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NOTES:
SEE SHEET 2 OF 2 FOR NOTES.

BRIDGE HYDRAULIC DATA
 DESIGN DISCHARGE = 3,900 CFS
 FREQUENCY OF DESIGN FLOOD = 25 YRS
 DESIGN HIGH WATER ELEVATION = 571.4 FT.
 DRAINAGE AREA = 26.8 SQ. MI.
 BASE DISCHARGE (Q100 FEMA) = 5,550 CFS
 BASE HIGH WATER ELEVATION = 573.3 FT.

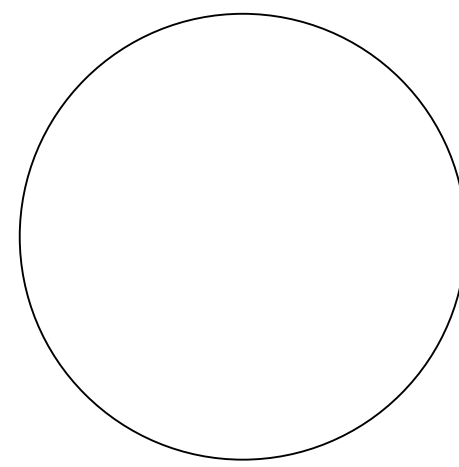
OVERTOPPING FLOOD DATA
 OVERTOPPING DISCHARGE = >17,000 CFS
 FREQUENCY OF OVERTOPPING FLOOD = >500 YRS
 OVERTOPPING FLOOD ELEVATION = 581.98 FT.
 NOTE: ROADWAY OVERTOPS RIGHT SHOULDER AT STA. 13+43.62 -L-

CURVE DATA -L-
 PI STA. = 15+77.24
 Δ = 30°-32'-57" (LT.)
 D = 7°-57'-28"
 L = 383.89'
 T = 196.63'
 R = 720.00'

PI = 12+95.00 -L-
 ELEV = 581.28'
 VC = 190'
 (-)6.9082%
 (+)0.3000%
 PI = 17+20.00 -L-
 ELEV = 582.56'
 VC = 150'
 (+)4.0903%

GRADE DATA -L-

I HEREBY CERTIFY THESE PLANS ARE AS-BUILT PLANS



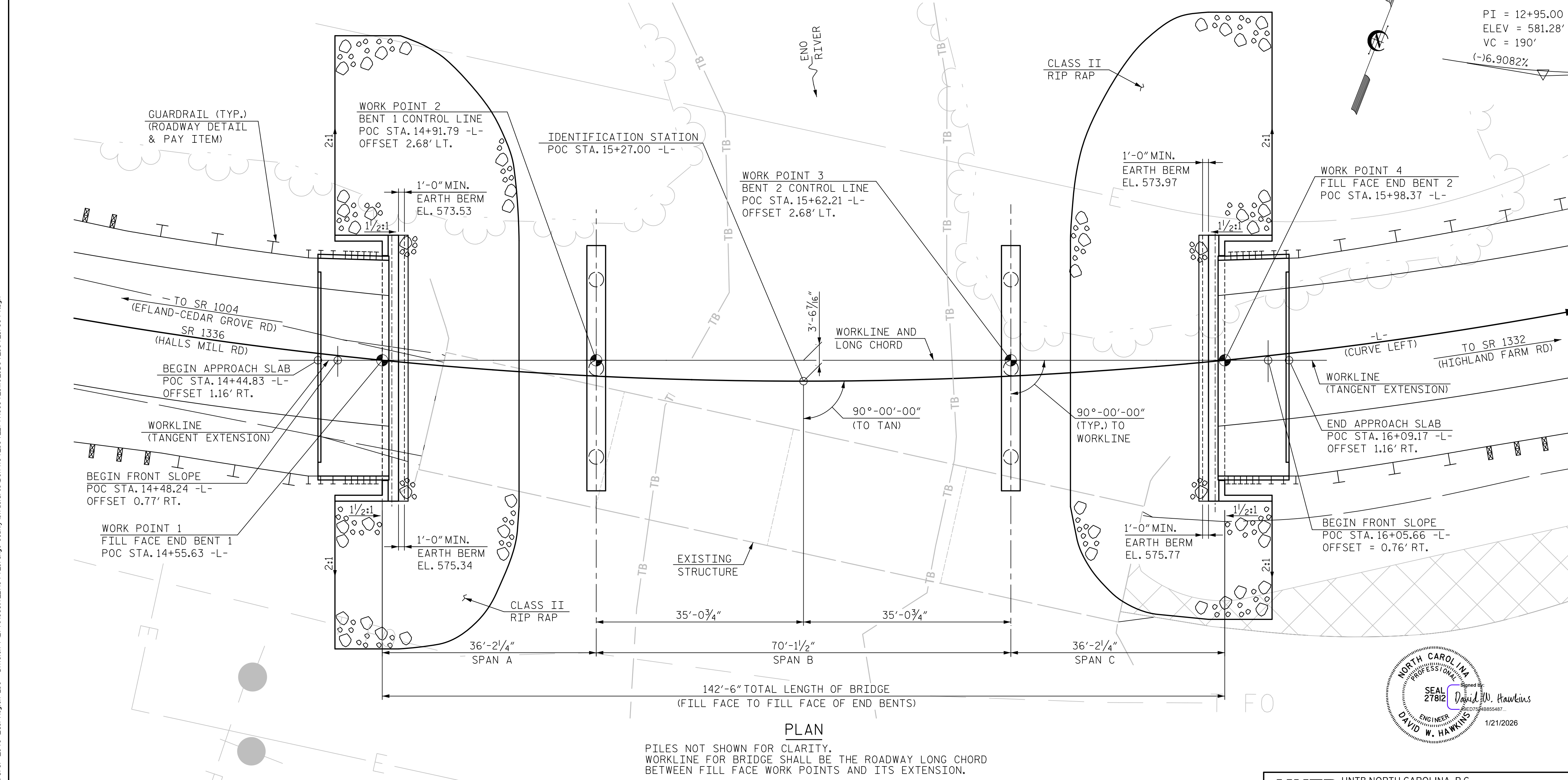
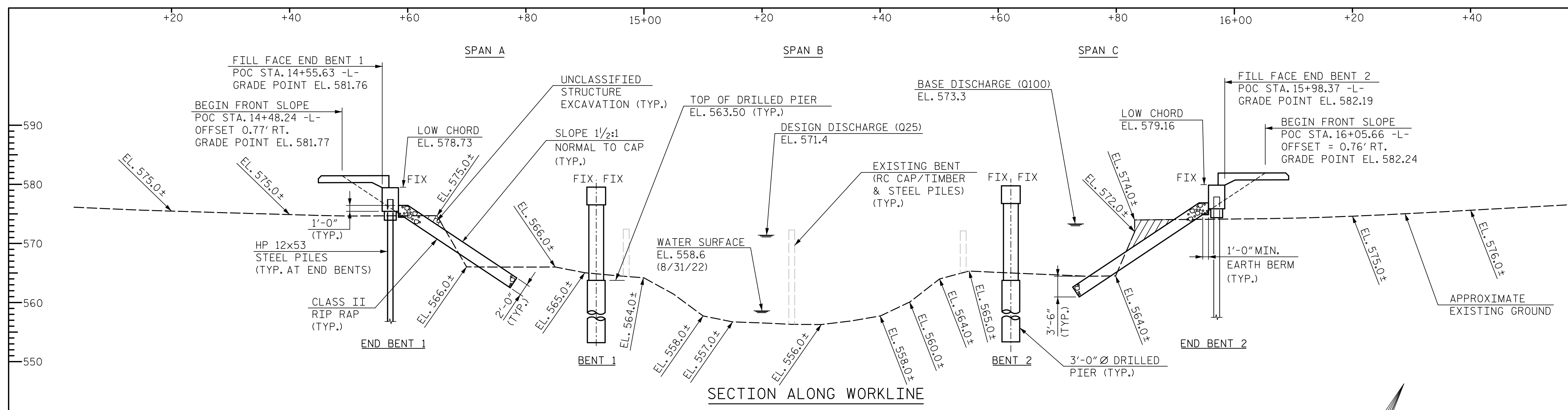
PROJECT NO. BP7-R009
 ORANGE COUNTY
 STATION: POC 15+27.00 -L-

SHEET 1 OF 2 REPLACES BRIDGE NO. 670011

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH
 GENERAL DRAWING FOR
 BRIDGE ON SR 1336 OVER
 ENO RIVER BETWEEN
 SR 1004 AND SR 1332

| REVISIONS | | | | | SHEET NO. |
|-----------|----|------|-----|----|-----------|
| NO. | BY | DATE | NO. | BY | DATE |
| 1 | | | 3 | | |
| 2 | | | 4 | | |

S-1
TOTAL SHEETS
24



PILES NOT SHOWN FOR CLARITY.
 WORKLINE FOR BRIDGE SHALL BE THE ROADWAY LONG CHORD BETWEEN FILL FACE WORK POINTS AND ITS EXTENSION.

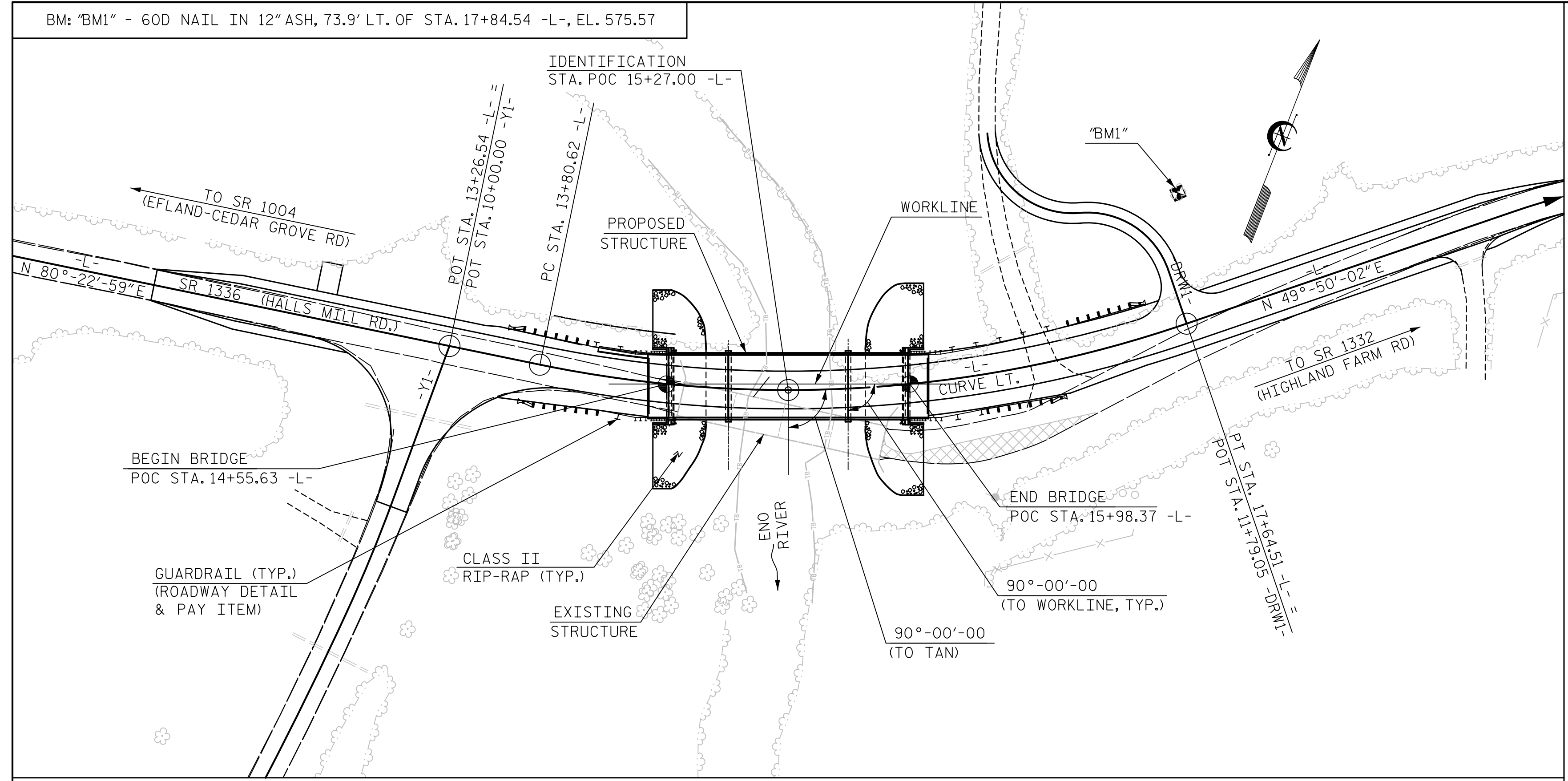
NORTH CAROLINA PROFESSIONAL ENGINEER
 SEAL 27812
 DAVID W. HAWKINS
 1/21/2026

HNTB HNTB NORTH CAROLINA, P.C.
 NC License No. C-1554
 4000 Center at North Hills Street, Suite 500, Raleigh, N.C. 27609

DWG. NO. 1

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LOCATION SKETCH
FOR UTILITY INFORMATION, SEE UTILITY PLANS AND SPECIAL PROVISIONS.

GENERAL DRAWING NOTES

ASSUMED LIVE LOAD = HL-93 OR ALTERNATE LOADING.

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

THIS BRIDGE IS LOCATED IN SEISMIC ZONE 1.

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

FOR OTHER DESIGN DATA AND GENERAL NOTES, SEE SHEET SN.

FOR SUBMITTAL OF WORKING DRAWINGS, SEE SPECIAL PROVISIONS.

FOR FALSEWORK AND FORMWORK, SEE SPECIAL PROVISIONS.

FOR CRANE SAFETY, SEE SPECIAL PROVISIONS.

FOR GROUT FOR STRUCTURES, SEE SPECIAL PROVISIONS.

THE EXISTING STRUCTURE CONSISTING OF ONE 30'-8", TWO 30'-0", AND ONE 30'-8" TIMBER DECK ON STEEL I-BEAM SPANS; 19.2' CLEAR ROADWAY WIDTH ON CONCRETE ABUTMENTS AND INTERIOR BENTS LOCATED AT PROPOSED STRUCTURE SHALL BE REMOVED. THE EXISTING BRIDGE IS PRESENTLY POSTED FOR LOAD LIMIT. SHOULD THE STRUCTURAL INTEGRITY OF THE BRIDGE DETERIORATE DURING CONSTRUCTION OF THE PROPOSED BRIDGE, A LOAD LIMIT MAY BE POSTED AND MAY BE REDUCED AS FOUND NECESSARY DURING THE LIFE OF THE PROJECT.

INASMUCH AS THE PAINT SYSTEM ON THE EXISTING STRUCTURAL STEEL CONTAINS LEAD, THE CONTRACTOR'S ATTENTION IS DIRECTED TO ARTICLE 107-1 OF THE STANDARD SPECIFICATIONS. ANY COSTS RESULTING FROM COMPLIANCE WITH APPLICABLE STATE OR FEDERAL REGULATIONS PERTAINING TO HANDLING OF MATERIALS CONTAINING LEAD BASED PAINT SHALL BE INCLUDED IN THE BID PRICE FOR "REMOVAL OF EXISTING STRUCTURE AT STATION POC 15+27.00 -L-."

THE MATERIAL SHOWN IN THE CROSS-HATCHED AREA SHALL BE EXCAVATED FOR A DISTANCE OF 21'-2" LEFT OF WORKLINE AND 23'-10" RIGHT OF WORKLINE AS DIRECTED BY THE ENGINEER. THIS WORK WILL BE PAID FOR AT THE CONTRACT LUMP SUM PRICE FOR UNCLASSIFIED STRUCTURE EXCAVATION. SEE SECTION 412 OF THE STANDARD SPECIFICATIONS.

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

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

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

THE SCOUR CRITICAL ELEVATION FOR BENT NO. 1 IS ELEVATION 553.0. THE SCOUR CRITICAL ELEVATION FOR BENT NO. 2 IS ELEVATION 558.5. SCOUR CRITICAL ELEVATIONS ARE USED TO MONITOR POSSIBLE SCOUR PROBLEMS DURING THE LIFE OF THE STRUCTURE.

FOR EROSION CONTROL MEASURES, SEE EROSION CONTROL PLANS.

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

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

FOUNDATION NOTES

FOR PILES, SEE SECTION 450 OF THE STANDARD SPECIFICATIONS.

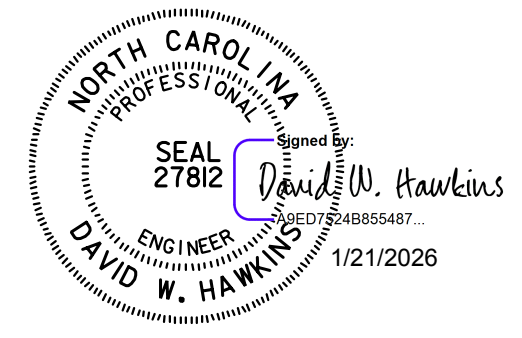
FOR DRILLED PIERS, SEE SECTION 411 OF THE STANDARD SPECIFICATIONS.

| TOTAL BILL OF MATERIAL | | | | | | | | | | |
|------------------------|---|---------------------|----------------------------------|--------------------------------------|-------------|---|------------------|---|-------------------|---------------------------------|
| | REMOVAL OF EXISTING STRUCTURE AT STATION POC 15+27.00 -L- | ASBESTOS ASSESSMENT | 3'-0" DIA. DRILLED PIERS IN SOIL | 3'-0" DIA. DRILLED PIERS NOT IN SOIL | CSL TESTING | UNCLASSIFIED STRUCTURE EXCAVATION AT STATION POC 15+27.00 -L- | CLASS A CONCRETE | BRIDGE APPROACH SLABS, STATION POC 15+27.00 -L- | REINFORCING STEEL | SPIRAL COLUMN REINFORCING STEEL |
| | LUMP SUM | LUMP SUM | LIN FT. | LIN FT. | EACH | LUMP SUM | CU. YDS. | LUMP SUM | LBS. | LBS. |
| SUPERSTRUCTURE | | | | | | | | LUMP SUM | | |
| END BENT 1 | | | | | | LUMP SUM | 24.2 | | 2,923 | |
| BENT 1 | | | 48 | 39 | 1 | | 21.7 | | 11,367 | 2,048 |
| BENT 2 | | | 15 | 24 | 1 | | 21.8 | | 9,294 | 1,395 |
| END BENT 2 | | | | | | LUMP SUM | 24.2 | | 2,923 | |
| TOTAL | LUMP SUM | LUMP SUM | 63 | 63 | 2 | LUMP SUM | 91.9 | LUMP SUM | 26,507 | 3,443 |

| TOTAL BILL OF MATERIAL | | | | | | | | | | | | |
|------------------------|---|----------------------|-------------------|----------------------|--------------------|----------------------------------|--------------------------------|-------------------------|----------------------|---|------|----------|
| | PILE DRIVING EQUIPMENT SETUP FOR HP 12x53 STEEL PILES | HP 12x53 STEEL PILES | STEEL PILE POINTS | DYNAMIC PILE TESTING | TWO BAR METAL RAIL | 1'-2"x2'-9 1/2" CONCRETE PARAPET | RIP RAP CLASS II (2'-0" THICK) | GEOTEXTILE FOR DRAINAGE | ELASTOMERIC BEARINGS | 3'-0"x2'-0" PRESTRESSED CONC. CORED SLABS | | |
| | EACH | EACH | LIN. FT. | EACH | EACH | LIN. FT. | LIN. FT. | TONS | SQ. YDS. | LUMP SUM | EACH | LIN. FT. |
| SUPERSTRUCTURE | | | | | | 265.50 | 280.50 | | | LUMP SUM | 39 | 1,820 |
| END BENT 1 | 7 | 7 | 175 | 7 | 1 | | | 320 | 355 | | | |
| BENT 1 | | | | | | | | | | | | |
| BENT 2 | | | | | | | | | | | | |
| END BENT 2 | 7 | 7 | 140 | 7 | | | | 395 | 440 | | | |
| TOTAL | 14 | 14 | 315 | 14 | 1 | 265.50 | 280.50 | 715 | 795 | LUMP SUM | 39 | 1,820 |

PROJECT NO. BP7-R009
ORANGE COUNTY
STATION: POC 15+27.00 -L-

SHEET 2 OF 2



STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH
GENERAL DRAWING
FOR
LOCATION SKETCH,
GENERAL NOTES,
FOUNDATION NOTES
& BILL OF MATERIAL

HNTB HNTB NORTH CAROLINA, P.C.
NC License No. C-1554
4000 Center at North Hills Street, Suite 500, Raleigh, N.C. 27609

DWG. NO. 2

DRAWN BY: M. WRIGHT DATE: 08/24
CHECKED BY: Z. REINEKE DATE: 03/25
DESIGN ENGINEER OF RECORD: D. HAWKINS DATE: 03/25

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

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SUMMARY OF PILE INFORMATION/INSTALLATION

(Blank entries indicate item is not applicable to structure)

| End Bent / Bent No, Pile(s) #(-#) (e.g., "Bent 1, Piles 1-5") | Number of Piles per Line | Factored Resistance per Pile KIPS | Pile Cut-Off (Top of Pile) Elevation FT | Estimated Pile Length per Pile FT | Scour Critical Elevation FT | Driven Piles | | | Predrilling for Piles ** | | | Drilled-In Piles | | |
|--|--------------------------|-----------------------------------|---|-----------------------------------|-----------------------------|--|--|-----------------------------|------------------------------------|--|-------------------------------------|---|---|---|
| | | | | | | Minimum Pile Tip (Tip No Higher Than) Elevation FT | Required Driving Resistance (RDR)* per pile KIPS | Pile Redrives Quantity EACH | Predrilling Length per Pile LIN FT | Predrilling Elevation (Elevation Not To Predrill Below) FT | Maximum Predrilling Diameter INCHES | Pile Excavation (Bottom of Hole) Elevation FT | Pile Excavation Not In Soil per Pile LIN FT | Pile Excavation In Soil per Pile LIN FT |
| END BENT NO. 1 | 7 | 120 | SEE SUBSTRUCTURE PLANS | 25 | | | 200 | | | | | | | |
| END BENT NO. 2 | 7 | 120 | SEE SUBSTRUCTURE PLANS | 20 | | | 200 | | | | | | | |
| | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | |
| TOTAL QUANTITY: | | | | | | | | | | | | | | |

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

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

PILE DESIGN INFORMATION

(Blank entries indicate item is not applicable to structure)

| End Bent / Bent No, Pile(s) #(-#) (e.g., "Bent 1, Piles 1-5") | Factored Axial Load per Pile KIPS | Factored Drag Load per Pile KIPS | Factored Dead Load * per Pile KIPS | Dynamic Resistance Factor | Nominal Drag Resistance per Pile KIPS | Nominal Scour Resistance per Pile KIPS |
|--|-----------------------------------|----------------------------------|------------------------------------|---------------------------|---------------------------------------|--|
| END BENT NO. 1 (1-7) | 120 | | | 0.6 | | |
| END BENT NO. 2 (1-7) | 120 | | | 0.6 | | |
| | | | | | | |
| | | | | | | |
| | | | | | | |
| TOTAL QUANTITY: | | | | | | |

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

SUMMARY OF PILE ACCESSORIES

(Blank entries indicate item is not applicable to structure)

| End Bent / Bent No, Pile(s) #(-#) (e.g., "Bent 1, Piles 1-5") | Pipe Pile Plates EACH | Steel Pile Points | | |
|--|-----------------------|------------------------------|-------------------------------|--------------------|
| | | Pipe Pile Cutting Shoes EACH | Pipe Pile Conical Points EACH | H-Pile Points EACH |
| END BENT NO. 1 (1-7) | | | | 7 |
| END BENT NO. 2 (1-7) | | | | 7 |
| | | | | |
| | | | | |
| | | | | |
| TOTAL QUANTITY: | | | | 14 |

SUMMARY OF DPT/PILE ORDER LENGTHS

(Blank entries indicate item is not applicable to structure)

| Dynamic Pile Testing (DPT) | | | Pile Order Lengths for Concrete Piles | |
|--|-------------------------|---------------------------|--|-------------------------------------|
| End Bent / Bent No (e.g., "Bent 1 - Bent 3") | DPT Test Pile Length FT | DPT Testing Quantity EACH | End Bent / Bent No (e.g., "Bent 1 - Bent 3") | Pile Order Length Basis* EST or DPT |
| END BENT NO. 1 | 30 | 1 | | |
| | | | | |
| | | | | |
| | | | | |
| TOTAL QUANTITY: | | 1 | | |

* 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.

SUMMARY OF DRILLED PIER INFORMATION/INSTALLATION

(Blank entries indicate item is not applicable to structure)

| End Bent / Bent No, Pier(s) #(-#) (e.g., "Bent 1, Piers 1-3") | Number of Piers per Line | Factored Resistance per Pier KIPS | Required Drilled Pier Tip Elevation FT | Required Tip Resistance per Pier KSF | Scour Critical Elevation FT | Minimum Drilled Pier Penetration Into Rock per Pier LIN FT | Drilled Pier Length* per Pier LIN FT | Drilled Pier Length Not In Soil* per Pier LIN FT | Drilled Pier Length In Soil* per Pier LIN FT | Permanent Steel Casing Required? YES | Permanent Steel Casing Tip Elevation (Elevation Not To Extend Casing Below) FT | Permanent Steel Casing Length** per Pier LIN FT |
|--|--------------------------|-----------------------------------|--|--------------------------------------|-----------------------------|--|--------------------------------------|--|--|--------------------------------------|--|---|
| BENT NO. 1 (1-3) | 3 | 790 | 537.30 | 130 | 552.00 | 10 | | 13 | 16 | | | |
| BENT NO. 2 (1-3) | 3 | 790 | 550.50 | 130 | 557.50 | 8 | | 8 | 5 | | | |
| | | | | | | | | | | | | |
| | | | | | | | | | | | | |
| | | | | | | | | | | | | |
| TOTAL QUANTITY: | | | | | | | | 63 | 63 | | | |

* Drilled Pier Length, Drilled Pier Length Not in Soil and Drilled Pier Length in Soil represent estimated drilled pier quantities and are measured and paid for as either "___ Dia. Drilled Piers" or "___ Dia. Drilled Piers Not in Soil" and "___ Dia. Drilled Piers in Soil" in accordance with Article 411-7 of the NCDOT Standard Specifications. For bents with a not in soil pay item, drilled piers through air or water will be paid at the contract unit price for "___ Dia. Drilled Piers in Soil."

** Permanent Steel Casing Length equals the difference between the ground line or top of drilled pier elevation, whichever is higher, and the permanent casing tip elevation and is measured and paid for as "Permanent Steel Casing for ___ Dia. Drilled Pier" in accordance with Article 411-7 of the NCDOT Standard Specifications.

SUMMARY OF DRILLED PIER TESTING

(Blank entries indicate item is not applicable to structure)

| End Bent / Bent No, Pier(s) #(-#) (e.g., "Bent 1, Piers 1-3") | Standard Penetration Test (SPT) EACH | Crosshole Sonic Logging (CSL) EACH | Thermal Integrity Profiler (TIP) EACH | Shaft Inspection Device (SID) EACH | Pile Integrity Test (PIT) EACH |
|--|--------------------------------------|------------------------------------|---------------------------------------|------------------------------------|--------------------------------|
| BENT No.1 (1-3) | | 1 | | | |
| BENT No.2 (1-3) | | 1 | | | |
| | | | | | |
| | | | | | |
| TOTAL QUANTITY: | | 2 | | | |


PROJECT NO. BP7-R009

ORANGE COUNTY

STATION: 15+27 -L-

NOTES:

- The Pile Foundation Tables are based on the bridge substructure design and foundation recommendations sealed by a North Carolina Professional Engineer (ABNER F. RIGGS, JR. , #014155) on 02-25-2025.
- 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.
- The Engineer may adjust the quantity for DPT Testing, Pipe Pile Plates, Permanent Steel Casing, SPTs, TIPs, CSL Testing, SID Inspections and PITs when necessary.

| | | | | | | |
|---|--|-----|-------|-------|-----|--|
|  Signed by David W. Hawkins AGED7524885487... SIGNATURE DATE | STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION RALEIGH PILE AND DRILLED PIER FOUNDATION TABLES | | | | | SHEET NO. S-3 TOTAL SHEETS 24 |
| | REVISIONS | | | | | |
| DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED | NO. 1 | BY: | DATE: | NO. 3 | BY: | DATE: |
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LOAD AND RESISTANCE FACTOR RATING (LRFR) SUMMARY FOR PRESTRESSED CONCRETE GIRDERS

| LOAD TYPE | VEHICLE | WEIGHT (W) (TONS) | CONTROLLING LOAD RATING (#) | MINIMUM RATING FACTORS (RF) | TONS = W x RF | STRENGTH I LIMIT STATE | | | | | | | | | | SERVICE III LIMIT STATE | | | | | COMMENT NUMBER | | | |
|---------------------------|---|----------------------|--------------------------------|-----------------------------------|---------------|-----------------------------|------------------------------|---------------|------|--------------------|---|------------------------------|---------------|------|--------------------|---|-----------------------------|------------------------------|---------------|------|----------------|--------------------|---|--|
| | | | | | | MOMENT | | | | | SHEAR | | | | | MOMENT | | | | | | | | |
| | | | | | | LIVE-LOAD FACTORS (γ LL) | DISTRIBUTION FACTORS (DF) | RATING FACTOR | SPAN | GIRDER LOCATION | DISTANCE FROM LEFT END OF SPAN (ft) | DISTRIBUTION FACTORS (DF) | RATING FACTOR | SPAN | GIRDER LOCATION | DISTANCE FROM LEFT END OF SPAN (ft) | LIVE-LOAD FACTORS (γ LL) | DISTRIBUTION FACTORS (DF) | RATING FACTOR | SPAN | | GIRDER LOCATION | DISTANCE FROM LEFT END OF SPAN (ft) | |
| DESIGN LOAD | HL-93 (INVENTORY) | N/A | ① | 2.48 | - | 1.75 | 0.30 | 2.80 | 35' | ER | 17 | 0.33 | 3.57 | 35' | ER | 1.7 | 0.80 | 0.30 | 2.48 | 35' | ER | 17 | | |
| | HL-93 (OPERATING) | N/A | | 3.62 | - | 1.35 | 0.30 | 3.62 | 35' | ER | 17 | 0.33 | 4.66 | 35' | ER | 1.7 | -- | -- | -- | -- | -- | -- | | |
| | HS-20 (INVENTORY) | 36.000 | ② | 3.26 | 117.4 | 1.75 | 0.30 | 3.63 | 35' | ER | 20.4 | 0.33 | 4.13 | 35' | ER | 1.7 | 0.80 | 0.30 | 3.26 | 35' | ER | 20.4 | | |
| | HS-20 (OPERATING) | 36.000 | | 4.70 | 169.2 | 1.35 | 0.30 | 4.70 | 35' | ER | 20.4 | 0.33 | 5.38 | 35' | ER | 1.7 | -- | -- | -- | -- | -- | -- | | |
| LEGAL LOAD | SINGLE VEHICLE (SV) | SNSH | | 5.66 | 76.4 | 1.4 | 0.30 | 7.99 | 35' | ER | 17 | 0.33 | 10.77 | 35' | ER | 1.7 | 0.80 | 0.30 | 5.66 | 35' | ER | 17 | | |
| | | SNGARBS2 | 20.000 | | 4.79 | 95.8 | 1.4 | 0.30 | 6.65 | 35' | ER | 20.4 | 0.33 | 8.13 | 35' | ER | 1.7 | 0.80 | 0.30 | 4.79 | 35' | ER | 20.4 | |
| | | SNAGRIS2 | 22.000 | | 4.75 | 104.5 | 1.4 | 0.30 | 6.60 | 35' | ER | 20.4 | 0.33 | 7.74 | 35' | ER | 1.7 | 0.80 | 0.30 | 4.75 | 35' | ER | 20.4 | |
| | | SNCOTTS3 | 27.250 | | 2.83 | 77.1 | 1.4 | 0.30 | 4.00 | 35' | ER | 17 | 0.33 | 5.37 | 35' | ER | 1.7 | 0.80 | 0.30 | 2.83 | 35' | ER | 17 | |
| | | SNAGGRS4 | 34.925 | | 2.62 | 91.5 | 1.4 | 0.30 | 3.70 | 35' | ER | 17 | 0.33 | 4.80 | 35' | ER | 1.7 | 0.80 | 0.30 | 2.62 | 35' | ER | 17 | |
| | | SNS5A | 35.550 | | 2.54 | 90.3 | 1.4 | 0.30 | 3.59 | 35' | ER | 17 | 0.33 | 5.07 | 35' | ER | 1.7 | 0.80 | 0.30 | 2.54 | 35' | ER | 17 | |
| | | SNS6A | 39.950 | | 2.46 | 98.3 | 1.4 | 0.30 | 3.47 | 35' | ER | 17 | 0.33 | 4.76 | 35' | ER | 1.7 | 0.80 | 0.30 | 2.46 | 35' | ER | 17 | |
| | SNS7B | 42.000 | ③ | 2.34 | 98.3 | 1.4 | 0.30 | 3.31 | 35' | ER | 17 | 0.33 | 4.88 | 35' | ER | 1.7 | 0.80 | 0.30 | 2.34 | 35' | ER | 17 | | |
| | TRUCK TRACTOR SEMI-TRAILER (TTST) | TNAGRIT3 | 33.000 | | 3.03 | 100.0 | 1.4 | 0.30 | 4.28 | 35' | ER | 17 | 0.33 | 5.58 | 35' | ER | 1.7 | 0.80 | 0.30 | 3.03 | 35' | ER | 17 | |
| | | TNT4A | 33.075 | | 3.03 | 100.2 | 1.4 | 0.30 | 4.28 | 35' | ER | 17 | 0.33 | 5.26 | 35' | ER | 1.7 | 0.80 | 0.30 | 3.03 | 35' | ER | 17 | |
| | | TNT6A | 41.600 | | 2.66 | 110.7 | 1.4 | 0.30 | 3.75 | 35' | ER | 17 | 0.33 | 5.16 | 35' | ER | 1.7 | 0.80 | 0.30 | 2.66 | 35' | ER | 17 | |
| | | TNT7A | 42.000 | | 2.75 | 115.5 | 1.4 | 0.30 | 3.83 | 35' | ER | 20.4 | 0.33 | 4.78 | 35' | ER | 1.7 | 0.80 | 0.30 | 2.75 | 35' | ER | 17 | |
| | | TNT7B | 42.000 | | 2.70 | 113.4 | 1.4 | 0.30 | 3.81 | 35' | ER | 17 | 0.33 | 4.64 | 35' | ER | 1.7 | 0.80 | 0.30 | 2.70 | 35' | ER | 17 | |
| | | TNAGRIT4 | 43.000 | | 2.71 | 116.5 | 1.4 | 0.30 | 3.76 | 35' | ER | 20.4 | 0.33 | 4.44 | 35' | ER | 1.7 | 0.80 | 0.30 | 2.71 | 35' | ER | 20.4 | |
| TNAGT5A | | 45.000 | | 2.52 | 113.4 | 1.4 | 0.30 | 3.55 | 35' | ER | 17 | 0.33 | 4.71 | 35' | ER | 1.7 | 0.80 | 0.30 | 2.52 | 35' | ER | 17 | | |
| TNAGT5B | 45.000 | | 2.43 | 109.4 | 1.4 | 0.30 | 3.43 | 35' | ER | 17 | 0.33 | 4.19 | 35' | ER | 1.7 | 0.80 | 0.30 | 2.43 | 35' | ER | 17 | | | |
| EMERGENCY VEHICLE (EV) | EV2 | 28.750 | | 3.44 | 98.9 | 1.3 | 0.30 | 5.15 | 35' | ER | 20.4 | 0.33 | 6.18 | 35' | ER | 1.7 | 0.80 | 0.30 | 3.44 | 35' | ER | 20.4 | | |
| | EV3 | 43.000 | ④ | 2.25 | 96.8 | 1.3 | 0.30 | 3.42 | 35' | ER | 17 | 0.33 | 4.18 | 35' | ER | 1.7 | 0.80 | 0.30 | 2.25 | 35' | ER | 17 | | |

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:

- EVALUATION OF EMERGENCY VEHICLES WITH MULTIPLE LANES LOAD CONSISTED OF 2 EMERGENCY VEHICLES IN ADJACENT LANES.

CONTROLLING LOAD RATING

① DESIGN LOAD RATING (HL-93)

② DESIGN LOAD RATING (HS-20)

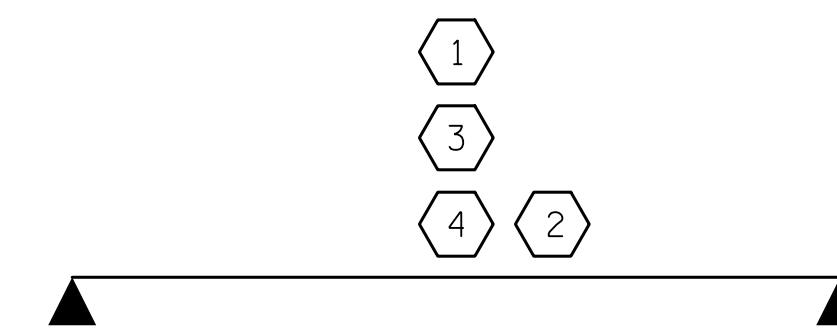
③ LEGAL LOAD RATING **

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
FOR SPANS " A " AND " C "

PROJECT NO. BP7-R009
ORANGE COUNTY
STATION: POC 15+27.00 -L-

SHEET 1 OF 2

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

LRFR SUMMARY FOR
35' CORED SLAB UNIT
90° SKEW
(NON-INTERSTATE TRAFFIC)

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

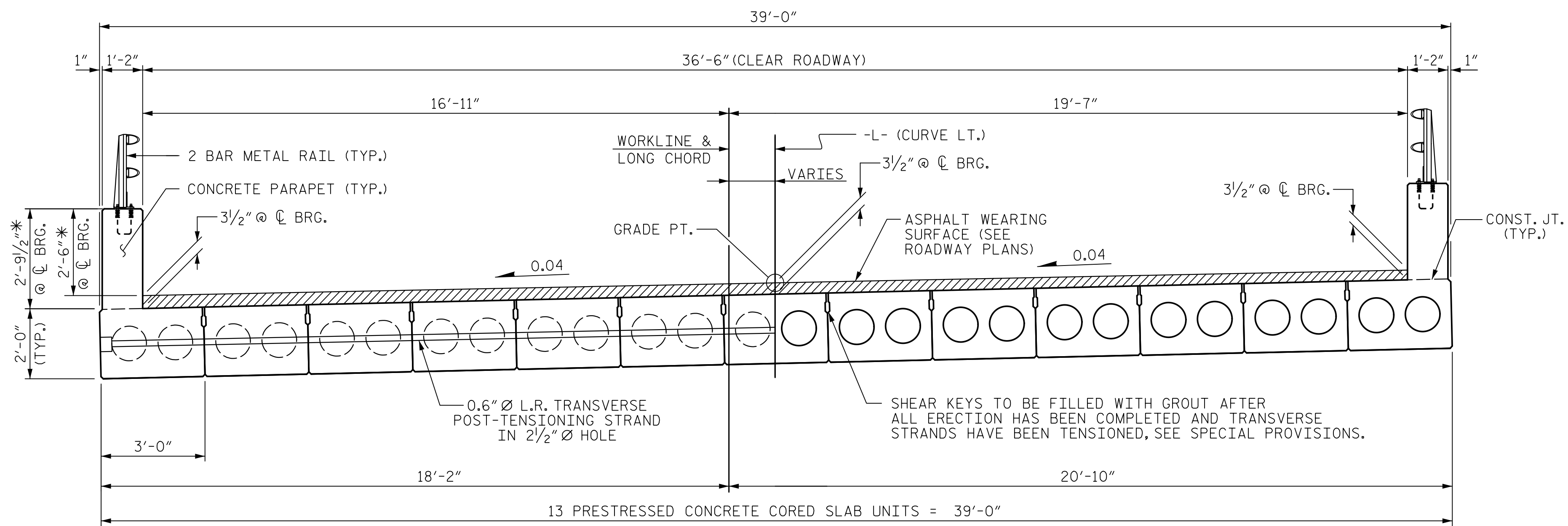
HNTB HNTB NORTH CAROLINA, P.C.
NC License No. C-1554
4000 Center at North Hills Street, Suite 500, Raleigh, N.C. 27609

DESIGNED BY: M. WRIGHT DATE: 08/23
CHECKED BY: Z. REINEKE DATE: 03/25
DESIGN ENGINEER OF RECORD: D. HAWKINS DATE: 03/25

SEAL 27812
DAVID W. HAWKINS
ENGINEER
1/21/2026

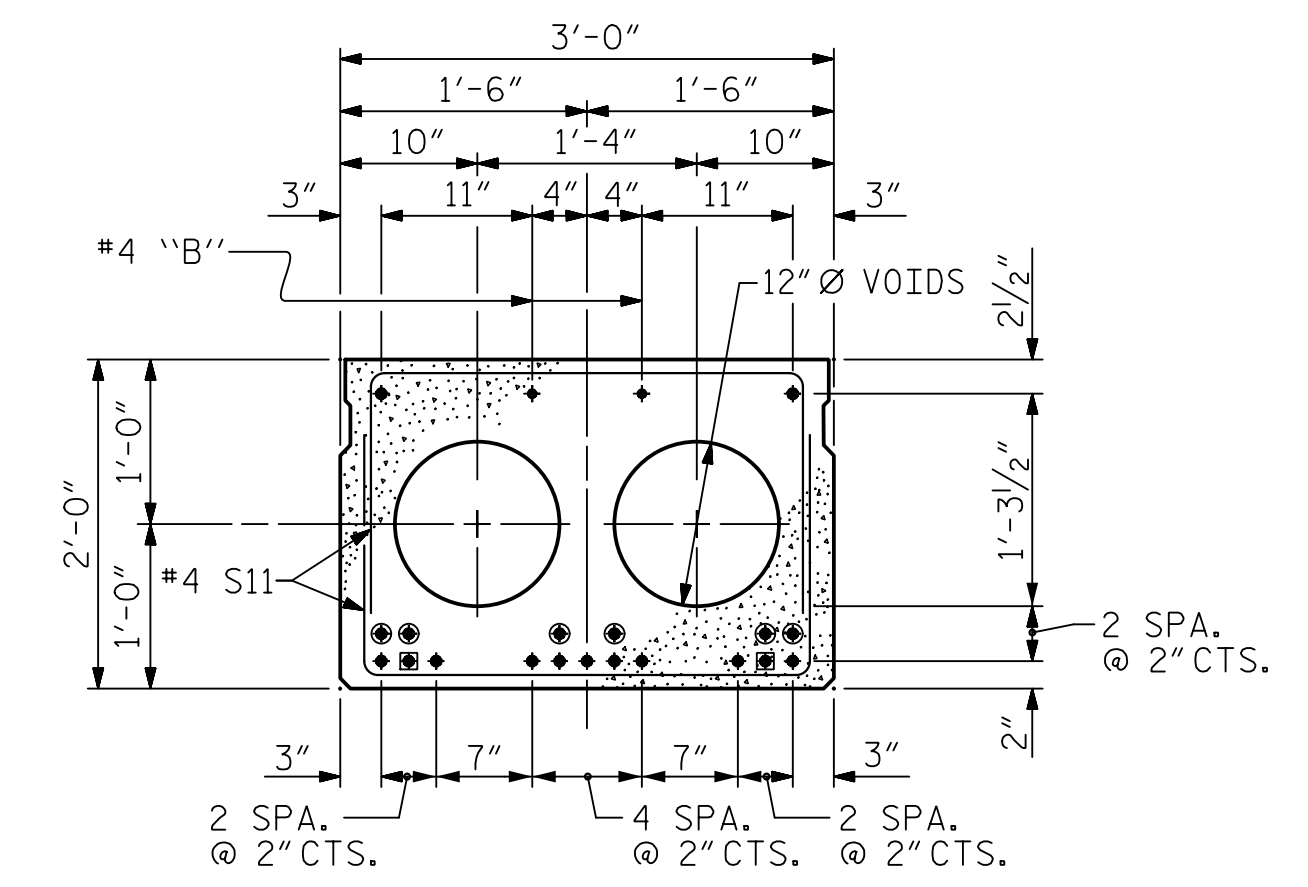
DWG. NO. 4

DOCUMENT NOT CONSIDERED FINAL
UNLESS ALL SIGNATURES COMPLETED

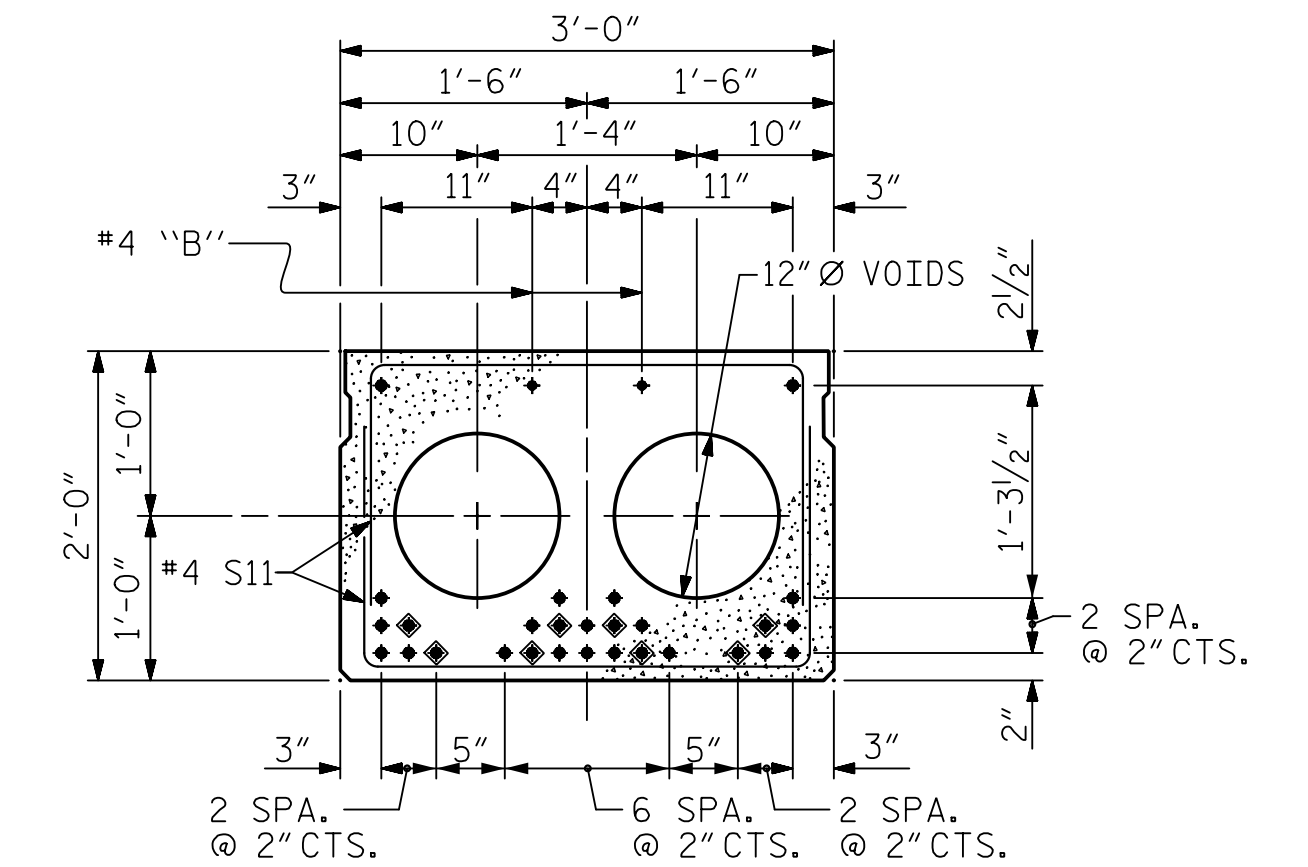


HALF SECTION AT INTERMEDIATE DIAPHRAGMS
 HALF SECTION THROUGH VOIDS
TYPICAL SECTION

* - THE MAXIMUM PARAPET HEIGHT AND ASPHALT THICKNESS IS SHOWN. THE HEIGHT OF THE PARAPET AND ASPHALT THICKNESS VARIES WHILE THE TOP OF THE PARAPET FOLLOWS THE PROFILE OF THE GUTTERLINE. FOR PARAPET HEIGHT DETAILS AND ASPHALT THICKNESS, SEE THE "SECTION THRU PARAPET" DETAIL ON SHEET 4 OF 4.



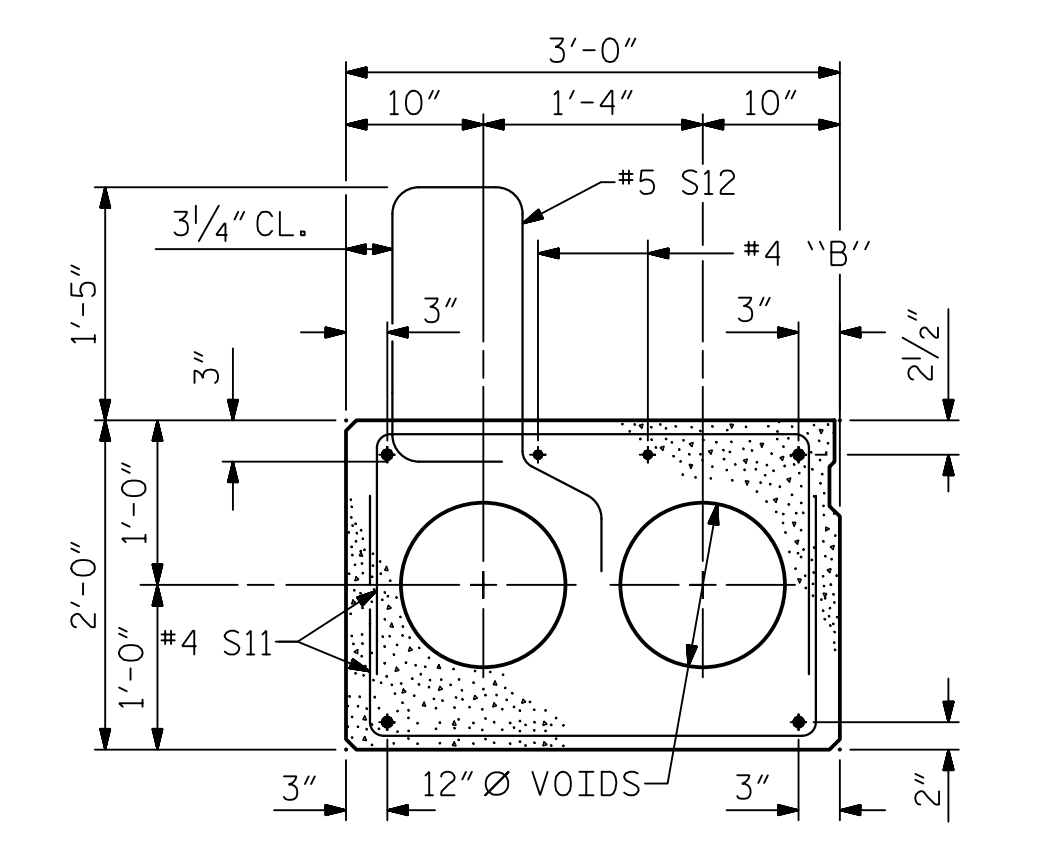
INTERIOR SLAB SECTION (35' UNIT)
 (13 STRANDS REQUIRED)



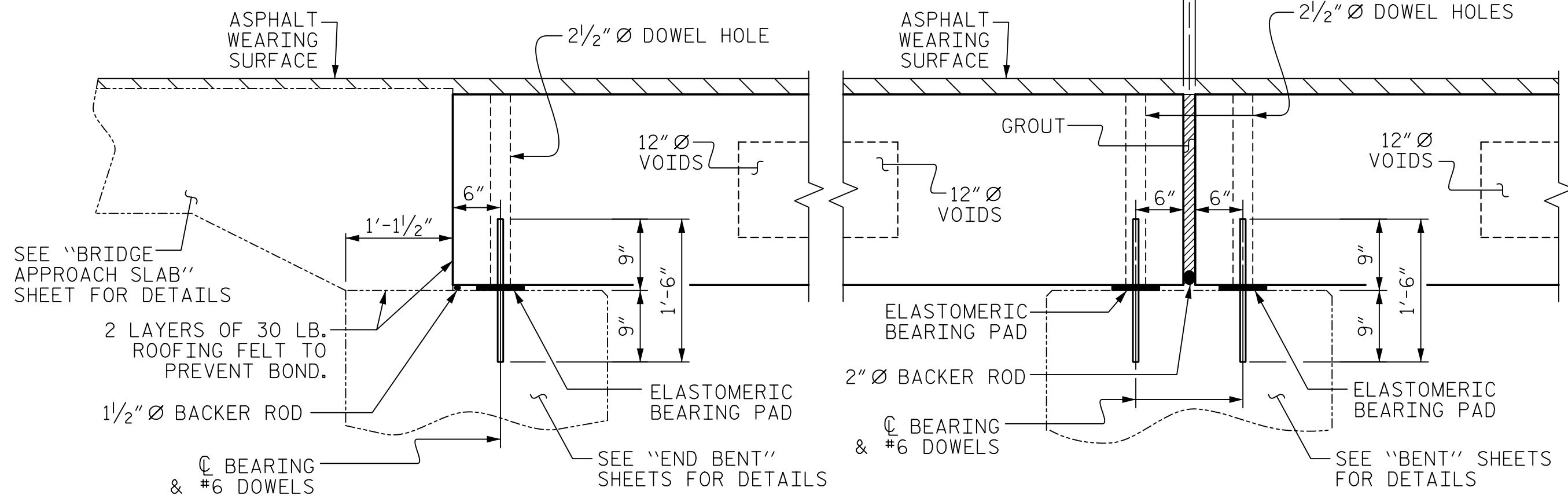
INTERIOR SLAB SECTION (70' UNIT)
 (28 STRANDS REQUIRED)

0.6" Ø LOW RELAXATION STRAND LAYOUT

- ☑ BOND SHALL BE BROKEN ON THESE STRANDS FOR A DISTANCE OF 2'-0" FROM END OF CORED SLAB UNIT. SEE STANDARD SPECIFICATIONS, ARTICLE 1078-7.
- ◆ BOND SHALL BE BROKEN ON THESE STRANDS FOR A DISTANCE OF 12'-0" FROM END OF CORED SLAB UNIT. SEE STANDARD SPECIFICATIONS, ARTICLE 1078-7.
- OPTIONAL FULL LENGTH DEBONDED STRANDS. THESE STRANDS ARE NOT REQUIRED. IF THE FABRICATOR CHOOSES TO INCLUDE THESE STRANDS IN THE CORED SLAB UNIT, THE STRANDS SHALL BE DEBONDED FOR THE FULL LENGTH OF THE UNIT AT NO ADDITIONAL COST. SEE STANDARD SPECIFICATIONS, ARTICLE 1078-7.

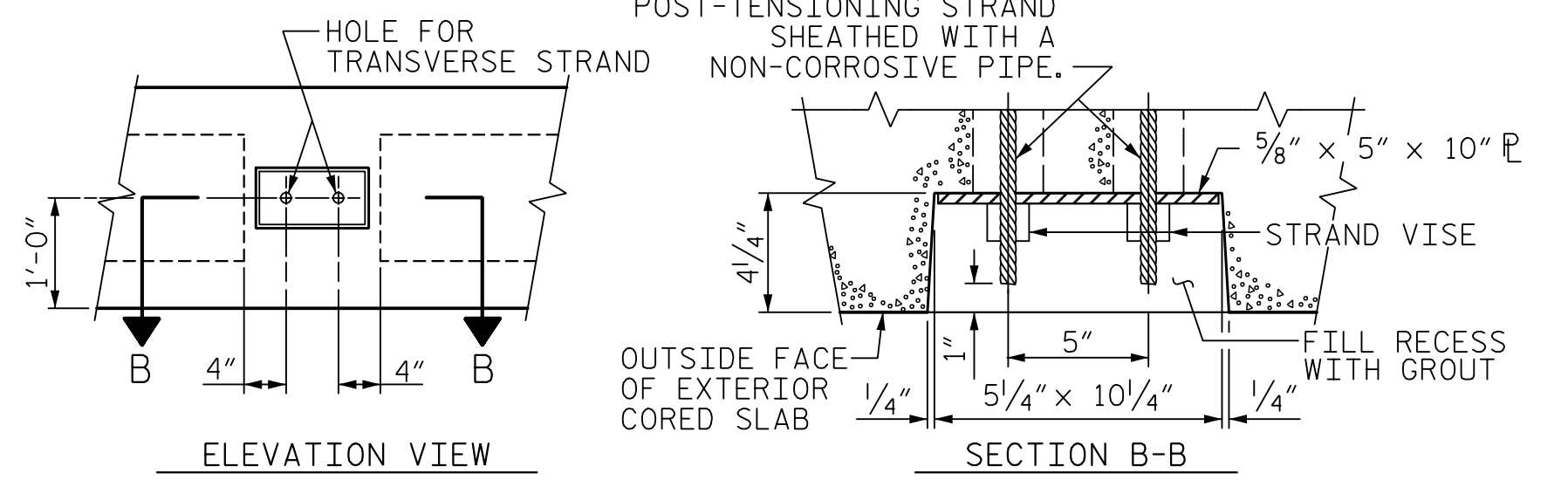
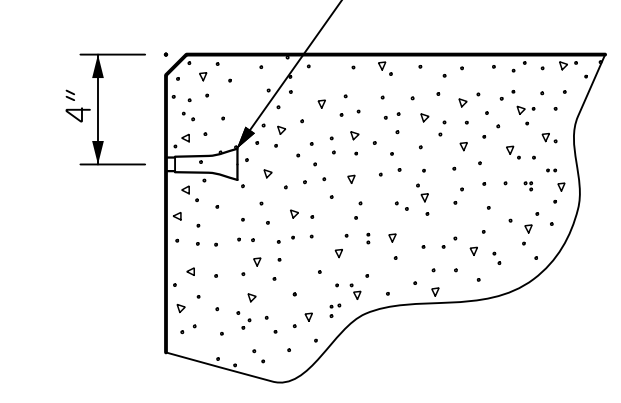


EXTERIOR SLAB SECTION
 (FOR PRESTRESSED STRAND LAYOUT, SEE INTERIOR SLAB SECTION.)

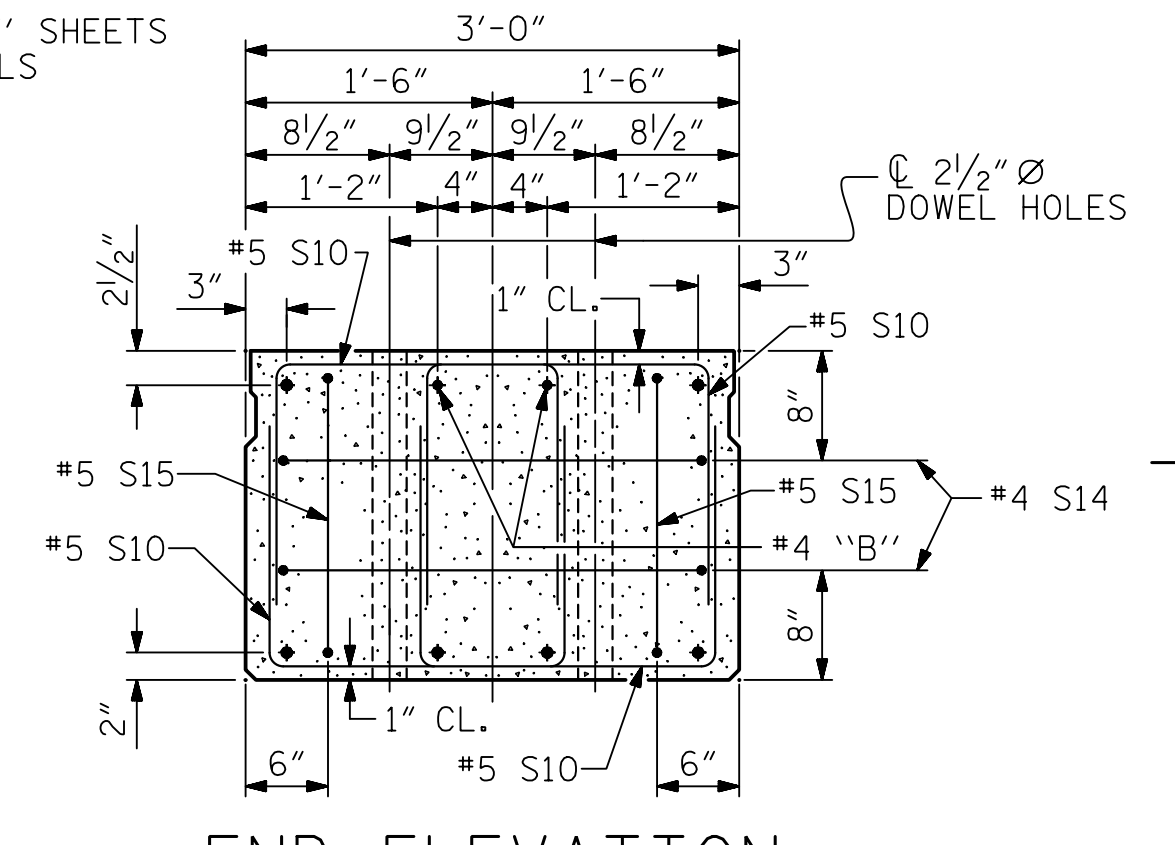


SECTION AT END BENT **SECTION AT BENT**

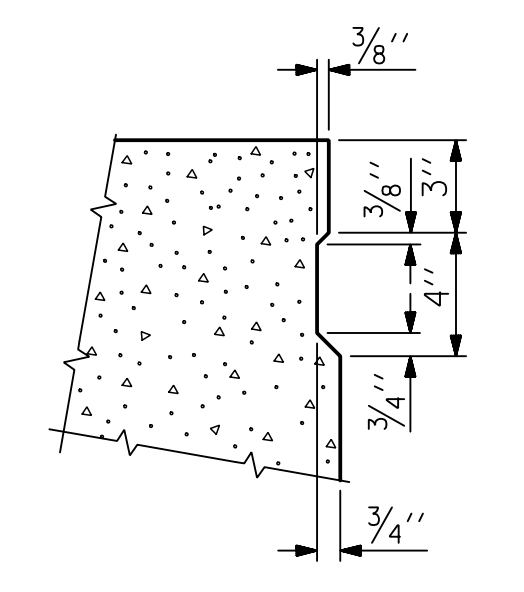
PERMITTED THREADED INSERT CAST IN OUTSIDE FACE OF EXTERIOR UNIT AND RECESSED 3/8" SIZE TO BE DETERMINED BY CONTRACTOR.



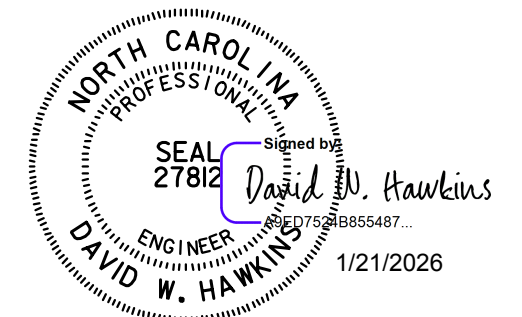
GROUTED RECESS AT END OF POST-TENSIONED STRAND CORED SLABS



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



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



PROJECT NO. BP7-R009
ORANGE COUNTY
 STATION: POC 15+27.00 -L-

SHEET 1 OF 4

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

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

| | |
|--------------------------|--------------|
| ASSEMBLED BY : M. WRIGHT | DATE : 04/23 |
| CHECKED BY : Z. REINEKE | DATE : 03/25 |
| DRAWN BY : MAA | 6/10 |
| CHECKED BY : MKT | 7/10 |
| REV. 8/14 | MAA/TMG |

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 NC License No. C-1554
 4000 Center at North Hills Street, Suite 500, Raleigh, N.C. 27609

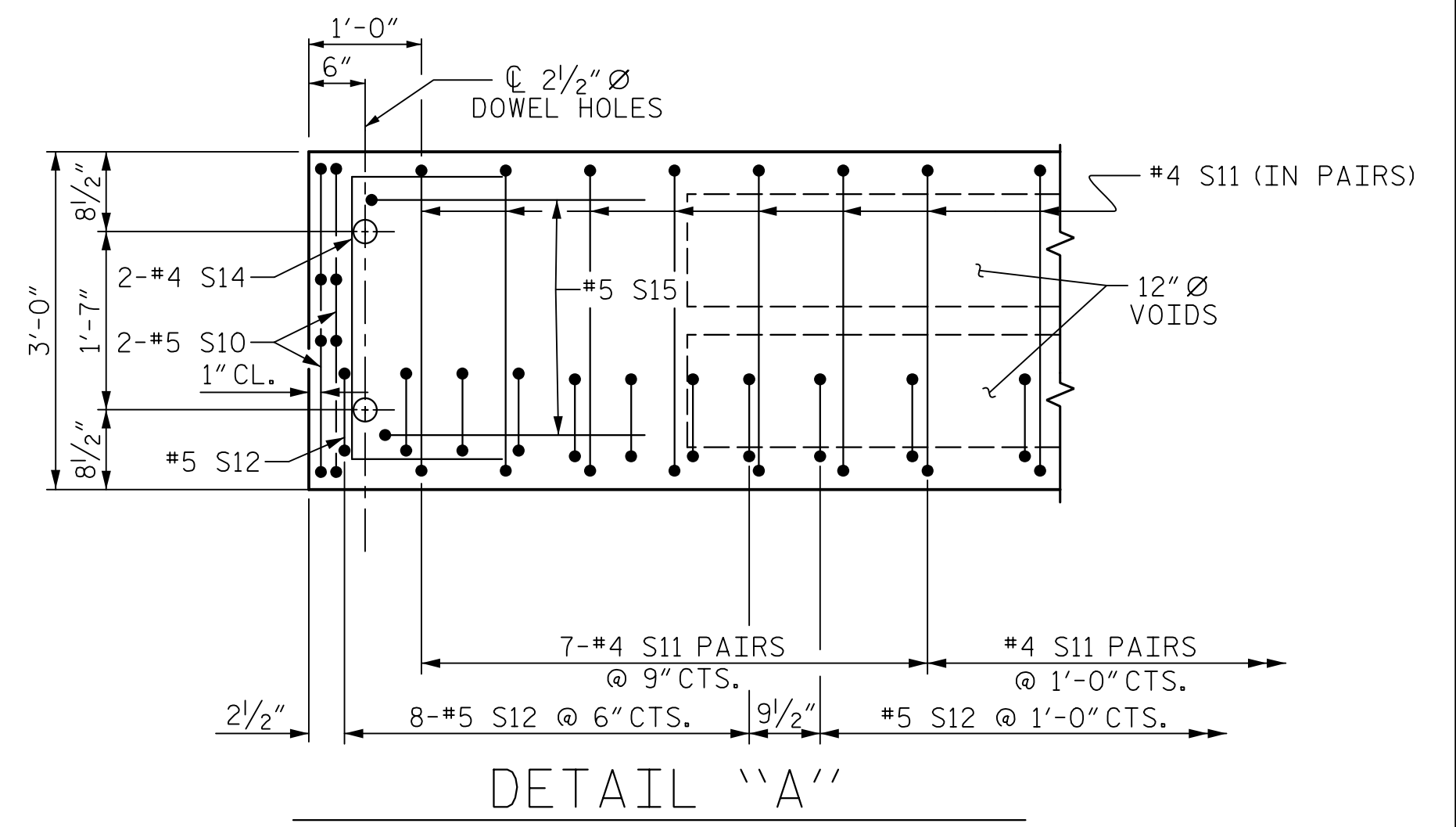
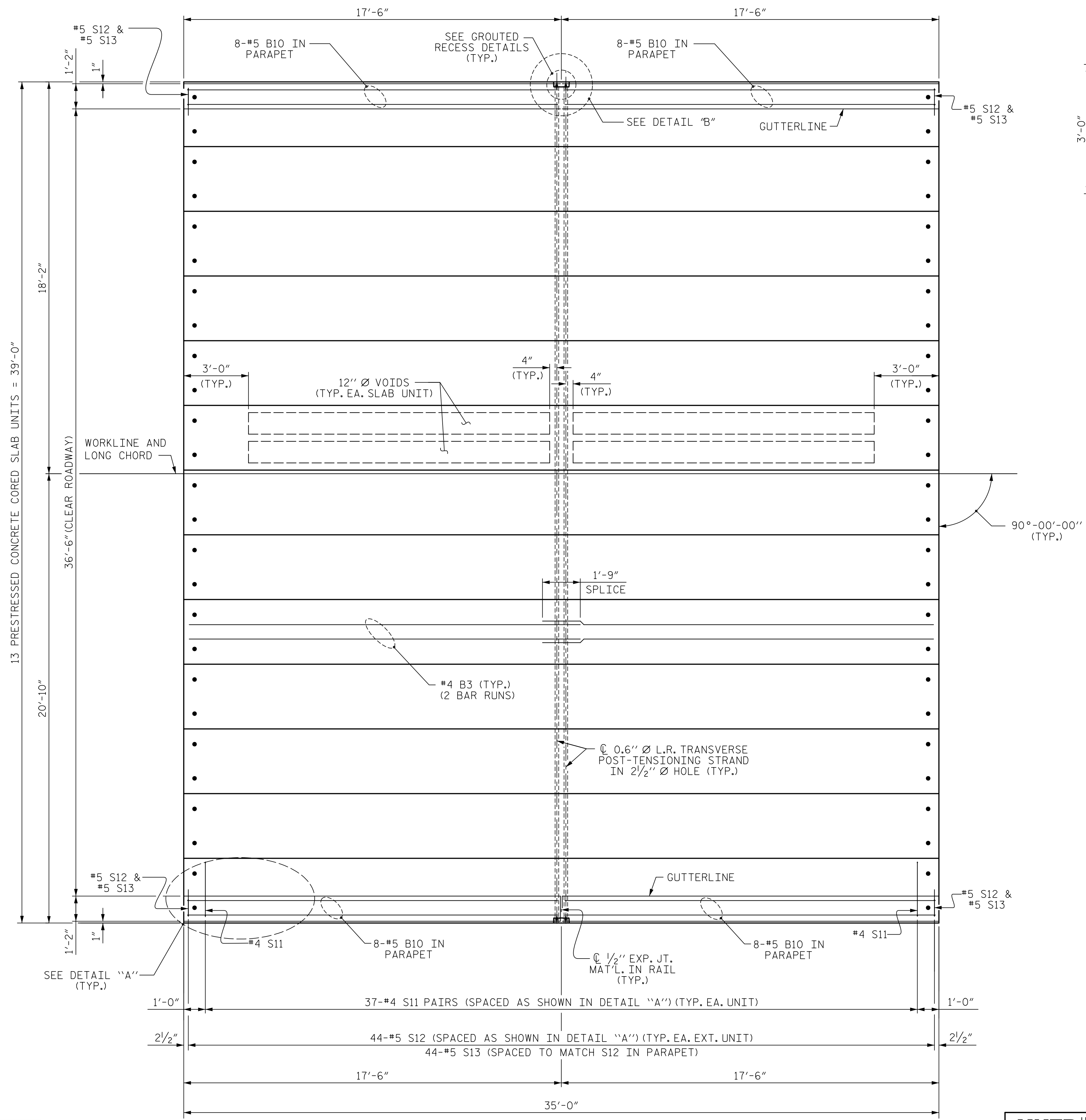
DWG. NO. 6

| | | | |
|---------------------------|------------|------|-------|
| DRAWN BY | M. WRIGHT | DATE | 04/23 |
| CHECKED BY | Z. REINEKE | DATE | 03/25 |
| DESIGN ENGINEER OF RECORD | D. HAWKINS | DATE | 03/25 |

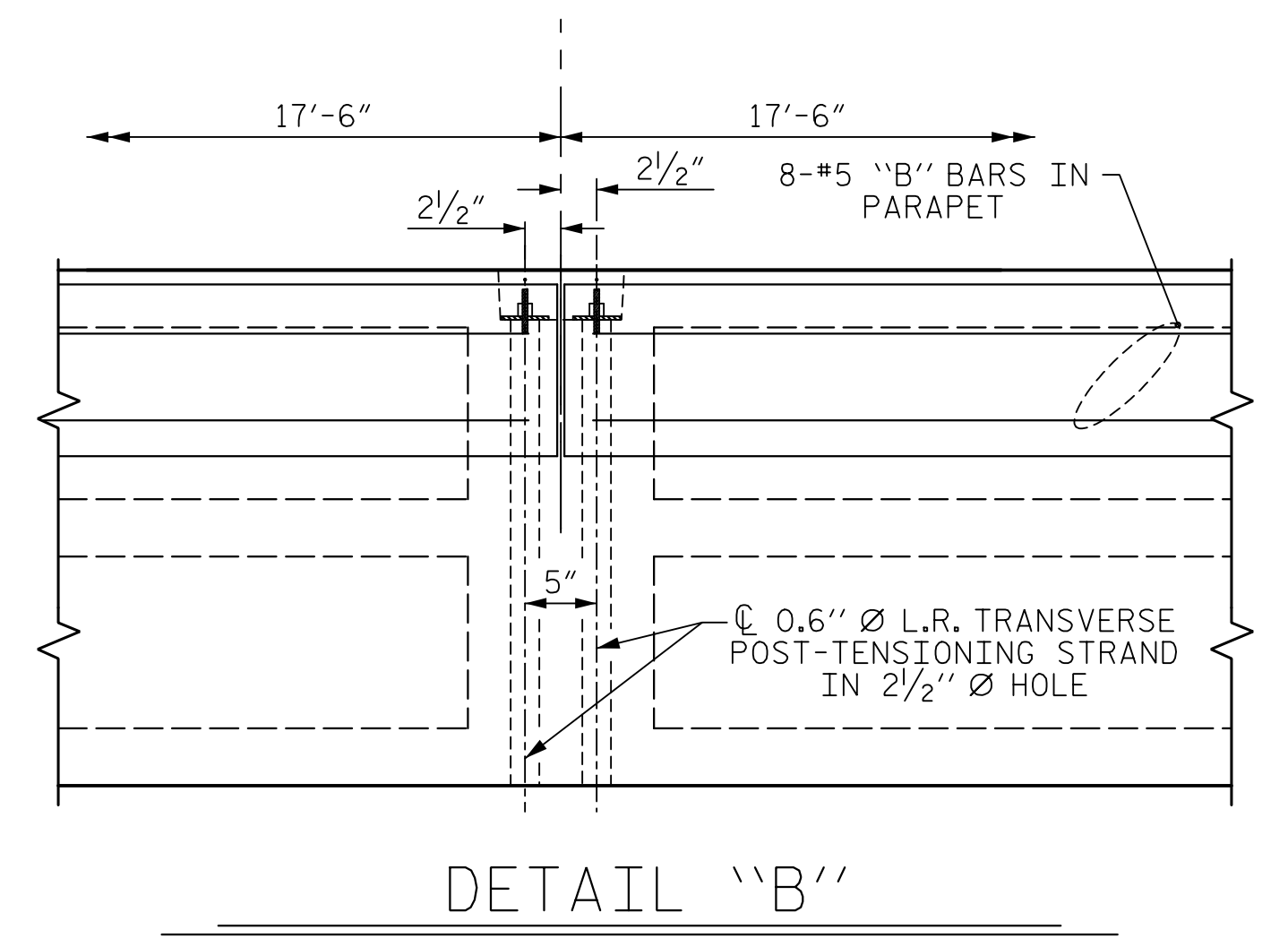
| REVISIONS | | | | | SHEET NO. |
|-----------|----|------|-----|----|-----------|
| NO. | BY | DATE | NO. | BY | DATE |
| 1 | | | 3 | | |
| 2 | | | 4 | | |

TOTAL SHEETS: 24

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



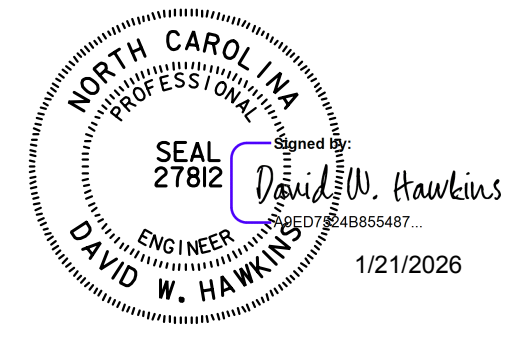
DETAIL "B"

PROJECT NO. BP7-R009
ORANGE COUNTY
 STATION: POC 15+27.00 -L-

SHEET 2 OF 4

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

PLAN OF 35' UNIT
 36'-6" CLEAR ROADWAY
 90° SKEW
 SPAN A & C



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 4000 Center at North Hills Street, Suite 500, Raleigh, N.C. 27609

DRAWN BY: M. WRIGHT DATE: 04/23
 CHECKED BY: Z. REINEKE DATE: 03/25
 DESIGN ENGINEER OF RECORD: D. HAWKINS DATE: 03/25

DWG. NO. 7

| REVISIONS | | | | | | SHEET NO. |
|-----------|----|------|-----|----|------|--------------|
| NO. | BY | DATE | NO. | BY | DATE | S-7 |
| 1 | | | 3 | | | TOTAL SHEETS |
| 2 | | | 4 | | | 24 |

| | |
|--------------------------|----------------------|
| ASSEMBLED BY : M. WRIGHT | DATE : 04/23 |
| CHECKED BY : Z. REINEKE | DATE : 03/25 |
| DRAWN BY : DGE 6/09 | REV. 12/5/11 MAA/AAC |
| CHECKED BY: BCH 6/09 | REV. 8/14 MAA/TMG |

PLAN OF UNIT

DOCUMENT NOT CONSIDERED FINAL
 UNLESS ALL SIGNATURES COMPLETED

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NOTES

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

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

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

THE 2 1/2" Ø DOWEL HOLES AT FIXED ENDS OF SLAB SECTIONS SHALL BE FILLED WITH NON-SHRINK GROUT.

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

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

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

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

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

APPLY EPOXY PROTECTIVE COATING TO CORED SLAB UNIT ENDS.

GROOVED CONTRACTION JOINTS, 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.

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

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

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

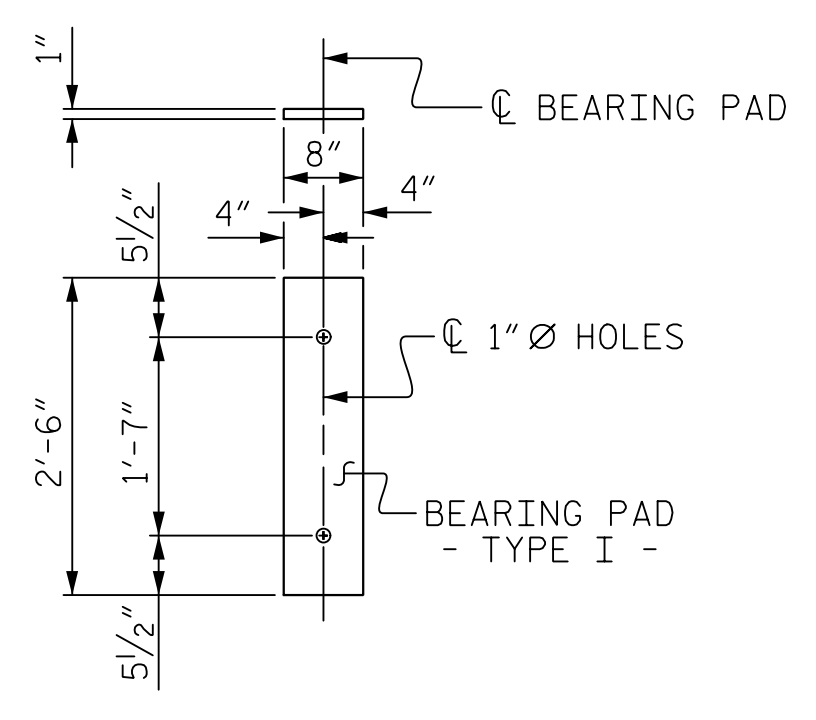
FOR GROUT FOR STRUCTURES, SEE SPECIAL PROVISIONS.

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

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

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

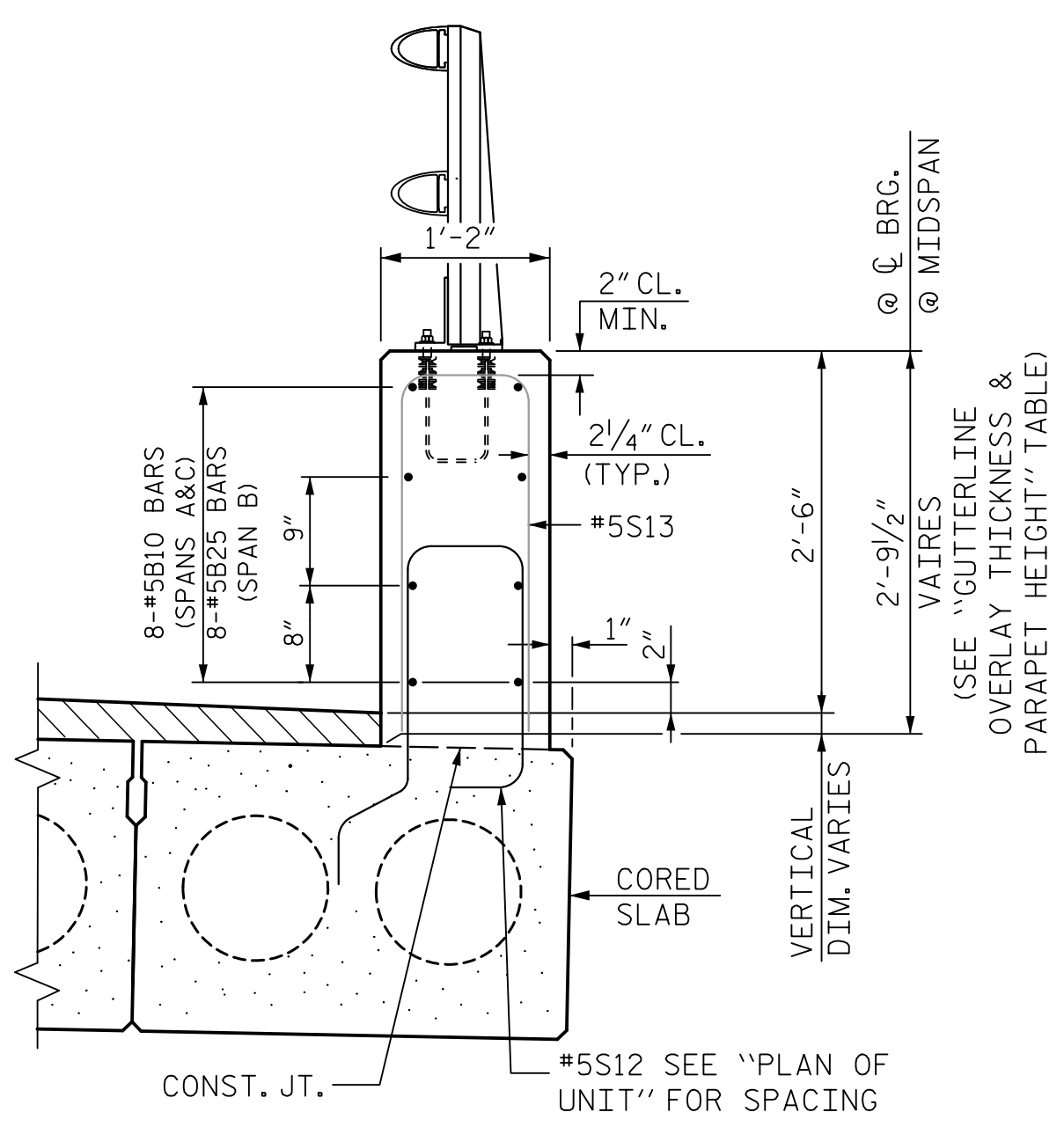
THE COST OF THE PERMITTED THREADED INSERTS SHALL BE INCLUDED IN THE PRICE BID FOR THE PRECAST UNITS.



FIXED END
(TYPE I - 78 REQ'D)

ELASTOMERIC BEARING DETAILS

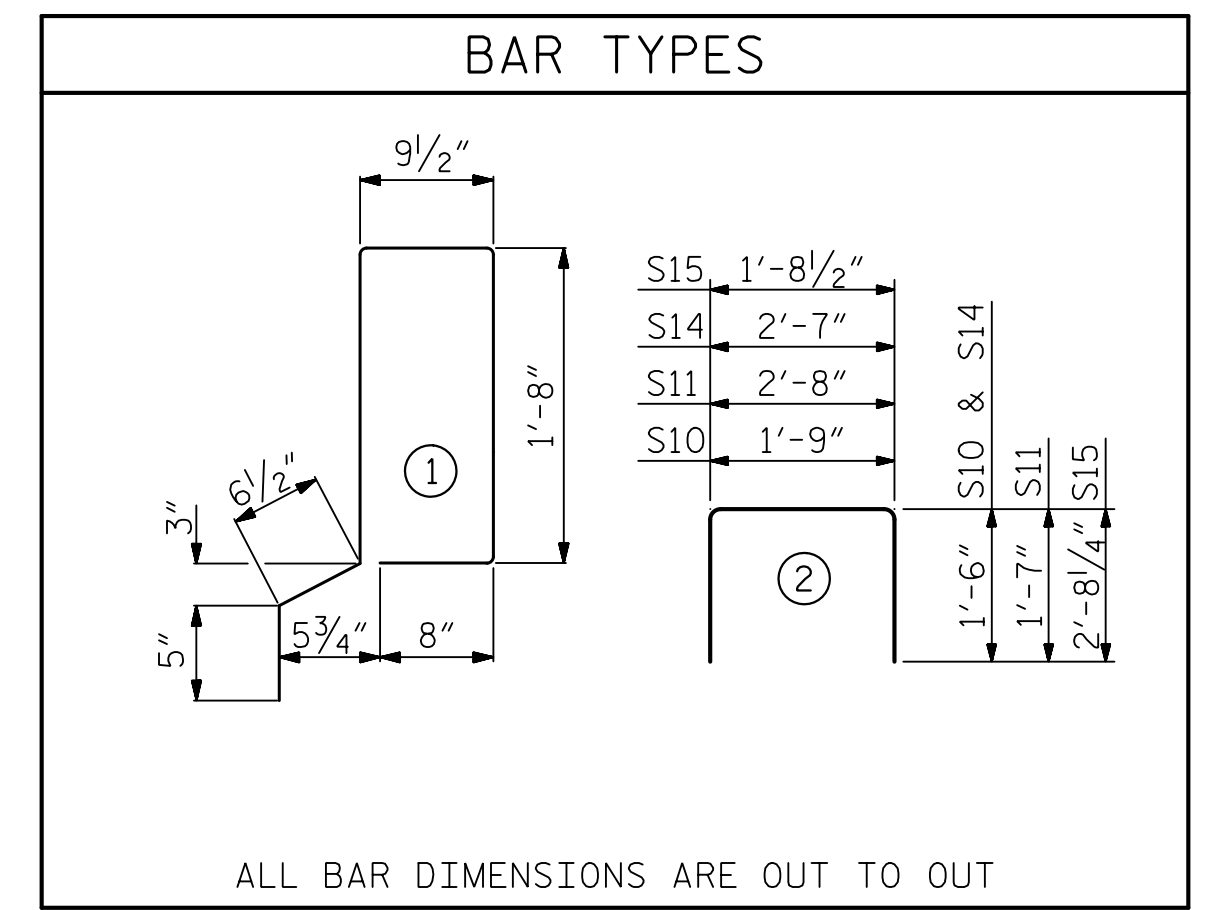
ELASTOMER IN ALL BEARINGS SHALL BE 60 DUROMETER HARDNESS.



SECTION THRU PARAPET

| BILL OF MATERIAL FOR ONE 35' CORED SLAB UNIT | | | | | | | |
|--|--------|------|------|---------------|--------|---------------|--------|
| BAR | NUMBER | SIZE | TYPE | EXTERIOR UNIT | | INTERIOR UNIT | |
| | | | | LENGTH | WEIGHT | LENGTH | WEIGHT |
| B3 | 4 | #4 | STR | 18'-3" | 49 | 18'-3" | 49 |
| S10 | 8 | #5 | 2 | 4'-9" | 40 | 4'-9" | 40 |
| S11 | 74 | #4 | 2 | 5'-10" | 288 | 5'-10" | 288 |
| *S12 | 44 | #5 | 1 | 5'-9" | 264 | | |
| S14 | 4 | #4 | 2 | 5'-7" | 15 | 5'-7" | 15 |
| S15 | 4 | #5 | 2 | 7'-1" | 30 | 7'-1" | 30 |
| REINFORCING STEEL | | | | LBS. | 422 | | 422 |
| *EPOXY COATED REINFORCING STEEL | | | | LBS. | 264 | | |
| 5000 P.S.I. CONCRETE | | | | CU. YDS. | 6.2 | | 6.2 |
| 0.6" Ø L.R. STRANDS | | | | No. | 13 | | 13 |

| BILL OF MATERIAL FOR ONE 70' CORED SLAB UNIT | | | | | | | |
|--|--------|------|------|---------------|--------|---------------|--------|
| BAR | NUMBER | SIZE | TYPE | EXTERIOR UNIT | | INTERIOR UNIT | |
| | | | | LENGTH | WEIGHT | LENGTH | WEIGHT |
| B22 | 6 | #4 | STR | 24'-6" | 98 | 24'-6" | 98 |
| S10 | 8 | #5 | 2 | 4'-9" | 40 | 4'-9" | 40 |
| S11 | 144 | #4 | 2 | 5'-10" | 561 | 5'-10" | 561 |
| *S12 | 79 | #5 | 1 | 5'-9" | 474 | | |
| S14 | 4 | #4 | 2 | 5'-7" | 15 | 5'-7" | 15 |
| S15 | 4 | #5 | 2 | 7'-1" | 30 | 7'-1" | 30 |
| REINFORCING STEEL | | | | LBS. | 744 | | 744 |
| *EPOXY COATED REINFORCING STEEL | | | | LBS. | 474 | | |
| 7000 P.S.I. CONCRETE | | | | CU. YDS. | 11.8 | | 11.8 |
| 0.6" Ø L.R. STRANDS | | | | No. | 28 | | 28 |



ALL BAR DIMENSIONS ARE OUT TO OUT

| CORED SLABS REQUIRED | | | |
|----------------------|--------|--------|--------------|
| 35' UNIT | NUMBER | LENGTH | TOTAL LENGTH |
| EXTERIOR C.S. | 4 | 35'-0" | 140'-0" |
| INTERIOR C.S. | 22 | 35'-0" | 770'-0" |
| TOTAL | 26 | | 910'-0" |

| CORED SLABS REQUIRED | | | |
|----------------------|--------|--------|--------------|
| 70' UNIT | NUMBER | LENGTH | TOTAL LENGTH |
| EXTERIOR C.S. | 2 | 70'-0" | 140'-0" |
| INTERIOR C.S. | 11 | 70'-0" | 770'-0" |
| TOTAL | 13 | | 910'-0" |

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

| GUTTERLINE ASPHALT THICKNESS & PARAPET HEIGHT | | |
|---|--------------------------------------|------------------------|
| | ASPHALT OVERLAY THICKNESS @ MID-SPAN | RAIL HEIGHT @ MID-SPAN |
| 35' UNITS | 3" | 2'-9" |
| 70' UNITS | 2" | 2'-8" |

| DEAD LOAD DEFLECTION AND CAMBER | |
|--|---------------|
| 35' CORED SLAB UNIT | 3'-0" x 2'-0" |
| CAMBER (SLAB ALONE IN PLACE) | 5/8" ↑ |
| DEFLECTION DUE TO SUPERIMPOSED DEAD LOAD** | 1/8" ↓ |
| FINAL CAMBER | 1/2" ↑ |

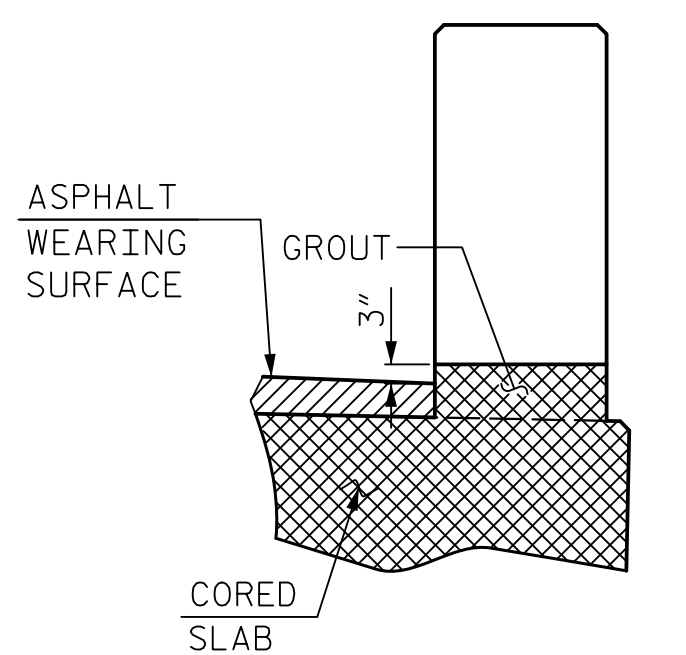
* INCLUDES FUTURE WEARING SURFACE

| CONCRETE RELEASE STRENGTH | |
|---------------------------|------|
| UNIT | PSI |
| 35' UNITS | 4000 |
| 70' UNITS | 5500 |

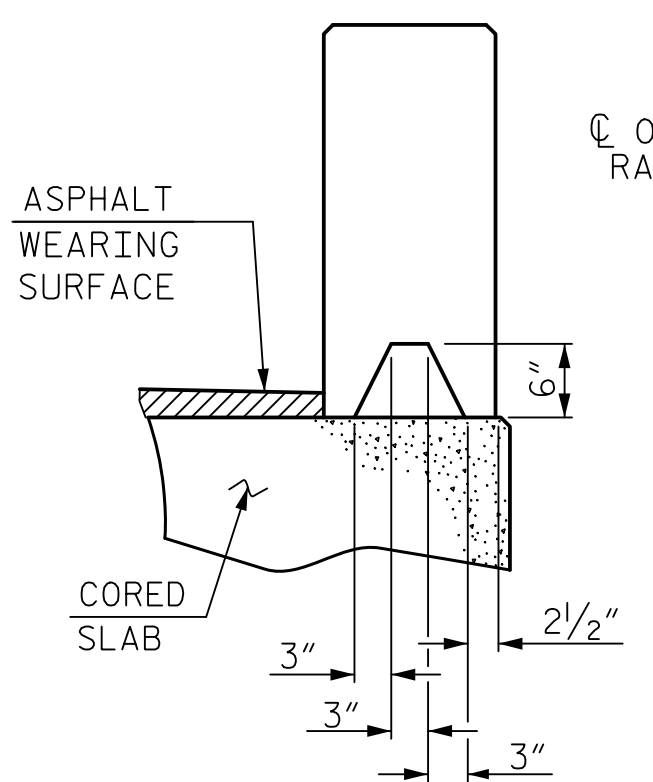
NOTE: FOR END POST REINFORCING DETAILS AND PARAPET BILL OF MATERIAL, SEE SHEET "RAIL POST SPACING AND END OF RAIL DETAILS FOR TWO BAR METAL RAILS".

| DEAD LOAD DEFLECTION AND CAMBER | |
|--|---------------|
| 70' CORED SLAB UNIT | 3'-0" x 2'-0" |
| CAMBER (SLAB ALONE IN PLACE) | 2 1/4" ↑ |
| DEFLECTION DUE TO SUPERIMPOSED DEAD LOAD** | 3/4" ↓ |
| FINAL CAMBER | 1 1/2" ↑ |

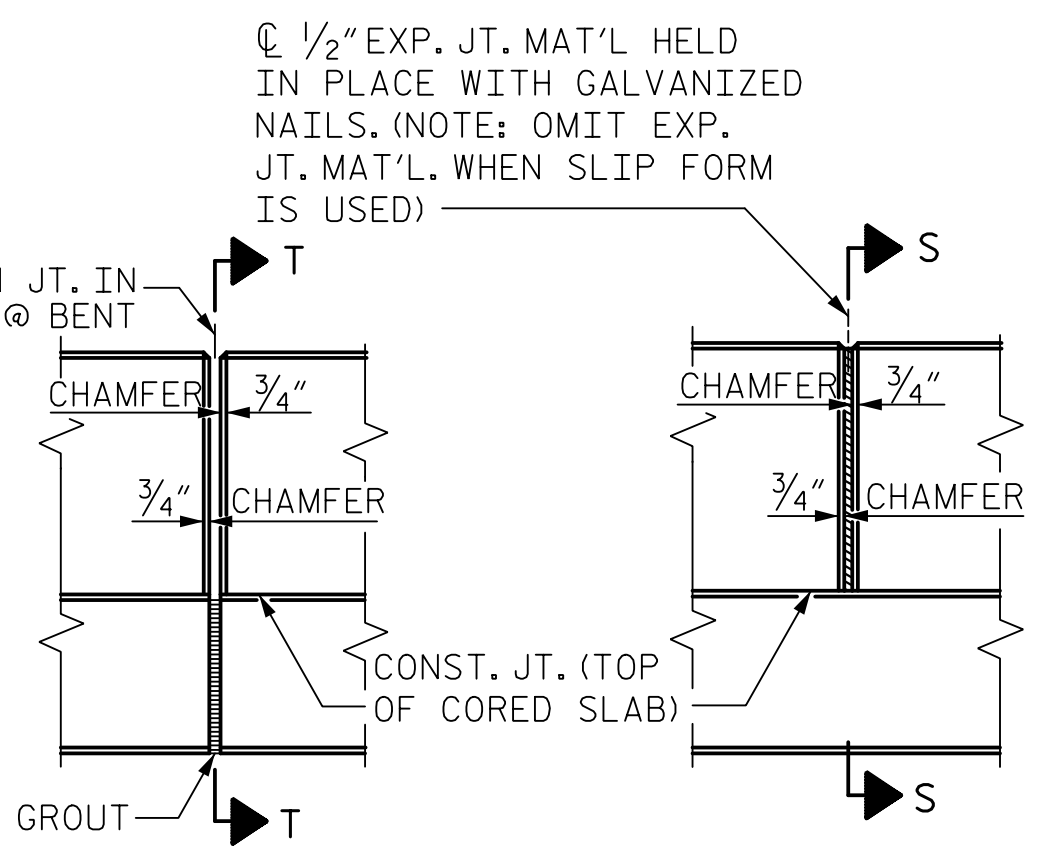
* INCLUDES FUTURE WEARING SURFACE



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



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



ELEVATION AT EXPANSION JOINTS

PARAPET DETAILS

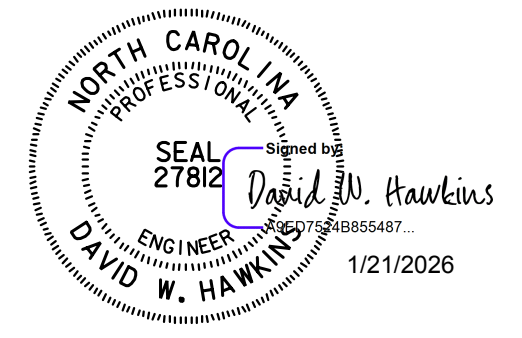
| | |
|--------------------------|--------------|
| ASSEMBLED BY : M. WRIGHT | DATE : 04/32 |
| CHECKED BY : Z. REINEKE | DATE : 03/25 |
| DRAWN BY : MAA 6/10 | REV. 5/18 |
| CHECKED BY : MKT 7/10 | MAA/THC |

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

HNTB HNTB NORTH CAROLINA, P.C.
NC License No. C-1554
4000 Center at North Hills Street, Suite 500, Raleigh, N.C. 27609

DRAWN BY: M. WRIGHT DATE: 04/23
CHECKED BY: Z. REINEKE DATE: 03/25
DESIGN ENGINEER OF RECORD: D. HAWKINS DATE: 03/25

DWG. NO. 9



PROJECT NO. BP7-R009
ORANGE COUNTY
STATION: POC 15+27.00 -L-

SHEET 4 OF 4

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

3'-0" X 2'-0"
PRESTRESSED CONCRETE
CORED SLAB UNIT
90° SKEW

| REVISIONS | | | | | | SHEET NO. |
|-----------|----|------|-----|----|------|--------------|
| NO. | BY | DATE | NO. | BY | DATE | S-9 |
| 1 | | | 3 | | | TOTAL SHEETS |
| 2 | | | 4 | | | 24 |

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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.

PAY LENGTH = 265.50' LIN. FT.

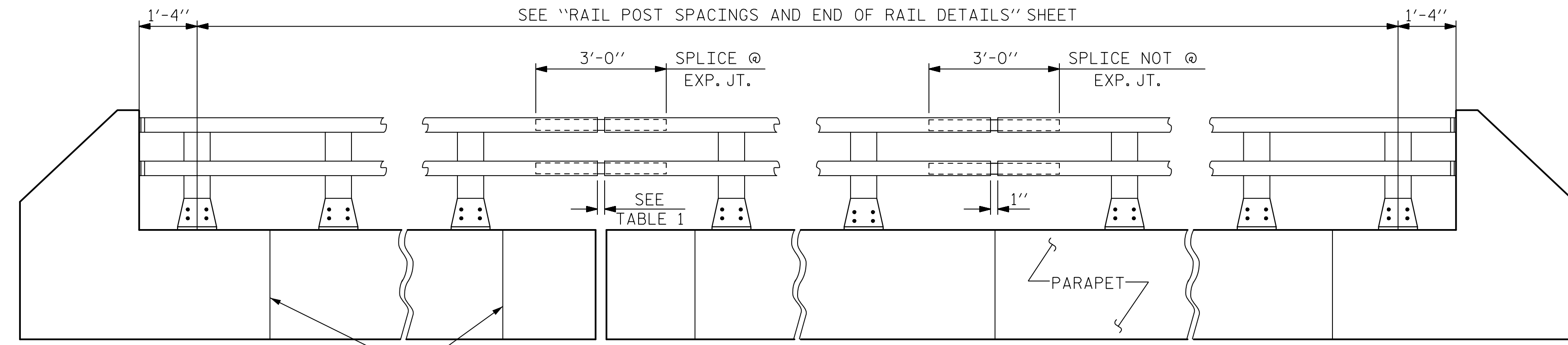
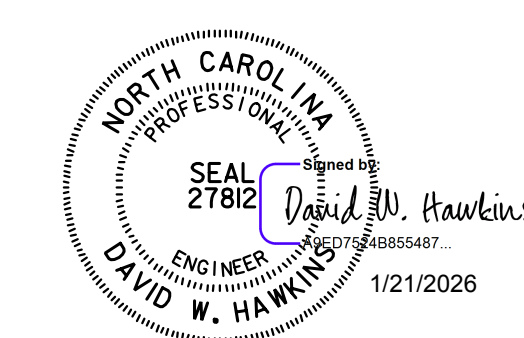
PROJECT NO. BP7-R009
ORANGE COUNTY
STATION: POC 15+27.00 -L-

SHEET 1 OF 2

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH
STANDARD

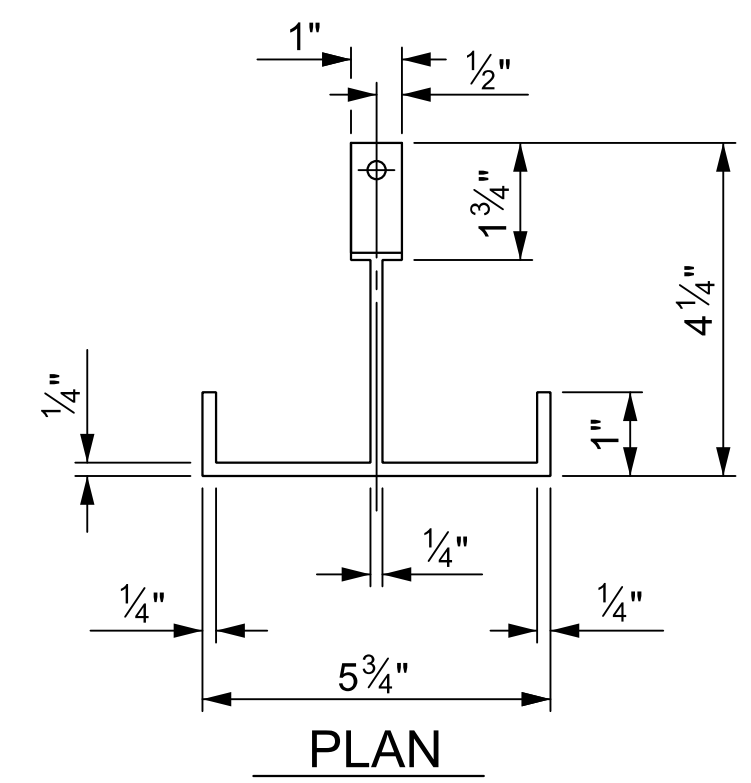
2 BAR METAL RAIL

| REVISIONS | | | | | | SHEET NO. |
|-----------|----|------|-----|----|------|--------------|
| NO. | BY | DATE | NO. | BY | DATE | S-10 |
| 1 | | | 3 | | | TOTAL SHEETS |
| 2 | | | 4 | | | 24 |

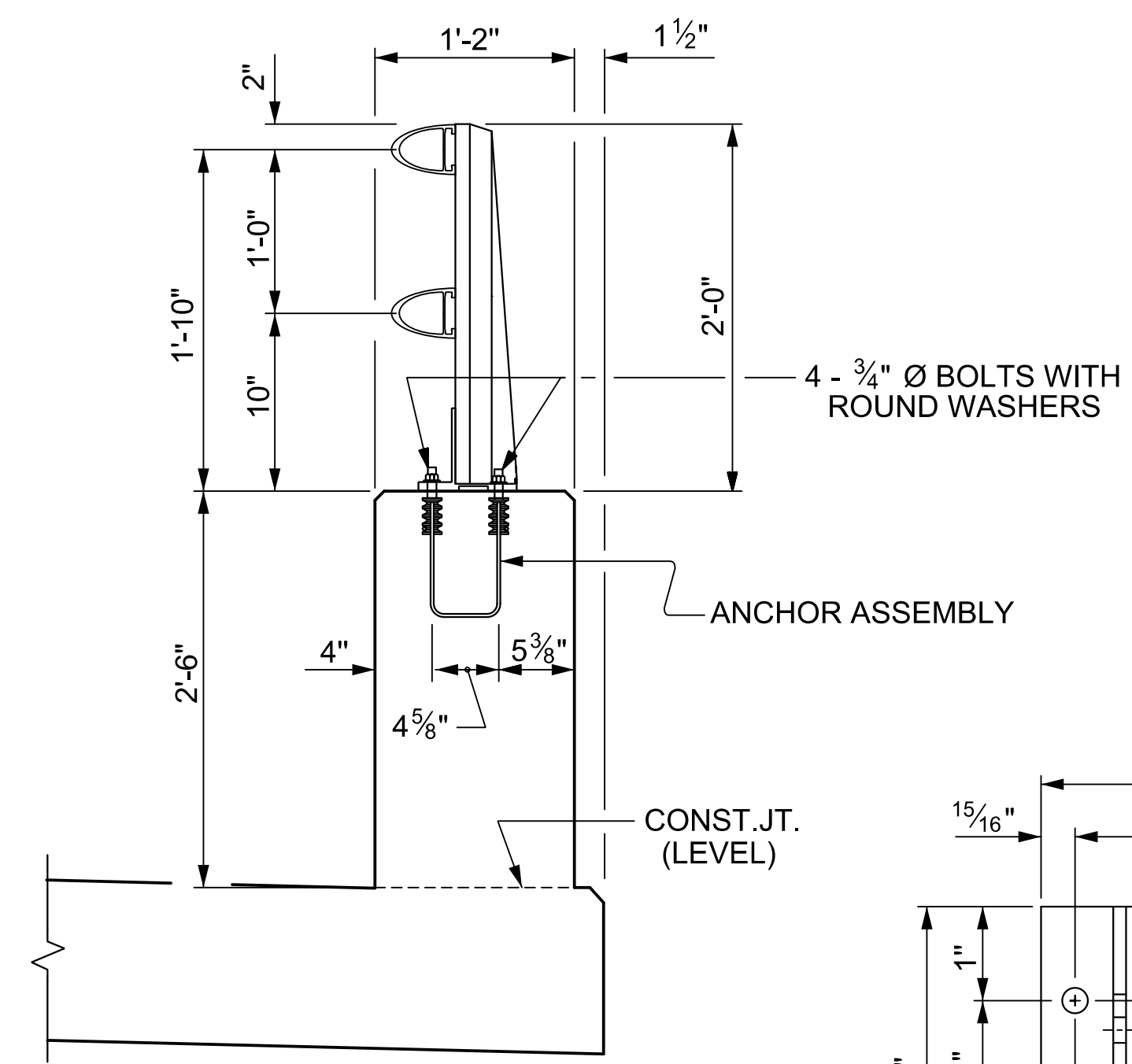


ELEVATION
NOTE : FOR ATTACHMENT OF METAL RAIL TO END POST, SEE STANDARD NO. BMR2.

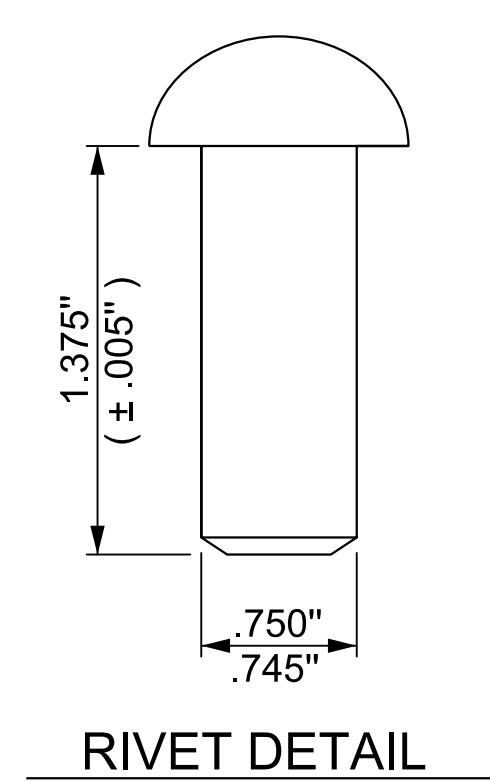
| EXP. JT. @ | RAIL OPENING |
|------------|--------------|
| BENT 1 | 1 1/2" |
| BENT 2 | 1 1/2" |



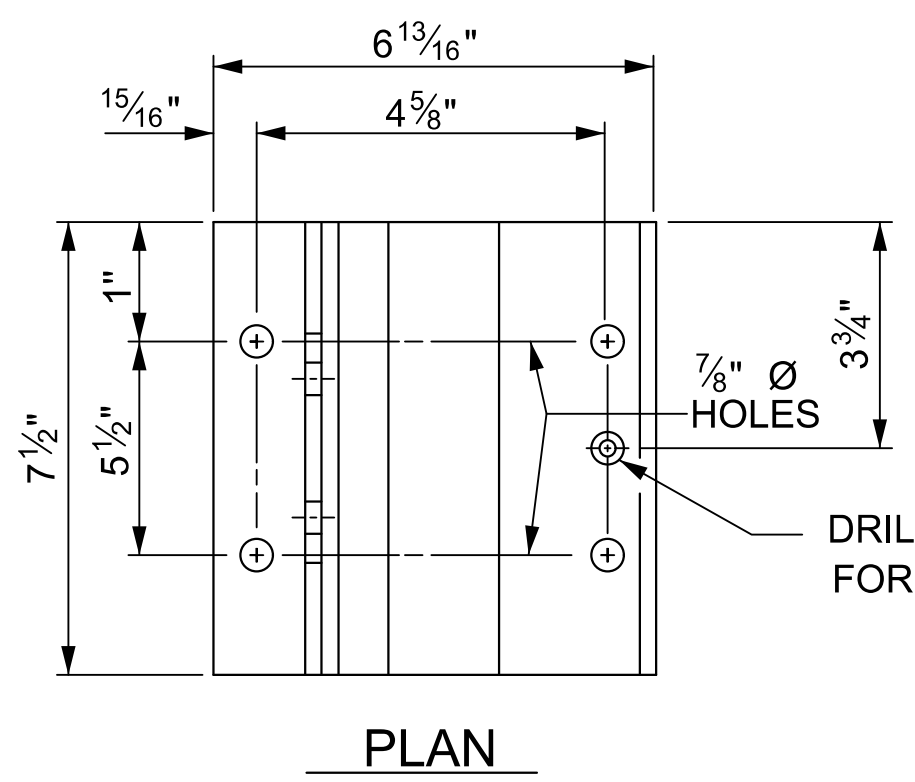
PLAN



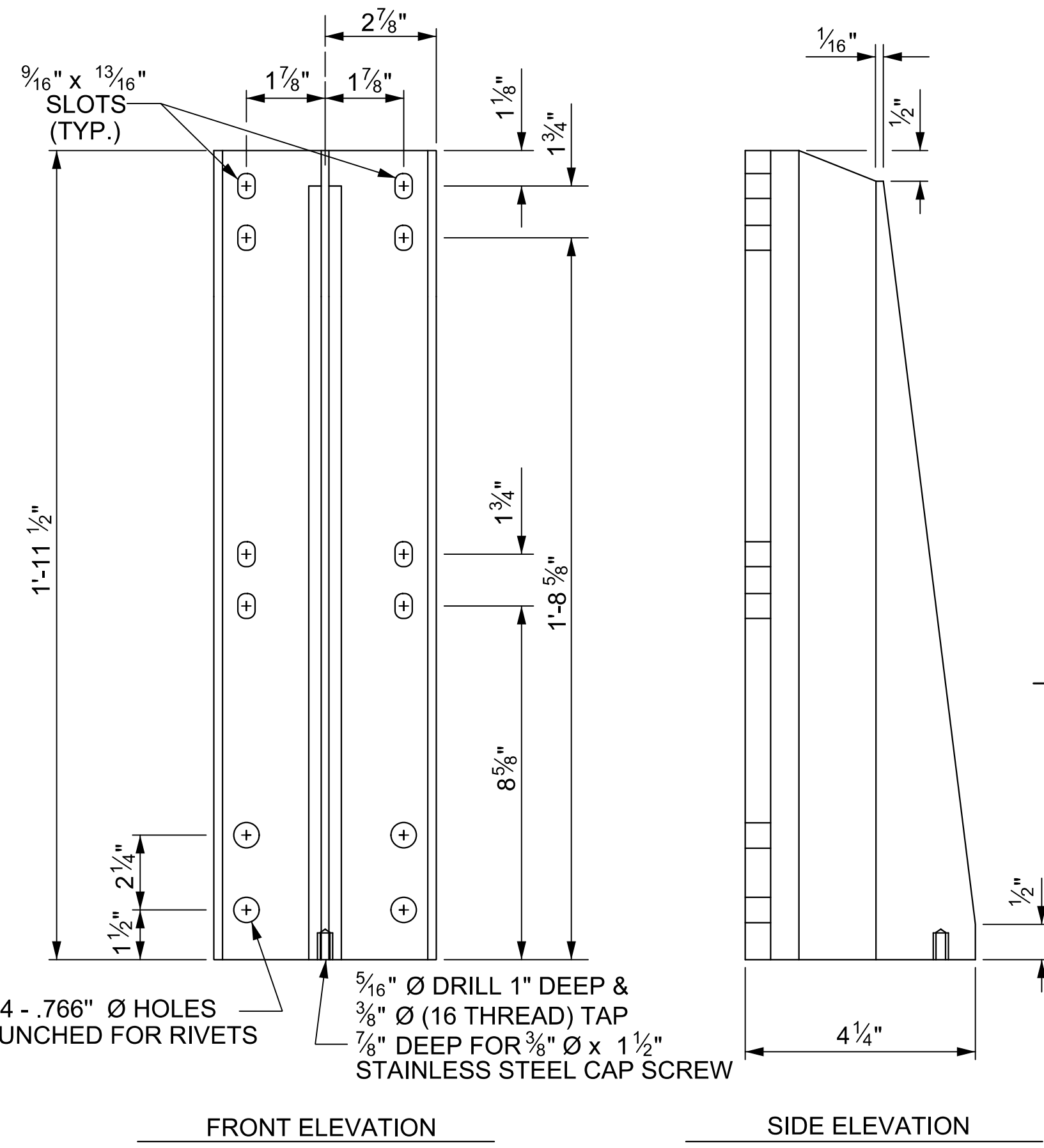
SECTION THRU PARAPET AND RAIL



RIVET DETAIL



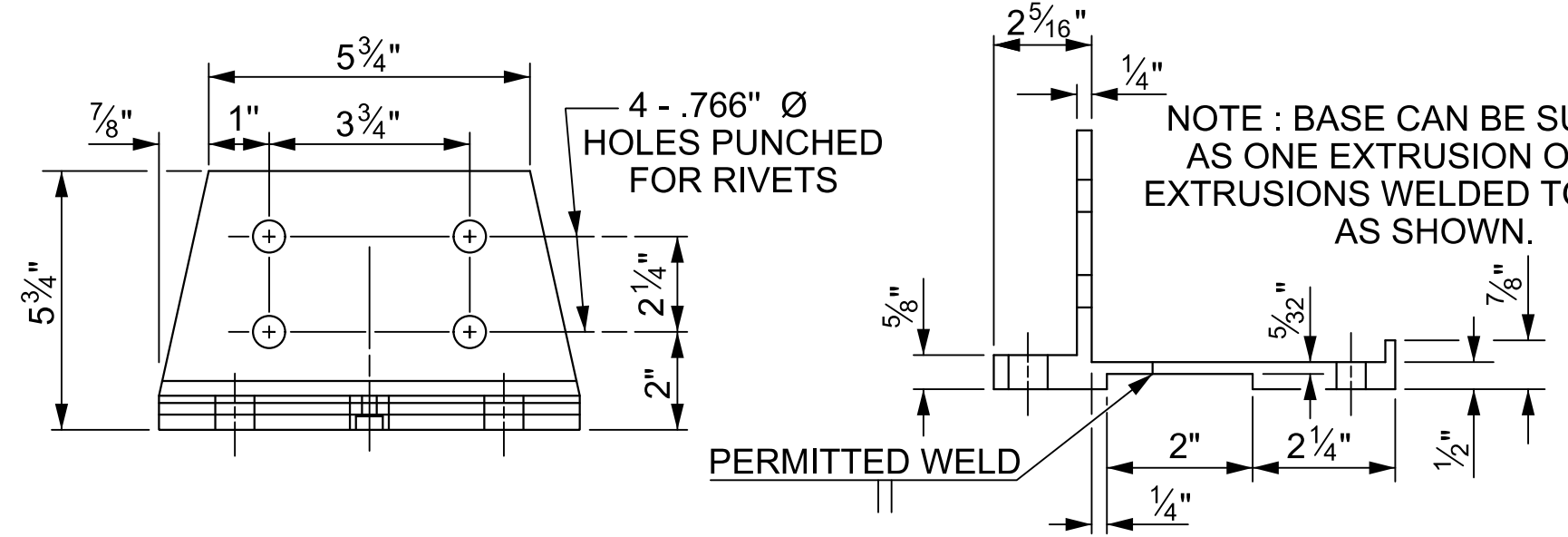
PLAN



FRONT ELEVATION

SIDE ELEVATION

DETAILS OF POST



FRONT ELEVATION

SIDE ELEVATION

POST BASE DETAILS

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4000 Center at North Hills Street, Suite 500, Raleigh, N.C. 27609

DWG. NO. 10

| | |
|--|--------------|
| DRAWN BY : M. WRIGHT | DATE : 08/24 |
| CHECKED BY : Z. REINEKE | DATE : 03/25 |
| DESIGN ENGINEER OF RECORD : D. HAWKINS | DATE : 03/25 |

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NOTES

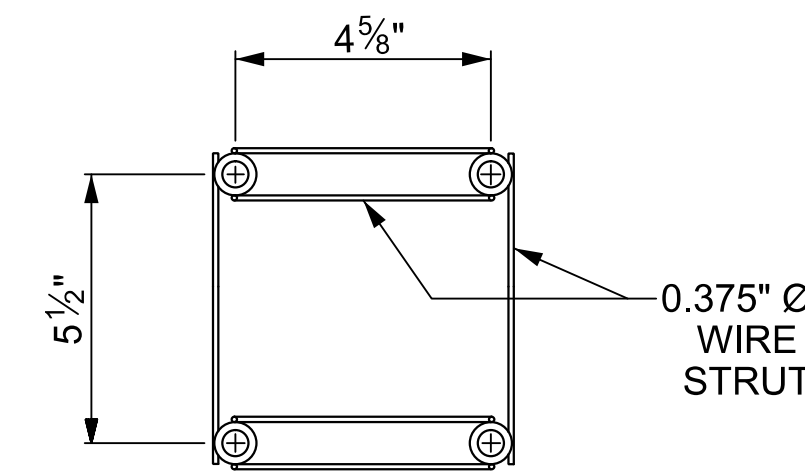
STRUCTURAL CONCRETE ANCHOR ASSEMBLY

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

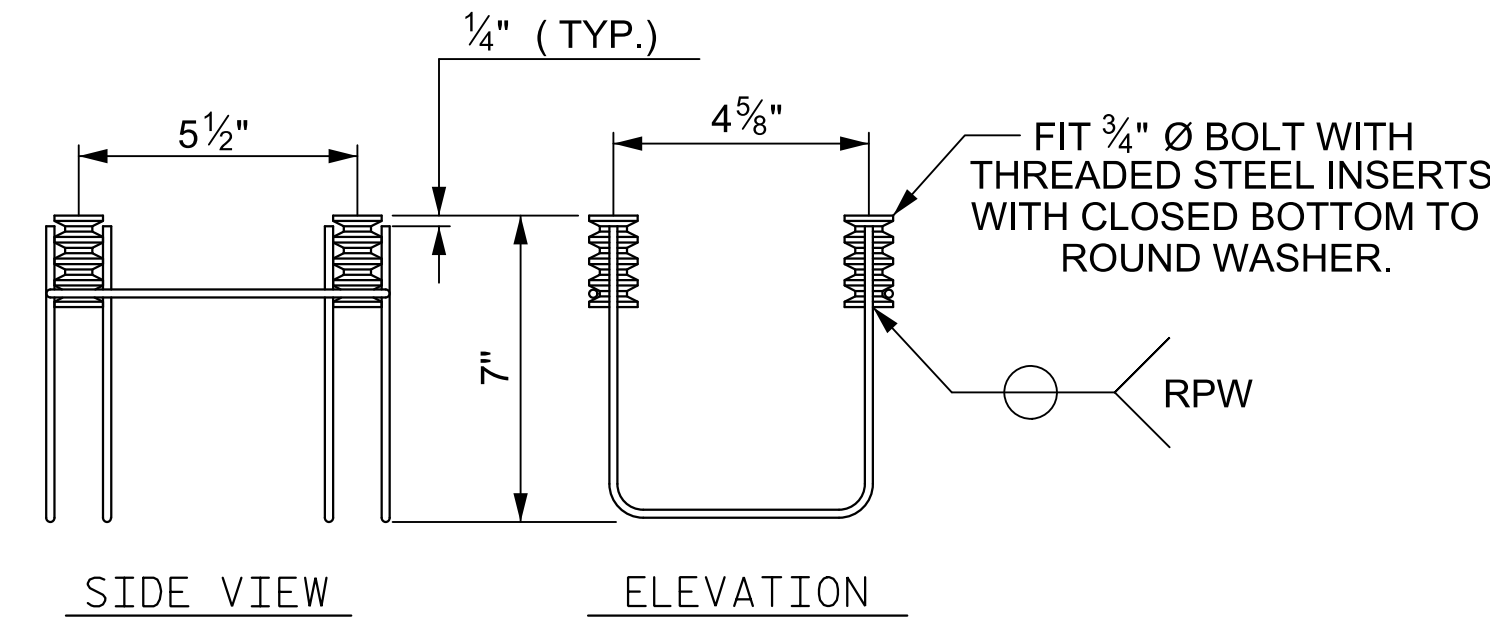
- A. FERRULES SHALL BE MADE FROM STEEL MEETING THE REQUIREMENTS OF AASHTO M169, GRADE 12L14 AND SHALL HAVE A MINIMUM LENGTH OF THREADS OF 2" FOR 3/4" FERRULES.
- B. 4 - 3/4" Ø x 2 1/2" BOLTS WITH WASHERS. BOLTS SHALL CONFORM TO THE REQUIREMENTS OF ASTM A307. BOLTS AND WASHERS SHALL BE GALVANIZED. AT THE CONTRACTOR'S OPTION, STAINLESS STEEL BOLTS AND WASHERS MAY BE USED AS AN ALTERNATE FOR THE 3/4" Ø x 2 1/2" GALVANIZED BOLTS 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.
- C. WIRE STRUT SHOWN IN THE CONCRETE ANCHOR ASSEMBLY DETAIL IS THE MINIMUM ALLOWABLE SIZE AND SHALL HAVE A MINIMUM TENSILE STRENGTH OF 100,000 PSI. AS AN OPTION, A 7/16" Ø WIRE STRUT WITH A MINIMUM TENSILE STRENGTH OF 90,000 PSI IS ACCEPTABLE.
- D. THE METAL RAIL ANCHOR ASSEMBLIES TO BE HOT DIPPED GALVANIZED TO CONFORM TO REQUIREMENTS OF ASTM A123.
- E. THE COST OF THE METAL RAIL ANCHOR ASSEMBLY WITH BOLTS AND WASHERS COMPLETE IN PLACE SHALL BE INCLUDED IN THE PRICE BID FOR LINEAR FEET OF METAL RAIL.
- F. BOLTS TO BE TIGHTENED ONE-HALF TURN WITH A WRENCH FROM A FINGER-TIGHT POSITION.

THE CONTRACTOR MAY USE ADHESIVELY ANCHORED ANCHOR BOLTS IN PLACE OF THE METAL RAIL ANCHOR ASSEMBLY. LEVEL ONE FIELD TESTING IS REQUIRED, AND THE YIELD LOAD OF THE 3/4" Ø BOLT IS 10 KIPS. FOR ADHESIVELY ANCHORED ANCHOR BOLTS OR DOWELS, SEE THE STANDARD SPECIFICATIONS.

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.



PLAN

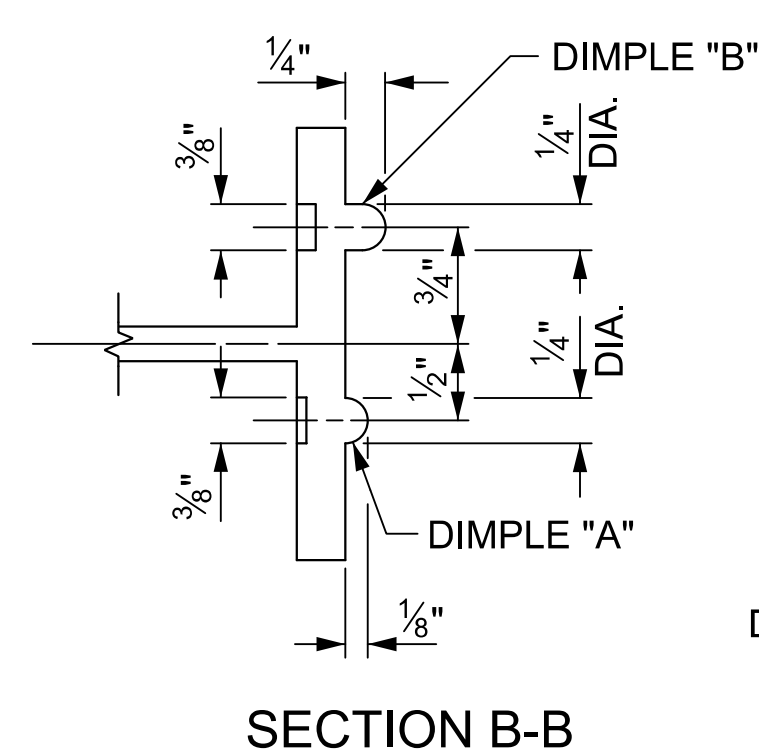


SIDE VIEW

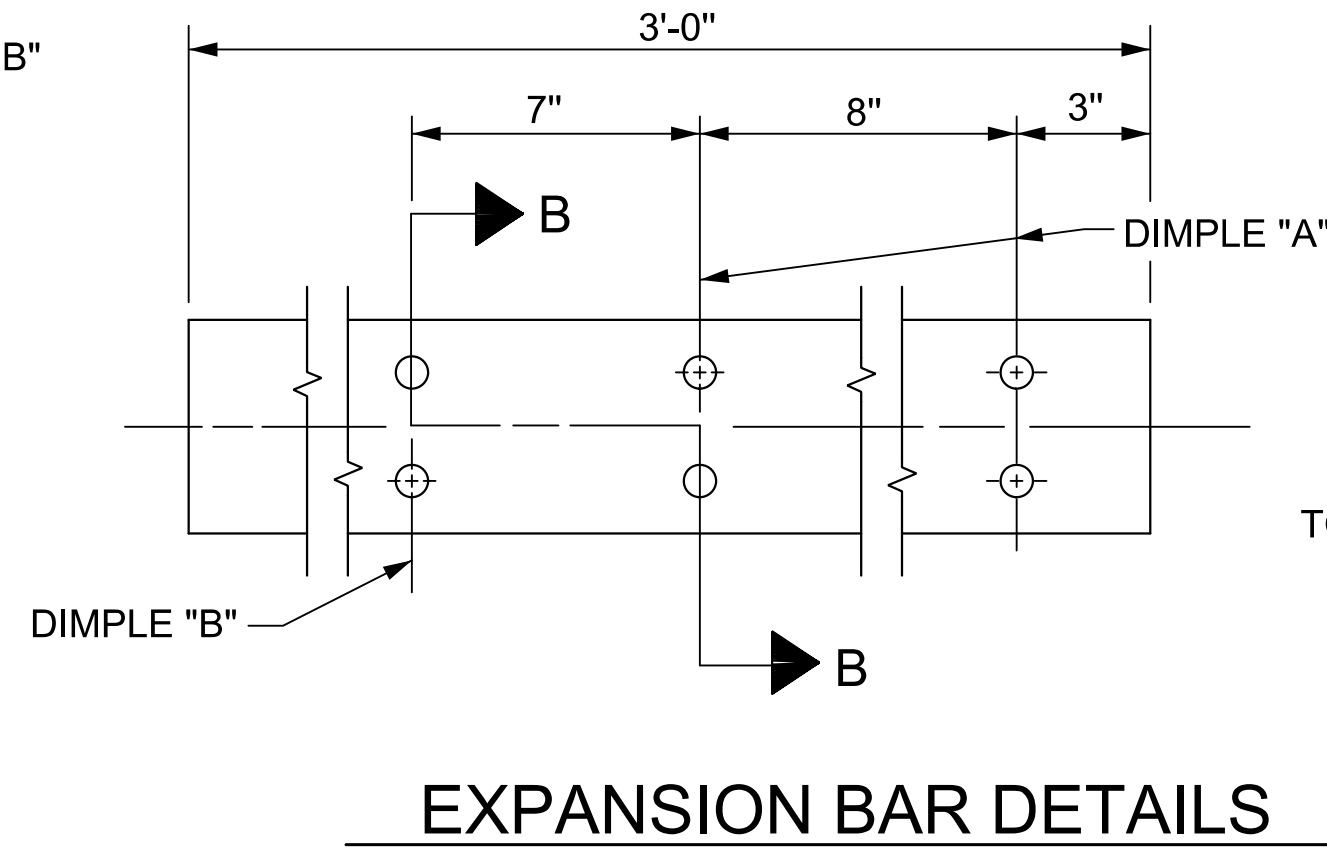
ELEVATION

4-BOLT METAL RAIL ANCHOR ASSEMBLY

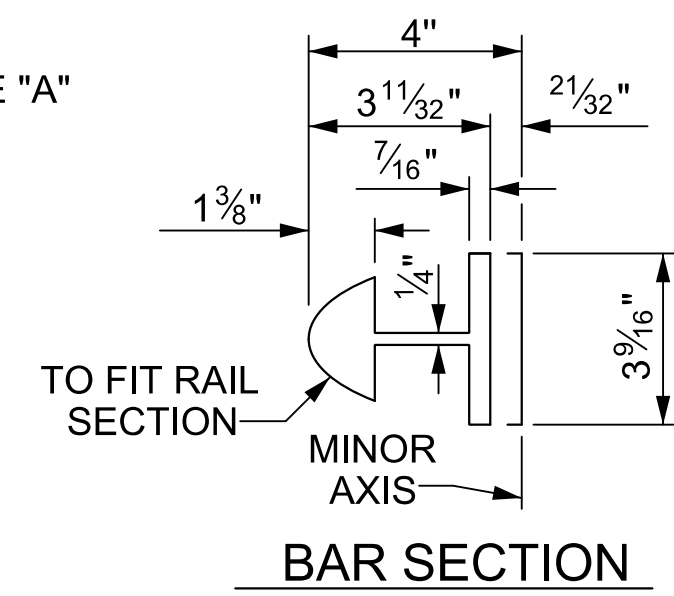
(52 ASSEMBLIES REQUIRED)



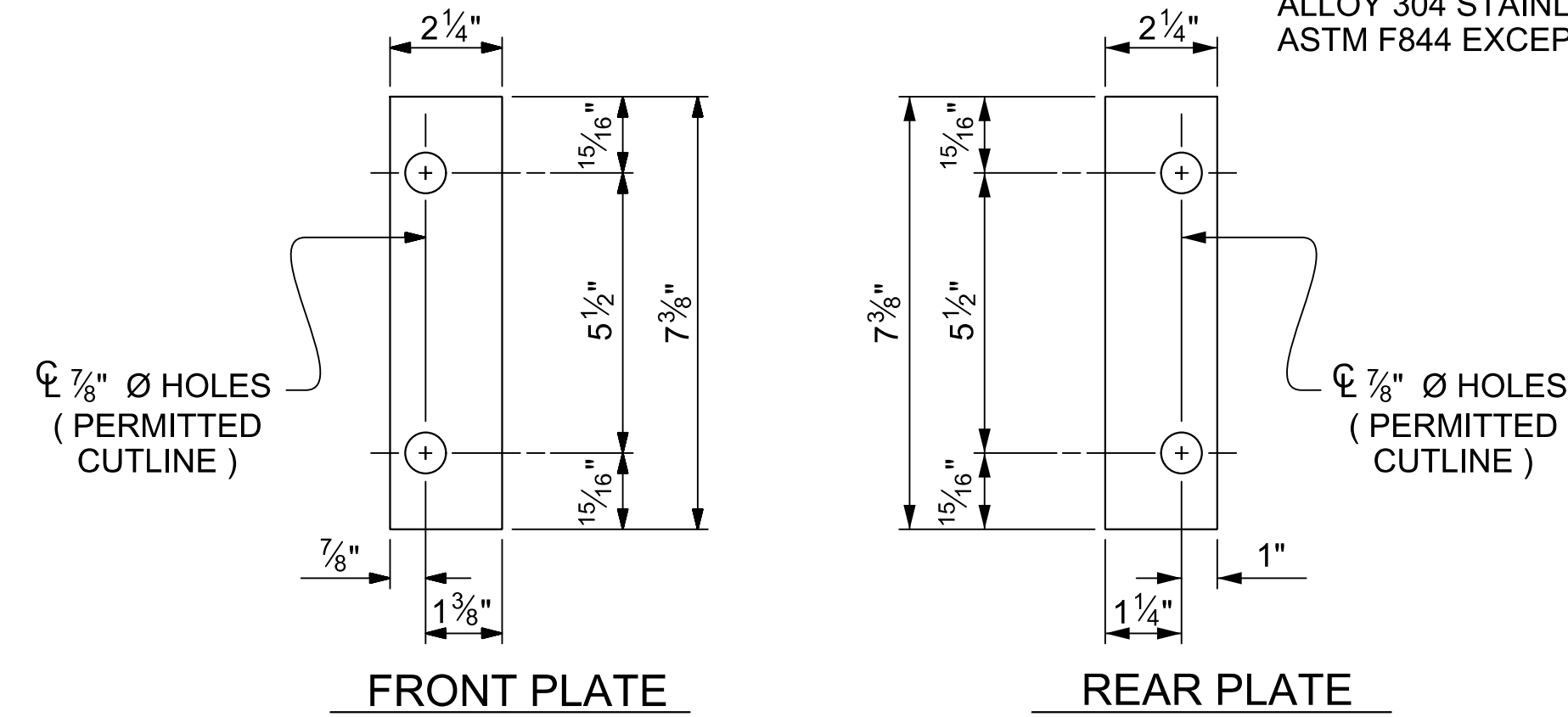
SECTION B-B



EXPANSION BAR DETAILS

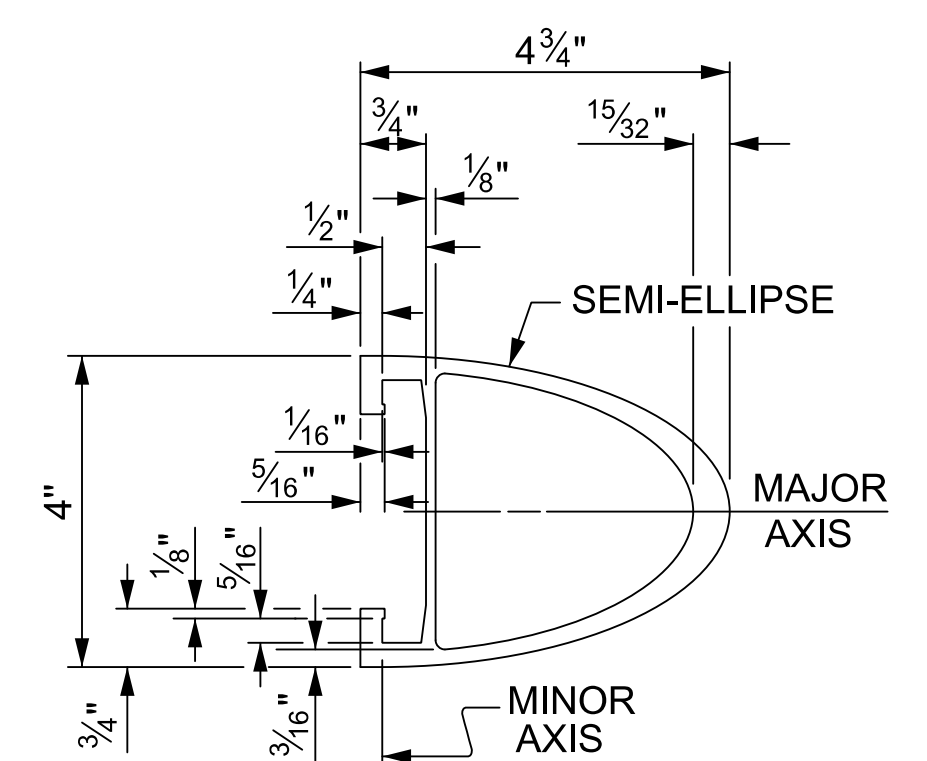


BAR SECTION

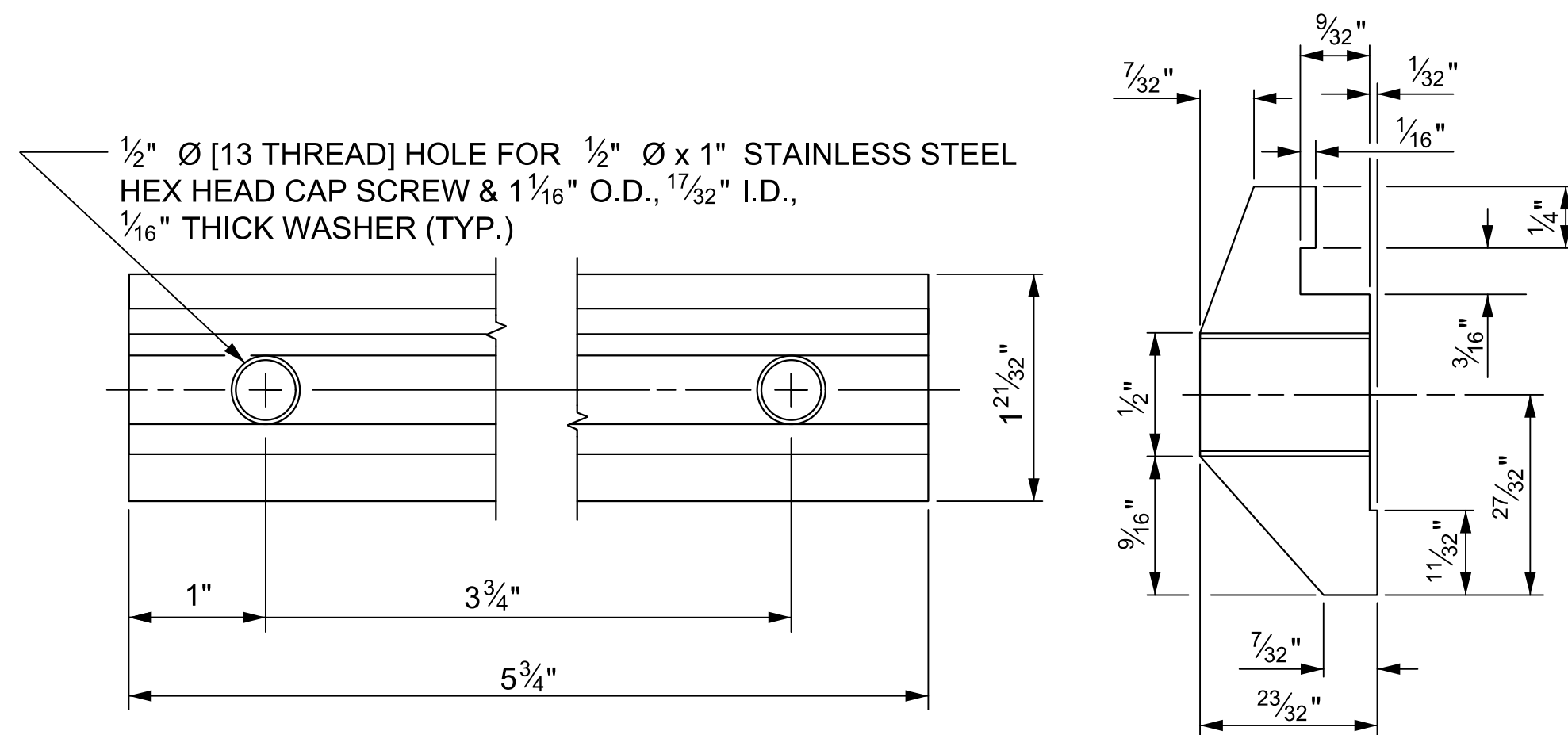


SHIM DETAILS

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

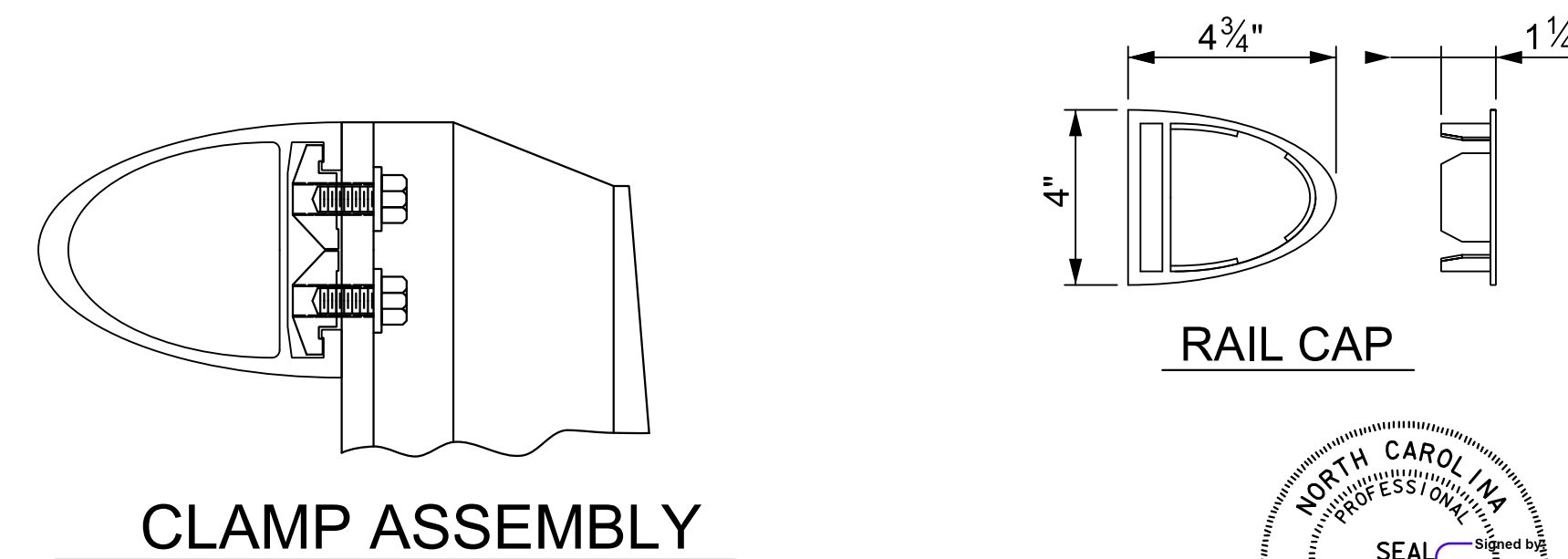


RAIL SECTION



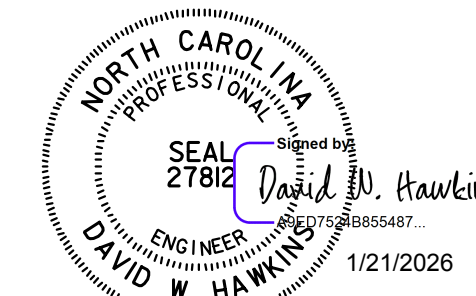
CLAMP BAR DETAIL

(4 REQUIRED PER POST)



CLAMP ASSEMBLY

RAIL CAP



PROJECT NO. BP7-R009
ORANGE COUNTY
 STATION: POC 15+27.00 -L-

SHEET 2 OF 2

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

STANDARD

2 BAR METAL RAIL

ASSEMBLED BY : M. WRIGHT DATE : 08/24
 CHECKED BY : Z. REINEKE DATE : 03/25

DRAWN BY : EEM 6/94 REV. 10/11 MAA/GM
 CHECKED BY : RGW 6/94 REV. 12/17 MAA/THC
 REV. 10/23 BNG/SNM

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 4000 Center at North Hills Street, Suite 500, Raleigh, N.C. 27609

DRAWN BY : M. WRIGHT DATE : 08/24
 CHECKED BY : Z. REINEKE DATE : 03/25
 DESIGN ENGINEER OF RECORD : D. HAWKINS DATE : 03/25

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

| REVISIONS | | | | | SHEET NO. |
|-----------|----|------|-----|----|-----------|
| NO. | BY | DATE | NO. | BY | DATE |
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TOTAL SHEETS: 24

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NOTES

STRUCTURAL CONCRETE INSERT

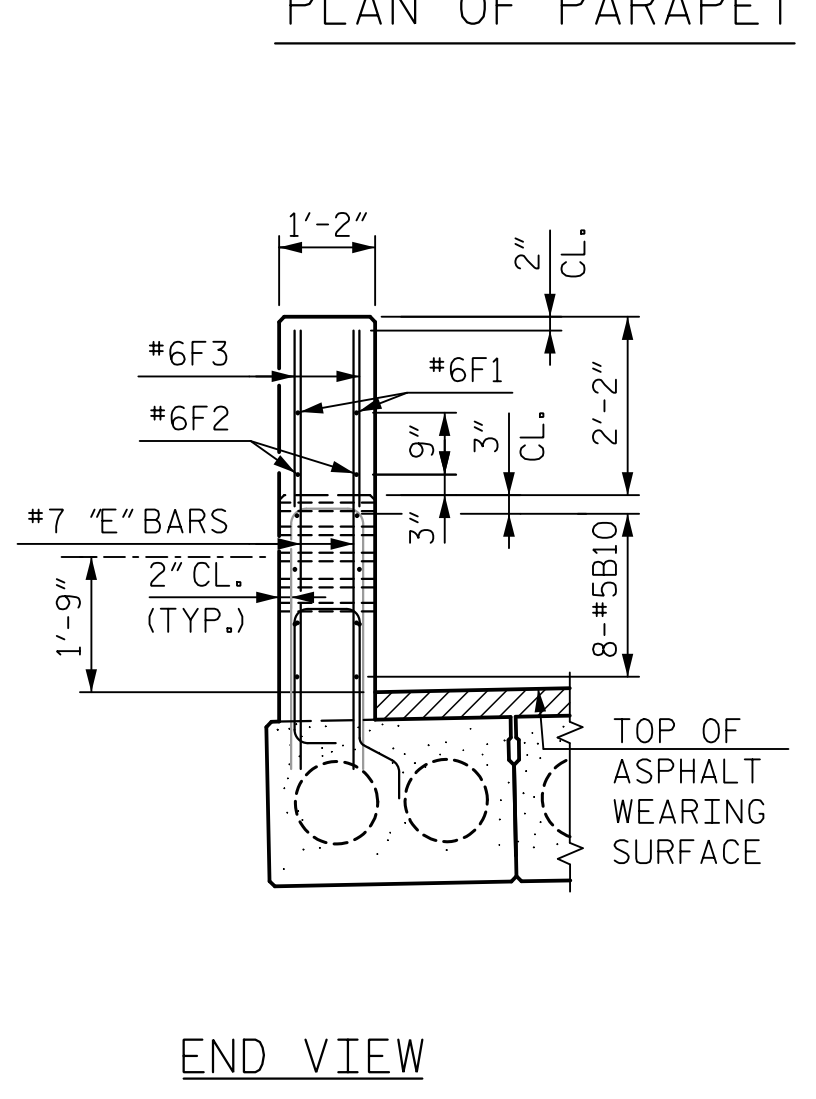
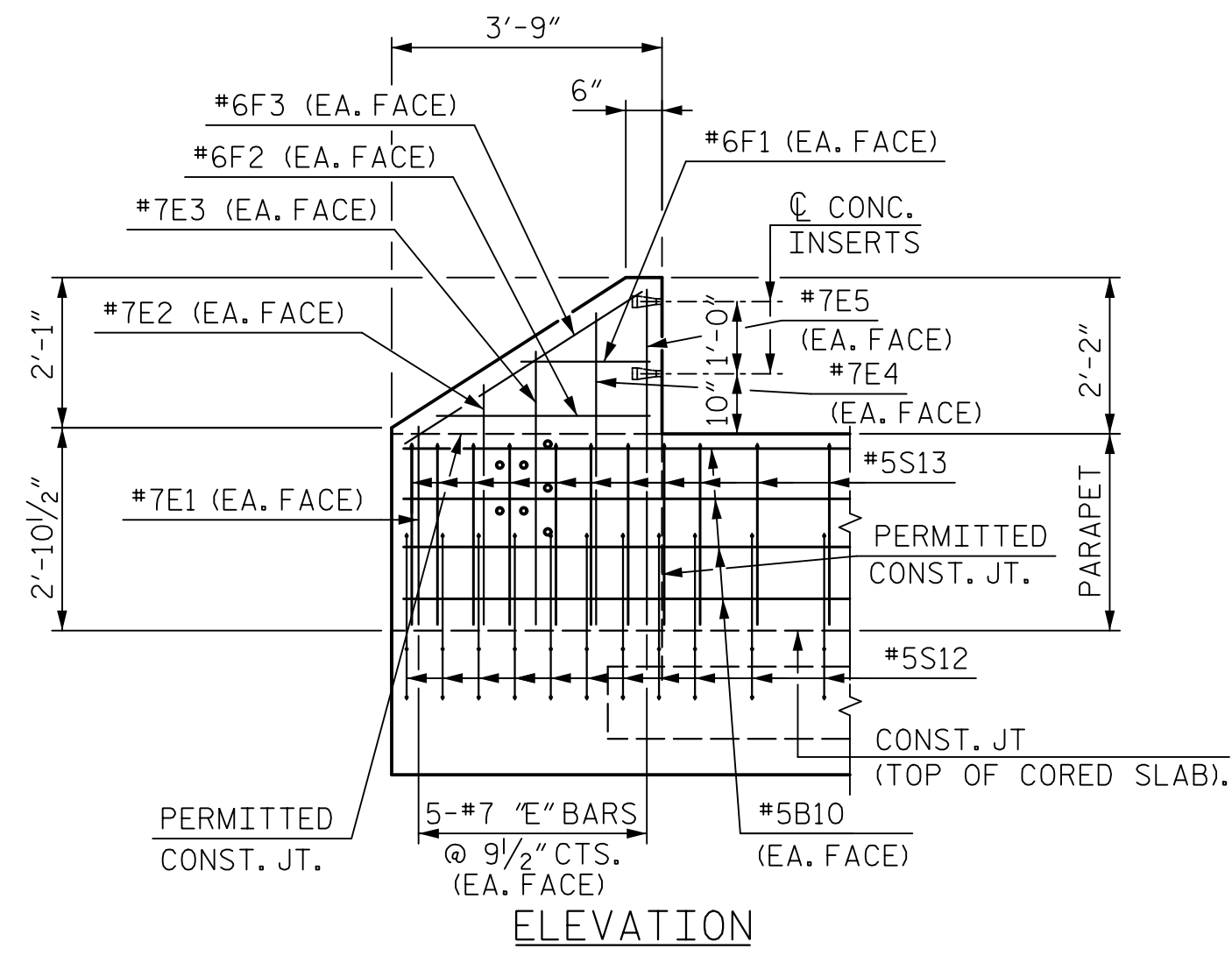
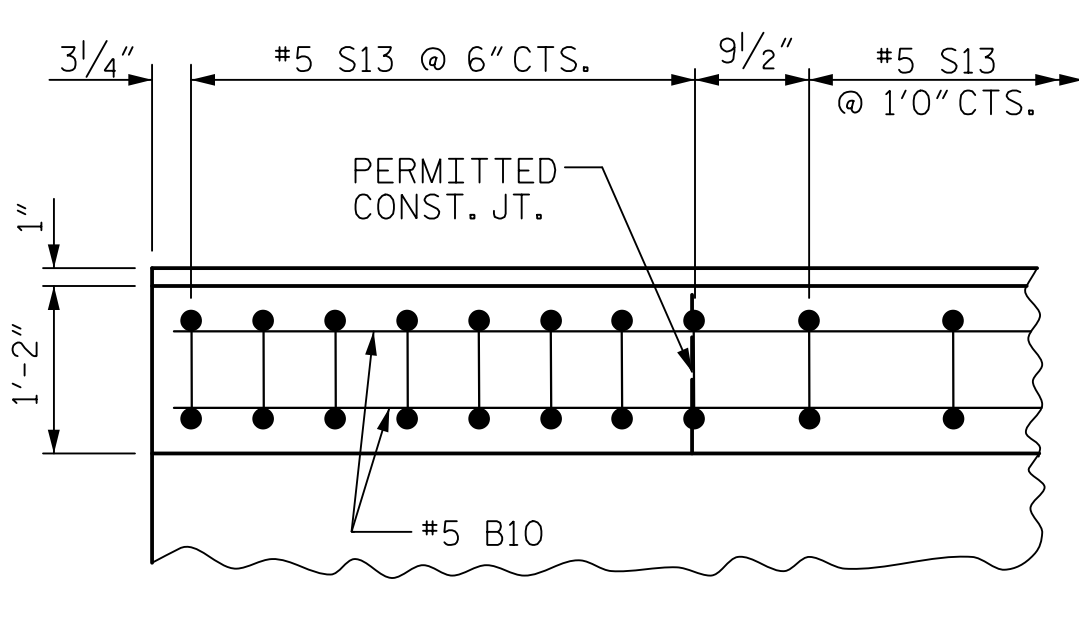
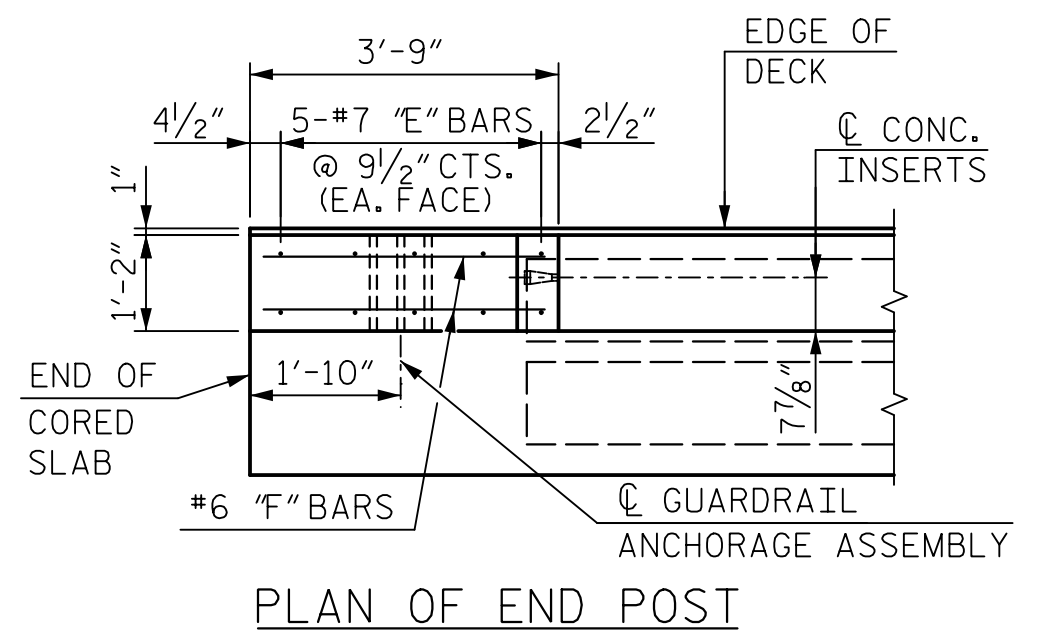
- THE STRUCTURAL CONCRETE INSERT ASSEMBLY SHALL CONSIST OF THE FOLLOWING COMPONENTS:
- A. FERRULES SHALL BE MADE FROM STEEL MEETING THE REQUIREMENTS OF AASHTO M169, GRADE 12L14 AND SHALL HAVE A MINIMUM LENGTH OF THREADS OF 1 1/2".
 - B. 1 - 3/4" Ø x 1 5/8" BOLT WITH WASHER. BOLT SHALL CONFORM TO THE 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 3/4" Ø x 1 5/8" GALVANIZED BOLT AND WASHER. THEY SHALL CONFORM TO OR EXCEED THE MECHANICAL REQUIREMENTS OF ASTM A307. THE USE OF THIS ALTERNATE SHALL BE APPROVED BY THE ENGINEER.)
 - C. WIRE STRUT SHOWN IN THE CONCRETE INSERT ASSEMBLY DETAIL IS THE MINIMUM ALLOWABLE SIZE AND SHALL HAVE A MINIMUM TENSILE STRENGTH OF 100,000 PSI. AS AN OPTION, A 7/16" Ø WIRE STRUT WITH A MINIMUM TENSILE STRENGTH OF 90,000 PSI IS ACCEPTABLE.

NOTES

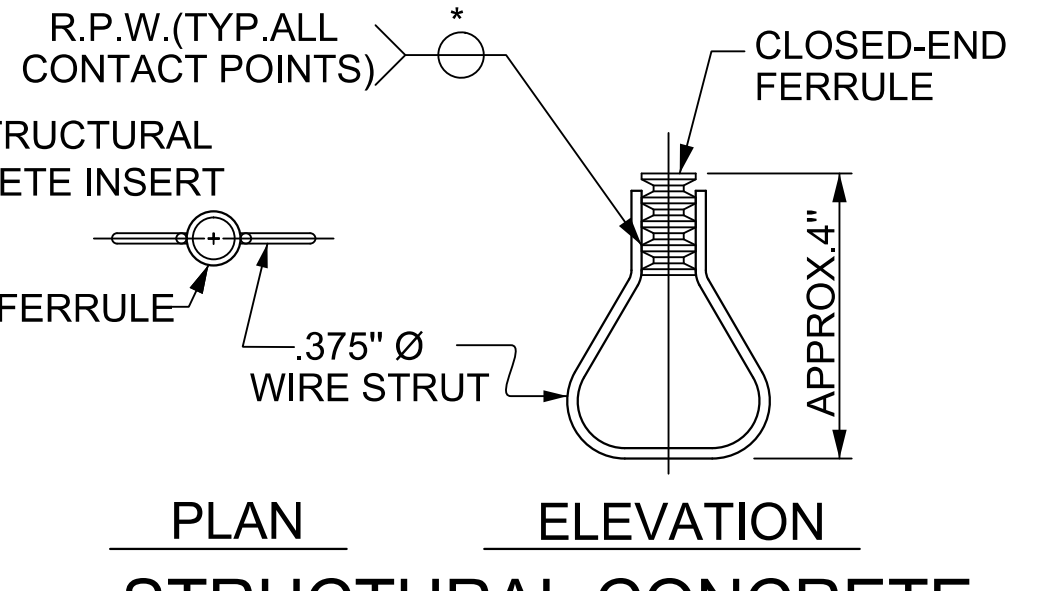
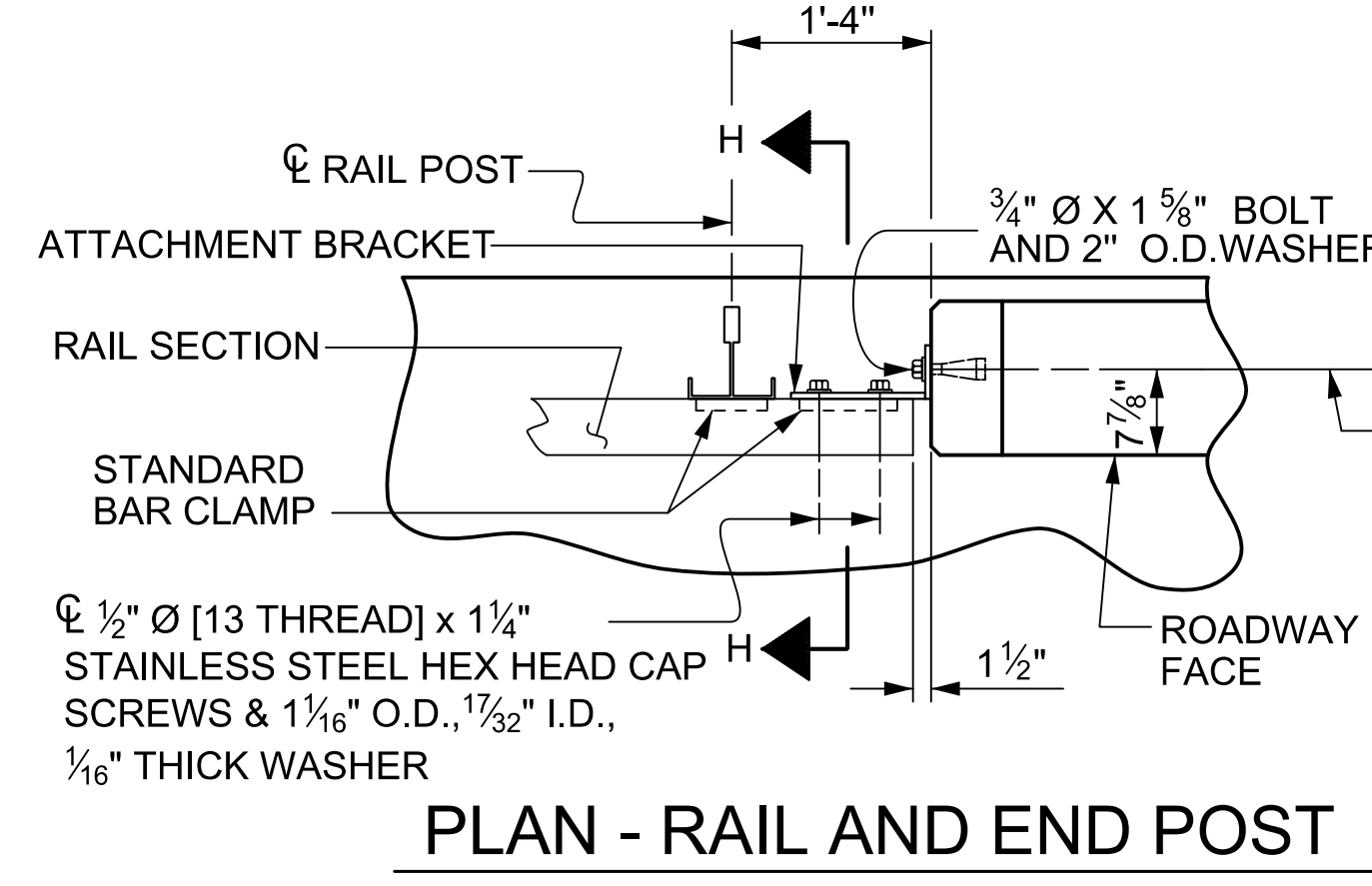
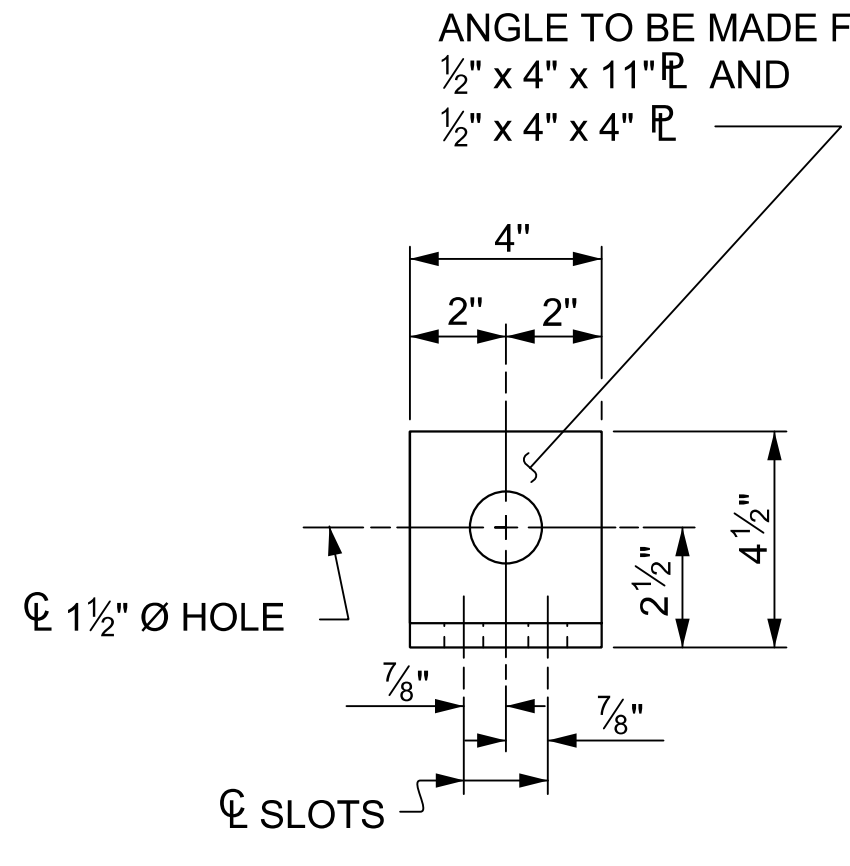
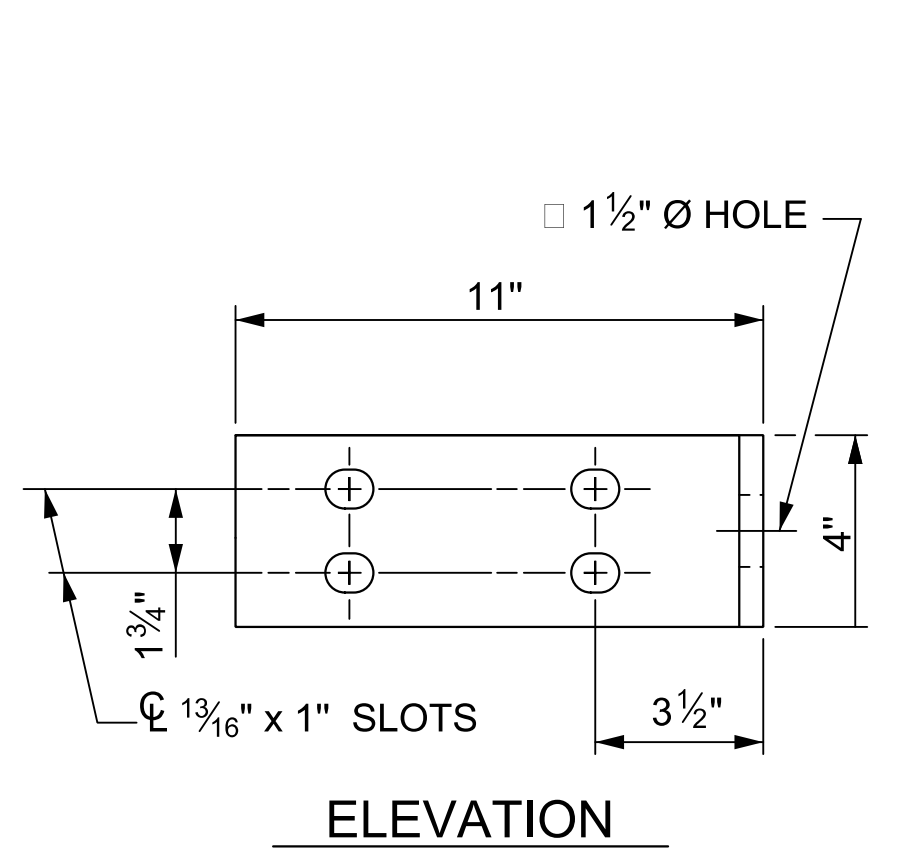
METAL RAIL TO END POST CONNECTION

- THE METAL RAIL TO END POST CONNECTION SHALL CONSIST OF THE FOLLOWING COMPONENTS:
- A. 1/2" PLATES SHALL CONFORM TO ASTM A36 GRADE 36 AND SHALL BE GALVANIZED AFTER FABRICATION.
 - B. 3/4" STRUCTURAL CONCRETE INSERT SHALL HAVE A WORKING LOAD SHEAR CAPACITY OF 4800 LBS. THE FERRULES SHALL ENGAGE A 3/4" Ø x 1 5/8" BOLT WITH 2" O.D. WASHER IN PLACE. THE 3/4" Ø x 1 5/8" 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. 1/2" 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 3/4" STRUCTURAL CONCRETE INSERT WITH BOLT SHALL BE ASSEMBLED IN THE SHOP.
- THE COST OF THE 3/4" STRUCTURAL CONCRETE INSERT ASSEMBLY, AND THE 1/2" 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 3/4" Ø x 1 5/8" BOLT WITH WASHER SHALL BE REPLACED WITH A 3/4" Ø x 6 1/2" BOLT AND 2" O.D. WASHER. ALL SPECIFICATIONS THAT APPLY TO THE 3/4" Ø x 1 5/8" BOLT SHALL APPLY TO THE 3/4" Ø x 6 1/2" BOLT. FIELD TESTING OF THE ADHESIVE BONDING SYSTEM IS NOT REQUIRED.

| BAR TYPES | | | | | |
|--|-----|------|------|----------|------------|
| | | | | | |
| ALL BAR DIMENSIONS ARE OUT TO OUT | | | | | |
| BILL OF MATERIAL FOR PARAPET & END POSTS | | | | | |
| BAR | NO. | SIZE | TYPE | LENGTH | WEIGHT |
| * B10 | 64 | # 5 | STR | 17'-1" | 1,140 |
| * B25 | 48 | # 5 | STR | 22'-11" | 1,147 |
| | | | | | |
| * E1 | 8 | # 7 | STR | 2'-9" | 45 |
| * E2 | 8 | # 7 | STR | 3'-4" | 55 |
| * E3 | 8 | # 7 | STR | 3'-10" | 63 |
| * E4 | 8 | # 7 | STR | 4'-4" | 71 |
| * E5 | 8 | # 7 | STR | 4'-8" | 76 |
| | | | | | |
| * F1 | 8 | # 6 | STR | 1'-10" | 22 |
| * F2 | 8 | # 6 | STR | 3'-0" | 36 |
| * F3 | 8 | # 6 | STR | 3'-10" | 46 |
| | | | | | |
| * S13 | 334 | # 5 | 1 | 5'-8" | 1,974 |
| | | | | | |
| * EPOXY COATED REINFORCING STEEL | | | | | LBS. 4,675 |
| CLASS AA CONCRETE | | | | CU. YDS. | 34.5 |
| TOTAL LIN. FT. OF 1'-2" x 2'-9 1/2" CONCRETE PARAPET | | | | | 280.50' |

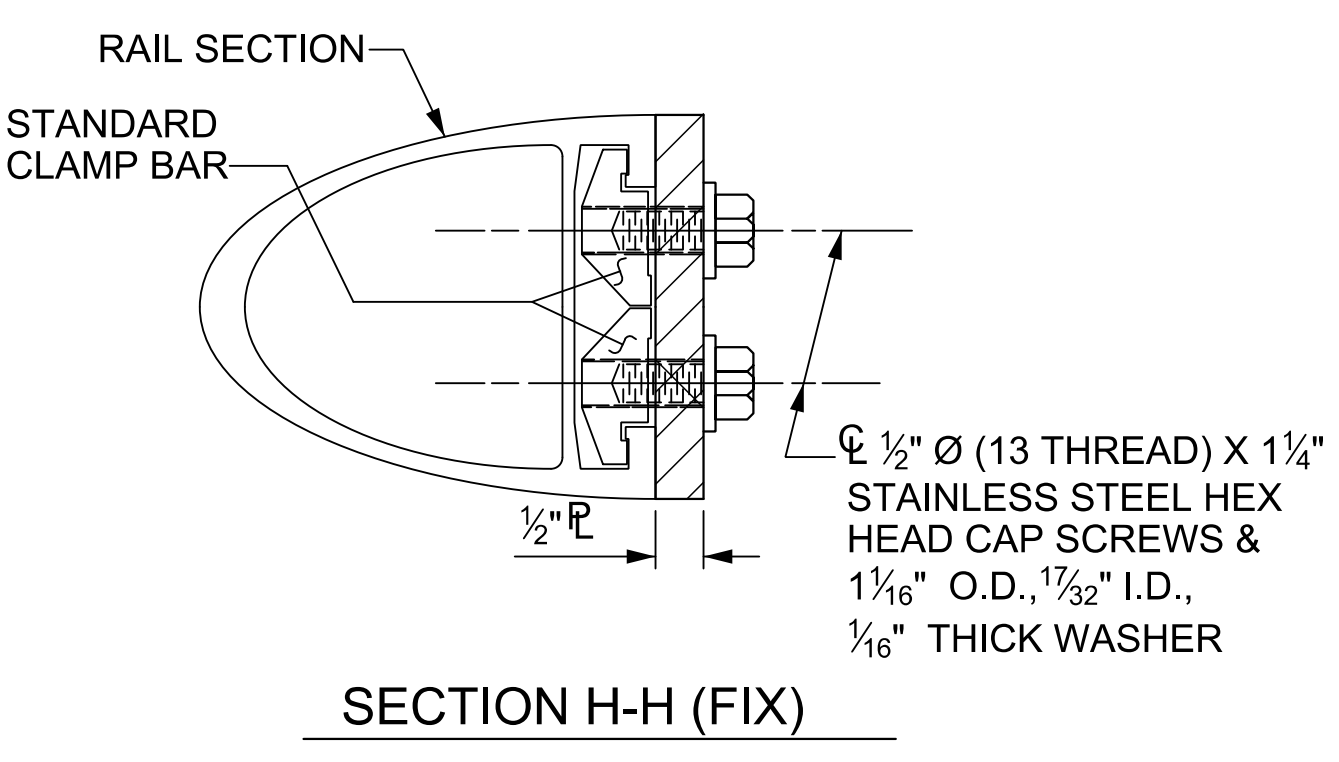
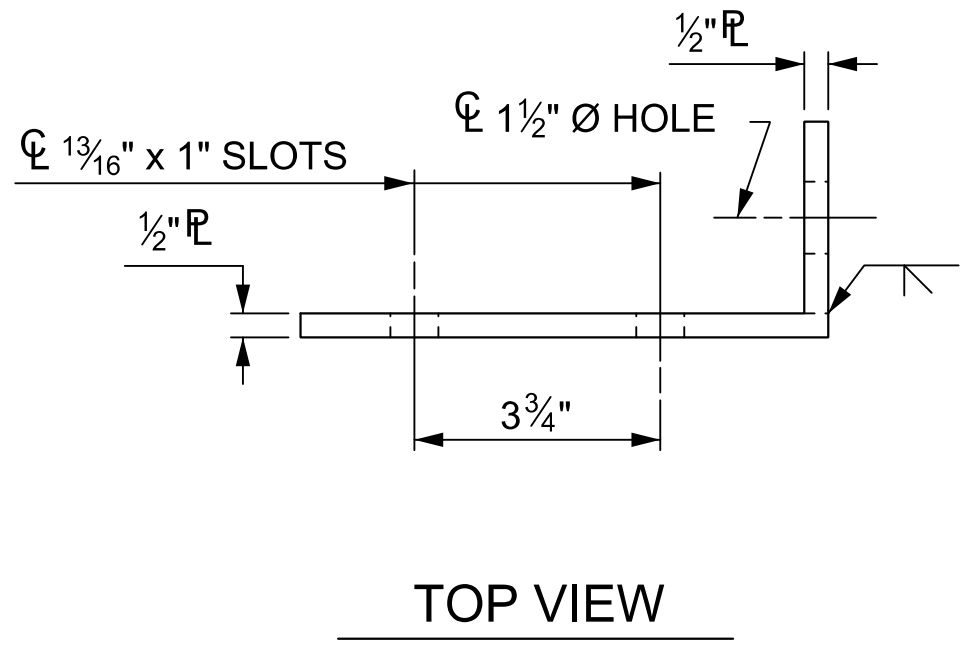


PARAPET AND END POST FOR TWO BAR METAL RAIL



STRUCTURAL CONCRETE INSERT

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



DETAILS FOR ATTACHING METAL RAIL TO END POST

PROJECT NO. BP7-R009
ORANGE COUNTY
 STATION: POC 15+27.00 -L-

SHEET 1 OF 2

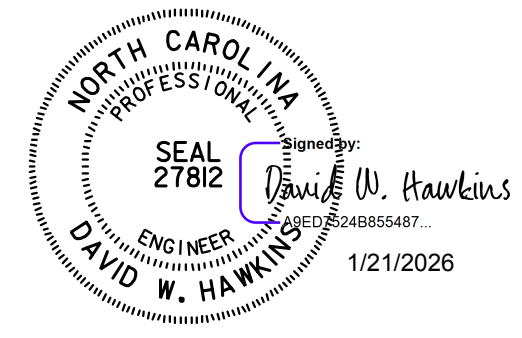
STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH
STANDARD
RAIL POST SPACINGS
AND
END OF RAIL DETAILS
 FOR TWO BAR METAL RAILS

| REVISIONS | | | | | | SHEET NO. |
|-----------|----|------|-----|----|------|--------------|
| NO. | BY | DATE | NO. | BY | DATE | S-12 |
| 1 | | | 3 | | | TOTAL SHEETS |
| 2 | | | 4 | | | 24 |

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 NC License No. C-1554
 4000 Center at North Hills Street, Suite 500, Raleigh, N.C. 27609

CHECKED BY: M. WRIGHT DATE: 08/24
 Z. REINEKE DATE: 03/25
 DESIGN ENGINEER OF RECORD: D. HAWKINS DATE: 03/25

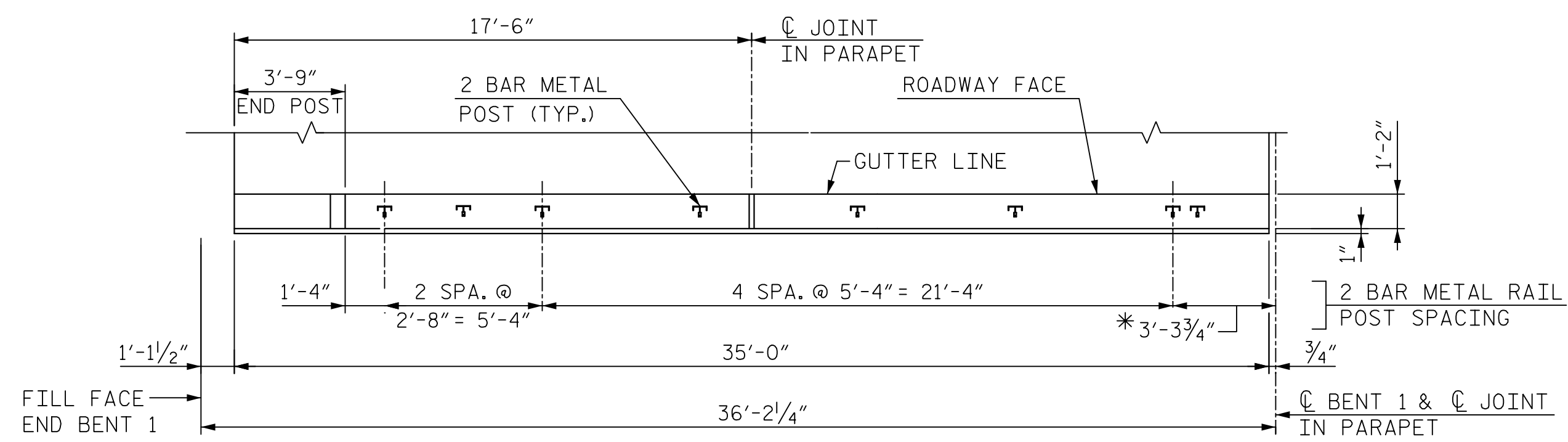
DWG. NO. 12



| | |
|--------------------------|----------------------|
| ASSEMBLED BY : M. WRIGHT | DATE : 08/24 |
| CHECKED BY : Z. REINEKE | DATE : 03/25 |
| DRAWN BY : FCJ 1/88 | REV. 10/17/11 MAA/GM |
| CHECKED BY : CRK 3/89 | REV. 12/17 MAA/THC |
| | REV. 10/23 BNB/SNM |

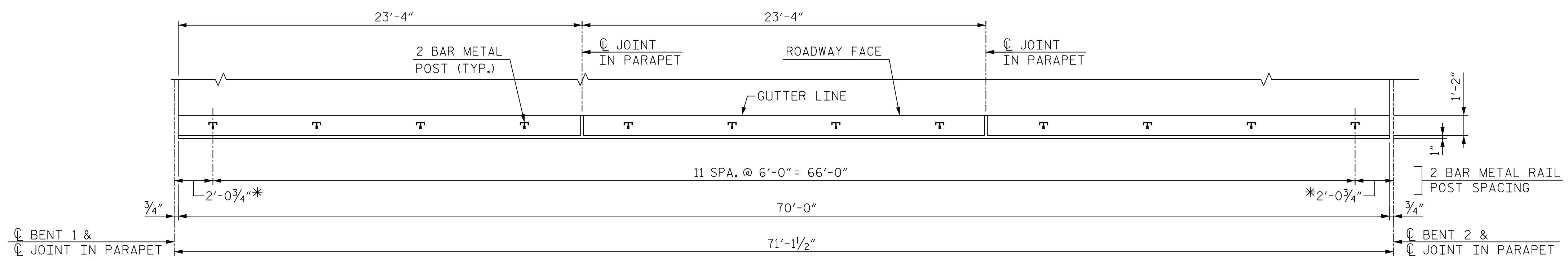
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

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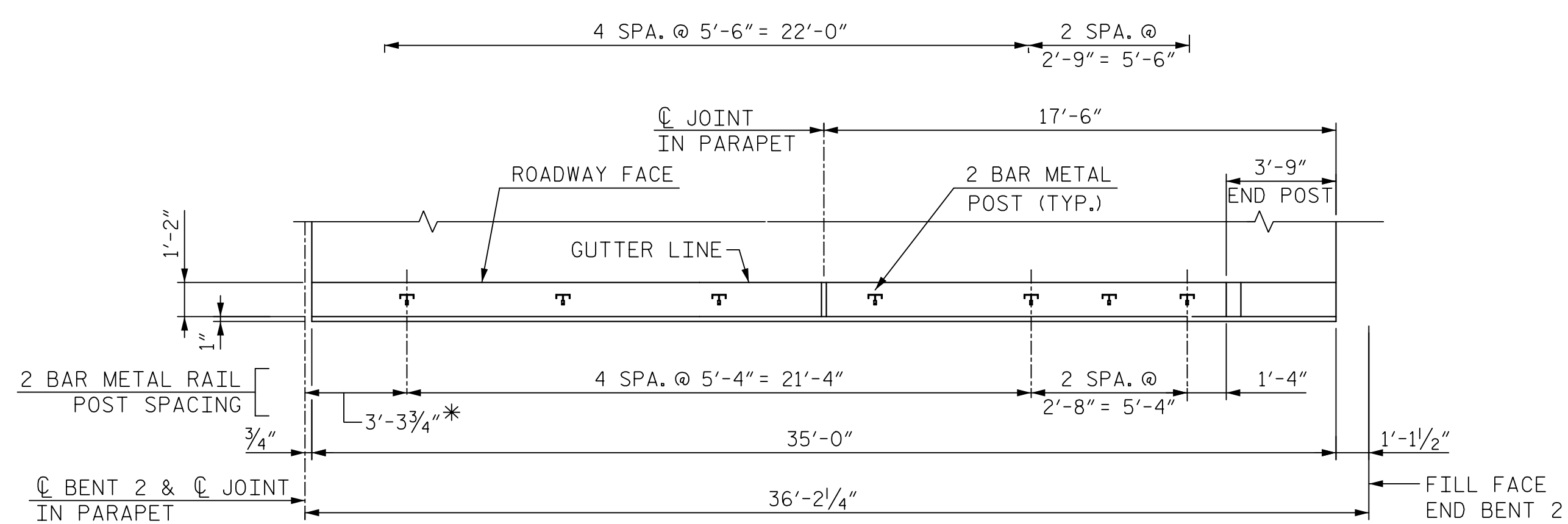
PLAN OF RAIL POST SPACINGS IN SPAN A

RIGHT SIDE PLAN SHOWN, LEFT SIDE OPPOSITE HAND.
* DIMENSION TO C BENT 1.



PLAN OF RAIL POST SPACINGS IN SPAN B

RIGHT SIDE PLAN SHOWN, LEFT SIDE OPPOSITE HAND.
* DIMENSION TO C BENT 1 OR C BENT 2.

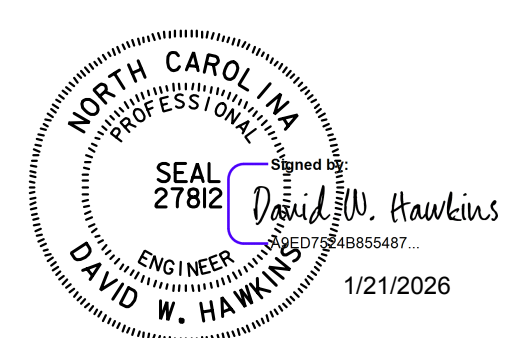


PLAN OF RAIL POST SPACINGS IN SPAN C

RIGHT SIDE PLAN SHOWN, LEFT SIDE OPPOSITE HAND.
* DIMENSION TO C BENT 2.

PROJECT NO. BP7-R009
ORANGE COUNTY
STATION: POC 15+27.00 -L-

SHEET 2 OF 2



STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH
STANDARD
**RAIL POST SPACINGS
AND
END OF RAIL DETAILS**
FOR TWO BAR METAL RAILS

| | |
|--------------------------|----------------------|
| ASSEMBLED BY : M. WRIGHT | DATE : 08/24 |
| CHECKED BY : Z. REINEKE | DATE : 03/25 |
| DRAWN BY : FCJ 1/88 | REV. 10/17/11 MAA/GM |
| CHECKED BY : CRK 3/89 | REV. 12/17 MAA/THC |
| | REV. 10/23 BNB/SNM |

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NC License No. C-1554
4000 Center at North Hills Street, Suite 500, Raleigh, N.C. 27609

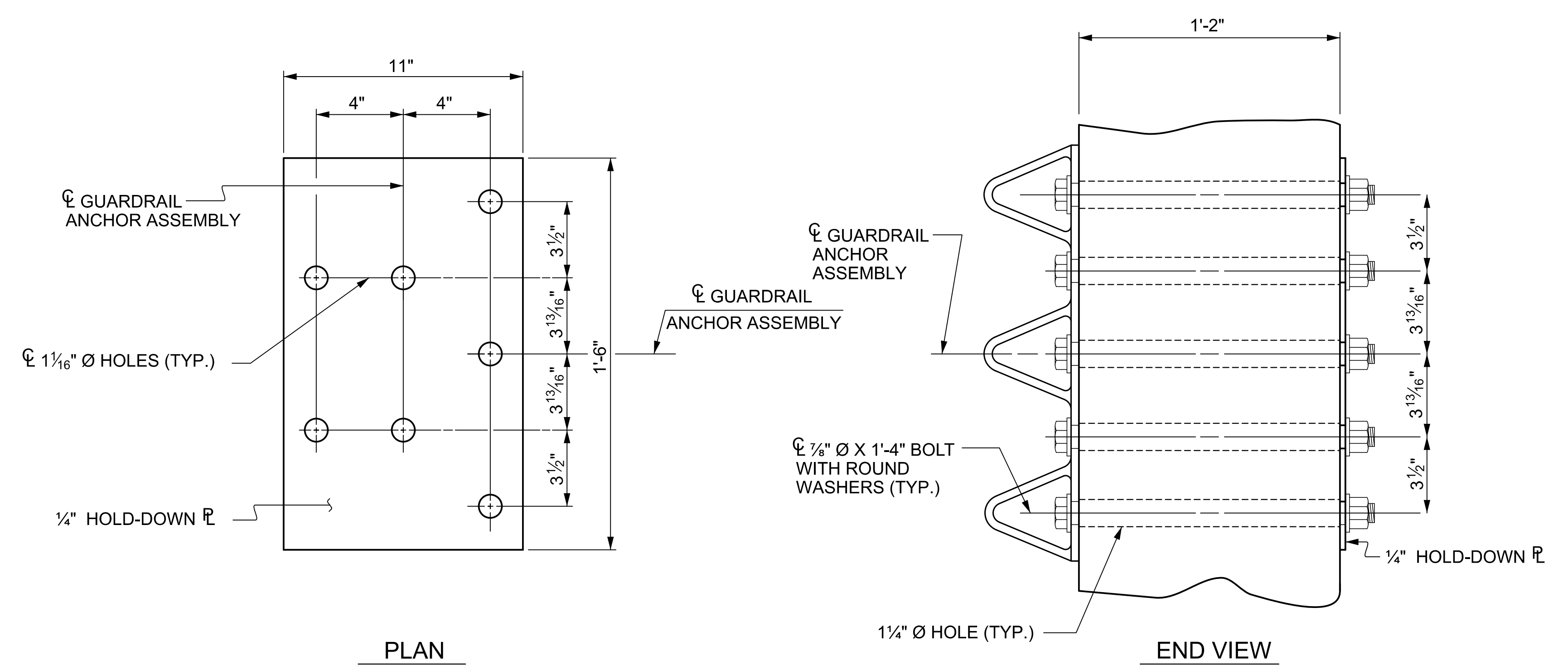
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|---------------------------|------------|------|-------|
| DRAWN BY | M. WRIGHT | DATE | 08/24 |
| CHECKED BY | Z. REINEKE | DATE | 03/25 |
| DESIGN ENGINEER OF RECORD | D. HAWKINS | DATE | 03/25 |

DWG. NO. 13

| REVISIONS | | | | | | SHEET NO. |
|-----------|----|------|-----|----|------|--------------|
| NO. | BY | DATE | NO. | BY | DATE | S-13 |
| 1 | | | 3 | | | TOTAL SHEETS |
| 2 | | | 4 | | | 24 |

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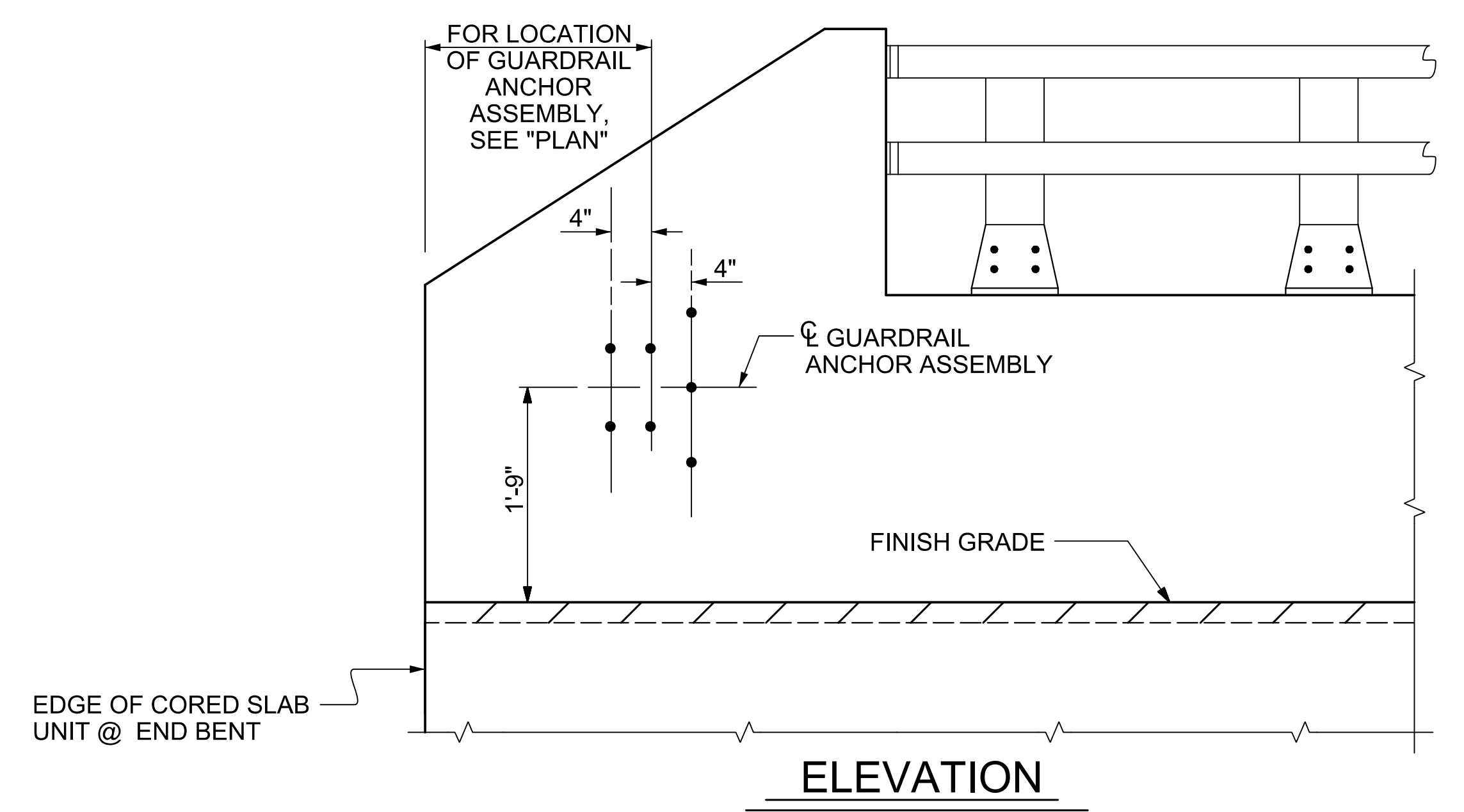


GUARDRAIL ANCHOR ASSEMBLY DETAILS

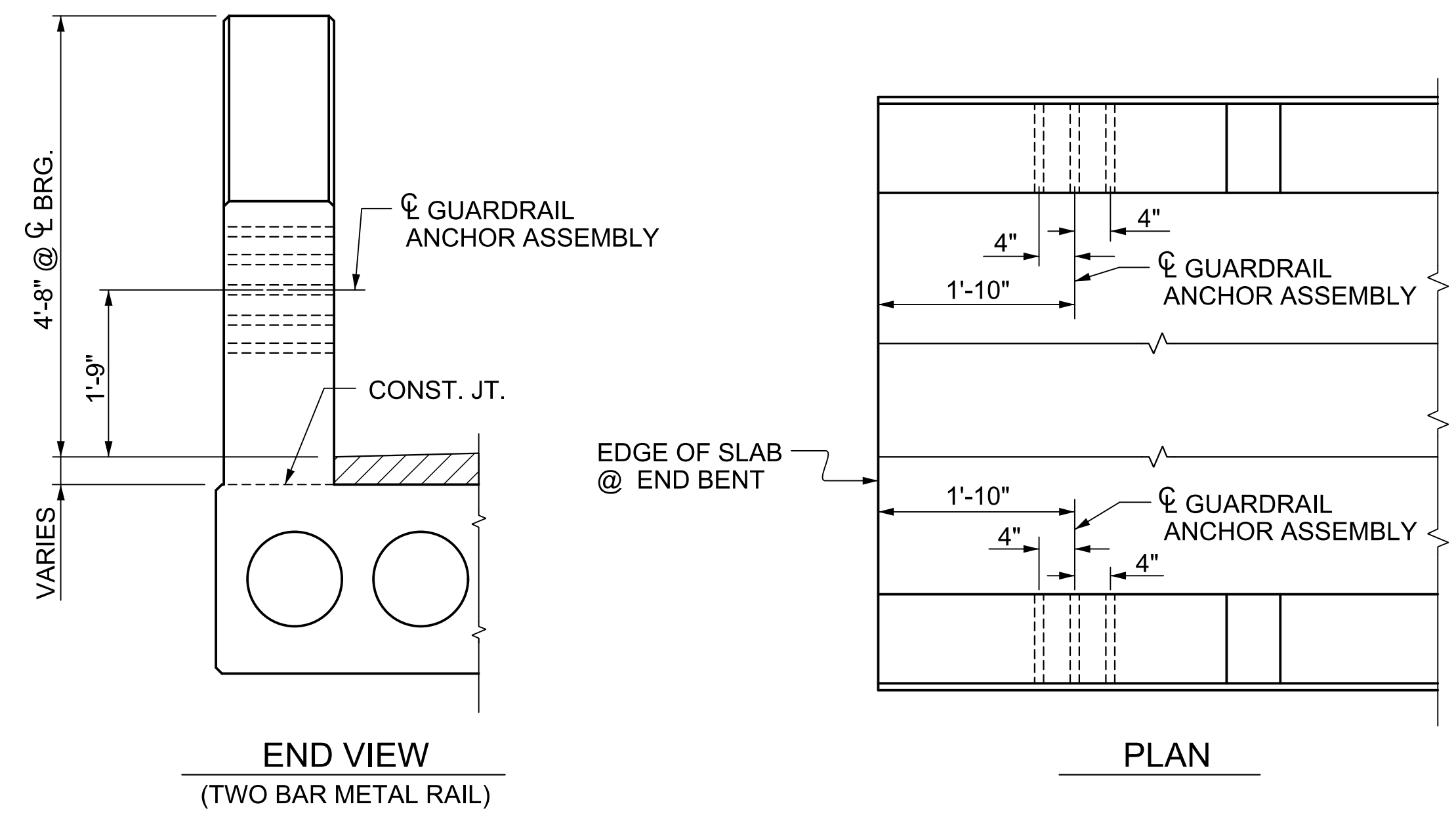


SKETCH SHOWING POINTS OF ATTACHMENT

* LOCATION OF GUARDRAIL ATTACHMENT



ELEVATION



LOCATION OF GUARDRAIL ANCHOR AT END POST

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 THE PARAPET. FOR POINTS OF ATTACHMENT, SEE SKETCH.

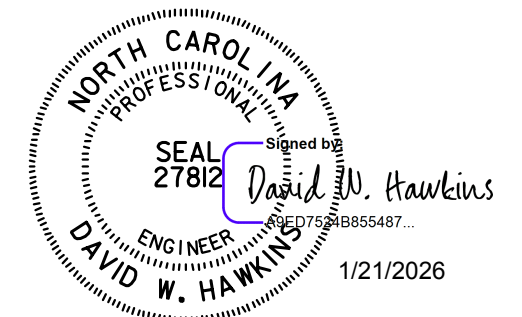
AFTER INSTALLATION, THE EXPOSED THREAD OF THE BOLT SHALL BE BURRED WITH A SHARP POINTED TOOL.

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 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. BP7-R009
ORANGE COUNTY
 STATION: POC 15+27.00 -L-



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

| | |
|--------------------------|--------------------|
| ASSEMBLED BY : M. WRIGHT | DATE : 08/24 |
| CHECKED BY : Z. REINEKE | DATE : 03/25 |
| DRAWN BY : MAA 5/10 | REV. 1/15 MAA/TMG |
| CHECKED BY : CM 5/10 | REV. 12/17 MAA/THC |
| | REV. 5/18 MAA/THC |

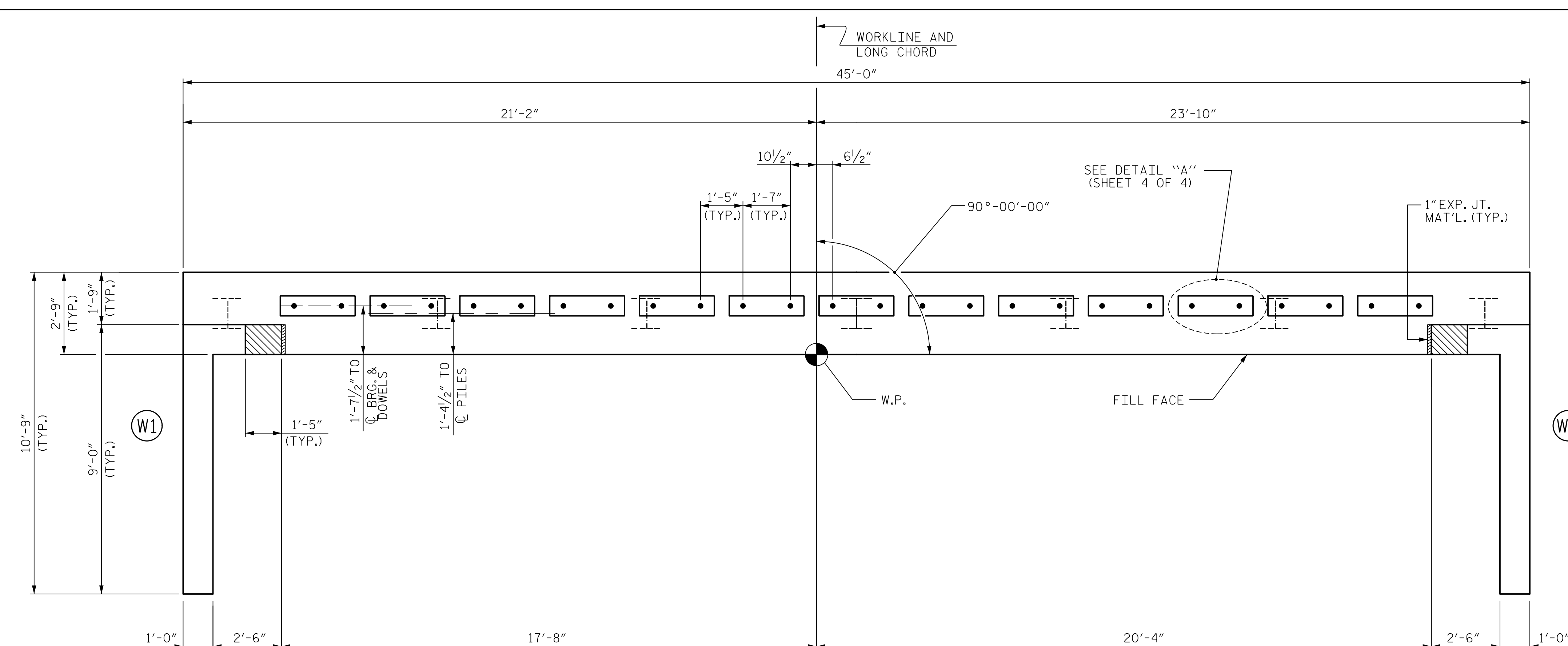
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|--|--------------|---|--|
| HNTB HNTB NORTH CAROLINA, P.C. | | 4000 Center at North Hills Street, Suite 500, Raleigh, N.C. 27609 | |
| DRAWN BY : M. WRIGHT | DATE : 08/24 | DWG. NO. 14 | |
| CHECKED BY : Z. REINEKE | DATE : 03/25 | | |
| DESIGN ENGINEER OF RECORD : D. HAWKINS | DATE : 03/25 | | |

| REVISIONS | | | | | SHEET NO. |
|-----------|----|------|-----|----|-----------|
| NO. | BY | DATE | NO. | BY | DATE |
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| 2 | | | 4 | | |

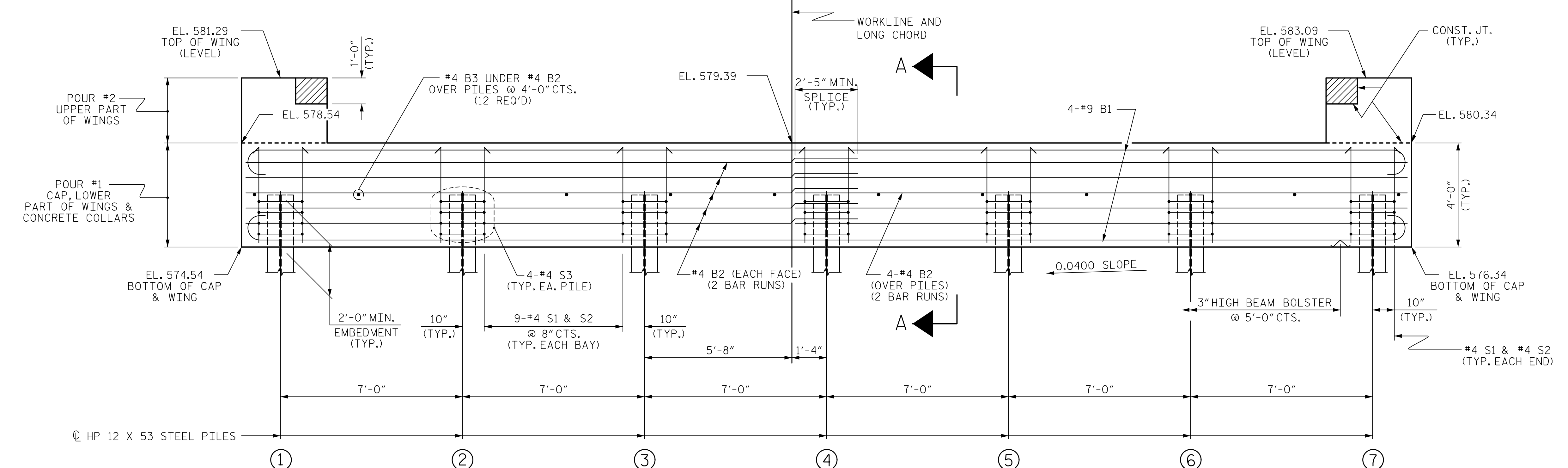
TOTAL SHEETS: 24

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PLAN



ELEVATION

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

NOTES

STIRRUPS IN CAP MAY BE SHIFTED AS NECESSARY TO CLEAR DOWELS.
 THE CONCRETE IN THE SHADED AREA OF THE WING SHALL BE POURED AFTER THE VERTICAL CONCRETE BARRIER RAIL IS CAST IF SLIP FORMING IS USED.
 FOR PILE SPLICE DETAILS, SEE SHEET 4 OF 4.
 FOR WING DETAILS, SEE SHEET 3 OF 4.

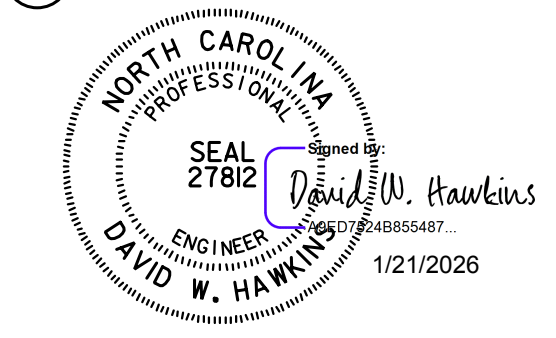
| TOP OF PILE ELEVATIONS | |
|------------------------|--------|
| ① | 576.60 |
| ② | 576.88 |
| ③ | 577.16 |
| ④ | 577.44 |
| ⑤ | 577.72 |
| ⑥ | 578.00 |
| ⑦ | 578.28 |

PROJECT NO. BP7-R009
ORANGE COUNTY
 STATION: POC 15+27.00 -L-

SHEET 1 OF 4

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

SUBSTRUCTURE
 END BENT No. 1



STD. NO. EB_39_90S4

| | |
|--------------------------|-------------------|
| ASSEMBLED BY : M. WRIGHT | DATE : 04/23 |
| CHECKED BY : Z. REINEKE | DATE : 03/25 |
| DRAWN BY : WJH 12/11 | REV. 4/15 MAA/TMG |
| CHECKED BY : AAC 12/11 | |

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| | |
|--|--------------|
| DRAWN BY : M. WRIGHT | DATE : 04/23 |
| CHECKED BY : Z. REINEKE | DATE : 03/25 |
| DESIGN ENGINEER OF RECORD : D. HAWKINS | DATE : 03/25 |

DWG. NO. 15

**DOCUMENT NOT CONSIDERED FINAL
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| REVISIONS | | | | | | SHEET NO. |
|-----------|----|------|-----|----|------|--------------|
| NO. | BY | DATE | NO. | BY | DATE | TOTAL SHEETS |
| 1 | | | 3 | | | 24 |
| 2 | | | 4 | | | |

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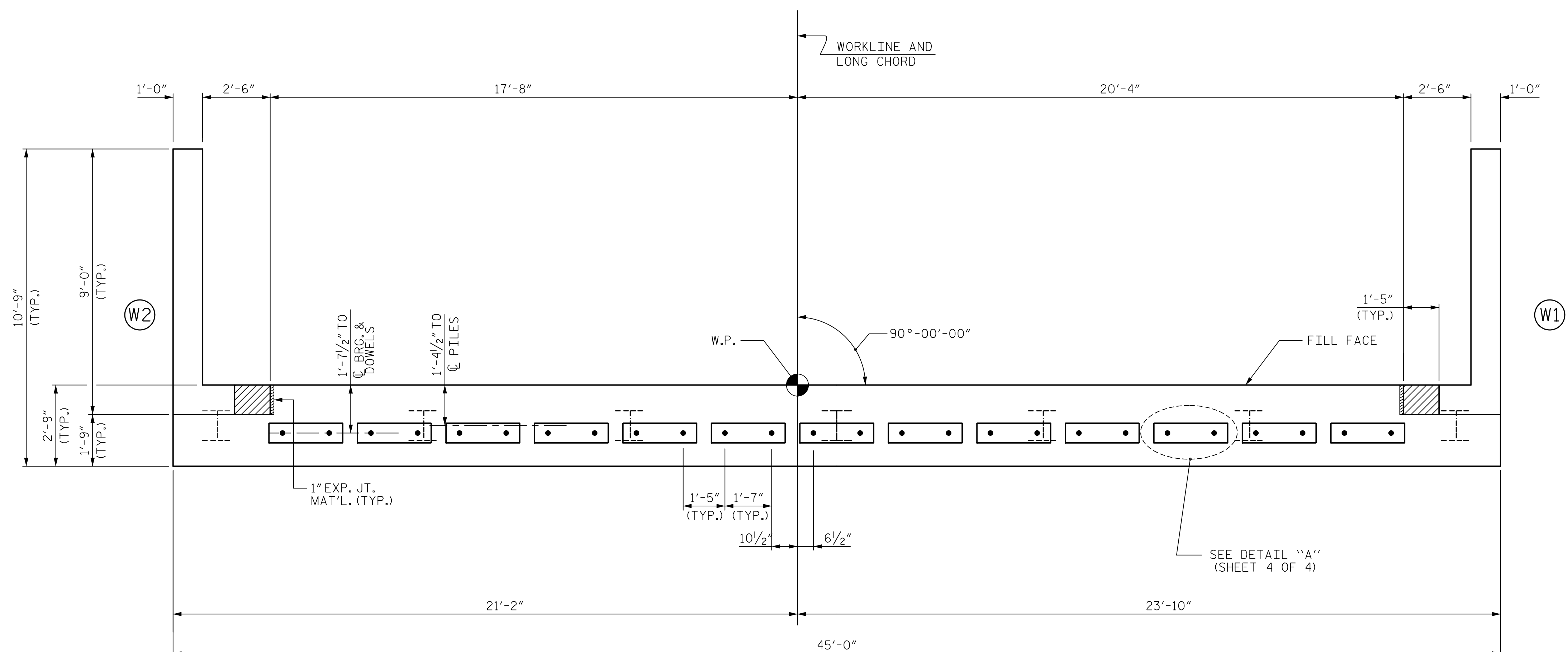
NOTES

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

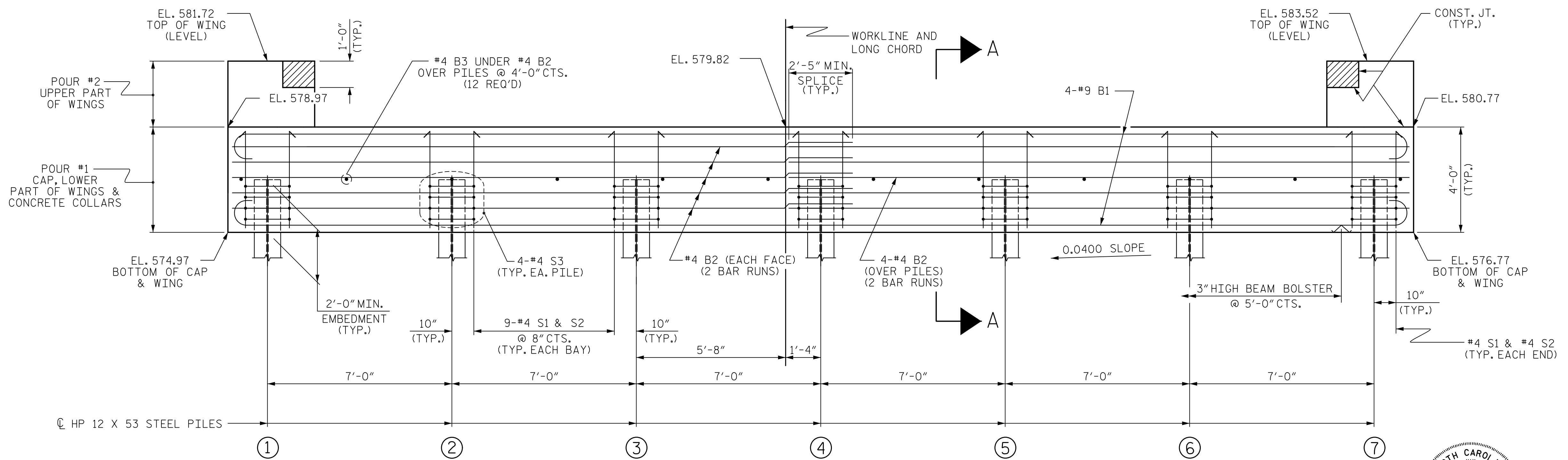
THE CONCRETE IN THE SHADED AREA OF THE WING SHALL BE POURED AFTER THE VERTICAL CONCRETE BARRIER RAIL IS CAST IF SLIP FORMING IS USED.

FOR PILE SPLICE DETAILS, SEE SHEET 4 OF 4.

FOR WING DETAILS, SEE SHEET 3 OF 4.



PLAN



ELEVATION

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

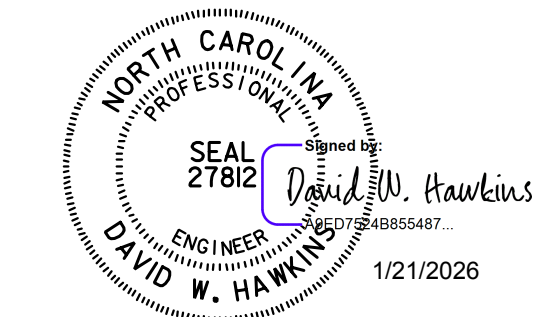
| TOP OF PILE ELEVATIONS | |
|------------------------|--------|
| ① | 577.03 |
| ② | 577.31 |
| ③ | 577.59 |
| ④ | 577.87 |
| ⑤ | 578.15 |
| ⑥ | 578.43 |
| ⑦ | 578.71 |

PROJECT NO. BP7-R009
ORANGE COUNTY
 STATION: POC 15+27.00 -L-

SHEET 2 OF 4

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

SUBSTRUCTURE
 END BENT No. 2



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STD. NO. EB_39_90S4

| | |
|--------------------------|-------------------|
| ASSEMBLED BY : M. WRIGHT | DATE : 04/23 |
| CHECKED BY : Z. REINEKE | DATE : 03/25 |
| DRAWN BY : WJH 12/11 | REV. 4/15 MAA/TMG |
| CHECKED BY : AAC 12/11 | |

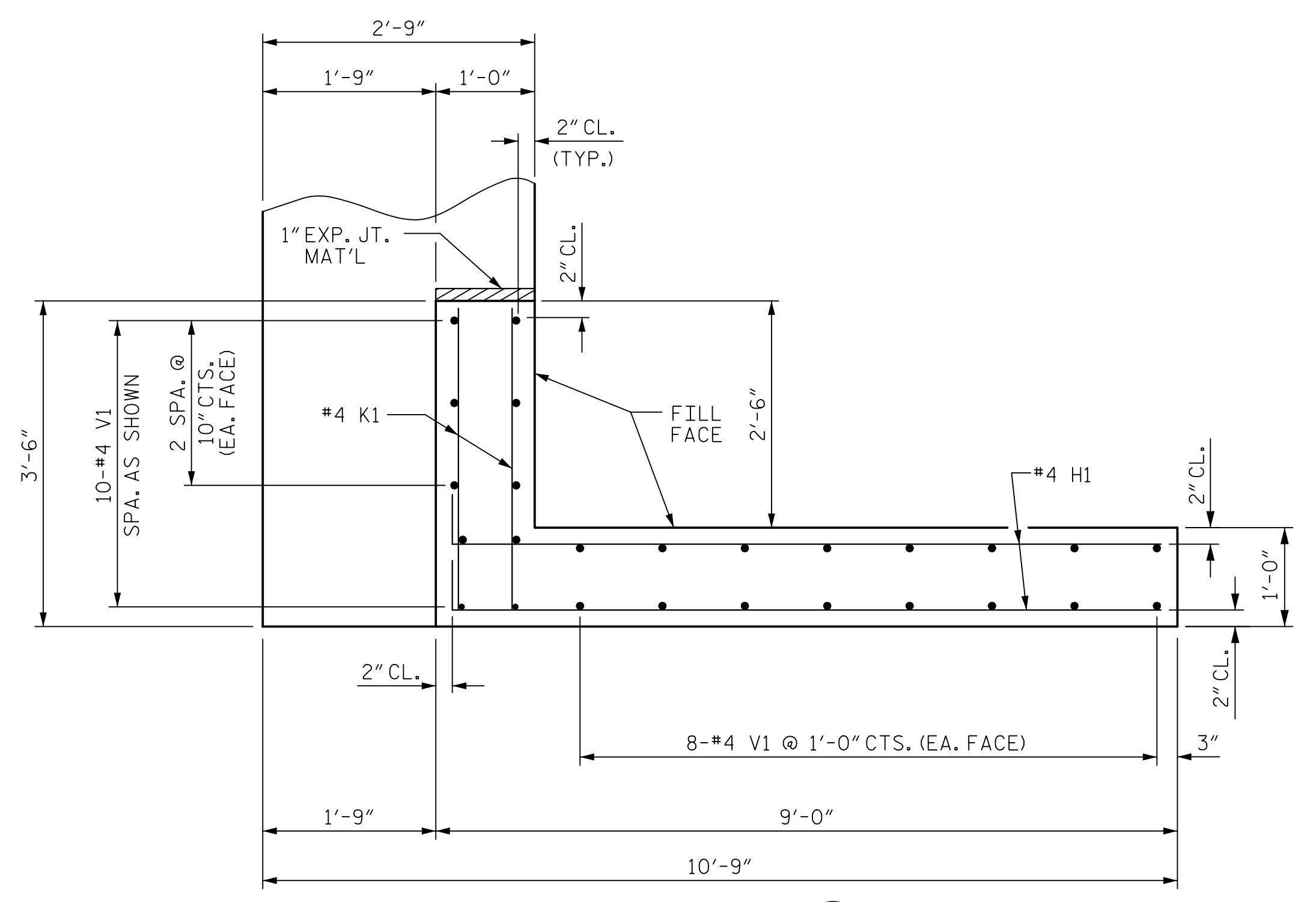
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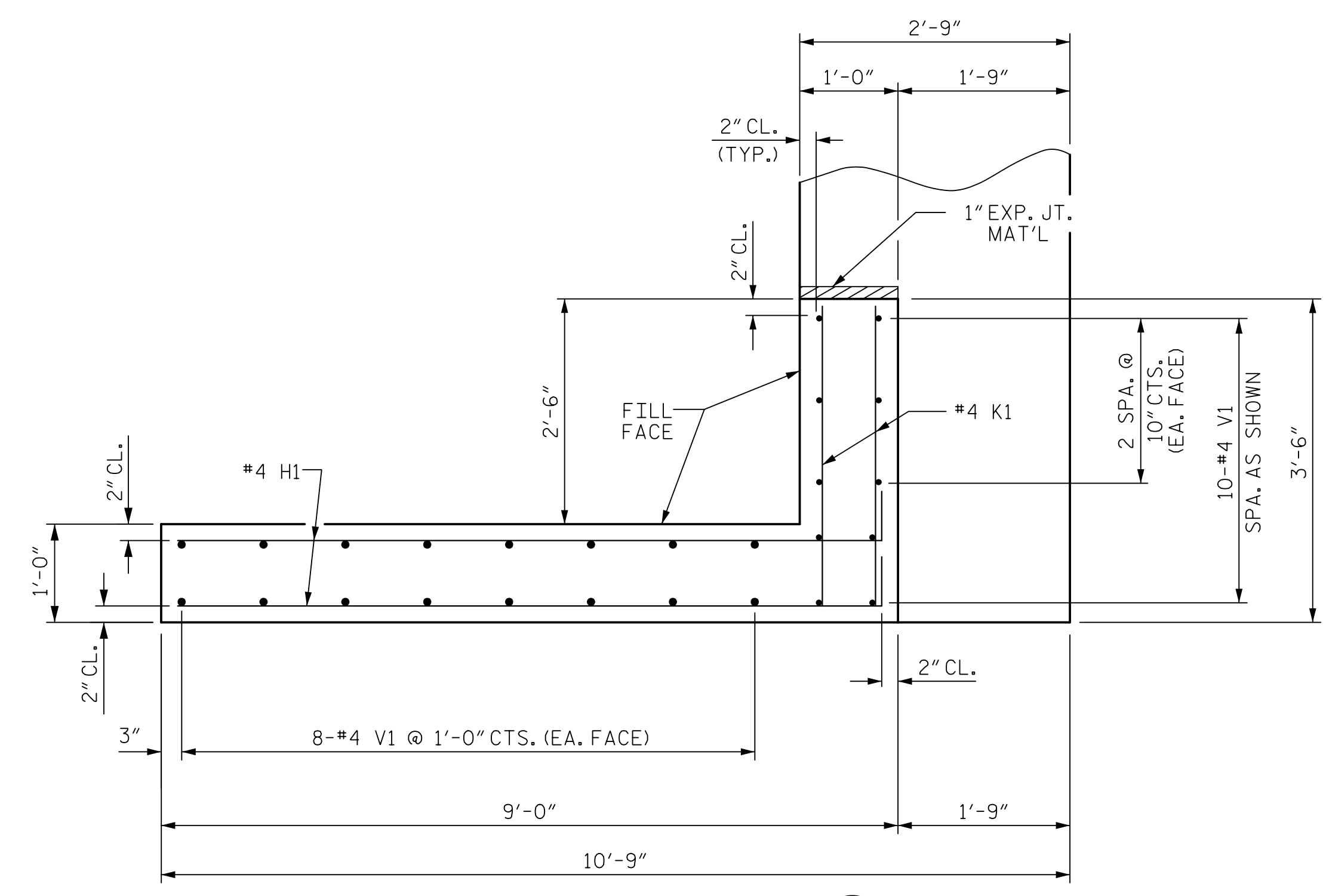
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| DRAWN BY : M. WRIGHT | DATE : 04/23 |
| CHECKED BY : Z. REINEKE | DATE : 03/25 |
| DESIGN ENGINEER OF RECORD : D. HAWKINS | DATE : 03/25 |

DWG. NO. 16

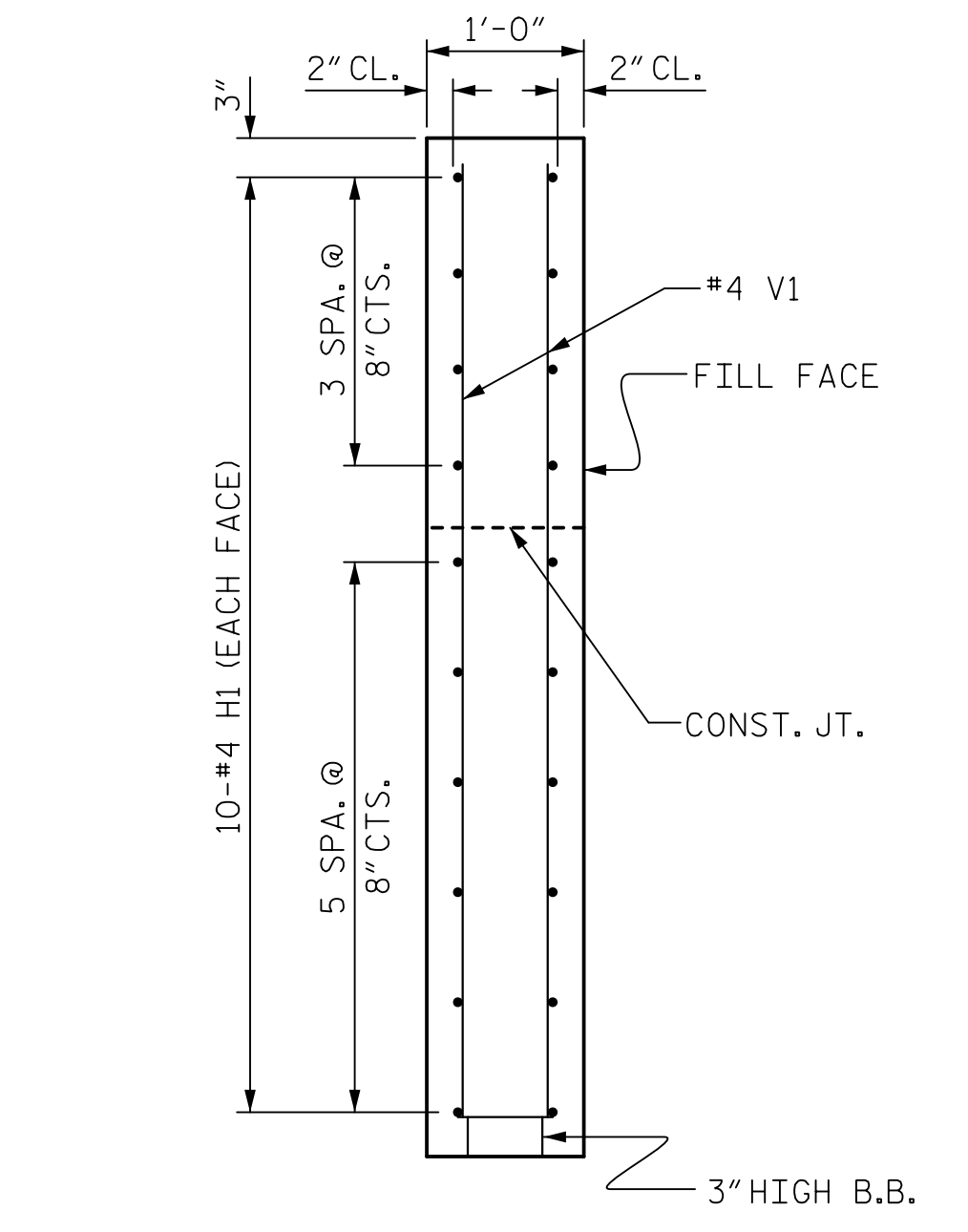
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|-----------|----|------|-----|----|------|--------------|
| NO. | BY | DATE | NO. | BY | DATE | TOTAL SHEETS |
| 1 | | | 3 | | | 24 |
| 2 | | | 4 | | | |



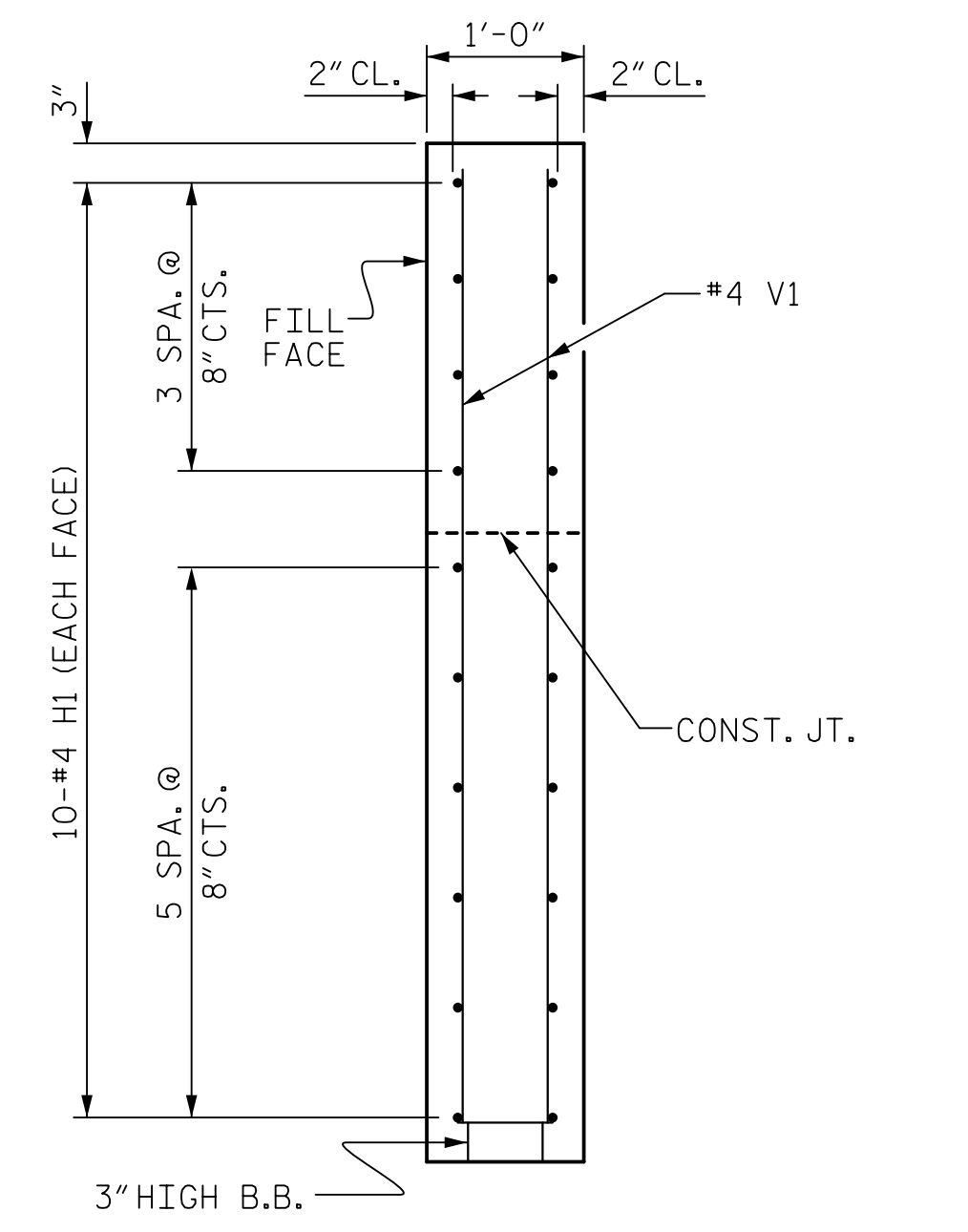
PLAN OF WING (W1)



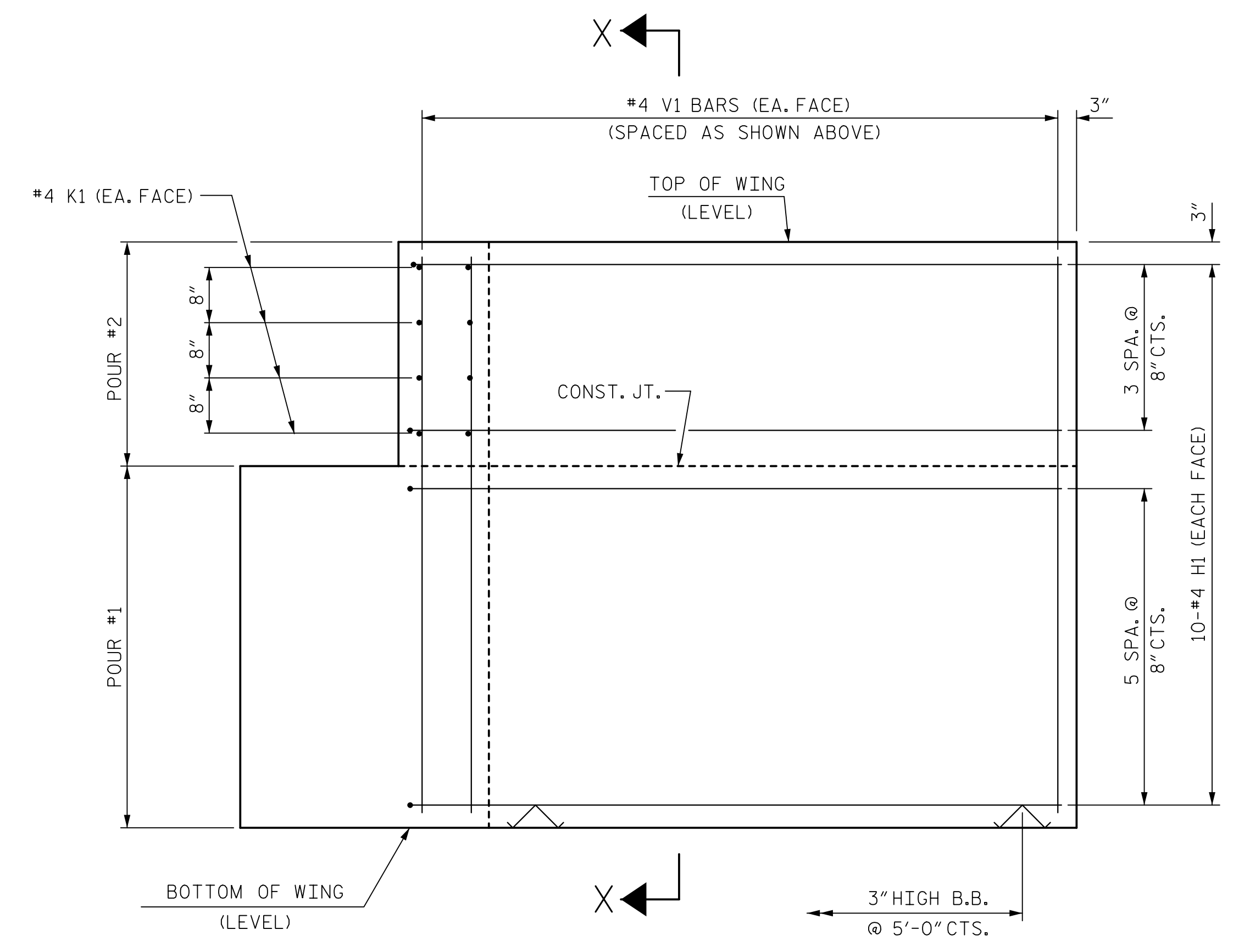
PLAN OF WING (W2)



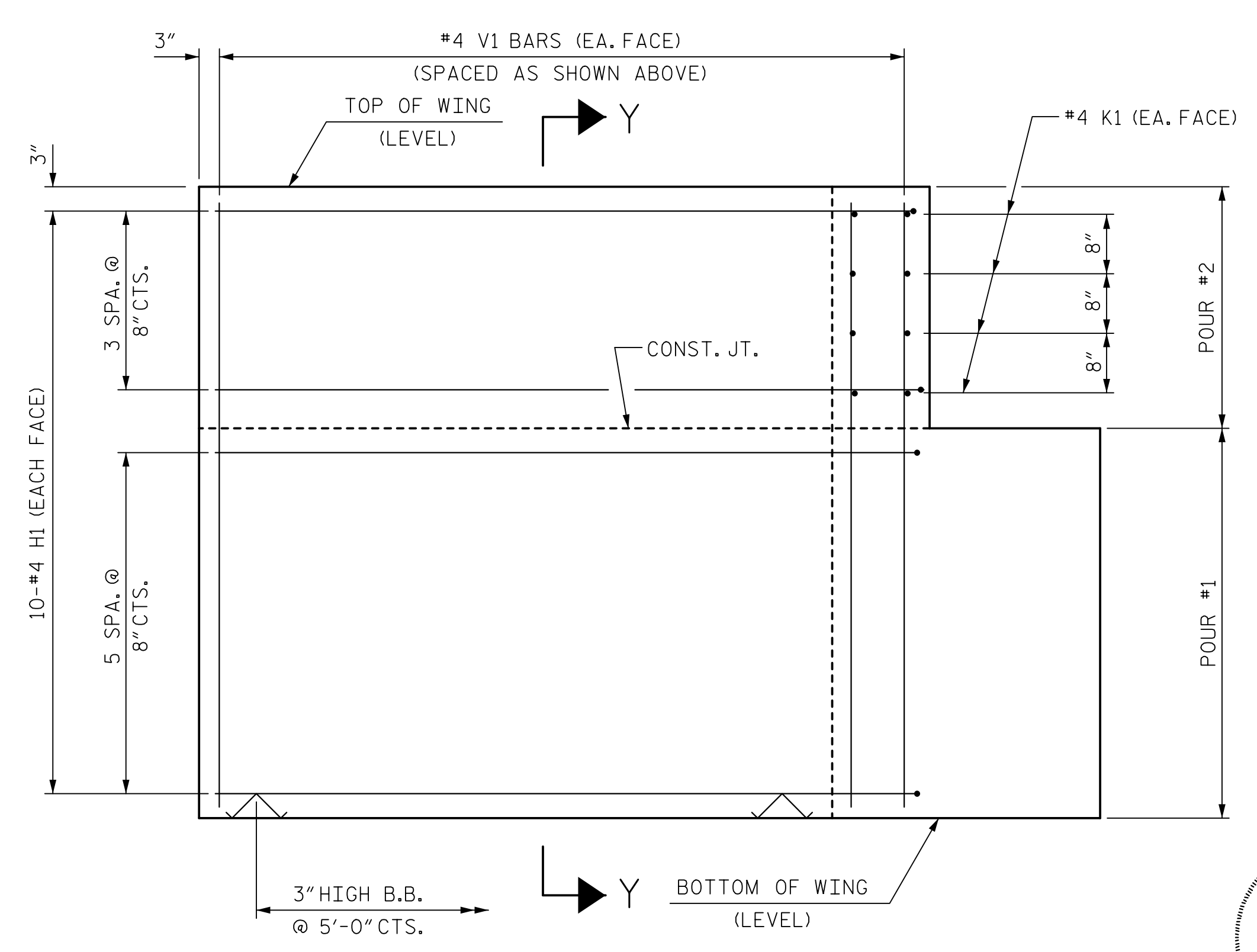
SECTION X-X



SECTION Y-Y



ELEVATION OF WING (W1)



ELEVATION OF WING (W2)

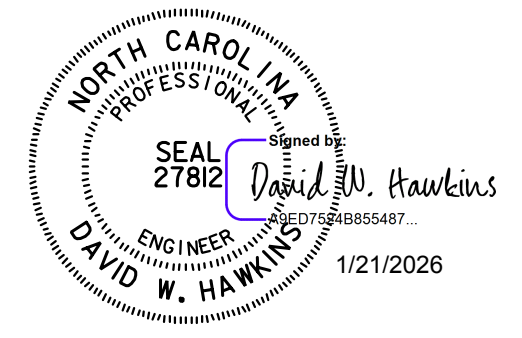
WING DETAILS

PROJECT NO. BP7-R009
ORANGE COUNTY
 STATION: POC 15+27.00 -L-

SHEET 3 OF 4

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

SUBSTRUCTURE
 END BENT
 WING DETAILS



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DRAWN BY: M. WRIGHT DATE: 04/23
 CHECKED BY: Z. REINEKE DATE: 03/25
 DESIGN ENGINEER OF RECORD: D. HAWKINS DATE: 03/25

DWG. NO. 17

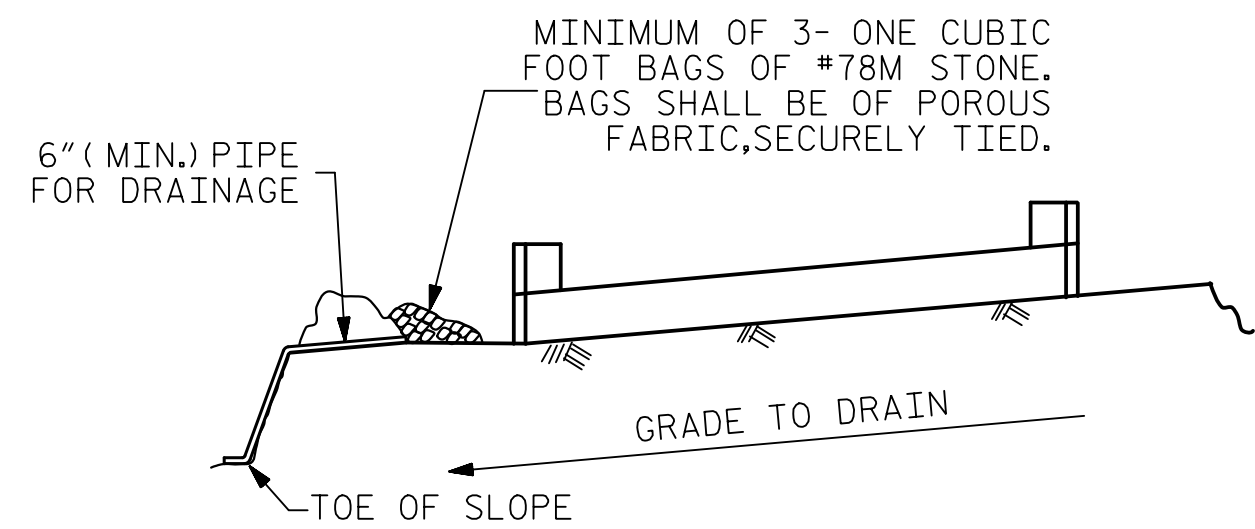
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|-----------|----|------|-----|----|------|--------------|
| NO. | BY | DATE | NO. | BY | DATE | S-17 |
| 1 | | | 3 | | | TOTAL SHEETS |
| 2 | | | 4 | | | 24 |

STD. NO. EB_39_90S4

| | |
|-------------------------|-------------|
| ASSEMBLED BY: M. WRIGHT | DATE: 04/23 |
| CHECKED BY: Z. REINEKE | DATE: 03/25 |
| DRAWN BY: WJH 12/11 | REV. 4/15 |
| CHECKED BY: AAC 12/11 | MAA/TMG |

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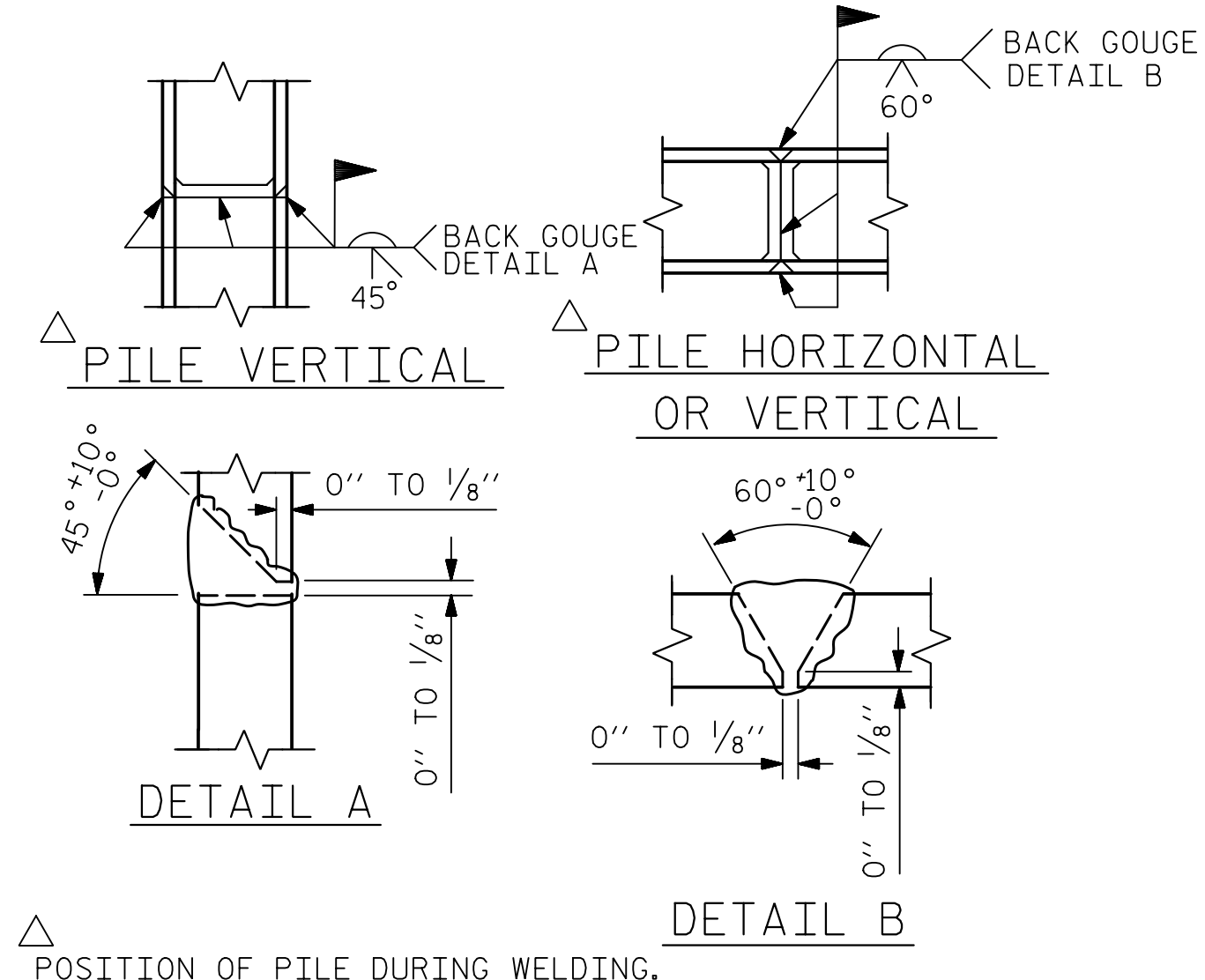


BAGGED STONE AND PIPE SHALL BE PLACED IMMEDIATELY AFTER COMPLETION OF END BENT EXCAVATION. PIPE MAY BE EITHER CONCRETE, CORRUGATED STEEL, CORRUGATED ALUMINUM ALLOY, OR CORRUGATED PLASTIC. PERFORATED PIPE WILL NOT BE ALLOWED.

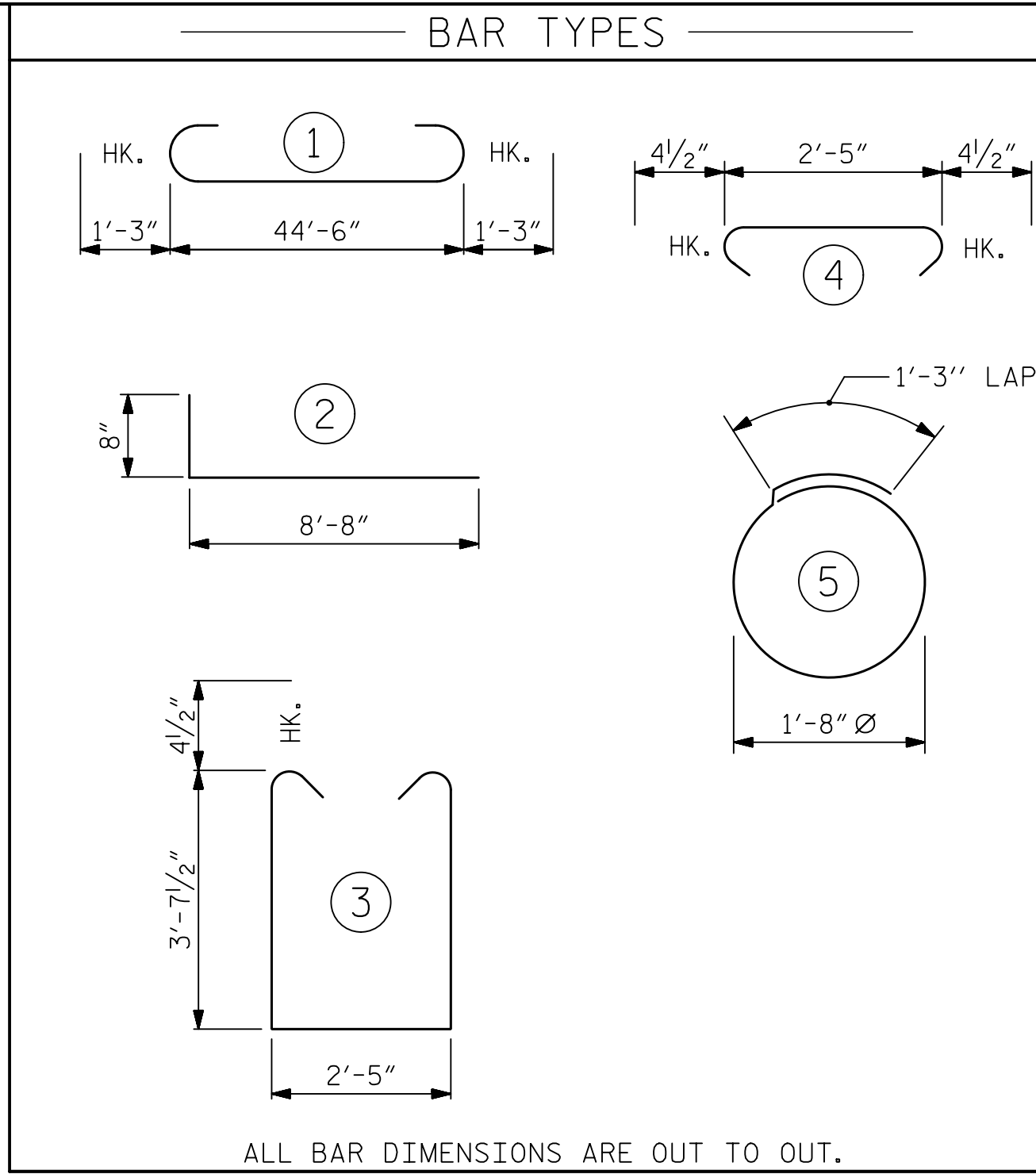
BAGGED STONE SHALL REMAIN IN PLACE UNTIL THE ENGINEER DIRECTS THAT IT BE REMOVED. THE CONTRACTOR SHALL REMOVE AND DISPOSE OF SILT ACCUMULATIONS AT BAGGED STONE WHEN SO DIRECTED BY THE ENGINEER. BAGS SHALL BE REMOVED AND REPLACED WHENEVER THE ENGINEER DETERMINES THAT THEY HAVE DETERIORATED AND LOST THEIR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

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

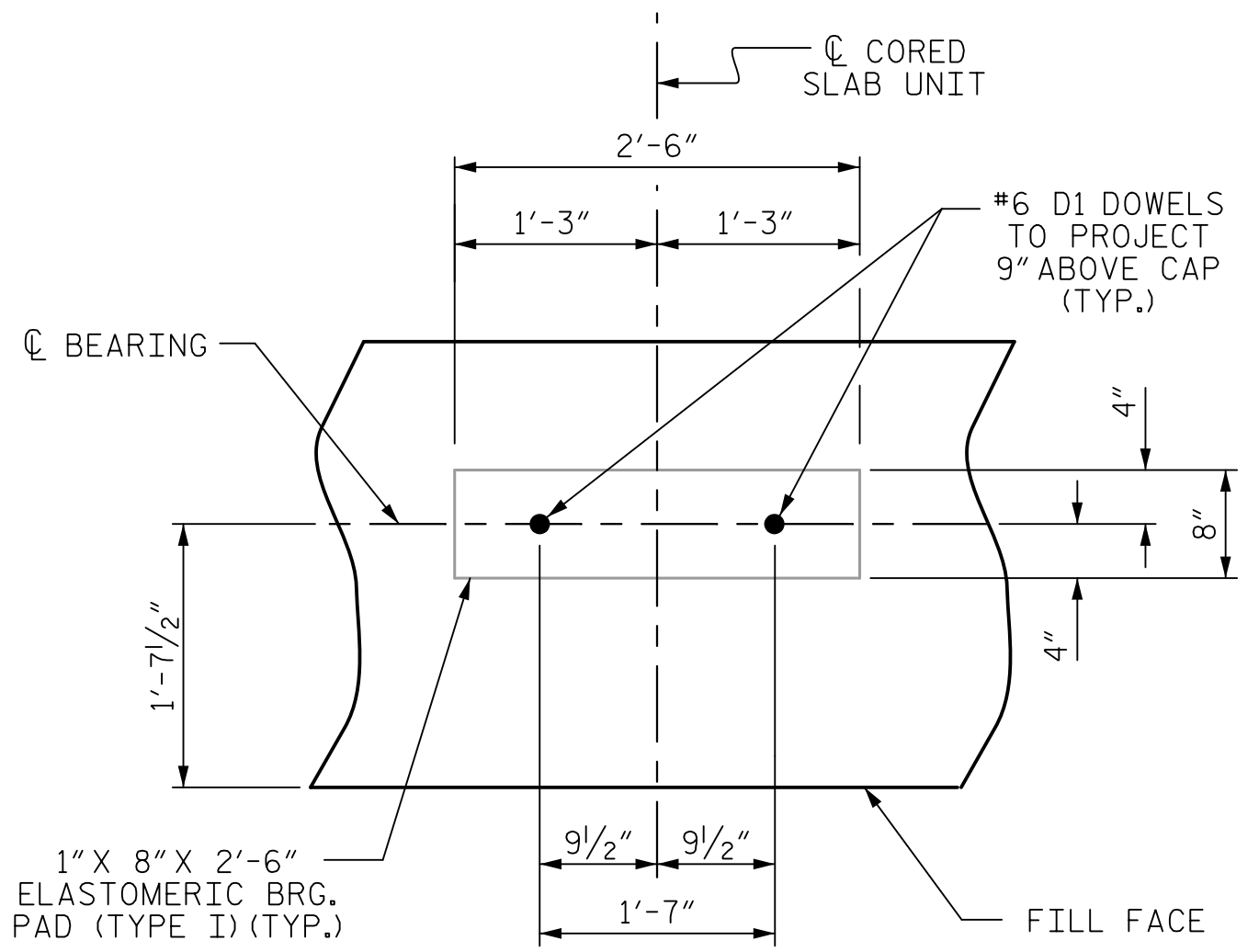
TEMPORARY DRAINAGE AT END BENT



PILE SPLICE DETAILS

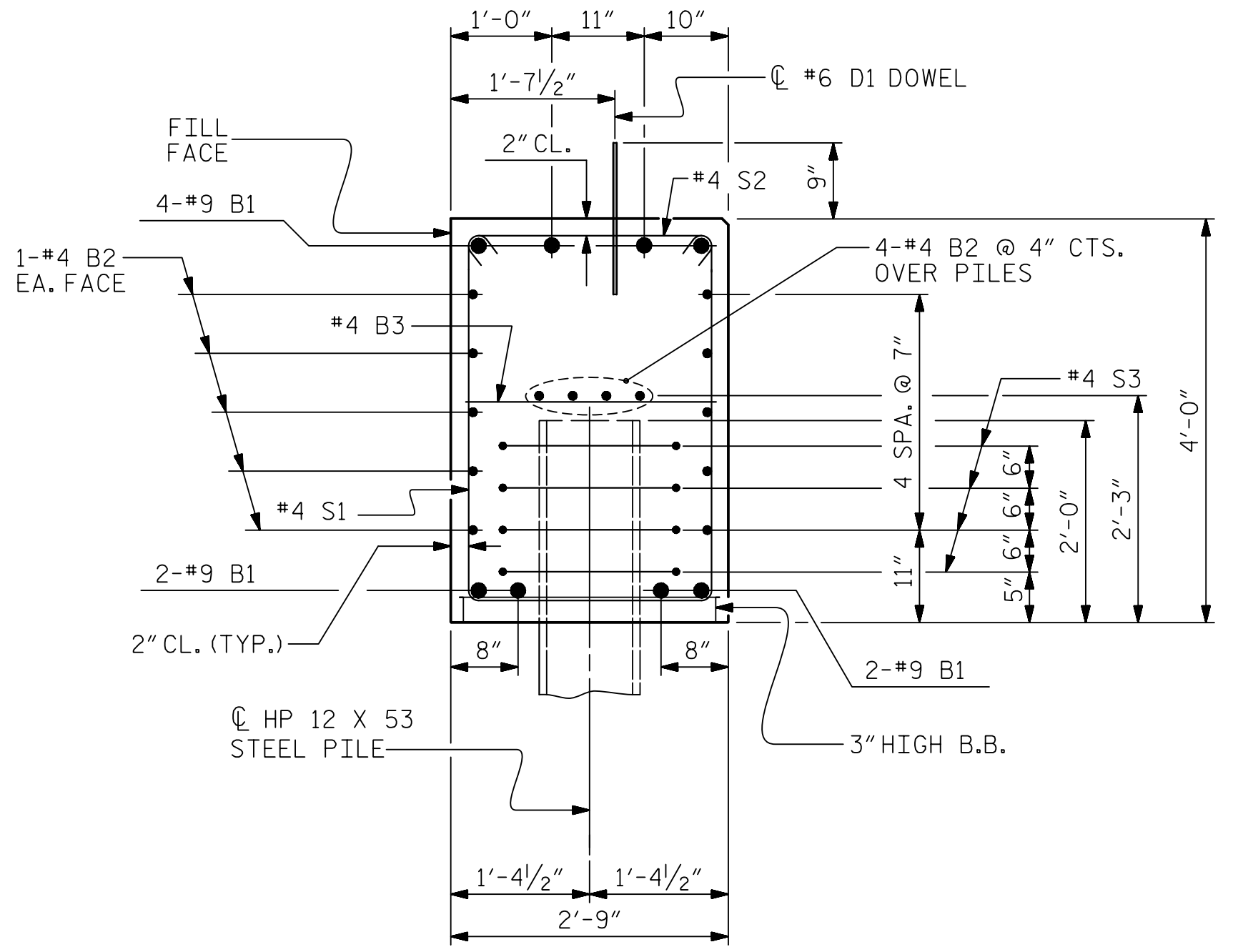


| BILL OF MATERIAL FOR ONE END BENT | | | | | |
|---|------------------------------------|------|------|------------|--------|
| BAR | NO. | SIZE | TYPE | LENGTH | WEIGHT |
| B1 | 8 | #9 | | 47'-0" | 1278 |
| B2 | 28 | #4 | STR | 23'-7" | 441 |
| B3 | 12 | #4 | STR | 2'-5" | 19 |
| D1 | 26 | #6 | STR | 1'-6" | 59 |
| H1 | 40 | #4 | 2 | 9'-4" | 249 |
| K1 | 16 | #4 | STR | 3'-1" | 33 |
| S1 | 56 | #4 | 3 | 10'-5" | 390 |
| S2 | 56 | #4 | 4 | 3'-2" | 118 |
| S3 | 28 | #4 | 5 | 6'-6" | 122 |
| V1 | 52 | #4 | STR | 6'-2" | 214 |
| REINFORCING STEEL (FOR ONE END BENT) | | | | 2,923 LBS. | |
| CLASS A CONCRETE BREAKDOWN (FOR ONE END BENT) | | | | | |
| POUR #1 | CAP, LOWER PART OF WINGS & COLLARS | | | 21.9 C.Y. | |
| POUR #2 | UPPER PART OF WINGS | | | 2.3 C.Y. | |
| TOTAL CLASS A CONCRETE | | | | 24.2 C.Y. | |



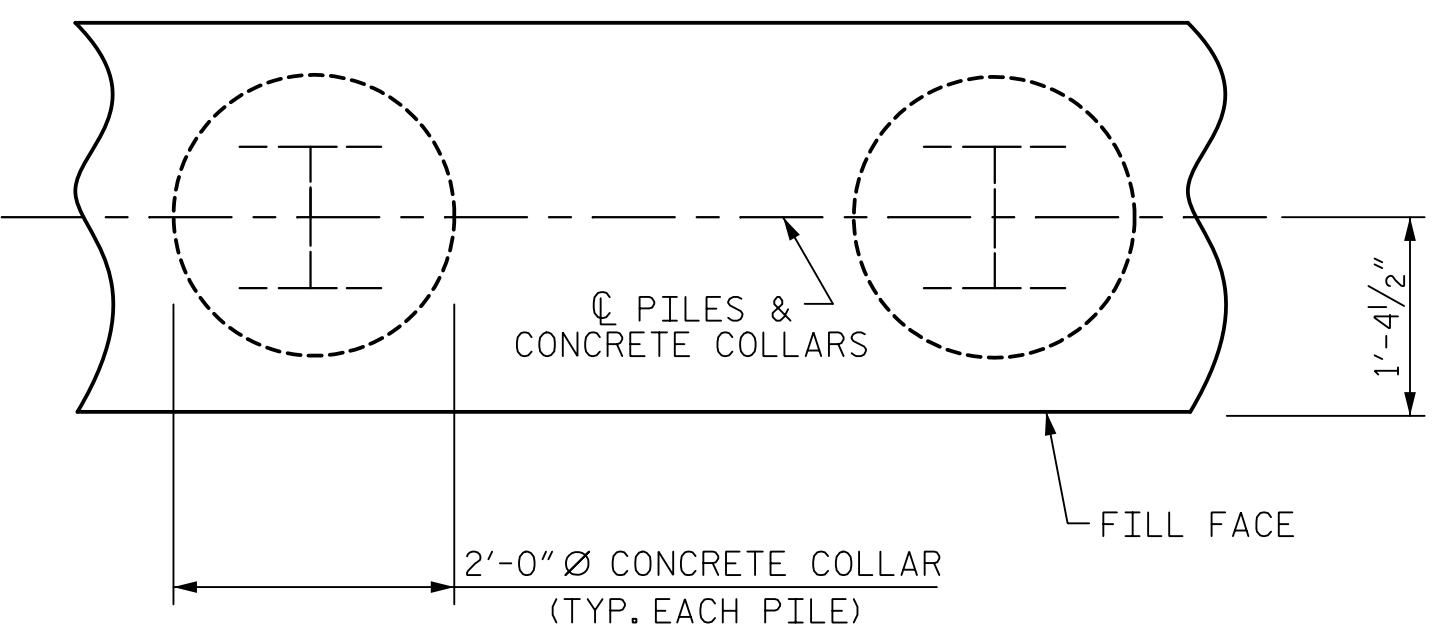
DETAIL "A"

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

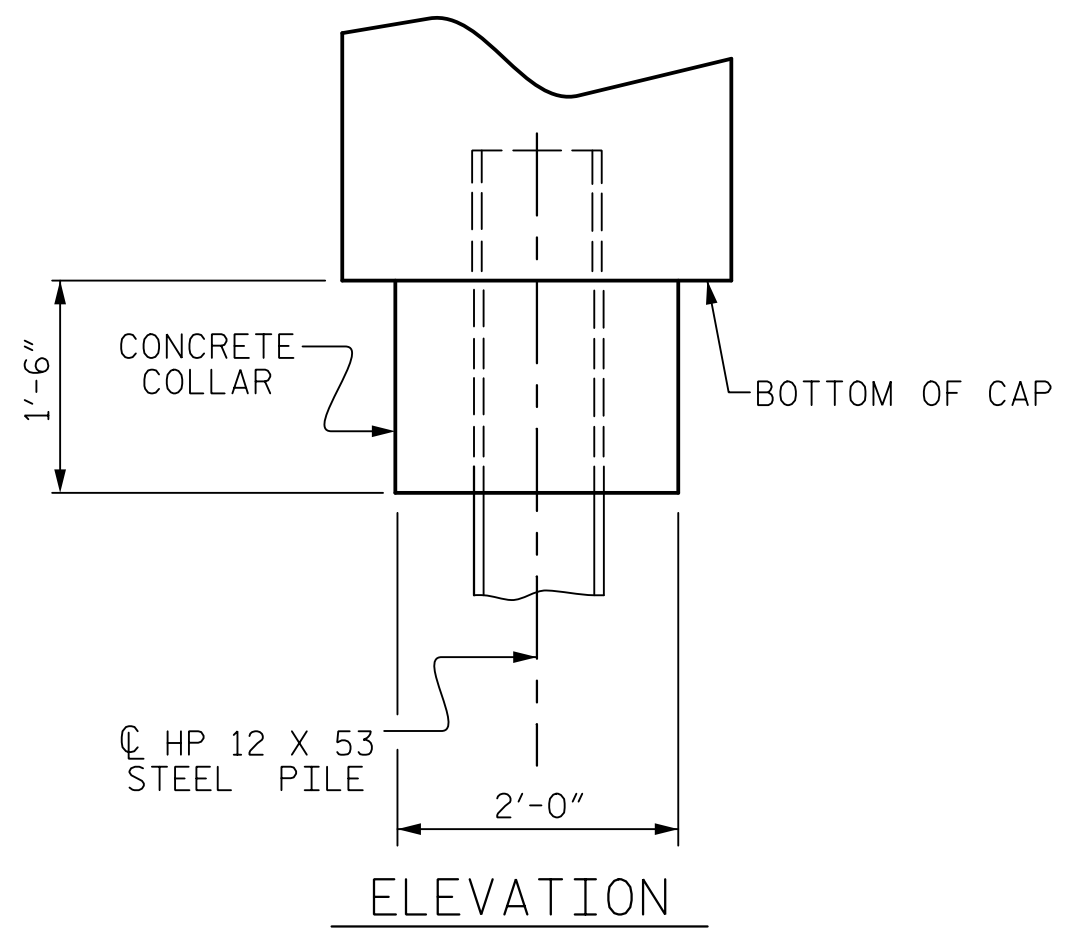


SECTION A-A

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



PLAN



ELEVATION

CORROSION PROTECTION FOR STEEL PILES DETAIL

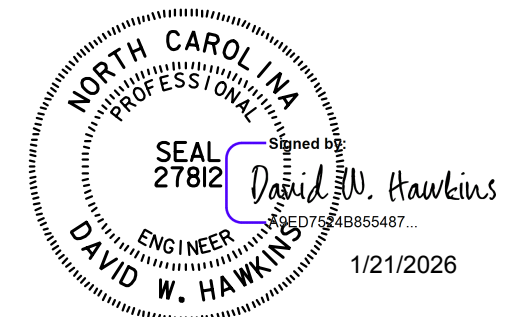
(END BENT No. 1 SHOWN, END BENT No. 2 SIMILAR BY ROTATION)

PROJECT NO. BP7-R009
ORANGE COUNTY
 STATION: POC 15+27.00 -L-

SHEET 4 OF 4

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

SUBSTRUCTURE
 END BENT No. 1 & 2
 DETAILS



HNTB HNTB NORTH CAROLINA, P.C.
 NC License No. C-1554
 4000 Center at North Hills Street, Suite 500, Raleigh, N.C. 27609

DRAWN BY: M. WRIGHT DATE: 04/23
 CHECKED BY: Z. REINEKE DATE: 03/25
 DESIGN ENGINEER OF RECORD: D. HAWKINS DATE: 03/25

DWG. NO. 18

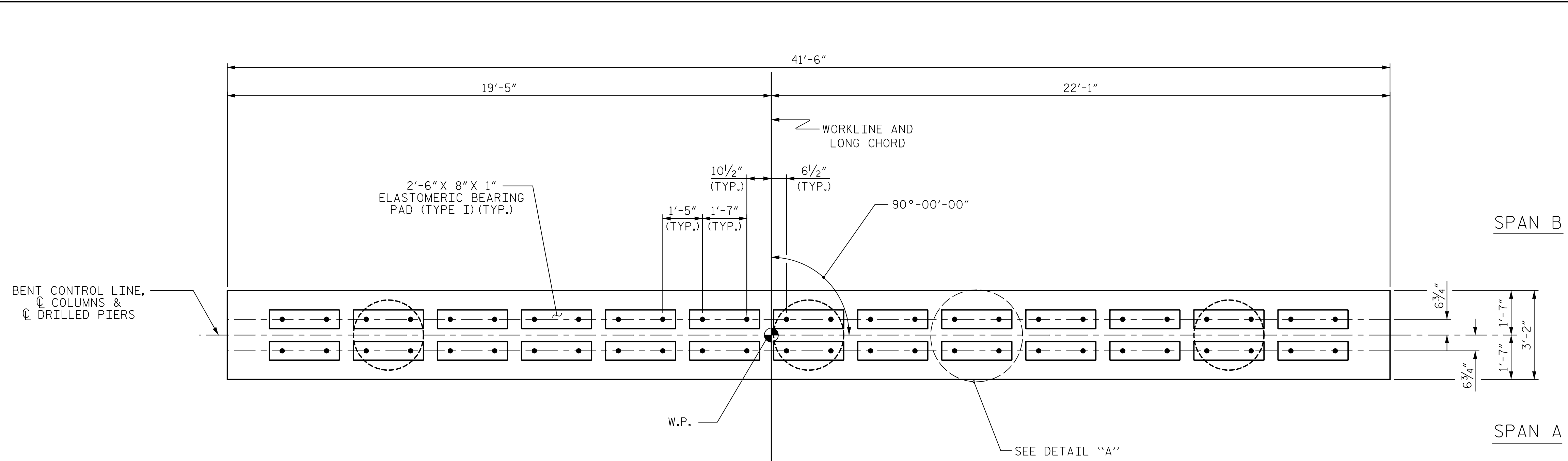
| REVISIONS | | | | | | SHEET NO. |
|-----------|----|------|-----|----|------|--------------|
| NO. | BY | DATE | NO. | BY | DATE | S-18 |
| 1 | | | 3 | | | TOTAL SHEETS |
| 2 | | | 4 | | | 24 |

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STD. NO. EB_39_90S4

| | |
|-------------------------|-------------|
| ASSEMBLED BY: M. WRIGHT | DATE: 04/23 |
| CHECKED BY: Z. REINEKE | DATE: 03/25 |
| DRAWN BY: WJH 12/11 | REV. 4/17 |
| CHECKED BY: AAC 12/11 | MAA/THC |



PLAN

NOTES

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

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

FOR DRILLED PIERS, SEE SECTION 411 OF THE STANDARD SPECIFICATIONS.

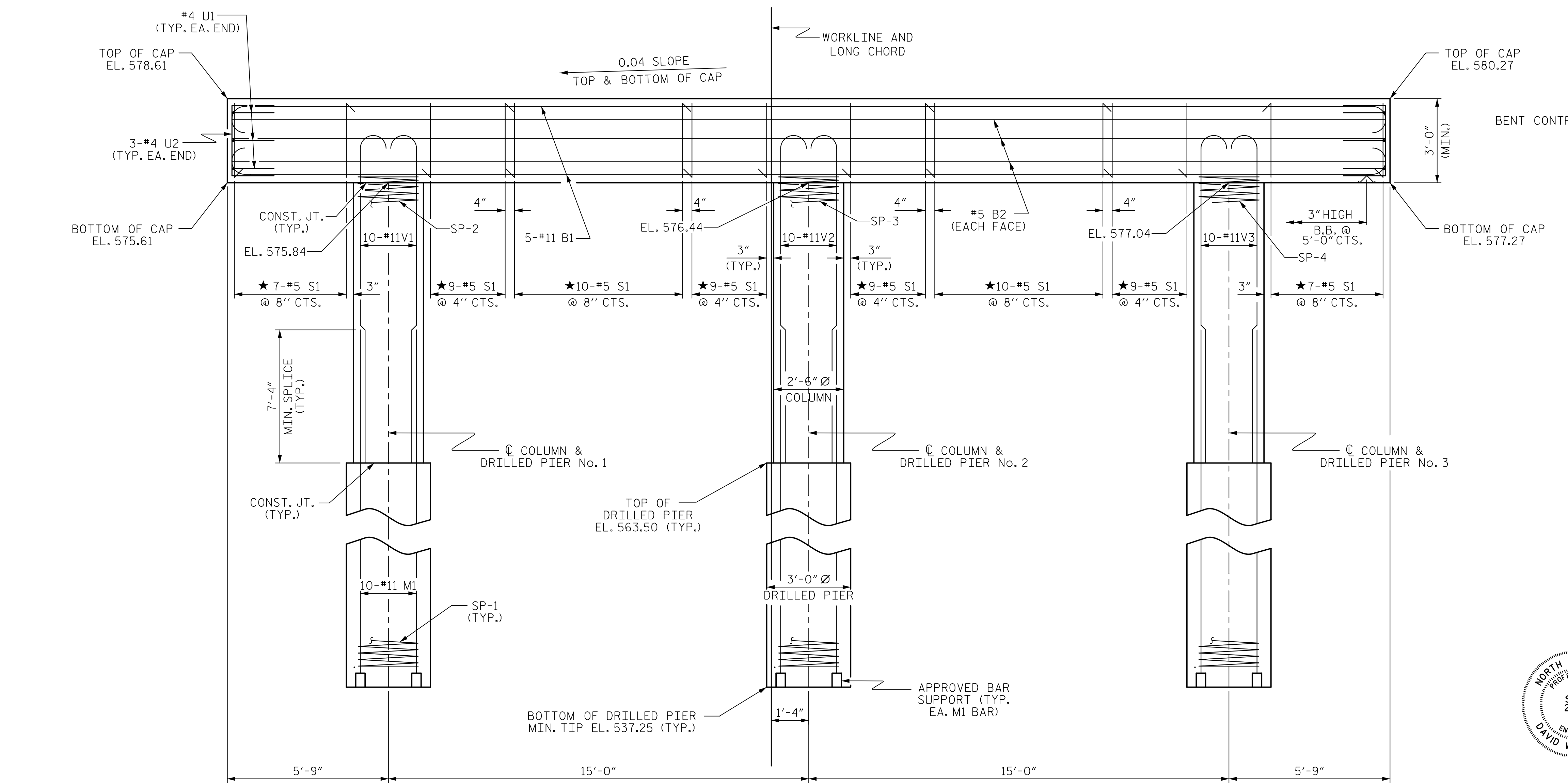
ALL STEEL IN THE DRILLED PIERS IS INCLUDED IN THE PAY ITEMS FOR "REINFORCING STEEL" AND "SPIRAL COLUMN REINFORCING STEEL."

★ INVERT ALTERNATE STIRRUPS.

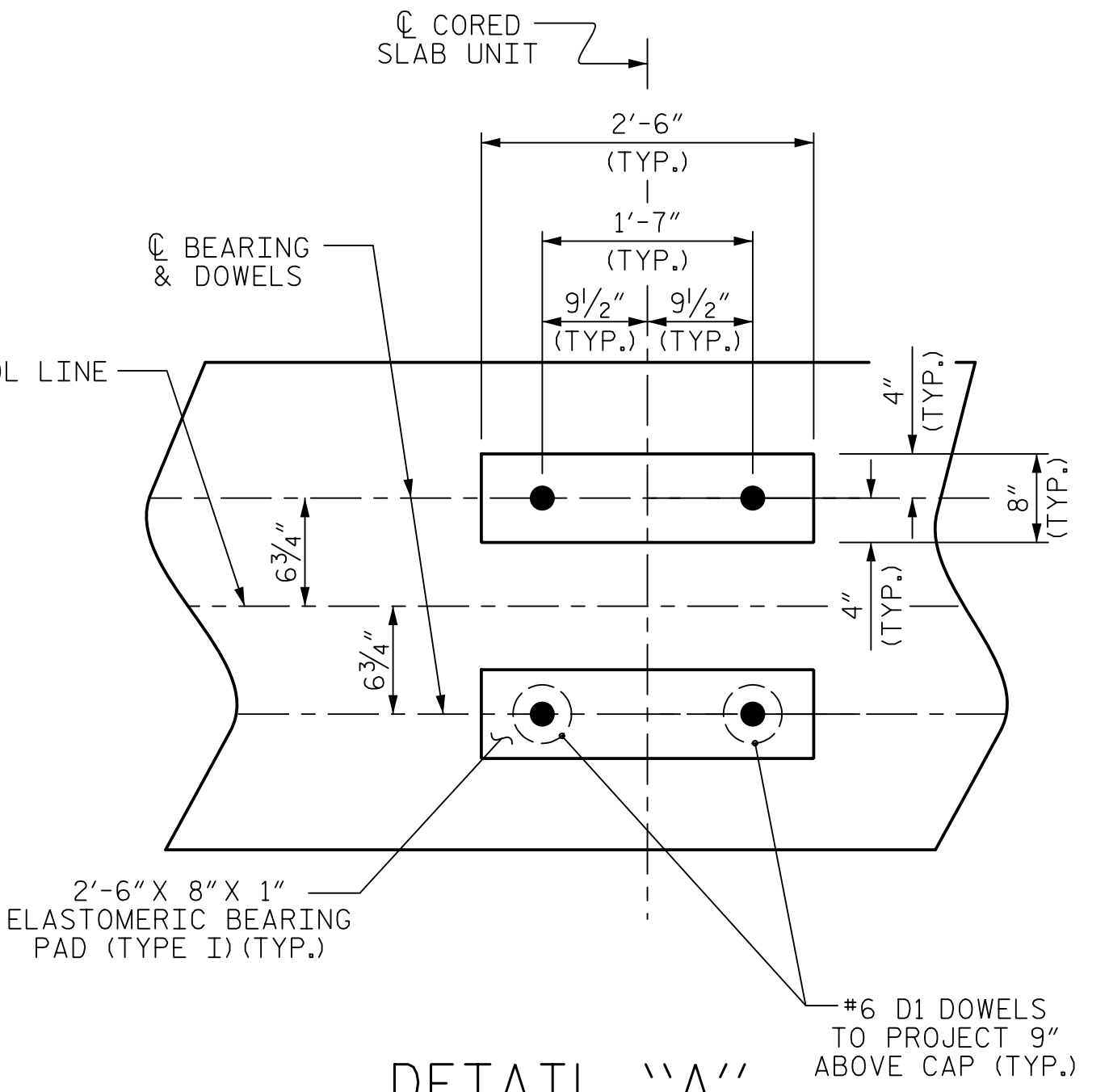
THE LOCATION OF THE CONSTRUCTION JOINT IN THE DRILLED PIERS IS BASED ON AN APPROXIMATE GROUND LINE ELEVATION. IF THE CONSTRUCTION JOINT IS ABOVE THE ACTUAL GROUND LINE ELEVATION, THE CONTRACTOR SHALL PLACE THE CONSTRUCTION JOINT ONE FOOT BELOW THE GROUND LINE.

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

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



ELEVATION



DETAIL "A"

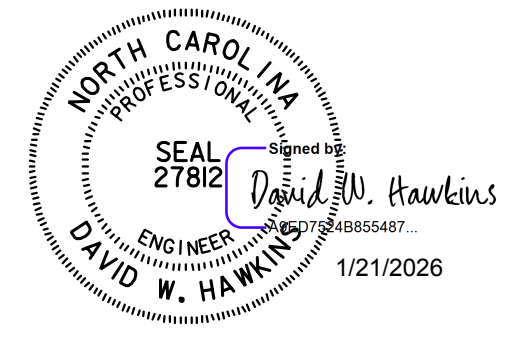
(DIMENSIONS ARE TYPICAL EACH BEARING)

PROJECT NO. BP7-R009
ORANGE COUNTY
 STATION: POC 15+27.00 -L-

SHEET 1 OF 2

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

SUBSTRUCTURE
 BENT No. 1



HNTB HNTB NORTH CAROLINA, P.C.
 NC License No. C-1554
 4000 Center at North Hills Street, Suite 500, Raleigh, N.C. 27609

DRAWN BY: D. HORTON DATE: 10/24
 CHECKED BY: Z. REINEKE DATE: 03/25
 DESIGN ENGINEER OF RECORD: D. HAWKINS DATE: 03/25

DWG. NO. 19

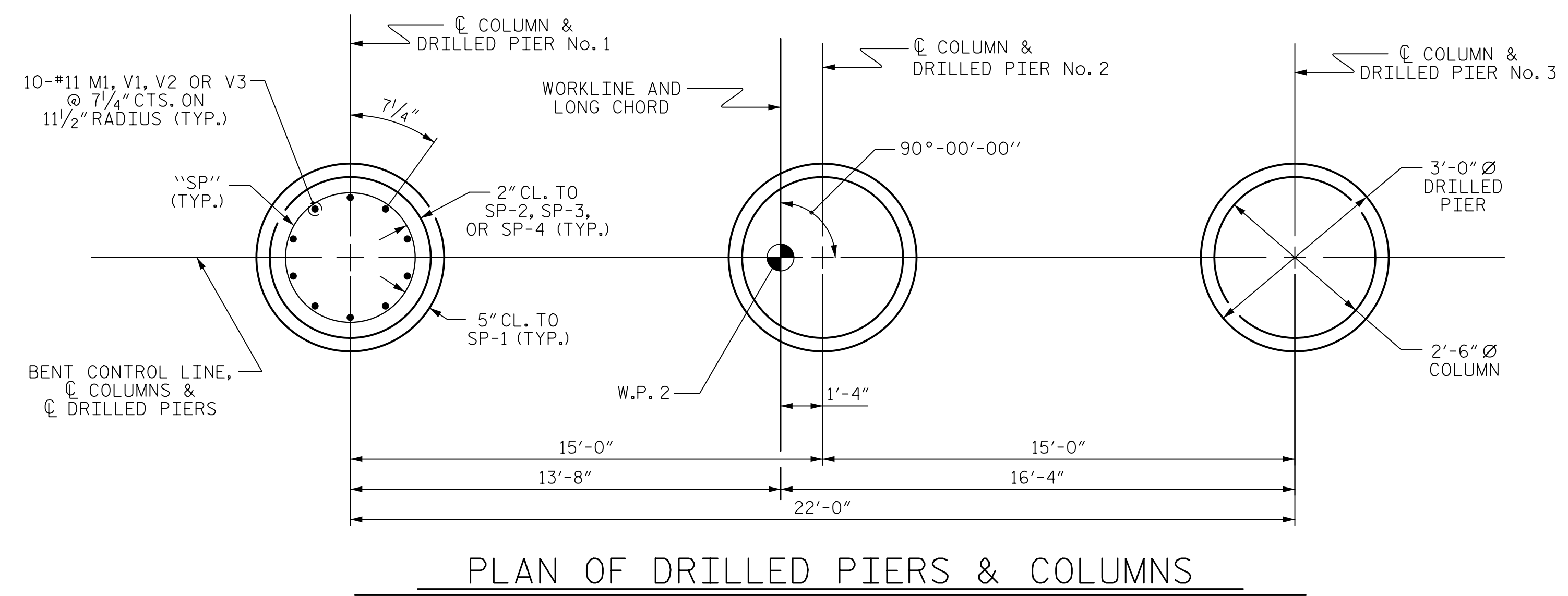
| REVISIONS | | | | | | SHEET NO. |
|-----------|----|------|-----|----|------|--------------|
| NO. | BY | DATE | NO. | BY | DATE | S-19 |
| 1 | | | 3 | | | TOTAL SHEETS |
| 2 | | | 4 | | | 24 |

DIMENSIONS & REINFORCING STEEL ARE TYPICAL FOR EACH COLUMN & DRILLED PIER UNLESS OTHERWISE NOTED.

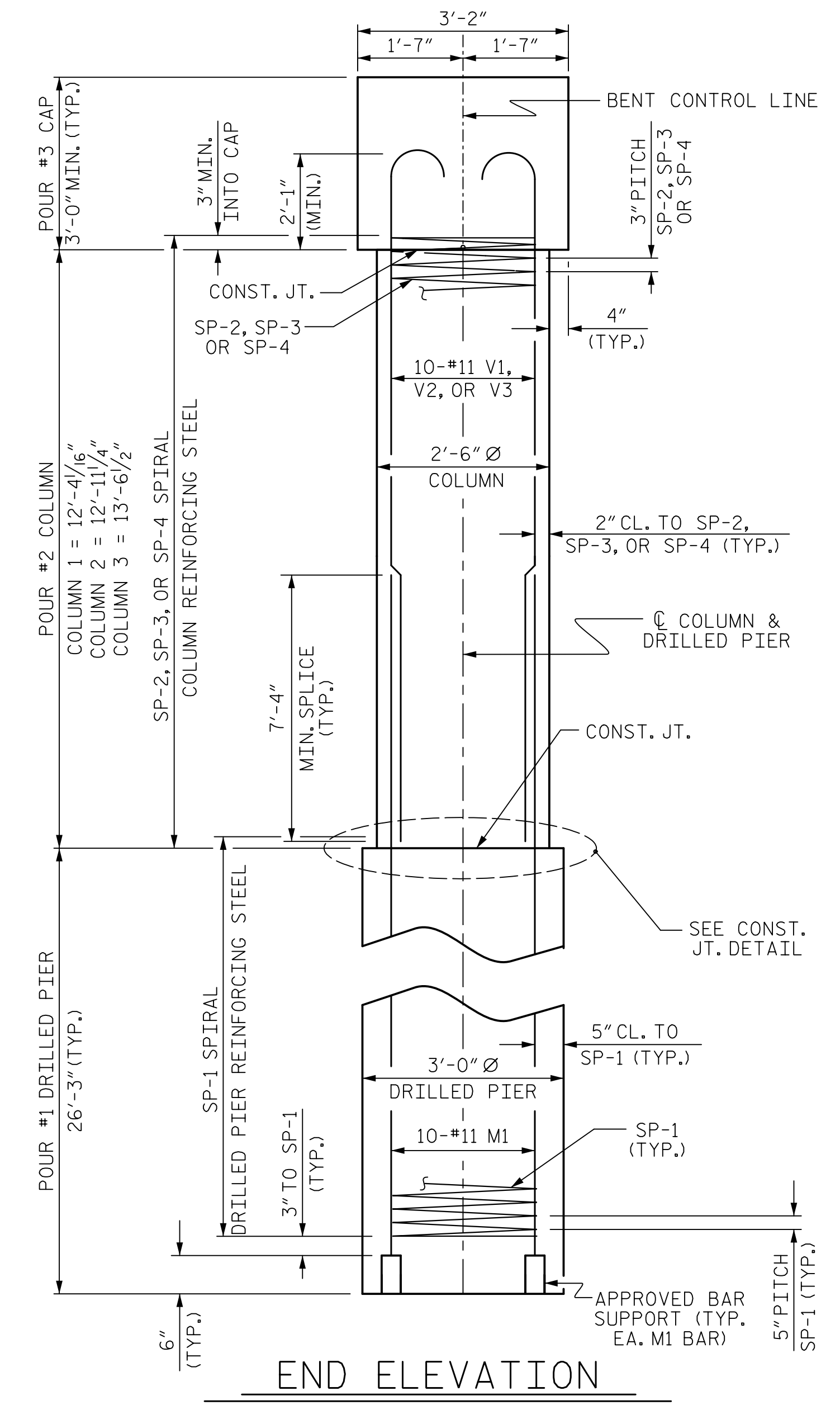
**DOCUMENT NOT CONSIDERED FINAL
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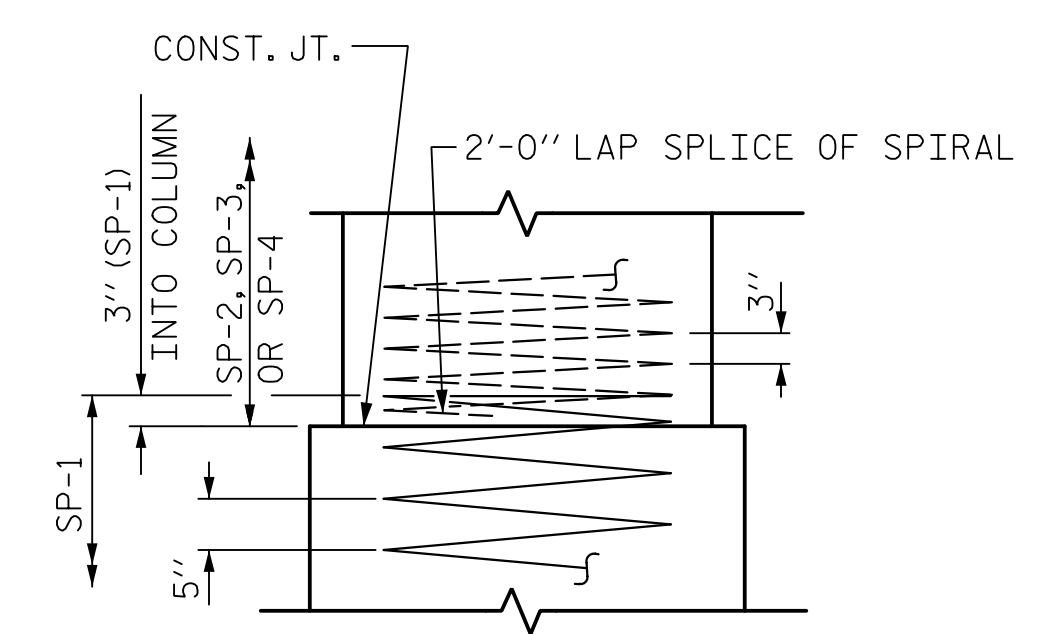
| | |
|--------------------------|--------------------|
| ASSEMBLED BY : M. WRIGHT | DATE : 08/24 |
| CHECKED BY : Z. REINEKE | DATE : 03/25 |
| DRAWN BY : DCE 4/10 | REV. 11/14 MAA/TMG |
| CHECKED BY : MKT 4/10 | |



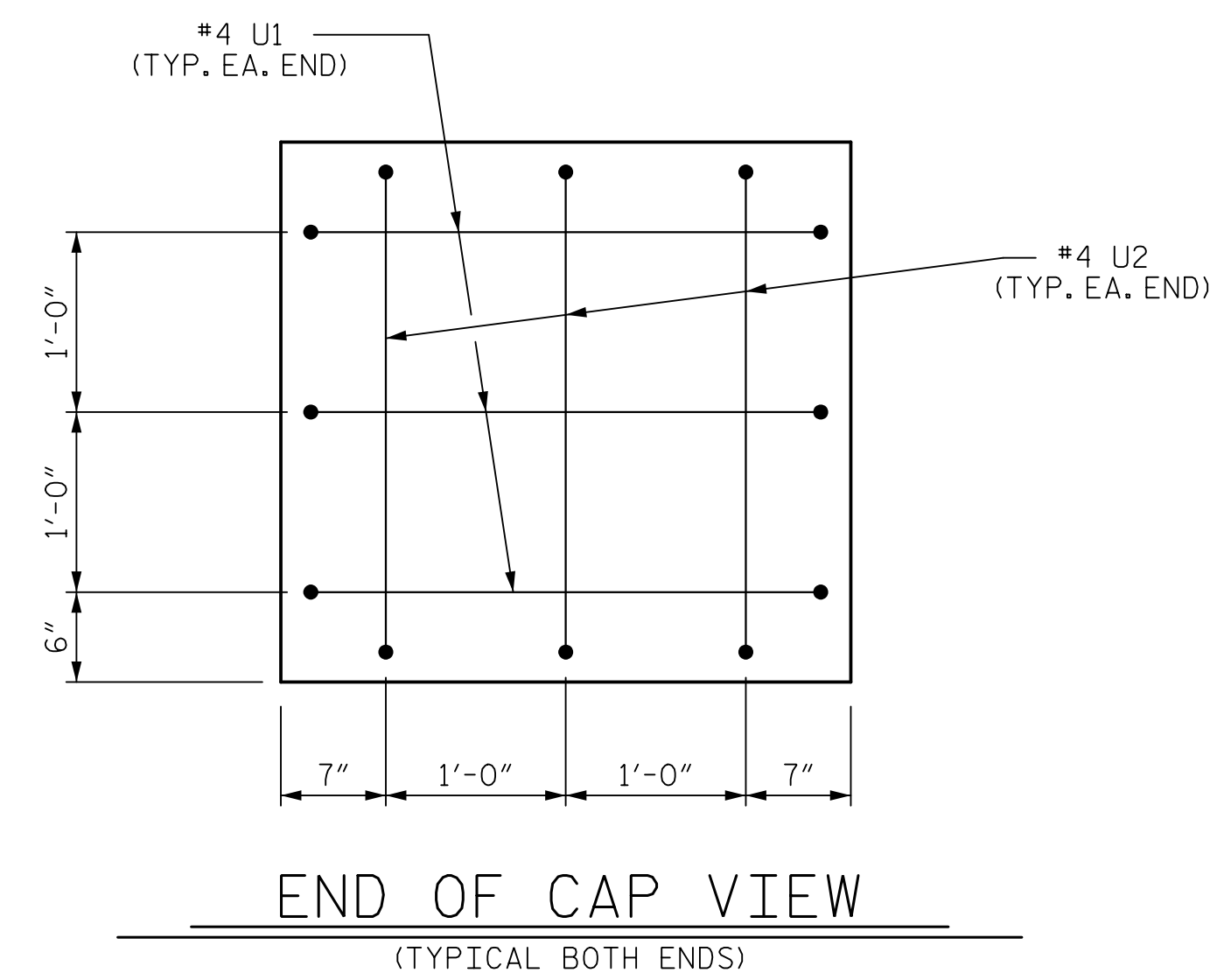
PLAN OF DRILLED PIERS & COLUMNS



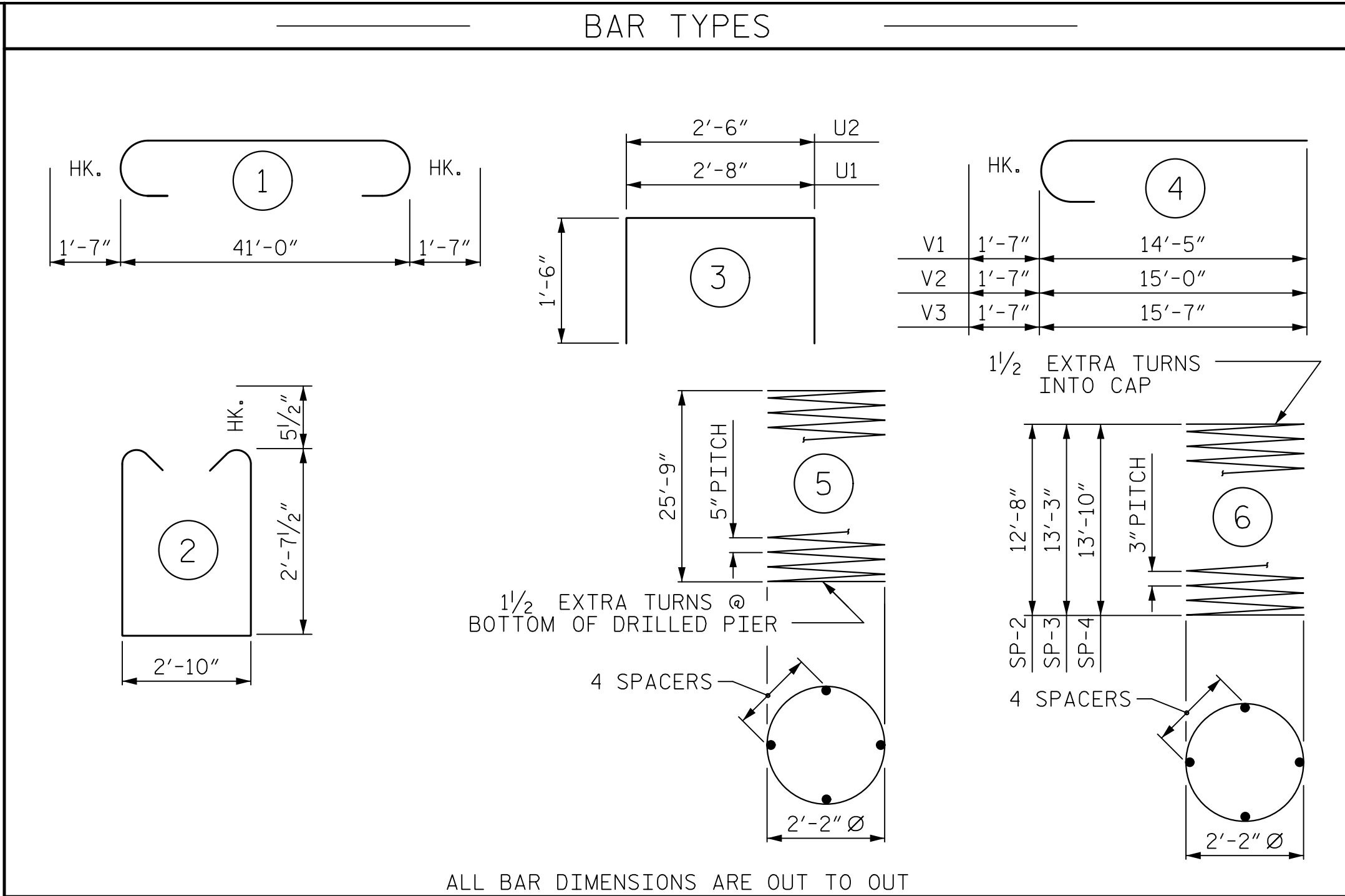
END ELEVATION



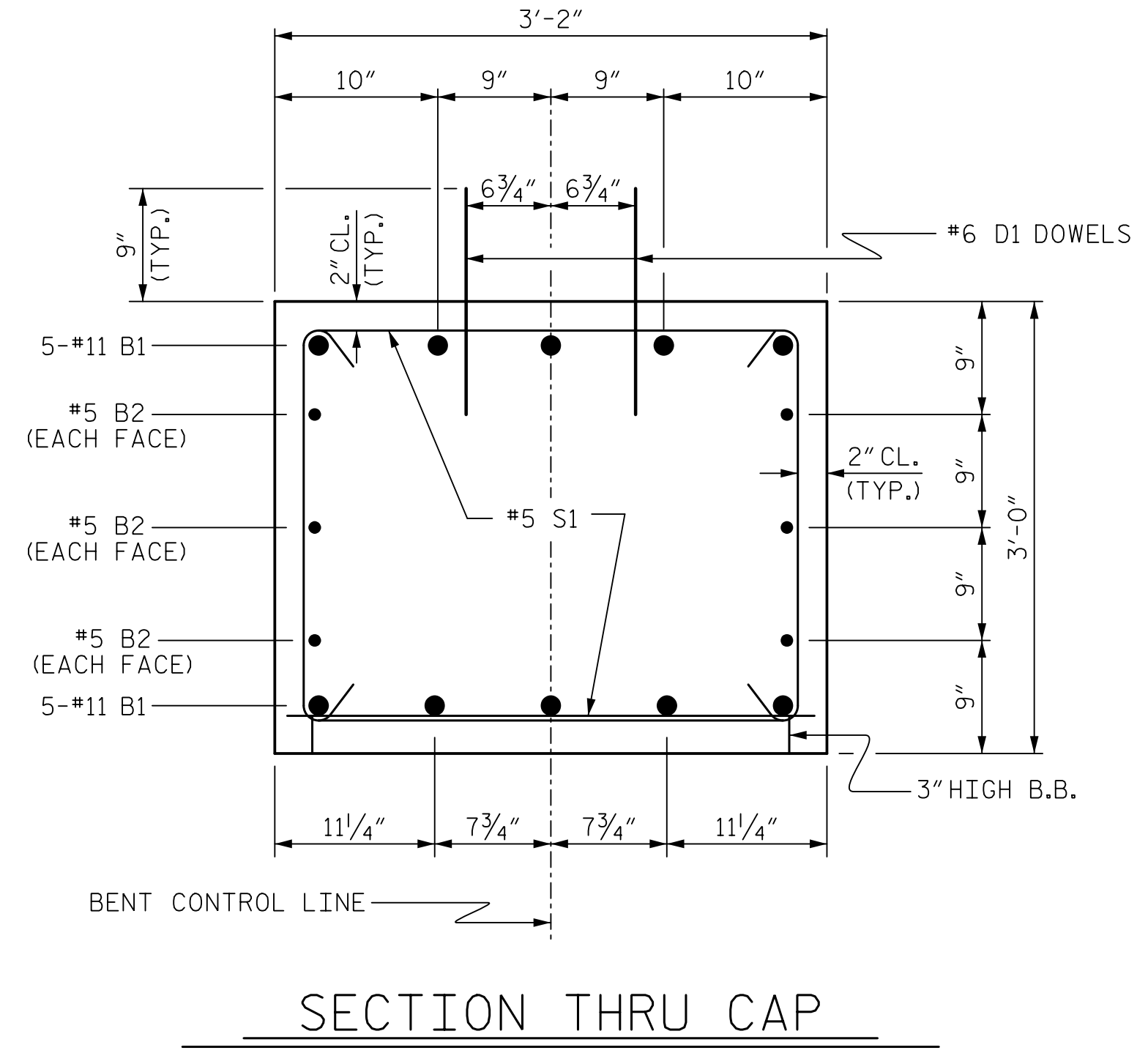
CONSTRUCTION JOINT DETAIL



END OF CAP VIEW
(TYPICAL BOTH ENDS)



ALL BAR DIMENSIONS ARE OUT TO OUT



SECTION THRU CAP

| BILL OF MATERIAL | | | | | |
|-------------------|-----|------|------|--------|-------------|
| BAR | NO. | SIZE | TYPE | LENGTH | WEIGHT |
| B1 | 10 | #11 | | 44'-2" | 2,347 |
| B2 | 6 | #5 | STR | 41'-2" | 258 |
| D1 | 52 | #6 | STR | 1'-6" | 117 |
| M1 | 30 | #11 | STR | 33'-3" | 5,300 |
| S1 | 70 | #5 | 2 | 9'-0" | 657 |
| U1 | 6 | #4 | 3 | 5'-8" | 23 |
| U2 | 6 | #4 | 3 | 5'-6" | 22 |
| V1 | 10 | #11 | 4 | 16'-0" | 850 |
| V2 | 10 | #11 | 4 | 16'-7" | 881 |
| V3 | 10 | #11 | 4 | 17'-2" | 912 |
| REINFORCING STEEL | | | | | 11,367 LBS. |

| SPIRAL COLUMN REINFORCING STEEL | | | | | |
|---------------------------------|---|----|---|---------|------------|
| SP-1 | 3 | * | 5 | 421'-4" | 1,318 |
| SP-2 | 1 | ** | 6 | 348'-6" | 233 |
| SP-3 | 1 | ** | 6 | 364'-2" | 243 |
| SP-4 | 1 | ** | 6 | 379'-9" | 254 |
| SPIRAL COLUMN REINFORCING STEEL | | | | | 2,048 LBS. |

* THE SP-1 SPIRAL REINFORCING STEEL SHALL BE W31 OR D-31 COLD DRAWN WIRE OR #5 PLAIN OR DEFORMED BAR
 ** THE SP-2, SP-3, AND SP-4 SPIRAL REINFORCING STEEL SHALL BE W20 OR D-20 COLD DRAWN WIRE OR #4 PLAIN OR DEFORMED BAR

| CLASS A CONCRETE BREAKDOWN | |
|-------------------------------|------------------|
| POUR #2 (COLUMNS) | 7.1 C.Y. |
| POUR #3 (CAP) | 14.6 C.Y. |
| TOTAL CLASS A CONCRETE | 21.7 C.Y. |

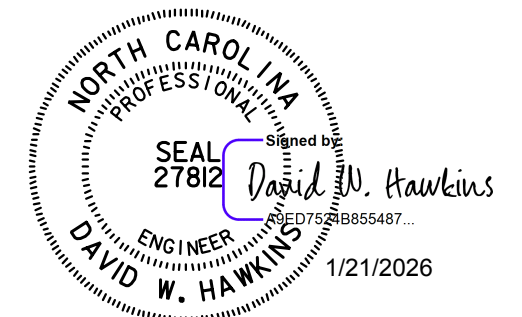
| DRILLED PIERS: | |
|---|-----------|
| DRILLED PIER CONCRETE POUR #1 (DRILLED PIERS) | 20.7 C.Y. |

PROJECT NO. BP7-R009
ORANGE COUNTY
 STATION: POC 15+27.00 -L-

SHEET 2 OF 2

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

SUBSTRUCTURE
 BENT No. 1



HNTB HNTB NORTH CAROLINA, P.C.
 NC License No. C-1554
 4000 Center at North Hills Street, Suite 500, Raleigh, N.C. 27609

DRAWN BY: D. HORTON DATE: 10/24
 CHECKED BY: Z. REINEKE DATE: 03/25
 DESIGN ENGINEER OF RECORD: D. HAWKINS DATE: 03/25

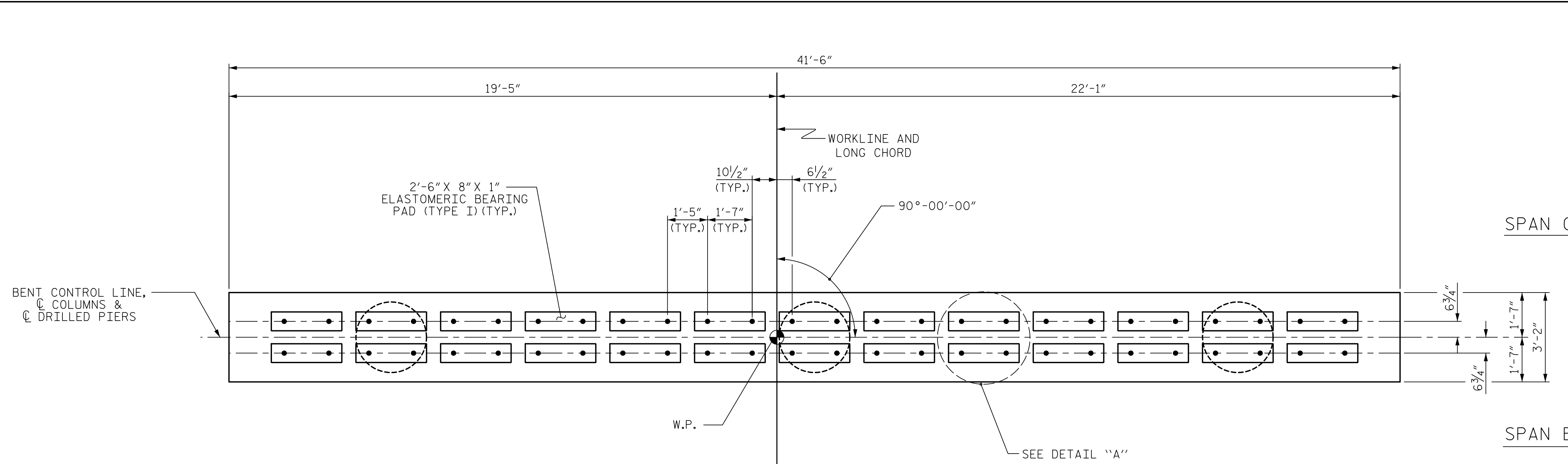
DWG. NO. 20

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 UNLESS ALL SIGNATURES COMPLETED

| REVISIONS | | | | | |
|-----------|----|------|-----|----|------|
| NO. | BY | DATE | NO. | BY | DATE |
| 1 | | | 3 | | |
| 2 | | | 4 | | |

SHEET NO. S-20
 TOTAL SHEETS 24

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PLAN

NOTES

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

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

FOR DRILLED PIERS, SEE SECTION 411 OF THE STANDARD SPECIFICATIONS.

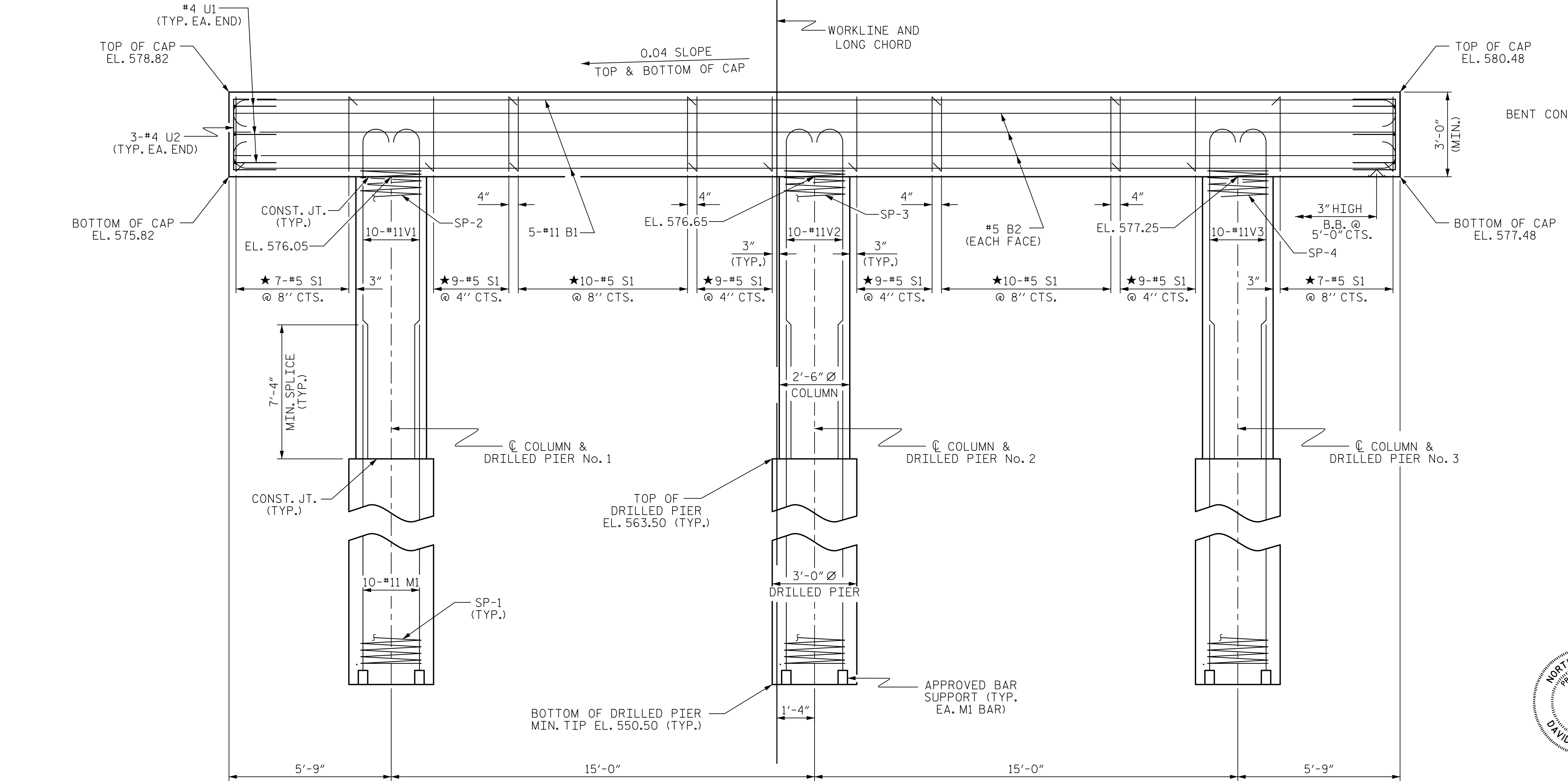
ALL STEEL IN THE DRILLED PIERS IS INCLUDED IN THE PAY ITEMS FOR "REINFORCING STEEL" AND "SPIRAL COLUMN REINFORCING STEEL."

★ INVERT ALTERNATE STIRRUPS.

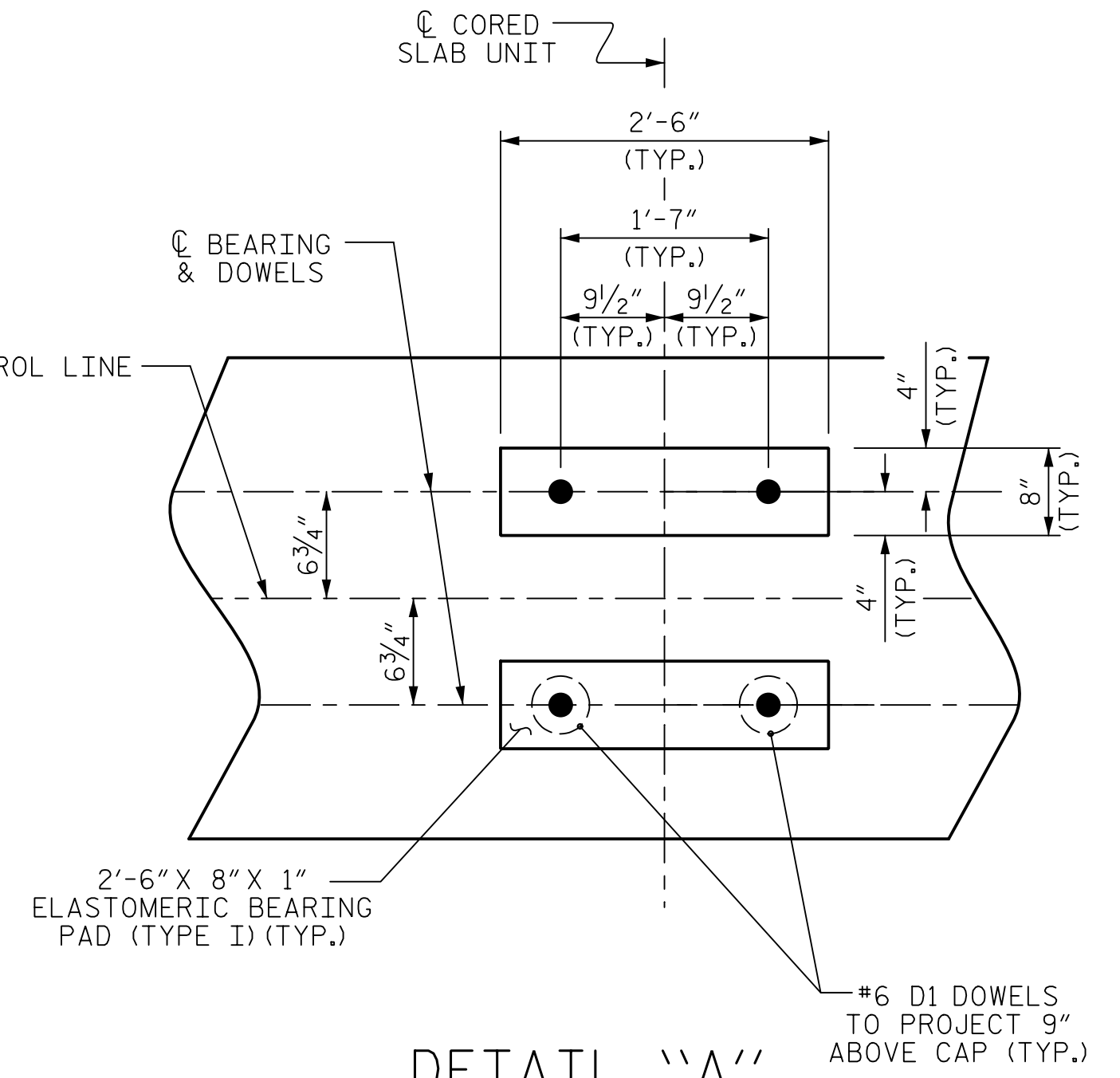
THE LOCATION OF THE CONSTRUCTION JOINT IN THE DRILLED PIERS IS BASED ON AN APPROXIMATE GROUND LINE ELEVATION. IF THE CONSTRUCTION JOINT IS ABOVE THE ACTUAL GROUND LINE ELEVATION, THE CONTRACTOR SHALL PLACE THE CONSTRUCTION JOINT ONE FOOT BELOW THE GROUND LINE.

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

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



ELEVATION



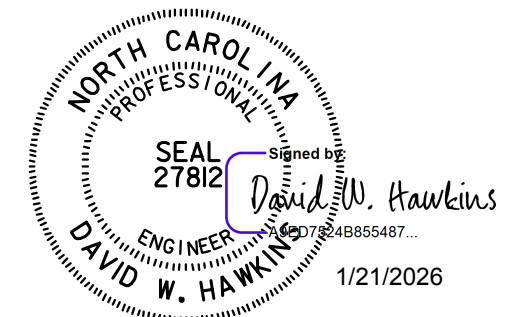
DETAIL "A"

PROJECT NO. BP7-R009
ORANGE COUNTY
 STATION: POC 15+27.00 -L-

SHEET 1 OF 2

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

SUBSTRUCTURE
 BENT No. 2



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 4000 Center at North Hills Street, Suite 500, Raleigh, N.C. 27609

DRAWN BY: D. HORTON DATE: 10/24
 CHECKED BY: Z. REINEKE DATE: 03/25
 DESIGN ENGINEER OF RECORD: D. HAWKINS DATE: 03/25

DWG. NO. 21

| REVISIONS | | | | | | SHEET NO. |
|-----------|----|------|-----|----|------|--------------|
| NO. | BY | DATE | NO. | BY | DATE | S-21 |
| 1 | | | 3 | | | TOTAL SHEETS |
| 2 | | | 4 | | | 24 |

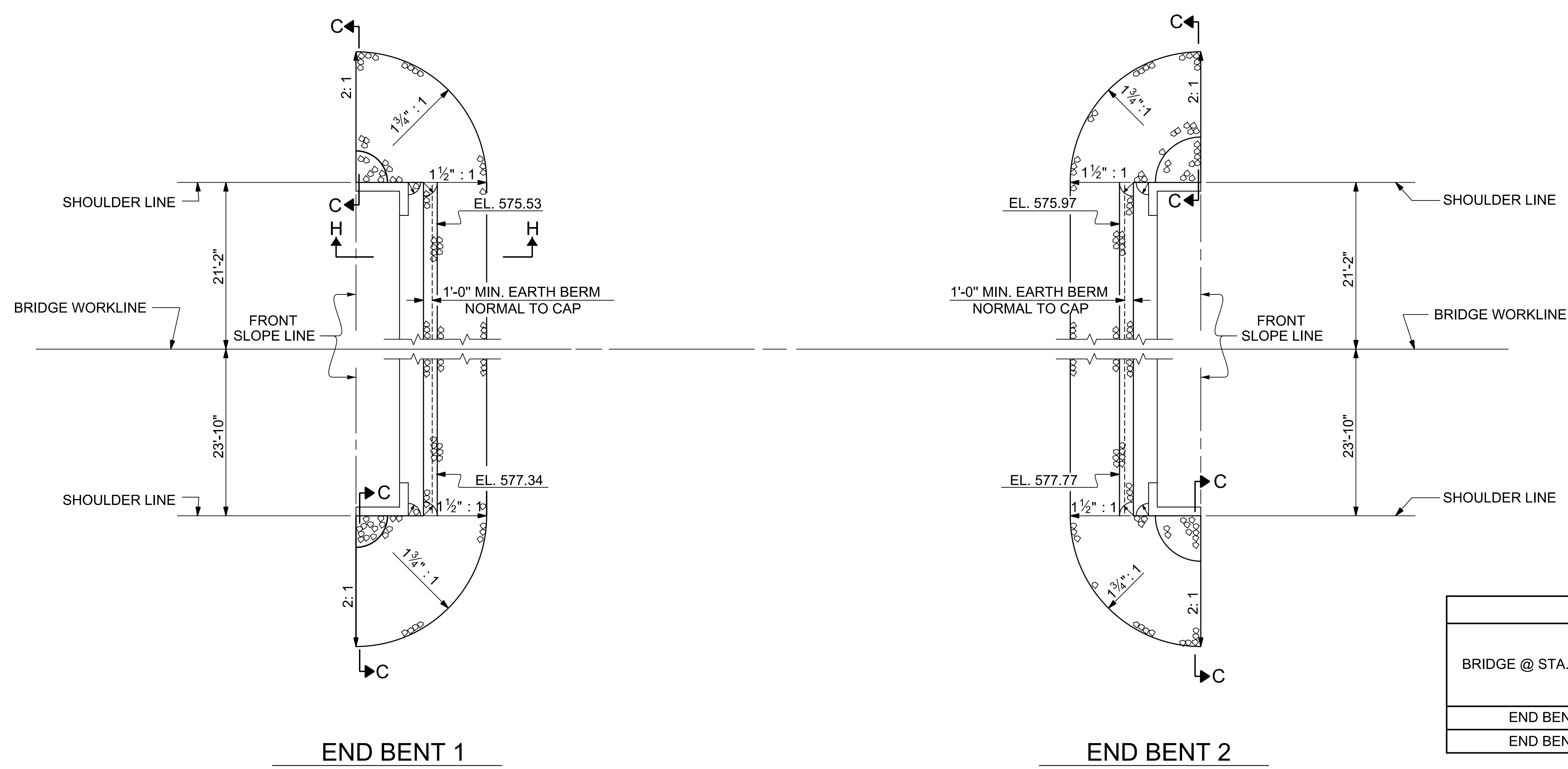
DIMENSIONS & REINFORCING STEEL ARE TYPICAL FOR EACH COLUMN & DRILLED PIER UNLESS OTHERWISE NOTED.

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

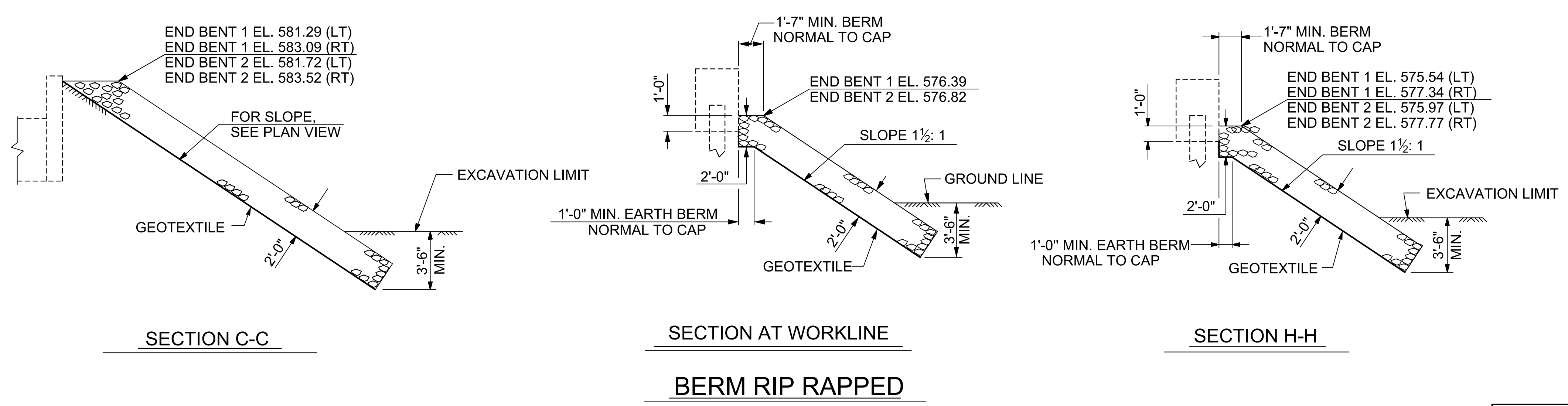
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| | |
|--------------------------|--------------------|
| ASSEMBLED BY : M. WRIGHT | DATE : 08/24 |
| CHECKED BY : Z. REINEKE | DATE : 03/25 |
| DRAWN BY : DCE 4/10 | REV. 11/14 MAA/TMG |
| CHECKED BY : MKT 4/10 | |

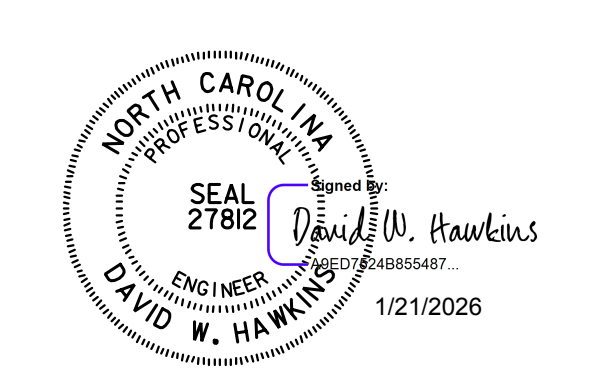
NOTES :
FOR BERM WIDTH DIMENSIONS, SEE GENERAL DRAWING.



| ESTIMATED QUANTITIES | | |
|----------------------------|--------------------------------|-------------------------|
| BRIDGE @ STA. 15+27.00 -L- | RIP RAP CLASS II (2'-0" THICK) | GEOTEXTILE FOR DRAINAGE |
| | TONS | SQUARE YARDS |
| END BENT 1 | 320 | 355 |
| END BENT 2 | 395 | 440 |



PROJECT NO. BP7-R009
ORANGE COUNTY
STATION: POC 15+27.00 -L-



STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH
STANDARD
RIP RAP DETAILS

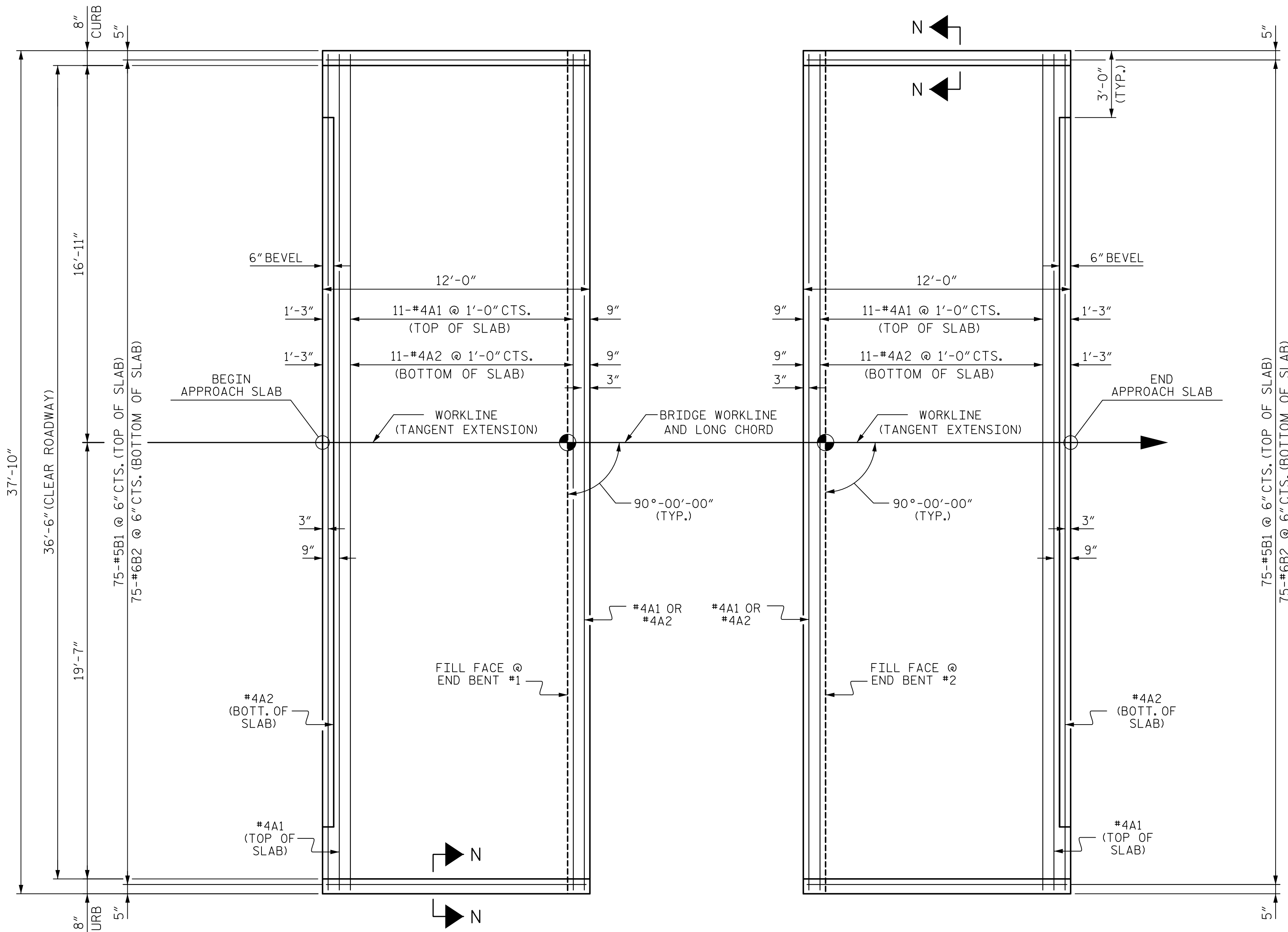
ASSEMBLED BY : M. WRIGHT DATE : 08/24
CHECKED BY : Z. REINEKE DATE : 03/25
DRAWN BY : REK 1/84 REV. 10/1/II MAA/GM
CHECKED BY : RDU 1/84 REV. 12/21/II MAA/GM
REV. 12/17 MAA/THC

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4000 Center at North Hills Street, Suite 500, Raleigh, N.C. 27609
DRAWN BY : M. WRIGHT DATE : 08/24
CHECKED BY : Z. REINEKE DATE : 03/25
DESIGN ENGINEER OF RECORD : D. HAWKINS DATE : 03/25
DWG. NO. 23

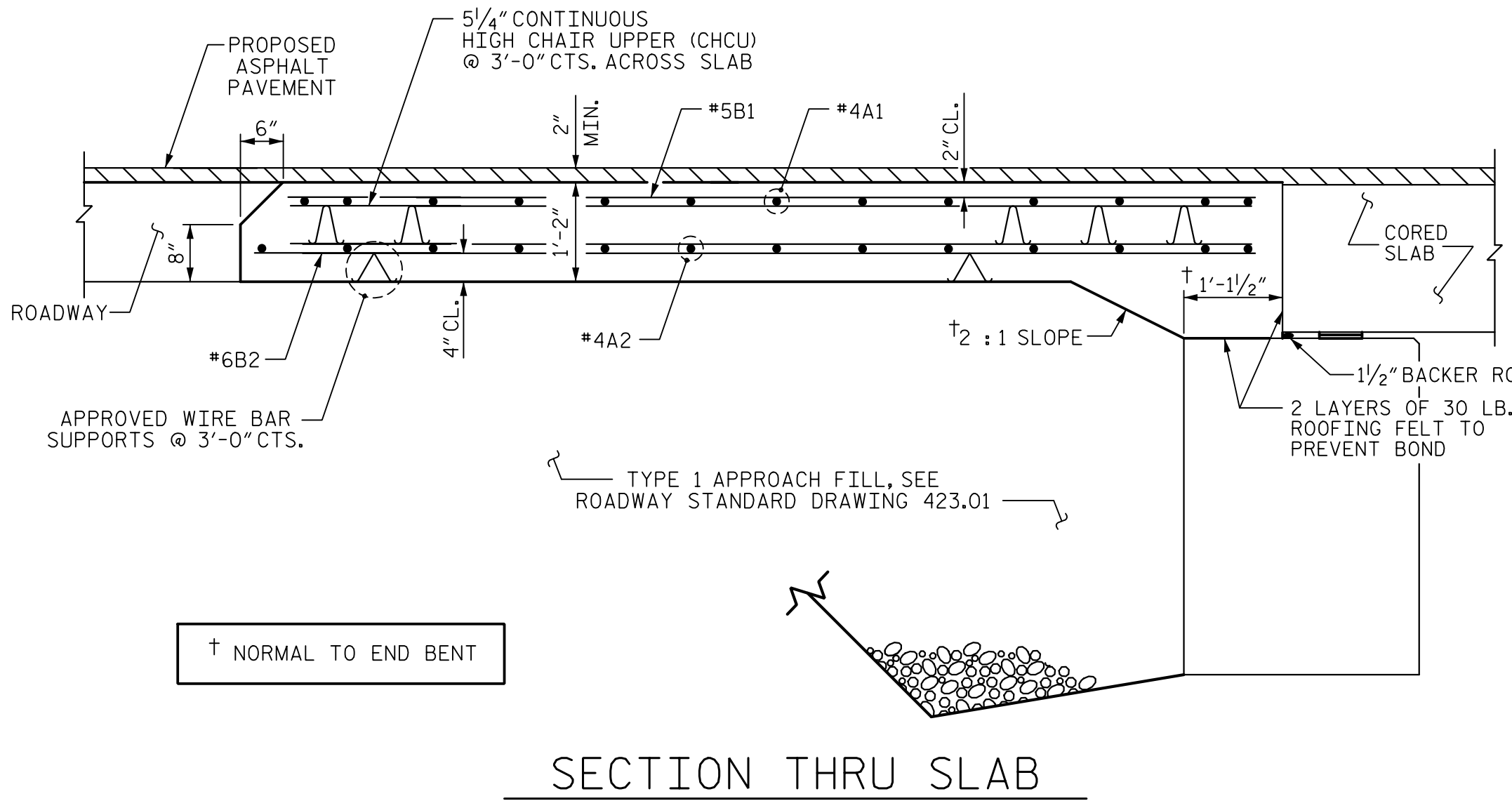
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|-----------|----|------|-----|----|------|-----------------|
| NO. | BY | DATE | NO. | BY | DATE | S-23 |
| 1 | | | 3 | | | TOTAL SHEETS 24 |
| 2 | | | 4 | | | |

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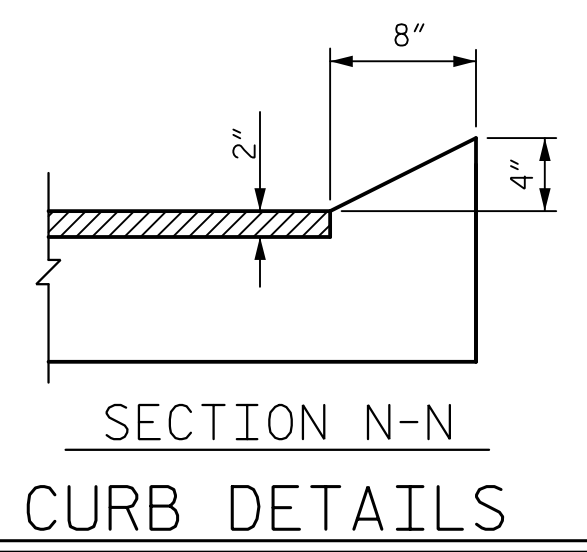


PLAN @ END BENT #1
 PLAN @ END BENT #2
 DIMENSIONS SHOWN ARE TYPICAL FOR BOTH APPROACH SLABS



SECTION THRU SLAB

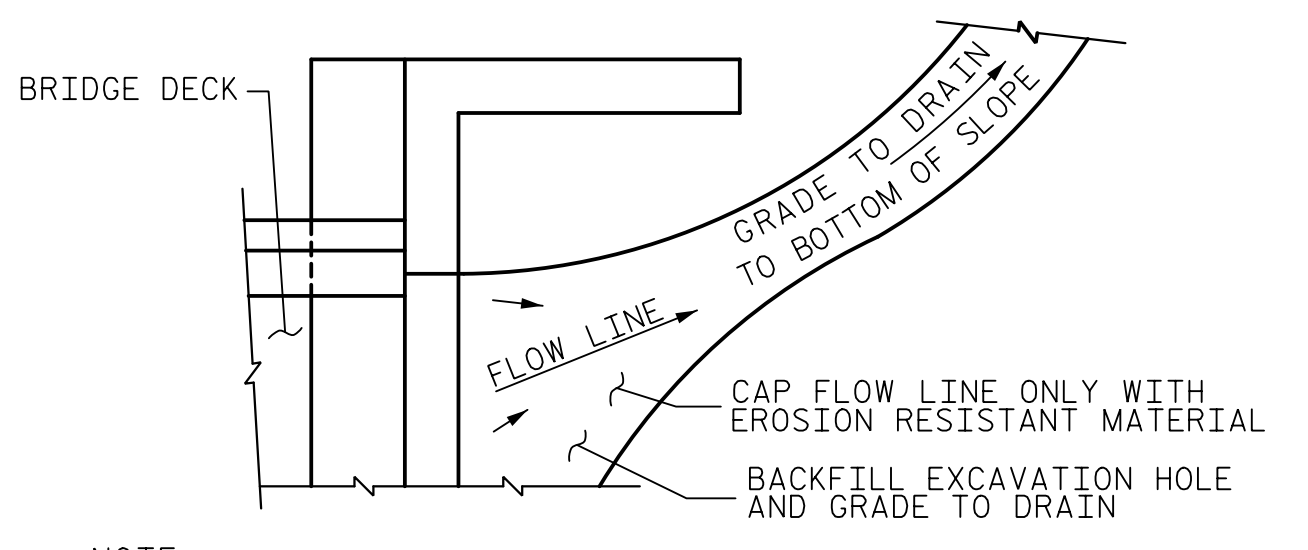
| SPlice LENGTHS | | |
|----------------|--------------|----------|
| BAR SIZE | EPOXY COATED | UNCOATED |
| #4 | 1'-11" | 1'-7" |
| #5 | 2'-5" | 2'-0" |
| #6 | 3'-7" | 2'-5" |



SECTION N-N
 CURB DETAILS

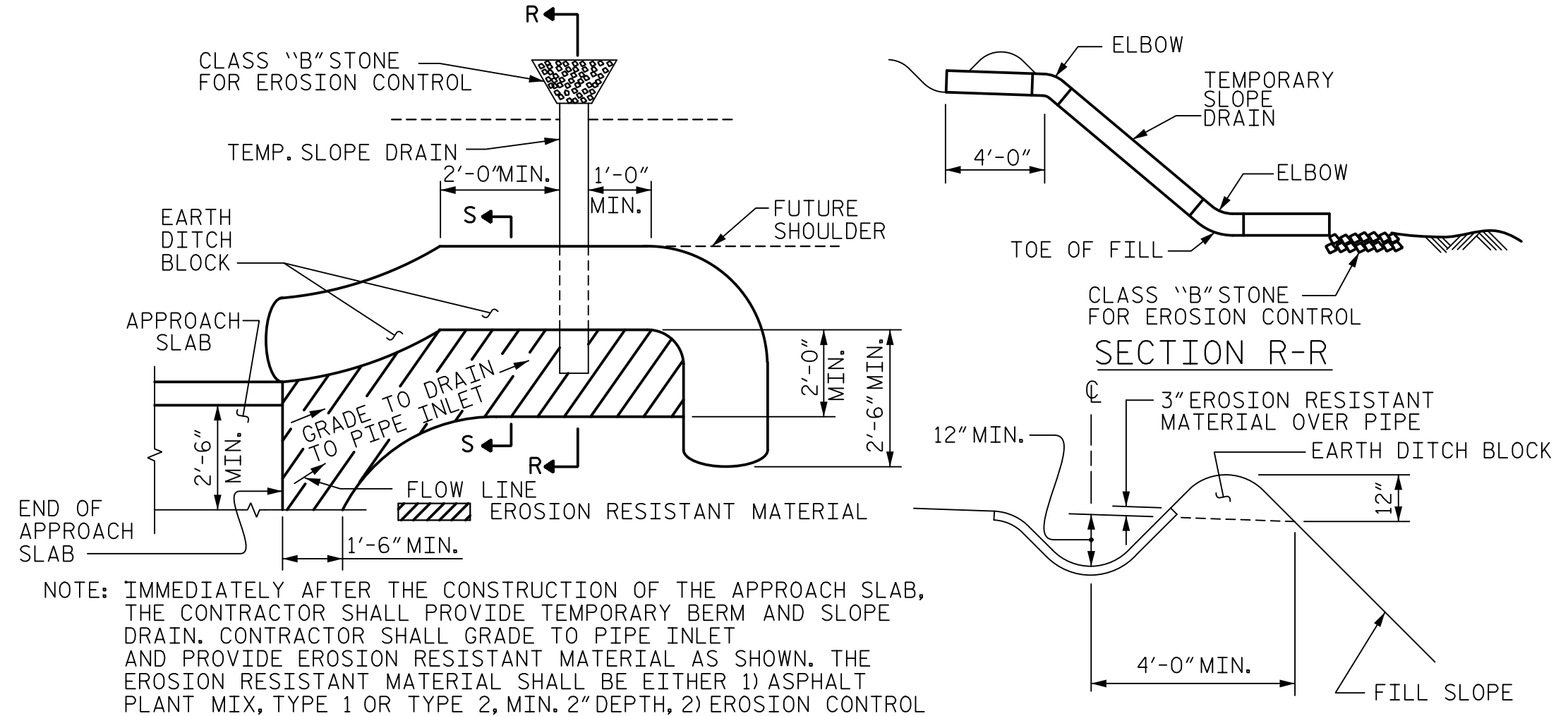
NOTES

FOR BRIDGE APPROACH FILL, SEE ROADWAY PLANS.
 AREA BETWEEN THE WINGWALL AND APPROACH SLAB SHALL BE GRADED TO DRAIN THE WATER AWAY FROM THE FILL FACE OF THE BRIDGE AND SHALL BE PAVED. SEE ROADWAY PLANS.
 APPROACH SLAB GROOVING IS NOT REQUIRED.



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

TEMPORARY DRAINAGE DETAIL



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

PLAN VIEW
 TEMPORARY BERM AND SLOPE DRAIN DETAILS

(TO BE USED WHEN SHOULDER BERM GUTTER IS REQUIRED)

PROJECT NO. BP7-R009
ORANGE COUNTY
 STATION: POC 15+27.00 -L-

| BILL OF MATERIAL | | | | | |
|----------------------------------|-----|------|------|--------|--------|
| APPROACH SLAB AT EB #1 | | | | | |
| BAR | NO. | SIZE | TYPE | LENGTH | WEIGHT |
| *A1 | 13 | #4 | STR | 37'-6" | 326 |
| A2 | 13 | #4 | STR | 37'-6" | 326 |
| *B1 | 75 | #5 | STR | 11'-2" | 874 |
| B2 | 75 | #6 | STR | 11'-8" | 1,314 |
| REINFORCING STEEL | | | | LBS. | 1,640 |
| * EPOXY COATED REINFORCING STEEL | | | | LBS. | 1,200 |
| CLASS AA CONCRETE | | | | C. Y. | 22.9 |
| APPROACH SLAB AT EB #2 | | | | | |
| BAR | NO. | SIZE | TYPE | LENGTH | WEIGHT |
| *A1 | 13 | #4 | STR | 37'-6" | 326 |
| A2 | 13 | #4 | STR | 37'-6" | 326 |
| *B1 | 75 | #5 | STR | 11'-2" | 874 |
| B2 | 75 | #6 | STR | 11'-8" | 1,314 |
| REINFORCING STEEL | | | | LBS. | 1,640 |
| * EPOXY COATED REINFORCING STEEL | | | | LBS. | 1,200 |
| CLASS AA CONCRETE | | | | C. Y. | 22.9 |

ASSEMBLED BY : M. WRIGHT DATE : 04/23
 CHECKED BY : Z. REINEKE DATE : 03/25
 DRAWN BY : SHS/MAA 5-09 REV. 12-17 MAA/THC
 CHECKED BY : BCH 5-09 REV. 08-19 BNB/THC

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 DRAWN BY : M. WRIGHT DATE : 04/23
 CHECKED BY : Z. REINEKE DATE : 03/25
 DESIGN ENGINEER OF RECORD : D. HAWKINS DATE : 03/25
 DWG. NO. 24

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH
 STANDARD
 BRIDGE APPROACH SLAB
 FOR PRESTRESSED CONCRETE
 CORED SLAB UNIT
 (SUB-REGIONAL TIER)
 90° SKEW

| REVISIONS | | | | | SHEET NO. |
|-----------|----|------|-----|----|-----------|
| NO. | BY | DATE | NO. | BY | DATE |
| 1 | | | 3 | | |
| 2 | | | 4 | | |

TOTAL SHEETS: 24

