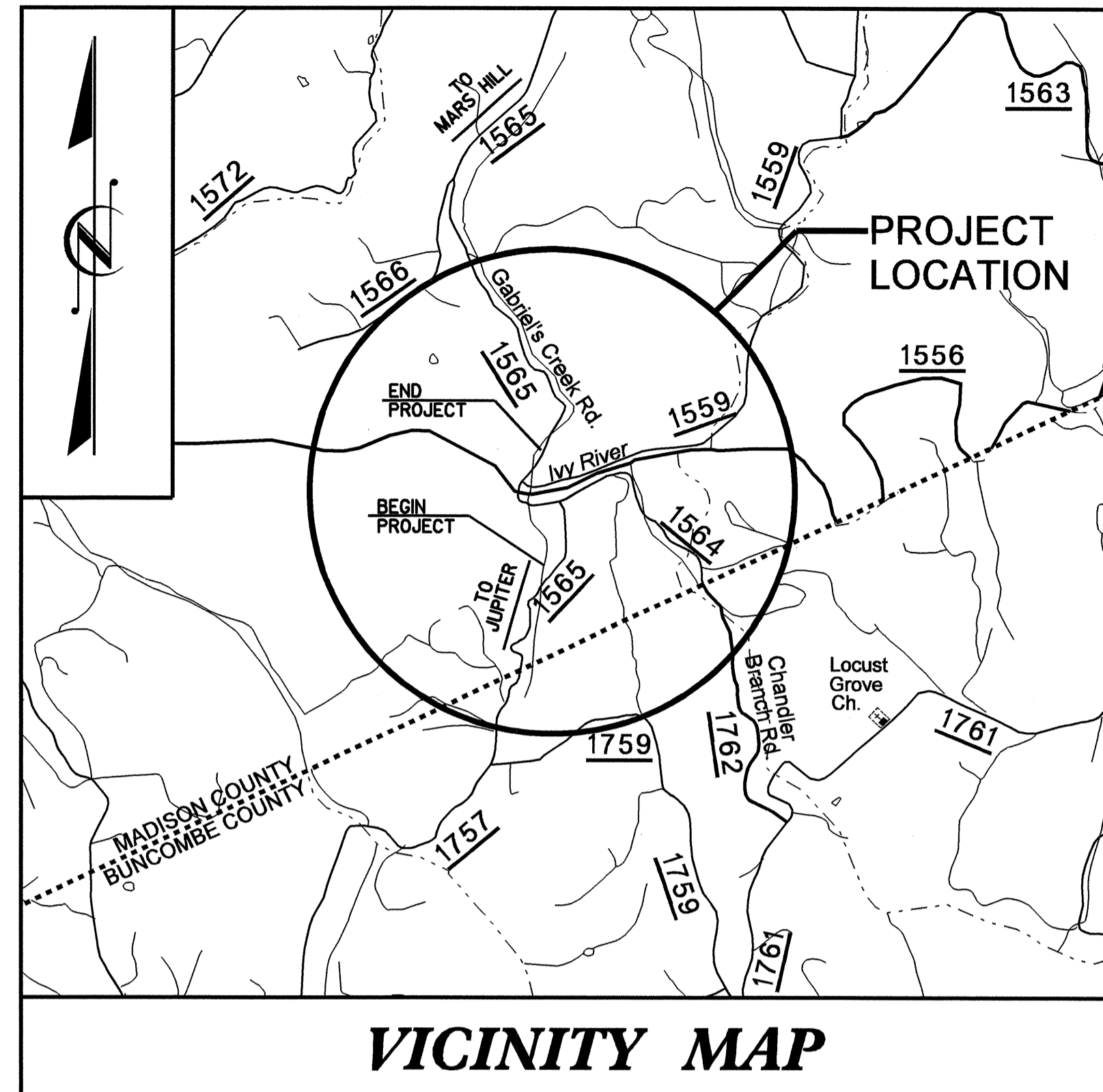


CONTRACT: C202034 TIP PROJECT: B-4184



VICINITY MAP

NEAREST SHIPPING POINT : MARSHALL ON NORFOLK SOUTHERN RR
APPROX. 10 MILES FROM PROJECT

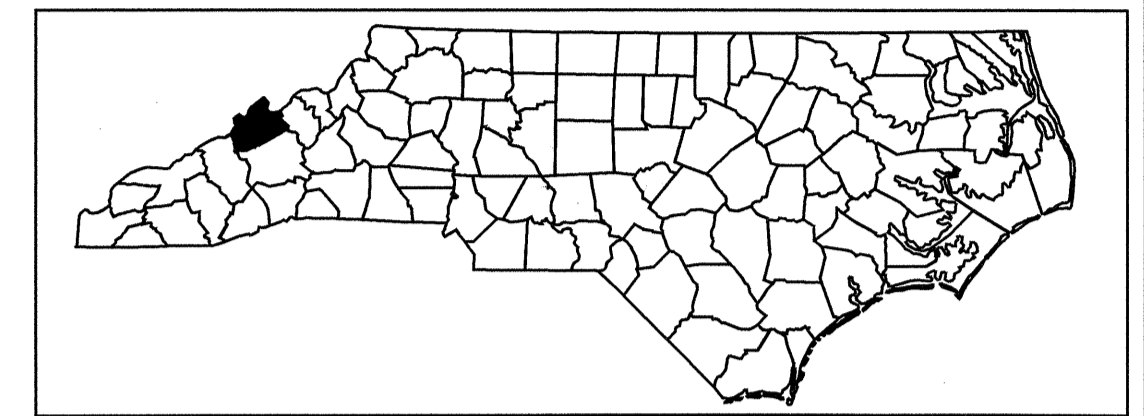
STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

MADISON COUNTY

LOCATION: BRIDGE NO. 4 OVER IVY RIVER ON SR 1565

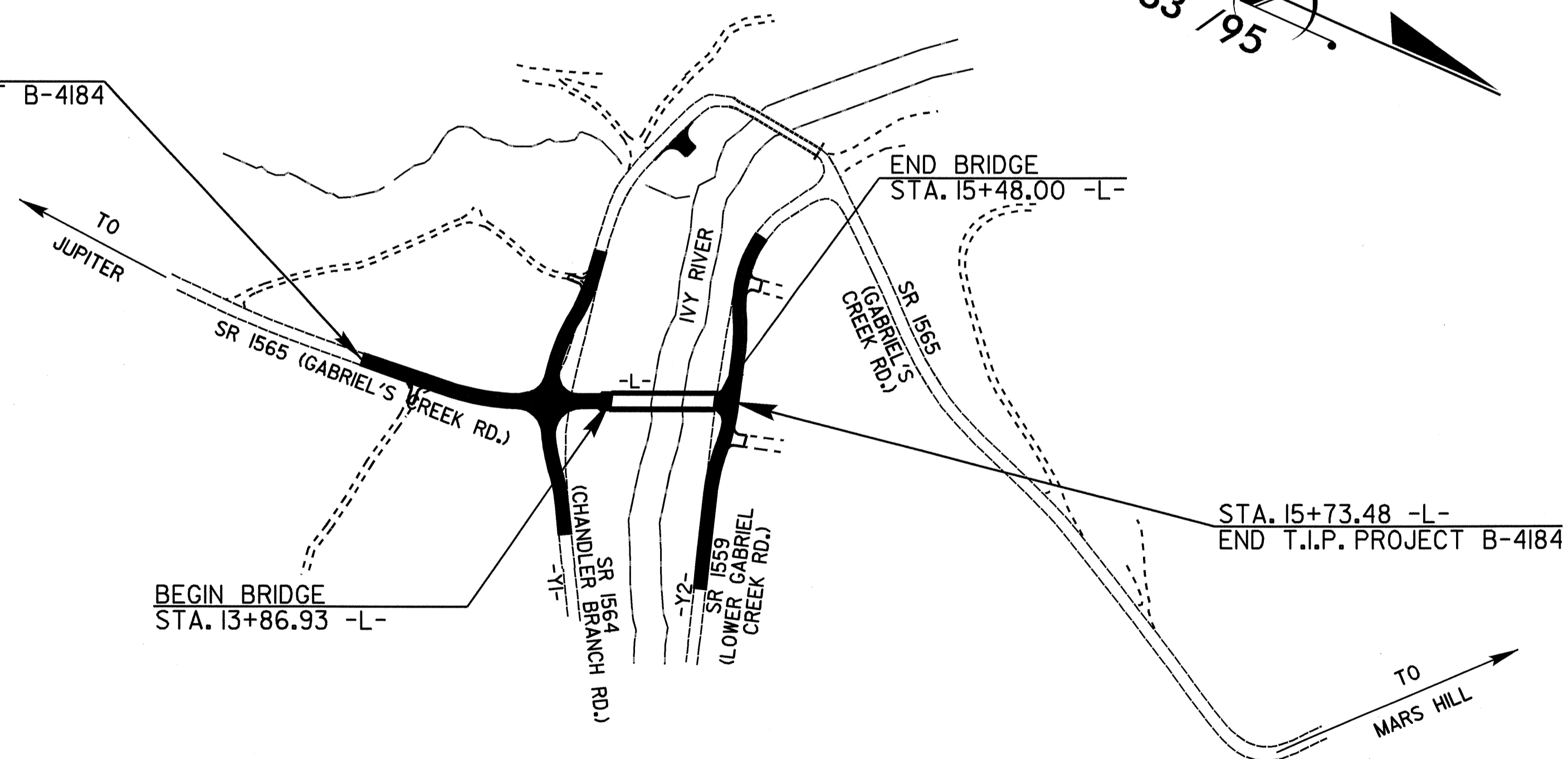
TYPE OF WORK: GRADING, PAVING, DRAINAGE, AND STRUCTURE

| STATE | STATE PROJECT REFERENCE NO. | SHEET NO. | TOTAL SHEETS |
|-----------------|-----------------------------|-------------|--------------|
| N.C. | B-4184 | | |
| STATE PROJ. NO. | F.A. PROJ. NO. | DESCRIPTION | |
| 33531.1.1 | BRZ-1565(5) | PE | |
| 33531.2.1 | BRZ-1565(5) | RW & UTIL | |
| 33531.3.1 | BRZ-1565(5) | CONST. | |
| | | | |
| | | | |



STRUCTURE

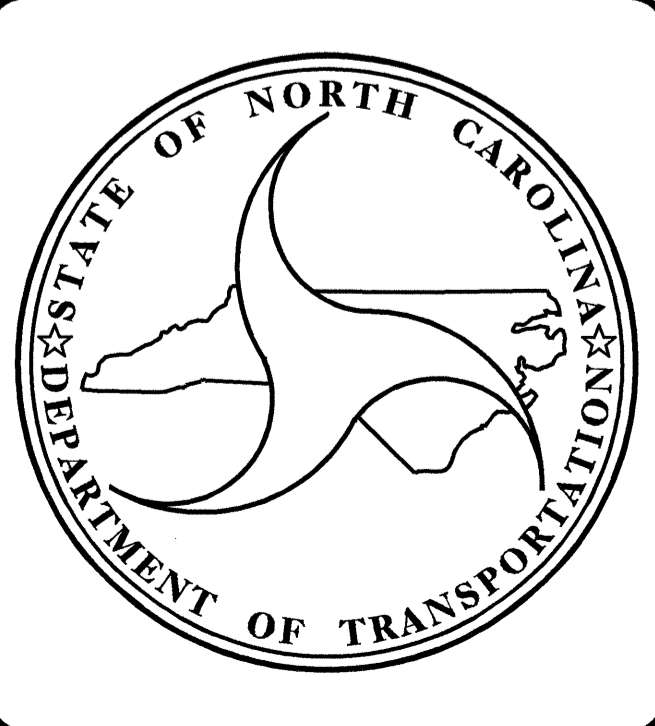
STA. 10+00.00 -L-
BEGIN T.I.P. PROJECT B-4184



END BRIDGE
STA. 15+48.00 -L-

BEGIN BRIDGE
STA. 13+86.93 -L-

STA. 15+73.48 -L-
END T.I.P. PROJECT B-4184



DESIGN DATA

| | |
|--------------|-------------|
| ADT 2008 = | 500 |
| ADT 2030 = | 900 |
| DHV = | 12 % |
| D = | 60 % |
| T = | 3 % * |
| V = | 30 MPH |
| * TTST 2% | DUAL 1% |
| FUNC CLASS = | RURAL LOCAL |

PROJECT LENGTH

| | |
|-------------------------------------|---------------|
| LENGTH ROADWAY TIP PROJECT B-4184 | = 0.079 MILES |
| LENGTH STRUCTURE TIP PROJECT B-4184 | = 0.030 MILES |
| TOTAL LENGTH OF PROJECT B-4184 | = 0.109 MILES |

Prepared In the Office of:

DIVISION OF HIGHWAYS

2006 STANDARD SPECIFICATIONS

LETTING DATE :
DECEMBER 16, 2008

| |
|--|
| N.N. BULLOCK, P.E. PROJECT ENGINEER |
| A.K. PASCHAL, P.E. PROJECT DESIGN ENGINEER |

STRUCTURE DESIGN UNIT
1000 BIRCH RIDGE DR.
RALEIGH, N.C. 27610

DIVISION OF HIGHWAYS
STATE OF NORTH CAROLINA

STATE DESIGN ENGINEER
DEPARTMENT OF TRANSPORTATION
FEDERAL HIGHWAY ADMINISTRATION

APPROVED
DIVISION ADMINISTRATOR

DATE

30-OCT-2008 14:31
F:\AS\structures\B4184\Final Plans\B4184_ad_15h.dgn
jshank

NOTES:

ASSUMED LIVE LOAD = HS20 OR ALTERNATE LOADING, EXCEPT THAT THE CORED SLABS HAVE BEEN DESIGNED FOR HS 25.
 FOR OTHER DESIGN DATA AND GENERAL NOTES, SEE SHEET SN.
 FOR EROSION CONTROL MEASURES, SEE EROSION CONTROL PLANS.
 THIS BRIDGE HAS BEEN DESIGNED BY THE STRENGTH DESIGN METHOD AS SPECIFIED IN AASHTO STANDARD SPECIFICATIONS.

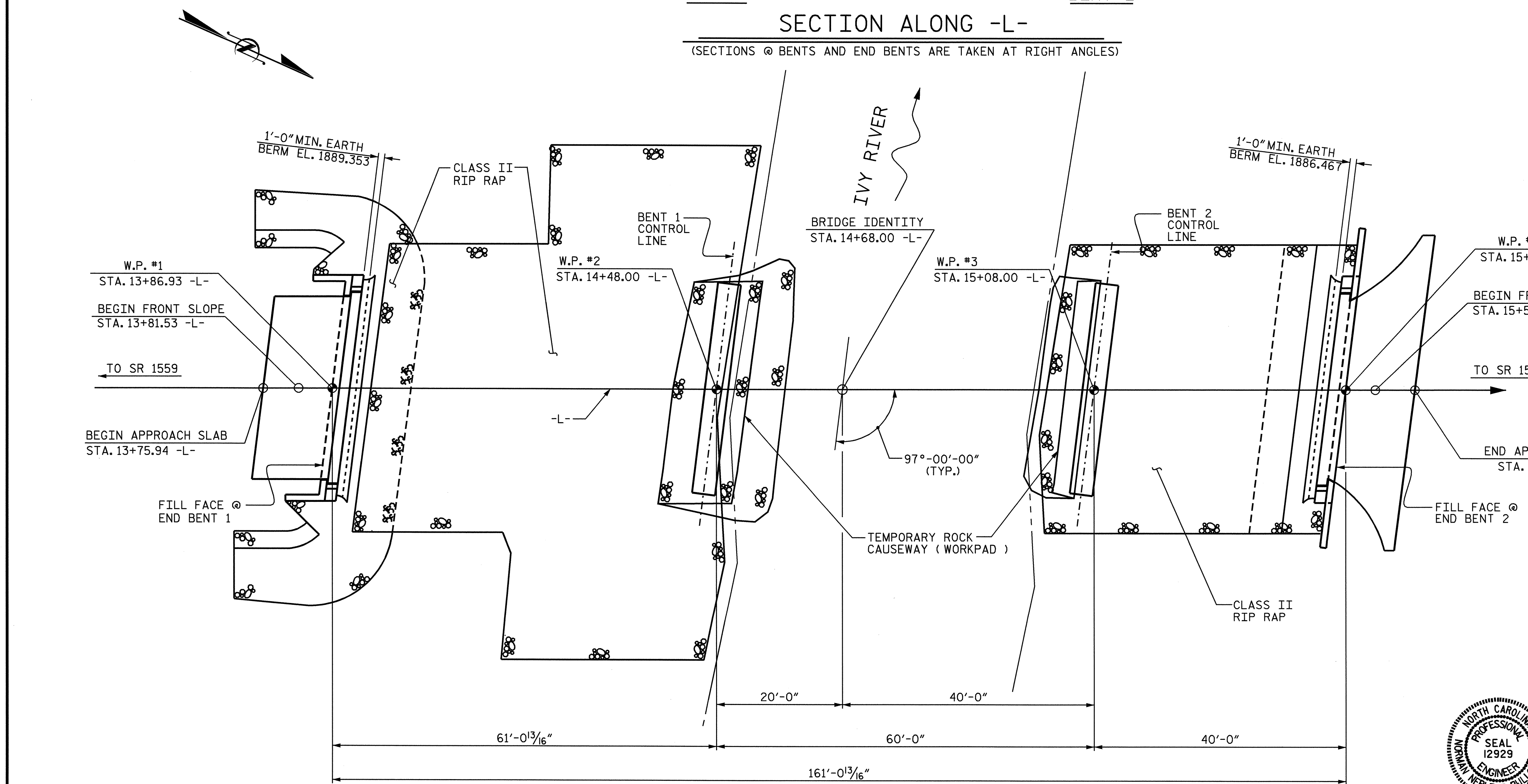
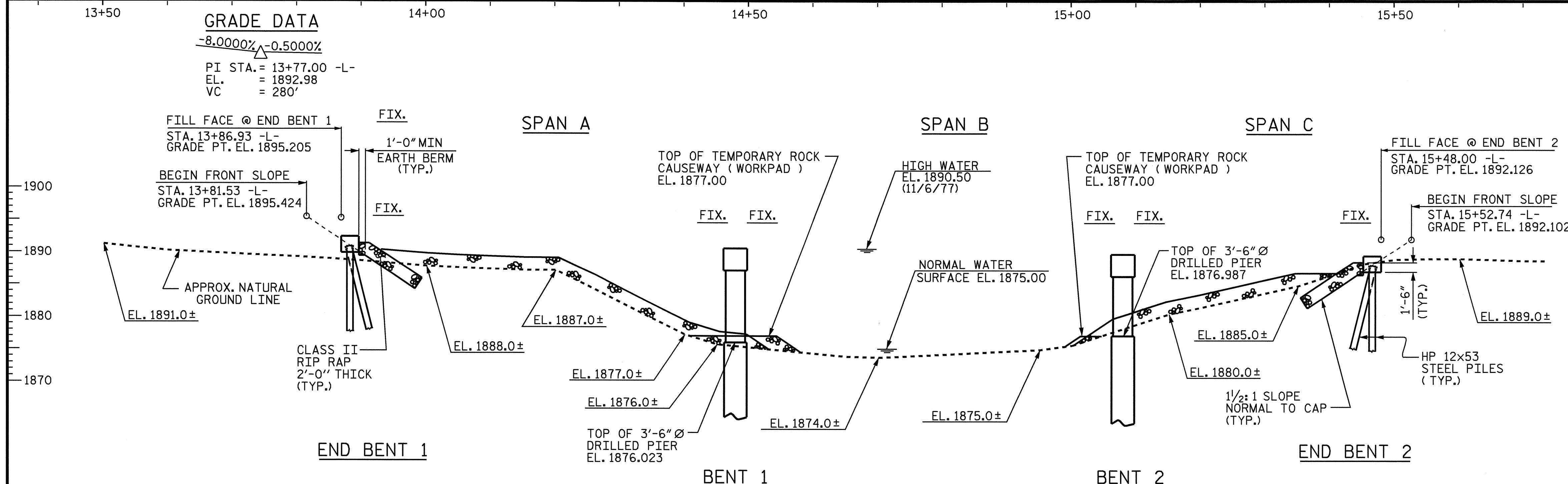
THIS BRIDGE HAS BEEN DESIGNED IN ACCORDANCE WITH THE REQUIREMENTS OF THE AASHTO STANDARD SPECIFICATIONS FOR SEISMIC DESIGN OF HIGHWAY BRIDGES FOR SEISMIC PERFORMANCE CATEGORY B.
 THE EXISTING STRUCTURE CONSISTING OF 4 (1 @ 40'-5", 1 @ 42'-8", 1 @ 32'-2" & 1 @ 40'-2") TIMBER DECK SPANS ON STEEL I BEAMS WITH A CLEAR ROADWAY WIDTH OF 11'-4" ON TIMBER CAP AND PILE END BENTS AND BENT 3 WITH BENT 1 AND 2 CONSISTING OF TIMBER POST ON CONCRETE SILLS AND LOCATED APPROXIMATELY 470 FEET DOWNSTREAM FROM THE PROPOSED STRUCTURE SHALL BE REMOVED. THE EXISTING BRIDGE IS PRESENTLY POSTED BELOW THE LEGAL LOAD LIMIT. SHOULD THE STRUCTURAL INTEGRITY OF THE BRIDGE FURTHER DETERIORATE, THIS LOAD LIMITATION MAY BE REDUCED AS FOUND NECESSARY DURING THE LIFE OF THE PROJECT. SEE SPECIAL PROVISION FOR "REMOVAL OF EXISTING STRUCTURE @ STA. 14+68.00 -L-".

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 SUBSTRUCTURE OF THE EXISTING BRIDGE NOTED IN THESE 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 NOTED IN THE PLANS AND THE ACTUAL CONDITIONS AT THE PROJECT SITE.

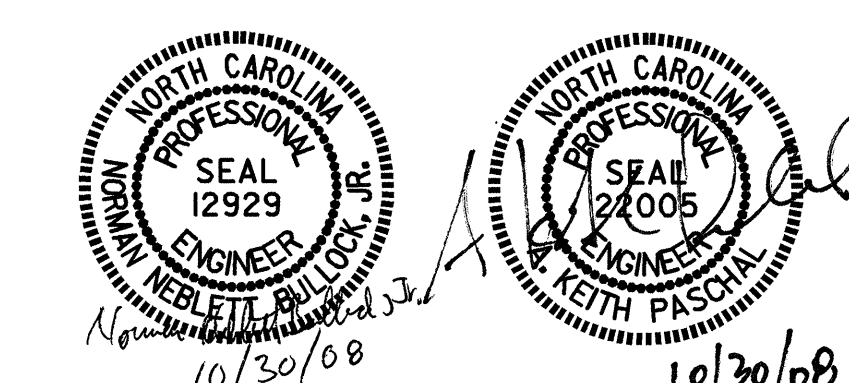
INASMUCH AS THE PAINT SYSTEM ON THE EXISTING STRUCTURAL STEEL CONTAINS LEAD, THE CONTRACTOR'S ATTENTION IS DIRECTED TO ARTICLE 107-1 OF THE STANDARD SPECIFICATIONS. ANY COSTS RESULTING FROM COMPLIANCE WITH APPLICABLE STATE OR FEDERAL REGULATIONS PERTAINING TO HANDLING OF MATERIALS CONTAINING LEAD BASED PAINT SHALL BE INCLUDED IN THE BID PRICE FOR "REMOVAL OF EXISTING STRUCTURE AT STATION 14+68.00 -L-".

SEE SHEET 3 OF 3 FOR ADDITIONAL NOTES.



DRAWN BY: E. G. ALLEN DATE: 9/8/08
 CHECKED BY: J. G. KHARVA DATE: 9/22/08

PLAN
 (PILES AND DRILLED PIERS ARE NOT SHOWN IN PLAN VIEW FOR CLARITY)

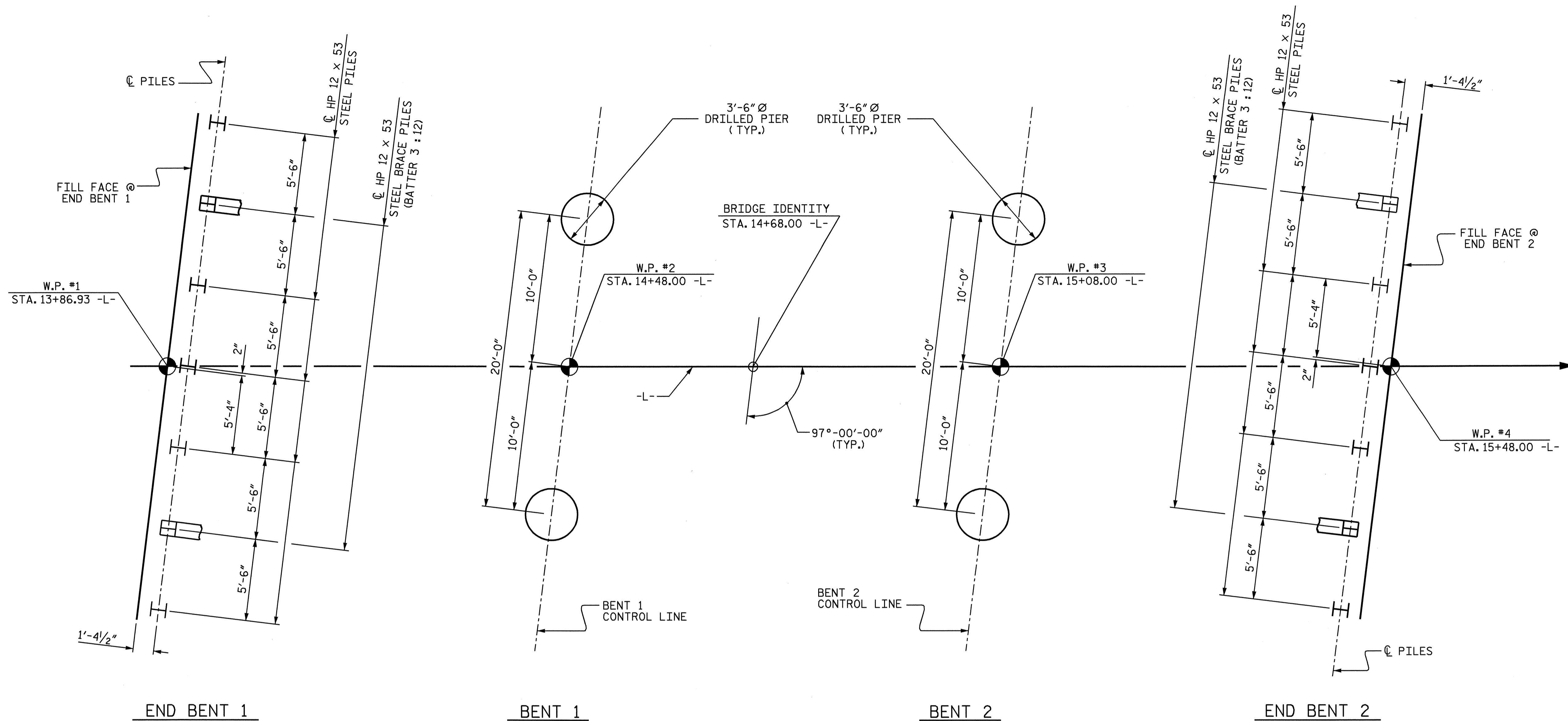


PROJECT NO. B-4184
MADISON COUNTY
 STATION: 14+68.00-L-
 SHEET 1 OF 3 REPLACES BRIDGE #4

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

GENERAL DRAWING
 BRIDGE ON SR 1565 OVER
 IVY RIVER BETWEEN
 SR 1559 AND SR 1564

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



FOUNDATION LAYOUT

(DIMENSIONS LOCATING PILES & DRILLED PIERS ARE SHOWN TO CENTERLINE PILES & DRILLED PIERS)

FOUNDATION NOTES :

DRILLED PIERS AT BENT 1 AND BENT 2 ARE DESIGNED FOR BOTH SKIN FRICTION AND END BEARING. CHECK FIELD CONDITIONS FOR THE REQUIRED END BEARING CAPACITY OF 5 TSF.

DRILLED PIERS AT BENT 1 AND BENT 2 ARE DESIGNED FOR AN APPLIED LOAD OF 206 TONS AND 175 TONS EACH RESPECTIVELY AT THE TOP OF THE COLUMN.

INSTALL DRILLED PIERS AT BENT 1 AND BENT 2 TO EXTEND TO AN ELEVATION NO HIGHER THAN 1854 FT. AND 1856 FT. RESPECTIVELY AND SATISFY THE REQUIRED END BEARING CAPACITY.

PERMANENT STEEL CASING MAY BE REQUIRED FOR DRILLED PIERS AT BENT 1 AND BENT 2. IF REQUIRED, DO NOT EXTEND CASING BELOW ELEVATION 1866.5 FT. FOR BENT 1 AND 1869.5 FT. FOR BENT 2 WITHOUT PRIOR APPROVAL FROM THE ENGINEER. THE ENGINEER WILL DETERMINE THE NEED FOR PERMANENT STEEL CASING.

THE SCOUR CRITICAL ELEVATIONS FOR BENT 1 IS 1854 FT. AND BENT 2 IS 1864 FT. SCOUR CRITICAL ELEVATIONS ARE USED TO MONITOR POSSIBLE SCOUR PROBLEMS DURING THE LIFE OF THE STRUCTURE.

SPT TESTING IS NOT REQUIRED TO DETERMINE END BEARING CAPACITY FOR DRILLED PIERS AT BENT 1 AND BENT 2.

SID INSPECTIONS MAY BE REQUIRED FOR DRILLED PIERS. THE ENGINEER WILL DETERMINE THE NEED FOR SID INSPECTIONS.

CSL TUBES ARE REQUIRED AND CSL TESTING MAY BE REQUIRED FOR DRILLED PIERS. THE ENGINEER WILL DETERMINE THE NEED FOR CSL TESTING. FOR CROSSHOLE SONIC LOGGING, SEE SPECIAL PROVISIONS.

FOR DRILLED PIERS, SEE SPECIAL PROVISIONS.

DRIVE PILES AT BENT 1 AND END BENT 2 TO A REQUIRED BEARING CAPACITY OF 120 TONS PER PILE. THE REQUIRED BEARING CAPACITY IS EQUAL TO THE ALLOWABLE BEARING CAPACITY WITH A MINIMUM FACTOR OF SAFETY OF TWO.

THE ALLOWABLE BEARING CAPACITY FOR PILES AT END BENT 1 AND END BENT 2 IS 60 TONS PER PILE.

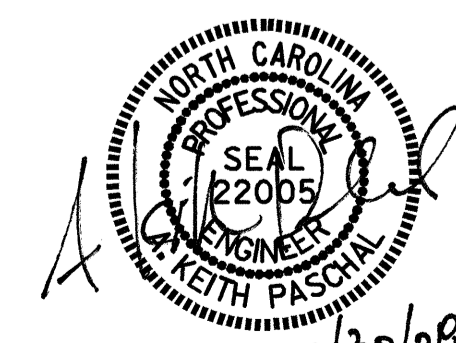
DRAWN BY : E. G. ALLEN DATE : 9/8/08
 CHECKED BY : J. G. KHARVA DATE : 9/22/08

30-OCT-2008 14:37
 r:\structures\b4184\final plans\B4184.ed.GD.dgn
 jdhawk

PROJECT NO. B-4184
MADISON COUNTY
 STATION: 14+68.00-L-

SHEET 2 OF 3

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 GENERAL DRAWING
 BRIDGE ON SR 1565 OVER
 IVY RIVER BETWEEN
 SR 1559 AND SR 1564



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

TOTAL BILL OF MATERIAL

| | CONSTRUCTION, MAINTENANCE AND REMOVAL OF TEMPORARY ACCESS | REMOVAL OF EXISTING STRUCTURE | 3'-6" Ø DRILLED PIERS IN SOIL | 3'-6" Ø DRILLED PIERS NOT IN SOIL | PERMANENT STEEL CASING FOR 3'-6" Ø DRILLED PIERS | SID INSPECTION | CROSSHOLE SONIC LOGGING | CLASS A CONCRETE | BRIDGE APPROACH SLABS | REINFORCING STEEL | SPIRAL COLUMN REINFORCING STEEL | HP 12 X 53 STEEL PILES | ONE BAR METAL RAIL | 1'-0" X 2'-0 1/2" CONCRETE PARAPET | RIP RAP CLASS II (2'-0" THICK) | FILTER FABRIC FOR DRAINAGE | ELASTOMERIC BEARINGS | 3'-0" X 1'-9" PRESTRESSED CONCRETE CORED SLABS | | |
|----------------|---|-------------------------------|-------------------------------|-----------------------------------|--|----------------|-------------------------|------------------|-----------------------|-------------------|---------------------------------|------------------------|--------------------|------------------------------------|--------------------------------|----------------------------|----------------------|--|-----|----------|
| | LUMP SUM | LUMP SUM | LIN. FT. | LIN. FT. | LIN. FT. | EACH | EACH | CU. YDS. | LUMP SUM | LBS. | LBS. | NO. | LIN. FT. | LIN. FT. | LIN. FT. | TONS | SQ. YARDS | LUMP SUM | NO. | LIN. FT. |
| SUPERSTRUCTURE | | | | | | | | | LUMP SUM | | | | 302.35 | 317.65 | | | | LUMP SUM | 30 | 1585.52 |
| END BENT 1 | | | | | | | | 12.5 | | 1869 | | 7 | 175 | | 550 | 610 | | | | |
| BENT 1 | | | 20.17 | 24.00 | 19.05 | | | 24.0 | | 7648 | 1416 | | | | | | | | | |
| BENT 2 | | | 14.00 | 18.00 | 15.00 | | | 22.9 | | 7550 | 1289 | | | | | | | | | |
| END BENT 2 | | | | | | | | 12.2 | | 1835 | | 7 | 175 | | 265 | 294 | | | | |
| TOTAL | LUMP SUM | LUMP SUM | 34.17 | 42.00 | 34.05 | 2 | 1 | 71.6 | LUMP SUM | 18902 | 2705 | 14 | 350 | 302.35 | 317.65 | 815 | 904 | LUMP SUM | 30 | 1585.52 |

NOTES (CONTINUED):

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

THIS STRUCTURE HAS BEEN DESIGNED IN ACCORDANCE WITH HEC 18, "EVALUATING SCOUR AT BRIDGES", MAY, 2001.

AT THE CONTRACTOR'S OPTION, AND UPON REMOVAL OF THE CAUSEWAY, THE CLASS II RIP RAP USED IN THE CAUSEWAY MAY BE PLACED AS RIP RAP SLOPE PROTECTION, SEE SPECIAL PROVISIONS FOR CONSTRUCTION, MAINTENANCE AND REMOVAL OF TEMPORARY ACCESS AT STATION 14+68.00 -L-.

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

FOR SUBMITTAL OF WORKING DRAWINGS, SEE SPECIAL PROVISIONS.

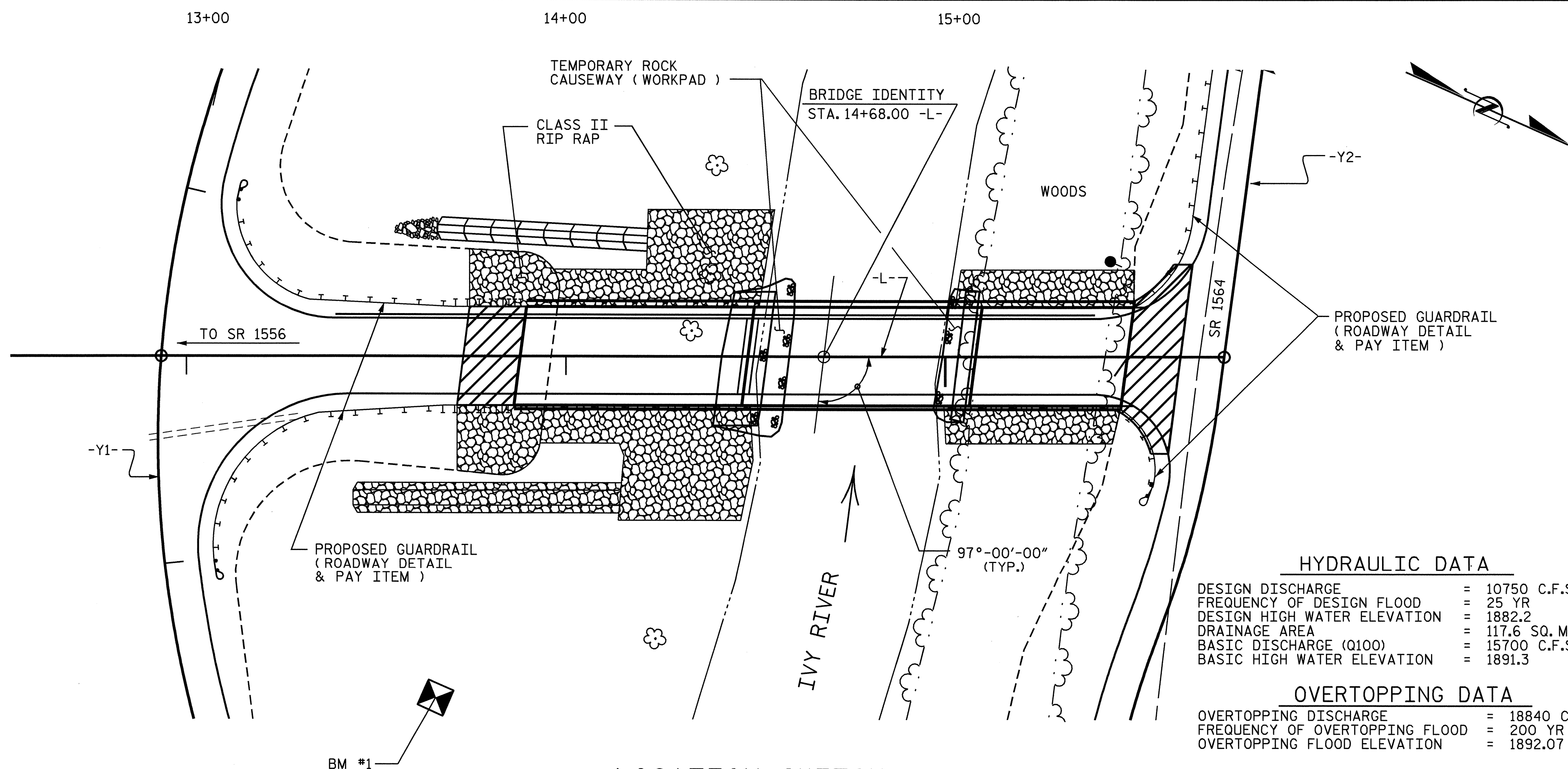
FOR FALSEWORK AND FORMWORK, SEE SPECIAL PROVISIONS.

FOR CRANE SAFETY, SEE SPECIAL PROVISIONS.

FOR GROUT FOR STRUCTURES, SEE SPECIAL PROVISIONS.

FOR PRESTRESSED CONCRETE MEMBERS, SEE SPECIAL PROVISIONS.

B.M. #1 : RR SPIKE IN BASE OF 36" PINE 90.79' RT. OF STA. 13+65.59 -L- EL. 1950.59'



HYDRAULIC DATA

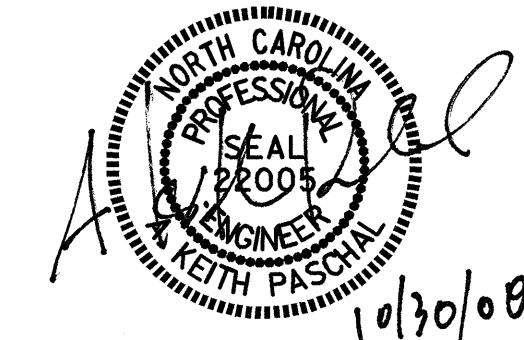
| | | |
|-----------------------------|---|--------------|
| DESIGN DISCHARGE | = | 10750 C.F.S. |
| FREQUENCY OF DESIGN FLOOD | = | 25 YR |
| DESIGN HIGH WATER ELEVATION | = | 1882.2 |
| DRAINAGE AREA | = | 117.6 SQ. MI |
| BASIC DISCHARGE (Q100) | = | 15700 C.F.S. |
| BASIC HIGH WATER ELEVATION | = | 1891.3 |

OVERTOPPING DATA

| | | |
|--------------------------------|---|--------------|
| OVERTOPPING DISCHARGE | = | 18840 C.F.S. |
| FREQUENCY OF OVERTOPPING FLOOD | = | 200 YR |
| OVERTOPPING FLOOD ELEVATION | = | 1892.07 |

PROJECT NO. B-4184
MADISON COUNTY
 STATION: 14+68.00-L-

SHEET 3 OF 3



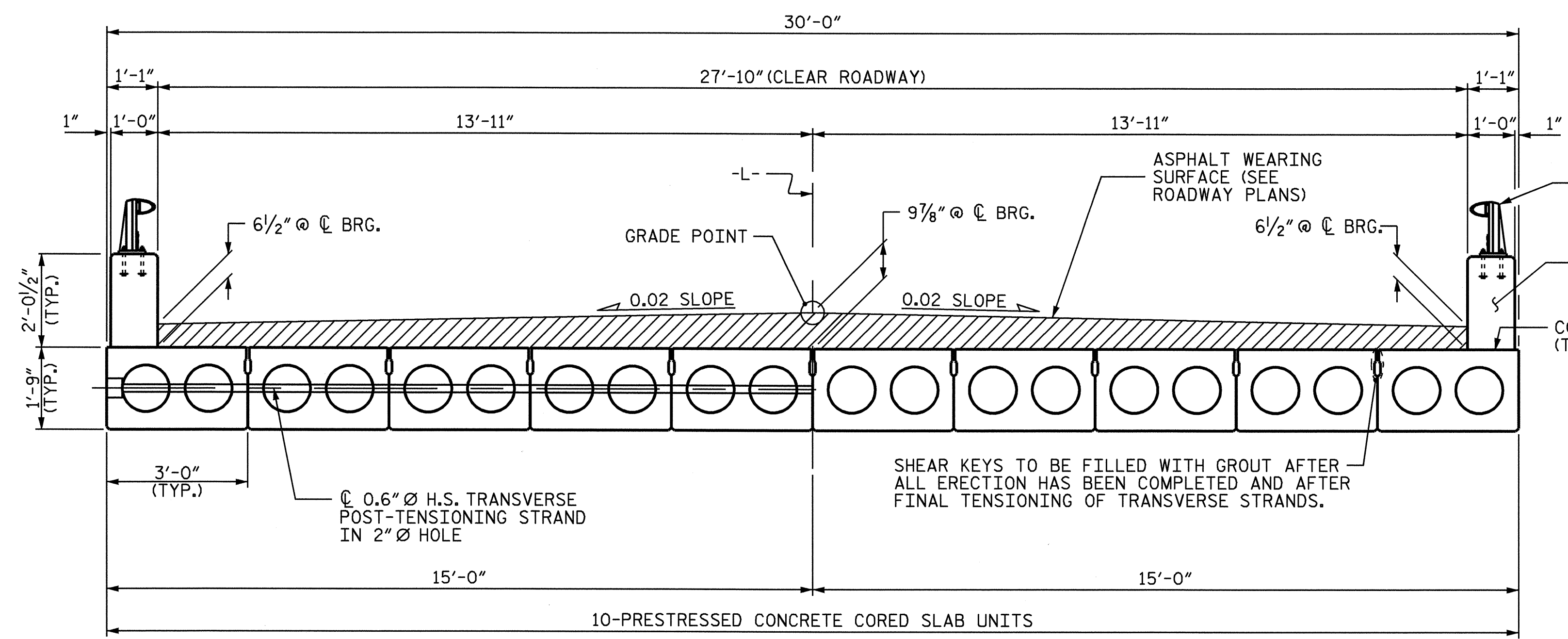
STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

GENERAL DRAWING
 BRIDGE ON SR 1565 OVER
 IVY RIVER BETWEEN
 SR 1559 AND SR 1564

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

DRAWN BY : E. G. ALLEN DATE : 9/8/08
 CHECKED BY : J. G. KHARVA DATE : 9/22/08

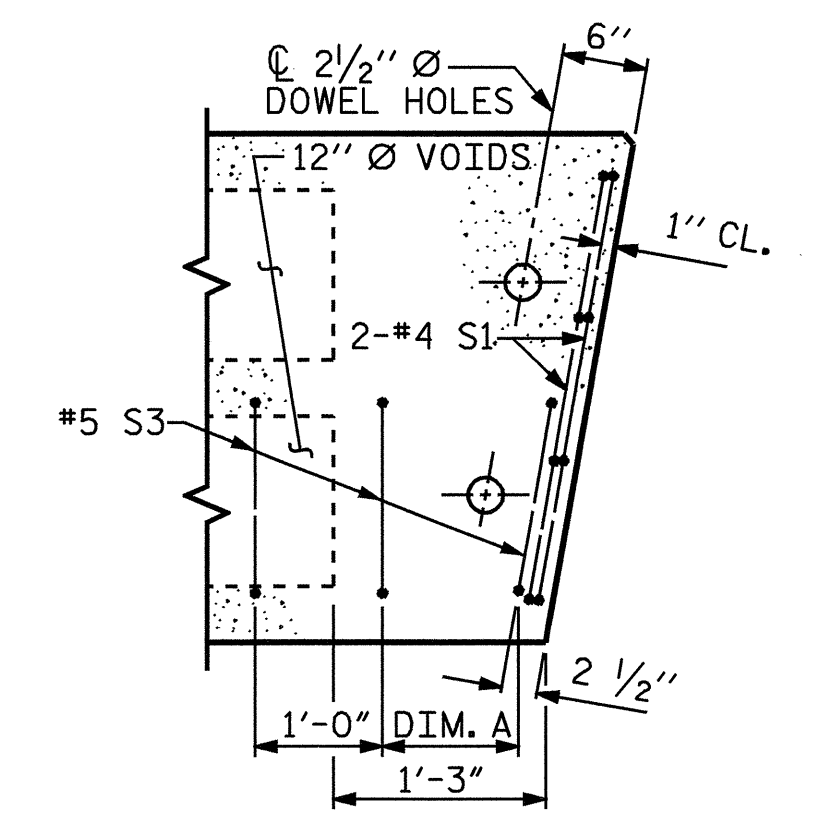
NOTE: FOR UTILITY INFORMATION, SEE UTILITY PLANS AND SPECIAL PROVISIONS.



HALF SECTION @ DIAPHRAGMS

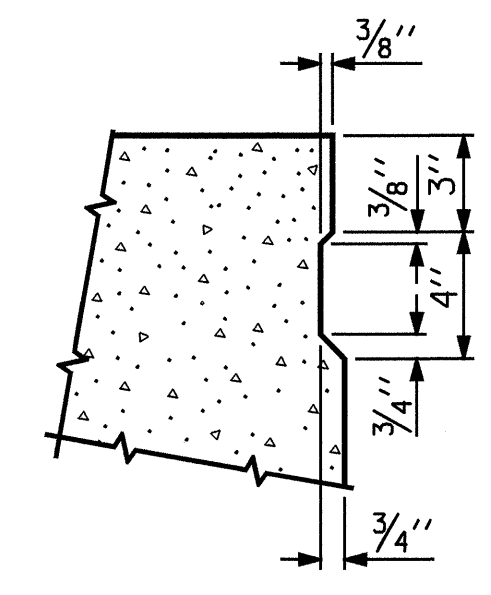
HALF SECTION @ VOIDS

TYPICAL SECTION



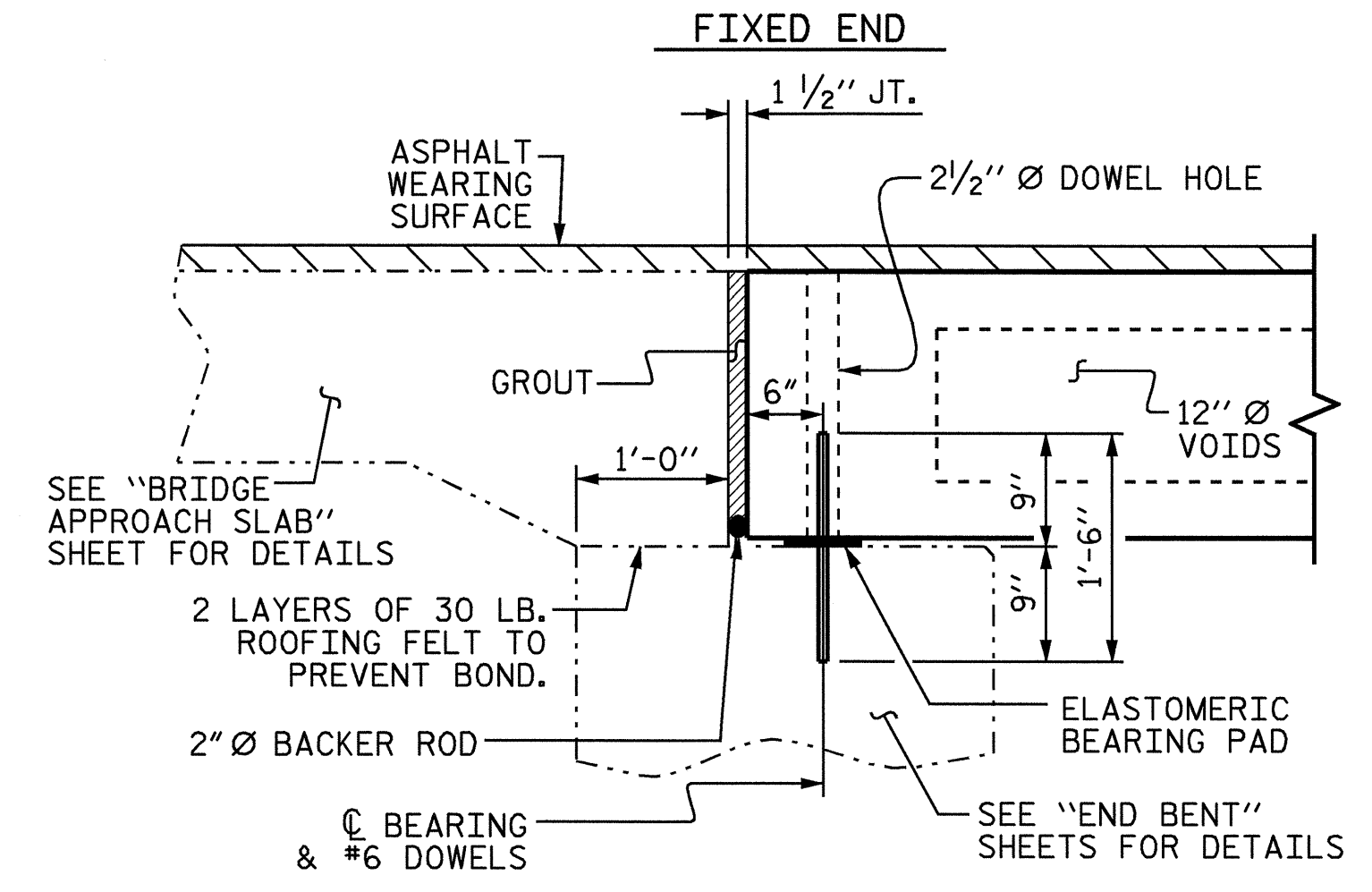
PART PLAN-EXTERIOR SECTION

NOTE: EXTERIOR SECTION SHOWN-INTERIOR SECTION SIMILAR EXCEPT OMIT S3 BARS.
 DIM. A = 8 9/16" (SPAN A & B)
 DIM. A = 7 11/16" (SPAN C)

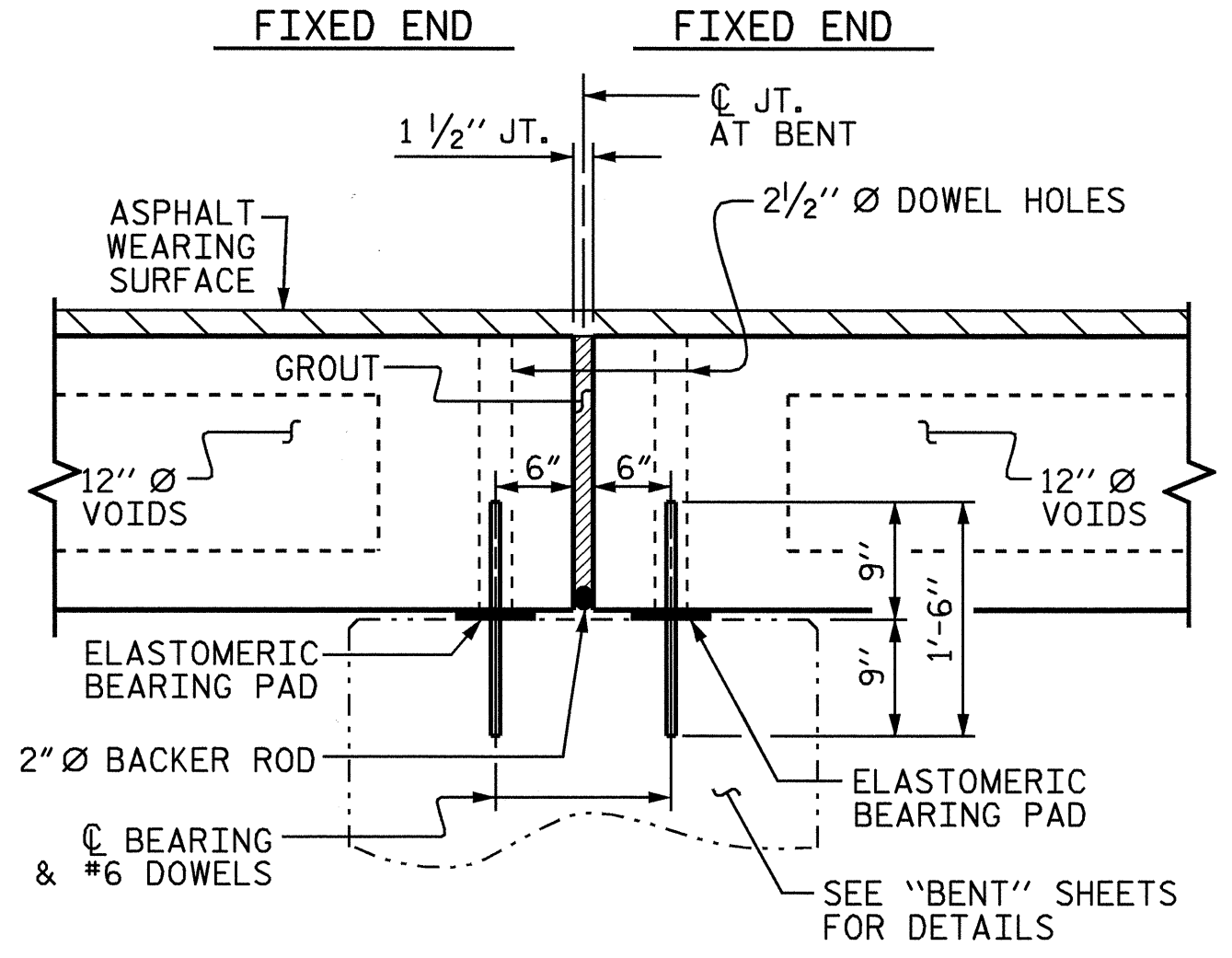


SHEAR KEY DETAIL

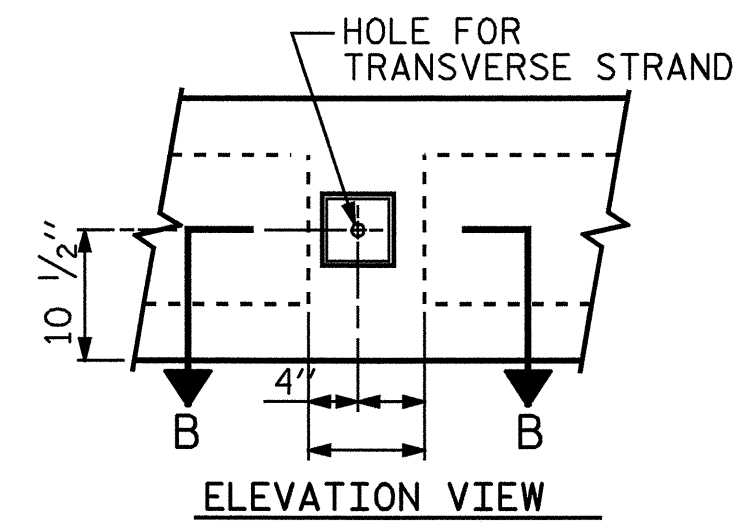
NOTE: OMIT SHEAR KEY ON OUTSIDE FACE OF EXTERIOR CORED SLABS.



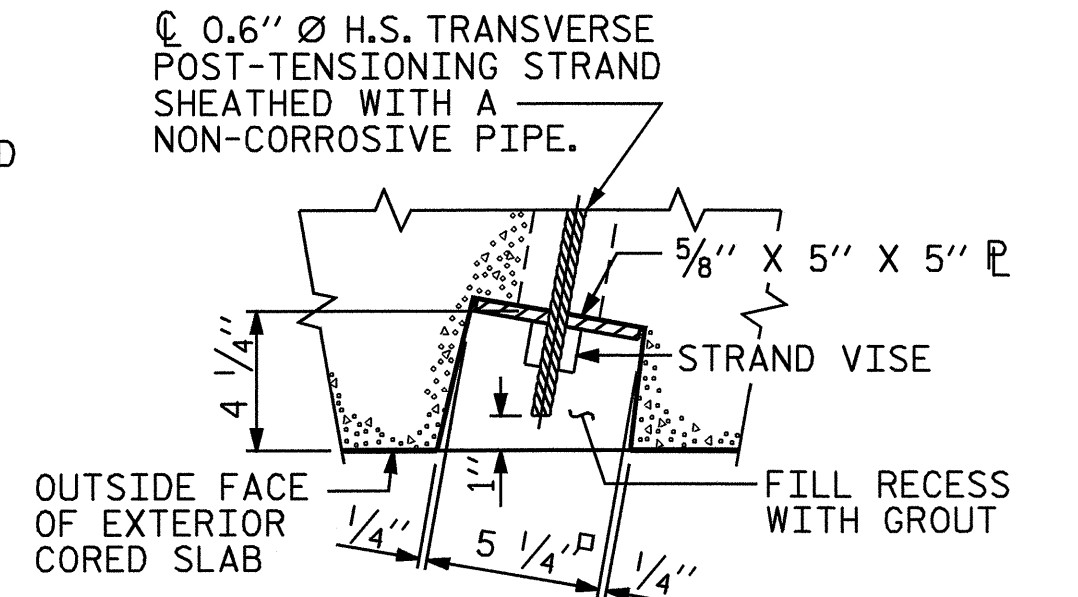
SECTION AT END BENT



SECTION AT BENT

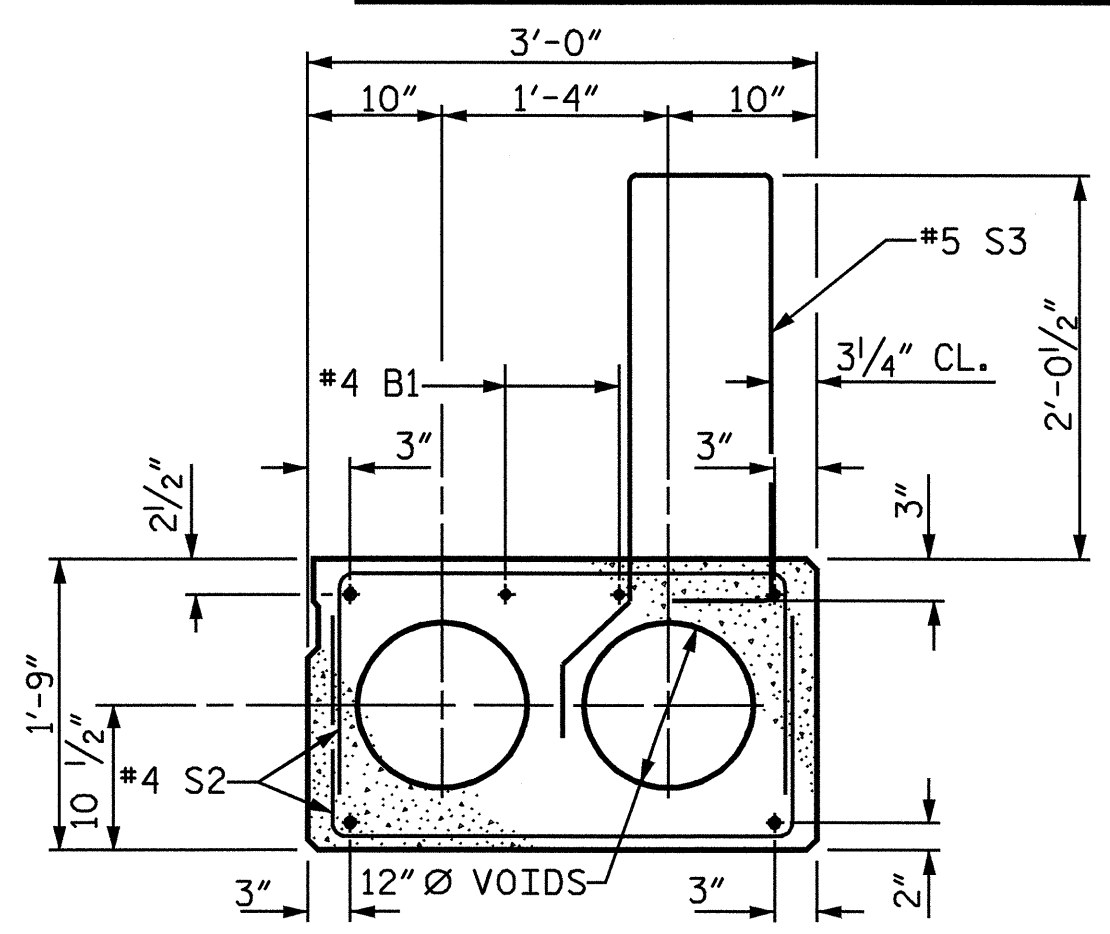


ELEVATION VIEW



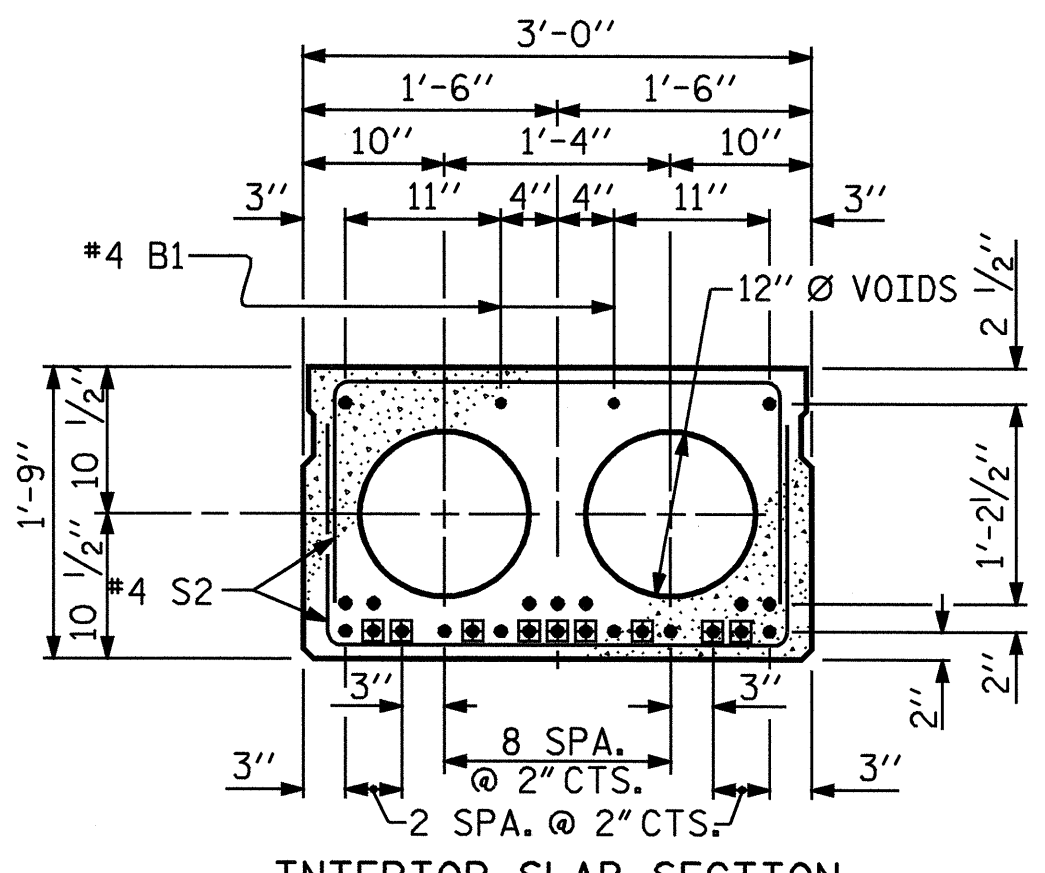
SECTION B-B

GRouted RECESS AT END OF POST-TENSIONED STRAND-CORED SLABS



EXTERIOR SLAB SECTION

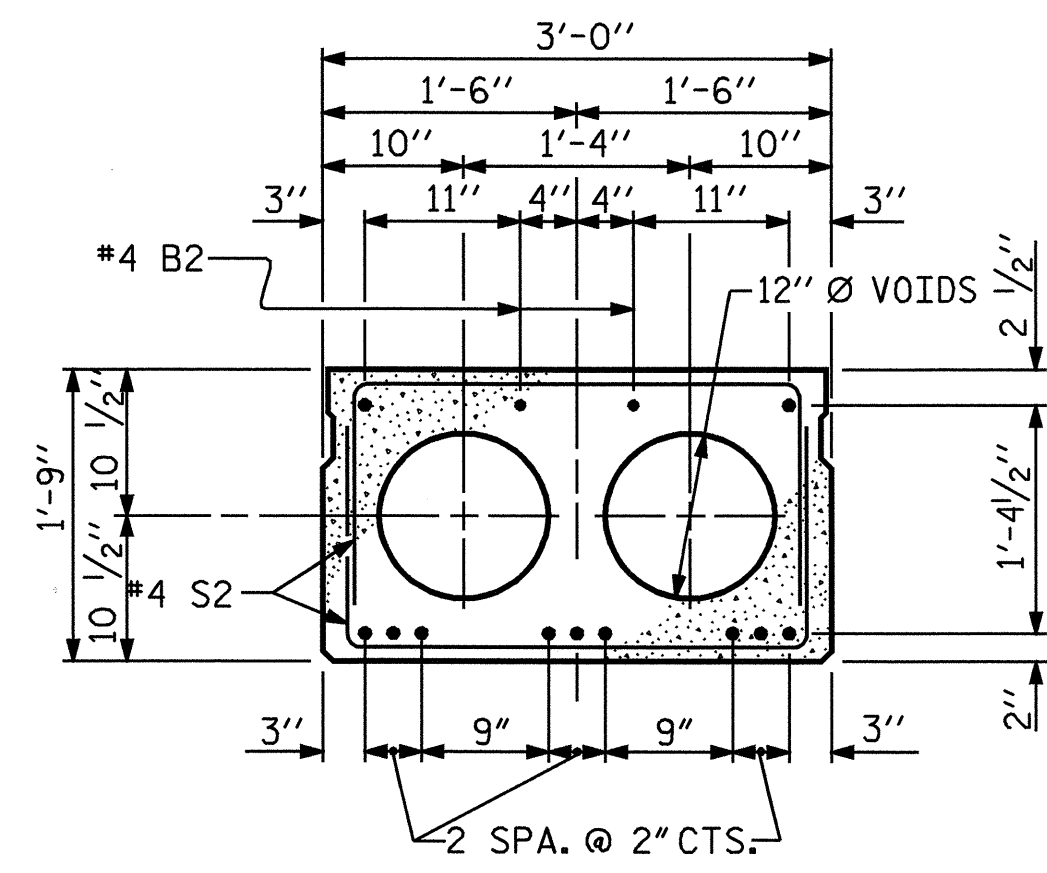
(FOR PRESTRESSED STRAND LAYOUT, SEE INTERIOR SLAB SECTION.)



INTERIOR SLAB SECTION

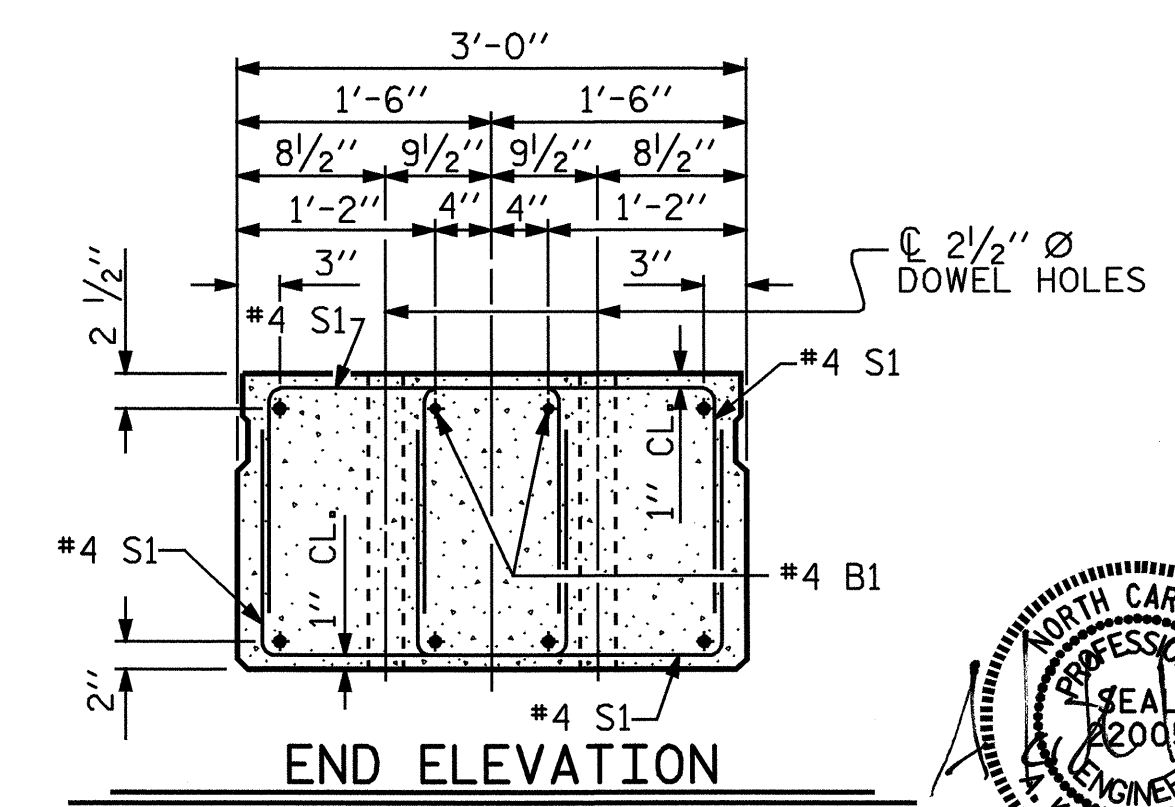
BOND SHALL BE BROKEN ON THESE STRANDS FOR A DISTANCE OF 8'-6" FROM THE END OF THE CORED SLAB UNIT. SEE STANDARD SPECIFICATION ARTICLE 1078-7.

0.6" Ø LOW RELAXATION STRAND LAYOUT (SPANS A & B)



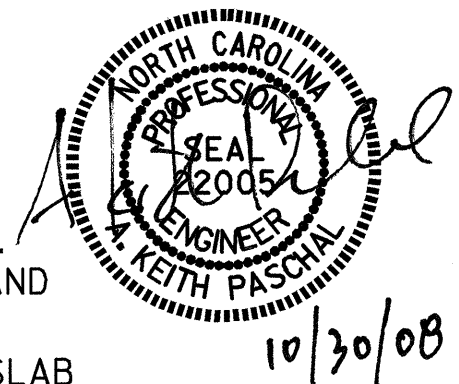
INTERIOR SLAB SECTION

0.6" Ø LOW RELAXATION STRAND LAYOUT (SPAN C)



END ELEVATION

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

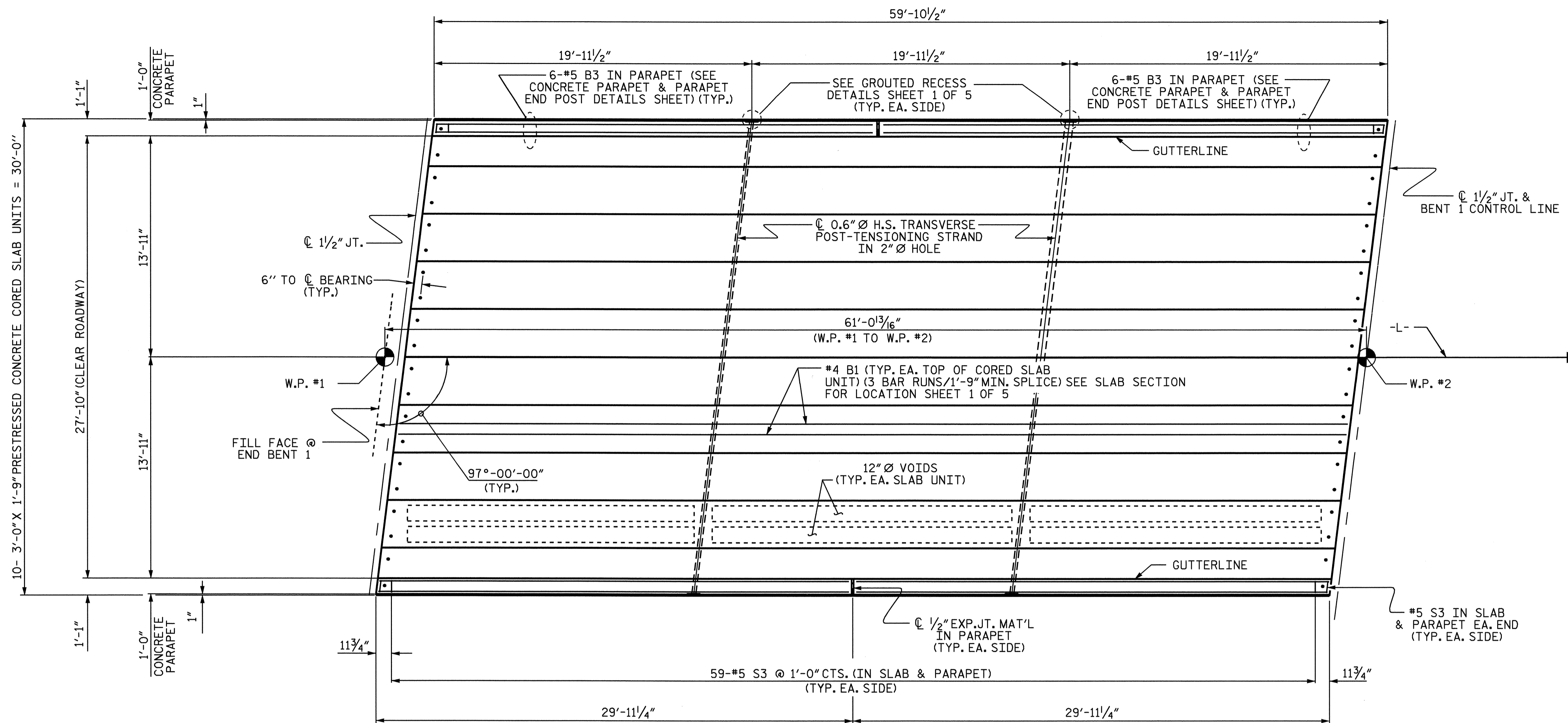


PROJECT NO. B-4184
 MADISON COUNTY
 STATION: 14+68.00 -L-

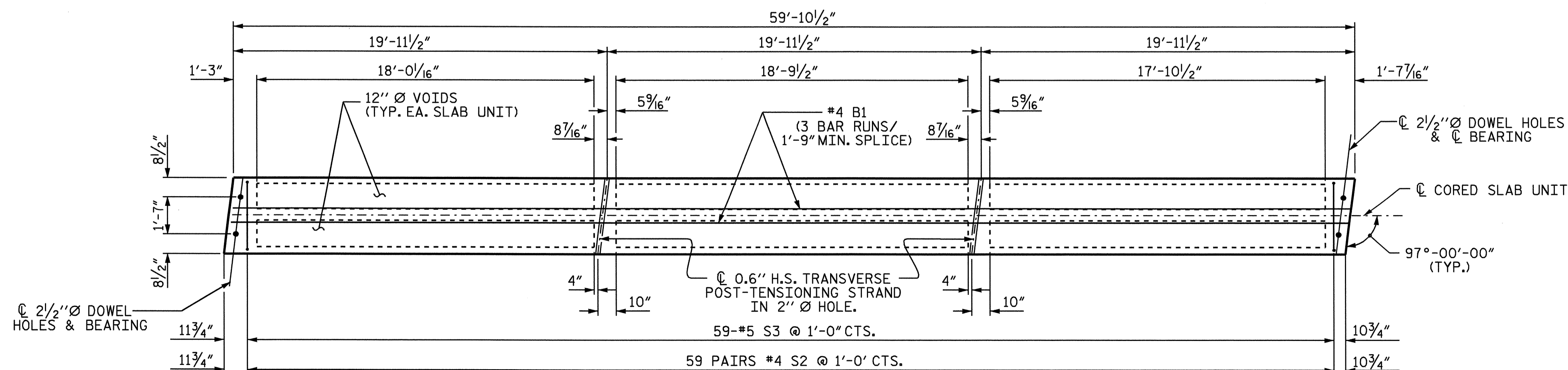
SHEET 1 OF 5

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

| | |
|-------------------------|------------|
| ASSEMBLED BY: J.D. HAWK | DATE: 8/08 |
| CHECKED BY: J.G. KHARVA | DATE: 8/08 |
| DRAWN BY: WJH | 4/89 |
| CHECKED BY: FCJ | 5/89 |
| REV. 10/17/00 | RWW/LES |
| REV. 7/10/01RR | RWW/LES |
| REV. 5/1/06 | TLA/GM |



PLAN OF SPAN A



PLAN OF CORED SLAB UNIT

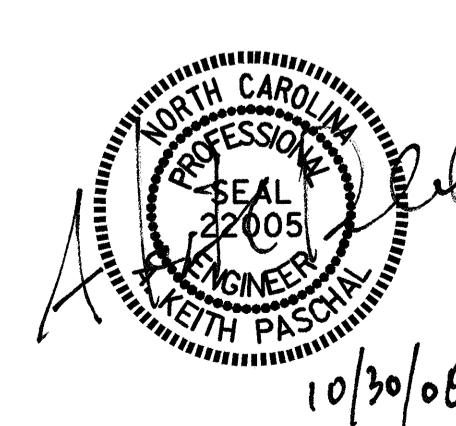
EXTERIOR UNIT SHOWN, INTERIOR UNIT SIMILAR EXCEPT OMIT #5 S3 BARS. FOR LOCATION OF ADDITIONAL REINFORCING STEEL AT END OF SLAB UNIT, SEE "PART-PLAN EXTERIOR SECTION" SHEET 1 OF 5.

PROJECT NO. B-4184
 MADISON COUNTY
 STATION: 14+68.00 -L-

SHEET 2 OF 5

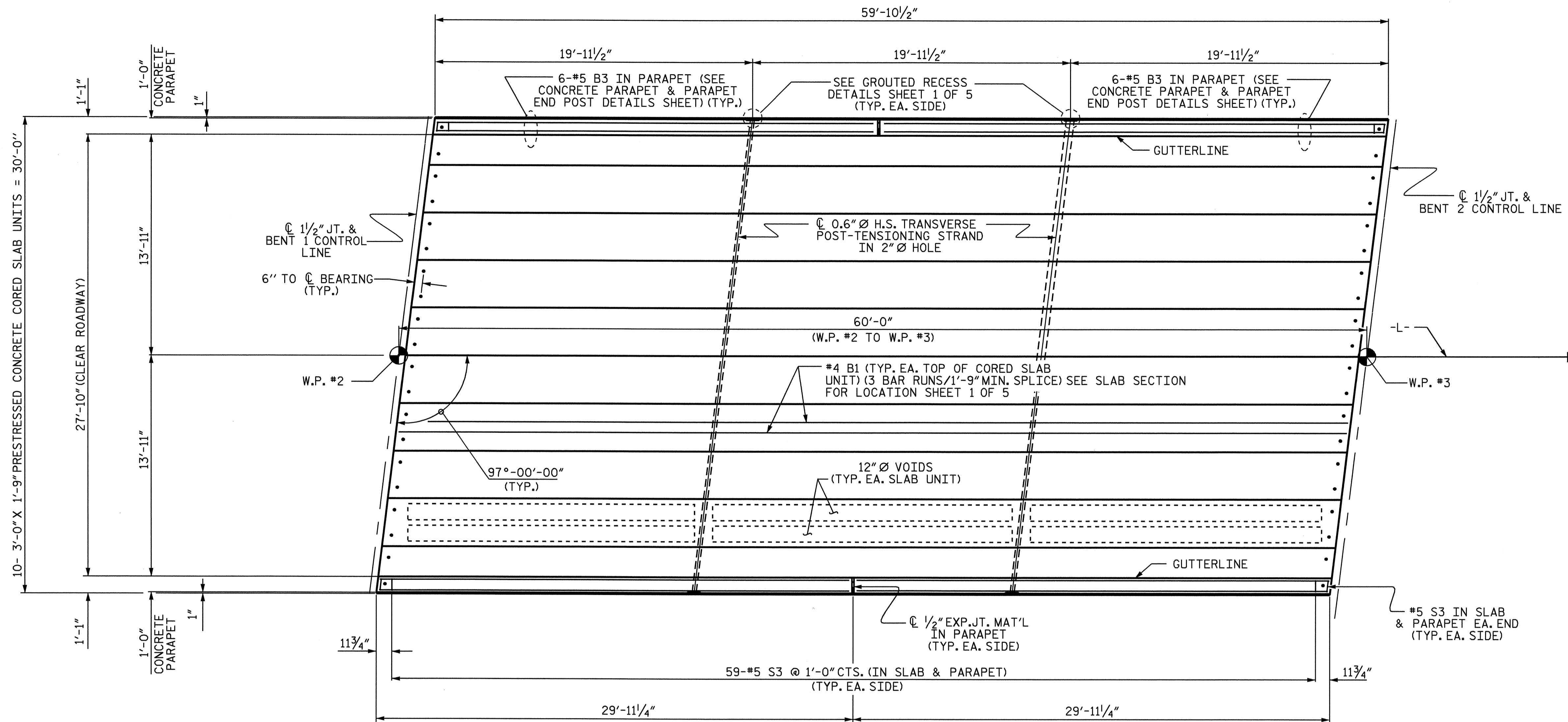
STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

SUPERSTRUCTURE
 PLAN OF SPAN A

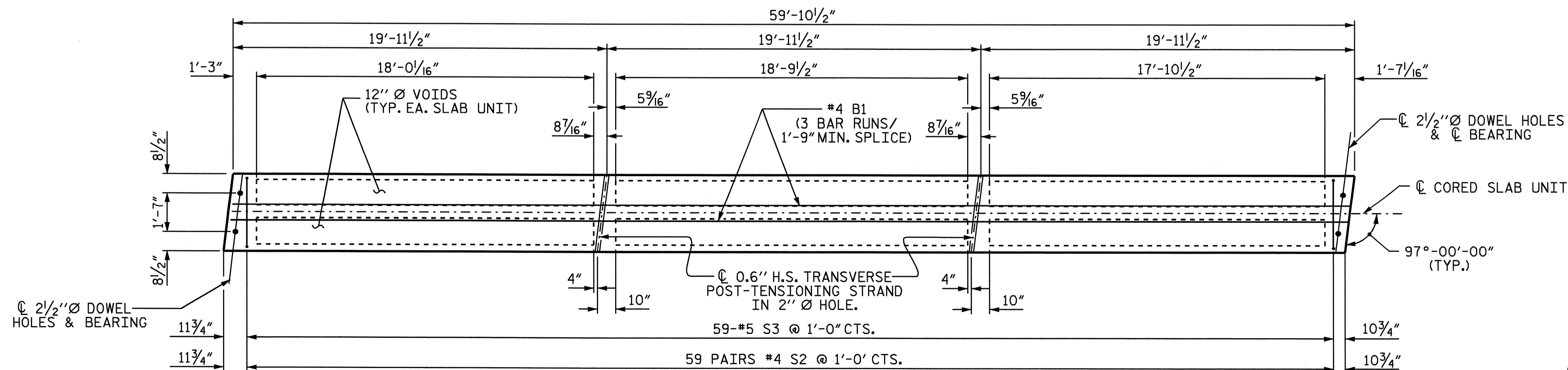


DRAWN BY: J.D. HAWK DATE: 8/08
 CHECKED BY: J.G. KHARVA DATE: 8/08

| REVISIONS | | | | | | SHEET NO. | |
|-----------|-----|-------|-----|-----|-------|--------------|--|
| NO. | BY: | DATE: | NO. | BY: | DATE: | S-5 | |
| 1 | | | 3 | | | TOTAL SHEETS | |
| 2 | | | 4 | | | 25 | |



PLAN OF SPAN B



PLAN OF CORED SLAB UNIT

EXTERIOR UNIT SHOWN, INTERIOR UNIT SIMILAR EXCEPT OMIT #5 S3 BARS.
 FOR LOCATION OF ADDITIONAL REINFORCING STEEL AT END OF SLAB UNIT,
 SEE "PART-PLAN EXTERIOR SECTION" SHEET 1 OF 5.

PROJECT NO. B-4184
 MADISON COUNTY
 STATION: 14+68.00 -L-

SHEET 3 OF 5

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

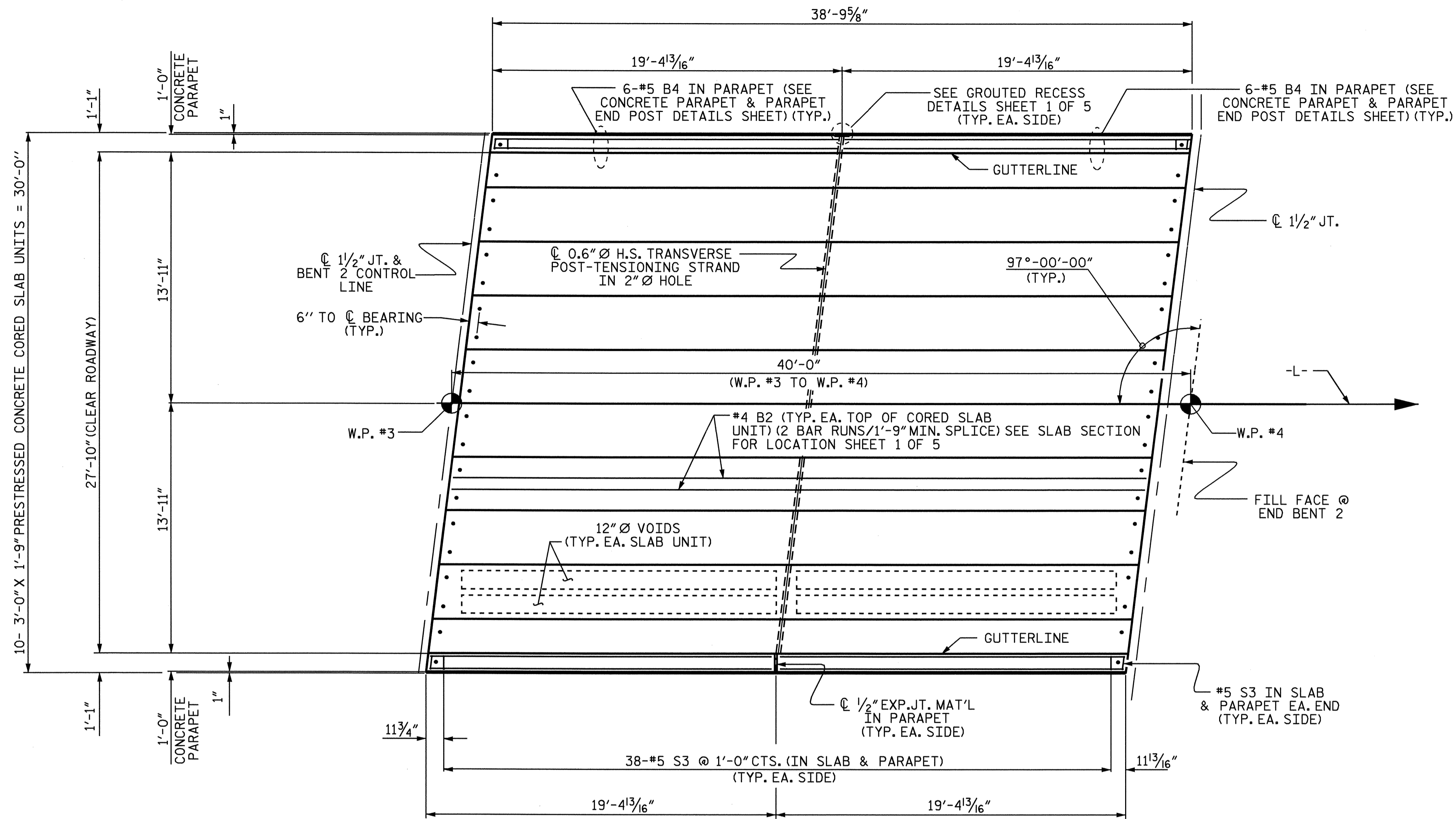
SUPERSTRUCTURE
 PLAN OF SPAN B



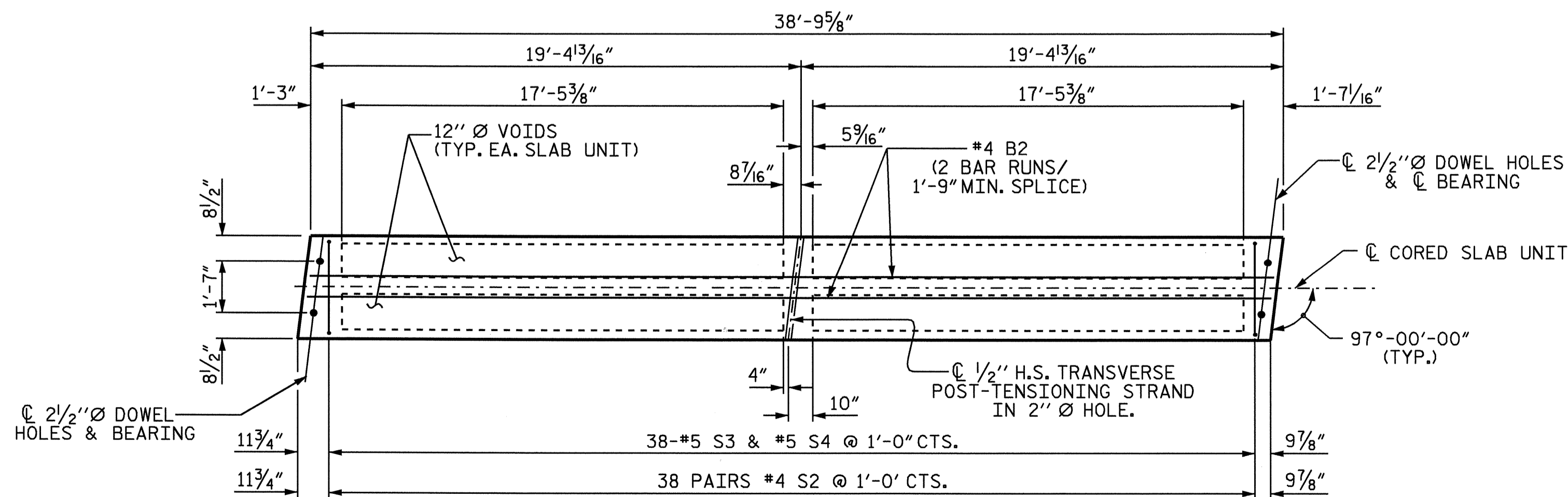
DRAWN BY: J.D. HAWK DATE: 8/08
 CHECKED BY: J.G. KHARVA DATE: 8/08

30-OCT-2008 14:30
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 jdhawk

| REVISIONS | | | | | | SHEET NO. |
|-----------|-----|-------|-----|-----|-------|--------------|
| NO. | BY: | DATE: | NO. | BY: | DATE: | S-6 |
| 1 | | | 3 | | | TOTAL SHEETS |
| 2 | | | 4 | | | 25 |



PLAN OF SPAN C



PLAN OF CORED SLAB UNIT

EXTERIOR UNIT SHOWN, INTERIOR UNIT SIMILAR EXCEPT OMIT #5 S3 BARS.
FOR LOCATION OF ADDITIONAL REINFORCING STEEL AT END OF SLAB UNIT,
SEE "PART-PLAN EXTERIOR SECTION" SHEET 1 OF 5.

PROJECT NO. B-4184
MADISON COUNTY
STATION: 14+68.00 -L-

SHEET 4 OF 5

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUPERSTRUCTURE
PLAN OF SPAN C

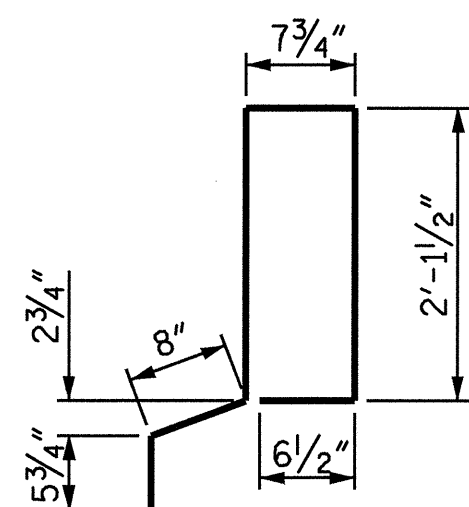


DRAWN BY: J.D. HAWK DATE: 8/08
CHECKED BY: J.G. KHARVA DATE: 8/08

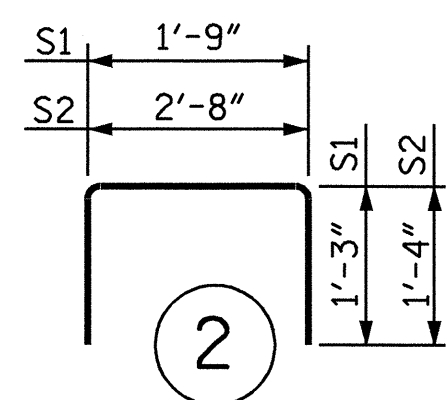
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JDHAWK

| REVISIONS | | | | | | SHEET NO. |
|-----------|-----|-------|-----|-----|-------|--------------|
| NO. | BY: | DATE: | NO. | BY: | DATE: | S-7 |
| 1 | | | 3 | | | TOTAL SHEETS |
| 2 | | | 4 | | | 25 |

BAR TYPES



1



2

ALL BAR DIMENSIONS ARE OUT TO OUT.

BILL OF MATERIAL FOR ONE CORED SLAB SECTION

| SPANS A & B | | | | EXTERIOR UNIT | | INTERIOR UNIT | |
|----------------------------------|--------|------|------|---------------|-----------|---------------|-----------|
| BAR | NUMBER | SIZE | TYPE | LENGTH | WEIGHT | LENGTH | WEIGHT |
| B1 | 6 | # 4 | STR | 23'-1" | 92 | 23'-1" | 92 |
| S1 | 8 | # 4 | 2 | 4'-3" | 23 | 4'-3" | 23 |
| S2 | 118 | # 4 | 2 | 5'-4" | 420 | 5'-4" | 420 |
| * S3 | 61 | # 5 | 1 | 6'-7" | 419 | | |
| REINFORCING STEEL | | | | | 535 LBS. | | 535 LBS. |
| * EPOXY COATED REINFORCING STEEL | | | | | 419 LBS. | | |
| 7,000 P.S.I. CONCRETE | | | | | 8.4 C. Y. | | 8.3 C. Y. |
| 0.6" Ø L.R. STRANDS No. | | | | | 24 | | 24 |

BILL OF MATERIAL FOR ONE CORED SLAB SECTION

| SPANS C | | | | EXTERIOR UNIT | | INTERIOR UNIT | |
|----------------------------------|--------|------|------|---------------|-----------|---------------|-----------|
| BAR | NUMBER | SIZE | TYPE | LENGTH | WEIGHT | LENGTH | WEIGHT |
| B2 | 4 | # 4 | STR | 20'-2" | 54 | 20'-2" | 54 |
| S1 | 8 | # 4 | 2 | 4'-3" | 23 | 4'-3" | 23 |
| S2 | 76 | # 4 | 2 | 5'-4" | 271 | 5'-4" | 271 |
| * S3 | 40 | # 5 | 1 | 6'-7" | 275 | | |
| REINFORCING STEEL | | | | | 348 LBS. | | 348 LBS. |
| * EPOXY COATED REINFORCING STEEL | | | | | 275 LBS. | | |
| 5,000 P.S.I. CONCRETE | | | | | 5.5 C. Y. | | 5.4 C. Y. |
| 0.6" Ø L.R. STRANDS No. | | | | | 11 | | 11 |

NOTES

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

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

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

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

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

WHEN CORED SLABS ARE CAST, A POSITIVE HOLD-DOWN SYSTEM SHALL BE EMPLOYED TO PREVENT VOIDS FROM RISING OR MOVING SIDEWAYS. THIS SYSTEM SHALL BE DESIGNED TO BE LEFT IN PLACE UNTIL THE CONCRETE HAS REACHED RELEASE STRENGTH. AT LEAST THREE WEEKS PRIOR TO CASTING CORED SLABS, THE CONTRACTOR SHALL SUBMIT TO THE ENGINEER FOR REVIEW AND COMMENT, DETAILED DRAWINGS OF THE PROPOSED HOLD-DOWN SYSTEM. IN ADDITION TO STRUCTURAL DETAILS, LOCATION AND SPACING OF THE HOLD-DOWNS SHALL BE INDICATED.

THE TRANSFER OF LOAD FROM THE ANCHORAGES TO THE CORED SLAB UNIT SHALL BE DONE WHEN THE CONCRETE HAS REACHED A COMPRESSIVE STRENGTH OF NOT LESS THAN 5400 PSI. SPANS A & B & 4000 PSI SPAN C.

ALL REINFORCING STEEL IN PARAPET SHALL BE EPOXY COATED.

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

APPLY EPOXY PROTECTIVE COATING TO CORED SLAB UNIT ENDS.

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

FOR PRESTRESSED CONCRETE MEMBERS, SEE SPECIAL PROVISIONS.

GRADE 270 STRANDS

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

SUPERSTRUCTURE REINFORCING STEEL LENGTHS ARE BASED ON THE FOLLOWING MINIMUM SPLICE LENGTHS

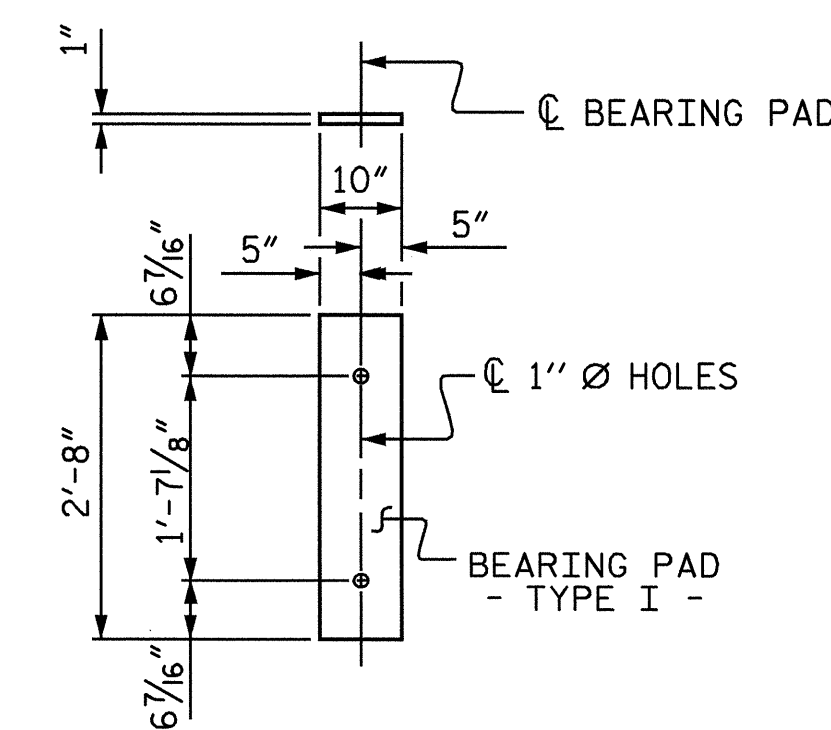
| BAR SIZE | SUPERSTRUCTURE EXCEPT APPROACH SLABS, PARAPET, AND BARRIER RAIL | | APPROACH SLABS | | PARAPET AND BARRIER RAIL |
|----------|---|----------|----------------|----------|--------------------------|
| | EPOXY COATED | UNCOATED | EPOXY COATED | UNCOATED | |
| #4 | 2'-0" | 1'-9" | 2'-0" | 1'-9" | 2'-9" |
| #5 | 2'-6" | 2'-2" | 2'-6" | 2'-2" | 3'-5" |
| #6 | 3'-0" | 2'-7" | 3'-10" | 2'-7" | 4'-4" |
| #7 | 5'-3" | 3'-6" | | | |
| #8 | 6'-10" | 4'-7" | | | |

CORED SLABS REQUIRED

| | NUMBER PER SPAN | LENGTH | | | TOTAL LENGTH |
|---------------|-----------------|-------------|-------------|------------|--------------|
| | | SPAN A | SPAN B | SPAN C | |
| EXTERIOR C.S. | 2 | 59'-10 1/2" | 59'-10 1/2" | 38'-9 5/8" | 317'-1 1/4" |
| INTERIOR C.S. | 8 | 59'-10 1/2" | 59'-10 1/2" | 38'-9 5/8" | 1268'-5" |
| TOTAL | 10 | | | | 1585'-6 1/4" |

| DEAD LOAD DEFLECTION AND CAMBER | | |
|--|--------------------|--------------------|
| | 3'-0" x 1'-9" | 3'-0" x 1'-9" |
| | SPANS A & B | SPAN C |
| | 0.6" Ø L.R. STRAND | 0.6" Ø L.R. STRAND |
| CAMBER (SLAB ALONE IN PLACE) | 4 1/4" ↑ | 1 1/16" ↑ |
| DEFLECTION DUE TO SUPERIMPOSED DEAD LOAD** | 3/4" ↓ | 1/8" ↓ |
| FINAL CAMBER | 3 1/2" ↑ | 9/16" ↑ |

** INCLUDES FUTURE WEARING SURFACE



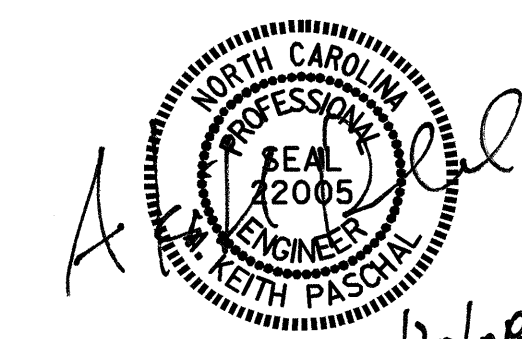
FIXED END
(TYPE I - 60 REQUIRED)

ELASTOMERIC BEARING DETAILS

PROJECT NO. B-4184
MADISON COUNTY
 STATION: 14+68.00 -L-

SHEET 5 OF 5

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH
 STANDARD
 3'-0" X 1'-9"
 PRESTRESSED
 CONCRETE CORED
 SLAB UNIT

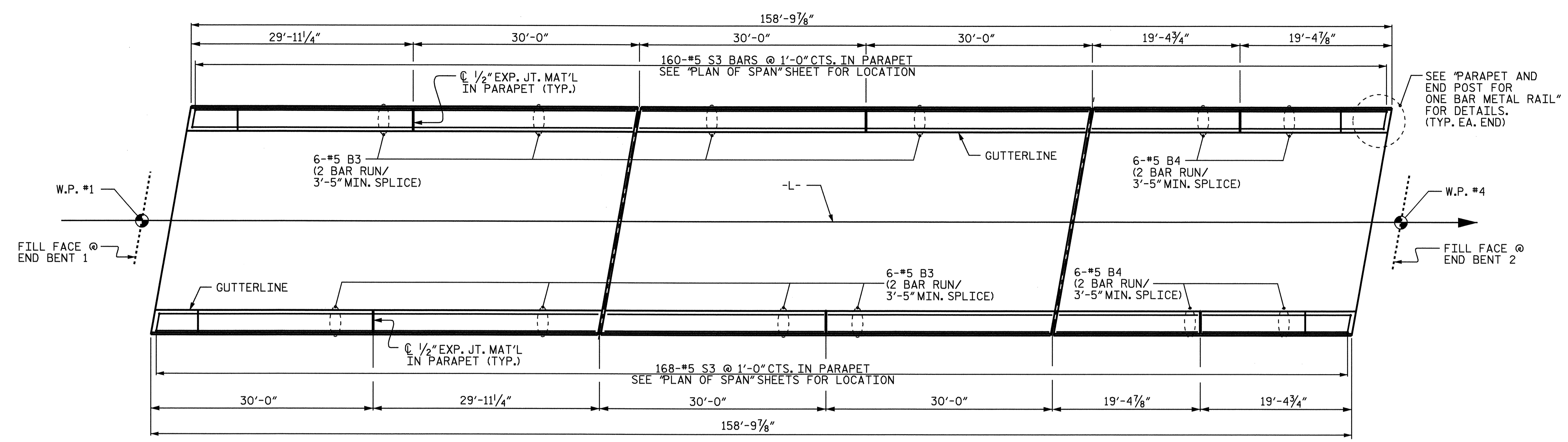


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|-----------|-----|-------|-----|-----|-------|--------------------|
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| 1 | | | 3 | | | TOTAL SHEETS 25 |
| 2 | | | 4 | | | |

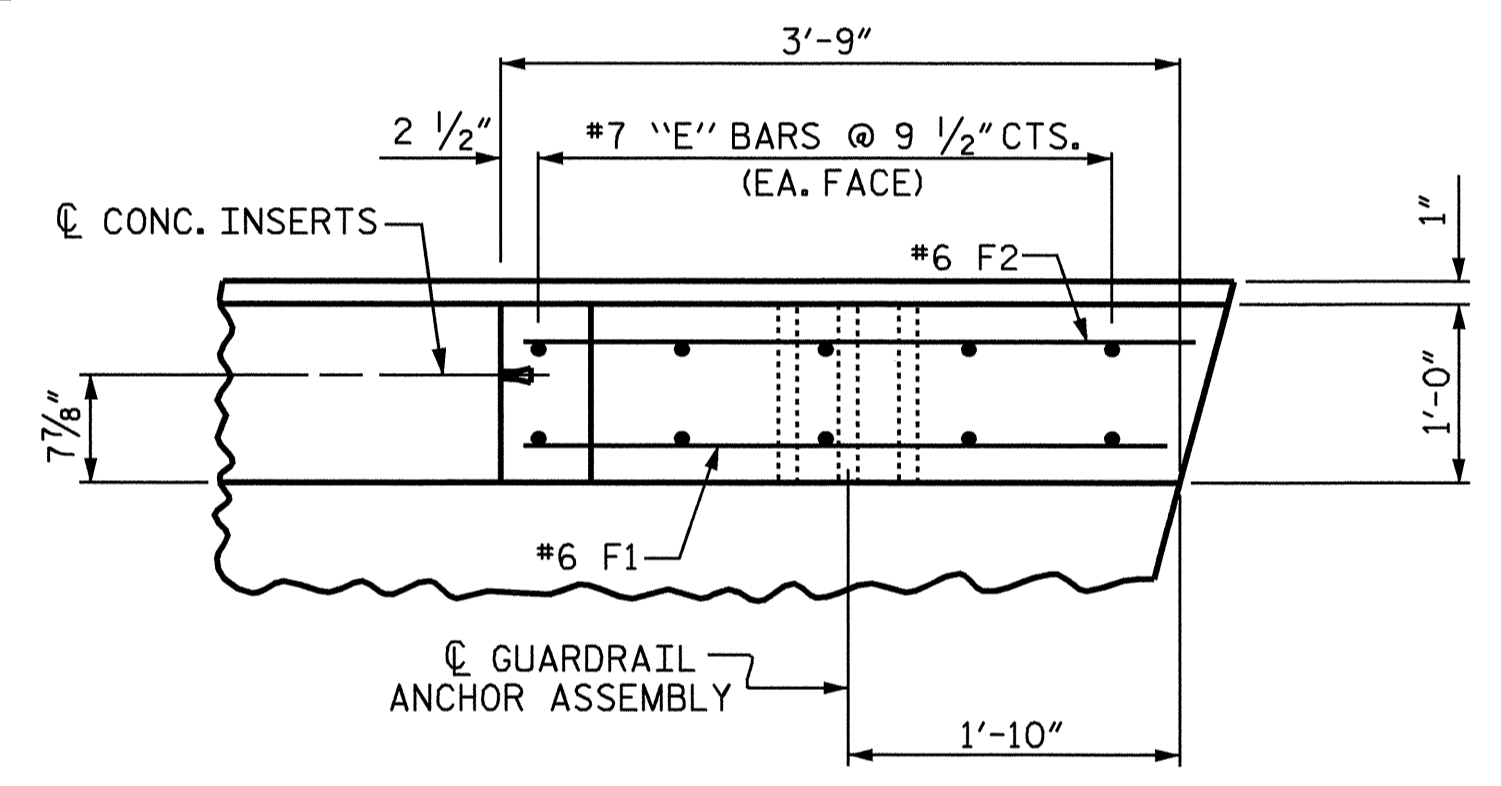
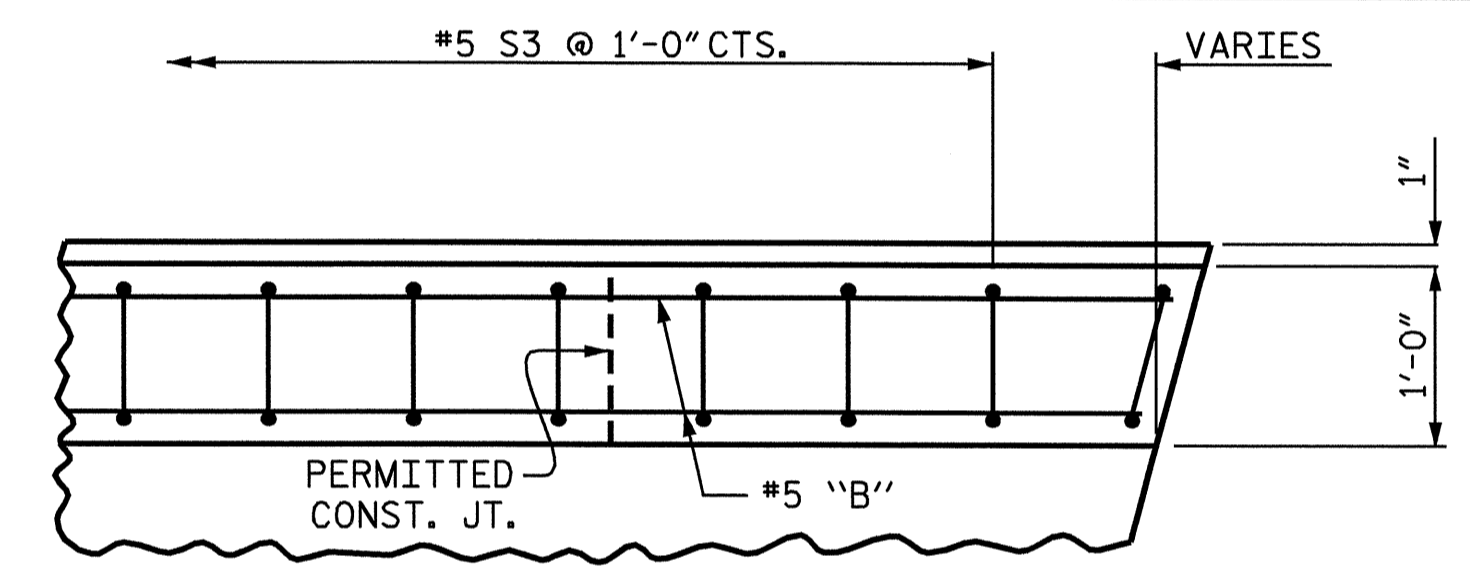
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|--------------------------|-----------------------|
| ASSEMBLED BY : J.D. HAWK | DATE : 8/08 |
| CHECKED BY : J.G. KHARVA | DATE : 8/08 |
| DRAWN BY : WJH 4/89 | REV. 2/6/97 EEM/RGW |
| CHECKED BY : FCJ 5/89 | REV. 8/16/99 RWW/LES |
| | REV. 10/17/00 RWW/LES |

BILL OF MATERIAL FOR PARAPETS AND END POSTS

| BAR | NO. | SIZE | TYPE | LENGTH | WEIGHT |
|--|-----|------|------|-----------------|--------|
| *B3 | 96 | #5 | STR | 16'-7" | 1660 |
| *B4 | 48 | #5 | STR | 11'-3" | 563 |
| *E1 | 8 | #7 | STR | 2'-7" | 42 |
| *E2 | 8 | #7 | STR | 2'-8" | 44 |
| *E3 | 8 | #7 | STR | 2'-10" | 46 |
| *E4 | 8 | #7 | STR | 3'-0" | 49 |
| *E5 | 8 | #7 | STR | 3'-1" | 50 |
| *F1 | 8 | #6 | STR | 3'-8" | 44 |
| *F2 | 8 | #6 | STR | 3'-6" | 42 |
| * EPOXY COATED REINFORCING STEEL 2450 LBS. | | | | | |
| CLASS AA CONCRETE | | | | 24.6 CU. YDS. | |
| CONCRETE PARAPET | | | | 317.65 LIN. FT. | |

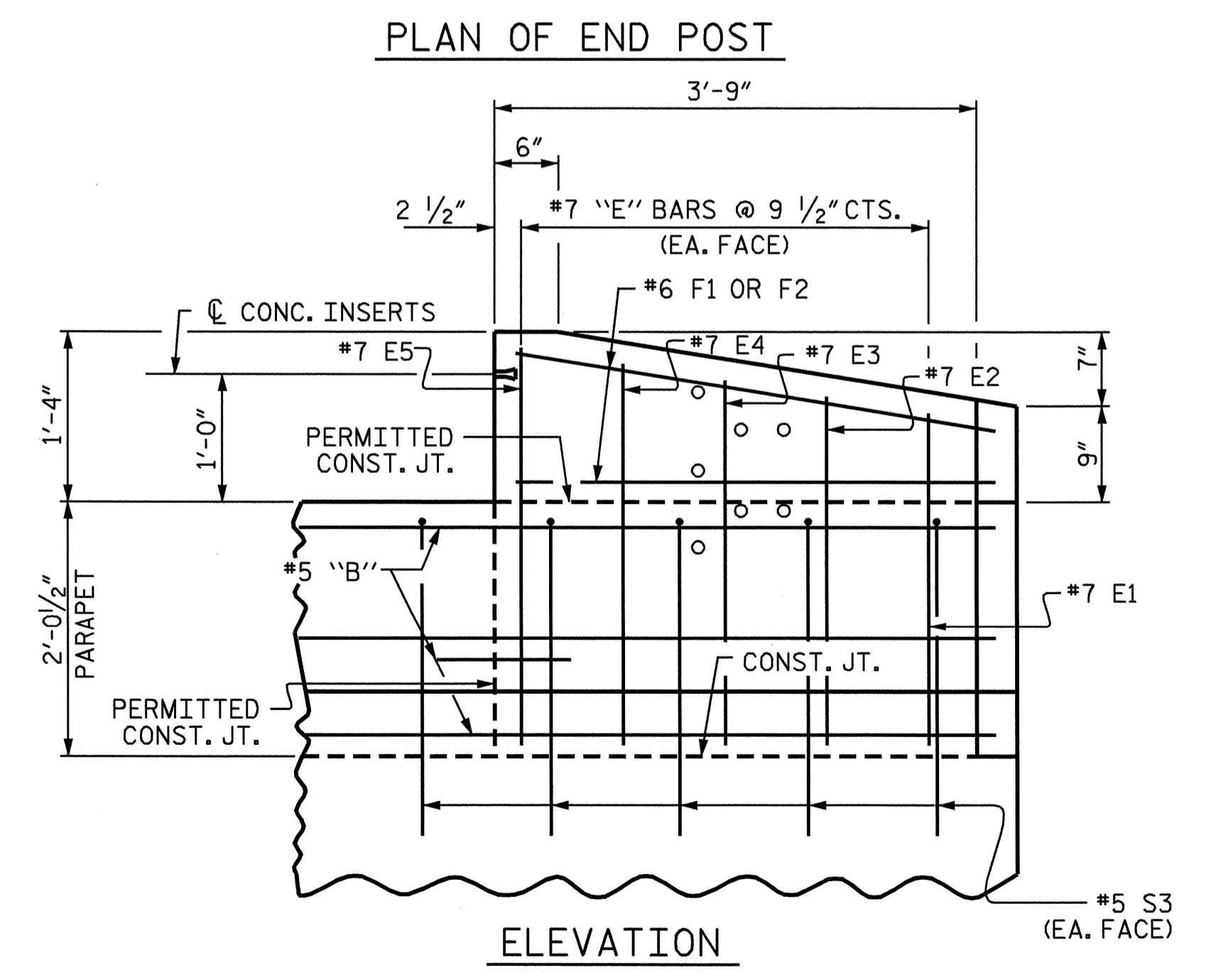
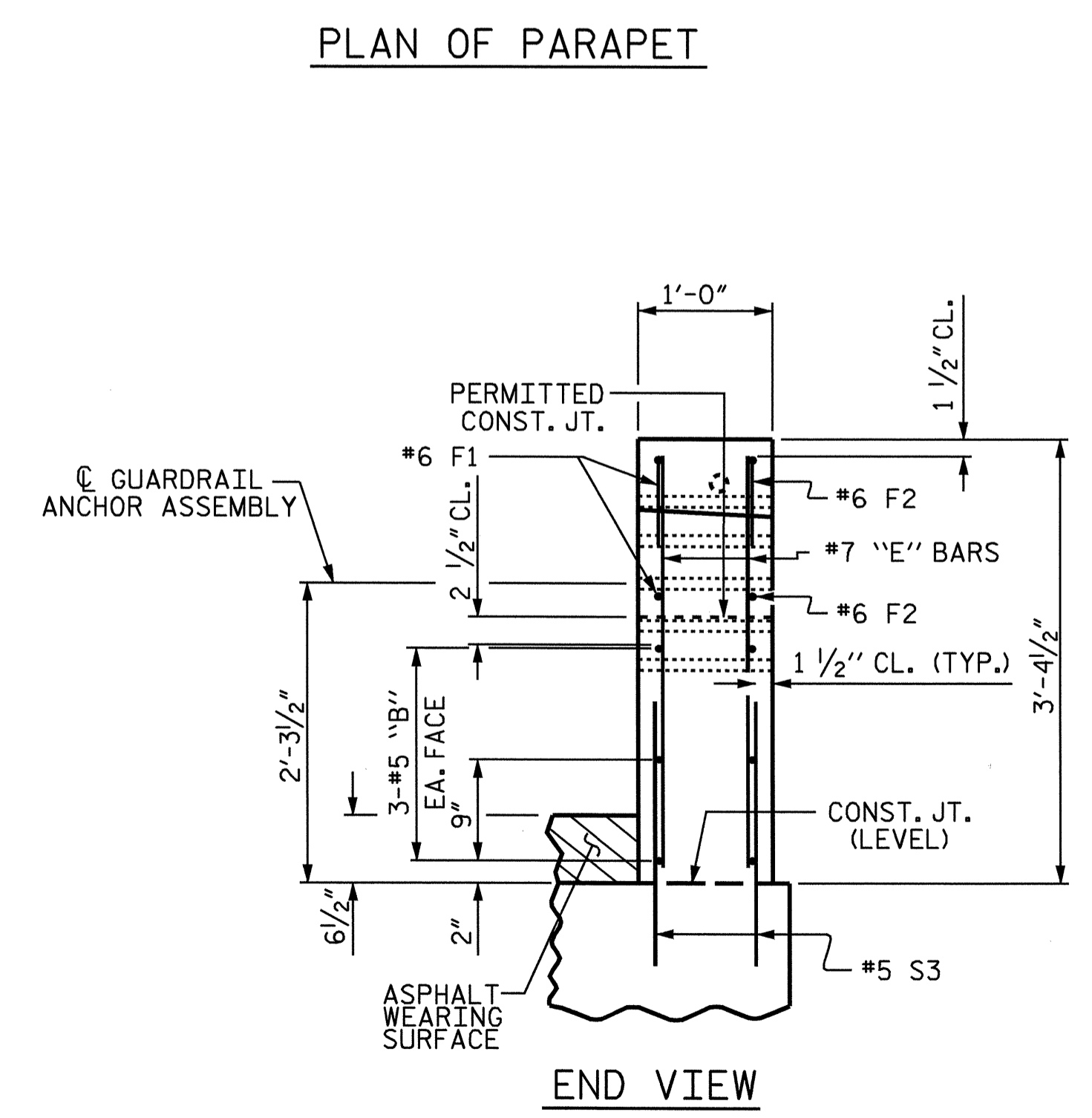
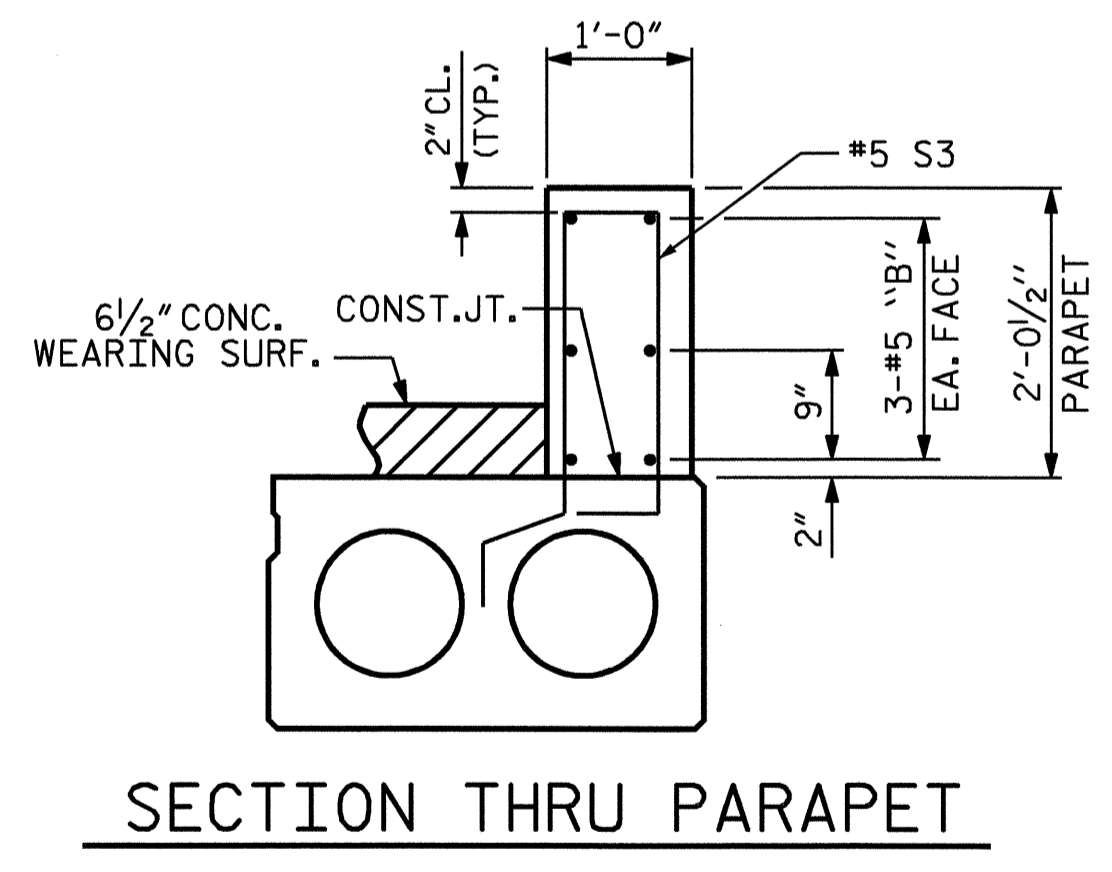


PLAN OF PARAPET



NOTES:

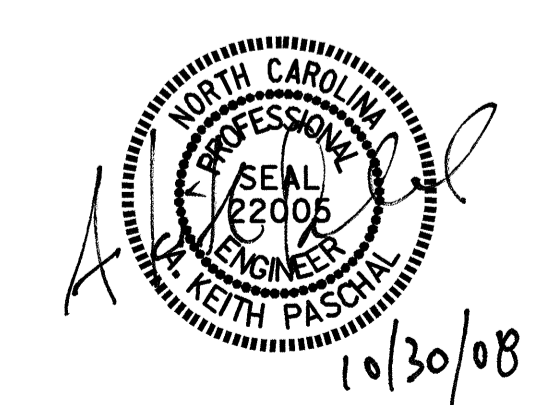
ALL REINFORCING STEEL IN THE PARAPETS AND END POSTS SHALL BE EPOXY COATED.
 FOR DETAILS OF CONCRETE INSERT AND GUARDRAIL ANCHOR ASSEMBLY, SEE 'RAIL POST SPACINGS AND END OF RAIL DETAILS' SHEET 3 OF 4.
 GROOVED CONTRACTION JOINTS, 1/2" IN DEPTH, SHALL BE TOOLED IN ALL EXPOSED FACES OF THE PARAPET IN ACCORDANCE WITH ARTICLE 825-10(B) OF THE STANDARD SPECIFICATIONS. THE CONTRACTION JOINT SHALL BE LOCATED AT A SPACING OF 8 FT. TO 10 FT. BETWEEN EXPANSION JOINTS. NO CONTRACTION JOINTS WILL BE REQUIRED FOR SEGMENTS LESS THAN 10 FT. IN LENGTH.
 THE #5 S3 BARS ARE INCLUDED IN BILL OF MATERIAL FOR CORED SLAB UNITS.



PARAPET AND END POST FOR ONE BAR METAL RAIL

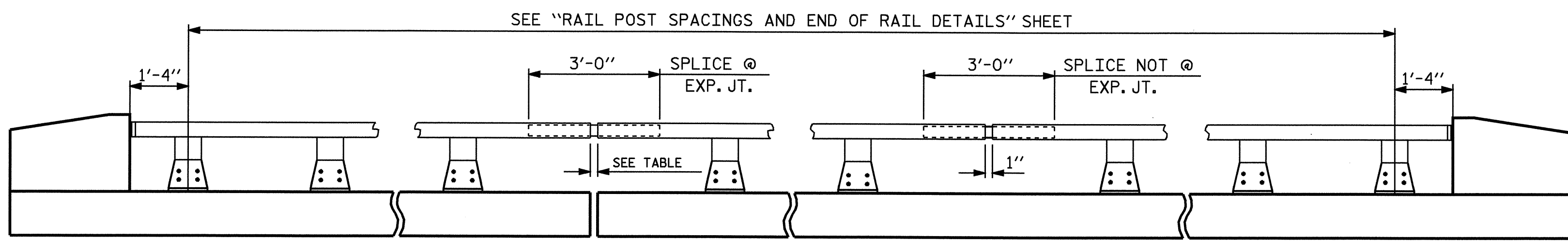
PROJECT NO. B-4184
MADISON COUNTY
 STATION: 14+68.00 -L-

SHEET 1 OF 4
 STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH
 SUPERSTRUCTURE
 CONCRETE PARAPET
 AND PARAPET
 END POST DETAILS



DRAWN BY: J.G. KHARVA DATE: 9/15/08
 CHECKED BY: J.D. HAWK DATE: 9/29/08

| REVISIONS | | | | | | SHEET NO. |
|-----------|-----|-------|-----|-----|-------|--------------|
| NO. | BY: | DATE: | NO. | BY: | DATE: | S-9 |
| 1 | | | 3 | | | TOTAL SHEETS |
| 2 | | | 4 | | | 25 |



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

NOTES

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

ALUMINUM RAILS

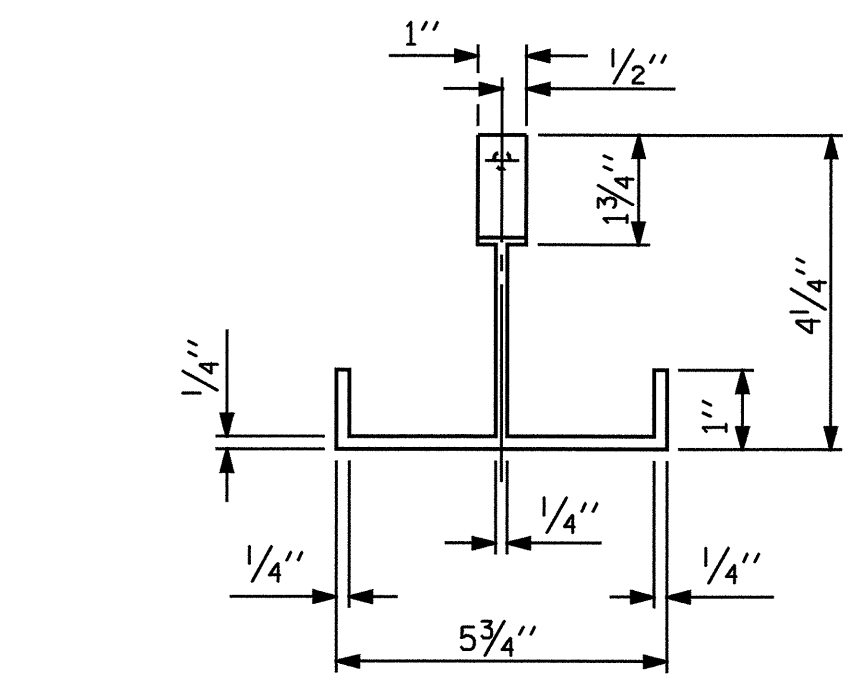
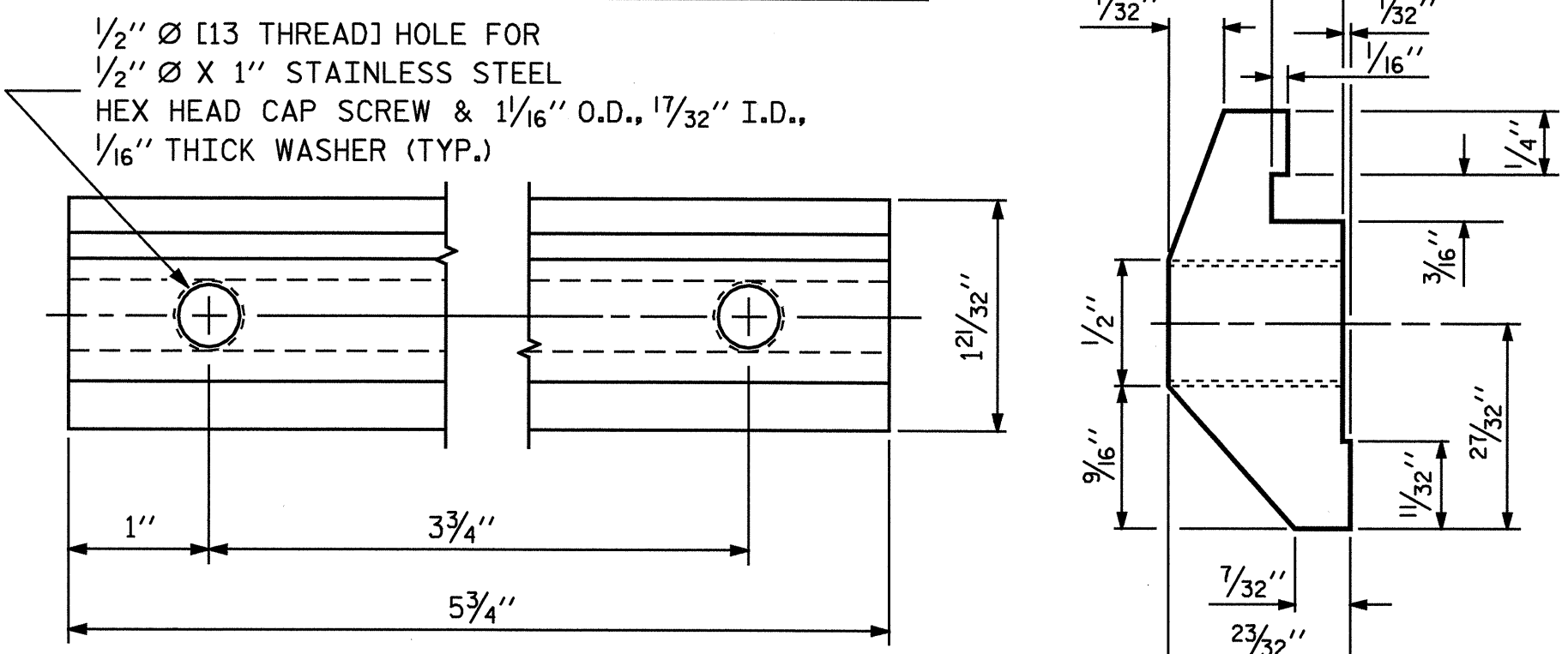
MATERIAL FOR POSTS, BASES AND RAILS, EXPANSION BARS AND CLAMP BARS SHALL BE ASTM B221 ALLOY 6061-T6. MATERIAL FOR RIVETS SHALL BE ASTM B316 ALLOY 6061-T6. RIVETS SHALL BE STANDARD BUTTON HEAD AND CONE POINT COLD DRIVEN AS PER DRAWING.

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

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

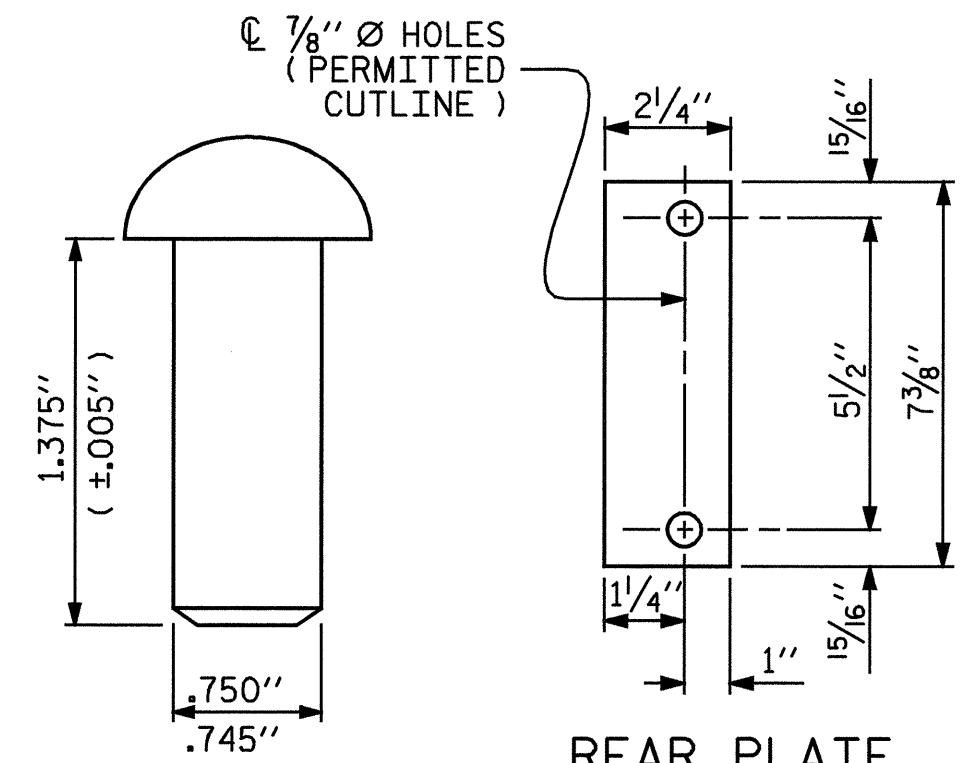
NOTE:
FOR ATTACHMENT OF METAL RAIL TO END POST, SEE STANDARD NO. BMR2.

ELEVATION

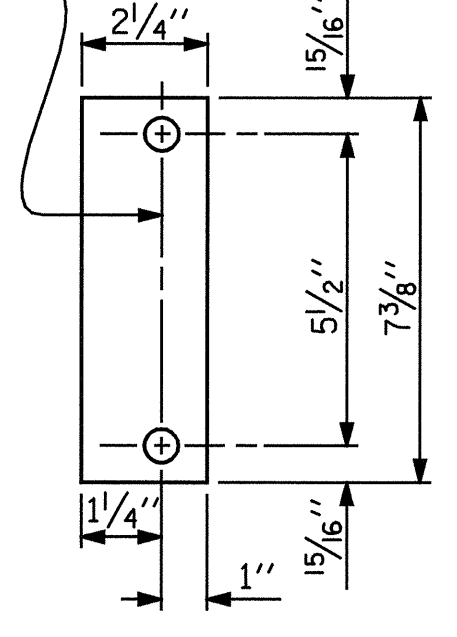


PLAN

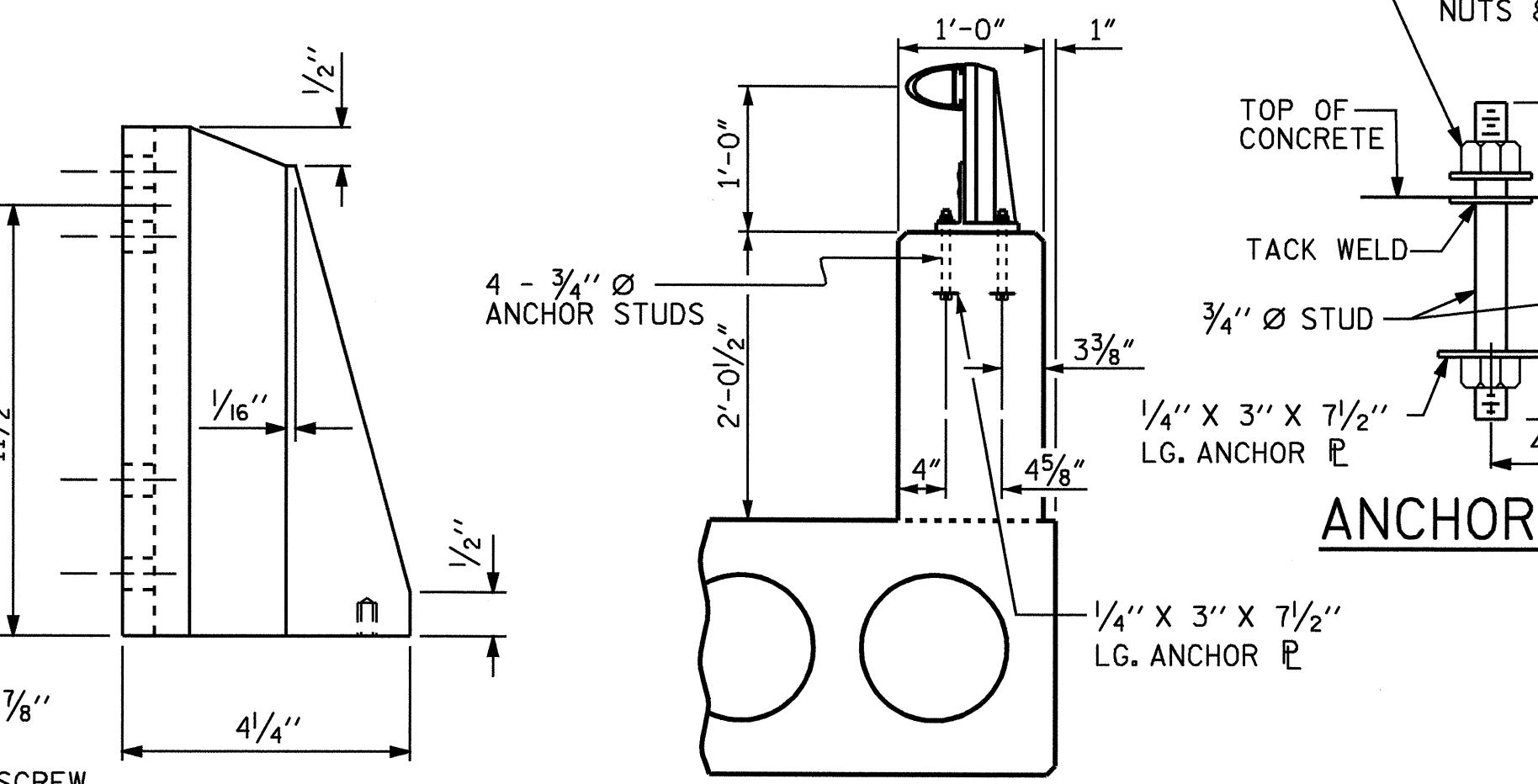
RIVET DETAIL



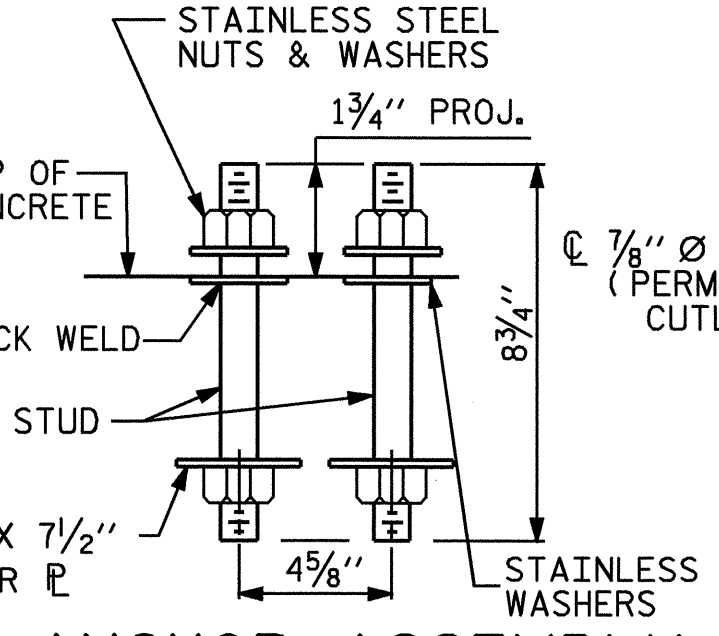
REAR PLATE



CLAMP BAR DETAIL
(2 REQUIRED PER POST)

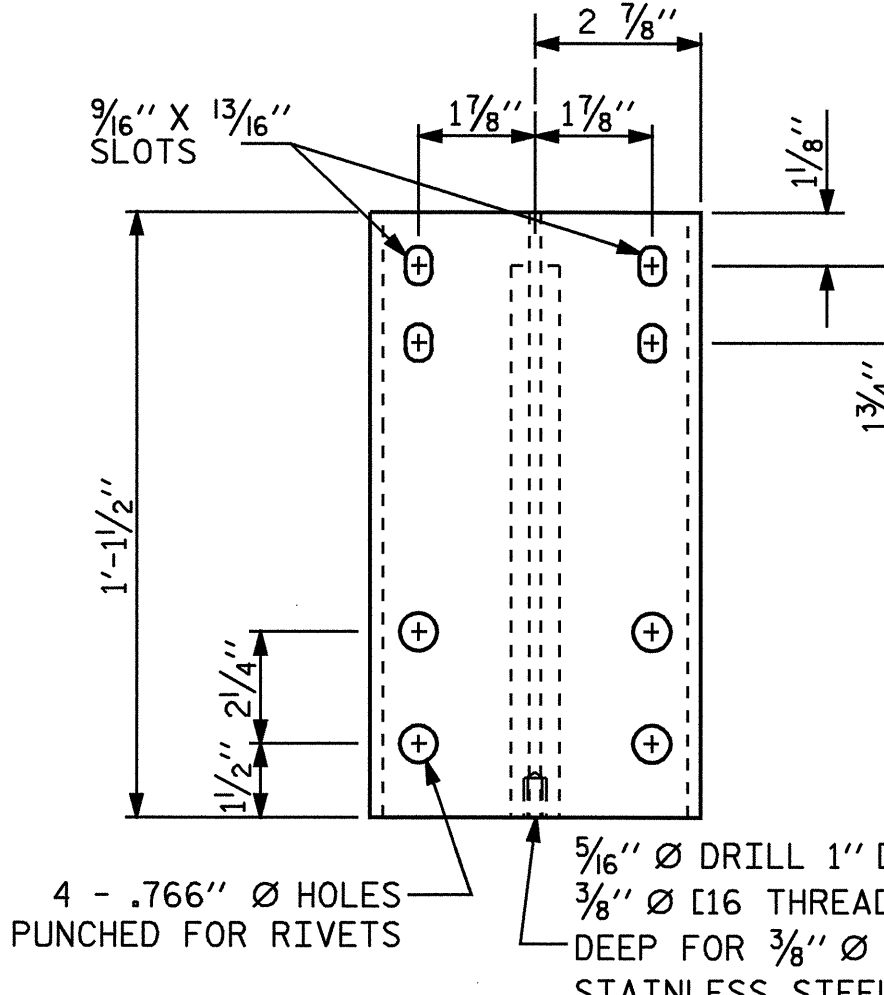


ANCHOR ASSEMBLY



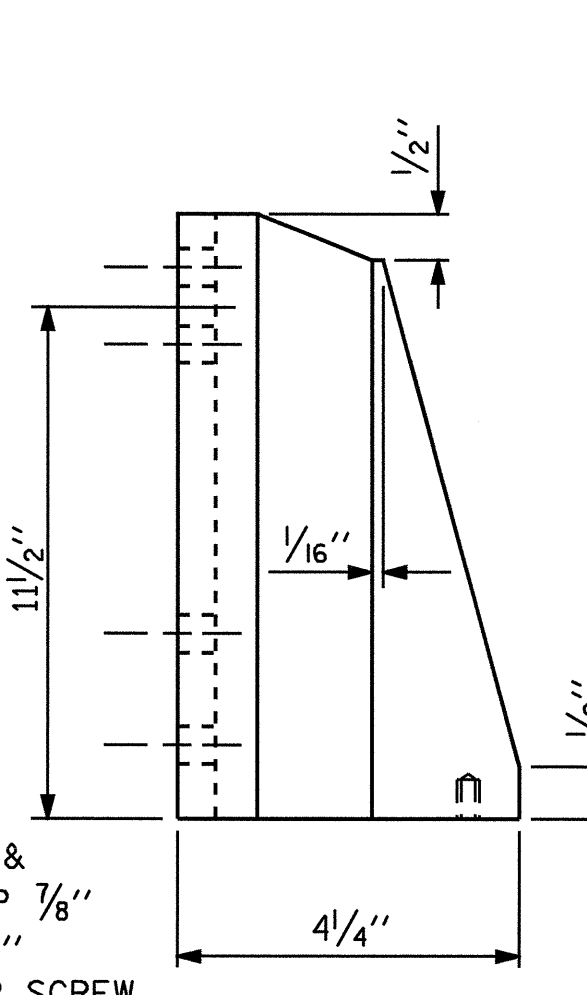
SHIM DETAILS

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

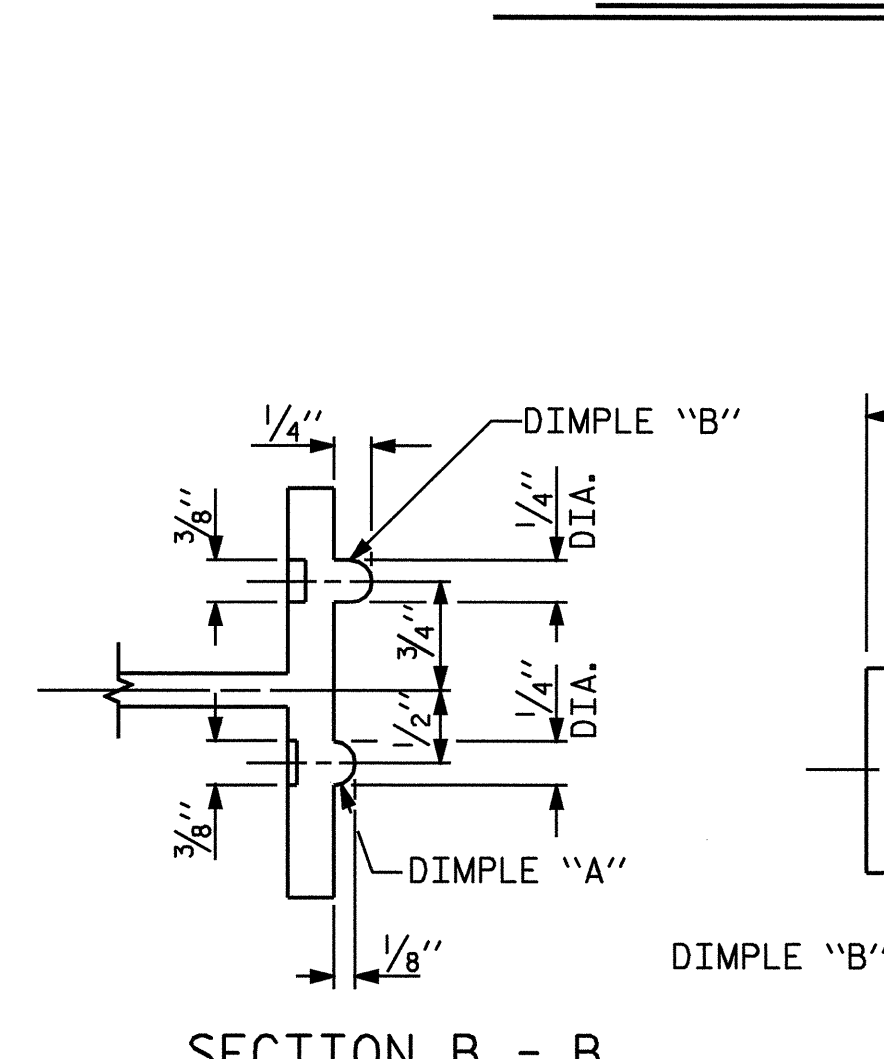


FRONT ELEVATION

SIDE ELEVATION

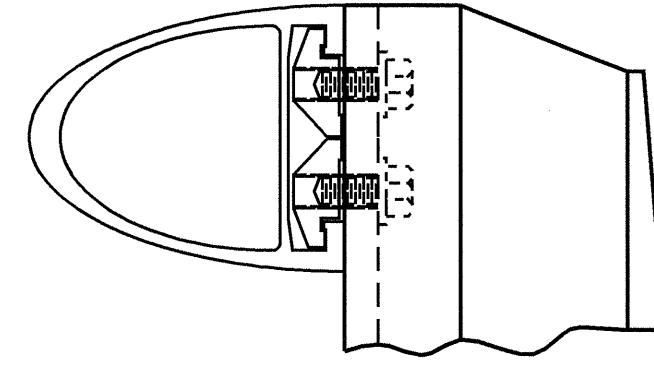
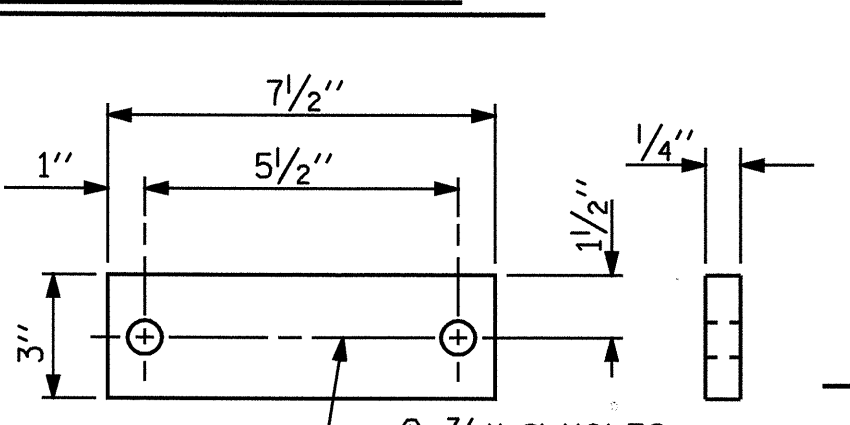


DETAILS OF POST



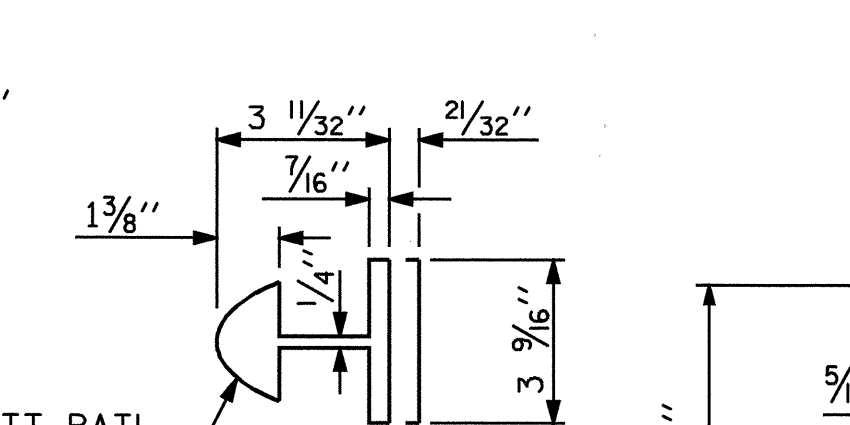
SECTION B - B

SECTION THRU PARAPET AND RAIL

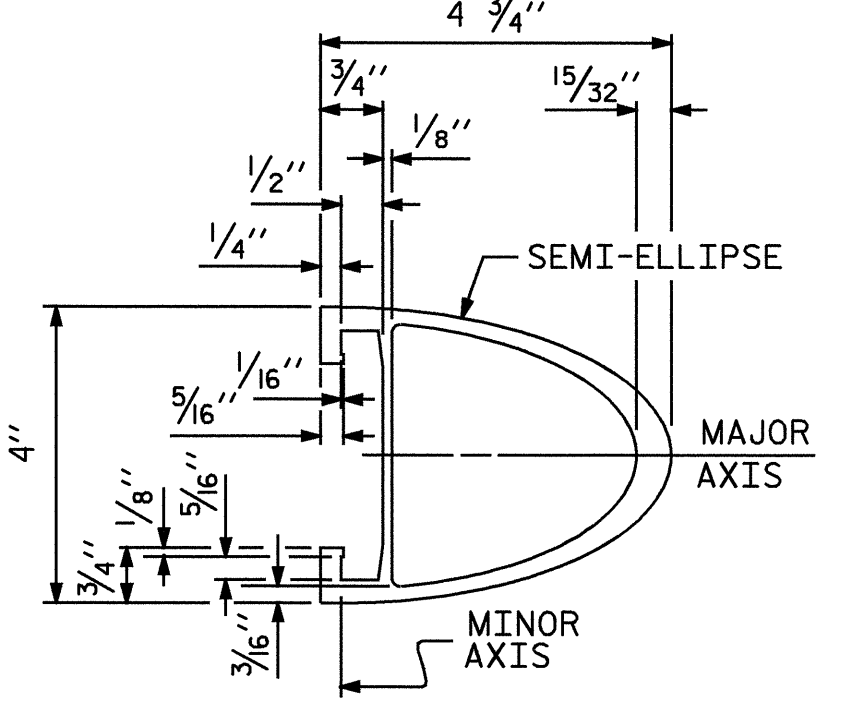


CLAMP & RAIL ASSEMBLY

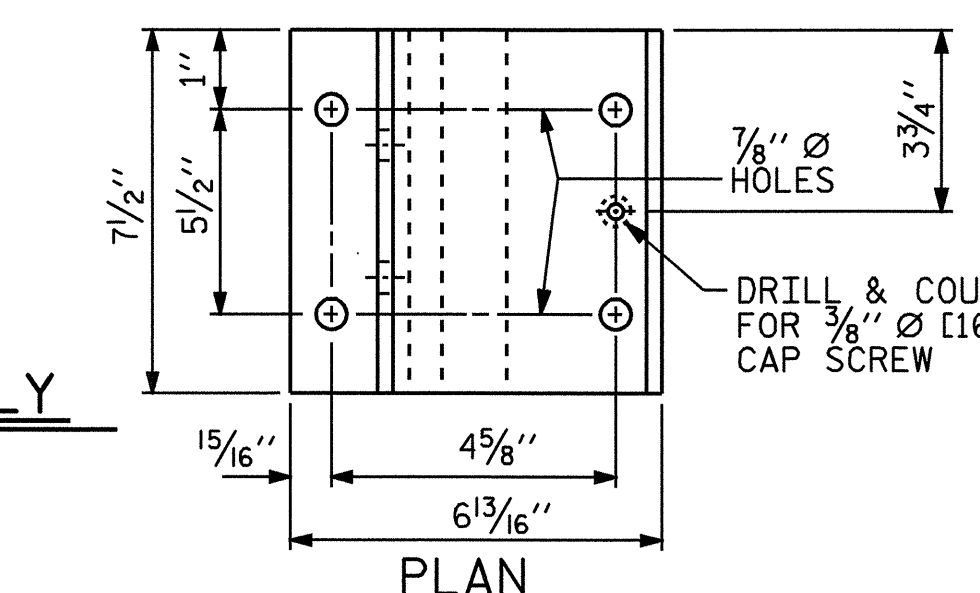
ANCHOR PLATE



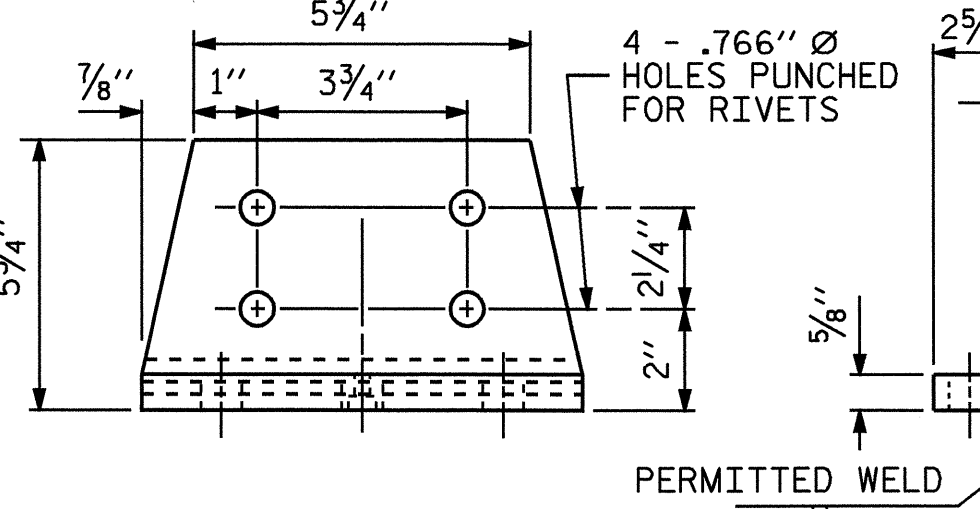
BAR SECTION



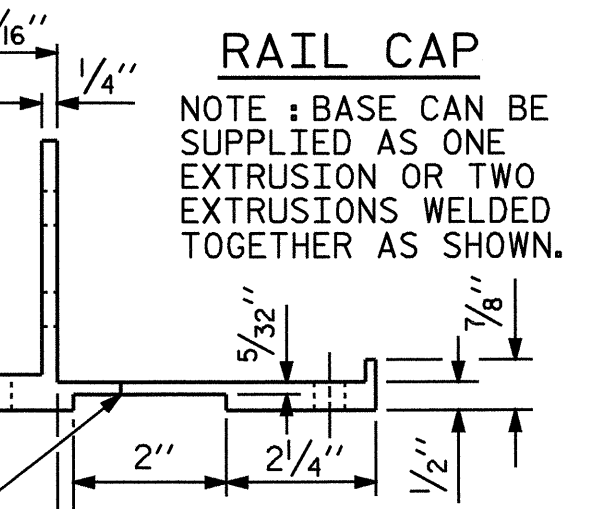
RAIL SECTION



PLAN



FRONT ELEVATION



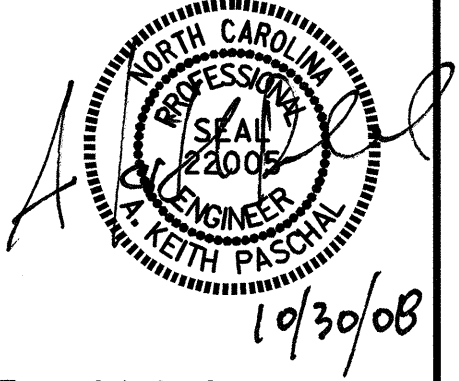
SIDE ELEVATION

RAIL CAP

NOTE: BASE CAN BE SUPPLIED AS ONE EXTRUSION OR TWO EXTRUSIONS WELDED TOGETHER AS SHOWN.

POST BASE DETAILS

PAY LENGTH = 302.35 LIN. FT.



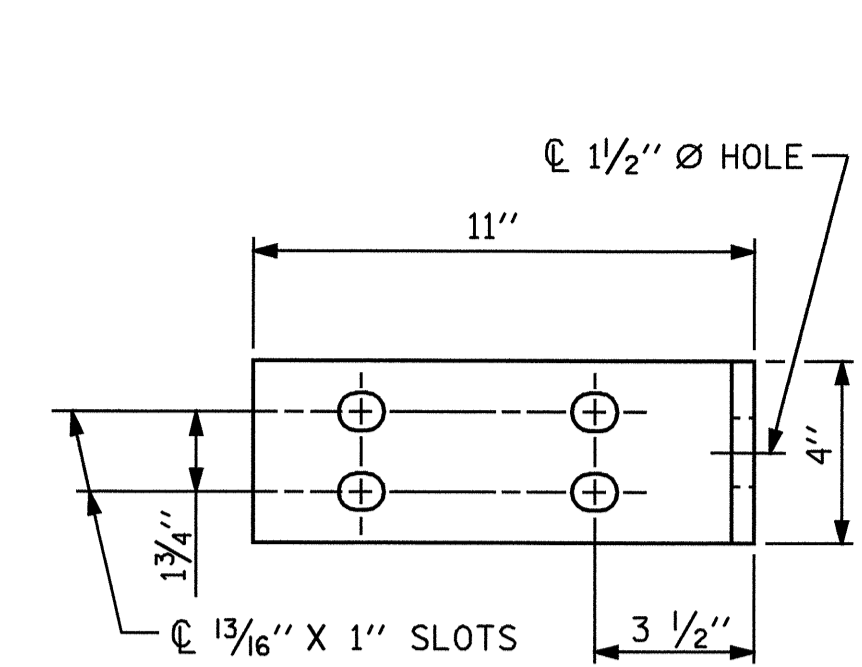
PROJECT NO. B-4184
MADISON COUNTY
STATION: 14+68.00 -L-

SHEET 2 OF 4

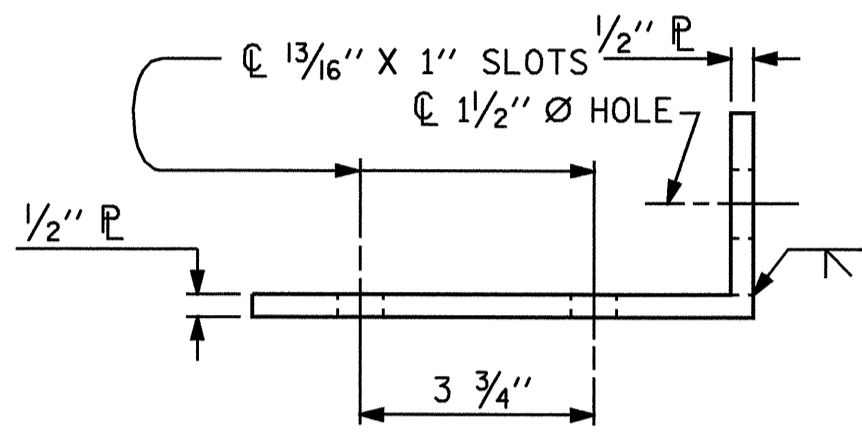
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|-----------|-----|-------|-----|-----------|--------------|
| NO. | BY: | DATE: | NO. | BY: | DATE: |
| 1 | | | 3 | | |
| 2 | | | 4 | | |
| | | | | | TOTAL SHEETS |
| | | | | | 25 |

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

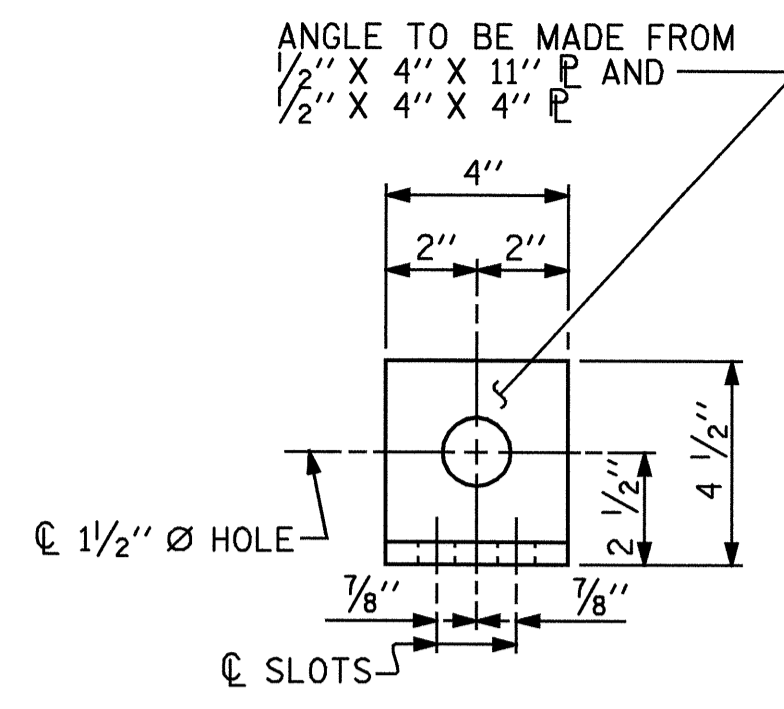
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| ASSEMBLED BY: J. G. KHARVA | DATE: 09/16/08 |
| CHECKED BY: J. D. HAWK | DATE: 09/29/08 |
| DRAWN BY: FCJ 1/88 | REV. 10/17/00 LES/RDR |
| CHECKED BY: CRK 3/89 | REV. 5/7/03R RWW/JTE |
| | REV. 5/1/06R KMM/GM |



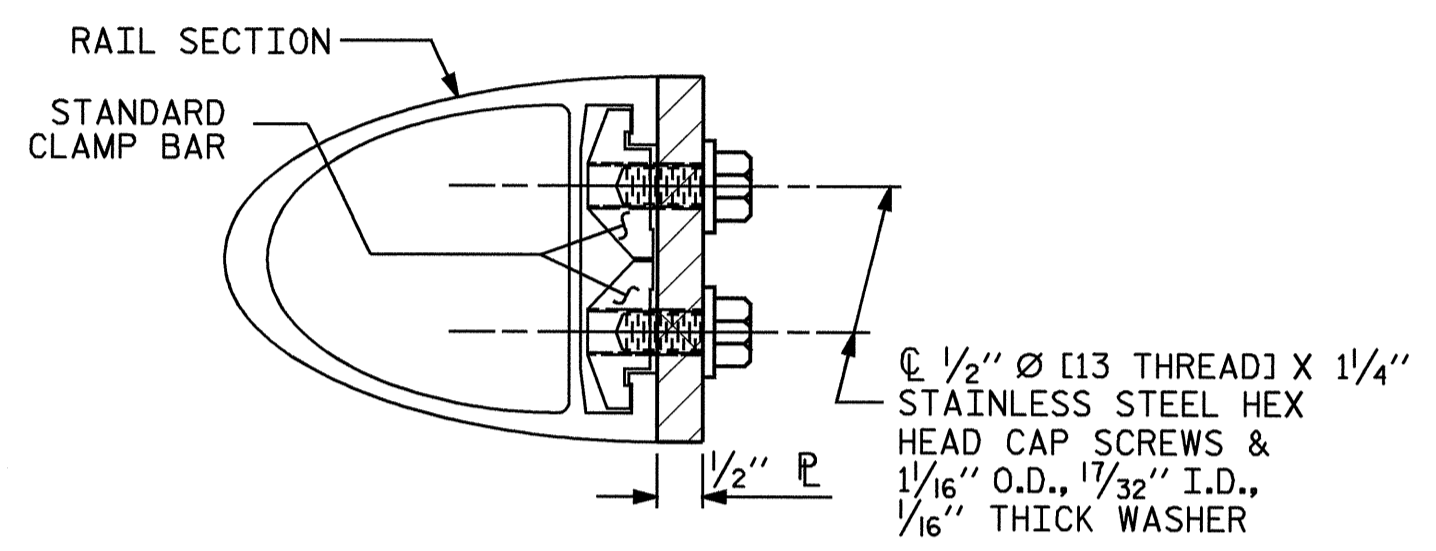
ELEVATION



TOP VIEW



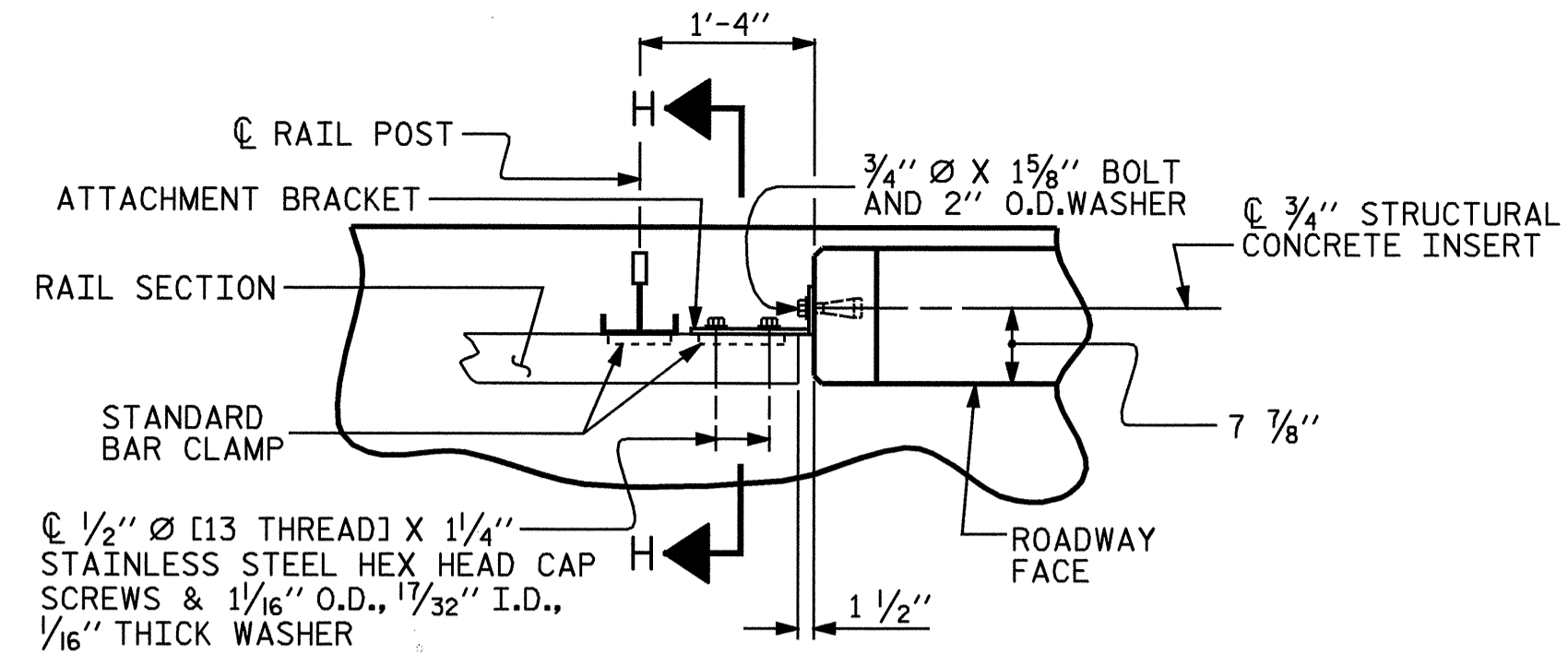
END VIEW (FIX)



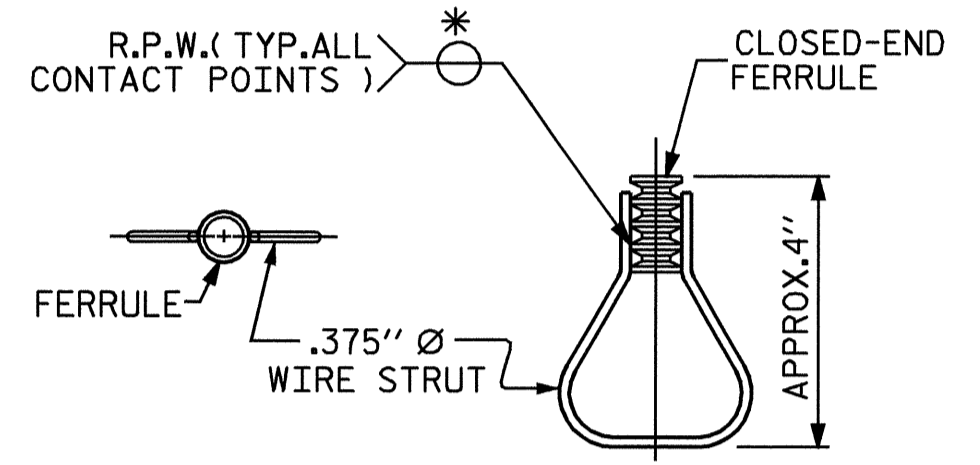
SECTION H-H (FIX)

FIXED

DETAILS FOR ATTACHING METAL RAIL TO END POST



PLAN - RAIL AND END POST



PLAN ELEVATION
STRUCTURAL CONCRETE INSERT

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

NOTES

STRUCTURAL CONCRETE INSERT

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

NOTES

METAL RAIL TO END POST CONNECTION

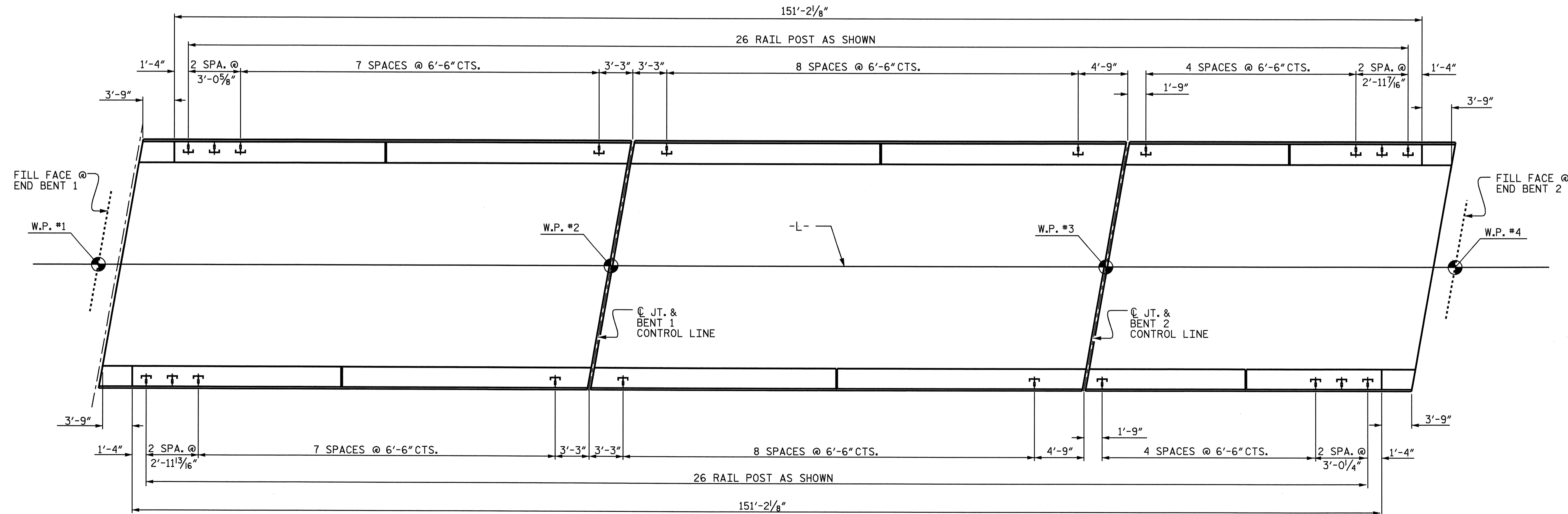
- THE METAL RAIL TO END POST CONNECTION SHALL CONSIST OF THE FOLLOWING COMPONENTS:
- 1/2" PLATES SHALL CONFORM TO AASHTO M270 GRADE 36 AND SHALL BE GALVANIZED AFTER FABRICATION.
 - 3/4" STRUCTURAL CONCRETE INSERT SHALL HAVE A WORKING LOAD SHEAR CAPACITY OF 4800 LBS. THE FERRULES SHALL ENGAGE A 3/4" Ø X 1 5/8" BOLT WITH 2" O.D. WASHER IN PLACE. THE 3/4" Ø X 1 5/8" BOLT SHALL HAVE N. C. THREADS.
 - CAP SCREWS FOR RAIL ATTACHMENT TO ANGLE SHALL CONFORM TO THE REQUIREMENTS OF ASTM F593 ALLOY 305 STAINLESS STEEL. CAP SCREWS TO BE CENTERED IN SLOTS AT 60°F.
 - STANDARD CLAMP BARS (SEE METAL RAIL SHEET).
 - 1/2" Ø PIPE SLEEVES (IF REQUIRED) TO BE GALVANIZED.

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

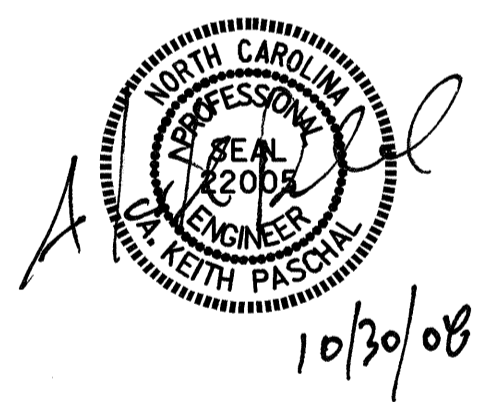
THE 3/4" STRUCTURAL CONCRETE INSERT WITH BOLT SHALL BE ASSEMBLED IN THE SHOP.

THE COST OF THE 3/4" STRUCTURAL CONCRETE INSERT ASSEMBLY, AND THE 1/2" PLATES COMPLETE IN PLACE SHALL BE INCLUDED IN THE VARIOUS PAY ITEMS.

THE CONTRACTOR, AT HIS OPTION, MAY USE AN ADHESIVE BONDING SYSTEM IN LIEU OF THE STRUCTURAL CONCRETE INSERT EMBEDDED IN THE END POST. IF THE ADHESIVE BONDING SYSTEM IS USED, THE 3/4" Ø X 1 5/8" BOLT WITH WASHER SHALL BE REPLACED WITH A 3/4" Ø X 6 1/2" BOLT AND 2" O.D. WASHER. ALL SPECIFICATIONS THAT APPLY TO THE 3/4" Ø X 1 5/8" BOLT SHALL APPLY TO THE 3/4" Ø X 6 1/2" BOLT. FIELD TESTING OF THE ADHESIVE BONDING SYSTEM IS NOT REQUIRED.



PLAN OF RAIL POST SPACING



PROJECT NO. B-4184
MADISON COUNTY
 STATION: 14+68.00 -L-

SHEET 3 OF 4

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

| REVISIONS | | | | | | SHEET NO. S-11 |
|-----------|-----|-------|-----|-----|-------|--------------------|
| NO. | BY: | DATE: | NO. | BY: | DATE: | |
| 1 | | | 3 | | | TOTAL SHEETS 25 |
| 2 | | | 4 | | | |

| | | | |
|----------------|--------------|---------------|----------|
| ASSEMBLED BY : | J. G. KHARVA | DATE : | 09/16/08 |
| CHECKED BY : | J. D. HAWK | DATE : | 09/29/08 |
| DRAWN BY : | FCJ 1/88 | REV. 10/17/00 | LES/RDR |
| CHECKED BY : | CRK 3/89 | REV. 5/7/03 | RWW/JTE |
| | | REV. 5/1/06 | TLA/GM |

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.

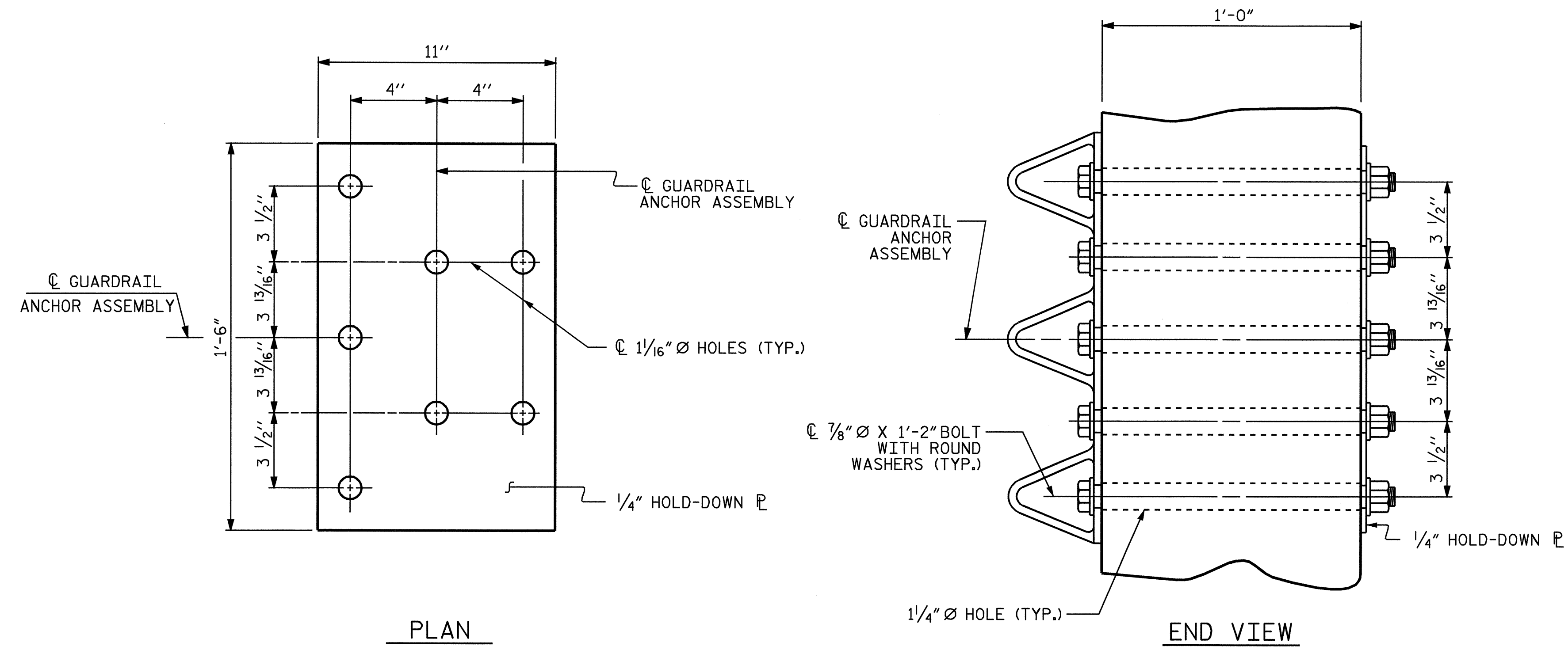
BOLTS SHALL CONFORM TO THE REQUIREMENTS OF ASTM A307 AND NUTS SHALL CONFORM TO THE REQUIREMENTS OF AASHTO M291. BOLTS, NUTS AND WASHERS SHALL BE GALVANIZED. AT THE CONTRACTOR'S OPTION, STAINLESS STEEL BOLTS, NUTS AND WASHERS MAY BE USED AS AN ALTERNATE FOR THE 7/8" Ø GALVANIZED BOLTS, NUTS AND WASHERS.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

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

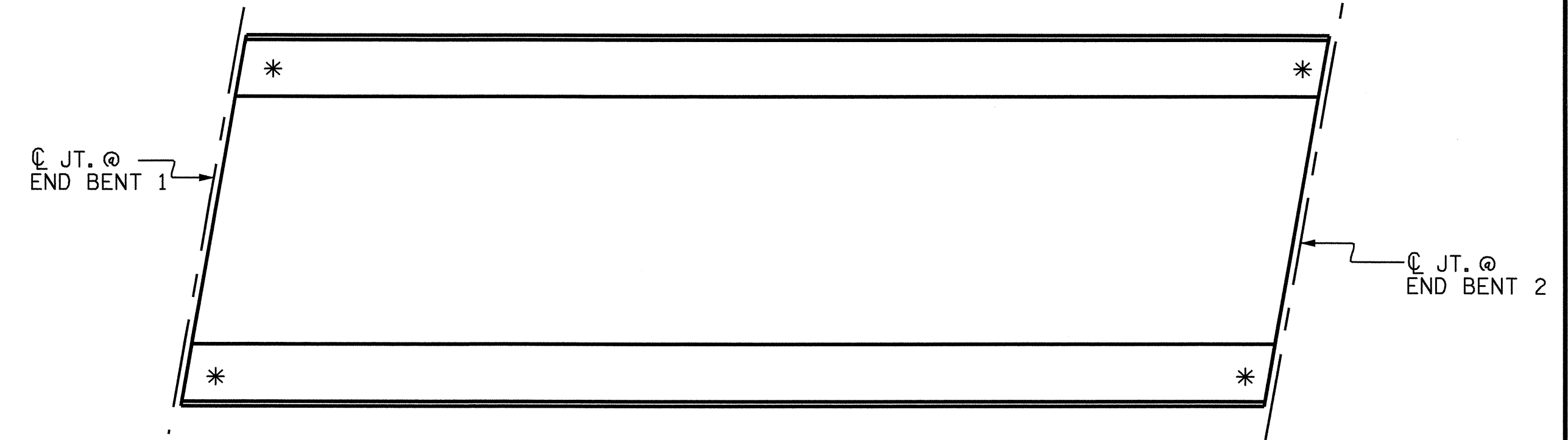
THE COST OF THE GUARDRAIL ANCHOR ASSEMBLIES WITH BOLTS, NUTS AND WASHERS COMPLETE IN PLACE, SHALL BE INCLUDED IN THE VARIOUS PAY ITEMS.

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

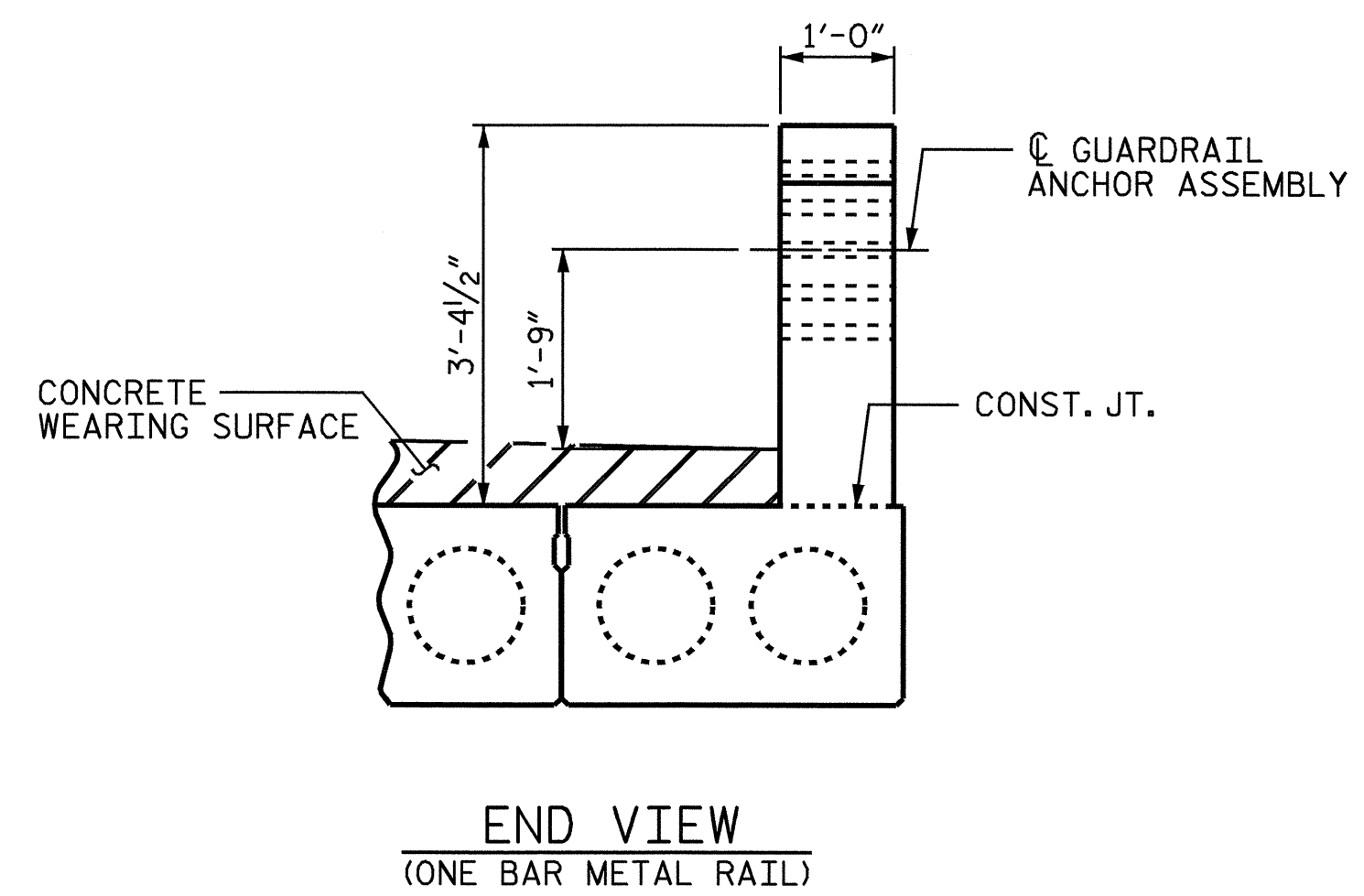
THE 1 1/4" Ø HOLES SHALL BE FORMED OR DRILLED WITH A CORE BIT. IMPACT TOOLS WILL NOT BE PERMITTED. ANY CONCRETE DAMAGED BY THIS WORK SHALL BE REPAIRED TO THE SATISFACTION OF THE ENGINEER.



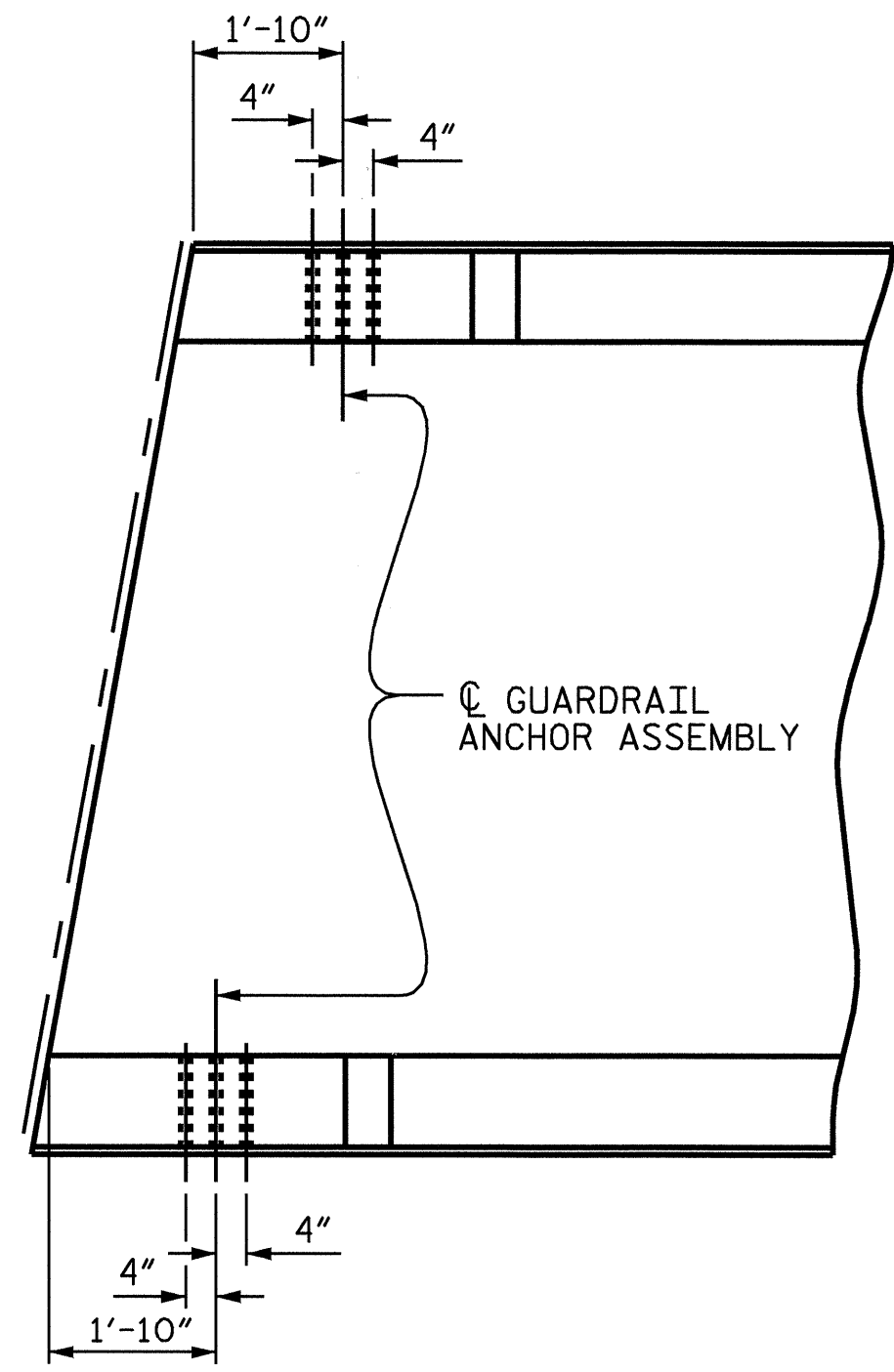
GUARDRAIL ANCHOR ASSEMBLY DETAILS



SKETCH SHOWING POINTS OF ATTACHMENT
* LOCATION OF GUARDRAIL ATTACHMENT



END VIEW
(ONE BAR METAL RAIL)

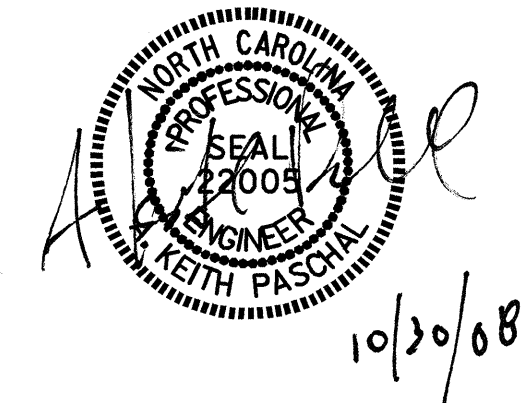


PLAN
END BENT 1 SHOWN, END BENT 2 SIMILAR

LOCATION OF GUARDRAIL ANCHOR AT END POST

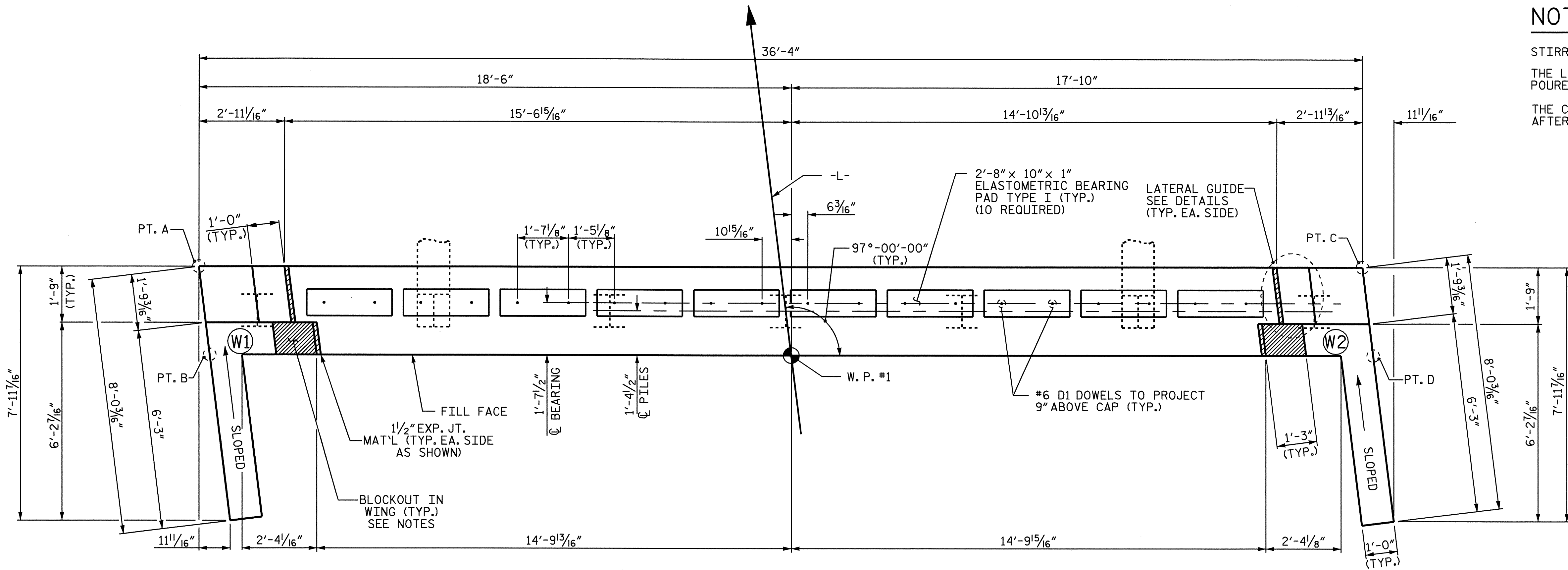
PROJECT NO. B-4184
MADISON COUNTY
STATION: 14+68.00 -L-
SHEET 4 OF 4

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



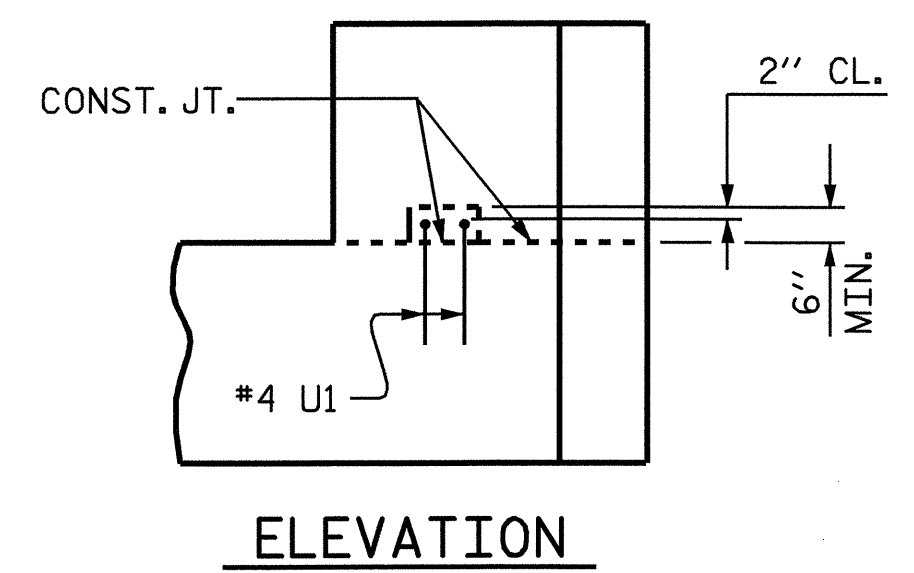
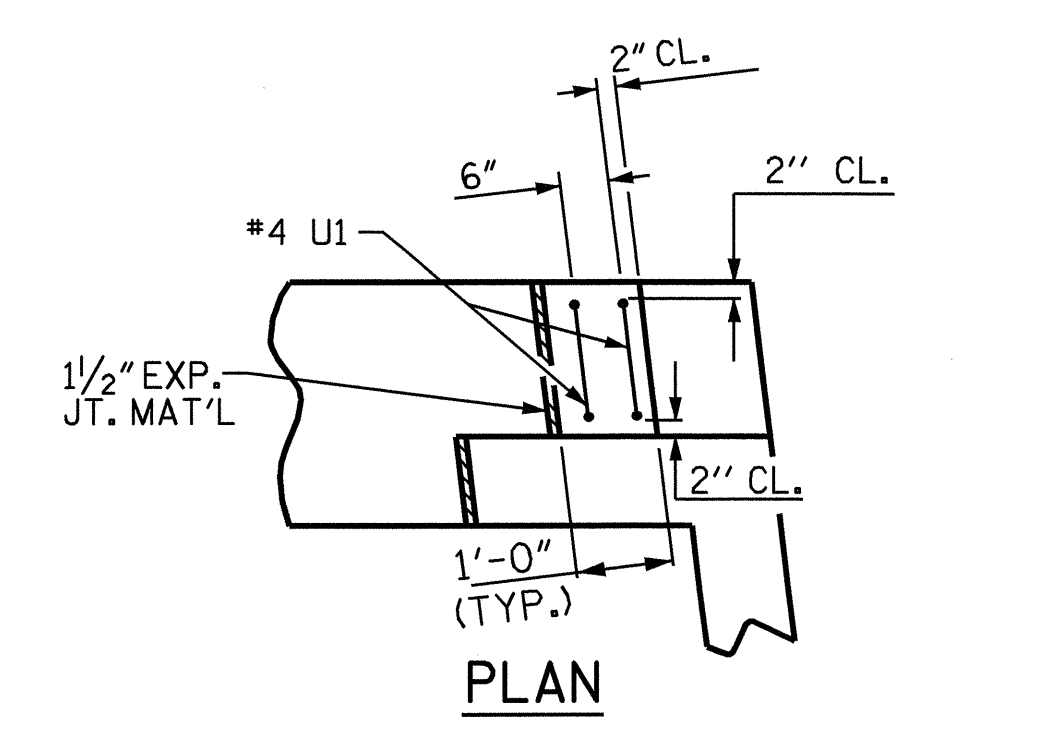
| | |
|-----------------------------|-----------------------|
| ASSEMBLED BY : J. G. KHARVA | DATE : 09/15/08 |
| CHECKED BY : J. D. HAWK | DATE : 09/29/08 |
| DRAWN BY : EEM 6/94 | REV. 10/17/00 RWW/LJS |
| CHECKED BY : RGW 6/94 | REV. 5/7/03 RWW/JTE |
| | REV. 5/1/06 TLA/GM |

| REVISIONS | | | | | | SHEET NO. |
|-----------|-----|-------|-----|-----|-------|--------------|
| NO. | BY: | DATE: | NO. | BY: | DATE: | S-12 |
| 1 | | | 3 | | | TOTAL SHEETS |
| 2 | | | 4 | | | 25 |

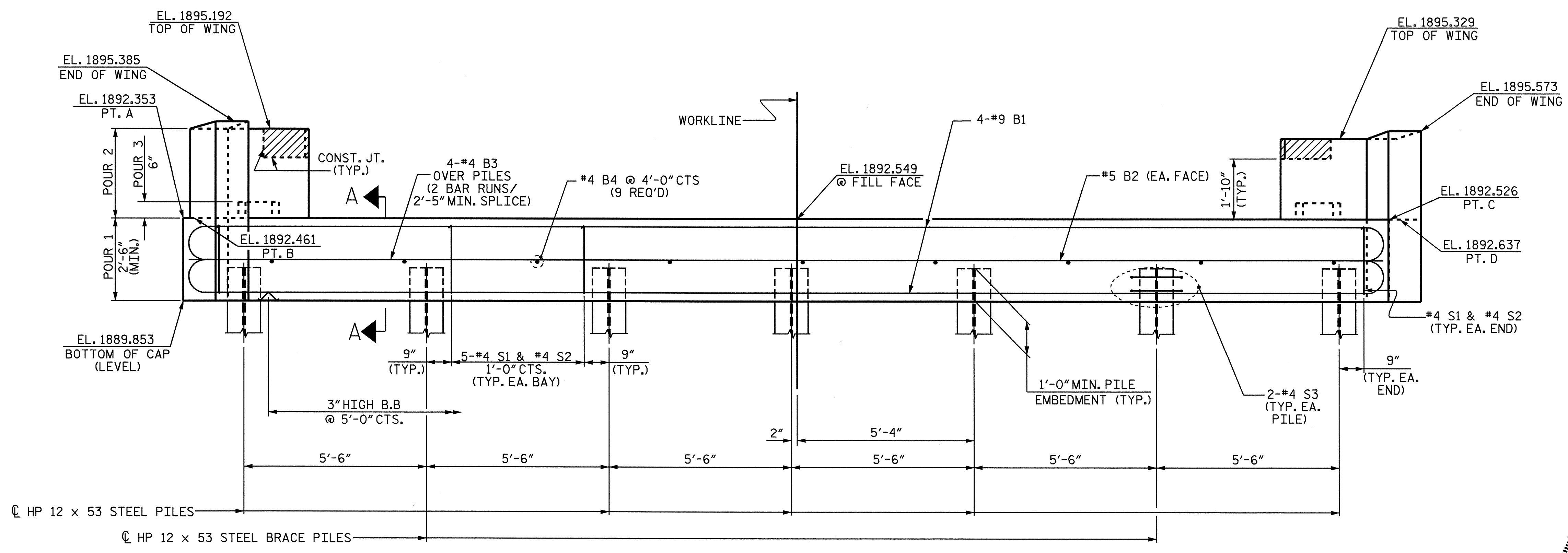


PLAN

NOTES
 STIRRUPS IN CAP MAY BE SHIFTED AS NECESSARY TO CLEAR DOWELS.
 THE LATERAL GUIDE AT EACH END OF THE CAP IS NOT TO BE POURED UNTIL AFTER THE CORED SLAB UNITS ARE IN PLACE.
 THE CONCRETE IN THE SHADED AREA OF THE WING SHALL BE POURED AFTER THE PARAPET IS CAST IF SLIP FORMING IS USED.



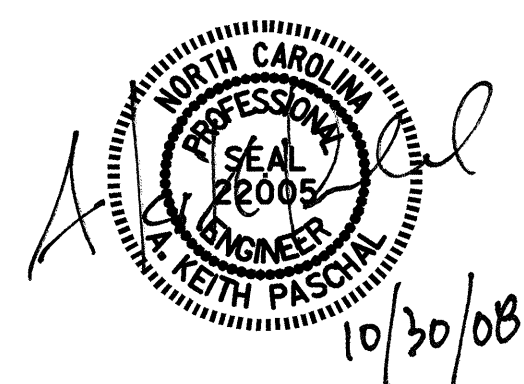
LATERAL GUIDE DETAILS
 (EACH END SIMILAR)



ELEVATION

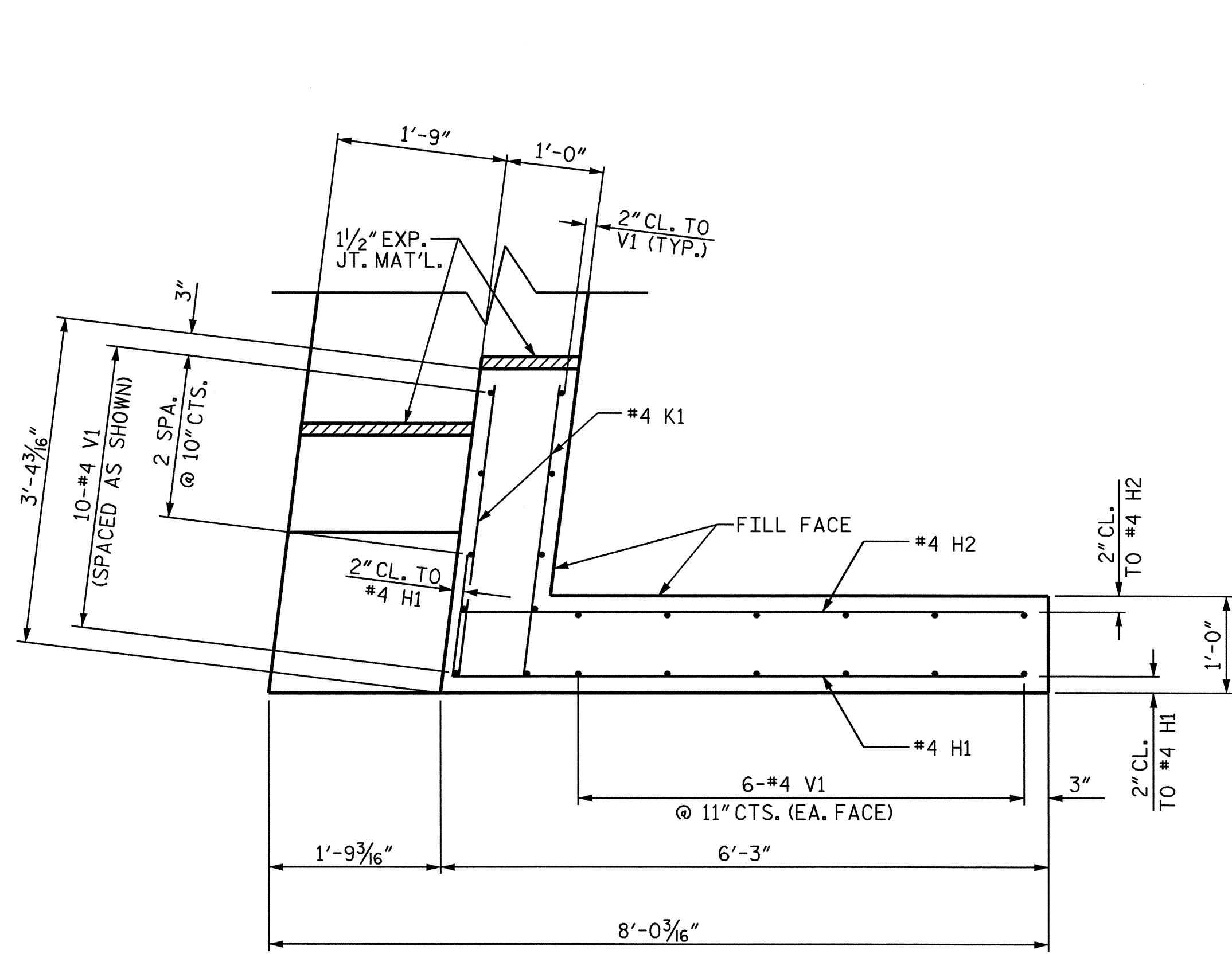
PROJECT NO. B-4184
MADISON COUNTY
 STATION: 14+68.00 -L-
 SHEET 1 OF 3

| | | | | | |
|--|-----|-------|-----|-----|--------------------|
| STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION RALEIGH | | | | | |
| SUBSTRUCTURE END BENT 1 | | | | | |
| REVISIONS | | | | | |
| NO. | BY: | DATE: | NO. | BY: | DATE: |
| 1 | | | 3 | | |
| 2 | | | 4 | | |
| | | | | | SHEET NO. S-13 |
| | | | | | TOTAL SHEETS 25 |

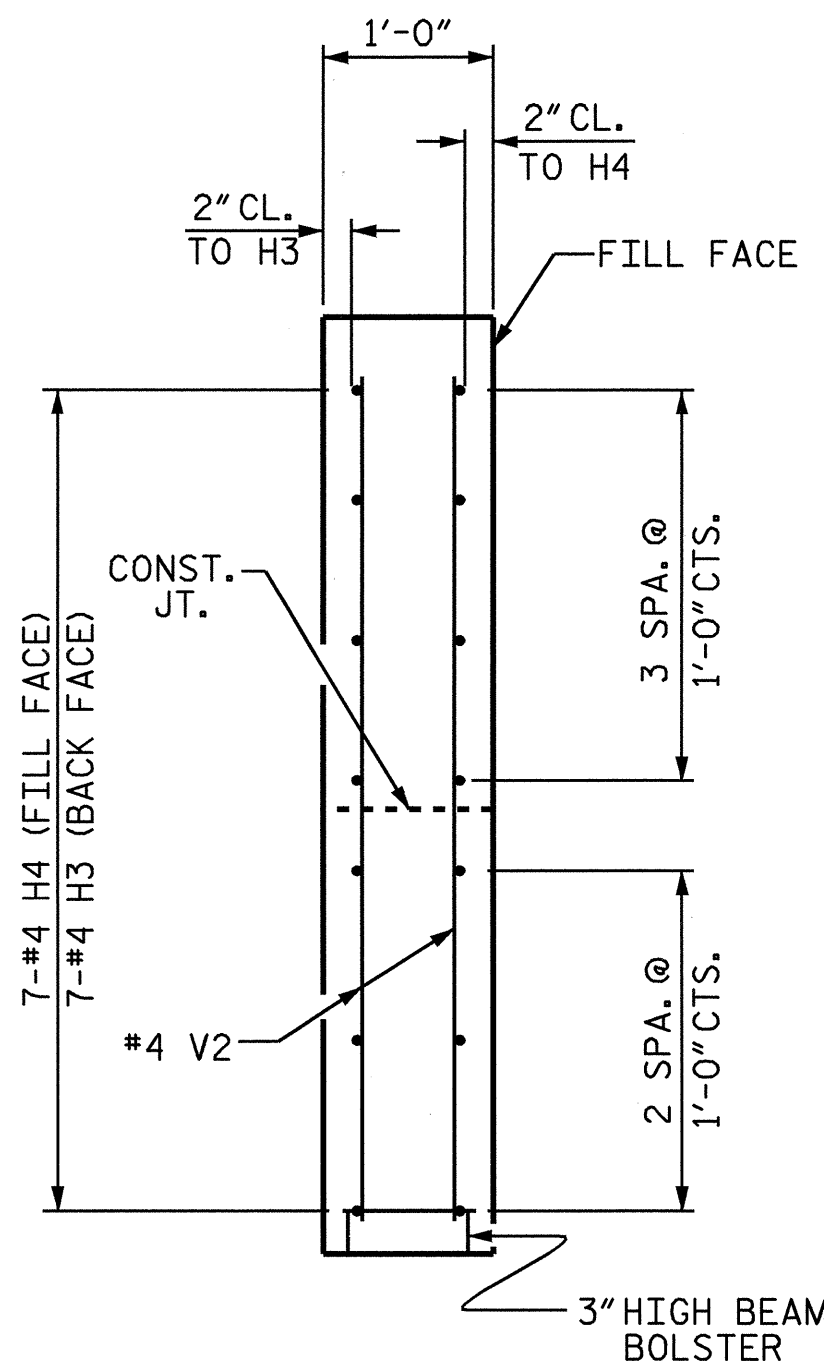


DRAWN BY : J.D. HAWK DATE : 9/08
 CHECKED BY : J.G. KHARVA DATE : 10/08

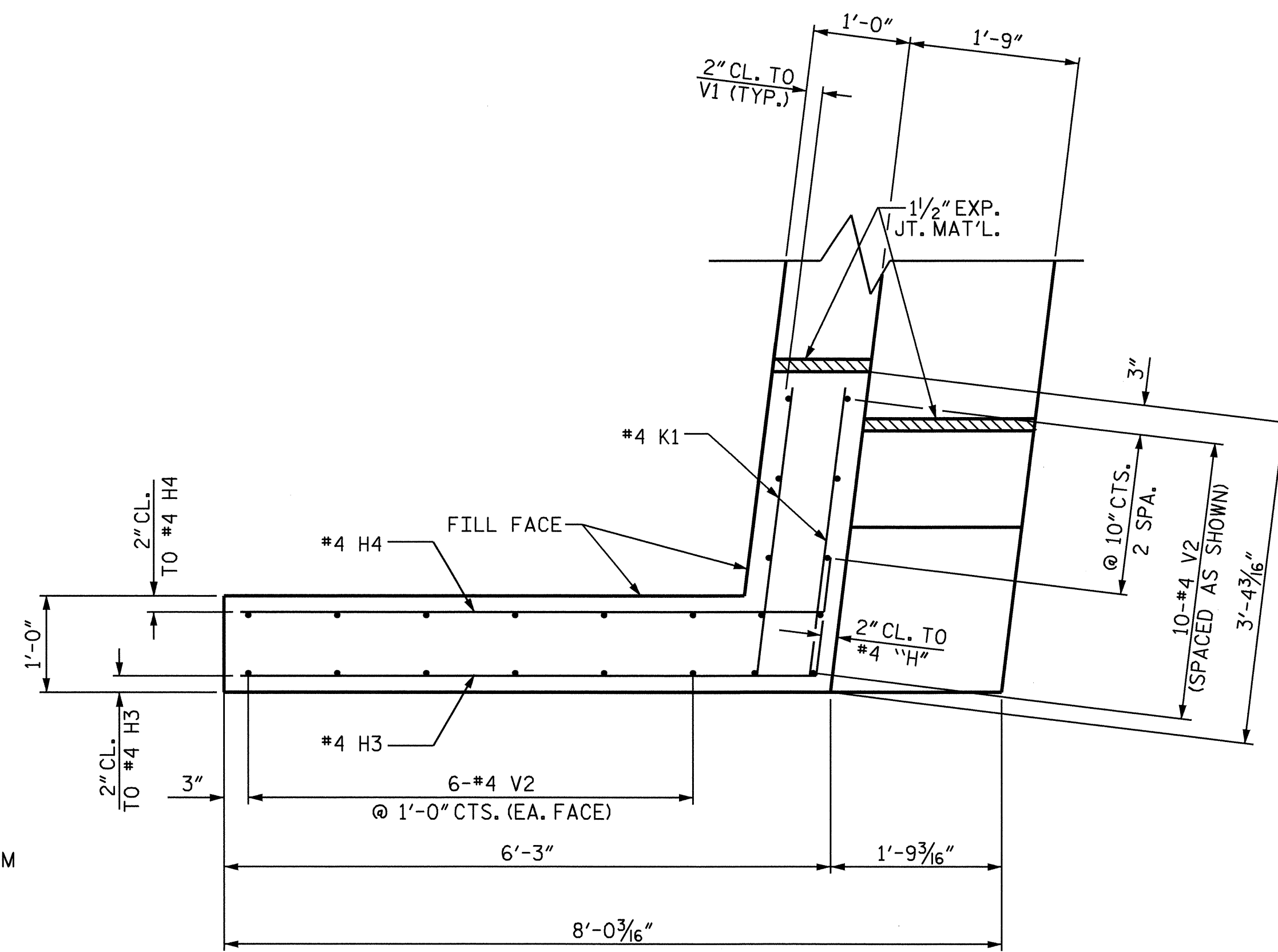
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 jdhawk



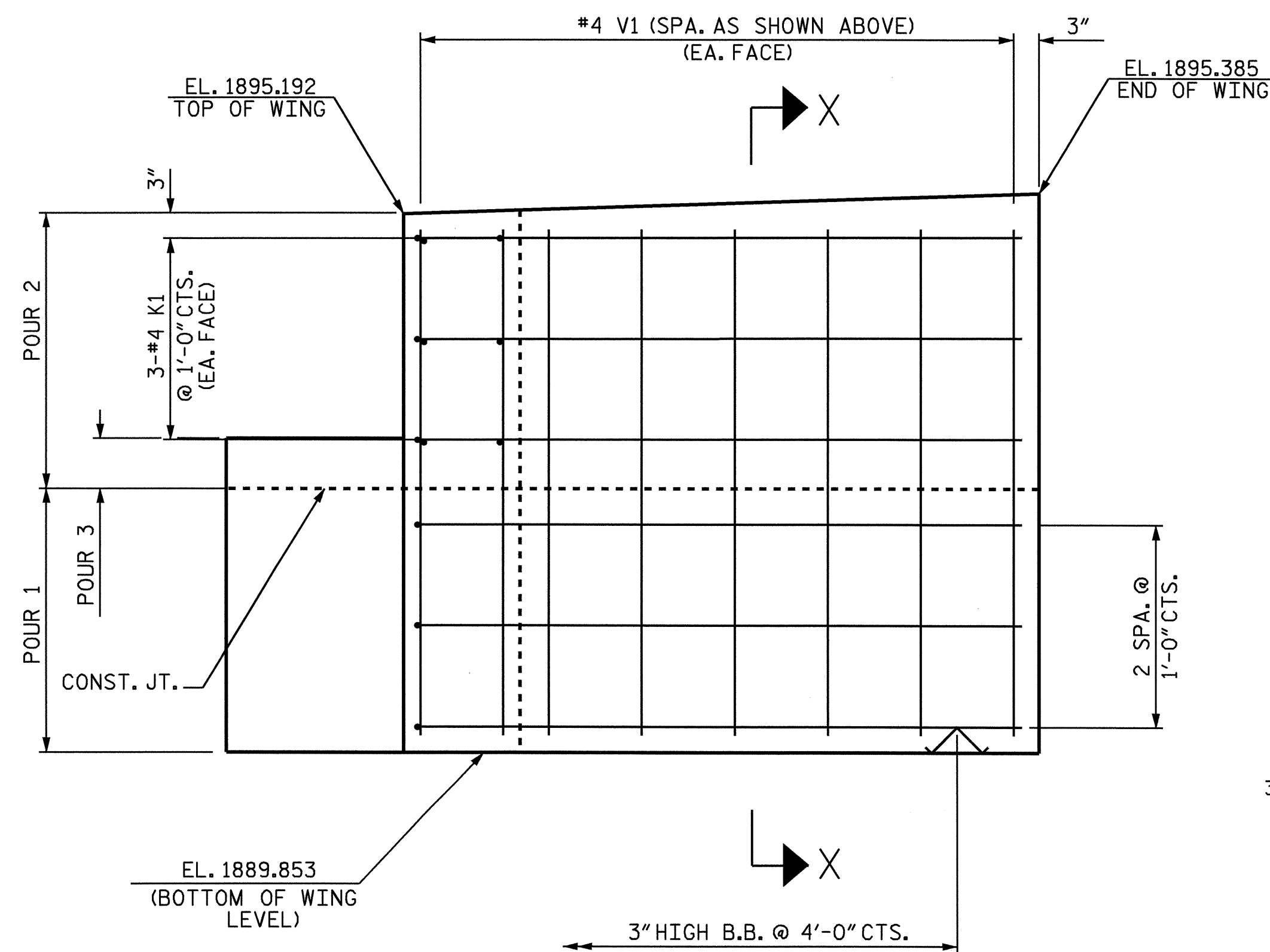
PLAN OF WING (W1)



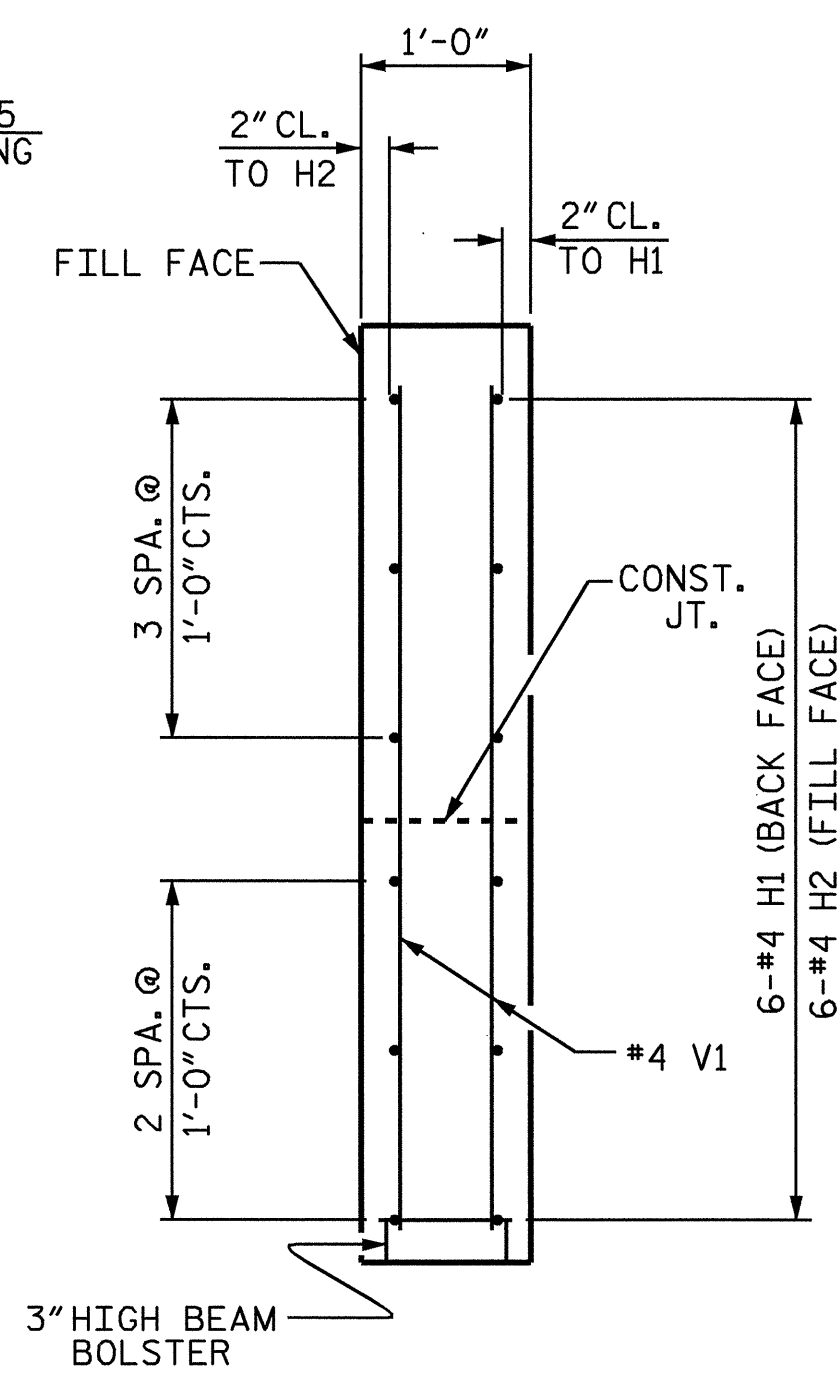
SECTION Y-Y



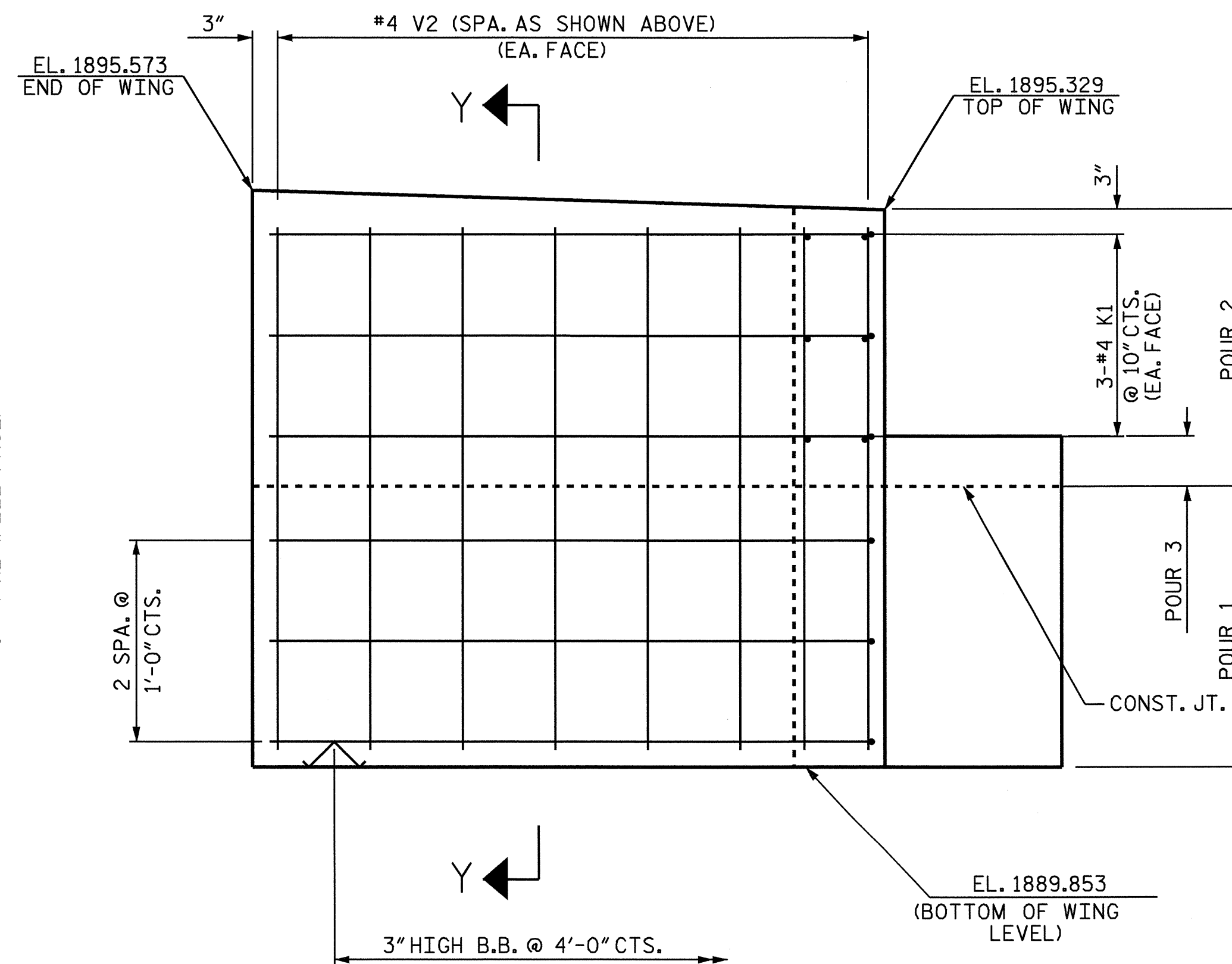
PLAN OF WING (W2)



ELEVATION OF WING (W1)



SECTION X-X



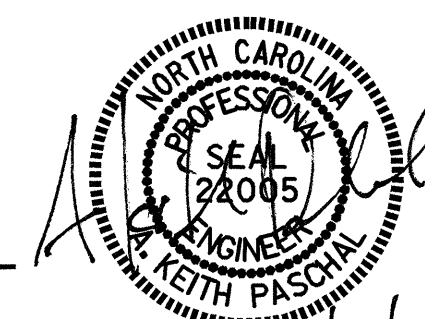
ELEVATION OF WING (W2)

PROJECT NO. B-4184
 MADISON COUNTY
 STATION: 14+68.00 -L-

SHEET 2 OF 3

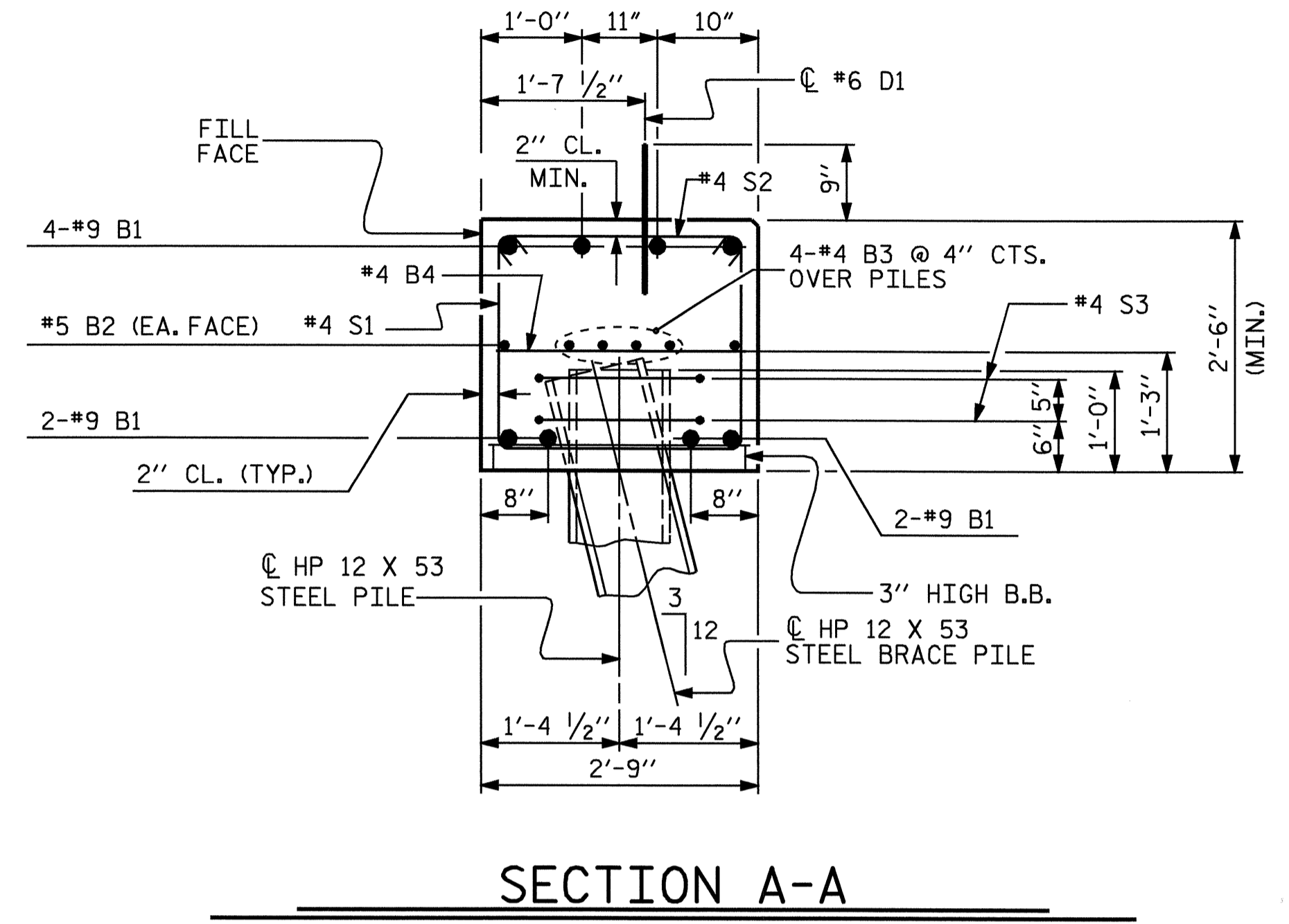
STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

SUBSTRUCTURE
 END BENT 1

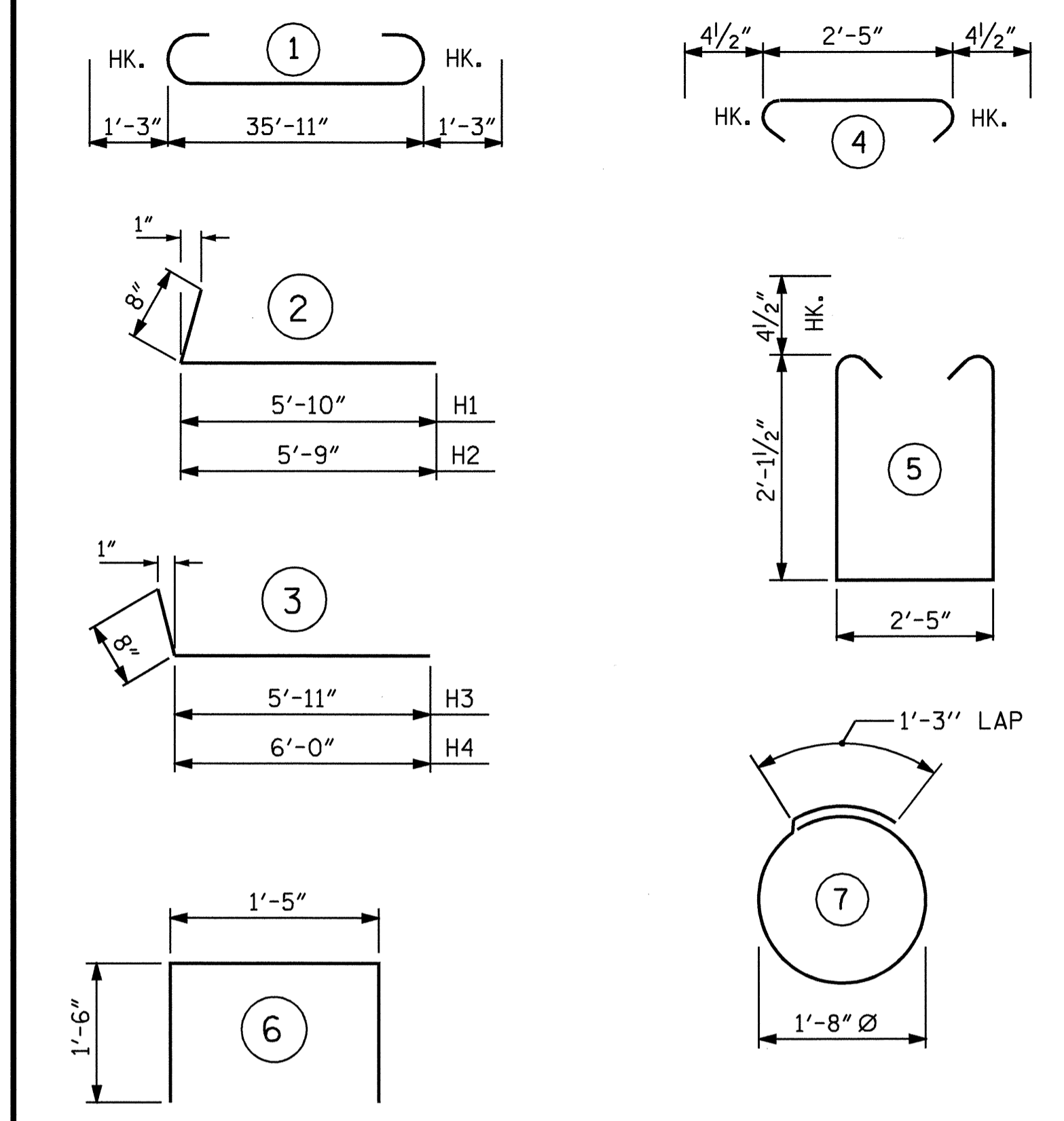


DRAWN BY: J.D. HAWK DATE: 9/08
 CHECKED BY: J.G. KHARVA DATE: 9/08

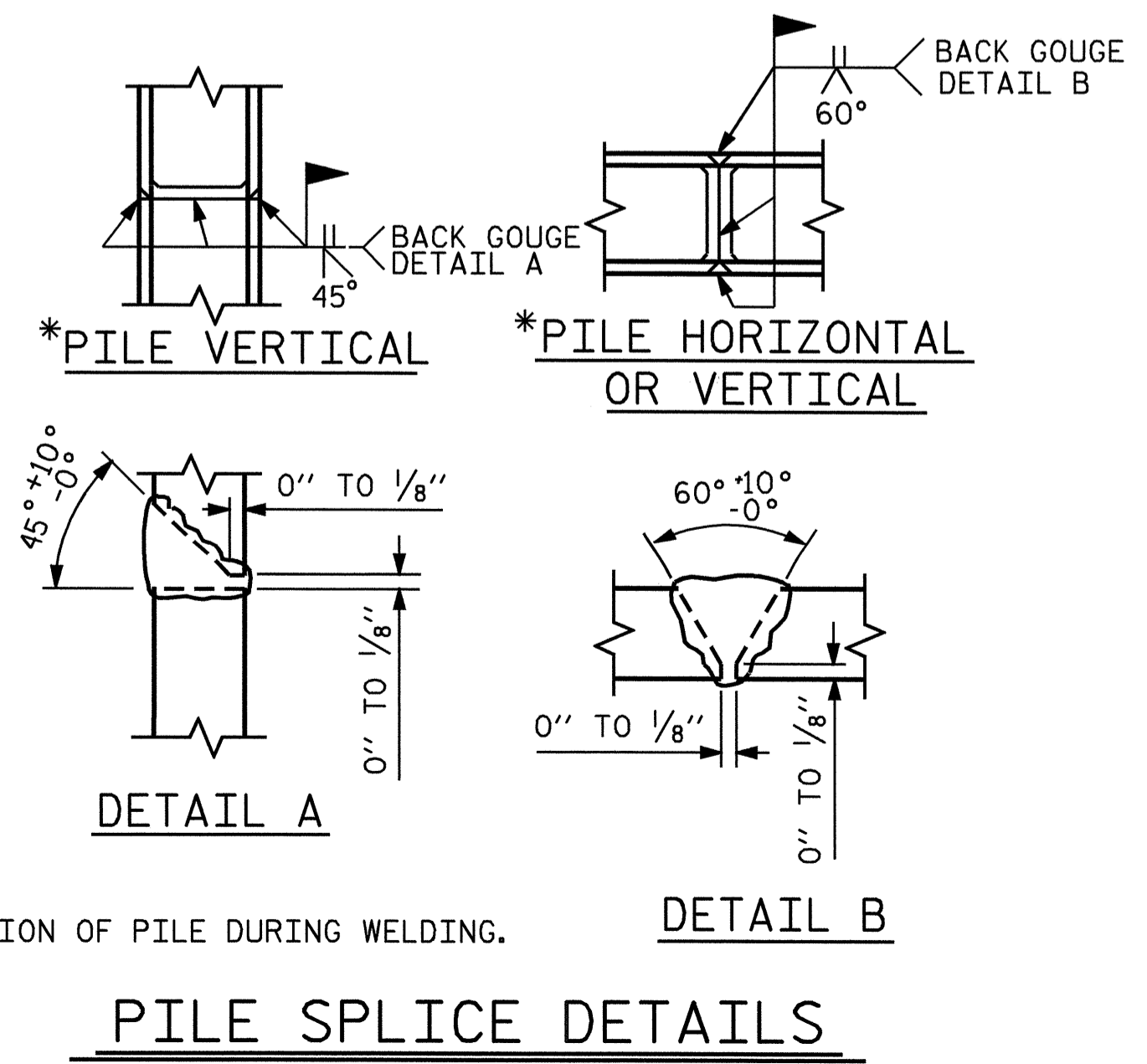
| REVISIONS | | | | | | SHEET NO. | |
|-----------|-----|-------|-----|-----|-------|--------------|--|
| NO. | BY: | DATE: | NO. | BY: | DATE: | S-14 | |
| 1 | | | 3 | | | TOTAL SHEETS | |
| 2 | | | 4 | | | 25 | |



| BILL OF MATERIAL | | | | | |
|------------------------------------|-----|------|------|-----------|--------------|
| END BENT 1 | | | | | |
| BAR | NO. | SIZE | TYPE | LENGTH | WEIGHT |
| B1 | 8 | #9 | 1 | 38'-5" | 1045 |
| B2 | 2 | #5 | STR | 36'-0" | 75 |
| B3 | 8 | #4 | STR | 19'-3" | 103 |
| B4 | 9 | #4 | STR | 2'-5" | 15 |
| D1 | 20 | #6 | STR | 1'-6" | 45 |
| H1 | 6 | #4 | 2 | 6'-6" | 26 |
| H2 | 6 | #4 | 2 | 6'-5" | 26 |
| H3 | 6 | #4 | 3 | 6'-7" | 26 |
| H4 | 6 | #4 | 3 | 6'-8" | 27 |
| K1 | 16 | #4 | STR | 3'-0" | 32 |
| S1 | 32 | #4 | 5 | 7'-5" | 159 |
| S2 | 32 | #4 | 4 | 3'-2" | 68 |
| S3 | 14 | #4 | 7 | 6'-6" | 61 |
| U1 | 4 | #4 | 6 | 4'-5" | 12 |
| V1 | 22 | #4 | STR | 5'-0" | 73 |
| V2 | 22 | #4 | STR | 5'-2" | 76 |
| TOTAL REINFORCING STEEL | | | | | = 1869 LBS |
| CLASS A CONCRETE BREAKDOWN | | | | | |
| POUR 1 (CAP & LOWER PART OF WINGS) | | | | 10.6 C.Y. | |
| POUR 2 (UPPER PART OF WINGS) | | | | 1.8 C.Y. | |
| POUR 3 (LATERAL GUIDE) | | | | 0.1 C.Y. | |
| TOTAL CLASS A CONCRETE | | | | 12.5 C.Y. | |
| HP 12 X 53 STEEL PILES | | | | | 175 LIN. FT. |

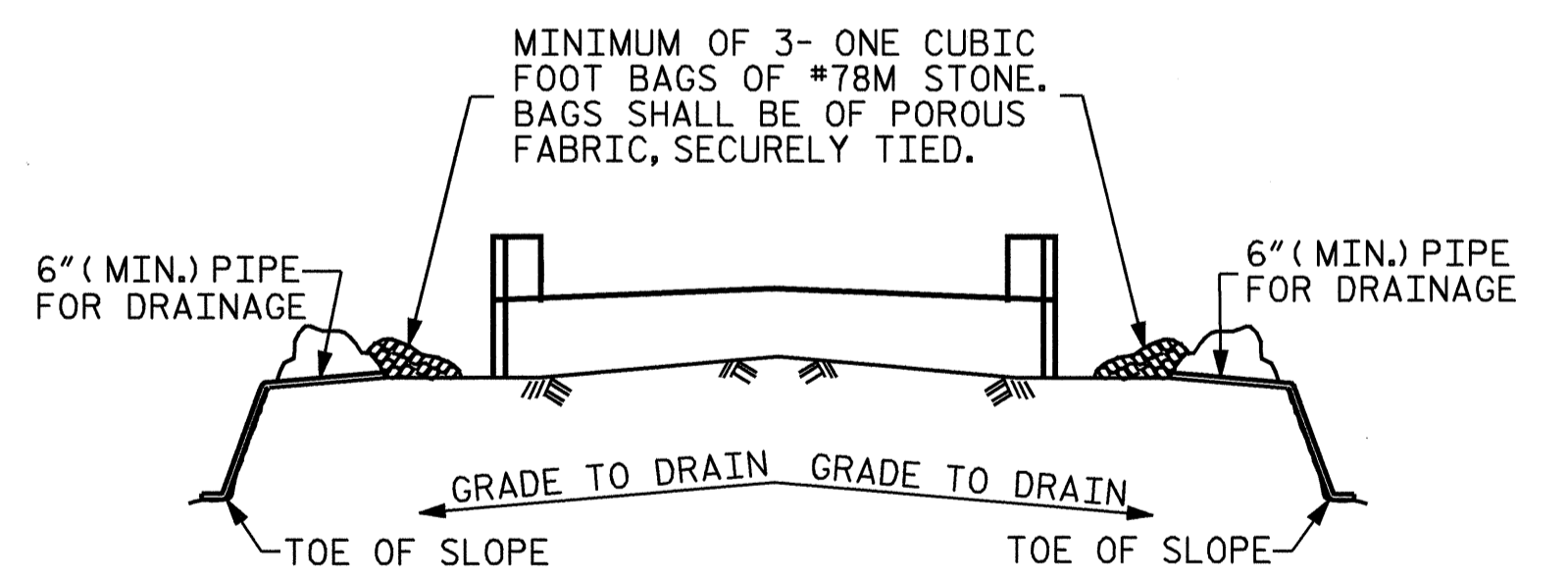


ALL BAR DIMENSIONS ARE OUT TO OUT.



*POSITION OF PILE DURING WELDING.

PILE SPLICE DETAILS



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

PROJECT NO. B-4184
MADISON COUNTY
 STATION: 14+68.00 -L-

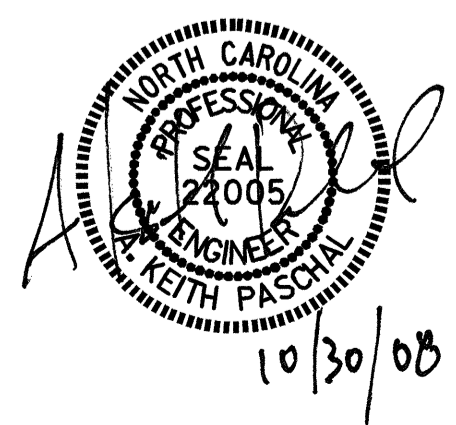
SHEET 3 OF 3

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

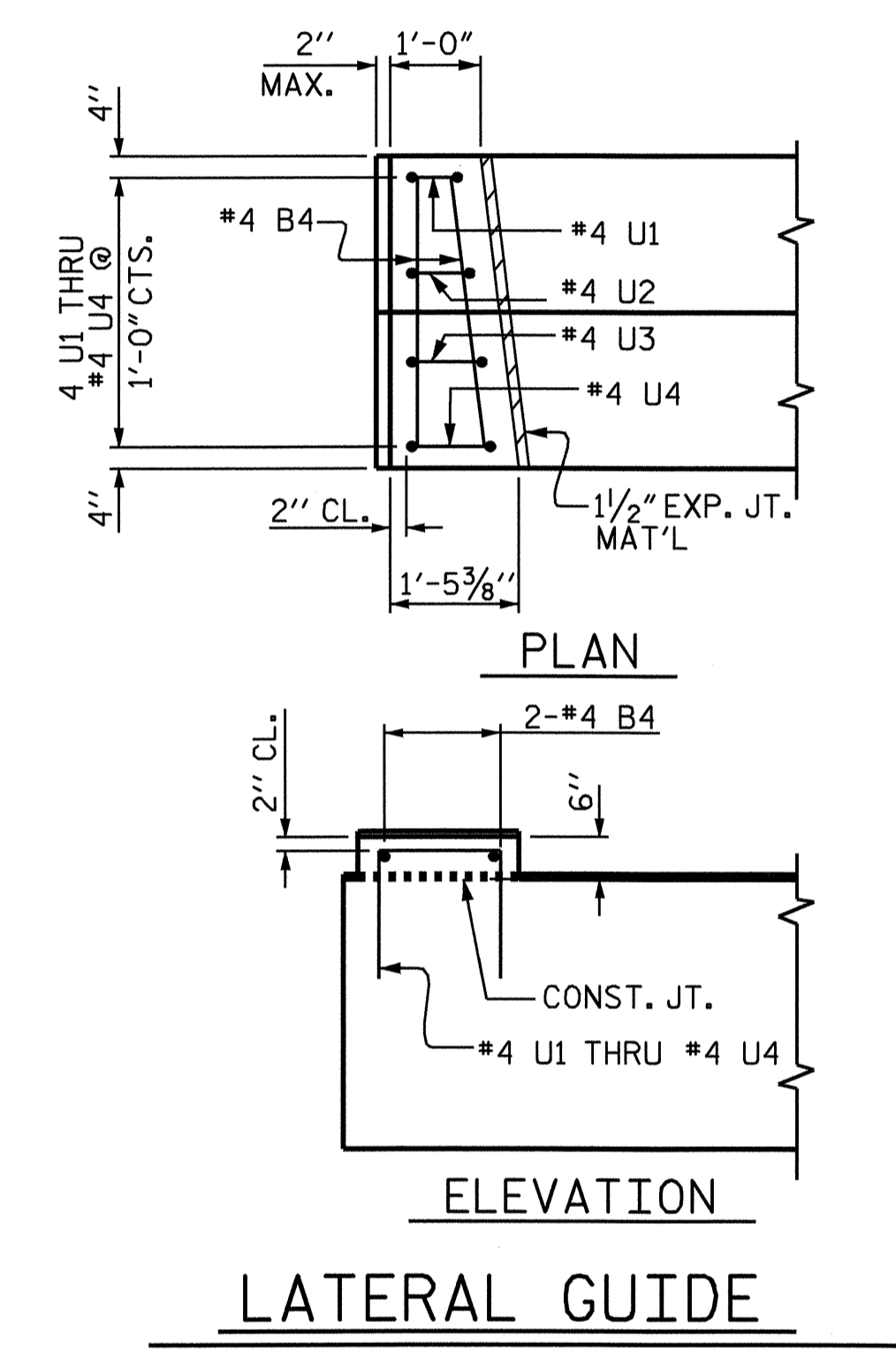
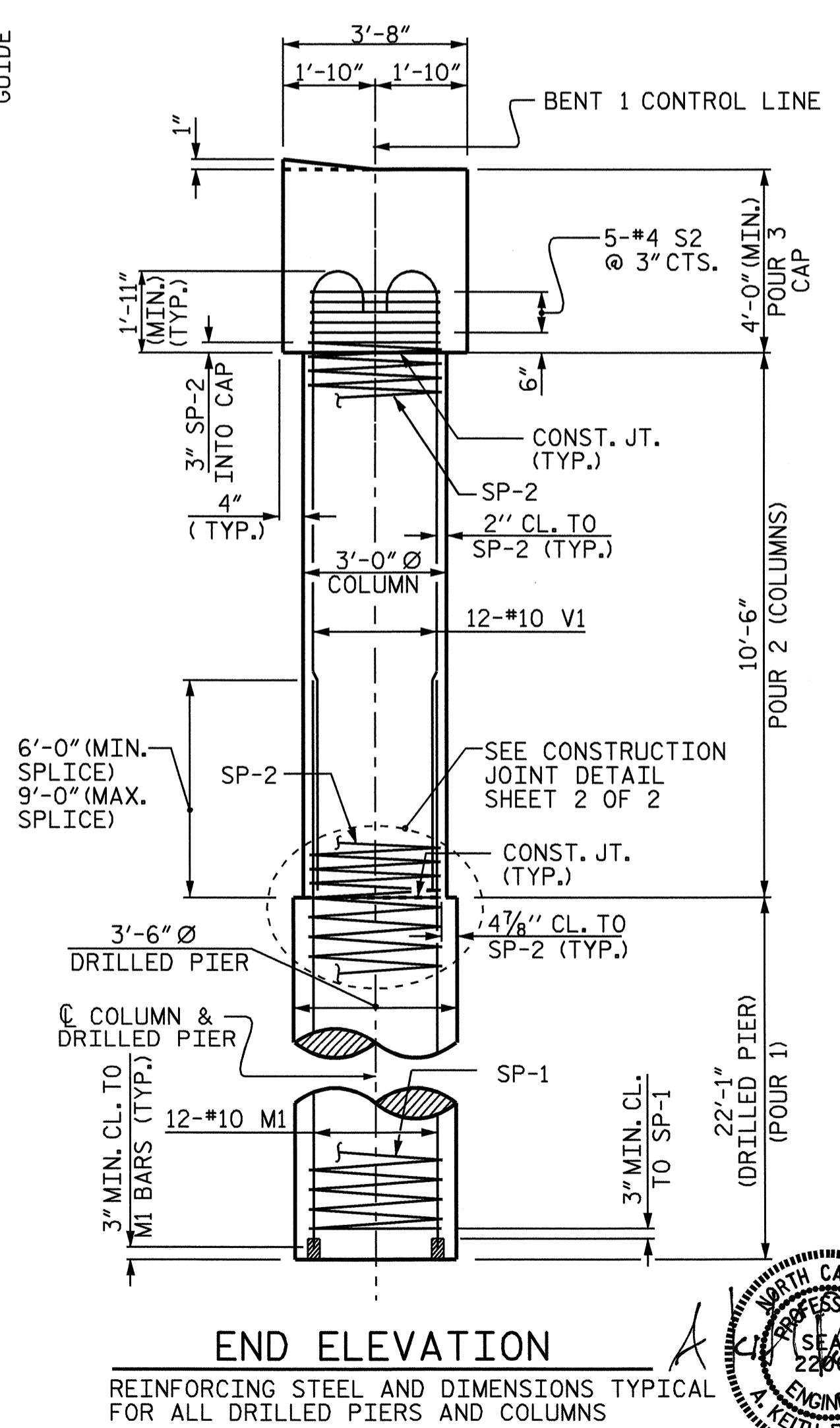
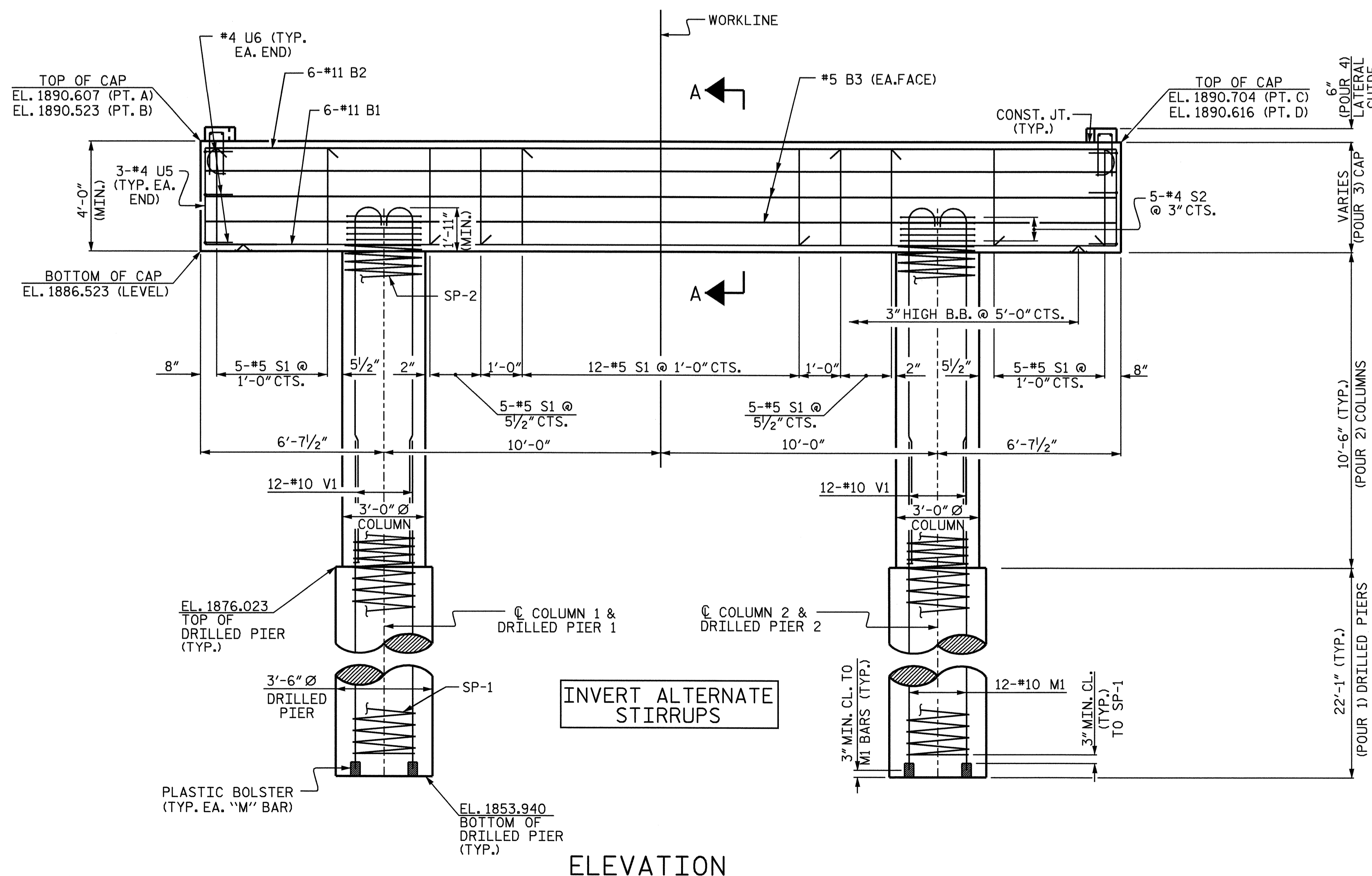
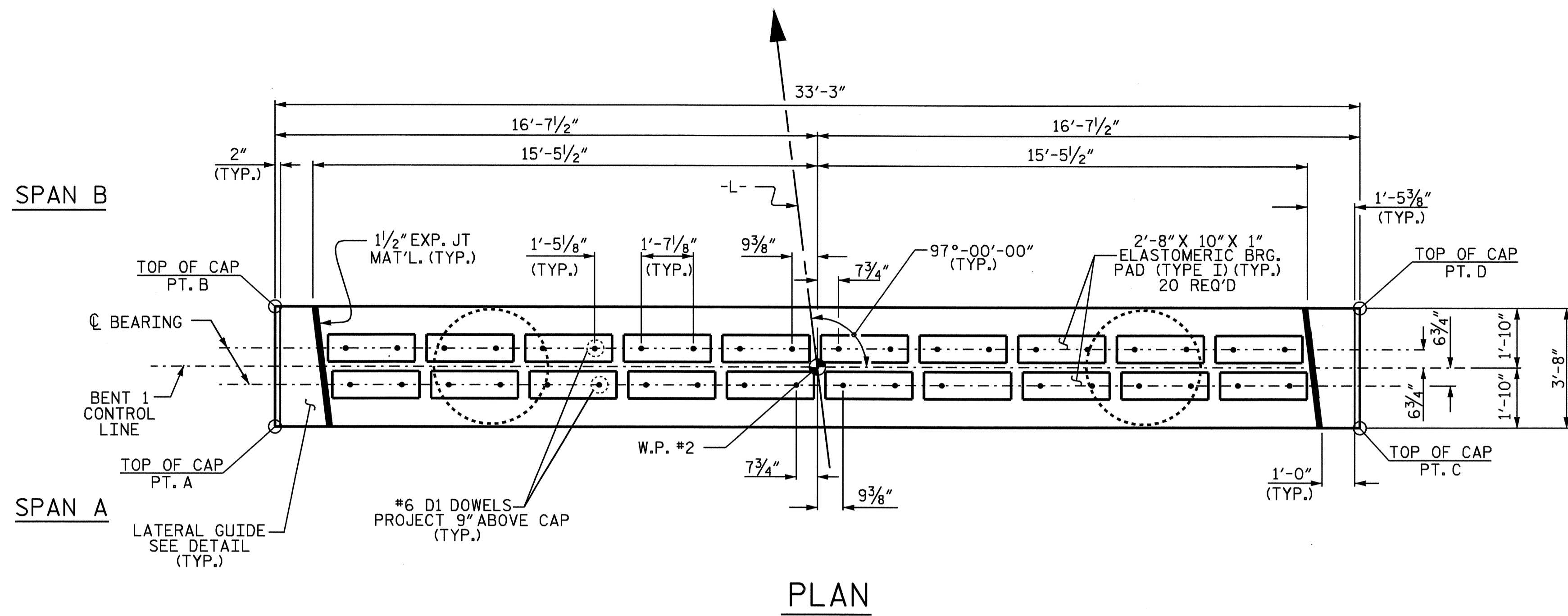
SUBSTRUCTURE
 END BENT 1

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

SHEET NO. **S-15**
 TOTAL SHEETS **25**



DRAWN BY: J.D. HAWK DATE: 9/08
 CHECKED BY: J.G. KHARVA DATE: 9/08



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 LATERAL GUIDE AT EACH END OF THE CAP IS NOT TO BE POURED UNTIL AFTER THE CORED SLAB UNITS ARE IN PLACE.

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.

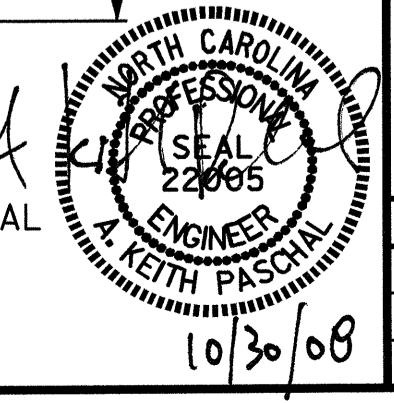
PROJECT NO. B-4184
MADISON COUNTY
 STATION: 14+68.00 -L-
 SHEET 1 OF 2

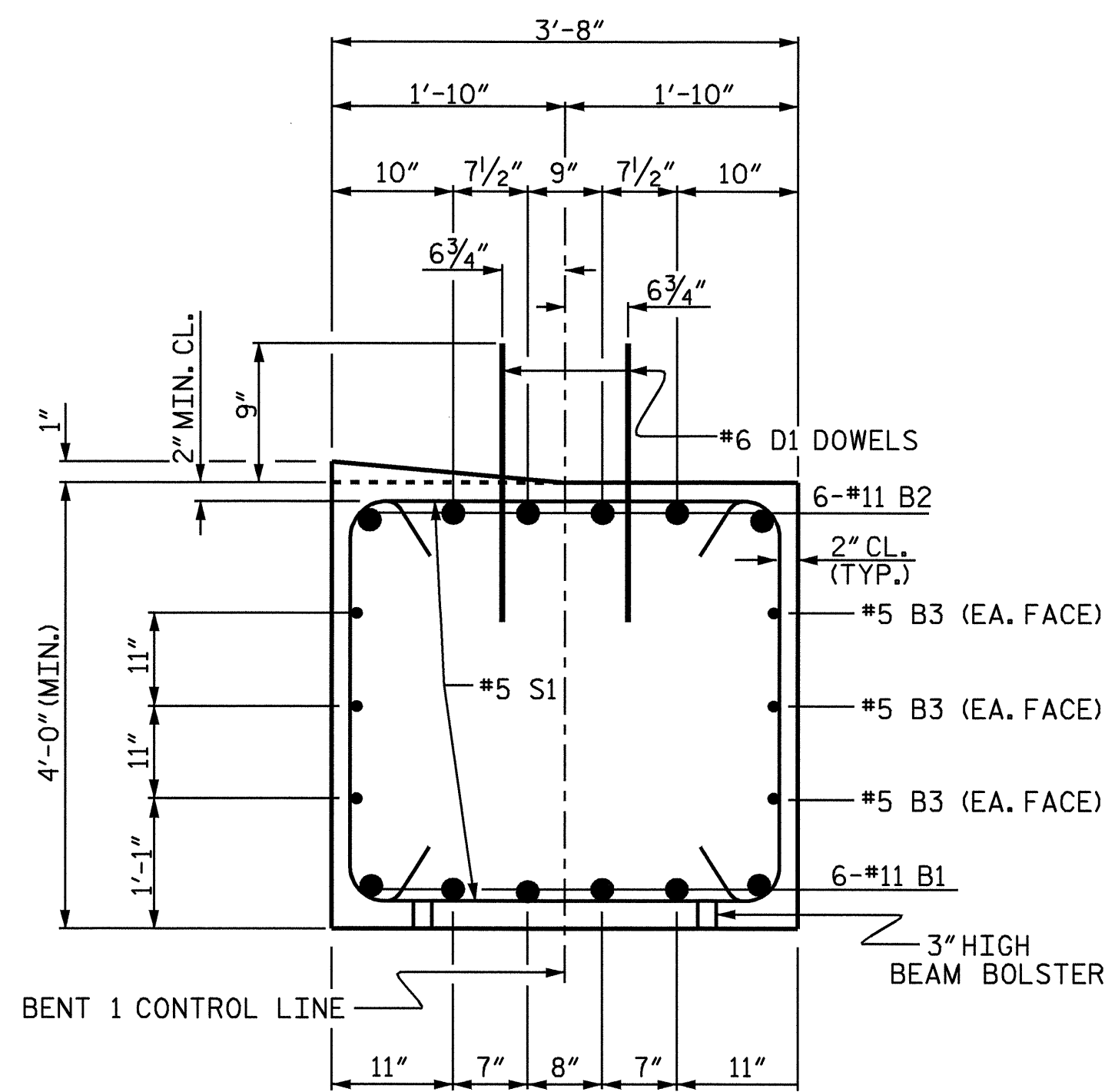
| | | | | | |
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| STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION RALEIGH | | | | | |
| SUBSTRUCTURE BENT 1 | | | | | |
| REVISIONS | | | | | SHEET NO. |
| NO. | BY: | DATE: | NO. | BY: | DATE: |
| 1 | | | 3 | | |
| 2 | | | 4 | | |
| | | | | | TOTAL SHEETS 25 |

DRAWN BY : J. G. KHARVA DATE : 09/23/08
 CHECKED BY : J. D. HAWK DATE : 10/02/08

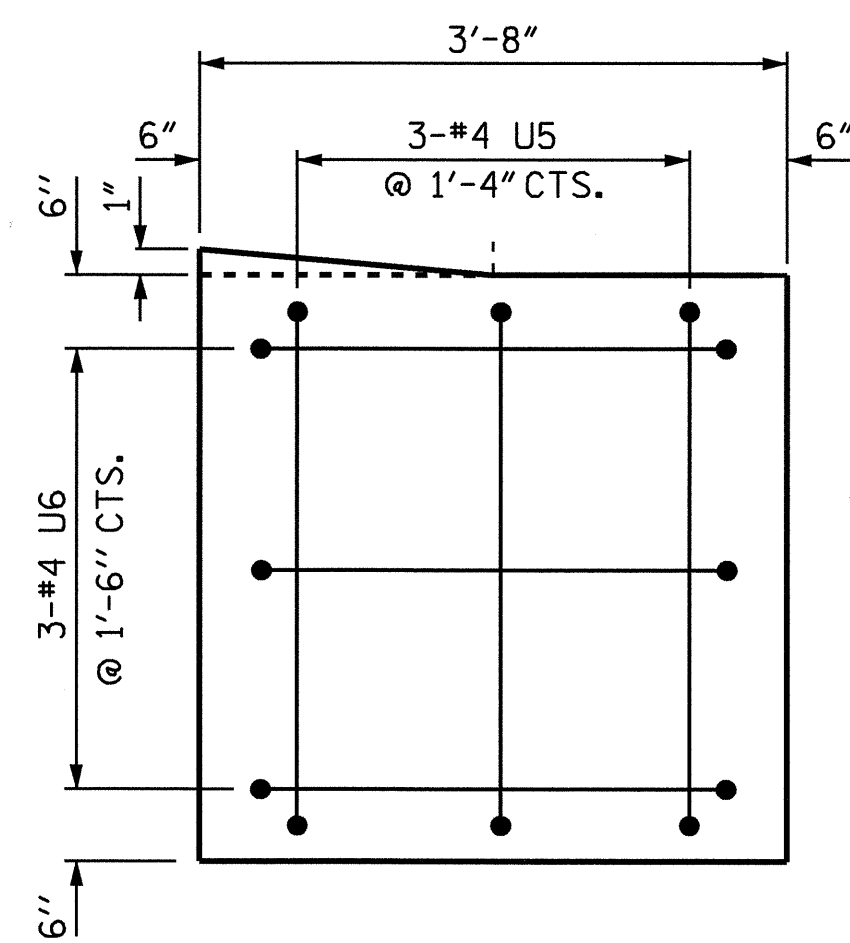
(REINFORCING STEEL AND DIMENSIONS ARE TYPICAL FOR ALL DRILLED PIERS AND COLUMNS)

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 jdhawk



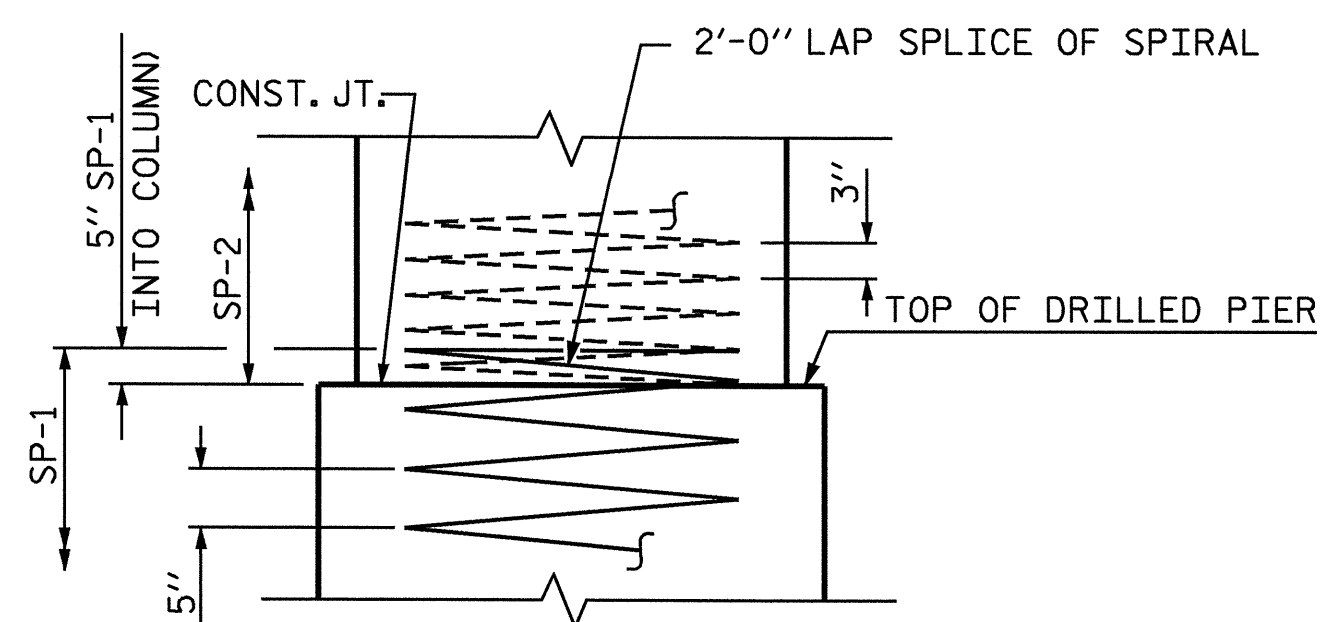


SECTION A-A

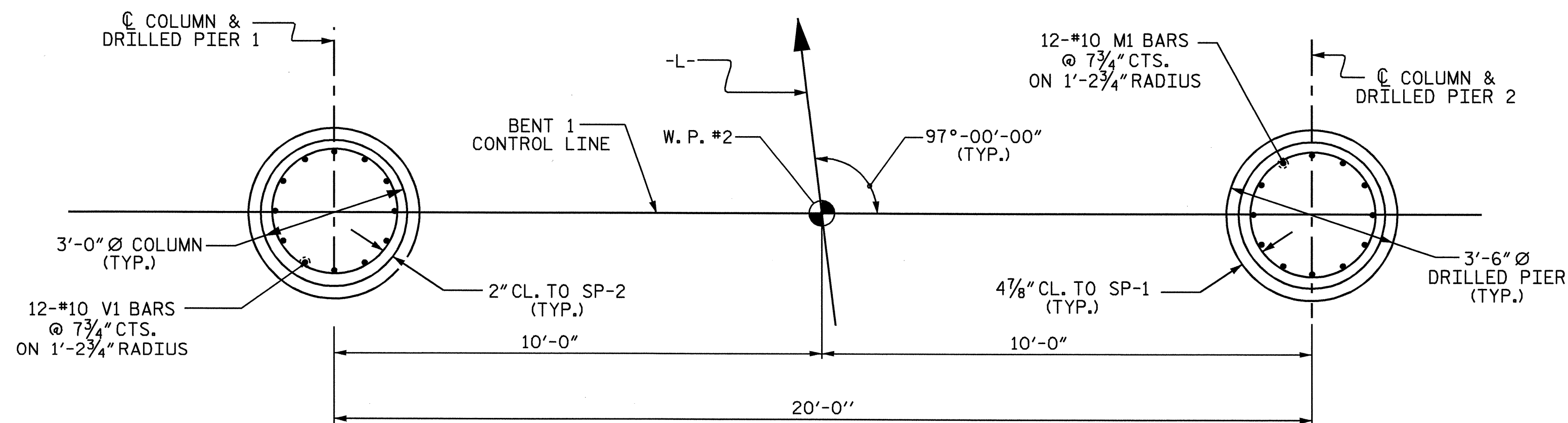


END VIEW

(TYP. EA. END)

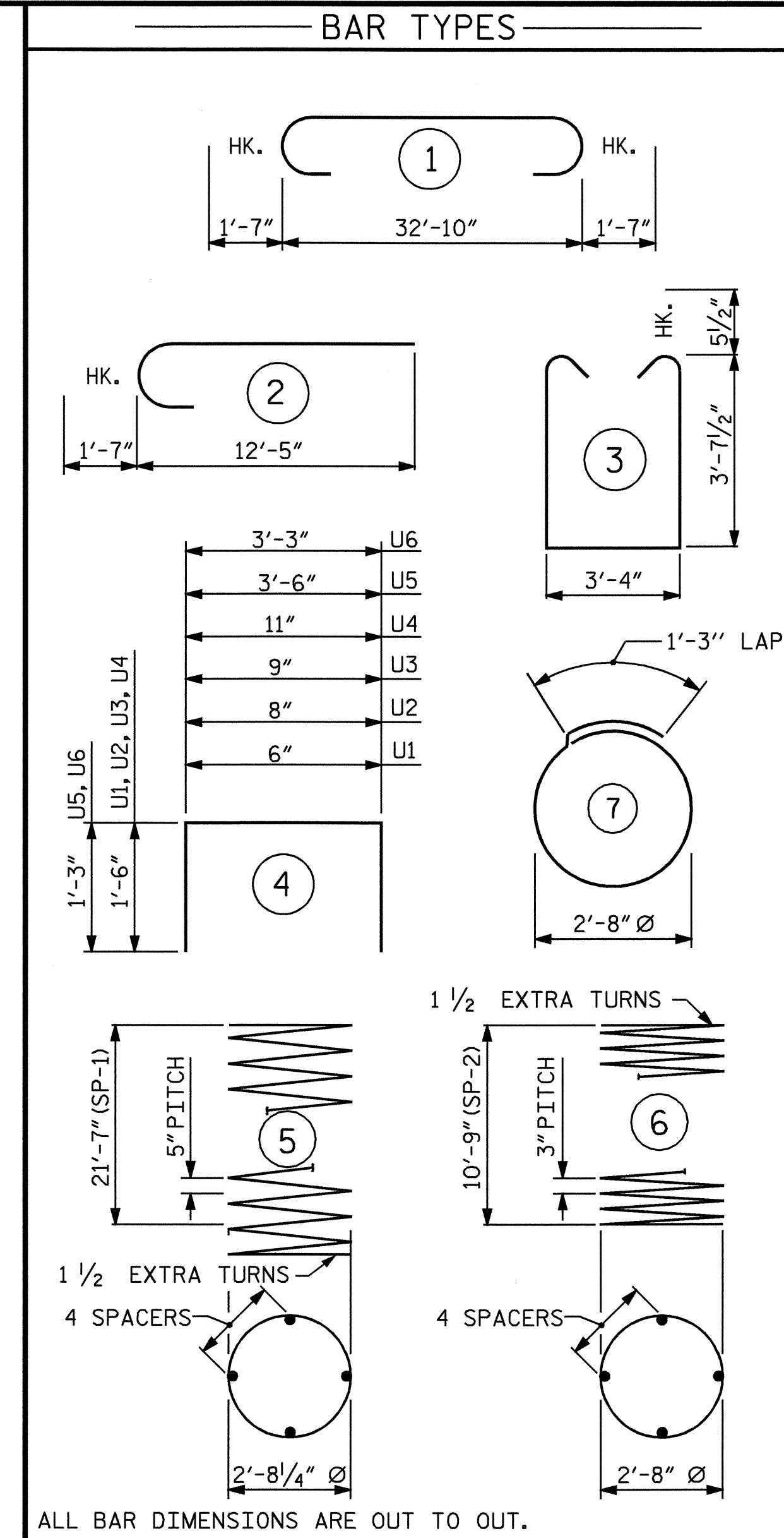


CONSTRUCTION JOINT DETAIL



PLAN OF COLUMNS & DRILLED PIERS

(REINFORCING STEEL AND DIMENSION ARE TYPICAL FOR ALL COLUMNS AND DRILLED PIERS)



ALL BAR DIMENSIONS ARE OUT TO OUT.

| BILL OF MATERIAL | | | | | |
|--|-----|------|------|---------|------------------|
| BENT 1 | | | | | |
| BAR | NO. | SIZE | TYPE | LENGTH | WEIGHT |
| B1 | 6 | #11 | STR | 32'-11" | 1149 |
| B2 | 6 | #11 | 1 | 36'-0" | 1148 |
| B3 | 6 | #5 | STR | 32'-11" | 206 |
| B4 | 4 | #4 | STR | 3'-4" | 9 |
| D1 | 40 | #6 | STR | 1'-6" | 90 |
| M1 | 24 | #10 | STR | 30'-10" | 3184 |
| S1 | 32 | #5 | 3 | 11'-6" | 384 |
| S2 | 10 | #4 | 7 | 9'-8" | 65 |
| U1 | 2 | #4 | 4 | 3'-6" | 5 |
| U2 | 2 | #4 | 4 | 3'-8" | 5 |
| U3 | 2 | #4 | 4 | 3'-9" | 5 |
| U4 | 2 | #4 | 4 | 3'-11" | 5 |
| U5 | 6 | #4 | 4 | 6'-0" | 24 |
| U6 | 6 | #4 | 4 | 5'-9" | 23 |
| V1 | 24 | #10 | 2 | 14'-0" | 1446 |
| REINFORCING STEEL | | | | | = 7648 LBS. |
| SP-1 | 2 | * | 5 | 443'-7" | 925 |
| SP-2 | 2 | ** | 6 | 367'-2" | 491 |
| SPIRAL COLUMN REINFORCING STEEL | | | | | = 1416 LBS. |
| CLASS A CONCRETE BREAKDOWN | | | | | |
| POUR 2 COLUMNS | | | | | 5.5 C.Y. |
| POUR 3 CAP | | | | | 18.2 C.Y. |
| POUR 4 LATERAL GUIDE | | | | | 0.3 C.Y. |
| TOTAL | | | | | 24.0 C.Y. |
| DRILLED PIERS | | | | | |
| DRILLED PIER CONCRETE | | | | | |
| POUR 1 (DRILLED PIERS) | | | | | 15.7 C.Y. |
| 3'-6" Ø DRILLED PIERS IN SOIL | | | | | 20.17 LIN. FT. |
| 3'-6" Ø DRILLED PIERS NOT IN SOIL | | | | | 24.00 LIN. FT. |
| PERMANENT STEEL CASING FOR 3'-6" Ø DRILLED PIERS | | | | | LIN. FT. = 19.05 |
| ▲ CSL TUBES | | | | | LIN. FT. = 196.7 |

* 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 #5 PLAIN OR DEFORMED BAR.

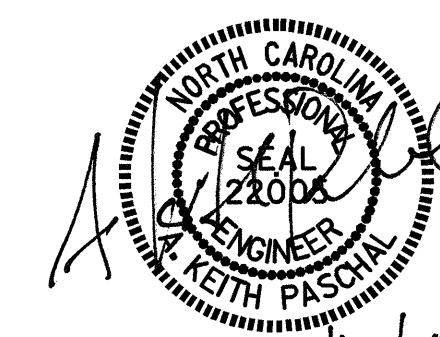
▲ NO SEPARATE PAYMENT WILL BE MADE FOR CSL TUBES. CSL TUBES WILL BE INCLUDED IN THE UNIT BID PRICE FOR DRILLED PIERS.

PROJECT NO. B-4184
MADISON COUNTY
 STATION: 14+68.00 -L-

SHEET 2 OF 2

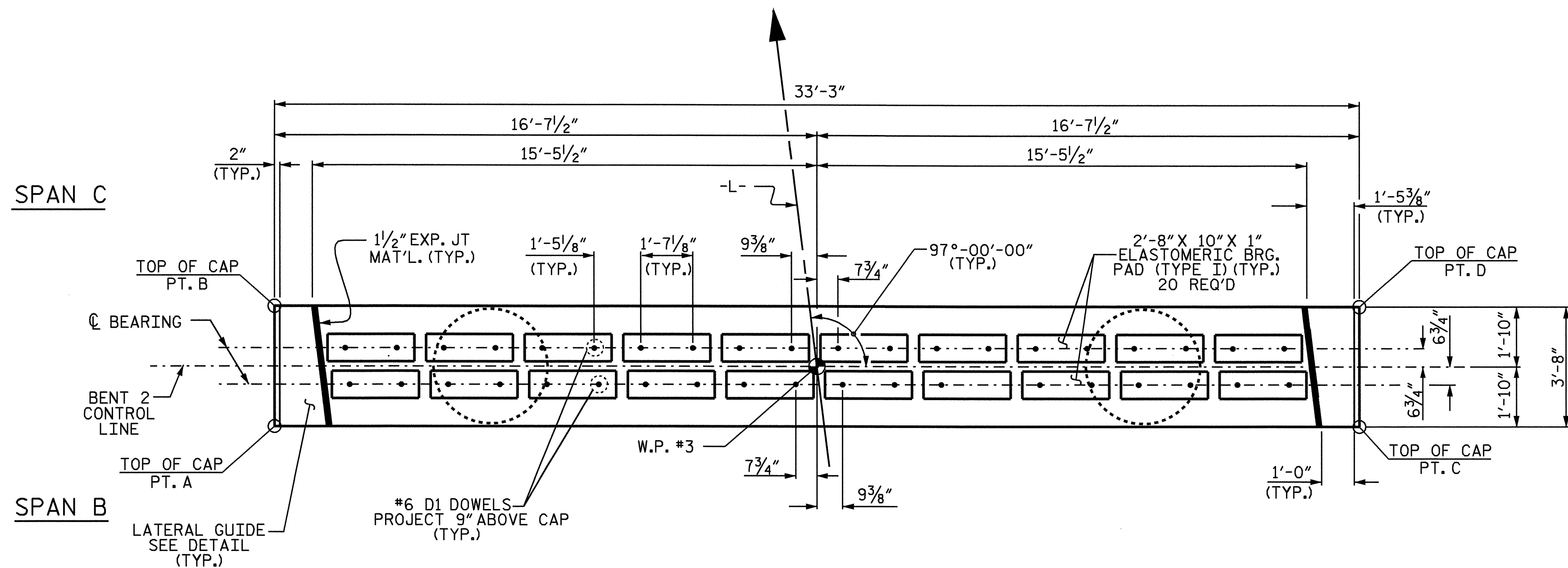
STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

SUBSTRUCTURE
 BENT 1

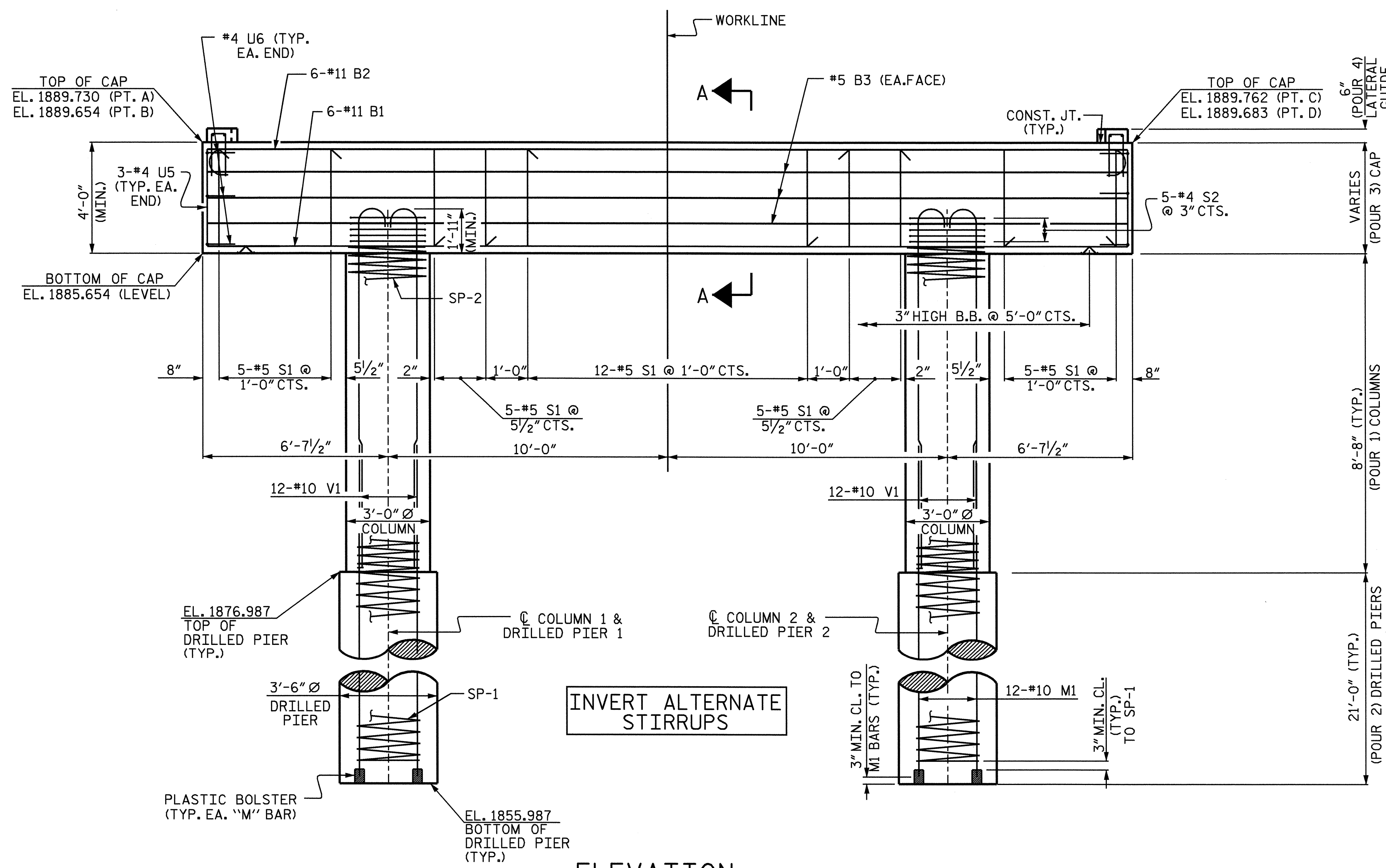


| REVISIONS | | | | | | SHEET NO. |
|-----------|-----|-------|-----|-----|-------|--------------|
| NO. | BY: | DATE: | NO. | BY: | DATE: | TOTAL SHEETS |
| 1 | | | 3 | | | S-17 |
| 2 | | | 4 | | | 25 |

DRAWN BY: J. G. KHARVA DATE: 9/02/08
 CHECKED BY: J. D. HAWK DATE: 10/02/08

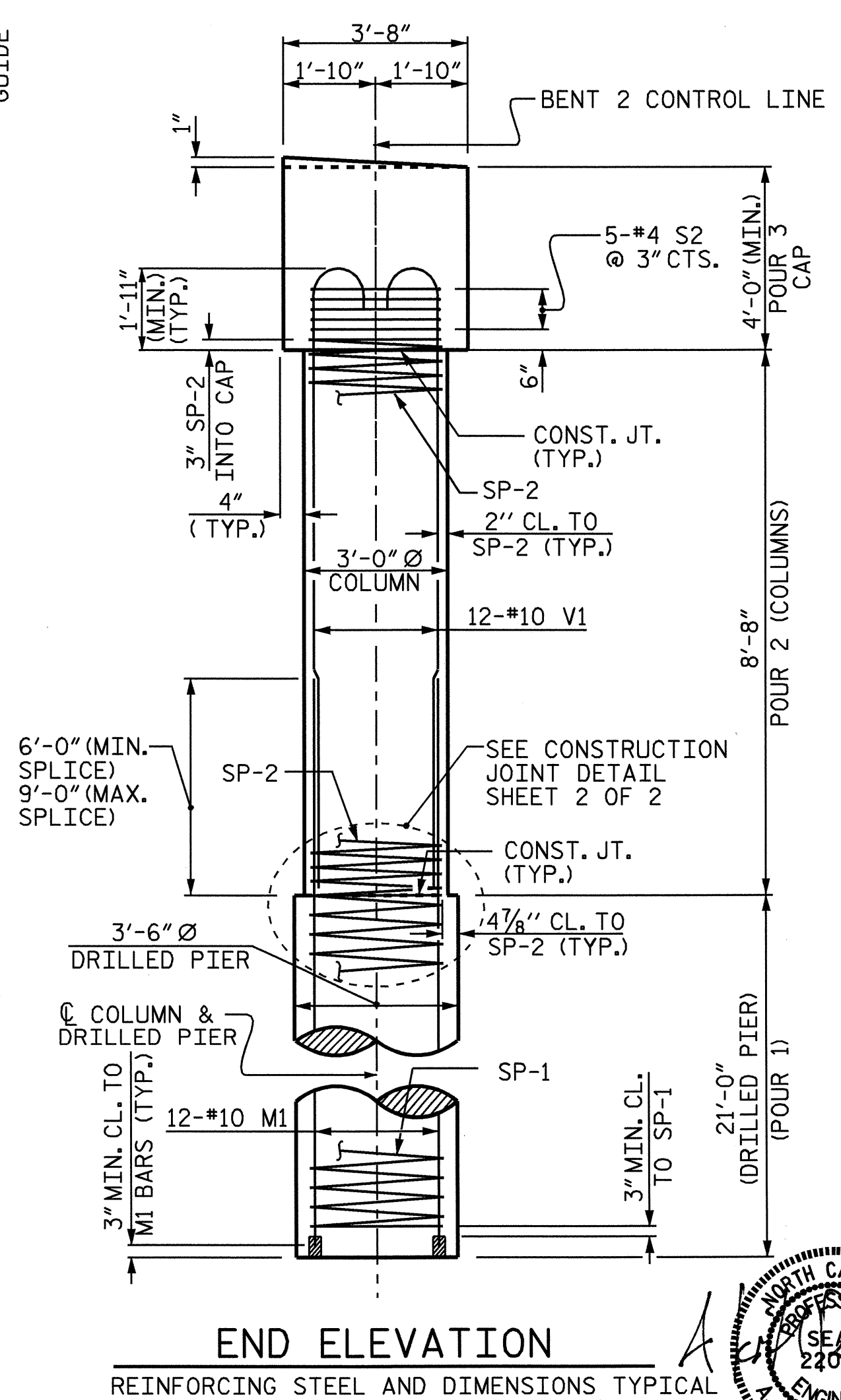


PLAN



ELEVATION

(REINFORCING STEEL AND DIMENSIONS ARE TYPICAL FOR ALL DRILLED PIERS AND COLUMNS)



NOTES

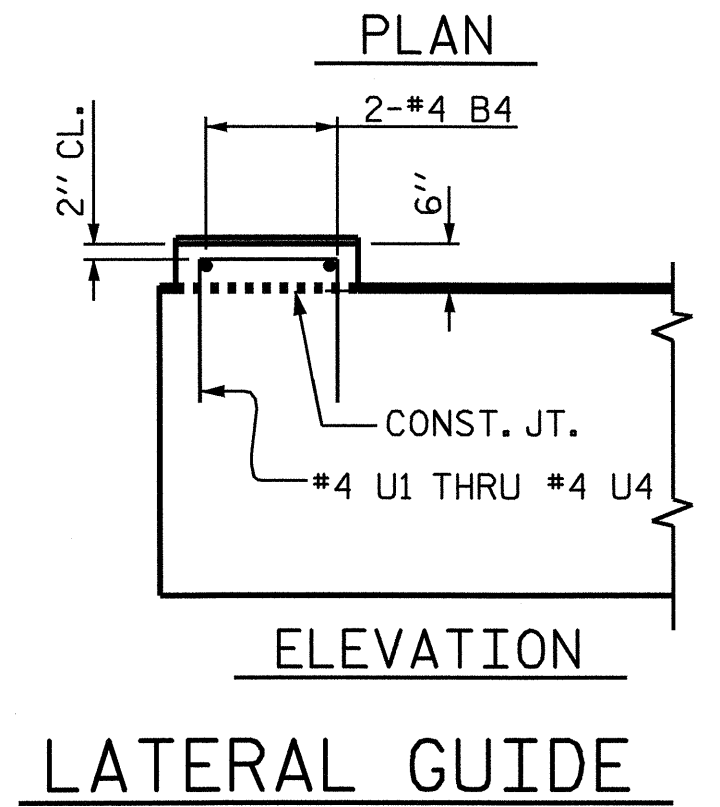
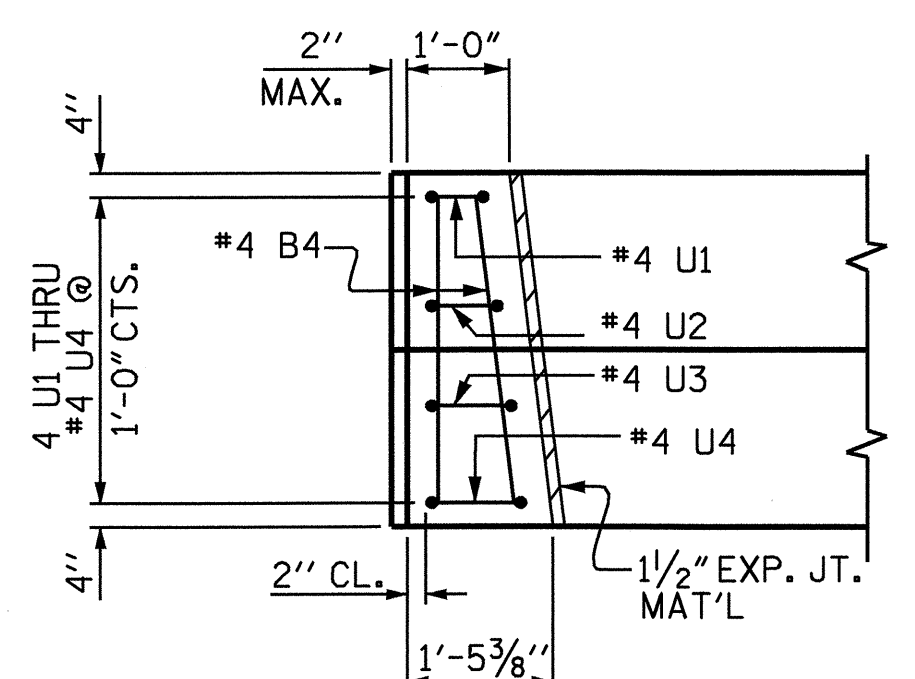
STIRRUPS IN CAP MAY BE SHIFTED AS NECESSARY TO CLEAR DOWELS.

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 LATERAL GUIDE AT EACH END OF THE CAP IS NOT TO BE POURED UNTIL AFTER THE CORED SLAB UNITS ARE IN PLACE.

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.



PROJECT NO. B-4184

MADISON COUNTY

STATION: 14+68.00 -L-

SHEET 1 OF 2

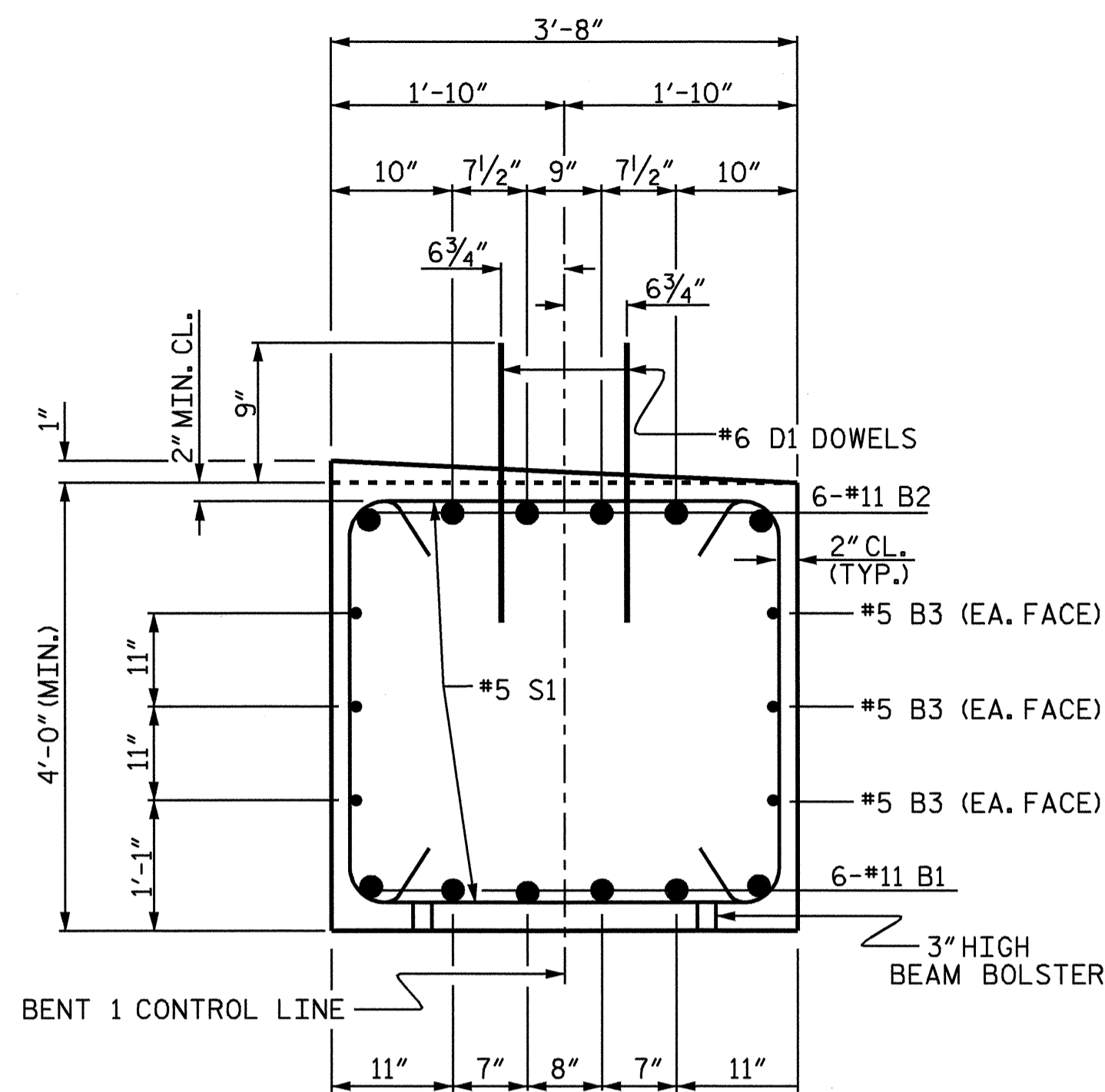
STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUBSTRUCTURE
BENT 2

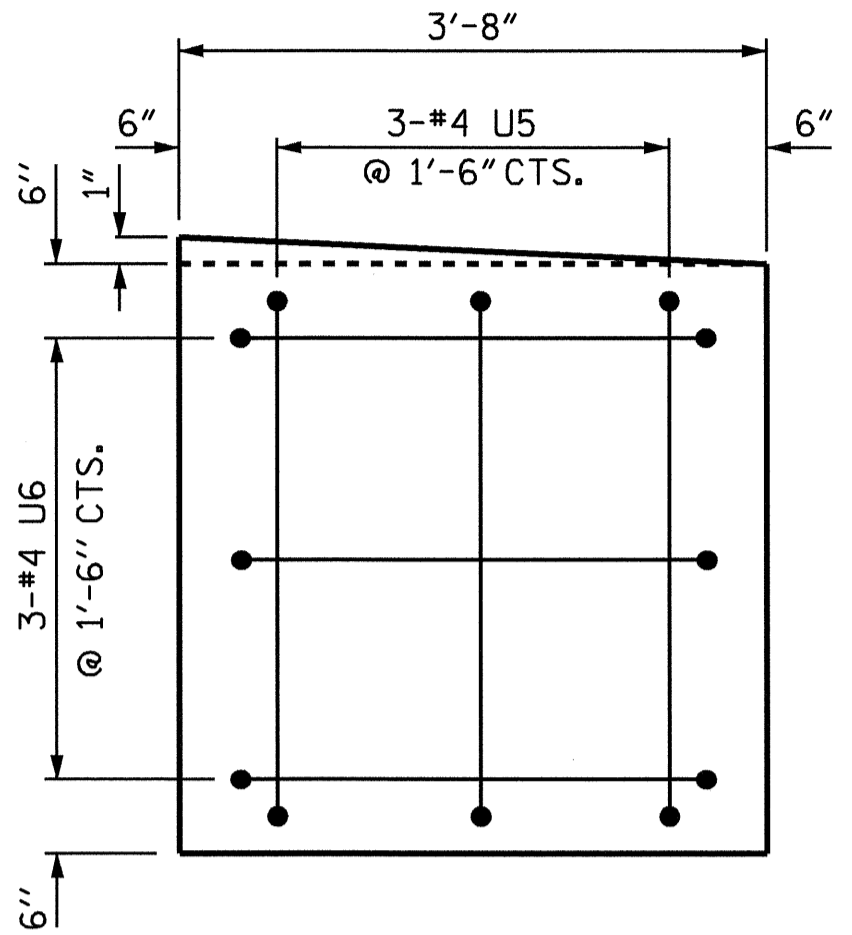
10/30/08

DRAWN BY: J. G. KHARVA DATE: 09/23/08
CHECKED BY: J. D. HAWK DATE: 10/02/08

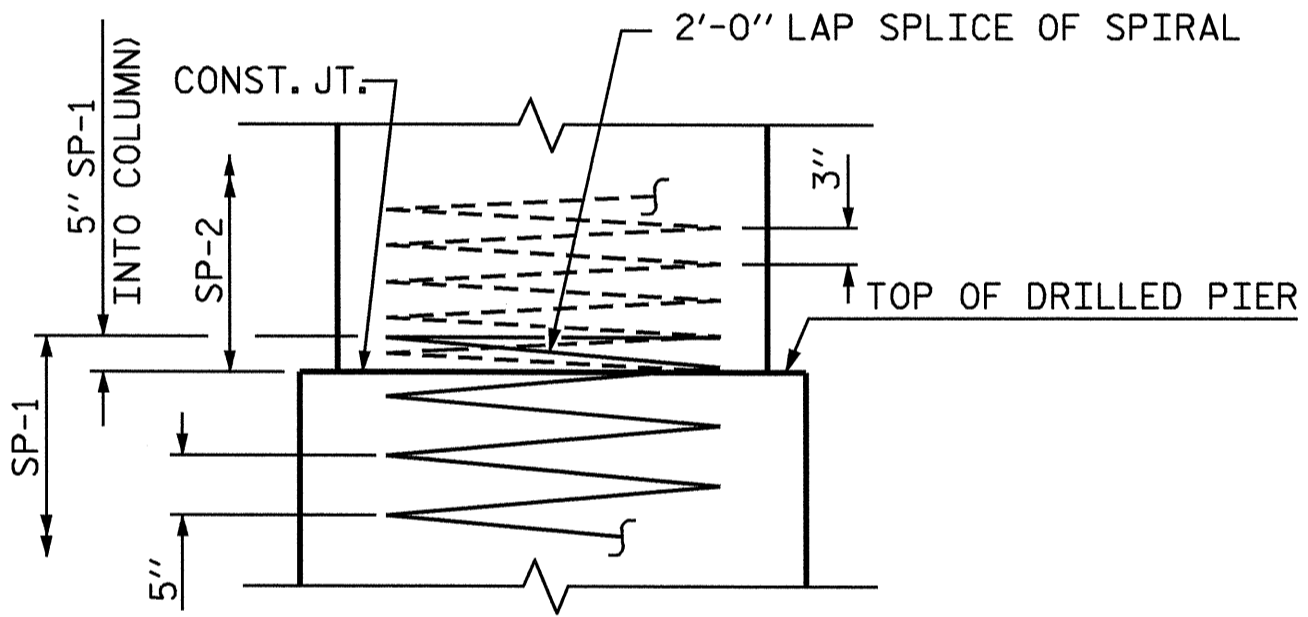
| REVISIONS | | | | | | SHEET NO. | |
|-----------|-----|-------|-----|-----|-------|--------------|--|
| NO. | BY: | DATE: | NO. | BY: | DATE: | S-18 | |
| 1 | | | 3 | | | TOTAL SHEETS | |
| 2 | | | 4 | | | 25 | |



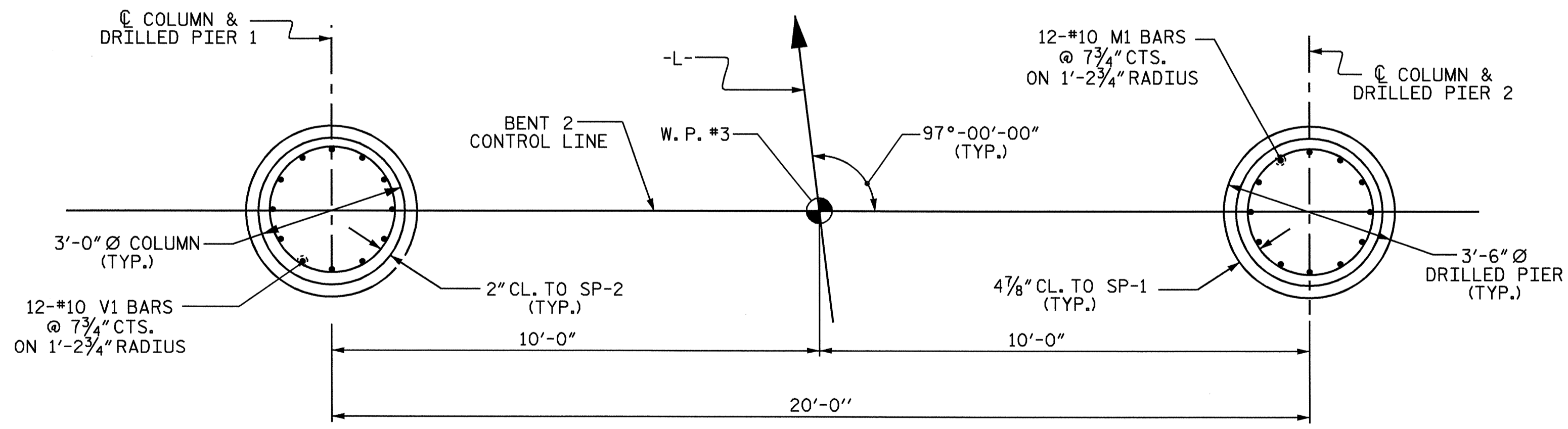
SECTION A-A



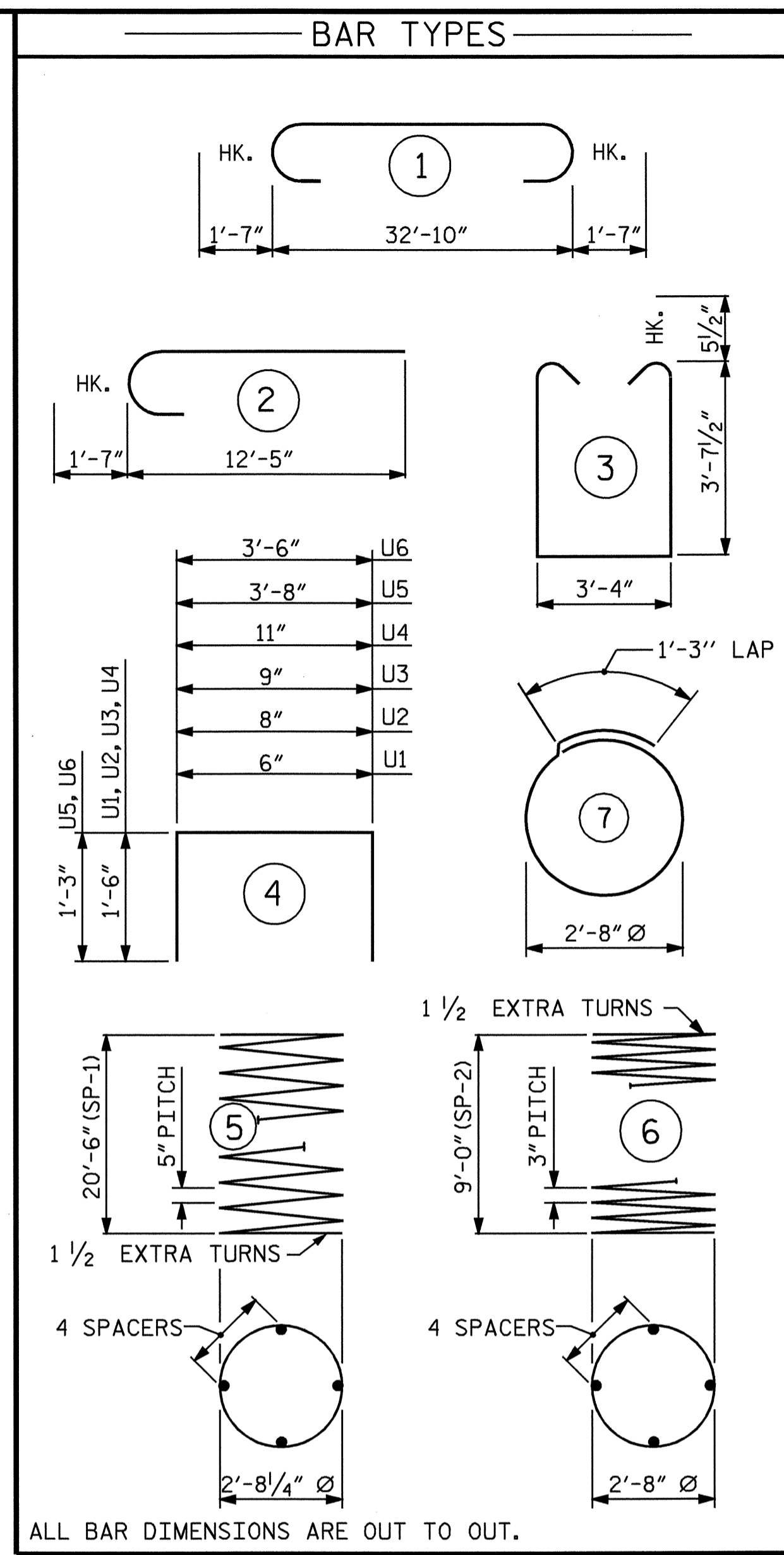
END VIEW
(TYP. EA. END)



CONSTRUCTION JOINT DETAIL



PLAN OF COLUMNS & DRILLED PIERS
(REINFORCING STEEL AND DIMENSION ARE TYPICAL FOR ALL COLUMNS AND DRILLED PIERS)



ALL BAR DIMENSIONS ARE OUT TO OUT.

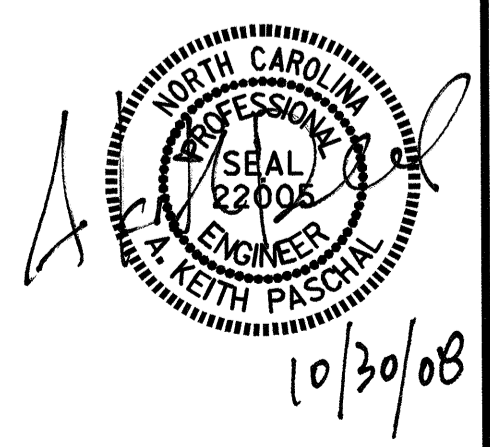
| BILL OF MATERIAL | | | | | |
|--|-----|------|------|------------------|-----------|
| BENT 2 | | | | | |
| BAR | NO. | SIZE | TYPE | LENGTH | WEIGHT |
| B1 | 6 | #11 | STR | 32'-11" | 1149 |
| B2 | 6 | #11 | 1 | 36'-0" | 1148 |
| B3 | 6 | #5 | STR | 32'-11" | 206 |
| B4 | 4 | #4 | STR | 3'-4" | 9 |
| D1 | 40 | #6 | STR | 1'-6" | 90 |
| M1 | 24 | #10 | STR | 29'-9" | 3072 |
| S1 | 32 | #5 | 3 | 11'-6" | 384 |
| S2 | 10 | #4 | 7 | 9'-8" | 65 |
| U1 | 2 | #4 | 4 | 3'-6" | 5 |
| U2 | 2 | #4 | 4 | 3'-8" | 5 |
| U3 | 2 | #4 | 4 | 3'-9" | 5 |
| U4 | 2 | #4 | 4 | 3'-11" | 5 |
| U5 | 6 | #4 | 4 | 6'-0" | 24 |
| U6 | 6 | #4 | 4 | 5'-9" | 23 |
| V1 | 24 | #10 | 2 | 13'-2" | 1360 |
| REINFORCING STEEL | | | | = | 7550 LBS. |
| SP-1 | 2 | ** | 5 | 420'-9" | 878 |
| SP-2 | 2 | ** | 6 | 307'-4" | 411 |
| SPIRAL COLUMN REINFORCING STEEL | | | | = | 1289 LBS. |
| CLASS A CONCRETE BREAKDOWN | | | | | |
| POUR 2 COLUMNS | | | | 4.5 | C.Y. |
| POUR 3 CAP | | | | 18.1 | C.Y. |
| POUR 4 LATERAL GUIDE | | | | 0.3 | C.Y. |
| TOTAL | | | | 22.9 | C.Y. |
| DRILLED PIERS | | | | | |
| DRILLED PIER CONCRETE | | | | | |
| POUR 1 (DRILLED PIERS) | | | | 15.0 | C.Y. |
| 3'-6" Ø DRILLED PIERS IN SOIL | | | | 24.00 | LIN. FT. |
| 3'-6" Ø DRILLED PIERS NOT IN SOIL | | | | 18.00 | LIN. FT. |
| PERMANENT STEEL CASING FOR 3'-6" Ø DRILLED PIERS | | | | LIN. FT. = 15.0 | |
| ▲ CSL TUBES | | | | LIN. FT. = 188.0 | |

- * 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 #5 PLAIN OR DEFORMED BAR.
- ▲ NO SEPARATE PAYMENT WILL BE MADE FOR CSL TUBES. CSL TUBES WILL BE INCLUDED IN THE UNIT BID PRICE FOR DRILLED PIERS.

PROJECT NO. B-4184
MADISON COUNTY
 STATION: 14+68.00 -L-

SHEET 2 OF 2

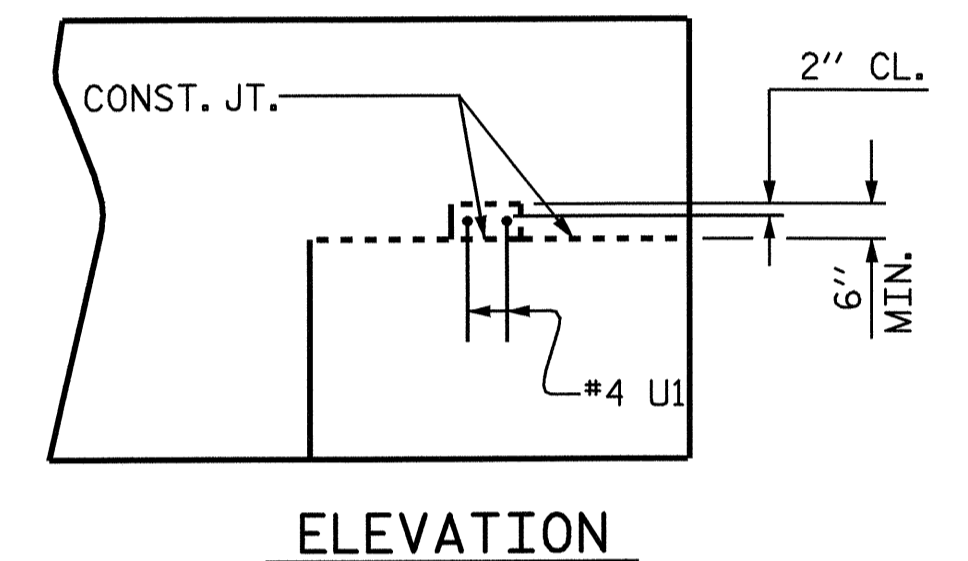
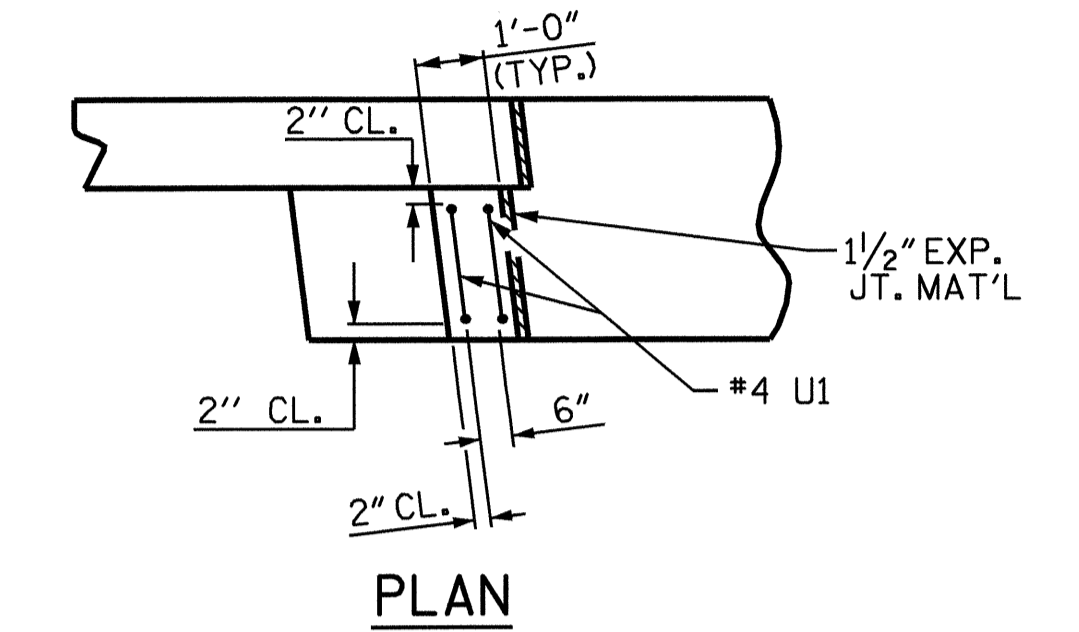
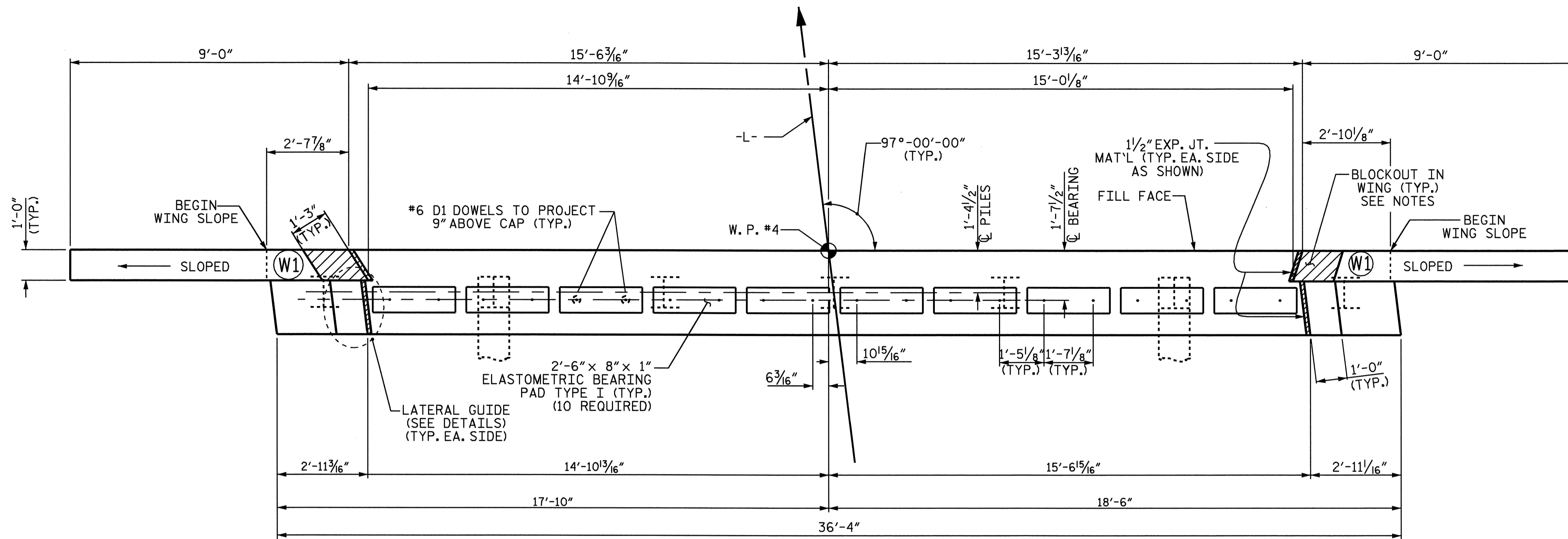
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|--|-----|-------|-----|-----|-------|
| STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION RALEIGH | | | | | |
| SUBSTRUCTURE BENT 2 | | | | | |
| REVISIONS | | | | | |
| NO. | BY: | DATE: | NO. | BY: | DATE: |
| 1 | | | 3 | | |
| 2 | | | 4 | | |
| SHEET NO. | | | | | S-19 |
| TOTAL SHEETS | | | | | 25 |



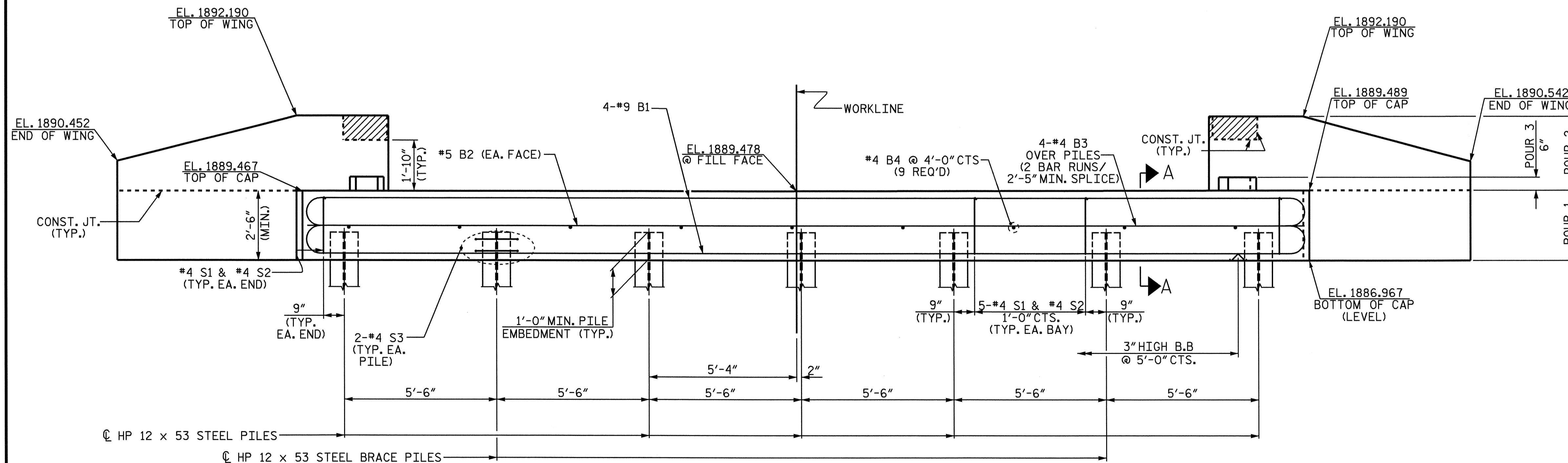
DRAWN BY : J. G. KHARVA DATE : 9/02/08
 CHECKED BY : J. D. HAWK DATE : 10/02/08

NOTES

STIRRUPS IN CAP MAY BE SHIFTED AS NECESSARY TO CLEAR DOWELS.
 THE LATERAL GUIDE AT EACH END OF THE CAP IS NOT TO BE
 POURED UNTIL AFTER THE CORED SLAB UNITS ARE IN PLACE.
 THE CONCRETE IN THE SHADED AREA OF THE WING SHALL BE POURED
 AFTER THE PARAPET IS CAST IF SLIP FORMING IS USED.



LATERAL GUIDE DETAILS
 (EACH END SIMILAR)



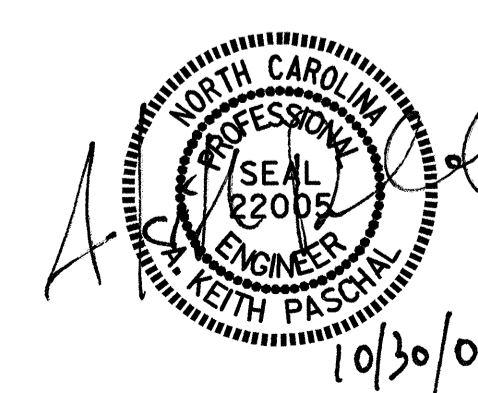
PROJECT NO. B-4184
MADISON COUNTY
 STATION: 14+68.00 -L-

SHEET 1 OF 2

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

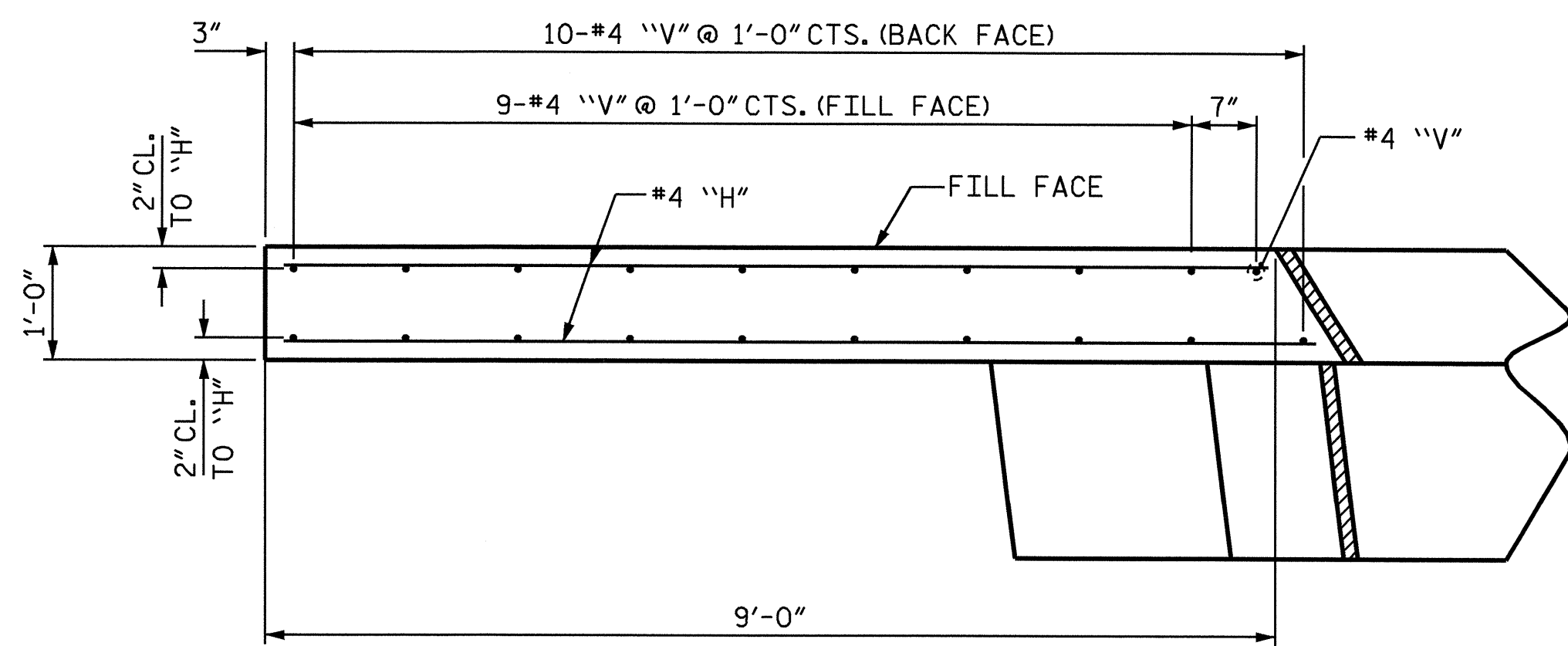
**SUBSTRUCTURE
 END BENT 2**

| REVISIONS | | | | | | SHEET NO. |
|-----------|-----|-------|-----|-----|-------|--------------|
| NO. | BY: | DATE: | NO. | BY: | DATE: | S-20 |
| 1 | | | 3 | | | TOTAL SHEETS |
| 2 | | | 4 | | | 25 |

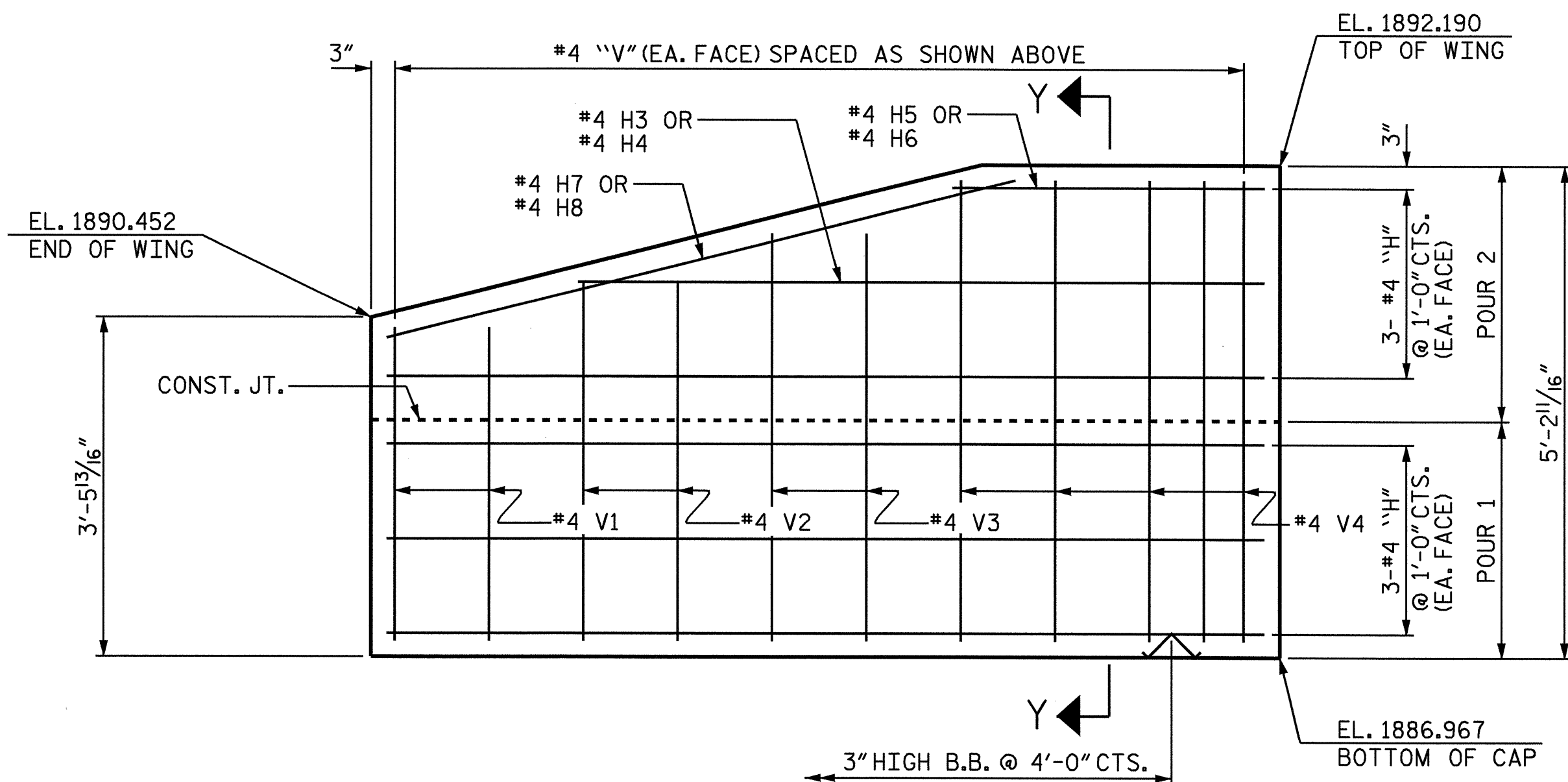


10/30/08

DRAWN BY: J.D. HAWK DATE: 9/08
 CHECKED BY: J.G. KHARVA DATE: 10/08

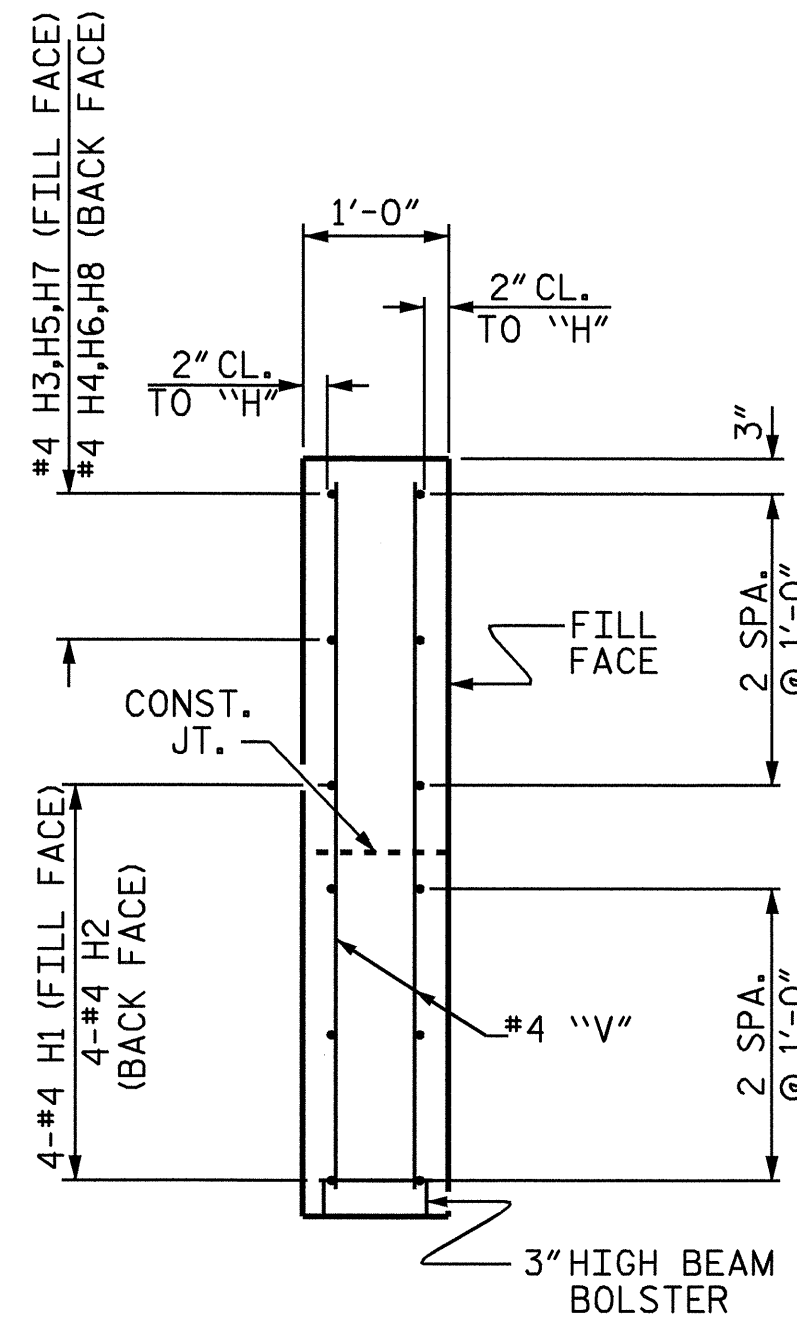


PLAN OF WING (W1)

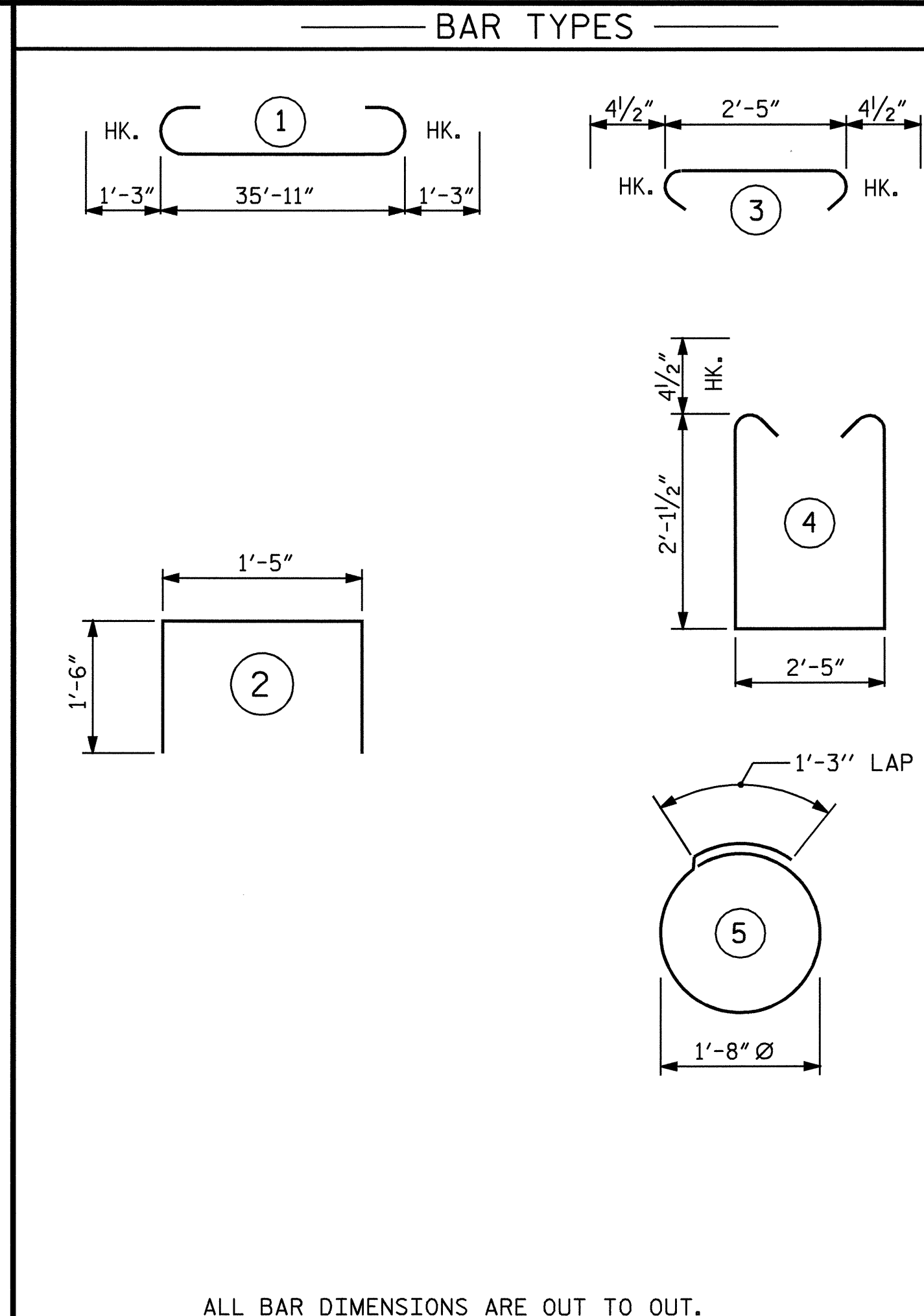


ELEVATION OF WING (W1)

(LEFT WING SHOWN, RIGHT WING SIMILAR)



SECTION Y-Y



ALL BAR DIMENSIONS ARE OUT TO OUT.

BILL OF MATERIAL

END BENT 2

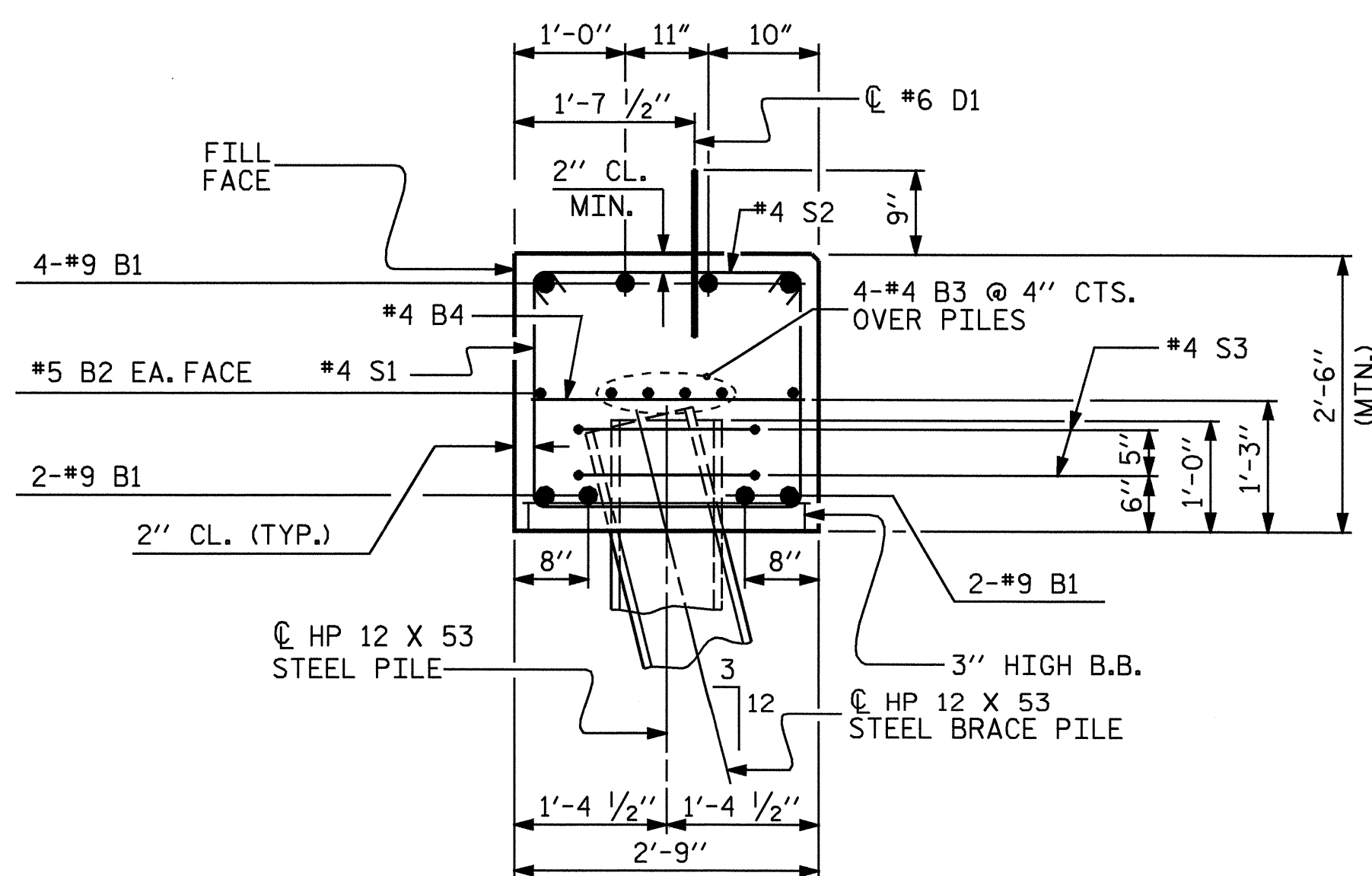
| BAR | NO. | SIZE | TYPE | LENGTH | WEIGHT |
|-----|-----|------|------|--------|--------|
| B1 | 8 | #9 | 1 | 38'-5" | 1045 |
| B2 | 2 | #5 | STR | 36'-0" | 75 |
| B3 | 8 | #4 | STR | 19'-3" | 103 |
| B4 | 9 | #4 | STR | 2'-5" | 15 |
| D1 | 20 | #6 | STR | 1'-6" | 45 |
| H1 | 8 | #4 | STR | 8'-9" | 47 |
| H2 | 8 | #4 | STR | 9'-2" | 49 |
| H3 | 2 | #4 | STR | 6'-9" | 9 |
| H4 | 2 | #4 | STR | 7'-2" | 10 |
| H5 | 2 | #4 | STR | 2'-9" | 4 |
| H6 | 2 | #4 | STR | 3'-2" | 4 |
| H7 | 2 | #4 | STR | 6'-0" | 8 |
| H8 | 2 | #4 | STR | 6'-1" | 8 |
| S1 | 32 | #4 | 4 | 7'-5" | 159 |
| S2 | 32 | #4 | 3 | 3'-2" | 68 |
| S3 | 14 | #4 | 5 | 6'-6" | 61 |
| U1 | 4 | #4 | 2 | 4'-5" | 12 |
| V1 | 8 | #4 | STR | 3'-3" | 18 |
| V2 | 8 | #4 | STR | 3'-9" | 20 |
| V3 | 8 | #4 | STR | 4'-3" | 23 |
| V4 | 16 | #4 | STR | 4'-10" | 52 |

TOTAL REINFORCING STEEL = 1835 LBS

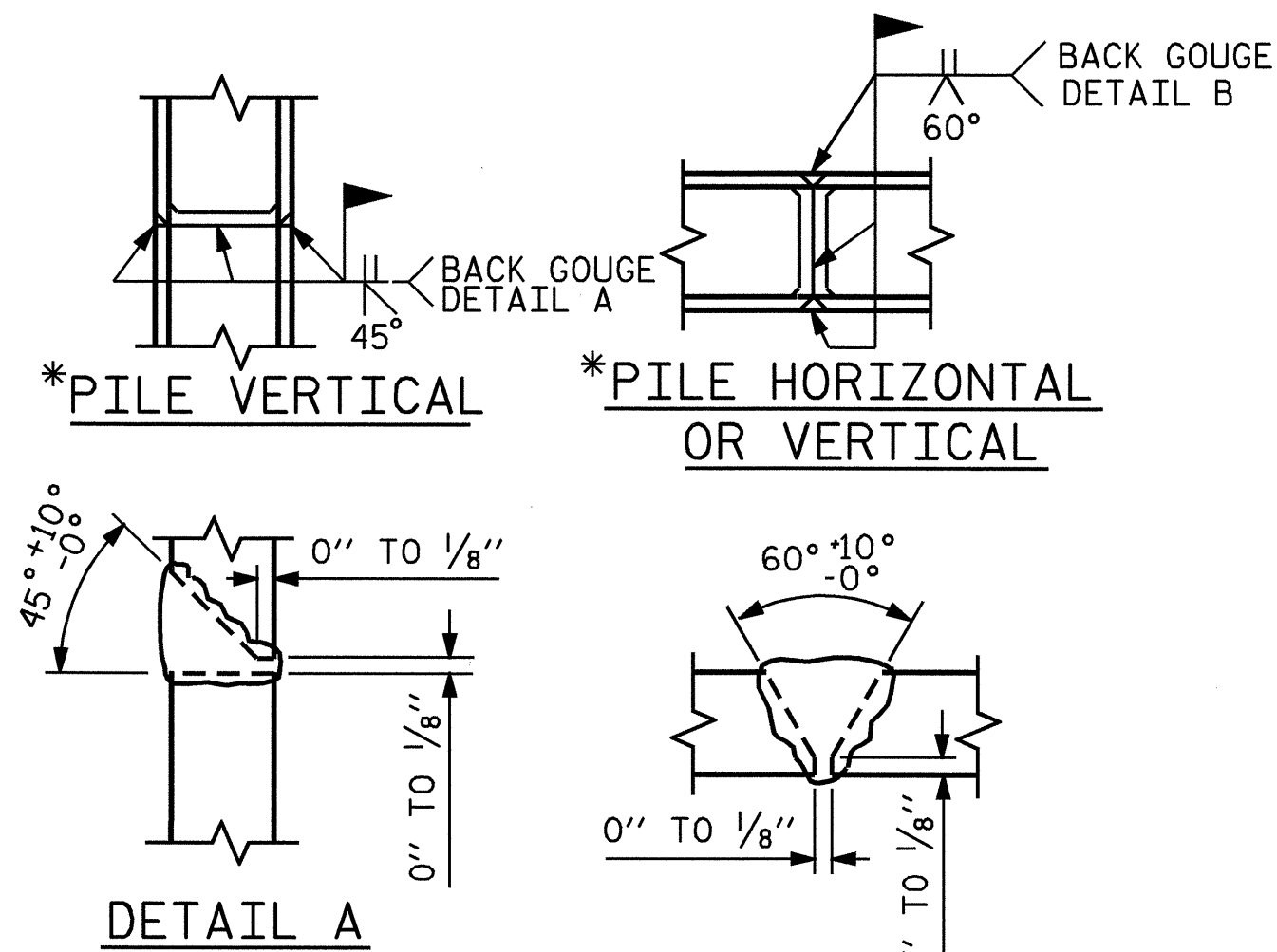
CLASS A CONCRETE BREAKDOWN

| | |
|------------------------------------|-----------|
| POUR 1 (CAP & LOWER PART OF WINGS) | 10.5 C.Y. |
| POUR 2 (UPPER PART OF WINGS) | 1.6 C.Y. |
| POUR 3 (LATERAL GUIDE) | 0.1 C.Y. |
| TOTAL CLASS A CONCRETE | 12.2 C.Y. |

HP 12 X 53 STEEL PILES NO. 7 175 LIN. FT.

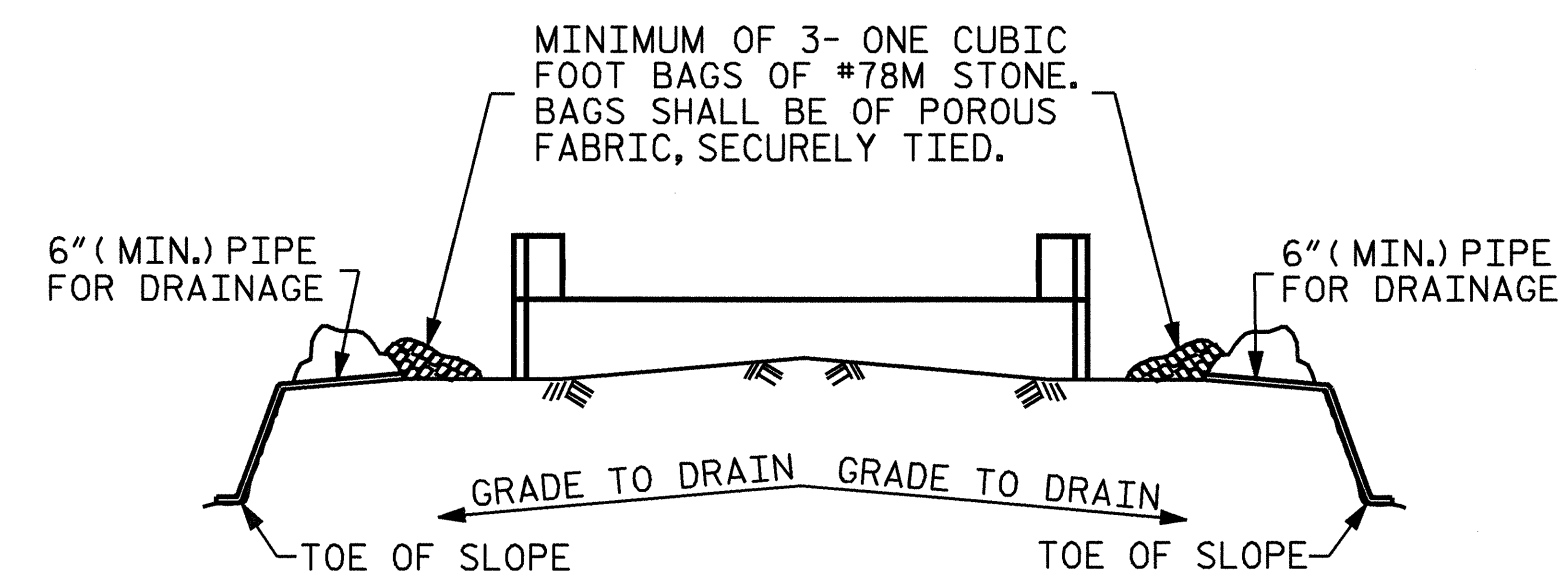


SECTION A-A



PILE SPLICE DETAILS

*POSITION OF PILE DURING WELDING.



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

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

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

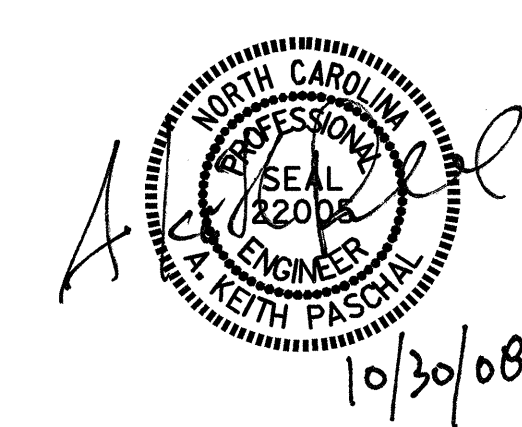
TEMPORARY DRAINAGE AT END BENT

PROJECT NO. B-4184
 MADISON COUNTY
 STATION: 14+68.00 -L-

SHEET 2 OF 2

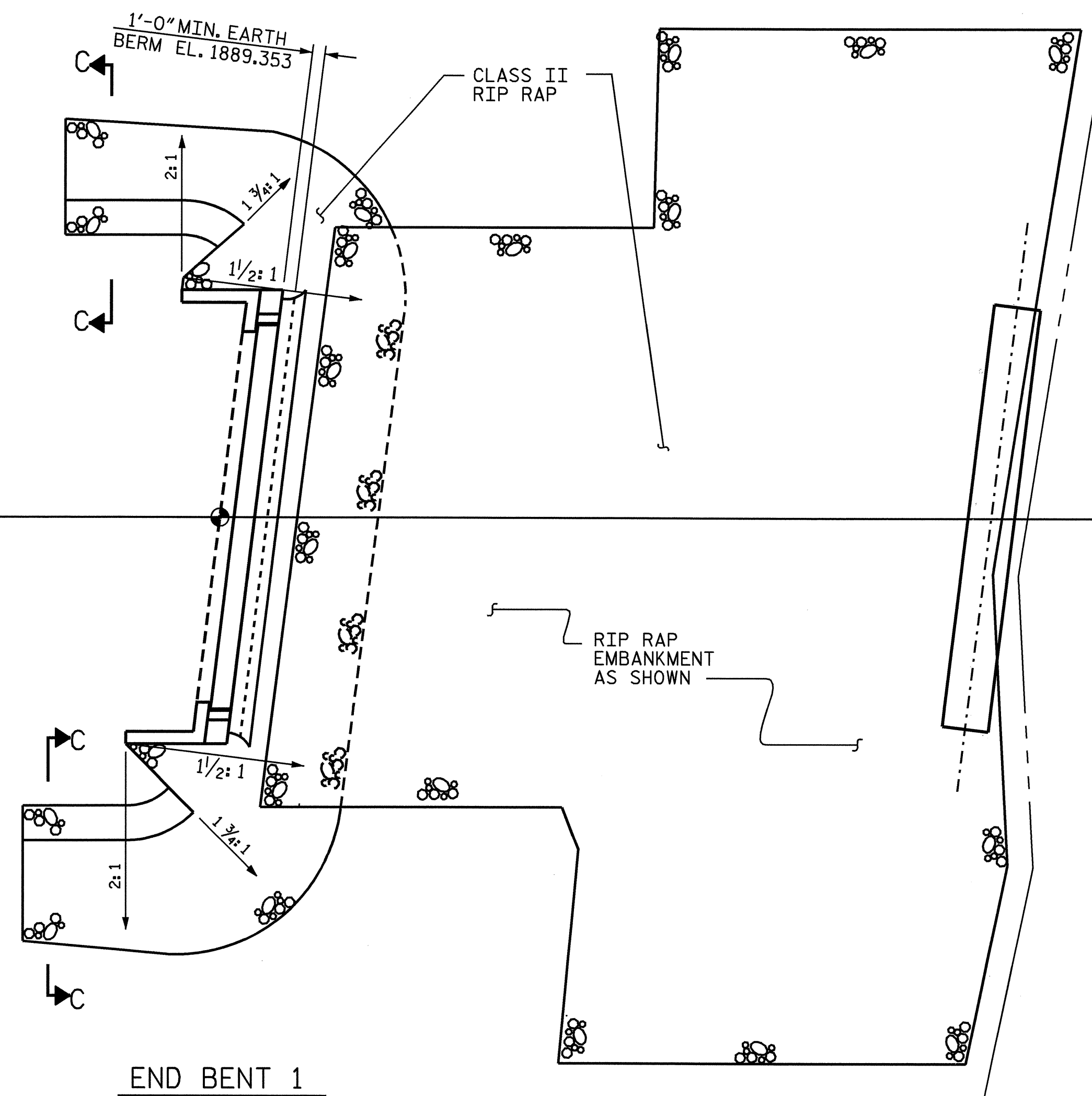
STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

SUBSTRUCTURE
 END BENT 2

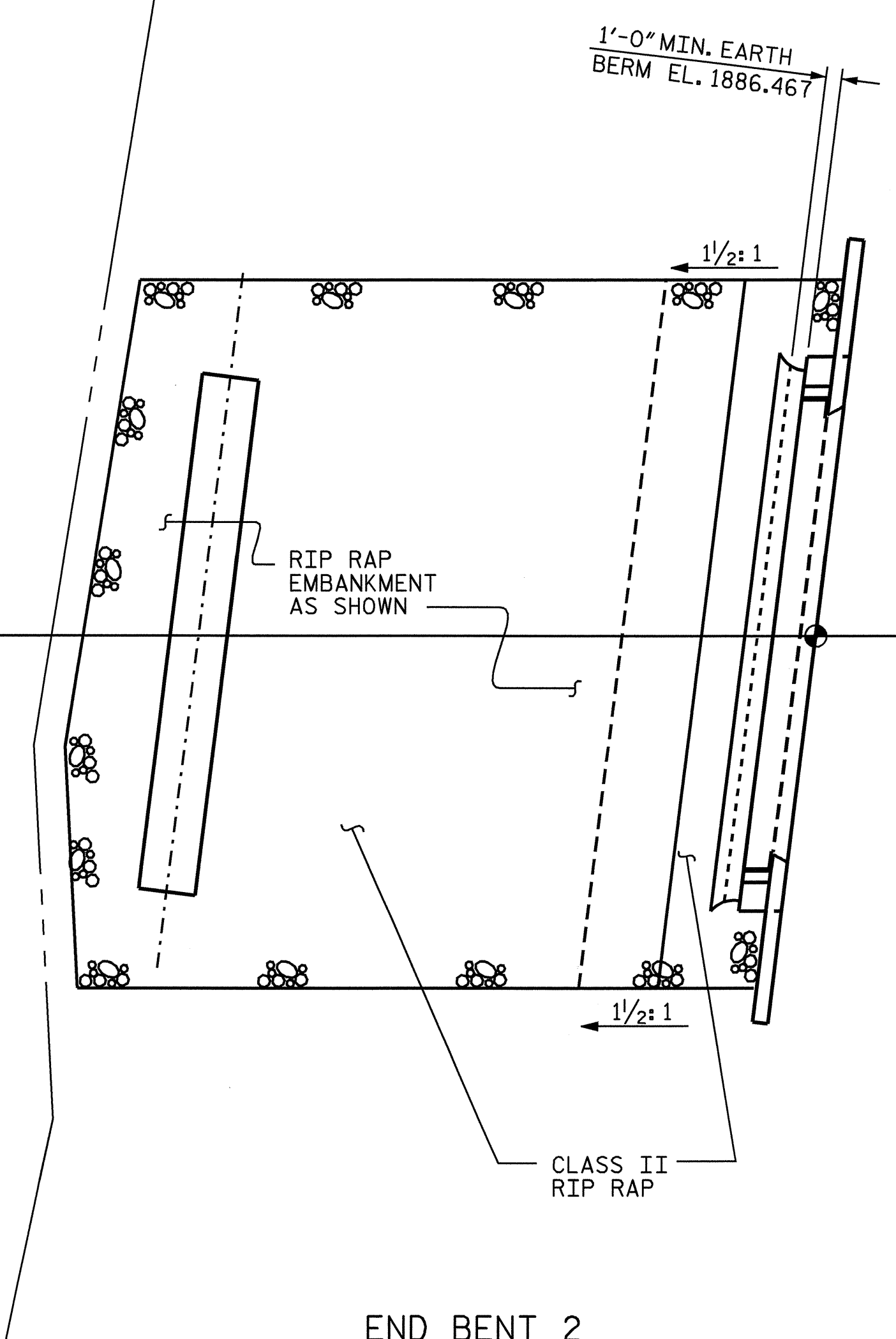


| REVISIONS | | | | | | SHEET NO. |
|-----------|-----|-------|-----|-----|-------|-----------------|
| NO. | BY: | DATE: | NO. | BY: | DATE: | S-21 |
| 1 | | | 3 | | | TOTAL SHEETS 25 |
| 2 | | | 4 | | | |

DRAWN BY: J.D. HAWK DATE: 8/08
 CHECKED BY: J.G. KHARVA DATE: 10/08

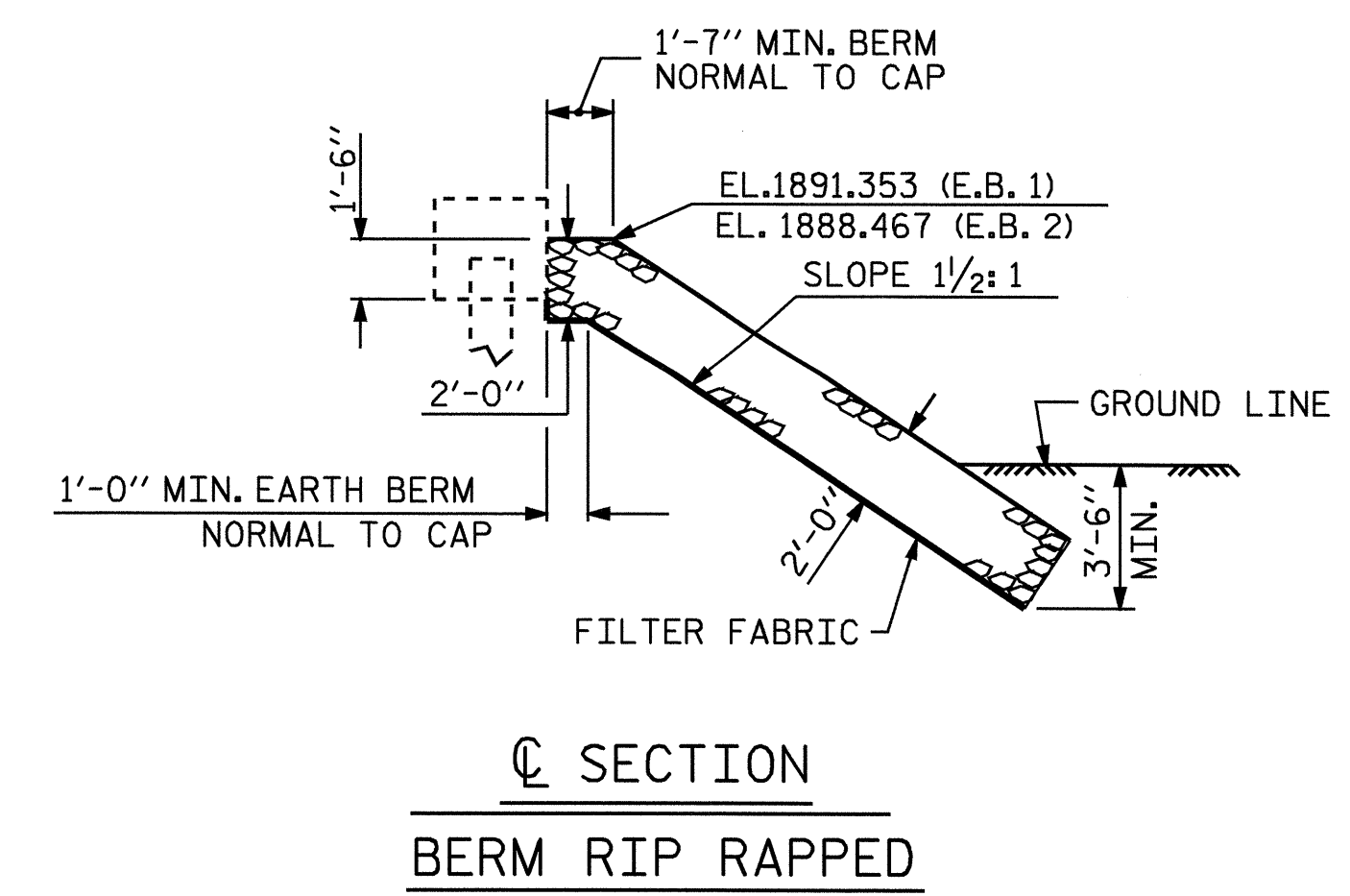


IVY RIVER

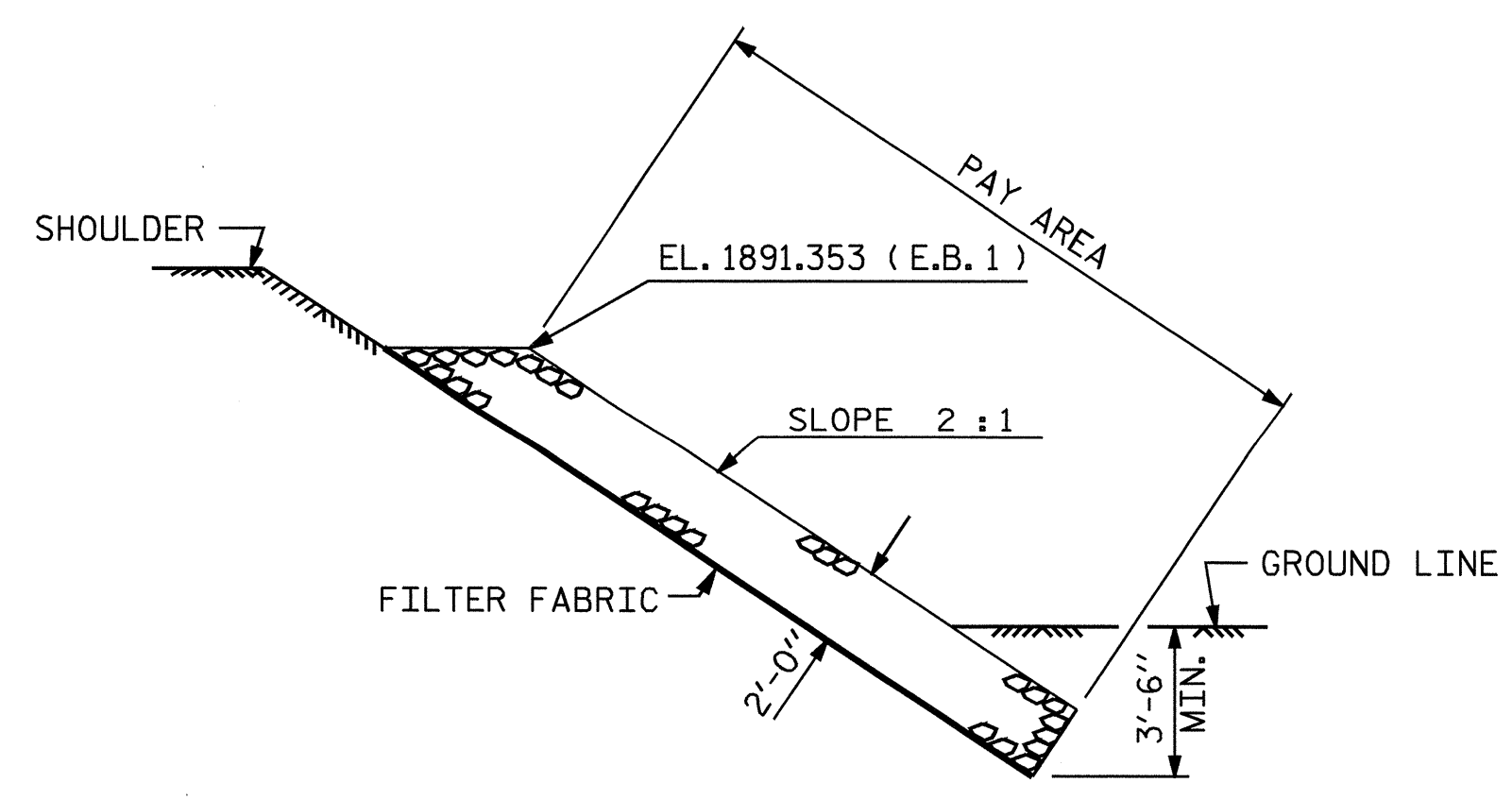


PLAN

| ESTIMATED QUANTITIES | | |
|-------------------------------|--|-------------------------------|
| BRIDGE @ STA. 14+68.00 -L- | RIP RAP CLASS II (2'-0" THICK) | FILTER FABRIC FOR DRAINAGE |
| | TONS | SQUARE YARDS |
| END BENT 1 | 550 | 610 |
| END BENT 2 | 265 | 294 |

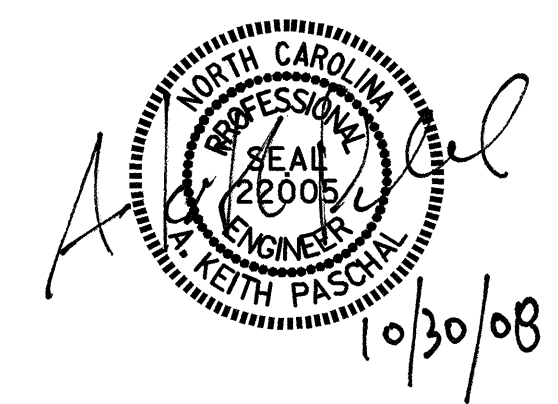


SECTION
BERM RIP RAPPED



SECTION C-C

PROJECT NO. B-4184
MADISON COUNTY
 STATION: 14+68.00 -L-



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

| REVISIONS | | | | | | SHEET NO. S-22 |
|-----------|-----|-------|-----|-----|-------|--------------------|
| NO. | BY: | DATE: | NO. | BY: | DATE: | |
| 1 | | | 3 | | | TOTAL SHEETS 25 |
| 2 | | | 4 | | | |

ASSEMBLED BY : J.G. KHARVA DATE : 09/03/08
 CHECKED BY : J.D. HAWK DATE : 10/08
 DRAWN BY : REK 1/84 REV. 8/16/99 RWW/LES
 CHECKED BY : RDU 1/84 REV. 10/17/00 RWW/LES
 REV. 5/1/06 TLA/GM

08-OCT-2008 11:17
 F:\structures\b4184\final plans\b4184_sd_rr.dgn
 JDHAWK

NOTES

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

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

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.

THE 6" COMP. A.B.C. SHALL BE FLUSH WITH THE ROADWAY END OF THE APPROACH SLAB AND SHALL EXTEND 1'-0" OUTSIDE OF EACH EDGE OF THE APPROACH SLAB.

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

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

FOR JOINT DETAILS, SEE "PRESTRESSED CONCRETE CORED SLAB UNIT" SHEETS.

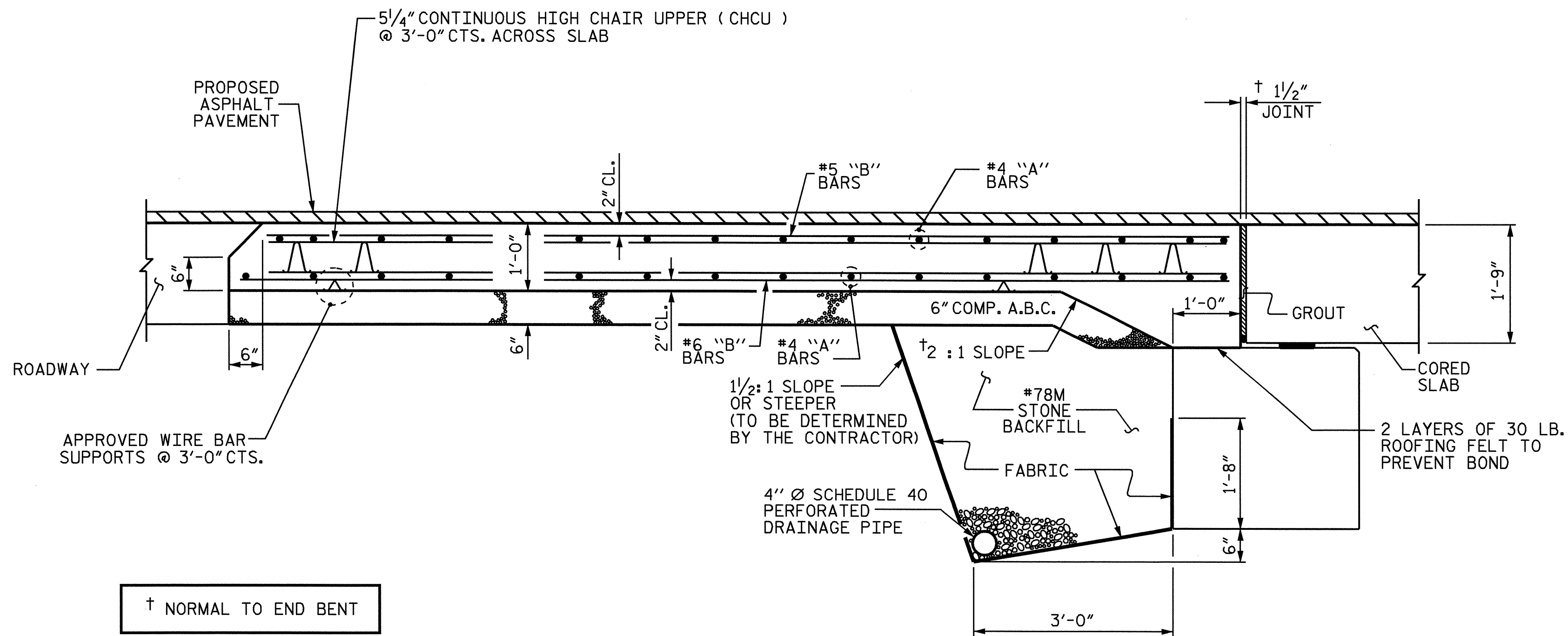
THE JOINT AT THE END BENT SHALL BE GROUTED AS SOON AS PRACTICAL AFTER THE CONSTRUCTION OF THE APPROACH SLABS.

APPROACH SLAB GROOVING IS NOT REQUIRED.

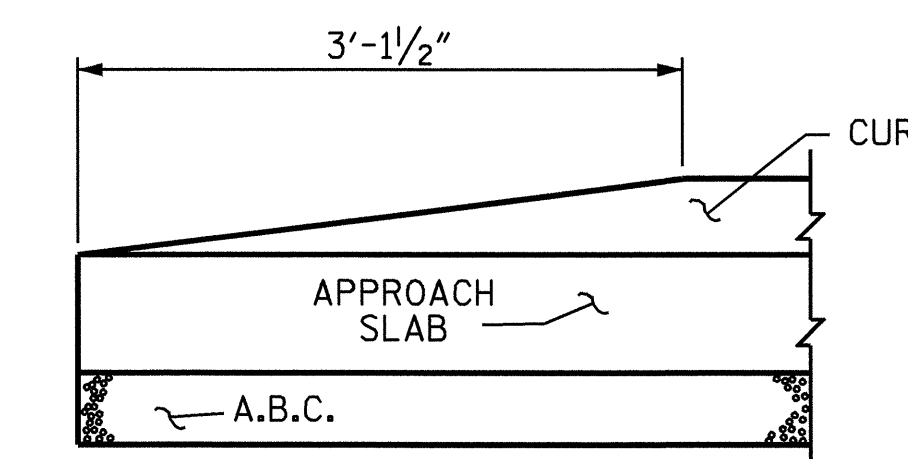
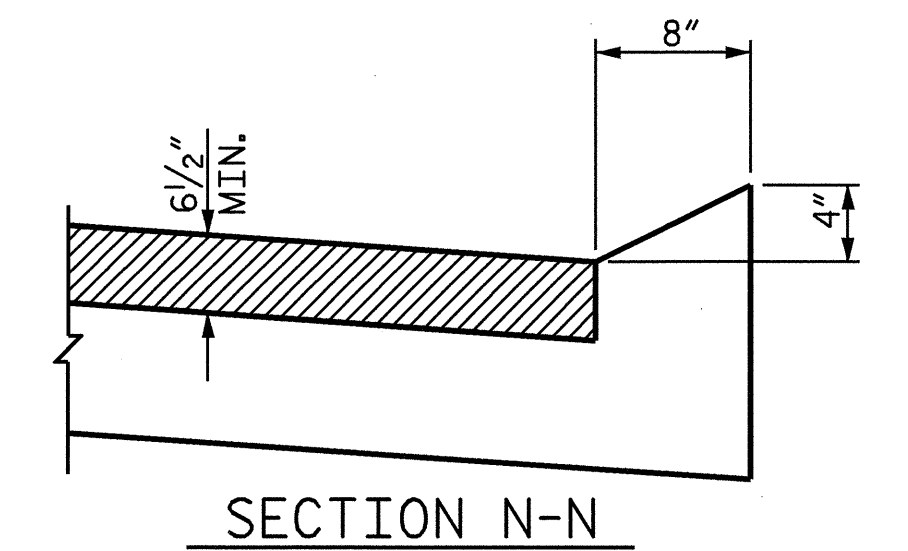
FOR PLAN SEE SHEET 2 OF 3

BILL OF MATERIAL

| APPROACH SLAB AT E.B. 1 | | | | | | APPROACH SLAB AT E.B. 2 | | | | | | | | | | | |
|---|-----|------|------|--------|--------|-------------------------|-----|------|------|---------|--------|---|-----|------|------|--------|--------|
| BAR | NO. | SIZE | TYPE | LENGTH | WEIGHT | BAR | NO. | SIZE | TYPE | LENGTH | WEIGHT | BAR | NO. | SIZE | TYPE | LENGTH | WEIGHT |
| *A1 | 13 | #4 | STR | 29'-0" | 252 | *A100 | 1 | #4 | STR | 29'-6" | 20 | *B112 | 2 | #5 | STR | 10'-2" | 21 |
| A2 | 13 | #4 | STR | 29'-0" | 252 | *A101 | 1 | #4 | STR | 30'-0" | 20 | *B113 | 2 | #5 | STR | 8'-7" | 18 |
| *B1 | 58 | #5 | STR | 14'-4" | 867 | *A102 | 2 | #4 | STR | 16'-7" | 22 | *B114 | 2 | #5 | STR | 7'-3" | 15 |
| B2 | 58 | #6 | STR | 14'-8" | 1278 | *A103 | 2 | #4 | STR | 17'-2" | 23 | *B115 | 2 | #5 | STR | 6'-0" | 13 |
| REINFORCING STEEL LBS. 1530 | | | | | | *A104 | 2 | #4 | STR | 17'-11" | 24 | *B116 | 2 | #5 | STR | 5'-0" | 10 |
| *EPOXY COATED REINFORCING STEEL LBS. 1119 | | | | | | *A105 | 2 | #4 | STR | 18'-9" | 25 | *B117 | 2 | #5 | STR | 4'-1" | 9 |
| CLASS AA CONCRETE C. Y. 14.5 | | | | | | *A106 | 2 | #4 | STR | 19'-7" | 26 | *B118 | 2 | #5 | STR | 3'-3" | 7 |
| | | | | | | *A107 | 2 | #4 | STR | 20'-8" | 28 | *B119 | 2 | #5 | STR | 2'-10" | 6 |
| | | | | | | *A108 | 2 | #4 | STR | 21'-10" | 29 | *B120 | 2 | #5 | STR | 2'-2" | 5 |
| | | | | | | *A109 | 2 | #4 | STR | 23'-2" | 31 | *B121 | 2 | #5 | STR | 1'-8" | 3 |
| | | | | | | *A110 | 2 | #4 | STR | 24'-9" | 33 | B200 | 58 | #6 | STR | 11'-8" | 1016 |
| | | | | | | *A111 | 4 | #4 | STR | 26'-2" | 70 | B201 | 2 | #6 | STR | 10'-3" | 31 |
| | | | | | | A200 | 1 | #4 | STR | 29'-6" | 20 | B202 | 2 | #6 | STR | 8'-8" | 26 |
| | | | | | | A201 | 1 | #4 | STR | 30'-0" | 20 | B203 | 2 | #6 | STR | 7'-4" | 22 |
| | | | | | | A202 | 2 | #4 | STR | 16'-7" | 22 | B204 | 2 | #6 | STR | 6'-2" | 19 |
| | | | | | | A203 | 2 | #4 | STR | 17'-2" | 23 | B205 | 2 | #6 | STR | 5'-2" | 16 |
| | | | | | | A204 | 2 | #4 | STR | 17'-11" | 24 | B206 | 2 | #6 | STR | 4'-3" | 13 |
| | | | | | | A205 | 2 | #4 | STR | 18'-9" | 25 | B207 | 2 | #6 | STR | 3'-6" | 11 |
| | | | | | | A206 | 2 | #4 | STR | 19'-7" | 26 | B208 | 2 | #6 | STR | 2'-10" | 9 |
| | | | | | | A207 | 2 | #4 | STR | 20'-8" | 28 | B209 | 2 | #6 | STR | 2'-2" | 7 |
| | | | | | | A208 | 2 | #4 | STR | 21'-10" | 29 | B210 | 2 | #6 | STR | 1'-8" | 5 |
| | | | | | | A209 | 2 | #4 | STR | 23'-2" | 31 | B211 | 1 | #6 | STR | 1'-2" | 4 |
| | | | | | | A210 | 2 | #4 | STR | 24'-9" | 33 | B212 | 2 | #6 | STR | 10'-6" | 32 |
| | | | | | | A211 | 4 | #4 | STR | 26'-2" | 70 | B213 | 2 | #6 | STR | 8'-11" | 27 |
| | | | | | | *B100 | 58 | #5 | STR | 11'-4" | 686 | B214 | 2 | #6 | STR | 7'-7" | 23 |
| | | | | | | *B101 | 2 | #5 | STR | 9'-11" | 21 | B215 | 2 | #6 | STR | 6'-4" | 19 |
| | | | | | | *B102 | 2 | #5 | STR | 8'-4" | 17 | B216 | 2 | #6 | STR | 5'-4" | 16 |
| | | | | | | *B103 | 2 | #5 | STR | 7'-0" | 14 | B217 | 2 | #6 | STR | 4'-5" | 13 |
| | | | | | | *B104 | 2 | #5 | STR | 5'-10" | 12 | B218 | 2 | #6 | STR | 3'-7" | 11 |
| | | | | | | *B105 | 2 | #5 | STR | 4'-10" | 10 | B219 | 2 | #6 | STR | 2'-10" | 9 |
| | | | | | | *B106 | 2 | #5 | STR | 3'-11" | 8 | B220 | 2 | #6 | STR | 2'-2" | 7 |
| | | | | | | *B107 | 2 | #5 | STR | 3'-2" | 7 | B221 | 2 | #6 | STR | 1'-8" | 5 |
| | | | | | | *B108 | 2 | #5 | STR | 2'-6" | 5 | REINFORCING STEEL LBS. 1692 | | | | | |
| | | | | | | *B109 | 2 | #5 | STR | 2'-2" | 5 | *EPOXY COATED REINFORCING STEEL LBS. 1248 | | | | | |
| | | | | | | *B110 | 2 | #5 | STR | 1'-8" | 3 | CLASS AA CONCRETE C. Y. 20.0 | | | | | |
| | | | | | | *B111 | 2 | #5 | STR | 1'-2" | 2 | | | | | | |



SECTION THRU SLAB



END OF CURB WITHOUT SHOULDER BERM GUTTER (OMIT TAPER WHEN SHOULDER BERM GUTTER IS NOT REQUIRED)

CURB DETAILS

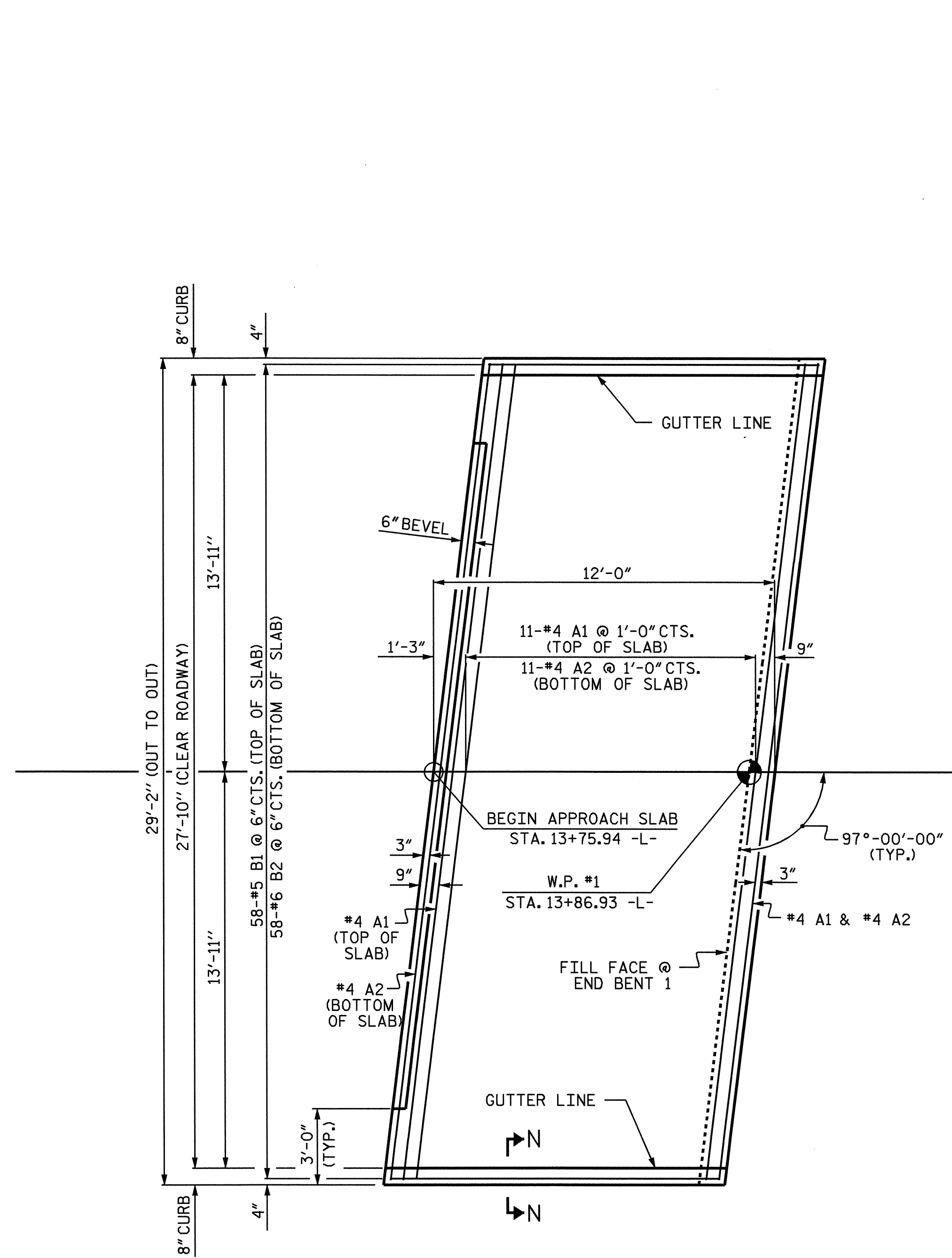
PROJECT NO. B-4184
MADISON COUNTY
 STATION: 14+68.00 -L-

SHEET 1 OF 3

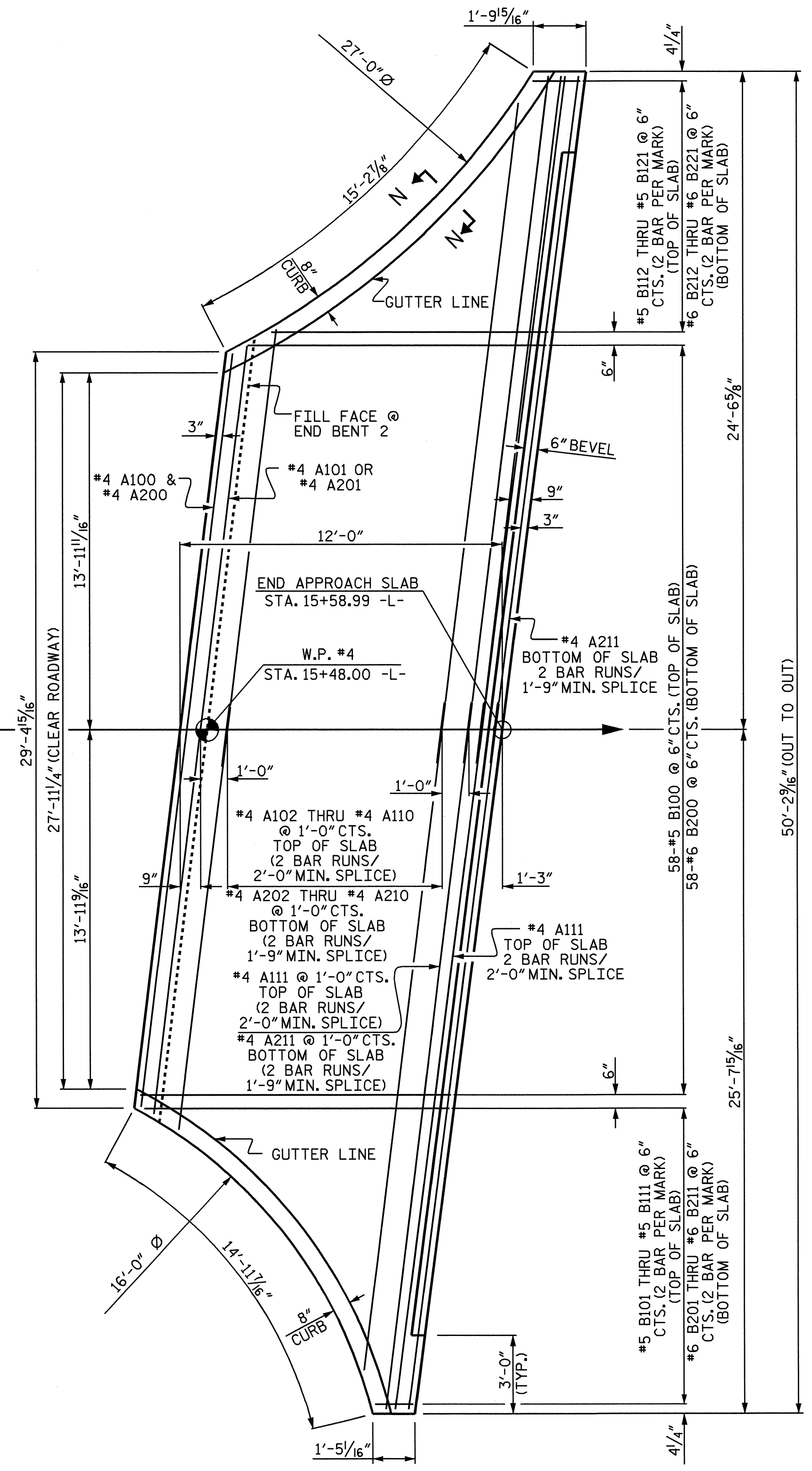
STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH
 STANDARD
 BRIDGE APPROACH SLAB
 FOR PRESTRESSED CONCRETE
 CORED SLAB UNIT
 (SUB-REGIONAL TIER)

| REVISIONS | | | | | | SHEET NO. | |
|-----------|-----|-------|-----|-----|-------|-----------------|--|
| NO. | BY: | DATE: | NO. | BY: | DATE: | S-23 | |
| 1 | | | 3 | | | TOTAL SHEETS 25 | |
| 2 | | | 4 | | | | |

ASSEMBLED BY : J. G. KHARVA DATE : 09/11/08
 CHECKED BY : J.D. HAWK DATE : 9/08
 DRAWN BY : KMM 3-08
 CHECKED BY : GM 3-08



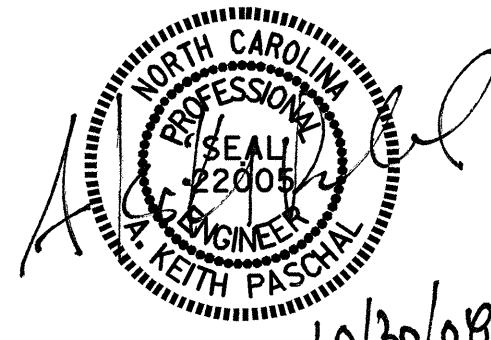
PLAN @ END BENT 1



PLAN @ END BENT 2
SEE SHEET 3 OF 3 FOR ARC OFFSETS.

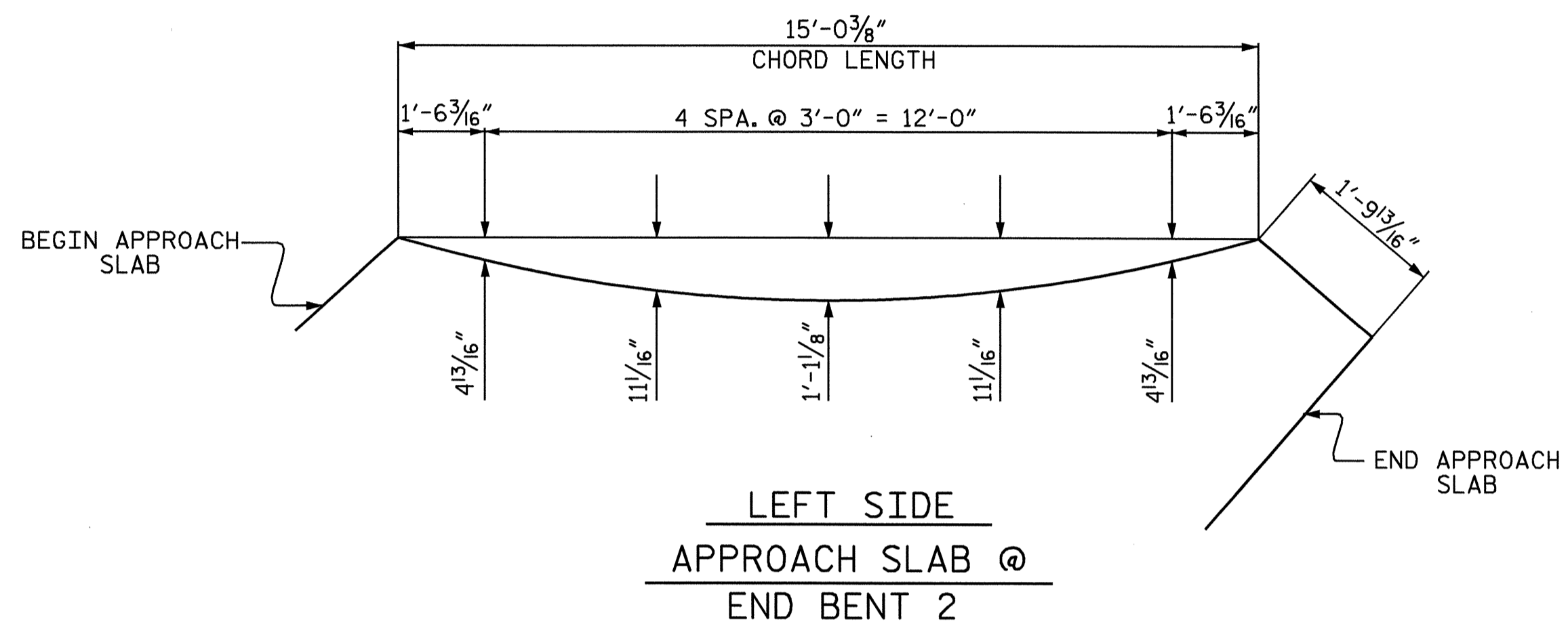
PROJECT NO. B-4184
MADISON COUNTY
 STATION: 14+68.00 -L-
 SHEET 2 OF 3

| | | | | | |
|--|-----|-------|-----|-----|-----------|
| STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION RALEIGH | | | | | |
| BRIDGE APPROACH SLAB FOR PRESTRESSED CONCRETE CORED SLAB | | | | | |
| REVISIONS | | | | | SHEET NO. |
| NO. | BY: | DATE: | NO. | BY: | DATE: |
| 1 | | | 3 | | |
| 2 | | | 4 | | |
| TOTAL SHEETS | | | | | 25 |
| | | | | | S-24 |

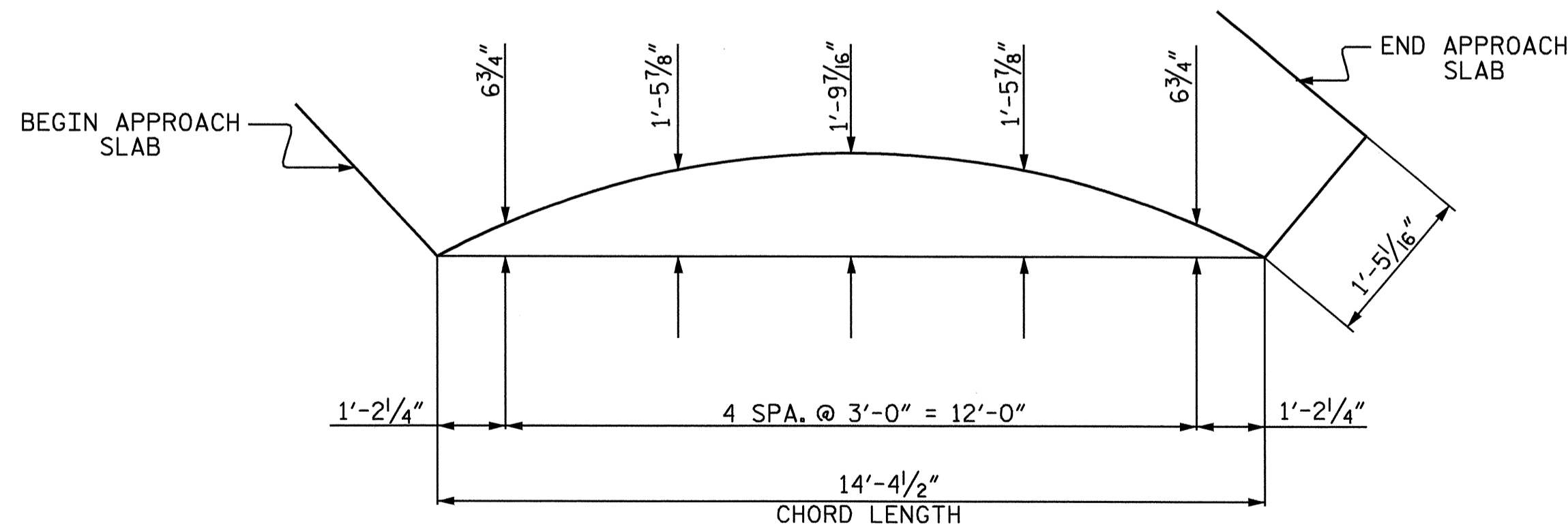


DRAWN BY : J. G. KHARVA DATE : 09/11/08
 CHECKED BY : J.D. HAWK DATE : 10/02/08

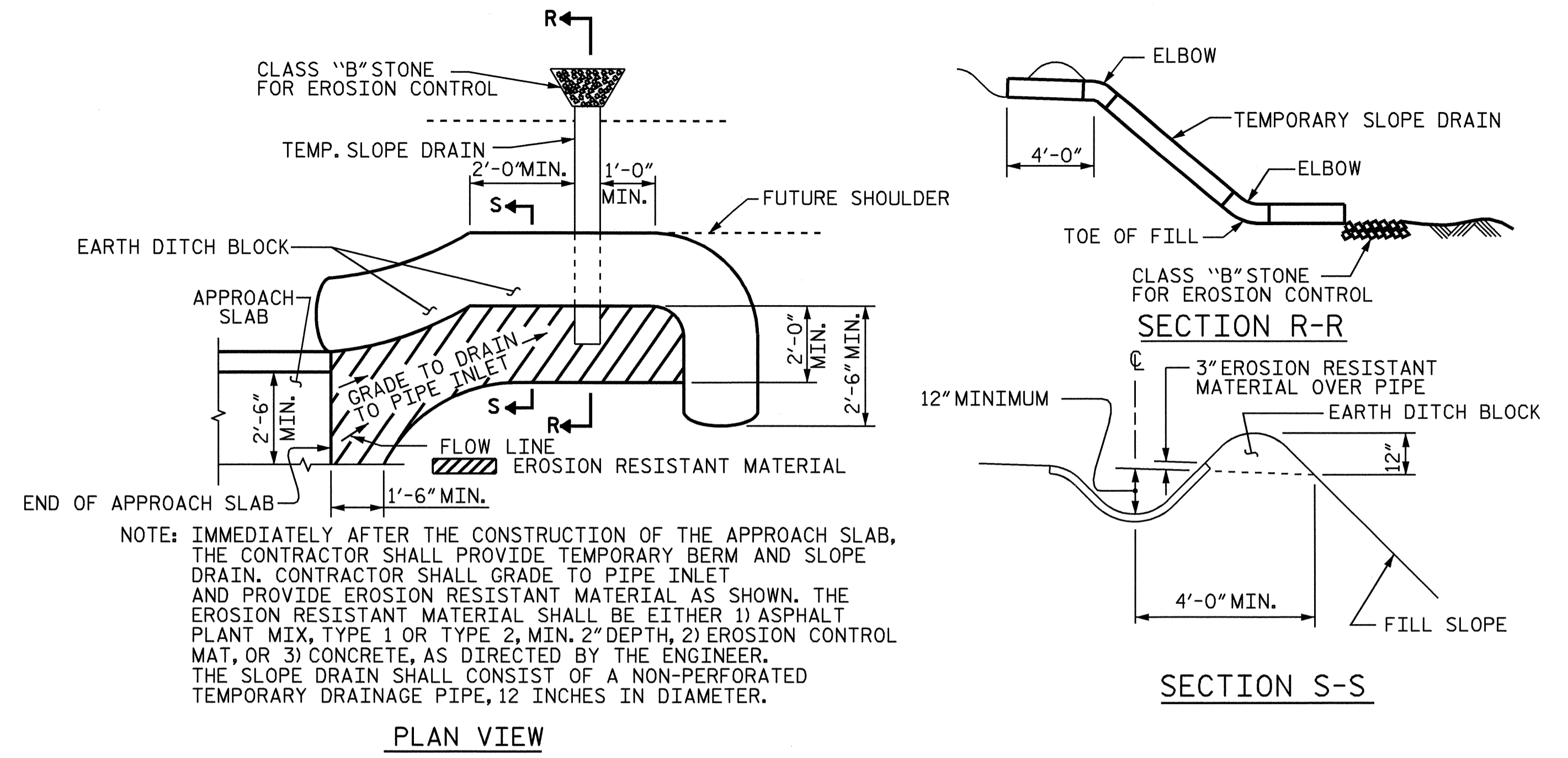
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 jdhawk



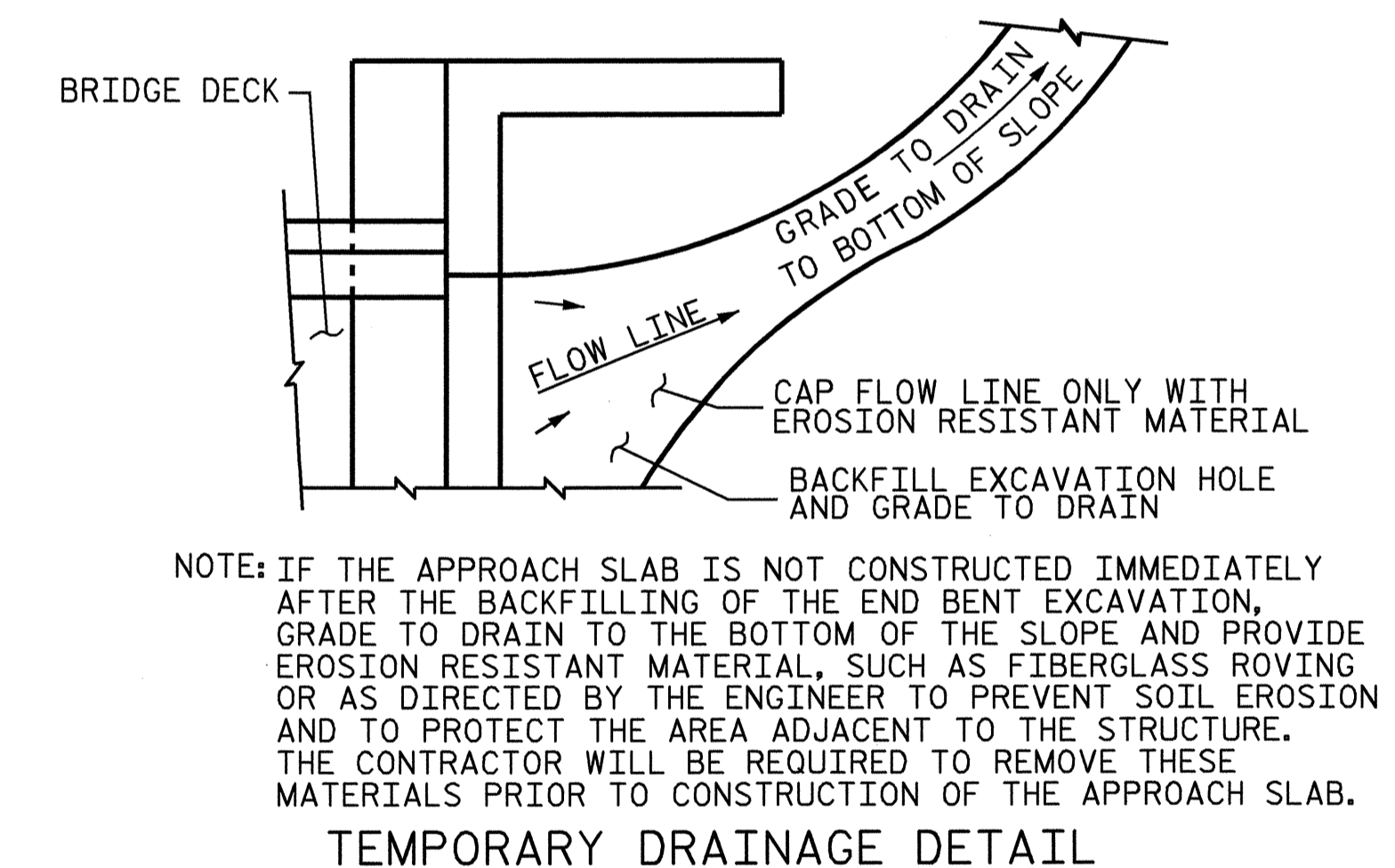
LEFT SIDE
APPROACH SLAB @
END BENT 2



RIGHT SIDE
APPROACH SLAB @
END BENT 2
ARC OFFSET



TEMPORARY BERM AND SLOPE DRAIN DETAILS
(TO BE USED WHEN SHOULDER BERM GUTTER IS REQUIRED)



Professional Engineer Seal
Keith Pascoal
10/30/08

PROJECT NO. B-4184
MADISON COUNTY
STATION: 14+68.00 -L-

SHEET 3 OF 3

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH
STANDARD
BRIDGE APPROACH
SLAB DETAILS

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

| | |
|----------------------------|-----------------------|
| ASSEMBLED BY : J.G. KHARVA | DATE : 9/02/08 |
| CHECKED BY : J.D. HAWK | DATE : 9/08 |
| DRAWN BY : FCJ 11/88 | REV. 10/17/00 RWW/LES |
| CHECKED BY : ARB 11/88 | REV. 5/17/03 RWW/JTE |
| | REV. 5/1/06R MAA/KMM |

STANDARD NOTES

DESIGN DATA:

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

MATERIAL AND WORKMANSHIP:

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

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

CONCRETE:

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

CONCRETE CHAMFERS:

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

DOWELS:

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

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

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

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

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

REINFORCING STEEL:

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

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

STRUCTURAL STEEL:

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

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

PLACEMENT OF BEAM OR GIRDER MEMBERS ON TRUCKS FOR HAULING SHALL BE DONE IN COMPLIANCE WITH LIMITS SHOWN ON SKETCHES PROVIDED TO THE MATERIALS AND TEST UNIT APPROVED BY THE STRUCTURE DESIGN UNIT DATED MAY 8, 1991.

THESE SKETCHES PRIMARILY LIMIT THE UNSUPPORTED CANTILEVER LENGTH OF MEMBERS. WHEN THE CONTRACTOR WISHES TO PLACE MEMBERS ON TRUCKS NOT IN ACCORDANCE WITH THESE LIMITS, TO SHIP BY RAIL, TO ATTACH SHIPPING RESTRAINTS TO THE MEMBERS OR TO INVERT MEMBERS, HE SHALL SUBMIT A SKETCH FOR APPROVAL PRIOR TO SHIPPING. SEE ALSO ARTICLE 1072-11.

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

HANDRAILS AND POSTS:

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

METAL HANDRAILS SHALL BE IN ACCORDANCE WITH THE PLANS. RAILS SHALL BE AS MANUFACTURED FOR BRIDGE RAILING. CASTINGS SHALL BE OF A UNIFORM APPEARANCE. 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