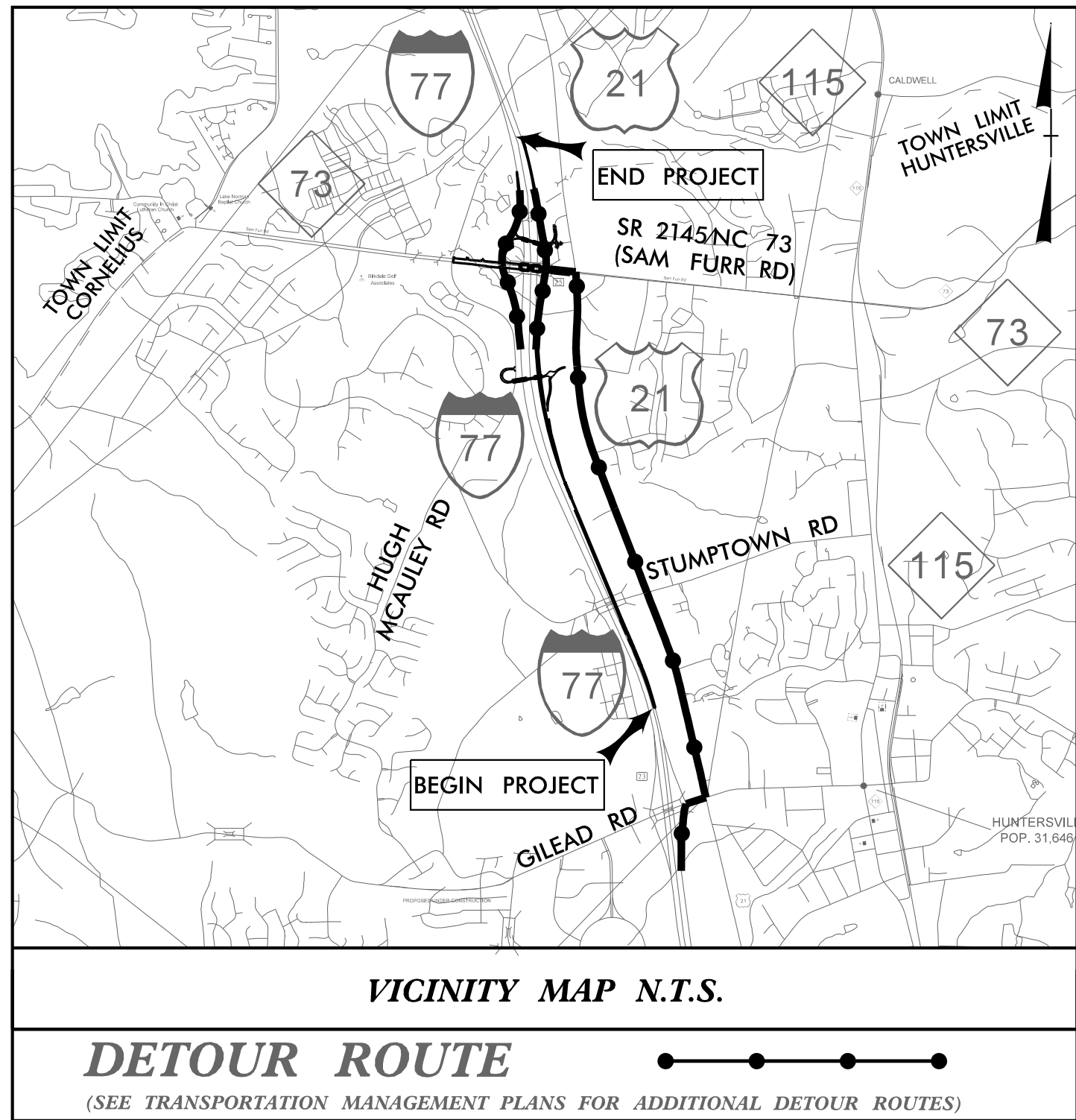


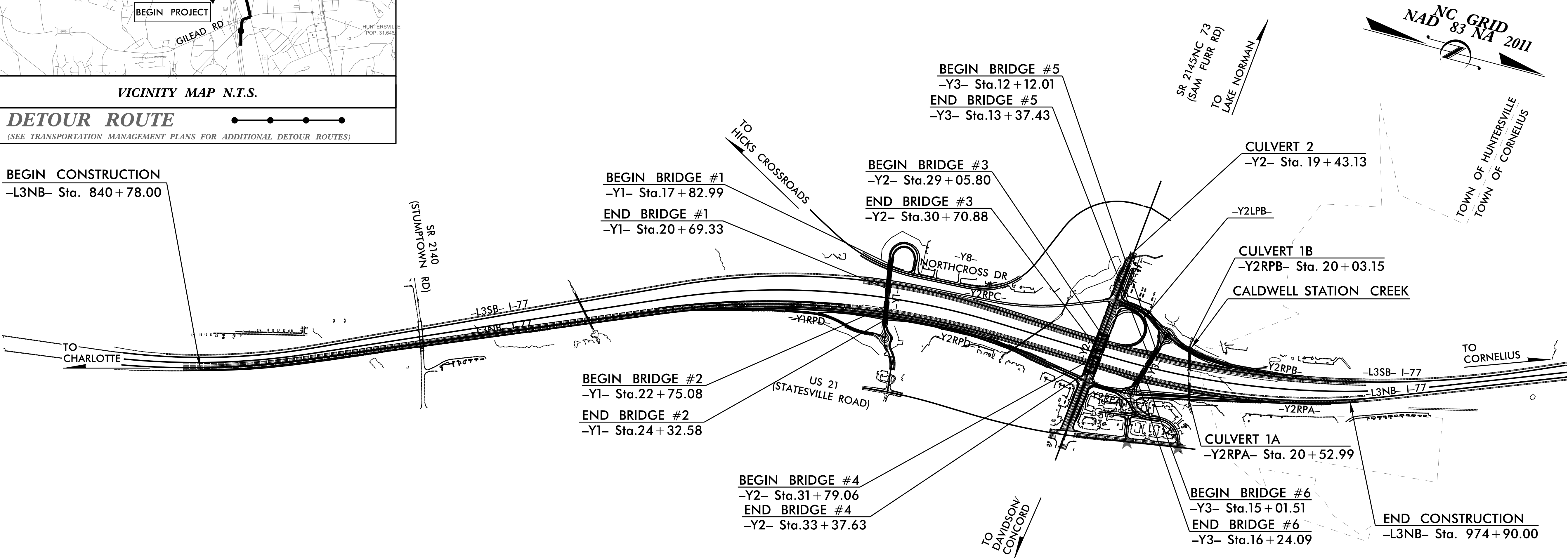
K:\ARDT_Structures\Bridge\NC\1036524 - I-5715 Structure Design\Cad\Dgn\400_001_I5715_SMU_TS.dgn
8/4/2026

CONTRACT:

TIP PROJECT: I-5715



BEGIN CONSTRUCTION
-L3NB- Sta. 840 + 78.00



STRUCTURES

DESIGN DATA

ADT 2025 = 121,400
ADT 2045 = 152,000
DHV = 8 %
D = 55 %
T = 14 % *
V = 70 MPH
* (TTST 10% + DUAL 4%)
FUNC. CLASS = INTERSTATE
"STATE WIDE TIER"

PROJECT LENGTH

LENGTH ROADWAY TIP PROJECT I-5715 = 2.540 MILES

TOTAL LENGTH OF TIP PROJECT I-5715 = 2.540 MILES

* NOTE: PROJECT LENGTH BASED ON
I-77 NORTHBOUND LANES

PLANS PREPARED FOR
THE NCDOT BY:

2024 STANDARD SPECIFICATIONS

RIGHT OF WAY DATE:
AUGUST 30, 2023

LETTING DATE:
OCTOBER 20, 2026

Kimley»Horn

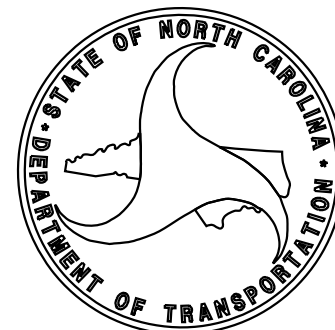
NC LICENSE #F-0102
200 SOUTH TRYON STREET, SUITE 200
CHARLOTTE, NORTH CAROLINA 28202
PHONE: (704) 333-5131

ANDREW L. PHILLIPS, P.E.
PROJECT ENGINEER

PATRICK D. COOKSEY, P.E.
PROJECT DESIGN ENGINEER

RADHA ATTALURI
NCDOT PROJECT MANAGER

DIVISION OF HIGHWAYS
STATE OF NORTH CAROLINA



STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	I-5715	1	
STATE PROJ. NO.	F.A. PROJ. NO.	DESCRIPTION	
50128.1.FS1	NHPP-077-1(220)29	PE	
50128.2.1	NHPP-077-1(220)29	ROW	
50128.2.2	NHPP-077-1(220)29	UTIL	
50128.3.1	NHPP-077-1(220)29	CON	

DOCUMENT NOT CONSIDERED FINAL
UNLESS ALL SIGNATURES COMPLETED

LOCATION: I-77 AND THE NC 73 INTERCHANGE UPGRADE EXISTING INTERCHANGE TO
SPLIT DIAMOND CONFIGURATION

TYPE OF WORK: GRADING, DRAINAGE, PAVING, SIGNALS, AND STRUCTURES

K:\P01-Structures\Bridge\NC\01036524 - I-5715 Structure Design\Coord\gn\400_003_15715_SML1501.dgn 8/4/2026

DRAWING NO.	SHEET TITLE
	TITLE SHEET
S1-1	GENERAL DRAWING - SHEET 1 OF 4
S1-2	GENERAL DRAWING - SHEET 2 OF 4
S1-3	GENERAL DRAWING - SHEET 3 OF 4
S1-4	GENERAL DRAWING - SHEET 4 OF 4
S1-5	STANDARD - LRFR SUMMARY FOR STEEL GIRDERS - NON-INTERSTATE TRAFFIC
S1-6	SUPERSTRUCTURE - CONSTRUCTION PHASING
S1-7	SUPERSTRUCTURE - TYPICAL SECTION - SHEET 1 OF 3
S1-8	SUPERSTRUCTURE - TYPICAL SECTION - SHEET 2 OF 3
S1-9	SUPERSTRUCTURE - TYPICAL SECTION DETAILS - SHEET 3 OF 3
S1-10	SUPERSTRUCTURE - PLAN OF SPANS - SHEET 1 OF 3
S1-11	SUPERSTRUCTURE - PLAN OF SPANS - SHEET 2 OF 3
S1-12	SUPERSTRUCTURE - PLAN OF SPANS - SHEET 3 OF 3
S1-13	SUPERSTRUCTURE - FRAMING PLAN
S1-14	SUPERSTRUCTURE - STRUCTURAL STEEL DETAILS - SHEET 1 OF 5
S1-15	SUPERSTRUCTURE - STRUCTURAL STEEL DETAILS - SHEET 2 OF 5
S1-16	SUPERSTRUCTURE - STRUCTURAL STEEL DETAILS - SHEET 3 OF 5
S1-17	SUPERSTRUCTURE - STRUCTURAL STEEL DETAILS - SHEET 4 OF 5
S1-18	SUPERSTRUCTURE - STRUCTURAL STEEL DETAILS - SHEET 5 OF 5
S1-19	STANDARD - ELASTOMERIC BEARING DETAILS
S1-20	STANDARD - DISC BEARING DETAILS
S1-21	SUPERSTRUCTURE - DEAD LOAD DEFLECTIONS - SPAN A - SHEET 1 OF 4
S1-22	SUPERSTRUCTURE - DEAD LOAD DEFLECTIONS - SPAN A - SHEET 2 OF 4
S1-23	SUPERSTRUCTURE - DEAD LOAD DEFLECTIONS - SPAN B - SHEET 3 OF 4
S1-24	SUPERSTRUCTURE - DEAD LOAD DEFLECTIONS - SPAN B - SHEET 4 OF 4
S1-25	STANDARD - 2 BAR METAL RAIL - SHEET 1 OF 2
S1-26	STANDARD - 2 BAR METAL RAIL - SHEET 2 OF 2
S1-27	SUPERSTRUCTURE - EXTERIOR CONCRETE PARAPET LAYOUT - SHEET 1 OF 4
S1-28	SUPERSTRUCTURE - EXTERIOR CONCRETE PARAPET DETAILS - SHEET 2 OF 4
S1-29	STANDARD - RAIL POST SPACING AND END OF RAIL DETAILS - SHEET 3 OF 4
S1-30	STANDARD - GUARDRAIL ANCHORAGE DETAILS FOR METAL RAILS - SHEET 4 OF 4
S1-31	SUPERSTRUCTURE - MODIFIED 2 BAR METAL RAIL (INTERIOR) - SHEET 1 OF 2
S1-32	SUPERSTRUCTURE - MODIFIED 2 BAR METAL RAIL (INTERIOR) - SHEET 2 OF 2
S1-33	SUPERSTRUCTURE - INTERIOR CONCRETE PARAPET LAYOUT - SHEET 1 OF 3
S1-34	SUPERSTRUCTURE - INTERIOR CONCRETE PARAPET DETAILS - SHEET 2 OF 3
S1-35	STANDARD - END OF RAIL DETAILS FOR MODIFIED 2 BAR METAL RAIL - SHEET 3 OF 3
S1-36	SUPERSTRUCTURE - BILL OF MATERIAL
S1-37	SUBSTRUCTURE - END BENT 1 - SHEET 1 OF 2
S1-38	SUBSTRUCTURE - END BENT 1 DETAILS & BILL OF MATERIAL - SHEET 2 OF 2
S1-39	SUBSTRUCTURE - BENT 1 - SHEET 1 OF 3
S1-40	SUBSTRUCTURE - BENT 1 DETAILS - SHEET 2 OF 3
S1-41	SUBSTRUCTURE - BENT 1 DETAILS & BILL OF MATERIAL - SHEET 3 OF 3
S1-42	SUBSTRUCTURE - END BENT 2 - SHEET 1 OF 2
S1-43	SUBSTRUCTURE - END BENT 2 DETAILS & BILL OF MATERIAL - SHEET 2 OF 2
S1-44	STANDARD - SLOPE PROTECTION DETAILS
S1-45	STANDARD - BRIDGE APPROACH SLAB FOR FLEXIBLE PAVEMENT - SHEET 1 OF 2
S1-46	STANDARD - BRIDGE APPROACH SLAB DETAILS - SHEET 2 OF 2
S1-47	STANDARD - GUARDRAIL ANCHORAGE DETAILS FOR METAL RAILS ON APPROACH SLAB
S2-1	GENERAL DRAWING - SHEET 1 OF 4
S2-2	GENERAL DRAWING - SHEET 2 OF 4
S2-3	GENERAL DRAWING - SHEET 3 OF 4
S2-4	GENERAL DRAWING - SHEET 4 OF 4
S2-5	STANDARD - LRFR SUMMARY FOR STEEL GIRDERS - NON-INTERSTATE TRAFFIC
S2-6	SUPERSTRUCTURE - CONSTRUCTION PHASING
S2-7	SUPERSTRUCTURE - TYPICAL SECTION - SHEET 1 OF 3
S2-8	SUPERSTRUCTURE - TYPICAL SECTION - SHEET 2 OF 3
S2-9	SUPERSTRUCTURE - TYPICAL SECTION DETAILS - SHEET 3 OF 3
S2-10	SUPERSTRUCTURE - PLAN OF SPAN - SHEET 1 OF 2
S2-11	SUPERSTRUCTURE - PLAN OF SPAN - SHEET 2 OF 2
S2-12	SUPERSTRUCTURE - FRAMING PLAN
S2-13	SUPERSTRUCTURE - STRUCTURAL STEEL DETAILS - SHEET 1 OF 5
S2-14	SUPERSTRUCTURE - STRUCTURAL STEEL DETAILS - SHEET 2 OF 5
S2-15	SUPERSTRUCTURE - STRUCTURAL STEEL DETAILS - SHEET 3 OF 5
S2-16	SUPERSTRUCTURE - STRUCTURAL STEEL DETAILS - SHEET 4 OF 5
S2-17	SUPERSTRUCTURE - STRUCTURAL STEEL DETAILS - SHEET 5 OF 5
S2-18	STANDARD - DISC BEARING DETAILS
S2-19	SUPERSTRUCTURE - DEAD LOAD DEFLECTIONS - SPAN A - SHEET 1 OF 2
S2-20	SUPERSTRUCTURE - DEAD LOAD DEFLECTIONS - SPAN A - SHEET 2 OF 2
S2-21	STANDARD - 2 BAR METAL RAIL - SHEET 1 OF 2
S2-22	STANDARD - 2 BAR METAL RAIL - SHEET 2 OF 2
S2-23	SUPERSTRUCTURE - EXTERIOR CONCRETE PARAPET LAYOUT - SHEET 1 OF 4
S2-24	SUPERSTRUCTURE - EXTERIOR CONCRETE PARAPET DETAILS - SHEET 2 OF 4
S2-25	STANDARD - RAIL POST SPACING AND END OF RAIL DETAILS - SHEET 3 OF 4
S2-26	STANDARD - GUARDRAIL ANCHORAGE DETAILS FOR METAL RAILS - SHEET 4 OF 4
S2-27	SUPERSTRUCTURE - MODIFIED 2 BAR METAL RAIL (INTERIOR) - SHEET 1 OF 2
S2-28	SUPERSTRUCTURE - MODIFIED 2 BAR METAL RAIL (INTERIOR) - SHEET 2 OF 2
S2-29	SUPERSTRUCTURE - INTERIOR CONCRETE PARAPET LAYOUT - SHEET 1 OF 3
S2-30	SUPERSTRUCTURE - INTERIOR CONCRETE PARAPET DETAILS - SHEET 2 OF 3
S2-31	STANDARD - END OF RAIL DETAILS FOR MODIFIED 2 BAR METAL RAIL - SHEET 3 OF 3
S2-32	SUPERSTRUCTURE - BILL OF MATERIAL
S2-33	SUBSTRUCTURE - END BENT 1 - SHEET 1 OF 2
S2-34	SUBSTRUCTURE - END BENT 1 DETAILS & BILL OF MATERIAL - SHEET 2 OF 2
S2-35	SUBSTRUCTURE - END BENT 2 - SHEET 1 OF 2
S2-36	SUBSTRUCTURE - END BENT 2 DETAILS & BILL OF MATERIAL - SHEET 2 OF 2
S2-37	STANDARD - SLOPE PROTECTION DETAILS
S2-38	STANDARD - BRIDGE APPROACH SLAB FOR FLEXIBLE PAVEMENT - SHEET 1 OF 2
S2-39	STANDARD - BRIDGE APPROACH SLAB DETAILS - SHEET 2 OF 2
S2-40	STANDARD - GUARDRAIL ANCHORAGE DETAILS FOR METAL RAILS ON APPROACH SLAB

DRAWING NO.	SHEET TITLE
S3-1	GENERAL DRAWING - SHEET 1 OF 4
S3-2	GENERAL DRAWING - SHEET 2 OF 4
S3-3	GENERAL DRAWING - SHEET 3 OF 4
S3-4	GENERAL DRAWING - SHEET 4 OF 4
S3-5	STANDARD - LRFR SUMMARY FOR NEW STEEL GIRDERS - NON-INTERSTATE TRAFFIC
S3-6	SUPERSTRUCTURE - CONSTRUCTION SEQUENCE - SHEET 1 OF 4
S3-7	SUPERSTRUCTURE - CONSTRUCTION SEQUENCE - SHEET 2 OF 4
S3-8	SUPERSTRUCTURE - CONSTRUCTION SEQUENCE - SHEET 3 OF 4
S3-9	SUPERSTRUCTURE - CONSTRUCTION SEQUENCE - SHEET 4 OF 4
S3-10	SUPERSTRUCTURE - TYPICAL SECTIONS - SHEET 1 OF 3
S3-11	SUPERSTRUCTURE - TYPICAL SECTIONS - SHEET 2 OF 3
S3-12	SUPERSTRUCTURE - TYPICAL SECTION DETAILS - SHEET 3 OF 3
S3-13	SUPERSTRUCTURE - PLAN OF SPANS - LEFT SIDE - SHEET 1 OF 5
S3-14	SUPERSTRUCTURE - PLAN OF SPANS - LEFT SIDE - SHEET 2 OF 5
S3-15	SUPERSTRUCTURE - PLAN OF SPANS - RIGHT SIDE - SHEET 3 OF 5
S3-16	SUPERSTRUCTURE - PLAN OF SPANS - RIGHT SIDE - SHEET 4 OF 5
S3-17	SUPERSTRUCTURE - PLAN OF SPAN DETAILS - SHEET 5 OF 5
S3-18	SUPERSTRUCTURE - GIRDER FRAMING PLAN
S3-19	SUPERSTRUCTURE - STRUCTURAL STEEL DETAILS - SHEET 1 OF 3
S3-20	SUPERSTRUCTURE - STRUCTURAL STEEL DETAILS - SHEET 2 OF 3
S3-21	SUPERSTRUCTURE - STRUCTURAL STEEL DETAILS - SHEET 3 OF 3
S3-22	STANDARD - ELASTOMERIC BEARING DETAILS
S3-23	SUPERSTRUCTURE - DEAD LOAD DEFLECTIONS - SPAN A - LEFT EXTENSION - SHEET 1 OF 6
S3-24	SUPERSTRUCTURE - DEAD LOAD DEFLECTIONS - SPAN A - RIGHT EXTENSION - SHEET 2 OF 6
S3-25	SUPERSTRUCTURE - DEAD LOAD DEFLECTIONS - SPAN B - LEFT EXTENSION - SHEET 3 OF 6
S3-26	SUPERSTRUCTURE - DEAD LOAD DEFLECTIONS - SPAN B - RIGHT EXTENSION - SHEET 4 OF 6
S3-27	SUPERSTRUCTURE - DEAD LOAD DEFLECTIONS - SPAN C - LEFT EXTENSION - SHEET 5 OF 6
S3-28	SUPERSTRUCTURE - DEAD LOAD DEFLECTIONS - SPAN C - RIGHT EXTENSION - SHEET 6 OF 6
S3-29	SUPERSTRUCTURE - CONCRETE PARAPET DETAILS - SHEET 1 OF 3
S3-30	SUPERSTRUCTURE - CONCRETE PARAPET DETAILS - SHEET 2 OF 3
S3-31	SUPERSTRUCTURE - CONCRETE PARAPET DETAILS - SHEET 3 OF 3
S3-32	STANDARD - GUARDRAIL ANCHORAGE DETAILS FOR METAL RAILS
S3-33	STANDARD - 2 BAR METAL RAIL - SHEET 1 OF 4
S3-34	STANDARD - 2 BAR METAL RAIL - SHEET 2 OF 4
S3-35	SUPERSTRUCTURE - PLAN OF RAIL POST SPACING - 3 OF 4
S3-36	STANDARD - END OF RAIL DETAILS FOR 2 BAR METAL RAIL - 4 OF 4
S3-37	STANDARD - FOAM JOINT SEAL DETAILS
S3-38	SUPERSTRUCTURE - SIDEWALK DETAILS
S3-39	CONCRETE MEDIAN DETAILS
S3-40	SUPERSTRUCTURE - BILL OF MATERIAL - LEFT SIDE - SHEET 1 OF 3
S3-41	SUPERSTRUCTURE - BILL OF MATERIAL - RIGHT SIDE - SHEET 2 OF 3
S3-42	SUPERSTRUCTURE - BILL OF MATERIAL - SHEET 3 OF 3
S3-43	SUBSTRUCTURE - END BENT 1 - LEFT EXTENSION - SHEET 1 OF 4
S3-44	SUBSTRUCTURE - END BENT 1 - RIGHT EXTENSION - SHEET 2 OF 4
S3-45	SUBSTRUCTURE - END BENT 1 WING WALL DETAILS - SHEET 3 OF 4
S3-46	SUBSTRUCTURE - END BENT 1 - SECTION AND DETAILS - SHEET 4 OF 4
S3-47	SUBSTRUCTURE - BENT 1 - LEFT EXTENSION - PLAN AND ELEVATION - SHEET 1 OF 4
S3-48	SUBSTRUCTURE - BENT 1 - LEFT EXTENSION - SECTIONS AND DETAILS - SHEET 2 OF 4
S3-49	SUBSTRUCTURE - BENT 1 - RIGHT EXTENSION - PLAN AND ELEVATION - SHEET 3 OF 4
S3-50	SUBSTRUCTURE - BENT 1 - RIGHT EXTENSION - SECTIONS AND DETAILS - SHEET 4 OF 4
S3-51	SUBSTRUCTURE - BENT 2 - LEFT EXTENSION - PLAN AND ELEVATION - SHEET 1 OF 4
S3-52	SUBSTRUCTURE - BENT 2 - LEFT EXTENSION - SECTIONS AND DETAILS - SHEET 2 OF 4
S3-53	SUBSTRUCTURE - BENT 2 - RIGHT EXTENSION - PLAN AND ELEVATION - SHEET 3 OF 4
S3-54	SUBSTRUCTURE - BENT 2 - RIGHT EXTENSION - SECTIONS AND DETAILS - SHEET 4 OF 4
S3-55	SUBSTRUCTURE - END BENT 2 - LEFT EXTENSION - SHEET 1 OF 4
S3-56	SUBSTRUCTURE - END BENT 2 - RIGHT EXTENSION - SHEET 2 OF 4
S3-57	SUBSTRUCTURE - END BENT 2 WING WALL DETAILS - SHEET 3 OF 4
S3-58	SUBSTRUCTURE - END BENT 2 - SECTION AND DETAILS - SHEET 4 OF 4
S3-59	STANDARD - SLOPE PROTECTION DETAILS
S3-60	STANDARD - BRIDGE APPROACH SLAB FOR FLEXIBLE PAVEMENT - SHEET 1 OF 3
S3-61	STANDARD - BRIDGE APPROACH SLAB DETAILS - SHEET 2 OF 3
S3-62	STANDARD - BRIDGE APPROACH SLAB SIDEWALK DETAILS - SHEET 3 OF 3
S3-63	APPROACH SLAB MEDIAN DETAILS

PROJECT NO. I-5715
MECKLENBURG COUNTY
STATION: _____

STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION RALEIGH					
INDEX OF SHEETS					
REVISIONS					
NO.	BY:	DATE:	NO.	BY:	DATE:
1			3		
2			4		

Kimley»Horn

421 Fayetteville Street, Suite 600
Raleigh, NC 27601-1772
Phone (919) 677-2000

NC LICENSE # F-0102

This document, together with the concepts and designs presented herein, as an instrument of services, is prepared only for the specific project and client for whom it was prepared. It is not to be used for any other project or client without written authorization and adoption by Kimley-Horn and Associates, Inc. It shall be without liability to Kimley-Horn and Associates, Inc.

Copyright Kimley-Horn and Associates, Inc., 2026

DOCUMENT NOT CONSIDERED FINAL
UNLESS ALL SIGNATURES COMPLETED

8/4/2026 K:\B01-Structures\Bridges\NC\01036524 - I-5715 Structure Design\Coord\gn\400_005_15715_SML\502.dgn

DRAWING NO.	SHEET TITLE
S4-1	GENERAL DRAWING - SHEET 1 OF 4
S4-2	GENERAL DRAWING - SHEET 2 OF 4
S4-3	GENERAL DRAWING - SHEET 3 OF 4
S4-4	GENERAL DRAWING - SHEET 4 OF 4
S4-5	STANDARD - LRFR SUMMARY FOR NEW STEEL GIRDERS - NON-INTERSTATE TRAFFIC
S4-6	SUPERSTRUCTURE - CONSTRUCTION SEQUENCE - SHEET 1 OF 4
S4-7	SUPERSTRUCTURE - CONSTRUCTION SEQUENCE - SHEET 2 OF 4
S4-8	SUPERSTRUCTURE - CONSTRUCTION SEQUENCE - SHEET 3 OF 4
S4-9	SUPERSTRUCTURE - CONSTRUCTION SEQUENCE - SHEET 4 OF 4
S4-10	SUPERSTRUCTURE - TYPICAL SECTIONS - SHEET 1 OF 3
S4-11	SUPERSTRUCTURE - TYPICAL SECTIONS - SHEET 2 OF 3
S4-12	SUPERSTRUCTURE - TYPICAL SECTION DETAILS - SHEET 3 OF 3
S4-13	SUPERSTRUCTURE - PLAN OF SPANS - LEFT SIDE - SHEET 1 OF 5
S4-14	SUPERSTRUCTURE - PLAN OF SPANS - LEFT SIDE - SHEET 2 OF 5
S4-15	SUPERSTRUCTURE - PLAN OF SPANS - RIGHT SIDE - SHEET 3 OF 5
S4-16	SUPERSTRUCTURE - PLAN OF SPANS - RIGHT SIDE - SHEET 4 OF 5
S4-17	SUPERSTRUCTURE - PLAN OF SPAN DETAILS - SHEET 5 OF 5
S4-18	SUPERSTRUCTURE - GIRDER FRAMING PLAN
S4-19	SUPERSTRUCTURE - STRUCTURAL STEEL DETAILS - SHEET 1 OF 3
S4-20	SUPERSTRUCTURE - STRUCTURAL STEEL DETAILS - SHEET 2 OF 3
S4-21	SUPERSTRUCTURE - STRUCTURAL STEEL DETAILS - SHEET 3 OF 3
S4-22	STANDARD - ELASTOMERIC BEARING DETAILS
S4-23	SUPERSTRUCTURE - DEAD LOAD DEFLECTIONS - SPAN A - LEFT EXTENSION - SHEET 1 OF 6
S4-24	SUPERSTRUCTURE - DEAD LOAD DEFLECTIONS - SPAN A - RIGHT EXTENSION - SHEET 2 OF 6
S4-25	SUPERSTRUCTURE - DEAD LOAD DEFLECTIONS - SPAN B - LEFT EXTENSION - SHEET 3 OF 6
S4-26	SUPERSTRUCTURE - DEAD LOAD DEFLECTIONS - SPAN B - RIGHT EXTENSION - SHEET 4 OF 6
S4-27	SUPERSTRUCTURE - DEAD LOAD DEFLECTIONS - SPAN C - LEFT EXTENSION - SHEET 5 OF 6
S4-28	SUPERSTRUCTURE - DEAD LOAD DEFLECTIONS - SPAN C - RIGHT EXTENSION - SHEET 6 OF 6
S4-29	SUPERSTRUCTURE - CONCRETE PARAPET DETAILS - SHEET 1 OF 3
S4-30	SUPERSTRUCTURE - CONCRETE PARAPET DETAILS - SHEET 2 OF 3
S4-31	SUPERSTRUCTURE - CONCRETE PARAPET DETAILS - SHEET 3 OF 3
S4-32	STANDARD - GUARDRAIL ANCHORAGE DETAILS FOR METAL RAILS
S4-33	STANDARD - 2 BAR METAL RAIL - SHEET 1 OF 4
S4-34	STANDARD - 2 BAR METAL RAIL - SHEET 2 OF 4
S4-35	SUPERSTRUCTURE - PLAN OF RAIL POST SPACING - 3 OF 4
S4-36	STANDARD - END OF RAIL DETAILS FOR 2 BAR METAL RAIL - 4 OF 4
S4-37	STANDARD - FOAM JOINT SEAL DETAILS
S4-38	SUPERSTRUCTURE - SIDEWALK DETAILS
S4-39	CONCRETE MEDIAN DETAILS
S4-40	SUPERSTRUCTURE - BILL OF MATERIAL - LEFT SIDE - SHEET 1 OF 3
S4-41	SUPERSTRUCTURE - BILL OF MATERIAL - RIGHT SIDE - SHEET 2 OF 3
S4-42	SUPERSTRUCTURE - BILL OF MATERIAL - SHEET 3 OF 3
S4-43	SUBSTRUCTURE - END BENT 1 - LEFT EXTENSION - SHEET 1 OF 4
S4-44	SUBSTRUCTURE - END BENT 1 - RIGHT EXTENSION - SHEET 2 OF 4
S4-45	SUBSTRUCTURE - END BENT 1 WING WALL DETAILS - SHEET 3 OF 4
S4-46	SUBSTRUCTURE - END BENT 1 - SECTION AND DETAILS - SHEET 4 OF 4
S4-47	SUBSTRUCTURE - BENT 1 - LEFT EXTENSION - PLAN AND ELEVATION - SHEET 1 OF 4
S4-48	SUBSTRUCTURE - BENT 1 - LEFT EXTENSION - SECTIONS AND DETAILS - SHEET 2 OF 4
S4-49	SUBSTRUCTURE - BENT 1 - RIGHT EXTENSION - PLAN AND ELEVATION - SHEET 3 OF 4
S4-50	SUBSTRUCTURE - BENT 1 - RIGHT EXTENSION - SECTIONS AND DETAILS - SHEET 4 OF 4
S4-51	SUBSTRUCTURE - BENT 2 - LEFT EXTENSION - PLAN AND ELEVATION - SHEET 1 OF 4
S4-52	SUBSTRUCTURE - BENT 2 - LEFT EXTENSION - SECTIONS AND DETAILS - SHEET 2 OF 4
S4-53	SUBSTRUCTURE - BENT 2 - RIGHT EXTENSION - PLAN AND ELEVATION - SHEET 3 OF 4
S4-54	SUBSTRUCTURE - BENT 2 - RIGHT EXTENSION - SECTIONS AND DETAILS - SHEET 4 OF 4
S4-55	SUBSTRUCTURE - END BENT 2 - LEFT EXTENSION - SHEET 1 OF 4
S4-56	SUBSTRUCTURE - END BENT 2 - RIGHT EXTENSION - SHEET 2 OF 4
S4-57	SUBSTRUCTURE - END BENT 2 WING WALL DETAILS - SHEET 3 OF 4
S4-58	SUBSTRUCTURE - END BENT 2 - SECTION AND DETAILS - SHEET 4 OF 4
S4-59	STANDARD - SLOPE PROTECTION DETAILS
S4-60	STANDARD - BRIDGE APPROACH SLAB FOR FLEXIBLE PAVEMENT - SHEET 1 OF 3
S4-61	STANDARD - BRIDGE APPROACH SLAB DETAILS - SHEET 2 OF 3
S4-62	STANDARD - BRIDGE APPROACH SLAB SIDEWALK DETAILS - SHEET 3 OF 3
S4-63	APPROACH SLAB MEDIAN DETAILS
S5-1	GENERAL DRAWING - SHEET 1 OF 4
S5-2	GENERAL DRAWING - SHEET 2 OF 4
S5-3	GENERAL DRAWING - SHEET 3 OF 4
S5-4	GENERAL DRAWING - SHEET 4 OF 4
S5-5	STANDARD - LRFR SUMMARY
S5-6	SUPERSTRUCTURE - TYPICAL SECTIONS - SHEET 1 OF 2
S5-7	SUPERSTRUCTURE - TYPICAL SECTIONS - SHEET 2 OF 2
S5-8	SUPERSTRUCTURE - PLAN OF SPAN - SHEET 1 OF 2
S5-9	SUPERSTRUCTURE - PLAN OF SPAN - SHEET 2 OF 2
S5-10	SUPERSTRUCTURE - FRAMING PLAN
S5-11	STANDARD - 63"FIB PRESTRESSED CONCRETE GIRDER CONTINUOUS FOR LIVE LOAD - SHEET 1 OF 3
S5-12	STANDARD - PRESTRESSED CONCRETE GIRDER CONTINUOUS FOR LIVE LOAD DETAILS - SHEET 2 OF 3
S5-13	STANDARD - INTERMEDIATE STEEL DIAPHRAGMS FOR 63"FIB - SHEET 3 OF 3
S5-14	SUPERSTRUCTURE - GIRDER DEFLECTION AND CAMBER TABLES
S5-15	STANDARD - ELASTOMERIC BEARING DETAILS
S5-16	STANDARD - 2 BAR METAL RAIL - SHEET 1 OF 2
S5-17	STANDARD - 2 BAR METAL RAIL - SHEET 2 OF 2
S5-18	SUPERSTRUCTURE - EXTERIOR CONCRETE PARAPET LAYOUT - SHEET 1 OF 4
S5-19	SUPERSTRUCTURE - EXTERIOR CONCRETE PARAPET DETAILS - SHEET 2 OF 4
S5-20	SUPERSTRUCTURE - RAIL POST SPACINGS AND END OF RAIL DETAILS - SHEET 3 OF 4
S5-21	STANDARD - GUARDRAIL ANCHORAGE DETAILS FOR METAL RAIL - SHEET 4 OF 4
S5-22	SUPERSTRUCTURE - MODIFIED 2 BAR METAL RAIL (INTERIOR) - SHEET 1 OF 2
S5-23	SUPERSTRUCTURE - MODIFIED 2 BAR METAL RAIL (INTERIOR) - SHEET 2 OF 2
S5-24	SUPERSTRUCTURE - INTERIOR CONCRETE PARAPET LAYOUT AND DETAILS - SHEET 1 OF 3

DRAWING NO.	SHEET TITLE
S5-25	SUPERSTRUCTURE - INTERIOR CONCRETE PARAPET DETAILS - SHEET 2 OF 3
S5-26	SUPERSTRUCTURE - END OF RAIL DETAILS FOR MODIFIED 2 BAR METAL RAIL - SHEET 3 OF 3
S5-27	SUPERSTRUCTURE - BILL OF MATERIAL
S5-28	SUBSTRUCTURE - END BENT 1 - SHEET 1 OF 2
S5-29	SUBSTRUCTURE - END BENT 1 DETAILS & BILL OF MATERIAL - SHEET 2 OF 2
S5-30	SUBSTRUCTURE - END BENT 2 - SHEET 1 OF 2
S5-31	SUBSTRUCTURE - END BENT 2 DETAILS & BILL OF MATERIAL - SHEET 2 OF 2
S5-32	STANDARD - SLOPE PROTECTION DETAILS
S5-33	STANDARD - BRIDGE APPROACH SLAB FOR FLEXIBLE PAVEMENT - SHEET 1 OF 2
S5-34	STANDARD - BRIDGE APPROACH SLAB DETAILS - SHEET 2 OF 2
S5-35	STANDARD - GUARDRAIL ANCHORAGE DETAILS FOR INTERIOR PARAPET METAL RAILS ON APPROACH SLAB
S6-1	GENERAL DRAWING - SHEET 1 OF 4
S6-2	GENERAL DRAWING - SHEET 2 OF 4
S6-3	GENERAL DRAWING - SHEET 3 OF 4
S6-4	GENERAL DRAWING - SHEET 4 OF 4
S6-5	STANDARD - LRFR SUMMARY
S6-6	SUPERSTRUCTURE - TYPICAL SECTIONS - SHEET 1 OF 2
S6-7	SUPERSTRUCTURE - TYPICAL SECTIONS - SHEET 2 OF 2
S6-8	SUPERSTRUCTURE - PLAN OF SPAN - SHEET 1 OF 2
S6-9	SUPERSTRUCTURE - PLAN OF SPAN - SHEET 2 OF 2
S6-10	SUPERSTRUCTURE - FRAMING PLAN
S6-11	STANDARD - 63"FIB PRESTRESSED CONCRETE GIRDER CONTINUOUS FOR LIVE LOAD - SHEET 1 OF 3
S6-12	STANDARD - PRESTRESSED CONCRETE GIRDER CONTINUOUS FOR LIVE LOAD DETAILS - SHEET 2 OF 3
S6-13	STANDARD - INTERMEDIATE STEEL DIAPHRAGMS FOR 63"FIB - SHEET 3 OF 3
S6-14	SUPERSTRUCTURE - GIRDER DEFLECTION AND CAMBER TABLES
S6-15	STANDARD - ELASTOMERIC BEARING DETAILS
S6-16	STANDARD - 2 BAR METAL RAIL - SHEET 1 OF 2
S6-17	STANDARD - 2 BAR METAL RAIL - SHEET 2 OF 2
S6-18	SUPERSTRUCTURE - EXTERIOR CONCRETE PARAPET LAYOUT - SHEET 1 OF 4
S6-19	SUPERSTRUCTURE - EXTERIOR CONCRETE PARAPET DETAILS - SHEET 2 OF 4
S6-20	SUPERSTRUCTURE - RAIL POST SPACINGS AND END OF RAIL DETAILS - SHEET 3 OF 4
S6-21	STANDARD - GUARDRAIL ANCHORAGE DETAILS FOR METAL RAIL - SHEET 4 OF 4
S6-22	SUPERSTRUCTURE - MODIFIED 2 BAR METAL RAIL (INTERIOR) - SHEET 1 OF 2
S6-23	SUPERSTRUCTURE - MODIFIED 2 BAR METAL RAIL (INTERIOR) - SHEET 2 OF 2
S6-24	SUPERSTRUCTURE - INTERIOR CONCRETE PARAPET LAYOUT - SHEET 1 OF 3
S6-25	SUPERSTRUCTURE - INTERIOR CONCRETE PARAPET DETAILS - SHEET 2 OF 3
S6-26	SUPERSTRUCTURE - END OF RAIL DETAILS FOR MODIFIED 2 BAR METAL RAIL - SHEET 3 OF 3
S6-27	SUPERSTRUCTURE - BILL OF MATERIAL
S6-28	SUBSTRUCTURE - END BENT 1 - SHEET 1 OF 2
S6-29	SUBSTRUCTURE - END BENT 1 DETAILS & BILL OF MATERIAL - SHEET 2 OF 2
S6-30	SUBSTRUCTURE - END BENT 2 - SHEET 1 OF 2
S6-31	SUBSTRUCTURE - END BENT 2 DETAILS & BILL OF MATERIAL - SHEET 2 OF 2
S6-32	STANDARD - SLOPE PROTECTION DETAILS
S6-33	STANDARD - BRIDGE APPROACH SLAB FOR FLEXIBLE PAVEMENT - SHEET 1 OF 2
S6-34	STANDARD - BRIDGE APPROACH SLAB DETAILS - SHEET 2 OF 2
S6-35	STANDARD - GUARDRAIL ANCHORAGE DETAILS FOR INTERIOR PARAPET METAL RAILS ON APPROACH SLAB
S7-1	GENERAL DRAWING
S7-2	SUPERSTRUCTURE - CONSTRUCTION SEQUENCE - SHEET 1 OF 2
S7-3	SUPERSTRUCTURE - CONSTRUCTION SEQUENCE - SHEET 2 OF 2
S7-4	SUPERSTRUCTURE - SPECIAL APPROACH SLAB TYPICAL SECTION AND DETAILS
S7-5	SUPERSTRUCTURE - SPECIAL BRIDGE APPROACH SLAB PLAN
S7-6	SUPERSTRUCTURE - SPECIAL BRIDGE APPROACH SLAB DETAILS
S7-7	SUPERSTRUCTURE - SPECIAL APPROACH CONNECTOR SLAB PLAN
S7-8	SUPERSTRUCTURE - SIDEWALK DETAILS
S7-9	SUPERSTRUCTURE - CONCRETE PARAPET DETAILS
S7-10	STANDARD - 2 BAR METAL RAIL - SHEET 1 OF 3
S7-11	SUPERSTRUCTURE - 2 BAR METAL RAIL - SHEET 2 OF 3
S7-12	STANDARD - RAIL POST SPACINGS AND END OF RAIL DETAILS - SHEET 3 OF 3
S7-13	SUPERSTRUCTURE - CONCRETE MEDIAN DETAILS
S7-14	STANDARD NOTES

DOCUMENT NOT CONSIDERED FINAL
UNLESS ALL SIGNATURES COMPLETED

Kimley»Horn

421 Fayetteville Street, Suite 600
Raleigh, NC 27601-1772
Phone (919) 677-2000

NC LICENSE # F-0102

This document, together with the concepts and designs presented herein, as an integral part of the services rendered, is prepared only for the specific project and client for whom it was prepared. It is not to be used for any other project or purpose without the written authorization and signature of Kimley-Horn and Associates, Inc. It shall be without liability to Kimley-Horn and Associates, Inc.

Copyright Kimley-Horn and Associates, Inc., 2026

PROJECT NO. I-5715
MECKLENBURG COUNTY
STATION: _____

STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION RALEIGH					
INDEX OF SHEETS					
REVISIONS					
NO.	BY:	DATE:	NO.	BY:	DATE:
1			3		
2			4		

8/4/2026 K:\RDT-Structures\Bridges\NC\01036524 - I-5715 Structure Design\Cad\Drawn\400_007_I5715_SML_IS03.dgn

DRAWING NO.	SHEET TITLE
C1A-1	BARREL STANDARD - DOUBLE 10 FT. X 8 FT. CONCRETE BOX CULVERT - 90° SKEW - SHEET 1 OF 5
C1A-2	BARREL STANDARD - DOUBLE 10 FT. X 8 FT. CONCRETE BOX CULVERT - 90° SKEW - SHEET 2 OF 5
C1A-3	BARREL STANDARD - DOUBLE 10 FT. X 8 FT. CONCRETE BOX CULVERT - 90° SKEW - SHEET 3 OF 5
C1A-4	STANDARD WINGS FOR CONCRETE BOX CULVERT - SHEET 4 OF 5
C1A-5	STANDARD - LRFR SUMMARY FOR REINFORCED CONCRETE BOX CULVERTS - SHEET 5 OF 5
C1B-1	BARREL STANDARD - DOUBLE 10 FT. X 12 FT. CONCRETE BOX CULVERT - 75° SKEW - SHEET 1 OF 7
C1B-2	BARREL STANDARD - DOUBLE 10 FT. X 12 FT. CONCRETE BOX CULVERT - 75° SKEW - SHEET 2 OF 7
C1B-3	BARREL STANDARD - DOUBLE 10 FT. X 12 FT. CONCRETE BOX CULVERT - 75° SKEW - SHEET 3 OF 7
C1B-4	BARREL STANDARD - DOUBLE 10 FT. X 12 FT. CONCRETE BOX CULVERT - 75° SKEW - SHEET 4 OF 7
C1B-5	WING DETAILS FOR CONCRETE BOX CULVERT - SHEET 5 OF 7
C1B-6	STANDARD WINGS FOR CONCRETE BOX CULVERT - SHEET 6 OF 7
C1B-7	STANDARD - LRFR SUMMARY FOR REINFORCED CONCRETE BOX CULVERTS (NON-INTERSTATE TRAFFIC) - SHEET 7 OF 7
C2-1	BARREL STANDARD - SINGLE 12 FT. X 5 FT. CONCRETE BOX CULVERT - 60° SKEW - SHEET 1 OF 5
C2-2	BARREL STANDARD - SINGLE 12 FT. X 5 FT. CONCRETE BOX CULVERT - 60° SKEW - SHEET 2 OF 5
C2-3	BARREL STANDARD - SINGLE 12 FT. X 5 FT. CONCRETE BOX CULVERT - 60° SKEW - SHEET 3 OF 5
C2-4	STANDARD WINGS FOR CONCRETE BOX CULVERT - SHEET 4 OF 5
C2-5	STANDARD - LRFR SUMMARY FOR REINFORCED CONCRETE BOX CULVERTS - SHEET 5 OF 5
SBW-1	STANDARD - SOUND BARRIER WALL (CONCRETE PILES) - SHEET 1 OF 5
SBW-2	STANDARD - SOUND BARRIER WALL (CONCRETE PILES) - SHEET 2 OF 5
SBW-3	STANDARD - SOUND BARRIER WALL DETAILS (CONCRETE PILES) - SHEET 3 OF 5
SBW-4	MODIFIED SOUND BARRIER WALL - SHEET 4 OF 5
SBW-5	MODIFIED SOUND BARRIER WALL CONCRETE BEAM DETAILS - SHEET 5 OF 5
	STANDARD NOTES

PROJECT NO. I-5715
MECKLENBURG COUNTY
STATION: _____

STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION RALEIGH					
INDEX OF SHEETS					
REVISIONS					
NO.	BY:	DATE:	NO.	BY:	DATE:
1			3		
2			4		

Kimley»Horn

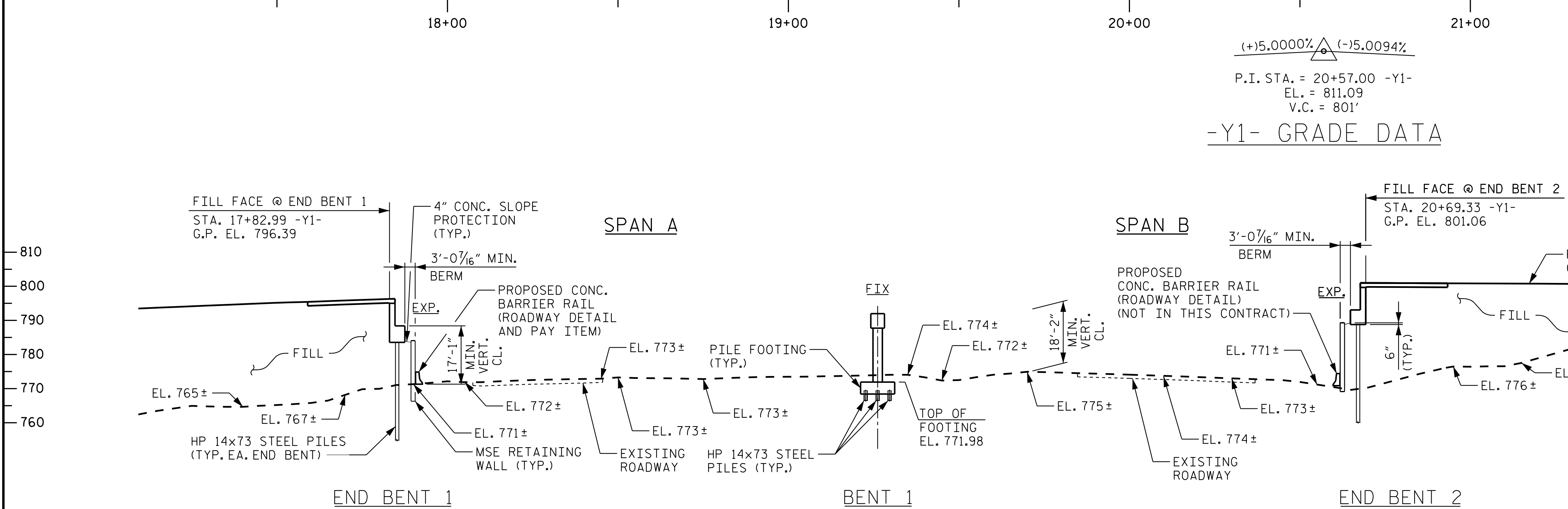
421 Fayetteville Street, Suite 600
Raleigh, NC 27601-1772
Phone (919) 677-2000

NC LICENSE #
F-0102

This document, together with the concepts and designs presented herein, as an instrument of services, is prepared only for the specific project and client for which it was prepared. Release or use of this document without written authorization and adoption by Kimley-Horn and Associates, Inc. shall be without liability to Kimley-Horn and Associates, Inc.

Copyright Kimley-Horn and Associates, Inc., 2026

DOCUMENT NOT CONSIDERED FINAL
UNLESS ALL SIGNATURES COMPLETED



(+)5.0000% (-)5.0094%

P.I. STA. = 20+57.00 -Y1-
EL. = 811.09
V.C. = 801'

-Y1- GRADE DATA

HORIZONTAL CURVE DATA -L3SB-

P.I. STA. 914+35.24
Δ = 24°47'57.5" (RT)
D = 0°45'08.7"
L = 3,296.00'
T = 1,674.22'
R = 7,615.00'

HORIZONTAL CURVE DATA -Y8-

P.I. STA. 19+56.48
Δ = 30°50'47.8" (LT)
D = 2°58'01.8"
L = 1,039.60'
T = 532.73'
R = 1,931.00'

* MINIMUM HORIZONTAL CLEARANCE TO CONCRETE BARRIER RAIL

(A) STA. 17+92.34 -Y1-
OFFSET 11.42' (RT)
= STA. 21+23.73 -Y8-
OFFSET 30.10' (LT)
EL. 772.33

(B) STA. 19+70.70 -Y1-
OFFSET 11.42' (RT)
= STA. 920+37.73 -L3SB-
OFFSET 37.413' (LT)
EL. 775.14

PROJECT NO. I-5715

MECKLENBURG COUNTY

STATION: 20+08.83 -Y1-

920+51.28 -L3SB-

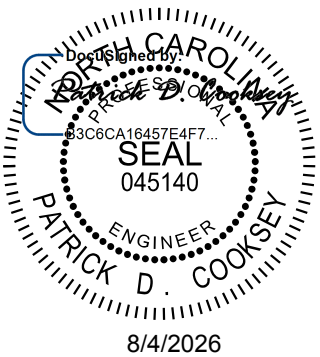
SHEET 1 OF 4 BRIDGE NO. 591415

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

GENERAL DRAWING

FOR BRIDGE OVER
NORTHCROSS DR. AND SOUTHBOUND
I-77 ON I-77 SOUTH CROSSING
BETWEEN NORTHCROSS DR. AND US 21

REVISIONS					SHEET NO.	
NO.	BY:	DATE:	NO.	BY:	DATE:	TOTAL SHEETS
1			3			47
2			4			



Kimley»Horn

421 Fayetteville Street, Suite 600
Raleigh, NC 27601-1772
Phone (919) 677-2000 NC LICENSE # F-0102

This document, together with the concepts and designs presented herein, as an advisory or services, is prepared only for the specific project and client, and without liability to Kimley-Horn and Associates, Inc. shall be without liability to Kimley-Horn and Associates, Inc.

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

PLAN

PILES AND FOOTINGS NOT SHOWN IN PLAN VIEW FOR CLARITY.
PMVC - DENOTES POINT OF MINIMUM VERTICAL CLEARANCE

K:\B01_Structures\Bridges\NC\01036524 - I-5715 Structure Design\Coord\gn\Site *I-5715_SML\001_I5715_SML\001_591415_001.dgn
7/31/2026

DRAWN BY: R. C. GIESEN DATE: 04/2026
CHECKED BY: T. H. ORR DATE: 04/2026
DESIGN ENGINEER OF RECORD: A. L. PHILLIPS DATE: 04/2026



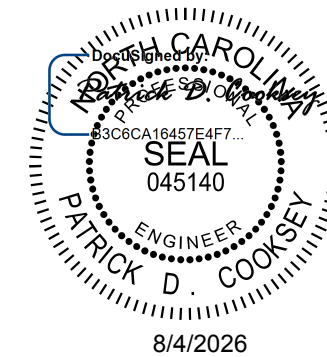
FOR PILES, SEE SECTION 450 OF THE STANDARD SPECIFICATIONS.
INSTALL PILES AT END BENT NO.1 AND END BENT NO.2 PRIOR TO MSE WALL CONSTRUCTION.

SHEET 2 OF 4

FOR BRIDGE OVER
NORTHCROSS DR. AND SOUTHBOUND
I-77 ON I-77 SOUTH CROSSING
BETWEEN NORTHCROSS DR. AND US 21

REVISIONS						SHEET NO. S1-2
NO.	BY:	DATE:	NO.	BY:	DATE:	
1			3			TOTAL SHEETS 47
2			4			

STR. #1



421 Fayetteville Street, Suite 600
Raleigh, NC 27601-1772 NC LICENSE #
Phone (919) 677-2000 F-0102

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

This document, together with the concepts and designs presented herein, as an instrument of services, is intended only for the specific purpose and client for which it was prepared. Reuse of and improper reliance of this document without written authorization and adoption by Kimley-Horn and Associates, Inc. shall be without liability to Kimley-Horn and Associates, Inc.

Copyright Kimley-Horn and Associates, Inc., 2026

(Blank entries indicate item is not applicable to structure)

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

PILE DESIGN INFORMATION
(Blank entries indicate item is not applicable to structure)

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

(Blank entries indicate item is not applicable to structure)

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

1. The Pile Foundation Tables are based on the bridge substructure design and foundation recommendations sealed by a North Carolina Professional Engineer (Pete Tomos, #051623) on 02-04-2026.
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.

SHEET 3 OF 4



STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

GENERAL DRAWING
FOR BRIDGE OVER
NORTHCROSS DR. AND SOUTHBOUND
I-77 ON I-77 SOUTH CROSSING
BETWEEN NORTHCROSS DR. AND US 21

STR. #1

LOAD FACTORS:

DESIGN LOAD RATING FACTORS	LIMIT STATE	γ _{DC}	γ _{DW}
	STRENGTH I	1.25	1.50
	SERVICE II	1.00	1.00

NOTES:

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

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

COMMENTS:

1.

2.

3.

4.

#

CONTROLLING LOAD RATING

1

DESIGN LOAD RATING (HL-93)

2

DESIGN LOAD RATING (HS-20)

3

LEGAL LOAD RATING * *

4

EMERGENCY VEHICLE LOAD RATING

* *

SEE CHART FOR VEHICLE TYPE

GIRDER LOCATION

I

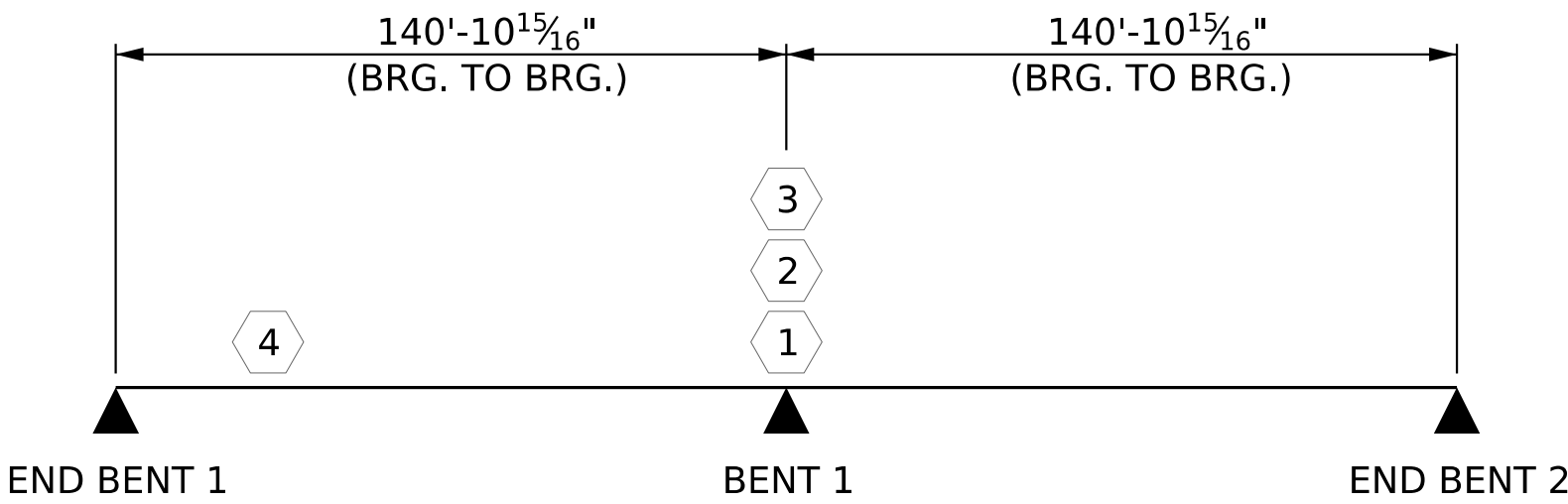
- INTERIOR GIRDER

EL

- EXTERIOR LEFT GIRDER

ER

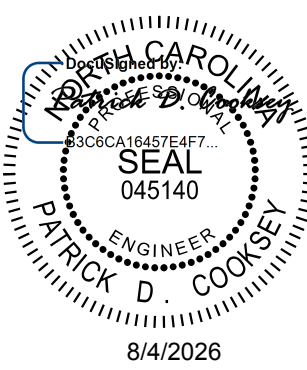
- EXTERIOR RIGHT GIRDER



PROJECT NO. I-5715

MECKLENBURG COUNTY

STATION: 20+08.83 -Y1-



Kimley»Horn

421 Fayetteville Street, Suite 600
Raleigh, NC 27601-1772
Phone (919) 677-2000
NC LICENSE # F-0102

This document, together with the concepts and designs presented herein, as an integral part of the project, is prepared only for the specific project and shall not be used for any other project without the written authorization and signature of Kimley-Horn and Associates, Inc. shall be without liability to Kimley-Horn and Associates, Inc.

Copyright Kimley-Horn and Associates, Inc., 2026

DOCUMENT NOT CONSIDERED FINAL
UNLESS ALL SIGNATURES COMPLETED

STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION RALEIGH					
STANDARD					
LRFR SUMMARY FOR STEEL GIRDERS NON-INTERSTATE TRAFFIC					
REVISIONS					
NO.	BY:	DATE:	NO.	BY:	DATE:
1			3		
2			4		
SHEET NO. S1-5					TOTAL SHEETS 47

STR. #1 STD. NO. LRFR3

DRAWN BY: <u>R. C. GIESEN</u>	DATE: <u>04/2026</u>
CHECKED BY: <u>T. H. ORR</u>	DATE: <u>04/2026</u>
DESIGN ENGINEER OF RECORD: <u>A. L. PHILLIPS</u>	DATE: <u>04/2026</u>



ERECTION NOTES

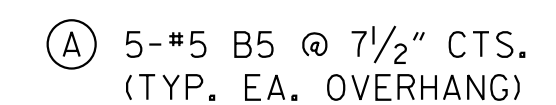
Kimley»Horn

421 Fayetteville Street, Suite 600
Raleigh, NC 27601-1772
Phone (919) 677-2000

NC LICENSE #
F-0102

This document, together with the concepts and designs presented herein, as instrument of services, is intended only for the specific purpose and client for which it was prepared. It is the property of Kimley-Horn and Associates, Inc. and its use without written authorization and adoption by Kimley-Horn and Associates, Inc. shall be without liability to Kimley-Horn and Associates, Inc.

Copyright Kimley-Horn and Associates, Inc., 2026



1'-1 $\frac{3}{4}$ " TOP OF SLAB
TO BOTTOM OF TOP
FLANGE @ CL BEARING

9 $\frac{3}{4}$ " UNIFORM SLAB
@ CL BEARING

CL GDR.

4" BUILD-UP
@ CL BEARING

STAY-IN-PLACE
METAL FORM
(TYP.)

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

SHEET 1 OF 3

STATE OF NORTH CAROLINA

DEPARTMENT OF TRANSPORTATION

RALEIGH

SUPERSTRUCTURE

TYPICAL SECTION

REVISIONS

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

SHEET NO.

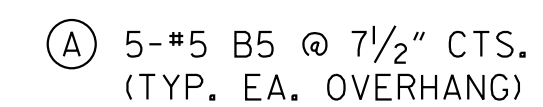
S1-7

TOTAL
SHEETS

47

STR. #1

DRAWN BY: <u>R. C. GIESEN</u>	DATE: <u>04/2026</u>
CHECKED BY: <u>T. H. ORR</u>	DATE: <u>04/2026</u>
DESIGN ENGINEER OF RECORD: <u>A. L. PHILLIPS</u>	DATE: <u>04/2026</u>



NOTES:
FOR NOTES, SEE SHEET 3 OF 3.

SHEET 2 OF 3



Kimley»»Horn

421 Fayetteville Street, Suite 600
Raleigh, NC 27601-1772
Phone (919) 677-2000

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

REVISIONS						SHEET NO. S1-8
NO.	BY:	DATE:	NO.	BY:	DATE:	
1			3			TOTAL SHEETS 47
2			4			

STR. #1



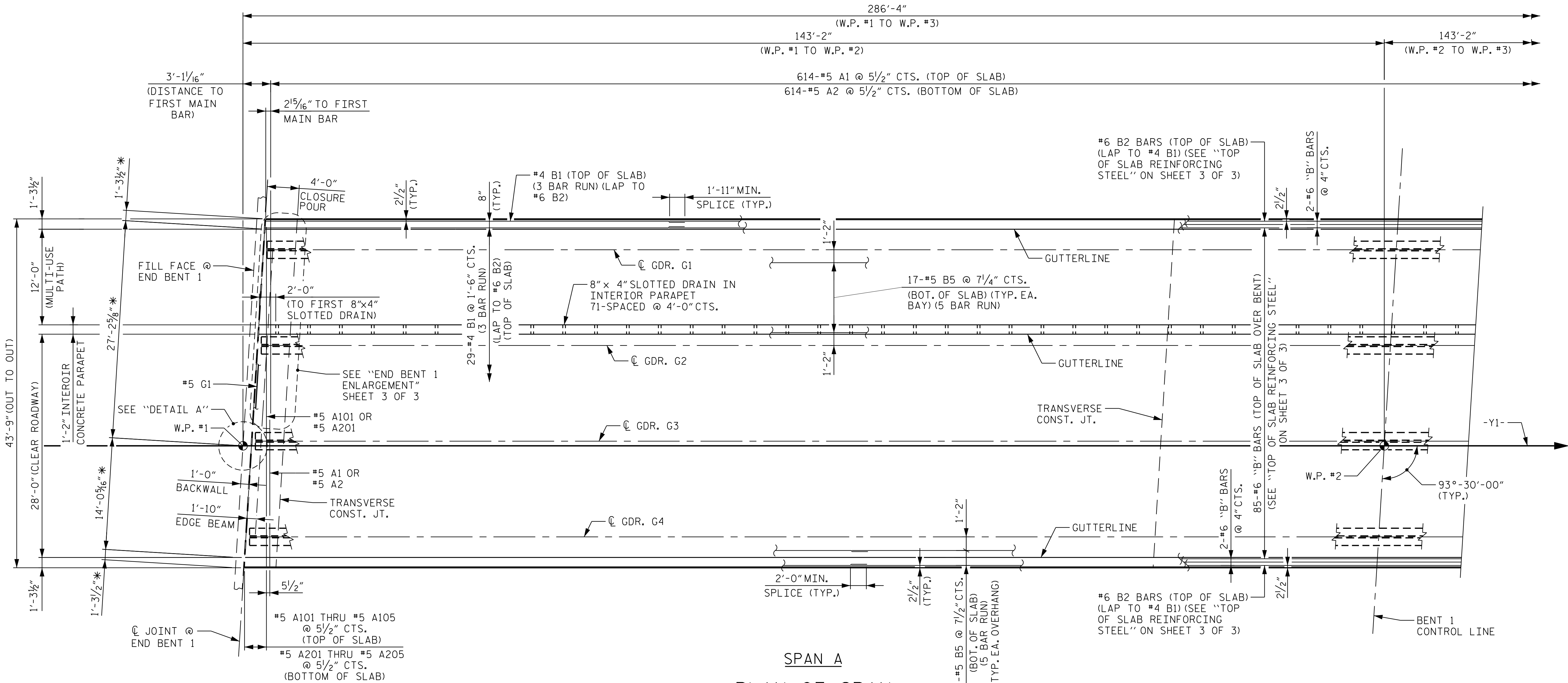
SECTION AT BENT 1



Professional Engineer Seal for Patrick D. Cooksey, State of North Carolina, License No. 045140, expires 8/4/2026.

STR. #1

7/31/2026 K:\B01-Structures\Bridges\N\01036524 - I-5715 Structure Design\Cad\Drawn\Site *I\Structure I\Final\401.019.I5715.SW\SL591415.010.dgn



NOTES:

FOR POUR SEQUENCE AND LOCATION OF CONSTRUCTION JOINTS, SEE SUPERSTRUCTURE "BILL OF MATERIAL".

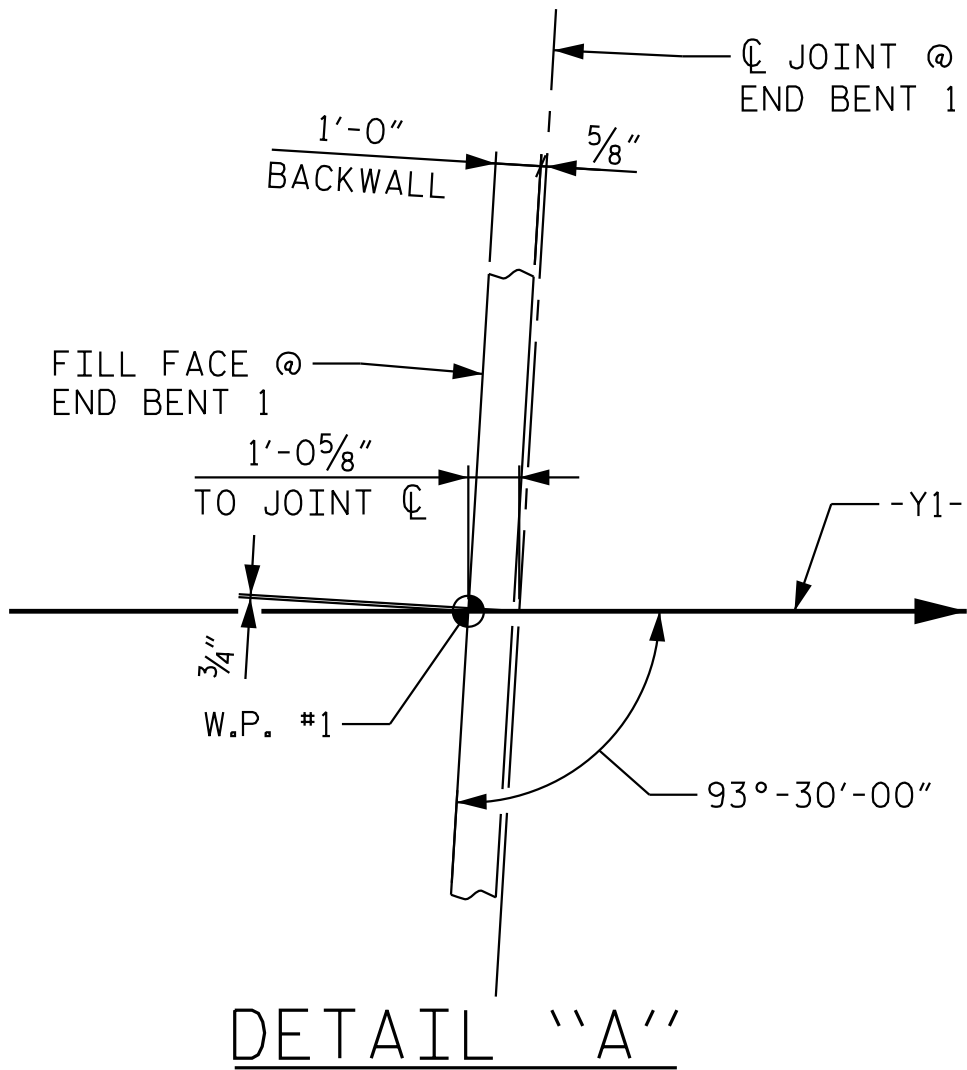
FOR CONCRETE PARAPET REINFORCING STEEL, SEE "CONCRETE PARAPET DETAILS" SHEETS.

FOR "TOP OF SLAB REINFORCING STEEL" DETAIL, SEE SHEET 3 OF 3.

INTERMEDIATE DIAPHRAGMS NOT SHOWN FOR CLARITY, SEE "FRAMING PLAN" SHEETS.

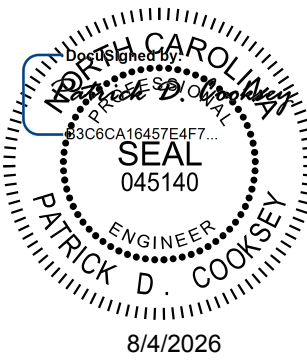
FOR LOCATION OF TRANSVERSE CONSTRUCTION JOINT, SEE "BILL OF MATERIAL".

FOR SPLICE LENGTHS, REFER TO MINIMUM SPLICE LENGTH TABLE ON SUPERSTRUCTURE BILL OF MATERIAL SHEET.



PROJECT NO. I-5715
MECKLENBURG COUNTY
STATION: 20+08.83 -Y1-

SHEET 1 OF 3

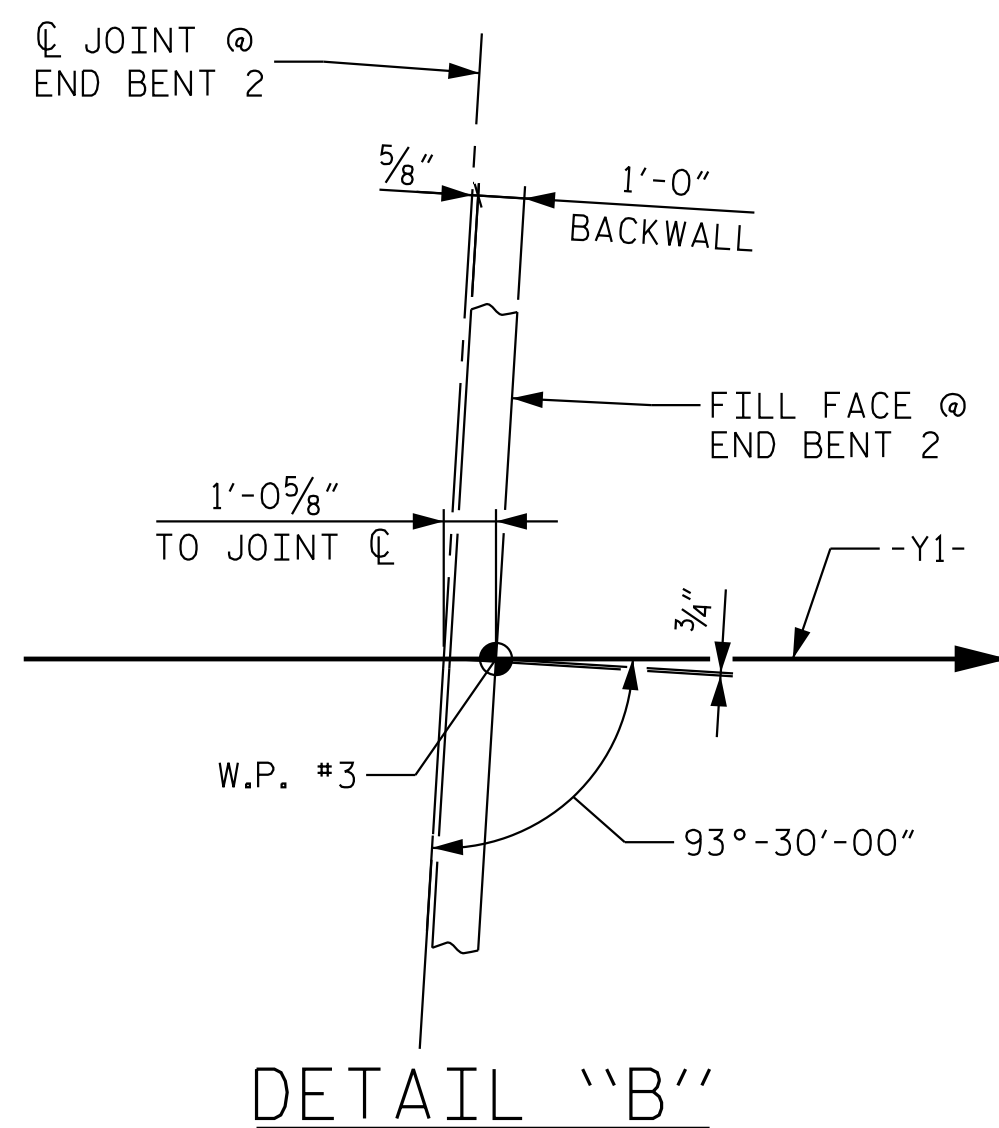


Kimley»Horn
421 Fayetteville Street, Suite 600
Raleigh, NC 27601-1772
Phone (919) 677-2000
NC LICENSE # F-0102

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

REVISIONS						SHEET NO. S1-10
NO.	BY:	DATE:	NO.	BY:	DATE:	
1			3			TOTAL SHEETS 47
2			4			

STR. #1



SPAN B
PLAN OF SPAN

* DENOTES MEASURED ALONG $\mathbb{C}$ OF JOINT

PROJECT NO. I-5715
MECKLENBURG COUNTY
 STATION: 20+08.83 -Y1-

SHEET 2 OF 3

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUPERSTRUCTURE
PLAN OF SPANS

Kimley»Horn

421 Fayetteville Street, Suite 600
Raleigh, NC 27601-1772
Phone (919) 677-2000

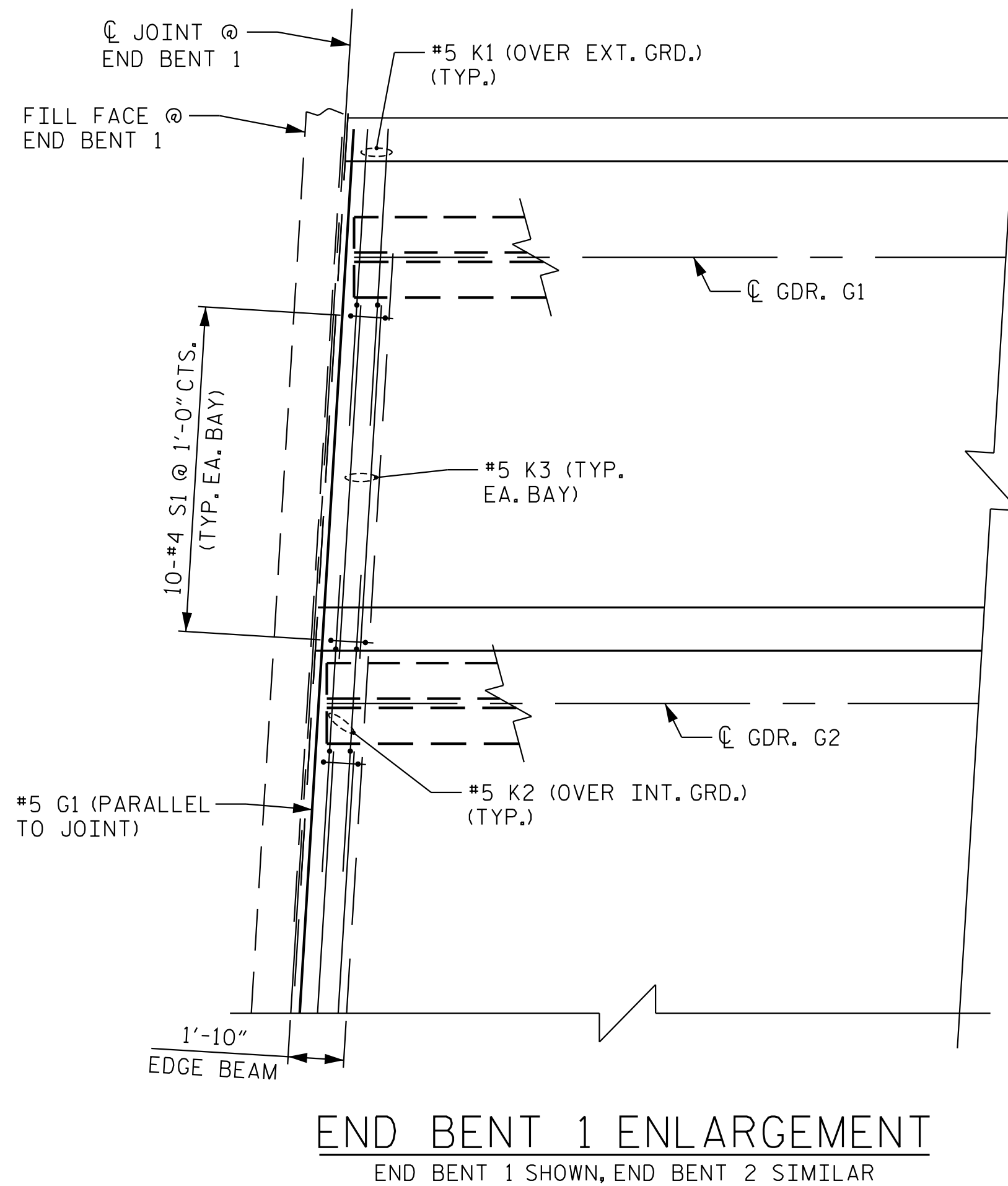
This document, together with the concepts and designs presented herein, as an instrument of services, is intended only for the specific purpose and client for which it was prepared. Reuse of any part of this document without the express written authorization and adoption by Kimley-Horn and Associates, Inc. shall be without liability to Kimley-Horn and Associates, Inc.

Copyright Kimley-Horn and Associates, Inc., 2026

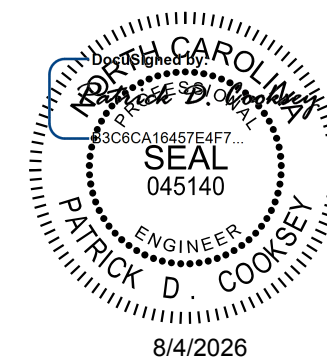
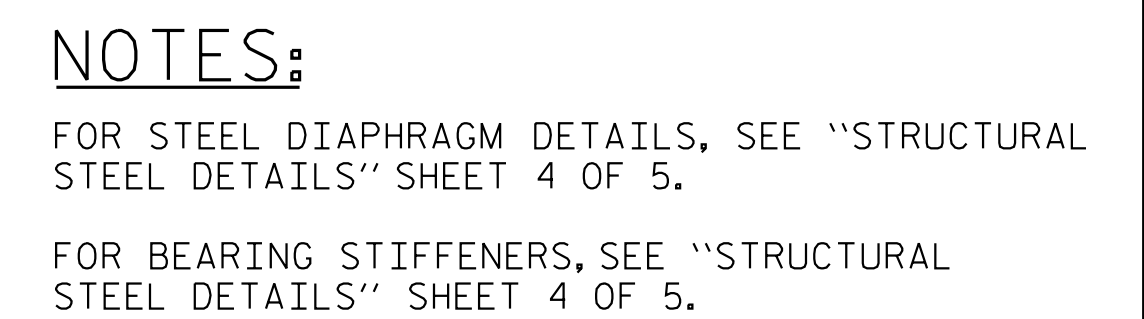
**DOCUMENT NOT CONSIDERED FINAL
UNLESS ALL SIGNATURES COMPLETED**

REVISIONS						SHEET NO. S1-11
NO.	BY:	DATE:	NO.	BY:	DATE:	
1			3			TOTAL SHEETS 47
2			4			

STR. #1



STR. #1



PROJECT NO. I-5715
MECKLENBURG COUNTY
 STATION: 20+08.83 -Y1-

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUPERSTRUCTURE
FRAMING PLAN

REVISONS						SHEET NO. S1-13
NO.	BY:	DATE:	NO.	BY:	DATE:	
1			3			TOTAL SHEETS 47
2			4			

STR. #1

8/74/2026	DRAWN BY: <u>R. C. GIESEN</u>	DATE: <u>04/2026</u>
	CHECKED BY: <u>T. H. ORR</u>	DATE: <u>04/2026</u>
	DESIGN ENGINEER OF RECORD: <u>A. L. PHILLIPS</u>	DATE: <u>04/2026</u>

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

Kimley»Horn

421 Fayetteville Street, Suite 600
Raleigh, NC 27601-1772
Phone (919) 677-2000

NC LICENSE #
F-0102

This document, together with the concepts and designs presented herein, are
instrument of services, is intended only for the specific purpose and client for
which it was prepared. It is not to be used for any other purpose, and the design
written authorization and adoption by Kimley-Horn and Associates, Inc. shall
without liability to Kimley-Horn and Associates, Inc.

Copyright Kimley-Horn and Associates, Inc., 2026.

7/31/2026 K:\PDI-Structures\Bridges\NC\01036524 - I-5715 Structure Design\Cad\Drawn\Site *I-5715.SWJ.SS1.591415.014.dgn

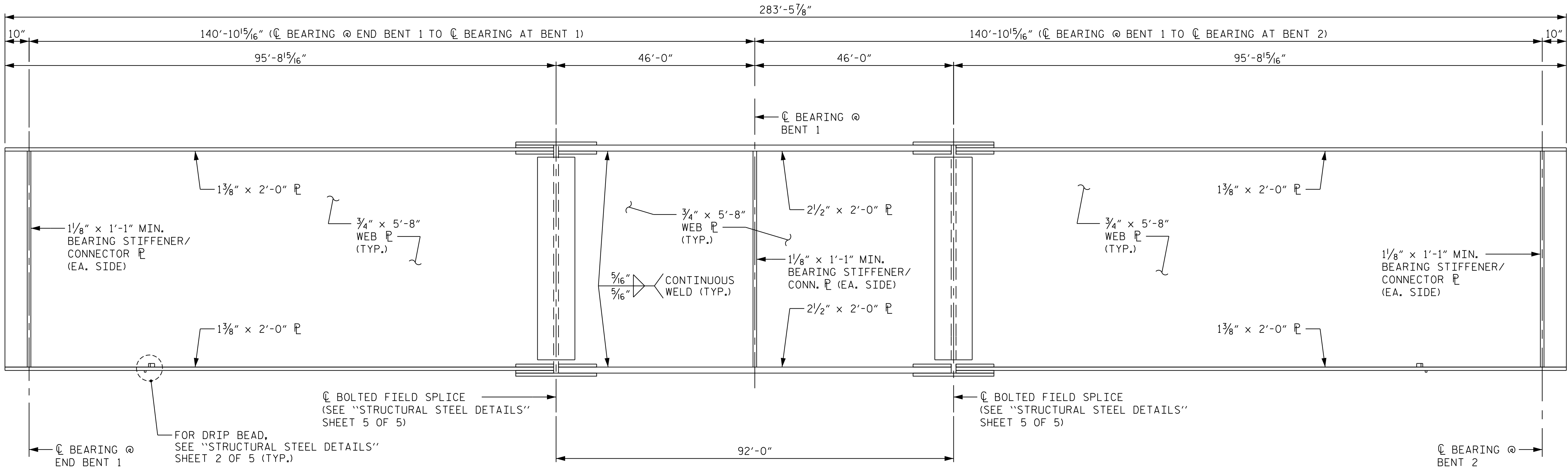
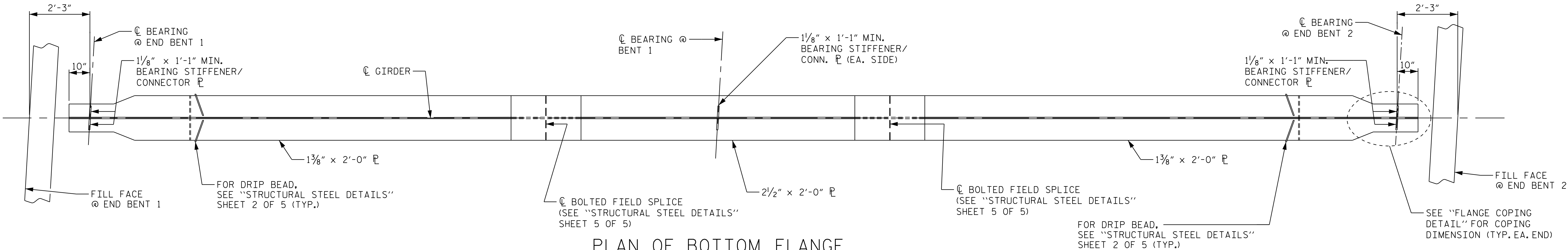
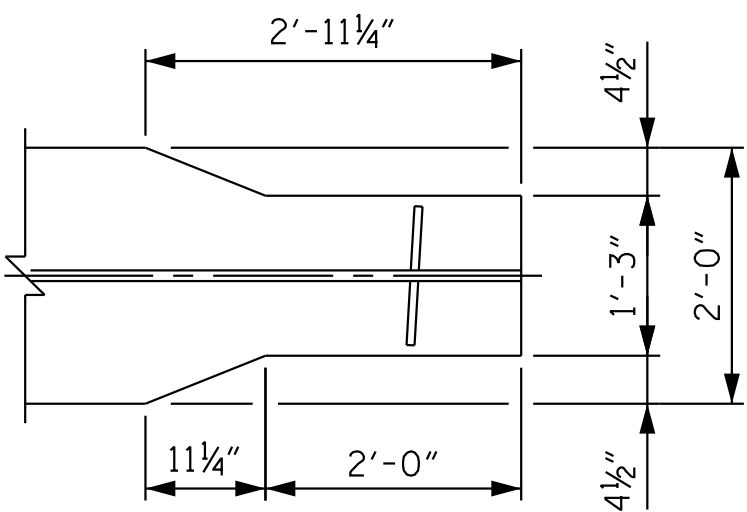


PLATE GIRDER ELEVATION
SHEAR STUDS NOT SHOWN, SEE SHEET 5 OF 5 FOR SHEAR STUD LOCATIONS



PLAN OF BOTTOM FLANGE
END BENT DIAPHRAGMS NOT SHOWN FOR CLARITY



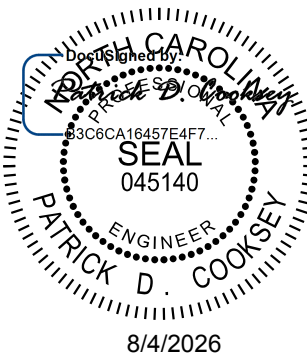
FLANGE COPING DETAIL
SHOWING REDUCTION IN FLANGE WIDTH (BOTTOM FLANGE ONLY)

NOTES:

FOR STRUCTURAL STEEL
NOTES, SEE SHEET 2 OF 5.

PROJECT NO. I-5715
MECKLENBURG COUNTY
STATION: 20+08.83 -Y1-

SHEET 1 OF 5



Kimley»Horn

421 Fayetteville Street, Suite 600
Raleigh, NC 27601-1772
Phone (919) 677-2000 NC LICENSE # F-0102

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

STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION RALEIGH						SUPERSTRUCTURE STRUCTURAL STEEL DETAILS		
REVISIONS						SHEET NO. S1-14		
NO.	BY:	DATE:	NO.	BY:	DATE:	TOTAL SHEETS 47		
1			3					
2			4					

STR. #1

DRAWN BY: R. C. GIESEN DATE: 04/2026
CHECKED BY: T. H. ORR DATE: 04/2026
DESIGN ENGINEER OF RECORD: A. L. PHILLIPS DATE: 04/2026

CHARPY V-NOTCH

59'-11"

59'-11"

415/16"

141 ROWS @ 8"

(4 STUDS PER ROW)

8"

2'-8"

8"

133 ROWS @ 8"

(4 STUDS PER ROW)

8"

2'-8"

8"

141 ROWS @ 8"

(4 STUDS PER ROW)

415/16"

SHEAR STUD SPACING

CL BEARING @ BENT 1

SEE "STRUCTURAL STEEL DETAILS", SHEET 5 OF 5

CL BEARING @ BENT 1

CL BEARING @ BENT 2

CL BOLTED FIELD SPLICE (SEE "STRUCTURAL STEEL DETAILS" SHEET 5 OF 5)

CL BOLTED FIELD SPLICE (SEE "STRUCTURAL STEEL DETAILS" SHEET 5 OF 5)

SEE NOTE ①

24'-8"

24'-8"

SEE NOTE ①

SPAN A

SPAN B

10"

10"

CHARPY V-NOTCH NOTES:

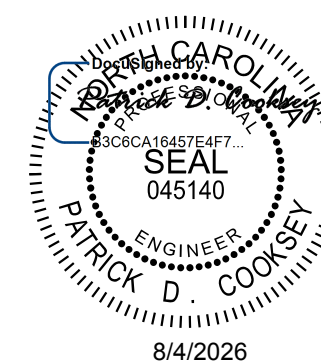
1. CHARPY V-NOTCH TESTS ARE REQUIRED FOR ALL TOP OR BOTTOM FLANGE PLATES WHICH FALL WITHIN THESE LIMITS, ALL WEB PLATES, AND SPLICE PLATES. IF A PERMITTED SHOP FLANGE SPLICE IS NOT USED, CHARPY V-NOTCH TESTS WILL BE REQUIRED FOR THE ENTIRE FLANGE PLATE. FOR CHARPY V-NOTCH TESTS, SEE ARTICLE 1072-7 OF THE STANDARD SPECIFICATIONS.
2. NO WELDING OF FORMS OR FALSEWORK TO THE TOP FLANGE WILL BE PERMITTED IN THIS REGION.

SHEET 3 OF 5

SUPERSTRUCTURE
STRUCTURAL STEEL
DETAILS

REVISIONS						SHEET NO. S1-16
NO.	BY:	DATE:	NO.	BY:	DATE:	
1			3			TOTAL SHEETS 47
2			4			

STR. #1



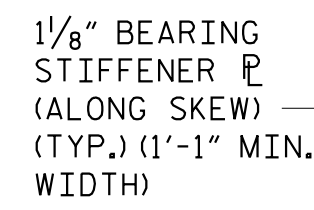
421 Fayetteville Street, Suite 600
Raleigh, NC 27601-1772
Phone (919) 677-2000

This document, together with the concepts and designs presented herein, as an instrument of services, is intended only for the specific purpose and client for which it was prepared. Reuse of and improper reliance of this document without written authorization and adoption by Kimley-Horn and Associates, Inc. shall be without liability to Kimley-Horn and Associates, Inc.

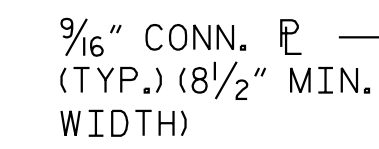
Copyright Kimley-Horn and Associates, Inc., 2026

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

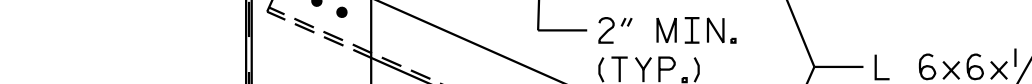
DRAWN BY: R. C. GIESEN DATE: 04/2026
 CHECKED BY: T. H. ORR DATE: 04/2026
 DESIGN ENGINEER OF RECORD: A. L. PHILLIPS DATE: 04/2026



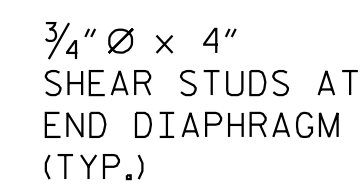
TYPICAL END BENT DIAPHRAGM - (D1)



TYPICAL INTERMEDIATE DIAPHRAGM - (D3)

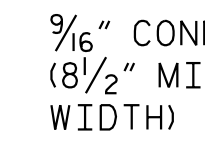


TYPICAL BENT DIAPHRAGM - (D2)

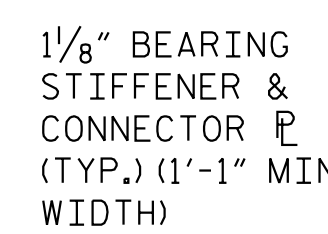


SHEAR STUD DETAIL

NOTE: TOP OF SHEAR STUD SHALL HAVE AT
LEAST 2 1/2" COVER AND PENETRATE AT
LEAST 3" ABOVE BOTTOM OF EDGE BEAM.



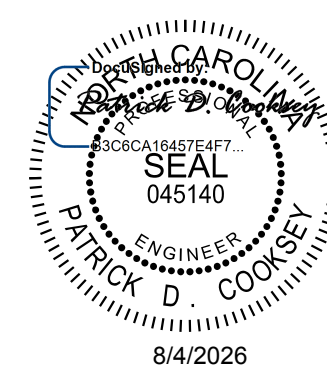
INTERMEDIATE
DIAPHRAGM
CONNECTOR
PLATE DETAIL



BEARING STIFFENER/
CONNECTOR PLATE
END BENT &
BENT DIAPHRAGM

PROJECT NO. I-5715
MECKLENBURG COUNTY
 STATION: 20+08.83 -Y1-

SHEET 4 OF 5



Kimley»»Horn

421 Fayetteville Street, Suite 600
Raleigh, NC 27601-1772
Phone (919) 677-2000

This document, together with the concepts and designs presented herein, as an instrument of services, is intended only for the specific purpose and client for which it was prepared. Reuse of and improper reliance on this document without written authorization and adoption by Kimley-Horn and Associates, Inc. shall be without liability to Kimley-Horn and Associates, Inc.

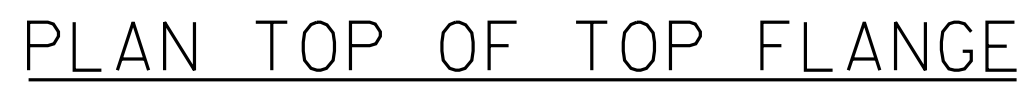
Copyright Kimley-Horn and Associates, Inc., 2026

DRAWN BY: <u>R. C. GIESEN</u>	DATE: <u>04/2026</u>
CHECKED BY: <u>T. H. ORR</u>	DATE: <u>04/2026</u>
DESIGN ENGINEER OF RECORD: <u>A. L. PHILLIPS</u>	DATE: <u>04/2026</u>

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

REVISIONS						SHEET NO. S1-17
NO.	BY:	DATE:	NO.	BY:	DATE:	
1			3			TOTAL SHEETS 47
2			4			

STR. #1

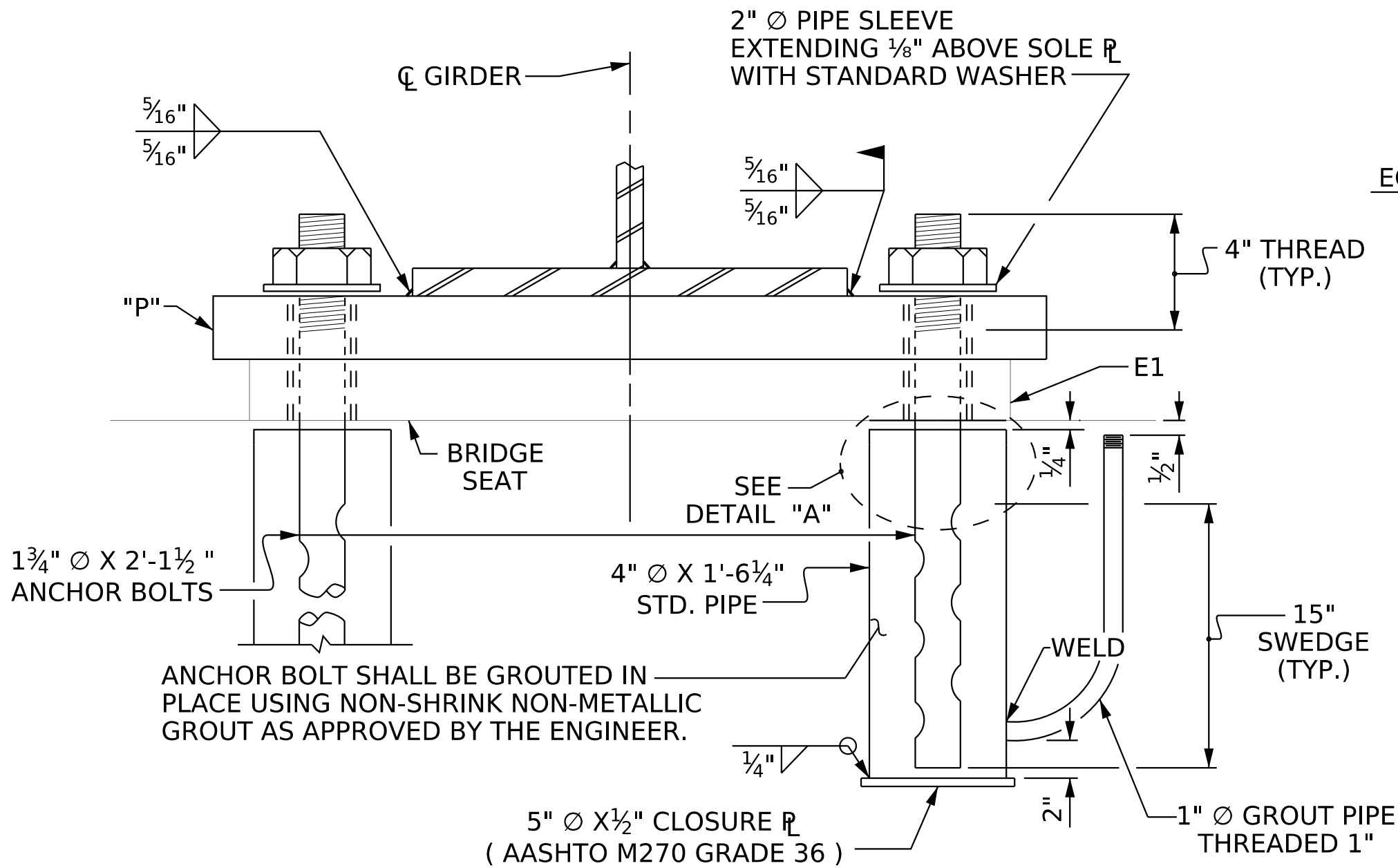


This document, together with the concepts and designs presented herein, as an instrument of services, is intended only for the specific purpose and client for which it was prepared. Reuse of and improper reliance of this document without written authorization and adoption by Kimley-Horn and Associates, Inc. shall be without liability to Kimley-Horn and Associates, Inc.

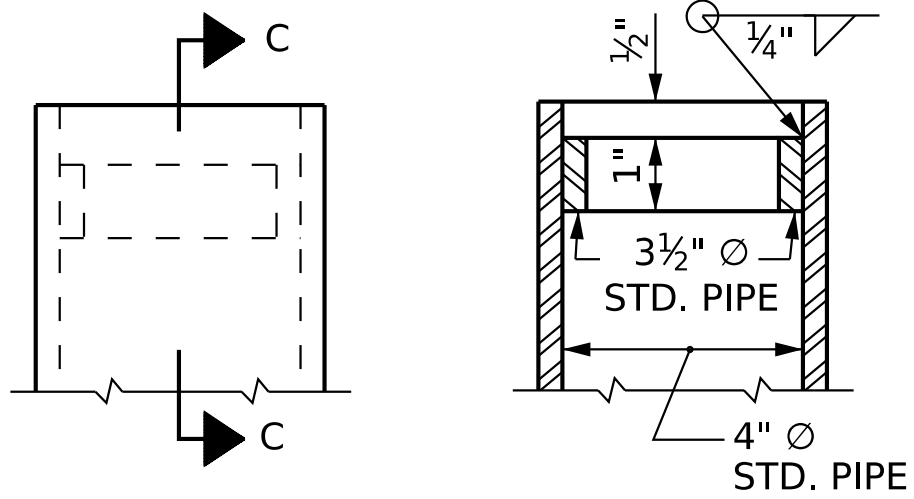
Copyright Kimley-Horn and Associates, Inc., 2026

STR. #1

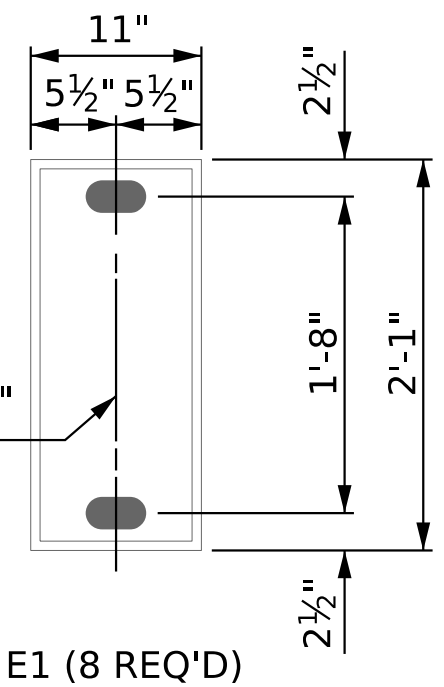
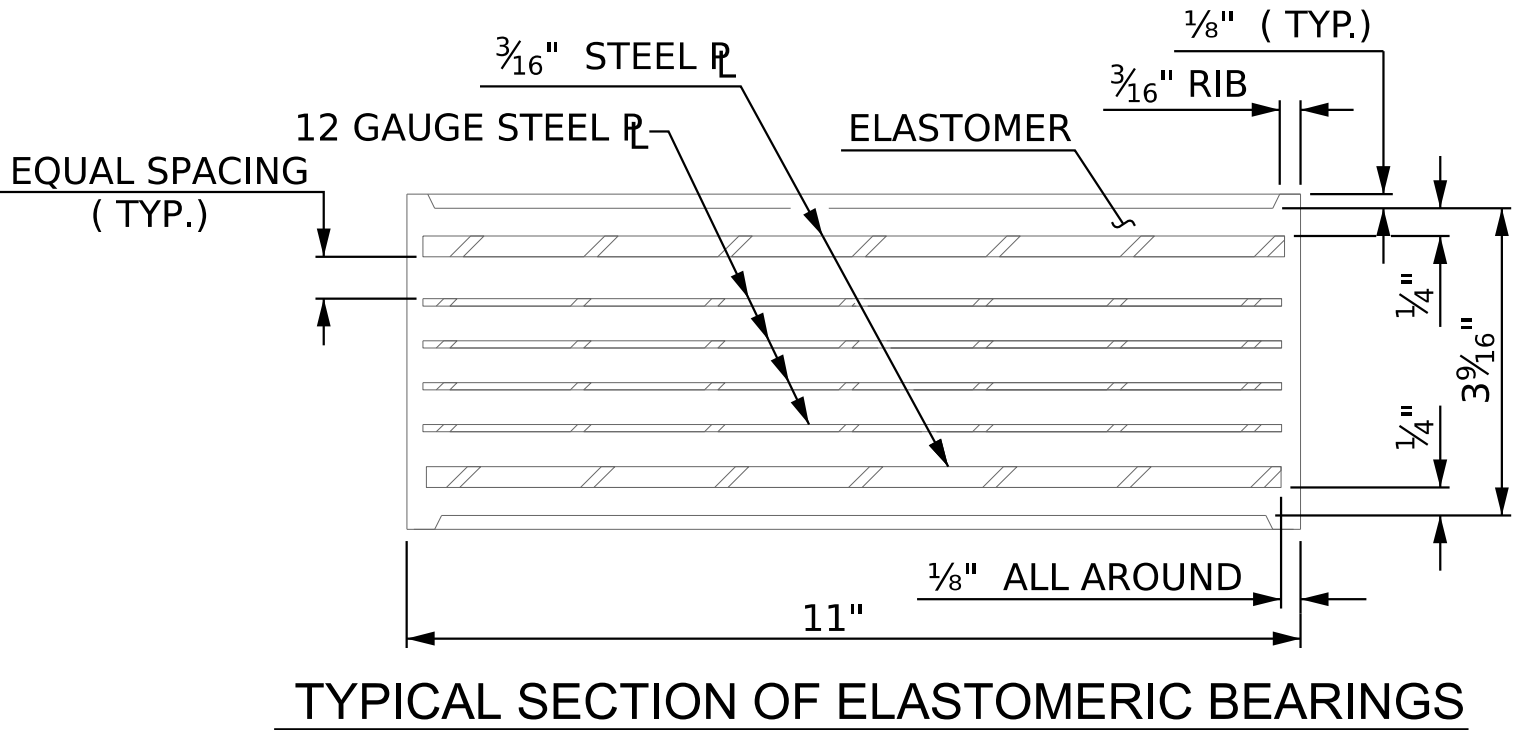
7/31/2026 K:\B01_Structures\Bridges\NC\01036524 - I-5715 Structure Design\Coord\gn\Site *I-5715_SML\B01_591415_018.dgn



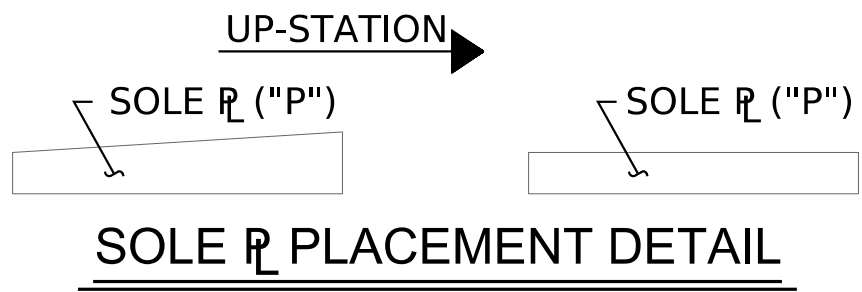
EXPANSION
END VIEW



SECTION C-C
DETAIL "A"



PLAN VIEW OF ELASTOMERIC BEARING
TYPE IV



NOTES

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

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

THE PAYMENT FOR THE PIPE SLEEVES SHALL BE INCLUDED IN THE SEVERAL PAY ITEMS.

FOR PAINTED STRUCTURAL STEEL (EXCLUDING AASHTO M270 GRADE 50W), SOLE PLATES, ANCHOR BOLTS, NUTS AND WASHERS SHALL BE GALVANIZED IN ACCORDANCE WITH THE STANDARD SPECIFICATIONS.

FOR AASHTO M270 GRADE 50W STRUCTURAL STEEL, SOLE PLATE SHALL BE AASHTO M270 GRADE 50W AND SHALL NOT BE GALVANIZED. ANCHOR BOLTS, NUTS AND WASHERS SHALL BE GALVANIZED IN ACCORDANCE WITH THE STANDARD SPECIFICATIONS.

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

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

ALL SURFACES OF BEARING PLATES SHALL BE SMOOTH AND STRAIGHT.

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

FOR STEEL REINFORCED ELASTOMERIC BEARINGS, SEE STANDARD SPECIFICATIONS.

THE CLOSURE PLATE, GROUT PIPE AND STANDARD PIPE FOR THE EXPANSION ASSEMBLY NEED NOT BE GALVANIZED.

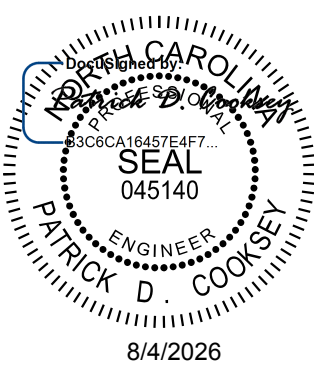
THE CONTRACTOR'S ATTENTION IS CALLED TO THE FOLLOWING PROCEDURE, WHICH MAY BE REQUIRED BY THE ENGINEER, TO RESET ELASTOMERIC BEARINGS DUE TO GIRDER TRANSLATION AND END ROTATION:

- ONCE THE DECK HAS CURED, THE GIRDERS SHALL BE JACKED THEN THE ANCHOR BOLTS AND ELASTOMERIC BEARING SLOTS CENTERED AS NEARLY AS PRACTICAL ABOUT THE BEARING STIFFENER. THIS OPERATION SHALL BE PERFORMED AT APPROXIMATELY 60°F.
- AFTER CENTERING THE ELASTOMERIC BEARING SLOTS AND ANCHOR BOLTS, THE ANCHOR BOLTS SHALL BE GROUTED.

THE CONTRACTOR MAY PROPOSE ALTERNATE METHODS, PROVIDED DETAILS ARE SUBMITTED TO THE ENGINEER FOR REVIEW AND APPROVAL.

MAXIMUM ALLOWABLE SERVICE LOADS	
D.L.+L.L. (NO IMPACT)	
TYPE IV	310 k

PROJECT NO. I-5715
MECKLENBURG COUNTY
STATION: 20+08.83 -Y1-



Kimley»Horn

421 Fayetteville Street, Suite 600
Raleigh, NC 27601-1772
Phone (919) 677-2000 NC LICENSE # F-0102

This document, together with the concepts and designs presented herein, is an integral part of the contract. It is to be used only for the specific project and shall not be used for any other purpose without the written authorization and signature of Kimley-Horn and Associates, Inc. shall be without liability to Kimley-Horn and Associates, Inc.

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

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

STANDARD
ELASTOMERIC
BEARING DETAILS
(STEEL SUPERSTRUCTURE)

REVISIONS						SHEET NO. S1-19
NO.	BY:	DATE:	NO.	BY:	DATE:	
1			3			TOTAL SHEETS 47
2			4			

STR. #1 STD. NO. EB2

DRAWN BY: R. C. GIESEN DATE: 04/2026
CHECKED BY: T. H. ORR DATE: 04/2026
DESIGN ENGINEER OF RECORD: A. L. PHILLIPS DATE: 04/2026

NOTES

FOR DISC BEARINGS, SEE SPECIAL PROVISIONS.

ALL BEARING PLATES SHALL BE AASHTO M270 GRADE 50W OR GRADE 50.

AT ALL POINTS OF SUPPORT, NUTS FOR ANCHOR BOLTS SHALL BE FINGER-TIGHTENED PLUS AN ADDITIONAL ¼ TURN. THE THREAD OF THE NUT AND BOLT SHALL THEN BE BURRED WITH A SHARP POINTED TOOL.

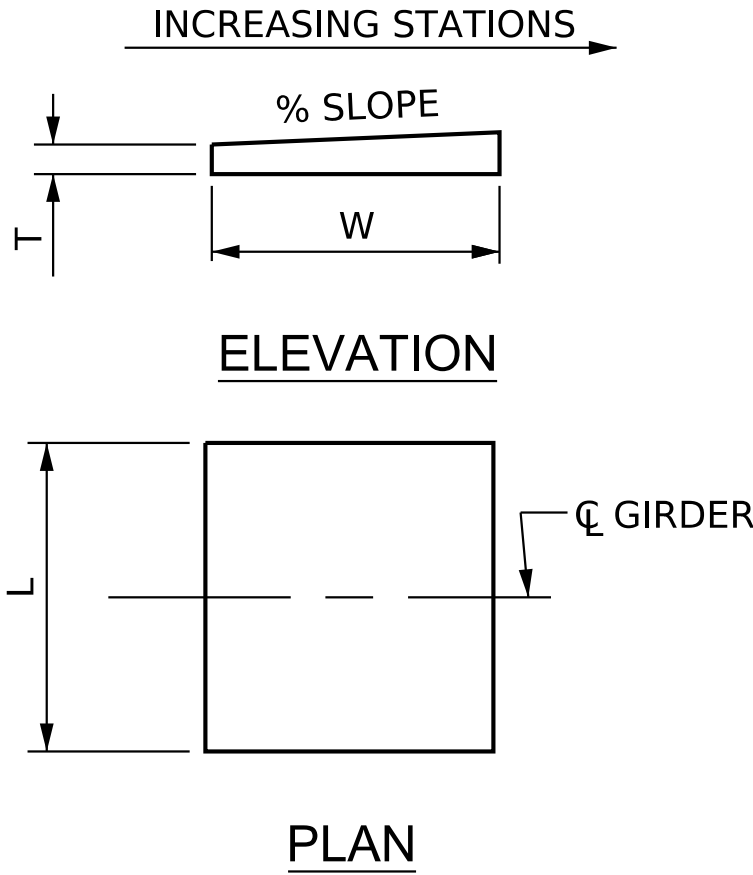
WHEN WELDING THE SOLE PLATE TO THE GIRDER, USE TEMPERATURE INDICATING WAX PENS, OR OTHER SUITABLE MEANS, TO ENSURE THAT THE TEMPERATURE OF THE BEARING DOES NOT EXCEED 250°F. TEMPERATURES ABOVE THIS MAY DAMAGE THE TFE OR URETHANE DISC.

SOLE PLATES SHOULD BE WELDED TO GIRDER FLANGES AND ANCHOR BOLTS SHOULD BE GROUTED BEFORE FALSEWORK IS PLACED.

ALL SURFACES OF BEARING PLATES SHALL BE SMOOTH AND STRAIGHT.

FOR THERMAL SPRAYED COATINGS (METALLIZATION), SEE SPECIAL PROVISIONS.

THE MINIMUM ROTATIONAL CAPACITY FOR ALL BEARINGS SHALL BE 0.02 RADIAN.

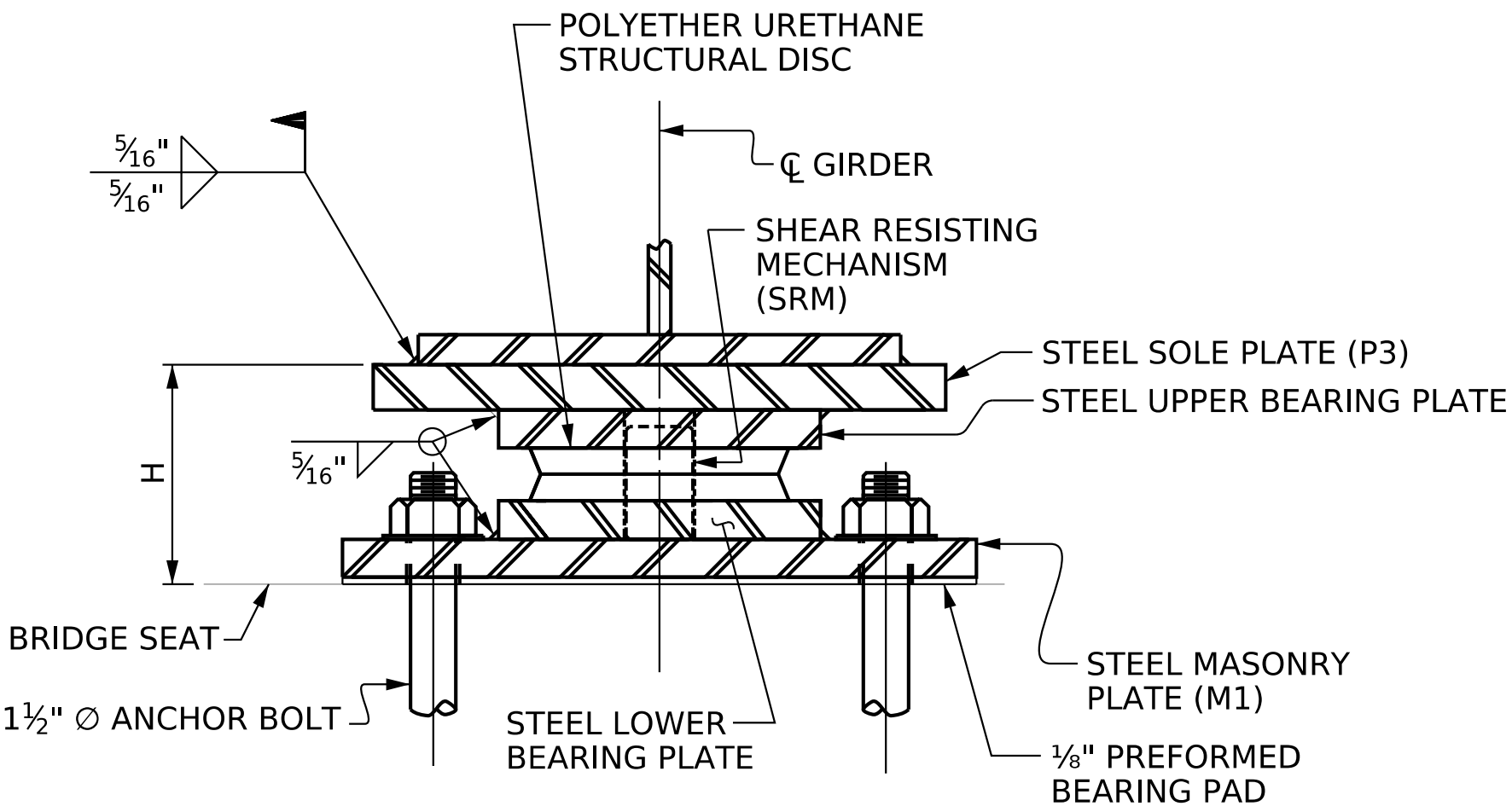
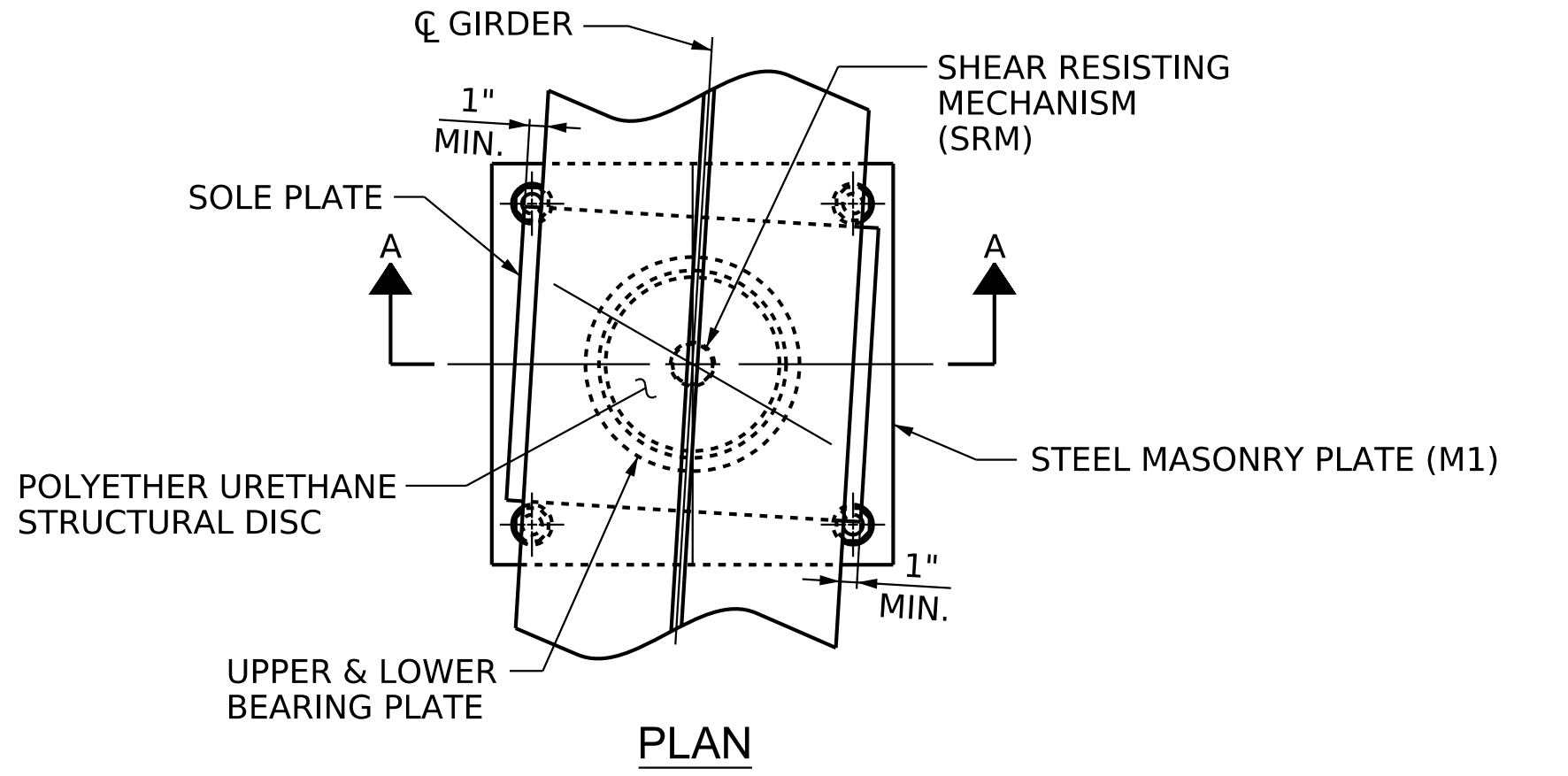


NOTE:
DIMENSIONS "W" AND "T" SHALL BE DETERMINED BY THE BEARING MANUFACTURER.

SET DIMENSION "L" SUCH THAT THE MINIMUM EDGE DISTANCE TO THE GIRDER FLANGE IS 1".

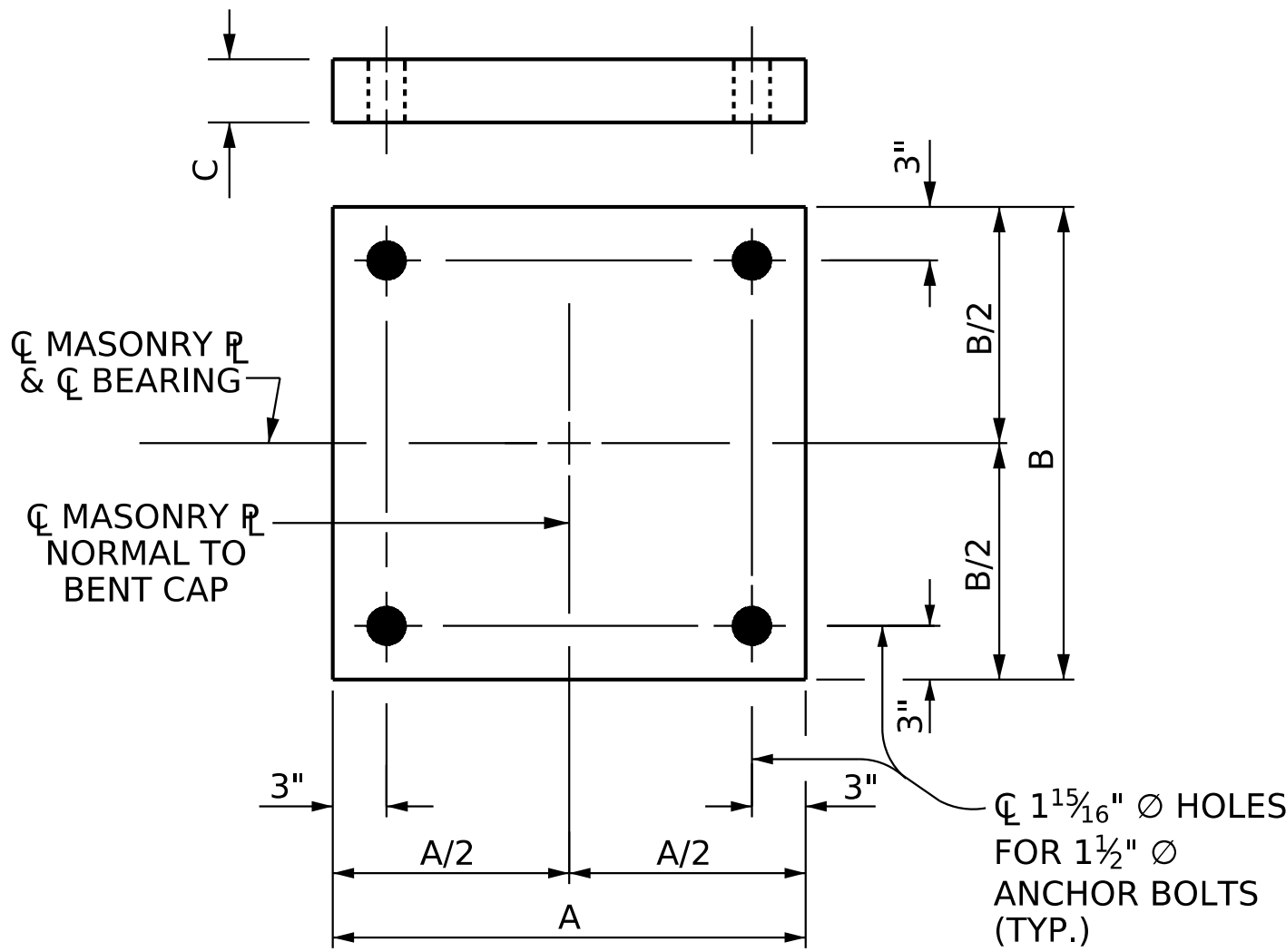
SOLE PLATE DETAILS (P3)

(4 REQ'D)



SECTION A-A

DB1, FIXED



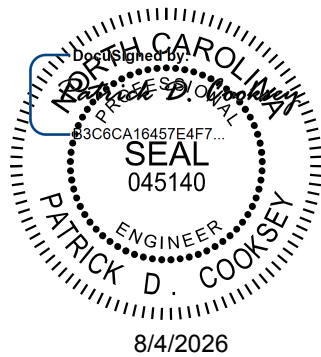
PLAN

M1 (4 REQ'D)

MASONRY PLATE DETAILS

				DIMENSIONS						LOADS AND MOVEMENT				
DESIGNATIONS		LOCATION	NUMBER OF BEARINGS	BEARING	MASONRY PLATE			SOLE PLATE		UNFACTORED VERTICAL LOAD (KIPS)		FACTORED HORIZONTAL LOAD (KIPS)	ONE-WAY MOVEMENT (IN.)	
BEARINGS	MASONRY PL			H (IN.)	A (IN.)	B (IN.)	C (IN.)	TOP SLOPE (%)	L (IN.)	DEAD				LIVE
				DC	DW	LL+IM								
DB1 (FIXED)	M1	BENT 1	4	7 7/16"	30"	30"	1"	1.63%	30	515	63	239	175	-

PROJECT NO. I-5715
MECKLENBURG COUNTY
STATION: 20+08.83 -Y1-



Kimley»Horn

421 Fayetteville Street, Suite 600
Raleigh, NC 27601-1772
Phone (919) 677-2000 NC LICENSE # F-0102

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

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH
STANDARD
DISC BEARING
DETAILS

REVISIONS						SHEET NO. S1-20
NO.	BY:	DATE:	NO.	BY:	DATE:	
1			3			TOTAL SHEETS 47
2			4			

STR. #1

STD. NO. DB1

DRAWN BY: R. C. GIESEN DATE: 04/2026
CHECKED BY: T. H. ORR DATE: 04/2026
DESIGN ENGINEER OF RECORD: A. L. PHILLIPS DATE: 04/2026

* INCLUDES SLAB, BUILDUPS & STAY-IN-PLACE FORMS.
ALL VALUES ARE SHOWN IN FEET (DECIMAL FORM), EXCEPT "FINAL CAMBER", WHICH IS GIVEN IN INCHES (FRACTION FORM).

* INCLUDES SLAB, BUILDUPS & STAY-IN-PLACE FORMS.
ALL VALUES ARE SHOWN IN FEET (DECIMAL FORM), EXCEPT "FINAL CAMBER", WHICH IS GIVEN IN INCHES (FRACTION FORM).

SHEET 1 OF 4



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

STR. #1

7/31/2026 K:\RDT_Structures\Bridges\NC\01036524 - I-5715 Structure Design\Coord\gn\Site *I-5715_SMLD\2.59\415_022.dgn

DEAD LOAD DEFLECTION TABLE FOR GIRDERS																																										
	SPAN A																																									
	GIRDER 3																																									
	FORTIETH POINTS																																									
	0	.025	.050	.075	.100	.125	.150	.175	.200	.225	.250	.275	.300	.325	.350	.375	.400	.425	.450	.475	.500	.525	.550	.575	.600	.625	.650	.675	.700	.725	.750	.775	.800	.825	.850	.875	.900	.925	.950	.975	0	
DEFLECTION DUE TO WEIGHT OF STEEL ↓	0.000	0.004	0.009	0.013	0.017	0.021	0.025	0.029	0.032	0.035	0.037	0.040	0.042	0.043	0.044	0.045	0.045	0.045	0.045	0.044	0.043	0.042	0.040	0.038	0.036	0.033	0.031	0.028	0.025	0.022	0.019	0.016	0.014	0.011	0.008	0.006	0.004	0.003	0.001	0.000	0.000	
DEFLECTION DUE TO WEIGHT OF SLAB * ↓	0.000	0.016	0.031	0.047	0.061	0.075	0.089	0.101	0.112	0.122	0.131	0.139	0.145	0.151	0.154	0.157	0.158	0.157	0.156	0.153	0.149	0.143	0.137	0.130	0.122	0.113	0.104	0.094	0.084	0.074	0.064	0.054	0.045	0.036	0.028	0.020	0.014	0.008	0.004	0.001	0.000	
DEFLECTION DUE TO WEIGHT OF RAIL ↓	0.000	0.002	0.004	0.006	0.008	0.009	0.011	0.012	0.014	0.015	0.016	0.017	0.018	0.019	0.019	0.020	0.020	0.020	0.020	0.019	0.019	0.018	0.017	0.016	0.015	0.014	0.013	0.012	0.011	0.010	0.008	0.007	0.006	0.005	0.004	0.003	0.002	0.001	0.001	0.000	0.000	
TOTAL DL DEFLECTION ↓	0.000	0.022	0.044	0.066	0.086	0.106	0.125	0.142	0.158	0.172	0.185	0.196	0.205	0.212	0.218	0.221	0.223	0.222	0.220	0.216	0.211	0.203	0.195	0.184	0.173	0.161	0.148	0.134	0.120	0.106	0.092	0.078	0.065	0.052	0.040	0.029	0.020	0.012	0.006	0.002	0.000	
VERTICAL CURVE ORDINATE ↑	0.000	0.030	0.059	0.086	0.112	0.136	0.158	0.179	0.198	0.216	0.232	0.247	0.260	0.272	0.282	0.290	0.297	0.303	0.307	0.309	0.310	0.309	0.307	0.303	0.297	0.290	0.282	0.272	0.260	0.247	0.232	0.216	0.198	0.179	0.158	0.136	0.112	0.086	0.059	0.030	0.000	
REQUIRED CAMBER ↑	0"	0⅝"	1¼"	1⅓⅙"	2⅜"	2⅞"	3⅜"	3⅞"	4¼"	4⅞⅙"	5"	5⅝"	5⅞"	5⅓⅙"	6"	6⅛"	6¼"	6⅝⅙"	6⅝"	6⅝"	6⅓⅙"	6⅞"	6"	5⅞"	5⅝"	5⅞"	5⅞"	5⅞"	4⅞"	4⅞⅙"	4¼"	3⅞"	3½"	3⅞"	2⅜"	2⅓⅙"	2"	1⅞"	1⅓⅙"	0⅜"	0⅓⅙"	0"

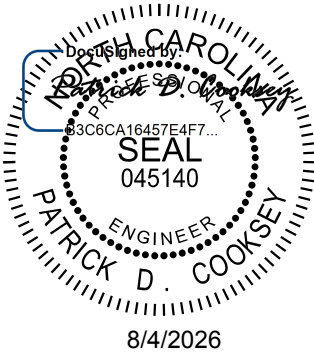
* INCLUDES SLAB, BUILDUPS & STAY-IN-PLACE FORMS.
ALL VALUES ARE SHOWN IN FEET (DECIMAL FORM), EXCEPT ``FINAL CAMBER '', WHICH IS GIVEN IN INCHES (FRACTION FORM).

DEAD LOAD DEFLECTION TABLE FOR GIRDERS																																											
	SPAN A																																										
	GIRDER 4																																										
	FORTIETH POINTS	0	.025	.050	.075	.100	.125	.150	.175	.200	.225	.250	.275	.300	.325	.350	.375	.400	.425	.450	.475	.500	.525	.550	.575	.600	.625	.650	.675	.700	.725	.750	.775	.800	.825	.850	.875	.900	.925	.950	.975	0	
DEFLECTION DUE TO WEIGHT OF STEEL ↓	0.000	0.004	0.008	0.012	0.016	0.020	0.024	0.027	0.030	0.033	0.035	0.038	0.039	0.041	0.042	0.043	0.043	0.043	0.043	0.042	0.041	0.040	0.038	0.036	0.034	0.032	0.029	0.026	0.024	0.021	0.018	0.016	0.013	0.010	0.008	0.006	0.004	0.002	0.001	0.000	0.000		
DEFLECTION DUE TO WEIGHT OF SLAB * ↓	0.000	0.014	0.028	0.042	0.055	0.068	0.080	0.091	0.101	0.111	0.119	0.126	0.132	0.136	0.140	0.142	0.143	0.143	0.141	0.139	0.135	0.130	0.124	0.118	0.111	0.103	0.094	0.085	0.076	0.067	0.058	0.050	0.041	0.033	0.026	0.019	0.013	0.008	0.004	0.001	0.000		
DEFLECTION DUE TO WEIGHT OF RAIL ↓	0.000	0.002	0.004	0.006	0.008	0.009	0.011	0.013	0.014	0.015	0.016	0.017	0.018	0.019	0.019	0.020	0.020	0.020	0.020	0.019	0.019	0.018	0.018	0.017	0.016	0.015	0.013	0.012	0.011	0.010	0.008	0.007	0.006	0.005	0.004	0.003	0.002	0.001	0.001	0.000	0.000		
TOTAL DL DEFLECTION ↓	0.000	0.020	0.041	0.060	0.080	0.098	0.115	0.131	0.146	0.159	0.171	0.181	0.189	0.196	0.201	0.204	0.206	0.205	0.203	0.200	0.195	0.188	0.180	0.171	0.160	0.149	0.137	0.124	0.111	0.098	0.085	0.072	0.060	0.048	0.037	0.027	0.019	0.011	0.005	0.002	0.000		
VERTICAL CURVE ORDINATE ↑	0.000	0.030	0.059	0.086	0.112	0.136	0.158	0.179	0.198	0.216	0.232	0.247	0.260	0.272	0.282	0.290	0.297	0.303	0.307	0.309	0.310	0.309	0.307	0.303	0.297	0.290	0.282	0.272	0.260	0.247	0.232	0.216	0.198	0.179	0.158	0.136	0.112	0.086	0.059	0.030	0.000		
REQUIRED CAMBER ↑	0"	0⅝"	1⅜"	1¾"	2⅝"	2⅓"	3¼"	3⅞"	4⅞"	4½"	4⅓"	5⅞"	5⅜"	5⅓"	5⅓"	6⅞"	6⅞"	6⅞"	6⅞"	6⅞"	6⅞"	6⅞"	5⅓"	5⅓"	5⅞"	5⅞"	5½"	5¼"	5"	4¾"	4⅞"	4⅞"	4⅞"	4⅞"	4⅞"	4⅞"	4⅞"	4⅞"	4⅞"	4⅞"	4⅞"	4⅞"	0"

* INCLUDES SLAB, BUILDUPS & STAY-IN-PLACE FORMS.
ALL VALUES ARE SHOWN IN FEET (DECIMAL FORM), EXCEPT ``FINAL CAMBER '', WHICH IS GIVEN IN INCHES (FRACTION FORM).

PROJECT NO. I-5715
MECKLENBURG COUNTY
STATION: 20+08.83 -Y1-

SHEET 2 OF 4



Kimley»Horn
421 Fayetteville Street, Suite 600
Raleigh, NC 27601-1772
Phone (919) 677-2000
NC LICENSE # F-0102

This document, together with the concepts and designs presented herein, is an integral part of the project. It is to be used only for the specific project and shall not be reproduced, copied, or otherwise used for any other project without the written authorization and signature of Kimley-Horn and Associates, Inc. shall be without liability to Kimley-Horn and Associates, Inc.
Copyright Kimley-Horn and Associates, Inc., 2026

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

DRAWN BY: R. C. GIESEN DATE: 04/2026
CHECKED BY: T. H. ORR DATE: 04/2026
DESIGN ENGINEER OF RECORD: A. L. PHILLIPS DATE: 04/2026

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUPERSTRUCTURE
DEAD LOAD DEFLECTIONS
SPAN A

REVISIONS						SHEET NO. S1-22
NO.	BY:	DATE:	NO.	BY:	DATE:	
1			3			TOTAL SHEETS 47
2			4			

* INCLUDES SLAB, BUILDUPS & STAY-IN-PLACE FORMS.
ALL VALUES ARE SHOWN IN FEET (DECIMAL FORM), EXCEPT "FINAL CAMBER", WHICH IS GIVEN IN INCHES (FRACTION FORM).

* INCLUDES SLAB, BUILDUPS & STAY-IN-PLACE FORMS.
ALL VALUES ARE SHOWN IN FEET (DECIMAL FORM), EXCEPT "FINAL CAMBER", WHICH IS GIVEN IN INCHES (FRACTION FORM).

SHEET 3 OF 4

DRAWN BY: R. C. GIESEN DATE: 04/2026
 CHECKED BY: T. H. ORR DATE: 04/2026
 DESIGN ENGINEER OF RECORD: A. L. PHILLIPS DATE: 04/2026

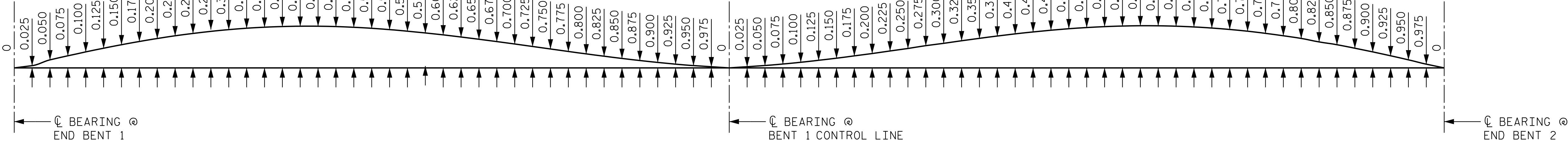
**DOCUMENT NOT CONSIDERED FINAL
UNLESS ALL SIGNATURES COMPLETED**

DEAD LOAD DEFLECTION TABLE FOR GIRDERS																																										
FORTIETH POINTS	SPAN B																																									
	GIRDER 3																																									
	0	.025	.050	.075	.100	.125	.150	.175	.200	.225	.250	.275	.300	.325	.350	.375	.400	.425	.450	.475	.500	.525	.550	.575	.600	.625	.650	.675	.700	.725	.750	.775	.800	.825	.850	.875	.900	.925	.950	.975	0	
DEFLECTION DUE TO WEIGHT OF STEEL ↓	0.000	0.000	0.001	0.003	0.004	0.006	0.008	0.011	0.014	0.016	0.019	0.022	0.025	0.028	0.031	0.033	0.036	0.038	0.040	0.042	0.043	0.044	0.045	0.045	0.045	0.045	0.044	0.043	0.042	0.040	0.040	0.037	0.035	0.032	0.029	0.025	0.021	0.017	0.013	0.009	0.004	0.000
DEFLECTION DUE TO WEIGHT OF SLAB * ↓	0.000	0.001	0.004	0.008	0.014	0.020	0.028	0.036	0.045	0.054	0.064	0.074	0.084	0.094	0.103	0.113	0.122	0.130	0.137	0.143	0.148	0.152	0.155	0.157	0.157	0.156	0.154	0.150	0.145	0.139	0.131	0.122	0.112	0.101	0.088	0.075	0.061	0.047	0.031	0.016	0.000	
DEFLECTION DUE TO WEIGHT OF RAIL ↓	0.000	0.000	0.000	0.001	0.002	0.003	0.004	0.005	0.006	0.007	0.008	0.009	0.011	0.012	0.013	0.014	0.015	0.016	0.017	0.018	0.018	0.019	0.019	0.019	0.019	0.019	0.019	0.018	0.018	0.017	0.016	0.015	0.014	0.012	0.011	0.009	0.007	0.006	0.004	0.002	0.000	
TOTAL DL DEFLECTION ↓	0.000	0.002	0.006	0.012	0.020	0.029	0.040	0.052	0.064	0.078	0.091	0.105	0.119	0.133	0.147	0.160	0.172	0.184	0.194	0.203	0.210	0.216	0.220	0.222	0.222	0.221	0.217	0.212	0.205	0.195	0.185	0.172	0.158	0.142	0.124	0.106	0.086	0.065	0.044	0.022	0.000	
VERTICAL CURVE ORDINATE ↑	0.000	0.007	0.036	0.064	0.090	0.115	0.138	0.160	0.180	0.198	0.215	0.230	0.244	0.257	0.267	0.276	0.284	0.290	0.295	0.298	0.299	0.299	0.297	0.294	0.289	0.283	0.275	0.266	0.255	0.242	0.228	0.212	0.195	0.176	0.156	0.134	0.111	0.086	0.060	0.032	0.000	
REQUIRED CAMBER ↑	0"	0 1⁄8"	0 1⁄2"	0 5⁄16"	1 5⁄16"	1 3⁄4"	2 1⁄8"	2 9⁄16"	2 15⁄16"	3 5⁄16"	3 11⁄16"	4"	4 3⁄8"	4 11⁄16"	5"	5 1⁄4"	5 1⁄2"	5 11⁄16"	5 7⁄8"	6"	6 1⁄8"	6 3⁄16"	6 3⁄16"	6 3⁄16"	6 1⁄8"	6 1⁄16"	5 7⁄8"	5 3⁄4"	5 1⁄2"	5 1⁄4"	4 5⁄16"	4 5⁄8"	4 1⁄4"	3 13⁄16"	3 3⁄8"	2 7⁄8"	2 3⁄8"	1 13⁄16"	1 1⁄4"	0 5⁄8"	0"	

* INCLUDES SLAB, BUILDUPS & STAY-IN-PLACE FORMS.
ALL VALUES ARE SHOWN IN FEET (DECIMAL FORM), EXCEPT ``FINAL CAMBER '', WHICH IS GIVEN IN INCHES (FRACTION FORM).

DEAD LOAD DEFLECTION TABLE FOR GIRDERS																																									
FORTIETH POINTS	SPAN B																																								
	GIRDER 4																																								
	0	.025	.050	.075	.100	.125	.150	.175	.200	.225	.250	.275	.300	.325	.350	.375	.400	.425	.450	.475	.500	.525	.550	.575	.600	.625	.650	.675	.700	.725	.750	.775	.800	.825	.850	.875	.900	.925	.950	.975	0
DEFLECTION DUE TO WEIGHT OF STEEL ↓	0.000	0.000	0.001	0.002	0.004	0.006	0.008	0.010	0.013	0.016	0.018	0.021	0.024	0.026	0.029	0.032	0.034	0.036	0.038	0.040	0.041	0.042	0.043	0.043	0.043	0.043	0.042	0.041	0.039	0.038	0.035	0.033	0.030	0.027	0.024	0.020	0.016	0.012	0.008	0.004	0.000
DEFLECTION DUE TO WEIGHT OF SLAB * ↓	0.000	0.001	0.003	0.007	0.012	0.018	0.025	0.032	0.040	0.049	0.057	0.066	0.075	0.084	0.093	0.101	0.109	0.116	0.123	0.128	0.133	0.137	0.139	0.141	0.141	0.140	0.138	0.135	0.130	0.124	0.118	0.109	0.100	0.090	0.079	0.067	0.055	0.042	0.028	0.014	0.000
DEFLECTION DUE TO WEIGHT OF RAIL ↓	0.000	0.000	0.000	0.001	0.002	0.003	0.004	0.005	0.006	0.007	0.008	0.009	0.011	0.012	0.013	0.014	0.015	0.016	0.017	0.018	0.019	0.019	0.019	0.020	0.020	0.019	0.019	0.019	0.018	0.017	0.016	0.015	0.014	0.012	0.011	0.009	0.008	0.006	0.004	0.002	0.000
TOTAL DL DEFLECTION ↓	0.000	0.001	0.005	0.011	0.018	0.027	0.037	0.047	0.059	0.071	0.084	0.097	0.110	0.122	0.135	0.147	0.158	0.169	0.178	0.186	0.193	0.198	0.201	0.203	0.204	0.202	0.199	0.194	0.187	0.179	0.169	0.157	0.144	0.130	0.114	0.097	0.079	0.060	0.040	0.020	0.000
VERTICAL CURVE ORDINATE ↑	0.000	0.007	0.036	0.064	0.090	0.115	0.138	0.159	0.179	0.198	0.215	0.230	0.244	0.256	0.267	0.276	0.284	0.290	0.294	0.297	0.299	0.299	0.297	0.294	0.289	0.283	0.275	0.265	0.254	0.242	0.228	0.212	0.195	0.176	0.156	0.134	0.111	0.086	0.059	0.031	0.000
REQUIRED CAMBER ↑	0"	0 1⁄8"	0 1⁄2"	0 7⁄8"	1 5⁄16"	1 11⁄16"	2 1⁄16"	2 1⁄2"	2 7⁄8"	3 1⁄4"	3 9⁄16"	3 15⁄16"	4 1⁄4"	4 9⁄16"	4 13⁄16"	5 1⁄16"	5 5⁄16"	5 1⁄2"	5 11⁄16"	5 13⁄16"	5 7⁄8"	5 15⁄16"	6"	5 15⁄16"	5 15⁄16"	5 13⁄16"	5 11⁄16"	5 1⁄2"	5 5⁄16"	5 1⁄16"	4 3⁄4"	4 7⁄16"	4 1⁄16"	3 11⁄16"	3 1⁄4"	2 3⁄4"	2 1⁄4"	1 3⁄4"	1 3⁄16"	0 5⁄8"	0"

* INCLUDES SLAB, BUILDUPS & STAY-IN-PLACE FORMS.
ALL VALUES ARE SHOWN IN FEET (DECIMAL FORM), EXCEPT ``FINAL CAMBER '', WHICH IS GIVEN IN INCHES (FRACTION FORM).



SPAN A

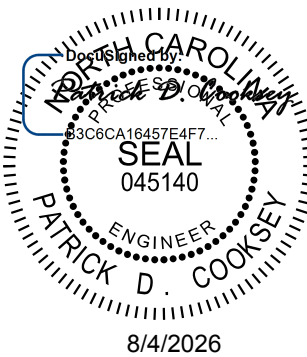
SPAN B

SCHEMATIC CAMBER ORDINATES

SLOPE FOR THE ZERO CAMBER BASE LINE VARIES

PROJECT NO. I-5715
MECKLENBURG COUNTY
STATION: 20+08.83 -Y1-

SHEET 4 OF 4



Kimley»Horn
421 Fayetteville Street, Suite 600
Raleigh, NC 27601-1772
Phone (919) 677-2000
NC LICENSE # F-0102

This document, together with the concepts and designs presented herein, is an integral part of the project. It is to be used only for the specific project and shall not be used for any other project without the written authorization and signature of Kimley-Horn and Associates, Inc. It shall be without liability to Kimley-Horn and Associates, Inc.
Copyright Kimley-Horn and Associates, Inc., 2026

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

STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION RALEIGH						
SUPERSTRUCTURE DEAD LOAD DEFLECTIONS SPAN B						
REVISIONS						SHEET NO. S1-24
NO.	BY:	DATE:	NO.	BY:	DATE:	TOTAL SHEETS 47
1			3			
2			4			

STR. #1

DRAWN BY: <u>R. C. GIESEN</u>	DATE: <u>04/2026</u>
CHECKED BY: <u>T. H. ORR</u>	DATE: <u>04/2026</u>
DESIGN ENGINEER OF RECORD: <u>A. L. PHILLIPS</u>	DATE: <u>04/2026</u>



NOTE: FINISH TO BE DETERMINED BY THE ARCHITECT.

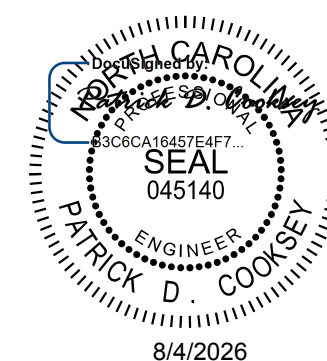
1" 1/2" 1 3/4" 4 1/4" 1" 1/4" 5 3/4" 1/4" 1/4"

PLAN

1.375" (±.005") .750" .745"

ELEVATION

RIVET DETAIL



Kimley»»Horn

421 Fayetteville Street, Suite 600
Raleigh, NC 27601-1772
Phone (919) 677-2000

This document, together with the concepts and designs presented herein, as an instrument of services, is intended only for the specific purpose and client for which it was prepared. Reuse of and improper reliance of this document without written authorization and adoption by Kimley-Horn and Associates, Inc. shall be without liability to Kimley-Horn and Associates, Inc.

Copyright Kimley-Horn and Associates, Inc., 2026

PAY LENGTH = 553.1 LIN. FT.

PROJECT NO. I-5715
MECKLENBURG COUNTY
 STATION: 20+08.83 -Y1-

SHEET 1 OF 2

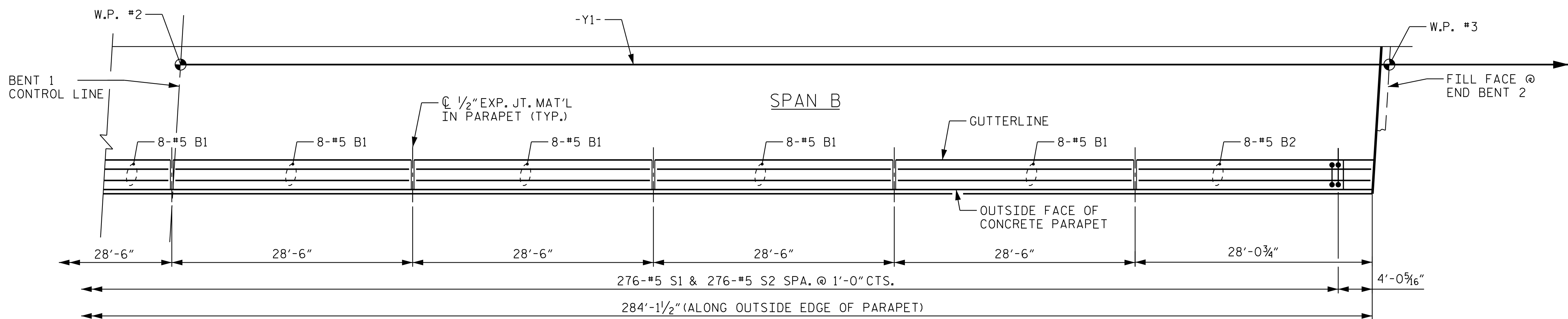
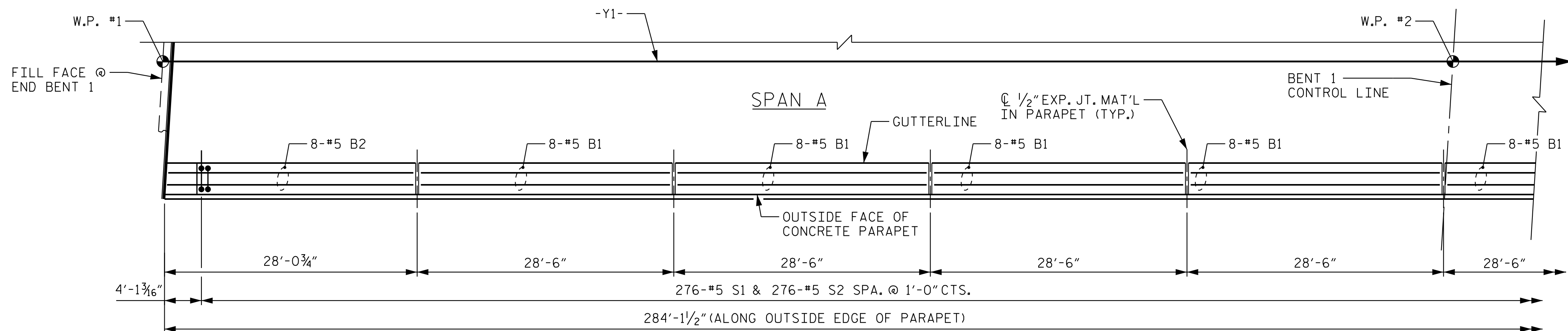
STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

STANDARD
2 BAR METAL RAIL

REVISIONS						SHEET S1-2
NO.	BY:	DATE:	NO.	BY:	DATE:	
1			3			TOTAL SHEET 47
2			4			

STR. #1 STD. NO. BMR3

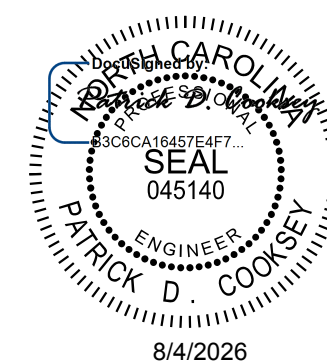
DRAWN BY: R. C. GIESEN	DATE: 04/2026
CHECKED BY: T. H. ORR	DATE: 04/2026
DESIGN ENGINEER OF RECORD: A. L. PHILLIPS	DATE: 04/2026



EXTERIOR CONCRETE PARAPET LAYOUT
(RIGHT SIDE SHOWN, LEFT SIDE SIMILAR)

PROJECT NO. I-5715
MECKLENBURG COUNTY
 STATION: 20+08.83 -Y1-

SHEET 1 OF 4



Kimley»»Horn

421 Fayetteville Street, Suite 600
Raleigh, NC 27601-1772
Phone (919) 677-2000

NC LICENSE #
F-0102

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

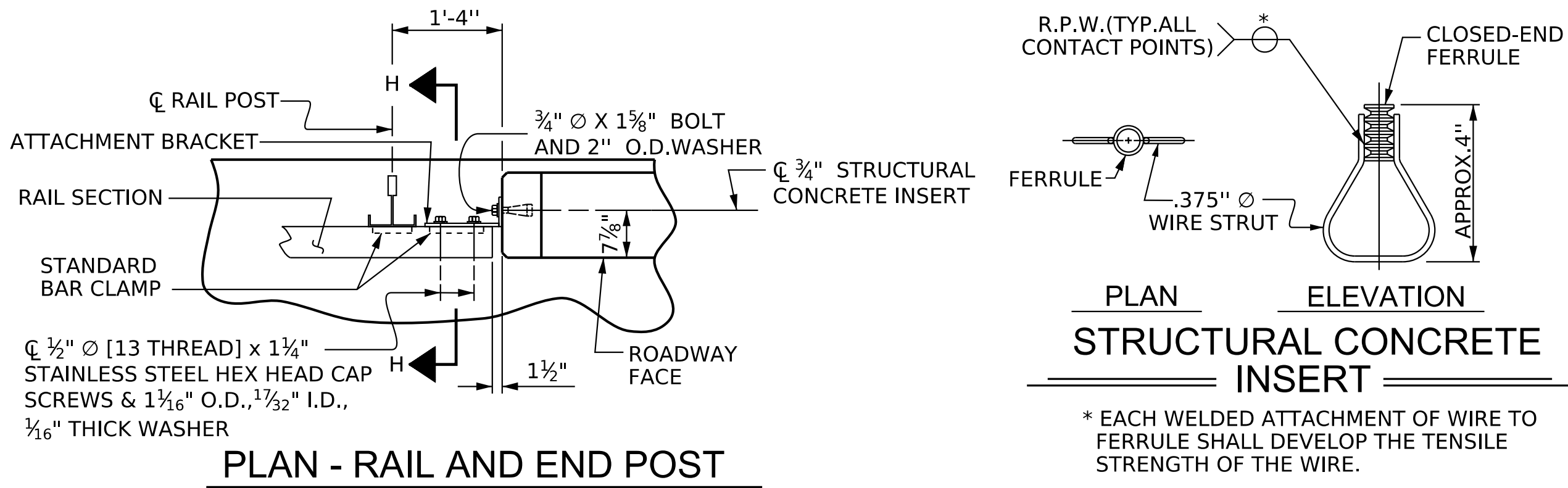
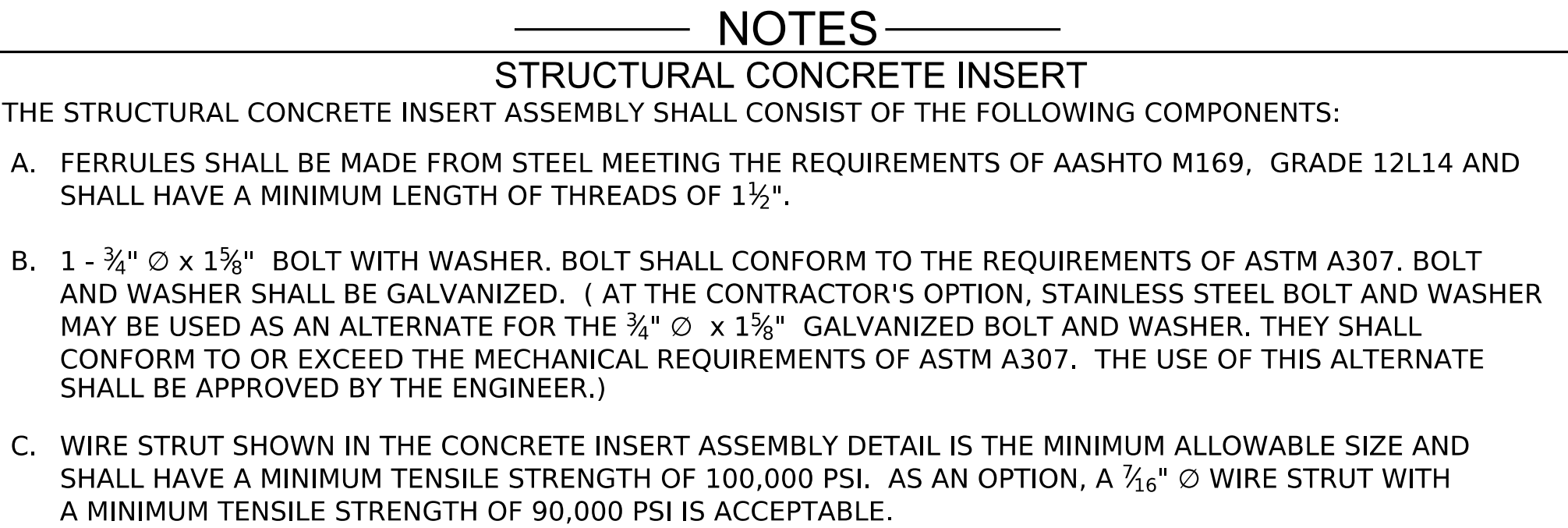
STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUPERSTRUCTURE
EXTERIOR CONCRETE
PARAPET LAYOUT

STR. #1

DRAWN BY: R. C. GIESEN DATE: 04/2026
 CHECKED BY: T. H. ORR DATE: 04/2026
 DESIGN ENGINEER OF RECORD: A. L. PHILLIPS DATE: 04/2026

STR. #1



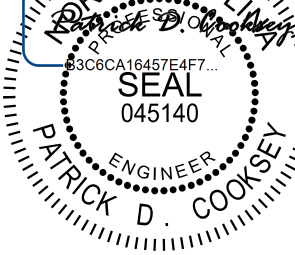
SHEET 3 OF 4

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

STANDARD
RAIL POST SPACING
AND END OF RAIL
DETAILS

REVISIONS						SHEET NO. S1-29
NO.	BY:	DATE:	NO.	BY:	DATE:	TOTAL SHEETS 47
1			3			
2			4			

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



 8/4/2026

Kimley»Horn

421 Fayetteville Street, Suite 600
 Raleigh, NC 27601-1772
 Phone (919) 677-2000

NC LICENSE #
 F-0102

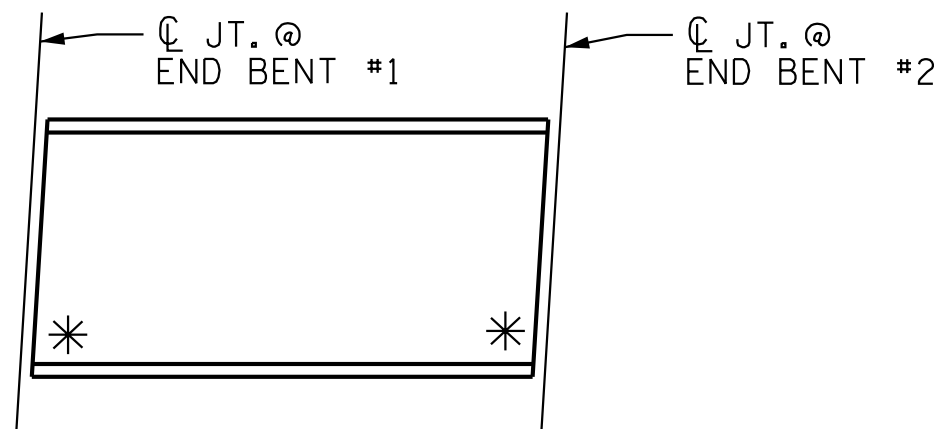
This document, together with the concepts and designs presented herein, as an instrument of service, is standing only for the specific purpose and client for which it was prepared. No other and improper reliance of this document without written authorization of Kimley-Horn and Associates, Inc. shall be permitted.

Copyright Kimley-Horn and Associates, Inc. 2026

STR. #1 STD. NO. BMR2

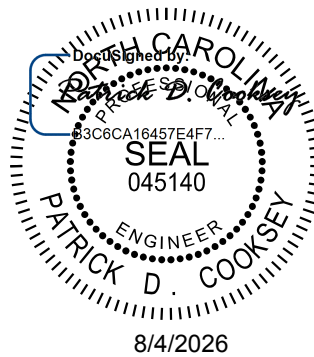
[illegible]

* LOCATION OF GUARDRAIL ATTACHMENT



PROJECT NO. I-5715
MECKLENBURG COUNTY
 STATION: 20+08.83 -Y1-

SHEET 4 OF 4



Kimley»»Horn

421 Fayetteville Street, Suite 600
Raleigh, NC 27601-1772 NC LICENSE #
Phone (919) 677-2000 F-0102

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

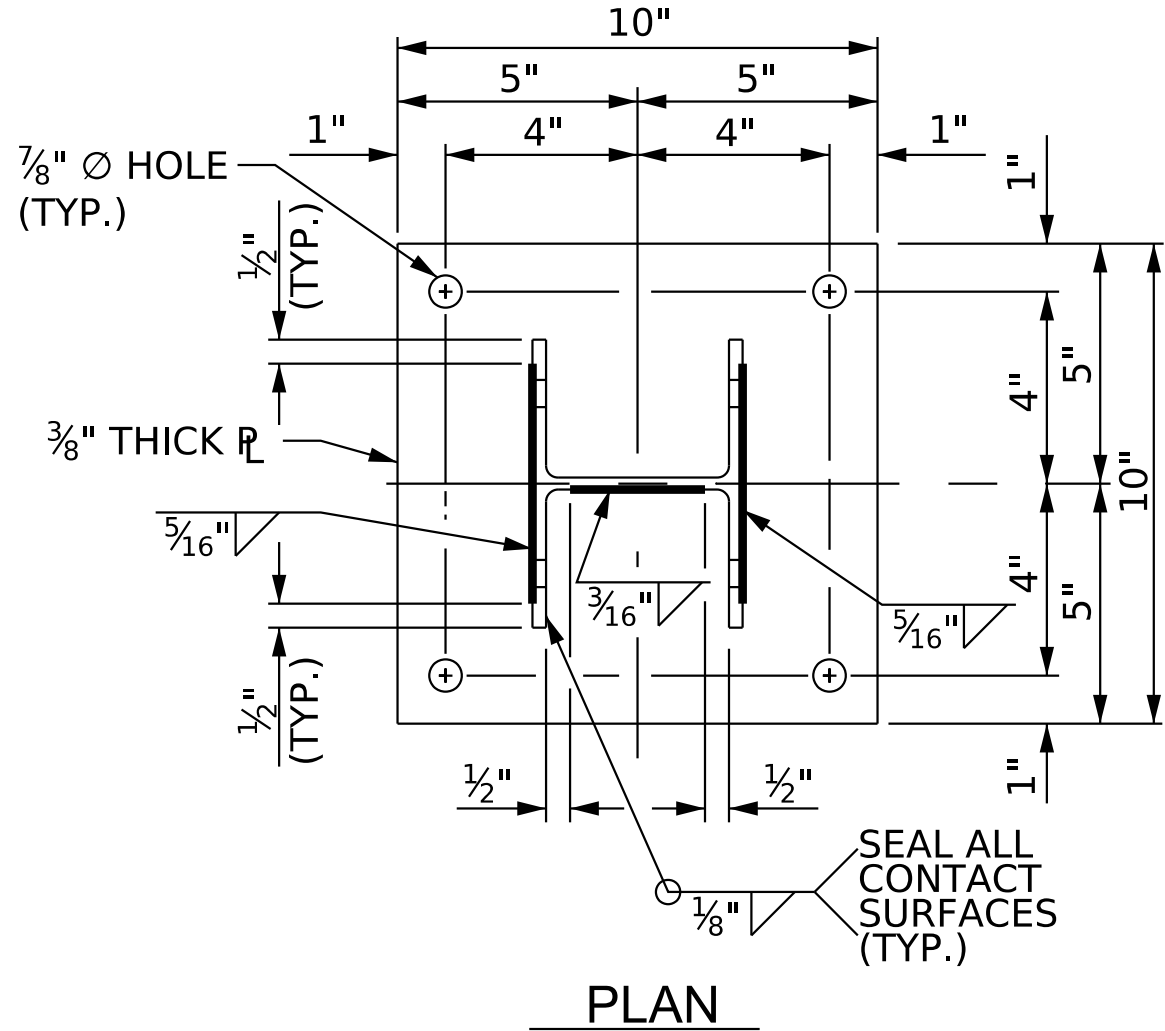
STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

STANDARD

GUARDRAIL ANCHORAGE
DETAILS
FOR METAL RAILS

STR. #1

STD. NO. GRA3

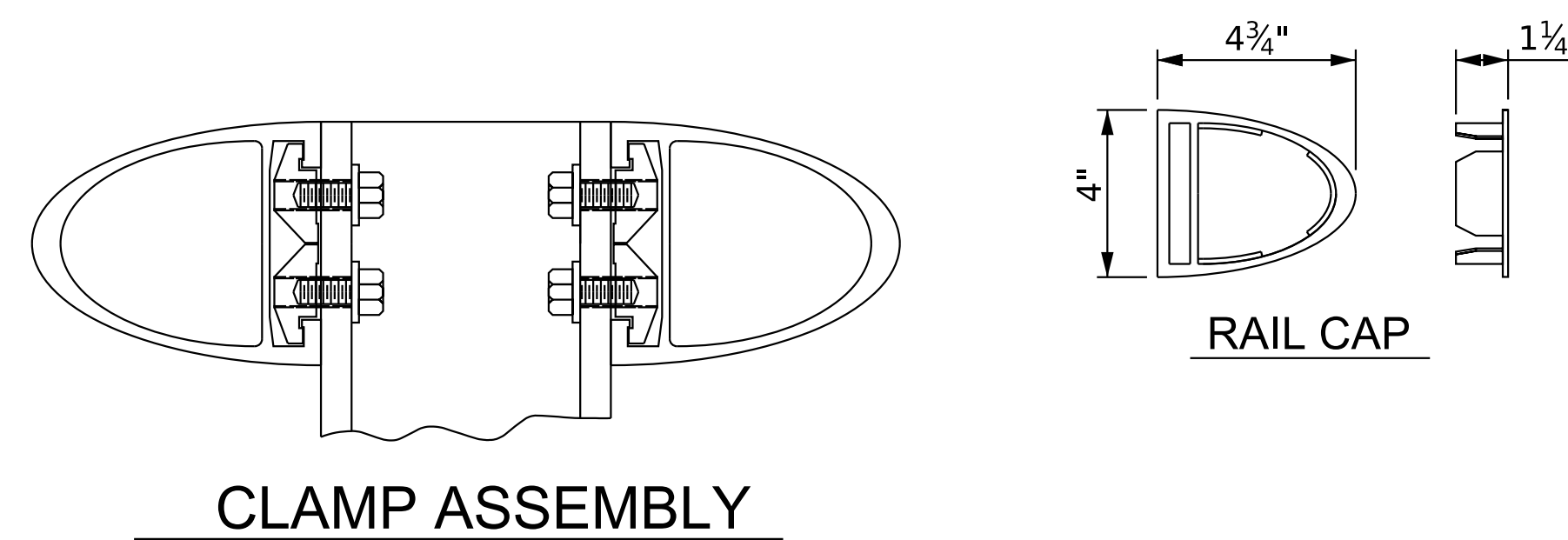
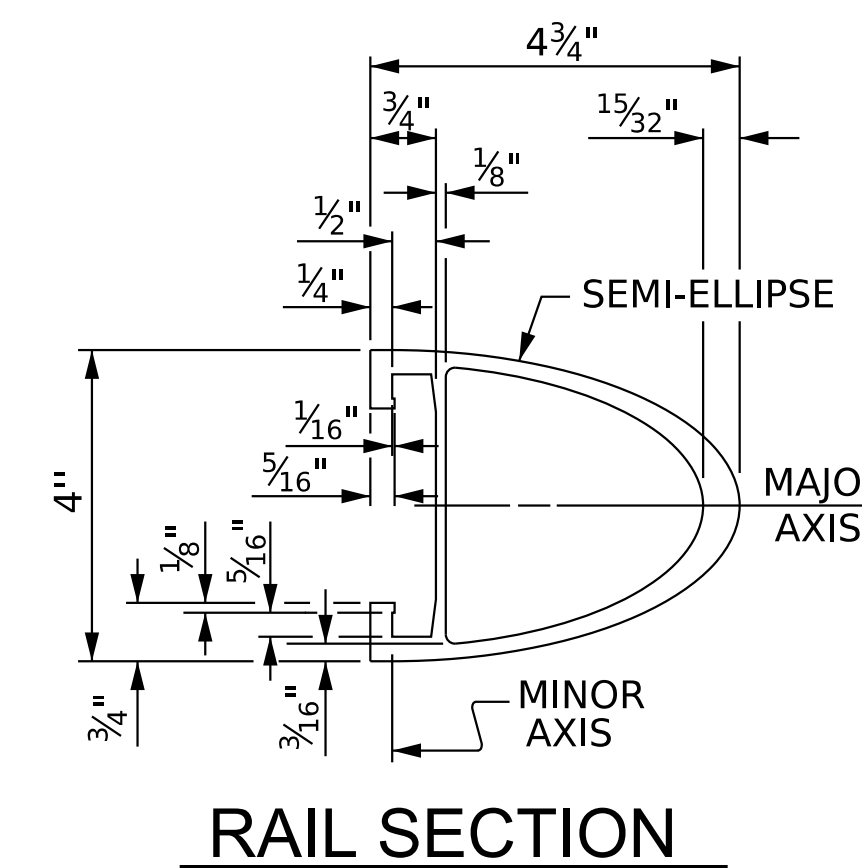


**DOCUMENT NOT CONSIDERED FINAL
UNLESS ALL SIGNATURES COMPLETED**

STR. #1



WHEN ADHESIVELY ANCHORED ANCHOR BOLTS ARE USED, BOLTS SHALL MEET THE REQUIREMENTS OF ASTM F593 ALLOY 304 STAINLESS STEEL WITH MINIMUM 75,000 PSI ULTIMATE STRENGTH. NUTS SHALL MEET THE REQUIREMENTS OF ASTM F594 ALLOY 304 STAINLESS STEEL AND WASHERS SHALL MEET THE REQUIREMENTS OF ASTM F844 EXCEPT THEY SHALL BE MADE FROM ALLOY 304 STAINLESS STEEL.



REVISIONS						SHEET NO. S1-32
NO.	BY:	DATE:	NO.	BY:	DATE:	
1			3			TOTAL SHEETS 47
2			4			

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

421 Fayetteville Street, Suite 600
Raleigh, NC 27601-1772
Phone (919) 677-2000

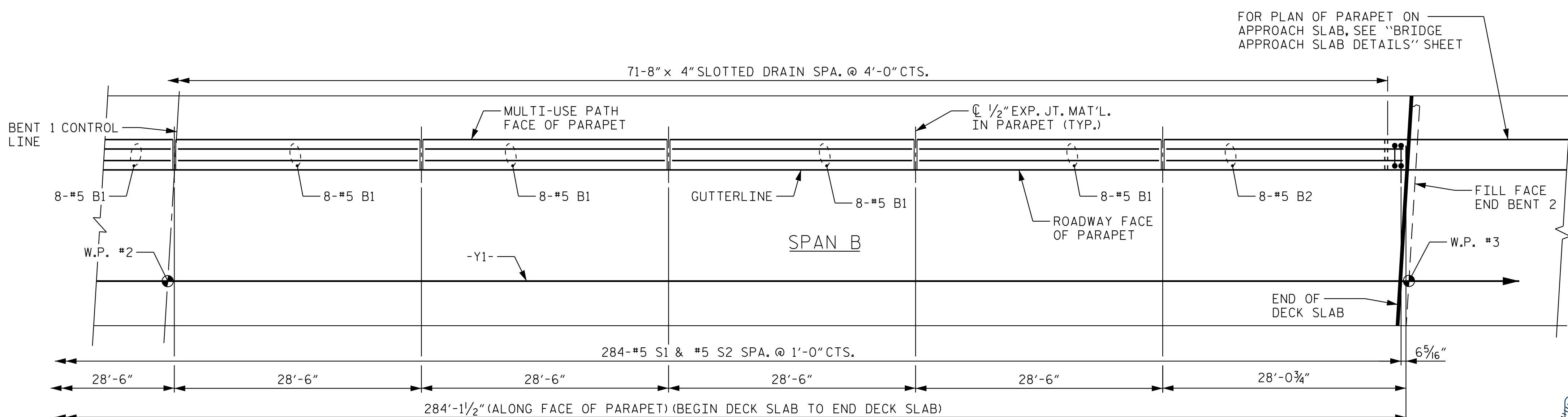
NC LICENSE #
F-0102

This document, together with the concepts and designs presented herein, as a part of the instrument of services, is intended only for the specific purpose and client for which it was prepared. Reuse of and improper reliance of this document without authorization and adoption by Kimley-Horn and Associates, Inc. shall be without liability to Kimley-Horn and Associates, Inc.

Copyright Kimley-Horn and Associates, Inc. 2026.

STR. #1

8"x 4" SLOTTED DRAIN HOLES MAY BE SHIFTED
SLIGHTLY TO AVOID CONFLICTS WITH #5 S1 & #5 S2.



NORTH CAROLINA
 PROFESSIONAL ENGINEER
 STATE OF NORTH CAROLINA
 33C6CA16457E4F7...
 SEAL
 045140
 ENGINEER
 PATRICK D. COOKSEY
 8/4/2026

This document, together with the concepts and designs presented herein, as instrument of services, is intended only for the specific purpose and client for which it was prepared. Reuse and improper reliance on this document without written authorization and adoption by Kimley-Horn and Associates, Inc. shall be without liability to Kimley-Horn and Associates, Inc.

Copyright Kimley-Horn and Associates, Inc., 2026

PROJECT NO. I-5715
MECKLENBURG COUNTY
 STATION: 20+08.83 -Y1-

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUPERSTRUCTURE
INTERIOR CONCRETE
PARAPET LAYOUT

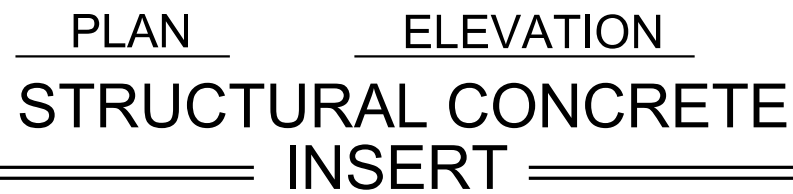
REVISIONS						SHEET NO. S1-33
NO.	BY:	DATE:	NO.	BY:	DATE:	
1			3			TOTAL SHEETS 47
2			4			

STR. #1

DRAWN BY: <u>R. C. GIESEN</u>	DATE: <u>04/2026</u>
CHECKED BY: <u>T. H. ORR</u>	DATE: <u>04/2026</u>
DESIGN ENGINEER OF RECORD: <u>A. L. PHILLIPS</u>	DATE: <u>04/2026</u>



DETAILS FOR ATTACHING METAL RAIL TO END POST



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



421 Fayetteville Street, Suite 600
Raleigh, NC 27601-1772
Phone (919) 677-2000

NC LICENSE #
F-0102

This document, together with the concepts and designs presented herein, as an instrument of services, is intended only for the specific purpose and client for which it was prepared. Reuse of and improper reliance of this document without written authorization and adoption by Kimley-Horn and Associates, Inc. shall be without liability to Kimley-Horn and Associates, Inc.

Copyright Kimley-Horn and Associates, Inc., 2026

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

PROJECT NO. I-5715
MECKLENBURG COUNTY
 STATION: 20+08.83 -Y1-

SHEET 3 OF 3

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

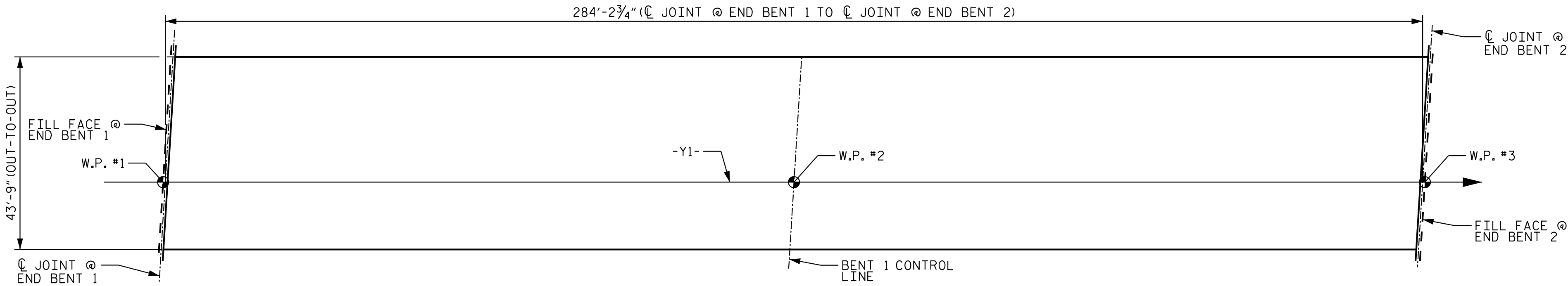
END OF RAIL DETAILS
FOR MODIFIED 2 BAR
METAL RAIL

REVISIONS						SHEET NO. S1-35
NO.	BY:	DATE:	NO.	BY:	DATE:	
1			3			TOTAL SHEETS 47
2			4			

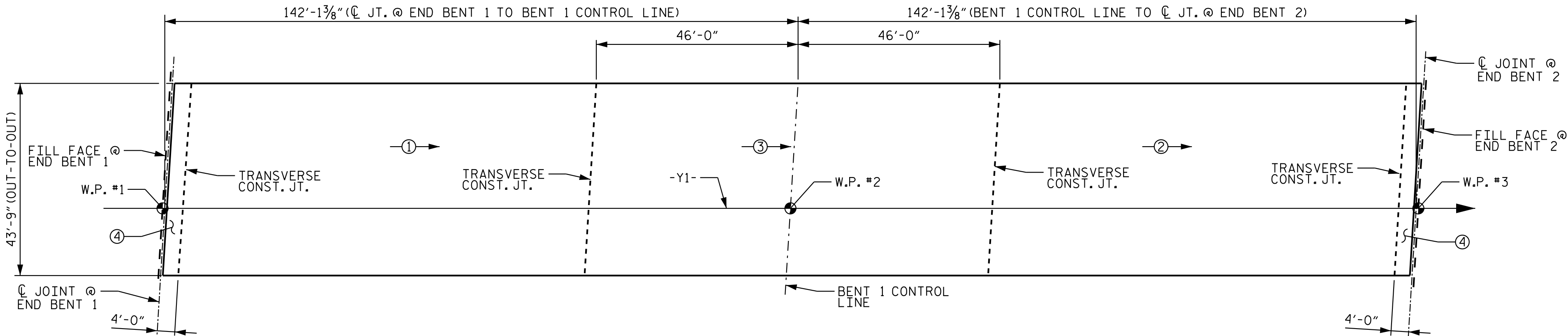
STR. #1

STD. NO. BMR2

7/31/2026 K:\PDT-Structures\Bridges\N\01036524 - I-5715 Structure Design\Cad\Drawn\Site *I-5715_SML_BMI_591415_036.dgn

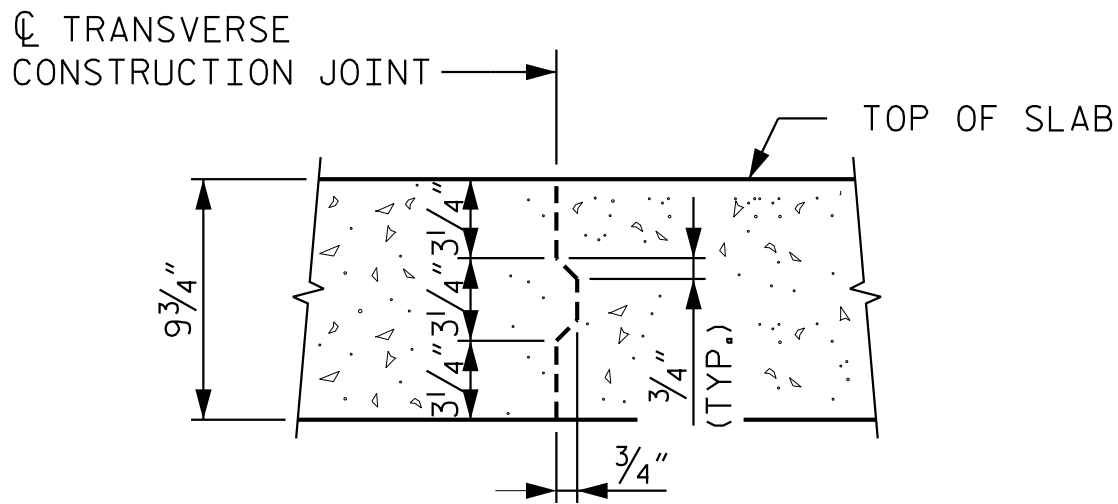


LAYOUT FOR COMPUTING AREA
OF REINFORCED CONCRETE DECK SLAB
(SQ. FT. = 12,431)



POUR SEQUENCE
⊗→ DENOTES POUR NUMBER AND DIRECTION

GROOVING BRIDGE FLOORS	
APPROACH SLABS	1,689 SQ.FT.
BRIDGE DECK	9,649 SQ.FT.
TOTAL	11,338 SQ.FT.



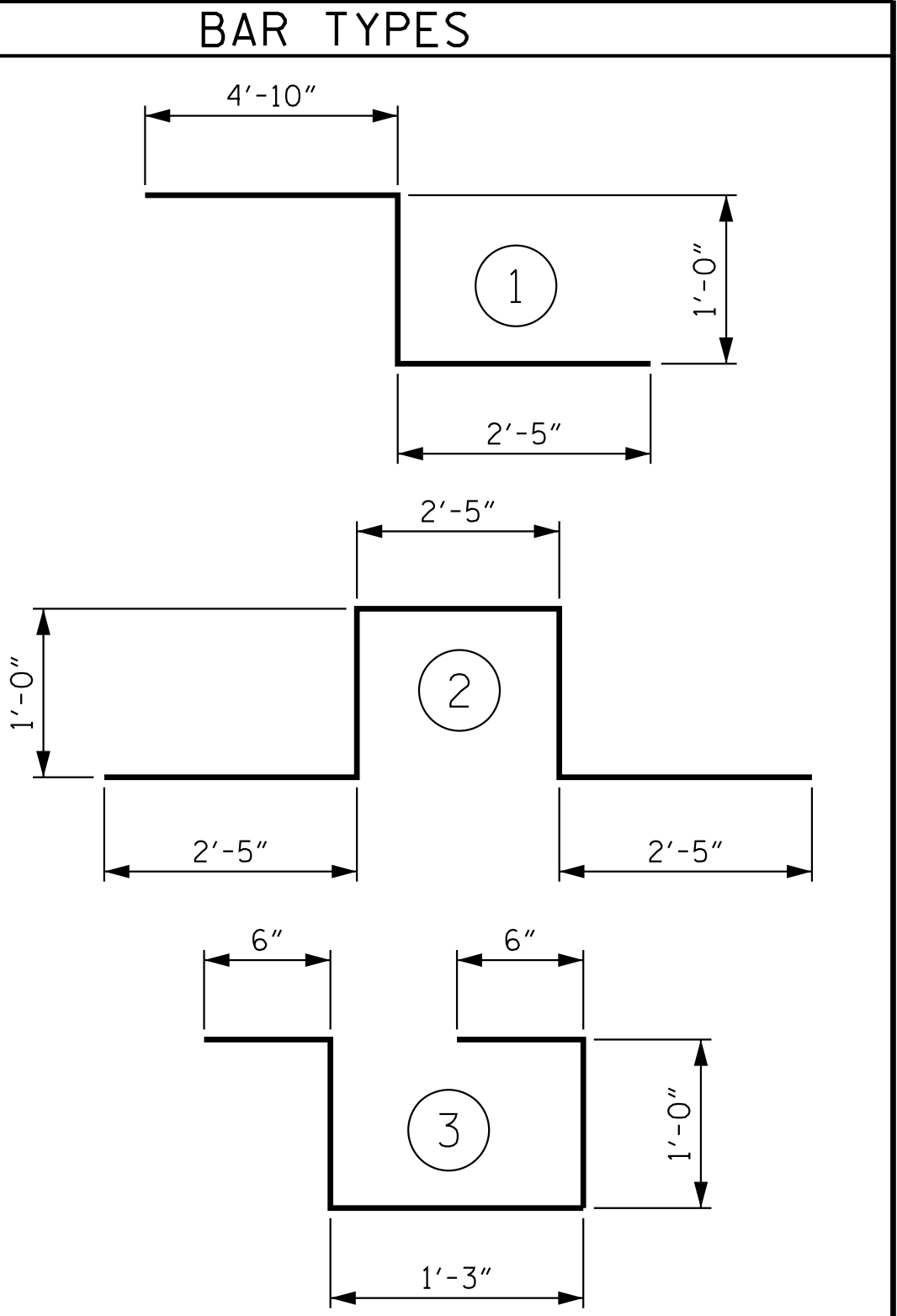
TRANSVERSE CONSTRUCTION
JOINT IN DECK SLAB

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

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

DOCUMENT NOT CONSIDERED FINAL
UNLESS ALL SIGNATURES COMPLETED

BILL OF MATERIAL					
SUPERSTRUCTURE					
BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
* A1	614	#5	STR	43'-5"	27,804
A2	614	#5	STR	43'-5"	27,804
*A101	2	#5	STR	37'-3"	78
*A102	2	#5	STR	29'-10"	62
*A103	2	#5	STR	22'-3"	46
*A104	2	#5	STR	14'-9"	31
*A105	2	#5	STR	7'-3"	15
A201	2	#5	STR	37'-3"	78
A202	2	#5	STR	29'-10"	62
A203	2	#5	STR	22'-3"	46
A204	2	#5	STR	14'-9"	31
A205	2	#5	STR	7'-3"	15
* B1	186	#4	STR	33'-5"	4,152
* B2	89	#6	STR	60'-0"	8,021
* B3	31	#6	STR	44'-10"	2,088
* B4	58	#6	STR	37'-10"	3,296
B5	305	#5	STR	58'-6"	18,610
* G1	2	#5	STR	43'-6"	91
* K1	8	#5	1	8'-3"	69
* K2	8	#5	2	9'-3"	77
* K3	12	#5	STR	9'-8"	121
* S1	60	#4	3	4'-3"	170



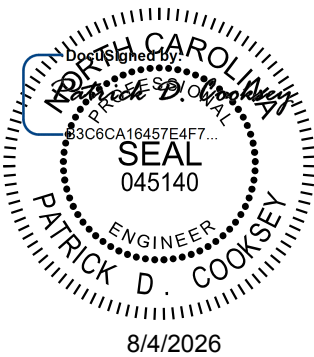
ALL BAR DIMENSIONS ARE OUT TO OUT

SUPERSTRUCTURE BILL OF MATERIAL			
	CLASS AA CONCRETE	REINFORCING STEEL	EPOXY COATED REINFORCING STEEL
	(CU. YDS.)	(LBS.)	(LBS.)
POUR #1	141.6	49,942	42,825
POUR #2	141.6		
POUR #3	115.4		
POUR #4	7.1		
TOTALS **	405.6	49,942	42,825

** QUANTITIES FOR CONCRETE BARRIER RAILS AND
PARAPET ARE NOT INCLUDED

* DENOTES EPOXY COATED REINFORCING

PROJECT NO. I-5715
MECKLENBURG COUNTY
STATION: 20+08.83 -Y1-



Kimley»Horn
421 Fayetteville Street, Suite 600
Raleigh, NC 27601-1772
Phone (919) 677-2000 NC LICENSE # F-0102

This document, together with the concepts and designs presented herein, is an integral part of the project. It is to be used only for the specific project and shall not be used for any other project without the written authorization and signature of Kimley-Horn and Associates, Inc. shall be without liability to Kimley-Horn and Associates, Inc.

STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION RALEIGH					
SUPERSTRUCTURE BILL OF MATERIAL					
REVISIONS					SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:
1			3		
2			4		
					TOTAL SHEETS
					47

STR. #1



SHEET 1 OF 2



421 Fayetteville Street, Suite 600
Raleigh, NC 27601-1772
Phone (919) 677-2000

This document, together with the concepts and designs presented herein, as an instrument of services, is intended only for the specific purpose and client for which it was prepared. Reuse of and improper reliance of this document without written authorization and adoption by Kimley-Horn and Associates, Inc. shall be without liability to Kimley-Horn and Associates, Inc.

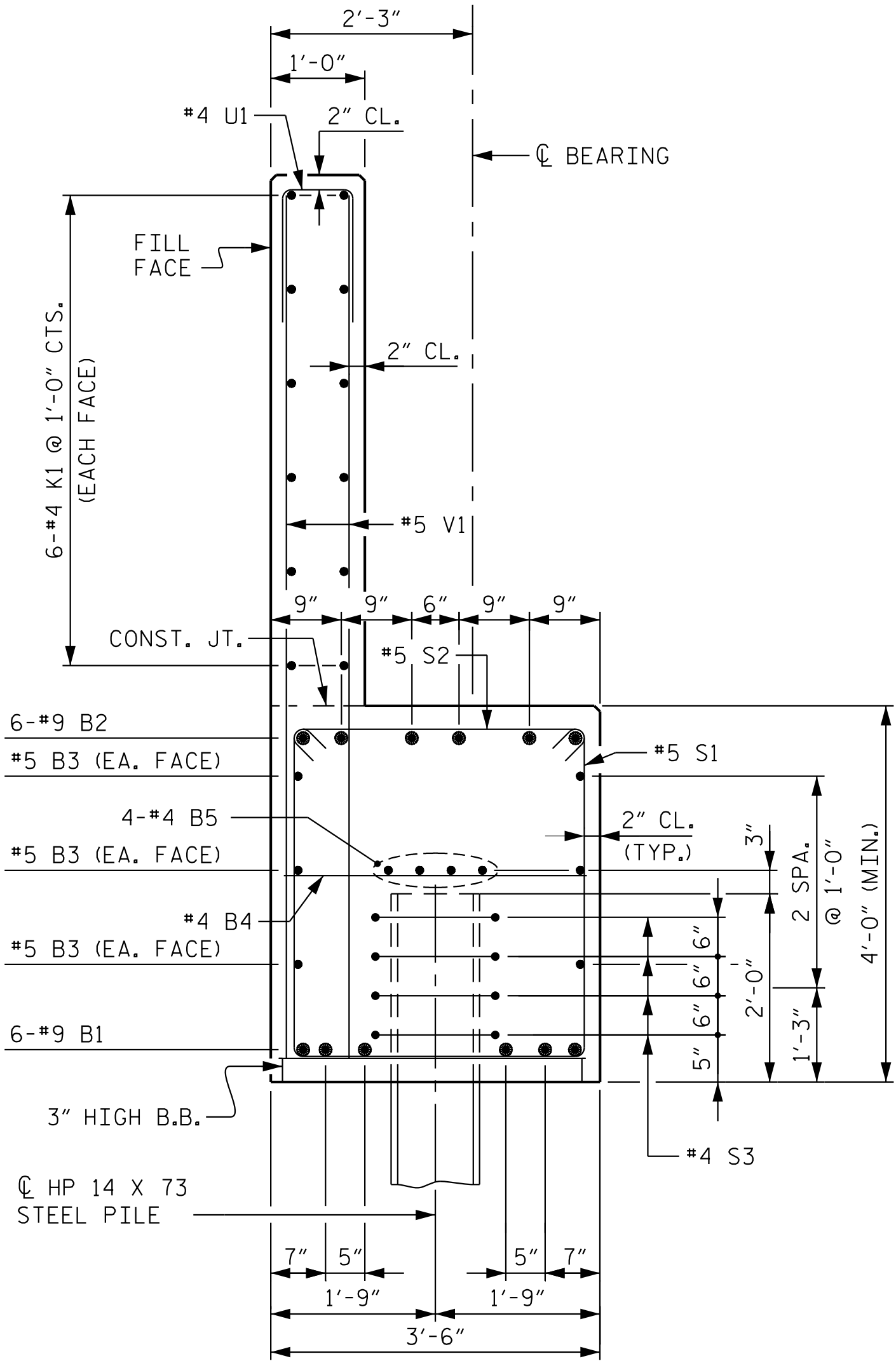
Copyright Kimley-Horn and Associates, Inc., 2026

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

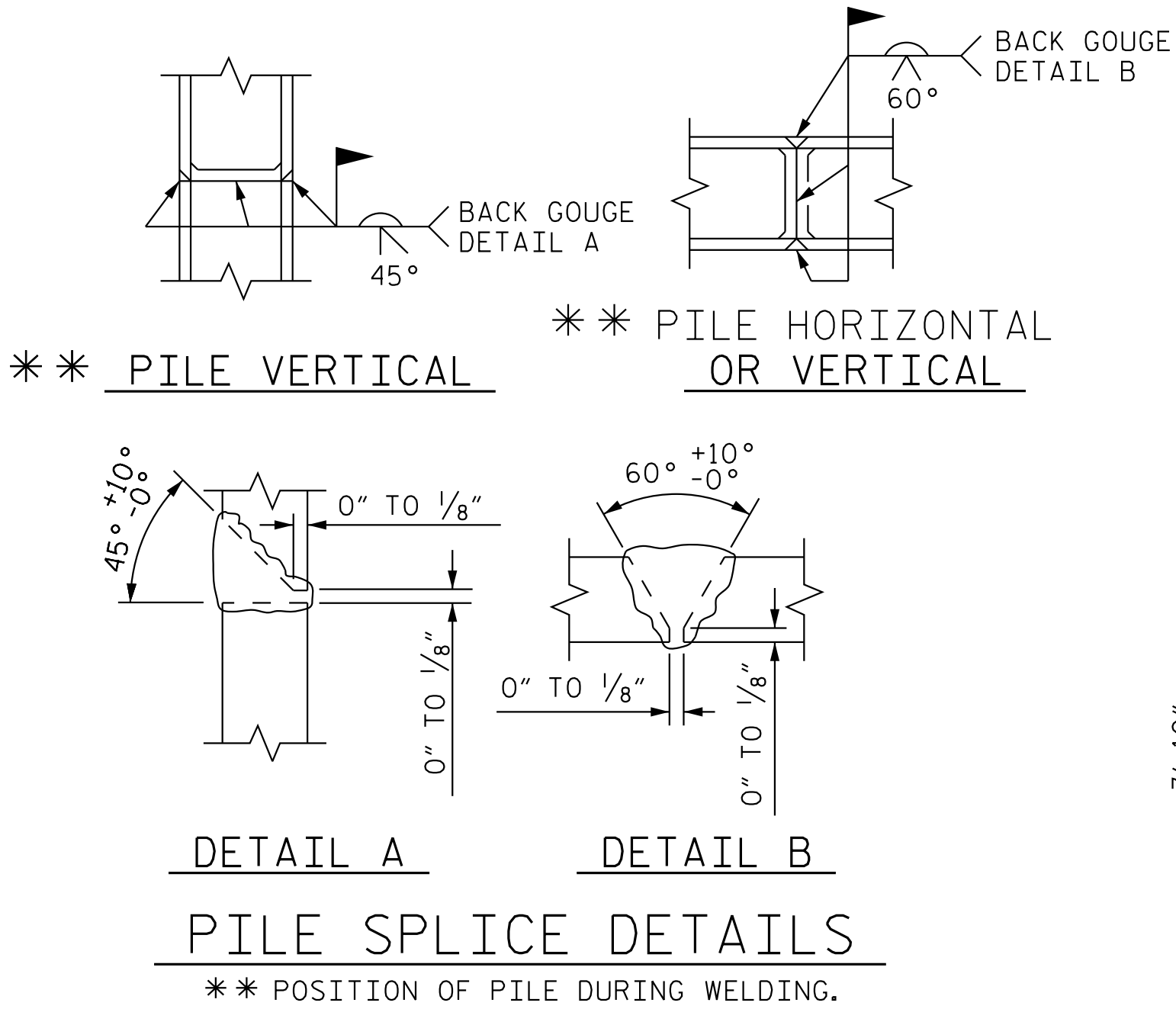
REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S1-37
1			3			TOTAL SHEETS 47
2			4			

STR. #1

K:\B01_Structures\Bridges\N\01036524 - I-5715 Structure Design\Coord\gn\Site *I-5715_SML\F2.591415.038.dgn



SECTION A-A

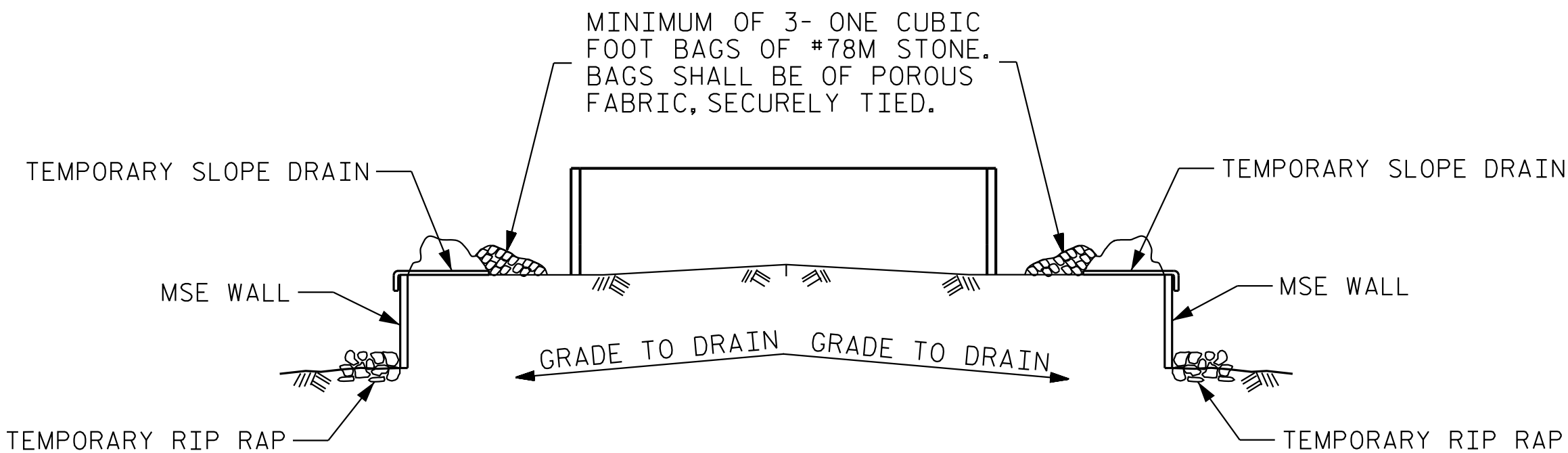


DETAIL A

DETAIL B

PILE SPLICE DETAILS

** POSITION OF PILE DURING WELDING.

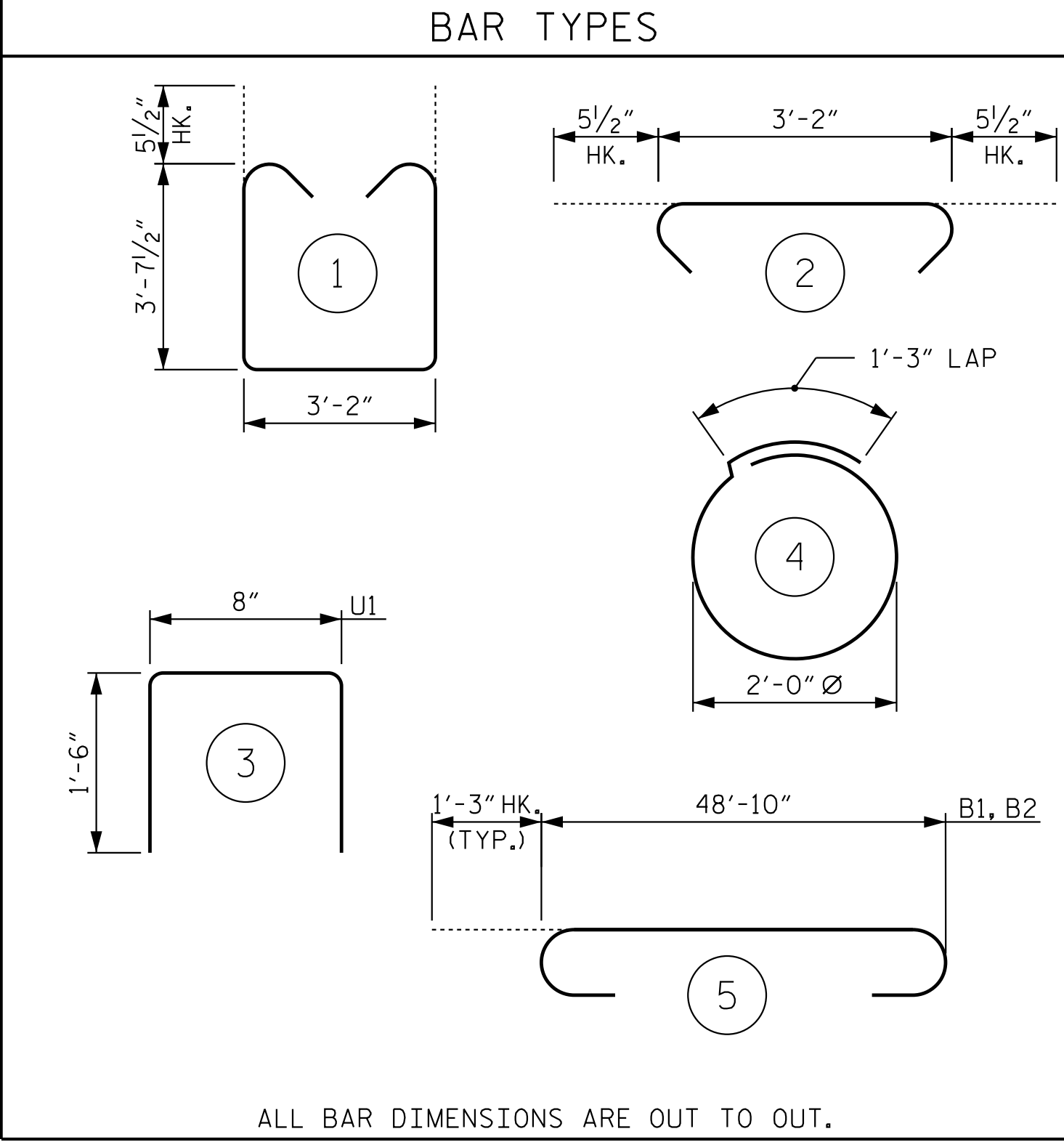


BAGGED STONE AND PIPE SHALL BE PLACED IMMEDIATELY AFTER COMPLETION OF END BENT EXCAVATION. PIPE MAY BE EITHER CONCRETE, CORRUGATED STEEL, CORRUGATED ALUMINUM ALLOY, OR CORRUGATED PLASTIC. PERFORATED PIPE WILL NOT BE ALLOWED.

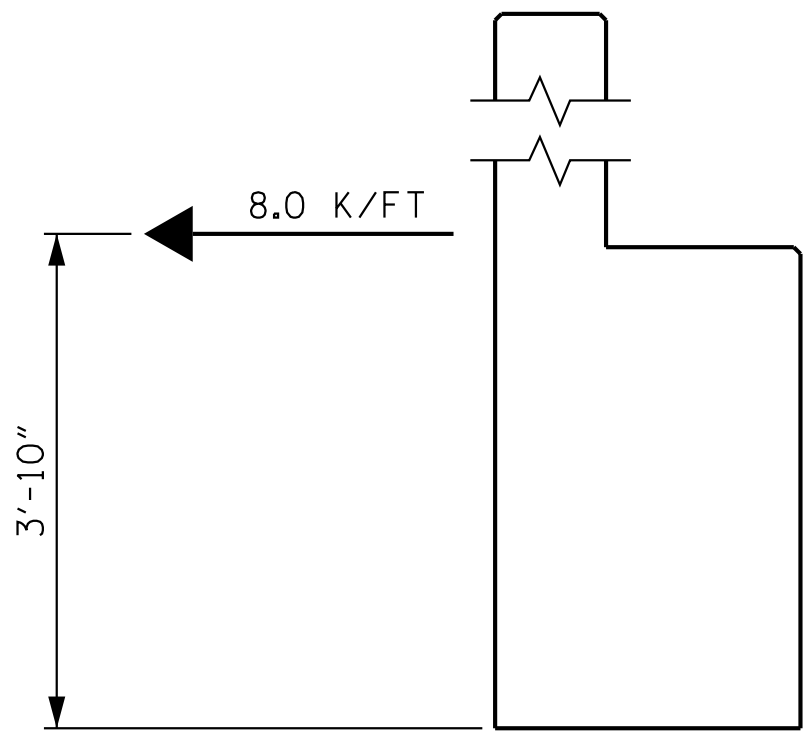
BAGGED STONE SHALL REMAIN IN PLACE UNTIL THE ENGINEER DIRECTS THAT IT BE REMOVED. THE CONTRACTOR SHALL REMOVE AND DISPOSE OF SILT ACCUMULATIONS AT BAGGED STONE WHEN SO DIRECTED BY THE ENGINEER. BAGS SHALL BE REMOVED AND REPLACED WHENEVER THE ENGINEER DETERMINES THAT THEY HAVE DETERIORATED AND LOST THEIR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



ALL BAR DIMENSIONS ARE OUT TO OUT.



MSE REINFORCING STRAP

LOAD DETAIL

MSE REINFORCING STRAP NOTES

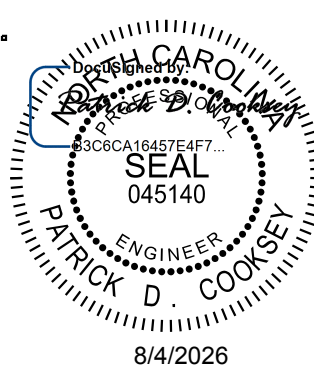
MSE REINFORCING STRAPS SHALL BE ATTACHED TO THE END BENT CAP AND/OR BACKWALL. FOR DESIGN CRITERIA AND DETAILS, SEE MSE WALL SHEETS AND SPECIAL PROVISIONS.

PLANS, WORKING DRAWINGS, AND DESIGN CALCULATIONS SHALL BE SUBMITTED BY THE CONTRACTOR TO THE ENGINEER FOR REVIEW AND APPROVAL, SEE SPECIAL PROVISIONS.

PLANS SUBMITTED FOR REVIEW SHALL INCLUDE THE FOLLOWING: PLAN VIEW, ELEVATION VIEW, TYPICAL SECTIONS, AND STRAP DETAILS.

THE MSE REINFORCING STRAPS SHALL BE DESIGNED TO CARRY THE LOADS FROM THE BRIDGE SUPERSTRUCTURE AS INDICATED IN THE "MSE REINFORCING STRAP LOAD DETAIL". IN ADDITION, THE MSE REINFORCING STRAPS SHALL ALSO BE DESIGNED TO CARRY LOADS FROM SOIL PRESSURE AS OUTLINED IN THE SPECIAL PROVISION.

THE LOADS IN THE DETAIL ABOVE ARE FACTORED LOADS.



Kimley»Horn

421 Fayetteville Street, Suite 600
Raleigh, NC 27601-1772
Phone (919) 677-2000 NC LICENSE # F-0102

This document, together with the concepts and designs presented herein, is an integral part of the contract. It shall be used only for the specific project and shall not be used for any other purpose without the written authorization and signature of Kimley-Horn and Associates, Inc. shall be without liability to Kimley-Horn and Associates, Inc.

BILL OF MATERIAL

END BENT 1

BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
B1	6	#9	5	51'-4"	1,047
B2	6	#9	5	51'-4"	1,047
B3	6	#5	STR	48'-10"	306
B4	13	#4	STR	3'-2"	27
B5	8	#4	STR	25'-8"	137
K1	24	#4	STR	25'-5"	407
K2	8	#4	STR	2'-10"	15
S1	78	#5	1	11'-4"	922
S2	78	#5	2	4'-1"	332
S3	40	#4	4	7'-7"	203
U1	51	#4	3	3'-8"	125
V1	86	#5	STR	9'-7"	860
V2	16	#5	STR	11'-3"	188

REINFORCING STEEL				5,616 LBS.	
CLASS A CONCRETE BREAKDOWN					
POUR 1 (CAP)				26.6 C.Y.	
POUR 2 (BACKWALL)				12.2 C.Y.	
TOTAL CLASS A CONCRETE				38.8 C.Y.	

PROJECT NO. I-5715

MECKLENBURG COUNTY

STATION: 20+08.83 -Y1-

SHEET 2 OF 2

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUBSTRUCTURE

END BENT 1 DETAILS
& BILL OF MATERIAL

REVISIONS						SHEET NO. S1-38
NO.	BY:	DATE:	NO.	BY:	DATE:	
1			3			TOTAL SHEETS 47
2			4			

STR. #1

DRAWN BY: R. C. GIESEN DATE: 04/2026
CHECKED BY: T. H. ORR DATE: 04/2026
DESIGN ENGINEER OF RECORD: A. L. PHILLIPS DATE: 04/2026

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



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



-
- Professional Engineer Seal for Patrick D. Cooksey, State of North Carolina, License No. 33080A1645754E7, dated 8/4/2026.

REVISIONS						SHEET NO. SI-39
NO.	BY:	DATE:	NO.	BY:	DATE:	
1			3			TOTAL SHEETS 47
2			4			

This document, together with the concepts and designs presented herein, as an instrument of services, is intended only for the specific purpose and client for which it was prepared. Reuse of and improper reliance on this document without written authorization and adoption by Kimley-Horn and Associates, Inc. shall be without liability to Kimley-Horn and Associates, Inc.

Copyright Kimley-Horn and Associates, Inc. 2026

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



4'-0"

2'-0" 2'-0"

⊕ CAP, COLUMNS & FOOTINGS

1'-8" MIN. (TYP.)

CONST. JT. (TYP.)

3" MIN. INTO CAP (SP-1)

3" (TYP.)

2" CL. TO SP-1

14-#9 V1

3'-6" (TYP.)

15'-5"

4'-1" MIN. SPLICE (TYP.)

14-#9 M1 BARS

SP-1

CONST. JT.

#6 T1 (TYP.)

4'-4"

#10 T2 (TYP.)

Professional Engineer Seal for Patrick D. Cooksey, State of North Carolina, License No. 045140, expires 8/4/2026.

This document, together with the concepts and designs presented herein, as an instrument of services, is intended only for the specific purpose and client for which it was prepared. Reuse of and improper reliance of this document without written authorization and adoption by Kimley-Horn and Associates, Inc. shall be without liability to Kimley-Horn and Associates, Inc.

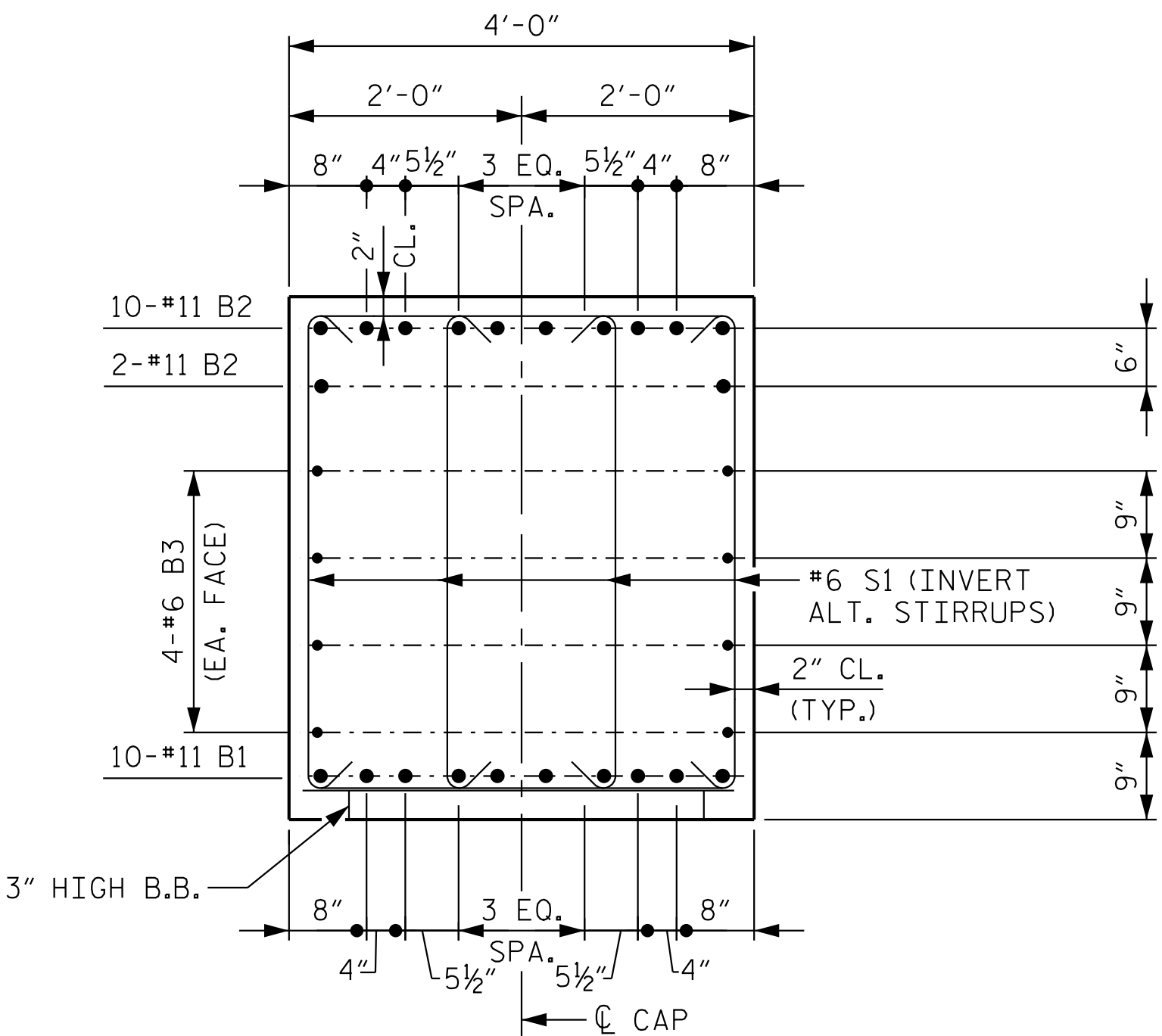
Copyright Kimley-Horn and Associates, Inc., 2026

REVISIONS						SHEET NO. S1-40
NO.	BY:	DATE:	NO.	BY:	DATE:	
1			3			TOTAL SHEETS 47
2			4			

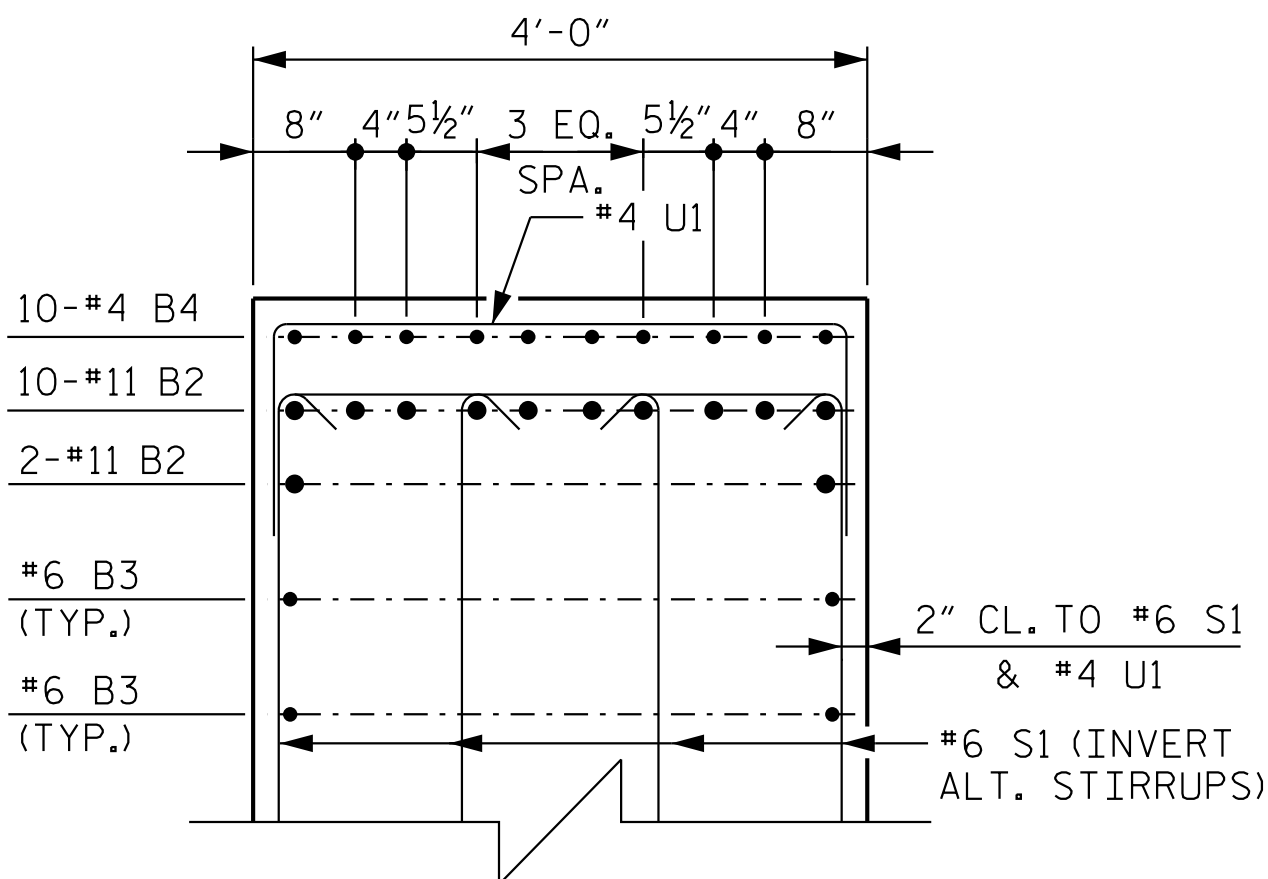
STR. #1

DRAWN BY: R. C. GIESEN	DATE: 04/2026
CHECKED BY: T. H. ORR	DATE: 04/2026
DESIGN ENGINEER OF RECORD: A. L. PHILLIPS	DATE: 04/2026

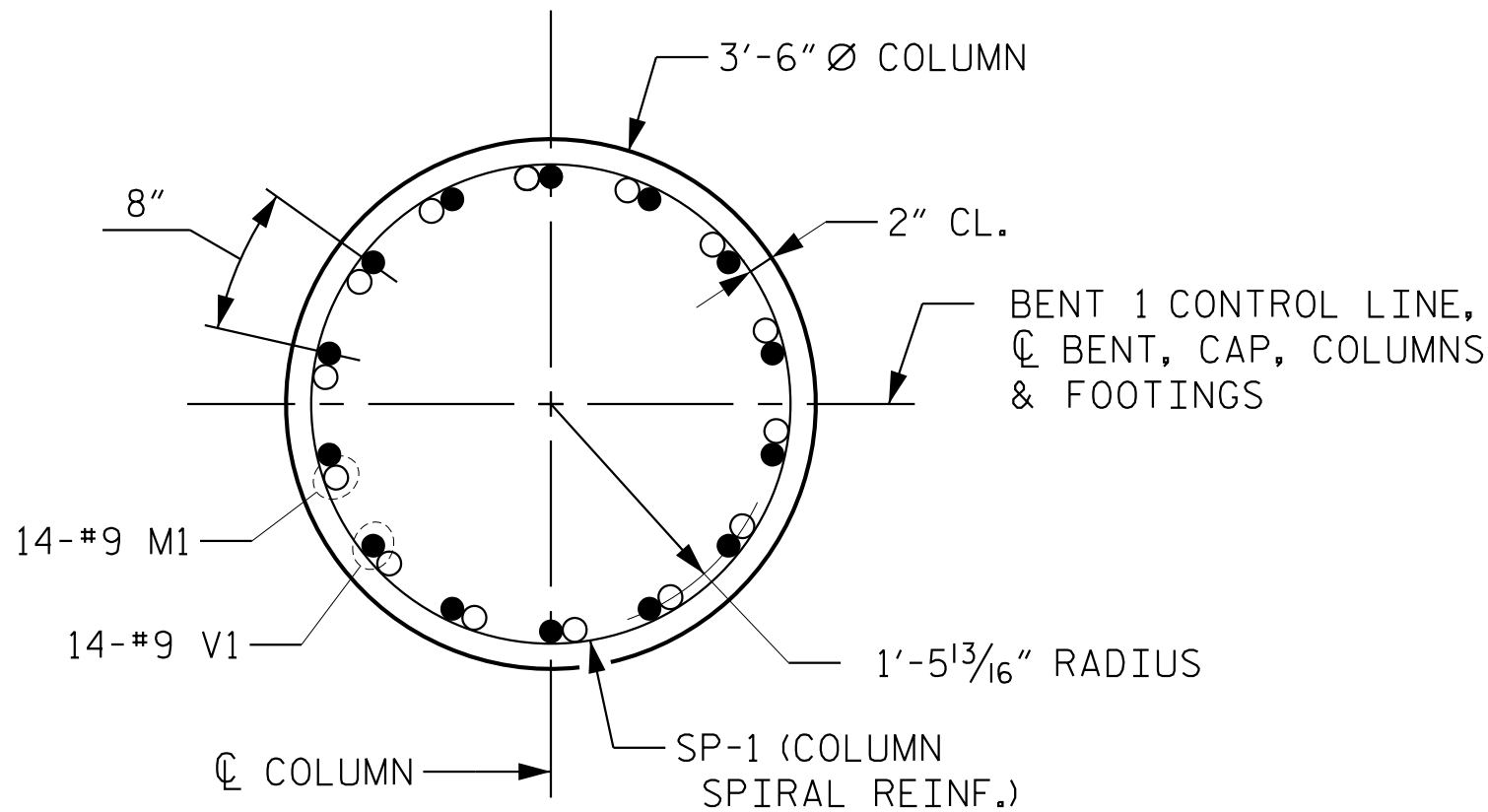
K:\BRI-Structures\Bridges\NC\01036524 - I-5715 Structure Design\Coord\gn\Site *I-5715_S&U_B3_591415_041.dgn 7/31/2026



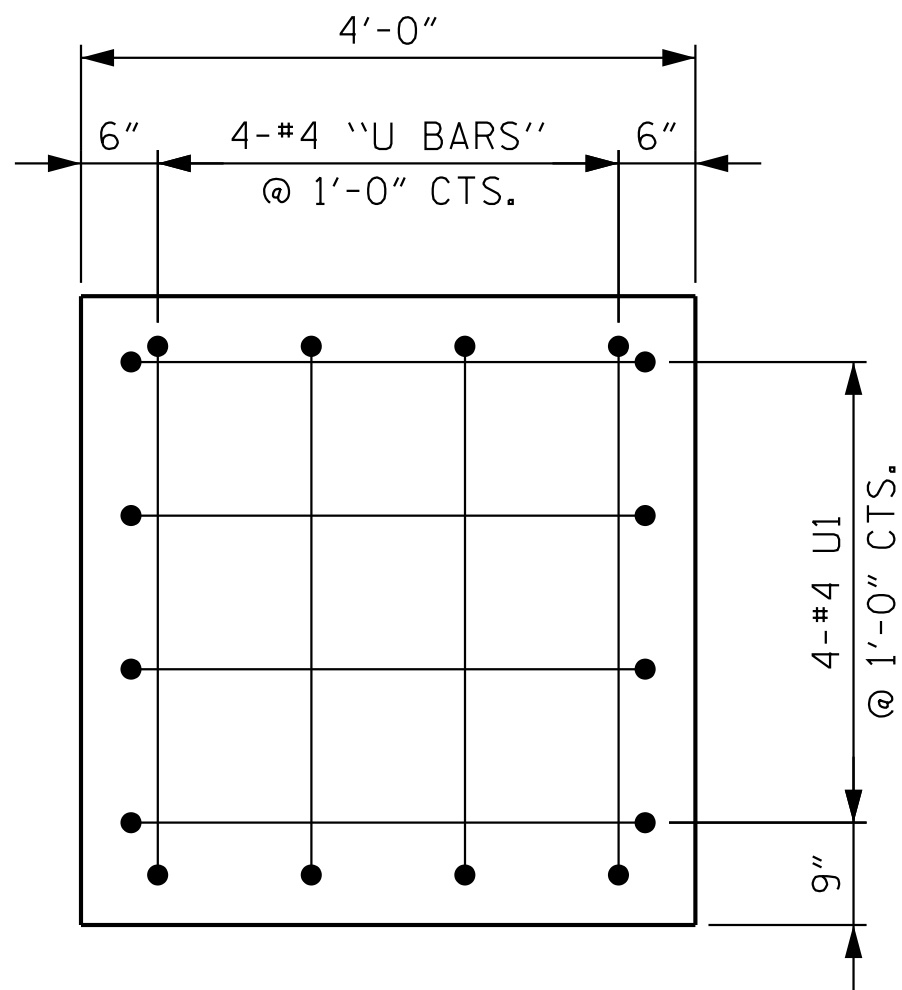
SECTION A-A



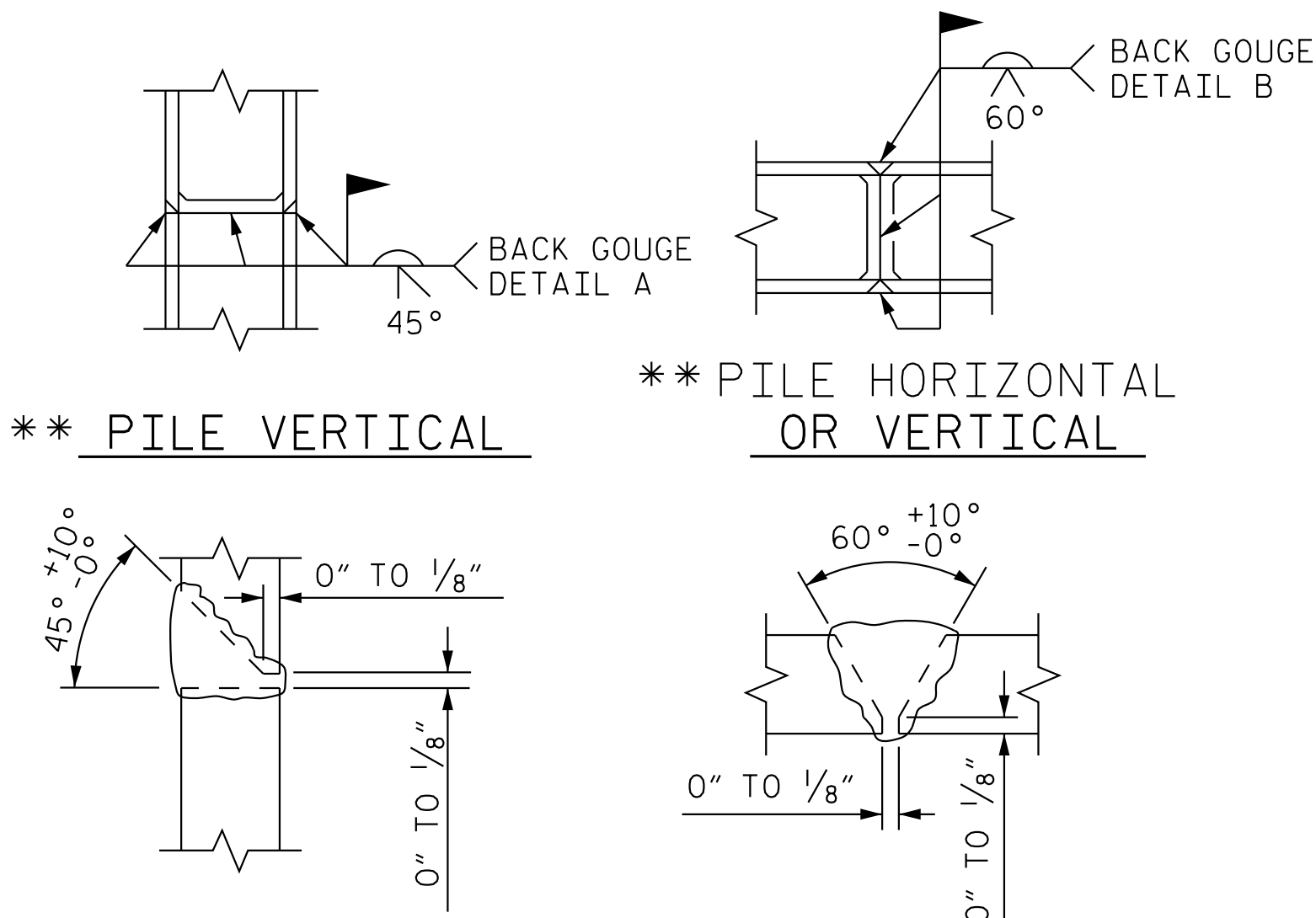
PARTIAL SECTION B-B



SECTION C-C



VIEW X-X



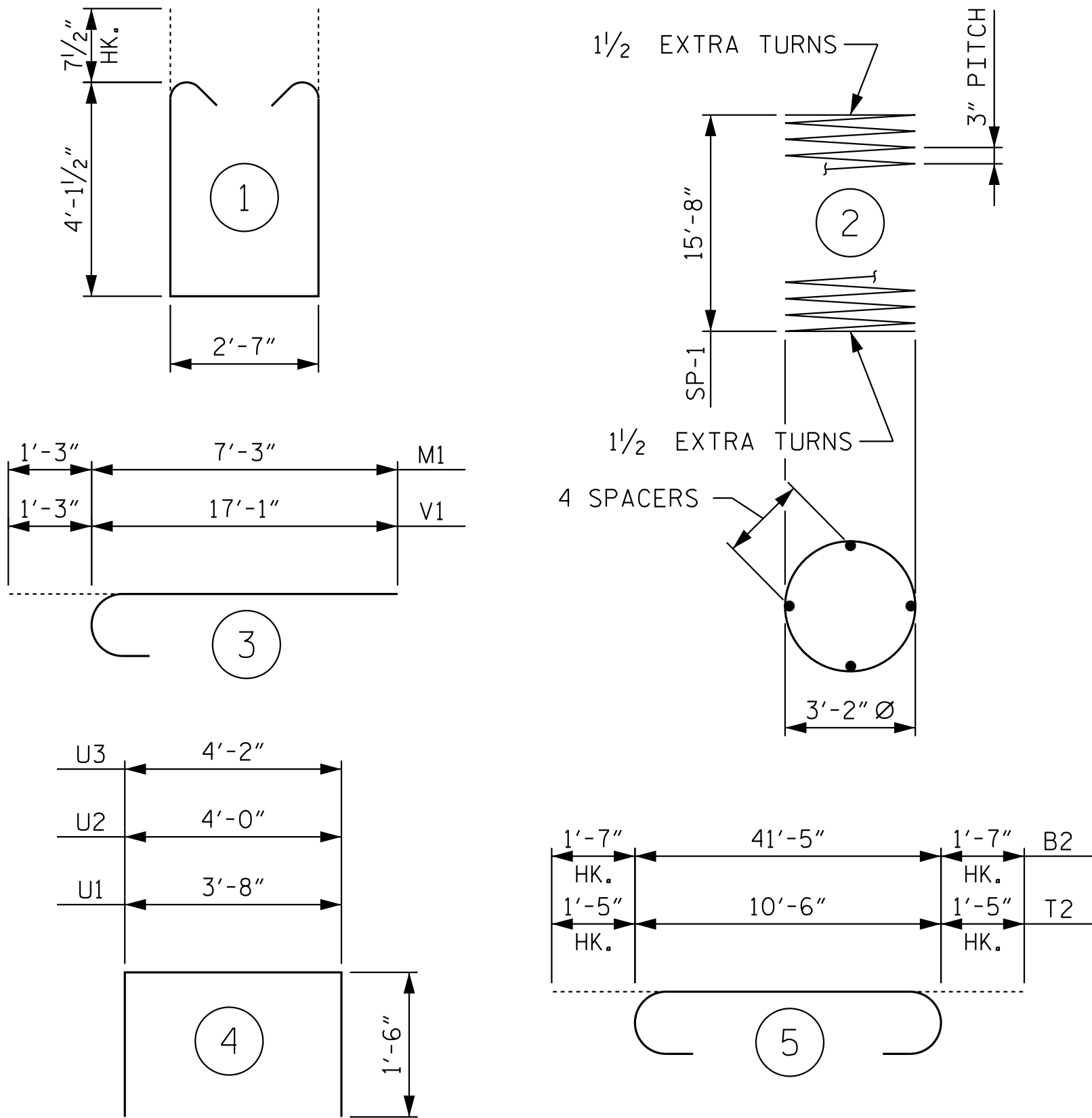
DETAIL A

DETAIL B

PILE SPLICE DETAILS

** POSITION OF PILE DURING WELDING.

BAR TYPES



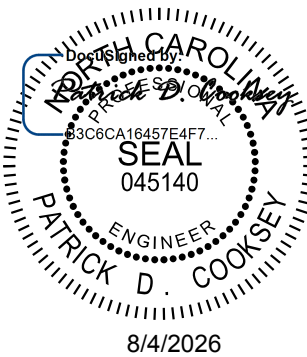
ALL BAR DIMENSIONS ARE OUT TO OUT

BILL OF MATERIAL

BENT 1					
BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
B1	10	#11	STR	41'-5"	2,200
B2	12	#11	5	44'-7"	2,842
B3	8	#6	STR	41'-5"	498
B4	10	#4	STR	30'-11"	207
M1	42	#9	3	8'-6"	1,214
S1	104	#6	1	12'-1"	1,888
T1	72	#6	STR	10'-8"	1,154
T2	72	#10	5	13'-4"	4,131
U1	48	#4	4	6'-8"	214
U2	4	#4	4	7'-0"	19
U3	4	#4	4	7'-2"	19
V1	42	#9	3	18'-4"	2,618
REINFORCING STEEL					17,033 LBS
SP-1	3	**	2	648'-2"	1,299
SPIRAL COLUMN REINFORCING STEEL					1,299 LBS.
** THE "SP" SPIRAL REINFORCING STEEL SHALL BE W20 OR D-20 COLD DRAWN WIRE OR #4 PLAIN OR DEFORMED BAR.					
BENT 1 TOTAL QUANTITIES					
CLASS A CONCRETE					
POUR 1 (FOOTINGS)					58.3 C.Y.
POUR 2 (COLUMNS)					16.5 C.Y.
POUR 3 (CAP)					29.3 C.Y.
TOTAL CLASS A CONCRETE					104.1 C.Y.

PROJECT NO. I-5715
MECKLENBURG COUNTY
STATION: 20+08.83 -Y1-

SHEET 3 OF 3



Kimley»Horn

421 Fayetteville Street, Suite 600
Raleigh, NC 27601-1772
Phone (919) 677-2000 NC LICENSE # F-0102

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

REVISIONS						SHEET NO. S1-41
NO.	BY:	DATE:	NO.	BY:	DATE:	
1			3			TOTAL SHEETS 47
2			4			

STR. #1

NOTES

FOR SECTION A-A AND PARTIAL SECTION B-B, SEE SHEET 2 OF 2.

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

FOR PILE SPLICE DETAILS, SEE SHEET 2 OF 2.

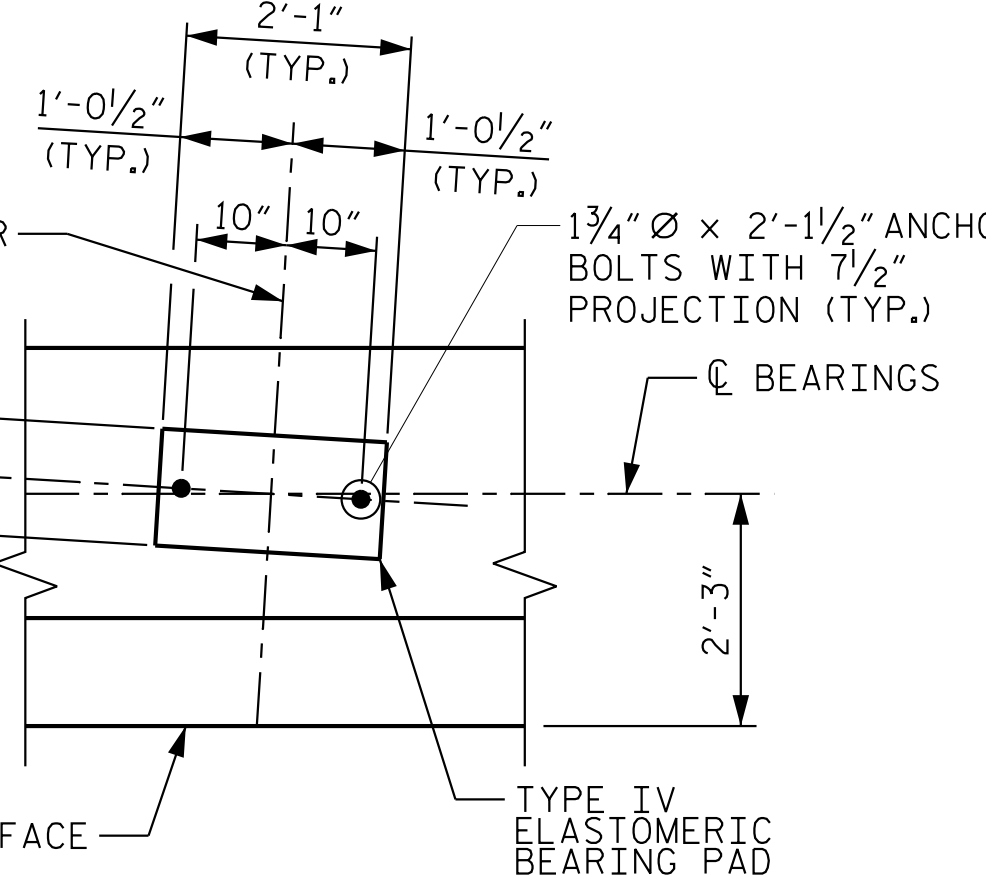
BACKWALL SHALL BE PLACED BEFORE APPLYING THE EPOXY PROTECTIVE COATING.

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

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

THE CONCRETE IN THE SHADED AREAS OF THE BACKWALL SHALL BE POURED AFTER THE PARAPETS ARE CAST IF SLIP FORMING IS USED.

EPOXY COAT THE END BENT CAP AFTER ADJUSTMENTS ARE MADE TO BEARINGS AND ANCHOR BOLTS ARE GROUTED.



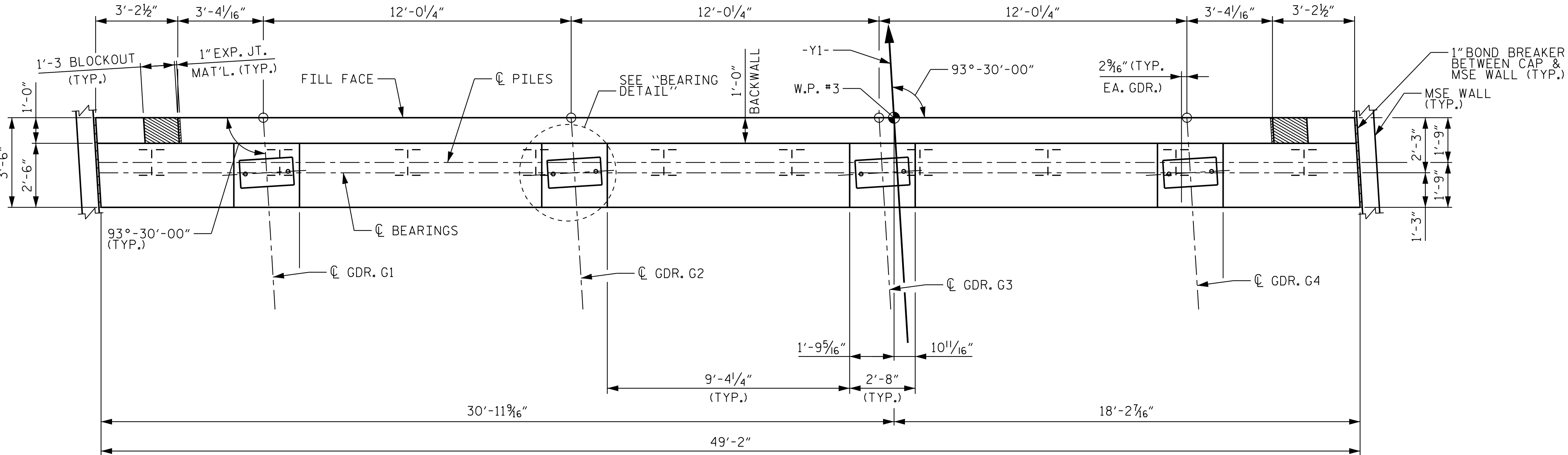
BEARING DETAIL

PROJECT NO. I-5715
MECKLENBURG COUNTY
STATION: 20+08.83 -Y1-

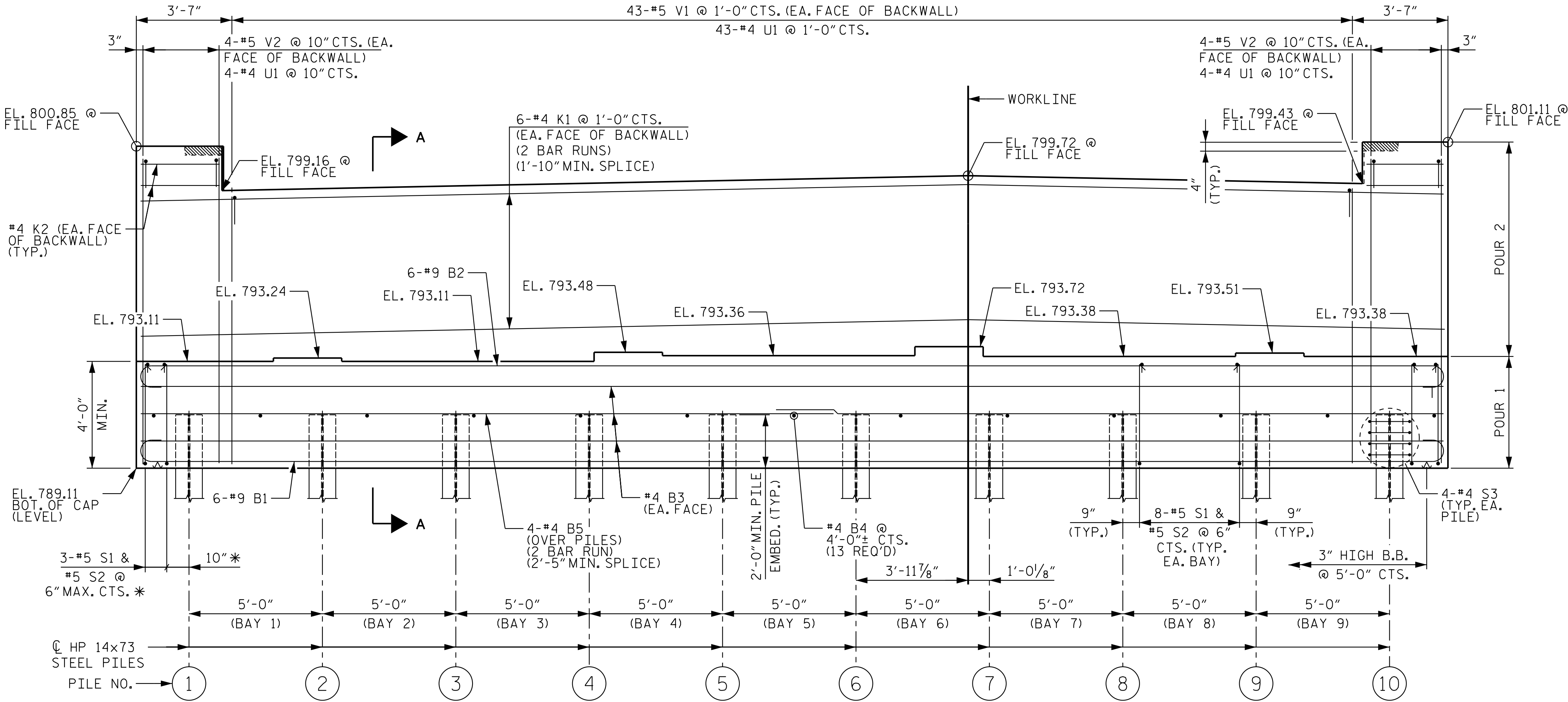
SHEET 1 OF 2

STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION RALEIGH					
SUBSTRUCTURE END BENT 2					
REVISIONS					SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:
1			3		
2			4		
					TOTAL SHEETS
					47

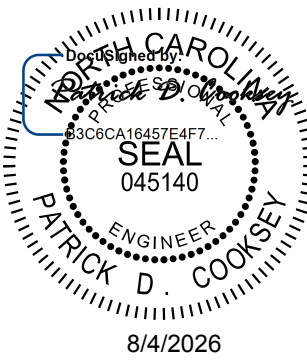
STR. #1



PLAN



ELEVATION

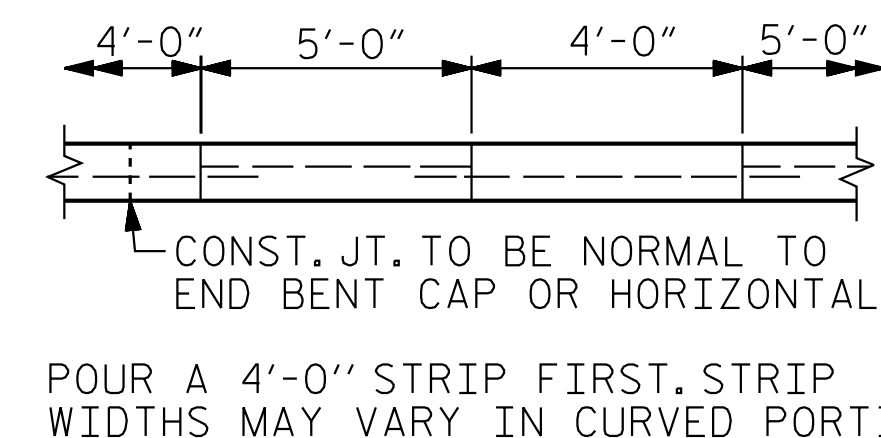
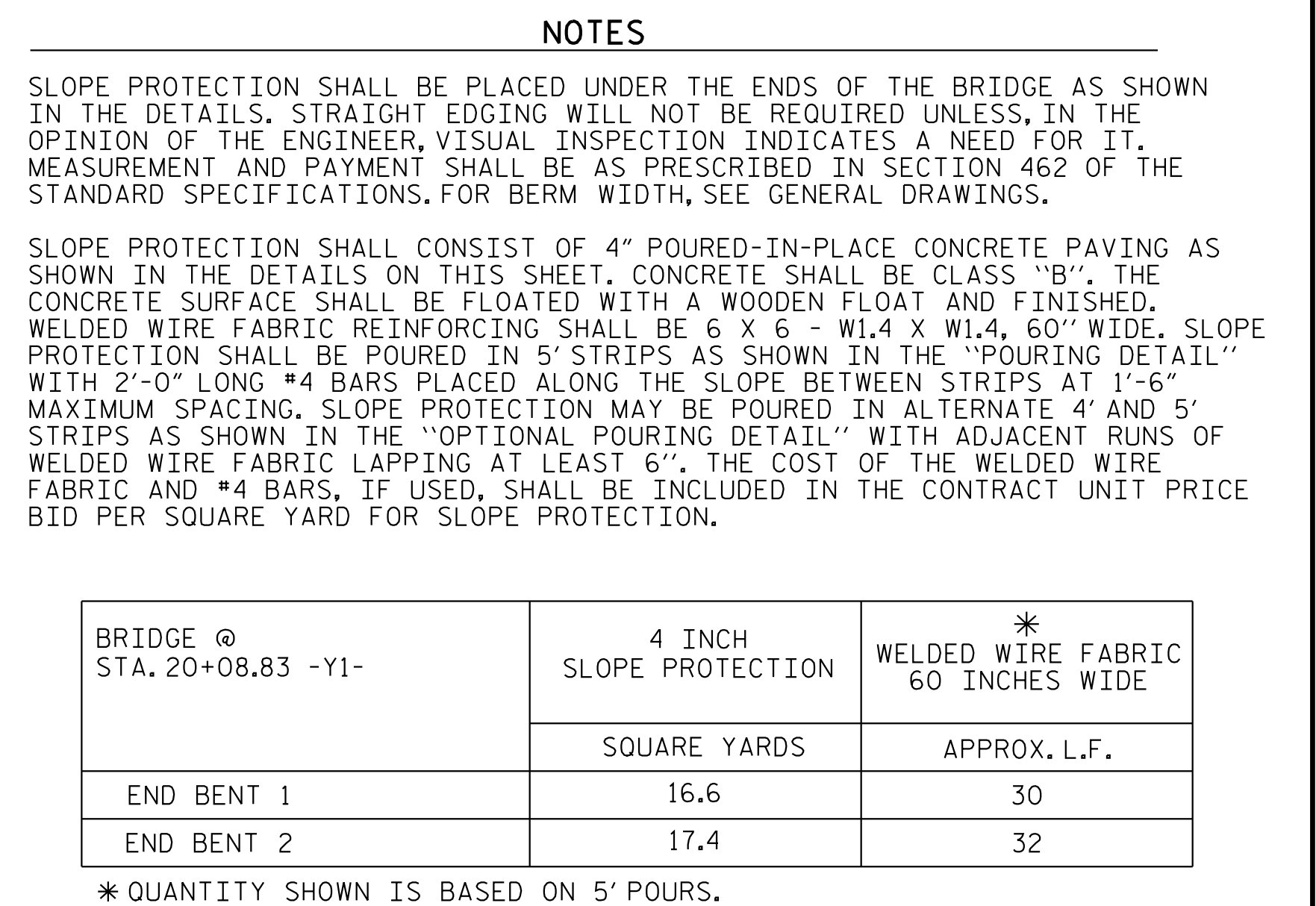


Kimley»Horn

421 Fayetteville Street, Suite 600
Raleigh, NC 27601-1772
Phone (919) 677-2000 NC LICENSE # F-0102

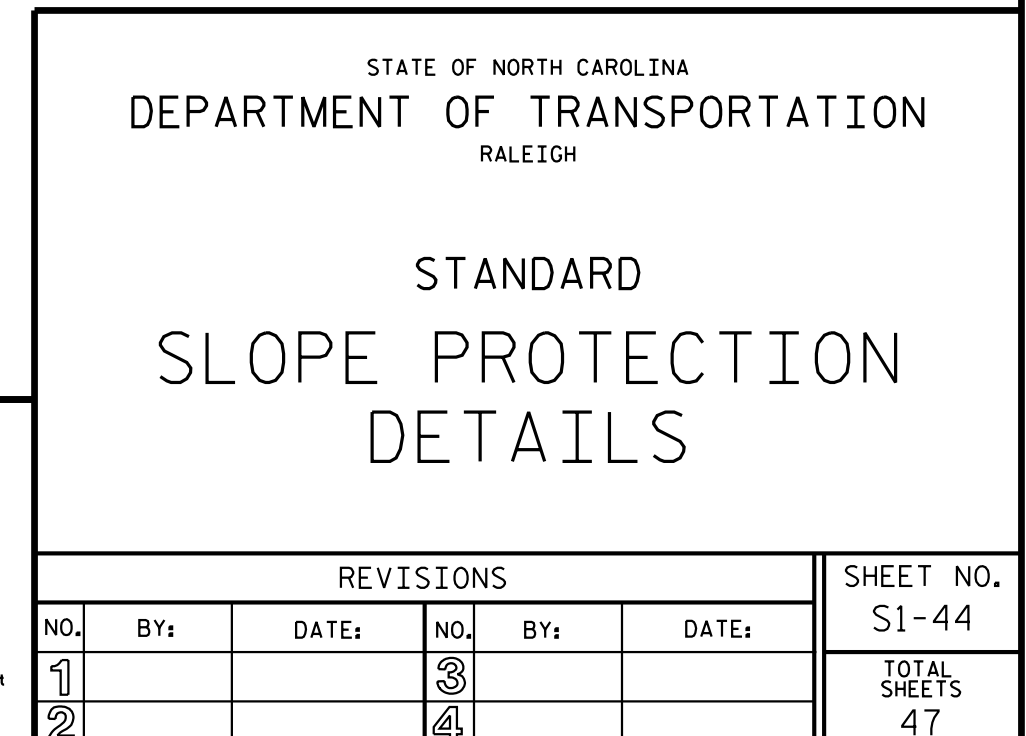
**DOCUMENT NOT CONSIDERED FINAL
UNLESS ALL SIGNATURES COMPLETED**

DRAWN BY: R. C. GIESEN DATE: 04/2026
CHECKED BY: T. H. ORR DATE: 04/2026
DESIGN ENGINEER OF RECORD: A. L. PHILLIPS DATE: 04/2026



OPTIONAL POURING DETAIL

PROJECT NO. I-5715
MECKLENBURG COUNTY
 STATION: 20+08.83 -Y1-



STR. #1	STD. NO. SP1
---------	--------------

DRAWN BY: <u>R. C. GIESEN</u>	DATE: <u>04/2026</u>
CHECKED BY: <u>T. H. ORR</u>	DATE: <u>04/2026</u>
DESIGN ENGINEER OF RECORD: <u>A. L. PHILLIPS</u>	DATE: <u>04/2026</u>

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

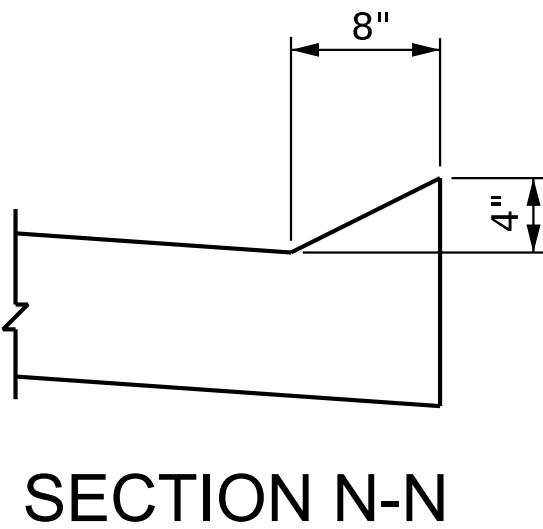
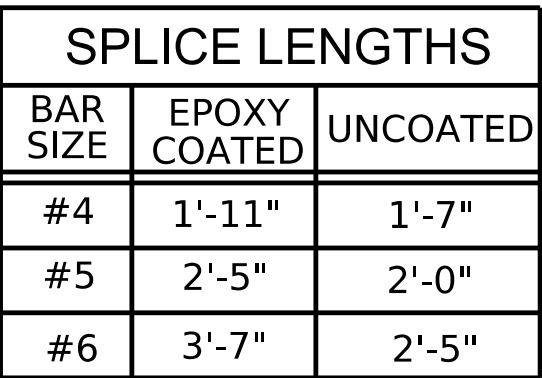
Kimley»Horn

421 Fayetteville Street, Suite 600
Raleigh, NC 27601-1772
Phone (919) 677-2000

NC LICENSE #
F-0102

This document, together with the concepts and designs presented herein, as instruments of service, is intended only for the specific project and client for which it was prepared. It is not to be distributed, copied, reproduced, or used for any other project without the written authorization and approval by Kimley-Horn and Associates, Inc. Kimley-Horn and Associates, Inc. shall not be responsible for any consequences that may result from unauthorized use of this document.

Consistent Kimley-Horn and Associates, Inc., 2076



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

* * QUANTITIES FOR PARAPET AND
END POST ARE NOT INCLUDED.
SEE SHEET 2 OF 2.

SHEET 1 OF 2

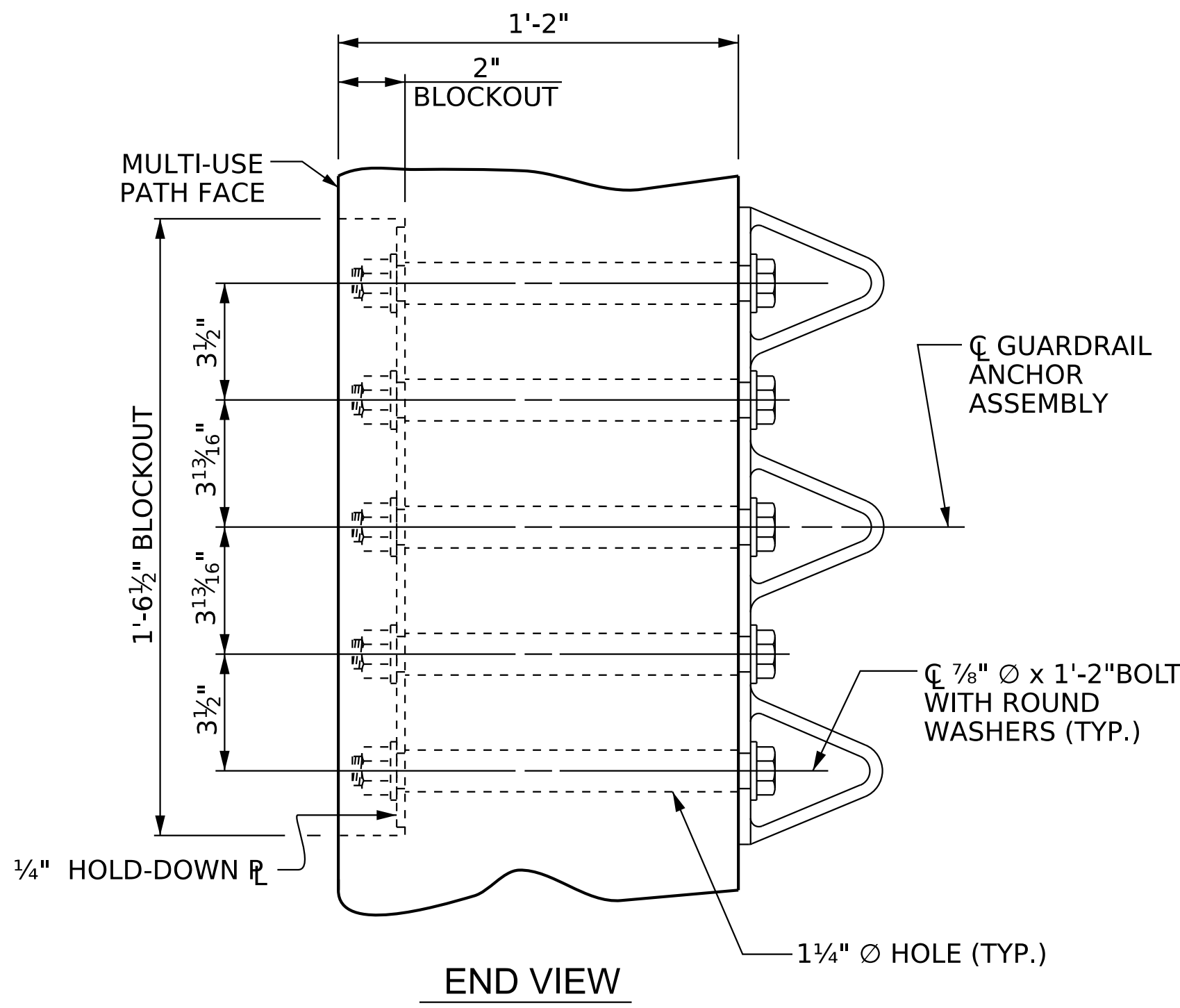
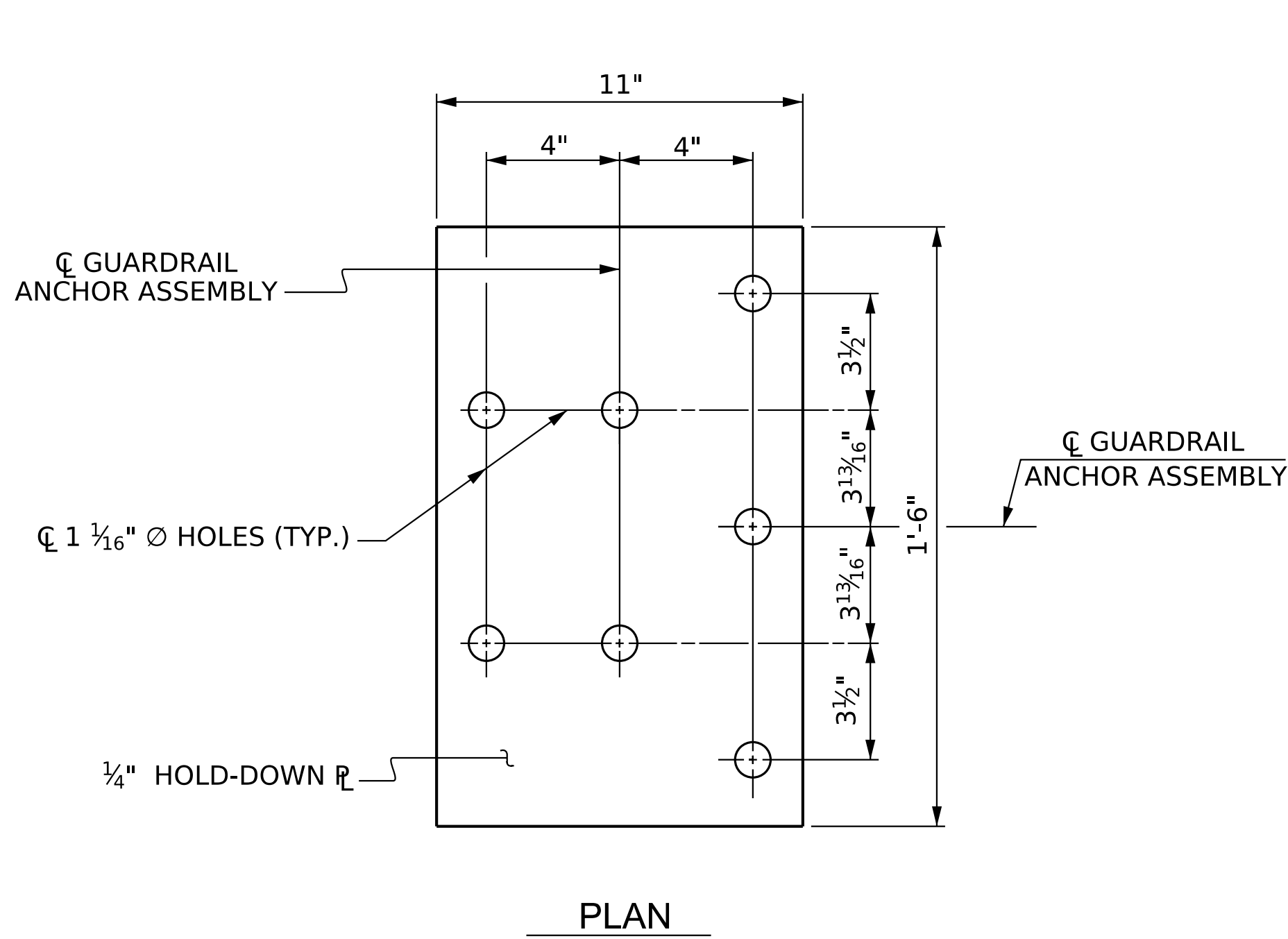
REVISIONS						SHEET NO. S1-45
NO.	BY:	DATE:	NO.	BY:	DATE:	
1			3			TOTAL SHEETS 47
2			4			

STD. NO. BAS2

FOR S2 BAR LAYOUT, SEE SHEET 2 OF 2.

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

7/31/2026 K:\RD1_Structures\Bridge\NC\01036524 - I-5715 Structure Design\Coord\gn\Site *I\Final\401_093_15715_SML\CR2.59\415_047.dgn



NOTES

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

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

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

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

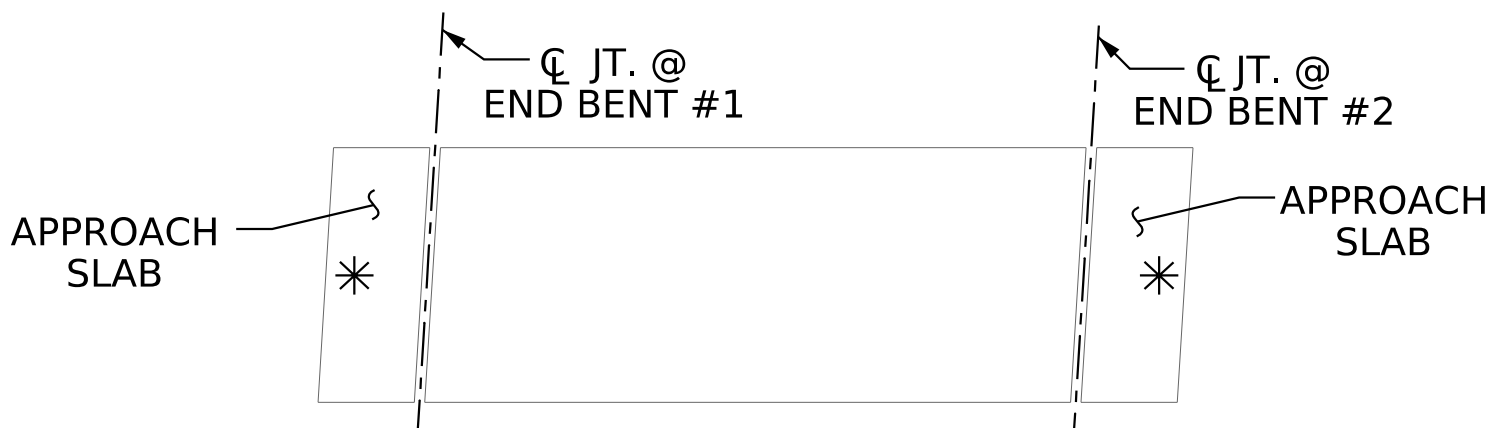
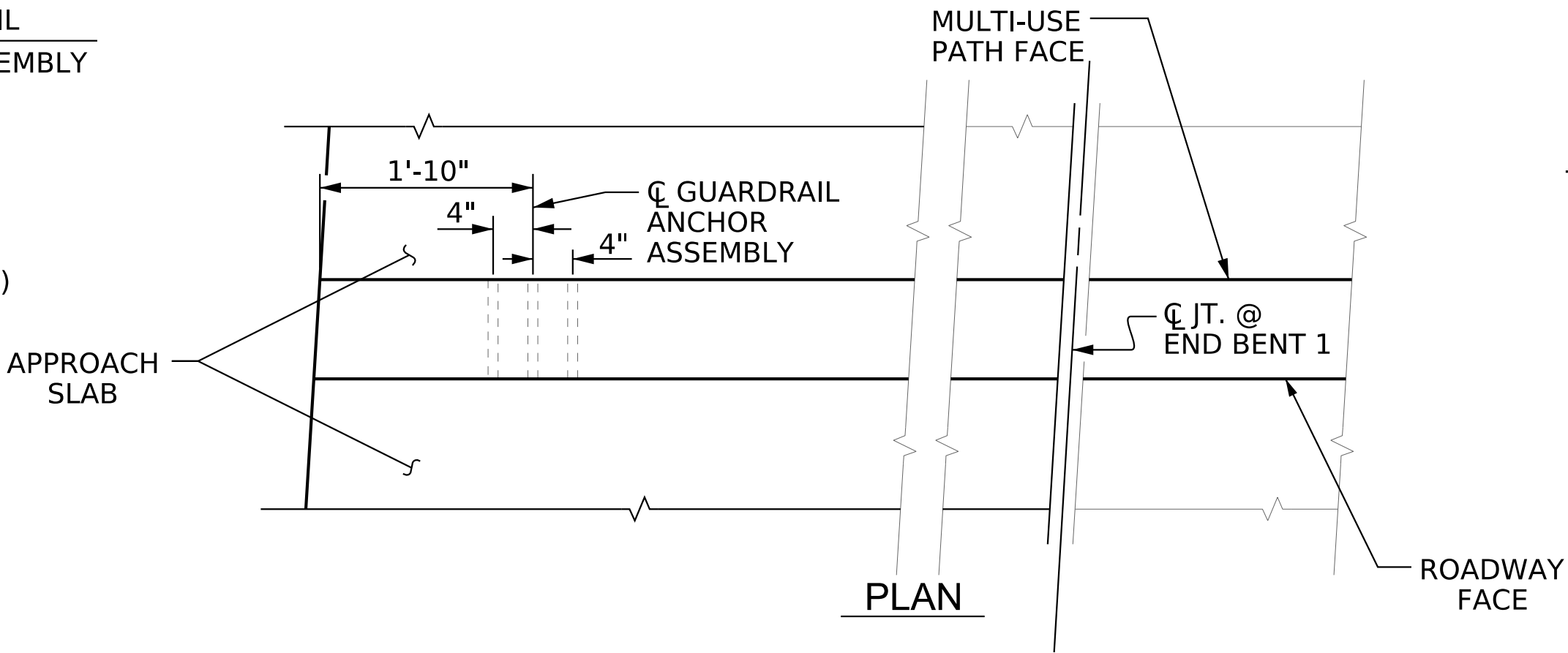
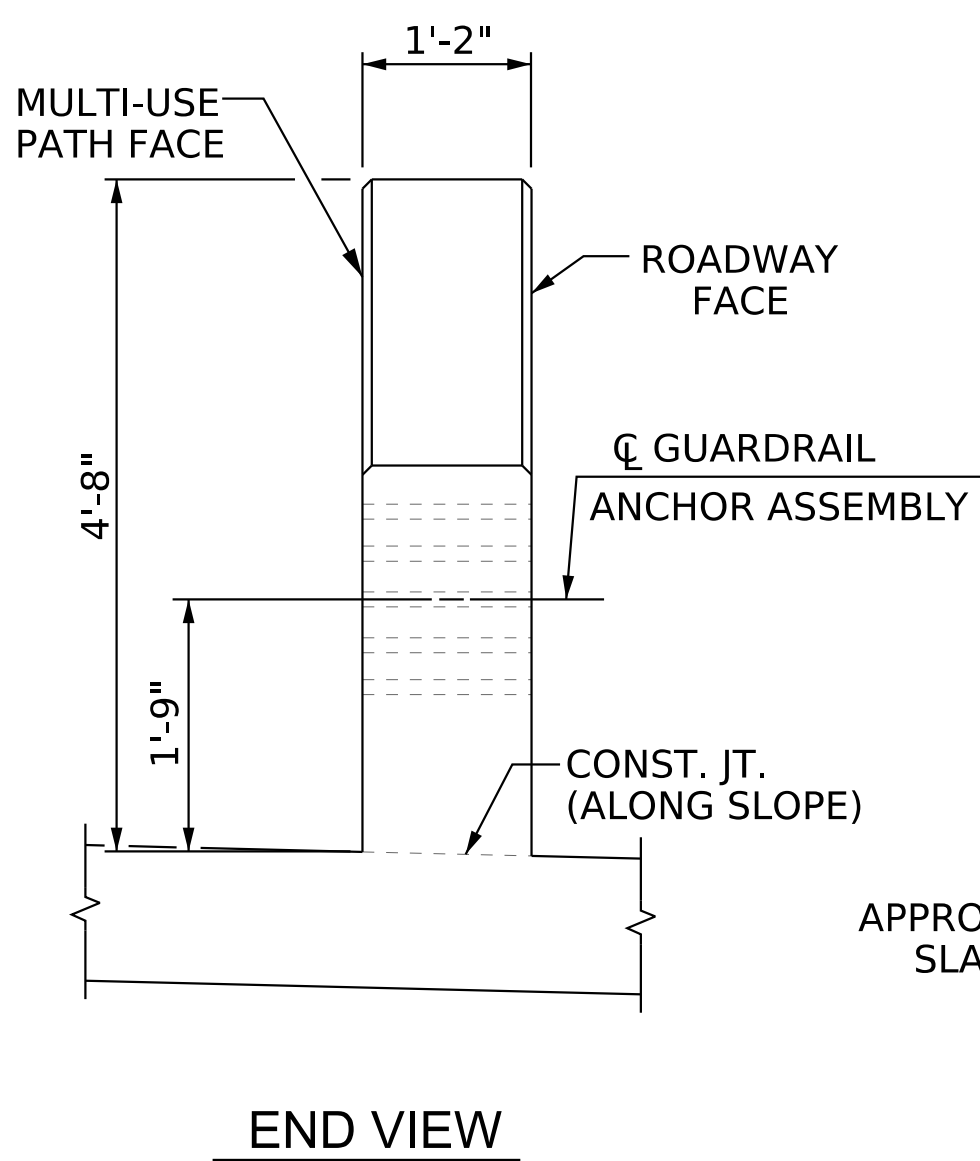
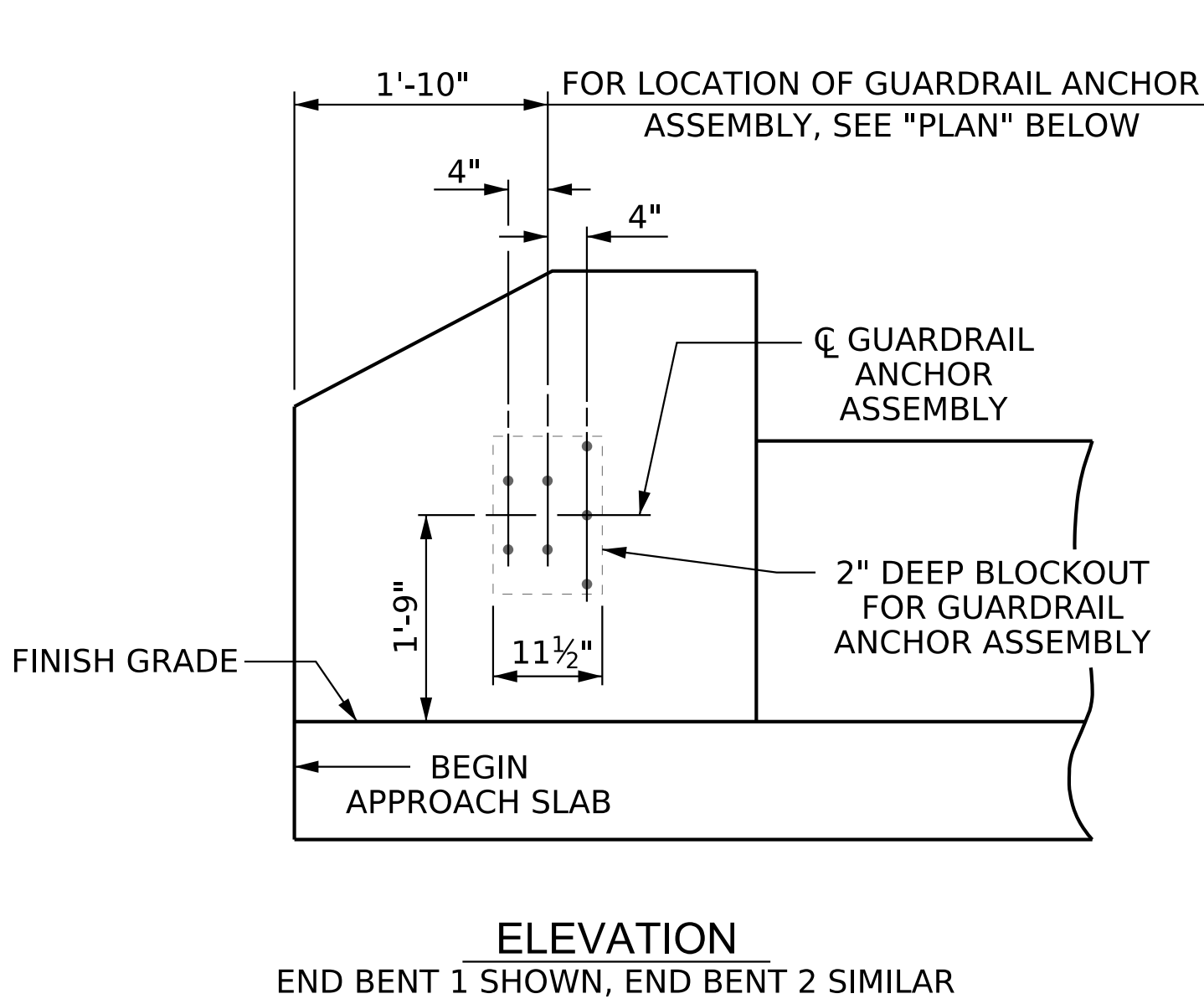
AFTER INSTALLATION, THE EXPOSED THREAD OF THE BOLT SHALL BE BURRED WITH A SHARP POINTED TOOL.

THE COST OF THE GUARDRAIL ANCHOR 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 RAIL TO CLEAR ASSEMBLY BOLTS.

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

REINFORCING SHALL BE SHIFTED SLIGHTLY AS NECESSARY TO AVOID BLOCKOUT FOR GUARDRAIL ANCHORAGE ASSEMBLY ON MULTI-USE PATH FACE.



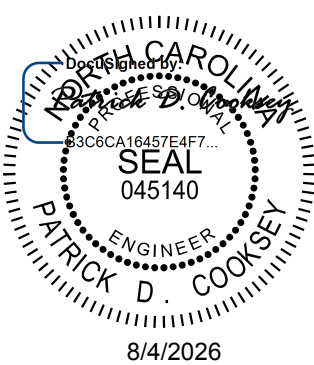
SKETCH SHOWING POINTS OF ATTACHMENT

* DENOTES GUARDRAIL ANCHOR ASSEMBLY

LOCATION OF ANCHORS FOR GUARDRAIL

BEGINNING OF APPROACH SLAB SHOWN, END APPROACH SLAB SIMILAR

PROJECT NO. I-5715
MECKLENBURG COUNTY
STATION: 20+08.83 -Y1-



Kimley»Horn

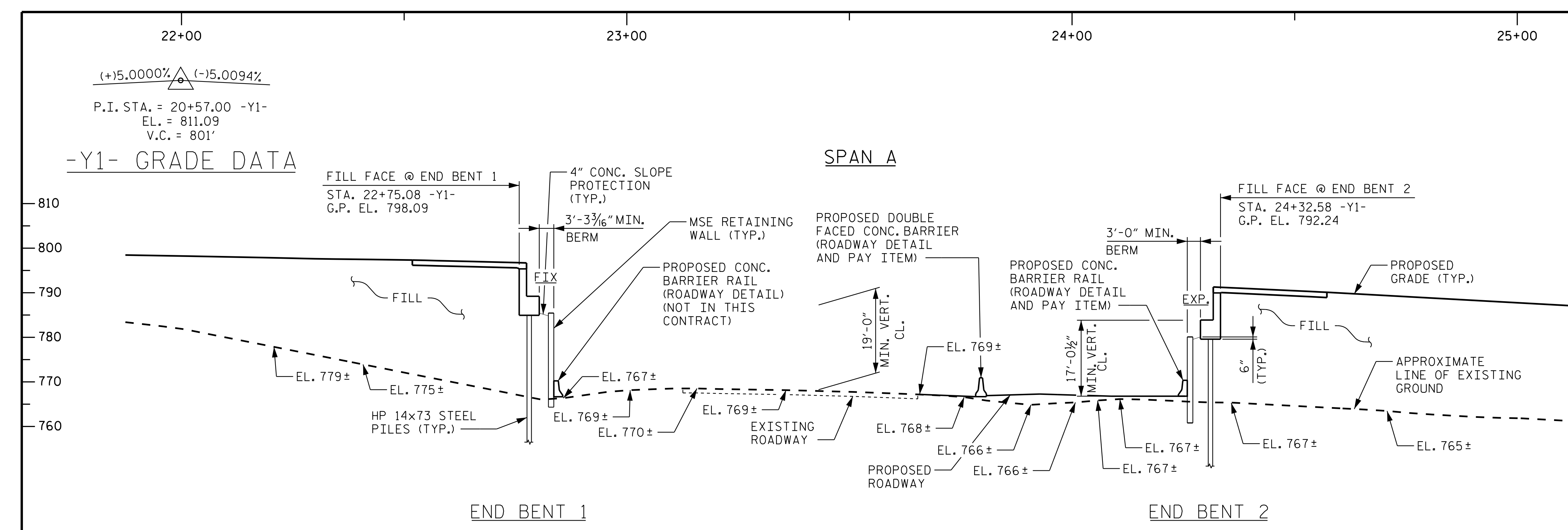
421 Fayetteville Street, Suite 600
Raleigh, NC 27601-1772
Phone (919) 677-2000 NC LICENSE # F-0102

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

DRAWN BY: R. C. GIESEN DATE: 04/2026
CHECKED BY: T. H. ORR DATE: 04/2026
DESIGN ENGINEER OF RECORD: A. L. PHILLIPS DATE: 04/2026

STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION RALEIGH					
GUARDRAIL ANCHORAGE DETAILS FOR INTERIOR PARAPET METAL RAILS ON APPROACH SLAB					
REVISIONS					
NO.	BY:	DATE:	NO.	BY:	DATE:
1			3		
2			4		
SHEET NO. S1-47					TOTAL SHEETS 47

STR. #1



HORIZONTAL CURVE DATA -Y1-

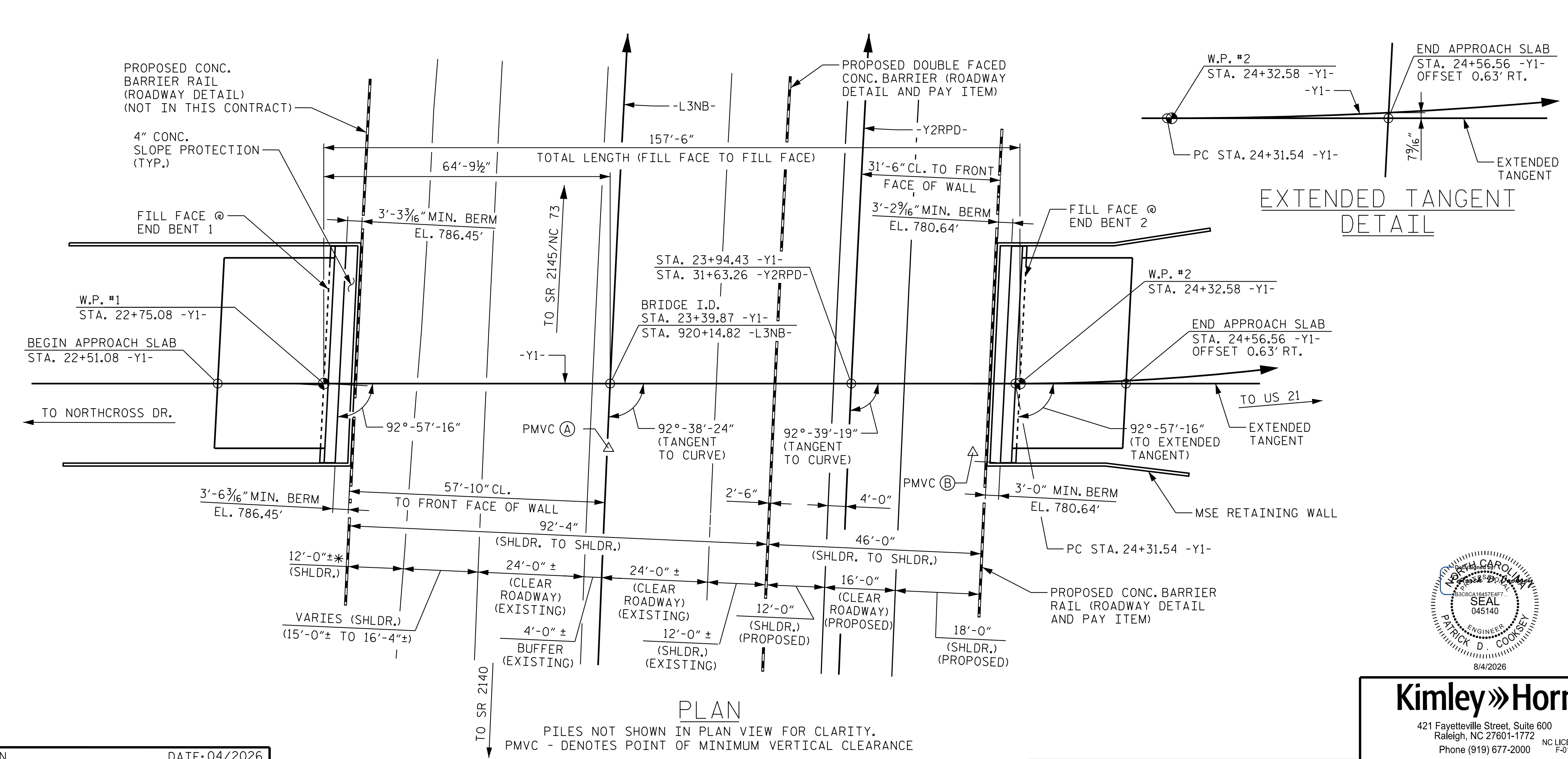
P.I. STA. 25+03.54
 $\Delta = 16^{\circ}23'17.0''$ (LT)
 $D = 11^{\circ}27'33.0''$
 $L = 143.01'$
 $T = 72.00'$
 $R = 500.00'$

HORIZONTAL CURVE DATA -L3NB-

P.I. STA. 914+16.21
 $\Delta = 21^\circ 54' 03.7''$ (RT)
 $D = 0^\circ 35' 54.2''$
 $L = 3,659.99'$
 $T = 1,852.61'$
 $R = 9,575.00'$

HORIZONTAL CURVE DATA -Y2RPD-

P.I. STA. 28+75.31
 $\Delta = 13^{\circ}19'53.5''$ (RT)
 $D = 0^{\circ}36'06.5''$
 $L = 2,215.22'$
 $T = 1,112.63'$
 $R = 9,520.50'$



* MINIMUM HORIZONTAL
CLEARANCE TO CONCRETE
BARRIER RAIL

① STA. 23+39.35 -Y1-
OFFSET 11.42' (RT)
= STA. 920+03.39 -L3NB-
OFFSET 0.00'
EL. 769.66

⑦ STA. 24+23.94 -Y1-
OFFSET 11.42' (RT)
= STA. 31+53.19 -Y2RPD-
OFFSET 30.00' (RT)
EL. 768.19

PROJECT NO. I-5715
MECKLENBURG COUNTY
STATION: 23+39.87 -Y1-
920+14.82 -L3NB-
SHEET 1 OF 4 BRIDGE NO. 591416

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

GENERAL DRAWING

FOR BRIDGE OVER
NORTHBOUND I-77 ON I-77
SOUTH CROSSING BETWEEN
NORTHCROSS DR. AND US 21

# on or about be	REVISIONS						SHEET NO. S2-1
	NO.	BY:	DATE:	NO.	BY:	DATE:	
	1			3			TOTAL SHEETS 40
	2			4			

STR. #2

7/31/2026 DRAWN BY: R. C. GIESEN DATE: 04/2026
 CHECKED BY: E. W. SPRABERRY DATE: 04/2026
 DESIGN ENGINEER OF RECORD: A. L. PHILLIPS DATE: 04/2026

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

NOT RECORDED
DEPT. OF REVENUE
RECORDS DIVISION
JAN 26 2011 10:45 AM
SEAL
045140
ENGINEER
PATRICIA D. COOPER

8/4/2026

Kimley»Horn

421 Fayetteville Street, Suite 600
Raleigh, NC 27601-1772
Phone (919) 677-2000

NC LICENSE #
F-0102

This document, together with the concepts and designs presented herein, as an instrument of service, is intended only for the specific purpose and client for which it was prepared. Reuse of and improper reliance of this document without written authorization by Kimley-Horn and Associates, Inc. shall be deemed a violation of the applicable terms of the contract.

Copyright Kimley-Horn and Associates, Inc. 2008



FOR PILES, SEE SECTION 450 OF THE STANDARD SPECIFICATIONS.
INSTALL PILES AT END BENT NO.1 AND END BENT NO.2 PRIOR TO MSE WALL CONSTRUCTION.

SHEET 2 OF 4



421 Fayetteville Street, Suite 600
Raleigh, NC 27601-1772
Phone (919) 677-2000

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

STR. #2

(Blank entries indicate item is not applicable to structure)

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

PILE DESIGN INFORMATION
(Blank entries indicate item is not applicable to structure)

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

(Blank entries indicate item is not applicable to structure)

Pile Order Lengths for Concrete Piles	
End Bent / Bent No (e.g., "Bent 1 - Bent 3")	Pile Order Length Basis* EST or DPT

NOTES:

-
- Professional Engineer Seal for Patrick D. Cooksey, State of North Carolina, License No. 045140, expires 8/4/2026.

421 Fayetteville Street, Suite 600
Raleigh, NC 27601-1772 NC LICENSE #
Phone (919) 677-2000 F-0102

This document, together with the concepts and designs presented herein, as an instrument of services, is intended only for the specific purpose and client for which it was prepared. Reuse of and improper reliance on this document without written authorization and adoption by Kimley-Horn and Associates, Inc. shall be without liability to Kimley-Horn and Associates, Inc.

Copyright Kimley-Horn and Associates, Inc., 2026

SHEET 3 OF 4

FOR BRIDGE OVER
NORTHBOUND I-77 ON I-77
SOUTH CROSSING BETWEEN
NORTHCROSS DR. AND US 21

STR. #2

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.

COMMENTS:

1.

2.

3.

4.

CONTROLLING LOAD RATING

1

DESIGN LOAD RATING (HL-93)

2

DESIGN LOAD RATING (HS-20)

3

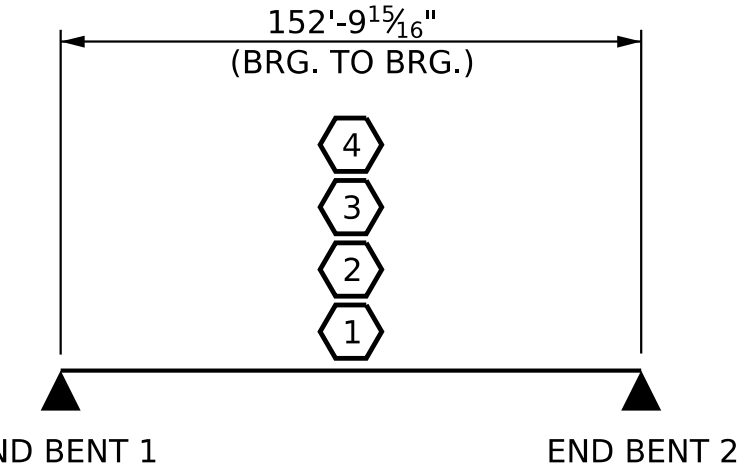
LEGAL LOAD RATING **

4

EMERGENCY VEHICLE LOAD RATING **

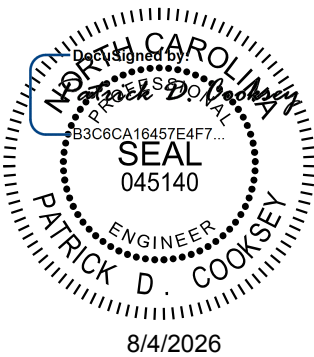
** SEE CHART FOR VEHICLE TYPE

GIRDER LOCATION

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

LRFR SUMMARY

PROJECT NO. I-5715
MECKLENBURG COUNTY
STATION: 23+39.87 -Y1-



Kimley»Horn
421 Fayetteville Street, Suite 600
Raleigh, NC 27601-1772
Phone (919) 677-2000
NC LICENSE # F-0102

This document, together with the concepts and designs presented herein, is an integral part of the project. It is intended only for the specific project and shall not be used for any other purpose without the written authorization and signature of Kimley-Horn and Associates, Inc. shall be without liability to Kimley-Horn and Associates, Inc.
Copyright Kimley-Horn and Associates, Inc., 2026

DOCUMENT NOT CONSIDERED FINAL
UNLESS ALL SIGNATURES COMPLETED

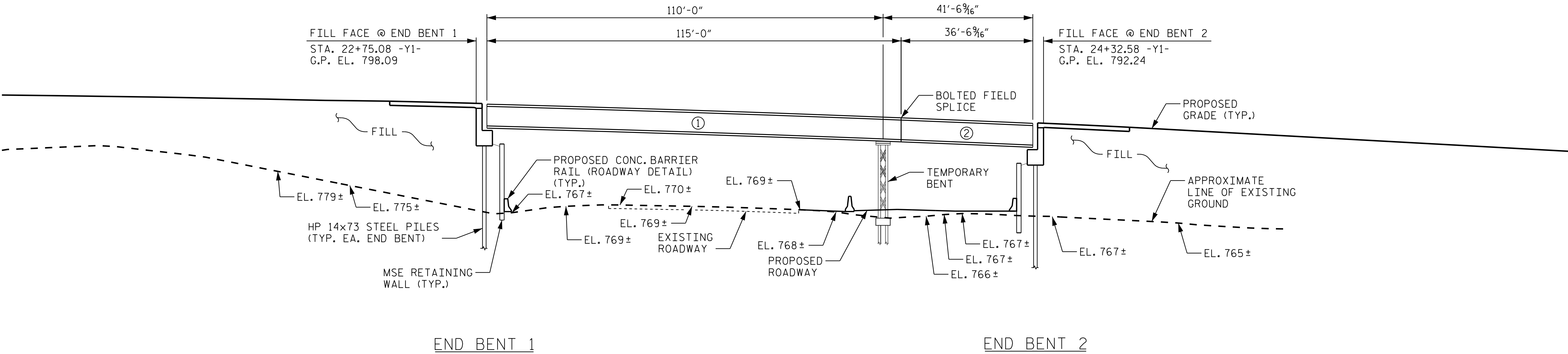
STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION RALEIGH STANDARD					
LRFR SUMMARY FOR STEEL GIRDERS NON-INTERSTATE TRAFFIC					
REVISIONS					
NO.	BY:	DATE:	NO.	BY:	DATE:
1			3		
2			4		
SHEET NO. S2-5					TOTAL SHEETS 40

STR. #2 STD. LRFR1

DRAWN BY: <u>R. C. GIESEN</u>	DATE: <u>04/2026</u>
CHECKED BY: <u>E. W. SPRABERRY</u>	DATE: <u>04/2026</u>
DESIGN ENGINEER OF RECORD: <u>A. L. PHILLIPS</u>	DATE: <u>04/2026</u>

7/31/2026 K:\RDT-Structures\Bridges\NC\01036524 - I-5715 Structure Design\Coord\Site *1\Structure 2\Final\402.01-15715_SML_PCL_591416_006.dgn

SPAN A



SECTION ALONG -Y1-
SECTIONS @ BENTS AND END BENTS ARE @ RIGHT ANGLES

○ - DENOTES FIELD SECTION NUMBER AND GIRDER ERECTION STAGE (TYP.)

ERECTION NOTES

ERECTION OF GIRDERS SHALL BE COORDINATED WITH TRAFFIC PHASING REQUIREMENTS. SEE TRAFFIC CONTROL PLANS.

ERECT A MINIMUM OF TWO GIRDERS AT A TIME WITH ALL DIAPHRAGMS/ CROSSFRAMES BETWEEN THE GIRDERS IN PLACE AND THE BOLTS TIGHTENED PRIOR TO RELEASING THE GIRDERS.

ERECT EACH SUBSEQUENT PAIR OF GIRDERS WITH DIAPHRAGMS/CROSSFRAMES CONNECTING TO THE ADJACENT PREVIOUSLY ERECTED GIRDER AND TIGHTEN ALL BOLTS BEFORE RELEASING THE GIRDERS.

THE STRUCTURAL STEEL SHALL REMAIN SUPPORTED DURING ERECTION IN ITS CAMBERED POSITION.

TEMPORARY SUPPORT TOWERS SHALL SUPPORT ALL GIRDERS IN THE TYPICAL SECTION AND REMAIN IN PLACE UNTIL ALL CROSSFRAMES/DIAPHRAGMS AND LATERAL BRACING ARE IN PLACE AND ALL HIGH STRENGTH BOLTS ARE TIGHTENED.

THE CONTRACTOR'S ERECTION PLAN SHALL INCLUDE A METHOD OF TEMPORARY SUPPORT TOWER REMOVAL THAT WILL UNIFORMLY TRANSFER THE WEIGHT OF ALL STRUCTURAL STEEL TO THE DIAPHRAGMS/CROSSFRAMES AND ENSURE THAT THE GIRDERS WILL REMAIN IN THE CAMBERED POSITION.

PLANS FOR TEMPORARY SUPPORT TOWERS, ERECTION SEQUENCE, AND TEMPORARY SUPPORT TOWER REMOVAL SHALL BE SUBMITTED TO THE ENGINEER FOR REVIEW AND APPROVAL.

THE CONTRACTOR IS RESPONSIBLE FOR DESIGNING THE TEMPORARY SUPPORT TOWERS. THE DESIGN SHALL BE COMPLETED BY A PROFESSIONAL ENGINEER REGISTERED IN THE STATE OF NORTH CAROLINA. THE CONTRACTOR SHALL SUBMIT SIGNED AND SEALED WORKING DRAWINGS AND CALCULATIONS FOR APPROVAL BY THE ENGINEER.

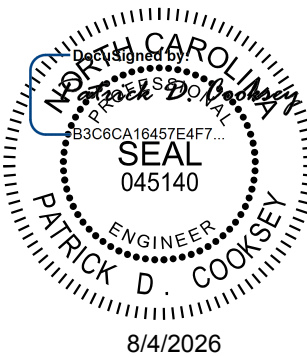
DURING GIRDER ERECTION, THE CONTRACTOR IS RESPONSIBLE FOR PROVIDING TEMPORARY LATERAL BRACING AND OTHER MEANS OF SUPPORT, AS REQUIRED, TO ENSURE STABILITY OF THE GIRDERS, AVOID UPLIFT OF THE GIRDERS AT POINTS OF SUPPORT, AND MAINTAIN PLUMBNESS OF THE GIRDER WEBS.

THE CONTRACTOR MAY SUBMIT AN ALTERNATE ERECTION METHOD TO THE ENGINEER FOR REVIEW AND APPROVAL.

FOR TEMPORARY SUPPORT TOWERS, SEE SPECIAL PROVISIONS.

NO SEPARATE MEASUREMENT OR PAYMENT WILL BE MADE FOR PROVIDING THE TEMPORARY SUPPORT TOWERS, TEMPORARY LATERAL BRACING, AND OTHER MEANS OF SUPPORT. THE COST FOR ALL MATERIALS, EQUIPMENT, TOOLS, AND LABOR NECESSARY TO PROVIDE THE TEMPORARY SUPPORTS SHALL BE CONSIDERED INCIDENTAL TO THE LUMP SUM BID PRICE FOR STRUCTURAL STEEL.

PROJECT NO. I-5715
MECKLENBURG COUNTY
STATION: 23+39.87 -Y1-



Kimley»Horn

421 Fayetteville Street, Suite 600
Raleigh, NC 27601-1772
Phone (919) 677-2000 NC LICENSE # F-0102

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

This document, together with the concepts and designs presented herein, is an integral part of the contract. It is to be used only for the specific project and shall not be used for any other purpose. It is to be kept confidential and shall not be distributed without written authorization and signature by Kimley-Horn and Associates, Inc. It shall be without liability to Kimley-Horn and Associates, Inc.

STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION RALEIGH					
SUPERSTRUCTURE CONSTRUCTION PHASING					
REVISIONS					SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:
1			3		
2			4		
					TOTAL SHEETS
					40

DRAWN BY: R. C. GIESEN DATE: 04/2026
CHECKED BY: E. W. SPRABERRY DATE: 04/2026
DESIGN ENGINEER OF RECORD: A. L. PHILLIPS DATE: 04/2026



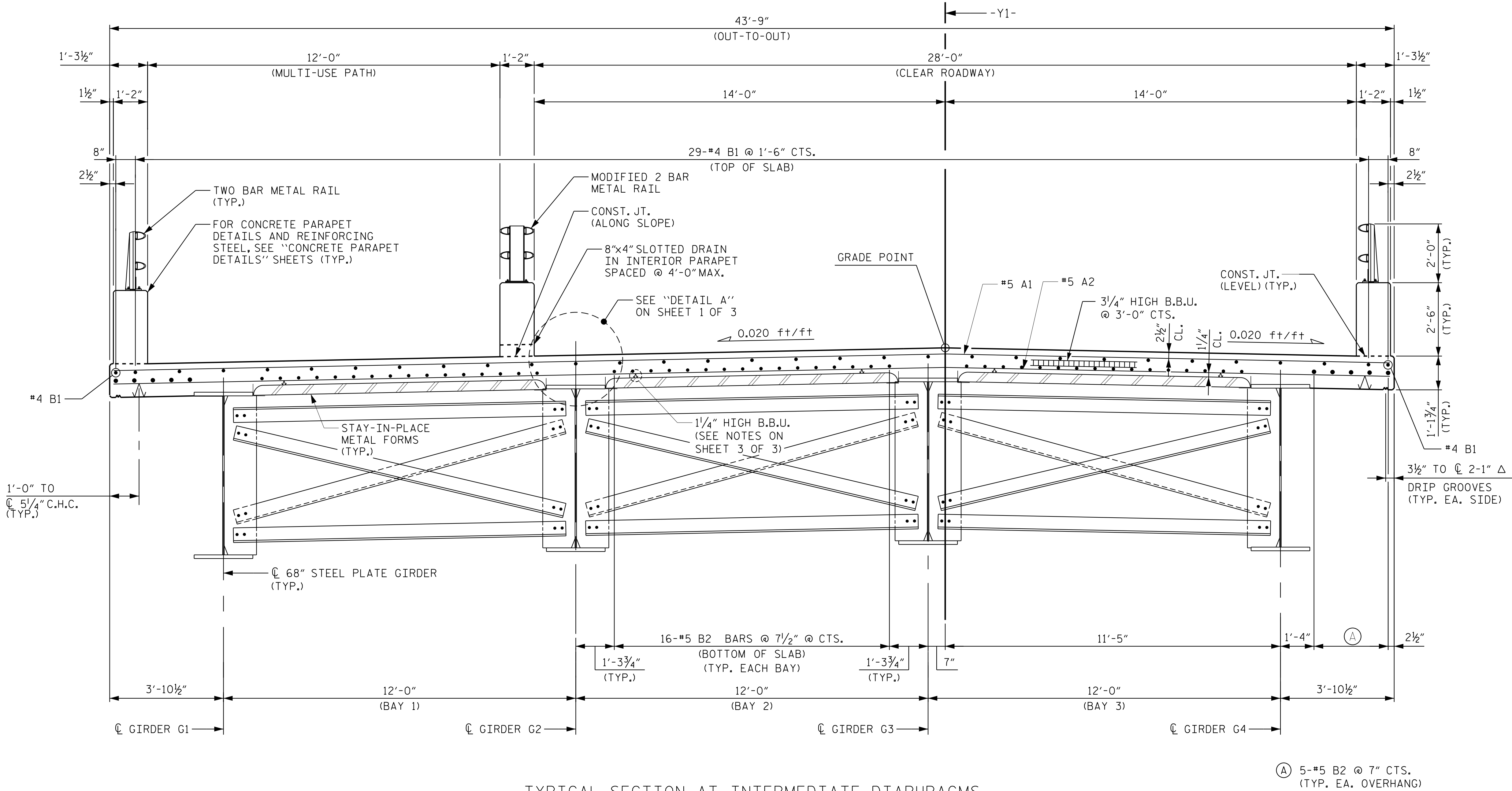
SHEET 1 OF 3



REVISIONS						SHEET NO. S2-7
NO.	BY:	DATE:	NO.	BY:	DATE:	
1			3			TOTAL SHEETS 40
2			4			

STR. #2

DRAWN BY: <u>R. C. GIESEN</u>	DATE: <u>04/2026</u>
CHECKED BY: <u>E. W. SPRABERRY</u>	DATE: <u>04/2026</u>
DESIGN ENGINEER OF RECORD: <u>A. L. PHILLIPS</u>	DATE: <u>04/2026</u>



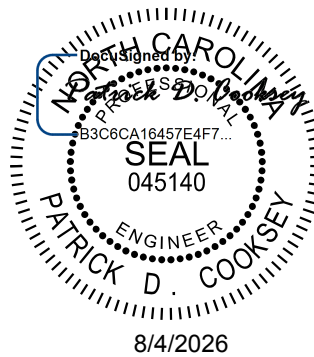
TYPICAL SECTION AT INTERMEDIATE DIAPHRAGMS

TYPICAL SECTION

NOTES:
FOR NOTES, SEE SHEET 3 OF 3.

PROJECT NO. I-5715
MECKLENBURG COUNTY
STATION: 23+39.87 -Y1-

SHEET 2 OF 3



Kimley»Horn

421 Fayetteville Street, Suite 600
Raleigh, NC 27601-1772
Phone (919) 677-2000 NC LICENSE # F-0102

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

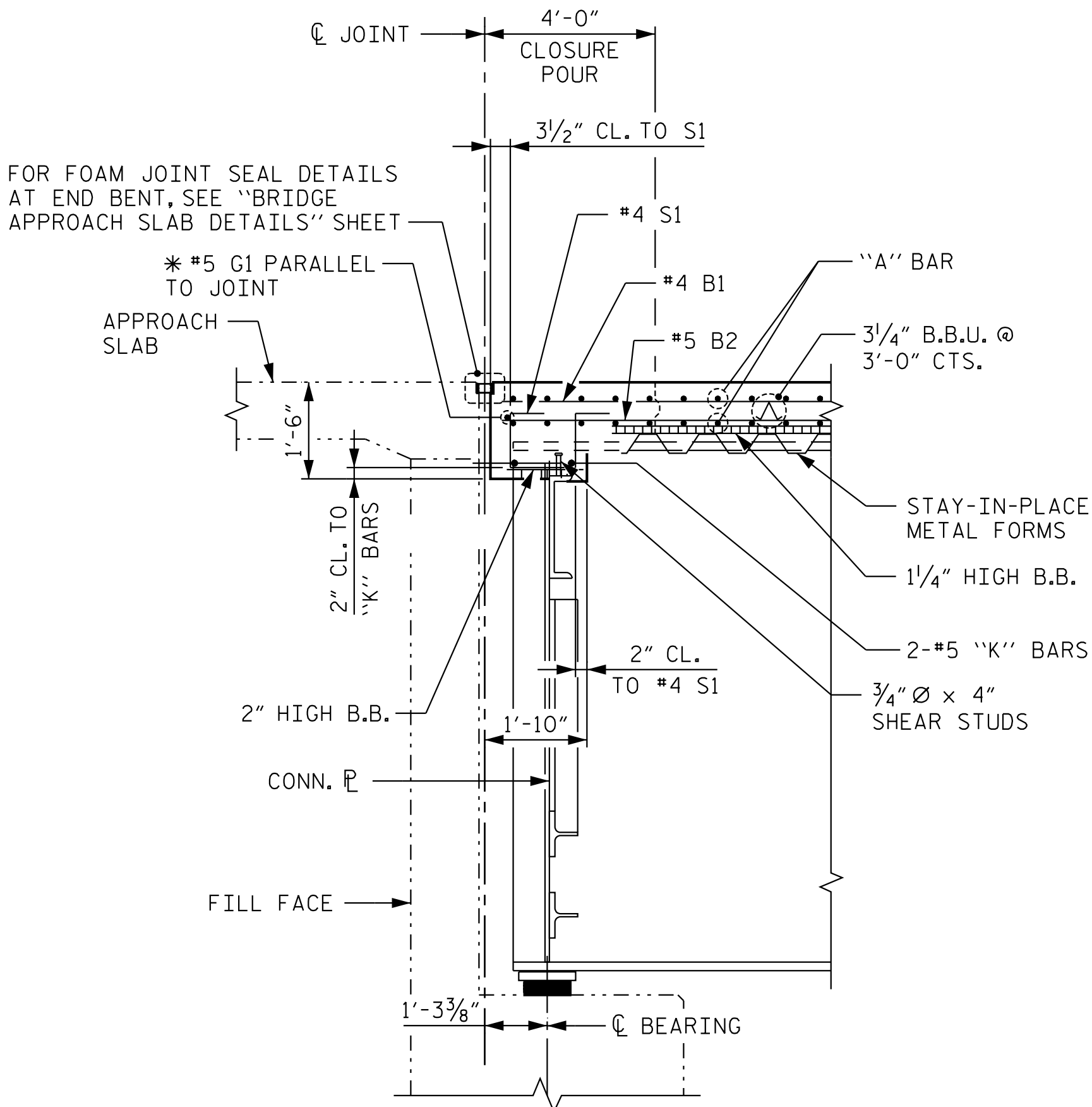
STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUPERSTRUCTURE
TYPICAL SECTION

REVISIONS						SHEET NO. S2-8
NO.	BY:	DATE:	NO.	BY:	DATE:	
1			3			TOTAL SHEETS 40
2			4			

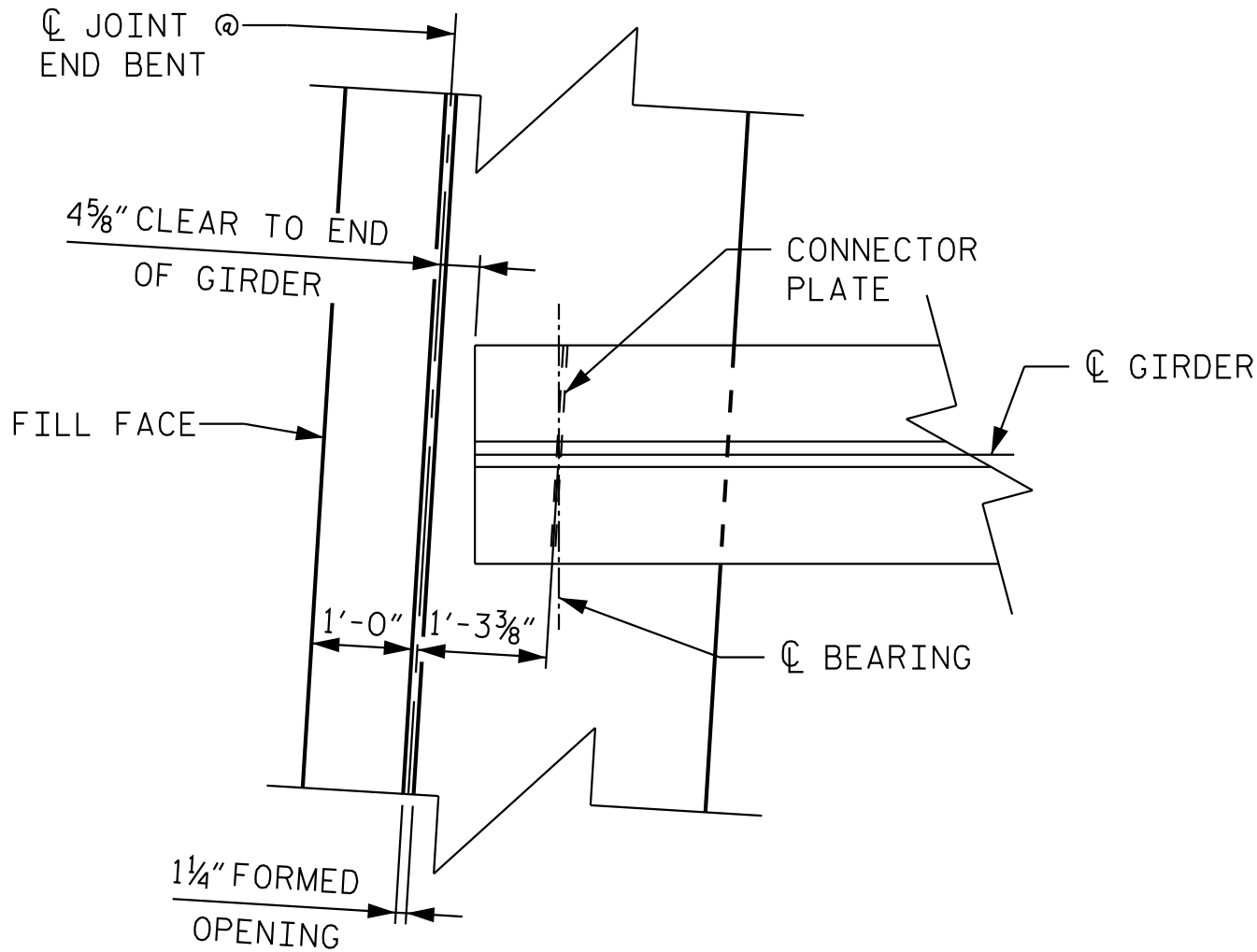
STR. #2

DRAWN BY: R. C. GIESEN DATE: 04/2026
CHECKED BY: E. W. SPRABERRY DATE: 04/2026
DESIGN ENGINEER OF RECORD: A. L. PHILLIPS DATE: 04/2026



SECTION THRU DIAPHRAGM AT END BENTS

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



PLAN OF GIRDER AT END BENT JOINT

NOTES:

PROVIDE 1 1/4" HIGH BEAM BOLSTERS UPPER AT 4'-0" CTS. ATOP THE METAL STAY-IN-PLACE FORMS TO SUPPORT THE BOTTOM MAT OF "A" BARS. WHEN USING REMOVABLE FORMS, PROVIDE CONTINUOUS HIGH CHAIRS FOR METAL DECK (C.H.C.M.) @ 4'-0" CTS. WITH A HEIGHT TO SUPPORT THE BOTTOM MAT OF "A" BARS A CLEAR DISTANCE OF 2 1/2" ABOVE THE TOP OF THE REMOVABLE FORM.

STRUCTURAL STEEL ERECTION IN A CONTINUOUS UNIT SHALL BE COMPLETED BEFORE FALSEWORK OR FORMS ARE PLACED ON THE UNIT.

METAL STAY-IN-PLACE FORMS SHALL NOT BE WELDED TO BEAM OR GIRDER FLANGES IN THE ZONES REQUIRING CHARPY V-NOTCH TEST. SEE STRUCTURAL STEEL DETAIL SHEETS.

FOR MORE INFORMATION REGARDING THE DIAPHRAGMS, SEE "STRUCTURAL STEEL DETAILS" SHEETS.

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

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

#5 "C" BARS MAY BE SHIFTED SLIGHTLY, AS NECESSARY, TO CLEAR REINFORCING STEEL AND STRIRRUPS.

THE CONTRACTOR MAY, WHEN NECESSARY, PROPOSE A SCHEME FOR AVOIDING INTERFERENCE BETWEEN METAL STAY-IN-PLACE FORM SUPPORTS OR FORMS AND GIRDER STIFFENERS OR CONNECTOR PLATES. THE PROPOSAL SHALL BE INDICATED, AS APPROPRIATE, ON EITHER THE STEEL WORKING DRAWINGS OR THE METAL STAY-IN-PLACE FORM WORKING DRAWING.

THE CONTRACTOR SHALL ENSURE THE STABILITY OF THE GIRDER WEB DURING CONSTRUCTION BASED ON THE OVERHANG SUPPORT SYSTEM USED.

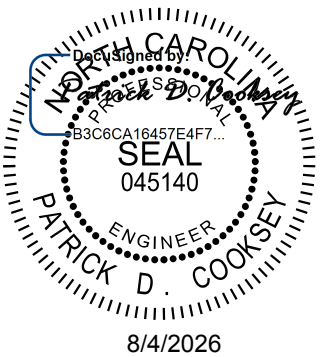
FOR REINFORCING STEEL IN CONCRETE PARAPET, SEE "CONCRETE PARAPET" SHEETS.

FOR POUR SEQUENCE, SEE "BILL OF MATERIAL" SHEET.

THE CONTRACTOR SHALL ADJUST THE GIRDER BUILDUPS AS NECESSARY TO INCORPORATE A MAXIMUM PERMISSIBLE VARIATION IN DISC BEARING DEPTH OF 1/2". SEE SPECIAL PROVISIONS FOR DISC BEARINGS.

PROJECT NO. I-5715
MECKLENBURG COUNTY
STATION: 23+39.87 -Y1-

SHEET 3 OF 3



Kimley»Horn

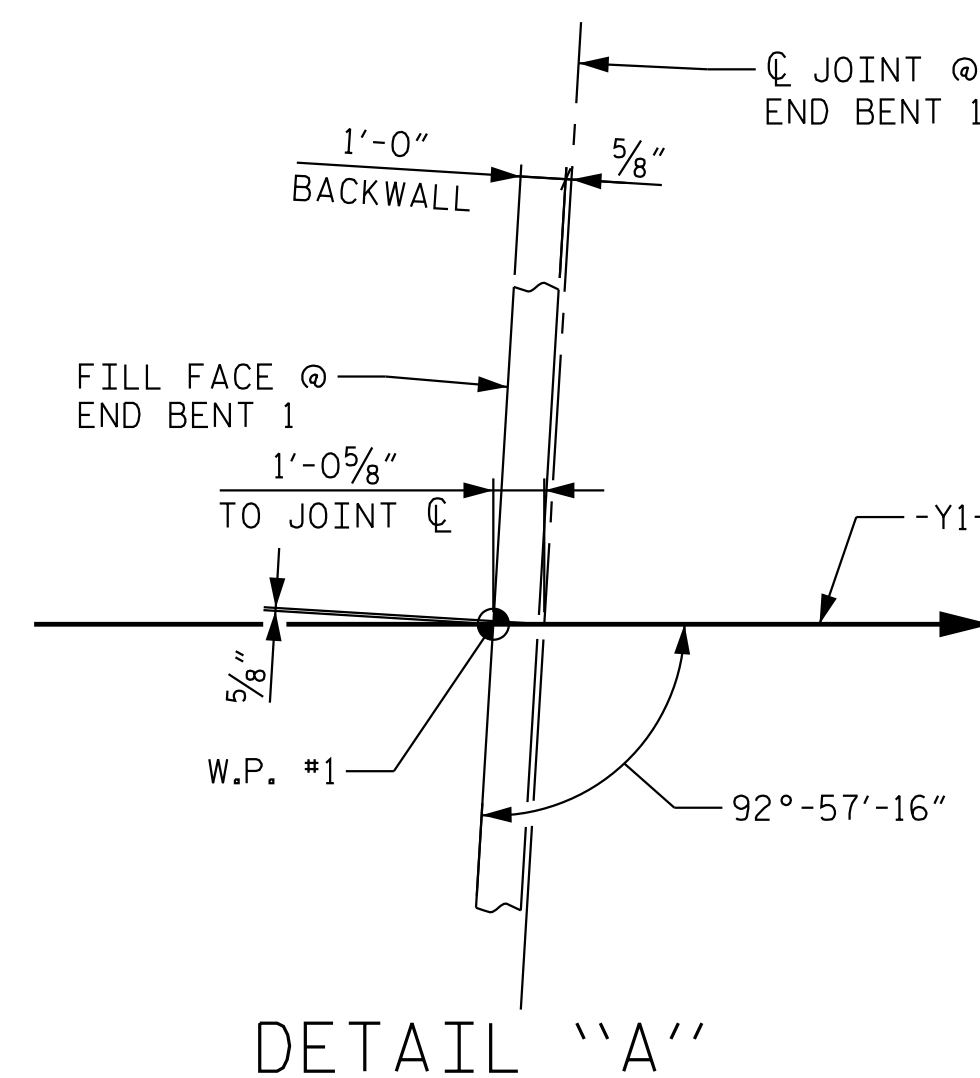
421 Fayetteville Street, Suite 600
Raleigh, NC 27601-1772
Phone (919) 677-2000
NC LICENSE # F-0102

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

STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION RALEIGH					
SUPERSTRUCTURE TYPICAL SECTION DETAILS					
REVISIONS					
NO.	BY:	DATE:	NO.	BY:	DATE:
1			3		
2			4		
SHEET NO. S2-9					TOTAL SHEETS 40

STR. #2

DRAWN BY: <u>R. C. GIESEN</u>	DATE: <u>04/2026</u>
CHECKED BY: <u>E. W. SPRABERRY</u>	DATE: <u>04/2026</u>
DESIGN ENGINEER OF RECORD: <u>A. L. PHILLIPS</u>	DATE: <u>04/2026</u>



FOR SPLICE LENGTHS, REFER TO MINIMUM
SPLICE LENGTH TABLE ON SUPERSTRUCTURE
BILL OF MATERIAL SHEET.

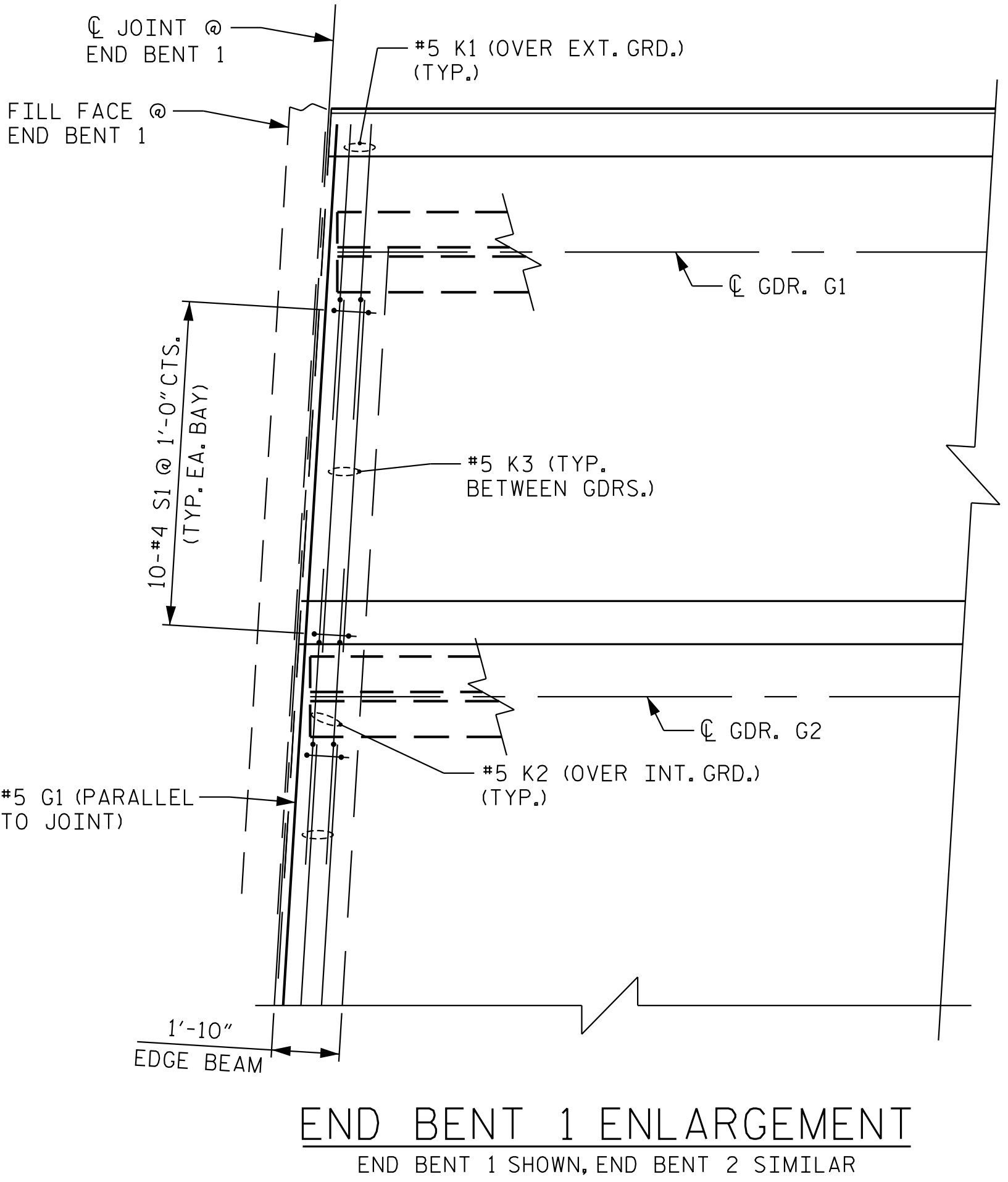
**DOCUMENT NOT CONSIDERED FINAL
UNLESS ALL SIGNATURES COMPLETED**

421 Fayetteville Street, Suite 600
Raleigh, NC 27601-1772
Phone (919) 677-2000

REVISIONS						SHEET NO. S2-10
NO.	BY:	DATE:	NO.	BY:	DATE:	
1			3			TOTAL SHEETS 40
2			4			

STR. #2

NOTES: _____
FOR NOTES, SEE SHEET 1 OF 2.



PROJECT NO. I-5715
MECKLENBURG COUNTY
 STATION: 23+39.87 -Y1-

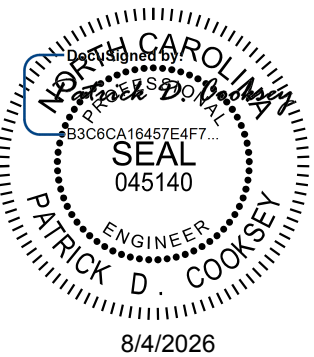
SHEET 2 OF 2

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUPERSTRUCTURE
PLAN OF SPAN

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S2-11
1			3			TOTAL SHEETS 40
2			4			

STR. #2



Kimley»»Horn

421 Fayetteville Street, Suite 600
Raleigh, NC 27601-1772
Phone (919) 677-2000

This document, together with the concepts and designs presented herein, as an instrument of services, is intended only for the specific purpose and client for which it was prepared. Reuse of and improper reliance on this document without written authorization and adoption by Kimley-Horn and Associates, Inc. shall be without liability to Kimley-Horn and Associates, Inc.

Copyright Kimley-Horn and Associates, Inc., 2026

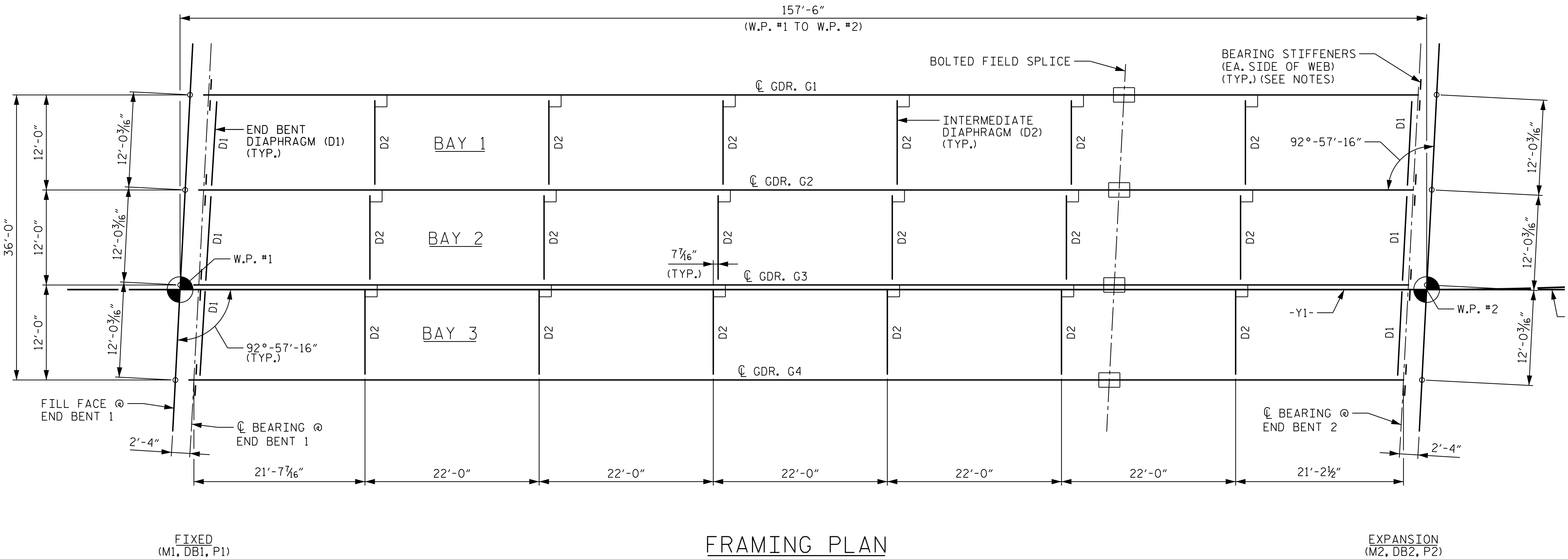
**DOCUMENT NOT CONSIDERED FINAL
UNLESS ALL SIGNATURES COMPLETED**

DRAWN BY: R. C. GIESEN DATE: 04/2026
 CHECKED BY: E. W. SPRABERRY DATE: 04/2026
 DESIGN ENGINEER OF RECORD: A. L. PHILLIPS DATE: 04/2026

NOTES:

FOR STEEL DIAPHRAGM DETAILS, SEE "STRUCTURAL STEEL DETAILS" SHEET 4 OF 5.

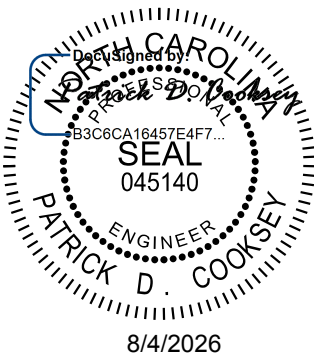
FOR BEARING STIFFENERS, SEE "STRUCTURAL STEEL DETAILS" SHEET 4 OF 5.



PROJECT NO. I-5715

MECKLENBURG COUNTY

STATION: 23+39.87 -Y1-



Kimley»Horn

421 Fayetteville Street, Suite 600
Raleigh, NC 27601-1772
Phone (919) 677-2000 NC LICENSE # F-0102

This document, together with the concepts and designs presented herein, is an integral part of the project. It is to be used only for the specific project and shall not be reproduced, copied, or otherwise used for any other project without the written authorization and signature of Kimley-Horn and Associates, Inc. It shall be without liability to Kimley-Horn and Associates, Inc.

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

STATE OF NORTH CAROLINA

DEPARTMENT OF TRANSPORTATION

RALEIGH

SUPERSTRUCTURE

FRAMING PLAN

REVISIONS						SHEET NO. S2-12	
NO.	BY:	DATE:	NO.	BY:	DATE:	TOTAL SHEETS 40	
1			3				
2			4				

STR. #2

7/31/2026 K:\RDT-Structures\Bridges\NC\01036524 - I-5715 Structure Design\Cad\Drawn\Site *1\Structure 2\Final\02.023.15715.SML\FPI.59\016_012.dgn

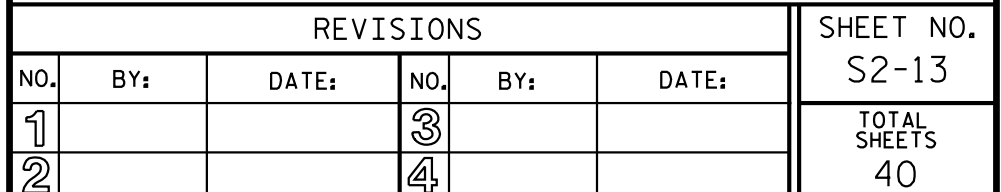
DRAWN BY: <u>R. C. GIESEN</u>	DATE: <u>04/2026</u>
CHECKED BY: <u>E. W. SPRABERRY</u>	DATE: <u>04/2026</u>
DESIGN ENGINEER OF RECORD: <u>A. L. PHILLIPS</u>	DATE: <u>04/2026</u>



SHEAR STUDS NOT SHOWN, SEE SHEET 5 OF 5 FOR SHEAR STUD LOCATIONS



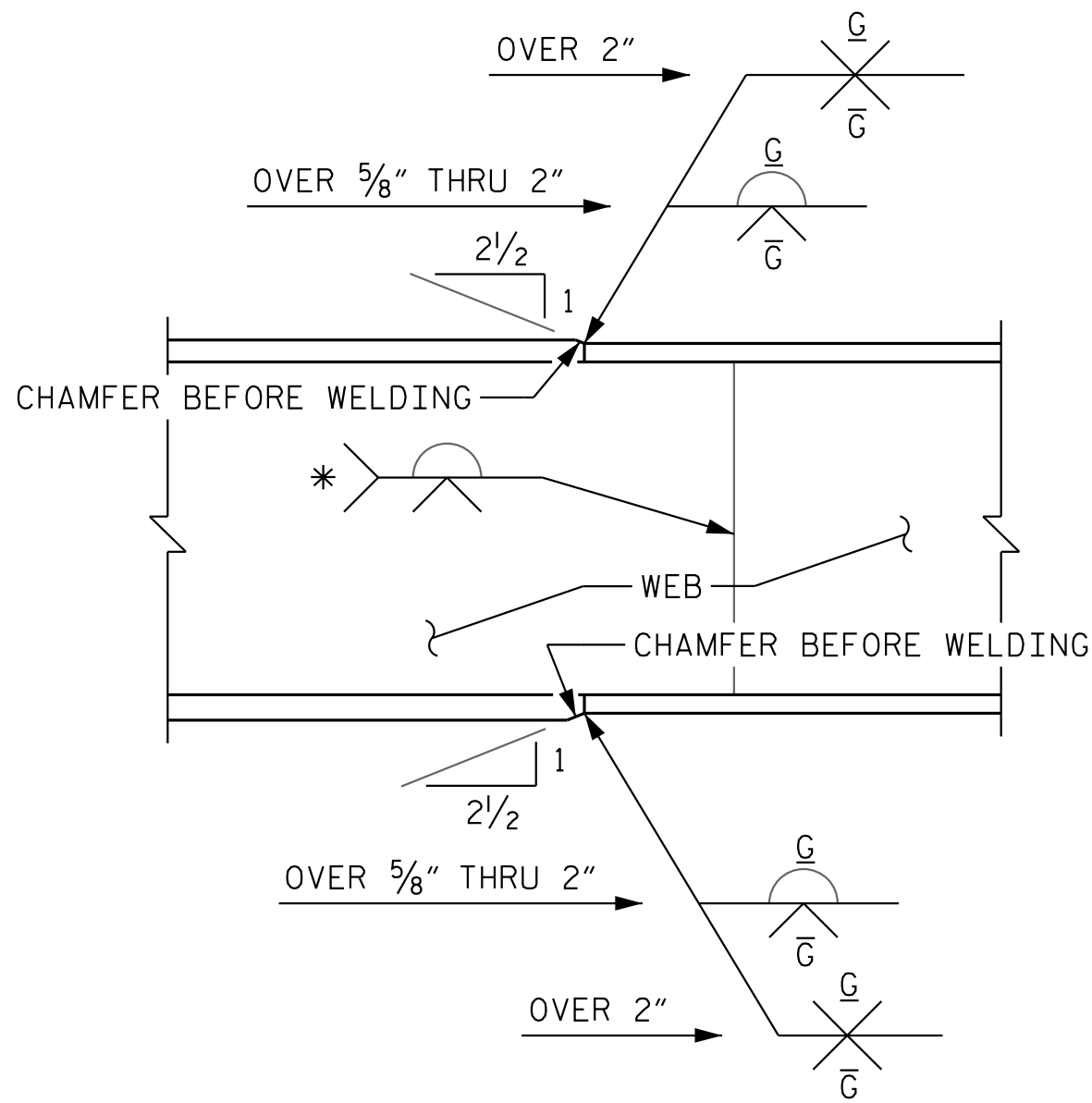
SHEET 1 OF 5



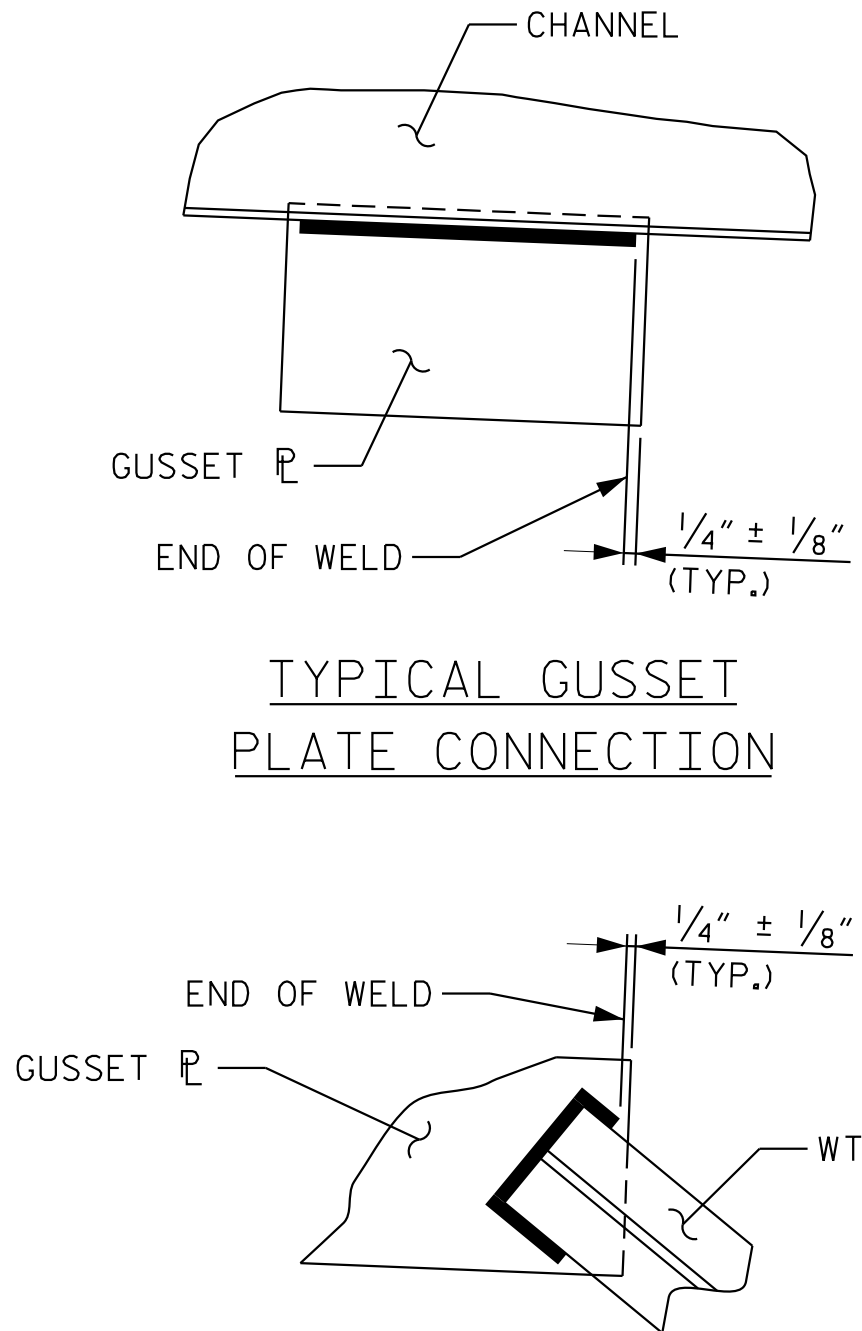
DRAWN BY: R. C. GIESEN DATE: 04/2026
 CHECKED BY: E. W. SPRABERRY DATE: 04/2026
 DESIGN ENGINEER OF RECORD: A. L. PHILLIPS DATE: 04/2026

Copyright Kimley-Horn and Associates, Inc., 2026

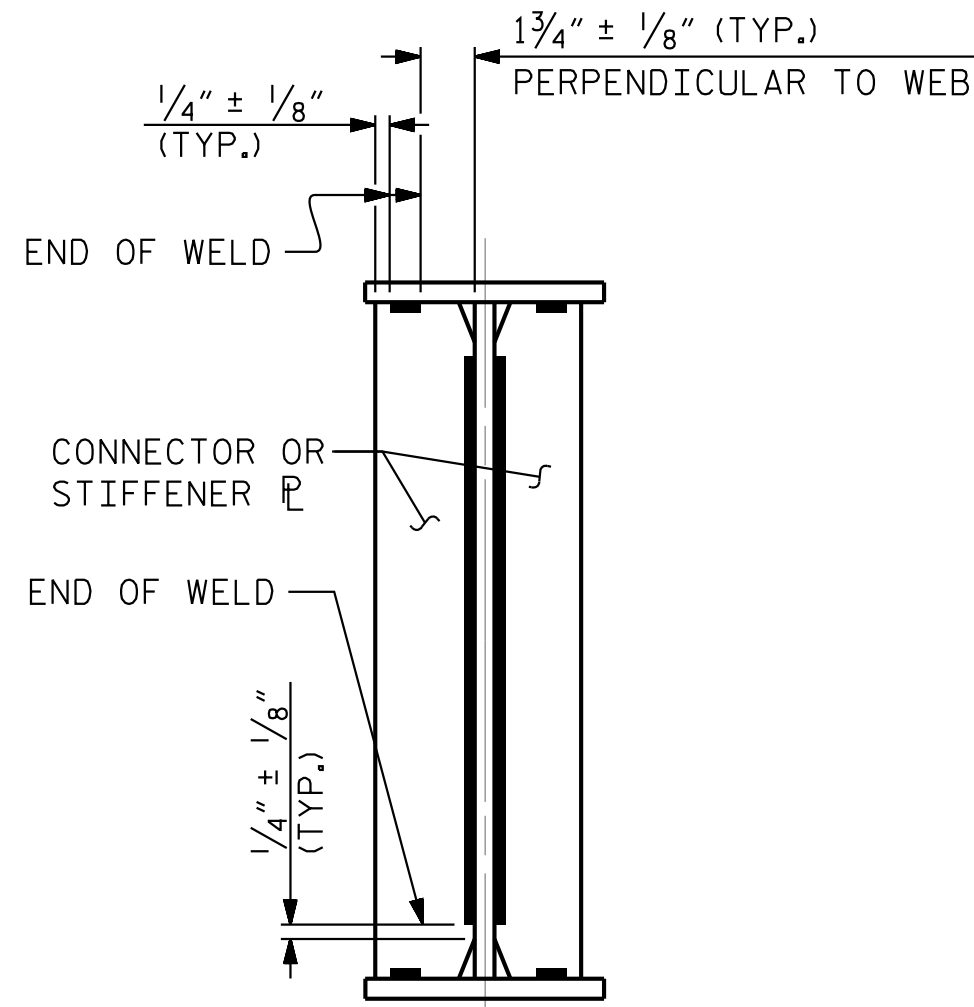
K:\PDI_Structures\Bridges\NC\01036524 - I-5715 Structure Design\Coord\gn\Site *1\Structure 2\Final\02.027.15715.SWL.SS2.59146.014.dgn 7/31/2026



ELEVATION
TYPICAL FLANGE AND
WEB BUTT JOINT
* GRIND SMOOTH AND FLUSH ON
OUTER FACE OF EXTERIOR GIRDERS

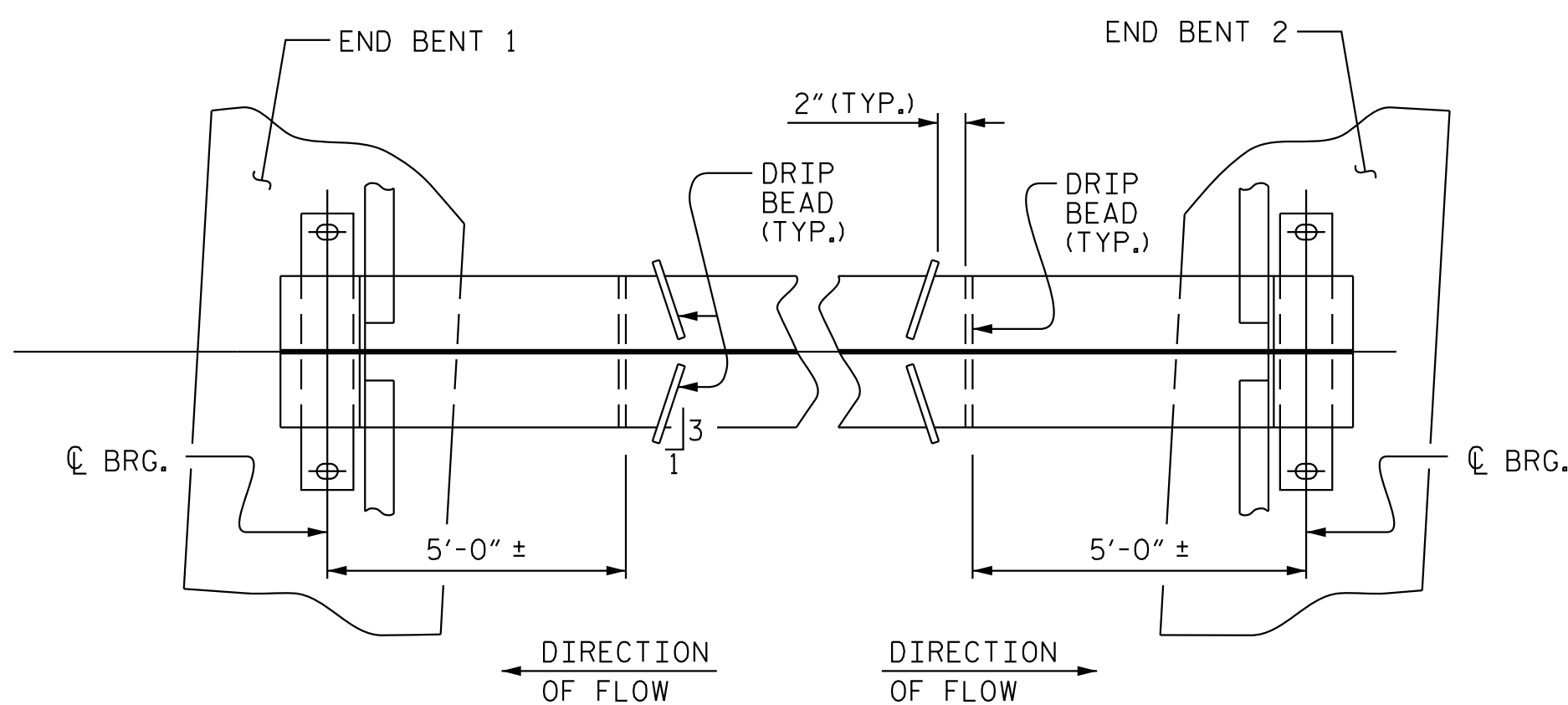


TYPICAL "TEE" TO
GUSSET PLATE CONNECTION

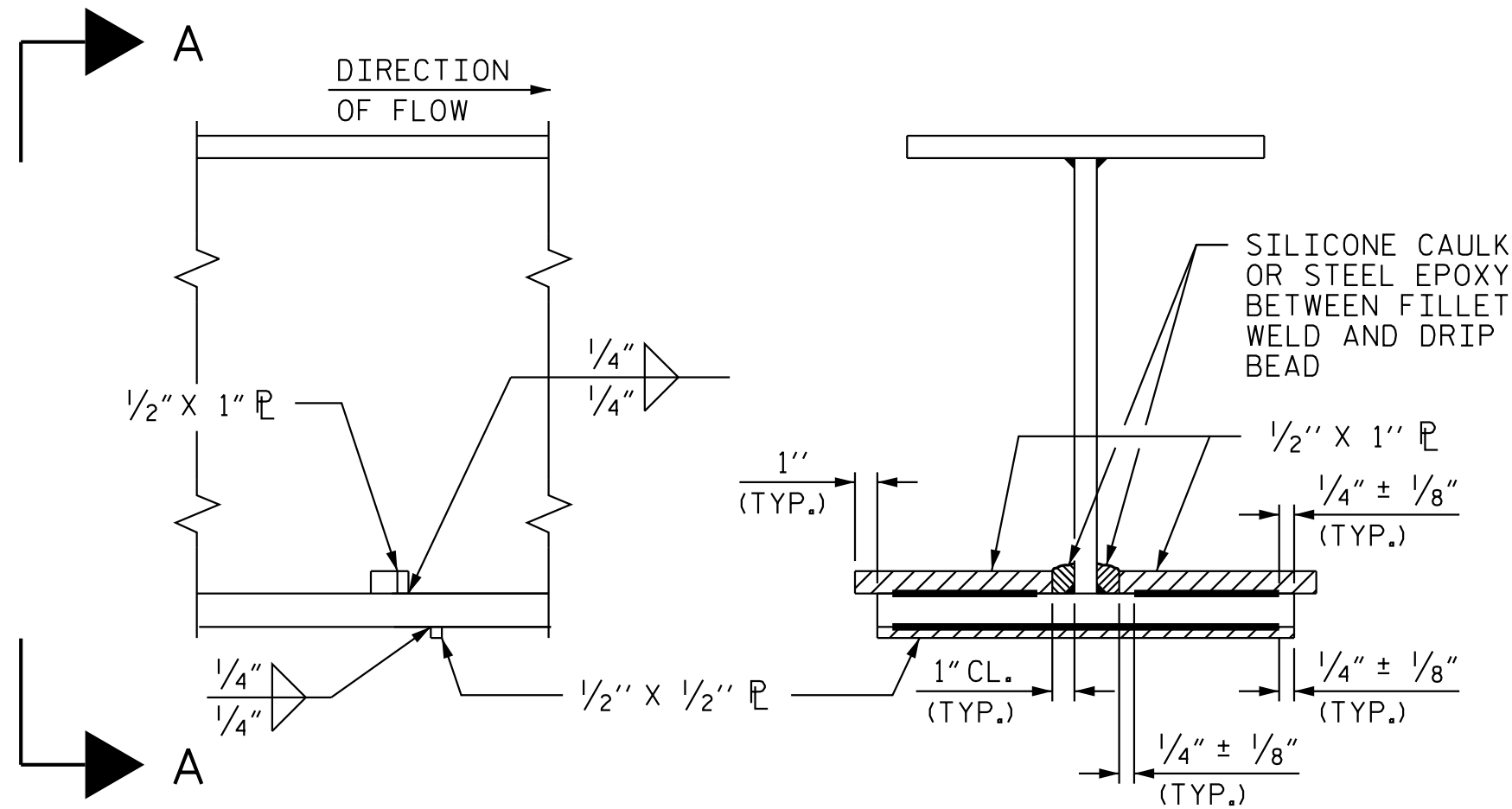


TYPICAL STIFFENER OR
CONNECTOR PLATE CONNECTIONS
INTERIOR GIRDER SHOWN, HOLES NOT SHOWN.

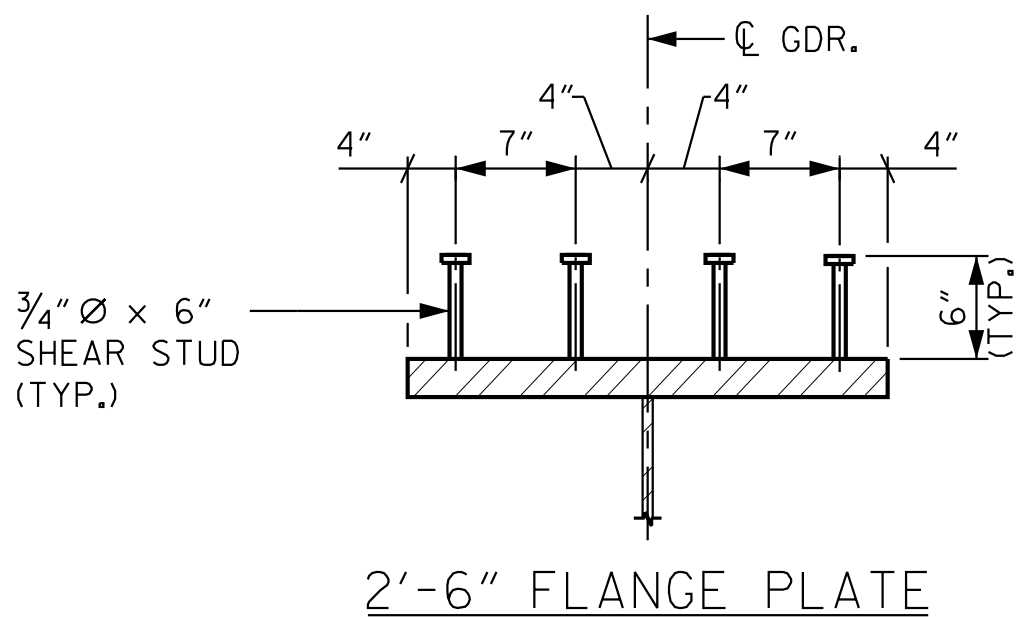
WELD TERMINATION DETAILS



PART PLAN - BOTTOM FLANGE



DRIP BEAD DETAILS



SHEAR STUD DETAILS
(TYP. EA. GIRDER)

STRUCTURAL STEEL NOTES

ALL STRUCTURAL STEEL SHALL BE AASHTO M270 GRADE 50W AND PAINTED IN ACCORDANCE WITH SYSTEM 5 OR SYSTEM 6 OF THE STRUCTURAL STEEL SHOP COATINGS PROGRAM AND SECTION 442-8 OF THE STANDARD SPECIFICATIONS UNLESS OTHERWISE NOTED ON THE PLANS.

ALL DIMENSIONS SHOWN ARE HORIZONTAL OR VERTICAL, UNLESS OTHERWISE NOTED.

ALL FIELD CONNECTIONS TO BE 7/8" DIA. HIGH STRENGTH BOLTS UNLESS OTHERWISE NOTED.

STUDS ON GIRDERS MAY BE SHIFTED UP TO 1" IF NECESSARY TO CLEAR FLANGE SPLICE WELD.

TENSION ON THE ASTM A325 BOLTS SHALL BE CALIBRATED USING DIRECT TENSION INDICATOR WASHERS IN ACCORDANCE WITH ARTICLE 440-8 OF THE STANDARD SPECIFICATIONS.

END OF GIRDERS SHALL BE PLUMB.

BEARING STIFFENERS MAY REQUIRE COPING IF WIDER THAN BOTTOM FLANGE.

FABRICATORS SHALL DETAIL DIAPHRAGM MEMBERS AND CONNECTIONS FOR STEEL DEAD LOAD FIT. GIRDERS SHALL BE PLUMB AT THE END OF STEEL ERECTION, PRIOR TO DECK PLACEMENT, THROUGHOUT THE LENGTH OF THE BRIDGE.

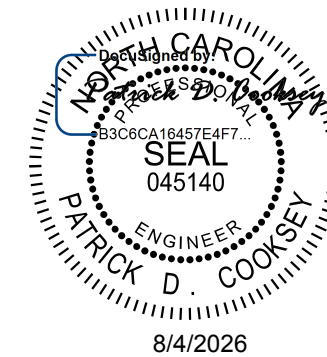
STRUCTURAL STEEL ERECTION IN A CONTINUOUS UNIT SHALL BE COMPLETE BEFORE FALSEWORK OF FORMS ARE PLACED ON THE UNIT.

PERMITTED FLANGE AND WEB SHOP SPLICES SHALL NOT BE LOCATED WITHIN 15 FEET OF MAXIMUM DEAD LOAD DEFLECTION (NOR WITHIN 15 FEET OF INTERMEDIATE BEARINGS OF CONTINUOUS UNITS). KEEP 2 FEET MINIMUM BETWEEN WEB AND FLANGE SHOP SPLICES. KEEP 6" MINIMUM BETWEEN CONNECTOR PLATE OR TRANSVERSE STIFFENER WELDS AND WEB OR FLANGE SHOP SPLICES.

BEARING STIFFENERS ARE TO BE PLACED NORMAL TO THE WEB OF THE GIRDER AND SHALL BE PLUMB.

PROJECT NO. I-5715
MECKLENBURG COUNTY
STATION: 23+39.87 -Y1-

SHEET 2 OF 5



Kimley»Horn

421 Fayetteville Street, Suite 600
Raleigh, NC 27601-1772
Phone (919) 677-2000 NC LICENSE # F-0102

This document, together with the concepts and designs presented herein, as an integral part thereof, is prepared only for the specific project and client, and is not to be used for any other project without the written authorization and signature of Kimley-Horn and Associates, Inc. shall be without liability to Kimley-Horn and Associates, Inc.

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

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUPERSTRUCTURE
STRUCTURAL STEEL
DETAILS

REVISIONS						SHEET NO. S2-14
NO.	BY:	DATE:	NO.	BY:	DATE:	
1			3			TOTAL SHEETS 40
2			4			

STR. #2

[illegible]

CHARPY V-NOTCH NOTES:

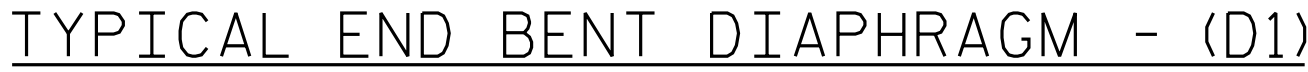
1. A CHARPY V-NOTCH TEST IS REQUIRED FOR WEB PLATES, BOTTOM FLANGE PLATES, BOTTOM FLANGE PLATES, BOTTOM SPLICE PLATES, AND WEB SPLICE PLATES (IF USED) FOR ALL GIRDERS AND IN ACCORDANCE WITH ARTICLE 1072-7 OF THE STANDARD SPECIFICATIONS.

SHEET 3 OF 5

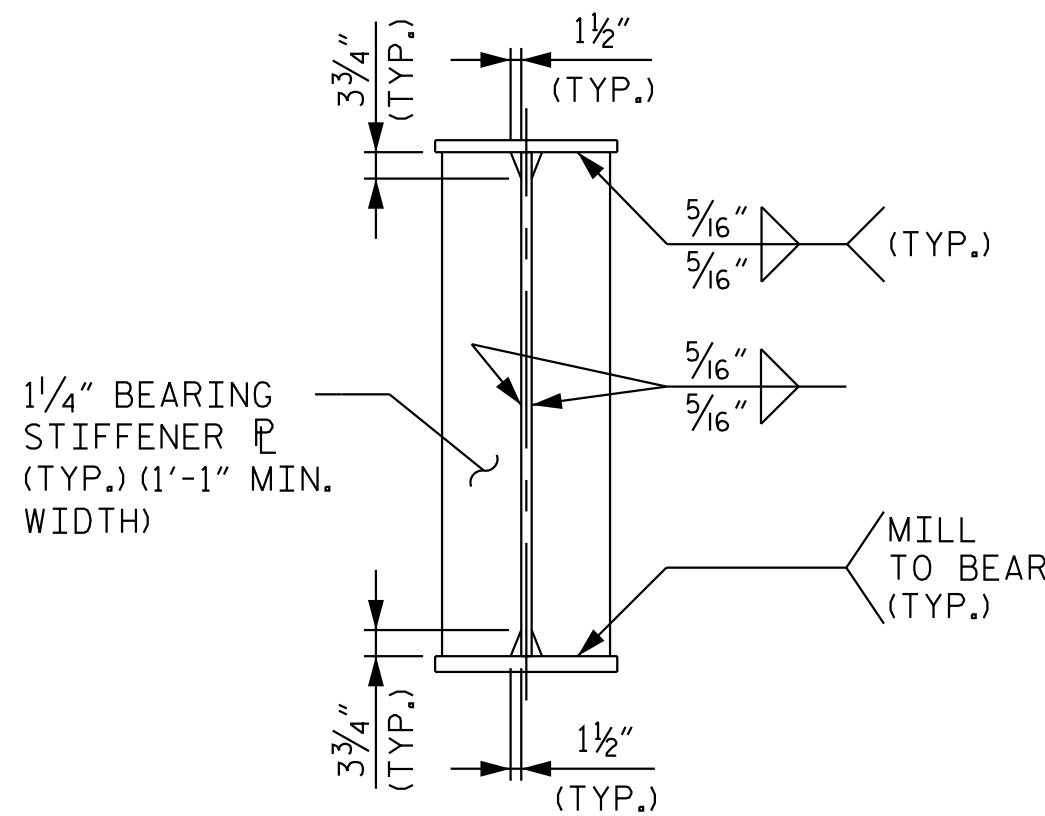


**DOCUMENT NOT CONSIDERED FINAL
UNLESS ALL SIGNATURES COMPLETED**

STR. #2



INTERMEDIATE
DIAPHRAGM
CONNECTOR
PLATE DETAIL



BEARING STIFFENER/
CONNECTOR P
END BENT &
BENT DIAPHRAGM

PROJECT NO. I-5715
MECKLENBURG COUNTY
 STATION: 23+39.87 -Y1-

SHEET 4 OF 5



421 Fayetteville Street, Suite 600
Raleigh, NC 27601-1772 NC LICENSE #
Phone (919) 677-2000 F-0102

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

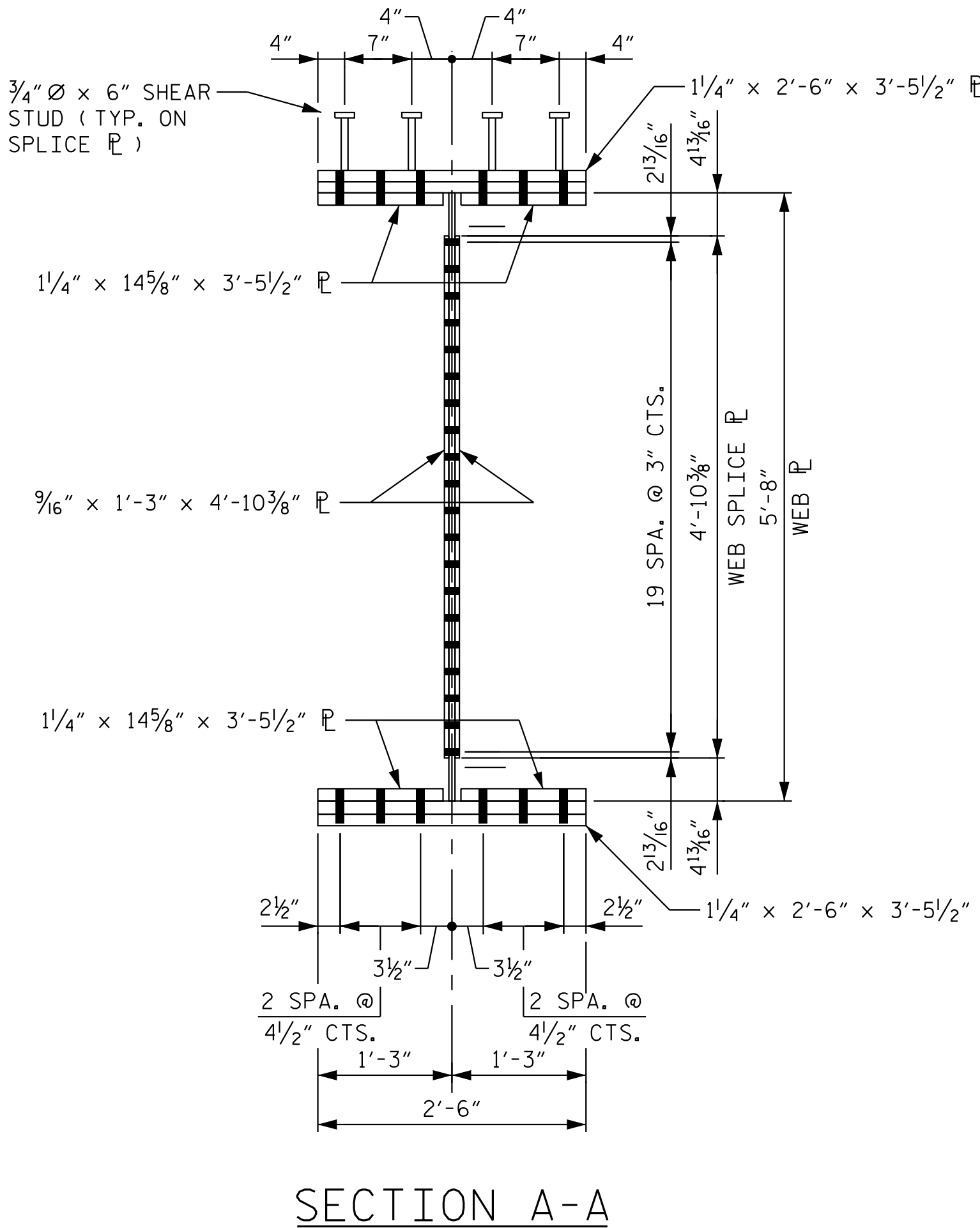
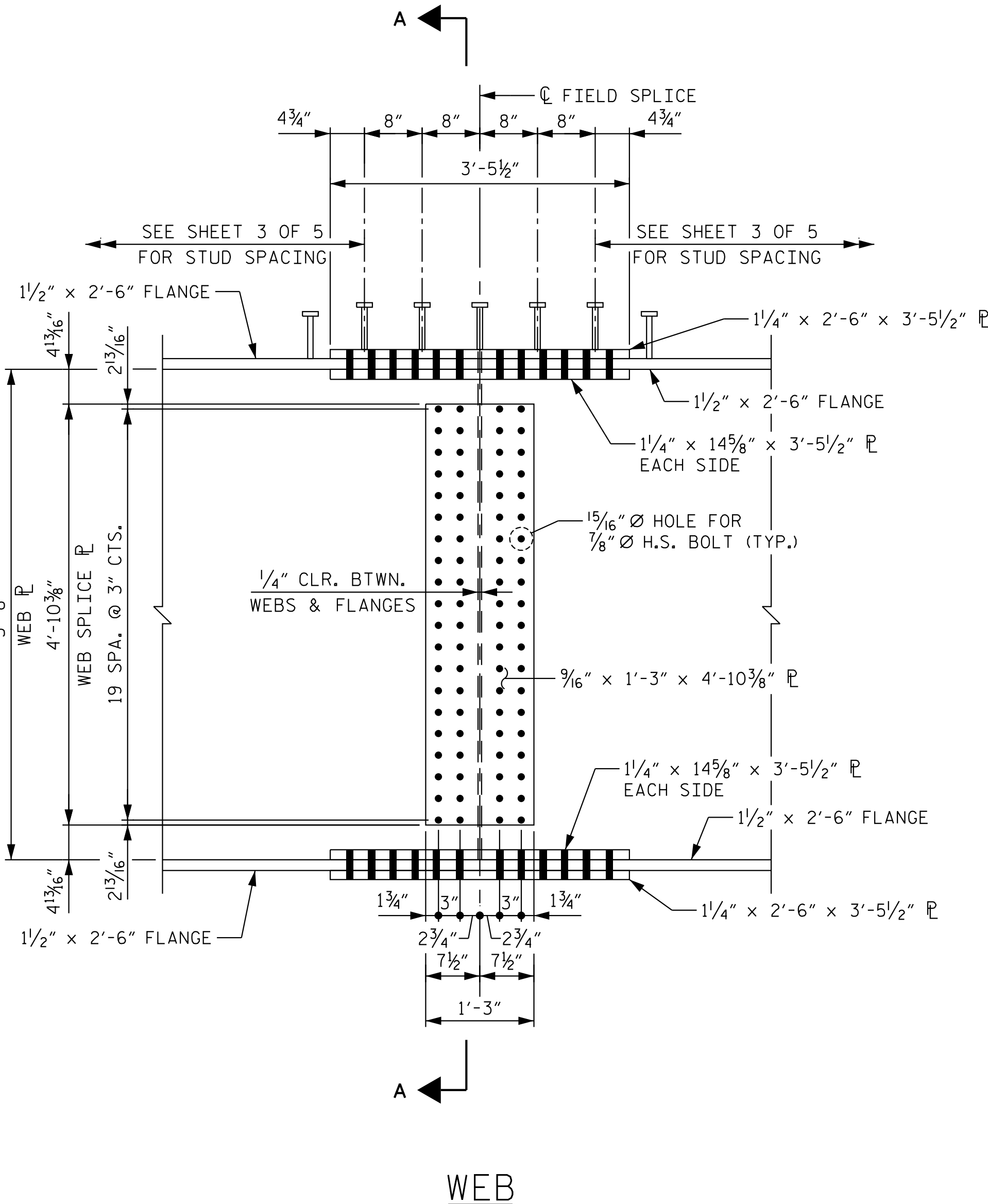
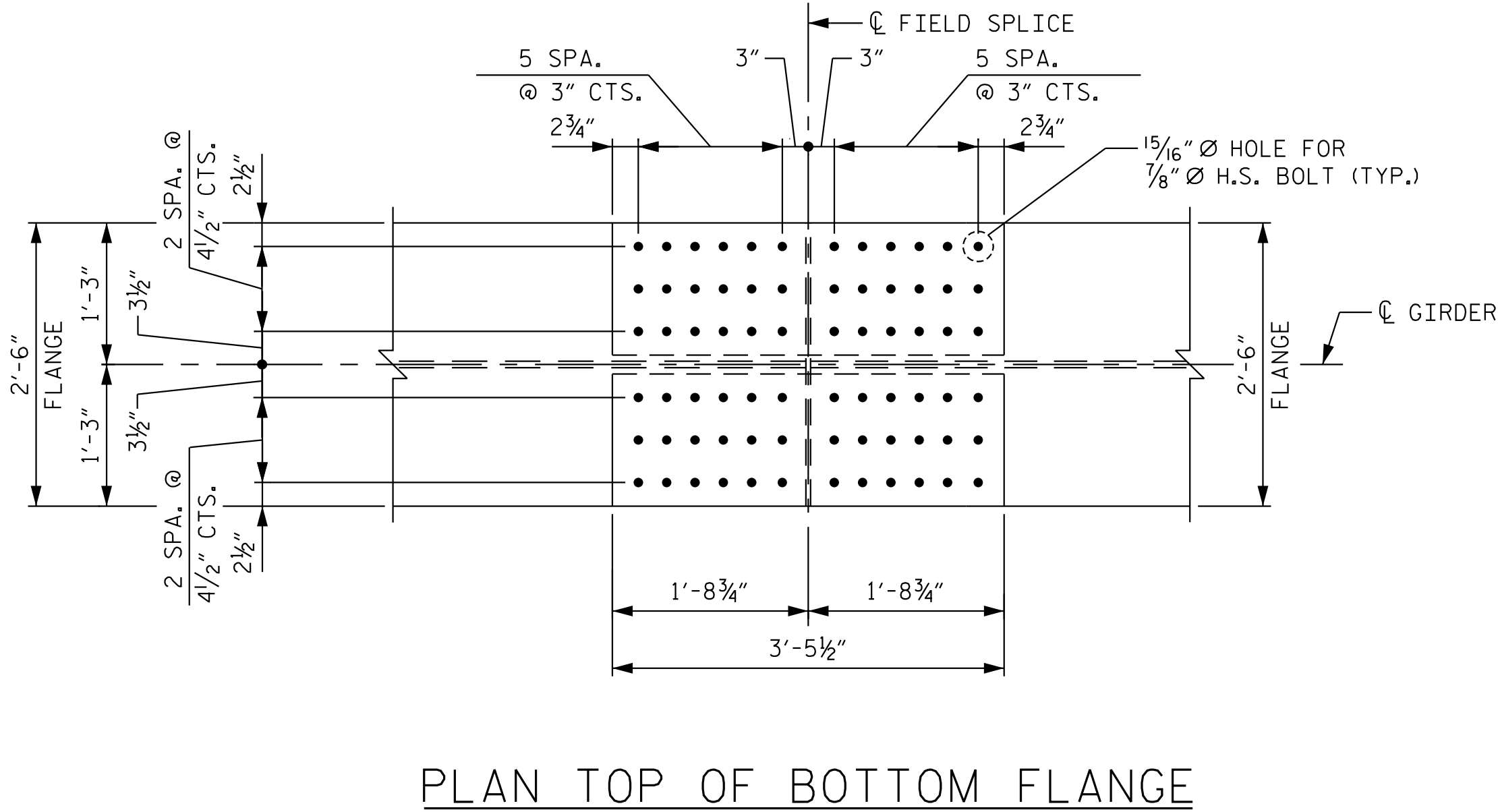
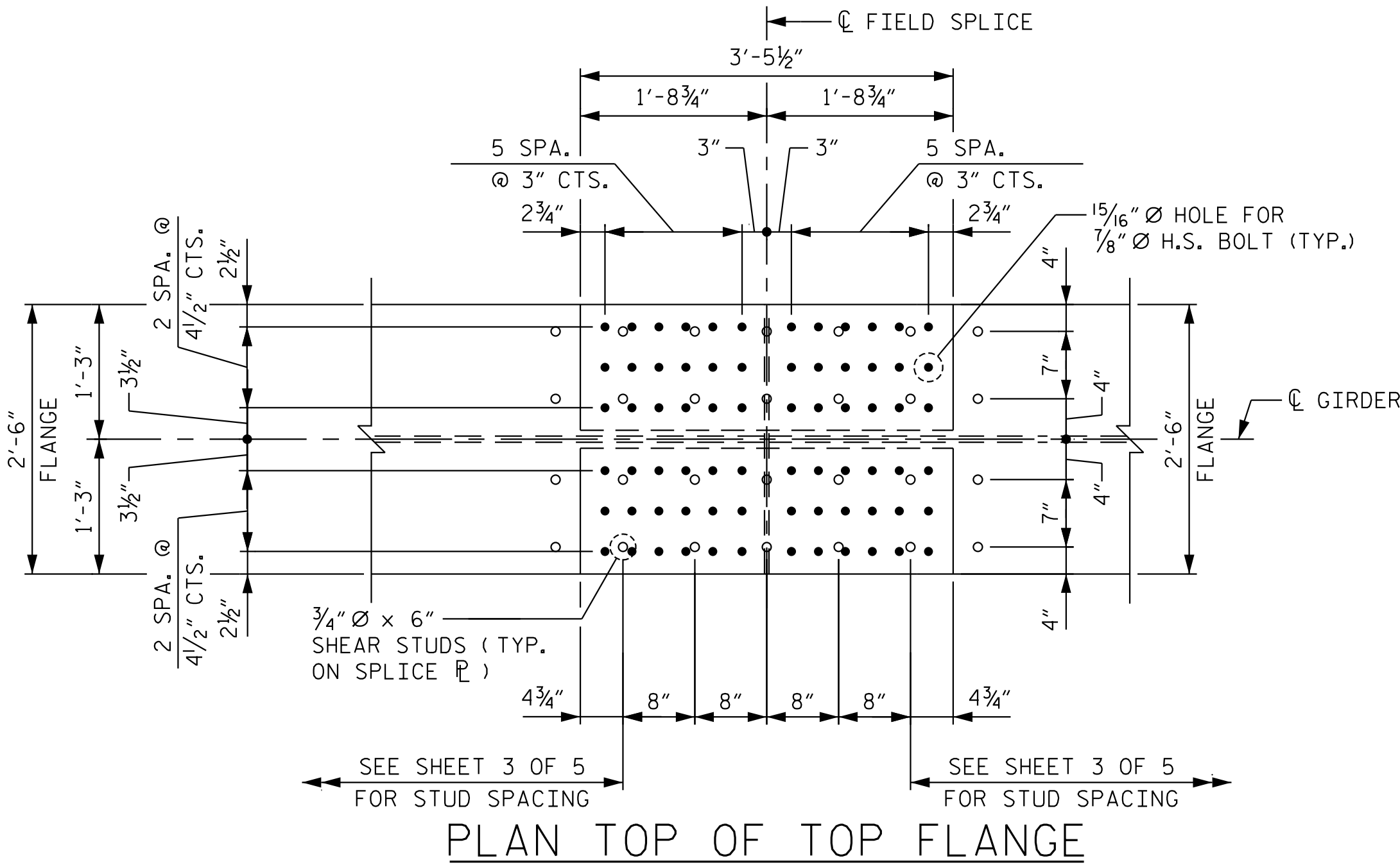
REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S2-16
1			3			TOTAL SHEETS 40
2			4			

STR. #2

Docusign Envelope ID: D09FC899-7D37-8CBB-808D-1F160F80AF1A

K:\B01-Structures\Bridges\N\01036524 - I-5715 Structure Design\Cad\Drawn\Site - I-5715 Structure Design\Cad\Drawn\Site - I-5715 Structure Design\2\Final\402.033.15115.SML\SS-591416-017.dgn

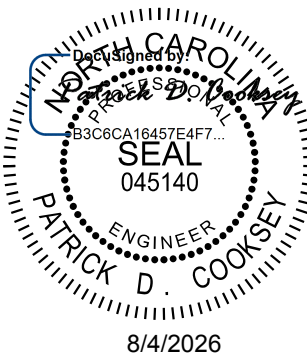
7/31/2026



NOTES:
FOR STRUCTURAL STEEL NOTES, SEE SHEET 2 OF 5.

PROJECT NO. I-5715
MECKLENBURG COUNTY
STATION: 23+39.87 -Y1-

SHEET 5 OF 5



Kimley»Horn

421 Fayetteville Street, Suite 600
Raleigh, NC 27601-1772
Phone (919) 677-2000 NC LICENSE # F-0102

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

REVISIONS						SHEET NO. S2-17
NO.	BY:	DATE:	NO.	BY:	DATE:	
1			3			TOTAL SHEETS 40
2			4			

STR. #2

NOTES

FOR DISC BEARINGS, SEE SPECIAL PROVISIONS.

ALL BEARING PLATES SHALL BE AASHTO M270 GRADE 50W OR GRADE 50.

AT ALL POINTS OF SUPPORT, NUTS FOR ANCHOR BOLTS SHALL BE FINGER-TIGHTENED PLUS AN ADDITIONAL ¼ TURN. THE THREAD OF THE NUT AND BOLT SHALL THEN BE BURRED WITH A SHARP POINTED TOOL.

WHEN WELDING THE SOLE PLATE TO THE GIRDER, USE TEMPERATURE INDICATING WAX PENS, OR OTHER SUITABLE MEANS, TO ENSURE THAT THE TEMPERATURE OF THE BEARING DOES NOT EXCEED 250°F. TEMPERATURES ABOVE THIS MAY DAMAGE THE TFE OR URETHANE DISC.

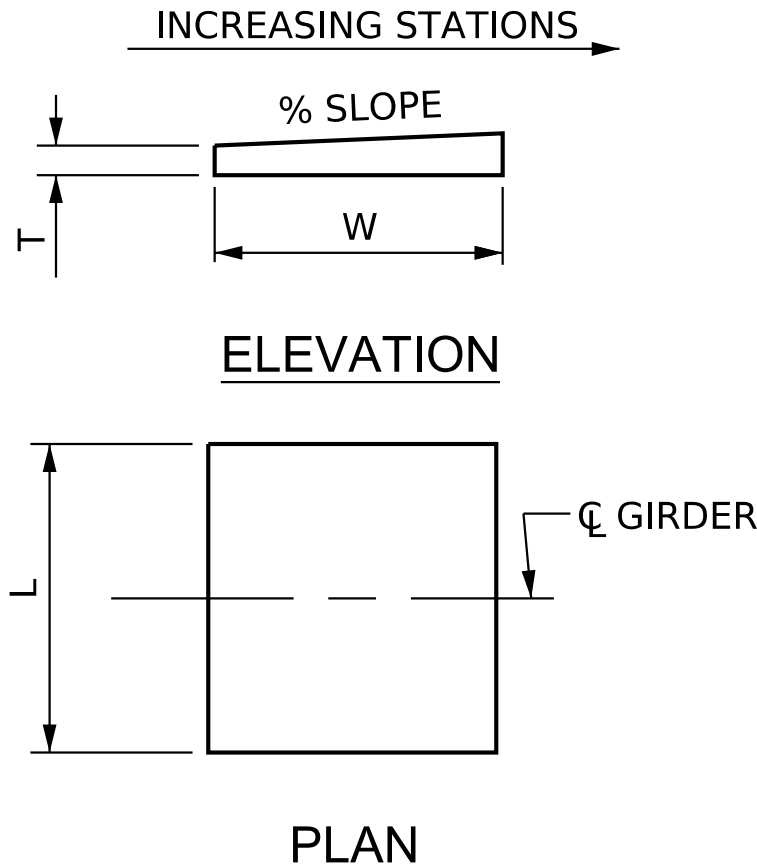
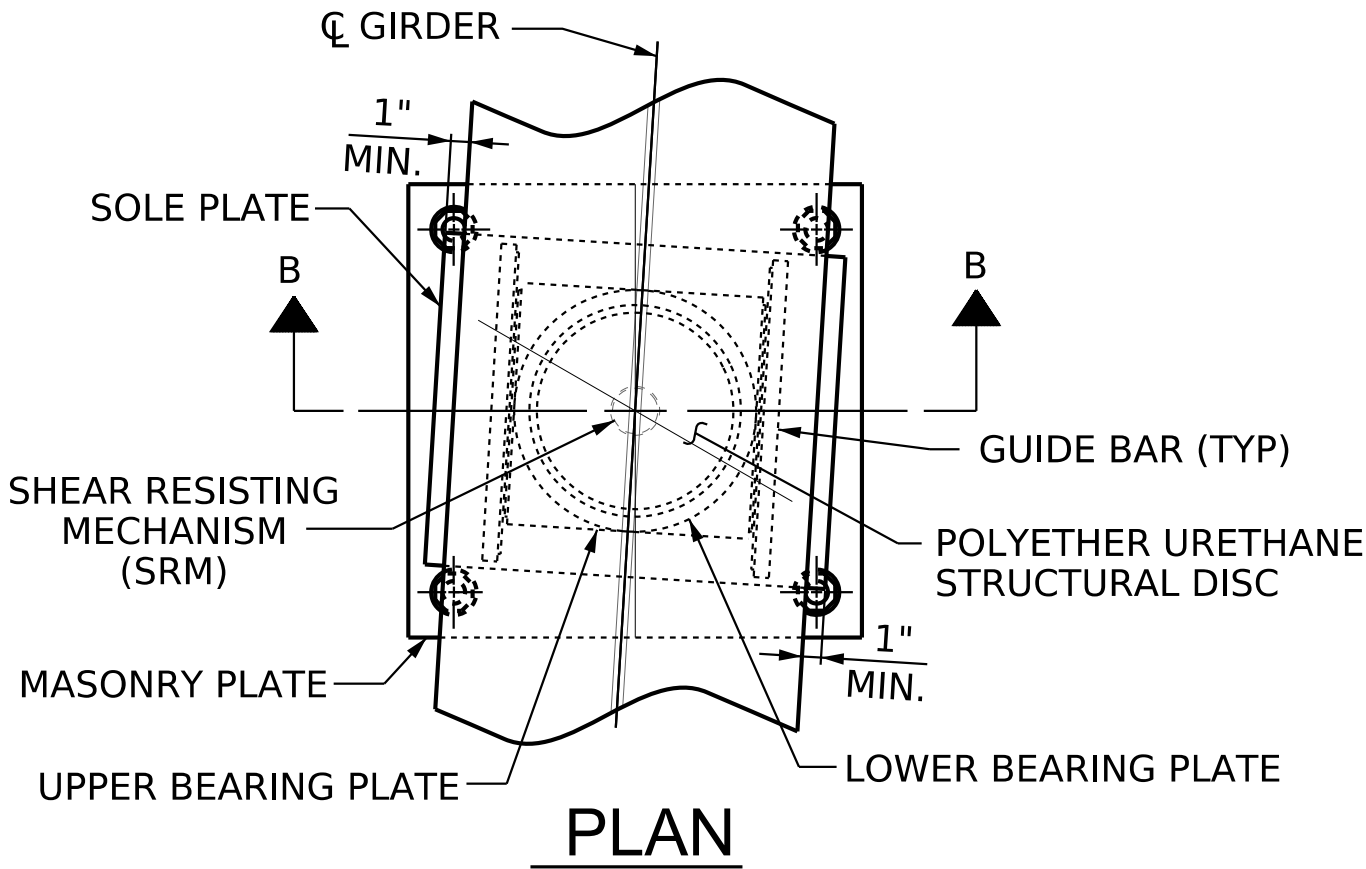
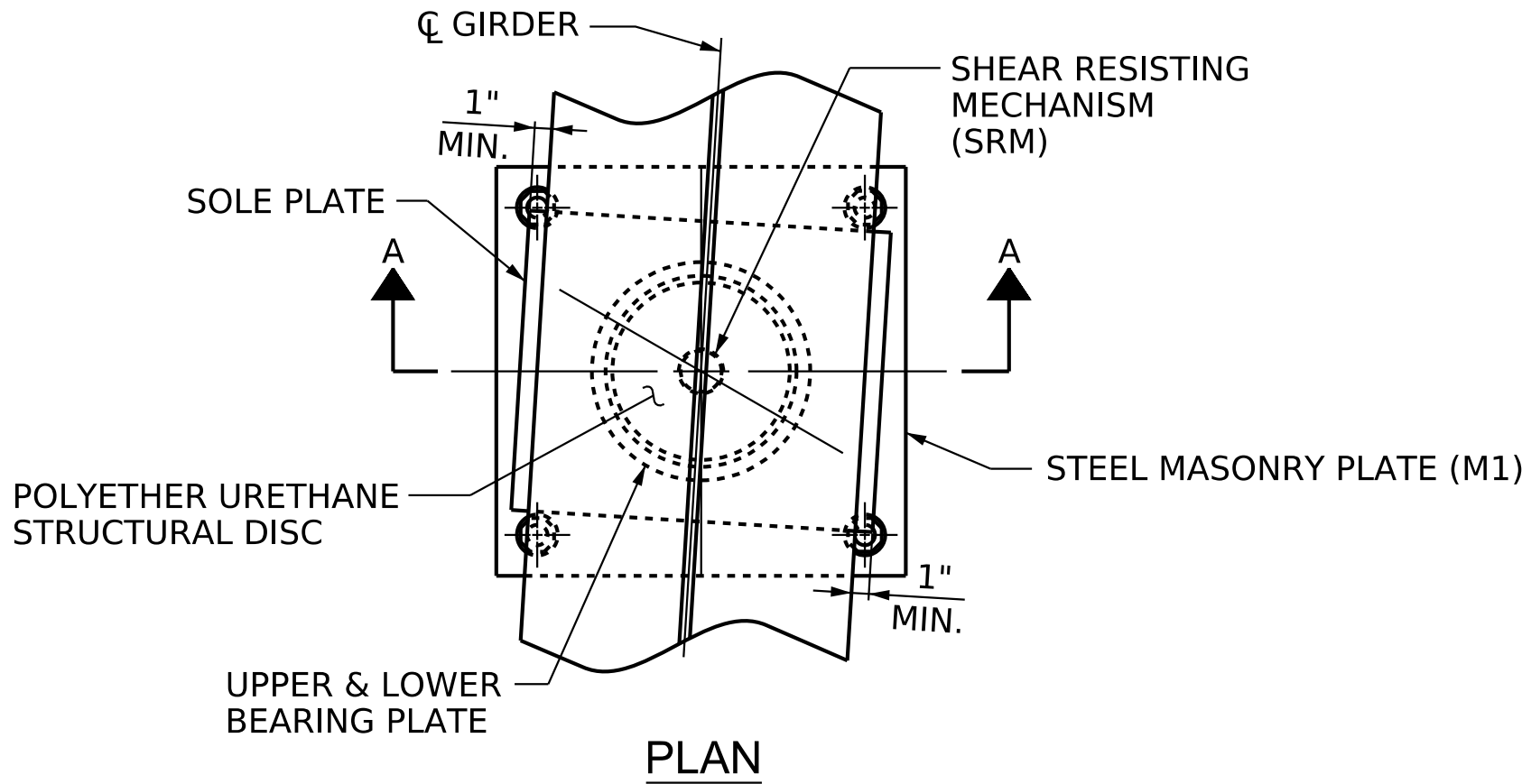
SOLE PLATES SHOULD BE WELDED TO GIRDER FLANGES AND ANCHOR BOLTS SHOULD BE GROUTED BEFORE FALSEWORK IS PLACED.

ALL SURFACES OF BEARING PLATES SHALL BE SMOOTH AND STRAIGHT.

FOR THERMAL SPRAYED COATINGS (METALLIZATION), SEE SPECIAL PROVISIONS.

THE MINIMUM ROTATIONAL CAPACITY FOR ALL BEARINGS SHALL BE 0.02 RADIAN.

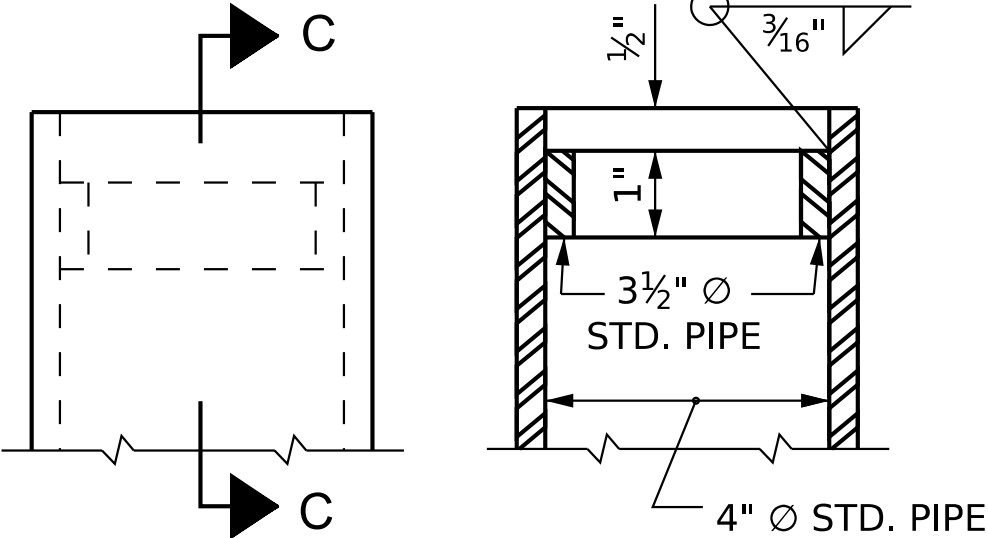
AFTER BEARING ASSEMBLY IS IN PLACE AND ANCHOR BOLTS HAVE BEEN FINALLY POSITIONED, THEY SHALL BE GROUTED IN PLACE AS SHOWN.



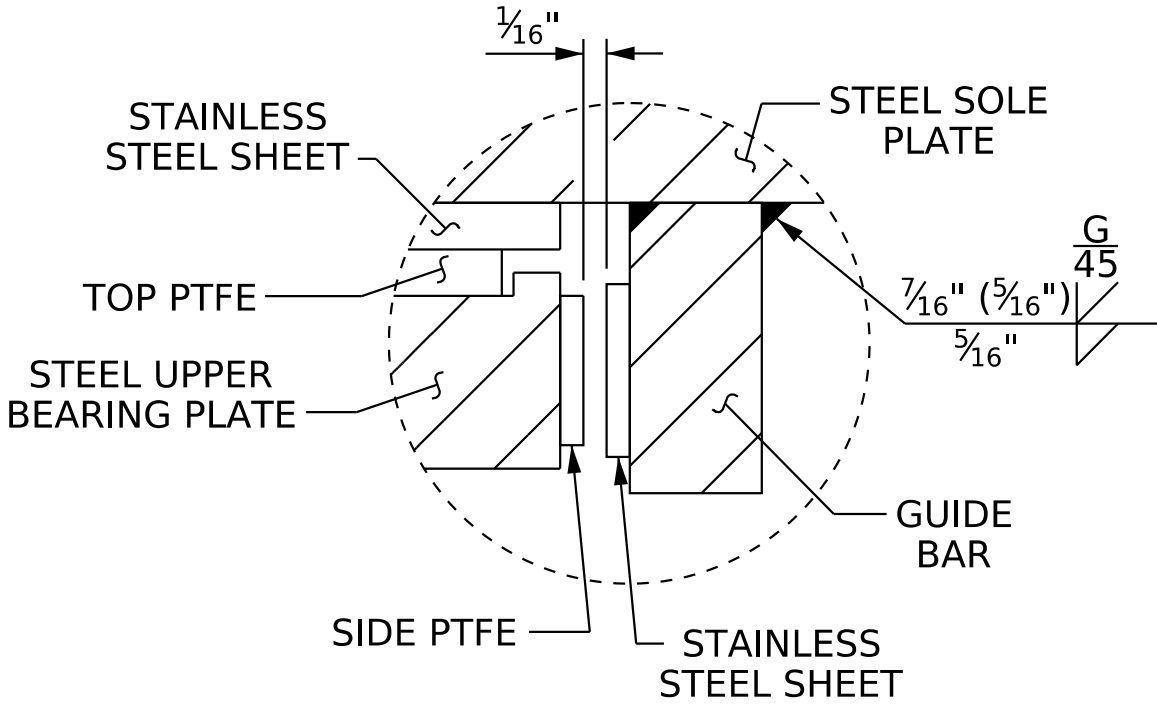
NOTE:
DIMENSIONS "W" AND "T" SHALL BE DETERMINED BY THE BEARING MANUFACTURER.

SET DIMENSION "L" SUCH THAT THE MINIMUM EDGE DISTANCE TO THE GIRDER FLANGE IS 1".

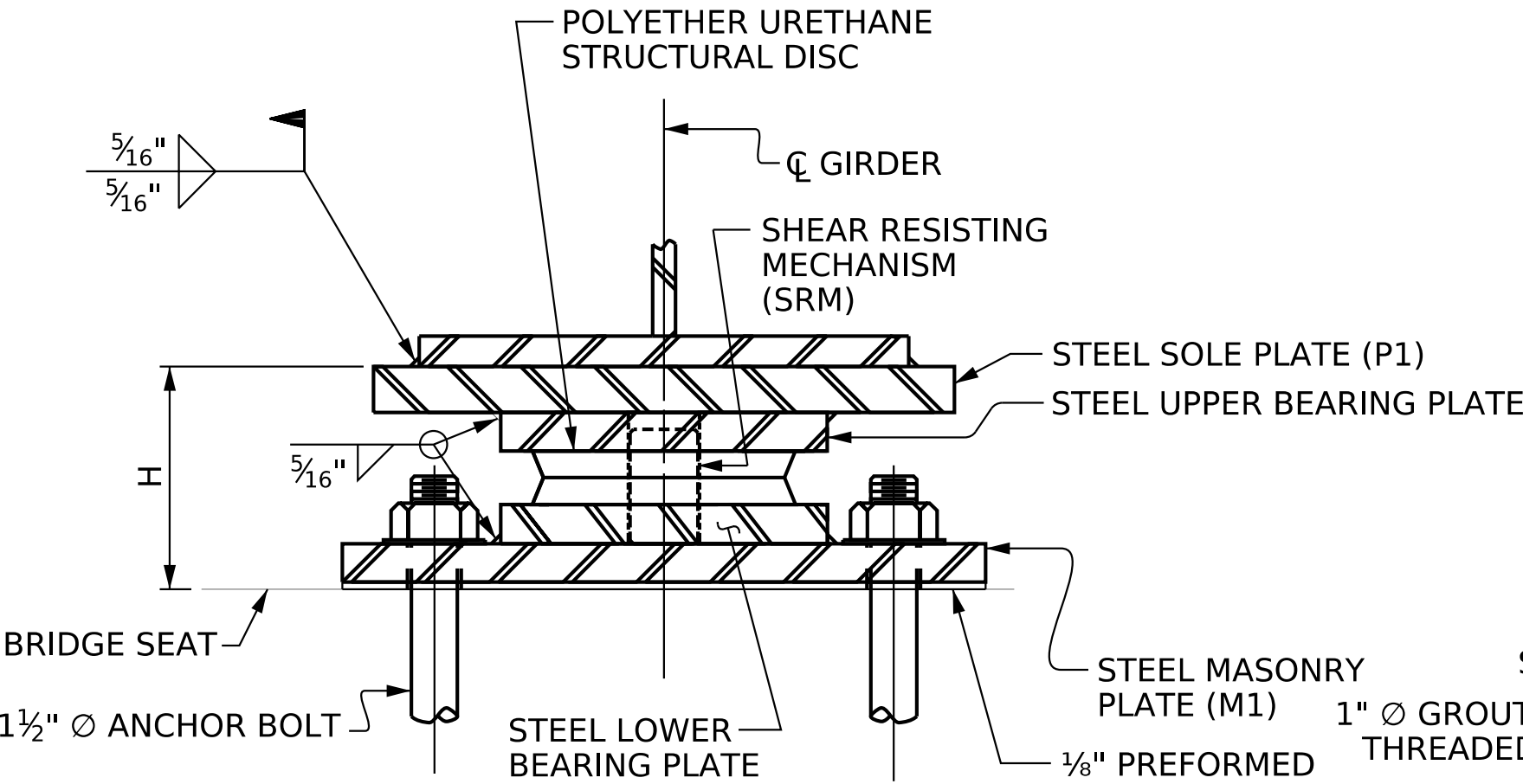
SOLE PLATE DETAILS ("P")
(8 REQ'D)



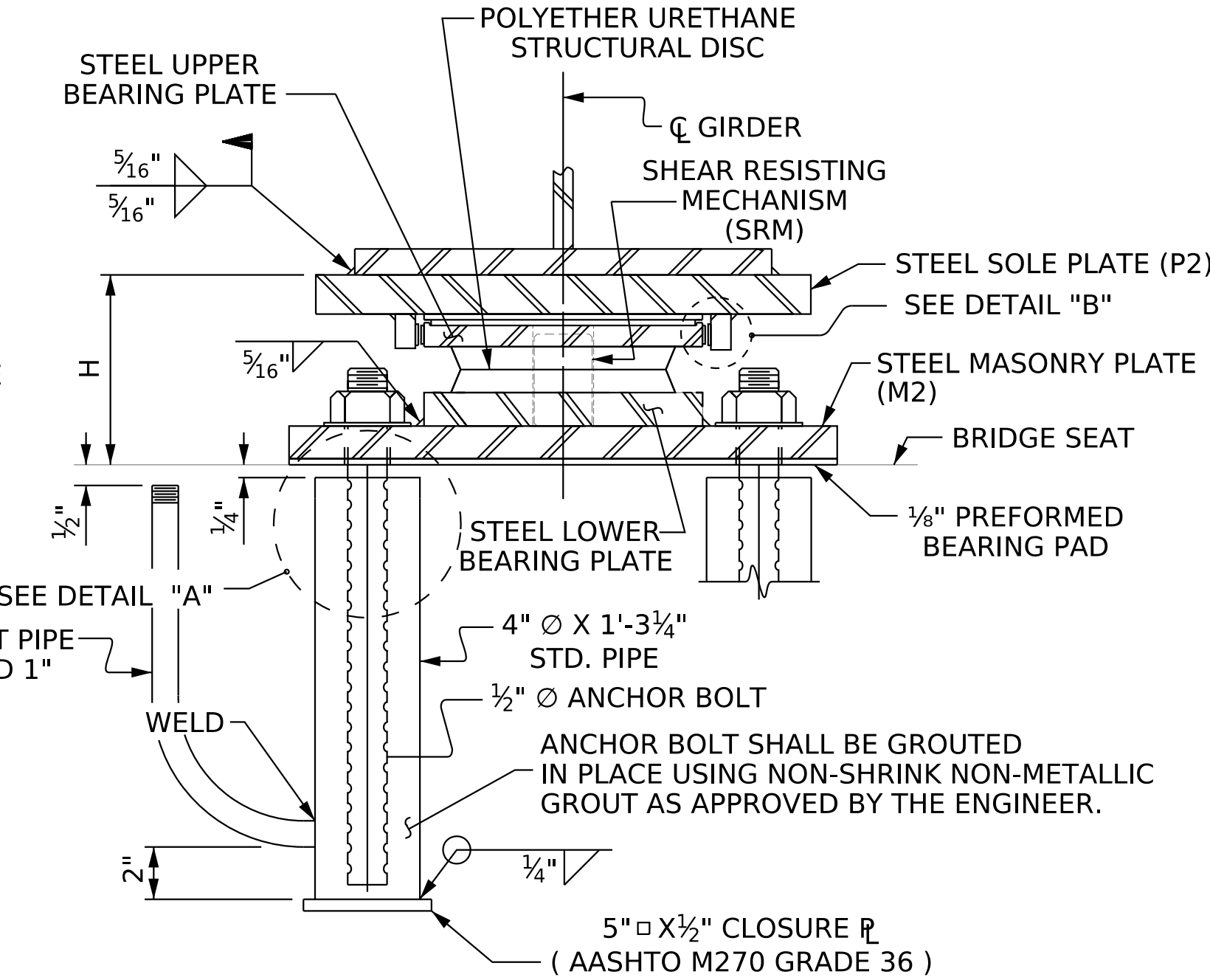
DETAIL "A"



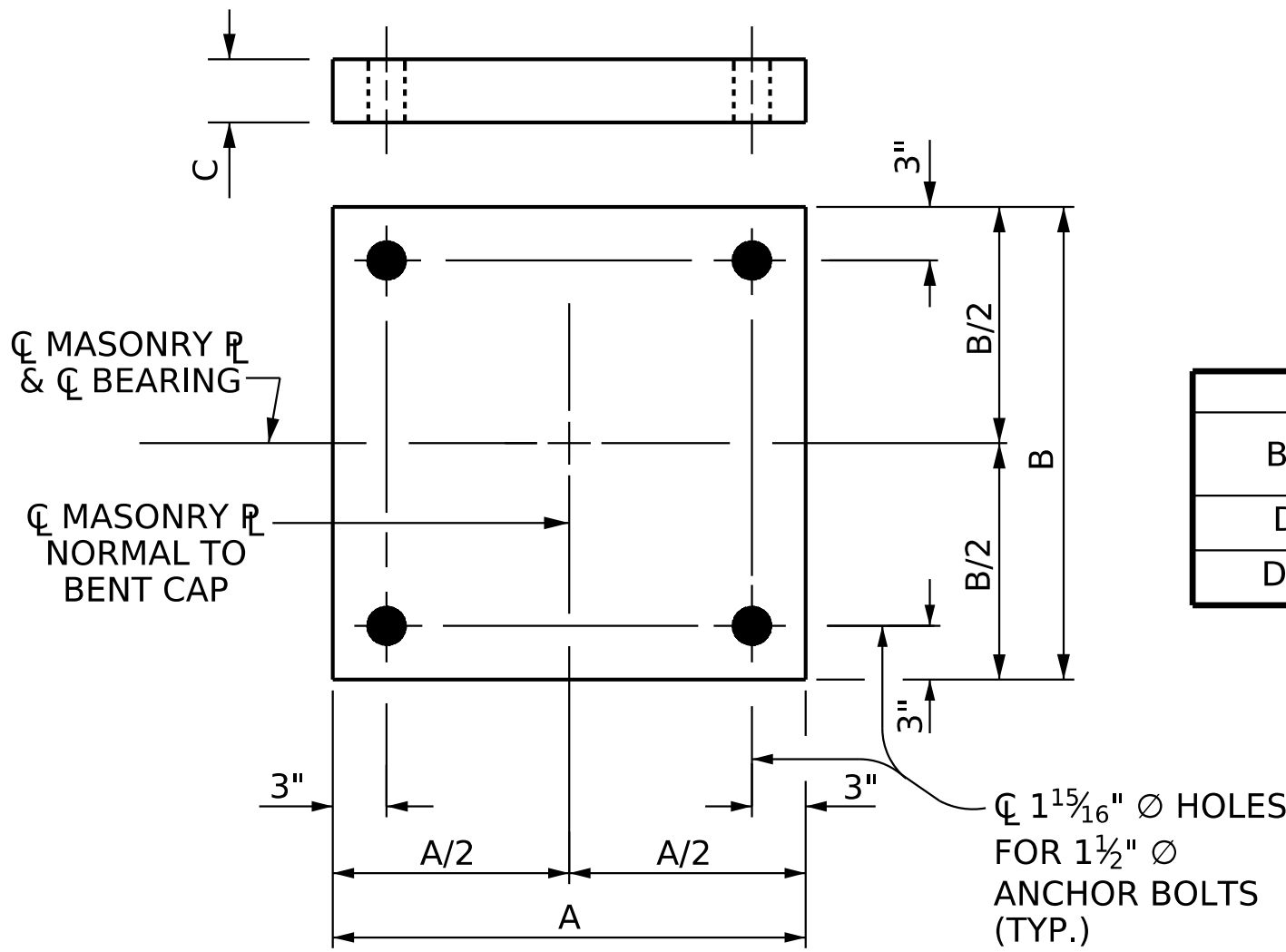
DETAIL "B"



SECTION A-A
DB1, FIXED
(4 REQ'D)



SECTION B-B
DB2, EXP.
(4 REQ'D)



MASONRY PLATE
DETAILS

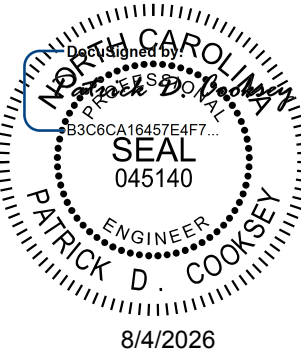
DESIGNATIONS				DIMENSIONS					LOADS AND MOVEMENT				
BEARINGS	MASONRY PLATE	LOCATION	NUMBER OF BEARINGS	BEARING H (IN.)	MASONRY PLATE (IN.)			SOLE PLATE TOP SLOPE (%)	SOLE PLATE L (IN.)	UNFACTORED VERTICAL LOAD (KIPS)		FACTORED HORIZONTAL LOAD (KIPS)	ONE-WAY MOVEMENT (IN.)
					A	B	C			DC	DW	LIVE LL+IM	
DB1 (FIX)	M1	END BENT 1	4	5 3/4"	21"	21"	3/4"	-2.42%	32	194	25	161	75
DB2 (EXP.)	M2	END BENT 2	4	6 5/8"	27"	27"	3/4"	-5.16%	32	195	25	159	75

PLATE SETTING DATA
(EXPANSION DISC BEARINGS)

LOCATION	TEMPERATURE AT TIME OF SETTING			*
	45° F	60° F	90° F	
DB2 (EXP.)	-0.1875	0	0.375	

* CORRECTION FOR END ROTATION DUE TO WEIGHT OF SLAB AND COMPOSITE DEAD LOAD.

TEMPERATURE SETTING DETAIL



Kimley»Horn

421 Fayetteville Street, Suite 600
Raleigh, NC 27601-1772
Phone (919) 677-2000 NC LICENSE # F-0102

This document, together with the concepts and designs presented herein, is an integral part of the project. It is intended for the use of the client and shall not be used for any other purpose without the written authorization and signature of Kimley-Horn and Associates, Inc. shall be without liability to Kimley-Horn and Associates, Inc.

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

PROJECT NO. I-5715
MECKLENBURG COUNTY
STATION: 23+39.87 -Y1-

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

STANDARD
DISC BEARING
DETAILS

REVISIONS						SHEET NO. S2-18
NO.	BY:	DATE:	NO.	BY:	DATE:	
1			3			TOTAL SHEETS 40
2			4			

STR. #2

STD. NO. DB1

DRAWN BY: R. C. GIESEN DATE: 04/2026
CHECKED BY: E. W. SPRABERRY DATE: 04/2026
DESIGN ENGINEER OF RECORD: A. L. PHILLIPS DATE: 04/2026

7/31/2026 K:\RDT_Structures\Bridges\NC\01036524 - I-5715 Structure Design\Coord\Sign\Site *1\Structure 2\Final\402.037-15115.SWL.DLL 591416.018.dgn

DEAD LOAD DEFLECTION TABLE FOR GIRDERS																																									
	SPAN A																																								
	GIRDER 1																																								
FORTIETH POINTS	0	.025	.050	.075	.100	.125	.150	.175	.200	.225	.250	.275	.300	.325	.350	.375	.400	.425	.450	.475	.500	.525	.550	.575	.600	.625	.650	.675	.700	.725	.750	.775	.800	.825	.850	.875	.900	.925	.950	.975	0
DEFLECTION DUE TO WEIGHT OF STEEL ↓	0.000	0.012	0.023	0.035	0.046	0.057	0.067	0.077	0.087	0.096	0.104	0.112	0.119	0.125	0.131	0.136	0.140	0.143	0.145	0.146	0.147	0.146	0.145	0.143	0.140	0.136	0.131	0.126	0.120	0.113	0.105	0.097	0.088	0.078	0.068	0.057	0.046	0.035	0.024	0.012	0.000
DEFLECTION DUE TO WEIGHT OF SLAB * ↓	0.000	0.037	0.074	0.111	0.147	0.181	0.215	0.247	0.277	0.306	0.333	0.357	0.380	0.400	0.417	0.432	0.445	0.454	0.461	0.465	0.467	0.465	0.461	0.454	0.444	0.432	0.417	0.399	0.379	0.357	0.332	0.306	0.277	0.247	0.215	0.181	0.146	0.111	0.074	0.037	0.000
DEFLECTION DUE TO WEIGHT OF RAIL ↓	0.000	0.005	0.011	0.016	0.021	0.026	0.031	0.035	0.039	0.043	0.047	0.051	0.054	0.057	0.059	0.061	0.063	0.064	0.065	0.066	0.066	0.066	0.065	0.064	0.063	0.061	0.059	0.057	0.054	0.051	0.047	0.043	0.039	0.035	0.031	0.026	0.021	0.016	0.011	0.005	0.000
TOTAL DL DEFLECTION ↓	0.000	0.054	0.108	0.161	0.213	0.264	0.313	0.359	0.403	0.445	0.484	0.520	0.552	0.582	0.607	0.629	0.647	0.661	0.672	0.678	0.680	0.678	0.672	0.662	0.647	0.629	0.608	0.582	0.553	0.520	0.485	0.446	0.404	0.360	0.313	0.264	0.214	0.162	0.108	0.054	0.000
VERTICAL CURVE ORDINATE ↑	0.000	0.036	0.069	0.101	0.131	0.160	0.186	0.211	0.233	0.254	0.274	0.291	0.306	0.320	0.332	0.342	0.350	0.357	0.361	0.364	0.365	0.364	0.361	0.357	0.350	0.342	0.332	0.320	0.306	0.291	0.274	0.254	0.233	0.211	0.186	0.160	0.131	0.101	0.069	0.036	0.000
REQUIRED CAMBER ↑	0"	1 1⁄16"	2 1⁄8"	3 1⁄8"	4 1⁄8"	5 1⁄16"	6"	6 13⁄16"	7 5⁄8"	8 3⁄8"	9 1⁄16"	9 3⁄4"	10 5⁄16"	10 13⁄16"	11 1⁄4"	11 5⁄8"	12"	12 3⁄16"	12 3⁄8"	12 1⁄2"	12 9⁄16"	12 1⁄2"	12 3⁄8"	12 3⁄16"	12"	11 11⁄16"	11 1⁄4"	10 13⁄16"	10 5⁄16"	9 3⁄4"	9 1⁄8"	8 3⁄8"	7 5⁄8"	6 7⁄8"	6"	5 1⁄16"	4 1⁄8"	3 1⁄8"	2 1⁄8"	1 1⁄16"	0"

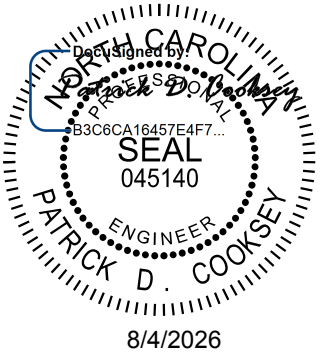
* INCLUDES SLAB,BUILDUPS & STAY-IN-PLACE FORMS.
ALL VALUES ARE SHOWN IN FEET (DECIMAL FORM),EXCEPT ``FINAL CAMBER ``,WHICH IS GIVEN IN INCHES (FRACTION FORM).

DEAD LOAD DEFLECTION TABLE FOR GIRDERS																																									
	SPAN A																																								
	GIRDER 2																																								
	FORTIETH POINTS																																								
	0	.025	.050	.075	.100	.125	.150	.175	.200	.225	.250	.275	.300	.325	.350	.375	.400	.425	.450	.475	.500	.525	.550	.575	.600	.625	.650	.675	.700	.725	.750	.775	.800	.825	.850	.875	.900	.925	.950	.975	0
DEFLECTION DUE TO WEIGHT OF STEEL ↓	0.000	0.012	0.023	0.035	0.046	0.057	0.068	0.078	0.087	0.096	0.105	0.112	0.120	0.126	0.131	0.136	0.140	0.143	0.145	0.147	0.147	0.147	0.146	0.144	0.141	0.137	0.132	0.127	0.120	0.113	0.106	0.097	0.088	0.078	0.068	0.058	0.047	0.035	0.024	0.012	0.000
DEFLECTION DUE TO WEIGHT OF SLAB * ↓	0.000	0.038	0.075	0.112	0.148	0.183	0.217	0.249	0.280	0.309	0.336	0.361	0.383	0.403	0.421	0.436	0.449	0.458	0.465	0.470	0.471	0.470	0.465	0.458	0.449	0.436	0.421	0.403	0.383	0.361	0.336	0.309	0.280	0.249	0.217	0.183	0.148	0.112	0.075	0.038	0.000
DEFLECTION DUE TO WEIGHT OF RAIL ↓	0.000	0.005	0.011	0.016	0.021	0.026	0.030	0.035	0.039	0.043	0.047	0.051	0.054	0.057	0.059	0.061	0.063	0.064	0.065	0.066	0.066	0.066	0.065	0.064	0.063	0.061	0.059	0.057	0.054	0.051	0.047	0.043	0.039	0.035	0.030	0.026	0.021	0.016	0.011	0.005	0.000
TOTAL DL DEFLECTION ↓	0.000	0.055	0.109	0.163	0.215	0.266	0.315	0.362	0.407	0.449	0.488	0.524	0.556	0.586	0.611	0.633	0.652	0.666	0.676	0.682	0.684	0.682	0.676	0.666	0.652	0.634	0.612	0.586	0.557	0.524	0.488	0.449	0.407	0.363	0.316	0.266	0.215	0.163	0.109	0.055	0.000
VERTICAL CURVE ORDINATE ↑	0.000	0.036	0.069	0.101	0.131	0.160	0.186	0.211	0.233	0.254	0.274	0.291	0.306	0.320	0.332	0.342	0.350	0.357	0.361	0.364	0.365	0.364	0.361	0.357	0.350	0.342	0.332	0.320	0.306	0.291	0.274	0.254	0.233	0.211	0.186	0.160	0.131	0.101	0.069	0.036	0.000
REQUIRED CAMBER ↑	0"	1 1⁄16"	2 1⁄8"	3 3⁄16"	4 3⁄16"	5 1⁄8"	6"	6 7⁄8"	7 11⁄16"	8 7⁄16"	9 1⁄8"	9 3⁄4"	10 3⁄8"	10 7⁄8"	11 5⁄16"	11 11⁄16"	12"	12 1⁄4"	12 7⁄16"	12 9⁄16"	12 9⁄16"	12 9⁄16"	12 7⁄16"	12 1⁄4"	12"	11 11⁄16"	11 5⁄16"	10 7⁄8"	10 3⁄8"	9 13⁄16"	9 1⁄8"	8 7⁄16"	7 11⁄16"	6 7⁄8"	6"	5 1⁄8"	4 3⁄16"	3 3⁄16"	2 1⁄8"	1 1⁄16"	0"

* INCLUDES SLAB,BUILDUPS & STAY-IN-PLACE FORMS.
ALL VALUES ARE SHOWN IN FEET (DECIMAL FORM),EXCEPT ``FINAL CAMBER ``,WHICH IS GIVEN IN INCHES (FRACTION FORM).

PROJECT NO. I-5715
MECKLENBURG COUNTY
STATION: 23+39.87 -Y1-

SHEET 1 OF 2



Kimley»Horn
421 Fayetteville Street, Suite 600
Raleigh, NC 27601-1772
Phone (919) 677-2000
NC LICENSE # F-0102

This document, together with the concepts and designs presented herein, as an integral part thereof, is prepared only for the specific project and shall not be used for any other project without the written authorization and signature of Kimley-Horn and Associates, Inc. shall be without liability to Kimley-Horn and Associates, Inc.
Copyright Kimley-Horn and Associates, Inc., 2026

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

DRAWN BY: R. C. GIESEN DATE: 04/2026
CHECKED BY: E. W. SPRABERRY DATE: 04/2026
DESIGN ENGINEER OF RECORD: A. L. PHILLIPS DATE: 04/2026

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUPERSTRUCTURE
DEAD LOAD DEFLECTIONS
SPAN A

REVISIONS						SHEET NO. S2-19
NO.	BY:	DATE:	NO.	BY:	DATE:	
1			3			TOTAL SHEETS 40
2			4			

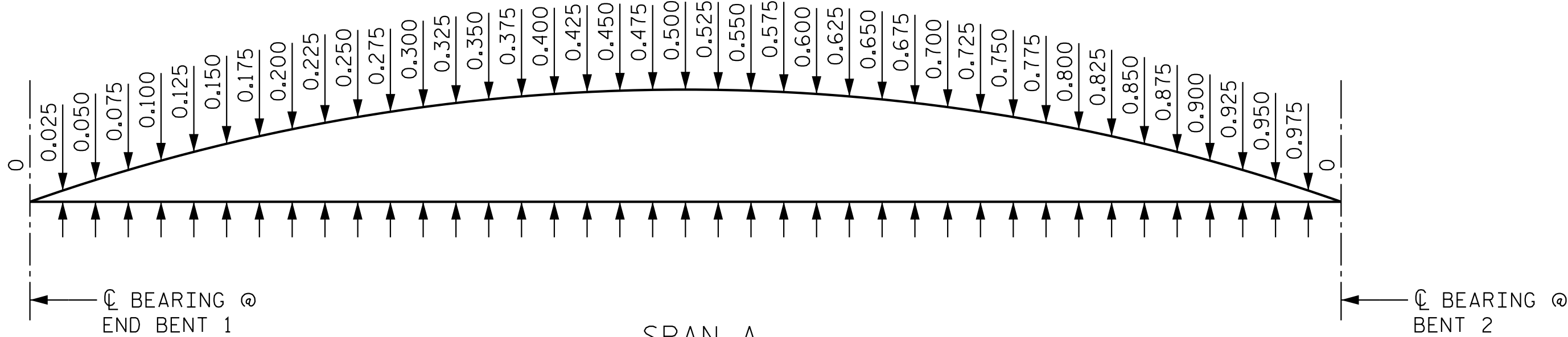
K:\RDT_Structures\Bridges\NC\01036524 - I-5715 Structure Design\Coord\gn\Site *1\Structure 2\Final\402.039.15715.SWL.DL.2.591\16.020.dgn 7/31/2026

DEAD LOAD DEFLECTION TABLE FOR GIRDERS																																									
	SPAN A																																								
	GIRDER 3																																								
	FORTIETH POINTS																																								
	0	.025	.050	.075	.100	.125	.150	.175	.200	.225	.250	.275	.300	.325	.350	.375	.400	.425	.450	.475	.500	.525	.550	.575	.600	.625	.650	.675	.700	.725	.750	.775	.800	.825	.850	.875	.900	.925	.950	.975	0
DEFLECTION DUE TO WEIGHT OF STEEL ↓	0.000	0.012	0.023	0.035	0.046	0.057	0.068	0.078	0.087	0.096	0.105	0.112	0.120	0.126	0.131	0.136	0.140	0.143	0.145	0.147	0.147	0.147	0.146	0.144	0.141	0.137	0.132	0.127	0.120	0.113	0.106	0.097	0.088	0.078	0.068	0.058	0.047	0.035	0.024	0.012	0.000
DEFLECTION DUE TO WEIGHT OF SLAB * ↓	0.000	0.038	0.075	0.112	0.148	0.183	0.216	0.248	0.279	0.308	0.335	0.359	0.382	0.402	0.419	0.435	0.447	0.457	0.464	0.468	0.469	0.468	0.464	0.457	0.447	0.435	0.420	0.402	0.382	0.359	0.335	0.308	0.279	0.249	0.216	0.183	0.148	0.112	0.075	0.038	0.000
DEFLECTION DUE TO WEIGHT OF RAIL ↓	0.000	0.005	0.011	0.016	0.021	0.026	0.030	0.035	0.039	0.043	0.047	0.051	0.054	0.057	0.059	0.061	0.063	0.064	0.065	0.066	0.066	0.066	0.065	0.064	0.063	0.061	0.059	0.057	0.054	0.051	0.047	0.043	0.039	0.035	0.030	0.026	0.021	0.016	0.011	0.005	0.000
TOTAL DL DEFLECTION ↓	0.000	0.055	0.109	0.162	0.214	0.265	0.314	0.361	0.406	0.447	0.486	0.522	0.555	0.584	0.610	0.632	0.650	0.664	0.675	0.681	0.683	0.681	0.675	0.665	0.651	0.633	0.611	0.585	0.556	0.523	0.487	0.448	0.406	0.362	0.315	0.266	0.215	0.163	0.109	0.055	0.000
VERTICAL CURVE ORDINATE ↑	0.000	0.036	0.069	0.101	0.131	0.160	0.186	0.211	0.233	0.254	0.274	0.291	0.306	0.320	0.332	0.342	0.350	0.357	0.361	0.364	0.365	0.364	0.361	0.357	0.350	0.342	0.332	0.320	0.306	0.291	0.274	0.254	0.233	0.211	0.186	0.160	0.131	0.101	0.069	0.036	0.000
REQUIRED CAMBER ↑	0"	1 ¹ / ₁₆ "	2 ¹ / ₈ "	3 ³ / ₁₆ "	4 ¹ / ₈ "	5 ¹ / ₈ "	6"	6 ⁷ / ₈ "	7 ¹¹ / ₁₆ "	8 ¹ / ₁₆ "	9 ¹ / ₈ "	9 ³ / ₄ "	10 ⁹ / ₁₆ "	10 ⁷ / ₈ "	11 ⁵ / ₁₆ "	11 ¹¹ / ₁₆ "	12"	12 ¹ / ₄ "	12 ⁷ / ₁₆ "	12 ⁹ / ₁₆ "	12 ⁹ / ₁₆ "	12 ⁹ / ₁₆ "	12 ⁷ / ₁₆ "	12 ¹ / ₄ "	12"	11 ¹¹ / ₁₆ "	11 ⁵ / ₁₆ "	10 ⁷ / ₈ "	10 ³ / ₈ "	9 ³ / ₄ "	9 ¹ / ₈ "	8 ⁷ / ₁₆ "	7 ¹¹ / ₁₆ "	6 ⁷ / ₈ "	6"	5 ¹ / ₈ "	4 ³ / ₁₆ "	3 ³ / ₁₆ "	2 ¹ / ₈ "	1 ¹ / ₁₆ "	0"

* INCLUDES SLAB,BUILDUPS & STAY-IN-PLACE FORMS.
ALL VALUES ARE SHOWN IN FEET (DECIMAL FORM),EXCEPT ``FINAL CAMBER `` ,WHICH IS GIVEN IN INCHES (FRACTION FORM).

DEAD LOAD DEFLECTION TABLE FOR GIRDERS																																									
	SPAN A																																								
	GIRDER 4																																								
FORTIETH POINTS	0	.025	.050	.075	.100	.125	.150	.175	.200	.225	.250	.275	.300	.325	.350	.375	.400	.425	.450	.475	.500	.525	.550	.575	.600	.625	.650	.675	.700	.725	.750	.775	.800	.825	.850	.875	.900	.925	.950	.975	0
DEFLECTION DUE TO WEIGHT OF STEEL ↓	0.000	0.012	0.023	0.035	0.046	0.057	0.067	0.077	0.087	0.096	0.104	0.112	0.119	0.125	0.131	0.136	0.140	0.143	0.145	0.146	0.147	0.146	0.145	0.143	0.140	0.136	0.132	0.126	0.120	0.113	0.105	0.097	0.088	0.078	0.068	0.057	0.046	0.035	0.024	0.012	0.000
DEFLECTION DUE TO WEIGHT OF SLAB * ↓	0.000	0.037	0.073	0.109	0.145	0.179	0.212	0.244	0.274	0.302	0.329	0.353	0.375	0.395	0.412	0.427	0.440	0.449	0.456	0.460	0.462	0.460	0.456	0.449	0.440	0.428	0.413	0.395	0.376	0.353	0.329	0.303	0.274	0.244	0.213	0.179	0.145	0.110	0.074	0.037	0.000
DEFLECTION DUE TO WEIGHT OF RAIL ↓	0.000	0.005	0.011	0.016	0.021	0.026	0.031	0.035	0.040	0.044	0.047	0.051	0.054	0.057	0.059	0.062	0.063	0.065	0.066	0.066	0.066	0.066	0.065	0.063	0.062	0.059	0.057	0.054	0.051	0.047	0.044	0.039	0.035	0.031	0.026	0.021	0.016	0.011	0.005	0.000	
TOTAL DL DEFLECTION ↓	0.000	0.054	0.107	0.160	0.212	0.262	0.310	0.356	0.400	0.442	0.480	0.516	0.548	0.577	0.603	0.624	0.642	0.657	0.667	0.673	0.675	0.673	0.667	0.657	0.643	0.625	0.604	0.578	0.549	0.517	0.482	0.443	0.402	0.357	0.311	0.263	0.212	0.161	0.108	0.054	0.000
VERTICAL CURVE ORDINATE ↑	0.000	0.036	0.069	0.101	0.131	0.160	0.186	0.211	0.233	0.254	0.274	0.291	0.306	0.320	0.332	0.342	0.350	0.357	0.361	0.364	0.365	0.364	0.361	0.357	0.350	0.342	0.332	0.320	0.306	0.291	0.274	0.254	0.233	0.211	0.186	0.160	0.131	0.101	0.069	0.036	0.000
REQUIRED CAMBER ↑	0"	1 ¹ / ₁₆ "	2 ¹ / ₈ "	3 ¹ / ₈ "	4 ¹ / ₈ "	5 ¹ / ₁₆ "	5 ⁵ / ₁₆ "	6 ¹³ / ₁₆ "	7 ⁵ / ₈ "	8 ³ / ₈ "	9 ¹ / ₁₆ "	9 ¹¹ / ₁₆ "	10 ¹ / ₄ "	10 ³ / ₄ "	11 ³ / ₁₆ "	11 ⁵ / ₈ "	11 ⁵ / ₁₆ "	12 ³ / ₁₆ "	12 ⁵ / ₁₆ "	12 ⁷ / ₁₆ "	12 ¹ / ₂ "	12 ⁷ / ₁₆ "	12 ⁵ / ₁₆ "	12 ³ / ₁₆ "	11 ⁵ / ₁₆ "	11 ⁵ / ₈ "	11 ¹ / ₄ "	10 ¹³ / ₁₆ "	10 ¹ / ₄ "	9 ¹¹ / ₁₆ "	9 ¹ / ₁₆ "	8 ³ / ₈ "	7 ⁵ / ₈ "	6 ¹³ / ₁₆ "	5 ⁵ / ₁₆ "	5 ¹ / ₁₆ "	4 ¹ / ₈ "	3 ¹ / ₈ "	2 ¹ / ₈ "	1 ¹ / ₁₆ "	0"

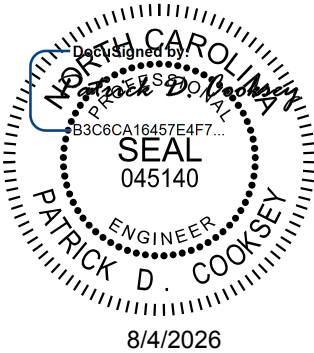
* INCLUDES SLAB,BUILDUPS & STAY-IN-PLACE FORMS.
ALL VALUES ARE SHOWN IN FEET (DECIMAL FORM),EXCEPT ``FINAL CAMBER `` ,WHICH IS GIVEN IN INCHES (FRACTION FORM).



SPAN A
SCHEMATIC CAMBER ORDINATES
SLOPE FOR THE ZERO CAMBER BASE LINE VARIES

PROJECT NO. I-5715
MECKLENBURG COUNTY
STATION: 23+39.87 -Y1-

SHEET 2 OF 2



Kimley»Horn
421 Fayetteville Street, Suite 600
Raleigh, NC 27601-1772
Phone (919) 677-2000
NC LICENSE # F-0102

This document, together with the concepts and designs presented herein, as an integral part thereof, is prepared only for the specific project and shall not be used for any other project without the written authorization and signature of Kimley-Horn and Associates, Inc. shall be without liability to Kimley-Horn and Associates, Inc.
Copyright Kimley-Horn and Associates, Inc., 2026

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

DRAWN BY: R. C. GIESEN DATE: 04/2026
CHECKED BY: E. W. SPRABERRY DATE: 04/2026
DESIGN ENGINEER OF RECORD: A. L. PHILLIPS DATE: 04/2026

STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION RALEIGH						
SUPERSTRUCTURE DEAD LOAD DEFLECTIONS SPAN A						
REVISIONS						SHEET NO. S2-20
NO.	BY:	DATE:	NO.	BY:	DATE:	TOTAL SHEETS 40
1			3			
2			4			

STR. #2

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.

UNLESS OTHERWISE REQUIRED IN THE CONTRACT DOCUMENTS, THE CONTRACTOR HAS THE OPTION TO USE AN ALTERNATE TO THE 2 BAR METAL RAIL. THE ALTERNATE RAIL SHALL MEET THE REQUIREMENTS OF THE AASHTO LRFD BRIDGE DESIGN SPECIFICATIONS AND MUST BE LISTED ON THE DEPARTMENT'S APPROVED PRODUCTS LIST (APL) UNDER "2 BAR METAL RAIL ALTERNATE". ADJUSTMENTS TO THE CONCRETE PARAPET WILL NOT BE ALLOWED.

ALUMINUM RAILS

MATERIAL FOR POSTS, BASES AND RAILS, EXPANSION BARS AND CLAMP BARS SHALL BE ASTM B-221 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

MATERIAL 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.

CAP SCREWS SHALL BE ASTM F593 ALLOY 305 STAINLESS STEEL. WASHERS SHALL MEET THE REQUIREMENTS OF ASTM F844 EXCEPT THEY SHALL BE MADE FROM ALLOY 304 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 KINKING TO THE REQUIRED CURVATURE IN A UNIFORM MANNER ACCEPTABLE TO THE ENGINEER.

TO INSURE 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, BUT REMAINS VISIBLE AFTER RAIL PLACEMENT.

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.

GROOVED CONTRACTION JOINTS, 1/2" 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.

FOR MODIFIED 2 BAR METAL RAIL, SEE SPECIAL PROVISIONS.

PAY LENGTH = 295.5 LIN. FT.

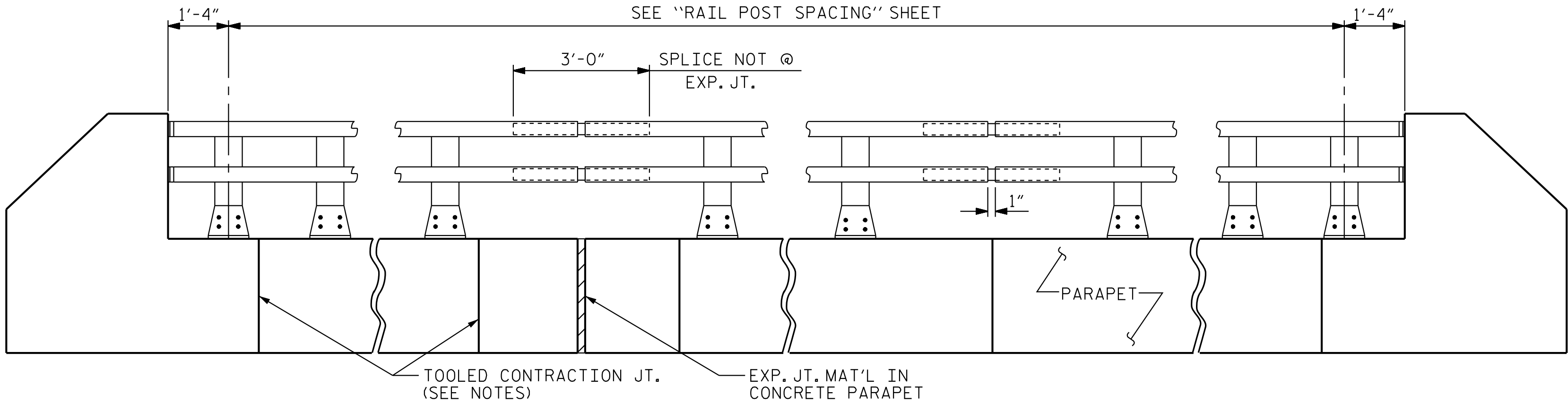
PROJECT NO. I-5715
MECKLENBURG COUNTY
STATION: 23+39.87 -Y1-

SHEET 1 OF 2

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH
STANDARD
2 BAR METAL RAIL

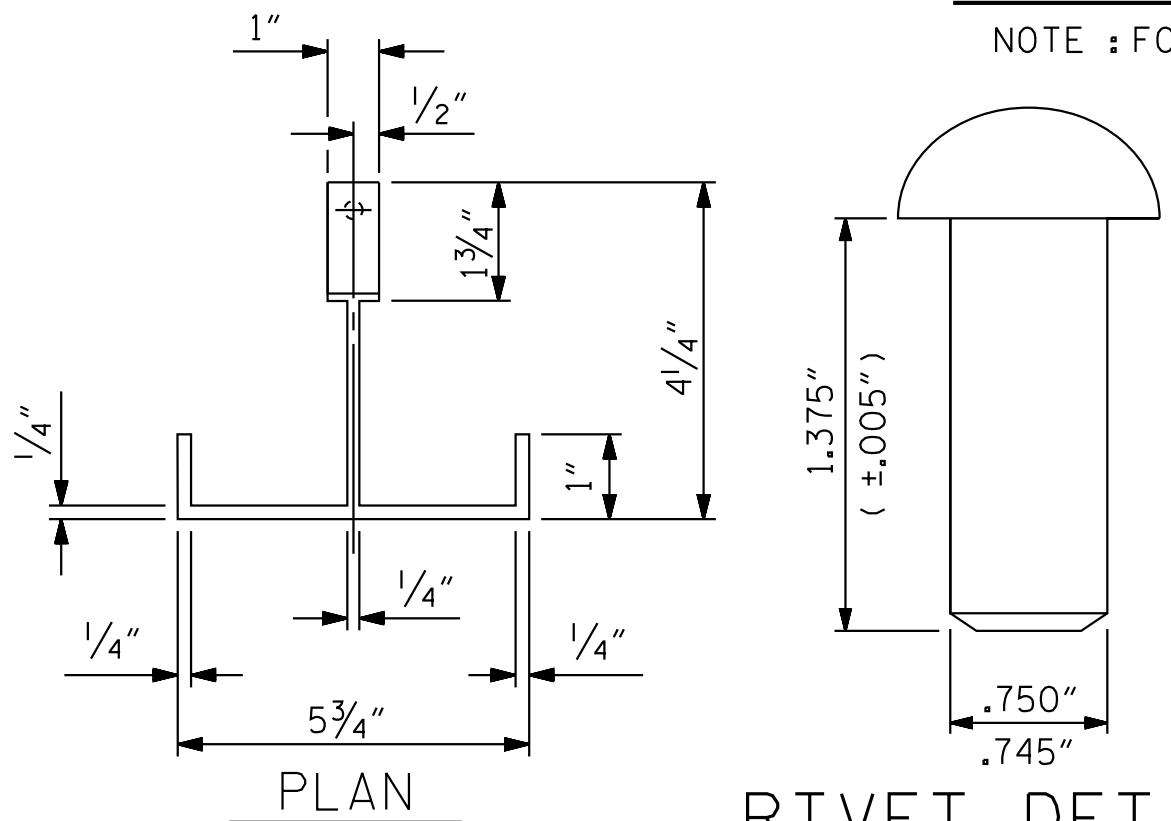
REVISIONS						SHEET NO. S2-21
NO.	BY:	DATE:	NO.	BY:	DATE:	
1			3			TOTAL SHEETS 40
2			4			

STR. #2 STD. NO. BMR3

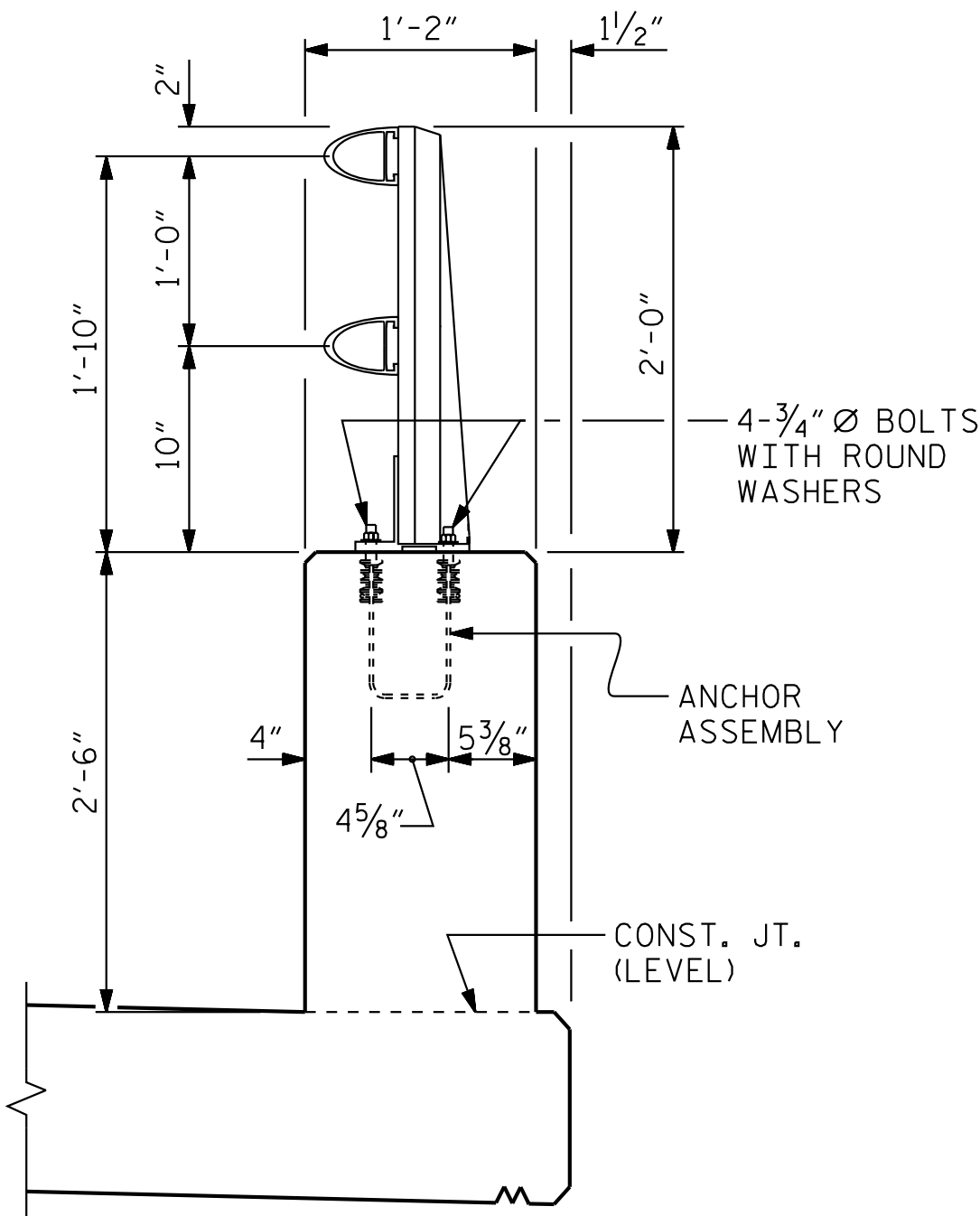


ELEVATION

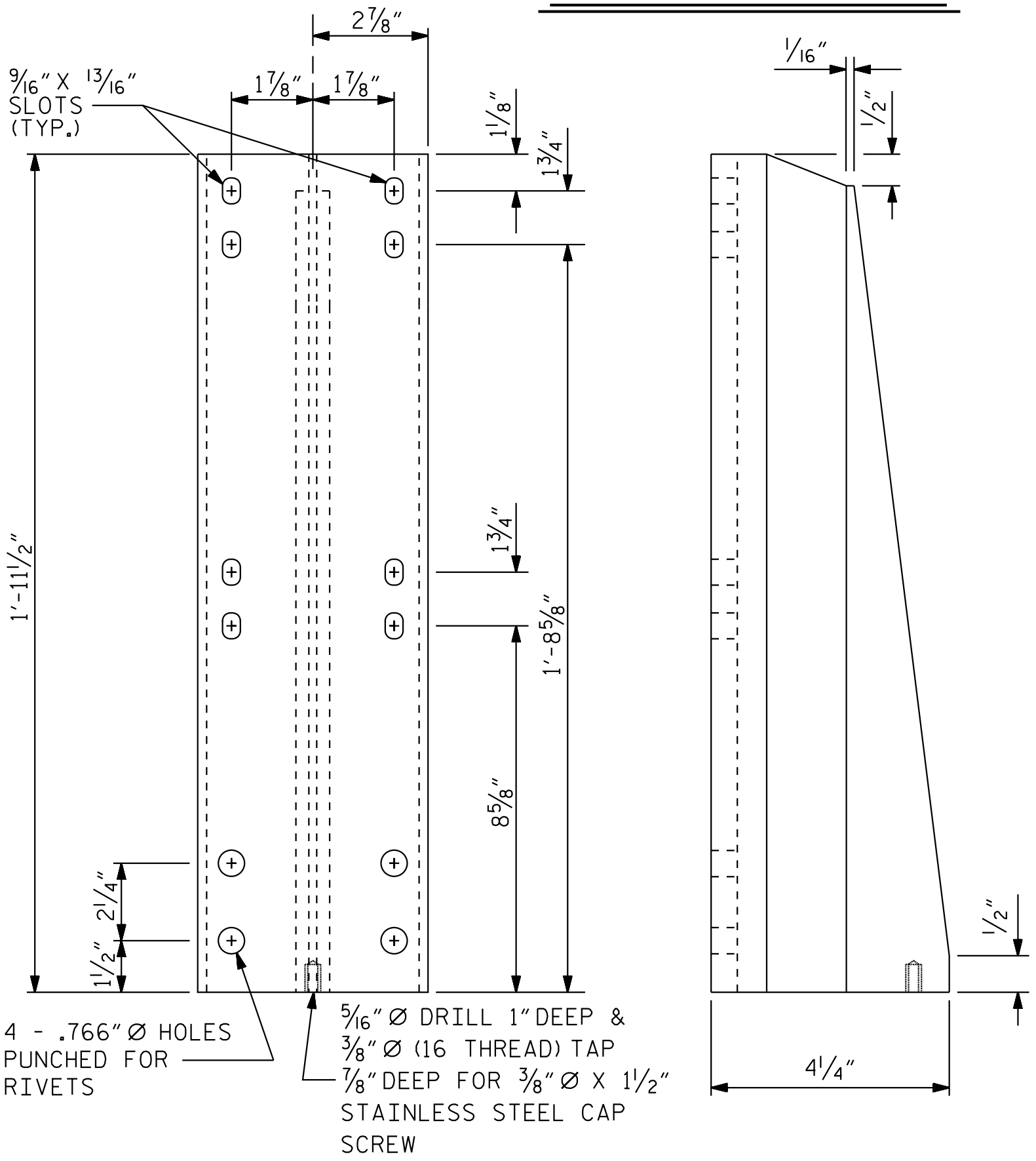
NOTE :FOR ATTACHMENT OF METAL RAIL TO END POST, SEE "RAIL POST SPACINGS AND END OF RAIL DETAILS" SHEET.



RIVET DETAIL



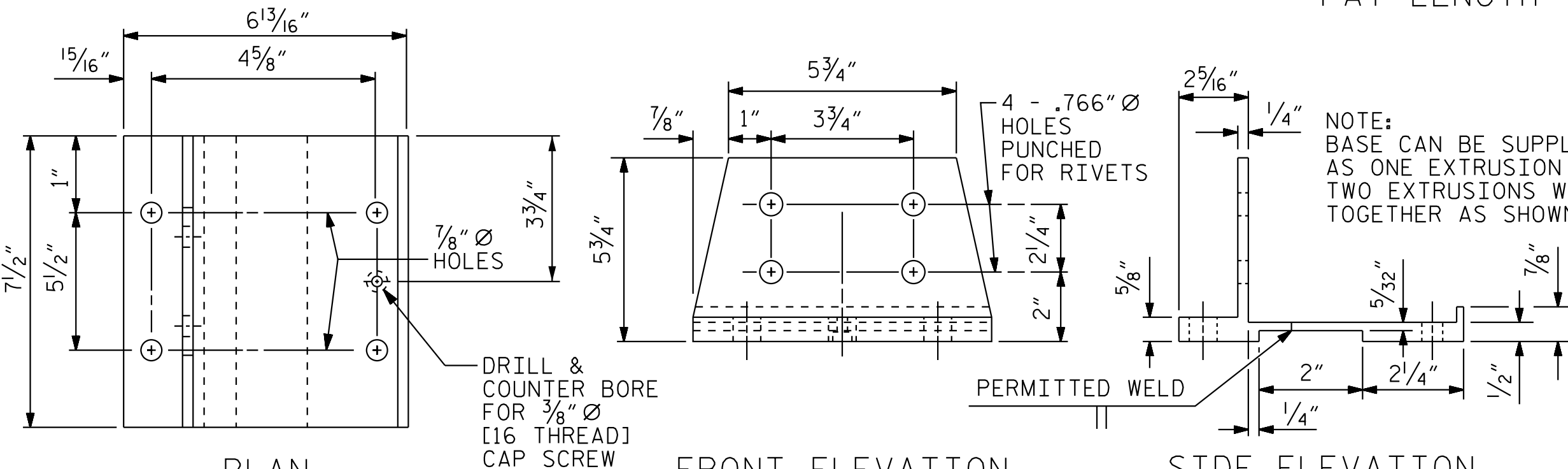
SECTION THRU PARAPET AND RAIL



FRONT ELEVATION

SIDE ELEVATION

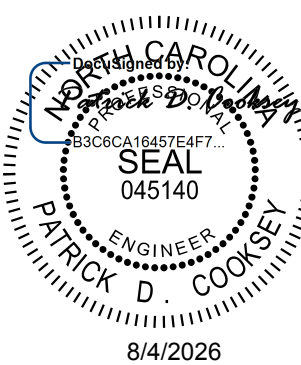
DETAILS OF POST



FRONT ELEVATION

SIDE ELEVATION

POST BASE DETAILS



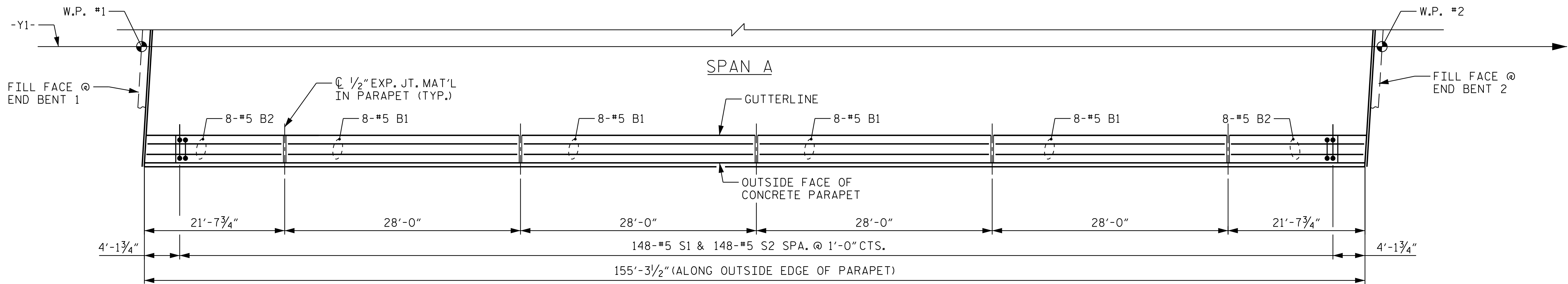
Kimley»Horn

421 Fayetteville Street, Suite 600
Raleigh, NC 27601-1772
Phone (919) 677-2000 NC LICENSE # F-0102

DOCUMENT NOT CONSIDERED FINAL
UNLESS ALL SIGNATURES COMPLETED

DRAWN BY: R. C. GIESEN DATE: 04/2026
CHECKED BY: E. W. SPRABERRY DATE: 04/2026
DESIGN ENGINEER OF RECORD: A. L. PHILLIPS DATE: 04/2026

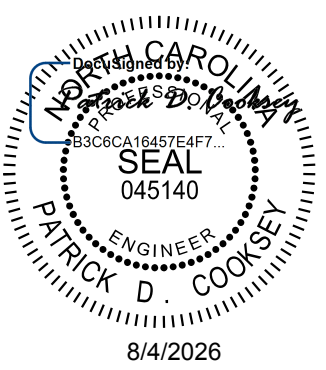
7/31/2026 K:\RDT_Structures\Bridge\NC\01036524 - I-5715 Structure Design\Cad\Drawn\Site *1\Structure 2\Final\402.045.15715.SWL.plt 59416.023.dgn



EXTERIOR CONCRETE PARAPET LAYOUT
(RIGHT SIDE SHOWN, LEFT SIDE SIMILAR)

PROJECT NO. I-5715
MECKLENBURG COUNTY
STATION: 23+39.87 -Y1-

SHEET 1 OF 4



Kimley»Horn
421 Fayetteville Street, Suite 600
Raleigh, NC 27601-1772
Phone (919) 677-2000 NC LICENSE # F-0102

This document, together with the concepts and designs presented herein, is an integral part of the project. It is to be used only for the specific project and shall not be used for any other purpose without the written authorization and signature of Kimley-Horn and Associates, Inc. It shall be without liability to Kimley-Horn and Associates, Inc.

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

REVISIONS						SHEET NO. S2-23
NO.	BY:	DATE:	NO.	BY:	DATE:	
1			3			TOTAL SHEETS 40
2			4			

DRAWN BY: <u>R. C. GIESEN</u>	DATE: <u>04/2026</u>
CHECKED BY: <u>E. W. SPRABERRY</u>	DATE: <u>04/2026</u>
DESIGN ENGINEER OF RECORD: <u>A. L. PHILLIPS</u>	DATE: <u>04/2026</u>

STR. #2

K:\PDI_Structures\Bridges\NC\01036524 - I-5715 Structure Design\Coord\gn\Site *I\Structure 2\Final\02.047.15715.SML CP2.59146.024.dgn 7/31/2026

NOTES

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

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

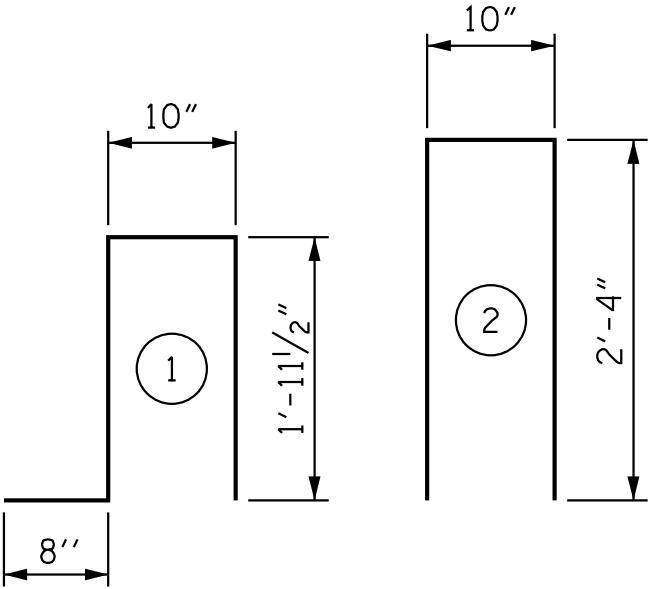
THE #5 S1 AND #5 S2 BARS MAY BE SHIFTED SLIGHTLY IN ORDER TO MAINTAIN A 2" MINIMUM CLEARANCE TO THE 1/2" EXPANSION JOINT MATERIAL IN PARAPET.

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

FOR DETAILS OF GUARDRAIL ANCHOR ASSEMBLIES, SEE "GUARDRAIL ANCHORAGE DETAILS FOR METEL RAIL" SHEET.

GROOVED CONTRACTION JOINTS, 1/2" 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 BARRIER RAIL EXPANSION JOINTS. ONLY ONE CONTRACTION JOINT IS REQUIRED AT MIDPOINT OF BARRIER RAIL SEGMENTS LESS THAN 20 FEET IN LENGTH AND NO CONTRACTION JOINTS ARE REQUIRED FOR THOSE SEGMENTS LESS THAN 10 FEET IN LENGTH.

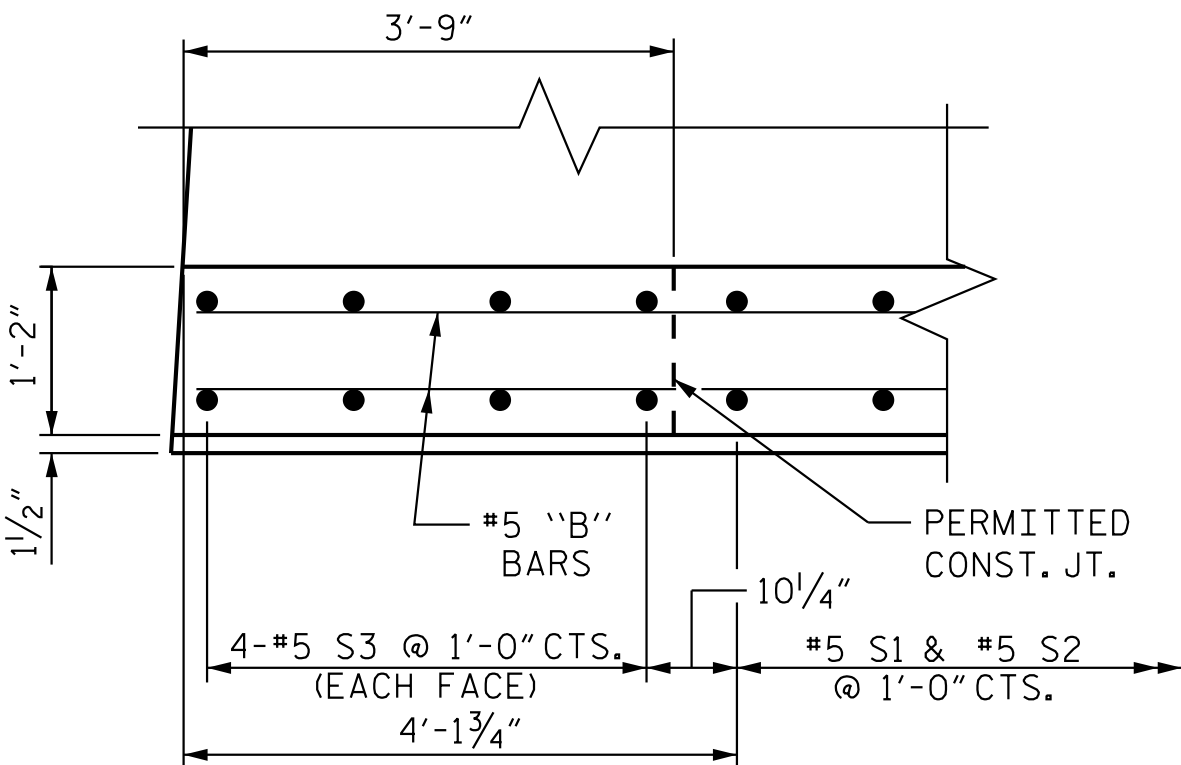
BAR TYPES



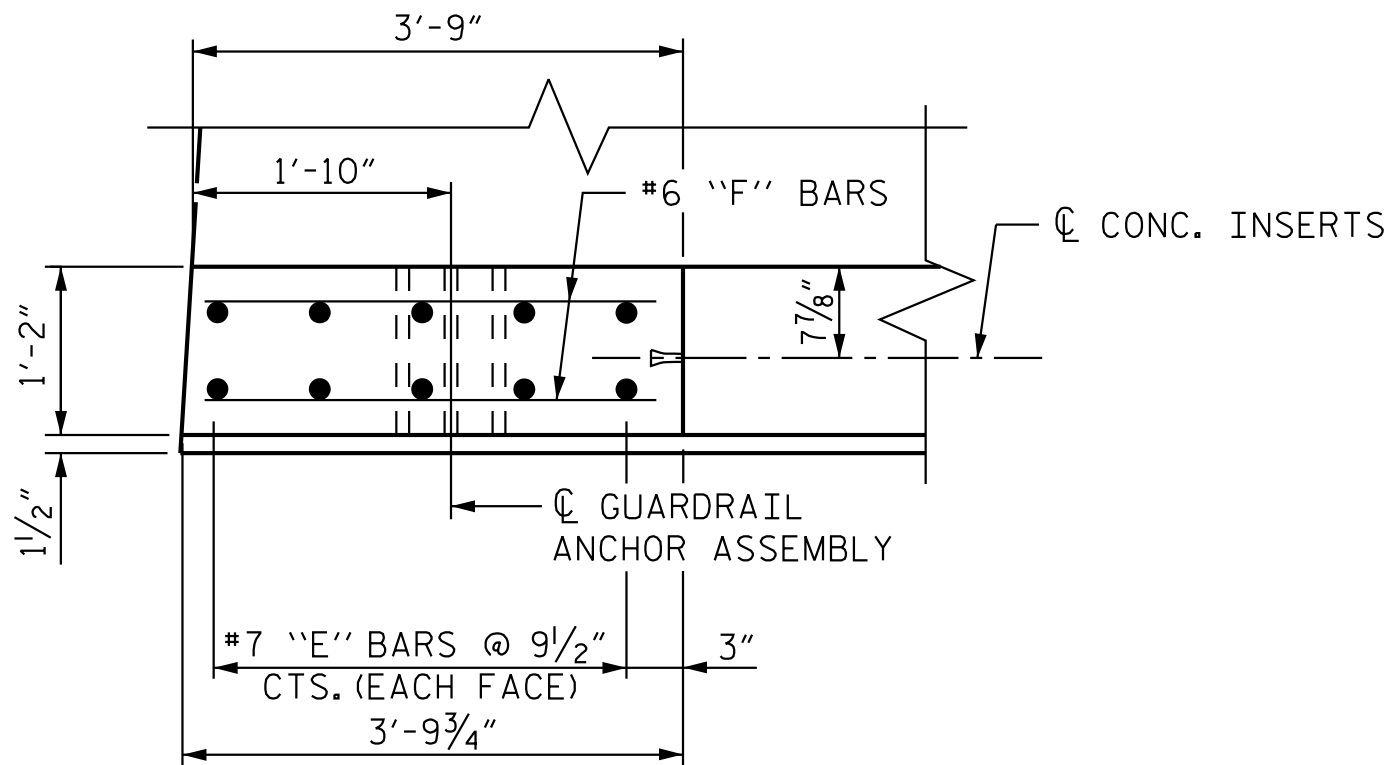
ALL BAR DIMENSIONS ARE OUT TO OUT

BILL OF MATERIAL

2 CONCRETE PARAPETS AND 4 END POSTS					
BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
* B1	64	5	STR	27'-8"	1,847
* B2	32	5	STR	21'-3"	709
* E1	8	7	STR	2'-6"	41
* E2	8	7	STR	3'-0"	49
* E3	8	7	STR	3'-6"	57
* E4	8	7	STR	4'-0"	65
* E5	8	7	STR	4'-4"	71
* F1	8	6	STR	1'-9"	21
* F2	8	6	STR	1'-11"	23
* F3	8	6	STR	3'-9"	45
* S1	296	5	1	5'-5"	1,672
* S2	296	5	2	5'-6"	1,698
* S3	32	5	STR	2'-10"	95
*EPOXY COATED REINFORCING STEEL				LBS.	6,393
CLASS AA CONCRETE				C.Y.	34.4
1'-2" X 2'-6" CONCRETE PARAPET					310.3 LF

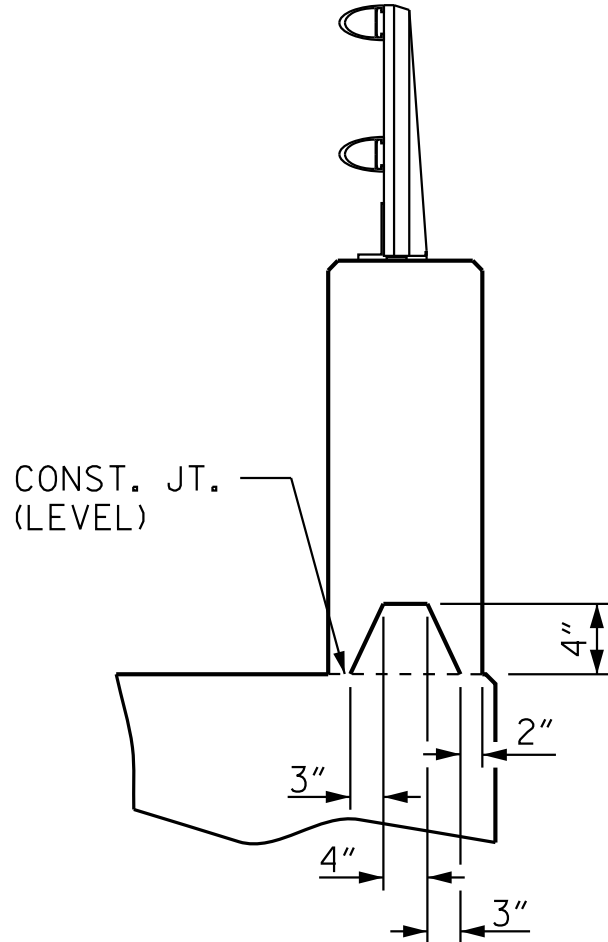
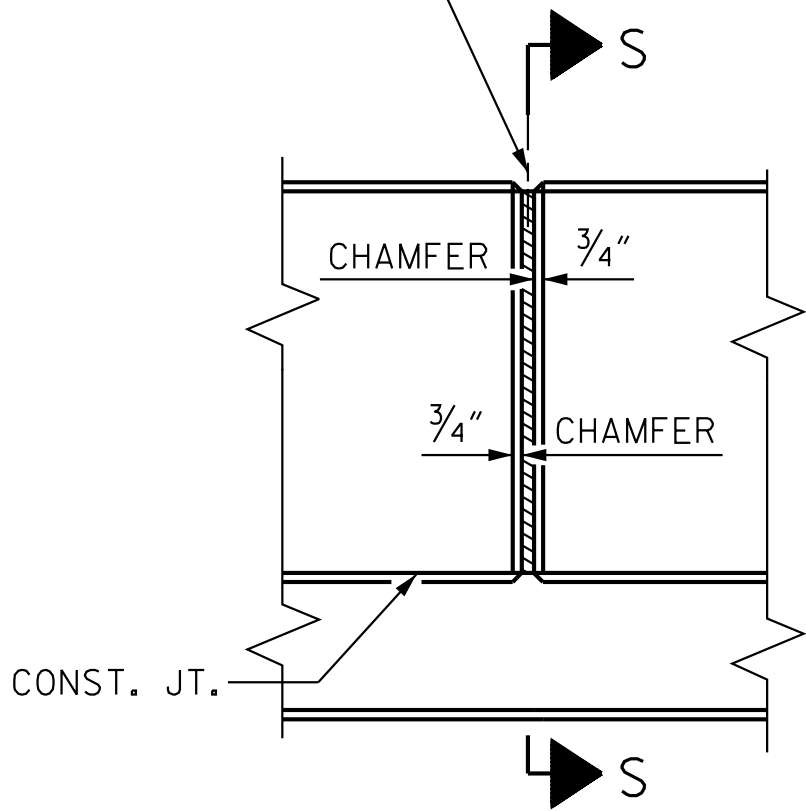


PLAN OF PARAPET

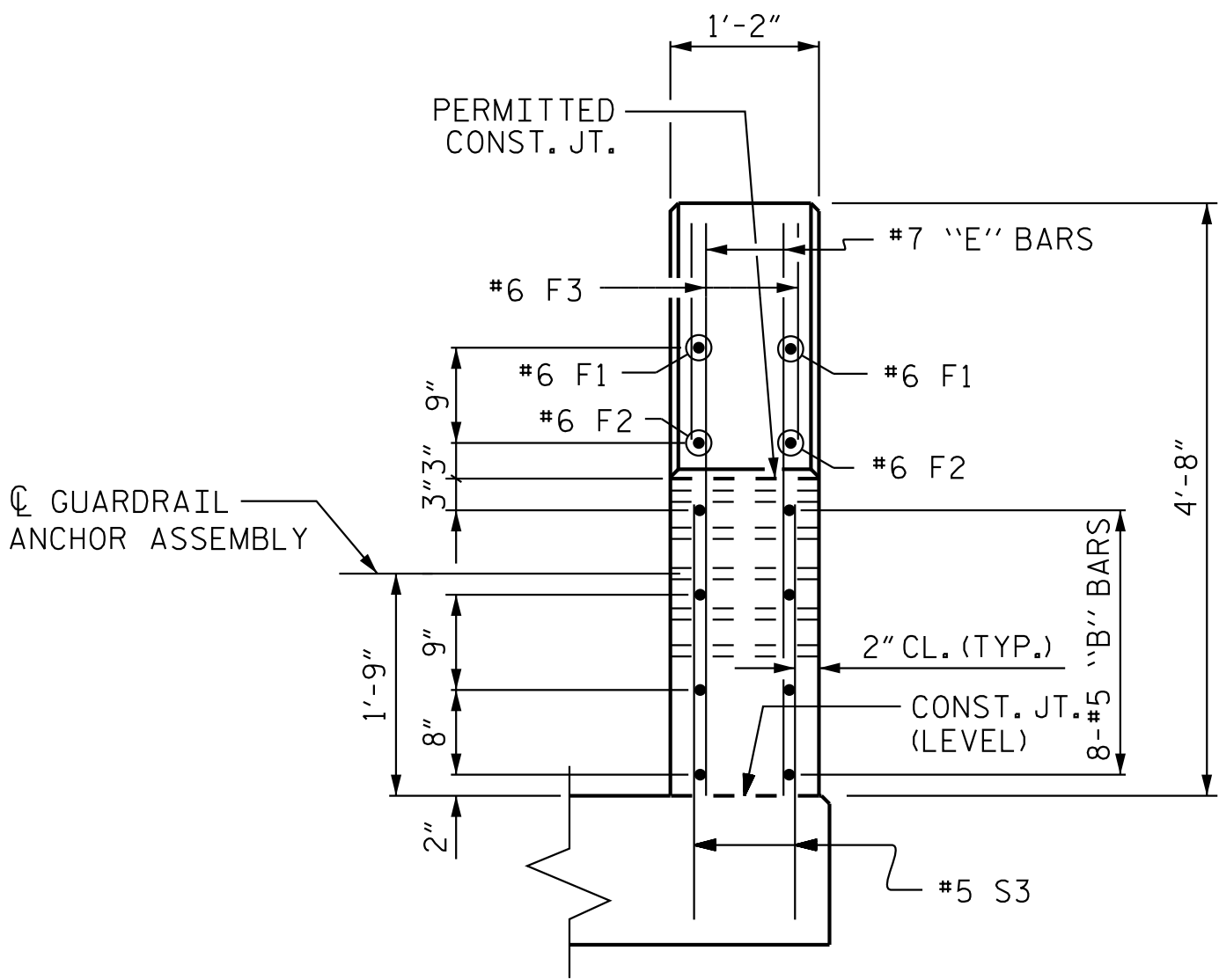


PLAN OF END POST

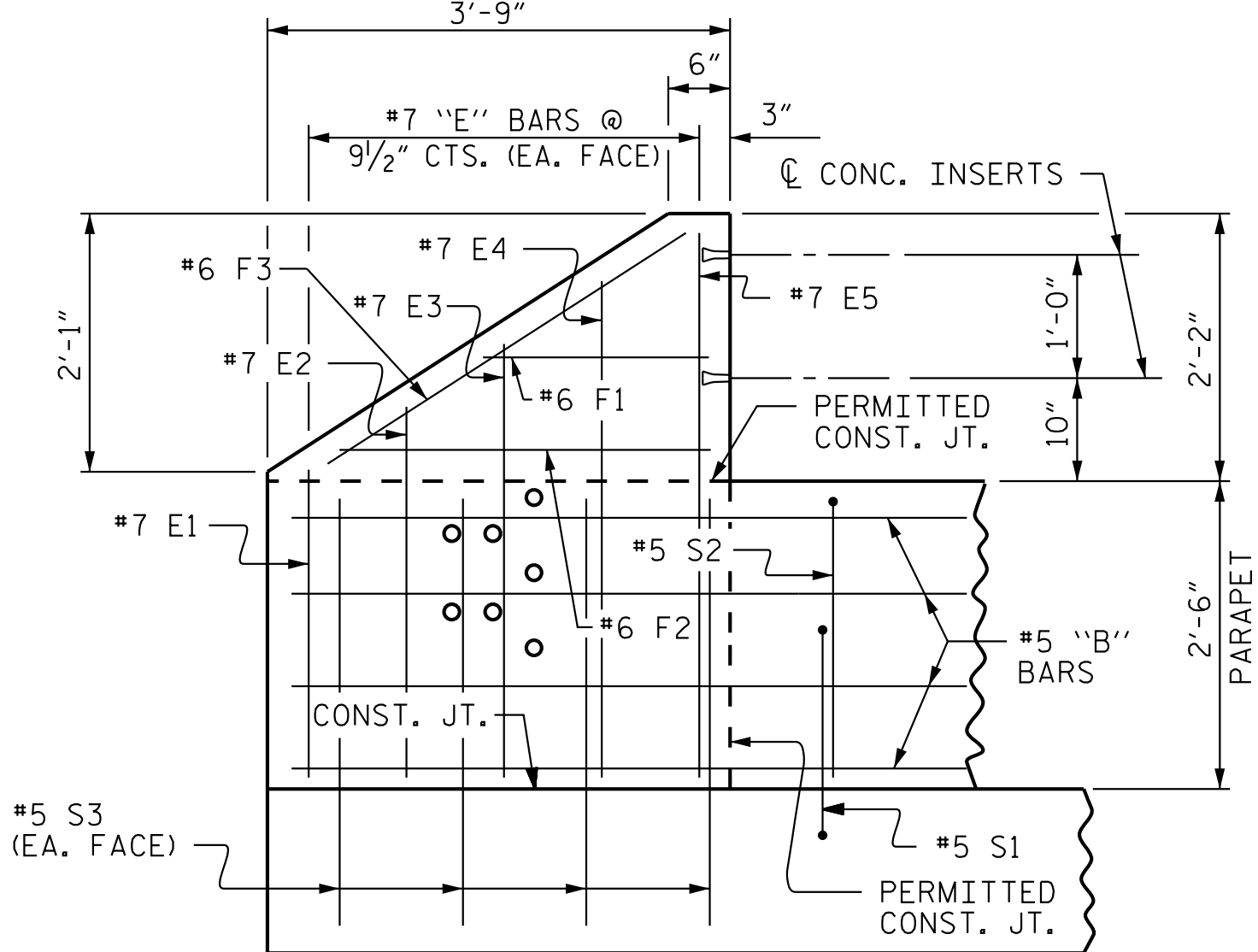
1/2" EXP. JT. MAT'L HELD IN PLACE WITH GALVANIZED NAILS. (NOTE: OMIT EXP. JT. MAT'L. WHEN SLIP FORM IS USED.)



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



END VIEW

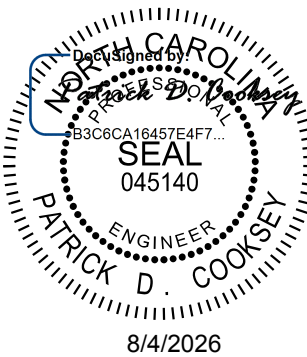


ELEVATION

ELEVATION AT EXPANSION JOINTS

PROJECT NO. I-5715
MECKLENBURG COUNTY
STATION: 23+39.87 -Y1-

SHEET 2 OF 4



Kimley»Horn

421 Fayetteville Street, Suite 600
Raleigh, NC 27601-1772
Phone (919) 677-2000 NC LICENSE # F-0102

This document, together with the concepts and designs presented herein, as an integral part of the project, is prepared only for the specific project and shall not be used for any other project without the written authorization and signature of Kimley-Horn and Associates, Inc. shall be without liability to Kimley-Horn and Associates, Inc.

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUPERSTRUCTURE
EXTERIOR CONCRETE
PARAPET DETAILS

REVISIONS						SHEET NO. S2-24
NO.	BY:	DATE:	NO.	BY:	DATE:	
1			3			TOTAL SHEETS 40
2			4			

STR. #2

DRAWN BY: R. C. GIESEN DATE: 04/2026
CHECKED BY: E. W. SPRABERRY DATE: 04/2026
DESIGN ENGINEER OF RECORD: A. L. PHILLIPS DATE: 04/2026

CONCRETE PARAPET DETAILS AT END BENTS

(RIGHT PARAPET SHOWN, LEFT SIDE SIMILAR)

DOCUMENT NOT CONSIDERED FINAL
UNLESS ALL SIGNATURES COMPLETED

K:\B01_Structures\Bridges\N\01036524 - I-5715 Structure Design\Cad\Drawn\Site *I\Structure 2\Final\02-049-15715-SWL2MR7-591416-025.dgn 7/31/2026

DRAWN BY: R. C. GIESEN

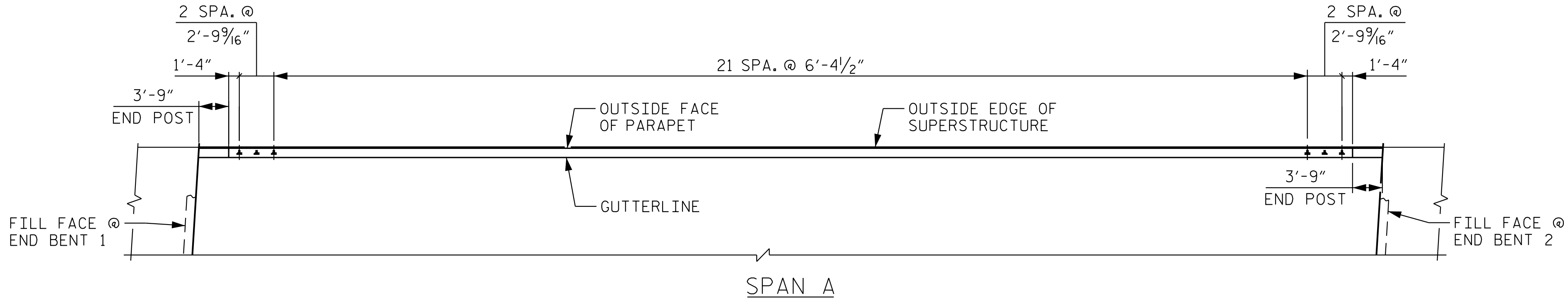
CHECKED BY: E. W. SPRABERRY

DESIGN ENGINEER OF RECORD: A. L. PHILLIPS

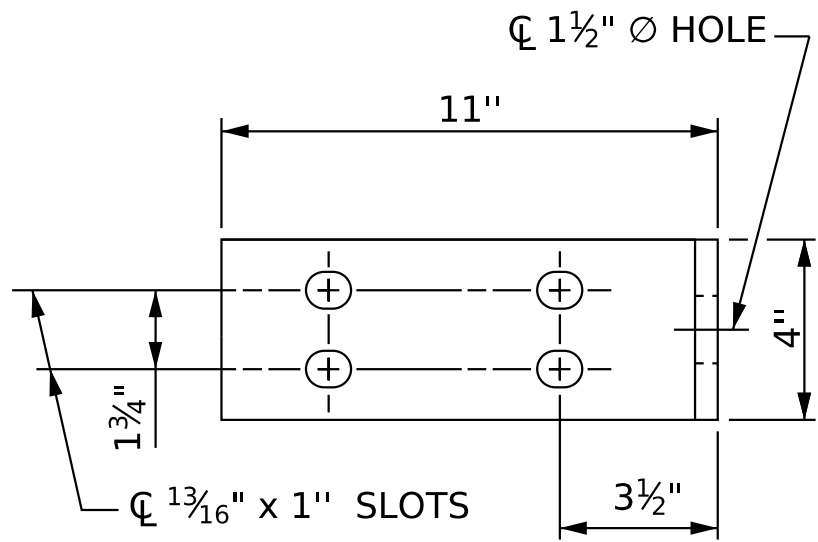
DATE: 04/2026

DATE: 04/2026

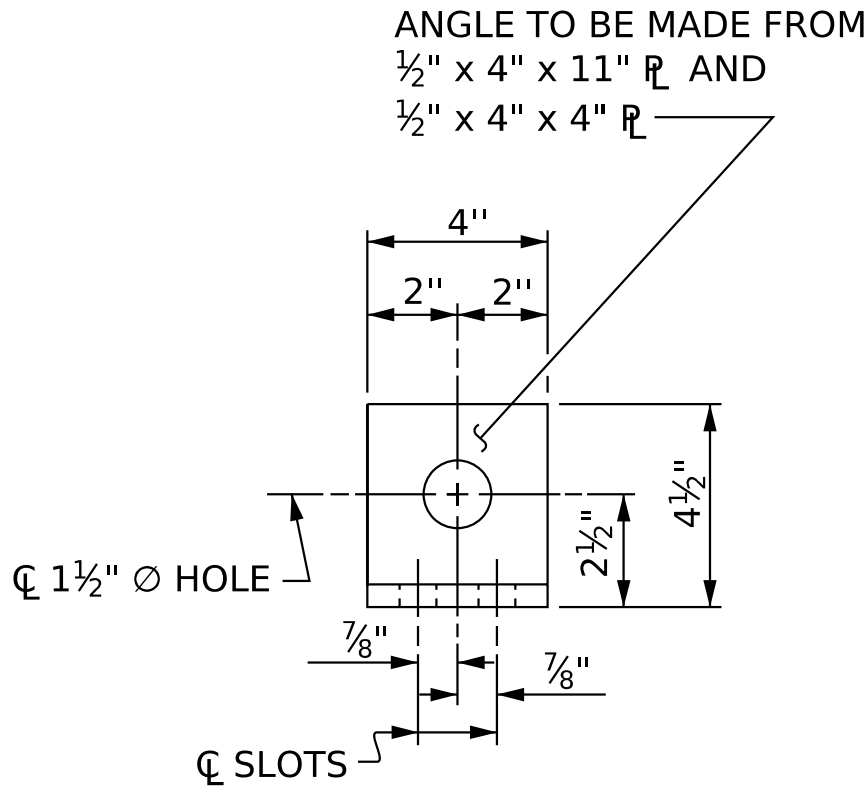
DATE: 04/2026



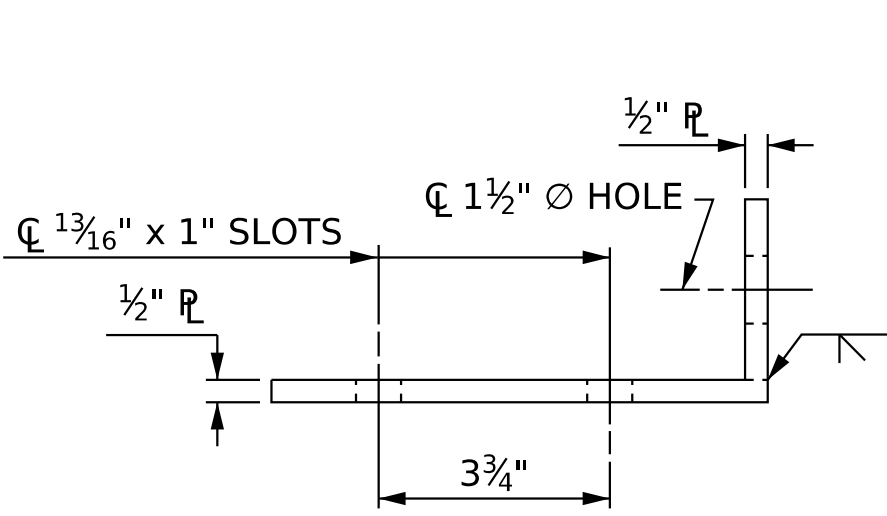
PLAN OF RAIL POST SPACINGS
(LEFT SIDE SHOWN, RIGHT SIDE SIMILAR)



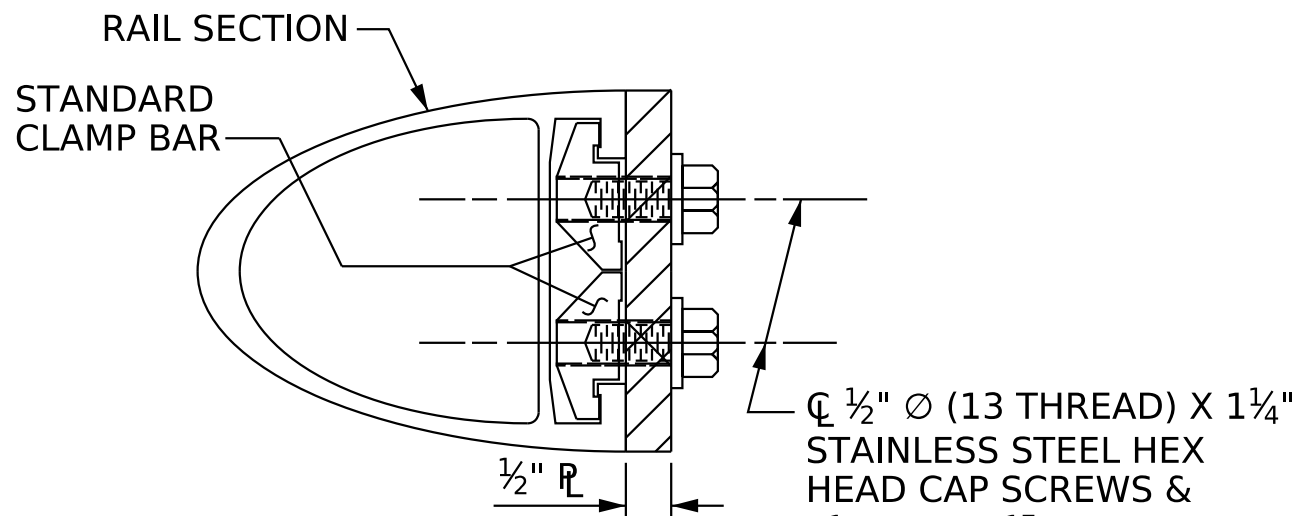
ELEVATION



END VIEW



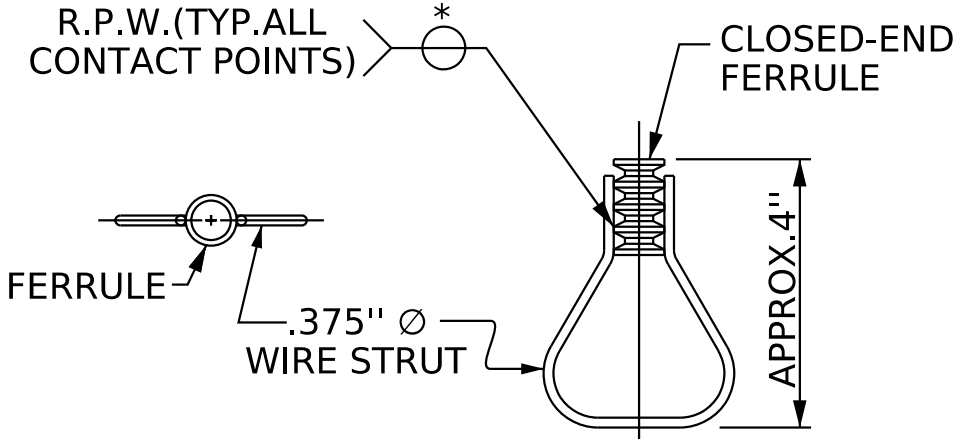
TOP VIEW



FIXED

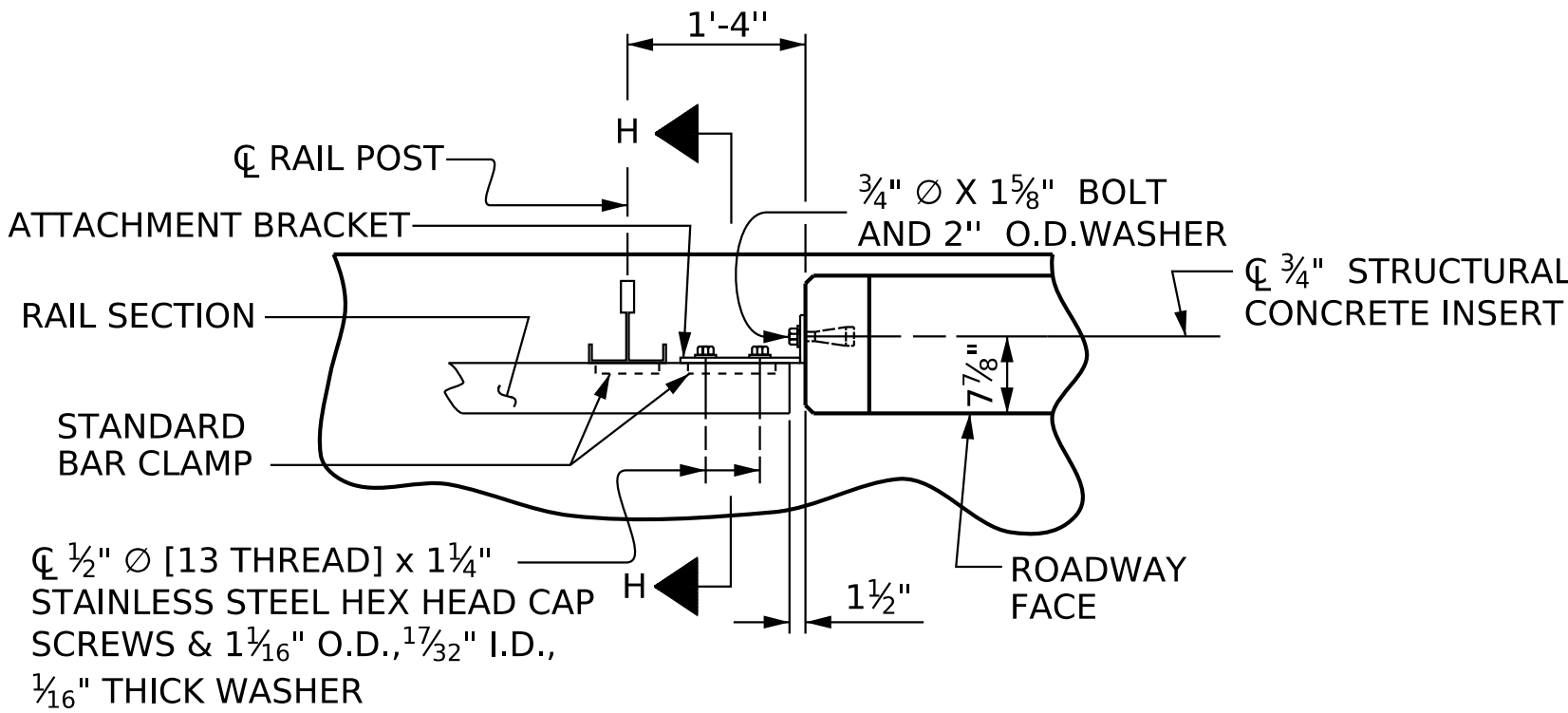
SECTION H-H

DETAILS FOR ATTACHING METAL RAIL TO END POST



PLAN
ELEVATION
STRUCTURAL CONCRETE
INSERT

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



PLAN - RAIL AND 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" Ø 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" Ø 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 ⅜" Ø 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:

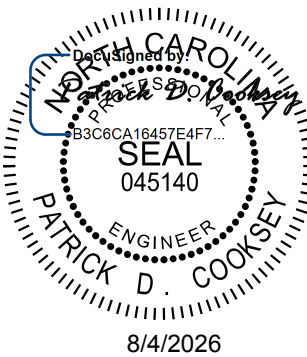
- A. ½" PLATES SHALL CONFORM TO ASTM A36 GRADE 36 AND SHALL BE GALVANIZED AFTER FABRICATION.
- B. ¾" STRUCTURAL CONCRETE INSERT SHALL HAVE A WORKING LOAD SHEAR CAPACITY OF 4800 LBS. THE FERRULES SHALL ENGAGE A ¾" Ø x 1⅝" BOLT WITH 2" O.D. WASHER IN PLACE. THE ¾" Ø x 1⅝" BOLT SHALL HAVE N. C. THREADS.
- 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" Ø 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 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" Ø x 1⅝" BOLT WITH WASHER SHALL BE REPLACED WITH A ¾" Ø x 6½" BOLT AND 2" O.D. WASHER. ALL SPECIFICATIONS THAT APPLY TO THE ¾" Ø x 1⅝" BOLT SHALL APPLY TO THE ¾" Ø x 6½" BOLT. FIELD TESTING OF THE ADHESIVE BONDING SYSTEM IS NOT REQUIRED.



Kimley»Horn

421 Fayetteville Street, Suite 600
Raleigh, NC 27601-1772
Phone (919) 677-2000 NC LICENSE # F-0102

This document, together with the concepts and designs presented herein, as an integral part thereof, is prepared only for the specific project and shall have no other use or application without the written authorization and signature of Kimley-Horn and Associates, Inc. shall be without liability to Kimley-Horn and Associates, Inc.

Copyright Kimley-Horn and Associates, Inc., 2026

DOCUMENT NOT CONSIDERED FINAL
UNLESS ALL SIGNATURES COMPLETED

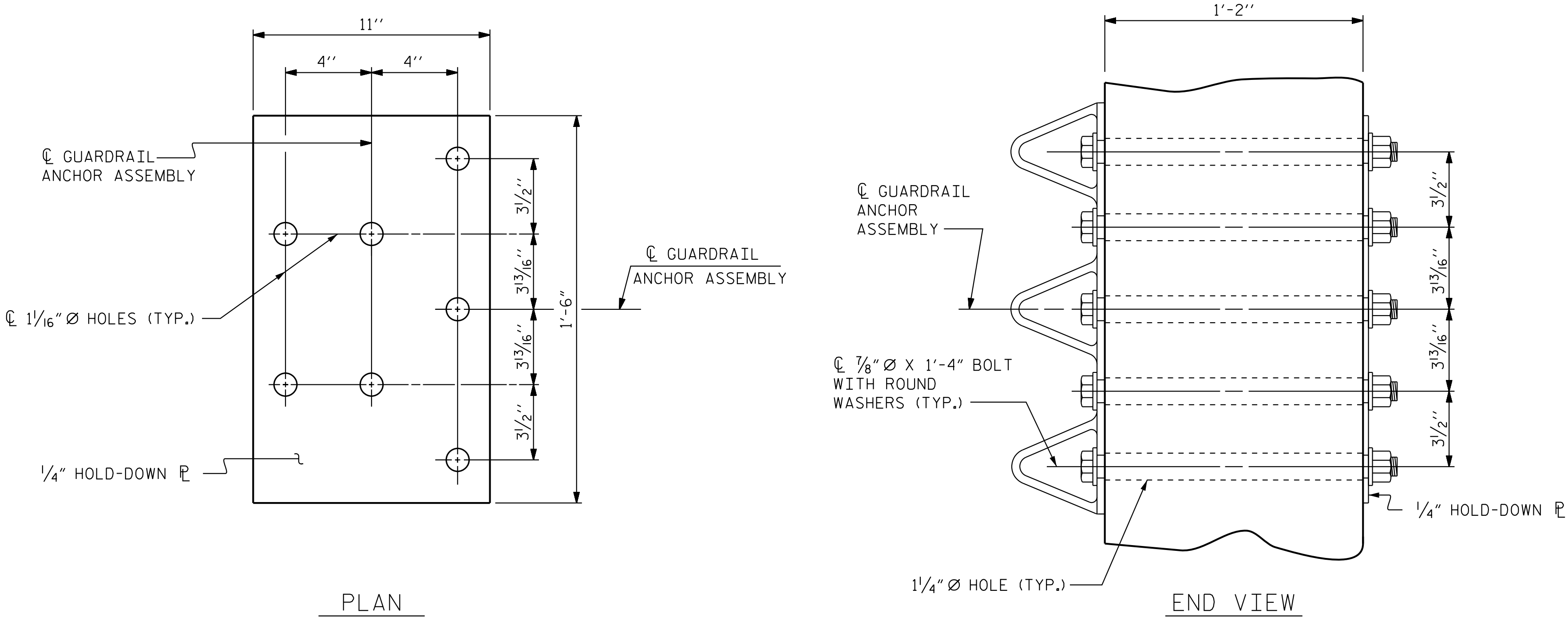
PROJECT NO. I-5715
MECKLENBURG COUNTY
STATION: 23+39.87 -Y1-

SHEET 3 OF 4

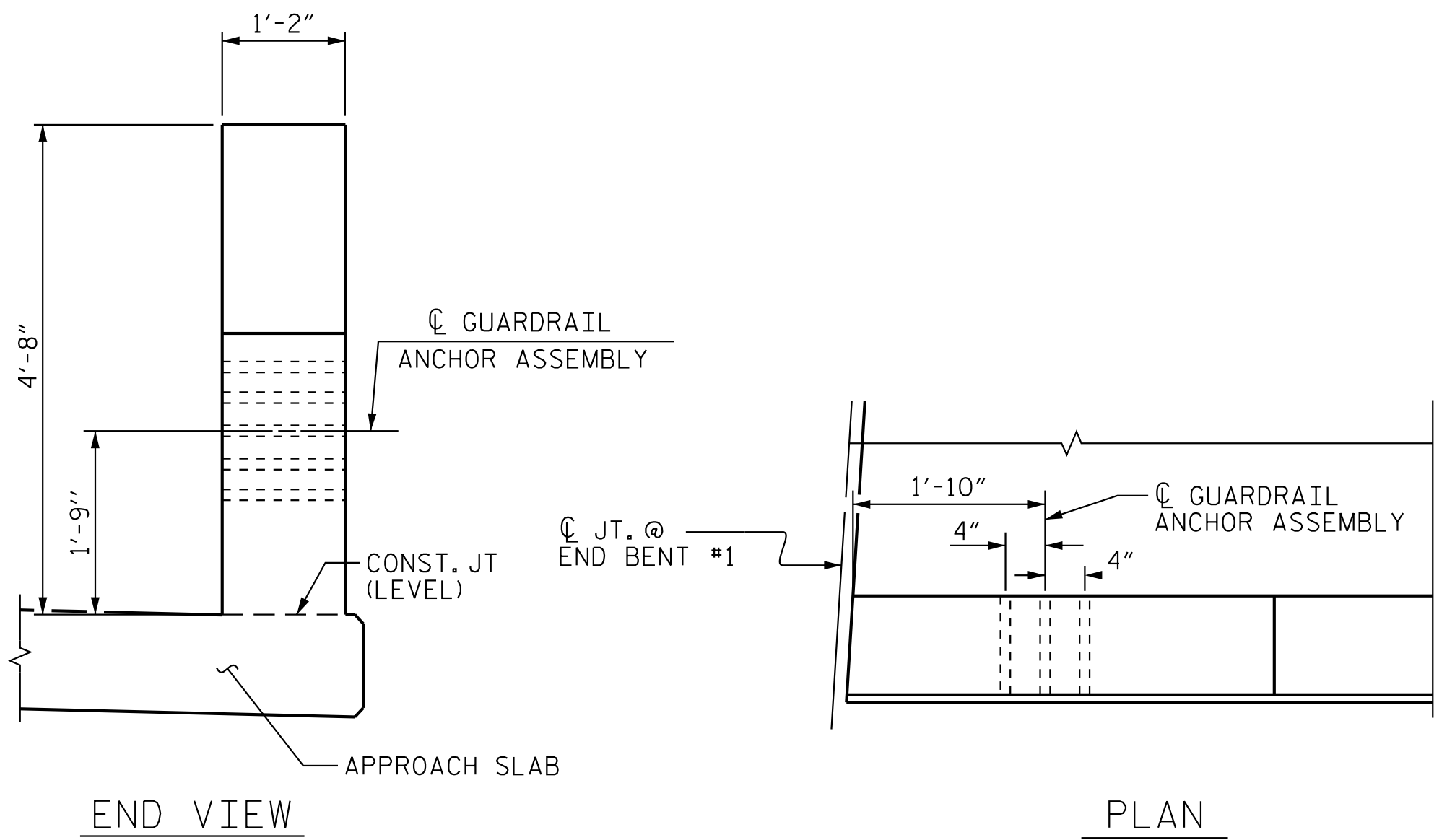
STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION RALEIGH					
STANDARD RAIL POST SPACING AND END OF RAIL DETAILS					
REVISIONS					SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:
1			3		
2			4		
					TOTAL SHEETS
					40

STR. #2 STD. NO. BMR2

7/31/2026 K:\RD1_Structures\Bridges\NC\01036524 - I-5715 Structure Design\Coord\gn\Site *1\Structure 2\Final\02_051_I5715_SML_CRI_591416_026.dgn

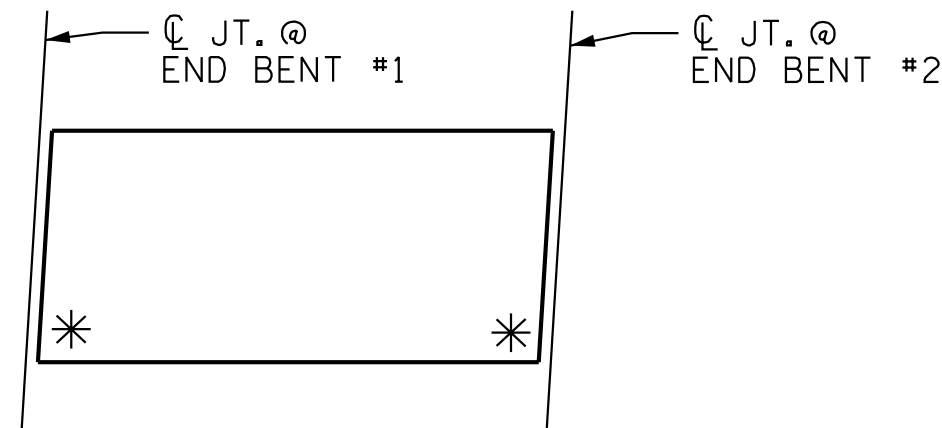


GUARDRAIL ANCHOR ASSEMBLY DETAILS



LOCATION OF GUARDRAIL ANCHOR AT END POST

END BENT 1 SHONW, END BENT 2 SIMILAR



SKETCH SHOWING POINTS OF ATTACHMENT

* LOCATION OF GUARDRAIL ATTACHMENT

NOTES

THE GUARDRAIL ANCHOR ASSEMBLY SHALL CONSIST OF A 1/4" HOLD DOWN PLATE AND 7 - 3/8" Ø BOLTS WITH NUTS AND WASHERS.

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

BOLTS SHALL CONFORM TO THE REQUIREMENTS OF ASTM A307 AND NUTS SHALL CONFORM TO THE REQUIREMENTS OF AASHTO M291. BOLTS, NUTS AND WASHERS SHALL BE GALVANIZED. AT THE CONTRACTOR'S OPTION, STAINLESS STEEL BOLTS, NUTS AND WASHERS MAY BE USED AS AN ALTERNATE FOR THE 3/8" Ø GALVANIZED BOLTS, NUTS AND WASHERS. THEY SHALL CONFORM TO OR EXCEED THE MECHANICAL REQUIREMENTS OF ASTM A307. THE USE OF THIS ALTERNATE SHALL BE APPROVED BY THE ENGINEER.

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

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

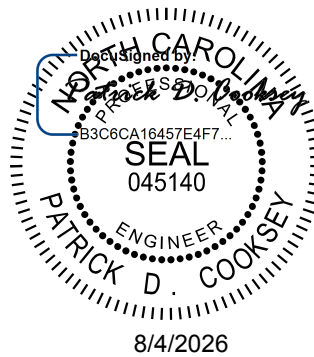
THE COST OF THE GUARDRAIL ANCHOR ASSEMBLIES WITH BOLTS, NUTS AND WASHERS COMPLETE IN PLACE, SHALL BE INCLUDED IN THE VARIOUS PAY ITEMS.

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

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

PROJECT NO. I-5715
MECKLENBURG COUNTY
STATION: 23+39.87 -Y1-

SHEET 4 OF 4



Kimley»Horn

421 Fayetteville Street, Suite 600
Raleigh, NC 27601-1772
Phone (919) 677-2000 NC LICENSE # F-0102

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

This document, together with the concepts and designs presented herein, is an integral part of the contract. It is to be used only for the specific project and shall not be used for any other purpose without the written authorization and signature of Kimley-Horn and Associates, Inc. shall be without liability to Kimley-Horn and Associates, Inc.

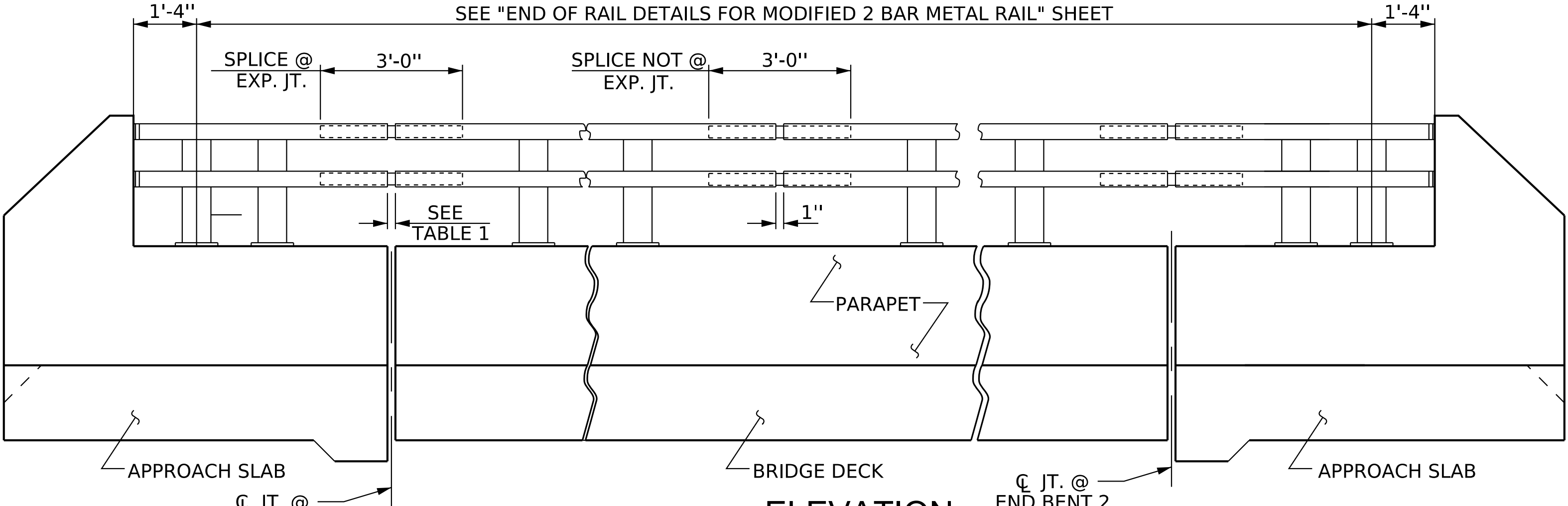
STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH
STANDARD
GUARDRAIL ANCHORAGE
DETAILS
FOR METAL RAILS

REVISIONS						SHEET NO. S2-26
NO.	BY:	DATE:	NO.	BY:	DATE:	
1			3			TOTAL SHEETS 40
2			4			

STR. #2 STD. NO. GRA3

DRAWN BY: R. C. GIESEN DATE: 04/2026
CHECKED BY: E. W. SPRABERRY DATE: 04/2026
DESIGN ENGINEER OF RECORD: A. L. PHILLIPS DATE: 04/2026

K:\B01_Structures\Bridges\NC\01036524 - I-5715 Structure Design\Coord\gn\Site *1\Structure 2\Final\02_053_15715_SML2\MS_591416_027.dgn 7/31/2026

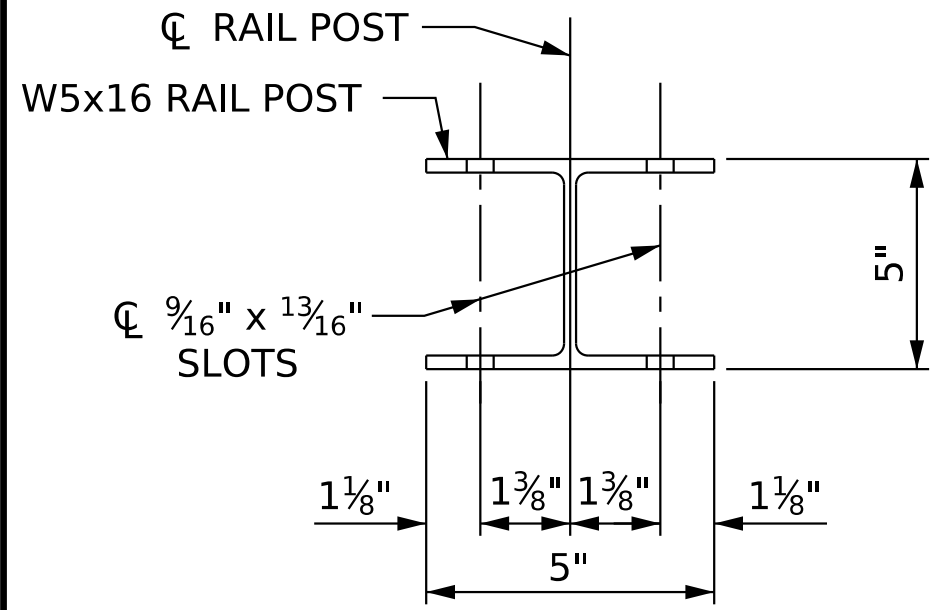


ELEVATION

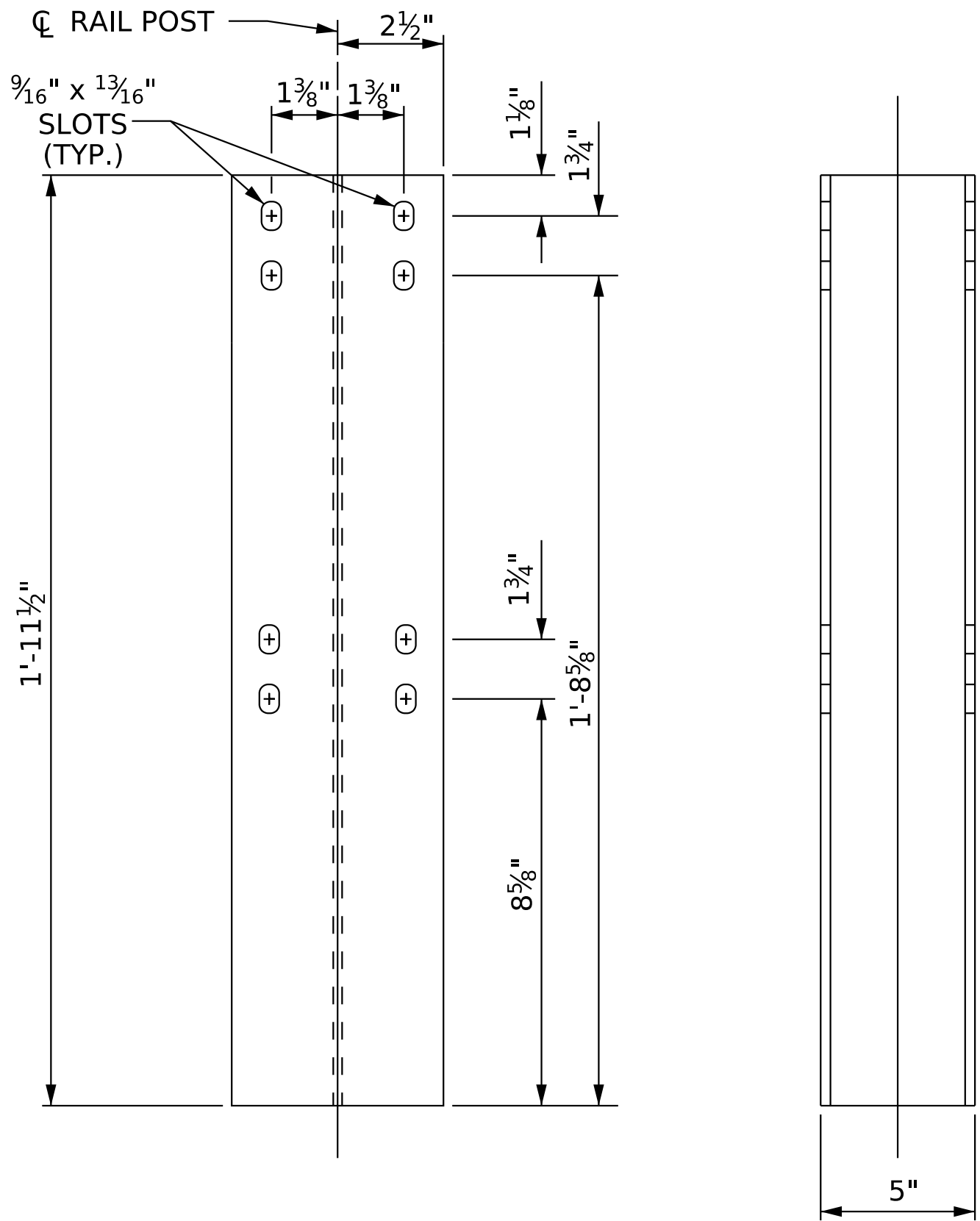
NOTE: FOR ATTACHMENT OF METAL RAIL TO END POST, SEE "END OF RAIL DETAILS FOR MODIFIED 2 BAR METAL RAIL" SHEET.

TABLE 1

EXP. JT. @	RAIL OPENING
END BENT 1	1 1/4"
END BENT 2	1 1/4"



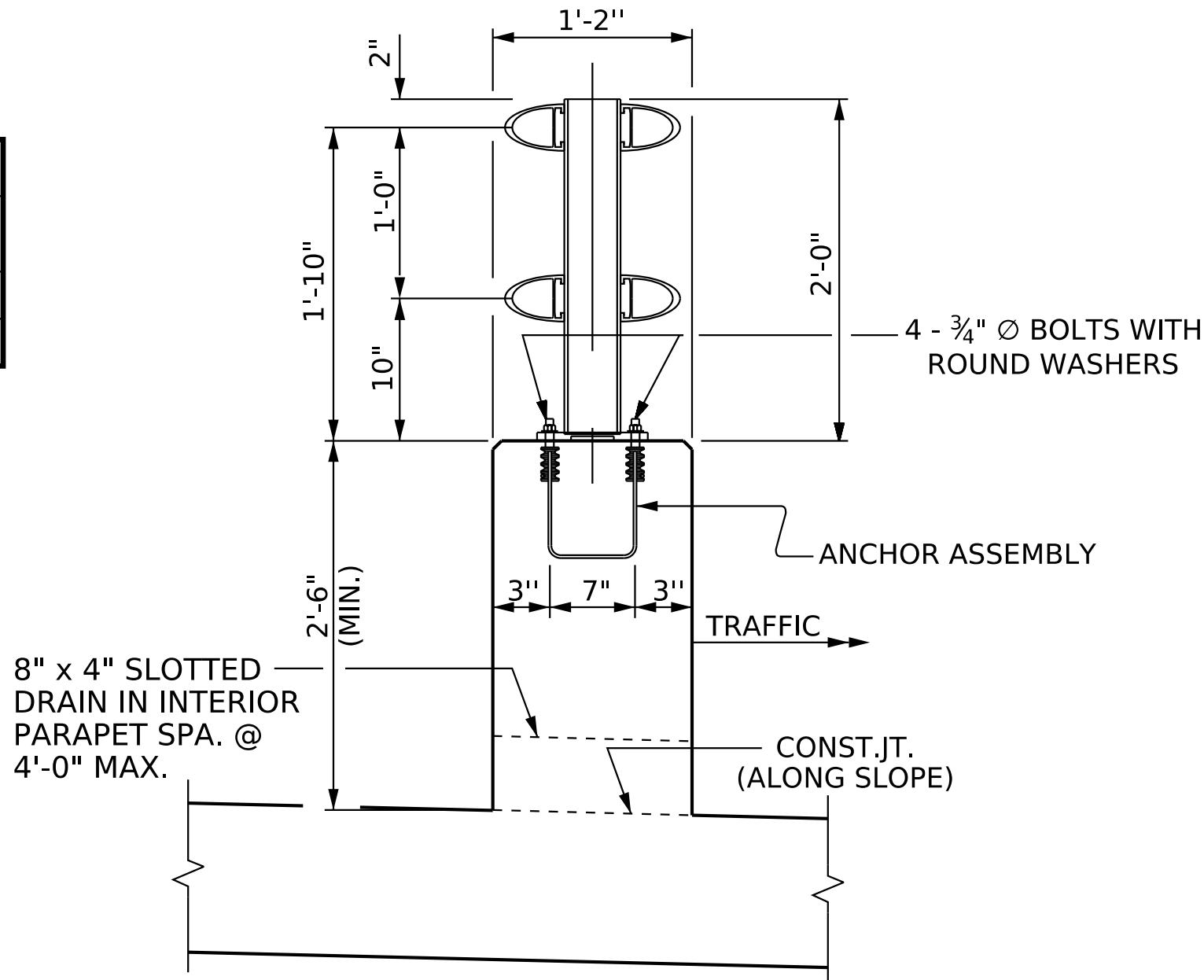
PLAN



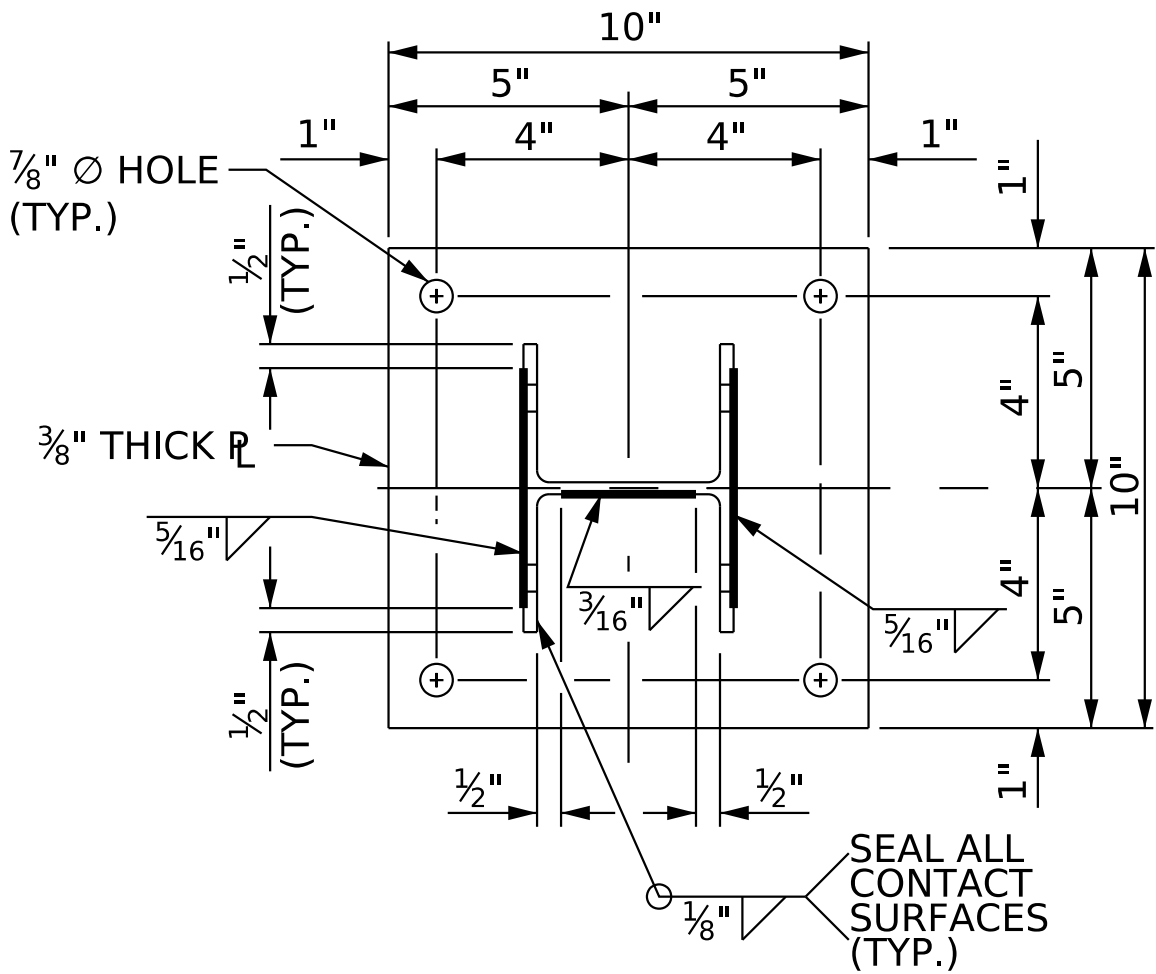
FRONT ELEVATION

SIDE ELEVATION

DETAILS OF POST



SECTION THRU PARAPET AND RAIL



PLAN

POST BASE DETAILS

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.

UNLESS OTHERWISE REQUIRED IN THE CONTRACT DOCUMENTS, THE CONTRACTOR HAS THE OPTION TO USE AN ALTERNATE TO THE 2 BAR METAL RAIL. THE ALTERNATE RAIL SHALL MEET THE REQUIREMENTS OF THE AASHTO LRFD BRIDGE DESIGN SPECIFICATIONS AND MUST BE LISTED ON THE DEPARTMENT'S APPROVED PRODUCTS LIST (APL) UNDER "2 BAR METAL RAIL ALTERNATE". ADJUSTMENTS TO THE CONCRETE PARAPET WILL NOT BE ALLOWED.

ALUMINUM RAILS

MATERIAL FOR POSTS, BASES AND RAILS, EXPANSION BARS AND CLAMP BARS SHALL BE ASTM B-221 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.

CAP SCREWS SHALL BE ASTM F593 ALLOY 305 STAINLESS STEEL. WASHERS SHALL MEET THE REQUIREMENTS OF ASTM F844 EXCEPT THEY SHALL BE MADE FROM ALLOY 304 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 KINKING TO THE REQUIRED CURVATURE IN A UNIFORM MANNER ACCEPTABLE TO THE ENGINEER.

TO INSURE 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, BUT REMAINS VISIBLE AFTER RAIL PLACEMENT.

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.

GROOVED CONTRACTION JOINTS, 1/2" 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.

FOR MODIFIED TWO BAR METAL RAIL, SEE SPECIAL PROVISIONS.

PAY LENGTH = 197.9 * LIN. FT.

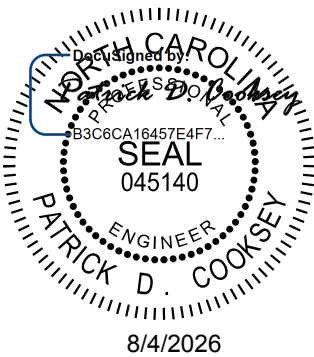
* INCLUDES MODIFIED 2 BAR METAL RAIL ON APPROACH SLABS

PROJECT NO. I-5715

MECKLENBURG COUNTY

STATION: 23+39.87 -Y1-

SHEET 1 OF 2



Kimley»Horn

421 Fayetteville Street, Suite 600
Raleigh, NC 27601-1772
Phone (919) 677-2000 NC LICENSE # F-0102

This document, together with the concepts and designs presented herein, is an integral part of the project. It is intended for the specific project and shall not be used for any other project without the written authorization and signature of Kimley-Horn and Associates, Inc. shall be without liability to Kimley-Horn and Associates, Inc.

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUPERSTRUCTURE
MODIFIED 2 BAR
METAL RAIL
(INTERIOR)

REVISIONS						SHEET NO. S2-27
NO.	BY:	DATE:	NO.	BY:	DATE:	
1			3			TOTAL SHEETS 40
2			4			

STR. #2

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



(34 ASSEMBLIES REQUIRED)



NOTE :

SHIMS MAY BE CUT ALONG PERMITTED CUTLINE OR
SLOTTED TO EDGE OF PLATE TO FACILITATE PLACEMENT.



421 Fayetteville Street, Suite 600
Raleigh, NC 27601-1772 NC
Phone (919) 677-2000

This document, together with the concepts and designs presented herein, as an instrument of services, is intended only for the specific purpose and client for which it was prepared. Reuse of any part of this document without the express written authorization and adoption by Kimley-Horn and Associates, Inc. shall be without liability to Kimley-Horn and Associates, Inc.

Copyright Kimley-Horn and Associates, Inc., 2026

DRAWN BY: <u>R. C. GIESEN</u>	DATE: <u>04/2026</u>
CHECKED BY: <u>E. W. SPRABERRY</u>	DATE: <u>04/2026</u>
DESIGN ENGINEER OF RECORD: <u>A. L. PHILLIPS</u>	DATE: <u>04/2026</u>

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

PROJECT NO. I-5715
MECKLENBURG COUNTY
 STATION: 23+39.87 -Y1-

SHEET 2 OF 2

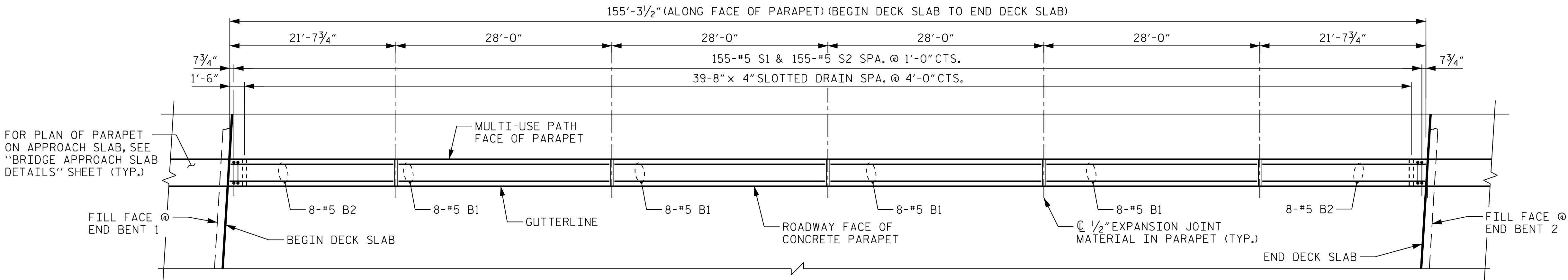
STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUPERSTRUCTURE
MODIFIED 2 BAR
METAL RAIL
(INTERIOR)

STR. #2

STD. NO. BMR4

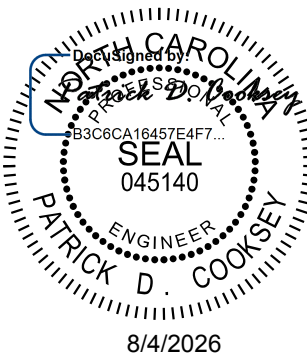
NOTES:
8" x 4" SLOTTED DRAIN HOLES MAY BE SHIFTED
SLIGHTLY TO AVOID CONFLICTS WITH #5 S1 & #5 S2.



INTERIOR CONCRETE PARAPET LAYOUT

PROJECT NO. I-5715
MECKLENBURG COUNTY
STATION: 23+39.87 -Y1-

SHEET 1 OF 3



Kimley»Horn
421 Fayetteville Street, Suite 600
Raleigh, NC 27601-1772
Phone (919) 677-2000 NC LICENSE # F-0102

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

REVISIONS						SHEET NO. S2-29
NO.	BY:	DATE:	NO.	BY:	DATE:	
1			3			TOTAL SHEETS 40
2			4			

STR. #2

7/31/2026 K:\RDT_Structures\Bridges\NC\01036524 - I-5715 Structure Design\Cad\Drawn\Site *1\Structure 2\Final\02.057.15715.SWL.CPL.591416.029.dgn

DRAWN BY: R. C. GIESEN DATE: 04/2026
CHECKED BY: E. W. SPRABERRY DATE: 04/2026
DESIGN ENGINEER OF RECORD: A. L. PHILLIPS DATE: 04/2026

NOTES

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

ALL REINFORCING STEEL IN PARAPET SHALL BE EPOXY COATED.

THE #5 S1 AND #5 S2 BARS MAY BE SHIFTED SLIGHTLY IN ORDER TO MAINTAIN A 2" MINIMUM CLEARANCE TO THE 1/2" EXPANSION JOINT MATERIAL IN PARAPET.

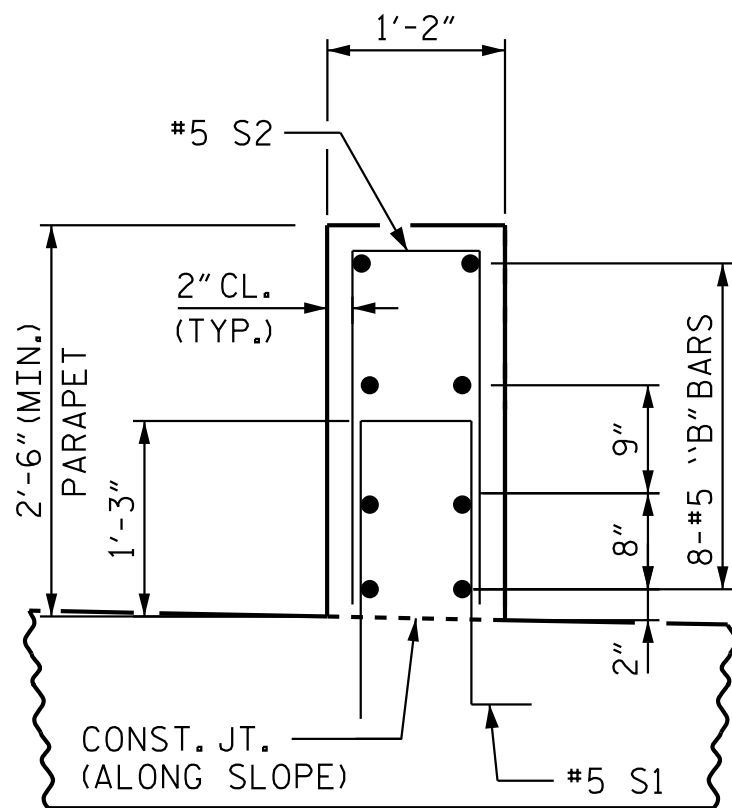
FOR CONCRETE PARAPET ON APPROACH SLABS, SEE "APPROACH SLAB
DETAILS" SHEET.

FOR GUARDRAIL ANCHORAGE ASSEMBLY, SEE "GUARDRAIL ANCHORAGE
DETAILS FOR INTERIOR PARAPET METAL RAILS ON APPROACH SLAB"
SHEET.

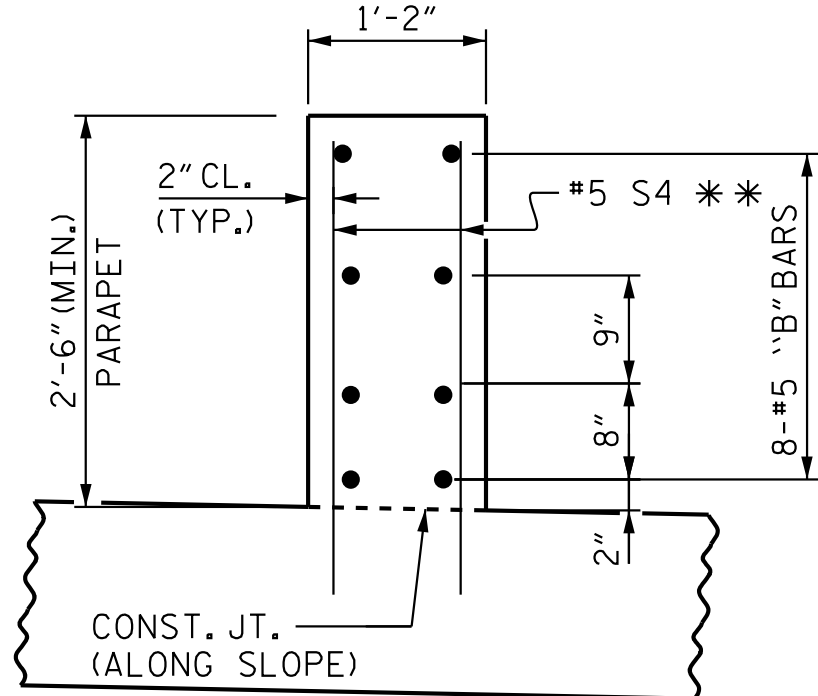
GROOVED CONTRACTION JOINTS, 1/2" IN DEPTH, SHALL BE TOOLED IN ALL EXPOSED FACES OF THE PARAPET RAIL AND IN ACCORDANCE WITH ARTICLE 825-10(B) OF THE STANDARD SPECIFICATIONS. THE CONTRACTION JOINT SHALL BE LOCATED AT EACH THIRD POINT BETWEEN BARRIER RAIL EXPANSION JOINTS. ONLY ONE CONTRACTION JOINT IS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

*** THE CONTRACTOR MAY USE ADHESIVELY ANCHORED #5 S4 BARS. LEVEL 2 FIELD TESTING IS REQUIRED AND THE YIELD LOAD OF THE #5 S4 BARS IS 18.6 KIPS. FOR ADHESIVELY ANCHORED BOLTS OR DOWELS, SEE STANDARD SPECIFICATIONS.

INTERIOR CONCRETE PARAPET SHALL BE PAID FOR BY LINEAR FOOT
OF 1'-2" X 2'-6" CONCRETE PARAPET.

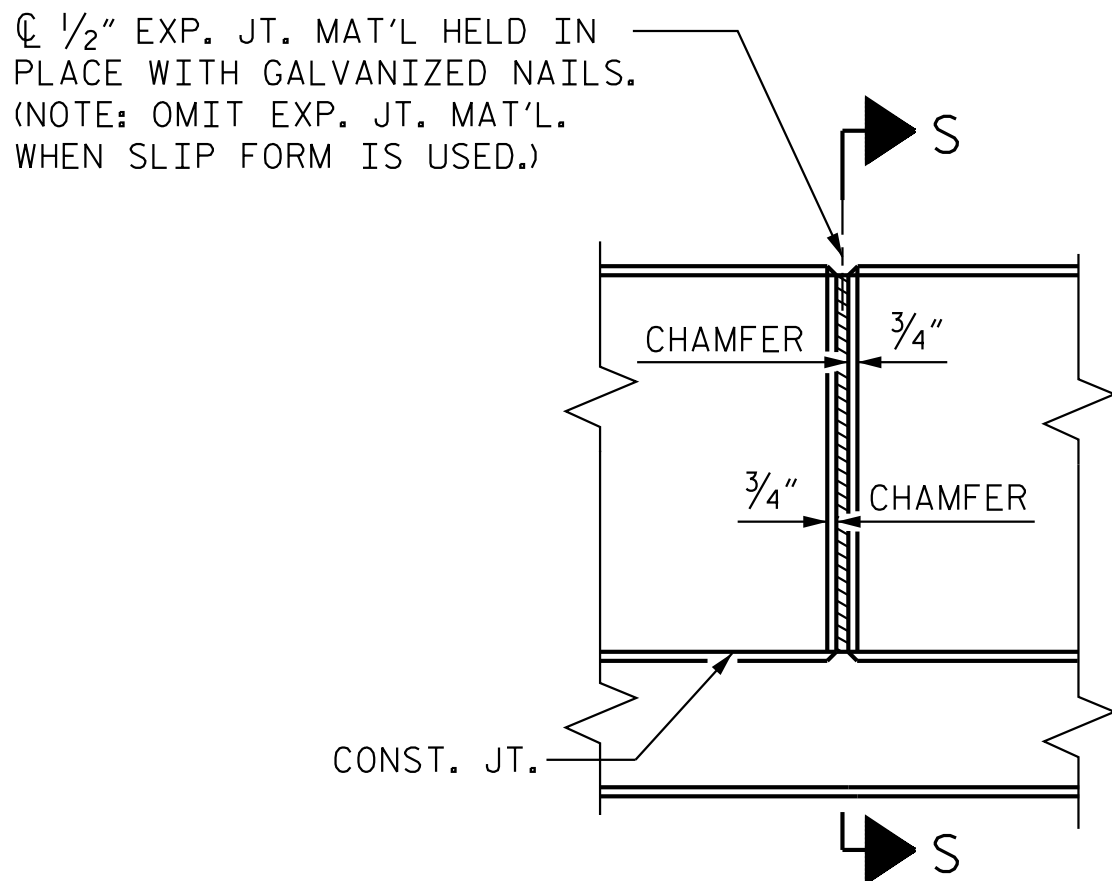


SECTION THRU PARAPET

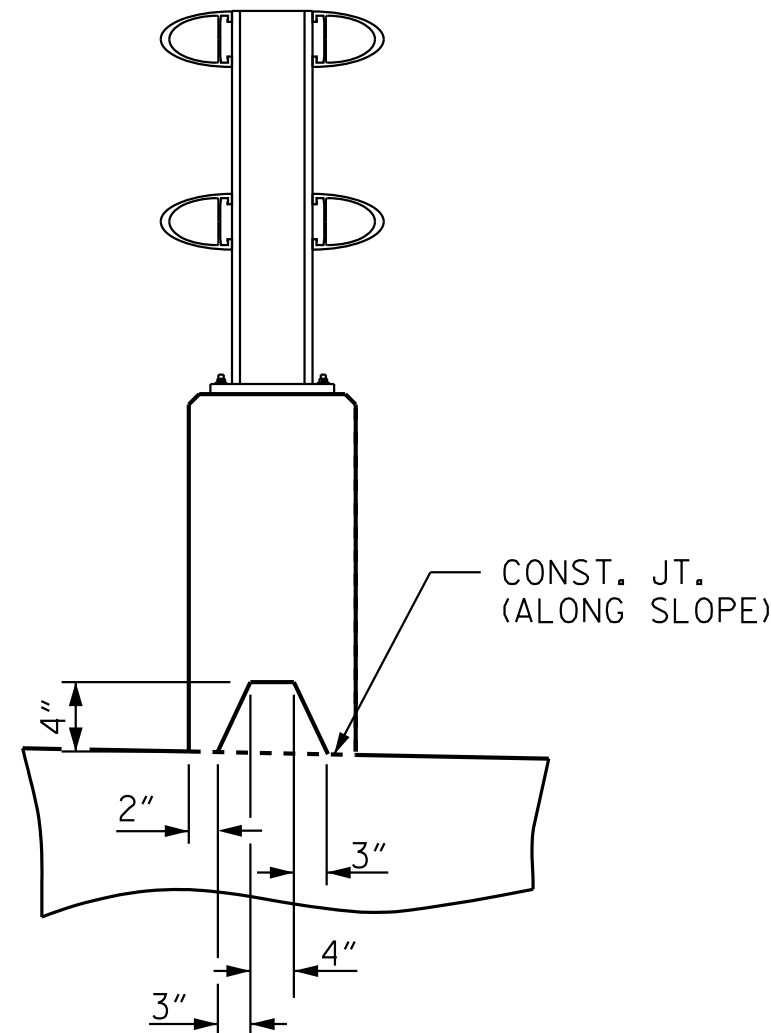


OPTIONAL SECTION
THRU PARAPET

*** FOR OPTIONAL ADHESIVE ANCHORING (NOT INCLUDED IN TOTAL QUANTITY)



ELEVATION AT EXPANSION JOINTS

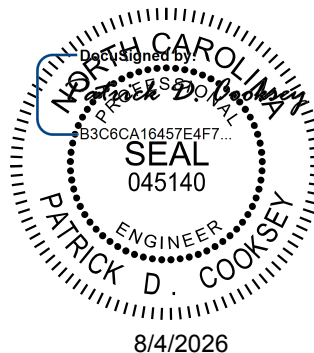


SECTION S-S
AT DAM IN OPEN JOINT
(THIS IS TO BE USED ONLY
WHEN SLIP FORM IS USED)

ELEVATION AT EXPANSION JOINTS

PROJECT NO. I-5715
MECKLENBURG COUNTY
 STATION: 23+39.87 -Y1-

SHEET 2 OF 3



Kimley»»Horn

421 Fayetteville Street, Suite 600
Raleigh, NC 27601-1772
Phone (919) 677-2000

This document, together with the concepts and designs presented herein, as an instrument of services, is intended only for the specific purpose and client for which it was prepared. Reuse of and improper reliance of this document without written authorization and adoption by Kimley-Horn and Associates, Inc. shall be without liability to Kimley-Horn and Associates, Inc.

Copyright Kimley-Horn and Associates, Inc., 2026

Copyright Kimley-Horn and Associates, Inc., 2026

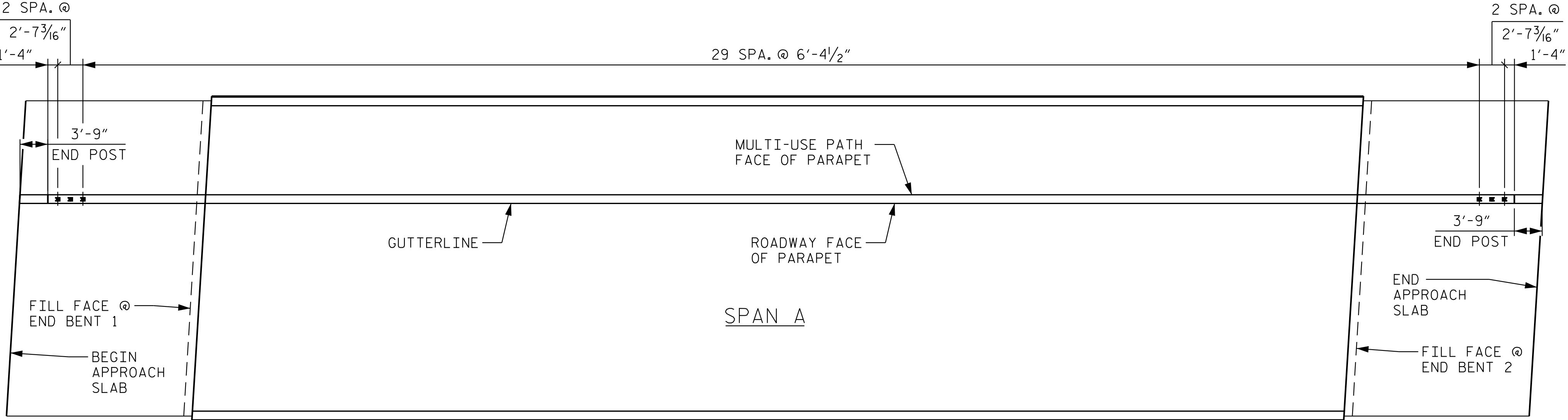
STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUPERSTRUCTURE
INTERIOR CONCRETE
PARAPET DETAILS

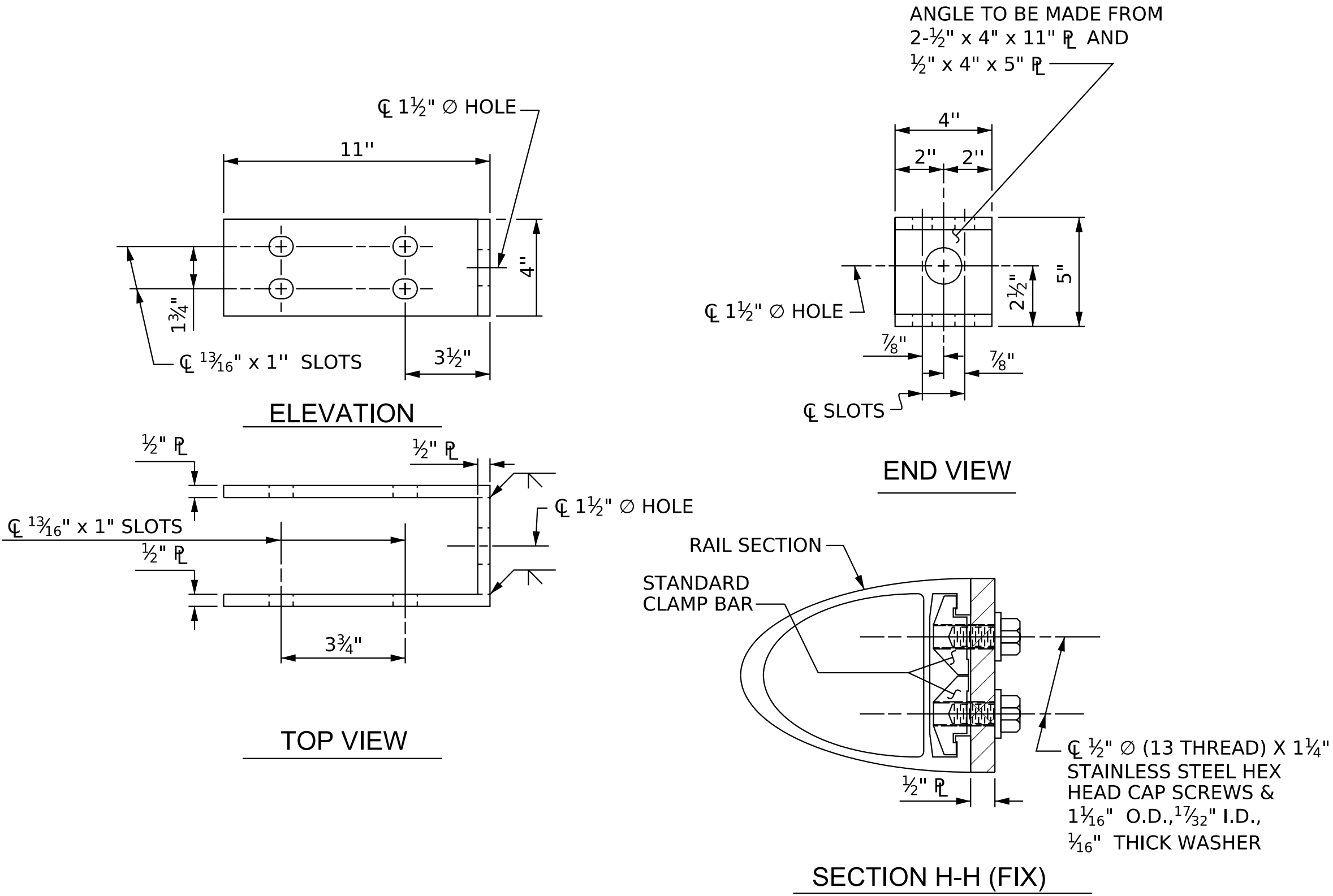
REVISIONS						SHEET NO. S2-30
NO.	BY:	DATE:	NO.	BY:	DATE:	
1			3			TOTAL SHEETS 40
2			4			

STR. #2

7/31/2026 K:\B01_Structures\Bridges\N\01036524 - I-5715 Structure Design\Coord\gn\Site *1\Structure 2\Final\402.061.15715.SMU.2WR4.591416.031.dgn



PLAN OF RAIL POST SPACINGS



FIXED

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" Ø 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" Ø 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 ⅞" Ø 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" Ø x 1⅝" BOLT WITH 2" O.D. WASHER IN PLACE. THE ¾" Ø x 1⅝" BOLT SHALL HAVE N. C. THREADS.
- C.

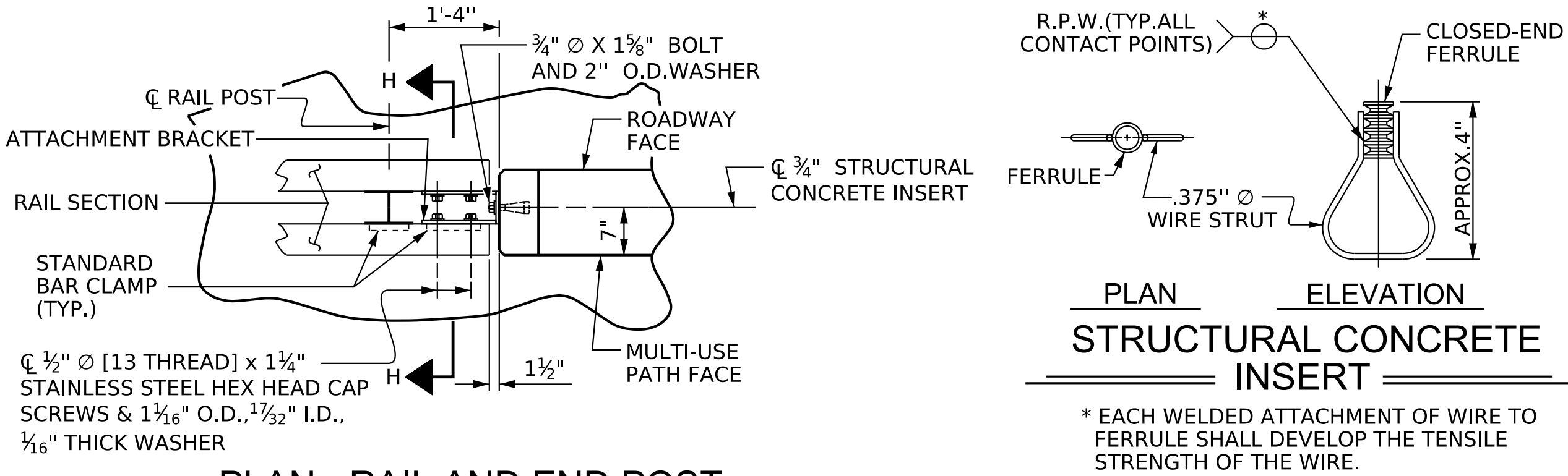
CAP SCREWS FOR RAIL ATTACHMENT TO ANGLE SHALL CONFORM TO THE REQUIREMENTS OF ASTM F593 ALLOY 305 STAINLESS STEEL. CAP SCREWS TO BE CENTERED IN SLOTS AT 60°F.
- D.

STANDARD CLAMP BARS (SEE METAL RAIL SHEET).
- E.

½" Ø 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.

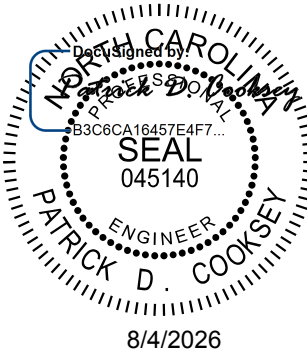
THE CONTRACTOR, AT HIS OPTION, MAY USE AN ADHESIVE BONDING SYSTEM IN LIEU OF THE STRUCTURAL CONCRETE INSERT EMBEDDED IN THE END POST. IF THE ADHESIVE BONDING SYSTEM IS USED, THE ¾" Ø x 1⅝" BOLT WITH WASHER SHALL BE REPLACED WITH A ¾" Ø x 6½" BOLT AND 2" O.D. WASHER. ALL SPECIFICATIONS THAT APPLY TO THE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



PLAN - RAIL AND END POST

PROJECT NO. I-5715
MECKLENBURG COUNTY
STATION: 23+39.87 -Y1-

SHEET 3 OF 3



Kimley»Horn

421 Fayetteville Street, Suite 600
Raleigh, NC 27601-1772
Phone (919) 677-2000
NC LICENSE # F-0102

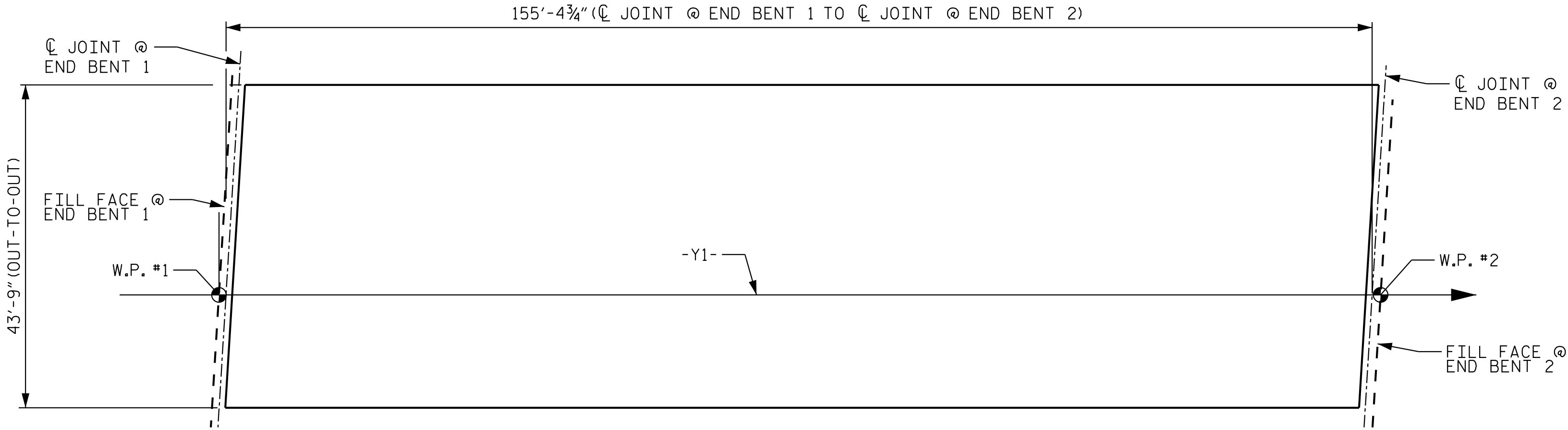
**DOCUMENT NOT CONSIDERED FINAL
UNLESS ALL SIGNATURES COMPLETED**

REVISIONS						SHEET NO. S2-31
NO.	BY:	DATE:	NO.	BY:	DATE:	
1			3			TOTAL SHEETS 40
2			4			

STR. #2 STD. NO. BMR2

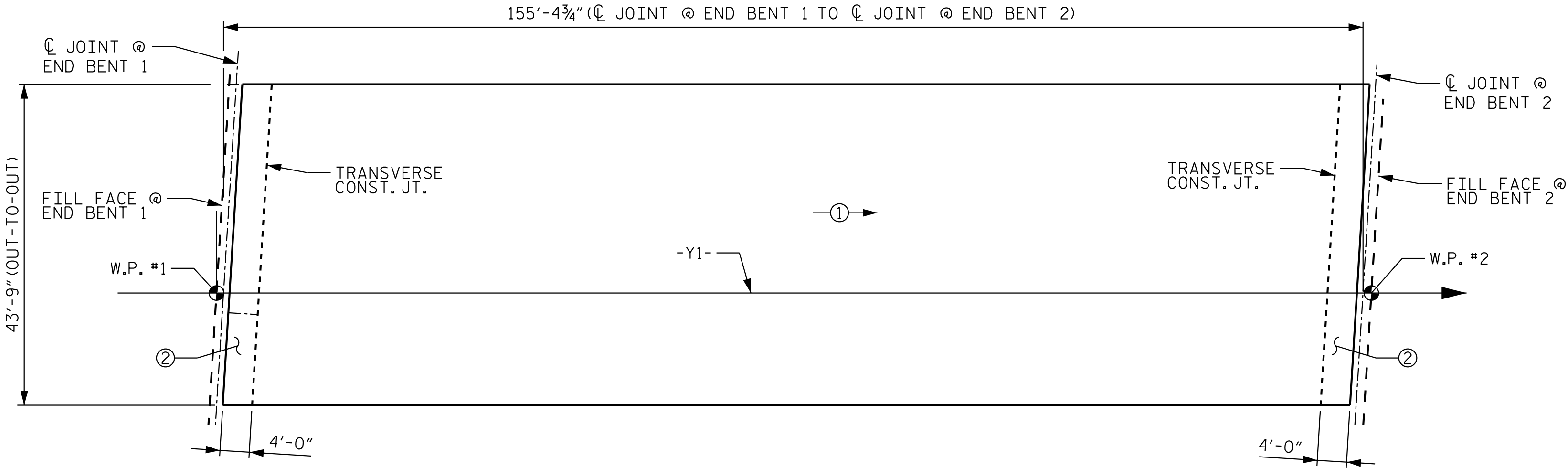
DRAWN BY: R. C. GIESEN DATE: 04/2026
CHECKED BY: E. W. SPRABERRY DATE: 04/2026
DESIGN ENGINEER OF RECORD: A. L. PHILLIPS DATE: 04/2026

K:\ARDI_Structures\Bridges\NC\01036524 - I-5715 Structure Design\Cad\Drawn\Site *1\Structure 2\Final\402.063.151515.SWL.BWL.591415.032.dgn 7/31/2026



LAYOUT FOR COMPUTING AREA
OF REINFORCED CONCRETE DECK SLAB

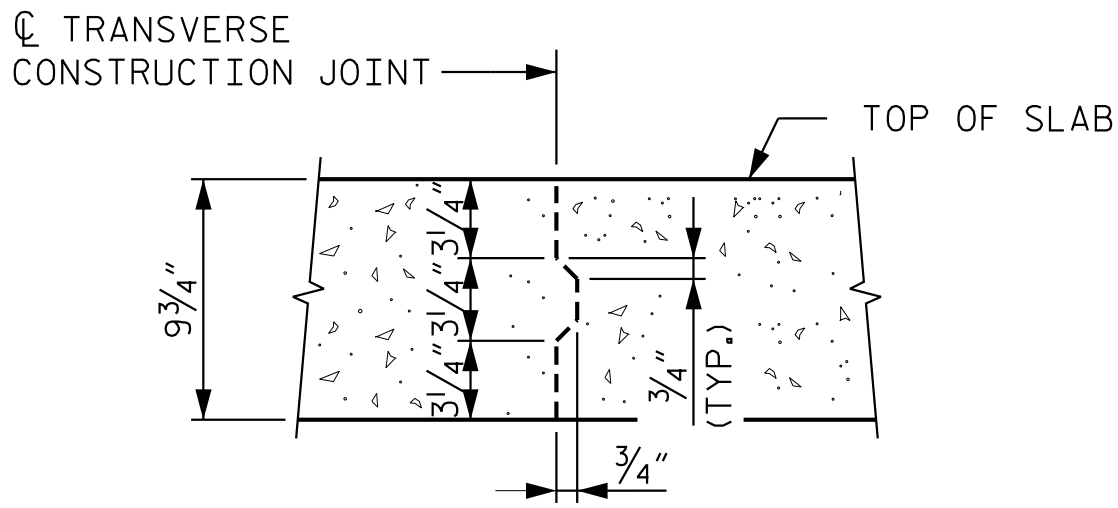
(SQ. FT. = 6,794)



POUR SEQUENCE

⊗ → DENOTES POUR NUMBER AND DIRECTION

GROOVING BRIDGE FLOORS	
APPROACH SLABS	1,718 SQ.FT.
BRIDGE DECK	5,471 SQ.FT.
TOTAL	7,189 SQ.FT.



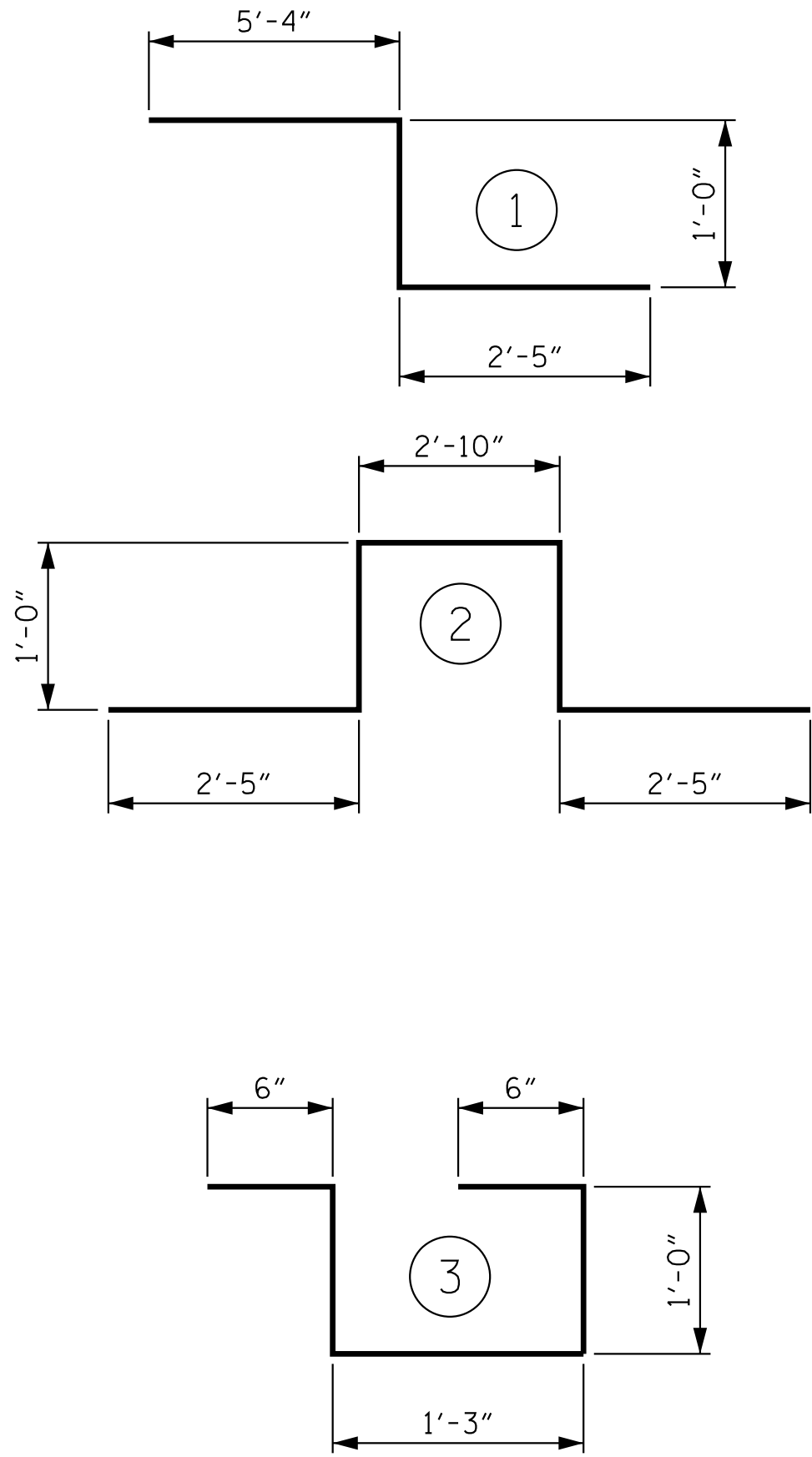
TRANSVERSE CONSTRUCTION
JOINT IN DECK SLAB

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

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

BILL OF MATERIAL					
SUPERSTRUCTURE					
BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
* A1	334	#5	STR	43'-5"	15,125
A2	334	#5	STR	43'-5"	15,125
*A101	2	#5	STR	35'-4"	74
*A102	2	#5	STR	26'-6"	55
*A103	2	#5	STR	17'-7"	37
*A104	2	#5	STR	8'-9"	18
A201	2	#5	STR	35'-4"	74
A202	2	#5	STR	26'-6"	55
A203	2	#5	STR	17'-7"	37
A204	2	#5	STR	8'-9"	18
* B1	155	#4	STR	33'-0"	3,417
B2	174	#5	STR	53'-0"	9,619
* G1	2	#5	STR	43'-5"	91
* K1	8	#5	1	8'-9"	73
* K2	8	#5	2	9'-8"	81
* K3	12	#5	STR	9'-2"	115
* S1	60	#4	3	4'-3"	170

BAR TYPES



ALL BAR DIMENSIONS ARE OUT TO OUT

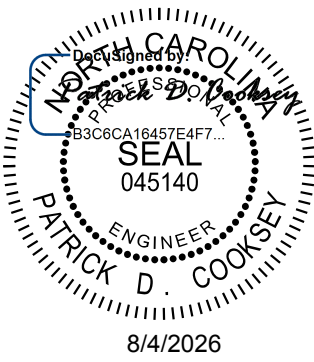
SUPERSTRUCTURE BILL OF MATERIAL

	CLASS AA CONCRETE	REINFORCING STEEL	EPOXY COATED REINFORCING STEEL
	(CU. YDS.)	(LBS.)	(LBS.)
SPAN A		24,928	19,256
POUR #1	190.3		
POUR #2	3.9		
TOTALS **	194.2	24,928	19,256

** QUANTITIES FOR CONCRETE PARAPETS ARE
NOT INCLUDED

* DENOTES EPOXY COATED REINFORCING

PROJECT NO. I-5715
MECKLENBURG COUNTY
STATION: 23+39.87 -Y1-



Kimley»Horn

421 Fayetteville Street, Suite 600
Raleigh, NC 27601-1772
Phone (919) 677-2000 NC LICENSE # F-0102

This document, together with the concepts and designs presented herein, as an integral part of the project, is prepared only for the specific project and shall not be used for any other project without the written authorization and signature of Kimley-Horn and Associates, Inc. shall be without liability to Kimley-Horn and Associates, Inc.

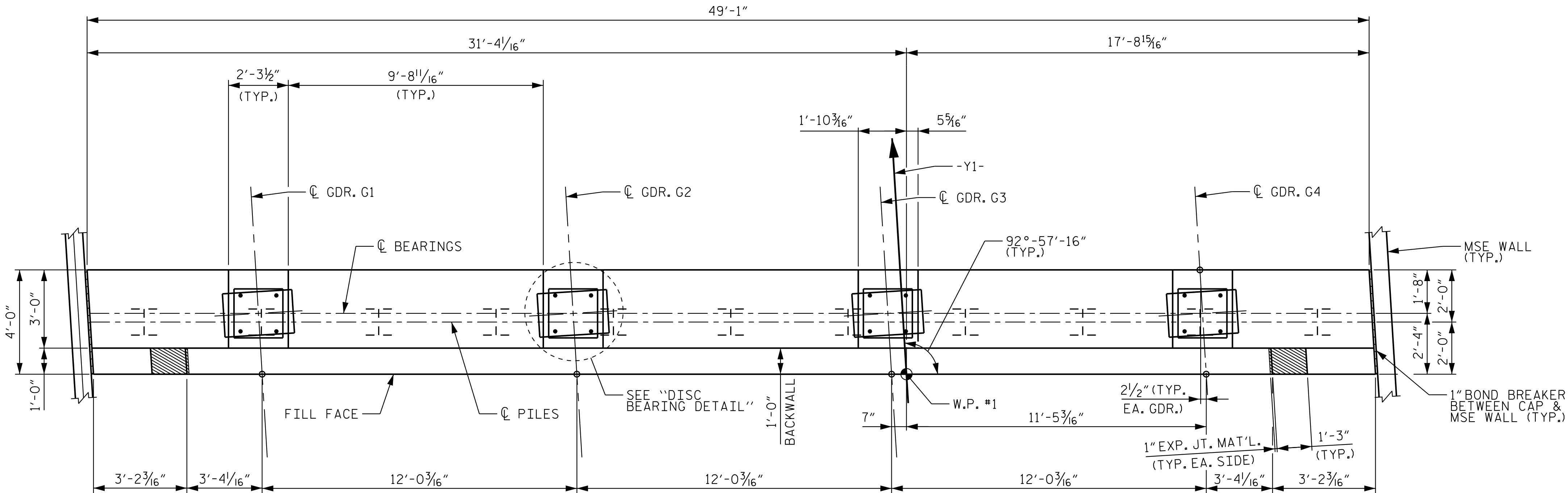
STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION RALEIGH					
SUPERSTRUCTURE BILL OF MATERIAL					
REVISIONS					SHEET NO. S2-32
NO.	BY:	DATE:	NO.	BY:	DATE:
1			3		
2			4		
					TOTAL SHEETS 40

STR. #2

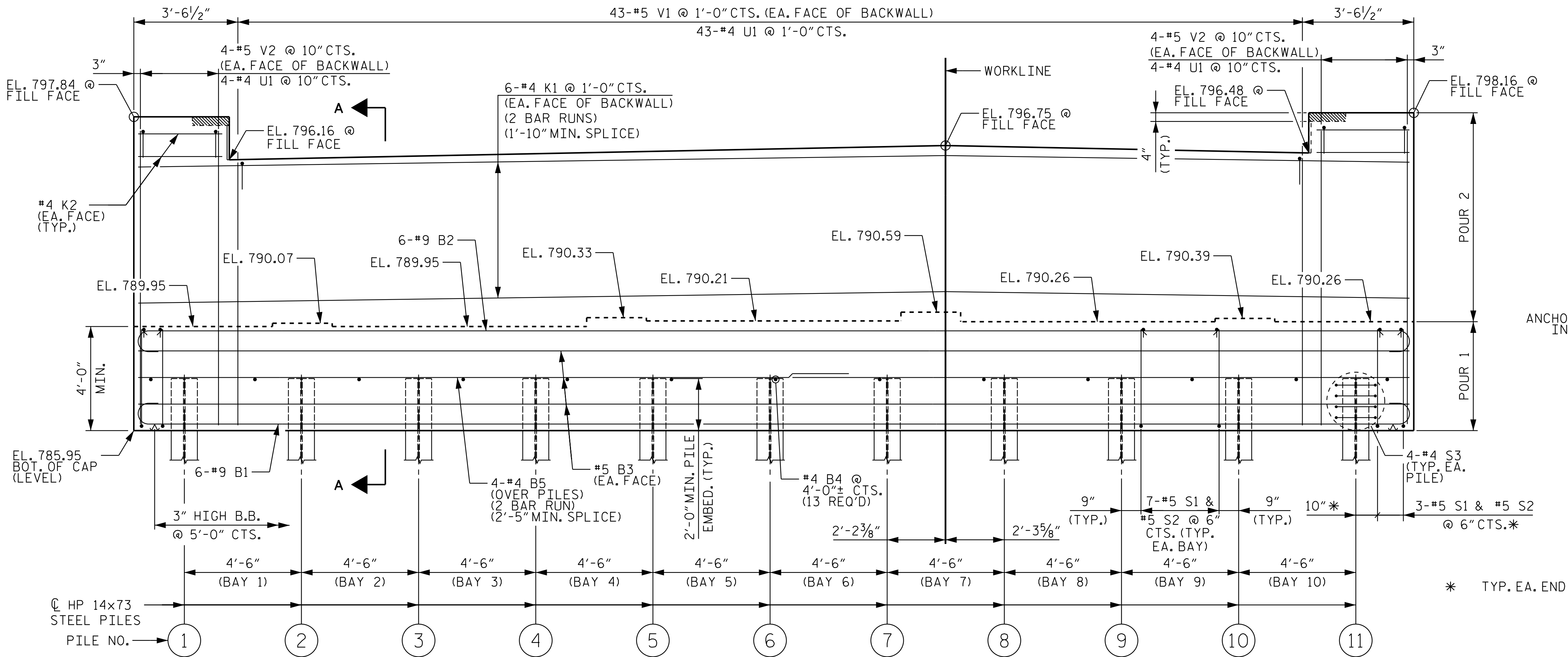
DRAWN BY: R. C. GIESEN DATE: 04/2026
CHECKED BY: E. W. SPRABERRY DATE: 04/2026
DESIGN ENGINEER OF RECORD: A. L. PHILLIPS DATE: 04/2026

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

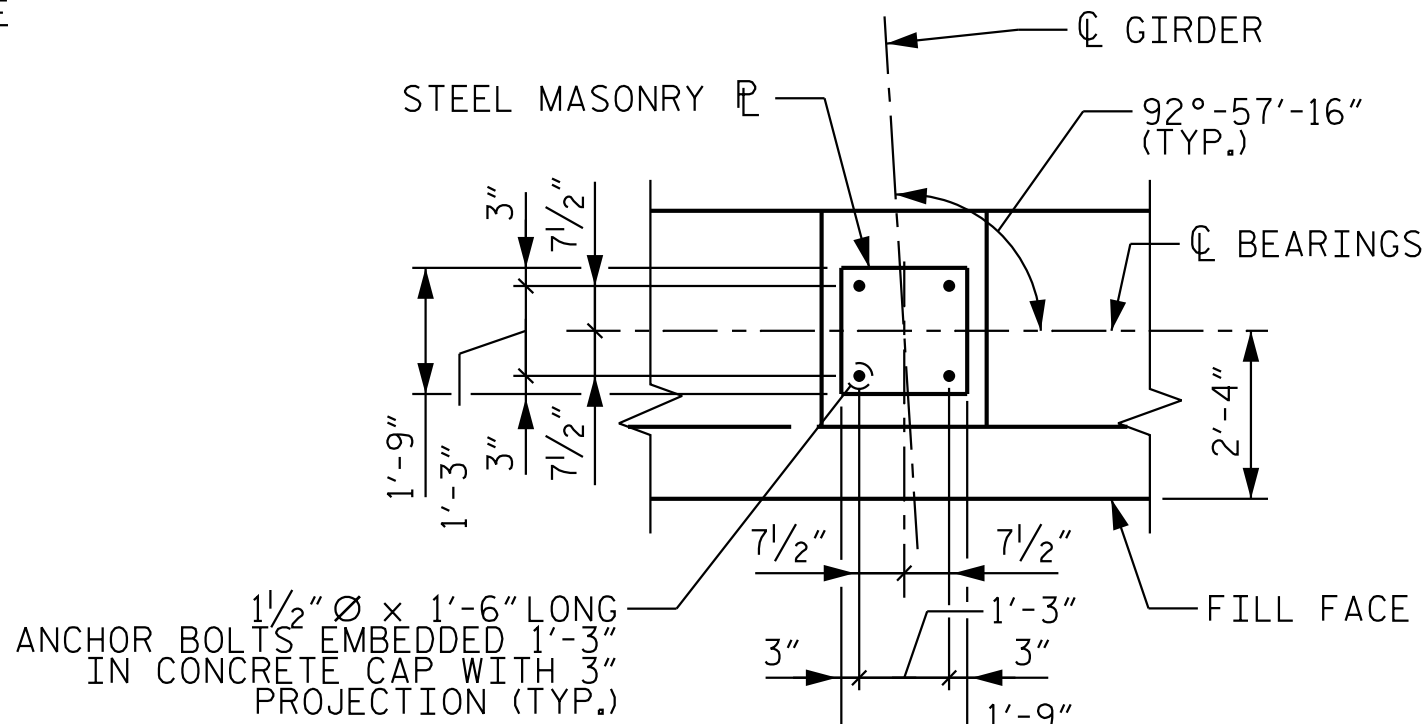
K:\PDI_Structures\Bridges\NC\01036524 - I-5715 Structure Design\Coord\gn\Site - I-5715 Structure 2\Final\402.065.153115.SWL EL 591416.033.dgn 7/31/2026



PLAN



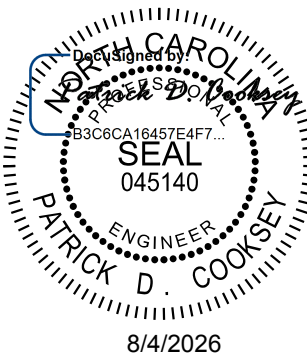
ELEVATION



DISC BEARING DETAIL

PROJECT NO. I-5715
MECKLENBURG COUNTY
STATION: 23+39.87 -Y1-

SHEET 1 OF 2



Kimley»Horn

421 Fayetteville Street, Suite 600
Raleigh, NC 27601-1772
Phone (919) 677-2000 NC LICENSE # F-0102

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

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUBSTRUCTURE
END BENT 1

REVISIONS						SHEET NO. S2-33
NO.	BY:	DATE:	NO.	BY:	DATE:	
1			3			TOTAL SHEETS 40
2			4			

STR. #2

DRAWN BY: R. C. GIESEN DATE: 04/2026
CHECKED BY: E. W. SPRABERRY DATE: 04/2026
DESIGN ENGINEER OF RECORD: A. L. PHILLIPS DATE: 04/2026



The seal is circular with a dashed outer border. Inside the border, the text "NORTH CAROLINA" is at the top, "PROFESSIONAL ENGINEER" is at the bottom, and "PATRICK D. COOK" is on the left. In the center, it says "SEAL" and "045140". A blue checkmark is drawn over the seal. Below the seal, the date "8/4/2026" is printed.

This document, together with the concepts and designs presented herein, as an instrument of services, is intended only for the specific purpose and client for which it was prepared. Reuse of and improper reliance on this document without written authorization and approval by Kimley-Horn and Associates, Inc. shall be without liability to Kimley-Horn and Associates, Inc.

Copyright Kimley-Horn and Associates, Inc. 2026

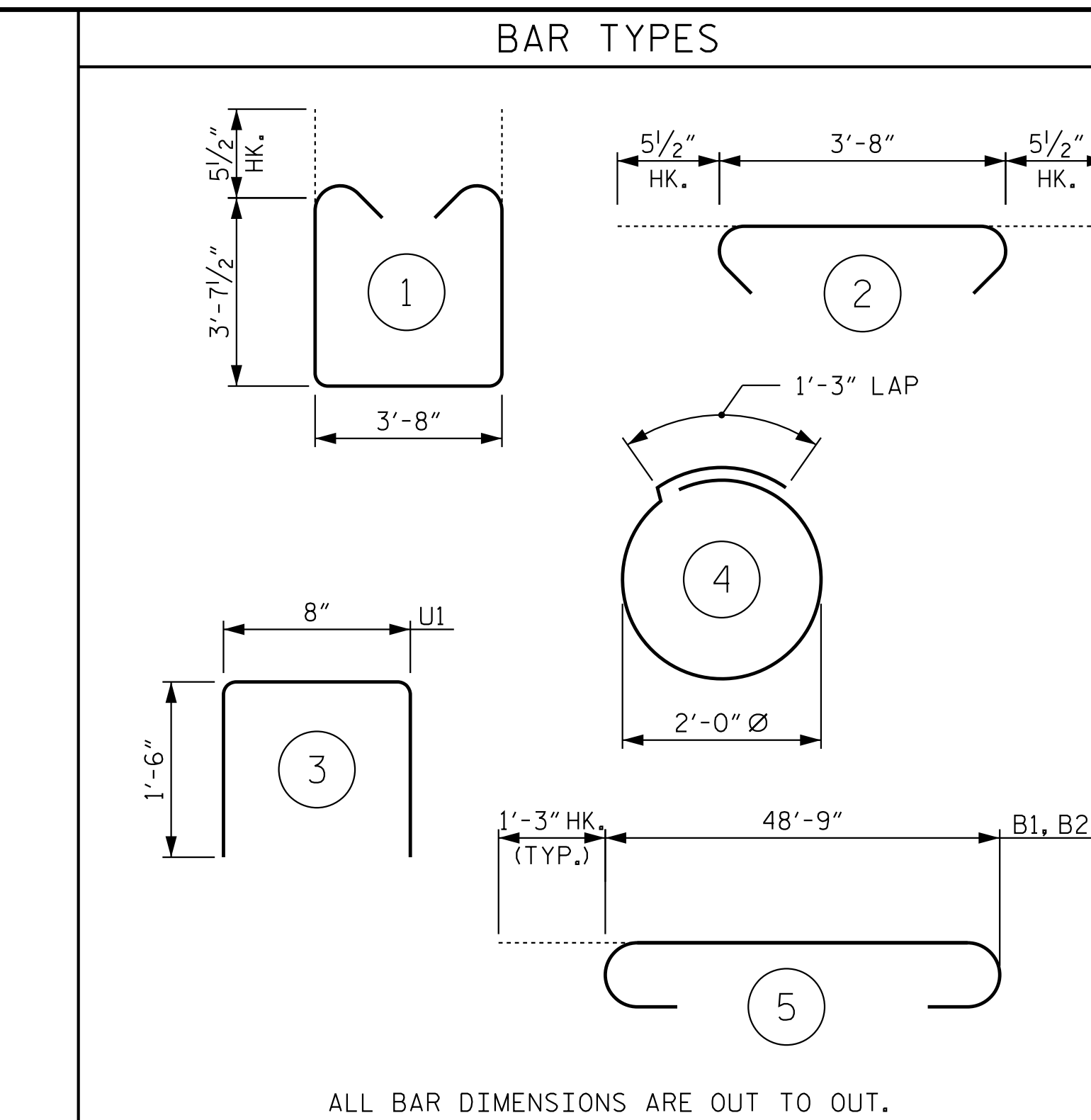
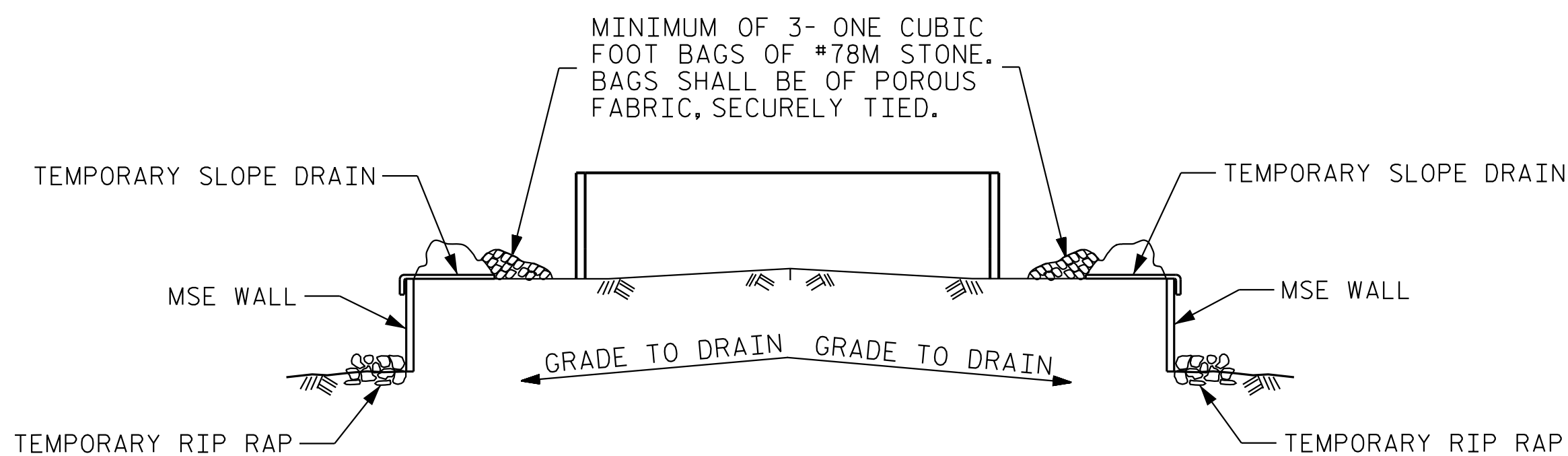
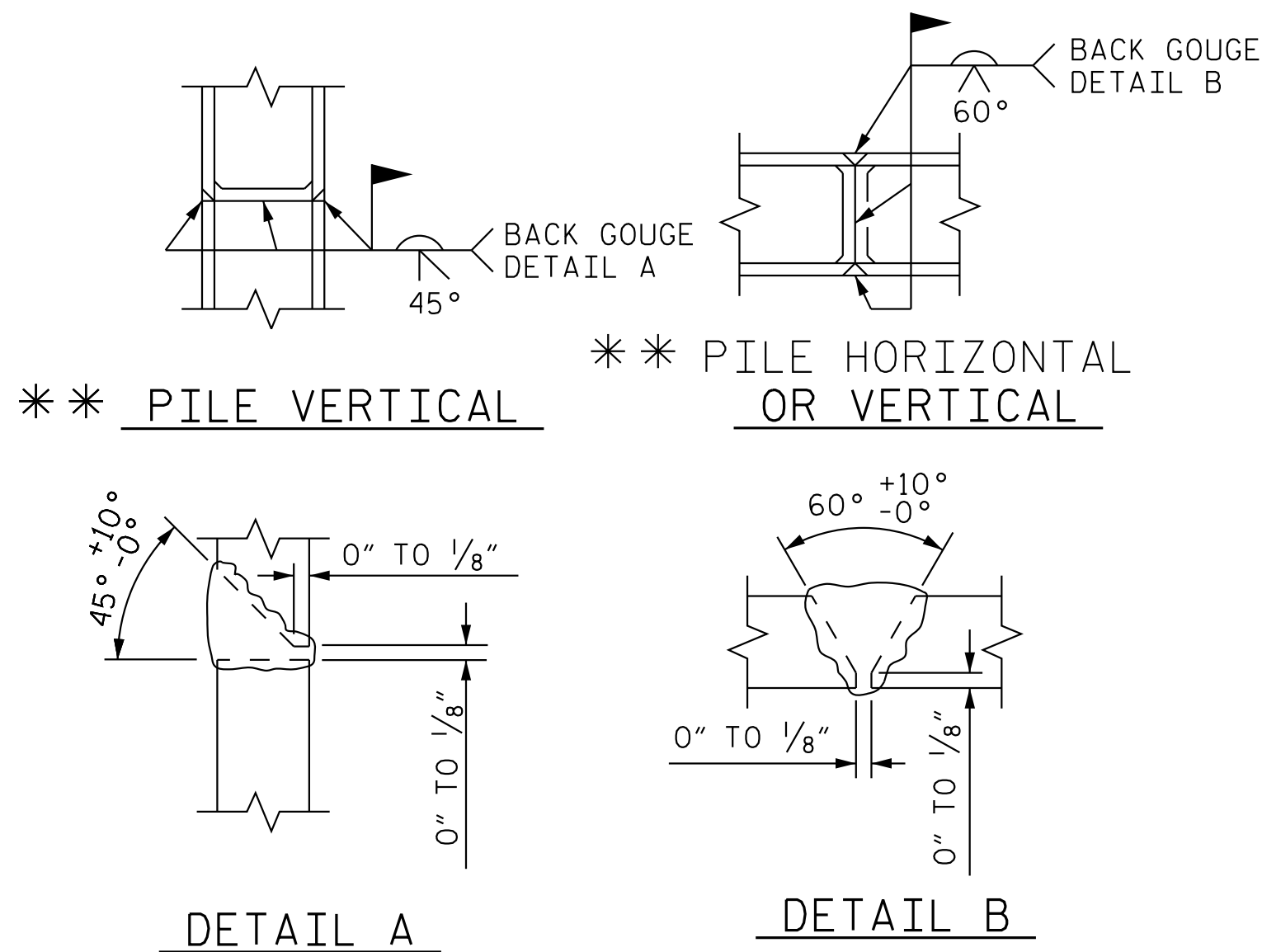
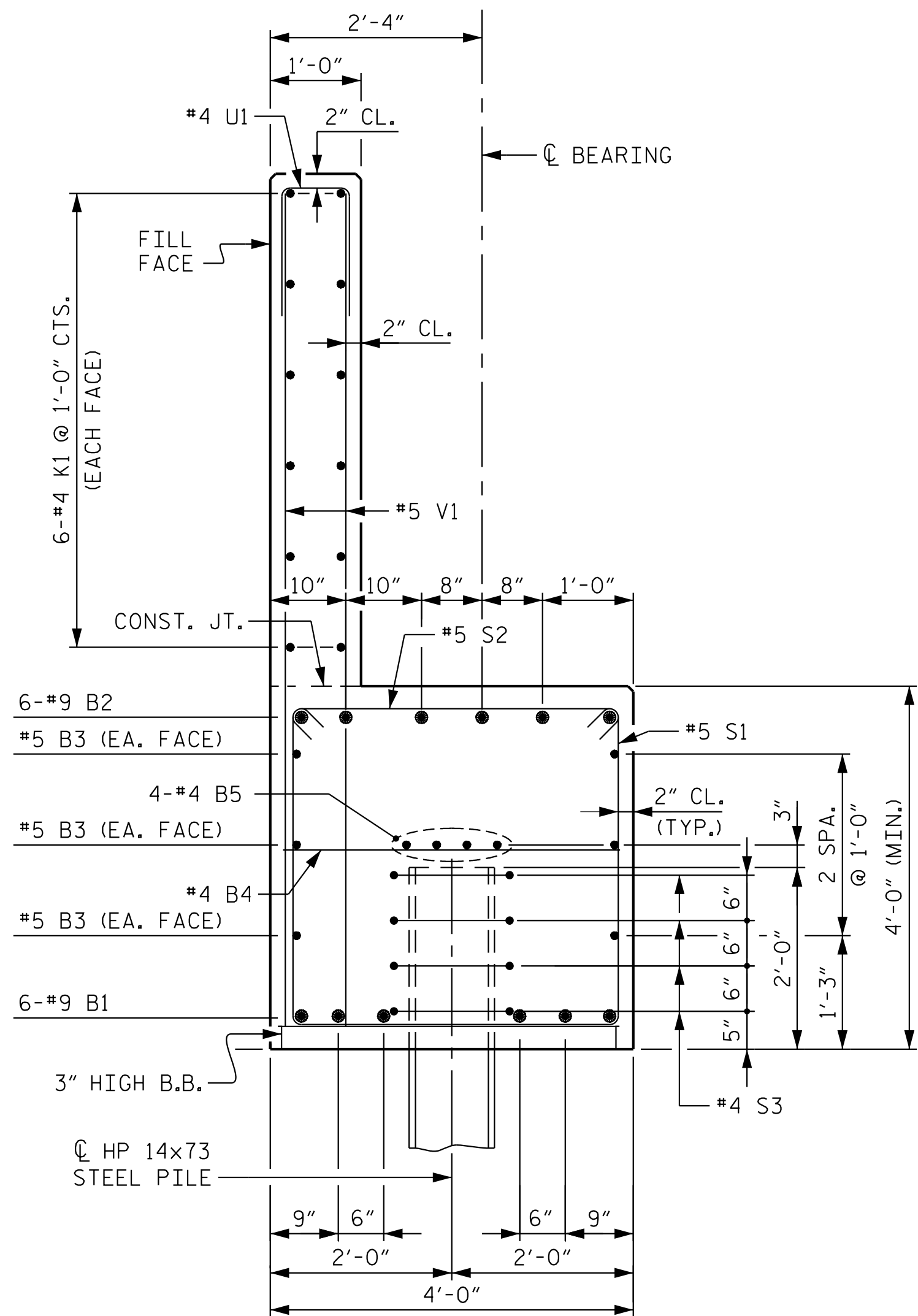
**DOCUMENT NOT CONSIDERED FINAL
UNLESS ALL SIGNATURES COMPLETED**

THE CONCRETE IN THE SHADED AREAS OF THE
BACKWALL SHALL BE POURED AFTER THE PARAPETS
ARE CAST IF SLIP FORMING IS USED.



REVISIONS						SHEET NO. S2-35
NO.	BY:	DATE:	NO.	BY:	DATE:	
1			3			TOTAL SHEETS 40
2			4			

STR. #2



BILL OF MATERIAL					
END BENT 2					
BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
B1	6	#9	5	51'-3"	1,046
B2	6	#9	5	51'-3"	1,046
B3	6	#5	STR	48'-9"	305
B4	13	#4	STR	3'-8"	32
B5	8	#4	STR	25'-7"	137
K1	24	#4	STR	25'-4"	406
K2	8	#4	STR	3'-2"	17
S1	76	#5	1	11'-10"	938
S2	76	#5	2	4'-7"	363
S3	44	#5	4	7'-7"	348
U1	51	#4	3	3'-8"	125
V1	86	#5	STR	9'-9"	875
V2	16	#5	STR	11'-5"	191
REINFORCING STEEL					5,829 LBS.
CLASS A CONCRETE BREAKDOWN					
POUR 1 (CAP)					31.9 C.Y.
POUR 2 (BACKWALL)					10.5 C.Y.
TOTAL CLASS A CONCRETE					42.4 C.Y.

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

RED LOADS.

8/4/2026

Kimley»Horn

421 Fayetteville Street, Suite 600
 Raleigh, NC 27601-1772
 Phone (919) 677-2000

NC LICENSE # F-4102

This document, together with the concepts and designs presented herein, is an instrument of services is intended only for the specific purpose and client for which it was prepared. These documents are the sole property of Kimley-Horn and Associates, Inc. and are not to be reproduced or used in any other project without written authorization and approval by Kimley-Horn and Associates, Inc. shall be without liability to Kimley-Horn and Associates, Inc. 2026

REVISIONS						SHEET NO. S2-36
NO.	BY:	DATE:	NO.	BY:	DATE:	
1			3			TOTAL SHEETS 40
2			4			

STR. #2



SLOPE PROTECTION SHALL CONSIST OF 4" POURED-IN-PLACE CONCRETE PAVING AS SHOWN IN THE DETAILS ON THIS SHEET. CONCRETE SHALL BE CLASS "B". THE CONCRETE SURFACE SHALL BE FLOATED WITH A WOODEN FLOAT AND FINISHED. WELDED WIRE FABRIC REINFORCING SHALL BE 6 X 6 W1.4 X W1.4, 60" WIDE. SLOPE PROTECTION SHALL BE POURED IN 5' STRIPS AS SHOWN IN THE "POURING DETAIL" WITH 2'-0" LONG #4 BARS PLACED ALONG THE SLOPE BETWEEN STRIPS AT 1'-6" MAXIMUM SPACING. SLOPE PROTECTION MAY BE POURED IN ALTERNATE 4' AND 5' STRIPS AS SHOWN IN THE "OPTIONAL POURING DETAIL" WITH ADJACENT RUNS OF WELDED WIRE FABRIC LAPPING AT LEAST 6". THE COST OF THE WELDED WIRE FABRIC AND #4 BARS, IF USED, SHALL BE INCLUDED IN THE CONTRACT UNIT PRICE BID PER SQUARE YARD FOR SLOPE PROTECTION.

* QUANTITY SHOWN IS BASED ON 5' POURS.



REVISIONS						SHEET NO. S2-37
NO.	BY:	DATE:	NO.	BY:	DATE:	
1			3			TOTAL SHEETS 40
2			4			

STR. #2 STD. NO. SP1

DRAWN BY: R. C. GIESEN	DATE: 04/2026
CHECKED BY: E. W. SPRABERRY	DATE: 04/2026
DESIGN ENGINEER OF RECORD: A. L. PHILLIPS	DATE: 04/2026

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

Kimley»»Horn

421 Fayetteville Street, Suite 600
Raleigh, NC 27601-1772
Phone (919) 677-2000

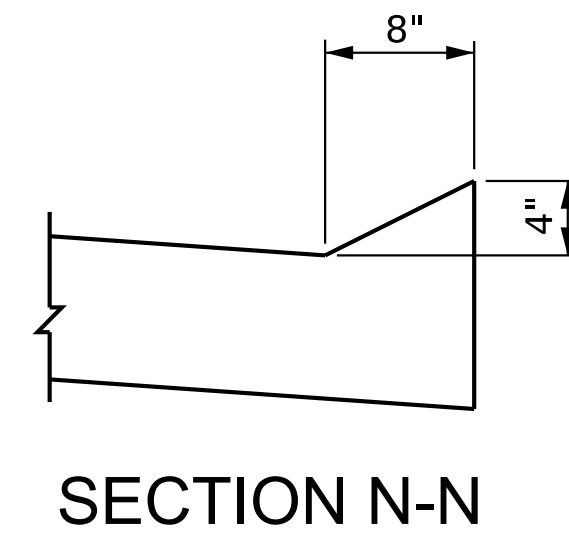
This document, together with the concepts and designs presented herein, as an instrument of services, is intended only for the specific purpose and client for which it was prepared. Reuse of and improper reliance of this document without written authorization and adoption by Kimley-Horn and Associates, Inc. shall be without liability to Kimley-Horn and Associates, Inc.

Copyright Kimley-Horn and Associates, Inc., 2026



FOR "S" BAR LAYOUT, SEE SHEET 2 OF 2.

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



(TYPE II - STANDARD APPROACH FILL)

DRAWN BY: R. C. GIESEN	DATE: 04/2026
CHECKED BY: E. W. SPRABERRY	DATE: 04/2026
DESIGN ENGINEER OF RECORD: A. L. PHILLIPS	DATE: 04/2026

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

Kimley»»Horn

421 Fayetteville Street, Suite 600
Raleigh, NC 27601-1772
Phone (919) 677-2000

This document, together with the concepts and designs presented herein, as an instrument of services, is intended only for the specific purpose and client for which it was prepared. Reuse of and improper reliance of this document without written authorization and adoption by Kimley-Horn and Associates, Inc. shall be without liability to Kimley-Horn and Associates, Inc.

Copyright Kimley-Horn and Associates, Inc., 2026

PROJECT NO. I-5715
MECKLENBURG COUNTY
 STATION: 23+39.87 -Y1-

SHEET 1 OF 2

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

STANDARD

BRIDGE APPROACH SLAB FOR FLEXIBLE PAVEMENT

REVISONS						SHEET NO. S2-38
NO.	BY:	DATE:	NO.	BY:	DATE:	
1			3			TOTAL SHEETS 40
2			4			

STR. #2

STD. NO. BAS2

