

CONTRACT: C201765 TIP PROJECT: B-3606

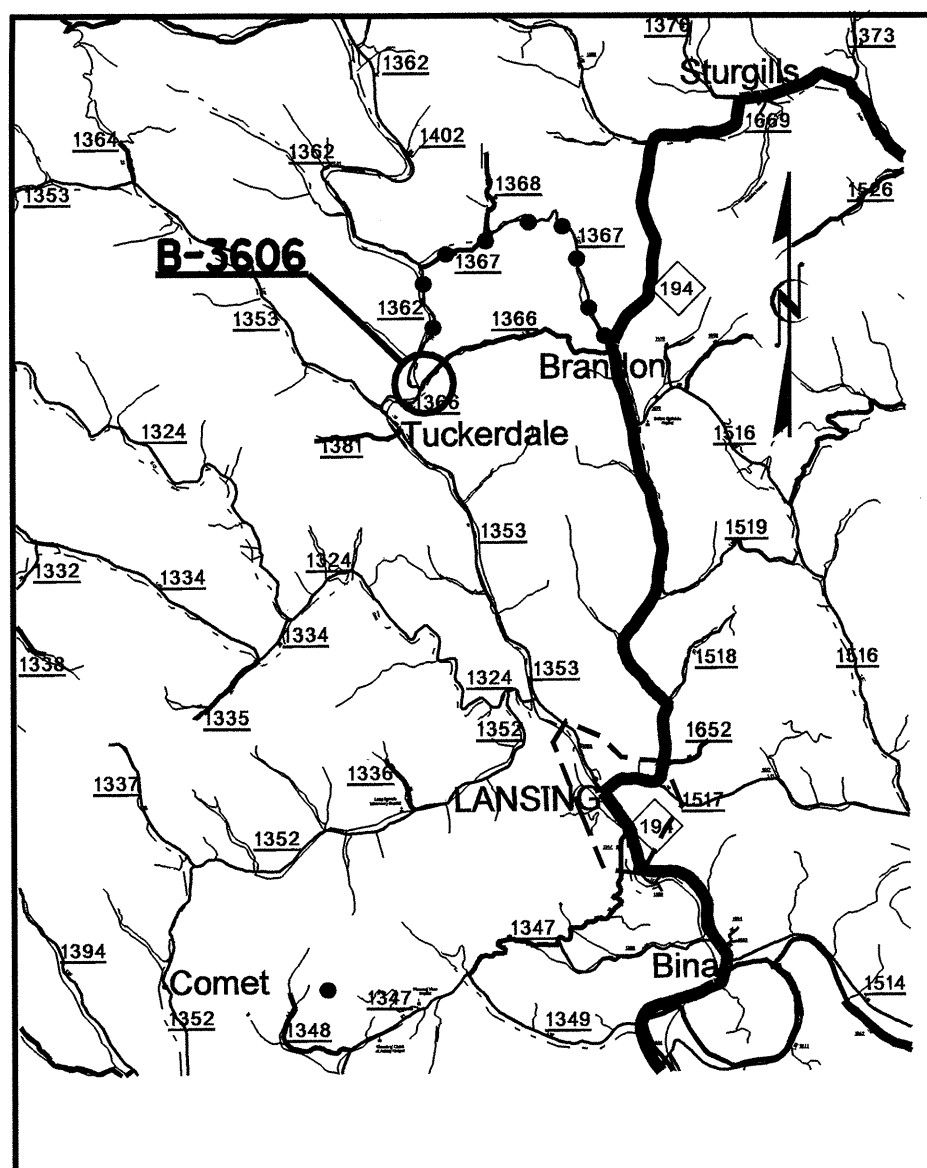
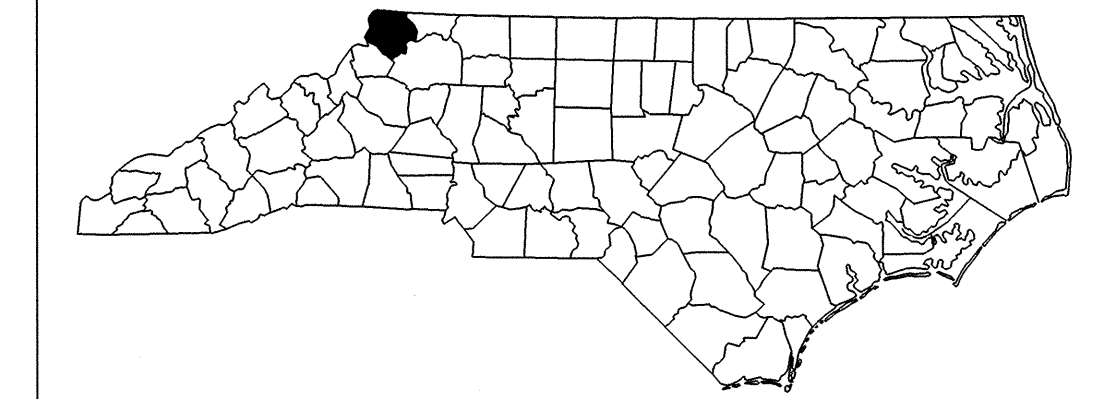
STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

ASHE COUNTY

**LOCATION: BRIDGE 70 OVER BIG HORSE CREEK
ON SR 1366 (ANDERSON HILL ROAD)**

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

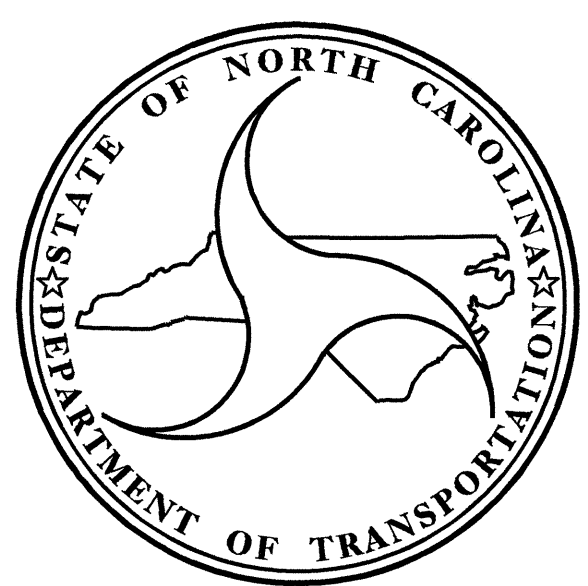
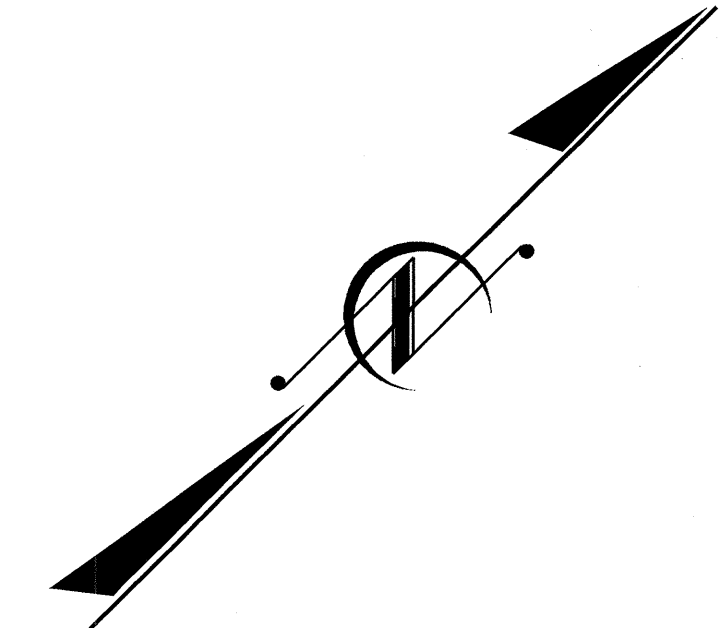
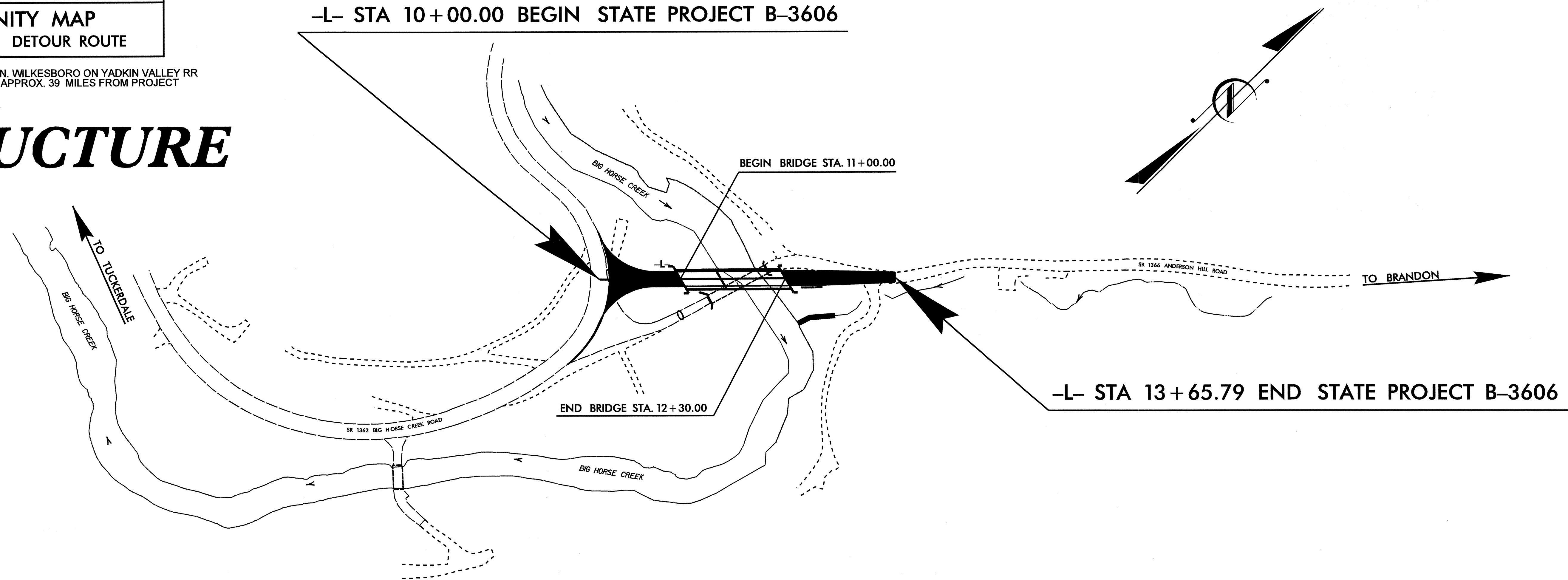
| | | | |
|-----------------|-----------------------------|-------------|--------------|
| STATE | STATE PROJECT REFERENCE NO. | SHEET NO. | TOTAL SHEETS |
| N.C. | B-3606 | | |
| STATE PROJ. NO. | F.A. PROJ. NO. | DESCRIPTION | |
| 33159.1.1 | BRZ-1366(1) | PE | |
| 33159.2.1 | BRZ-1366(1) | RW, UTIL. | |
| 33159.3.1 | BRZ-1366(1) | CONSTR. | |



VICINITY MAP
●●●● DETOUR ROUTE

NEAREST SHIPPING POINT: N. WILKESBORO ON YADKIN VALLEY RR
APPROX. 39 MILES FROM PROJECT

STRUCTURE



DESIGN DATA

| | |
|------------|--------|
| ADT 2005 = | 208 |
| ADT 2030 = | 400 |
| DHV = | 12 % |
| D = | 60 % |
| T = | 3 % * |
| V = | 30 MPH |

FUNC CLASS = RURAL LOCAL
* TTST 1 DUAL 2

PROJECT LENGTH

| | |
|--|-----------|
| LENGTH OF ROADWAY TIP PROJECT B-3606 = | 0.044 MI. |
| LENGTH OF STRUCTURE TIP PROJECT B-3606 = | 0.025 MI. |
| TOTAL LENGTH OF TIP PROJECT B-3606 = | 0.069 MI. |

Prepared in the Office of:
DIVISION OF HIGHWAYS
1000 BIRCH RIDGE DR. RALEIGH, NC 27610

2006 STANDARD SPECIFICATIONS

LETTING DATE:
FEBRUARY 19, 2008

N. N. BULLOCK, PE
PROJECT ENGINEER

D. R. CALHOUN, PE
PROJECT DESIGN ENGINEER

STRUCTURE DESIGN UNIT

**DIVISION OF HIGHWAYS
STATE OF NORTH CAROLINA**

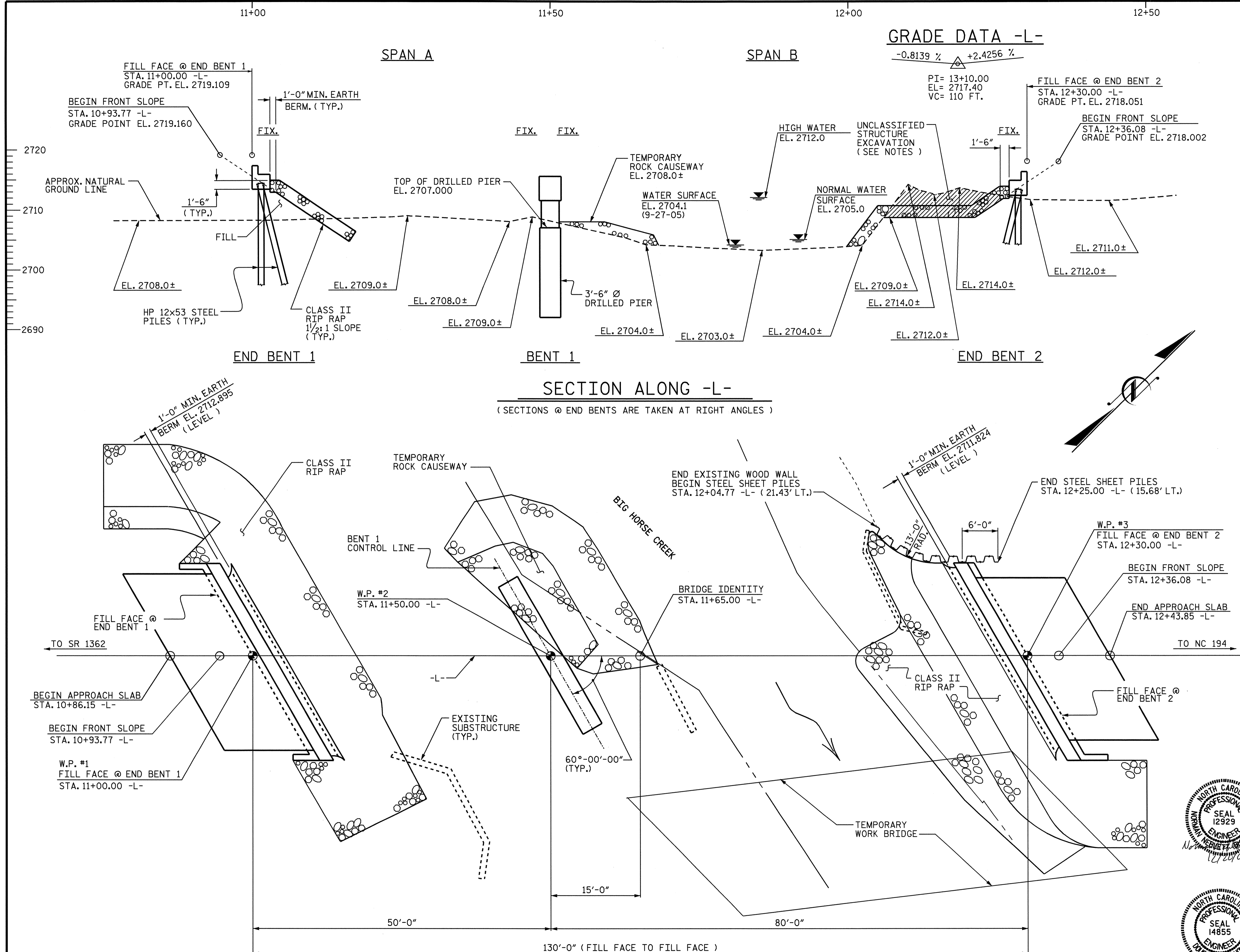
STATE DESIGN ENGINEER

**DEPARTMENT OF TRANSPORTATION
FEDERAL HIGHWAY ADMINISTRATION**

APPROVED
DIVISION ADMINISTRATOR

P.E.
DATE

13-DEC-2007 09:55
Structures\Final Plans\b-3606_sd_1_tsh_01.dgn
gchen



NOTES

ASSUMED LIVE LOAD = HS20 OR ALTERNATE LOADING, EXCEPT THAT THE BOX BEAM UNITS 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.

THE EXISTING STRUCTURE CONSISTING OF TWO (2) @ 40'-6" OVERALL LENGTH 81'-0" TIMBER FLOOR SPANS ON STEEL I-BEAMS WITH A CLEAR ROADWAY WIDTH OF 11'-0" ON REINFORCED CONCRETE ABUTMENTS AND PIER WITH CONCRETE ENCASMENT AND LOCATED AT THE PROPOSED STRUCTURE SHALL BE REMOVED.

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

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 11+65.00 -L-.'

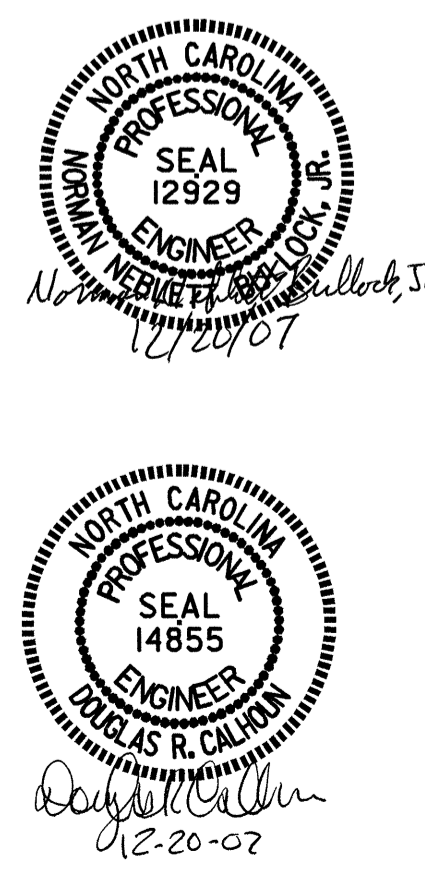
SECTION ALONG -L-
(SECTIONS @ END BENTS ARE TAKEN AT RIGHT ANGLES)

SEE SHEET 2 OF 3 FOR FOUNDATION NOTES.
SEE SHEET 3 OF 3 FOR ADDITIONAL NOTES.

| SHEET PILE ELEVATIONS | | |
|---------------------------------|-----------|-------------|
| STATION | TOP ELEV. | BOTT. ELEV. |
| 12+04.77 -L- TO 12+19.00 -L- | 2718.324 | 2693.324 |
| 12+19.00 -L- TO 12+25.00 -L- | 2718.324 | 2712.324 |

DRAWN BY : E. G. ALLEN DATE : 12/12/05
CHECKED BY : J. MYA DATE : 12/13/05

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



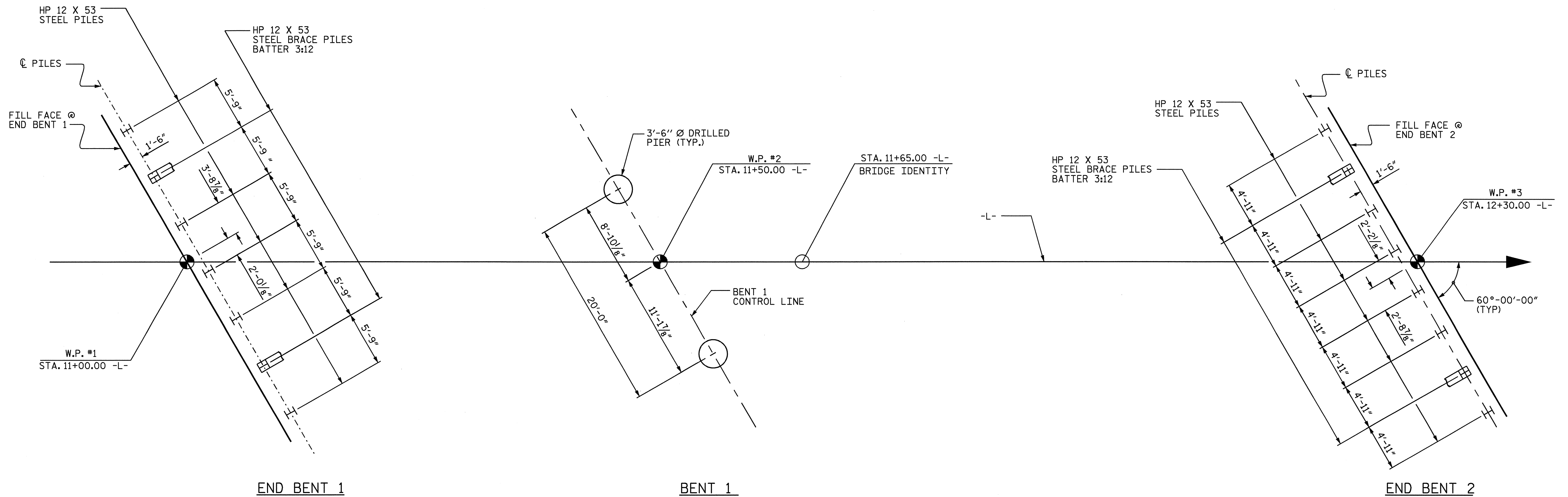
PROJECT NO. B-3606
ASHE COUNTY
STATION: 11+65.00 -L-
SHEET 1 OF 3 REPLACES BRIDGE NO. 70

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

GENERAL DRAWING
FOR BRIDGE ON SR 1366
OVER BIG HORSE CREEK
BETWEEN SR 1362 AND NC 194

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

TOTAL SHEETS: 24



FOUNDATION LAYOUT

(DIMENSIONS LOCATING END BENT PILES AND BENT DRILLED PIERS ARE SHOWN TO CENTERLINE OF PILES AND DRILLED PIERS)

FOUNDATION NOTES

DRILLED PIERS AT BENT 1 ARE DESIGNED FOR BOTH SKIN FRICTION AND END BEARING. CHECK FIELD CONDITIONS FOR THE REQUIRED END BEARING CAPACITY OF 40 TSF.

DRILLED PIERS AT BENT 1 ARE DESIGNED FOR AN APPLIED LOAD OF 200 TONS EACH AT THE TOP OF THE COLUMN.

PERMANENT STEEL CASING MAY BE REQUIRED FOR DRILLED PIERS AT BENT 1. IF REQUIRED, DO NOT EXTEND THE CASING BELOW ELEVATION 2700.0 FT. WITHOUT PRIOR APPROVAL FROM THE ENGINEER. THE ENGINEER WILL DETERMINE THE NEED FOR PERMANENT STEEL CASING. SEE DRILLED PIERS SPECIAL PROVISION.

DRILLED PIERS AT BENT 1 SHALL EXTEND TO AN ELEVATION NO HIGHER THAN 2693.0 FT. AND SATISFY THE REQUIRED END BEARING CAPACITY.

THE SCOUR CRITICAL ELEVATION FOR BENT 1 IS ELEVATION 2697.0 FT. SCOUR CRITICAL ELEVATIONS ARE USED TO MONITOR POSSIBLE SCOUR PROBLEMS DURING THE LIFE OF THE STRUCTURE.

FOR DRILLED PIERS, SEE DRILLED PIERS SPECIAL PROVISIONS.

SPT TESTING MAY BE REQUIRED TO DETERMINE THE END BEARING CAPACITY OF THE DRILLED PIERS AT BENT 1.

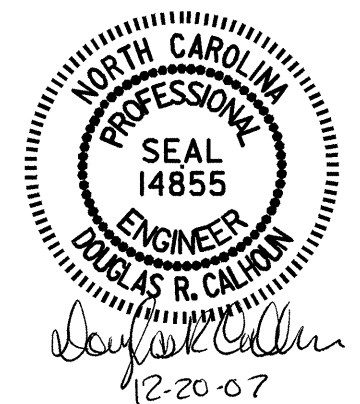
SID INSPECTIONS MAY BE REQUIRED TO INSPECT THE BOTTOM CLEANLINESS OF THE DRILLED PIERS AT BENT 1. THE ENGINEER WILL DETERMINE THE NEED FOR SID INSPECTIONS. SEE DRILLED PIERS SPECIAL PROVISION.

CSL TUBES ARE REQUIRED AND CSL TESTING MAY BE REQUIRED FOR THE DRILLED PIERS AT BENT 1. THE ENGINEER WILL DETERMINE THE NEED FOR CSL TESTING. SEE CROSSHOLE SONIC LOGGING SPECIAL PROVISION.

THE ALLOWABLE BEARING CAPACITY FOR PILES AT END BENT 1 & 2 IS 50 TONS PER PILE.

DRIVE PILES AT END BENT 1 & 2 TO A REQUIRED BEARING CAPACITY OF 100 TONS PER PILE. THE REQUIRED BEARING CAPACITY IS EQUAL TO THE ALLOWABLE BEARING CAPACITY WITH A MINIMUM FACTOR OF SAFETY OF TWO.

PROJECT NO. B-3606
ASHE COUNTY
 STATION: 11+65.00 -L-
 SHEET 2 OF 3



STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH
GENERAL DRAWING
 BRIDGE ON SR 1366 OVER
 BIG HORSE CREEK BETWEEN
 SR 1362 AND NC 194

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

DRAWN BY : J. MYA DATE : 8/28/07
 CHECKED BY : E.G. ALLEN DATE : 9/10/07

TOTAL BILL OF MATERIAL

| | CONSTRUCTION, MAINTENANCE & 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 PIER | SID INSPECTIONS | SPT TESTING | CROSSHOLE SONIC LOGGING | UNCLASSIFIED STRUCTURE EXCAVATION | CLASS A CONCRETE | BRIDGE APPROACH SLABS | REINFORCING STEEL | SPIRAL COLUMN REINFORCING STEEL | HP 12 X 53 STEEL PILES | 18" STEEL SHEET PILES | ONE BAR METAL RAIL | 1'-0" X 1'-11" CONCRETE PARAPET | RIP RAP CLASS II (2'-0" THICK) | FILTER FABRIC FOR DRAINAGE | ELASTOMERIC BEARINGS | 3'-0" X 2'-3" PRESTRESSED CONCRETE BOX BEAMS | | |
|----------------|---|-------------------------------|-------------------------------|-----------------------------------|---|-----------------|-------------|-------------------------|-----------------------------------|------------------|-----------------------|-------------------|---------------------------------|------------------------|-----------------------|--------------------|---------------------------------|--------------------------------|----------------------------|----------------------|--|-----|----------|
| | LUMP SUM | LUMP SUM | LIN. FT. | LIN. FT. | LIN. FT. | EACH | EACH | EACH | LUMP SUM | CU. YDS. | LUMP SUM | LBS. | LBS. | NO. | LIN. FT. | SQ. FT. | LIN. FT. | LIN. FT. | TONS | SQ. YDS. | LUMP SUM | NO. | LIN. FT. |
| SUPERSTRUCTURE | | | | | | | | | | | LUMP SUM | | | | | | 238.65 | 254.80 | | | LUMP SUM | 18 | 1145.34 |
| END BENT 1 | | | | | | | | | | 15.9 | | 2301 | | 7 | 105 | | | | 124 | 138 | | | |
| BENT 1 | | | 15.00 | 13.00 | 14.00 | | | | | 24.1 | | 5841 | 823 | | | | | | | | | | |
| END BENT 2 | | | | | | | | | | 16.0 | | 2242 | | 8 | 120 | 515 | | | 129 | 143 | | | |
| TOTAL | LUMP SUM | LUMP SUM | 15.00 | 13.00 | 14.00 | 1 | 1 | 1 | LUMP SUM | 56.0 | LUMP SUM | 10,384 | 823 | 15 | 225 | 515 | 238.65 | 254.80 | 253 | 281 | LUMP SUM | 18 | 1145.34 |

NOTES (CONT.):

THE MATERIAL SHOWN IN THE CROSS-HATCHED AREA SHALL BE EXCAVATED FOR A DISTANCE OF 25 FT. EACH SIDE OF CENTERLINE ROADWAY AT END BENT 2 AND WHERE SHOWN ON LOCATION SKETCH AS DIRECTED BY THE ENGINEER. THIS WORK WILL BE MEASURED AND PAID FOR AT THE CONTRACT LUMP SUM PRICE FOR UNCLASSIFIED STRUCTURE EXCAVATION.

THIS BRIDGE HAS BEEN DESIGNED IN ACCORDANCE WITH THE REQUIREMENTS OF THE AASHTO STANDARD SPECIFICATIONS FOR SEISMIC DESIGN OF HIGHWAY BRIDGES FOR SEISMIC PERFORMANCE CATEGORY A.

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

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

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 11+65.00 -L-.

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

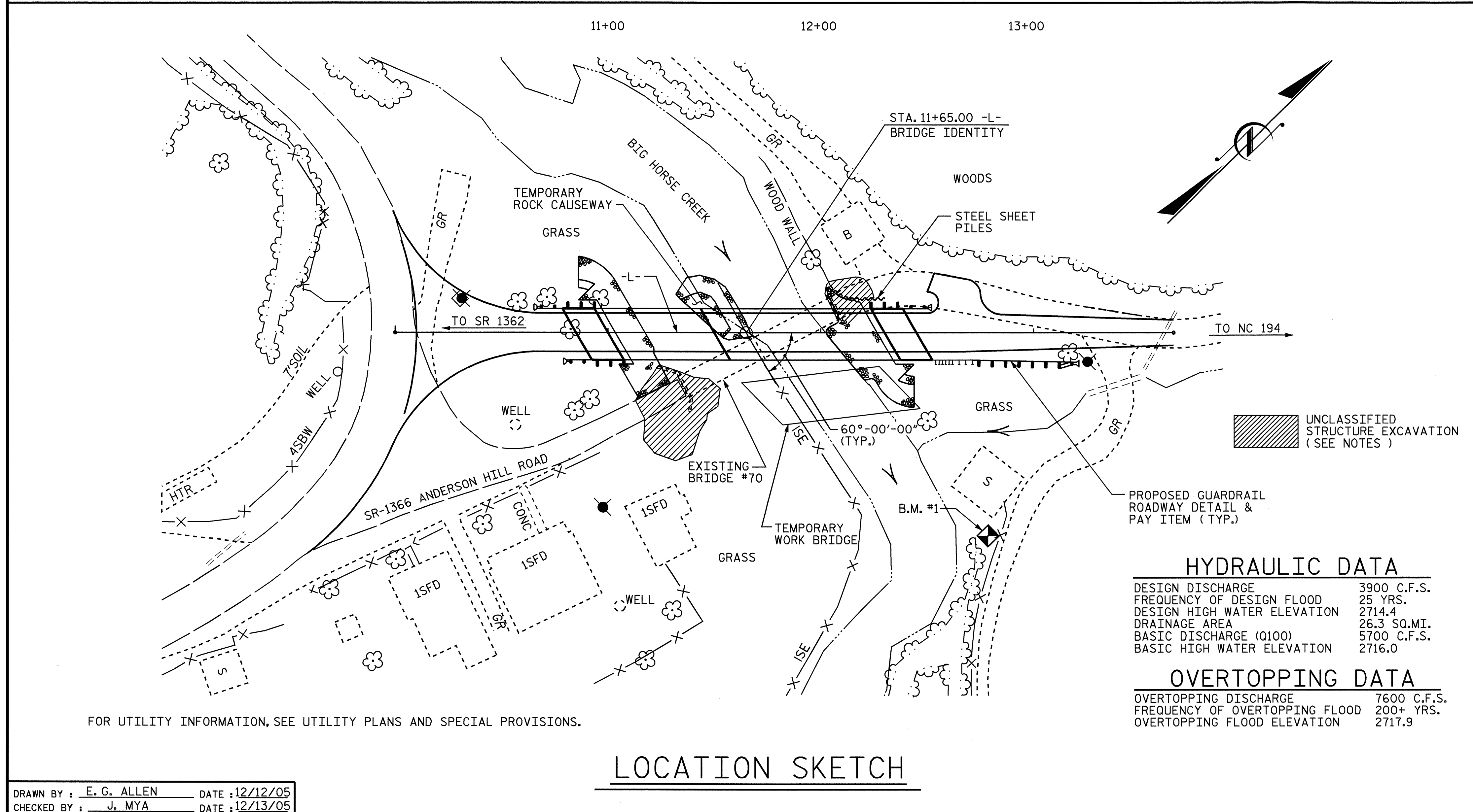
FOR SUBMITTAL OF WORKING DRAWINGS, SEE SPECIAL PROVISIONS.

FOR FALSEWORK AND FORMWORK, SEE SPECIAL PROVISIONS.

FOR CRANE SAFETY, SEE SPECIAL PROVISIONS.

FOR 18" STEEL SHEET PILES, SEE SPECIAL PROVISIONS.

B.M. #1 : 8" SPIKE IN BASE OF 36" RED OAK 97' RIGHT STA. 12+78.57 -L- ELEV. 2714.98

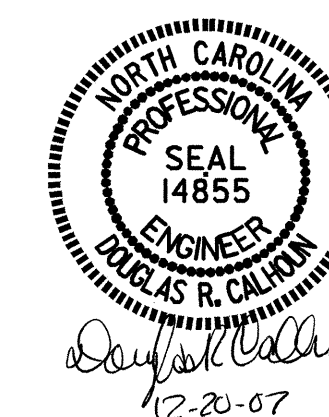


PROJECT NO. B-3606
ASHE COUNTY
 STATION: 11+65.00 -L-

SHEET 3 OF 3

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

GENERAL DRAWING
 FOR BRIDGE ON SR 1366
 OVER BIG HORSE CREEK
 BETWEEN SR 1362 AND NC 194



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

DRAWN BY : E. G. ALLEN DATE : 12/12/05
 CHECKED BY : J. MYA DATE : 12/13/05

NOTES

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

ALL REINFORCING STEEL CAST WITH THE BOX BEAM SECTIONS SHALL BE GRADE 60 AND SHALL BE INCLUDED IN THE UNIT PRICE BID FOR PRESTRESSED CONCRETE BOX BEAMS.

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

THE 2 1/2" Ø DOWEL HOLES AT FIXED ENDS OF BOX BEAM SECTIONS SHALL BE FILLED WITH GROUT.

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

THE TRANSFER OF LOAD FROM THE ANCHORAGES TO THE BOX BEAM UNIT SHALL BE DONE WHEN THE CONCRETE HAS REACHED A COMPRESSIVE STRENGTH OF NOT LESS THAN 4000 PSI FOR SPAN A AND 5600 PSI FOR SPAN B.

ALL REINFORCING STEEL IN CONCRETE PARAPETS SHALL BE EPOXY COATED.

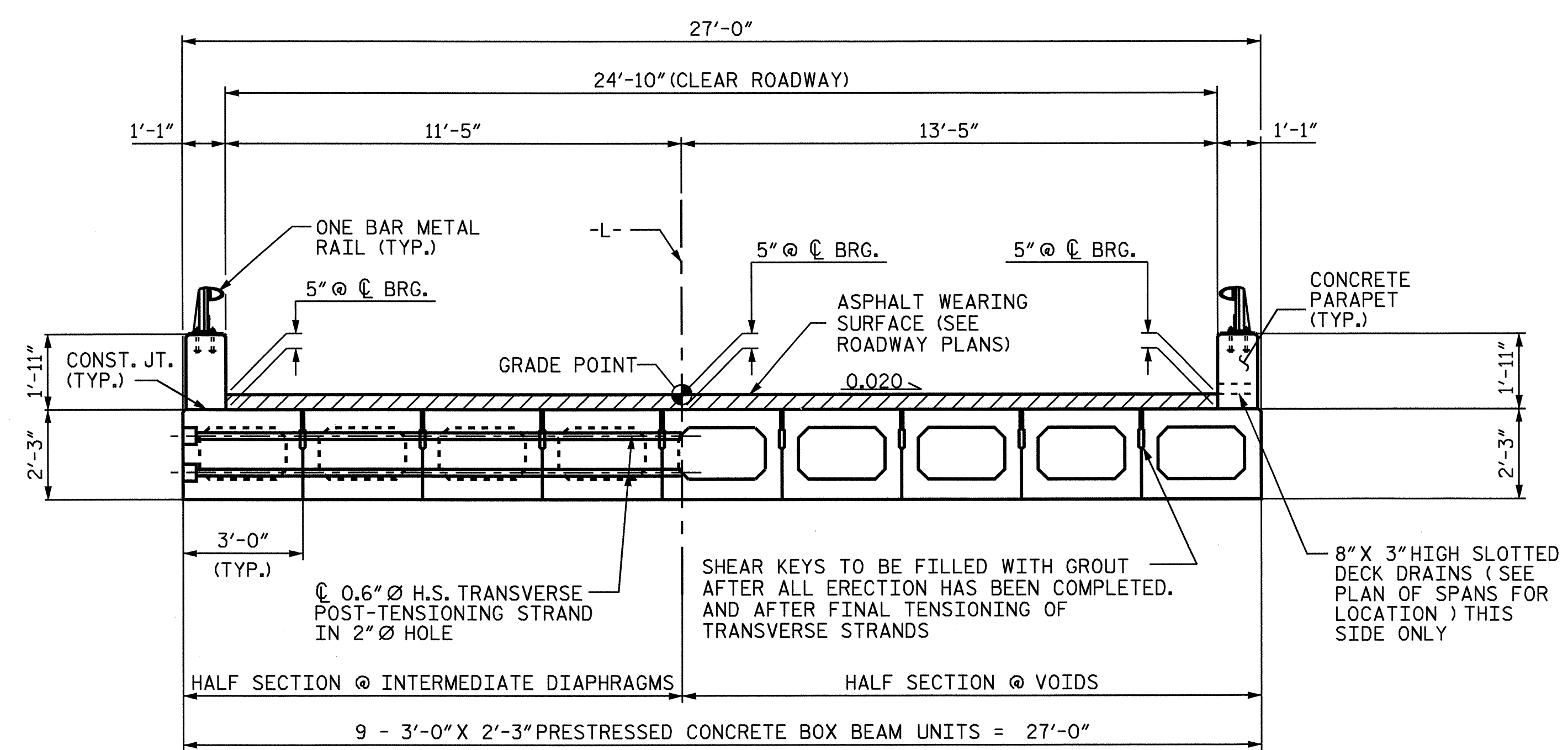
PRESTRESSING STRANDS SHALL BE CUT FLUSH WITH THE BOX BEAM UNIT ENDS.

APPLY EPOXY PROTECTIVE COATING TO BOX BEAM UNIT ENDS.

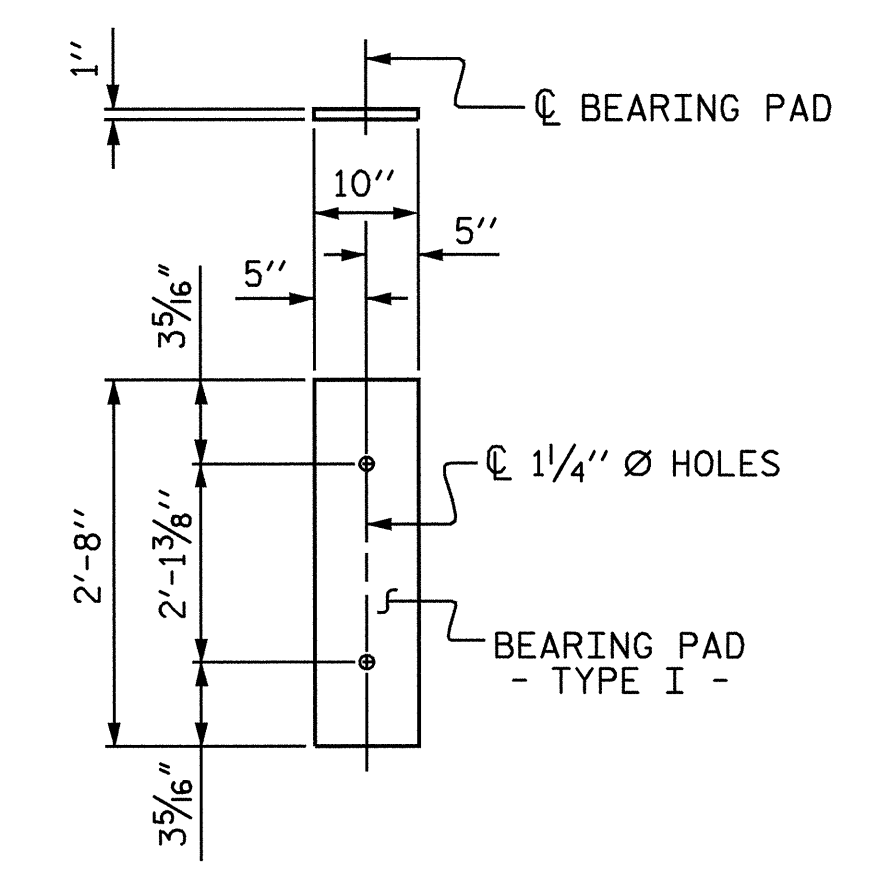
THE LOCATION OF THE VOID DRAINS MAY BE SHIFTED SLIGHTLY WHERE NECESSARY TO CLEAR PRESTRESSING STRANDS OR TRANSVERSE REINFORCING STEEL.

FOR GROUT FOR STRUCTURES, SEE SPECIAL PROVISIONS.

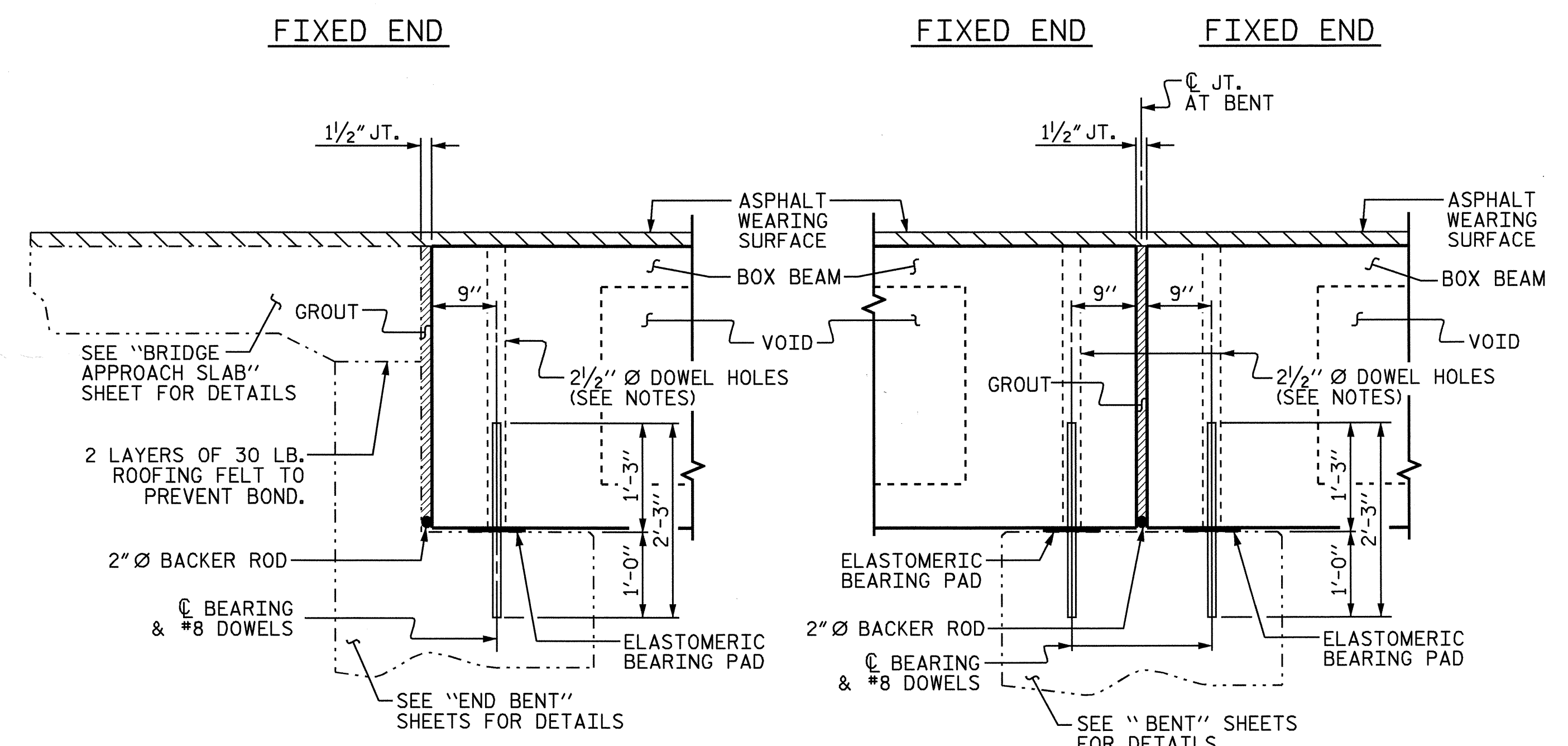
FOR PRESTRESSED CONCRETE MEMBERS, SEE SPECIAL PROVISIONS.



TYPICAL SECTION



FIXED END
(TYPE I - 36 REQ'D)
ELASTOMERIC BEARING DETAILS

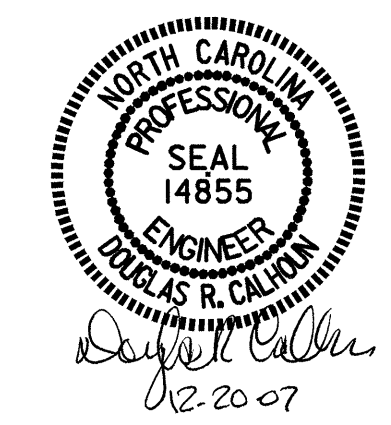


SECTION AT END BENT

SECTION AT BENT

PROJECT NO. B-3606
ASHE COUNTY
STATION: 11+65.00 -L-

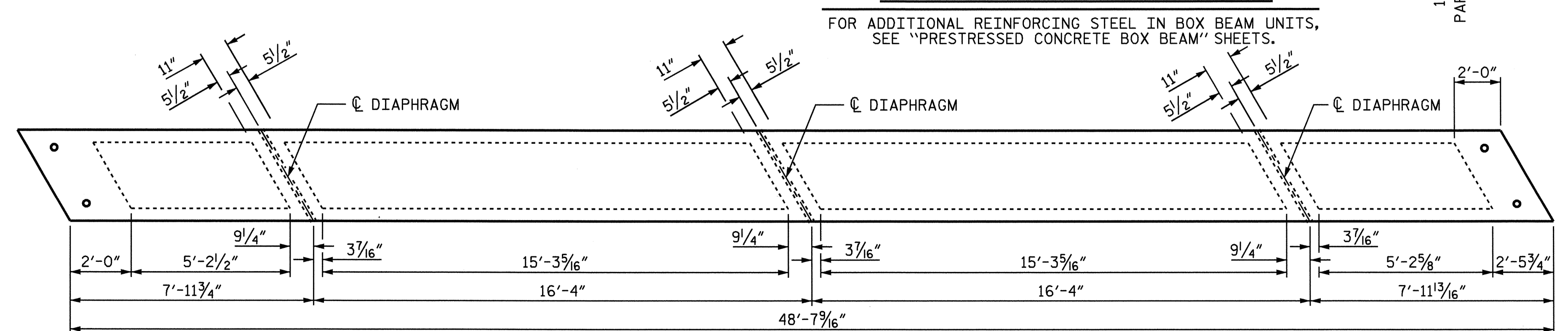
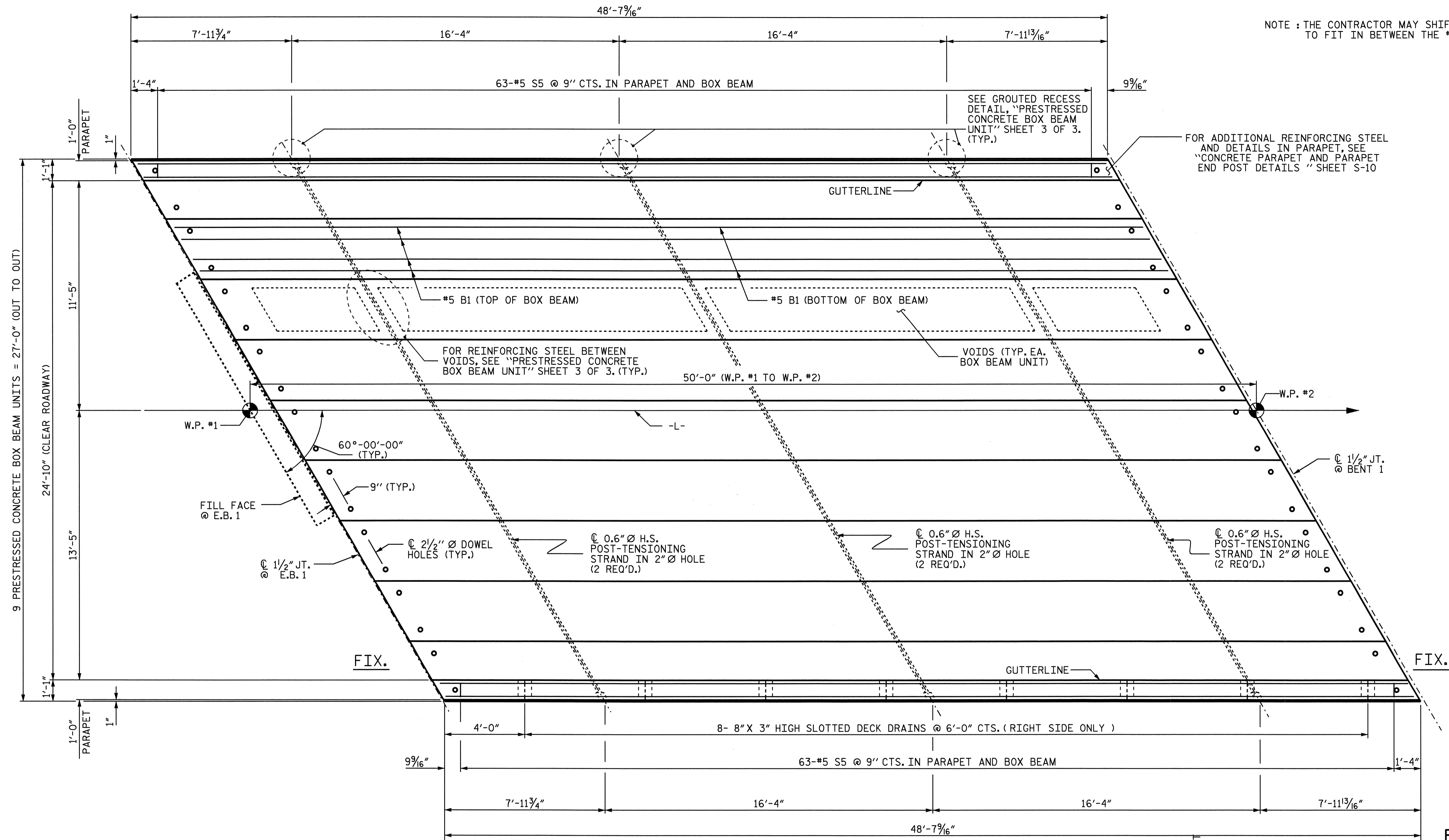
STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH
STANDARD
3'-0" X 2'-3"
PRESTRESSED CONCRETE
BOX BEAM UNIT



| | |
|-----------------------------|---------------------|
| ASSEMBLED BY : T.L.CLELLAND | DATE : 12/6/05 |
| CHECKED BY : J.B.WILSON | DATE : 12/20/05 |
| DRAWN BY : TLA 5/05 | ADDED 7/11/05R |
| CHECKED BY : GM 6/05 | REV. 5/1/06R KMM/GM |

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

NOTE : THE CONTRACTOR MAY SHIFT THE SLOTTED DECK DRAINS AS NECESSARY TO FIT IN BETWEEN THE #5 S5 BARS IN BOX BEAM AND PARAPET.



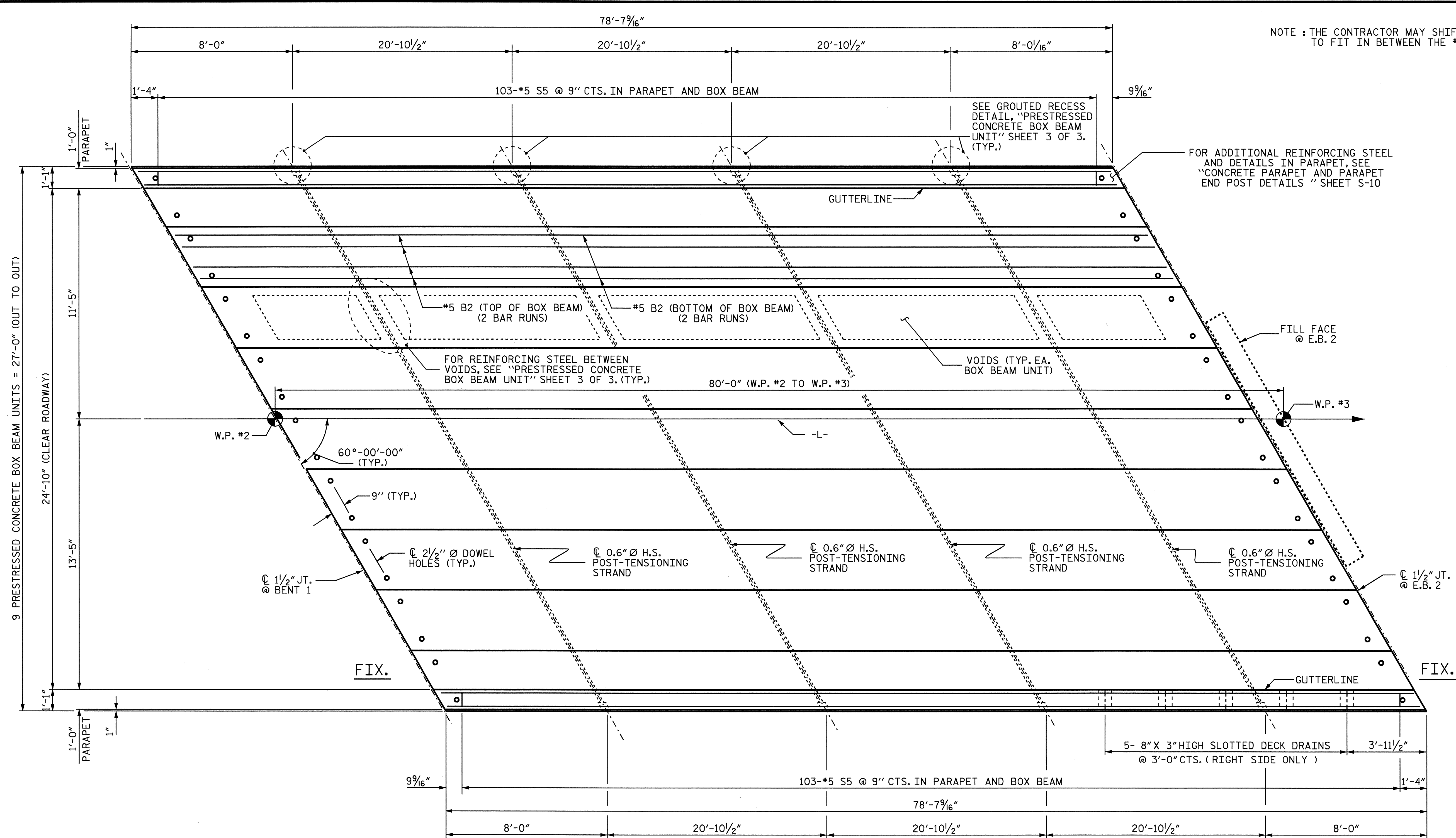
PLAN OF BOX BEAM UNIT - SPAN A
(SHOWING LOCATION OF VOIDS AND DIAPHRAGMS)

PROJECT NO. B-3606
ASHE COUNTY
 STATION: 11+65.00 -L-

| | | | | | |
|--|-----|-------|-----|-----|--------------------|
| STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION RALEIGH | | | | | |
| SUPERSTRUCTURE PLAN OF SPAN A | | | | | |
| REVISIONS | | | | | SHEET NO. |
| NO. | BY: | DATE: | NO. | BY: | DATE: |
| 1 | | | 3 | | |
| 2 | | | 4 | | |
| | | | | | TOTAL SHEETS 24 |

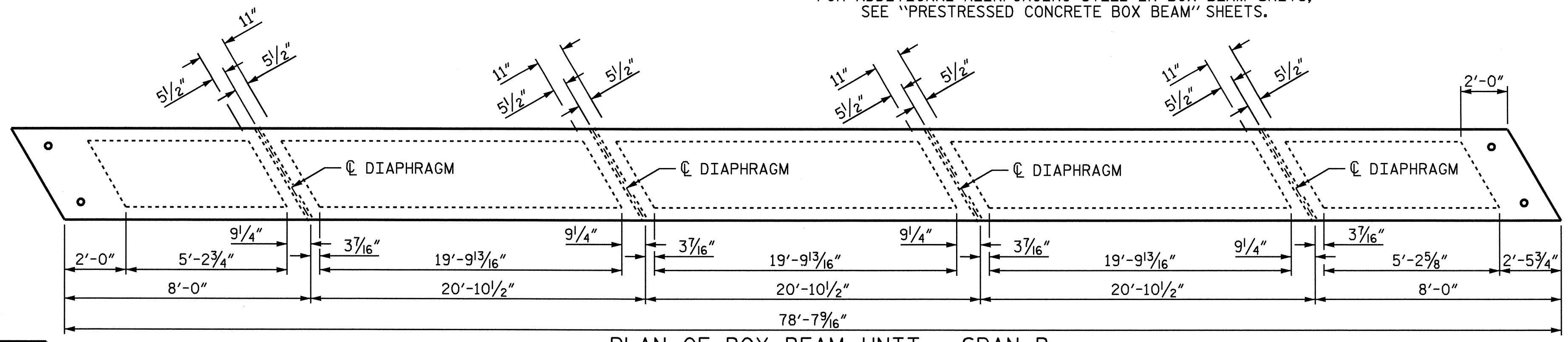


DRAWN BY : T.L.CLELLAND DATE : 12/6/05
 CHECKED BY : J.B.WILSON DATE : 12/20/05



NOTE: THE CONTRACTOR MAY SHIFT THE SLOTTED DECK DRAINS AS NECESSARY TO FIT IN BETWEEN THE #5 S5 BARS IN BOX BEAM AND PARAPET.

FOR ADDITIONAL REINFORCING STEEL IN BOX BEAM UNITS, SEE "PRESTRESSED CONCRETE BOX BEAM" SHEETS.



PLAN OF BOX BEAM UNIT - SPAN B (SHOWING LOCATION OF VOIDS AND DIAPHRAGMS)

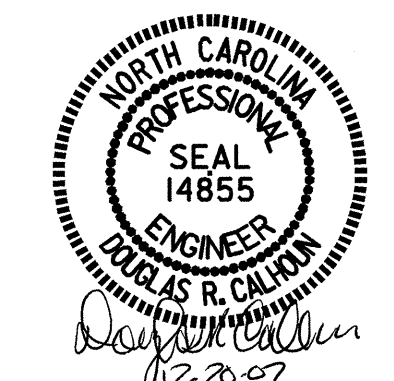
DRAWN BY: T.L.CLELLAND DATE: 12/6/05
 CHECKED BY: J.B.WILSON DATE: 12/20/05

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 galen

PROJECT NO. B-3606
 ASHE COUNTY
 STATION: 11+65.00 -L-

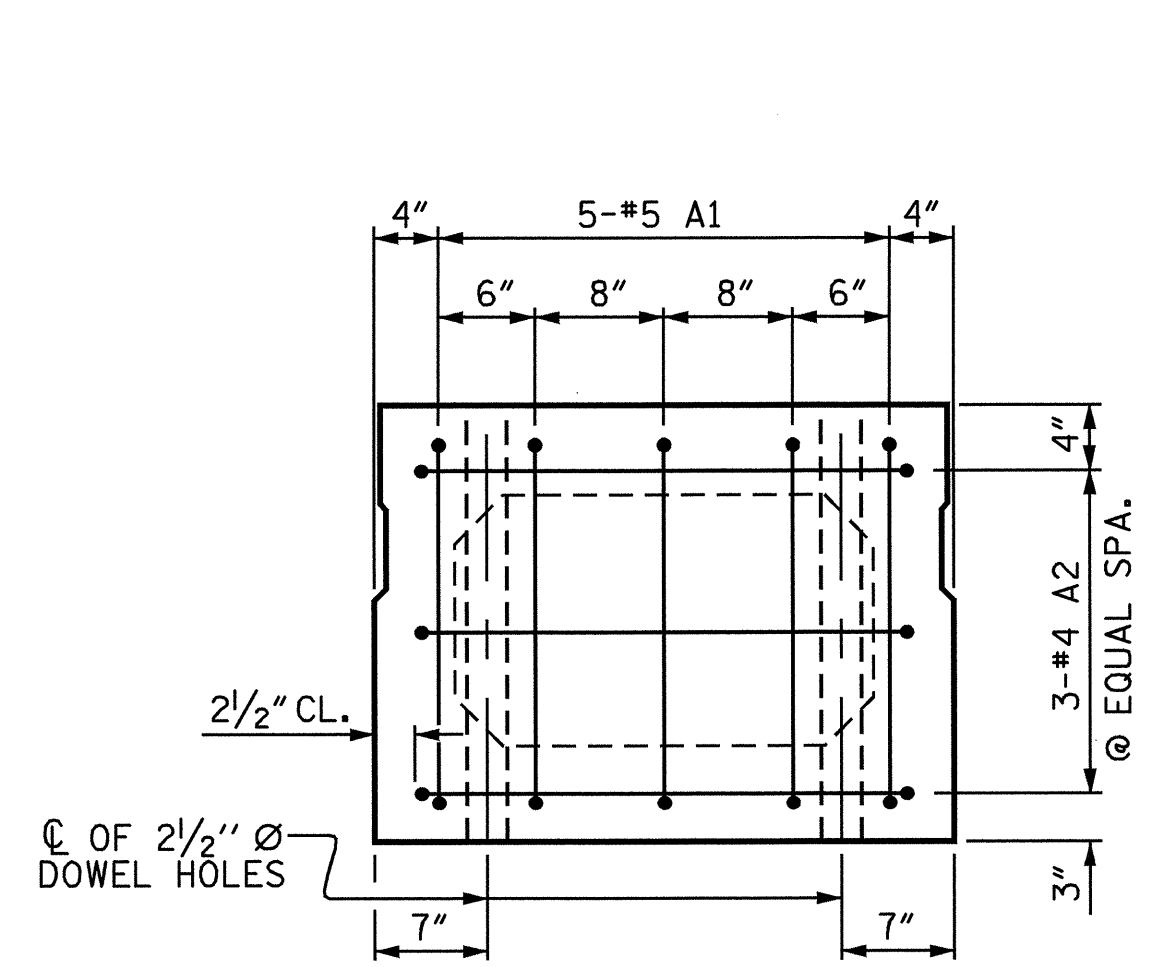
STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

SUPERSTRUCTURE
 PLAN OF SPAN B



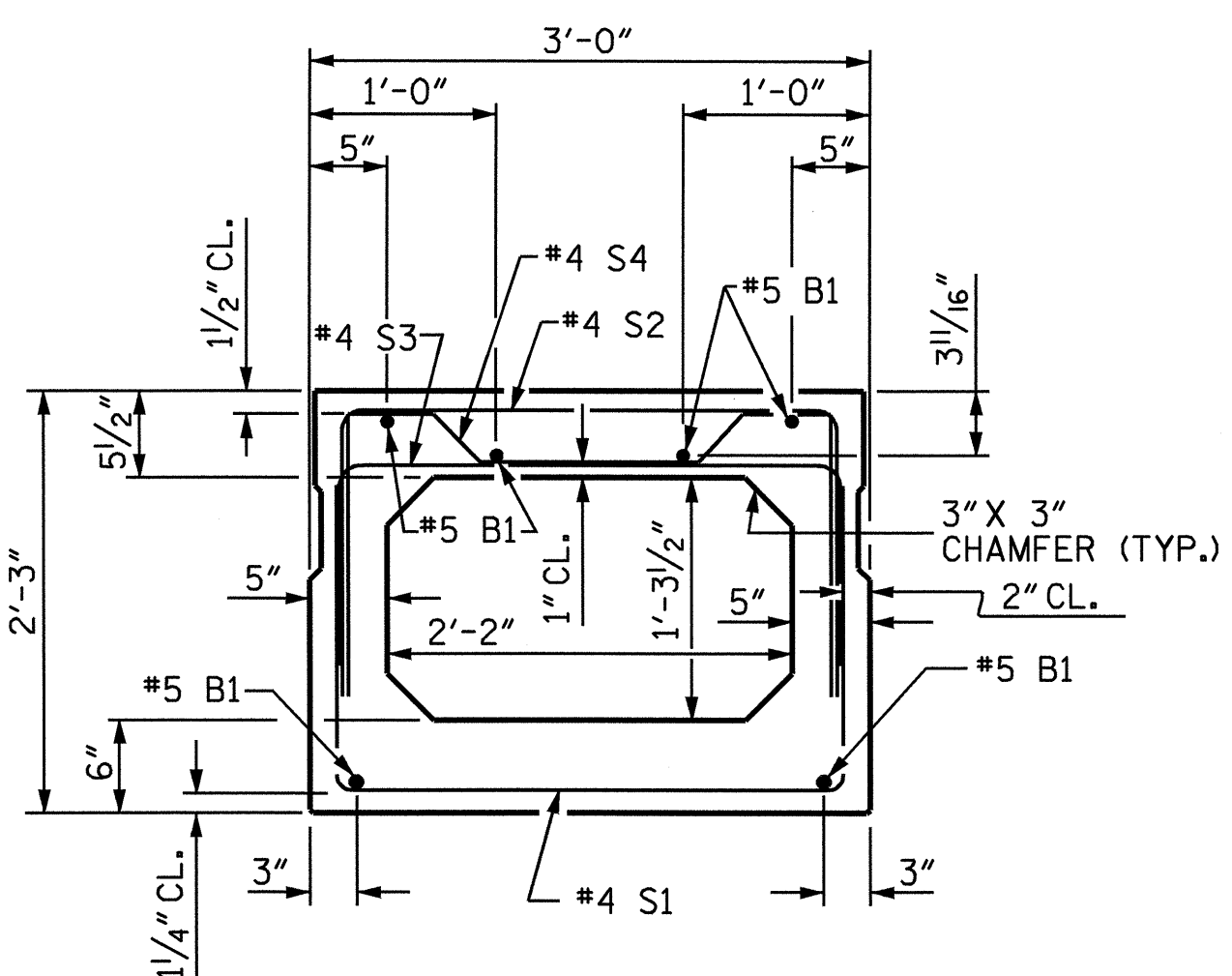
| REVISIONS | | | | | | SHEET NO. | |
|-----------|-----|-------|-----|-----|-------|--------------|----|
| NO. | BY: | DATE: | NO. | BY: | DATE: | S-6 | |
| 1 | | | 3 | | | TOTAL SHEETS | 24 |
| 2 | | | 4 | | | | |

NC005



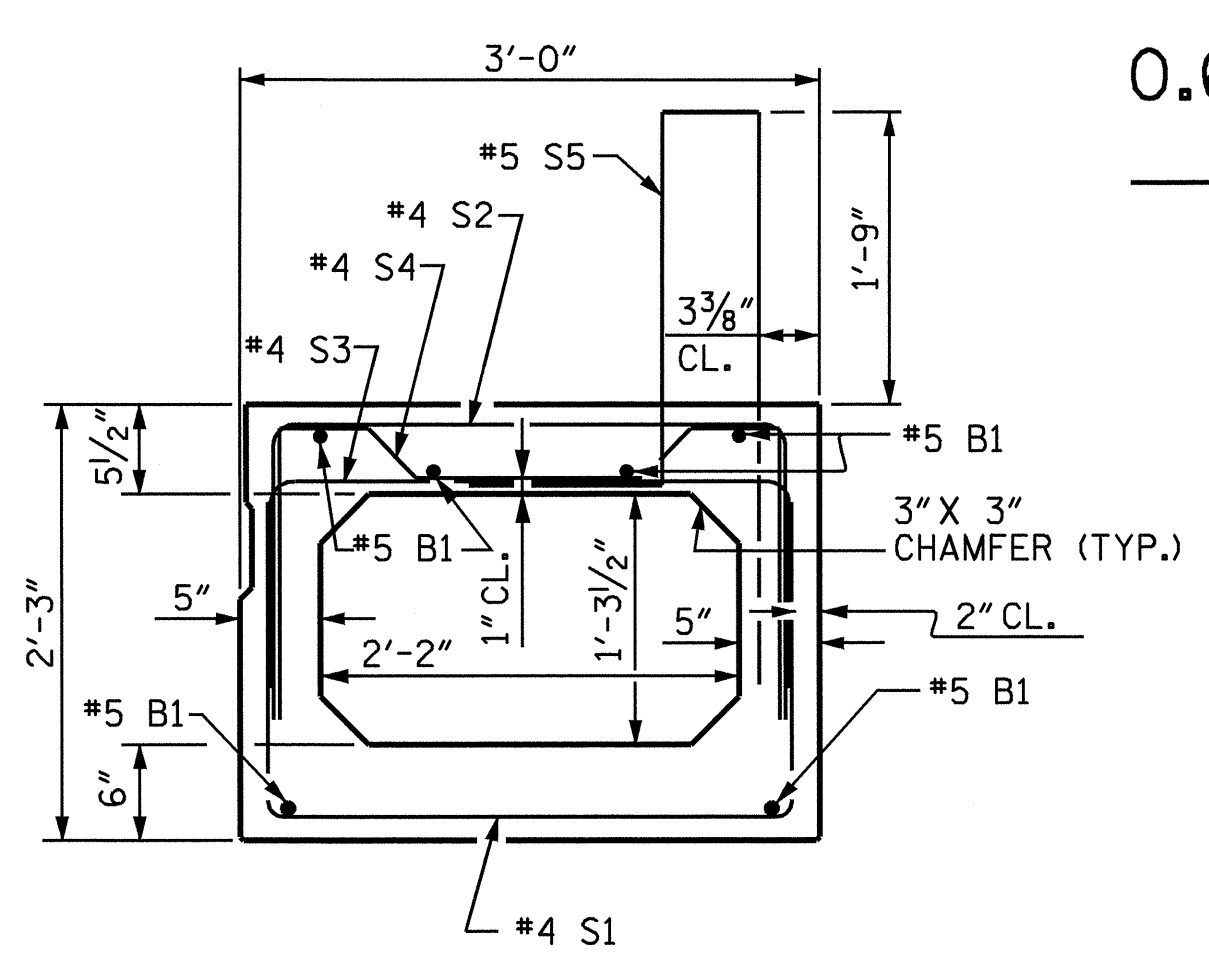
END ELEVATION

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



INTERIOR BOX BEAM SECTION

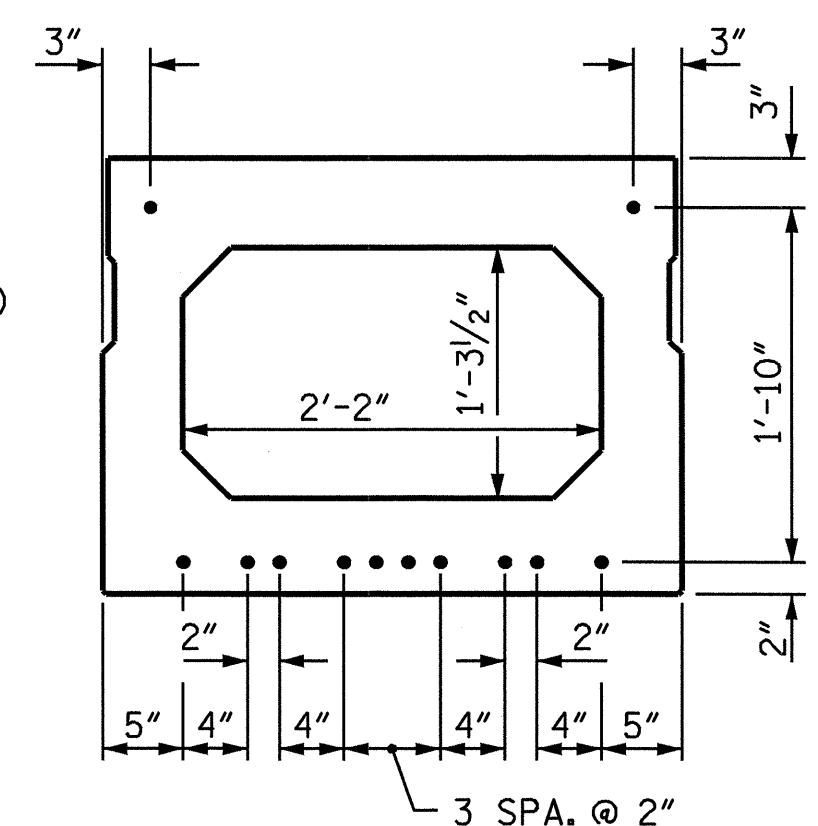
(STRAND LAYOUT NOT SHOWN)



EXTERIOR BOX BEAM SECTION

(STRAND LAYOUT NOT SHOWN)

0.6" Ø LOW RELAXATION STRAND LAYOUT



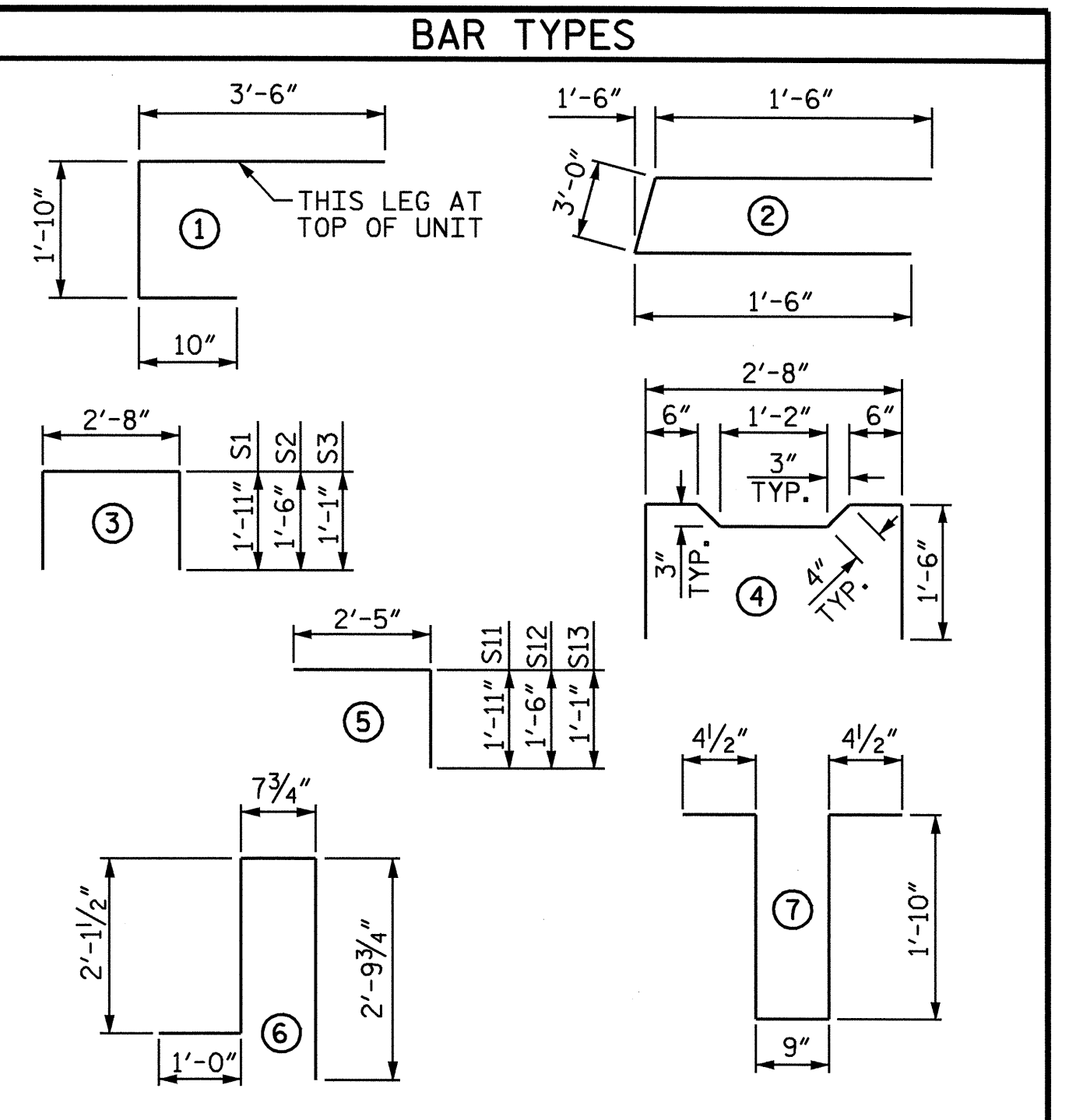
TYPICAL STRAND LOCATION

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

DEBONDING LEGEND

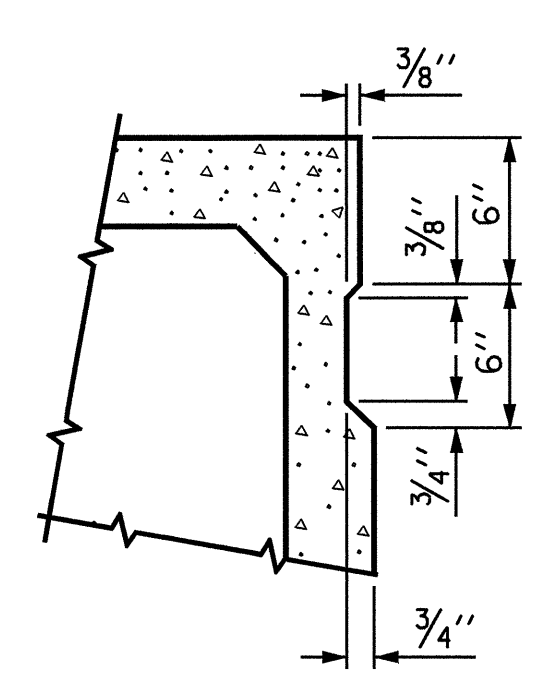
● FULLY BONDED STRANDS

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



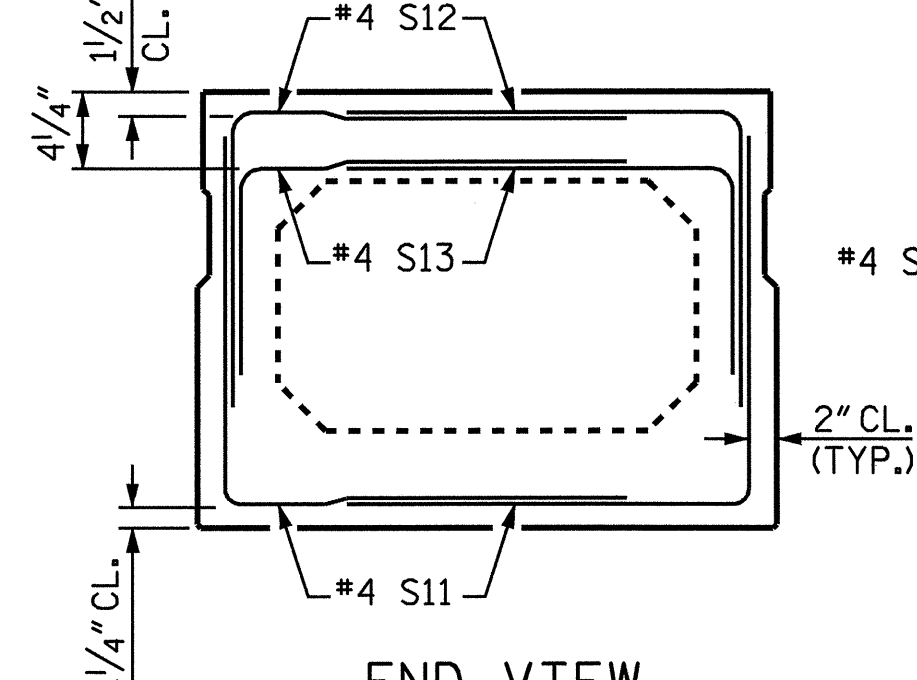
ALL BAR DIMENSIONS ARE OUT TO OUT

| BILL OF MATERIAL FOR ONE BOX BEAM SECTION | | | | | | | |
|---|--------|------|------|---------------|--------|---------------|--------|
| BAR | NUMBER | SIZE | TYPE | EXTERIOR UNIT | | INTERIOR UNIT | |
| | | | | LENGTH | WEIGHT | LENGTH | WEIGHT |
| A1 | 10 | #5 | 1 | 6'-2" | 64 | 6'-2" | 64 |
| A2 | 18 | #4 | 2 | 6'-0" | 72 | 6'-0" | 72 |
| B1 | 6 | #5 | STR | 48'-3" | 302 | 48'-3" | 302 |
| K1 | 9 | #4 | 7 | 5'-2" | 31 | 5'-2" | 31 |
| K2 | 6 | #4 | STR | 2'-6" | 10 | 2'-6" | 10 |
| S1 | 35 | #4 | 3 | 6'-6" | 152 | 6'-6" | 152 |
| S2 | 35 | #4 | 3 | 5'-8" | 132 | 5'-8" | 132 |
| S3 | 61 | #4 | 3 | 4'-10" | 197 | 4'-10" | 197 |
| S4 | 26 | #4 | 4 | 5'-10" | 101 | 5'-10" | 101 |
| S11 | 28 | #4 | 5 | 4'-4" | 81 | 4'-4" | 81 |
| S12 | 28 | #4 | 5 | 3'-11" | 73 | 3'-11" | 73 |
| S13 | 28 | #4 | 5 | 3'-6" | 65 | 3'-6" | 65 |
| * S5 | 63 | #5 | 6 | 6'-7" | 433 | -- | -- |
| REINFORCING STEEL | | | | LBS. 1280 | | LBS. 1280 | |
| * EPOXY COATED REINF. STEEL | | | | LBS. 433 | | | |
| 5000 P.S.I. CONCRETE | | | | CU. YDS. 8.0 | | CU. YDS. 7.9 | |
| 0.6" Ø L.R. STRANDS | | | | No. 12 | | No. 12 | |



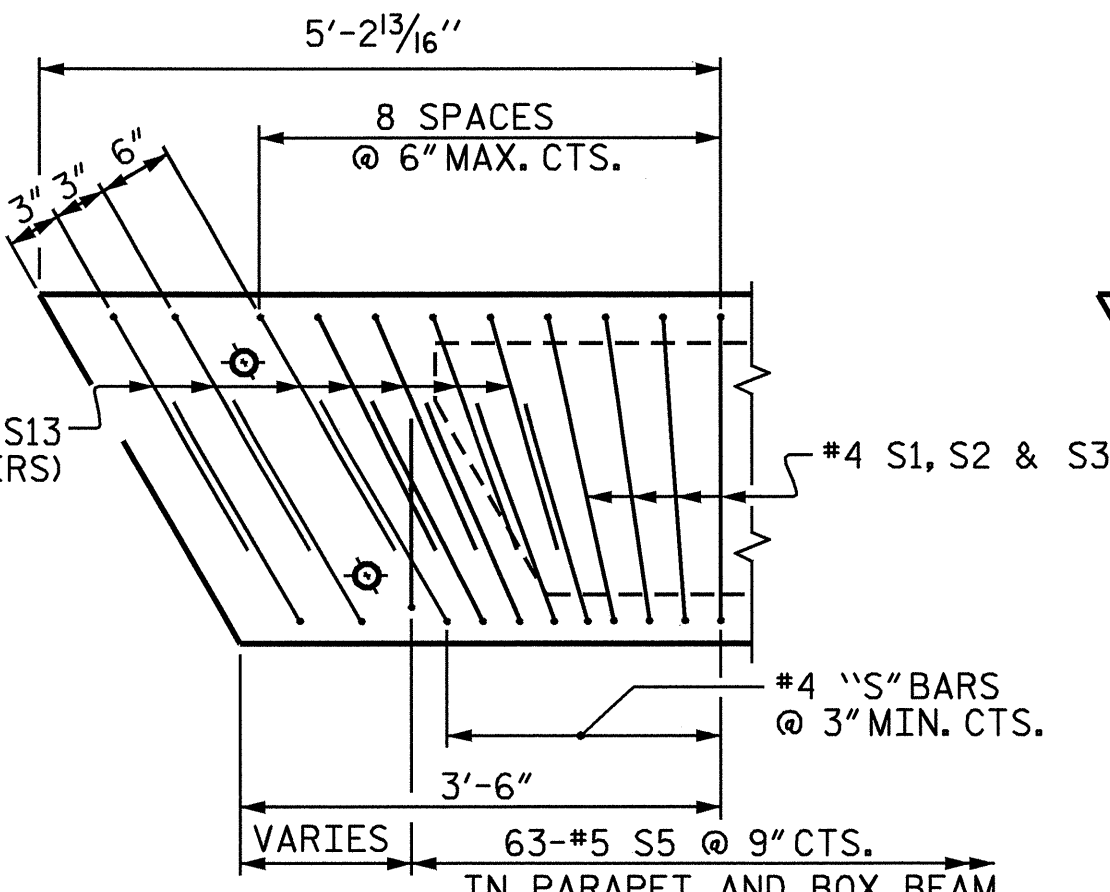
SHEAR KEY DETAIL

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



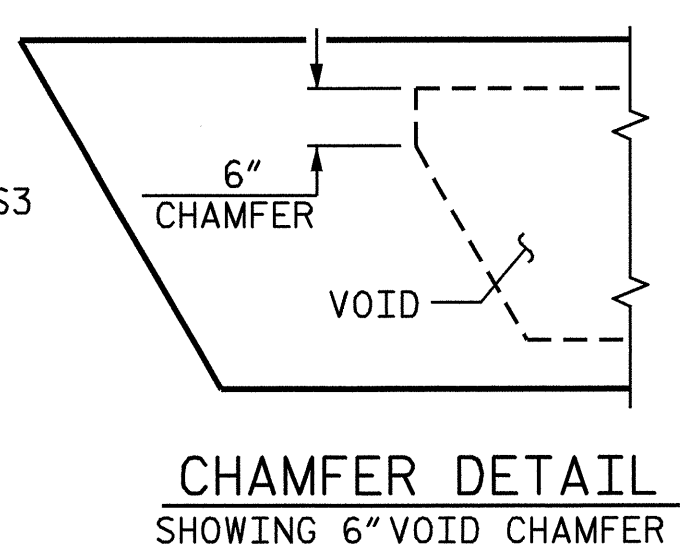
END VIEW

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



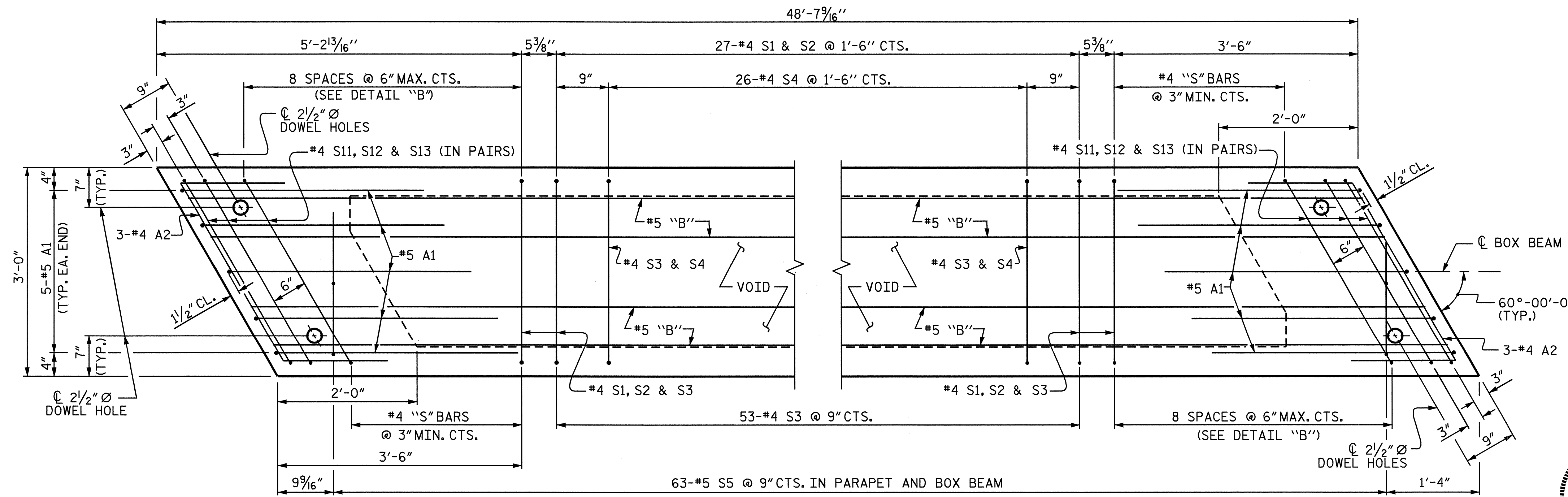
DETAIL "B"

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



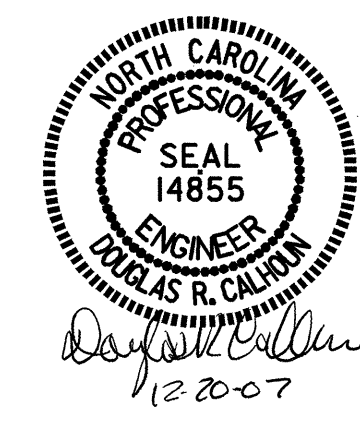
CHAMFER DETAIL

SHOWING 6" VOID CHAMFER



PLAN OF BOX BEAM

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



| | |
|-----------------------------|--------------------|
| ASSEMBLED BY : T.L.CLELLAND | DATE : 11/14/05 |
| CHECKED BY : J.B.WILSON | DATE : 12/20/05 |
| DRAWN BY : TLA 5/05 | ADDED 7/11/05 |
| CHECKED BY : GM 6/05 | REV. 5/1/06 TLA/GM |

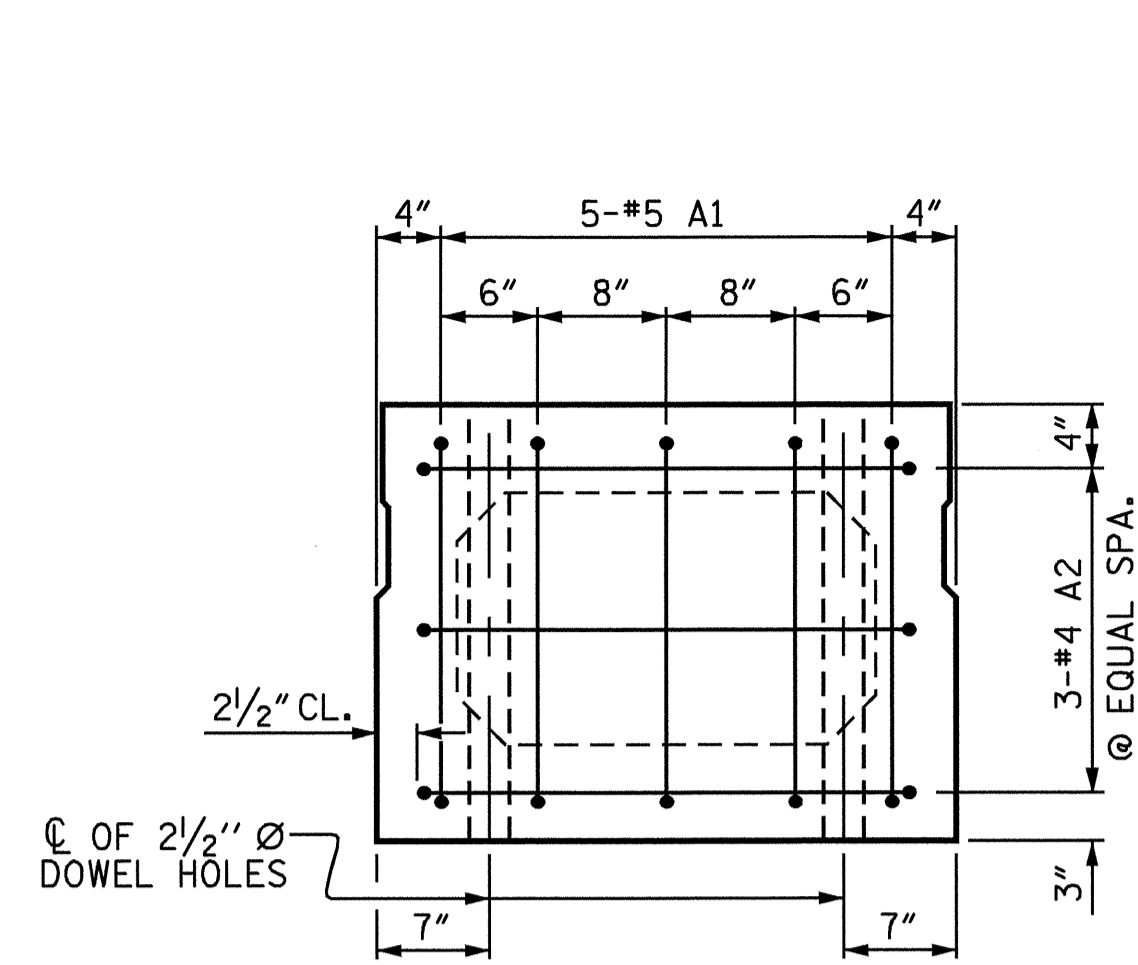
13-DEC-2007 09:59 R:\Structures\Final Plans\B-3606.sd.BX.dgn

PROJECT NO. B-3606
 ASHE COUNTY
 STATION: 11+65.00 -L-
 SHEET 1 OF 3

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

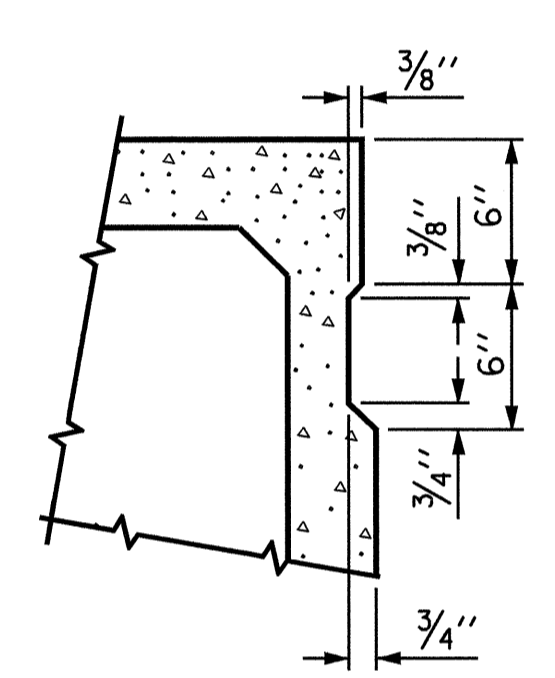
| REVISIONS | | | | SHEET NO. | | |
|-----------|-----|-------|-----|-----------|-------|--------------|
| NO. | BY: | DATE: | NO. | BY: | DATE: | TOTAL SHEETS |
| 1 | | | 3 | | | 24 |
| 2 | | | 4 | | | |

(SHT 2A) STD. NO. PCBB2



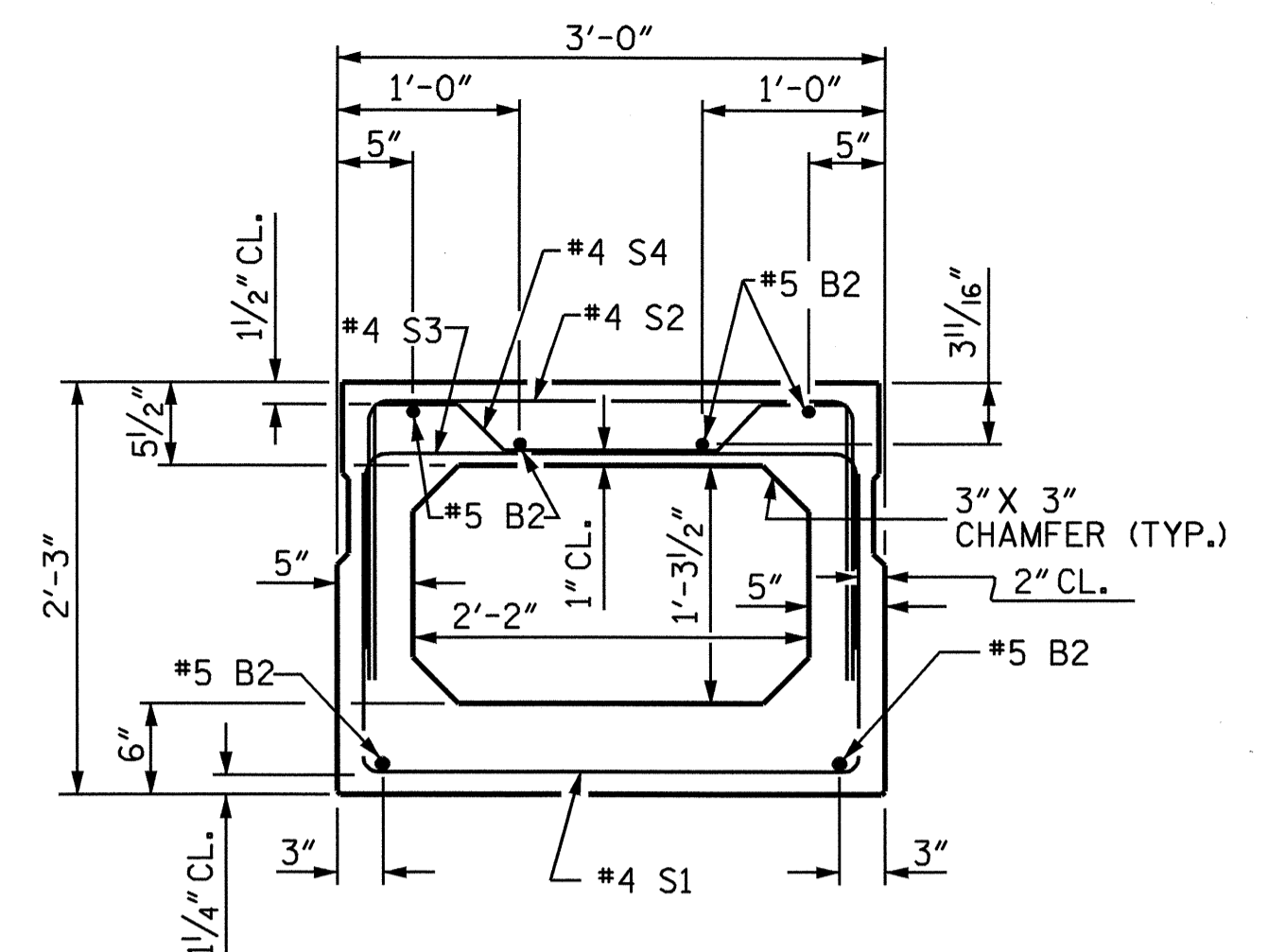
END ELEVATION

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



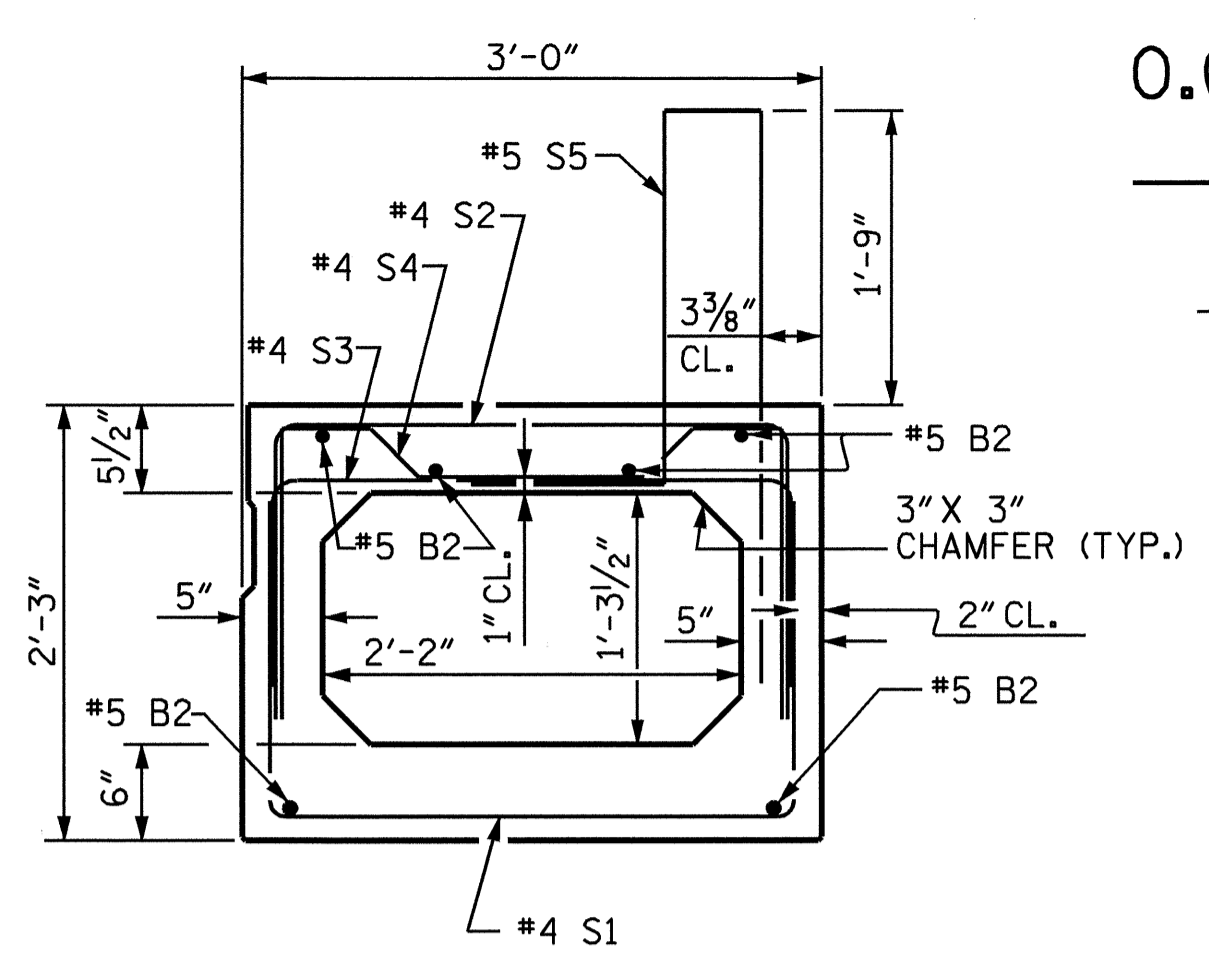
SHEAR KEY DETAIL

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



INTERIOR BOX BEAM SECTION

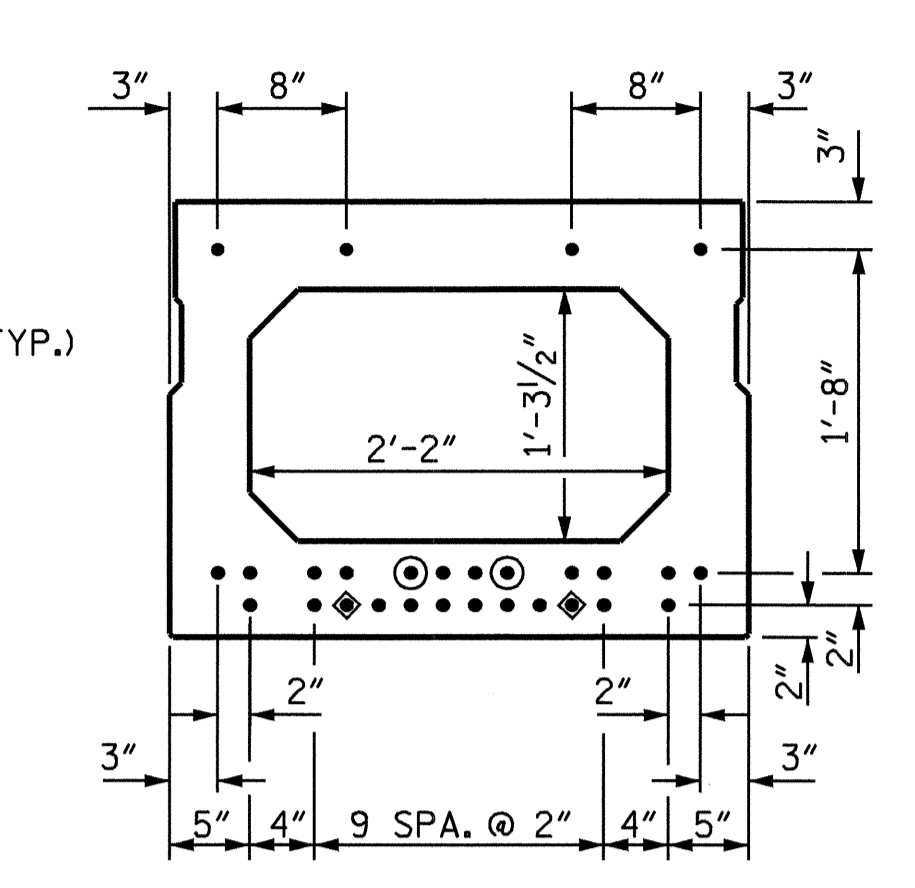
(STRAND LAYOUT NOT SHOWN)



EXTERIOR BOX BEAM SECTION

(STRAND LAYOUT NOT SHOWN)

0.6" Ø LOW RELAXATION STRAND LAYOUT



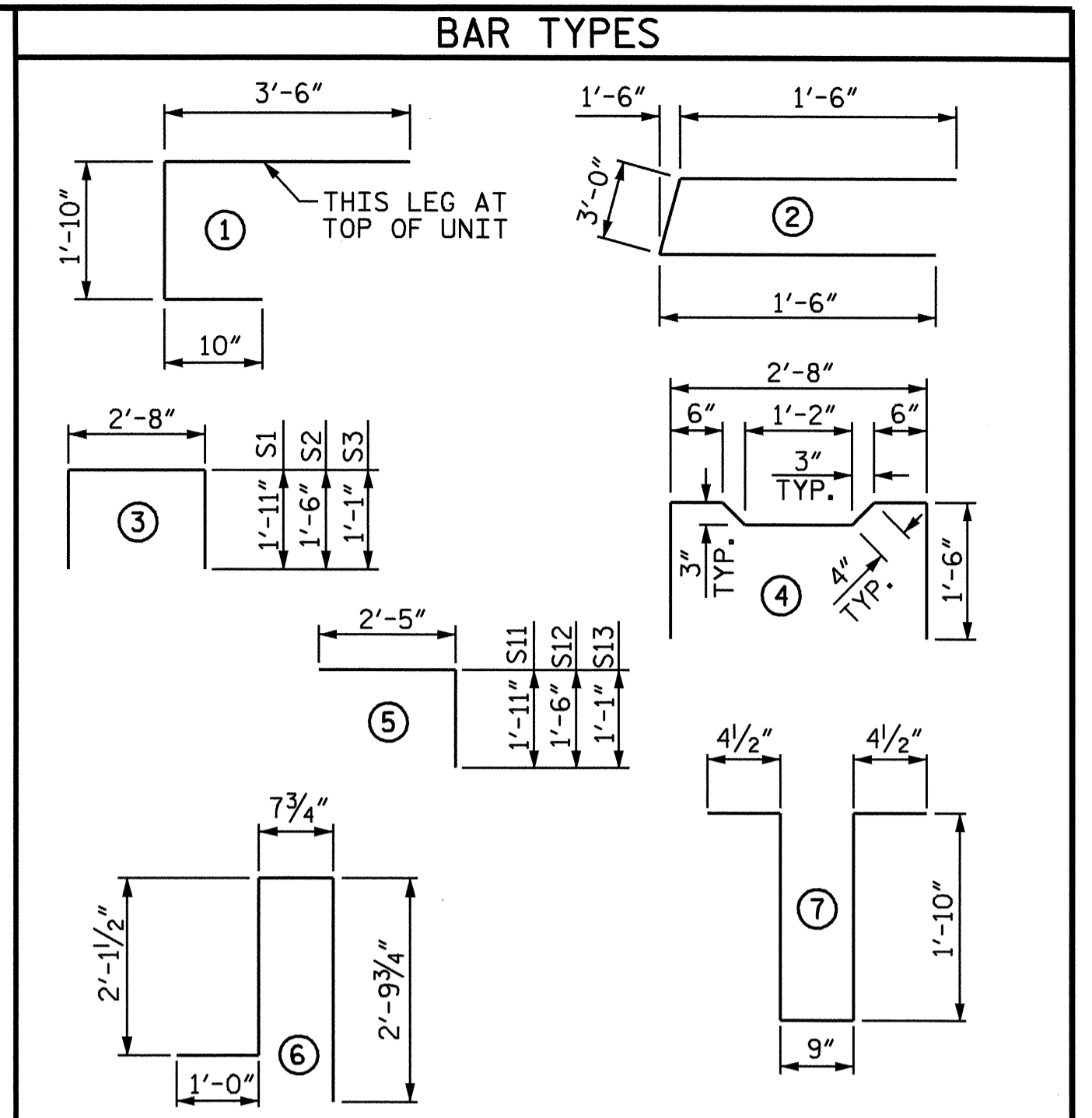
TYPICAL STRAND LOCATION

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

DEBONDING LEGEND

- FULLY BONDED STRANDS
- STRANDS DEBONDED FOR 2'-0" FROM END OF GIRDER
- ◇ STRANDS DEBONDED FOR 10'-0" FROM END OF GIRDER

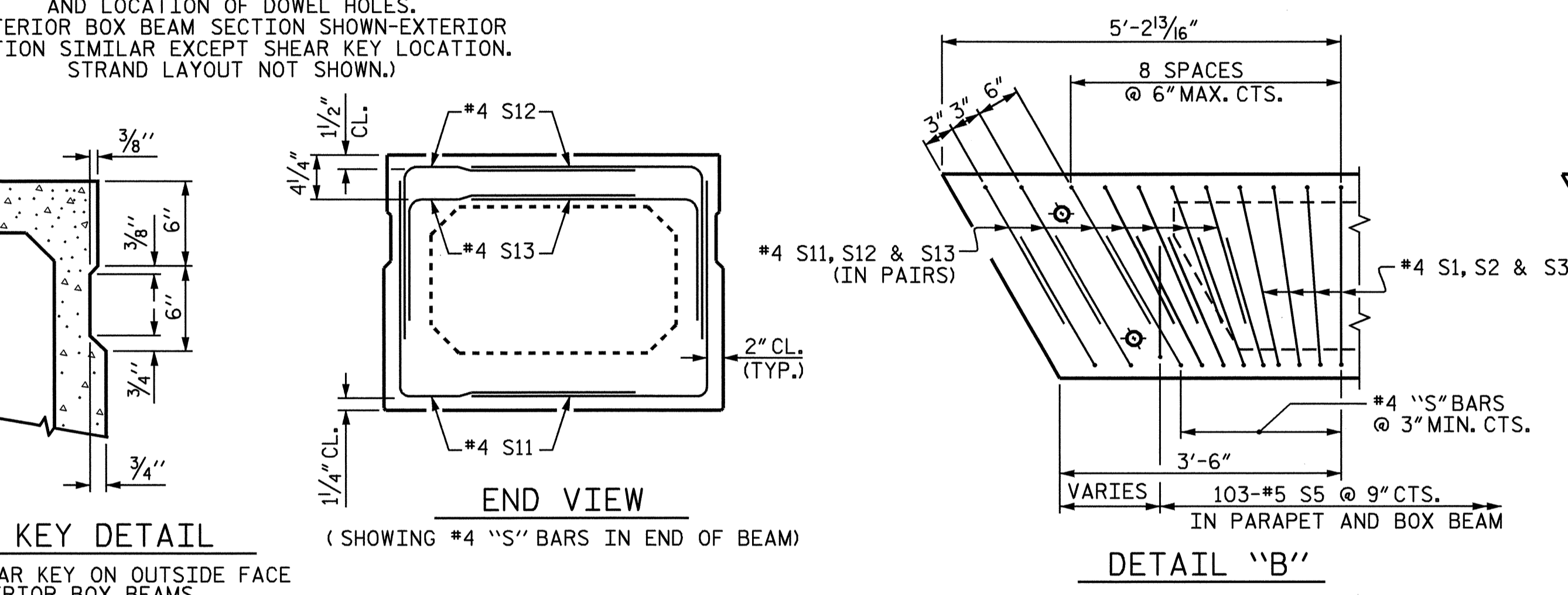
| GRADE 270 STRANDS | |
|---------------------------------------|-------------|
| | 0.6" Ø L.R. |
| AREA (SQUARE INCHES) | 0.217 |
| ULTIMATE STRENGTH (LBS. PER STRAND) | 58,600 |
| APPLIED PRESTRESS (LBS. PER STRAND) | 43,950 |



ALL BAR DIMENSIONS ARE OUT TO OUT

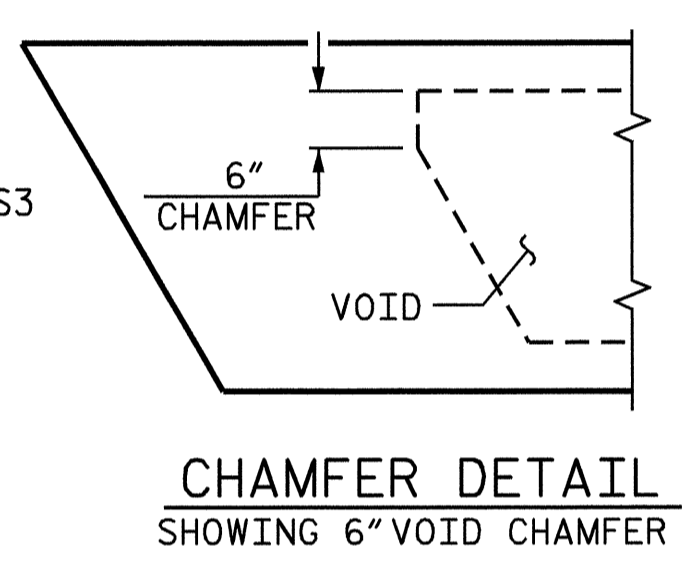
BILL OF MATERIAL FOR ONE BOX BEAM SECTION

| BAR | NUMBER | SIZE | TYPE | EXTERIOR UNIT | | INTERIOR UNIT | |
|----------------------------|--------|------|------|---------------|---------------|---------------|---------------|
| | | | | LENGTH | WEIGHT | LENGTH | WEIGHT |
| A1 | 10 | #5 | 1 | 6'-2" | 64 | 6'-2" | 64 |
| A2 | 22 | #4 | 2 | 6'-0" | 88 | 6'-0" | 88 |
| B2 | 12 | #5 | STR | 40'-3" | 504 | 40'-3" | 504 |
| K1 | 12 | #4 | 7 | 5'-2" | 41 | 5'-2" | 41 |
| K2 | 8 | #4 | STR | 2'-6" | 13 | 2'-6" | 13 |
| S1 | 55 | #4 | 3 | 6'-6" | 239 | 6'-6" | 239 |
| S2 | 55 | #4 | 3 | 5'-8" | 208 | 5'-8" | 208 |
| S3 | 101 | #4 | 3 | 4'-10" | 326 | 4'-10" | 326 |
| S4 | 46 | #4 | 4 | 5'-10" | 179 | 5'-10" | 179 |
| S11 | 28 | #4 | 5 | 4'-4" | 81 | 4'-4" | 81 |
| S12 | 28 | #4 | 5 | 3'-11" | 73 | 3'-11" | 73 |
| S13 | 28 | #4 | 5 | 3'-6" | 65 | 3'-6" | 65 |
| *S5 | 103 | #5 | 6 | 6'-7" | 707 | -- | -- |
| REINFORCING STEEL | | | | | LBS. 1881 | | LBS. 1881 |
| *EPOXY COATED REINF. STEEL | | | | | 707 | | |
| 7000 P.S.I. CONCRETE | | | | | CU. YDS. 12.6 | | CU. YDS. 12.4 |
| 0.6" Ø L.R. STRANDS | | | | | No. 28 | | No. 28 |

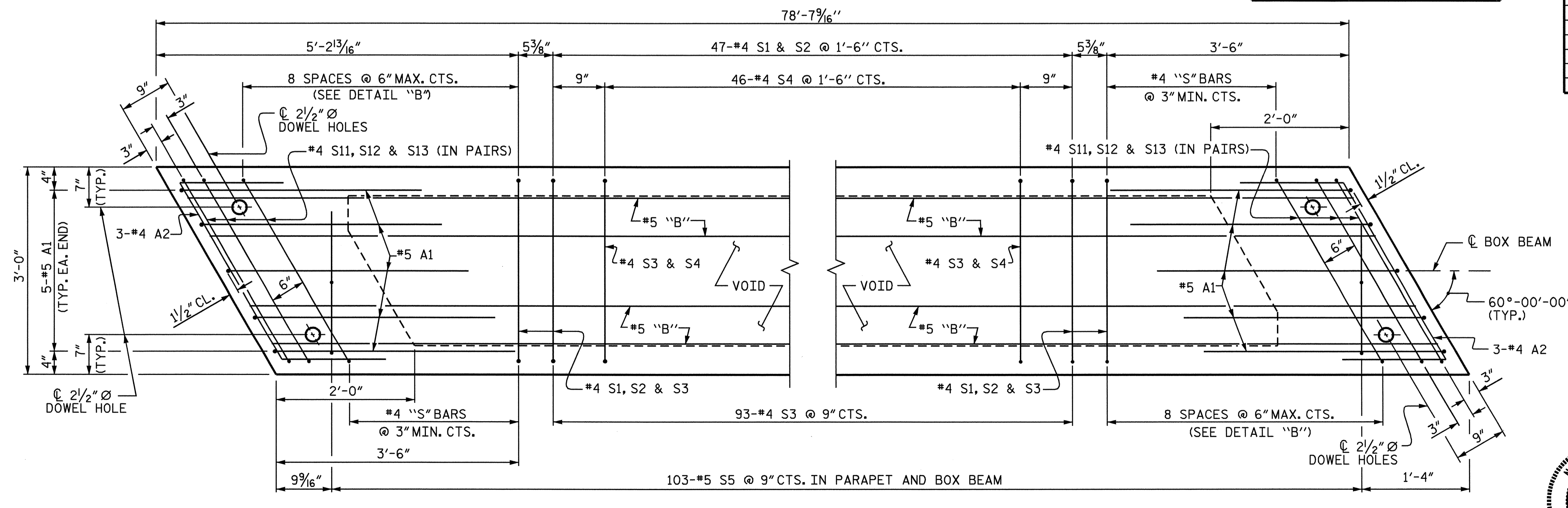


DETAIL "B"

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



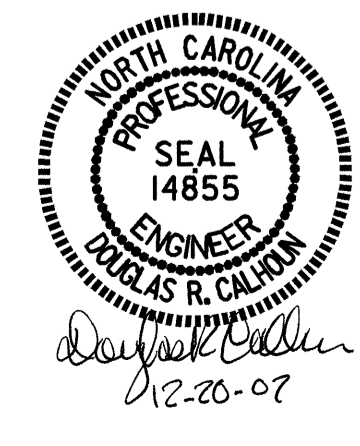
CHAMFER DETAIL
SHOWING 6" VOID CHAMFER



PLAN OF BOX BEAM

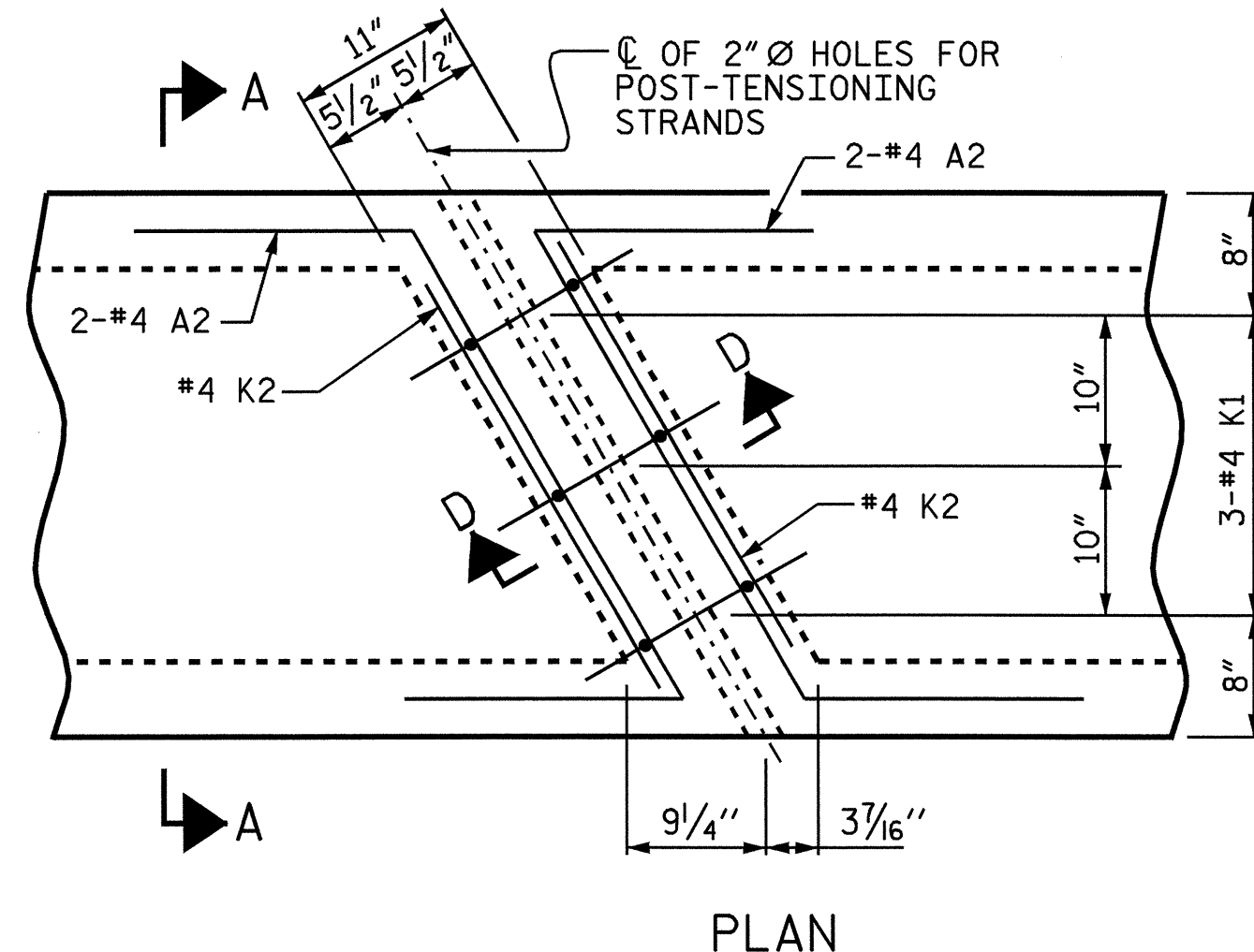
EXTERIOR UNIT SHOWN, INTERIOR UNIT SIMILAR EXCEPT OMIT #5 S5 BARS. FOR LOCATION OF DIAPHRAGMS, SEE PLAN OF SPANS. FOR REINFORCING STEEL IN DIAPHRAGMS, SEE DIAPHRAGM DETAILS.

| | |
|-----------------------------|-----------------|
| ASSEMBLED BY : T.L.CLELLAND | DATE : 11/14/05 |
| CHECKED BY : J.B.WILSON | DATE : 12/20/05 |
| DRAWN BY : TLA 5/05 | ADDED 7/11/05 |
| CHECKED BY : GM 6/05 | REV. 5/1/06 |

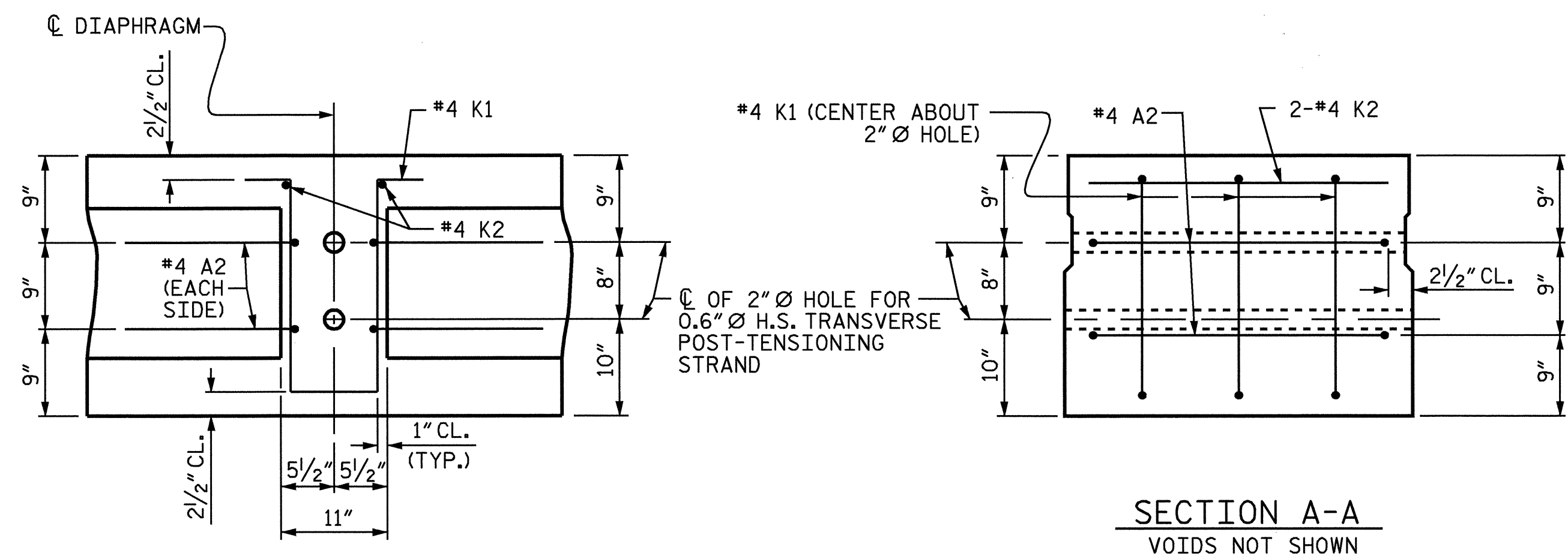


PROJECT NO. B-3606
ASHE COUNTY
STATION: 11+65.00 -L-
SHEET 2 OF 3

| STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION RALEIGH | | | | SHEET NO. S-8 |
|--|-----|-------|-----|---------------------------|
| STANDARD 3'-0" X 2'-3" PRESTRESSED CONCRETE BOX BEAM UNIT SPAN B | | | | |
| REVISIONS | | | | TOTAL SHEETS 24 |
| NO. | BY: | DATE: | NO. | |
| 1 | | | 3 | |
| 2 | | | 4 | |



PLAN

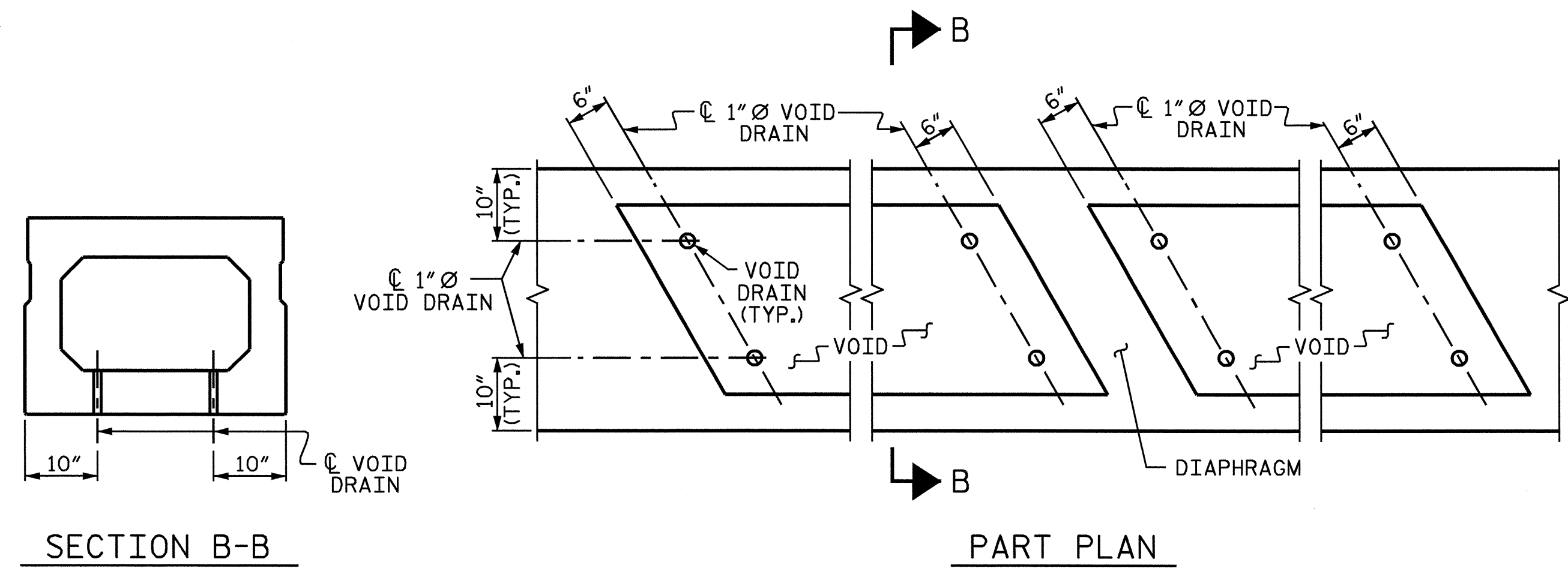


SECTION A-A
VOIDS NOT SHOWN

SECTION D-D

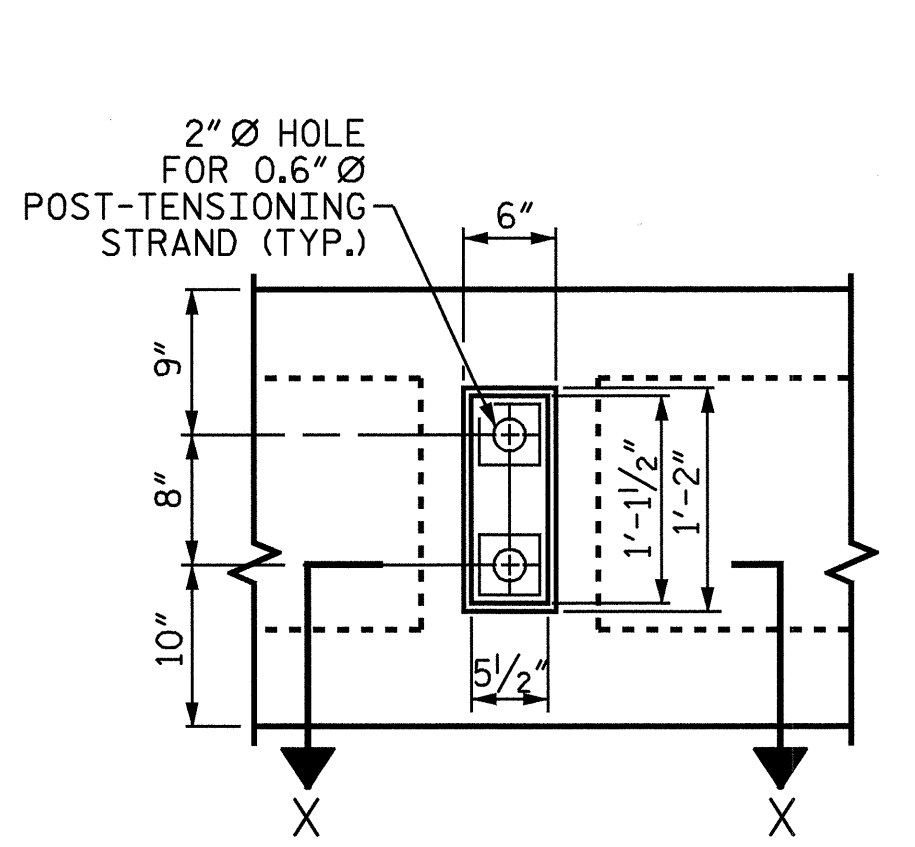
DOUBLE DIAPHRAGM DETAILS

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

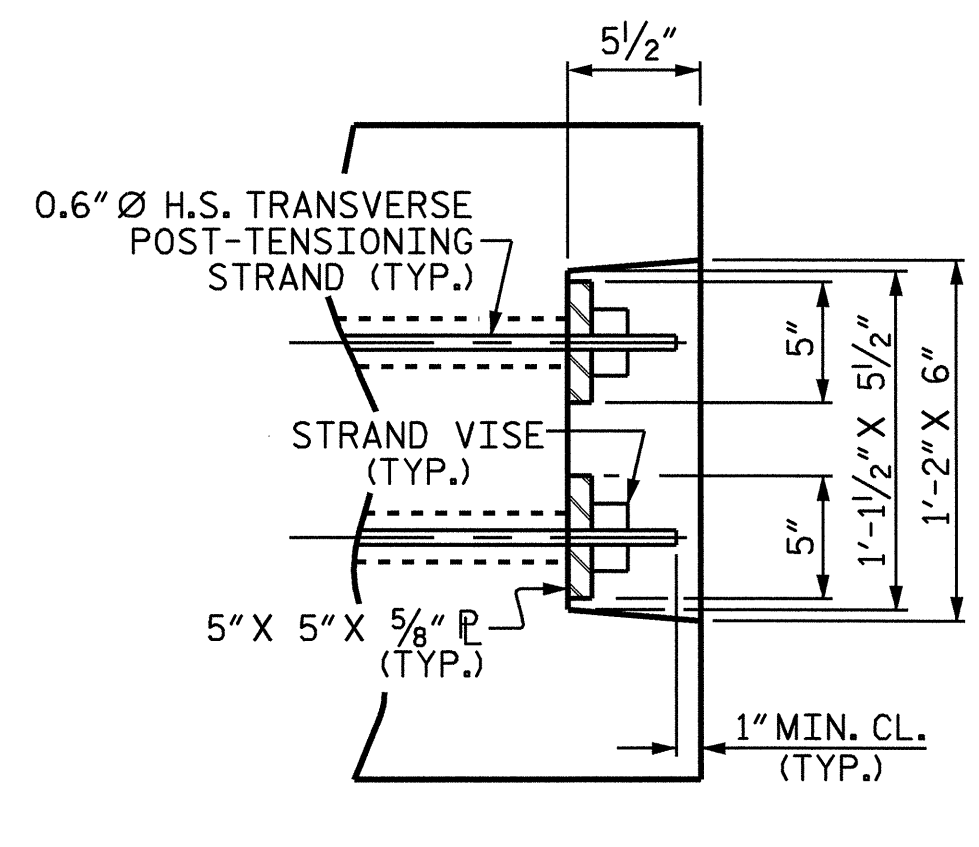


VOID DRAIN DETAILS

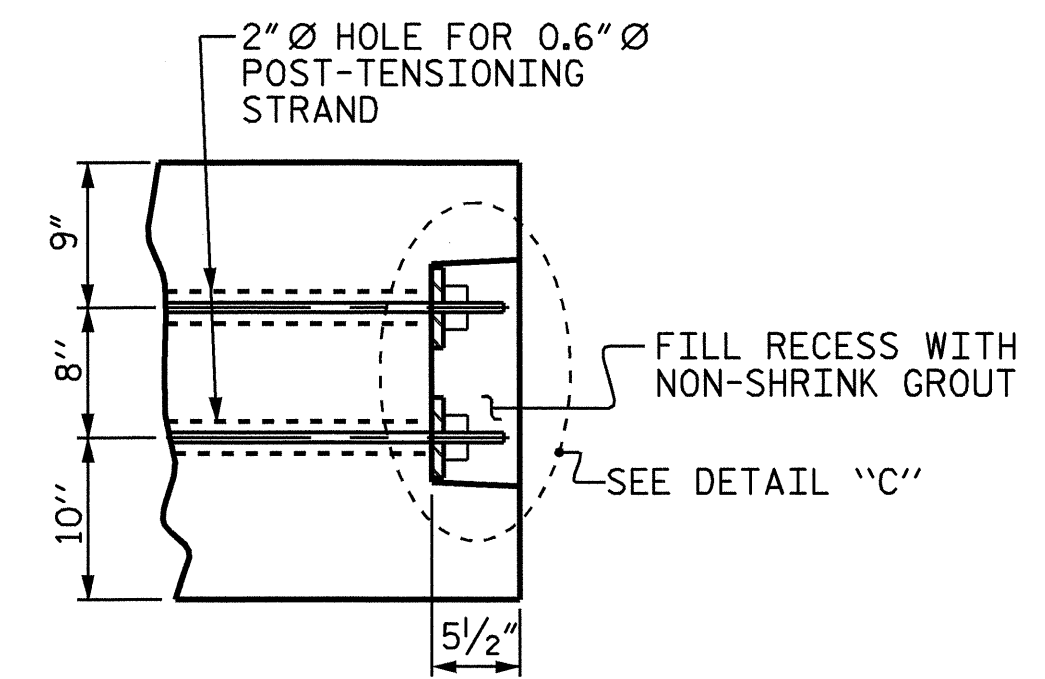
(DIMENSIONS SHOWN ARE TYPICAL FOR EACH VOID)



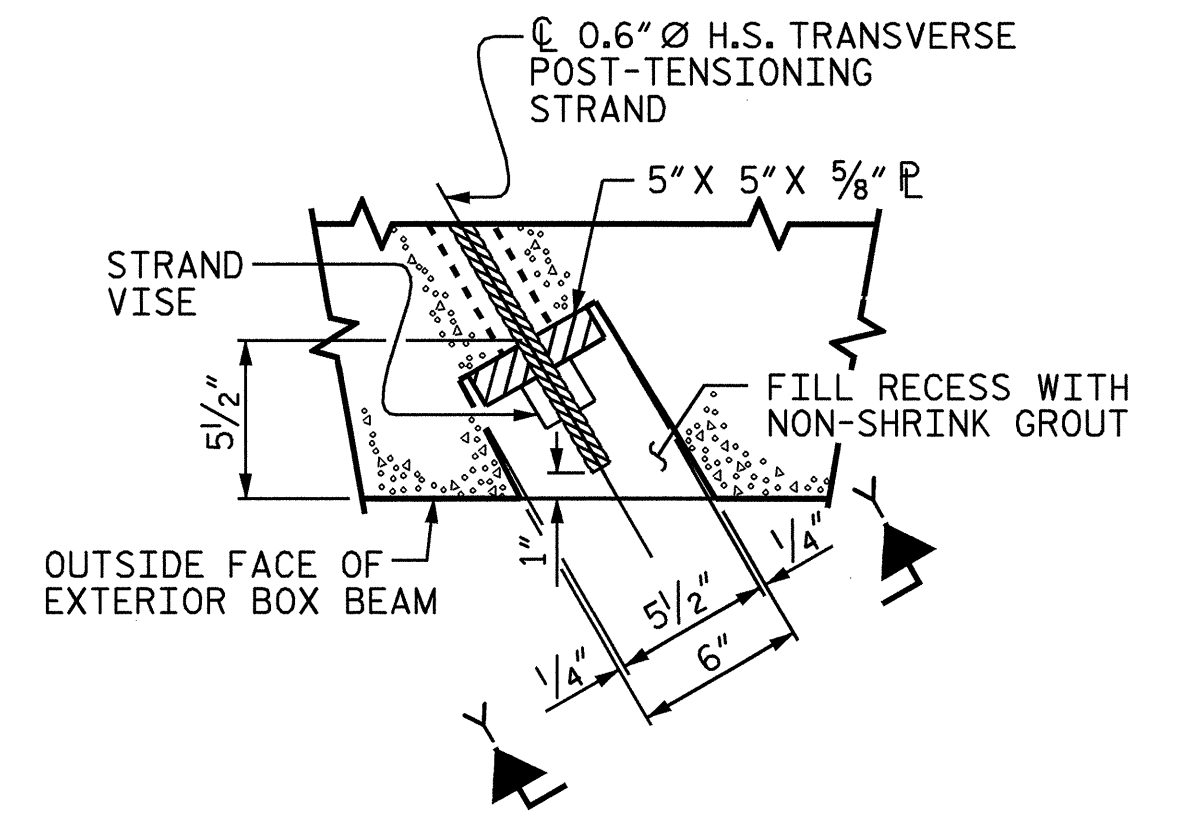
VIEW Y-Y
SHOWING ELEVATION VIEW OF GROUED RECESS



DETAIL "C"



PART SECTION AT RECESS



SECTION X-X
SHOWING PLAN VIEW OF GROUED RECESS

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

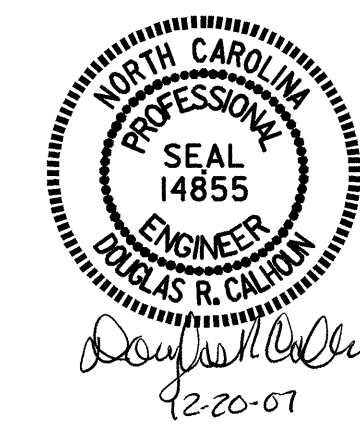
| BOX BEAM UNITS REQUIRED | | | |
|-------------------------|--------|-------------|--------------|
| | NUMBER | LENGTH | TOTAL LENGTH |
| SPAN A | 9 | 48'-7 9/16" | 437'-8 1/16" |
| SPAN B | 9 | 78'-7 9/16" | 707'-8 1/16" |
| TOTAL | 18 | | 1145'-4 1/8" |

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

PROJECT NO. B-3606
ASHE COUNTY
 STATION: 11+65.00 -L-

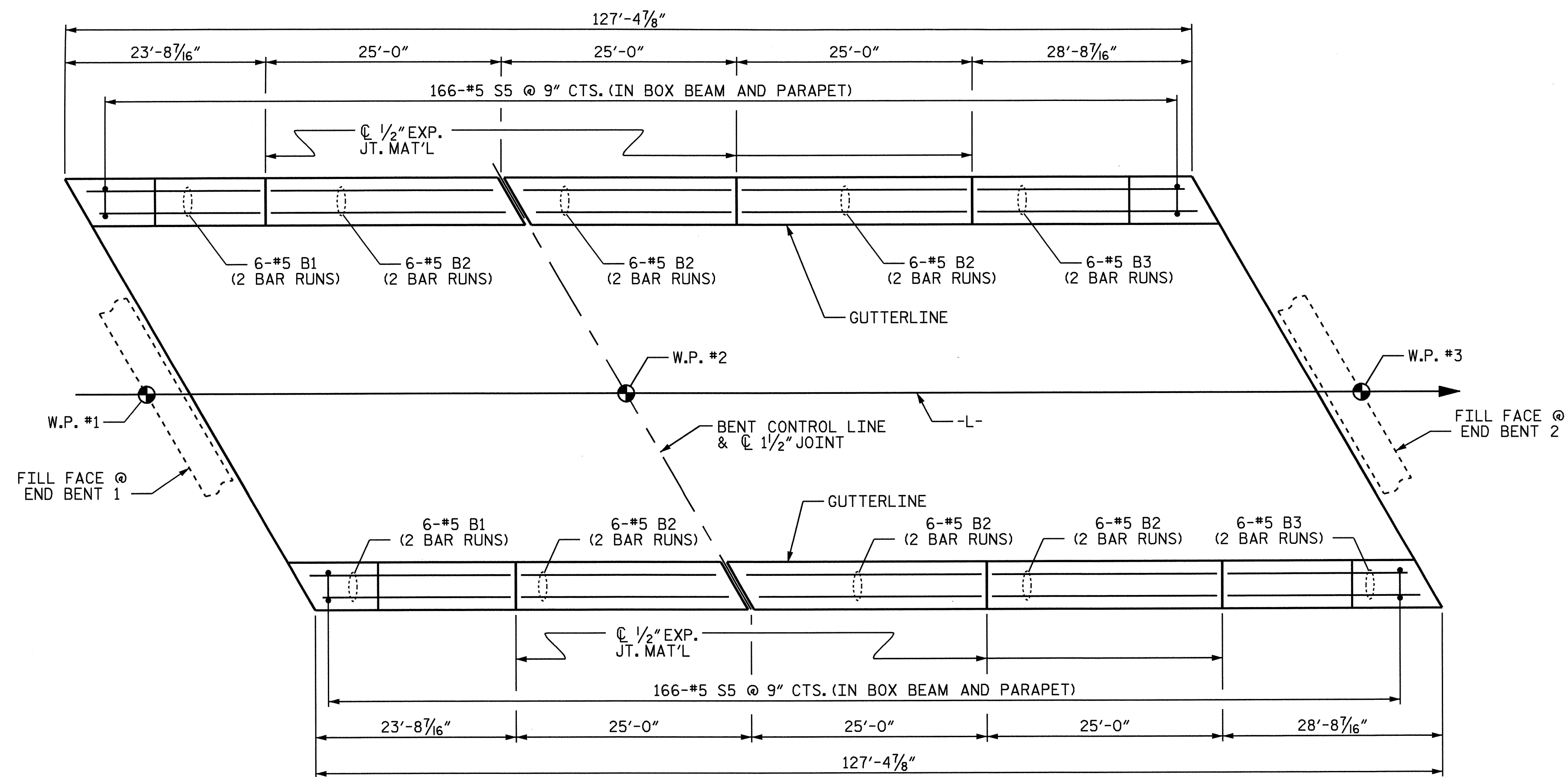
SHEET 3 OF 3

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH
 STANDARD
 3'-0" X 2'-3"
 PRESTRESSED CONCRETE
 BOX BEAM UNIT

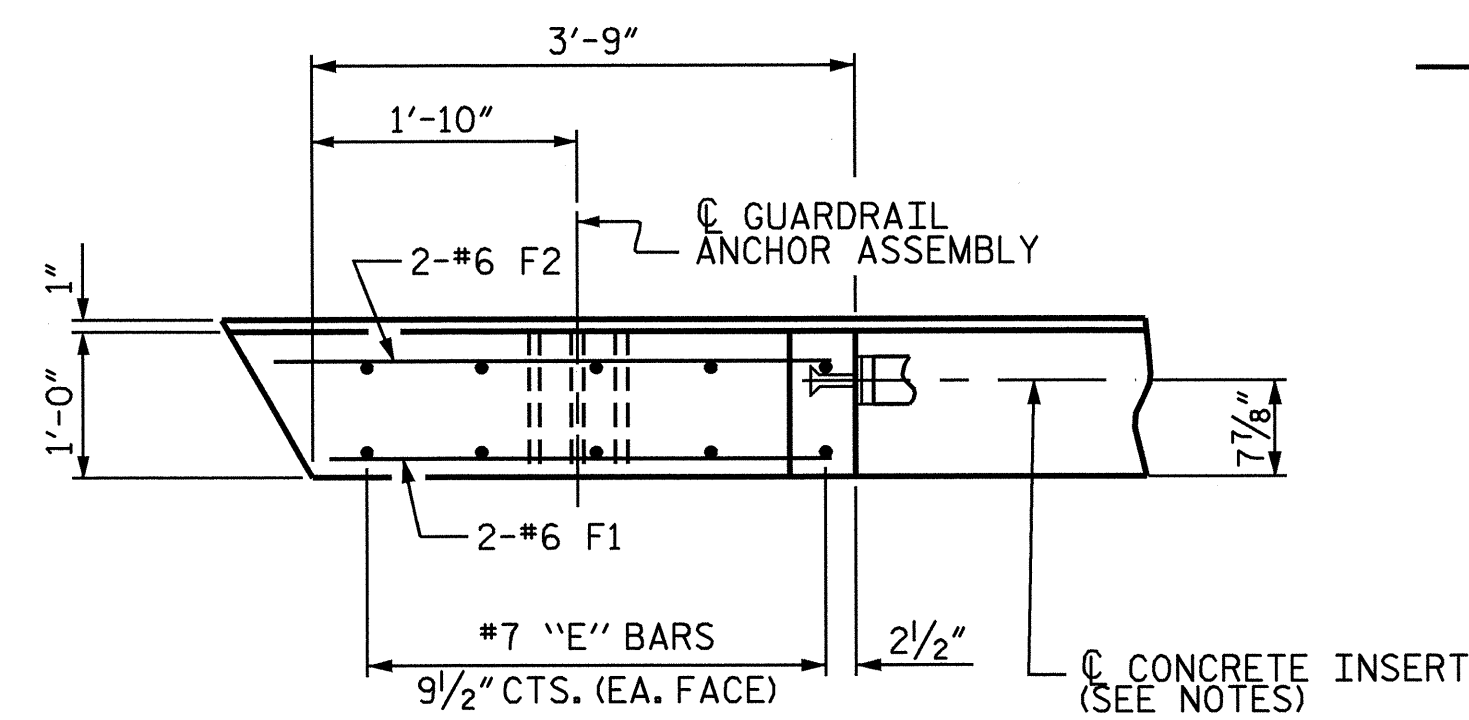


| REVISIONS | | | | | | SHEET NO. |
|-----------|-----|-------|-----|-----|-------|--------------|
| NO. | BY: | DATE: | NO. | BY: | DATE: | S-9 |
| 1 | | | 3 | | | TOTAL SHEETS |
| 2 | | | 4 | | | 24 |

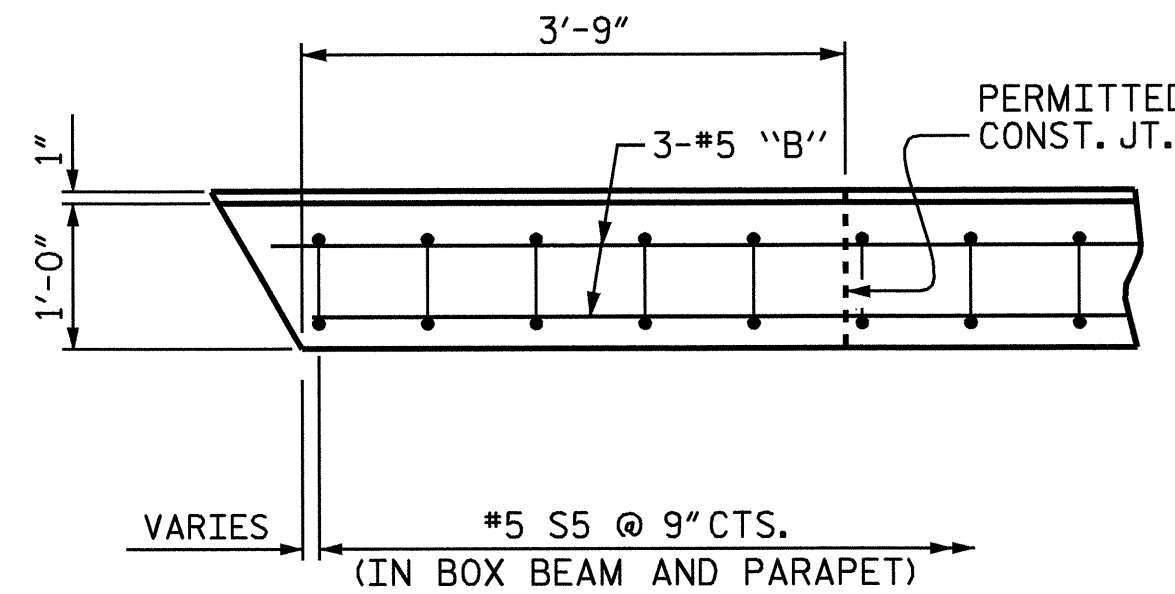
ASSEMBLED BY : T.L.CLELLAND DATE : 12/6/05
 CHECKED BY : J.B.WILSON DATE : 12/20/05
 DRAWN BY : TLA 5/05 ADDED 7/11/05
 CHECKED BY : GM 6/05 REV. 5/1/06 TLA/GM



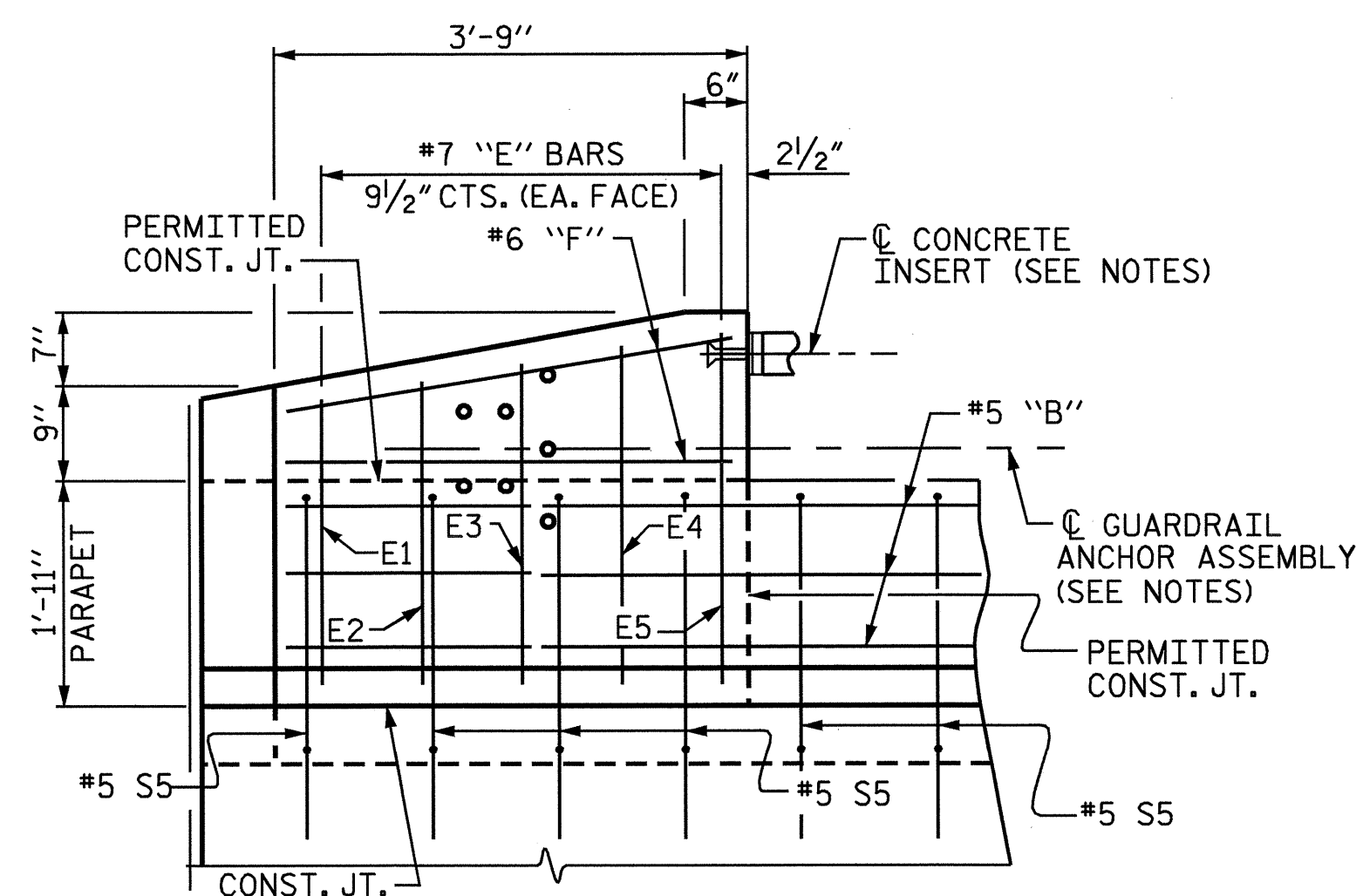
PLAN OF PARAPET



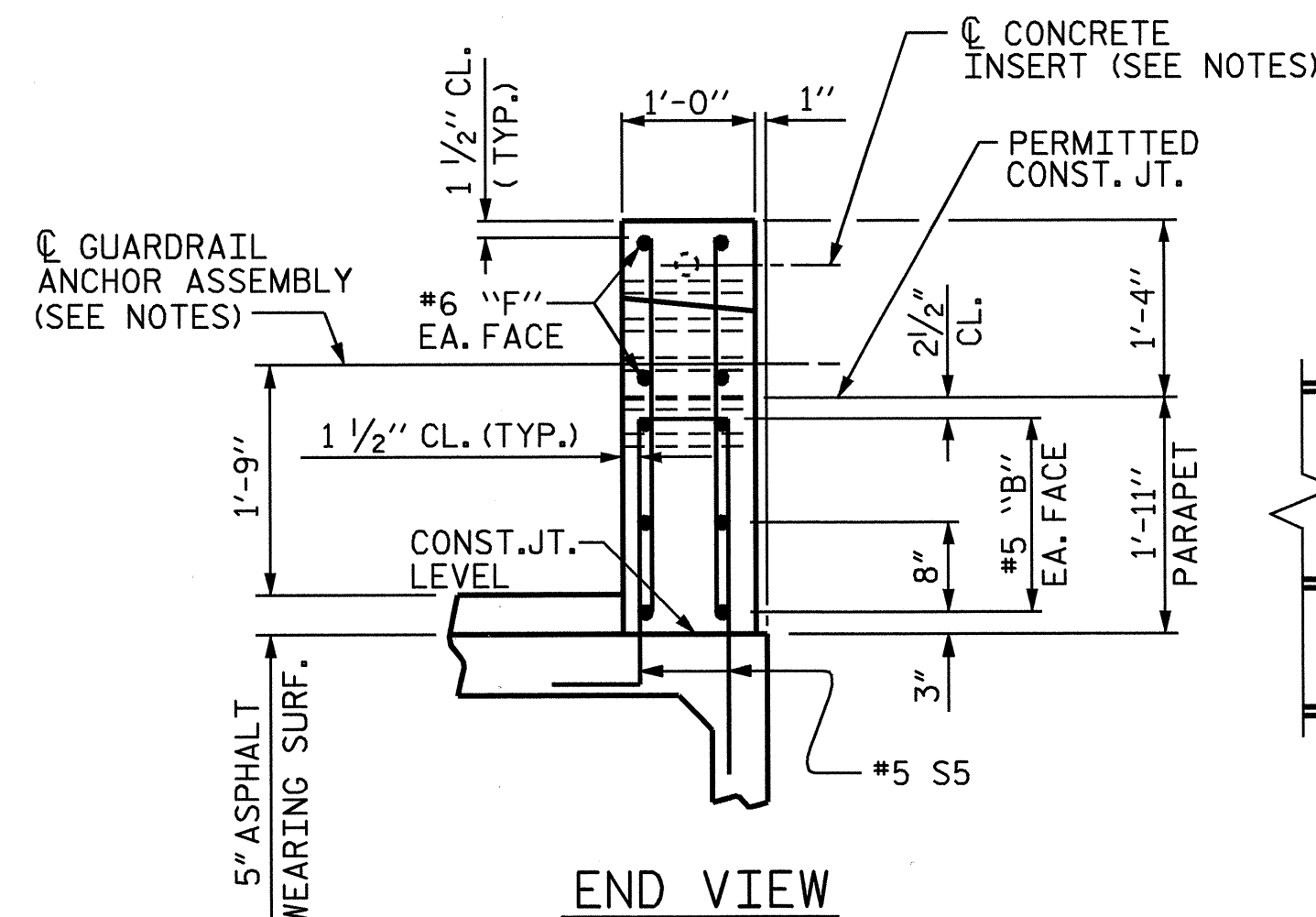
PLAN OF END POST



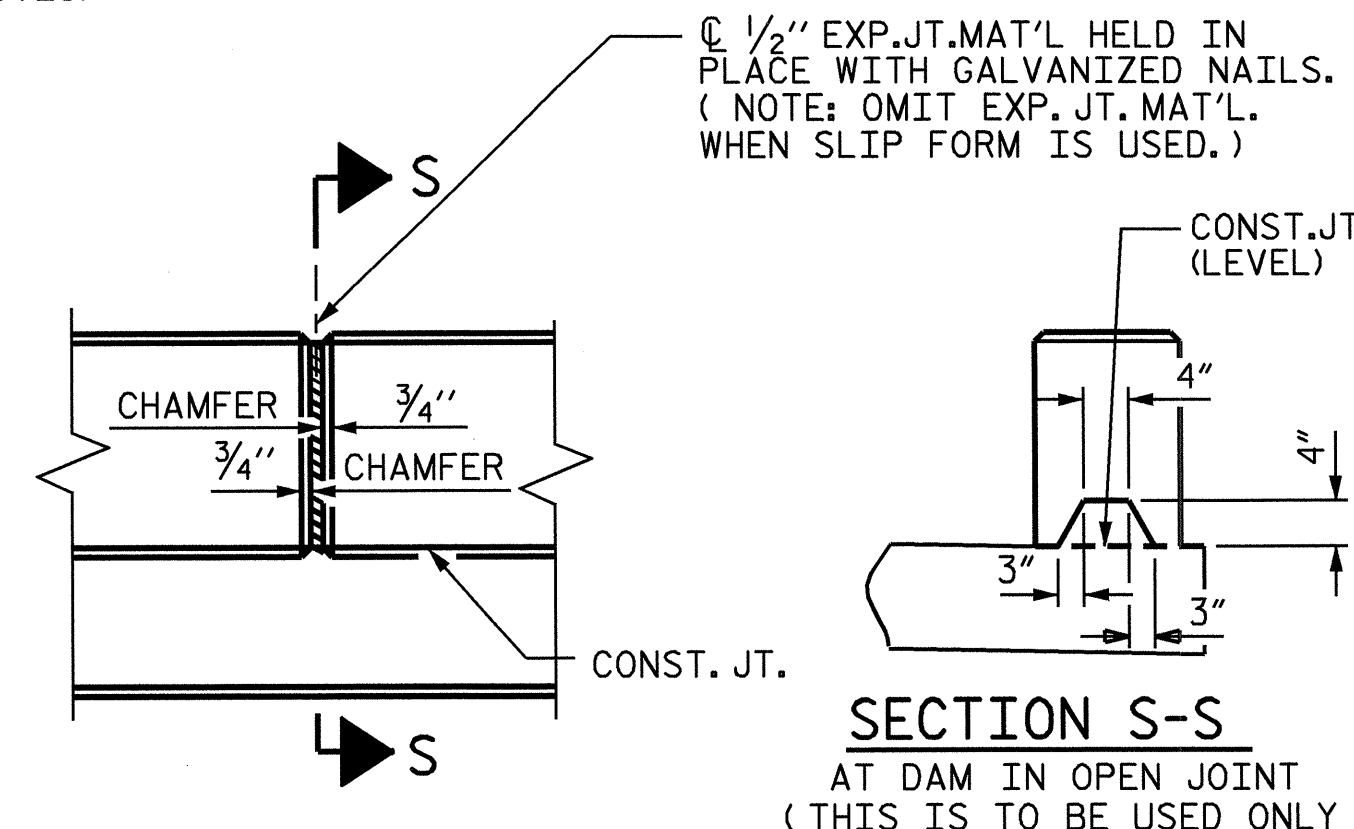
PLAN OF PARAPET



ELEVATION



END VIEW



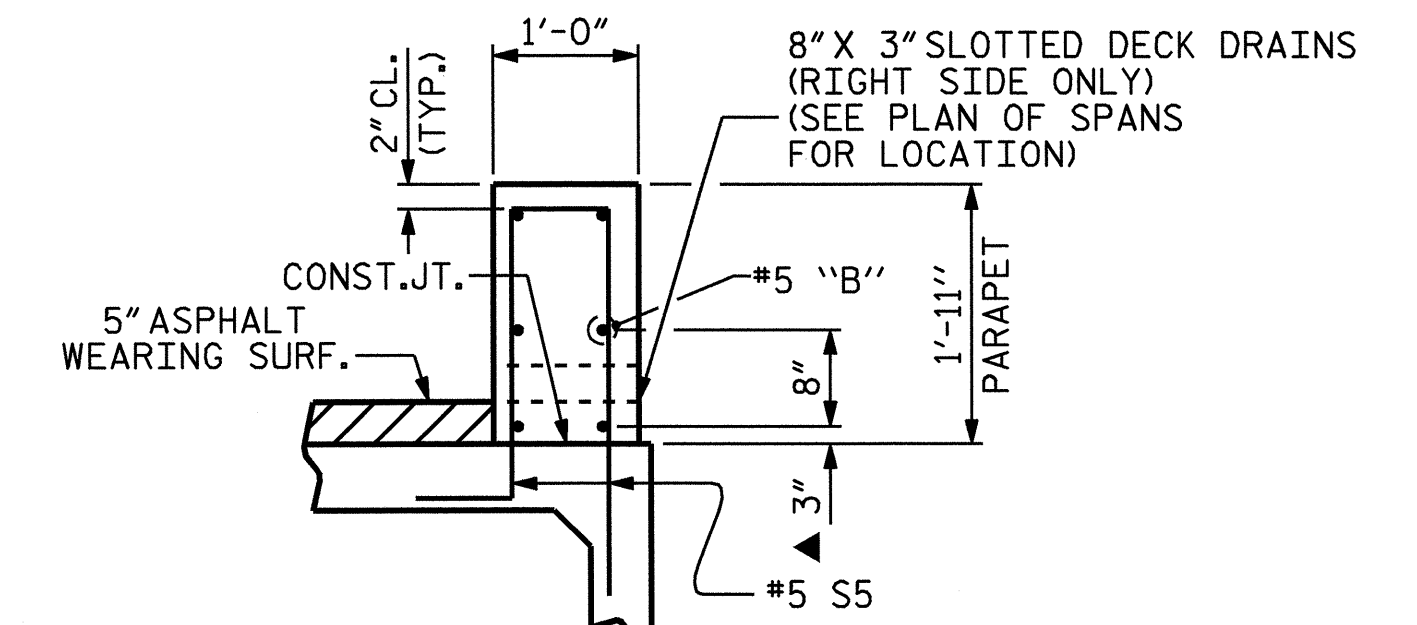
ELEVATION AT EXPANSION JOINTS

| BILL OF MATERIAL | | | | | |
|----------------------------------|-----|------|------|---------|--------|
| PARAPETS AND END POSTS | | | | | |
| BAR | NO. | SIZE | TYPE | LENGTH | WEIGHT |
| *B1 | 24 | 5 | STR | 13'-8" | 342 |
| *B2 | 72 | 5 | STR | 14'-4" | 1076 |
| *B3 | 24 | 5 | STR | 15'-10" | 396 |
| *E1 | 8 | 7 | STR | 2'-5" | 40 |
| *E2 | 8 | 7 | STR | 2'-7" | 42 |
| *E3 | 8 | 7 | STR | 2'-8" | 44 |
| *E4 | 8 | 7 | STR | 2'-10" | 46 |
| *E5 | 8 | 7 | STR | 2'-11" | 48 |
| *F1 | 8 | 6 | STR | 3'-5" | 41 |
| *F2 | 8 | 6 | STR | 3'-10" | 46 |
| * EPOXY COATED REINFORCING STEEL | | | | LBS. | 2121 |
| CLASS AA CONCRETE | | | | C.Y. | 18.7 |
| CONCRETE PARAPET | | | | LN.FT. | 254.80 |

| SPlice LENGTH CHART | |
|---------------------|-------------|
| SIZE | MIN. SPLICE |
| #5 | 3'-5" |

NOTES

- ALL REINFORCING STEEL IN THE PARAPETS AND END POSTS SHALL BE EPOXY COATED.
- FOR DETAILS OF CONCRETE INSERT AND GUARDRAIL ANCHOR ASSEMBLY, SEE SHEET 3 OF 4 AND SHEET 4 OF 4.
- #5 S5 BARS ARE INCLUDED IN THE BILL OF MATERIAL FOR BOX BEAM UNITS.
- 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 FEET IN LENGTH.



SECTION THRU PARAPET

▲ THESE #5 "B" BARS TO BE MOVED UP AS NECESSARY TO KEEP THE DECK DRAIN ABOVE 5" ASPHALT WEARING SURFACE.

PROJECT NO. B-3606
 ASHE COUNTY
 STATION: 11+65.00 -L-

SHEET 1 OF 4

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



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

DRAWN BY : T.L.CLELLAND DATE : 1/25/06
 CHECKED BY : J.B.WILSON DATE : 2/10/06

13-DEC-2007 10:00
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 gallen

PARAPET AND END POST FOR ONE-BAR RAIL

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.

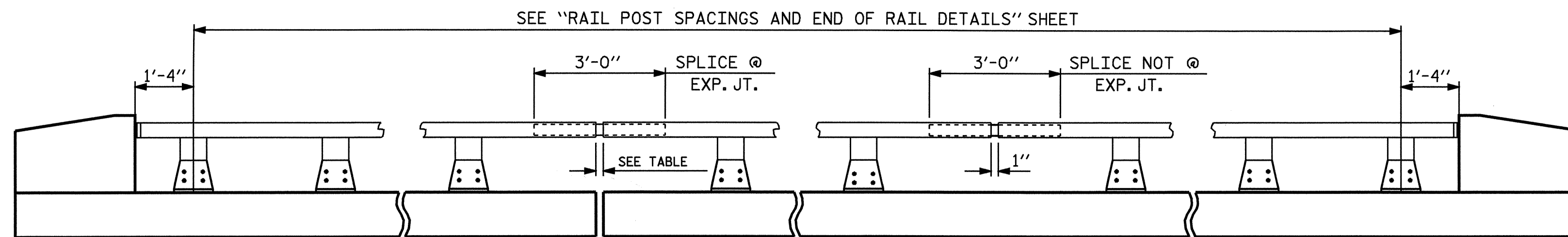
GALVANIZED STEEL RAILS

MATERIALS AND GALVANIZING ARE TO CONFORM TO THE FOLLOWING SPECIFICATIONS: POST, POST BASES, RAILS, EXPANSION BARS AND CLAMP BARS: AASHTO M270 GRADE 36 STRUCTURAL STEEL - GALVANIZED TO AASHTO M111. RIVETS: RIVETS SHALL MEET THE REQUIREMENTS OF ASTM A502 FOR GRADE 1 RIVETS. THE CUT ENDS OF GALVANIZED STEEL RAILING, AFTER GRINDING SMOOTH SHALL BE GIVEN TWO COATS OF ZINC RICH PAINT MEETING THE REQUIREMENTS OF FEDERAL SPECIFICATION MIL-P-26915 USAF TYPE 1, OR OF FEDERAL SPECIFICATIONS TT-P-641. SHIMS: SHIMS SHALL MEET THE REQUIREMENTS OF ASTM A570 FOR GRADE 33 OR A611 FOR GRADE C AND SHALL BE GALVANIZED IN ACCORDANCE WITH AASHTO M111. CLOSURE PLATES: CLOSURE PLATES SHALL MEET THE REQUIREMENTS OF ASTM A570 FOR GRADE 33 OR A611 FOR GRADE C AND SHALL BE GALVANIZED IN ACCORDANCE WITH AASHTO M111.

GENERAL NOTES

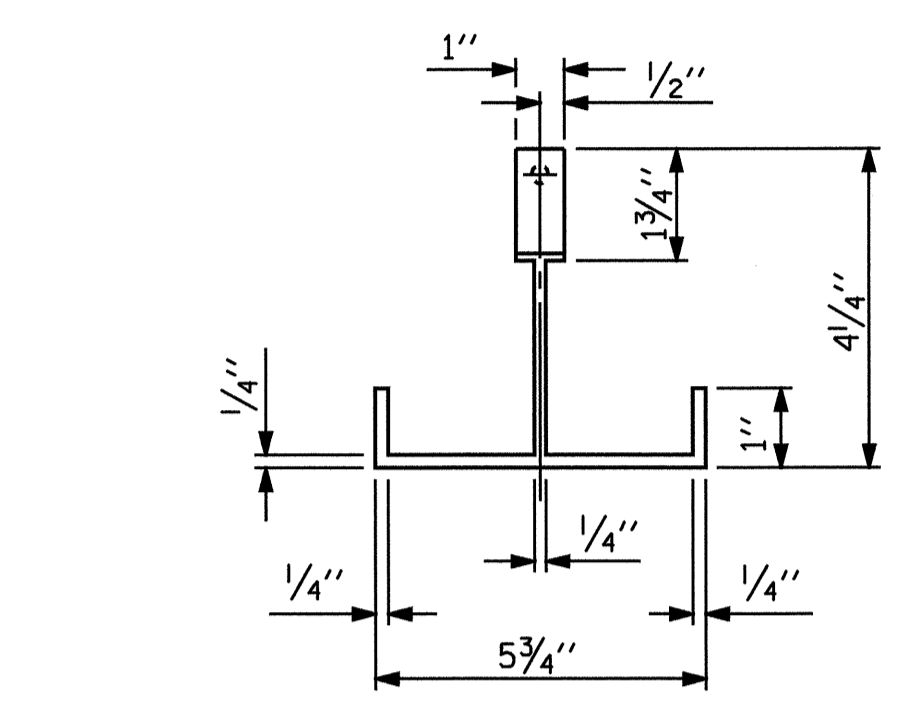
RAILING SHALL BE CONTINUOUS FROM END POST TO END POST OF BRIDGE. EACH JOINT IN RAIL LENGTH SHALL BE SPLICED AS DETAILED. PANEL LENGTHS OF RAIL SHALL BE ATTACHED TO A MINIMUM OF THREE POSTS. FOR END OF RAIL TO CLEAR FACE OF CONCRETE END POST DIMENSION, SEE STANDARD NO. BMR2. MATERIAL FOR ANCHOR STUDS SHALL BE ASTM F593 ALLOY 304 STAINLESS STEEL WITH MINIMUM 75,000 PSI ULTIMATE STRENGTH. STUDS TO BE EMBEDDED 7" IN CONCRETE. NUTS SHALL BE AMERICAN STANDARD FINISHED HEXAGON THICK, CLASS 2B THREAD, AND MEET THE REQUIREMENTS OF ASTM F594 ALLOY 304 STAINLESS STEEL. WASHERS SHALL MEET THE REQUIREMENTS OF ASTM F844 EXCEPT THEY SHALL BE MADE FROM ALLOY 304 STAINLESS STEEL. ANCHOR P SHALL BE AASHTO M270 GRADE 36. CAP SCREWS SHALL BE ASTM F593 ALLOY 305 STAINLESS STEEL. CERTIFIED MILL REPORTS ARE REQUIRED FOR RAILS AND POSTS. SHOP INSPECTION IS NOT REQUIRED. METAL RAIL POSTS SHALL BE SET NORMAL TO CURB GRADE. METHOD OF MEASUREMENT FOR METAL RAILS: FOR LENGTH OF METAL RAILS TO BE PAID FOR, SEE THE STANDARD SPECIFICATIONS. CURVED RAIL USAGE: WHERE RAILS ARE TO BE USED ON BRIDGES ON HORIZONTAL AND/OR VERTICAL CURVATURE THE CONTRACTOR MAY, AT HIS OPTION, HAVE THE REQUIRED CURVATURE IN THE RAIL FORMED IN THE SHOP OR IN THE FIELD. IN EITHER EVENT, THE RAIL SHALL CONFORM WITHOUT BUCKLING OR KINKING TO THE REQUIRED CURVATURE IN A UNIFORM MANNER ACCEPTABLE TO THE ENGINEER. TO INSURE FUTURE IDENTIFICATION OF THE FABRICATOR, A PERMANENT IDENTIFYING MARK SHALL BE PLACED ON EACH POST. THE METHOD OF MARKING AND LOCATION SHALL BE SUCH THAT IT DOES NOT DETRACT FROM THE APPEARANCE OF THE POST. SHIMS SHALL BE USED AS NECESSARY FOR POST ALIGNMENT. ALLOY 6351-T5 MAY BE SUBSTITUTED FOR ALLOY 6061-T6 WHERE APPLICABLE. MINOR VARIATIONS IN DETAILS OF METAL RAIL WILL BE CONSIDERED. DETAILS OF SUCH VARIATIONS, IF DESIRED, SHALL BE SUBMITTED FOR APPROVAL. THE CONTRACTOR MAY USE ADHESIVELY ANCHORED ANCHOR BOLTS IN PLACE OF THE ANCHOR ASSEMBLY. LEVEL TWO FIELD TESTING IS REQUIRED, AND THE YIELD LOAD OF THE 3/4" BOLT IS 10 KIPS. FOR ADHESIVELY ANCHORED ANCHOR BOLTS OR DOWELS, SEE SPECIAL PROVISIONS. WHEN ADHESIVELY ANCHORED ANCHOR BOLTS ARE USED, BOLTS, NUTS AND WASHERS SHALL MEET THE SAME REQUIREMENTS AS THE ANCHOR STUDS, NUTS AND WASHERS FOR USE WITH THE ANCHOR ASSEMBLY.

| TABLE | |
|------------|--------------|
| EXP. JT. @ | RAIL OPENING |
| BENT No. 1 | 1 1/2" |

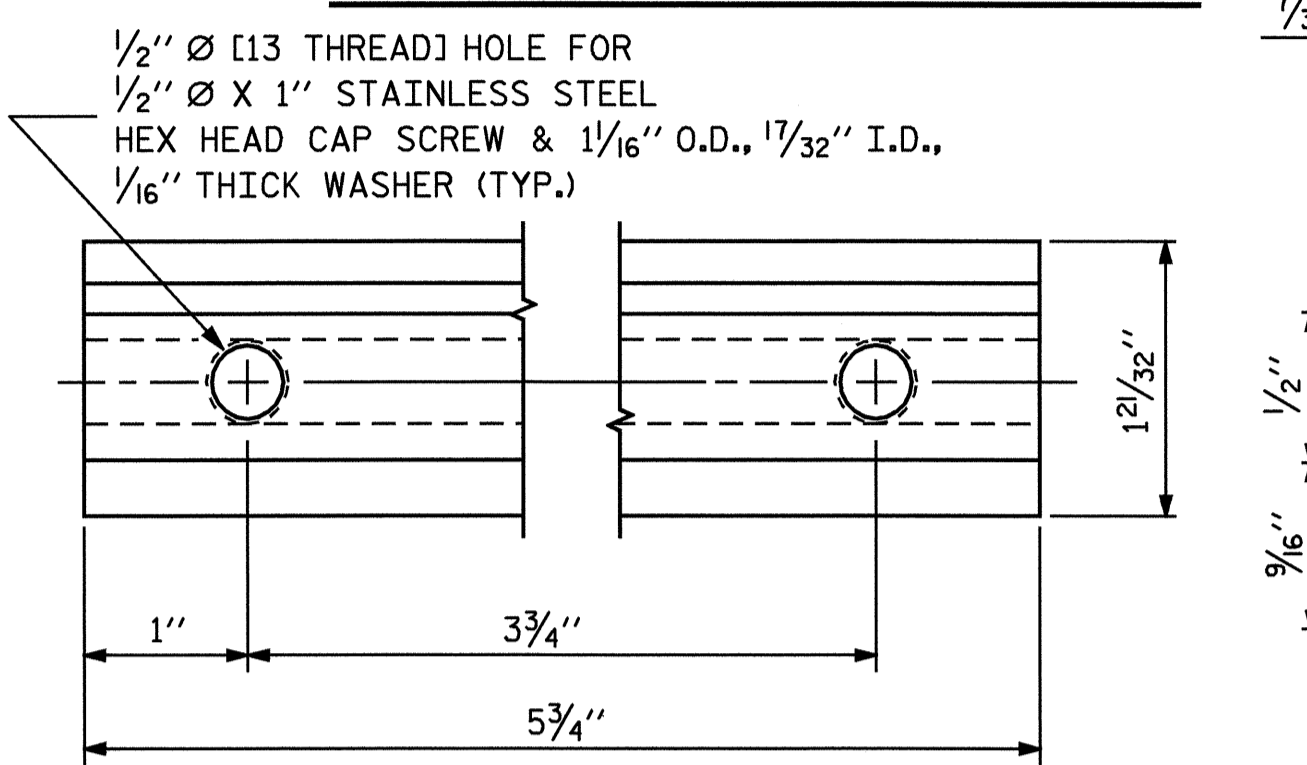


NOTE: FOR ATTACHMENT OF METAL RAIL TO END POST, SEE STANDARD NO. BMR2.

ELEVATION

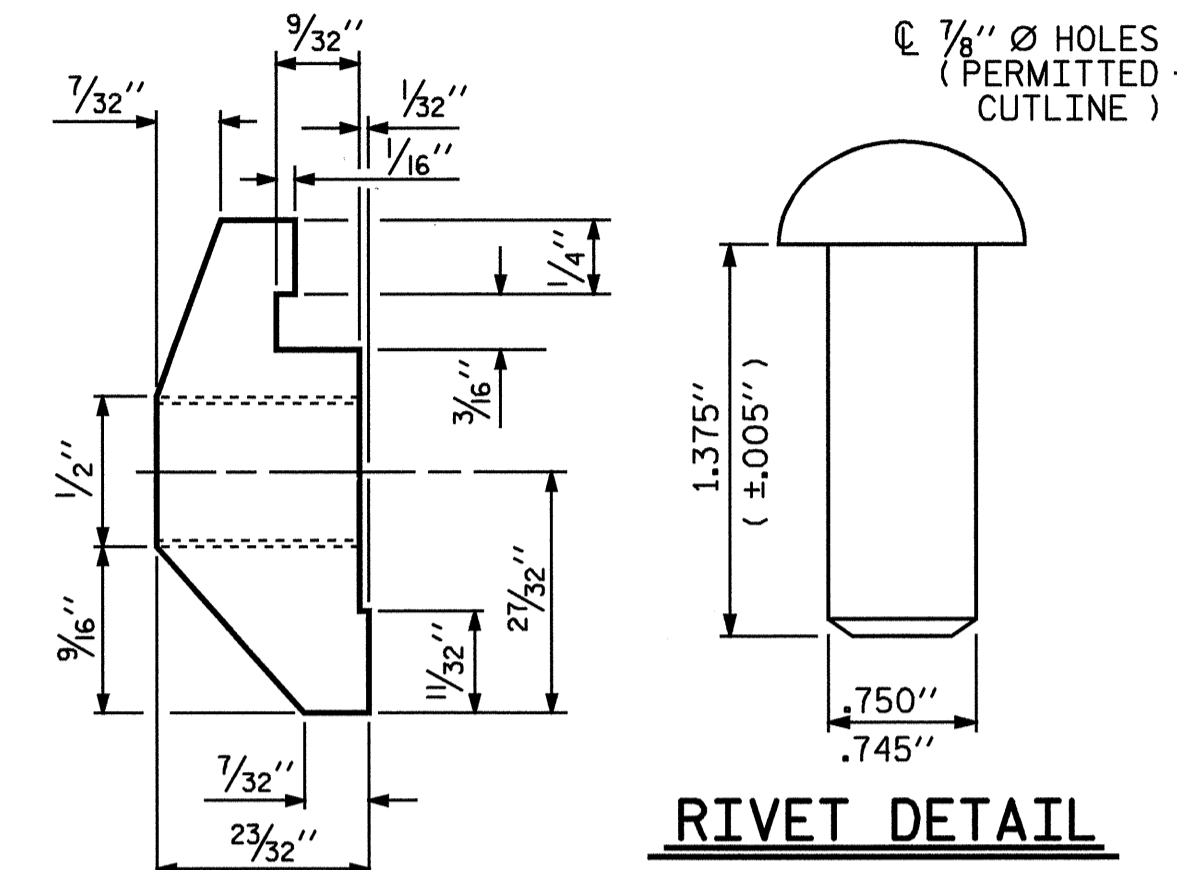


PLAN

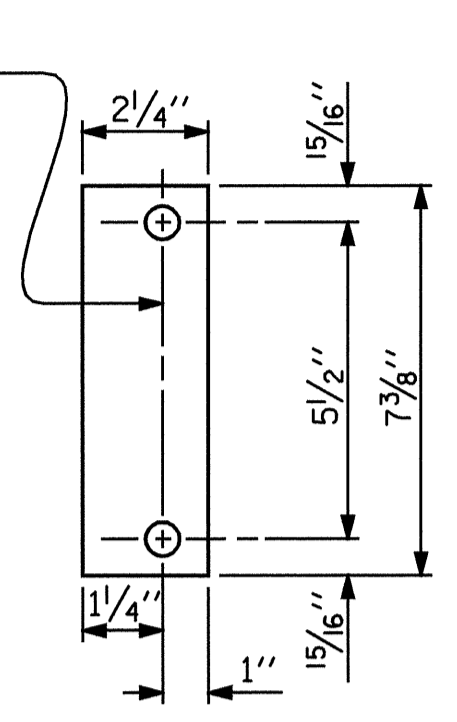


CLAMP BAR DETAIL

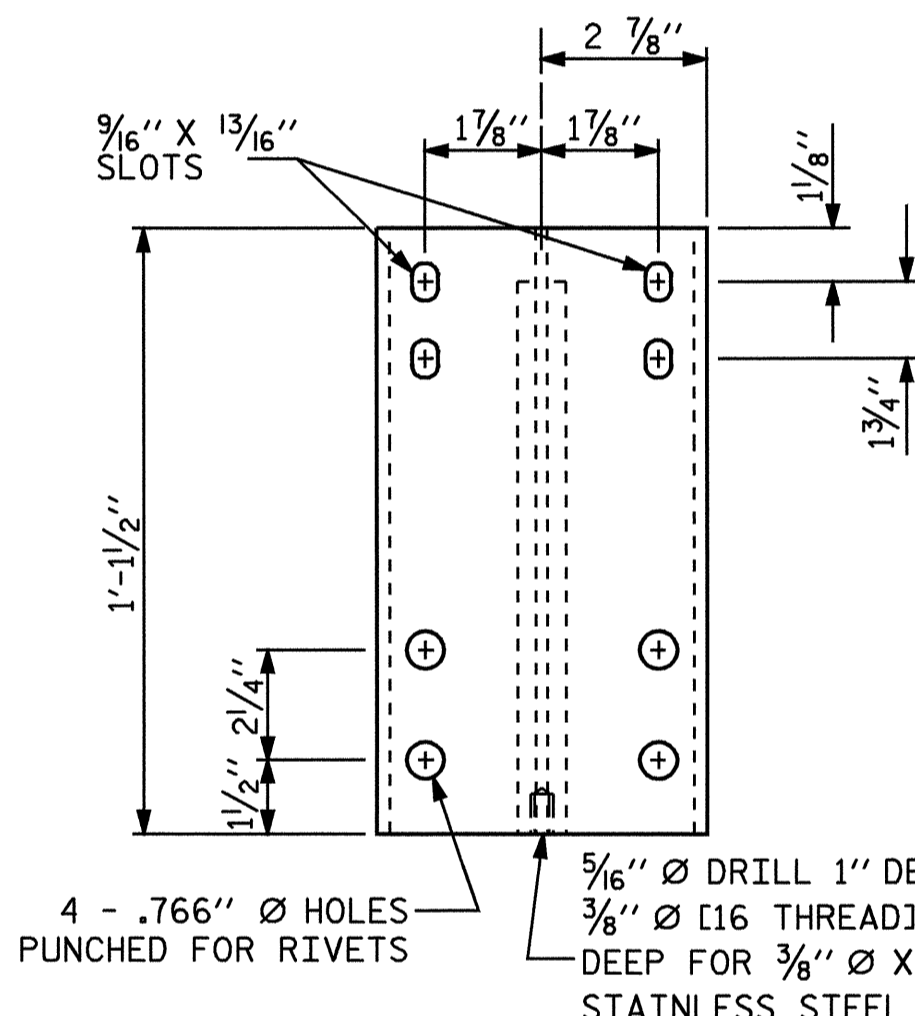
(2 REQUIRED PER POST)



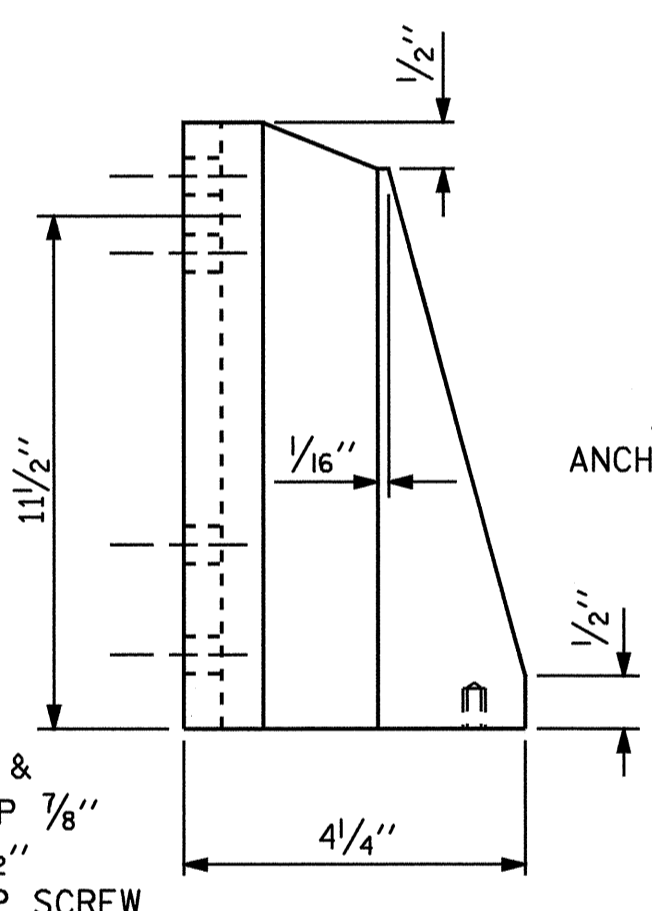
RIVET DETAIL



REAR PLATE

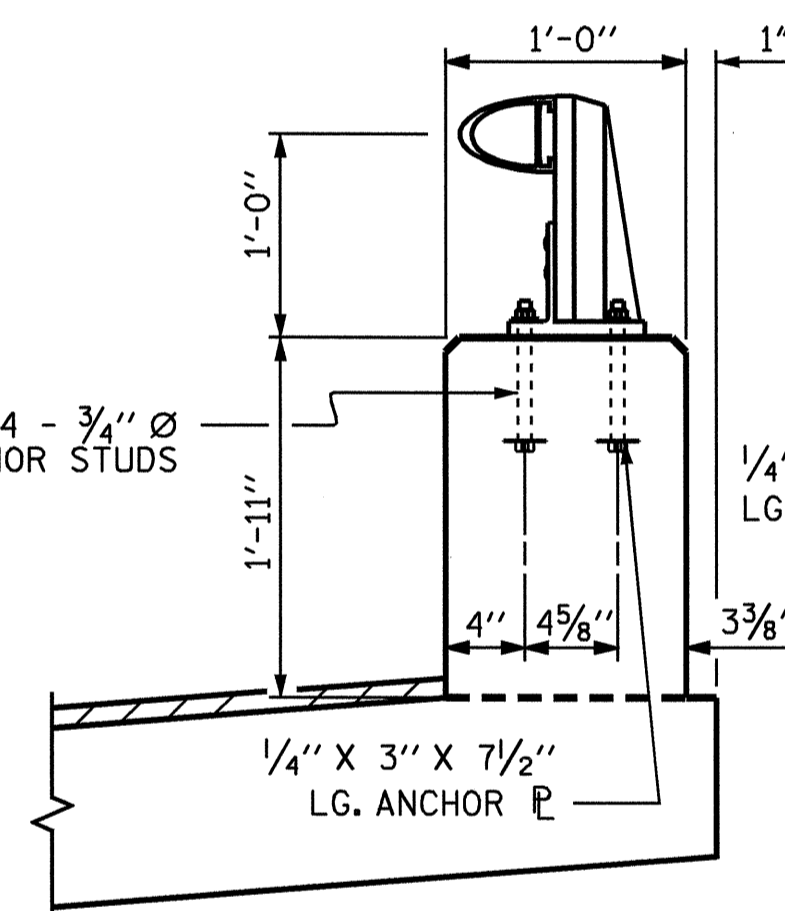


FRONT ELEVATION

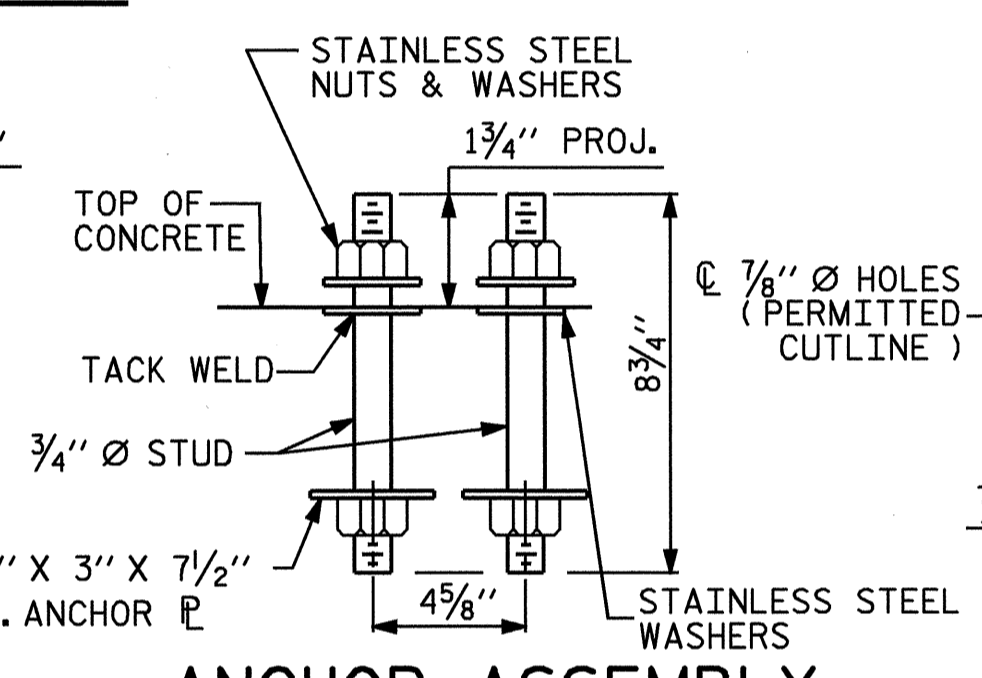


SIDE ELEVATION

DETAILS OF POST



SECTION THRU PARAPET AND RAIL

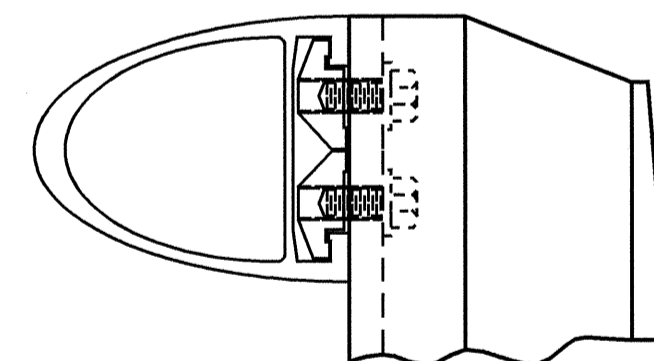


ANCHOR ASSEMBLY

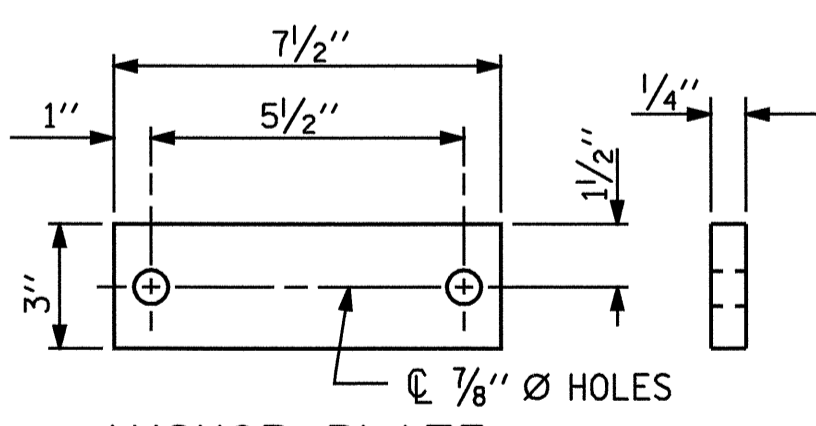
FRONT PLATE

SHIM DETAILS

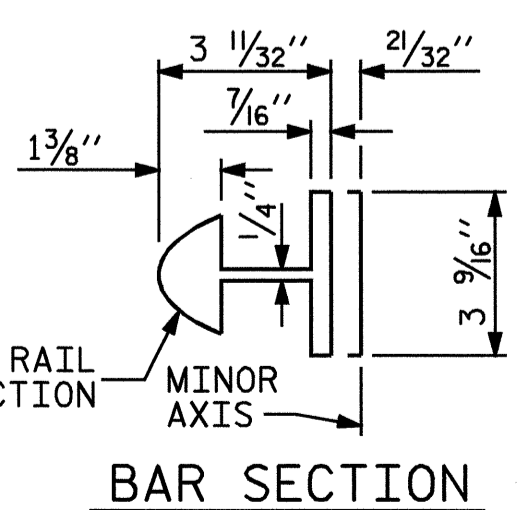
NOTE: SHIMS MAY BE CUT ALONG PERMITTED CUTLINE OR SLOTTED TO EDGE OF PLATE TO FACILITATE PLACEMENT.



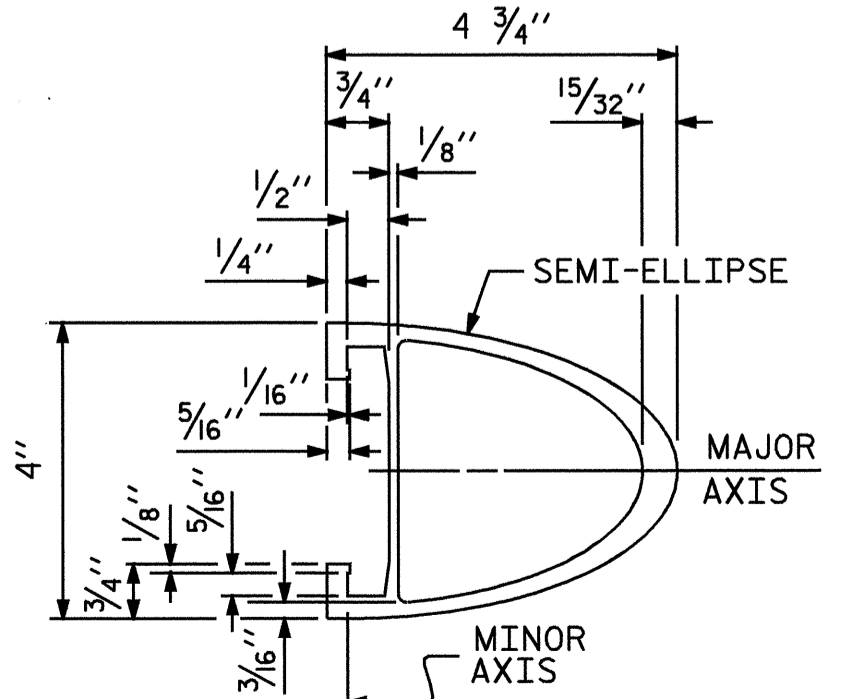
CLAMP & RAIL ASSEMBLY



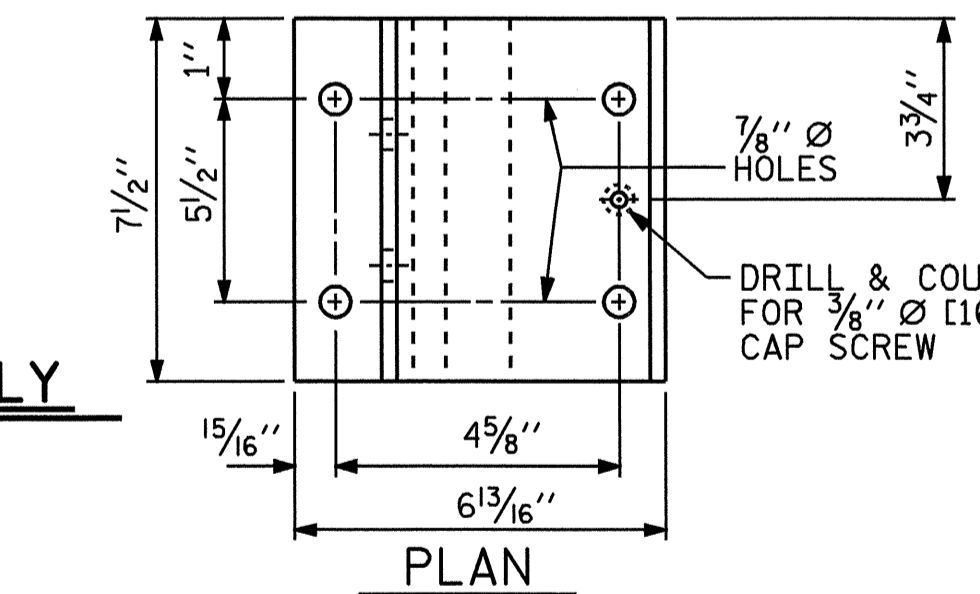
ANCHOR PLATE



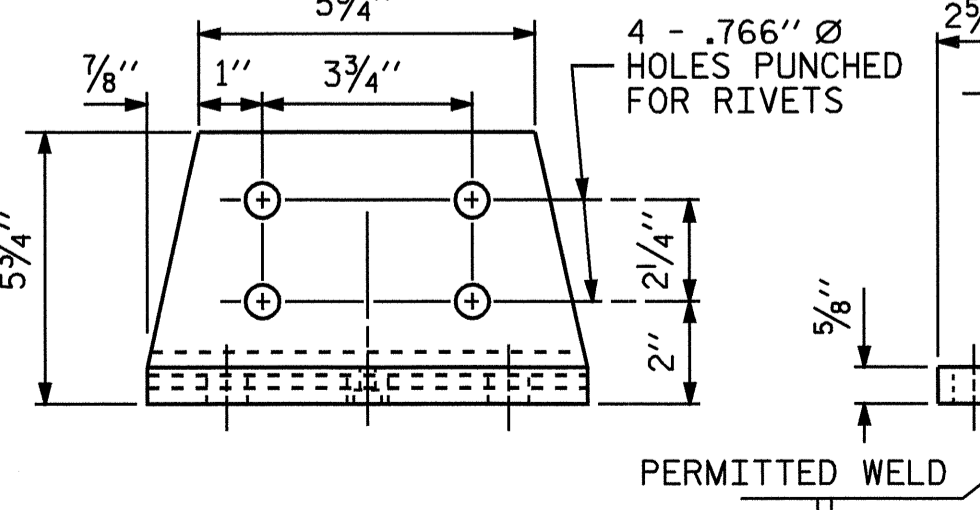
BAR SECTION



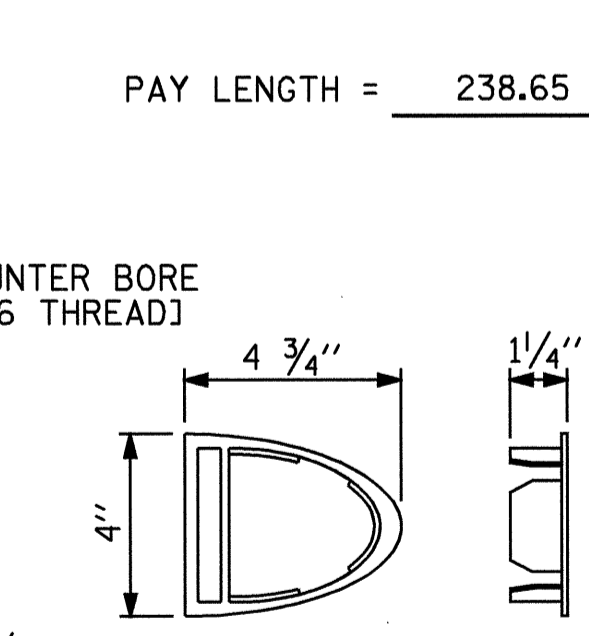
RAIL SECTION



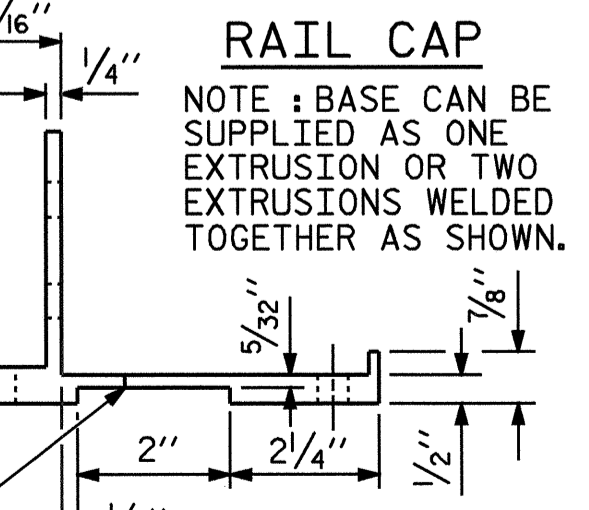
PLAN



FRONT ELEVATION



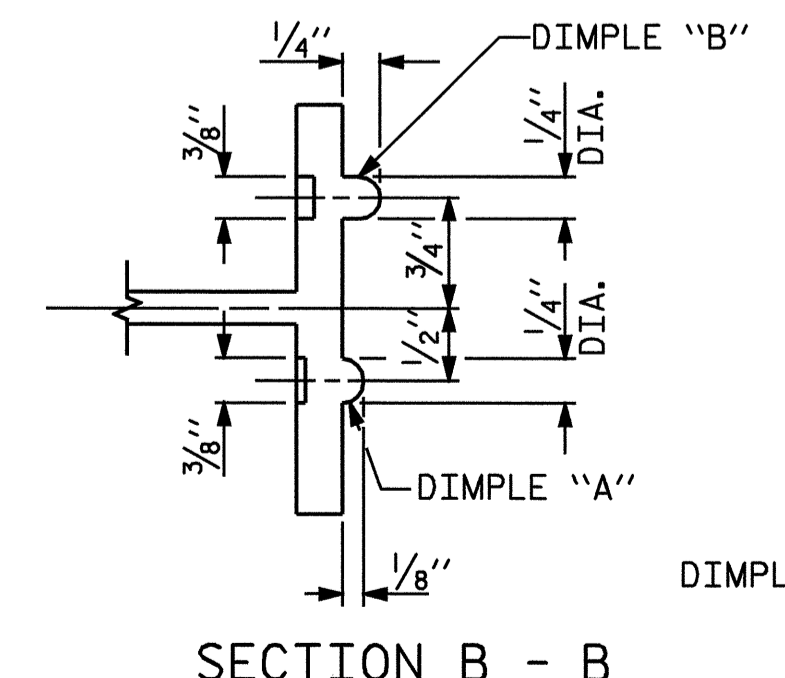
SIDE ELEVATION



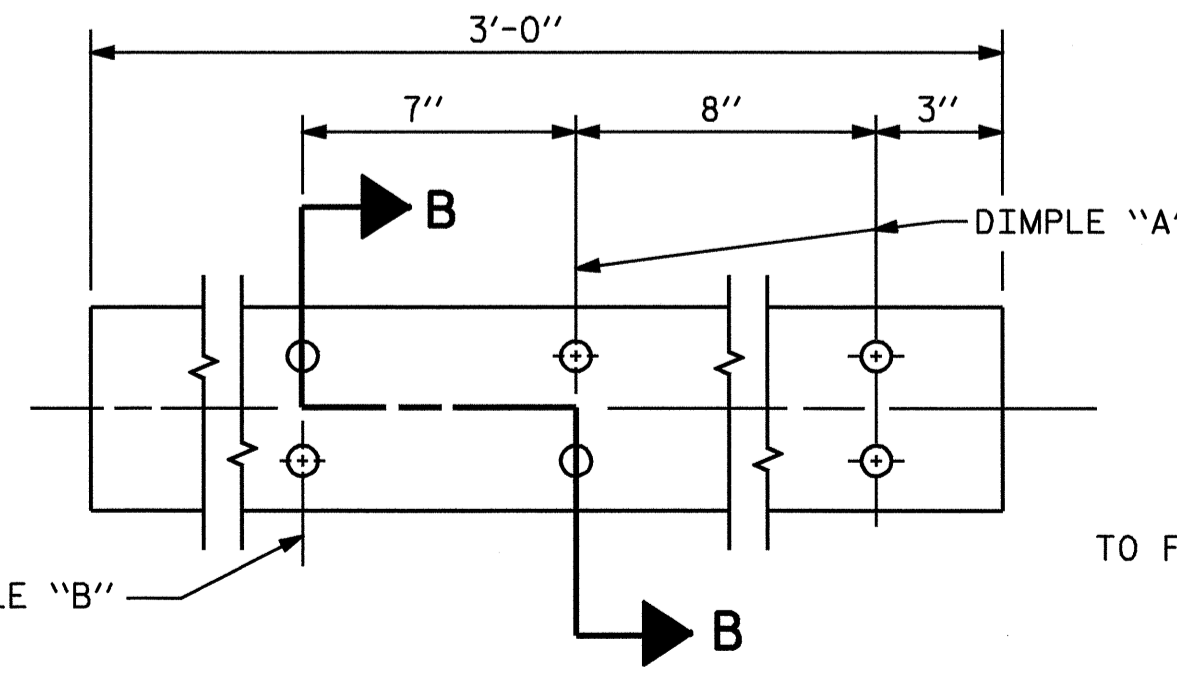
RAIL CAP

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

POST BASE DETAILS



SECTION B - B



EXPANSION BAR DETAILS

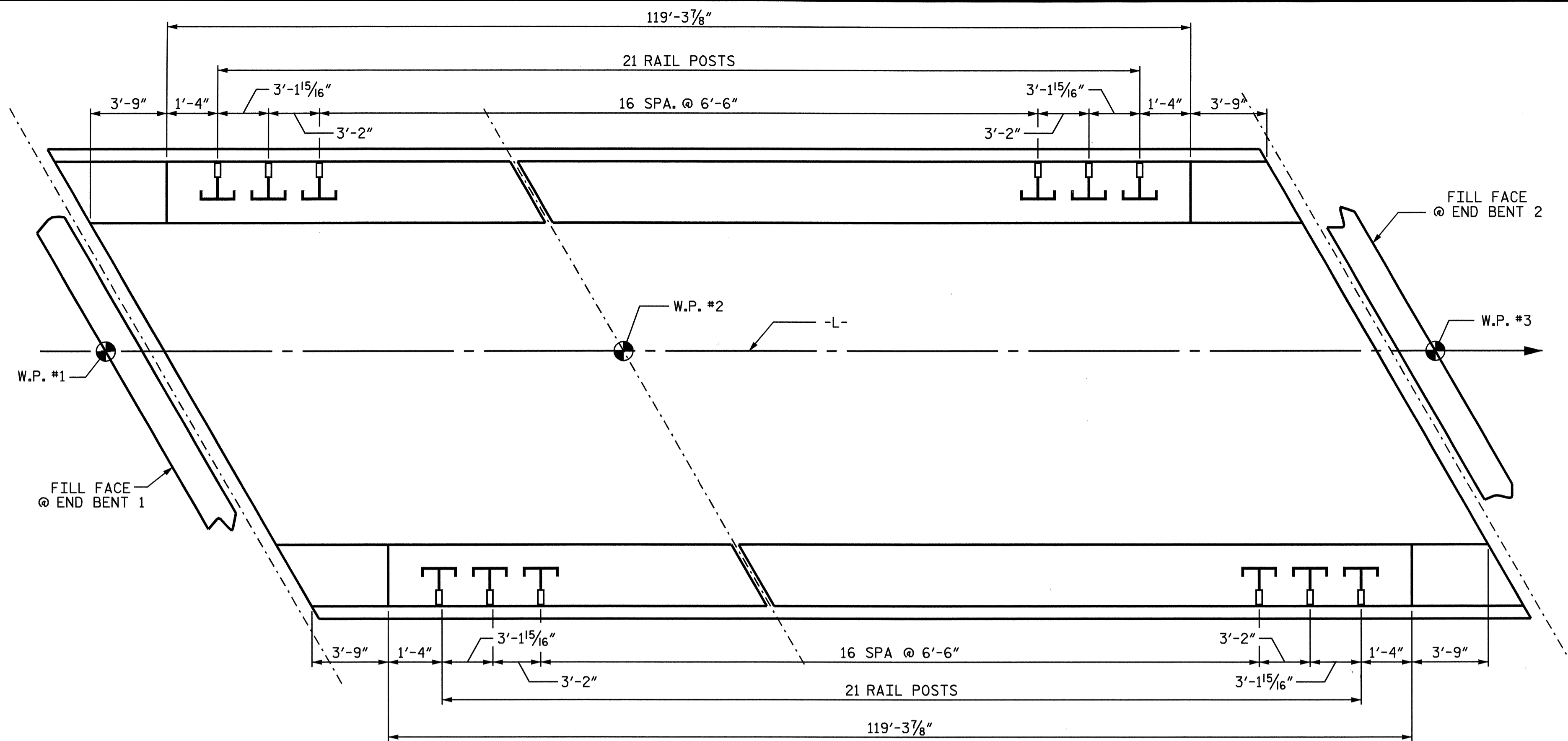
| | |
|----------------------------|-----------------------|
| ASSEMBLED BY: T.L.CLELLAND | DATE: 1/25/06 |
| CHECKED BY: J.B.WILSON | DATE: 2/10/06 |
| DRAWN BY: FCJ 1/88 | REV. 10/17/00 LES/RDR |
| CHECKED BY: CRK 3/89 | REV. 5/7/03R RWW/JTE |
| | REV. 5/1/06R KMM/GM |



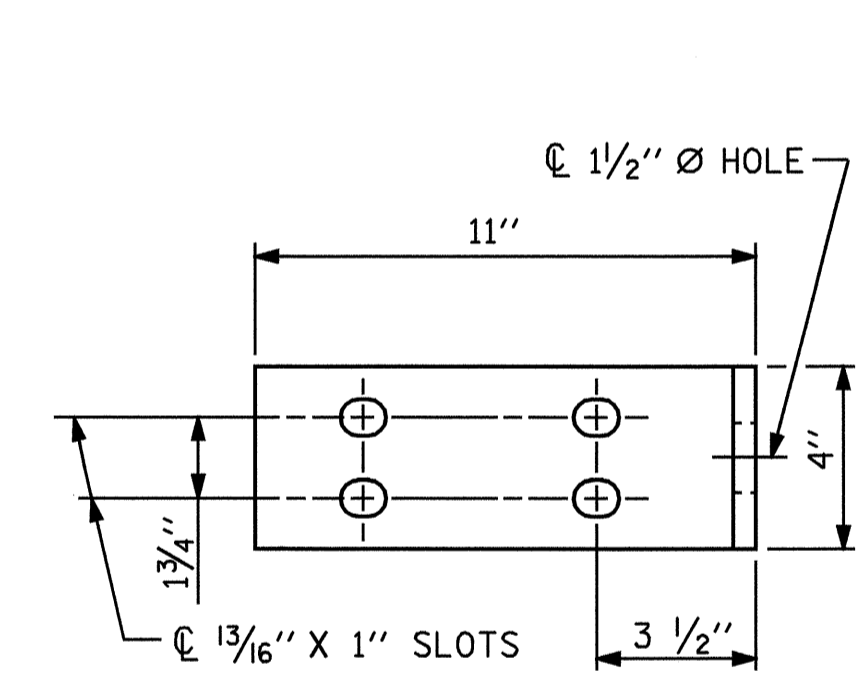
PAY LENGTH = 238.65 LIN. FT.
 PROJECT NO. B-3606
 ASHE COUNTY
 STATION: 11+65.00 -L-

SHEET 2 OF 4

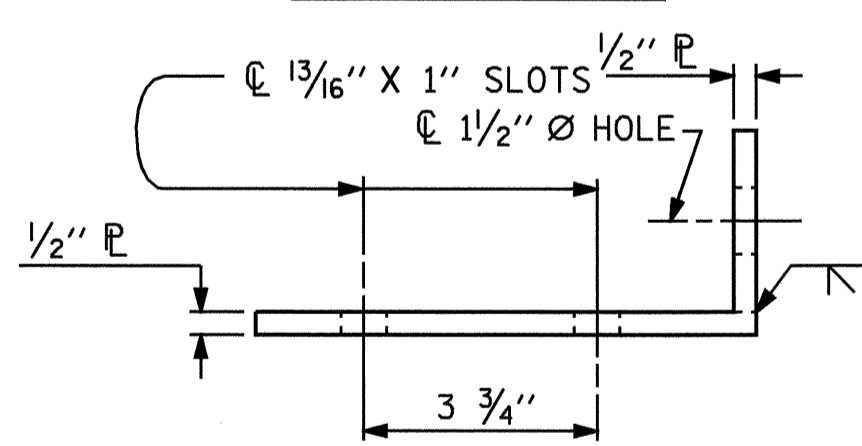
| | | | | | |
|--|-----|-------|-----|------------------------------|-----------------|
| STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION RALEIGH | | | | STANDARD 1 BAR METAL RAIL | |
| REVISIONS | | | | | |
| NO. | BY: | DATE: | NO. | BY: | DATE: |
| 1 | | | 3 | | |
| 2 | | | 4 | | |
| SHEET NO. S-11 | | | | | TOTAL SHEETS 24 |



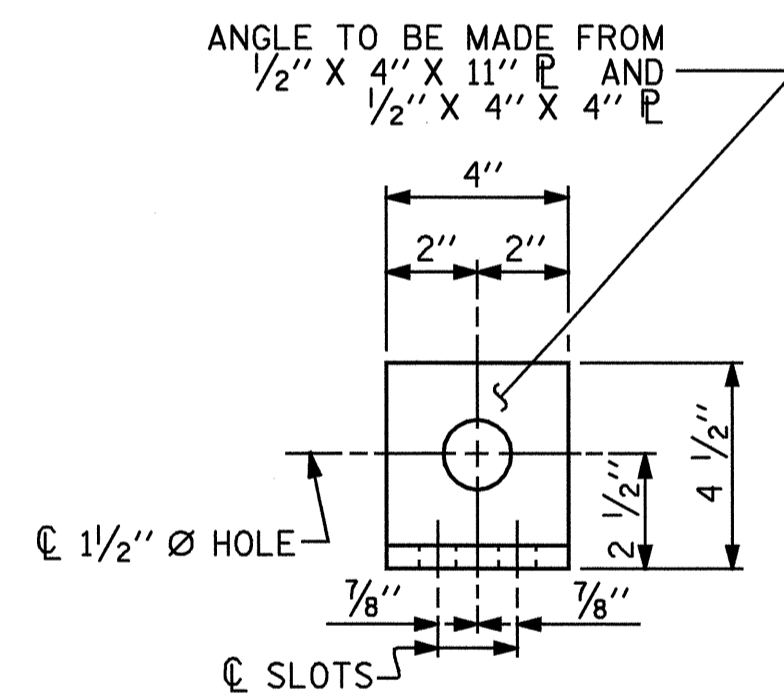
PLAN OF RAIL POST SPACINGS



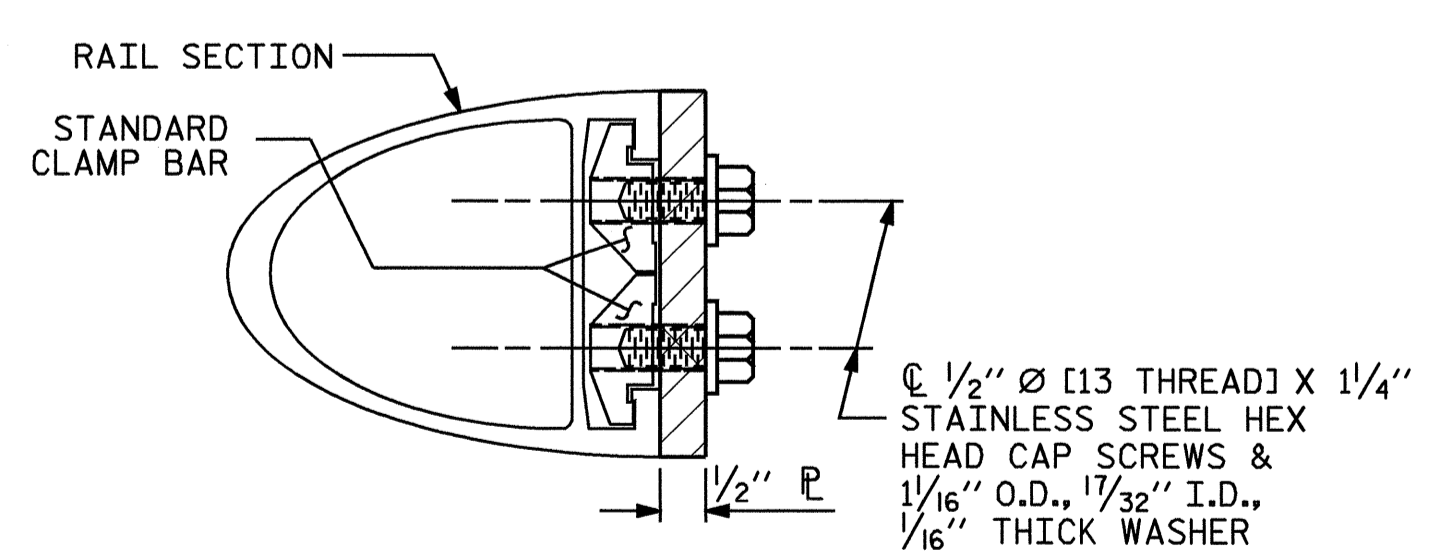
ELEVATION



TOP VIEW

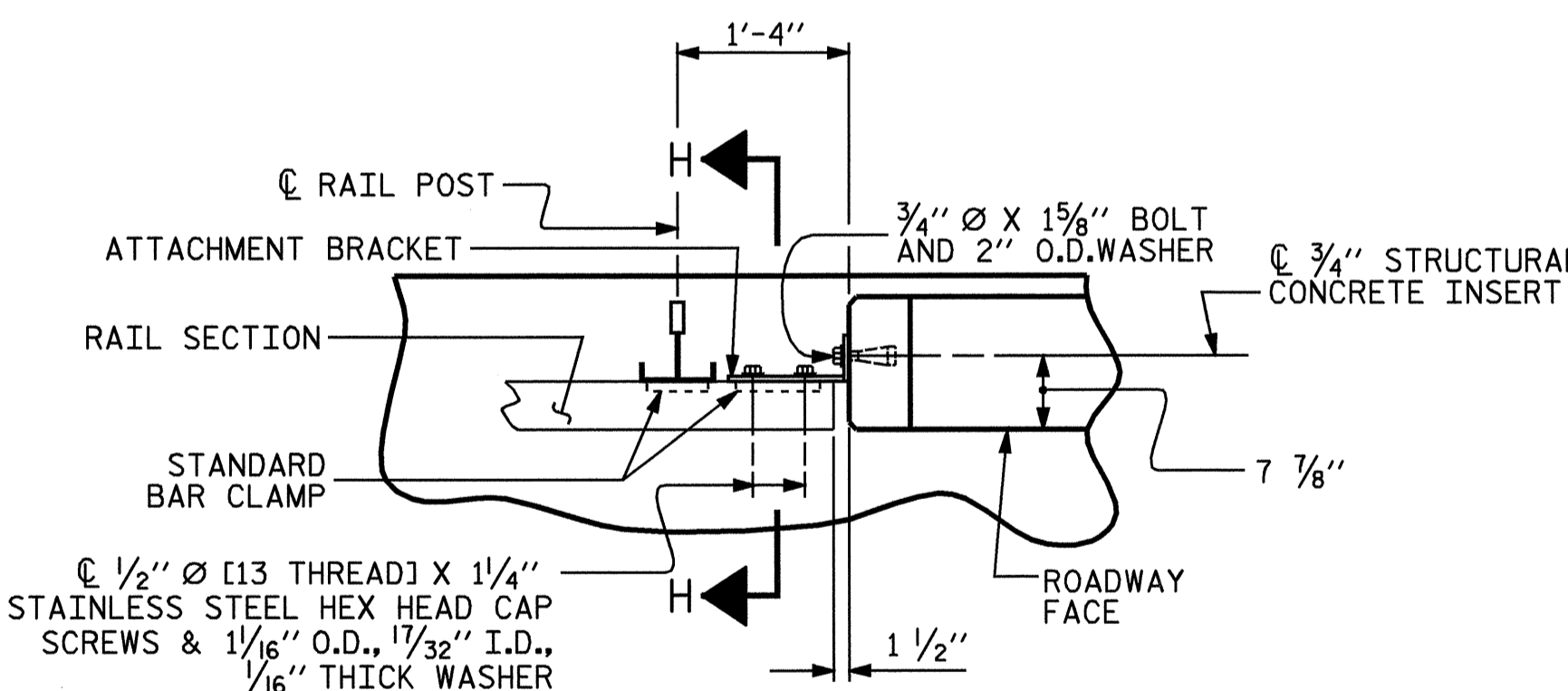


END VIEW (FIX)



SECTION H-H (FIX)

FIXED



PLAN - RAIL AND END POST

DETAILS FOR ATTACHING METAL RAIL TO END POST

NOTES

STRUCTURAL CONCRETE INSERT

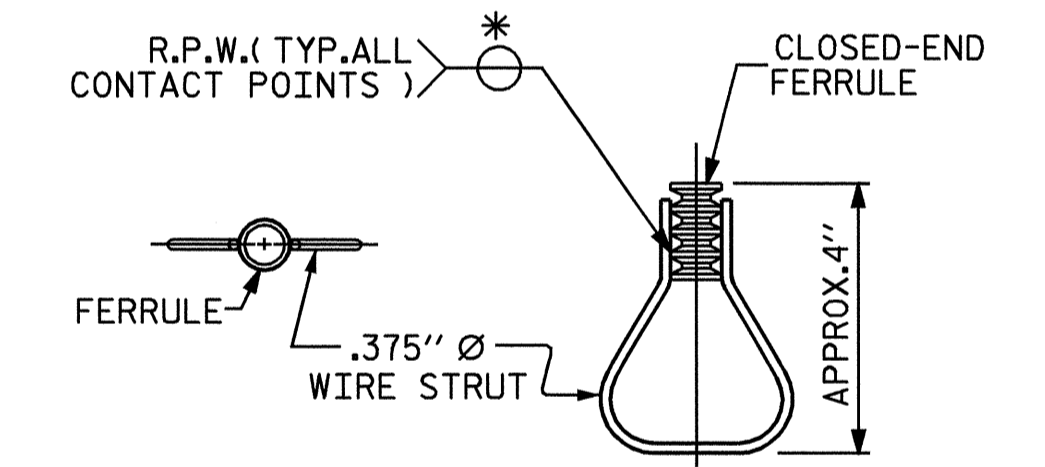
- THE STRUCTURAL CONCRETE INSERT ASSEMBLY SHALL CONSIST OF THE FOLLOWING COMPONENTS:
- A. FERRULES SHALL BE MADE FROM STEEL MEETING THE REQUIREMENTS OF AASHTO M169, GRADE 12L14 AND SHALL HAVE A MINIMUM LENGTH OF THREADS OF 1 1/2".
 - B. 1 - 3/4" Ø X 1 5/8" BOLT WITH WASHER. BOLT SHALL CONFORM TO THE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

NOTES

METAL RAIL TO END POST CONNECTION

- THE METAL RAIL TO END POST CONNECTION SHALL CONSIST OF THE FOLLOWING COMPONENTS:
- A. 1/2" PLATES SHALL CONFORM TO AASHTO M270 GRADE 36 AND SHALL BE GALVANIZED AFTER FABRICATION.
 - B. 3/4" STRUCTURAL CONCRETE INSERT SHALL HAVE A WORKING LOAD SHEAR CAPACITY OF 4800 LBS. THE FERRULES SHALL ENGAGE A 3/4" Ø X 1 5/8" BOLT WITH 2" O.D. WASHER IN PLACE. THE 3/4" Ø X 1 5/8" BOLT SHALL HAVE N. C. THREADS.
 - C. CAP SCREWS FOR RAIL ATTACHMENT TO ANGLE SHALL CONFORM TO THE REQUIREMENTS OF ASTM F593 ALLOY 305 STAINLESS STEEL. CAP SCREWS TO BE CENTERED IN SLOTS AT 60°.
 - D. STANDARD CLAMP BARS (SEE METAL RAIL SHEET).
 - E. 1/2" Ø PIPE SLEEVES (IF REQUIRED) TO BE GALVANIZED.
- THE COST OF THE STANDARD CLAMP BARS AND CAP SCREWS USED IN THE METAL RAIL TO END POST CONNECTION SHALL BE INCLUDED IN THE UNIT CONTRACT PRICE BID FOR LINEAR FEET OF 1 OR 2 BAR METAL RAILS.
- THE 3/4" STRUCTURAL CONCRETE INSERT WITH BOLT SHALL BE ASSEMBLED IN THE SHOP.
- THE COST OF THE 3/4" STRUCTURAL CONCRETE INSERT ASSEMBLY, AND THE 1/2" PLATES COMPLETE IN PLACE SHALL BE INCLUDED IN THE VARIOUS PAY ITEMS.

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



PLAN ELEVATION

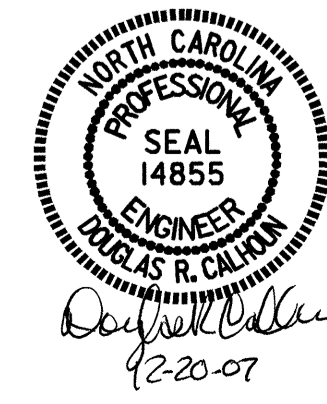
STRUCTURAL CONCRETE INSERT

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

PROJECT NO. B-3606
 ASHE COUNTY
 STATION: 11+65.00 -L-

SHEET 3 OF 4

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



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

| | |
|-----------------------------|-----------------------|
| ASSEMBLED BY : T.L.CLELLAND | DATE : 1/25/06 |
| CHECKED BY : J.B.WILSON | DATE : 2/10/06 |
| 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 M11.

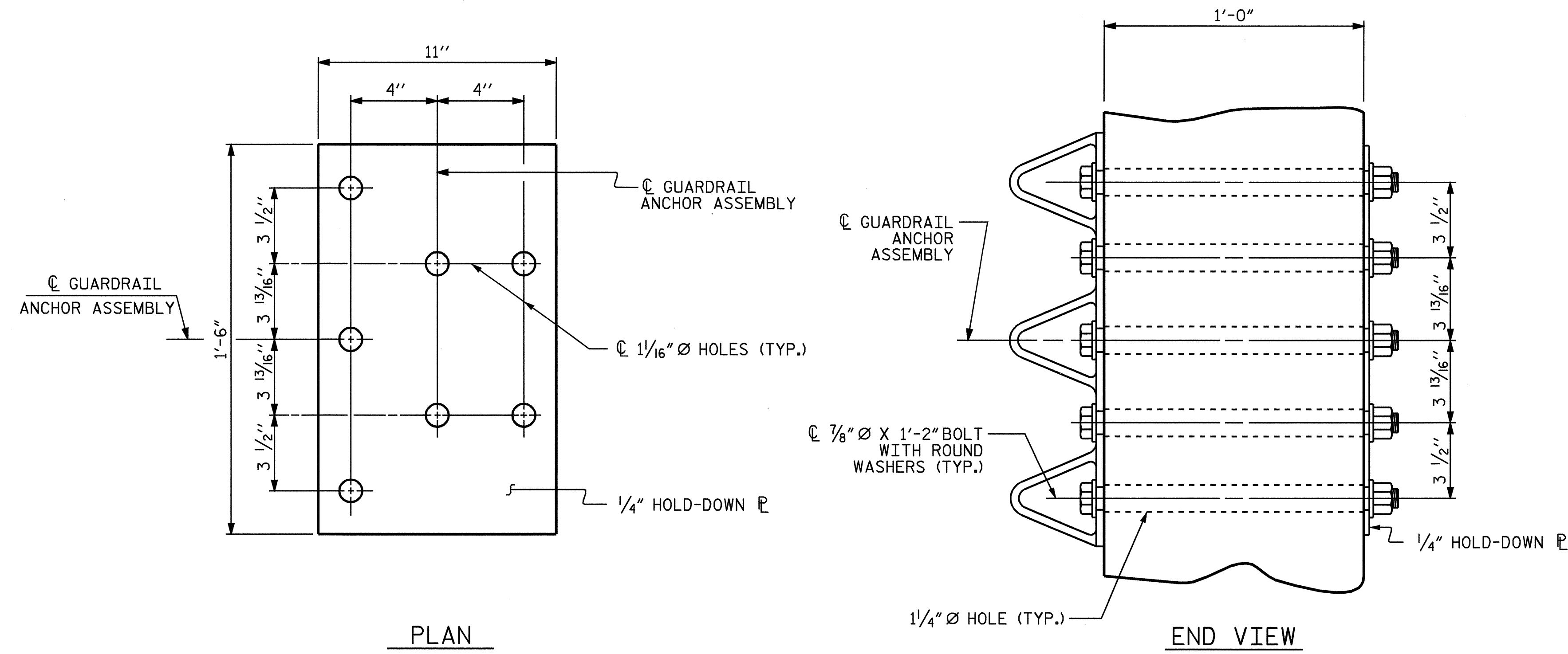
BOLTS SHALL CONFORM TO THE REQUIREMENTS OF ASTM A307 AND NUTS SHALL CONFORM TO THE REQUIREMENTS OF AASHTO M291. BOLTS, NUTS AND WASHERS SHALL BE GALVANIZED. AT THE CONTRACTOR'S OPTION, STAINLESS STEEL BOLTS, NUTS AND WASHERS MAY BE USED AS AN ALTERNATE FOR THE 7/8" Ø GALVANIZED BOLTS, NUTS AND WASHERS.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

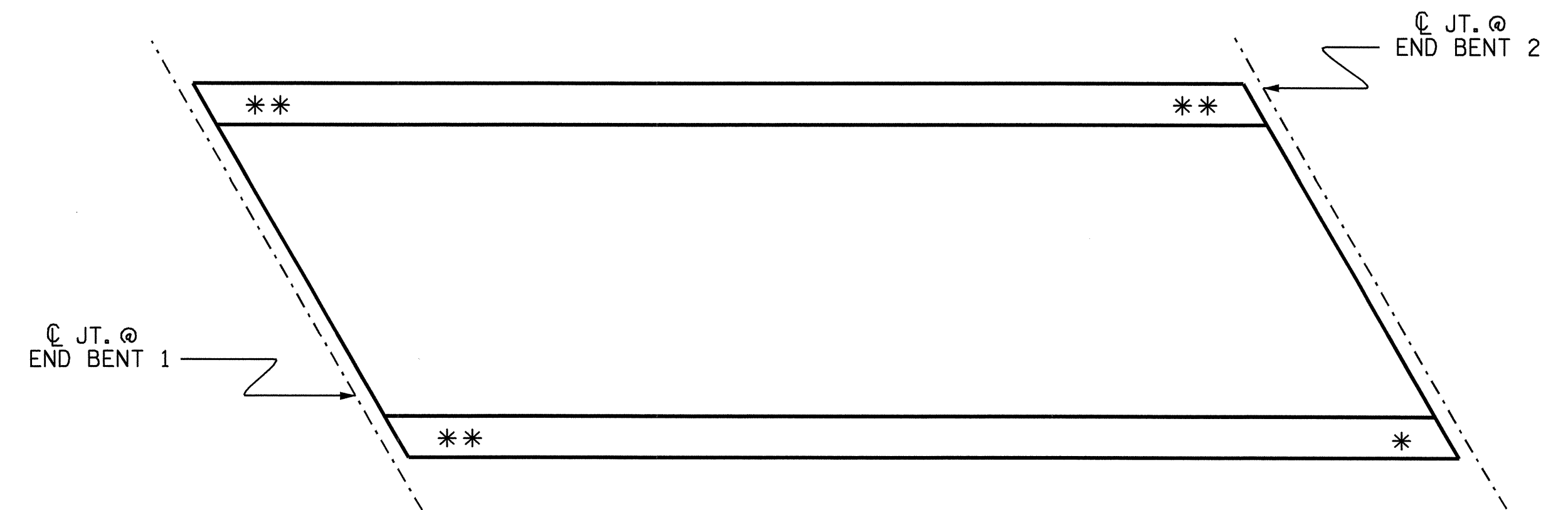
THE COST OF THE GUARDRAIL ANCHOR ASSEMBLIES WITH BOLTS, NUTS AND WASHERS COMPLETE IN PLACE, SHALL BE INCLUDED IN THE VARIOUS PAY ITEMS.

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.

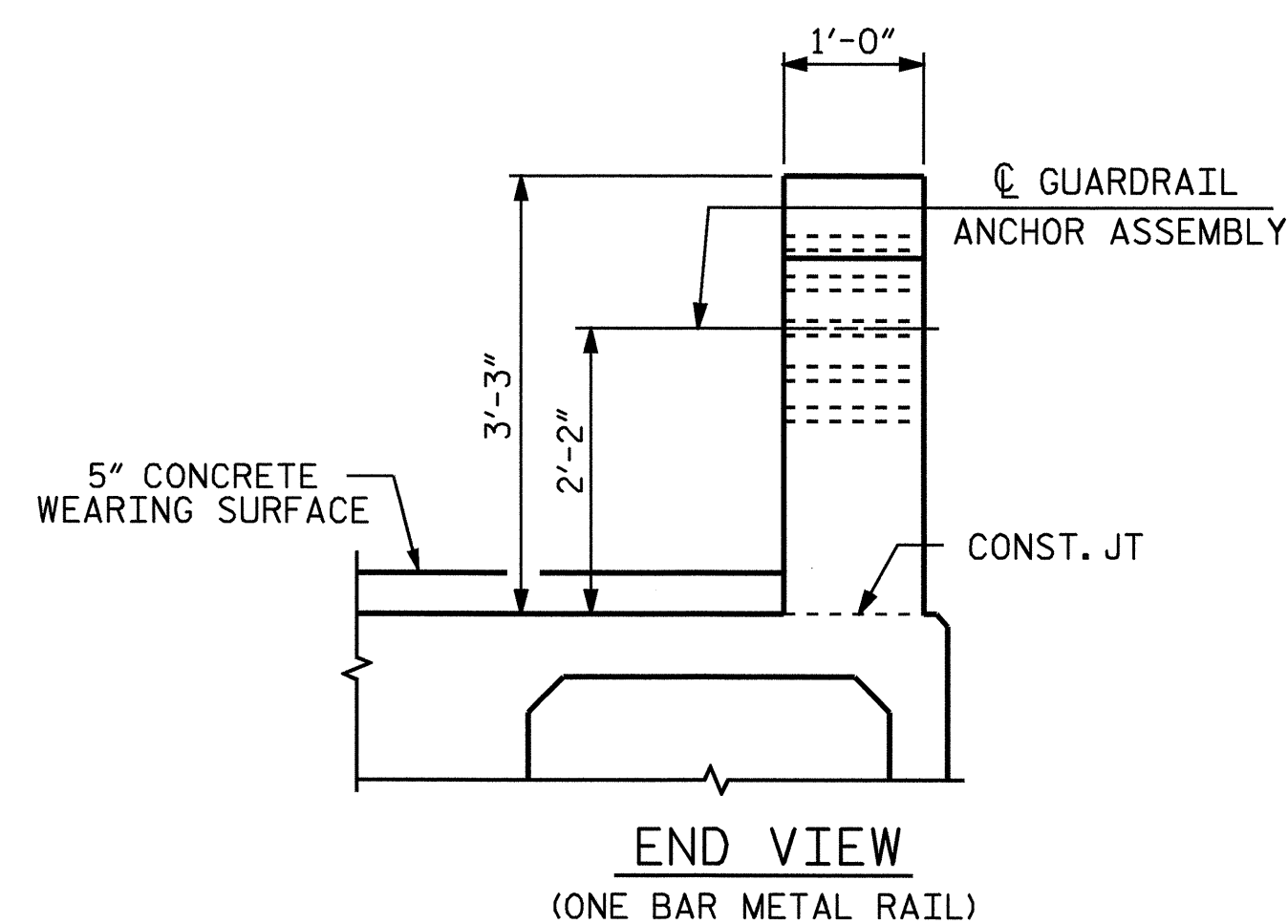


GUARDRAIL ANCHOR ASSEMBLY DETAILS

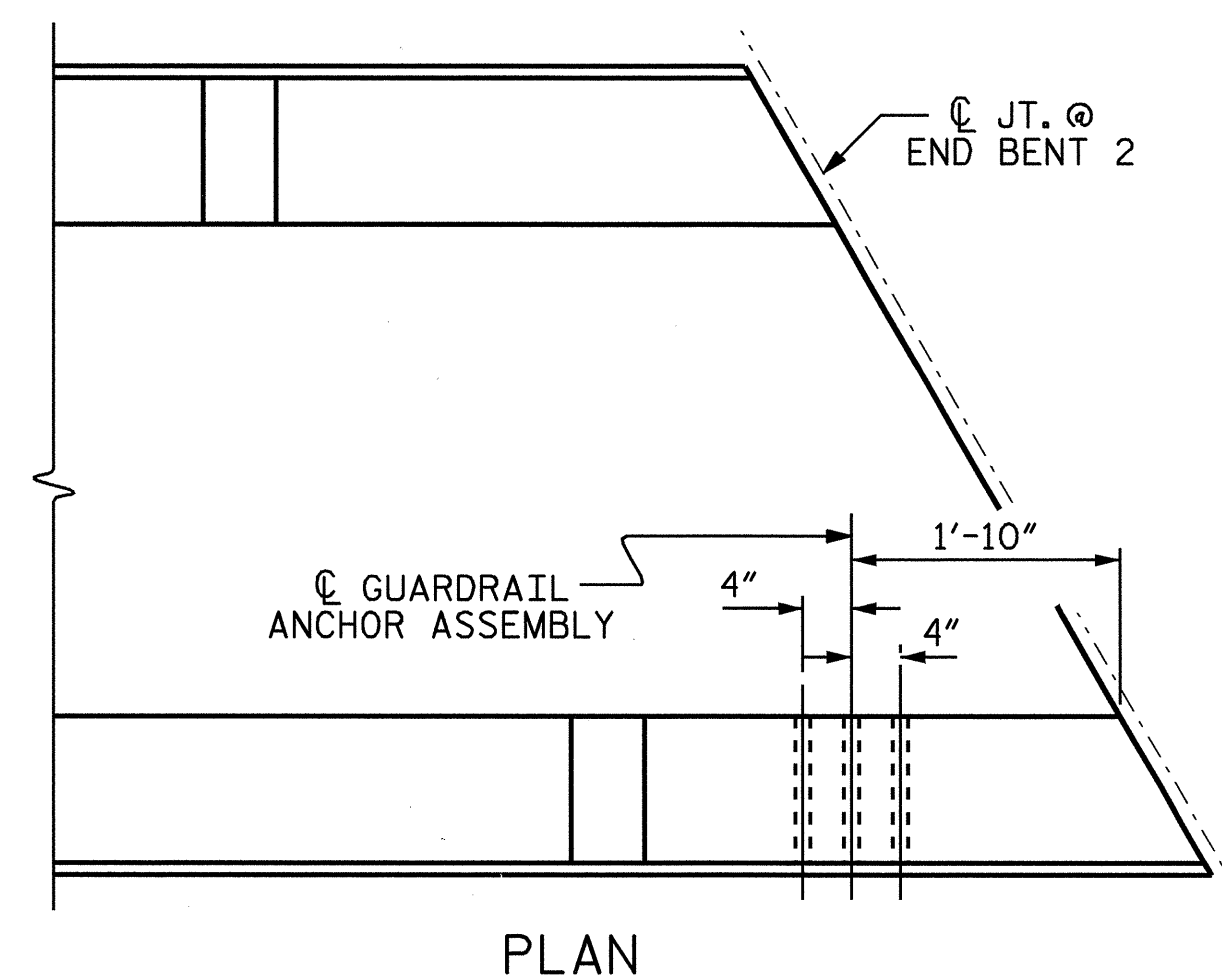


SKETCH SHOWING POINTS OF ATTACHMENT

- * LOCATION OF GUARDRAIL ATTACHMENT
- ** LOCATION OF IMPACT ATTENUATOR ATTACHMENT



LOCATION OF GUARDRAIL ANCHOR AT END POST



| | |
|-----------------------------|-----------------------|
| ASSEMBLED BY : T.L.CLELLAND | DATE : 1/25/05 |
| CHECKED BY : J.B.WILSON | DATE : 2/10/06 |
| DRAWN BY : EEM 6/94 | REV. 10/17/00 RWW/LES |
| CHECKED BY : RGW 6/94 | REV. 5/7/03 RWW/JTE |
| | REV. 5/1/06 TLA/GM |



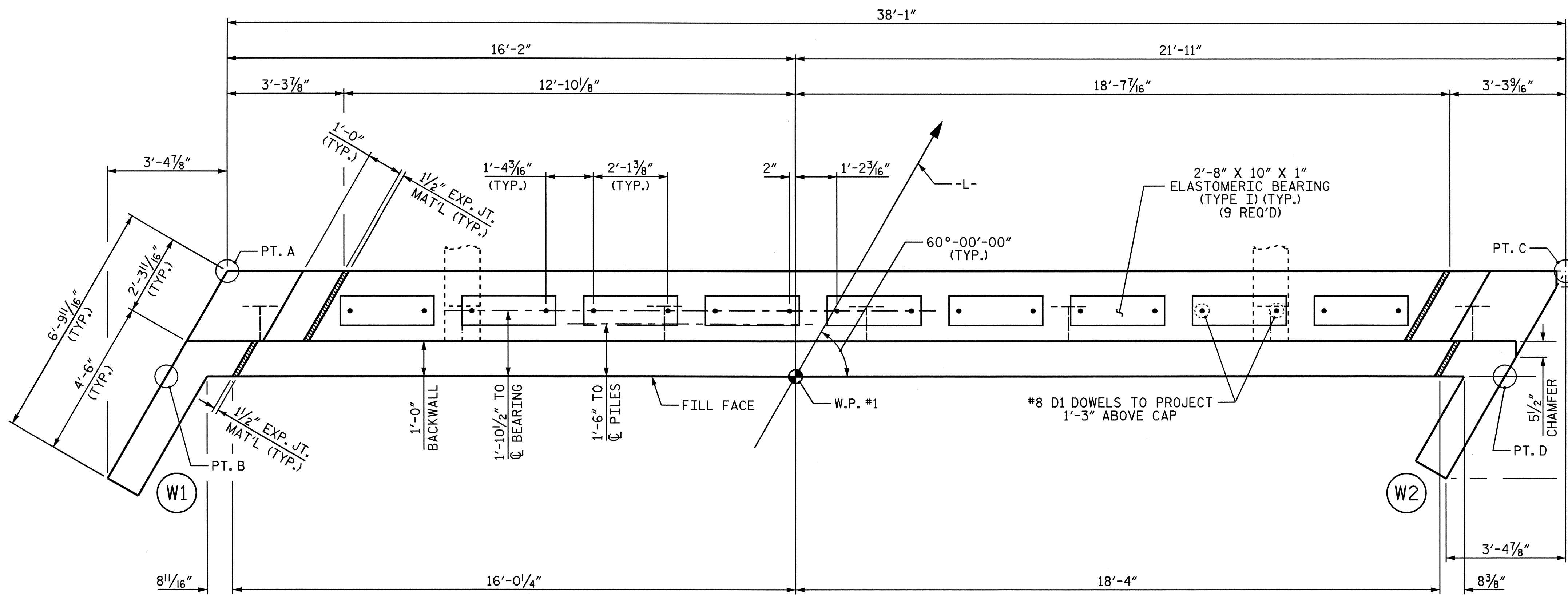
PROJECT NO. B-3606
ASHE COUNTY
 STATION: 11+65.00 -L-

SHEET 4 OF 4

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

JUNE 1994

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



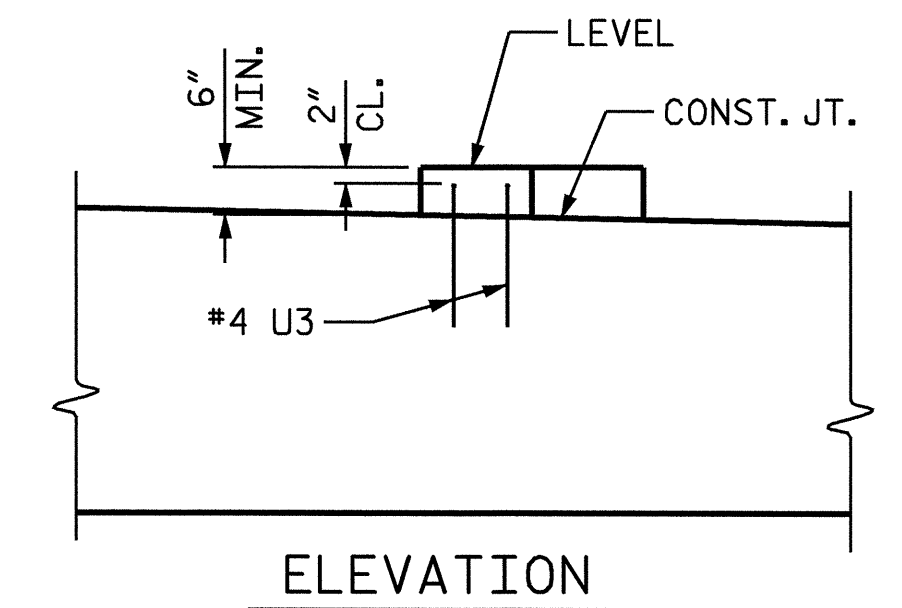
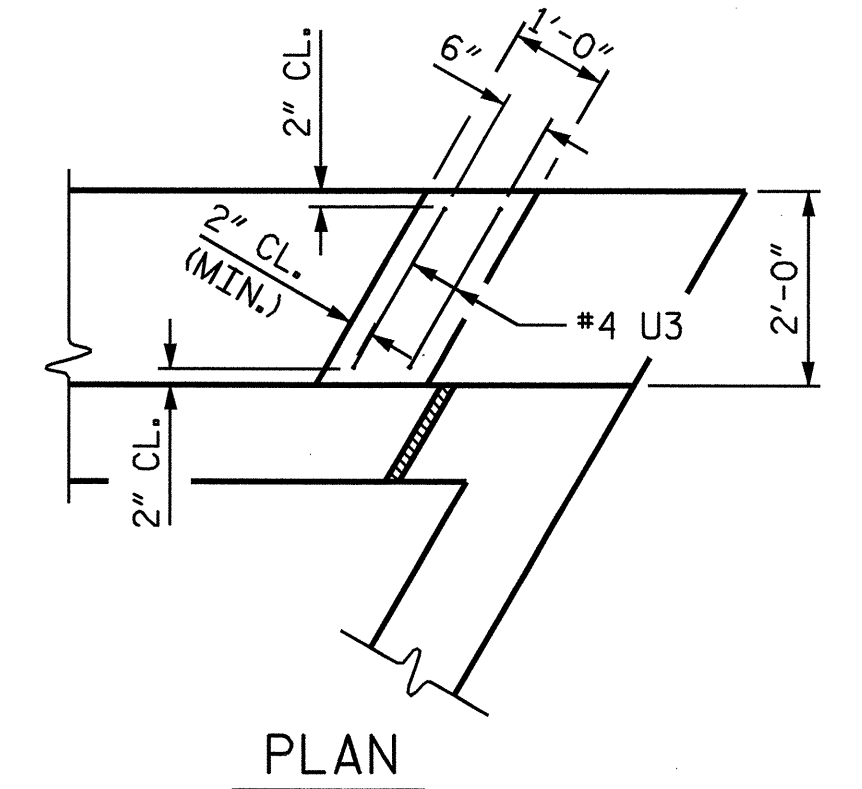
PLAN

NOTES

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

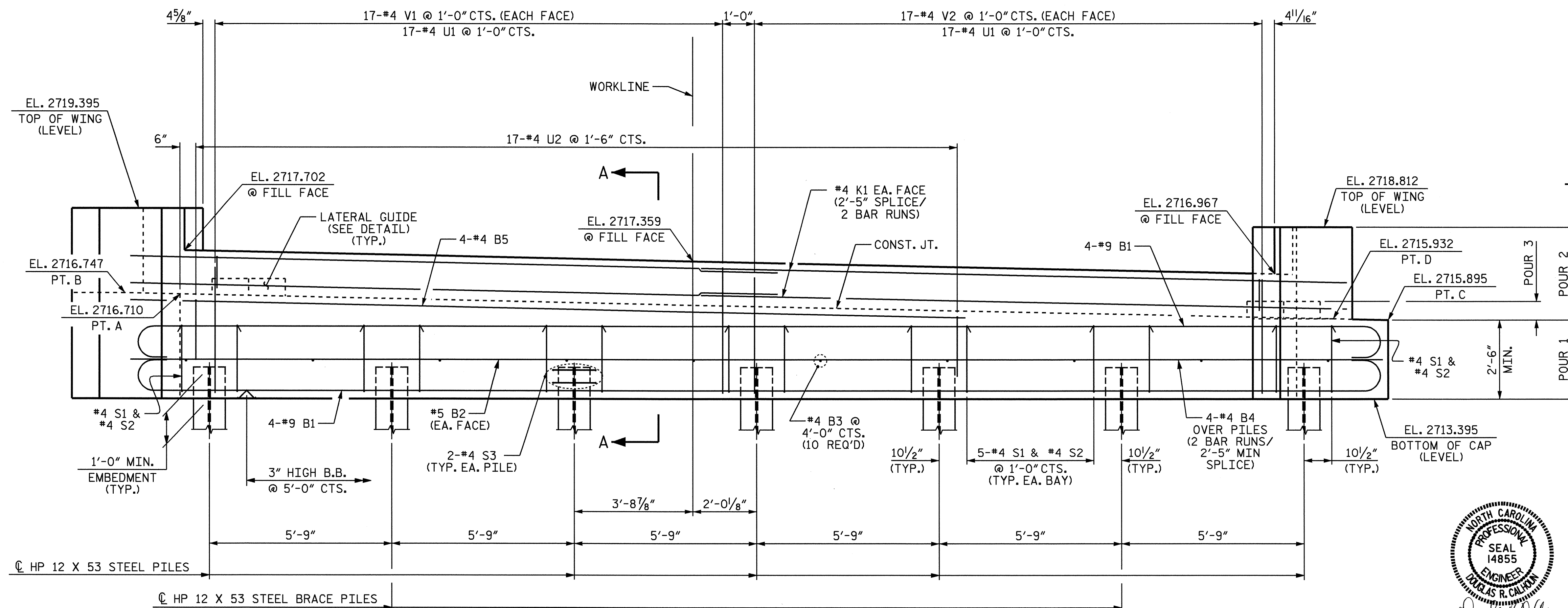
THE LATERAL GUIDE AT EACH END OF THE CAP IS NOT TO BE POURED UNTIL AFTER THE BOX BEAM UNITS ARE IN PLACE.

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



LATERAL GUIDE

RIGHT SIDE SHOWN, LEFT SIDE SIMILAR



ELEVATION

PROJECT NO. B-3606

ASHE COUNTY

STATION: 11+65.00 -L-

SHEET 1 OF 3

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

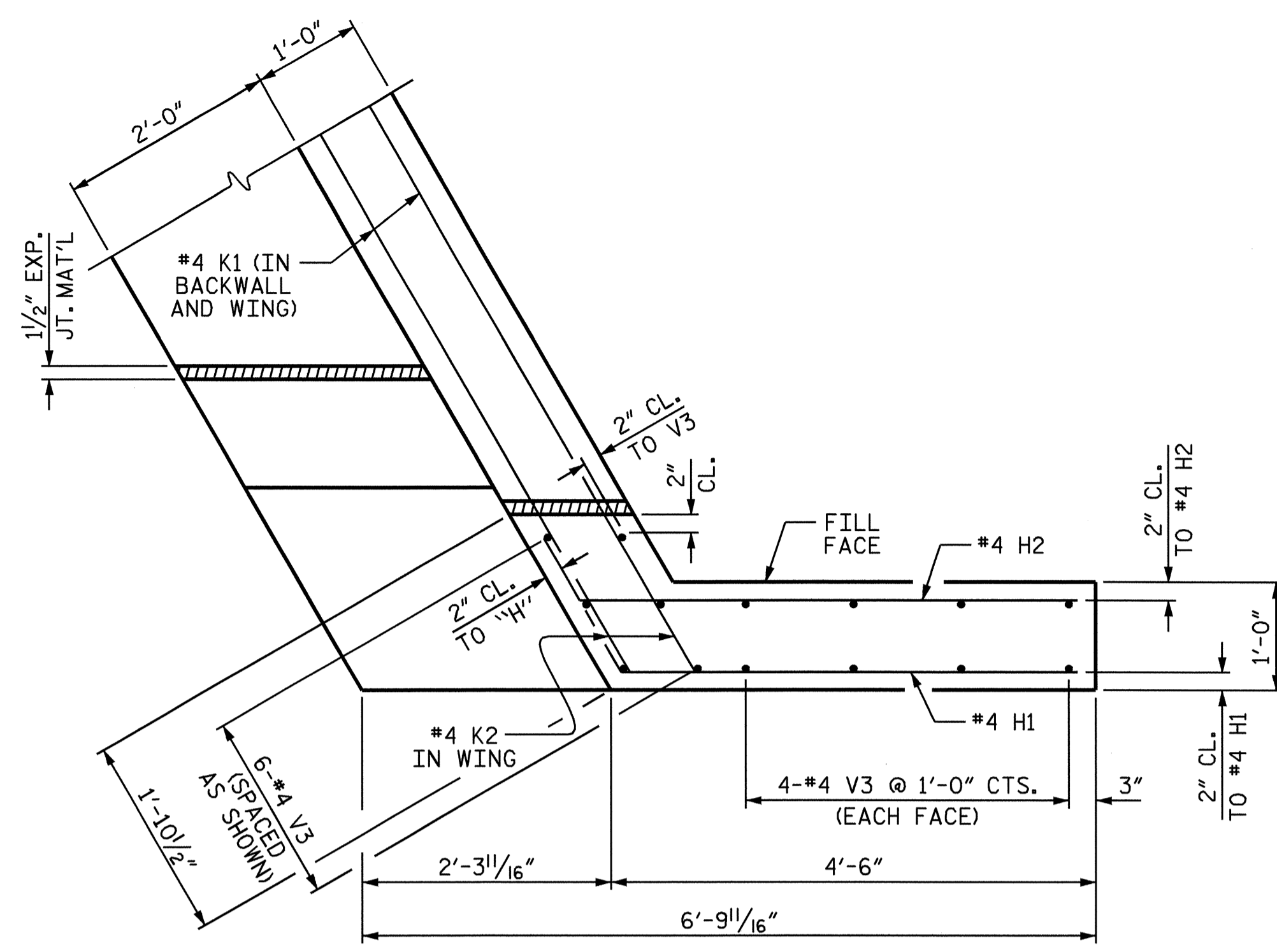
SUBSTRUCTURE
END BENT 1



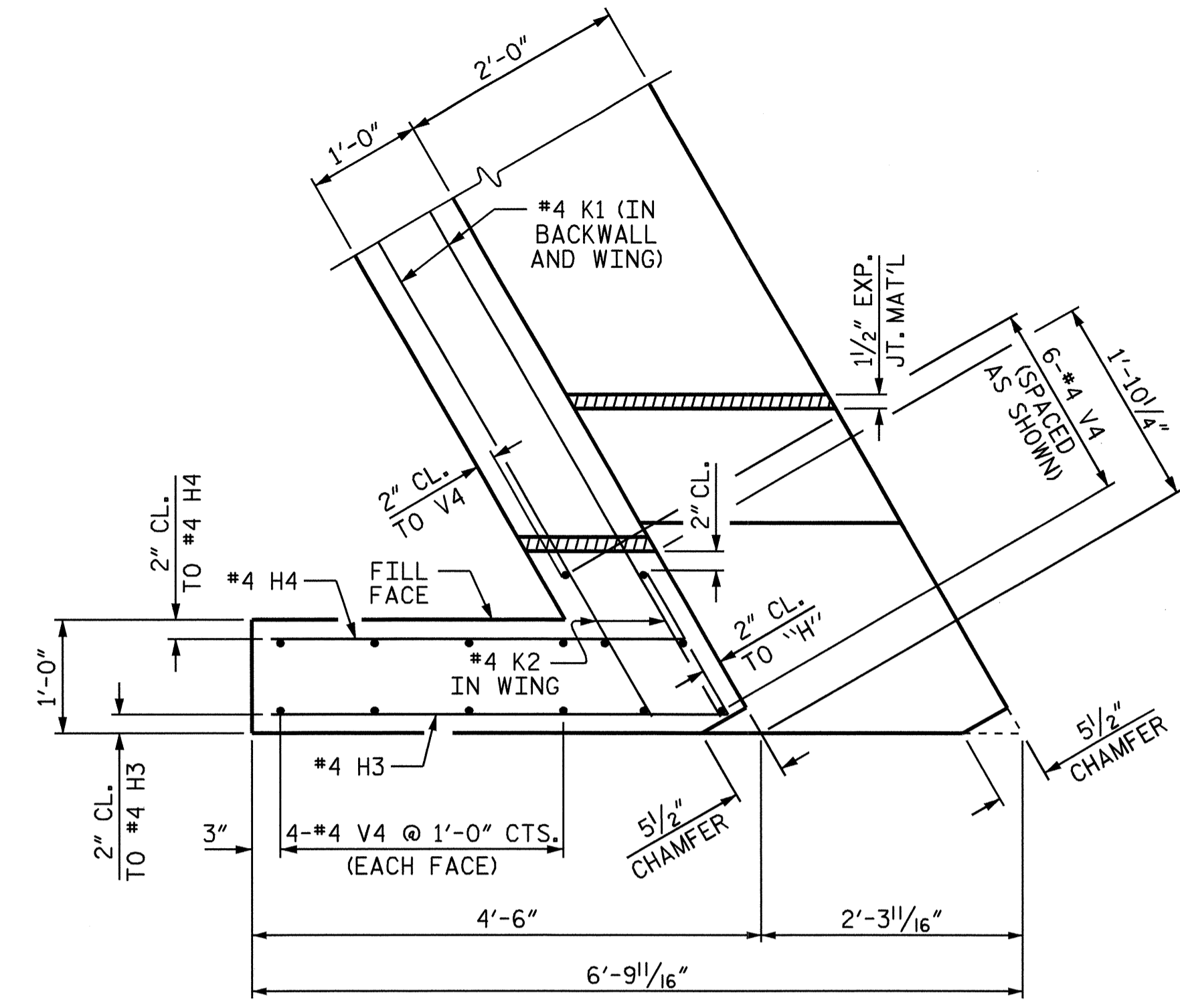
DRAWN BY: T. A. HARRIS DATE: 1/30/06
CHECKED BY: J.B. WILSON DATE: 5/1/06

13-DEC-2007 10:01
R:\Structures\Final Plans\B3606.sd.E*.dgn
gallen

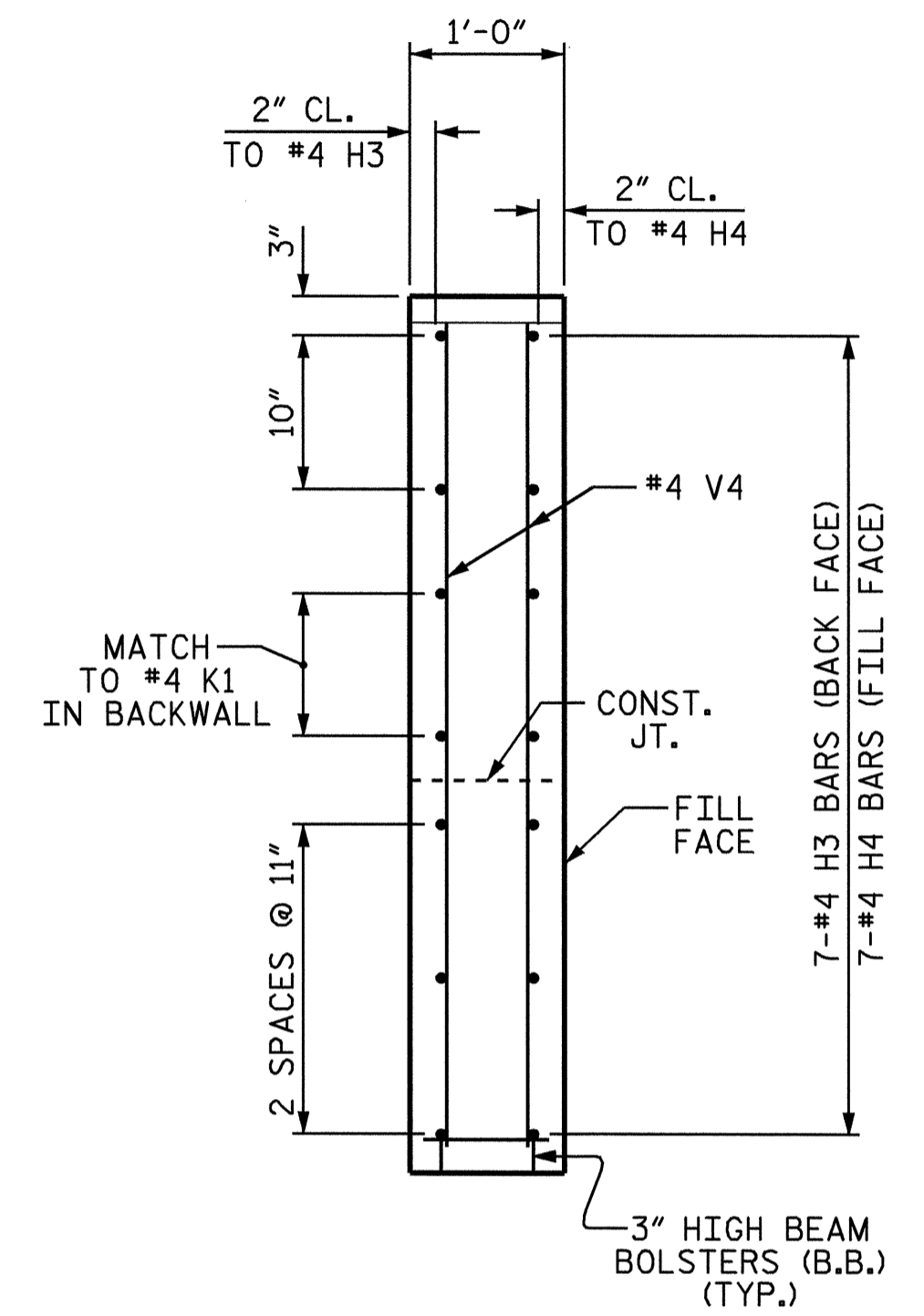
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|-----------|-----|-------|-----|-----|-------|--------------------|
| NO. | BY: | DATE: | NO. | BY: | DATE: | |
| 1 | | | 3 | | | TOTAL SHEETS 24 |
| 2 | | | 4 | | | |



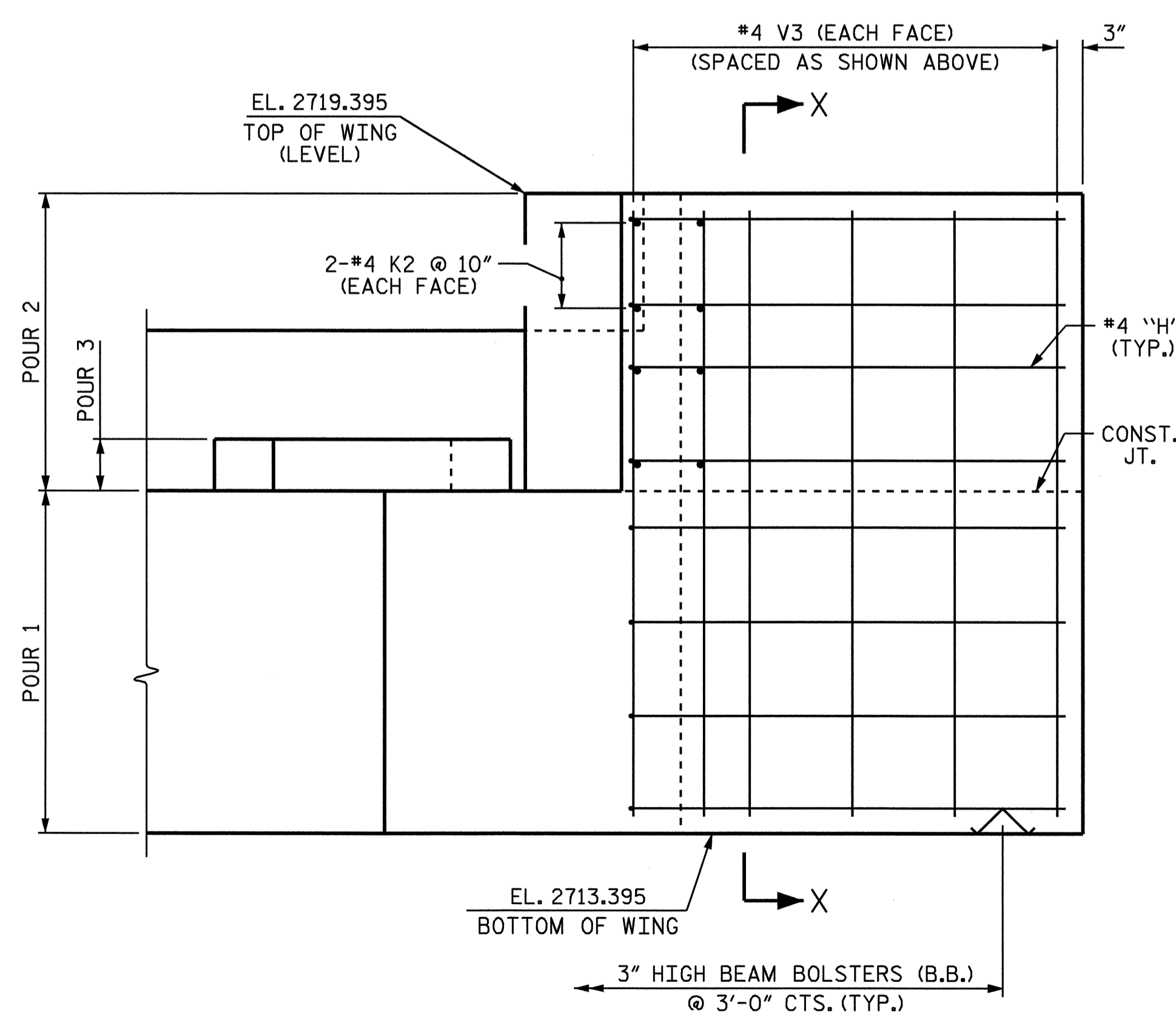
PLAN OF WING (W1)



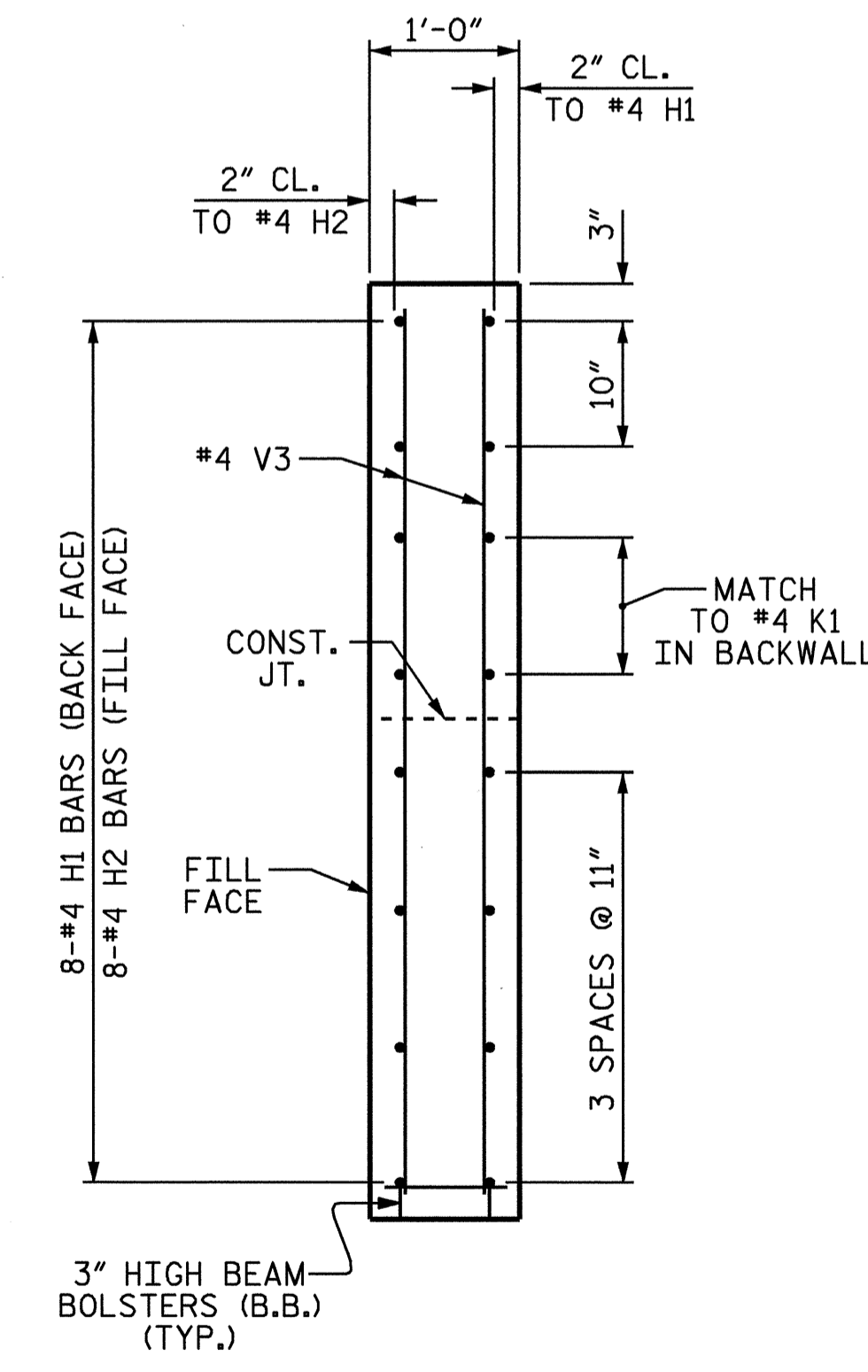
PLAN OF WING (W2)



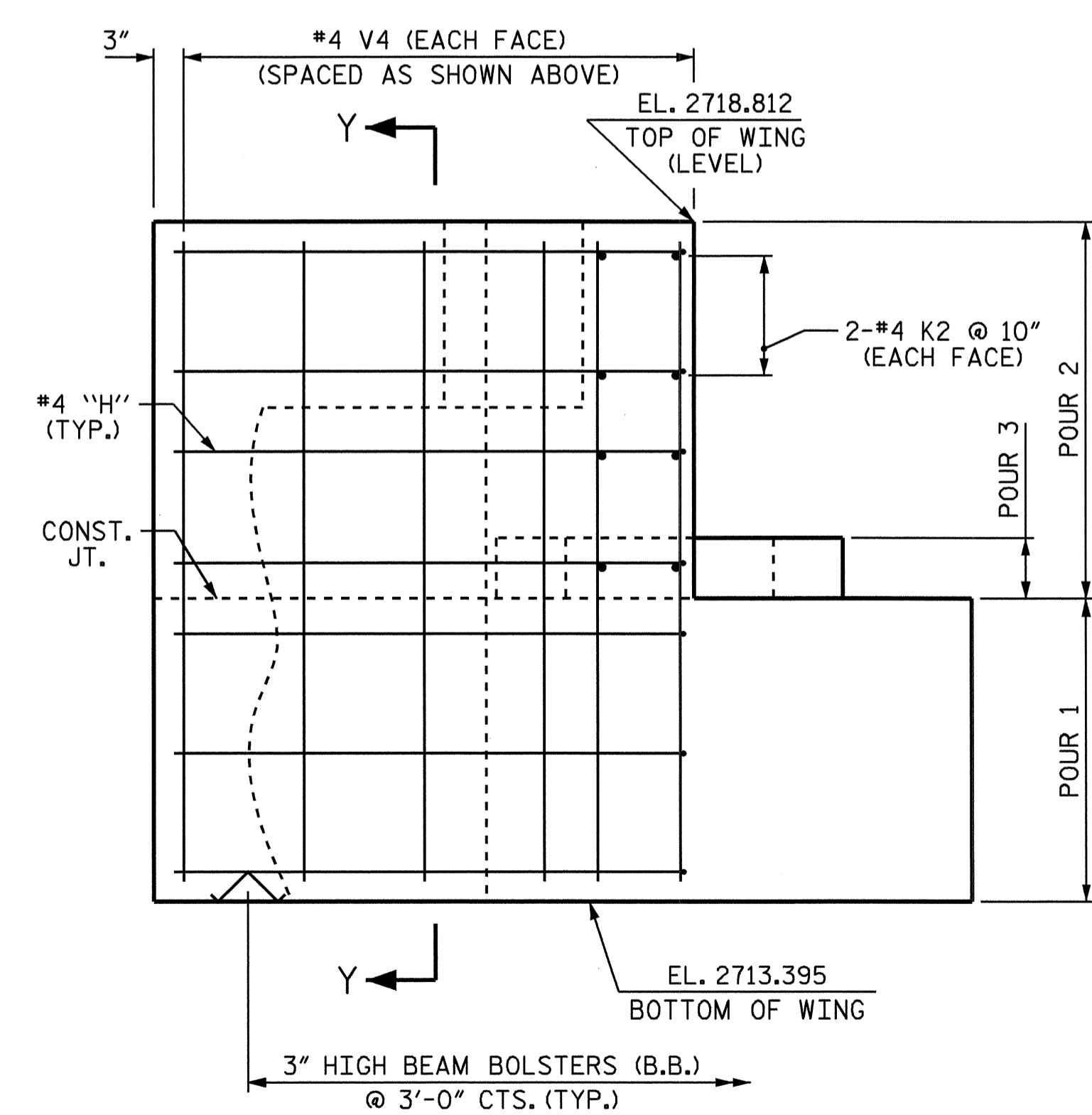
SECTION Y-Y



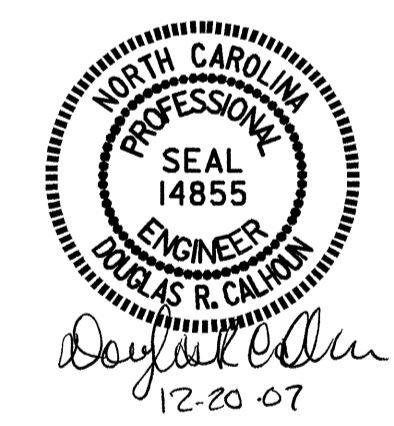
ELEVATION OF WING (W1)



SECTION X-X



ELEVATION OF WING (W2)

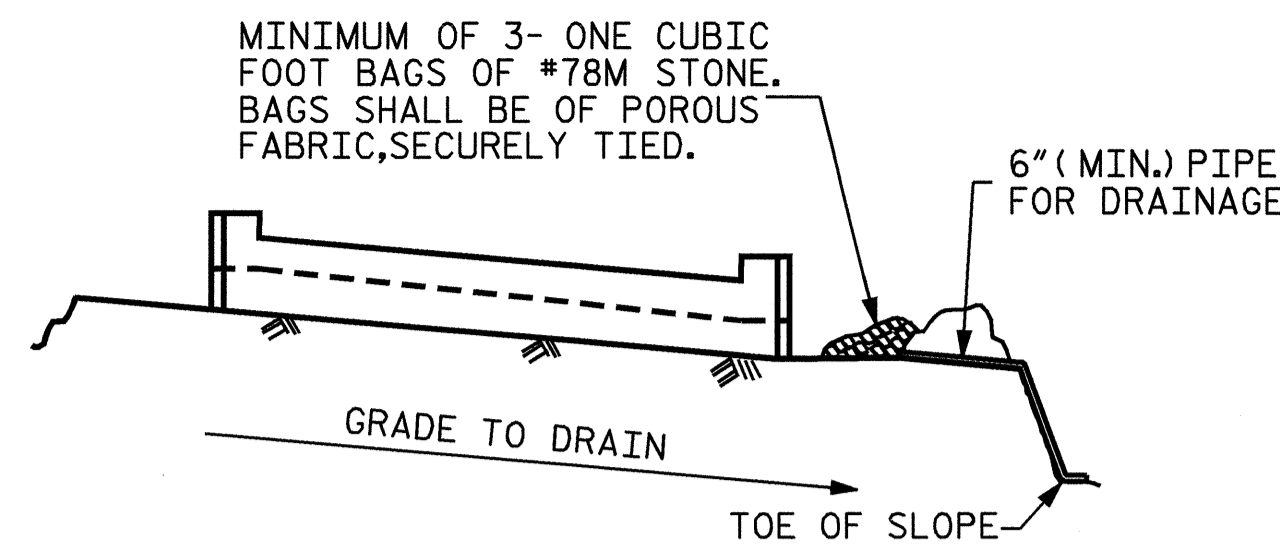


PROJECT NO. B-3606
ASHE COUNTY
 STATION: 11+65.00 -L-
 SHEET 2 OF 3

| | | | | | |
|--|-----|-------|-----|-----|--------------------|
| 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 24 |

DRAWN BY : T. A. HARRIS DATE : 1/30/06
 CHECKED BY : J.B. WILSON DATE : 5/1/06

13-DEC-2007 10:01
 R:\Structures\Final Plans\B3606.sd.E*.dgn
 gallen

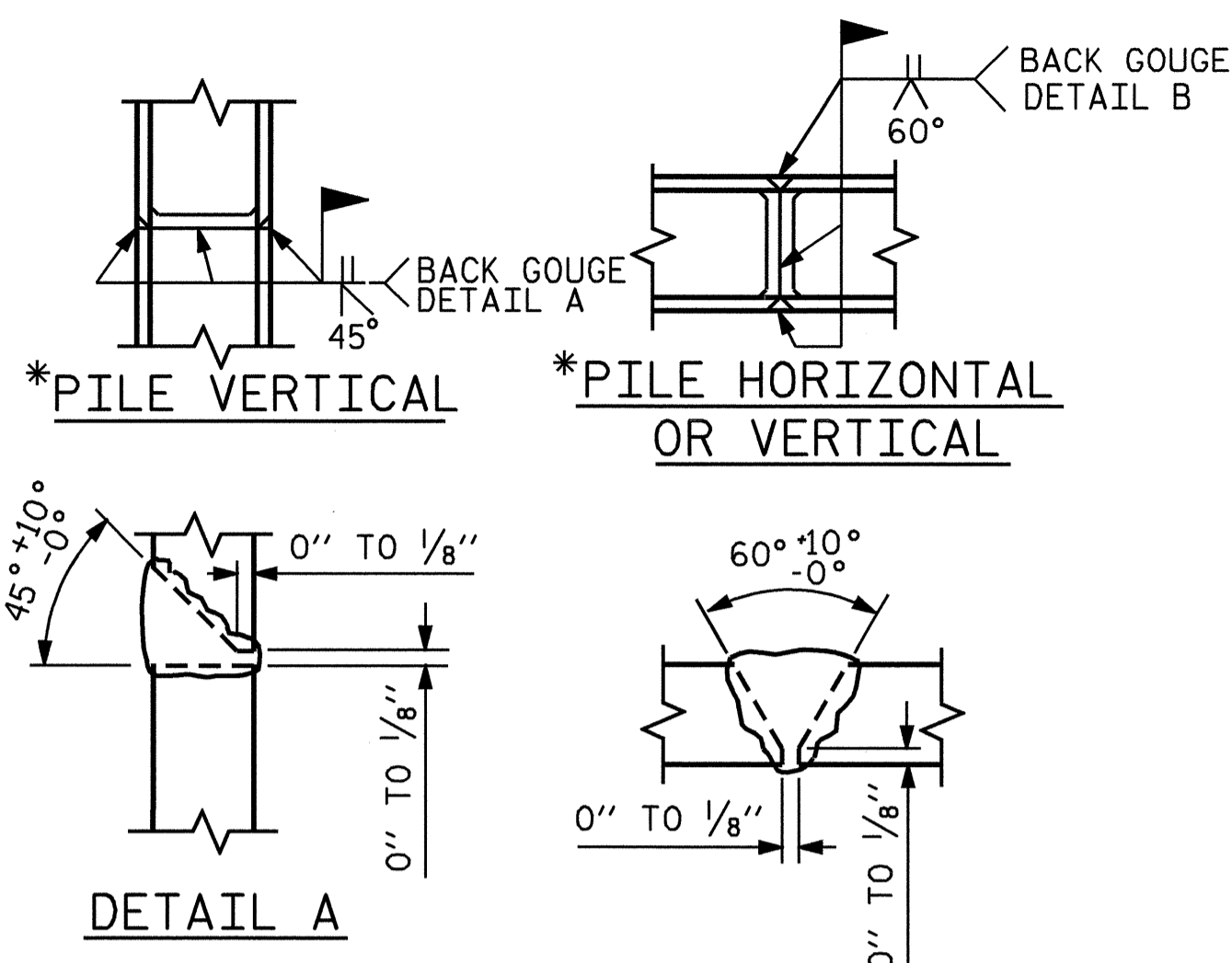


BAGGED STONE AND PIPE SHALL BE PLACED IMMEDIATELY AFTER COMPLETION OF END BENT EXCAVATION. PIPE MAY BE EITHER CONCRETE, CORRUGATED STEEL, CORRUGATED ALUMINUM ALLOY, OR CORRUGATED PLASTIC. PERFORATED PIPE WILL NOT BE ALLOWED.

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

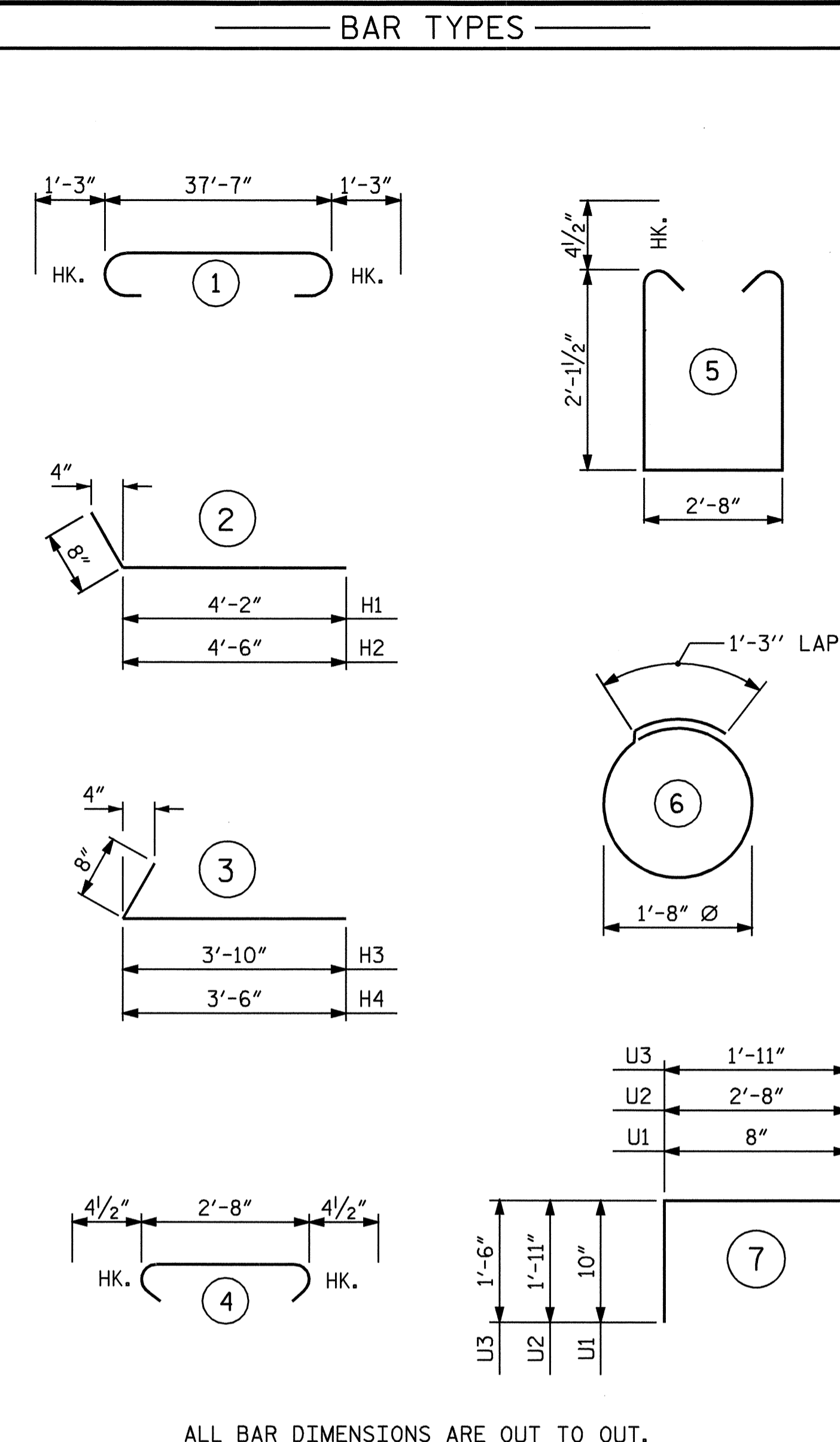
NO SEPARATE PAYMENT WILL BE MADE FOR THIS WORK AND THE ENTIRE COST OF THIS WORK SHALL BE INCLUDED IN THE UNIT CONTRACT PRICE BID FOR THE SEVERAL PAY ITEMS.

TEMPORARY DRAINAGE AT END BENT



* POSITION OF PILE DURING WELDING.

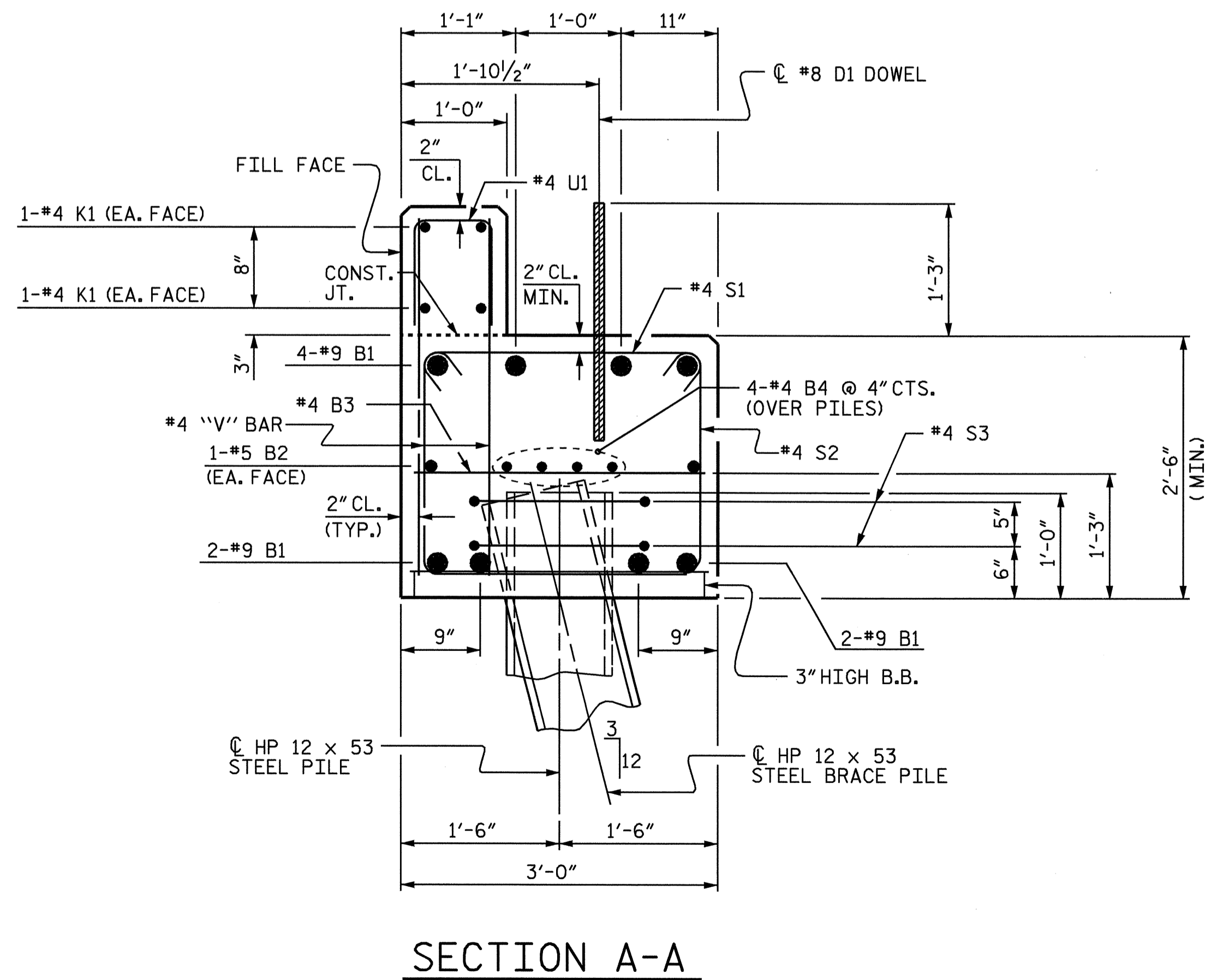
PILE SPLICE DETAILS



| BILL OF MATERIAL | | | | | |
|------------------|-----|------|------|--------|--------|
| END BENT 1 | | | | | |
| BAR | NO. | SIZE | TYPE | LENGTH | WEIGHT |
| B1 | 8 | #9 | 1 | 40'-1" | 1090 |
| B2 | 2 | #5 | STR | 37'-8" | 79 |
| B3 | 10 | #4 | STR | 2'-8" | 18 |
| B4 | 8 | #4 | STR | 20'-1" | 107 |
| D1 | 18 | #8 | STR | 2'-3" | 108 |
| H1 | 8 | #4 | 2 | 4'-10" | 26 |
| H2 | 8 | #4 | 2 | 5'-2" | 28 |
| H3 | 7 | #4 | 3 | 4'-6" | 21 |
| H4 | 7 | #4 | 3 | 4'-2" | 19 |
| K1 | 8 | #4 | STR | 20'-1" | 107 |
| K2 | 8 | #4 | STR | 1'-6" | 8 |
| S1 | 32 | #4 | 4 | 3'-5" | 73 |
| S2 | 32 | #4 | 5 | 7'-8" | 164 |
| S3 | 14 | #4 | 6 | 6'-6" | 61 |
| U1 | 34 | #4 | 7 | 2'-4" | 53 |
| U2 | 17 | #4 | 7 | 6'-6" | 74 |
| U3 | 4 | #4 | 7 | 4'-11" | 13 |
| V1 | 34 | #4 | STR | 3'-7" | 81 |
| V2 | 34 | #4 | STR | 3'-1" | 70 |
| V3 | 14 | #4 | STR | 5'-8" | 53 |
| V4 | 14 | #4 | STR | 5'-1" | 48 |

| REINFORCING STEEL = 2301 LBS | | |
|---|------|------|
| CLASS A CONCRETE BREAKDOWN | | |
| POUR 1 (CAP & LOWER PART OF WINGS) | C.Y. | 13.0 |
| POUR 2 (BACKWALL & UPPER PART OF WINGS) | C.Y. | 2.8 |
| POUR 3 (LATERAL GUIDE) | C.Y. | 0.1 |
| CLASS A CONCRETE TOTAL | C.Y. | 15.9 |

| HP 12 x 53 STEEL PILES | | |
|------------------------|----------|-----|
| NO. 7 | LINE FT. | 105 |



DRAWN BY : T. A. HARRIS DATE : 1/30/06
 CHECKED BY : J. B. WILSON DATE : 5/1/06

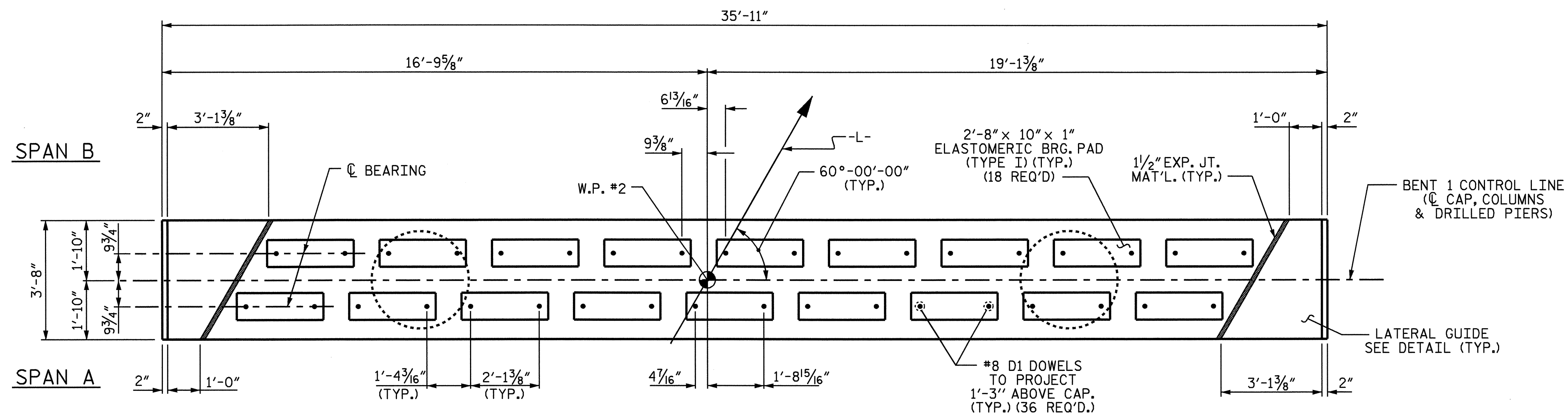
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PROJECT NO. B-3606
 ASHE COUNTY
 STATION: 11+65.00 -L-
 SHEET 3 OF 3

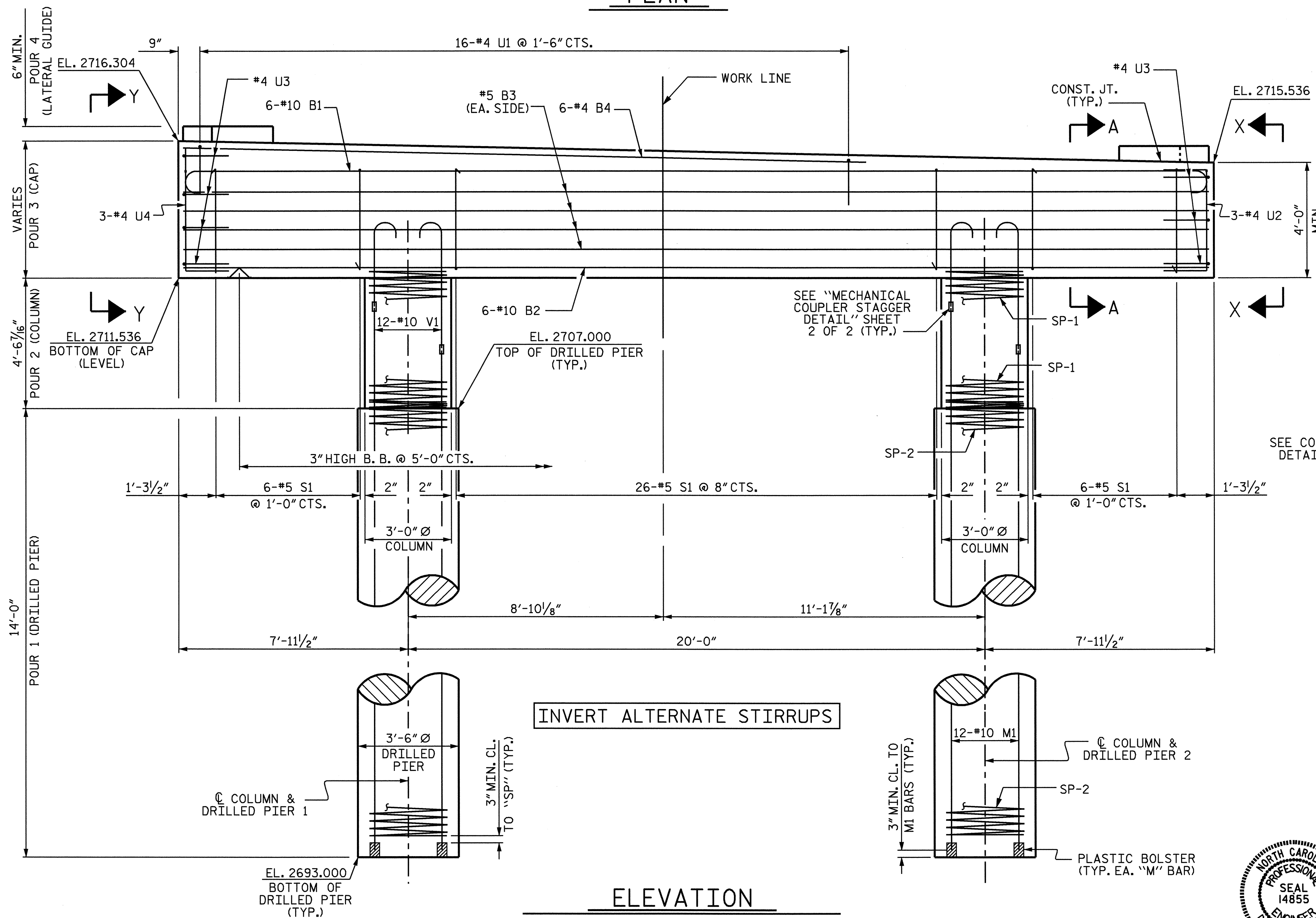


STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH
 SUBSTRUCTURE
 END BENT 1

| REVISIONS | | | | | | SHEET NO. |
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| 1 | | | 3 | | | TOTAL SHEETS |
| 2 | | | 4 | | | 24 |

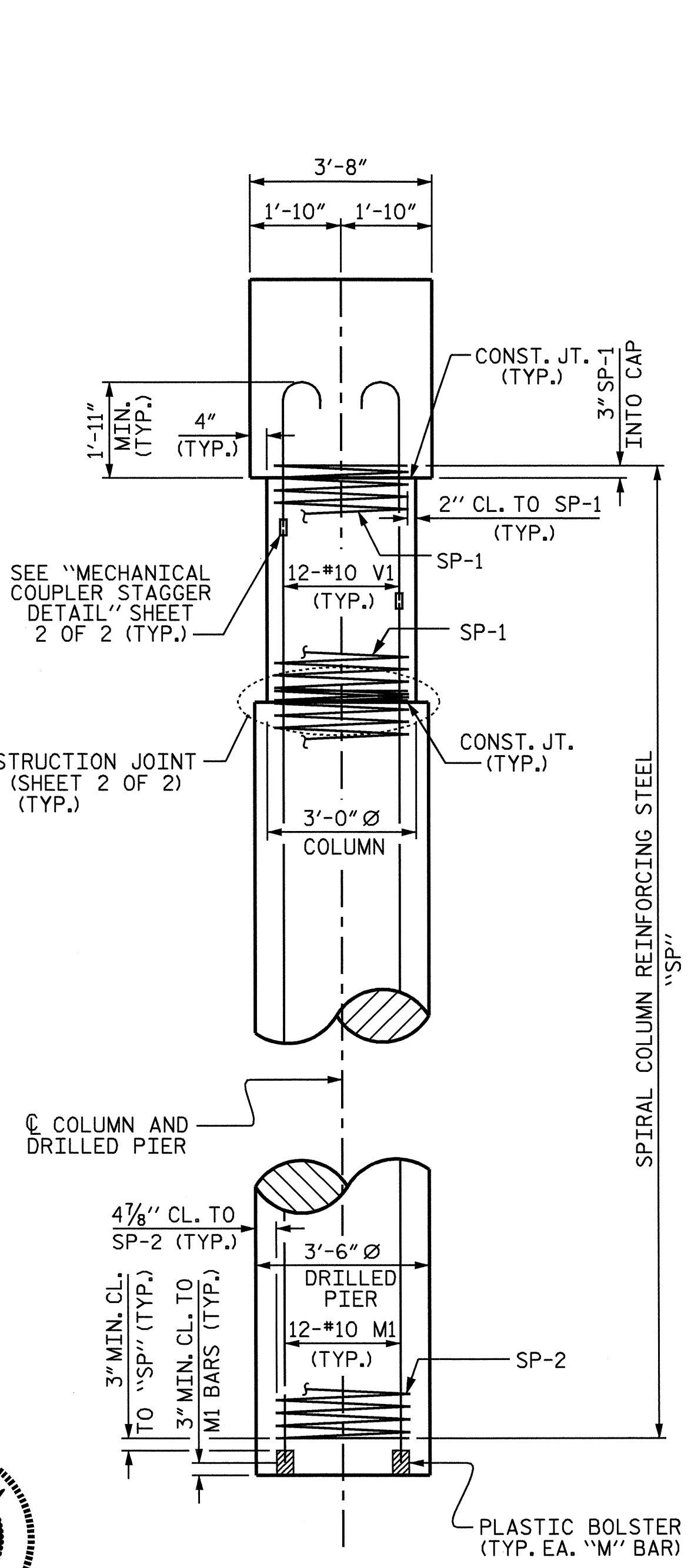


PLAN

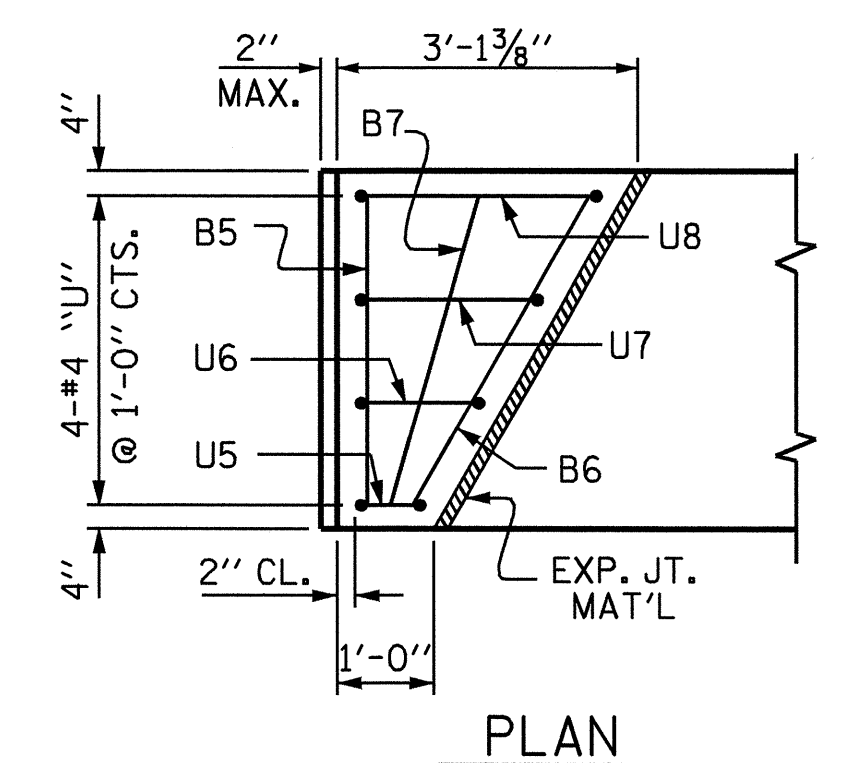


ELEVATION

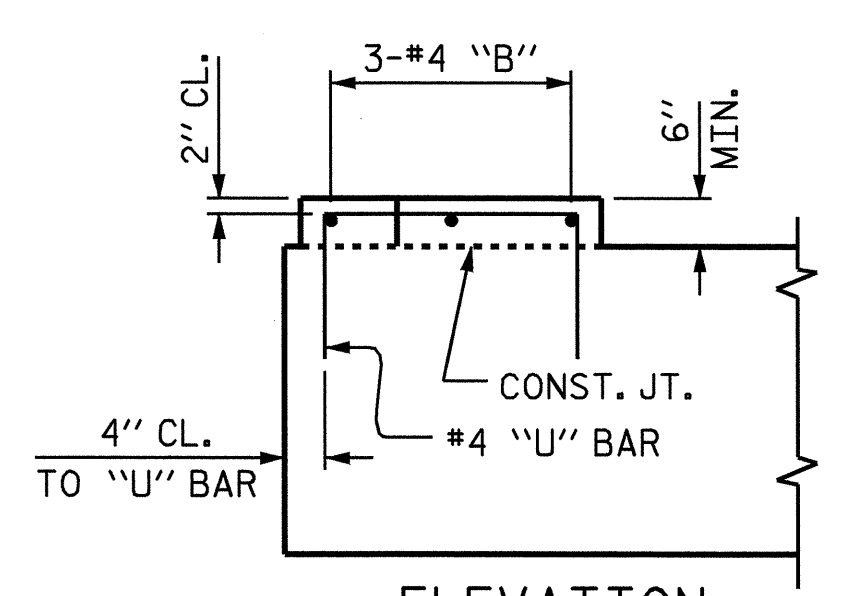
(REINFORCING STEEL AND DIMENSIONS ARE TYPICAL FOR ALL DRILLED PIERS AND COLUMNS)



END ELEVATION



PLAN



ELEVATION

LATERAL GUIDE

NOTES

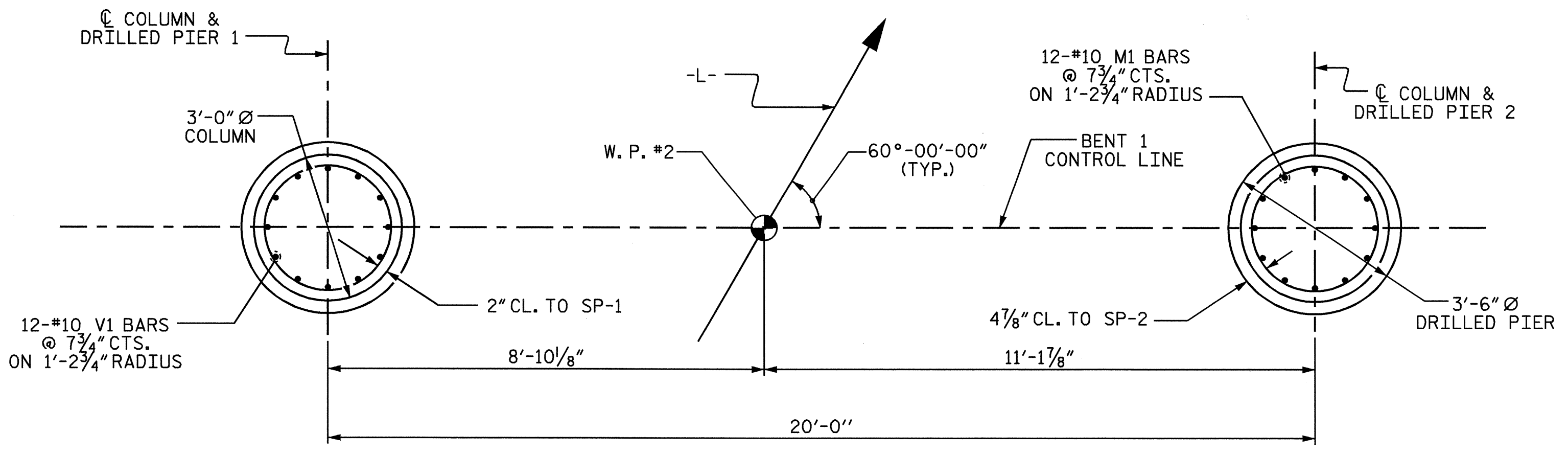
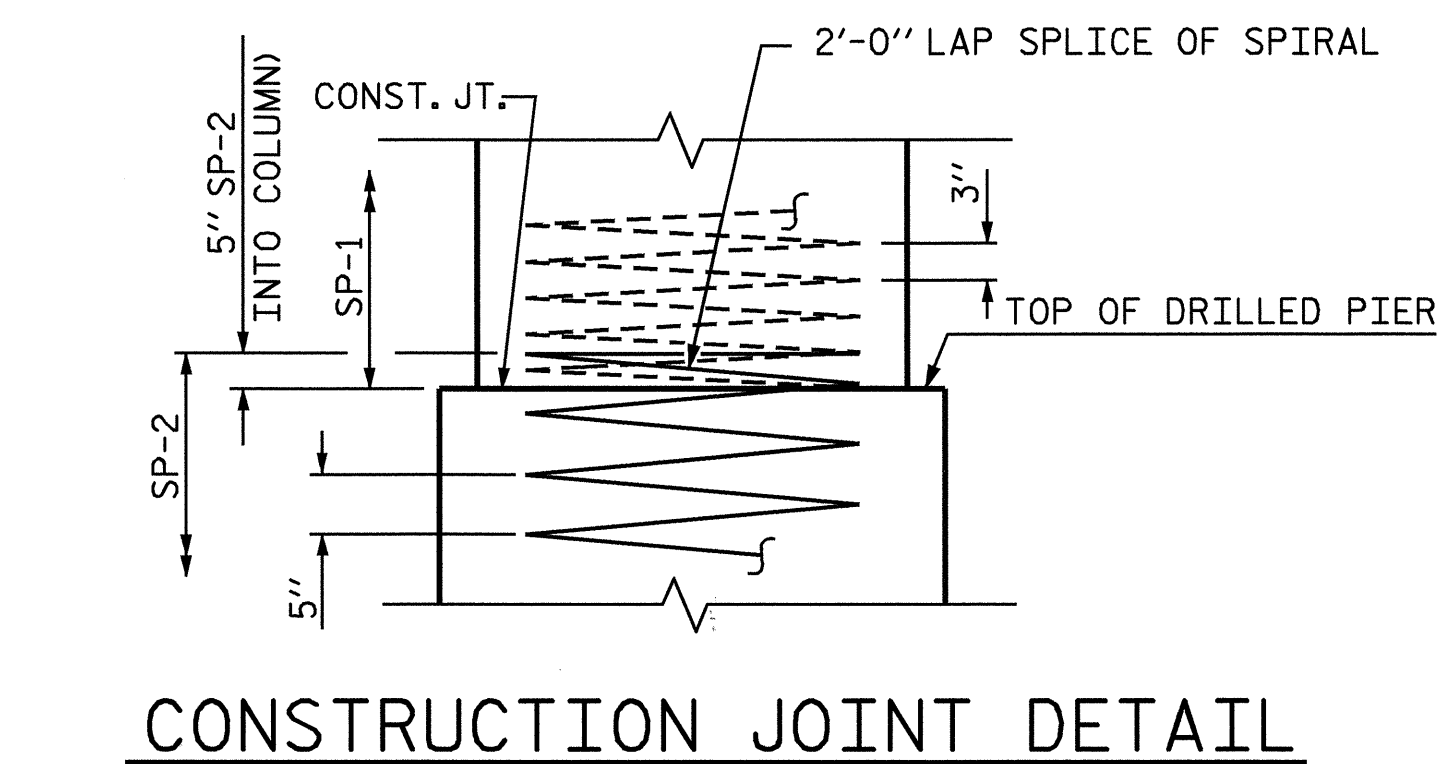
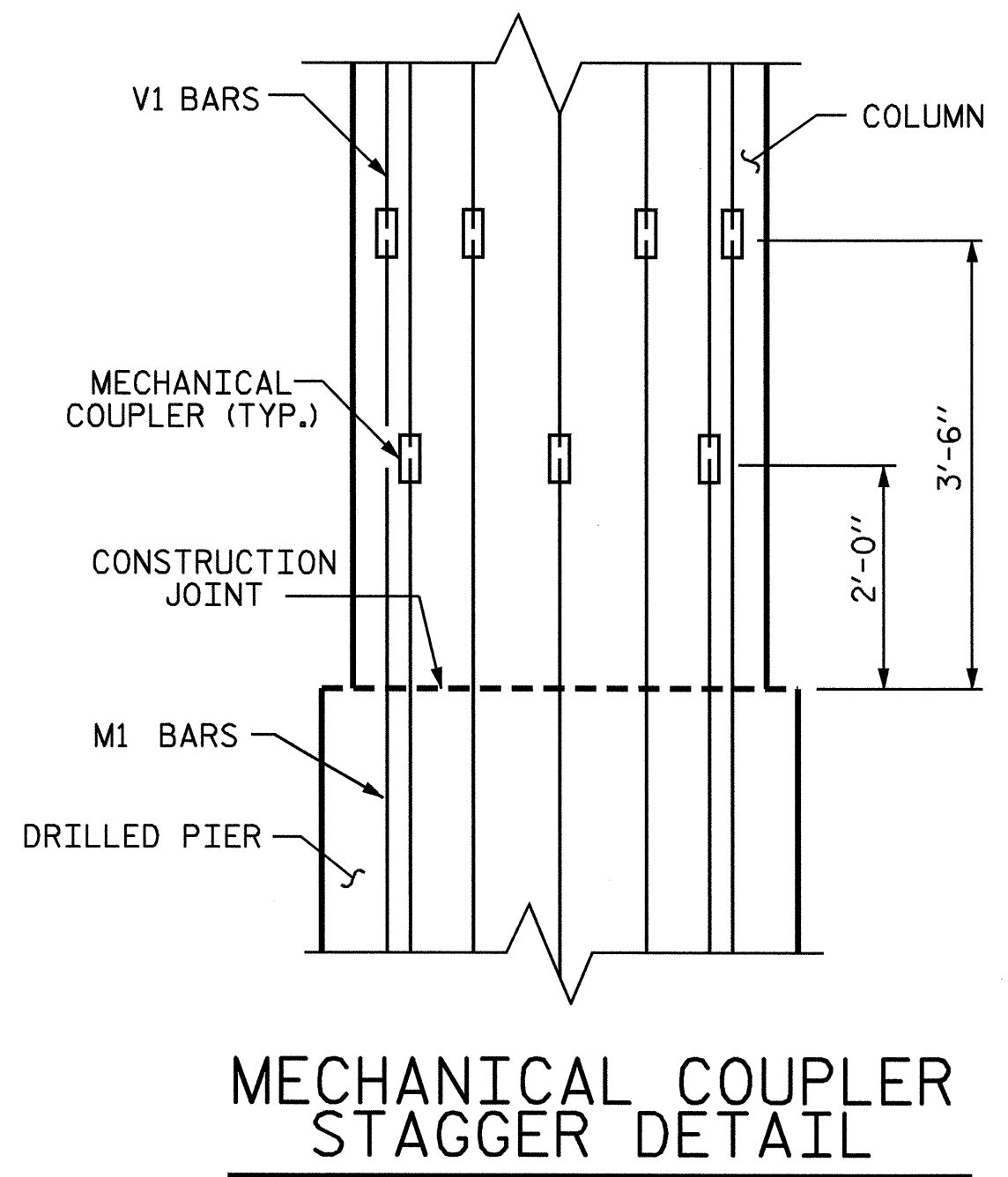
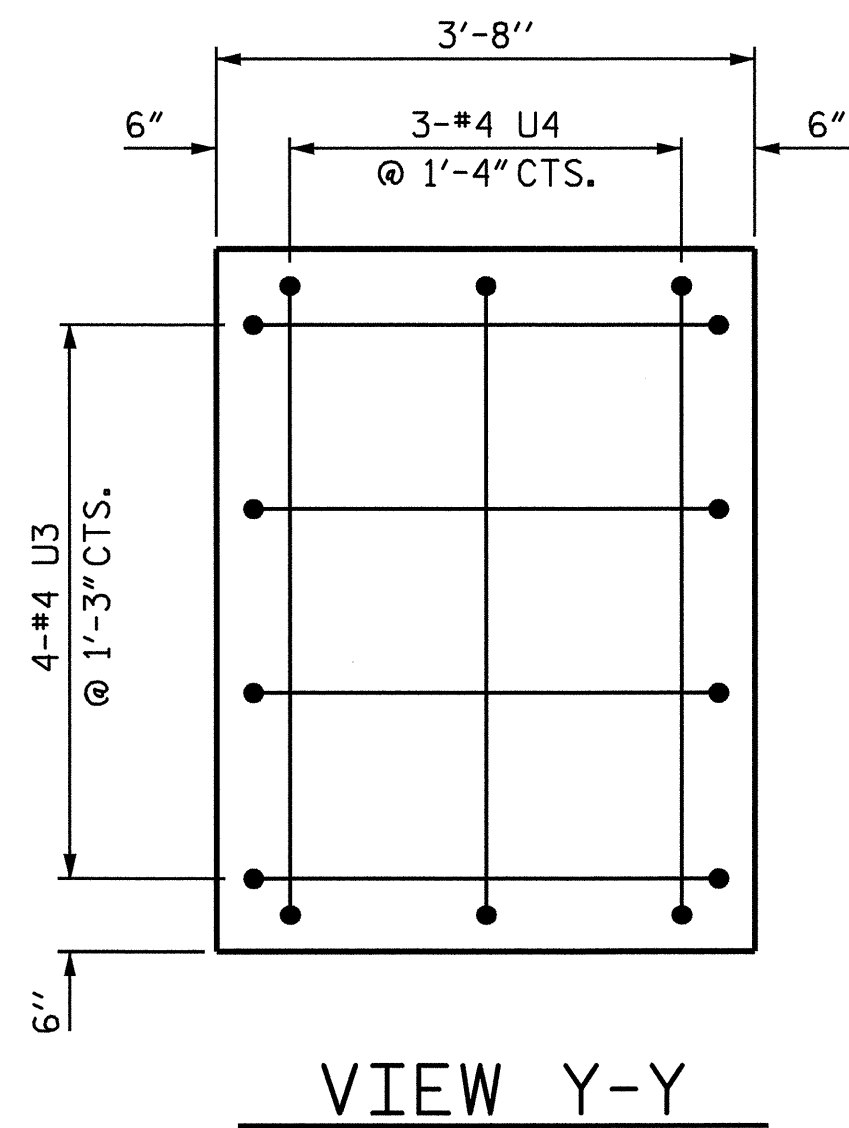
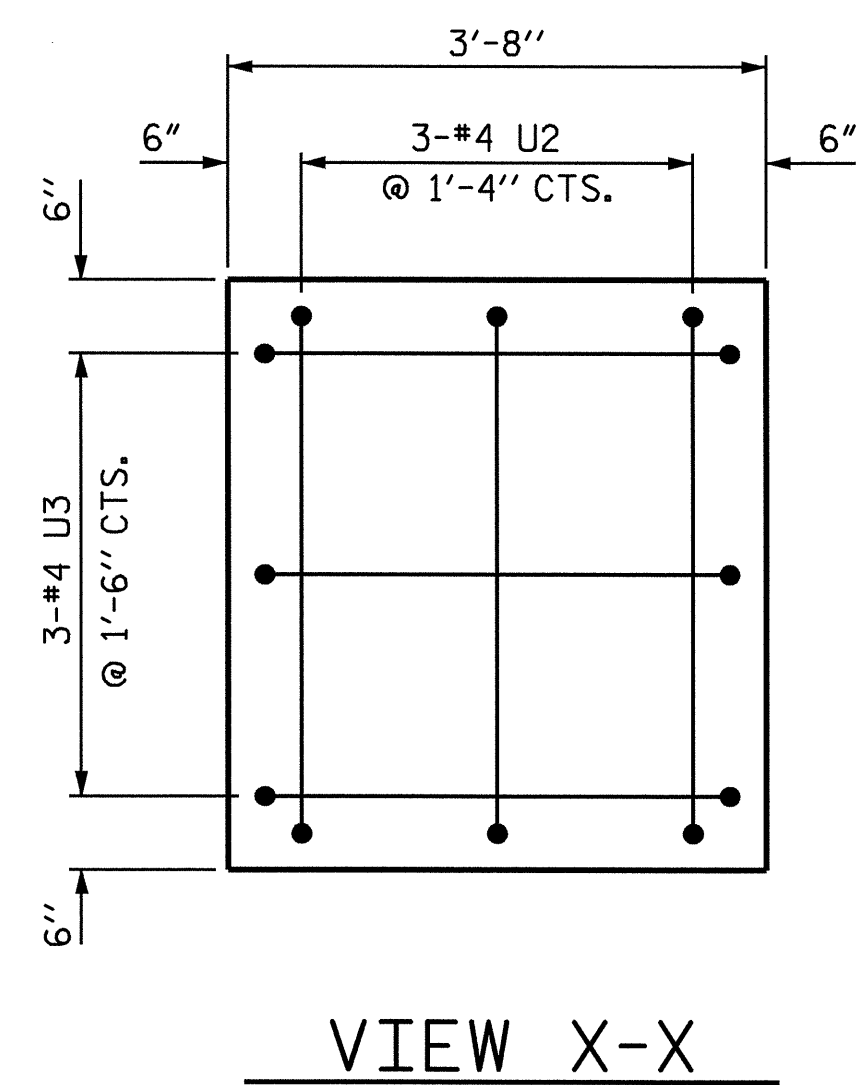
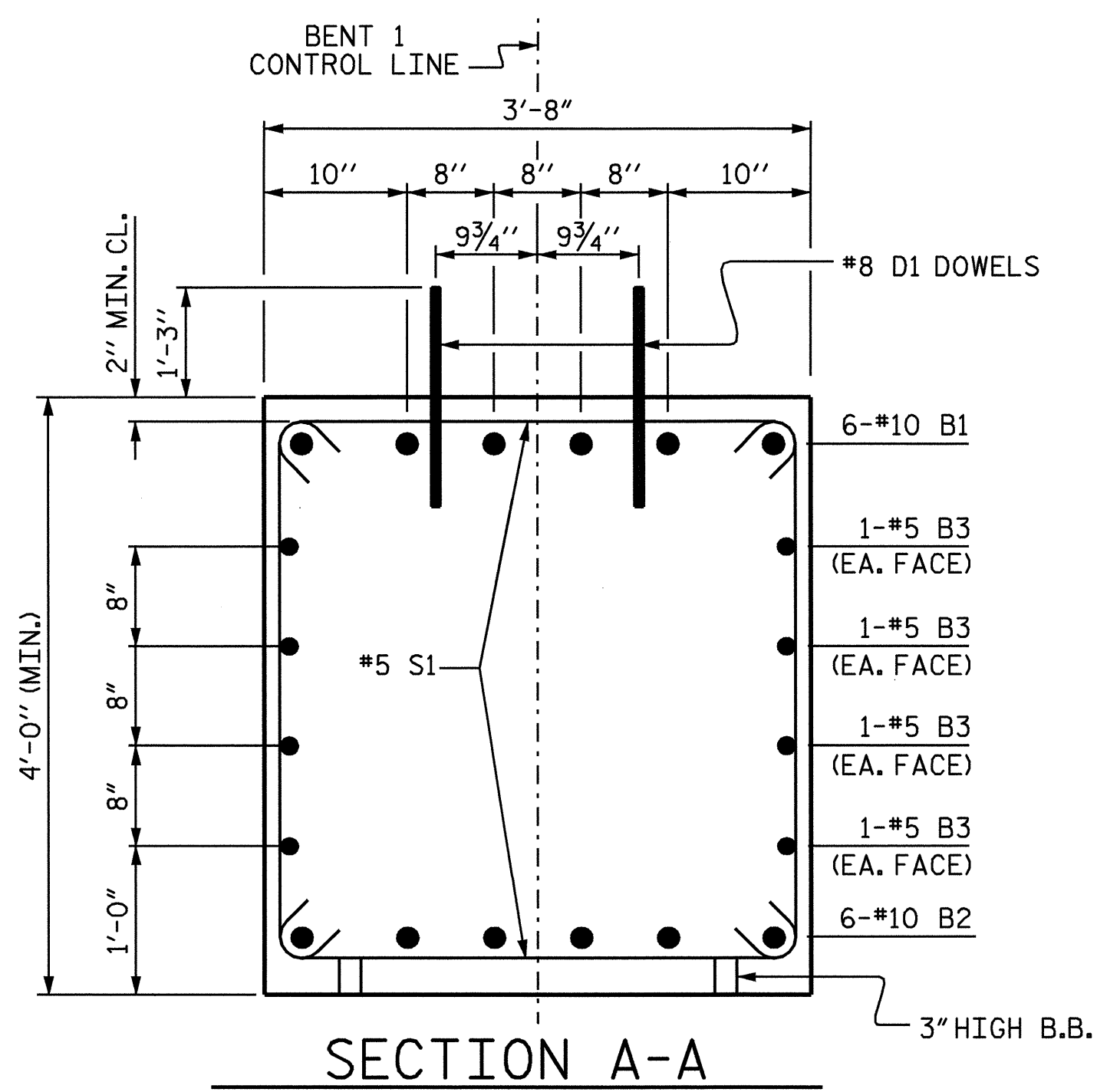
- STIRRUPS IN CAP MAY BE SHIFTED AS NECESSARY TO CLEAR ANCHOR BOLTS.
- HOOKS ON "V" BARS MAY BE TURNED AS NECESSARY FOR PLACING REINFORCING STEEL.
- ALL STEEL IN THE DRILLED PIERS IS INCLUDED IN THE PAY ITEMS FOR "REINFORCING STEEL" AND "SPIRAL COLUMN REINFORCING STEEL".
- THE CONTRACTOR'S ATTENTION IS CALLED TO THE FACT THAT THE LONGITUDINAL REINFORCEMENT FOR THE DRILLED PIERS IS DETAILED WITH 3 FEET OF EXTRA LENGTH.
- SPLICING OF THE LONGITUDINAL BARS IN THE DRILLED PIER WILL NOT BE PERMITTED.
- MECHANICAL COUPLERS SHALL BE USED TO JOIN THE LONGITUDINAL DRILLED PIER REINFORCING STEEL TO THE COLUMN REINFORCING STEEL. THE HEIGHT OF THE COUPLERS SHALL BE STAGGERED ON ALTERNATING BARS BY 1'-6" AND THE DRILLED PIER AND COLUMN STEEL SHALL BE CUT ACCORDINGLY.
- THE LOCATION OF THE CONSTRUCTION JOINT IN THE DRILLED PIERS IS BASED ON AN APPROXIMATE GROUND LINE ELEVATION. IF THE CONSTRUCTION JOINT IS ABOVE THE ACTUAL GROUND LINE ELEVATION, THE CONTRACTOR SHALL PLACE THE CONSTRUCTION JOINT 1 FT. BELOW THE GROUND LINE.

DRAWN BY: J. MYA DATE: 9/4/07
 CHECKED BY: B. N. GRADY DATE: 9/6/07



PROJECT NO. B-3606
 ASHE COUNTY
 STATION: 11+65.00 -L-
 SHEET 1 OF 2

| STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION RALEIGH | | | | | |
|--|-----|-------|-----|-----|--------------------|
| SUBSTRUCTURE BENT 1 | | | | | |
| REVISIONS | | | | | |
| NO. | BY: | DATE: | NO. | BY: | DATE: |
| 1 | | | 3 | | |
| 2 | | | 4 | | |
| | | | | | SHEET NO. S-17 |
| | | | | | TOTAL SHEETS 24 |



PLAN OF COLUMNS AND DRILLED PIERS

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

DRAWN BY: J.MYA DATE: 9/4/07
 CHECKED BY: B. N. GRADY DATE: 9/6/07

BAR TYPES

| | |
|----|-------|
| U1 | 3'-4" |
| U2 | 3'-7" |
| U3 | 3'-3" |
| U4 | 4'-3" |
| U5 | 7" |
| U6 | 1'-2" |
| U7 | 1'-9" |
| U8 | 2'-4" |

ALL BAR DIMENSIONS ARE OUT TO OUT.

BILL OF MATERIAL

BENT 1

| BAR | NO. | SIZE | TYPE | LENGTH | WEIGHT |
|---|-----|------|------|------------------|----------------|
| B1 | 6 | #10 | 1 | 38'-4" | 990 |
| B2 | 6 | #10 | STR | 35'-7" | 919 |
| B3 | 8 | #5 | STR | 35'-7" | 297 |
| B4 | 6 | #4 | STR | 23'-8" | 95 |
| B5 | 2 | #4 | STR | 3'-4" | 4 |
| B6 | 2 | #4 | STR | 3'-10" | 5 |
| B7 | 2 | #4 | STR | 3'-5" | 5 |
| D1 | 36 | #8 | STR | 2'-3" | 216 |
| M1 | 24 | #10 | STR | 20'-3" | 2091 |
| S1 | 38 | #5 | 3 | 11'-6" | 456 |
| U1 | 16 | #4 | 4 | 7'-0" | 75 |
| U2 | 3 | #4 | 4 | 6'-1" | 12 |
| U3 | 7 | #4 | 4 | 5'-9" | 27 |
| U4 | 3 | #4 | 4 | 6'-9" | 14 |
| U5 | 2 | #4 | 4 | 3'-7" | 5 |
| U6 | 2 | #4 | 4 | 4'-2" | 6 |
| U7 | 2 | #4 | 4 | 4'-9" | 6 |
| U8 | 2 | #4 | 4 | 5'-4" | 7 |
| V1 | 24 | #10 | 2 | 5'-11" | 611 |
| REINFORCING STEEL | | | | | = 5841 LBS. |
| SP-1 | 2 | * | 5 | 171'-11" | 230 |
| SP-2 | 2 | ** | 6 | 284'-5" | 593 |
| SPIRAL COLUMN REINFORCING STEEL | | | | | = 823 LBS. |
| CLASS A CONCRETE BREAKDOWN | | | | | |
| POUR #2 (COLUMNS) | | | | 2.4 C.Y. | |
| POUR #3 CAP | | | | 21.4 C.Y. | |
| POUR #4 LATERAL GUIDE | | | | 0.3 C.Y. | |
| TOTAL | | | | 24.1 C.Y. | |
| DRILLED PIERS | | | | | |
| DRILLED PIER CONCRETE POUR #1 (DRILLED PIERS) | | | | | 10.0 C.Y. |
| 3'-6" Ø DRILLED PIERS IN SOIL | | | | | 15.00 LIN. FT. |
| 3'-6" Ø DRILLED PIERS NOT IN SOIL | | | | | 13.00 LIN. FT. |
| PERMANENT STEEL CASING FOR 3'-6" Ø DRILLED PIERS LIN. FT. = 14.00 | | | | | |
| SID INSPECTION | | | | 1 EACH | |
| CROSSHOLE SONIC LOGGING | | | | 1 EACH | |
| ▲ CSL TUBES | | | | LIN. FT. = 132.0 | |
| SPT TESTING | | | | 1 EACH | |

- * THE SP-1 SPIRAL REINFORCING STEEL SHALL BE W20 OR D-20 COLD DRAWN WIRE OR #4 PLAIN OR DEFORMED BAR.
- ** THE SP-2 SPIRAL REINFORCING STEEL SHALL BE W31 OR D-31 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-3606
 ASHE COUNTY
 STATION: 11+65.00 -L-
 SHEET 2 OF 2



STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

SUBSTRUCTURE BENT 1

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

S-18
 24

NOTES

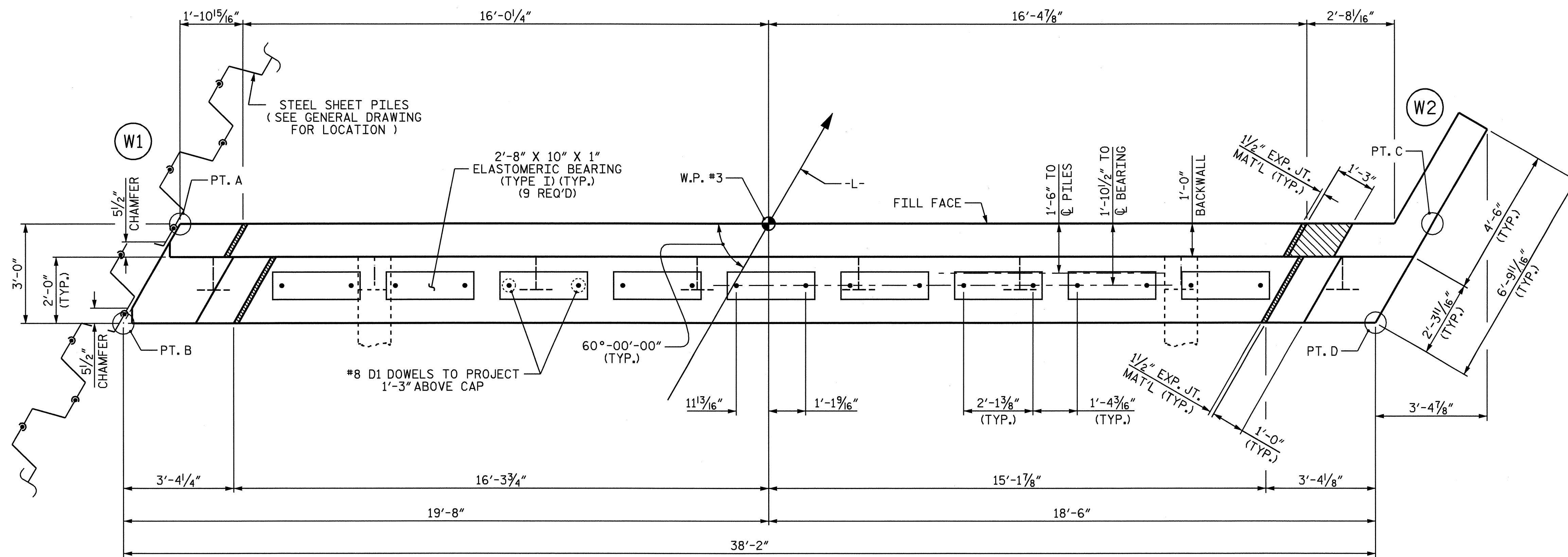
STIRRUPS IN CAP MAY BE SHIFTED AS NECESSARY TO CLEAR DOWELS.

THE CONCRETE IN THE SHADED AREA OF THE WING SHALL BE POURED AFTER THE PARAPET AND END POST ARE CAST IF SLIP FORMING IS USED.

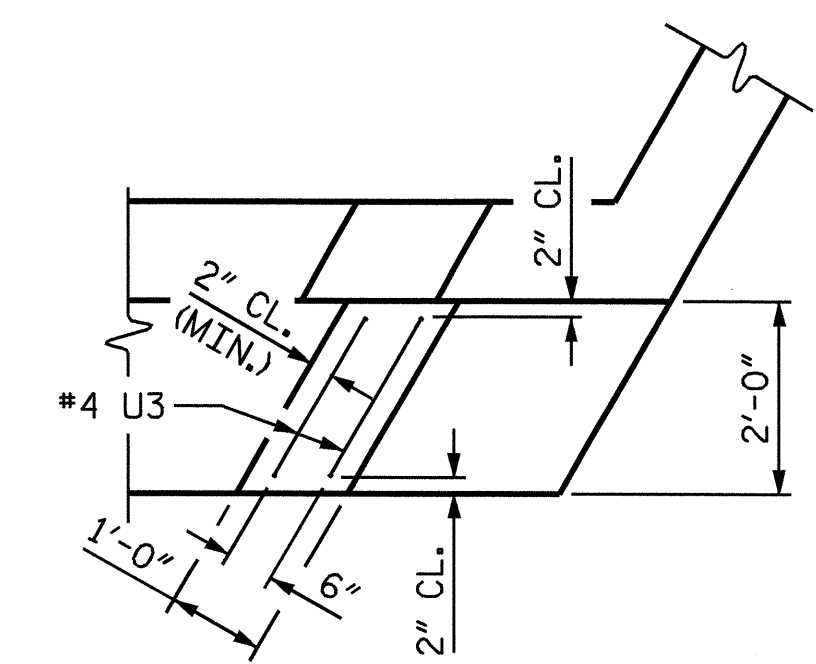
THE LATERAL GUIDE AT EACH END OF THE CAP IS NOT TO BE POURED UNTIL AFTER THE BOX BEAM UNITS ARE IN PLACE.

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

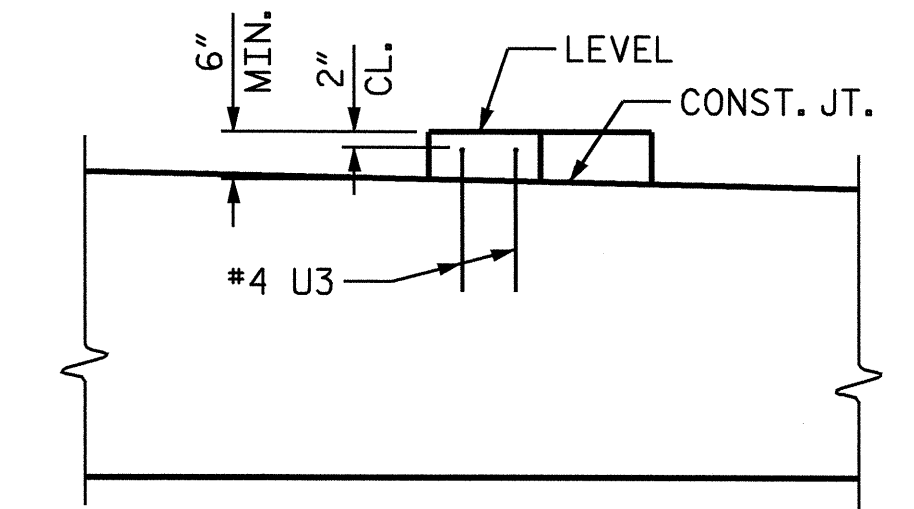
STEEL SHEET PILING SHALL BE HOT ROLLED, HAVE A MINIMUM THICKNESS OF 3/8", AND A MINIMUM SECTION MODULUS OF 30 CUBIC INCHES PER LINEAR FOOT OF WALL.



PLAN



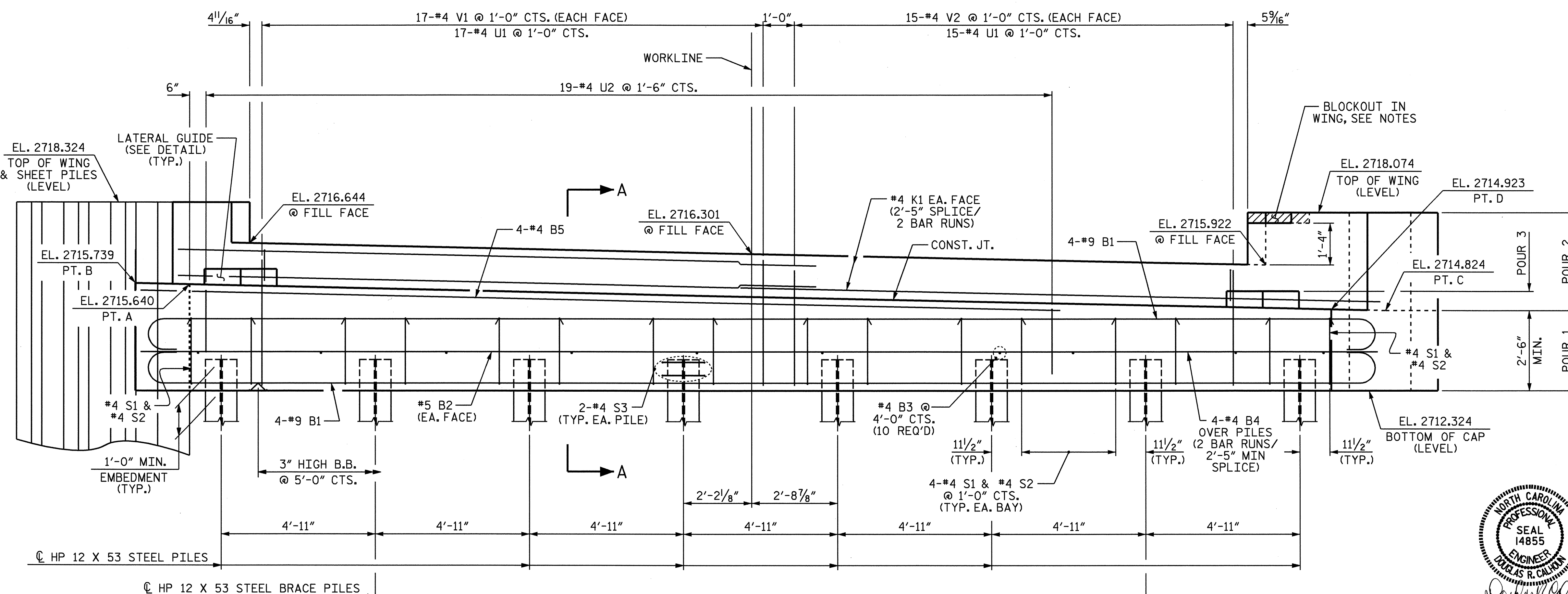
PLAN



ELEVATION

LATERAL GUIDE

RIGHT SIDE SHOWN, LEFT SIDE SIMILAR



ELEVATION

PROJECT NO. B-3606
 ASHE COUNTY
 STATION: 11+65.00 -L-

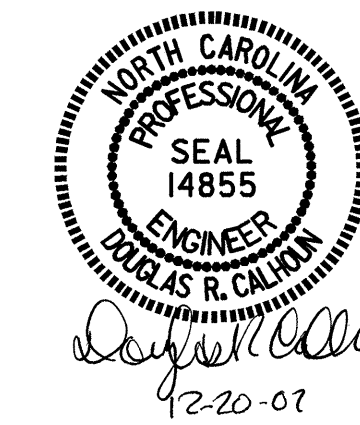
SHEET 1 OF 3

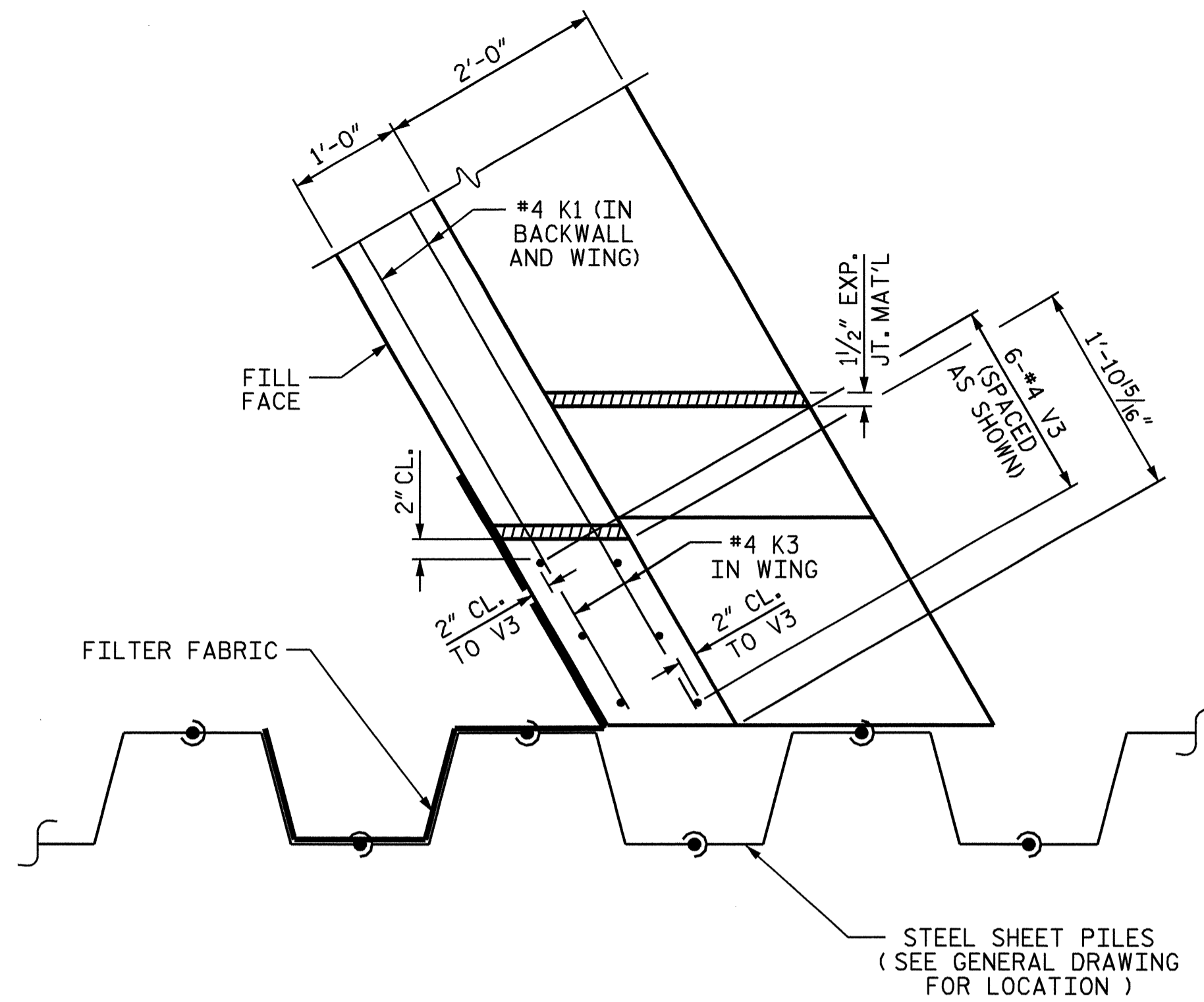
STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

SUBSTRUCTURE
 END BENT 2

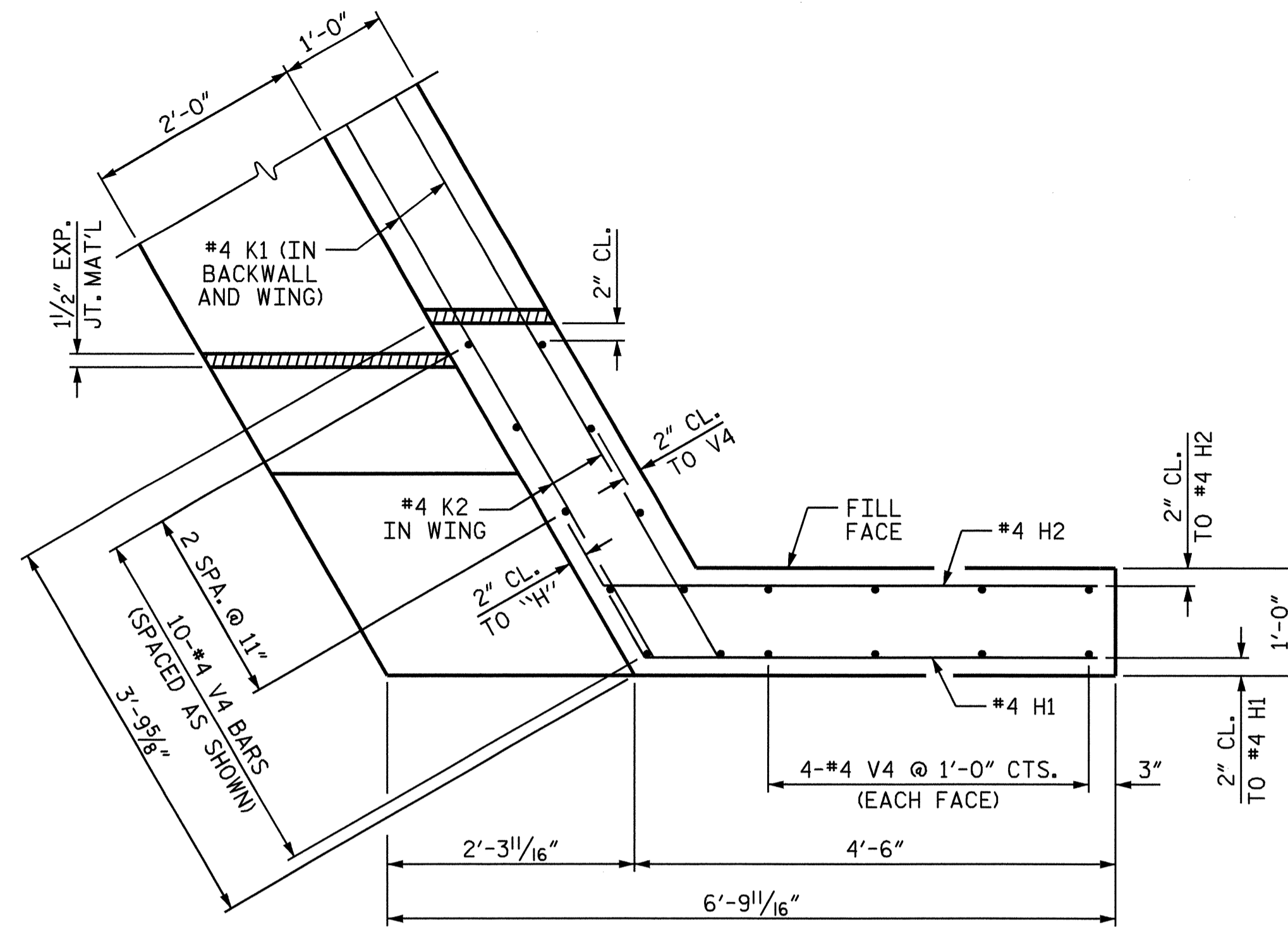
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| NO. | BY: | DATE: | NO. | BY: | DATE: | S-19 |
| 1 | | | 3 | | | TOTAL SHEETS |
| 2 | | | 4 | | | 24 |

DRAWN BY: T. A. HARRIS DATE: 1/30/06
 CHECKED BY: J.B. WILSON DATE: 5/1/06

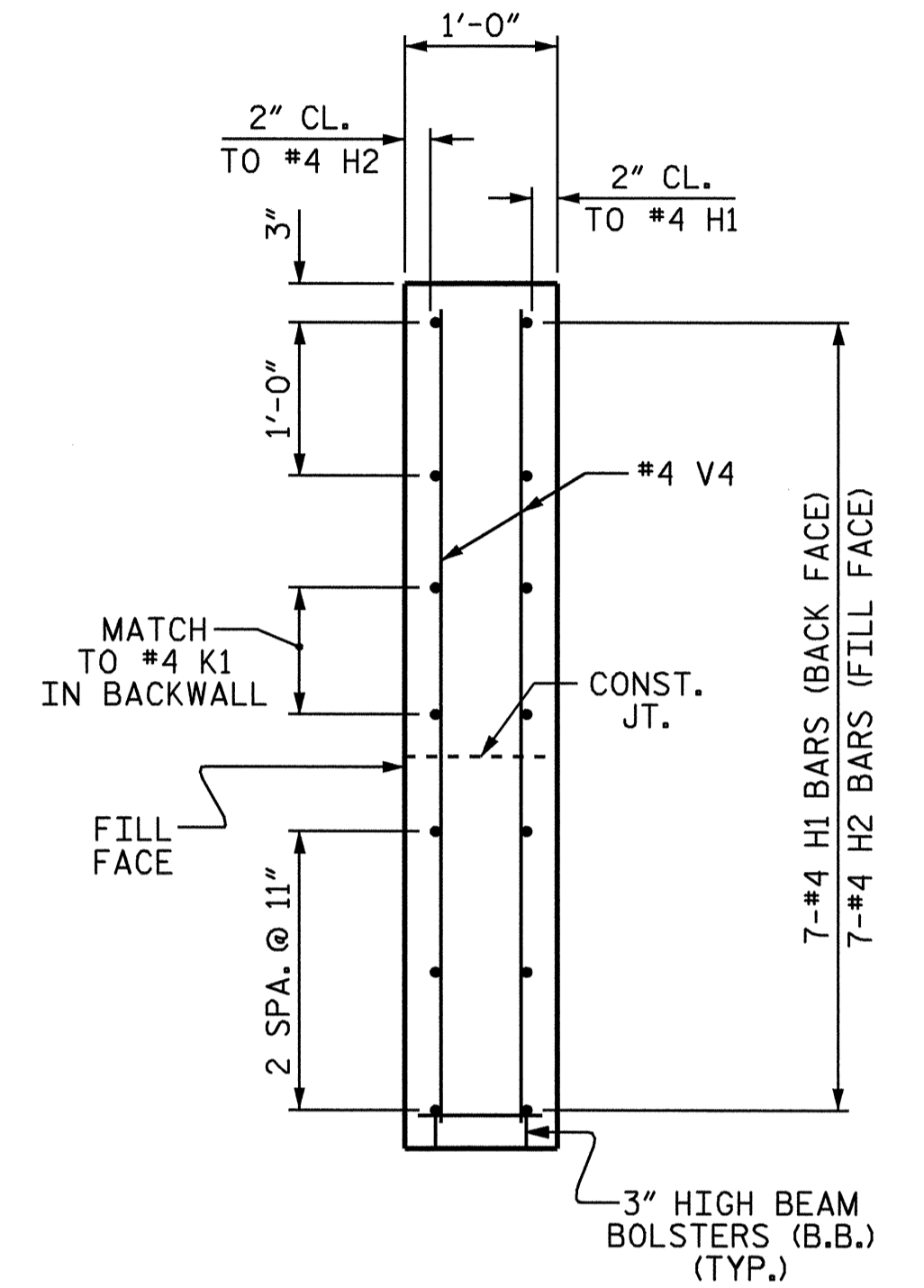




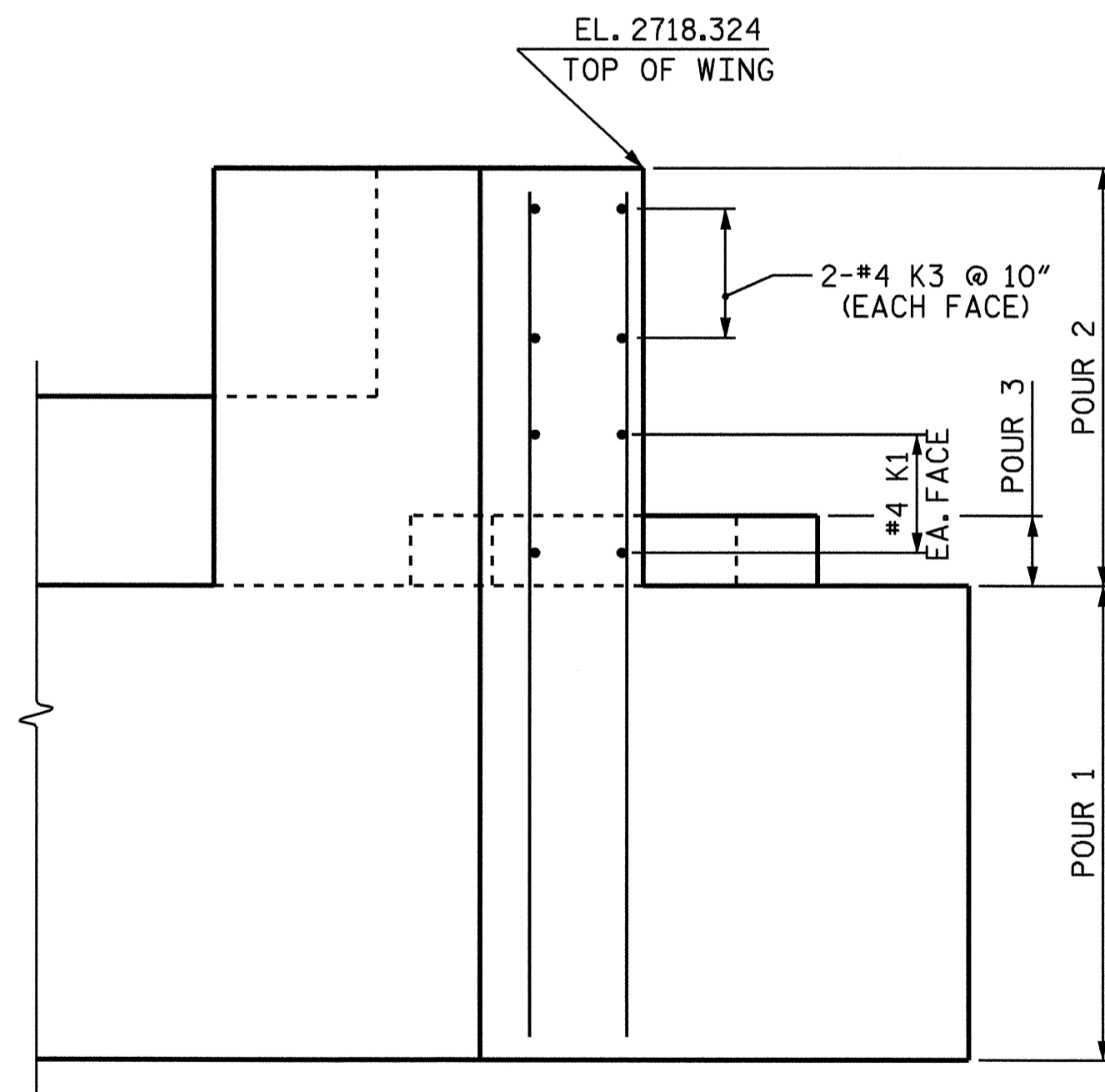
PLAN OF WING (W1)



PLAN OF WING (W2)

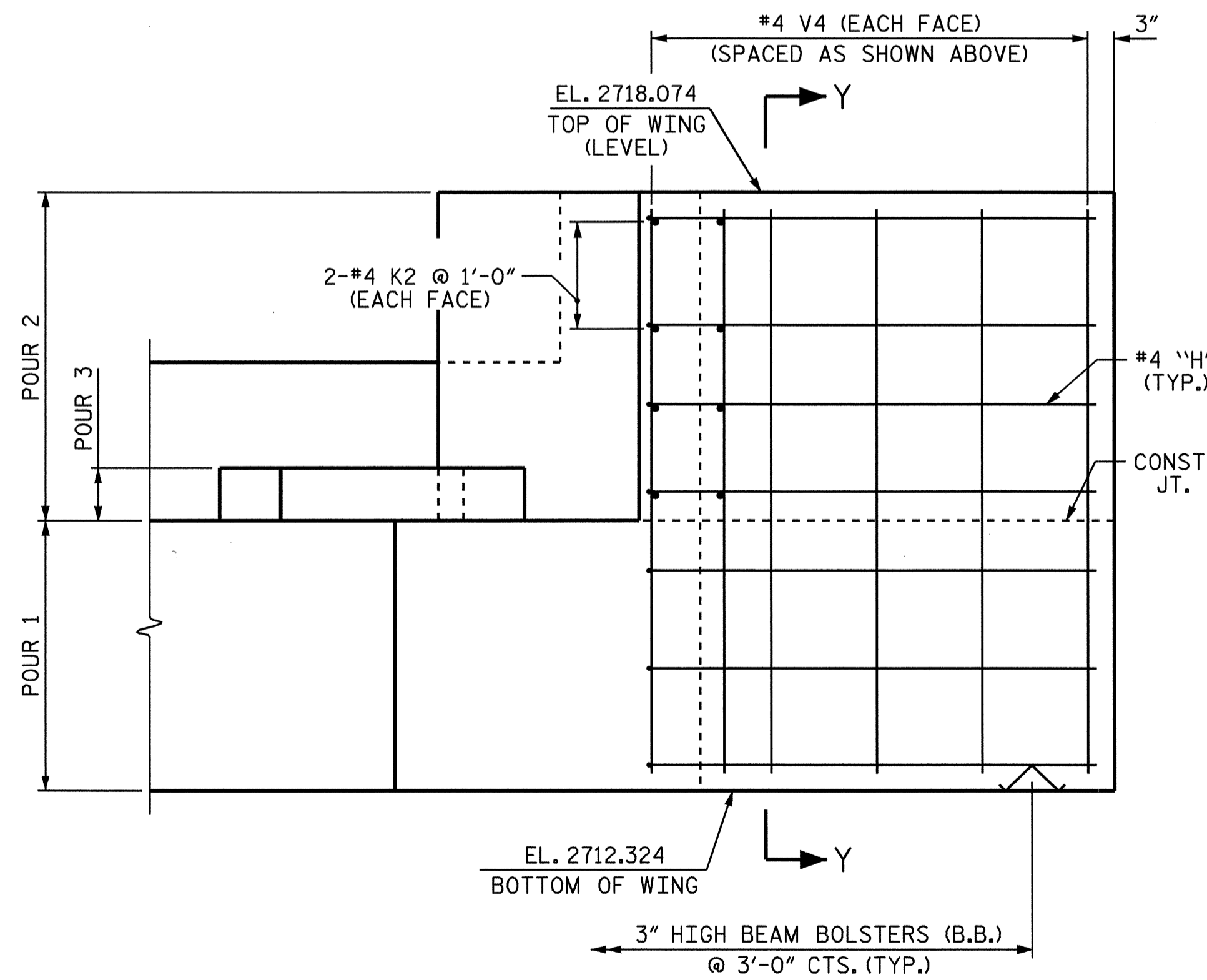


SECTION Y-Y

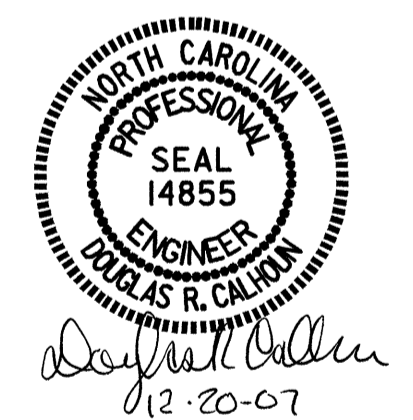


END OF WING (W1)

(STEEL SHEET PILES NOT SHOWN FOR CLARITY)



ELEVATION OF WING (W2)



PROJECT NO. B-3606
 ASHE COUNTY
 STATION: 11+65.00 -L-

SHEET 2 OF 3

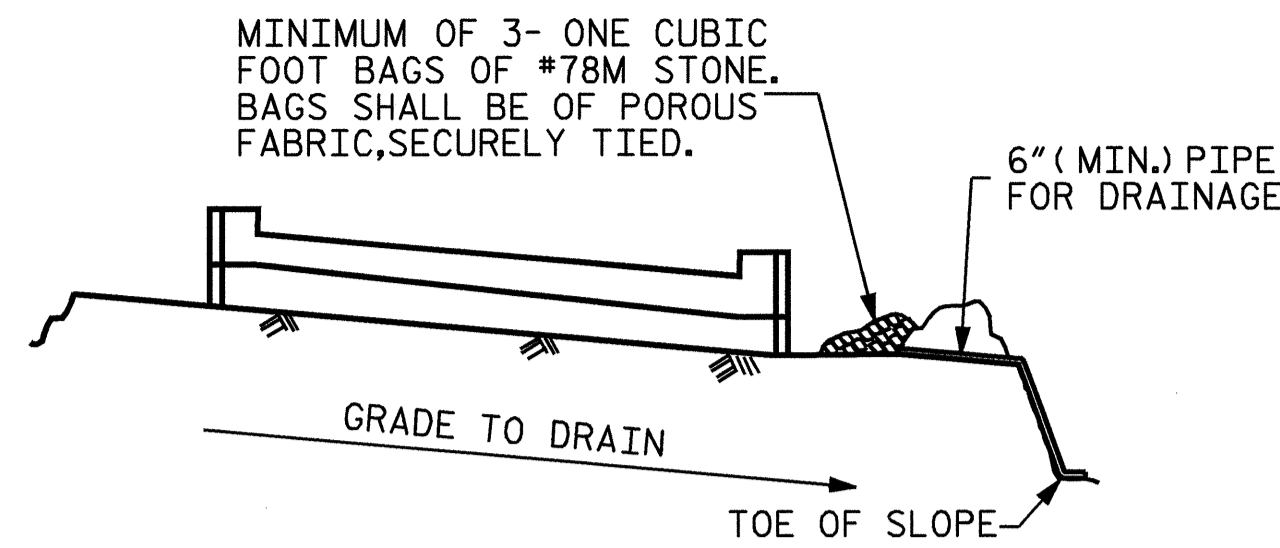
STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

SUBSTRUCTURE
 END BENT 2

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 CHECKED BY: J.B. WILSON DATE: 5/1/06

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| REVISIONS | | | | | SHEET NO. |
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| TOTAL SHEETS | | | | | 24 |

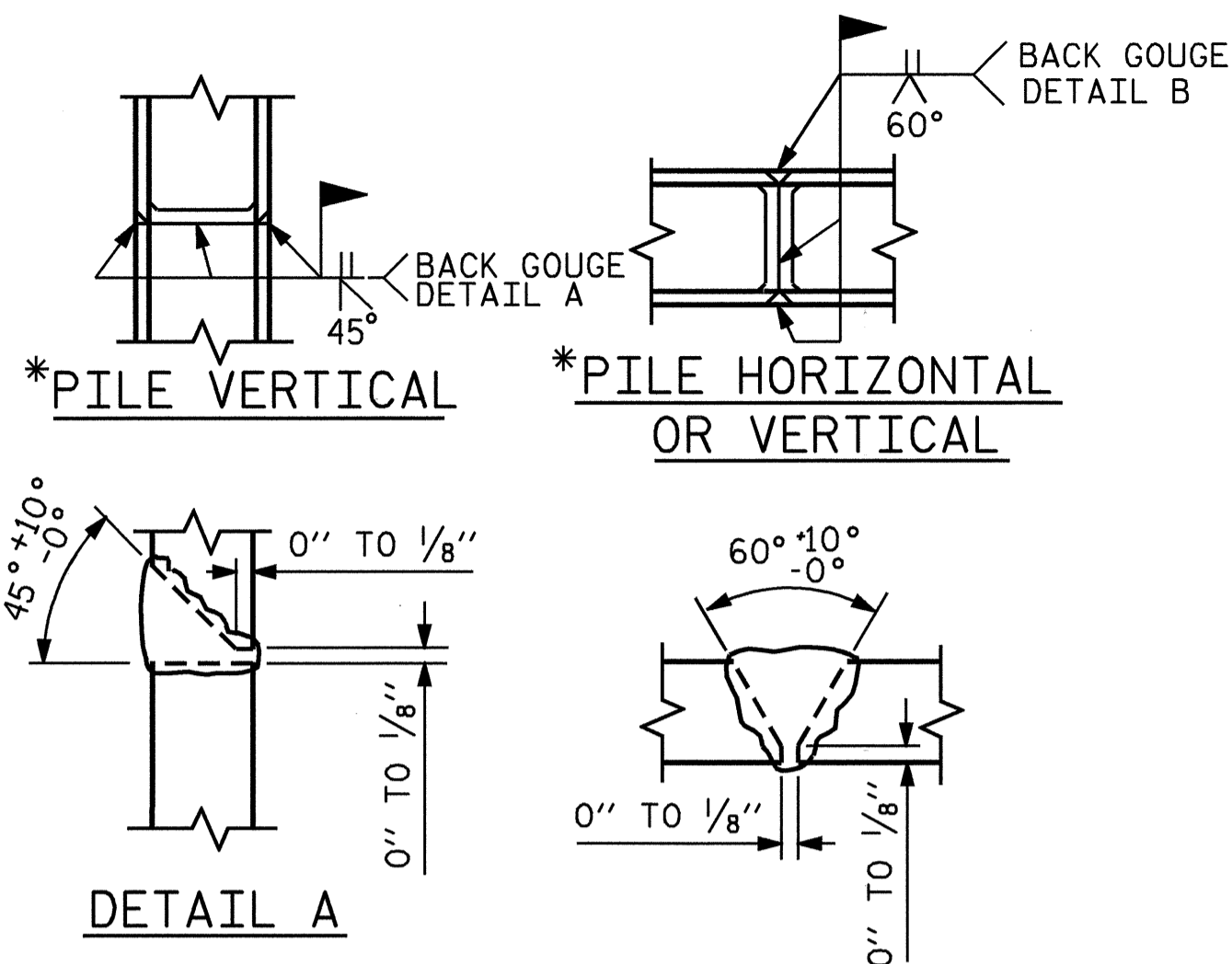


BAGGED STONE AND PIPE SHALL BE PLACED IMMEDIATELY AFTER COMPLETION OF END BENT EXCAVATION. PIPE MAY BE EITHER CONCRETE, CORRUGATED STEEL, CORRUGATED ALUMINUM ALLOY, OR CORRUGATED PLASTIC. PERFORATED PIPE WILL NOT BE ALLOWED.

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

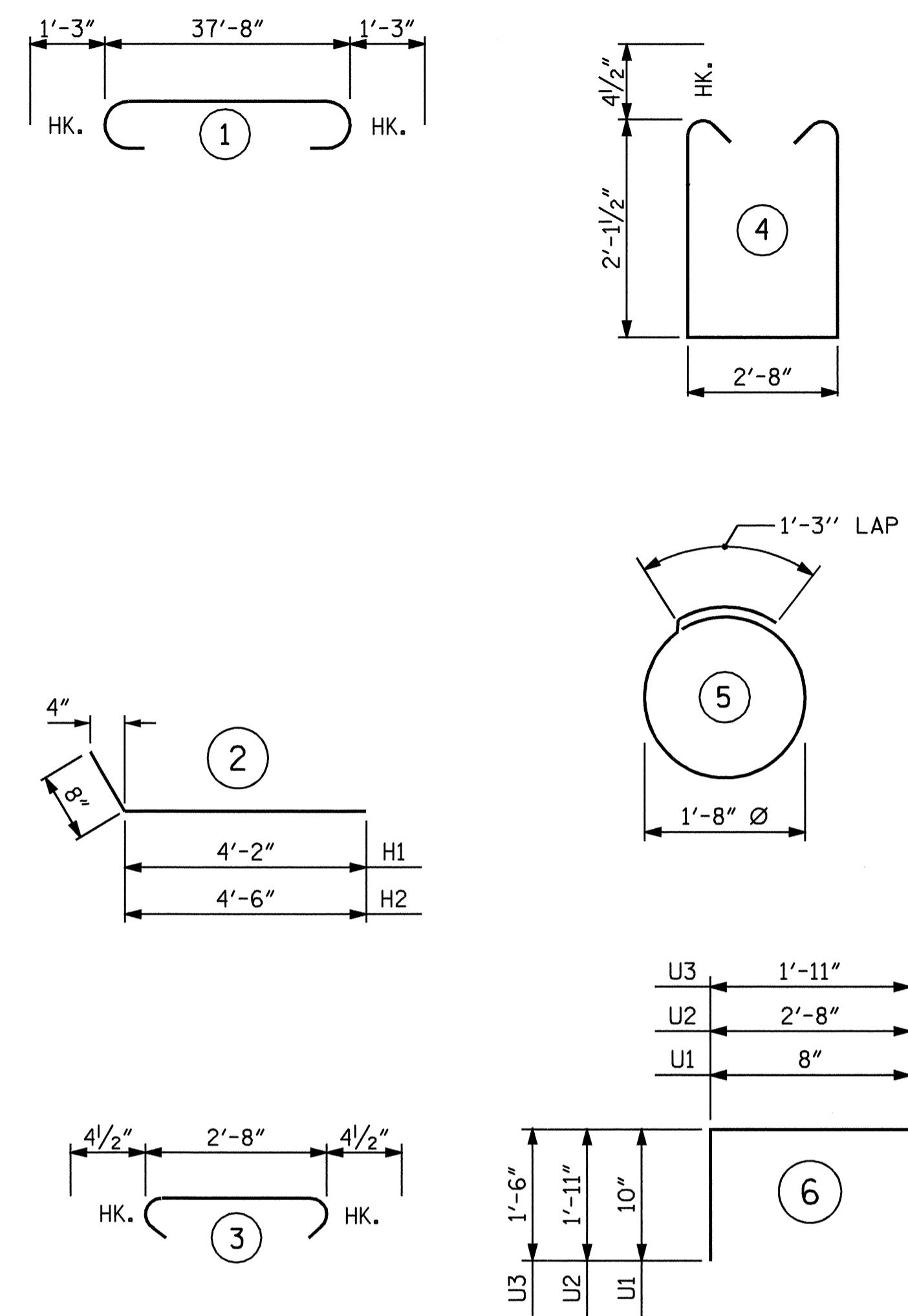
NO SEPARATE PAYMENT WILL BE MADE FOR THIS WORK AND THE ENTIRE COST OF THIS WORK SHALL BE INCLUDED IN THE UNIT CONTRACT PRICE BID FOR THE SEVERAL PAY ITEMS.

TEMPORARY DRAINAGE AT END BENT



* POSITION OF PILE DURING WELDING. **PILE SPLICE DETAILS**

BAR TYPES

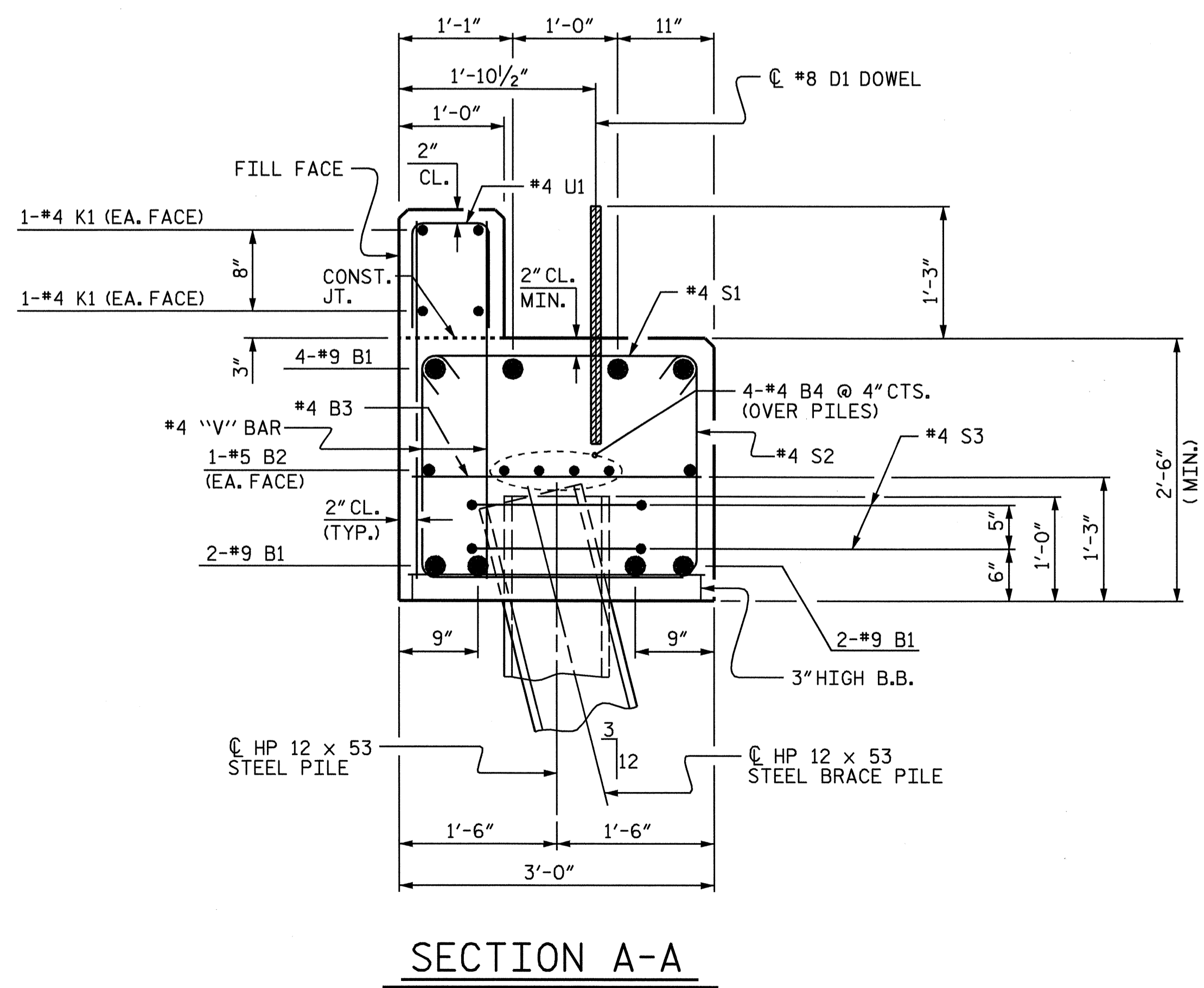


ALL BAR DIMENSIONS ARE OUT TO OUT.

BILL OF MATERIAL

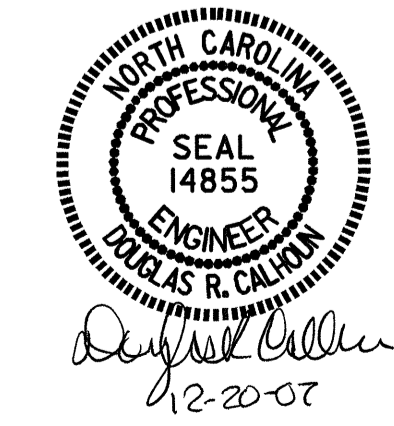
| END BENT 2 | | | | | |
|------------|-----|------|------|--------|--------|
| BAR | NO. | SIZE | TYPE | LENGTH | WEIGHT |
| B1 | 8 | #9 | 1 | 40'-2" | 1093 |
| B2 | 2 | #5 | STR | 37'-8" | 79 |
| B3 | 10 | #4 | STR | 2'-8" | 18 |
| B4 | 8 | #4 | STR | 20'-1" | 107 |
| D1 | 18 | #8 | STR | 2'-3" | 108 |
| H1 | 7 | #4 | 2 | 4'-10" | 23 |
| H2 | 7 | #4 | 2 | 5'-2" | 24 |
| K1 | 8 | #4 | STR | 20'-1" | 107 |
| K2 | 4 | #4 | STR | 3'-5" | 9 |
| K3 | 4 | #4 | STR | 1'-6" | 4 |
| S1 | 30 | #4 | 3 | 3'-5" | 68 |
| S2 | 30 | #4 | 4 | 7'-8" | 154 |
| S3 | 16 | #4 | 5 | 6'-6" | 69 |
| U1 | 32 | #4 | 6 | 2'-4" | 50 |
| U2 | 19 | #4 | 6 | 6'-6" | 82 |
| U3 | 4 | #4 | 6 | 4'-11" | 13 |
| V1 | 34 | #4 | STR | 3'-7" | 81 |
| V2 | 30 | #4 | STR | 3'-3" | 65 |
| V3 | 6 | #4 | STR | 5'-8" | 23 |
| V4 | 18 | #4 | STR | 5'-5" | 65 |

| | | |
|---|----------|----------|
| REINFORCING STEEL | = | 2242 LBS |
| CLASS A CONCRETE BREAKDOWN | | |
| POUR 1 (CAP & LOWER PART OF WINGS) | C.Y. | 13.1 |
| POUR 2 (BACKWALL & UPPER PART OF WINGS) | C.Y. | 2.8 |
| POUR 3 (LATERAL GUIDE) | C.Y. | 0.1 |
| CLASS A CONCRETE TOTAL | C.Y. | 16.0 |
| HP 12 x 53 STEEL PILES | | |
| NO. 8 | LIN. FT. | 120 |
| 18" STEEL SHEET PILES | SQ. FT. | 515 |



SECTION A-A

PROJECT NO. B-3606
ASHE COUNTY
 STATION: 11+65.00 -L-
 SHEET 3 OF 3

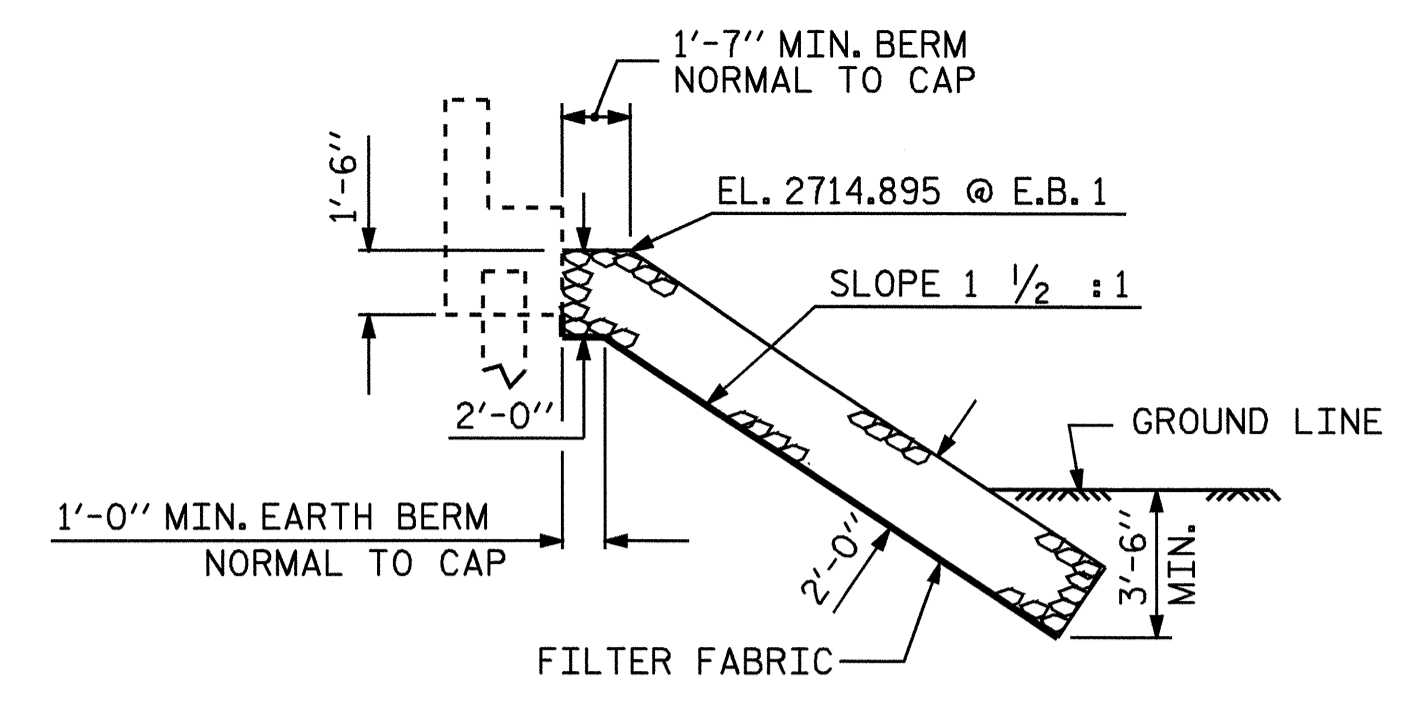
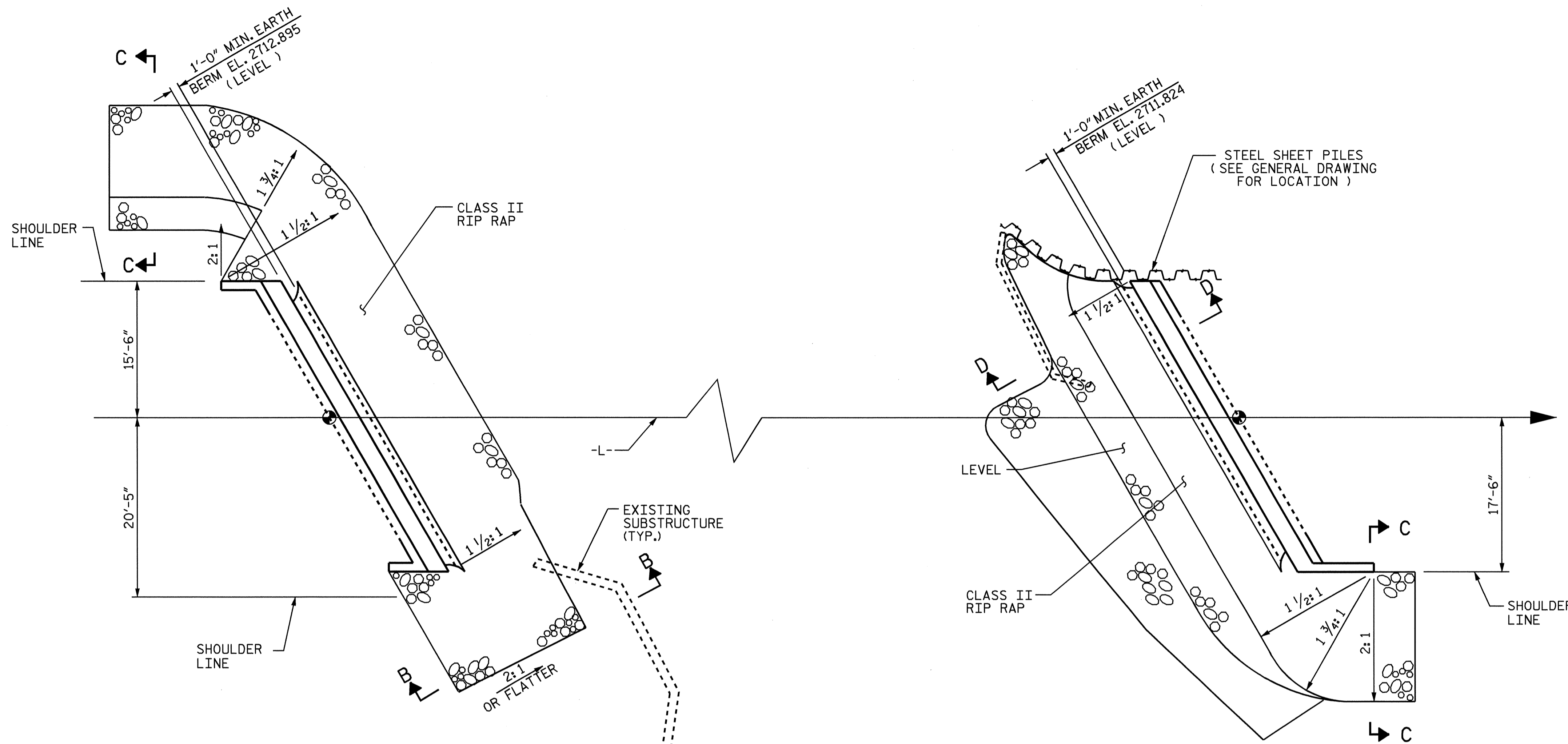


STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH
**SUBSTRUCTURE
 END BENT 2**

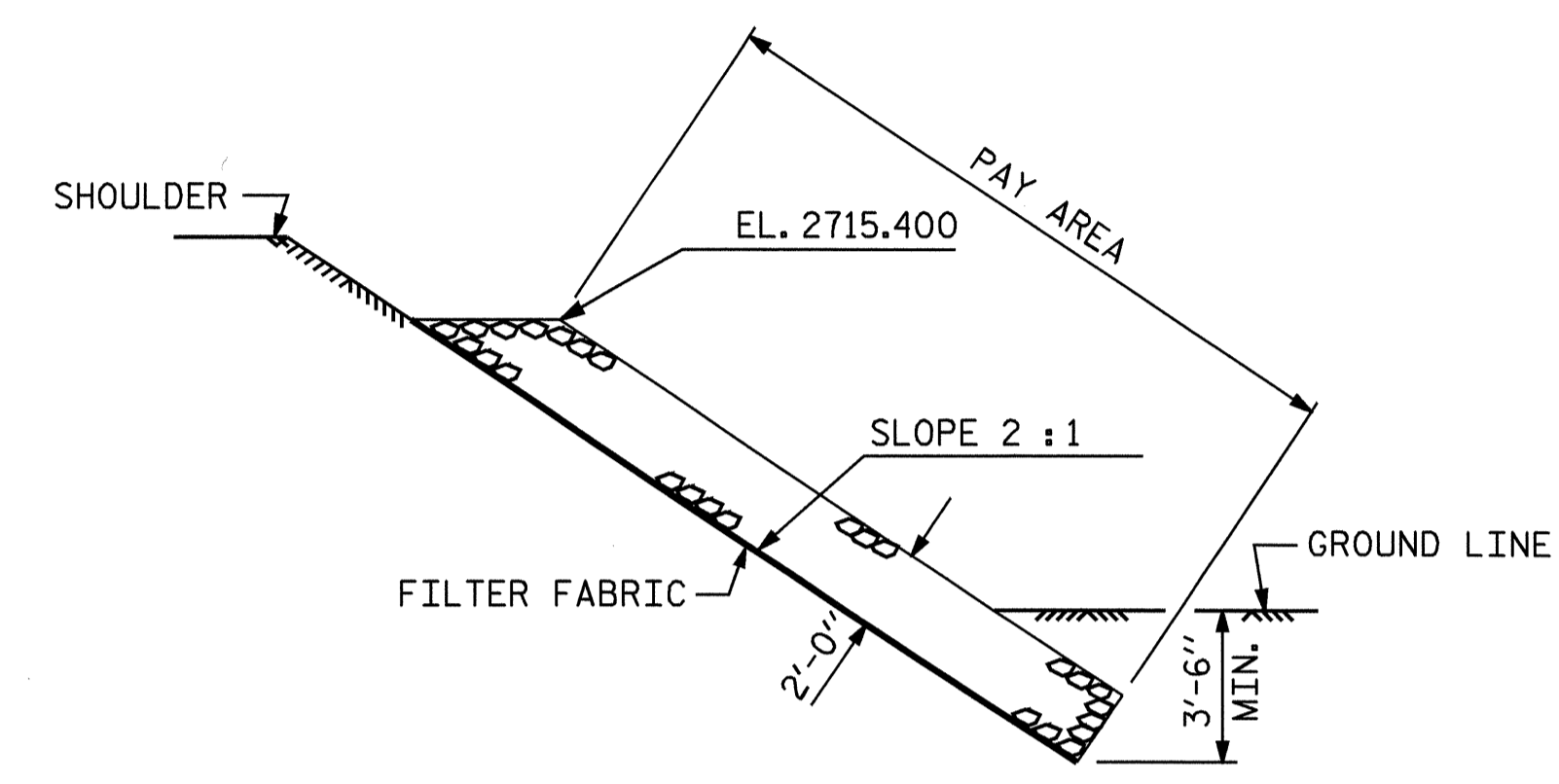
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TOTAL SHEETS: **24**

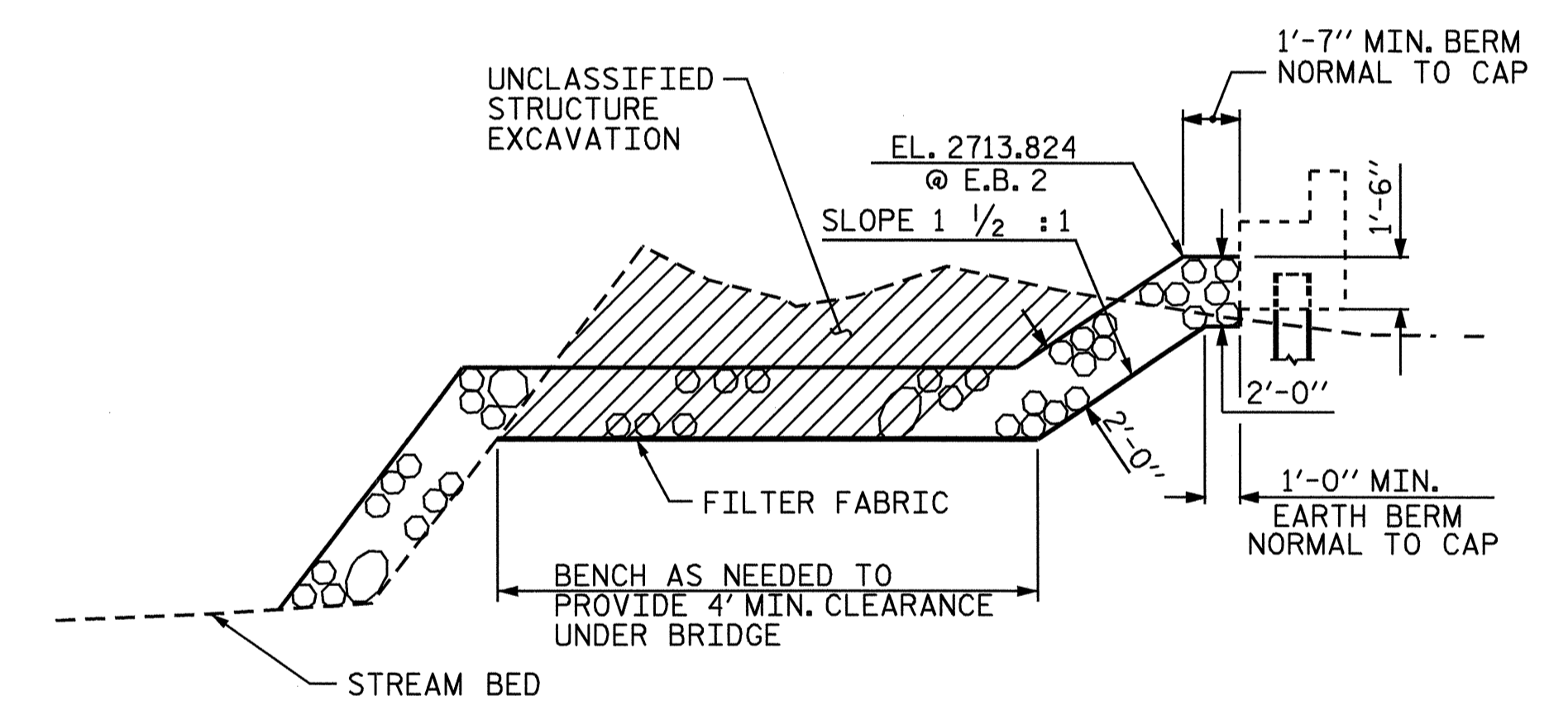
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 CHECKED BY: J. B. WILSON DATE: 5/1/06



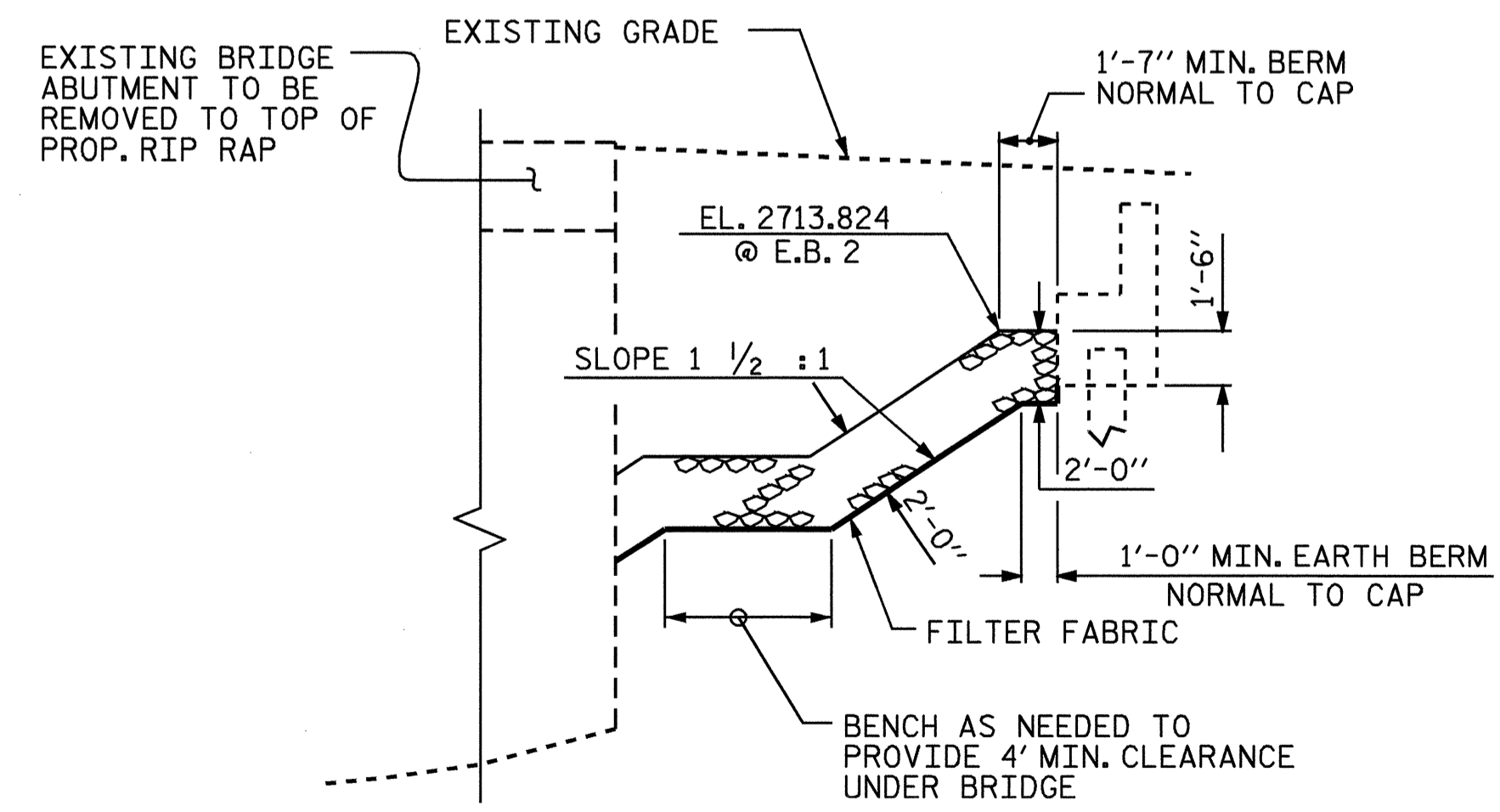
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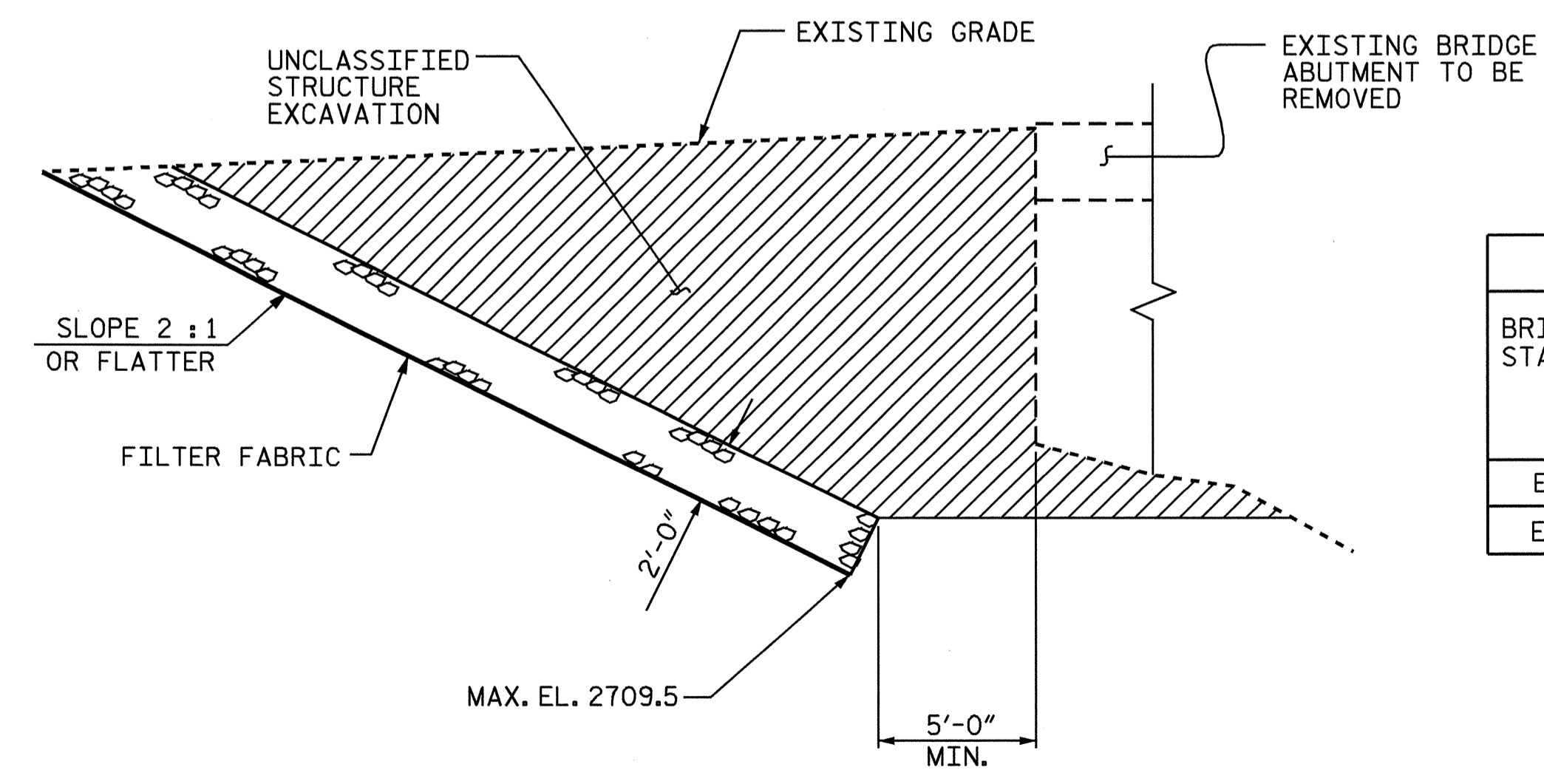
SECTION C-C



SECTION C-C @ END BENT 2



SECTION D-D



SECTION B-B

| ESTIMATED QUANTITIES | | |
|----------------------------|--------------------------------|----------------------------|
| BRIDGE @ STA. 11+65.00 -L- | RIp RAP CLASS II (2'-0" THICK) | FILTER FABRIC FOR DRAINAGE |
| | TONS | SQUARE YARDS |
| END BENT 1 | 124 | 138 |
| END BENT 2 | 129 | 143 |

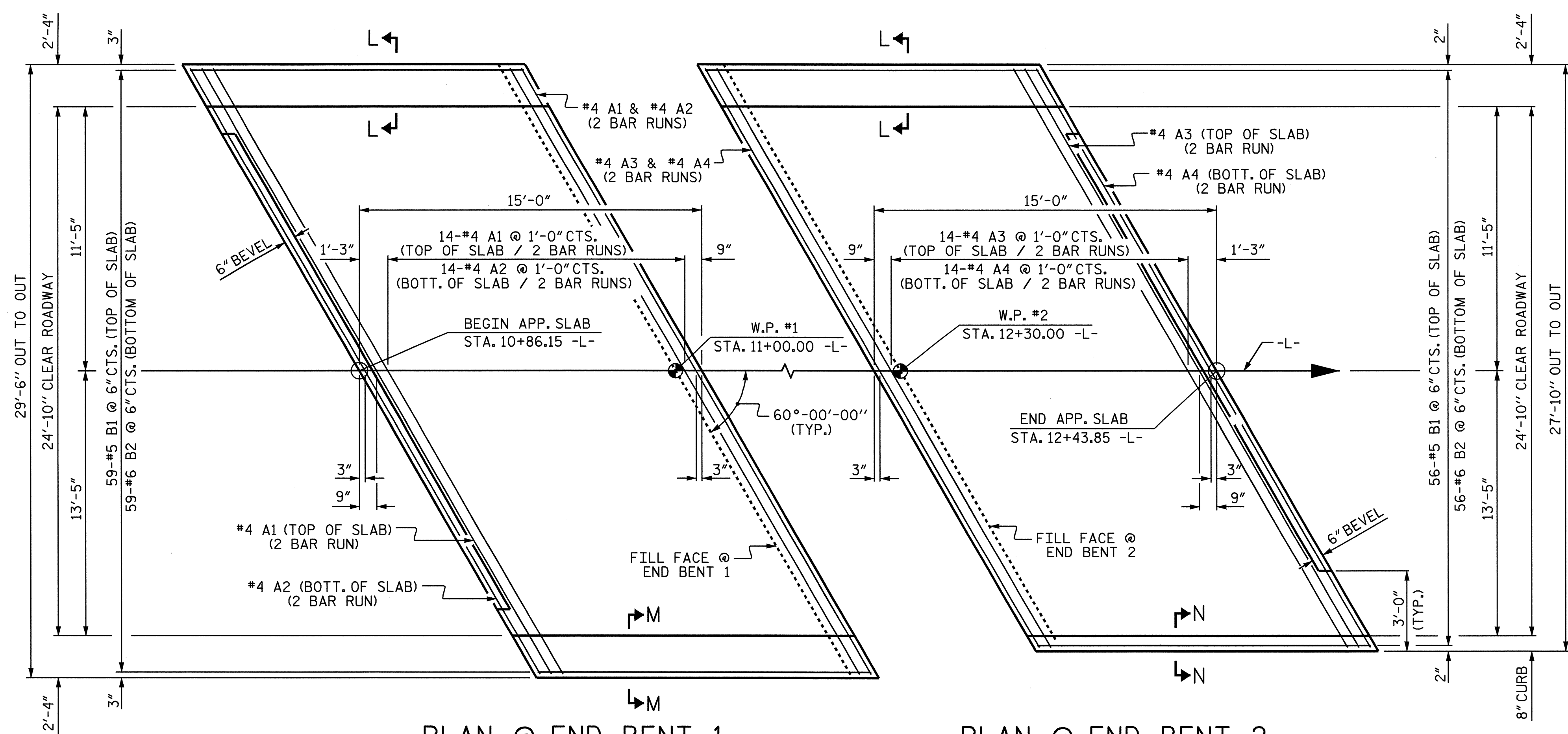
PROJECT NO. B-3606
ASHE COUNTY
 STATION: 11+65.00 -L-

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 24 |
| 2 | | | 4 | | | |



DRAWN BY: J. MYA DATE: 1/3/06
 CHECKED BY: T. A. HARRIS DATE: 2/14/06



PLAN @ END BENT 1

PLAN @ END BENT 2

NOTES

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

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

THE 6" COMP. A.B.C. SHALL 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.

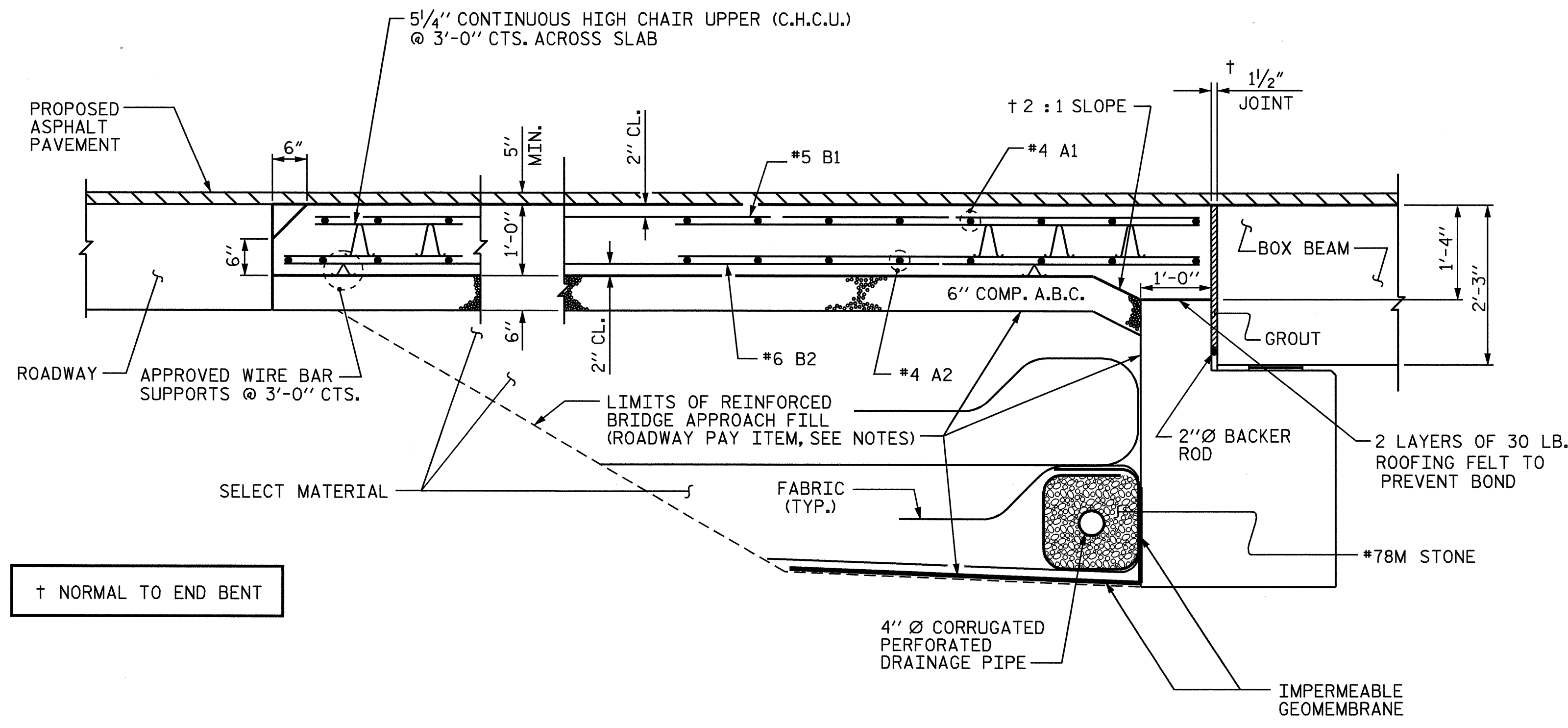
FOR JOINT DETAILS, SEE "PRESTRESSED CONCRETE BOX BEAM UNIT" SHEETS.

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

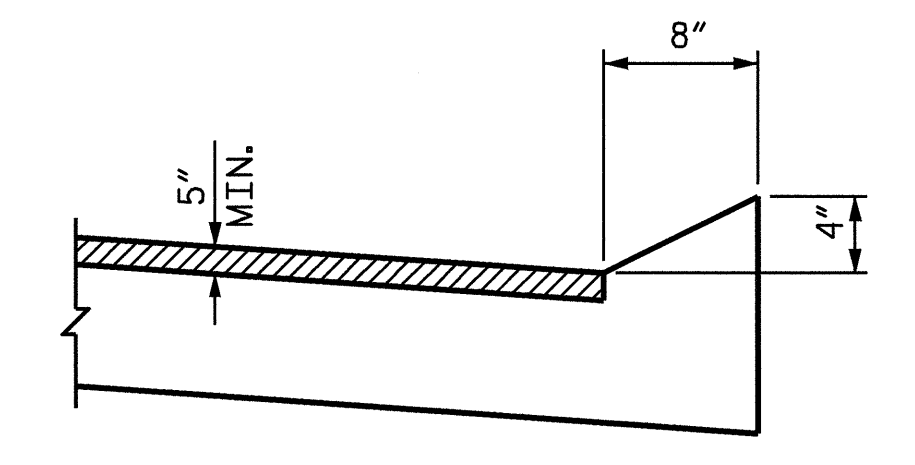
APPROACH SLAB GROOVING IS NOT REQUIRED.

| BILL OF MATERIAL | | | | | |
|---------------------------------|-----|------|------|---------|--------|
| FOR APPROACH SLAB @ END BENT 1 | | | | | |
| BAR | NO. | SIZE | TYPE | LENGTH | WEIGHT |
| *A1 | 32 | #4 | STR | 17'-11" | 383 |
| A2 | 32 | #4 | STR | 17'-9" | 379 |
| *B1 | 59 | #5 | STR | 14'-2" | 872 |
| B2 | 59 | #6 | STR | 14'-8" | 1300 |
| REINFORCING STEEL | | | | LBS. | 1679 |
| *EPOXY COATED REINFORCING STEEL | | | | LBS. | 1255 |
| CLASS AA CONCRETE | | | | C. Y. | 16.8 |
| FOR APPROACH SLAB @ END BENT 2 | | | | | |
| BAR | NO. | SIZE | TYPE | LENGTH | WEIGHT |
| *A3 | 32 | #4 | STR | 16'-11" | 362 |
| A4 | 32 | #4 | STR | 16'-10" | 360 |
| *B1 | 56 | #5 | STR | 14'-2" | 827 |
| B2 | 56 | #6 | STR | 14'-8" | 1234 |
| REINFORCING STEEL | | | | LBS. | 1594 |
| *EPOXY COATED REINFORCING STEEL | | | | LBS. | 1189 |
| CLASS AA CONCRETE | | | | C. Y. | 15.9 |

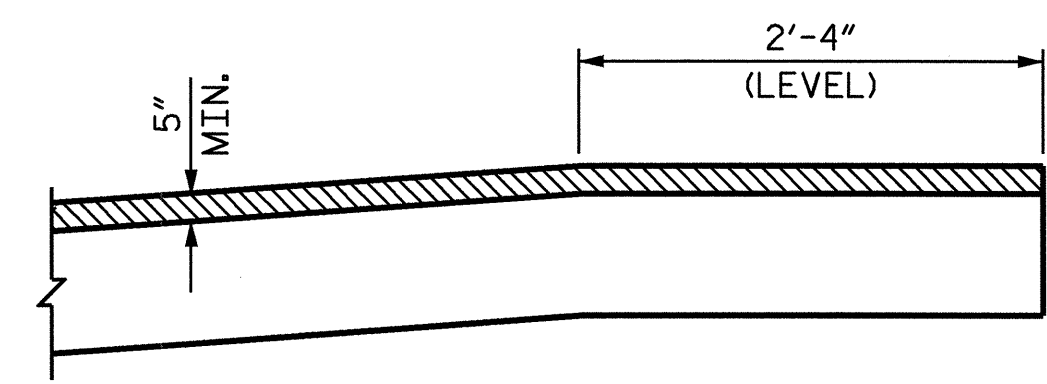
| SPlice LENGTH CHART | |
|---------------------|-------------|
| BAR | MIN. SPLICE |
| *4 A1 | 2'-0" |
| *4 A2 | 1'-9" |
| *4 A3 | 2'-0" |
| *4 A4 | 1'-9" |



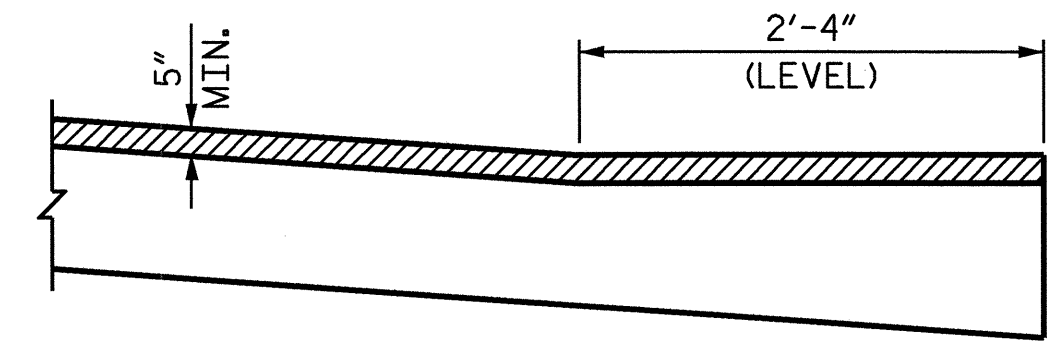
SECTION THRU SLAB



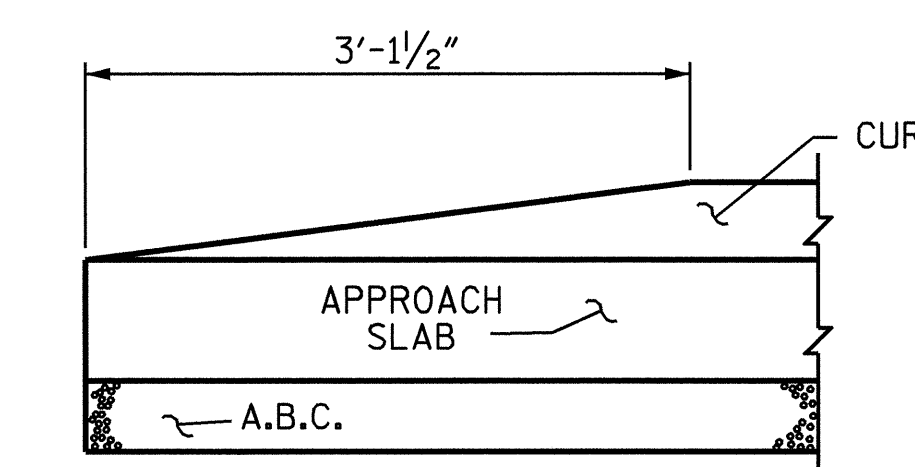
SECTION N-N



SECTION L-L



SECTION M-M



END OF CURB WITHOUT SHOULDER BERM GUTTER (OMIT TAPER WHEN SHOULDER BERM GUTTER IS REQUIRED)

CURB DETAILS

PROJECT NO. B-3606
ASHE COUNTY
 STATION: 11+65.00 -L-

SHEET 1 OF 2

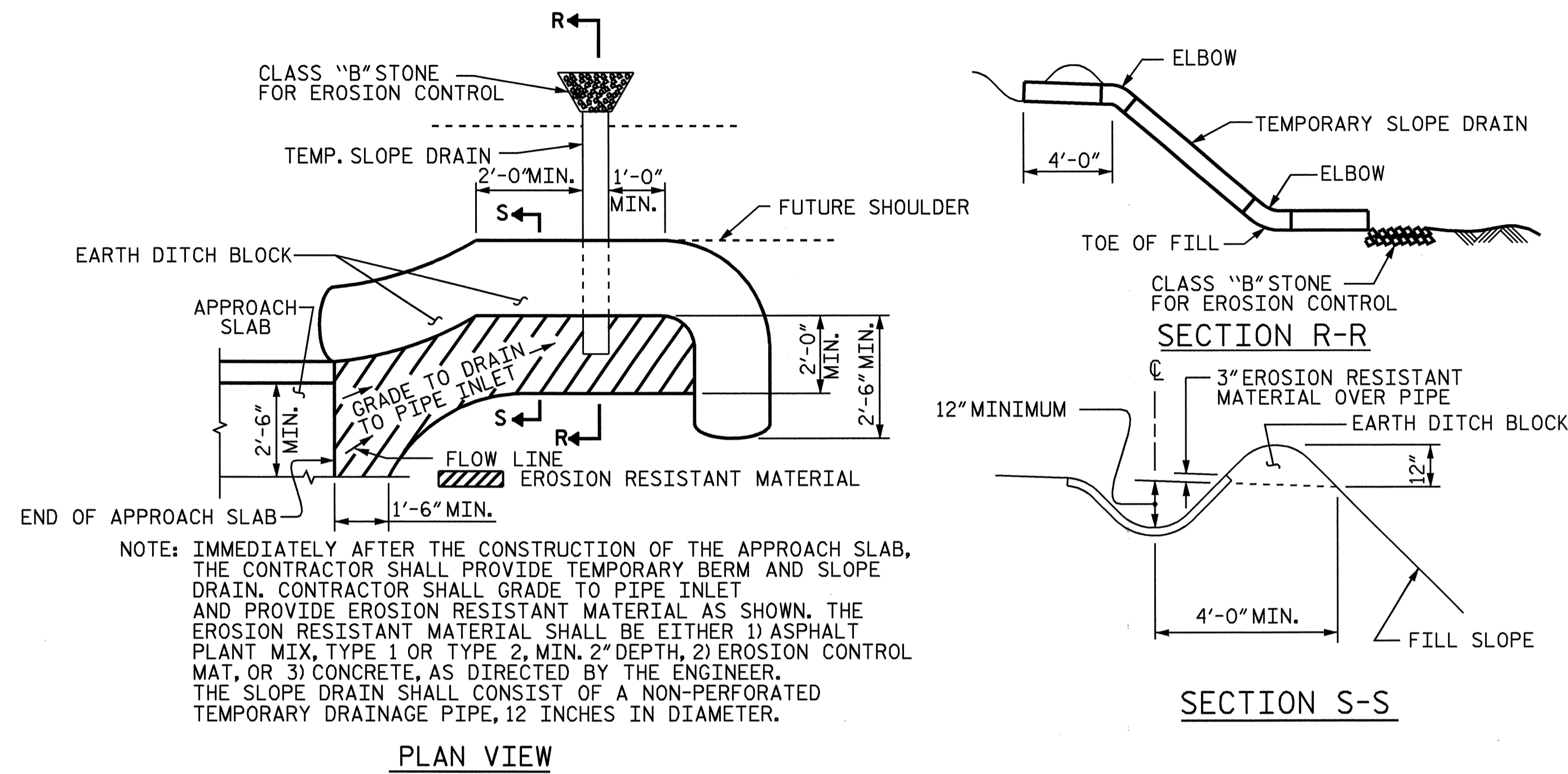
STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH
 STANDARD
 BRIDGE APPROACH SLAB
 FOR PRESTRESSED CONCRETE
 BOX BEAM



| | |
|---------------------------|----------------------|
| ASSEMBLED BY : J. MYA | DATE : 12/12/05 |
| CHECKED BY : T. A. HARRIS | DATE : 12/14/06 |
| DRAWN BY : FCJ 6/87 | REV. 7/10/01 LES/RDR |
| CHECKED BY : EGA 6/87 | REV. 5/7/03R RWW/JTE |
| | REV. 5/1/06R KMM/GM |

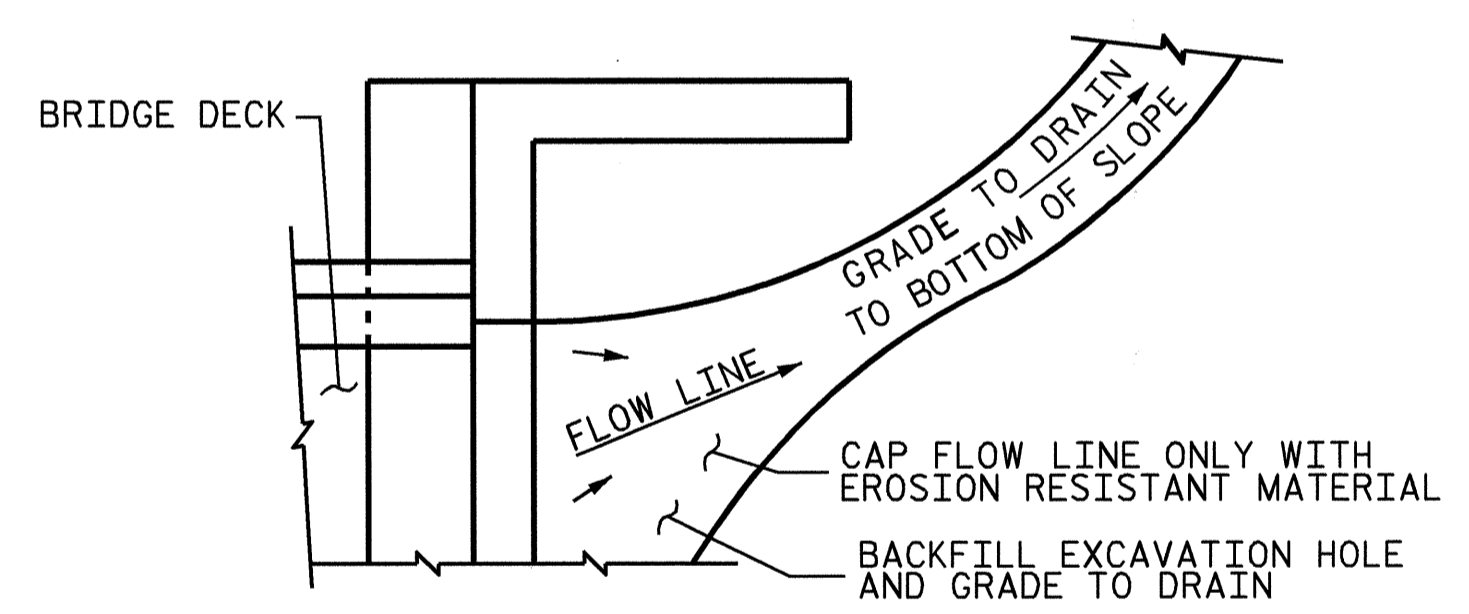
| REVISIONS | | | SHEET NO. | | |
|-----------|-----|-------|-----------|-----|-------|
| NO. | BY: | DATE: | NO. | BY: | DATE: |
| 1 | | | 3 | | |
| 2 | | | 4 | | |

TOTAL SHEETS: 24



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

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



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

TEMPORARY DRAINAGE DETAIL

PROJECT NO. B-3606
ASHE COUNTY
 STATION: 11+65.00 -L-

SHEET 2 OF 2



| | | | | | | |
|--|-----|-------|-----|-----|-------|---------------------------|
| STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION RALEIGH | | | | | | 1988 |
| STANDARD BRIDGE APPROACH SLAB DETAILS | | | | | | SHEET NO. S-24 |
| REVISIONS | | | | | | TOTAL SHEETS 24 |
| NO. | BY: | DATE: | NO. | BY: | DATE: | |
| 1 | | | 3 | | | |
| 2 | | | 4 | | | |

ASSEMBLED BY : J. MYA DATE : 12/12/05
 CHECKED BY : T. A. HARRIS DATE : 2/14/06

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