

09/08/99

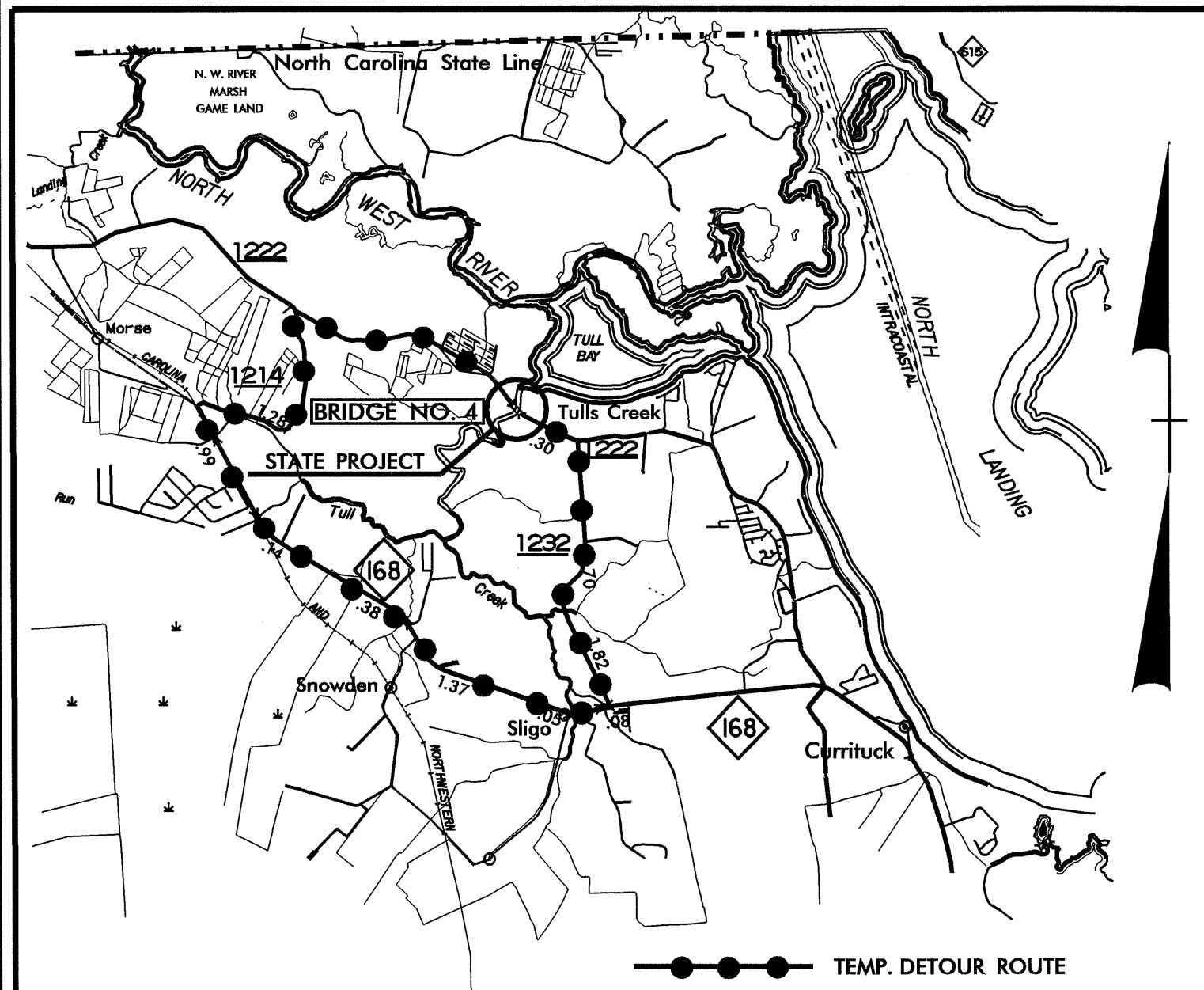
STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

CURRITUCK COUNTY

LOCATION: BRIDGE NO. 4 OVER TULLS CREEK
ON SR 1222

TYPE OF WORK: GRADING, DRAINAGE, PAVING AND STRUCTURE

| STATE | STATE PROJECT REFERENCE NO. | SHEET NO. | TOTAL SHEETS |
|-----------------|-----------------------------|-------------|--------------|
| N.C. | B-2950 | | |
| STATE PROJ. NO. | F.A. PROJ. NO. | DESCRIPTION | |
| 32773.1.1 | BRZ-1222(2) | P.E. | |
| 32773.2.1 | BRZ-1222(2) | ROW & UTIL | |
| 32773.3.2 | BRZ-1222(2) | CONST. | |
| | | | |
| | | | |
| | | | |



VICINITY MAP

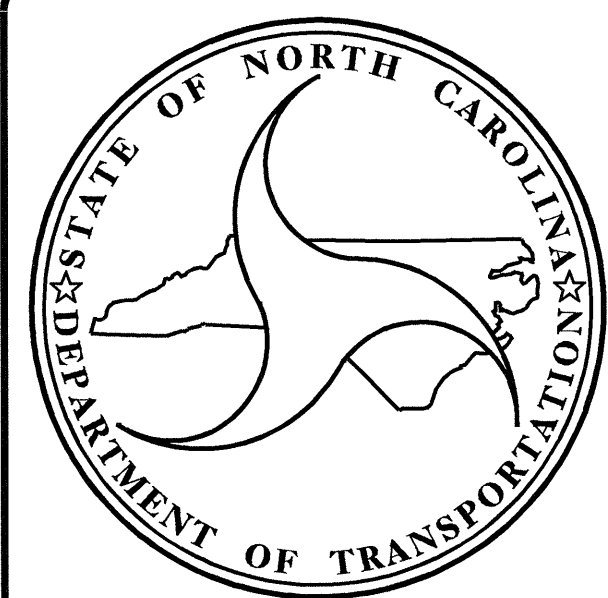
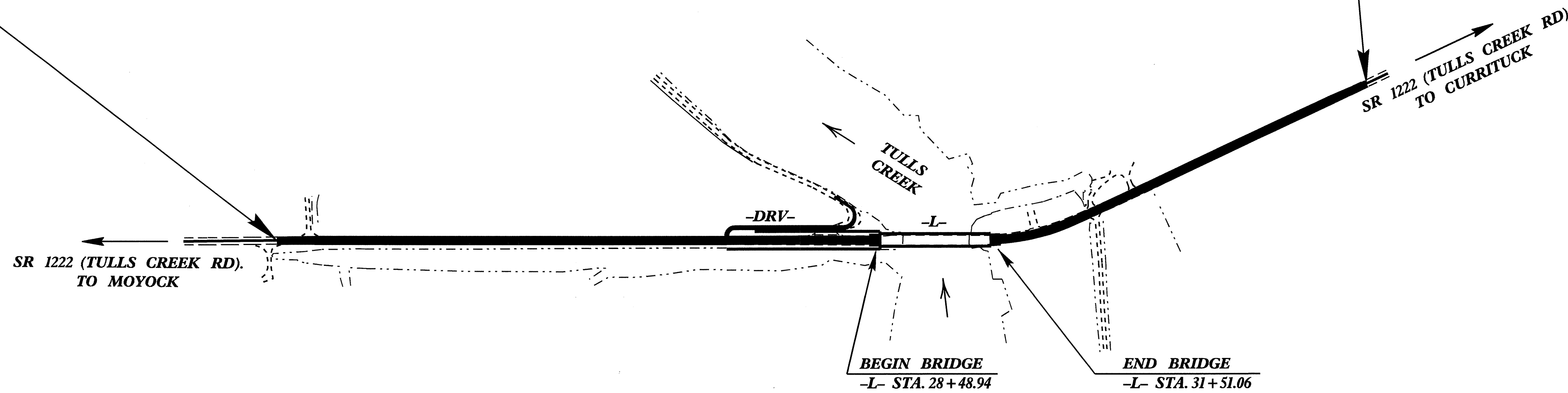
TIP PROJECT: B-2950

CONTRACT: C201641

STRUCTURES

BEG TIP PROJECT B-2950 -L- STA. 12+50.00

END TIP PROJECT B-2950 -L- STA. 42+43.10



DESIGN DATA

| | |
|---------------------|----------|
| ADT 2007 = | 4428 |
| ADT 2027 = | 8508 |
| DHV = | 14% |
| D = | 60% |
| T = | 5% * |
| V = | 50 MPH * |
| RURAL COLLECTOR | |
| * TTST 2% + DUAL 3% | |

PROJECT LENGTH

| | |
|---------------------------------------|----------|
| LENGTH ROADWAY TIP PROJECT B-2950 = | 0.510 MI |
| LENGTH STRUCTURE TIP PROJECT B-2950 = | 0.057 MI |
| TOTAL LENGTH TIP PROJECT B-2950 = | 0.567 MI |

Prepared In the Office of:
DIVISION OF HIGHWAYS
1000 Birch Ridge Dr., Raleigh NC, 27610

2006 STANDARD SPECIFICATIONS

LETTING DATE:
AUGUST 21, 2007

Q.H. NGUYEN, PE
PROJECT ENGINEER

J.R. DUGGINS, JR., PE
PROJECT DESIGN ENGINEER

STRUCTURE DESIGN UNIT
1000 BIRCH RIDGE DRIVE
RALEIGH, NC 27610

DIVISION OF HIGHWAYS
STATE OF NORTH CAROLINA

STATE DESIGN ENGINEER

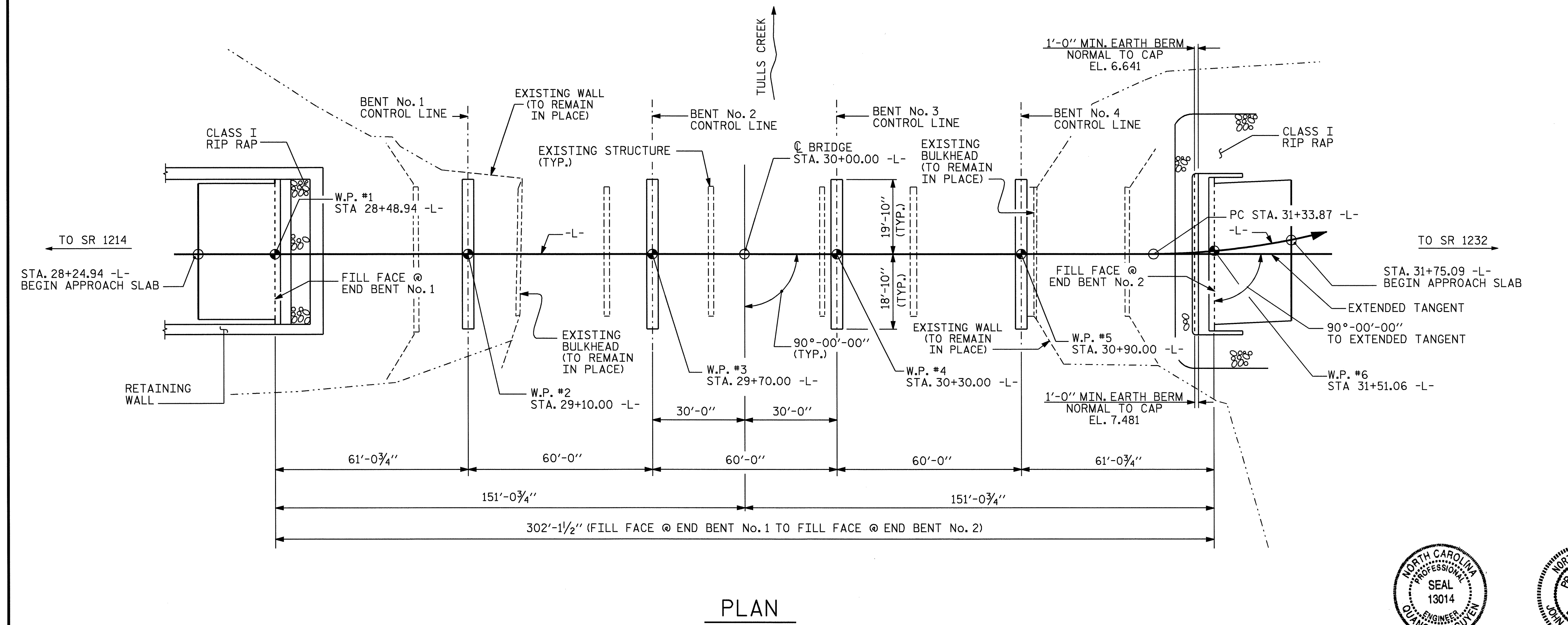
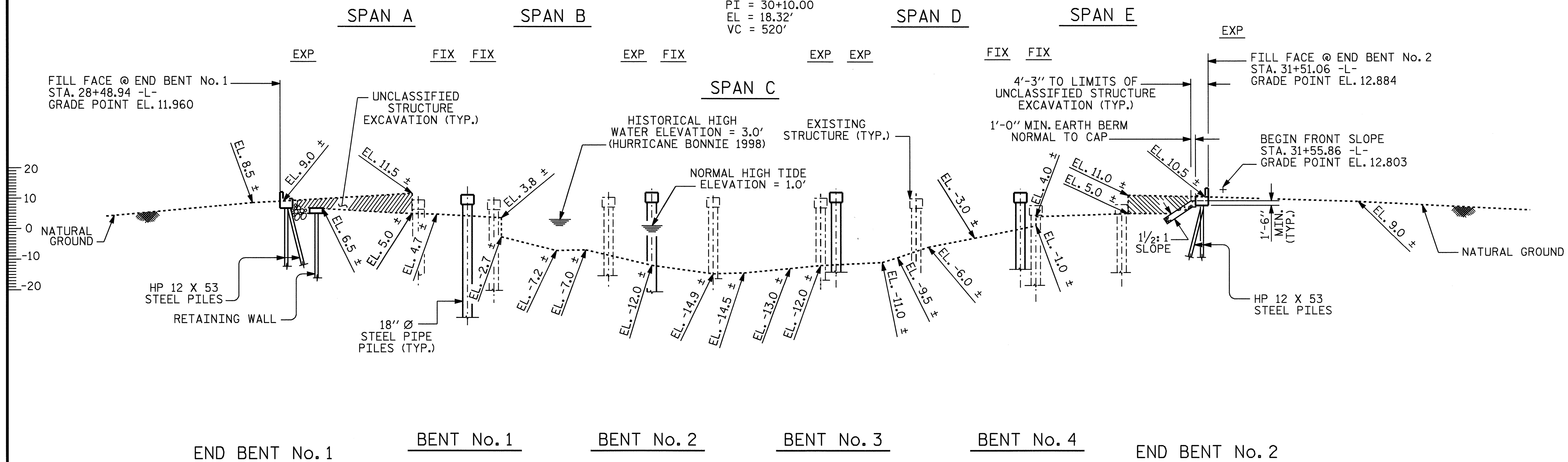
DEPARTMENT OF TRANSPORTATION
FEDERAL HIGHWAY ADMINISTRATION

APPROVED

DIVISION ADMINISTRATOR

05-JUL-2007 09:34
\$\$\$\$\$DCN\$\$\$\$\$
donodg

GRADE DATA
 + 3.5540 % - 3.2022 %
 GRADE DATA
 PI = 30+10.00
 EL = 18.32'
 VC = 520'



PROJECT NO. B-2950
 CURRITUCK COUNTY
 STATION: 30+00.00 -L-
 SHEET 1 OF 4 REPLACES BRIDGE NO. 4

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

GENERAL DRAWING
 FOR BRIDGE ON SR 1222
 (TULLS CREEK RD.)
 OVER TULLS CREEK BETWEEN
 SR 1214 AND SR 1232

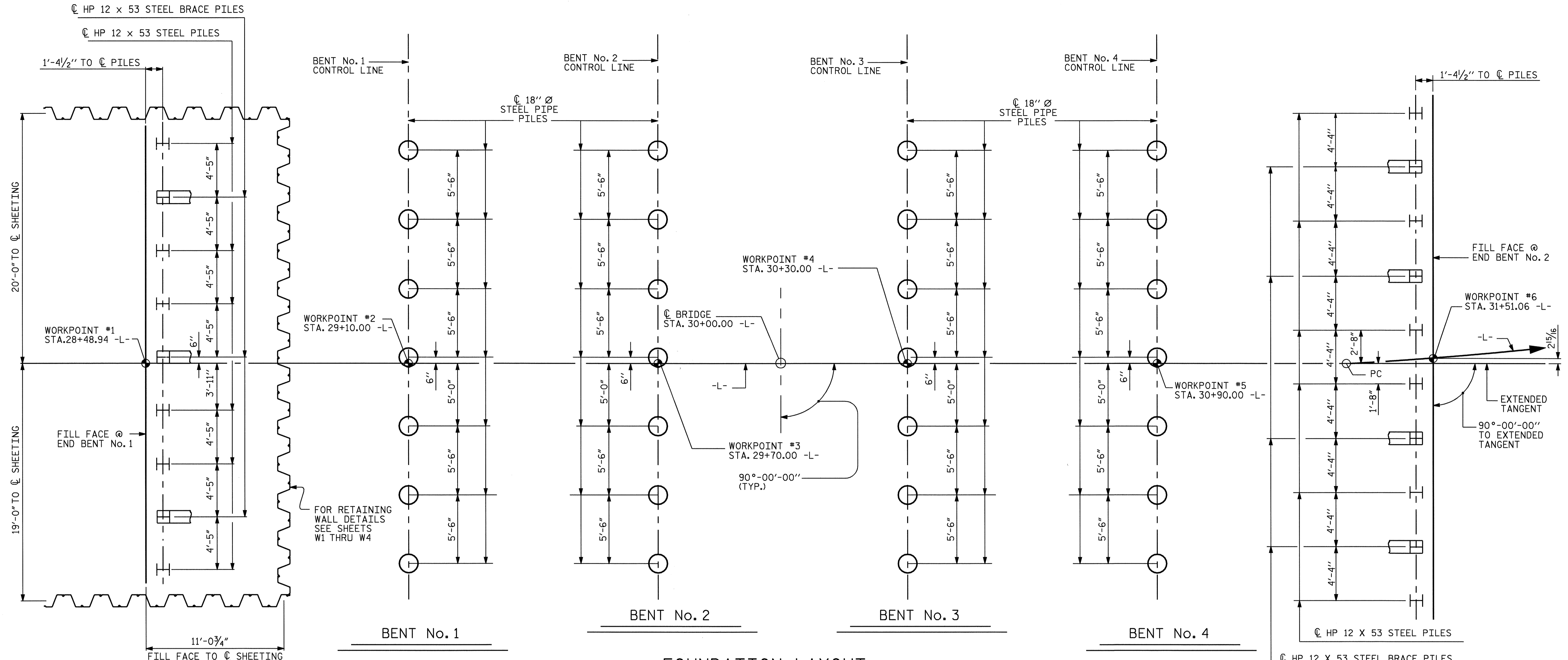
| REVISIONS | | | | | | SHEET NO. | |
|-----------|-----|-------|-----|-----|-------|--------------|--|
| NO. | BY: | DATE: | NO. | BY: | DATE: | 5-1 | |
| 1 | | | 3 | | | TOTAL SHEETS | |
| 2 | | | 4 | | | 26 | |

DRAWN BY : M. POOLE DATE : 03/07
 CHECKED BY : J.R. DUGGINS DATE : 03/07

05-JUL-2007 08:22
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 dhdodge

NORTH CAROLINA PROFESSIONAL SEAL 13014
 QUANG H. NGUYEN
 7-9-07

NORTH CAROLINA PROFESSIONAL SEAL 15779
 JOHN R. DUGGINS, JR.
 7-6-07



FOUNDATION LAYOUT

DIMENSIONS LOCATION PILES ARE SHOWN TO THE PILE CENTERLINE AT BOTTOM OF CAP. BRACE PILES ARE BATTERED 3 : 12

NOTES

DRIVE PILES AT END BENT No.1 AND END BENT No.2 TO A REQUIRED BEARING CAPACITY OF 100 TONS PER PILE. THE REQUIRED BEARING CAPACITY IS EQUAL TO THE ALLOWABLE BEARING CAPACITY WITH A MINIMUM FACTOR OF SAFETY OF TWO.

THE ALLOWABLE BEARING CAPACITY FOR PILES AT END BENT No.1 AND END BENT No.2 IS 50 TONS PER PILE.

DRIVE PILES AT BENT No.1 AND BENT No.4 TO A REQUIRED BEARING CAPACITY OF 195 TONS PER PILE. THE REQUIRED BEARING CAPACITY IS EQUAL TO THE ALLOWABLE BEARING CAPACITY WITH A MINIMUM FACTOR OF SAFETY OF TWO PLUS ANY ADDITIONAL CAPACITY TO ACCOUNT FOR DOWN DRAG OR NEGATIVE SKIN FRICTION AND SCOUR.

THE ALLOWABLE BEARING CAPACITY FOR PILES AT BENT No.1 AND BENT No.4 IS 90 TONS PER PILE.

DRIVE PILES AT BENT No.2 AND BENT No.3 TO A REQUIRED BEARING CAPACITY OF 185 TONS PER PILE. THE REQUIRED BEARING CAPACITY IS EQUAL TO THE ALLOWABLE BEARING CAPACITY WITH A MINIMUM FACTOR OF SAFETY OF TWO PLUS ANY ADDITIONAL CAPACITY TO ACCOUNT FOR DOWN DRAG OR NEGATIVE SKIN FRICTION AND SCOUR.

THE ALLOWABLE BEARING CAPACITY FOR PILES AT BENT No.2 AND BENT No.3 IS 90 TONS PER PILE.

DRIVE PILES AT BENT No.1 AND BENT No.4 TO A TIP ELEVATION NO HIGHER THAN -35 FEET.

DRIVE PILES AT BENT No.2 AND BENT No.3 TO A TIP ELEVATION NO HIGHER THAN -45 FEET.

TESTING THE FIRST PILE WITH THE PILE DRIVING ANALYZER (PDA) DURING DRIVING, RESTRIKING OR REDRIVING IS REQUIRED AT BENT No.1 OR BENT No.4. SEE PILE DRIVING ANALYZER SPECIAL PROVISION.

PIPE PILE PLATES ARE REQUIRED FOR THE PIPE PILES AT BENT No.1, BENT No.2, BENT No.3 & BENT No.4 USE PIPE PILE PLATES WITH DIAMETER EQUAL TO THE PIPE PILE DIAMETER. SEE SECTION 450 OF THE STANDARD SPECIFICATIONS.

IT HAS BEEN ESTIMATED THAT A HAMMER WITH AN EQUIVALENT RATED ENERGY IN THE RANGE OF 45,000 TO 75,000 FT-LBS PER BLOW WILL BE REQUIRED TO DRIVE PILES AT BENT No.1, BENT No.2, BENT No.3 & BENT No.4 THIS ESTIMATED ENERGY RANGE DOES NOT RELEASE THE CONTRACTOR FROM ARTICLE 450-5 OF THE STANDARD SPECIFICATIONS.

THE SCOUR CRITICAL ELEVATION FOR BENT No.1 AND BENT No.4 IS ELEVATION -13 FEET SCOUR CRITICAL ELEVATIONS ARE USED TO MONITOR POSSIBLE SCOUR PROBLEMS DURING THE LIFE OF THE STRUCTURE.

THE SCOUR CRITICAL ELEVATION FOR BENT No.2 AND BENT No.3 IS ELEVATION -20 FEET SCOUR CRITICAL ELEVATIONS ARE USED TO MONITOR POSSIBLE SCOUR PROBLEMS DURING THE LIFE OF THE STRUCTURE.

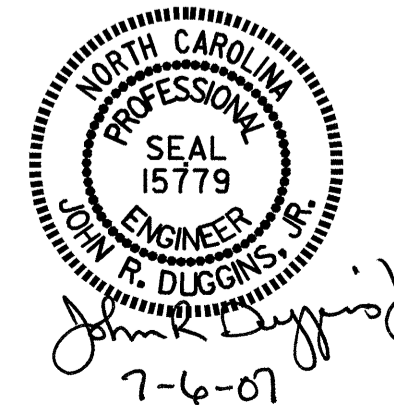
DRIVE PILES AT END BENT No.1 AFTER SHEET PILING HAS BEEN INSTALLED, UNDERCUT HAS BEEN PERFORMED, AND PRIOR TO BACKFILLING WITH LIGHTWEIGHT AGGREGATE.

PILE RESTRIKES FOR LRFD ARE REQUIRED FOR PILES AT BENT No.1 OR BENT No.4. SEE PILE RESTRIKES FOR LRFD SPECIAL PROVISION.

TESTING PILES WITH THE PILE DRIVING ANALYZER FOR LRFD IS REQUIRED AT END BENT No.1 OR END BENT No.2. SEE PILE DRIVING ANALYZER FOR LRFD SPECIAL PROVISION.

DRAWN BY : M. POOLE DATE : 04/07
 CHECKED BY : J. R. DUGGINS DATE : 04/07

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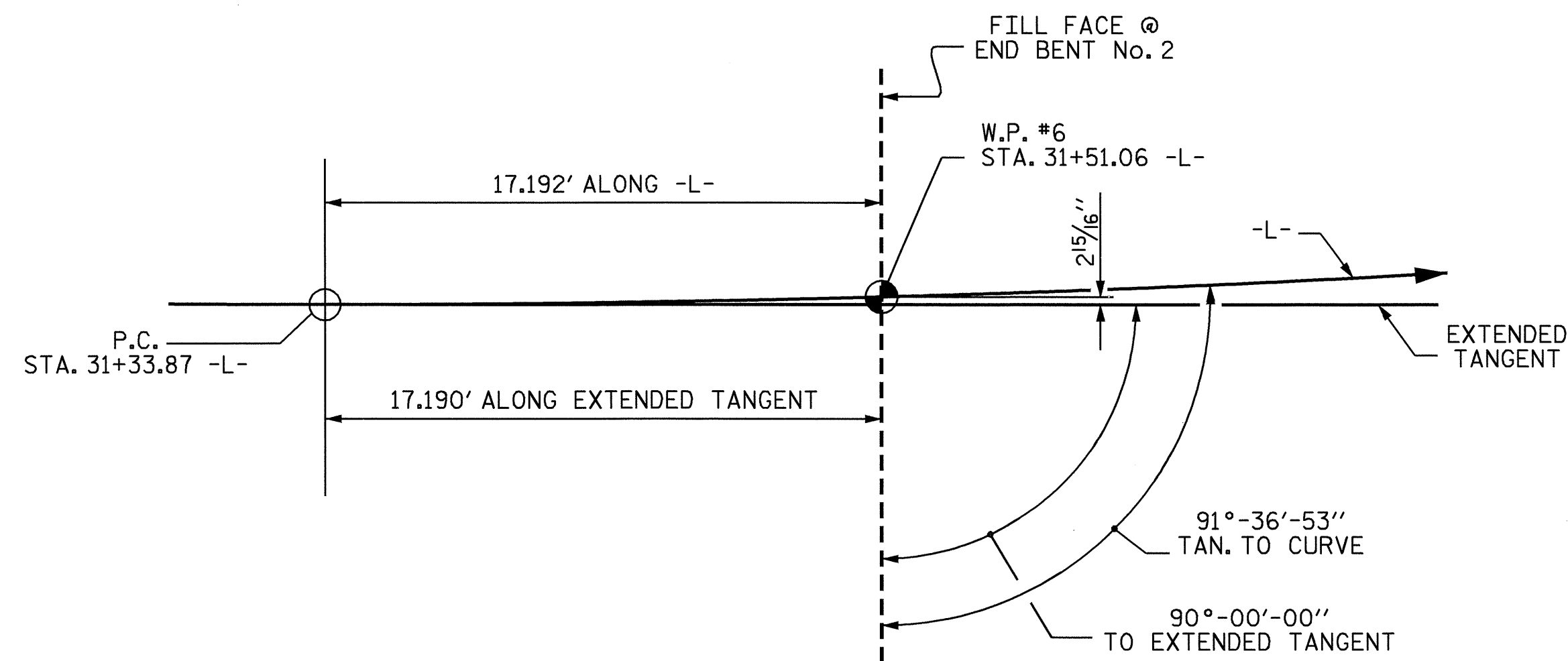


PROJECT NO. B-2950
 CURRITUCK COUNTY
 STATION: 30+00.00 -L-
 SHEET 2 OF 4

| | | | | | |
|--|-----|-------|-----|-----|--------------------|
| STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION RALEIGH | | | | | |
| GENERAL DRAWING FOR BRIDGE ON SR 1222 (TULLS CREEK RD.) OVER TULLS CREEK BETWEEN SR 1214 AND SR 1232 | | | | | |
| REVISIONS | | | | | SHEET NO. |
| NO. | BY: | DATE: | NO. | BY: | DATE: |
| 1 | | | 3 | | |
| 2 | | | 4 | | |
| | | | | | TOTAL SHEETS 26 |
| | | | | | 5-2 |

TOTAL BILL OF MATERIAL

| | REMOVAL OF EXISTING STRUCTURE | PDA TESTING | PDA ASSISTANCE | UNCLASSIFIED STRUCTURE EXCAVATION | CONCRETE WEARING SURFACE | GROOVING BRIDGE FLOORS | CLASS AA CONCRETE | BRIDGE APPROACH SLABS | EPOXY COATED REINFORCING STEEL | HP 12 X 53 STEEL PILES | PP 18 X 0.5 STEEL PILES | PIPE PILE PLATES | PILE REDRIVES | CONCRETE BARRIER RAIL | RIP RAP CLASS I | FILTER FABRIC FOR DRAINAGE | ELASTOMERIC BEARINGS | EVAZOTE JOINT SEALS | 3'-0" X 2'-3" PRESTRESSED CONCRETE BOX BEAMS | | | | |
|----------------|-------------------------------|-------------|----------------|-----------------------------------|--------------------------|------------------------|-------------------|-----------------------|--------------------------------|------------------------|-------------------------|------------------|---------------|-----------------------|-----------------|----------------------------|----------------------|---------------------|--|----------|-----|---------|--|
| | LUMP SUM | EACH | EACH | LUMP SUM | SQ. FT. | SQ. FT. | CU. YDS. | LUMP SUM | LBS. | NO. | LIN.FT. | NO. | LIN.FT. | EACH | EACH | LIN.FT. | TONS | SQ. YDS. | LUMP SUM | LUMP SUM | NO. | LIN.FT. | |
| SUPERSTRUCTURE | | | | | 9727 | 10199 | | LUMP SUM | | | | | | | | 599.8 | | | LUMP SUM | LUMP SUM | 60 | 3592.50 | |
| END BENT NO. 1 | | | | LUMP SUM | | | 12.0 | | 2174 | 9 | 585 | | | | 23 | 25 | | | | | | | |
| BENT NO. 1 | | | | | | | 11.3 | | 2751 | | | 7 | 385 | 7 | | | | | | | | | |
| BENT NO. 2 | | | | | | | 11.3 | | 2751 | | | 7 | 455 | 7 | | | | | | | | | |
| BENT NO. 3 | | | | | | | 11.3 | | 2751 | | | 7 | 455 | 7 | | | | | | | | | |
| BENT NO. 4 | | | | | | | 11.3 | | 2751 | | | 7 | 385 | 7 | | | | | | | | | |
| END BENT NO. 2 | | | | LUMP SUM | | | 15.9 | | 2613 | 10 | 500 | | | | 180 | 200 | | | | | | | |
| TOTAL | LUMP SUM | 1 | 2 | LUMP SUM | 9727 | 10199 | 73.1 | LUMP SUM | 15791 | 19 | 1085 | 28 | 1680 | 28 | 23 | 599.8 | 203 | 225 | LUMP SUM | LUMP SUM | 60 | 3592.50 | |



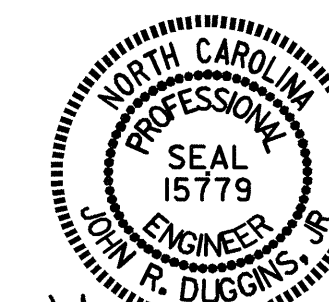
EXTENDED TANGENT LAYOUT
AT END BENT No. 2

PROJECT NO. B-2950
CURRITUCK COUNTY
 STATION: 30+00.00 -L-

SHEET 3 OF 4

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

GENERAL DRAWING
 FOR BRIDGE ON SR 1222
 (TULLS CREEK RD.)
 OVER TULLS CREEK BETWEEN
 SR 1214 AND SR 1232



John R. Duggins
7-10-07

DRAWN BY : M. POOLE DATE : 04/07
 CHECKED BY : J.R. DUGGINS DATE : 04/07

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 mpoole

| REVISIONS | | | | | | SHEET NO. |
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| 1 | | | 3 | | | TOTAL SHEETS |
| 2 | | | 4 | | | 26 |

B.M. : A 5/8 INCH REBAR WITH AN ALUMINUM CAP LOCATED 63 FEET RT. OF STA. 32+44.00 -L- KNOWN AS -BL 5-,
 ELEV. = 9.25; NGVD 29

NOTES

ASSUMED LIVE LOAD = HS 20 OR ALTERNATE LOADING, EXCEPT THAT THE BOX BEAMS HAVE BEEN DESIGNED FOR HS-25.
 FOR OTHER DESIGN DATA AND GENERAL NOTES, SEE SHEET SN.
 FOR EROSION CONTROL MEASURES SEE EROSION CONTROL PLANS.
 THIS BRIDGE HAS BEEN DESIGNED BY THE STRENGTH DESIGN METHOD AS SPECIFIED IN AASHTO STANDARD SPECIFICATIONS.

THIS STRUCTURE HAS BEEN DESIGNED IN ACCORDANCE WITH HEC 18, "EVALUATING SCOUR AT BRIDGES", MAY, 2001.
 THIS BRIDGE HAS BEEN DESIGNED IN ACCORDANCE WITH THE REQUIREMENTS OF THE AASHTO STANDARD SPECIFICATIONS FOR SEISMIC DESIGN OF HIGHWAY BRIDGES FOR SEISMIC PERFORMANCE CATEGORY A.

THE EXISTING STRUCTURE CONSISTING OF 7 SPANS 1 @ 30'-0", 5 @ 35'-0" AND 1 @ 30'-0" WITH STEEL PLANK FLOOR ON STEEL I-BEAMS SUPERSTRUCTURE AND A CLEAR ROADWAY WIDTH OF 28'-0" ON A SUBSTRUCTURE CONSISTING OF TIMBER CAPS ON TIMBER PILES END BENTS AND BENTS, ALSO WITH 4 CRUTCH BENTS CONSISTING OF STEEL BEAMS WITH STEEL PILES AND LOCATED AT THE PROPOSED STRUCTURE LOCATION SHALL BE REMOVED. SEE SPECIAL PROVISION FOR REMOVAL OF EXISTING STRUCTURE.

THE CONTRACTOR SHALL PROVIDE INDEPENDENT ASSURANCE SAMPLES OF REINFORCING STEEL AS FOLLOWS: FOR PROJECTS REQUIRING UP TO 400 TONS OF REINFORCING STEEL, ONE 30 INCH SAMPLE OF EACH SIZE BAR USED, AND FOR PROJECTS REQUIRING OVER 400 TONS OF REINFORCING STEEL, TWO 30 INCH SAMPLES OF EACH SIZE BAR USED. THE BARS FROM WHICH THE SAMPLES ARE TAKEN MUST THEN BE SPLICED WITH REPLACEMENT BARS OF THE SIZE AND LENGTH OF THE SAMPLE, PLUS A MINIMUM LAP SPLICE OF THIRTY BAR DIAMETERS.

REMOVAL OF THE EXISTING BRIDGE SHALL BE PERFORMED SO AS NOT TO ALLOW DEBRIS TO FALL INTO THE WATER. THE CONTRACTOR SHALL REMOVE THE BRIDGE AND SUBMIT PLANS FOR DEMOLITION IN ACCORDANCE WITH ARTICLE 402-2 OF THE STANDARD SPECIFICATIONS.

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 30+00.00 -L-."

THE MATERIAL SHOWN IN THE CROSS-HATCHED AREA, ON SHEET 1 OF 4, SHALL BE EXCAVATED FOR A DISTANCE OF 25 FT. EACH SIDE OF CENTERLINE ROADWAY AS DIRECTED BY THE ENGINEER. THIS WORK WILL BE PAID FOR AT THE CONTRACT LUMP SUM PRICE FOR UNCLASSIFIED STRUCTURE EXCAVATION.

FOR SUBMITTAL OF WORKING DRAWINGS, SEE SPECIAL PROVISIONS.

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.

FOR FALSEWORK AND FORMWORK, SEE SPECIAL PROVISIONS.

THIS STRUCTURE CONTAINS THE NECESSARY CORROSION PROTECTION REQUIRED FOR A CORROSIVE SITE.

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

CLASS AA CONCRETE SHALL BE USED IN ALL CAST-IN-PLACE BENT CAPS AND END BENTS AND SHALL CONTAIN CALCIUM NITRITE CORROSION INHIBITOR.

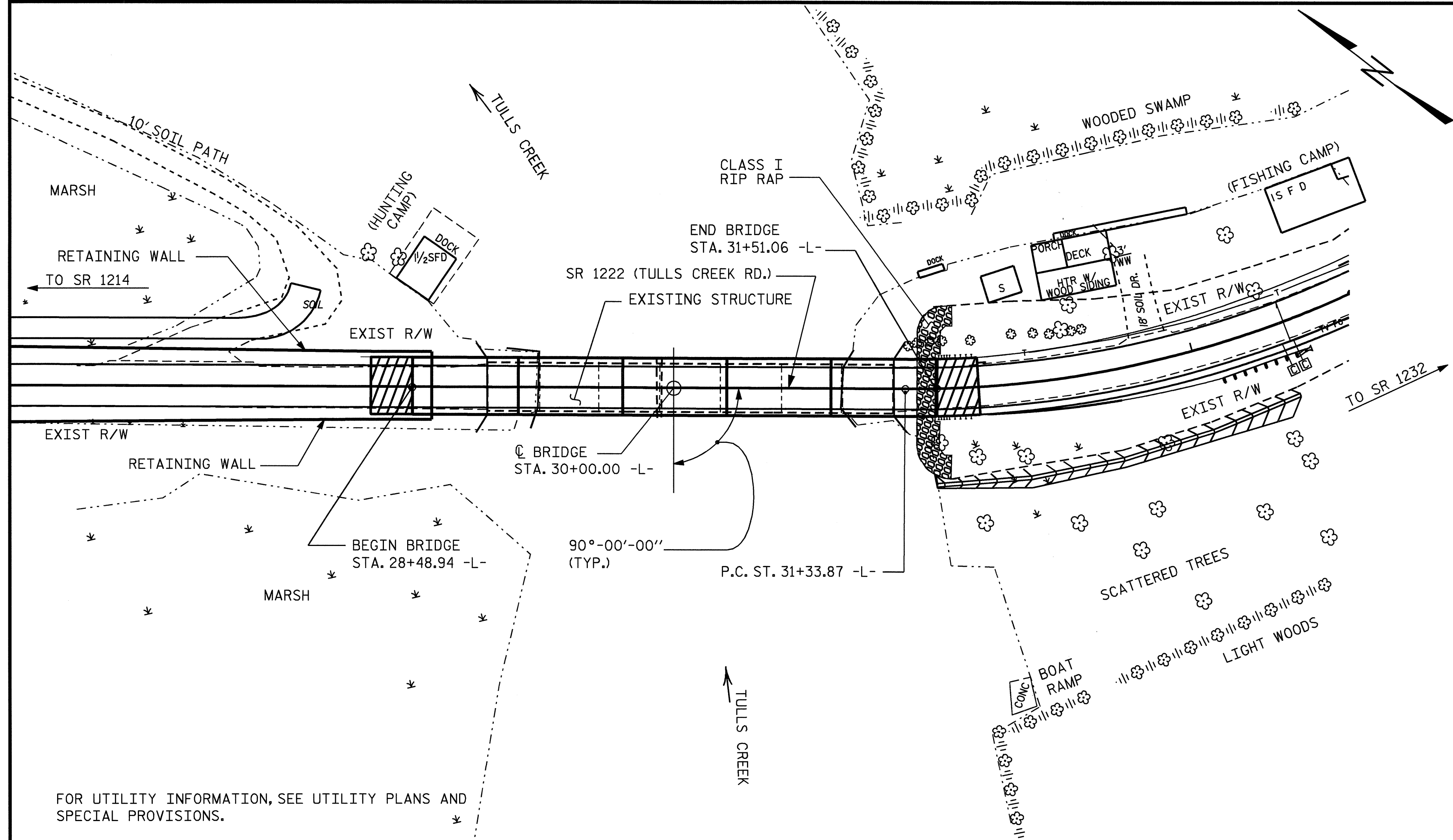
FOR CRANE SAFETY, SEE SPECIAL PROVISIONS.

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

FOR PRESTRESSED CONCRETE MEMBERS, SEE SPECIAL PROVISIONS.

ALL METALLIZED SURFACES SHALL RECEIVE A SEAL COATING AS SPECIFIED IN THE SPECIAL PROVISION FOR THERMAL SPRAYED COATINGS (METALLIZATION.)

REINFORCED BRIDGE APPROACH FILL NOT REQUIRED AT END BENT NO. 1



LOCATION SKETCH

HYDRAULIC DATA

DESIGN DISCHARGE.....N/A CFS.
 FREQUENCY OF DESIGN FLOOD.....10 YEARS
 DESIGN HIGH WATER ELEVATION.....3.0 FT.
 DRAINAGE AREA.....INDETERMINATE
 BASIC DISCHARGE(Q100).....N/A
 BASIC HIGH WATER ELEVATION.....6.3 FT.

OVERTOPPING FLOOD DATA

OVERTOPPING DISCHARGE.....N/A.
 FREQUENCY OF OVERTOPPING FLOOD.....10 + YRS.
 OVERTOPPING FLOOD ELEVATION.....4.3 FT.

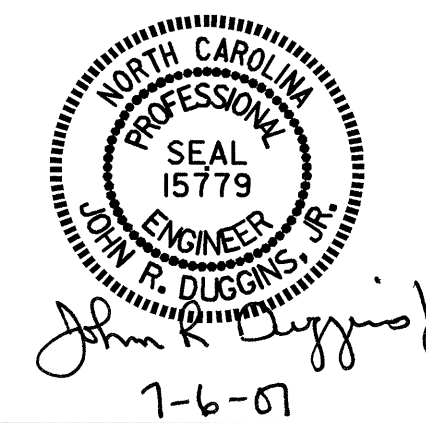
DRAWN BY : M. POOLE DATE : 03/07
 CHECKED BY : J. R. DUGGINS DATE : 03/07

PROJECT NO. B-2950
CURRITUCK COUNTY
 STATION: 30+00.00 -L-

SHEET 4 OF 4

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

GENERAL DRAWING
 FOR BRIDGE ON SR 1222
 (TULLS CREEK RD.)
 OVER TULLS CREEK BETWEEN
 SR 1214 AND SR 1232



| REVISIONS | | | | | | SHEET NO. |
|-----------|-----|-------|-----|-----|-------|--------------|
| NO. | BY: | DATE: | NO. | BY: | DATE: | TOTAL SHEETS |
| 1 | | | 3 | | | 5-4 |
| 2 | | | 4 | | | 26 |

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 BOX BEAM SECTIONS SHALL BE GRADE 60 AND SHALL BE INCLUDED IN THE UNIT PRICE BID FOR PRESTRESSED CONCRETE BOX BEAMS.

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 2 1/2" Ø DOWEL HOLES AT EXPANSION ENDS OF SLAB SECTIONS SHALL BE FILLED WITH JOINT SEALER MATERIAL TO 1 1/2" ABOVE THE TOP OF DOWELS AND THEN FILLED WITH GROUT.

THE JOINT SEALER MATERIAL SHALL CONFORM TO THE REQUIREMENTS OF TYPE SL LOW MODULUS SILICONE SEALANT. SEE SECTION 1028 OF THE STANDARD SPECIFICATIONS.

THE 2" Ø BACKER ROD SHALL CONFORM TO THE REQUIREMENTS OF TYPE M BOND BREAKER. SEE SECTION 1028 OF THE STANDARD SPECIFICATIONS.

WHEN BOX BEAMS ARE CAST, A POSITIVE HOLD-DOWN SYSTEM SHALL BE EMPLOYED TO PREVENT VOIDS FROM RISING OR MOVING SIDWAYS. THIS SYSTEM SHALL BE DESIGNED TO BE LEFT IN PLACE UNTIL THE CONCRETE HAS REACHED RELEASE STRENGTH. AT LEAST THREE WEEKS PRIOR TO CASTING BOX BEAMS, 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 BOXED BEAM UNIT SHALL BE DONE WHEN THE CONCRETE HAS REACHED A COMPRESSIVE STRENGTH OF NOT LESS THAN 4400 PSI.

ALL REINFORCING STEEL IN BARRIER RAILS AND CONCRETE WEARING SURFACE SHALL BE EPOXY COATED.

PRESTRESSING STRANDS SHALL BE CUT FLUSH WITH THE BOX BEAM UNIT ENDS.

APPLY EPOXY PROTECTIVE COATING TO BOX BEAM UNIT ENDS.

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

FOR PRESTRESSED CONCRETE MEMBERS, SEE SPECIAL PROVISIONS.

PRESTRESSED CONCRETE BOX BEAM UNITS SHALL CONTAIN CALCIUM NITRITE CORROSION INHIBITOR.

THE LOCATION OF THE VOID DRAINS MAY BE SHIFTED SLIGHTLY WHERE NECESSARY TO CLEAR PRESTRESSING STRANDS OR TRANSVERSE REINFORCING STEEL.

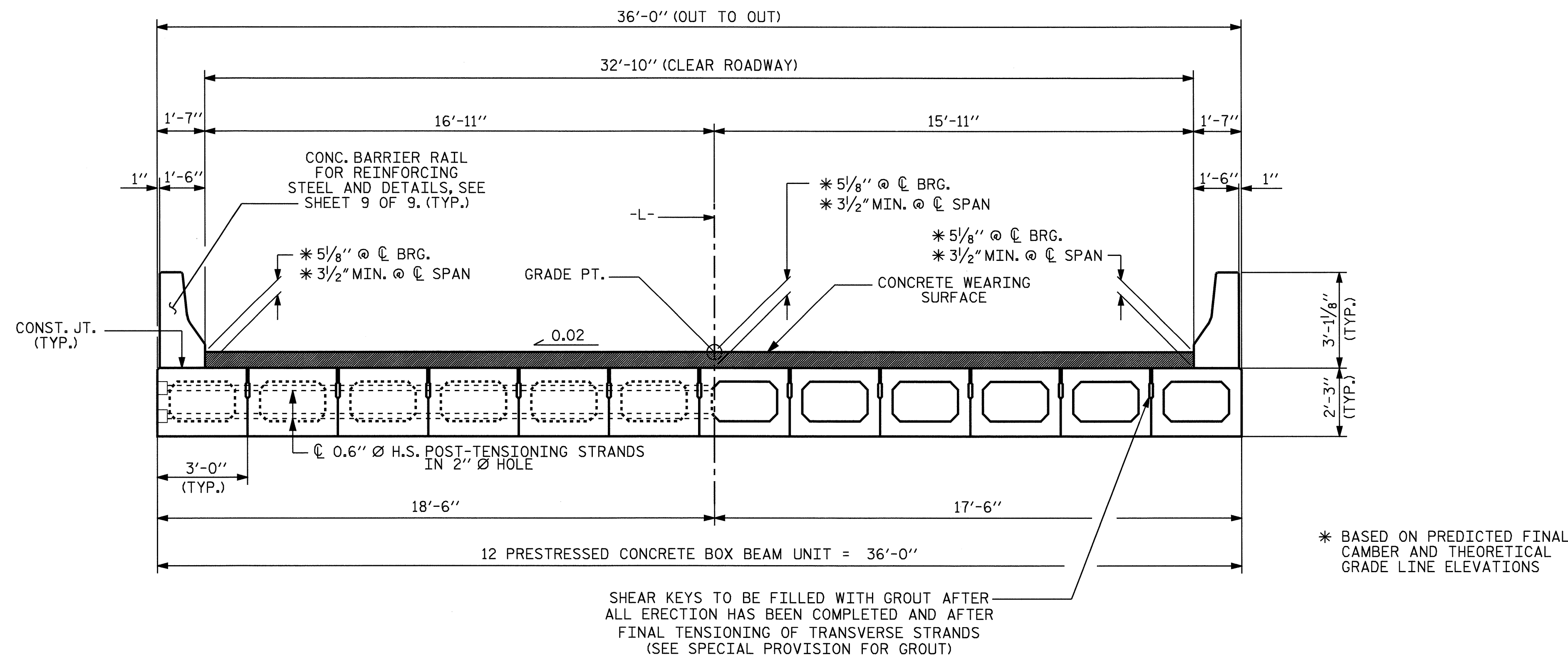
FOR EVAZOTE JOINT SEALS, SEE SPECIAL PROVISIONS.

THE NOMINAL UNCOMPRESSED SEAL WIDTH OF THE EVAZOTE JOINT SEAL SHALL BE 3 1/8" AT BENTS No. 2 & 3.

PLACEMENT OF THE CONCRETE WEARING SURFACE SHALL OCCUR AFTER CASTING THE CONCRETE RAIL. THE COST OF THE REINFORCING STEEL CAST WITH THE CONCRETE WEARING SURFACE SHALL BE INCLUDED IN THE UNIT PRICE BID FOR CONCRETE WEARING SURFACE. FOR CONCRETE WEARING SURFACE, SEE SPECIAL PROVISIONS.

FOR ELASTOMERIC CONCRETE, SEE SPECIAL PROVISIONS.

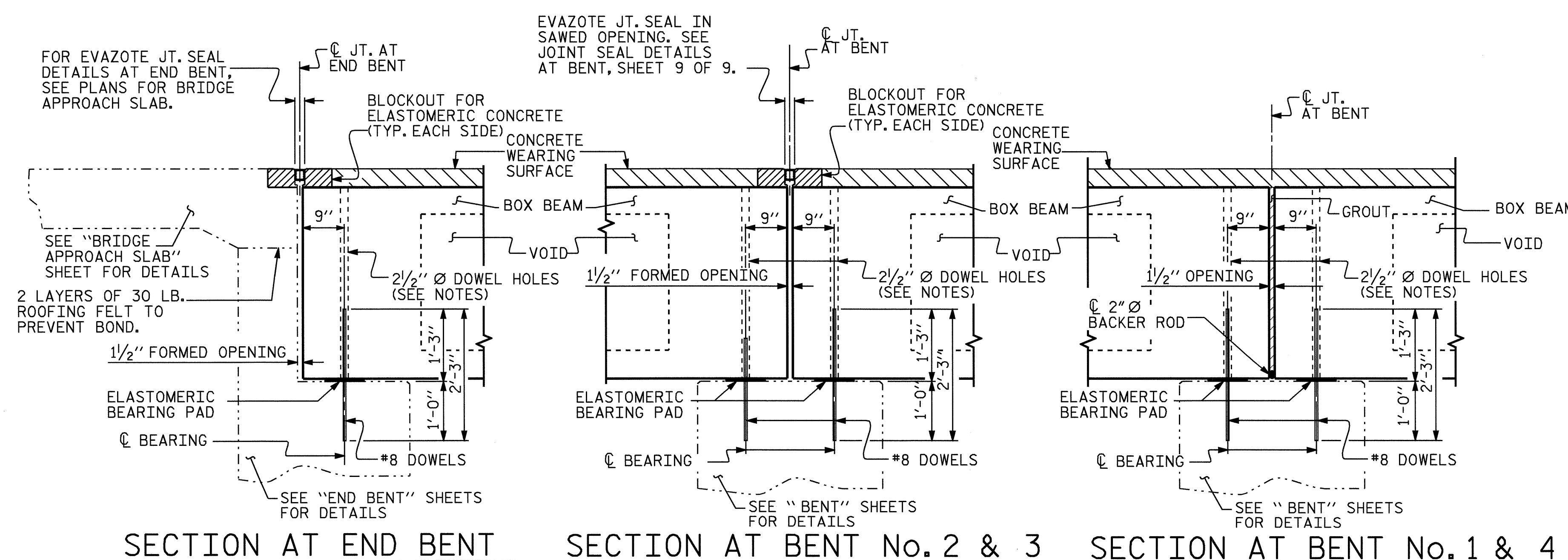
FOR GROUT FOR STRUCTURES, SEE SPECIAL PROVISIONS.



HALF SECTION @ INTERMEDIATE DIAPHRAGM

HALF SECTION @ VOIDS

TYPICAL SECTION



SECTION AT END BENT

SECTION AT BENT No. 2 & 3

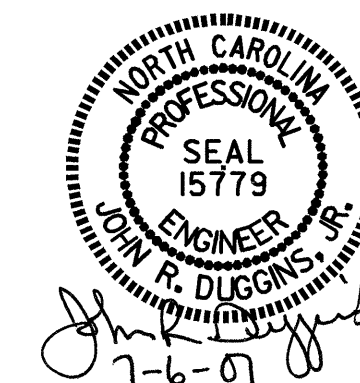
SECTION AT BENT No. 1 & 4

PROJECT NO. B-2950
 CURRITUCK COUNTY
 STATION: 30+00.00 -L-

SHEET 1 OF 9

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

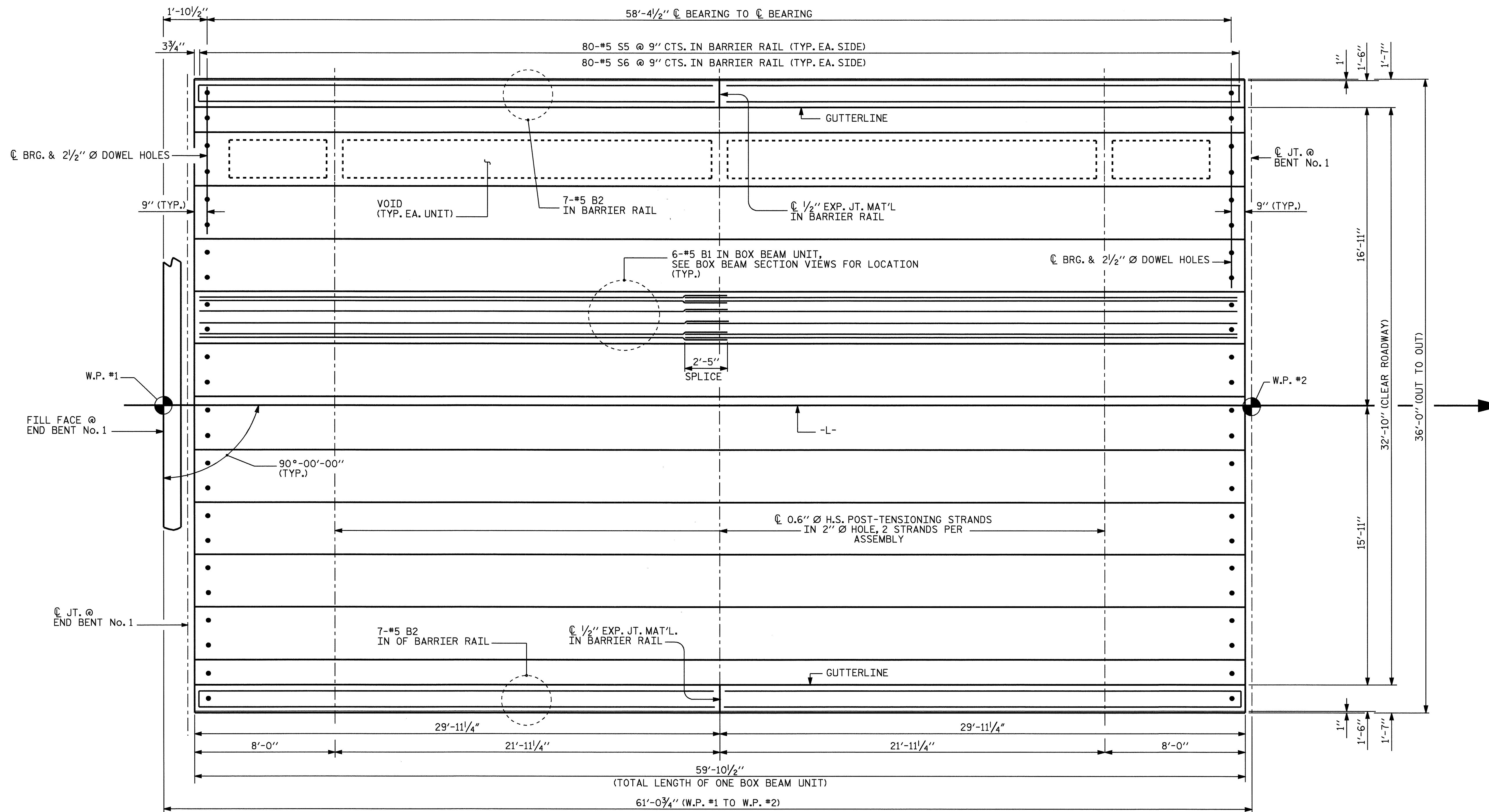
3'-0" X 2'-3"
 PRESTRESSED CONCRETE
 BOX BEAM UNIT



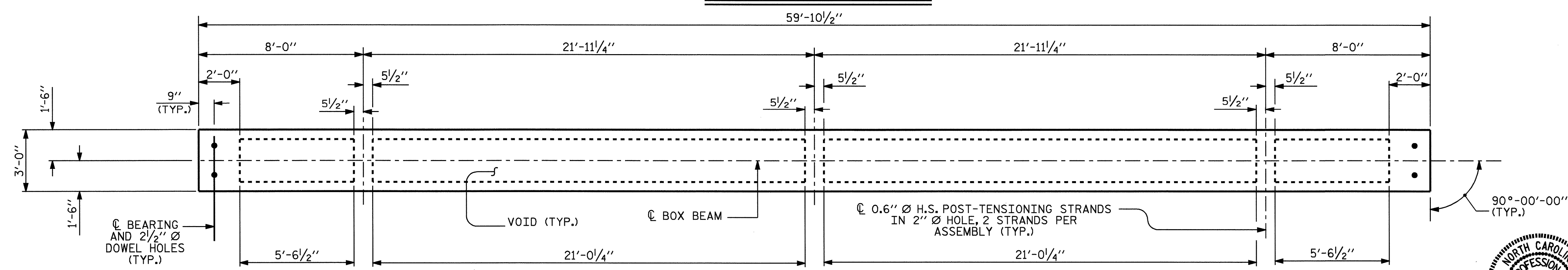
ASSEMBLED BY : M. POOLE
 CHECKED BY : D. HODGE
 DATE : 10/06
 DATE : 04/07
 DRAWN BY : TLA 3/05
 CHECKED BY :

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

TOTAL SHEETS: 26



PLAN OF SPAN A



PLAN OF BOX BEAM UNIT

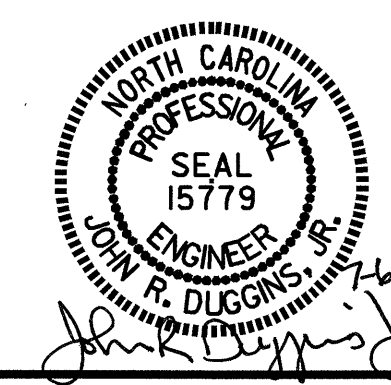
FOR REINFORCING STEEL, SEE PLAN OF BOX BEAM, SHEET 7 OF 9.

PROJECT NO. B-2950
 CURRITUCK COUNTY
 STATION: 30+00.00 -L-

SHEET 2 OF 9

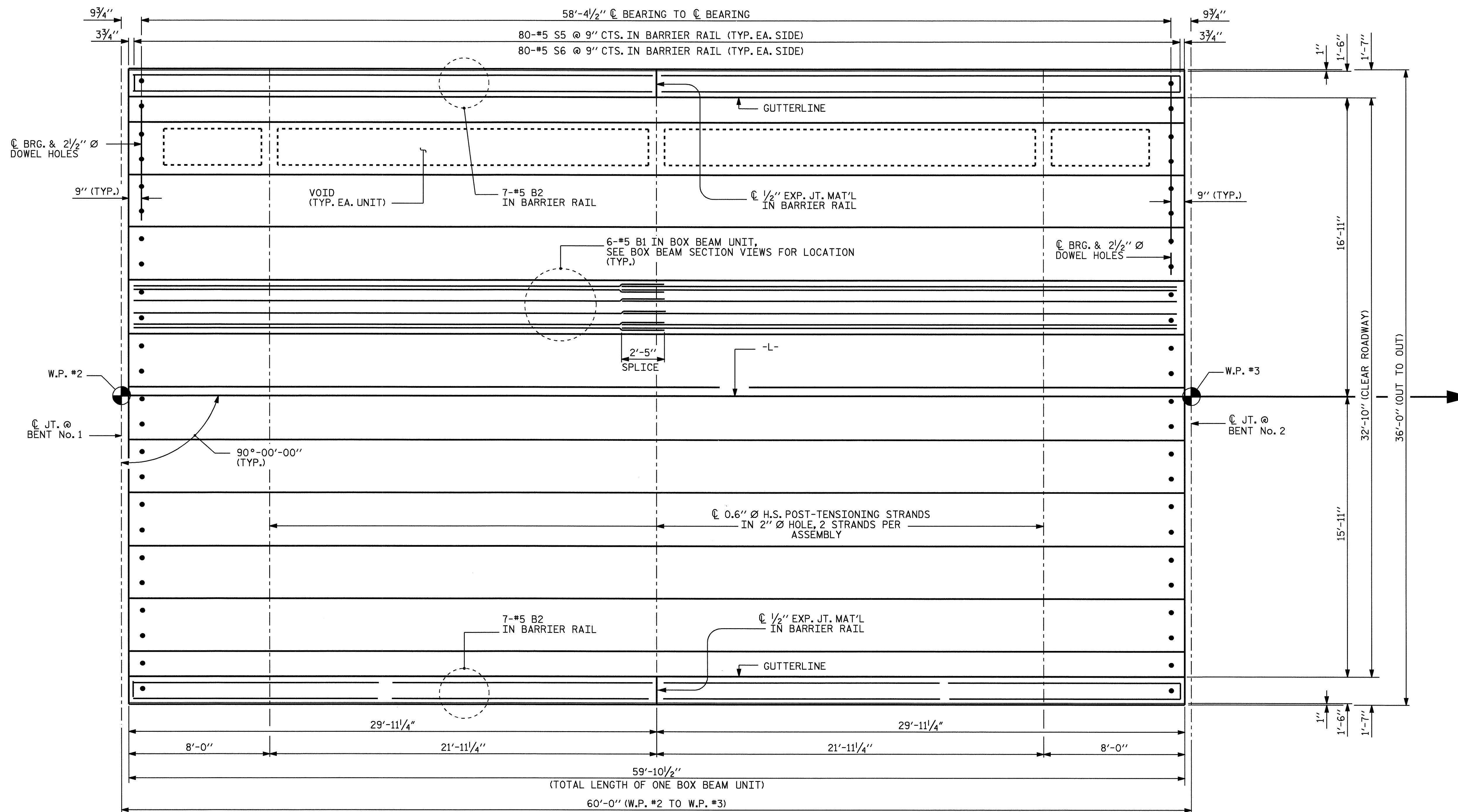
STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

PLAN OF SPAN A

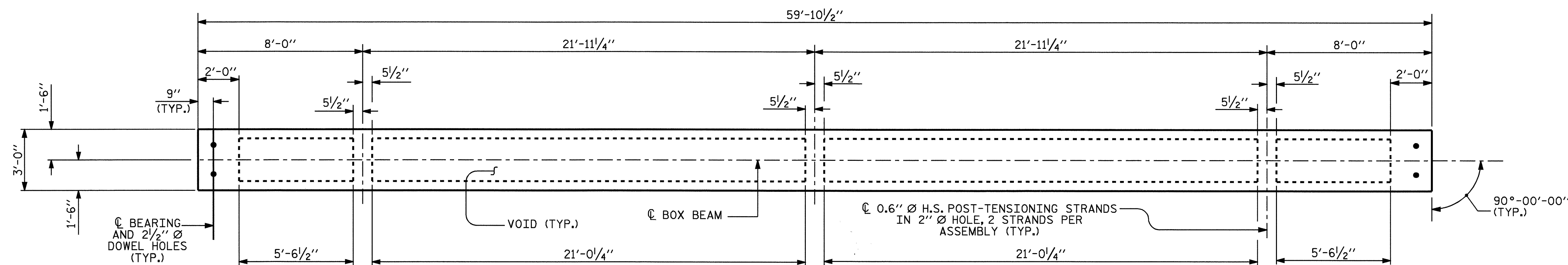


DRAWN BY: M. POOLE DATE: 10/06
 CHECKED BY: D. HODGE DATE: 04/07

| REVISIONS | | | | | | SHEET NO. |
|-----------|-----|-------|-----|-----|-------|-----------------|
| NO. | BY: | DATE: | NO. | BY: | DATE: | |
| 1 | | | 3 | | | S-6 |
| 2 | | | 4 | | | TOTAL SHEETS 26 |



PLAN OF SPAN B



PLAN OF BOX BEAM UNIT
FOR REINFORCING STEEL, SEE PLAN OF BOX BEAM, SHEET 7 OF 9.

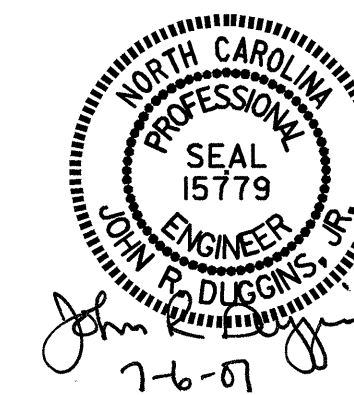
PROJECT NO. B-2950
CURRITUCK COUNTY

STATION: 30+00.00 -L-

SHEET 3 OF 9

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

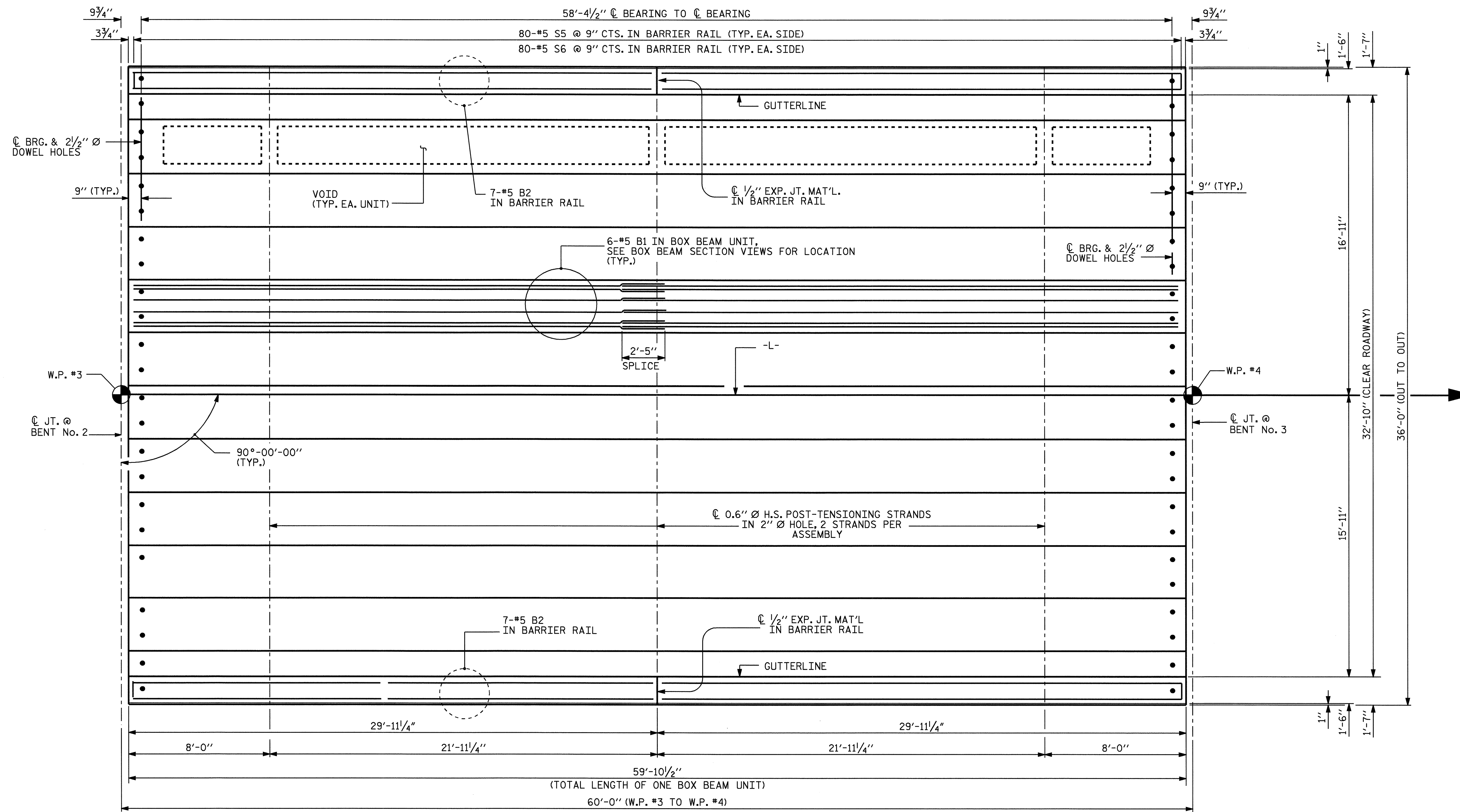
PLAN OF SPAN B



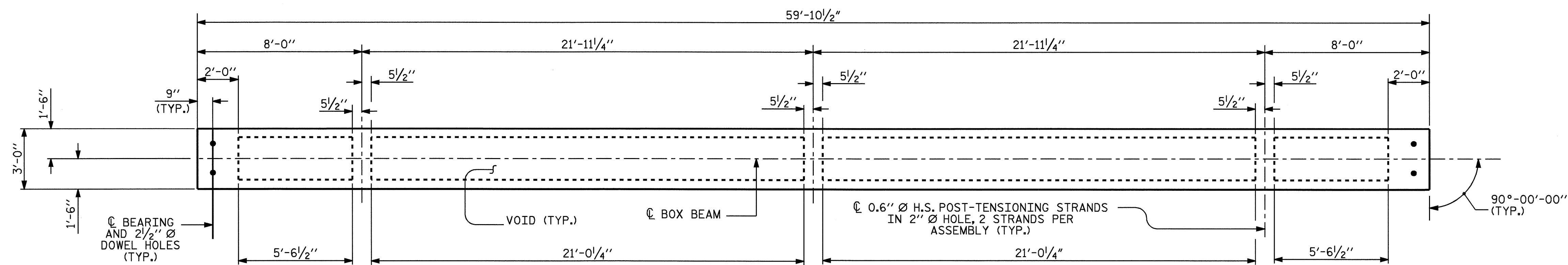
DRAWN BY: M. POOLE DATE: 10/06
CHECKED BY: D. HODGE DATE: 04/07

05-JUL-2007 08:25
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dnhodge

| REVISIONS | | | | | | SHEET NO. |
|-----------|-----|-------|-----|-----|-------|-----------------|
| NO. | BY: | DATE: | NO. | BY: | DATE: | |
| 1 | | | 3 | | | 5-7 |
| 2 | | | 4 | | | TOTAL SHEETS 26 |



PLAN OF SPAN C



PLAN OF BOX BEAM UNIT

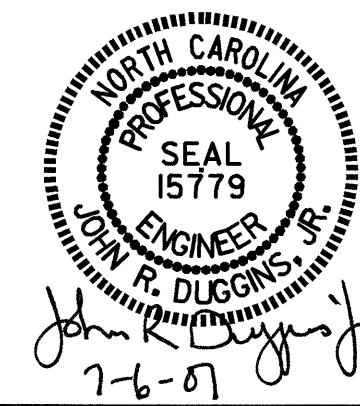
FOR REINFORCING STEEL, SEE PLAN OF BOX BEAM, SHEET 7 OF 9.

PROJECT NO. B-2950
 CURRITUCK COUNTY
 STATION: 30+00.00 -L-
 SHEET 4 OF 9

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

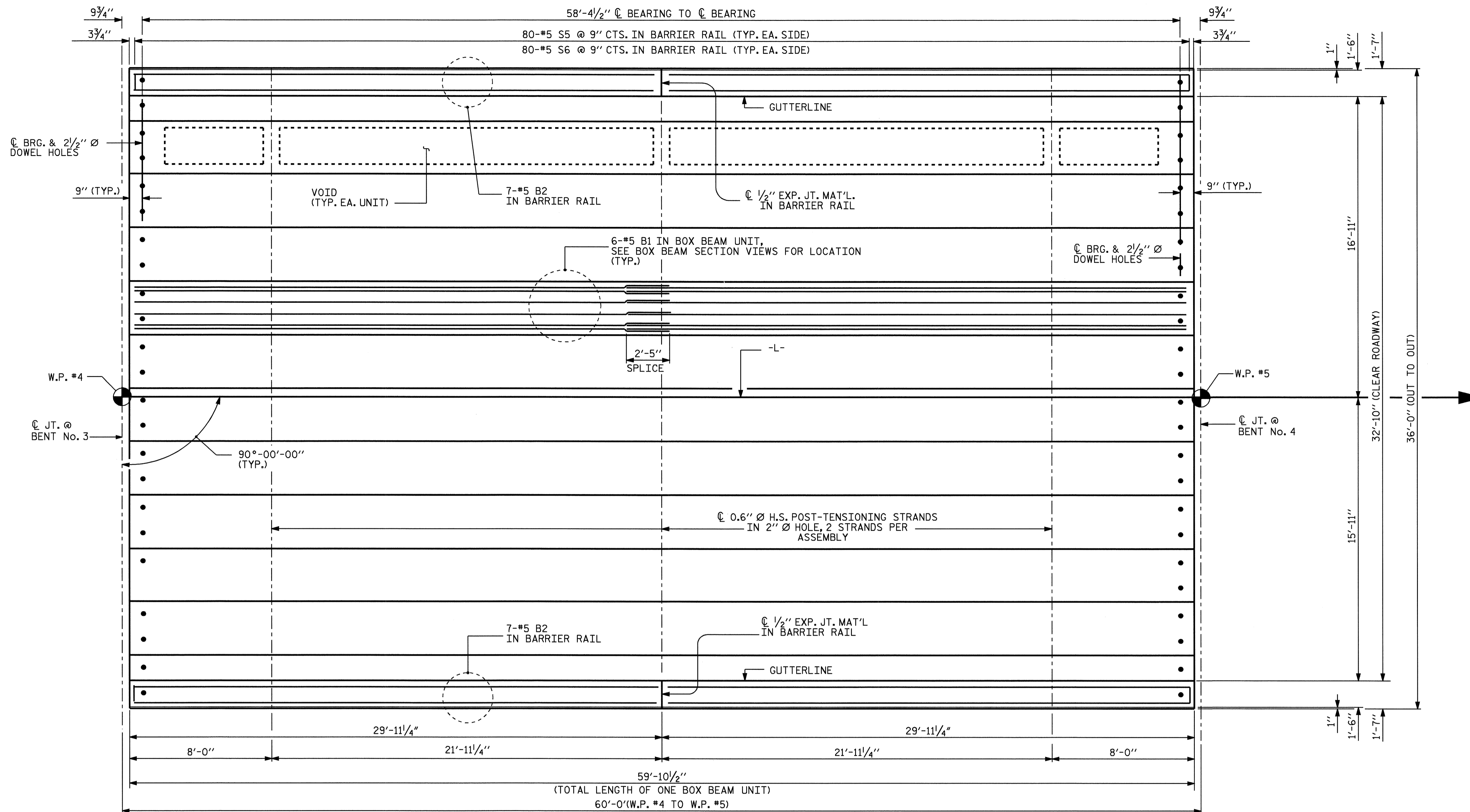
PLAN OF SPAN C

| REVISIONS | | | | | | SHEET NO. |
|-----------|-----|-------|-----|-----|-------|--------------|
| NO. | BY: | DATE: | NO. | BY: | DATE: | 6-8 |
| 1 | | | 3 | | | TOTAL SHEETS |
| 2 | | | 4 | | | 26 |

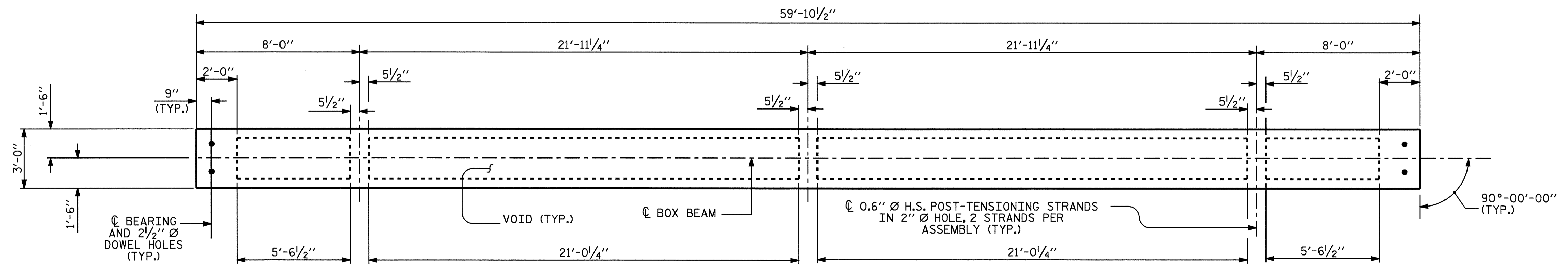


DRAWN BY: M. POOLE DATE: 10/06
 CHECKED BY: D. HODGE DATE: 04/07

05-JUL-2007 08:26
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 dhodge



PLAN OF SPAN D



PLAN OF BOX BEAM UNIT

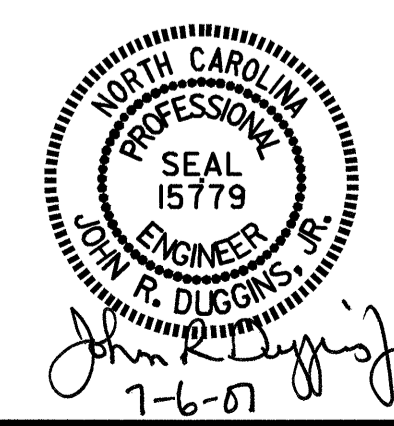
FOR REINFORCING STEEL, SEE PLAN OF BOX BEAM, SHEET 7 OF 9.

PROJECT NO. B-2950
 CURRITUCK COUNTY
 STATION: 30+00.00 -L-
 SHEET 5 OF 9

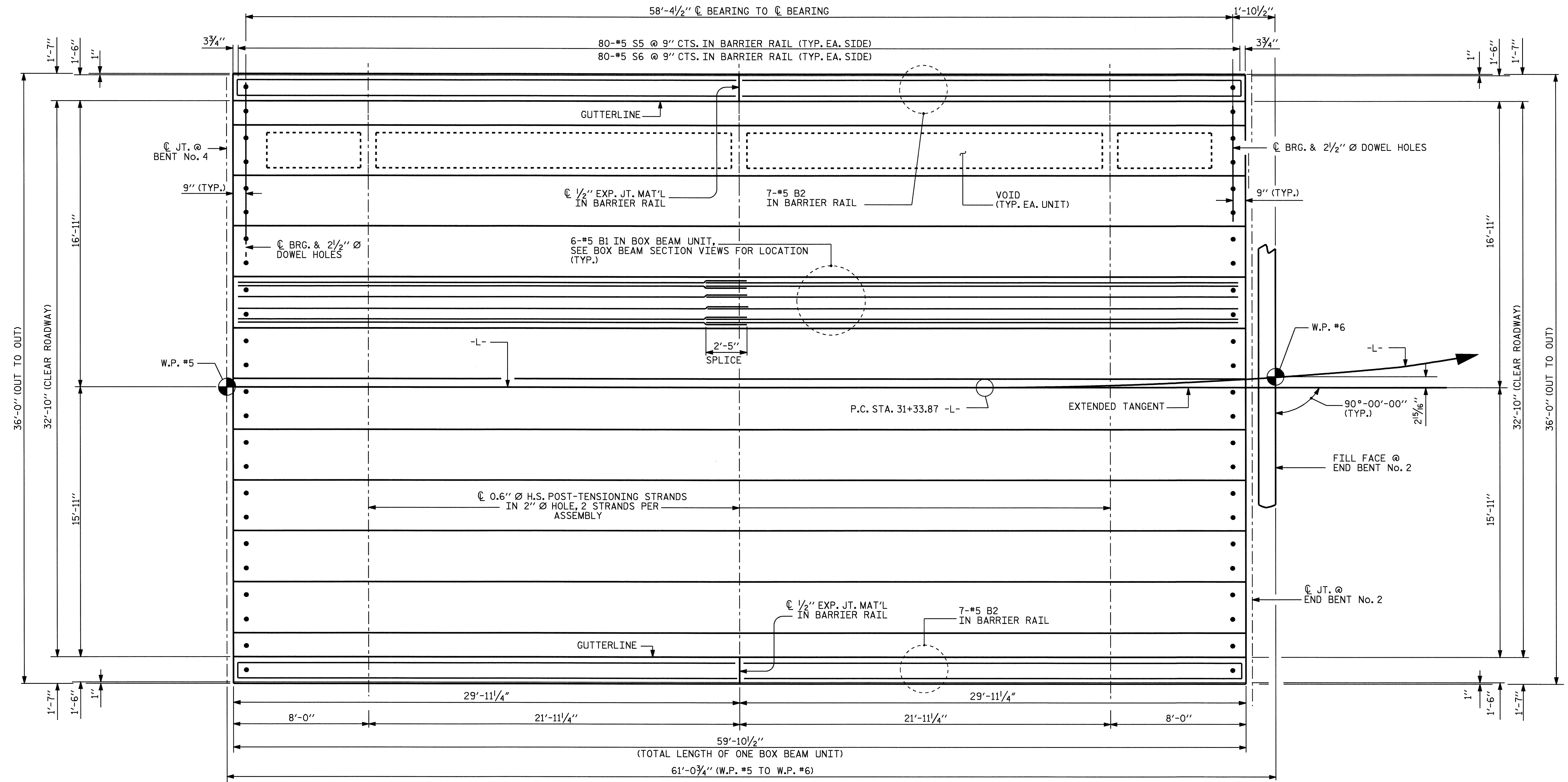
STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

PLAN OF SPAN D

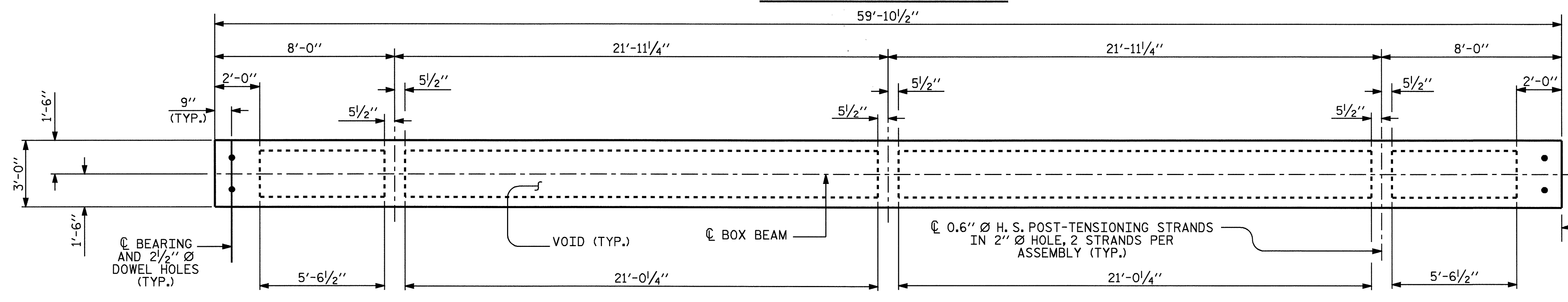
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|-----------|-----|-------|-----|-----|-------|-----------------|
| NO. | BY: | DATE: | NO. | BY: | DATE: | |
| 1 | | | 3 | | | 5-9 |
| 2 | | | 4 | | | TOTAL SHEETS 26 |



DRAWN BY: M. POOLE DATE: 10/06
 CHECKED BY: D. HODGE DATE: 04/07



PLAN OF SPAN E



PLAN OF BOX BEAM UNIT

FOR REINFORCING STEEL, SEE PLAN OF BOX BEAM, SHEET 7 OF 9.

PROJECT NO. B-2950

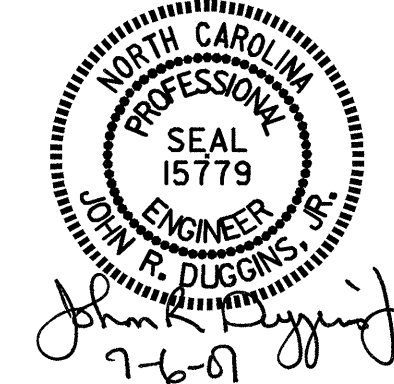
COUNTY _____

STATION: 30+00.00 -L-

SHEET 6 OF 9

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

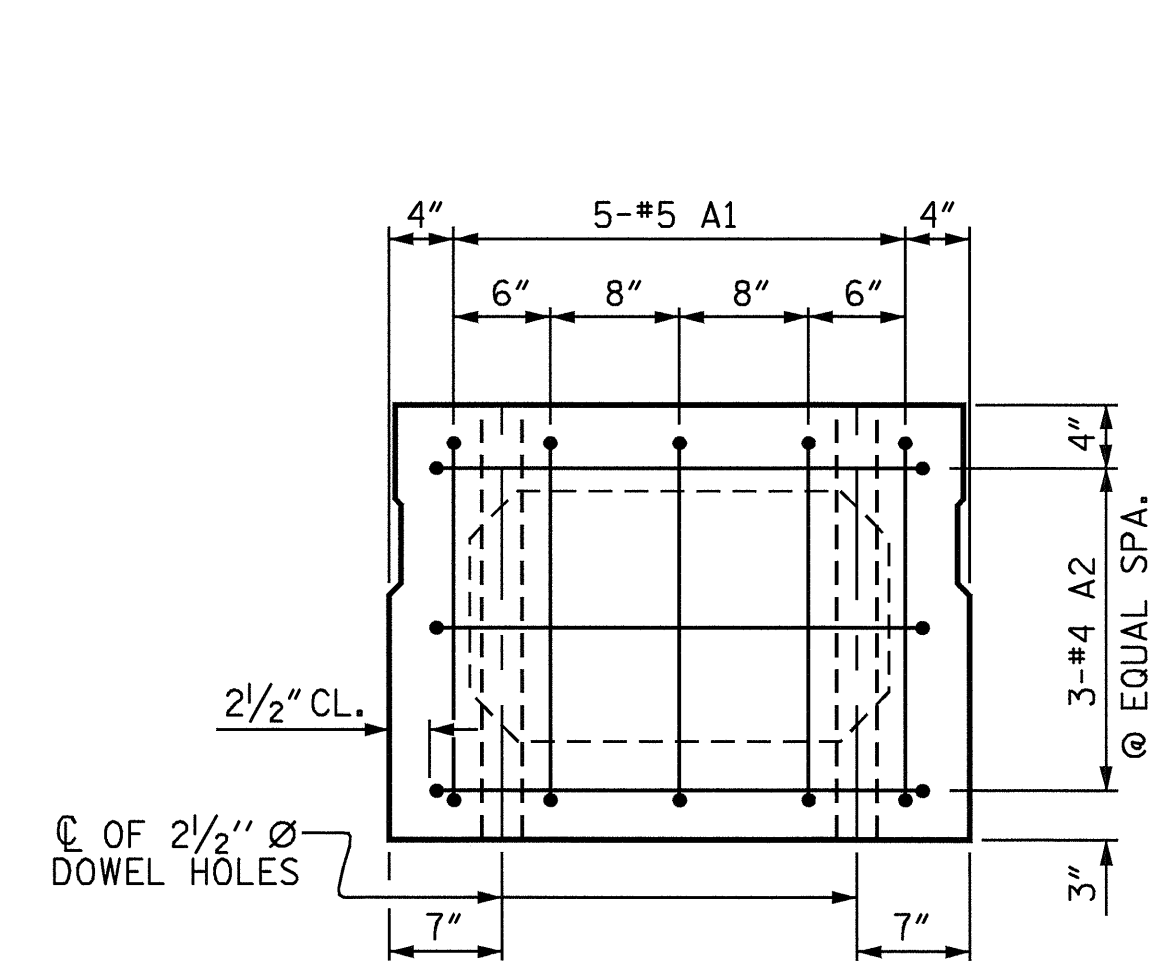
PLAN OF SPAN E



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

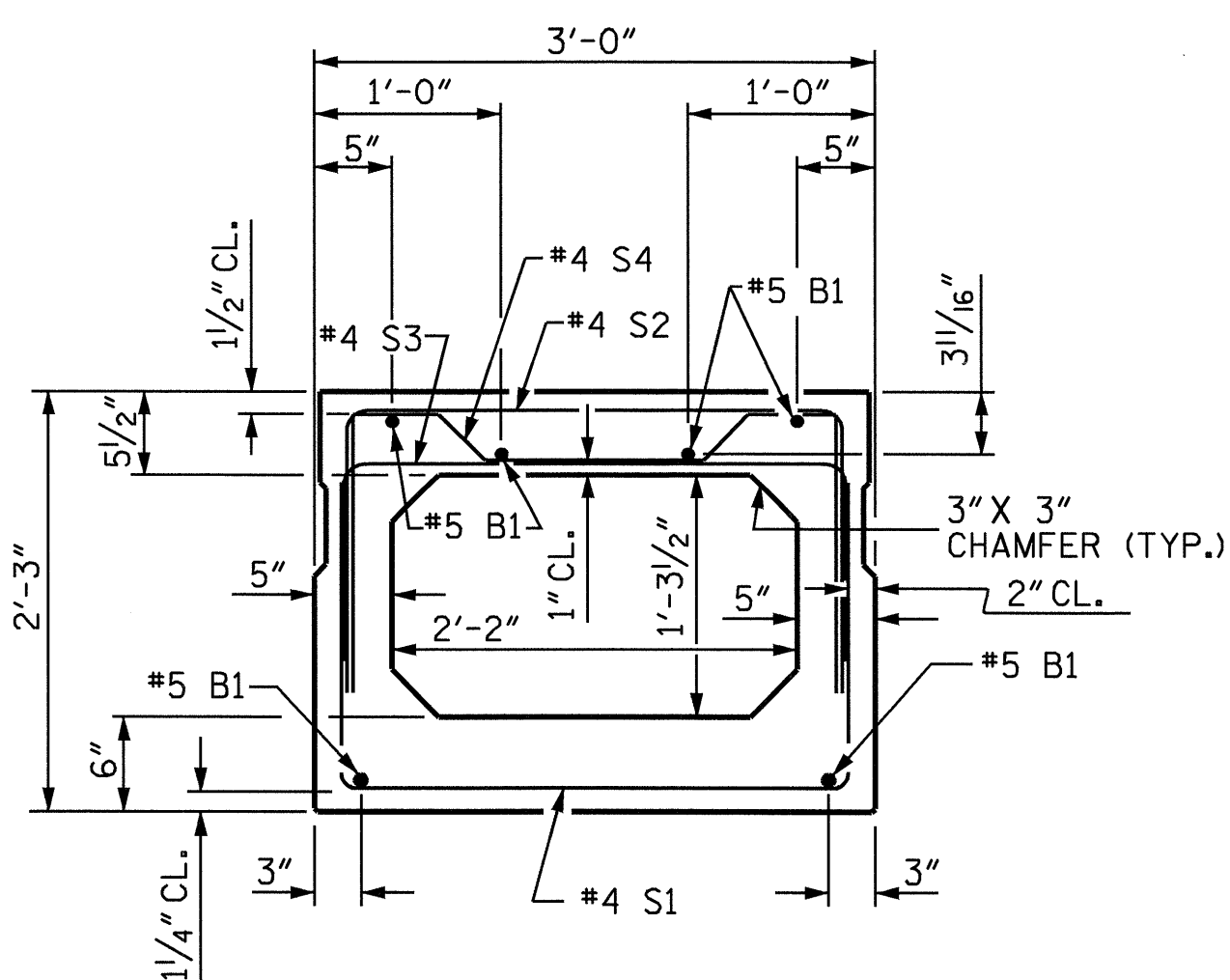
DRAWN BY : M. POOLE DATE : 10/06
CHECKED BY : D. HODGE DATE : 04/07

05-JUL-2007 08:26
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dahodge



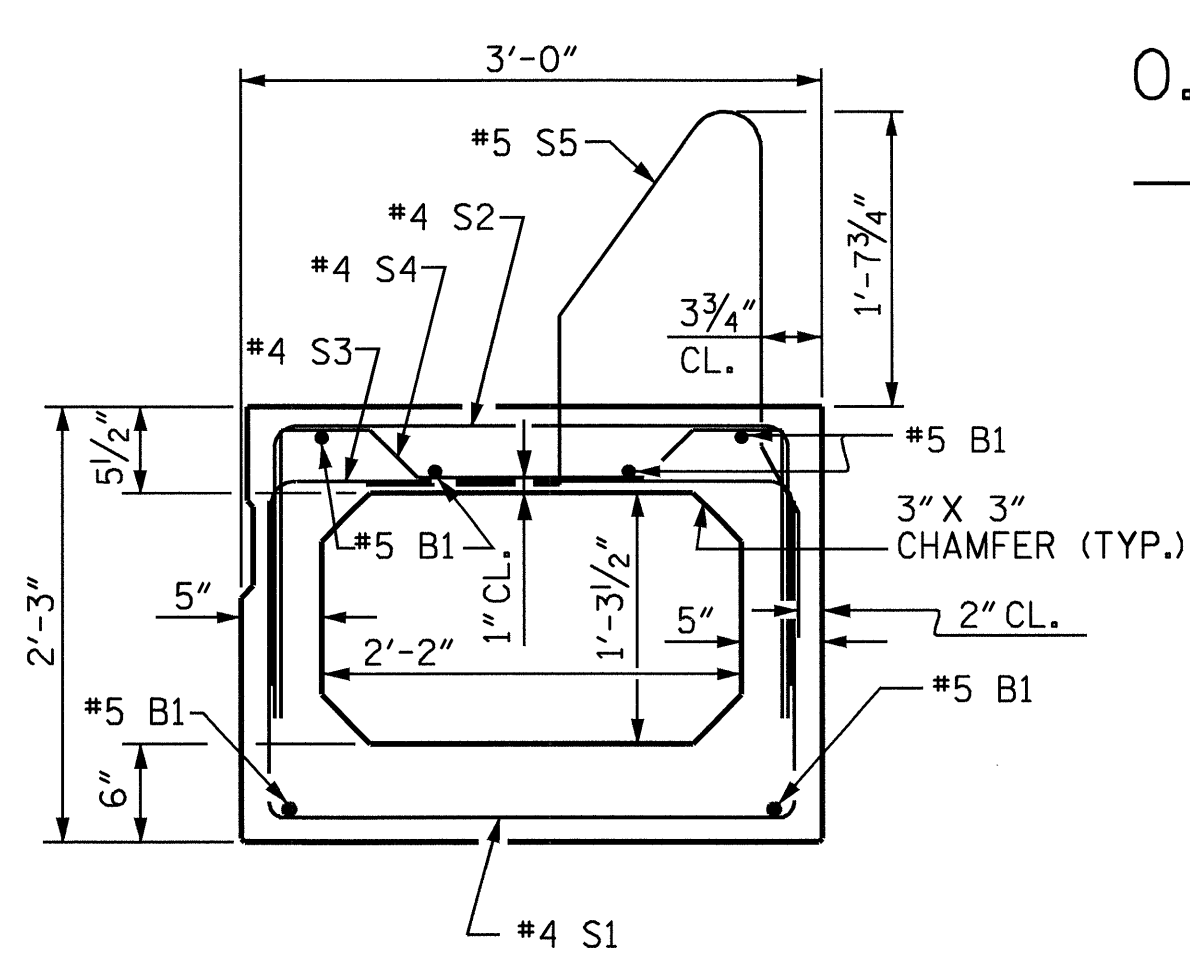
END ELEVATION

SHOWING PLACEMENT OF #5 & #4 "A" BARS AND LOCATION OF DOWEL HOLES.
 (INTERIOR BOX BEAM SECTION SHOWN-EXTERIOR SECTION SIMILAR EXCEPT SHEAR KEY LOCATION. STRAND LAYOUT NOT SHOWN.)



INTERIOR BOX BEAM SECTION

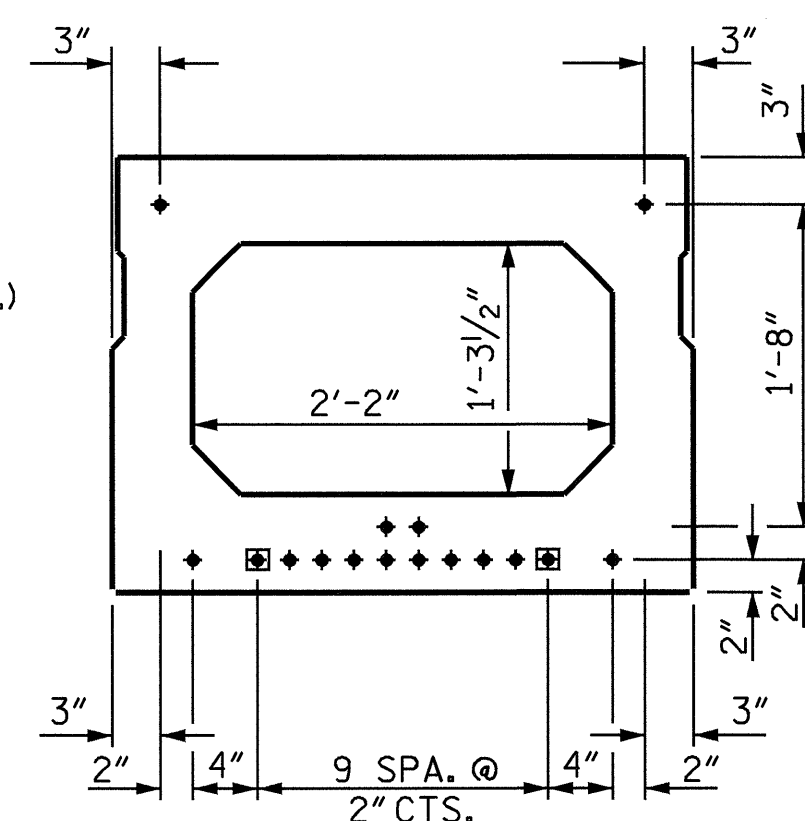
(STRAND LAYOUT NOT SHOWN)



EXTERIOR BOX BEAM SECTION

(STRAND LAYOUT NOT SHOWN)

0.6" Ø LOW RELAXATION STRAND LAYOUT



TYPICAL STRAND LOCATION

(16 STRANDS REQUIRED)

(INTERIOR BOX BEAM SECTION SHOWN-EXTERIOR SECTION SIMILAR EXCEPT SHEAR KEY LOCATION)

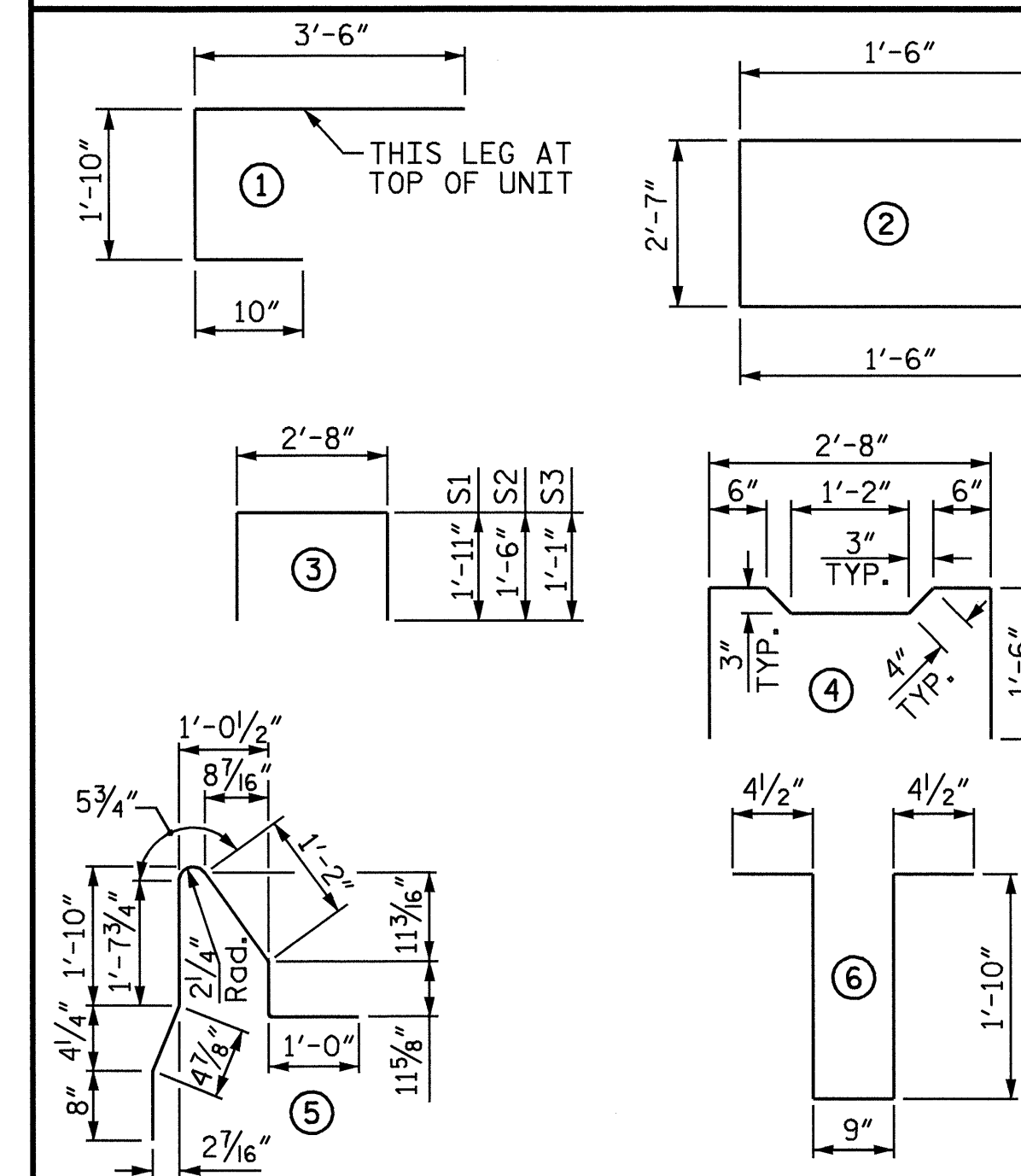
DEBONDING LEGEND

- FULLY BONDED STRANDS
- ◼ STRANDS DEBONDED FOR 2'-0" FROM END OF GIRDER

GRADE 270 STRANDS

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

BAR TYPES

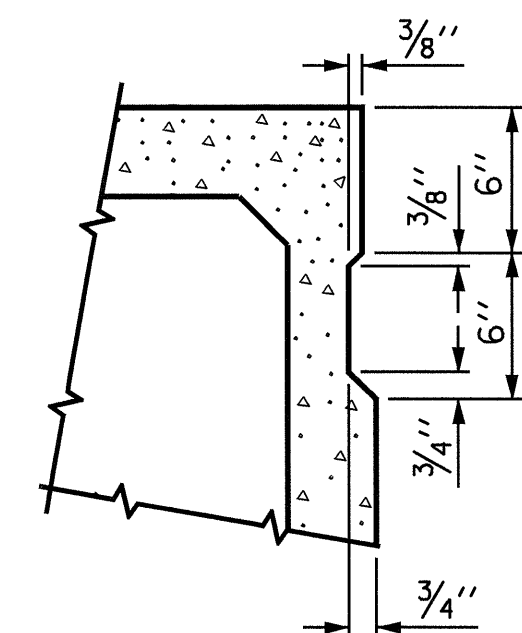


ALL BAR DIMENSIONS ARE OUT TO OUT

BILL OF MATERIAL FOR ONE BOX BEAM SECTION

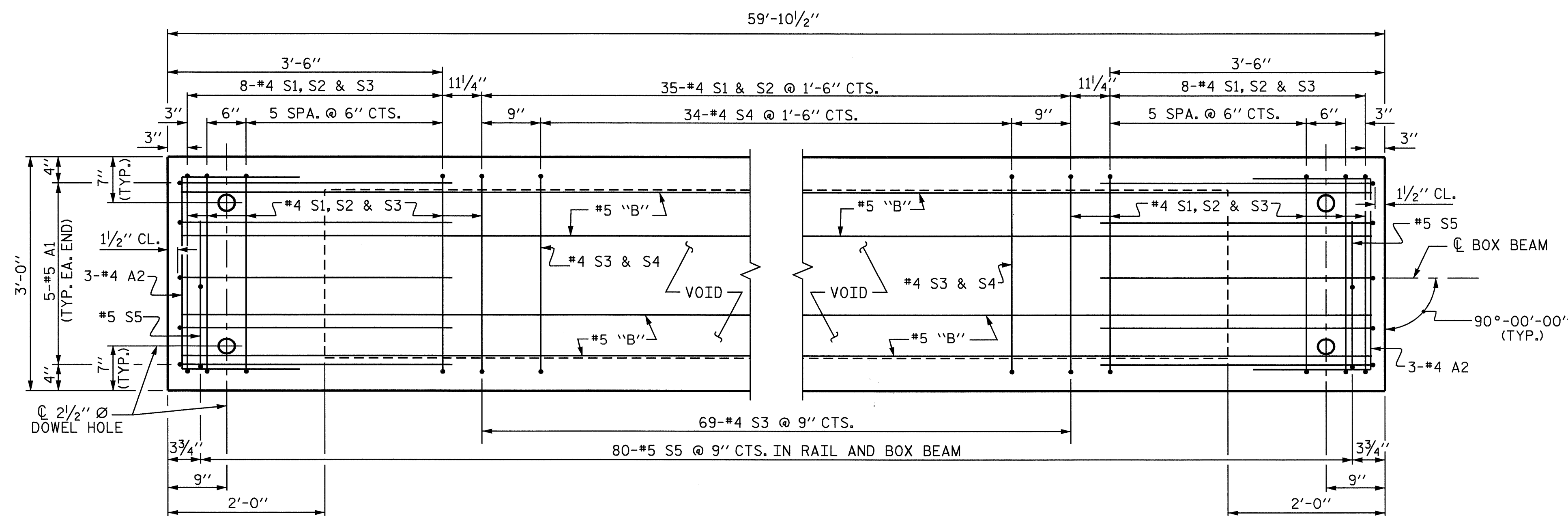
| BAR | NUMBER | SIZE | TYPE | EXTERIOR UNIT LENGTH | EXTERIOR UNIT WEIGHT | INTERIOR UNIT LENGTH | INTERIOR UNIT WEIGHT |
|------|--------|------|------|----------------------|----------------------|----------------------|----------------------|
| A1 | 10 | #5 | 1 | 6'-2" | 64 | 6'-2" | 64 |
| A2 | 18 | #4 | 2 | 5'-7" | 67 | 5'-7" | 67 |
| B1 | 6 | #5 | STR | 59'-6" | 372 | 59'-6" | 372 |
| K1 | 9 | #4 | 6 | 5'-2" | 31 | 5'-2" | 31 |
| K2 | 6 | #4 | STR | 2'-7" | 10 | 2'-7" | 10 |
| S1 | 51 | #4 | 3 | 6'-6" | 221 | 6'-6" | 221 |
| S2 | 51 | #4 | 3 | 5'-8" | 193 | 5'-8" | 193 |
| S3 | 85 | #4 | 3 | 4'-10" | 274 | 4'-10" | 274 |
| S4 | 34 | #4 | 4 | 5'-10" | 132 | 5'-10" | 132 |
| * S5 | 80 | #5 | 5 | 6'-4" | 528 | -- | -- |

| | | |
|-----------------------------|--------------|--------------|
| REINFORCING STEEL | 1364 LBS. | 1364 LBS. |
| * EPOXY COATED REINF. STEEL | 528 LBS. | |
| 5500 P.S.I. CONCRETE | 9.5 CU. YDS. | 9.5 CU. YDS. |
| 0.6" Ø L.R. STRANDS | No. 16 | No. 16 |



SHEAR KEY DETAIL

NOTE: OMIT SHEAR KEY ON OUTSIDE FACE OF EXTERIOR BOX BEAMS.

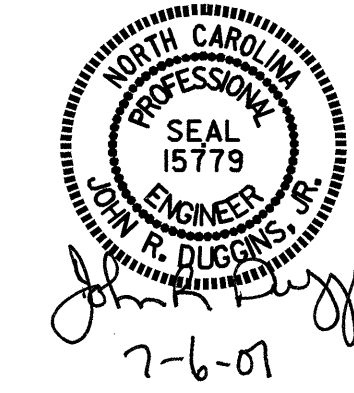


PLAN OF BOX BEAM

EXTERIOR UNIT SHOWN, INTERIOR UNIT SIMILAR EXCEPT OMIT #5 S5 BARS.
 FOR LOCATION OF DIAPHRAGMS, SEE PLAN OF SPANS.
 FOR REINFORCING STEEL IN DIAPHRAGMS, SEE DIAPHRAGM DETAILS.

| | |
|-------------------------|--------------------|
| ASSEMBLED BY : M. POOLE | DATE : 10/24/06 |
| CHECKED BY : D. HODGE | DATE : 04/07 |
| DRAWN BY : TLA 5/05 | ADDED 7/1/05 |
| CHECKED BY : GM 6/05 | REV. 5/1/06 TLA/GM |

08-MAY-2007 11:25
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 mpoole



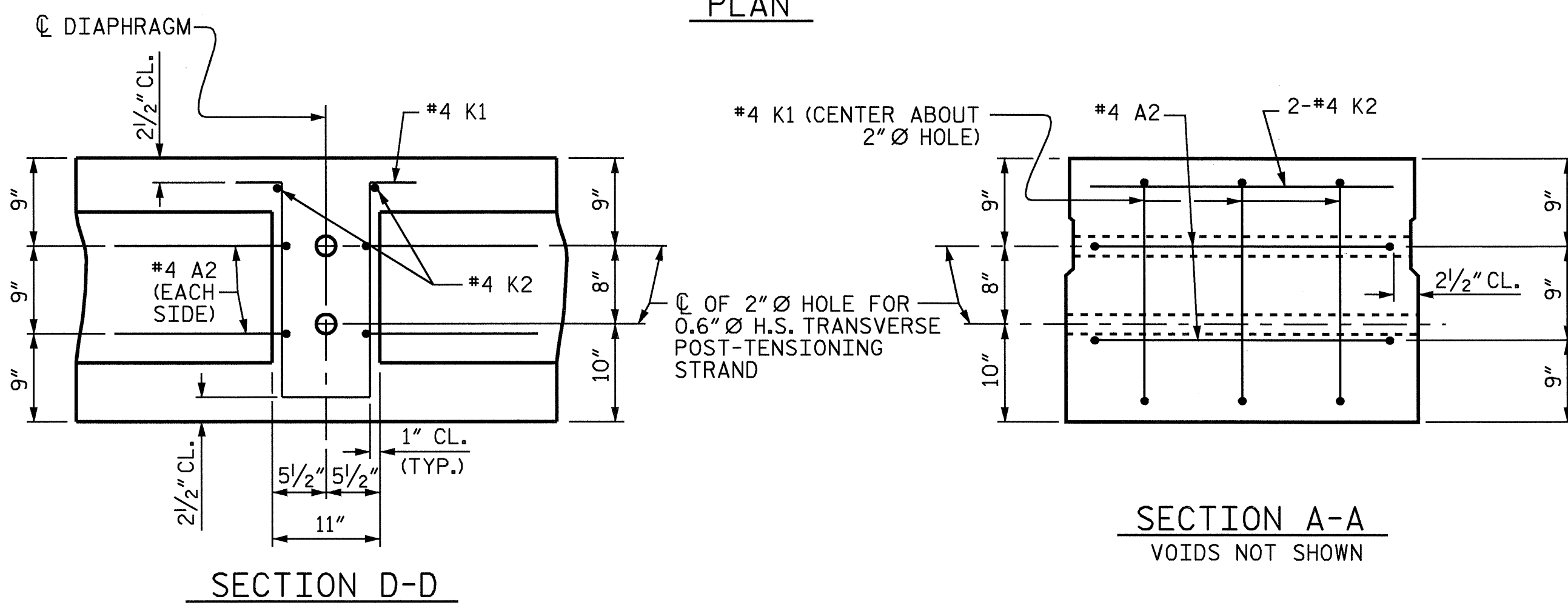
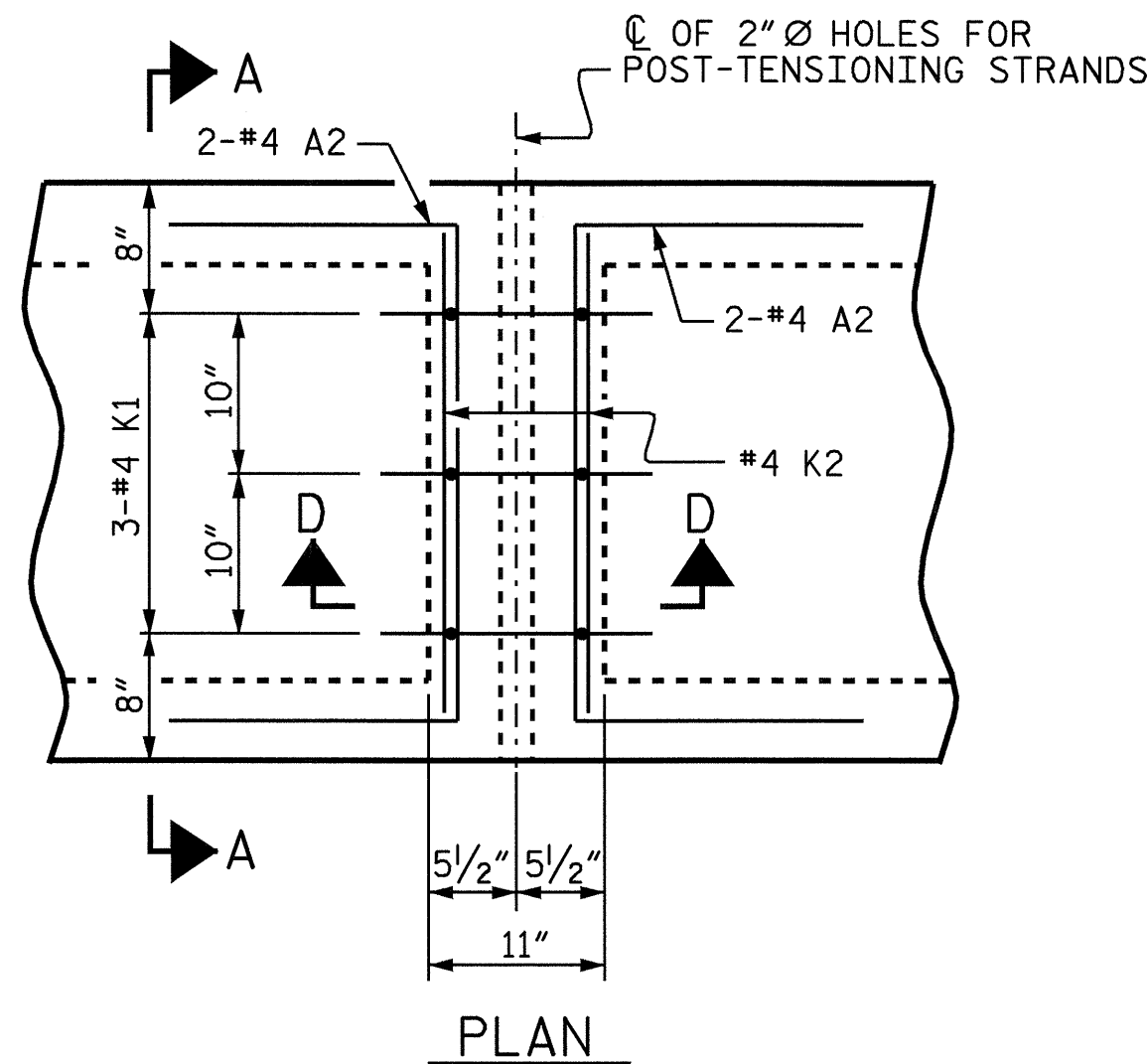
PROJECT NO. B-2950
 CURRITUCK COUNTY
 STATION: 30+00.00 -L-

SHEET 7 OF 9

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH
 3'-0" X 2'-3"
 PRESTRESSED CONCRETE
 BOX BEAM UNIT
 SPANS A THRU E

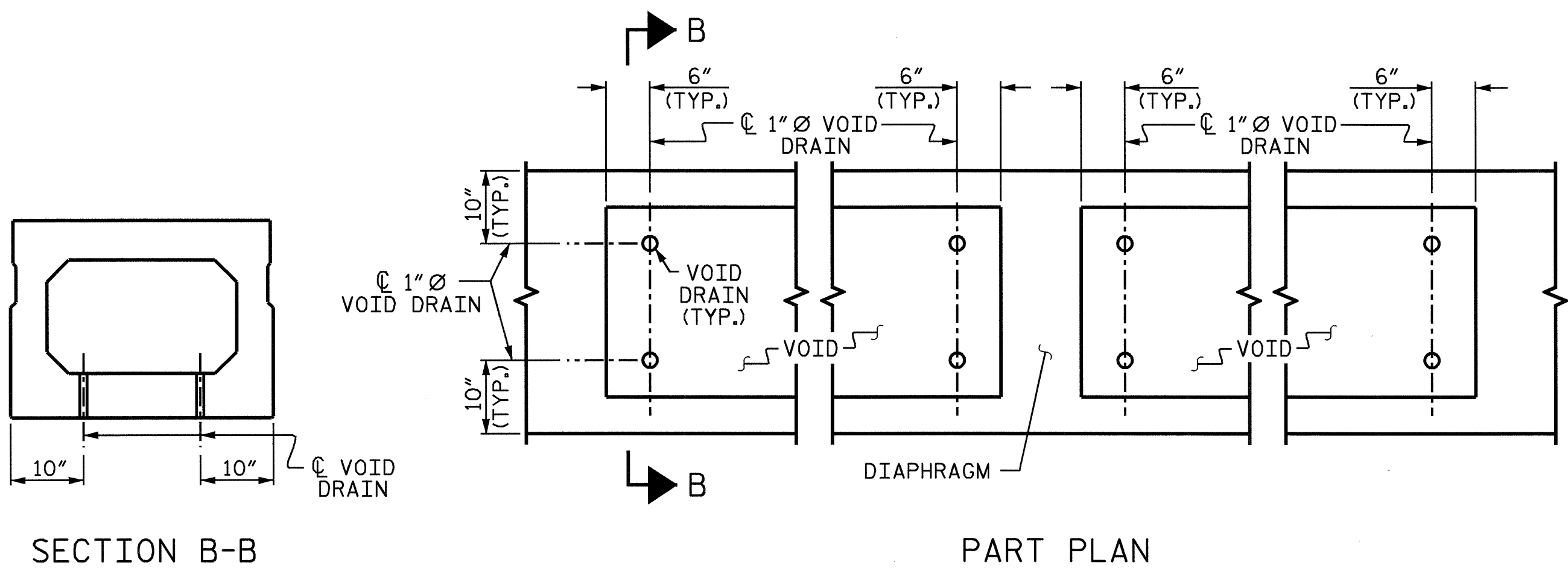
| REVISIONS | | | | | | SHEET NO. |
|-----------|-----|-------|-----|-----|-------|--------------|
| NO. | BY: | DATE: | NO. | BY: | DATE: | S-11 |
| 1 | | | 3 | | | TOTAL SHEETS |
| 2 | | | 4 | | | 26 |

(SHT 1) STD. NO. PCBB2



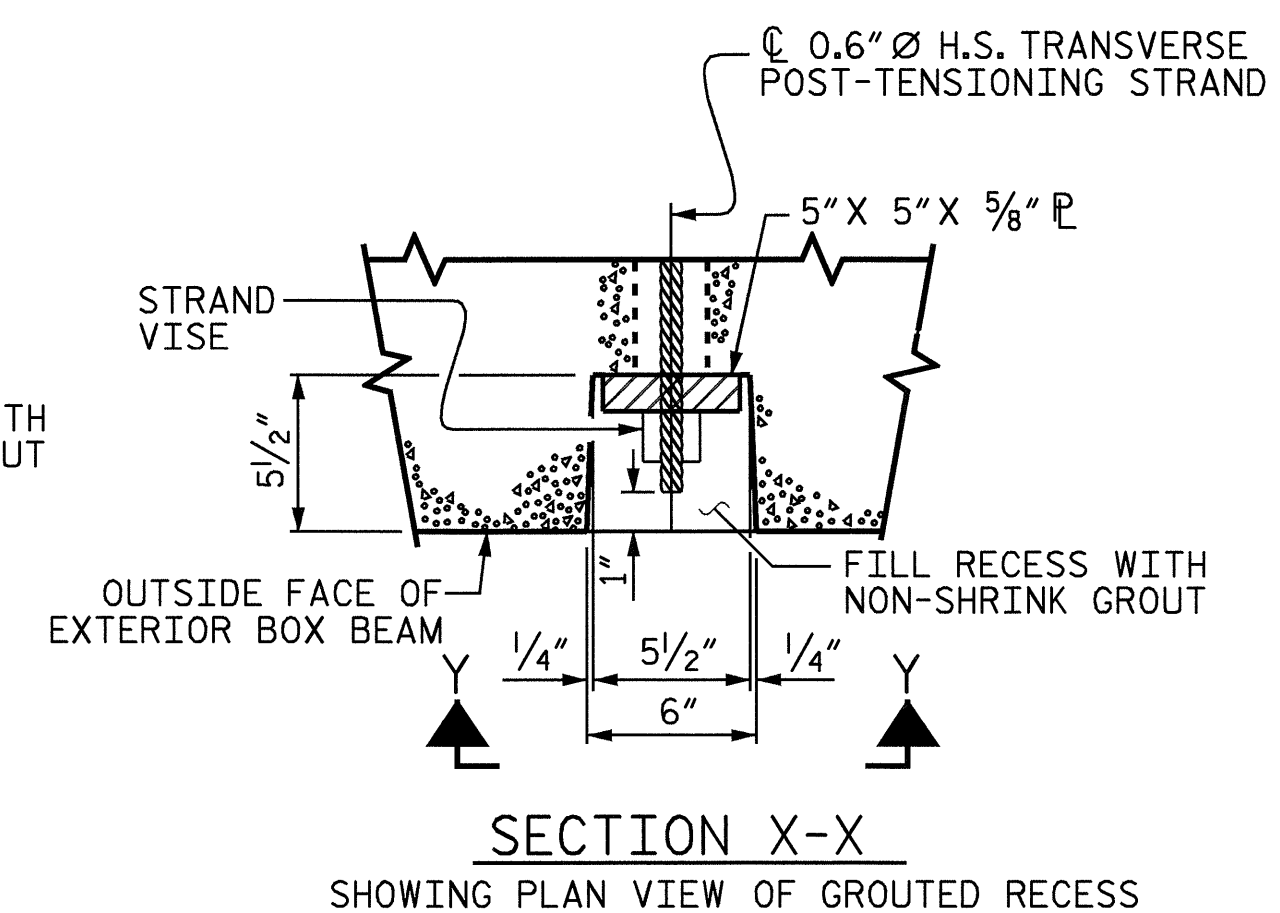
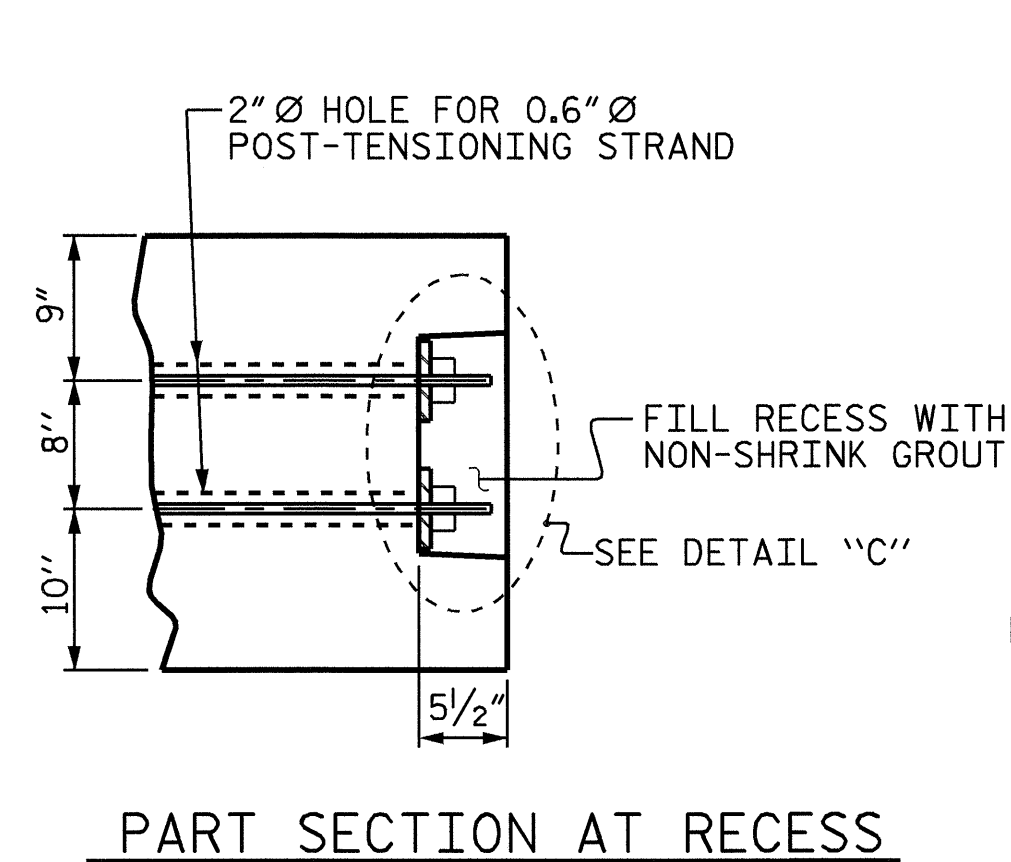
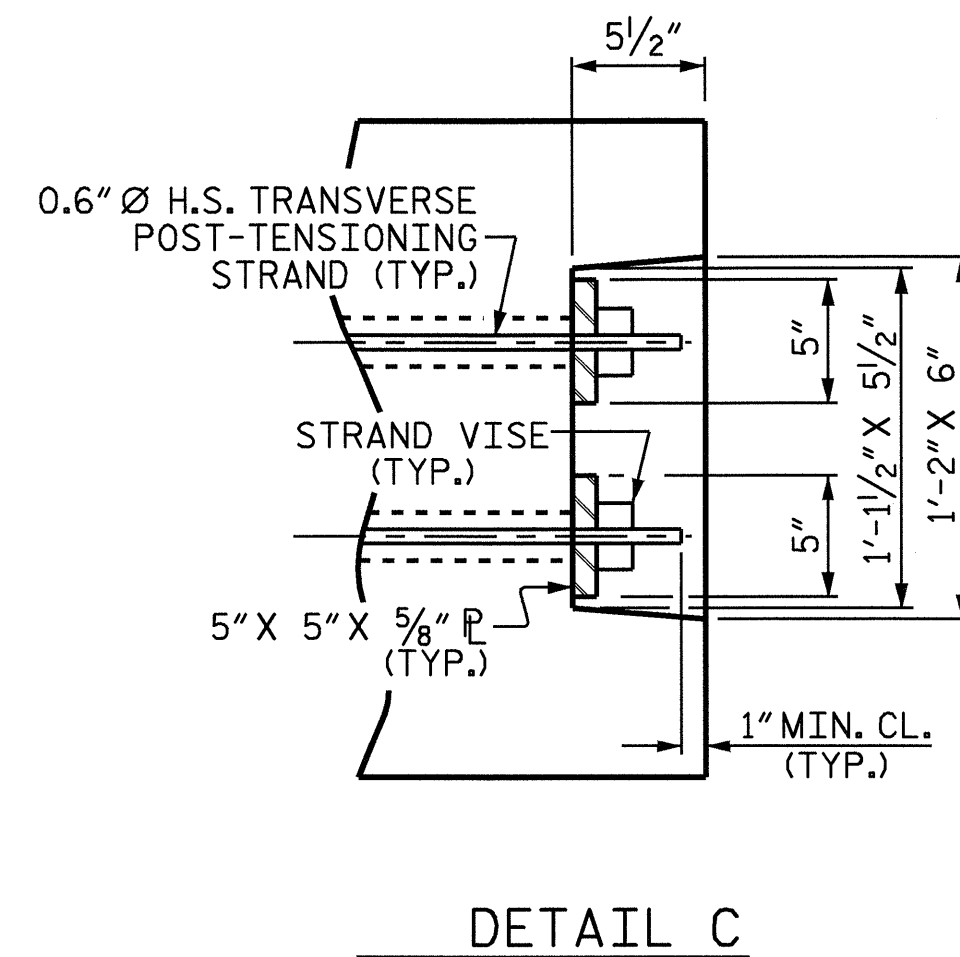
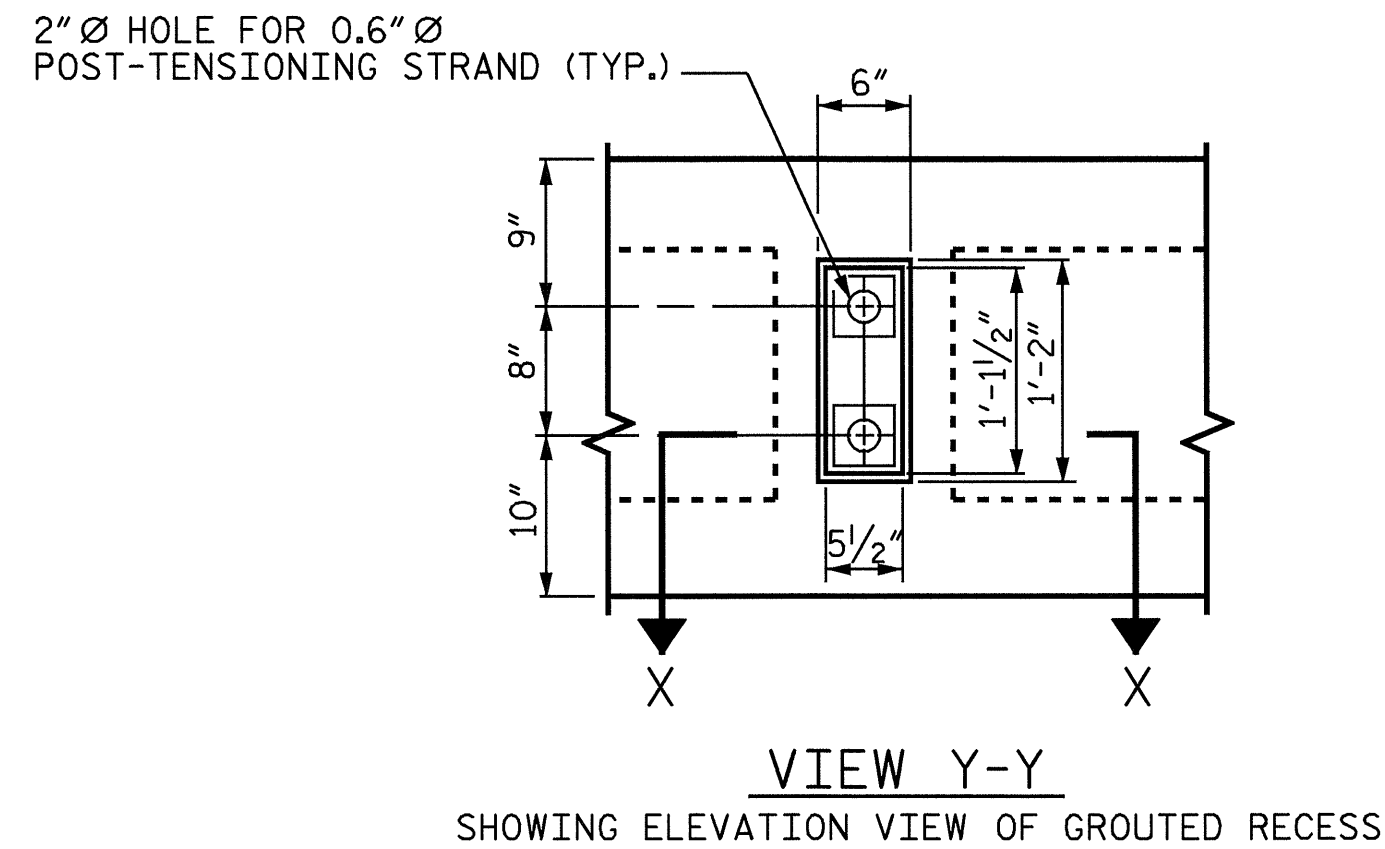
DOUBLE DIAPHRAGM DETAILS

#4 "S" BARS NOT SHOWN. #4 "S" BARS MAY BE SHIFTED SLIGHTLY TO CLEAR 2" Ø HOLE.



VOID DRAIN DETAILS

(DIMENSIONS SHOWN ARE TYPICAL FOR EACH VOID)



**GROUDED RECESS DETAIL AT
END OF POST-TENSIONED STRANDS
OF EXTERIOR BOX BEAM**

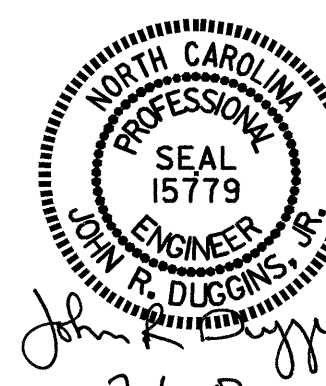
| DEAD LOAD DEFLECTION AND CAMBER | |
|--|----------------------|
| | 3'-0" x 2'-3" |
| | 0.6" Ø L.R. STRAND |
| | SPAN A, B, C, D, & E |
| CAMBER (BEAM ALONE IN PLACE) | ↑ 2" |
| DEFLECTION DUE TO CONCRETE WEARING SURFACE | ↓ 3/8" |
| FINAL CAMBER | ↑ 1 5/8" |

PROJECT NO. B-2950
CURRITUCK COUNTY
 STATION: 30+00.00 -L-

SHEET 8 OF 9

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

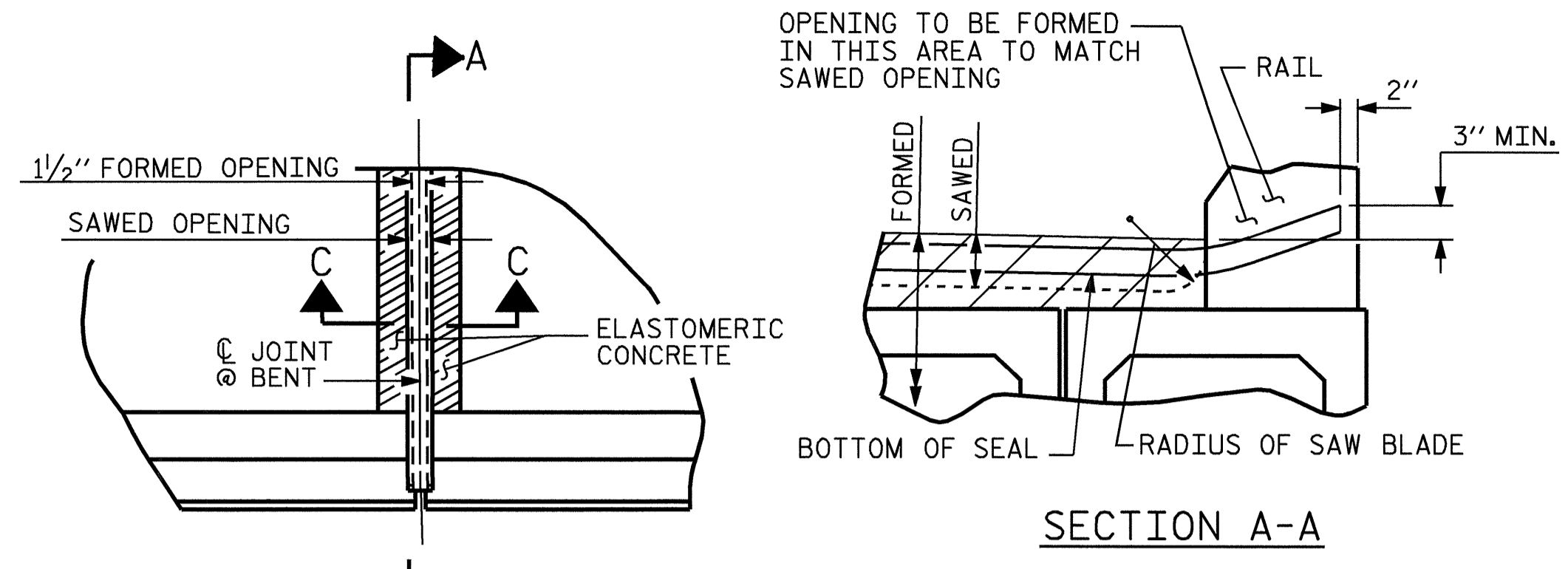
3'-0" X 2'-3"
 PRESTRESSED CONCRETE
 BOX BEAM UNIT



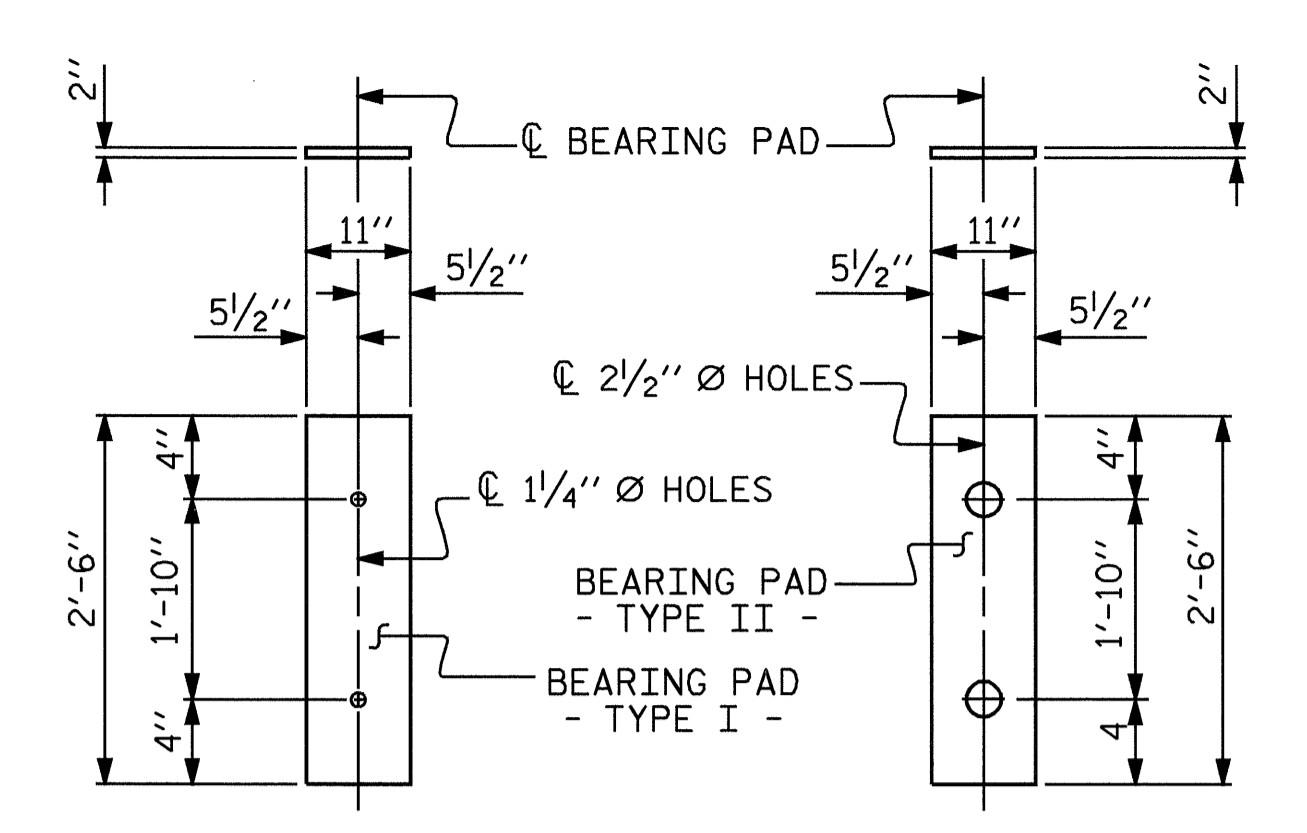
ASSEMBLED BY : M. POOLE DATE : 11/06
 CHECKED BY : D. HODGE DATE : 04/07
 DRAWN BY : TLA 5/05
 CHECKED BY : GM 6/05

ADDED 7/1/05
 REV. 5/1/06 TLA/GM

| REVISIONS | | | | | | SHEET NO. |
|-----------|-----|-------|-----|-----|-------|--------------|
| NO. | BY: | DATE: | NO. | BY: | DATE: | TOTAL SHEETS |
| 1 | | | 3 | | | S-12 |
| 2 | | | 4 | | | 26 |

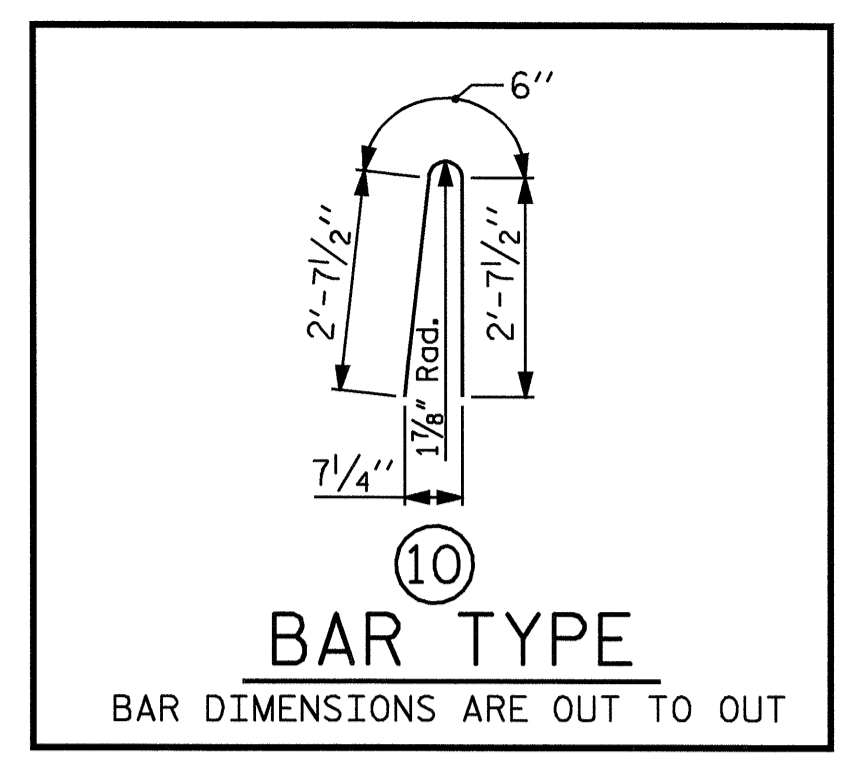


SECTION A-A

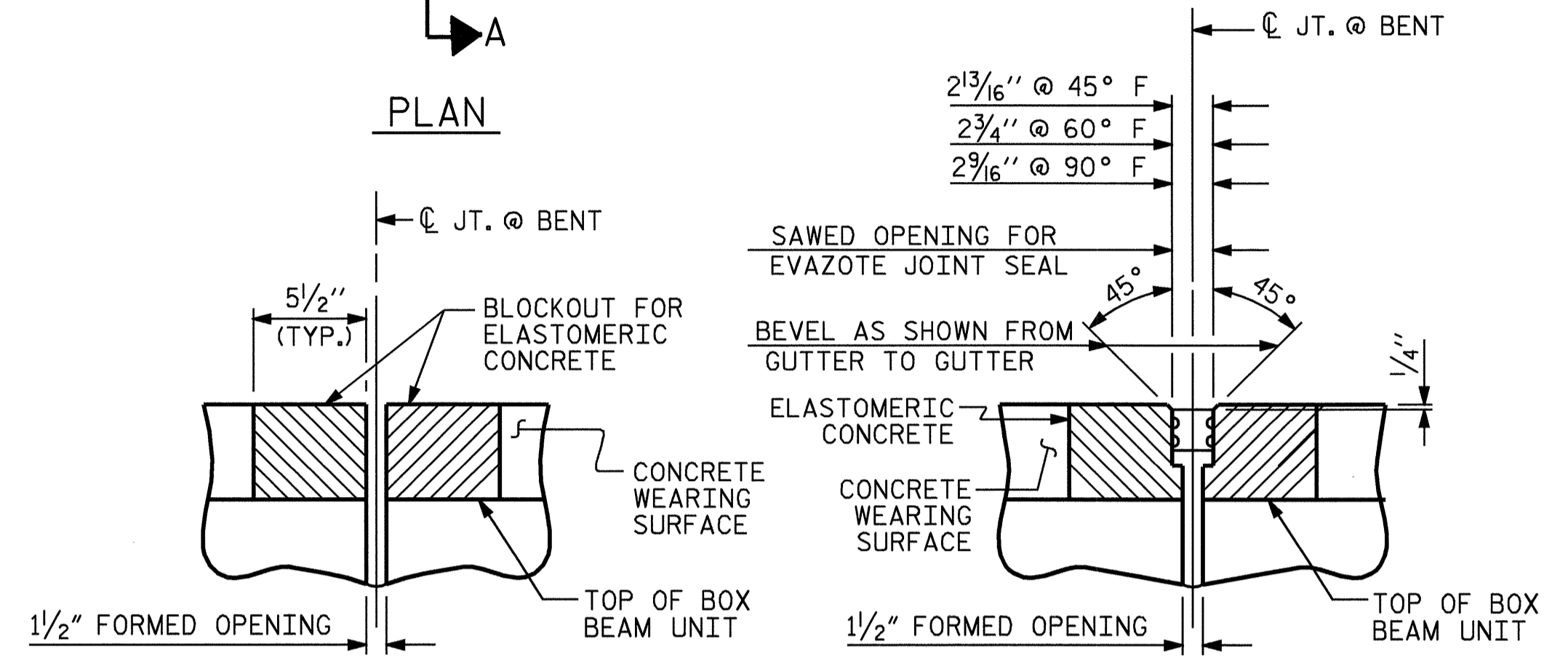


FIXED (TYPE I - 60 REQ'D) EXPANSION (TYPE II - 60 REQ'D)
ELASTOMERIC BEARING DETAILS
60 DUROMETER

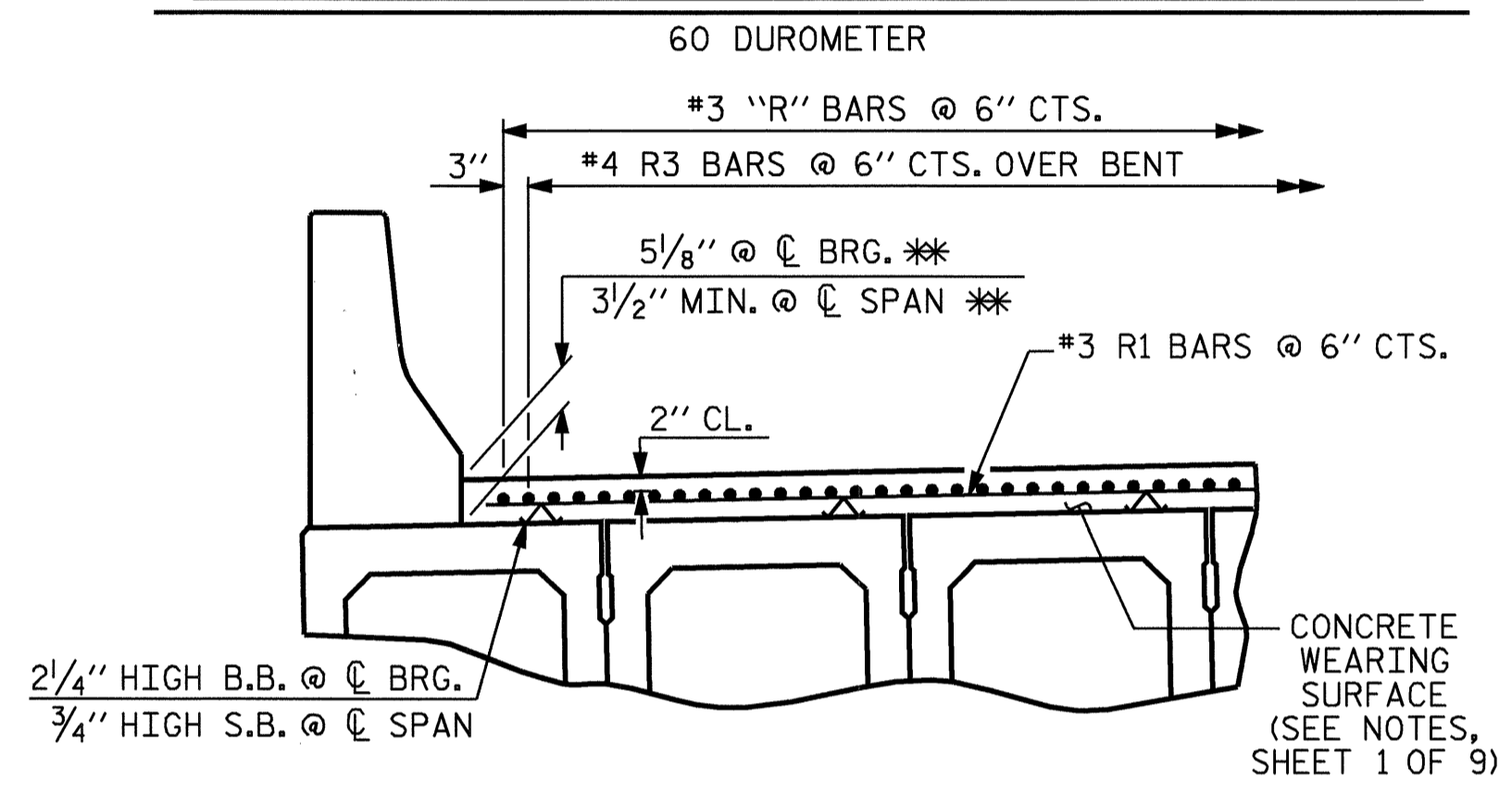
| BOX BEAM UNITS REQUIRED | | | |
|-------------------------|--------|-------------|--------------|
| | NUMBER | LENGTH | TOTAL LENGTH |
| SPAN A | | | |
| EXTERIOR B.B. | 2 | 59'-10 1/2" | 119'-9" |
| INTERIOR B.B. | 10 | 59'-10 1/2" | 598'-9" |
| SPAN B | | | |
| EXTERIOR B.B. | 2 | 59'-10 1/2" | 119'-9" |
| INTERIOR B.B. | 10 | 59'-10 1/2" | 598'-9" |
| SPAN C | | | |
| EXTERIOR B.B. | 2 | 59'-10 1/2" | 119'-9" |
| INTERIOR B.B. | 10 | 59'-10 1/2" | 598'-9" |
| SPAN D | | | |
| EXTERIOR B.B. | 2 | 59'-10 1/2" | 119'-9" |
| INTERIOR B.B. | 10 | 59'-10 1/2" | 598'-9" |
| SPAN E | | | |
| EXTERIOR B.B. | 2 | 59'-10 1/2" | 119'-9" |
| INTERIOR B.B. | 10 | 59'-10 1/2" | 598'-9" |
| TOTAL | | | |
| | | | 3592'-6" |



| SPLICE LENGTH CHART | |
|---------------------|--------------|
| BAR SIZE | EPOXY COATED |
| #3 | 1'-3" |
| #4 | 1'-8" |



SECTION C-C EVAZOTE JOINT SEAL (PRE-SAWED ELASTOMERIC CONCRETE DIMENSIONS)
SECTION C-C EVAZOTE JOINT SEAL
JOINT SEAL DETAILS AT BENT No. 2 & No. 3
(SHOWING FULL DEPTH BLOCKOUT)

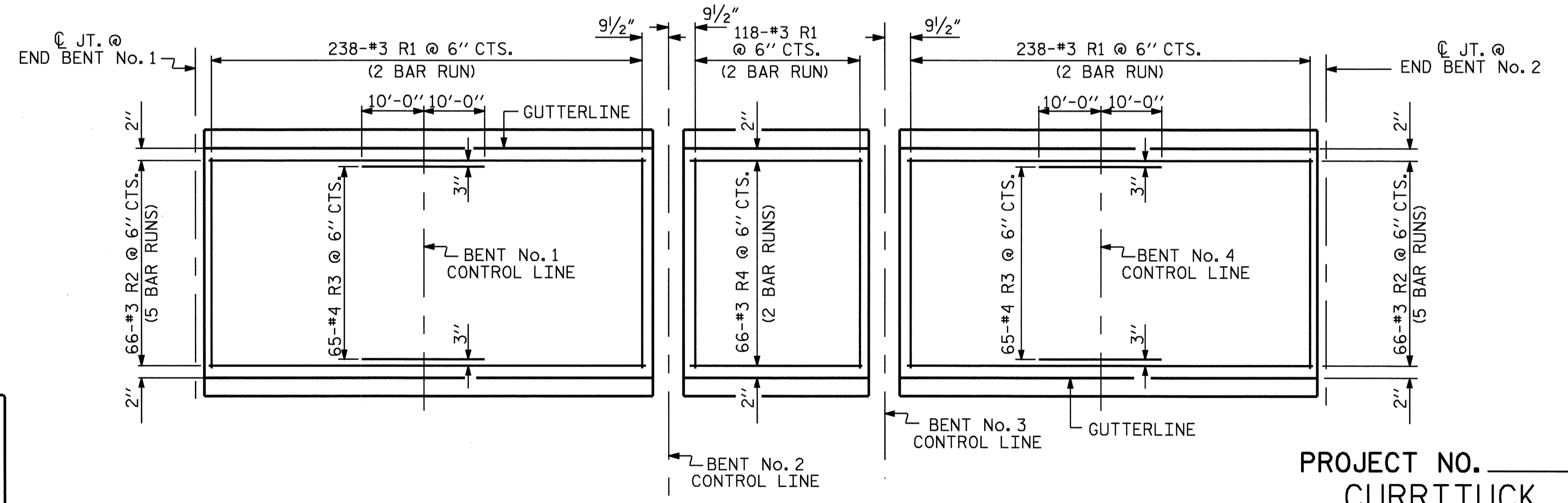


REINFORCING FOR CONCRETE WEARING SURFACE
** BASED ON PREDICTED FINAL CAMBER AND THEORETICAL GRADE LINE ELEVATIONS

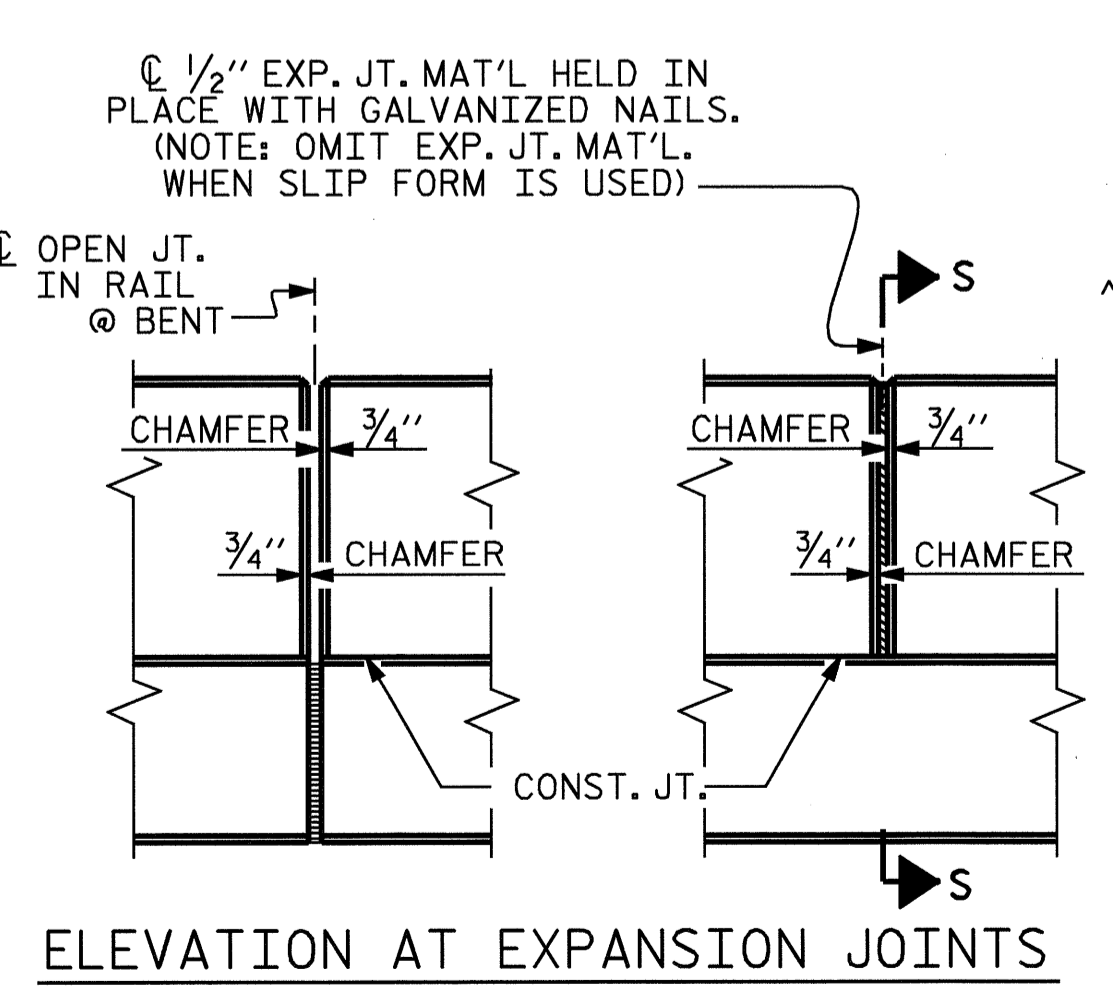
| BILL OF MATERIAL FOR CONCRETE BARRIER RAIL | | | | | | | | | | |
|--|---------------|--------|--------|--------|--------|-----------|---------|------|--------|--------|
| BAR | BARS PER SPAN | | | | | TOTAL NO. | SIZE | TYPE | LENGTH | WEIGHT |
| | SPAN A | SPAN B | SPAN C | SPAN D | SPAN E | | | | | |
| *B2 | 28 | 28 | 28 | 28 | 28 | 140 | #5 | STR | 29'-7" | 4320 |
| *S6 | 160 | 160 | 160 | 160 | 160 | 800 | #5 | 10 | 5'-9" | 4798 |
| * EPOXY COATED REINFORCING STEEL | | | | | | | LBS. | 9118 | | |
| CLASS AA CONCRETE | | | | | | | CU.YDS. | 74.3 | | |
| TOTAL LIN. FT. OF CONCRETE BARRIER RAIL | | | | | | | 599.8 | | | |

| ELASTOMERIC CONCRETE | |
|----------------------|----------------------------------|
| BENT NO. | ELASTOMERIC CONCRETE * (CU. FT.) |
| 2 | 12.9 |
| 3 | 12.9 |
| TOTAL | 25.8 |

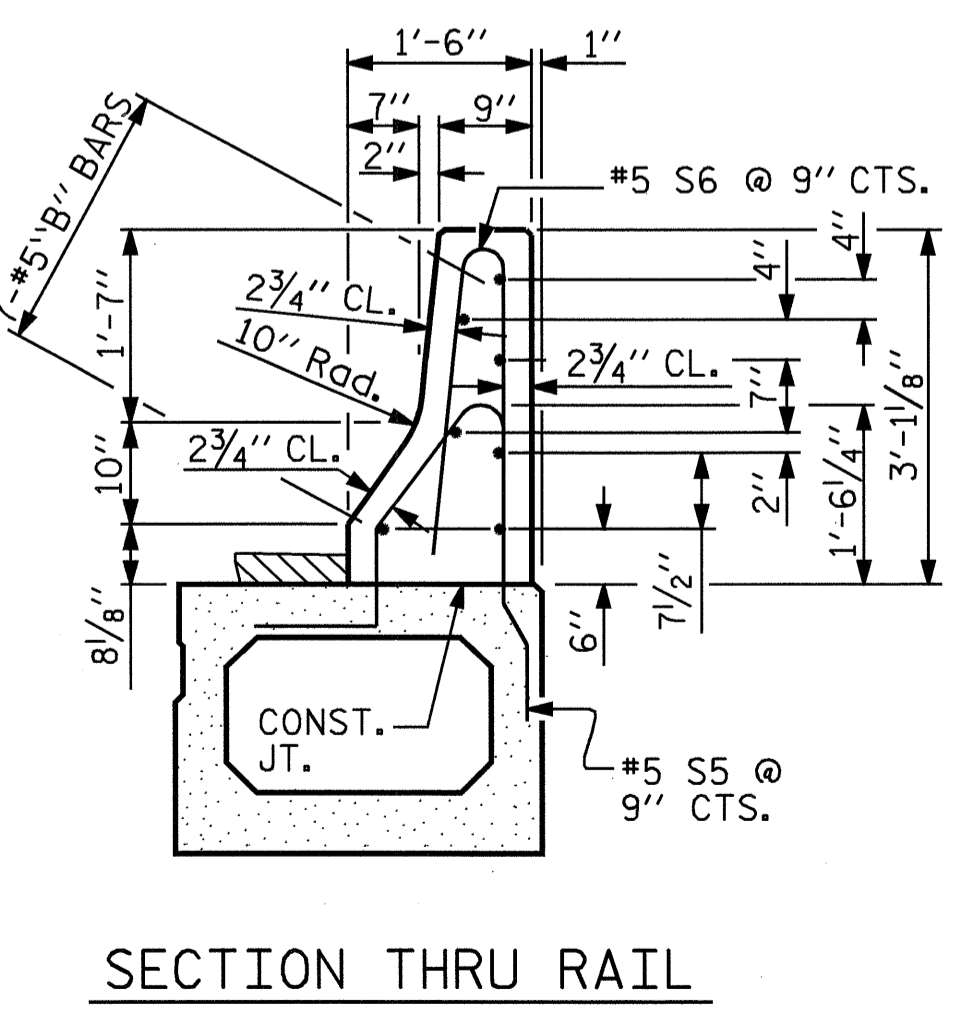
* BASED ON THE MINIMUM BLOCKOUT SHOWN.



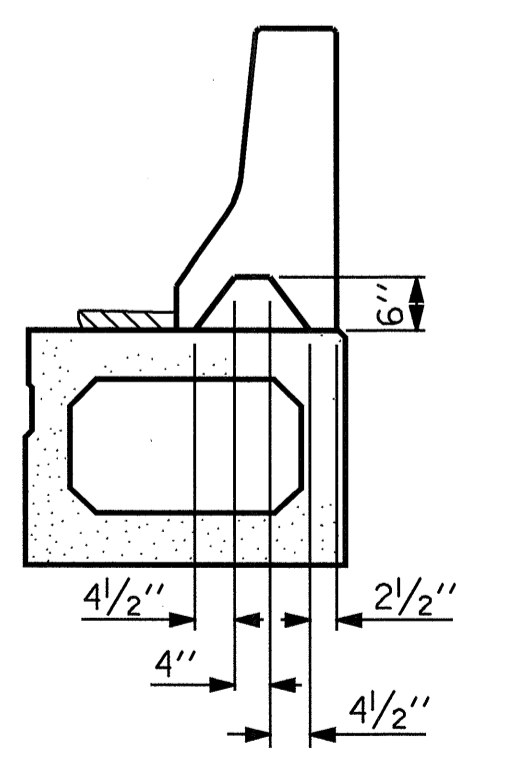
PLAN SHOWING CONCRETE WEARING SURFACE REINFORCING STEEL



ELEVATION AT EXPANSION JOINTS



SECTION THRU RAIL



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

| BILL OF MATERIAL FOR CONCRETE WEARING SURFACE | | | | | | |
|---|------|------|------|---------|---------|-------|
| BAR | NO. | SIZE | TYPE | LENGTH | WEIGHT | |
| *R1 | 1188 | #3 | STR | 16'-11" | 7556 | |
| *R2 | 660 | #3 | STR | 24'-11" | 6183 | |
| *R3 | 130 | #4 | STR | 20'-0" | 1737 | |
| *R4 | 132 | #3 | STR | 30'-0" | 1489 | |
| * EPOXY COATED REINFORCING STEEL | | | | | LBS. | 16965 |
| CONCRETE WEARING SURFACE | | | | | SQ. FT. | 9727 |

| GROOVING BRIDGE FLOORS | |
|------------------------|---------------|
| APPROACH SLABS | 1417 SQ. FT. |
| BRIDGE DECK | 8782 SQ. FT. |
| TOTAL | 10199 SQ. FT. |

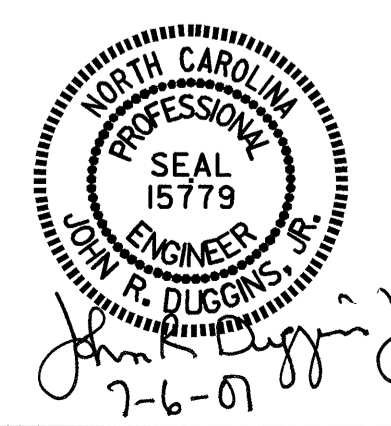
PROJECT NO. B-2950
CURRITUCK COUNTY
STATION: 30+00.00 -L-
SHEET 9 OF 9

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

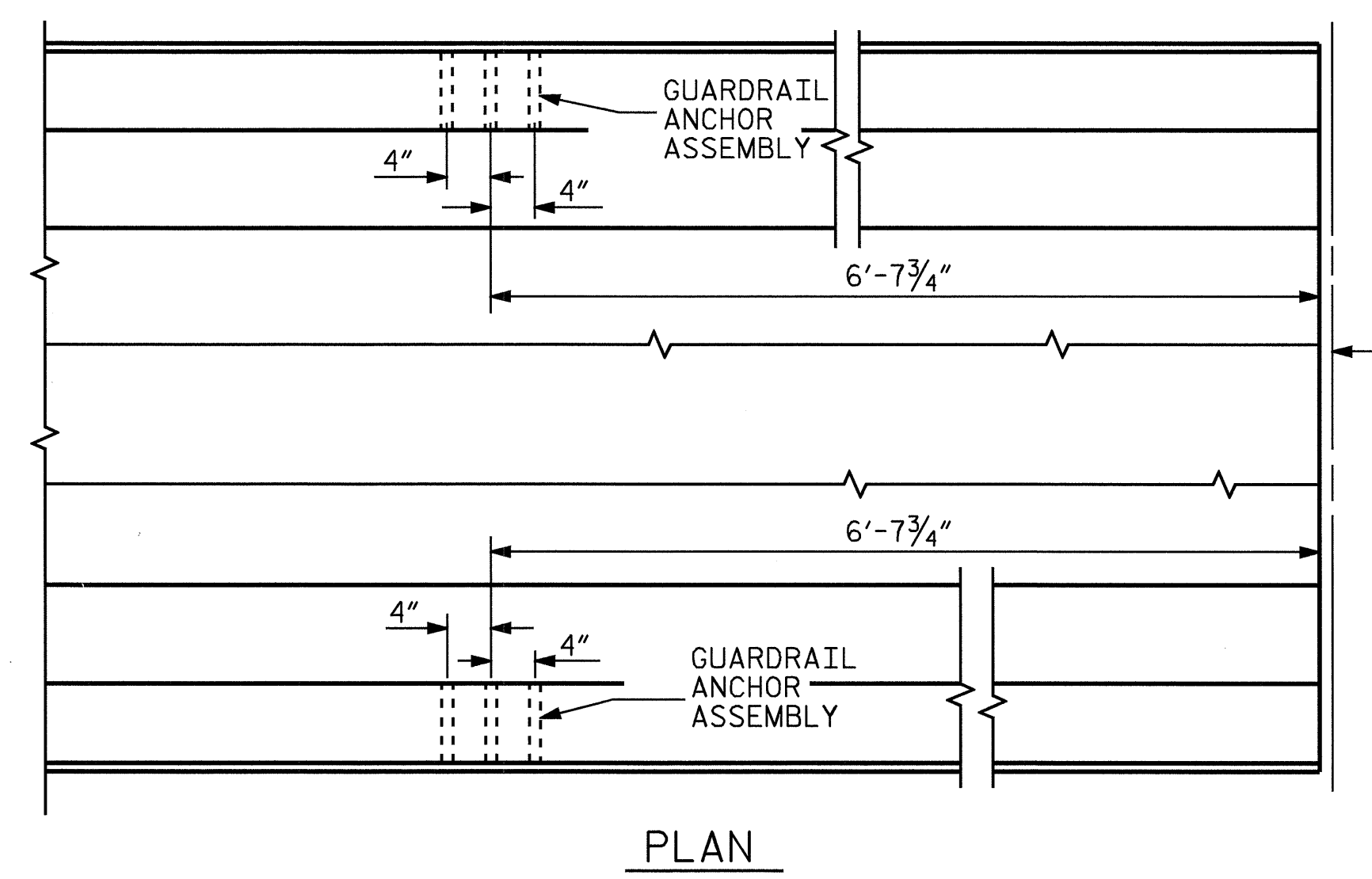
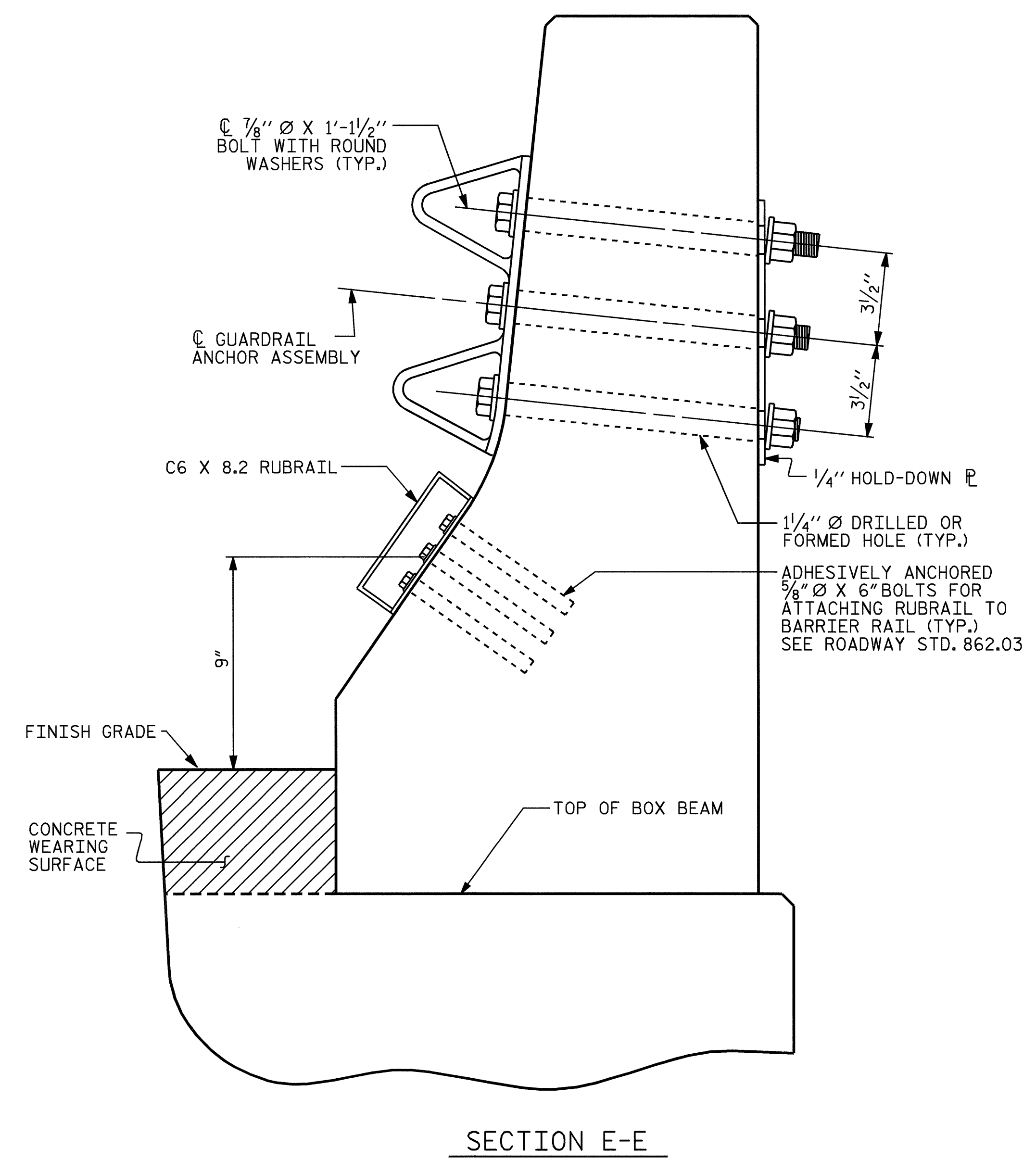
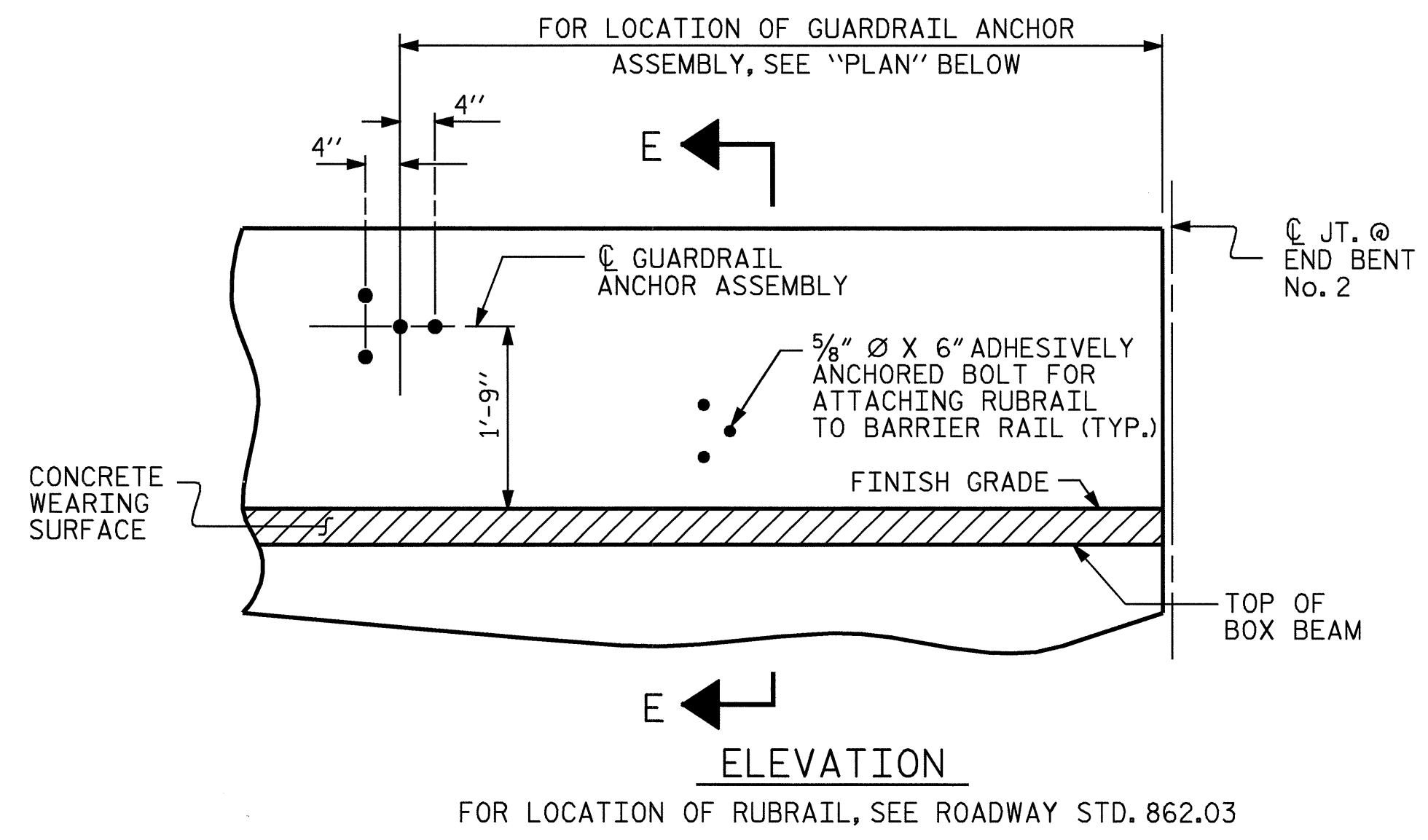
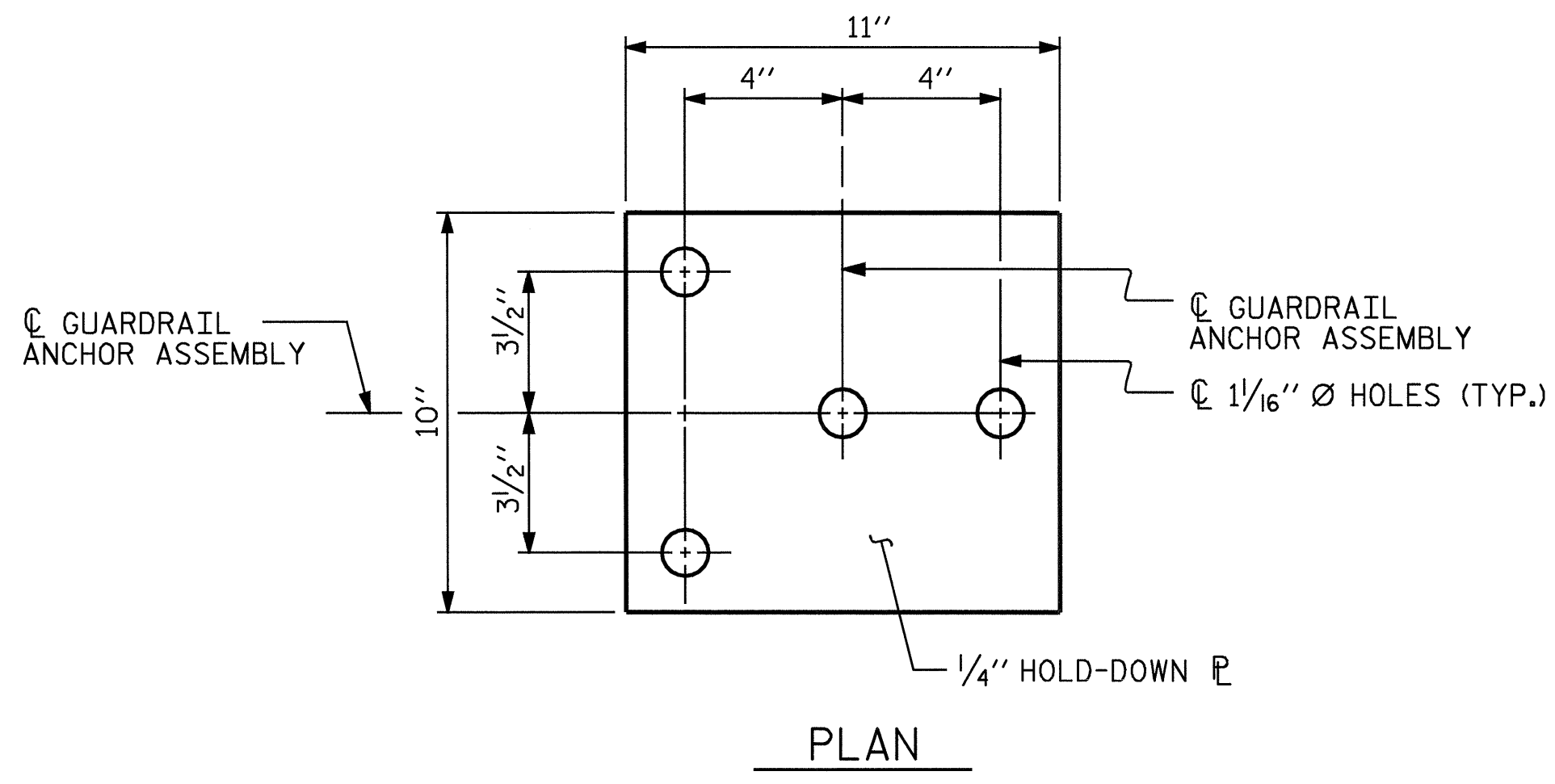
3'-0" X 2'-3"
PRESTRESSED CONCRETE
BOX BEAM UNIT DETAILS

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

SHEET NO. S-13
TOTAL SHEETS 26



ASSEMBLED BY: M. POOLE DATE: 11/06
CHECKED BY: D. HODGE DATE: 04/07
DRAWN BY: TLA 5/05
CHECKED BY: GM 6/05



LOCATION OF ANCHORS FOR GUARDRAIL

NOTES

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

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

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

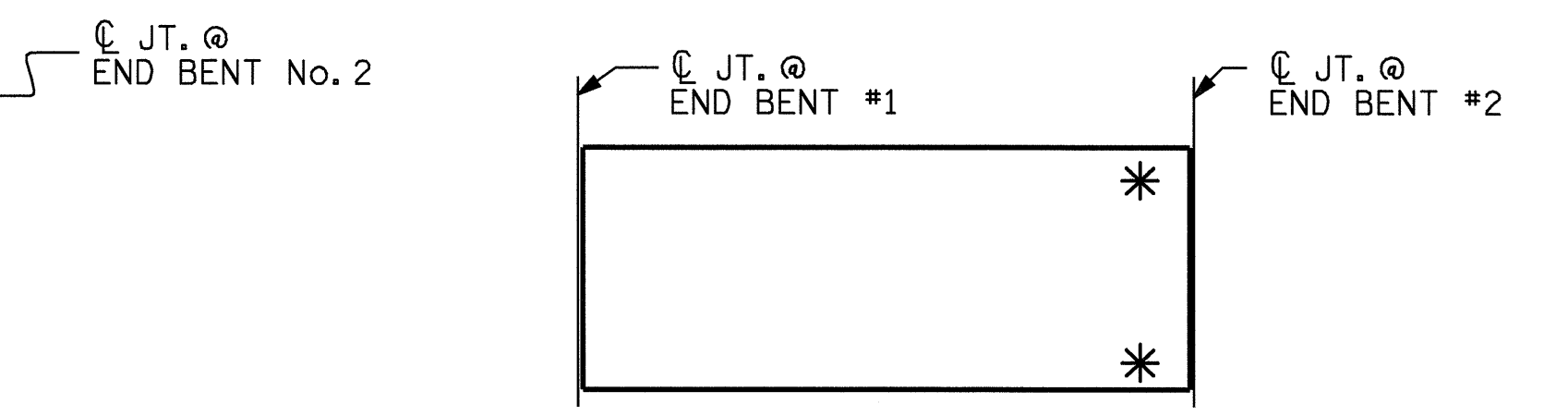
THE GUARDRAIL ANCHOR ASSEMBLY IS REQUIRED AT ALL POINTS WHERE APPROACH GUARDRAIL IS TO BE ATTACHED TO THE END OF BARRIER RAIL. FOR POINTS OF ATTACHMENT, SEE SKETCH.

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

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

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

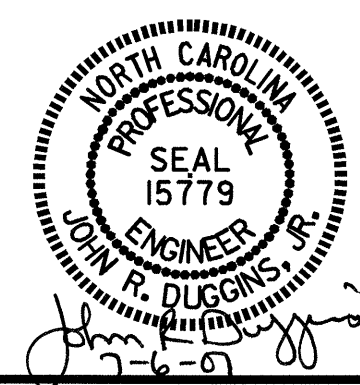
THE C6 X 8.2 RUBRAIL IS TO BE ADHESIVELY ANCHORED TO THE RAIL USING THREE 5/8" Ø X 6" BOLTS WITH WASHERS. SEE ROADWAY STANDARD 862.03 FOR DETAILS AND LOCATION OF THE RUBRAIL.



SKETCH SHOWING POINTS OF ATTACHMENTS
* DENOTES GUARDRAIL ANCHOR ASSEMBLY

PROJECT NO. B-2950
CURRITUCK COUNTY
STATION: 30+00.00 -L-

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH
STANDARD
GUARDRAIL ANCHORAGE
FOR BARRIER RAIL



| | |
|---------------------------|--------------|
| ASSEMBLED BY : D. HODGE | DATE : 4/07 |
| CHECKED BY : J.R. DUGGINS | DATE : 4/07 |
| DRAWN BY : TLA 5/06 | ADDED 5/1/06 |
| CHECKED BY : GM 5/06 | |

05-JUL-2007 08:29
RA Structures\B2950\dhodge\B2950_sd.GR.dgn
dhodge

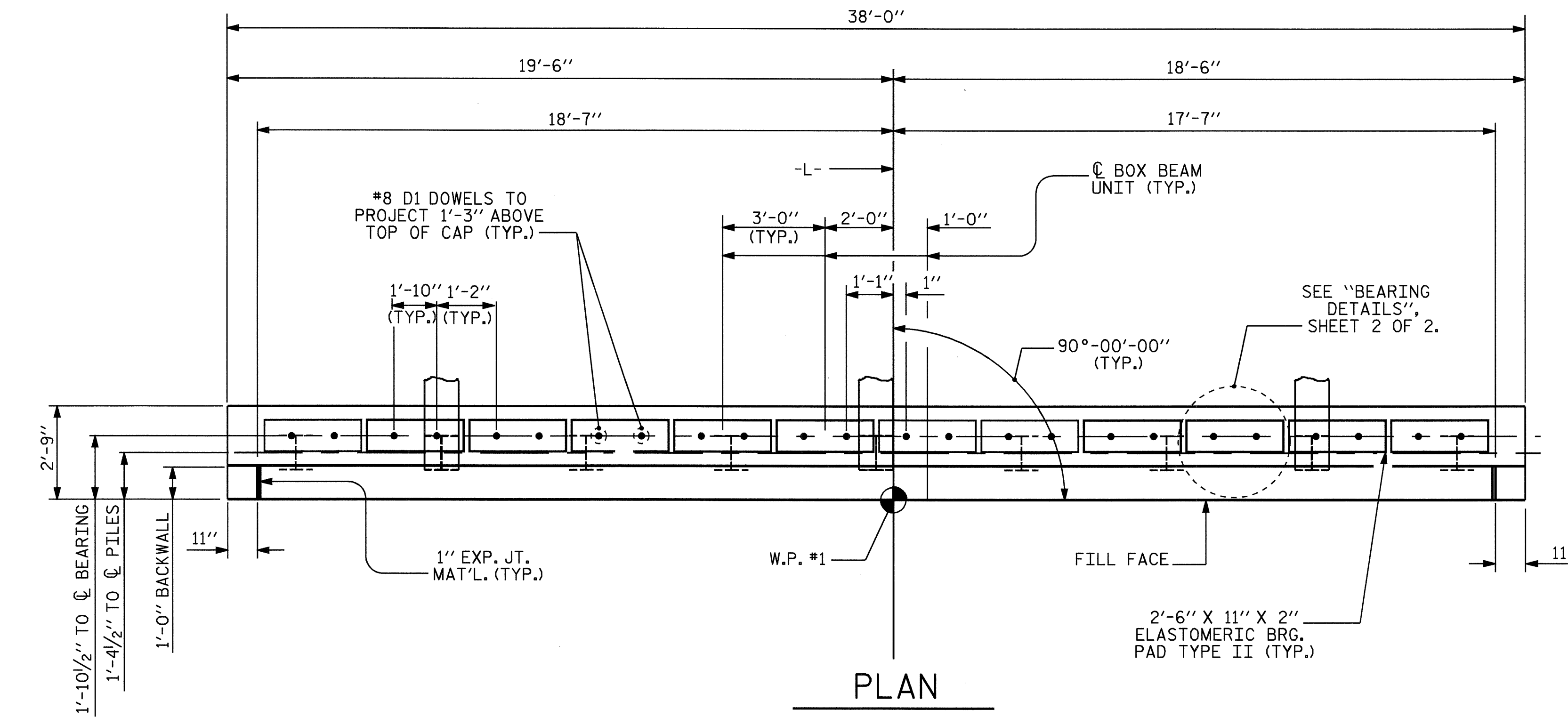
| REVISIONS | | | | | | SHEET NO. | |
|-----------|-----|-------|-----|-----|-------|-----------------|--|
| NO. | BY: | DATE: | NO. | BY: | DATE: | S-14 | |
| 1 | | | 3 | | | TOTAL SHEETS 26 | |
| 2 | | | 4 | | | | |

NOTES

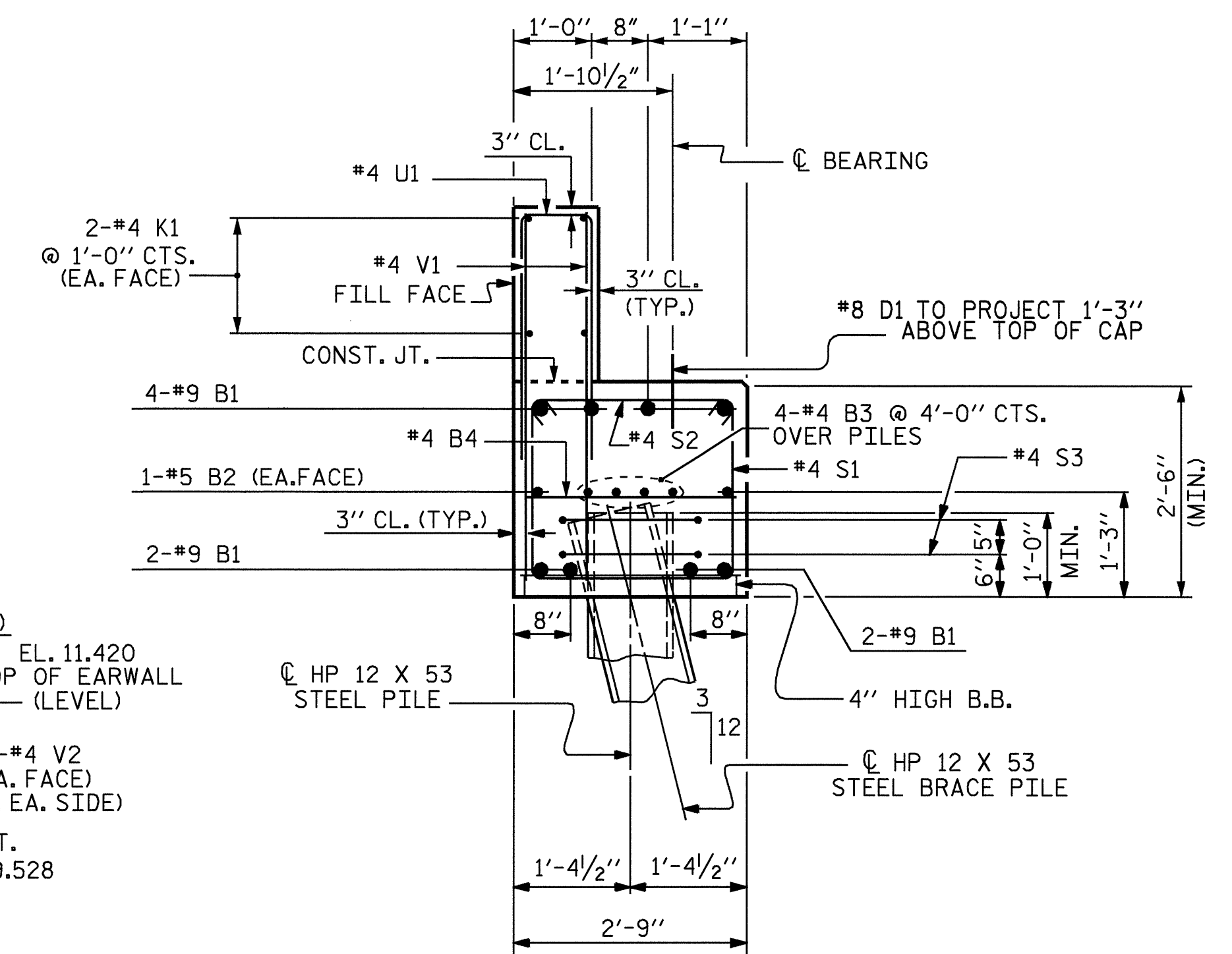
STIRRUPS IN CAP MAY BE SHIFTED AS NECESSARY TO CLEAR DOWELS.

BACKWALL SHALL BE PLACED BEFORE APPLYING THE EPOXY PROTECTIVE COATING.

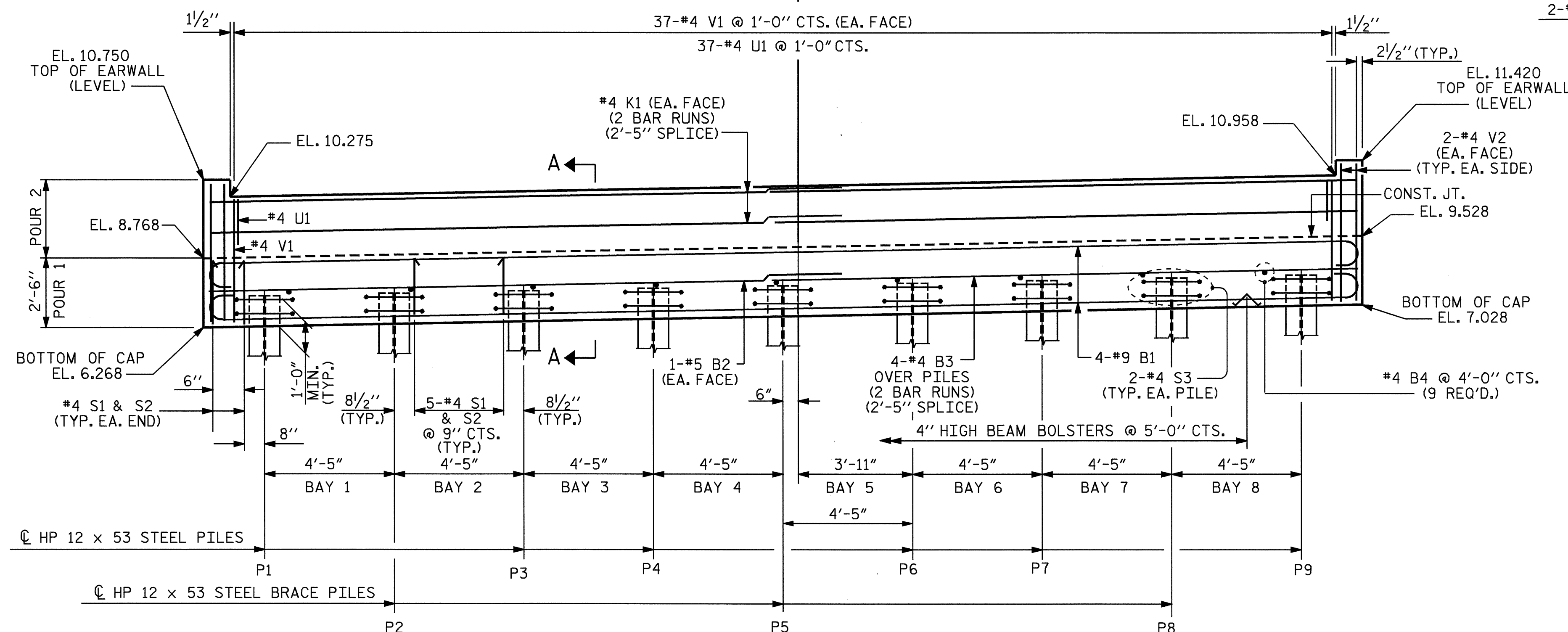
THE TOP SURFACE AREA OF THE END BENT CAP SHALL BE CURED IN ACCORDANCE WITH THE STANDARD SPECIFICATIONS EXCEPT THE MEMBRANE CURING COMPOUND METHOD SHALL NOT BE USED.



PLAN



SECTION A-A



ELEVATION

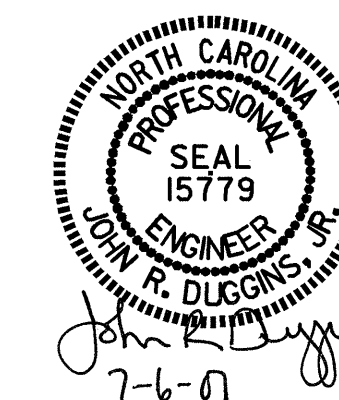
| TOP OF PILE ELEVATIONS | | | | | | | | |
|------------------------|-------|-------|-------|-------|-------|-------|-------|-------|
| P1 | P2 | P3 | P4 | P5 | P6 | P7 | P8 | P9 |
| 7.305 | 7.393 | 7.418 | 7.570 | 7.658 | 7.746 | 7.835 | 7.923 | 8.011 |

PROJECT NO. B-2950
CURRITUCK COUNTY
 STATION: 30+00.00 -L-

SHEET 1 OF 2

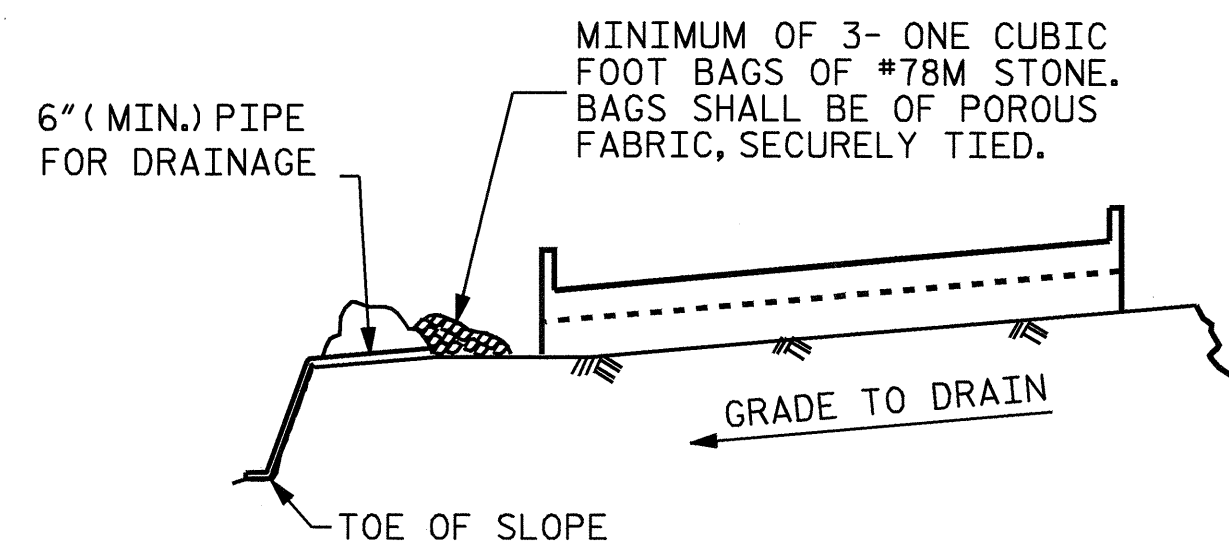
STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

SUBSTRUCTURE
 END BENT No. 1



| REVISIONS | | | | | | SHEET NO. |
|-----------|-----|-------|-----|-----|-------|-----------------|
| NO. | BY: | DATE: | NO. | BY: | DATE: | S-15 |
| 1 | | | 3 | | | TOTAL SHEETS 26 |
| 2 | | | 4 | | | |

DRAWN BY: M. POOLE DATE: 11/06
 CHECKED BY: D. HODGE DATE: 05/07



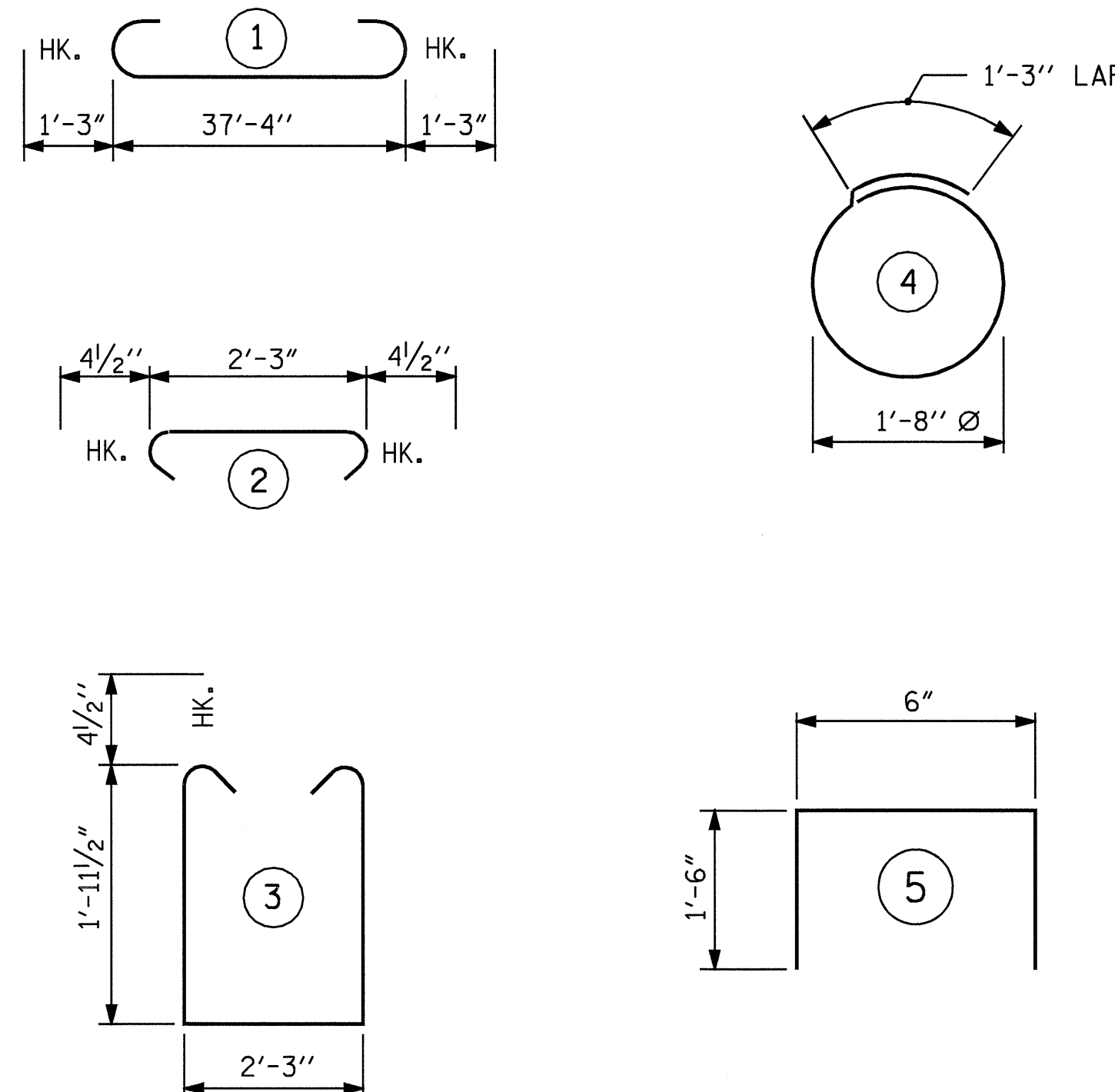
BAGGED STONE AND PIPE SHALL BE PLACED IMMEDIATELY AFTER COMPLETION OF END BENT EXCAVATION. PIPE MAY BE EITHER CONCRETE, CORRUGATED STEEL, CORRUGATED ALUMINUM ALLOY, OR CORRUGATED PLASTIC. PERFORATED PIPE WILL NOT BE ALLOWED.

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

BAR TYPES



ALL BAR DIMENSIONS ARE OUT TO OUT.

BILL OF MATERIAL

END BENT NO. 1

| BAR | NO. | SIZE | TYPE | LENGTH | WEIGHT |
|------|-----|------|------|---------|--------|
| * B1 | 8 | 9 | 1 | 39'-10" | 1083 |
| * B2 | 2 | 5 | STR | 37'-6" | 78 |
| * B3 | 8 | 4 | STR | 20'-0" | 107 |
| * B4 | 9 | 4 | STR | 2'-3" | 14 |
| * D1 | 24 | 8 | STR | 2'-3" | 144 |
| * K1 | 8 | 4 | STR | 20'-0" | 107 |
| * S1 | 44 | 4 | 3 | 6'-11" | 203 |
| * S2 | 44 | 4 | 2 | 3'-0" | 88 |
| * S3 | 18 | 4 | 4 | 6'-6" | 78 |
| * U1 | 37 | 4 | 5 | 3'-6" | 87 |
| * V1 | 74 | 4 | STR | 3'-4" | 165 |
| * V2 | 8 | 4 | STR | 3'-10" | 20 |

* EPOXY COATED REINFORCING STEEL 2174 LBS

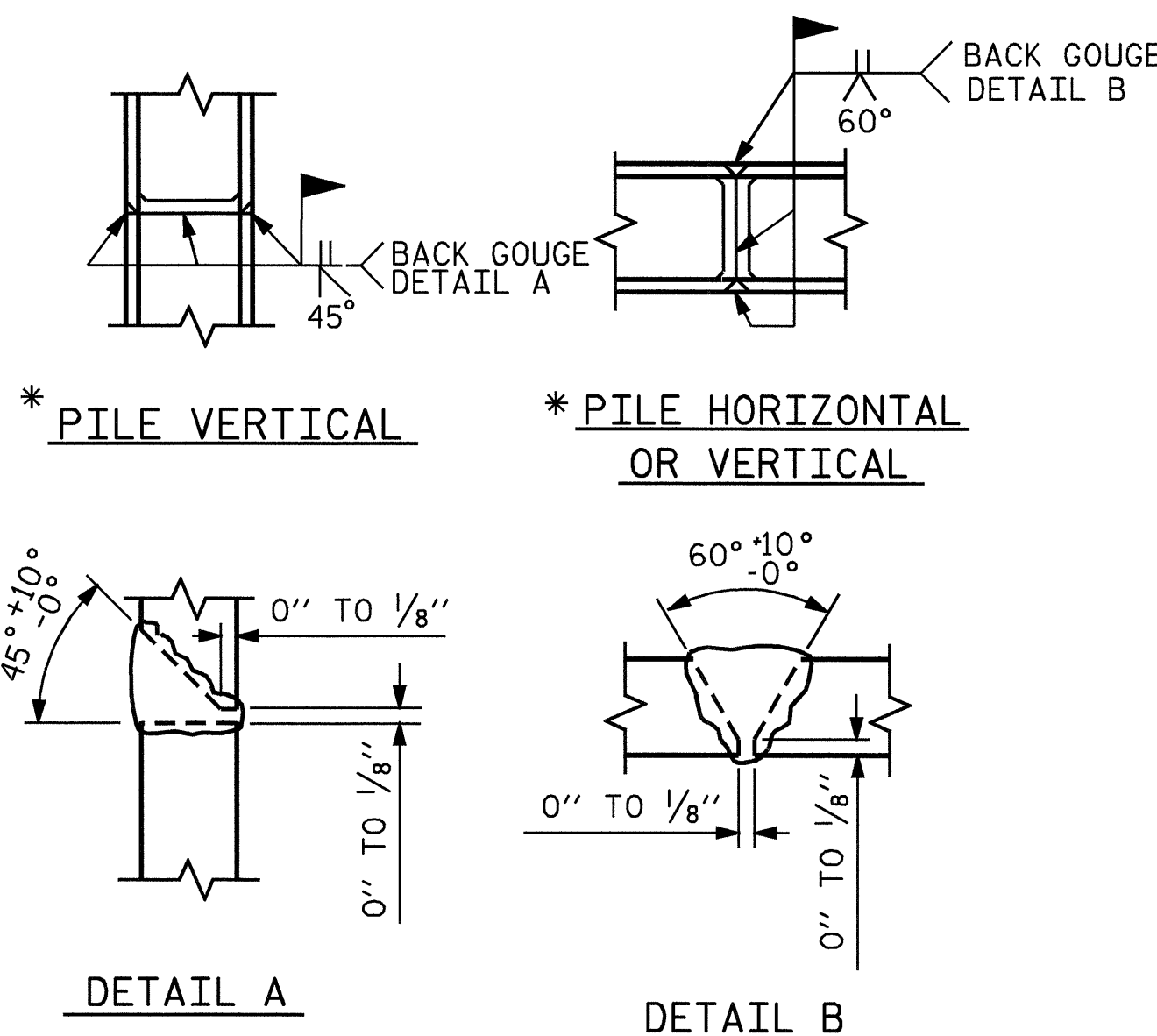
CLASS AA CONCRETE BREAKDOWN :

POUR #1 CAP 9.7 C.Y.

POUR #2 BACKWALL 2.3 C.Y.

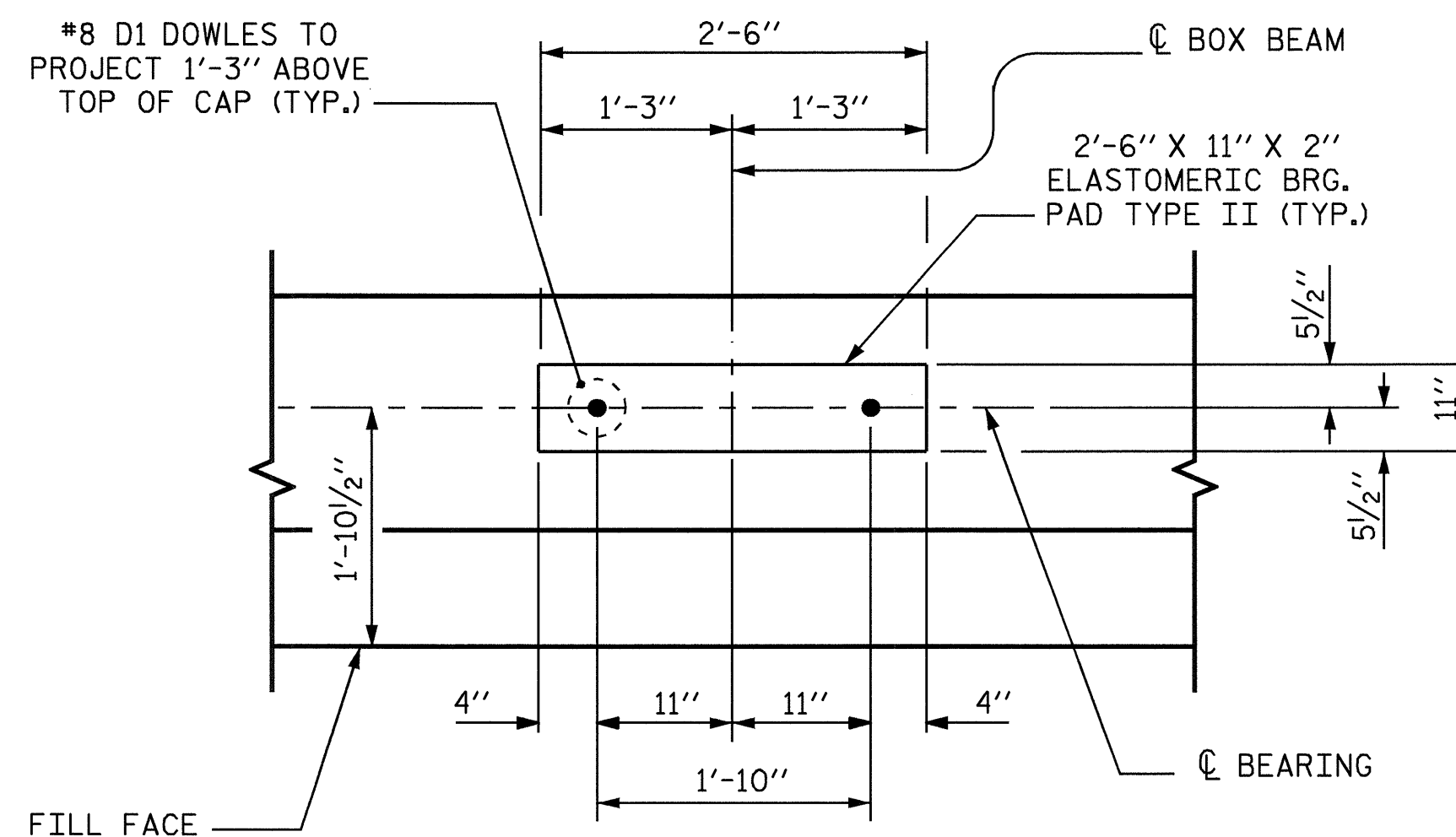
TOTAL 12.0 C.Y.

HP 12 X 53 STEEL PILES NO. 9 585 LIN FT.



* POSITION OF PILE DURING WELDING.

PILE SPLICE DETAILS

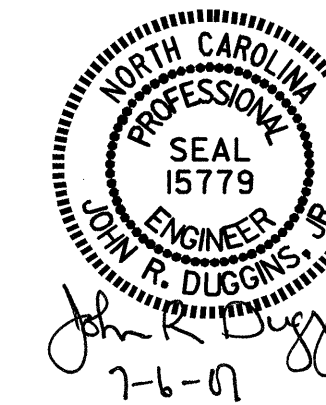


BEARING DETAIL

PROJECT NO. B-2950
CURRITUCK COUNTY
 STATION: 30+00.00 -L-
 SHEET 2 OF 2

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

SUBSTRUCTURE
END BENT No. 1



DRAWN BY: M. POOLE DATE: 11-06
 CHECKED BY: D. HODGE DATE: 05/07

| REVISIONS | | | | | | SHEET NO. |
|-----------|-----|-------|-----|-----|-------|--------------|
| NO. | BY: | DATE: | NO. | BY: | DATE: | S-16 |
| 1 | | | 3 | | | TOTAL SHEETS |
| 2 | | | 4 | | | 26 |

NOTES

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

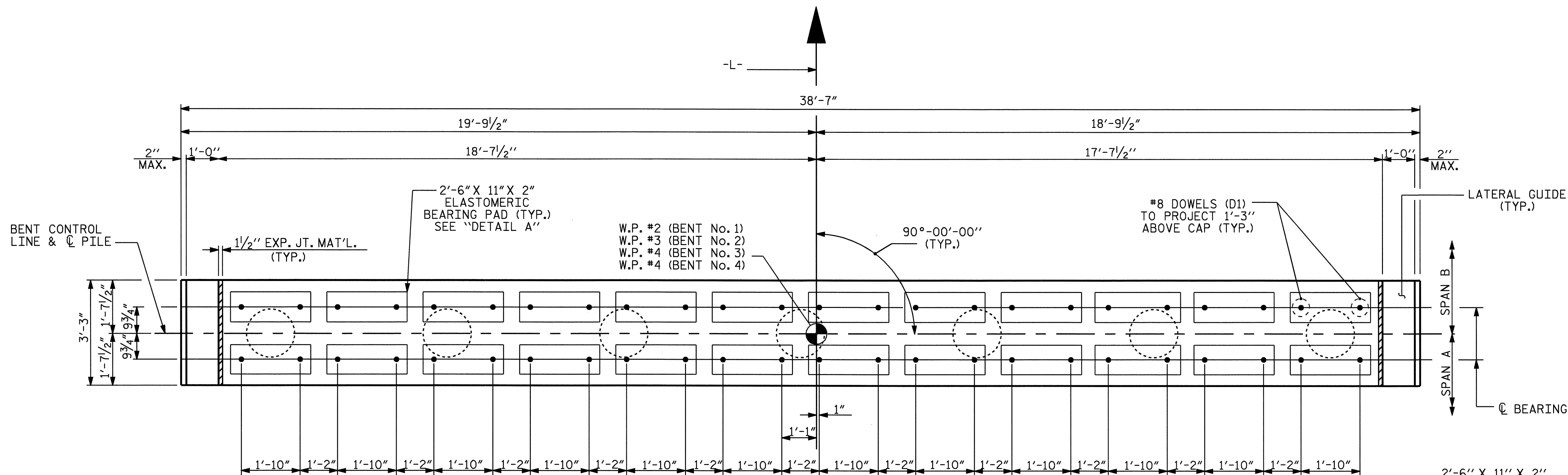
THE LATERAL GUIDES AT EACH END OF THE CAP ARE NOT TO BE POURED UNTIL AFTER THE BOXED BEAM UNITS ARE IN PLACE.

"U" BARS IN END CAP MAY BE SHIFTED SLIGHTLY AS NECESSARY TO CLEAR "B" BARS.

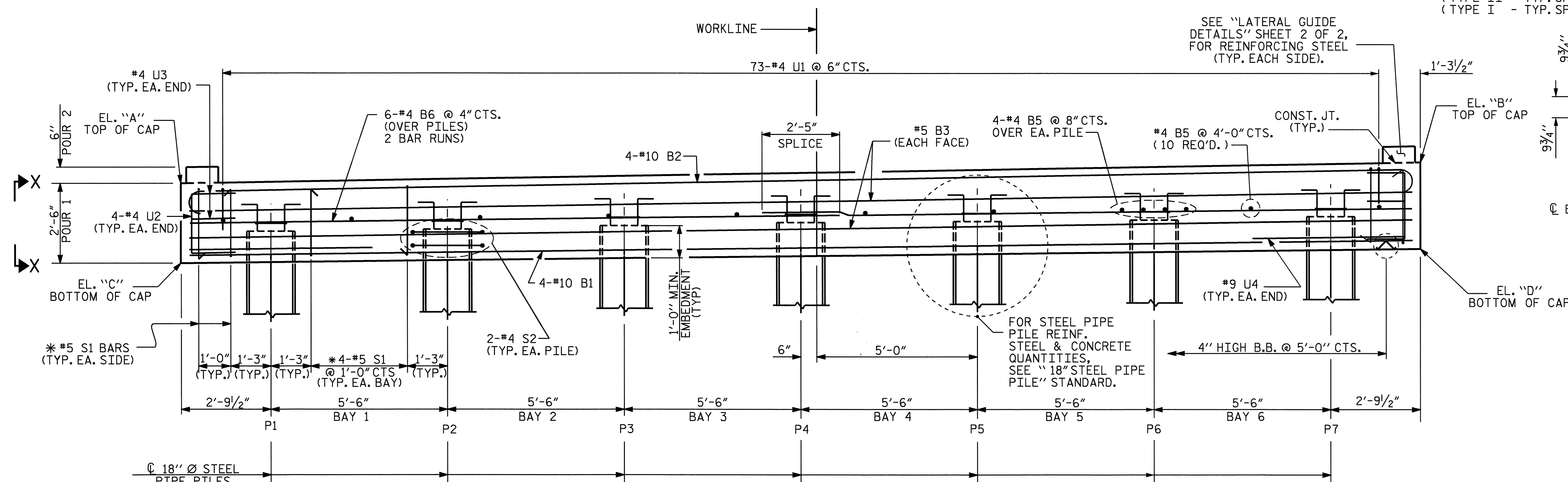
3" MINIMUM CONCRETE COVER FROM THE END OF CAP IS REQUIRED FOR ALL "U" BARS.

AFTER DRIVING THE PILES, APPLY 1 COAT EACH OF 1080-12 BROWN AND 1080-12 GRAY PAINT TO THE EMBEDDED SECTION OF THE METALLIZED PILE PRIOR TO CONCRETE EMBEDMENT IN ACCORDANCE WITH SECTION 442 OF THE STANDARD SPECIFICATIONS.

FOR PIPE PILE SPLICE DETAILS, SEE 18" STEEL PIPE PILE SHEET.



PLAN

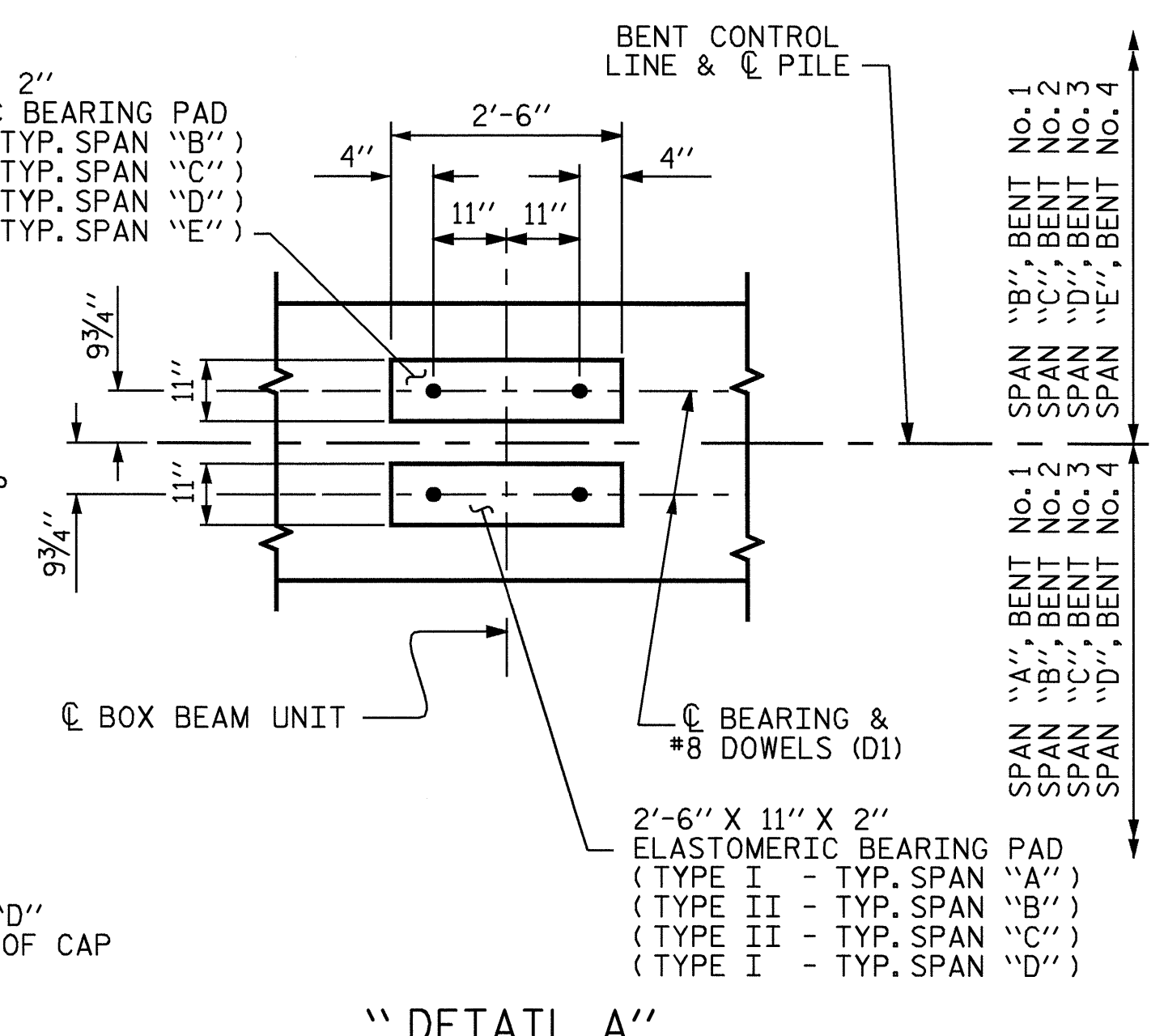


ELEVATION

* INVERT ALTERNATE STIRRUPS

| ELEVATIONS | | | | |
|------------|------------|------------|------------|------------|
| | BENT No. 1 | BENT No. 2 | BENT No. 3 | BENT No. 4 |
| EL. "A" | EL. 9.863 | EL. 10.515 | EL. 10.698 | EL. 10.413 |
| EL. "B" | EL. 10.635 | EL. 11.286 | EL. 11.469 | EL. 11.185 |
| EL. "C" | EL. 7.363 | EL. 8.015 | EL. 8.198 | EL. 7.913 |
| EL. "D" | EL. 8.135 | EL. 8.786 | EL. 8.969 | EL. 8.685 |
| ▲ PILE P1 | EL. 8.434 | EL. 9.086 | EL. 9.269 | EL. 8.984 |
| ▲ PILE P2 | EL. 8.544 | EL. 9.196 | EL. 9.379 | EL. 9.094 |
| ▲ PILE P3 | EL. 8.654 | EL. 9.306 | EL. 9.489 | EL. 9.204 |
| ▲ PILE P4 | EL. 8.764 | EL. 9.416 | EL. 9.599 | EL. 9.314 |
| ▲ PILE P5 | EL. 8.874 | EL. 9.526 | EL. 9.709 | EL. 9.424 |
| ▲ PILE P6 | EL. 8.984 | EL. 9.636 | EL. 9.819 | EL. 9.534 |
| ▲ PILE P7 | EL. 9.094 | EL. 9.746 | EL. 9.929 | EL. 9.644 |

▲ PILE ELEVATIONS FOR TOP OF PILE



"DETAIL A"

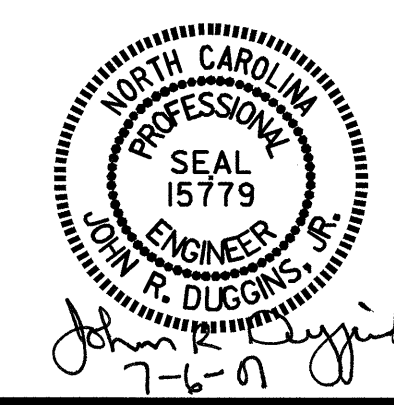
PROJECT NO. B-2950
CURRITUCK COUNTY
 STATION: 30+00.00 -L-

SHEET 1 OF 2

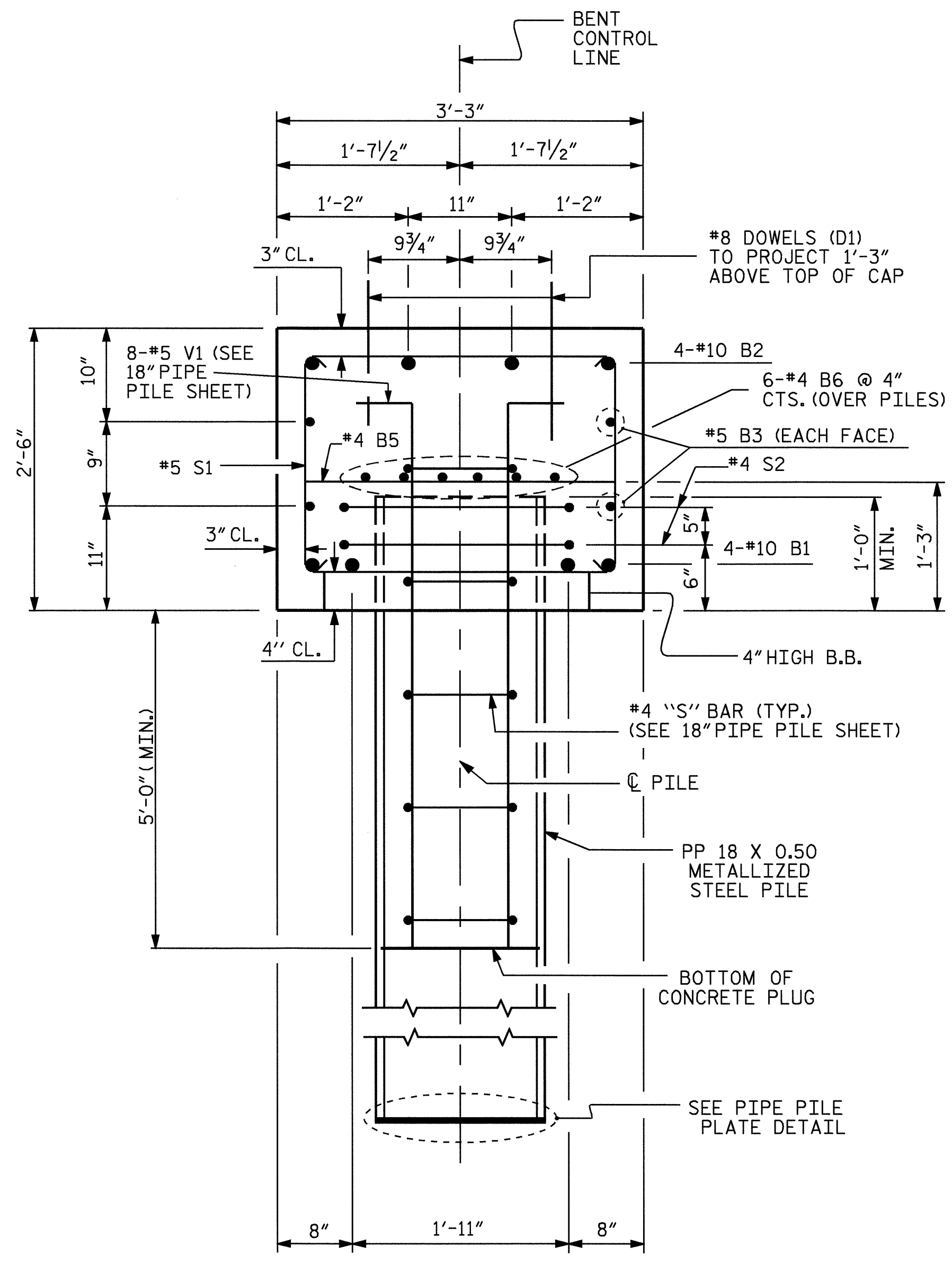
STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

SUBSTRUCTURE
 BENTS No. 1, 2, 3, & 4

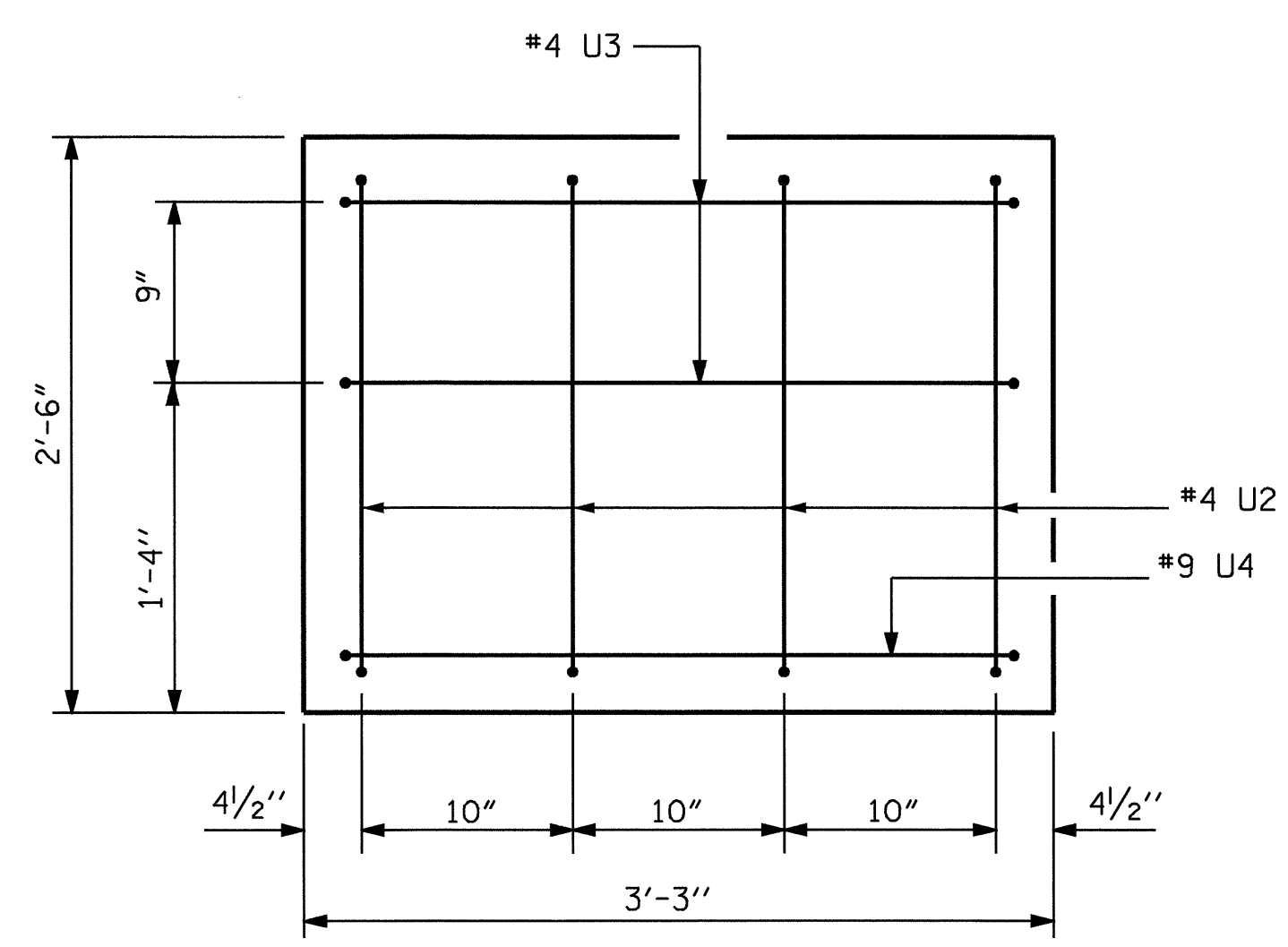
| REVISIONS | | | | | | SHEET NO. | |
|-----------|-----|-------|-----|-----|-------|-----------------|--|
| NO. | BY: | DATE: | NO. | BY: | DATE: | S-17 | |
| 1 | | | 3 | | | TOTAL SHEETS 26 | |
| 2 | | | 4 | | | | |



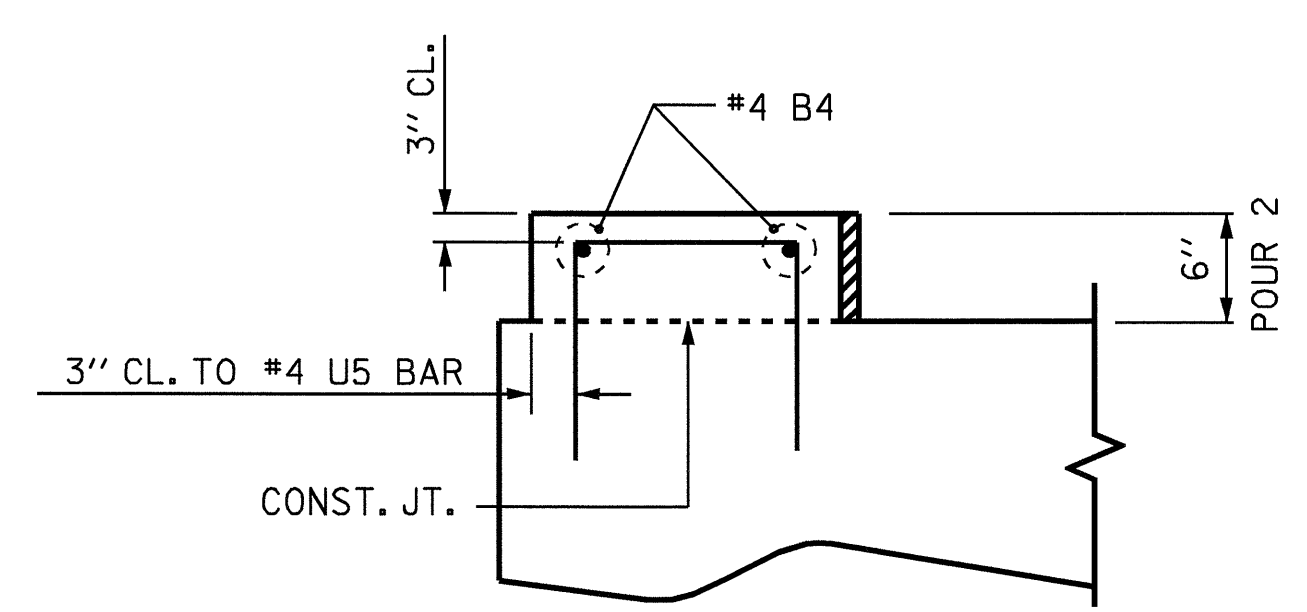
DRAWN BY: M. POOLE DATE: 04/07
 CHECKED BY: J. LAMBERT DATE: 04/07



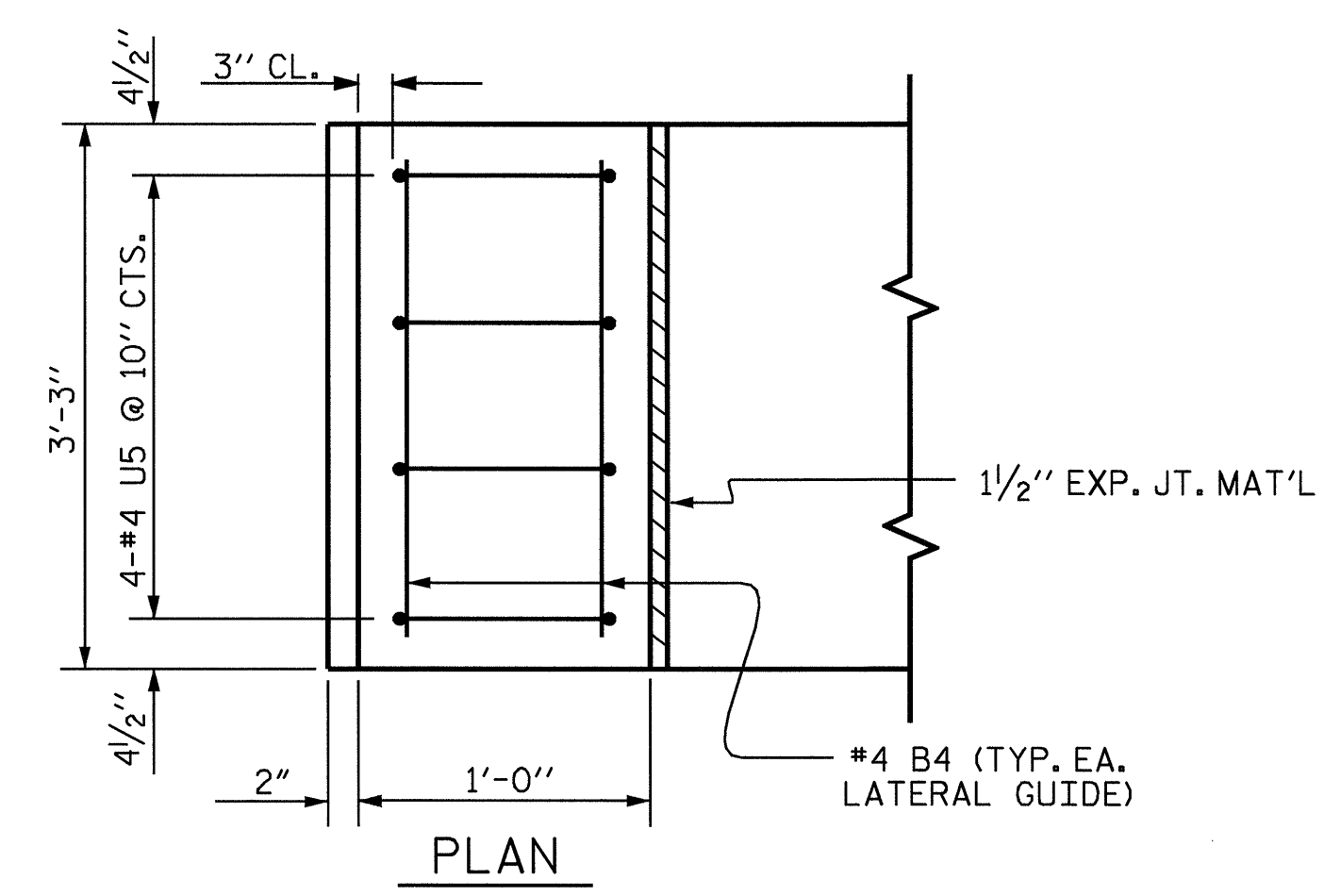
SECTION THRU CAP & STEEL PIPE PILE



VIEW X-X



ELEVATION



PLAN

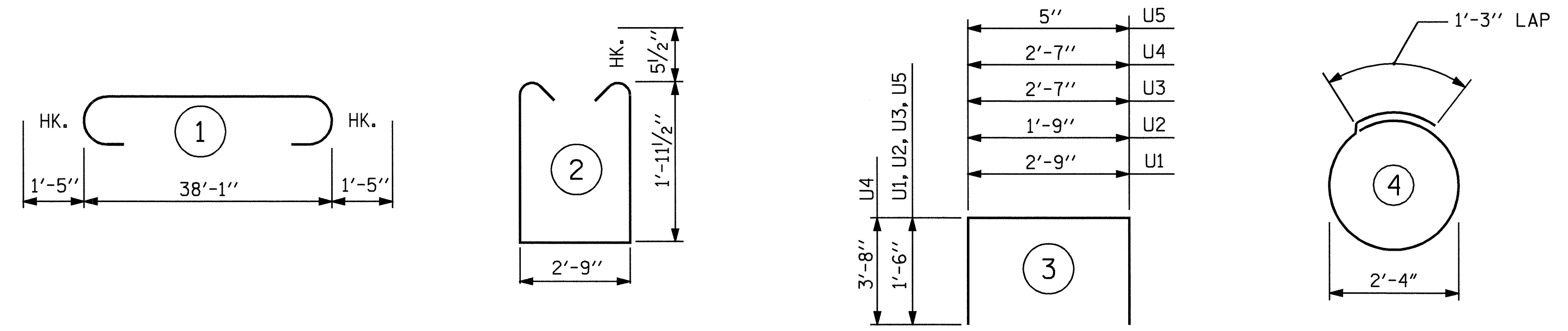
LATERAL GUIDE DETAILS

(EACH END SIMILAR)

BILL OF MATERIAL

| BENT No. 1 | | | | | | BENT No. 2 | | | | | | BENT No. 3 | | | | | | BENT No. 4 | | | | | |
|--|------|------|--------|---------|-----|--|------|------|--------|---------|-----|--|------|------|--------|---------|-----|--|------|------|--------|---------|-----|
| BAR NO. | SIZE | TYPE | LENGTH | WEIGHT | | BAR NO. | SIZE | TYPE | LENGTH | WEIGHT | | BAR NO. | SIZE | TYPE | LENGTH | WEIGHT | | BAR NO. | SIZE | TYPE | LENGTH | WEIGHT | |
| *B1 | 4 | 10 | STR | 38'-1" | 655 | *B1 | 4 | 10 | STR | 38'-1" | 655 | *B1 | 4 | 10 | STR | 38'-1" | 655 | *B1 | 4 | 10 | STR | 38'-1" | 655 |
| *B2 | 4 | 10 | 1 | 40'-11" | 704 | *B2 | 4 | 10 | 1 | 40'-11" | 704 | *B2 | 4 | 10 | 1 | 40'-11" | 704 | *B2 | 4 | 10 | 1 | 40'-11" | 704 |
| *B3 | 4 | 5 | STR | 38'-1" | 159 | *B3 | 4 | 5 | STR | 38'-1" | 159 | *B3 | 4 | 5 | STR | 38'-1" | 159 | *B3 | 4 | 5 | STR | 38'-1" | 159 |
| *B4 | 4 | 4 | STR | 2'-9" | 7 | *B4 | 4 | 4 | STR | 2'-9" | 7 | *B4 | 4 | 4 | STR | 2'-9" | 7 | *B4 | 4 | 4 | STR | 2'-9" | 7 |
| *B5 | 4 | 4 | STR | 2'-9" | 70 | *B5 | 4 | 4 | STR | 2'-9" | 70 | *B5 | 4 | 4 | STR | 2'-9" | 70 | *B5 | 4 | 4 | STR | 2'-9" | 70 |
| *B6 | 12 | 4 | STR | 20'-3" | 162 | *B6 | 12 | 4 | STR | 20'-3" | 162 | *B6 | 12 | 4 | STR | 20'-3" | 162 | *B6 | 12 | 4 | STR | 20'-3" | 162 |
| *D1 | 48 | 8 | STR | 2'-3" | 288 | *D1 | 48 | 8 | STR | 2'-3" | 288 | *D1 | 48 | 8 | STR | 2'-3" | 288 | *D1 | 48 | 8 | STR | 2'-3" | 288 |
| *S1 | 28 | 5 | 2 | 7'-7" | 221 | *S1 | 28 | 5 | 2 | 7'-7" | 221 | *S1 | 28 | 5 | 2 | 7'-7" | 221 | *S1 | 28 | 5 | 2 | 7'-7" | 221 |
| *S2 | 14 | 4 | 4 | 8'-7" | 80 | *S2 | 14 | 4 | 4 | 8'-7" | 80 | *S2 | 14 | 4 | 4 | 8'-7" | 80 | *S2 | 14 | 4 | 4 | 8'-7" | 80 |
| *U1 | 73 | 4 | 3 | 5'-9" | 280 | *U1 | 73 | 4 | 3 | 5'-9" | 280 | *U1 | 73 | 4 | 3 | 5'-9" | 280 | *U1 | 73 | 4 | 3 | 5'-9" | 280 |
| *U2 | 8 | 4 | 3 | 4'-9" | 25 | *U2 | 8 | 4 | 3 | 4'-9" | 25 | *U2 | 8 | 4 | 3 | 4'-9" | 25 | *U2 | 8 | 4 | 3 | 4'-9" | 25 |
| *U3 | 4 | 4 | 3 | 5'-7" | 15 | *U3 | 4 | 4 | 3 | 5'-7" | 15 | *U3 | 4 | 4 | 3 | 5'-7" | 15 | *U3 | 4 | 4 | 3 | 5'-7" | 15 |
| *U4 | 2 | 9 | 3 | 9'-11" | 67 | *U4 | 2 | 9 | 3 | 9'-11" | 67 | *U4 | 2 | 9 | 3 | 9'-11" | 67 | *U4 | 2 | 9 | 3 | 9'-11" | 67 |
| *U5 | 8 | 4 | 3 | 3'-5" | 18 | *U5 | 8 | 4 | 3 | 3'-5" | 18 | *U5 | 8 | 4 | 3 | 3'-5" | 18 | *U5 | 8 | 4 | 3 | 3'-5" | 18 |
| * EPOXY COATED REINFORCING STEEL LBS. 2,751 | | | | | | * EPOXY COATED REINFORCING STEEL LBS. 2,751 | | | | | | * EPOXY COATED REINFORCING STEEL LBS. 2,751 | | | | | | * EPOXY COATED REINFORCING STEEL LBS. 2,751 | | | | | |
| CLASS "AA" CONCRETE POUR 1 CAP 11.2 C.Y. POUR 2 LATERAL GUIDE 0.1 C.Y. ** TOTAL 11.3 C.Y. | | | | | | CLASS "AA" CONCRETE POUR 1 CAP 11.2 C.Y. POUR 2 LATERAL GUIDE 0.1 C.Y. ** TOTAL 11.3 C.Y. | | | | | | CLASS "AA" CONCRETE POUR 1 CAP 11.2 C.Y. POUR 2 LATERAL GUIDE 0.1 C.Y. ** TOTAL 11.3 C.Y. | | | | | | CLASS "AA" CONCRETE POUR 1 CAP 11.2 C.Y. POUR 2 LATERAL GUIDE 0.1 C.Y. ** TOTAL 11.3 C.Y. | | | | | |
| PP 18" X 0.5 STEEL PILES NO. 7 385 LIN. FT. | | | | | | PP 18" X 0.5 STEEL PILES NO. 7 455 LIN. FT. | | | | | | PP 18" X 0.5 STEEL PILES NO. 7 455 LIN. FT. | | | | | | PP 18" X 0.5 STEEL PILES NO. 7 385 LIN. FT. | | | | | |
| PIPE PILE PLATES NO. 7 EA. | | | | | | PIPE PILE PLATES NO. 7 EA. | | | | | | PIPE PILE PLATES NO. 7 EA. | | | | | | PIPE PILE PLATES NO. 7 EA. | | | | | |
| ** CONCRETE DISPLACED BY THE FILLED 18" Ø STEEL PIPE PILES HAS BEEN DEDUCTED. | | | | | | ** CONCRETE DISPLACED BY THE FILLED 18" Ø STEEL PIPE PILES HAS BEEN DEDUCTED. | | | | | | ** CONCRETE DISPLACED BY THE FILLED 18" Ø STEEL PIPE PILES HAS BEEN DEDUCTED. | | | | | | ** CONCRETE DISPLACED BY THE FILLED 18" Ø STEEL PIPE PILES HAS BEEN DEDUCTED. | | | | | |

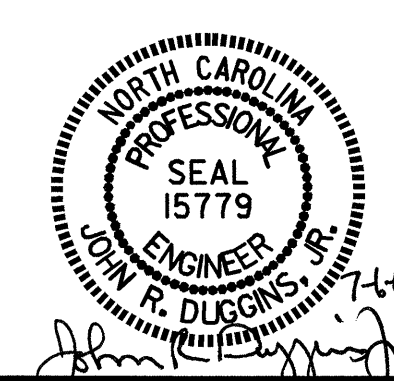
BAR TYPES



ALL BAR DIMENSIONS ARE OUT TO OUT.

PROJECT NO. B-2950
CURRITUCK COUNTY
STATION: 30+00.00 -L-
SHEET 2 OF 2

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH
SUBSTRUCTURE
BENTS No. 1, 2, 3 & 4



| REVISIONS | | | | | | SHEET NO. | |
|-----------|-----|-------|-----|-----|-------|-----------------|--|
| NO. | BY: | DATE: | NO. | BY: | DATE: | S-18 | |
| 1 | | | 3 | | | TOTAL SHEETS 26 | |
| 2 | | | 4 | | | | |

DRAWN BY: M. POOLE DATE: 04/07
CHECKED BY: J. LAMBERT DATE: 04/07

NOTES

THE LATERAL GUIDES ARE NOT TO BE POURED UNTIL AFTER THE BOX GIRDER UNITS ARE IN PLACE.

STIRRUPS IN CAP MAY BE SHIFTED AS NECESSARY TO CLEAR #8 DOWELS.

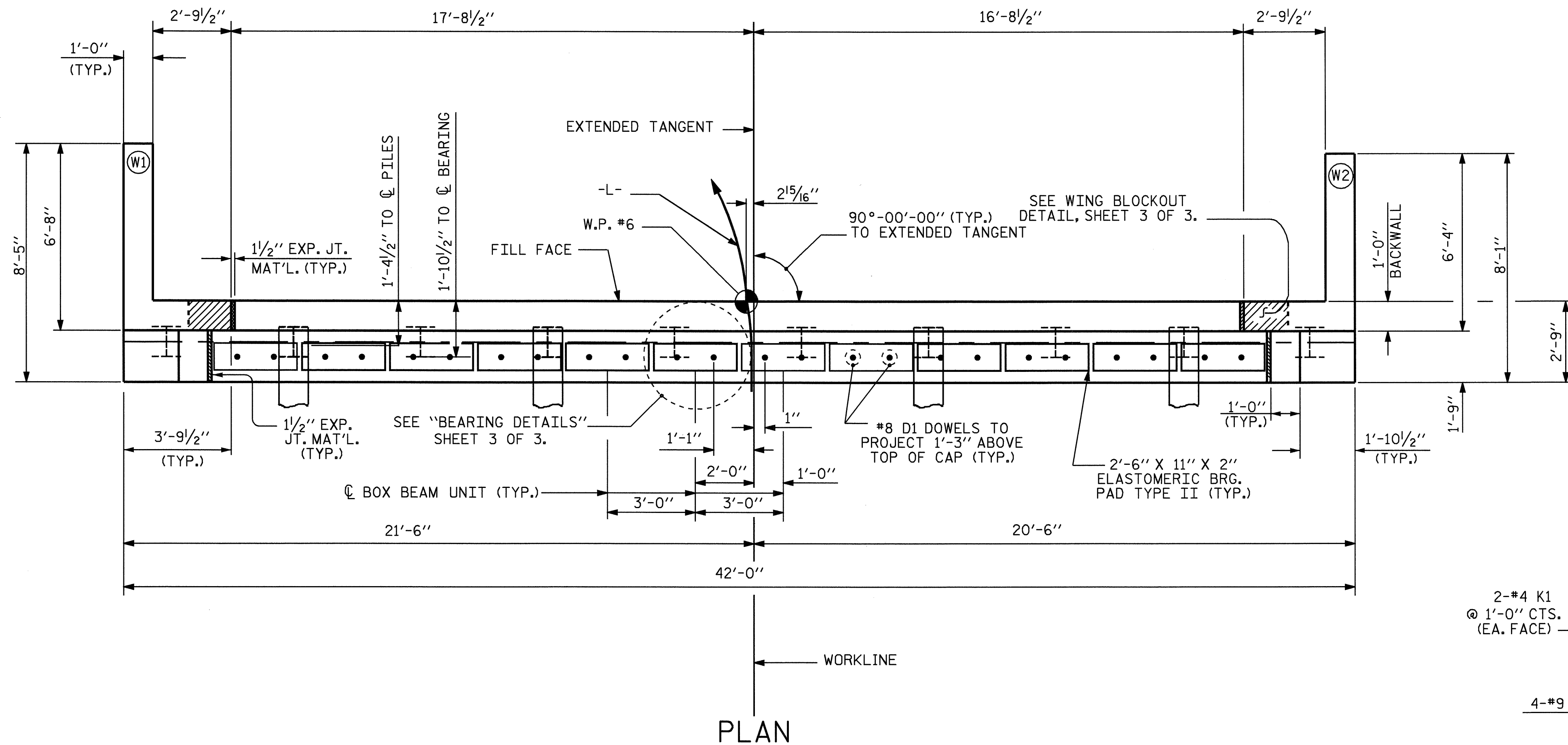
THE CONTRACTOR SHALL PROVIDE FOR INSTALLATION OF THE 4" Ø DRAIN PIPE THROUGH THE WING WALL AS REQUIRED FOR REINFORCED BRIDGE APPROACH FILLS, SEE THE ROADWAY PLANS. REINFORCING STEEL IN THE WING WALL MAY BE SHIFTED AS NECESSARY TO CLEAR THE DRAIN PIPE.

FOR PILE SPLICE DETAILS, SEE SHEET 3 OF 3.

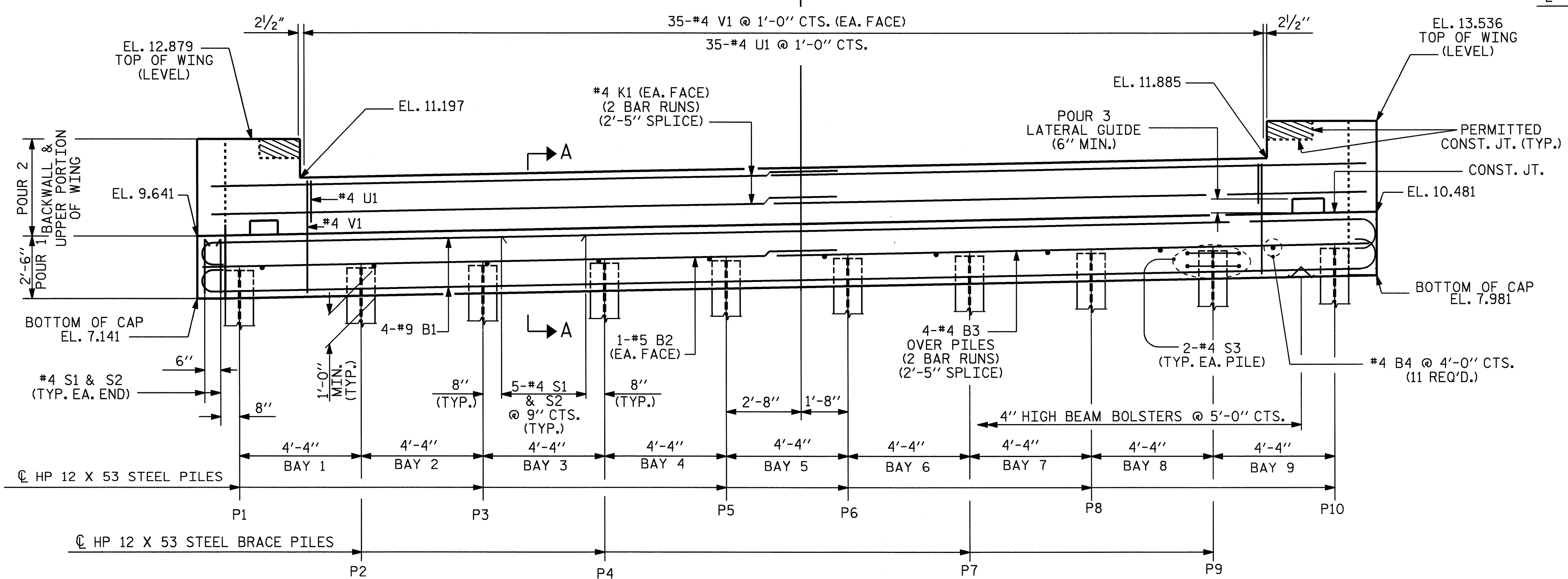
THE CONCRETE IN THE SHADED AREA OF THE WING SHALL BE POURED AFTER THE BARRIER RAIL IS CAST IF SLIP FORMING IS USED.

BACKWALL SHALL BE PLACED BEFORE APPLYING THE EPOXY PROTECTIVE COATING.

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

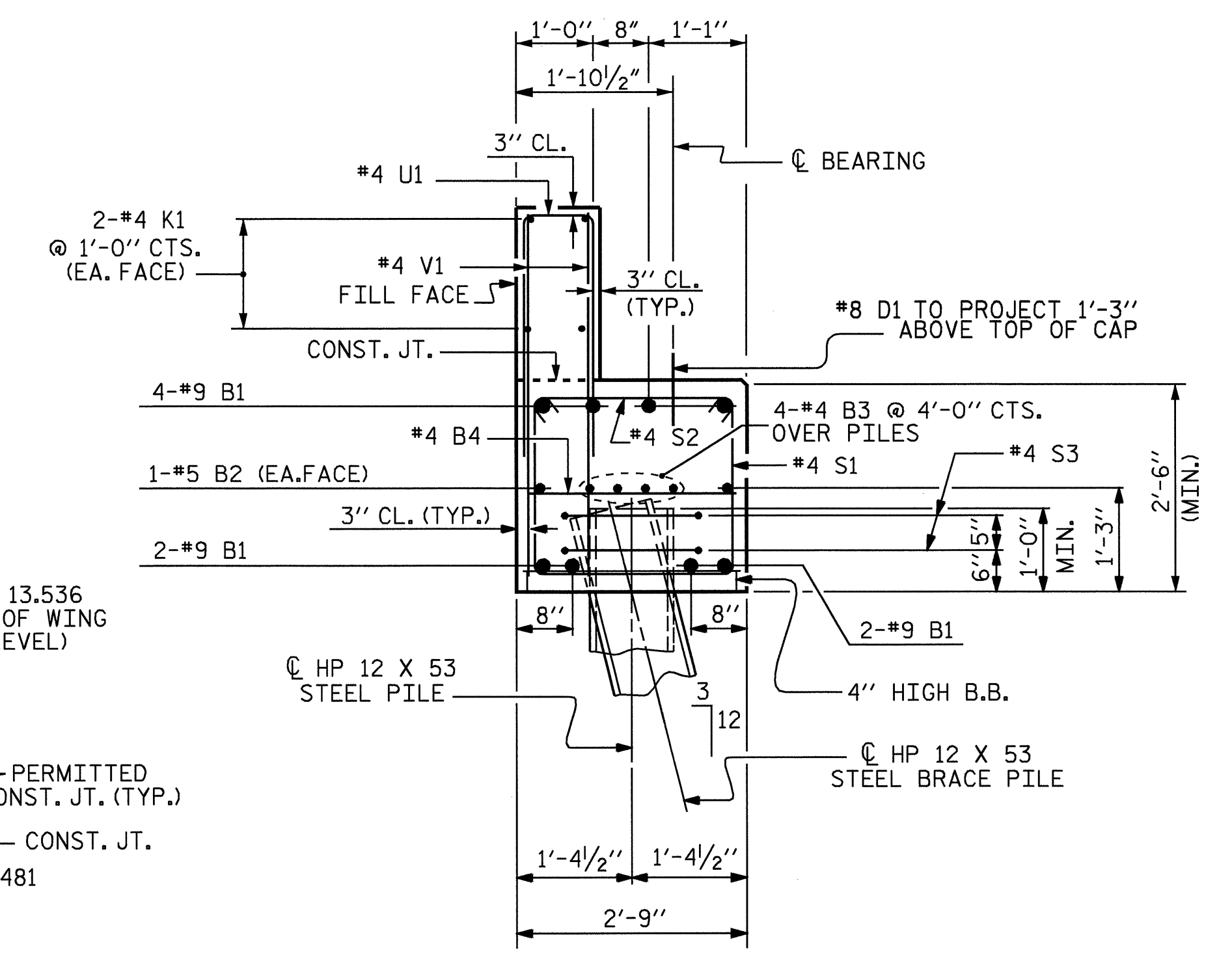


PLAN



ELEVATION

| TOP OF PILE ELEVATIONS | | | | | | | | | | |
|------------------------|-------|-------|-------|-------|-------|-------|-------|-------|-------|--|
| P1 | P2 | P3 | P4 | P5 | P6 | P7 | P8 | P9 | P10 | |
| 8.181 | 8.268 | 8.354 | 8.441 | 8.528 | 8.614 | 8.701 | 8.788 | 8.874 | 8.961 | |

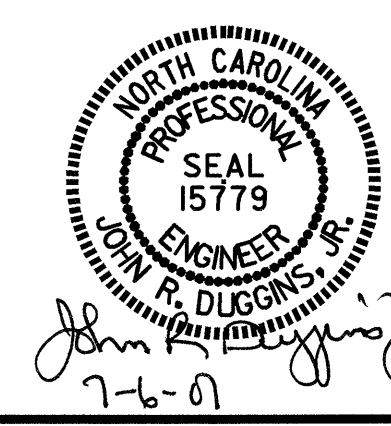


SECTION A-A

PROJECT NO. **B-2950**
 CURRITUCK COUNTY
 STATION: **30+00.00 -L-**

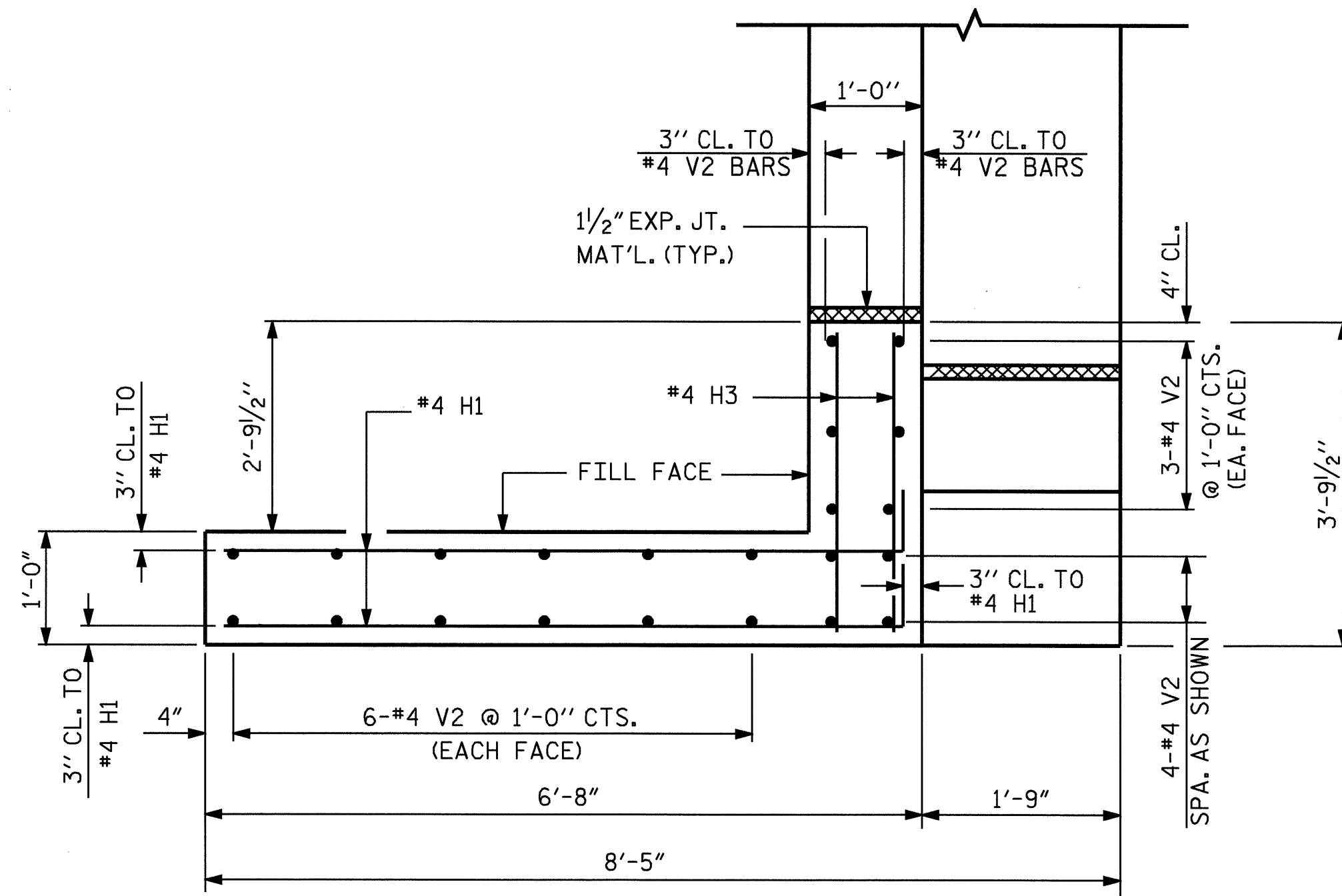
SHEET 1 OF 3

| STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION RALEIGH | | | | | |
|--|-----|-------|-----|-----|-------|
| SUBSTRUCTURE END BENT No. 2 | | | | | |
| REVISIONS | | | | | |
| NO. | BY: | DATE: | NO. | BY: | DATE: |
| 1 | | | 3 | | |
| 2 | | | 4 | | |

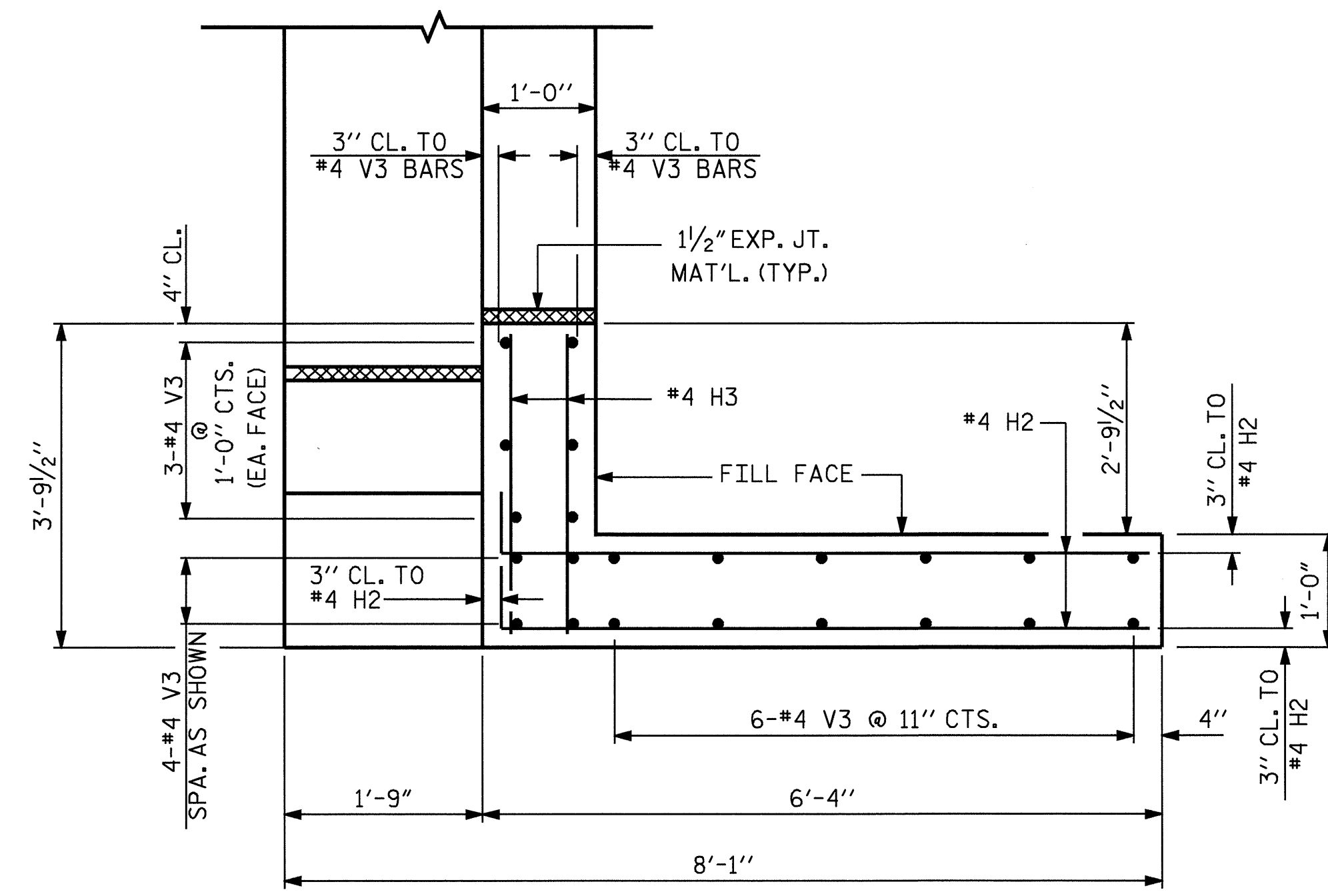


DRAWN BY : M. POOLE DATE : 11/06
 CHECKED BY : D. HODGE DATE : 05/07

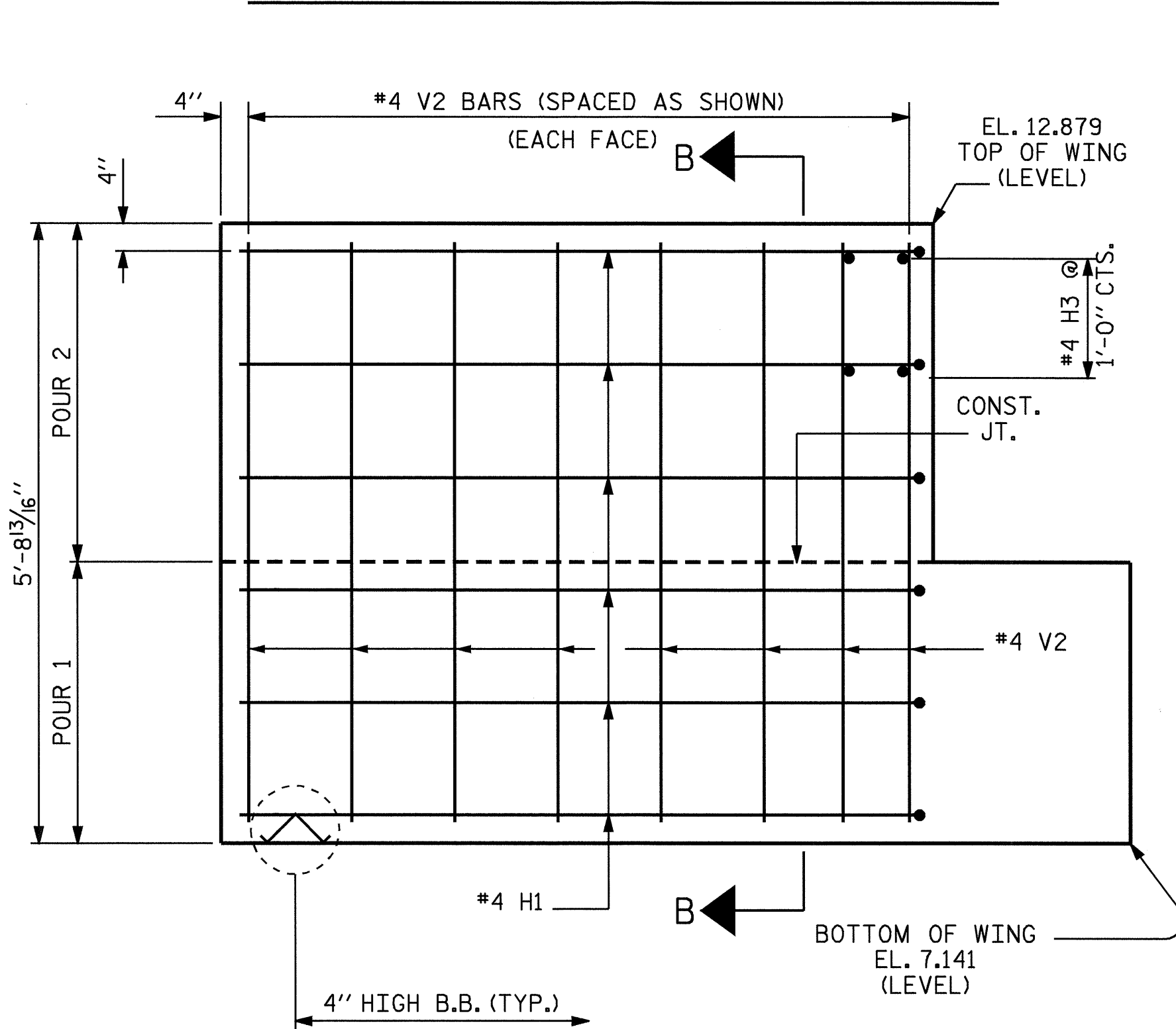
| SHEET NO. | |
|--------------|----|
| 5-19 | |
| TOTAL SHEETS | 26 |



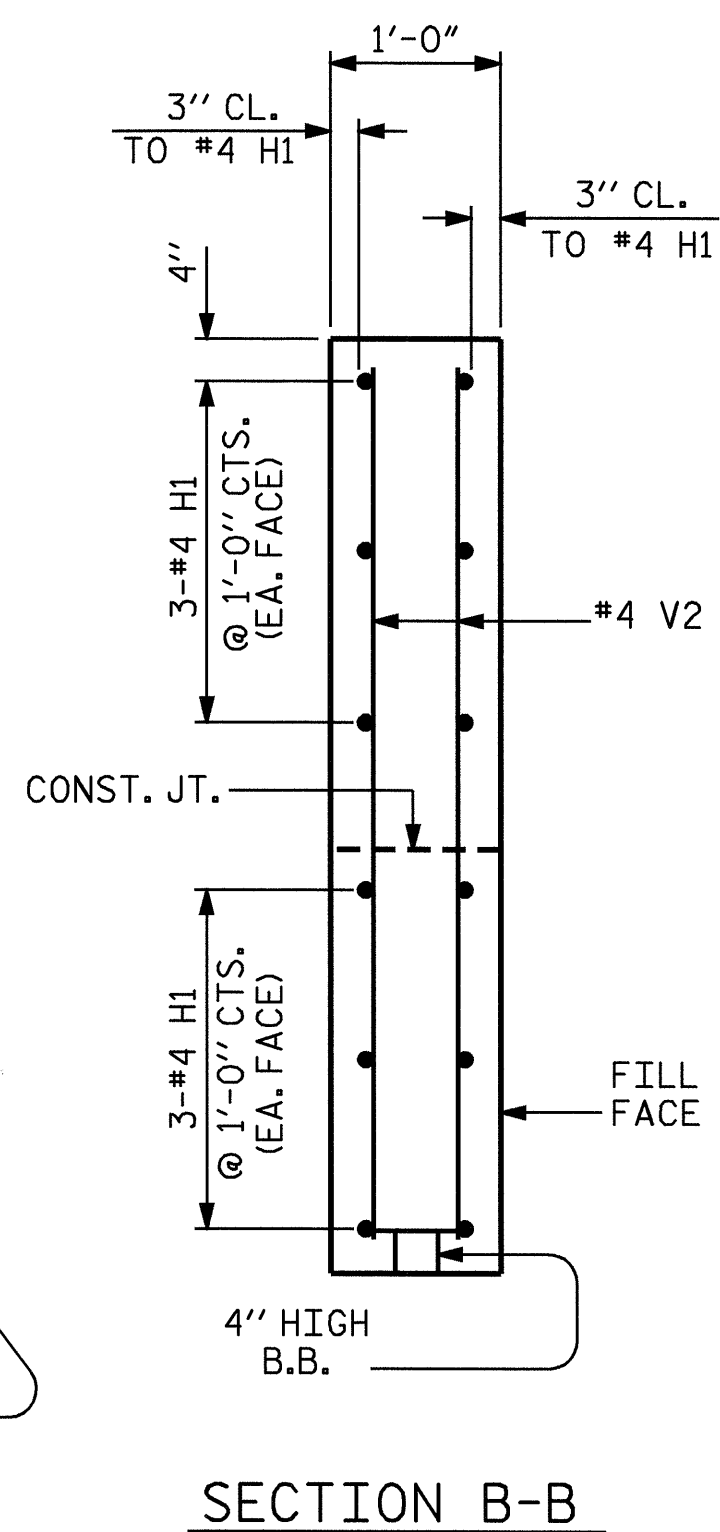
PLAN OF LEFT WING - W1



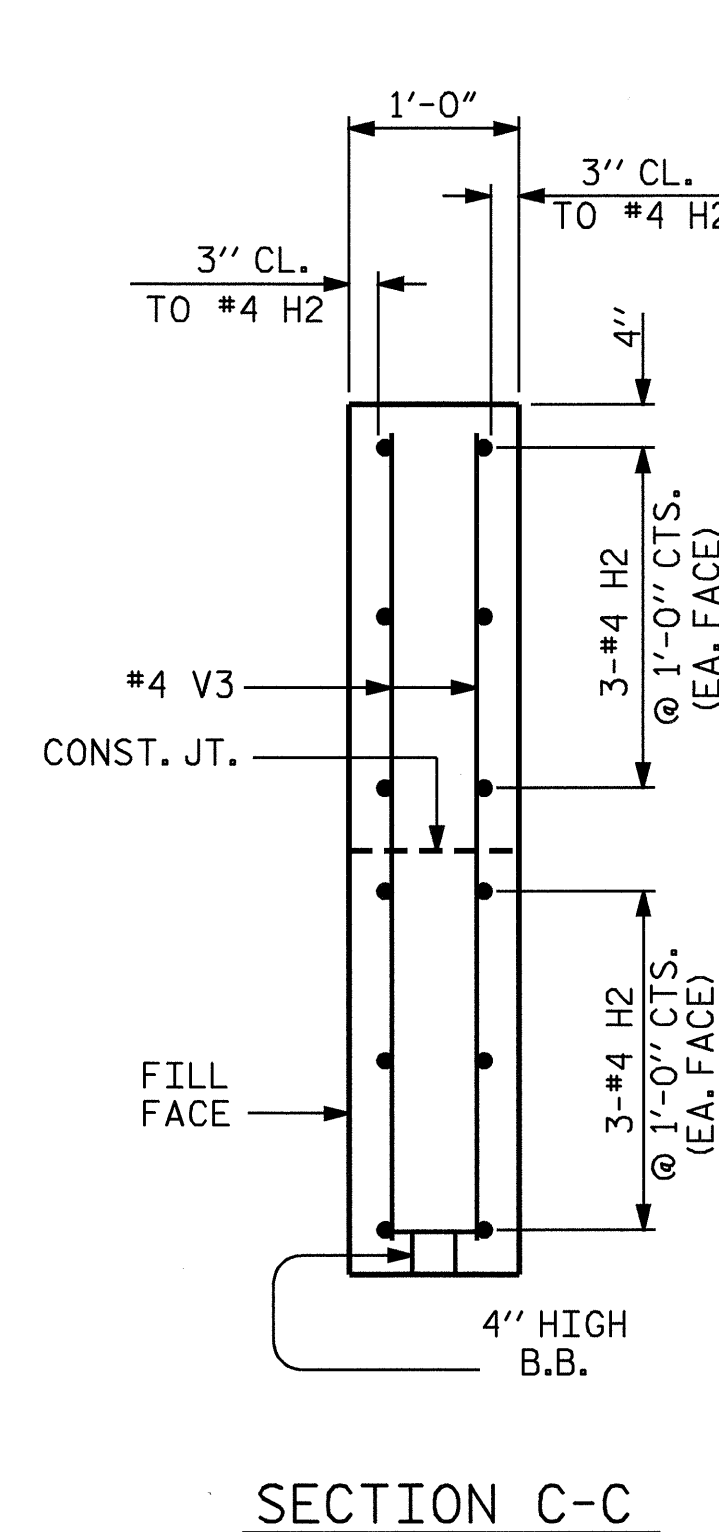
PLAN OF RIGHT WING - W2



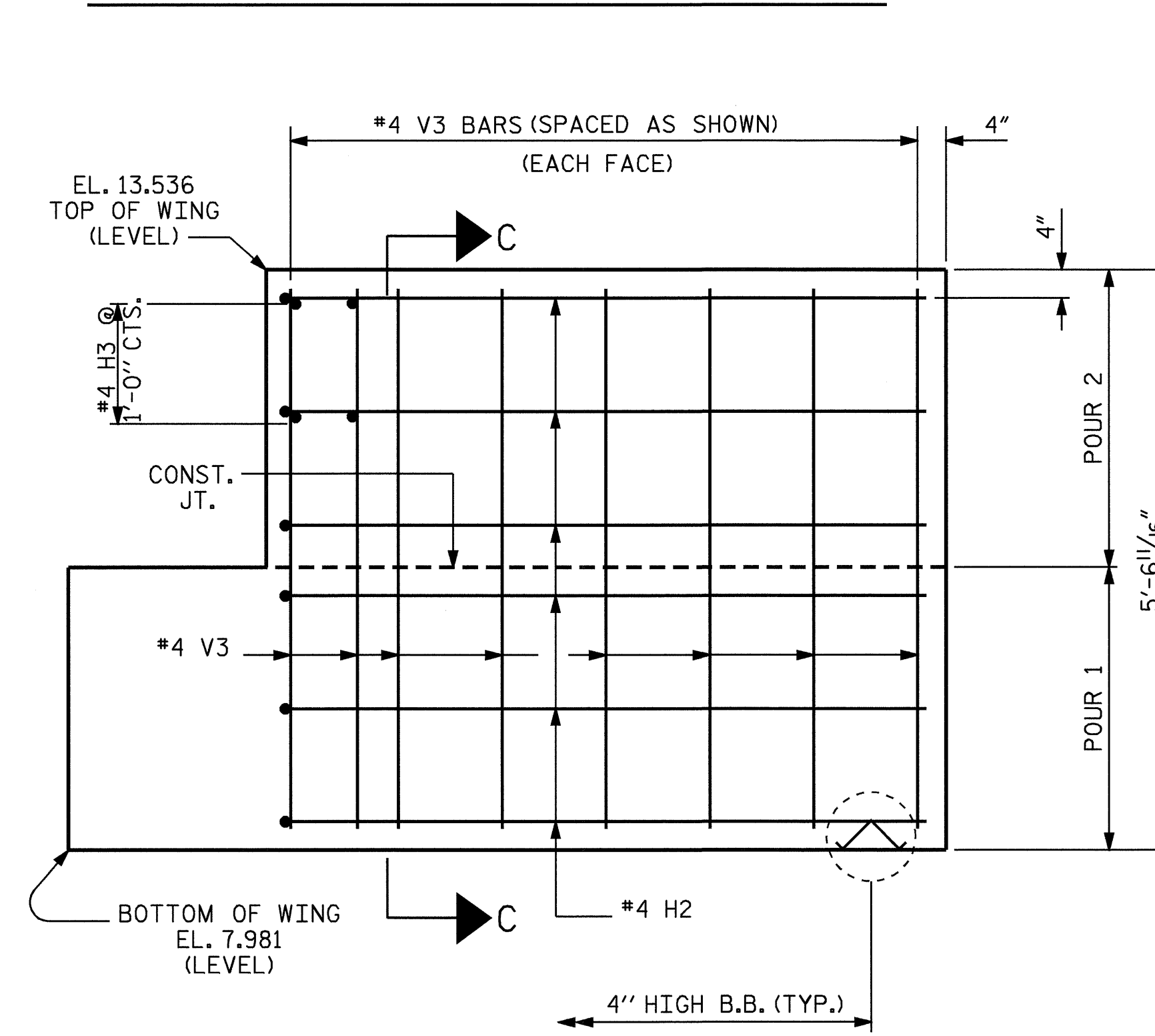
ELEVATION OF LEFT WING - W1



SECTION B-B



SECTION C-C



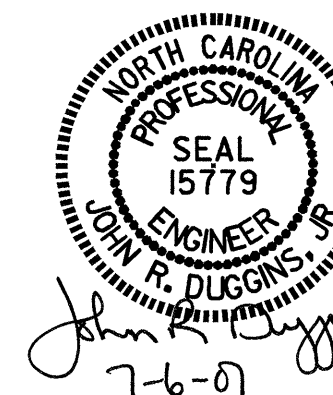
ELEVATION OF RIGHT WING - W2

PROJECT NO. B-2950
CURRITUCK COUNTY
 STATION: 30+00.00 -L-

SHEET 2 OF 3

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

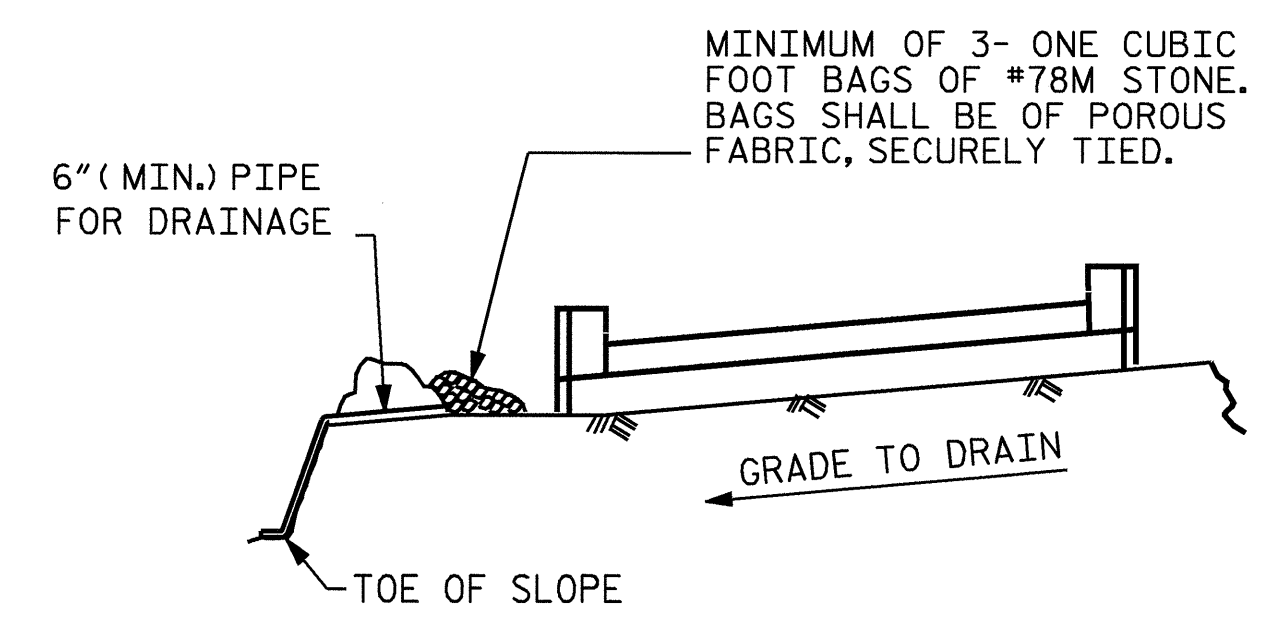
SUBSTRUCTURE
 END BENT No. 2



DRAWN BY: M. POOLE DATE: 11-06
 CHECKED BY: D. HODGE DATE: 05/07

16-MAY-2007 11:49
 R:\Structures\B2950\m\poole\Microstation\B2950_sd.E2_01.dgn
 dahodge

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

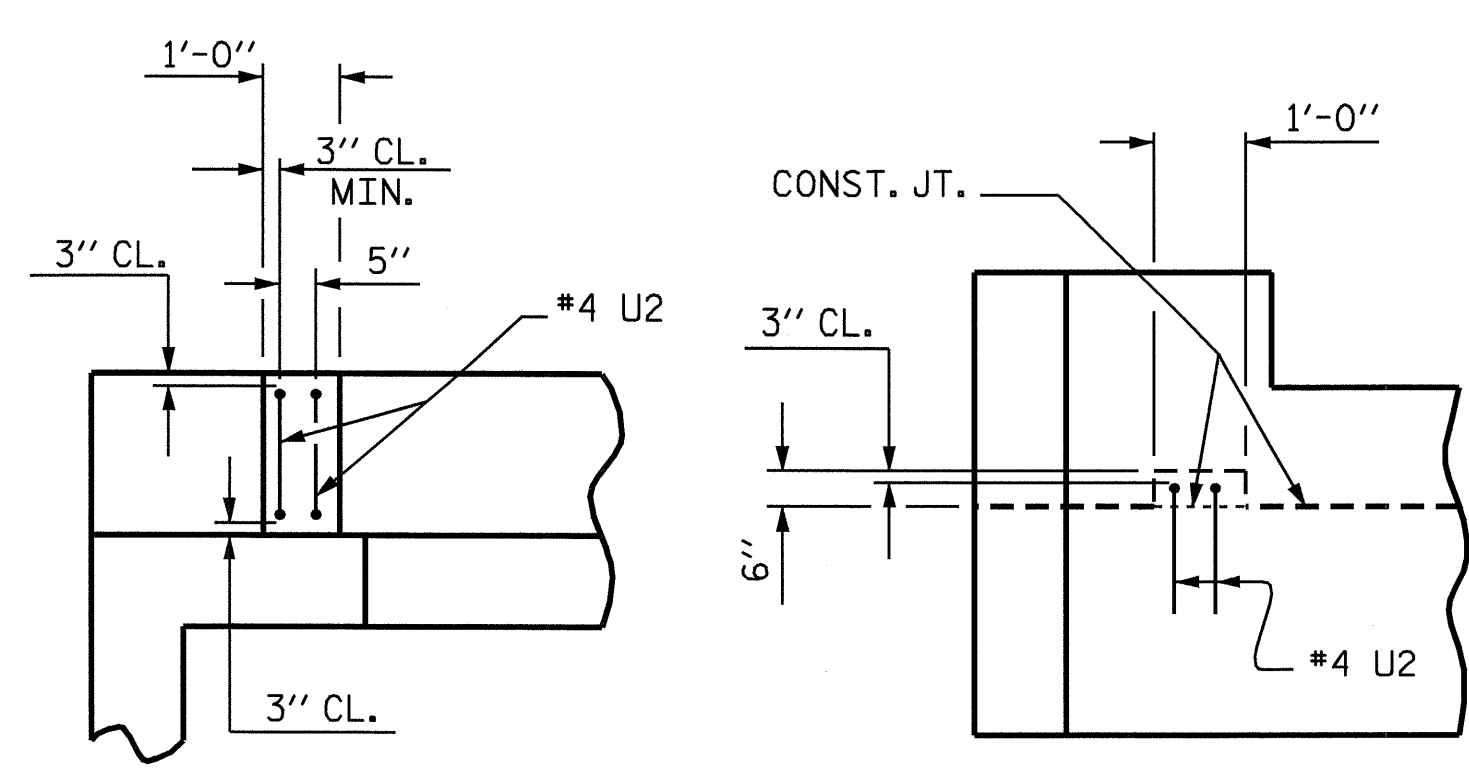


BAGGED STONE AND PIPE SHALL BE PLACED IMMEDIATELY AFTER COMPLETION OF END BENT EXCAVATION. PIPE MAY BE EITHER CONCRETE, CORRUGATED STEEL, CORRUGATED ALUMINUM ALLOY, OR CORRUGATED PLASTIC. PERFORATED PIPE WILL NOT BE ALLOWED.

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

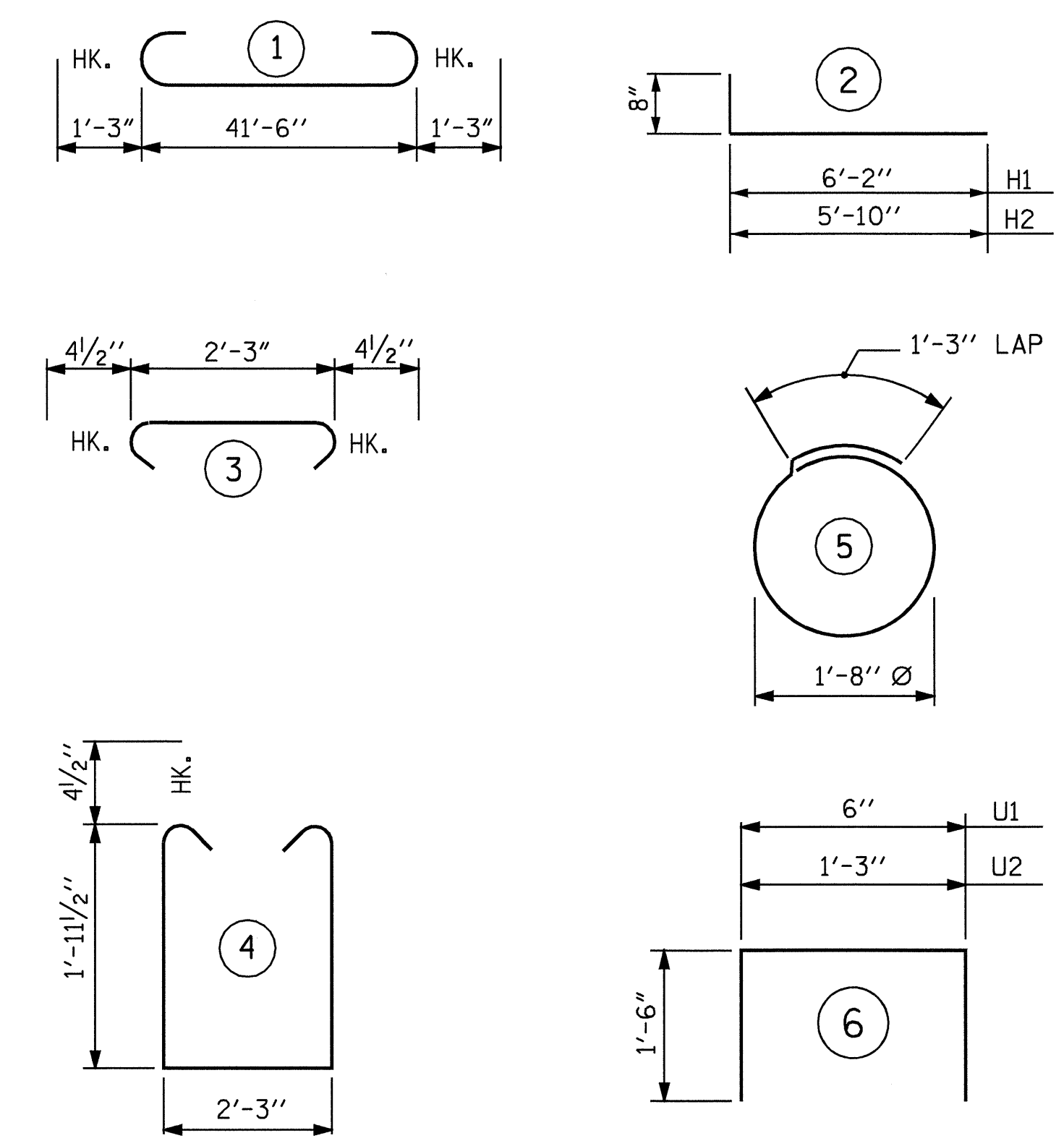


PLAN ELEVATION

LATERAL GUIDE DETAILS

(EACH END SIMILAR)

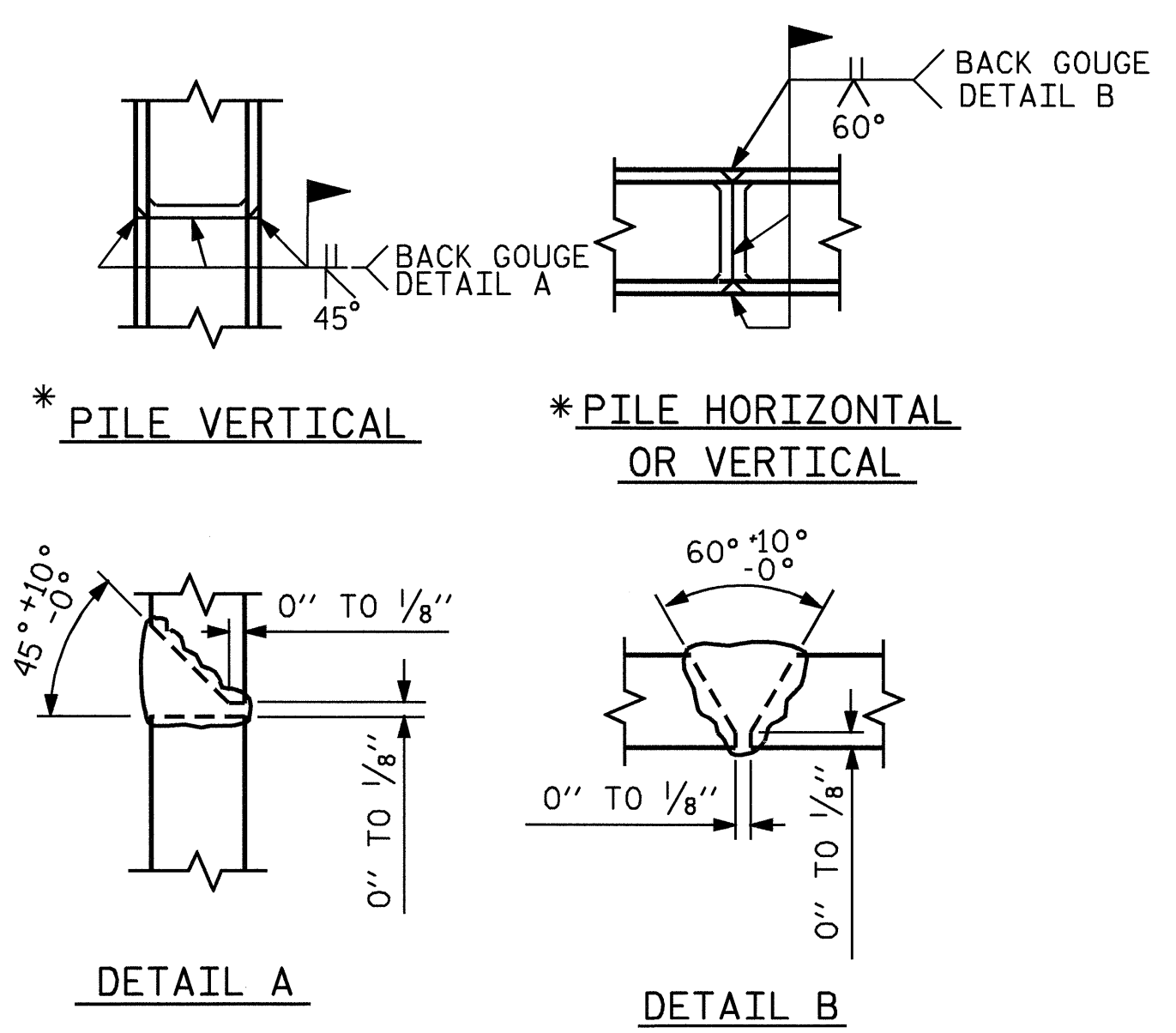
BAR TYPES



ALL BAR DIMENSIONS ARE OUT TO OUT.

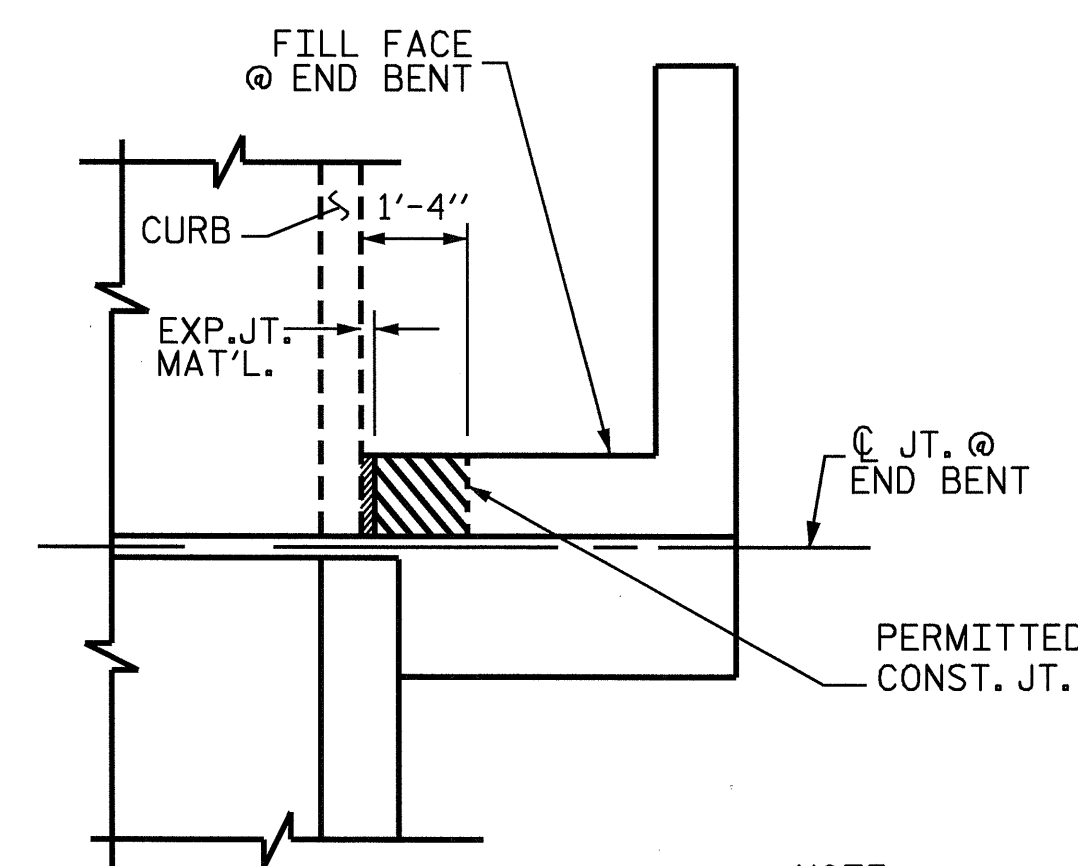
BILL OF MATERIAL

| END BENT NO. 2 | | | | | |
|---|-----|------|------|--------|-------------|
| BAR NO. | NO. | SIZE | TYPE | LENGTH | WEIGHT |
| *B1 | 8 | 9 | 1 | 44'-0" | 1197 |
| *B2 | 2 | 5 | STR | 41'-6" | 87 |
| *B3 | 8 | 4 | STR | 22'-0" | 118 |
| *B4 | 11 | 4 | STR | 2'-3" | 17 |
| *D1 | 24 | 8 | STR | 2'-3" | 144 |
| *H1 | 12 | 4 | 2 | 6'-10" | 55 |
| *H2 | 12 | 4 | 2 | 6'-6" | 52 |
| *H3 | 8 | 4 | STR | 3'-3" | 17 |
| *K1 | 8 | 4 | STR | 22'-0" | 118 |
| *S1 | 49 | 4 | 4 | 6'-11" | 226 |
| *S2 | 49 | 4 | 3 | 3'-0" | 98 |
| *S3 | 20 | 4 | 5 | 6'-6" | 87 |
| *U1 | 35 | 4 | 6 | 3'-6" | 82 |
| *U2 | 4 | 4 | 6 | 4'-3" | 11 |
| *V1 | 70 | 4 | STR | 3'-4" | 156 |
| *V2 | 22 | 4 | STR | 5'-2" | 76 |
| *V3 | 22 | 4 | STR | 4'-11" | 72 |
| * EPOXY COATED REINFORCING STEEL | | | | | 2613 LBS |
| CLASS AA CONCRETE BREAKDOWN : | | | | | |
| POUR #1 (CAP & LOWER WINGS) | | | | | 11.7 C.Y. |
| POUR #2 (UPPER PORTION OF WINGS & BACKWALL) | | | | | 4.1 C.Y. |
| POUR #3 (LATERAL GUIDES) | | | | | 0.1 C.Y. |
| TOTAL | | | | | 15.9 C.Y. |
| HP 12 X 53 STEEL PILES NO. 10 | | | | | 500 LIN FT. |

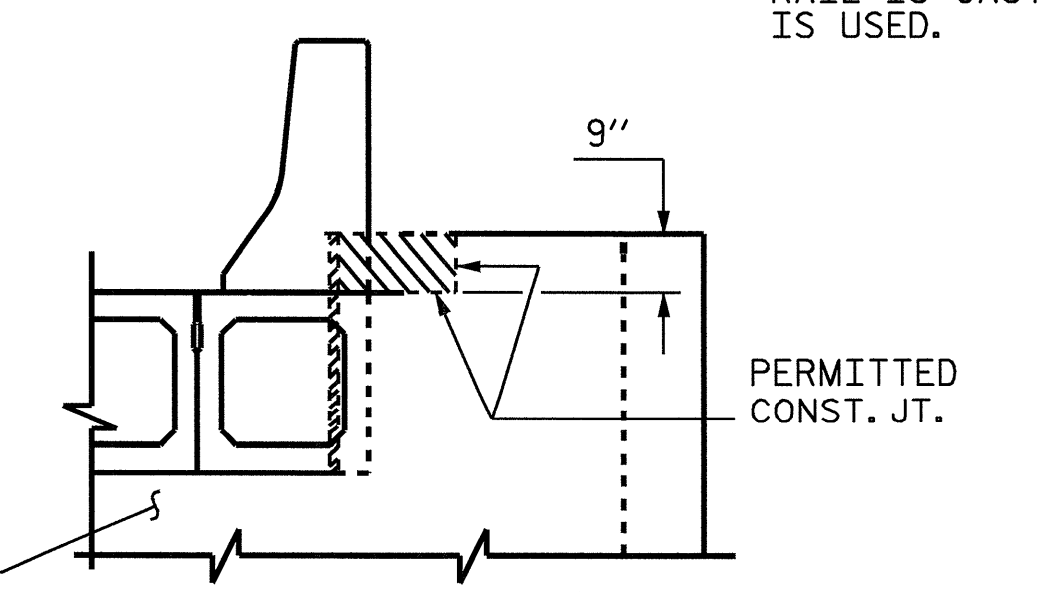


* POSITION OF PILE DURING WELDING.

PILE SPLICE DETAILS



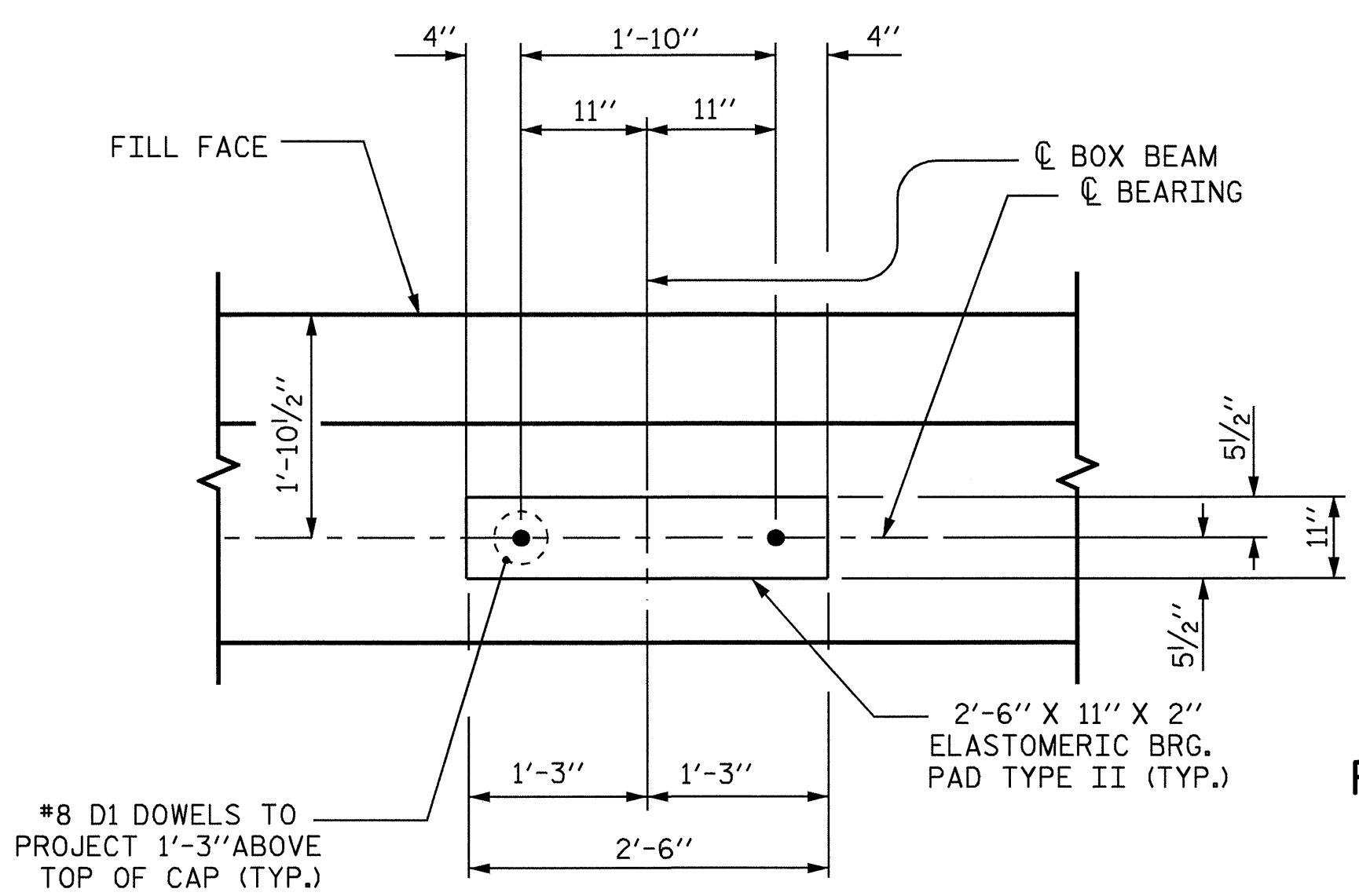
PLAN ELEVATION



ELEVATION

BLOCKOUT IN WING WALL

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



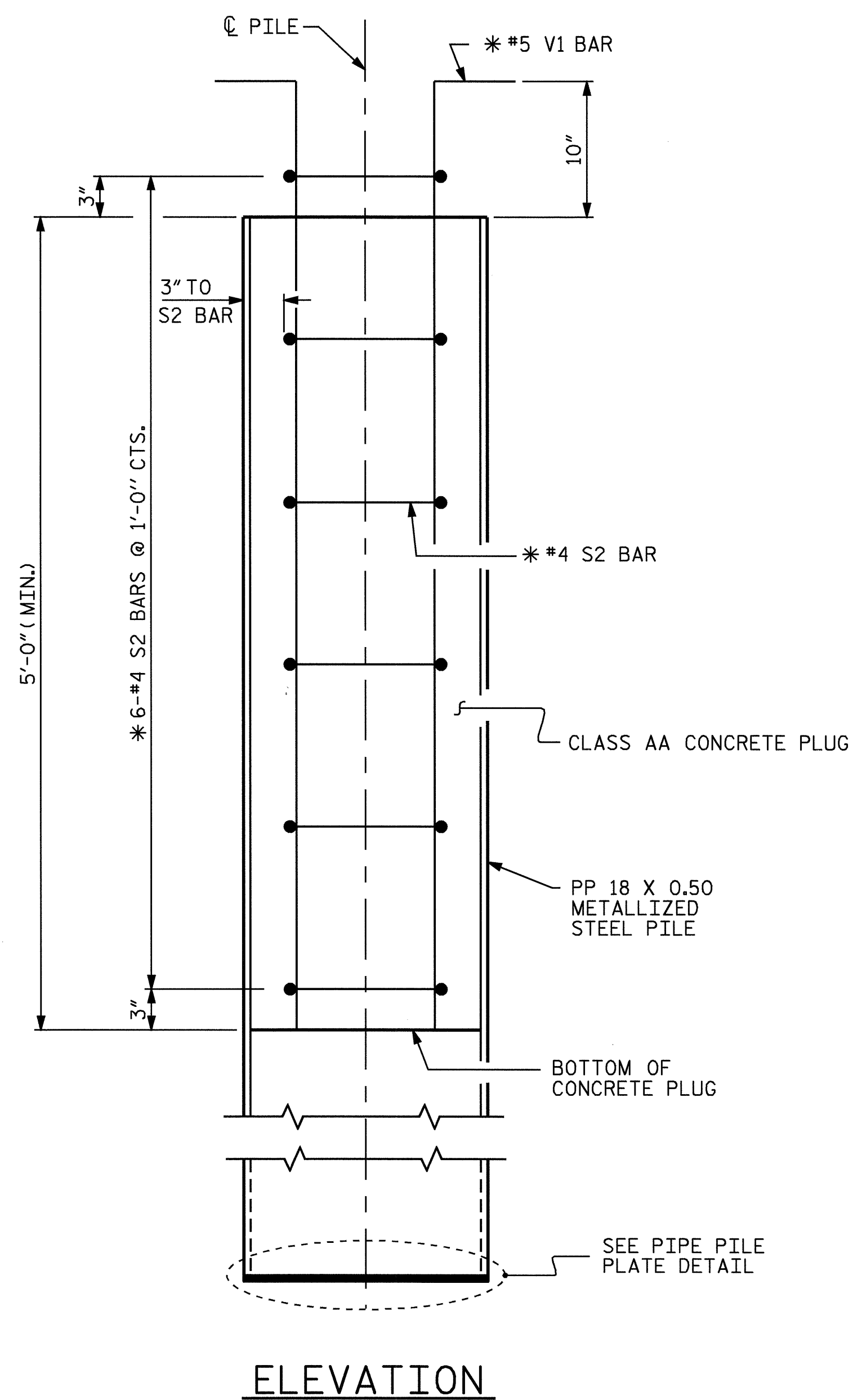
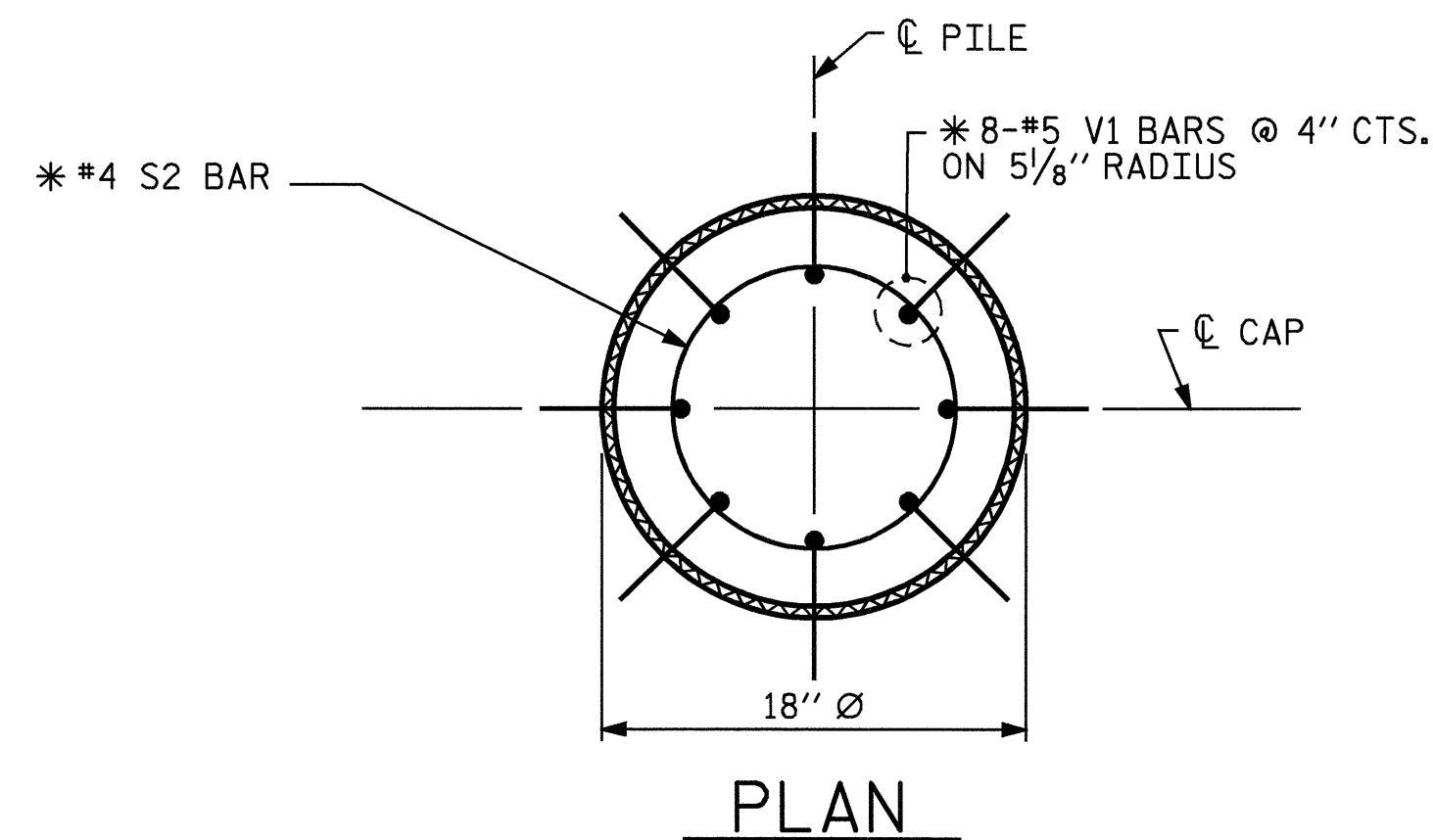
BEARING DETAIL

PROJECT NO. B-2950
 CURRITUCK COUNTY
 STATION: 30+00.00 -L-
 SHEET 3 OF 3

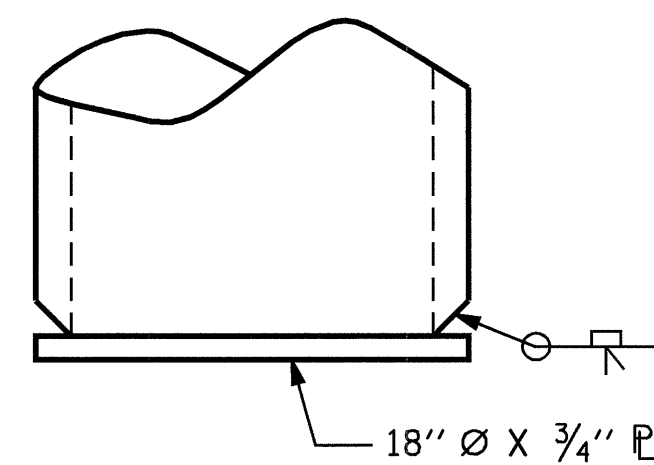
STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH
 SUBSTRUCTURE
 END BENT No. 2



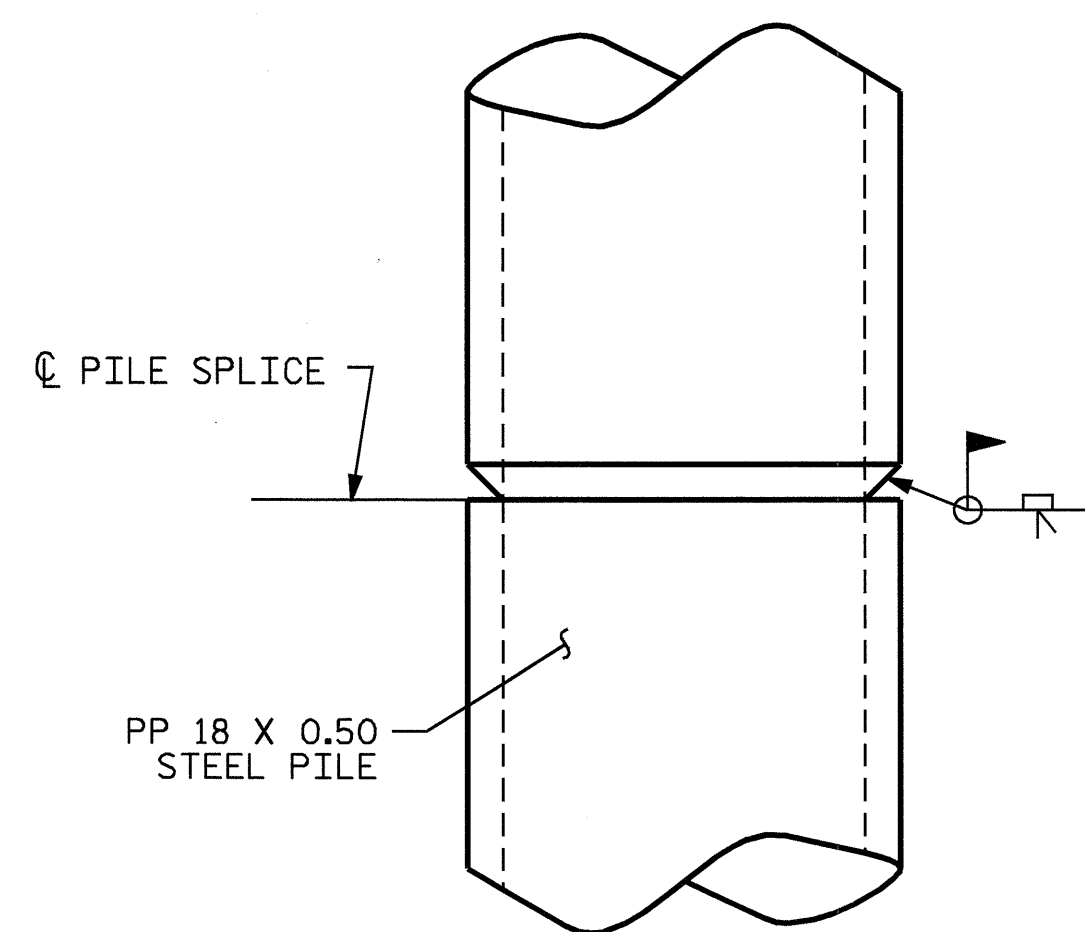
| REVISIONS | | | | | | SHEET NO. |
|-----------|-----|-------|-----|-----|-------|-----------------|
| NO. | BY: | DATE: | NO. | BY: | DATE: | |
| 1 | | | 3 | | | TOTAL SHEETS 26 |
| 2 | | | 4 | | | |



PP 18 X 0.50 METALLIZED STEEL PILE
(CLOSED END)



PIPE PILE PLATE DETAIL



PIPE PILE SPLICE DETAIL

NOTES

STEEL PIPE PILES SHALL BE OF UNIFORM DIAMETER AND MEET THE REQUIREMENTS OF ASTM A252, GRADE 3 MODIFIED (50,000 PSI YIELD STRENGTH).

METALLIZING OF THE PIPE PILE PLATES IS NOT REQUIRED.

REMOVE AND REPLACE OR REPAIR TO THE SATISFACTION OF THE ENGINEER PILES THAT ARE DAMAGED, DEFORMED OR COLLAPSED DURING INSTALLATION OR DRIVING.

PILE SPLICES SHALL BE IN ACCORDANCE WITH THE STANDARD SPECIFICATIONS AND AWS D1.1.

FOR CLOSED END PIPE PILES, REMOVE ALL SOIL AND WATER FROM INSIDE THE PILES JUST PRIOR TO PLACING REINFORCING STEEL AND CONCRETE FOR THE CONCRETE PLUG.

FORM THE CONCRETE PLUG SUCH THAT THE REINFORCING STEEL OR CONCRETE DOES NOT MOVE AND THE CLEARANCE FROM THE REINFORCING STEEL TO THE INSIDE OF THE PILE IS MAINTAINED AFTER CONCRETE PLACEMENT. DO NOT PLACE CONCRETE IN THE BENT CAP UNTIL THE CONCRETE PLUG HAS ATTAINED A MINIMUM COMPRESSIVE STRENGTH OF 1500 PSI.

THE EPOXY COATED REINFORCING STEEL, CLASS AA CONCRETE AND METALLIZING ARE CONSIDERED INCIDENTAL TO THE CONTRACT UNIT PRICE BID PER LINEAR FOOT FOR PP 18 X 0.50 STEEL PILES.

APPLY TO THE TOP 30' OF PIPE PILE AN 8 MIL THICK 1350 ALUMINUM (W-A1-1350) THERMAL SPRAYED COATING WITH A 0.5 MIL THICK SEAL COAT TO THE PILES IN ACCORDANCE WITH THE THERMAL SPRAYED COATINGS SPECIAL PROVISION AND SECTION 442 OF THE STANDARD SPECIFICATIONS. FOR THERMAL SPRAYED COATINGS, SEE SPECIAL PROVISIONS.

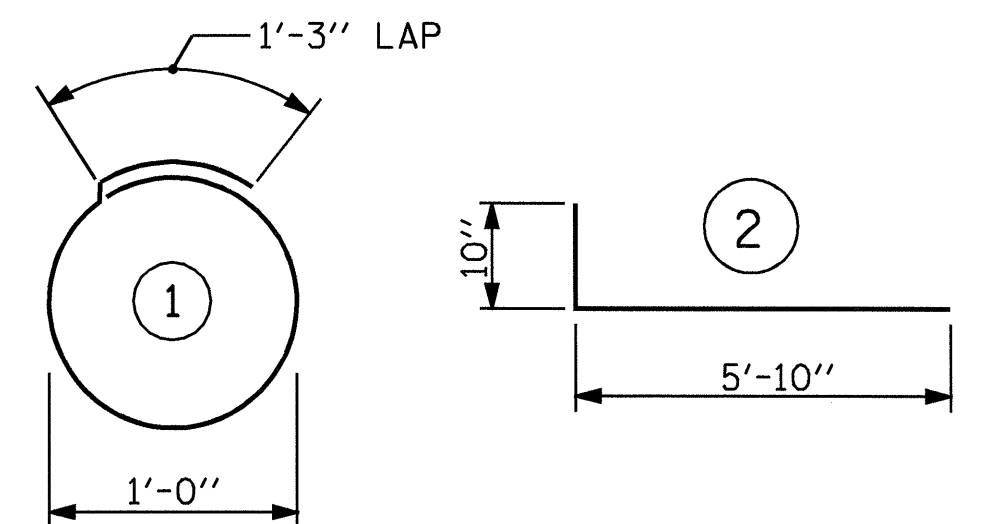
BILL OF MATERIAL FOR ONE
PP 18 X 0.50 STEEL PILE

| BAR | NO. | SIZE | TYPE | LENGTH | WEIGHT |
|-----|-----|------|------|--------|--------|
| *S2 | 6 | #4 | 1 | 4'-5" | 18 |
| *V1 | 8 | #5 | 2 | 6'-8" | 56 |

EPOXY COATED REINFORCING STEEL = 74 lbs

CLASS AA CONCRETE
5'-0" MINIMUM PLUG 0.3 CY

BAR TYPES



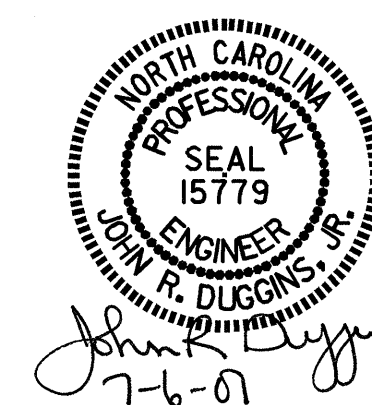
ALL BAR DIMENSIONS ARE OUT TO OUT.

* THESE BARS ARE EPOXY COATED

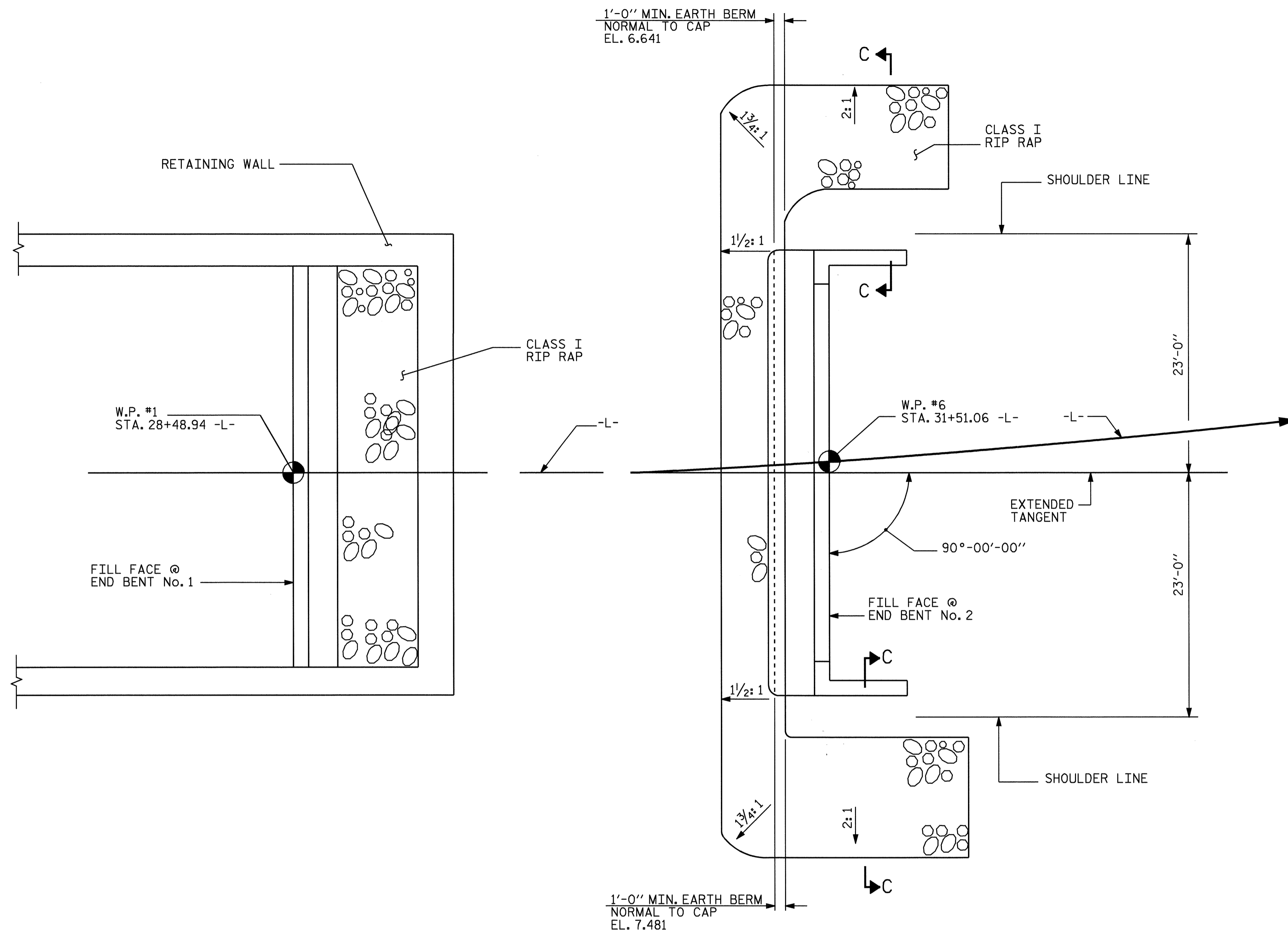
PROJECT NO. B-2950
CURRITUCK COUNTY
STATION: 30+00.00 -L-

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH
STANDARD
18" STEEL PIPE PILE

| | |
|-------------------------|----------------------|
| ASSEMBLED BY : M. POOLE | DATE : 04/07 |
| CHECKED BY : J. LAMBERT | DATE : 04/07 |
| DRAWN BY : RWW 1/01 | REV. 5/7/03 RWW/JTE |
| CHECKED BY : LES 1/01 | REV. 10/1/05 LBG/TLA |
| | REV. 5/1/06 TLA/GM |

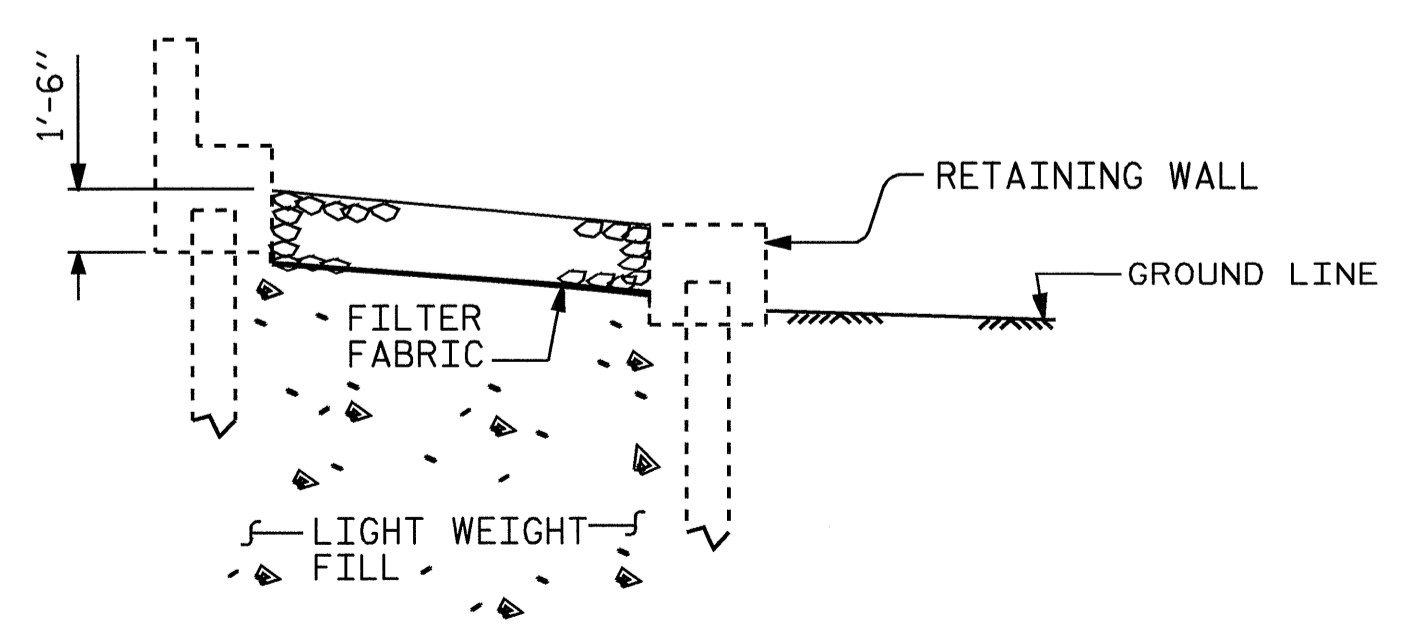


| REVISIONS | | | | | | SHEET NO. |
|-----------|-----|-------|-----|-----|-------|-----------------|
| NO. | BY: | DATE: | NO. | BY: | DATE: | |
| 1 | | | 3 | | | 5-22 |
| 2 | | | 4 | | | TOTAL SHEETS 26 |

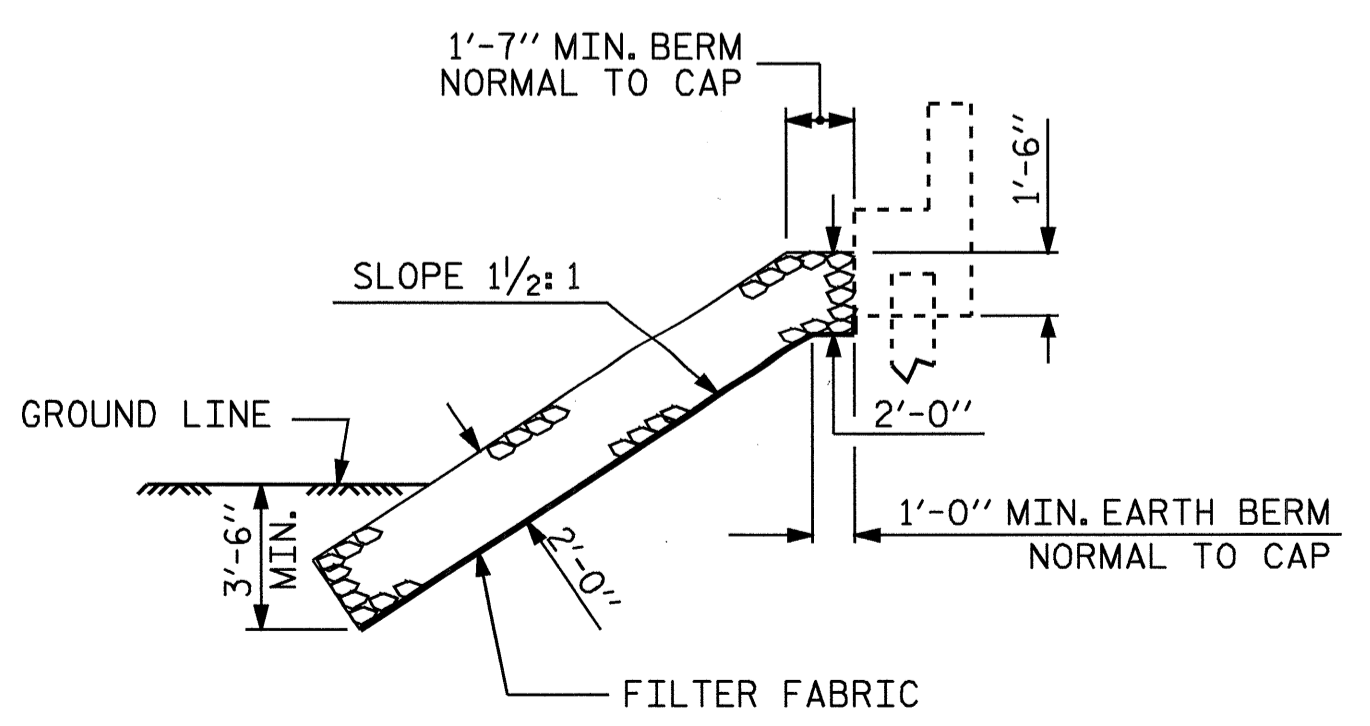


| ESTIMATED QUANTITIES | | |
|-------------------------------|--------------------|-------------------------------|
| BRIDGE @ STA. 30+00.00 -L- | RIp RAP CLASS I | FILTER FABRIC FOR DRAINAGE |
| | TONS | SQUARE YARDS |
| END BENT No. 1 | 23 | 25 |
| END BENT No. 2 | 180 | 200 |

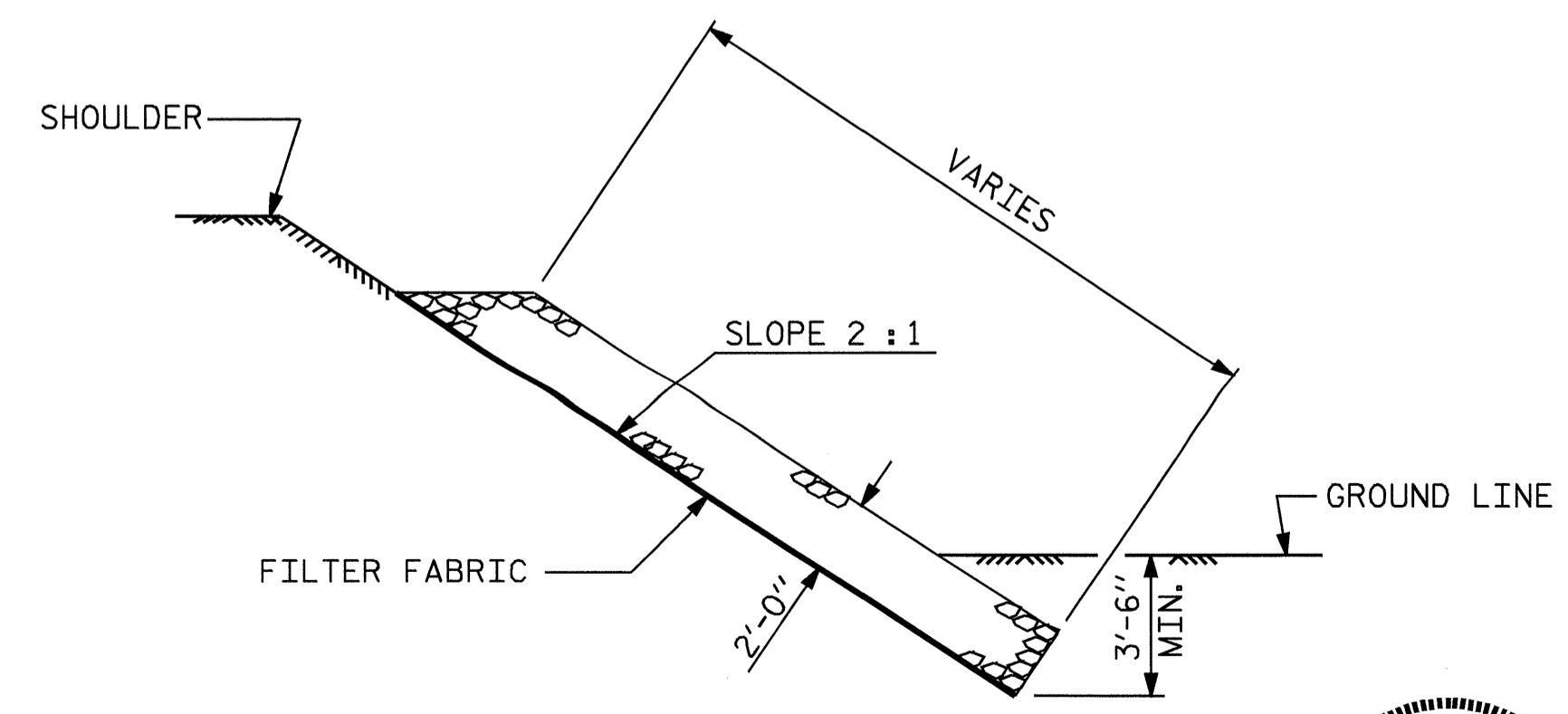
PLAN



SECTION @ END BENT No. 1



**SECTION
BERM RIP RAPPED**

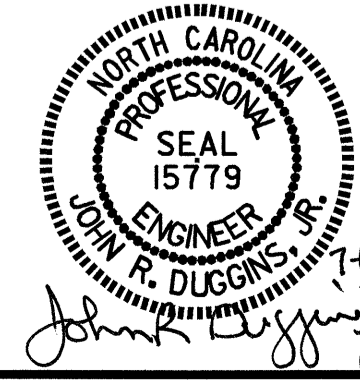


SECTION C-C

PROJECT NO. B-2950
CURRITUCK COUNTY
 STATION: 30+00.00 -L-

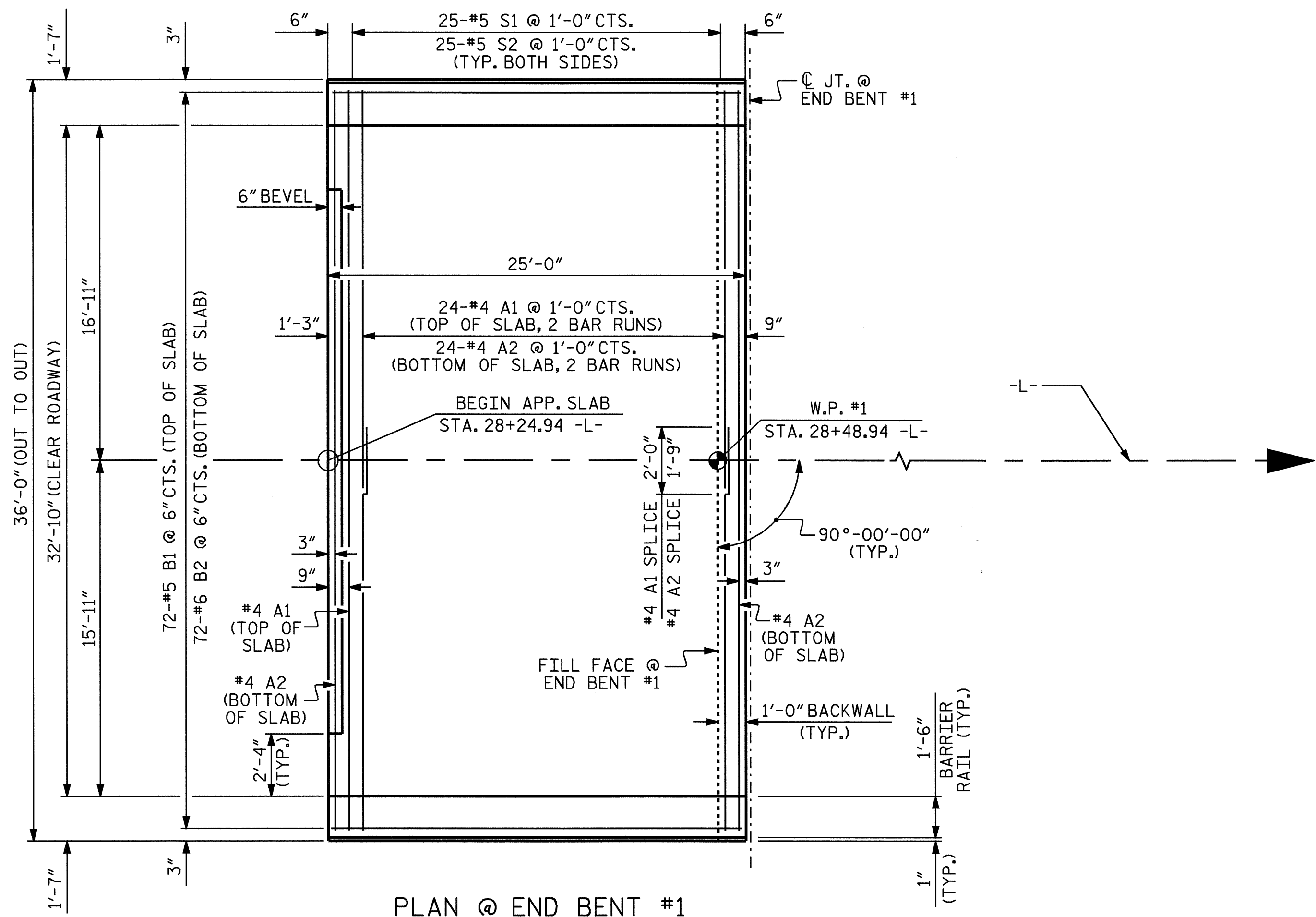
STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

— RIP RAP DETAILS —

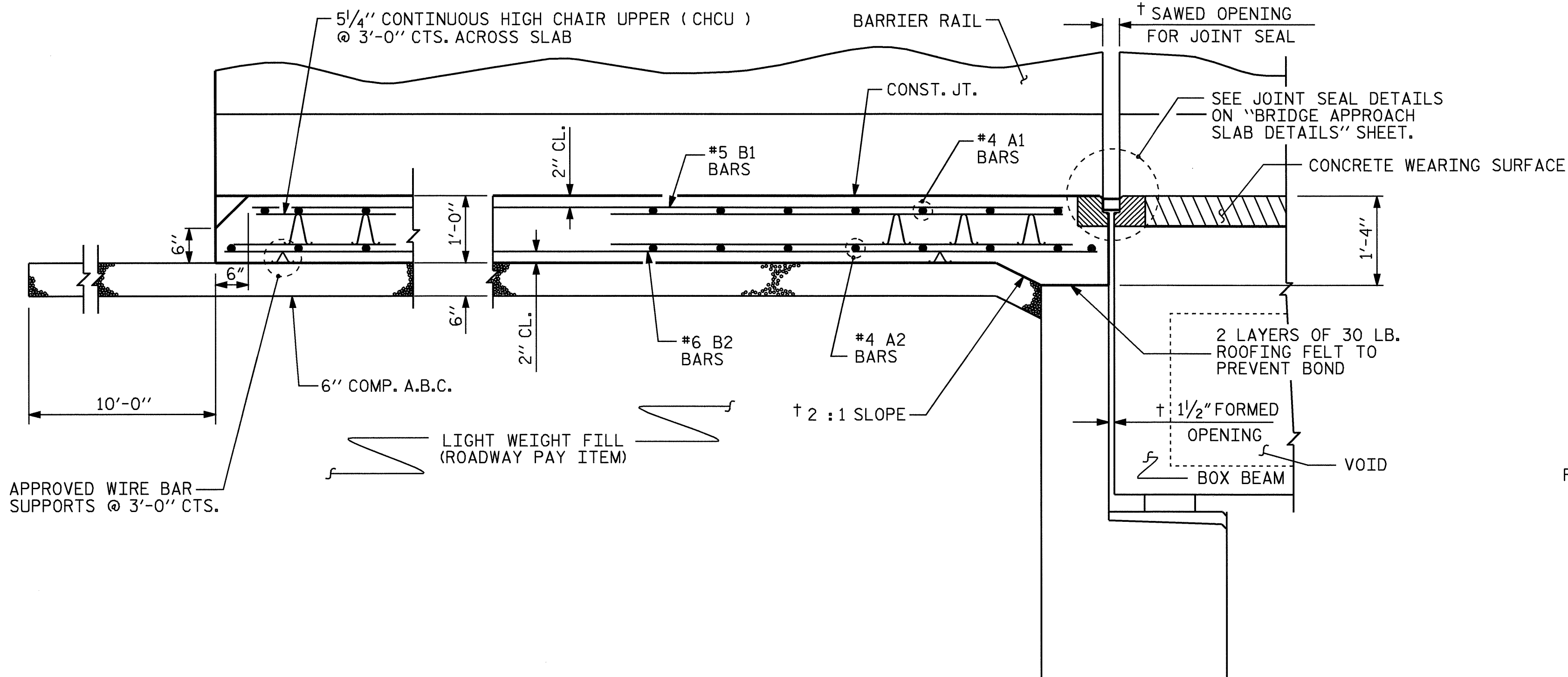


ASSEMBLED BY : M. POOLE DATE : 04/07
 CHECKED BY : J. R. DUGGINS DATE : 04/07
 DRAWN BY : FCJ 2/88 REV. 8/16/99 RWW/LES
 CHECKED BY : ARB 8/88 REV. 10/17/00 RWW/LES
 REV. 5/1/06 TLA/GM

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

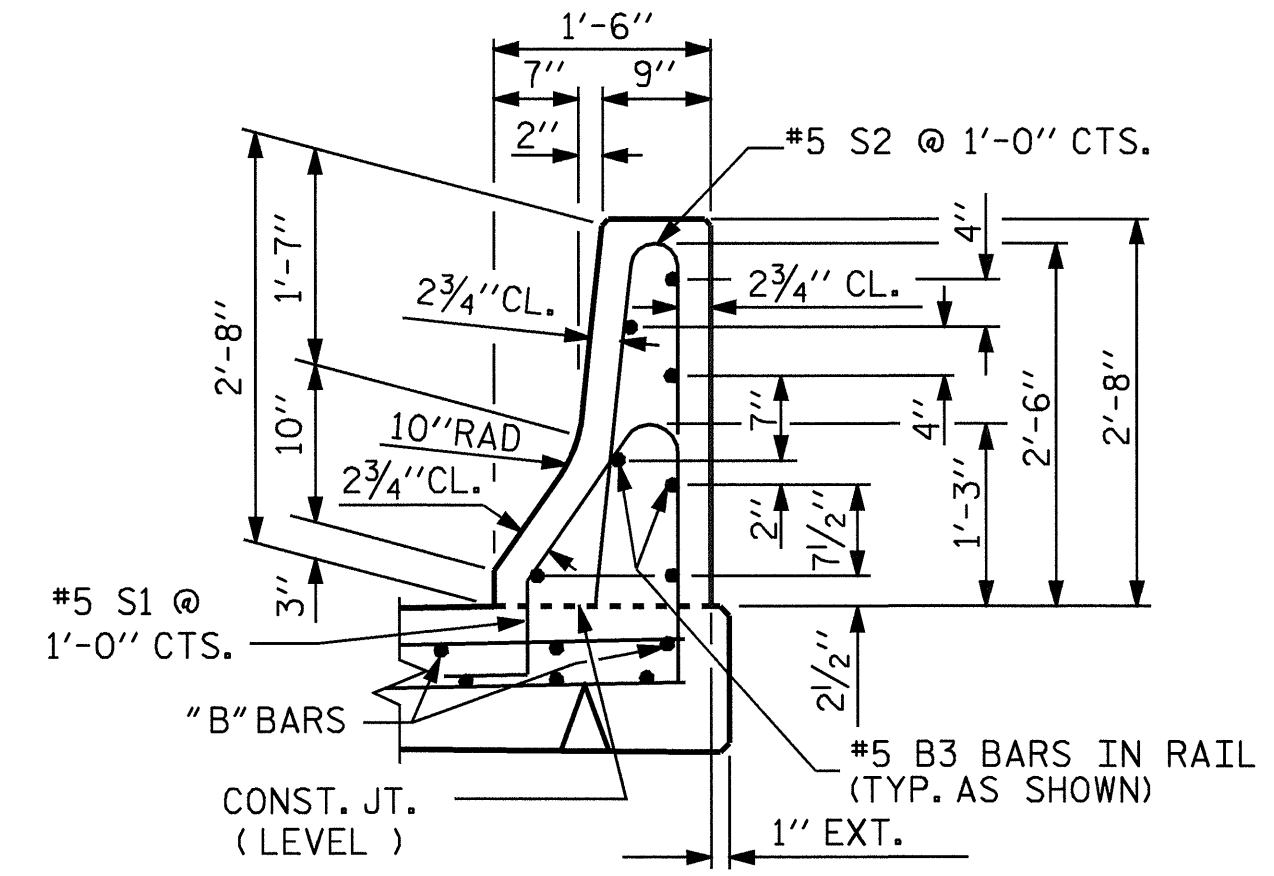


PLAN @ END BENT #1

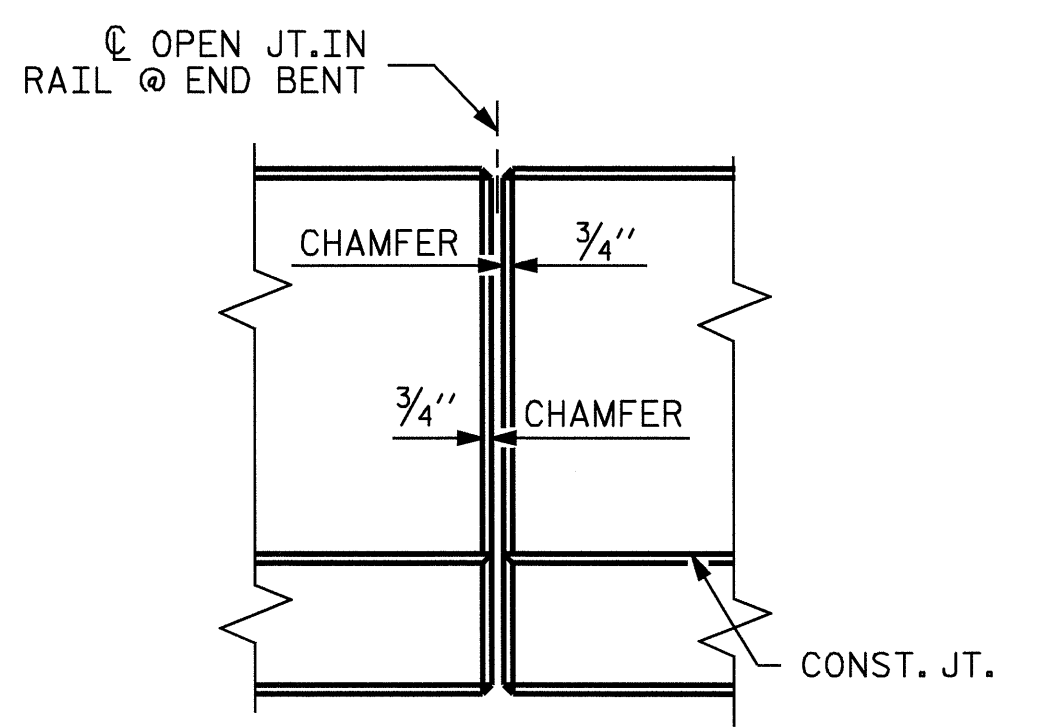


SECTION THRU SLAB

SHOWING SECTION WITHOUT CONCRETE WEARING SURFACE



SECTION THRU RAIL



ELEVATION AT EXPANSION JOINTS

BARRIER RAIL DETAILS

NOTES

THE COST OF THE BARRIER RAIL ON THE APPROACH SLAB SHALL BE INCLUDED IN THE LUMP SUM CONTRACT PRICE BID FOR BRIDGE APPROACH SLABS.

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

APPROACH SLAB SHALL BE POURED AFTER CONCRETE WEARING SURFACE IS POURED.

SUBDRAIN FINE AGGREGATE IS TO BE CONTINUOUS ALONG FILL FACE OF BACKWALL AND END BENT FROM OUTSIDE EDGE TO OUTSIDE EDGE OF APPROACH SLAB.

THE 6" COMP. A.B.C. SHALL EXTEND 10'-0" BEYOND THE END OF THE APPROACH SLAB.

THE CONTRACTOR MAY USE 4" TYPE B-25.0B ASPHALT CONCRETE BASE COURSE IN LIEU OF 6" COMP. A.B.C. IF THIS OPTION IS USED, THE BASE COURSE SHALL EXTEND 1'-0" BEYOND THE END OF THE APPROACH SLAB AND THE WIDTH SHALL BE THE SAME AS THAT OF THE APPROACH SLAB.

THE CONTRACTOR MAY USE 5" CLASS "A" CONCRETE BASE IN LIEU OF 6" COMP. A.B.C. IF THIS OPTION IS USED, THE CONCRETE BASE SHALL EXTEND 1'-0" BEYOND THE END OF THE APPROACH SLAB AND THE WIDTH SHALL BE THE SAME AS THAT OF THE APPROACH SLAB. THE CONCRETE SHALL BE FINISHED TO A SMOOTH SURFACE AND A LAYER OF 30 LB ROOFING FELT SHALL BE PLACED BETWEEN THE CONCRETE BASE AND THE APPROACH SLAB TO PREVENT BOND. THE APPROACH SLAB SHALL NOT BE CAST UNTIL THE CONCRETE BASE HAS REACHED AN AGE OF THREE CURING DAYS.

FOR EVAZOTE JOINT SEALS, SEE SPECIAL PROVISIONS.

THE NOMINAL UNCOMPRESSED SEAL WIDTH OF THE EVAZOTE JOINT SEAL SHALL BE 3 3/4".

FOR ELASTOMERIC CONCRETE, SEE SPECIAL PROVISIONS.

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

BILL OF MATERIAL

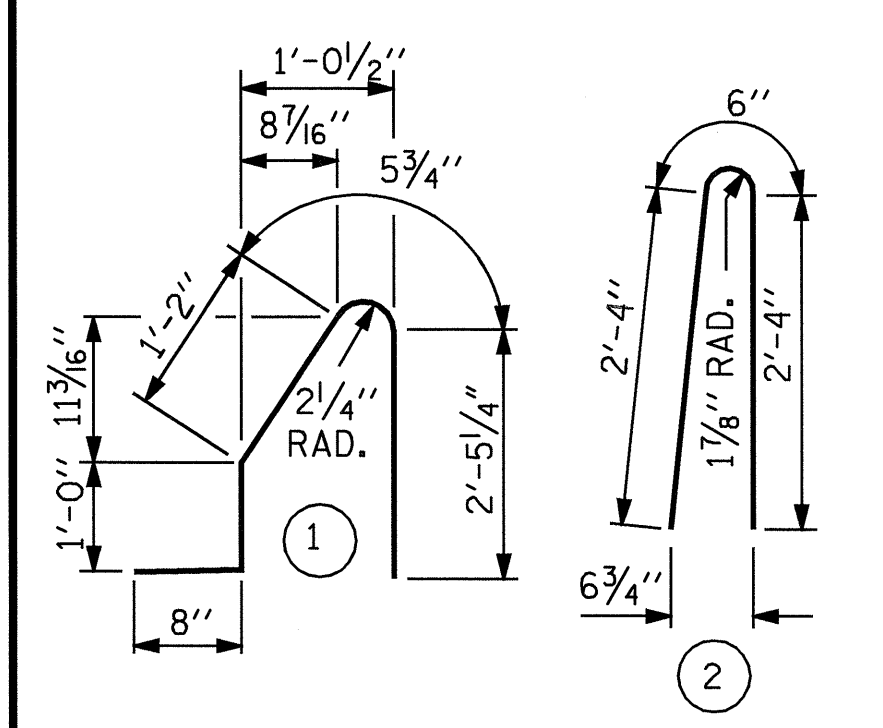
FOR APPROACH SLAB @ END BENT NO. 1

| BAR | NO. | SIZE | TYPE | LENGTH | WEIGHT |
|-----|-----|------|------|---------|--------|
| *A1 | 50 | #4 | STR | 18'-10" | 629 |
| A2 | 52 | #4 | STR | 18'-9" | 651 |
| *B1 | 72 | #5 | STR | 23'-9" | 1784 |
| B2 | 72 | #6 | STR | 24'-8" | 2668 |
| *B3 | 14 | #5 | STR | 24'-8" | 360 |
| *S1 | 50 | #5 | 1 | 5'-9" | 300 |
| *S2 | 50 | #5 | 2 | 5'-2" | 269 |

| REINFORCING STEEL | LBS. | WEIGHT |
|---------------------------------|------|--------|
| *EPOXY COATED REINFORCING STEEL | LBS. | 3342 |

| CLASS AA CONCRETE BREAKDOWN | | | |
|-----------------------------|-------|------|--|
| POUR 1 SLAB AND CURB | C. Y. | 33.8 | |
| POUR 2 RAIL | C. Y. | 5.0 | |
| CLASS AA CONCRETE | C. Y. | 38.8 | |

BAR TYPES



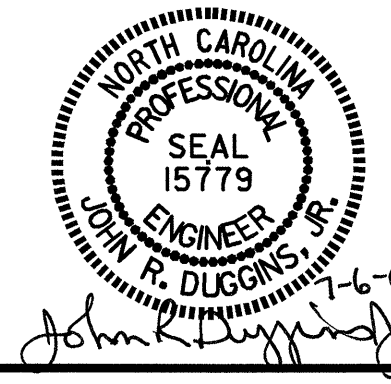
ALL BAR DIMENSIONS ARE OUT TO OUT

PROJECT NO. B-2950
CURRITUCK COUNTY
STATION: 30+00.00 -L-

SHEET 1 OF 3

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

END BENT #1
BRIDGE APPROACH SLAB
FOR FLEXIBLE PAVEMENT
WITH BARRIER RAIL



| REVISIONS | | | | | | SHEET NO. |
|-----------|-----|-------|-----|-----|-------|--------------|
| NO. | BY: | DATE: | NO. | BY: | DATE: | TOTAL SHEETS |
| 1 | | | 3 | | | 3-24 |
| 2 | | | 4 | | | 26 |

| | |
|------------------------------|----------------------|
| ASSEMBLED BY : A.L. FIGUEROA | DATE : 4-25-07 |
| CHECKED BY : J.R. DUGGINS | DATE : 4-26-07 |
| DRAWN BY : LES 8/01 | REV. 5/7/03R RWW/JTE |
| CHECKED BY : RDR 8/01 | REV. 5/1/06 TLA/GM |

NOTES

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

APPROACH SLAB SHALL BE POURED AFTER CONCRETE WEARING SURFACE IS POURED.

FOR REINFORCED BRIDGE APPROACH FILL INCLUDING FABRIC, IMPERMEABLE GEOMEMBRANE, 4" Ø DRAINAGE PIPE, #78M STONE, AND SELECT MATERIAL, 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.

THE 6" COMP. A.B.C. SHALL EXTEND 10'-0" BEYOND THE END OF THE APPROACH SLAB AND 1'-0" OUTSIDE OF EACH EDGE OF SLAB.

THE CONTRACTOR MAY USE 4" TYPE B-25.0B ASPHALT CONCRETE BASE COURSE IN LIEU OF 6" COMP. A.B.C. IF THIS OPTION IS USED, THE BASE COURSE SHALL EXTEND 1'-0" BEYOND THE END OF THE APPROACH SLAB AND THE WIDTH SHALL BE THE SAME AS THAT OF THE APPROACH SLAB.

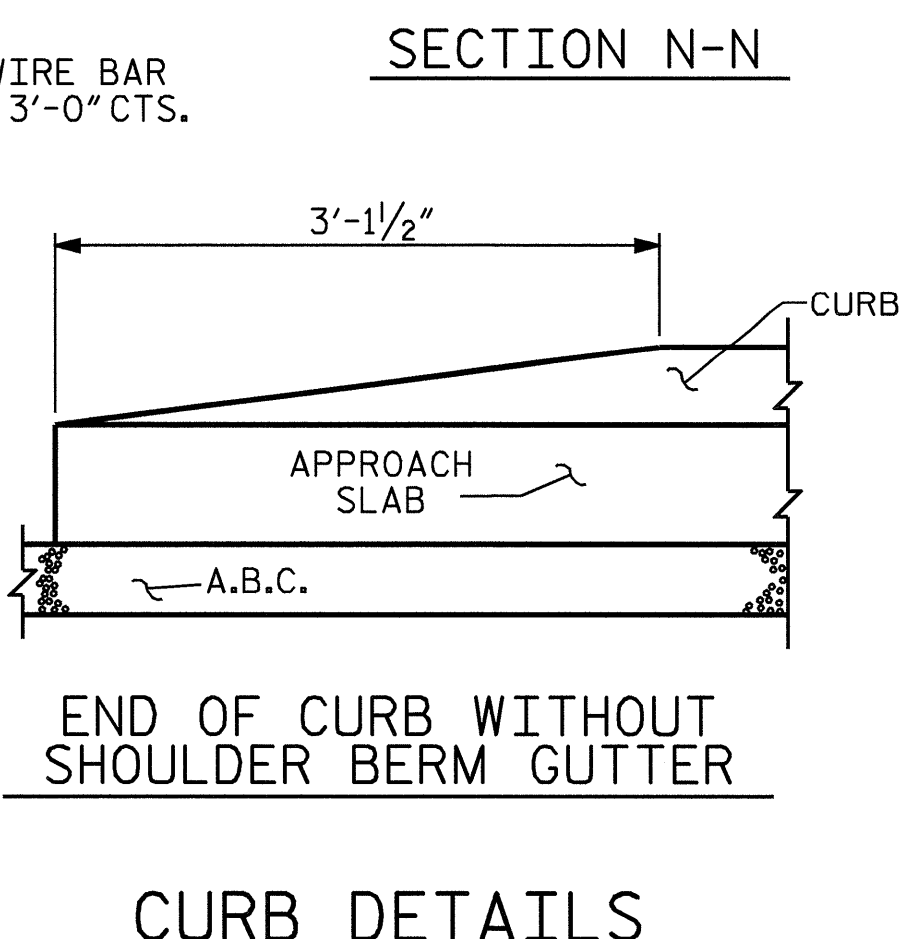
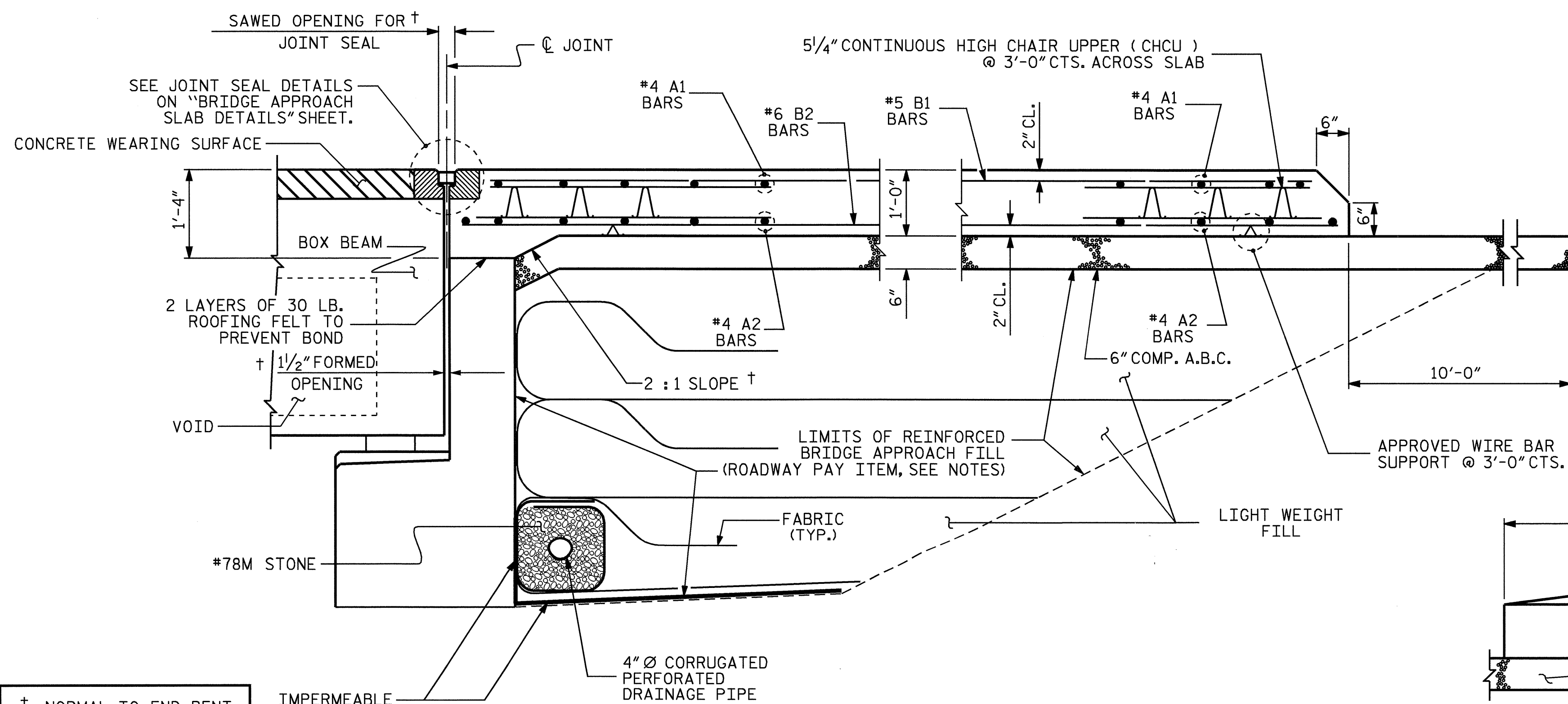
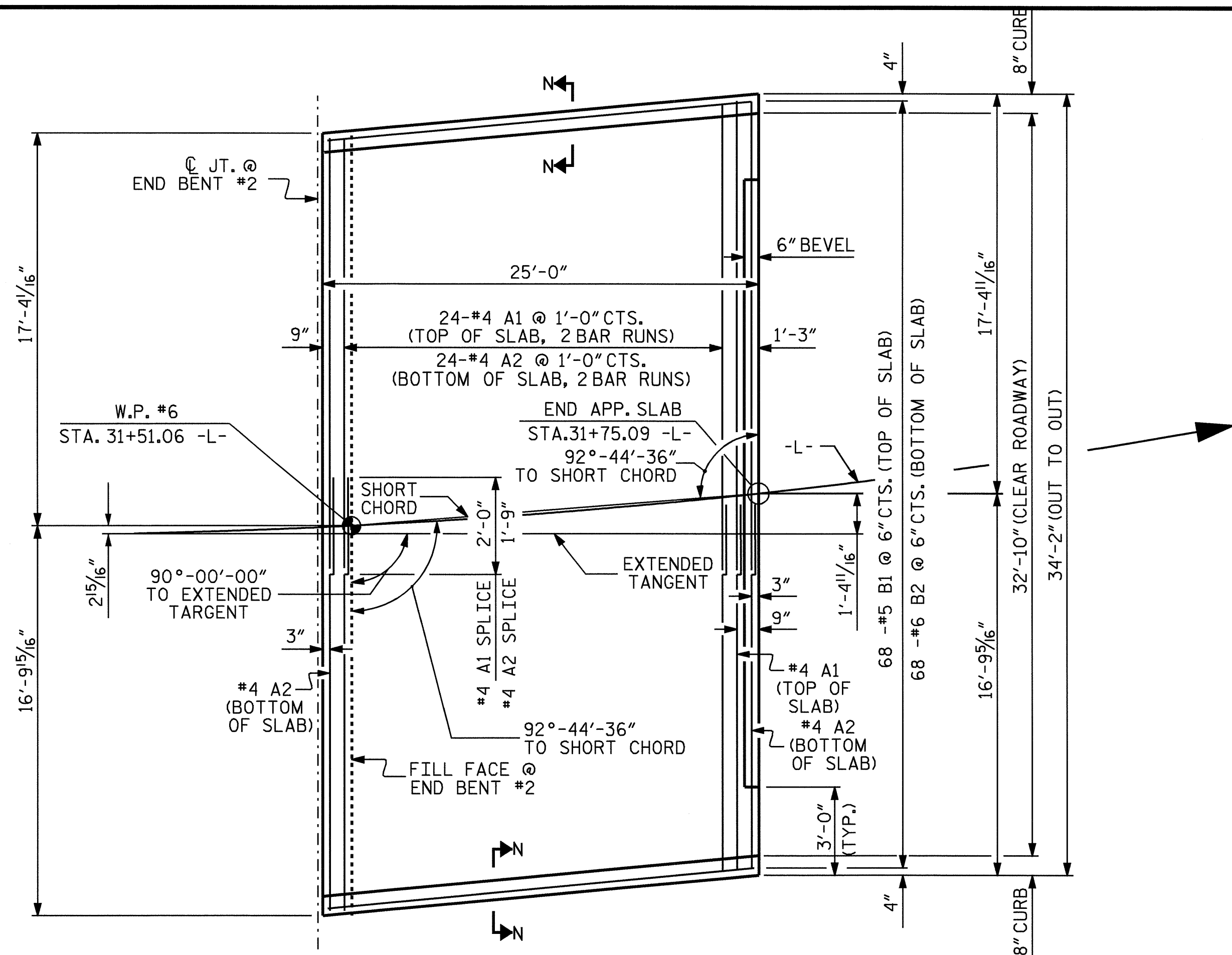
THE CONTRACTOR MAY USE 5" CLASS "A" CONCRETE BASE IN LIEU OF 6" COMP. A.B.C. IF THIS OPTION IS USED, THE CONCRETE BASE SHALL EXTEND 1'-0" BEYOND THE END OF THE APPROACH SLAB AND THE WIDTH SHALL BE THE SAME AS THAT OF THE APPROACH SLAB. THE CONCRETE SHALL BE FINISHED TO A SMOOTH SURFACE AND A LAYER OF 30 LB ROOFING FELT SHALL BE PLACED BETWEEN THE CONCRETE BASE AND THE APPROACH SLAB TO PREVENT BOND. THE APPROACH SLAB SHALL NOT BE CAST UNTIL THE CONCRETE BASE HAS REACHED AN AGE OF THREE CURING DAYS.

FOR EVAZOTE JOINT SEALS, SEE SPECIAL PROVISIONS.

THE NOMINAL UNCOMPRESSED SEAL WIDTH OF THE EVAZOTE JOINT SEAL SHALL BE 3 3/4".

FOR ELASTOMERIC CONCRETE, SEE SPECIAL PROVISIONS.

| BILL OF MATERIAL | | | | | |
|---------------------------------|-----|------|------|---------|------------|
| APPROACH SLAB AT EB NO. 2 | | | | | |
| BAR | NO. | SIZE | TYPE | LENGTH | WEIGHT |
| *A1 | 50 | #4 | STR | 17'-11" | 598 |
| A2 | 52 | #4 | STR | 17'-10" | 620 |
| *B1 | 68 | #5 | | 23'-9" | 1684 |
| B2 | 68 | #6 | STR | 24'-8" | 2519 |
| REINFORCING STEEL | | | | | LBS. 3139 |
| *EPOXY COATED REINFORCING STEEL | | | | | LBS. 2282 |
| CLASS AA CONCRETE | | | | | C. Y. 32.3 |



PROJECT NO. B-2950
CURRITUCK COUNTY
 STATION: 30+00.00 -L-

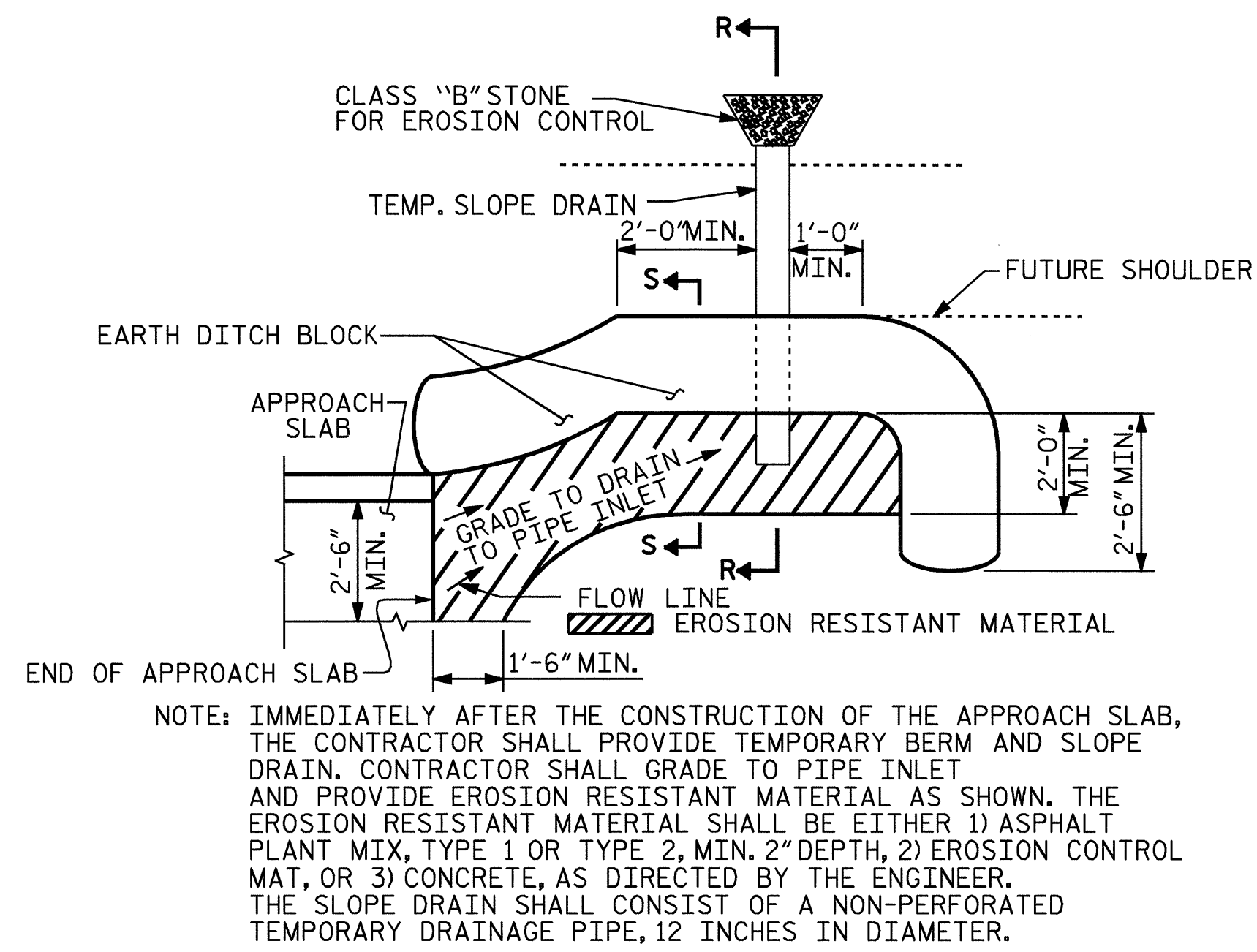
SHEET 2 OF 3

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

END BENT #2
 BRIDGE APPROACH SLAB
 FOR FLEXIBLE PAVEMENT

| REVISIONS | | | | | | SHEET NO. | |
|-----------|-----|-------|-----|-----|-------|-----------------|--|
| NO. | BY: | DATE: | NO. | BY: | DATE: | S-25 | |
| 1 | | | 3 | | | TOTAL SHEETS 26 | |
| 2 | | | 4 | | | | |

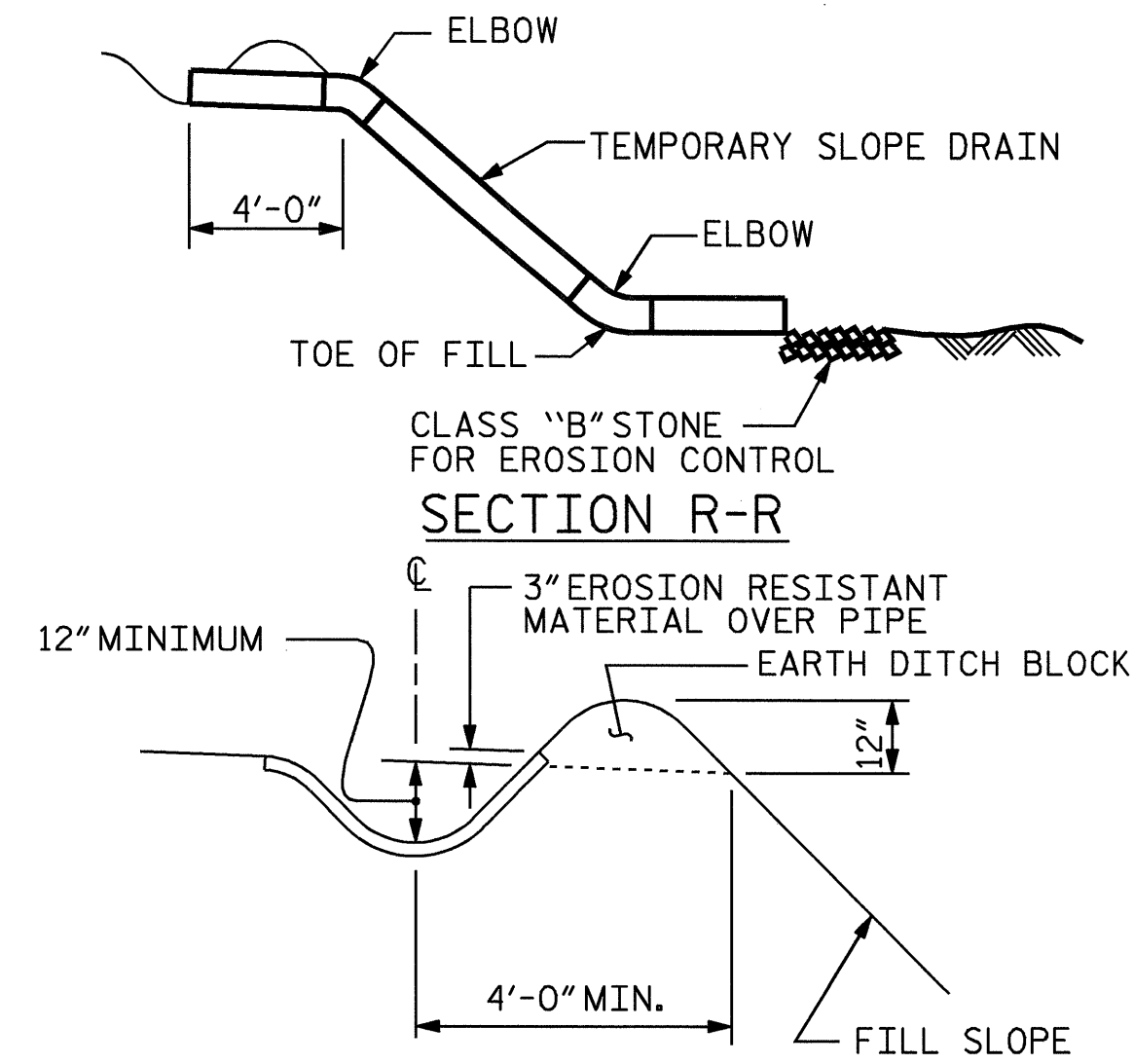
| | |
|------------------------------|----------------------|
| ASSEMBLED BY : A.L. FIGUEROA | DATE : 4-25-07 |
| CHECKED BY : J.R. DUGGINS | DATE : 4-26-07 |
| DRAWN BY : EEM 3/95 | REV. 7/10/01 LES/RJR |
| CHECKED BY : VAP 3/95 | REV. 5/7/03R RWW/JTE |
| | REV. 5/1/06 TLA/GM |



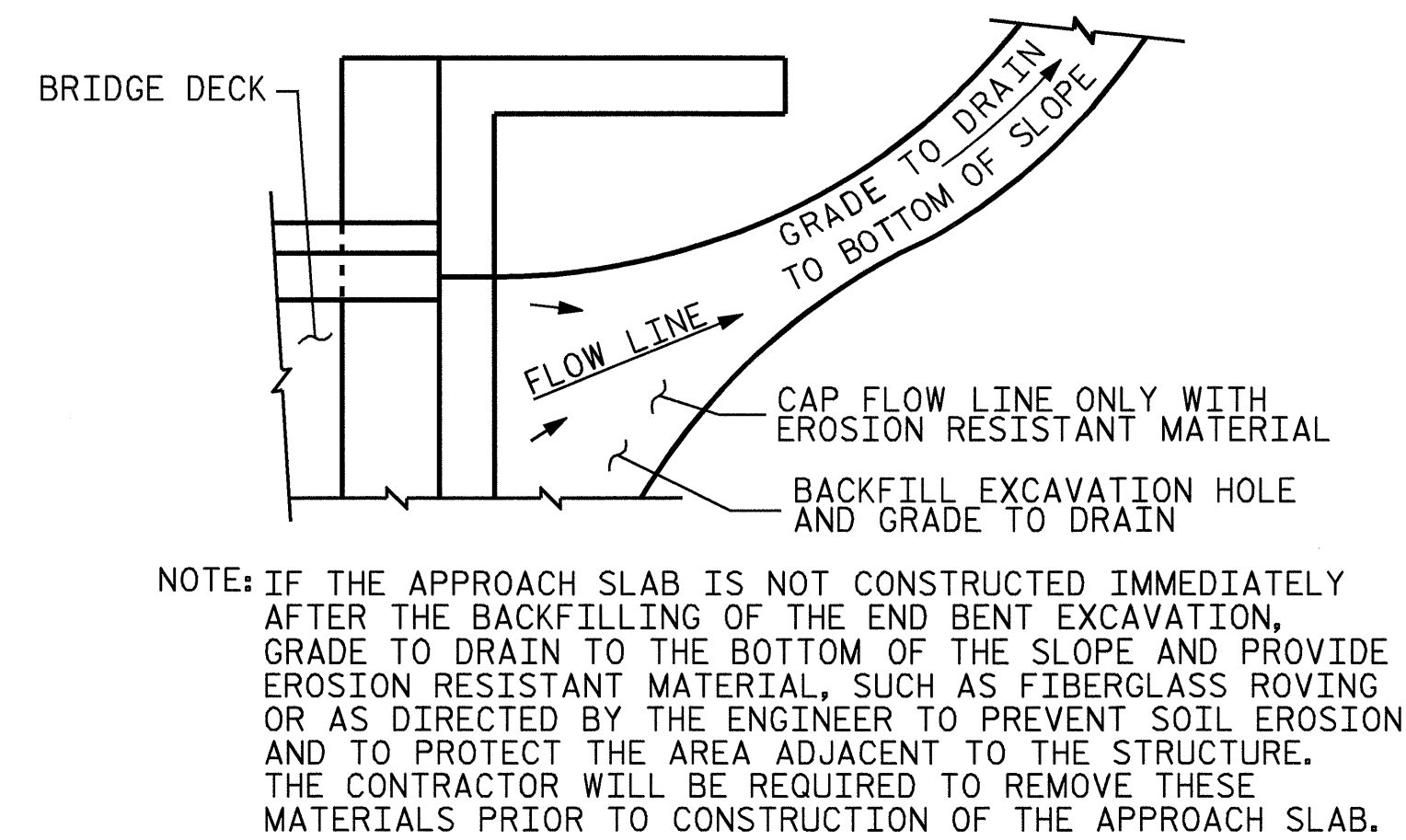
PLAN VIEW

TEMPORARY BERM AND SLOPE DRAIN DETAILS

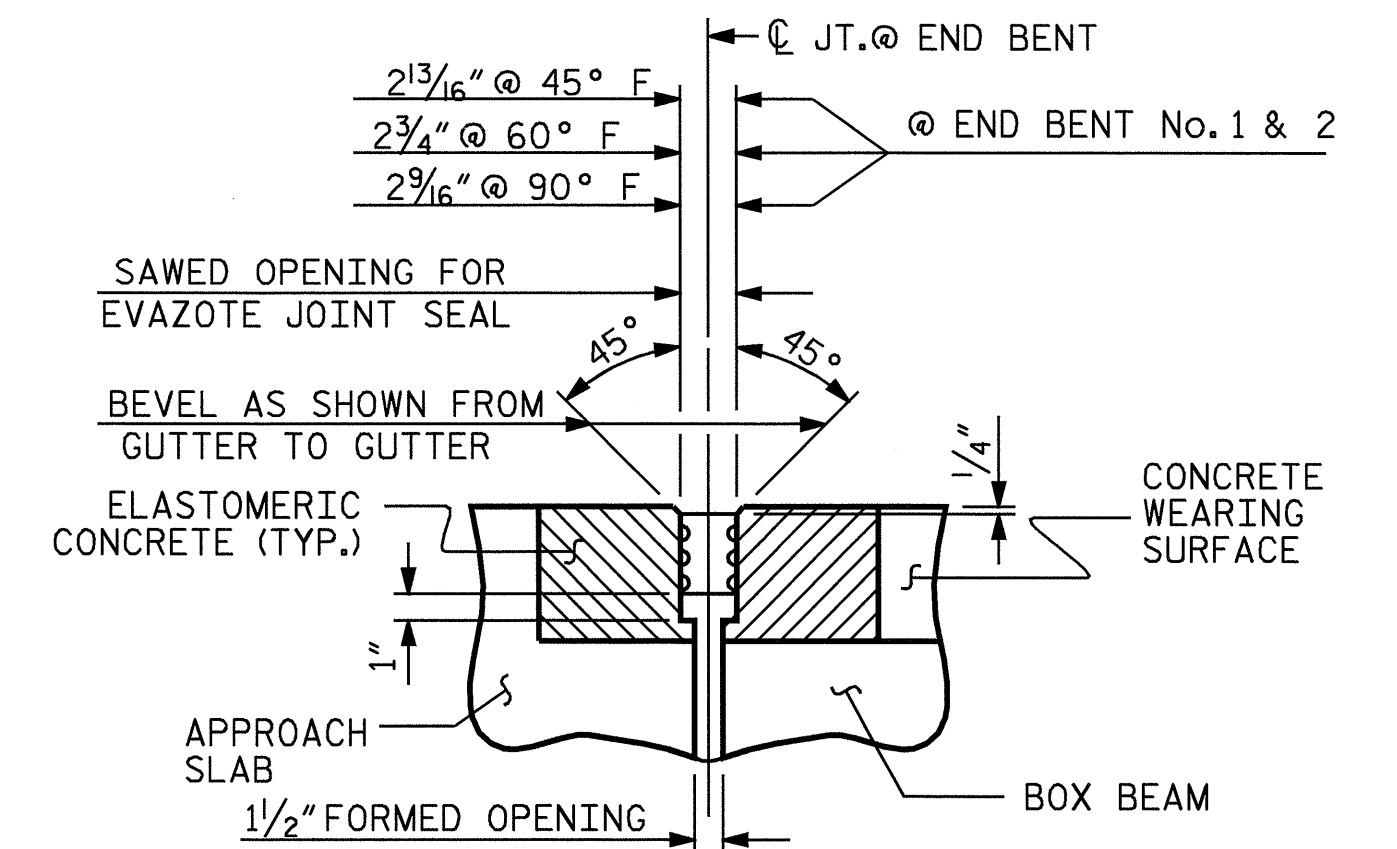
(TO BE USED WHEN SHOULDER BERM GUTTER IS REQUIRED)



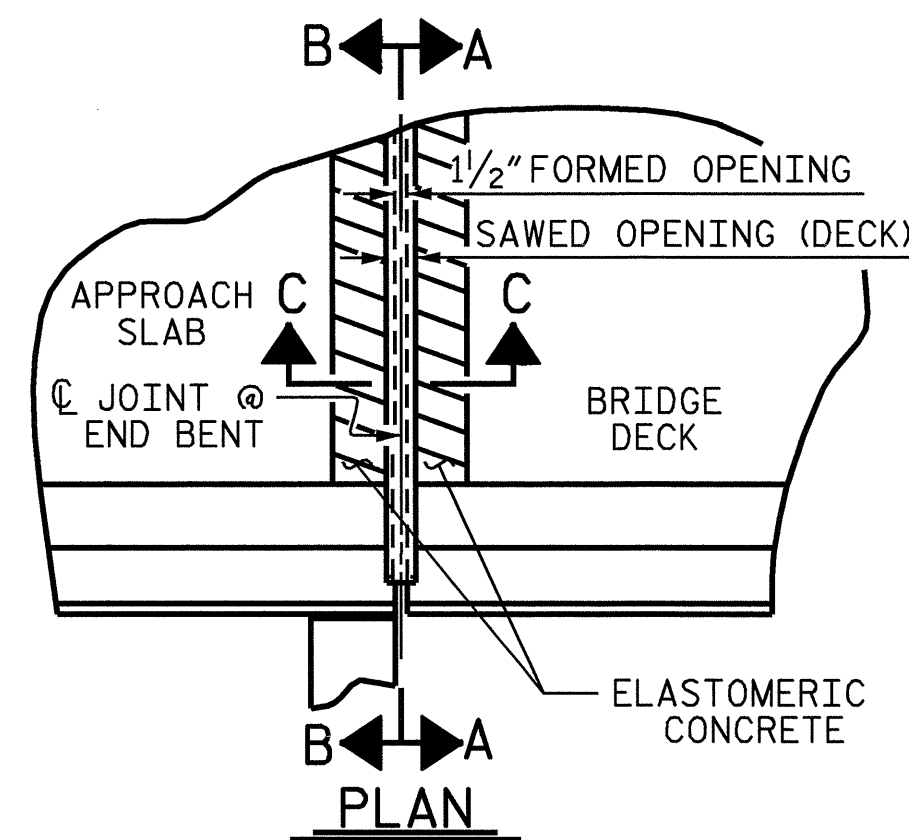
SECTION S-S



TEMPORARY DRAINAGE DETAIL

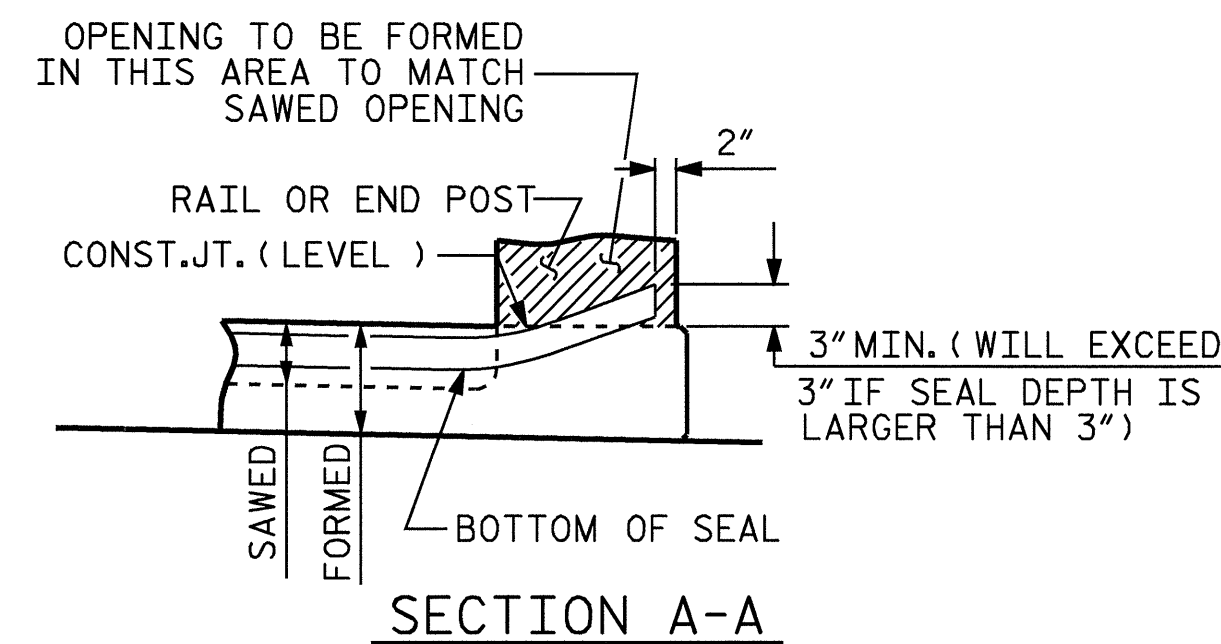


SECTION C-C
EVAZOTE JOINT SEAL

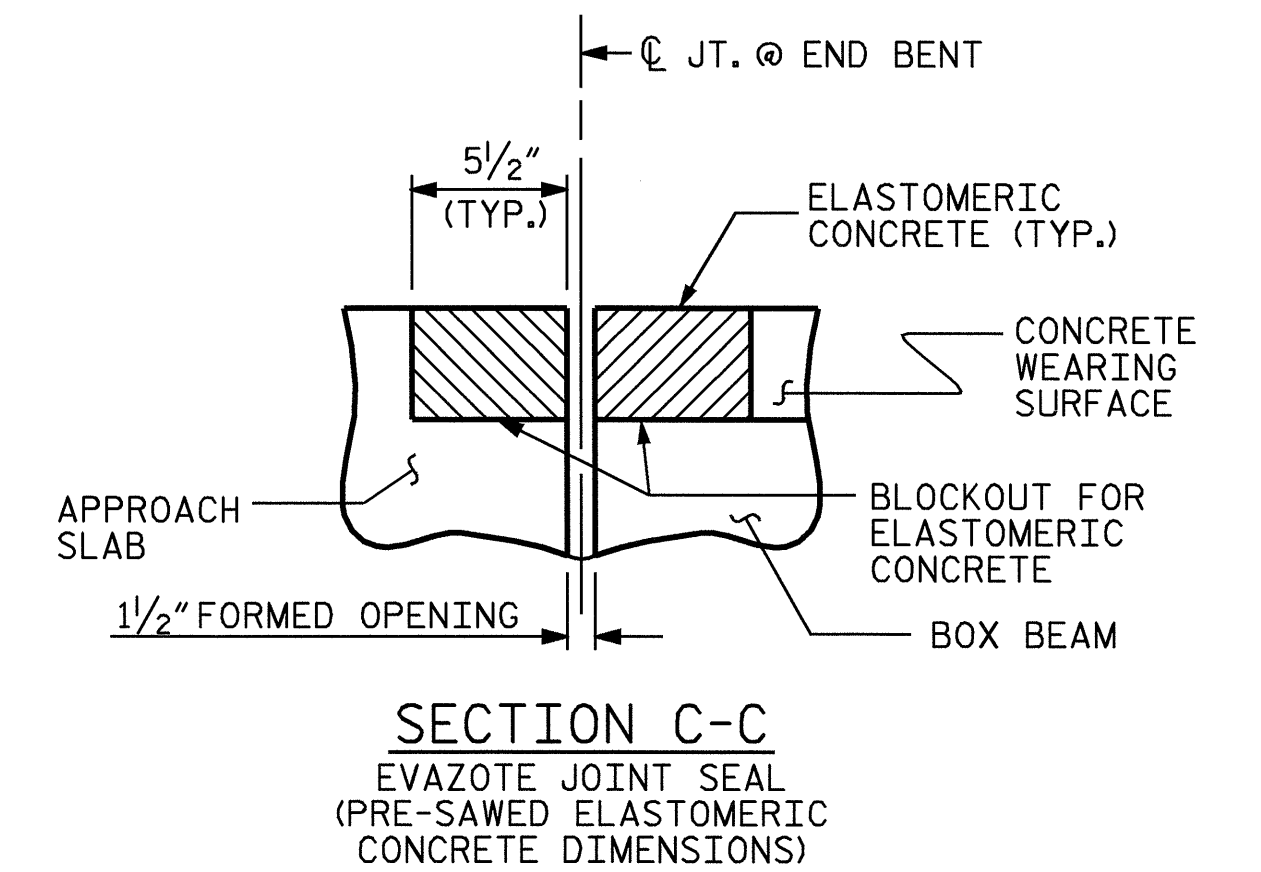


| ELASTOMERIC CONCRETE | |
|----------------------|----------------------------------|
| END BENT NO. | ELASTOMERIC CONCRETE * (CU. FT.) |
| 1 | 12.9 |
| 2 | 12.9 |
| TOTAL | 25.8 |

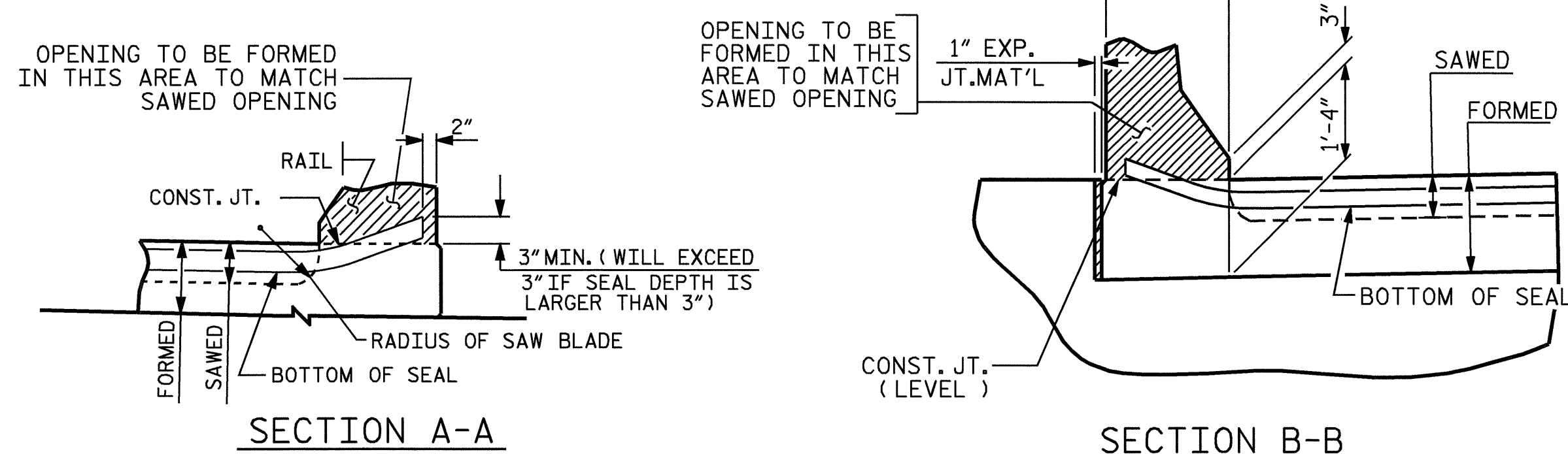
* BASED ON THE MINIMUM BLOCKOUT SHOWN.



SECTION A-A



SECTION C-C
EVAZOTE JOINT SEAL
(PRE-SAWED ELASTOMERIC CONCRETE DIMENSIONS)

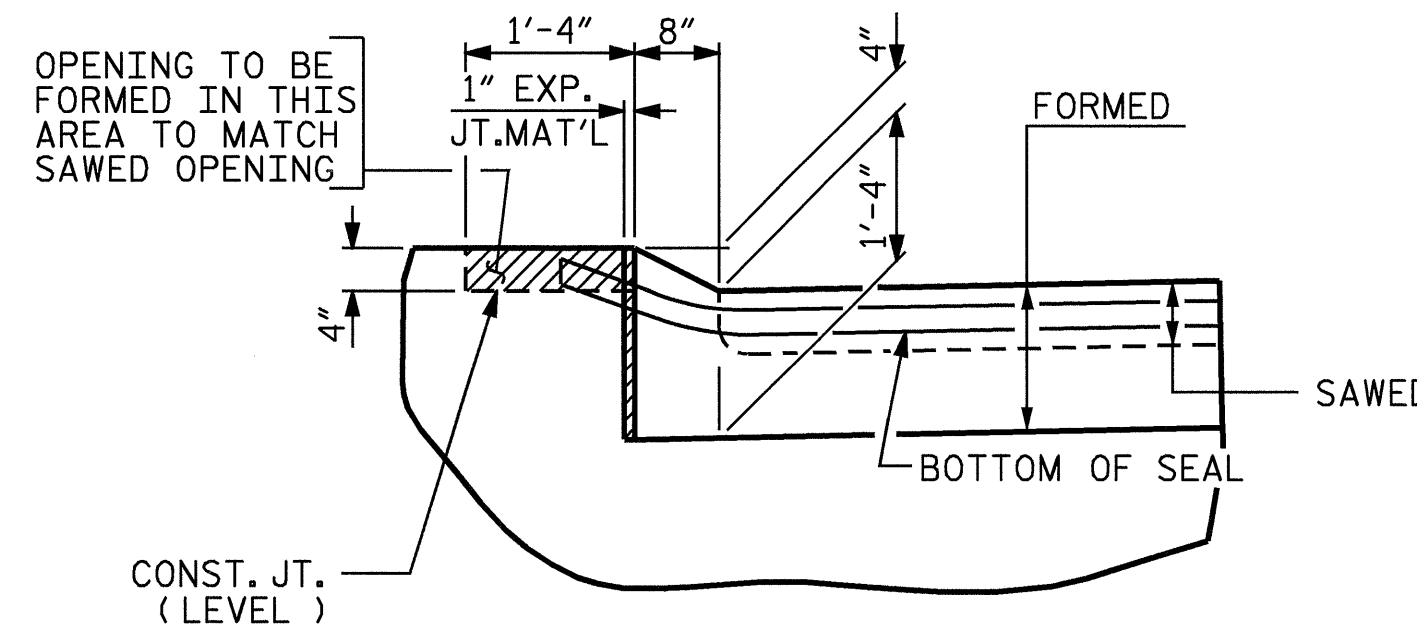


SECTION A-A

SECTION B-B

JOINT SEAL DETAILS @ END BENT NO.1

(FOR BARRIER RAIL)



SECTION B-B

JOINT SEAL DETAILS @ END BENT NO.2

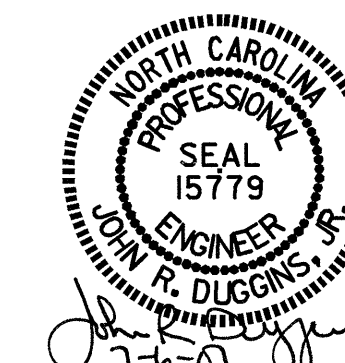
PROJECT NO. B-2950
CURRITUCK COUNTY
STATION: 30+00.00 -L-

SHEET 3 OF 3

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

STANDARD
BRIDGE APPROACH
SLAB DETAILS

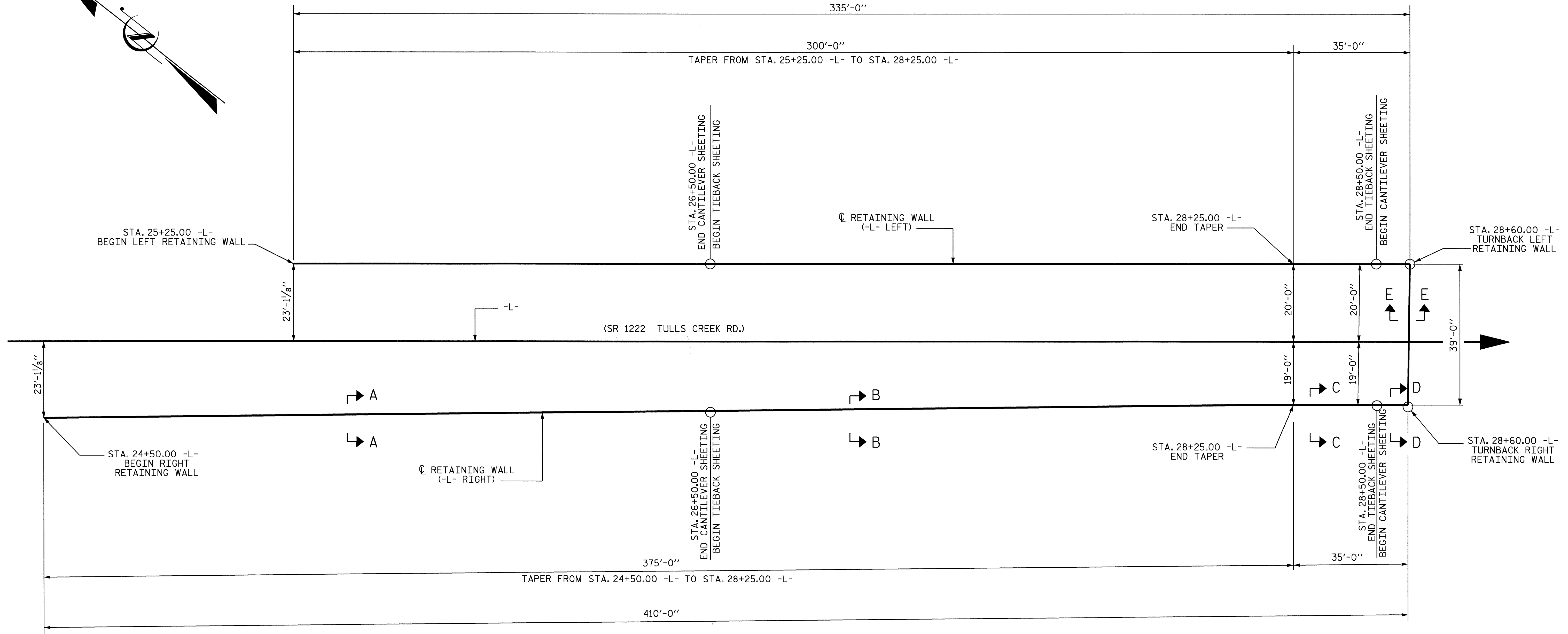
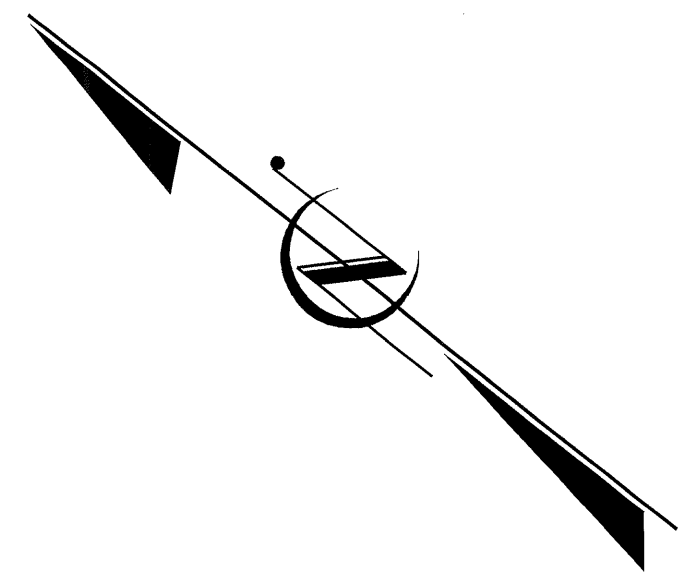
ASSEMBLED BY : A.L. FIGUEROA DATE : 04-25-07
CHECKED BY : J.R. DUGGINS DATE : 04-26-07
DRAWN BY : FCJ 11/88 REV. 8/16/99 MAB/LES
CHECKED BY : ARB 11/88 REV. 10/17/00 RWW/LES
REV. 5/7/03 RWW/JTE



| REVISIONS | | | | | | 1988 |
|-----------|-----|-------|-----|-----|-------|-----------------|
| NO. | BY: | DATE: | NO. | BY: | DATE: | SHEET NO. |
| 1 | | | 3 | | | S-26 |
| 2 | | | 4 | | | TOTAL SHEETS 26 |

STD. NO. BAS10

24+50 25+00 25+50 26+00 26+50 27+00 27+50 28+00 28+50



PLAN

NOTE: OFFSET DIMENSIONS ARE TO
 ☉ SHEETING. (SEE SECTION VIEWS, SHEET 3 OF 4)

PROJECT NO. B-2950
CURRITUCK COUNTY
 STATION: 30+00.00 -L-

SHEET 1 OF 4

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH
RETAINING WALLS
 (-L- LEFT)
 STA. 25+25.00 -L-
 TO STA. 28+60.00 -L- &
 (-L- RIGHT)
 STA. 24+50.00 -L-
 TO STA. 28+60.00 -L-

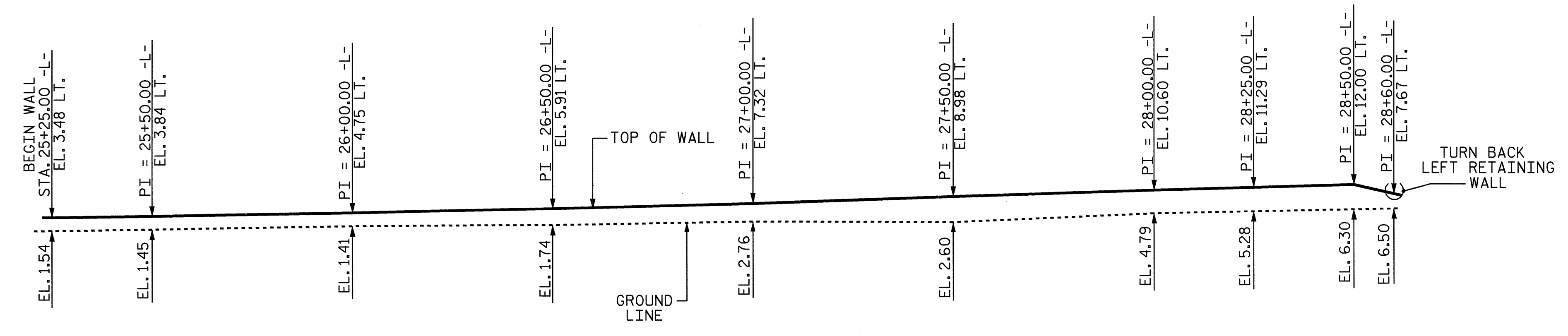
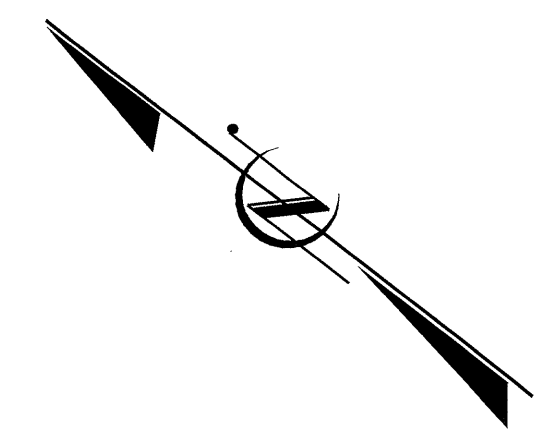


DRAWN BY: M. POOLE DATE: 12/06
 CHECKED BY: J. R. DUGGINS DATE: 12/06

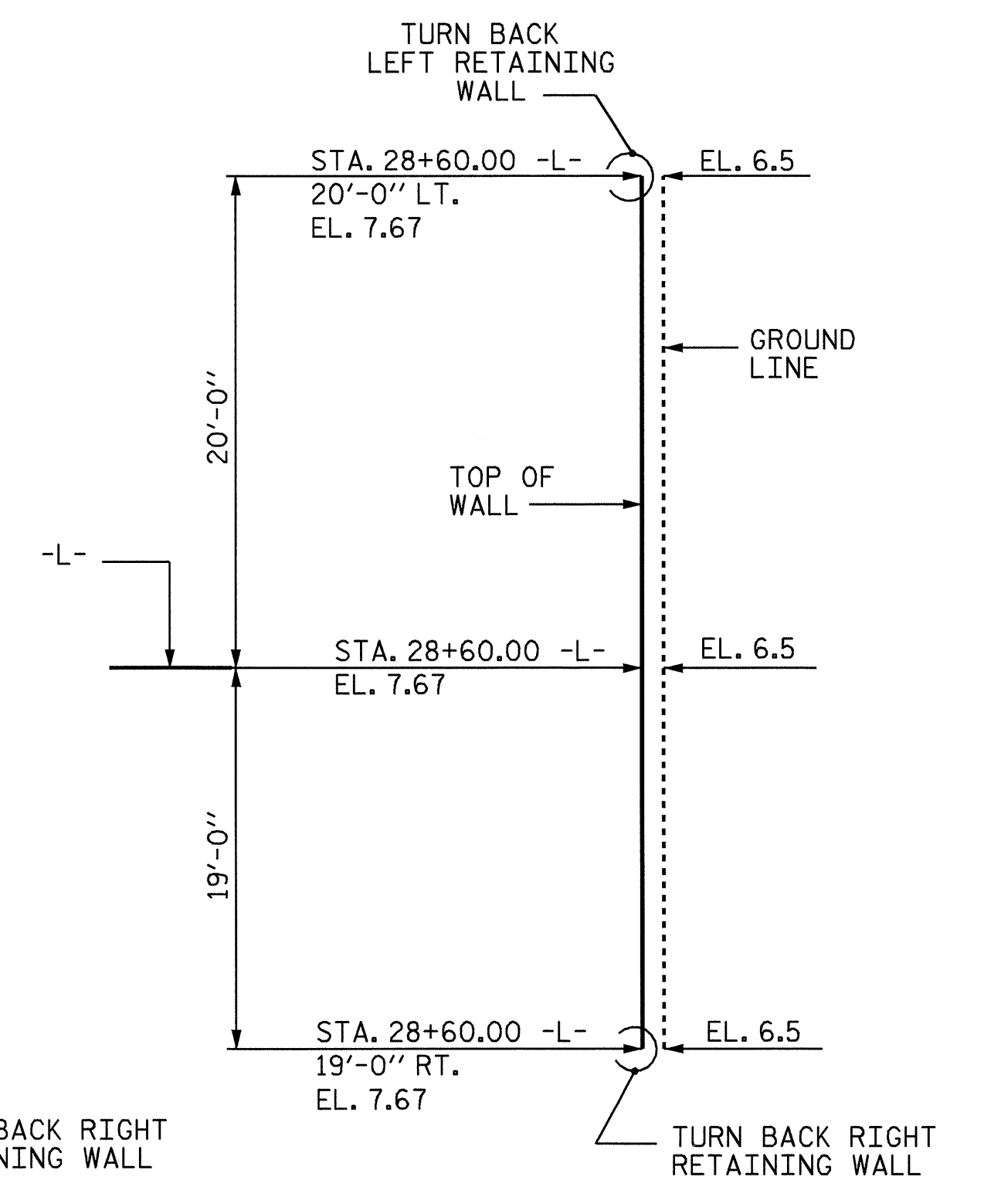
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 mpoole

| REVISIONS | | | | | | SHEET NO. |
|-----------|-----|-------|-----|-----|-------|--------------|
| NO. | BY: | DATE: | NO. | BY: | DATE: | W-1 |
| 1 | | | 3 | | | TOTAL SHEETS |
| 2 | | | 4 | | | 4 |

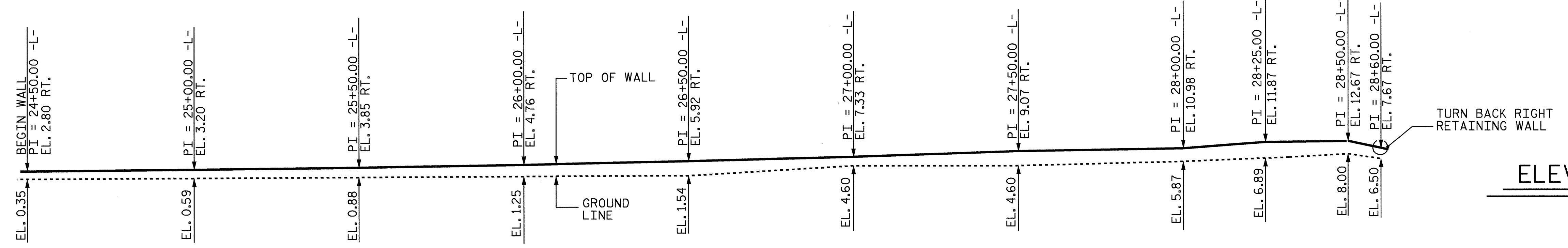
24+50 25+00 25+50 26+00 26+50 27+00 27+50 28+00 28+50



ELEVATION (-L- LEFT)



ELEVATION ALONG FRONT FACE

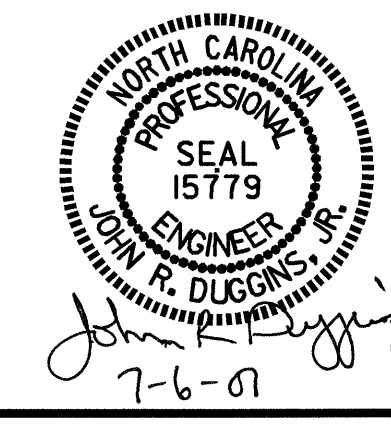


ELEVATION (-L- RIGHT)

PROJECT NO. B-2950
 CURRITUCK COUNTY
 STATION: 30+00.00 -L-

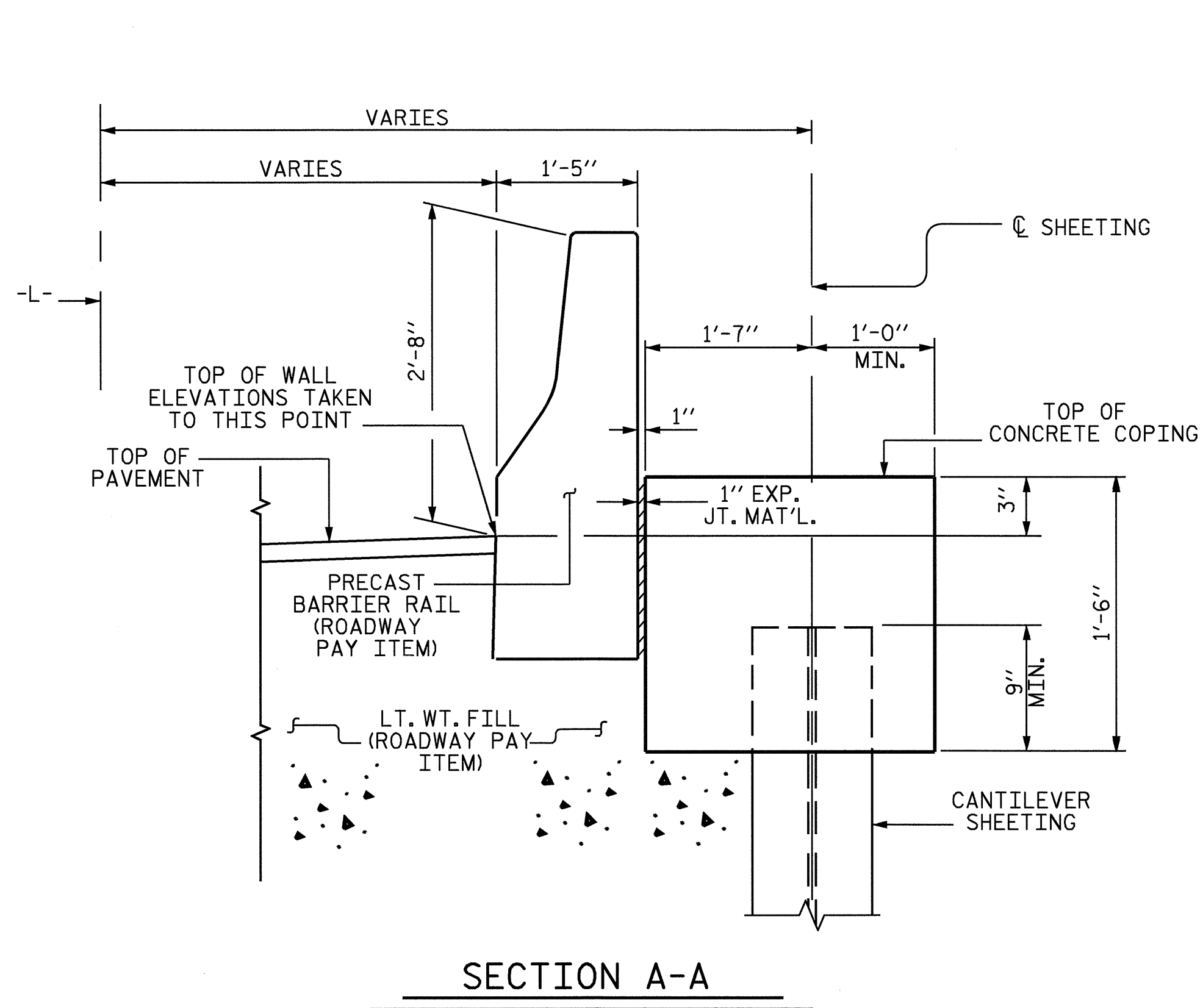
SHEET 2 OF 4

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH
 RETAINING WALLS
 (-L- LEFT)
 STA. 25+25.00 -L-
 TO STA. 28+60.00 -L- &
 (-L- RIGHT)
 STA. 24+50.00 -L-
 TO STA. 28+60.00 -L-

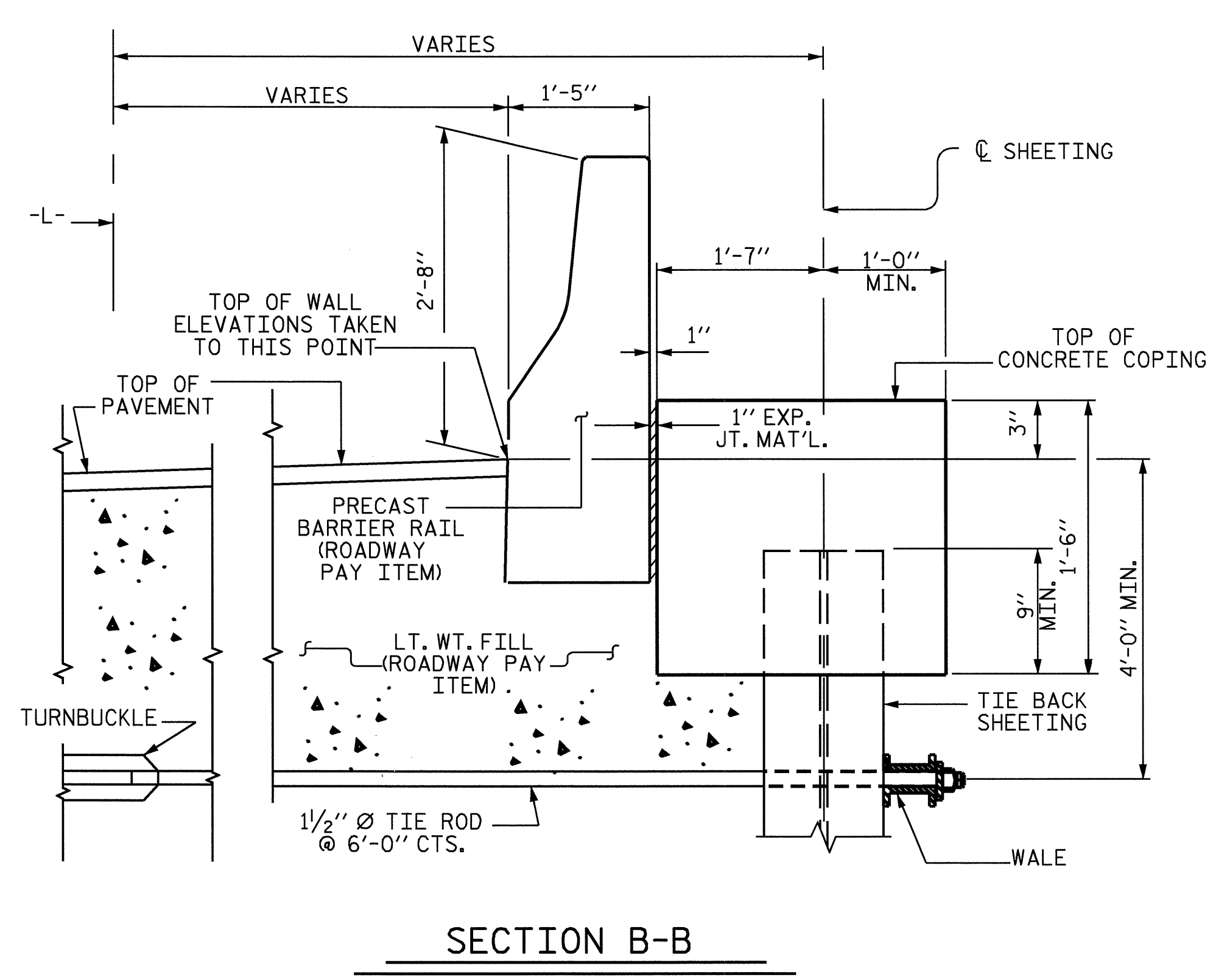


DRAWN BY : M. POOLE DATE : 12/06
 CHECKED BY : J. R. DUGGINS DATE : 12/06

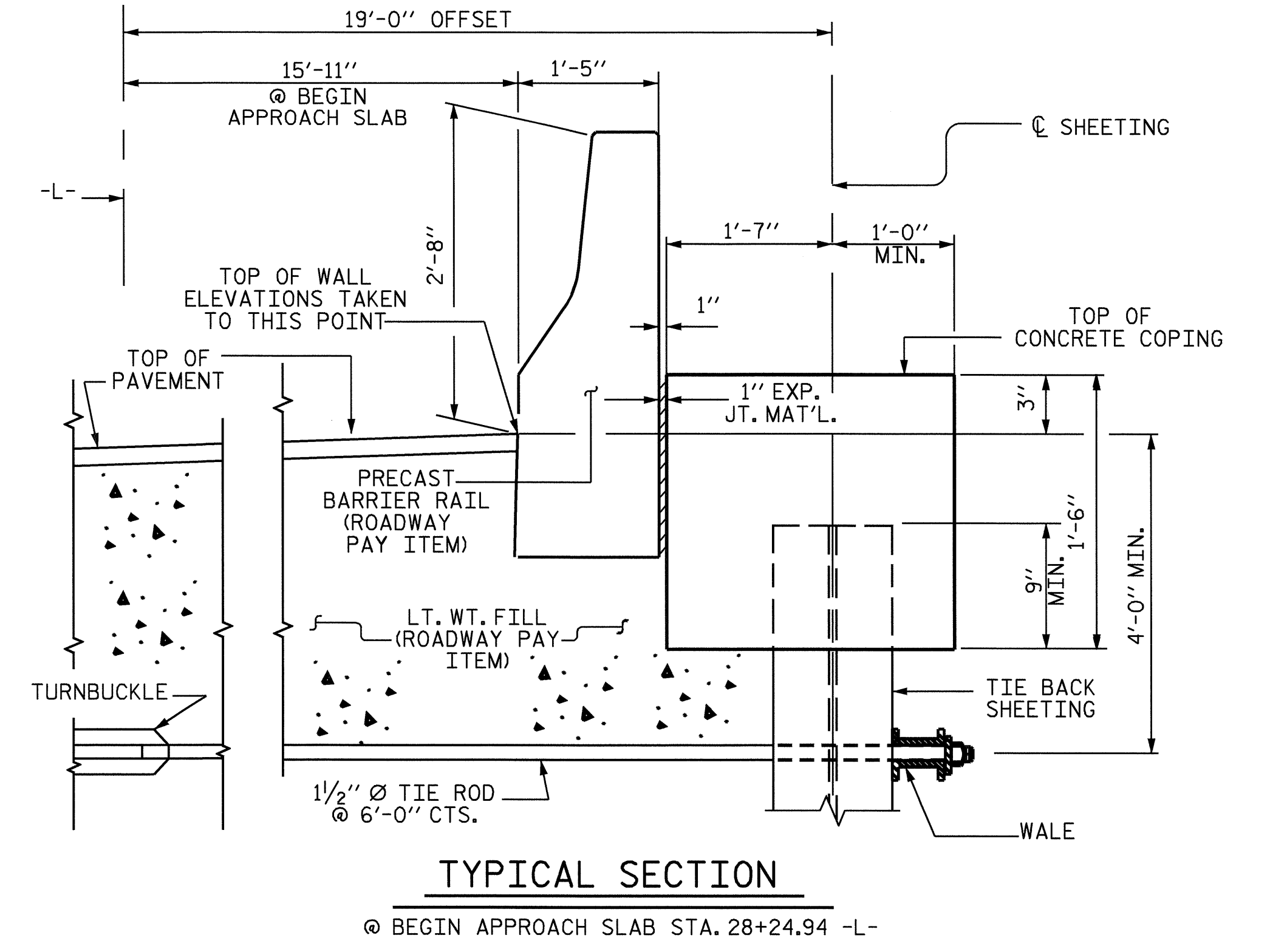
| REVISIONS | | | | | | SHEET NO. |
|-----------|-----|-------|-----|-----|-------|--------------|
| NO. | BY: | DATE: | NO. | BY: | DATE: | TOTAL SHEETS |
| 1 | | | 3 | | | 4 |
| 2 | | | 4 | | | 4 |



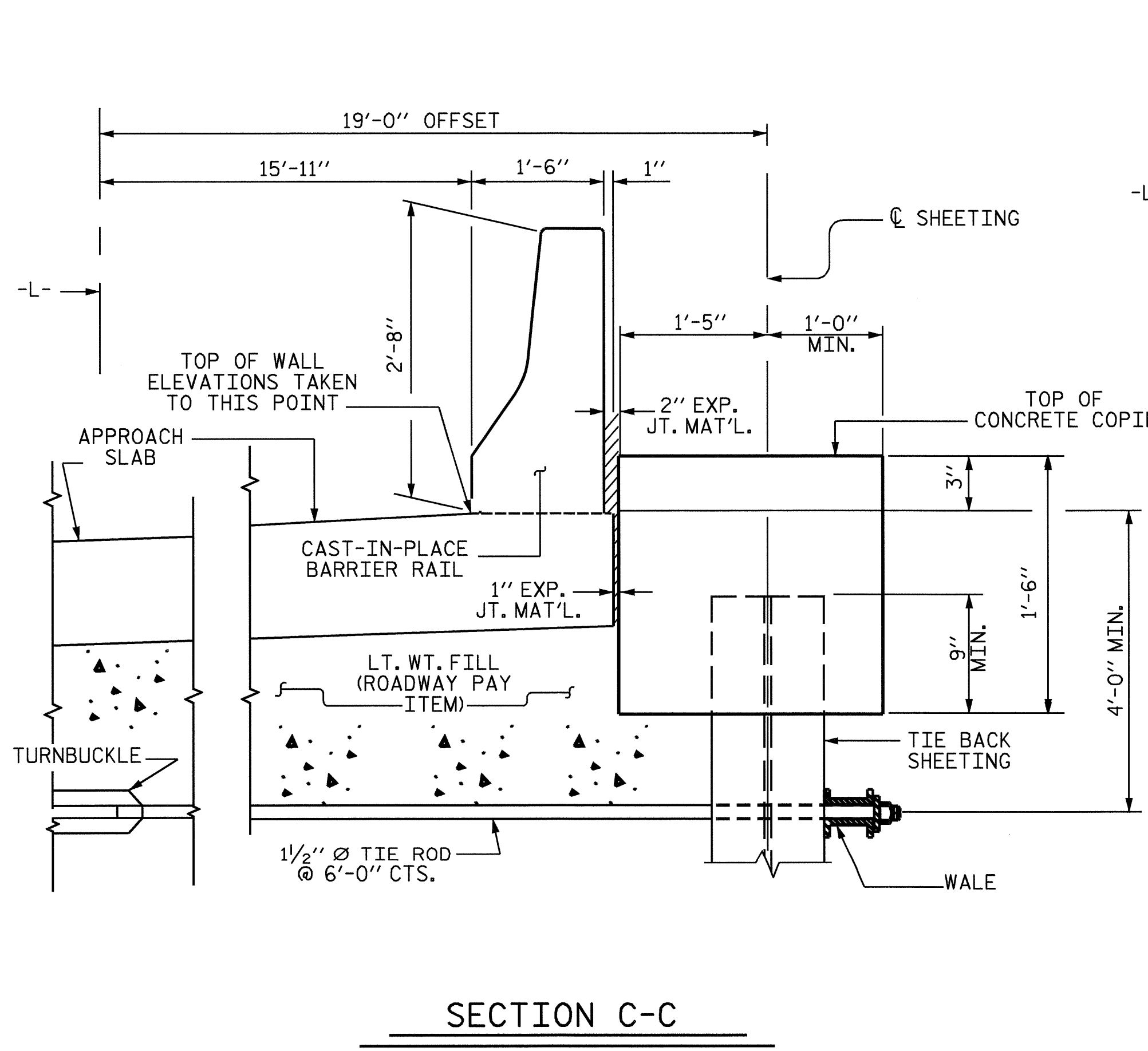
SECTION A-A



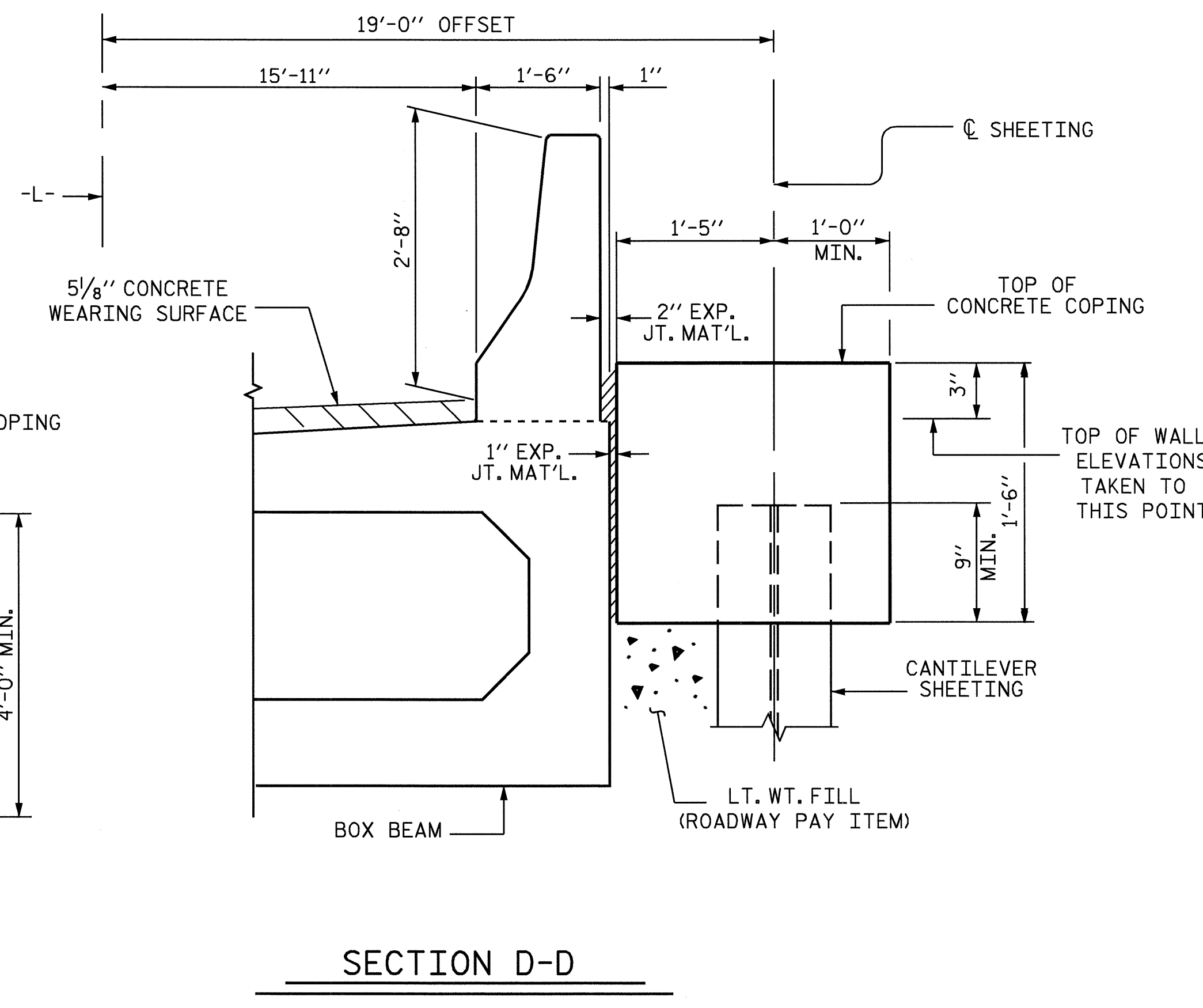
SECTION B-B



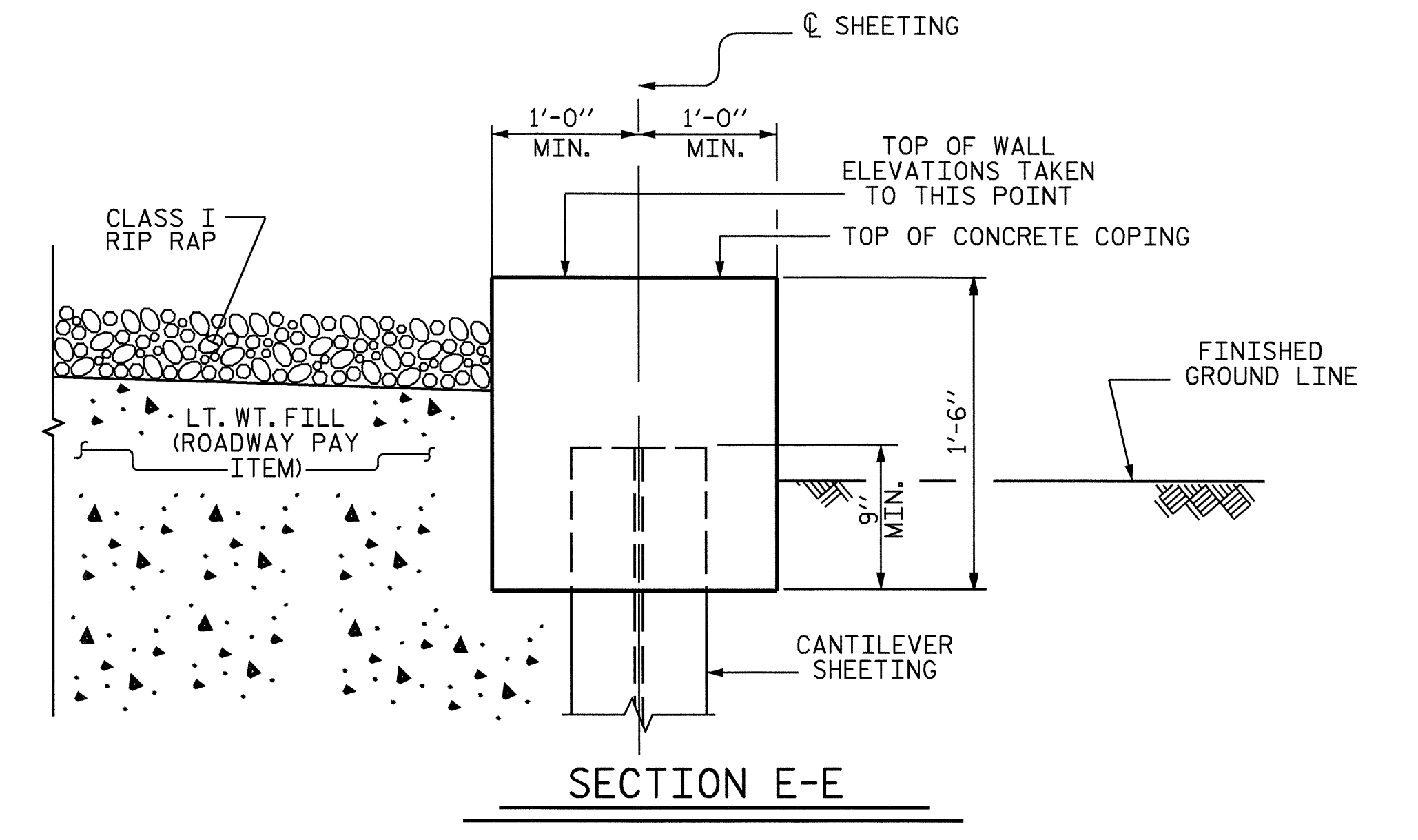
TYPICAL SECTION
@ BEGIN APPROACH SLAB STA. 28+24.94 -L-



SECTION C-C



SECTION D-D

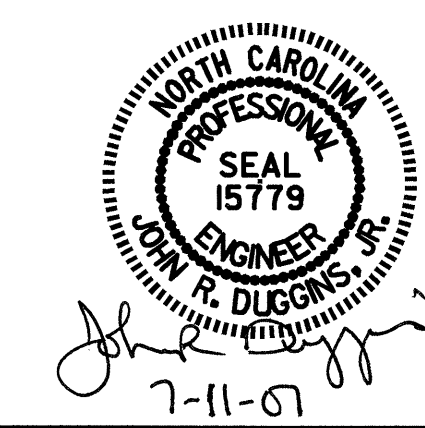


SECTION E-E

NOTE : FOR REINFORCING STEEL, ANCHOR STUDS AND WALE DETAILS, SEE SHEET 4 OF 4.

DRAWN BY : M. POOLE DATE : 12/06
CHECKED BY : J. R. DUGGINS DATE : 12/06

11-JUL-2007 11:07
R:\STRUCT\B2950\m\poole\MICROS\B2E98C\B2E98C.DGN
mpoole



PROJECT NO. B-2950
CURRITUCK COUNTY
STATION: 30+00.00 -L-

| REVISIONS | | | | | | SHEET NO. W-3 |
|-----------|-----|-------|-----|-----|-------|-------------------|
| NO. | BY: | DATE: | NO. | BY: | DATE: | |
| 1 | | | 3 | | | TOTAL SHEETS 4 |
| 2 | | | 4 | | | |

NOTES

- THE CONSTRUCTION SEQUENCE OF THE TIEBACK STEEL SHEET PILE RETAINING WALLS SHALL BE AS FOLLOWS UNLESS DIRECTED BY THE ENGINEER.
1. INSTALL SHEET PILES TO THE REQUIRED TIP ELEVATIONS AS SHOWN ON THE PLANS.
 2. PERFORM UNDERCUT AS SHOWN IN THE ROADWAY PLANS.
 3. DRIVE END BENT No. 1 PILES BEFORE PLACING BACKFILL.
 4. PLACE AND COMPACT LIGHTWEIGHT AGGREGATE, ACCORDING TO THE LIGHTWEIGHT AGGREGATE SPECIAL PROVISION, AS BACKFILL BEHIND THE SHEET PILE WALLS. SEE ROADWAY PLANS AND ROADWAY SPECIAL PROVISIONS.
 5. CONSTRUCT THE CAST-IN-PLACE CONCRETE COPING.
- PLACE THE BACKFILL ACCORDING TO TYPICAL SECTION No. 3 IN THE ROADWAY PLANS.

THE STEEL SHEET PILES SHALL HAVE A MAXIMUM WIDTH OF 18" AND A MINIMUM SECTION MODULAS OF 30.2 IN³ PER FOOT OF WALL

FOR TIEBACK STEEL SHEET PILE RETAINING WALLS, SEE SPECIAL PROVISIONS.

THE CONCRETE COPING SHALL BE CAST-IN-PLACE AND HAVE A SMOOTH FINISH. CONCRETE COPING IS REQUIRED ALONG THE ENTIRE LENGTH OF STEEL SHEET PILE WALLS.

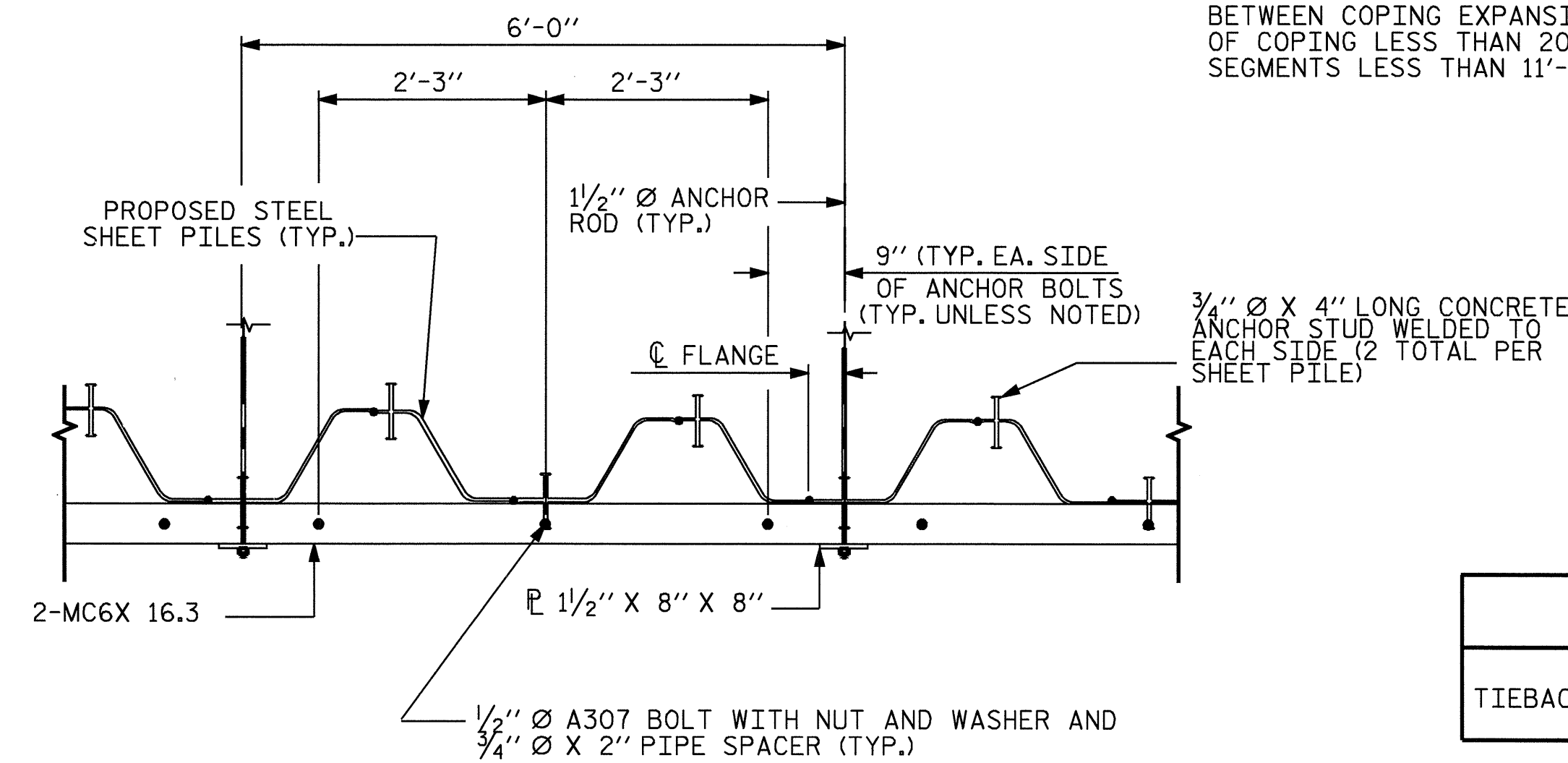
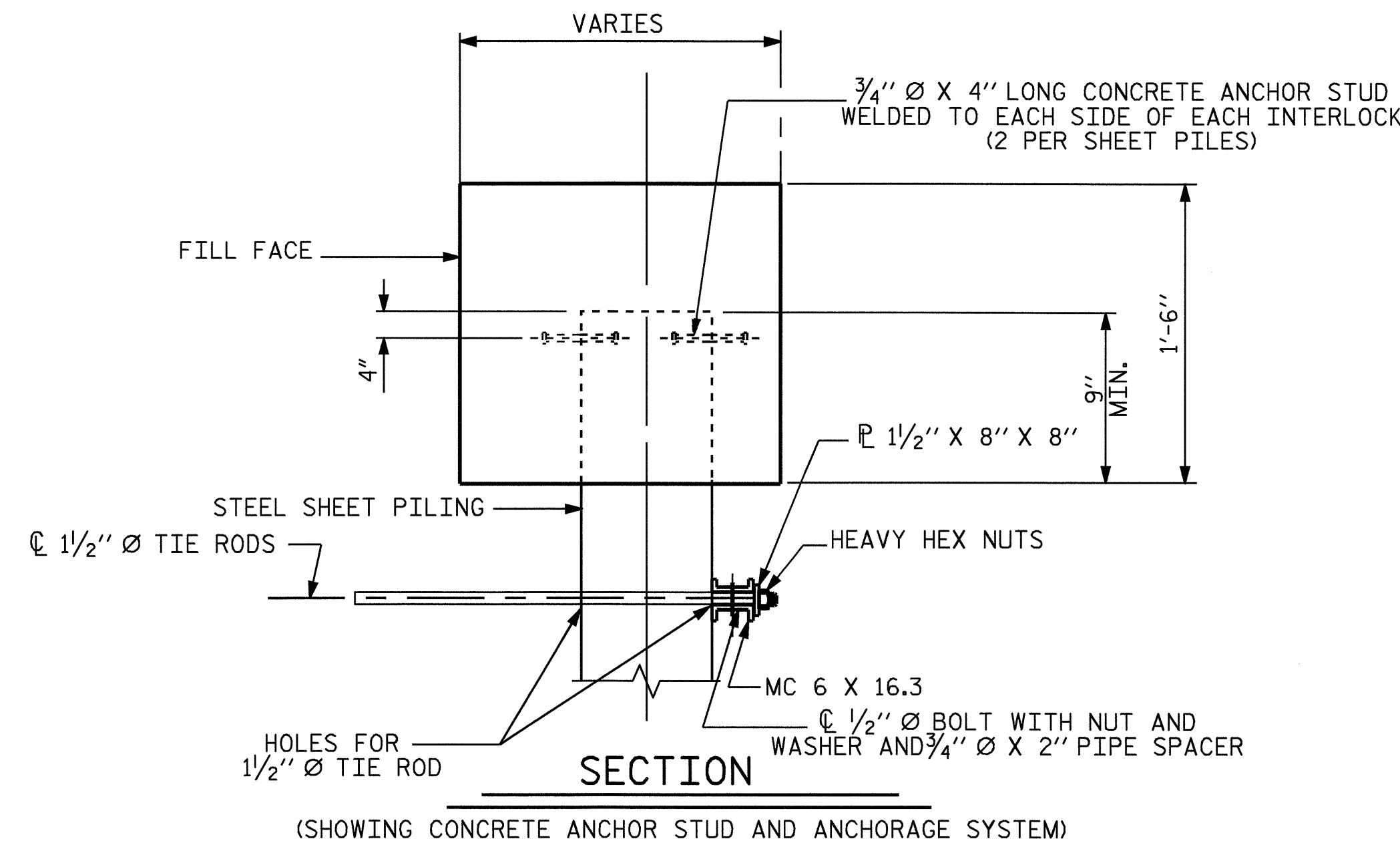
THE CONCRETE COPING BETWEEN STA. 28+47.00 -L- AND STA. 28+57.00 -L- SHALL NOT BE CAST UNTIL END BENT No. 1 IS CAST AND BOX BEAM UNITS ARE IN PLACE FOR SPAN A.

EXPANSION JOINTS IN THE COPING SHALL CONSIST OF 1/2" EXPANSION JOINT MATERIAL AND SHALL BE LOCATED AT 30'-0" MAXIMUM CENTERS. REINFORCING STEEL SHALL BE STOPPED 3" SHORT OF EITHER SIDE OF THE EXPANSION JOINTS.

GROOVED CONTRACTION JOINTS, 1/2" IN DEPTH, SHALL BE CONSTRUCTED IN ALL EXPOSED FACES OF THE COPING AND IN ACCORDANCE WITH ARTICLE 825-10(B) OF THE STANDARD SPECIFICATIONS. A JOINT SHALL BE LOCATED AT EACH THIRD POINT BETWEEN COPING EXPANSION JOINTS. ONLY ONE JOINT IS REQUIRED AT THE MIDPOINT OF COPING LESS THAN 20'-0" IN LENGTH AND NO JOINTS ARE REQUIRED FOR THOSE SEGMENTS LESS THAN 11'-6" IN LENGTH.

| STATION -L- | WALL TYPE | TIP ELEVATION |
|-------------------|---|---------------|
| 24+50 (LT.) | CANTILEVER SHEETING | -28 FT. |
| 25+00 (LT.) | CANTILEVER SHEETING | -28 FT. |
| 25+25 (RT.) | CANTILEVER SHEETING | -28 FT. |
| 25+50 (LT. & RT.) | CANTILEVER SHEETING | -28 FT. |
| 26+00 (LT. & RT.) | CANTILEVER SHEETING | -28 FT. |
| 26+50 (LT. & RT.) | END CANTILEVER SHEETING BEGIN TIEBACK SHEETING* | -28 FT. |
| 27+00 (LT. & RT.) | TIEBACK SHEETING * | -28 FT. |
| 27+50 (LT. & RT.) | TIEBACK SHEETING * | -25 FT. |
| 28+00 (LT. & RT.) | TIEBACK SHEETING * | -25 FT. |
| 28+50 (LT. & RT.) | TIEBACK SHEETING * | -25 FT. |
| UNDER BRIDGE | CANTILEVER SHEETING | -25 FT. |

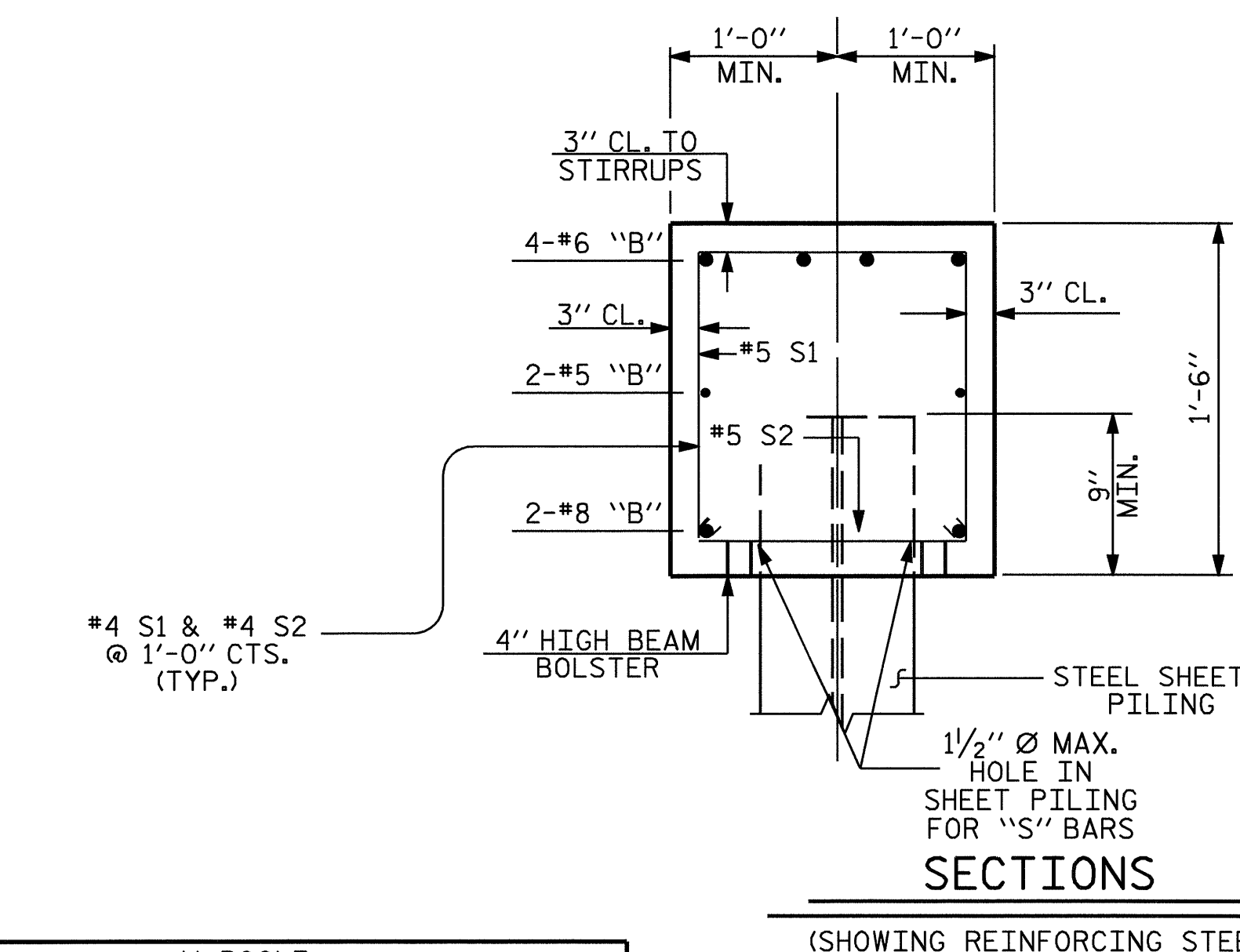
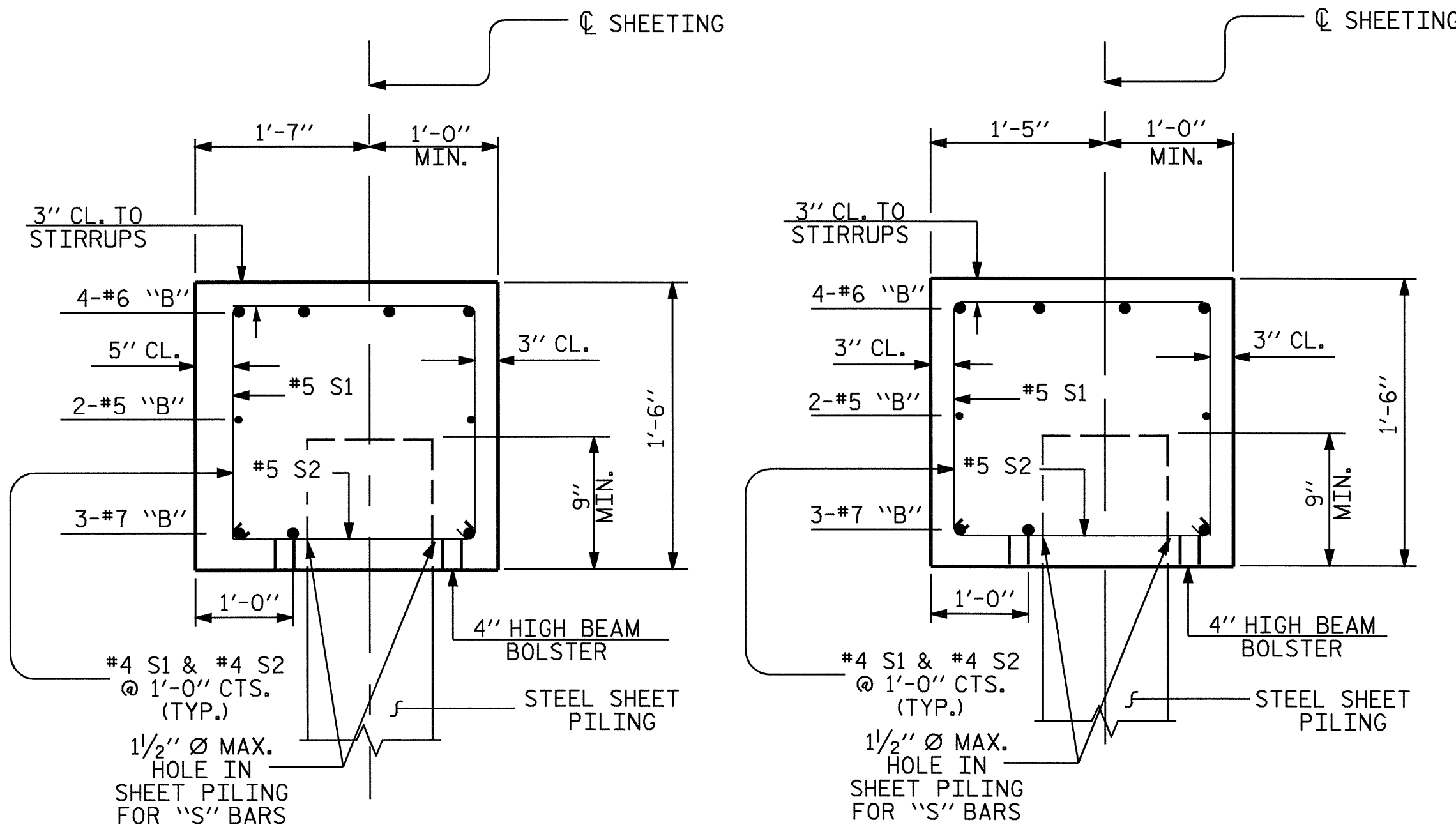
* LOCATE TIE RODS 4 FEET BELOW THE PLAN TOP OF WALL ELEVATIONS. EXTEND TIE RODS FROM WALL TO WALL.



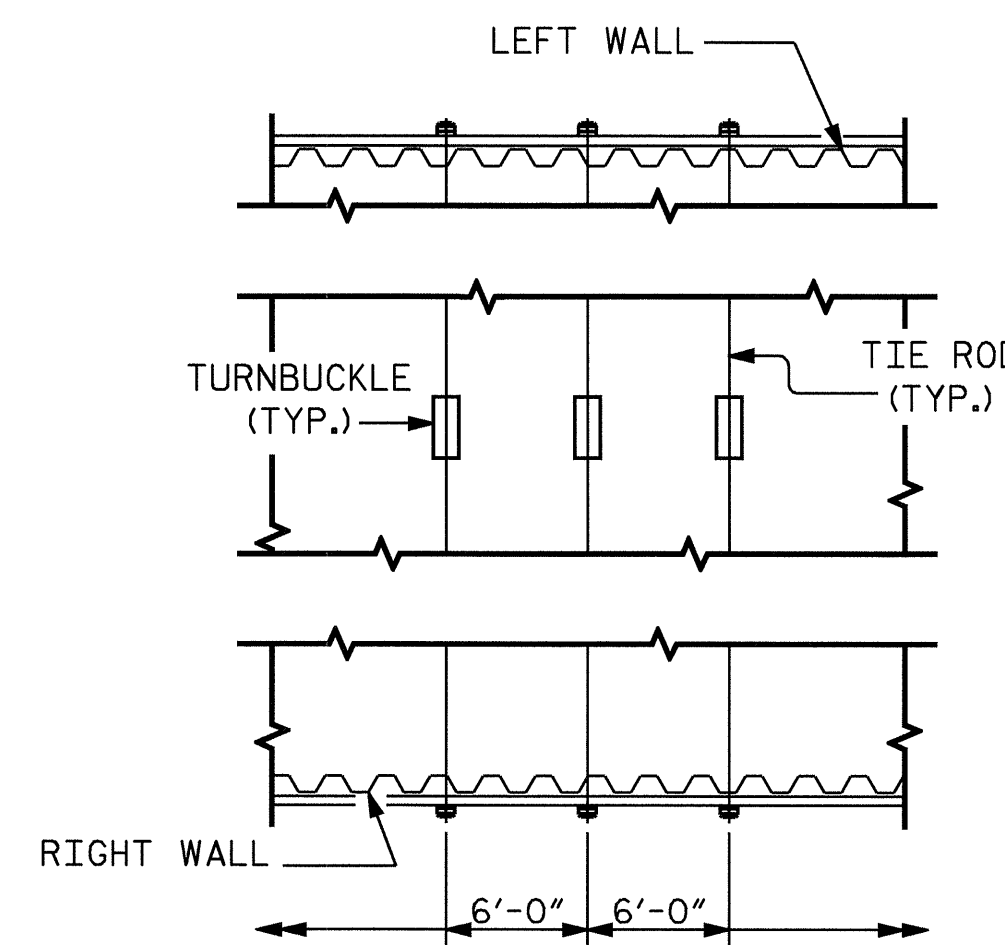
TIE ROD ANCHORAGE SYSTEM & STUD DETAIL

TOTAL BILL OF MATERIAL

TIEBACK STEEL SHEET PILE RETAINING WALLS 26,868 SQ. FT.



(SHOWING REINFORCING STEEL)

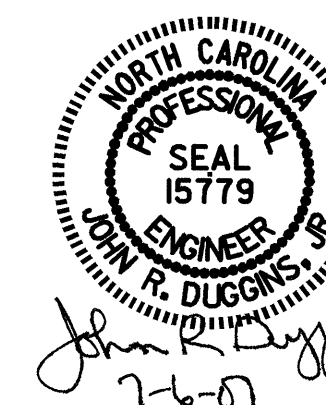


TIE ROD LAYOUT

PROJECT NO. B-2950
 CURRITUCK COUNTY
 STATION: 30+00.00 -L-

SHEET 4 OF 4

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH
 RETAINING WALLS
 (-L- LEFT)
 STA. 25+25.00 -L-
 TO STA. 28+60.00 -L- &
 (-L- RIGHT)
 STA. 24+50.00 -L-
 TO STA. 28+60.00 -L-



DRAWN BY: M. POOLE DATE: 12/06
 CHECKED BY: J. R. DUGGINS DATE: 12/06

| REVISIONS | | | | | | SHEET NO. | |
|-----------|-----|-------|-----|-----|-------|--------------|--|
| NO. | BY: | DATE: | NO. | BY: | DATE: | W-4 | |
| 1 | | | 3 | | | TOTAL SHEETS | |
| 2 | | | 4 | | | 4 | |

STANDARD NOTES

DESIGN DATA:

| | | |
|---|-------|----------------------------------|
| SPECIFICATIONS | ----- | A.A.S.H.T.O. (CURRENT) |
| LIVE LOAD | ----- | SEE PLANS |
| IMPACT ALLOWANCE | ----- | SEE A.A.S.H.T.O. |
| STRESS IN EXTREME FIBER OF | | |
| STRUCTURAL STEEL - AASHTO M270 GRADE 36 | - | 20,000 LBS. PER SQ. IN. |
| - AASHTO M270 GRADE 50W | - | 27,000 LBS. PER SQ. IN. |
| - AASHTO M270 GRADE 50 | - | 27,000 LBS. PER SQ. IN. |
| REINFORCING STEEL IN TENSION | | |
| GRADE 60 | -- | 24,000 LBS. PER SQ. IN. |
| CONCRETE IN COMPRESSION | ----- | 1,200 LBS. PER SQ. IN. |
| CONCRETE IN SHEAR | ----- | SEE A.A.S.H.T.O. |
| STRUCTURAL TIMBER - TREATED OR | | |
| UNTREATED - EXTREME FIBER STRESS | ----- | 1,800 LBS. PER SQ. IN. |
| COMPRESSION PERPENDICULAR TO GRAIN OF TIMBER | ----- | 375 LBS. PER SQ. IN. |
| EQUIVALENT FLUID PRESSURE OF EARTH | ----- | 30 LBS. PER CU. FT. (MINIMUM) |

MATERIAL AND WORKMANSHIP:

EXCEPT AS MAY OTHERWISE BE SPECIFIED ON PLANS OR IN THE SPECIAL PROVISIONS, ALL MATERIAL AND WORKMANSHIP SHALL BE IN ACCORDANCE WITH THE 2002 STANDARD SPECIFICATIONS "FOR ROADS AND STRUCTURES" OF THE N. C. DEPARTMENT OF TRANSPORTATION.

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

CONCRETE:

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

CONCRETE CHAMFERS:

UNLESS OTHERWISE NOTED ON THE PLANS, ALL EXPOSED CORNERS ON STRUCTURES SHALL BE CHAMFERED 3/4" WITH THE FOLLOWING EXCEPTIONS: TOP CORNERS OF CURBS MAY BE ROUNDED TO 1-1/2" RADIUS WHICH IS BUILT INTO CURB FORMS; CORNERS OF TRANSVERSE FLOOR EXPANSION JOINTS SHALL BE ROUNDED WITH A 1/4" FINISHING TOOL UNLESS OTHERWISE REQUIRED ON PLANS; AND CORNERS OF EXPANSION JOINTS IN THE ROADWAY FACES AND TOPS OF CURBS AND SIDEWALKS SHALL BE ROUNDED TO A 1/4" RADIUS WITH A FINISHING STONE OR TOOL UNLESS OTHERWISE REQUIRED ON PLANS.

DOWELS:

DOWELS WHEN INDICATED ON PLANS AS FOR CULVERT EXTENSIONS, SHALL BE EMBEDDED AT LEAST 12" INTO THE OLD CONCRETE AND GROUTED INTO PLACE WITH 1:2 CEMENT MORTAR.

ALLOWANCE FOR DEAD LOAD DEFLECTION, SETTLEMENT, ETC. IN CASTING SUPERSTRUCTURES:

BRIDGES SHALL BE BUILT ON THE GRADE OR VERTICAL CURVE SHOWN ON PLANS. SLABS, CURBS AND PARAPETS SHALL CONFORM TO THE GRADE OR CURVE.

ALL DIMENSIONS WHICH ARE GIVEN IN SECTION AND ARE AFFECTED BY DEAD LOAD DEFLECTIONS ARE DIMENSIONS AT CENTER LINE OF BEARING UNLESS OTHERWISE NOTED ON PLANS. IN SETTING FORMS FOR STEEL BEAM BRIDGES AND PRESTRESSED CONCRETE GIRDER BRIDGES, ADJUSTMENTS SHALL BE MADE DUE TO THE DEAD LOAD DEFLECTIONS FOR THE ELEVATIONS SHOWN. WHERE BLOCKS ARE SHOWN OVER BEAMS FOR BUILDING UP TO THE SLAB, THE VERTICAL DIMENSIONS OF THE BLOCKS SHALL BE ADJUSTED BETWEEN BEARINGS TO COMPENSATE FOR DEAD LOAD DEFLECTIONS, VERTICAL CURVE ORDINATE, AND ACTUAL BEAM CAMBER. WHERE BOTTOM OF SLAB IS IN LINE WITH BOTTOM OF TOP FLANGES, DEPTH OF SLAB BETWEEN BEARINGS SHALL BE ADJUSTED TO COMPENSATE FOR DEAD LOAD DEFLECTION, VERTICAL CURVE ORDINATE, AND ACTUAL BEAM CAMBER.

IN SETTING FALSEWORK AND FORMS FOR REINFORCED CONCRETE SPANS, AN ALLOWANCE SHALL BE MADE FOR DEAD LOAD DEFLECTIONS, SETTLEMENT OF FALSEWORK, AND PERMANENT CAMBER WHICH SHALL BE PROVIDED FOR IN ADDITION TO THE ELEVATIONS SHOWN. AFTER REMOVAL OF THE FALSEWORK, THE FINISHED STRUCTURES SHALL CONFORM TO THE PROFILE AND ELEVATIONS SHOWN ON THE PLANS AND CONSTRUCTION ELEVATIONS FURNISHED BY THE ENGINEER.

DETAILED DRAWINGS FOR FALSEWORK OR FORMS FOR BRIDGE SUPERSTRUCTURE AND ANY STRUCTURE OR PARTS OF A STRUCTURE AS NOTED ON THE PLANS SHALL BE SUBMITTED TO THE ENGINEER FOR APPROVAL BEFORE CONSTRUCTION OF THE FALSEWORK OR FORMS IS STARTED.

REINFORCING STEEL:

ALL REINFORCING STEEL SHALL BE DEFORMED WITH THE EXCEPTION OF #2 BARS WHICH MAY BE FABRICATED FROM COLD DRAWN STEEL WIRE. DIMENSIONS RELATIVE TO PLACEMENT OF REINFORCING ARE TO CENTERS OF BARS UNLESS OTHERWISE INDICATED IN THE PLANS. DIMENSIONS ON BAR DETAILS ARE TO CENTERS OF BARS OR ARE OUT TO OUT AS INDICATED ON PLANS.

WIRE BAR SUPPORTS SHALL BE PROVIDED FOR REINFORCING STEEL WHERE INDICATED ON THE PLANS. WHEN BAR SUPPORT PIECES ARE PLACED IN CONTINUOUS LINES, THEY SHALL BE SO PLACED THAT THE ENDS OF THE SUPPORTING WIRES SHALL BE LAPPED TO LOCK LEGS ON ADJOINING PIECES.

STRUCTURAL STEEL:

AT THE CONTRACTOR'S OPTION, HE MAY SUBSTITUTE 7/8" Ø SHEAR STUDS FOR THE 3/4" Ø STUDS SPECIFIED ON THE PLANS. THIS SUBSTITUTION SHALL BE MADE AT THE RATE OF 3 - 7/8" Ø STUDS FOR 4 - 3/4" Ø STUDS, AND STUD SPACING CHANGES SHALL BE MADE AS NECESSARY TO PROVIDE THE SAME EQUIVALENT NUMBER OF 7/8" Ø STUDS ALONG THE BEAM AS SHOWN FOR 3/4" Ø STUDS BASED ON THE RATIO OF 3 - 7/8" Ø STUDS FOR 4 - 3/4" Ø STUDS. STUDS OF THE LENGTH SPECIFIED ON THE PLANS MUST BE PROVIDED. THE MAXIMUM SPACING SHALL BE 2'-0".

EXCEPT AT THE INTERIOR SUPPORTS OF CONTINUOUS BEAMS WHERE THE COVER PLATE IS IN CONTACT WITH BEARING PLATE, THE CONTRACTOR MAY, AT HIS OPTION, SUBSTITUTE FOR THE COVER PLATES DESIGNATED ON THE PLANS COVER PLATES OF THE EQUIVALENT AREA PROVIDED THESE PLATES ARE AT LEAST 5/16" IN THICKNESS AND DO NOT EXCEED A WIDTH EQUAL TO THE FLANGE WIDTH LESS 2" OR A THICKNESS EQUAL TO 2 TIMES THE FLANGE THICKNESS. THE SIZE OF FILLET WELDS SHALL CONFORM TO THE REQUIREMENTS OF THE CURRENT ANSI/AASHTO/AWS "BRIDGE WELDING CODE". ELECTROSLAG WELDING WILL NOT BE PERMITTED.

PLACEMENT OF BEAM OR GIRDER MEMBERS ON TRUCKS FOR HAULING SHALL BE DONE IN COMPLIANCE WITH LIMITS SHOWN ON SKETCHES PROVIDED TO THE MATERIALS AND TEST UNIT APPROVED BY THE STRUCTURE DESIGN UNIT DATED MAY 8, 1991. THESE SKETCHES PRIMARILY LIMIT THE UNSUPPORTED CANTILEVER LENGTH OF MEMBERS. WHEN THE CONTRACTOR WISHES TO PLACE MEMBERS ON TRUCKS NOT IN ACCORDANCE WITH THESE LIMITS, TO SHIP BY RAIL, TO ATTACH SHIPPING RESTRAINTS TO THE MEMBERS OR TO INVERT MEMBERS, HE SHALL SUBMIT A SKETCH FOR APPROVAL PRIOR TO SHIPPING. SEE ALSO ARTICLE 1072-11.

WITH THE SOLE EXCEPTION OF EDGES AT SURFACES WHICH BEAR ON OTHER SURFACES, ALL SHARP EDGES AND ENDS OF SHAPES AND PLATES SHALL BE SLIGHTLY ROUNDED BY SUITABLE MEANS TO A RADIUS OF APPROXIMATELY 1/16 INCH OR EQUIVALENT FLAT SURFACE AT A SUITABLE ANGLE PRIOR TO PAINTING, GALVANIZING, OR METALLIZING.

HANDRAILS AND POSTS:

METAL STANDARDS AND FACES OF THE CONCRETE END POSTS FOR THE METAL RAIL SHALL BE SET NORMAL TO THE GRADE OF THE CURB, UNLESS OTHERWISE SHOWN ON PLANS. THE METAL RAIL AND TOPS OF CONCRETE POSTS USED WITH THE ALUMINUM RAIL SHALL BE BUILT PARALLEL TO THE GRADE OF THE CURB.

METAL HANDRAILS SHALL BE IN ACCORDANCE WITH THE PLANS. RAILS SHALL BE AS MANUFACTURED FOR BRIDGE RAILING. CASTINGS SHALL BE OF A UNIFORM APPEARANCE. FINISH AND OTHER DEFORMATIONS RESULTING FROM CASTING OR OTHERWISE SHALL BE REMOVED IN A MANNER SO THAT A UNIFORM COLORING OF THE COMPLETED CASTING SHALL BE OBTAINED. CASTINGS WITH DISCOLORATIONS OR OF NON-UNIFORM COLORING WILL NOT BE ACCEPTED. CERTIFIED MILL REPORTS ARE REQUIRED FOR METAL RAILS AND POSTS.

SPECIAL NOTES:

GENERALLY, IN CASE OF DISCREPANCY, THIS STANDARD SHEET OF NOTES SHALL GOVERN OVER THE SPECIFICATIONS, BUT THE REMAINDER OF THE PLANS SHALL GOVERN OVER NOTES HEREON, AND SPECIAL PROVISIONS SHALL GOVERN OVER ALL. SEE SPECIFICATIONS ARTICLE 105-4.

ENGLISH

JANUARY, 1990

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