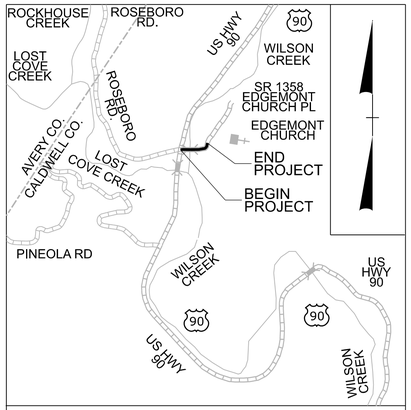
01/16/24

CONTRACT: DK00436 PROJECT: DF18311.2014030.PR

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



VICINITY MAP (NTS)

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

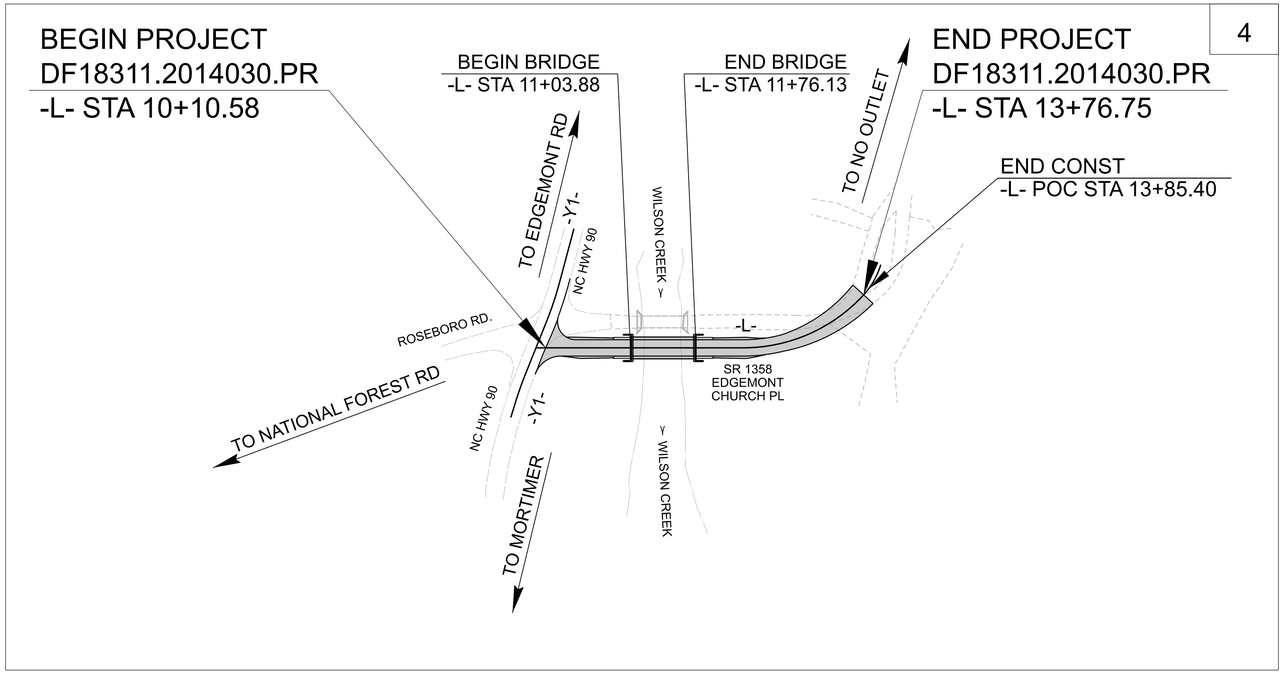
CALDWELL COUNTY

STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	DF18311.2014030.PR	1	

STATE PROJ. NO.	F. A. PROJ. NO.	DESCRIPTION
DF18311.2014030.PR	DF18311.2014030.PR	PE
DF18311.2014030.PR	DF18311.2014030.PR	R/W / UTIL
DF18311.2014030.PR	DF18311.2014030.PR	CONST.

LOCATION: *REPLACE BRIDGE NO. 161 ON SR 1358 OVER WILSON CREEK*

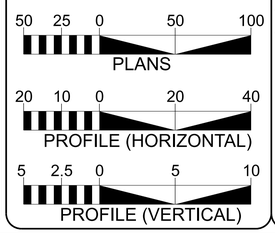
TYPE OF WORK: *GRADING, DRAINAGE, PAVING, AND STRUCTURE.*



THIS IS NOT A CONTROL OF ACCESS PROJECT.
THIS PROJECT IS NOT WITHIN ANY MUNICIPAL BOUNDARIES.

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

GRAPHIC SCALES



DESIGN DATA

ADT 2026 = 20
ADT 2050 = 20
K = N/A %
D = N/A %
T = N/A % *
V = 30 MPH
* TTST =N/A DUAL N/A
FUNC CLASS =
RURAL LOCAL
SUBREGIONAL TIER

PROJECT LENGTH

LENGTH OF ROADWAY PROJECT
DF18311.2014030.PR = 0.055 MILES

LENGTH OF STRUCTURE PROJECT
DF18311.2014030.PR= 0.014 MILES

TOTAL LENGTH OF PROJECT
DF18311.2014030.PR = 0.069 MILES

Prepared in the Office of:
KCA KISINGER CAMPO & ASSOCIATES
NC FIRM LICENSE No: C-1506
301 Fayetteville St.,
Suite 1500
Raleigh, NC 27601
(919)882-7839

2024 STANDARD SPECIFICATIONS

RIGHT OF WAY DATE: MAY 2, 2025

LETTING DATE: DECEMBER 18, 2025

L. GARLAND HAYWOOD, P.E.
PROJECT ENGINEER

ROBERT E. O'DELL JR.
PROJECT DESIGNER

ROB WEISZ, P.E.
NCDOT CONTACT

HYDRAULICS ENGINEER

10/16/2025

DocuSigned by: John McNulty
SIGNATURE: *P.E.*

NORTH CAROLINA PROFESSIONAL SEAL 057747 ENGINEER JOHN MCNULTY

ROADWAY DESIGN ENGINEER

10/16/2025

Signed by:
SIGNATURE: *P.E.*

NORTH CAROLINA PROFESSIONAL SEAL 023005 ENGINEER L GARLAND HAYWOOD

STATE OF NORTH CAROLINA • DEPARTMENT OF TRANSPORTATION •

INDEX OF SHEETS

GENERAL NOTES: 2024 SPECIFICATIONS
EFFECTIVE: 01-16-2024
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 III.

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.

SUBSURFACE DRAINS:

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

GUARDRAIL:

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

TEMPORARY SHORING:

SHORING REQUIRED FOR THE MAINTENANCE OF TRAFFIC NOT SHOWN ON THE PLANS WILL BE PAID FOR AT THE CONTRACT PRICE FOR "TEMPORARY SHORING".

SUBSURFACE PLANS:

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

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

SKYLINE SKYBEST - COMMUNICATIONS,

BLUE RIDGE ENERGY - ELECTRICITY,

BRIGHTSPEED - TELECOM.

RIGHT-OF-WAY MARKERS:

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

EFF. 01-16-2024
REV.

2024 ROADWAY ENGLISH STANDARD DRAWINGS

The following Roadway Standards as appear in "Roadway Standard Drawings" Contracts Standards and Development Unit - N. C. Department of Transportation - Raleigh, N. C., Dated January 16, 2024 are applicable to this project and by reference hereby are considered a part of these plans:

STD.NO.	TITLE
DIVISION 2 - EARTHWORK	
200.03	Method of Clearing - Method III
225.02	Guide for Grading Subgrade - Secondary and Local
225.04	Method of Obtaining Superelevation - Two Lane Pavement
DIVISION 4 - MAJOR STRUCTURES	
423.02	Bridge Approach Fills - Type 1A Alternate Approach Fill for Integral Bridge Abutment
DIVISION 5 - SUBGRADE, BASES AND SHOULDERS	
560.01	Method of Shoulder Construction - High Side of Superelevated Curve - Method I
DIVISION 8 - INCIDENTALS	
815.02	Subsurface Drain
848.04	Street Turnout
862.01	Guardrail Placement (Use Details in Lieu of Standards for Sheets 4, 6, 12, and 14 of 15)
862.02	Guardrail Installation
862.03	Structure Anchor Units (Use Detail in Lieu of Standard for Sheet 8 of 9)
876.01	Rip Rap in Channels and Ditches
876.04	Drainage Ditches with Class 'B' Rip Rap

DF1831I.2014030.PR

FINAL | 1A

NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
CALDWELL COUNTY

ROADWAY DESIGN UNIT

ROADWAY DESIGN ENGINEER
10/15/2025

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

PREPARED BY

KCA
KISINGER CAMPO & ASSOCIATES

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

REVISIONS

11/14/23

Note: Not to Scale

STATE OF NORTH CAROLINA, DIVISION OF HIGHWAYS

CONVENTIONAL PLAN SHEET SYMBOLS

BOUNDARIES AND PROPERTY:

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

BUILDINGS AND OTHER CULTURE:

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

HYDROLOGY:

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

RAILROADS:

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

RIGHT OF WAY & PROJECT CONTROL:

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

ROADS AND RELATED FEATURES:

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

VEGETATION:

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

EXISTING STRUCTURES:

MAJOR:

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

MINOR:

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

UTILITIES:

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

POWER:

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

TELEPHONE:

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

WATER:

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

TV:

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

GAS:

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

SANITARY SEWER:

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

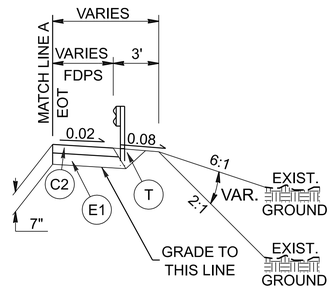
MISCELLANEOUS:

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

INSET A

USE INSET A IN CONJUNCTION WITH TYPICAL NO. 1

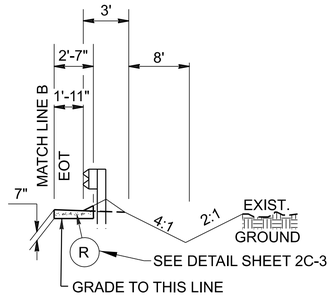
-L- LT. STA. 10+47.63 TO -L- LT. STA. 10+85.13 (MIRROR TYPICAL FOR LEFT)
-L- RT. STA. 10+47.63 TO -L- RT. STA. 10+85.13
-L- LT. STA. 11+94.88 TO -L- LT. STA. 12+32.38 (MIRROR TYPICAL FOR LEFT)
-L- RT STA. 11+94.88 TO -L- RT. STA. 12+32.38



INSET B

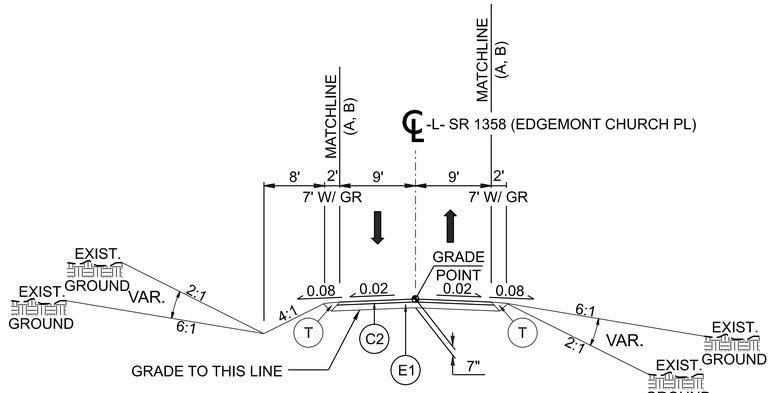
SPECIAL SHOULDER BERM GUTTER DETAIL

SEE MODIFIED SHOULDER BERM GUTTER DETAIL 846D01



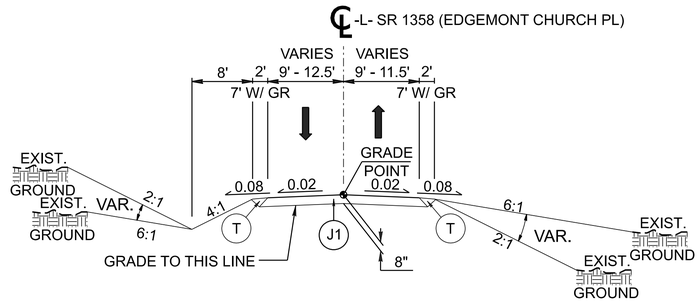
USE INSET B IN CONJUNCTION WITH TYPICAL NO. 1

-L- LT. STA.10+85.13 TO -L- LT. STA. 11+03.88 (MIRROR TYPICAL FOR LT.)
-L- RT. STA.10+85.13 TO -L- RT. STA. 11+03.88
-L- LT. STA. 11+76.13 TO -L- LT. STA. 11+94.88 (MIRROR TYPICAL FOR LT.)
-L- RT. STA.11+76.13 TO -L- RT. STA. 11+94.88



TYPICAL SECTION NO. 1

-L- STA. 10+10.58 TO 11+03.88 (BEGIN BRIDGE)
-L- STA. 11+76.13 (END BRIDGE) TO 12+53.96

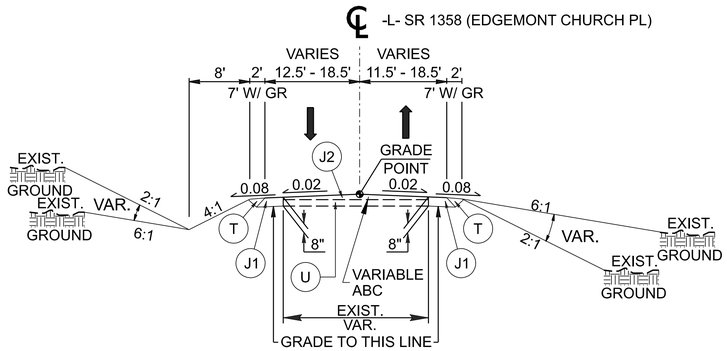


TYPICAL SECTION NO. 2

-L- STA. 12+53.96 TO 13+08.00

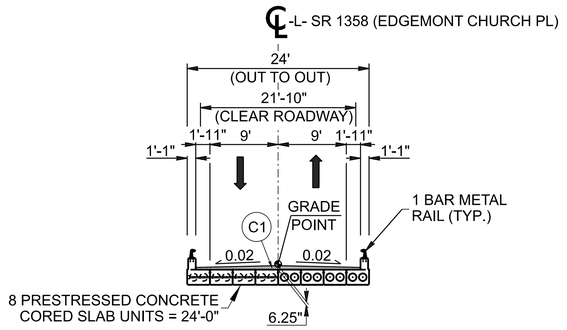
PAVEMENT SCHEDULE (FINAL PAVEMENT DESIGN 04/30/2025)	
C1	PROP. VAR. DEPTH ASPHALT CONCRETE SURFACE COURSE, TYPE S9.5B, AT AN AVERAGE RATE OF 110 LBS. PER SQ. YD. PER 1" DEPTH TO BE PLACED IN LAYERS NOT TO EXCEED 1.5" IN DEPTH.
C2	PROP. APPROX. 3" ASPHALT CONCRETE SURFACE COURSE, TYPE S9.5B, AT AN AVERAGE RATE OF 165 LBS. PER SQ. YD. IN EACH OF TWO LAYERS.
E1	PROP. APPROX. 4.0" ASPHALT CONCRETE BASE COURSE, TYPE B25.0C, AT AN AVERAGE RATE OF 456 LBS PER SQ. YD.
J1	PROP. 8.0" AGGREGATE BASE COURSE
J2	PROP. VAR. DEPTH AGGREGATE BASE COURSE
R	MODIFIED SHOULDER BERM GUTTER SEE DETAIL SHEET 2C-3
T	EARTH MATERIAL
U	EXISTING PAVEMENT

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



TYPICAL SECTION NO. 3

-L- STA. 13+08.00 TO 13+76.75



BRIDGE TYPICAL SECTION

-L- STA. 11+03.88 TO 11+76.13
SEE STRUCTURE PLANS FOR STRUCTURE CONSTRUCTION DETAILS

DF1831I.2014030.PR
FINAL | 2A-1

NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
CALDWELL COUNTY

ROADWAY DESIGN UNIT

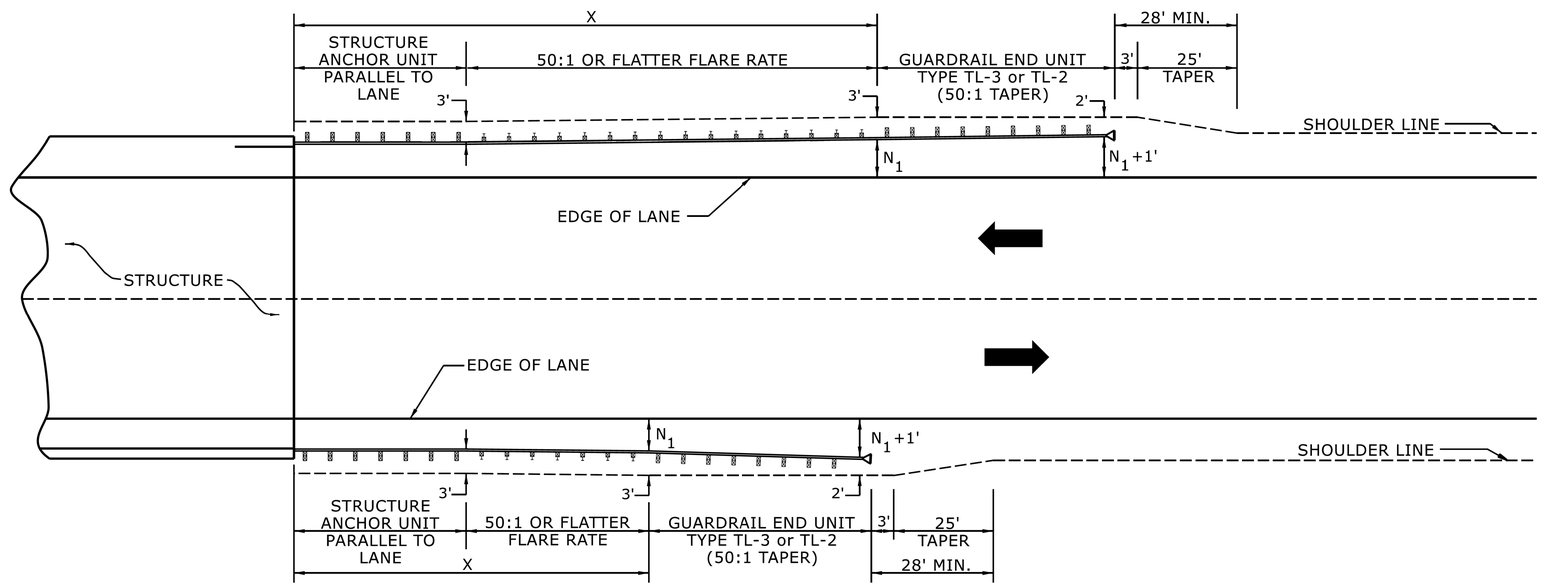
ROADWAY DESIGN ENGINEER
10/15/2025
NORTH CAROLINA PROFESSIONAL SEAL 023005 ENGINEER GARLAND HAYWOOD
DocuSigned by: Garland Haywood
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

PAVEMENT DESIGN ENGINEER
10/15/2025
NORTH CAROLINA PROFESSIONAL SEAL 049851 ENGINEER RAMIE A SHAW
DocuSigned by: Ramie A. Shaw

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

REVISIONS

PROJECT REFERENCE NO.	SHEET NO.



USE FLARE RATE AS THE CONTROL IF THE "N_1" DISTANCE IS NOT OBTAINED.
("N_1" IS BASED ON SHOULDER WIDTHS IN THE ROADWAY DESIGN MANUAL)

SEE STD. 862.03 FOR STRUCTURE ANCHOR UNITS

FOR POSTED SPEEDS ≥ 45MPH USE GREU TYPE TL-3
FOR POSTED SPEEDS < 45MPH USE GREU TYPE TL-2

GUARDRAIL LENGTH OF NEED (X) IS CALCULATED BASED ON THE AASHTO ROADSIDE DESIGN GUIDE.

LENGTHS AND OFFSETS FOR PROPOSED GUARDRAIL AT TWO LANE - TWO WAY LOCATIONS

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

ROADWAY DETAIL DRAWING FOR
GUARDRAIL PLACEMENT

SHEET 4 OF 15

862D01

10/16/2025

NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 033144 NICOLE M. HACKLER

Signed by:
Nicole M. Hackler
5884320304164C5...

DOCUMENT NOT CONSIDERED FINAL
UNLESS ALL SIGNATURES COMPLETED

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

SEE TITLE BLOCK

ORIGINAL BY: S.CALHOUN DATE: 7-25-2024
MODIFIED BY: _____ DATE: _____
CHECKED BY: _____ DATE: _____
FILE SPEC.: _____

DFI831I.2014030.PR

FINAL | 2C-1

NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
CALDWELL COUNTY

ROADWAY DESIGN UNIT

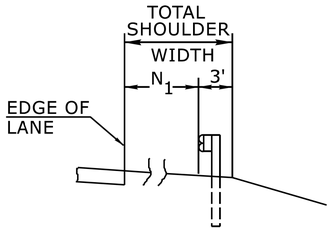
PREPARED BY

KCA KISINGER CAMPO & ASSOCIATES

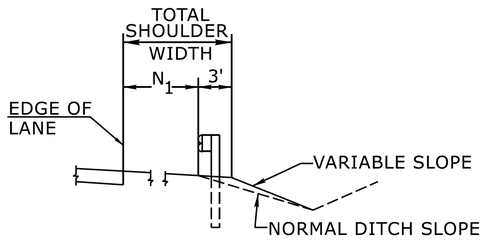
NC FIRM LICENSE No: C-1506
301 Fayetteville Street, Suite 1500
Raleigh, NC 27601
(919)882-7639

REVISIONS

PROJECT REFERENCE NO.	SHEET NO.

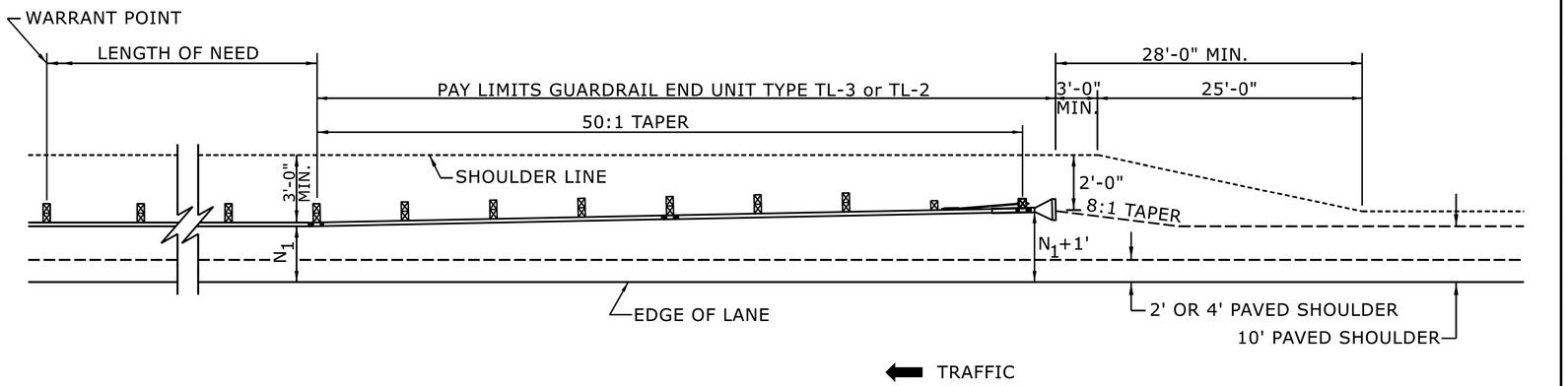


FILL SECTION



CUT SECTION

"N_1"= DISTANCE FROM EDGE OF LANE TO FACE OF GUARDRAIL WHERE GUARDRAIL IS PARALLEL TO LANE.



FOR POSTED SPEEDS ≥ 45mph USE GREU TYPE TL-3
FOR POSTED SPEEDS < 45mph USE GREU TYPE TL-2

DETAIL OF BEGINNING OF GUARDRAIL IN CUT OR FILL SECTION

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

ROADWAY DETAIL DRAWING FOR
GUARDRAIL PLACEMENT

SHEET 6 OF 15

862D01

DF1831I.2014030.PR

FINAL | 2C-2

NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
CALDWELL COUNTY

ROADWAY DESIGN UNIT

PREPARED BY

KCA
KISINGER CAMPO
& ASSOCIATES

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

10/16/2025

NORTH CAROLINA PROFESSIONAL SEAL 033144 ENGINEER NICOLE M HACKLER

Signed by:
Nicole M. Hackler
588432D3416 4C8...

REVISIONS

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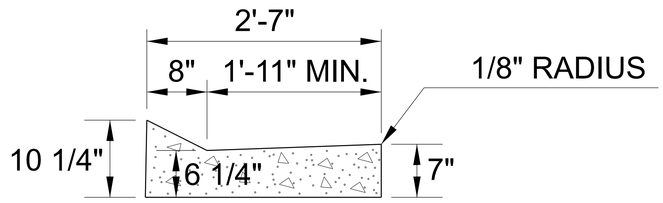
UNLESS ALL SIGNATURES COMPLETED

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

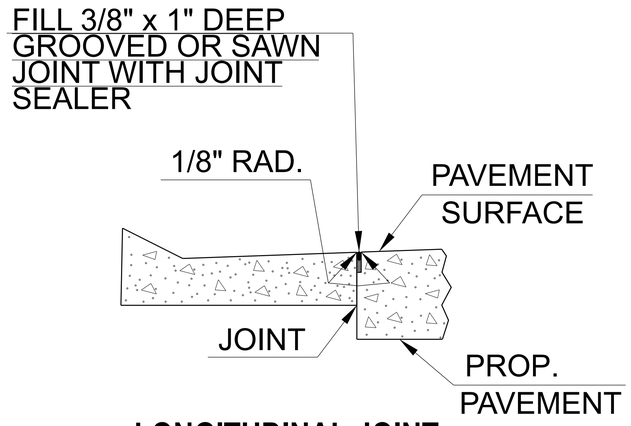
SEE TITLE BLOCK

ORIGINAL BY: S.CALHOUN DATE: 7-25-2024
MODIFIED BY: DATE:
CHECKED BY: DATE:
FILE SPEC.:

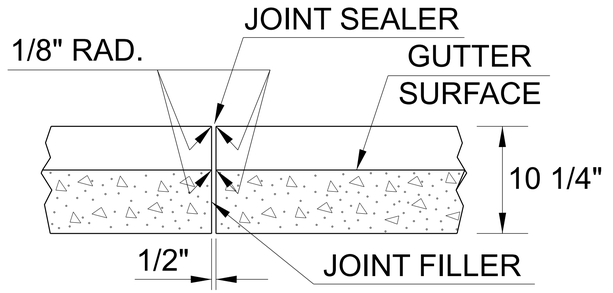
11/14/23



MODIFIED SHOULDER BERM GUTTER



LONGITUDINAL JOINT



TRANSVERSE EXPANSION JOINT IN CURB AND GUTTER

GENERAL NOTES:
-PLACE CONTRACTION JOINTS AT 10’ INTERVALS, EXCEPT THAT A 15’ SPACING MAY BE USED WHEN A MACHINE IS USED OR WHEN SATISFACTORY SUPPORT FOR THE FACE FORM CAN BE OBTAINED WITHOUT THE USE OF TEMPLATES AT 10’ INTERVALS.
-JOINT SPACING MAY BE ALTERED IF REQUIRED BY THE ENGINEER.
-CONTRACTION JOINTS MAY BE INSTALLED WITH THE USE OF TEMPLATES OR FORMED BY OTHER APPROVED METHODS. CONSTRUCT NON-TEMPLATE FORMED JOINTS A MIN. OF 1 1/2" DEEP.
-FILL ALL CONSTRUCTION JOINTS WITH JOINT FILLER AND SEALER.
-SPACE EXPANSION JOINTS AT 90’ INTERVALS AND ADJACENT TO ALL RIGID OBJECTS.

SECTION VIEW OF JOINTS

ENGLISH DETAIL DRAWING FOR
MODIFIED SHOULDER BERM GUTTER

SHEET OF
846D01

DF1831I.2014030.PR
FINAL | 2C-3

NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
CALDWELL COUNTY

ROADWAY DESIGN UNIT

ROADWAY DESIGN ENGINEER
10/15/2025
NORTH CAROLINA PROFESSIONAL SEAL 023005 ENGINEER GARLAND HAYWOOD
DocuSigned by: Garland Haywood
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

PREPARED BY

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

REVISIONS

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

5/26/20

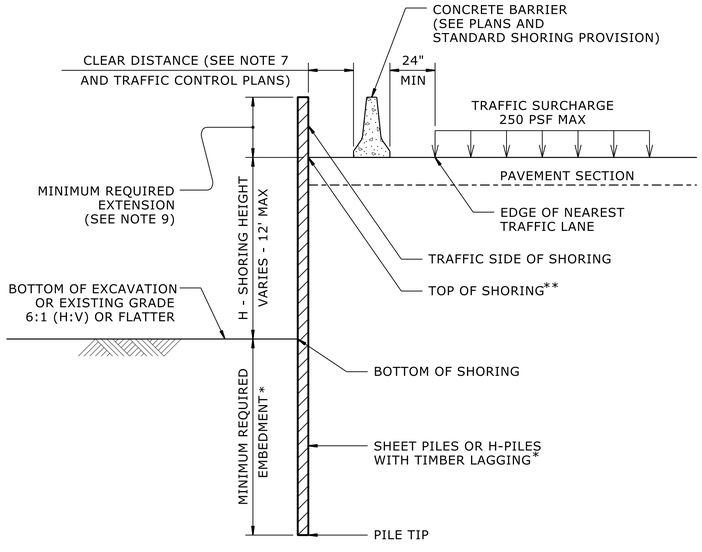
GROUNDWATER CONDITION (SEE NOTE 6)	H SHORING HEIGHT (FT)	SLOPE OR SURCHARGE CASE WITH NO TRAFFIC IMPACT					SURCHARGE CASE WITH TRAFFIC IMPACT				
		SHEET PILES		H-PILES WITH TIMBER LAGGING			SHEET PILES		H-PILES WITH TIMBER LAGGING		
		MINIMUM REQUIRED EMBEDMENT (FT)	MINIMUM REQUIRED SECTION MODULUS (IN^3/FT)	MINIMUM REQUIRED EMBEDMENT* (FT) (SEE NOTE 10)			MINIMUM REQUIRED EMBEDMENT (FT)	MINIMUM REQUIRED SECTION MODULUS (IN^3/FT)	MINIMUM REQUIRED EMBEDMENT* (FT) (SEE NOTE 10)		
				HP 10x42	HP 12x53	HP 14x73			HP 10x42	HP 12x53	HP 14x73
GROUNDWATER ELEVATION BEWTEEN BOTTOM OF SHORING AND PILE TIP	< 6	11.5	4.5	11.5	11.5	11.5	16.0	12.0	13.0	13.0	13.0
	7	13.0	7.0	13.0	13.0	13.0	17.0	14.5	14.5	14.5	14.5
	8	15.0	10.0	--	15.0	15.0	18.0	17.0	--	15.5	15.5
	9	17.0	14.0	--	17.0	17.0	19.0	20.0	--	17.0	17.0
	10	18.5	19.5	--	--	18.5	20.0	23.5	--	--	18.5
	11	20.5	26.0	--	--	--	21.0	28.0	--	--	20.0
	12	22.5	33.0	--	--	--	22.0	33.0	--	--	21.5
GROUNDWATER ELEVATION BELOW PILE TIP	< 6	7.5	3.0	8.0	8.0	8.0	11.0	10.0	9.5	9.5	9.5
	7	8.5	4.5	9.5	9.5	9.5	12.0	12.0	10.5	10.5	10.5
	8	10.0	6.5	10.5	10.5	10.5	12.5	14.0	11.5	11.5	11.5
	9	11.0	9.5	--	12.0	12.0	13.5	16.5	--	12.5	12.5
	10	12.5	13.0	--	--	13.5	14.0	19.5	--	13.5	13.5
	11	13.5	17.0	--	--	14.5	15.0	22.5	--	--	14.5
	12	15.0	21.5	--	--	16.0	16.0	25.5	--	--	15.5

MINIMUM REQUIRED EMBEDMENT AND SECTION MODULUS

*DO NOT USE H-PILES WITH TIMBER LAGGING FOR GROUNDWATER CONDITION, SHORING HEIGHT AND H-PILE SIZE SHOWN IF MINIMUM REQUIRED EMBEDMENT IS "--".

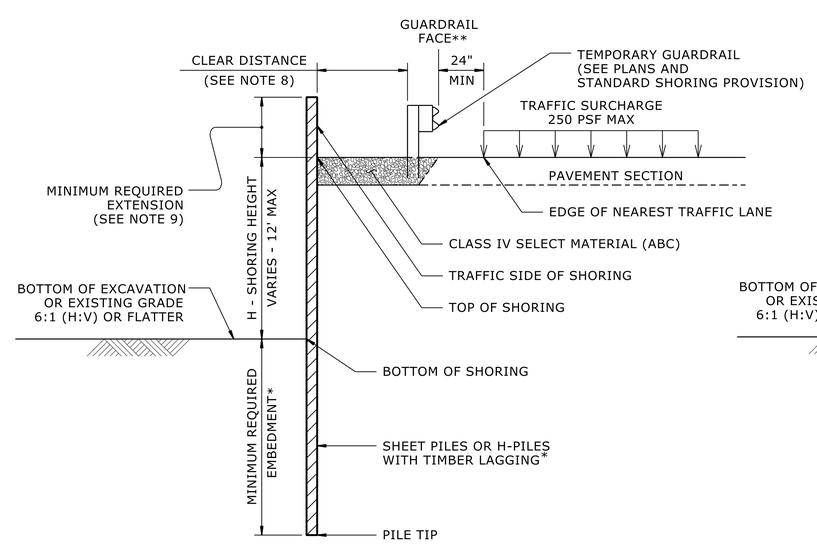
NOTES:

1. AT THE CONTRACTOR'S OPTION, USE STANDARD TEMPORARY SHORING AS NOTED IN THE PLANS.
2. FOR STANDARD TEMPORARY SHORING, SEE STANDARD SHORING PROVISION.
3. STANDARD TEMPORARY SHORING IS BASED ON THE FOLLOWING IN-SITU ASSUMED SOIL PARAMETERS:
   UNIT WEIGHT, γ = 120 PCF
   FRICTION ANGLE, ϕ = 30 DEGREES
   COHESION, c = 0 PSF
4. DO NOT USE STANDARD TEMPORARY SHORING IF ASSUMED SOIL PARAMETERS ARE NOT APPLICABLE.
5. DO NOT USE STANDARD TEMPORARY SHORING WHEN VERY LOOSE OR SOFT SOIL OR MUCK IS WITHIN THE EMBEDMENT DEPTH.
6. USE GROUNDWATER ELEVATION NOTED IN THE PLANS. IF NO GROUNDWATER ELEVATION IS SHOWN IN THE PLANS, USE "GROUNDWATER ELEVATION BETWEEN BOTTOM OF SHORING AND PILE TIP" FOR GROUNDWATER CONDITION. DO NOT USE STANDARD TEMPORARY SHORING IF GROUNDWATER IS ABOVE BOTTOM OF SHORING.
7. AT THE CONTRACTOR'S OPTION OR IF AVAILABLE CLEAR DISTANCE IS LESS THAN THE MINIMUM REQUIRED FOR CONCRETE BARRIER, SET BARRIER NEXT TO AND UP AGAINST TRAFFIC SIDE OF PILES AND USE "SURCHARGE CASE WITH TRAFFIC IMPACT".
8. AT THE CONTRACTOR'S OPTION OR IF AVAILABLE CLEAR DISTANCE IS LESS THAN 4' FOR TEMPORARY GUARDRAIL, ATTACH GUARDRAIL TO TRAFFIC SIDE OF PILES AS SHOWN IN THE PLANS AND USE "SURCHARGE CASE WITH TRAFFIC IMPACT".
9. MINIMUM REQUIRED EXTENSION IS 6" FOR "SLOPE OR SURCHARGE CASE WITH NO TRAFFIC IMPACT" AND 32" FOR "SURCHARGE CASE WITH TRAFFIC IMPACT".
10. MINIMUM REQUIRED EMBEDMENT FOR H-PILES WITH TIMBER LAGGING IS BASED ON DRIVEN H-PILES AT MAXIMUM 6' SPACING. AT THE CONTRACTOR'S OPTION, EMBEDMENT DEPTHS MAY BE REDUCED BY 25% FOR DRILLED-IN H-PILES.
11. SUBMIT A "STANDARD TEMPORARY SHORING SELECTION FORM" AT LEAST 7 DAYS BEFORE STARTING TEMPORARY SHORING CONSTRUCTION. UP TO 3 SHORING LOCATIONS MAY BE INCLUDED ON EACH FORM. STANDARD SHORING SELECTION FORMS ARE AVAILABLE FROM: connect.ncdot.gov/resources/Geological/Pages/Geotech_Forms_Details.aspx
12. CONTACT THE ENGINEER IF PILES DO NOT ATTAIN THE MINIMUM REQUIRED EMBEDMENT.



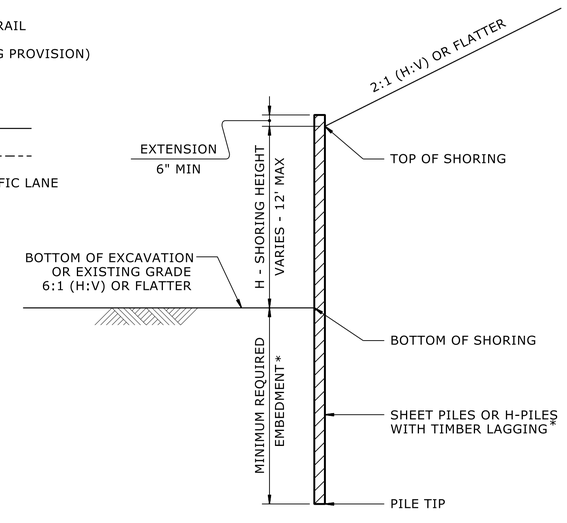
CONCRETE BARRIER

**TOP OF SHORING = EDGE OF PAVEMENT



TEMPORARY GUARDRAIL

**GUARDRAIL FACE = EDGE OF PAVEMENT



STANDARD TEMPORARY SHORING

(SLOPE CASE)
*SEE TABLE ABOVE.

STANDARD TEMPORARY SHORING

(SURCHARGE CASE)
*SEE TABLE ABOVE.

DF18311.2014030.PR

2G-1 | -

NORTH CAROLINA DEPARTMENT OF TRANSPORTATION

GEOTECHNICAL ENGINEERING UNIT

GEOTECHNICAL ENGINEER

DocuSigned by: Scott A. Hidden 7/08/2025

NORTH CAROLINA PROFESSIONAL SEAL 022246 ENGINEER SCOTT A. HIDDEN

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

STANDARD DETAIL NO. 1801.01

GEOTECHNICAL STANDARD DETAIL FOR

TEMPORARY SHORING

DATE: 02-18-2025

SUMMARY OF EARTHWORK

(IN CUBIC YARDS)

Station	Station	Uncl. Excav.	Embank. +15%	Borrow	Waste
-L- RT 10+10.58	-L- RT 11+03.88 (BEGIN BRIDGE)	27	92	65	
-L- RT 11+76.13 (END BRIDGE)	-L- RT 13+76.75	154	125		29
-L- LT 10+10.58	-L- LT 11+03.88 (BEGIN BRIDGE)	55	43	43	55
-L- LT 11+76.13 (END BRIDGE)	-L- LT 13+76.75	138	40	40	138
PROJECT TOTALS:		374	300	148	222
Loss Due To Clearing & Grubbing		-50		50	
Waste In Lieu of Borrow				-29	-29
Replace Topsoil on Borrow Pit (5%)				8	
GRAND TOTALS:		324	300	177	* 193
SAY:		**325**		**180**	**195**

* EXCAVATED WASTE MATERIAL CAN NOT BE USED UNTIL THE PROPOSED ROADWAY BED IS COMPLETE.

NOTES:

ALL EARTHWORK QUANTITIES WERE DERIVED FROM ORD QUANTITIES BY NAMED BOUNDARY REPORT(S).

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

EST. DDE = 33 CUBIC YARDS (CY).

EST. SHALLOW UNDERCUT 50 CY.

CLASS IV SUBGRADE STABILIZATION = 100 TONS.

PER GEOTECH RECOMMENDATION, ESTIMATED 225 CUBIC YARDS OF UNDERCUT TO BE USED IN THE DISCRETION OF THE RESIDENT ENGINEER.

PAVEMENT REMOVAL SUMMARY

IN SQUARE YARDS

SURVEY LINE	Station	Station	LOCATION LT/RT/CL	ASPHALT REMOVAL	ASPHALT BREAKUP	CONCRETE REMOVAL	CONCRETE BREAKUP
-L-	10+25.00	10+85.00	LT	175.21			
		TOTAL:		175.21			
		SAY:		**180**			

SHOULDER BERM GUTTER SUMMARY

FOR MODIFIED SHOULDER BERM GUTTER DETAIL SEE SHEET 2C-3

LINE	Station	Station	LENGTH
-L- (LT)	10+85.13	11+03.88	18.75
-L- (RT)	10+85.13	11+03.88	18.75
-L- (LT)	11+76.13	11+94.88	18.75
-L- (RT)	11+76.13	11+94.88	18.75
		TOTAL:	75
		SAY:	**75**

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NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
CALDWELL COUNTY

ROADWAY DESIGN UNIT

PREPARED BY

KCA
KISINGER CAMPO & ASSOCIATES

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

REVISIONS

11/14/23

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

GUARDRAIL SUMMARY

G = GATING IMPACT ATTENUATOR TYPE 350
NG = NON-GATING IMPACT ATTENUATOR TYPE 350
* = WEATHERED GR SEE SPECIAL PROVISION

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		CONCRETE MEDIAN BARRIER	REMOVE EXISTING GUARDRAIL	REMOVE & STOCKPILE EXISTING GUARDRAIL	REMARKS
				* STRAIGHT	SHOP CURVED	DOUBLE FACED	APPROACH END	TRAILING END			APPROACH END	TRAILING END	APPROACH END	TRAILING END	XI MOD	XI	GREU TL-3	M-350	TYPE B-77	AT-1	* TYPE-III	SHOP CURVE TYPE-III	* GREU TL-2	G	NG				
L	10+47.63	11+03.88	LT	56.25'				11+03.88	1.917	5.667		37.5'		0.75							1		1						
L	10+47.63	11+03.88	RT	56.25'			11+03.88		1.917	5.667	37.5'		0.75								1		1						
L	11+76.13	12+32.38	LT	56.25'			11+76.13		1.917	5.667	37.5'		0.75								1		1						
L	11+76.13	12+32.38	RT	56.25'				11+76.13	1.917	5.667		37.5'		0.75							1		1						
			SUBTOTALS:	225.00'																	4		4						
	LESS ANCHOR DEDUCTIONS:																												
	WEATHERED TYPE-III		4 @ 18.75'	75.00'																									
	WEATHERED GREU TL-2		4 @ 25.0'	100.00'																									
	WEATHERED ANCHOR TOTALS:			175.00'																									
	WEATHERED GUARDRAIL TOTALS:			50.00'																									
			SAY:	50.00'																	4		4						
	ADDITIONAL GUARDRAIL POSTS			5																									

"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

TEMPORARY GUARDRAIL SUMMARY

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

SURVEY LINE	BEG. STA.	END STA.	LOCATION	LENGTH			WARRANT POINT		"N" DIST. FROM E.O.L.	TOTAL SHOUL WIDTH	FLARE LENGTH		W		ANCHORS									IMPACT ATTENUATOR TYPE 350		CONCRETE MEDIAN BARRIER	REMOVE EXISTING GUARDRAIL	REMOVE & STOCKPILE EXISTING GUARDRAIL	REMARKS
				STRAIGHT	SHOP CURVED	DOUBLE FACED	APPROACH END	TRAILING END			APPROACH END	TRAILING END	APPROACH END	TRAILING END	XI MOD	XI	GREU TL-3	M-350	TYPE B-77	AT-1	TYPE-III	SHOP CURVE TYPE-III	GREU TL-2	G	NG				
-L-	10+48.70	11+11.20	LT	62.50'																2									
-L-	11+64.88	12+27.38	LT	62.50'																2									
			SUBTOTALS:	125.00'																									
	LESS ANCHOR DEDUCTIONS:																												
		TEMP AT-1	4 @ 6.25'	-25.00'																									
	ANCHOR TOTALS:			-25.00'																									
	GUARDRAIL TOTALS:			100.00'																									
			SAY:	100.00'																4									
	ADDITIONAL TEMPORARY GUARDRAIL POSTS			5																									

REVISIONS

DF1831I.2014030.PR
FINAL | 3B-2
NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
CALDWELL COUNTY

ROADWAY DESIGN UNIT

PREPARED BY

KCA
KISINGER CAMPO & ASSOCIATES

NC FIRM LICENSE No: C-1506
301 Fayetteville Street,
Suite 1500
Raleigh, NC 27601
(919)882-7639

11/14/23

COMPUTED BY: DM MULLEN, PE DATE: 9/16/2025
CHECKED BY: SC CLARK, PE DATE: 9/16/2025

(9-17-24)

PROJECT NO.	SHEET NO.
DF18311.2014030.PR	3G-1

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

SUMMARY OF SUBSURFACE DRAINAGE

LINE	Station	Station	Location LT/RT/CL	Drain Type* UD/BD/SD	LF
CONTINGENCY				SD	100
				TOTAL LF:	100

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

SUMMARY OF GEOTEXTILE FOR SUBGRADE STABILIZATION

LINE	Station	Station	Geotextile for Subgrade Stabilization SY
CONTINGENCY			
		TOTAL SY:	0*

*Total square yards of "Geotextile for Subgrade Stabilization" is only the estimated quantity for subgrades and may only represent a portion of the geotextile quantity shown in the Item Sheets of the Proposal.

SUMMARY OF AGGREGATE SUBGRADE/STABILIZATION

LINE	Station	Station	Aggregate Type* ASU(1/2)/ AST	Aggregate Thickness INCHES [8" for ASU(2)]	Shallow Undercut CY	Class IV Subgrade Stabilization TONS	Geotextile for Subgrade Stabilization SY	Stabilizer Aggregate TONS	Class IV Aggregate Stabilization TONS
CONTINGENCY					50	100	150		
				TOTAL CY/TONS/SY:	50	100**	150**	0	0

*ASU(1/2) = Aggregate Subgrade (Type 1 or 2)
*AST = Aggregate Stabilization
**Total tons of "Class IV Subgrade Stabilization" and total square yards of "Geotextile for Subgrade Stabilization" are only the estimated quantities for ASU(1/2)/AST and may only represent a portion of the subgrade stabilization and geotextile quantities shown in the Item Sheets of the Proposal.

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FINAL | 3G-1

NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
CALDWELL COUNTY

ROADWAY DESIGN UNIT

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NC FIRM LICENSE No: C-1506
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(919)882-7839

REVISIONS

11/14/23

-L-

CUR DATA -L-	CUR DATA -L-
PIc 13+06.79	PIc 13+96.40
Δc = 47°27'16.8" (LT)	Δc = 26°01'41.3" (LT)
D = 31°49'51.6"	D = 67°24'24.5"
Lc = 149.08	Lc = 38.61
Tc = 79.12	Tc = 19.65
R = 180	R = 85
DS = 30 MPH	DS = EXIST
* SE = 0.040	* SE = EXIST
* RO = 48'	* RO = EXIST

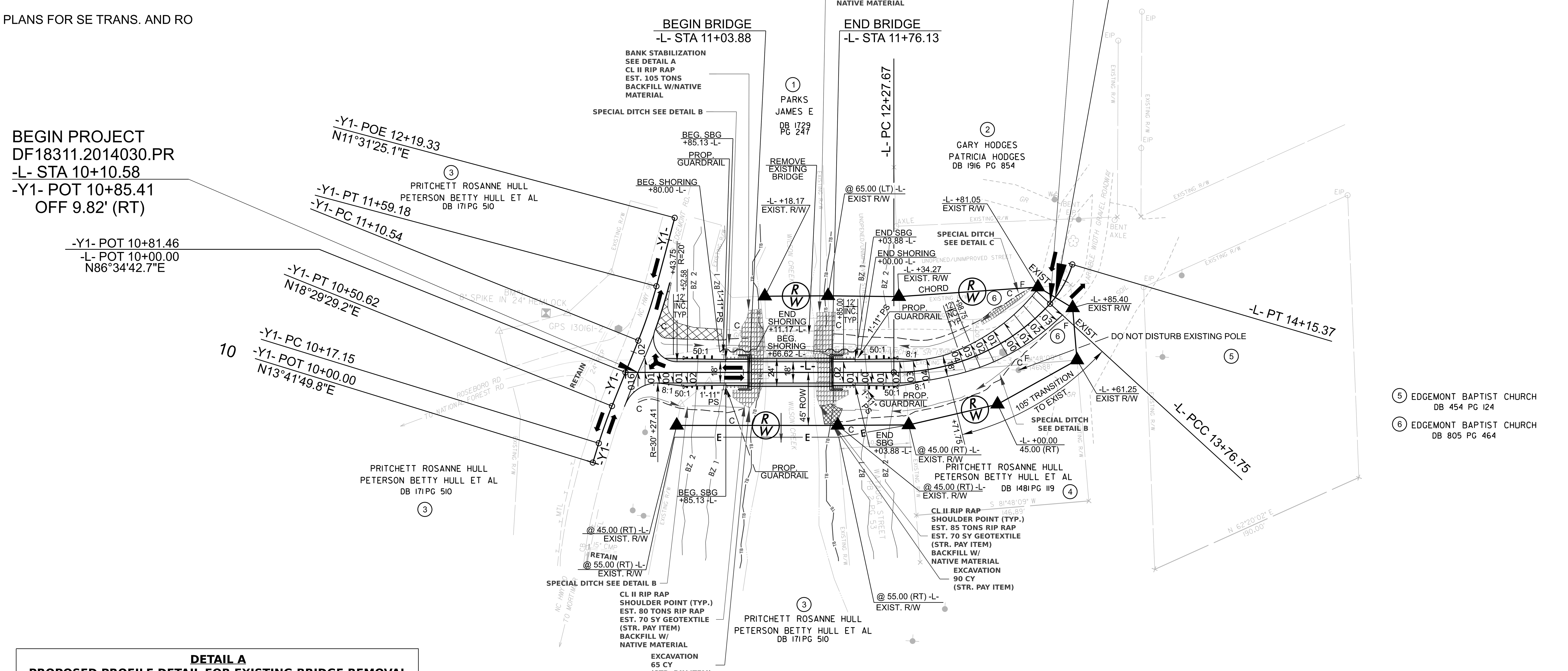
* SEE PLANS FOR SE TRANS. AND RO

-Y1-

CUR DATA -Y1-	CUR DATA -Y1-
PIc 10+33.90	PIc 11+34.89
Δc = 04°47'39.4" (RT)	Δc = 06°58'04.1" (LT)
D = 14°19'26.2"	D = 14°19'26.2"
Lc = 33.47	Lc = 48.64
Tc = 16.74	Tc = 24.35
R = 400	R = 400

END PROJECT
DF18311.2014030.PR
-L- STA 13+76.75

END CONST
-L- POC STA 13+85.40

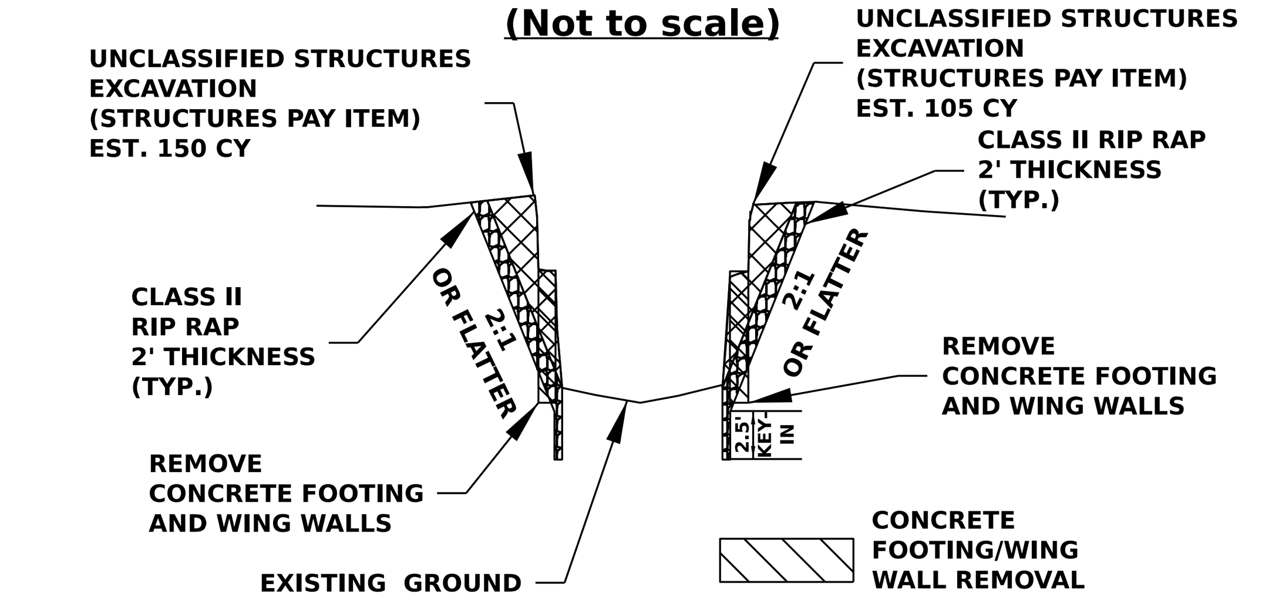


NAD 83
NA 2011
BEGIN PROJECT
DF18311.2014030.PR
-L- STA 10+10.58
-Y1- POT 10+85.41
OFF 9.82' (RT)
-Y1- POT 10+81.46
-L- POT 10+00.00
N86°34'42.7"E
-Y1- POE 12+19.33
N11°31'25.1"E
-Y1- PT 11+59.18
-Y1- PC 11+10.54
-Y1- PT 10+50.62
N18°29'29.2"E
-Y1- PC 10+17.15
-Y1- POT 10+00.00
N13°41'49.8"E
10
BEGIN BRIDGE
-L- STA 11+03.88
END BRIDGE
-L- STA 11+76.13
BANK STABILIZATION
SEE DETAIL A
CL II RIP RAP
EST. 105 TONS
BACKFILL W/NATIVE
MATERIAL
BANK STABILIZATION
SEE DETAIL A
CL II RIP RAP
EST. 100 TONS
BACKFILL W/
NATIVE MATERIAL
SPECIAL DITCH SEE DETAIL B
BEG. SBG
+85.13 -L-
PROP.
GUARDRAIL
BEG. SHORING
+80.00 -L-
REMOVE
EXISTING
BRIDGE
-L- +18.17
EXIST. R/W
@ 65.00 (LT) -L-
EXIST R/W
-L- PC 12+27.67
1
PARKS
JAMES E
DB 1729
PG 247
2
GARY HODGES
PATRICIA HODGES
DB 1916 PG 854
3
PRITCHETT ROSANNE HULL
PETERSON BETTY HULL ET AL
DB 171 PG 510
-L- +81.05
EXIST R/W
END SBG
+03.88 -L-
END SHORING
+00.00 -L-
SPECIAL DITCH
SEE DETAIL C
-L- +34.27
EXIST. R/W
CHORD
PROP.
GUARDRAIL
END
SHORING
+11.17 -L-
BEG.
SHORING
+66.62 -L-
EXIST
-L- +85.40
EXIST R/W
-L- PT 14+15.37
DO NOT DISTURB EXISTING POLE
5
-L- +61.25
EXIST R/W
105' TRANSITION
TO EXIST.
SPECIAL DITCH
SEE DETAIL B
-L- +00.00
45.00 (RT)
-L- PCC 13+76.75
45' ROW
PROP.
GUARDRAIL
END
SBG
+03.88 -L-
@ 45.00 (RT) -L-
EXIST. R/W
@ 45.00 (RT) -L-
EXIST. R/W
PRITCHETT ROSANNE HULL
PETERSON BETTY HULL ET AL
DB 1481 PG 119
4
PROP.
GUARDRAIL
BEG. SBG
+85.13 -L-
PRITCHETT ROSANNE HULL
PETERSON BETTY HULL ET AL
DB 171 PG 510
3
@ 45.00 (RT) -L-
EXIST. R/W
RETAIN
@ 55.00 (RT) -L-
EXIST. R/W
SPECIAL DITCH SEE DETAIL B
CL II RIP RAP
SHOULDER POINT (TYP.)
EST. 80 TONS RIP RAP
EST. 70 SY GEOTEXTILE
(STR. PAY ITEM)
BACKFILL W/
NATIVE MATERIAL
EXCAVATION
65 CY
(STR. PAY ITEM)
CL II RIP RAP
SHOULDER POINT (TYP.)
EST. 85 TONS RIP RAP
EST. 70 SY GEOTEXTILE
(STR. PAY ITEM)
BACKFILL W/
NATIVE MATERIAL
EXCAVATION
90 CY
(STR. PAY ITEM)
@ 55.00 (RT) -L-
EXIST. R/W
3
PRITCHETT ROSANNE HULL
PETERSON BETTY HULL ET AL
DB 171 PG 510
RETAIN

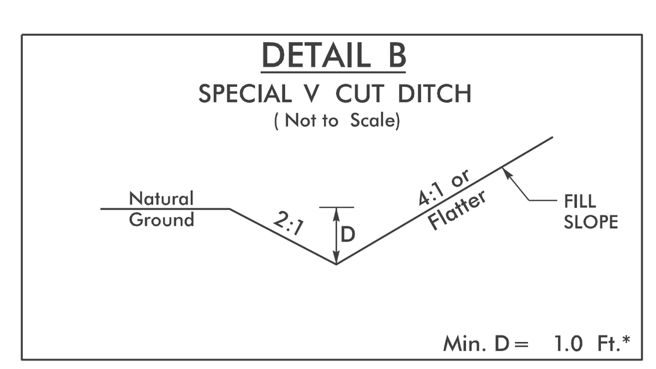
5 EDGEMONT BAPTIST CHURCH
DB 454 PG 124

6 EDGEMONT BAPTIST CHURCH
DB 805 PG 464

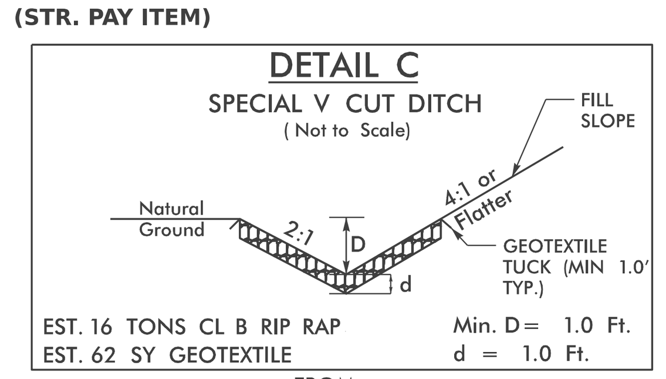
DETAIL A
PROPOSED PROFILE DETAIL FOR EXISTING BRIDGE REMOVAL
(Not to scale)



UNCLASSIFIED STRUCTURES
EXCAVATION
(STRUCTURES PAY ITEM)
EST. 150 CY
UNCLASSIFIED STRUCTURES
EXCAVATION
(STRUCTURES PAY ITEM)
EST. 105 CY
CLASS II RIP RAP
2' THICKNESS
(TYP.)
CLASS II
RIP RAP
2' THICKNESS
(TYP.)
2:1
OR FLATTER
REMOVE
CONCRETE FOOTING
AND WING WALLS
REMOVE
CONCRETE FOOTING
AND WING WALLS
EXISTING GROUND
CONCRETE
FOOTING/WING
WALL REMOVAL



FROM
-L- 10+11 TO 11+05 LT
-L- 10+11 TO 11+04 RT
-L- 11+72 TO 13+17 LT * (Min. D = 2.0 Ft.)
-L- 11+71 TO 13+26 RT



FROM
-L- 13+17 TO 13+77 LT

NOTES

1. ALL BRIDGE ANCHOR UNITS ARE TYPE III.
2. ALL GUARDRAIL ANCHOR UNITS ARE GREU TL-2.
3. SEE SHEET NO. 5 FOR -L- PROFILE.
4. SEE SHEETS S-1 THRU S-16 FOR STRUCTURE PLANS.

PROPOSED TEMPORARY SHORING

PAVED SHOULDER

PAVEMENT REMOVAL

DF18311.2014030.PR

FINAL 4

NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
CALDWELL COUNTY

ROADWAY DESIGN UNIT

ROADWAY DESIGN ENGINEER
10/15/2025
NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 023005 GARLAND HAYWOOD

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

HYDRAULICS ENGINEER
10/15/2025
NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 057747 JOHN MCNULTY

PREPARED BY

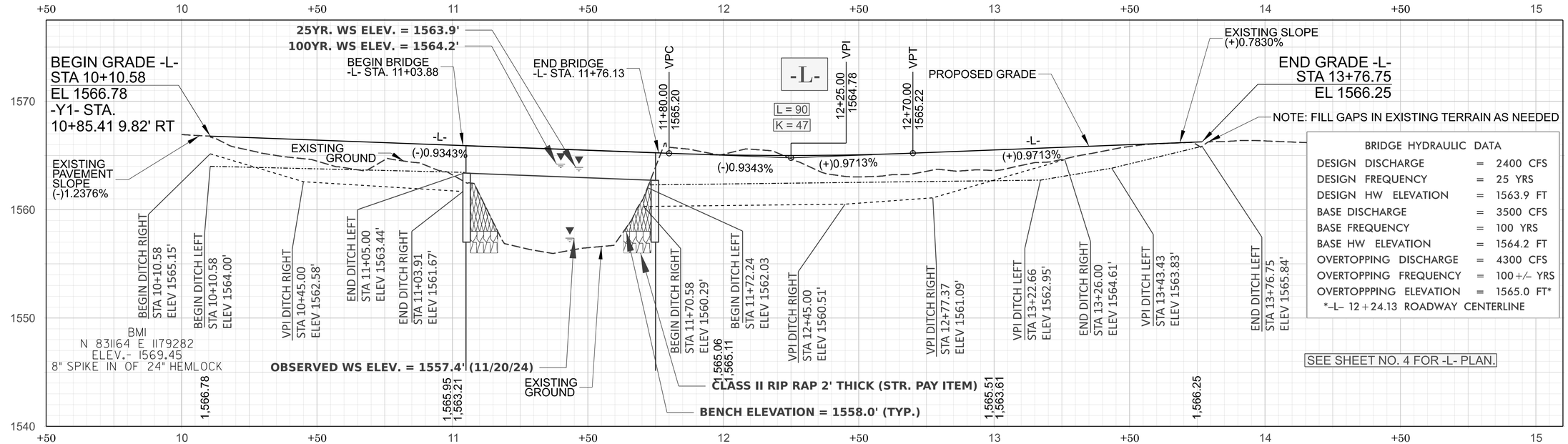
KCA
KISINGER CAMPO & ASSOCIATES

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

REVISIONS

HO_NT1/psykes - 10/3/2025

11/14/23



DITCH LINESTYLE LEGEND

- DITCH RT
- DITCH LT

REVISIONS

DF1831I.2014030.PR

FINAL | 5

NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
CALDWELL COUNTY

ROADWAY DESIGN UNIT

ROADWAY DESIGN ENGINEER
10/15/2025
NORTH CAROLINA PROFESSIONAL SEAL 023005 ENGINEER GARY W. HAYWOOD
DocuSigned by: Gary Haywood
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

HYDRAULICS ENGINEER
10/15/2025
NORTH CAROLINA PROFESSIONAL SEAL 057747 ENGINEER JOHN MCNULTY
DocuSigned by: John McNulty

PREPARED BY

KCA
KISINGER CAMPO & ASSOCIATES

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

SURVEY CONTROL SHEET

W/ EXISTING CENTERLINE ALIGNMENTS PRIOR TO CONSTRUCTION

PROJECT REFERENCE NO.	SHEET NO.
13-0161	RW02C-1

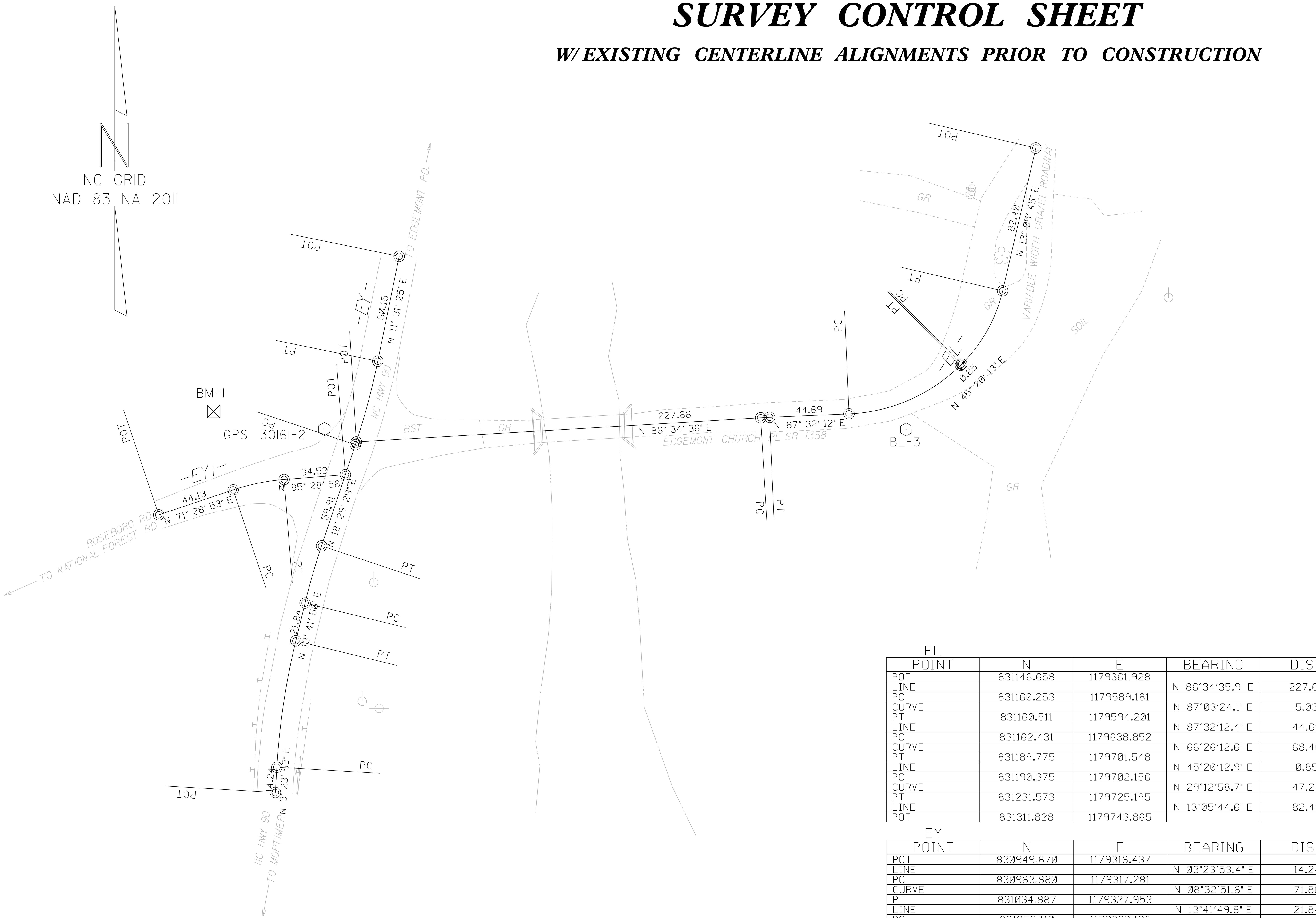
Location and Surveys

N. WILKESBORO L&S

PROJECT SURVEYOR

NORTH CAROLINA PROFESSIONAL SEAL L-4301 LAND SURVEYOR R. LANDON WAGONER

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED



I, R. Landon Wagoner, PLS, certify that the Project Control was performed under my supervision from an actual GPS survey made under my supervision and the following information was used to perform the survey:

Class of survey: ***AA***
Type of GPS field procedure: VRS
Dates of survey: NOVEMBER 2024
Datum/Epoch:NAD 83 / 2011
Published/Fixed-control use:
Localized around: 130616-1
Northing:830717.4357
Easting:1179290.6619
Combined grid factor:0.999887886
Geoid model:GEOID 18
Units:US SURVEY FEET

I also certify that the Baseline Control for this project was completed under my direct and responsible charge from an actual survey made under my supervision; that all horizontal closures had a minimum ratio of precision of 1:20,000 (Class AA) and Vertical accuracy to Class A. Field work was performed from November 18, 2024 to December 13,2024 , and all coordinates are based on NAD 83/2011 and all elevations are based on NAVD 88; that this survey was performed to meet the requirements of 21NCAC 56.1600 as applicable.

This 20th day of December, 2024.

Signed by:
R. Landon Wagoner
94066137FD3042D...
Professional Land Surveyor L-4301

EL

POINT	N	E	BEARING	DIST	DELTA	D	L	T	R
POT	831146.658	1179361.928							
LINE			N 86°34'35.9" E	227.66					
PC	831160.253	1179589.181							
CURVE			N 87°03'24.1" E	5.03	00°57'36.5"(RT)	19°05'54.9"	5.03	2.51	300.00
PT	831160.511	1179594.201							
LINE			N 87°32'12.4" E	44.69					
PC	831162.431	1179638.852							
CURVE			N 66°26'12.6" E	68.40	42°11'59.4"(LT)	60°18'40.8"	69.97	36.66	95.00
PT	831189.775	1179701.548							
LINE			N 45°20'12.9" E	0.85					
PC	831190.375	1179702.156							
CURVE			N 29°12'58.7" E	47.20	32°14'28.4"(LT)	67°24'24.5"	47.83	24.57	85.00
PT	831231.573	1179725.195							
LINE			N 13°05'44.6" E	82.40					
POT	831311.828	1179743.865							

EY

POINT	N	E	BEARING	DIST	DELTA	D	L	T	R
POT	830949.670	1179316.437							
LINE			N 03°23'53.4" E	14.24					
PC	830963.880	1179317.281							
CURVE			N 08°32'51.6" E	71.80	10°17'56.4"(RT)	14°19'26.2"	71.90	36.05	400.00
PT	831034.887	1179327.953							
LINE			N 13°41'49.8" E	21.84					
PC	831056.110	1179333.126							
CURVE			N 16°05'39.5" E	33.46	04°47'39.4"(RT)	14°19'26.2"	33.47	16.74	400.00
PT	831088.259	1179342.402							
LINE			N 18°29'29.2" E	59.91					
PC	831145.081	1179361.404							
CURVE			N 15°00'27.2" E	48.61	06°58'04.1"(LT)	14°19'26.2"	48.64	24.35	400.00
PT	831192.037	1179373.993							
LINE			N 11°31'25.1" E	60.15					
POT	831250.975	1179386.009							

EY1

POINT	N	E	BEARING	DIST	DELTA	D	L	T	R
POT	831105.689	1179250.851							
LINE			N 71°28'53.5" E	44.13					
PC	831119.705	1179292.695							
CURVE			N 78°28'54.9" E	29.25	14°00'02.8"(RT)	47°44'47.3"	29.32	14.73	120.00
PT	831125.546	1179321.356							
LINE			N 85°28'56.3" E	34.53					
POT	831128.266	1179355.781							

****

BM1 ELEVATION = 1569.45
N 831164 E 1179282
8" SPIKE IN 24" HEMLOCK

****

BL

POINT	DESC.	NORTH	EAST	ELEVATION
1301611	GPS1	830717.4350	1179290.6610	1569.23
1301612	GPS2	831153.9510	1179343.9820	1566.10
BL3	BL-3	831153.6620	1179670.9730	1564.25

GPS 130161-1

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

20-DEC-2024 08:07
L:\OLD D\NWILKES\Div 11 Huricane Helene Bridge Jobs\130161\CONTROL SHEETS\130161_ncdot_fs.dgn
rwalsh1 AT LS-329546L

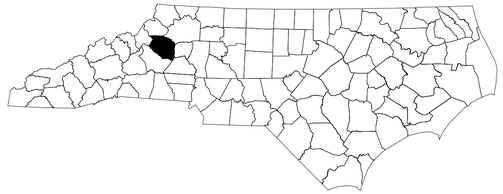
STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

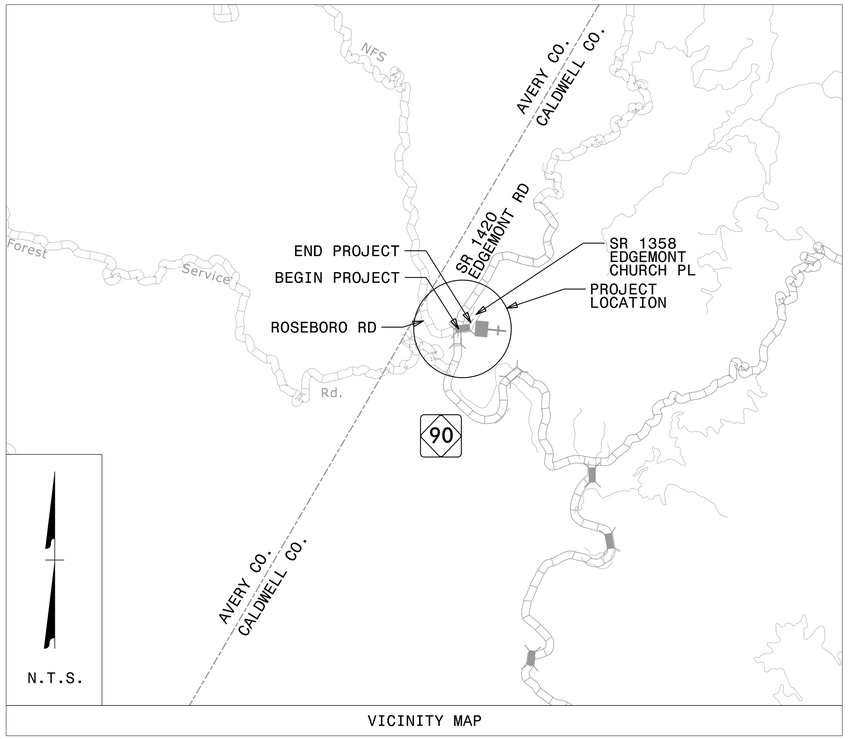
TRANSPORTATION MANAGEMENT PLAN

CALDWELL COUNTY

LOCATION: *REPLACE BRIDGE 161 ON SR 1358 OVER WILSON CREEK*

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





VICINITY MAP

INDEX OF SHEETS

SHEET NO.	TITLE
TMP-1	TITLE SHEET, VICINITY MAP, AND INDEX OF SHEETS
TMP-1A	ROADWAY STANDARD DRAWINGS AND LEGEND
TMP-1B	GENERAL NOTES & PHASING NOTES
TMP-2	TEMPORARY SHORING DATA
TMP-3	PHASE 1 & PHASE 2

SHEET NO.
TMP-1

DF18311.2014030.PR

TIP PROJECT:

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

PLANS PREPARED BY:

JACOB H. DUKE, P.E.
WZTC PROJECT ENGINEER

JASON M. DEBONE
WZTC PROJECT DESIGNER

NCDOT CONTACTS:

ROB N. WEISZ, P.E.
PROJECT MANAGER

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

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KCA KISINGER CAMPO & ASSOCIATES
Kisinger Campo & Associates Corp.
301 Fayetteville Street, Suite 1500
Raleigh, NC 27601
(919) 882-7839
NC Firm License No: C-1506

APPROVED: Signed by: Jacob H Duke 2953C8054E9409...

DATE: 10/15/2025

SEAL

NORTH CAROLINA PROFESSIONAL SEAL 043777 ENGINEER JACOB H DUKE

10/7/2025
DF1831l_TC_TMP_1.dgn
User:jdebone

PROJ. REFERENCE NO.	SHEET NO.
DF18311.2014030.PR	TMP-1A

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

ROADWAY STANDARD DRAWINGS

THE FOLLOWING ROADWAY STANDARDS AS SHOWN IN "ROADWAY STANDARD DRAWINGS" - N.C. DEPARTMENT OF TRANSPORTATION - RALEIGH, N.C., DATED JANUARY 2024 ARE APPLICABLE TO THIS PROJECT AND BY REFERENCE HEREBY ARE CONSIDERED A PART OF THESE PLANS:

STD. NO.	TITLE
1101.01	WORK ZONE ADVANCE WARNING SIGNS
1101.02	TEMPORARY LANE CLOSURES
1101.03	TEMPORARY ROAD CLOSURES
1101.04	TEMPORARY SHOULDER CLOSURES
1101.05	WORK ZONE VEHICLE ACCESSES
1101.06	WARNING SIGNS FOR BLASTING ZONES
1101.11	TRAFFIC CONTROL DESIGN TABLES
1110.01	STATIONARY WORK ZONE SIGNS
1110.02	PORTABLE WORK ZONE SIGNS
1115.01	FLASHING ARROW BOARDS
1130.01	DRUMS
1135.01	CONES
1145.01	BARRICADES - TYPE III
1150.01	FLAGGERS
1160.01	TEMPORARY CRASH CUSHION - REFLECTIVE END TREATMENT
1165.01	TRUCK MOUNTED ATTENUATOR
1170.01	PORTABLE CONCRETE BARRIER
1180.01	SKINNY DRUMS
1205.01	PAVEMENT MARKINGS - LINE TYPES AND OFFSETS
1205.02	PAVEMENT MARKINGS - TWO-LANE AND MULTI-LANE ROADWAYS
1205.03	PAVEMENT MARKINGS - EXIT AND ENTRANCE RAMPS
1205.04	PAVEMENT MARKINGS - INTERSECTIONS
1205.05	PAVEMENT MARKINGS - TURN LANES
1205.06	PAVEMENT MARKINGS - LANE DROPS
1205.07	PAVEMENT MARKINGS - PEDESTRIAN CROSSWALKS
1205.08	PAVEMENT MARKINGS - SYMBOLS AND WORD MESSAGES
1205.09	PAVEMENT MARKINGS - PAINTED ISLANDS
1205.10	PAVEMENT MARKINGS - SCHOOL AREAS
1205.11	PAVEMENT MARKINGS - RAILROAD CROSSINGS
1205.12	PAVEMENT MARKINGS - BRIDGES
1205.13	PAVEMENT MARKINGS - LANE REDUCTIONS
1205.14	PAVEMENT MARKINGS - ROUNDABOUTS
1205.15	PAVEMENT MARKINGS - REDUCED CONFLICT INTERSECTIONS
1205.16	BICYCLE FACILITIES
1205.17	PAVEMENT MARKINGS - SIDE-BY-SIDE/ADJACAENT ON/OFF RAMPS PVMT. MARKING LANE TREATMENT
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
1266.01	RAISED PAVEMENT MARKERS - TUBULAR MARKERS
1267.01	FLEXIBLE DELINEATORS - INSTALLATION
1267.02	FLEXIBLE DELINEATORS - SPACING TABLES
1267.03	FLEXIBLE DELINEATORS - INTERCHANGE PLACEMENT

LEGEND

GENERAL

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

SIGNALS

EXISTING PROPOSED

PAVEMENT MARKINGS

EXISTING LINES
TEMPORARY LINES

ABBREVIATIONS

SB - SOUTHBOUND
NB - NORTHBOUND
WB - WESTBOUND
EB - EASTBOUND

TRAFFIC CONTROL DEVICES

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

TEMPORARY SIGNING

- PORTABLE SIGN
- STATIONARY SIGN
- STATIONARY OR PORTABLE SIGN

PAVEMENT MARKERS

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

PAVEMENT MARKING SYMBOLS

PAVEMENT MARKING SYMBOLS

EXISTING PAVEMENT MARKING SYMBOLS

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

DATE: 10/15/2025

SEAL

NORTH CAROLINA PROFESSIONAL SEAL 043777 ENGINEER JACOB H DUKE

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

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

ROADWAY STANDARD DRAWINGS & LEGEND

10/7/2025
DF18311_TC_TMP_1A.dgn
User:jdebone

PROJ. REFERENCE NO.	SHEET NO.
DF18311.2014030.PR	TMP-1B

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

GENERAL NOTES

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

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

LANE AND SHOULDER CLOSURE REQUIREMENTS

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

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

C) WHEN PERSONNEL AND/OR EQUIPMENT ARE WORKING WITHIN 5 FT OF AN OPEN TRAVEL LANE ON AN UNDIVIDED FACILITY, 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 WITHIN 10 FT OF AN OPEN TRAVEL LANE ON A DIVIDED FACILITY, 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.

PAVEMENT EDGE DROP OFF REQUIREMENTS

F) 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.

G) 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) 100 FT IN ADVANCE AND A MINIMUM OF EVERY HALF MILE THROUGHOUT THE UNEVEN AREA.

TRAFFIC PATTERN ALTERATIONS

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

SIGNING

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

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

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

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

M) INSTALL BLACK ON ORANGE "DIP" SIGNS (W8-2) AND/OR "BUMP" SIGNS (W8-1) 100 FT IN ADVANCE OF THE UNEVEN AREA, OR AS DIRECTED BY THE ENGINEER.

TRAFFIC CONTROL DEVICES

N) 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.

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

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

MISCELLANEOUS

Q) IN THE EVENT A TIE-IN CANNOT BE MADE IN ONE DAY'S TIME, BRING THE TIE-IN AREA TO AN APPROPRIATE ROADWAY ELEVATION AS DETERMINED BY THE ENGINEER. PLACE BLACK ON ORANGE "LOOSE GRAVEL" SIGNS (W8-7) AND BLACK ON ORANGE "PAVEMENT ENDS" SIGNS (W8-3) AND RESPECTIVELY IN ADVANCE OF THE UNEVEN AREAS. USE DRUMS TO DELINEATE THE EDGE OF ROADWAY ALONG UNPAVED AREAS.

LOCAL NOTES

R) THE CONTRACTOR IS RESPONSIBLE TO MAINTAIN ACCESS TO CHURCH DRIVEWAY THROUGHOUT THE LIFE OF THE PROJECT.

PHASING NOTES

PRIOR TO ANY CONSTRUCTION, INSTALL WORK ZONE ADVANCE WARNING SIGNS USING NCDOT RSD 1101.01 SHEET 3 OF 3. CONTRACTOR MAY WORK ON MULTIPLE LOCATIONS SIMULTANEOUSLY IF APPROVED BY THE ENGINEER.

PHASE 1: USING THE TOP DETAIL ON TMP-3 (PHASE 1), PLACE SIGNS AND DEVICES AND DENOTE WORK AREA. INSTALL TEMPORARY GUARDRAIL AND TEMPORARY AT-1 ANCHOR UNITS PER PLANS. INSTALL TEMPORARY SHORING PER PLANS. GRADE BETWEEN TEMPORARY SHORING AND THE PROPOSED ROADWAY AND GRADE TO DRAIN. CONSTRUCT THE PROPOSED STRUCTURE AND ROADWAY UP UNTIL BUT NOT INCLUDING THE FINAL SURFACE COURSE AND DRAINAGE PER STRUCTURE AND ROADWAY PLANS. USE RSD 1101.02 SHEET 1 OF 19 ONLY AS NEEDED ON -Y1- (SR 1420) EDGEMONT RD.

SEE ICT PRIOR TO BEGINING ANY WORK IN PHASE 2.

PHASE 2:

STEP 1: USING THE BOTTOM DETAIL ON TMP-3 (PHASE 2), PLACE SIGNS AND DEVICES AND DENOTE WORK AREA. COMPLETE TIE IN WORK ON BOTH ENDS OF THE PROJECT PRIOR TO ANY OTHER WORK. ONCE TIE IN WORK IS COMPLETE, REMOVE AND RESET THE EXISTING STOP SIGN AND SHIFT TRAFFIC ONTO NEWLY CONSTRUCTED ROADWAY.

STEP 2: REMOVE TEMPORARY GUARDRAIL AND TEMPORARY AT-1 ANCHOR UNITS. REMOVE TEMPORARY SHORING. REMOVE THE EXISTING STRUCTURE AND REGRADE SIDE SLOPES PER ROADWAY PLANS. USE RSD 1101.02 SHEET 1 OF 19 ONLY AS NEEDED ON -Y1- (SR 1420) EDGEMONT RD.

PHASE 3: USING RSD 1101.02 SHEET 1 OF 19 AND ROADWAY PLANS, PLACE THE FINAL SURFACE LAYER ON -L- (SR 1358, EDGEMONT CHURCH PL.). ONCE ALL WORK IS COMPLETE, REMOVE ALL SIGNS AND DEVICES TO KEEP -L- (SR 1358, EDGEMONT CHURCH PL.) OPEN TO TRAFFIC.

MANAGEMENT STRATEGIES

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

RECOMMENDED STRATEGIES:

TRAFFIC MANAGEMENT STRATEGIES:

- LANE SHIFTS OR CLOSURES
- SHOULDER CLOSURES
- ONE-LANE, TWO WAY OPERATION (FLAGGING)

TRAFFIC / INCIDENT MANAGEMENT & SPEED ENFORCEMENT STRATEGIES:

- COORDINATION WITH STATE TRAFFIC OPERATIONS CENTER (STOC)

CONTRACTING & INNOVATIVE CONTRUCTION STRATEGIES:

- INTERMEDIATE CONTRACT TIMES / LIQUIDATED DAMAGES

APPROVED: Signed by: Jacob H Duke 2953CC8054E94D9...

DATE: 10/15/2025

SEAL

NORTH CAROLINA PROFESSIONAL SEAL 043777 ENGINEER JACOB H DUKE

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

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

GENERAL NOTES AND PHASING NOTES

10/7/2025
DF18311_TC_TMP_1B.dgn
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PROJ. REFERENCE NO.	SHEET NO.
DF18311.2014030.PR	TMP-2

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

SHORING NOTES

SHORING LOCATION NO.	BEGIN STA. & OFFSET	END STA. & OFFSET	ESTIMATED AVERAGE HEIGHT	ESTIMATED MAXIMUM HEIGHT	SHORING LOCATION TYPE
NO. 1	-L- STA. 10+80.00, 18.5' LT	-L- STA. 11+11.17, 18.5' LT	4'	5'	STRUCTURE
NO. 2	-L- STA. 11+66.62, 18.5' LT	-L- STA. 12+00.00, 18.5' LT	4'	5'	STRUCTURE

NOTES FOR TEMPORARY SHORING No. 1

FOR TEMPORARY SHORING AND POSITIVE PROTECTION FOR TEMPORARY SHROING, SEE PLANS AND TEMPORARY SHORING PROVISON.

TEMPORARY SHORING IS REQUIRED FOR THE BRIDGE END BENT CONSTRUCTION FROM STATION 10+80 -L-, 18.5' LT, TO STATION 11+11.17 -L-, 18.5' LT.

BEFORE BEGINNING TEMPORARY SHORING DESIGN OR CONSTRUCTION, SURVEY EXISTING GROUND ELEVATIONS IN THE VICINITY OF SHORING LOCATIONS TO DETERMINE ACTUAL SHORING HEIGHTS.

DESIGN TEMPORARY SHORING FROM STATION 10+80 -L-, 18.5' LT, TO STATION 11+11.17 -L-, 18.5' LT FOR THE FOLLOWING ASSUMED SOIL PARAMETERS AND GROUNDWATER ELEVATION:

UNIT WEIGHT (ɣ) = 120 LB/CF
FRICTION ANGLE (ϕ) = 30 DEGREES
COHESION (c) = 0 LB/SF
GROUNDWATER ELEVATION = 1560 FT

DRIVEN PILING FOR TEMPORARY SHORING FROM STATION 10+80 -L-, 18.5' LT, TO STATION 11+11.17 -L-, 18.5' LT MAY NOT PENETRATE BELOW ELEVATION 1557 FT DUE TO OBSTRUCTIONS, VERY DENSE OR HARD SOIL, BOULDERS OR WEATHERED OR HARD ROCK.

DO NOT USE A TEMPORARY WALL FOR TEMPORARY SHORING FROM STATION 10+80 -L-, 18.5' LT, TO STATION 11+11.17 -L-, 18.5' LT.

AT THE CONTRACTOR'S OPTION, USE STANDARD TEMPORARY SHORING FOR TEMPORARY SHORING FROM STATION 10+80 -L-, 18.5' LT, TO STATION 11+11.17 -L-, 18.5' LT. SEE STANDARD DETAIL NO. 1801.01 FOR STANDARD TEMPORARY SHORING.

IT MAY BE PREFERRED TO USE A TEMPORARY SOIL NAIL WALL FOR TEMPORARY SHORING FROM STATION 10+80 -L-, 18.5' LT, TO STATION 11+11.17 -L-, 18.5' LT. FOR TEMPORARY SOIL NAILS, SEE TEMPORARY SOIL NAIL WALLS PROVISION.

NOTES FOR TEMPORARY SHORING No. 2

FOR TEMPORARY SHORING AND POSITIVE PROTECTION FOR TEMPORARY SHROING, SEE PLANS AND TEMPORARY SHORING PROVISON.

TEMPORARY SHORING IS REQUIRED FOR THE BRIDGE END BENT CONSTRUCTION FROM STATION 11+66.62 -L-, 18.5' LT, TO STATION 12+00 -L-, 18.5' LT.

BEFORE BEGINNING TEMPORARY SHORING DESIGN OR CONSTRUCTION, SURVEY EXISTING GROUND ELEVATIONS IN THE VICINITY OF SHORING LOCATIONS TO DETERMINE ACTUAL SHORING HEIGHTS.

DESIGN TEMPORARY SHORING FROM STATION 11+66.62 -L-, 18.5' LT, TO STATION 12+00 -L-, 18.5' LT FOR THE FOLLOWING ASSUMED SOIL PARAMETERS AND GROUNDWATER ELEVATION:

UNIT WEIGHT (ɣ) = 120 LB/CF
FRICTION ANGLE (ϕ) = 30 DEGREES
COHESION (c) = 0 LB/SF
GROUNDWATER ELEVATION = 1560 FT

DRIVEN PILING FOR TEMPORARY SHORING FROM STATION 11+66.62 -L-, 18.5' LT, TO STATION 12+00 -L-, 18.5' LT MAY NOT PENETRATE BELOW ELEVATION 1560 FT DUE TO OBSTRUCTIONS, VERY DENSE OR HARD SOIL, BOULDERS OR WEATHERED OR HARD ROCK.

DO NOT USE A TEMPORARY WALL FOR TEMPORARY SHORING FROM STATION 11+66.62 -L-, 18.5' LT, TO STATION 12+00 -L-, 18.5' LT.

AT THE CONTRACTOR'S OPTION, USE STANDARD TEMPORARY SHORING FOR TEMPORARY SHORING FROM STATION 11+66.62 -L-, 18.5' LT, TO STATION 12+00 -L-, 18.5' LT. SEE STANDARD DETAIL NO. 1801.01 FOR STANDARD TEMPORARY SHORING.

IT MAY BE PREFERRED TO USE A TEMPORARY SOIL NAIL WALL FOR TEMPORARY SHORING FROM STATION 11+66.62 -L-, 18.5' LT, TO STATION 12+00 -L-, 18.5' LT. FOR TEMPORARY SOIL NAILS, SEE TEMPORARY SOIL NAIL WALLS PROVISION.

NOTES:

1. THE TEMPORARY SHORING NOTES SHOWN ON THIS SHEET WERE PROVIDED THROUGH A SEALED DOCUMENT FROM THE GEOTECHNICAL ENGINEERING UNIT. THE DOCUMENT WAS SUBMITTED TO THE WZTC SECTION ON JULY 8, 2025 AND SEALED BY A PROFESSIONAL ENGINEER, SHIPING YANG, PH.D, P.E., LICENSE #031361.

APPROVED: Signed by: Jacob H Duke 2953DC8054E94D9...

DATE: 10/15/2025

SEAL

NORTH CAROLINA PROFESSIONAL SEAL 043777 ENGINEER JACOB H DUKE

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

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

TEMPORARY SHORING DATA

10/7/2025
DF18311_TC_TMP_2.dgn
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PROJ. REFERENCE NO.	SHEET NO.
DF18311.2014030.PR	TMP-3

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

(1) QUANTITY = 125 SF

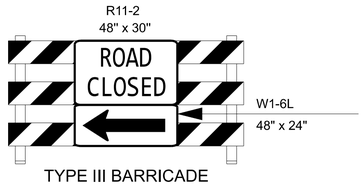
TEMPORARY SHORING
FROM STA. 10+80.00, 18.5′ LT
TO STA. 11+11.17, 18.5′ LT
ASSUMED AVG. HT. = 4 FT

(SEE SHEET TMP-2 FOR TEMPORARY SHORING NOTES)

(2) QUANTITY = 134 SF

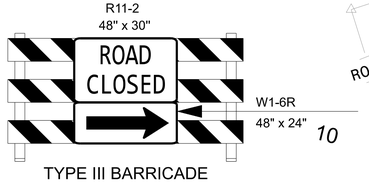
TEMPORARY SHORING
FROM STA. 11+66.62, 18.5′ LT
TO STA. 12+00.00, 18.5′ LT
ASSUMED AVG. HT. = 4 FT

(SEE SHEET TMP-2 FOR TEMPORARY SHORING NOTES)



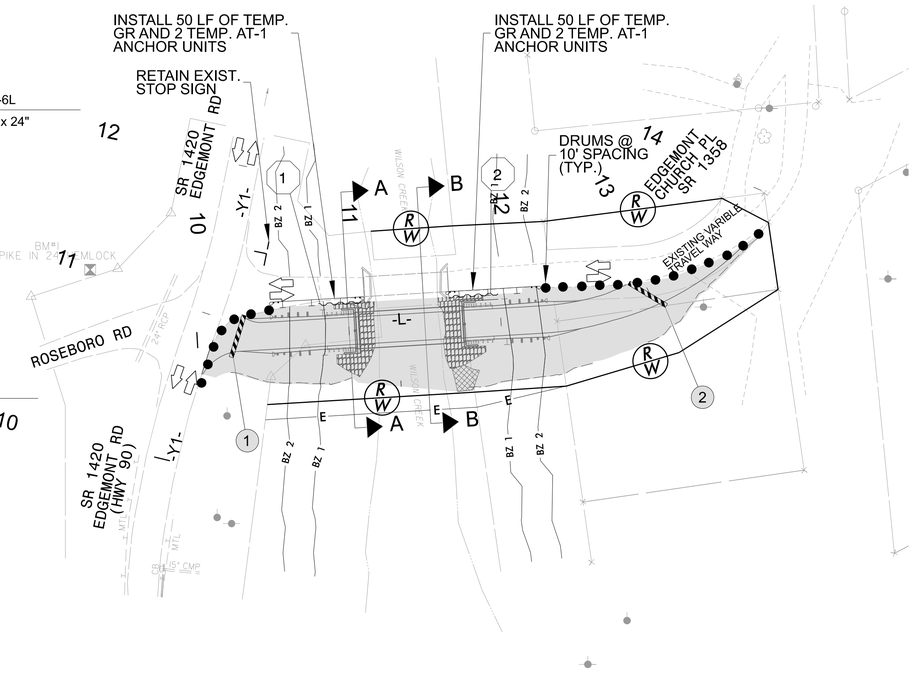
TYPE III BARRICADE

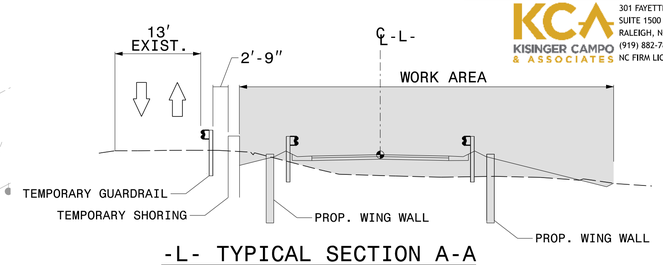
(1)



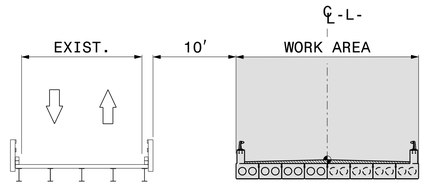
TYPE III BARRICADE

(2)





-L- TYPICAL SECTION A-A
STA. 11+00.00

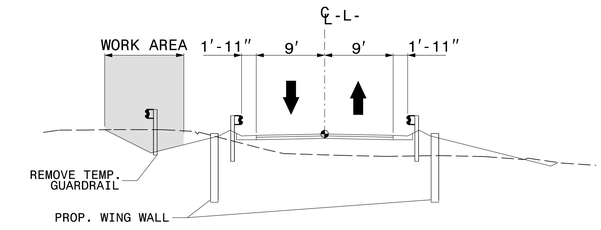


-L- TYPICAL SECTION B-B
STA. 11+50.00

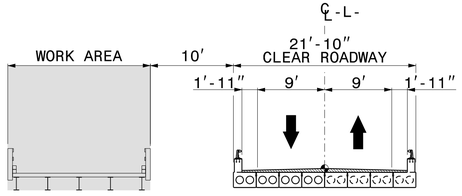
NOTES:

1. TRAFFIC CONTROL DEVICES SHALL BE INSTALLED PER ENGINEER'S INSTRUCTIONS.
2. ALL DRUMS ARE SPACED AT 10 FT UNLESS OTHERWISE NOTED.
3. THE CONTRACTOR MUST MAINTAIN DRIVEWAY ACCESS TO THE CHURCH FOR THE THE LIFE OF THE PROJECT.
4. THE POSTS OF THE TEMPORARY GUARDRAIL ARE TO BE DRIVEN INTO THE EXISTING GRAVEL ROAD AND/OR ASPHALT.

PHASE 1



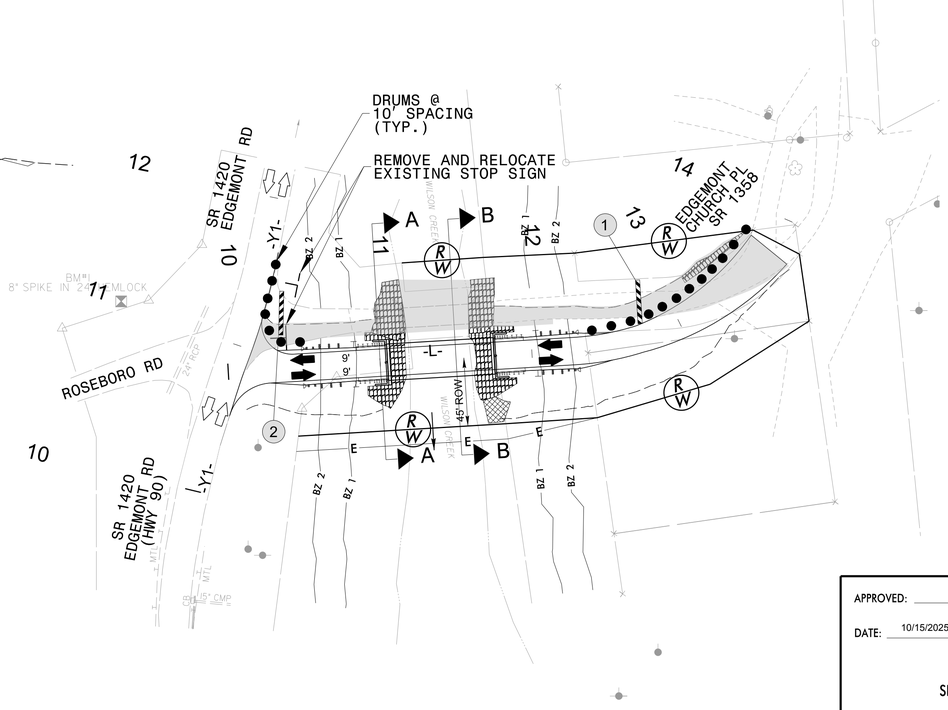
-L- TYPICAL SECTION A-A
STA. 11+00.00

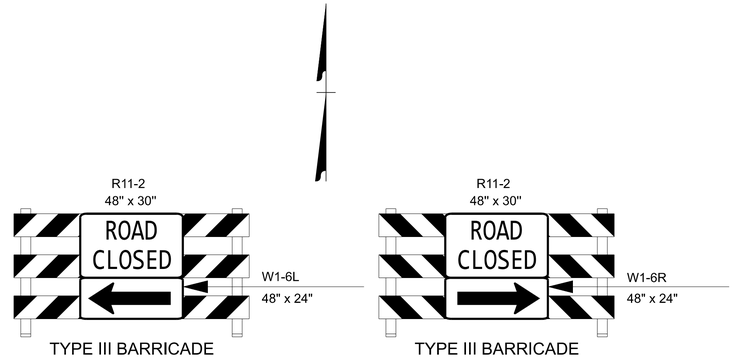


-L- TYPICAL SECTION B-B
STA. 11+50.00

NOTES:

1. TRAFFIC CONTROL DEVICES SHALL BE INSTALLED PER ENGINEER'S INSTRUCTIONS.
2. ALL DRUMS ARE SPACED AT 10 FT UNLESS OTHERWISE NOTED.
3. THE CONTRACTOR MUST MAINTAIN DRIVEWAY ACCESS TO THE CHURCH FOR THE THE LIFE OF THE PROJECT.
4. REMOVE AND RELOCATE TYPE E SIGN SYSTEM IN THE FINAL LOCATION.





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

DATE: 10/15/2025

SEAL

NORTH CAROLINA PROFESSIONAL SEAL 043777 ENGINEER JACOB H DUKE

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

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

PHASE 2

10/7/2025
DF18311_TC_TMP_3.dgn
User:idebone

TIP PROJECT: DF18311.2014030.PR

STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	DF18311.2014030.PR	EC-1	

STATE PROJ. NO.	F. A. PROJ. NO.	DESCRIPTION
DF18311.2014030.PR	N/A	PE

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

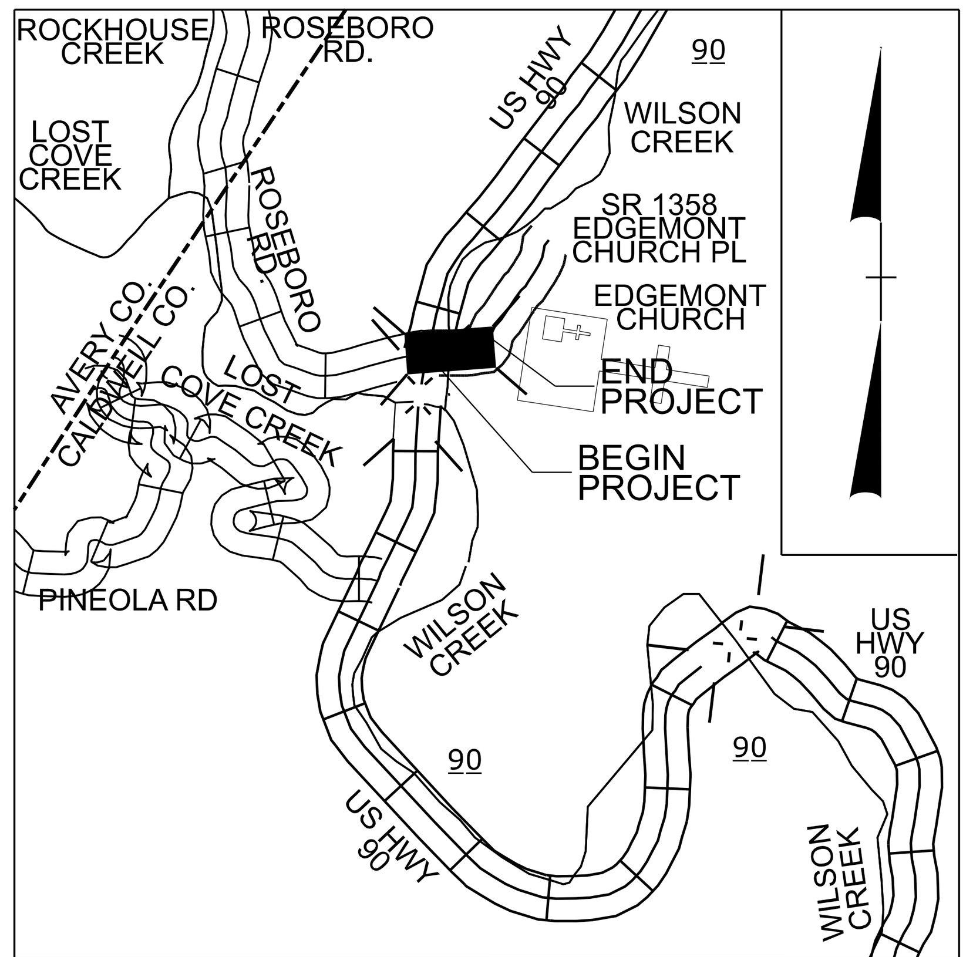
PLAN FOR PROPOSED
HIGHWAY EROSION CONTROL

CALDWELL COUNTY

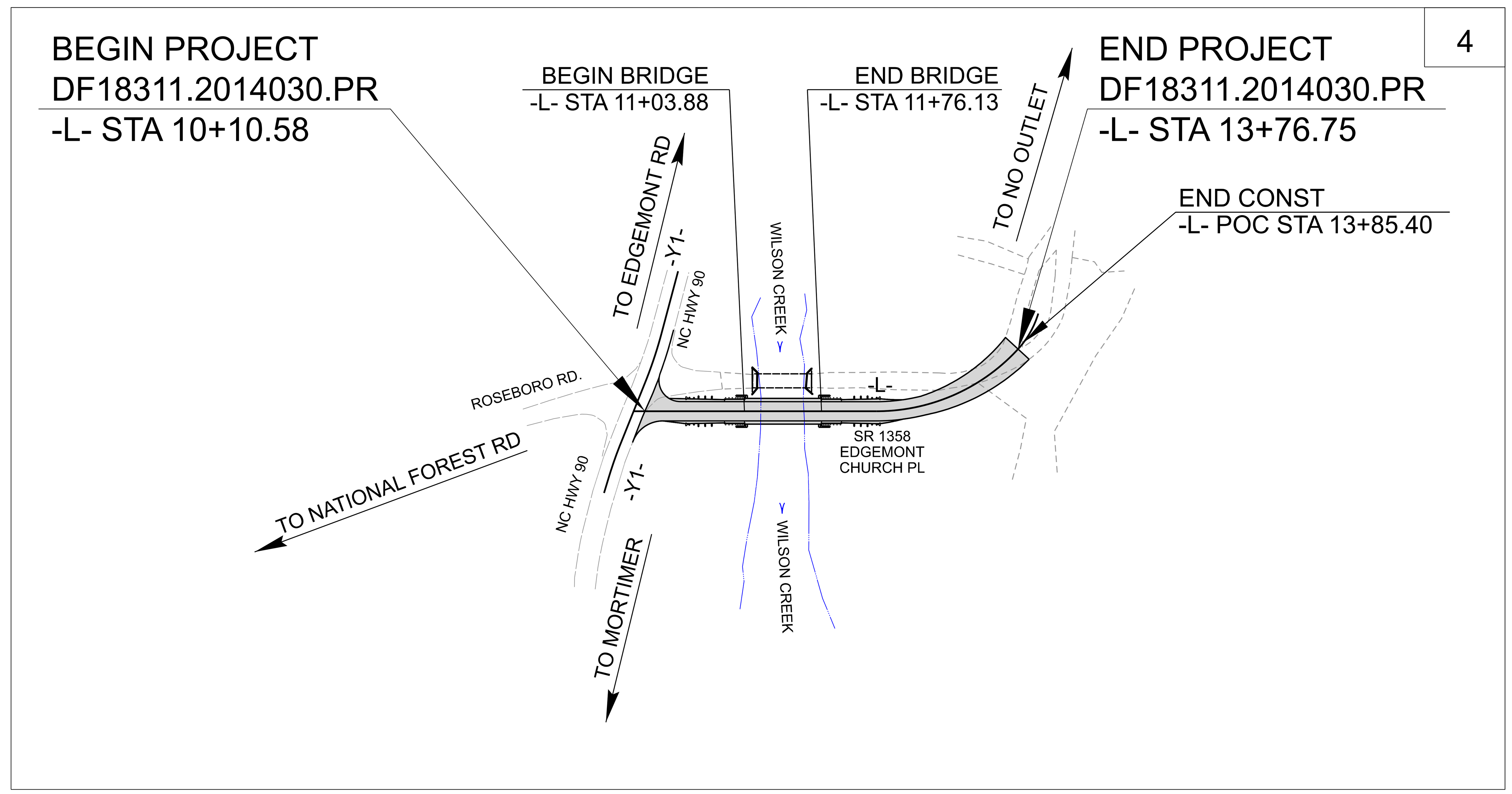
LOCATION: *REPLACE BRIDGE NO. 161 ON SR 1358 OVER WILSON CREEK*

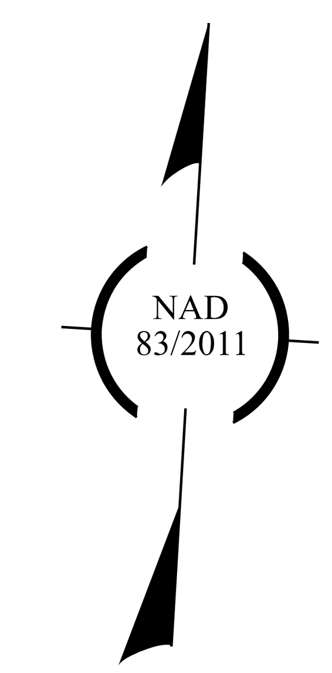
TYPE OF WORK: *GRADING, DRAINAGE, PAVING, AND STRUCTURE.*

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



VICINITY MAP (NTS)





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

ENVIRONMENTALLY SENSITIVE AREA(S) EXIST ON THIS PROJECT

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

THIS PROJECT HAS BEEN DESIGNED TO SENSITIVE WATERSHED STANDARDS.

HIGH QUALITY WATER(S) EXIST ON THIS PROJECT

High Quality Water Zone(s) Exist
From Sta. BEGIN PROJECT
to Sta. END PROJECT
Refer To E. C. Special Provisions for Special Considerations.

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 ISSUED BY THE NORTH CAROLINA DIVISION OF ENERGY, MINERAL, AND LAND RESOURCES.

Prepared In the Office of:

KCA KISINGER CAMPO & ASSOCIATES

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

Designed by:

CODY HARWARD, EI — NAME

4600 — LEVEL III CERTIFICATION NO.

Roadway Standard Drawings

The following roadway english standards as appear in "Roadway Standard Drawings"- Roadway Design Unit - N. C. Department of Transportation - Raleigh, N. C., dated January 2024 and the latest revison thereto are applicable to this project and by reference hereby are considered a part of these plans.

PROJECT REFERENCE NO.	SHEET NO.
DF183311.2014030.PR	EC-02
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

DIVISION OF HIGHWAYS
STATE OF NORTH CAROLINA

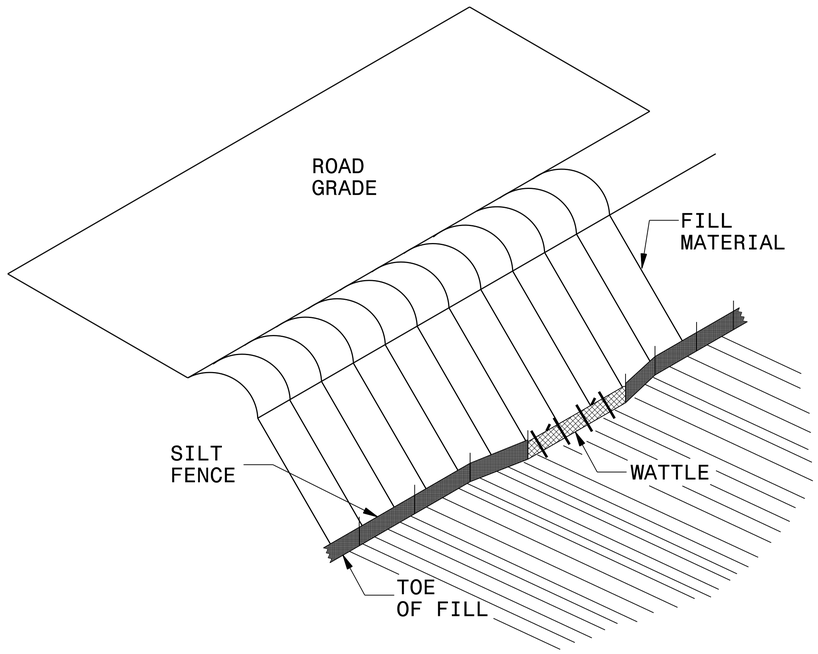
EROSION & SEDIMENT CONTROL LEGEND

Std. #	Description	Symbol
1605.01	Temporary Silt Fence	
1606.01	Special Sediment Control Fence	
1622.01	Temporary Berms and Slope Drains	
1630.02	Silt Basin Type B	
1630.03	Temporary Silt Ditch	TSD
1630.04	Stilling Basin	
1630.05	Temporary Diversion	TD
1630.06	Special Stilling Basin	
1630.07	Skimmer Basin	
1630.08	Tiered Skimmer Basin	
1630.09	Earthen Dam with Skimmer	
	Infiltration Basin	
	Rock Inlet Sediment Trap:	
1632.01	Type A	A
1632.02	Type B	B
1632.03	Type C	C

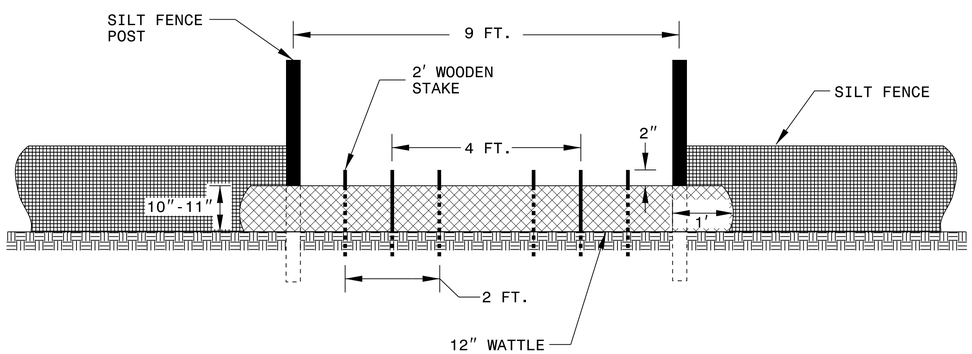
Std. #	Description	Symbol
1633.01	Temporary Rock Silt Check Type A	
1633.02	Temporary Rock Silt Check Type B	
1633.03	Temporary Rock Silt Check Type A with Excelsior Matting and Flocculant	
1634.01	Temporary Rock Sediment Dam Type A	
1634.02	Temporary Rock Sediment Dam Type B	
1635.01	Rock Pipe Inlet Sediment Trap Type A	A
1635.02	Rock Pipe Inlet Sediment Trap Type B	B
1636.01	Excelsior Wattle Check	
1636.01	Excelsior Wattle Check with Flocculant	
1636.01	Coir Fiber Wattle Check	
1636.01	Coir Fiber Wattle Check with Flocculant	
1636.02	Silt Fence Excelsior Wattle Break	EW
	Silt Fence Coir Fiber Wattle Break	CFW
1636.03	Excelsior Wattle Barrier	EW EW EW
1636.03	Coir Fiber Wattle Barrier	CFW CFW CFW

PROJECT REFERENCE NO.	SHEET NO.
DF1831I.2014030.PR	EC-2A
R/W SHEET NO.	

SILT FENCE COIR FIBER WATTLE BREAK DETAIL



ISOMETRIC VIEW



VIEW FROM SLOPE

NOTES:

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

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

DO NOT PLACE WATTLE ON TOE OF SLOPE.

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

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

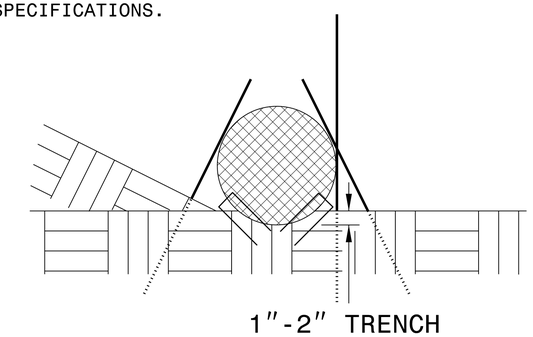
PROVIDE STAPLES MADE OF 0.125 IN. DIAMETER STEEL WIRE FORMED INTO A U SHAPE NOT LESS THAN 12" IN LENGTH.

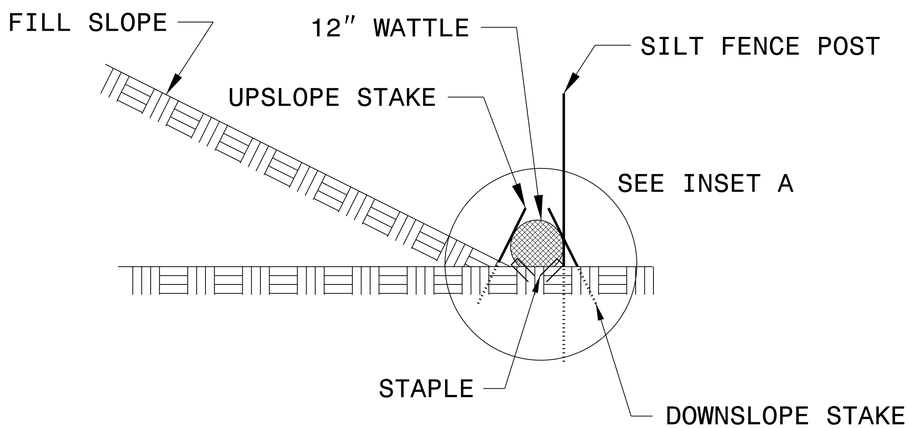
INSTALL STAPLES APPROXIMATELY EVERY 1 LINEAR FOOT ON BOTH SIDES OF WATTLE AND AT EACH END TO SECURE IT TO THE SOIL.

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

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

INSET A

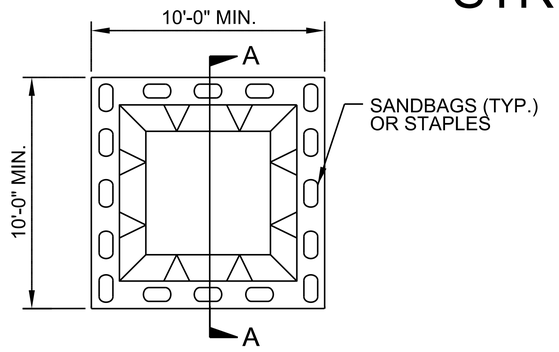




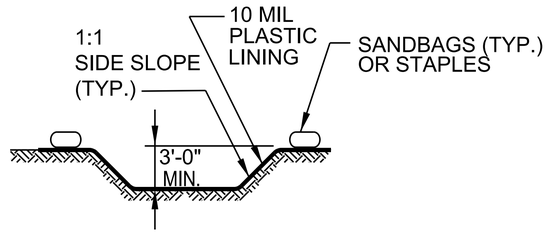
SIDE VIEW

PROJECT REFERENCE NO.	SHEET NO.
DF18311.2014030.PR	EC-2B
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

ONSITE CONCRETE WASHOUT STRUCTURE WITH LINER



PLAN



SECTION A-A

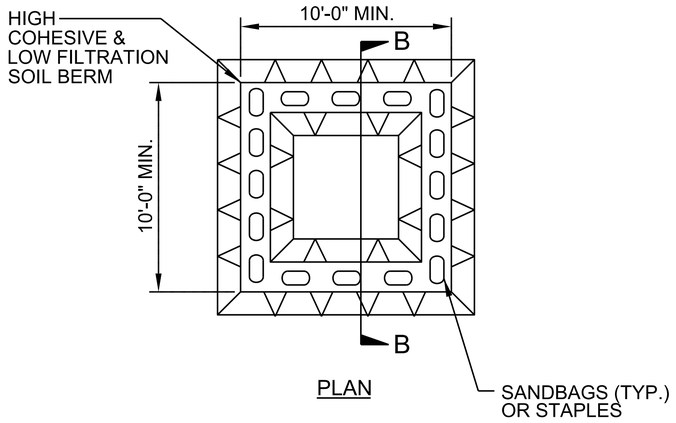
NOTES:
1. ACTUAL LOCATION DETERMINED IN FIELD

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

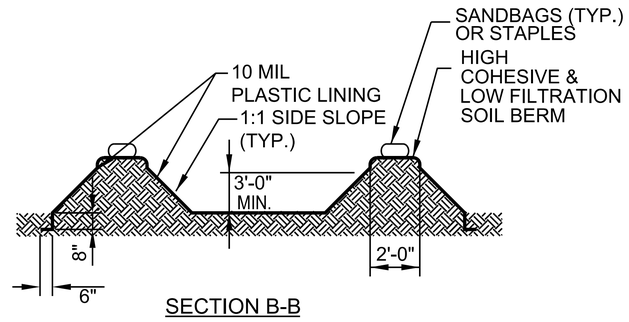
3.CONCRETE WASHOUT STRUCTURE NEEDS TO BE CLEARLY MARKED WITH SIGNAGE NOTING DEVICE.

BELOW GRADE WASHOUT STRUCTURE

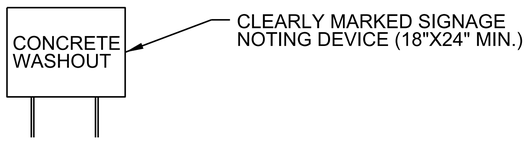
NOT TO SCALE



PLAN



SECTION B-B



NOTES:
1. ACTUAL LOCATION DETERMINED IN FIELD

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

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

ABOVE GRADE WASHOUT STRUCTURE

NOT TO SCALE

PROJECT REFERENCE NO.	SHEET NO.
DF1831I.2014030.PR	EC-3A
R/W SHEET NO.	

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 TO 4:1	14 DAYS	7 DAYS FOR SLOPES GREATER THAN 50' IN LENGTH WITH SLOPES STEEPER THAN 4:1. 7 DAYS FOR PERIMETER DIKES, SWALES, DITCHES PERIMETER SLOPES, AND HQW ZONES
ALL OTHER AREAS WITH SLOPES FLATTER THAN 4:1	14 DAYS	7 DAYS FOR PERIMETER DIKES, SWALES, DITCHES PERIMETER SLOPES, AND HQW ZONES

PROJECT REFERENCE NO.	SHEET NO.
DF1831I.20140301.PR	EC-3B
R/W SHEET NO.	___

DIVISION OF HIGHWAYS
STATE OF NORTH CAROLINA

SOIL STABILIZATION SUMMARY SHEET

MATTING FOR EROSION CONTROL (EXCELSIOR)

CONST SHEET NO.	LINE	FROM STATION	TO STATION	SIDE	ESTIMATE (SY)
4	-L-	10+11	10+45	RT	30
	SUBTOTAL EXCELSIOR MATTING				30

MATTING FOR EROSION CONTROL (STRAW)

CONST SHEET NO.	LINE	FROM STATION	TO STATION	SIDE	ESTIMATE (SY)
4	-L-	10+45	11+04	RT	50
4	-L-	12+45	12+77	RT	25
4	-L-	10+11	11+05	LT	75
4	-L-	11+72	13+23	LT	235
		SUBTOTAL STRAW MATTING			385

	SUBTOTAL EXCELSIOR MATTING	30
	SUBTOTAL STRAW MATTING	385
	MISCELLANEOUS MATTING TO BE INSTALLED	1500
	TOTAL	1915
	SAY	1915

5/26/20

-L-

CUR DATA -L-	CUR DATA -L-
PIc 13+06.79	PIc 13+96.40
Δc = 47°27'16.8" (LT)	Δc = 26°01'41.3" (LT)
D = 31°49'51.6"	D = 67°24'24.5"
Lc = 149.08	Lc = 38.61
Tc = 79.12	Tc = 19.65
R = 180	R = 85
DS = 30 MPH	DS = EXIST
* SE = 0.040	* SE = EXIST
* RO = 48'	* RO = EXIST

-Y1-

CUR DATA -Y1-	CUR DATA -Y1-
PIc 10+33.90	PIc 11+34.89
Δc = 04°47'39.4" (RT)	Δc = 06°58'04.1" (LT)
D = 14°19'26.2"	D = 14°19'26.2"
Lc = 33.47	Lc = 48.64
Tc = 16.74	Tc = 24.35
R = 400	R = 400

* SEE PLANS FOR SE TRANS. AND RO

BEGIN PROJECT
DF18311.2014030.PR
-L- STA 10+10.58
-Y1- POT 10+85.41
OFF 9.82' (RT)

-Y1- POT 10+81.46
-L- POT 10+00.00
N86°34'42.7"E

-Y1- POE 12+19.33
N11°31'25.1"E

-Y1- PT 11+59.18

-Y1- PC 11+10.54

-Y1- PT 10+50.62
N18°29'29.2"E

-Y1- PC 10+17.15
-Y1- POT 10+00.00
N13°41'49.8"E

NC GRID
NAD 83 NA 2011

END PROJECT
DF18311.2014030.PR
-L- STA 13+76.75

END CONST
-L- POC STA 13+85.40

BEGIN BRIDGE
-L- STA 11+03.88

END BRIDGE
-L- STA 11+76.13

-L- PC 12+27.67

-L- PT 14+15.37

-L- PCC 13+76.75

BANK STABILIZATION
SEE DETAIL A
CL II RIP RAP
EST. 100 TONS
BACKFILL W/
NATIVE MATERIAL

BANK STABILIZATION
SEE DETAIL A
CL II RIP RAP
EST. 105 TONS
BACKFILL W/NATIVE
MATERIAL

SPECIAL DITCH SEE DETAIL B

1 PARKS JAMES E
DB 1729 PG 247

2 GARY HODGES
PATRICIA HODGES
DB 1916 PG 854

3 PRITCHETT ROSANNE HULL
PETERSON BETTY HULL ET AL
DB 1711PG 510

4 PRITCHETT ROSANNE HULL
PETERSON BETTY HULL ET AL
DB 1481PG 119

5 EDGEMONT BAPTIST CHURCH
DB 454 PG 124

6 EDGEMONT BAPTIST CHURCH
DB 805 PG 464

REMOVE EXISTING BRIDGE

BEG. SBG +85.13 -L-

PROP. GUARDRAIL

BEG. SHORING +80.00 -L-

END SBG +03.88 -L-

END SHORING +00.00 -L-

BEG. SHORING +86.62 -L-

SPECIAL DITCH SEE DETAIL C

CHORD

DO NOT DISTURB EXISTING POLE

105' TRANSITION TO EXIST.

SPECIAL DITCH SEE DETAIL B

CL II RIP RAP
SHOULDER POINT (TYP.)
EST. 85 TONS RIP RAP
EST. 70 SY GEOTEXTILE
(STR. PAY ITEM)
BACKFILL W/
NATIVE MATERIAL
EXCAVATION
(STR. PAY ITEM)

IMPERVIOUS DIKE
(STR. PAY ITEM)

SPECIAL DITCH SEE DETAIL B
CL II RIP RAP
SHOULDER POINT (TYP.)
EST. 80 TONS RIP RAP
EST. 70 SY GEOTEXTILE
(STR. PAY ITEM)
BACKFILL W/
NATIVE MATERIAL

EXCAVATION
65 CY
(STR. PAY ITEM)

RETAIN

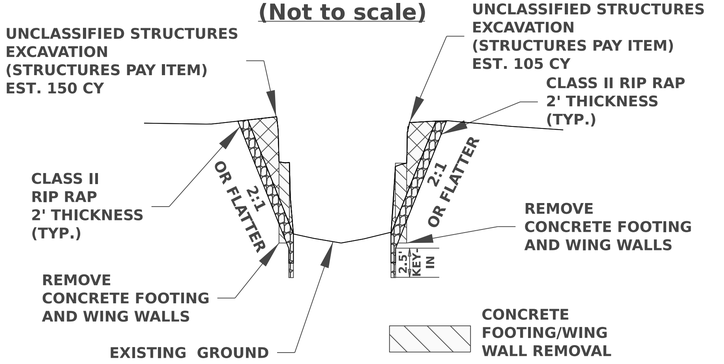
45' R/W

ENVIRONMENTALLY SENSITIVE AREA
SEE PROJECT SPECIAL PROVISIONS

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

CLEARING AND GRUBBING CONTROL
FOR CONSTRUCTION SHEET 04

DETAIL A
PROPOSED PROFILE DETAIL FOR EXISTING BRIDGE REMOVAL
(Not to scale)



DETAIL B
SPECIAL V CUT DITCH
(Not to Scale)

Min. D= 1.0 Ft.*

FROM
-L- 10+11 TO 11+05 LT
-L- 10+11 TO 11+04 RT
-L- 11+72 TO 13+17 LT * (Min. D = 2.0 Ft.)
-L- 11+71 TO 13+26 RT

DETAIL C
SPECIAL V CUT DITCH
(Not to Scale)

EST. 16 TONS CL B RIP RAP
EST. 62 SY GEOTEXTILE

Min. D= 1.0 Ft.
d = 1.0 Ft.

FROM
-L- 13+17 TO 13+77 LT

DF18311.2014030.PR
EC | EC-4/CONSTR.4

NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
CALDWELL COUNTY

ROADWAY DESIGN UNIT

PREPARED BY
KCA
KISINGER CAMPO & ASSOCIATES

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

REVISIONS

5/26/20

-L-

CUR DATA -L-	CUR DATA -L-
PIc 13+06.79	PIc 13+96.40
Δc = 47°27'16.8" (LT)	Δc = 26°01'41.3" (LT)
D = 31°49'51.6"	D = 67°24'24.5"
Lc = 149.08	Lc = 38.61
Tc = 79.12	Tc = 19.65
R = 180	R = 85
DS = 30 MPH	DS = EXIST
* SE = 0.040	* SE = EXIST
* RO = 48'	* RO = EXIST

-Y1-

CUR DATA -Y1-	CUR DATA -Y1-
PIc 10+33.90	PIc 11+34.89
Δc = 04°47'39.4" (RT)	Δc = 06°58'04.1" (LT)
D = 14°19'26.2"	D = 14°19'26.2"
Lc = 33.47	Lc = 48.64
Tc = 16.74	Tc = 24.35
R = 400	R = 400

* SEE PLANS FOR SE TRANS. AND RO

BEGIN PROJECT
DF18311.2014030.PR
-L- STA 10+10.58
-Y1- POT 10+85.41
OFF 9.82' (RT)

-Y1- POT 10+81.46
-L- POT 10+00.00
N86°34'42.7"E

-Y1- POE 12+19.33
N11°31'25.1"E

-Y1- PT 11+59.18

-Y1- PC 11+10.54

-Y1- PT 10+50.62
N18°29'29.2"E

-Y1- PC 10+17.15
-Y1- POT 10+00.00
N13°41'49.8"E

NC GRID
NAD 83 NA 2011

BEGIN BRIDGE
-L- STA 11+03.88

END BRIDGE
-L- STA 11+76.13

-L- PC 12+27.67

END PROJECT
DF18311.2014030.PR
-L- STA 13+76.75

END CONST
-L- POC STA 13+85.40

INSTALL MATTING ON ALL FILL SLOPES AND GRADED DITCHES AS WORK ALLOWS

BANK STABILIZATION
SEE DETAIL A
CL II RIP RAP
EST. 100 TONS
BACKFILL W/
NATIVE MATERIAL

BANK STABILIZATION
SEE DETAIL A
CL II RIP RAP
EST. 105 TONS
BACKFILL W/NATIVE
MATERIAL

SPECIAL DITCH SEE DETAIL B

1 PARKS
JAMES E
DB 1729
PG 247

2 GARY HODGES
PATRICIA HODGES
DB 1916 PG 854

3 PRITCHETT ROSANNE HULL
PETERSON BETTY HULL ET AL
DB 1711PG 510

4 PRITCHETT ROSANNE HULL
PETERSON BETTY HULL ET AL
DB 1481PG 119

5 EDGEMONT BAPTIST CHURCH
DB 454 PG 124

6 EDGEMONT BAPTIST CHURCH
DB 805 PG 464

BEG. SBG
+85.13 -L-

PROP. GUARDRAIL

REMOVE EXISTING BRIDGE

BEG. SHORING
+80.00 -L-

END SBG
+03.88 -L-

END SHORING
+11.17 -L-

BEG. SHORING
+86.62 -L-

SPECIAL DITCH
SEE DETAIL C

DO NOT DISTURB EXISTING POLE

105' TRANSITION TO EXIST

SPECIAL DITCH
SEE DETAIL B

-L- PT 14+15.37

-L- PCC 13+76.75

CL II RIP RAP
SHOULDER POINT (TYP.)
EST. 85 TONS RIP RAP
EST. 70 SY GEOTEXTILE
(STR. PAY ITEM)
BACKFILL W/
NATIVE MATERIAL
EXCAVATION
65 CY
(STR. PAY ITEM)

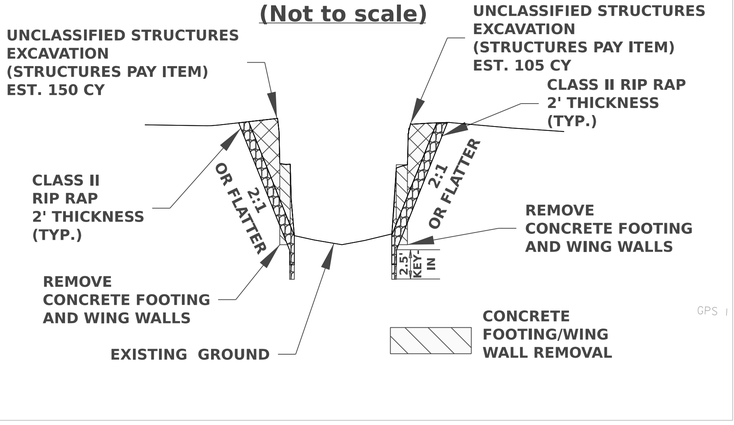
IMPERVIOUS DIKE
(STR. PAY ITEM)

RETAIN

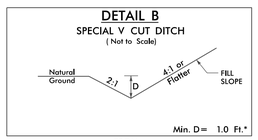
SPECIAL DITCH SEE DETAIL B

CL II RIP RAP
SHOULDER POINT (TYP.)
EST. 80 TONS RIP RAP
EST. 70 SY GEOTEXTILE
(STR. PAY ITEM)
BACKFILL W/
NATIVE MATERIAL
EXCAVATION
65 CY
(STR. PAY ITEM)

DETAIL A
PROPOSED PROFILE DETAIL FOR EXISTING BRIDGE REMOVAL
(Not to scale)

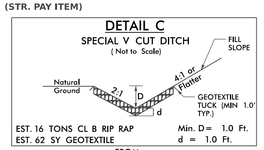


DETAIL B
SPECIAL V CUT DITCH
(Not to Scale)



FROM
-L- 10+11 TO 11+05 LT
-L- 10+11 TO 11+04 RT
-L- 11+72 TO 13+17 LT * (Min. D = 2.0 Ft.)
-L- 11+71 TO 13+26 RT

DETAIL C
SPECIAL V CUT DITCH
(Not to Scale)



FROM
-L- 13+17 TO 13+77 LT

DF18311.2014030.PR
EC | EC-5/CONSTR.4

NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
CALDWELL COUNTY

ROADWAY DESIGN UNIT

PREPARED BY
KCA
KISINGER CAMPO & ASSOCIATES

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

REVISIONS

STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	DF18311.2014030.PR	RF-1	
STATE PROJ. NO.	F. A. PROJ. NO.	DESCRIPTION	

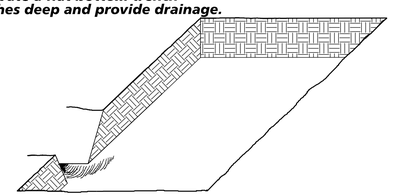
PLANTING DETAILS

SEEDLING / LINER BAREROOT PLANTING DETAIL

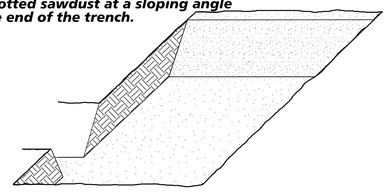
HEALING IN

1. Locate a healing-in site in a shady, well protected area.

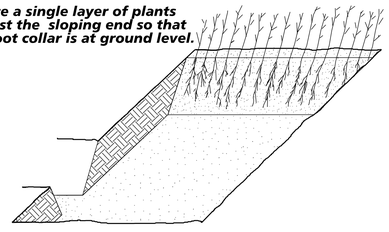
2. Excavate a flat bottom trench 12 inches deep and provide drainage.



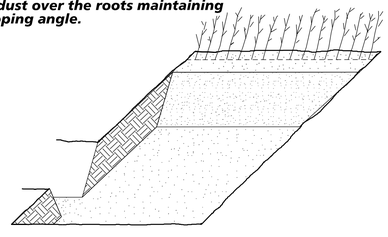
3. Backfill the trench with 2 inches well rotted sawdust. Place a 2 inch layer of well rotted sawdust at a sloping angle at one end of the trench.



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

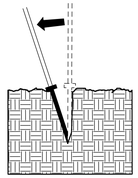


5. Place a 2 inch layer of well rotted sawdust over the roots maintaining a sloping angle.

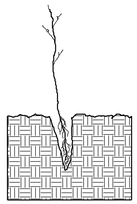


6. Repeat layers of plants and sawdust as necessary and water thoroughly.

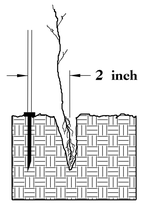
DIBBLE PLANTING METHOD
USING THE KBC PLANTING BAR



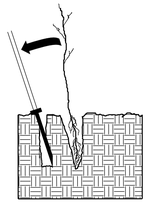
1. Insert planting bar as shown and pull handle toward planter.



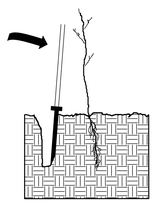
2. Remove planting bar and place seedling at correct depth.



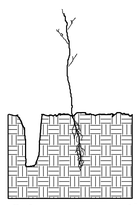
3. Insert planting bar 2 inches toward planter from seedling.



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



5. Push handle forward firming soil at top.



6. Leave compaction hole open. Water thoroughly.

PLANTING NOTES:

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

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

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

REFORESTATION

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

REFORESTATION

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

33% LIRIODENDRON TULIPIFERA	TULIP POPLAR	12 in - 18 in BR
33% PLATANUS OCCIDENTALIS	AMERICAN SYCAMORE	12 in - 18 in BR
33% BETULA NIGRA	RIVER BIRCH	12 in - 18 in BR

REFORESTATION DETAIL SHEET

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

11/14/23

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

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

CROSS-SECTION SUMMARY

Note: Quantities are approximate only. The Resident Engineer will recross-section the work accurately when the project is staked out. These cross-section notes will be used in computing the final quantities for which the contractor will be paid.

NOTE: EMBANKMENT COLUMN DOES NOT INCLUDE BACKFILL FOR UNDERCUT

Station -L- RT	Uncl. Exc. (cu. yd.)	Embt. (cu. yd.)
10+10.58	0	0
10+50	5	29
11+00	22	46
11+03.88	0	5

Station -L- RT	Uncl. Exc. (cu. yd.)	Embt. (cu. yd.)
11+76.13	0	0
12+00	70	0
12+50	62	25
13+00	12	68
13+50	6	16
13+76.75	4	0

Station -L- LT	Uncl. Exc. (cu. yd.)	Embt. (cu. yd.)
10+10.58	0	0
10+50	19	7
11+00	32	27
11+03.88	4	3

Station -L- LT	Uncl. Exc. (cu. yd.)	Embt. (cu. yd.)
11+76.13	0	0
12+00	45	1
12+50	50	8
13+00	24	17
13+50	14	8
13+76.75	5	1

DF1831I.2014030.PR

FINAL | X-1A

NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
CALDWELL COUNTY

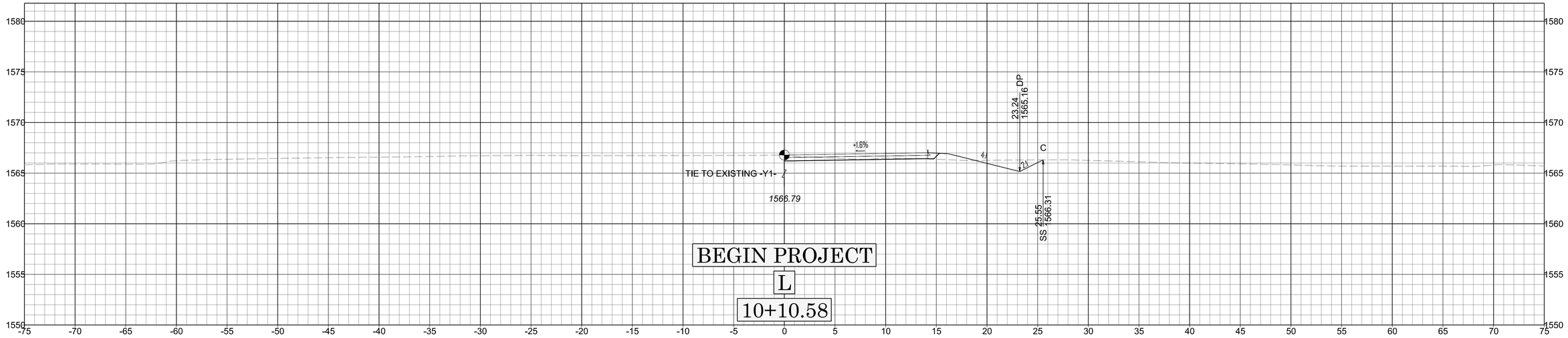
ROADWAY DESIGN UNIT

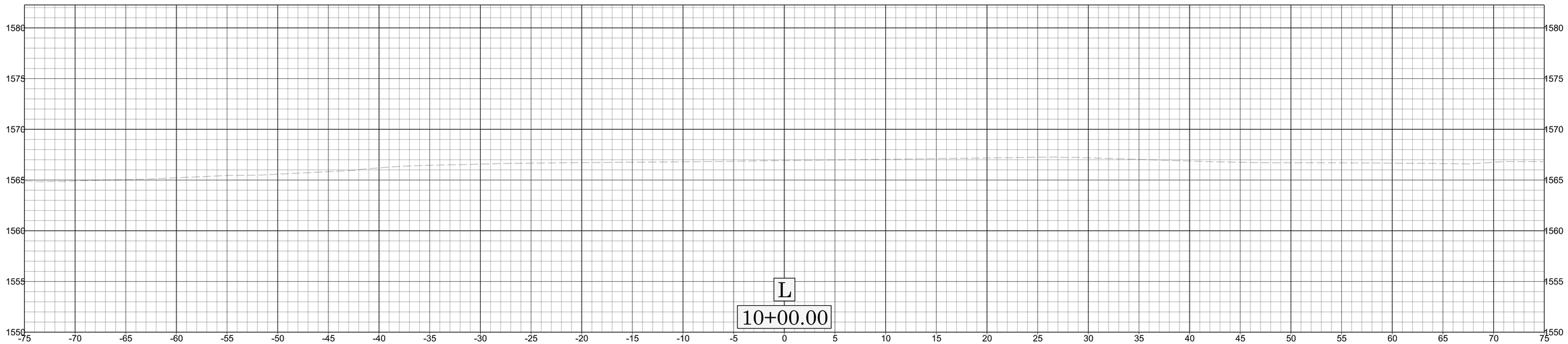
PREPARED BY

KCA
KISINGER CAMPO & ASSOCIATES

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

REVISIONS

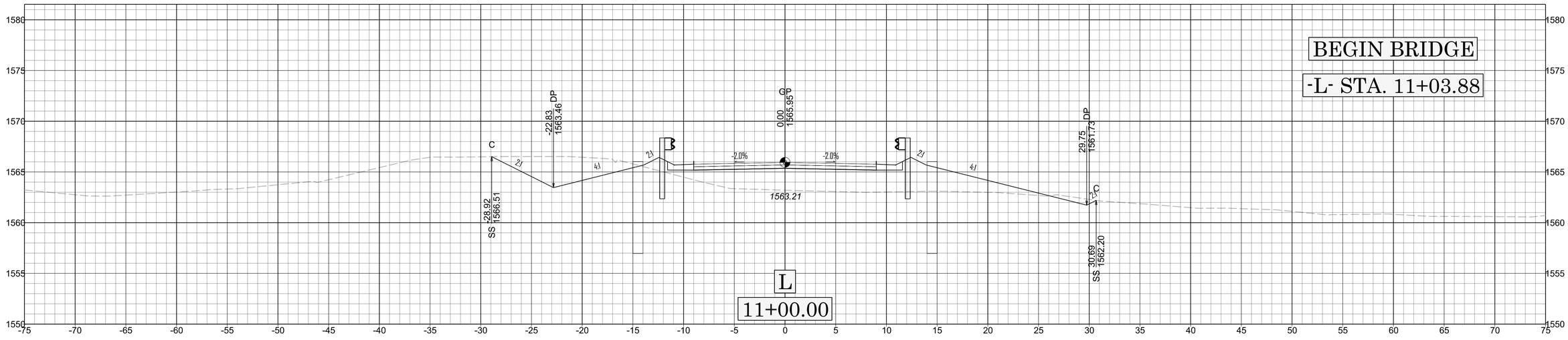


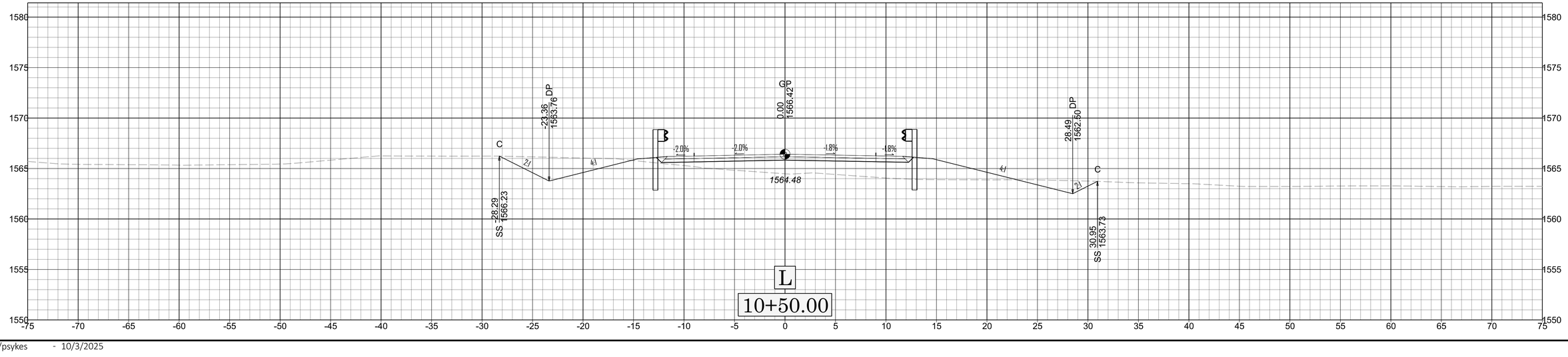


0 5 10

X 1

DFIB3II.2040301.PR

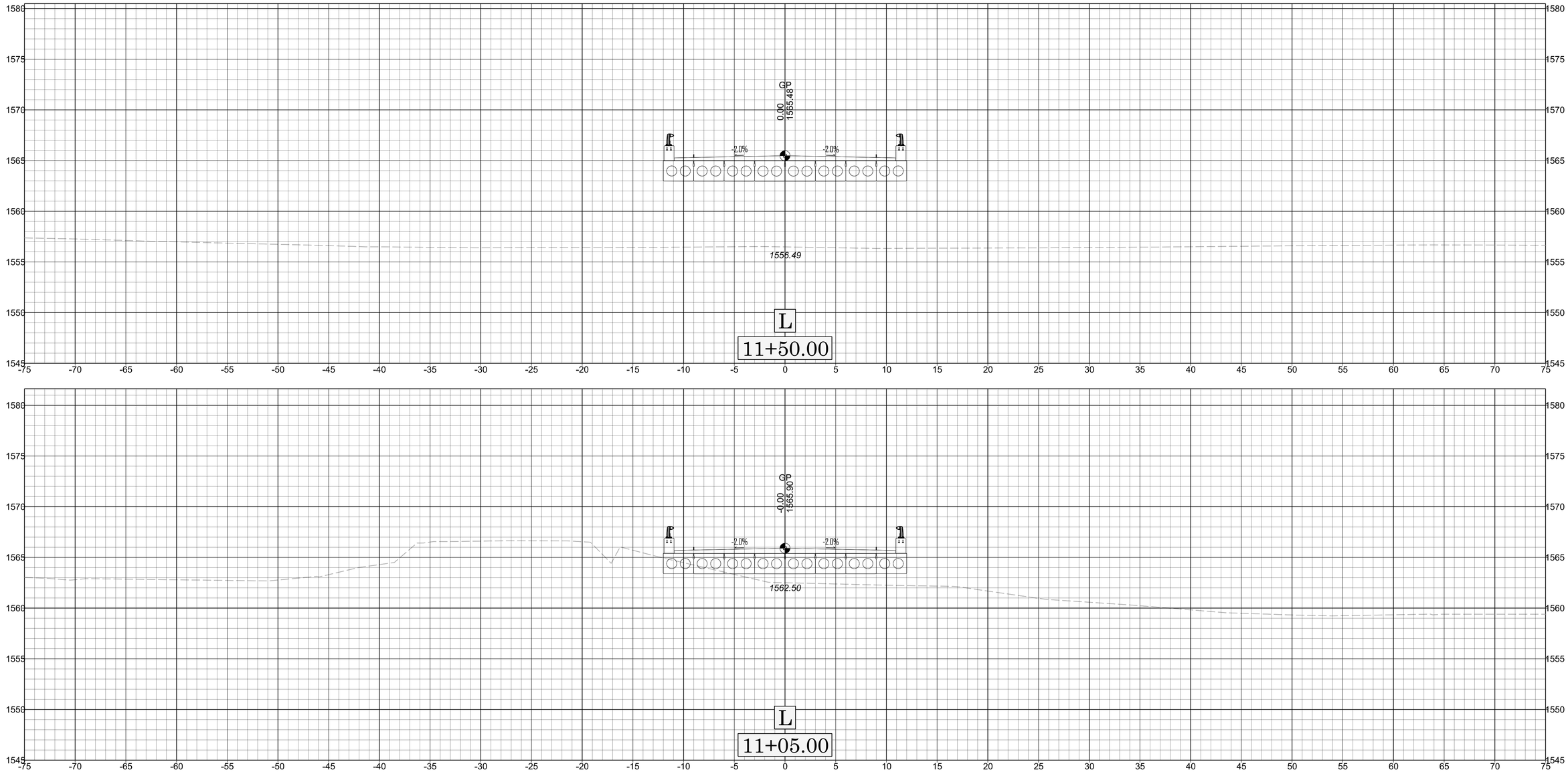


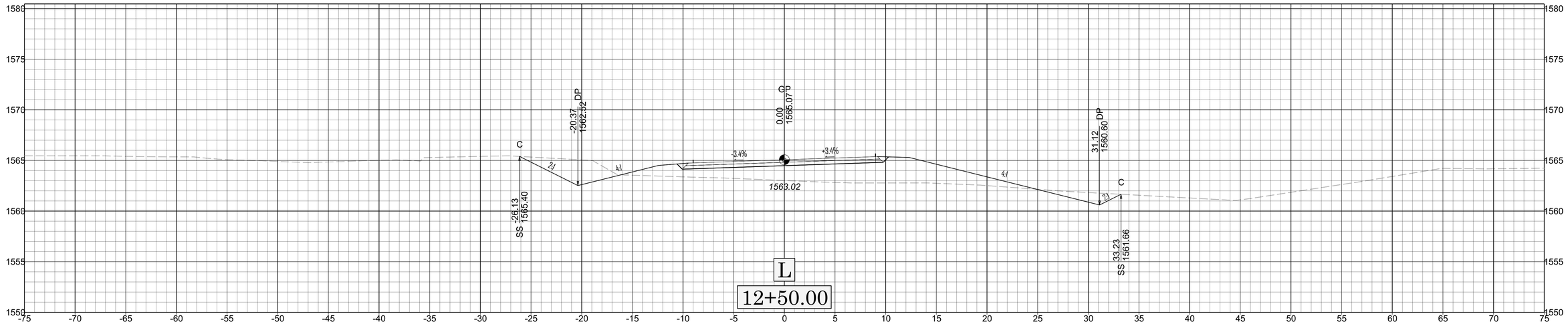


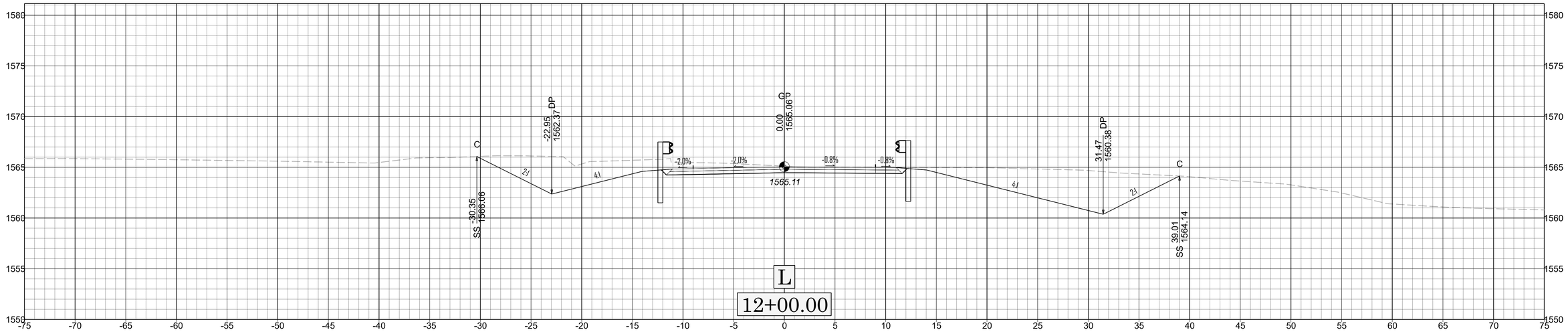
0 5 10

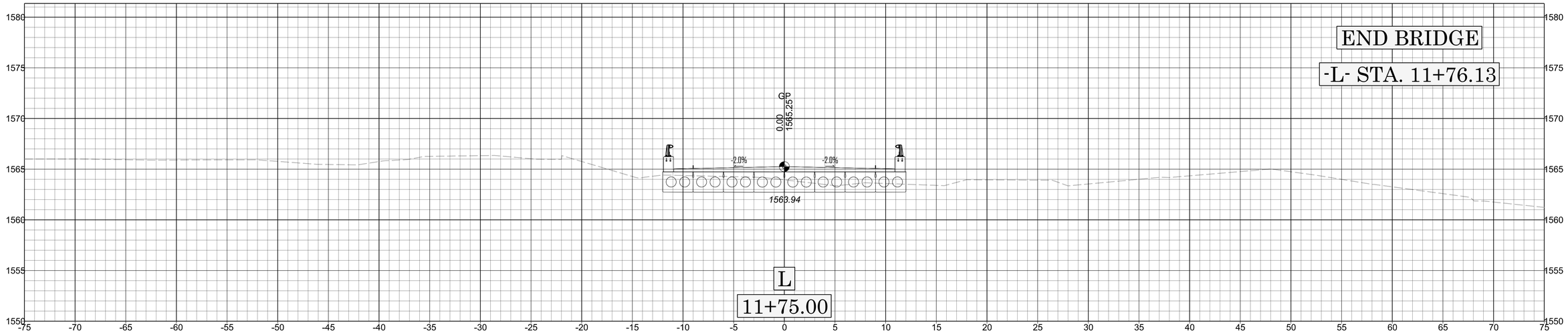
X 2

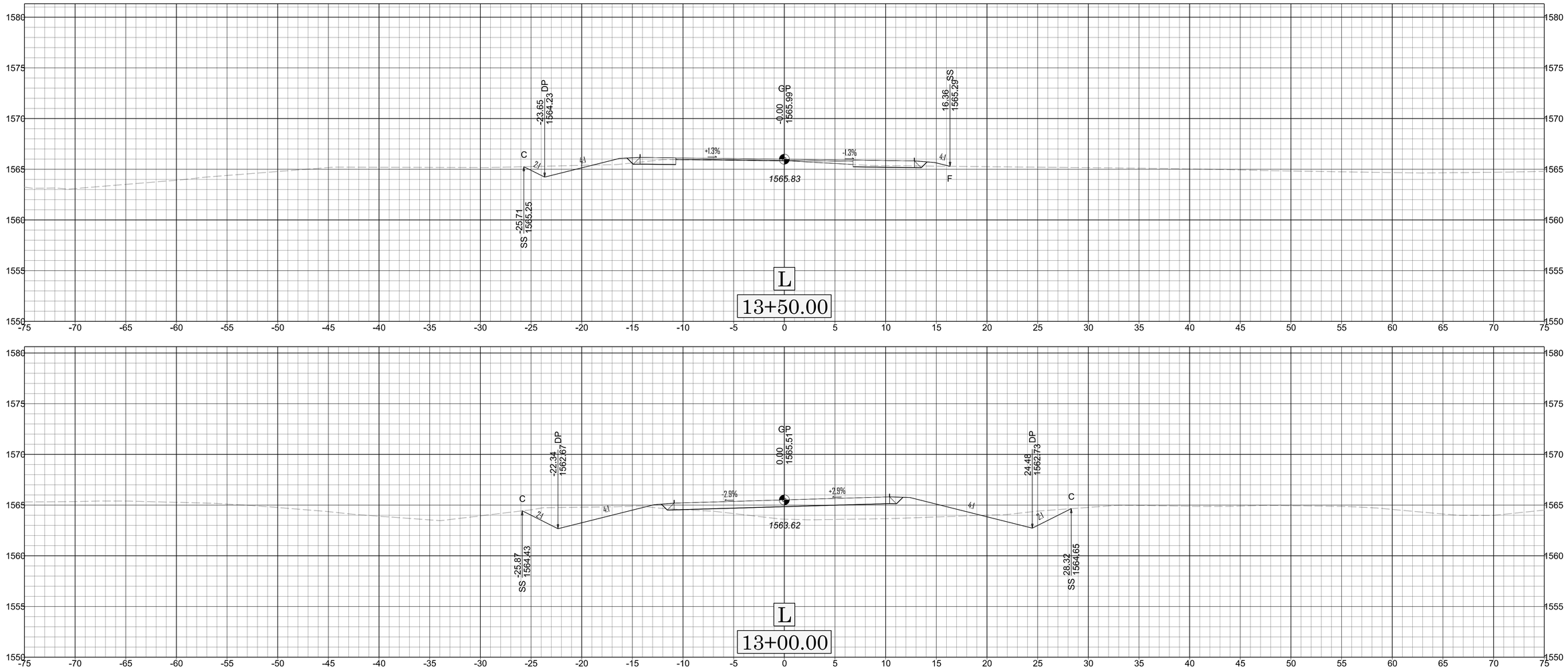
DF1831.2014030.PR

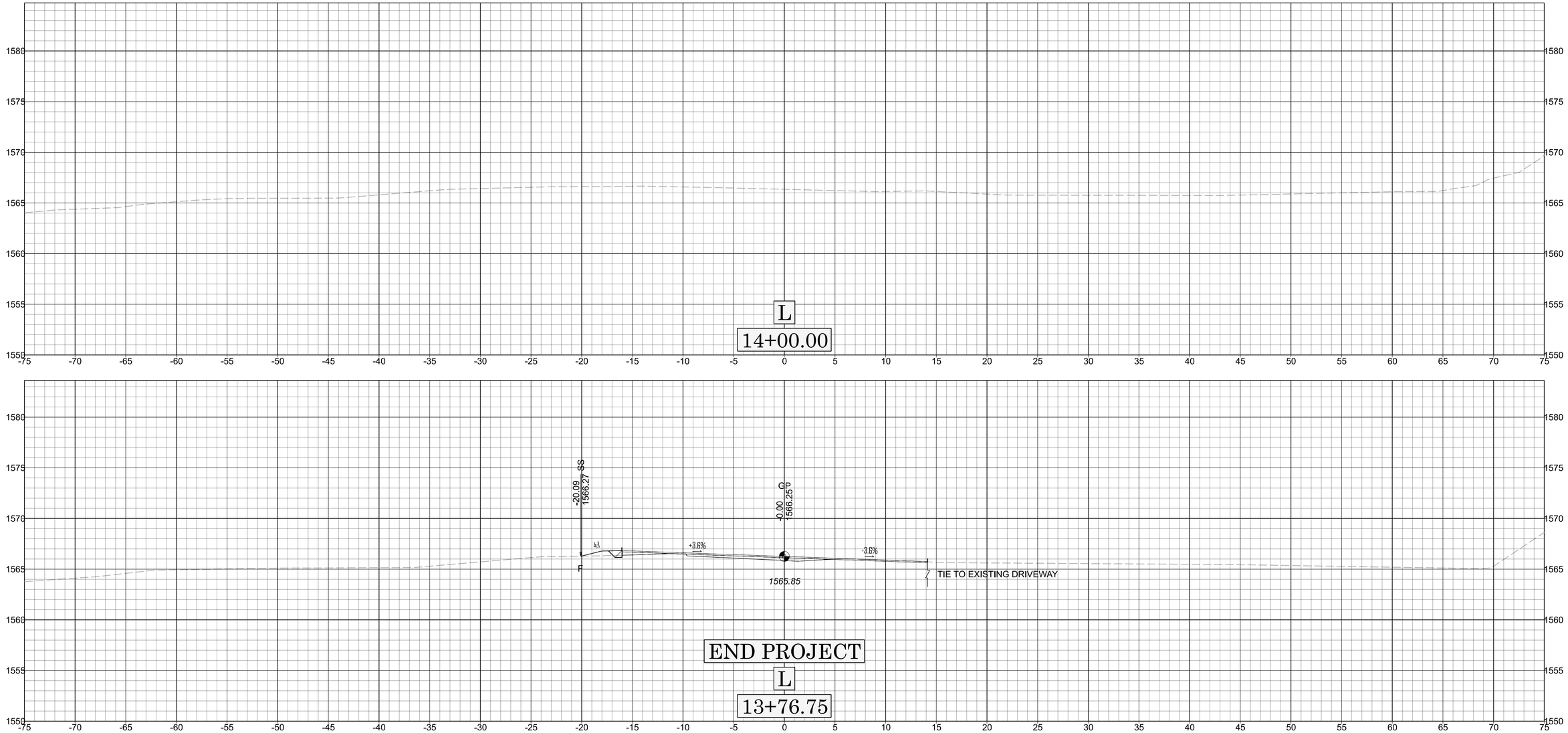

1580
1575
1570
1565
1560
1555
1550
1545
-75 -70 -65 -60 -55 -50 -45 -40 -35 -30 -25 -20 -15 -10 -5 0 5 10 15 20 25 30 35 40 45 50 55 60 65 70 75
G
0.00
1565.48
-2.0%
-2.0%
1556.49
L
11+50.00
G
-0.00
1565.90
-2.0%
-2.0%
1562.50
L
11+05.00


C
-20.37 DP
1562.32
G
0.00
1565.07
31.12
1560.60 DP
C
-26.13
SS 1565.40
1563.02
33.23
SS 1561.66
-3.4%
+3.4%
2:1
4:1
4:1
2:1
L
12+50.00

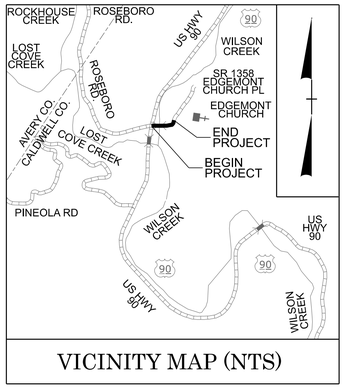

C
-22.95
1562.37 DP
G
0.00
1566.06
31.47
1560.38 DP
C
-30.35
SS 1566.06
1565.11
39.01
SS 1564.14
-2.0%
-2.0%
-0.8%
-0.8%
2:1
4:1
4:1
2:1
L
12+00.00


END BRIDGE
-L- STA. 11+76.13
G
0.00
1565.25
-2.0%
-2.0%
1563.94
L
11+75.00


-23.65
1564.23
DP
-0.00
1565.99
G
16.36
1565.29
SS
C
2:1
4:1
+1.3%
-1.3%
4:1
F
1565.83
-25.71
1565.25
SS
L
13+50.00
-22.34
1562.67
DP
0.00
1565.51
G
24.48
1562.73
DP
C
2:1
4:1
-2.9%
+2.5%
4:1
2:1
C
1563.62
-25.87
1564.43
SS
28.32
1564.65
SS
L
13+00.00


1580
1575
1570
1565
1560
1555
1550
-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
L
14+00.00
-20.09
1566.27
SS
-0.00
1566.25
CL
4:1
+3.6%
-3.6%
1565.85
TIE TO EXISTING DRIVEWAY
END PROJECT
L
13+76.75

PROJECT: DF18311.2014030.PR



VICINITY MAP (NTS)

STATE OF NORTH CAROLINA

DIVISION OF HIGHWAYS

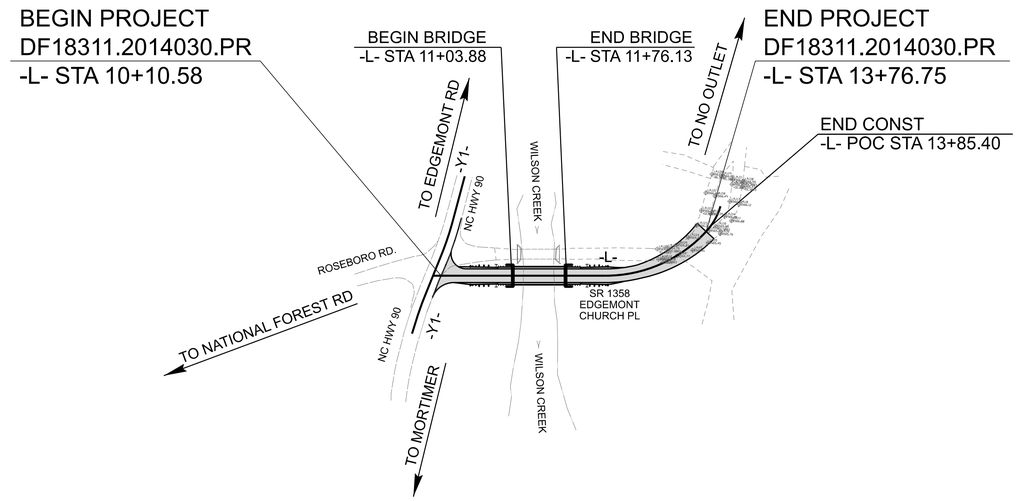
CALDWELL COUNTY

LOCATION: REPLACE BRIDGE NO. 161 ON 1358 OVER WILSON CREEK

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

STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	DF18311.2014030.PR		

STATE PROJ. NO.	F. A. PROJ. NO.	DESCRIPTION
DF18311.2014030.PR.1	–	P.E.
DF18311.2014030.PR.2	–	R/W,UTIL
DF18311.2014030.PR.3	–	CONST.



STRUCTURE

DESIGN DATA

ADT (2026) = 20
ADT (2050) = 20
K = N/A %
D = N/A %
T = N/A % *
V = 30 MPH
* (TTST N/A %, DUAL N/A %)

FUNC CLASS =
RURAL LOCAL SUBREGIONAL TIER

PROJECT LENGTH

LENGTH ROADWAY PROJECT DF18311.2014030.PR = 0.055 MILES
LENGTH STRUCTURE PROJECT DF18311.2014030.PR = 0.014 MILES

TOTAL LENGTH PROJECT DF18311.2014030.PR = 0.069 MILES

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

2024 STANDARD SPECIFICATIONS

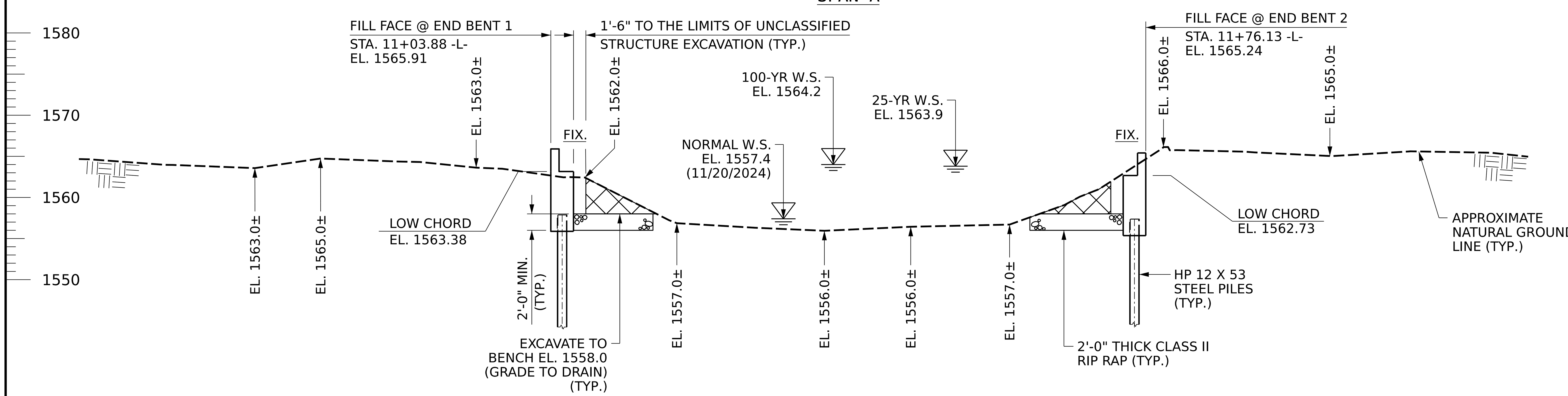
LETTING DATE :

SEE ROADWAY PLANS

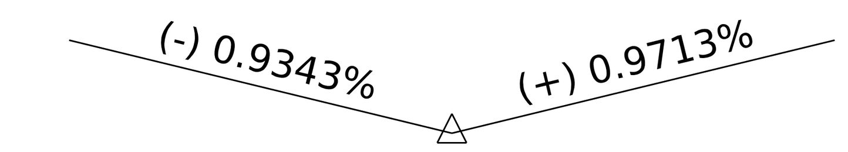
DIEGO A. AGUIRRE, PhD, P.E.
PROJECT ENGINEER

AIDAN J. HALPERN
PROJECT DESIGN ENGINEER

F.A. PROJECT DF18311.2014030.PR



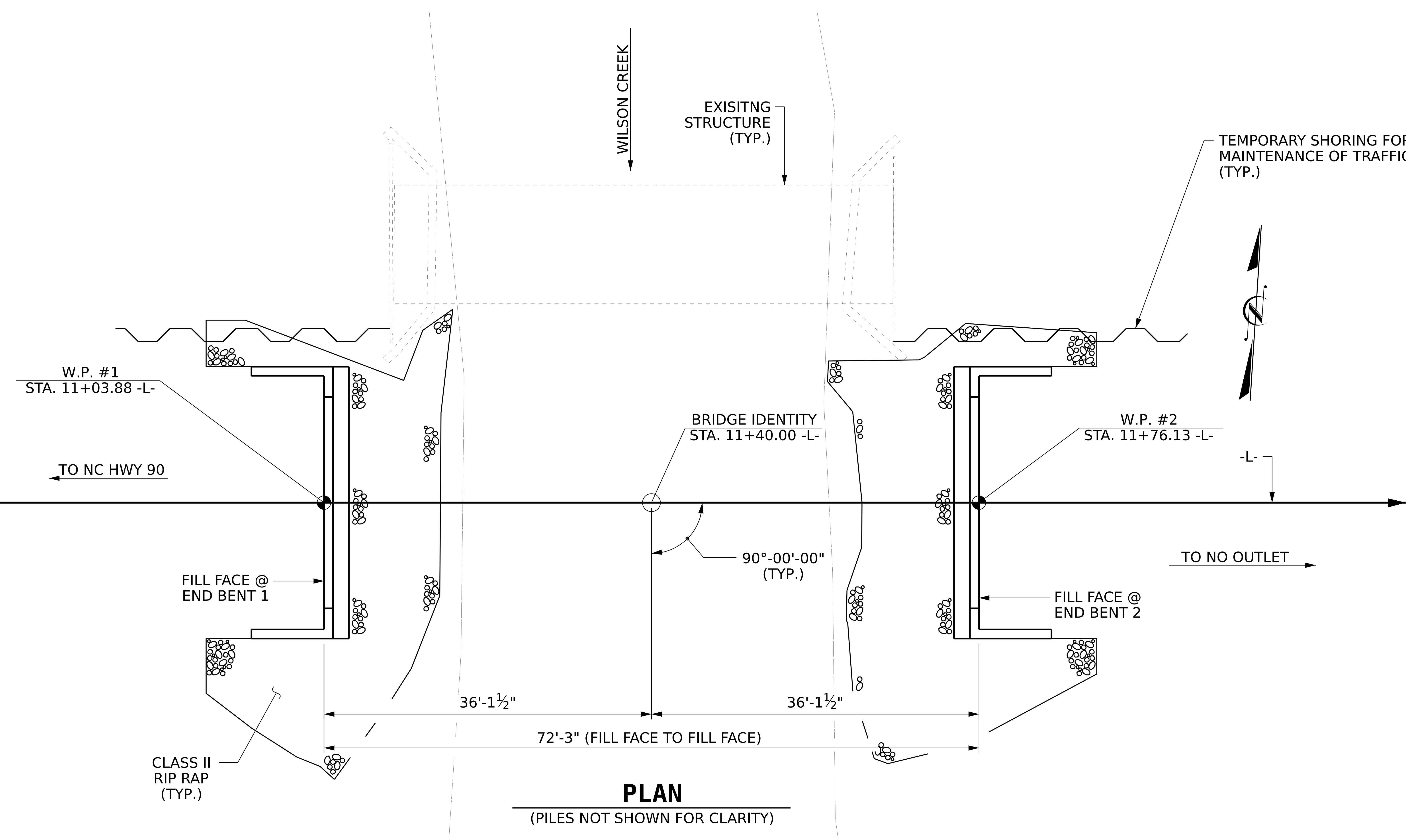
SECTION ALONG -L-



VERTICAL CURVE DATA

PI = 12+25.00 -L-
EL. = 1564.78'
VC = 90'

UNCLASSIFIED STRUCTURE EXCAVATION



PLAN

(PILES NOT SHOWN FOR CLARITY)

I HEREBY CERTIFY THESE PLANS
ARE THE AS-BUILT PLANS

PROJECT NO. DF18311.2014030.PR

CALDWELL COUNTY

STATION: 11+40.00 -L-

SHEET 1 OF 3 REPLACES BRIDGE NO. 130161

NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 048223 DIEGO A. AGUIRRE

Signed by: Diego A. Aguirre

10/16/2025

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

GENERAL DRAWING

FOR BRIDGE ON SR 1358
(EDGEMONT CHURCH PL.) OVER
WILSON CREEK BETWEEN
NC HWY 90 AND NO OUTLET

KCA KISINGER CAMPO & ASSOCIATES

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

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

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

DRAWN BY : AIDAN J. HALPERN DATE : 09/2025
CHECKED BY : LAURA E. SUTTON DATE : 09/2025
DESIGN ENGINEER OF RECORD: DIEGO A. AGUIRRE DATE : 09/2025

10/8/2025
401_005_DF18311.2014030PR_SMU_GD01_S-1_130161.dgn
daguirre

SUMMARY OF PILE INFORMATION/INSTALLATION

(Blank entries indicate item is not applicable to structure)

End Bent / Bent No, Pile(s) #(-#) (e.g., "Bent 1, Piles 1-5")	Number of Piles per Line	Factored Resistance per Pile KIPS	Pile Cut-Off (Top of Pile) Elevation FT	Estimated Pile Length per Pile FT	Scour Critical Elevation FT	Driven Piles			Predrilling for Piles **			Drilled-In Piles		
						Minimum Pile Tip (Tip No Higher Than) Elevation FT	Required Driving Resistance (RDR)* per pile KIPS	Pile Redrives Quantity EACH	Predrilling Length per Pile LIN FT	Predrilling Elevation (Elevation Not To Predrill Below) FT	Maximum Predrilling Diameter INCHES	Pile Excavation (Bottom of Hole) Elevation FT	Pile Excavation Not In Soil per Pile LIN FT	Pile Excavation In Soil per Pile LIN FT
End Bent 1, Piles 1-2	2	170	1557.96	7			285					1551.00	5	0
End Bent 1, Piles 3-5	3	170	1557.96	9			285					1549.00	5	2
End Bent 2, Piles 1-2	2	170	1557.31	12			285					1546.00	5	5
End Bent 2, Piles 3-5	3	170	1557.31	15			285					1543.00	5	8
TOTAL QUANTITY:													50	40

$$^{*}RDR = \frac{Factored\ Resistance + Factored\ Drag\ Load + Factored\ Dead\ Load}{Dynamic\ Resistance\ Factor} + Nominal\ Drag\ Load\ Resistance + Nominal\ Resistance\ from\ Scourable\ Material$$

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

PILE DESIGN INFORMATION

(Blank entries indicate item is not applicable to structure)

End Bent / Bent No, Pile(s) #(-#) (e.g., "Bent 1, Piles 1-5")	Factored Axial Load per Pile KIPS	Factored Drag Load per Pile KIPS	Factored Dead Load * per Pile KIPS	Dynamic Resistance Factor	Nominal Drag Resistance per Pile KIPS	Nominal Scour Resistance per Pile KIPS
End Bent 1, Piles 1-5	170			0.60		
End Bent 2, Piles 1-5	170			0.60		

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

NOTES:

1. The Pile Foundation Tables are based on the bridge substructure design and foundation recommendations sealed by a North Carolina Professional Engineer (Cheng Wang, #048123) on 09-16-2025.
2. Total Pile Driving Equipment Setup quantity (not shown in Pile Foundation Tables) equals the number of driven piles, i.e., the number of piles with a Required Driving Resistance.
3. The Engineer may adjust the quantity for DPT Testing and Pipe Pile Plates when necessary.
4. For Piles, see Section 450 of the Standard Specifications.
5. Fill holes for pile excavation at End Bent No. 1 and End Bent No. 2 with concrete.

SPECIAL NOTES:

1. Install piles at End Bent No. 1, left to a tip elevation no higher than 1,551 ft and a penetration of at least 5 ft into rock as defined by article 411-1 of the Standard Specifications.
2. Install piles at End Bent No. 1, right to a tip elevation of 1,549 ft or a penetration of at least 5 ft into rock as defined by article 411-1 of the Standard Specifications, whichever is shallower. Check field conditions for the required tip resistance of 60 tsf.
3. Install piles at End Bent No. 2, left to a tip elevation of 1,546 ft or a penetration of at least 5 ft into rock as defined by article 411-1 of the Standard Specifications, whichever is shallower. Check field conditions for the required tip resistance of 60 tsf.
4. Install piles at End Bent No. 2, right to a tip elevation of 1,543 ft or a penetration of at least 5 ft into rock as defined by article 411-1 of the Standard Specifications, whichever is shallower. Check field conditions for the required tip resistance of 60 tsf.

PROJECT NO. DF18311.2014030.PR

CALDWELL COUNTY

STATION: 11+40.00 -L-

SHEET 2 OF 3

NORTH CAROLINA PROFESSIONAL SEAL 048223 ENGINEER DIEGO A. AGUIRRE

Signed by: Diego A Aguirre ECF43B83073DFB... 10/16/2025

SIGNATURE DATE

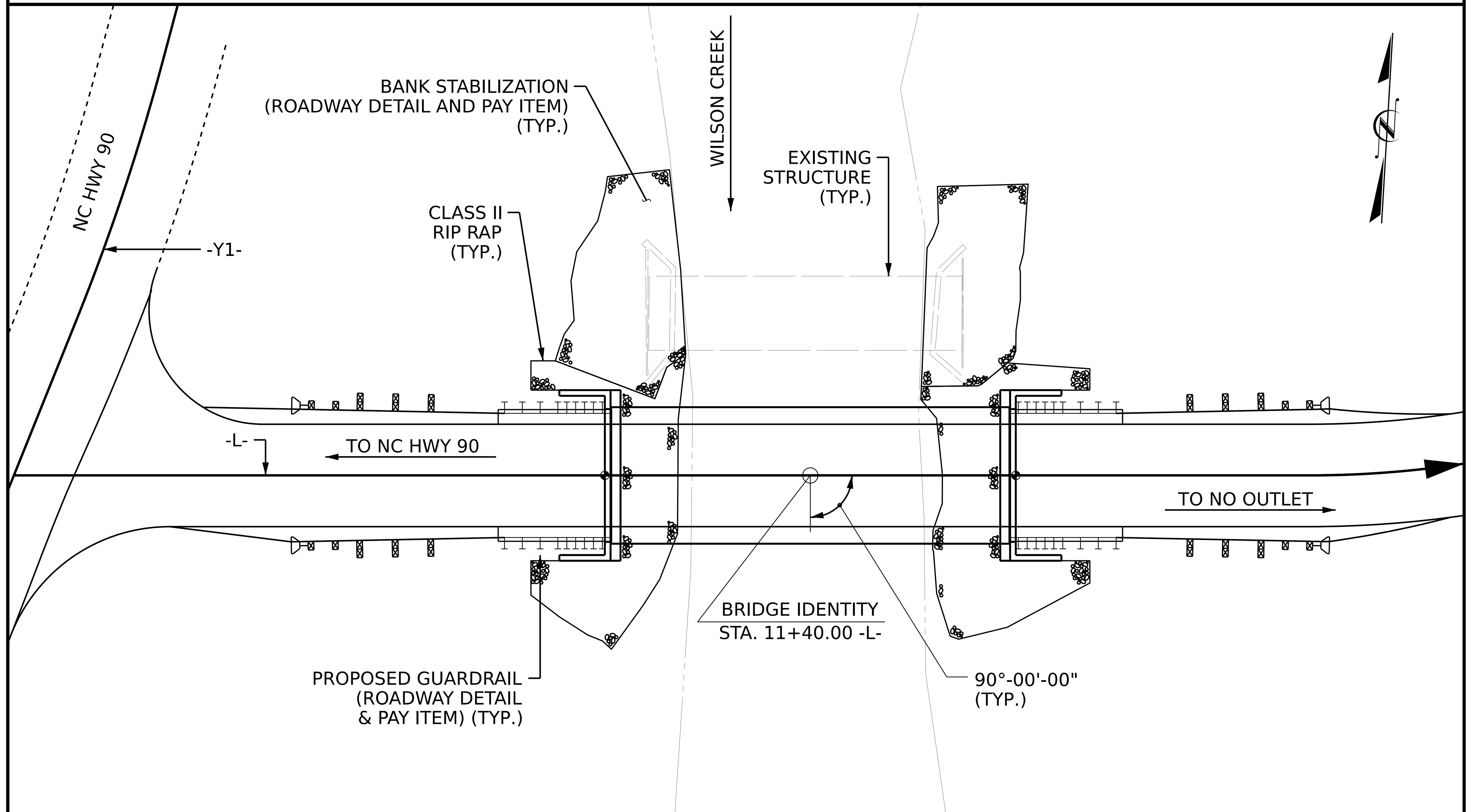
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

PILE FOUNDATION TABLES

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

BM INFO: BM#1, 8" SPIKE IN 24" HEMLOCK, -Y1- STA 11+03, 81.45 LT
EL. 1569.45, NORTHING: 831164 EASTING: 1179282



LOCATION SKETCH

NO KNOWN UTILTITY CONFLICTS.

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

TOTAL BILL OF MATERIAL

	REMOVAL OF EXISTING STRUCTURE AT STA. 11+40.00 -L-	ASBESTOS ASSESMENT	PILE EXCAVATION IN SOIL	PILE EXCAVATION NOT IN SOIL	UNCLASSIFIED STRUCTURE EXCAVATION AT STA. 11+40.00 -L-	CLASS A CONCRETE (BRIDGE)	REINFORCING STEEL (BRIDGE)	PILE DRIVING EQUIPMENT SETUP FOR HP 12 X 53 STEEL PILES	HP 12 X 53 STEEL PILES	
	LUMP SUM	LUMP SUM	LIN. FT.	LIN. FT.	LUMP SUM	CU. YDS.	LBS.	EA.	NO.	LIN. FT.
SUPERSTRUCTURE										
END BENT 1			6	25		32.4	3,185	5	5	41
END BENT 2			34	25		32.4	3,185	5	5	69
TOTAL	LUMP SUM	LUMP SUM	40	50	LUMP SUM	65.8	6,370	10	10	110

TOTAL BILL OF MATERIAL CONT'D

	ONE BAR METAL RAIL	1'-0" X 1'-9½" CONCRETE PARAPET	RIP RAP CLASS II (2'-0" THICK)	GEOTEXTILE FOR DRAINAGE	ELASTOMERIC BEARINGS	3'-0" X 2'-0" PRESTRESSED CONCRETE CORED SLABS	
	LIN. FT.	LIN. FT.	TONS	SQ. YDS.	LUMP SUM	NO.	LIN. FT.
SUPERSTRUCTURE	124.50	140.00			LUMP SUM	8	560.00
END BENT 1			80	70			
END BENT 2			85	70			
TOTAL	124.50	140.00	165	140	LUMP SUM	8	560.00

SAMPLE BAR REPLACEMENT

SIZE	LENGTH
#3	6′-2″
#4	7′-4″
#5	8′-6″
#6	9′-8″
#7	10′-10″
#8	12′-0″
#9	13′-2″
#10	14′-6″
#11	15′-10″

NOTE:
SAMPLE BAR REPLACEMENT LENGTHS BASED ON 30″(SAMPLE LENGTH) PLUS TWO SPLICE LENGTHS AND f_y = 60ksi.

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.

FOR ASBESTOS ASSESSMENT, SEE SPECIAL PROVISIONS.

FOR CORED SLAB AND BOX BEAM TENSIONING, SEE SPECIAL PROVISIONS.

INASMUCH AS THE PAINT SYSTEM ON THE EXISTING STRUCTURAL STEEL CONTAINS LEAD, THE CONTRACTOR'S ATTENTION IS DIRECTED TO ARTICLE 107-1 OF THE STANDARD SPECIFICATIONS. ANY COSTS RESULTING FROM COMPLIANCE WITH APPLICABLE STATE OR FEDERAL REGULATIONS PERTAINING TO HANDLING OF MATERIALS CONTAINING LEAD BASED PAINT SHALL BE INCLUDED IN THE BID PRICE FOR "REMOVAL OF EXISTING STRUCTURE AT STATION 14+40.00 -L-".

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

FOR LIMITS OF TEMPORARY SHORING FOR MAINTENANCE OF TRAFFIC, SEE TRAFFIC CONTROL PLANS. FOR PAY ITEM FOR TEMPORARY SHORING FOR MAINTENANCE OF TRAFFIC, SEE ROADWAY PLANS.

THE CONTRACTOR SHALL PROVIDE INDEPENDENT ASSURANCE SAMPLES OF REINFORCING STEEL AS FOLLOWS: FOR PROJECTS REQUIRING UP TO 400 TONS OF REINFORCING STEEL, ONE 30 INCH SAMPLE OF EACH SIZE BAR USED, AND FOR PROJECTS REQUIRING OVER 400 TONS OF REINFORCING STEEL, TWO 30 INCH SAMPLES OF EACH SIZE BAR USED. THE SAMPLE BARS SHOULD COME FROM STEEL ACTUALLY USED IN THE PROJECT AND THE SAMPLE BARS SHOULD BE REPLACED BY SPLICED BARS AS SPECIFIED IN THE SAMPLE BAR REPLACEMENT CHART. PAYMENT FOR THE SAMPLE BARS AND REPLACEMENT REINFORCING STEEL SHALL BE CONSIDERED INCIDENTAL TO VARIOUS PAY ITEMS.

AFTER SERVING AS A TEMPORARY STRUCTURE, THE EXISTING STRUCTURE, WHICH WAS ERECTED AFTER HURRICANE HELENE, CONSISTING OF A 40'-6" SINGLE SPAN ON STEEL I-BEAMS AND CONCRETE ABUTMENTS WITH A CLEAR ROADWAY OF 15'-10" AND A TIMBER DECK WITH ASPHALT WEARING SURFACE AND LOCATED APPROXIMATELY 11' UPSTREAM FROM THE PROPOSED STRUCTURE SHALL BE REMOVED. SHOULD THE STRUCTURAL INTEGRITY OF THE BRIDGE DETERIORATE DURING CONSTRUCTION OF THE PROPOSED BRIDGE, A LOAD LIMIT MAY BE POSTED AND MAY BE REDUCED AS FOUND NECESSARY DURING THE LIFE OF THE PROJECT.

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

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

FOR EROSION CONTROL MEASURES, SEE EROSION CONTROL PLANS.

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

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

HYDRAULIC DATA

DESIGN DISCHARGE	= 2400 CFS
FREQUENCY OF DESIGN FLOOD	= 25 YRS.
DESIGN HIGH WATER ELEVATION	= 1563.9
DRAINAGE AREA	= 15.2 SQ. MI.
BASE DISCHARGE (Q100)	= 3500 CFS
BASE HIGH WATER ELEVATION	= 1564.2

OVERTOPPING FLOOD DATA

OVERTOPPING DISCHARGE	= 4300 CFS
FREQUENCY OF OVERTOPPING FLOOD	= 100+ YRS.
OVERTOPPING FLOOD ELEVATION	= 1565.0*

NOTE: LOCATION OF OVERTOPPING 12+24.13 -L- ROADWAY CENTERLINE

PROJECT NO. DF18311.2014030.PR
CALDWELL COUNTY
STATION: 11+40.00 -L-
SHEET 3 OF 3

Signed by: Diego A. Aguirre
10/16/2025
NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 048223 DIEGO A. AGUIRRE

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

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

GENERAL DRAWING

FOR BRIDGE ON SR 1358 (EDGEMONT CHURCH PL.) OVER WILSON CREEK BETWEEN NC HWY 90 AND NO OUTLET

REVISIONS

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

SHEET NO. S-3
TOTAL SHEETS 16

DRAWN BY : AIDAN J. HALPERN DATE : 09/2025
CHECKED BY : LAURA E. SUTTON DATE : 09/2025
DESIGN ENGINEER OF RECORD: DIEGO A. AGUIRRE DATE : 09/2025

10/8/2025
401_015_DF18311.2014030PR_SMU_GD02_S-3_130161.dgn
daguirre

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

LOAD TYPE		VEHICLE	WEIGHT (W) (TONS)	⟨#⟩ CONTROLLING LOAD RATING	MINIMUM RATING FACTORS (RF)	TONS = W x RF	STRENGTH I LIMIT STATE										SERVICE III LIMIT STATE						COMMENT NUMBER
								MOMENT					SHEAR					MOMENT						
							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		HL-93 (INVENTORY)	N/A	⟨1⟩	1.006	--	1.75	0.273	1.03	70'	EL	34.5	0.507	1.32	70'	EL	6.9	0.80	0.273	1.01	70'	EL	34.5	
		HL-93 (OPERATING)	N/A		1.341	--	1.35	0.273	1.34	70'	EL	34.5	0.507	1.72	70'	EL	6.9	N/A	--	--	--	--	--	
		HS-20 (INVENTORY)	36.000	⟨2⟩	1.306	47.02	1.75	0.273	1.34	70'	EL	34.5	0.507	1.65	70'	EL	6.9	0.80	0.273	1.31	70'	EL	34.5	
		HS-20 (OPERATING)	36.000		1.740	62.64	1.35	0.273	1.74	70'	EL	34.5	0.507	2.14	70'	EL	6.9	N/A	--	--	--	--	--	
LEGAL LOAD	SINGLE VEHICLE (SV)	SNSH	13.500		2.917	39.379	1.4	0.273	3.75	70'	EL	34.5	0.507	4.87	70'	EL	6.9	0.80	0.273	2.92	70'	EL	34.5	
		SNGARBS2	20.000		2.187	43.741	1.4	0.273	2.81	70'	EL	34.5	0.507	3.47	70'	EL	6.9	0.80	0.273	2.19	70'	EL	34.5	
		SNAGRIS2	22.000		2.077	45.690	1.4	0.273	2.67	70'	EL	34.5	0.507	3.23	70'	EL	6.9	0.80	0.273	2.08	70'	EL	34.5	
		SNCOTTS3	27.250		1.452	39.565	1.4	0.273	1.87	70'	EL	34.5	0.507	2.43	70'	EL	6.9	0.80	0.273	1.45	70'	EL	34.5	
		SNAGGRS4	34.925		1.218	42.554	1.4	0.273	1.57	70'	EL	34.5	0.507	2.03	70'	EL	6.9	0.80	0.273	1.22	70'	EL	34.5	
		SNS5A	35.550		1.191	42.346	1.4	0.273	1.53	70'	EL	34.5	0.507	2.06	70'	EL	6.9	0.80	0.273	1.19	70'	EL	34.5	
		SNS6A	39.950		1.095	43.747	1.4	0.273	1.41	70'	EL	34.5	0.507	1.88	70'	EL	6.9	0.80	0.273	1.10	70'	EL	34.5	
		SNS7B	42.000		1.043	43.801	1.4	0.273	1.34	70'	EL	34.5	0.507	1.85	70'	EL	6.9	0.80	0.273	1.04	70'	EL	34.5	
	TRUCK TRACTOR SEMI-TRAILER (TTST)	TNAGRIT3	33.000		1.336	44.087	1.4	0.273	1.72	70'	EL	34.5	0.507	2.23	70'	EL	6.9	0.80	0.273	1.34	70'	EL	34.5	
		TNT4A	33.075		1.342	44.401	1.4	0.273	1.72	70'	EL	34.5	0.507	2.17	70'	EL	6.9	0.80	0.273	1.34	70'	EL	34.5	
		TNT6A	41.600		1.100	45.746	1.4	0.273	1.41	70'	EL	34.5	0.507	1.98	70'	EL	6.9	0.80	0.273	1.10	70'	EL	34.5	
		TNT7A	42.000		1.106	46.462	1.4	0.273	1.42	70'	EL	34.5	0.507	1.94	70'	EL	6.9	0.80	0.273	1.11	70'	EL	34.5	
		TNT7B	42.000		1.147	48.180	1.4	0.273	1.47	70'	EL	34.5	0.507	1.80	70'	EL	6.9	0.80	0.273	1.15	70'	EL	34.5	
		TNAGRIT4	43.000		1.089	46.838	1.4	0.273	1.40	70'	EL	34.5	0.507	1.74	70'	EL	6.9	0.80	0.273	1.09	70'	EL	34.5	
		TNAGT5A	45.000		1.026	46.175	1.4	0.273	1.32	70'	EL	34.5	0.507	1.74	70'	EL	6.9	0.80	0.273	1.03	70'	EL	34.5	
		TNAGT5B	45.000	⟨3⟩	1.013	45.579	1.4	0.273	1.30	70'	EL	34.5	0.507	1.66	70'	EL	6.9	0.80	0.273	1.01	70'	EL	34.5	
EMERGENCY VEHICLE (EV)		EV2	28.750		1.816	52.212	1.3	0.273	2.11	70'	EL	34.5	0.507	2.59	70'	EL	6.9	0.80	0.273	1.82	70'	EL	34.5	
		EV3	43.000	⟨4⟩	1.188	51.068	1.3	0.273	1.38	70'	EL	34.5	0.507	1.75	70'	EL	6.9	0.80	0.273	1.19	70'	EL	34.5	

LOAD FACTORS:

DESIGN LOAD RATING FACTORS	LIMIT STATE	γDC	γDW
	STRENGTH I	1.25	1.50
	SERVICE III	1.00	1.00

NOTES:

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

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

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

⟨1⟩
⟨2⟩
⟨3⟩
⟨4⟩

LRFR SUMMARY

FOR SPAN " A "

PROJECT NO. **DF18311.2014030.PR**

CALDWELL COUNTY

STATION: **11+40.00 -L-**

Signed by: Diego A Aguirre
ECP43B83073F...
10/16/2025

NORTH CAROLINA PROFESSIONAL SEAL 048223 ENGINEER DIEGO A AGUIRRE

KCA KISINGER CAMPO & ASSOCIATES
301 FAYETTEVILLE ST., SUITE 1500
RALEIGH, NC 27601 (919) 882-7839
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STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH
STANDARD

LRFR SUMMARY FOR 70' CORED SLAB UNIT 90° SKEW

(NON-INTERSTATE TRAFFIC)

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

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

DRAWN BY : CVC	6/10	REV. BY : BNB/AKP	06/23
CHECKED BY : DNS	6/10		
DRAWN BY : AIDAN J. HALPERN	DATE : 09/2025		
CHECKED BY : LAURA E. SUTTON	DATE : 09/2025		
DESIGN ENGINEER OF RECORD: DIEGO A. AGUIRRE	DATE : 09/2025		

10/8/2025
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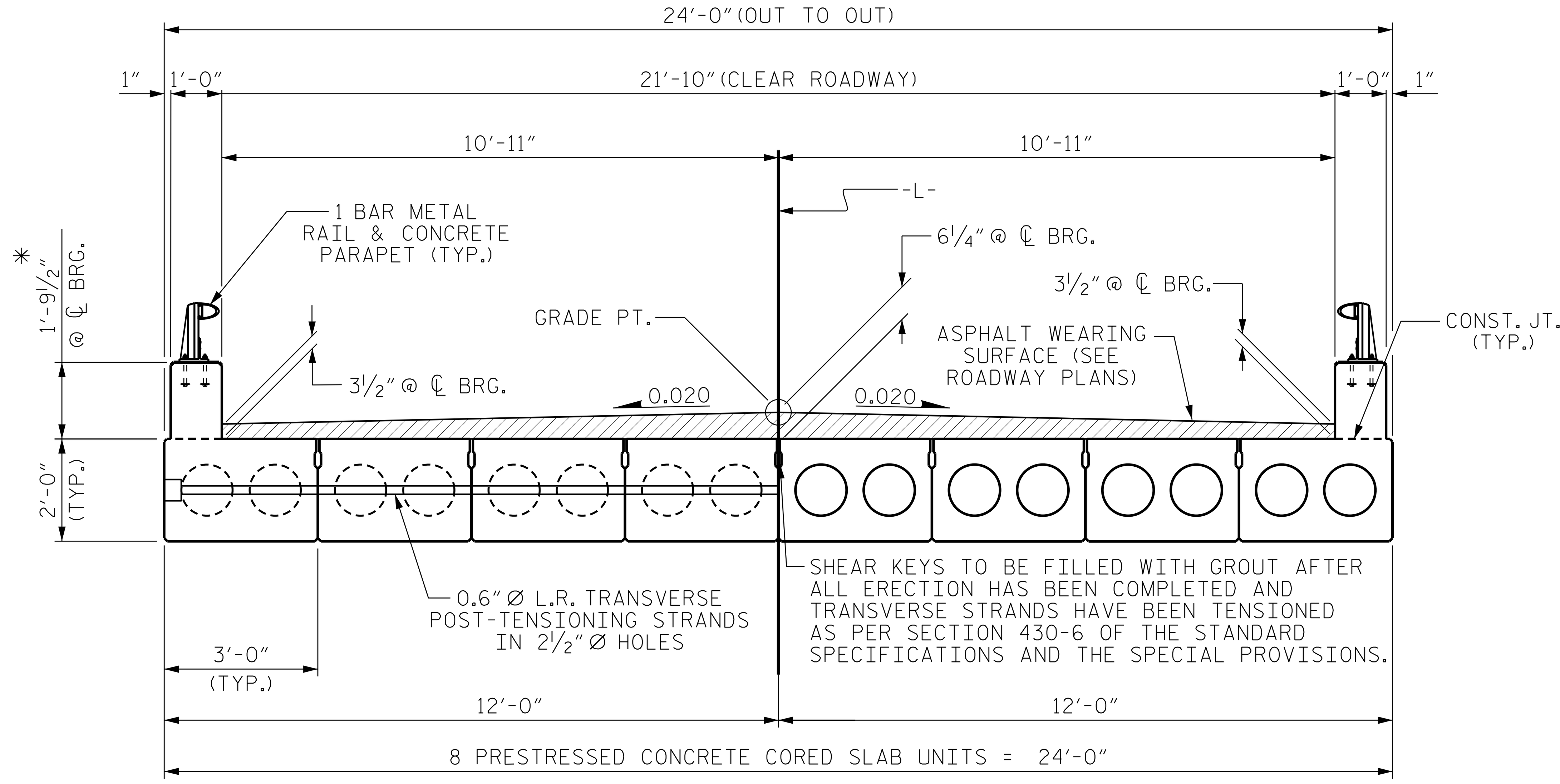
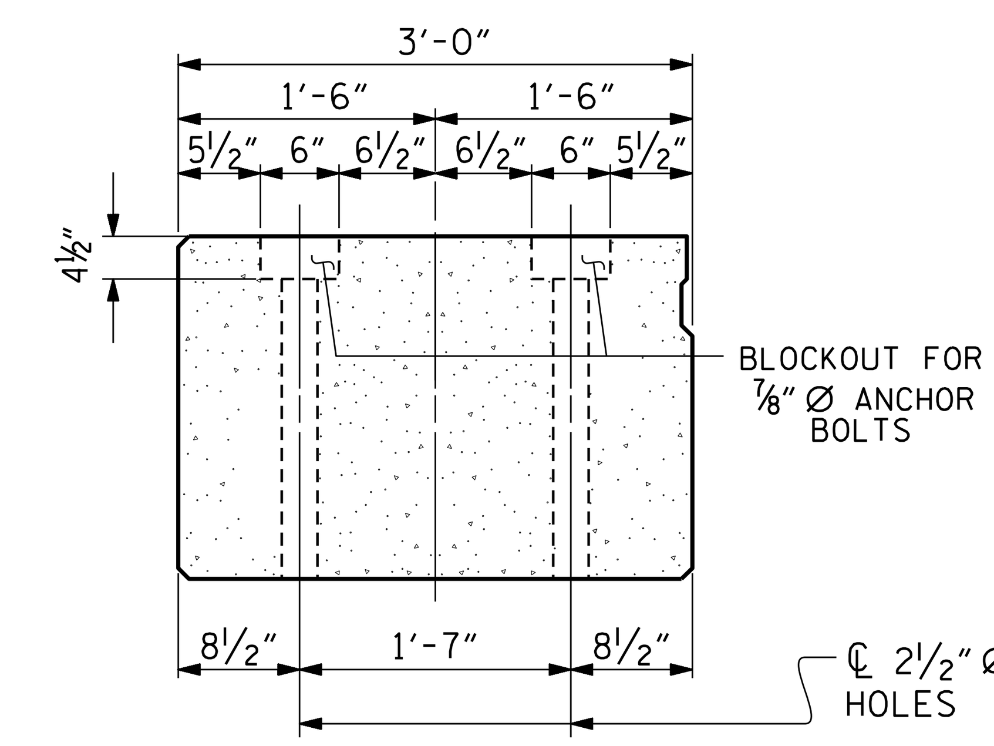
daguirre

STD. NO. 24LRFR1_90S_70L



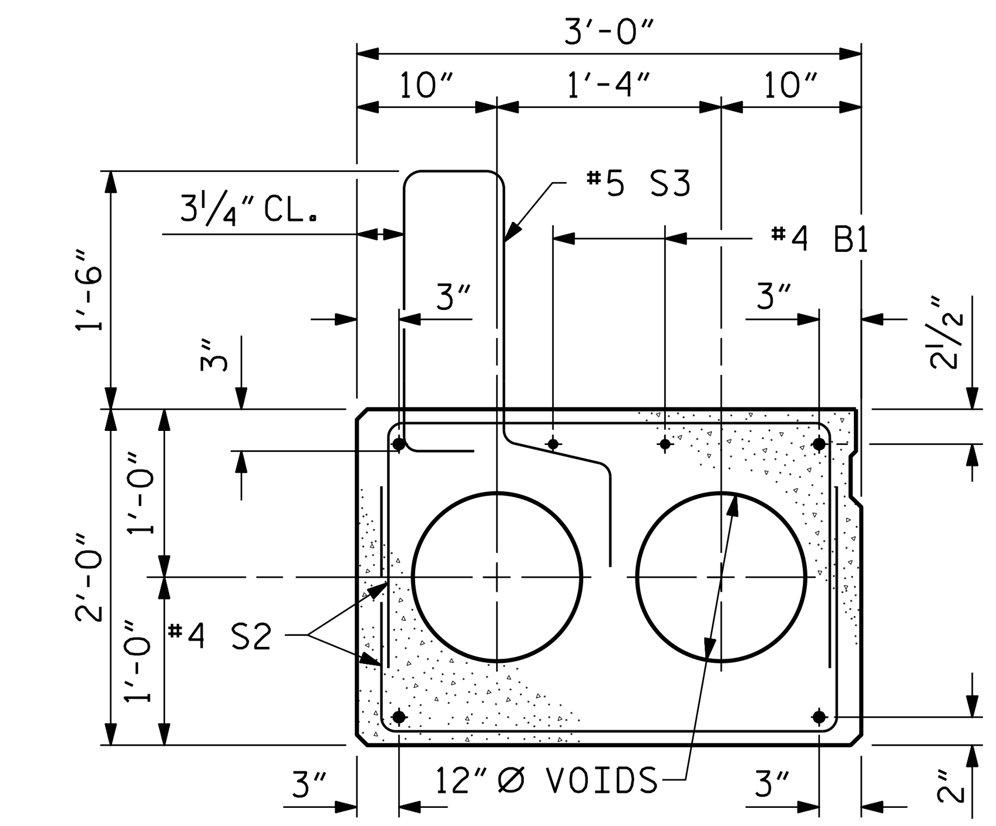
TYPICAL SECTION

* - THE MAXIMUM PARAPET HEIGHT AND ASPHALT THICKNESS IS SHOWN. THE HEIGHT OF THE PARAPET AND ASPHALT THICKNESS VARIES WHILE THE TOP OF THE PARAPET FOLLOWS THE PROFILE OF THE GUTTERLINE. FOR PARAPET HEIGHT DETAILS AND ASPHALT THICKNESS, SEE THE "1 BAR METAL RAIL PARAPET SECTION" DETAIL.



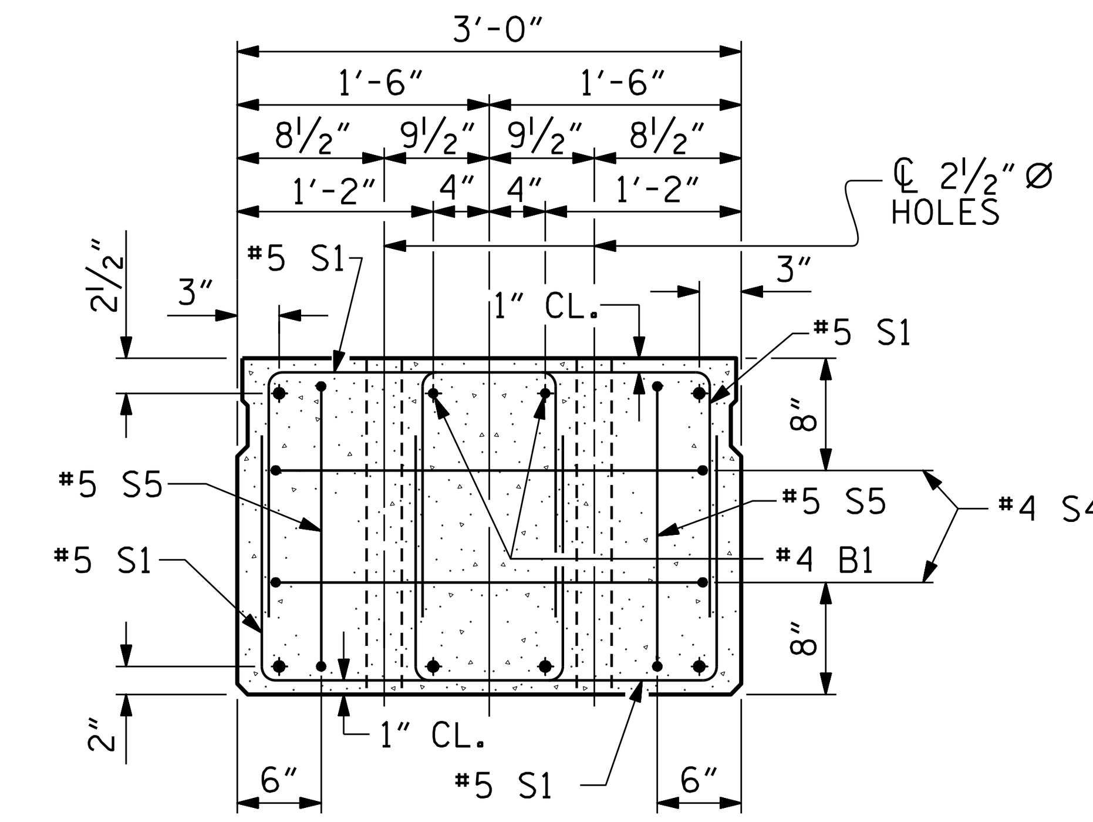
END ELEVATION

EXTERIOR UNIT SHOWN - INTERIOR UNIT SIMILAR EXCEPT SHEAR KEYS BOTH SIDES SHOWING LOCATION OF ANCHOR BOLT BLOCKOUTS.



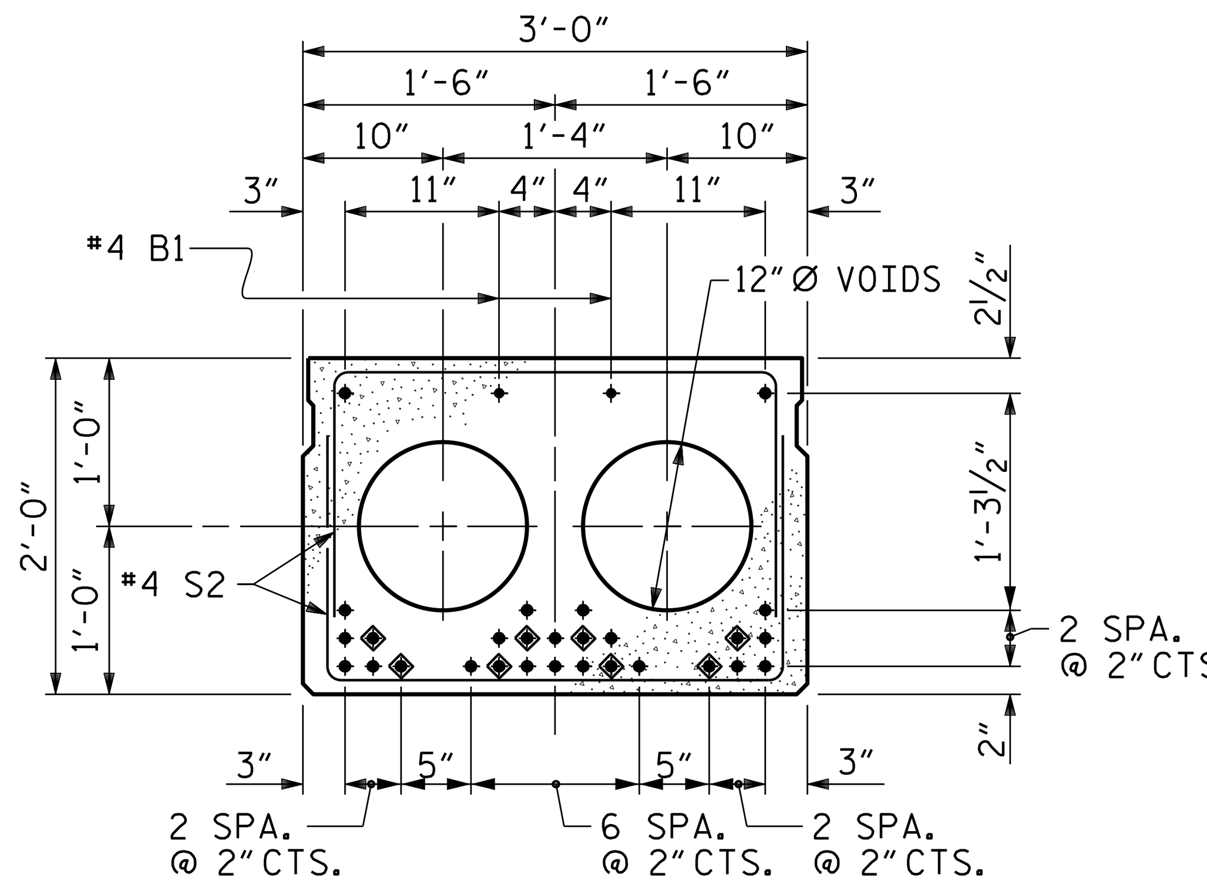
EXTERIOR SLAB SECTION (70' UNIT)

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



END ELEVATION

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



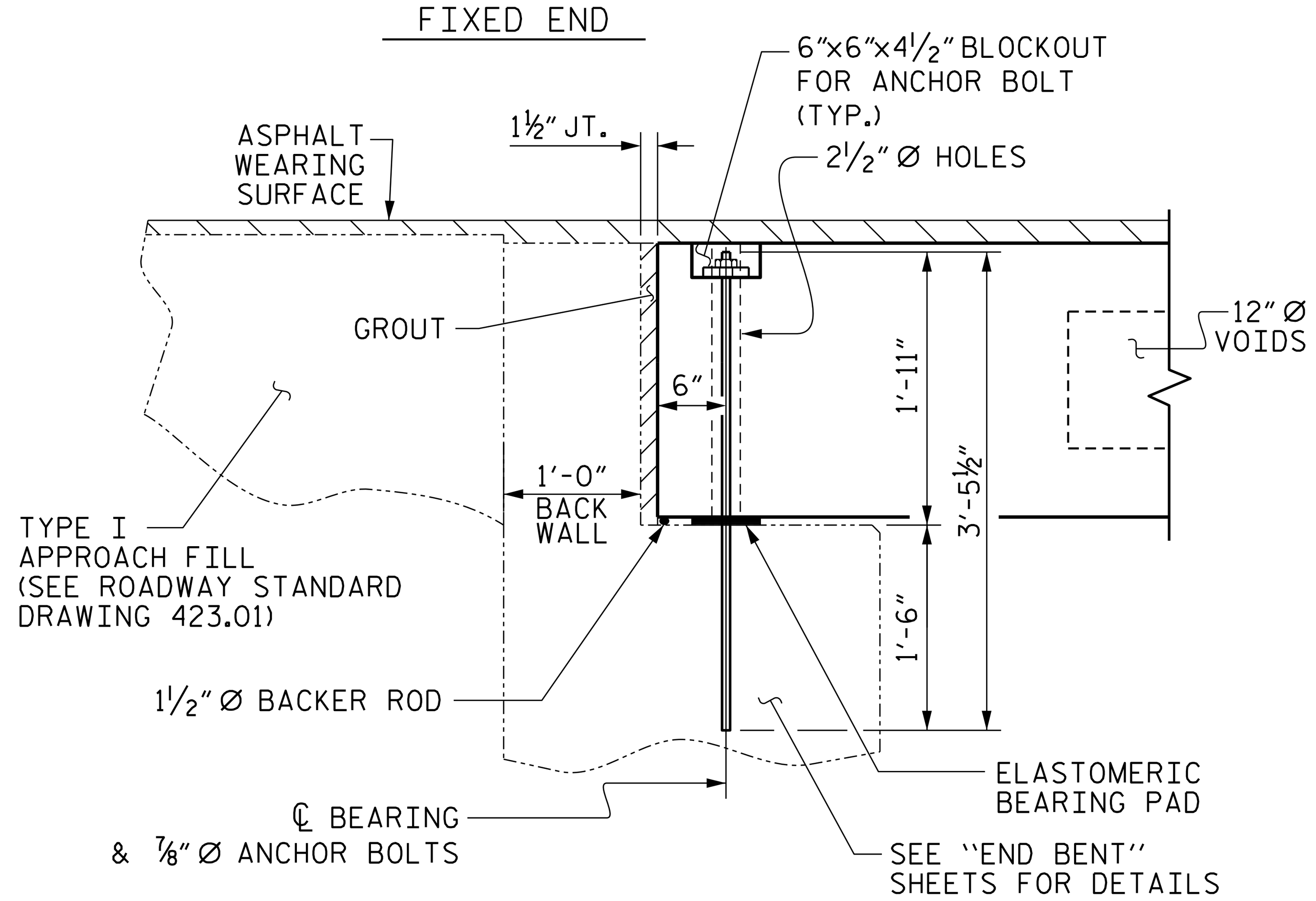
INTERIOR SLAB SECTION (70' UNIT)

(28 STRANDS REQUIRED)

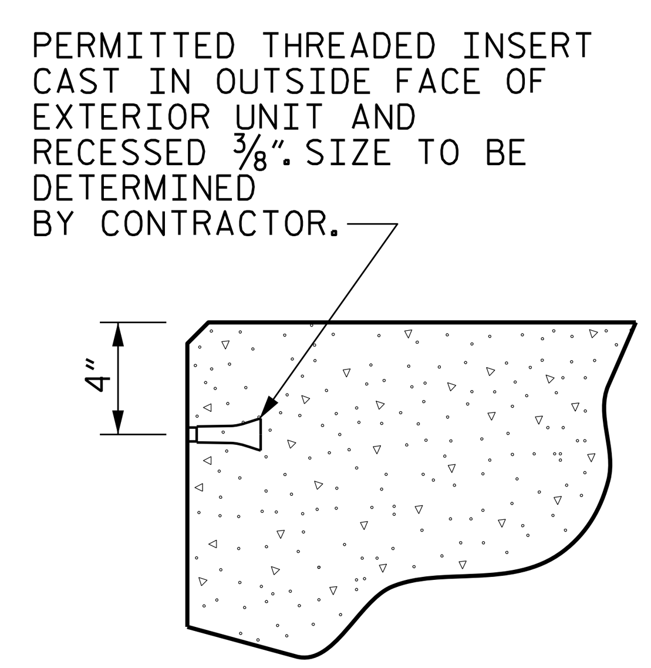
0.6" Ø LOW RELAXATION STRAND LAYOUT

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

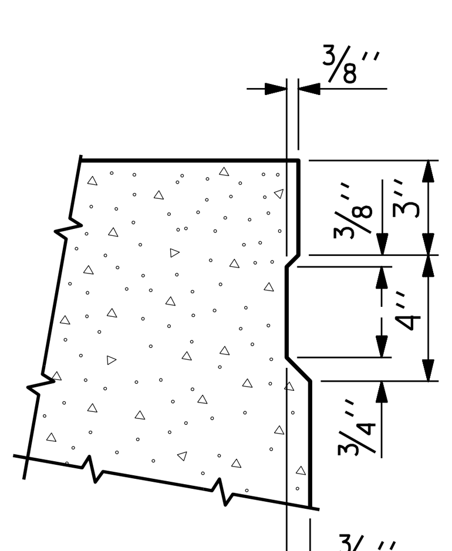
DEBONDING LEGEND



SECTION AT END BENT

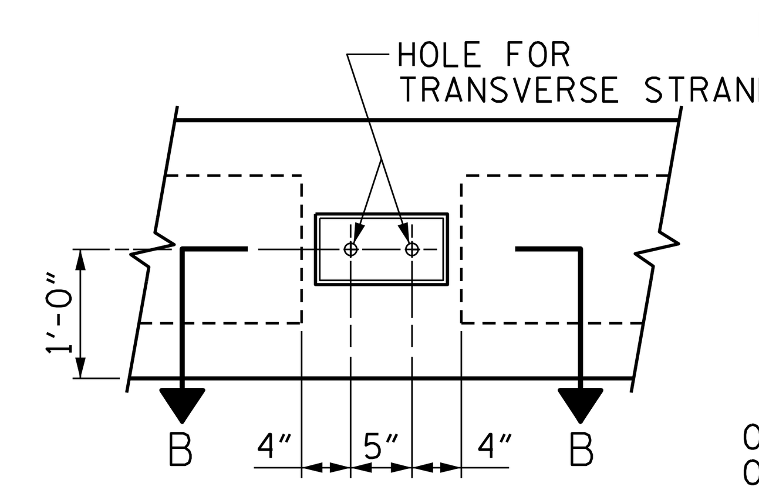


THREADED INSERT DETAIL

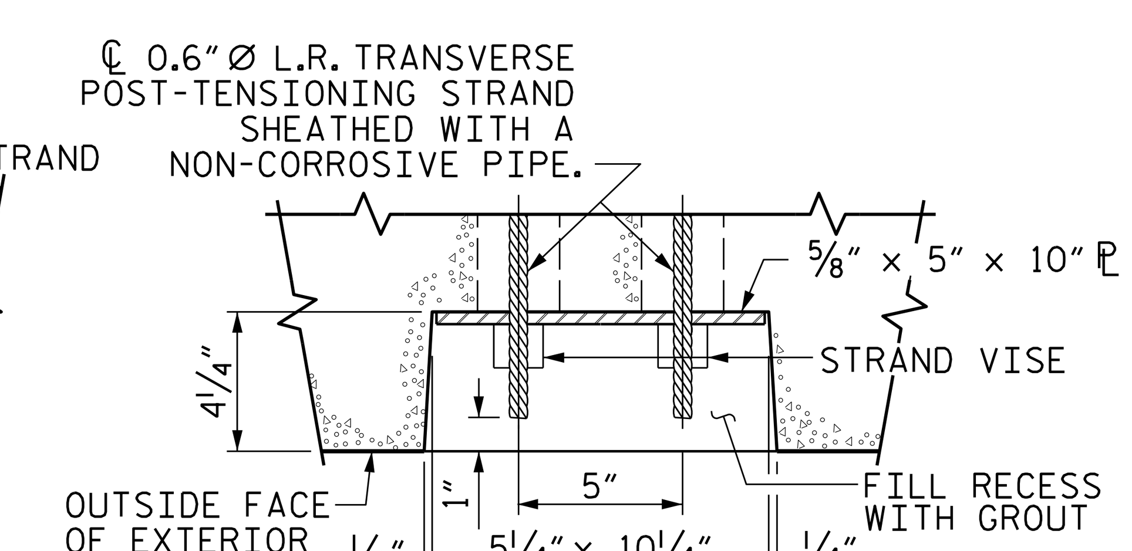


SHEAR KEY DETAIL

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



ELEVATION VIEW



SECTION B-B

GROUTED RECESS AT END OF POST-TENSIONED STRAND CORED SLABS

PROJECT NO. DF18311.2014030.PR
CALDWELL COUNTY
STATION: 11+40.00 -L-
SHEET 1 OF 3

Signed by: Diego A. Aguirre
10/16/2025

NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 048223 DIEGO A. AGUIRRE

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH
STANDARD

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

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

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

DRAWN BY : MAA	5/10	REV. 10/1/11	MAA/GM
CHECKED BY : GM	5/10	REV. 1/15	RWW/TMG
		REV. 12/17	MAA/THC

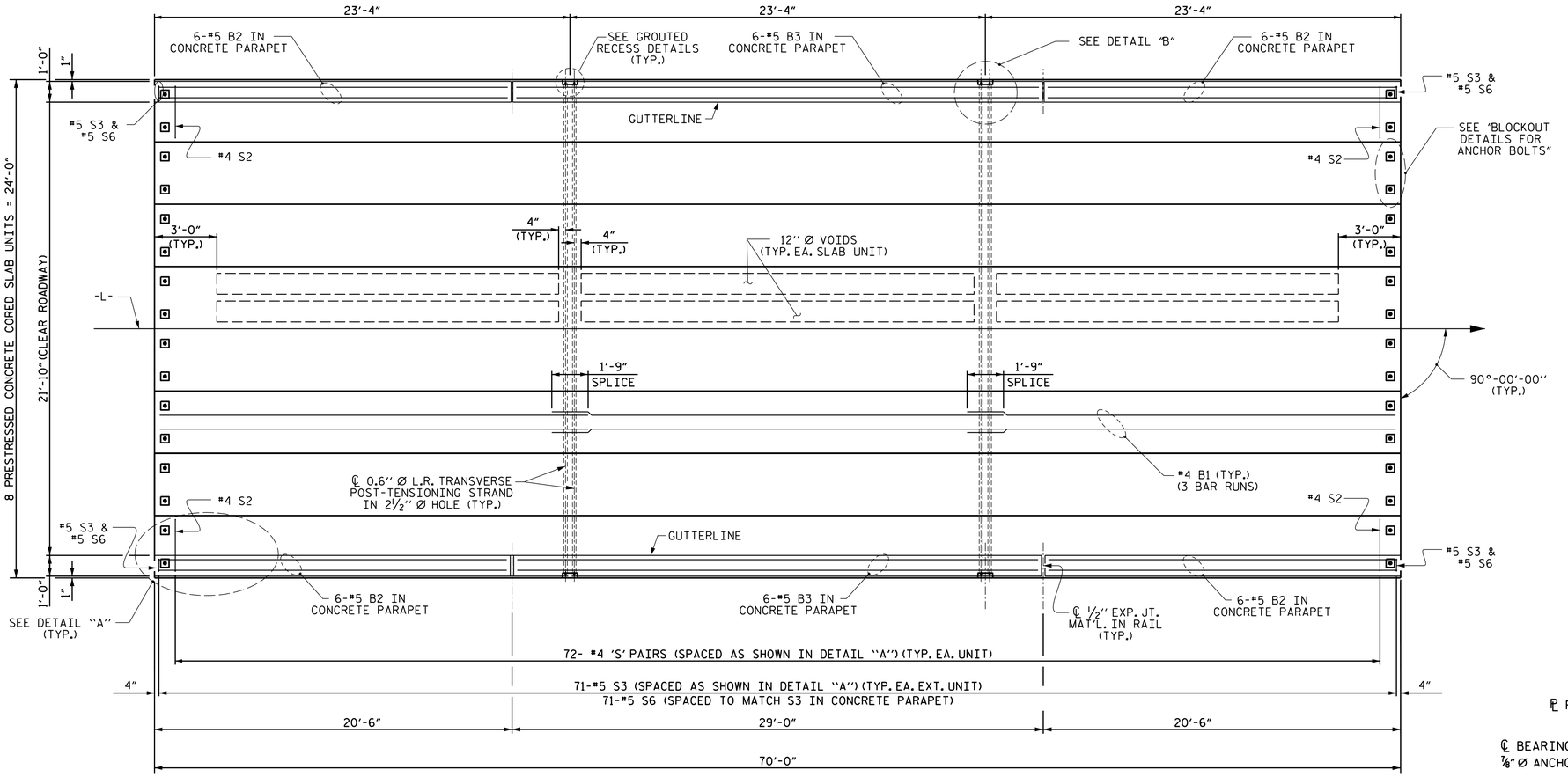
DRAWN BY :	AIDAN J. HALPERN	DATE : 09/2025
CHECKED BY :	LAURA E. SUTTON	DATE : 09/2025
DESIGN ENGINEER OF RECORD:	DIEGO A. AGUIRRE	DATE : 09/2025

REVISIONS							SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:		S-5
1			3				TOTAL SHEETS
2			4				16

10/8/2025
401_025_DF18311201403OPR_SMU_CS01_S-5_130161.dgn
daguirre

(SHT 3)
STD. NO. PCS4

DO NOT USE FOR CONSTRUCTION
PRELIMINARY PLANS



PLAN OF UNIT

NOTES:

ALL CORED SLAB UNITS SHALL BE ANCHORED WITH ⅞" Ø HOLD-DOWN ANCHOR BOLTS TO THE END BENTS AT THE ℄ BEARING, AS SHOWN ON THIS SHEET.

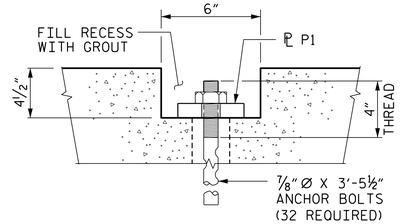
THE 2½" Ø ANCHOR BOLT HOLES AT FIXED ENDS OF CORED SLAB SECTIONS SHALL BE FILLED WITH NON-SHRINK GROUT TO THE BOTTOM OF THE ANCHOR BOLT BLOCKOUT PRIOR TO INSTALLING THE ANCHOR PLATES, WASHERS, AND NUTS. FOR GROUT FOR STRUCTURES, SEE SPECIAL PROVISIONS.

AT ALL FIXED ENDS OF CORED SLAB SECTIONS, NUTS FOR ANCHOR BOLTS SHALL BE FINGER-TIGHTENED AND THEN BACKED OFF ½ TURN. THE THREAD OF THE NUT AND BOLT SHALL BE THEN BURRED WITH A SHARP POINTED TOOL.

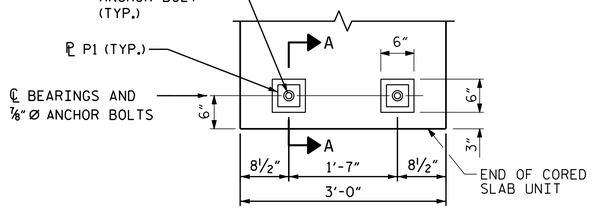
THE ANCHOR BOLT BLOCKOUTS IN CORED SLAB SECTIONS SHALL BE FILLED WITH NON-SHRINK GROUT AFTER TIGHTENING OF THE ANCHOR BOLTS AND PRIOR TO PLACEMENT OF THE WEARING SURFACE. FOR GROUT FOR STRUCTURES, SEE SPECIAL PROVISIONS.

THE VERTICAL FACES OF THE ANCHOR BOLT BLOCKOUTS SHALL BE FINISHED WITH A ROUGHENED SURFACE.

THE #5 S10, #5 S12, AND #4 S14 BARS MAY BE SHIFTED AS NECESSARY TO MAINTAIN 1" CLEAR TO ANCHOR BOLT BLOCKOUT.



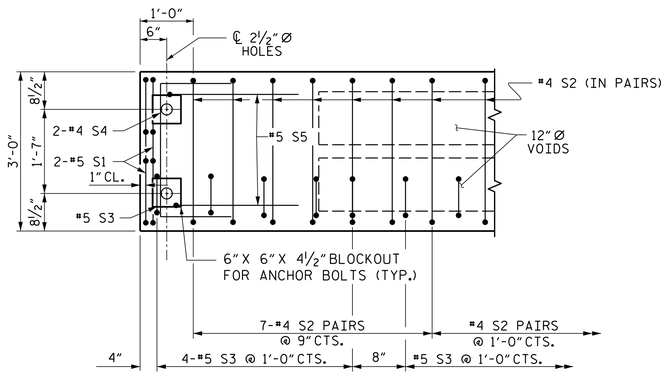
SECTION A-A



TYPICAL END - PLAN

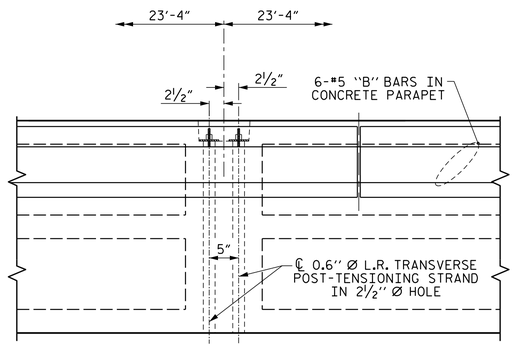
(TYPICAL EACH END & EACH CORED SLAB UNIT)

BLOCKOUT DETAILS FOR ANCHOR BOLTS

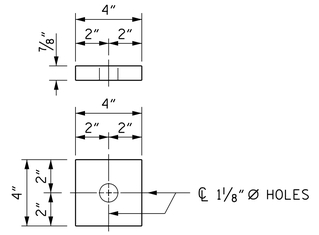


DETAIL "A"

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



DETAIL "B"



HOLD-DOWN PLATE "P1" DETAILS

(32 REQUIRED)

PROJECT NO. DF18311.2014030.PR
CALDWELL COUNTY
STATION: 11+40.00 -L-

SHEET 2 OF 3

Signed by: Diego A Aguirre ECF43B83073...
10/16/2025

NORTH CAROLINA PROFESSIONAL SEAL 048223 ENGINEER DIEGO A AGUIRRE

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

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

PLAN OF 70' UNIT
21'-10" CLEAR ROADWAY
90° SKEW

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-6
1			3			TOTAL SHEETS
2			4			16

DRAWN BY : AIDAN J. HALPERN DATE : 09/2025
CHECKED BY : LAURA E. SUTTON DATE : 09/2025
DESIGN ENGINEER OF RECORD: DIEGO A. AGUIRRE DATE : 09/2025

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10/8/2025
401_030_DF18311201403OPR_SMU_CS02_S-6_130161.dgn
daguirre

GRADE 270 STRANDS	
	0.6" Ø L.R.
AREA (SQUARE INCHES)	0.217
ULTIMATE STRENGTH (LBS. PER STRAND)	58,600
APPLIED PRESTRESS (LBS. PER STRAND)	43,950

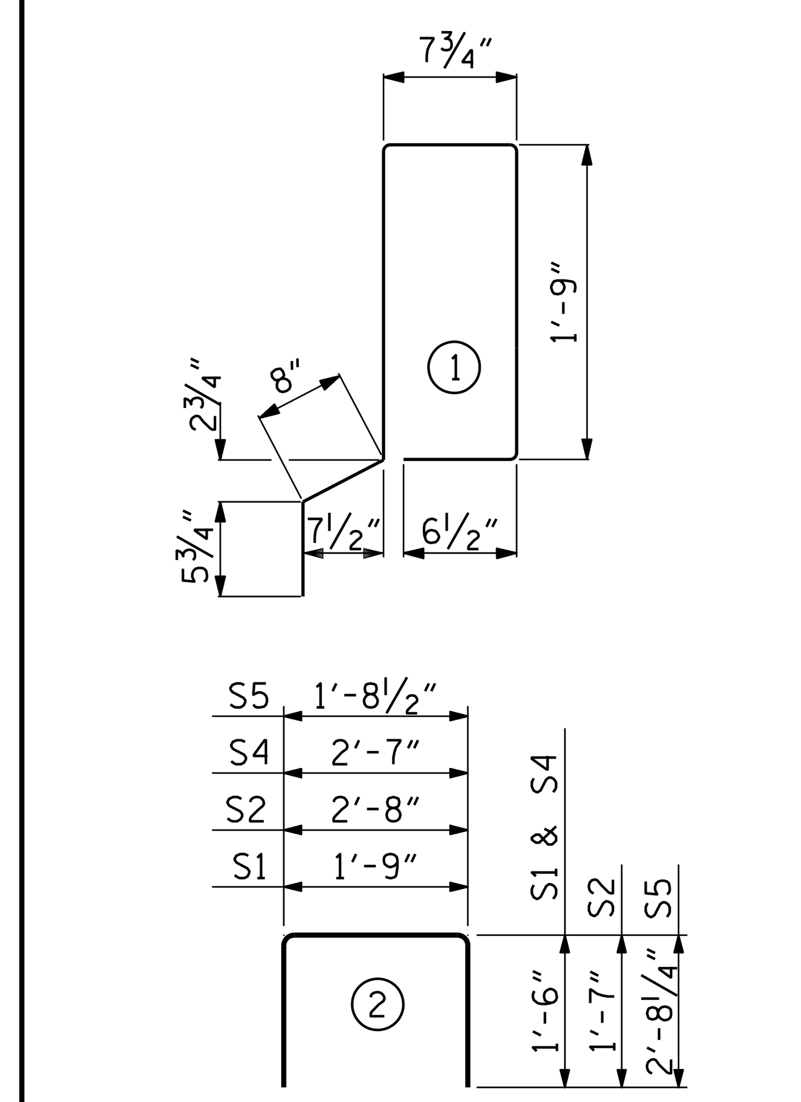
DEAD LOAD DEFLECTION AND CAMBER	
	3'-0" x 2'-0"
70' CORED SLAB UNIT	0.6" Ø L.R. STRAND
CAMBER (SLAB ALONE IN PLACE)	2¼" ↑
DEFLECTION DUE TO SUPERIMPOSED DEAD LOAD**	¾" ↓
FINAL CAMBER	1½" ↑

** INCLUDES FUTURE WEARING SURFACE

BILL OF MATERIAL FOR ONE 70' CORED SLAB UNIT

				EXTERIOR UNIT		INTERIOR UNIT	
BAR	NUMBER	SIZE	TYPE	LENGTH	WEIGHT	LENGTH	WEIGHT
B1	6	#4	STR	24'-6"	98	24'-6"	98
S1	8	#5	2	4'-9"	40	4'-9"	40
S2	144	#4	2	5'-10"	561	5'-10"	561
* S3	71	#5	1	5'-10"	432	—	—
S4	4	#4	2	5'-7"	15	5'-7"	15
S5	4	#5	2	7'-1"	30	7'-1"	30
REINFORCING STEEL			LBS.		744		744
* EPOXY COATED REINFORCING STEEL			LBS.		432		—
7000 P.S.I. CONCRETE			CU. YDS.		11.9		11.8
0.6" Ø L.R. STRANDS			No.		28		28

BAR TYPES



ALL BAR DIMENSIONS ARE OUT TO OUT

GUTTERLINE ASPHALT THICKNESS & PARAPET HEIGHT		
	ASPHALT OVERLAY THICKNESS @ MID-SPAN	PARAPET HEIGHT @ MID-SPAN
70' UNITS	2"	1'-8"

CORED SLABS REQUIRED			
	NUMBER	LENGTH	TOTAL LENGTH
70' UNIT			
EXTERIOR C.S.	2	70'-0"	140'-0"
INTERIOR C.S.	6	70'-0"	420'-0"
TOTAL	8		560'-0"

NOTES

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

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

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

THE 2½" Ø HOLES AT FIXED ENDS OF SLAB SECTIONS SHALL BE FILLED WITH NON-SHRINK GROUT.

THE 1½" Ø BACKER RODS SHALL CONFORM TO THE REQUIREMENTS OF TYPE M BOND BREAKER. SEE SECTION 1028 OF THE STANDARD SPECIFICATIONS.

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

THE TRANSFER OF LOAD FROM THE ANCHORAGES TO THE CORED SLAB UNIT SHALL BE DONE WHEN THE CONCRETE HAS REACHED A COMPRESSIVE STRENGTH OF NOT LESS THAN 5,500 PSI.

ALL REINFORCING STEEL IN CONCRETE PARAPET SHALL BE EPOXY COATED.

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

APPLY EPOXY PROTECTIVE COATING TO CORED SLAB UNIT ENDS.

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

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

THE #4 S2 STIRRUPS MAY BE SHIFTED AS NECESSARY TO MAINTAIN 1" CLEAR TO THE GROUTED RECESS.

FOR GROUT FOR STRUCTURES, SEE SPECIAL PROVISIONS.

FOR CORED SLAB AND BOX BEAM TENSIONING, SEE SPECIAL PROVISIONS.

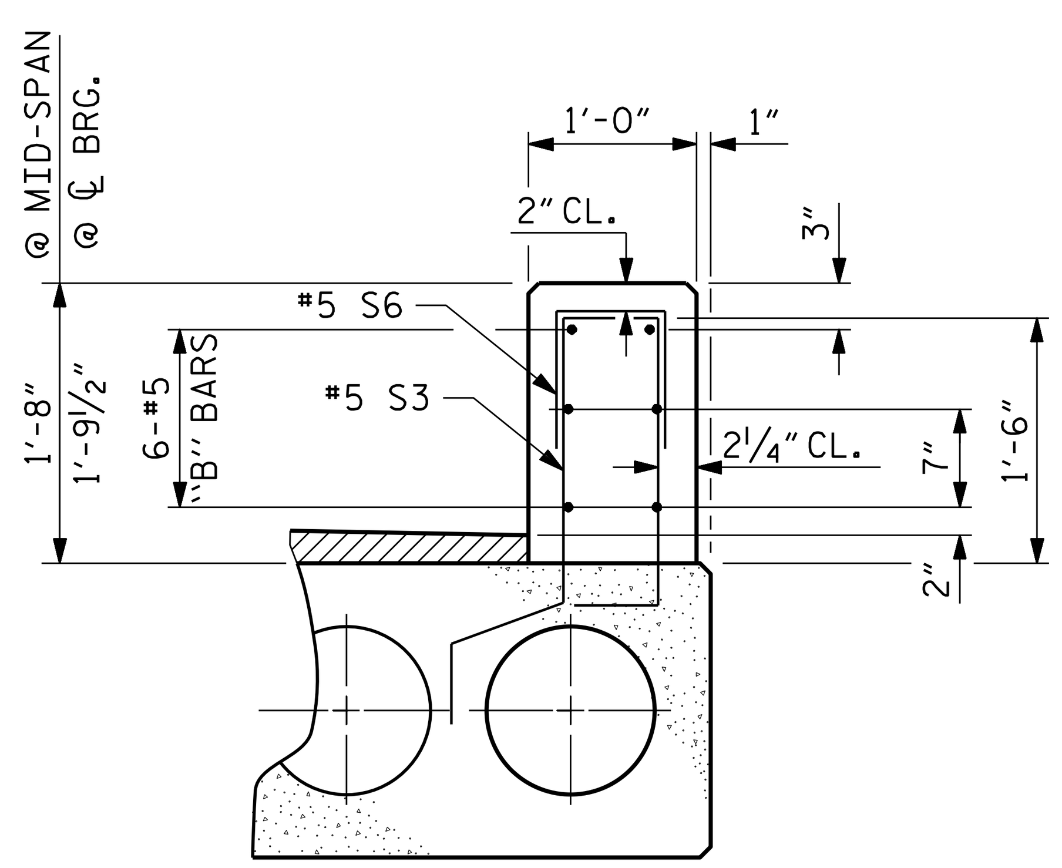
THE PERMITTED THREADED INSERTS ARE DETAILED AS AN OPTION FOR THE CONTRACTOR TO ATTACH FALSEWORK AND FORMWORK DURING CONSTRUCTION.

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

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

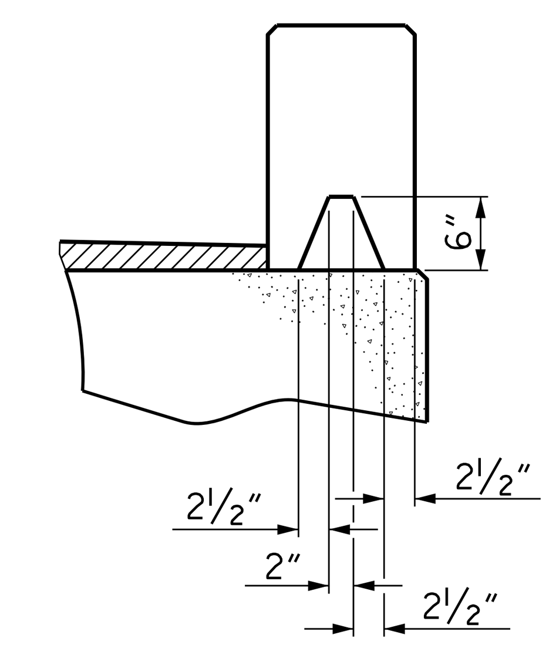
THE COST OF THE PERMITTED THREADED INSERTS SHALL BE INCLUDED IN THE PRICE BID FOR THE PRECAST UNITS.

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION



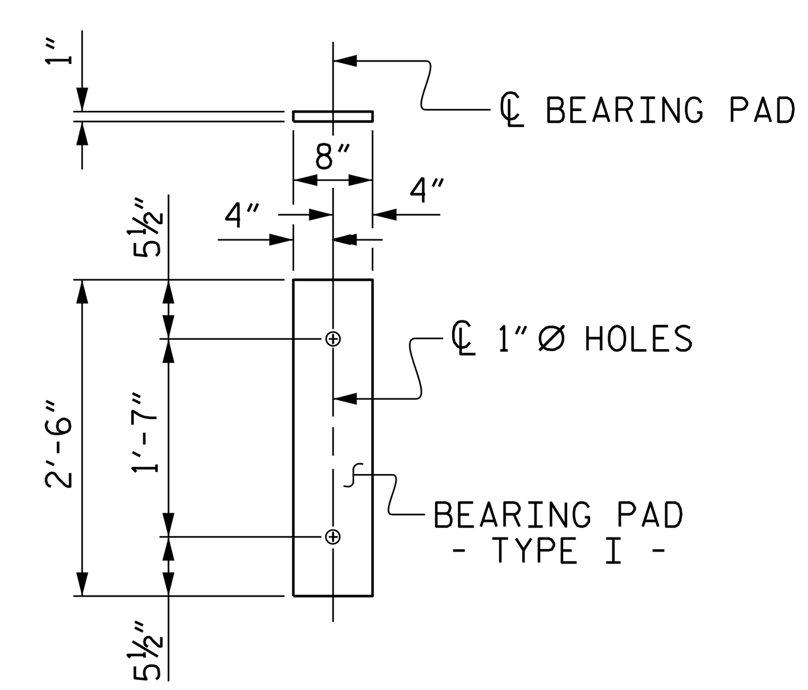
ONE BAR METAL RAIL PARAPET SECTION

(FOR ADDITIONAL DETAILS, SEE "CONCRETE PARAPET AND END POST DETAILS" AND "1 BAR METAL RAIL DETAILS" SHEETS)



SECTION S-S

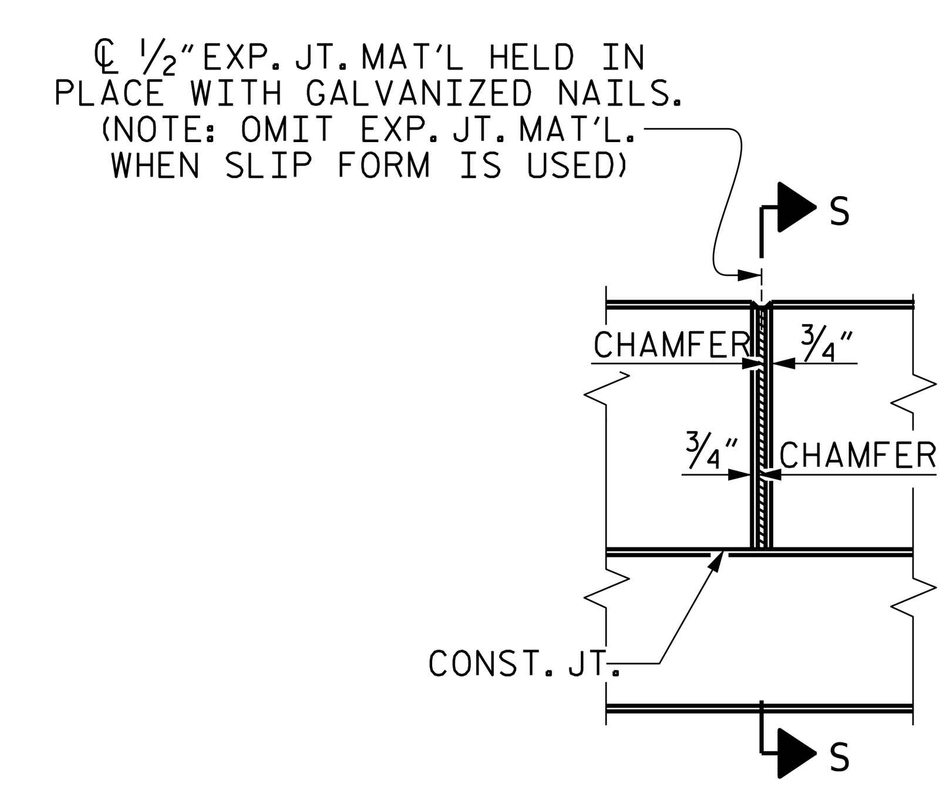
AT DAM IN OPEN JOINT
(THIS IS TO BE USED ONLY WHEN SLIP FORM IS USED)



FIXED END
(TYPE I - 16 REQ'D)

ELASTOMERIC BEARING DETAILS

ELASTOMER IN ALL BEARINGS SHALL BE 60 DUROMETER HARDNESS.



ELEVATION AT EXPANSION JOINTS

PROJECT NO. DF18311.2014030.PR
CALDWELL COUNTY
STATION: 11+40.00 -L-

SHEET 3 OF 3

Signed by: Diego A. Aguirre
10/16/2025
NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 048223 DIEGO A. AGUIRRE

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

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

STANDARD

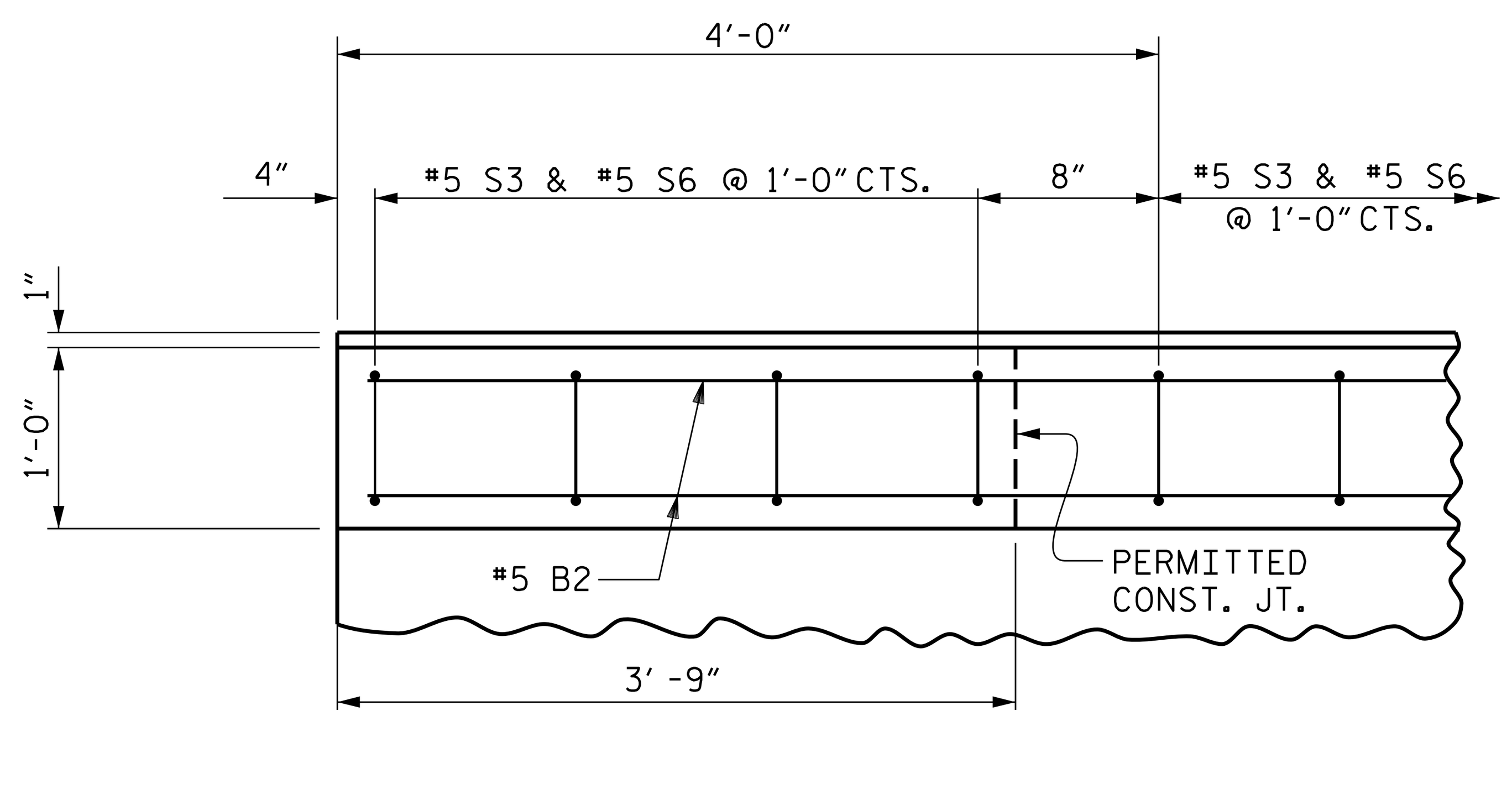
3'-0" X 2'-0"
PRESTRESSED CONCRETE
CORED SLAB UNIT

REVISIONS							SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:		S-7
1			3				TOTAL SHEETS
2			4				16

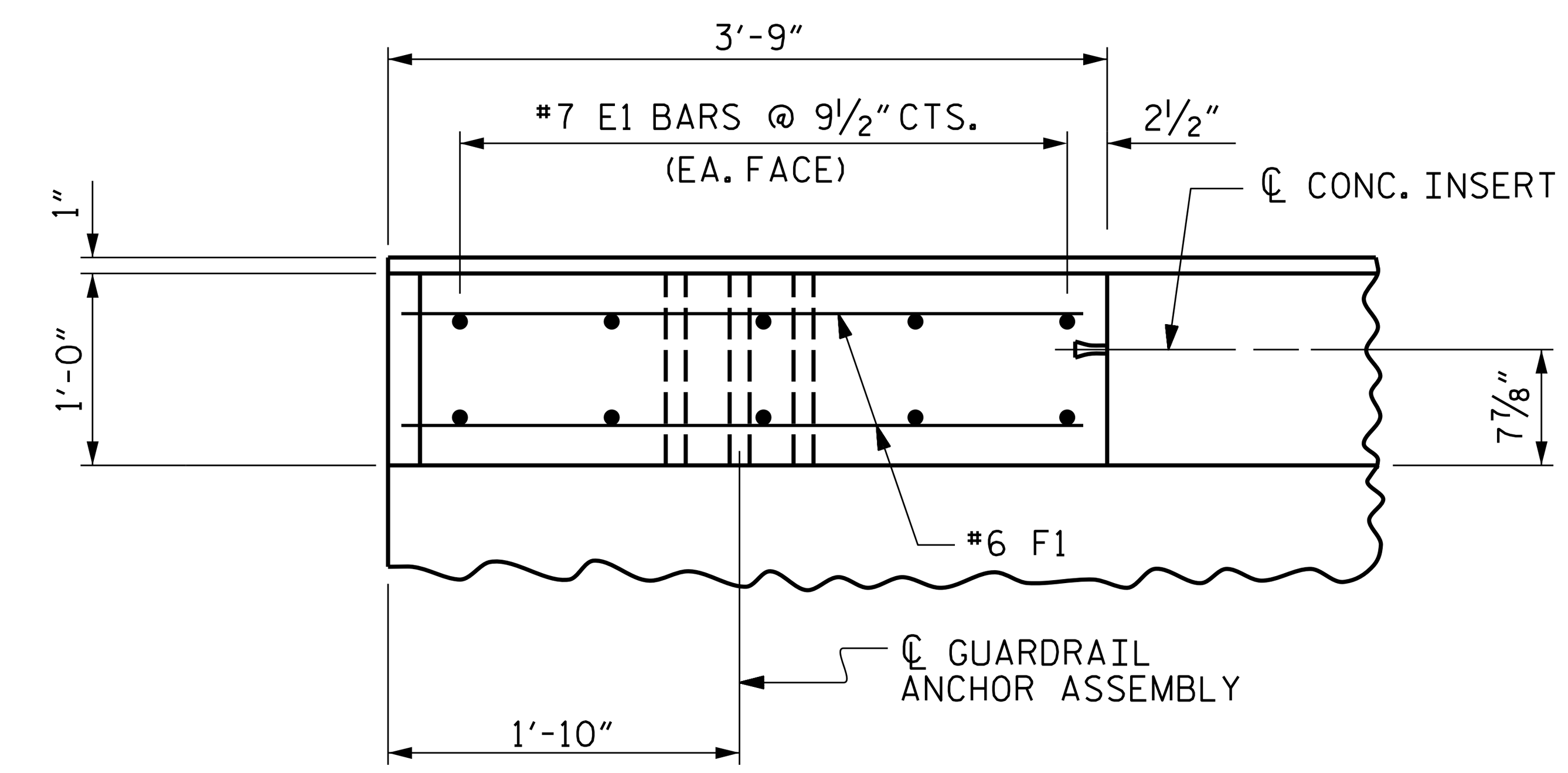
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

DRAWN BY : WJH 4/89 REV. 1/15 RWW/TMG
CHECKED BY : FCJ 5/89 REV. 12/17 MAA/THC
REV. 5/18 MAA/THC

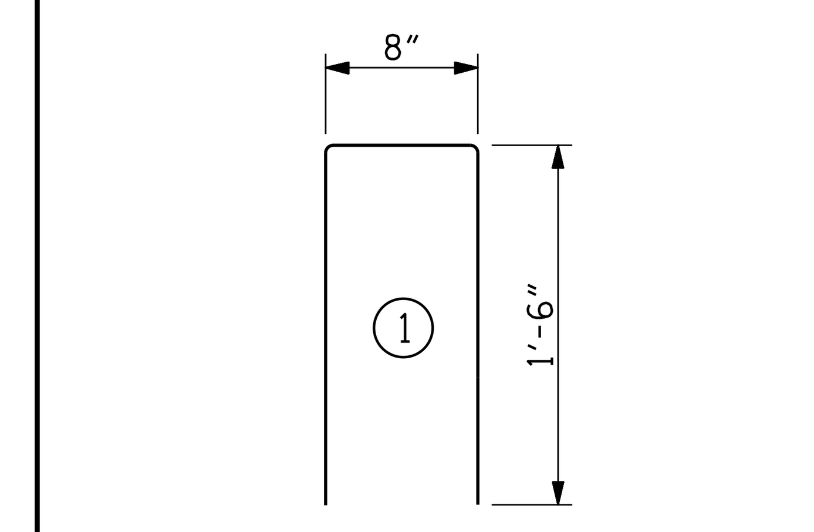
DRAWN BY : AIDAN J. HALPERN DATE : 09/2025
CHECKED BY : LAURA E. SUTTON DATE : 09/2025
DESIGN ENGINEER OF RECORD: DIEGO A. AGUIRRE DATE : 09/2025



PLAN OF PARAPET



PLAN OF END POST



BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
✱ B2	24	#5	STR	20'-1"	503
✱ B3	12	#5	STR	28'-7"	358
✱ E1	40	#7	STR	2'-9"	225
✱ F1	16	#6	STR	3'-5"	82
✱ S6	71	#5	1	3'-8"	272

BILL OF MATERIAL FOR PARAPETS (2) & END POSTS (4)

✱ EPOXY COATED REINFORCING STEEL	LBS.	1,440
CLASS AA CONCRETE	CU.YDS.	10.0
1'-0" X 1'-9½" CONCRETE PARAPET	LIN. FT.	140.00

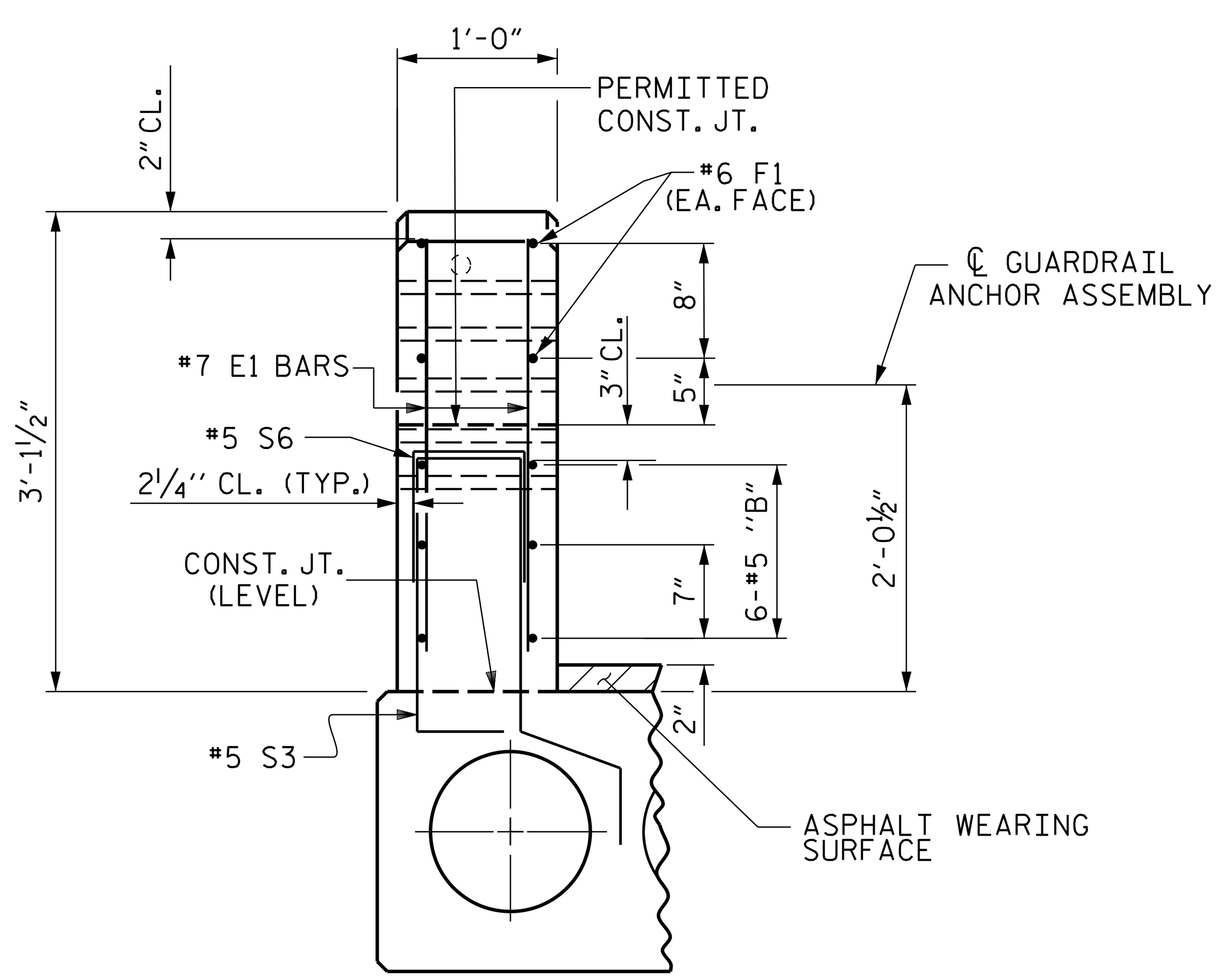
NOTES:

ALL REINFORCING STEEL IN CONCRETE PARAPET AND END POSTS SHALL BE EPOXY COATED.

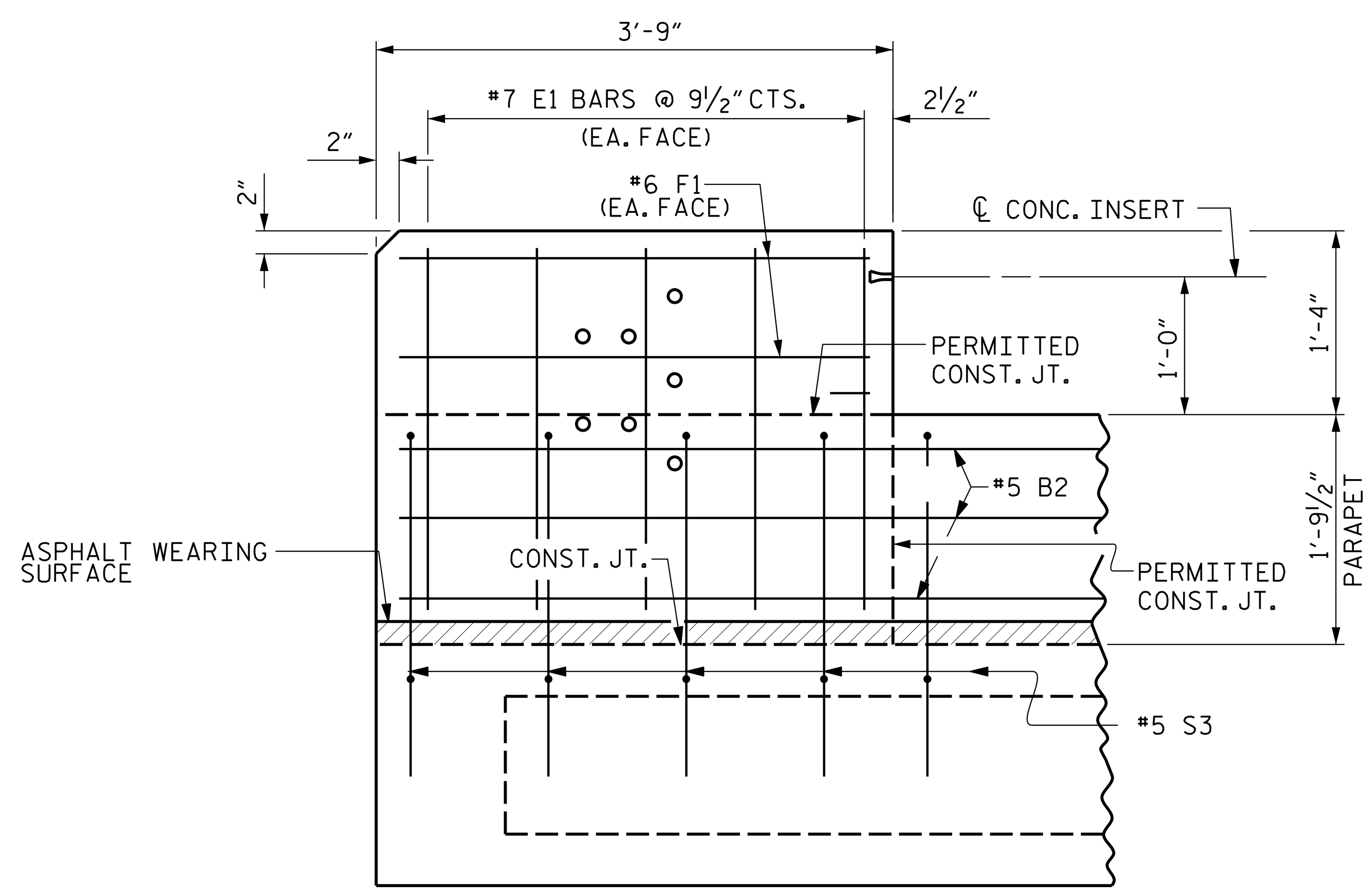
GROOVED CONTRACTION JOINTS, ½" IN DEPTH, SHALL BE TOOLED IN ALL EXPOSED FACES OF THE CONCRETE PARAPET AND IN ACCORDANCE WITH ARTICLE 825-10(B) OF THE STANDARD SPECIFICATIONS. A CONTRACTION JOINT SHALL BE LOCATED AT EACH THIRD POINT BETWEEN CONCRETE PARAPET EXPANSION JOINTS. ONLY ONE CONTRACTION JOINT IS REQUIRED AT MIDPOINT OF CONCRETE PARAPET SEGMENTS LESS THAN 20 FEET IN LENGTH AND NO CONTRACTION JOINTS ARE REQUIRED FOR THOSE SEGMENTS LESS THAN 10 FEET IN LENGTH.

FOR DETAILS OF CONCRETE INSERTS IN END POSTS, SEE "RAIL POST SPACING AND END OF RAIL DETAILS" SHEET.

FOR LOCATION OF GUARDRAIL ANCHOR ASSEMBLIES, SEE "GUARDRAIL ANCHORAGE DETAILS FOR METAL RAILS" SHEET.



END VIEW



ELEVATION

PARAPET AND END POST FOR ONE BAR METAL RAIL

PROJECT NO. DF18311.2014030.PR

CALDWELL COUNTY

STATION: 11+40.00 -L-

Signed by: Diego A. Aguirre
ECF43B830F36479...
10/16/2025
NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 048223 DIEGO A. AGUIRRE

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUPERSTRUCTURE

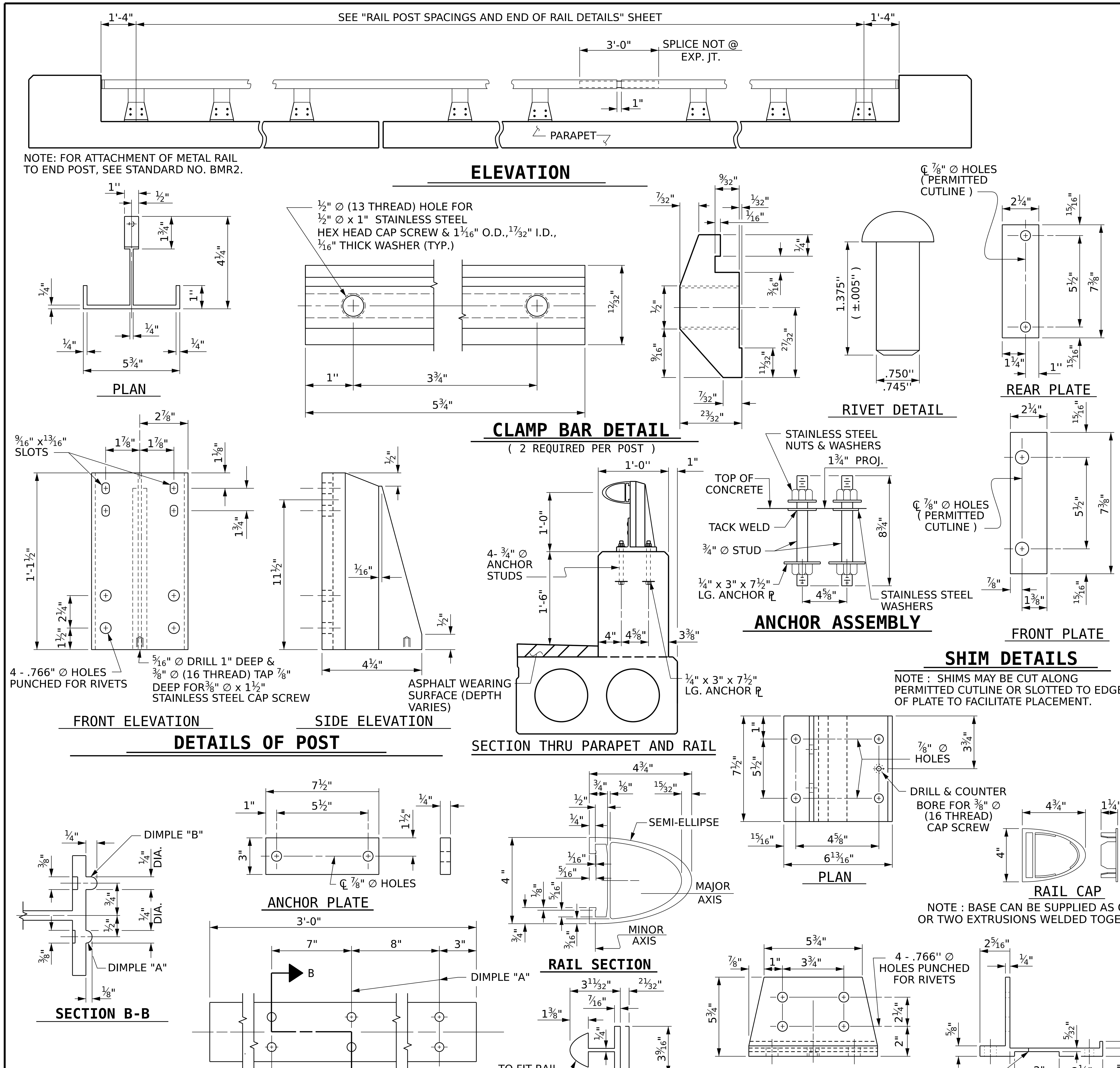
CONCRETE PARAPET AND END POST DETAILS

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

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-8
1			3			TOTAL SHEETS
2			4			16

DRAWN BY : AIDAN J. HALPERN DATE : 09/2025
CHECKED BY : LAURA E. SUTTON DATE : 09/2025
DESIGN ENGINEER OF RECORD: DIEGO A. AGUIRRE DATE : 09/2025



NOTES

AT THE CONTRACTOR'S OPTION, METAL RAIL MAY BE EITHER ALUMINUM OR GALVANIZED STEEL IN ACCORDANCE WITH THE REQUIREMENTS OF THE GENERAL NOTES AND THE FOLLOWING SPECIFICATIONS FOR THE ALTERNATE MATERIALS; HOWEVER THE CONTRACTOR WILL BE REQUIRED TO USE THE SAME RAIL MATERIAL ON ALL STRUCTURES ON THE PROJECT FOR WHICH METAL RAIL IS DESIGNATED.

ALUMINUM RAILS

MATERIAL FOR POSTS, BASES AND RAILS, EXPANSION BARS AND CLAMP BARS SHALL BE ASTM B221 ALLOY 6061-T6.

MATERIAL FOR RIVETS SHALL BE ASTM B316 ALLOY 6061-T6. RIVETS SHALL BE STANDARD BUTTON HEAD AND CONE POINT COLD DRIVEN AS PER DRAWING.

THE BASE OF RAIL POSTS, OR ANY OTHER ALUMINUM SURFACE IN CONTACT WITH CONCRETE SHALL BE THOROUGHLY COATED WITH AN ALUMINUM IMPREGNATED CAULKING COMPOUND OF APPROVED QUALITY.

MATERIAL FOR SHIMS TO BE ASTM B209 ALLOY 6061-T6.

GALVANIZED STEEL RAILS

MATERIALS AND GALVANIZING ARE TO CONFORM TO THE FOLLOWING SPECIFICATIONS:

POST, POST BASES, RAILS, EXPANSION BARS AND CLAMP BARS: ASTM A36 GRADE 36 STRUCTURAL STEEL - GALVANIZED TO ASTM A123.

RIVETS: RIVETS SHALL MEET THE REQUIREMENTS OF ASTM A502 FOR GRADE 1 RIVETS.

THE CUT ENDS OF GALVANIZED STEEL RAILING, AFTER GRINDING SMOOTH SHALL BE GIVEN TWO COATS OF ZINC RICH PAINT MEETING THE REQUIREMENTS OF FEDERAL SPECIFICATION MIL-P-26915 USAF TYPE 1, OR OF FEDERAL SPECIFICATIONS TT-P-641.

SHIMS: SHIMS SHALL MEET THE REQUIREMENTS OF ASTM A1011 FOR GRADE 36, 40, 45 OR ASTM A1008 FOR GRADE C AND SHALL BE GALVANIZED IN ACCORDANCE WITH ASTM A123.

RAIL CAPS: RAIL CAPS SHALL MEET THE REQUIREMENTS OF ASTM A1011 FOR GRADE 36, 40, 45 OR ASTM A1008 FOR GRADE C AND SHALL BE GALVANIZED IN ACCORDANCE WITH ASTM A123.

GENERAL NOTES

RAILING SHALL BE CONTINUOUS FROM END POST TO END POST OF BRIDGE. EACH JOINT IN RAIL LENGTH SHALL BE SPLICED AS DETAILED. PANEL LENGTHS OF RAIL SHALL BE ATTACHED TO A MINIMUM OF THREE POSTS.

FOR END OF RAIL TO CLEAR FACE OF CONCRETE END POST DIMENSION, SEE STANDARD NO. BMR2.

MATERIAL FOR ANCHOR STUDS SHALL BE ASTM F593 ALLOY 304 STAINLESS STEEL WITH MINIMUM 75,000 PSI ULTIMATE STRENGTH. STUDS TO BE EMBEDDED 7" IN CONCRETE. NUTS SHALL BE AMERICAN STANDARD FINISHED HEXAGON THICK, CLASS 2B THREAD, AND MEET THE REQUIREMENTS OF ASTM F594 ALLOY 304 STAINLESS STEEL. WASHERS SHALL MEET THE REQUIREMENTS OF ASTM F844 EXCEPT THEY SHALL BE MADE FROM ALLOY 304 STAINLESS STEEL. ANCHOR ℙ SHALL BE ASTM A36 GRADE 36.

CAP SCREWS SHALL BE ASTM F593 ALLOY 305 STAINLESS STEEL.

CERTIFIED MILL REPORTS ARE REQUIRED FOR RAILS AND POSTS. SHOP INSPECTION IS NOT REQUIRED.

METAL RAIL POSTS SHALL BE SET NORMAL TO CURB GRADE.

METHOD OF MEASUREMENT FOR METAL RAILS: FOR LENGTH OF METAL RAILS TO BE PAID FOR, SEE THE STANDARD SPECIFICATIONS.

CURVED RAIL USAGE: WHERE RAILS ARE TO BE USED ON BRIDGES ON HORIZONTAL AND/OR VERTICAL CURVATURE THE CONTRACTOR MAY, AT HIS OPTION, HAVE THE REQUIRED CURVATURE IN THE RAIL FORMED IN THE SHOP OR IN THE FIELD. IN EITHER EVENT, THE RAIL SHALL CONFORM WITHOUT BUCKLING OR KINKINGTO THE REQUIRED CURVATURE IN A UNIFORM MANNER ACCEPTABLE TO THE ENGINEER.

TO ENSURE FUTURE IDENTIFICATION OF THE FABRICATOR, A PERMANENT IDENTIFYING MARK SHALL BE PLACED ON EACH POST. THE METHOD OF MARKING AND LOCATION SHALL BE SUCH THAT IT DOES NOT DETRACT FROM THE APPEARANCE OF THE POST.

SHIMS SHALL BE USED AS NECESSARY FOR POST ALIGNMENT.

ALLOY 6351-T5 MAY BE SUBSTITUTED FOR ALLOY 6061-T6 WHERE APPLICABLE.

MINOR VARIATIONS IN DETAILS OF METAL RAIL WILL BE CONSIDERED. DETAILS OF SUCH VARIATIONS, IF DESIRED, SHALL BE SUBMITTED FOR APPROVAL.

THE CONTRACTOR MAY USE ADHESIVELY ANCHORED ANCHOR BOLTS IN PLACE OF THE ANCHOR ASSEMBLY. LEVEL TWO FIELD TESTING IS REQUIRED, AND THE YIELD LOAD OF THE ¾" ∅ BOLT IS 10 KIPS IN ACCORDANCE WITH THE STANDARD SPECIFICATIONS.

WHEN ADHESIVELY ANCHORED ANCHOR BOLTS ARE USED, BOLTS, NUTS AND WASHERS SHALL MEET THE SAME REQUIREMENTS AS THE ANCHOR STUDS, NUTS AND WASHERS FOR USE WITH THE ANCHOR ASSEMBLY.

GROOVED CONTRACTION JOINTS, ½" IN DEPTH, SHALL BE TOOLED IN ALL EXPOSED FACES OF THE PARAPET AND IN ACCORDANCE WITH ARTICLE 825-10(B) OF THE STANDARD SPECIFICATIONS. A CONTRACTION JOINT SHALL BE LOCATED AT EACH THIRD POINT BETWEEN PARAPET EXPANSION JOINTS. ONLY ONE CONTRACTION JOINT IS REQUIRED AT MIDPOINT OF PARAPET SEGMENTS LESS THAN 20 FEET IN LENGTH AND NO CONTRACTION JOINTS ARE REQUIRED FOR THOSE SEGMENTS LESS THAN 10 FEET IN LENGTH.

PAY LENGTH = 124.50 LIN. FT.

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

PROJECT NO. DF18311.2014030.PR
CALDWELL COUNTY
STATION: 11+40.00 -L-
SHEET 1 OF 2

Signed by: Diego A. Aguirre
10/16/2025
SEAL 048223 — NORTH CAROLINA PROFESSIONAL ENGINEER — DIEGO A. AGUIRRE

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

STANDARD

1 BAR METAL RAIL

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

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

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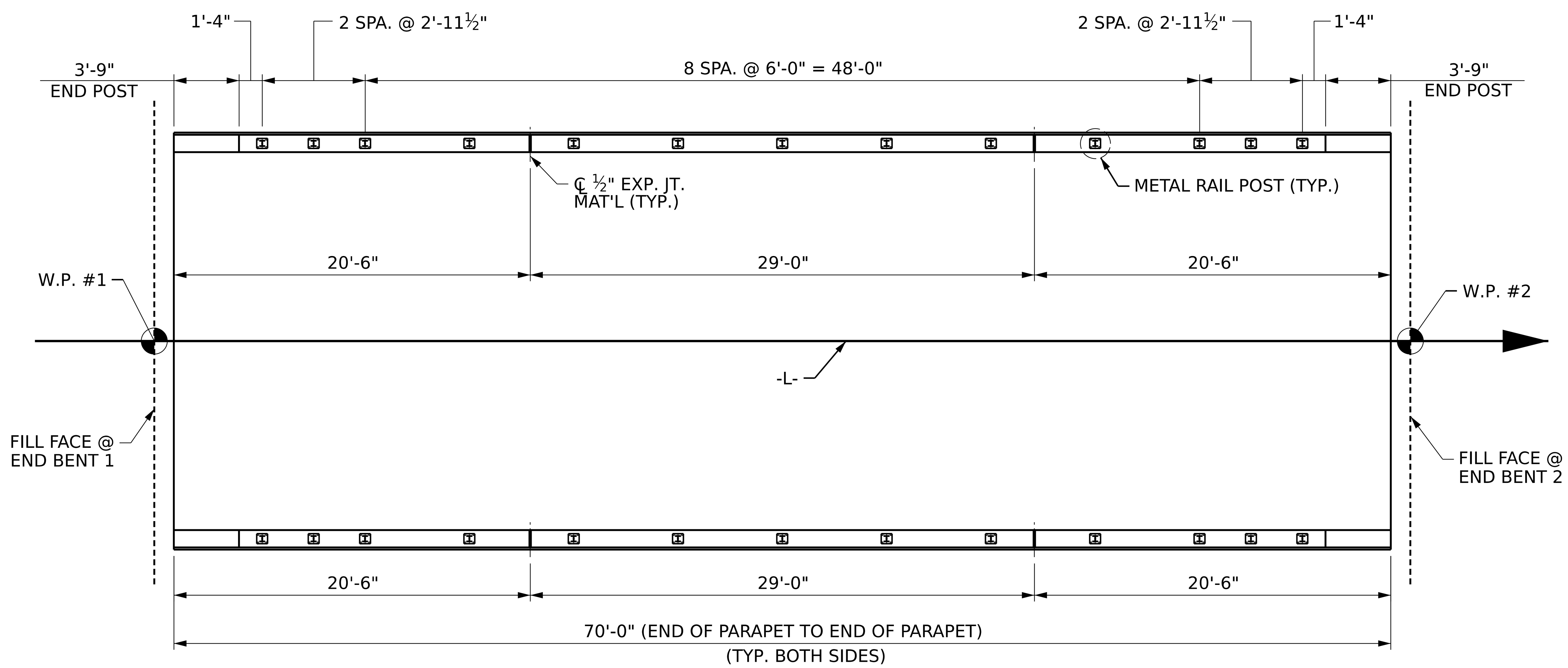
CHECKED BY : CRK 3/89	REV. 5/18 MAA/THC
	REV. 10/23 BNB/SNM

DRAWN BY : AIDAN J. HALPERN DATE : 09/2025
CHECKED BY : LAURA E. SUTTON DATE : 09/2025
DESIGN ENGINEER OF RECORD: DIEGO A. AGUIRRE DATE : 09/2025

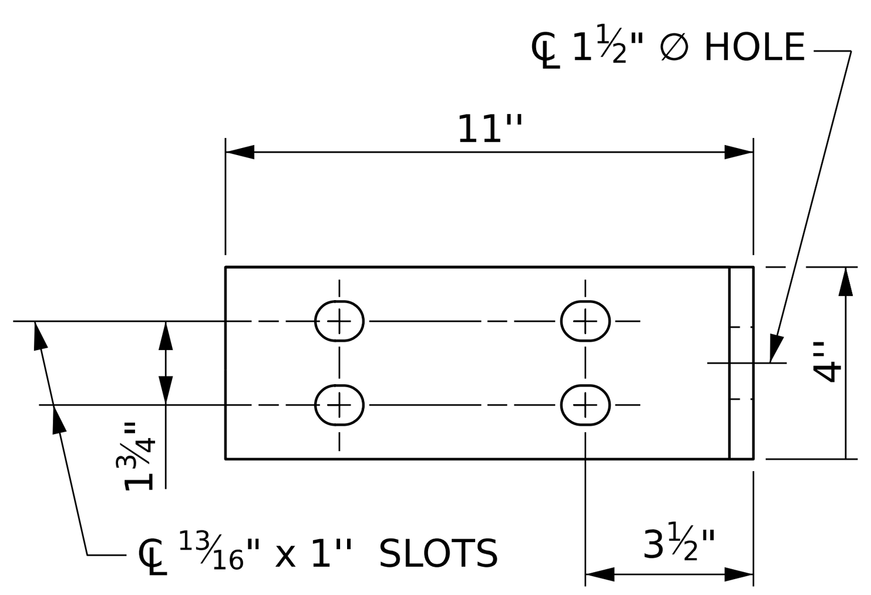
REVISIONS								SHEET NO.
NO.	BY:	DATE:		NO.	BY:	DATE:		S-9
1				3				TOTAL SHEETS
2				4				16

STD. NO. BMR1

10/8/2025
401_045_DF18311.2014030PR_SMU_BMR01_S-9_130161.dgn
daguirre



PLAN OF RAIL POST SPACINGS



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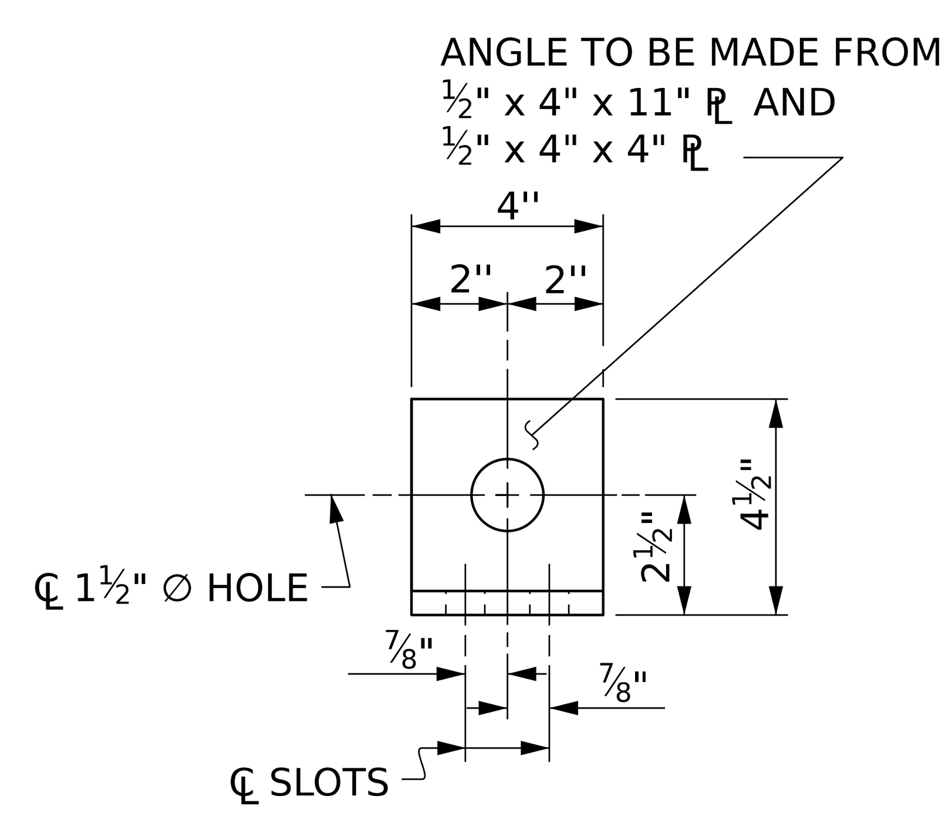
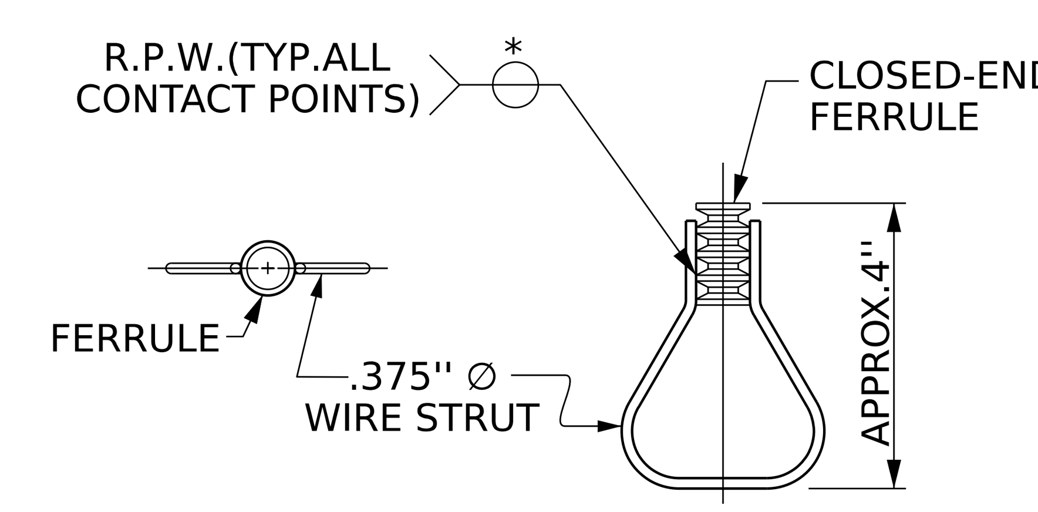
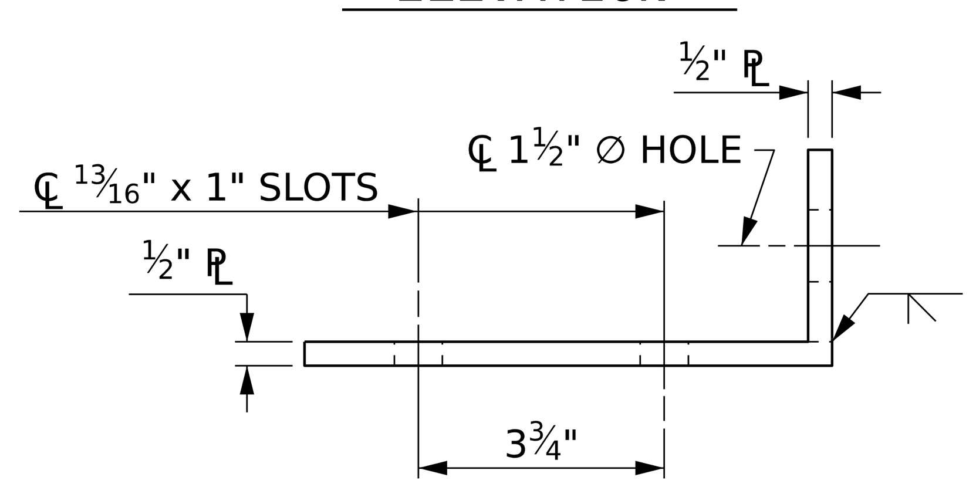


END VIEW (FIX AND EXP.)

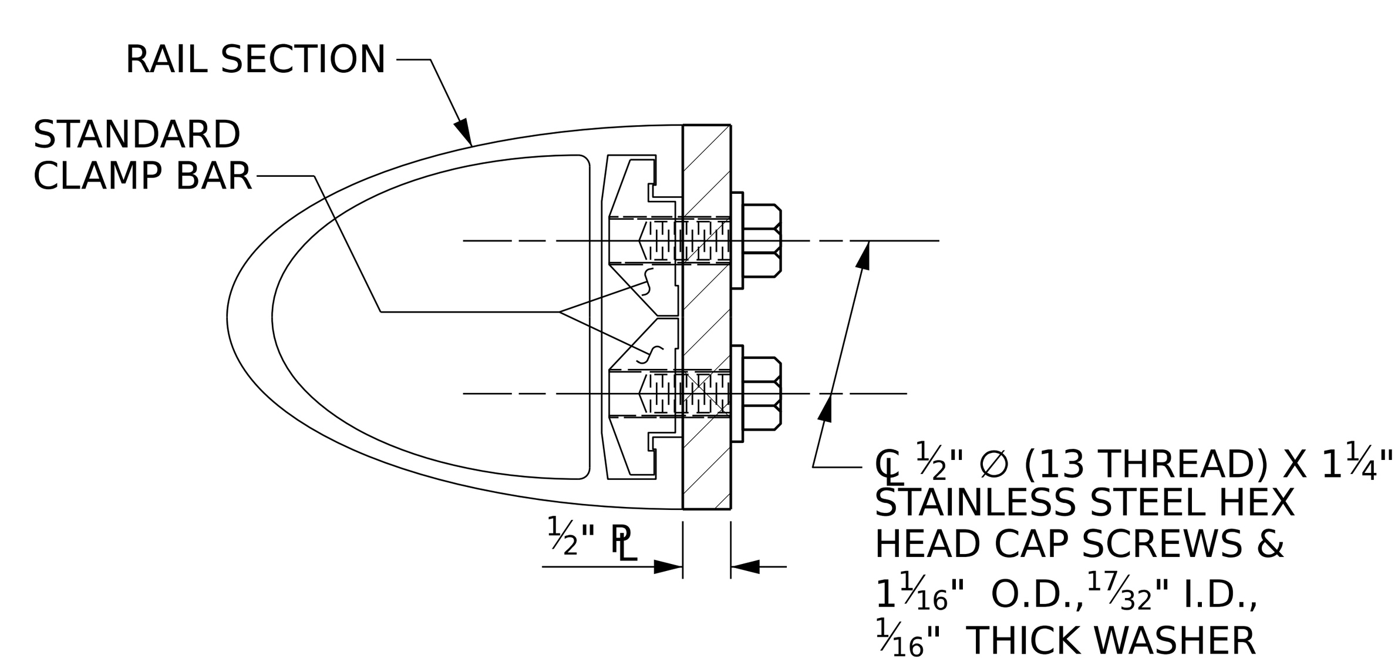


STRUCTURAL CONCRETE INSERT

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

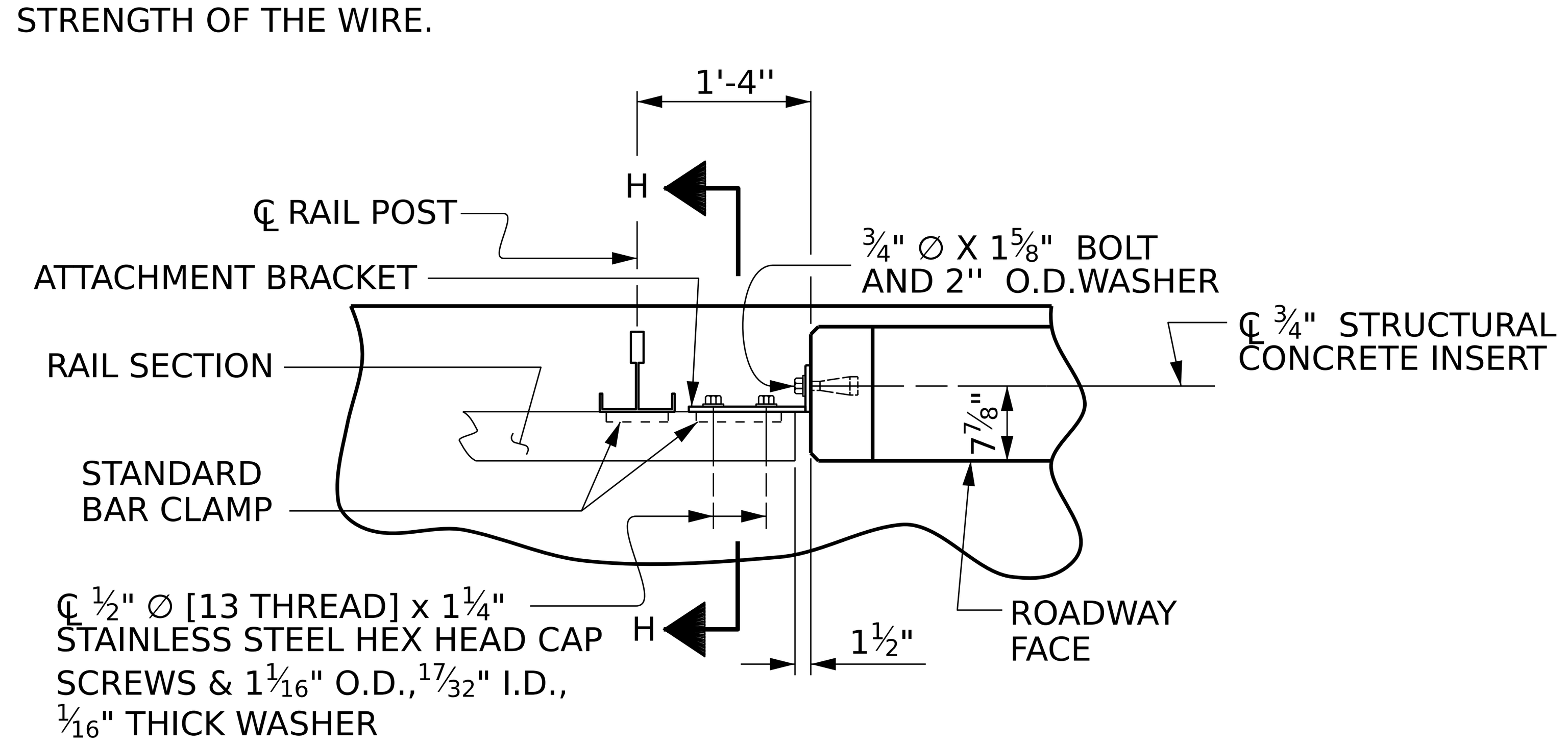


TOP VIEW



SECTION H-H (FIX)

FIXED



PLAN - RAIL AND END POST

DETAILS FOR ATTACHING METAL RAIL TO END POST

NOTES

STRUCTURAL CONCRETE INSERT

THE STRUCTURAL CONCRETE INSERT ASSEMBLY SHALL CONSIST OF THE FOLLOWING COMPONENTS:

A. FERRULES SHALL BE MADE FROM STEEL MEETING THE REQUIREMENTS OF AASHTO M169, GRADE 12L14 AND SHALL HAVE A MINIMUM LENGTH OF THREADS OF 1½".

B. 1 - ¾" ∅ x 1⅝" BOLT WITH WASHER. BOLT SHALL CONFORM TO THE REQUIREMENTS OF ASTM A307. BOLT AND WASHER SHALL BE GALVANIZED. (AT THE CONTRACTOR'S OPTION, STAINLESS STEEL BOLT AND WASHER MAY BE USED AS AN ALTERNATE FOR THE ¾" ∅ x 1⅝" GALVANIZED BOLT AND WASHER. THEY SHALL CONFORM TO OR EXCEED THE MECHANICAL REQUIREMENTS OF ASTM A307. THE USE OF THIS ALTERNATE SHALL BE APPROVED BY THE ENGINEER.)

C. WIRE STRUT SHOWN IN THE CONCRETE INSERT ASSEMBLY DETAIL IS THE MINIMUM ALLOWABLE SIZE AND SHALL HAVE A MINIMUM TENSILE STRENGTH OF 100,000 PSI. AS AN OPTION, A 7⁄16" ∅ WIRE STRUT WITH A MINIMUM TENSILE STRENGTH OF 90,000 PSI IS ACCEPTABLE.

NOTES

METAL RAIL TO END POST CONNECTION

THE METAL RAIL TO END POST CONNECTION SHALL CONSIST OF THE FOLLOWING COMPONENTS:

A. ½" PLATES SHALL CONFORM TO ASTM A36 GRADE 36 AND SHALL BE GALVANIZED AFTER FABRICATION.

B. ¾" STRUCTURAL CONCRETE INSERT SHALL HAVE A WORKING LOAD SHEAR CAPACITY OF 4800 LBS. THE FERRULES SHALL ENGAGE A ¾" ∅ x 1⅝" BOLT WITH 2" O.D. WASHER IN PLACE. THE ¾" ∅ x 1⅝" BOLT SHALL HAVE N. C. THREADS.

C. CAP SCREWS FOR RAIL ATTACHMENT TO ANGLE SHALL CONFORM TO THE REQUIREMENTS OF ASTM F593 ALLOY 305 STAINLESS STEEL. CAP SCREWS TO BE CENTERED IN SLOTS AT 60°F.

D. STANDARD CLAMP BARS (SEE METAL RAIL SHEET).

E. ½" ∅ PIPE SLEEVES (IF REQUIRED) TO BE GALVANIZED.

THE COST OF THE STANDARD CLAMP BARS AND CAP SCREWS USED IN THE METAL RAIL TO END POST CONNECTION SHALL BE INCLUDED IN THE UNIT CONTRACT PRICE BID FOR LINEAR FEET OF 1 OR 2 BAR METAL RAILS.

THE ¾" STRUCTURAL CONCRETE INSERT WITH BOLT SHALL BE ASSEMBLED IN THE SHOP.

THE COST OF THE ¾" STRUCTURAL CONCRETE INSERT ASSEMBLY, AND THE ½" PLATES COMPLETE IN PLACE SHALL BE INCLUDED IN THE VARIOUS PAY ITEMS.

THE CONTRACTOR, AT HIS OPTION, MAY USE AN ADHESIVE BONDING SYSTEM IN LIEU OF THE STRUCTURAL CONCRETE INSERT EMBEDDED IN THE END POST. IF THE ADHESIVE BONDING SYSTEM IS USED, THE ¾" ∅ x 1⅝" BOLT WITH WASHER SHALL BE REPLACED WITH A ¾" ∅ x 6½" BOLT AND 2" O.D. WASHER. ALL SPECIFICATIONS THAT APPLY TO THE ¾" ∅ x 1⅝" BOLT SHALL APPLY TO THE ¾" ∅ x 6½" BOLT. FIELD TESTING OF THE ADHESIVE BONDING SYSTEM IS NOT REQUIRED.

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

PROJECT NO. DF18311.2014030.PR
CALDWELL COUNTY
STATION: 11+40.00 -L-
SHEET 2 OF 2

Signed by: Diego A. Aguirre
10/16/2025

NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 048223 DIEGO A. AGUIRRE

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

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH
STANDARD

RAIL POST SPACINGS AND END OF RAIL DETAILS

FOR ONE OR TWO BAR METAL RAILS

DRAWN BY : FCJ 1/88	REV. 10/1/11 MAA/GM
CHECKED BY : CRK 3/89	REV. 12/17 MAA/THC
	REV. 10/23 BNB/SNM

DRAWN BY :	AIDAN J. HALPERN	DATE :	09/2025
CHECKED BY :	LAURA E. SUTTON	DATE :	09/2025
DESIGN ENGINEER OF RECORD:	DIEGO A. AGUIRRE	DATE :	09/2025

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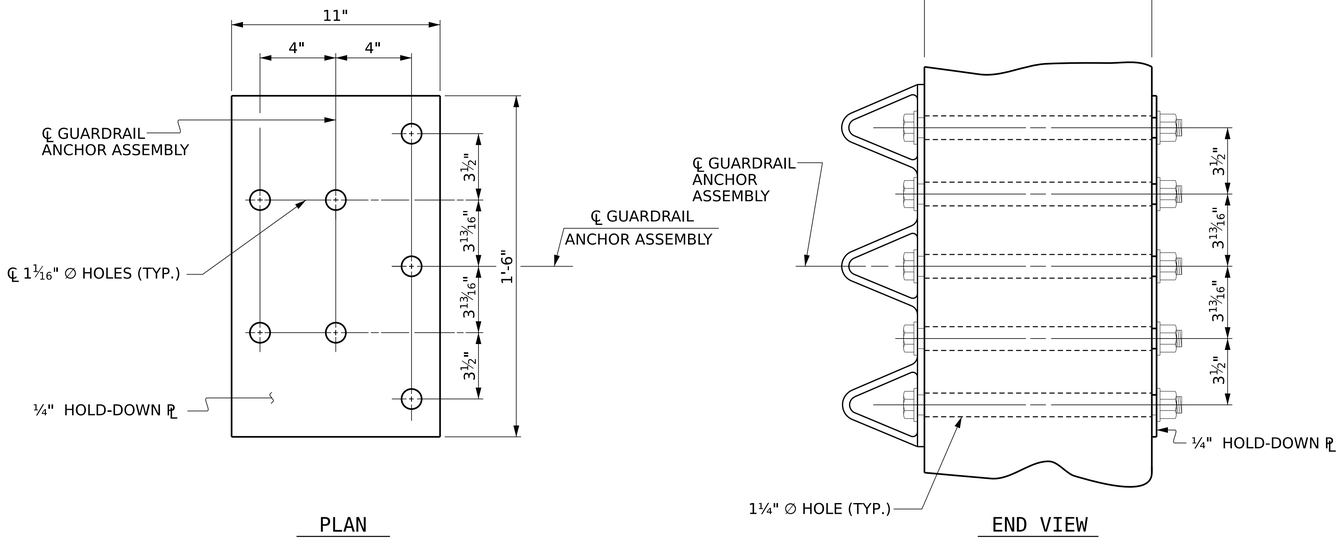
NO.	BY:	DATE:	NO.	BY:	DATE:	S-10
1			3			TOTAL SHEETS
2			4			16

STD. NO. BMR2



PLAN

END VIEW

GUARDRAIL ANCHOR ASSEMBLY DETAILS

NOTES

THE GUARDRAIL ANCHOR ASSEMBLY SHALL CONSIST OF A ¼'' HOLD DOWN PLATE AND 7 - ⅞'' ∅ BOLTS WITH NUTS AND WASHERS.

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

BOLTS SHALL CONFORM TO THE REQUIREMENTS OF ASTM A307 AND NUTS SHALL CONFORM TO THE REQUIREMENTS OF AASHTO M291. BOLTS, NUTS AND WASHERS SHALL BE GALVANIZED. AT THE CONTRACTOR'S OPTION, STAINLESS STEEL BOLTS, NUTS AND WASHERS MAY BE USED AS AN ALTERNATE FOR THE ⅞'' ∅ 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.

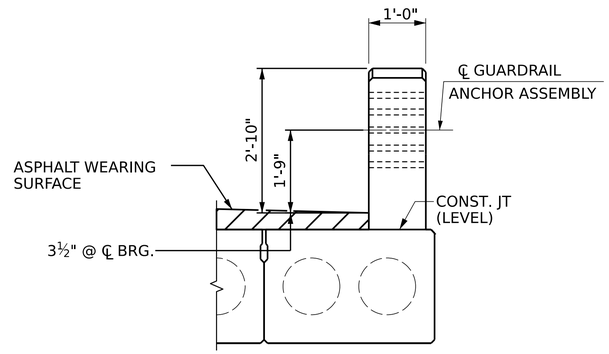
THE GUARDRAIL ANCHOR ASSEMBLY IS REQUIRED AT ALL POINTS WHERE APPROACH GUARDRAIL IS TO BE ATTACHED TO THE END OF THE PARAPET. FOR POINTS OF ATTACHMENT, SEE SKETCH.

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

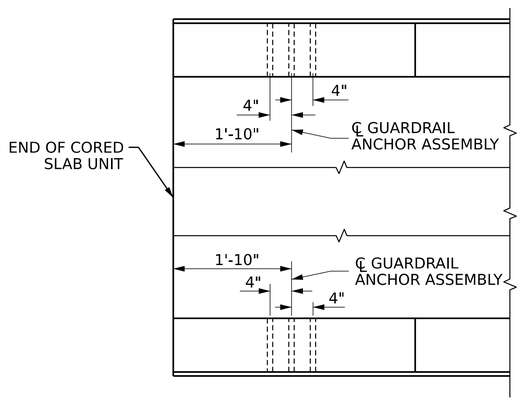
THE COST OF THE GUARDRAIL ANCHOR ASSEMBLIES WITH BOLTS, NUTS AND WASHERS COMPLETE IN PLACE, SHALL BE INCLUDED IN THE VARIOUS PAY ITEMS.

THE VERTICAL REINFORCING BARS MAY BE SHIFTED SLIGHTLY IN THE END POST TO CLEAR ASSEMBLY BOLTS.

THE 1 ¼'' ∅ 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.

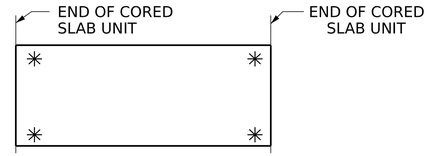


END VIEW
(ONE BAR METAL RAIL)



PLAN

LOCATION OF GUARDRAIL ANCHOR AT END POST



SKETCH SHOWING POINTS OF ATTACHMENT

* LOCATION OF GUARDRAIL ATTACHMENT

PROJECT NO. DF18311.2014030.PR

CALDWELL COUNTY

STATION: 11+40.00 -L-

Signed by: Diego A Aguirre
ECF43B8307354EB...
10/16/2025

NORTH CAROLINA PROFESSIONAL SEAL 048223 ENGINEER DIEGO A AGUIRRE

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

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH
STANDARD

GUARDRAIL ANCHORAGE DETAILS FOR METAL RAILS

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

DRAWN BY : AIDAN J. HALPERN DATE : 09/2025
CHECKED BY : LAURA E. SUTTON DATE : 09/2025
DESIGN ENGINEER OF RECORD: DIEGO A. AGUIRRE DATE : 09/2025

10/8/2025
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daguirre

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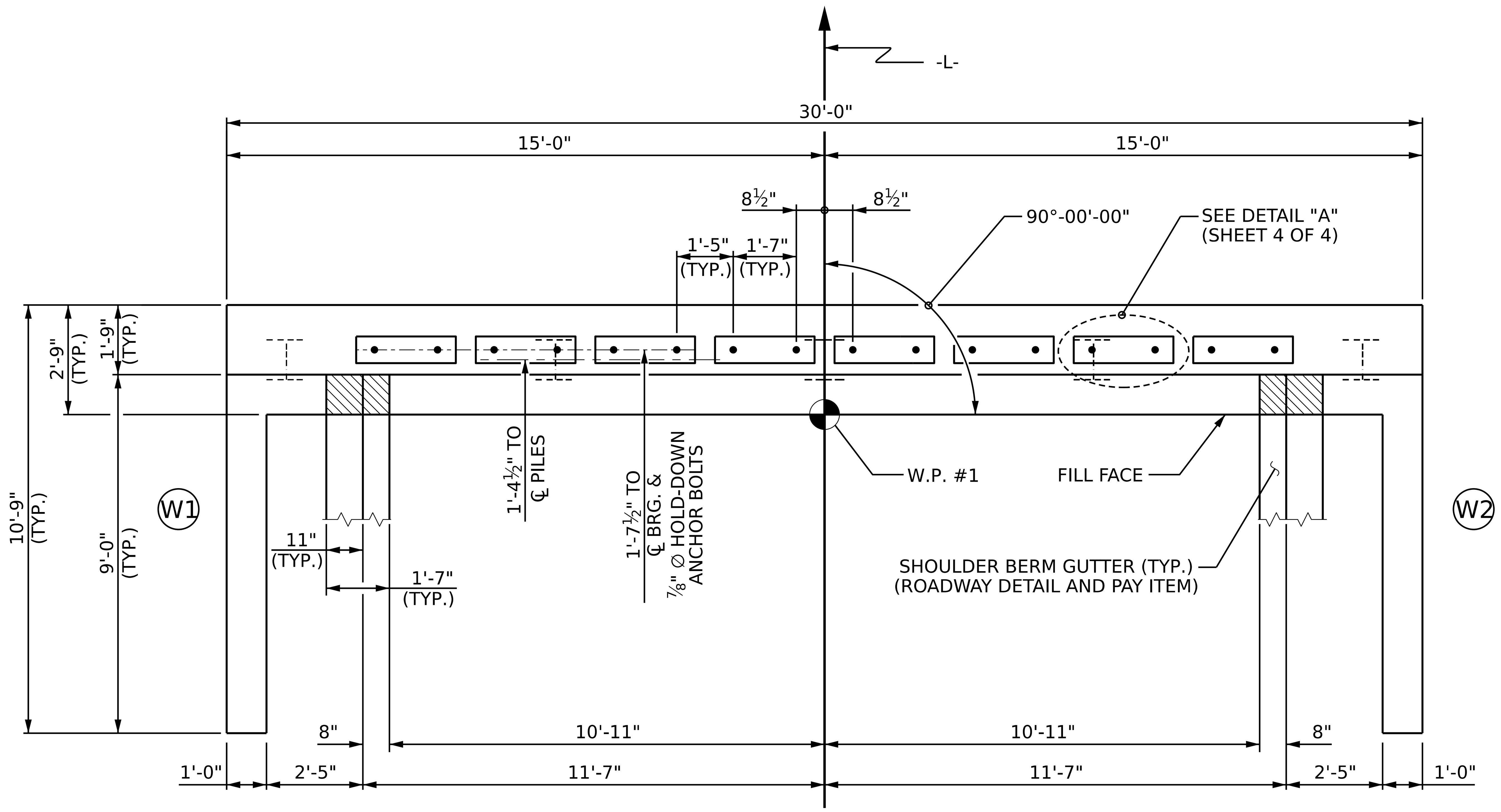
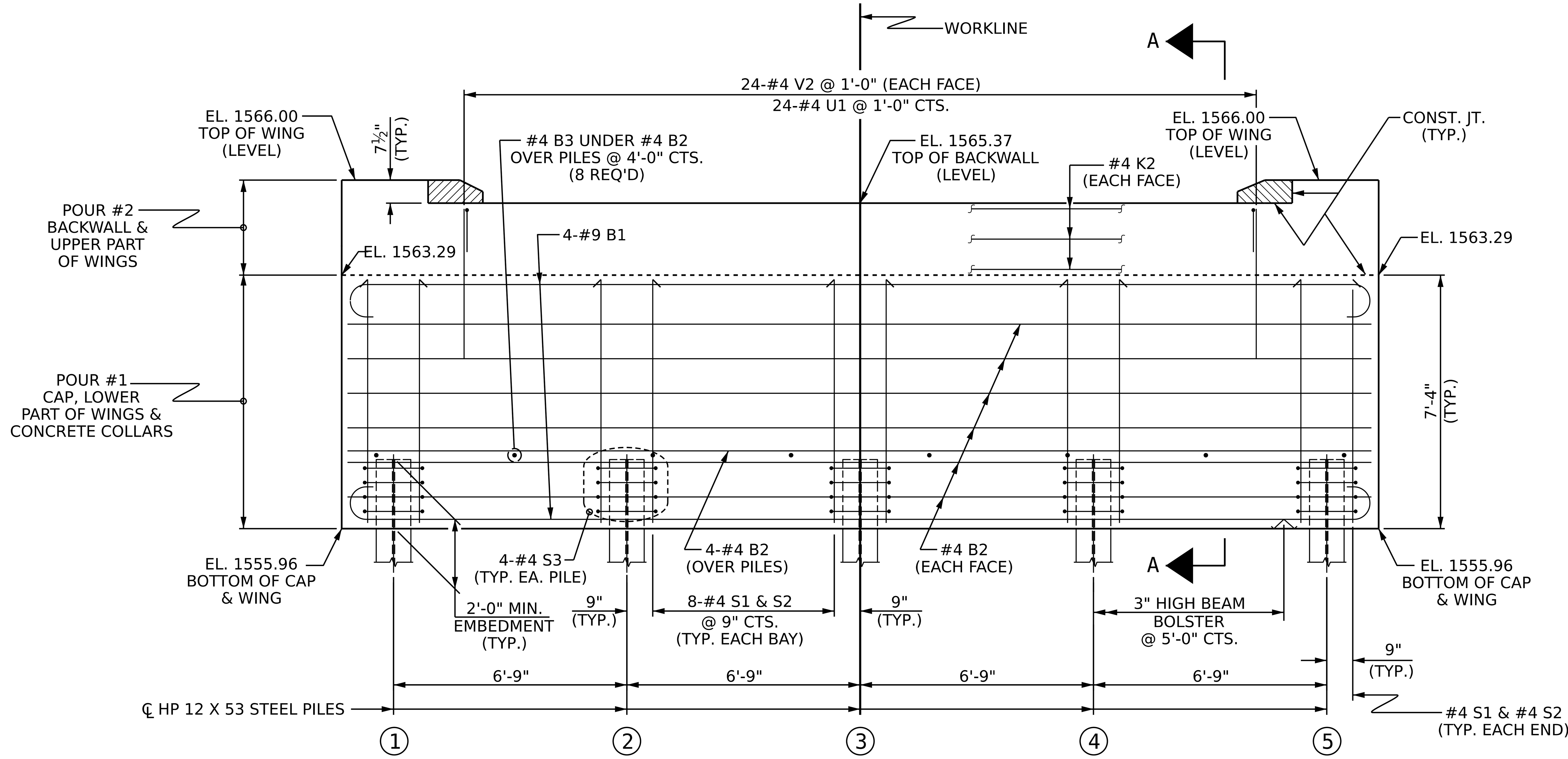
1			3			TOTAL SHEETS
2			4			16

STD. GRA3 (SHT 2)



PLAN



ELEVATION

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

NOTES

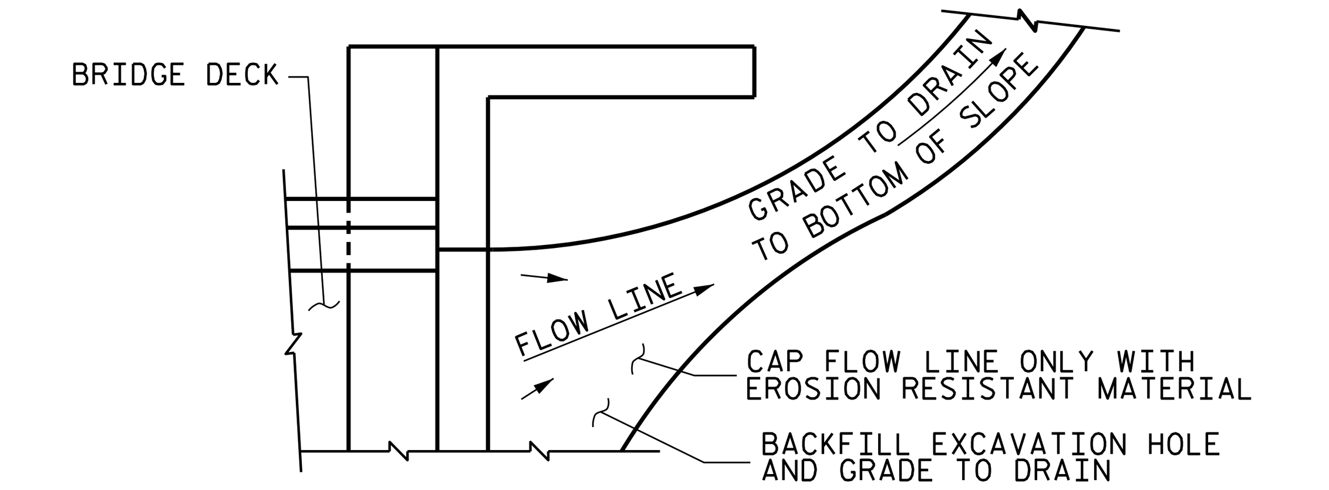
STIRRUPS IN CAP MAY BE SHIFTED AS NECESSARY TO CLEAR ANCHOR BOLTS.

THE CONCRETE IN THE SHADED AREA OF THE WING SHALL BE POURED AFTER THE CONCRETE PARAPETS, END POSTS, AND SHOULDER BERM GUTTER ARE CAST IF SLIP FORMING IS USED.

FOR PILE SPLICE DETAILS, SEE SHEET 4 OF 4.

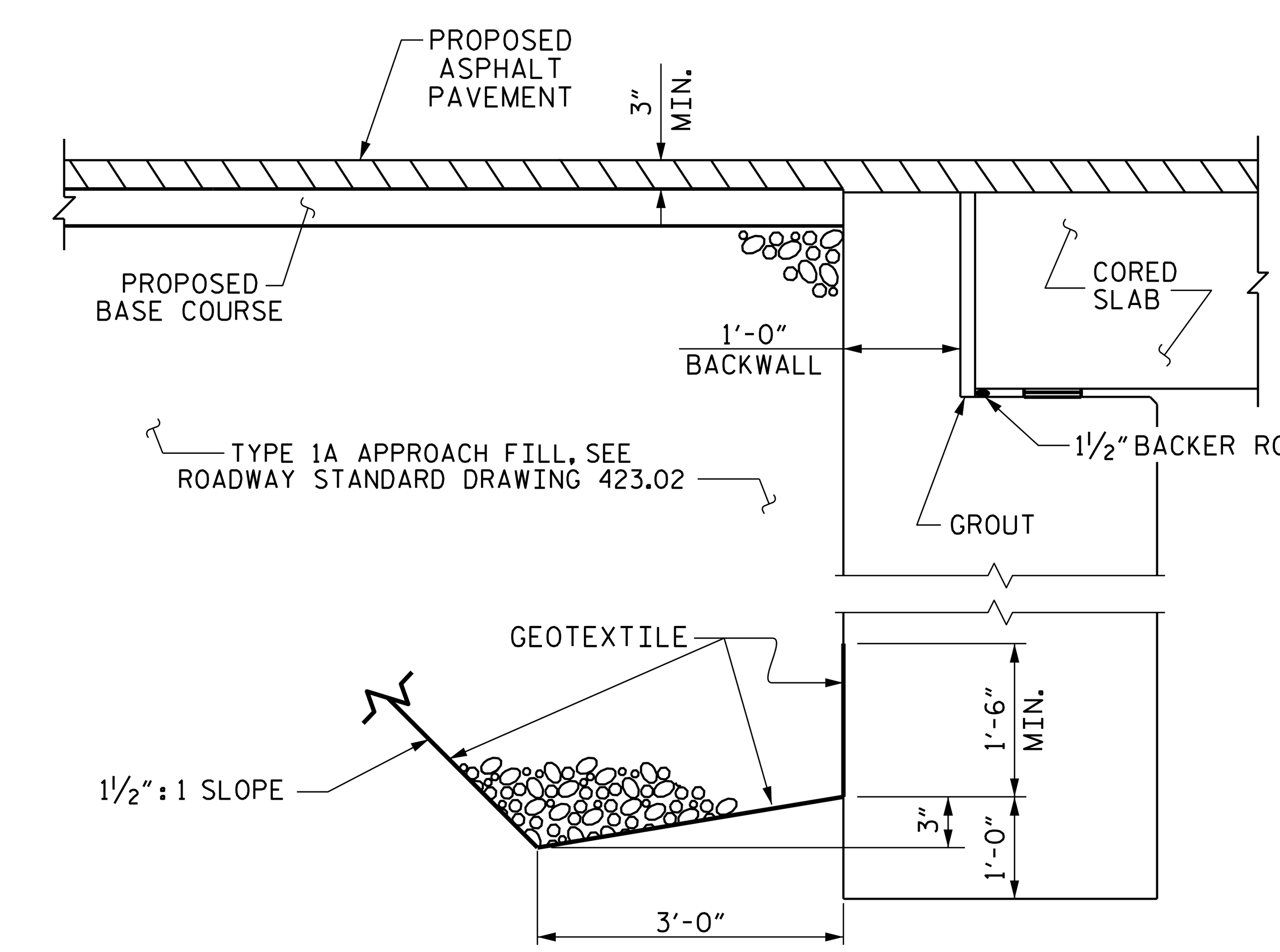
FOR WING DETAILS, SEE SHEET 3 OF 4.

FOR BRIDGE APPROACH FILL, SEE ROADWAY PLANS.



NOTE: IF THE APPROACH ROADWAY 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 ROADWAY.

TEMPORARY DRAINAGE DETAIL



SECTION THRU APPROACH FILL

PROJECT NO. DF18311.2014030.PR
CALDWELL COUNTY
STATION: 11+40.00 -L-
SHEET 1 OF 4

Signed by: Diego A. Aguirre
10/16/2025
NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 048223 DIEGO A. AGUIRRE

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

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH
SUBSTRUCTURE
END BENT 1

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1			3			TOTAL SHEETS	16
2			4				

DRAWN BY : AIDAN J. HALPERN DATE : 09/2025
CHECKED BY : LAURA E. SUTTON DATE : 09/2025
DESIGN ENGINEER OF RECORD: DIEGO A. AGUIRRE DATE : 09/2025

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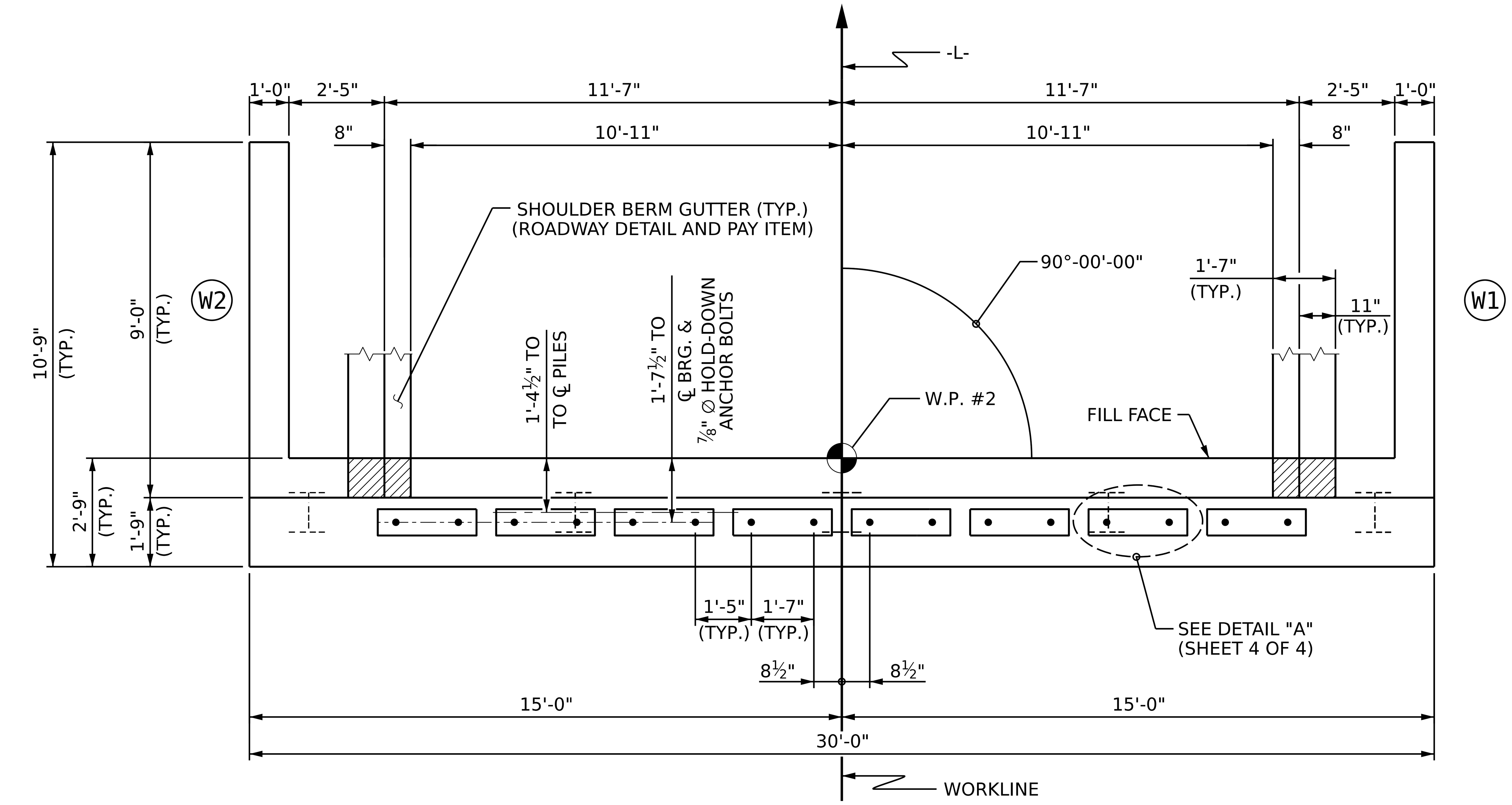

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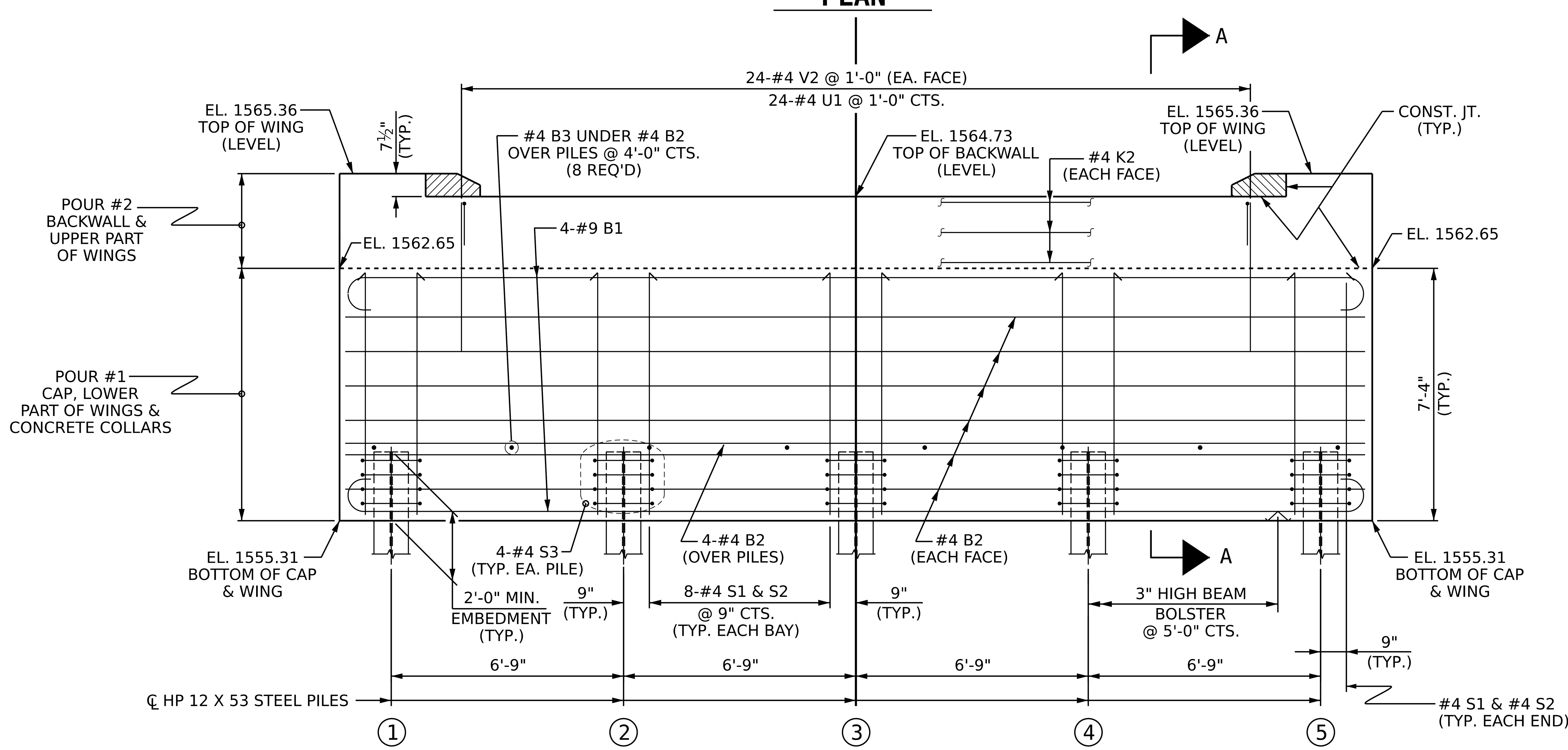

ELEVATION

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

NOTES

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

THE CONCRETE IN THE SHADED AREA OF THE WING SHALL BE POURED AFTER THE CONCRETE PARAPETS, END POSTS, AND SHOULDER BERM AND GUTTER (SBG) ARE CAST IF SLIP FORMING IS USED.

FOR PILE SPLICE DETAILS, SEE SHEET 4 OF 4.

FOR WING DETAILS, SEE SHEET 3 OF 4.

FOR BRIDGE APPROACH FILL DETAILS, SEE SHEET 1 OF 4.

PROJECT NO. DF18311.2014030.PR
CALDWELL COUNTY
STATION: 11+40.00 -L-
SHEET 2 OF 4

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH
SUBSTRUCTURE
END BENT 2

Signed by: Diego A. Aguirre
10/16/2025
NORTH CAROLINA PROFESSIONAL SEAL 048223 ENGINEER DIEGO A. AGUIRRE

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

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DRAWN BY :	AIDAN J. HALPERN	DATE :	09/2025
CHECKED BY :	LAURA E. SUTTON	DATE :	09/2025
DESIGN ENGINEER OF RECORD:	DIEGO A. AGUIRRE	DATE :	09/2025

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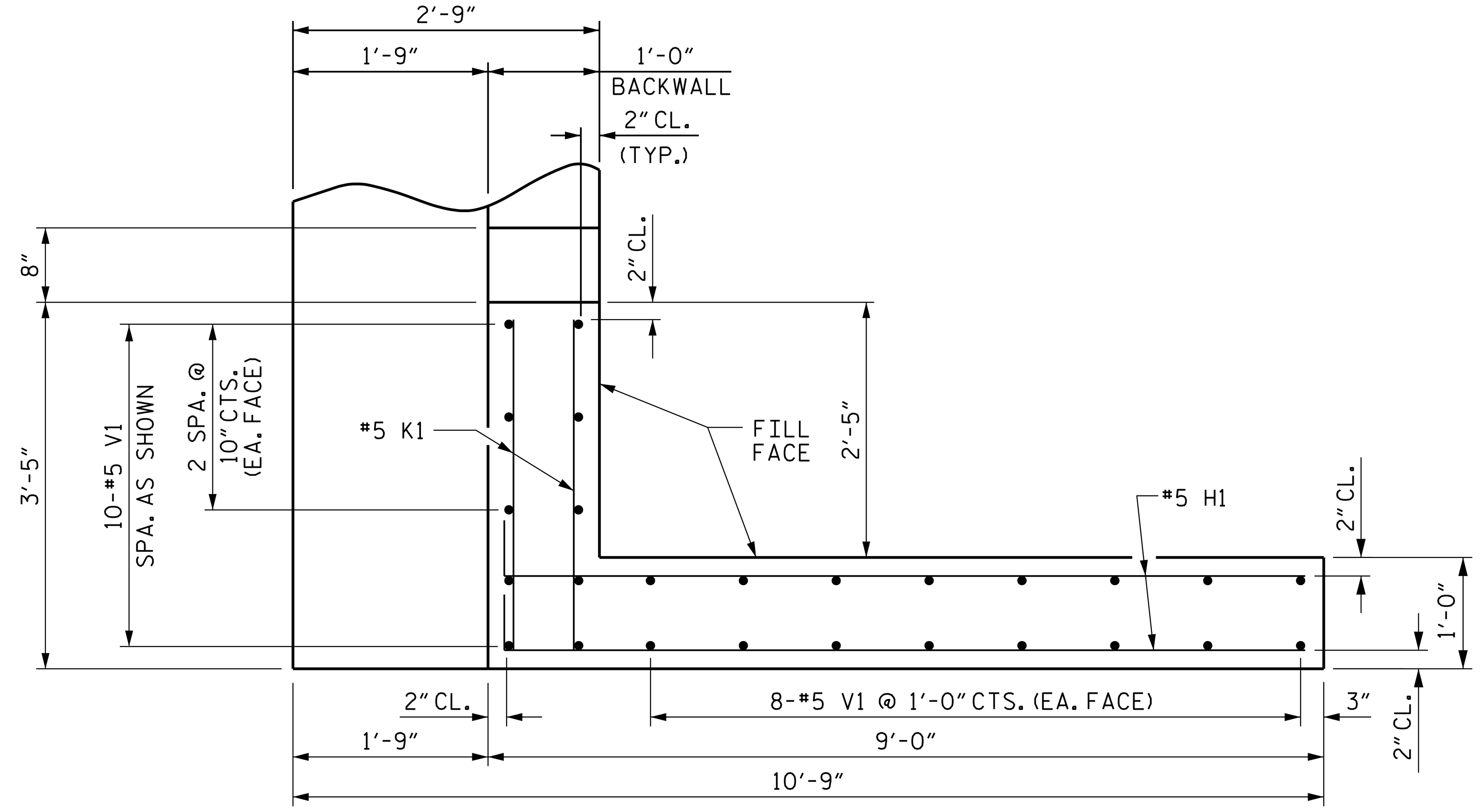
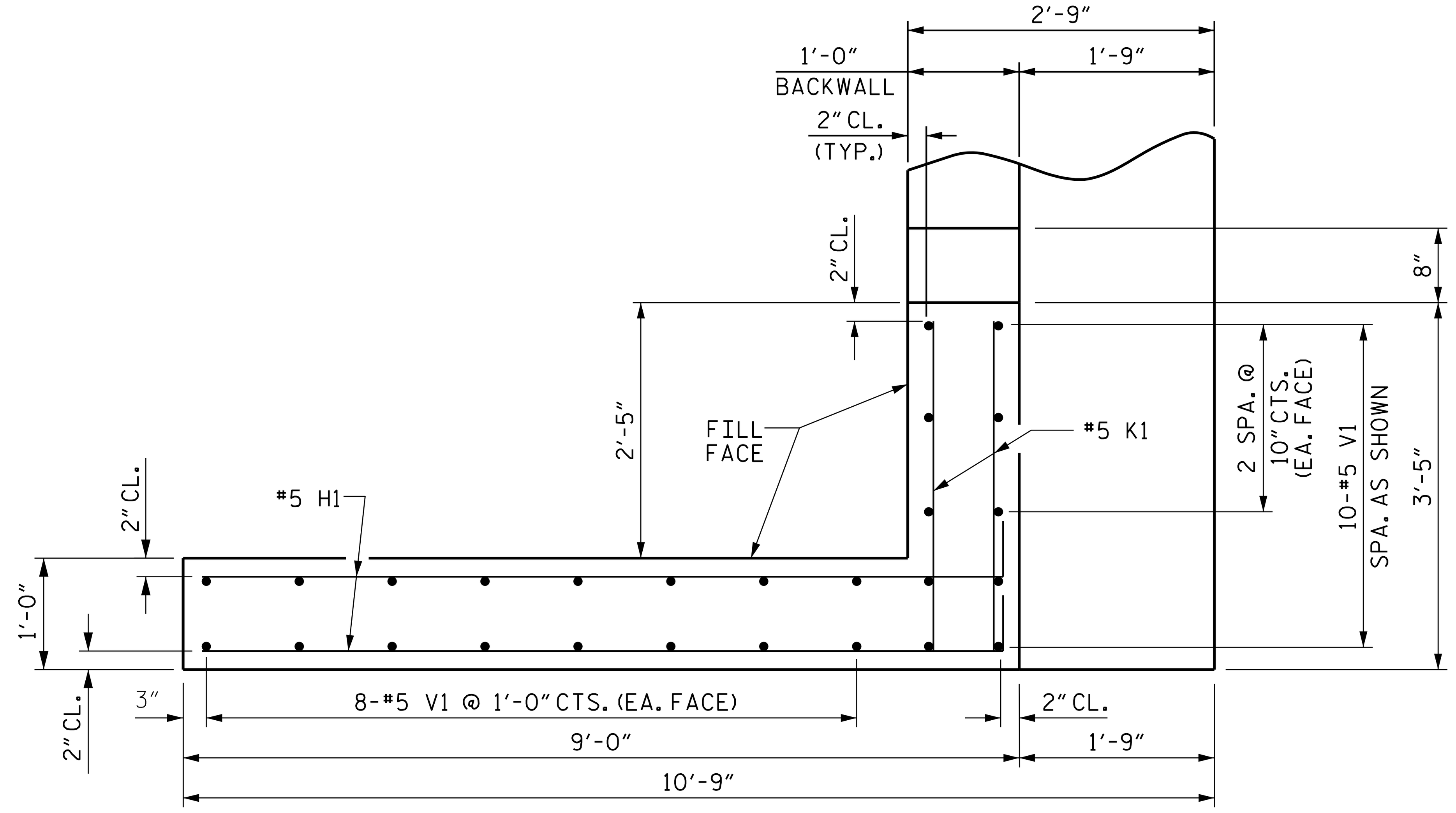
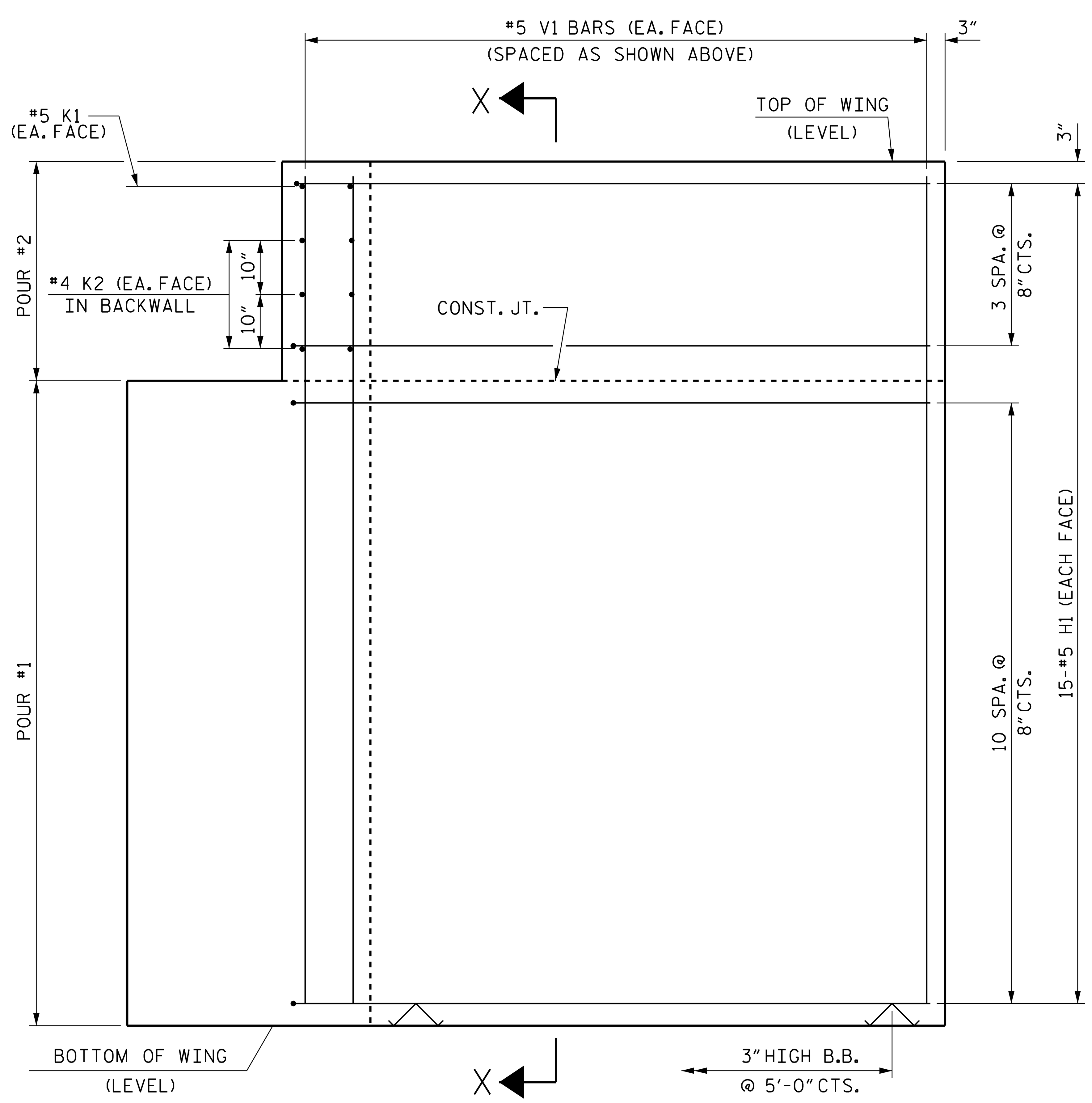


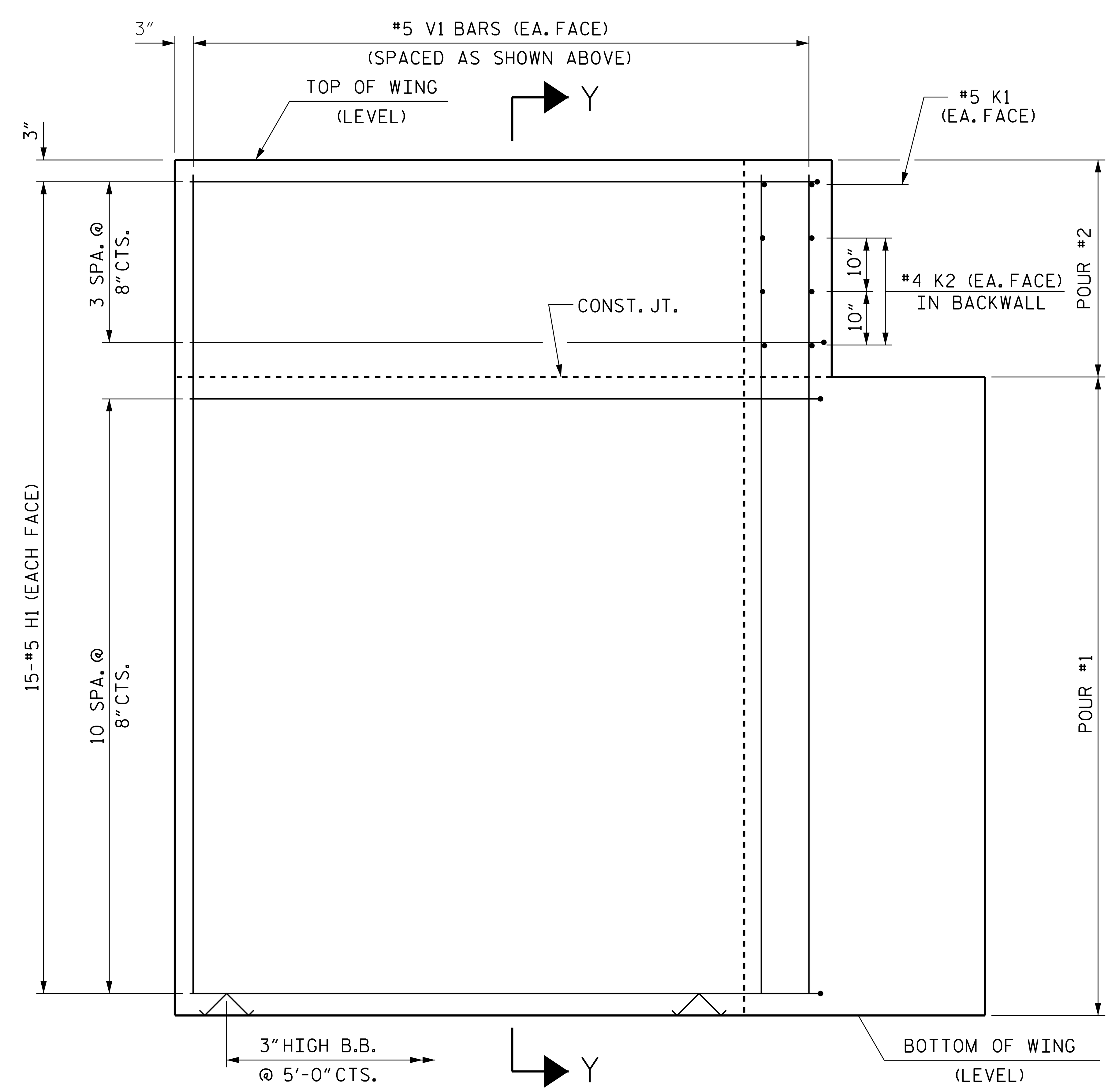
PLAN OF WING (W1)



PLAN OF WING (W2)



ELEVATION OF WING (W1)



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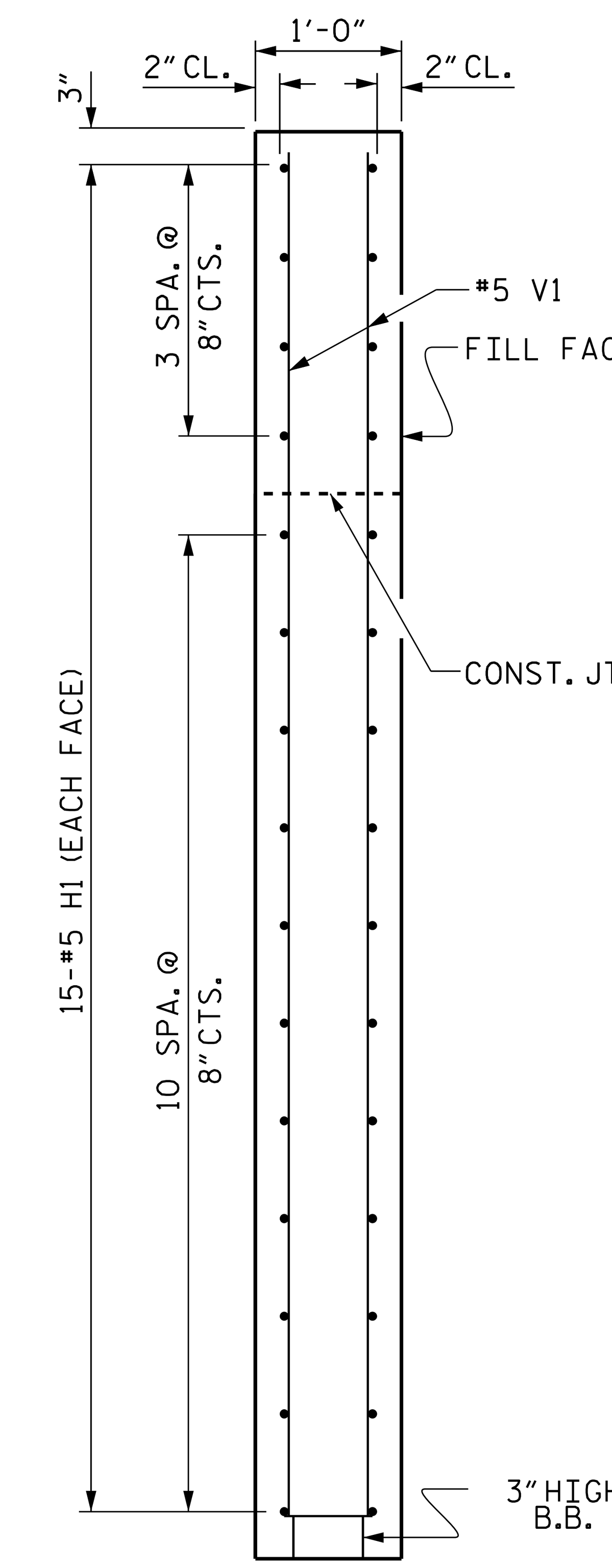
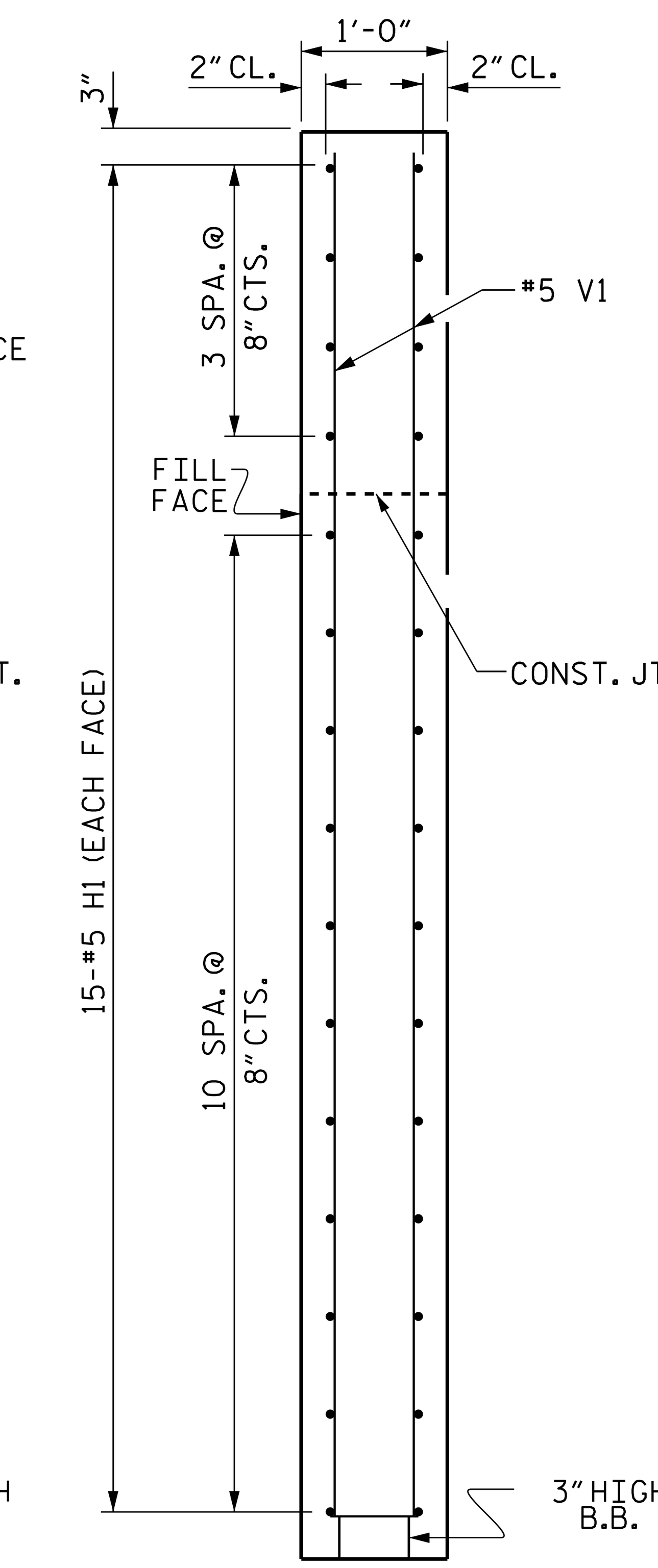


SECTION X-X



SECTION Y-Y

WING DETAILS

PROJECT NO. DF18311.2014030.PR
CALDWELL COUNTY
STATION: 11+40.00 -L-
SHEET 3 OF 4

Signed by: Diego A. Aguirre
10/16/2025

NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 048223 DIEGO A. AGUIRRE

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUBSTRUCTURE

END BENT
WING DETAILS

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

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

DRAWN BY :	AIDAN J. HALPERN	DATE :	09/2025
CHECKED BY :	LAURA E. SUTTON	DATE :	09/2025
DESIGN ENGINEER OF RECORD:	DIEGO A. AGUIRRE	DATE :	09/2025

REVISIONS

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

SHEET NO. S-14
TOTAL SHEETS 16

10/8/2025
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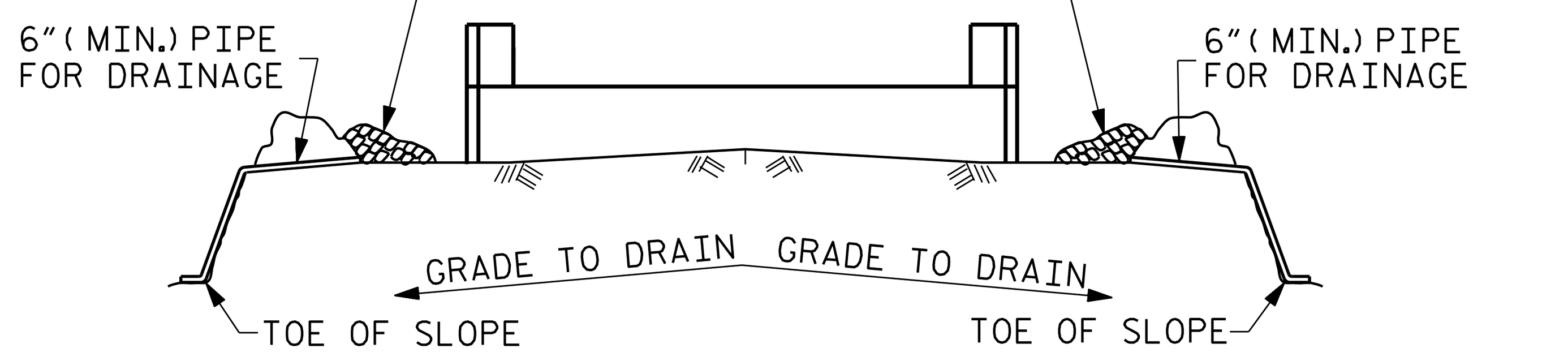
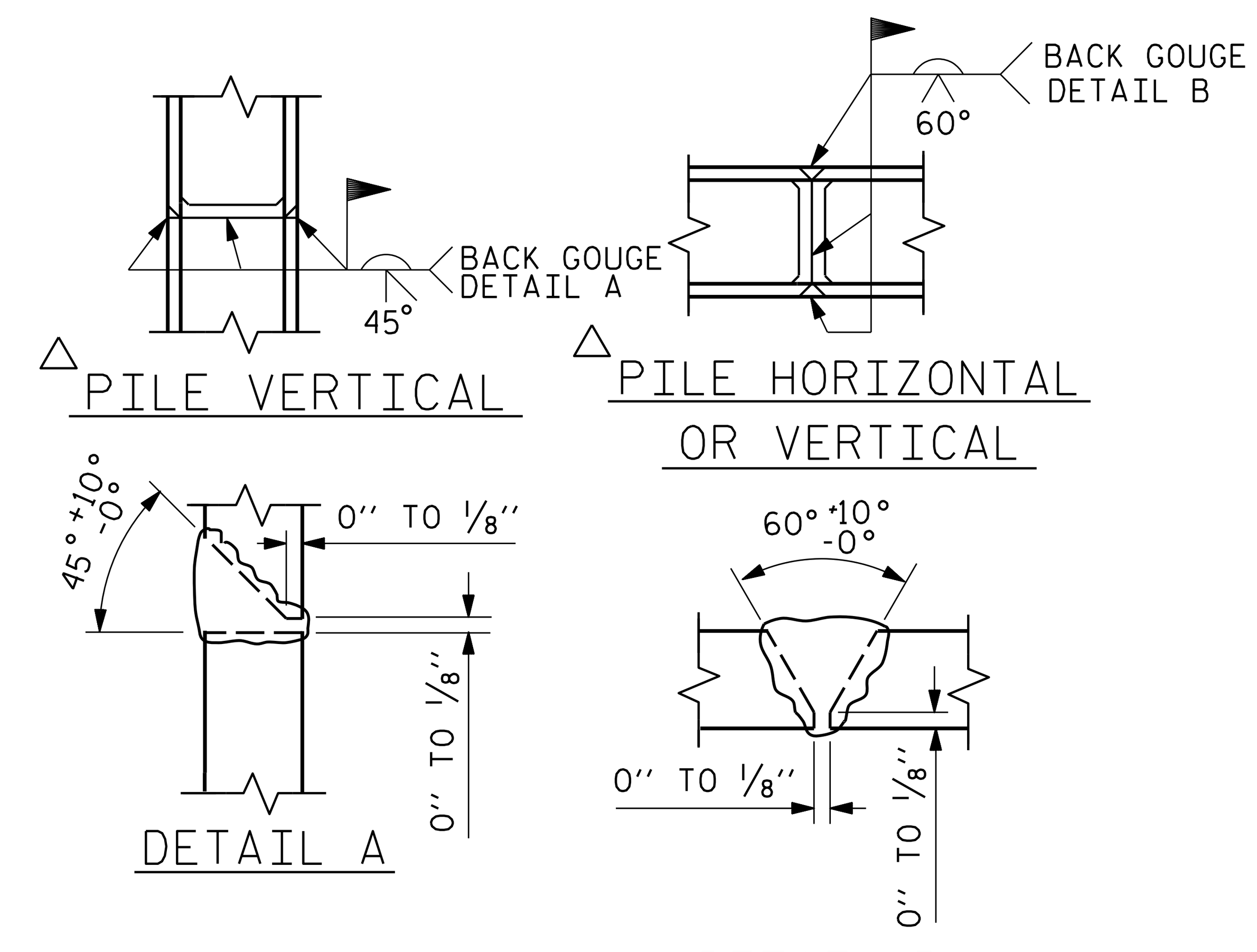


BAGGED STONE AND PIPE SHALL BE PLACED IMMEDIATELY AFTER COMPLETION OF END BENT EXCAVATION. PIPE MAY BE EITHER CONCRETE, CORRUGATED STEEL, CORRUGATED ALUMINUM ALLOY, OR CORRUGATED PLASTIC. PERFORATED PIPE WILL NOT BE ALLOWED.

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

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

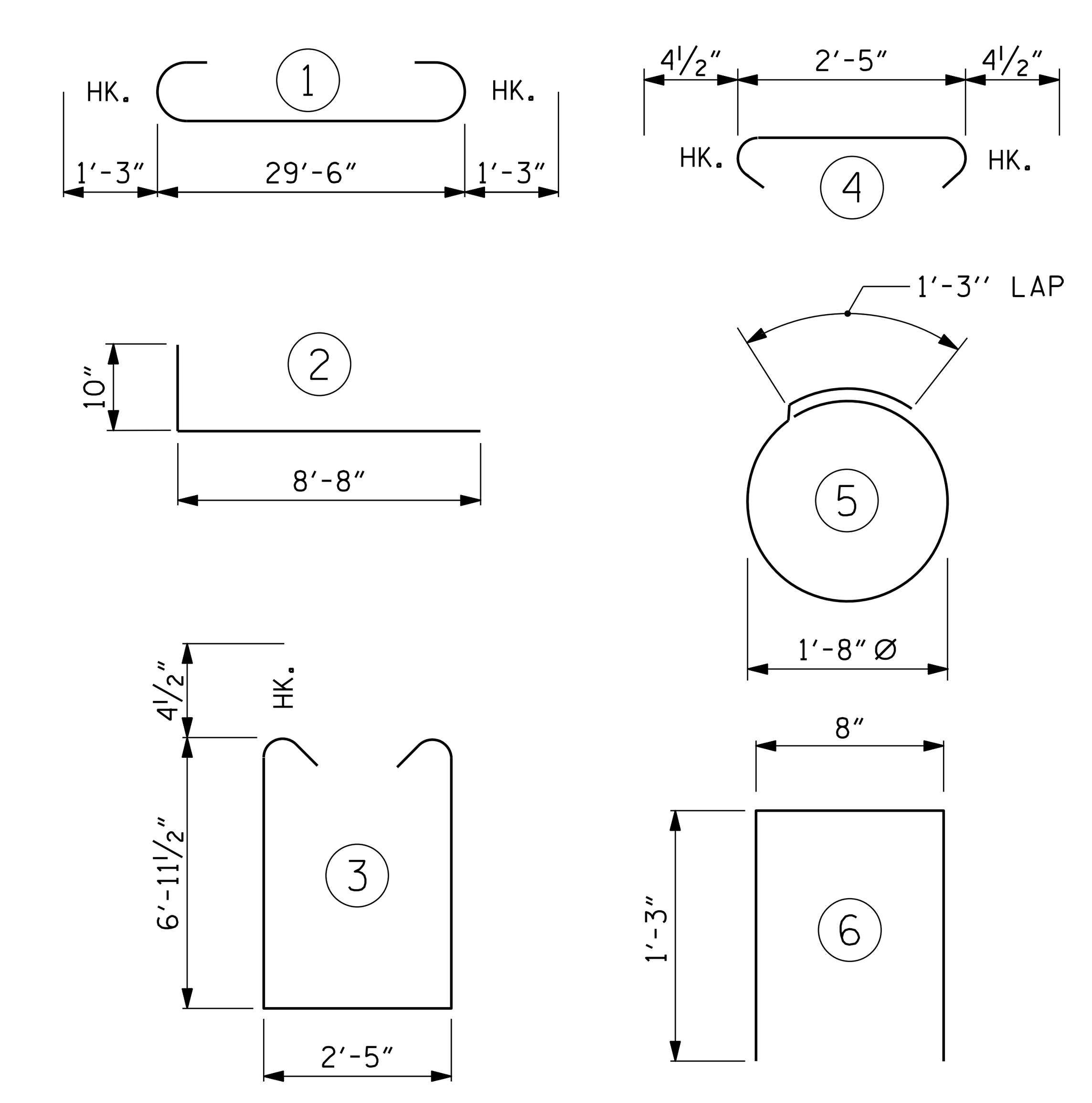
TEMPORARY DRAINAGE AT END BENT



POSITION OF PILE DURING WELDING.

PILE SPLICE DETAILS

BAR TYPES



ALL BAR DIMENSIONS ARE OUT TO OUT.

BILL OF MATERIAL
FOR ONE END BENT

BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
B1	8	#9	1	32'-0"	871
B2	16	#4	STR	29'-8"	318
B3	8	#4	STR	2'-5"	13
H1	60	#5	2	9'-6"	595
K1	4	#4	STR	3'-1"	8
K2	6	#4	STR	29'-8"	119
S1	34	#4	3	17'-1"	388
S2	34	#4	4	3'-2"	72
S3	20	#4	5	6'-6"	87
U1	24	#4	6	3'-2"	51
V1	52	#5	STR	9'-8"	524
V2	48	#4	STR	4'-4"	139

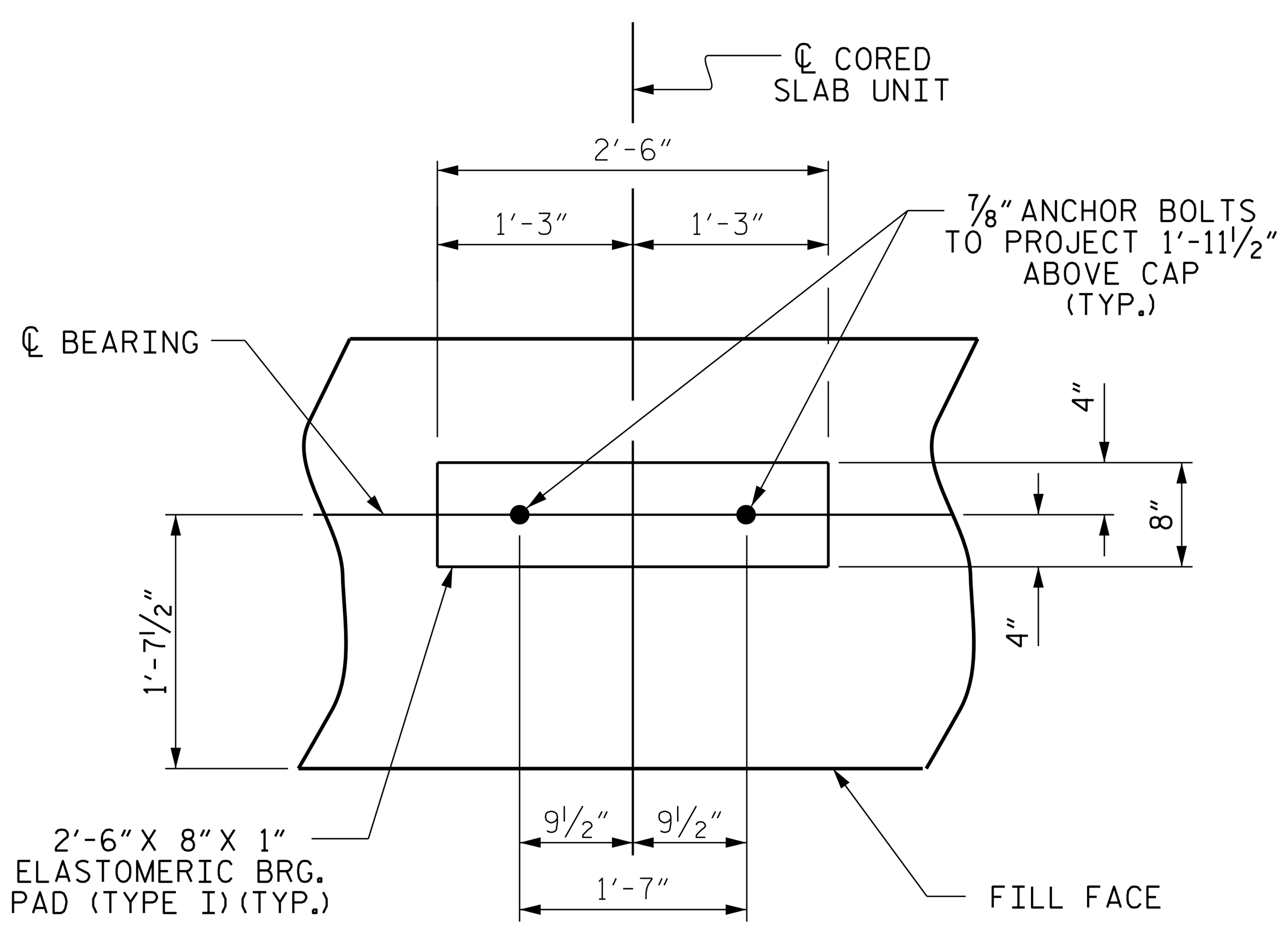
REINFORCING STEEL (FOR ONE END BENT) 3,185 LBS.

CLASS A CONCRETE BREAKDOWN (FOR ONE END BENT)

POUR #1 CAP, LOWER PART OF WINGS & COLLARS 28.2 C.Y.

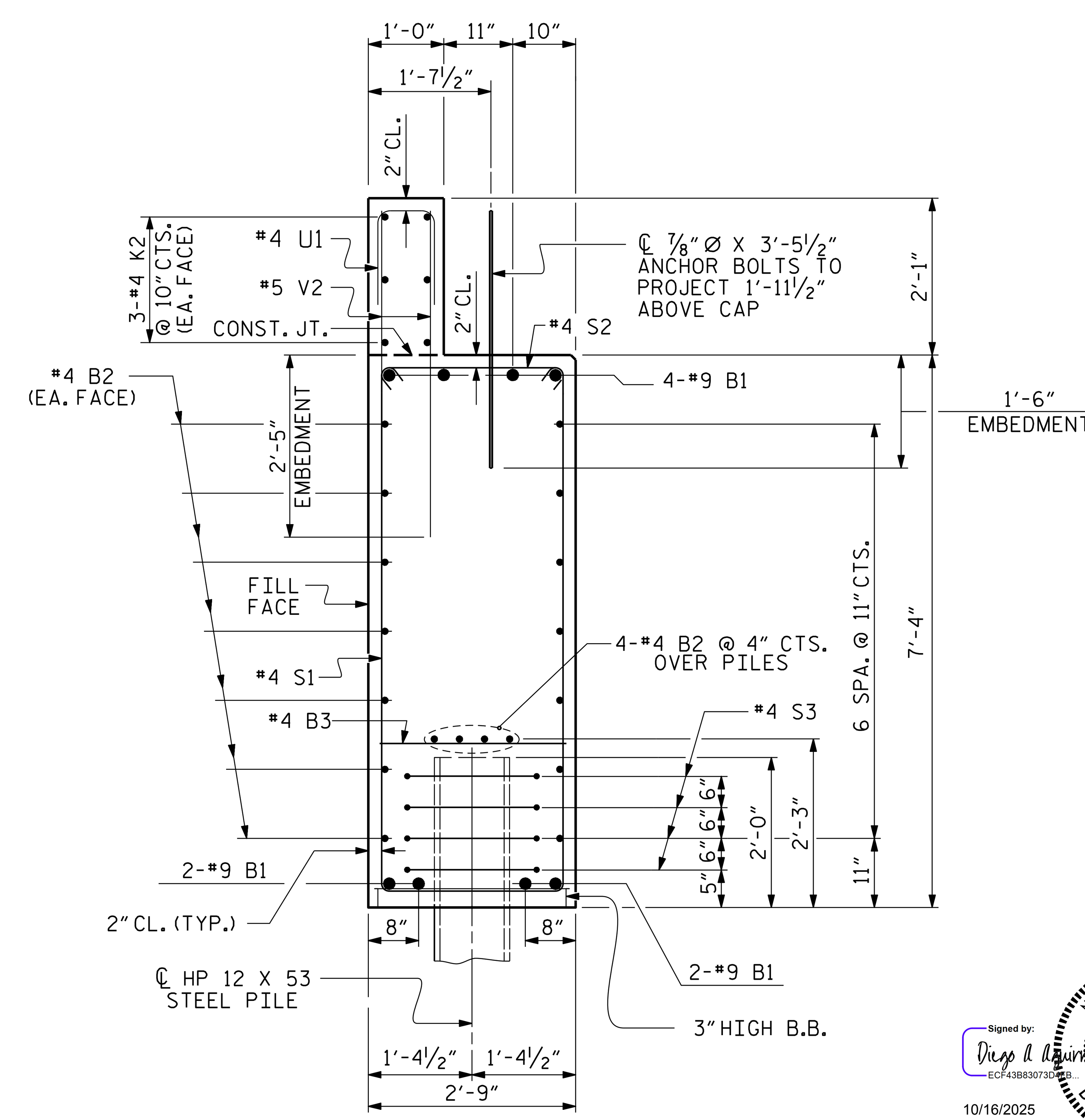
POUR #2 BACKWALL & UPPER PART OF WINGS 4.2 C.Y.

TOTAL CLASS A CONCRETE 32.4 C.Y.



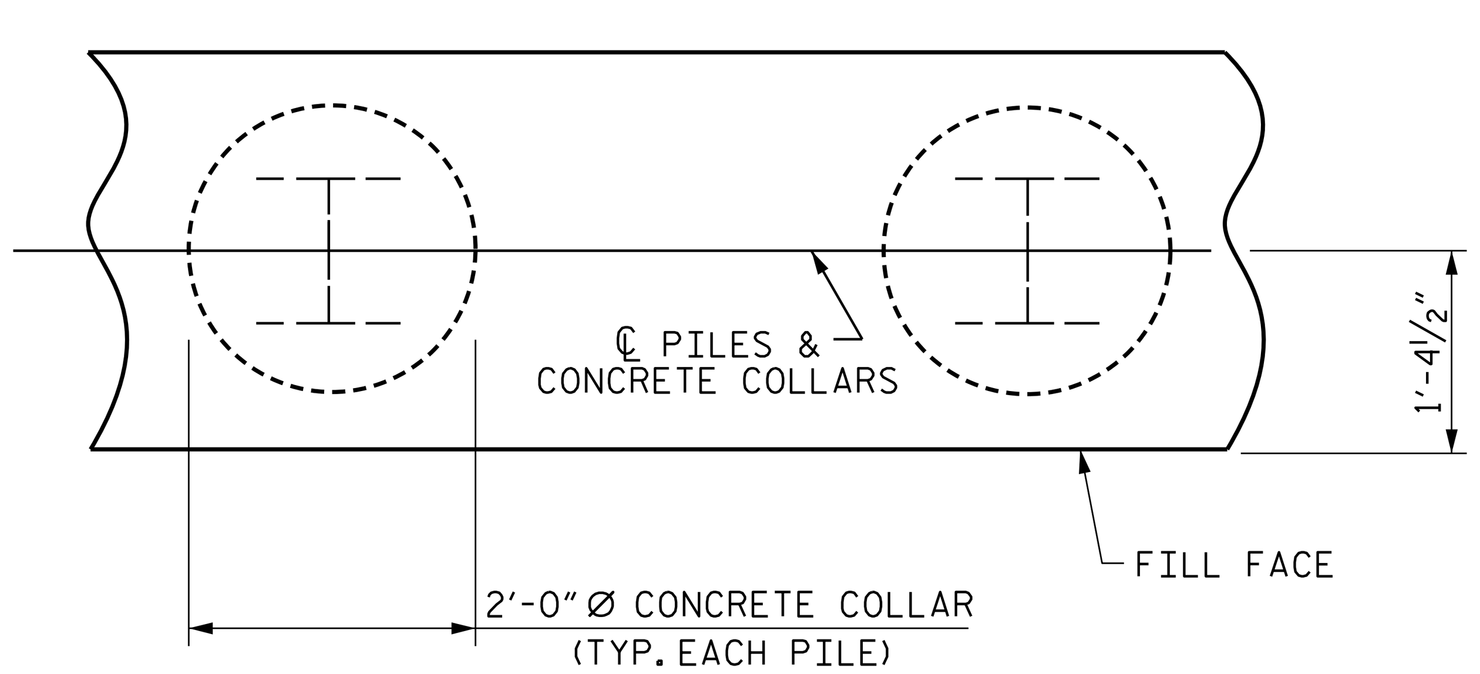
DETAIL "A"

(END BENT 1 SHOWN, END BENT 2 SIMILAR BY ROTATION)

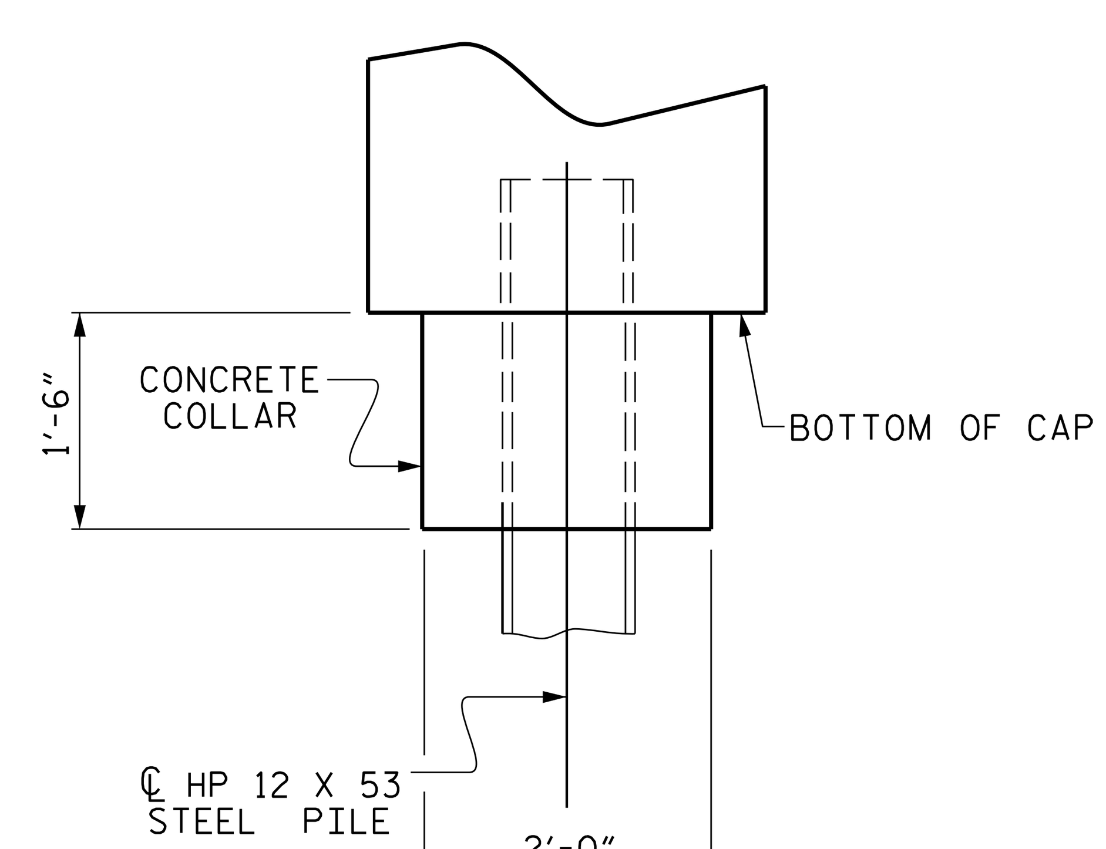


SECTION A-A

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



PLAN



ELEVATION

CORROSION PROTECTION FOR STEEL PILES DETAIL

(END BENT 1 SHOWN, END BENT 2 SIMILAR BY ROTATION)

PROJECT NO. DF18311.2014030.PR

CALDWELL COUNTY

STATION: 11+40.00 -L-

SHEET 4 OF 4

Signed by: Diego A. Aguirre

10/16/2025

NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 048223 DIEGO A. AGUIRRE

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUBSTRUCTURE

END BENT 1 & 2 DETAILS

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

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REVISIONS							SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:		S-15
1			3				TOTAL SHEETS
2			4				16

DRAWN BY : AIDAN J. HALPERN DATE : 09/2025
CHECKED BY : LAURA E. SUTTON DATE : 09/2025
DESIGN ENGINEER OF RECORD: DIEGO A. AGUIRRE DATE : 09/2025

10/8/2025
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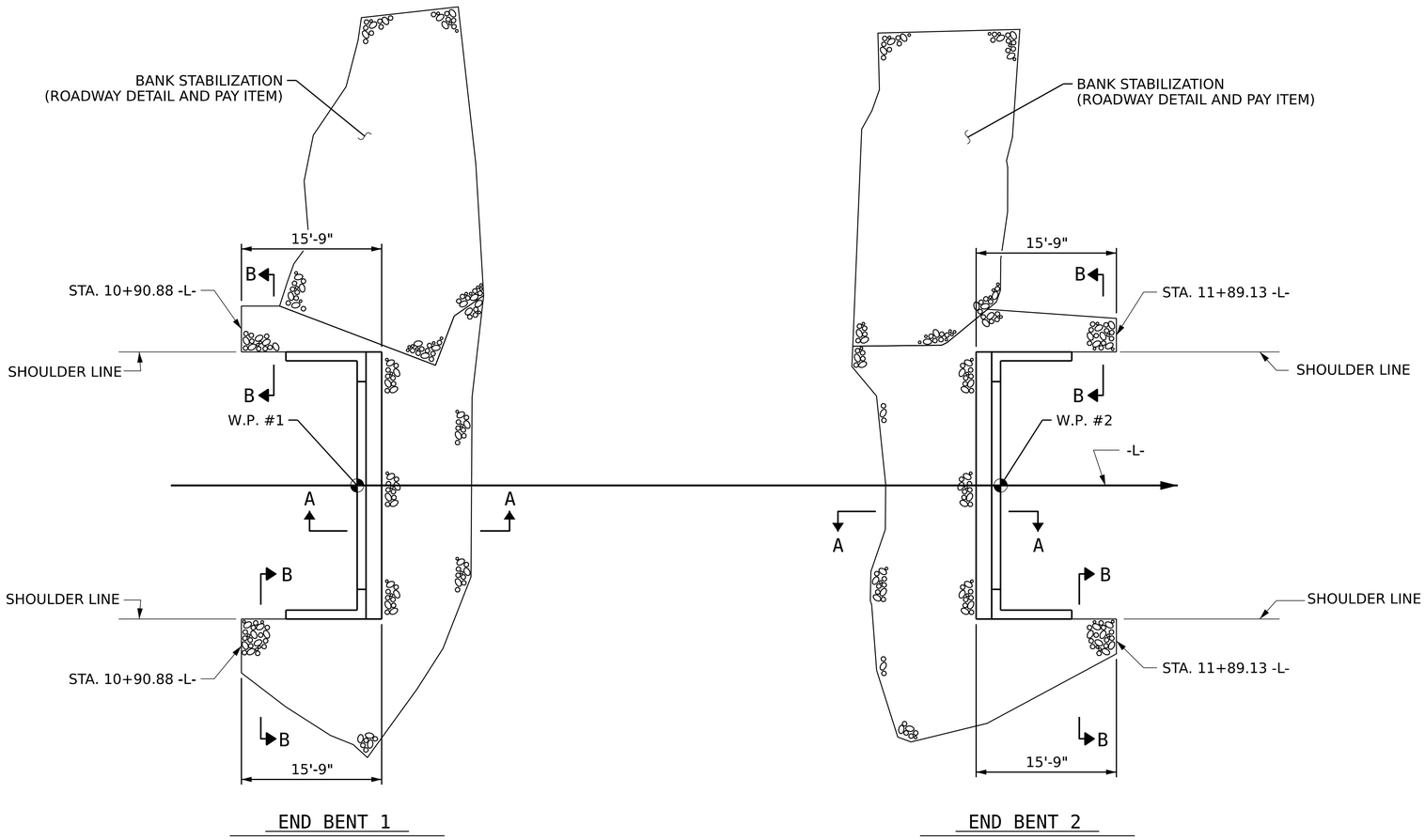
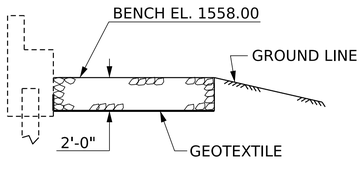


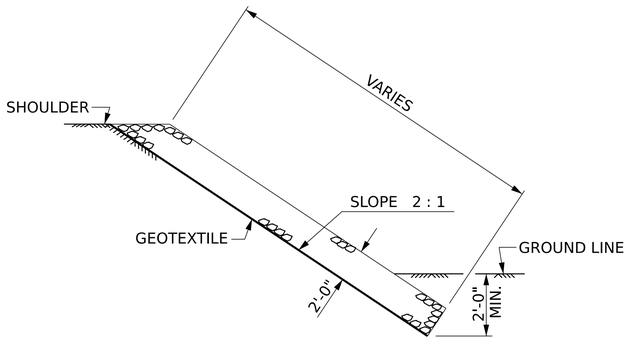
END BENT 1

END BENT 2

PLAN



SECTION A-A



SECTION B-B

ESTIMATED QUANTITIES		
BRIDGE @ STA. 11+40.00 -L-	RIP RAP CLASS II (2'-0" THICK)	GEOTEXTILE FOR DRAINAGE
	TONS	SQUARE YARDS
END BENT 1	80	70
END BENT 2	85	70

PROJECT NO. DF18311.2014030.PR

CALDWELL COUNTY

STATION: 11+40.00 -L-

Signed by: Diego A Aguirre
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10/16/2025

NORTH CAROLINA PROFESSIONAL SEAL 048223 ENGINEER DIEGO A AGUIRRE

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

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

RIP RAP DETAILS

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

DRAWN BY : AIDAN J. HALPERN DATE : 09/2025
CHECKED BY : LAURA E. SUTTON DATE : 09/2025
DESIGN ENGINEER OF RECORD: DIEGO A. AGUIRRE DATE : 09/2025

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STANDARD NOTES

DESIGN DATA:

SPECIFICATIONS	AASHTO (CURRENT)
LIVE LOAD	SEE PLANS
IMPACT ALLOWANCE	SEE AASHTO
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 AASHTO
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 2024 "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" ∅ SHEAR STUDS FOR THE ¾" ∅ STUDS SPECIFIED ON THE PLANS. THIS SUBSTITUTION SHALL BE MADE AT THE RATE OF 3 - ⅞" ∅ STUDS FOR 4 - ¾" ∅ STUDS, AND STUD SPACING CHANGES SHALL BE MADE AS NECESSARY TO PROVIDE THE SAME EQUIVALENT NUMBER OF ⅞" ∅ STUDS ALONG THE BEAM AS SHOWN FOR ¾" ∅ STUDS BASED ON THE RATIO OF 3 - ⅞"∅ STUDS FOR 4 - ¾" ∅ 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 $\frac{5}{16}$" 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 $\frac{1}{16}$" 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.