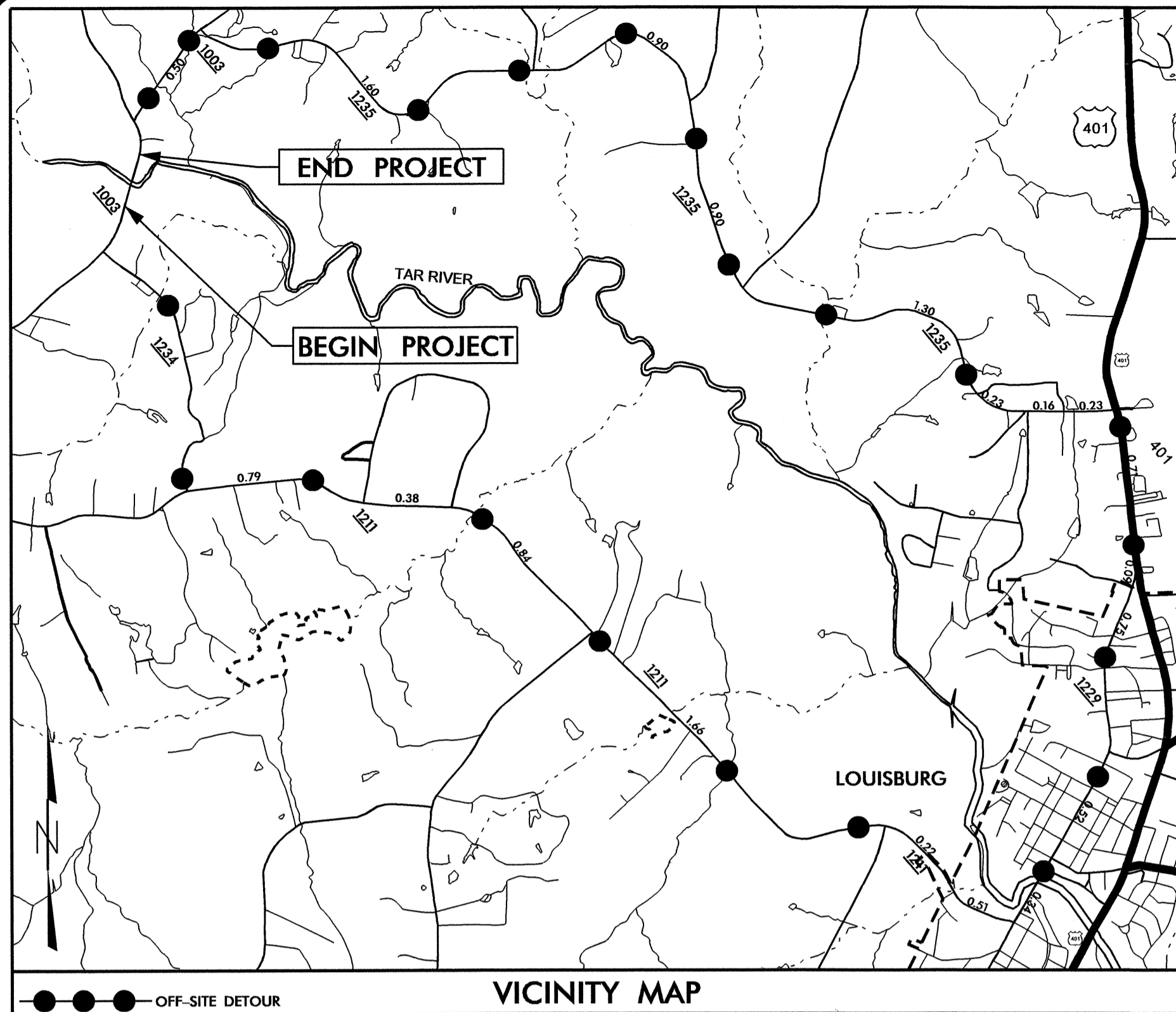


TIP PROJECT: B-4514

CONTRACT: C202747

| | | | |
|-----------------|-----------------------------|----------------|--------------|
| STATE | STATE PROJECT REFERENCE NO. | SHEET NO. | TOTAL SHEETS |
| N.C. | B-4514 | | |
| STATE PROJ. NO. | P.A. PROJ. NO. | DESCRIPTION | |
| 33739.1.1 | BRSTP-1003(30) | P.E. | |
| 33739.2.1 | BRSTP-1003(30) | R.W. UTILITIES | |
| 33739.3.1 | BRSTP-1003(30) | CONST. | |
| | | | |
| | | | |



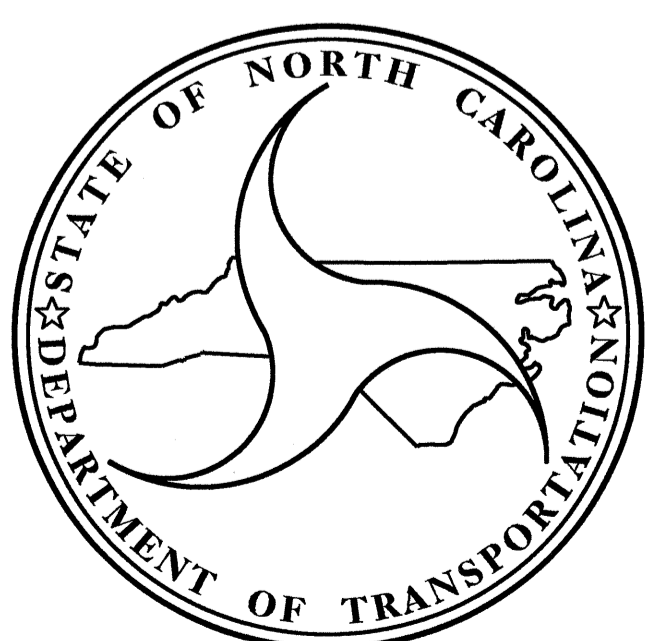
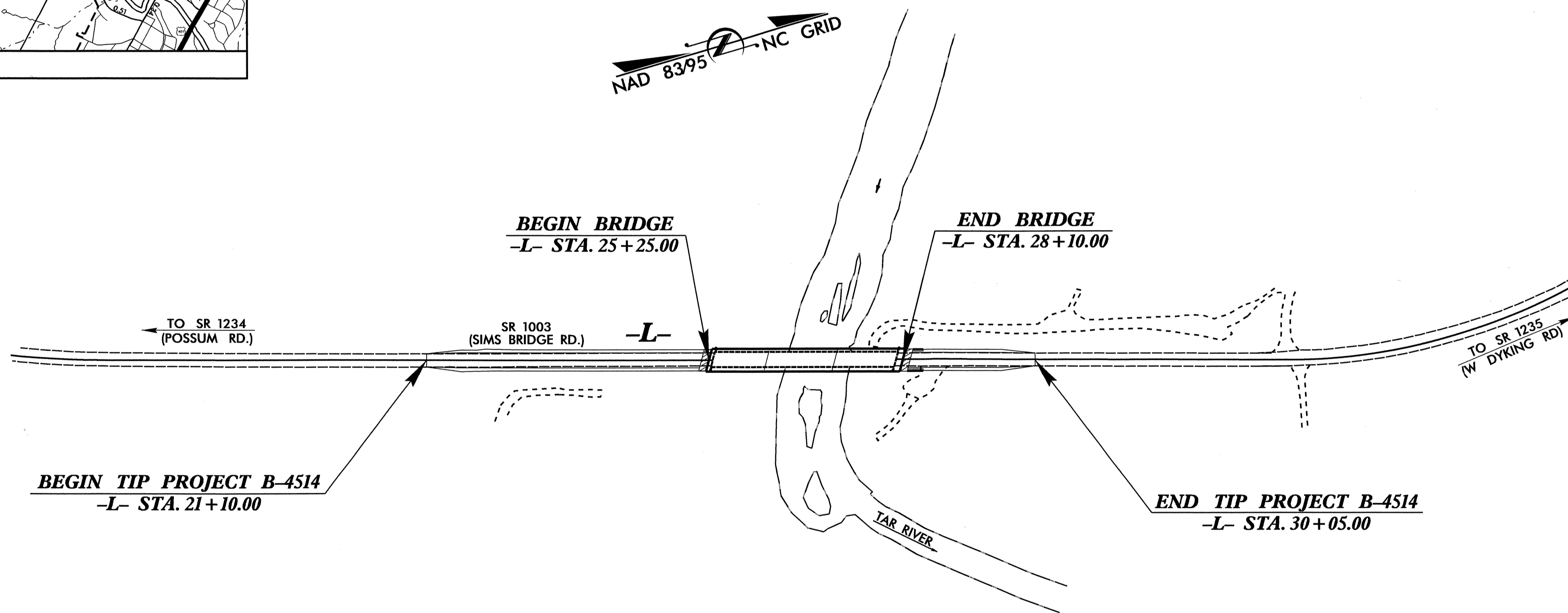
STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

FRANKLIN COUNTY

**LOCATION: BRIDGE NO. 36 OVER TAR RIVER
ON SR 1003 (SIMS BRIDGE RD.)**

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

STRUCTURE



DESIGN DATA

| | |
|-------------------|----------------------|
| ADT 2012 = | 2040 |
| ADT 2035 = | 4200 |
| DHV = | 10 % |
| D = | 70 % |
| T = | 5 % * |
| V = | 60 MPH |
| * TTST 3% DUAL 2% | |
| FUNC CLASS = | RURAL MINOR COLECTOR |

PROJECT LENGTH

| | |
|---------------------------------------|----------|
| LENGTH ROADWAY TIP PROJECT B-4514 = | 0.116 MI |
| LENGTH STRUCTURE TIP PROJECT B-4514 = | 0.054 MI |
| TOTAL LENGTH OF TIP PROJECT B-4514 = | 0.170 MI |

2012 STANDARD SPECIFICATIONS

LETTING DATE:
JANUARY 17, 2012

Prepared in the Office of:
DEPARTMENT OF TRANSPORTATION
1000 BIRCH RIDGE DR.
RALEIGH, N.C. 27610

B. S. COX, P.E.
PROJECT ENGINEER

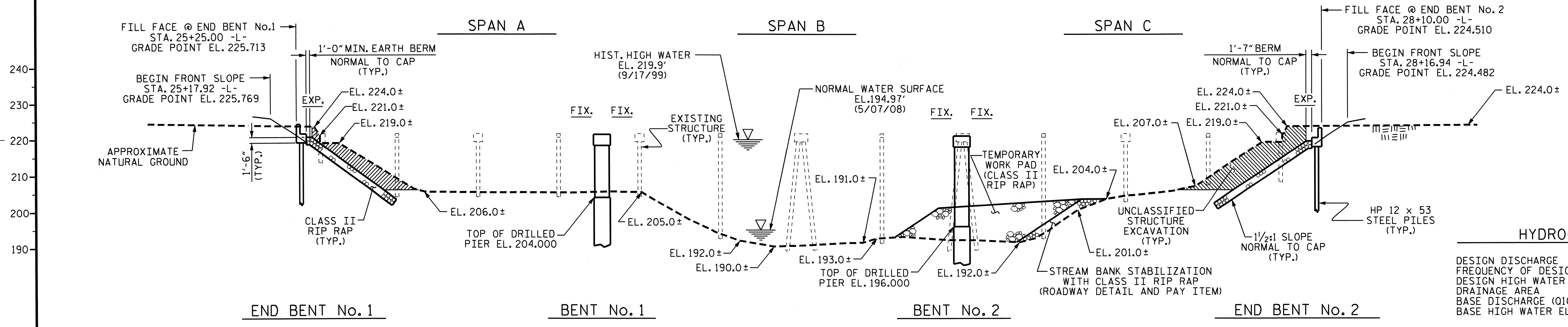
K. W. ALFORD, P.E.
PROJECT DESIGN ENGINEER



**DIVISION OF HIGHWAYS
STATE OF NORTH CAROLINA**

25+00 26+00 27+00 28+00

(-)4.0000% (-)0.4000%
 PI = 23+85.00
 EL = 226.21'
 VC = 350'
GRADE DATA -L-



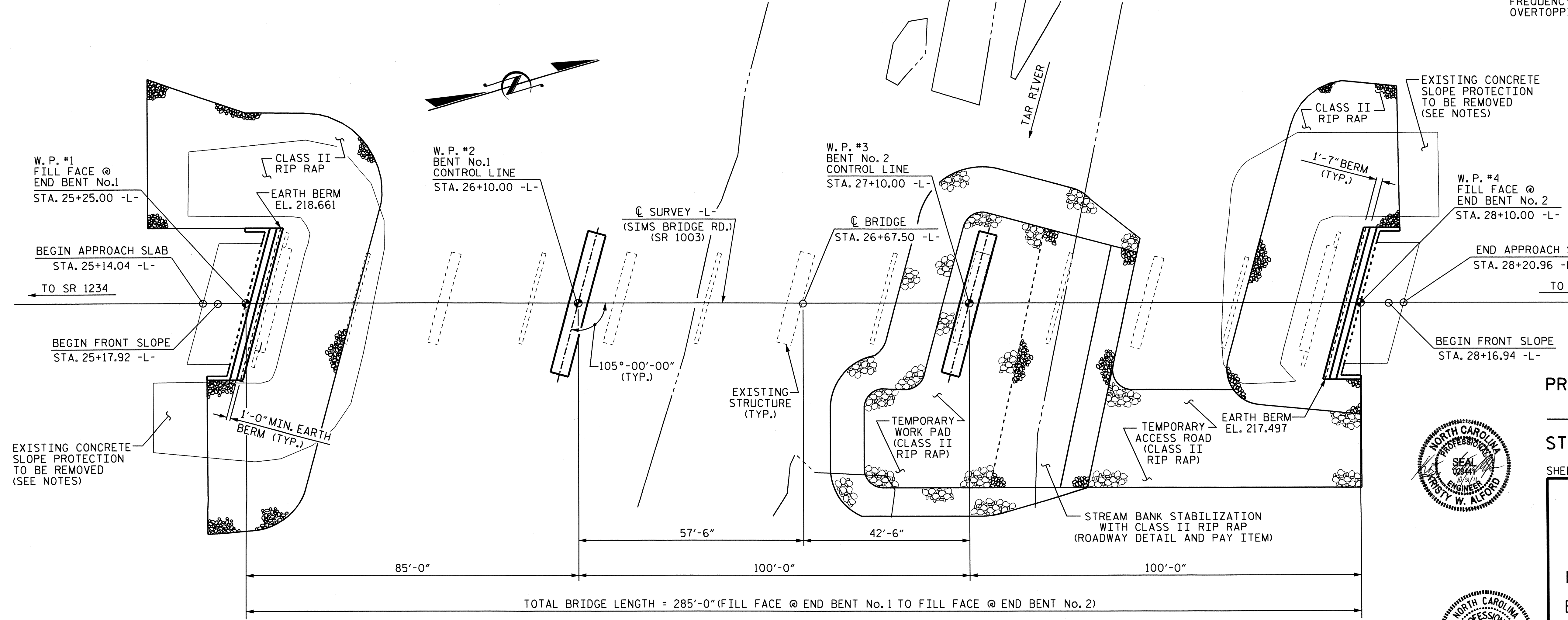
HYDROGRAPHIC DATA

| | |
|-----------------------------|-------------|
| DESIGN DISCHARGE | 16,400 CFS |
| FREQUENCY OF DESIGN FLOOD | 25 yr |
| DESIGN HIGH WATER ELEVATION | 219.3 |
| DRAINAGE AREA | 357 sq. mi. |
| BASE DISCHARGE (Q100) | 23,000 CFS |
| BASE HIGH WATER ELEVATION | 221.5 |

OVERTOPPING FLOOD DATA

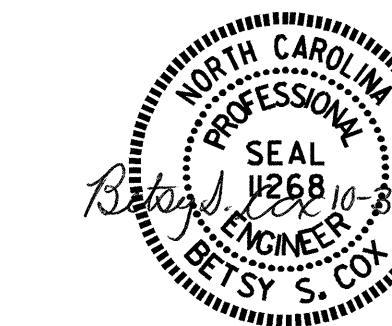
| | |
|--------------------------------|------------|
| OVERTOPPING DISCHARGE | 27,750 CFS |
| FREQUENCY OF OVERTOPPING FLOOD | 200 YRS.+ |
| OVERTOPPING FLOOD ELEVATION | 223.3 |

SECTION ALONG C SURVEY -L-
 (SECTIONS AT BENTS AND END BENTS ARE AT RIGHT ANGLES)



I HEREBY CERTIFY THESE PLANS ARE THE AS-BUILT PLANS

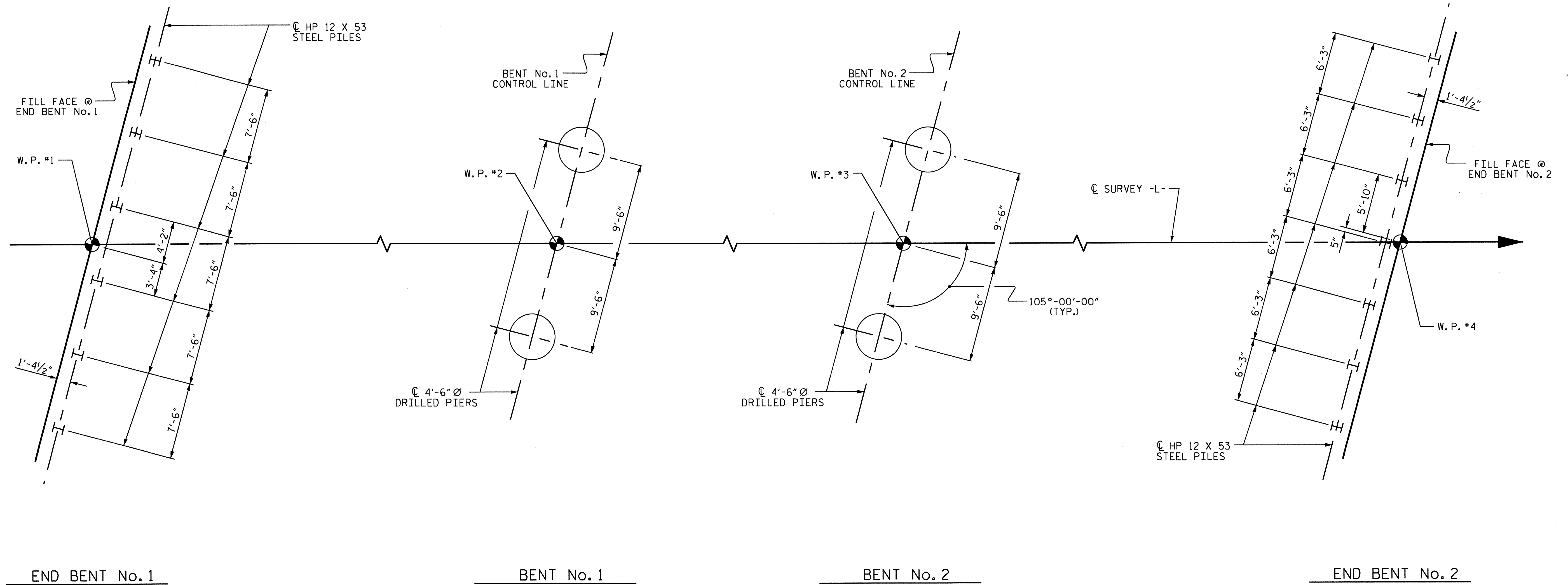
PROJECT NO. B-4514
 FRANKLIN COUNTY
 STATION: 26+67.50 -L-
 SHEET 1 OF 3 REPLACES BRIDGE No. 36



STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH
GENERAL DRAWING
 BRIDGE OVER TAR RIVER ON
 SR 1003 (SIMS BRIDGE RD.)
 BETWEEN SR 1234 & SR 1235

DRAWN BY : A. V. ROYAL DATE : 12/09
 CHECKED BY : T. BANKOVICH DATE : 07/10

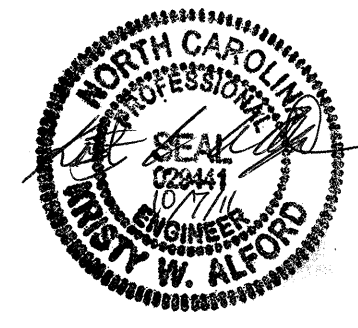
| REVISIONS | | | | | | SHEET NO. |
|-----------|-----|-------|-----|-----|-------|--------------|
| NO. | BY: | DATE: | NO. | BY: | DATE: | S-1 |
| 1 | | | 3 | | | TOTAL SHEETS |
| 2 | | | 4 | | | 27 |



FOUNDATION LAYOUT

PROJECT NO. B-4514
FRANKLIN COUNTY
 STATION: 26+67.50-L-

SHEET 2 OF 3

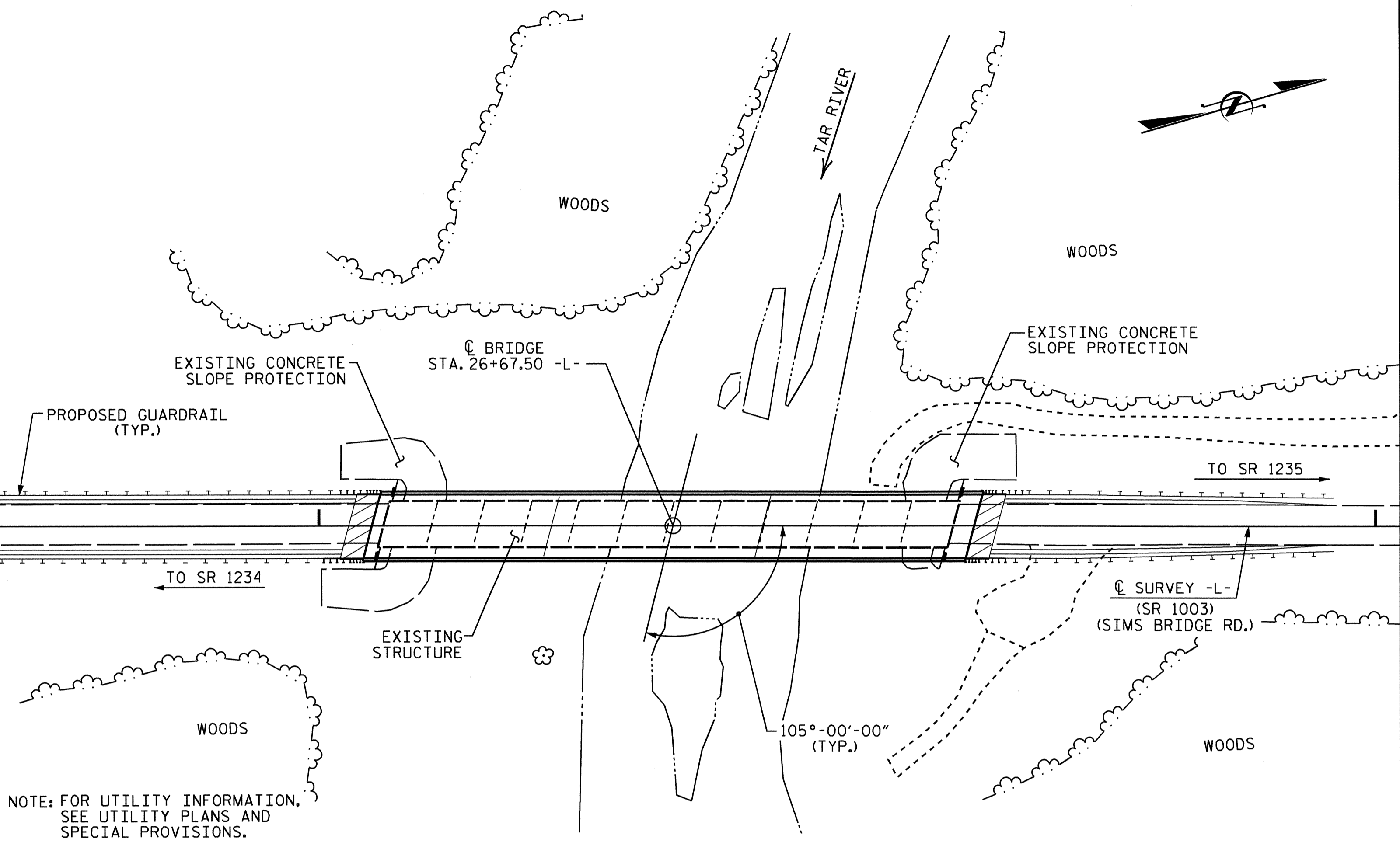


| | | | | | |
|------------------------------|-----|-------|-----|-----|-------|
| STATE OF NORTH CAROLINA | | | | | |
| DEPARTMENT OF TRANSPORTATION | | | | | |
| RALEIGH | | | | | |
| GENERAL DRAWING | | | | | |
| BRIDGE OVER TAR RIVER ON | | | | | |
| SR 1003 (SIMS BRIDGE RD.) | | | | | |
| BETWEEN SR 1234 & SR 1235 | | | | | |
| REVISIONS | | | | | |
| NO. | BY: | DATE: | NO. | BY: | DATE: |
| 1 | | | 3 | | |
| 2 | | | 4 | | |
| SHEET NO. | | | | | S-2 |
| TOTAL SHEETS | | | | | 27 |

DRAWN BY : A. V. ROYAL DATE : 12/09
 CHECKED BY : T. BANKOVICH DATE : 07/10

28-SEP-2011 08:15
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 kaiford

BM #51: R.R. SPIKE IN 8" POPLAR, 65' RT OF STA. 27+52 -L-, ELEV. 207.00'. NAVD 88



LOCATION SKETCH

NOTE: FOR UTILITY INFORMATION, SEE UTILITY PLANS AND SPECIAL PROVISIONS.

NOTES:

ASSUMED LIVE LOAD = HL-93 OR ALTERNATE LOADING.
 FOR OTHER DESIGN DATA AND GENERAL NOTES, SEE SHEET SN.
 FOR EROSION CONTROL MEASURES, SEE EROSION CONTROL PLANS.
 THIS BRIDGE HAS BEEN DESIGNED IN ACCORDANCE WITH THE AASHTO LRFD BRIDGE DESIGN SPECIFICATIONS.
 THE EXISTING STRUCTURE CONSISTING OF 2 @ 22'-5 1/2", 2 @ 22'-4", 2 @ 22'-5 1/2", 2 @ 22'-6", 2 @ 22'-5 1/2", AND 2 @ 22'-5 1/2" SPANS WITH A CLEAR ROADWAY WIDTH OF 22'-1" AND REINFORCED CONCRETE FLOOR ON CONT. I-BEAMS ON REINFORCED CONCRETE CAPS ON TIMBER PILE END BENTS, AND REINFORCED CONCRETE CAPS ON TIMBER AND STEEL PILE BENTS WITH STEEL CRUTCH BENTS AND LOCATED AT THE SITE OF THE PROPOSED STRUCTURE SHALL BE REMOVED. THE EXISTING BRIDGE IS PRESENTLY NOT POSTED FOR LOAD LIMIT. SHOULD THE STRUCTURAL INTEGRITY OF THE BRIDGE DETERIORATE, A LOAD LIMIT MAY BE POSTED AND MAY BE REDUCED AS FOUND NECESSARY DURING THE LIFE OF THE PROJECT.
 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.
 THE COST FOR REMOVAL OF THE EXISTING CONCRETE SLOPE PROTECTION SHALL BE INCLUDED IN THE LUMP SUM PAY ITEM FOR REMOVAL OF EXISTING STRUCTURE.
 THE MATERIAL SHOWN IN THE CROSS-HATCHED AREA 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. SEE SECTION 412 OF THE STANDARD SPECIFICATIONS.
 THE SUBSTRUCTURE OF THE EXISTING BRIDGE INDICATED ON THE PLANS IS FROM THE BEST INFORMATION AVAILABLE. SINCE THIS INFORMATION IS SHOWN FOR THE CONVENIENCE OF THE CONTRACTOR, THE CONTRACTOR SHALL HAVE NO CLAIM WHATSOEVER AGAINST THE DEPARTMENT OF TRANSPORTATION FOR ANY DELAYS OR ADDITIONAL COST INCURRED BASED ON DIFFERENCES BETWEEN THE EXISTING BRIDGE SUBSTRUCTURE SHOWN ON THE PLANS AND THE ACTUAL CONDITIONS AT THE PROJECT SITE.
 ASPHALT WEARING SURFACE IS INCLUDED IN ROADWAY QUANTITY ON ROADWAY PLANS.
 THIS STRUCTURE HAS BEEN DESIGNED IN ACCORDANCE WITH HEC 18, "EVALUATING SCOUR AT BRIDGES", MAY, 2001.
 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 SPICED WITH REPLACEMENT BARS OF THE SIZE AND LENGTH OF THE SAMPLE, PLUS A MINIMUM LAP SPICE OF THIRTY BAR DIAMETERS. PAYMENT FOR THE SAMPLES OF REINFORCING STEEL SHALL BE CONSIDERED INCIDENTAL TO VARIOUS PAY ITEMS.

AT THE CONTRACTOR'S OPTION, AND UPON REMOVAL OF THE WORKPAD, THE CLASS II RIP RAP USED IN THE WORKPAD MAY BE PLACED AS RIP RAP SLOPE PROTECTION. SEE SPECIAL PROVISIONS FOR CONSTRUCTION, MAINTENANCE AND REMOVAL OF TEMPORARY ACCESS AT STATION 26+67.50 -L-.
 FOR SUBMITTAL OF WORKING DRAWINGS, SEE SPECIAL PROVISIONS.
 FOR FALSEWORK AND FORMWORK, SEE SPECIAL PROVISIONS.
 FOR CRANE SAFETY, SEE SPECIAL PROVISIONS.
 FOR PILES, SEE SECTION 450 OF THE STANDARD SPECIFICATIONS.
 PILES AT END BENT No. 1 AND END BENT No. 2 ARE DESIGNED FOR A FACTORED RESISTANCE OF 110 TONS PER PILE.
 DRIVE PILES AT END BENT No. 1 AND END BENT No. 2 TO A REQUIRED DRIVING RESISTANCE OF 185 TONS PER PILE.
 FOR DRILLED PIERS, SEE SECTION 411 OF THE STANDARD SPECIFICATIONS.
 DRILLED PIERS AT BENT No. 1 AND BENT No. 2 ARE DESIGNED FOR A FACTORED RESISTANCE OF 640 TONS PER PIER. CHECK FIELD CONDITIONS FOR THE REQUIRED TIP RESISTANCE OF 60 TSF.
 PERMANENT STEEL CASINGS ARE REQUIRED FOR DRILLED PIERS AT BENT No. 2. DO NOT EXTEND PERMANENT CASINGS BELOW ELEVATION 178 FT. WITHOUT PRIOR APPROVAL FROM THE ENGINEER.
 INSTALL DRILLED PIERS AT BENT No. 1 THAT EXTEND TO AN ELEVATION NO HIGHER THAN 164 FT. (LEFT) AND 168 FT. (RIGHT), AND SATISFY THE REQUIRED TIP RESISTANCE.
 INSTALL DRILLED PIERS AT BENT No. 2 THAT EXTEND TO AN ELEVATION NO HIGHER THAN 158 FT. AND SATISFY THE REQUIRED TIP RESISTANCE.
 THE SCOUR CRITICAL ELEVATION FOR BENT No. 1 IS ELEVATION 187 FT. AND FOR BENT No. 2 IS ELEVATION 177 FT. RESPECTIVELY. SCOUR CRITICAL ELEVATIONS ARE USED TO MONITOR POSSIBLE SCOUR PROBLEMS DURING THE LIFE OF THE STRUCTURE.
 SPT TESTING IS REQUIRED FOR DRILLED PIERS AT BENT No. 1 (RIGHT) AND BENT No. 2 (RIGHT).
 SID INSPECTIONS MAY BE REQUIRED FOR DRILLED PIERS AT BENT No. 1 OR BENT No. 2. THE ENGINEER WILL DETERMINE THE NEED FOR SID INSPECTIONS.
 CSL TUBES ARE REQUIRED AND CSL TESTING MAY BE REQUIRED FOR DRILLED PIERS AT BENT No. 1 OR BENT No. 2. THE ENGINEER WILL DETERMINE THE NEED FOR CSL TESTING. FOR CROSSHOLE SONIC LOGGING, SEE SECTION 411 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 26+67.50 -L-."

| TOTAL BILL OF MATERIAL | | | | | | | | | | | |
|------------------------|---|-------------------------------|----------------------|---|----------------|-------------|-------------|-----------------------------------|------------------|-----------------------|-------------------|
| | CONSTRUCTION, MAINTENANCE AND REMOVAL OF TEMPORARY ACCESS | REMOVAL OF EXISTING STRUCTURE | 4'-6" Ø DRILLED PIER | PERMANENT STEEL CASING FOR 4'-6" Ø DRILLED PIER | SID INSPECTION | SPT TESTING | CSL TESTING | UNCLASSIFIED STRUCTURE EXCAVATION | CLASS A CONCRETE | BRIDGE APPROACH SLABS | REINFORCING STEEL |
| | LUMP SUM | LUMP SUM | LIN. FT. | LIN. FT. | EACH | EACH | EACH | LUMP SUM | CU.YDS. | LUMP SUM | LBS. |
| SUPERSTRUCTURE | | | | | | | | | | | |
| END BENT No. 1 | | | | | | | | | 18.6 | | 2819 |
| BENT No. 1 | | | 76 | | 1 | 1 | | | 36.0 | | 12384 |
| BENT No. 2 | | | 76 | 36 | 1 | 1 | | | 43.1 | | 13351 |
| END BENT No. 2 | | | | | | | | | 18.6 | | 2827 |
| TOTAL | LUMP SUM | LUMP SUM | 152 | 36 | 2 | 2 | 1 | LUMP SUM | 116.3 | LUMP SUM | 31381 |

| TOTAL BILL OF MATERIAL | | | | | | | | | |
|------------------------|---------------------------------|------------------------|--------------------------------|--------------------------------|----------------------------|----------------------|--|--|--|
| | SPIRAL COLUMN REINFORCING STEEL | HP 12 x 53 STEEL PILES | VERTICAL CONCRETE BARRIER RAIL | RIP RAP CLASS II (2'-0" THICK) | FILTER FABRIC FOR DRAINAGE | ELASTOMERIC BEARINGS | 3'-0" x 3'-3" PRESTRESSED CONCRETE BOX BEAMS | | |
| | LBS. | No. | LIN.FT. | LIN.FT. | TONS | SO.YDS. | LUMP SUM | | |
| SUPERSTRUCTURE | | | | 564.81 | | | 33 3,106.47 | | |
| END BENT No. 1 | | 6 | 240 | | 460 | 515 | | | |
| BENT No. 1 | 3064 | | | | | | | | |
| BENT No. 2 | 3535 | | | | | | | | |
| END BENT No. 2 | | 7 | 315 | | 240 | 270 | | | |
| TOTAL | 6599 | 13 | 555 | 564.81 | 700 | 785 | LUMP SUM 33 3,106.47 | | |

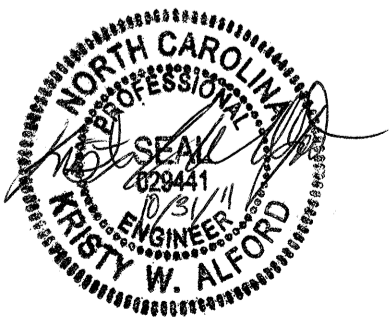
PROJECT NO. B-4514
 FRANKLIN COUNTY
 STATION: 26+67.50 -L-

SHEET 3 OF 3

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

GENERAL DRAWING
 BRIDGE OVER TAR RIVER
 ON SR 1003 (SIMS BRIDGE RD.)
 BETWEEN SR 1234 & SR 1235

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



DRAWN BY: A. V. ROYAL DATE: 12/09
 CHECKED BY: T. BANKOVICH DATE: 7/10

28-OCT-2011 07:45
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 Kalford

LOAD FACTORS:

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

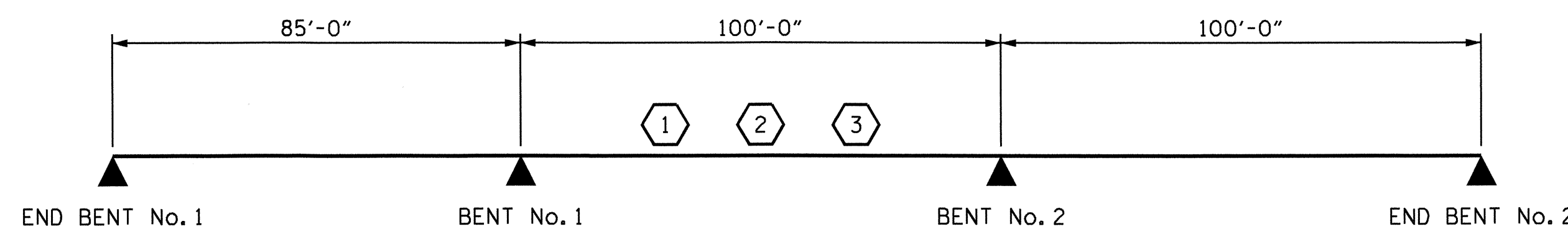
| LOAD AND RESISTANCE FACTOR RATING (LRFD) SUMMARY FOR PRESTRESSED CONCRETE GIRDERS | | | | | | | | | | | | | | | | | | | | | | | |
|---|------------|-------------------|---------------------------|-----------------------------|---------------|------------------------|---------------------------|---------------|------|-----------------|-------------------------------------|---------------------------|---------------|------|-----------------|-------------------------------------|------------------|---------------------------|---------------|------|-----------------|-------------------------------------|--------|
| LEVEL | VEHICLE | WEIGHT (W) (TONS) | CONTROLLING LOAD RATING # | MINIMUM RATING FACTORS (RF) | TONS = W X RF | STRENGTH I LIMIT STATE | | | | | | | | | | SERVICE III LIMIT STATE | | | | | | | |
| | | | | | | LIVELOAD FACTORS | MOMENT | | | | | SHEAR | | | | | LIVELOAD FACTORS | MOMENT | | | | | |
| | | | | | | | DISTRIBUTION FACTORS (DF) | RATING FACTOR | SPAN | GIRDER LOCATION | DISTANCE FROM LEFT END OF SPAN (ft) | DISTRIBUTION FACTORS (DF) | RATING FACTOR | SPAN | GIRDER LOCATION | DISTANCE FROM LEFT END OF SPAN (ft) | | DISTRIBUTION FACTORS (DF) | RATING FACTOR | SPAN | GIRDER LOCATION | DISTANCE FROM LEFT END OF SPAN (ft) | |
| DESIGN LOAD RATING | HL-93(Inv) | N/A | 1 | 1.061 | -- | 1.75 | 0.264 | 1.3 | B | EL | 49.159 | 0.574 | 1.09 | B | EL | 4.916 | 0.80 | 0.264 | 1.06 | B | EL | 49.159 | |
| | HL-93(0pr) | N/A | -- | 1.416 | -- | 1.35 | 0.264 | 1.68 | B | EL | 49.159 | 0.574 | 1.42 | B | EL | 4.916 | N/A | -- | -- | -- | -- | -- | |
| | HS-20(Inv) | 36.000 | 2 | 1.465 | 52.743 | 1.75 | 0.264 | 1.8 | B | EL | 49.159 | 0.574 | 1.47 | B | EL | 4.916 | 0.80 | 0.264 | 1.47 | B | EL | 49.159 | |
| | HS-20(0pr) | 36.000 | -- | 1.899 | 68.371 | 1.35 | 0.264 | 2.34 | B | EL | 49.159 | 0.574 | 1.9 | B | EL | 4.916 | N/A | -- | -- | -- | -- | -- | |
| LEGAL LOAD RATING | SV | SNSH | 13.500 | -- | 3.495 | 47.183 | 1.4 | 0.264 | 5.34 | B | EL | 49.159 | 0.574 | 4.52 | B | EL | 4.916 | 0.80 | 0.264 | 3.50 | B | EL | 49.159 |
| | | SNGARBS2 | 20.000 | -- | 2.532 | 50.644 | 1.4 | 0.264 | 3.87 | B | EL | 49.159 | 0.574 | 3.16 | B | EL | 4.916 | 0.80 | 0.264 | 2.53 | B | EL | 49.159 |
| | | SNAGRIS2 | 22.000 | -- | 2.369 | 52.115 | 1.4 | 0.264 | 3.62 | B | EL | 49.159 | 0.574 | 2.92 | B | EL | 4.916 | 0.80 | 0.264 | 2.37 | B | EL | 49.159 |
| | | SNCOTTS3 | 27.250 | -- | 1.737 | 47.336 | 1.4 | 0.264 | 2.65 | B | EL | 49.159 | 0.574 | 2.25 | B | EL | 4.916 | 0.80 | 0.264 | 1.74 | B | EL | 49.159 |
| | | SNAGGRS4 | 34.925 | -- | 1.424 | 49.725 | 1.4 | 0.264 | 2.18 | B | EL | 49.159 | 0.574 | 1.83 | B | EL | 4.916 | 0.80 | 0.264 | 1.42 | B | EL | 49.159 |
| | | SNS5A | 35.550 | -- | 1.394 | 49.562 | 1.4 | 0.264 | 2.13 | B | EL | 49.159 | 0.574 | 1.84 | B | EL | 4.916 | 0.80 | 0.264 | 1.39 | B | EL | 49.159 |
| | | SNS6A | 39.950 | -- | 1.268 | 50.648 | 1.4 | 0.264 | 1.94 | B | EL | 49.159 | 0.574 | 1.66 | B | EL | 4.916 | 0.80 | 0.264 | 1.27 | B | EL | 49.159 |
| | SNS7B | 42.000 | -- | 1.207 | 50.69 | 1.4 | 0.264 | 1.84 | B | EL | 49.159 | 0.574 | 1.62 | B | EL | 4.916 | 0.80 | 0.264 | 1.21 | B | EL | 49.159 | |
| | TTST | TNAGRIT3 | 33.000 | -- | 1.543 | 50.908 | 1.4 | 0.264 | 2.36 | B | EL | 49.159 | 0.574 | 1.99 | B | EL | 4.916 | 0.80 | 0.264 | 1.54 | B | EL | 49.159 |
| | | TNT4A | 33.075 | -- | 1.546 | 51.147 | 1.4 | 0.264 | 2.36 | B | EL | 49.159 | 0.574 | 1.95 | B | EL | 4.916 | 0.80 | 0.264 | 1.55 | B | EL | 49.159 |
| | | TNT6A | 41.600 | -- | 1.254 | 52.157 | 1.4 | 0.264 | 1.92 | B | EL | 49.159 | 0.574 | 1.69 | B | EL | 4.916 | 0.80 | 0.264 | 1.25 | B | EL | 49.159 |
| | | TNT7A | 42.000 | -- | 1.254 | 52.687 | 1.4 | 0.264 | 1.92 | B | EL | 49.159 | 0.574 | 1.66 | B | EL | 4.916 | 0.80 | 0.264 | 1.25 | B | EL | 49.159 |
| | | TNT7B | 42.000 | -- | 1.284 | 53.934 | 1.4 | 0.264 | 1.96 | B | EL | 49.159 | 0.574 | 1.59 | B | EL | 4.916 | 0.80 | 0.264 | 1.28 | B | EL | 49.159 |
| | | TNAGRIT4 | 43.000 | -- | 1.232 | 52.963 | 1.4 | 0.264 | 1.88 | B | EL | 49.159 | 0.574 | 1.54 | B | EL | 4.916 | 0.80 | 0.264 | 1.23 | B | EL | 49.159 |
| TNAGT5A | | 45.000 | -- | 1.166 | 52.475 | 1.4 | 0.264 | 1.78 | B | EL | 49.159 | 0.574 | 1.51 | B | EL | 4.916 | 0.80 | 0.264 | 1.17 | B | EL | 49.159 | |
| TNAGT5B | 45.000 | 3 | 1.156 | 52.033 | 1.4 | 0.264 | 1.77 | B | EL | 49.159 | 0.574 | 1.47 | B | EL | 4.916 | 0.80 | 0.264 | 1.16 | B | EL | 49.159 | | |

NOTES:

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

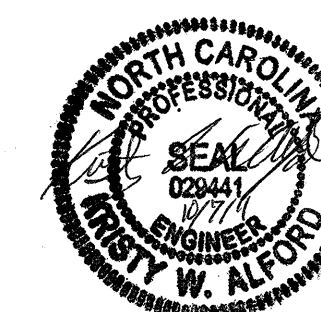
ALLOWABLE STRESSES FOR SERVICE III LIMIT STATE ARE AS REQUIRED FOR DESIGN.

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



LRFR SUMMARY

PROJECT NO. B-4514
FRANKLIN COUNTY
 STATION: 26+67.50 -L-



STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

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

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

ASSEMBLED BY : M. K. TOM DATE : 2/25/11
 CHECKED BY : T. M. GARRISON DATE : 3/4/11
 DRAWN BY : MAA 1/08 REV. 11/12/08R MAA/GM
 CHECKED BY : GM/DI 2/08

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 BOX BEAM SECTIONS SHALL BE FILLED WITH GROUT. THE 2 1/2" Ø DOWEL HOLES AT EXPANSION ENDS OF BOX BEAM 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. THE 2" Ø BACKER ROD SHALL CONFORM TO THE REQUIREMENTS OF TYPE M BOND BREAKER. SEE SECTION 1028 OF THE STANDARD SPECIFICATIONS.

THE TRANSFER OF LOAD FROM THE ANCHORAGES TO THE BOX BEAM UNIT SHALL BE DONE WHEN THE CONCRETE HAS REACHED A COMPRESSIVE STRENGTH OF NOT LESS THAN 4500 PSI FOR SPAN A AND 5400 PSI FOR SPANS B AND C.

ALL REINFORCING STEEL IN BARRIER RAILS SHALL BE EPOXY COATED.

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

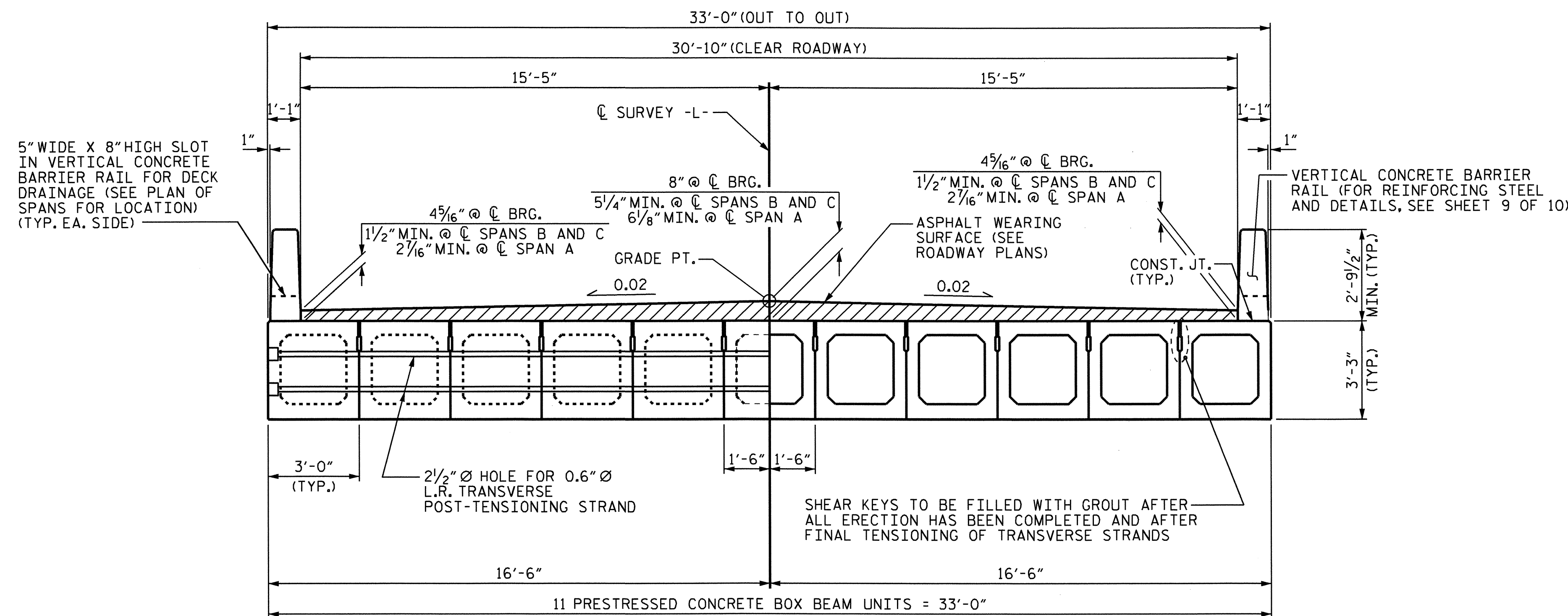
APPLY EPOXY PROTECTIVE COATING TO BOX BEAM UNIT ENDS AND OUTSIDE OF EXTERIOR UNITS.

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.

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

FOR GROUT FOR STRUCTURE, SEE SPECIAL PROVISIONS.

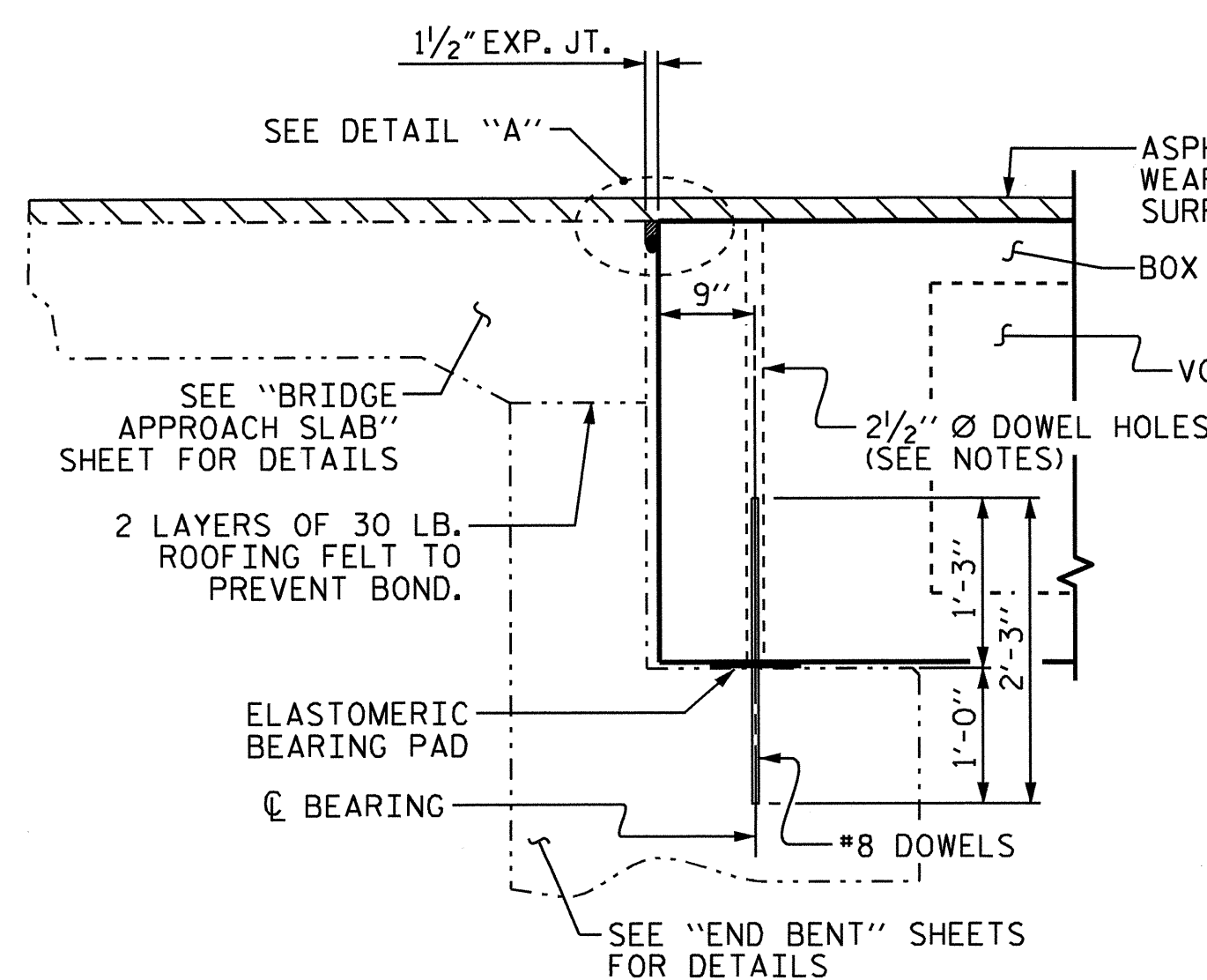
THE MINIMUM HEIGHT OF THE BARRIER RAIL IS SHOWN. THE HEIGHT OF THE BARRIER RAIL VARIES WHILE THE TOP OF THE RAIL FOLLOWS THE PROFILE OF THE GUTTERLINE.



HALF SECTION @ INTERMEDIATE DIAPHRAGMS HALF SECTION @ VOIDS

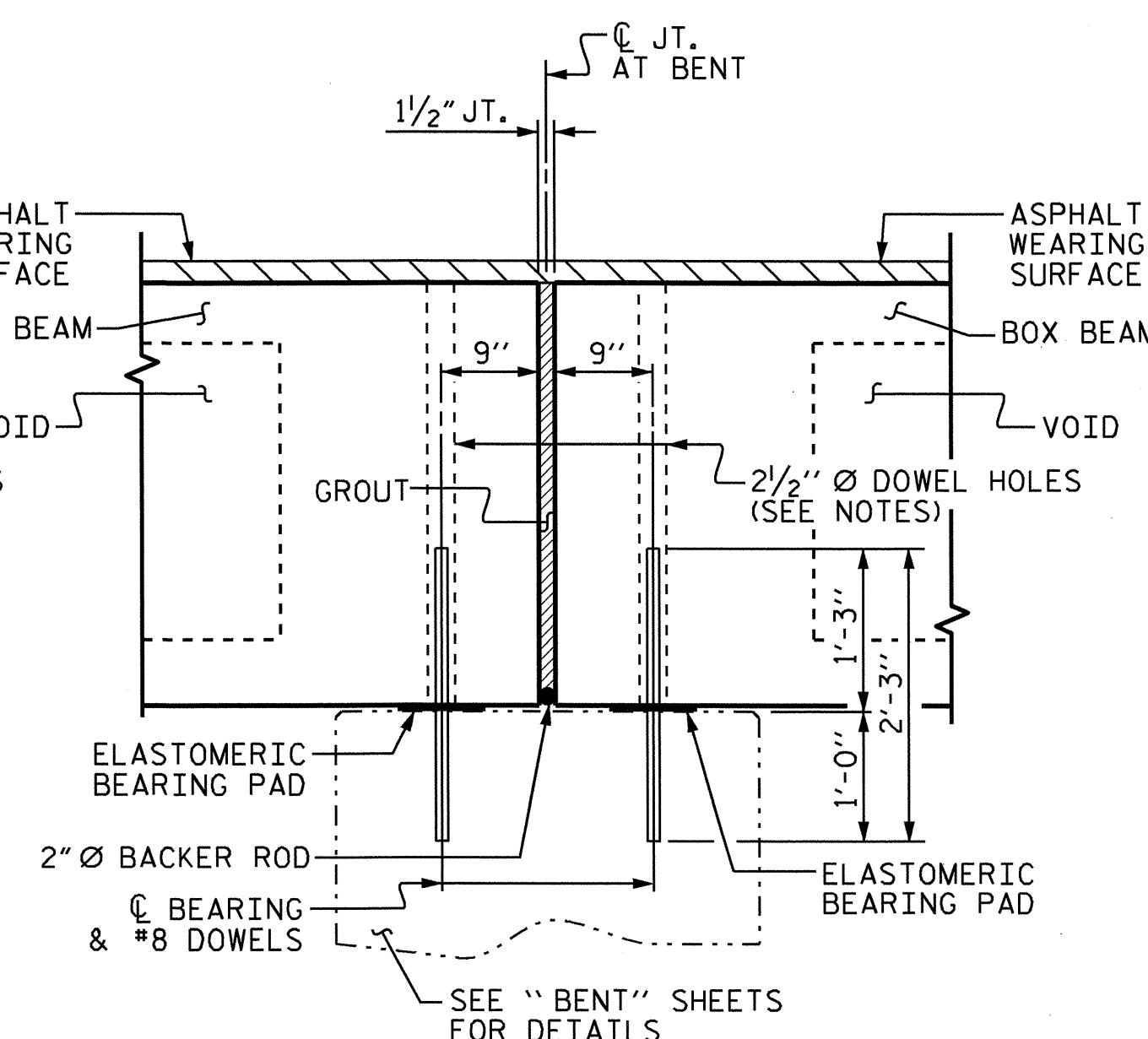
TYPICAL SECTION

EXPANSION END

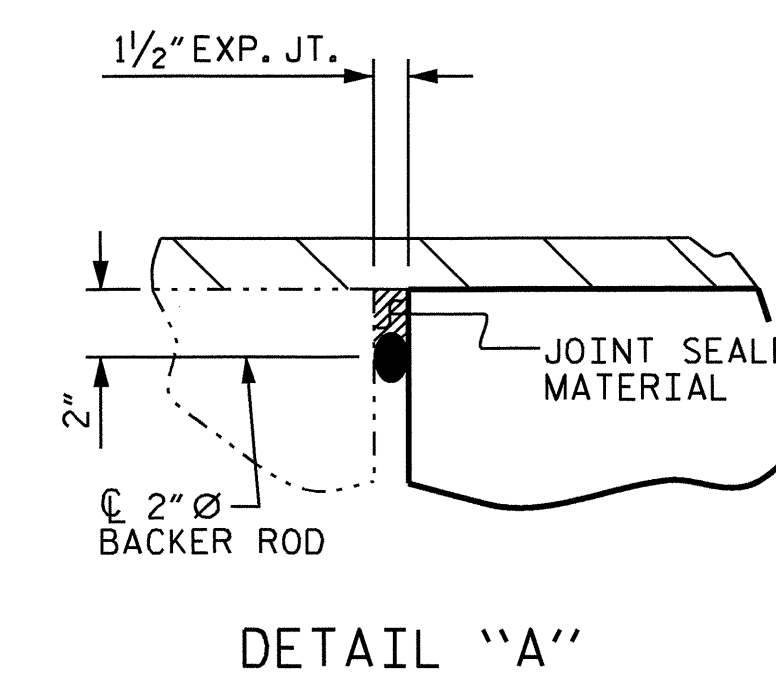


SECTION AT END BENT

FIXED END FIXED END



SECTION AT BENT



DETAIL "A"

PROJECT NO. B-4514
FRANKLIN COUNTY
 STATION: 26+67.50 -L-

SHEET 1 OF 10

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH
 STANDARD
 3'-0" X 3'-3"
 PRESTRESSED CONCRETE
 BOX BEAM UNIT

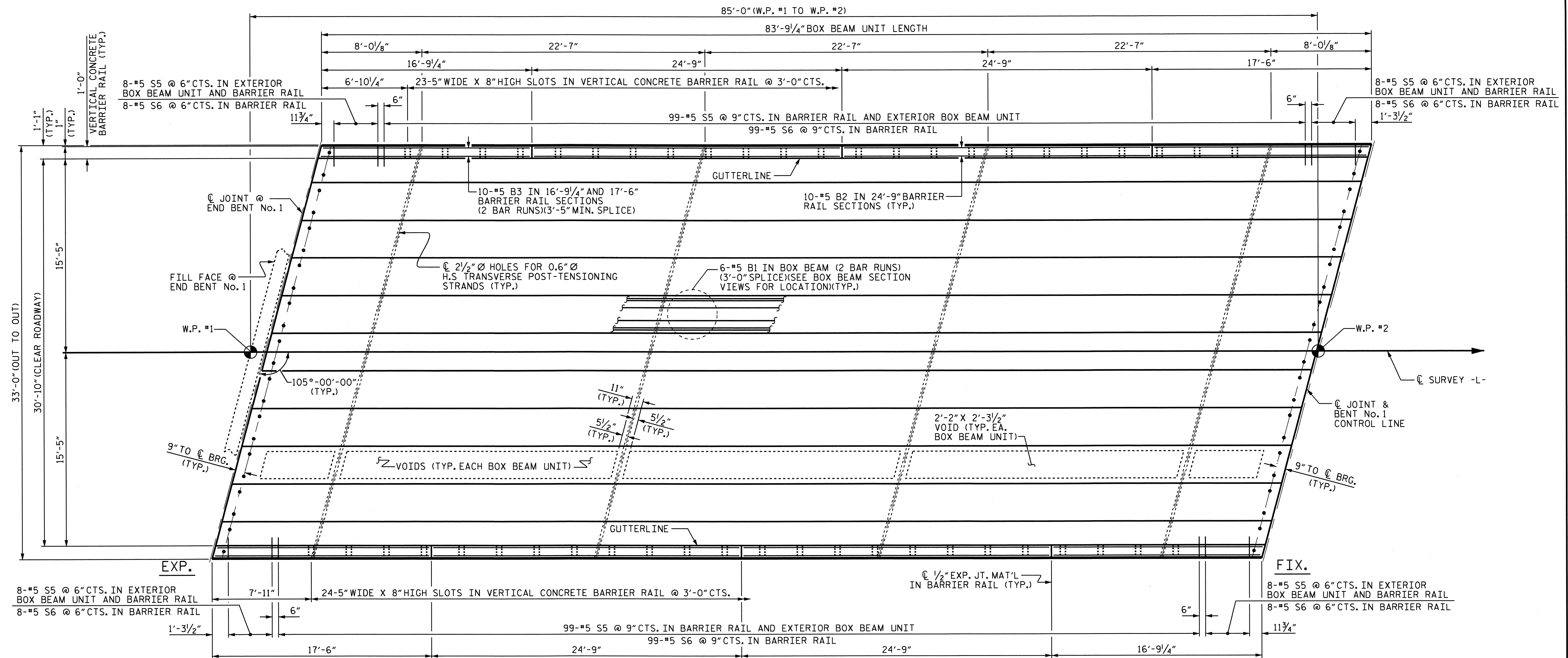


| | | | |
|----------------|---------|--------|---------------------|
| ASSEMBLED BY : | M.K.TOM | DATE : | 2/2011 |
| CHECKED BY : | D.G.ELY | DATE : | 3/2011 |
| DRAWN BY : | TLA | 5/05 | ADDED 7/11/05R |
| CHECKED BY : | GM | 6/05 | REV. 5/1/06R KMM/GM |

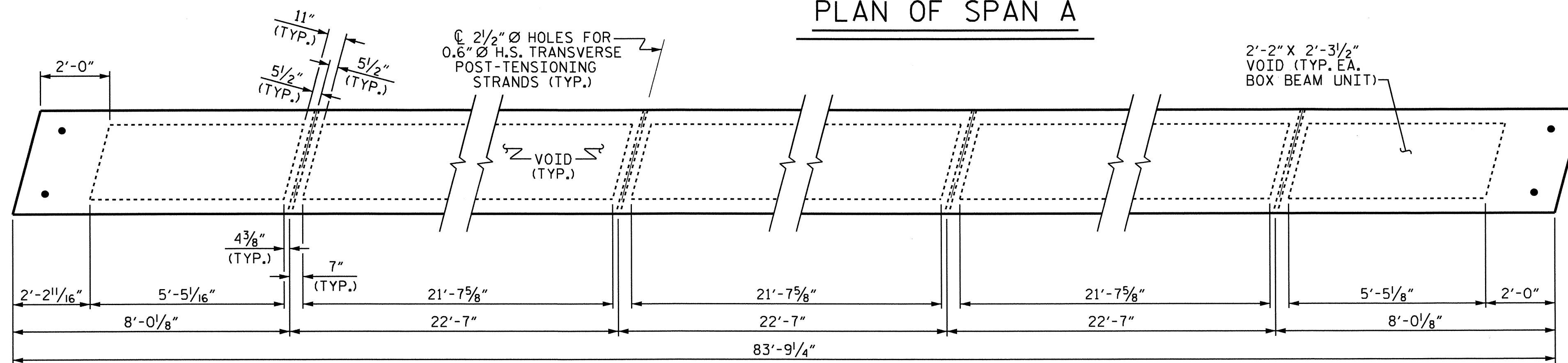
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 kalford

| REVISIONS | | | | | | SHEET NO. |
|-----------|-----|-------|-----|-----|-------|--------------|
| NO. | BY: | DATE: | NO. | BY: | DATE: | TOTAL SHEETS |
| 1 | | | 3 | | | 5 |
| 2 | | | 4 | | | 27 |

STD. NO. PCBB1



PLAN OF SPAN A



DIAPHRAGM AND VOID LAYOUT

PROJECT NO. B-4514
FRANKLIN COUNTY
STATION: 26+67.50 -L-

SHEET 2 OF 10

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUPERSTRUCTURE
PLAN OF SPAN A

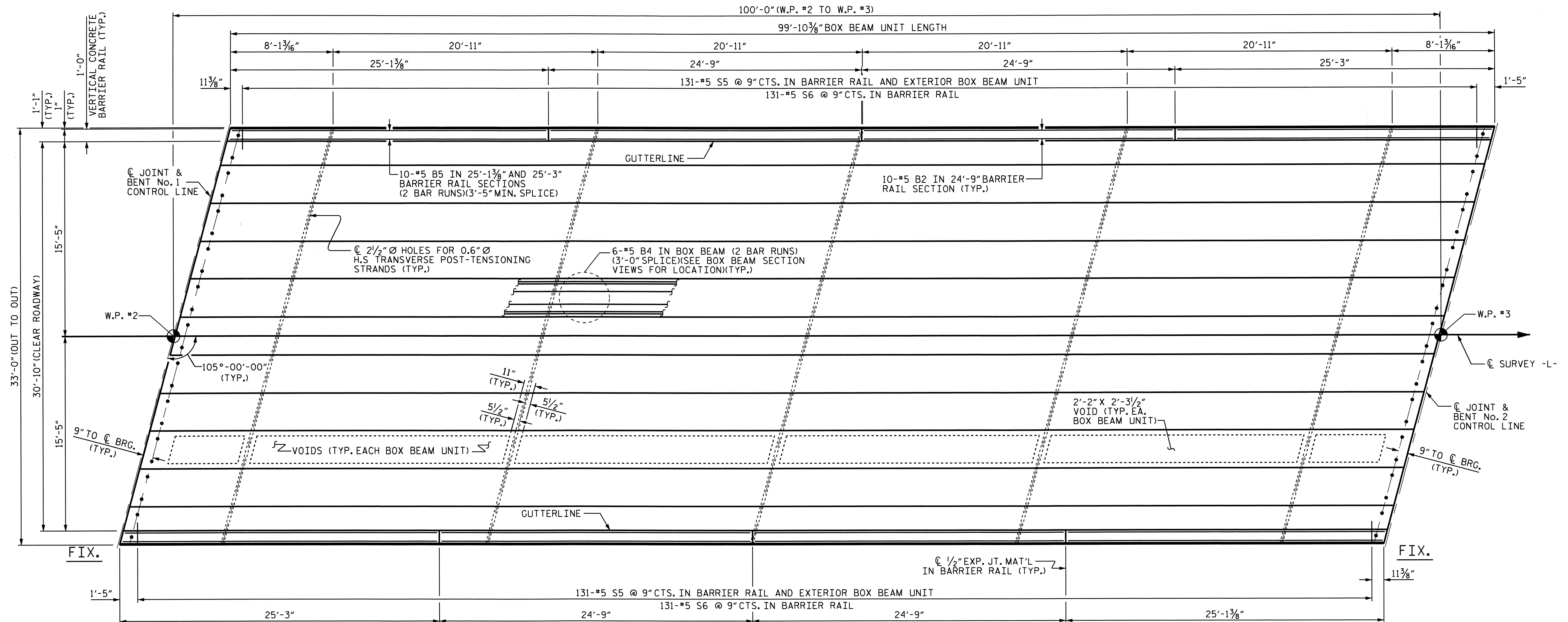


DRAWN BY: M.K.TOM DATE: 2/2011
CHECKED BY: D.G. ELY DATE: 3/2011

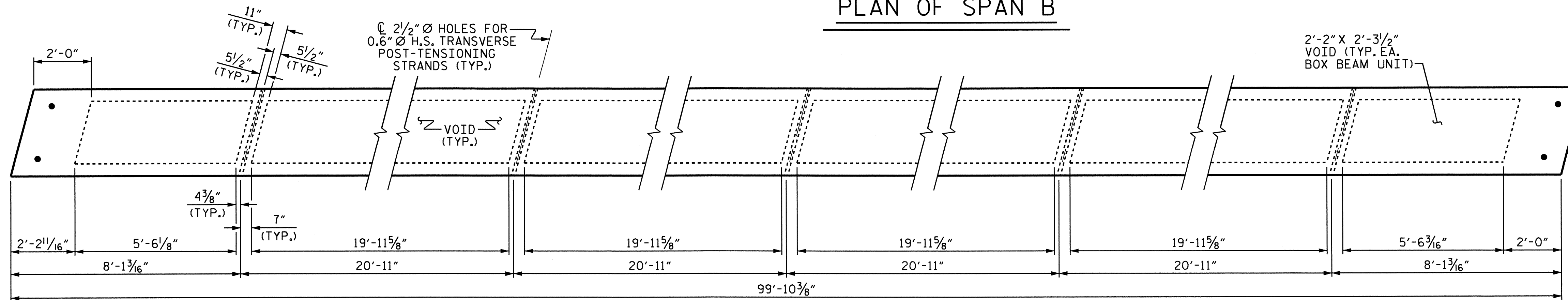
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| REVISIONS | | | | | | SHEET NO. |
|-----------|-----|-------|-----|-----|-------|--------------|
| NO. | BY: | DATE: | NO. | BY: | DATE: | S-6 |
| 1 | | | 3 | | | TOTAL SHEETS |
| 2 | | | 4 | | | 27 |

NC006



PLAN OF SPAN B



DIAPHRAGM AND VOID LAYOUT

PROJECT NO. B-4514
 FRANKLIN COUNTY
 STATION: 26+67.50 -L-

SHEET 3 OF 10

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

SUPERSTRUCTURE
 PLAN OF SPAN B

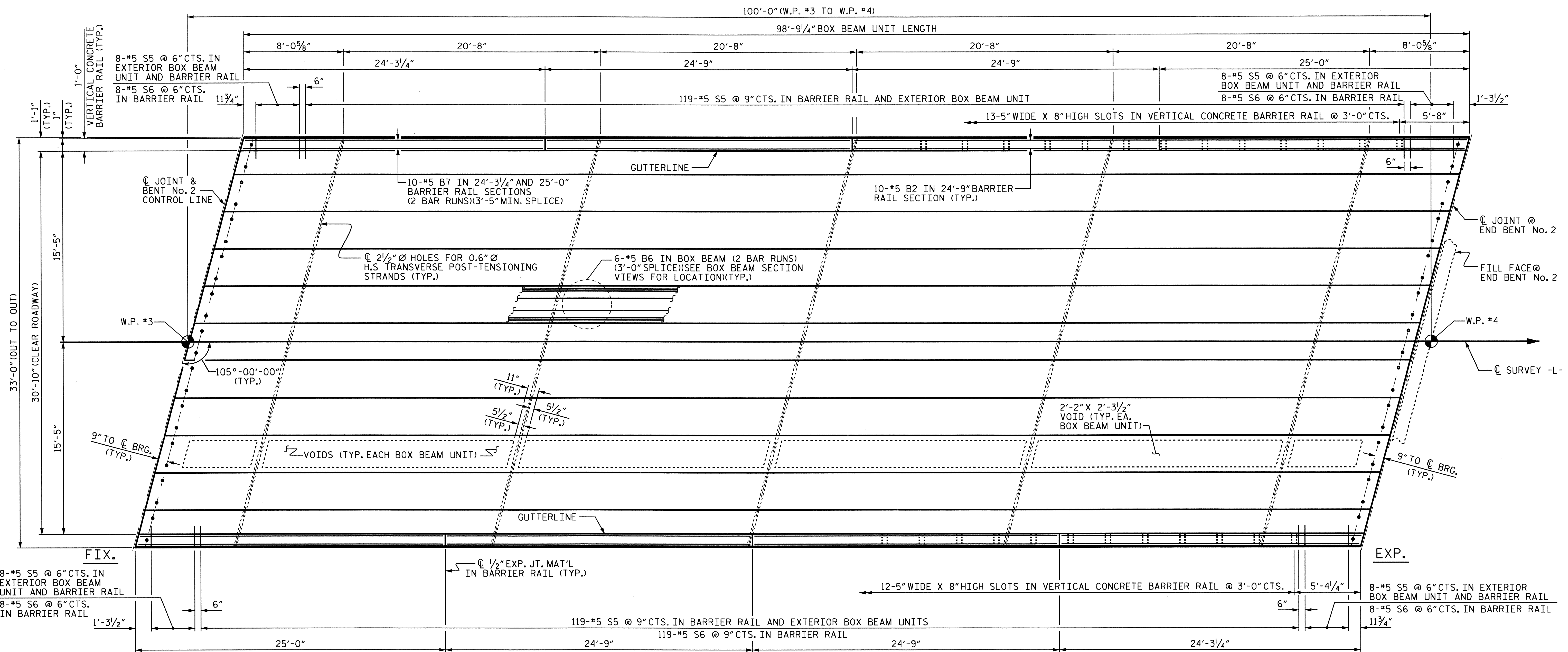


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 CHECKED BY: D.G. ELY DATE: 3/2011

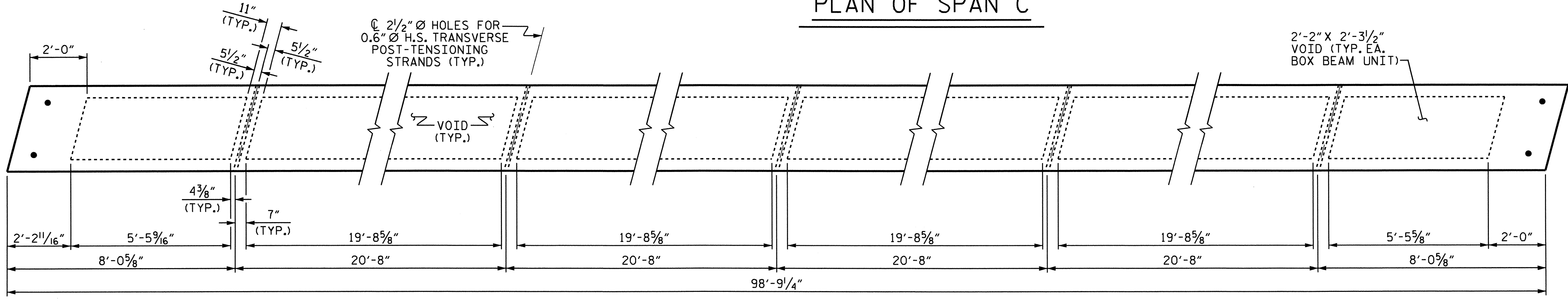
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| REVISIONS | | | | | | SHEET NO. | |
|-----------|-----|-------|-----|-----|-------|--------------|--|
| NO. | BY: | DATE: | NO. | BY: | DATE: | S-7 | |
| 1 | | | 3 | | | TOTAL SHEETS | |
| 2 | | | 4 | | | 27 | |

NC006



PLAN OF SPAN C



DIAPHRAGM AND VOID LAYOUT

PROJECT NO. B-4514
 FRANKLIN COUNTY
 STATION: 26+67.50 -L-

SHEET 4 OF 10

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

SUPERSTRUCTURE
 PLAN OF SPAN C

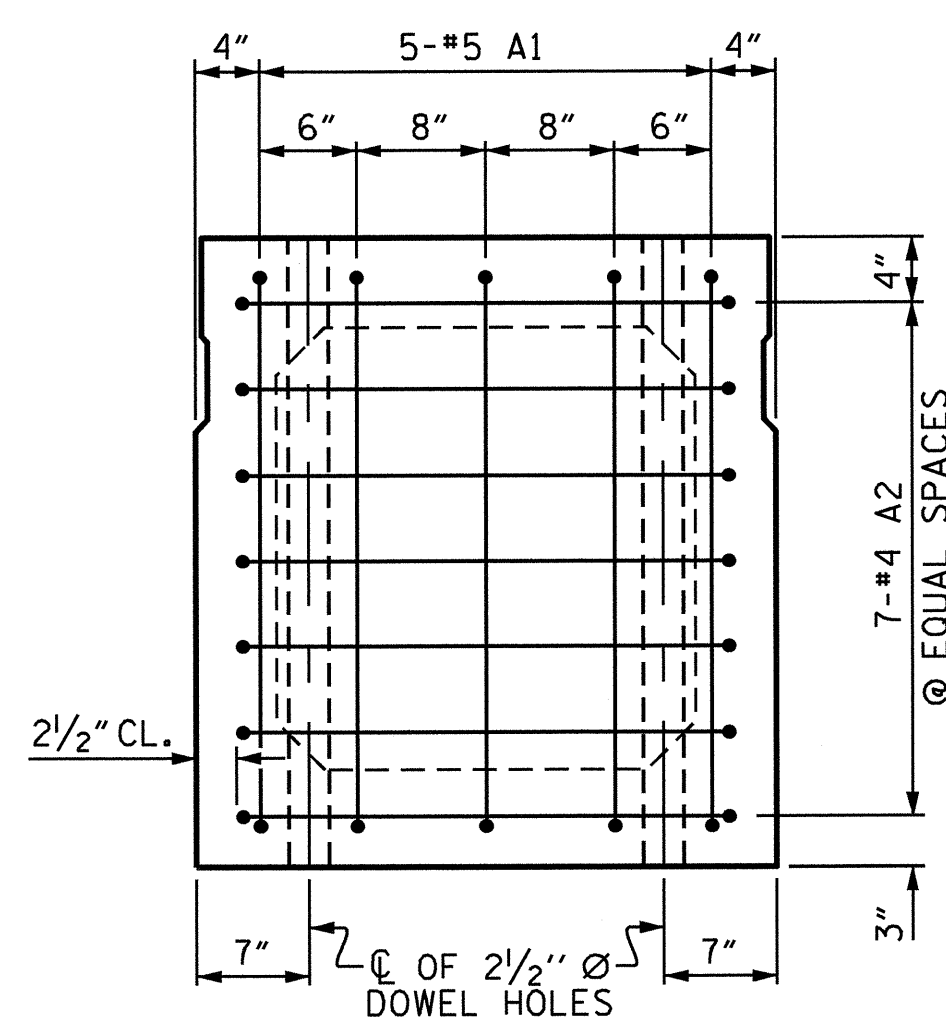


| REVISIONS | | | | | | SHEET NO. | |
|-----------|-----|-------|-----|-----|-------|--------------|--|
| NO. | BY: | DATE: | NO. | BY: | DATE: | S-8 | |
| 1 | | | 3 | | | TOTAL SHEETS | |
| 2 | | | 4 | | | 27 | |

DRAWN BY: M.K.TOM DATE: 2/2011
 CHECKED BY: D.G. ELY DATE: 3/2011

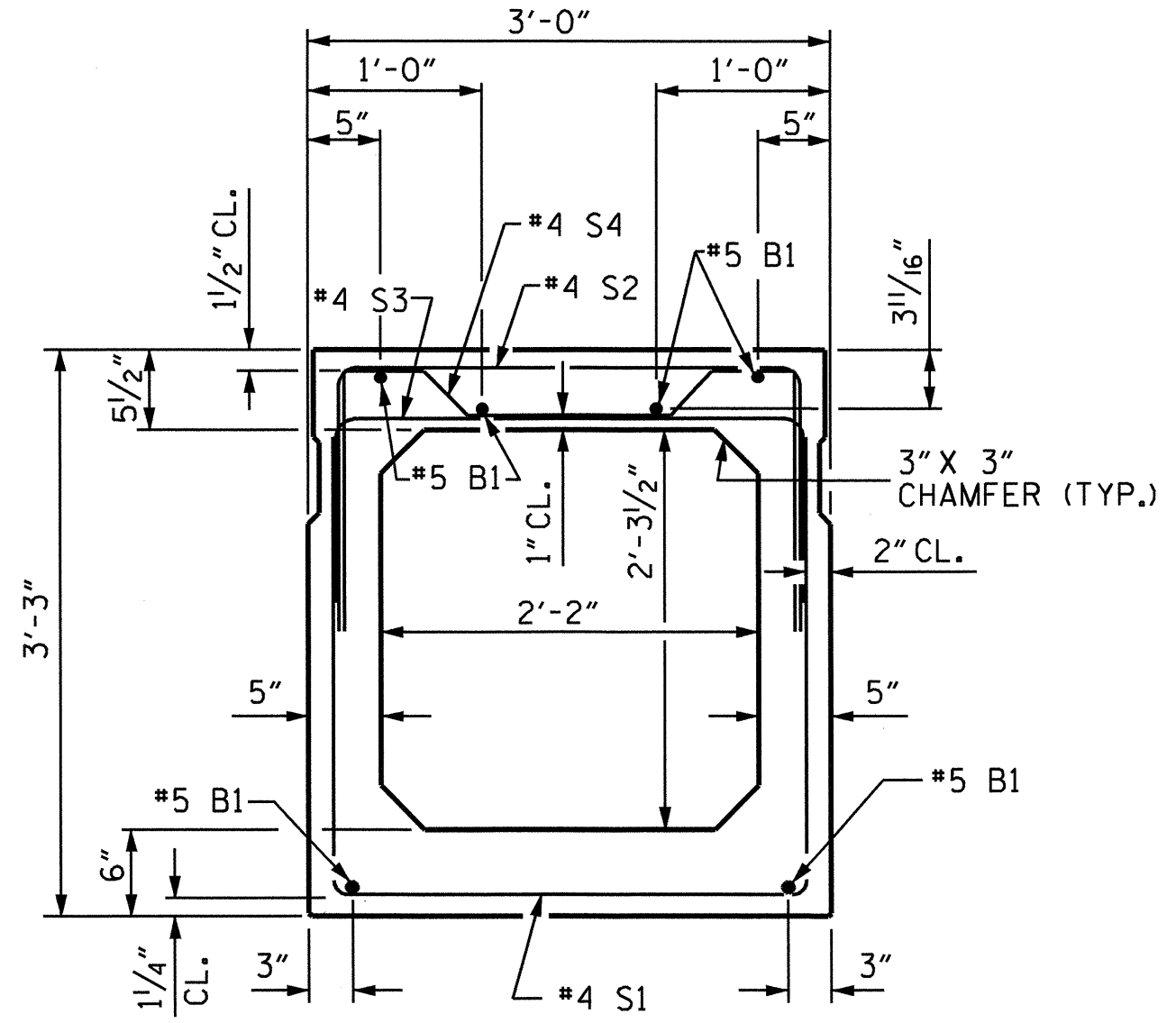
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NC005



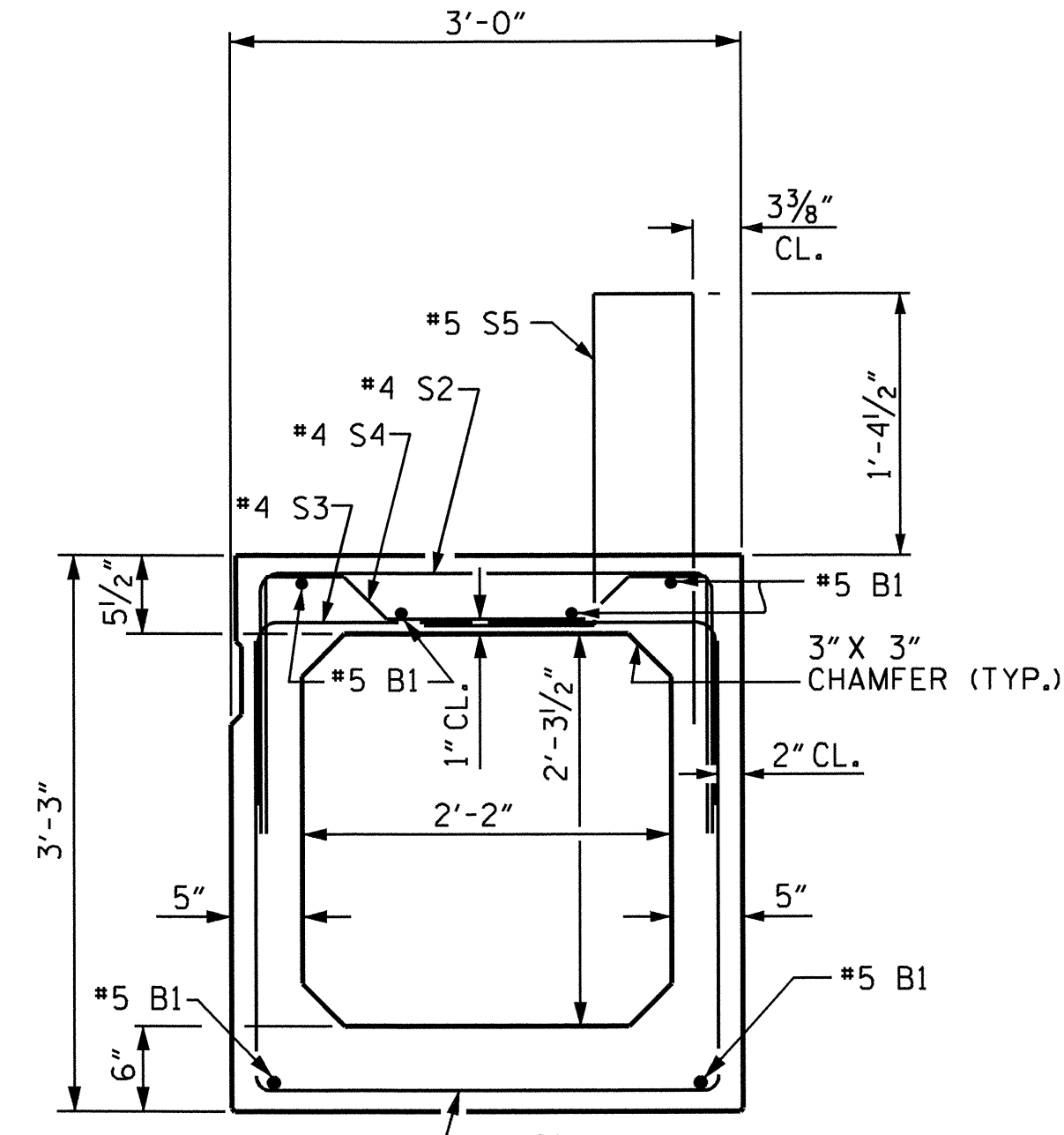
END ELEVATION

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.)



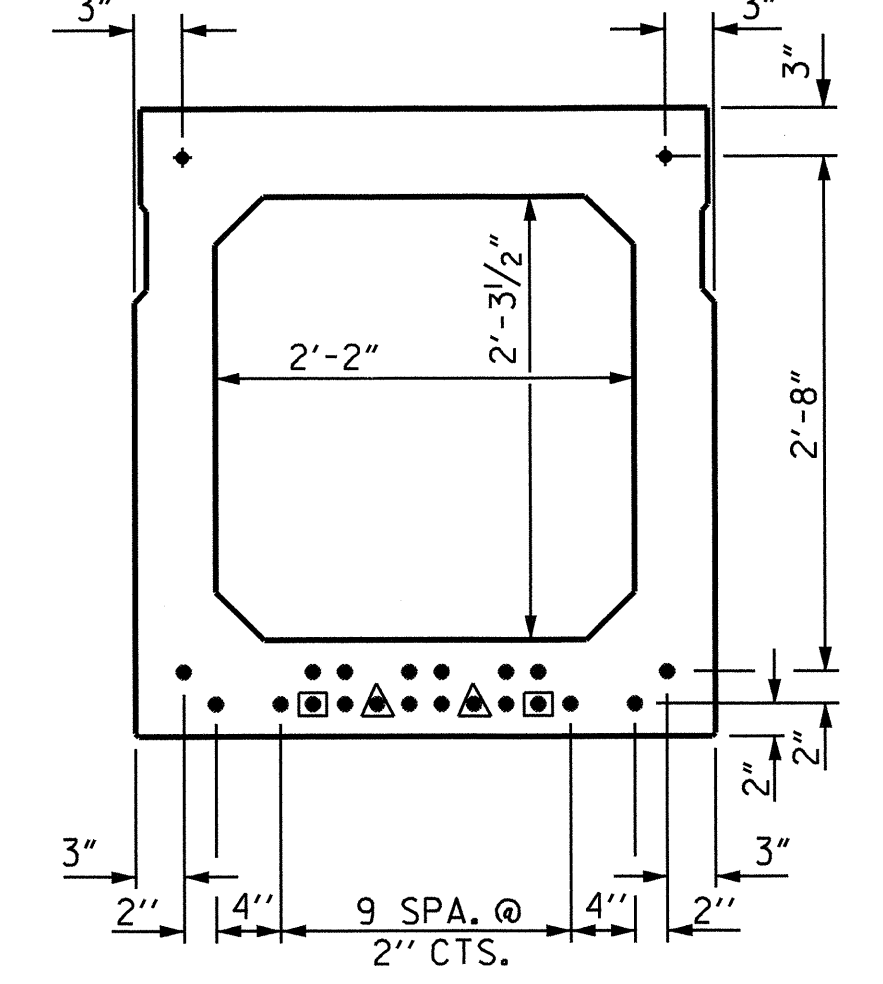
INTERIOR BOX BEAM SECTION

(STRAND LAYOUT NOT SHOWN)



EXTERIOR BOX BEAM SECTION

(STRAND LAYOUT NOT SHOWN)



TYPICAL STRAND LOCATION

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

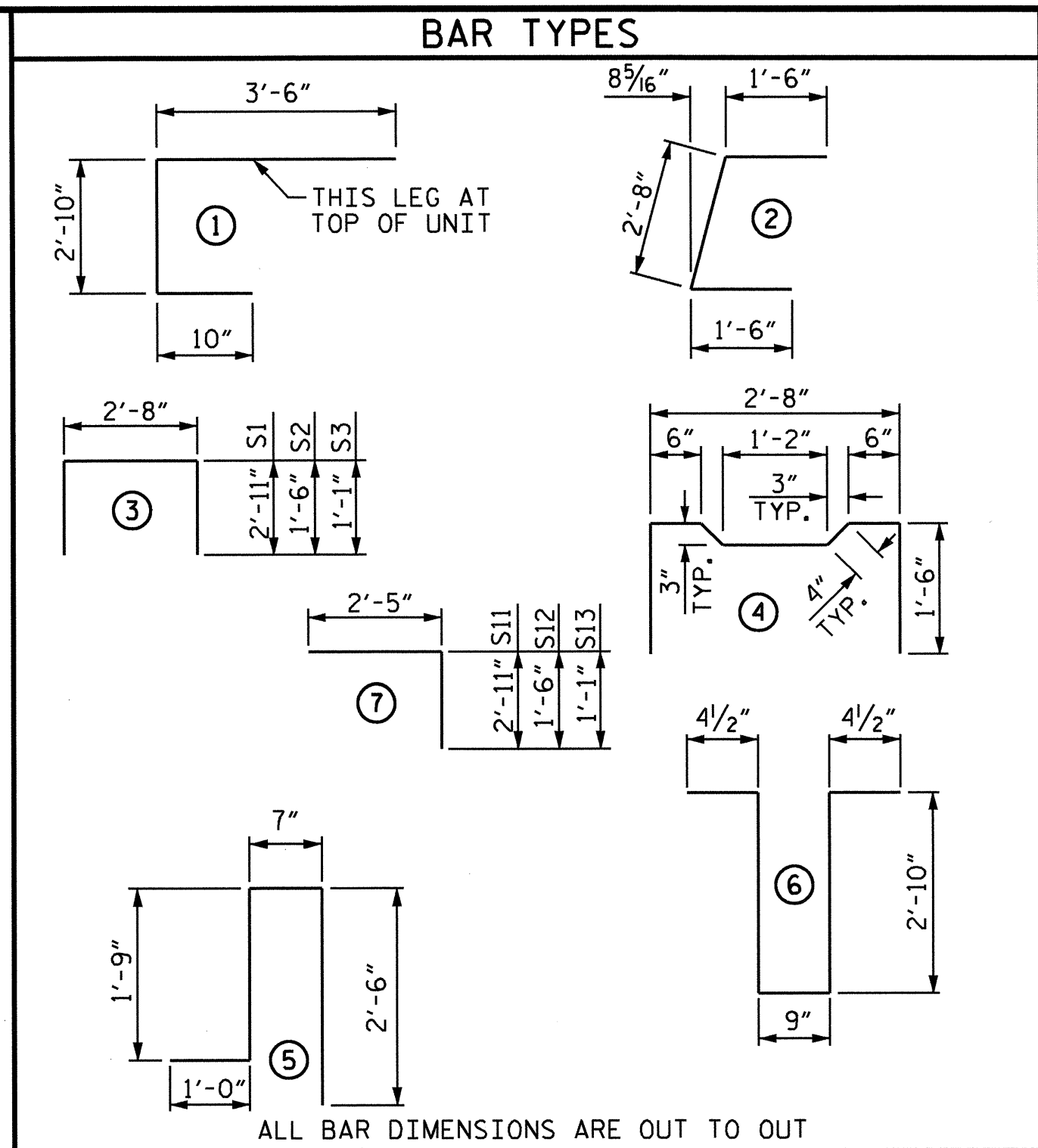
DEBONDING LEGEND

- FULLY BONDED STRANDS
- ◐ STRANDS DEBONDED FOR 2'-0" FROM END OF GIRDER
- ◑ STRANDS DEBONDED FOR 4'-0" FROM END OF GIRDER

0.6" Ø LOW RELAXATION STRAND LAYOUT

BOND SHALL BE BROKEN ON STRANDS AS SHOWN FOR THE SPECIFIED LENGTH FROM EACH END OF THE BOX BEAM. SEE STANDARD SPECIFICATIONS ARTICLE 1078-7.

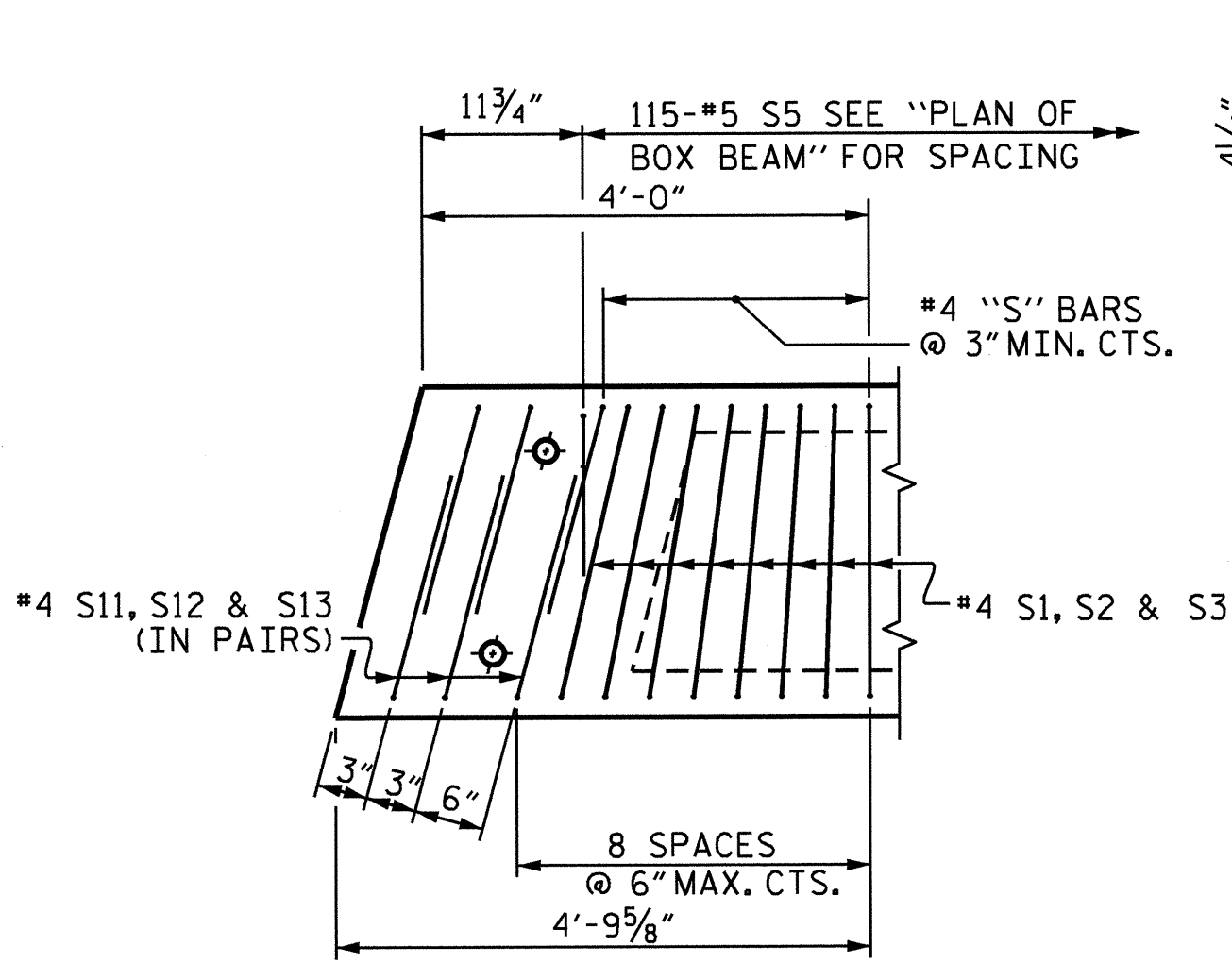
| GRADE 270 STRANDS | |
|-------------------------------------|--------|
| AREA (SQUARE INCHES) | 0.217 |
| ULTIMATE STRENGTH (LBS. PER STRAND) | 58,600 |
| APPLIED PRESTRESS (LBS. PER STRAND) | 43,950 |



ALL BAR DIMENSIONS ARE OUT TO OUT

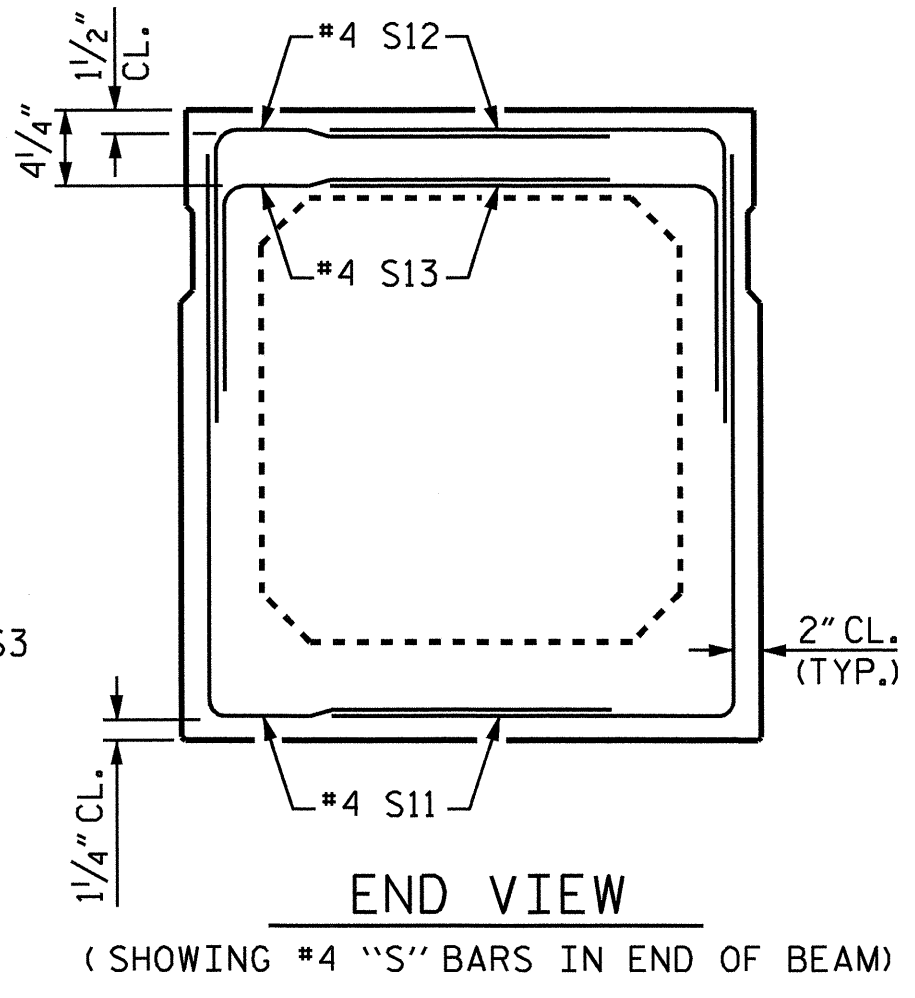
BILL OF MATERIAL FOR ONE BOX BEAM SECTION

| BAR | NUMBER | SIZE | TYPE | EXTERIOR UNIT | | INTERIOR UNIT | |
|-----------------------------|--------|------|------|---------------|--------|---------------|--------|
| | | | | LENGTH | WEIGHT | LENGTH | WEIGHT |
| A1 | 10 | #5 | 1 | 7'-2" | 75 | 7'-2" | 75 |
| A2 | 38 | #4 | 2 | 5'-8" | 144 | 5'-8" | 144 |
| B1 | 12 | #5 | STR | 43'-3" | 541 | 43'-3" | 541 |
| K1 | 12 | #4 | 6 | 7'-2" | 57 | 7'-2" | 57 |
| K2 | 8 | #4 | STR | 2'-7" | 14 | 2'-7" | 14 |
| S1 | 66 | #4 | 3 | 8'-6" | 375 | 8'-6" | 375 |
| S2 | 66 | #4 | 3 | 5'-8" | 250 | 5'-8" | 250 |
| S3 | 115 | #4 | 3 | 4'-10" | 371 | 4'-10" | 371 |
| S4 | 49 | #4 | 4 | 5'-10" | 191 | 5'-10" | 191 |
| S11 | 12 | #4 | 7 | 5'-4" | 43 | 5'-4" | 43 |
| S12 | 12 | #4 | 7 | 3'-11" | 31 | 3'-11" | 31 |
| S13 | 12 | #4 | 7 | 3'-6" | 28 | 3'-6" | 28 |
| *S5 | 115 | #5 | 5 | 5'-10" | 700 | -- | -- |
| REINFORCING STEEL | | | | 2120 LBS. | | 2120 LBS. | |
| * EPOXY COATED REINF. STEEL | | | | 700 LBS. | | | |
| 6500 P.S.I. CONCRETE | | | | 16.5 CU. YDS. | | 16.4 CU. YDS. | |
| 0.6" Ø L.R. STRANDS | | | | No. 22 | | No. 22 | |



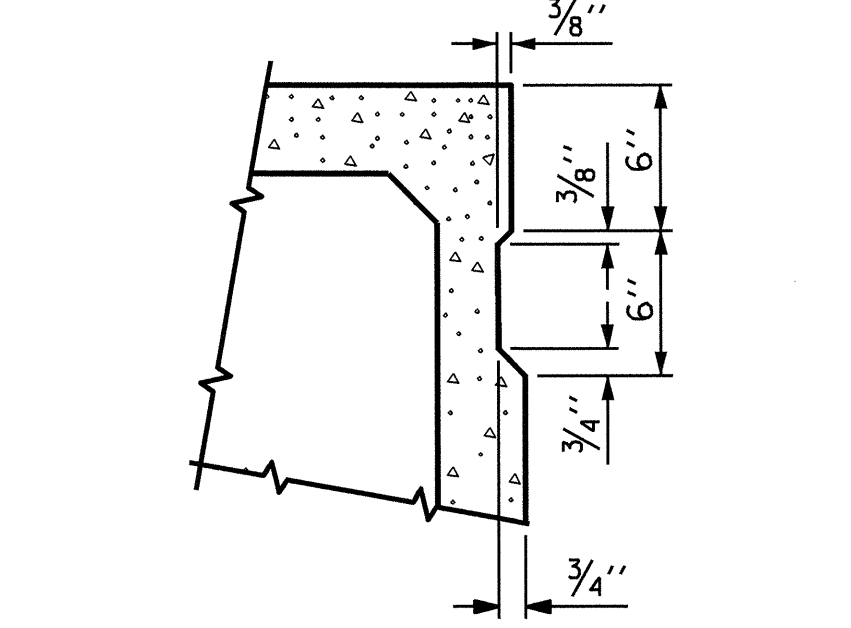
DETAIL "B"

EXTERIOR UNIT SHOWN, INTERIOR UNIT SIMILAR EXCEPT OMIT #5 S5 BARS. "B" BARS AND "A" BARS NOT SHOWN.



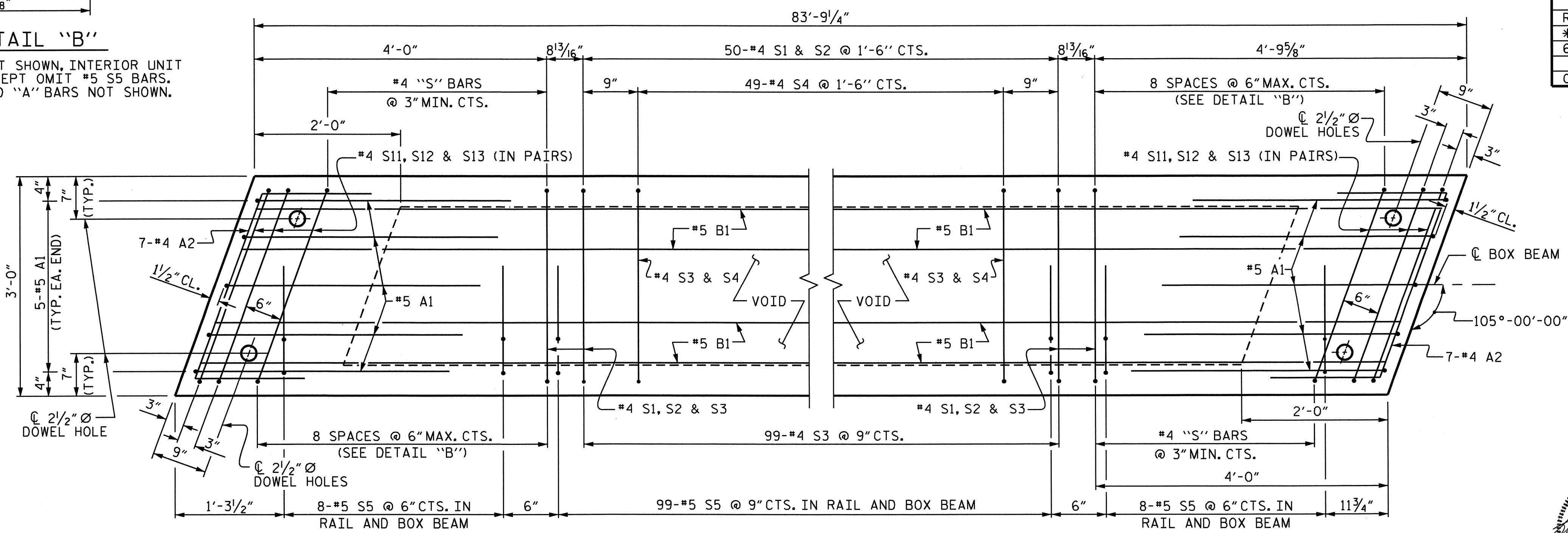
END VIEW

(SHOWING #4 "S" BARS IN END OF BEAM)



SHEAR KEY DETAIL

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

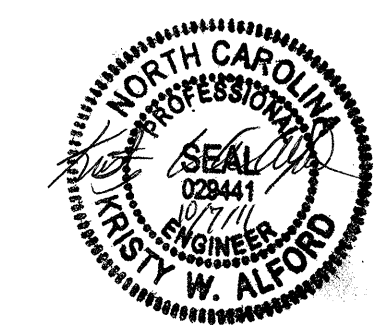


PLAN OF BOX BEAM

EXTERIOR UNIT SHOWN, INTERIOR UNIT SIMILAR EXCEPT OMIT #5 S5 BARS. FOR LOCATION OF DIAPHRAGMS AND VOIDS, SEE "DIAPHRAGM AND VOID LAYOUT" ON SHEET 2 OF 10. FOR REINFORCING STEEL IN DIAPHRAGMS, SEE DIAPHRAGM DETAILS ON SHEET 8 OF 10.

| | | | |
|----------------|----------|---------|--------|
| ASSEMBLED BY : | M.K.TOM | DATE : | 2/2011 |
| CHECKED BY : | D.G. ELY | DATE : | 3/2011 |
| DRAWN BY : | TLA | ADDED : | 7/1/05 |
| CHECKED BY : | GM | REV. : | 5/1/06 |

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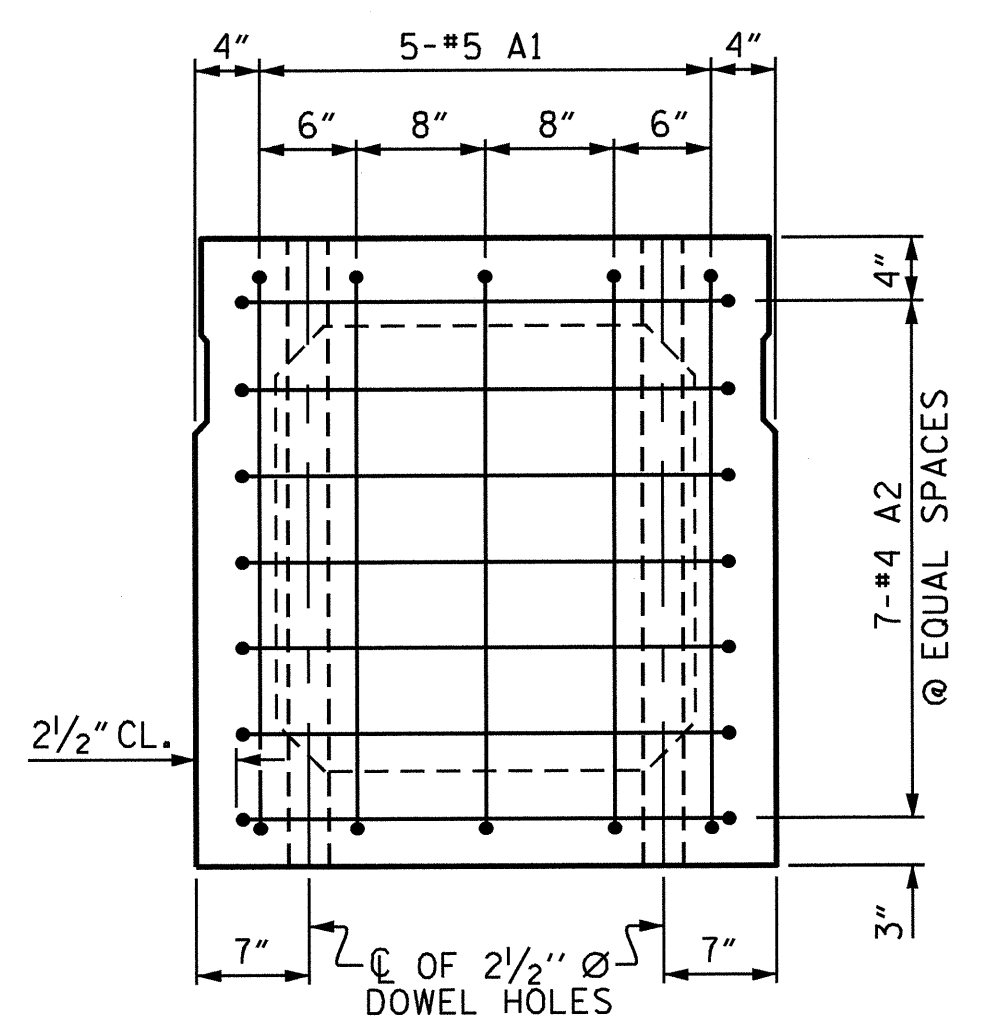


PROJECT NO. B-4514
FRANKLIN COUNTY
STATION: 26+67.50 -L-

SHEET 5 OF 10

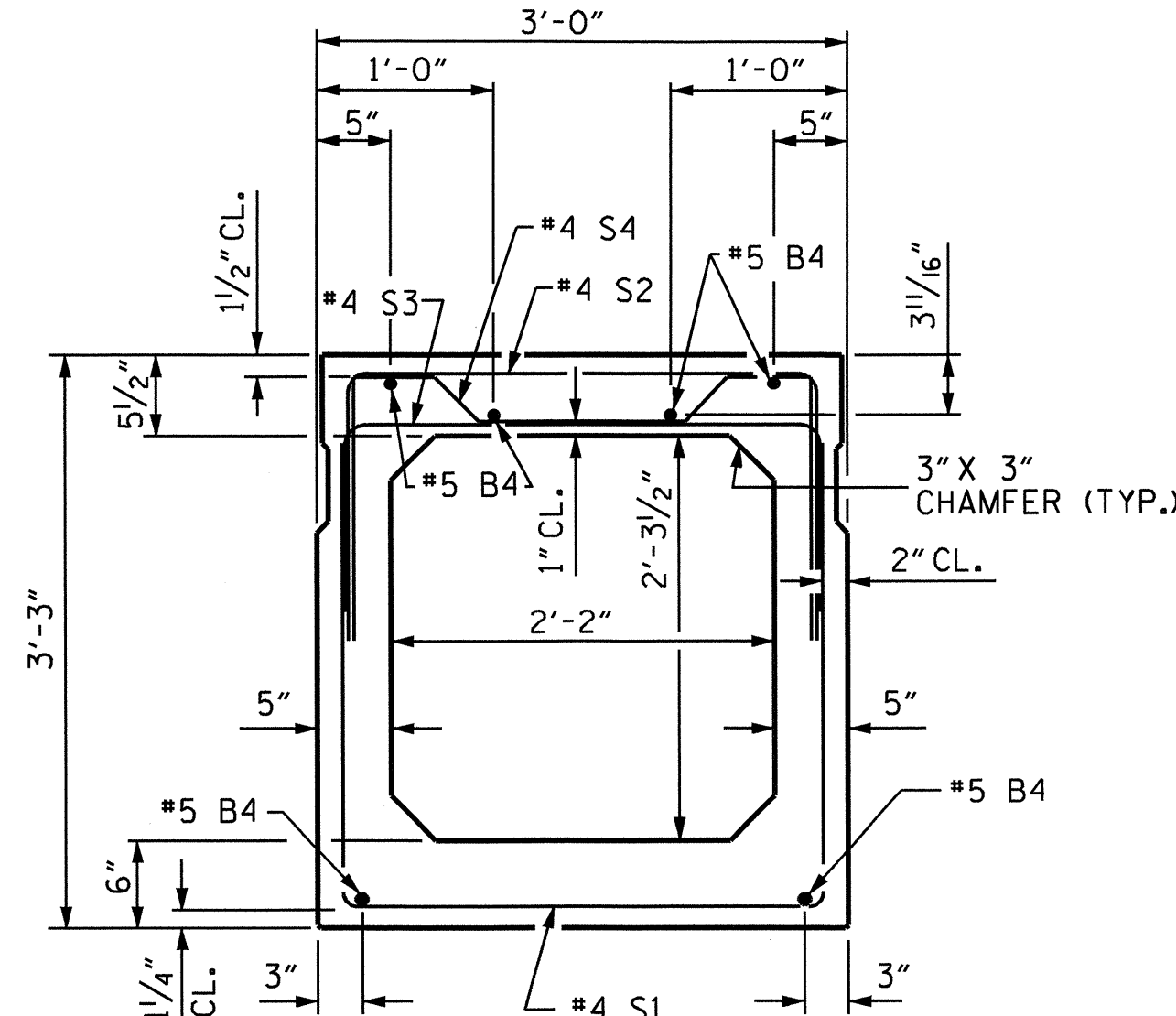
| REVISIONS | | | | | | SHEET NO. |
|-----------|-----|-------|-----|-----|-------|--------------|
| NO. | BY: | DATE: | NO. | BY: | DATE: | S-9 |
| 1 | | | 3 | | | TOTAL SHEETS |
| 2 | | | 4 | | | 27 |

(SHT 3C) STD. NO. PCBB6



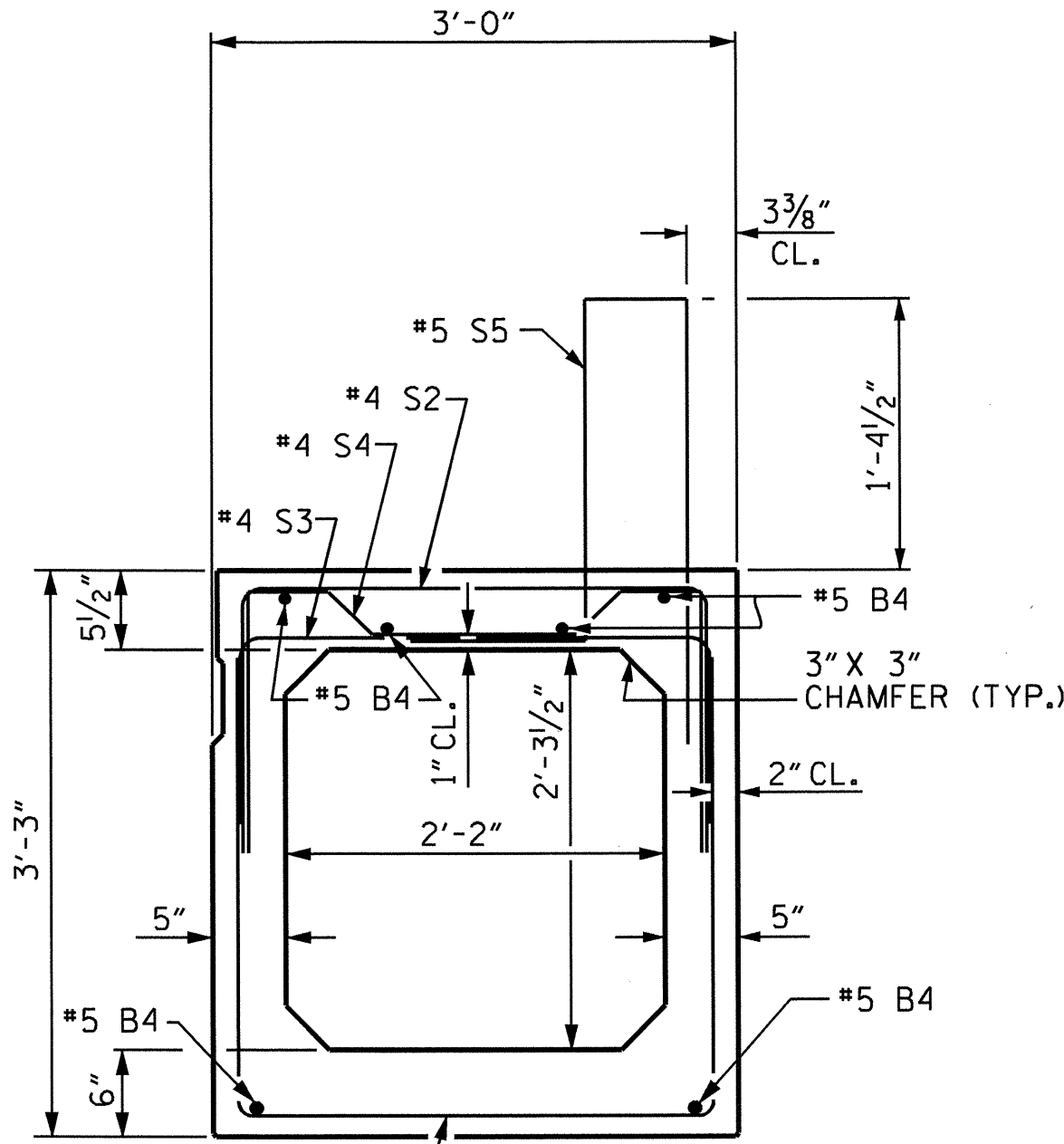
END ELEVATION

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.)



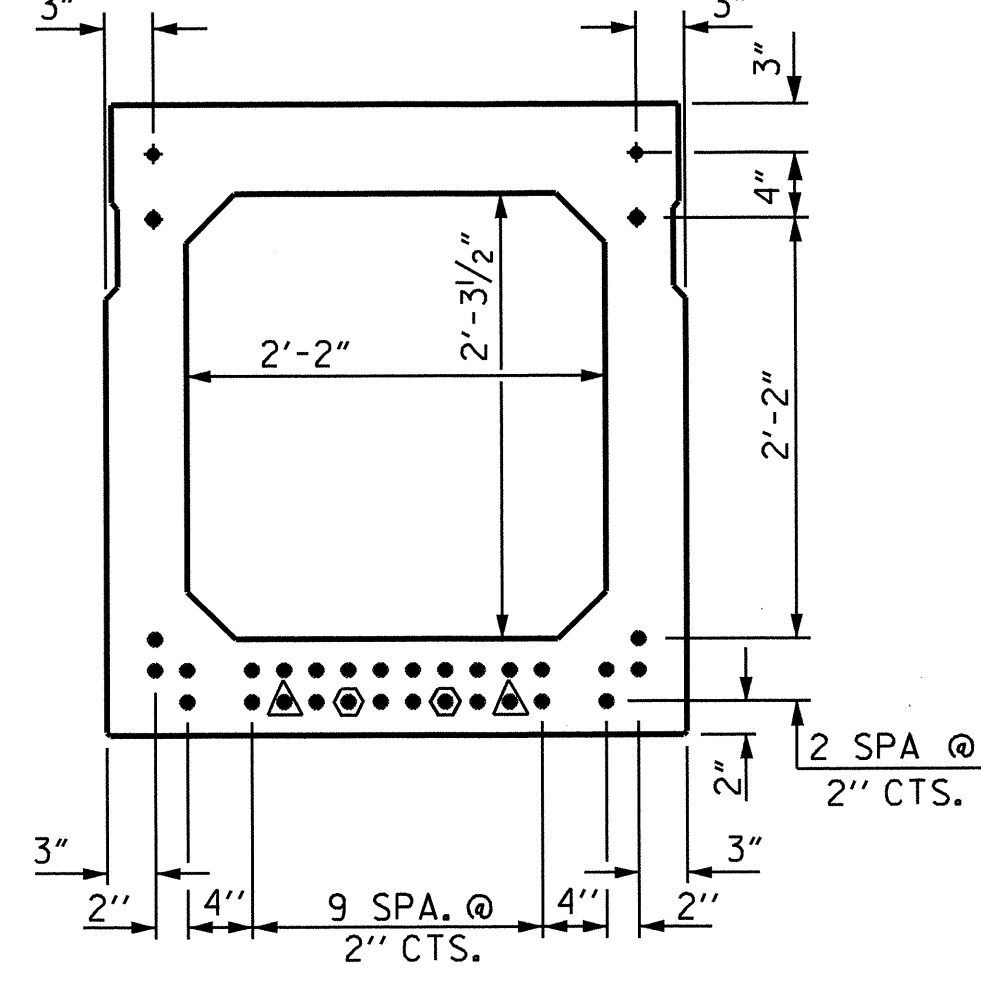
INTERIOR BOX BEAM SECTION

(STRAND LAYOUT NOT SHOWN)



EXTERIOR BOX BEAM SECTION

(STRAND LAYOUT NOT SHOWN)



TYPICAL STRAND LOCATION

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

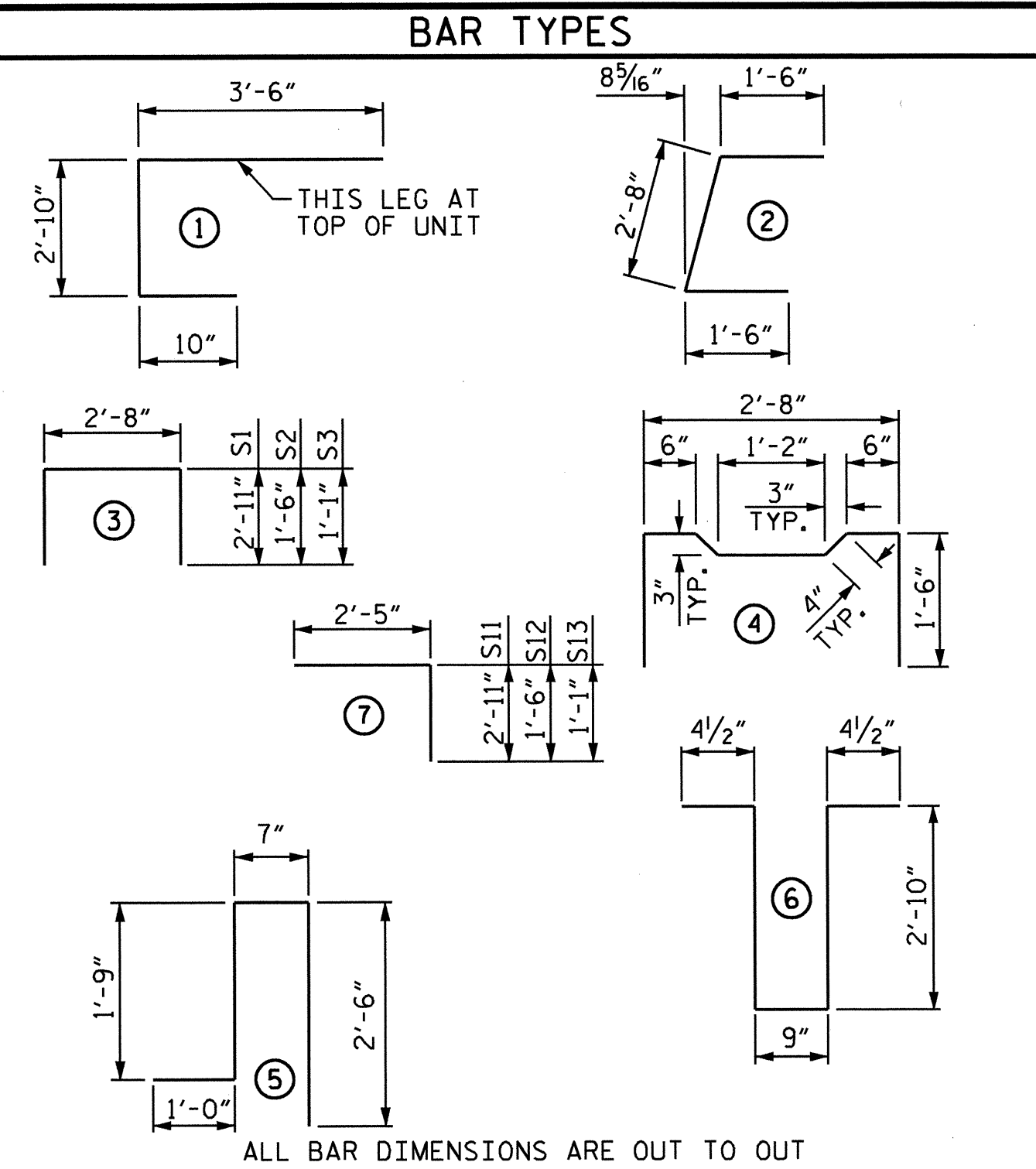
DEBONDING LEGEND

- FULLY BONDED STRANDS
- ▲ STRANDS DEBONDED FOR 4'-0" FROM END OF GIRDER
- ◐ STRANDS DEBONDED FOR 12'-0" FROM END OF GIRDER

0.6" Ø LOW RELAXATION STRAND LAYOUT

NOTE: BOND SHALL BE BROKEN ON STRANDS AS SHOWN FOR THE SPECIFIED LENGTH FROM EACH END OF THE BOX BEAM. SEE STANDARD SPECIFICATIONS ARTICLE 1078-7.

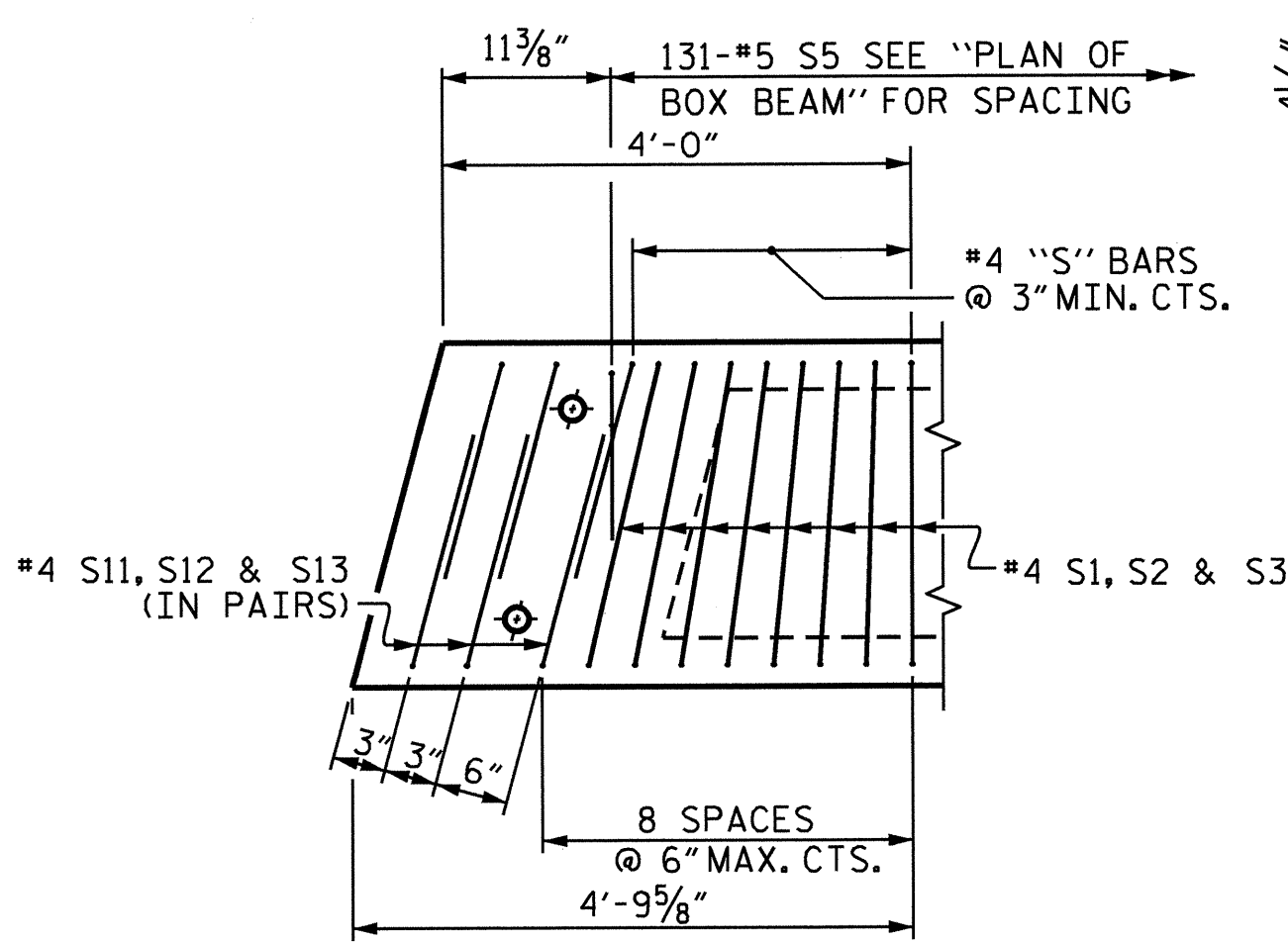
| GRADE 270 STRANDS | |
|---------------------------------------|--------|
| AREA (SQUARE INCHES) | 0.217 |
| ULTIMATE STRENGTH (LBS. PER STRAND) | 58,600 |
| APPLIED PRESTRESS (LBS. PER STRAND) | 43,950 |



ALL BAR DIMENSIONS ARE OUT TO OUT

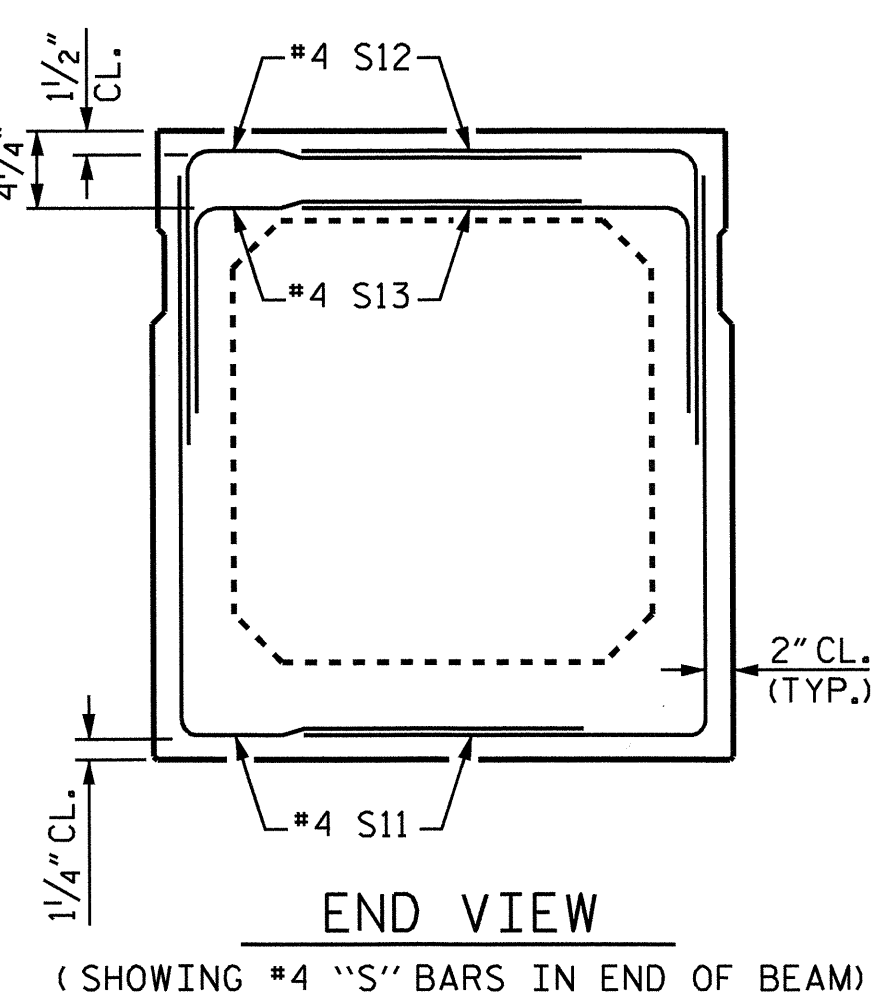
BILL OF MATERIAL FOR ONE BOX BEAM SECTION

| BAR | NUMBER | SIZE | TYPE | EXTERIOR UNIT | | INTERIOR UNIT | |
|-----------------------------|--------|------|------|---------------|---------------|---------------|---------------|
| | | | | LENGTH | WEIGHT | LENGTH | WEIGHT |
| A1 | 10 | #5 | 1 | 7'-2" | 75 | 7'-2" | 75 |
| A2 | 44 | #4 | 2 | 5'-8" | 167 | 5'-8" | 167 |
| B4 | 12 | #5 | STR | 51'-4" | 642 | 51'-4" | 642 |
| K1 | 15 | #4 | 6 | 7'-2" | 72 | 7'-2" | 72 |
| K2 | 10 | #4 | STR | 2'-7" | 17 | 2'-7" | 17 |
| S1 | 77 | #4 | 3 | 8'-6" | 437 | 8'-6" | 437 |
| S2 | 77 | #4 | 3 | 5'-8" | 291 | 5'-8" | 291 |
| S3 | 137 | #4 | 3 | 4'-10" | 442 | 4'-10" | 442 |
| S4 | 60 | #4 | 4 | 5'-10" | 234 | 5'-10" | 234 |
| S11 | 12 | #4 | 7 | 5'-4" | 43 | 5'-4" | 43 |
| S12 | 12 | #4 | 7 | 3'-11" | 31 | 3'-11" | 31 |
| S13 | 12 | #4 | 7 | 3'-6" | 28 | 3'-6" | 28 |
| * S5 | 131 | #5 | 5 | 5'-10" | 797 | -- | -- |
| REINFORCING STEEL | | | | | 2479 LBS. | | 2479 LBS. |
| * EPOXY COATED REINF. STEEL | | | | | 797 LBS. | | |
| 7500 P.S.I. CONCRETE | | | | | 19.6 CU. YDS. | | 19.4 CU. YDS. |
| 0.6" Ø L.R. STRANDS | | | | No. 32 | | No. 32 | |



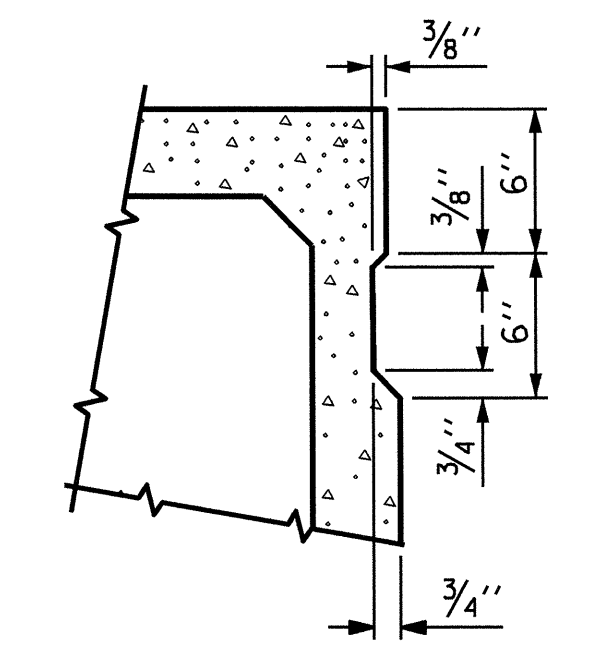
DETAIL "B"

EXTERIOR UNIT SHOWN, INTERIOR UNIT SIMILAR EXCEPT OMIT #5 S5 BARS. "B" BARS AND "A" BARS NOT SHOWN.



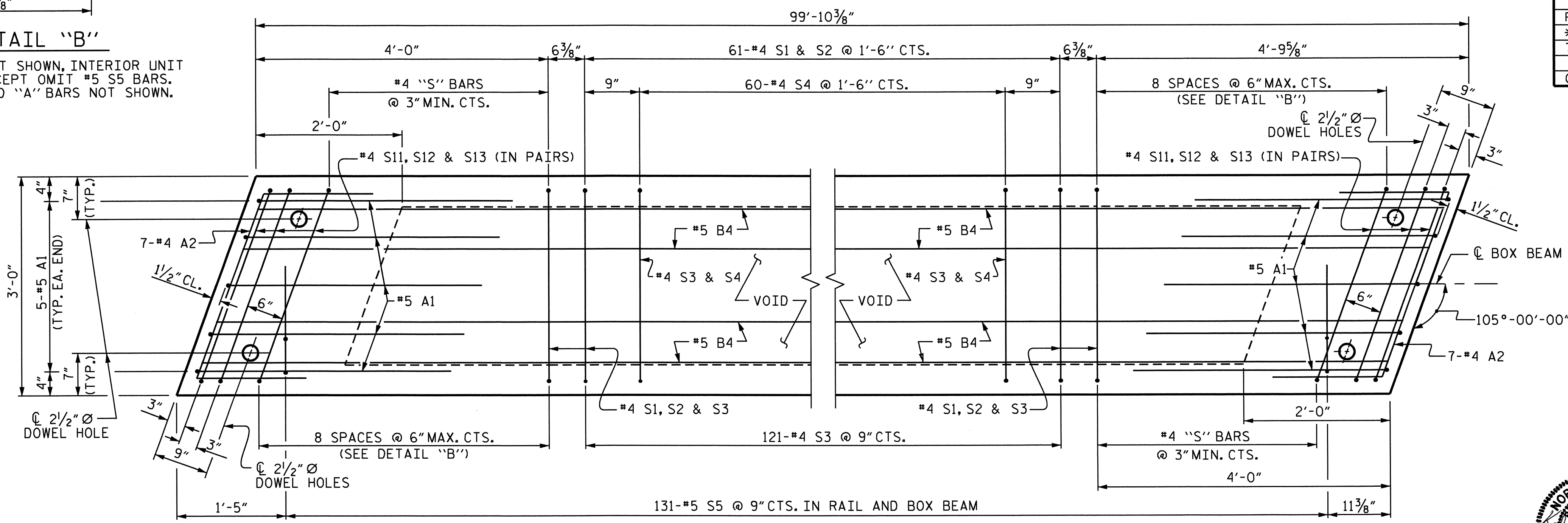
END VIEW

(SHOWING #4 "S" BARS IN END OF BEAM)



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 AND VOIDS, SEE "DIAPHRAGM AND VOID LAYOUT" ON SHEET 3 OF 10. FOR REINFORCING STEEL IN DIAPHRAGMS, SEE DIAPHRAGM DETAILS ON SHEET 8 OF 10.



PROJECT NO. B-4514
FRANKLIN COUNTY
STATION: 26+67.50 -L-
SHEET 6 OF 10

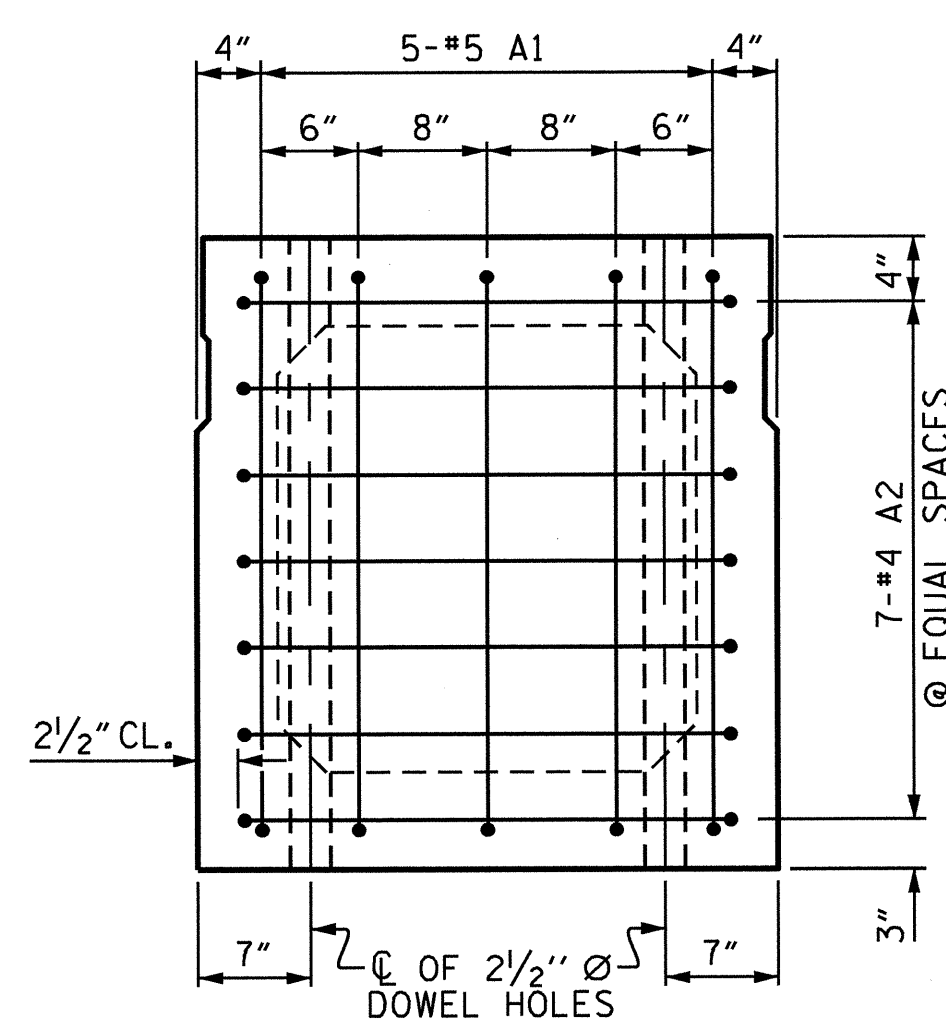
STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH
STANDARD
3'-0" X 3'-3"
PRESTRESSED CONCRETE
BOX BEAM UNIT
SPAN "B"

| REVISIONS | | | | | | SHEET NO. |
|-----------|-----|-------|-----|-----|-------|-----------------|
| NO. | BY: | DATE: | NO. | BY: | DATE: | |
| 1 | | | 3 | | | S-10 |
| 2 | | | 4 | | | TOTAL SHEETS 27 |

(SHT 3C) STD. NO. PCBB6

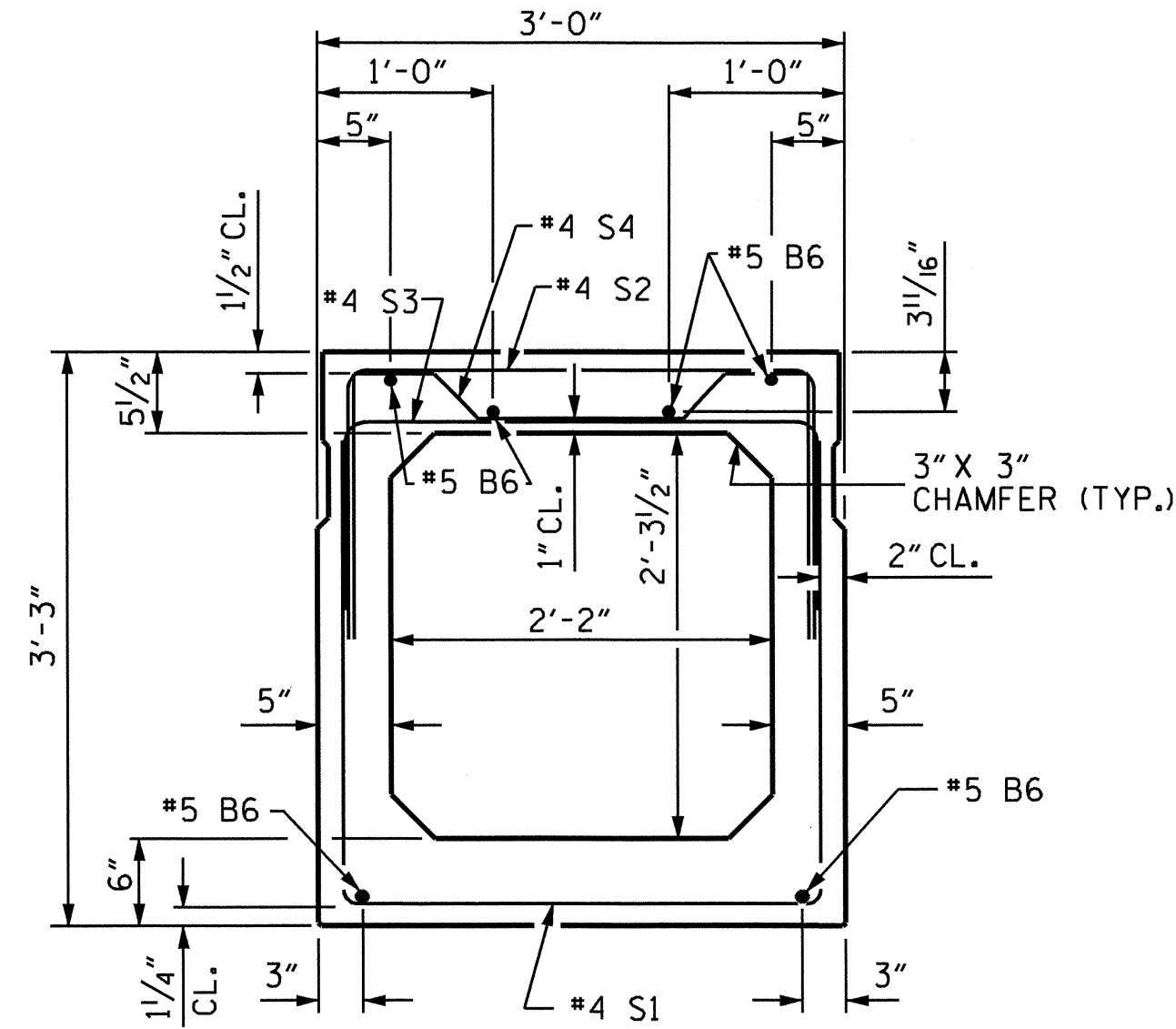
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|----------------|---------|--------|---------------|
| ASSEMBLED BY : | M.K.TOM | DATE : | 2/2011 |
| CHECKED BY : | D.G.ELY | DATE : | 3/2011 |
| DRAWN BY : | TLA | 5/05 | ADDED 7/11/05 |
| CHECKED BY : | GM | 6/05 | REV. 5/1/06 |

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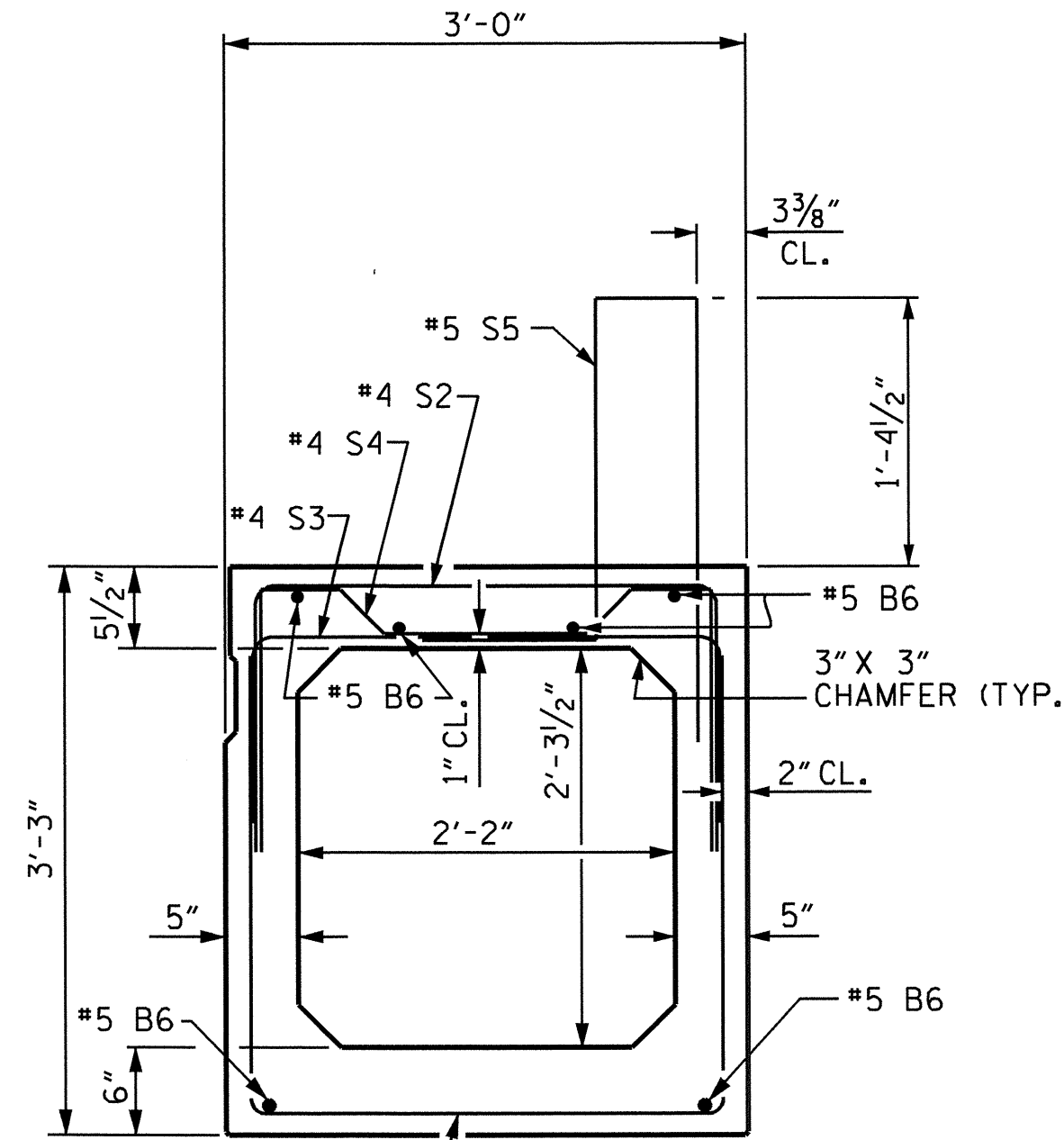
END ELEVATION

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.)



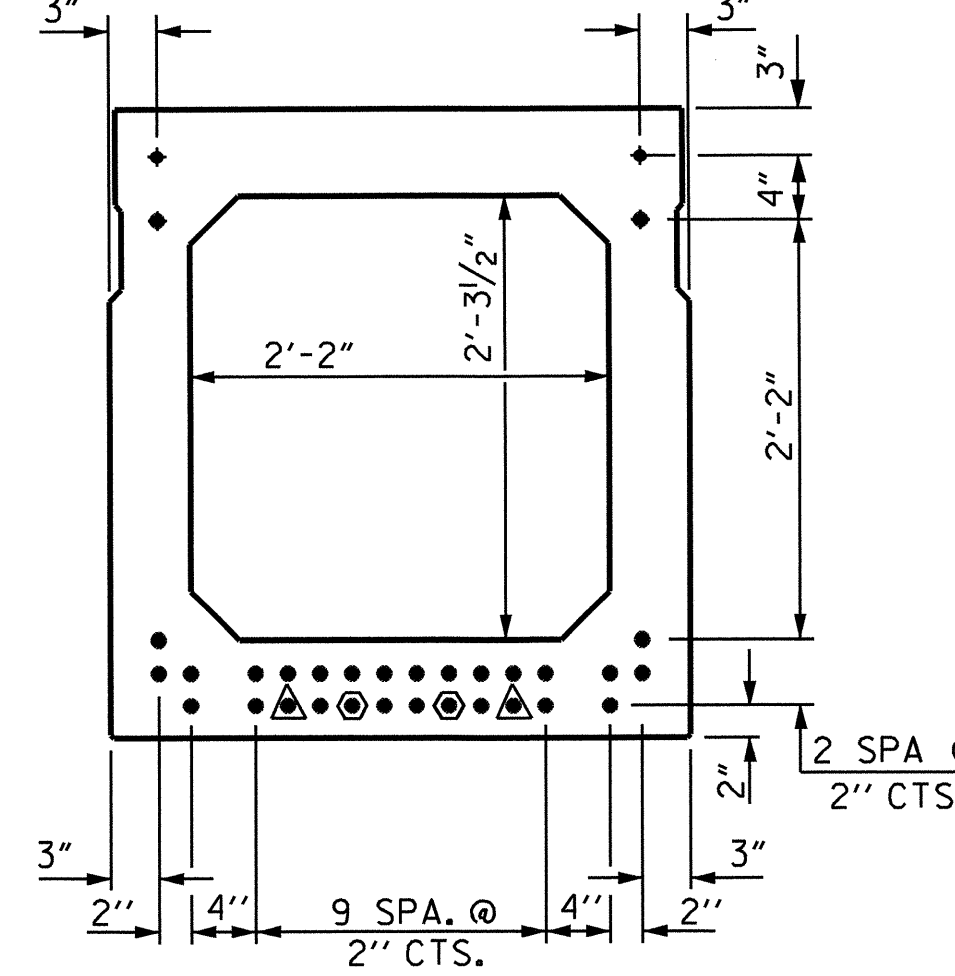
INTERIOR BOX BEAM SECTION

(STRAND LAYOUT NOT SHOWN)



EXTERIOR BOX BEAM SECTION

(STRAND LAYOUT NOT SHOWN)



TYPICAL STRAND LOCATION

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

DEBONDING LEGEND

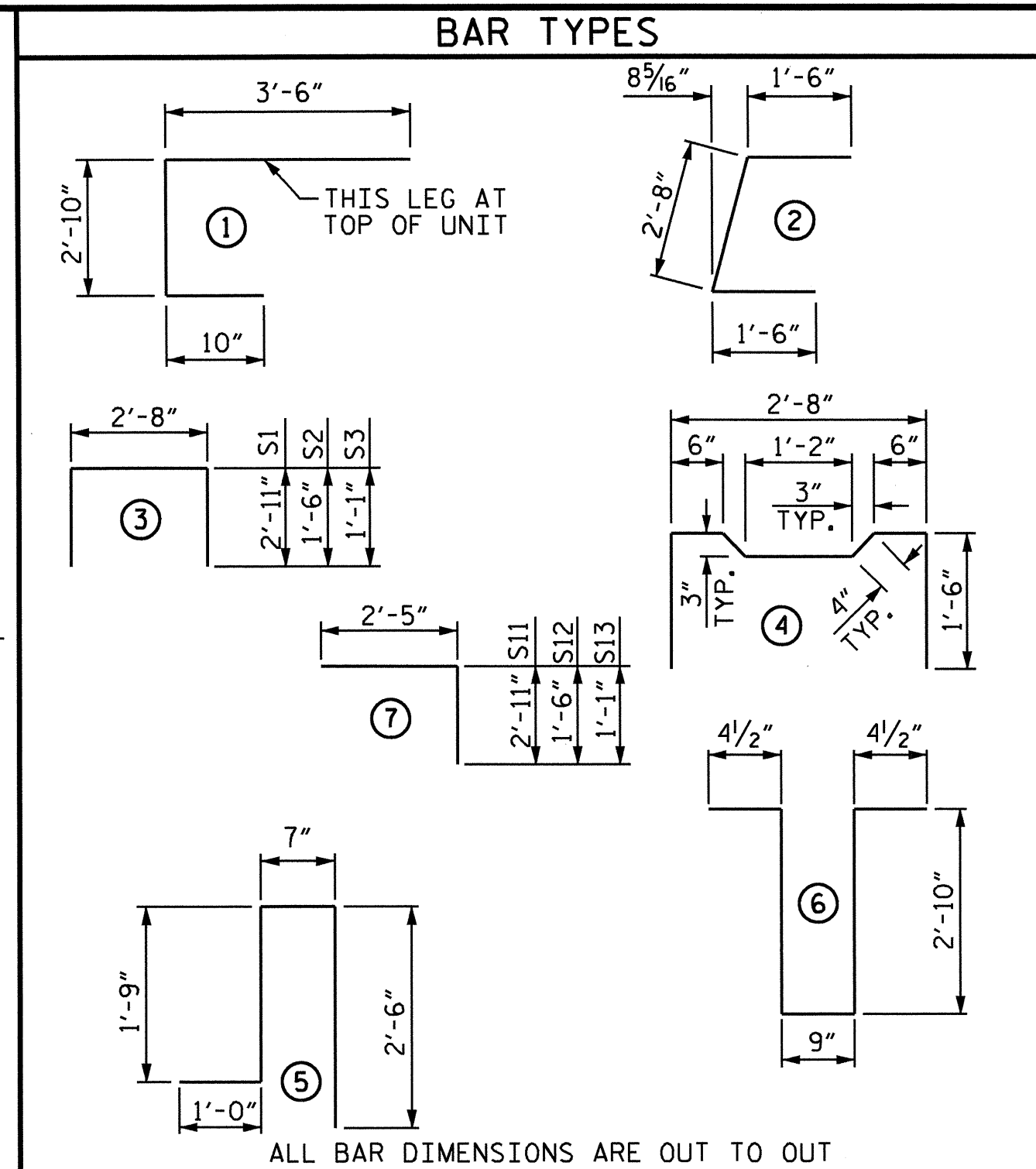
- FULLY BONDED STRANDS
- ▲ STRANDS DEBONDED FOR 4'-0" FROM END OF GIRDER
- ⊙ STRANDS DEBONDED FOR 12'-0" FROM END OF GIRDER

0.6" Ø LOW RELAXATION STRAND LAYOUT

NOTE: BOND SHALL BE BROKEN ON STRANDS AS SHOWN FOR THE SPECIFIED LENGTH FROM EACH END OF THE BOX BEAM. SEE STANDARD SPECIFICATIONS ARTICLE 1078-7.

GRADE 270 STRANDS

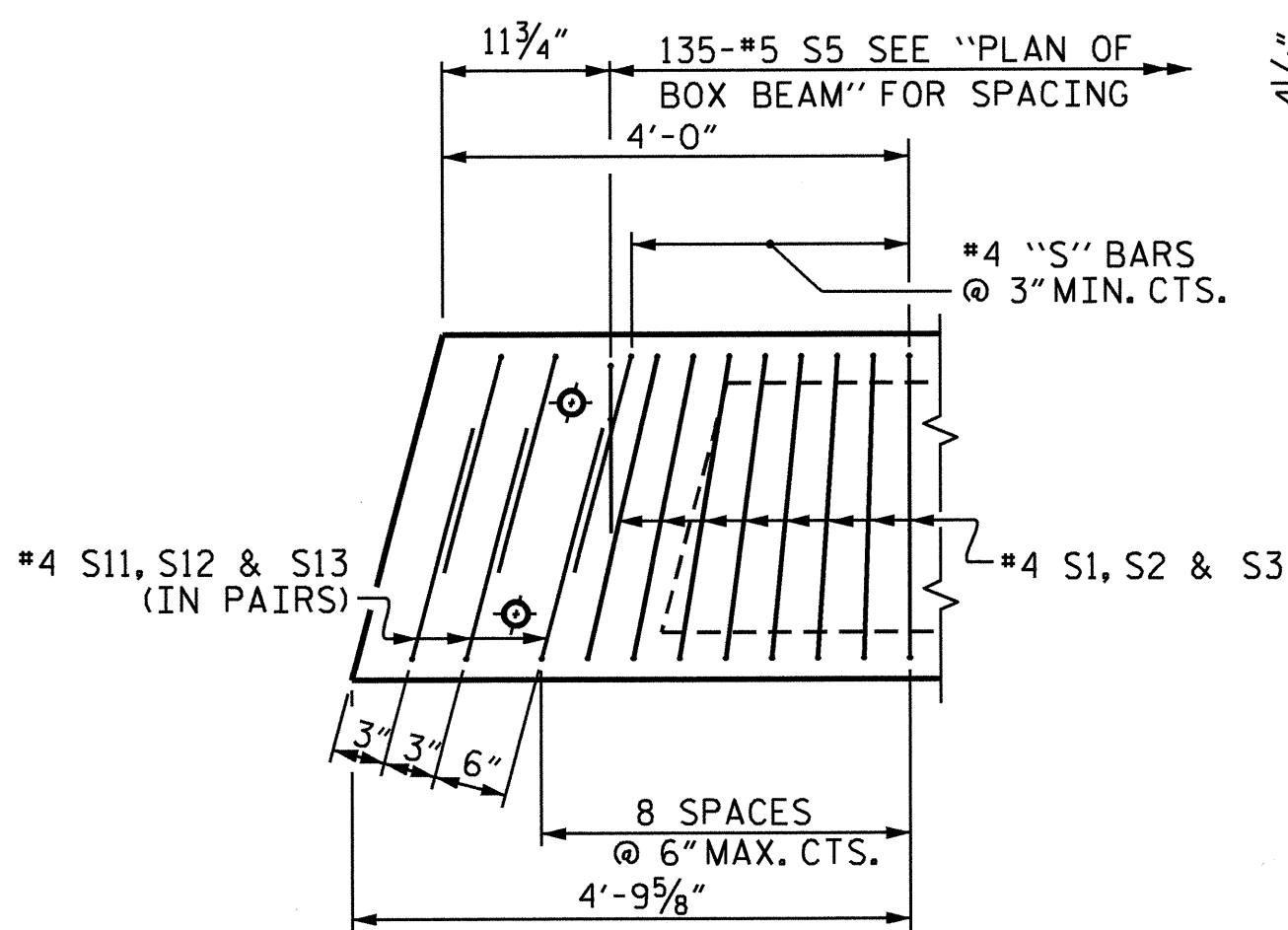
| AREA (SQUARE INCHES) | 0.6" Ø L.R. |
|---------------------------------------|-------------|
| ULTIMATE STRENGTH (LBS. PER STRAND) | 58,600 |
| APPLIED PRESTRESS (LBS. PER STRAND) | 43,950 |



ALL BAR DIMENSIONS ARE OUT TO OUT

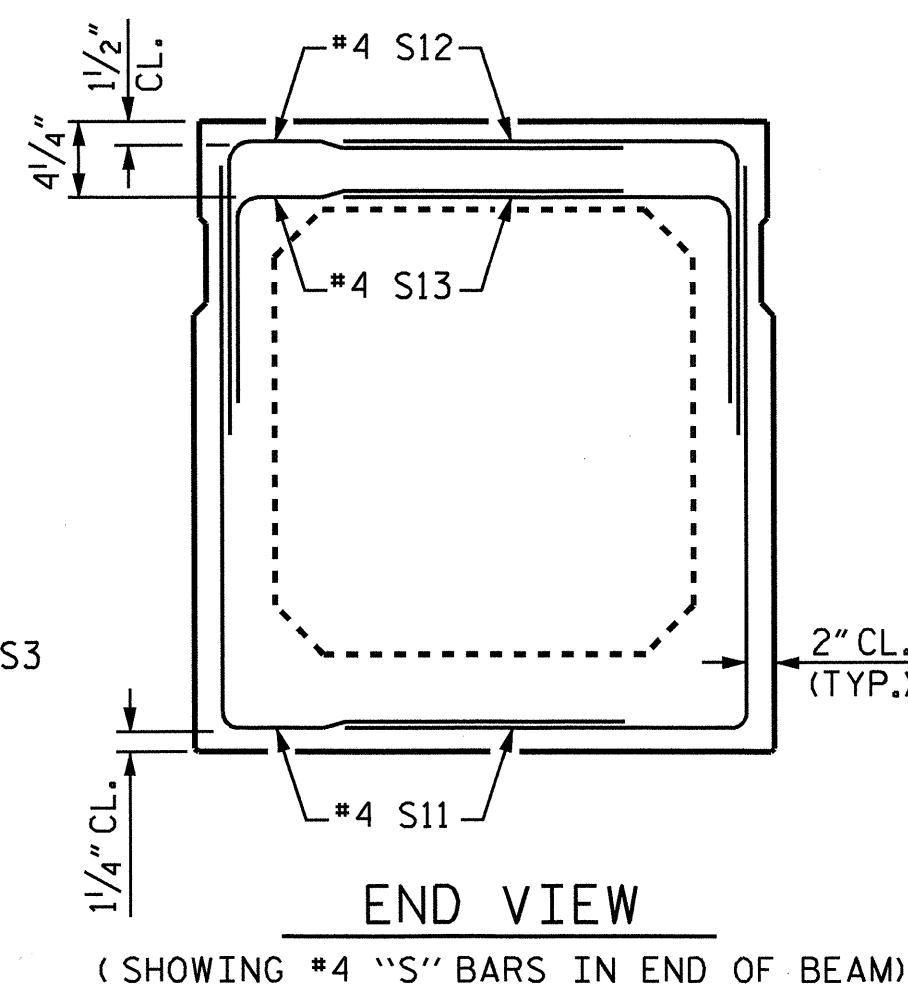
BILL OF MATERIAL FOR ONE BOX BEAM SECTION

| BAR | NUMBER | SIZE | TYPE | EXTERIOR UNIT LENGTH | EXTERIOR UNIT WEIGHT | INTERIOR UNIT LENGTH | INTERIOR UNIT WEIGHT |
|-----------------------------|--------|------|------|----------------------|----------------------|----------------------|----------------------|
| A1 | 10 | #5 | 1 | 7'-2" | 75 | 7'-2" | 75 |
| A2 | 44 | #4 | 2 | 5'-8" | 167 | 5'-8" | 167 |
| B6 | 12 | #5 | STR | 50'-9" | 635 | 50'-9" | 635 |
| K1 | 15 | #4 | 6 | 7'-2" | 72 | 7'-2" | 72 |
| K2 | 10 | #4 | STR | 2'-7" | 17 | 2'-7" | 17 |
| S1 | 76 | #4 | 3 | 8'-6" | 432 | 8'-6" | 432 |
| S2 | 76 | #4 | 3 | 5'-8" | 288 | 5'-8" | 288 |
| S3 | 135 | #4 | 3 | 4'-10" | 436 | 4'-10" | 436 |
| S4 | 59 | #4 | 4 | 5'-10" | 230 | 5'-10" | 230 |
| S11 | 12 | #4 | 7 | 5'-4" | 43 | 5'-4" | 43 |
| S12 | 12 | #4 | 7 | 3'-11" | 31 | 3'-11" | 31 |
| S13 | 12 | #4 | 7 | 3'-6" | 28 | 3'-6" | 28 |
| * S5 | 135 | #5 | 5 | 5'-10" | 821 | -- | -- |
| REINFORCING STEEL | | | | 2454 LBS. | | 2454 LBS. | |
| * EPOXY COATED REINF. STEEL | | | | 821 LBS. | | | |
| 7500 P.S.I. CONCRETE | | | | 19.4 CU. YDS. | | 19.2 CU. YDS. | |
| 0.6" Ø L.R. STRANDS | | | | No. | 32 | No. | 32 |



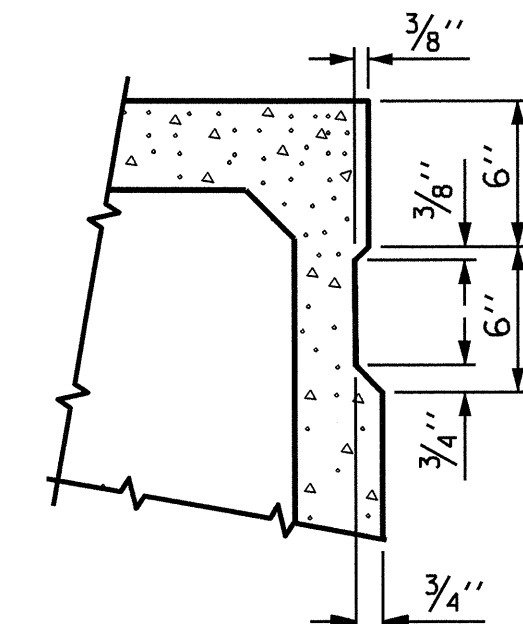
DETAIL "B"

EXTERIOR UNIT SHOWN, INTERIOR UNIT SIMILAR EXCEPT OMIT #5 S5 BARS. "B" BARS AND "A" BARS NOT SHOWN.



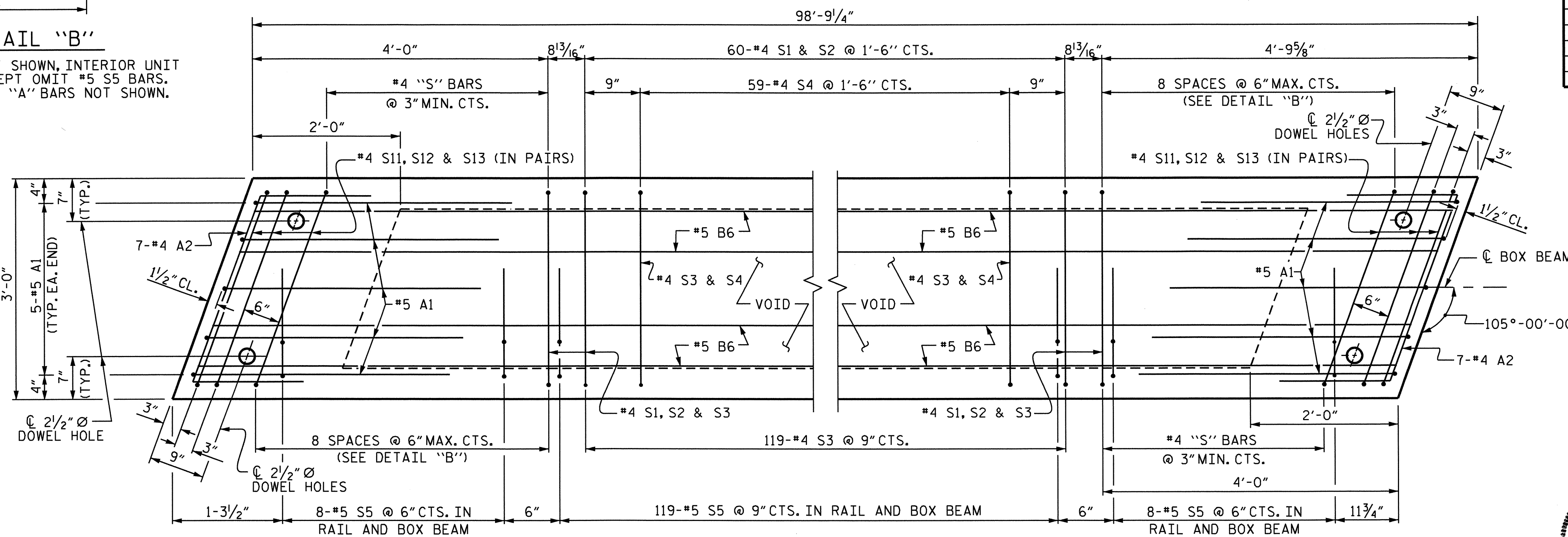
END VIEW

(SHOWING #4 "S" BARS IN END OF BEAM)



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 AND VOIDS, SEE "DIAPHRAGM AND VOID LAYOUT" ON SHEET 4 OF 10. FOR REINFORCING STEEL IN DIAPHRAGMS, SEE DIAPHRAGM DETAILS ON SHEET 8 OF 10.

| | | | |
|----------------|----------|--------|--------------------|
| ASSEMBLED BY : | M.K.TOM | DATE : | 2/2011 |
| CHECKED BY : | D.G. ELY | DATE : | 3/2011 |
| DRAWN BY : | TLA | 5/05 | ADDED 7/11/05 |
| CHECKED BY : | GM | 6/05 | REV. 5/1/06 TLA/GM |

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kalford

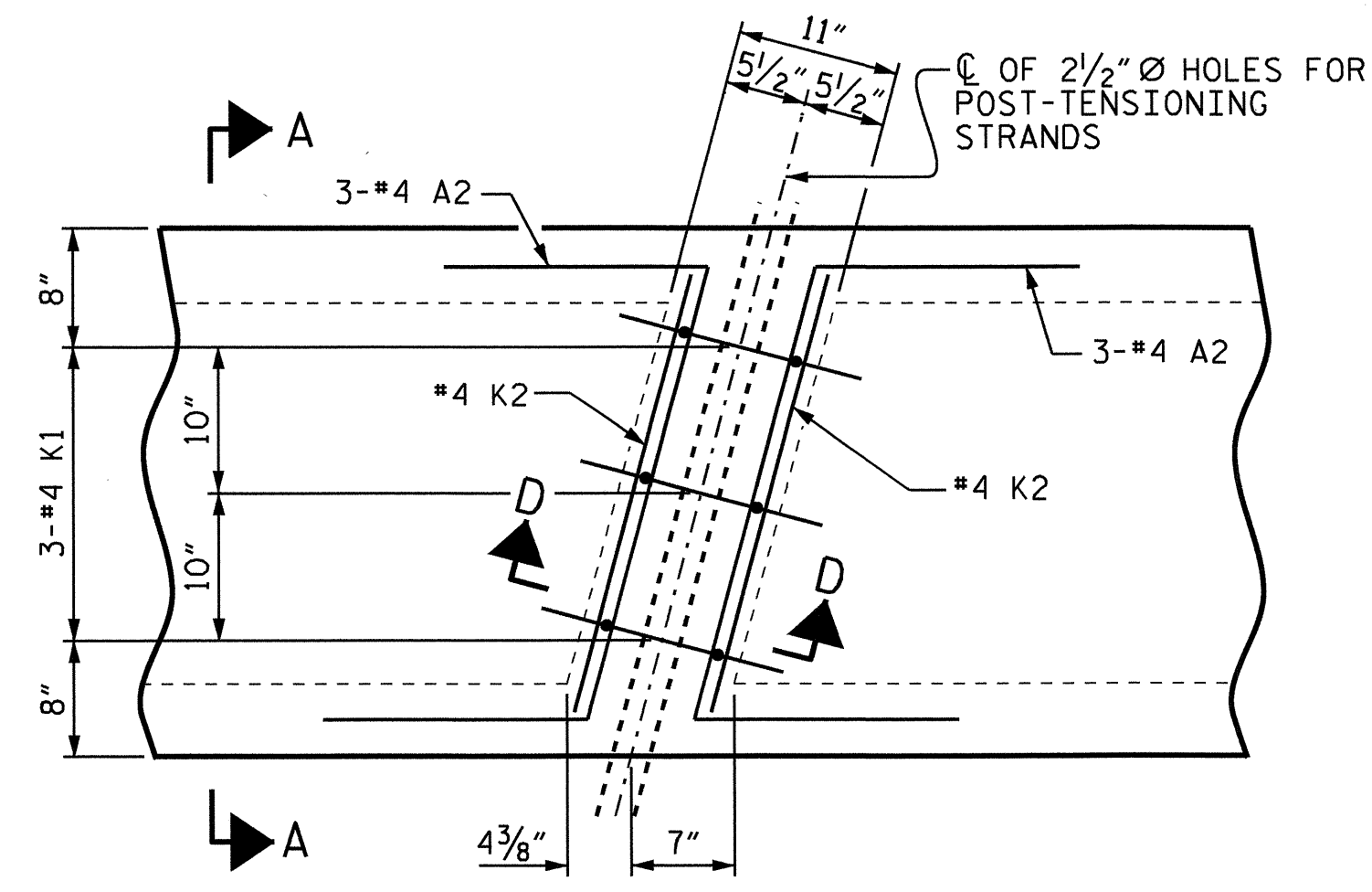


PROJECT NO. B-4514
FRANKLIN COUNTY
STATION: 26+67.50 -L-
SHEET 7 OF 10

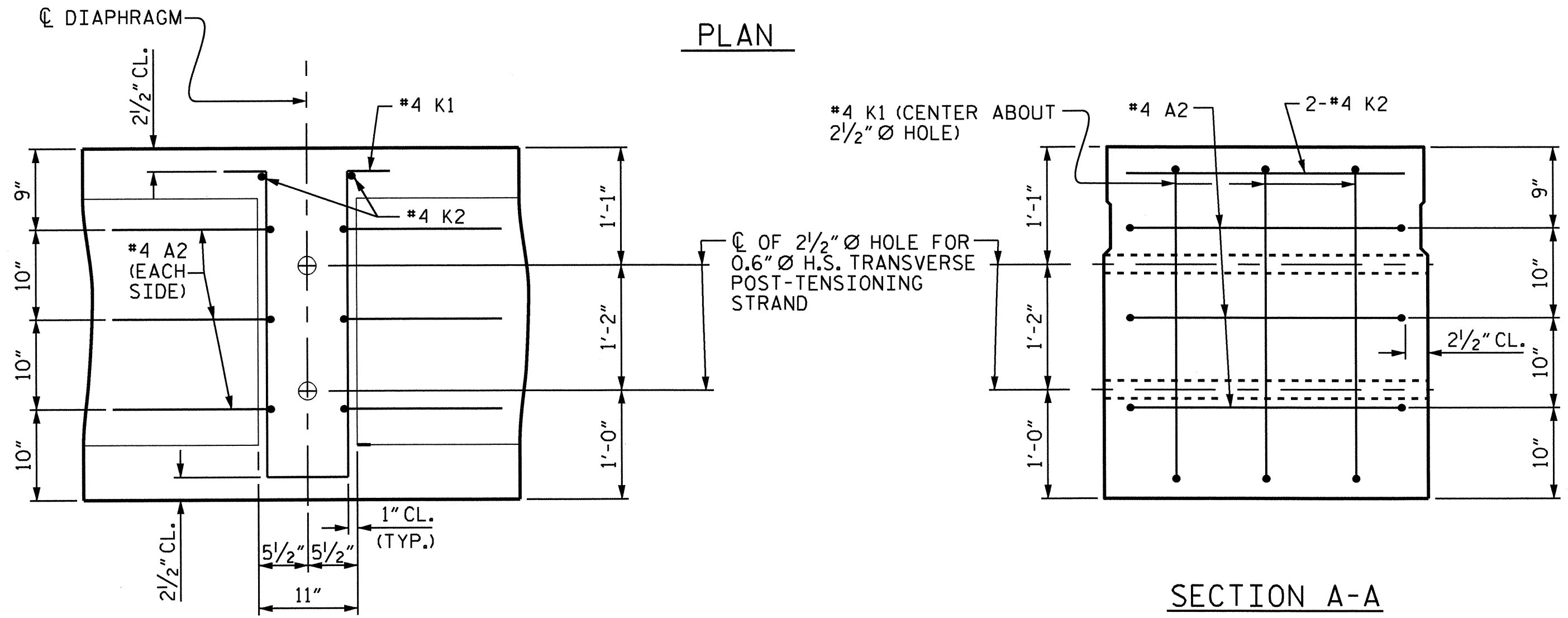
STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH
STANDARD
3'-0" X 3'-3"
PRESTRESSED CONCRETE
BOX BEAM UNIT
SPAN "C"

| REVISIONS | | | | | | SHEET NO. |
|-----------|-----|-------|-----|-----|-------|--------------|
| NO. | BY: | DATE: | NO. | BY: | DATE: | S-11 |
| 1 | | | 3 | | | TOTAL SHEETS |
| 2 | | | 4 | | | 27 |

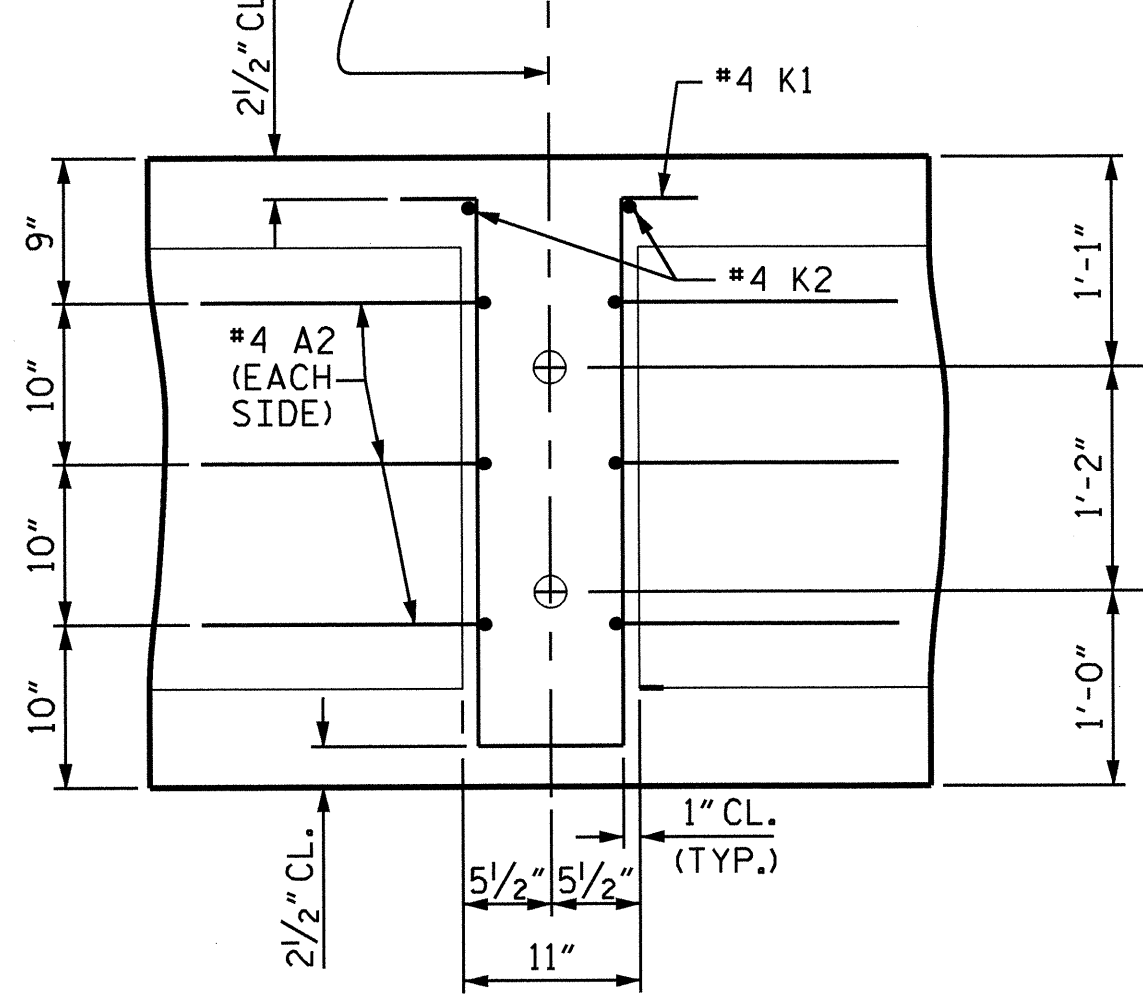
(SHT 3C) STD. NO. PCBB6



PLAN



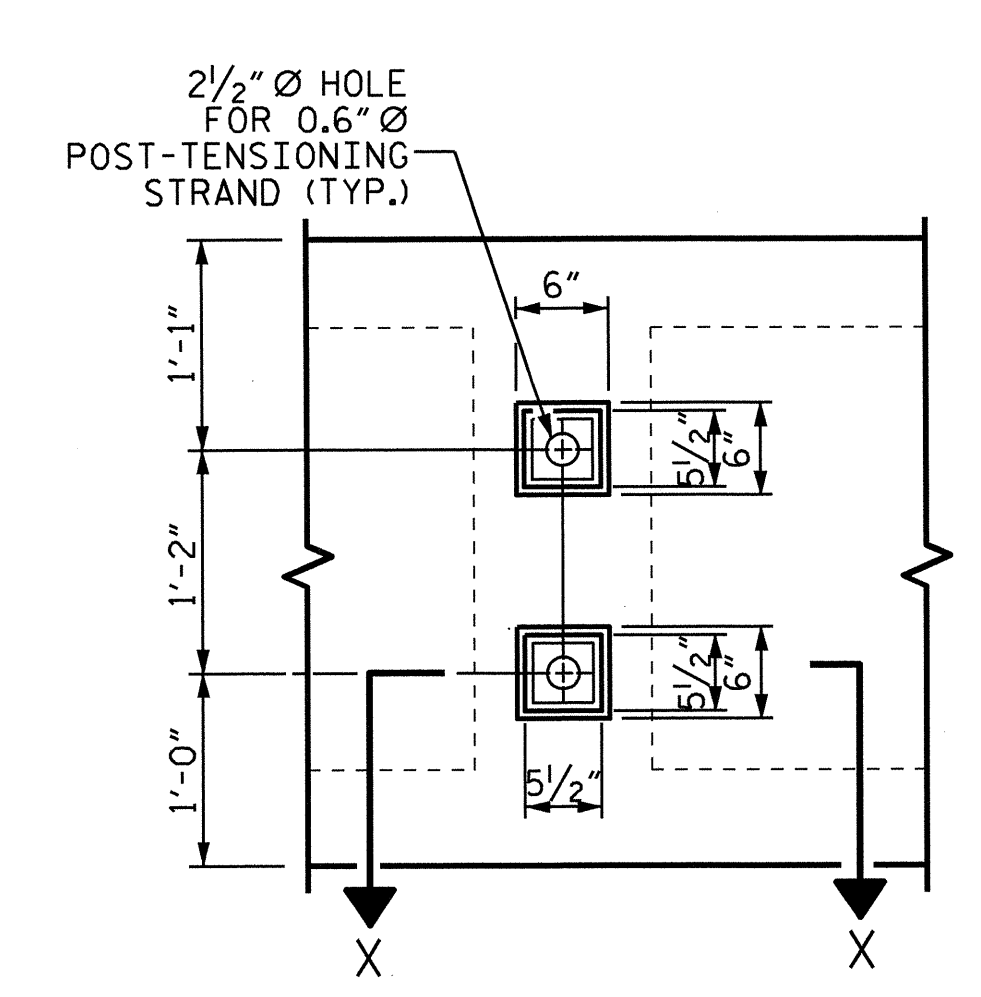
SECTION A-A
VOIDS NOT SHOWN



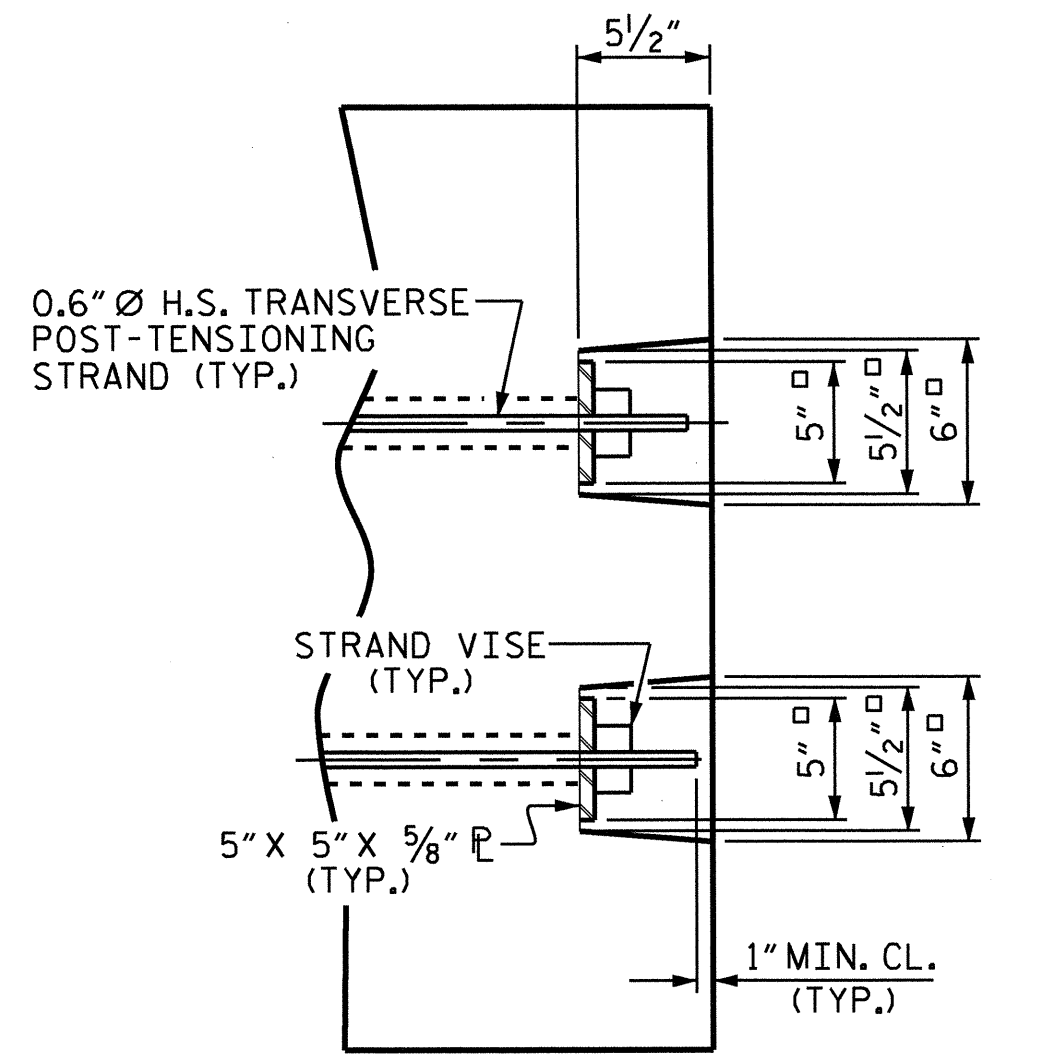
SECTION D-D

DOUBLE DIAPHRAGM DETAILS

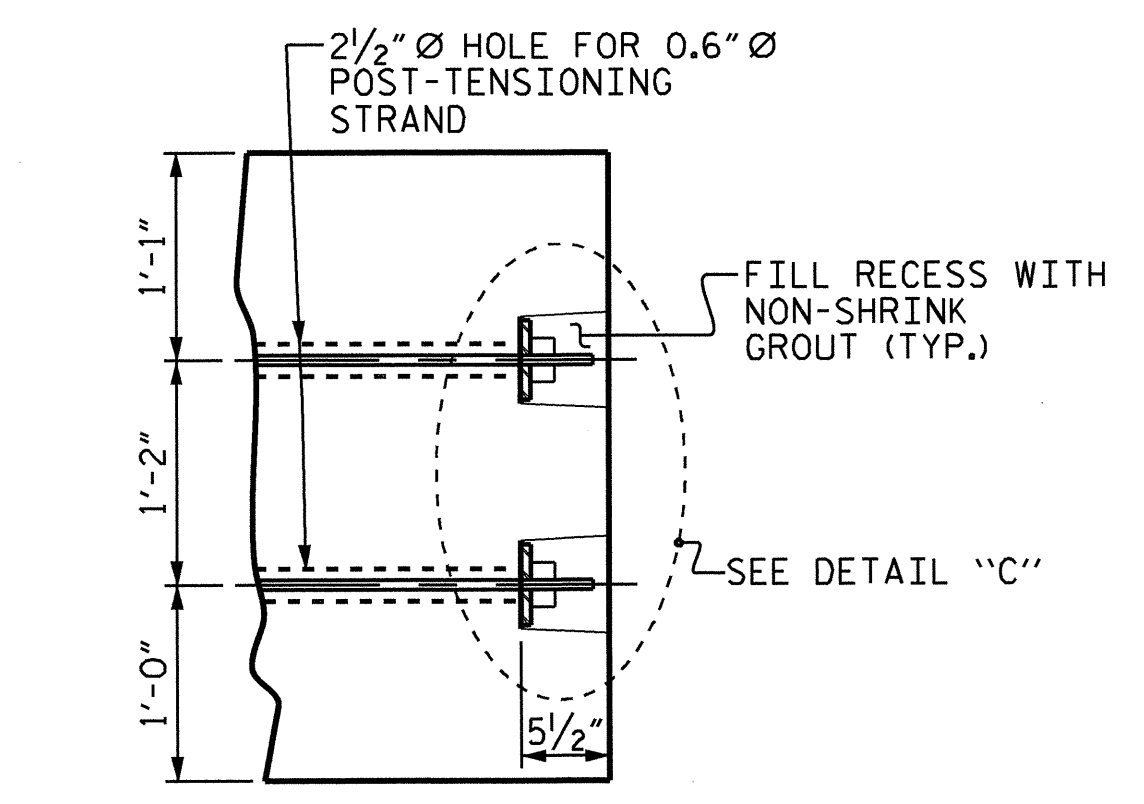
#4 "S" BARS NOT SHOWN. #4 "S" BARS MAY BE SHIFTED SLIGHTLY TO CLEAR 2 1/2" Ø HOLE.



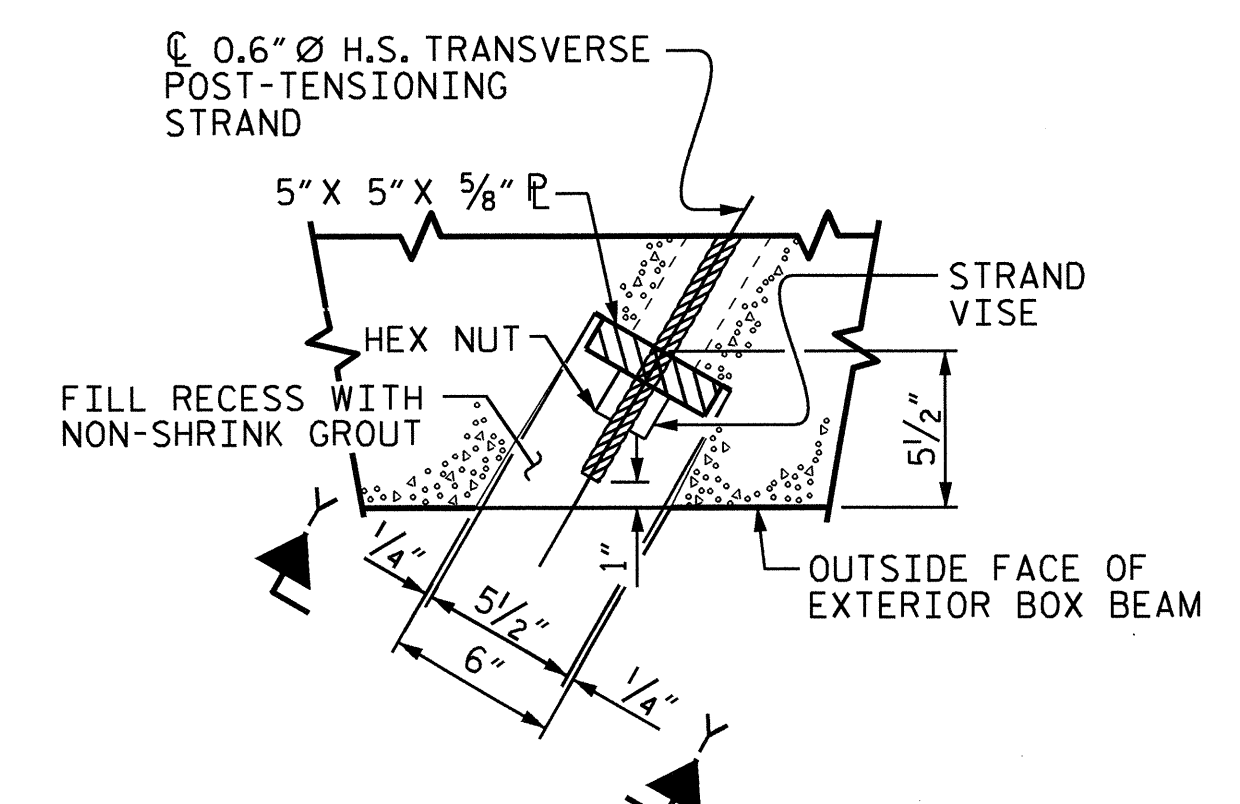
VIEW Y-Y
SHOWING ELEVATION VIEW OF GROUTED RECESS



DETAIL "C"

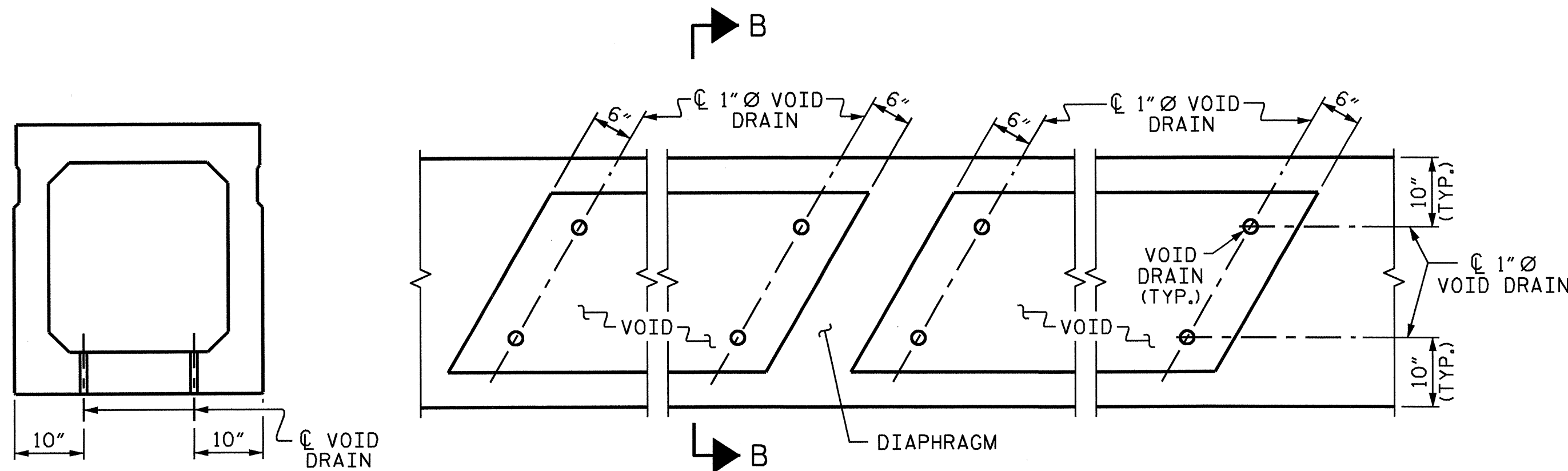


PART SECTION AT RECESS



SECTION X-X
SHOWING PLAN VIEW OF GROUTED RECESS

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



VOID DRAIN DETAILS
(DIMENSIONS SHOWN ARE TYPICAL FOR EACH VOID)

| DEAD LOAD DEFLECTION AND CAMBER | | | |
|---|--------------------|--------------------|--------------------|
| | 3'-0" x 3'-3" | 3'-0" x 3'-3" | 3'-0" x 3'-3" |
| | 0.6" Ø L.R. STRAND | 0.6" Ø L.R. STRAND | 0.6" Ø L.R. STRAND |
| | SPAN "A" | SPAN "B" | SPAN "C" |
| CAMBER (BEAM ALONE IN PLACE) ↑ | 2 1/2" | 3 1/16" | 3 1/16" |
| DEFLECTION DUE TO SUPERIMPOSED DEAD LOAD ** ↓ | 5/8" | 1/8" | 1/8" |
| FINAL CAMBER ↑ | 1 7/8" | 2 9/16" | 2 9/16" |

** INCLUDES FUTURE WEARING SURFACE

PROJECT NO. B-4514
FRANKLIN COUNTY
STATION: 26+67.50 -L-

SHEET 8 OF 10



STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH
STANDARD
3'-0" X 3'-3"
PRESTRESSED CONCRETE
BOX BEAM UNIT

| REVISIONS | | | | | | SHEET NO. |
|-----------|-----|-------|-----|-----|-------|--------------|
| NO. | BY: | DATE: | NO. | BY: | DATE: | S-12 |
| 1 | | | 3 | | | TOTAL SHEETS |
| 2 | | | 4 | | | 27 |

| | | | |
|----------------|----------|---------|---------|
| ASSEMBLED BY : | M.K.TOM | DATE : | 2/2011 |
| CHECKED BY : | D.G.ELY | DATE : | 3/2011 |
| DRAWN BY : | TLA 5/05 | ADDED : | 7/11/05 |
| CHECKED BY : | GM 6/05 | | |

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STD. NO. PCBB7

NOTES

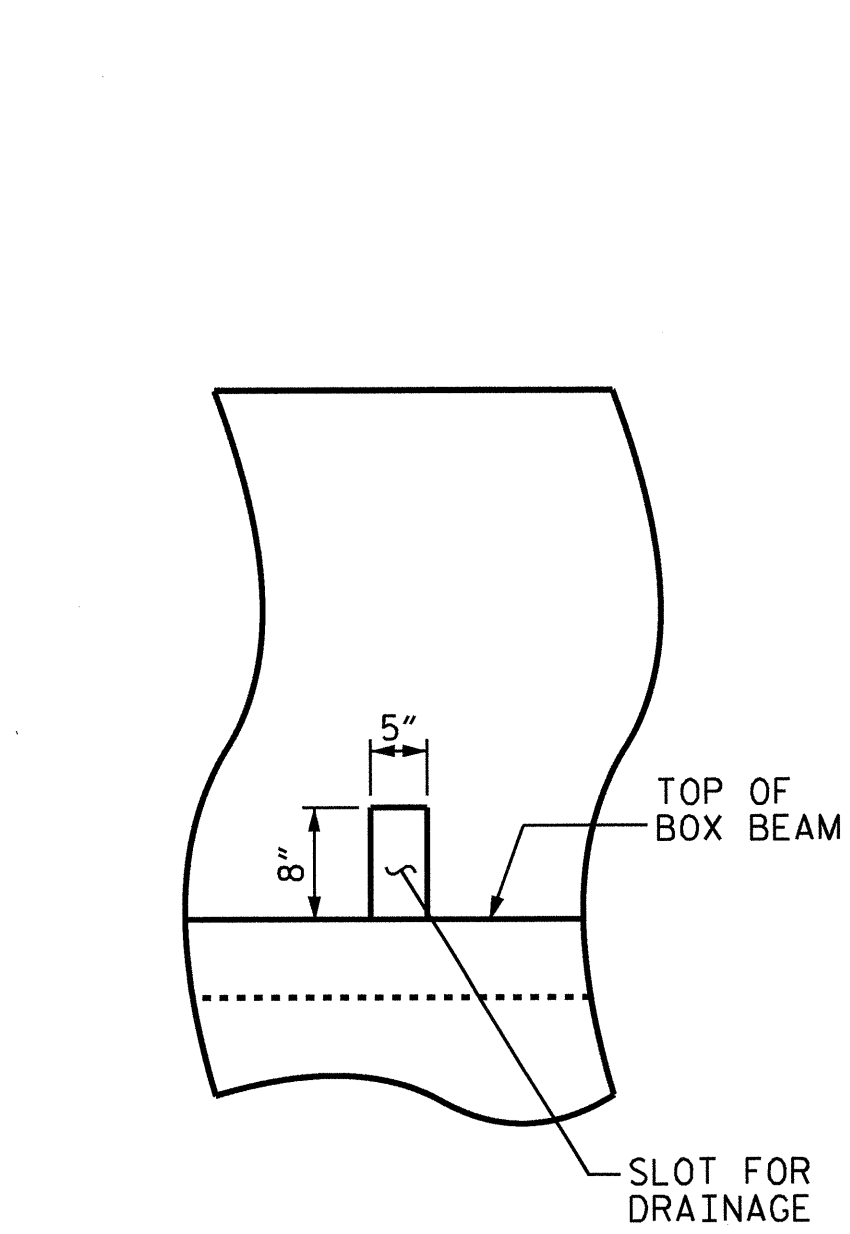
ALL REINFORCING STEEL IN VERTICAL CONCRETE BARRIER RAILS SHALL BE EPOXY COATED.

FOR DETAILS OF GUARDRAIL ANCHOR ASSEMBLIES, SEE "GUARDRAIL ANCHORAGE FOR VERTICAL CONCRETE BARRIER RAIL" SHEET.

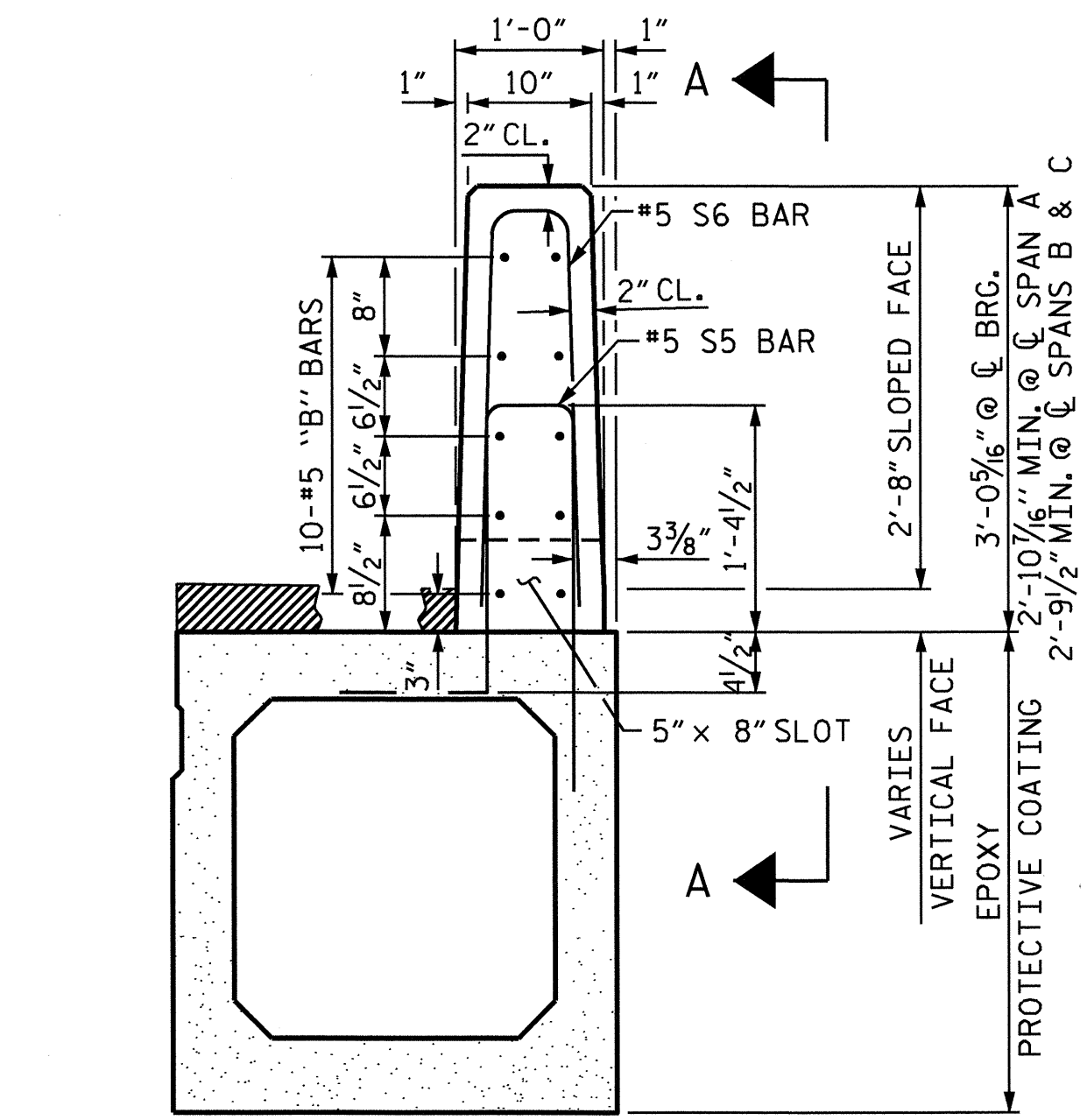
★ BOTTOM PAIR OF #5 "B" BARS IN BARRIER RAIL TO BE FIELD CUT AS REQUIRED TO MAINTAIN 2" CLEAR TO THE DRAINAGE SLOTS.

#5 S5 BARS ARE INCLUDED IN THE BILL OF MATERIAL FOR BOX BEAM SECTION.

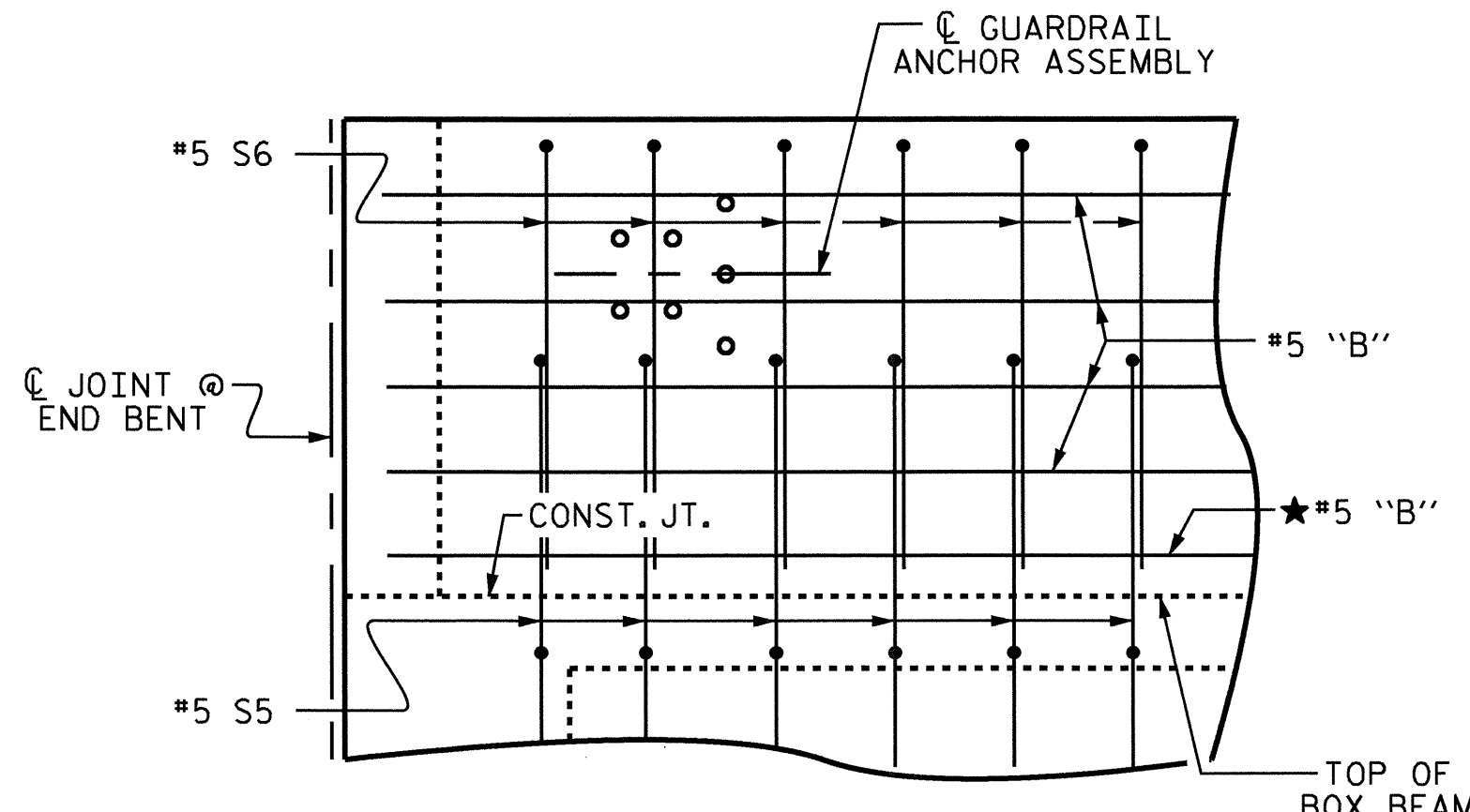
| BILL OF MATERIAL FOR VERTICAL CONCRETE BARRIER RAIL | | | | | | | | | |
|---|---------------|--------|--------|-----------|------|------|--------|-----------------|--|
| BAR | BARS PER SPAN | | | TOTAL NO. | SIZE | TYPE | LENGTH | WEIGHT | |
| | SPAN A | SPAN B | SPAN C | | | | | | |
| *B2 | 40 | 40 | 40 | 120 | #5 | STR | 24'-4" | 3046 | |
| *B3 | 80 | - | - | 80 | #5 | STR | 10'-4" | 862 | |
| *B5 | - | 80 | - | 80 | #5 | STR | 14'-3" | 1189 | |
| *B7 | - | - | 80 | 80 | #5 | STR | 14'-1" | 1175 | |
| *S6 | 230 | 262 | 270 | 762 | #5 | 8 | 5'-6" | 4371 | |
| * EPOXY COATED REINFORCING STEEL | | | | | | | | 10643 LBS. | |
| CLASS AA CONCRETE | | | | | | | | 56.4 CU. YDS. | |
| TOTAL LIN. FT. OF VERTICAL CONCRETE BARRIER RAIL | | | | | | | | 564.81 LIN. FT. | |



VIEW A-A
SEE PLAN OF SPANS FOR SLOT LOCATIONS (SLOT LOCATION MAY BE SHIFTED SLIGHTLY AS NECESSARY TO CENTER SLOTS BETWEEN #5 S5 & #5 S6 BARS IN BARRIER RAIL)



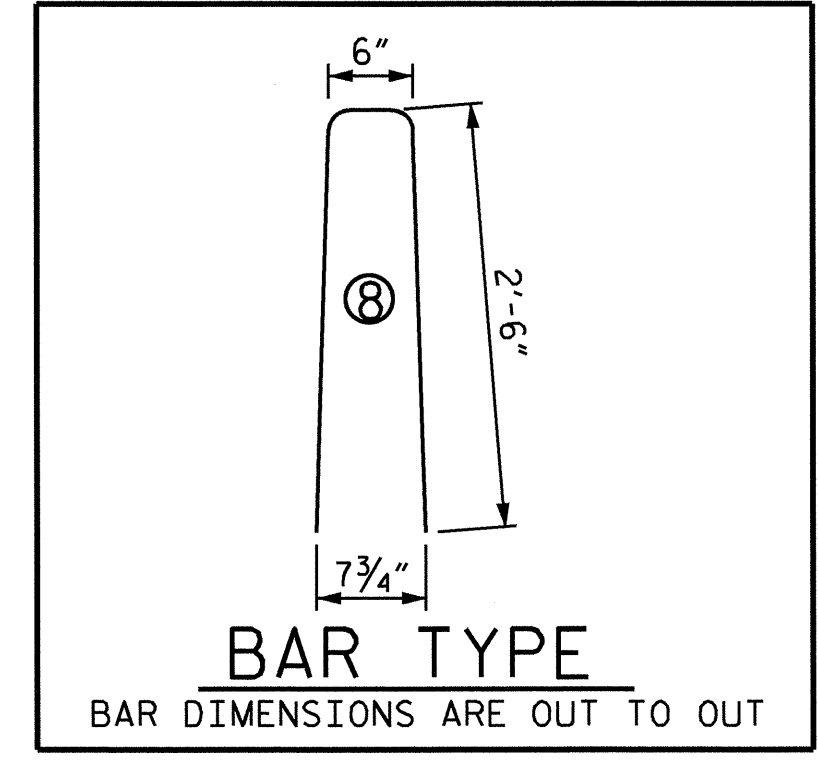
SECTION THRU RAIL



ELEVATION

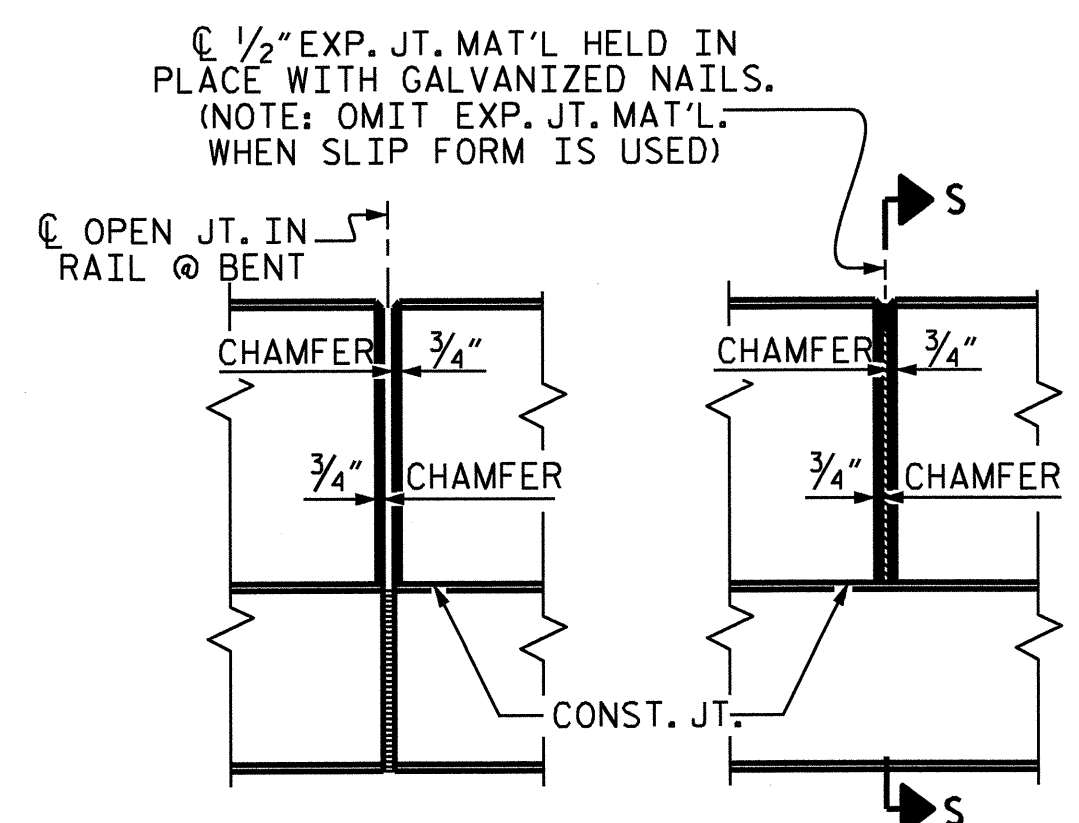
VERTICAL CONCRETE BARRIER RAIL DETAILS

(SEE "PRESTRESSED CONCRETE BOX BEAM UNIT" SHEETS FOR SPACING OF "S" BARS)

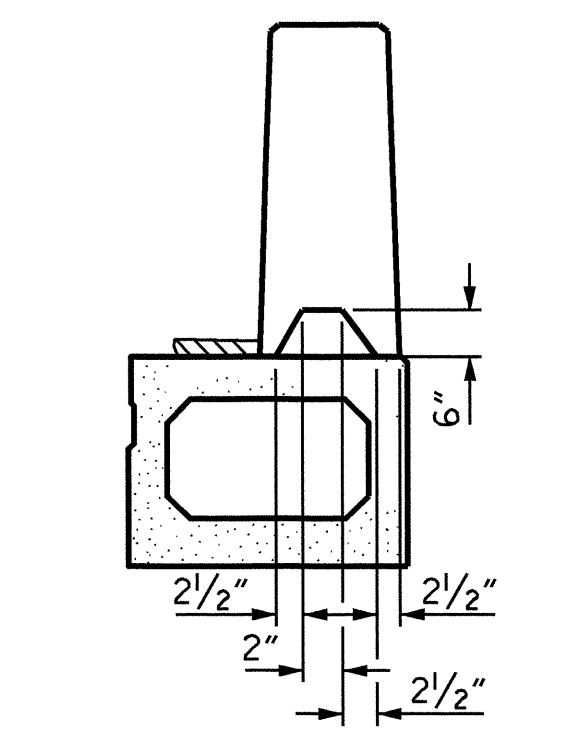


BAR TYPE
BAR DIMENSIONS ARE OUT TO OUT

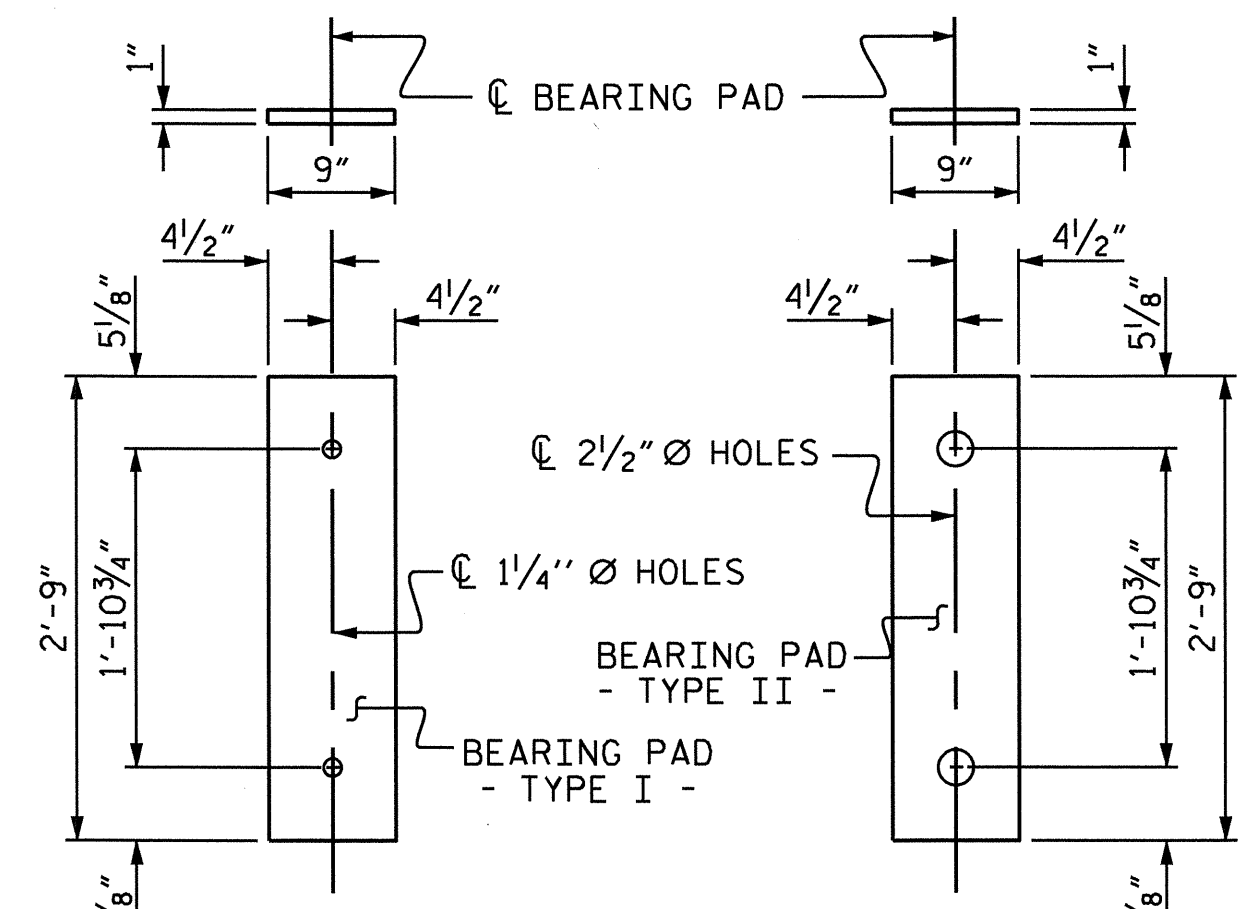
| BOX BEAM UNITS REQUIRED | | | |
|-------------------------|--------|-------------|--------------|
| | NUMBER | LENGTH | TOTAL LENGTH |
| SPAN A | | | |
| INTERIOR | 9 | 83'-9 1/4" | 753'-11 1/4" |
| EXTERIOR | 2 | 83'-9 1/4" | 167'-6 1/2" |
| SPAN B | | | |
| INTERIOR | 9 | 99'-10 3/8" | 898'-9 3/8" |
| EXTERIOR | 2 | 99'-10 3/8" | 199'-8 3/4" |
| SPAN C | | | |
| INTERIOR | 9 | 98'-9 1/4" | 888'-11 1/4" |
| EXTERIOR | 2 | 98'-9 1/4" | 197'-6 1/2" |
| TOTAL | 33 | | 3106.47 |



ELEVATION AT EXPANSION JOINTS



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



ELASTOMERIC BEARING DETAILS
ELASTOMER IN ALL BEARINGS SHALL BE 60 DUROMETER HARDNESS

PROJECT NO. B-4514
FRANKLIN COUNTY
STATION: 26+67.50 -L-

SHEET 9 OF 10

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH
3'-0" X 3'-3"
PRESTRESSED CONCRETE
BOX BEAM UNIT
DETAILS



| REVISIONS | | | | | | SHEET NO. |
|-----------|-----|-------|-----|-----|-------|-----------------|
| NO. | BY: | DATE: | NO. | BY: | DATE: | |
| 1 | | | 3 | | | S-13 |
| 2 | | | 4 | | | TOTAL SHEETS 27 |

| | |
|------------------------|---------------|
| ASSEMBLED BY : M.K.TOM | DATE : 2/2011 |
| CHECKED BY : D.G.ELY | DATE : 3/2011 |
| DRAWN BY : TLA 5/05 | ADDED 7/11/05 |
| CHECKED BY : GM 6/05 | |

NOTES

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

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

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

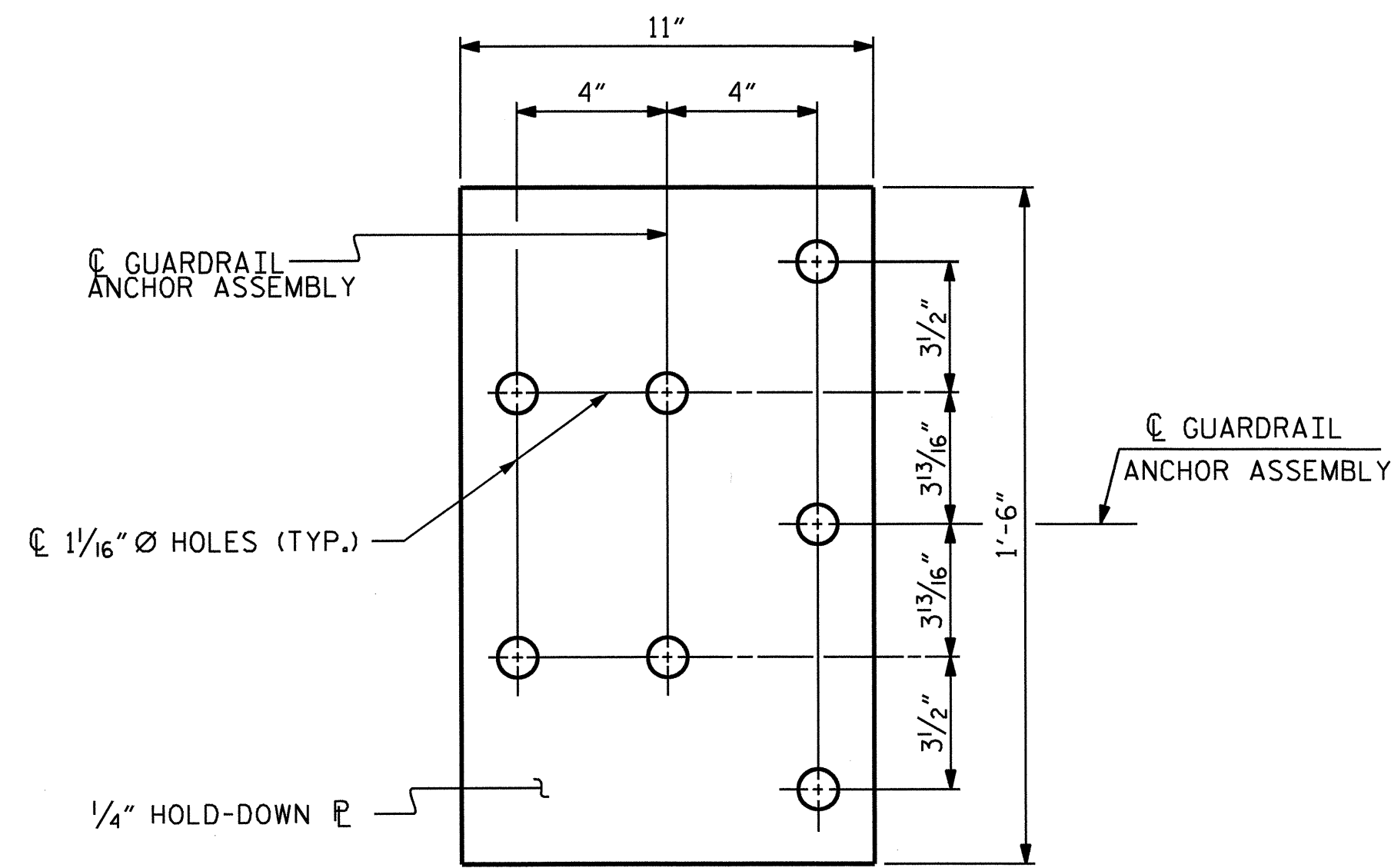
THE GUARDRAIL ANCHOR ASSEMBLY IS REQUIRED AT ALL POINTS WHERE APPROACH GUARDRAIL IS TO BE ATTACHED TO THE END OF BARRIER RAIL. FOR POINTS OF ATTACHMENT, SEE SKETCH.

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

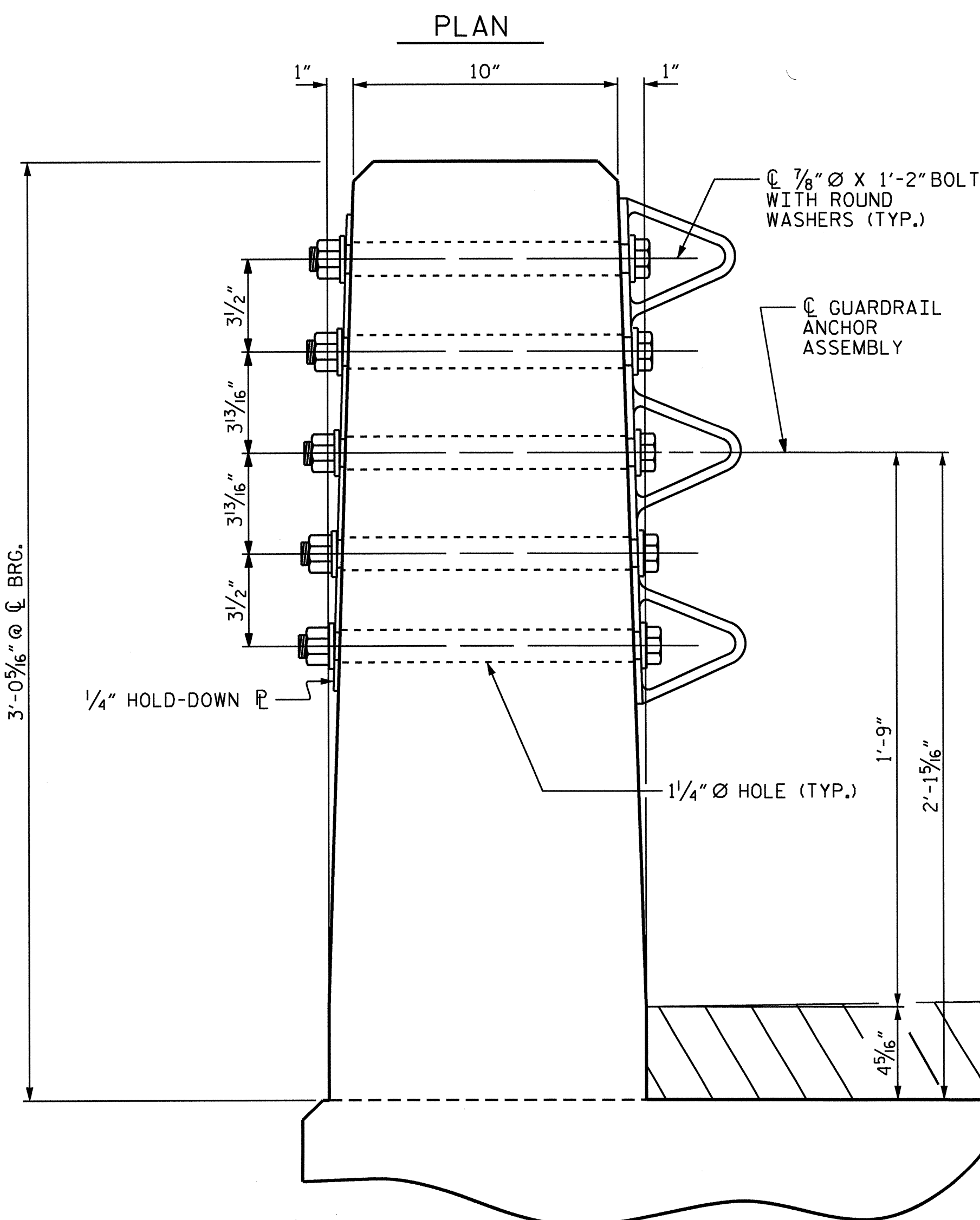
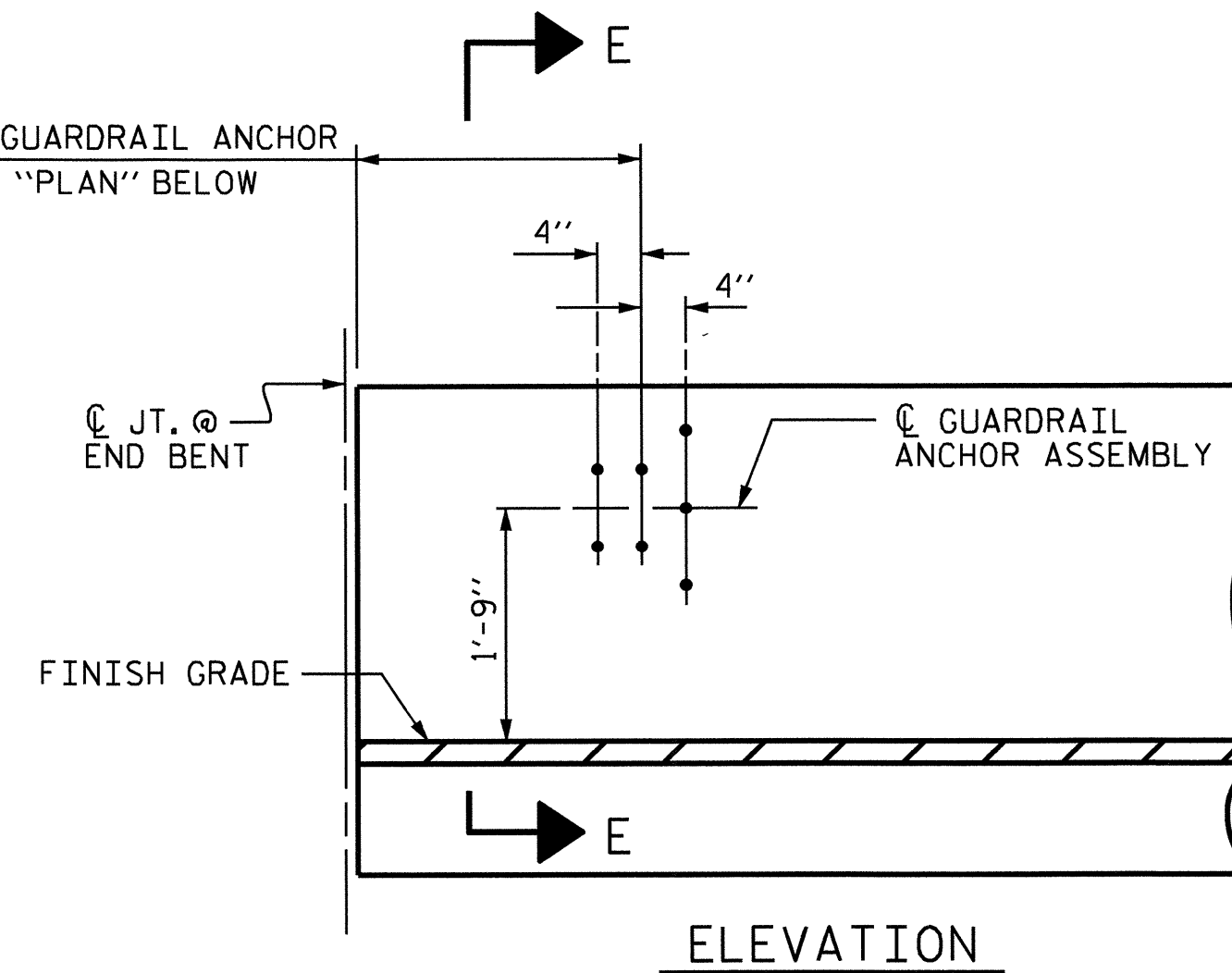
THE COST OF THE GUARDRAIL ANCHOR ASSEMBLY SHALL BE INCLUDED IN THE UNIT CONTRACT PRICE BID FOR VERTICAL CONCRETE BARRIER RAIL.

THE VERTICAL REINFORCING BARS MAY BE SHIFTED SLIGHTLY IN THE VERTICAL CONCRETE BARRIER RAIL TO CLEAR ASSEMBLY BOLTS.

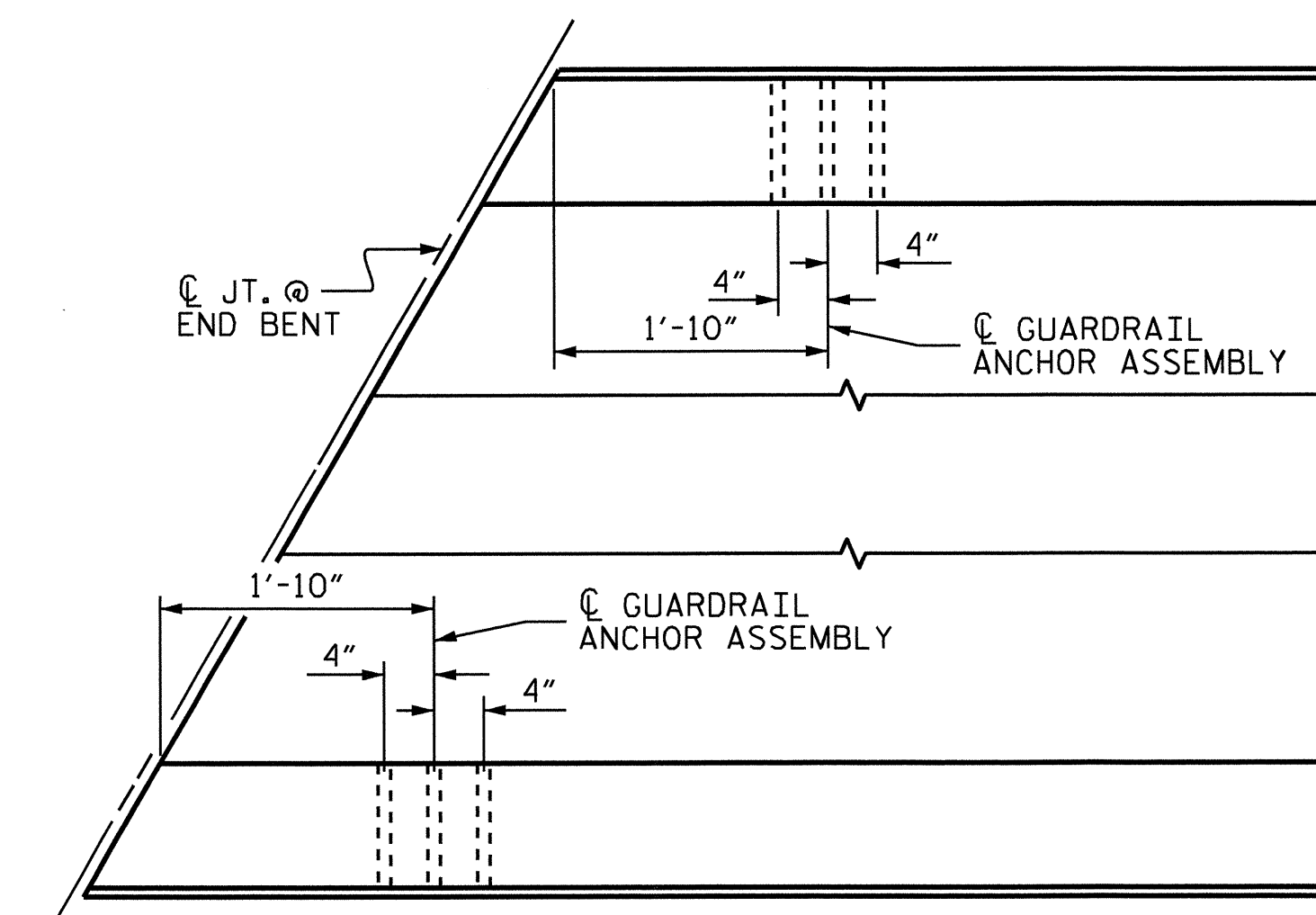
THE 1 1/4" Ø HOLES SHALL BE FORMED OR DRILLED WITH A CORE BIT. IMPACT TOOLS WILL NOT BE PERMITTED. ANY CONCRETE DAMAGED BY THIS WORK SHALL BE REPAIRED TO THE SATISFACTION OF THE ENGINEER.



FOR LOCATION OF GUARDRAIL ANCHOR ASSEMBLY, SEE "PLAN" BELOW



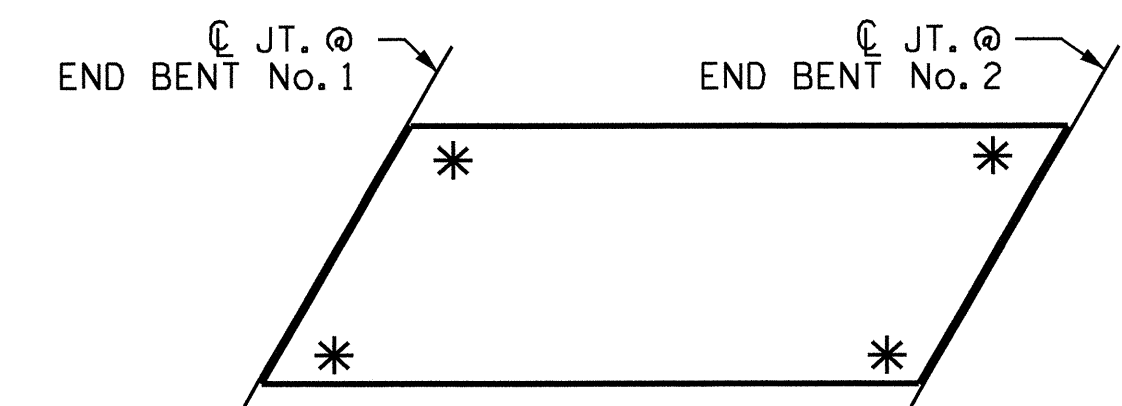
SECTION E-E
GUARDRAIL ANCHOR ASSEMBLY DETAILS



PLAN

LOCATION OF ANCHORS FOR GUARDRAIL

END BENT No. 1 SHOWN, END BENT No. 2 SIMILAR.



SKETCH SHOWING POINTS OF ATTACHMENT

* DENOTES GUARDRAIL ANCHOR ASSEMBLY

PROJECT NO. B-4514
FRANKLIN COUNTY
STATION: 26+67.50 -L-

SHEET 10 OF 10



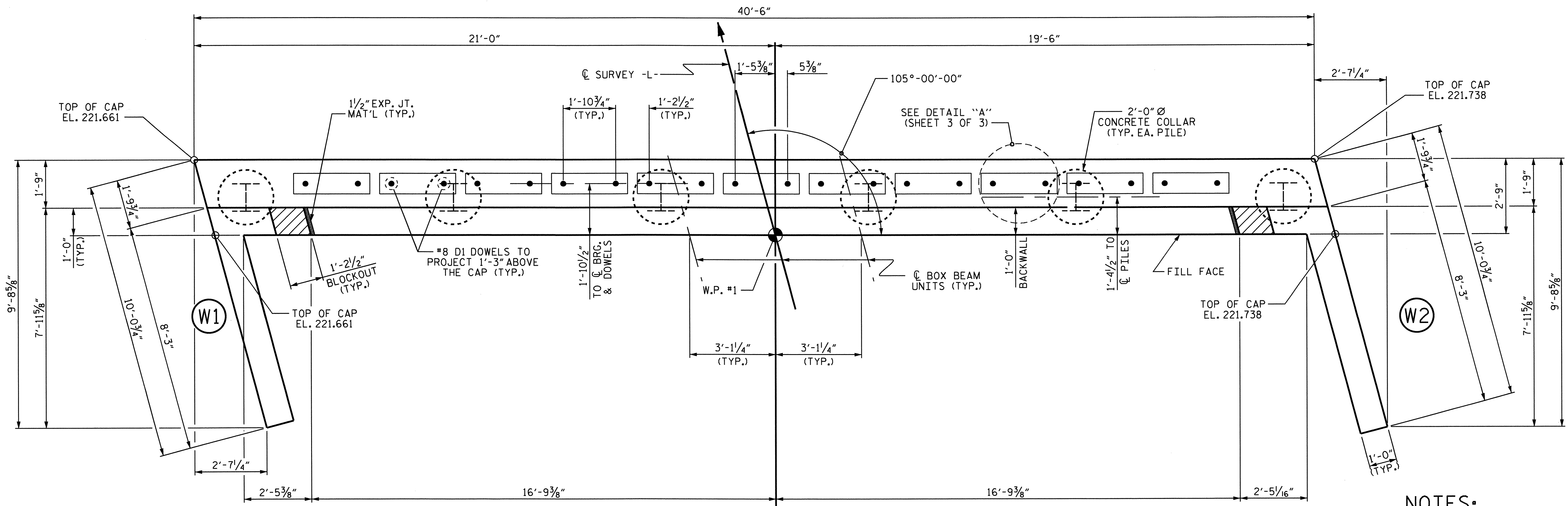
STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH
STANDARD
GUARDRAIL ANCHORAGE
FOR VERTICAL CONCRETE
BARRIER RAIL

| | |
|------------------------|---------------|
| ASSEMBLED BY : M.K.TOM | DATE : 2/2011 |
| CHECKED BY : D.G. ELY | DATE : 3/2011 |
| DRAWN BY : MAA 5/10 | ADDED 5/6/10 |
| CHECKED BY : GM 5/10 | |

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| REVISIONS | | | | | | SHEET NO. |
|-----------|-----|-------|-----|-----|-------|--------------|
| NO. | BY: | DATE: | NO. | BY: | DATE: | S-14 |
| 1 | | | 3 | | | TOTAL SHEETS |
| 2 | | | 4 | | | 27 |

(SHT 2) STD. NO. GRA3



PLAN

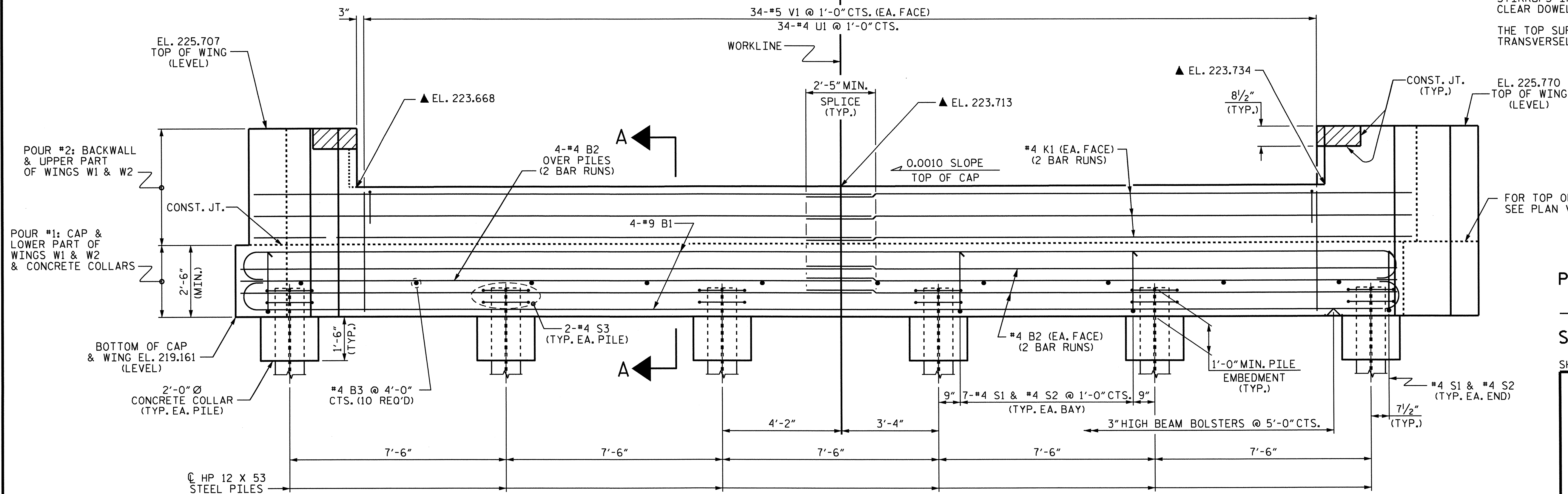
NOTES:

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

▲ THIS ELEVATION TAKEN ON FILL FACE OF BACKWALL.

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

THE TOP SURFACE OF THE END BENT CAP IS SLOPED TRANSVERSELY.



ELEVATION

FOR SECTION A-A SEE SHEET 3 OF 3

PROJECT NO. B-4514
 FRANKLIN COUNTY
 STATION: 26+67.50 -L-

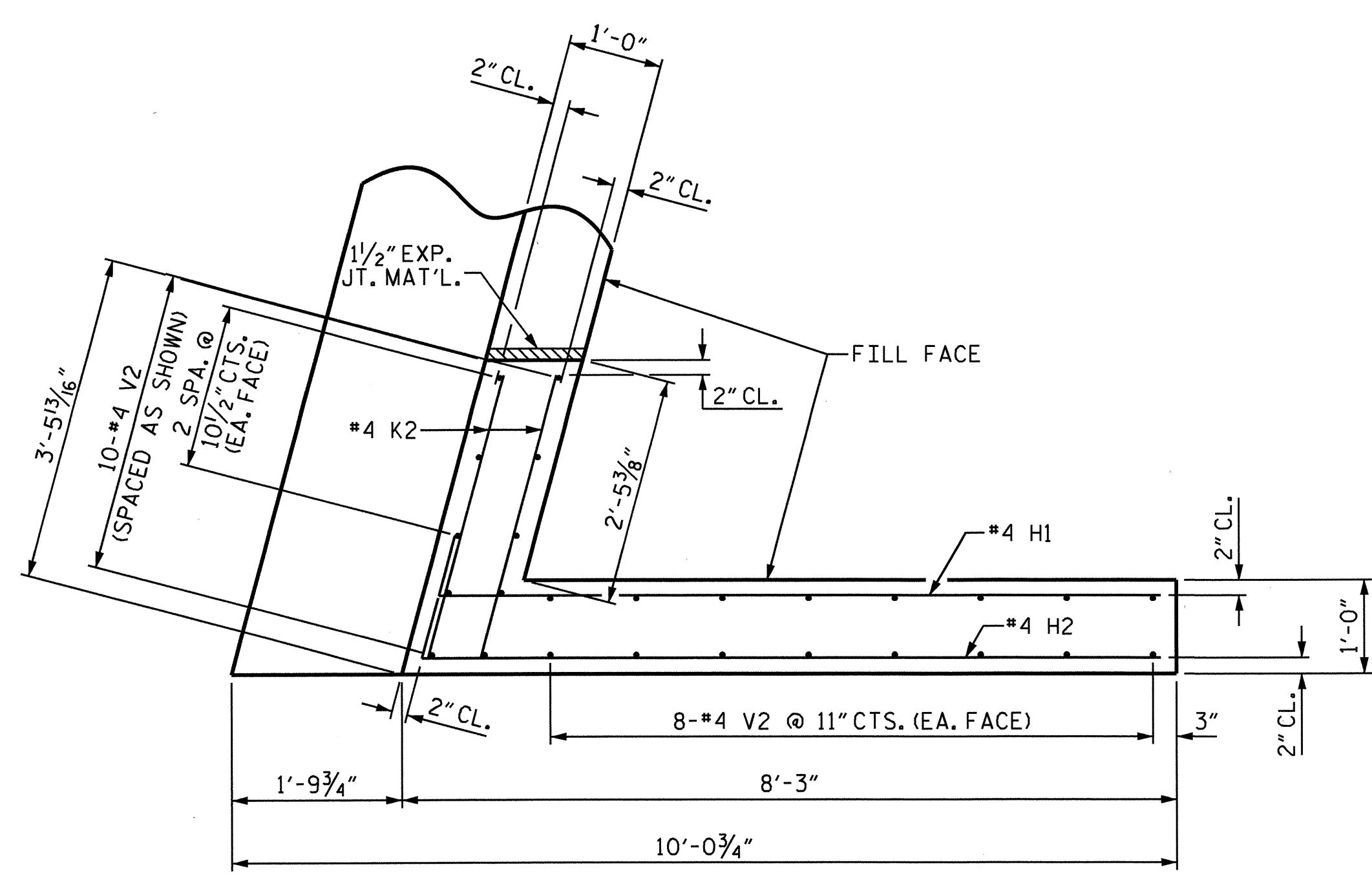
SHEET 1 OF 3

| STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION RALEIGH | | | | | | SHEET NO. S-15 |
|--|-----|-------|-----|-----|-------|--------------------|
| SUBSTRUCTURE | | | | | | TOTAL SHEETS 27 |
| END BENT No. 1 | | | | | | |
| REVISIONS | | | | | | |
| NO. | BY: | DATE: | NO. | BY: | DATE: | |
| 1 | | | 3 | | | |
| 2 | | | 4 | | | |

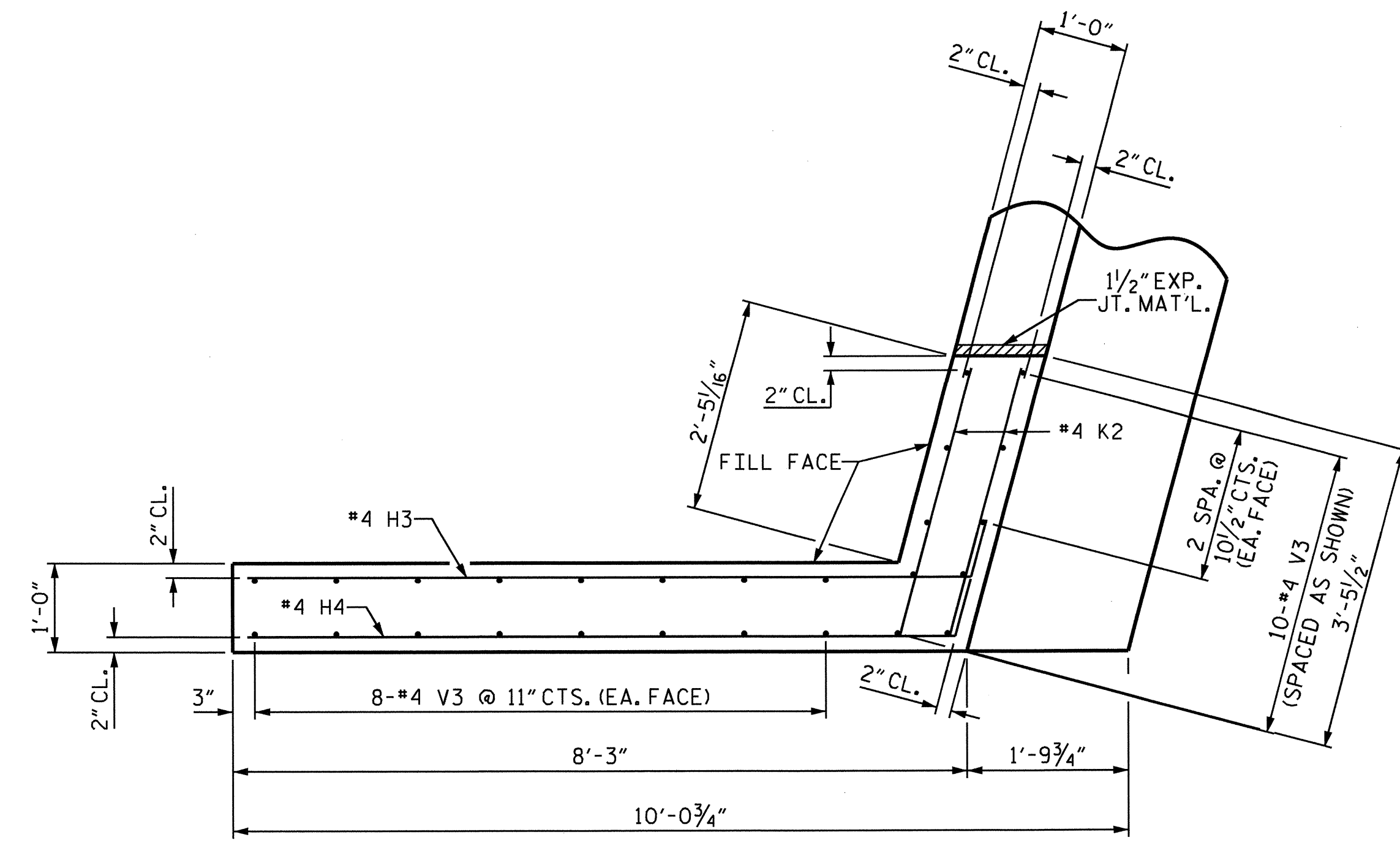
DRAWN BY: M.K. TOM DATE: 2/2011
 CHECKED BY: D.G. ELY DATE: 3/2011

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 Kalford

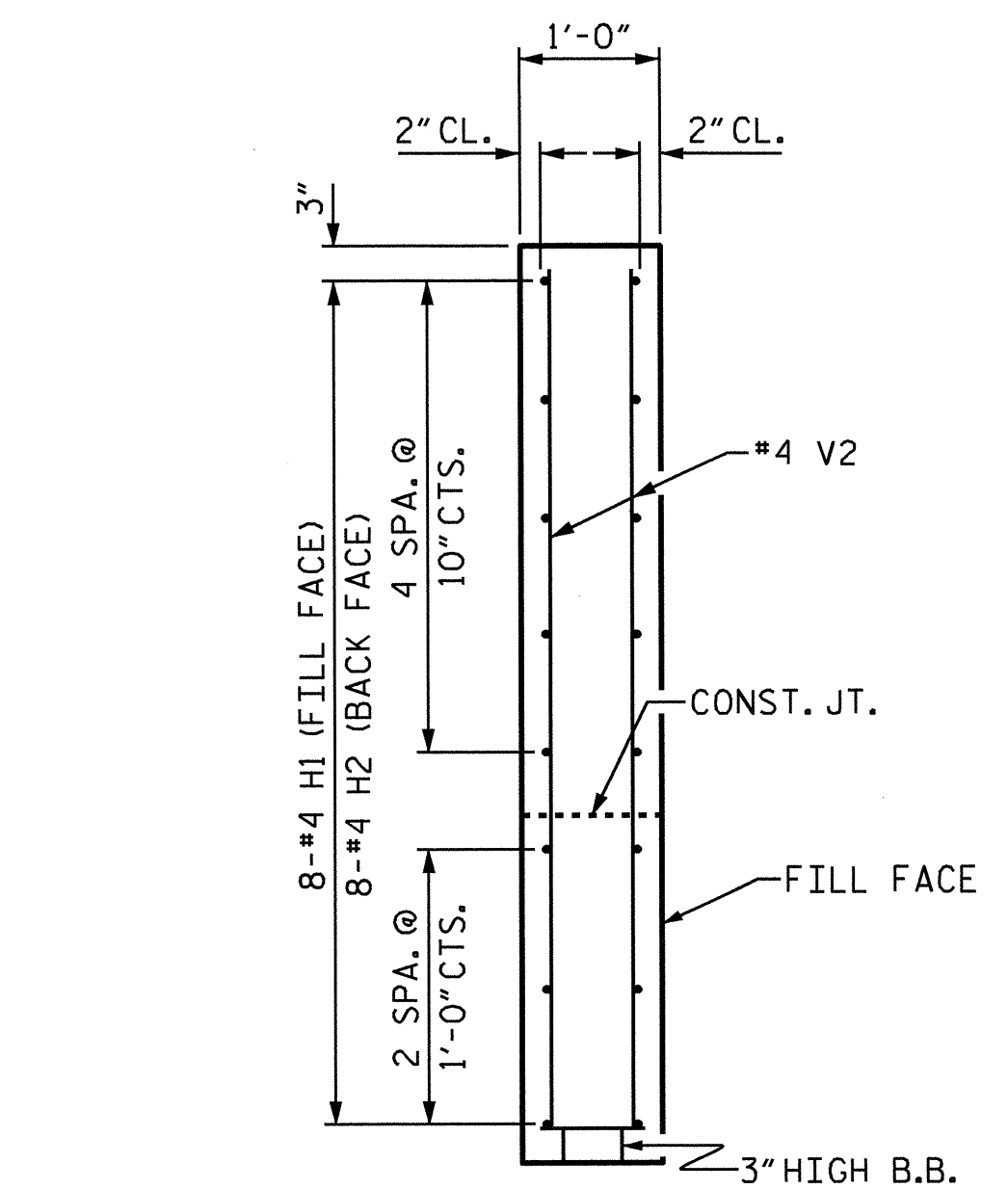
NC005



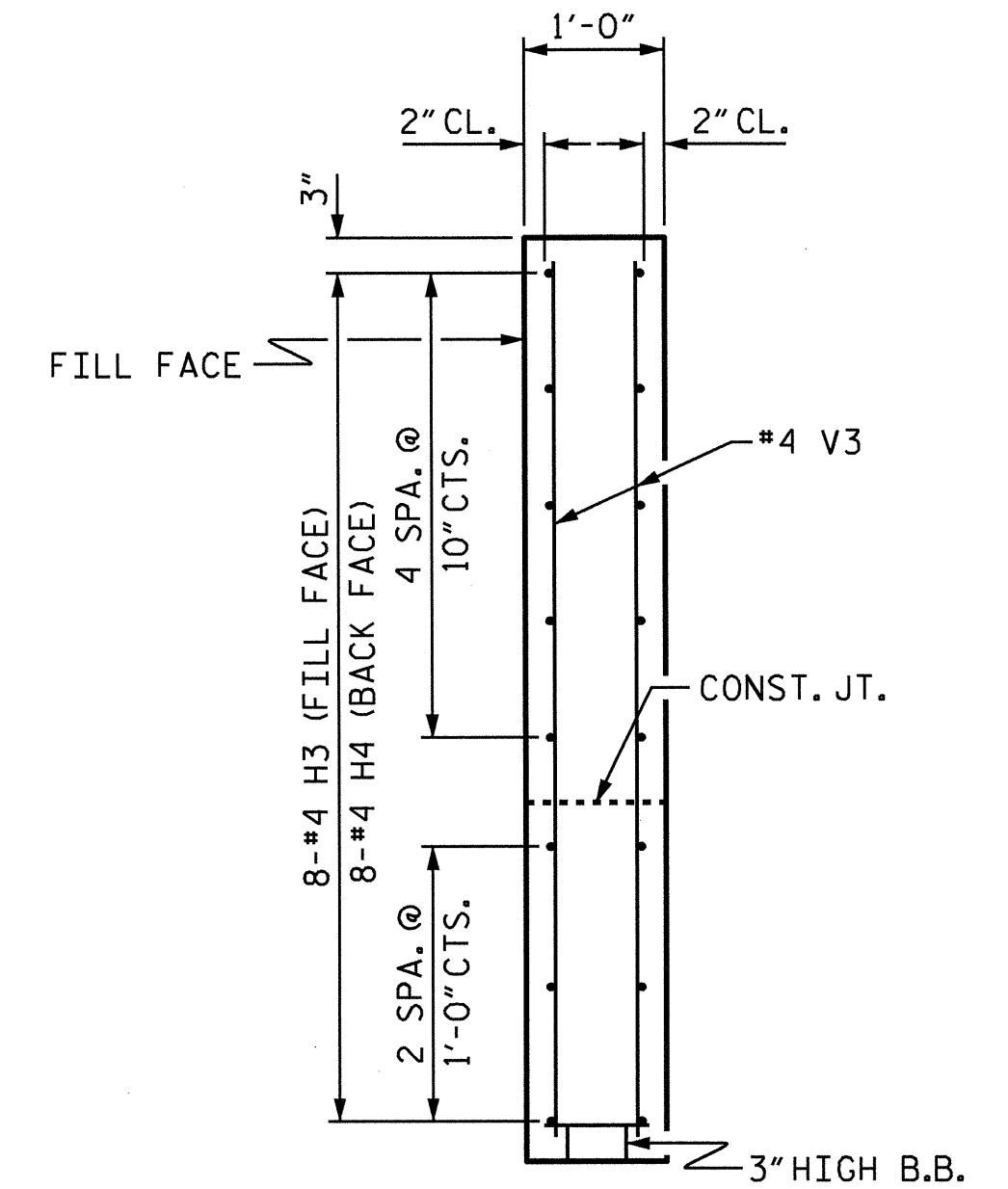
PLAN OF WING (W1)



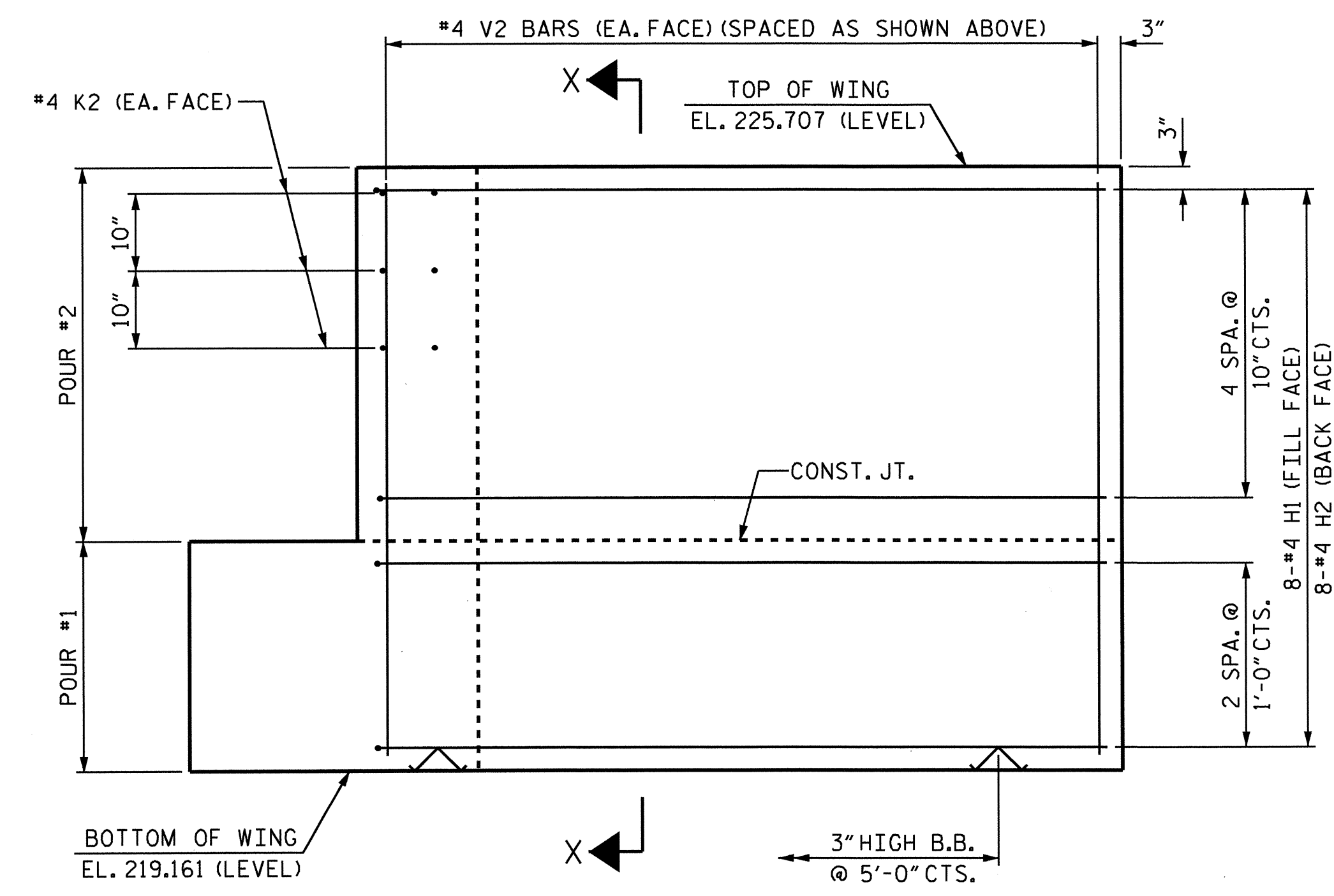
PLAN OF WING (W2)



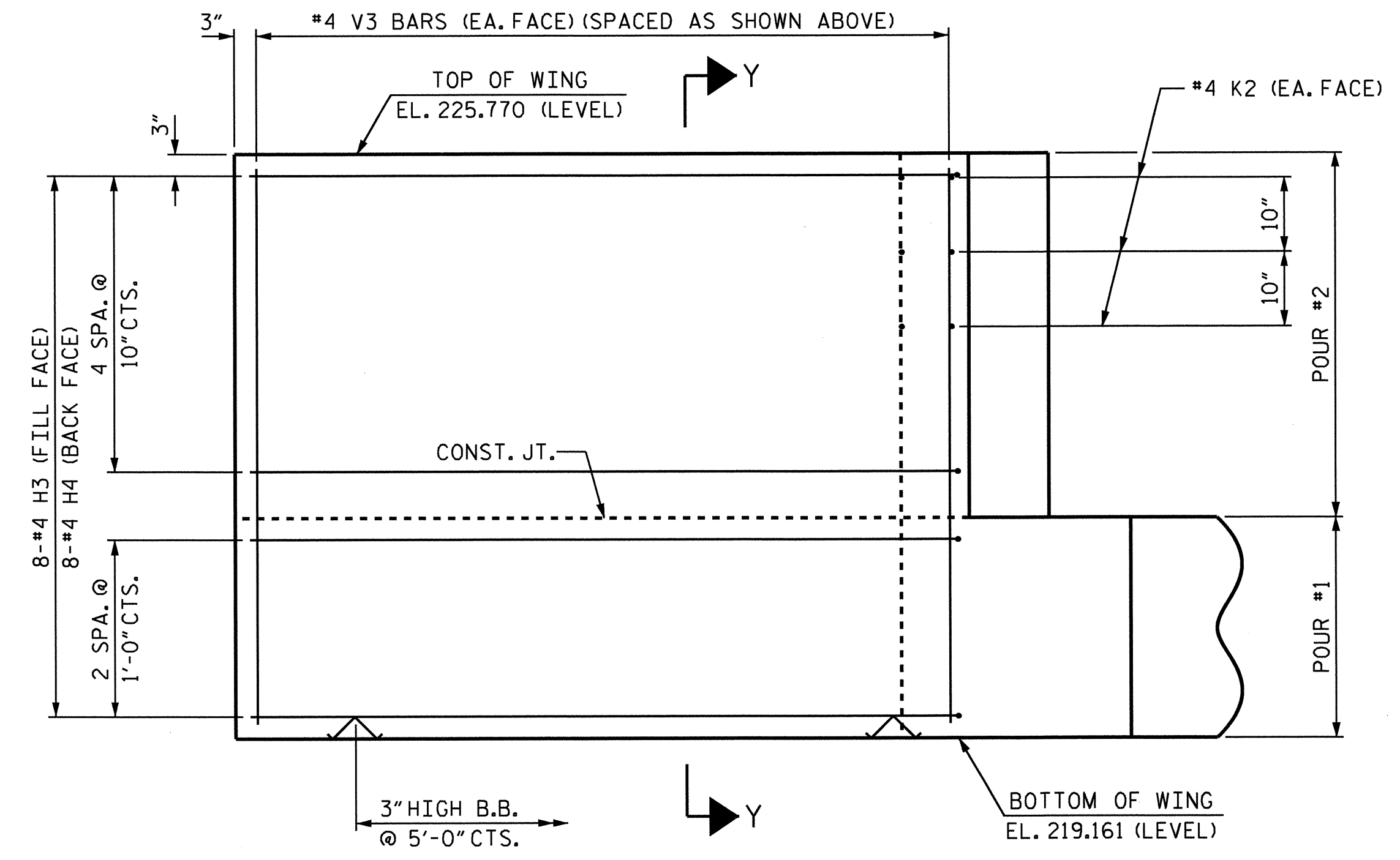
SECTION X-X



SECTION Y-Y

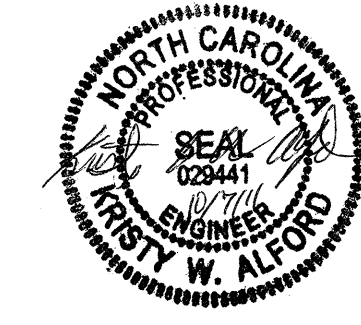


ELEVATION OF WING (W1)



ELEVATION OF WING (W2)

PROJECT NO. B-4514
FRANKLIN COUNTY
 STATION: 26+67.50 -L-
 SHEET 2 OF 3

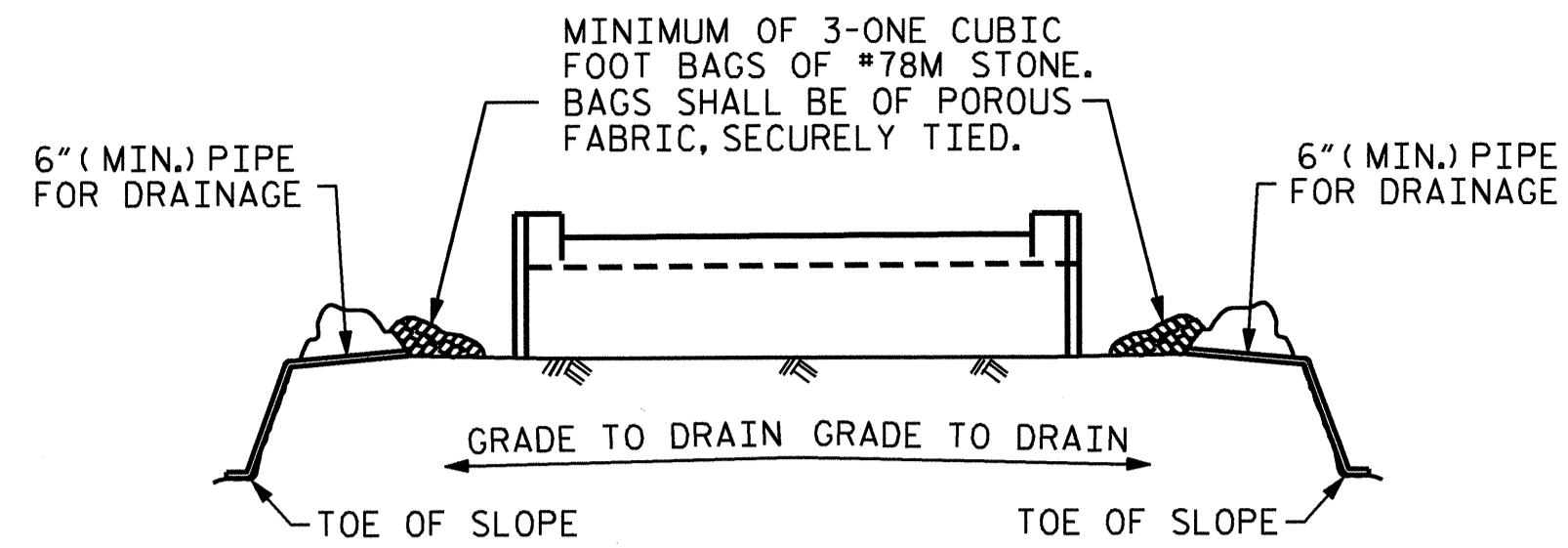


| STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION RALEIGH | | | | | |
|--|-----|-------|-----|-----|-------|
| SUBSTRUCTURE | | | | | |
| END BENT No. 1 | | | | | |
| REVISIONS | | | | | |
| NO. | BY: | DATE: | NO. | BY: | DATE: |
| 1 | | | 3 | | |
| 2 | | | 4 | | |

DRAWN BY : M.K. TOM DATE : 2/2011
 CHECKED BY : D.G. ELY DATE : 3/2011

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SHEET NO.
 S-16
 TOTAL SHEETS
 27

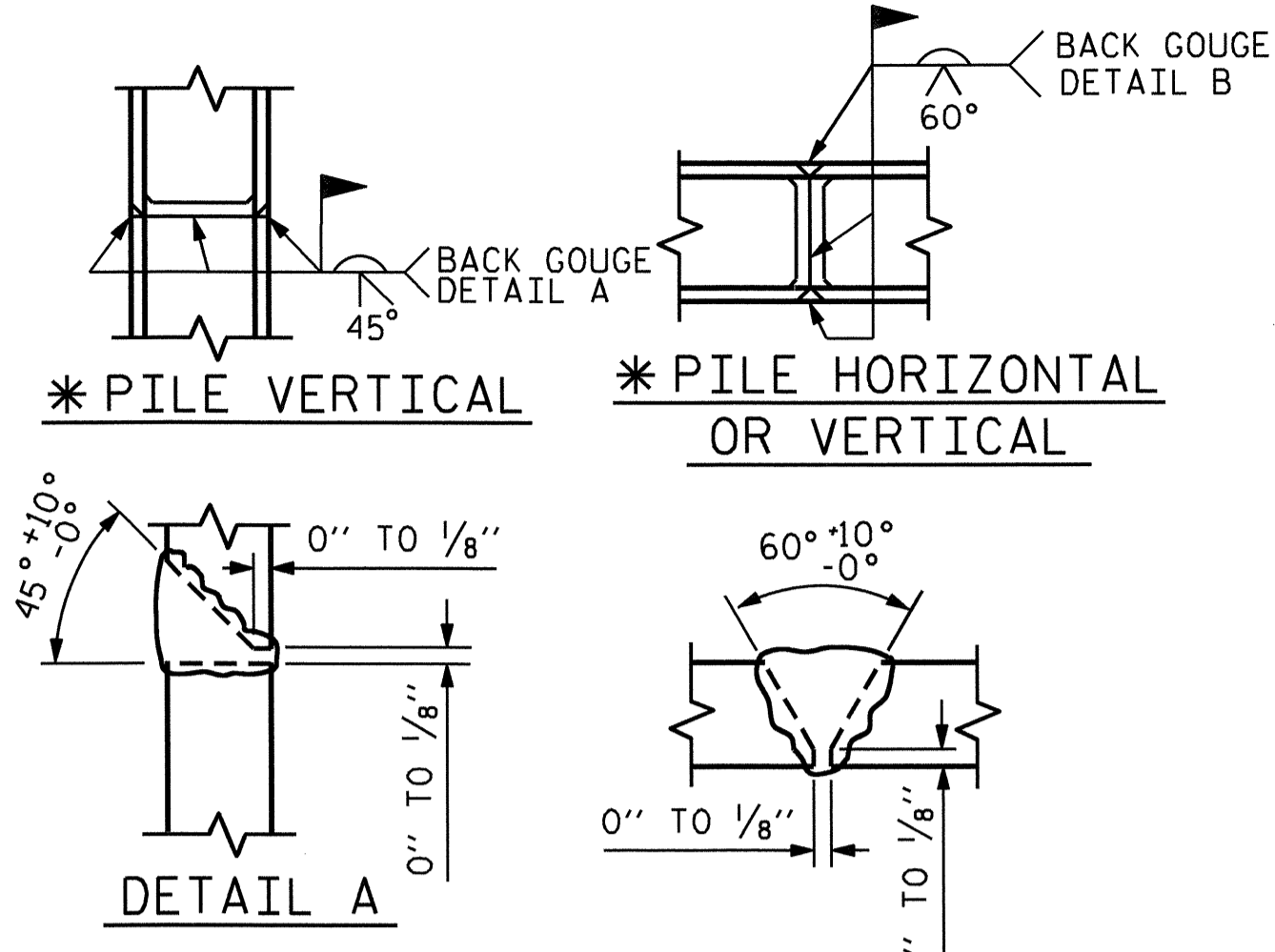


BAGGED STONE AND PIPE SHALL BE PLACED IMMEDIATELY AFTER COMPLETION OF END BENT EXCAVATION. PIPE MAY BE EITHER CONCRETE, CORRUGATED STEEL, CORRUGATED ALUMINUM ALLOY, OR CORRUGATED PLASTIC. PERFORATED PIPE WILL NOT BE ALLOWED.

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

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

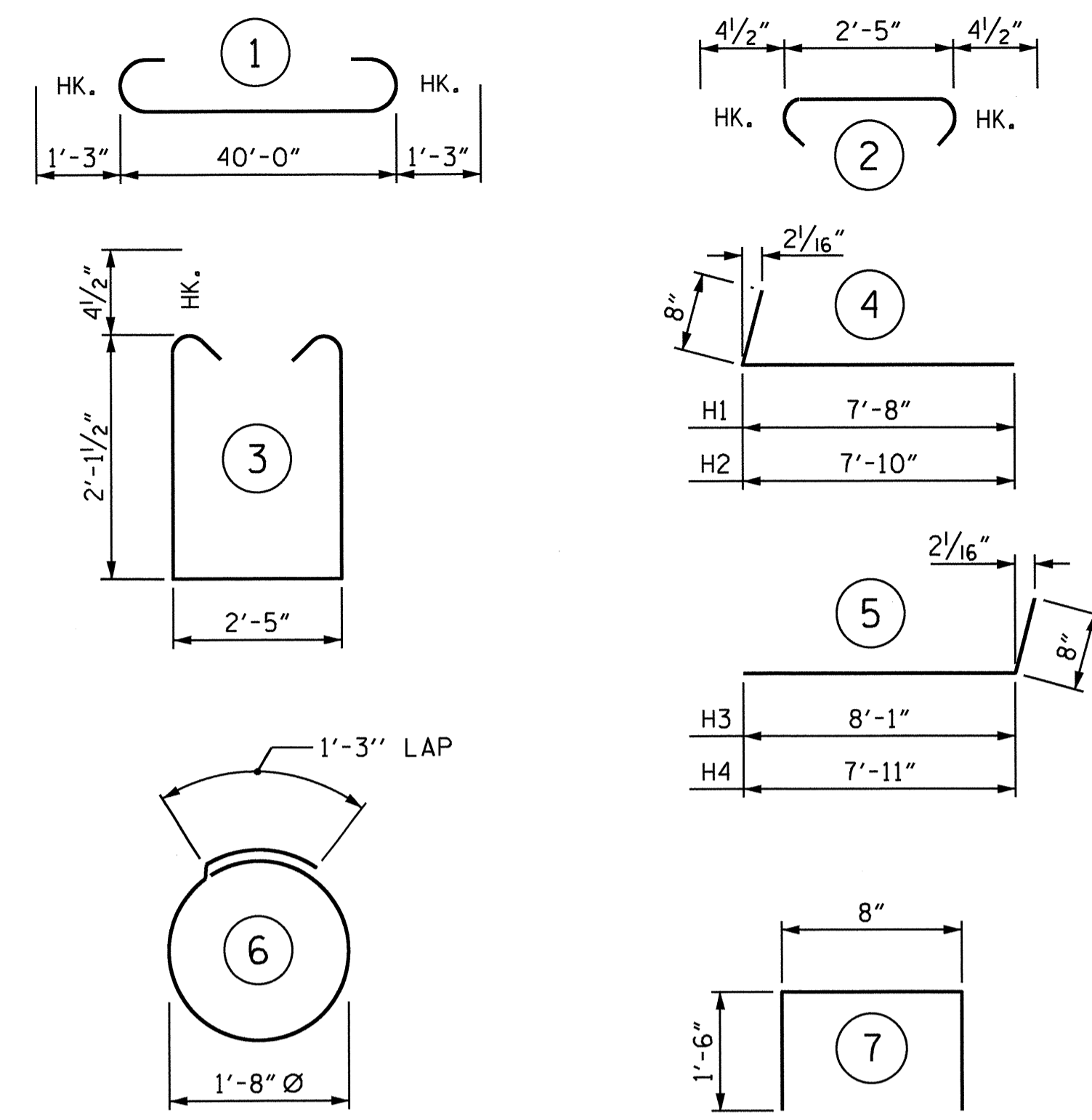
TEMPORARY DRAINAGE AT END BENT



* POSITION OF PILE DURING WELDING.

PILE SPLICE DETAILS

BAR TYPES



ALL BAR DIMENSIONS ARE OUT TO OUT.

BILL OF MATERIAL

END BENT No. 1

| BAR | NO. | SIZE | TYPE | LENGTH | WEIGHT |
|-----|-----|------|------|--------|--------|
| B1 | 8 | #9 | 1 | 42'-6" | 1156 |
| B2 | 16 | #4 | STR | 21'-4" | 228 |
| B3 | 10 | #4 | STR | 2'-5" | 16 |
| D1 | 22 | #8 | STR | 2'-3" | 132 |
| H1 | 8 | #4 | 4 | 8'-4" | 45 |
| H2 | 8 | #4 | 4 | 8'-6" | 45 |
| H3 | 8 | #4 | 5 | 8'-9" | 47 |
| H4 | 8 | #4 | 5 | 8'-7" | 46 |
| K1 | 12 | #4 | STR | 21'-4" | 171 |
| K2 | 12 | #4 | STR | 3'-1" | 25 |
| S1 | 37 | #4 | 2 | 3'-2" | 78 |
| S2 | 37 | #4 | 3 | 7'-5" | 183 |
| S3 | 12 | #4 | 6 | 6'-6" | 52 |
| U1 | 34 | #4 | 7 | 3'-8" | 83 |
| V1 | 68 | #5 | STR | 4'-2" | 296 |
| V2 | 26 | #4 | STR | 6'-2" | 107 |
| V3 | 26 | #4 | STR | 6'-3" | 109 |

REINFORCING STEEL = 2819 LBS

CLASS A CONCRETE BREAKDOWN

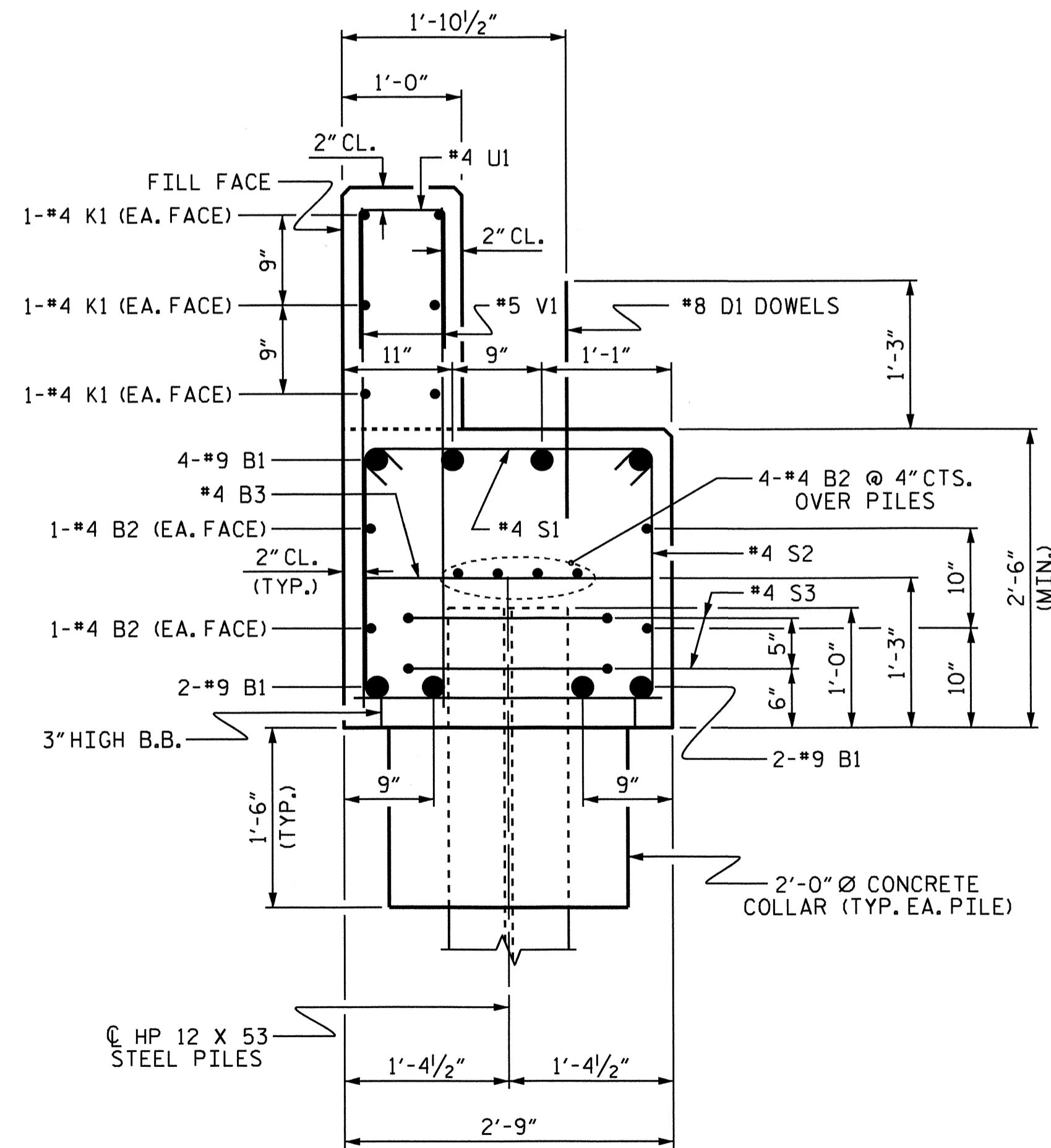
POUR #1: CAP, LOWER WINGS, & CONCRETE COLLARS 12.9 C.Y.

POUR #2: UPPER WINGS & BACKWALL 5.7 C.Y.

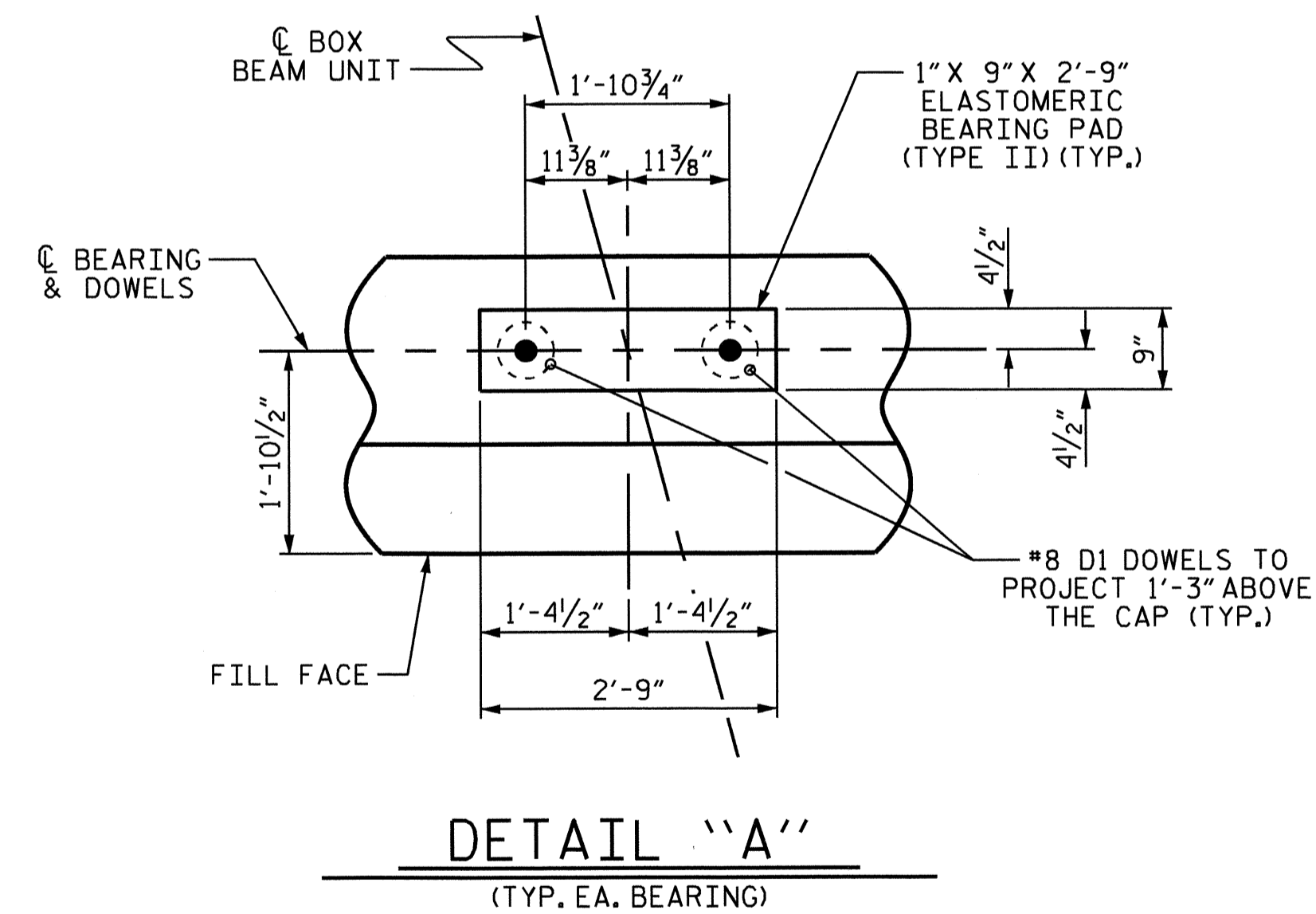
TOTAL CLASS A CONCRETE 18.6 C.Y.

HP 12 X 53 STEEL PILES

No. = 6 240 LIN. FT.



SECTION A-A



PROJECT NO. B-4514

FRANKLIN COUNTY

STATION: 26+67.50 -L-

SHEET 3 OF 3

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUBSTRUCTURE
END BENT No. 1



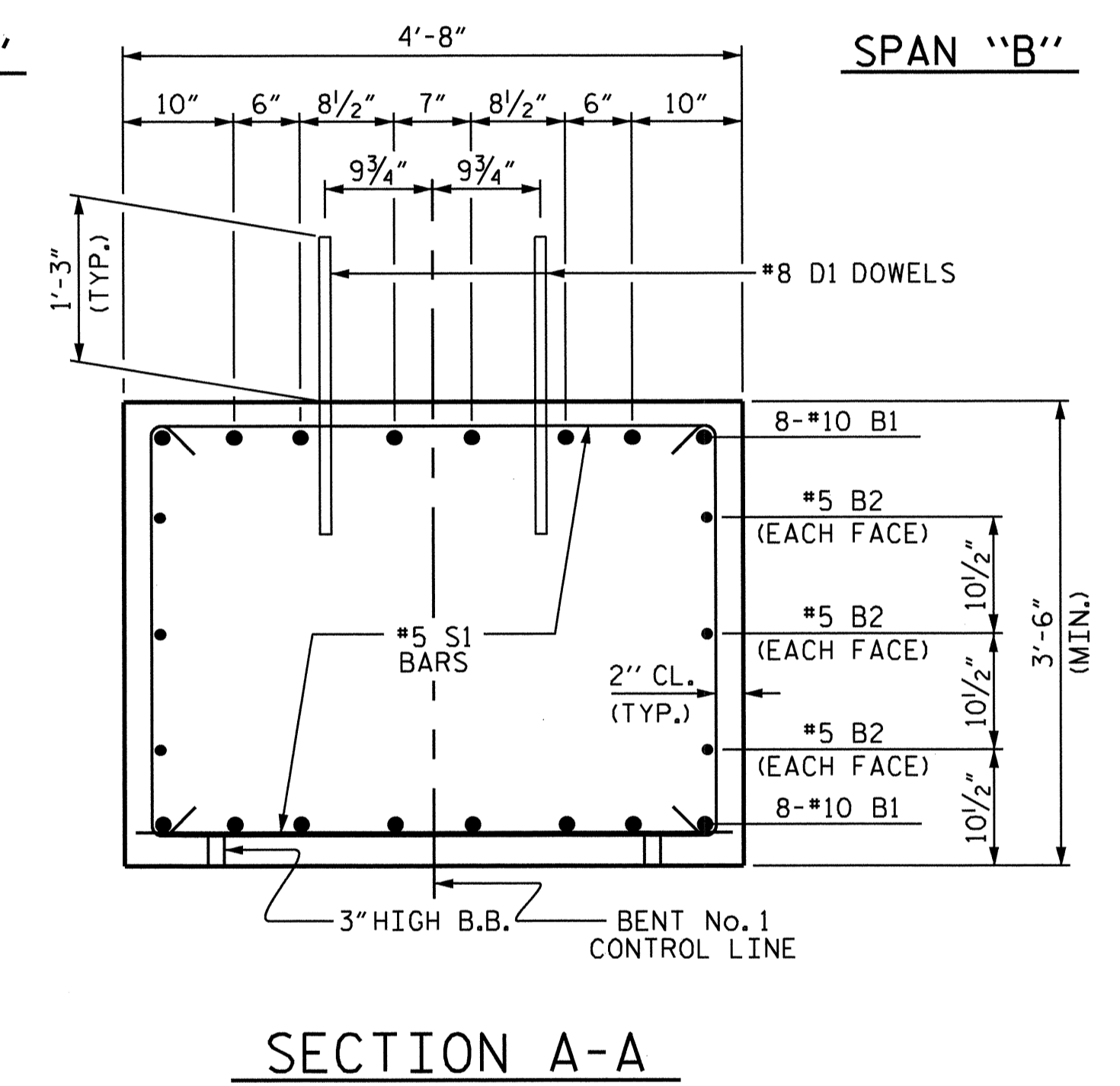
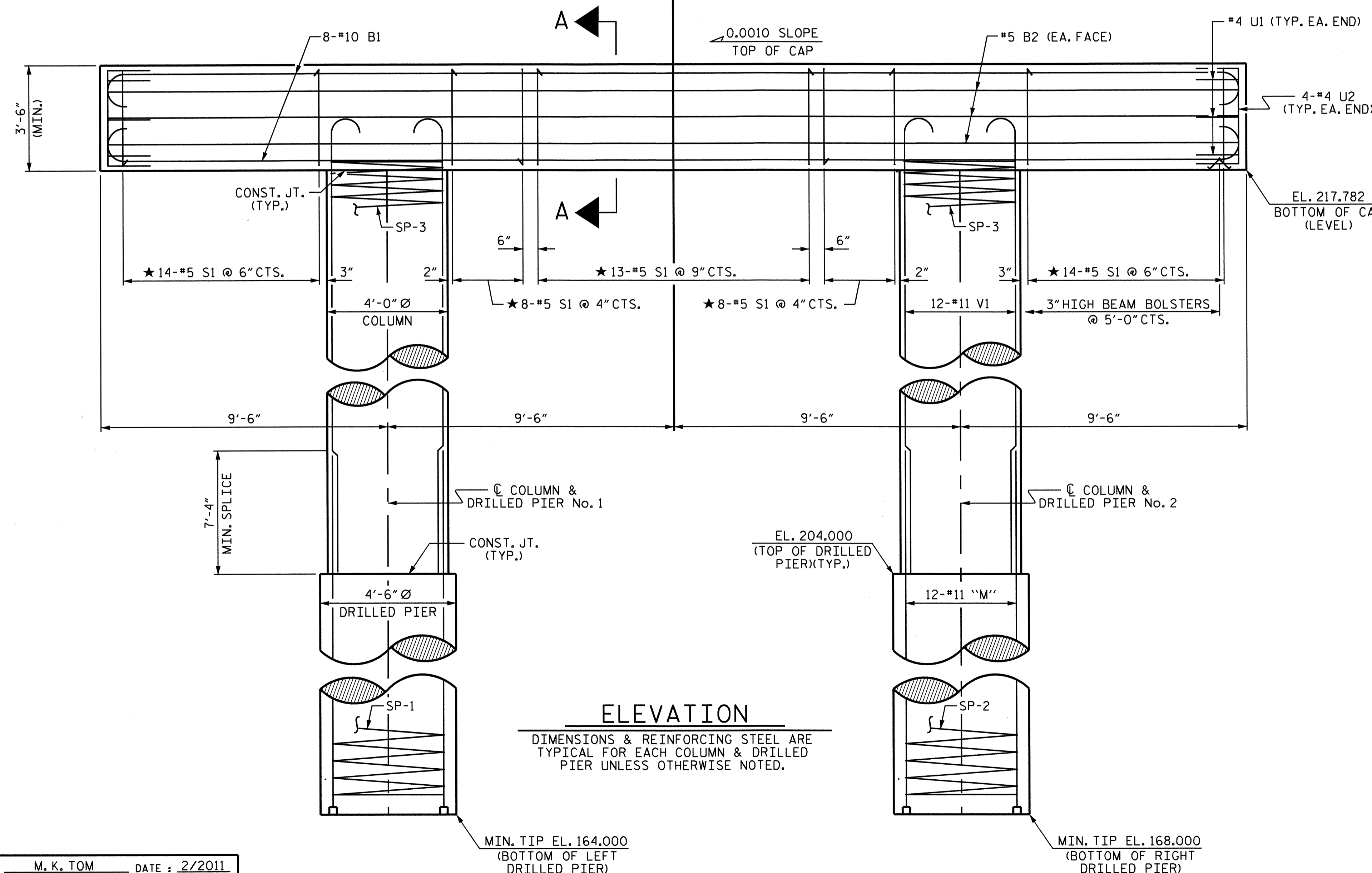
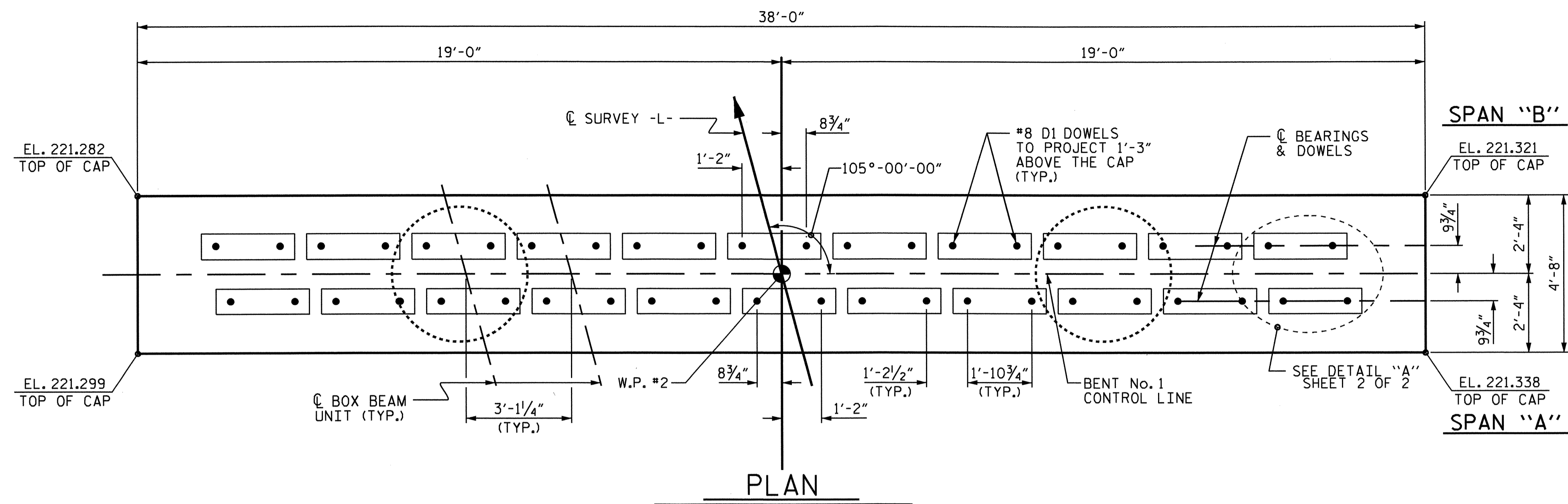
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| 1 | | | 3 | | | TOTAL SHEETS |
| 2 | | | 4 | | | 27 |

DRAWN BY: M.K. TOM DATE: 2/2011

CHECKED BY: D.G. ELY DATE: 3/2011

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kalford

NC005



NOTES:

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

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

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

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

★ INVERT ALTERNATE STIRRUPS AS SHOWN.

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

THE TOP OF THE BENT CAP IS SLOPED LONGITUDINALLY AND TRANSVERSELY.

PROJECT NO. B-4514

FRANKLIN COUNTY

STATION: 26+67.50 -L-

SHEET 1 OF 2

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

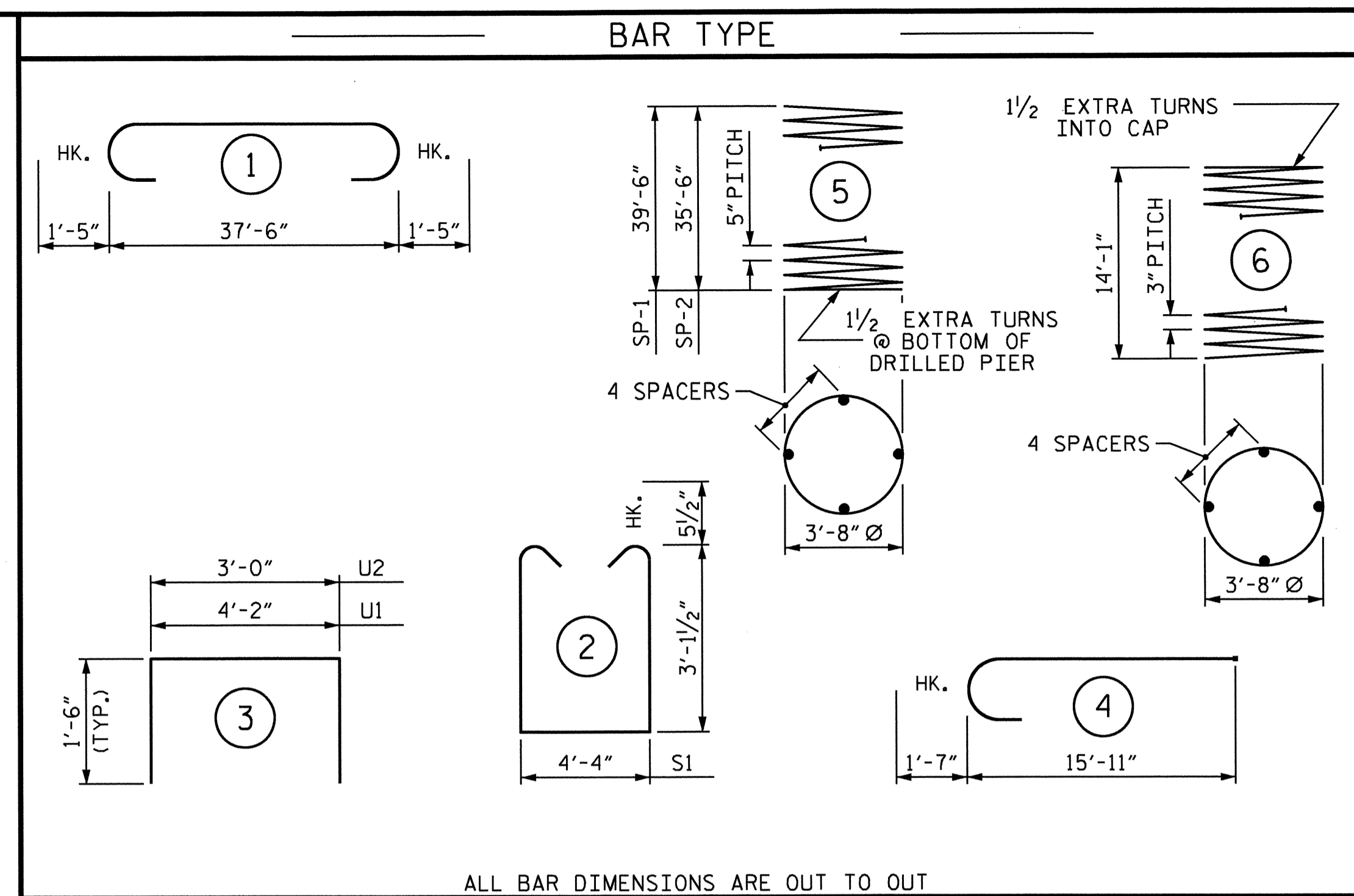
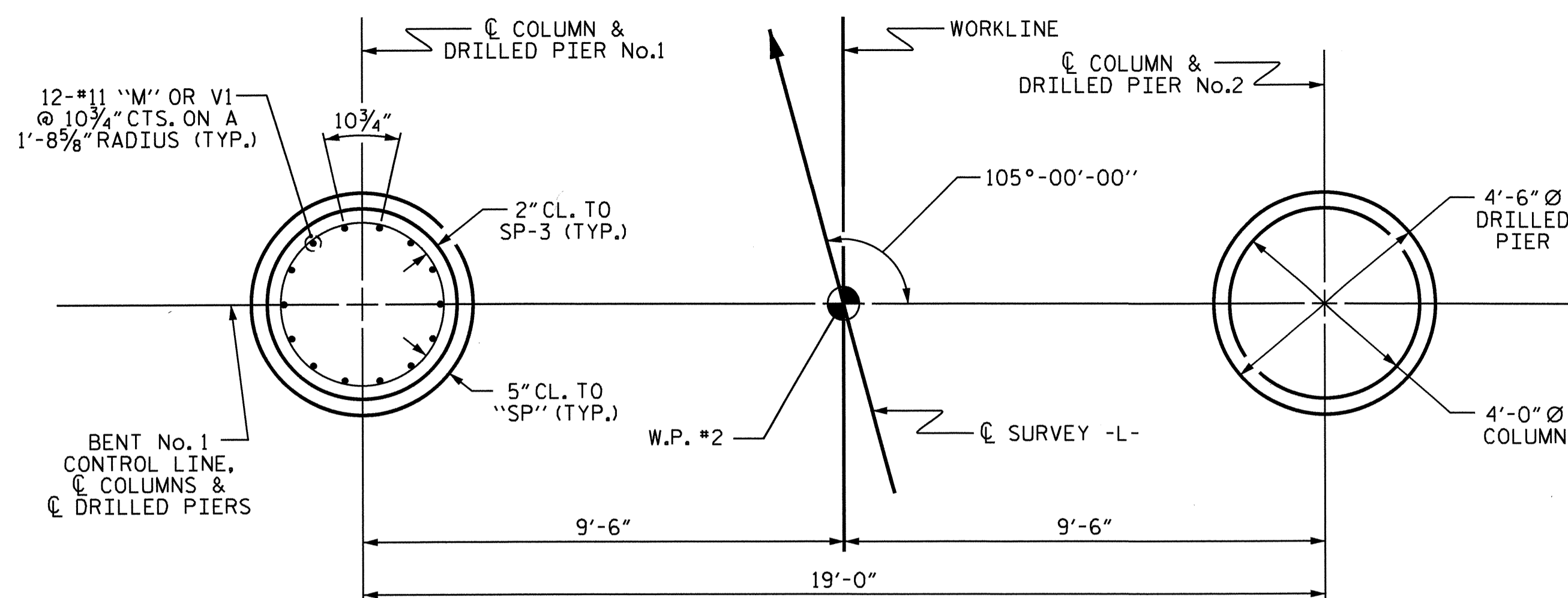
SUBSTRUCTURE
BENT No. 1

| REVISIONS | | | | | | SHEET NO. | |
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| 2 | | | 4 | | | 27 | |

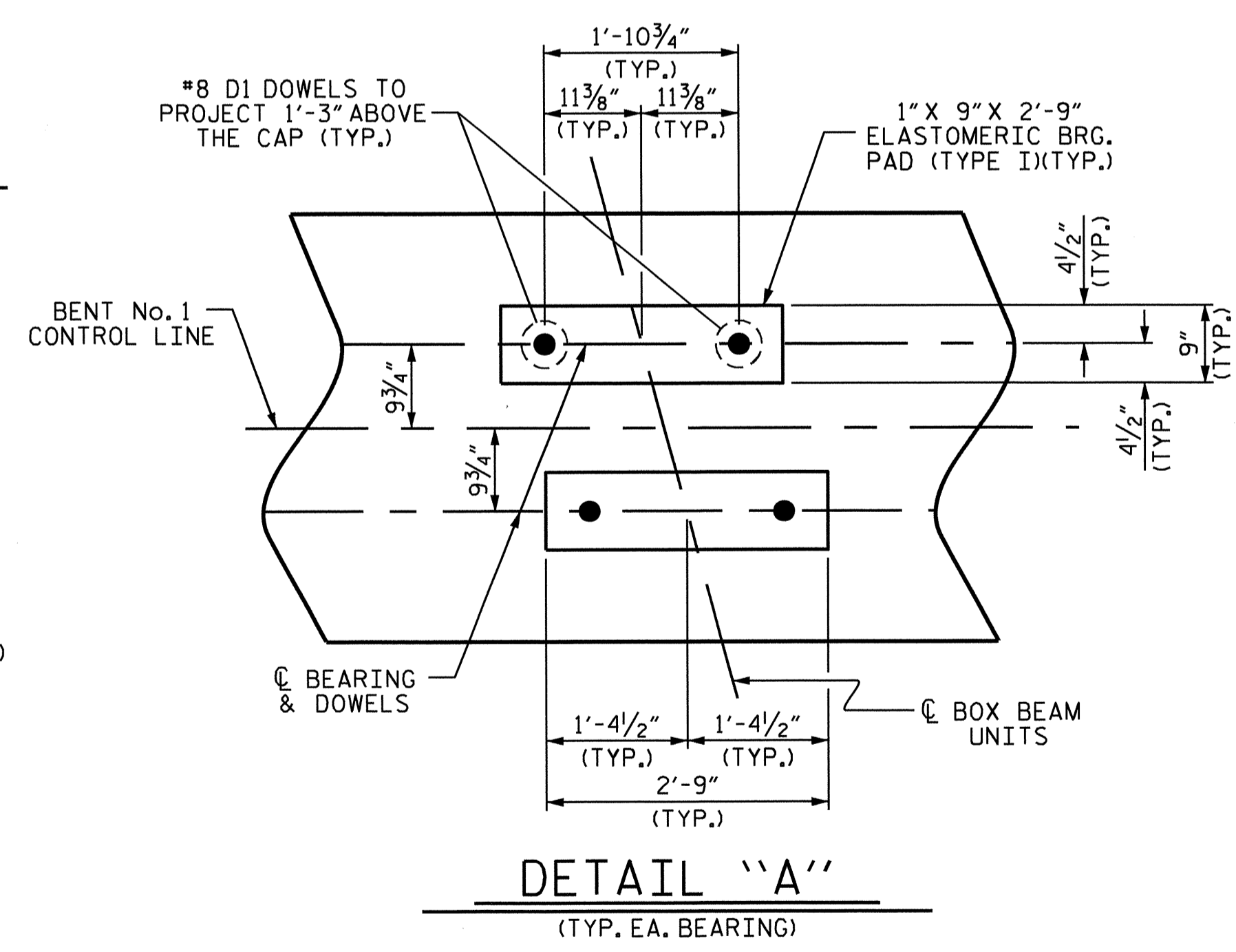
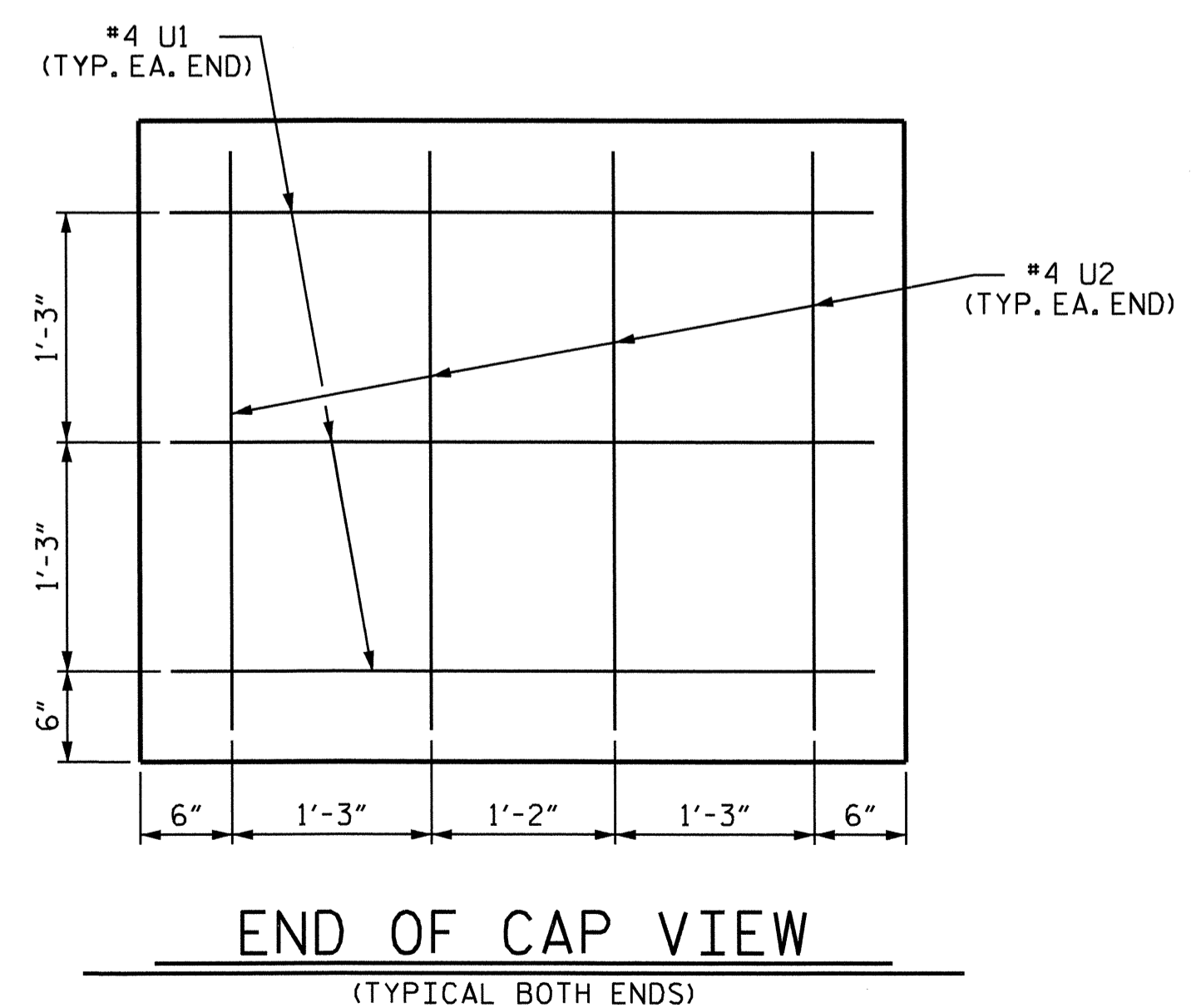
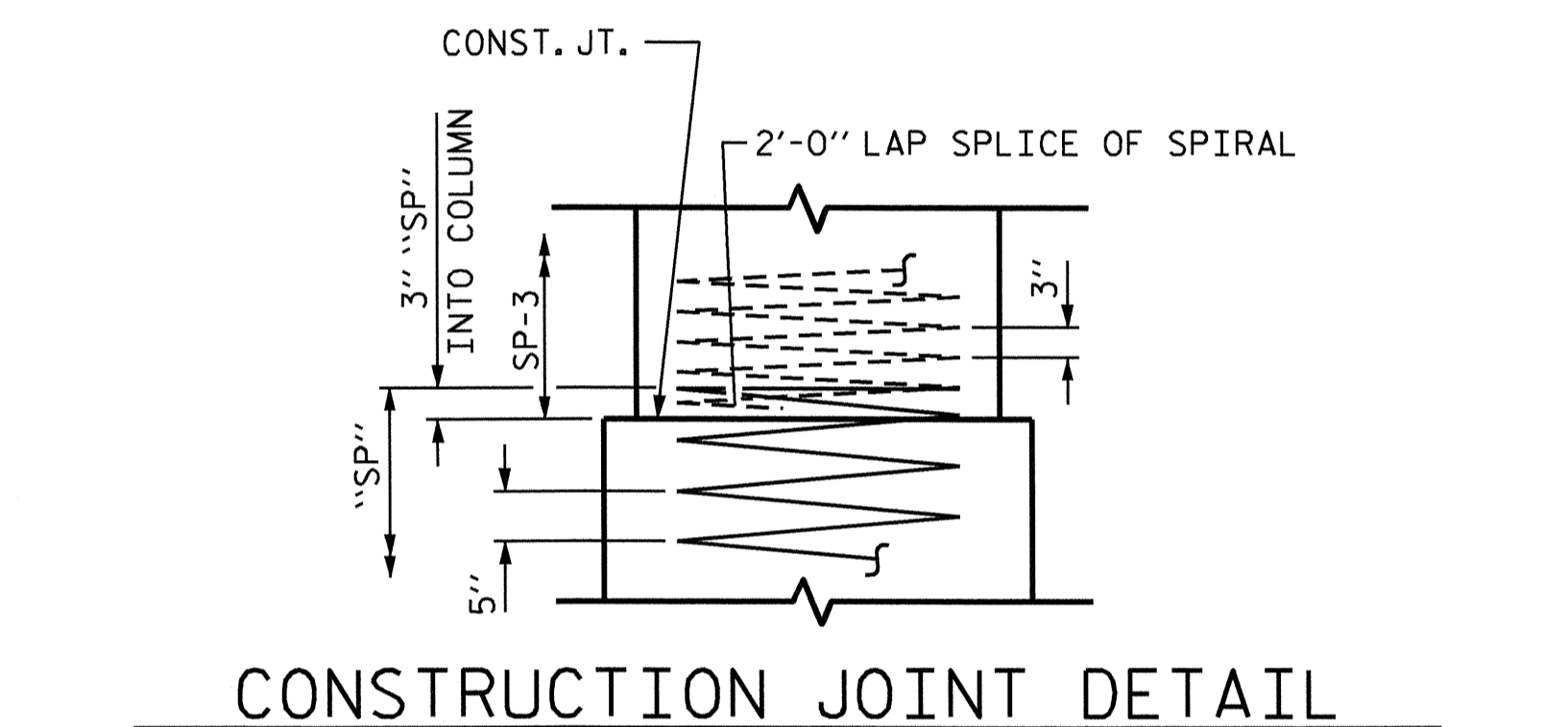
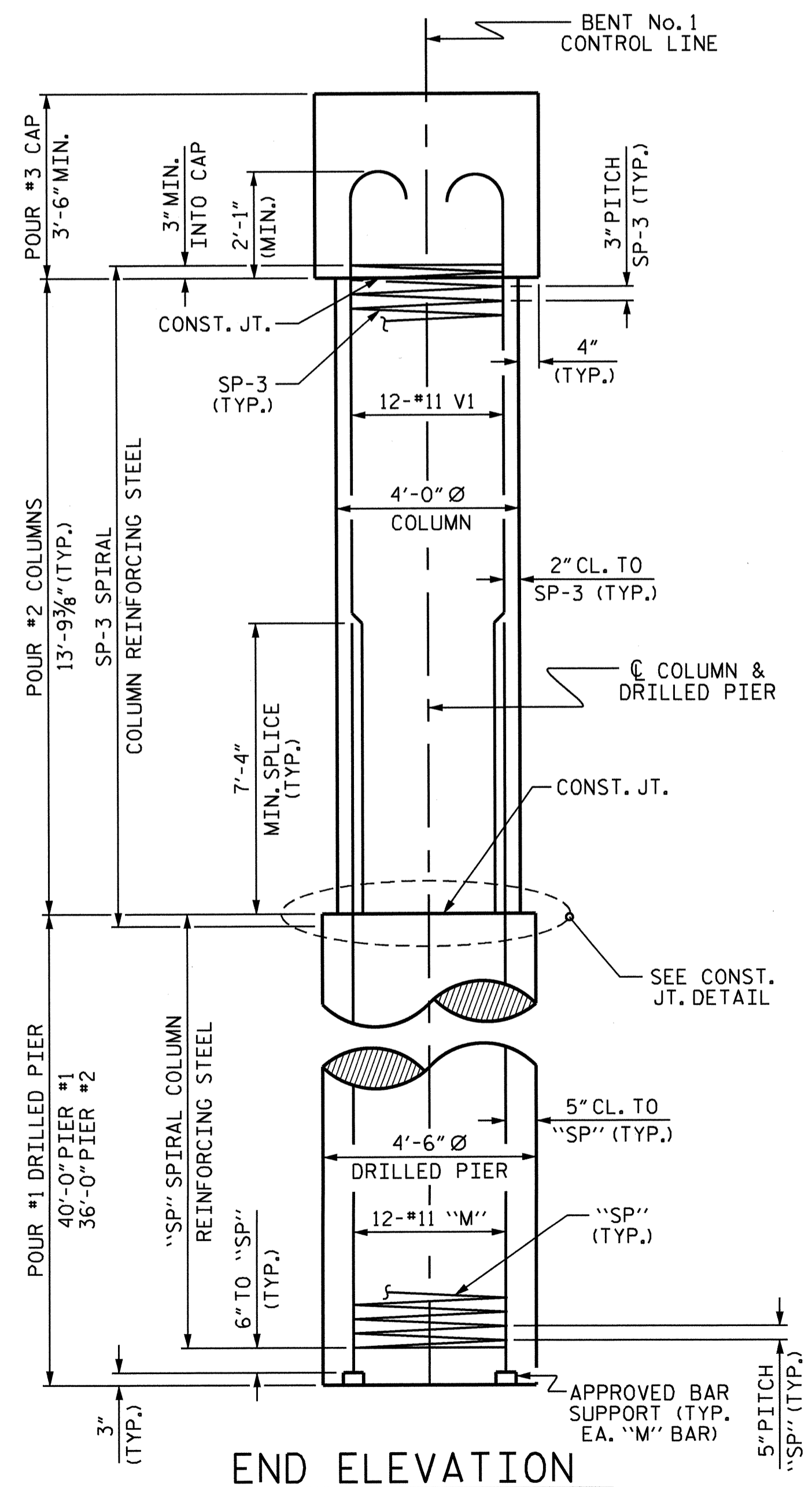


DRAWN BY: M. K. TOM DATE: 2/2011

CHECKED BY: A. V. ROYAL DATE: 3/2011



| BILL OF MATERIAL | | | | | |
|---|-----|------|------|----------|---------------|
| BENT No. 1 | | | | | |
| BAR NO. | NO. | SIZE | TYPE | LENGTH | WEIGHT |
| B1 | 16 | #10 | 1 | 40'-4" | 2777 |
| B2 | 6 | #5 | STR | 37'-8" | 236 |
| D1 | 44 | #8 | STR | 2'-3" | 264 |
| M1 | 12 | #11 | STR | 50'-1" | 3193 |
| M2 | 12 | #11 | STR | 46'-1" | 2938 |
| S1 | 57 | #5 | 2 | 11'-6" | 684 |
| U1 | 6 | #4 | 3 | 7'-2" | 29 |
| U2 | 8 | #4 | 3 | 6'-0" | 32 |
| V1 | 24 | #11 | 4 | 17'-6" | 2231 |
| REINFORCING STEEL | | | | | = 12,384 LBS. |
| SP-1 | 1 | * | 5 | 1102'-3" | 1150 |
| SP-2 | 1 | * | 5 | 988'-8" | 1031 |
| SP-3 | 2 | ** | 6 | 660'-9" | 883 |
| SPIRAL COLUMN REINFORCING STEEL | | | | | 3,064 LBS. |
| * THE SP-1 AND SP-2 SPIRAL REINFORCING STEEL SHALL BE W31 OR D-31 COLD DRAWN WIRE OR #5 PLAIN OR DEFORMED BAR | | | | | |
| ** THE SP-3 SPIRAL REINFORCING STEEL SHALL BE W20 OR D-20 COLD DRAWN WIRE OR #4 PLAIN OR DEFORMED BAR | | | | | |
| CLASS A CONCRETE BREAKDOWN | | | | | |
| POUR #2 (COLUMNS) | | | | | 12.8 C.Y. |
| POUR #3 (CAP) | | | | | 23.2 C.Y. |
| TOTAL CLASS A CONCRETE | | | | | 36.0 C.Y. |
| DRILLED PIERS: | | | | | |
| DRILLED PIER CONCRETE | | | | | |
| POUR #1 (DRILLED PIERS) | | | | | 44.8 C.Y. |
| 4'-6" Ø DRILLED PIER | | | | | 76 LIN. FT. |
| CSL TUBES | | | | | 324 LIN. FT. |



PROJECT NO. B-4514
FRANKLIN COUNTY
 STATION: 26+67.50 -L-
 SHEET 2 OF 2

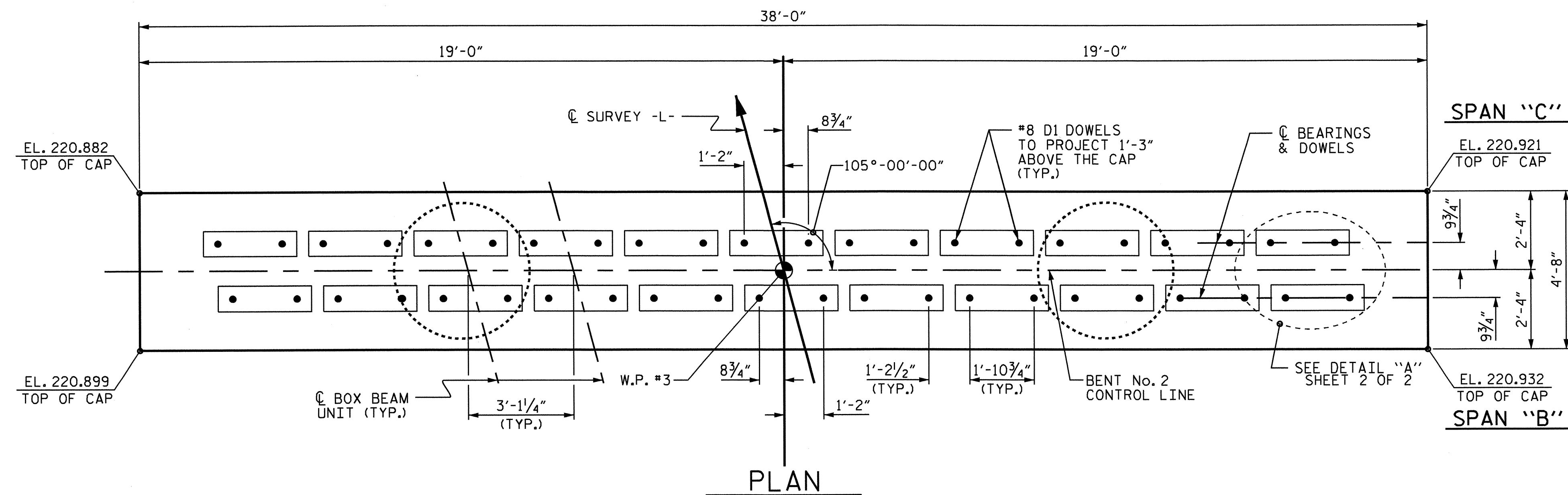


| STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION RALEIGH | | | | | |
|--|-----|-------|-----------|-----|-------|
| SUBSTRUCTURE BENT No. 1 | | | | | |
| REVISIONS | | | SHEET NO. | | |
| NO. | BY: | DATE: | NO. | BY: | DATE: |
| 1 | | | 3 | | |
| 2 | | | 4 | | |
| TOTAL SHEETS | | | | | 27 |

DRAWN BY: M. K. TOM DATE: 2/2011
 CHECKED BY: A. V. ROYAL DATE: 3/2011

28-SEP-2011 08:10
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NC005



NOTES:

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

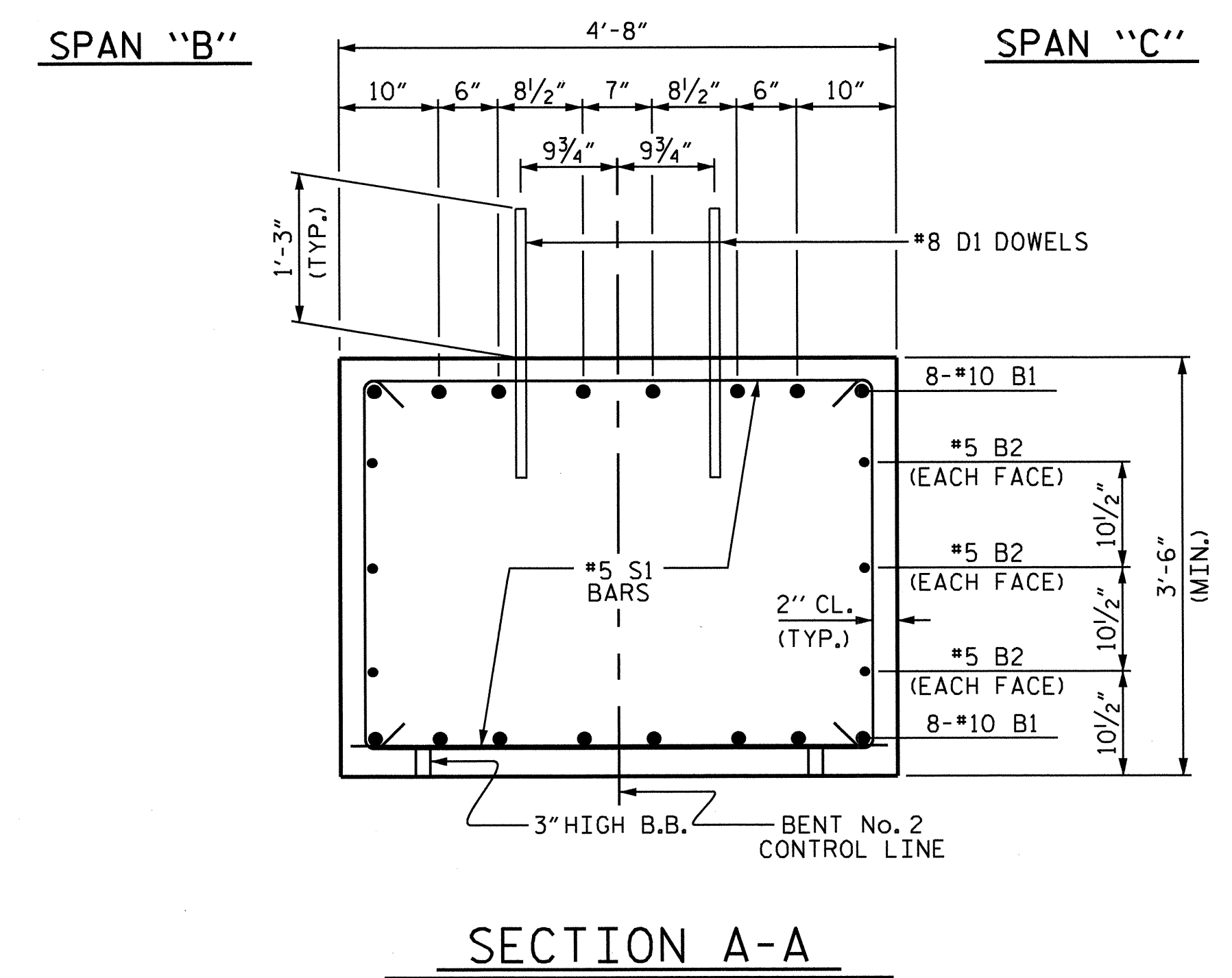
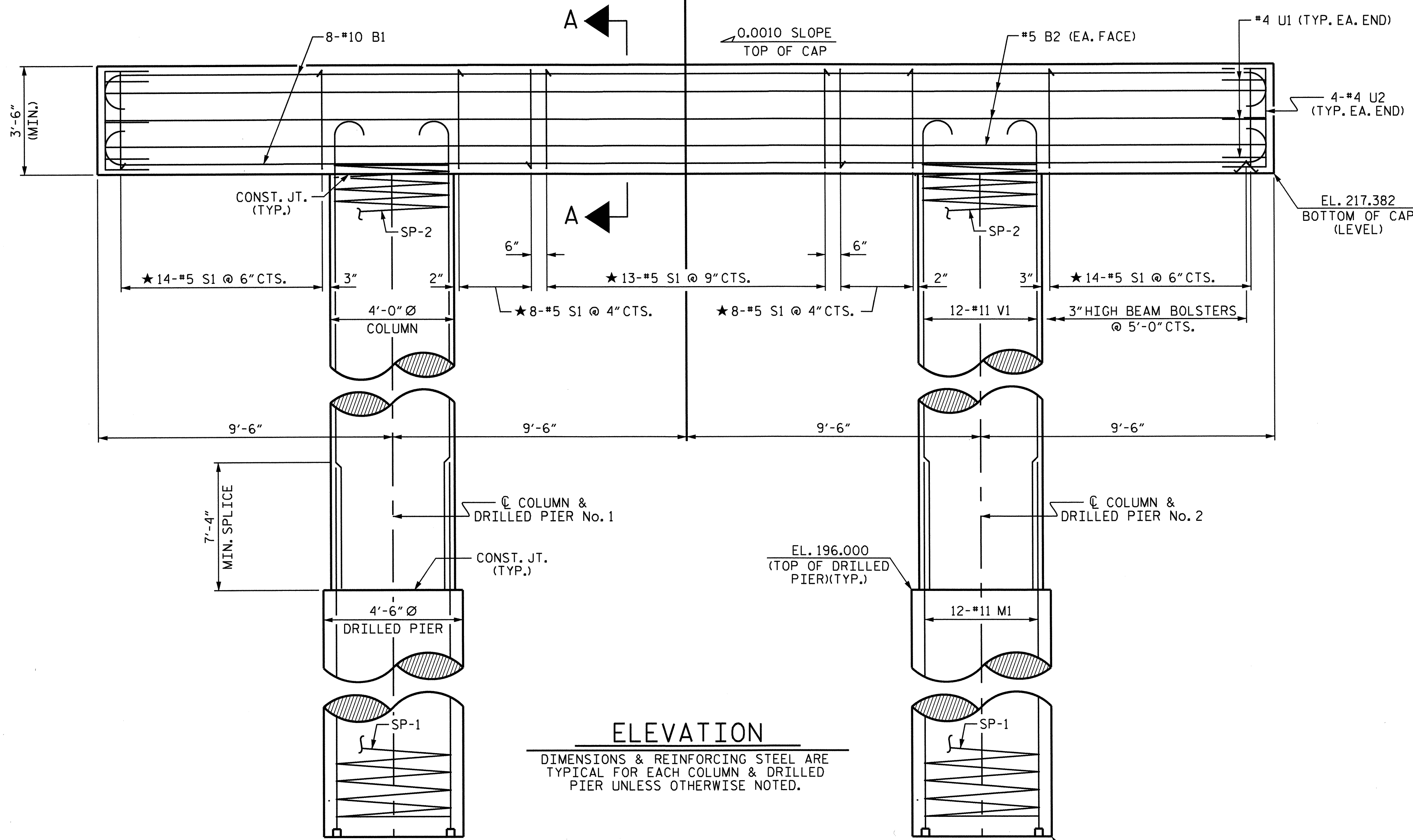
HOOKS ON "V" BARS MAY BE TURNED AS NECESSARY FOR PLACING REINFORCING STEEL.

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

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

★ INVERT ALTERNATE STIRRUPS AS SHOWN.

THE TOP OF THE BENT CAP IS SLOPED LONGITUDINALLY AND TRANSVERSELY.



PROJECT NO. B-4514
 FRANKLIN COUNTY
 STATION: 26+67.50 -L-
 SHEET 1 OF 2

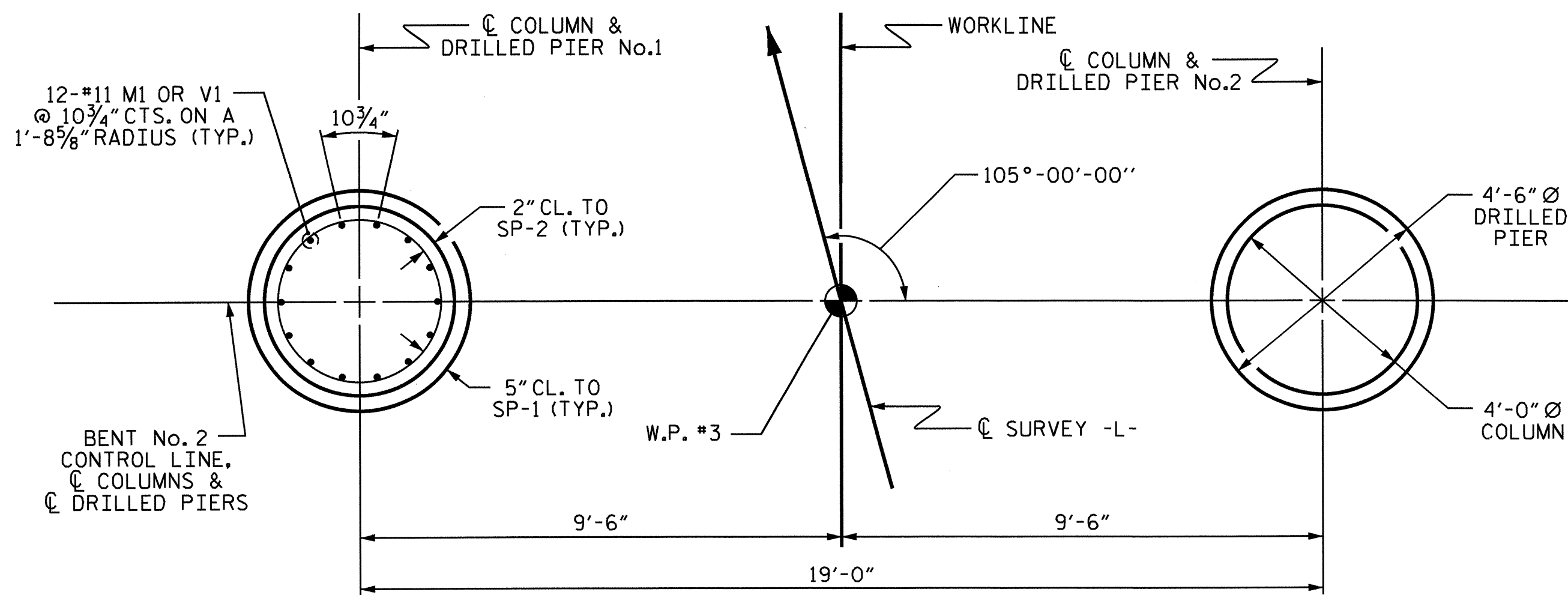


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| 1 | | | 3 | | | TOTAL SHEETS 27 |
| 2 | | | 4 | | | |

DRAWN BY: M. K. TOM DATE: 2/2011
 CHECKED BY: A. V. ROYAL DATE: 3/2011

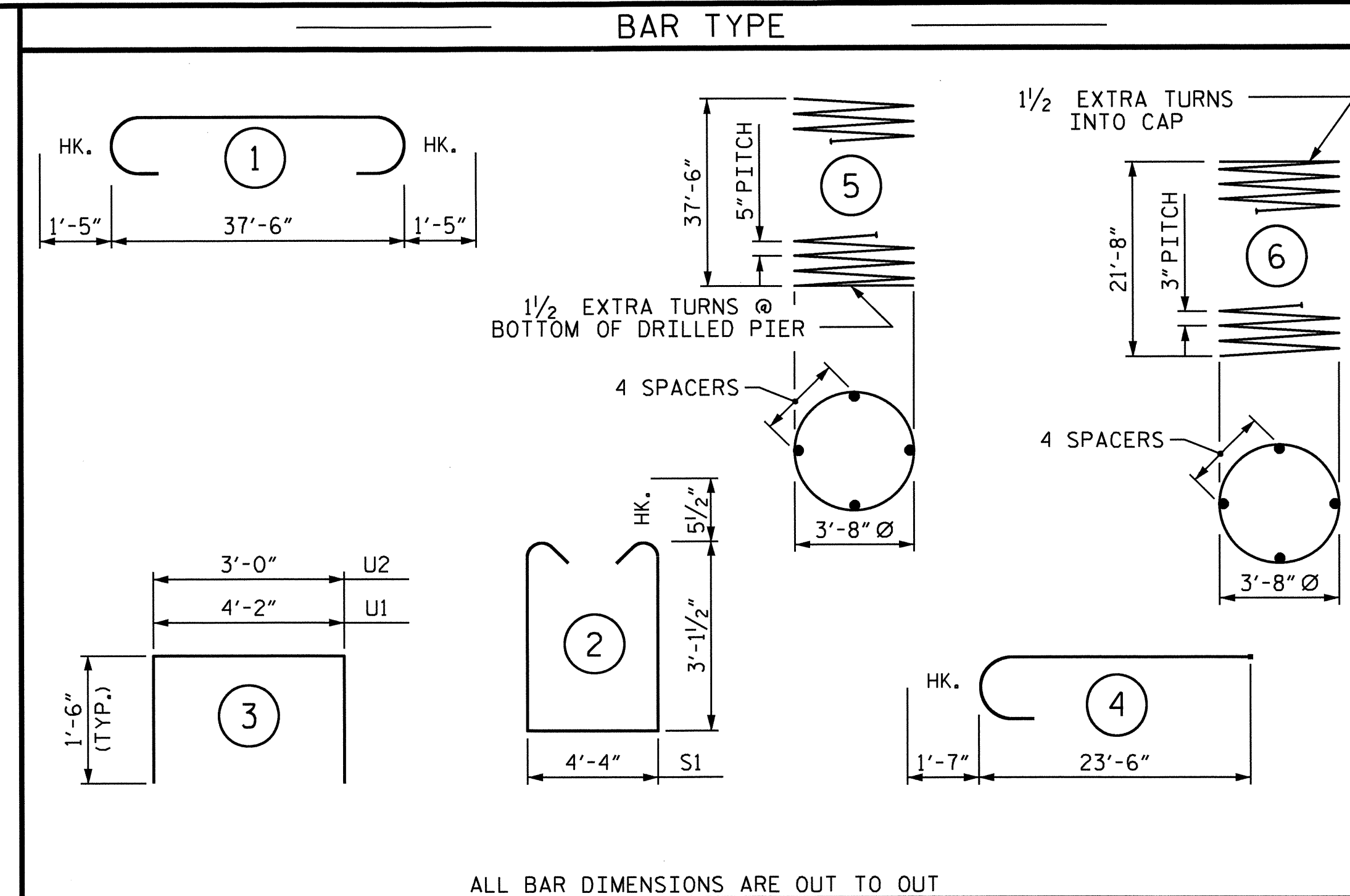
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NC005



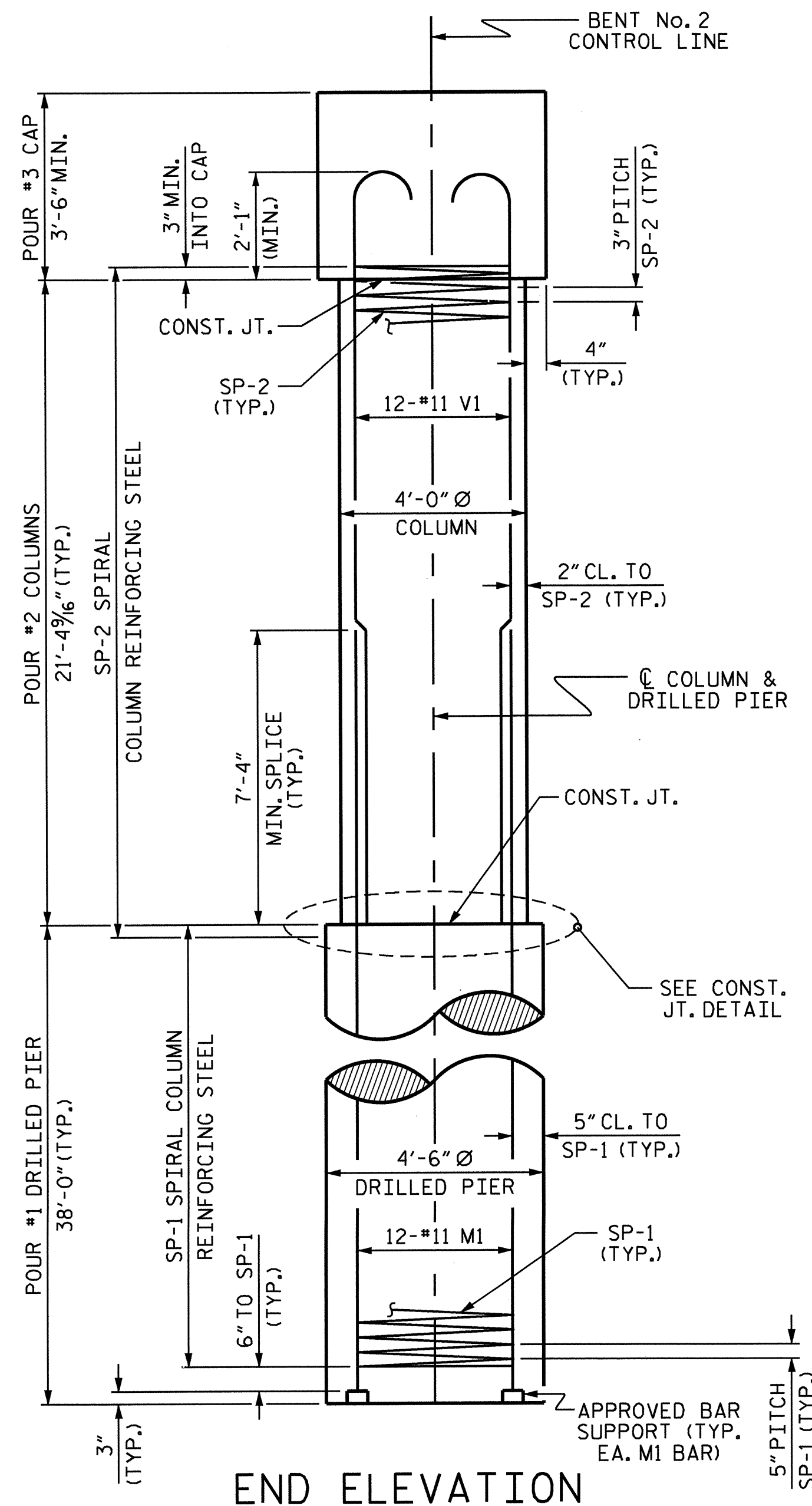
PLAN OF DRILLED PIERS & COLUMNS

REINFORCING STEEL, DIMENSIONS & DETAILS ARE TYPICAL FOR EACH DRILLED PIER

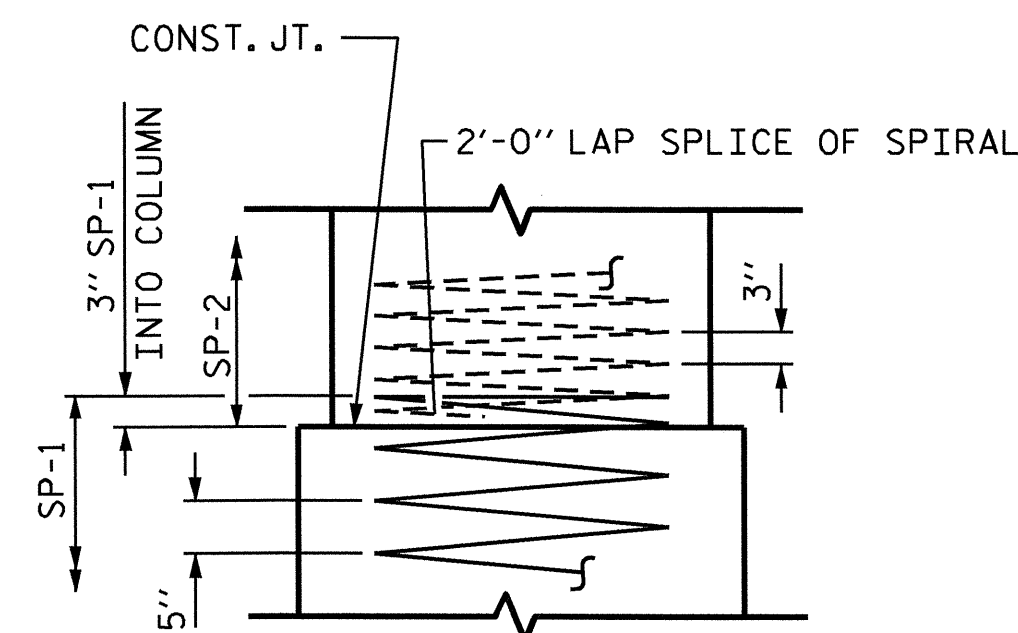


ALL BAR DIMENSIONS ARE OUT TO OUT

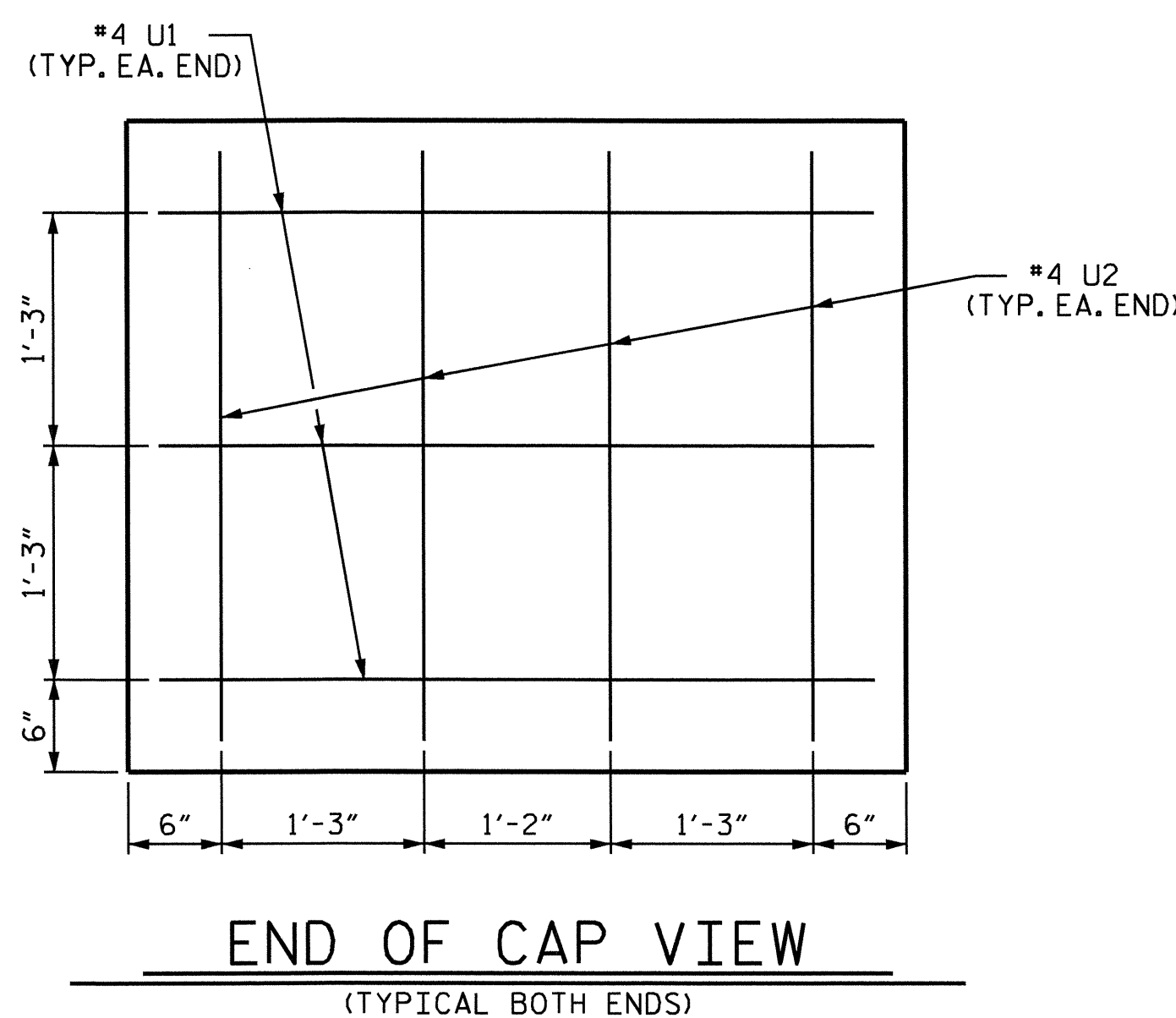
| BILL OF MATERIAL | | | | | |
|---|-----|------|------|----------|---------------|
| BENT No. 2 | | | | | |
| BAR | NO. | SIZE | TYPE | LENGTH | WEIGHT |
| B1 | 16 | #10 | 1 | 40'-4" | 2777 |
| B2 | 6 | #5 | STR | 37'-8" | 236 |
| D1 | 44 | #8 | STR | 2'-3" | 264 |
| M1 | 24 | #11 | STR | 48'-1" | 6131 |
| S1 | 57 | #5 | 2 | 11'-6" | 684 |
| U1 | 6 | #4 | 3 | 7'-2" | 29 |
| U2 | 8 | #4 | 3 | 6'-0" | 32 |
| V1 | 24 | #11 | 4 | 25'-1" | 3198 |
| REINFORCING STEEL | | | | | = 13,351 LBS. |
| SP-1 | 2 | * | 5 | 1045'-5" | 2181 |
| SP-2 | 2 | ** | 6 | 1013'-10 | 1354 |
| SPIRAL COLUMN REINFORCING STEEL | | | | | 3,535 LBS. |
| * THE SP-1 SPIRAL REINFORCING STEEL SHALL BE W31 OR D-31 COLD DRAWN WIRE OR #5 PLAIN OR DEFORMED BAR | | | | | |
| ** THE SP-2 SPIRAL REINFORCING STEEL SHALL BE W20 OR D-20 COLD DRAWN WIRE OR #4 PLAIN OR DEFORMED BAR | | | | | |
| CLASS A CONCRETE BREAKDOWN | | | | | |
| POUR #2 (COLUMNS) | | | | | 19.9 C.Y. |
| POUR #3 (CAP) | | | | | 23.2 C.Y. |
| TOTAL CLASS A CONCRETE | | | | | 43.1 C.Y. |
| DRILLED PIERS: | | | | | |
| DRILLED PIER CONCRETE | | | | | |
| POUR #1 (DRILLED PIERS) | | | | | 44.8 C.Y. |
| PERMANENT STEEL CASING FOR 4'-6" DRILLED PIER | | | | | 36 LIN. FT. |
| 4'-6" Ø DRILLED PIER | | | | | 76 LIN. FT. |
| CSL TUBES | | | | | 324 LIN. FT. |



END ELEVATION

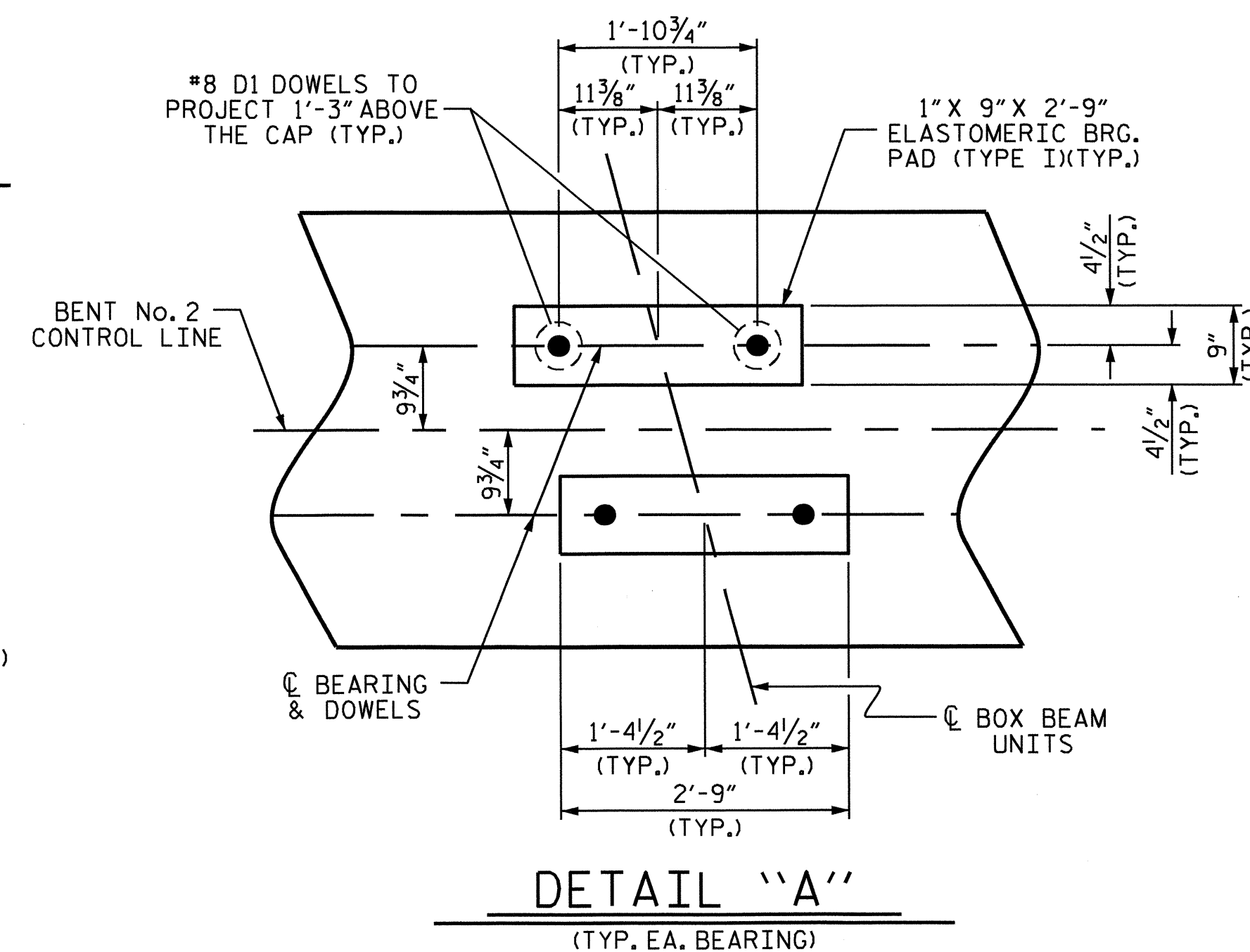


CONSTRUCTION JOINT DETAIL



END OF CAP VIEW

(TYPICAL BOTH ENDS)



DETAIL "A"

(TYP. EA. BEARING)

PROJECT NO. B-4514
 FRANKLIN COUNTY
 STATION: 26+67.50 -L-

SHEET 2 OF 2

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

SUBSTRUCTURE
 BENT No. 2

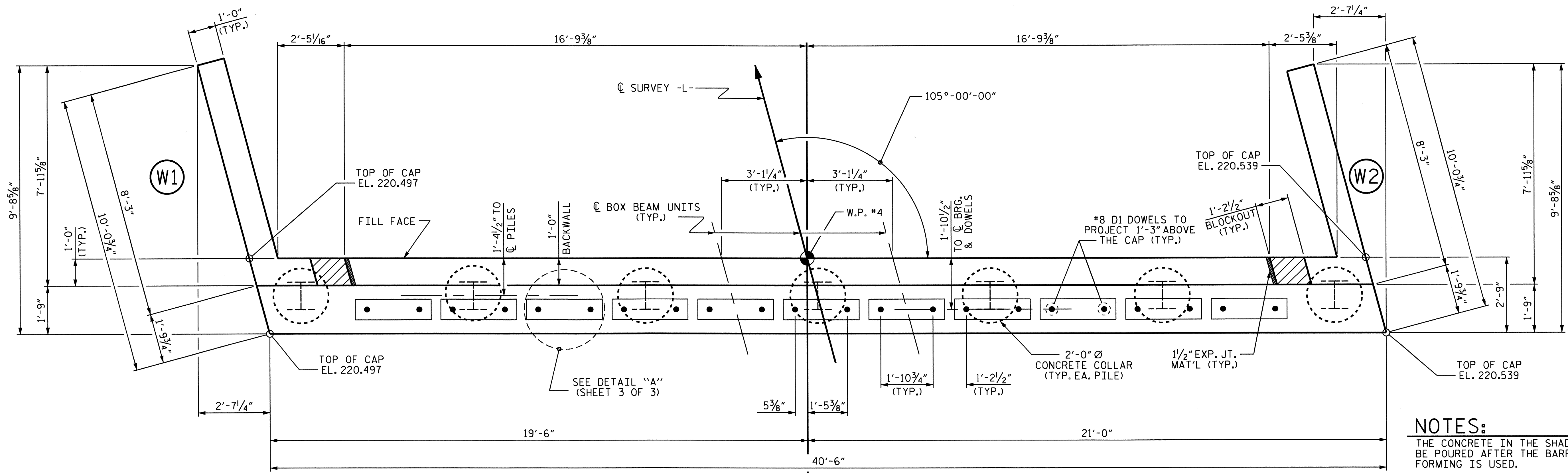


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 CHECKED BY: A. V. ROYAL DATE: 3/2011

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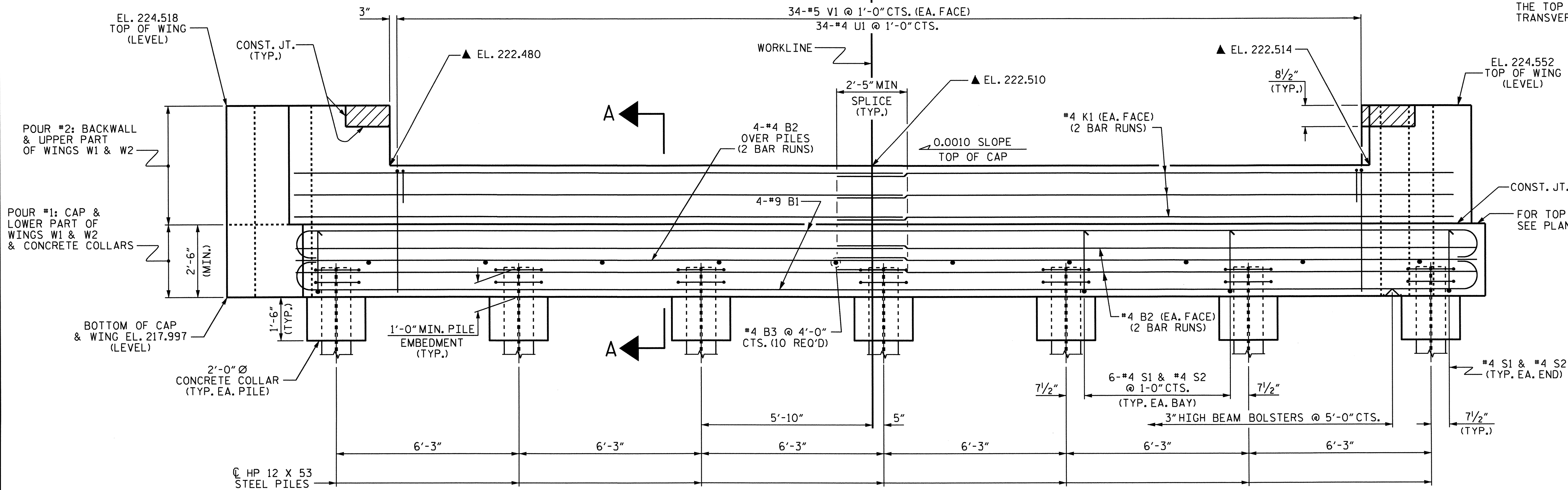
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| NO. | BY: | DATE: | NO. | BY: | DATE: | S-21 |
| 1 | | | 3 | | | TOTAL SHEETS |
| 2 | | | 4 | | | 27 |

NC005



PLAN

NOTES:
 THE CONCRETE IN THE SHADED AREA OF THE WING SHALL BE POURED AFTER THE BARRIER RAIL IS CAST IF SLIP FORMING IS USED.
 ▲ THIS ELEVATION TAKEN ON FILL FACE OF BACKWALL.
 STIRRUPS IN CAP MAY BE SHIFTED AS NECESSARY TO CLEAR DOWELS.
 THE TOP SURFACE OF THE END BENT CAP IS SLOPED TRANSVERSELY.



ELEVATION

FOR SECTION A-A SEE SHEET 3 OF 3

PROJECT NO. B-4514
FRANKLIN COUNTY
 STATION: 26+67.50 -L-
 SHEET 1 OF 3

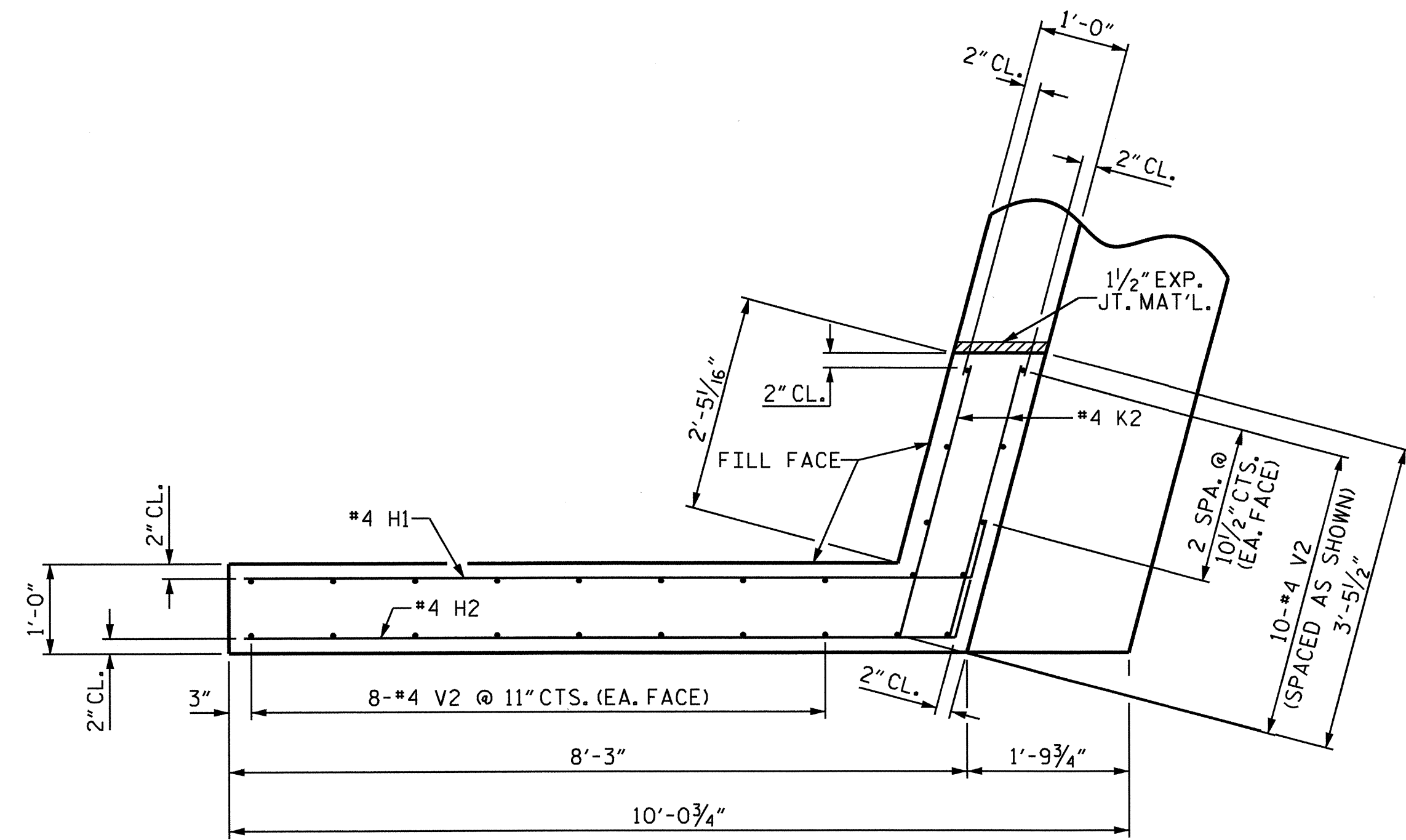
STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH
 SUBSTRUCTURE
 END BENT No. 2

| REVISIONS | | | | | | SHEET NO. | |
|-----------|-----|-------|-----|-----|-------|--------------|----|
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| 1 | | | 3 | | | TOTAL SHEETS | 27 |
| 2 | | | 4 | | | | |

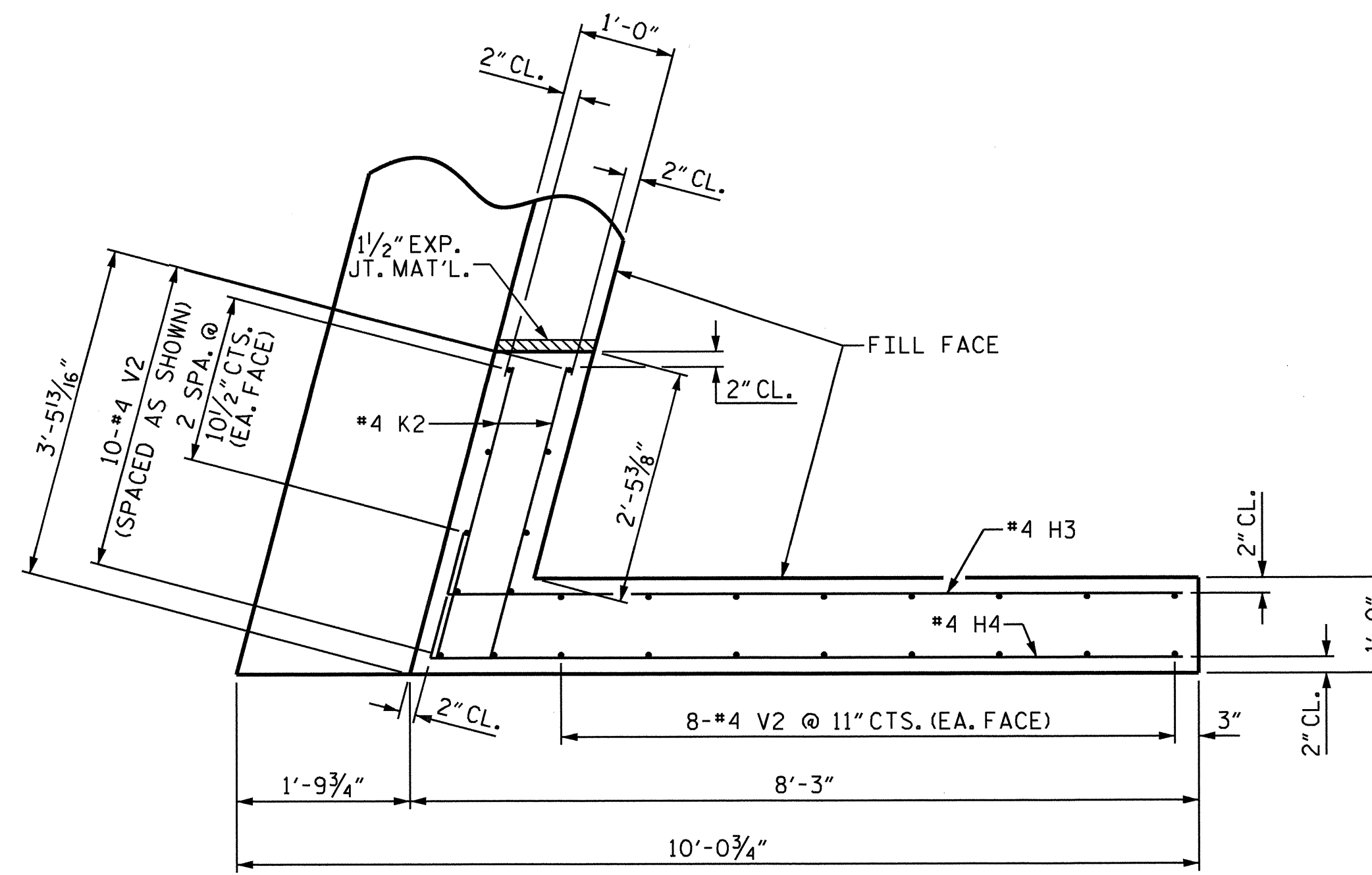
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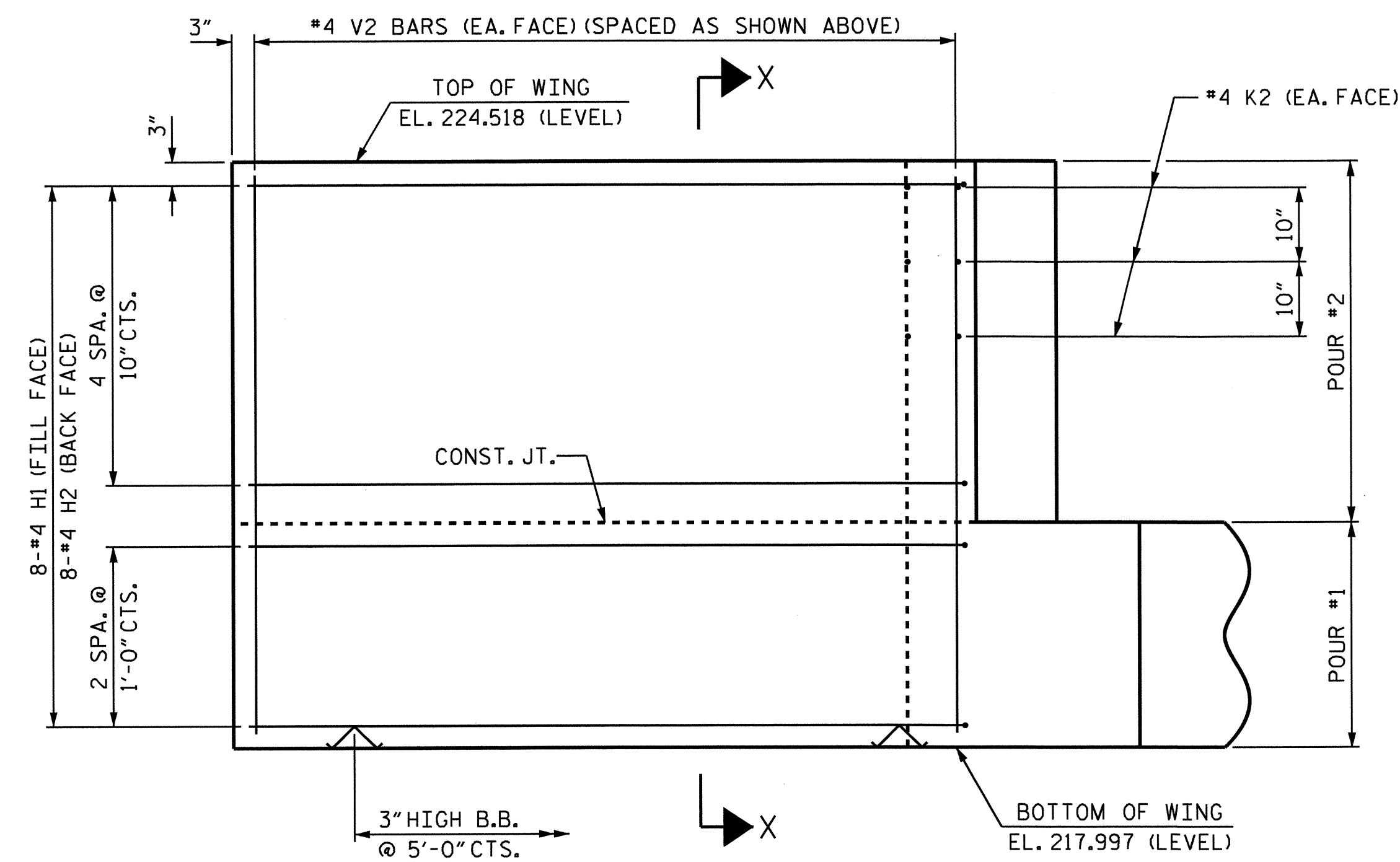
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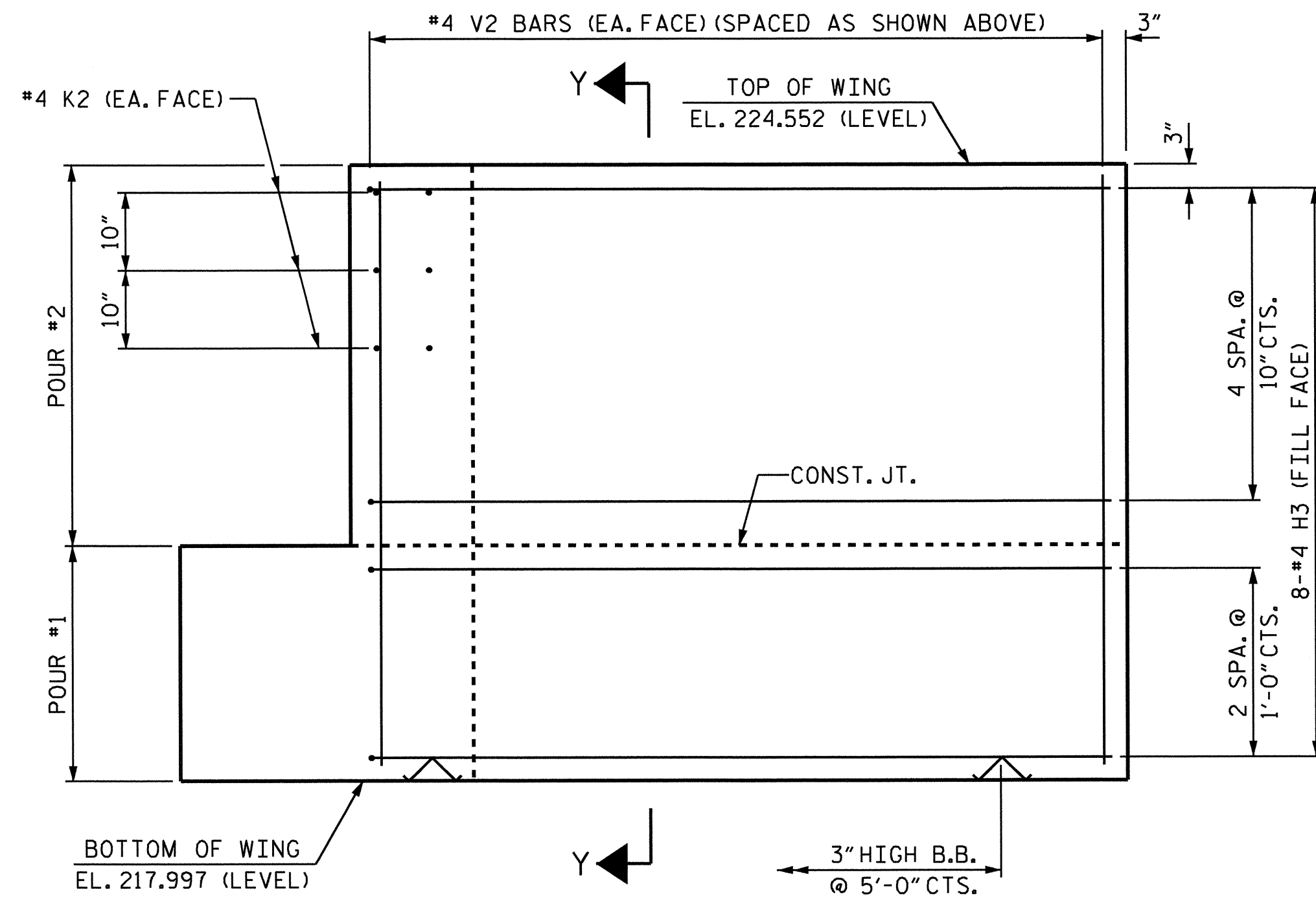
PLAN OF WING (W1)



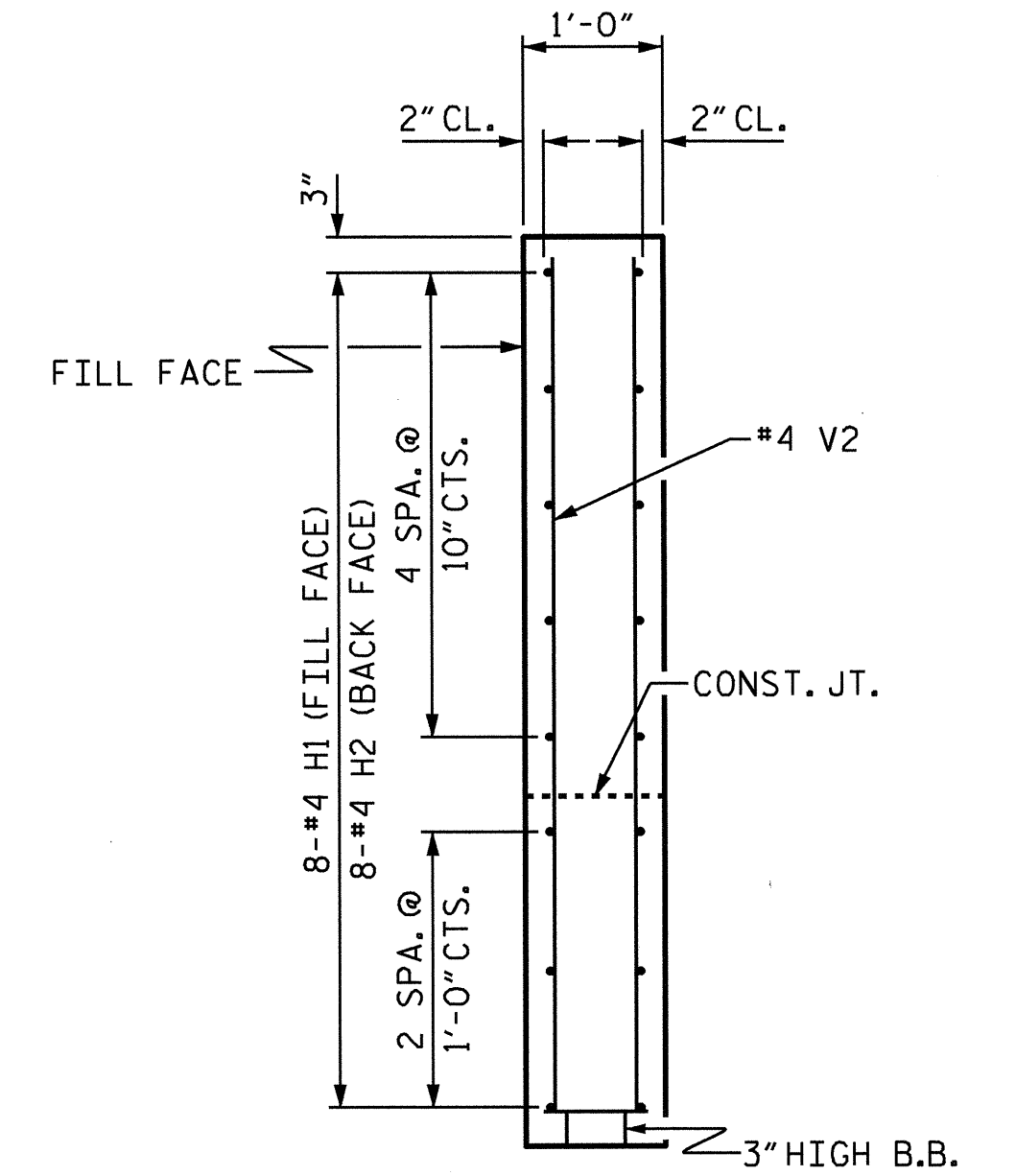
PLAN OF WING (W2)



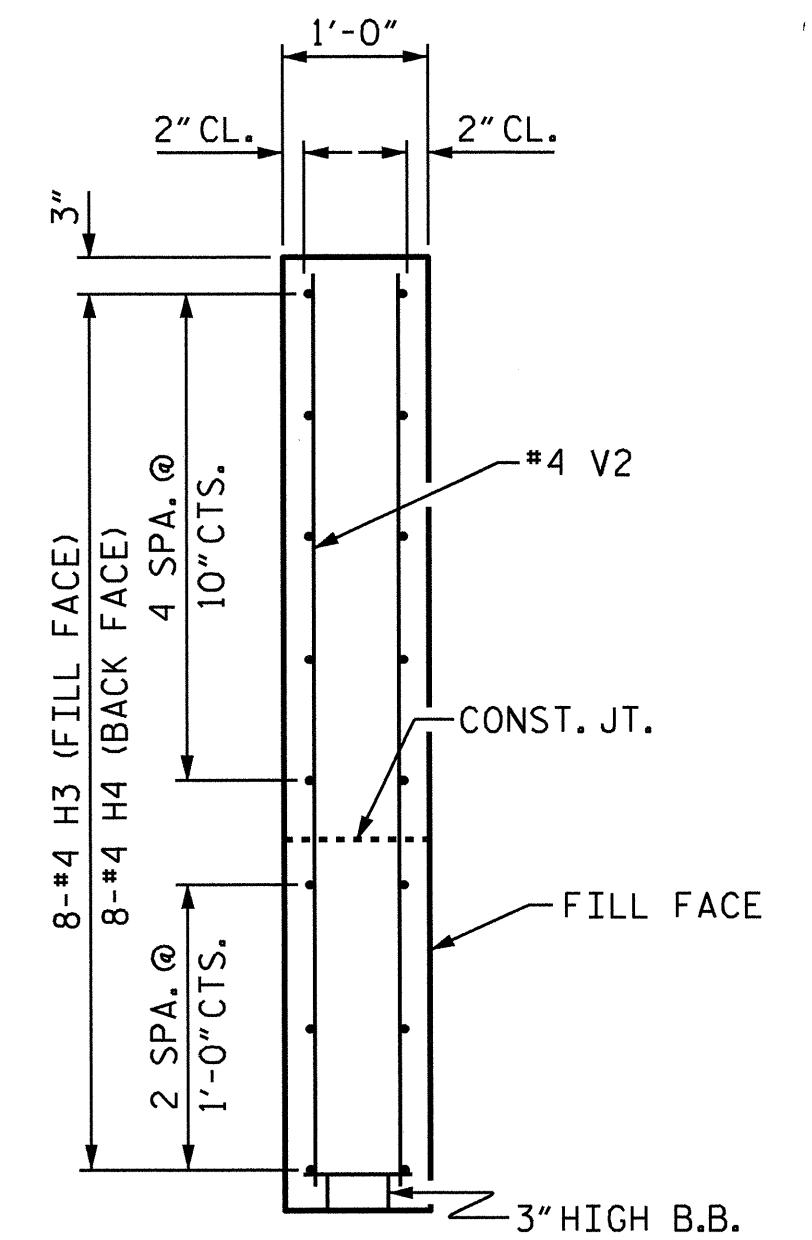
ELEVATION OF WING (W1)



ELEVATION OF WING (W2)



SECTION X-X



SECTION Y-Y

PROJECT NO. B-4514
FRANKLIN COUNTY
 STATION: 26+67.50 -L-

SHEET 2 OF 3

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

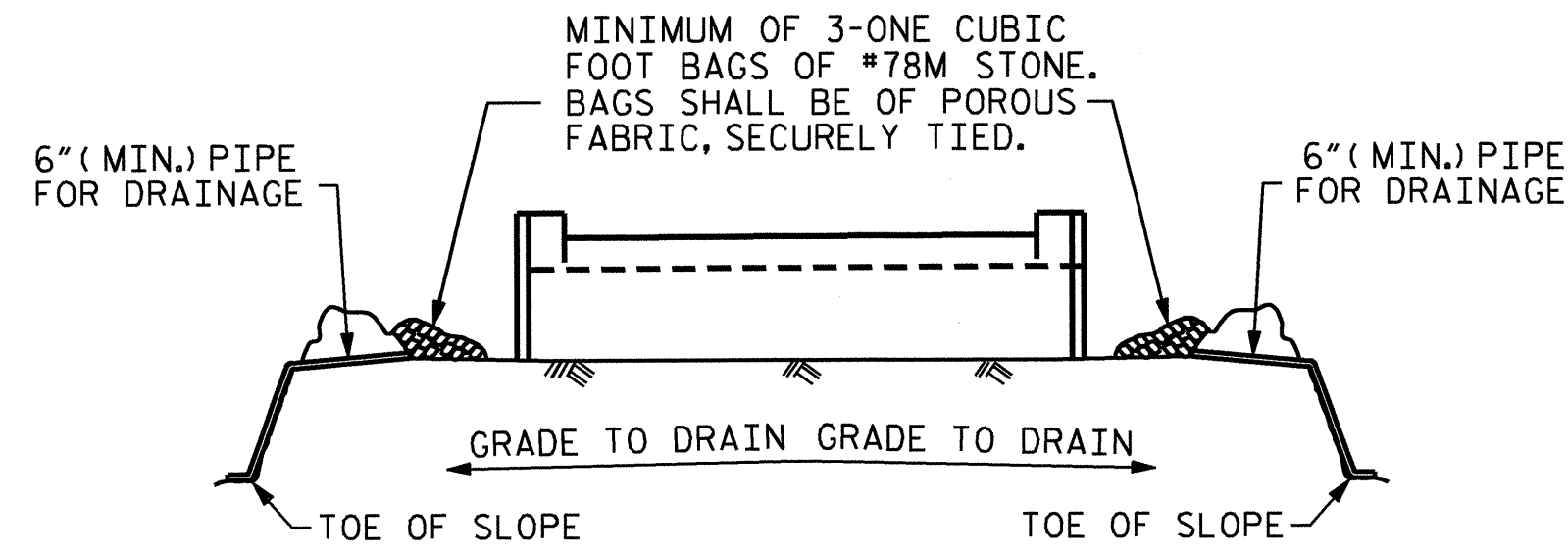
SUBSTRUCTURE
 END BENT No. 2



DRAWN BY: M.K. TOM DATE: 2/2011
 CHECKED BY: D.G. ELY DATE: 3/2011

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| REVISIONS | | | | | | SHEET NO. | |
|-----------|-----|-------|-----|-----|-------|--------------|--|
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| 1 | | | 3 | | | TOTAL SHEETS | |
| 2 | | | 4 | | | 27 | |

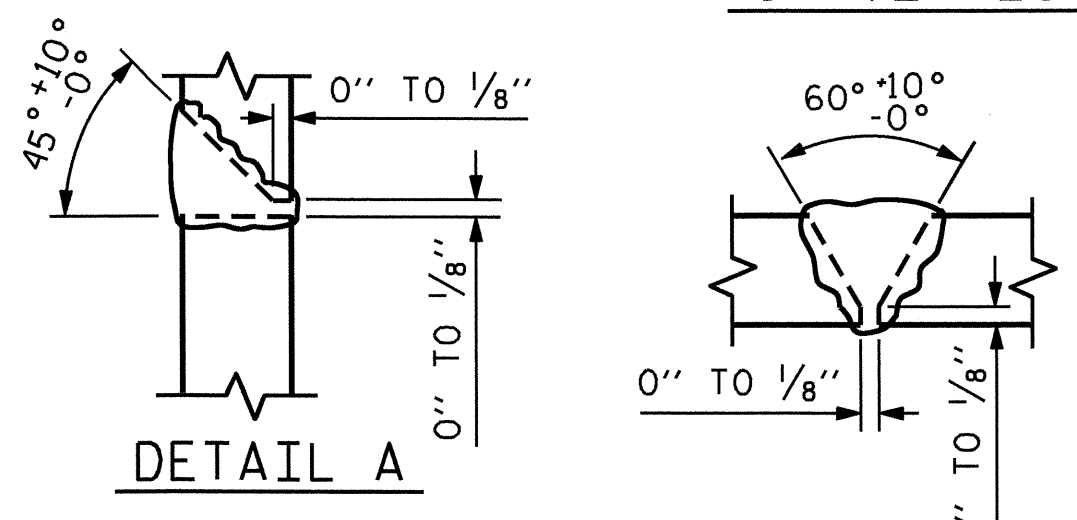
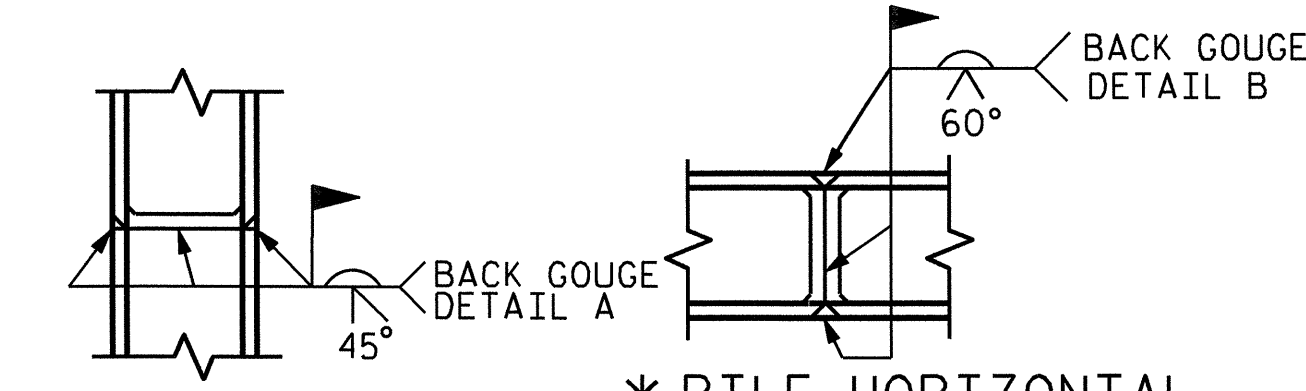


BAGGED STONE AND PIPE SHALL BE PLACED IMMEDIATELY AFTER COMPLETION OF END BENT EXCAVATION. PIPE MAY BE EITHER CONCRETE, CORRUGATED STEEL, CORRUGATED ALUMINUM ALLOY, OR CORRUGATED PLASTIC. PERFORATED PIPE WILL NOT BE ALLOWED.

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

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

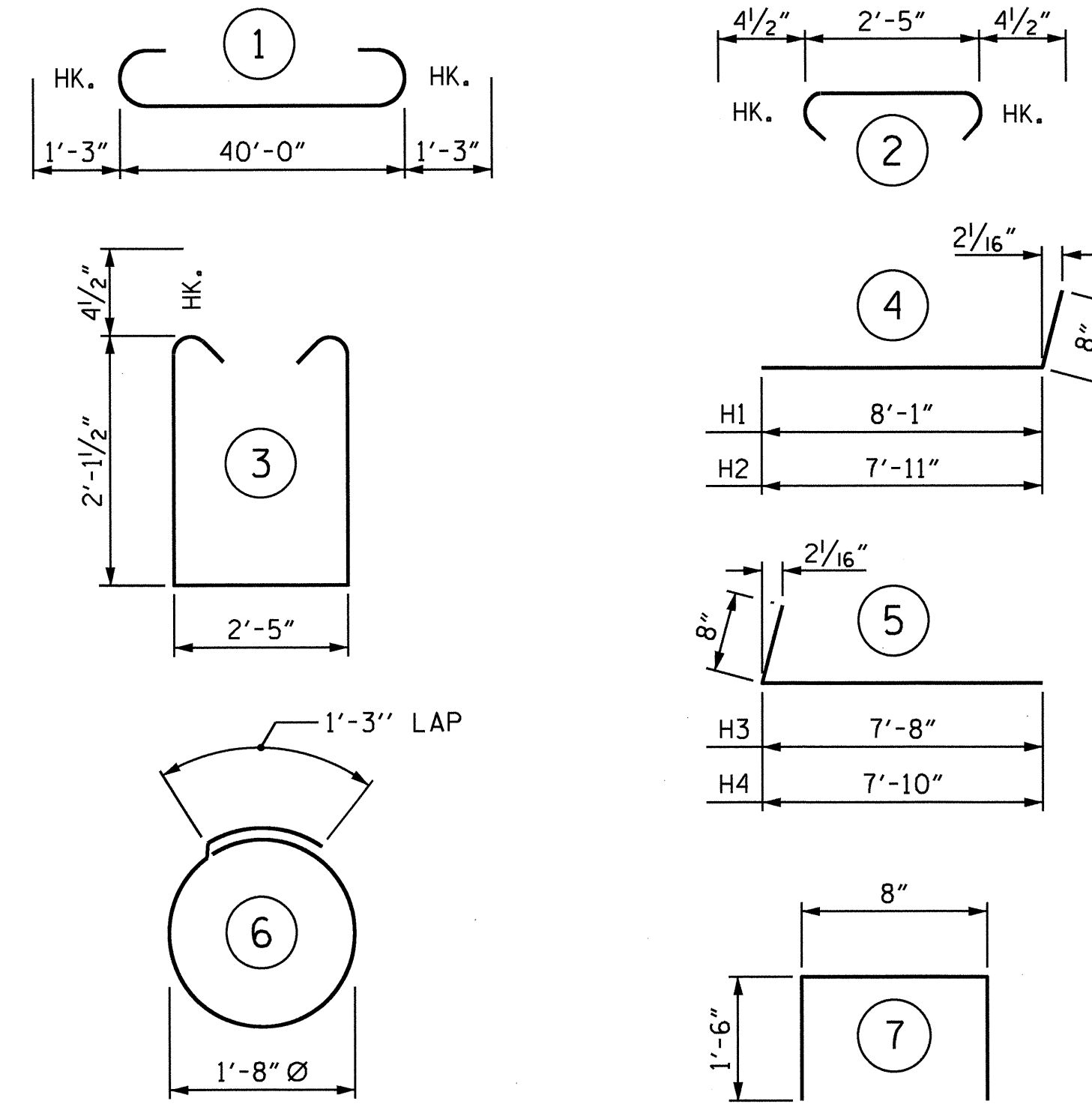
TEMPORARY DRAINAGE AT END BENT



* POSITION OF PILE DURING WELDING.

PILE SPLICE DETAILS

BAR TYPES



ALL BAR DIMENSIONS ARE OUT TO OUT.

BILL OF MATERIAL

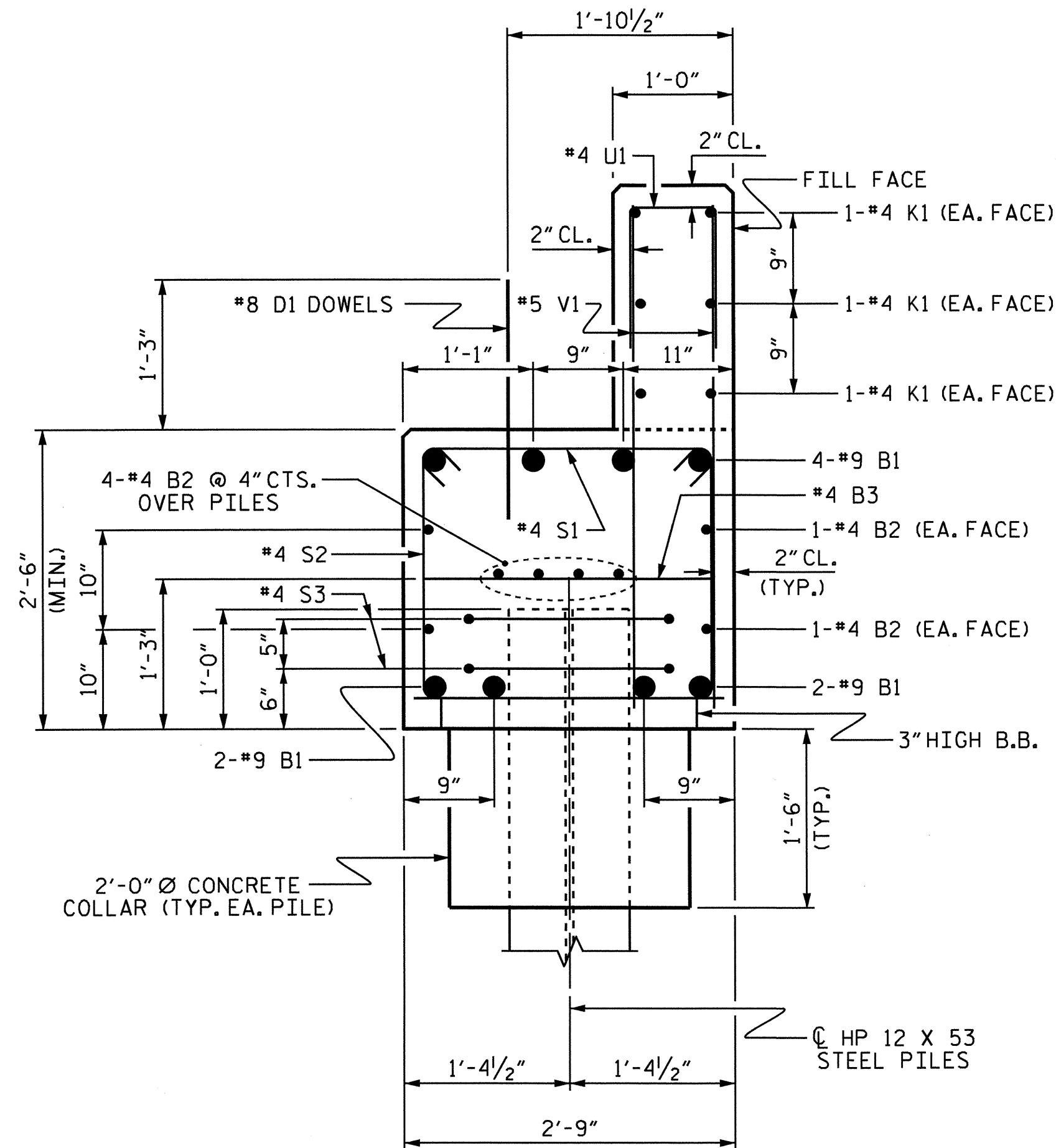
END BENT No. 2

| BAR | NO. | SIZE | TYPE | LENGTH | WEIGHT |
|-----|-----|------|------|--------|--------|
| B1 | 8 | #9 | 1 | 42'-6" | 1156 |
| B2 | 16 | #4 | STR | 21'-4" | 228 |
| B3 | 10 | #4 | STR | 2'-5" | 16 |
| D1 | 22 | #8 | STR | 2'-3" | 132 |
| H1 | 8 | #4 | 4 | 8'-9" | 47 |
| H2 | 8 | #4 | 4 | 8'-7" | 46 |
| H3 | 8 | #4 | 5 | 8'-4" | 45 |
| H4 | 8 | #4 | 5 | 8'-6" | 45 |
| K1 | 12 | #4 | STR | 21'-4" | 171 |
| K2 | 12 | #4 | STR | 3'-1" | 25 |
| S1 | 38 | #4 | 2 | 3'-2" | 80 |
| S2 | 38 | #4 | 3 | 7'-5" | 188 |
| S3 | 14 | #4 | 6 | 6'-6" | 61 |
| U1 | 34 | #4 | 7 | 3'-8" | 83 |
| V1 | 68 | #5 | STR | 4'-1" | 290 |
| V2 | 52 | #4 | STR | 6'-2" | 214 |

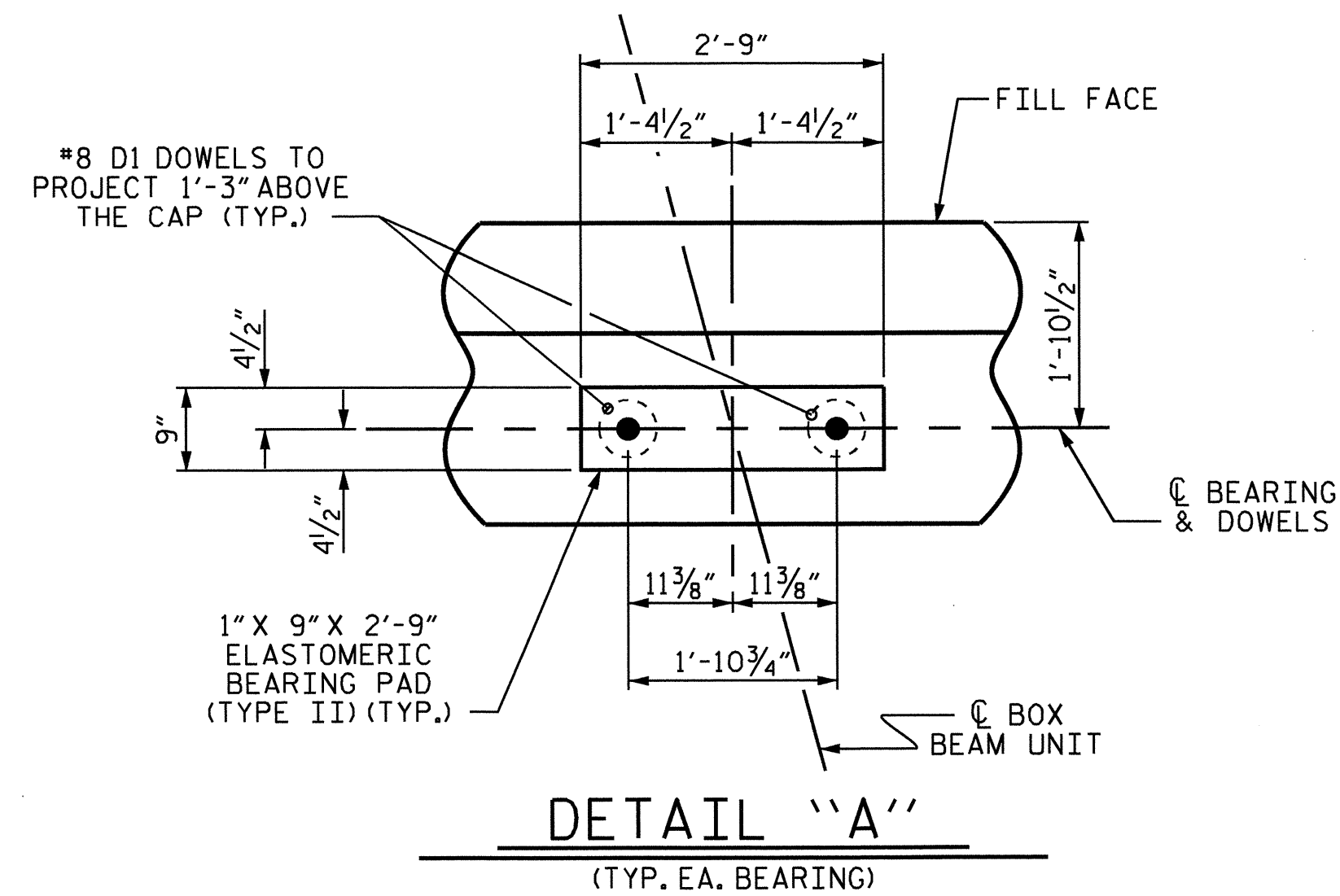
REINFORCING STEEL = 2827 LBS

CLASS A CONCRETE BREAKDOWN

| | |
|--|------------------|
| POUR #1: CAP, LOWER WINGS, & CONCRETE COLLAR | 12.9 C.Y. |
| POUR #2: UPPER WINGS & BACKWALL | 5.7 C.Y. |
| TOTAL CLASS A CONCRETE | 18.6 C.Y. |
| HP 12 X 53 STEEL PILES | |
| No. = 7 | 315 LIN. FT. |



SECTION A-A



PROJECT NO. B-4514

FRANKLIN COUNTY

STATION: 26+67.50 -L-

SHEET 3 OF 3

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUBSTRUCTURE
END BENT No. 2



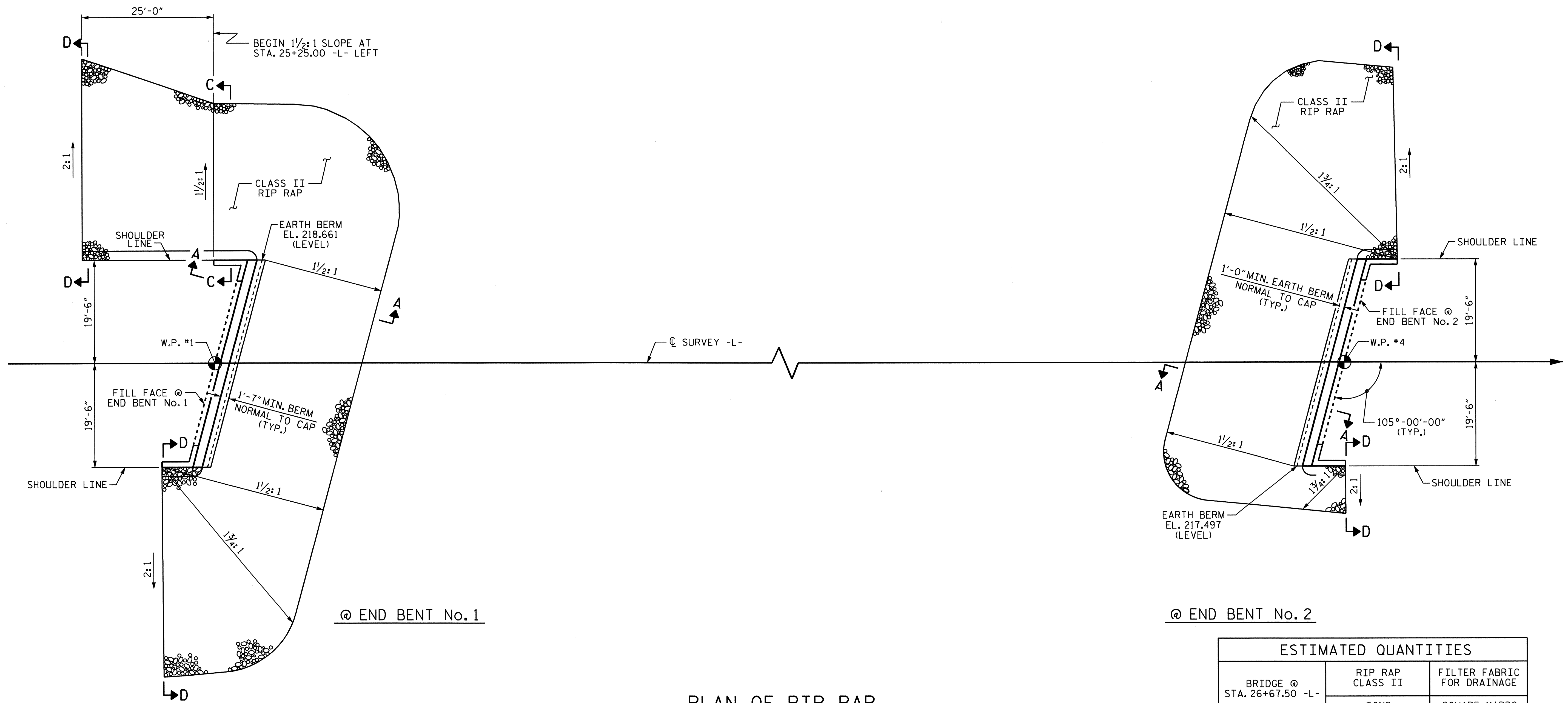
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| NO. | BY: | DATE: | NO. | BY: | DATE: | S-24 |
| 1 | | | 3 | | | TOTAL SHEETS |
| 2 | | | 4 | | | 27 |

DRAWN BY: M.K. TOM DATE: 2/2011

CHECKED BY: D.G. ELY DATE: 3/2011

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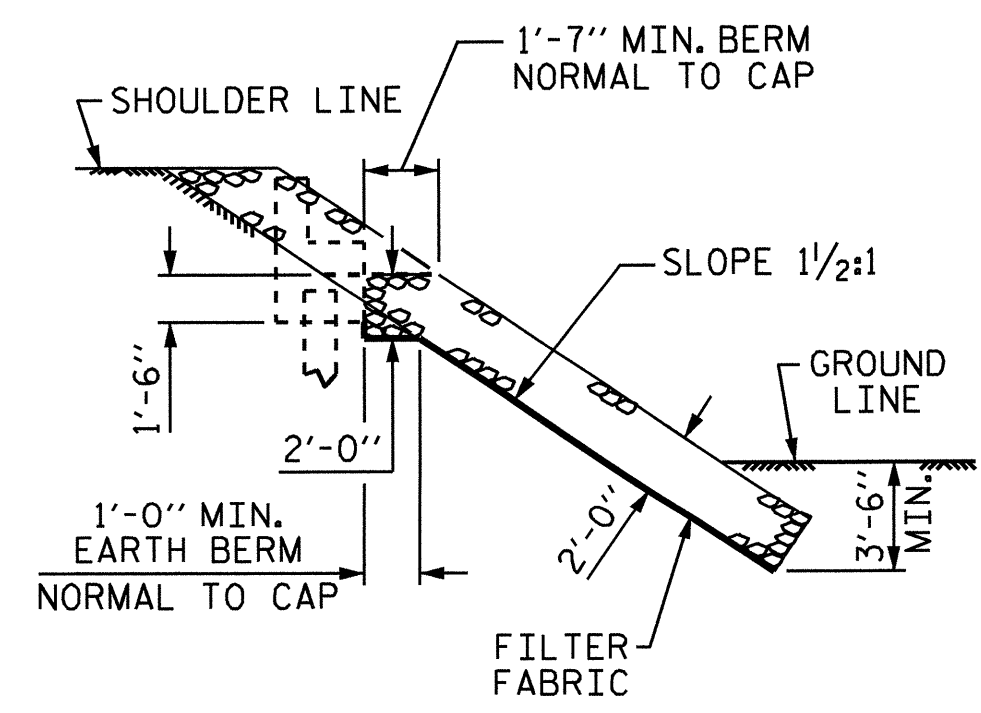
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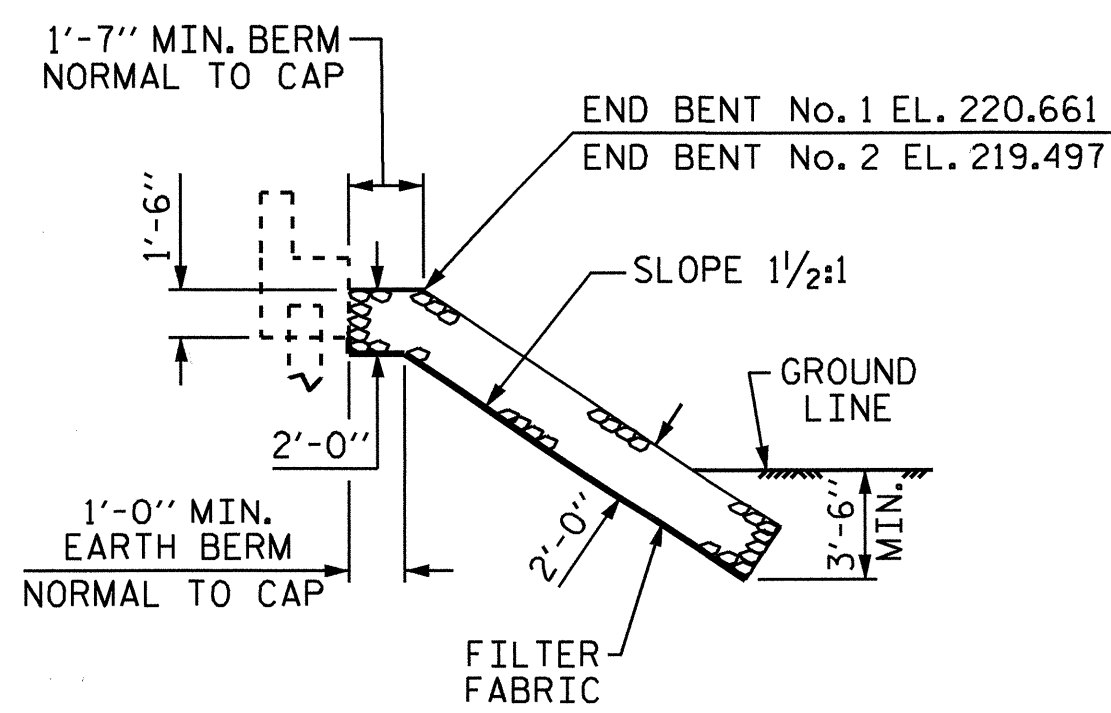
PLAN OF RIP RAP

@ END BENT No. 2

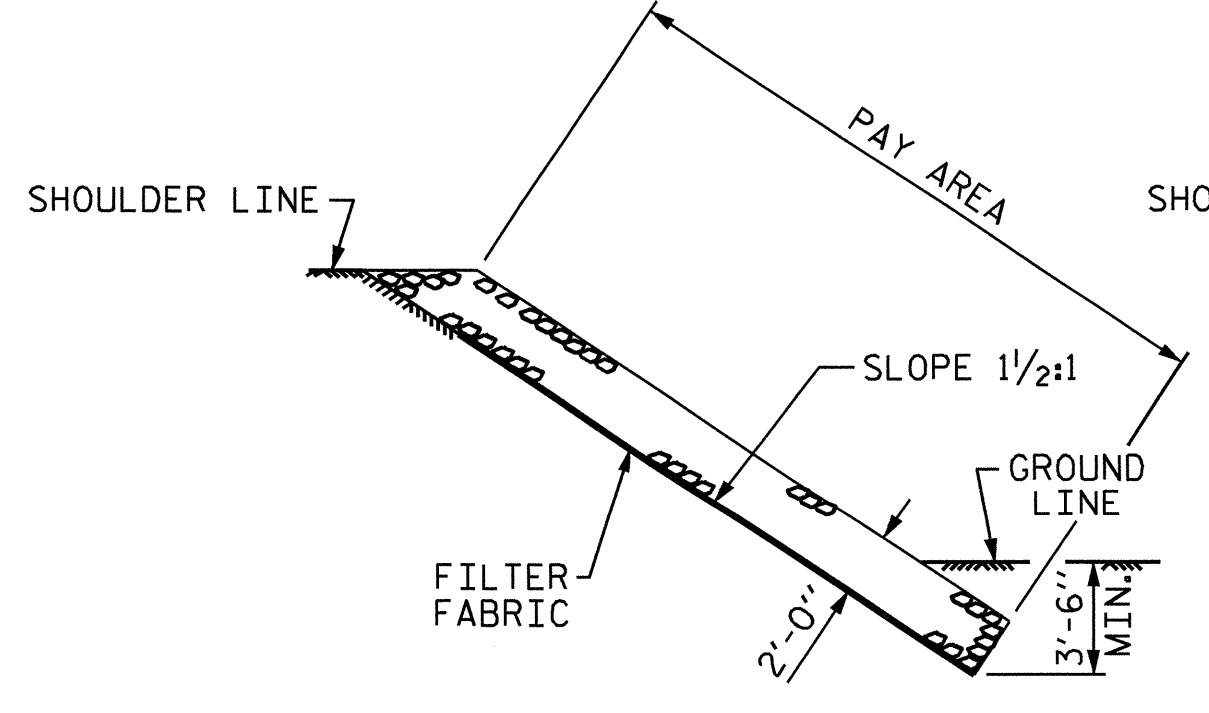
| ESTIMATED QUANTITIES | | |
|----------------------------|------------------|----------------------------|
| BRIDGE @ STA. 26+67.50 -L- | RIP RAP CLASS II | FILTER FABRIC FOR DRAINAGE |
| | TONS | SQUARE YARDS |
| END BENT No. 1 | 460 | 515 |
| END BENT No. 2 | 240 | 270 |



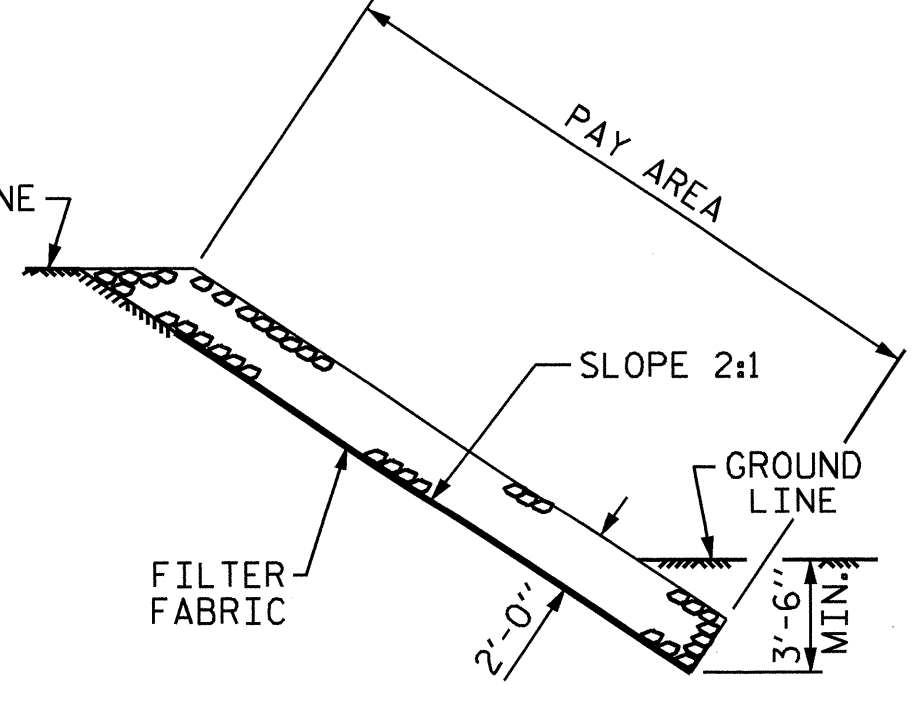
SECTION A-A



SECTION C-C
BERM RIP RAPPED



SECTION C-C



SECTION D-D

PROJECT NO. B-4514
FRANKLIN COUNTY
 STATION: 26+67.50 -L-

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

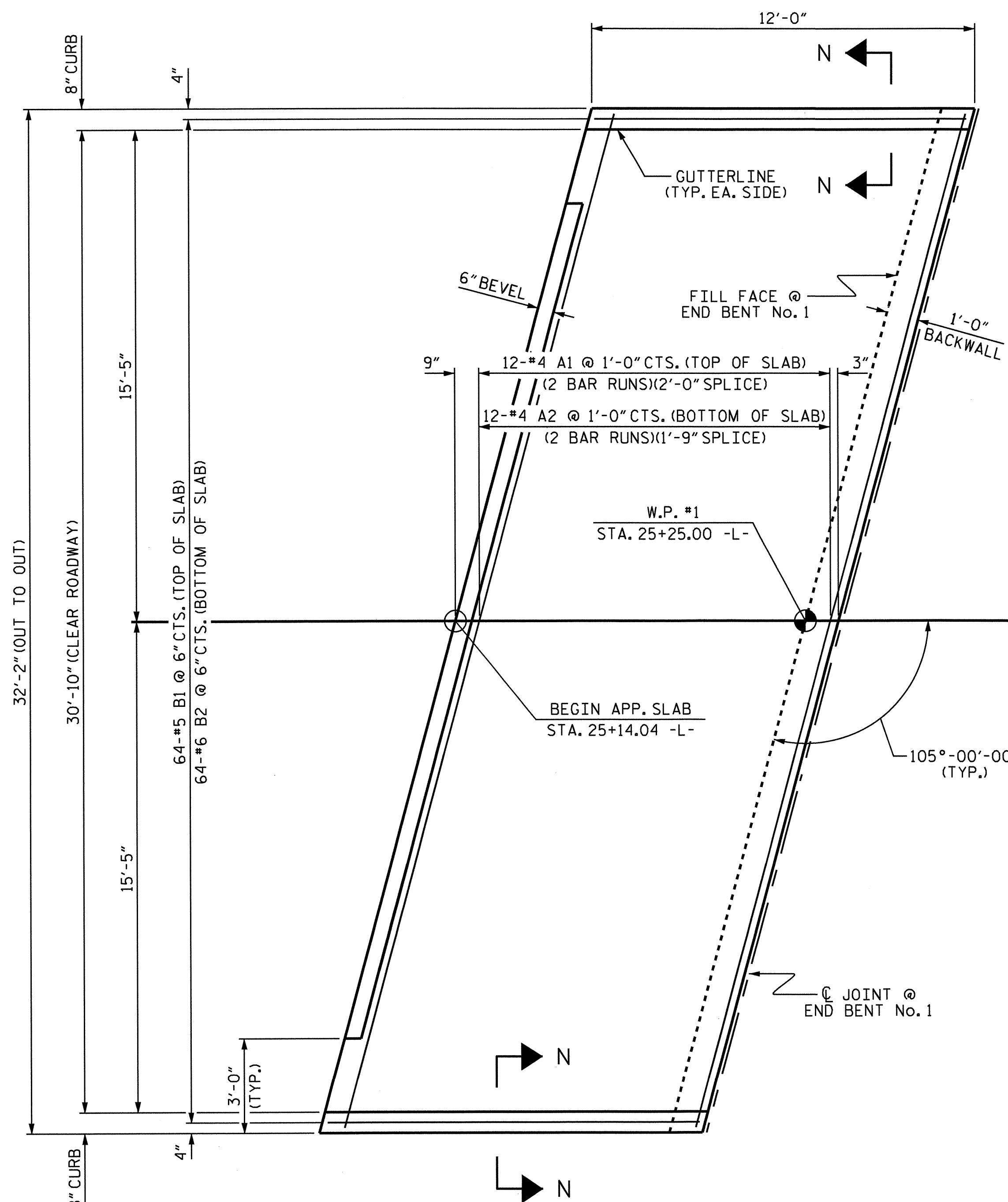
— RIP RAP DETAILS —



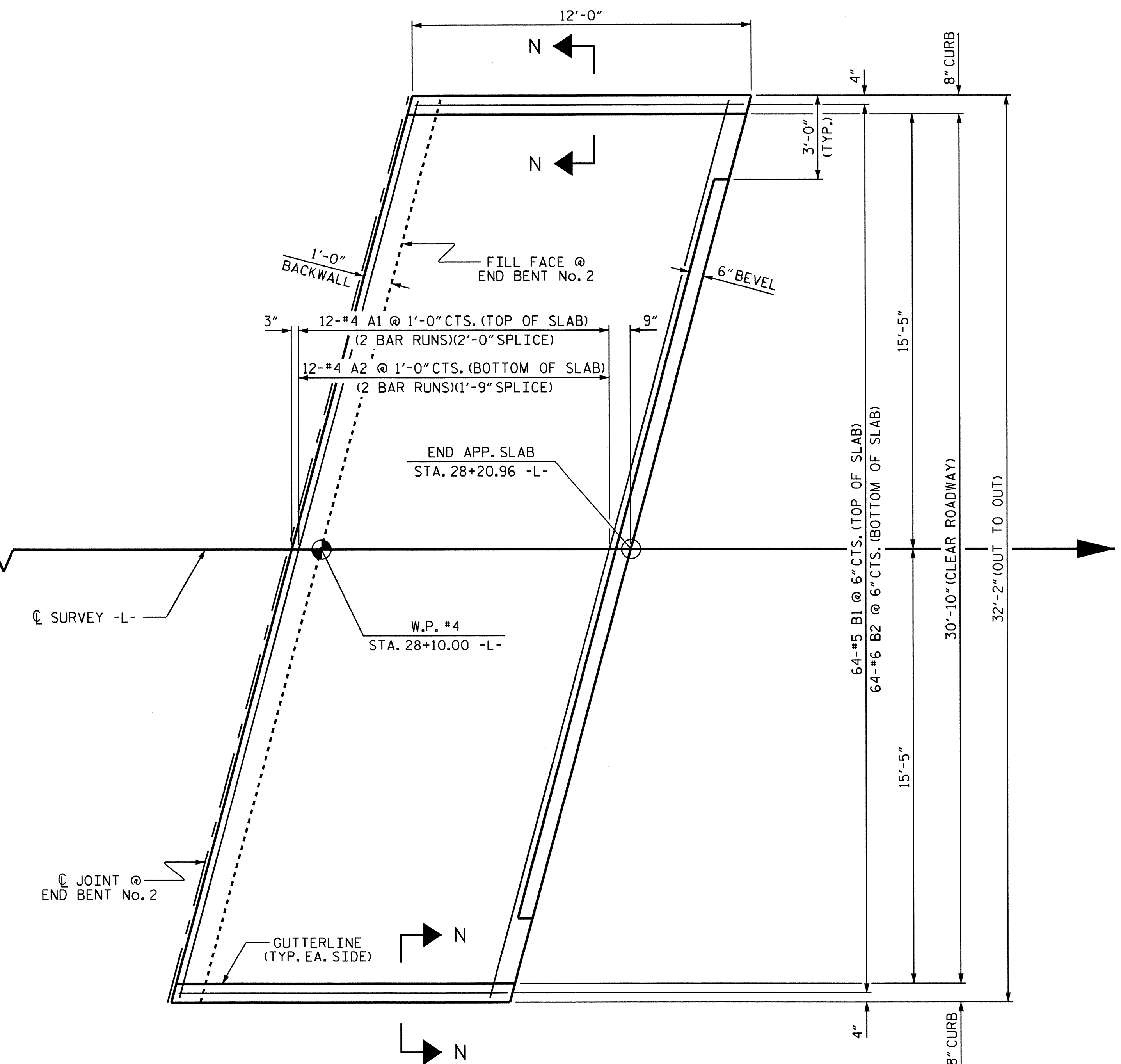
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|-----------|-----|-------|-----|-----|-------|-------------------|
| NO. | BY: | DATE: | NO. | BY: | DATE: | |
| 1 | | | 3 | | | TOTAL SHEETS 27 |
| 2 | | | 4 | | | |

DRAWN BY: M. K. TOM DATE: 2/2011
 CHECKED BY: A. V. ROYAL DATE: 3/2011

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AT END BENT No. 1



AT END BENT No. 2

PLAN OF APPROACH SLABS

FOR SECTION N-N, SEE SHEET 2 OF 2

PROJECT NO. B-4514
FRANKLIN COUNTY
 STATION: 26+67.50 -L-

SHEET 1 OF 2

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH
 BRIDGE APPROACH SLAB
 FOR PRESTRESSED
 CONCRETE BOX BEAM
 (SUB-REGIONAL TIER)



DRAWN BY: M. K. TOM DATE: 2/2011
 CHECKED BY: A. V. ROYAL DATE: 3/2011

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| REVISIONS | | | | | | SHEET NO. |
|-----------|-----|-------|-----|-----|-------|--------------|
| NO. | BY: | DATE: | NO. | BY: | DATE: | S-26 |
| 1 | | | 3 | | | TOTAL SHEETS |
| 2 | | | 4 | | | 27 |

NOTES

FOR BRIDGE APPROACH FILL INCLUDING FABRIC, 4" Ø DRAINAGE PIPE, AND #78M STONE BACKFILL, SEE ROADWAY PLANS.

FABRIC SHALL BE TYPE 1 ENGINEERING FABRIC IN ACCORDANCE WITH THE STANDARD SPECIFICATIONS SECTION 1056.

*78M STONE BACKFILL (CLASS V SELECT MATERIAL) SHALL BE IN ACCORDANCE WITH STANDARD SPECIFICATIONS SECTION 1016.

*78M STONE BACKFILL IS TO BE CONTINUOUS ALONG FILL FACE OF BACKWALL FROM OUTSIDE EDGE TO OUTSIDE EDGE OF APPROACH SLAB.

FOR THE 4" Ø DRAINAGE PIPE OUTLET(S), SEE ROADWAY STANDARD DRAWINGS.

AREA BETWEEN THE WINGWALL AND APPROACH SLAB SHALL BE GRADED TO DRAIN THE WATER AWAY FROM THE FILL FACE OF THE BRIDGE AND SHALL BE PAVED. SEE ROADWAY PLANS.

FOR JOINT DETAILS, SEE "PRESTRESSED CONCRETE BOX BEAM UNIT" SHEETS.

APPROACH SLAB GROOVING IS NOT REQUIRED.

BILL OF MATERIAL

| APPROACH SLAB AT EB #1 | | | | | |
|------------------------|-----|------|------|--------|--------|
| BAR | NO. | SIZE | TYPE | LENGTH | WEIGHT |
| *A1 | 24 | #4 | STR | 17'-6" | 281 |
| A2 | 24 | #4 | STR | 17'-5" | 279 |
| *B1 | 64 | #5 | STR | 11'-3" | 751 |
| B2 | 64 | #6 | STR | 11'-7" | 1113 |

| | | |
|---------------------------------|---|----------|
| REINFORCING STEEL | = | 1392 LBS |
| *EPOXY COATED REINFORCING STEEL | = | 1032 LBS |

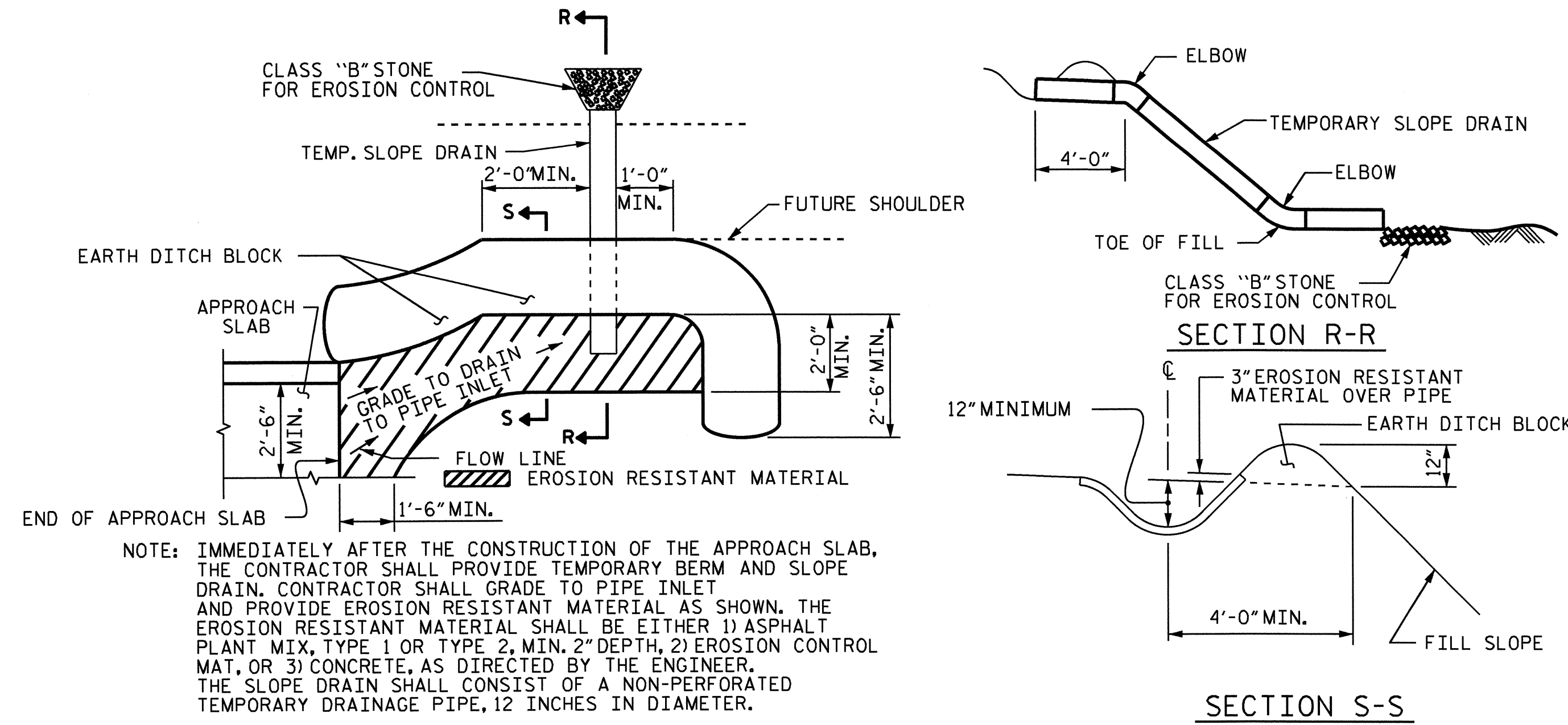
CLASS AA CONCRETE 17.1 C. Y.

BILL OF MATERIAL

| APPROACH SLAB AT EB #2 | | | | | |
|------------------------|-----|------|------|--------|--------|
| BAR | NO. | SIZE | TYPE | LENGTH | WEIGHT |
| *A1 | 24 | #4 | STR | 17'-6" | 281 |
| A2 | 24 | #4 | STR | 17'-5" | 279 |
| *B1 | 64 | #5 | STR | 11'-3" | 751 |
| B2 | 64 | #6 | STR | 11'-7" | 1113 |

| | | |
|---------------------------------|---|----------|
| REINFORCING STEEL | = | 1392 LBS |
| *EPOXY COATED REINFORCING STEEL | = | 1032 LBS |

CLASS AA CONCRETE 17.1 C. Y.

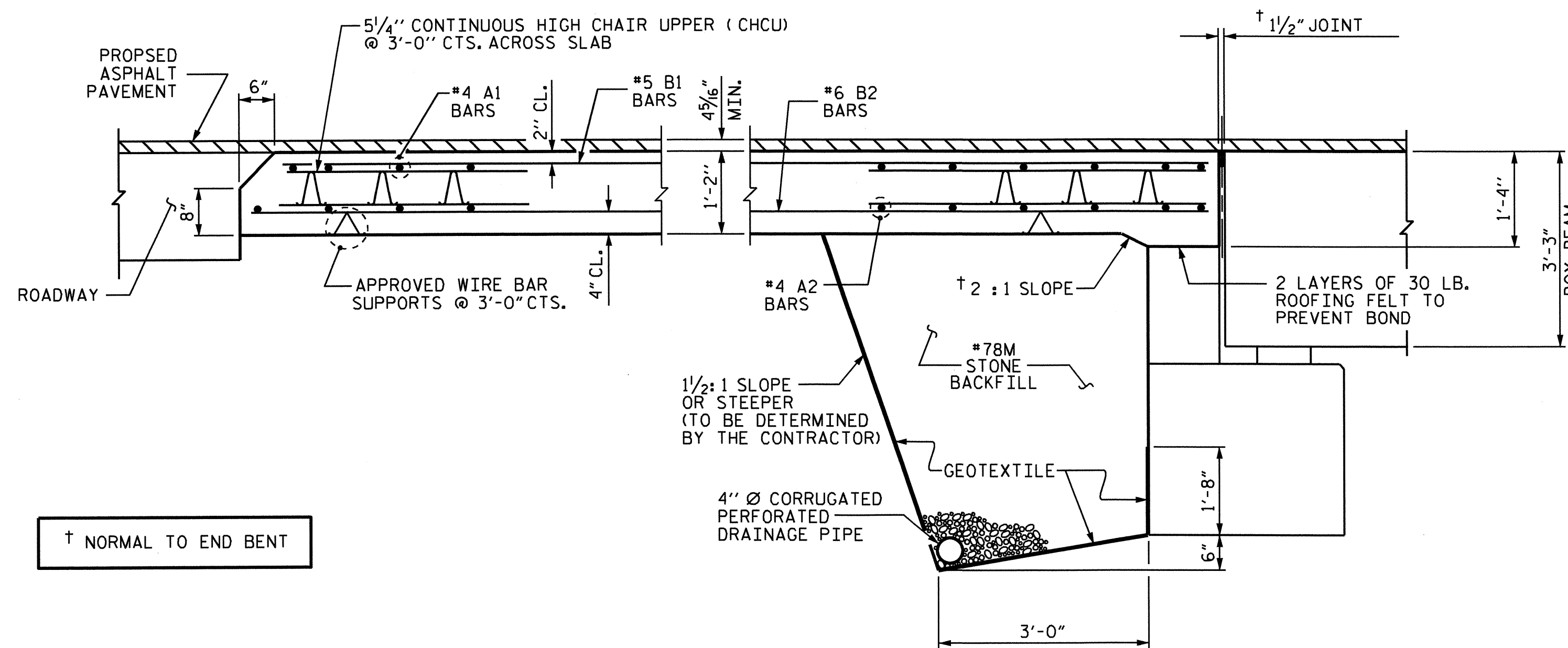


PLAN VIEW

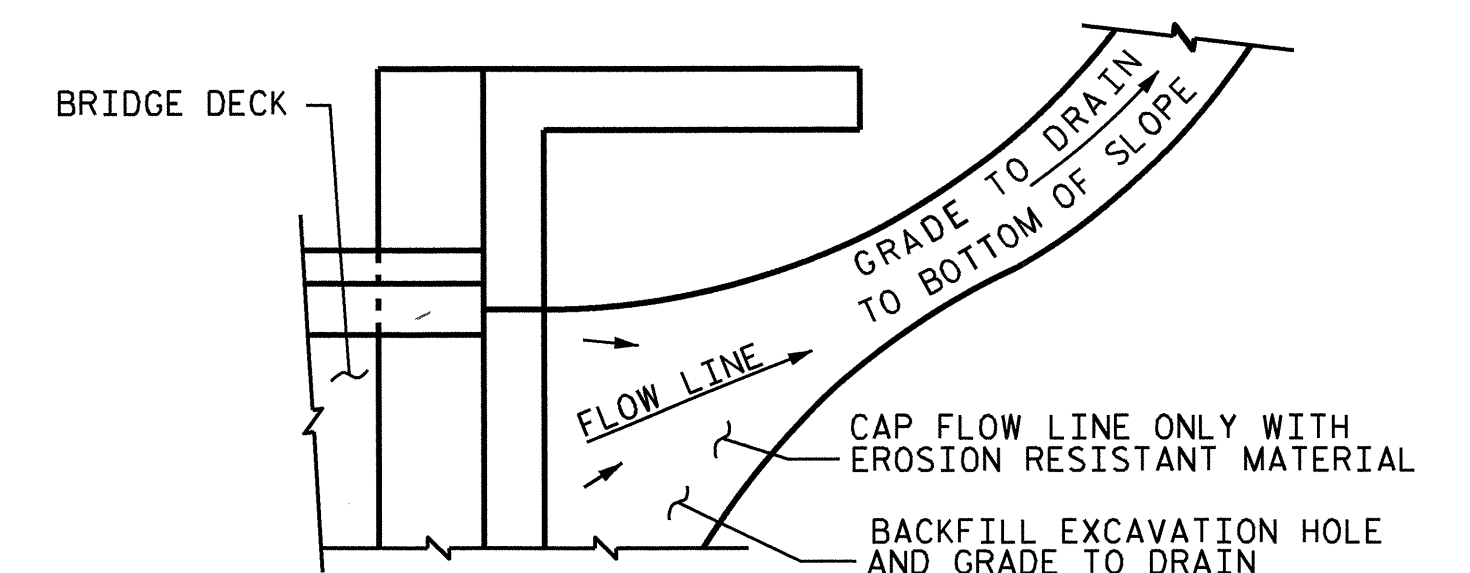
SECTION S-S

TEMPORARY BERM AND SLOPE DRAIN DETAILS

(TO BE USED WHEN SHOULDER BERM GUTTER IS REQUIRED)

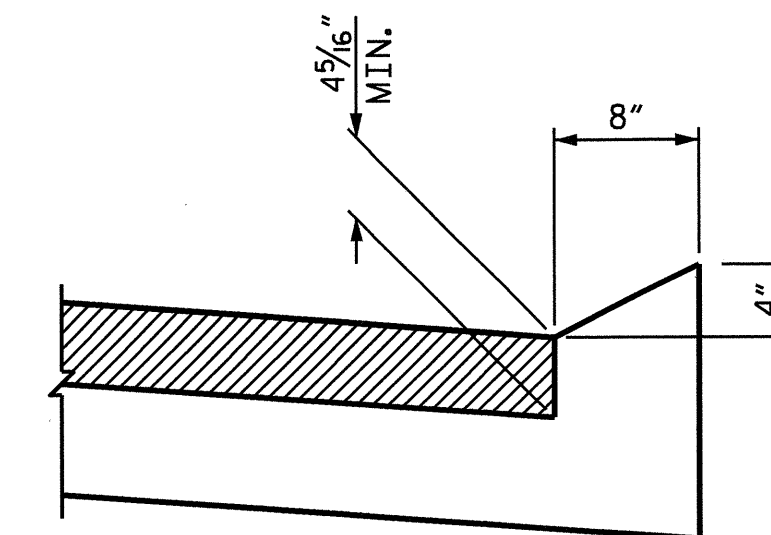


SECTION THRU SLAB

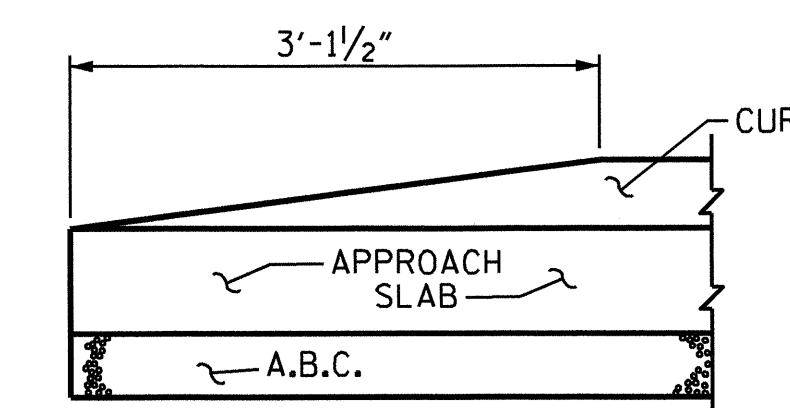


NOTE: IF THE APPROACH SLAB IS NOT CONSTRUCTED IMMEDIATELY AFTER THE BACKFILLING OF THE END BENT EXCAVATION, GRADE TO DRAIN TO THE BOTTOM OF THE SLOPE AND PROVIDE EROSION RESISTANT MATERIAL, SUCH AS FIBERGLASS ROVING OR AS DIRECTED BY THE ENGINEER TO PREVENT SOIL EROSION AND TO PROTECT THE AREA ADJACENT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

TEMPORARY DRAINAGE DETAIL



SECTION N-N



END OF CURB WITHOUT SHOULDER BERM GUTTER

CURB DETAILS

PROJECT NO. B-4514
 FRANKLIN COUNTY
 STATION: 26+67.50 -L-

SHEET 2 OF 2

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH
 BRIDGE APPROACH SLAB
 FOR PRESTRESSED
 CONCRETE BOX BEAM
 (SUB-REGIONAL TIER)



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

DRAWN BY: M. K. TOM DATE: 2/2011
 CHECKED BY: A. V. ROYAL DATE: 2/2011

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STANDARD NOTES

DESIGN DATA:

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

MATERIAL AND WORKMANSHIP:

EXCEPT AS MAY OTHERWISE BE SPECIFIED ON PLANS OR IN THE SPECIAL PROVISIONS, ALL MATERIAL AND WORKMANSHIP SHALL BE IN ACCORDANCE WITH THE 2006 "STANDARD SPECIFICATIONS FOR ROADS AND STRUCTURES" OF THE N. C. DEPARTMENT OF TRANSPORTATION.

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

CONCRETE:

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

CONCRETE CHAMFERS:

UNLESS OTHERWISE NOTED ON THE PLANS, ALL EXPOSED CORNERS ON STRUCTURES SHALL BE CHAMFERED 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. 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.

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

SPECIAL NOTES:

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

ENGLISH

JANUARY, 1990

STD. NO. SN