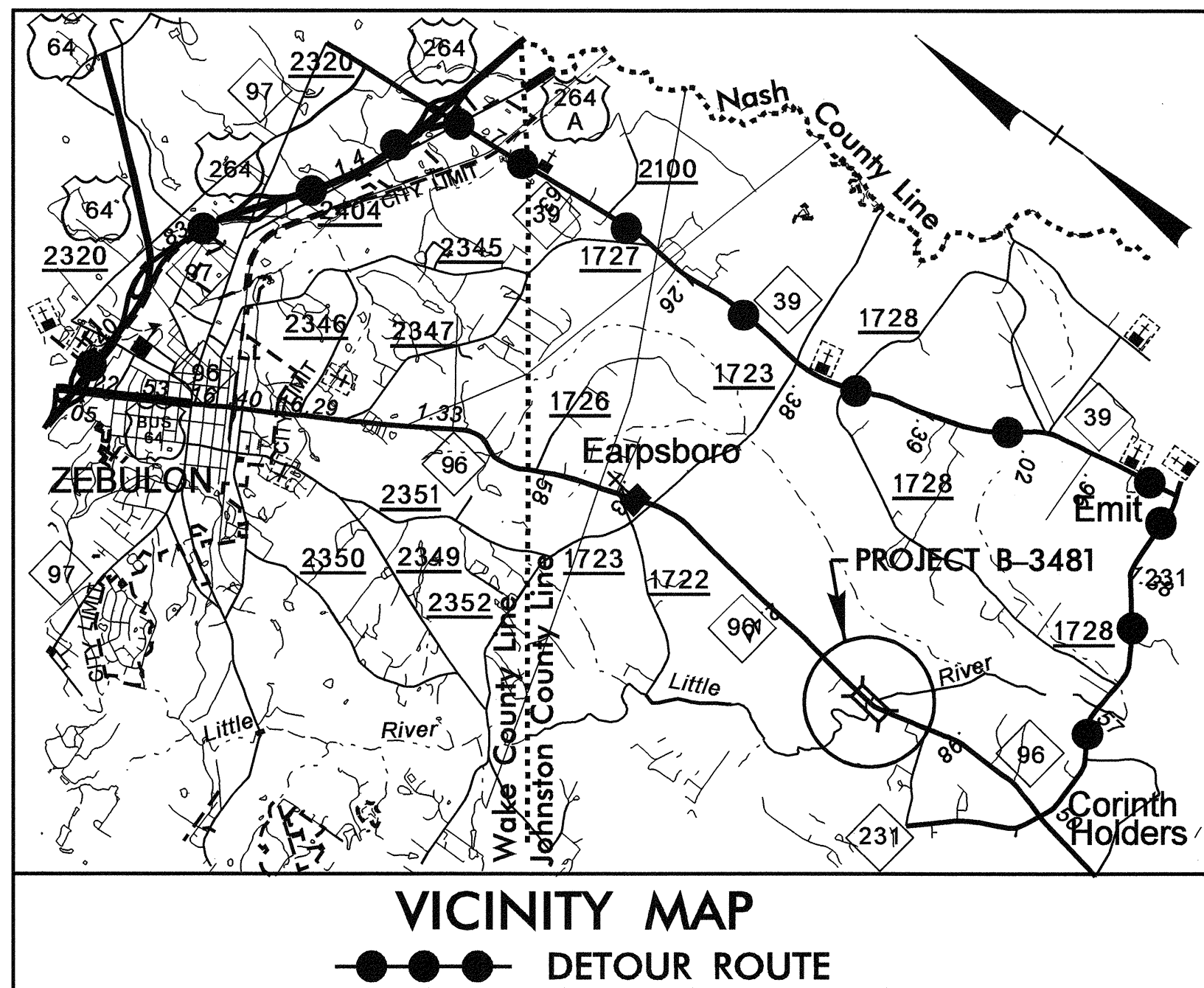


CONTRACT: C201637 TIP PROJECT: B-3481



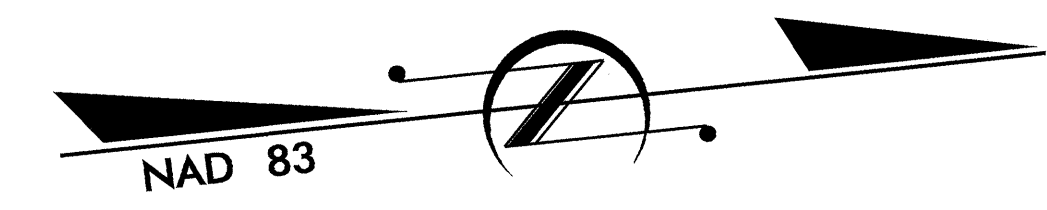
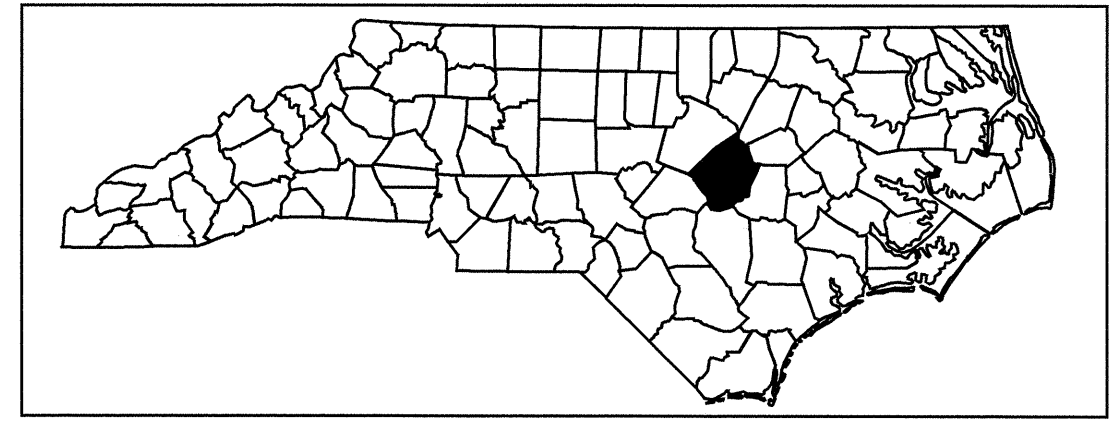
VICINITY MAP
 ●●●● DETOUR ROUTE
 NEAREST SHIPPING POINT: ZEBULON ON NORFOLK SOUTHERN RR
 6.2 MILES FROM PROJECT

STATE OF NORTH CAROLINA
 DIVISION OF HIGHWAYS

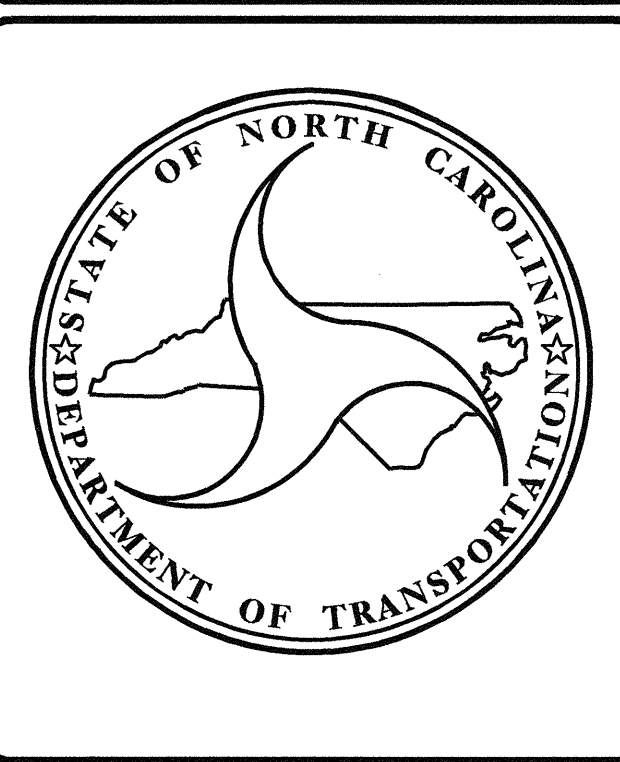
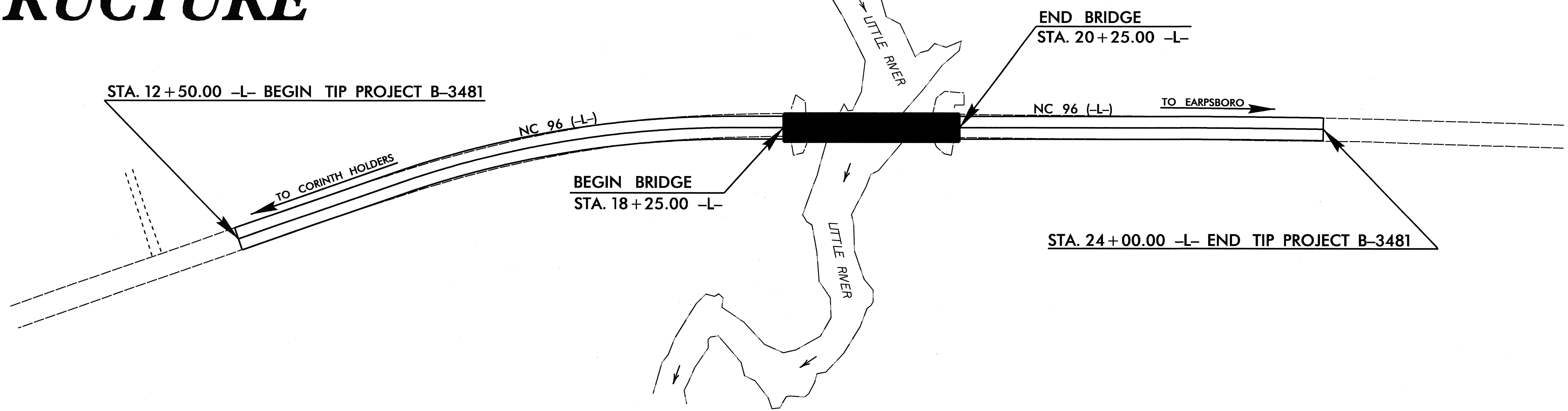
JOHNSTON COUNTY

LOCATION: BRIDGE NO. 94 OVER LITTLE RIVER ON NC 96
TYPE OF WORK: GRADING, DRAINAGE, PAVING & STRUCTURE

| STATE | STATE PROJECT REFERENCE NO. | SHEET NO. | TOTAL SHEETS |
|-----------------|-----------------------------|----------------|--------------|
| N.C. | B-3481 | | |
| STATE PROJ. NO. | F.A. PROJ. NO. | DESCRIPTION | |
| 33098.1.1 | BRSTP-96(2) | P.E. | |
| 33098.2.2 | BRSTP-96(2) | RW & UTILITIES | |
| 33098.3.2 | BRSTP-96(8) | CONSTR. | |
| | | | |
| | | | |



STRUCTURE



DESIGN DATA

| | |
|------------|----------|
| ADT 2007 = | 2970 |
| ADT 2025 = | 4500 |
| DHV = | 10 % |
| D = | 60 % |
| T = | 14 % * |
| V = | 55 MPH |
| * TTST 6 % | DUAL 8 % |

PROJECT LENGTH

| | |
|---------------------------------------|----------|
| LENGTH ROADWAY TIP PROJECT B-3481 = | 0.180 MI |
| LENGTH STRUCTURE TIP PROJECT B-3481 = | 0.038 MI |
| TOTAL LENGTH OF TIP PROJECT B-3481 = | 0.218 MI |

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

2006 STANDARD SPECIFICATIONS

LETTING DATE:
 MAY 15, 2007

N. N. BULLOCK, PE
 PROJECT ENGINEER

D. R. CALHOUN, PE
 PROJECT DESIGN ENGINEER

STRUCTURE DESIGN UNIT

Gregory R. Perpetti
 3.30.07

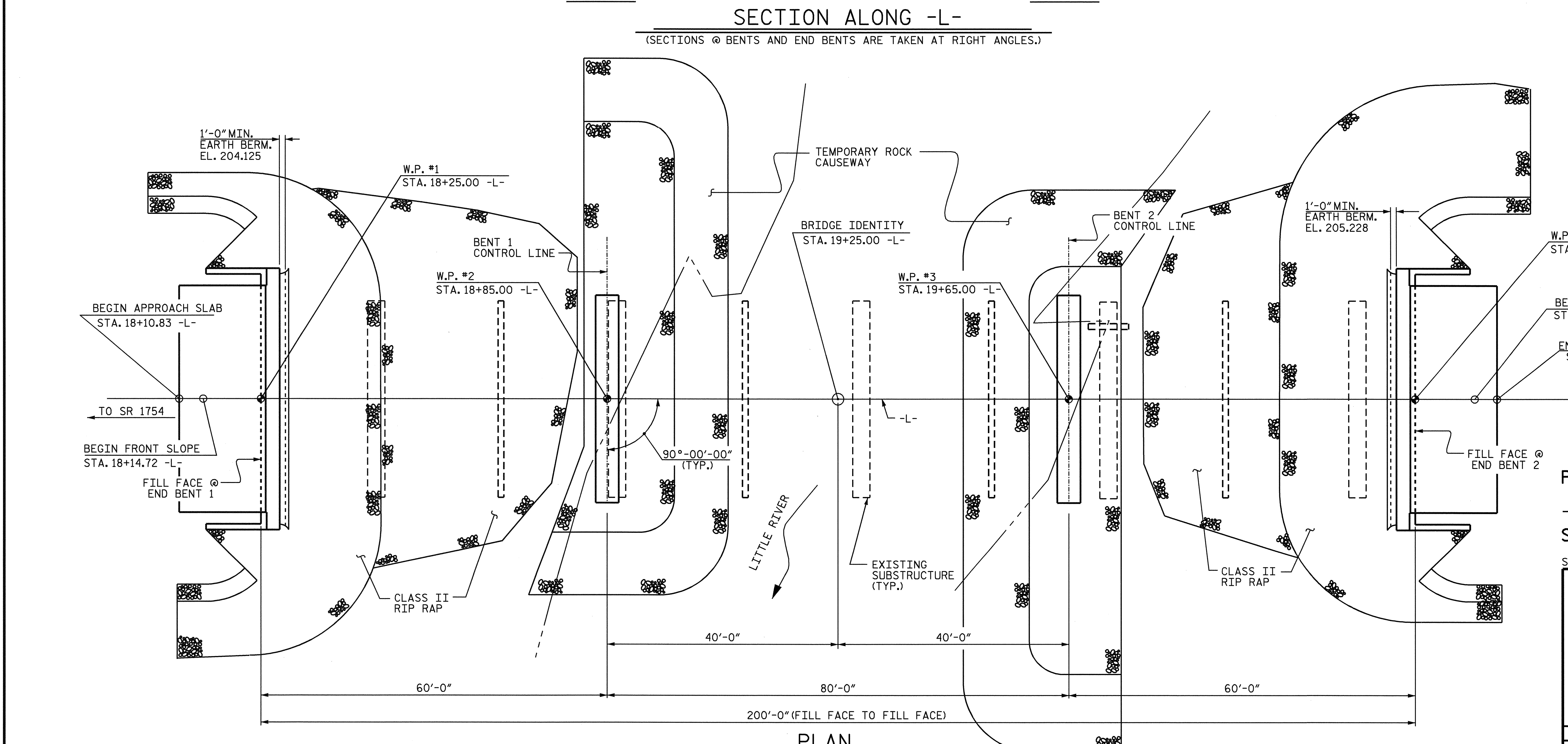
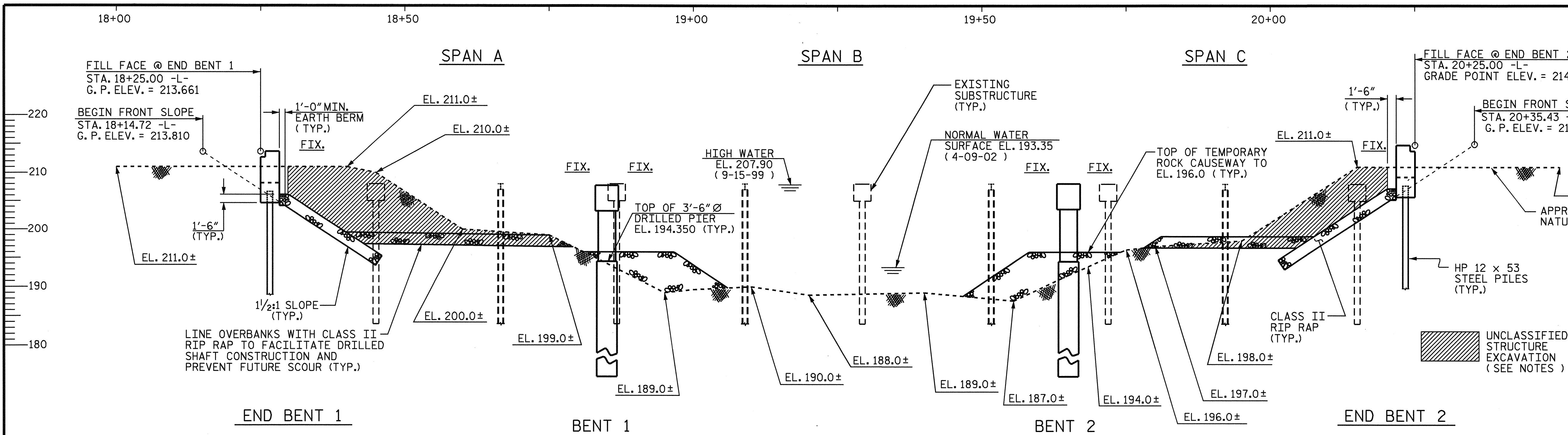
DIVISION OF HIGHWAYS
 STATE OF NORTH CAROLINA

STATE DESIGN ENGINEER _____ P.E.

DEPARTMENT OF TRANSPORTATION
 FEDERAL HIGHWAY ADMINISTRATION

APPROVED _____
 DIVISION ADMINISTRATOR DATE _____

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Professional Engineer Seal: NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 12929, ENGINEER JAMES R. CALHOUN, 3/30/07

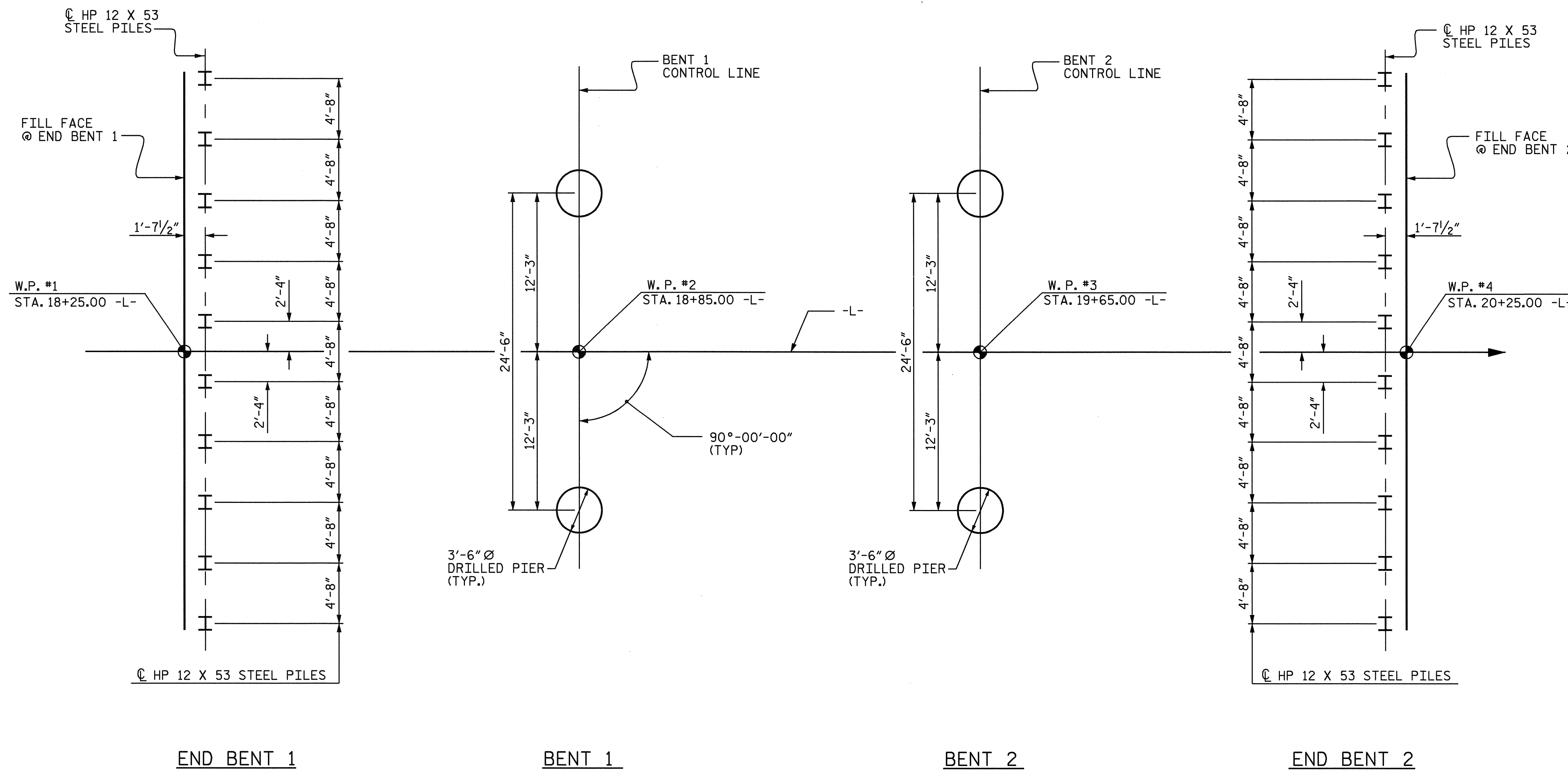
Professional Engineer Seal: NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 14855, ENGINEER DAVID W. COLLIER, 3/30/07

PROJECT NO. B-3481
JOHNSTON COUNTY
STATION: 19+25.00 -L-
SHEET 1 OF 3 REPLACES BRIDGE #94

| REVISIONS | | | | | | SHEET NO. |
|-----------|-----|-------|-----|-----|-------|-----------------|
| NO. | BY: | DATE: | NO. | BY: | DATE: | S-1 |
| 1 | | | 3 | | | TOTAL SHEETS 31 |
| 2 | | | 4 | | | |

DRAWN BY: E. G. ALLEN DATE: 1/17/06
CHECKED BY: T. A. HARRIS DATE: 1/24/06

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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 AND 2 ARE DESIGNED FOR BOTH SKIN FRICTION AND END BEARING. CHECK FIELD CONDITIONS FOR THE REQUIRED END BEARING CAPACITY OF 63 TSF.

DRILLED PIERS AT BENT 1 AND 2 ARE DESIGNED FOR AN APPLIED LOAD OF 320 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 182.0 FT. WITHOUT PRIOR APPROVAL FROM THE ENGINEER. THE ENGINEER WILL DETERMINE THE NEED FOR PERMANENT STEEL CASING. SEE DRILLED PIERS SPECIAL PROVISION.

PERMANENT STEEL CASING MAY BE REQUIRED FOR DRILLED PIERS AT BENT 2. IF REQUIRED, DO NOT EXTEND THE CASING BELOW ELEVATION 183.0 FT (LT.) AND 177.0 FT. (RT.) 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 MUST EXTEND TO AN ELEVATION NO HIGHER THAN 170.0 FT.(LT.), AND 177.0 FT.(RT.), SATISFY THE REQUIRED END BEARING CAPACITY AND HAVE A MINIMUM PENETRATION OF 5.0 FT. (RT. ONLY) INTO ROCK AS DEFINED BY THE DRILLED PIERS SPECIAL PROVISION.

DRILLED PIERS AT BENT 2 MUST EXTEND TO AN ELEVATION NO HIGHER THAN 177.0 FT.(LT.), AND 171.0 FT.(RT.), SATISFY THE REQUIRED END BEARING CAPACITY AND HAVE A MINIMUM PENETRATION OF 5.0 FT. (LT. ONLY) INTO ROCK AS DEFINED BY THE DRILLED PIERS SPECIAL PROVISION.

THE SCOUR CRITICAL ELEVATION FOR BENT 1 IS ELEVATION 181.0 FT. AND END BENT 2 IS ELEVATION 182.0 FT. (LT.) AND 175.0 FT. (RT.). ELEVATIONS ARE USED TO MONITOR POSSIBLE SCOUR PROBLEMS DURING THE LIFE OF THE STRUCTURE.

FOR DRILLED PIERS, SEE DRILLED PIERS SPECIAL PROVISIONS.

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

SID INSPECTIONS MAY BE REQUIRED TO INSPECT THE BOTTOM CLEANLINESS OF THE DRILLED PIERS AT BENT 1 AND 2. 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 AND 2. THE ENGINEER WILL DETERMINE THE NEED FOR CSL TESTING. SEE CROSSHOLE SONIC LOGGING SPECIAL PROVISION.

DO NOT USE SLURRY CONSTRUCTION FOR THE DRILLED PIERS AT BENT 1 AND 2.

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.

NOTES :

ASSUMED LIVE LOAD = HS 20 OR ALTERNATE LOADING, EXCEPT THAT THE GIRDERS 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.

PRESTRESSED CONCRETE DECK PANELS MAY BE USED IN LIEU OF METAL STAY-IN-PLACE FORMS IN ACCORDANCE WITH ARTICLE 420-3 OF THE STANDARD SPECIFICATIONS.

REMOVABLE FORMS MAY BE USED IN LIEU OF METAL STAY-IN-PLACE FORMS IN ACCORDANCE WITH ARTICLE 420-3 OF THE STANDARD SPECIFICATIONS.

THE EXISTING STRUCTURE CONSISTING OF EIGHT (2 @ 21'-1 1/2", 4 @ 21'-3", 2 @ 21'- 1/2") REINFORCED CONCRETE CONTINUOUS DECK SPANS WITH A CLEAR ROADWAY WIDTH OF 24'-1" ON STEEL I-BEAMS ON REINFORCED CONCRETE CAP/TIMBER PILE END BENTS AND THREE REINFORCED CONCRETE CAP/TIMBER PILE BENTS AND THREE STEEL CAP/STEEL PILE BENTS AND LOCATED AT THE PROPOSED STRUCTURE SHALL BE REMOVED. THE EXISTING BRIDGE IS PRESENTLY NOT POSTED FOR LOAD LIMIT. SHOULD THE STRUCTURAL INTEGRITY OF THE BRIDGE DETERIORATE DURING CONSTRUCTION OF THE PROPOSED STRUCTURE, A LOAD LIMIT MAY BE POSTED AND MAY BE REDUCED AS FOUND NECESSARY DURING THE LIFE OF THE PROJECT. SEE SPECIAL PROVISION FOR "REMOVAL OF EXISTING STRUCTURE @ STA. 19+25.00 -L-".

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

THE SUBSTRUCTURE OF THE EXISTING BRIDGE 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 19+25.00 -L-".

THE MATERIAL SHOWN IN THE CROSS-HATCHED AREA SHALL BE EXCAVATED FOR A DISTANCE OF 30 FT. EACH SIDE OF CENTERLINE ROADWAY AS DIRECTED BY THE ENGINEER. THIS WORK WILL BE MEASURED AND PAID FOR AT THE CONTRACT UNIT PRICE PER CUBIC YARD FOR UNCLASSIFIED STRUCTURE EXCAVATION.

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 19+25.00 -L-.

SEE SHEET 3 OF 3 FOR ADDITIONAL NOTES.

DRAWN BY : E. G. ALLEN DATE : 1/14/06
CHECKED BY : I. A. HARRIS DATE : 1/24/06

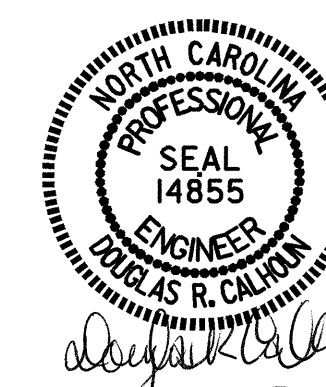
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PROJECT NO. B-3481
JOHNSTON COUNTY
STATION: 19+25.00 -L-

SHEET 2 OF 3

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

GENERAL DRAWING
FOR BRIDGE ON NC 96
OVER LITTLE RIVER BETWEEN
SR 1754 AND SR 1723



| REVISIONS | | | | | | SHEET NO. |
|-----------|-----|-------|-----|-----|-------|--------------|
| NO. | BY: | DATE: | NO. | BY: | DATE: | S-2 |
| 1 | | | 3 | | | TOTAL SHEETS |
| 2 | | | 4 | | | 31 |

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 INSPECTION | CROSSHOLE SONIC LOGGING | UNCLASSIFIED STRUCTURE EXCAVATION | REINFORCED CONCRETE DECK SLAB | GROOVING BRIDGE FLOORS | CLASS A CONCRETE | BRIDGE APPROACH SLABS | REINFORCING STEEL | SPIRAL COLUMN REINFORCING STEEL | 54" PRESTRESSED CONCRETE GIRDERS | HP 12 X 53 STEEL PILES | CONCRETE BARRIER RAIL | RIP RAP CLASS II (2'-0" THICK) | FILTER FABRIC FOR DRAINAGE | ELASTOMERIC BEARINGS | EVAZOTE JOINT SEALS | | |
|----------------|---|-------------------------------|-------------------------------|-----------------------------------|---|----------------|-------------------------|-----------------------------------|-------------------------------|------------------------|------------------|-----------------------|-------------------|---------------------------------|----------------------------------|------------------------|-----------------------|--------------------------------|----------------------------|----------------------|---------------------|----------|----------|
| | LUMP SUM | LUMP SUM | LIN.FT. | LIN.FT. | LIN.FT. | EA. | EA. | CU.YDS. | SQ.FT. | SQ.FT. | CU.YDS. | LUMP SUM | LBS. | LBS. | NO. | LIN.FT. | NO. | LIN.FT. | LIN.FT. | TONS | SQ.YDS. | LUMP SUM | LUMP SUM |
| SUPERSTRUCTURE | | | | | | | | | 7850 | 7482 | | LUMP SUM | | | 12 | 786.00 | | | 396.67 | | | LUMP SUM | LUMP SUM |
| END BENT 1 | | | | | | | | 425 | | | 18.2 | | 3364 | | | 10 | 150 | | | 408 | 453 | | |
| BENT 1 | | | 27.84 | 14.00 | 24.70 | | | | | | 26.9 | | 9874 | 1294 | | | | | | | | | |
| BENT 2 | | | 27.84 | 13.00 | 28.70 | | | | | | 27.0 | | 9852 | 1288 | | | | | | | | | |
| END BENT 2 | | | | | | | | 225 | | | 18.2 | | 3364 | | | 10 | 200 | | | 308 | 341 | | |
| TOTAL | LUMP SUM | LUMP SUM | 55.68 | 27.00 | 53.40 | 1 | 1 | 650 | 7850 | 7482 | 90.3 | LUMP SUM | 26,454 | 2582 | 12 | 786.00 | 20 | 350 | 396.67 | 716 | 794 | LUMP SUM | LUMP SUM |

NOTES (CONT.) :

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

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

THE 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.

NEEDLE BEAMS WILL NOT BE ALLOWED UNLESS OTHERWISE CALLED FOR ON THE PLANS OR APPROVED BY THE ENGINEER.

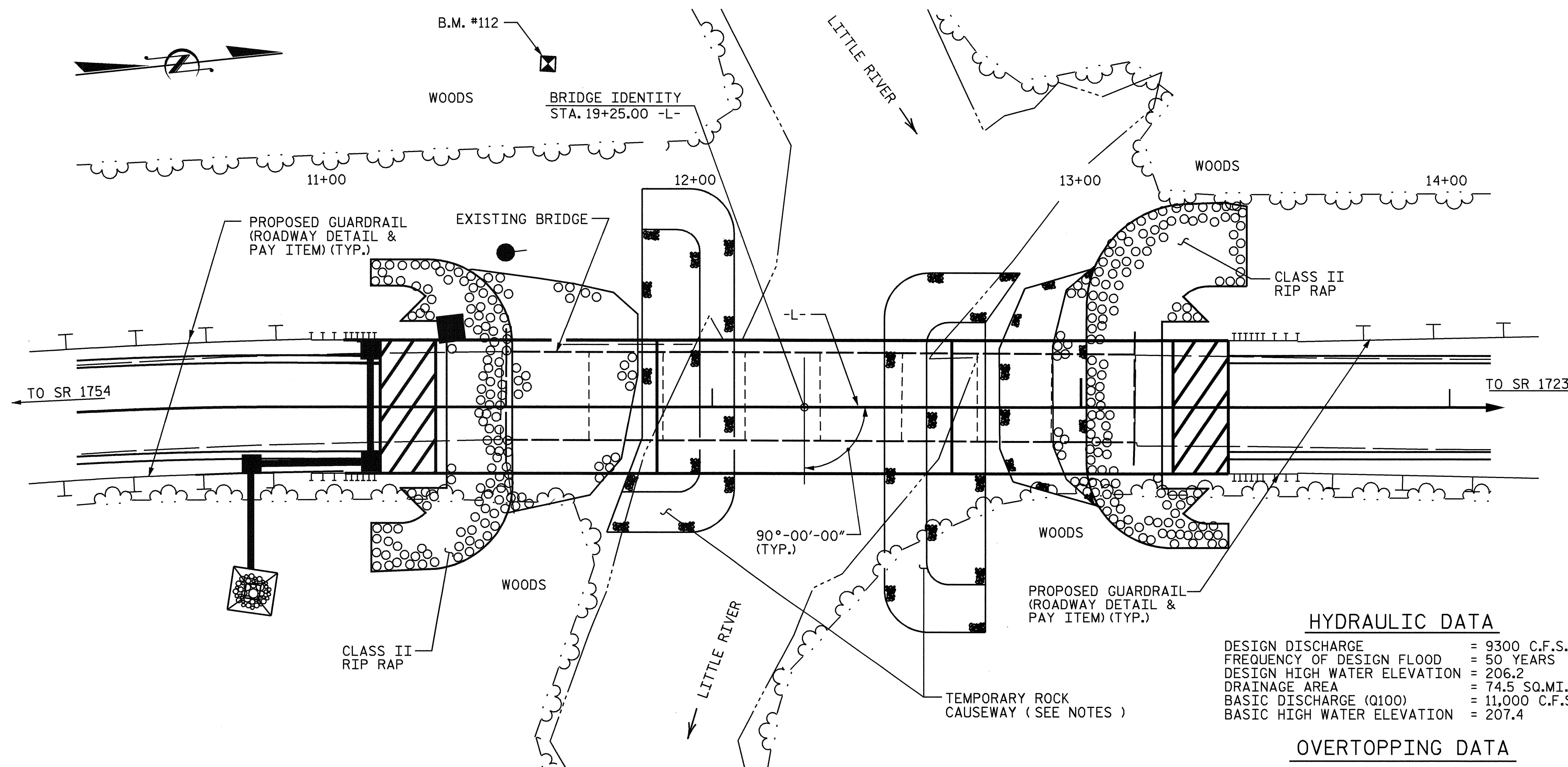
FOR SUBMITTAL OF WORKING DRAWINGS, SEE SPECIAL PROVISIONS.

FOR FALSEWORK AND FORMWORK, SEE SPECIAL PROVISIONS.

FOR CRANE SAFETY, SEE SPECIAL PROVISIONS.

FOR GROUT FOR STRUCTURES, SEE SPECIAL PROVISIONS.

B.M.#112 : R.R. SPIKE IN BASE OF 12" ELM 93.01 LEFT OF STA. 18+55.47 -L- ELEV. 199.52



HYDRAULIC DATA

DESIGN DISCHARGE = 9300 C.F.S.
 FREQUENCY OF DESIGN FLOOD = 50 YEARS
 DESIGN HIGH WATER ELEVATION = 206.2
 DRAINAGE AREA = 74.5 SQ.MI.
 BASIC DISCHARGE (Q100) = 11,000 C.F.S.
 BASIC HIGH WATER ELEVATION = 207.4

OVERTOPPING DATA

OVERTOPPING DISCHARGE = 27,000 C.F.S.
 FREQUENCY OF OVERTOPPING FLOOD = ± 500 YEARS
 OVERTOPPING FLOOD ELEVATION = 213.5

LOCATION SKETCH

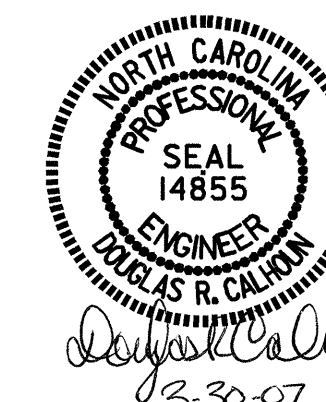
NOTE: FOR UTILITY INFORMATION, SEE UTILITY PLANS AND SPECIAL PROVISIONS.

DRAWN BY : E. G. ALLEN DATE : 1/17/06
 CHECKED BY : I. A. HARRIS DATE : 1/24/06

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PROJECT NO. B-3481
JOHNSTON COUNTY
 STATION: 19+25.00 -L-

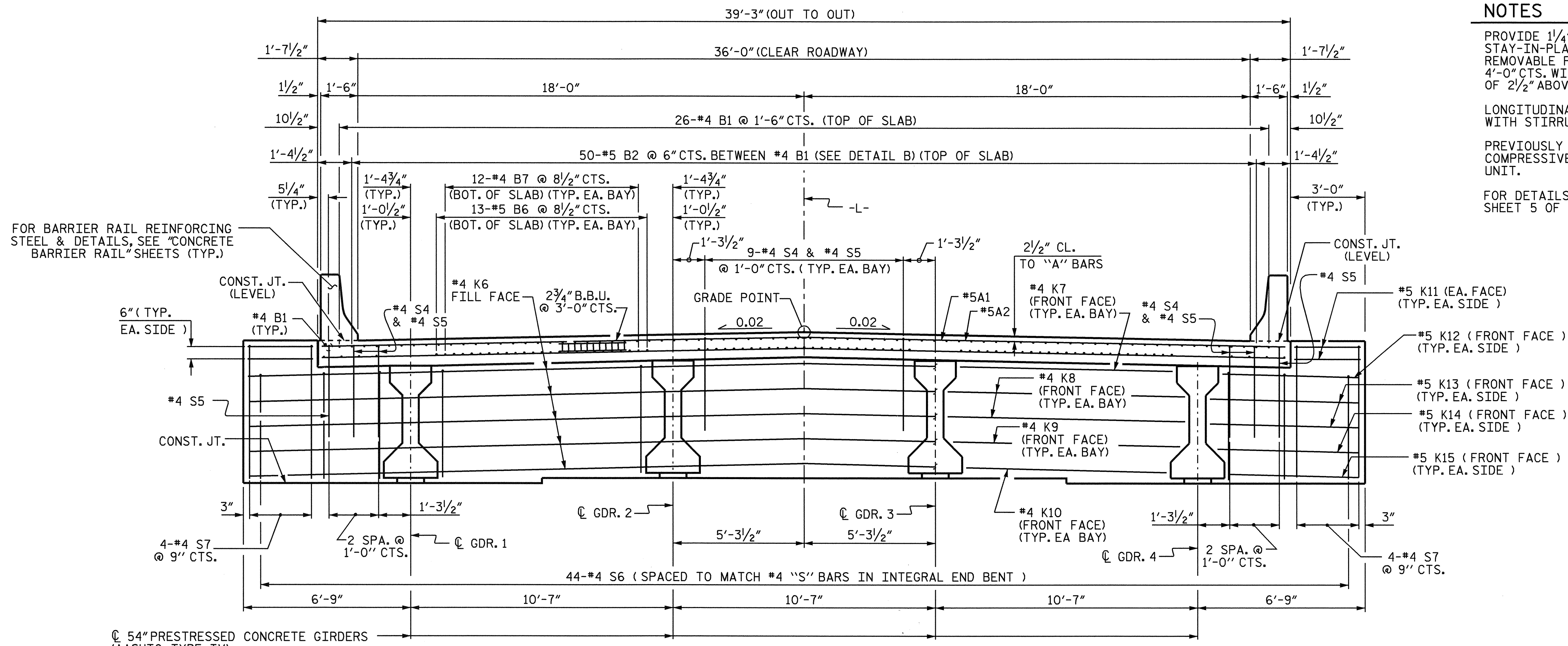
SHEET 3 OF 3



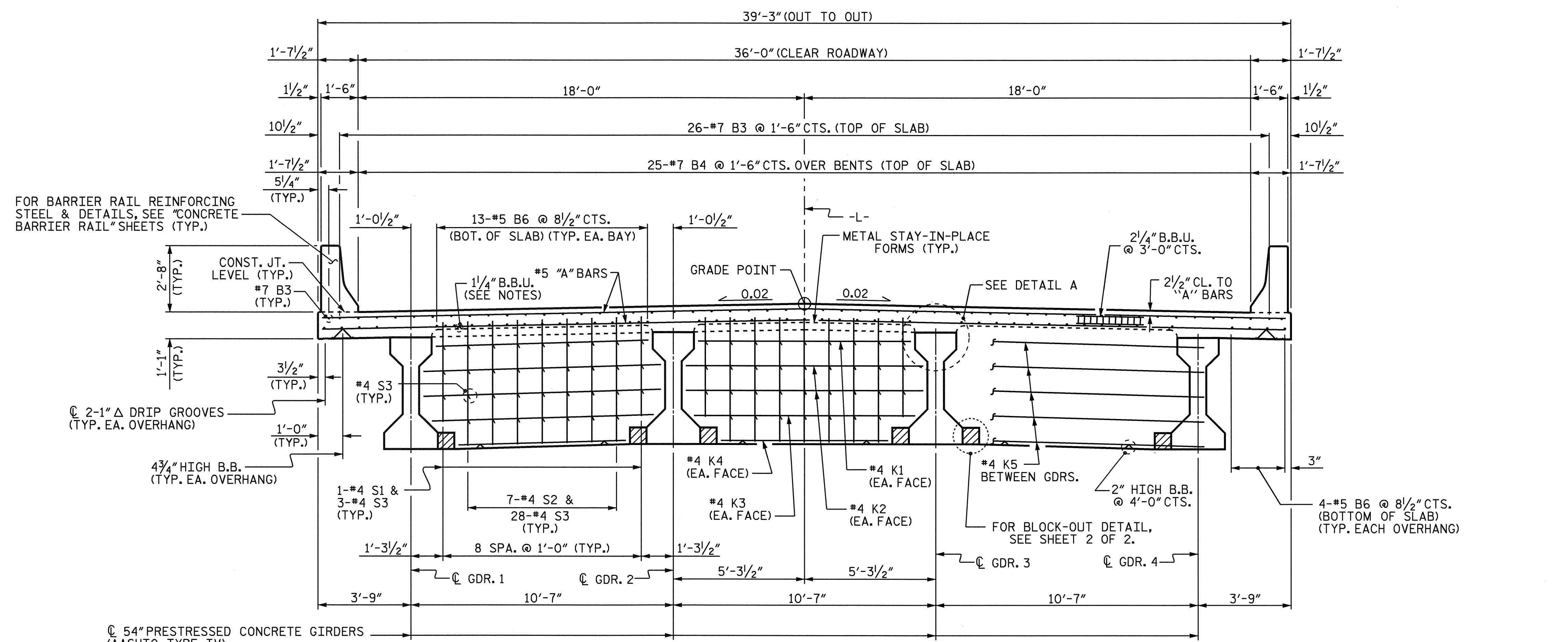
STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

**GENERAL DRAWING
 FOR BRIDGE ON NC 96
 OVER LITTLE RIVER BETWEEN
 SR 1754 AND SR 1723**

| REVISIONS | | | | | | SHEET NO. |
|-----------|-----|-------|-----|-----|-------|-----------------|
| NO. | BY: | DATE: | NO. | BY: | DATE: | S-3 |
| 1 | | | 3 | | | TOTAL SHEETS 31 |
| 2 | | | 4 | | | |



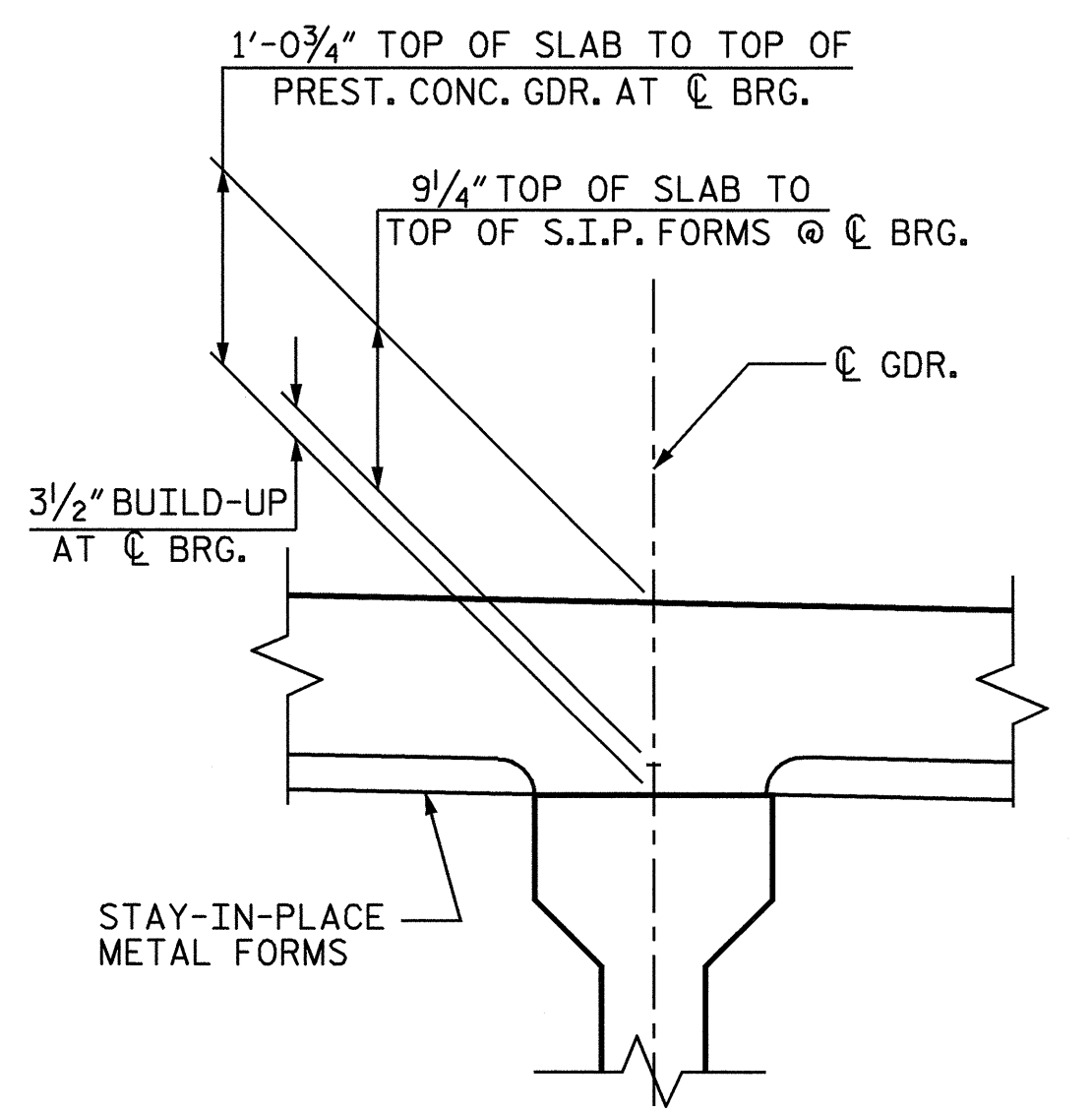
TYPICAL SECTION @ INTEGRAL END BENT



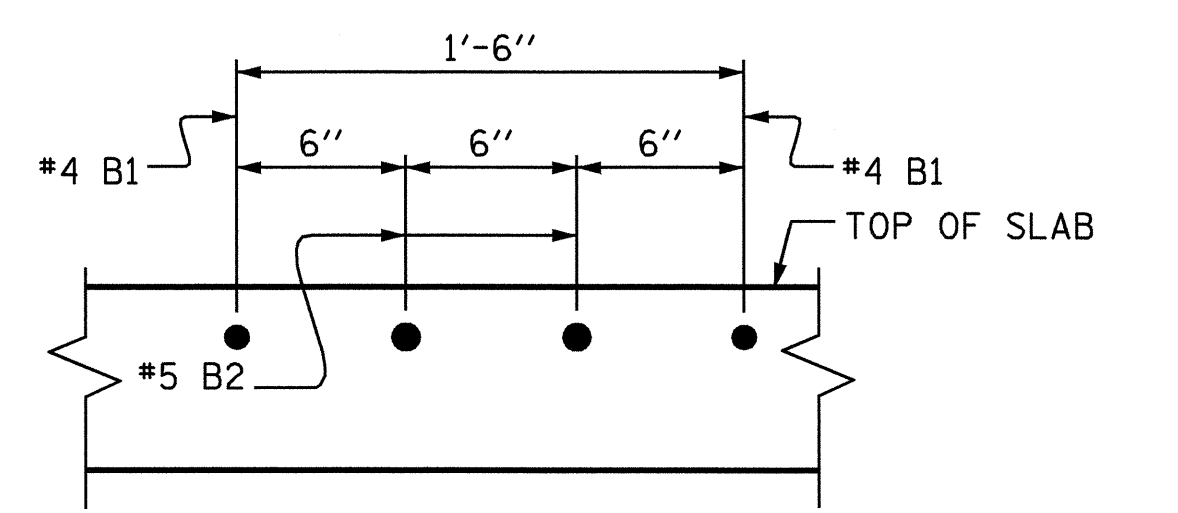
TYPICAL SECTION @ BENT DIAPHRAGM

NOTES

- PROVIDE 1/4" HIGH BEAM BOLSTERS UPPER AT 4'-0" CTS. ATOP THE METAL STAY-IN-PLACE FORMS TO SUPPORT THE BOTTOM MAT OF 'A' BARS. WHEN USING REMOVABLE FORMS, PROVIDE CONTINUOUS HIGH CHAIRS FOR METAL DECK (C.H.C.M.) @ 4'-0" CTS. WITH A HEIGHT TO SUPPORT THE BOTTOM MAT OF 'A' BARS A CLEAR DISTANCE OF 2 1/2" ABOVE THE TOP OF THE REMOVABLE FORM.
- LONGITUDINAL STEEL MAY BE SHIFTED SLIGHTLY, AS NECESSARY, TO AVOID INTERFERENCE WITH STIRRUPS IN PRESTRESSED CONCRETE GIRDERS.
- PREVIOUSLY CAST CONCRETE IN A CONTINUOUS UNIT SHALL HAVE ATTAINED A MINIMUM COMPRESSIVE STRENGTH OF 3,000 PSI BEFORE ADDITIONAL CONCRETE IS CAST IN THE UNIT.
- FOR DETAILS OF INTERMEDIATE DIAPHRAGMS, SEE "PRESTRESSED CONCRETE GIRDER SHEET 5 OF 5."



DETAIL A

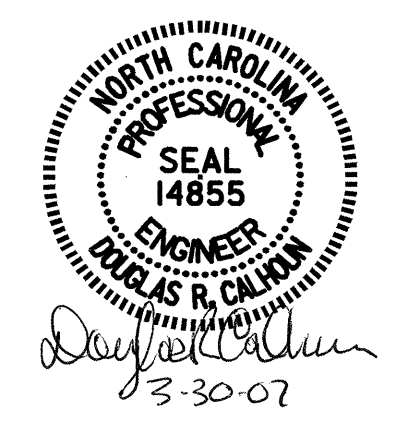


DETAIL B

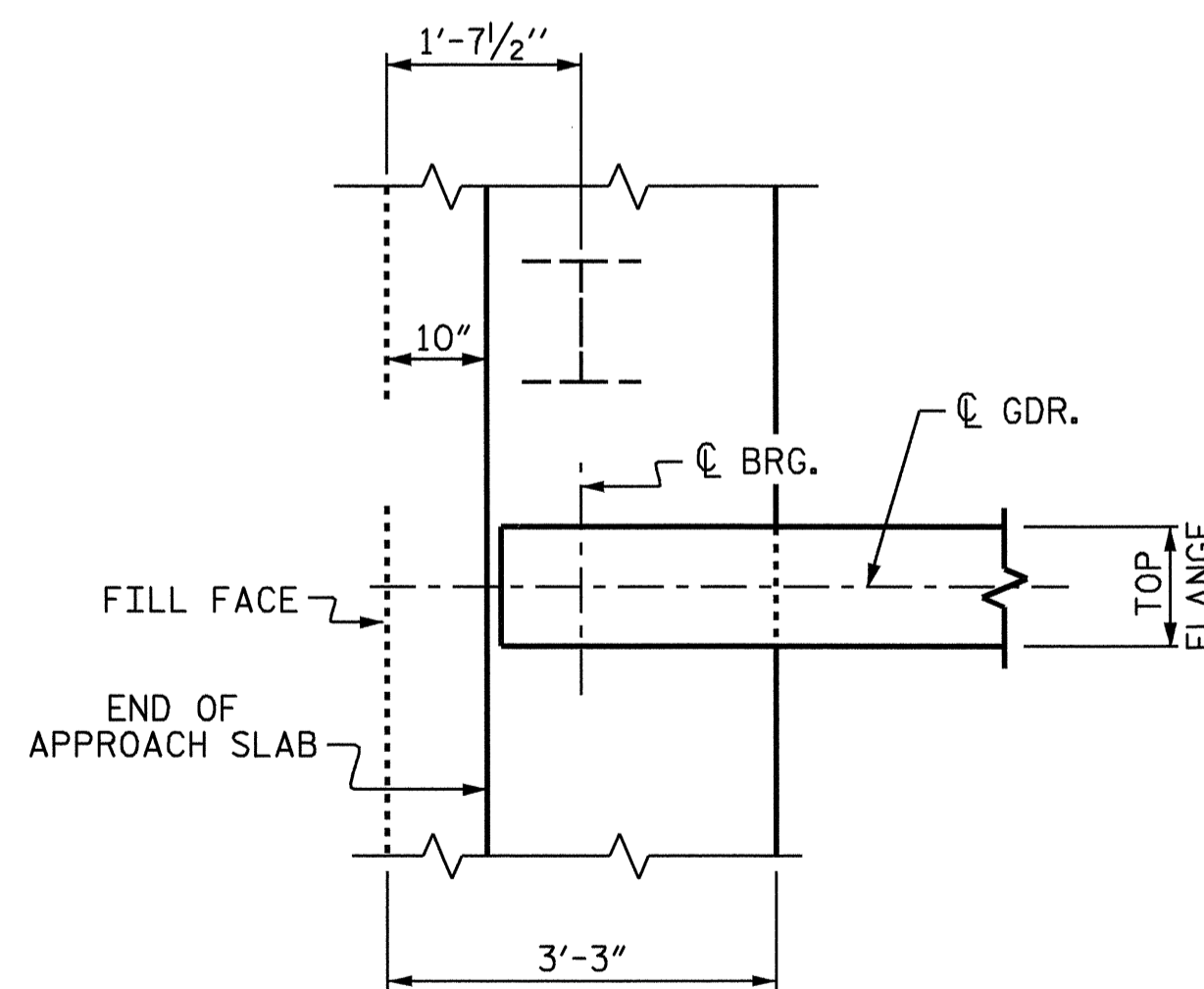
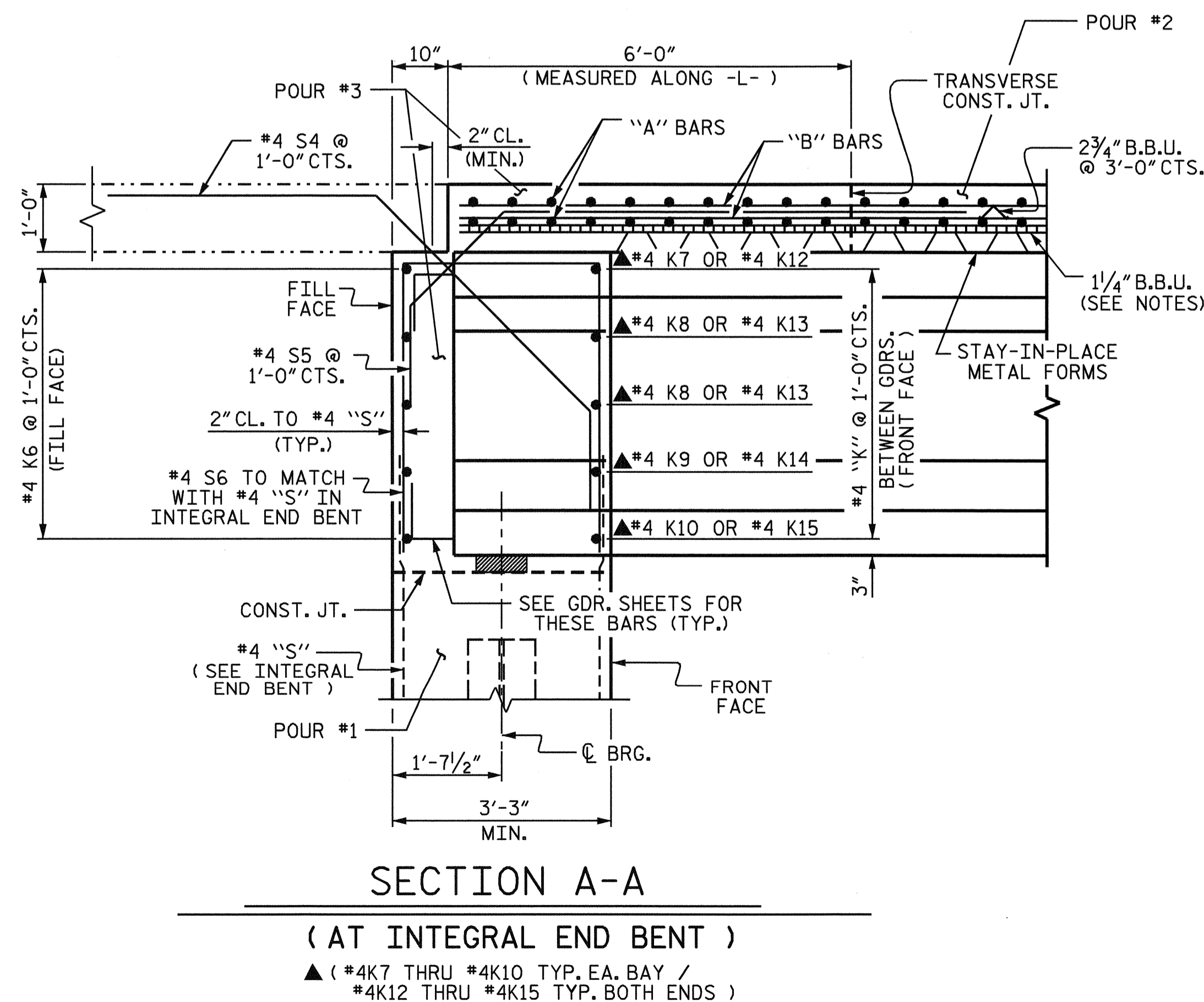
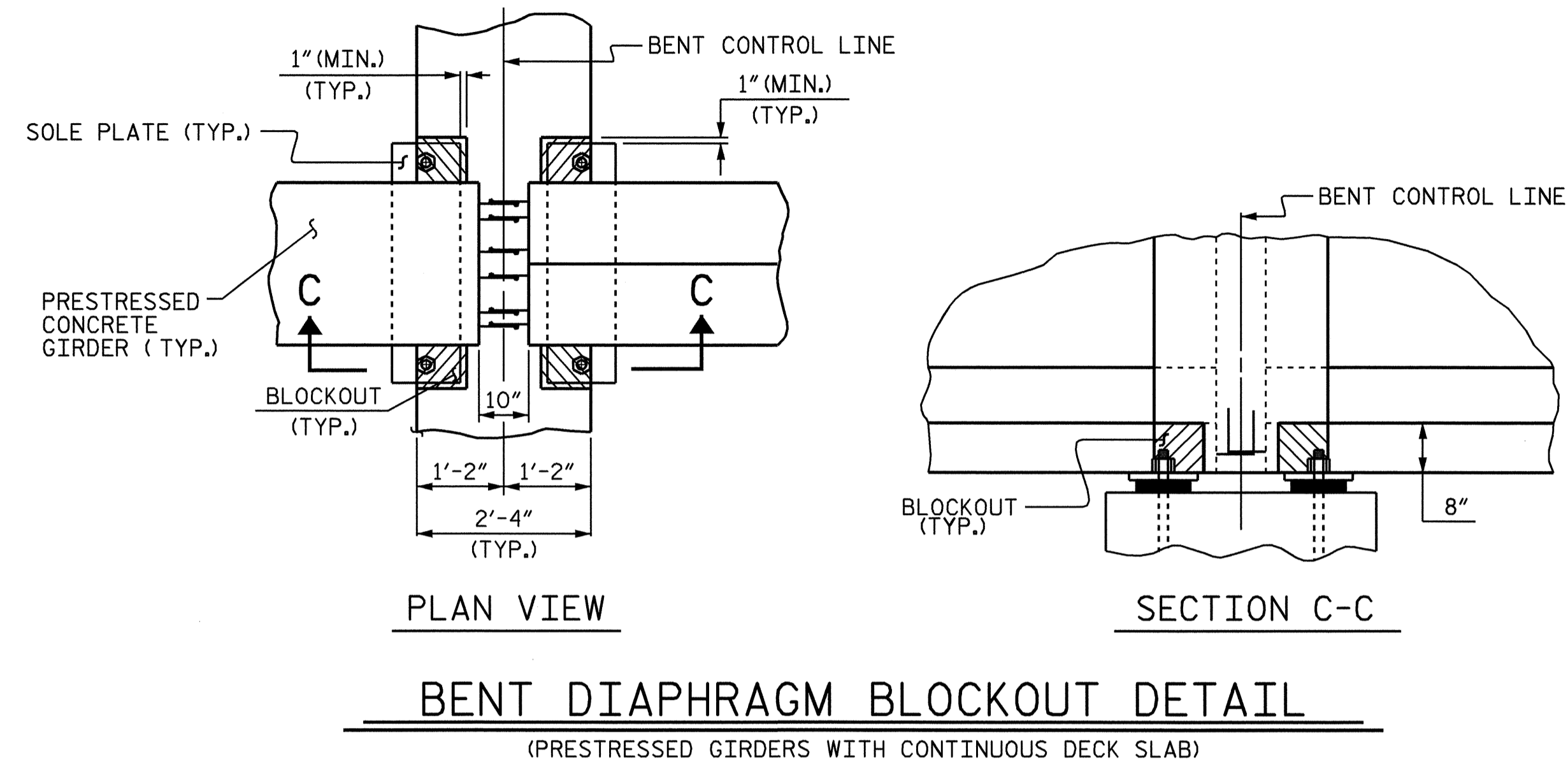
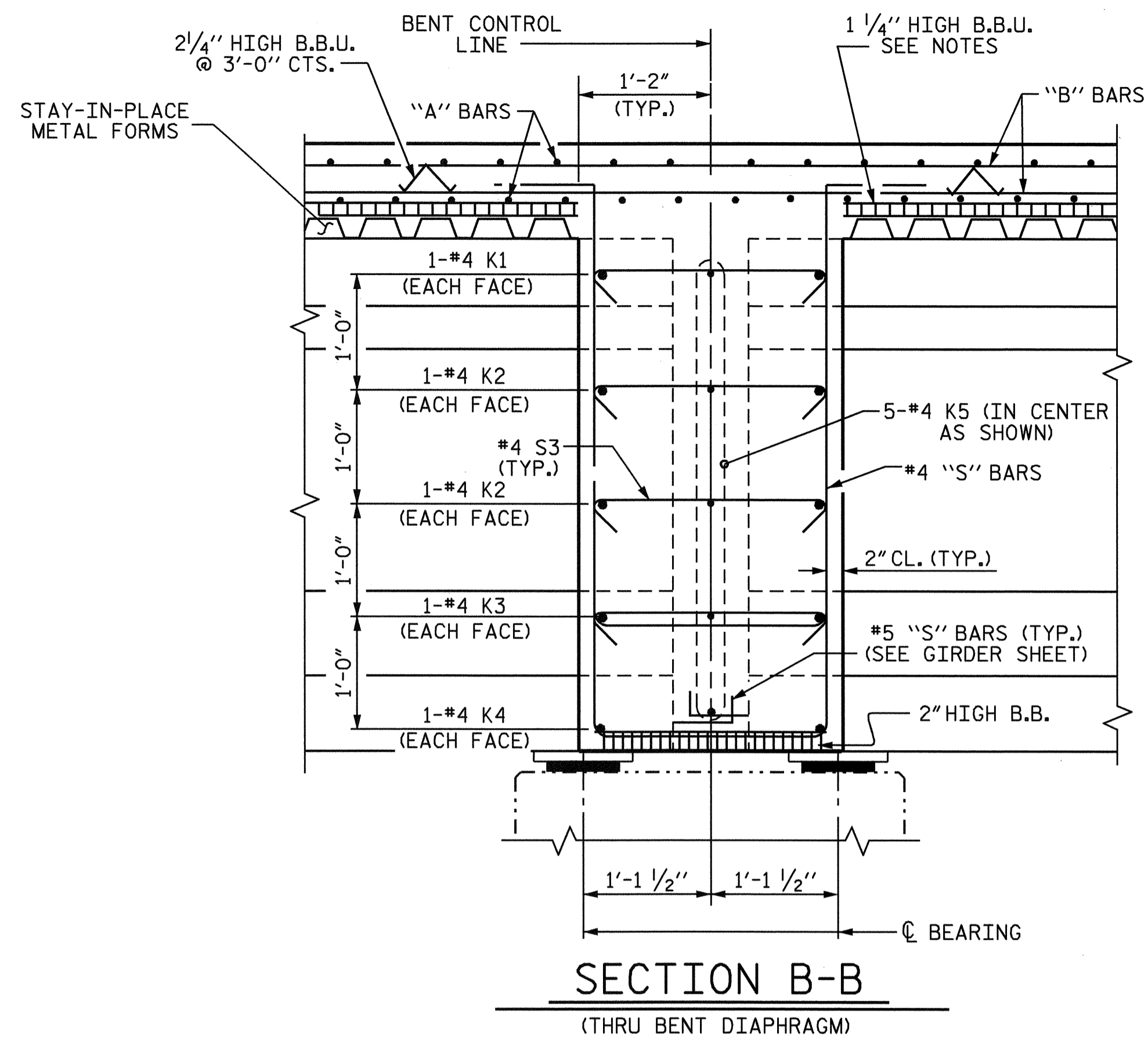
PROJECT NO. B-3481
 JOHNSTON COUNTY
 STATION: 19+25.00 -L-

SHEET 1 OF 2

| | | | | | |
|--|-----|-------|-----|-----|--------------------|
| STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION RALEIGH | | | | | |
| SUPERSTRUCTURE TYPICAL SECTION | | | | | |
| REVISIONS | | | | | SHEET NO. |
| NO. | BY: | DATE: | NO. | BY: | DATE: |
| 1 | | | 3 | | |
| 2 | | | 4 | | |
| | | | | | TOTAL SHEETS 31 |



DRAWN BY: T.A.H./J.M. DATE: 5/4/04
 CHECKED BY: B.N. GRADY DATE: 1/07



PROJECT NO. B-3481
JOHNSTON COUNTY
STATION: 19+25.00 -L-

SHEET 2 OF 2

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

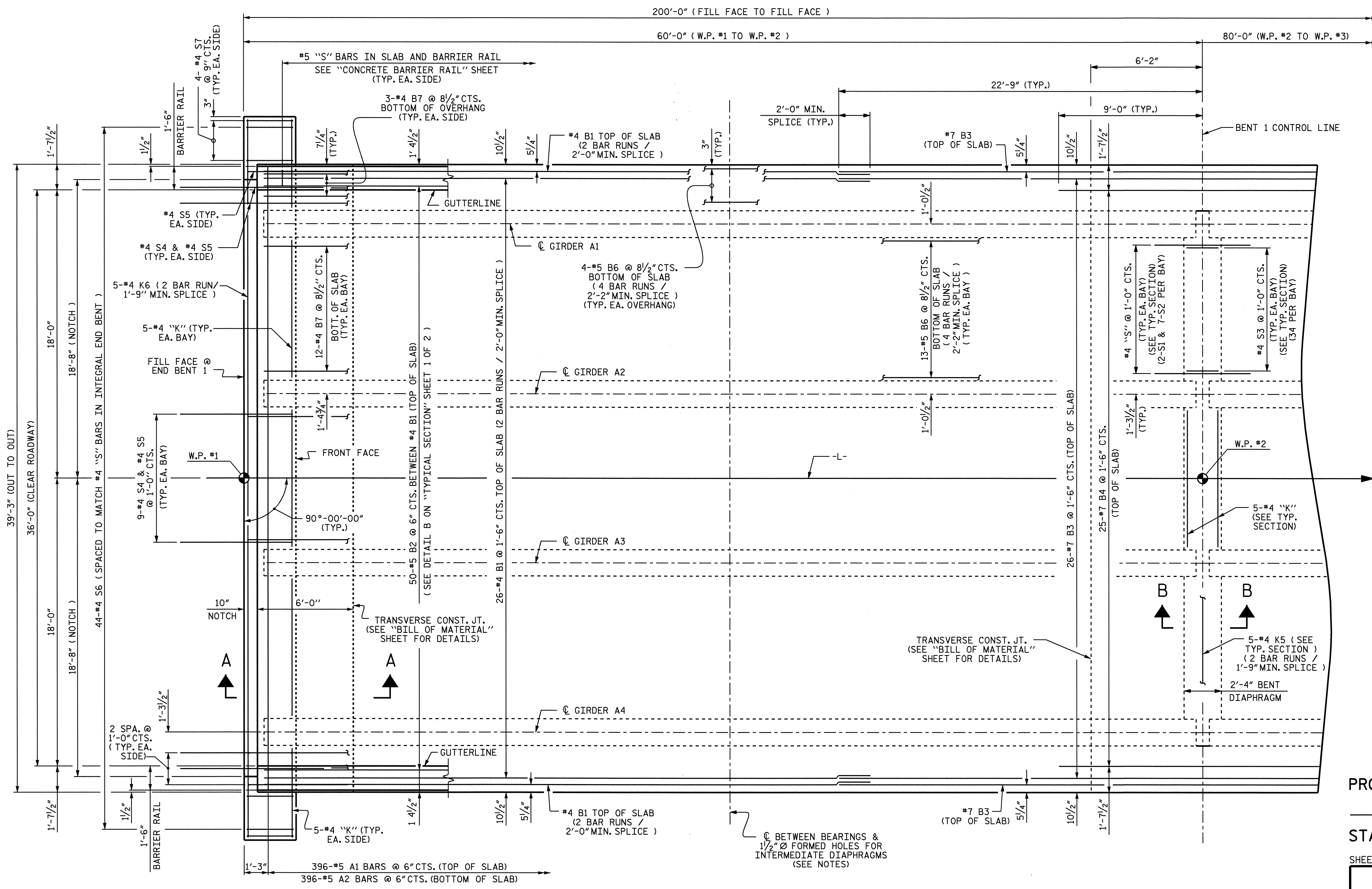
SUPERSTRUCTURE
TYPICAL SECTION



| REVISIONS | | | | | | SHEET NO. | |
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| 1 | | | 3 | | | TOTAL SHEETS 31 | |
| 2 | | | 4 | | | | |

DRAWN BY : T.A.H./J.M. DATE : 5/4/04
CHECKED BY : B.N. GRADY DATE : 1/07

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PLAN OF SPAN A

FOR SECTION VIEWS, SEE "TYPICAL SECTION" SHEET 2 OF 2.

FOR DETAILS OF INTERMEDIATE DIAPHRAGMS, SEE "PRESTRESSED CONCRETE GIRDER" SHEET 5 OF 5.

PROJECT NO. B-3481
JOHNSTON COUNTY
 STATION: 19+25.00 -L-

SHEET 1 OF 3

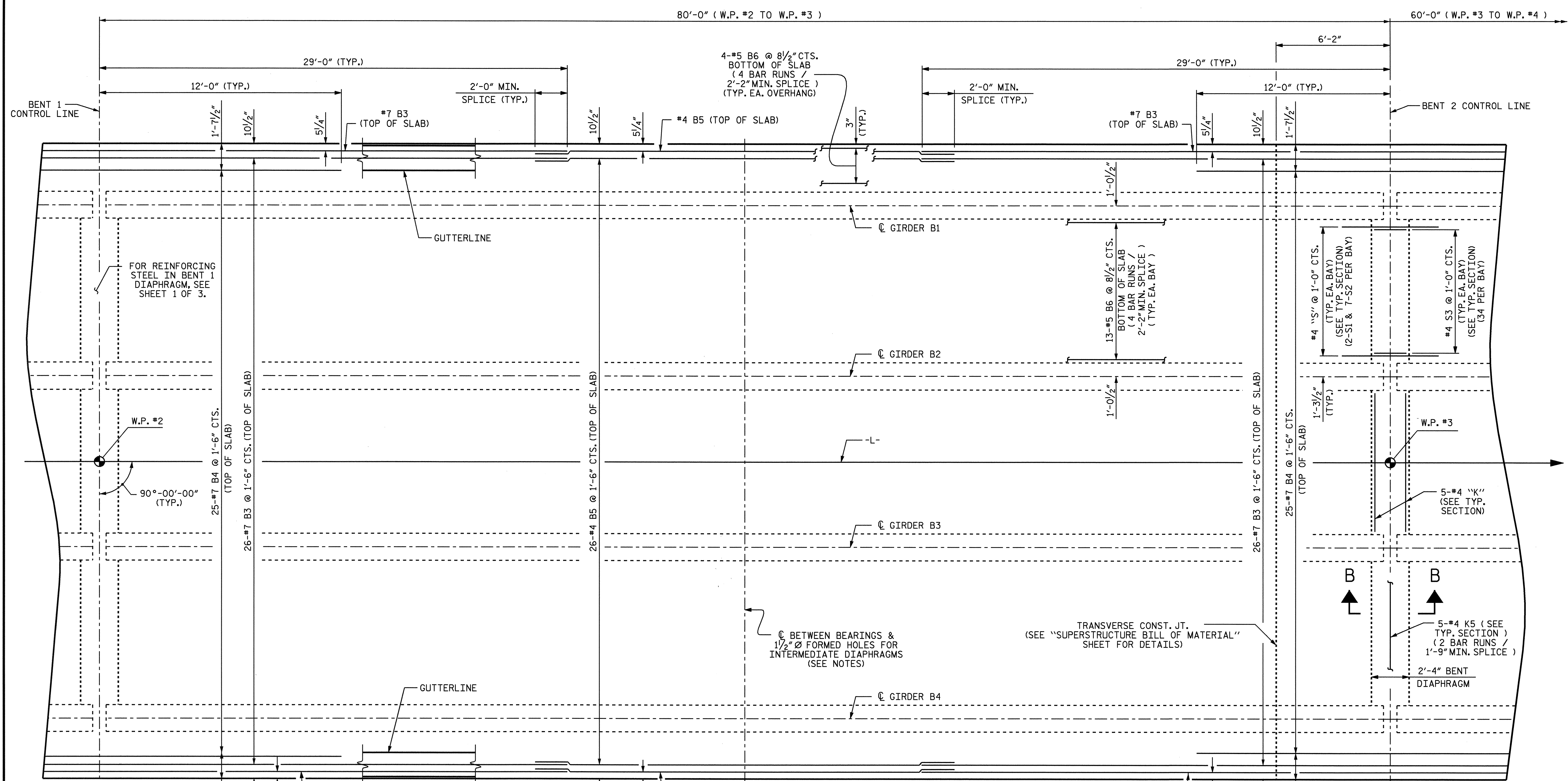
STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

**SUPERSTRUCTURE
 PLAN OF SPAN A**

| REVISIONS | | | | | | SHEET NO. |
|-----------|-----|-------|-----|-----|-------|--------------|
| NO. | BY: | DATE: | NO. | BY: | DATE: | S-6 |
| 1 | | | 3 | | | TOTAL SHEETS |
| 2 | | | 4 | | | 31 |



DRAWN BY : T.A.H./J.M. DATE : 5/5/04
 CHECKED BY : B.N. GRADY DATE : 1/07



- ← 396-#5 A1 BARS @ 6" CTS. (TOP OF SLAB) →
- ← 396-#5 A2 BARS @ 6" CTS. (BOTTOM OF SLAB) →
- ← #5 "S" BARS IN SLAB AND BARRIER RAIL →
- ← SEE "CONCRETE BARRIER RAIL" SHEET (TYP. EA. SIDE) →
- ← 200'-0" (FILL FACE TO FILL FACE) →

PLAN OF SPAN B

FOR SECTION VIEWS, SEE "TYPICAL SECTION" SHEET 2 OF 2.

FOR DETAILS OF INTERMEDIATE DIAPHRAGMS, SEE "PRESTRESSED CONCRETE GIRDER" SHEET 5 OF 5.

PROJECT NO. B-3481
JOHNSTON COUNTY
 STATION: 19+25.00 -L-

SHEET 2 OF 3

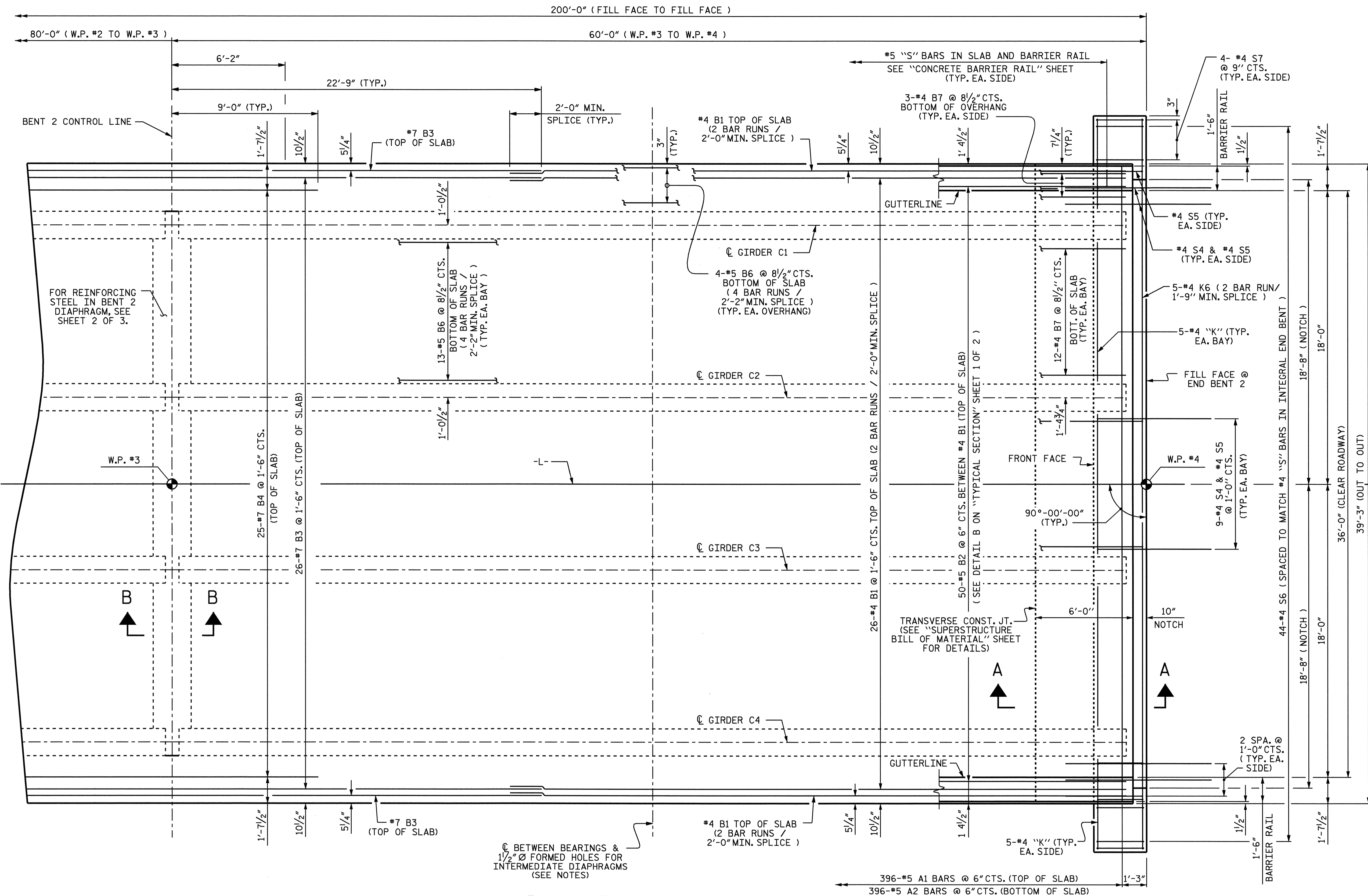
STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

**SUPERSTRUCTURE
 PLAN OF SPAN B**

| REVISIONS | | | | | | SHEET NO. |
|-----------|-----|-------|-----|-----|-------|--------------|
| NO. | BY: | DATE: | NO. | BY: | DATE: | S-7 |
| 1 | | | 3 | | | TOTAL SHEETS |
| 2 | | | 4 | | | 31 |



DRAWN BY : T.A.H. / J.M. DATE : 5/5/04
 CHECKED BY : B.N. GRADY DATE : 1/07



PLAN OF SPAN C

FOR SECTION VIEWS, SEE "TYPICAL SECTION" SHEET 2 OF 2.

FOR DETAILS OF INTERMEDIATE DIAPHRAGMS, SEE "PRESTRESSED CONCRETE GIRDER" SHEET 5 OF 5.

PROJECT NO. B-3481
 JOHNSTON COUNTY
 STATION: 19+25.00 -L-

SHEET 3 OF 3

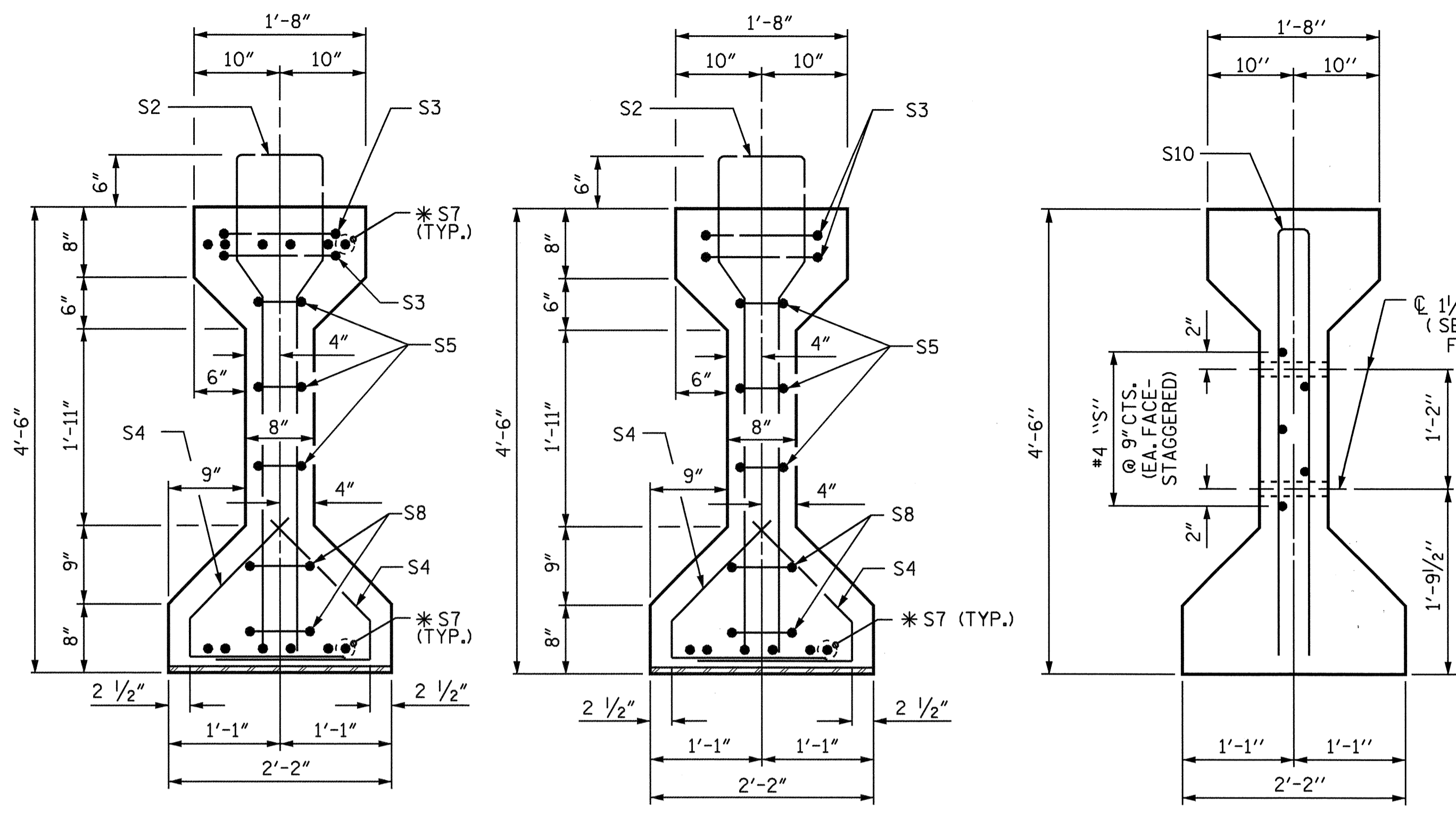
STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

**SUPERSTRUCTURE
 PLAN OF SPAN C**



| REVISIONS | | | | | | SHEET NO. |
|-----------|-----|-------|-----|-----|-------|--------------|
| NO. | BY: | DATE: | NO. | BY: | DATE: | S-8 |
| 1 | | | 3 | | | TOTAL SHEETS |
| 2 | | | 4 | | | 31 |

DRAWN BY : T.A.H./J.M. DATE : 5/5/04
 CHECKED BY : B.N. GRADY DATE : 1/07

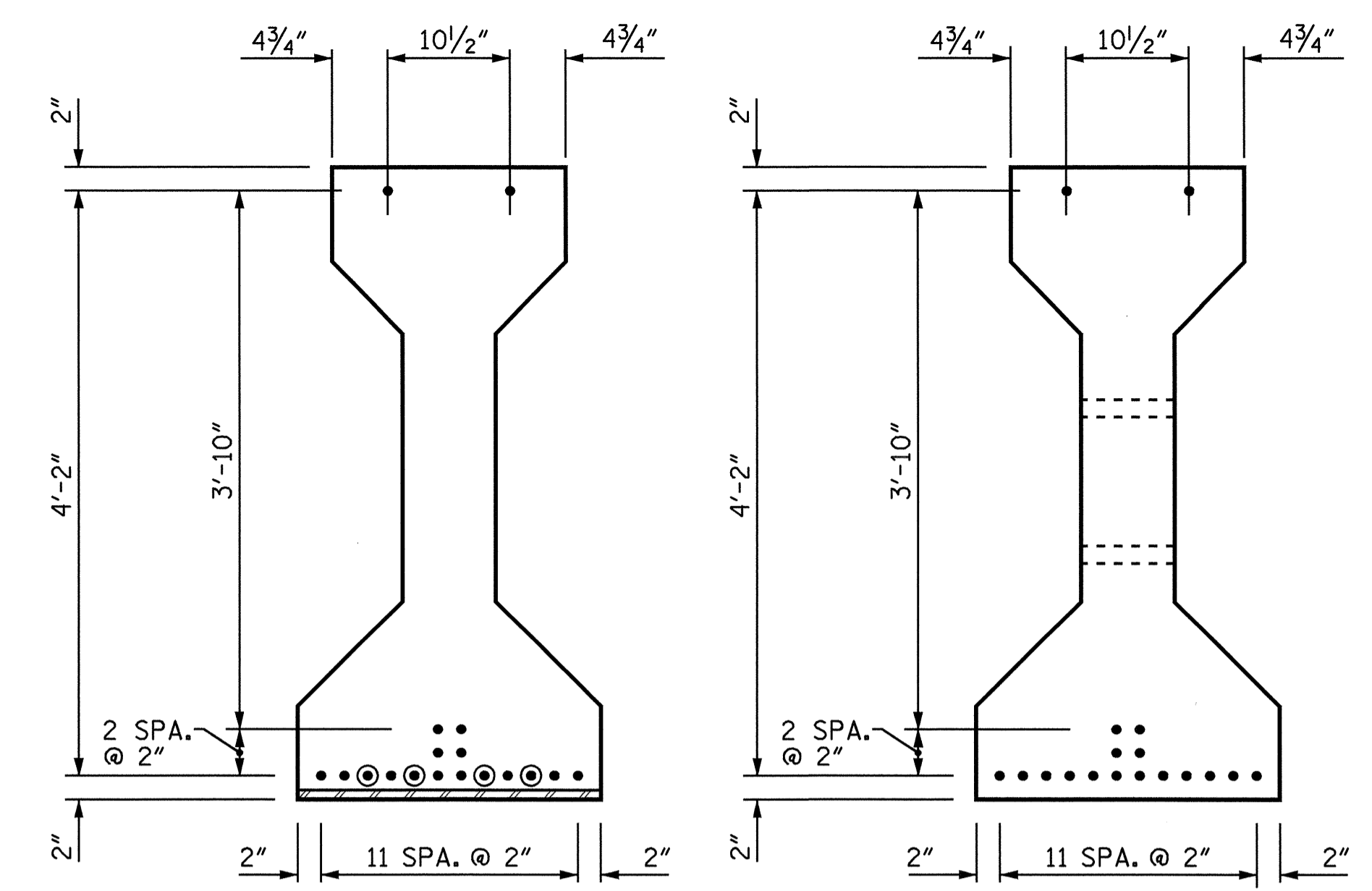


SECTION A-A

SECTION B-B

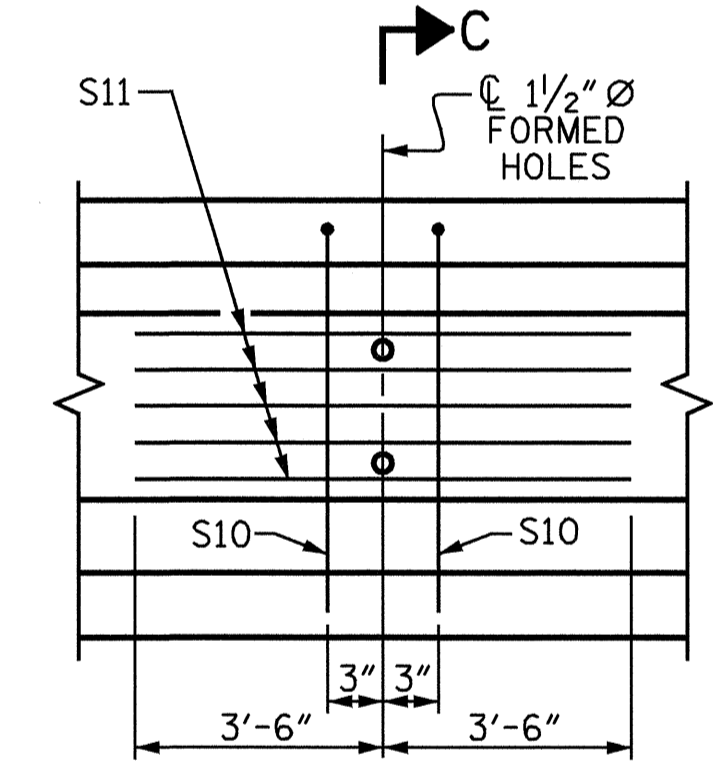
SECTION C-C
(S1 BARS NOT SHOWN)

* FOR S7 BARS, SEE DETAIL A OF PRESTRESSED CONCRETE GIRDER CONTINUOUS FOR LIVE LOAD DETAILS, SHEET 4 OF 5.

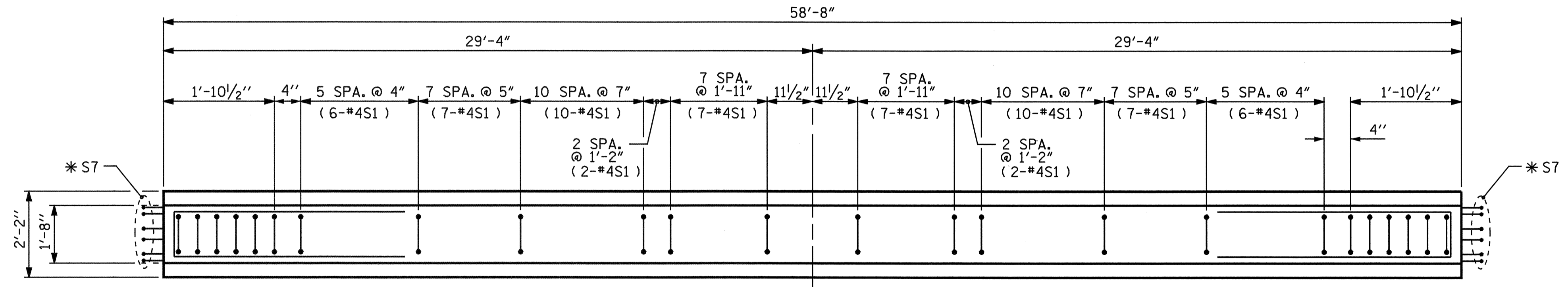


AT END OF GIRDER AT \bar{C} OF GIRDER
0.6" $\bar{\varnothing}$ LOW RELAXATION STRAND LAYOUT

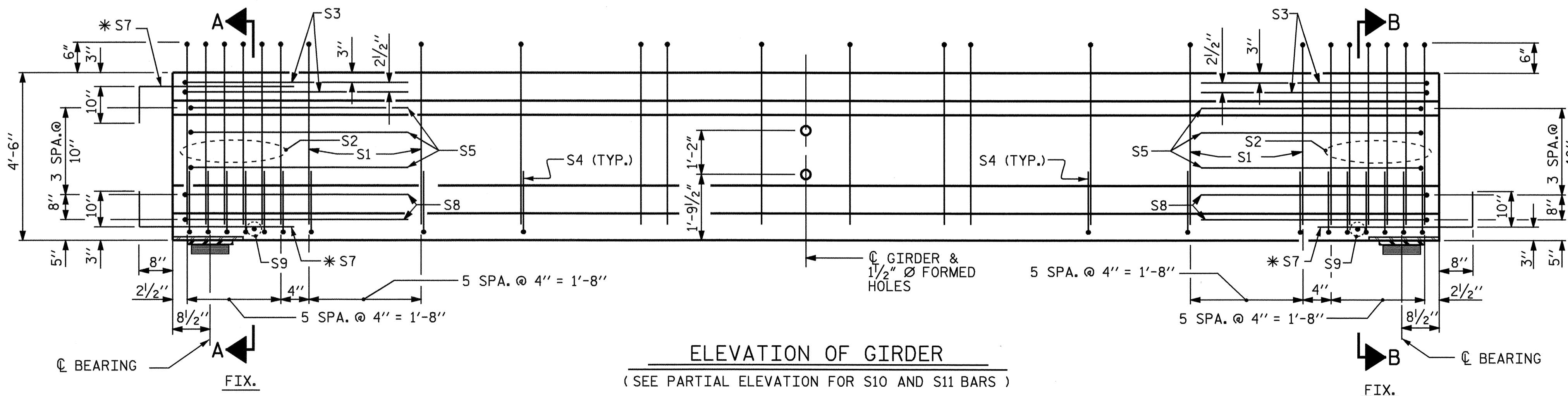
DEBONDING LEGEND
 ● FULLY BONDED STRANDS
 ⊙ STRANDS DEBONDED FOR 8'-0" FROM END OF GIRDER



PARTIAL ELEVATION
SHOWING INTERMEDIATE DIAPHRAGM REINFORCING STEEL FOR GIRDER Nos. A1 THRU A4



PLAN OF GIRDER



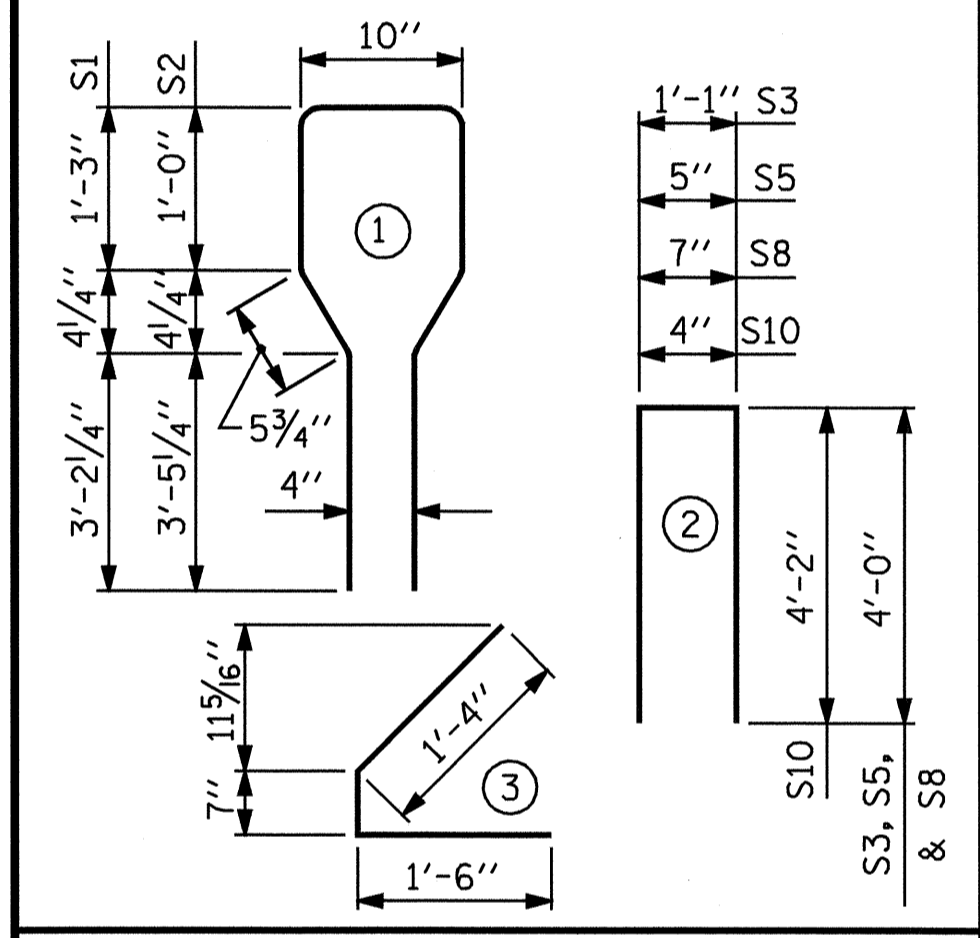
ELEVATION OF GIRDER
(SEE PARTIAL ELEVATION FOR S10 AND S11 BARS)

| 1/2" $\bar{\varnothing}$ L. R. GRADE 270 STRANDS | | |
|--|--|--|
| AREA (SQUARE INCHES) | ULTIMATE STRENGTH (LBS. PER STRAND) | APPLIED PRESTRESS (LBS. PER STRAND) |
| 0.153 | 41,300 | 30,980 |

| REINFORCING STEEL FOR ONE GIRDER | | | | | |
|----------------------------------|--------|------|------|--------|--------|
| BAR | NUMBER | SIZE | TYPE | LENGTH | WEIGHT |
| S1 | 64 | #4 | 1 | 10'-8" | 456 |
| S2 | 12 | #6 | 1 | 10'-8" | 192 |
| S3 | 4 | #4 | 2 | 9'-1" | 24 |
| S4 | 76 | #4 | 3 | 3'-5" | 173 |
| S5 | 6 | #4 | 2 | 8'-5" | 34 |
| *S7 | 18 | #5 | STR | 3'-8" | 69 |
| S8 | 4 | #4 | 2 | 8'-7" | 23 |
| S9 | 2 | #3 | STR | 1'-10" | 1 |
| S10 | 2 | #5 | 2 | 8'-8" | 18 |
| S11 | 5 | #4 | STR | 7'-0" | 23 |

* NOTE: S7 BARS SHALL BE BENT BEFORE SHIPMENT. HEAT BENDING SHALL NOT BE ALLOWED.

BAR TYPES
ALL BAR DIMENSIONS ARE OUT-TO-OUT



| QUANTITIES FOR ONE GIRDER | | | |
|---------------------------|-------------------|--------------------|---------------------------------------|
| | REINFORCING STEEL | 6,000 PSI CONCRETE | 0.6" $\bar{\varnothing}$ L.R. STRANDS |
| | LB. | C.Y. | No. |
| A1 - A4 | 1013 | 11.9 | 18 |

| GIRDERS REQUIRED | | |
|------------------|--------|--------------|
| NUMBER | LENGTH | TOTAL LENGTH |
| 4 | 58'-8" | 234'-8" |

PROJECT NO. B-3481
JOHNSTON COUNTY
STATION: 19+25.00 -L-

SHEET 1 OF 5

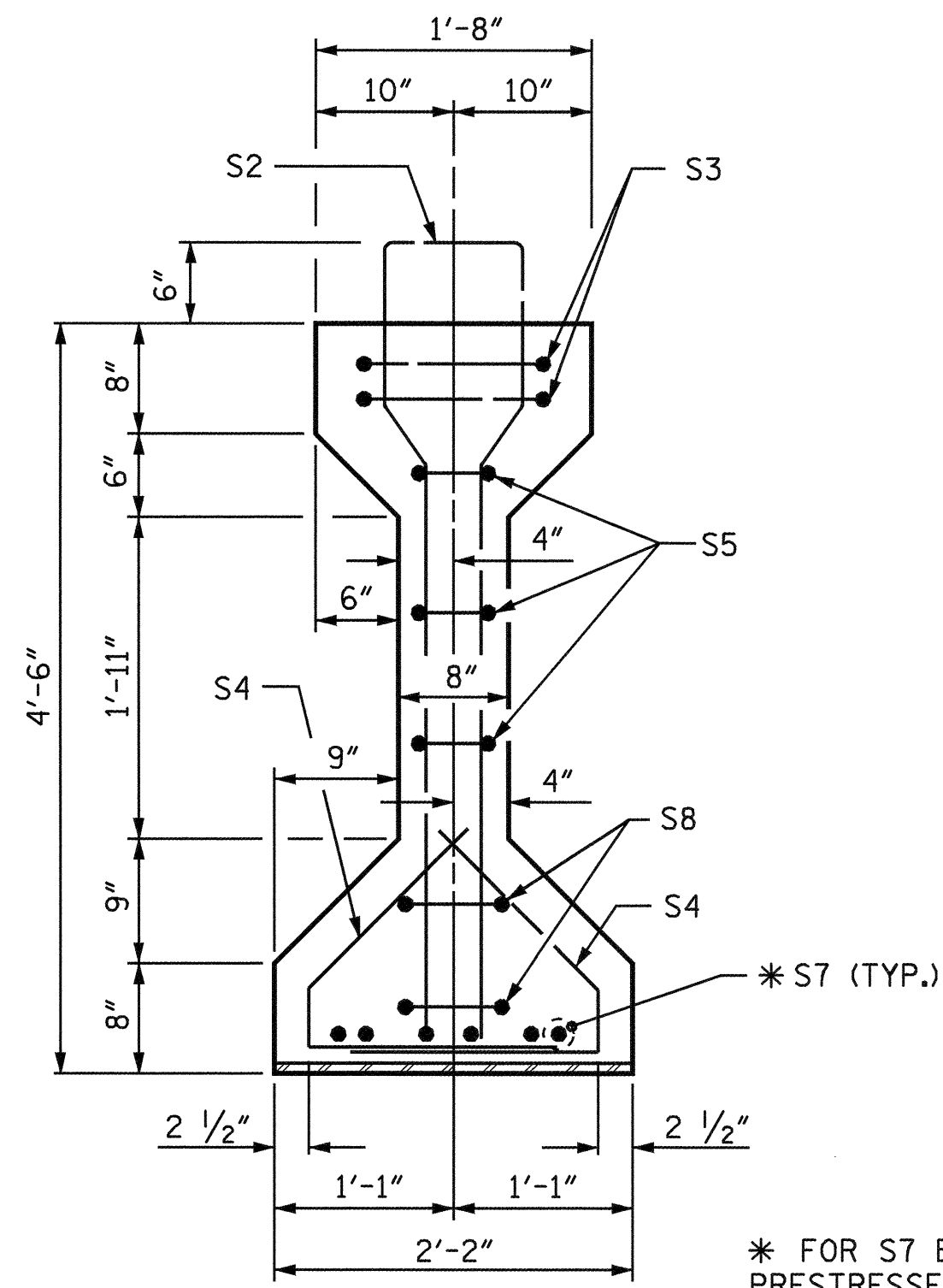


STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH
STANDARD AASHTO TYPE IV
PRESTRESSED CONCRETE GIRDER
CONTINUOUS FOR LIVE LOAD
SPAN A

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

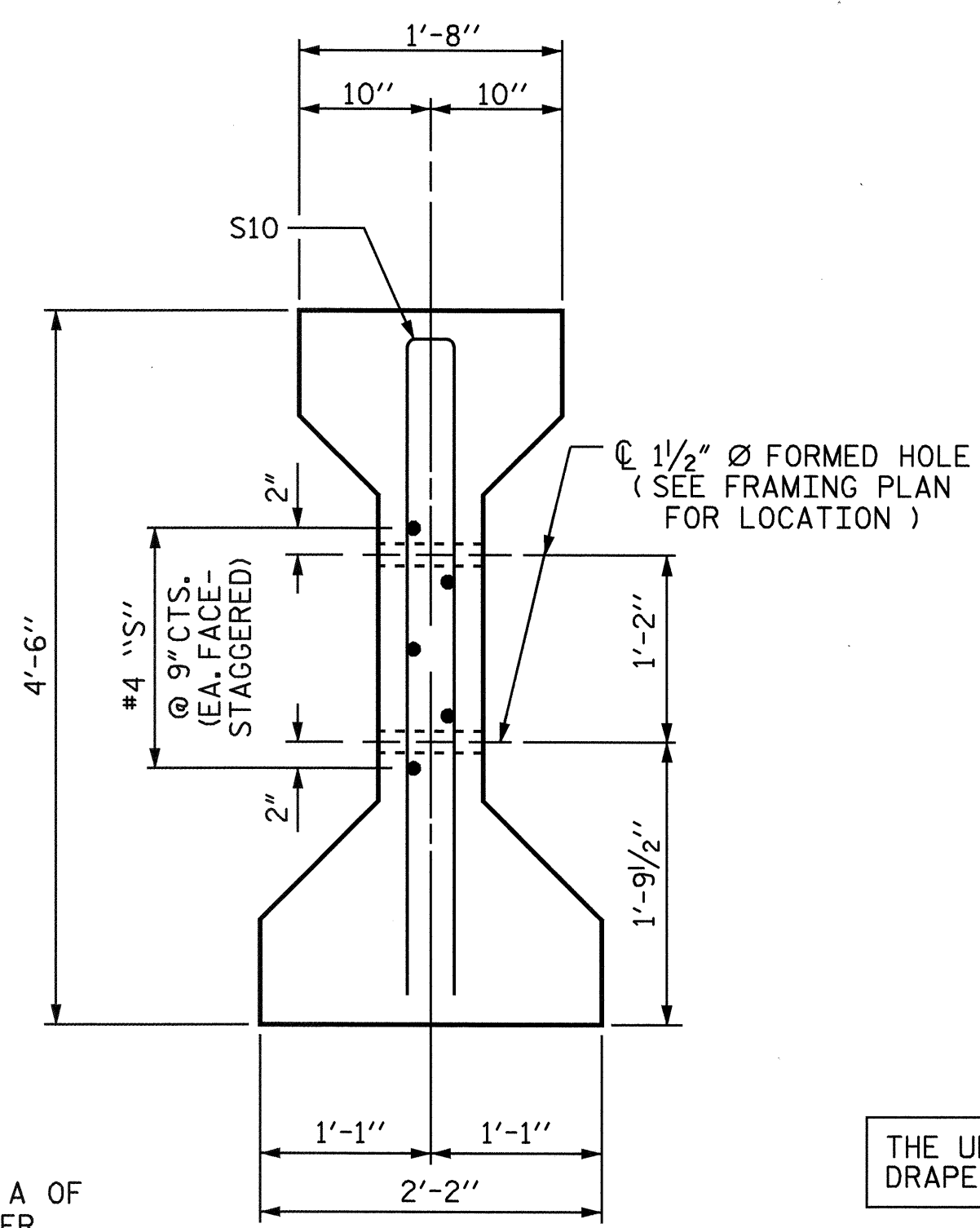
| | |
|--------------|-----|
| SHEET NO. | S-9 |
| TOTAL SHEETS | 31 |

| | | | |
|----------------|-------------|----------------|---------|
| ASSEMBLED BY : | T.A.H./J.M. | DATE : | 5/12/04 |
| CHECKED BY : | B.N. GRADY | DATE : | 1/07 |
| DRAWN BY : | ELR 8/91 | REV. 7/17/98 | RWW/LES |
| CHECKED BY : | GRP 8/91 | REV. 10/17/00R | RWW/LES |
| | | REV. 5/1/06 | TLA/GM |



SECTION A-A

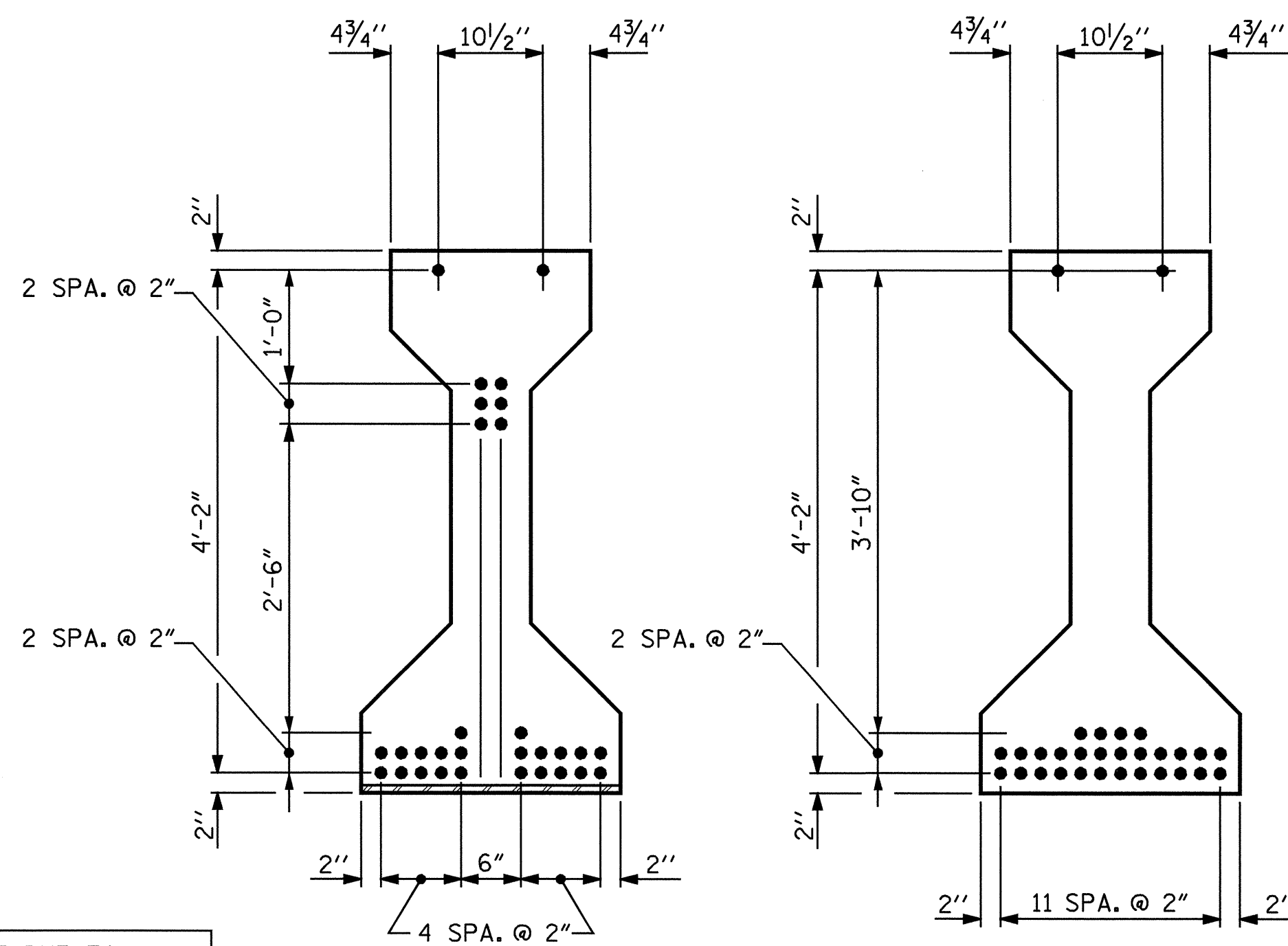
* FOR S7 BARS, SEE DETAIL A OF PRESTRESSED CONCRETE GIRDER CONTINUOUS FOR LIVE LOAD DETAILS, SHEET 4 OF 5.



SECTION C-C

(S1 BARS NOT SHOWN)

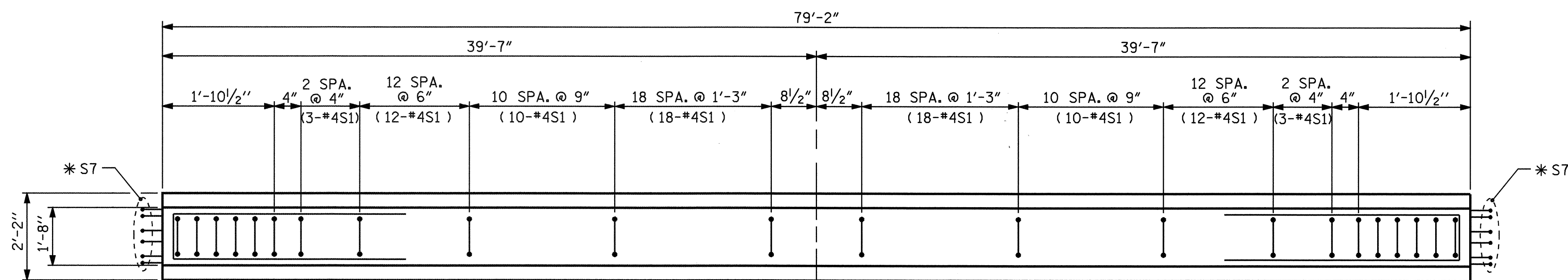
THE UPLIFT FORCE DUE TO DRAPED STRANDS IS 21.529 KIPS



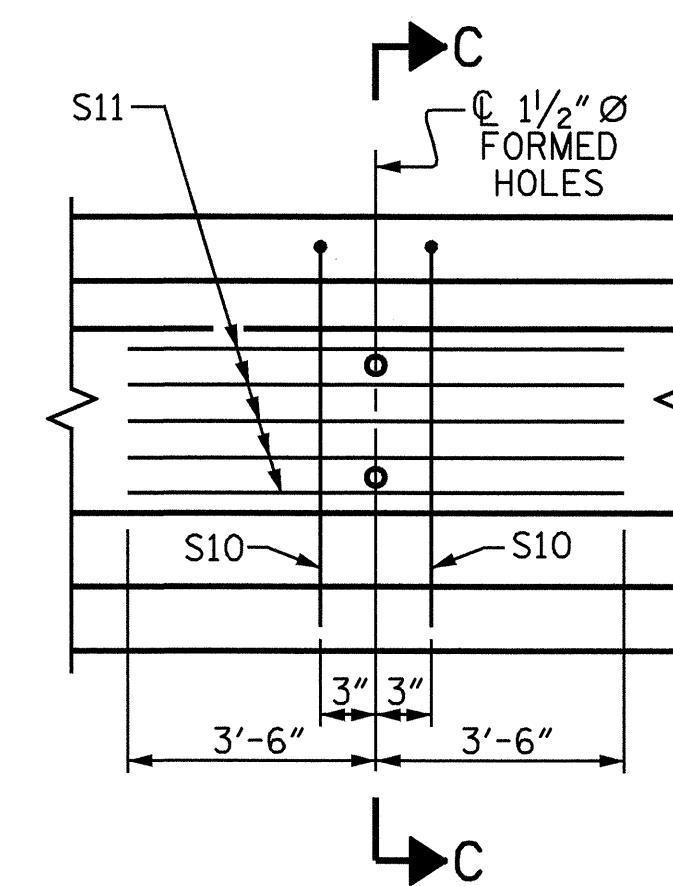
AT END OF GIRDER

AT C OF GIRDER

0.6" Ø LOW RELAXATION STRAND LAYOUT

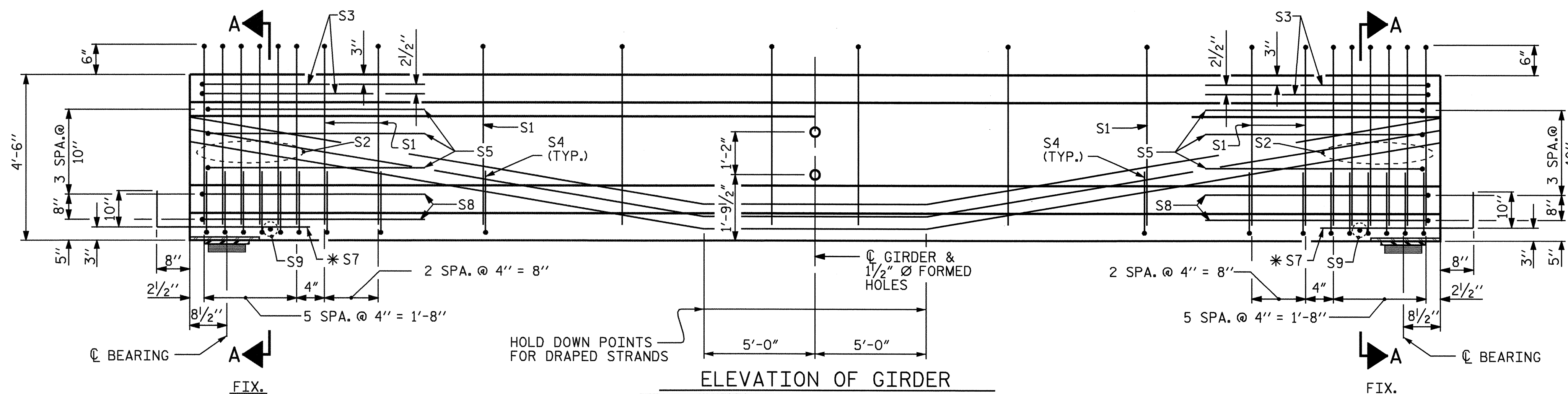


PLAN OF GIRDER



PARTIAL ELEVATION

SHOWING INTERMEDIATE DIAPHRAGM REINFORCING STEEL FOR GIRDER Nos. B1 THRU B4



ELEVATION OF GIRDER

(SEE PARTIAL ELEVATION FOR S10 AND S11 BARS)

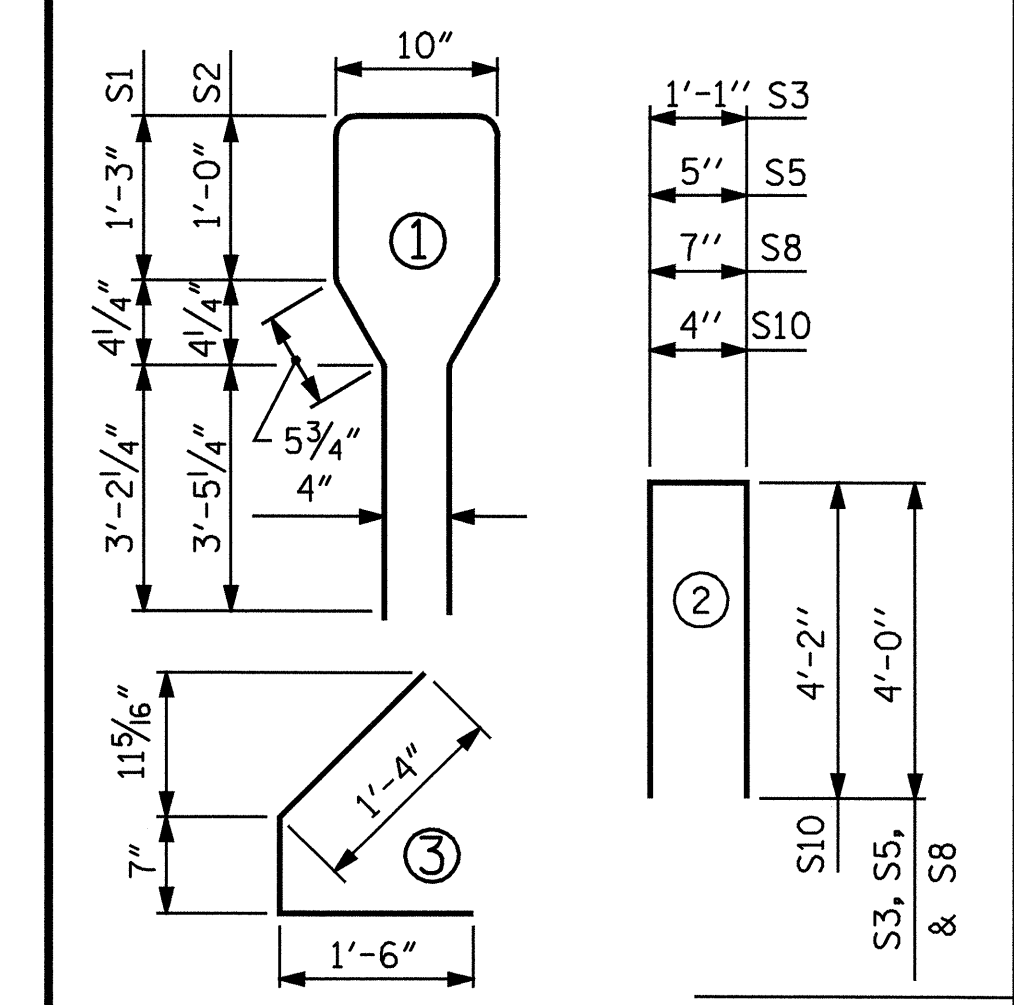
| 0.6" Ø L. R. GRADE 270 STRANDS | | |
|--------------------------------|--|--|
| AREA (SQUARE INCHES) | ULTIMATE STRENGTH (LBS. PER STRAND) | APPLIED PRESTRESS (LBS. PER STRAND) |
| 0.217 | 58,600 | 43,950 |

| REINFORCING STEEL FOR ONE GIRDER | | | | | |
|----------------------------------|--------|------|------|--------|--------|
| BAR | NUMBER | SIZE | TYPE | LENGTH | WEIGHT |
| S1 | 86 | #4 | 1 | 10'-8" | 613 |
| S2 | 12 | #6 | 1 | 10'-8" | 192 |
| S3 | 4 | #4 | 2 | 9'-1" | 24 |
| S4 | 84 | #4 | 3 | 3'-5" | 192 |
| S5 | 6 | #4 | 2 | 8'-5" | 34 |
| *S7 | 12 | #5 | STR | 3'-8" | 46 |
| S8 | 4 | #4 | 2 | 8'-7" | 23 |
| S9 | 2 | #3 | STR | 1'-10" | 1 |
| S10 | 2 | #5 | 2 | 8'-8" | 18 |
| S11 | 5 | #4 | STR | 7'-0" | 23 |

* NOTE: S7 BARS SHALL BE BENT BEFORE SHIPMENT. HEAT BENDING SHALL NOT BE ALLOWED.

BAR TYPES

ALL BAR DIMENSIONS ARE OUT-TO-OUT



QUANTITIES FOR ONE GIRDER

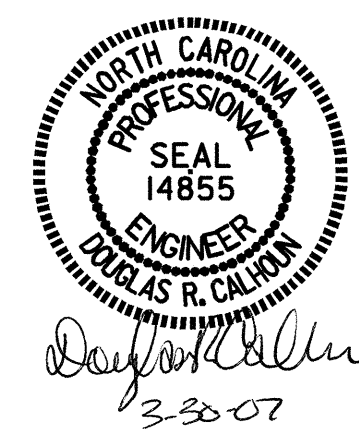
| | REINFORCING STEEL | 8,000 PSI CONCRETE | 0.6" Ø L.R. STRANDS |
|---------|-------------------|--------------------|---------------------|
| | LB. | C.Y. | No. |
| B1 - B4 | 1166 | 16.1 | 30 |

GIRDERS REQUIRED

| NUMBER | LENGTH | TOTAL LENGTH |
|--------|--------|--------------|
| 4 | 79'-2" | 316'-8" |

PROJECT NO. B-3481
 JOHNSTON COUNTY
 STATION: 19+25.00 -L-

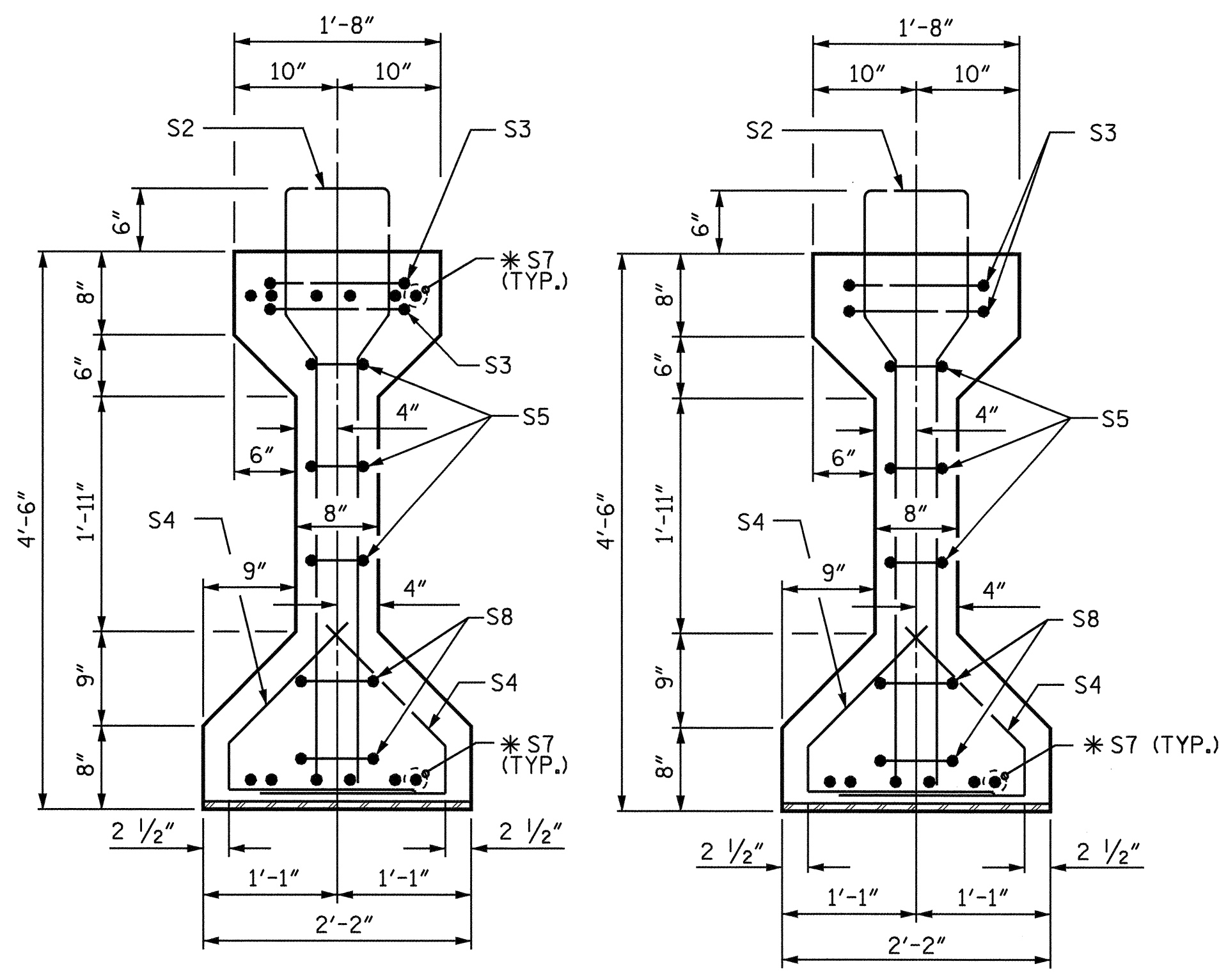
SHEET 2 OF 5



STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH
 STANDARD
 AASHTO TYPE IV
 PRESTRESSED CONCRETE GIRDER
 CONTINUOUS FOR LIVE LOAD
 SPAN B

| REVISIONS | | | | | | SHEET NO. S-10 |
|-----------|-----|-------|-----|-----|-------|-------------------|
| NO. | BY: | DATE: | NO. | BY: | DATE: | |
| 1 | | | 3 | | | TOTAL SHEETS 31 |
| 2 | | | 4 | | | |

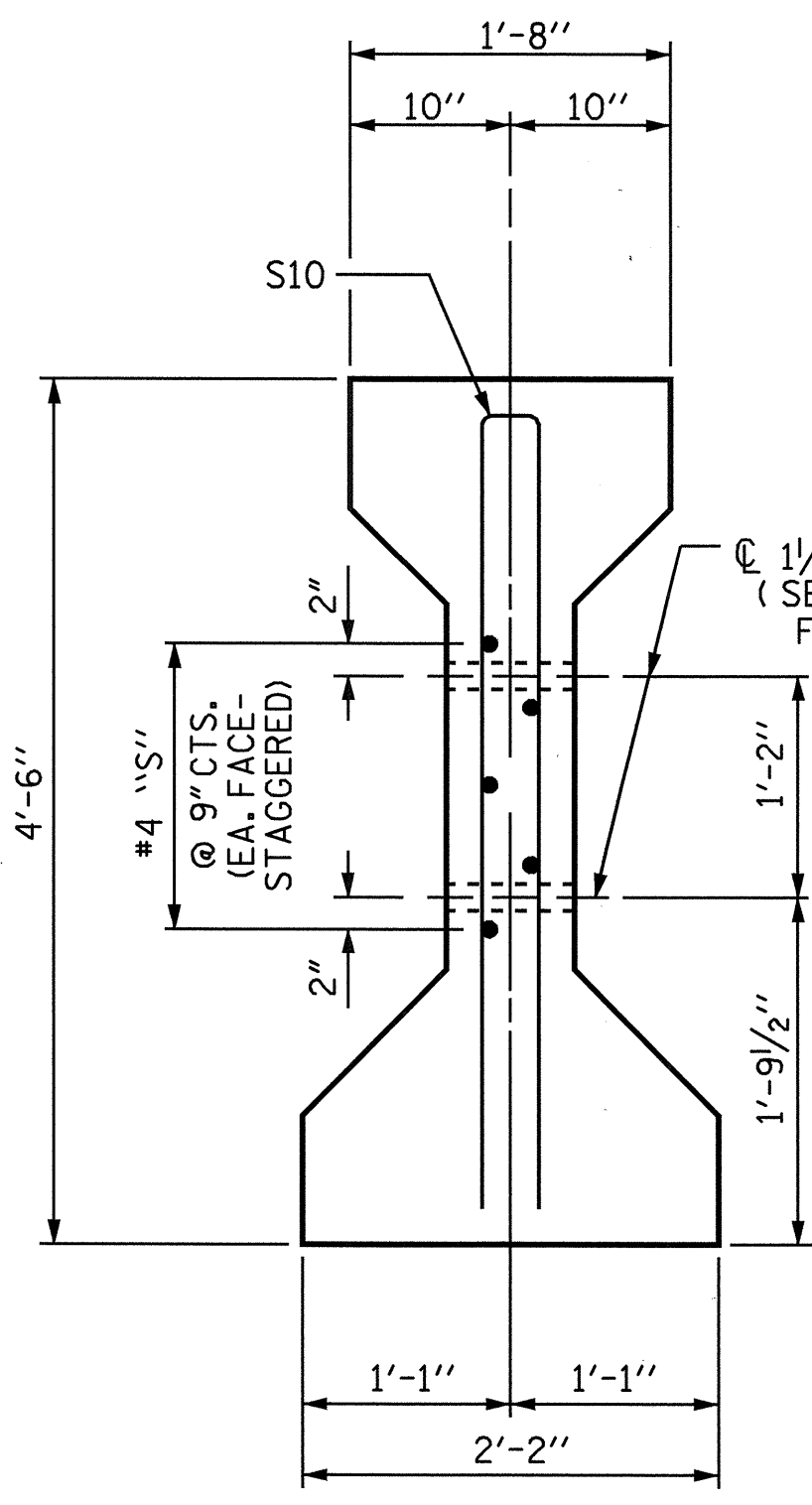
| | |
|----------------------------|------------------------|
| ASSEMBLED BY : T.A.H./J.M. | DATE : 5/12/04 |
| CHECKED BY : B.N. GRADY | DATE : 1/07 |
| DRAWN BY : ELR 8/91 | REV. 7/17/98 RWW/LES |
| CHECKED BY : GRP 8/91 | REV. 10/17/00R RWW/LES |
| | REV. 5/1/06 TLA/GM |



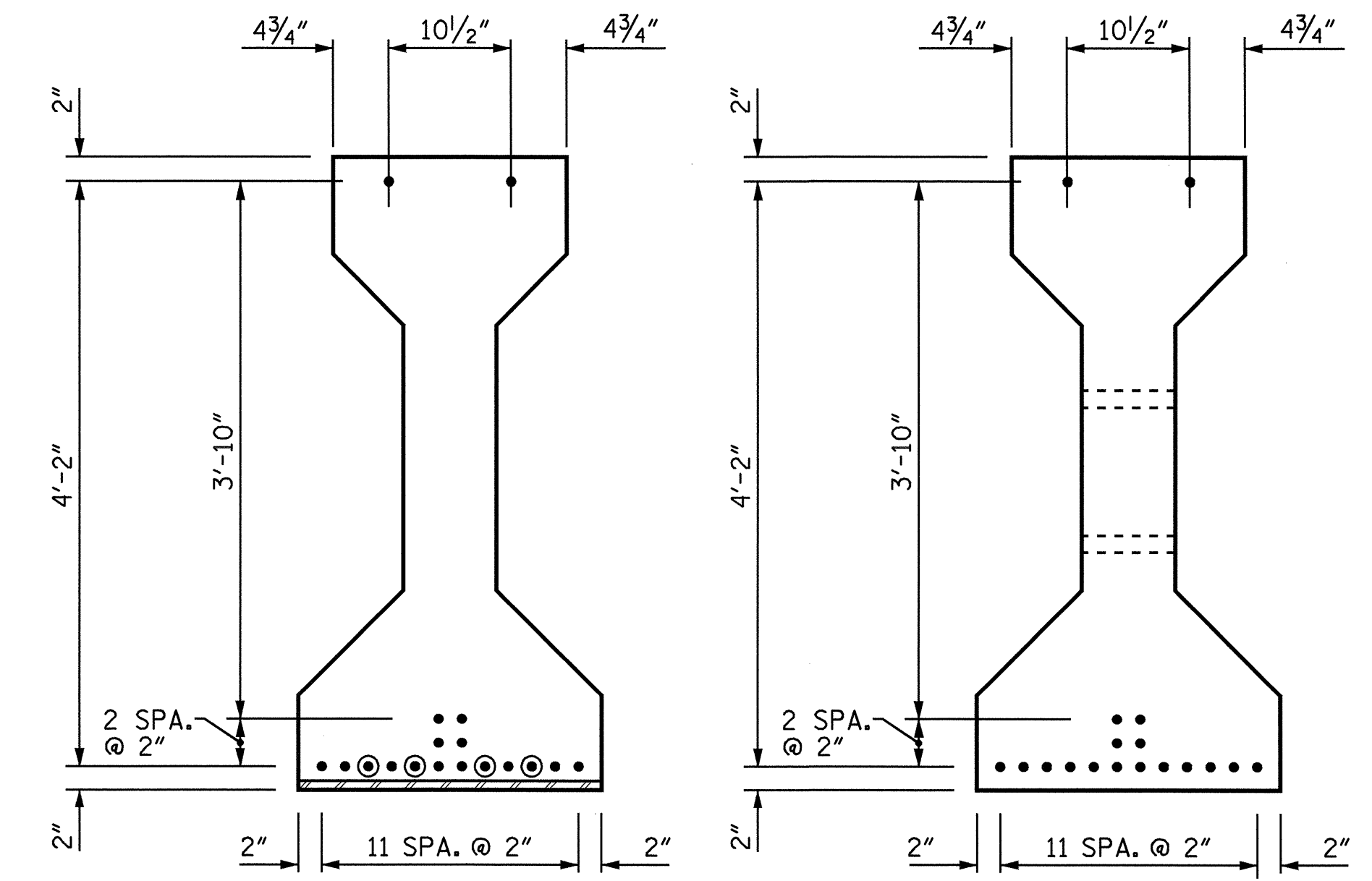
SECTION A-A

SECTION B-B

* FOR S7 BARS, SEE DETAIL A OF PRESTRESSED CONCRETE GIRDER CONTINUOUS FOR LIVE LOAD DETAILS, SHEET 4 OF 5.

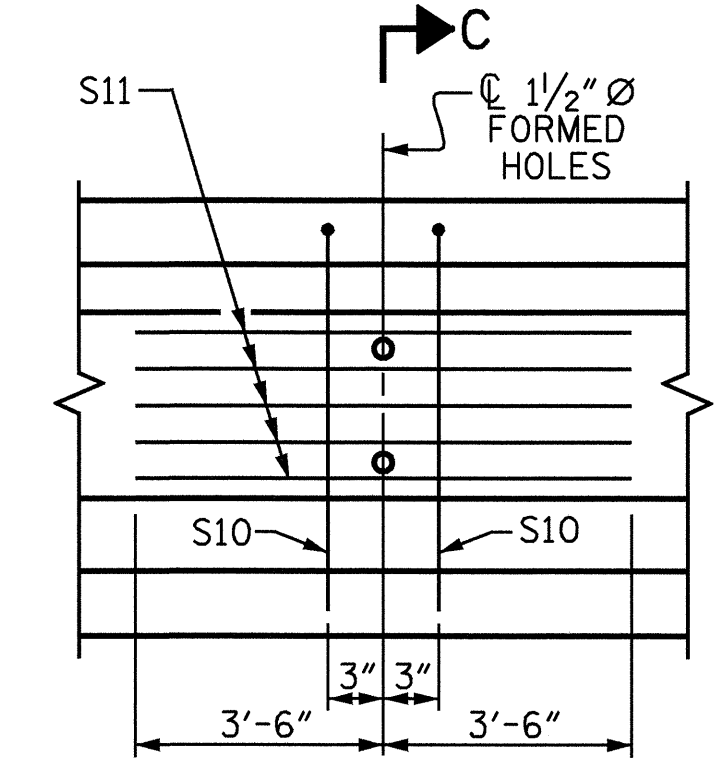


SECTION C-C
(S1 BARS NOT SHOWN)

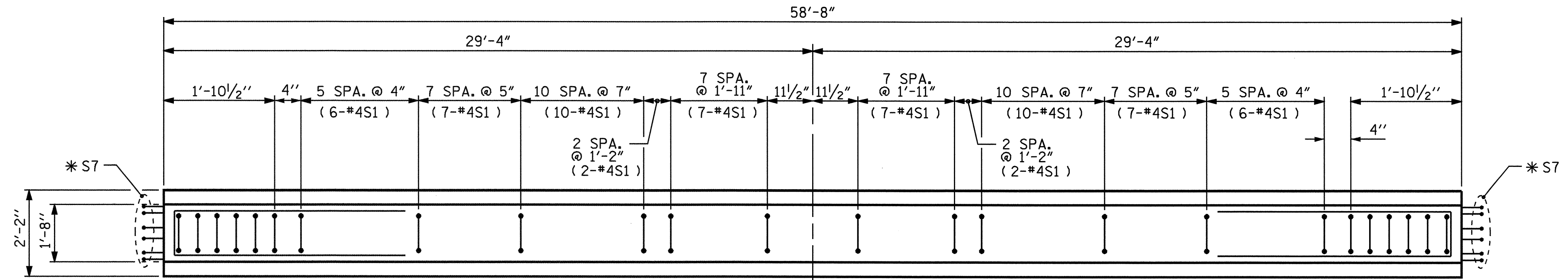


AT END OF GIRDER AT C OF GIRDER
0.6" Ø LOW RELAXATION STRAND LAYOUT

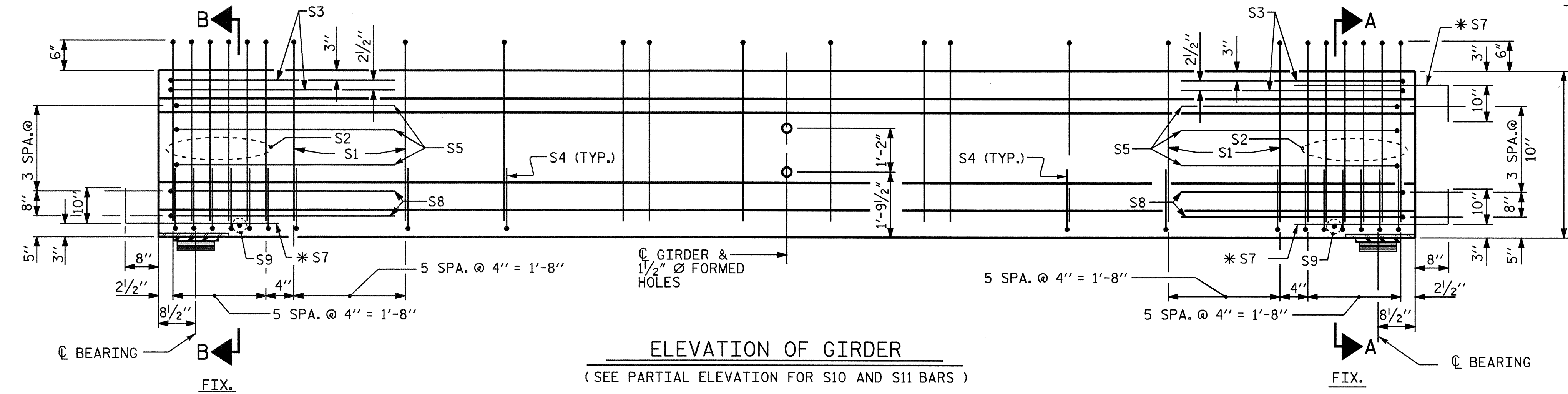
DEBONDING LEGEND
 ● FULLY BONDED STRANDS
 ⊙ STRANDS DEBONDED FOR 8'-0" FROM END OF GIRDER



PARTIAL ELEVATION
SHOWING INTERMEDIATE DIAPHRAGM REINFORCING STEEL FOR GIRDER Nos. A1 THRU A4



PLAN OF GIRDER



ELEVATION OF GIRDER
(SEE PARTIAL ELEVATION FOR S10 AND S11 BARS)

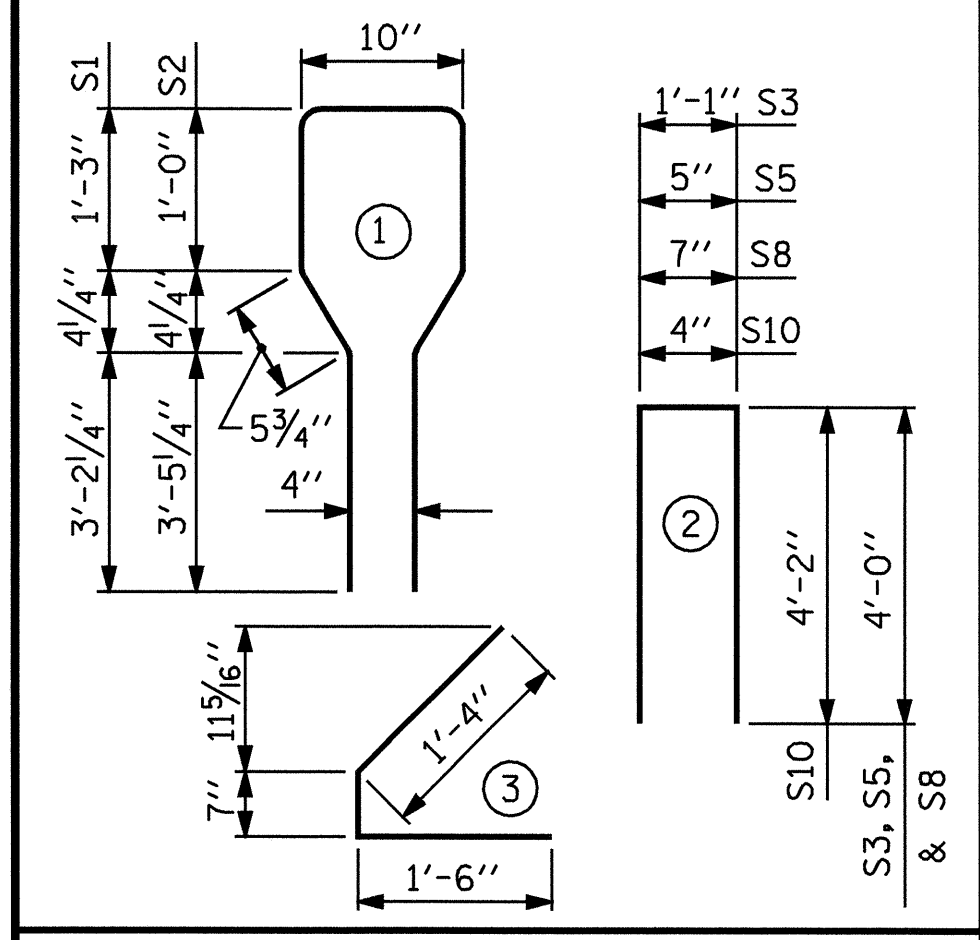
| 1/2" Ø L. R. GRADE 270 STRANDS | | |
|--------------------------------|--|--|
| AREA (SQUARE INCHES) | ULTIMATE STRENGTH (LBS. PER STRAND) | APPLIED PRESTRESS (LBS. PER STRAND) |
| 0.153 | 41,300 | 30,980 |

| REINFORCING STEEL FOR ONE GIRDER | | | | | |
|----------------------------------|--------|------|------|--------|--------|
| BAR | NUMBER | SIZE | TYPE | LENGTH | WEIGHT |
| S1 | 64 | #4 | 1 | 10'-8" | 456 |
| S2 | 12 | #6 | 1 | 10'-8" | 192 |
| S3 | 4 | #4 | 2 | 9'-1" | 24 |
| S4 | 76 | #4 | 3 | 3'-5" | 173 |
| S5 | 6 | #4 | 2 | 8'-5" | 34 |
| *S7 | 18 | #5 | STR | 3'-8" | 69 |
| S8 | 4 | #4 | 2 | 8'-7" | 23 |
| S9 | 2 | #3 | STR | 1'-10" | 1 |
| S10 | 2 | #5 | 2 | 8'-8" | 18 |
| S11 | 5 | #4 | STR | 7'-0" | 23 |

* NOTE: S7 BARS SHALL BE BENT BEFORE SHIPMENT. HEAT BENDING SHALL NOT BE ALLOWED.

BAR TYPES

ALL BAR DIMENSIONS ARE OUT-TO-OUT



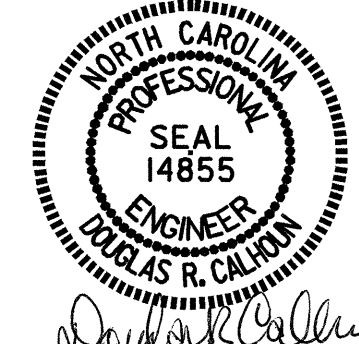
| QUANTITIES FOR ONE GIRDER | | | |
|---------------------------|-------------------|--------------------|---------------------|
| | REINFORCING STEEL | 6,000 PSI CONCRETE | 0.6" Ø L.R. STRANDS |
| | LB. | C.Y. | No. |
| C1 - C4 | 1013 | 11.9 | 18 |

GIRDERS REQUIRED

| NUMBER | LENGTH | TOTAL LENGTH |
|--------|--------|--------------|
| 4 | 58'-8" | 234'-8" |

PROJECT NO. B-3481
 JOHNSTON COUNTY
 STATION: 19+25.00 -L-

SHEET 3 OF 5



STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH
 STANDARD AASHTO TYPE IV
 PRESTRESSED CONCRETE GIRDER
 CONTINUOUS FOR LIVE LOAD
 SPAN C

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

| | |
|--------------|------|
| SHEET NO. | S-11 |
| TOTAL SHEETS | 31 |

| | | | |
|----------------|-------------|----------------|---------|
| ASSEMBLED BY : | T.A.H./J.M. | DATE : | 5/12/04 |
| CHECKED BY : | B.N. GRADY | DATE : | 1/07 |
| DRAWN BY : | ELR 8/91 | REV. 7/17/98 | RWW/LES |
| CHECKED BY : | GRP 8/91 | REV. 10/17/00R | RWW/LES |
| | | REV. 5/1/06 | TLA/GM |

| DEAD LOAD DEFLECTION TABLE FOR SPAN A | | | | | | | | | | | | | | | | | | | | | | | |
|---------------------------------------|-----------------|-------|-------|-------|-------|-------|--------|-------|-------|-------|-------|-----------------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|
| 0.6" Ø LOW RELAXATION | GIRDERS A1 & A4 | | | | | | | | | | | GIRDERS A2 & A3 | | | | | | | | | | | |
| TENTH POINTS | 0 | .1 | .2 | .3 | .4 | .5 | .6 | .7 | .8 | .9 | 0 | 0 | .1 | .2 | .3 | .4 | .5 | .6 | .7 | .8 | .9 | 0 | |
| CAMBER (GIRDER ALONE IN PLACE) | ↑ | 0.000 | 0.033 | 0.063 | 0.087 | 0.101 | 0.106 | 0.101 | 0.087 | 0.063 | 0.033 | 0.000 | 0.000 | 0.033 | 0.063 | 0.087 | 0.101 | 0.106 | 0.101 | 0.087 | 0.063 | 0.033 | 0.000 |
| * DEFLECTION DUE TO SUPERIMPOSED D.L. | ↓ | 0.000 | 0.009 | 0.016 | 0.022 | 0.026 | 0.027 | 0.026 | 0.022 | 0.016 | 0.009 | 0.000 | 0.000 | 0.010 | 0.018 | 0.025 | 0.029 | 0.031 | 0.029 | 0.025 | 0.018 | 0.010 | 0.000 |
| FINAL CAMBER | ↑ | 0 | 5/16" | 9/16" | 3/4" | 7/8" | 15/16" | 7/8" | 3/4" | 9/16" | 5/16" | 0 | 0 | 1/4" | 9/16" | 3/4" | 7/8" | 7/8" | 7/8" | 3/4" | 9/16" | 1/4" | 0 |

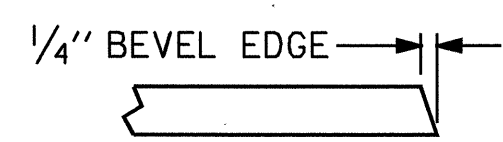
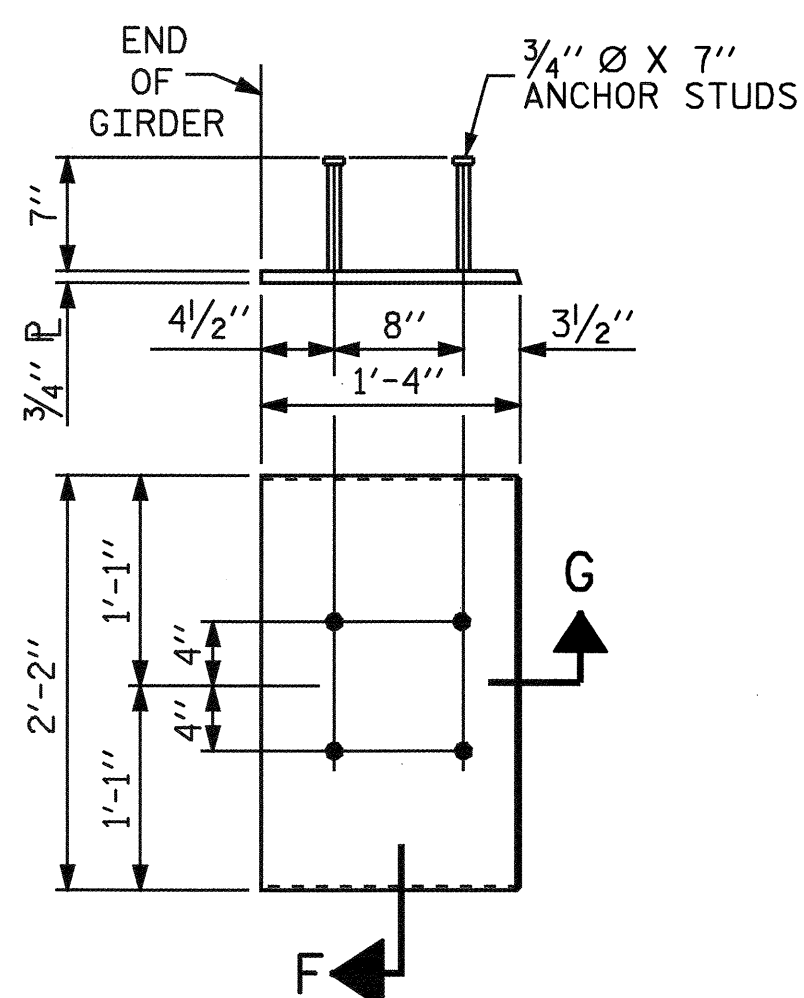
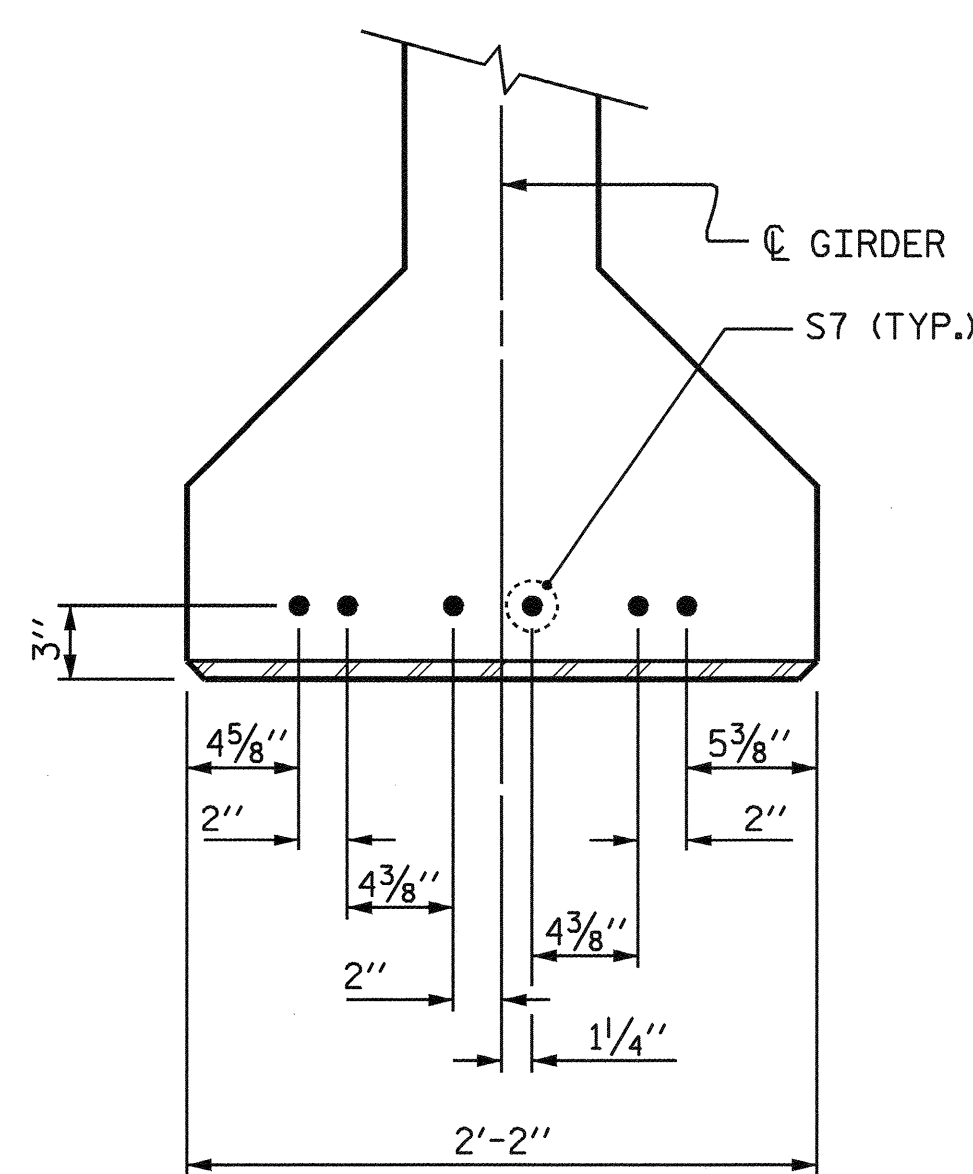
* INCLUDES FUTURE WEARING SURFACE
ALL VALUES ARE SHOWN IN FEET (DECIMAL FORM), EXCEPT "FINAL CAMBER", WHICH IS GIVEN IN INCHES (FRACTION FORM).

| DEAD LOAD DEFLECTION TABLE FOR SPAN B | | | | | | | | | | | | | | | | | | | | | | | |
|---------------------------------------|-----------------|-------|--------|-------|-------|--------|-------|--------|-------|-------|--------|-----------------|-------|--------|-------|-------|--------|-------|--------|-------|-------|--------|-------|
| 0.6" Ø LOW RELAXATION | GIRDERS B1 & B4 | | | | | | | | | | | GIRDERS B2 & B3 | | | | | | | | | | | |
| TENTH POINTS | 0 | .1 | .2 | .3 | .4 | .5 | .6 | .7 | .8 | .9 | 0 | 0 | .1 | .2 | .3 | .4 | .5 | .6 | .7 | .8 | .9 | 0 | |
| CAMBER (GIRDER ALONE IN PLACE) | ↑ | 0.000 | 0.084 | 0.160 | 0.219 | 0.256 | 0.269 | 0.256 | 0.219 | 0.160 | 0.084 | 0.000 | 0.000 | 0.084 | 0.160 | 0.219 | 0.256 | 0.269 | 0.256 | 0.219 | 0.160 | 0.084 | 0.000 |
| * DEFLECTION DUE TO SUPERIMPOSED D.L. | ↓ | 0.000 | 0.025 | 0.047 | 0.065 | 0.076 | 0.080 | 0.076 | 0.065 | 0.047 | 0.025 | 0.000 | 0.000 | 0.028 | 0.054 | 0.073 | 0.086 | 0.090 | 0.086 | 0.073 | 0.054 | 0.028 | 0.000 |
| FINAL CAMBER | ↑ | 0 | 11/16" | 13/8" | 17/8" | 23/16" | 21/4" | 23/16" | 17/8" | 13/8" | 11/16" | 0 | 0 | 11/16" | 11/4" | 13/4" | 21/16" | 21/8" | 21/16" | 13/4" | 11/4" | 11/16" | 0 |

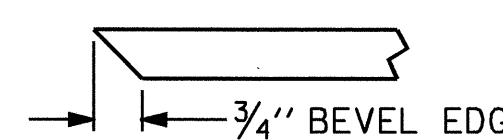
* INCLUDES FUTURE WEARING SURFACE
ALL VALUES ARE SHOWN IN FEET (DECIMAL FORM), EXCEPT "FINAL CAMBER", WHICH IS GIVEN IN INCHES (FRACTION FORM).

| DEAD LOAD DEFLECTION TABLE FOR SPAN C | | | | | | | | | | | | | | | | | | | | | | | |
|---------------------------------------|-----------------|-------|-------|-------|-------|-------|--------|-------|-------|-------|-------|-----------------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|
| 0.6" Ø LOW RELAXATION | GIRDERS C1 & C4 | | | | | | | | | | | GIRDERS C2 & C3 | | | | | | | | | | | |
| TENTH POINTS | 0 | .1 | .2 | .3 | .4 | .5 | .6 | .7 | .8 | .9 | 0 | 0 | .1 | .2 | .3 | .4 | .5 | .6 | .7 | .8 | .9 | 0 | |
| CAMBER (GIRDER ALONE IN PLACE) | ↑ | 0.000 | 0.033 | 0.063 | 0.087 | 0.101 | 0.106 | 0.101 | 0.087 | 0.063 | 0.033 | 0.000 | 0.000 | 0.033 | 0.063 | 0.087 | 0.101 | 0.106 | 0.101 | 0.087 | 0.063 | 0.033 | 0.000 |
| * DEFLECTION DUE TO SUPERIMPOSED D.L. | ↓ | 0.000 | 0.009 | 0.016 | 0.022 | 0.026 | 0.027 | 0.026 | 0.022 | 0.016 | 0.009 | 0.000 | 0.000 | 0.010 | 0.018 | 0.025 | 0.029 | 0.031 | 0.029 | 0.025 | 0.018 | 0.010 | 0.000 |
| FINAL CAMBER | ↑ | 0 | 5/16" | 9/16" | 3/4" | 7/8" | 15/16" | 7/8" | 3/4" | 9/16" | 5/16" | 0 | 0 | 1/4" | 9/16" | 3/4" | 7/8" | 7/8" | 7/8" | 3/4" | 9/16" | 1/4" | 0 |

* INCLUDES FUTURE WEARING SURFACE
ALL VALUES ARE SHOWN IN FEET (DECIMAL FORM), EXCEPT "FINAL CAMBER", WHICH IS GIVEN IN INCHES (FRACTION FORM).



SECTION "G"



SECTION "F"

(SEE NOTES)

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 SHALL BE GRADE 60.

EMBEDDED PLATE "B-1" SHALL BE GALVANIZED IN ACCORDANCE WITH THE STANDARD SPECIFICATIONS. BEVEL EDGES OF PLATE "B-1" TO GIVE CLOSE FIT BUT NOT TIGHT FIT TO STEEL CASTING FORM.

ANCHOR STUDS SHALL CONFORM TO AASHTO M169 GRADES 1010 THROUGH 1020 OR APPROVED EQUAL, AND SHALL MEET THE TYPE "B" REQUIREMENTS OF SUBSECTION 7.3 OF THE ANSI/AASHTO/AWS D1.5 BRIDGE WELDING CODE.

AT ENDS OF GIRDERS TO BE EMBEDDED IN CONCRETE DIAPHRAGMS OR END WALLS, PRESTRESSING STRANDS MAY EXTEND A MAXIMUM OF 2" BEYOND THE GIRDER ENDS. OTHERWISE, PRESTRESSING STRANDS SHALL BE CUT FLUSH WITH THE GIRDER ENDS.

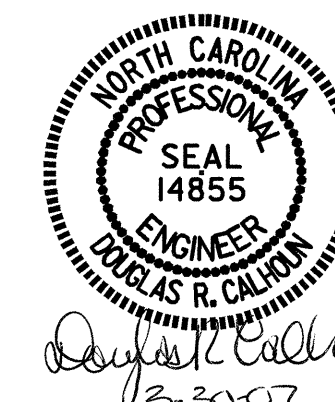
THE TRANSFER OF LOAD FROM THE ANCHORAGES TO THE GIRDER SHALL BE DONE WHEN CONCRETE HAS REACHED A COMPRESSIVE STRENGTH OF NOT LESS THAN 4000 PSI FOR SPANS A & C AND 4800 PSI FOR SPAN B.

DEPENDING ON THE TYPE OF SYSTEM USED TO SUPPORT THE DECK SLAB FORMS, PRESET ANCHORS MAY BE NECESSARY IN THE PRESTRESSED CONCRETE GIRDER.

THE TOP SURFACE OF THE GIRDER, EXCLUDING THE OUTSIDE 4", SHALL BE RAKED TO A DEPTH OF 1/4".

WHEN DRAPED STRANDS ARE DETAILED, THE LONGITUDINAL LOCATION OF THE HOLD DOWN DEVICES SHALL BE WITHIN 6" OF THE LOCATION SHOWN AND THE CENTER OF GRAVITY OF THE GROUP OF DRAPED STRANDS SHALL BE LOCATED WITHIN 1/2" OF THE THEORETICAL LOCATION SHOWN.

FOR CRACK REPAIR OF PRESTRESSED CONCRETE GIRDERS, SEE SPECIAL PROVISIONS.



PROJECT NO. B-3481
JOHNSTON COUNTY
STATION: 19+25.00 -L-

SHEET 4 OF 5

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH
STANDARD
PRESTRESSED CONCRETE GIRDER
CONTINUOUS FOR LIVE LOAD
DETAILS AND
DEAD LOAD DEFLECTION TABLES

ASSEMBLED BY : T.A.H./J.M. DATE : 5/10/04
CHECKED BY : B.N. GRADY. DATE : 11/17/05
DRAWN BY : ELR 11/91 REV. 10/17/00 RWW/LES
CHECKED BY : GRP 11/91 REV. 7/10/01RR LES/RDR
REV. 5/1/06 TLA/GM

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| REVISIONS | | | | | | SHEET NO. |
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| 1 | | | 3 | | | TOTAL SHEETS |
| 2 | | | 4 | | | 31 |

STRUCTURAL STEEL NOTES

ALL INTERMEDIATE DIAPHRAGM STEEL, CONNECTOR PLATES AND PLATE WASHERS SHALL BE AASHTO M270 GRADE 50 OR APPROVED EQUAL.

TENSION ON THE AASHTO M164 BOLTS THROUGH THE CHANNEL MEMBER SHALL BE CALIBRATED USING DIRECT TENSION INDICATOR WASHERS IN ACCORDANCE WITH ARTICLE 440-8 OF THE STANDARD SPECIFICATIONS.

TENSION ON THE AASHTO M164 BOLTS THROUGH THE GIRDER WEB SHALL BE SNUG TIGHTENED FOLLOWED BY AN ADDITIONAL 1/4 TURN.

THE CHANNELS, ANGLES, BOLTS, WASHERS, PLATE WASHERS AND DIRECT TENSION INDICATORS SHALL BE GALVANIZED IN ACCORDANCE WITH THE STANDARD SPECIFICATIONS, OR METALLIZED. FOR METALLIZATION, SEE SPECIAL PROVISIONS.

USE A MINIMUM 7/16" THICK PLATE WASHER WITH STANDARD HOLES UNDER EACH BOLT HEAD AND NUT. THE PLATE WASHERS SHALL HAVE SUFFICIENT SIZE TO COVER THE HOLES AFTER INSTALLATION. DIRECT TENSION INDICATORS ARE TO BE USED IN CONJUNCTION WITH THE PLATE WASHERS.

PROVIDE SUFFICIENT LENGTH OF ALL BOLTS TO ACCOMODATE WASHERS, DIRECT TENSION INDICATORS, THE THICKNESS OF CONNECTING MEMBER PLUS AT LEAST 1/4" PROJECTION BEYOND THE NUT.

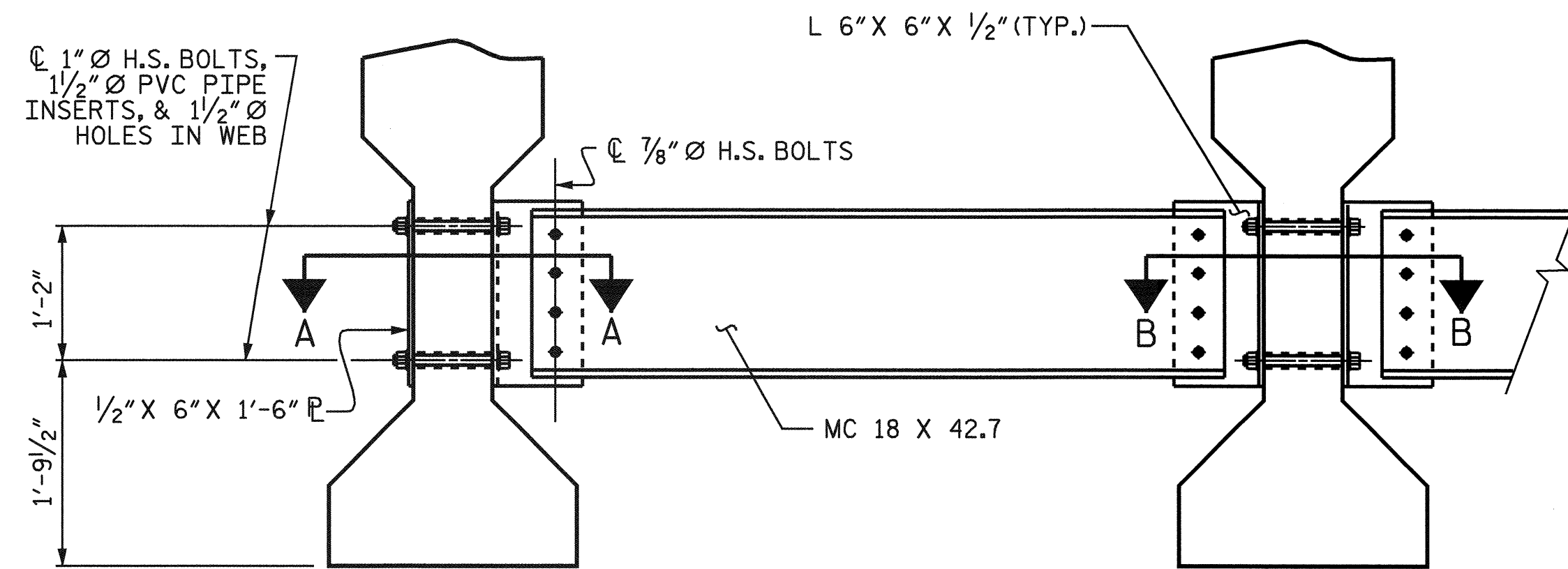
INTERMEDIATE DIAPHRAGM ASSEMBLY SHALL COMPLY WITH SECTION 1072 OF THE STANDARD SPECIFICATIONS.

CONTRACTOR SHALL SUBMIT TWO SETS OF WORKING DRAWINGS FOR THE INTERMEDIATE DIAPHRAGM ASSEMBLY FOR REVIEW, COMMENTS AND ACCEPTANCE. AFTER REVIEW, COMMENTS, AND ACCEPTANCE, SUBMIT SEVEN SETS FOR DISTRIBUTION.

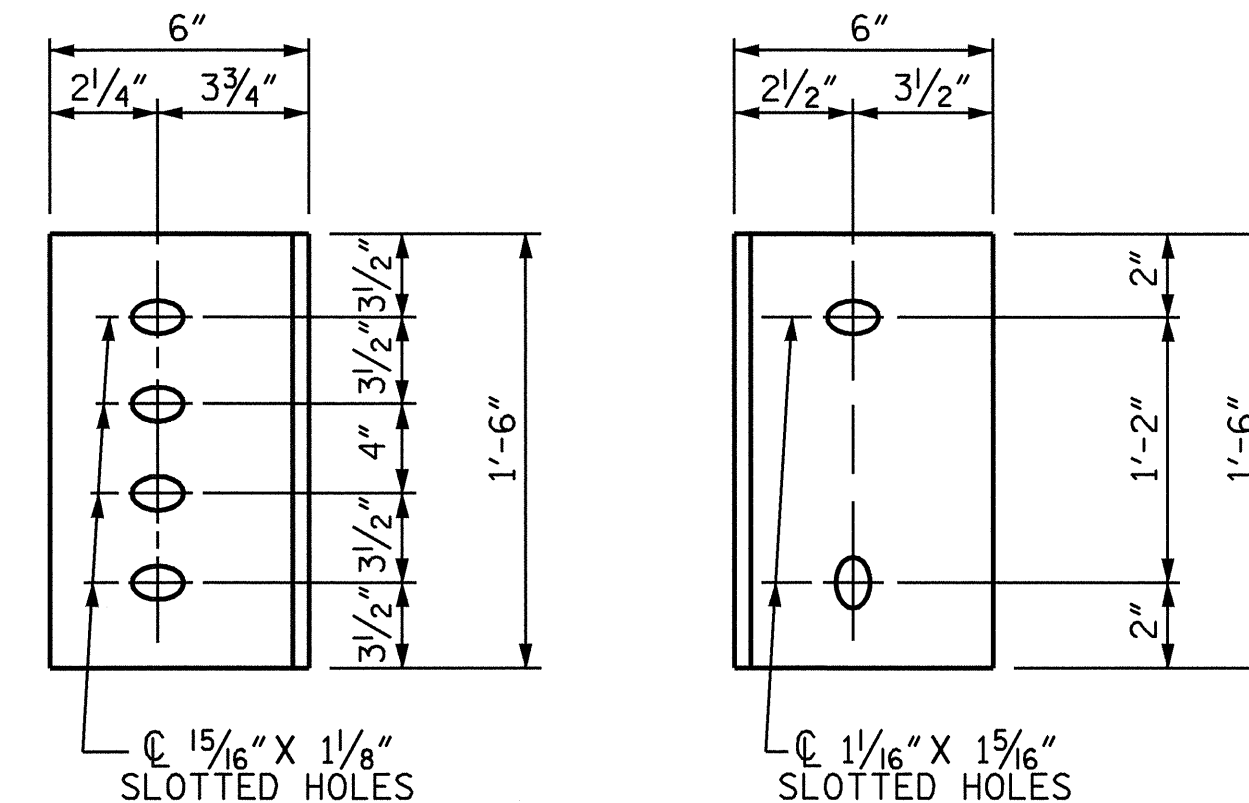
IN THE EXTERIOR BAYS, TEMPORARY STRUTS SHALL BE PLACED BETWEEN PRESTRESSED GIRDERS ADJACENT TO THE STEEL DIAPHRAGMS. STRUTS SHALL REMAIN IN PLACE 3 DAYS AFTER CONCRETE IS PLACED. ALL AASHTO M164 H.S. BOLTS SHALL BE FULLY TIGHTENED AFTER THE STRUTS HAVE BEEN REMOVED.

THE COST OF THE STEEL DIAPHRAGMS AND ASSEMBLIES SHALL BE INCLUDED IN THE UNIT PRICE BID FOR PRESTRESSED CONCRETE GIRDERS.

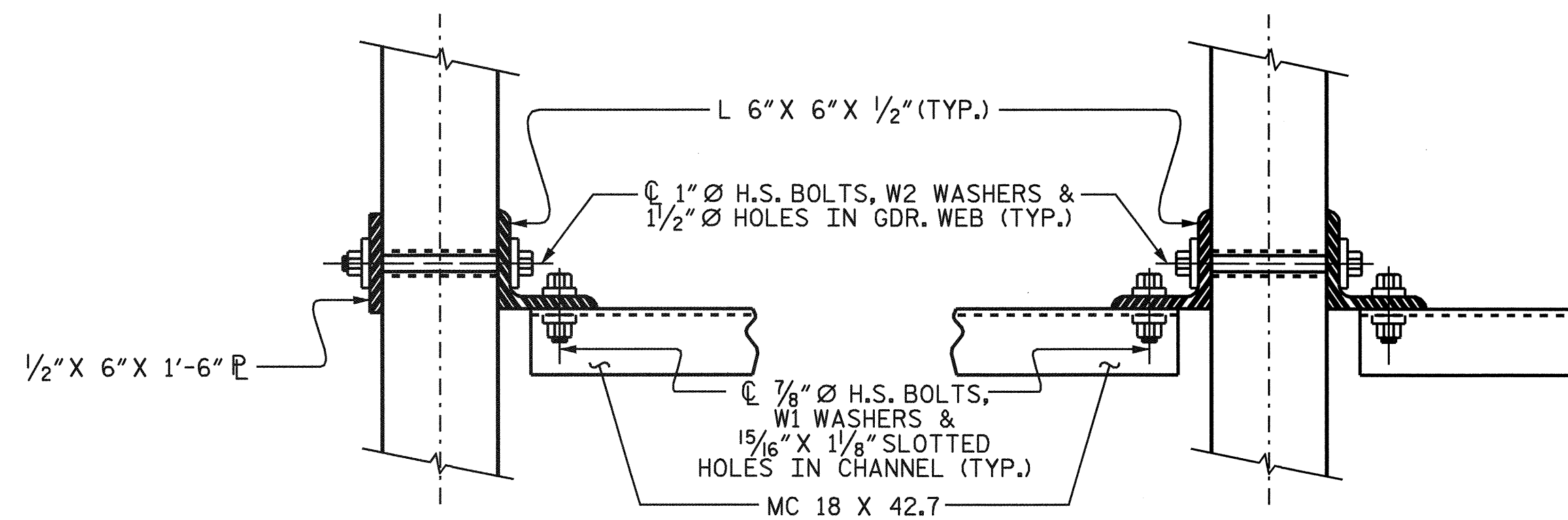
FOR HIGH STRENGTH BOLTS, SEE SPECIAL PROVISIONS.



EXTERIOR GIRDER
INTERIOR GIRDER
PART SECTION AT INTERMEDIATE DIAPHRAGM
(TYPE IV GIRDER SHOWN)



DIAPHRAGM FACE
(TYPE IV GDR.)
WEB FACE
CONNECTOR PLATE DETAILS



SECTION A-A
SECTION B-B
CONNECTION DETAILS
(FOR SKEW = 90°)

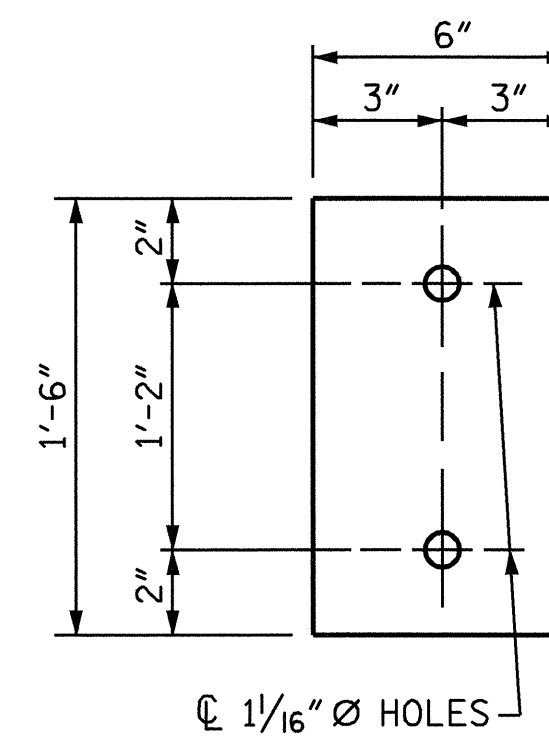
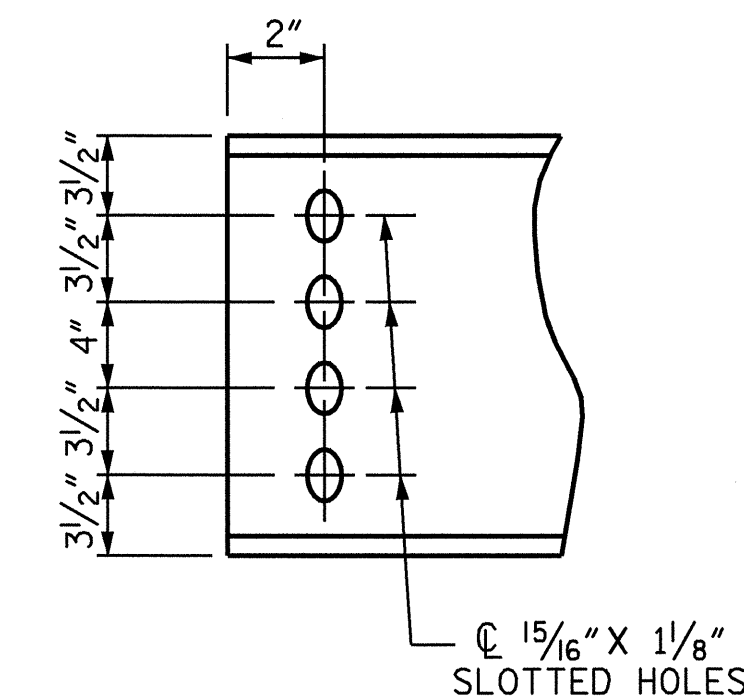
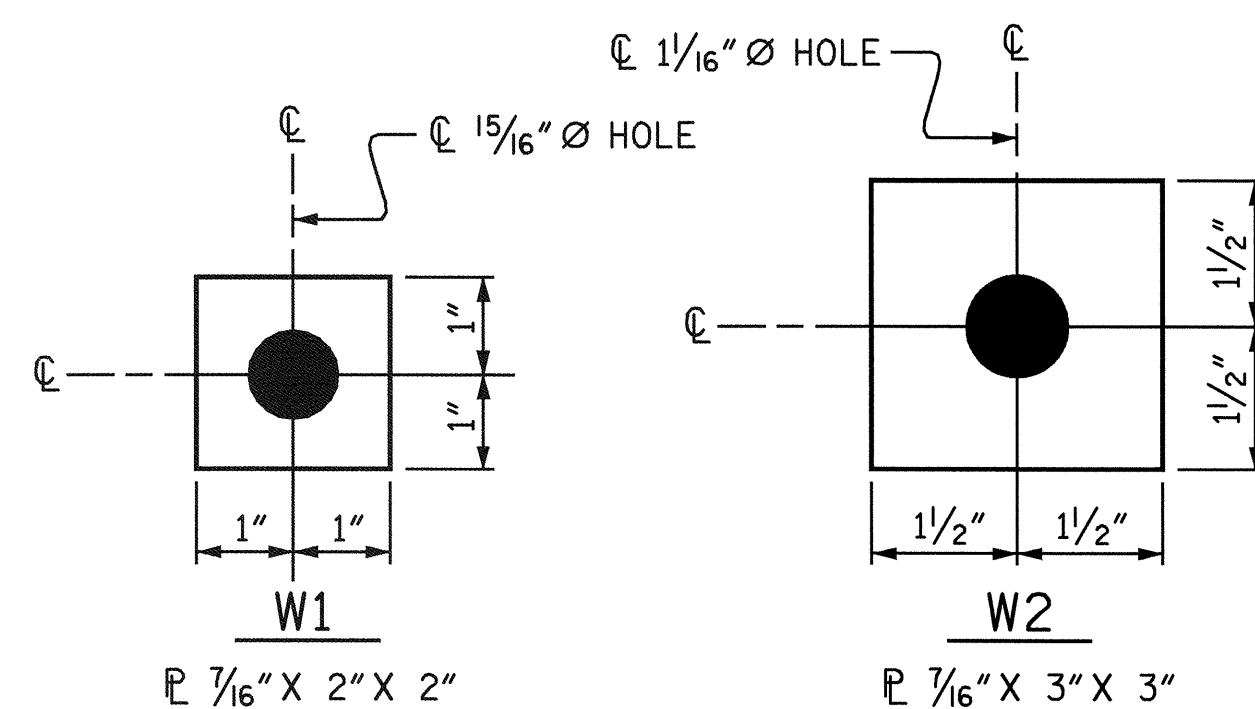


PLATE DETAILS



CHANNEL END
(TYPE IV GDR.)



USE WITH 7/8" Ø HVY. HEX NUTS & DIRECT TENSION INDICATOR WASHERS AT DIAPHRAGM CHANNEL TO CONNECTOR PLATE CONNECTIONS
USE WITH 1" Ø HVY. HEX NUTS & DIRECT TENSION INDICATOR WASHERS AT GIRDER CONNECTIONS

WASHER DETAILS

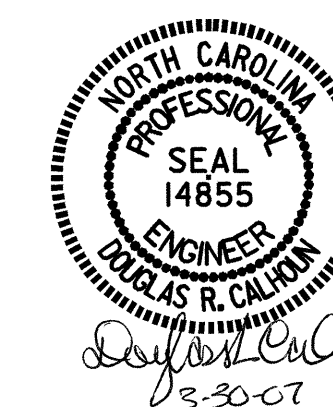
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|------------------------------------|------------------------|
| ASSEMBLED BY : T. A. HARRIS/J. MYA | DATE : 11/23/05 |
| CHECKED BY : W.S.A. | DATE : 11/30/05 |
| DRAWN BY : ELR 11/91 | REV. 10/17/00 RWW/LES |
| CHECKED BY : GRP 11/91 | REV. 7/10/01RR LES/RDR |
| | REV. 5/1/06 TLA/GM |

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PROJECT NO. B-3481
JOHNSTON COUNTY
STATION: 19+25.00 -L-

SHEET 5 OF 5

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| STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION RALEIGH | | | | | |
| STANDARD INTERMEDIATE STEEL DIAPHRAGMS FOR TYPE IV PRESTRESSED CONCRETE GIRDERS | | | | | |
| REVISIONS | | | | | |
| NO. | BY: | DATE: | NO. | BY: | DATE: |
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| | | | | | TOTAL SHEETS 31 |



STD.No.PCG12

NOTES

AT ALL FIXED POINTS OF SUPPORT, NUTS FOR ANCHOR BOLTS ARE TO BE TIGHTENED FINGER TIGHT AND THEN BACKED OFF 1/2 TURN. THE THREAD OF THE NUT AND BOLT SHALL THEN BE BURRED WITH A SHARP POINTED TOOL.

STEEL SOLE PLATES, ANCHOR BOLTS, NUTS, AND WASHERS SHALL BE GALVANIZED IN ACCORDANCE WITH THE STANDARD SPECIFICATIONS.

PRIOR TO WELDING, GRIND THE GALVANIZED SURFACE OF THE PORTION OF THE EMBEDDED PLATE AND SOLE PLATE THAT ARE TO BE WELDED. AFTER WELDING, DAMAGED GALVANIZED SURFACES SHALL BE REPAIRED IN ACCORDANCE WITH THE STANDARD SPECIFICATIONS.

WHEN WELDING THE SOLE PLATE TO THE EMBEDDED PLATE IN THE GIRDER, USE TEMPERATURE INDICATING WAX PENS, OR OTHER SUITABLE MEANS, TO ENSURE THAT THE TEMPERATURE OF THE SOLE PLATE DOES NOT EXCEED 300°F. TEMPERATURES ABOVE THIS MAY DAMAGE THE ELASTOMER.

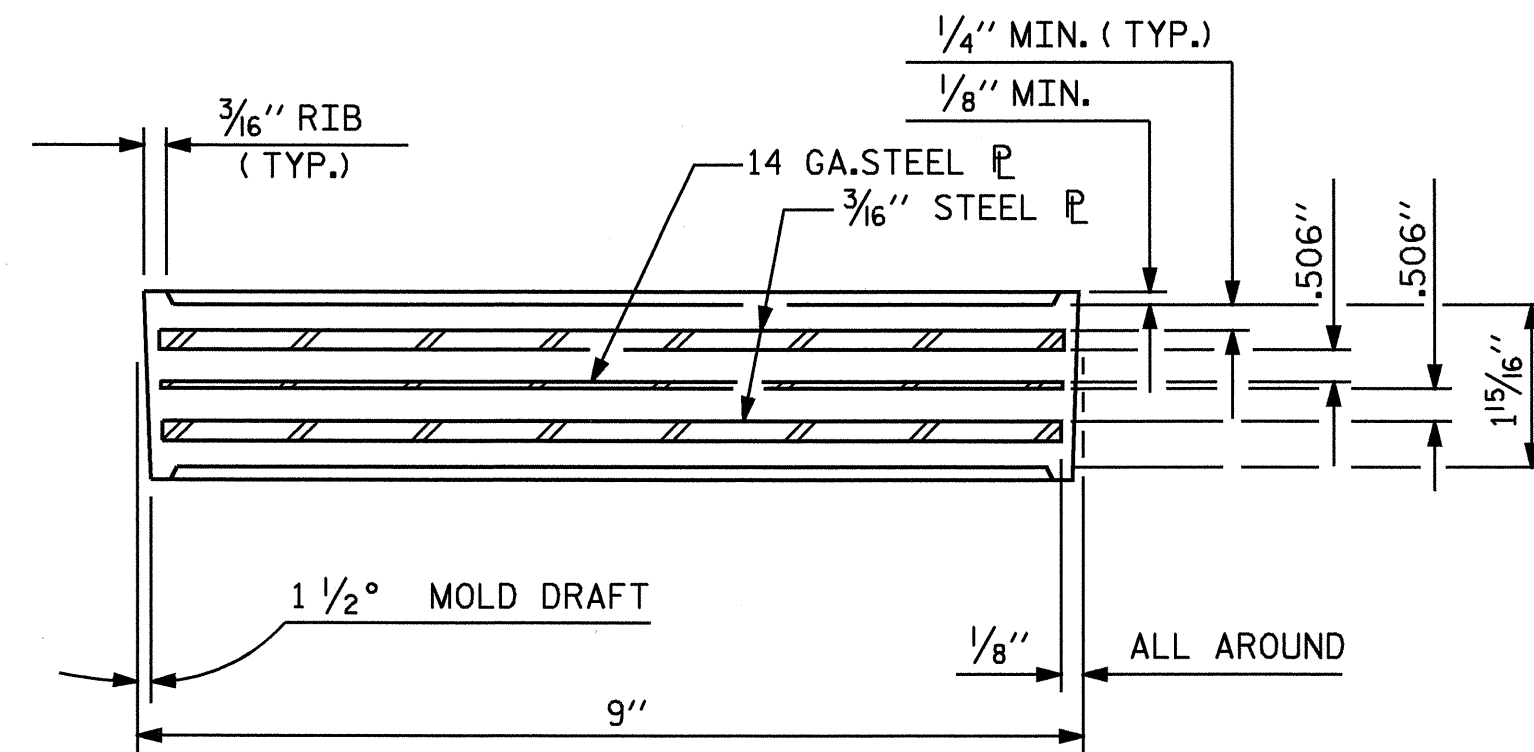
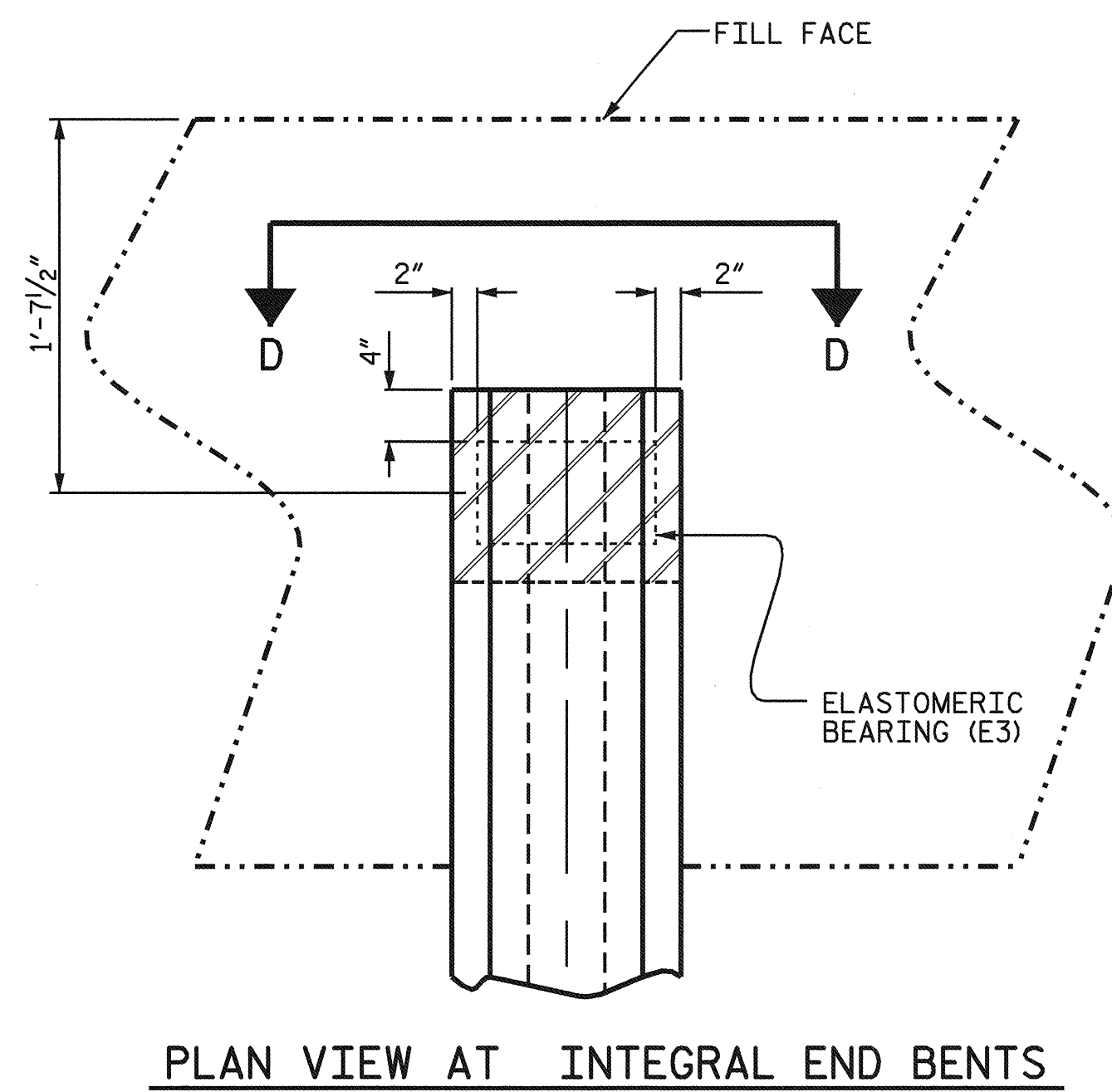
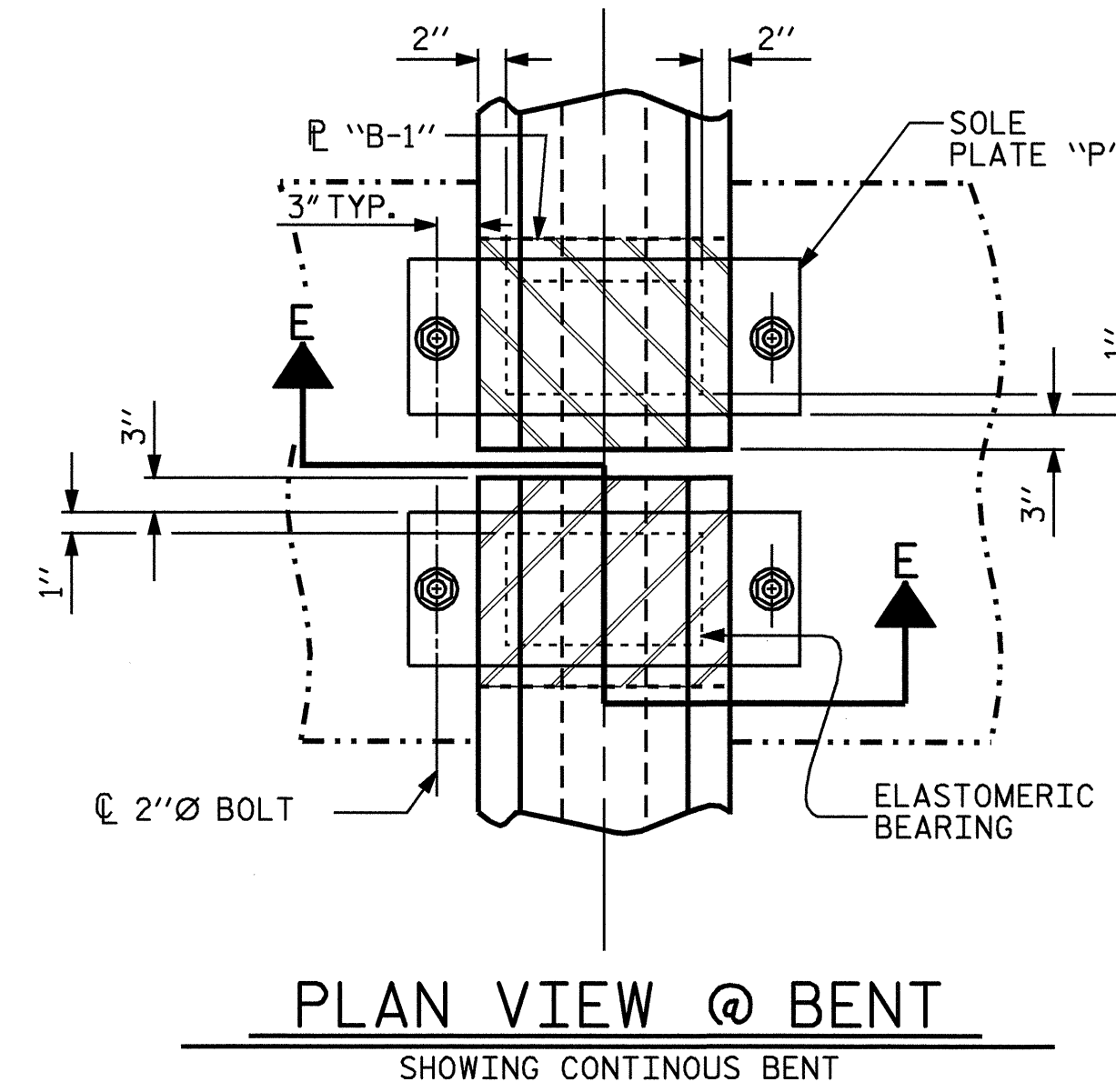
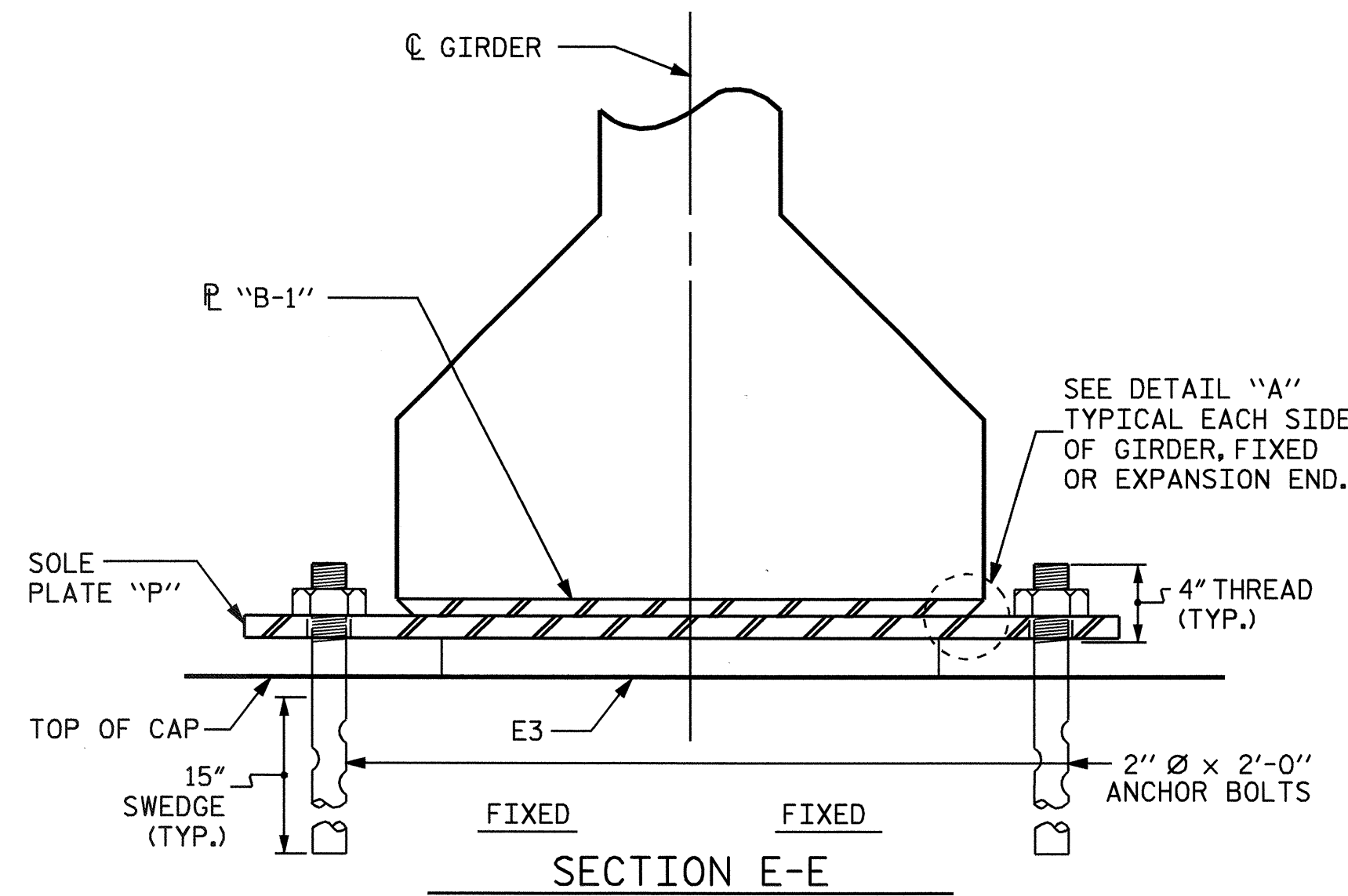
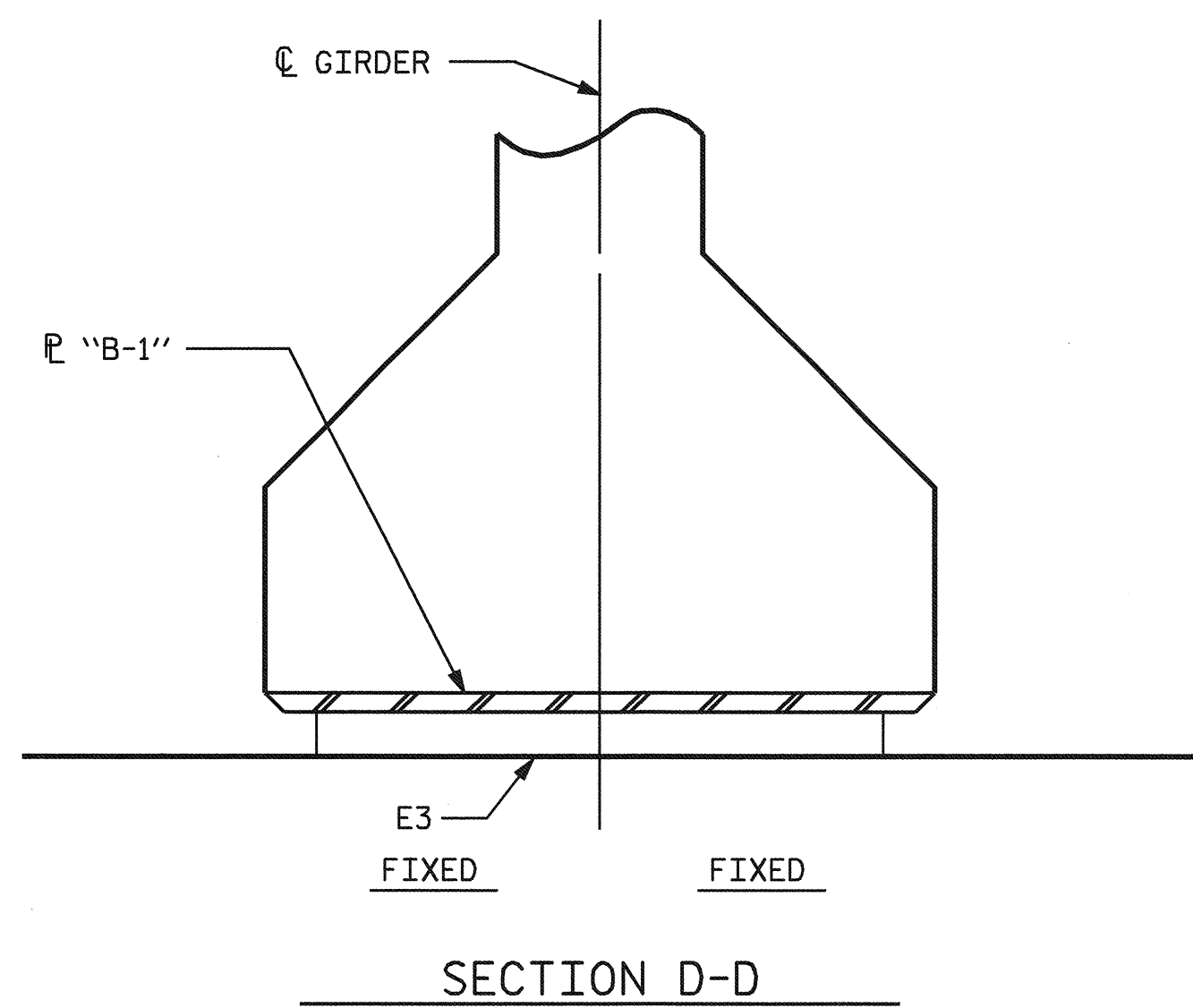
SOLE PLATE "P", BOLTS, NUTS, WASHERS, AND PIPE SLEEVE SHALL BE INCLUDED IN THE PAY ITEM FOR PRESTRESSED CONCRETE GIRDERS.

ANCHOR BOLTS SHALL MEET THE REQUIREMENTS OF ASTM A449. NUTS SHALL MEET THE REQUIREMENTS OF AASHTO M291-DH OR AASHTO M292-2H. WASHERS SHALL MEET THE REQUIREMENTS OF AASHTO M293. SHOP DRAWINGS ARE NOT REQUIRED FOR ANCHOR BOLT, NUTS AND WASHERS. SHOP INSPECTION IS REQUIRED.

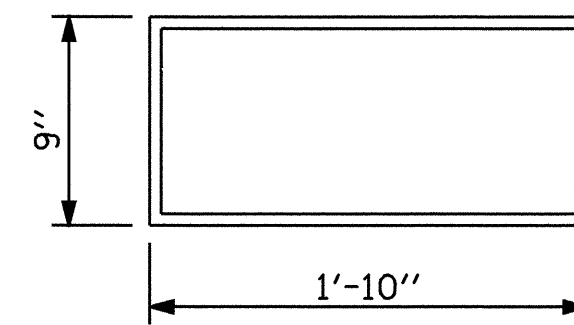
ALL SURFACES OF BEARING PLATES SHALL BE SMOOTH AND STRAIGHT.

ELASTOMER IN ALL BEARINGS SHALL BE 60 DUROMETER HARDNESS

| — LOAD RATINGS — | |
|------------------|---------------|
| | MAX.D.L.+L.L. |
| 54" PCG -TYPE IV | 137 K |



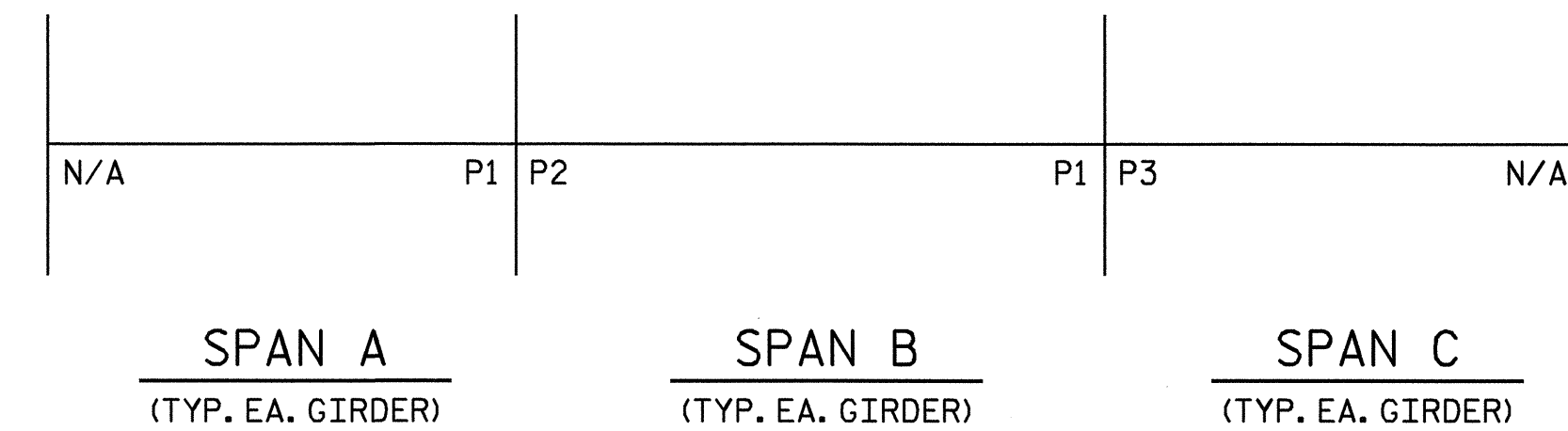
TYPICAL SECTION OF ELASTOMERIC BEARINGS



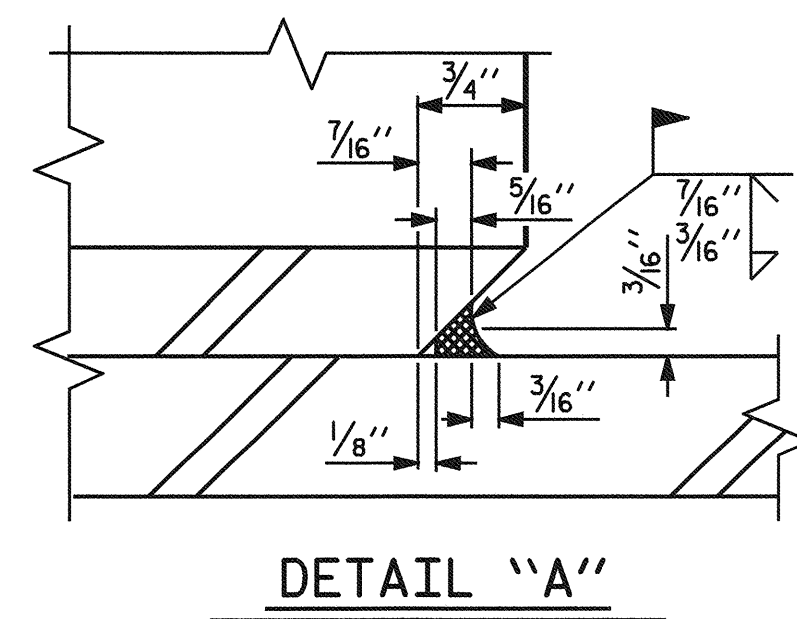
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PLAN VIEW OF ELASTOMERIC BEARING

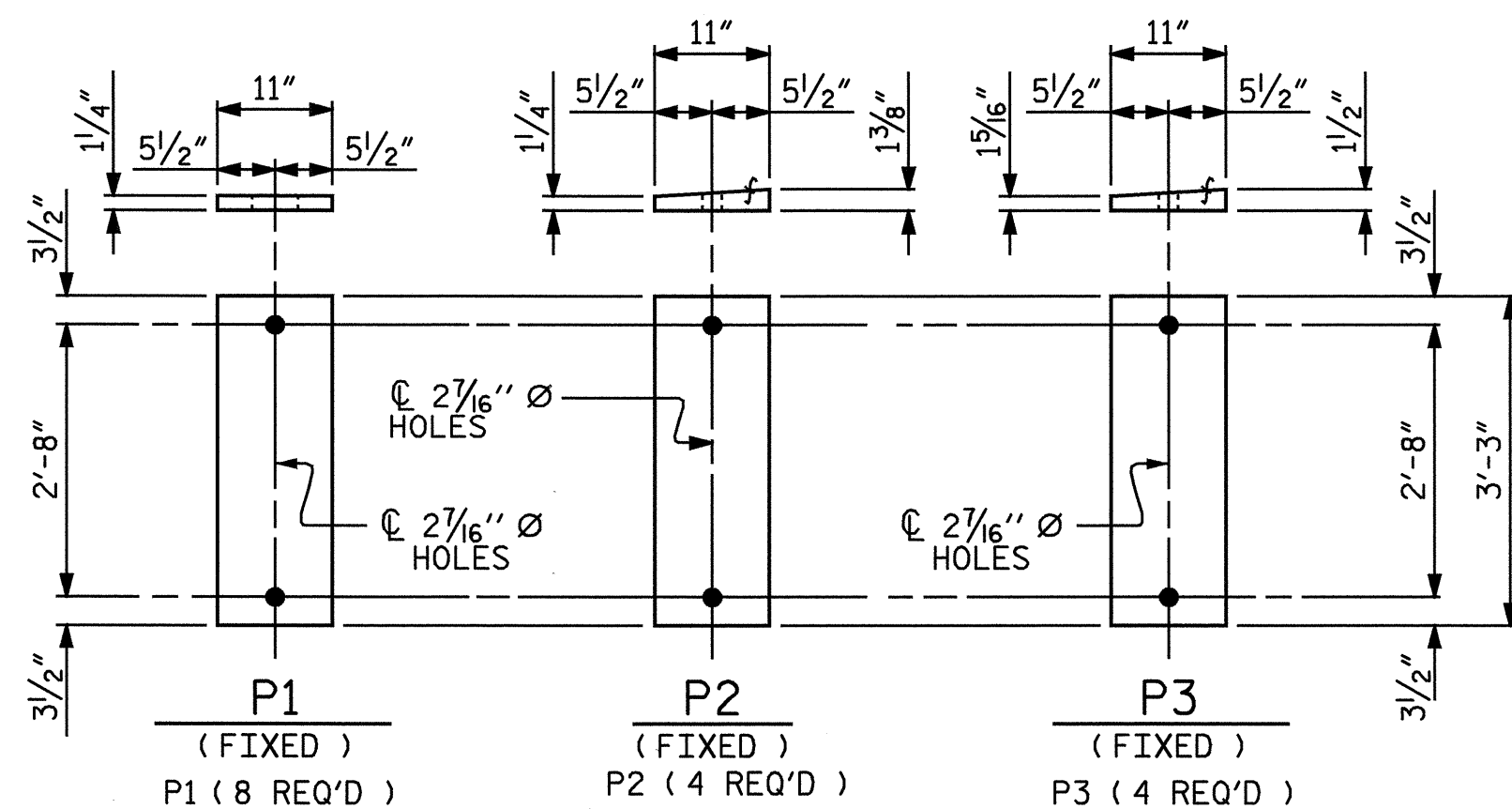
TYPE IV



SOLE P LAYOUT



DETAIL "A"



SOLE PLATE DETAILS ("P")

| | |
|----------------------------|-----------------------|
| ASSEMBLED BY : T.A.H./J.M. | DATE : 5/6/04 |
| CHECKED BY : B.N. GRADY | DATE : 1/07 |
| DRAWN BY : WJH 8/89 | REV. 8/16/99 RWW/LES |
| CHECKED BY : CRK 8/89 | REV. 10/17/00 RWW/LES |
| | REV. 7/10/01 RWW/LES |



PROJECT NO. B-3481
JOHNSTON COUNTY
 STATION: 19+25.00 -L-

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH
STANDARD ELASTOMERIC BEARING DETAILS
 PRESTRESSED CONCRETE GIRDER
 AUGUST SUPERSTRUCTURE 1989

| REVISIONS | | | | | | SHEET NO. |
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| NO. | BY: | DATE: | NO. | BY: | DATE: | TOTAL SHEETS |
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| 2 | | | 4 | | | 31 |

NOTES

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

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

BOLTS SHALL CONFORM TO THE REQUIREMENTS OF ASTM A307 AND NUTS SHALL CONFORM TO THE REQUIREMENTS OF AASHTO M291. BOLTS, NUTS AND WASHERS SHALL BE GALVANIZED. (AT THE CONTRACTOR'S OPTION, STAINLESS STEEL BOLTS, NUTS AND WASHERS MAY BE USED AS AN ALTERNATE FOR THE 1/8" Ø GALVANIZED BOLTS, NUTS AND WASHERS. THEY SHALL CONFORM TO OR EXCEED THE MECHANICAL REQUIREMENTS OF ASTM A307. THE USE OF THIS ALTERNATE SHALL BE APPROVED BY THE ENGINEER.)

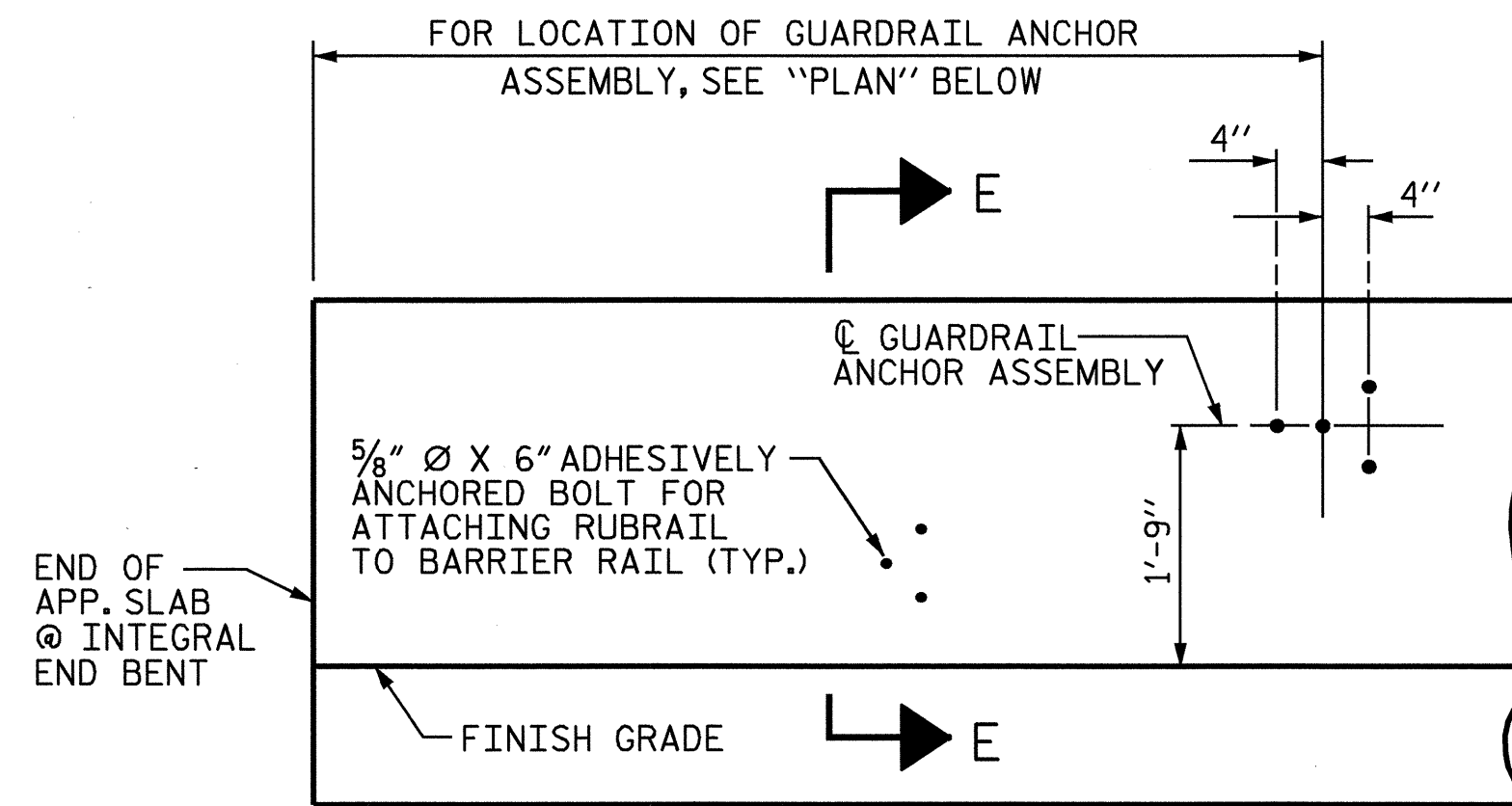
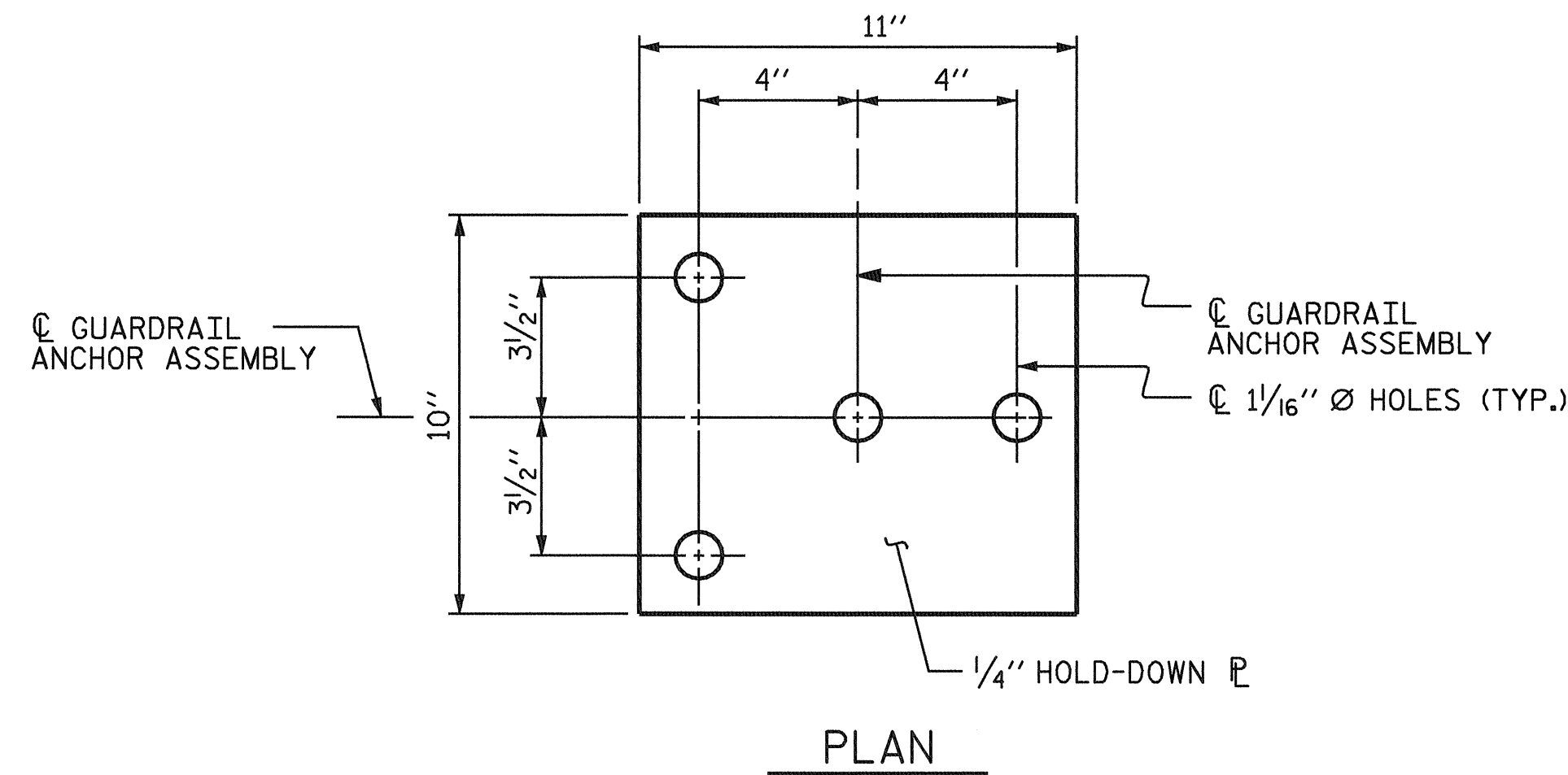
THE GUARDRAIL ANCHOR ASSEMBLY IS REQUIRED AT ALL POINTS WHERE APPROACH GUARDRAIL IS TO BE ATTACHED TO THE END OF BARRIER RAIL. FOR POINTS OF ATTACHMENT, SEE SKETCH.

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

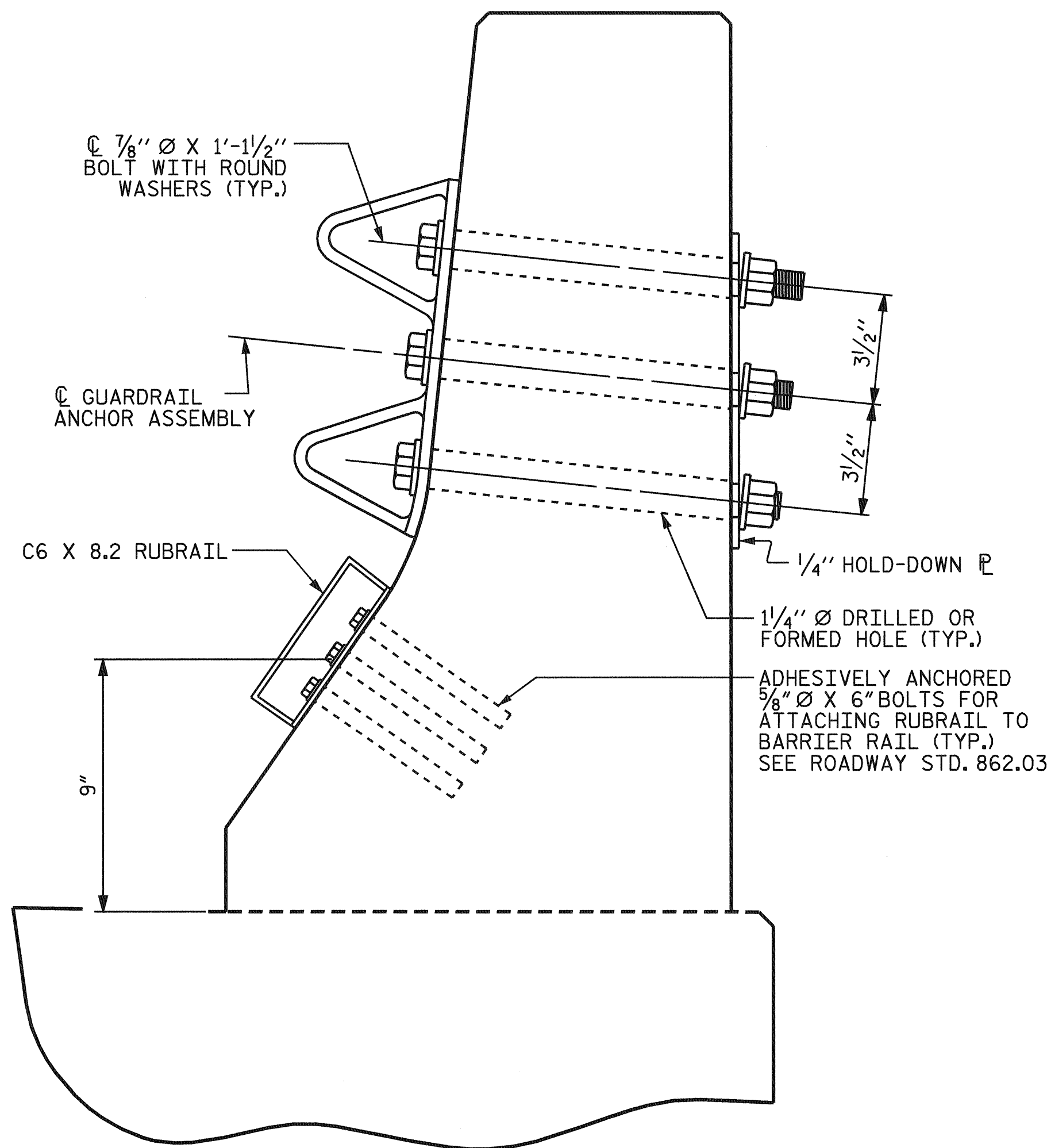
THE COST OF THE GUARDRAIL ANCHOR ASSEMBLY SHALL BE INCLUDED IN THE UNIT CONTRACT PRICE BID FOR CONCRETE BARRIER RAIL.

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

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

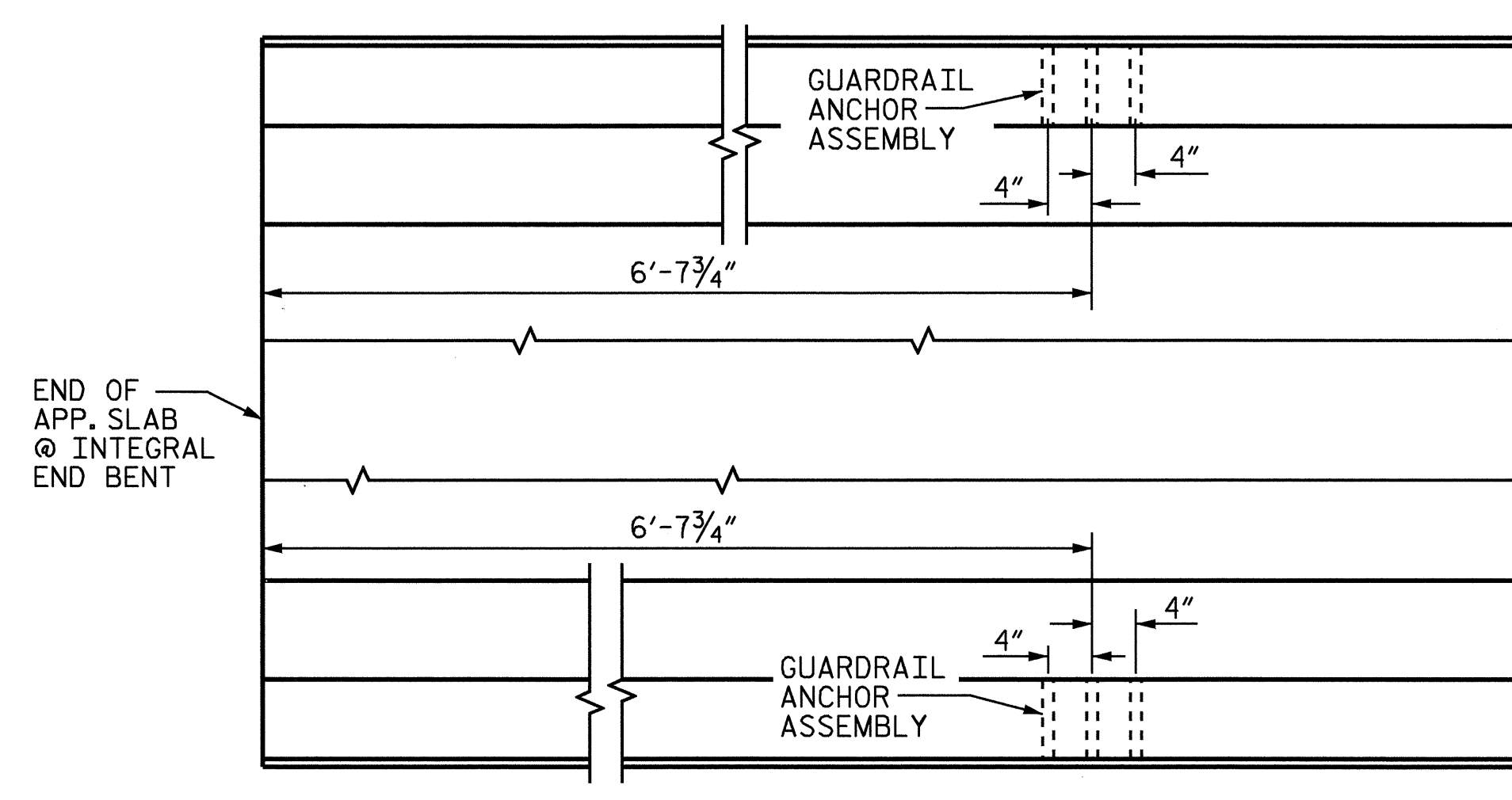


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FOR LOCATION OF RUBRAIL, SEE ROADWAY STD. 862.03



SECTION E-E

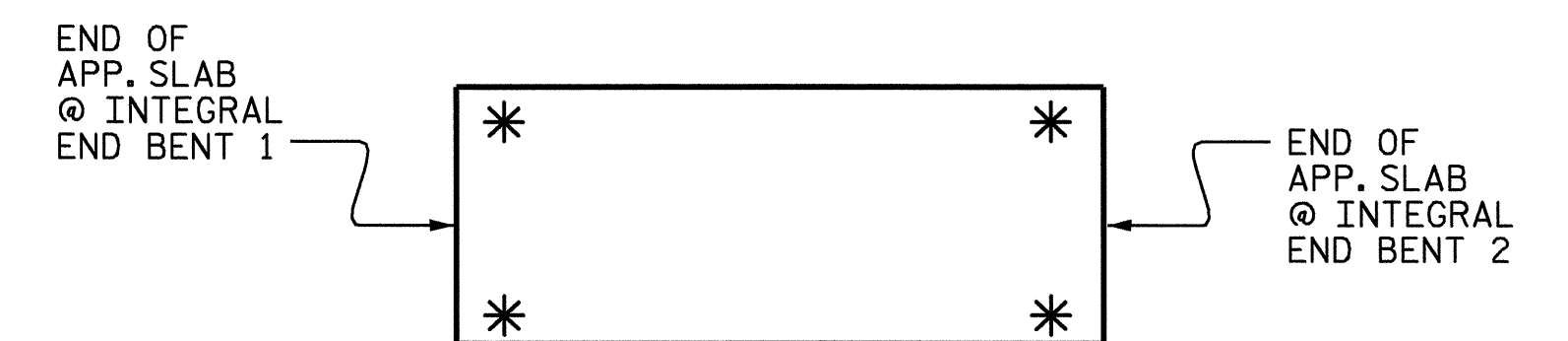
GUARDRAIL ANCHOR ASSEMBLY DETAILS



PLAN

LOCATION OF ANCHORS FOR GUARDRAIL

END BENT 1 SHOWN, END BENT 2 SIMILAR.

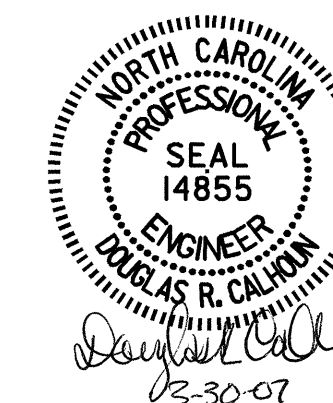


SKETCH SHOWING POINTS OF ATTACHMENTS

* DENOTES GUARDRAIL ANCHOR ASSEMBLY

| | |
|-------------------------|----------------|
| ASSEMBLED BY : T.A.H. | DATE : 5/12/04 |
| CHECKED BY : B.N. GRADY | DATE : 1/07 |
| DRAWN BY : TLA 5/06 | ADDED 5/1/06 |
| CHECKED BY : GM 5/06 | |

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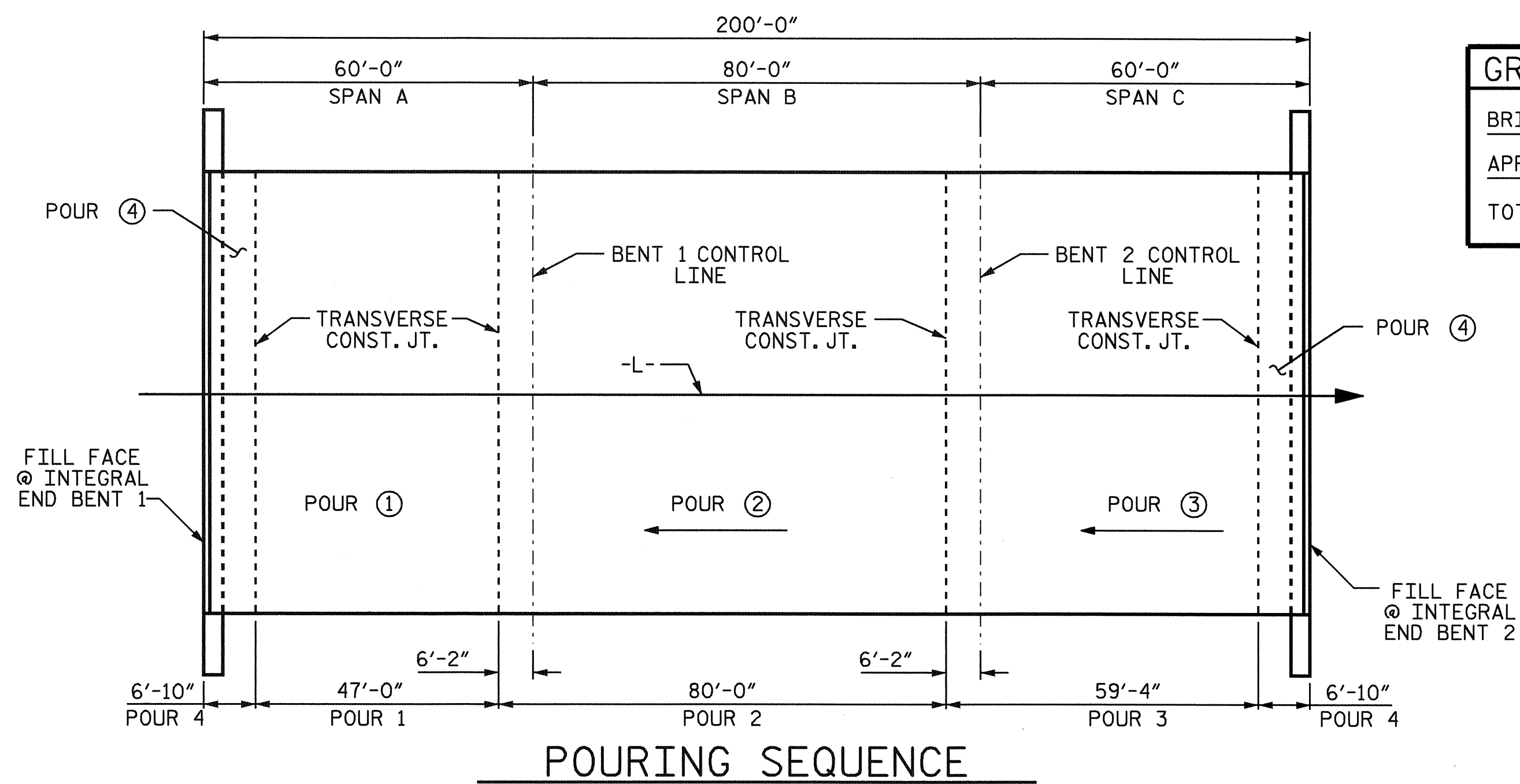


PROJECT NO. B-3481
JOHNSTON COUNTY
STATION: 19+25.00 -L-

SHEET 2 OF 2

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| STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION RALEIGH | | | | | |
| STANDARD GUARDRAIL ANCHORAGE FOR BARRIER RAIL | | | | | |
| REVISIONS | | | | | |
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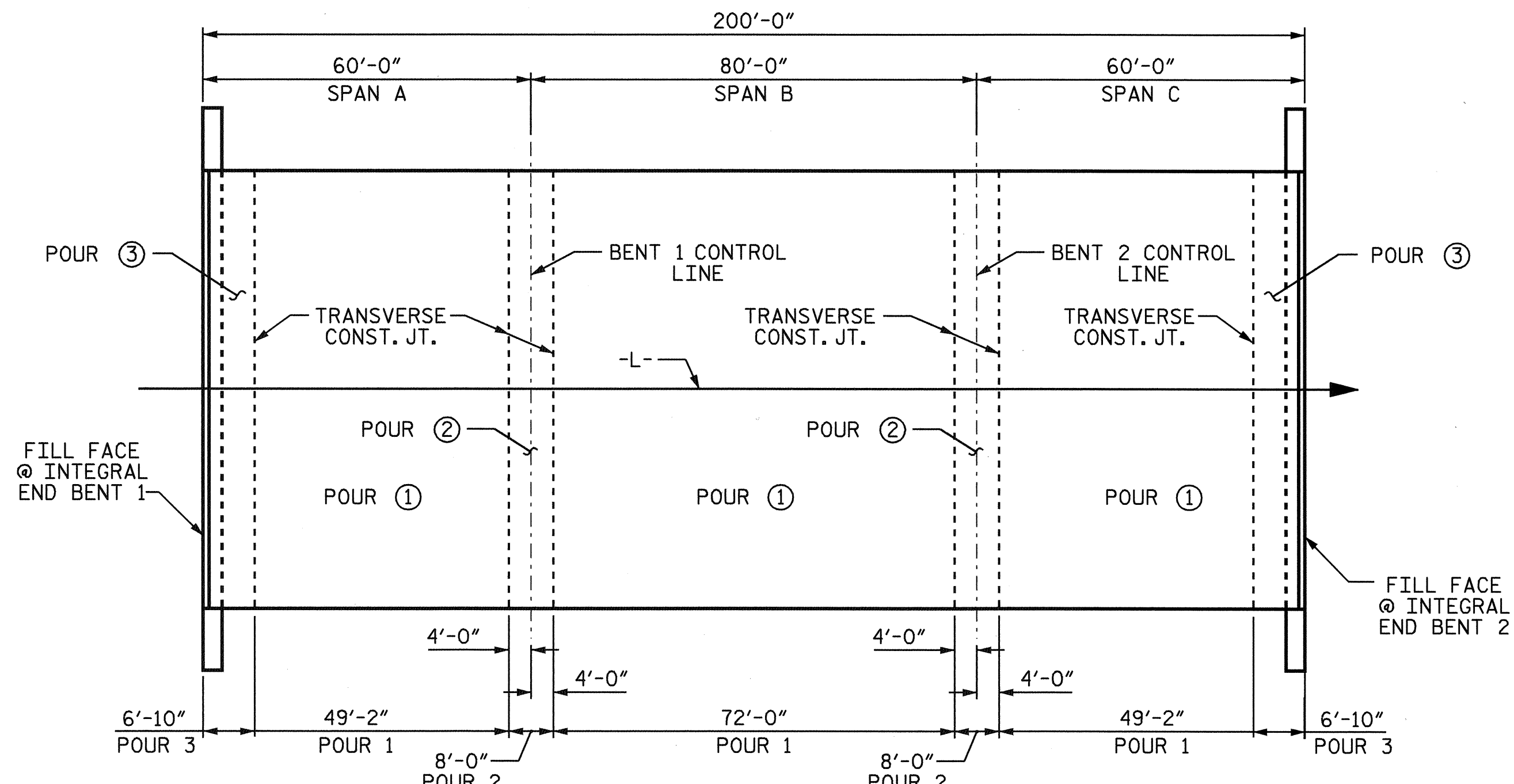
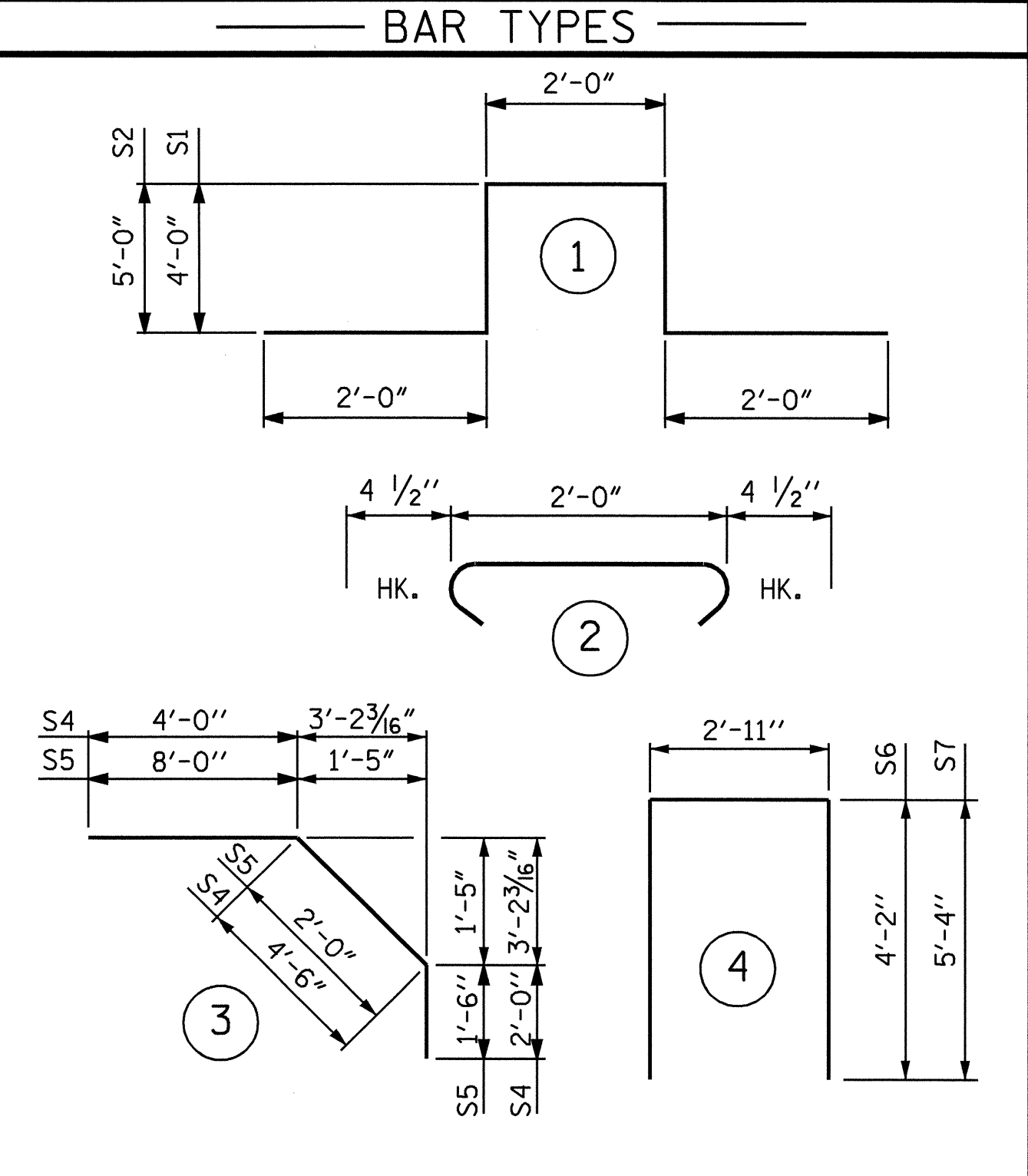
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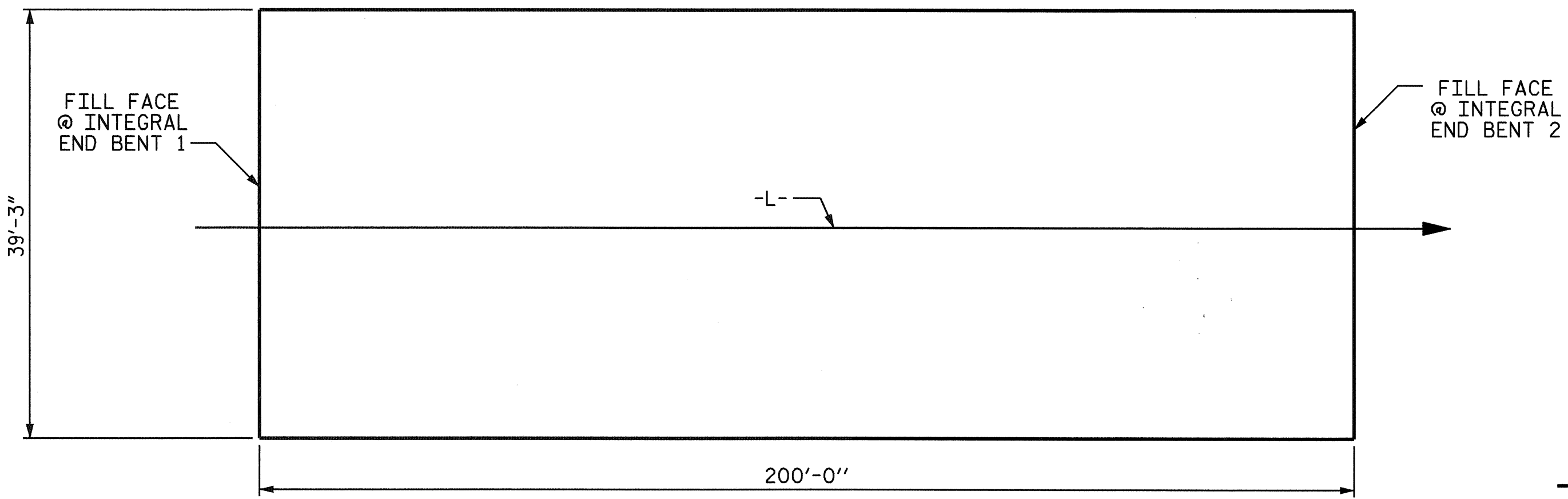
| GROOVING BRIDGE FLOORS | |
|------------------------|-------------|
| BRIDGE DECK | 6534 SQ.FT. |
| APPROACH SLABS | 948 SQ.FT. |
| TOTAL | 7482 SQ.FT. |

REINFORCING BAR SCHEDULE

| SPANS A, B, & C | | | | | |
|-----------------------------|-----|------|------|---------|--------|
| BAR | NO. | SIZE | TYPE | LENGTH | WEIGHT |
| *A1 | 396 | #5 | STR | 38'-11" | 16074 |
| A2 | 396 | #5 | STR | 38'-11" | 16074 |
| *B1 | 112 | #4 | STR | 20'-2" | 1509 |
| *B2 | 100 | #5 | STR | 12'-0" | 1252 |
| *B3 | 56 | #7 | STR | 51'-9" | 5924 |
| *B4 | 50 | #7 | STR | 21'-0" | 2146 |
| *B5 | 28 | #4 | STR | 26'-0" | 486 |
| B6 | 188 | #5 | STR | 51'-2" | 10033 |
| B7 | 84 | #4 | STR | 12'-0" | 673 |
| K1 | 12 | #4 | STR | 8'-7" | 69 |
| K2 | 24 | #4 | STR | 9'-7" | 154 |
| K3 | 12 | #4 | STR | 8'-11" | 71 |
| K4 | 12 | #4 | STR | 6'-9" | 54 |
| K5 | 20 | #4 | STR | 17'-0" | 227 |
| K6 | 20 | #4 | STR | 23'-4" | 312 |
| K7 | 6 | #4 | STR | 8'-7" | 34 |
| K8 | 12 | #4 | STR | 9'-7" | 77 |
| K9 | 6 | #4 | STR | 8'-11" | 36 |
| K10 | 6 | #4 | STR | 8'-1" | 32 |
| K11 | 16 | #4 | STR | 2'-8" | 29 |
| K12 | 4 | #4 | STR | 5'-7" | 15 |
| K13 | 8 | #4 | STR | 6'-1" | 33 |
| K14 | 4 | #4 | STR | 5'-9" | 15 |
| K15 | 4 | #4 | STR | 5'-4" | 14 |
| S1 | 12 | #4 | 1 | 14'-0" | 112 |
| S2 | 42 | #4 | 1 | 16'-0" | 449 |
| S3 | 204 | #4 | 2 | 2'-9" | 375 |
| *S4 | 62 | #4 | 3 | 10'-6" | 435 |
| *S5 | 66 | #4 | 3 | 11'-6" | 507 |
| S6 | 88 | #4 | 4 | 11'-3" | 661 |
| S7 | 16 | #4 | 4 | 13'-7" | 145 |
| REINFORCING STEEL = | | | | LBS | 29694 |
| EPOXY COATED REINF. STEEL = | | | | LBS | 28333 |

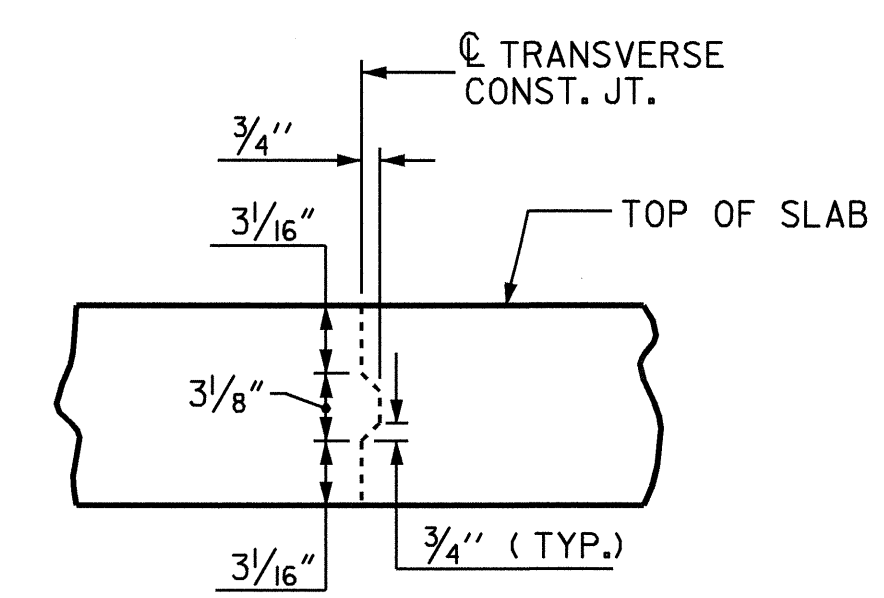


POUR 2 CAN NOT BE STARTED UNTIL BOTH ADJACENT POUR 1'S REACH A MINIMUM OF 3000 PSI.



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

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



TRANSVERSE CONSTRUCTION JOINT DETAIL

NOTE: REINFORCING STEEL IN SLAB NOT SHOWN. LONGITUDINAL REINFORCING STEEL SHALL BE CONTINUOUS THRU JOINT.

— SUPERSTRUCTURE BILL OF MATERIAL —

| | CLASS AA CONCRETE (CU. YDS.) | REINFORCING STEEL (LBS.) | EPOXY COATED REINFORCING STEEL (LBS.) |
|----------|---------------------------------|-----------------------------|--|
| POUR 1 | 62.7 | | |
| POUR 2 | 119.5 | | |
| POUR 3 | 90.9 | | |
| POUR 4 | 65.1 | | |
| TOTALS** | 338.2 | 29694 | 28333 |

** QUANTITIES FOR BARRIER RAIL ARE NOT INCLUDED

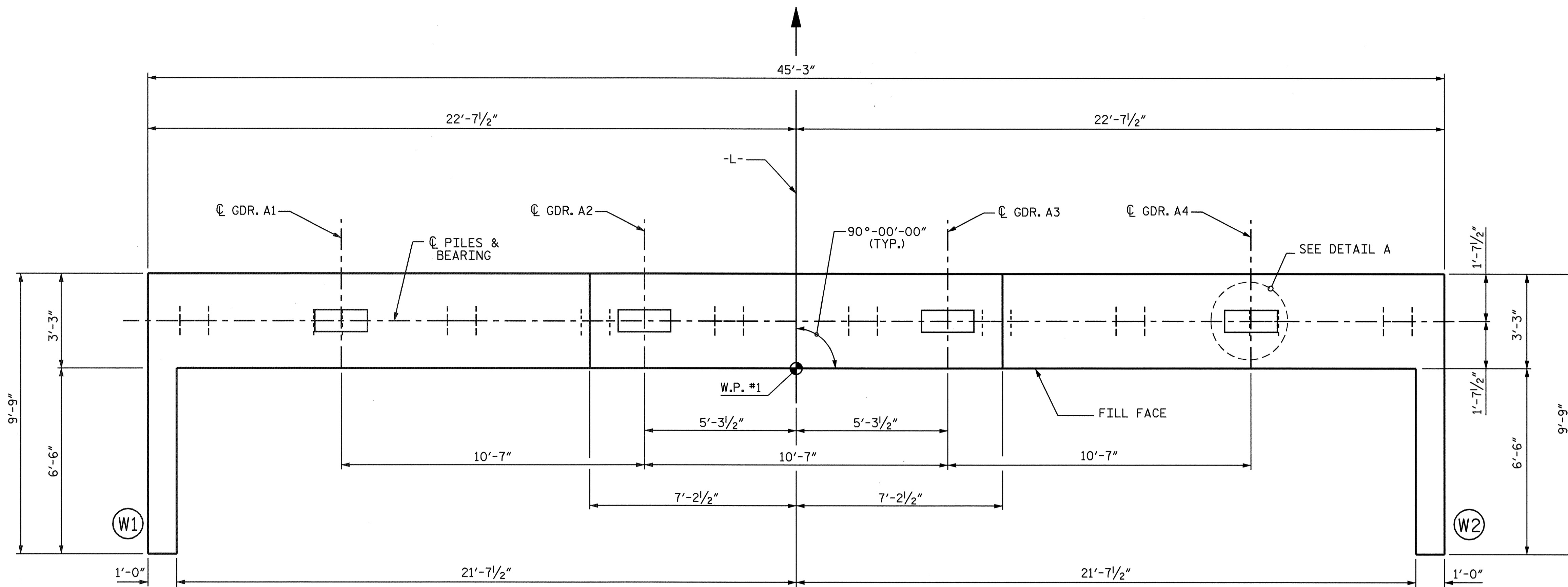


PROJECT NO. B-3481
JOHNSTON COUNTY
 STATION: 19+25.00 -L-

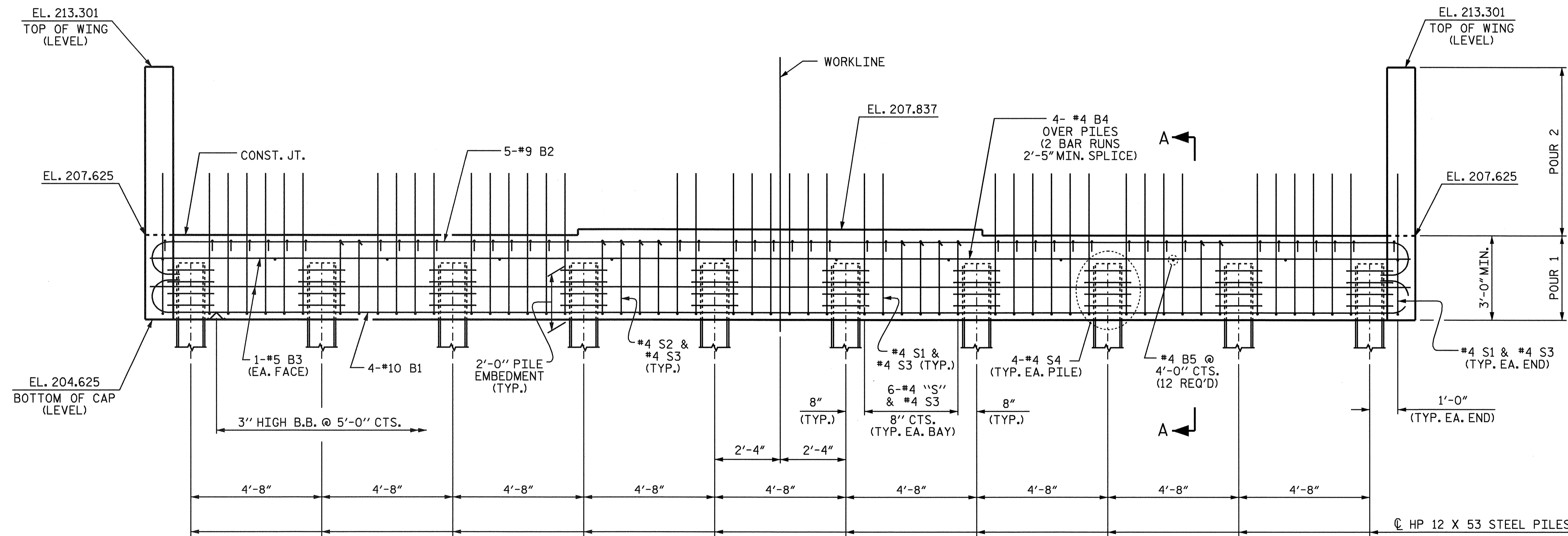
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| SUPERSTRUCTURE BILL OF MATERIAL | | | | | |
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| SHEET NO. S-17 |
| TOTAL SHEETS 31 |

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|---------------------------|---------------------|
| ASSEMBLED BY: T.A.H./J.M. | DATE: 5/6/04 |
| CHECKED BY: B.N. GRADY | DATE: 1/07 |
| DRAWN BY: JMB 5/87 | REV. 6/1/94 EEM/GRP |
| CHECKED BY: SJD 9/87 | REV. 8/16/99 RW/LES |
| | REV. 5/1/06 TLA/GM |



PLAN

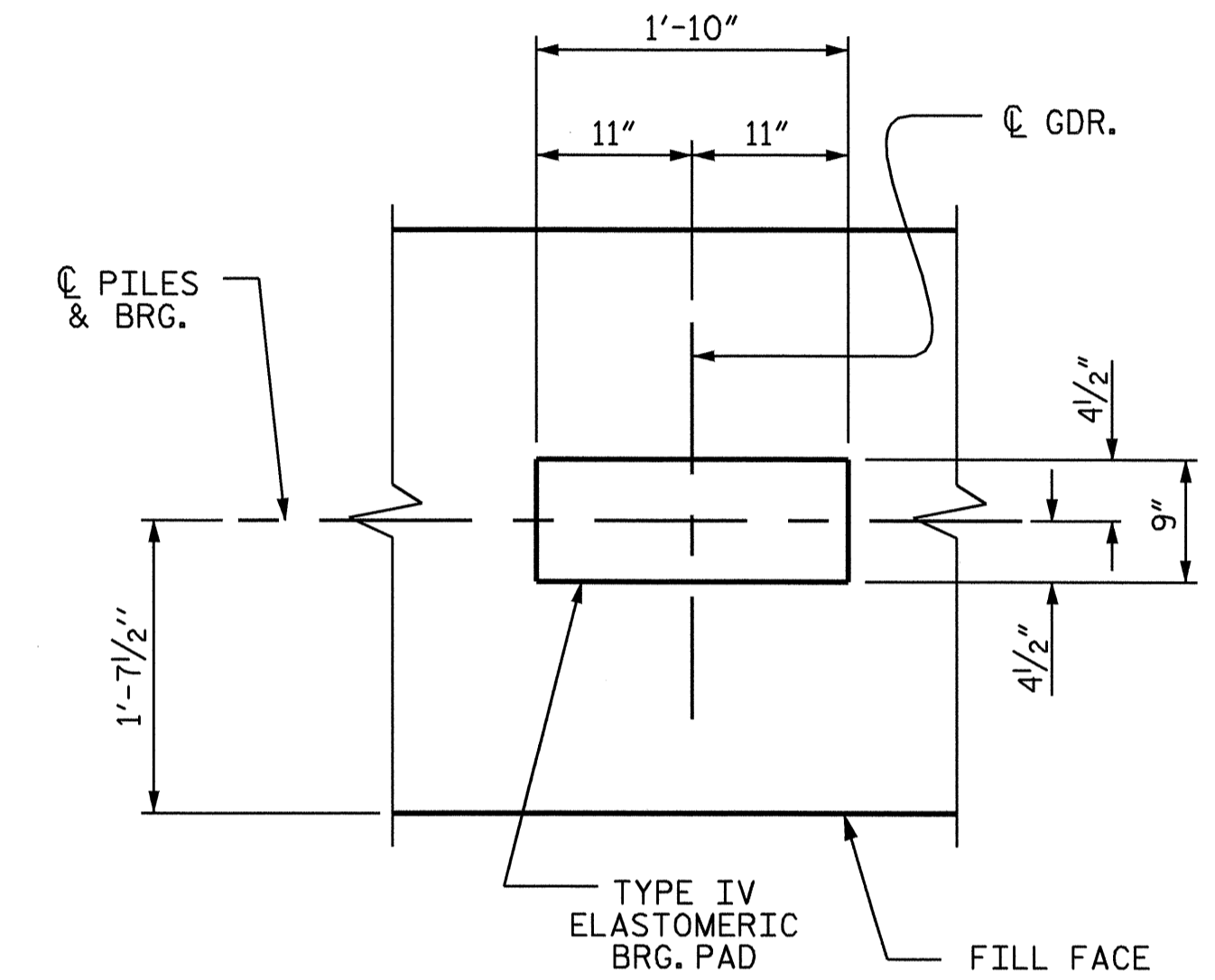


ELEVATION

NOTES

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.

THE CONTRACTOR'S ATTENTION IS CALLED TO THE FACT THAT THE UPPER PART OF WING IS TO BE POURED WITH SUPERSTRUCTURE.



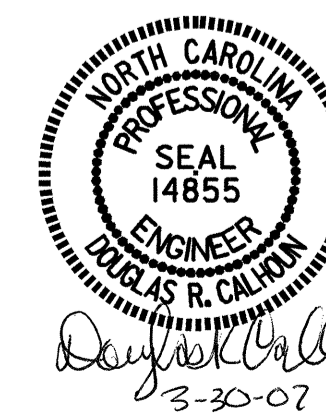
DETAIL A

(TYP. EACH BEARING)

PROJECT NO. B-3481
JOHNSTON COUNTY
 STATION: 19+25.00-L-

SHEET 1 OF 2

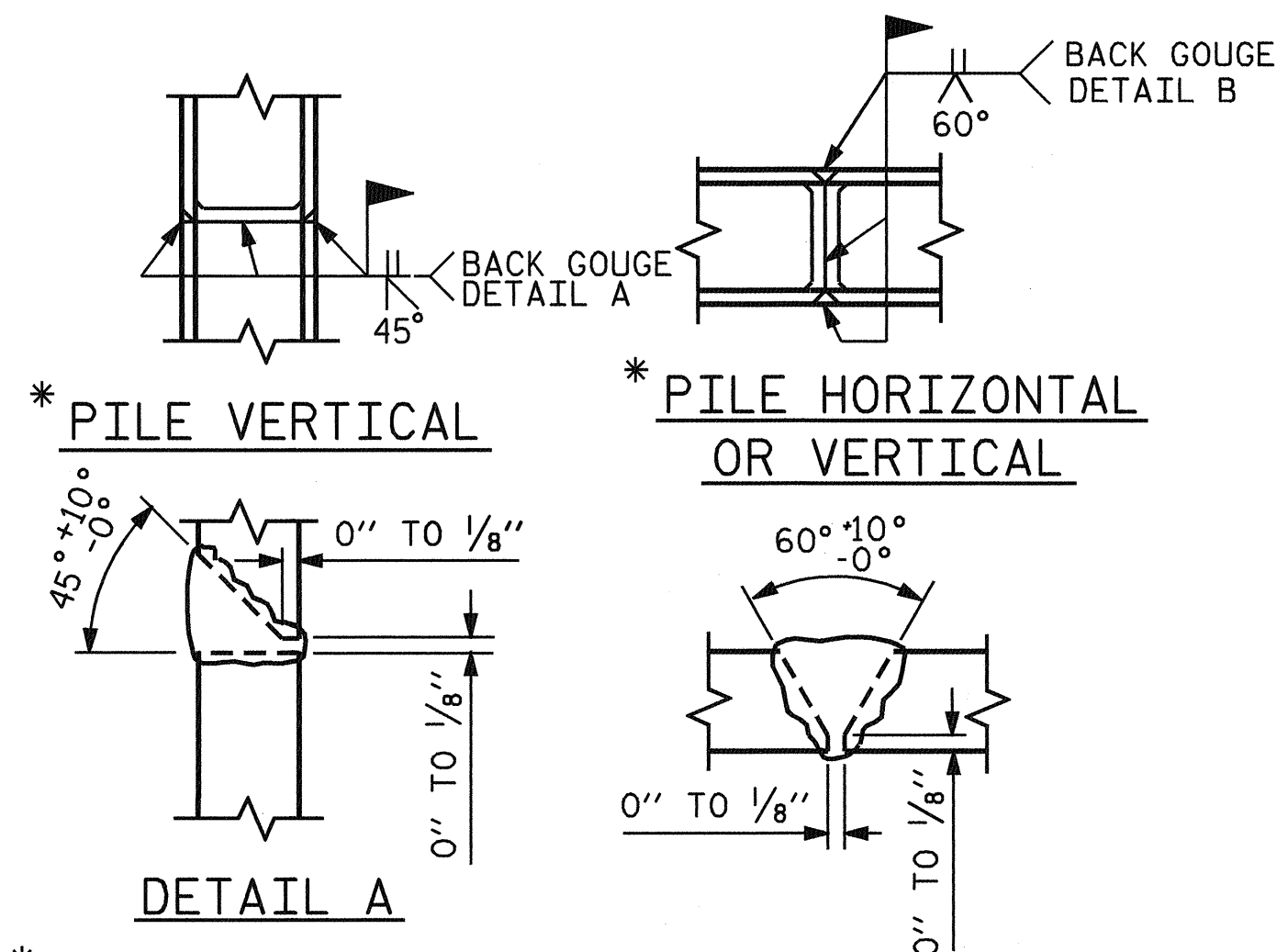
STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH
 SUBSTRUCTURE
 INTEGRAL END BENT 1



DRAWN BY: J.MYA DATE: 1/24/07
 CHECKED BY: B.N. GRADY DATE: 2/07

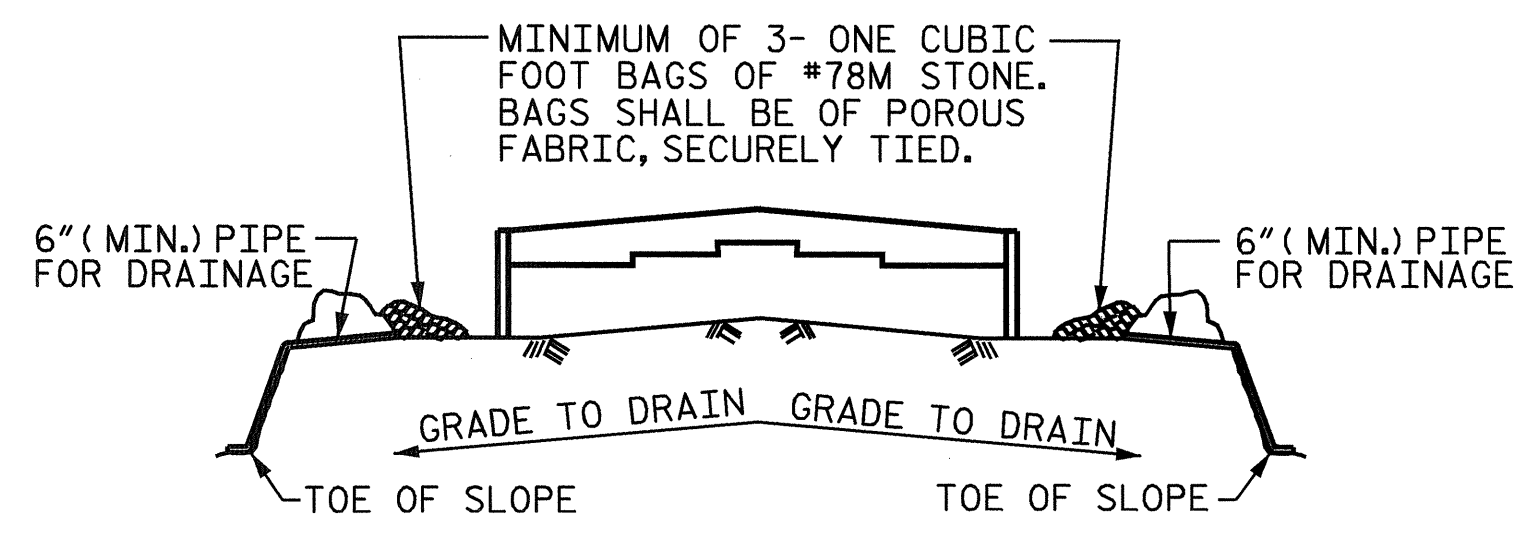
30-MAR-2007 12:20
 R:\Structures\B3481\FINAL PLANS\B-3481.sd.E*.01.dgn
 gallen

| REVISIONS | | | | | | SHEET NO. |
|-----------|-----|-------|-----|-----|-------|--------------|
| NO. | BY: | DATE: | NO. | BY: | DATE: | S-18 |
| 1 | | | 3 | | | TOTAL SHEETS |
| 2 | | | 4 | | | 31 |



* POSITION OF PILE DURING WELDING. DETAIL B

PILE SPlice DETAILS

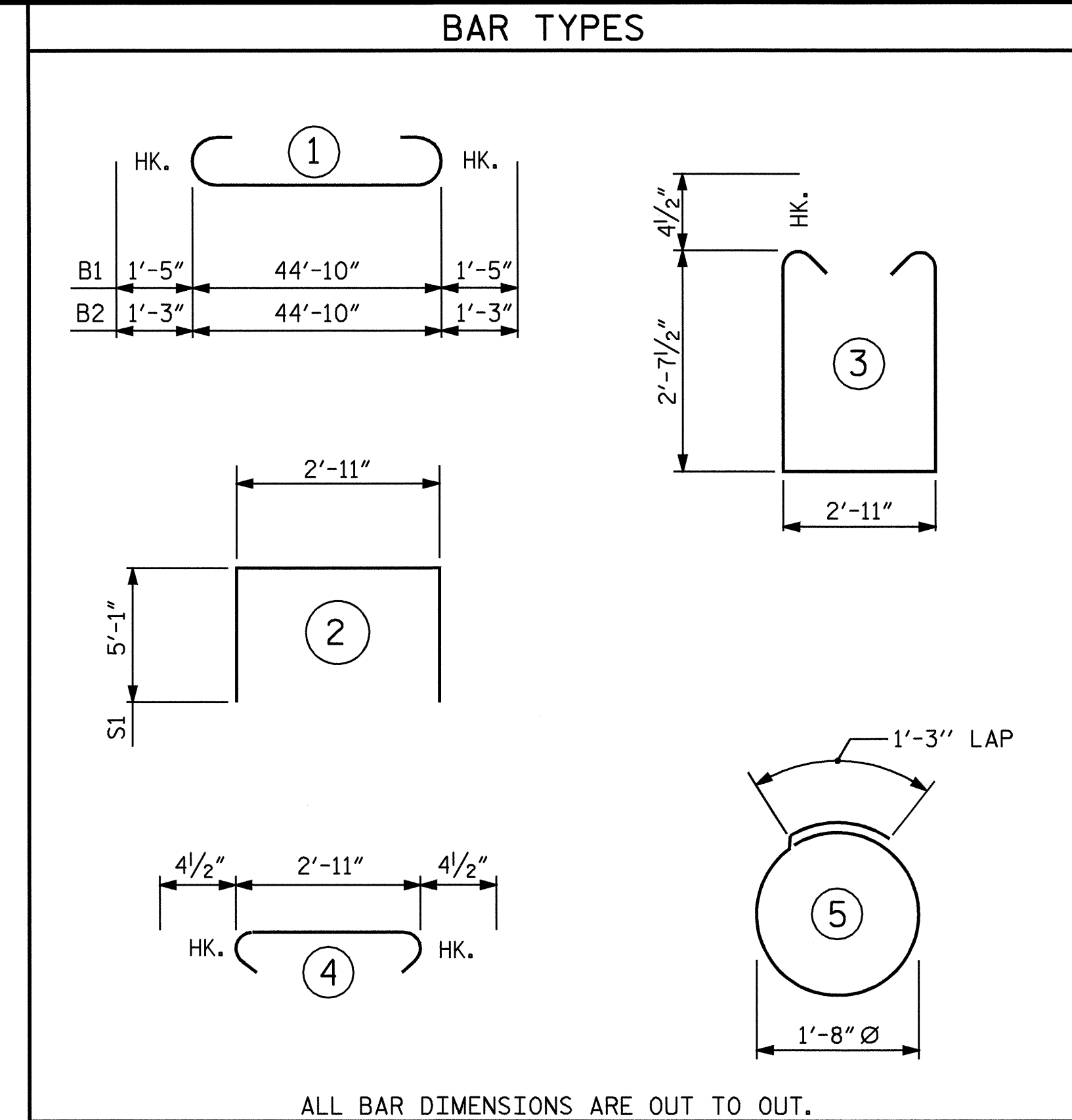


BAGGED STONE AND PIPE SHALL BE PLACED IMMEDIATELY AFTER COMPLETION OF END BENT EXCAVATION. PIPE MAY BE EITHER CONCRETE, CORRUGATED STEEL, CORRUGATED ALUMINUM ALLOY, OR CORRUGATED PLASTIC. PERFORATED PIPE WILL NOT BE ALLOWED.

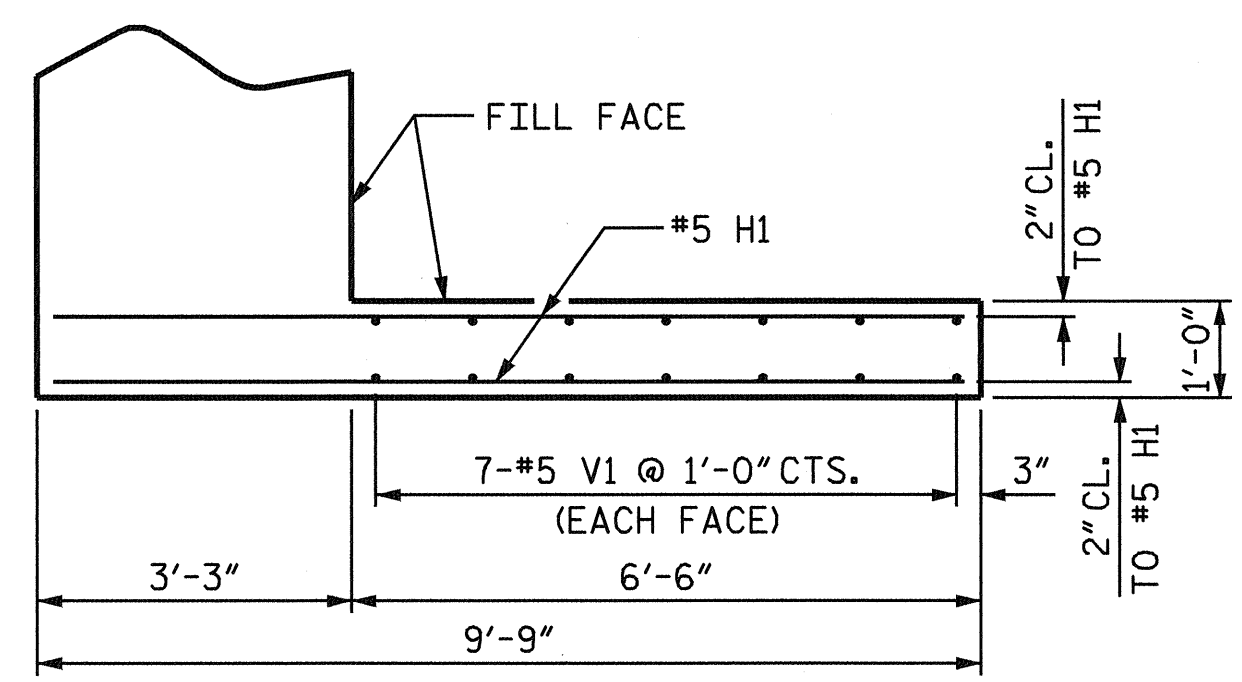
BAGGED STONE SHALL REMAIN IN PLACE UNTIL THE ENGINEER DIRECTS THAT IT BE REMOVED. THE CONTRACTOR SHALL REMOVE AND DISPOSE OF SILT ACCUMULATIONS AT BAGGED STONE WHEN SO DIRECTED BY THE ENGINEER. BAGS SHALL BE REMOVED AND REPLACED WHENEVER THE ENGINEER DETERMINES THAT THEY HAVE DETERIORATED AND LOST THEIR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

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

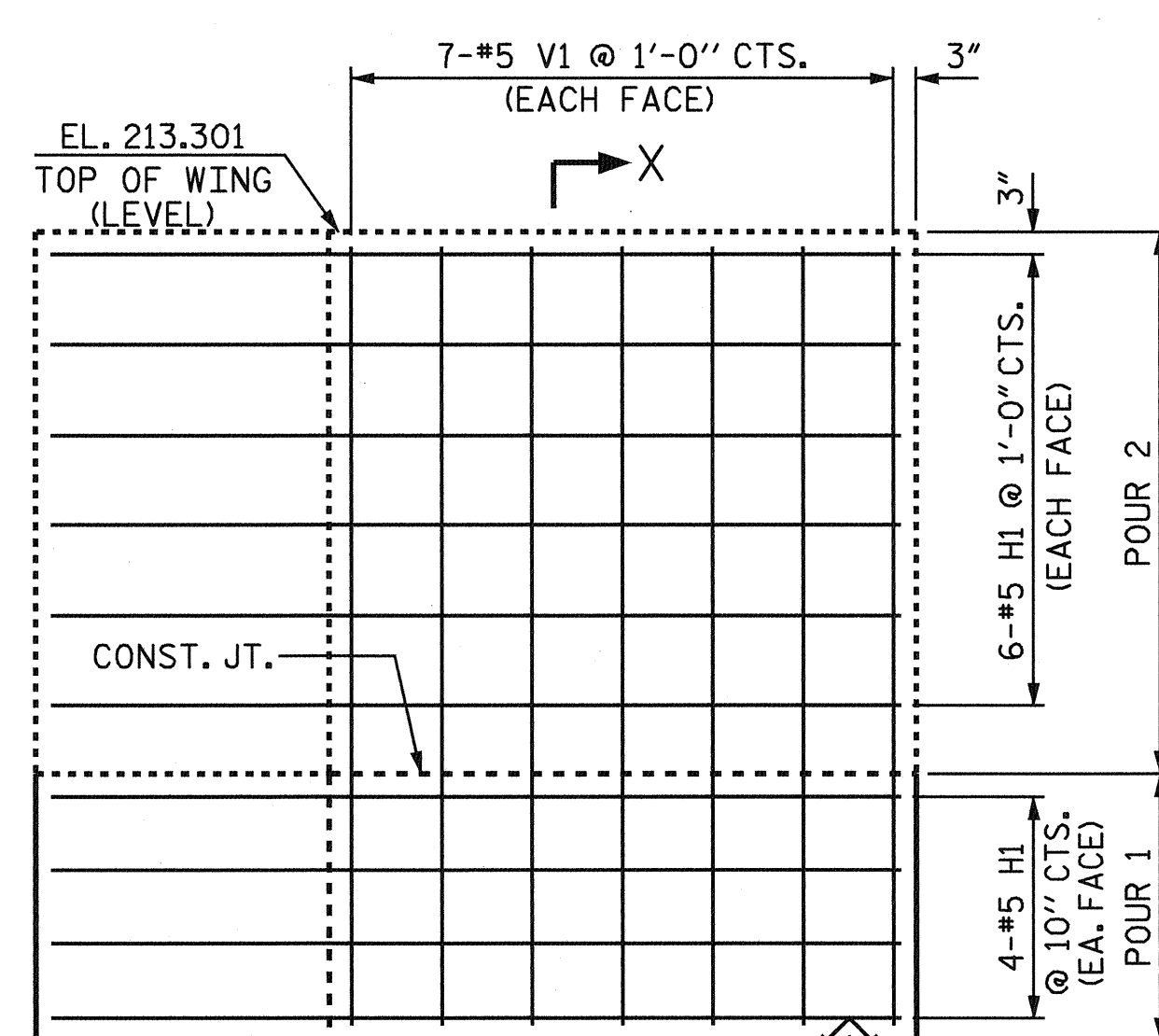
TEMPORARY DRAINAGE AT END BENT



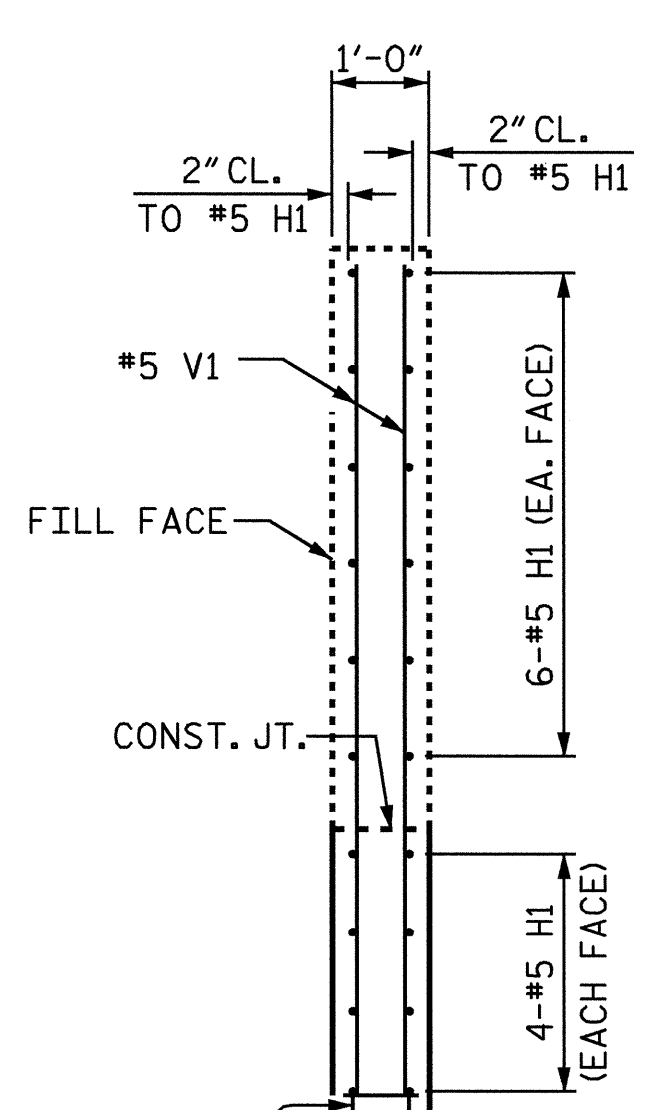
| BILL OF MATERIAL | | | | | | |
|---|------|------|--------|---------|------|---------|
| END BENT 1 | | | | | | |
| BAR NO. | SIZE | TYPE | LENGTH | WEIGHT | | |
| B1 | 4 | 10 | 1 | 47 - 8 | 820 | |
| B2 | 5 | 9 | 1 | 47 - 4 | 805 | |
| B3 | 4 | 5 | STR | 44 - 11 | 187 | |
| B4 | 8 | 4 | STR | 23 - 8 | 126 | |
| B5 | 12 | 4 | STR | 2 - 11 | 23 | |
| H1 | 40 | 5 | STR | 9 - 5 | 393 | |
| S1 | 44 | 4 | 2 | 13 - 1 | 385 | |
| S2 | 12 | 4 | 3 | 8 - 11 | 71 | |
| S3 | 56 | 4 | 4 | 3 - 8 | 137 | |
| S4 | 40 | 4 | 5 | 6 - 6 | 174 | |
| V1 | 28 | 5 | STR | 8 - 4 | 243 | |
| REINFORCING STEEL | | | | | LBS. | 3364 |
| CLASS A CONCRETE BREAKDOWN | | | | | | |
| * POUR 1 (CAP AND LOWER PART OF WINGS) 18.2 CU.YDS. | | | | | | |
| TOTAL | | | | | 18.2 | CU.YDS. |
| HP 12 x 53 STEEL PILES | | | | | | |
| NO. 10 | | | | | 150 | FT. |
| * UPPER WINGS (POUR 2) TO BE POURED WITH SUPERSTRUCTURE | | | | | | |



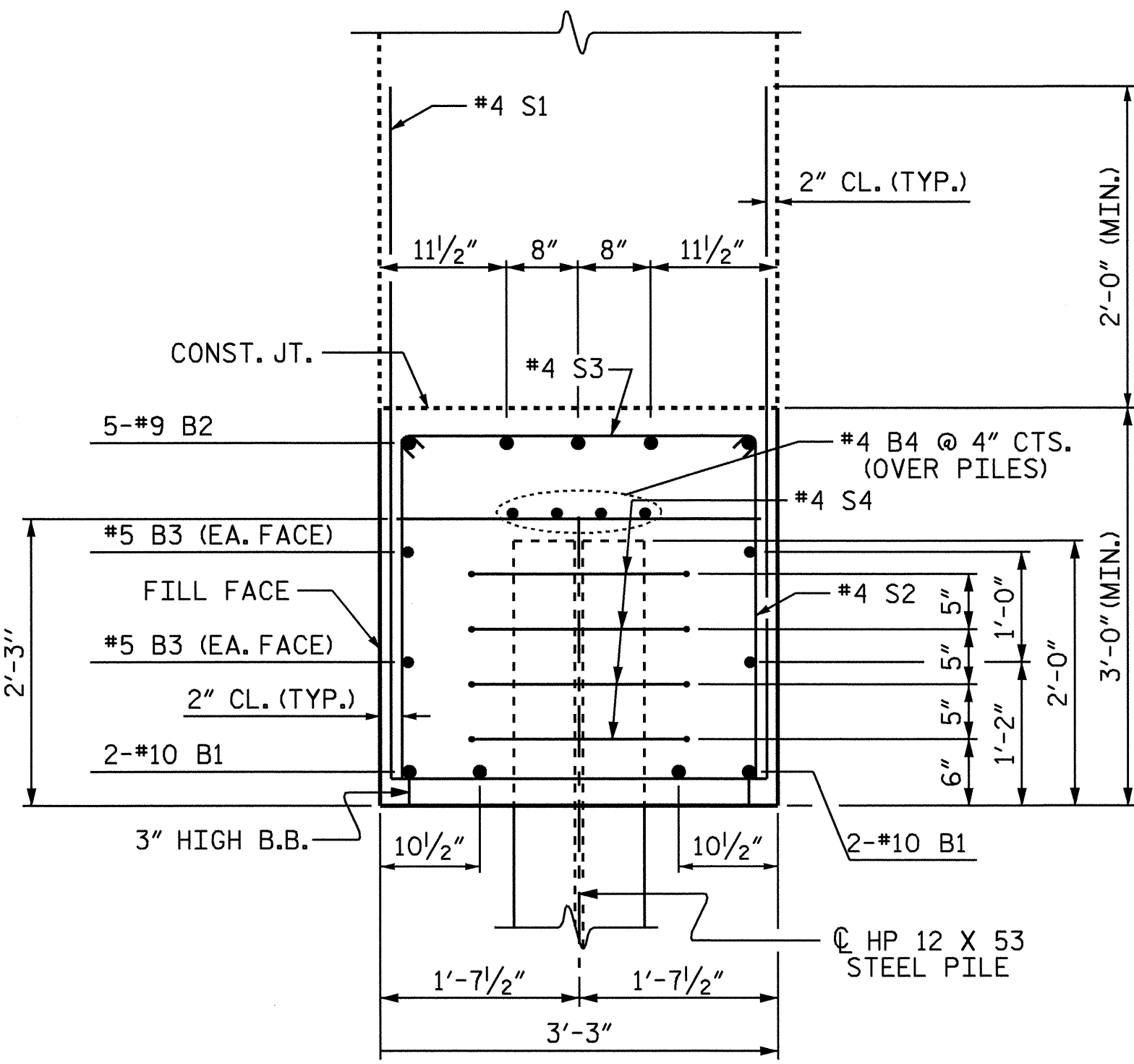
PLAN



ELEVATION



SECTION X-X



SECTION A-A

PROJECT NO. B-3481
JOHNSTON COUNTY
 STATION: 19+25.00 -L-

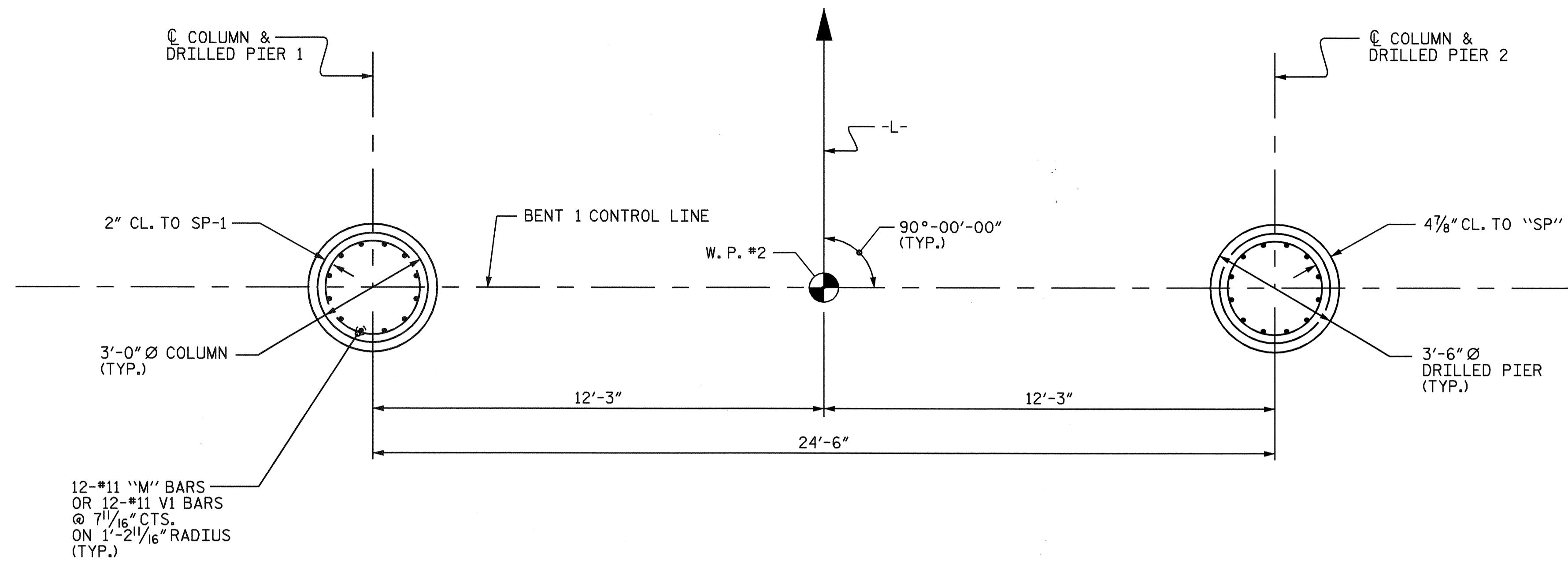
SHEET 2 OF 2

| STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION RALEIGH | | | | | |
|--|-----|-------|-----|-----|--------------------|
| SUBSTRUCTURE INTEGRAL END BENT 1 | | | | | |
| REVISIONS | | | | | |
| NO. | BY: | DATE: | NO. | BY: | DATE: |
| 1 | | | 3 | | |
| 2 | | | 4 | | |
| | | | | | SHEET NO. S-19 |
| | | | | | TOTAL SHEETS 31 |



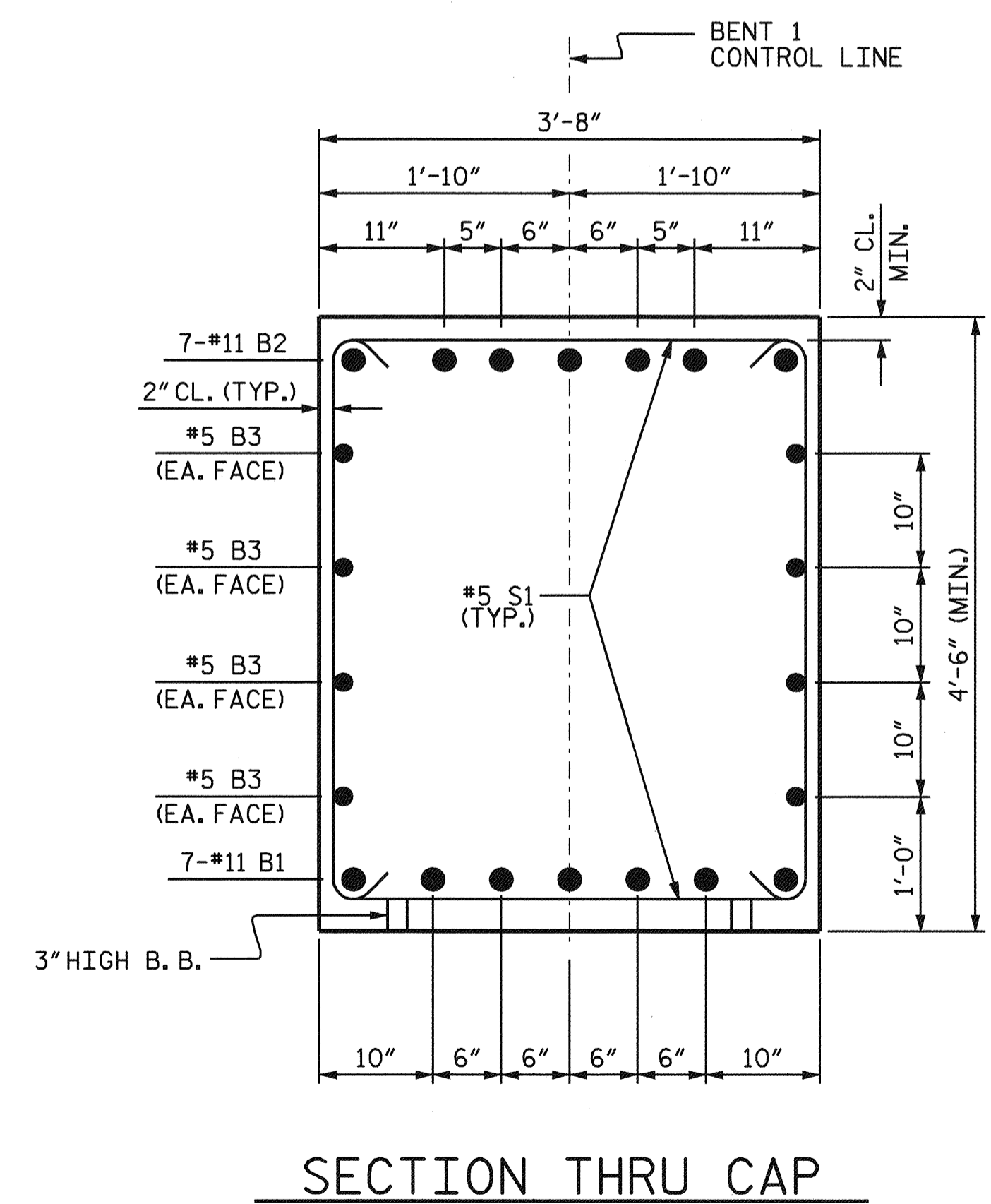
DRAWN BY: J. MYA DATE: 1/24/07
 CHECKED BY: B. N. GRADY DATE: 02/07

WING DETAILS
 (WING W1 SHOWN, WING W2 SIMILAR)

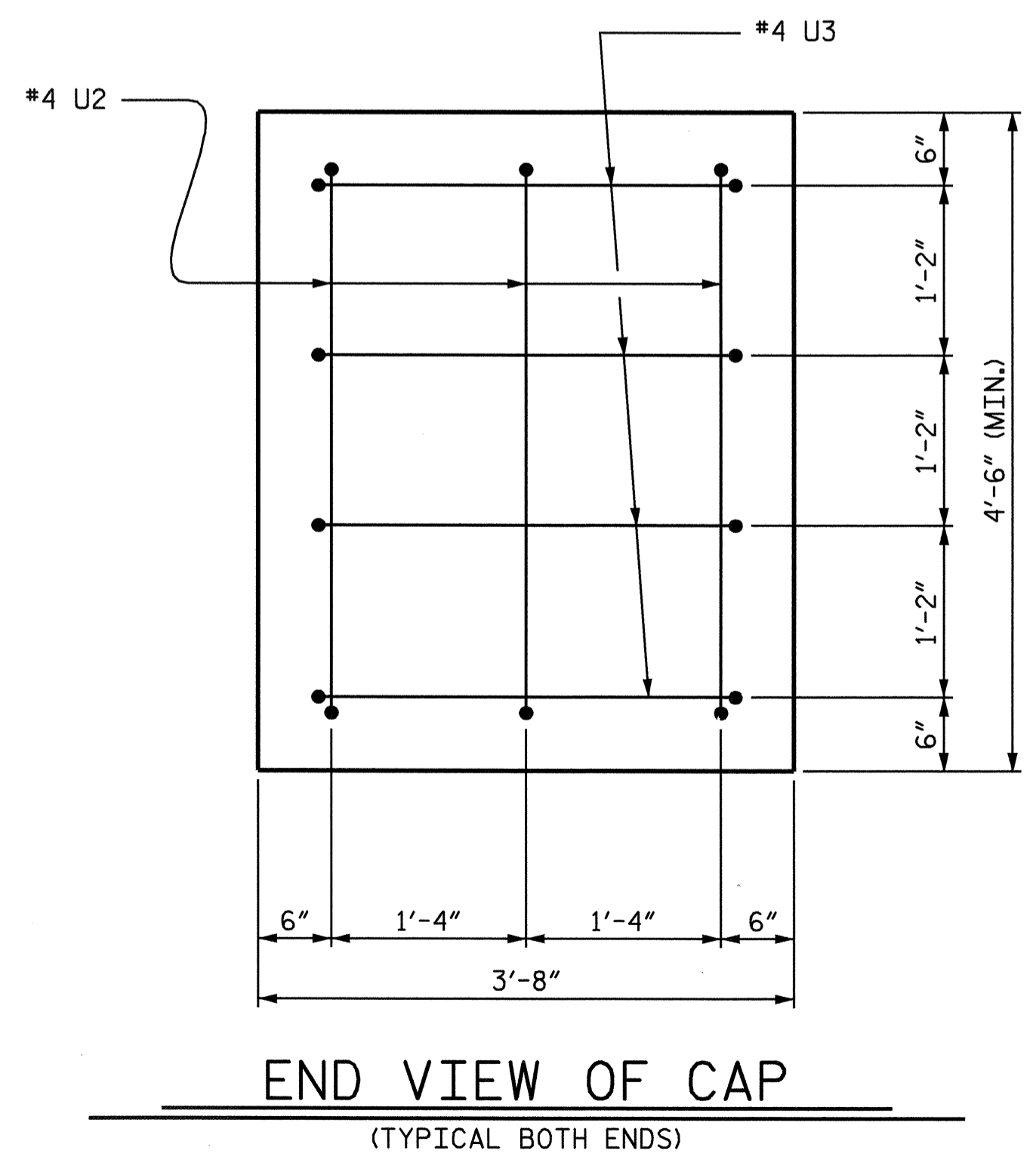


PLAN OF COLUMNS AND DRILLED PIERS

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

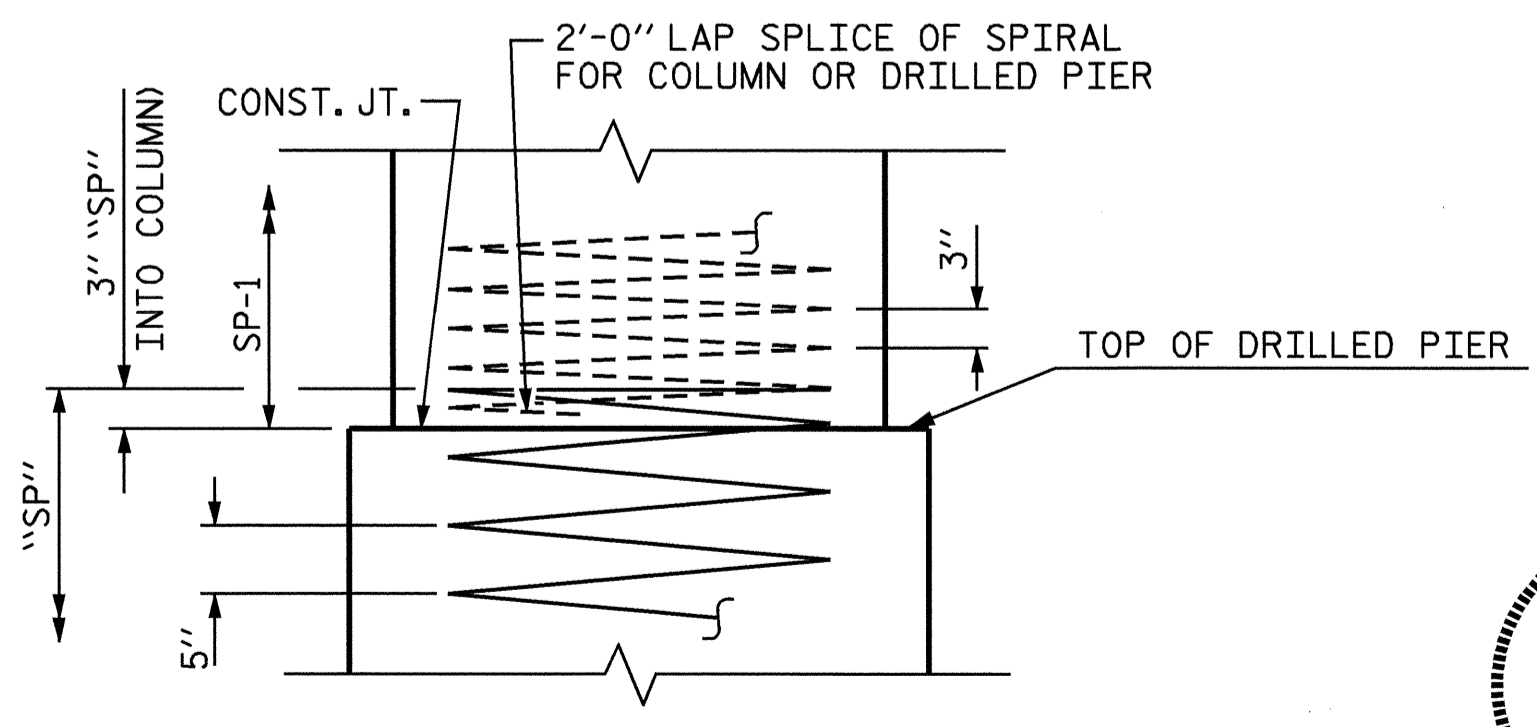


SECTION THRU CAP



END VIEW OF CAP

(TYPICAL BOTH ENDS)



CONSTRUCTION JOINT DETAIL

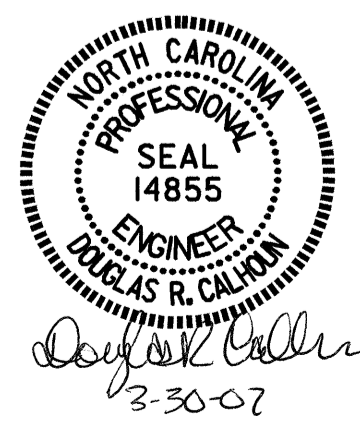
| BILL OF MATERIAL | | | | | |
|---|-----|------|------|----------|----------------|
| BENT 1 | | | | | |
| BAR | NO. | SIZE | TYPE | LENGTH | WEIGHT |
| B1 | 7 | #11 | STR | 35'-7" | 1323 |
| B2 | 7 | #11 | 1 | 38'-8" | 1438 |
| B3 | 8 | #5 | STR | 35'-7" | 297 |
| M1 | 12 | #11 | STR | 34'-7" | 2205 |
| M2 | 12 | #11 | STR | 27'-7" | 1759 |
| S1 | 83 | #5 | 3 | 12'-6" | 1082 |
| U1 | 28 | #4 | 4 | 5'-10" | 109 |
| U2 | 6 | #4 | 4 | 6'-6" | 26 |
| U3 | 8 | #4 | 4 | 5'-8" | 30 |
| V1 | 24 | #11 | 2 | 12'-7" | 1605 |
| REINFORCING STEEL | | | | | 9874 LBS. |
| SP-1 | 2 | *** | 5 | 314'-11" | 421 |
| SP-2 | 1 | ** | 6 | 488'-4" | 509 |
| SP-3 | 1 | ** | 6 | 349'-1" | 364 |
| SPIRAL COLUMN REINFORCING STEEL | | | | | 1294 LBS. |
| CLASS A CONCRETE BREAKDOWN | | | | | |
| POUR 2 (COLUMNS) | | | | | 4.7 CU.YDS. |
| POUR 3 (CAP) | | | | | 22.2 CU.YDS. |
| TOTAL CLASS A CONCRETE | | | | | 26.9 CU.YDS. |
| 3'-6" Ø DRILLED PIERS | | | | | |
| DRILLED PIER CONCRETE POUR 1 (DRILLED PIERS) | | | | | 14.9 CU.YDS. |
| 3'-6" Ø DRILLED PIERS IN SOIL : | | | | | 27.84 LIN. FT. |
| 3'-6" Ø DRILLED PIERS NOT IN SOIL : | | | | | 14.00 LIN. FT. |
| PERMANENT STEEL CASING FOR 3'-6" Ø DRILLED PIER : | | | | | 24.70 LIN. FT. |

ALL BAR DIMENSIONS ARE OUT TO OUT.
 *** THE SP-1 SPIRAL REINFORCING STEEL SHALL BE W20 OR D-20 COLD DRAWN WIRE OR #4 PLAIN OR DEFORMED BAR.
 ** THE SP-2 & SP-3 SPIRAL REINFORCING STEEL SHALL BE W31 OR D-31 COLD DRAWN WIRE OR #5 PLAIN OR DEFORMED BAR.

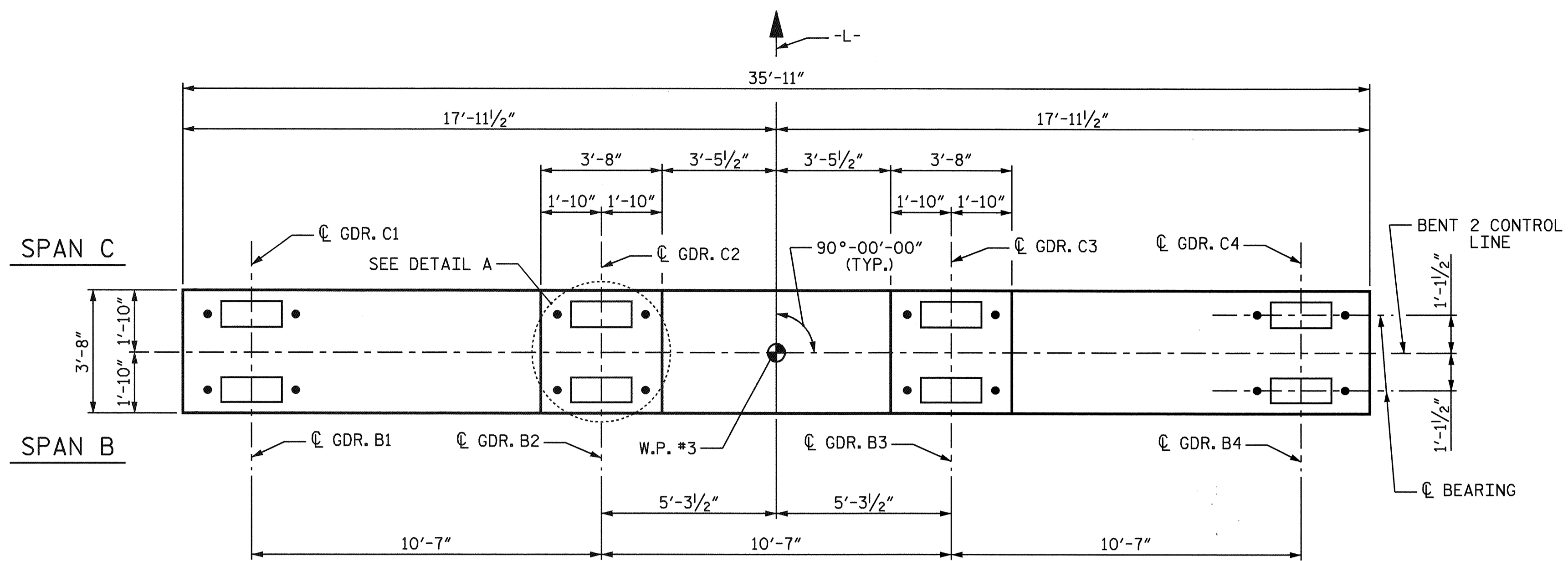
PROJECT NO. B-3481
 JOHNSTON COUNTY
 STATION: 19+25.00 -L-

SHEET 2 OF 2

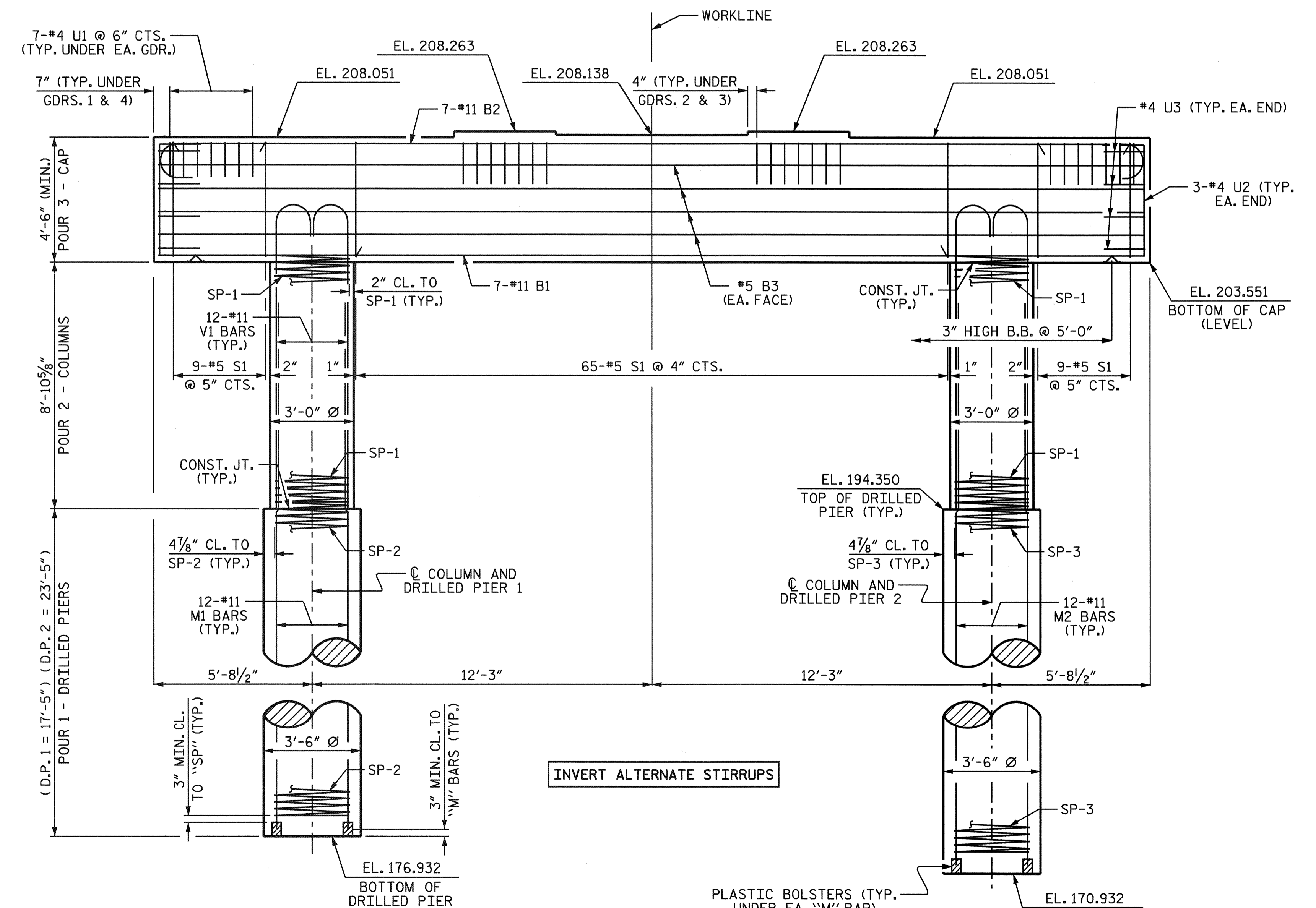
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|-----------|-----|-------|-----|-----|-------|--------------|
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| 1 | | | 3 | | | TOTAL SHEETS |
| 2 | | | 4 | | | 31 |



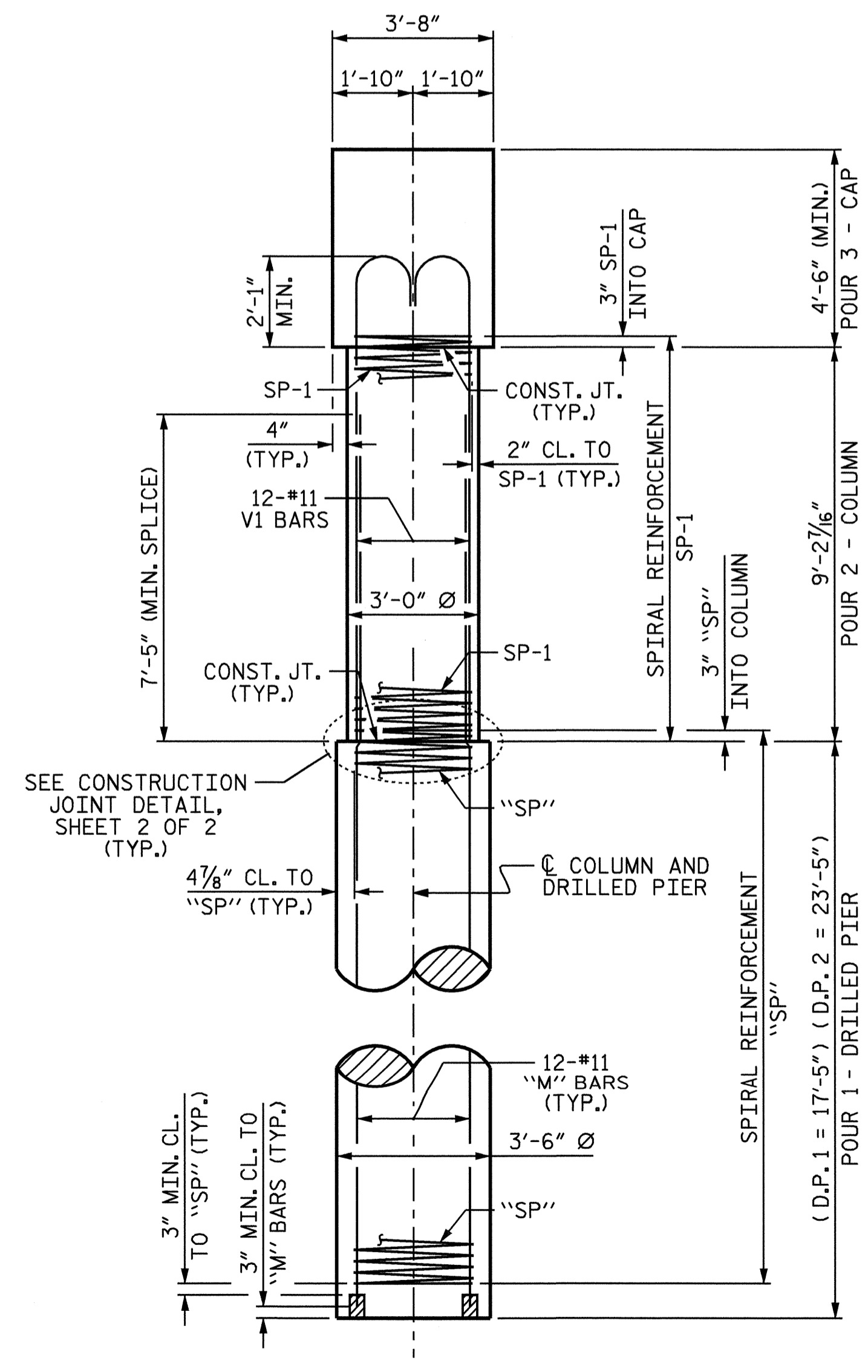
DRAWN BY : A.L.M. / T.A.H. DATE : 5/25/04
 CHECKED BY : W.S.A. DATE : 1/9/06



PLAN



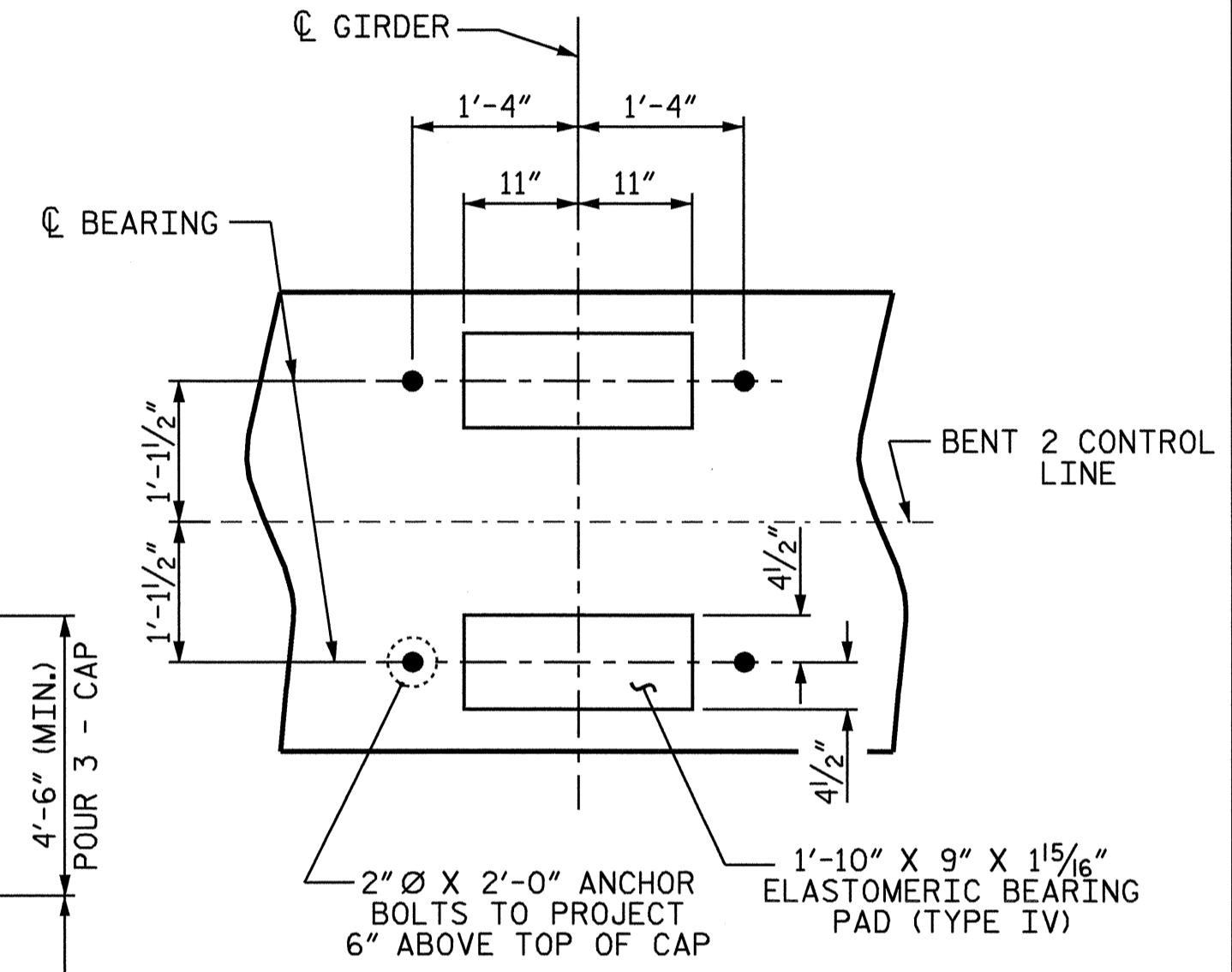
ELEVATION



END ELEVATION

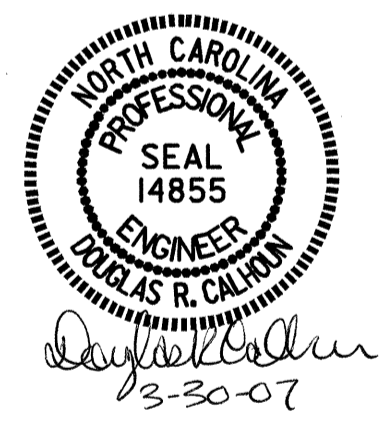
NOTES

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



DETAIL A

(DETAILS AND DIMENSIONS ARE TYPICAL FOR EACH BEARING)

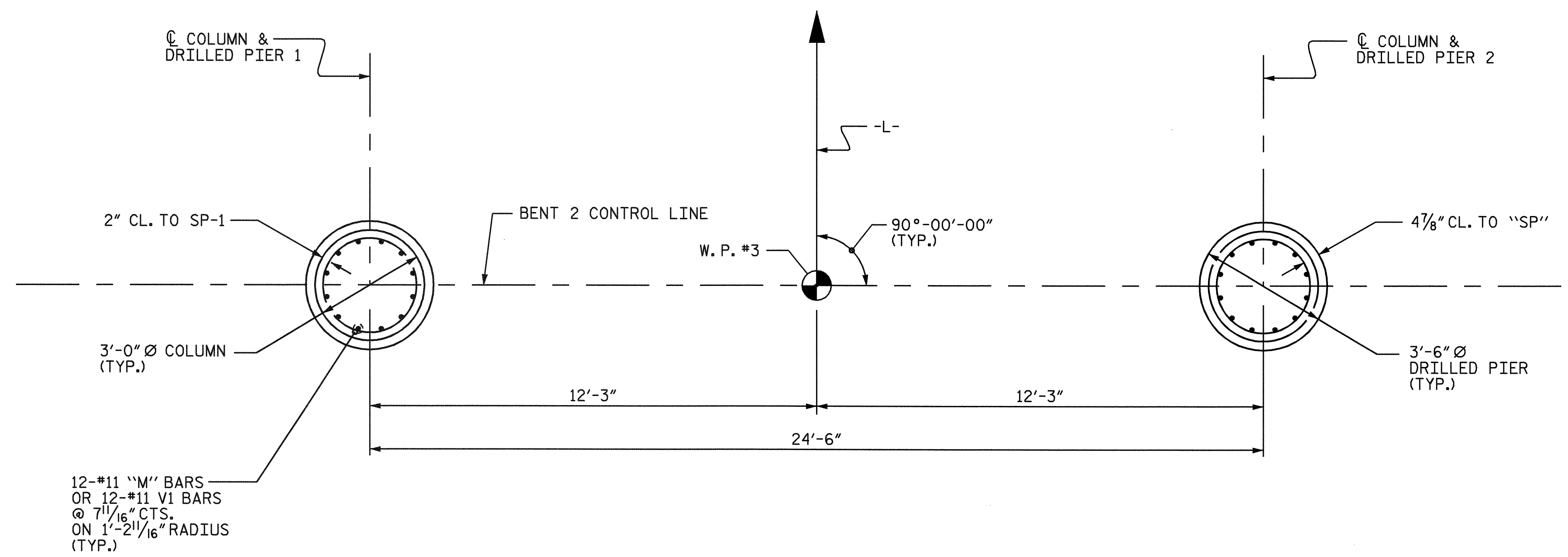


PROJECT NO. B-3481
 JOHNSTON COUNTY
 STATION: 19+25.00 -L-

SHEET 1 OF 2

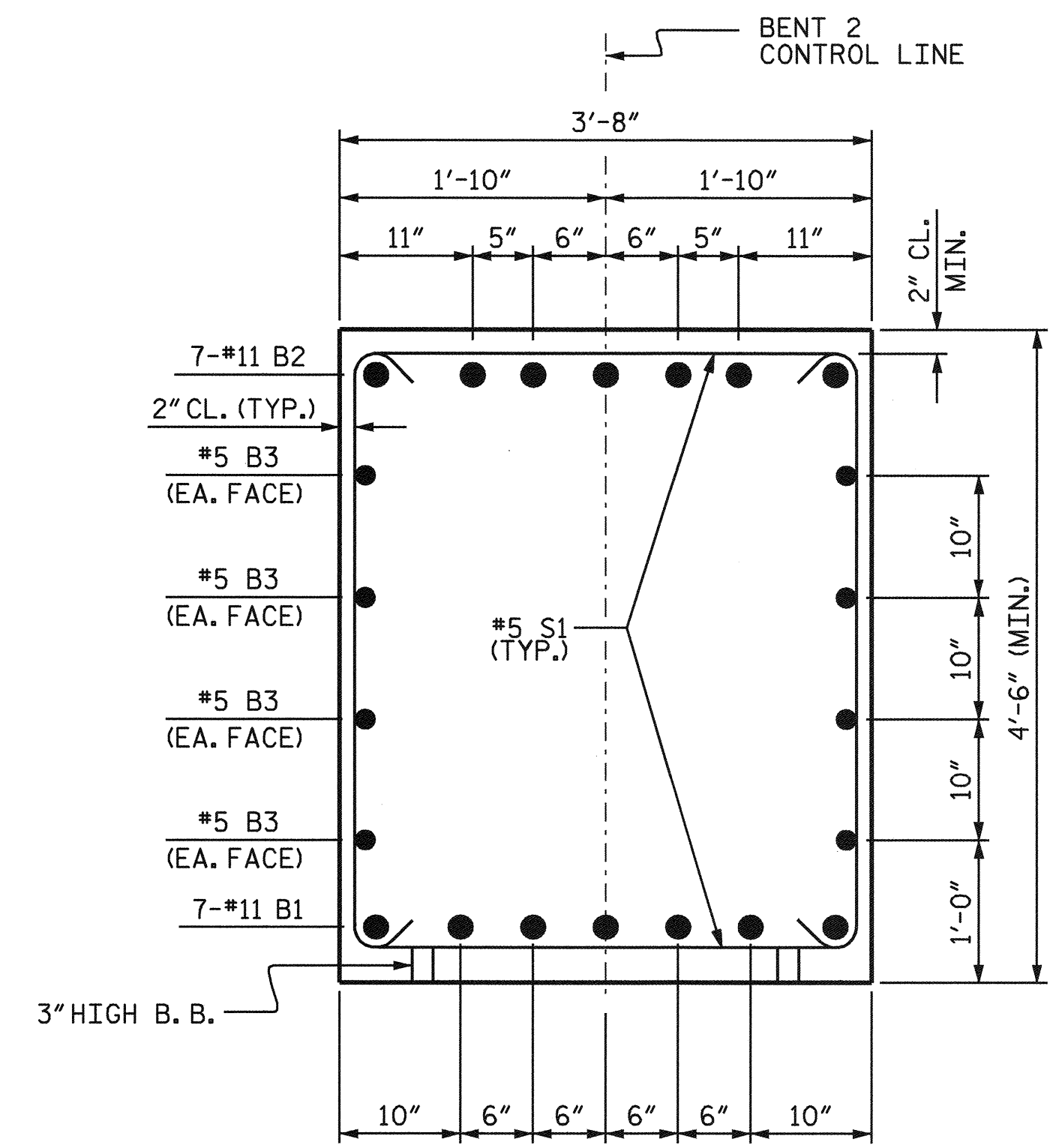
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|--|-----|-------|-----|-----|-------|--------------------|
| SUBSTRUCTURE BENT 2 | | | | | | TOTAL SHEETS 31 |
| REVISIONS | | | | | | NO. |
| NO. | BY: | DATE: | NO. | BY: | DATE: | |
| 1 | | | 3 | | | |
| 2 | | | 4 | | | |

DRAWN BY: A.L.M./T.A.H. DATE: 5/24/05
 CHECKED BY: W.S.A. DATE: 1/9/06

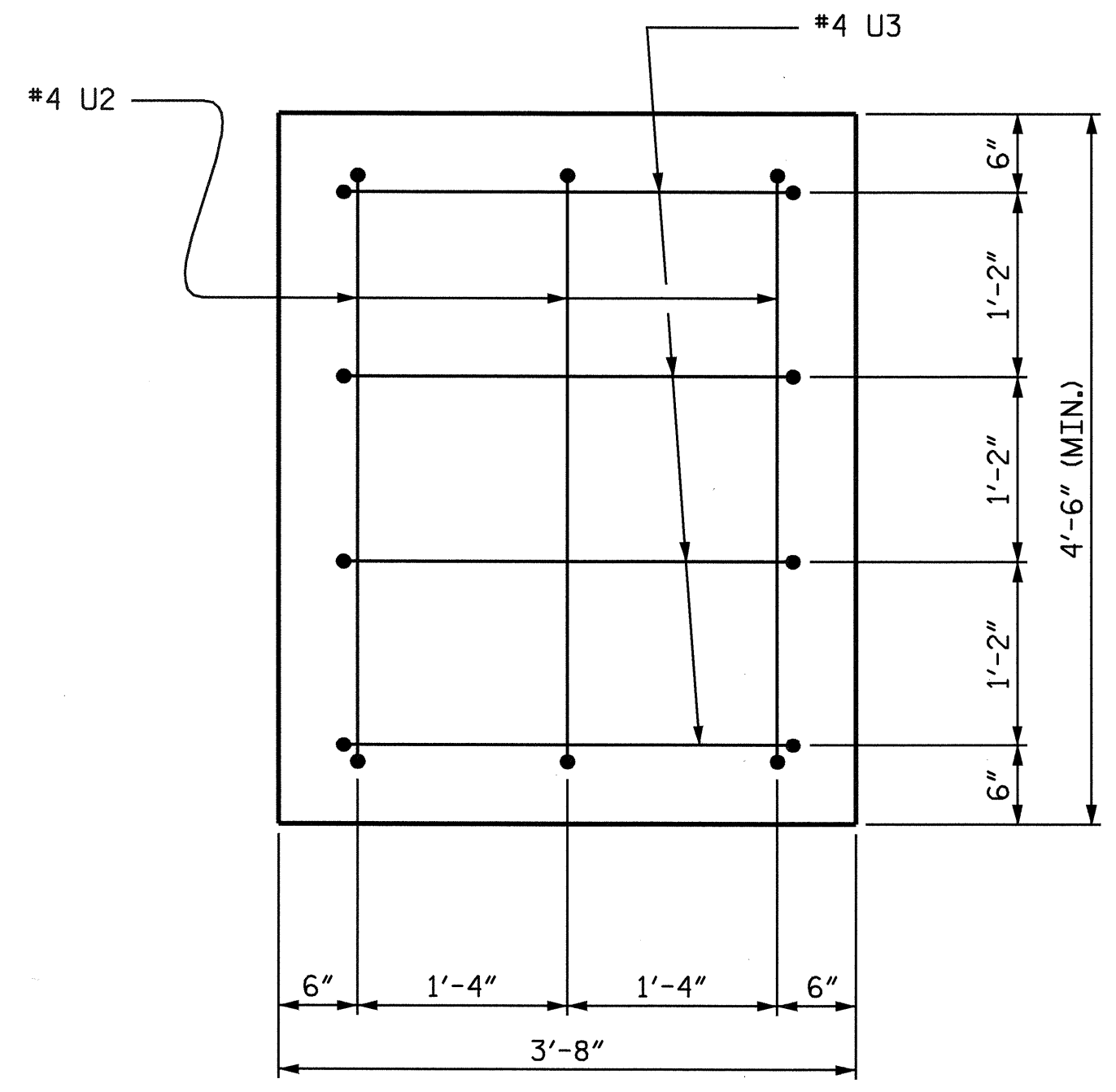


PLAN OF COLUMNS AND DRILLED PIERS

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

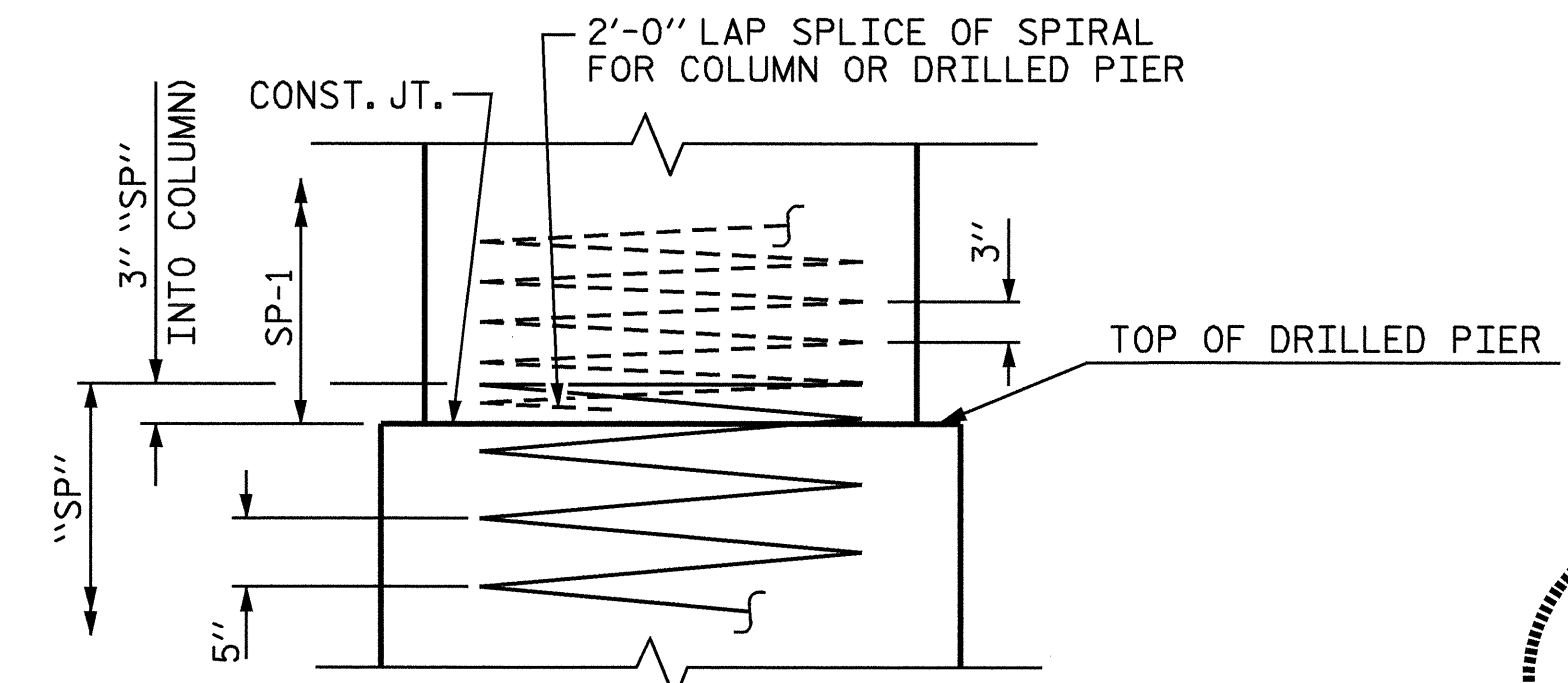


SECTION THRU CAP



END VIEW OF CAP

(TYPICAL BOTH ENDS)



CONSTRUCTION JOINT DETAIL

| BAR TYPES | | | | | BILL OF MATERIAL | |
|---|-----|------|------|----------|------------------|--|
| BENT 2 | | | | | | |
| BAR | NO. | SIZE | TYPE | LENGTH | WEIGHT | |
| B1 | 7 | #11 | STR | 35'-7" | 1323 | |
| B2 | 7 | #11 | 1 | 38'-8" | 1438 | |
| B3 | 8 | #5 | STR | 35'-7" | 297 | |
| M1 | 12 | #11 | STR | 27'-7" | 1759 | |
| M2 | 12 | #11 | STR | 33'-7" | 2141 | |
| S1 | 83 | #5 | 3 | 12'-6" | 1082 | |
| U1 | 28 | #4 | 4 | 5'-10" | 109 | |
| U2 | 6 | #4 | 4 | 6'-6" | 26 | |
| U3 | 8 | #4 | 4 | 5'-8" | 30 | |
| V1 | 24 | #11 | 2 | 12'-11" | 1647 | |
| REINFORCING STEEL | | | | | 9852 LBS. | |
| SP-1 | 2 | *** | 5 | 325'-11" | 435 | |
| SP-2 | 1 | ** | 6 | 349'-1" | 364 | |
| SP-3 | 1 | ** | 6 | 468'-5" | 489 | |
| SPIRAL COLUMN REINFORCING STEEL | | | | | 1288 LBS. | |
| CLASS A CONCRETE BREAKDOWN | | | | | | |
| POUR 2 (COLUMNS) | | | | | 4.8 CU.YDS. | |
| POUR 3 (CAP) | | | | | 22.2 CU.YDS. | |
| TOTAL CLASS A CONCRETE | | | | | 27.0 CU.YDS. | |
| 3'-6" Ø DRILLED PIERS | | | | | | |
| DRILLED PIER CONCRETE POUR 1 (DRILLED PIERS) | | | | | 14.5 CU.YDS. | |
| 3'-6" Ø DRILLED PIERS IN SOIL : | | | | | | |
| | | | | | 27.84 LIN. FT. | |
| 3'-6" Ø DRILLED PIERS NOT IN SOIL : | | | | | | |
| | | | | | 13.00 LIN. FT. | |
| PERMANENT STEEL CASING FOR 3'-6" Ø DRILLED PIER : | | | | | | |
| | | | | | 28.70 LIN. FT. | |

ALL BAR DIMENSIONS ARE OUT TO OUT.
 *** THE SP-1 SPIRAL REINFORCING STEEL SHALL BE W20 OR D-20 COLD DRAWN WIRE OR #4 PLAIN OR DEFORMED BAR.
 ** THE SP-2 & SP-3 SPIRAL REINFORCING STEEL SHALL BE W31 OR D-31 COLD DRAWN WIRE OR #5 PLAIN OR DEFORMED BAR.

PROJECT NO. B-3481
 JOHNSTON COUNTY
 STATION: 19+25.00 -L-

SHEET 2 OF 2

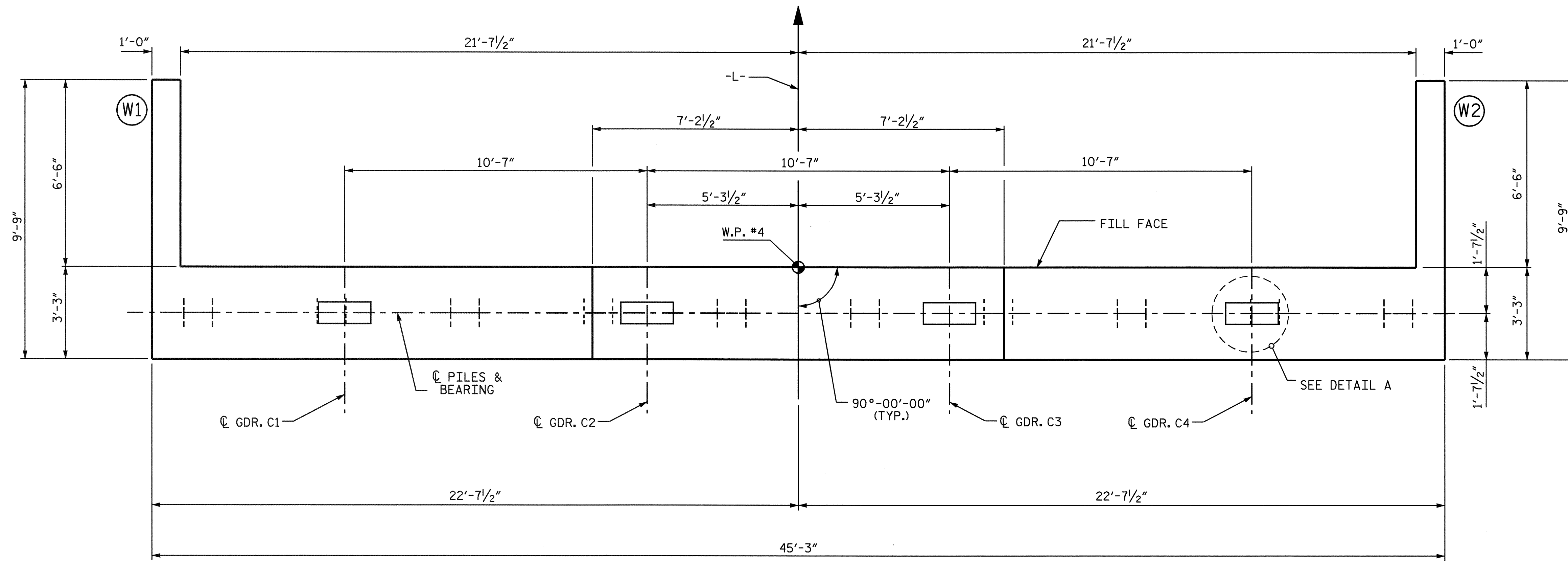
STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

SUBSTRUCTURE BENT 2

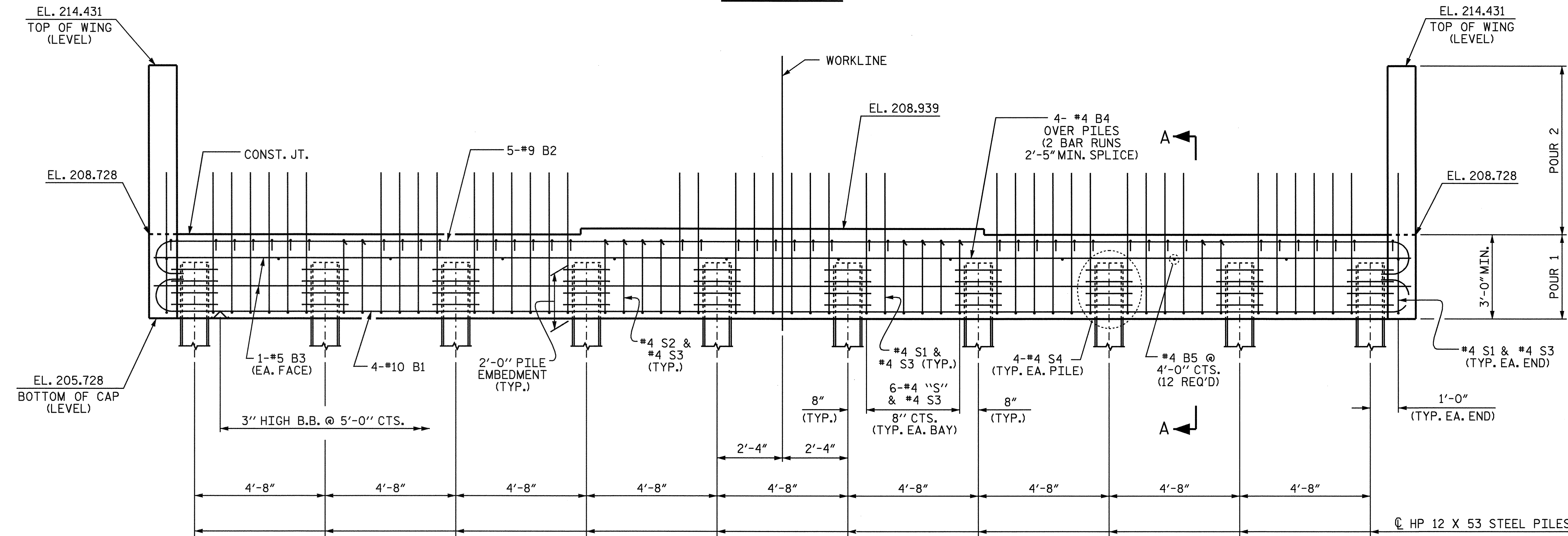


| REVISIONS | | | | | | SHEET NO. |
|-----------|-----|-------|-----|-----|-------|-----------------|
| NO. | BY: | DATE: | NO. | BY: | DATE: | S-23 |
| 1 | | | 3 | | | TOTAL SHEETS 31 |
| 2 | | | 4 | | | |

DRAWN BY : A.L.M. / T.A.H. DATE : 5/25/04
 CHECKED BY : W.S.A. DATE : 1/9/06



PLAN

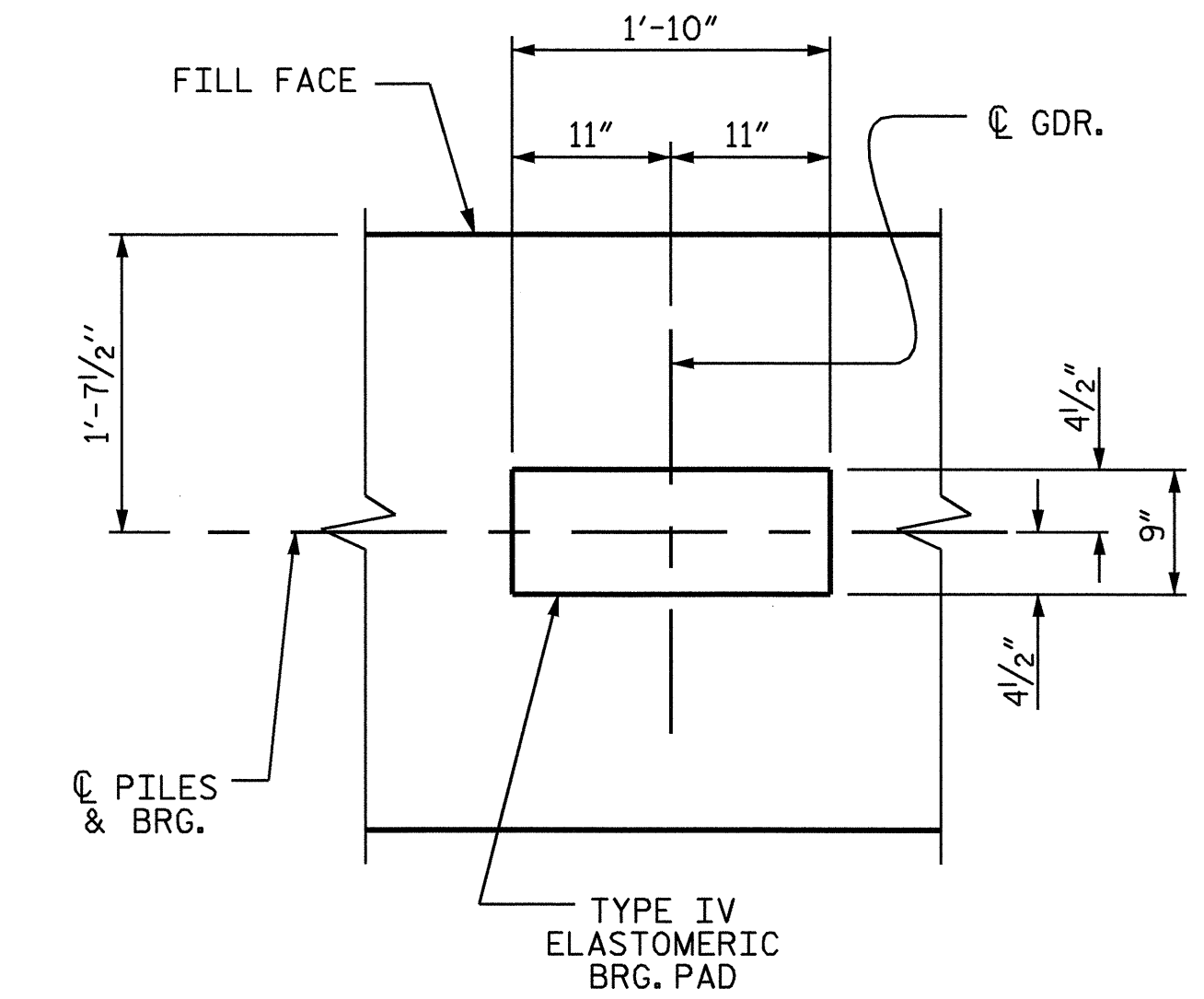


ELEVATION

NOTES

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.

THE CONTRACTOR'S ATTENTION IS CALLED TO THE FACT THAT THE UPPER PART OF WING IS TO BE POURED WITH SUPERSTRUCTURE.



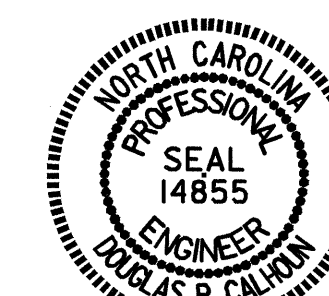
DETAIL A

(TYP. EACH BEARING)

PROJECT NO. B-3481
JOHNSTON COUNTY
 STATION: 19+25.00-L-

SHEET 1 OF 2

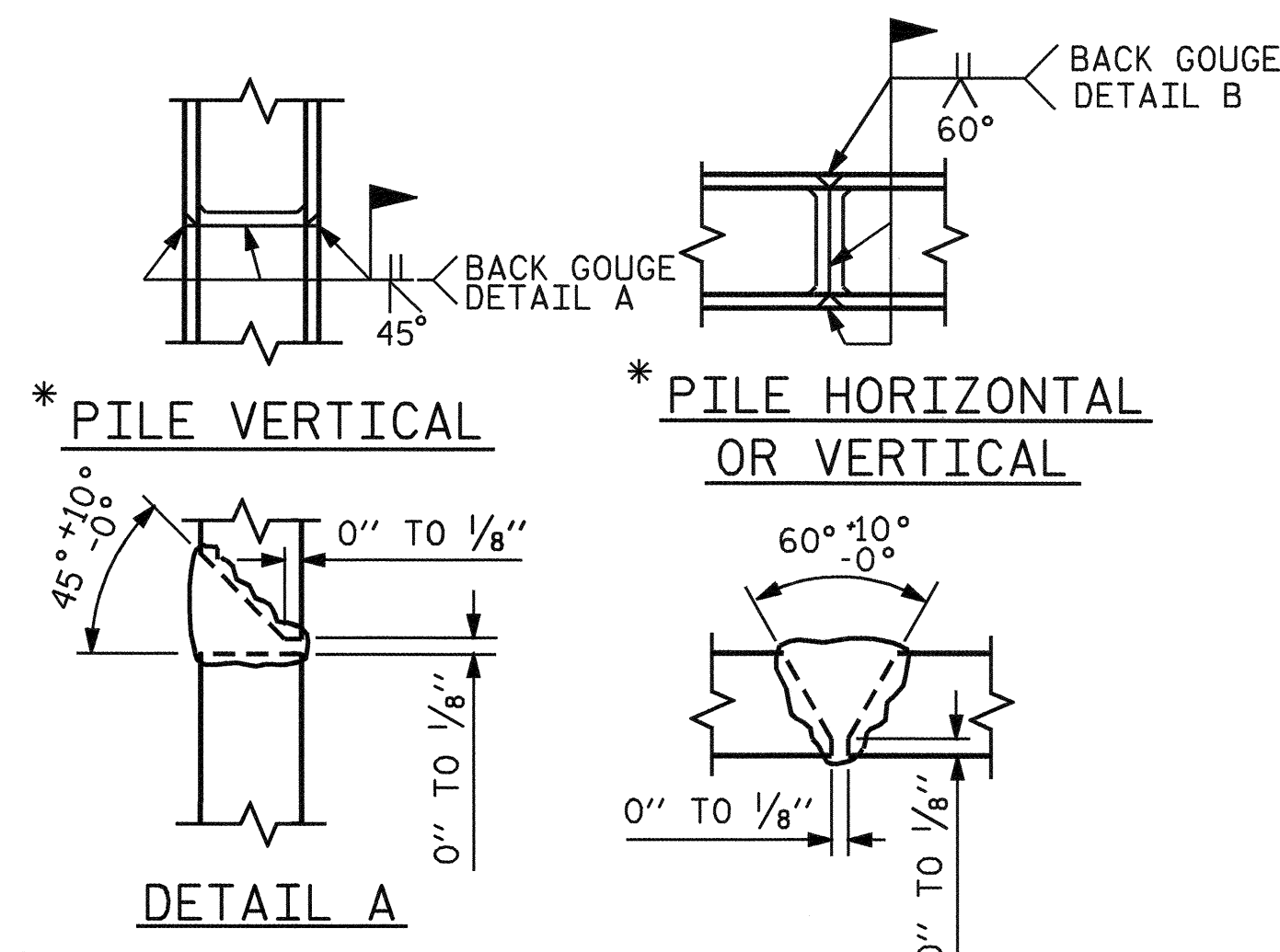
STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH
 SUBSTRUCTURE
 INTEGRAL END BENT 2



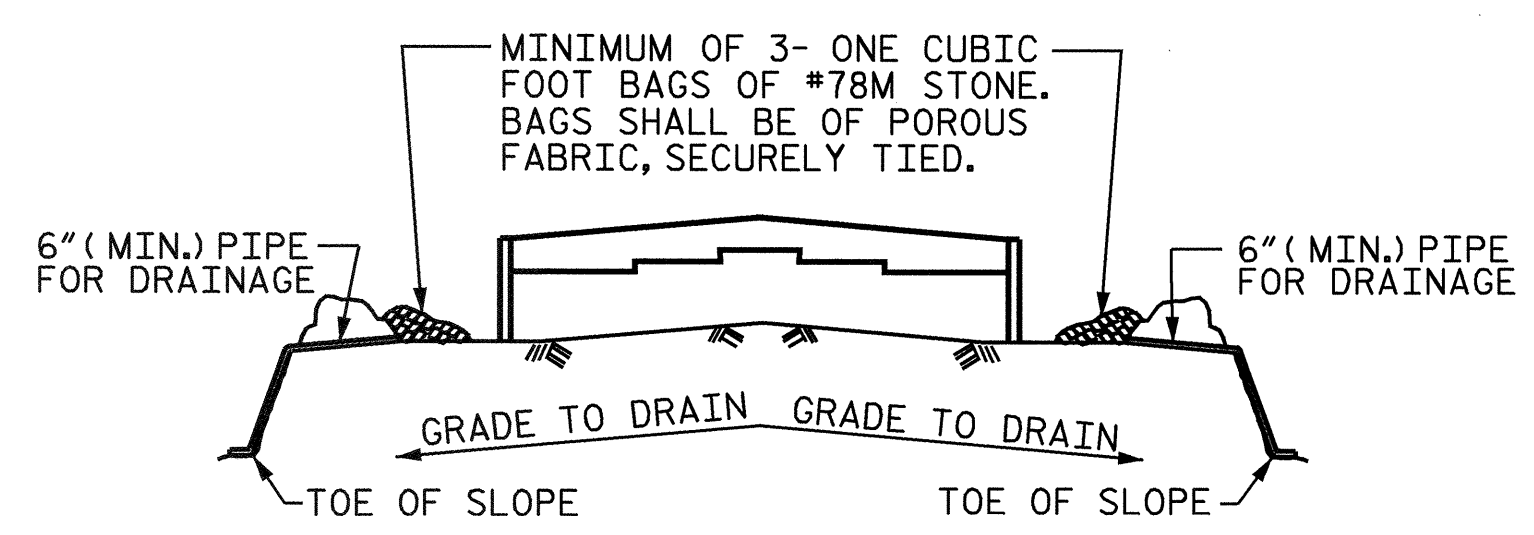
Douglas R. Callen
 3-30-07

| REVISIONS | | | | | | SHEET NO. | |
|-----------|-----|-------|-----|-----|-------|-----------------|--|
| NO. | BY: | DATE: | NO. | BY: | DATE: | S-24 | |
| 1 | | | 3 | | | TOTAL SHEETS 31 | |
| 2 | | | 4 | | | | |

DRAWN BY : J.MYA DATE : 1/24/07
 CHECKED BY : B.N. GRADY DATE : 2/07



PILE SPlice DETAILS



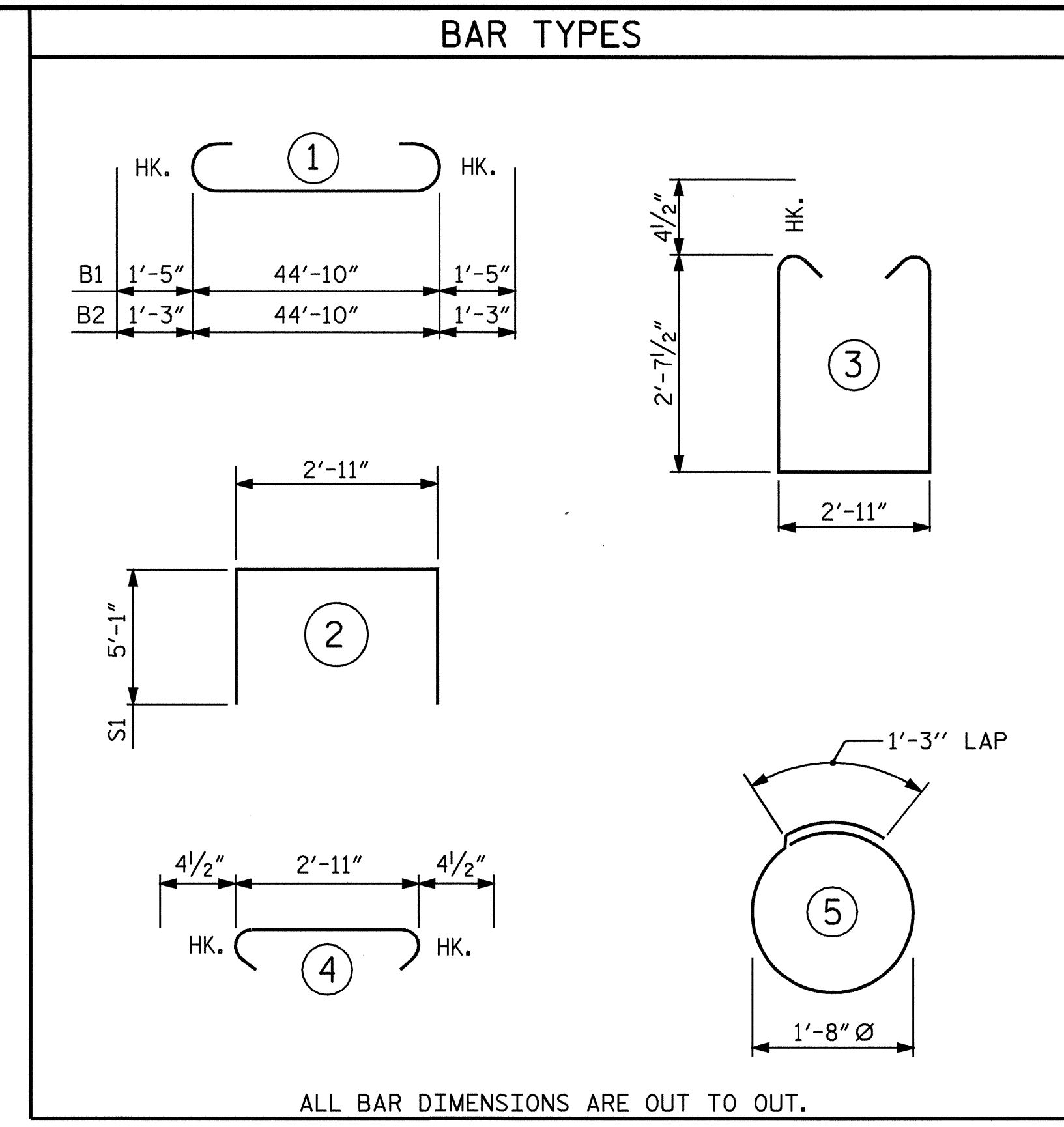
MINIMUM OF 3- ONE CUBIC FOOT BAGS OF #78M STONE. BAGS SHALL BE OF POROUS FABRIC, SECURELY TIED.

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.

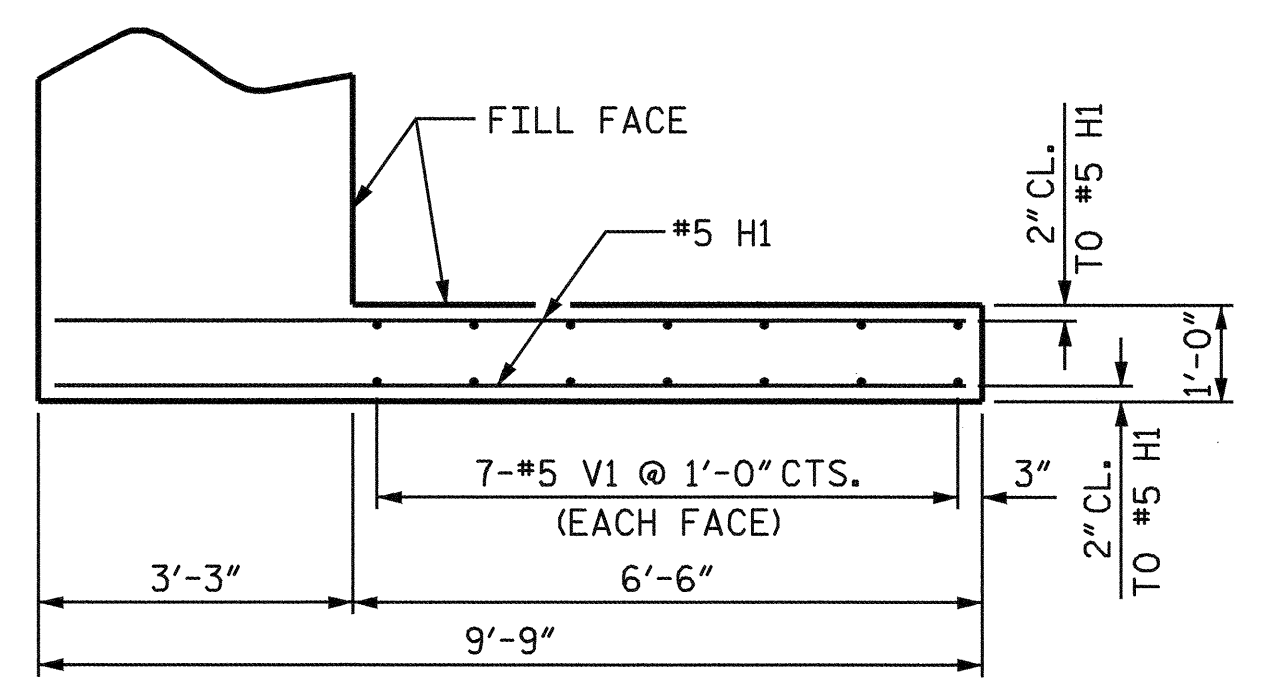
NO SEPARATE PAYMENT WILL BE MADE FOR THIS WORK AND THE ENTIRE COST OF THIS WORK SHALL BE INCLUDED IN THE UNIT CONTRACT PRICE BID FOR THE SEVERAL PAY ITEMS.

TEMPORARY DRAINAGE AT END BENT

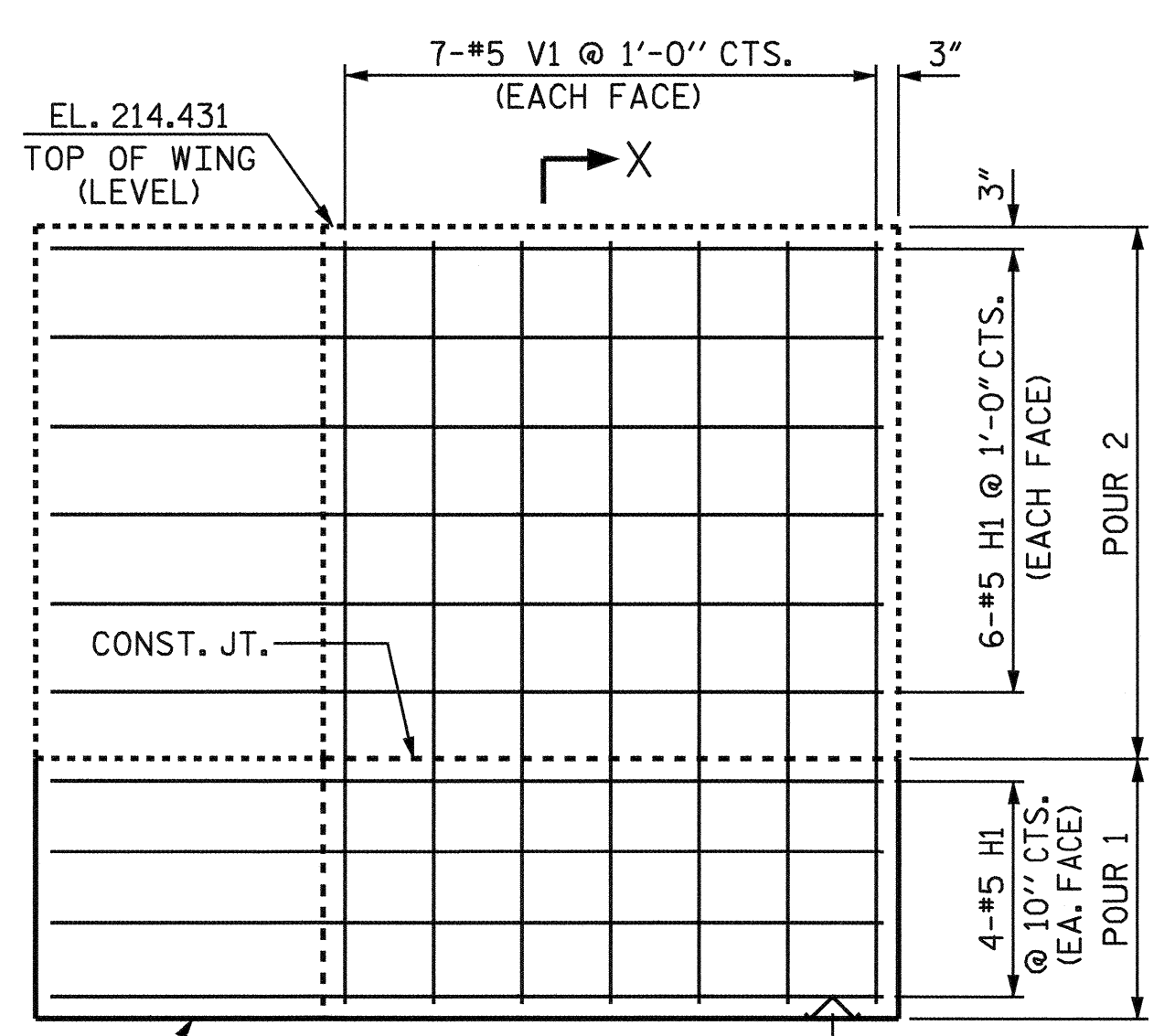


ALL BAR DIMENSIONS ARE OUT TO OUT.

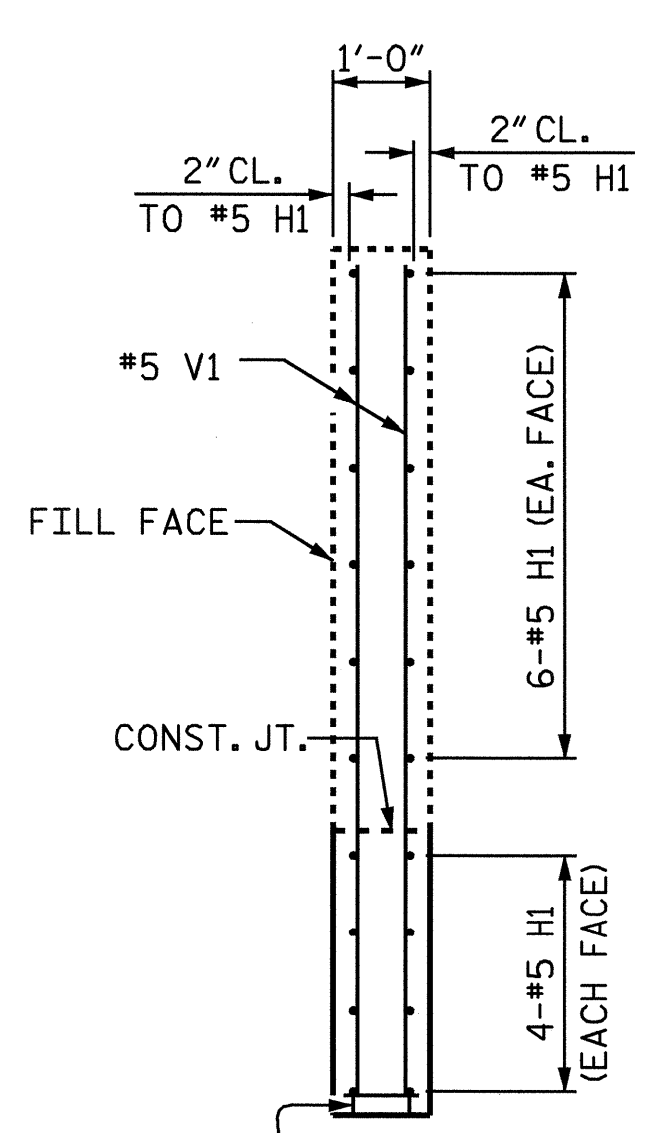
| BILL OF MATERIAL | | | | | |
|---|------|------|--------|--------------|------|
| END BENT 2 | | | | | |
| BAR NO. | SIZE | TYPE | LENGTH | WEIGHT | |
| B1 | 4 | 10 | 1 | 47 - 8 | 820 |
| B2 | 5 | 9 | 1 | 47 - 4 | 805 |
| B3 | 4 | 5 | STR | 44 - 11 | 187 |
| B4 | 8 | 4 | STR | 23 - 8 | 126 |
| B5 | 12 | 4 | STR | 2 - 11 | 23 |
| H1 | 40 | 5 | STR | 9 - 5 | 393 |
| S1 | 44 | 4 | 2 | 13 - 1 | 385 |
| S2 | 12 | 4 | 3 | 8 - 11 | 71 |
| S3 | 56 | 4 | 4 | 3 - 8 | 137 |
| S4 | 40 | 4 | 5 | 6 - 6 | 174 |
| V1 | 28 | 5 | STR | 8 - 4 | 243 |
| REINFORCING STEEL | | | | LBS. | 3364 |
| CLASS A CONCRETE BREAKDOWN | | | | | |
| * POUR 1 (CAP AND LOWER PART OF WINGS) | | | | 18.2 CU.YDS. | |
| TOTAL | | | | 18.2 CU.YDS. | |
| HP 12 x 53 STEEL PILES | | | | | |
| NO. 10 | | | | 200 FT. | |
| * UPPER WINGS (POUR 2) TO BE POURED WITH SUPERSTRUCTURE | | | | | |



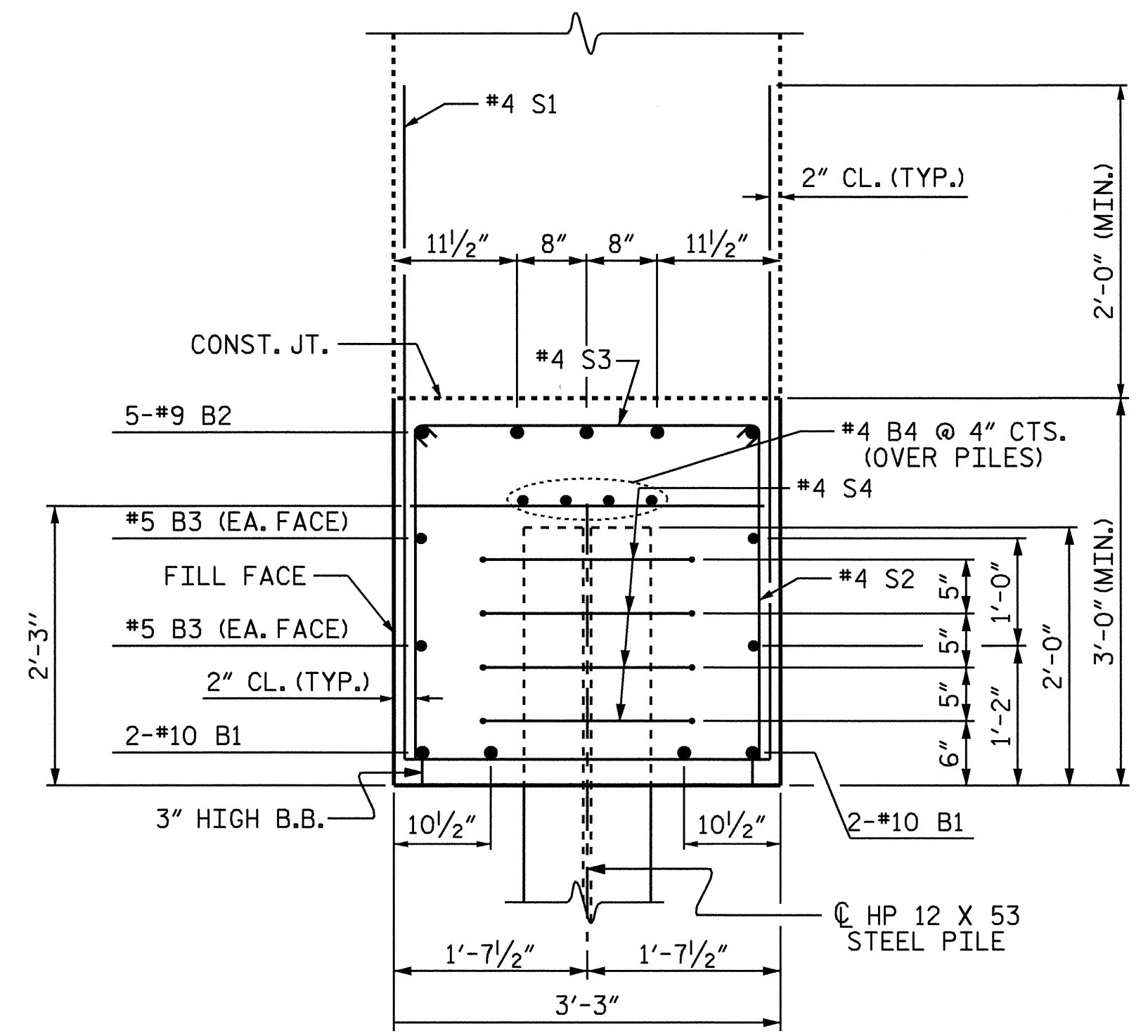
PLAN



ELEVATION



SECTION X-X

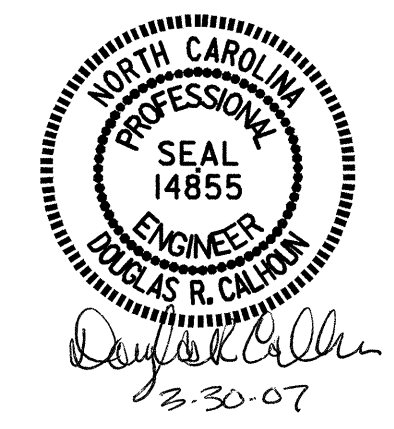


SECTION A-A

PROJECT NO. B-3481
 JOHNSTON COUNTY
 STATION: 19+25.00 -L-

SHEET 2 OF 2

| STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION RALEIGH | | | | | |
|--|-----|-------|-----|-----|--------------------|
| SUBSTRUCTURE INTEGRAL END BENT 2 | | | | | |
| REVISIONS | | | | | |
| NO. | BY: | DATE: | NO. | BY: | DATE: |
| 1 | | | 3 | | |
| 2 | | | 4 | | |
| | | | | | SHEET NO. S-25 |
| | | | | | TOTAL SHEETS 31 |

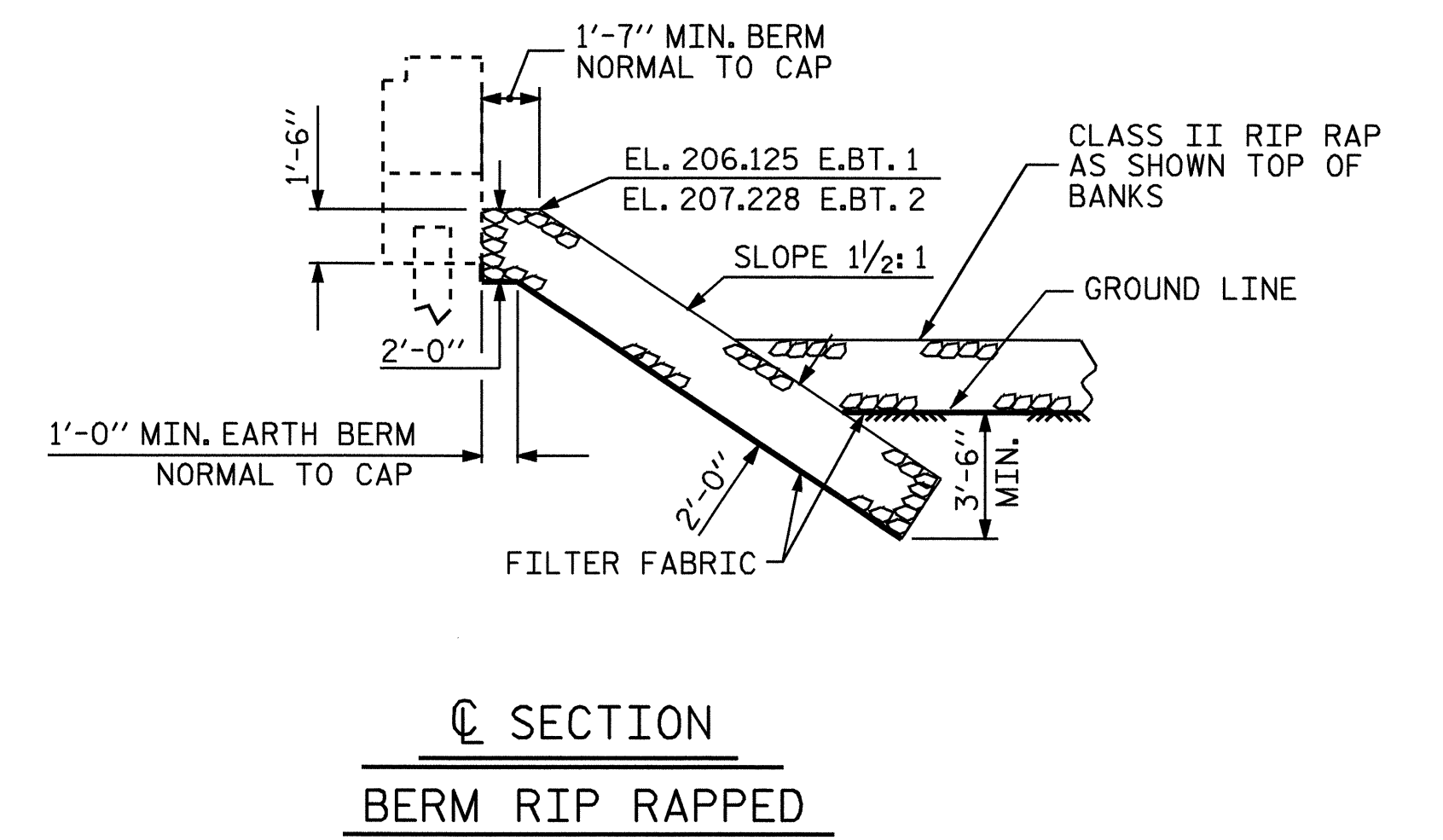
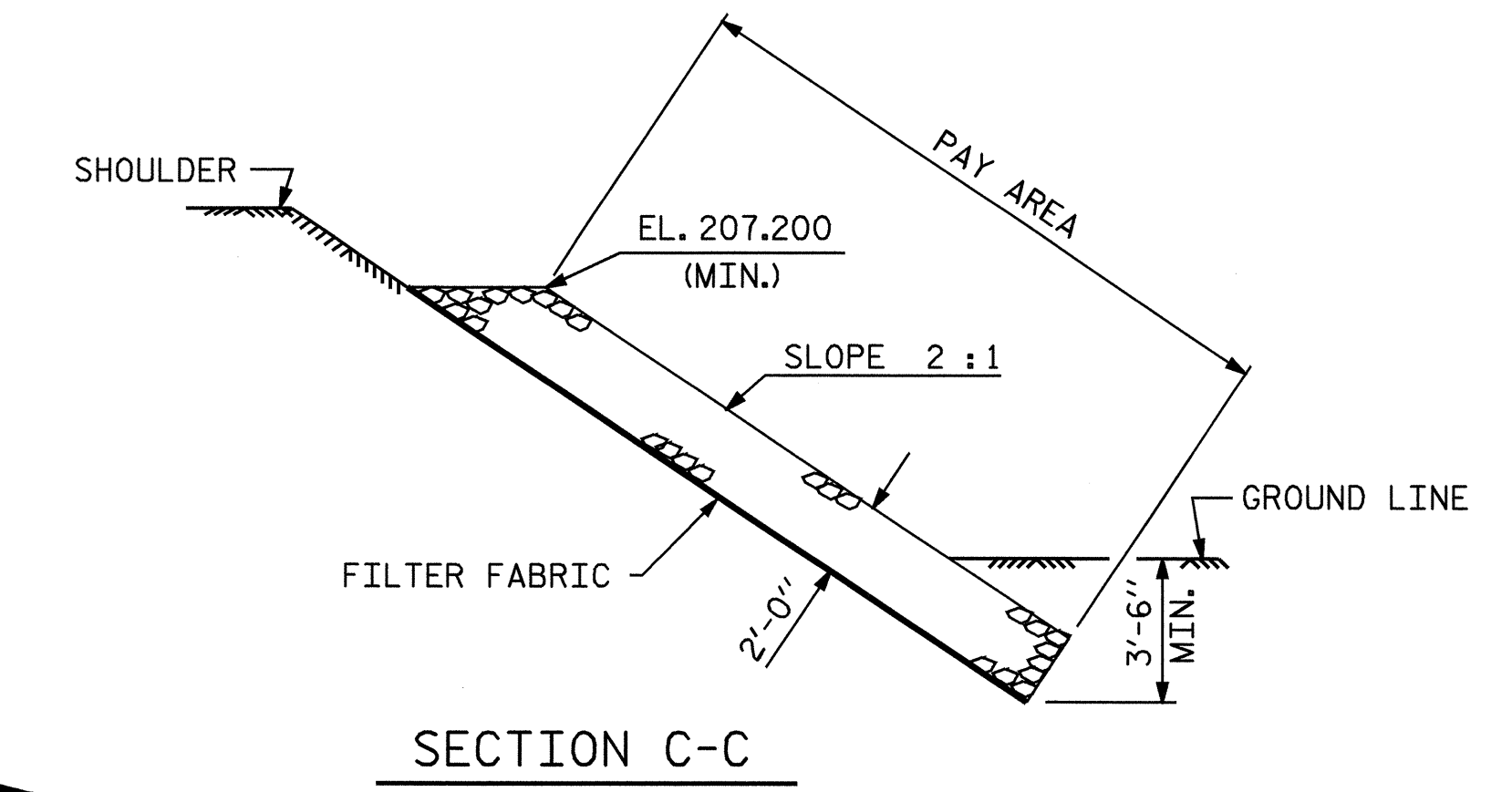
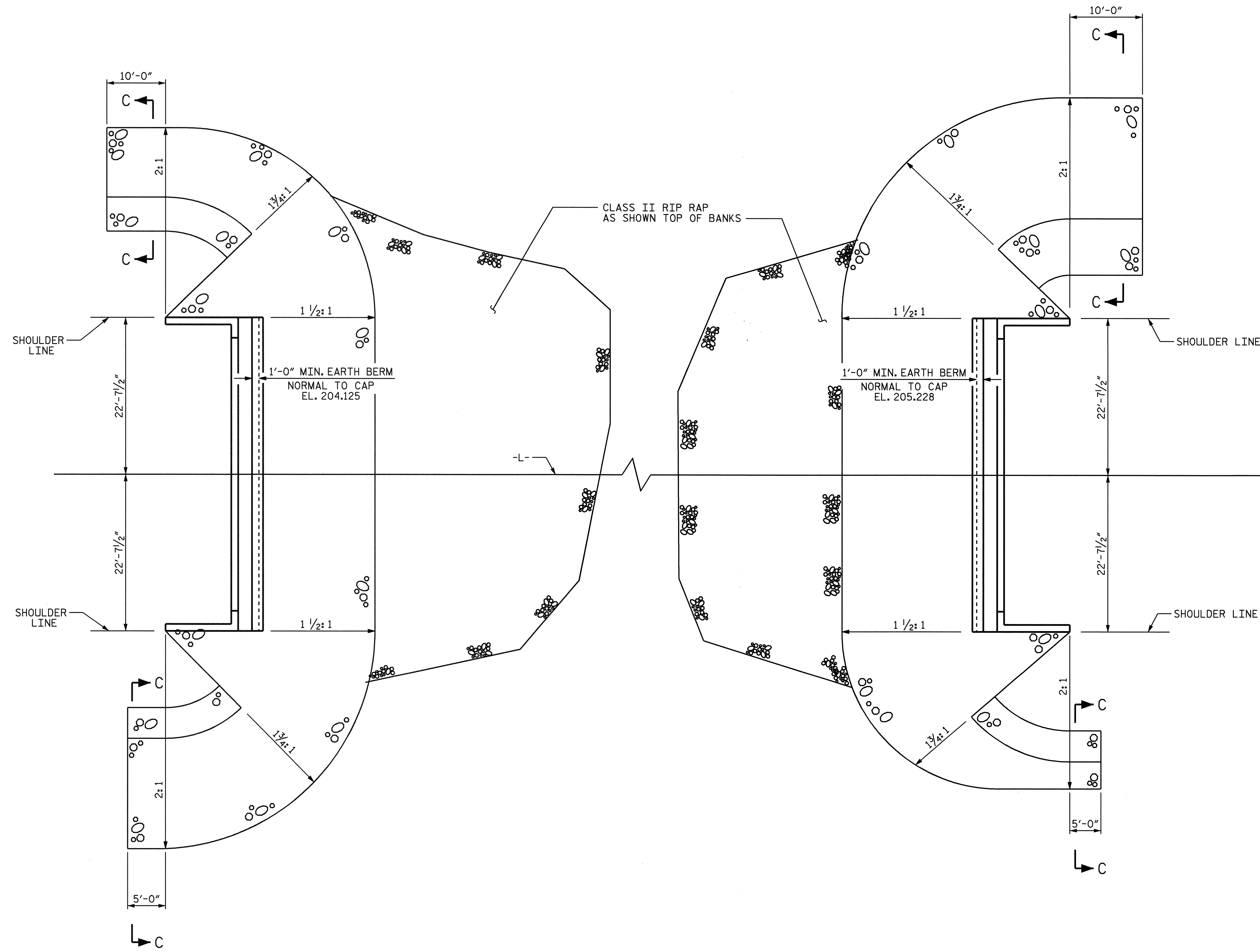


DRAWN BY: J. MYA DATE: 1/24/07
 CHECKED BY: B. N. GRADY DATE: 2/07

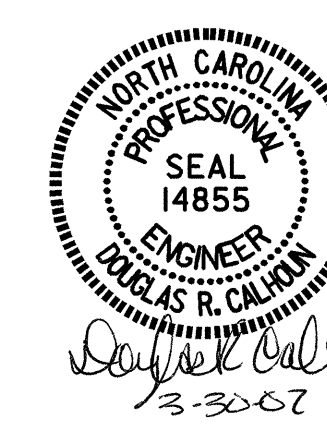
WING DETAILS
 (WING W1 SHOWN, WING W2 SIMILAR)

NOTES :
FOR BERM WIDTH DIMENSIONS, SEE GENERAL DRAWING.

| ESTIMATED QUANTITIES | | |
|-------------------------------|---------------------|-------------------------------|
| BRIDGE @ STA. 19+25.00 -L- | RIP RAP CLASS II | FILTER FABRIC FOR DRAINAGE |
| | TONS | SQUARE YARDS |
| END BENT 1 | 408 | 453 |
| END BENT 2 | 308 | 341 |

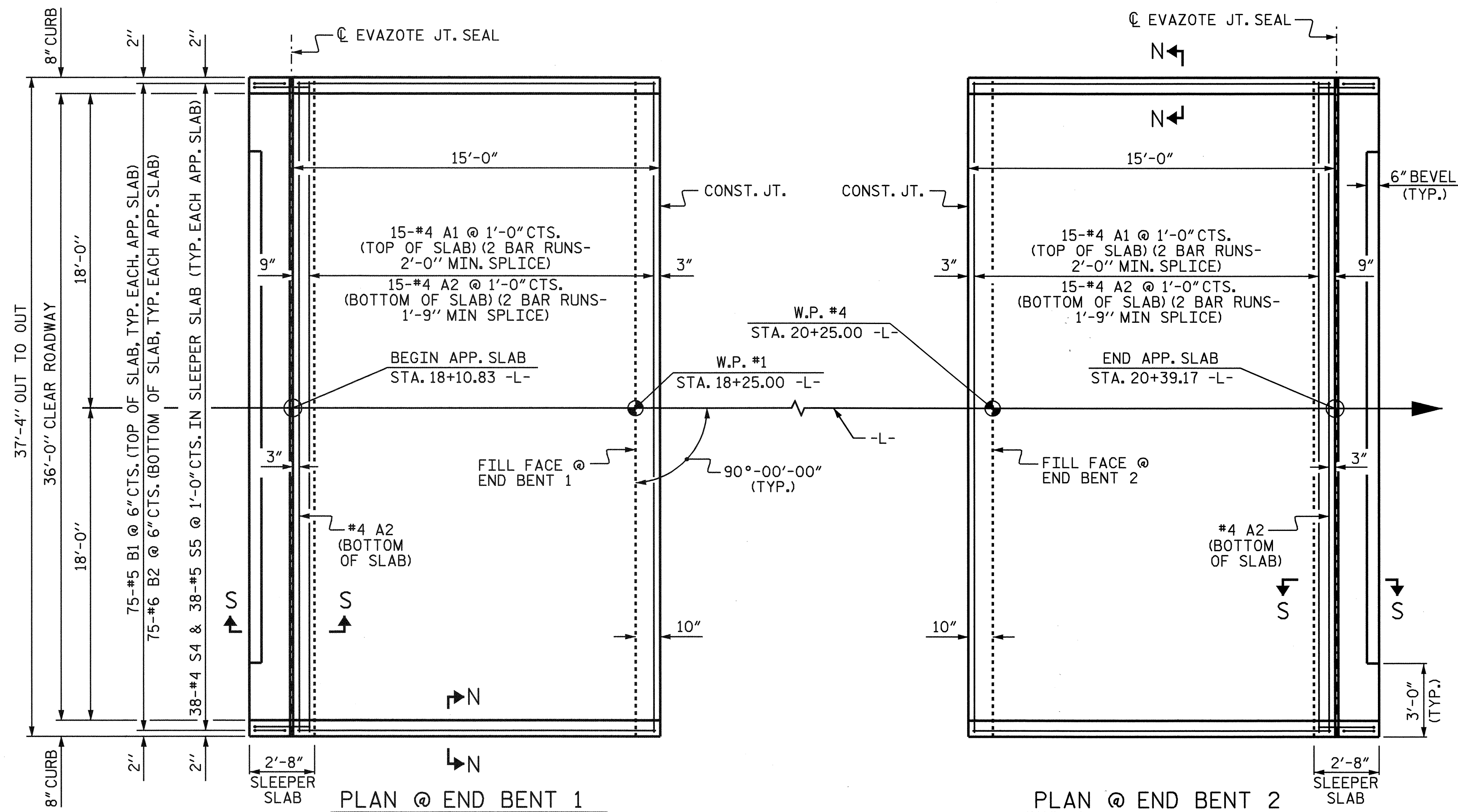


PROJECT NO. B-3481
JOHNSTON COUNTY
STATION: 19+25.00 -L-



| | | | | | | |
|--|-----|-------|-----|-----|-------|---------------------------|
| STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION RALEIGH | | | | | | SHEET NO. S-26 |
| STANDARD RIP RAP DETAILS | | | | | | |
| REVISIONS | | | | | | TOTAL SHEETS 31 |
| NO. | BY: | DATE: | NO. | BY: | DATE: | |
| 1 | | | 3 | | | |
| 2 | | | 4 | | | |

ASSEMBLED BY : A.L.M. / T.A.H. DATE : 5/14/04
CHECKED BY : W.S.A. DATE : 1/18/06
DRAWN BY : FCJ 2/88 REV. 7/17/98 REK/RWW
CHECKED BY : ARB 8/88 REV. 8/16/99 RWW/LES
REV. 10/17/00 RWW/LES



PLAN @ END BENT 1
DIMENSIONS SHOWN ARE TYPICAL FOR BOTH APPROACH SLABS. #4 A1 BARS IN SLEEPER SLAB NOT SHOWN FOR CLARITY.

PLAN @ END BENT 2

NOTES

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

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

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

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

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

THE CONTRACTOR MAY USE 5" CLASS "A" CONCRETE BASE IN LIEU OF 6" COMP. A.B.C. IF THIS OPTION IS USED, THE CONCRETE BASE SHALL EXTEND 1'-0" BEYOND THE END OF THE SLEEPER 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.

THE VERTICAL JOINT ON THE RIGHT AND LEFT SIDE OF THE APPROACH SLAB AT THE ENDS OF THE EVAZOTE JOINT SHALL BE FILLED WITH SILICONE OR OTHER APPROVED MATERIAL IN ORDER TO PREVENT BACKFILL FROM ENTERING THE JOINT OPENING.

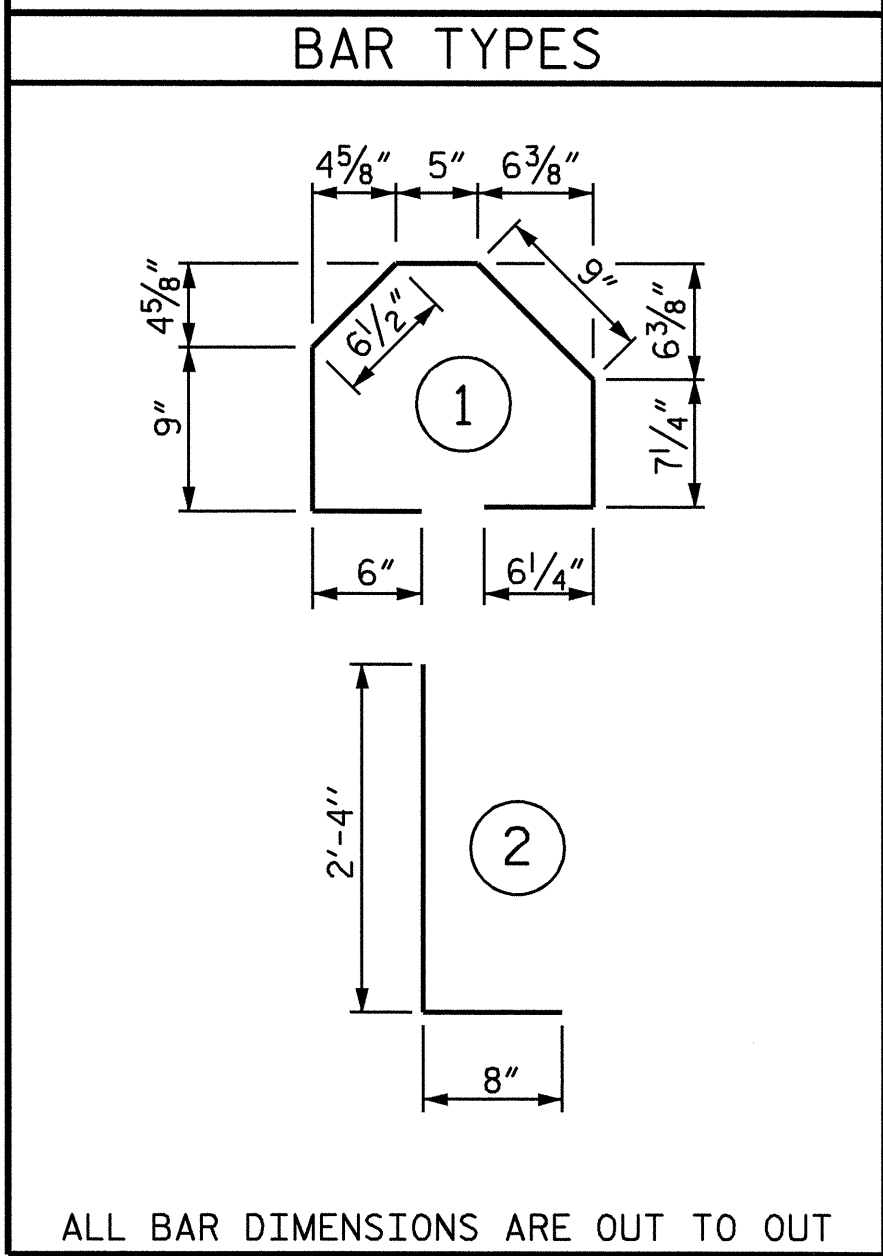
THE JOINT OPENING AT THE APPROACH SLAB/DECK INTERFACE SHALL BE SAWED NO MORE THAN 12 HOURS AFTER THE APPROACH SLAB IS CAST. THE JOINT SHALL BE CLEANED OF ALL DEBRIS BEFORE THE SEALANT IS APPLIED. THE JOINT SEALER MATERIAL SHALL CONFORM TO THE REQUIREMENTS OF TYPE SL LOW MODULUS SILICONE SEALANT.

FOR EVAZOTE JOINT SEALS, SEE SPECIAL PROVISIONS.

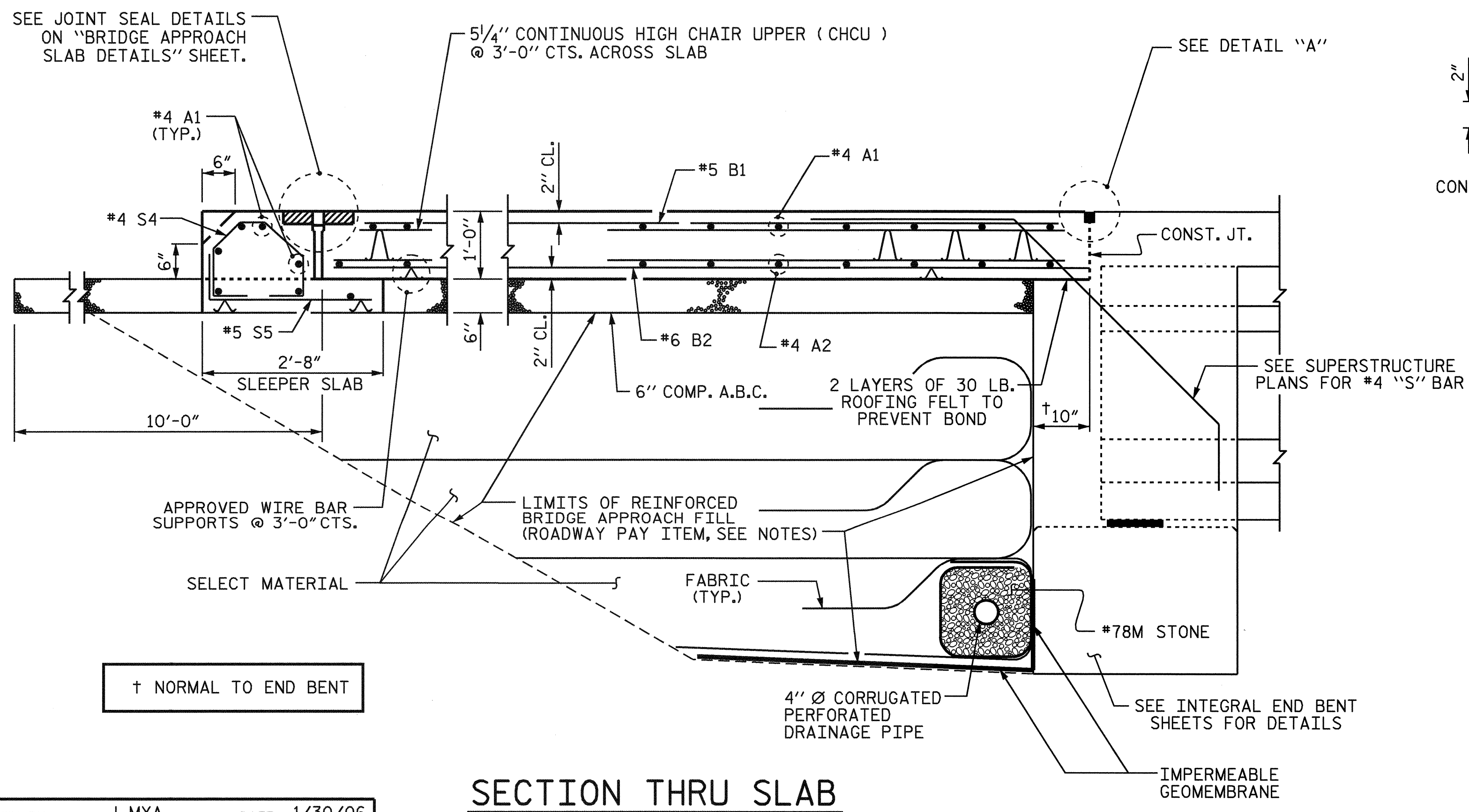
THE NOMINAL UNCOMPRESSED SEAL WIDTH OF THE EVAZOTE JOINT SEAL SHALL BE 2 1/2".

FOR ELASTOMERIC CONCRETE, SEE SPECIAL PROVISIONS.

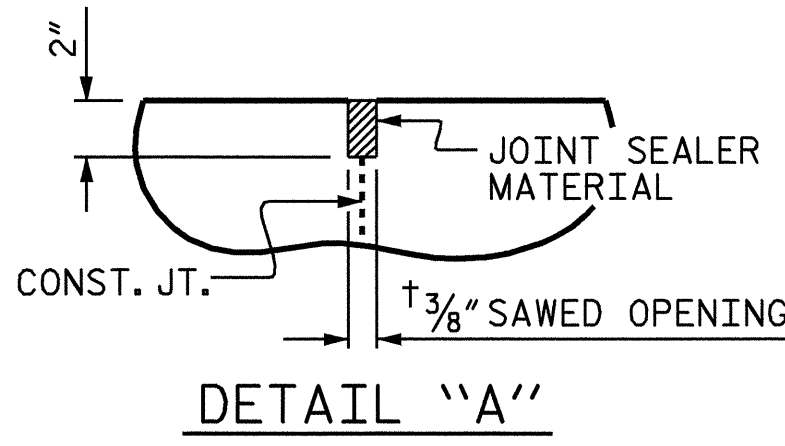
| BILL OF MATERIAL | | | | | |
|----------------------------------|-----|------|------|--------|--------|
| FOR ONE APPROACH SLAB (2 REQ'D) | | | | | |
| BAR | NO. | SIZE | TYPE | LENGTH | WEIGHT |
| * A1 | 44 | #4 | STR | 19'-6" | 573 |
| A2 | 32 | #4 | STR | 19'-5" | 415 |
| * B1 | 75 | #5 | STR | 14'-2" | 1108 |
| B2 | 75 | #6 | STR | 14'-8" | 1652 |
| * S4 | 38 | #4 | 1 | 4'-1" | 104 |
| S5 | 38 | #5 | 2 | 3'-0" | 119 |
| REINFORCING STEEL | | | | LBS. | 2186 |
| * EPOXY COATED REINFORCING STEEL | | | | LBS. | 1785 |
| CLASS AA CONCRETE | | | | | |
| POUR #1 - SLEEPER SLAB | | | | C. Y. | 1.8 |
| POUR #2 - SLAB & CURB | | | | C. Y. | 22.8 |
| TOTAL | | | | C. Y. | 24.6 |



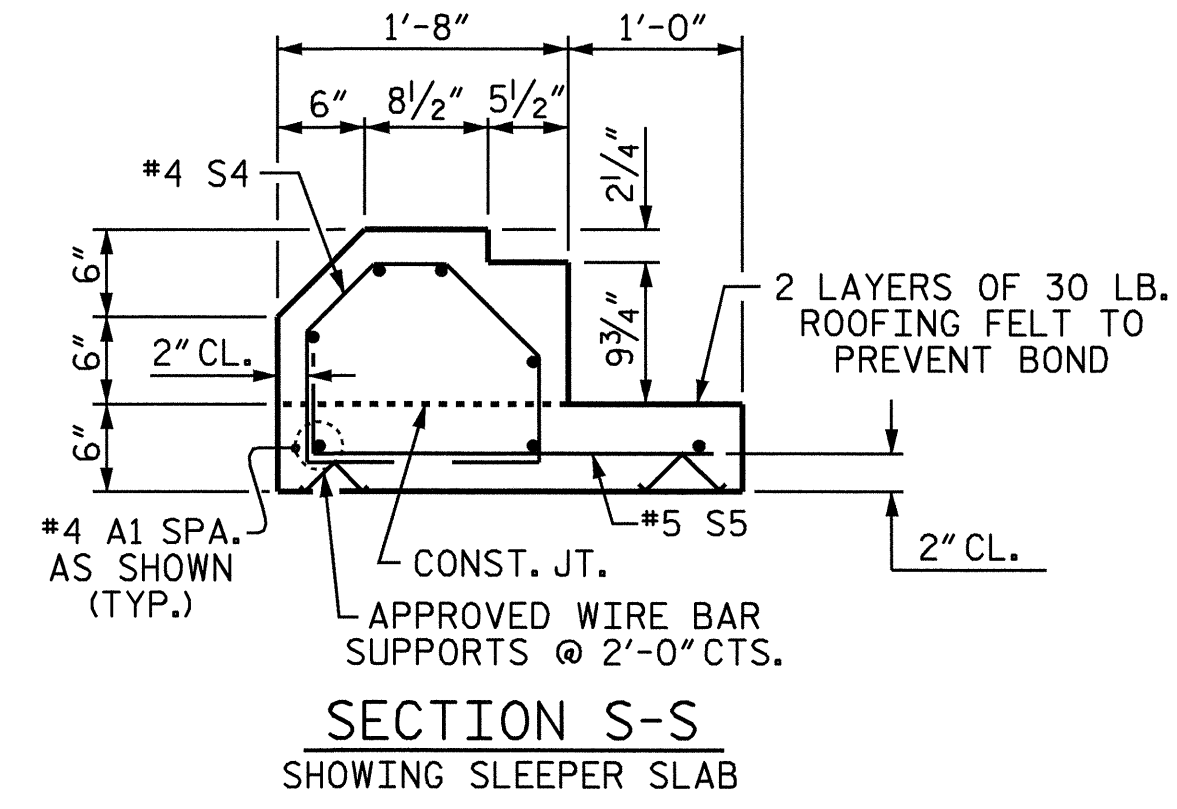
ALL BAR DIMENSIONS ARE OUT TO OUT



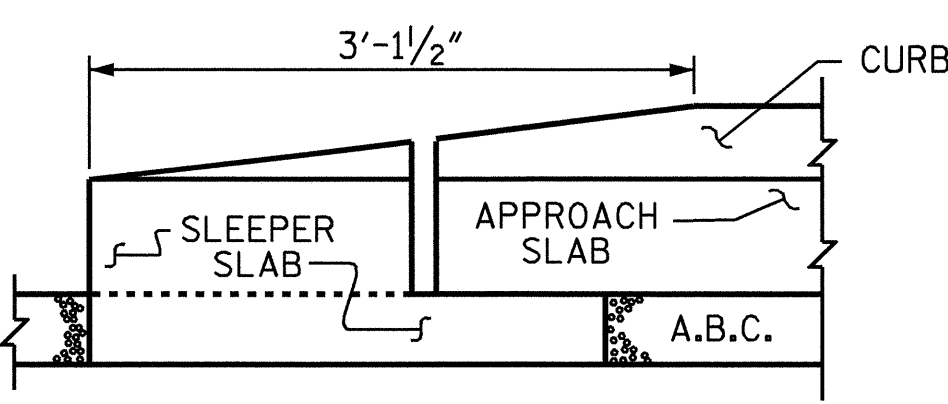
SECTION THRU SLAB



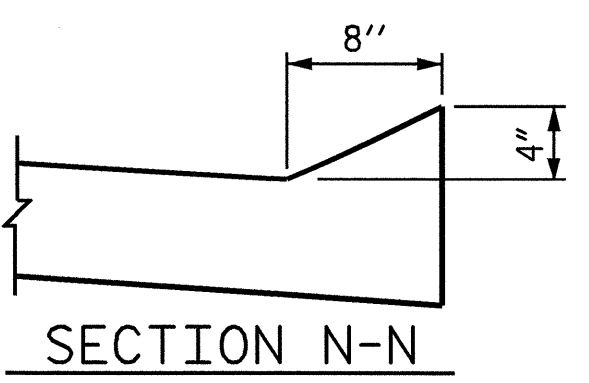
DETAIL "A"



SECTION S-S
SHOWING SLEEPER SLAB



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



SECTION N-N

DRAWN BY : J. MYA DATE : 1/30/06
CHECKED BY : B.N. GRADY DATE : 1/07

30-MAR-2007 12:34
R:\Structures\B3481\FINAL PLANS\B-3481.ed_AS_01.dgn
gallen



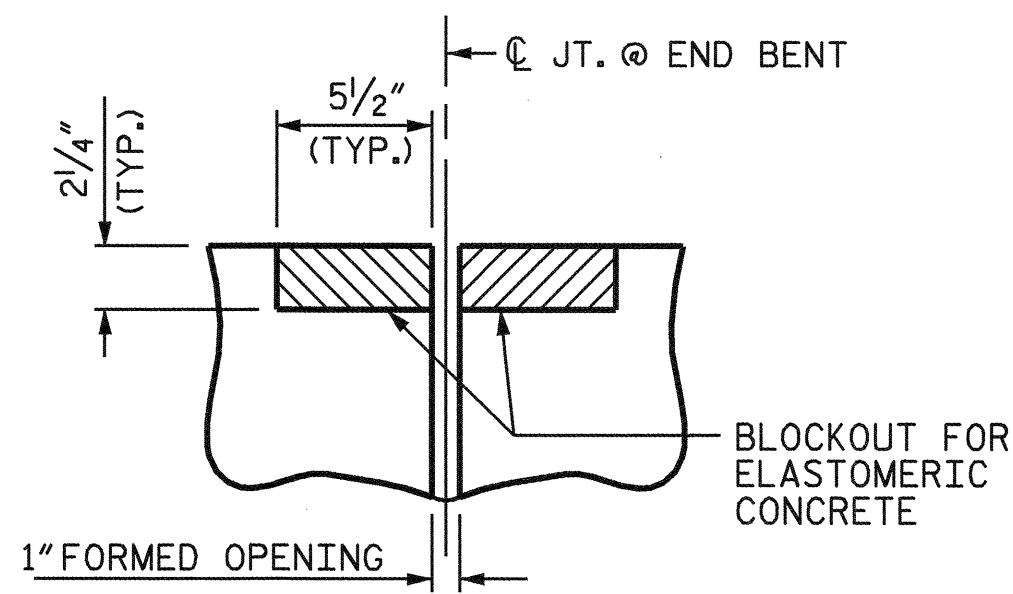
PROJECT NO. B-3481
JOHNSTON COUNTY
STATION: 19+25.00 -L-

SHEET 1 OF 2

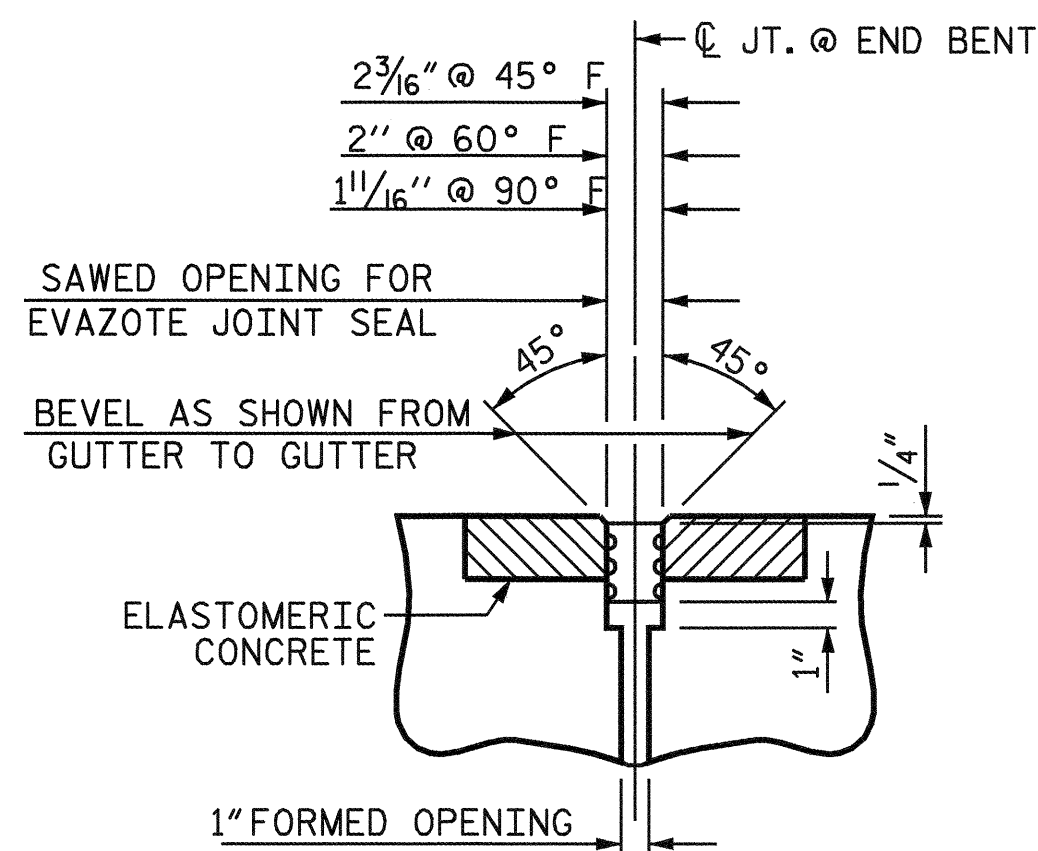
| REVISIONS | | | | | |
|-----------|-----|-------|-----|-----|-------|
| NO. | BY: | DATE: | NO. | BY: | DATE: |
| 1 | | | 3 | | |
| 2 | | | 4 | | |

SHEET NO. S-27
TOTAL SHEETS 31

STD. NO. BAS11



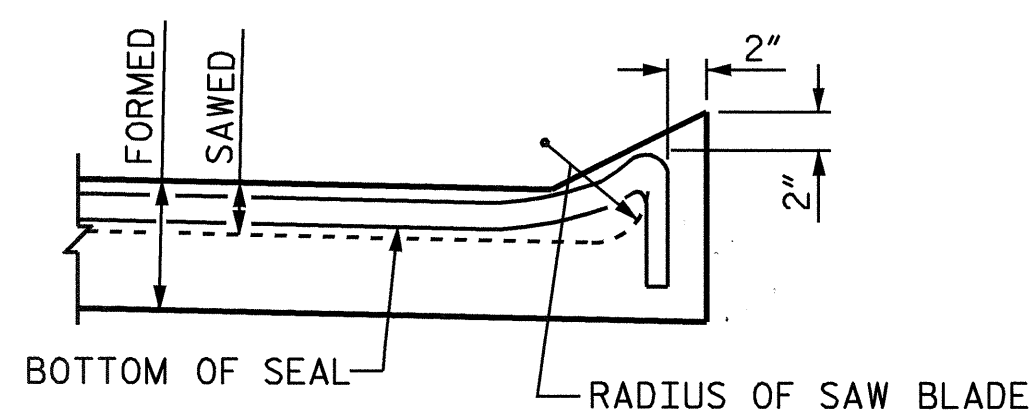
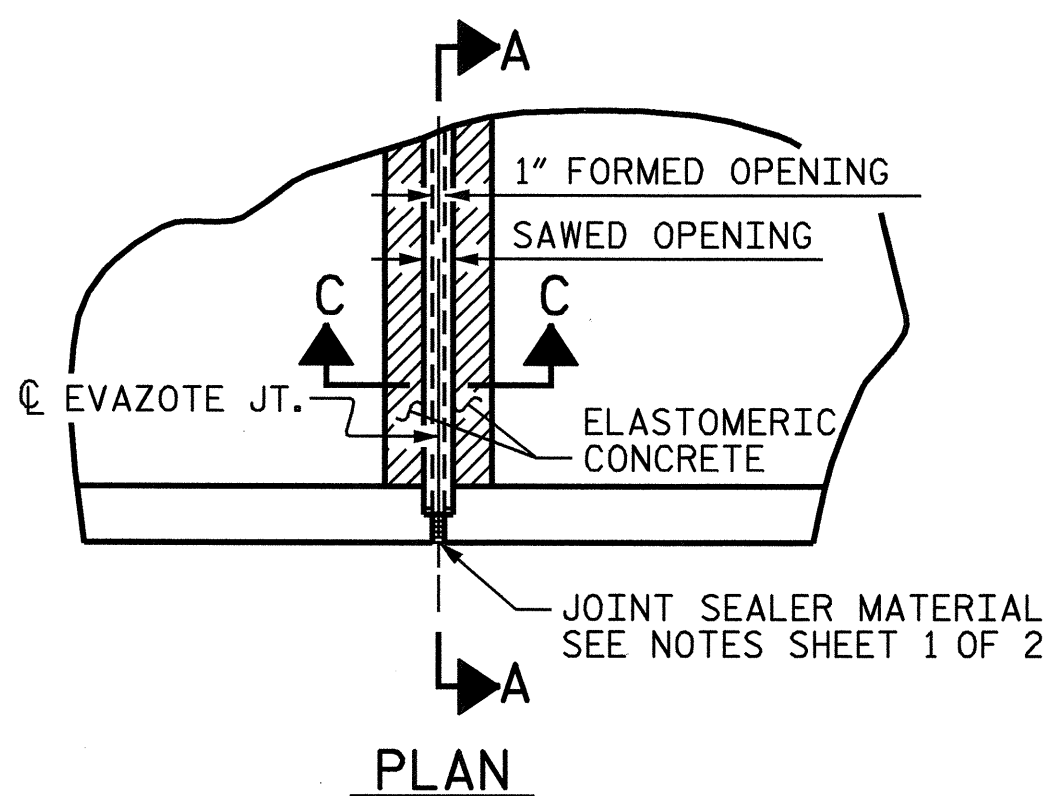
SECTION C-C
EVAZOTE JOINT SEAL
(PRE-SAWED ELASTOMERIC
CONCRETE DIMENSIONS)



SECTION C-C
EVAZOTE JOINT SEAL

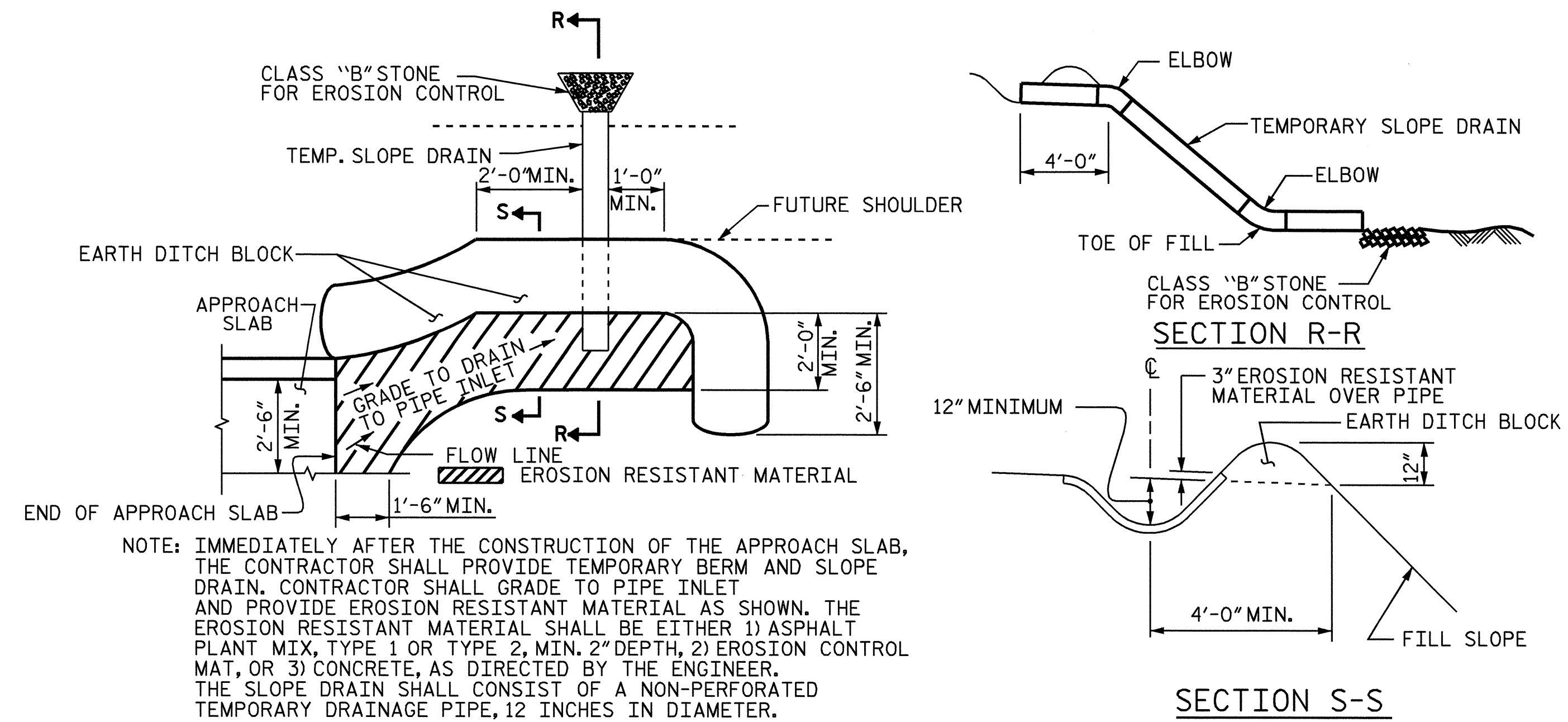
| ELASTOMERIC CONCRETE | |
|----------------------|----------------------------------|
| END BENT NO. | ELASTOMERIC CONCRETE * (CU. FT.) |
| 1 | 6.2 |
| 2 | 6.2 |
| TOTAL | 12.4 |

* BASED ON THE MINIMUM BLOCKOUT SHOWN.



SECTION A-A

JOINT SEAL DETAILS @ SLEEPER SLAB

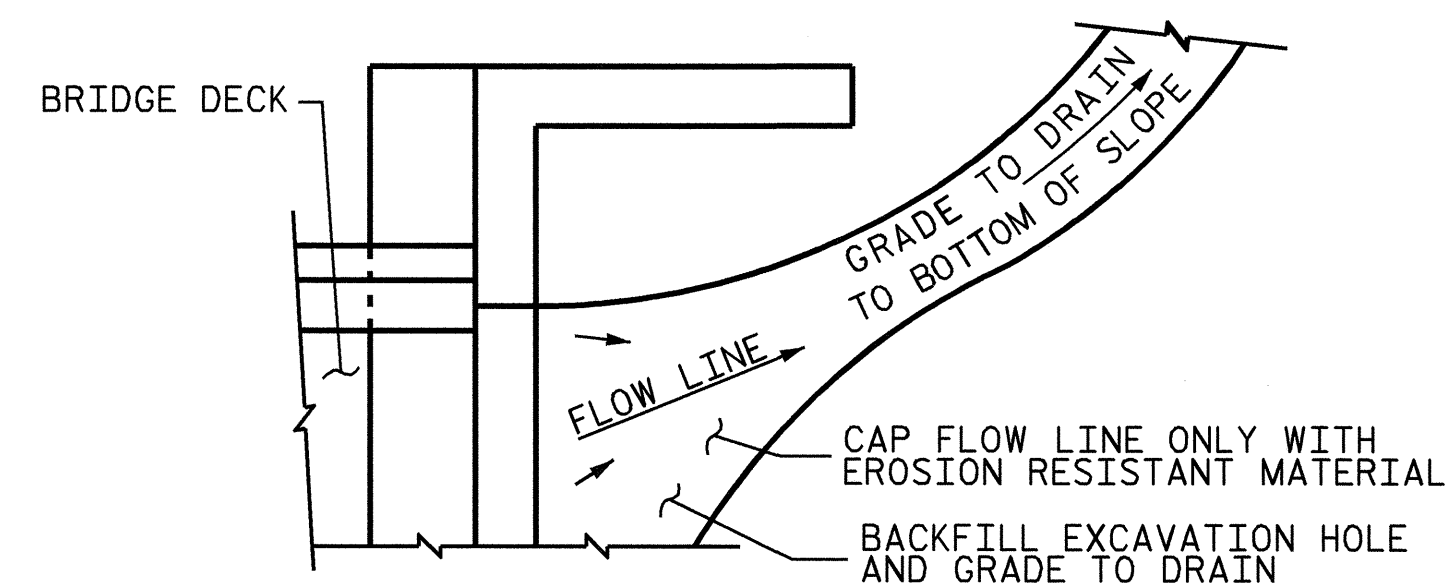


NOTE: IMMEDIATELY AFTER THE CONSTRUCTION OF THE APPROACH SLAB, THE CONTRACTOR SHALL PROVIDE TEMPORARY BERM AND SLOPE DRAIN. CONTRACTOR SHALL GRADE TO PIPE INLET AND PROVIDE EROSION RESISTANT MATERIAL AS SHOWN. THE EROSION RESISTANT MATERIAL SHALL BE EITHER 1) ASPHALT PLANT MIX, TYPE 1 OR TYPE 2, MIN.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

PLAN VIEW

TEMPORARY BERM AND SLOPE DRAIN DETAILS

(TO BE USED WHEN SHOULDER BERM GUTTER IS REQUIRED)



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

| | |
|-------------------------|-----------------------|
| ASSEMBLED BY : J. MYA | DATE : 1/30/07 |
| CHECKED BY : B.N. GRADY | DATE : 2/07 |
| DRAWN BY : FCJ 11/88 | REV. 10/17/00 RWW/LES |
| CHECKED BY : ARB 11/88 | REV. 5/7/03 RWW/JTE |
| | REV. 5/1/06 TLA/GM |



PROJECT NO. B-3481
JOHNSTON COUNTY
STATION: 19+25.00 -L-

SHEET 2 OF 2

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

| REVISIONS | | | | | | SHEET NO. |
|-----------|-----|-------|-----|-----|-------|--------------|
| NO. | BY: | DATE: | NO. | BY: | DATE: | TOTAL SHEETS |
| 1 | | | 3 | | | 31 |
| 2 | | | 4 | | | 31 |

STD. NO. BAS10

OVERHANG BRACKET CALCULATION INSTRUCTIONS

AASHTO SHAPES - TYPES III, IV, V, AND VI

- RECORD KNOWN INFORMATION ON "BRIDGE OVERHANG BRACKET SUMMARY" ON SHEET 2
- CALCULATE THE MAXIMUM SCREED LOAD PER BRACKET (SLPB) WITH AN ESTIMATED $R = 1.5$. $SLPB = R \times W$. ROUND VALUE UP TO NEAREST SLPB VALUE INDICATED ON APPROPRIATE TABLE 1-1, 1-2, 1-3, OR 1-4.
- WITH THE ESTIMATED SLPB, OVERHANG SLAB THICKNESS, "K" VALUE, AND 45° HANGER SAFE WORKING LOAD (SWL), ENTER THE APPROPRIATE TABLE 1-1, 1-2, 1-3, OR 1-4 (BASED ON OVERHANG DIMENSION) AND DETERMINE THE BRACKET SPACING, S.
- CALCULATE S/D1 AND S/D2, ROUNDING UP TO NEAREST VALUE IN TABLE 2. ENTER TABLE 2 AND DETERMINE R VALUE.
- CALCULATE REVISED SLPB. ROUND VALUE UP TO NEAREST SLPB VALUE INDICATED ON APPROPRIATE TABLE 1-1, 1-2, 1-3, OR 1-4.
- WITH THE REVISED SLPB, OVERHANG SLAB THICKNESS, "K" VALUE AND 45° HANGER SAFE WORKING LOAD (SWL), ENTER THE APPROPRIATE TABLE 1-1, 1-2, 1-3 OR 1-4 (BASED ON OVERHANG DIMENSION) AND DETERMINE REVISED BRACKET SPACING, S.
- CONTINUE ITERATIONS OF STEPS 4-6 UNTIL THE REVISED BRACKET SPACING, S, IS THE SAME AS THE PREVIOUS S VALUE.
- CHECK LUMBER JOIST SPACING: WITH BRACKET SPACING VALUE, S, ROUND THIS VALUE UP TO THE NEAREST VALUE OF ALLOWABLE SPAN LENGTH OF JOIST OF TABLE 3. USING THIS VALUE, ALONG WITH THE AVERAGE OVERHANG SLAB THICKNESS AND THE LUMBER JOIST SIZE, DETERMINE JOIST SPACING FROM TABLE 3. IF NECESSARY, ADJUST LUMBER JOIST SIZE AND/OR JOIST SPACING TO MEET ALLOWABLE SPAN LENGTH OF JOIST.
- CONVERSELY, IF THE DESIRED JOIST SPACING IS KNOWN, USE THIS ALONG WITH THE AVERAGE OVERHANG SLAB THICKNESS AND THE LUMBER JOIST SIZE TO DETERMINE IF ALLOWABLE SPAN LENGTH OF JOIST IS GREATER THAN THE BRACKET SPACING, S. IF NECESSARY, ADJUST LUMBER JOIST SIZE TO MEET REQUIREMENTS OF ALLOWABLE SPAN LENGTH OF JOIST AND JOIST SPACING.
- RECORD REMAINING INFORMATION ON "BRIDGE OVERHANG BRACKET SUMMARY" FORM.
- SUBMIT FORM AND CALCULATIONS FOR REVIEW AND APPROVAL.

TABLE 1-1 (FOR USE ON UP TO 2'-0" OVERHANG (L) & 54" HORIZONTAL LEG LENGTH OF THE OVERHANG BRACKET)

| AVG. SLAB THICKNESS (in) | BRACKET DIMENSION (in) | SCREED LOAD PER BRACKET | | | | | | | | | 45° HANGER SWL (lbs) |
|--------------------------|------------------------|-------------------------|-----------|-----------|-----------|-----------|-----------|-----------|----------|--------|----------------------|
| | | 2500 lbs. | 2250 lbs. | 2000 lbs. | 1750 lbs. | 1500 lbs. | 1250 lbs. | 1000 lbs. | 750 lbs. | 0 lbs. | |
| 10 | 30 | 2'-1" | 2'-7" | 3'-2" | 3'-8" | 4'-2" | 5'-9" | 4000 | | | |
| | 40 | 3'-6" | 4'-0" | 4'-5" | 4'-9" | 5'-1" | 5'-3" | 5'-5" | 5'-7" | 6'-7" | |
| | 50 | 3'-6" | 4'-0" | 4'-5" | 4'-9" | 5'-1" | 5'-3" | 5'-5" | 5'-7" | 6'-7" | |
| 12 | 30 | 2'-4" | 2'-10" | 3'-4" | 3'-9" | 5'-2" | 6000 | | | | |
| | 40 | 3'-2" | 3'-7" | 4'-1" | 4'-7" | 5'-0" | 5'-2" | 5'-4" | 5'-7" | 6'-5" | |
| | 50 | 3'-2" | 3'-7" | 4'-1" | 4'-7" | 5'-0" | 5'-2" | 5'-4" | 5'-7" | 6'-5" | |
| 14 | 30 | 2'-2" | 2'-7" | 3'-0" | 3'-5" | 4'-9" | 4000 | | | | |
| | 40 | 2'-10" | 3'-4" | 3'-9" | 4'-2" | 4'-7" | 5'-0" | 5'-4" | 5'-7" | 6'-4" | |
| | 50 | 2'-10" | 3'-4" | 3'-9" | 4'-2" | 4'-7" | 5'-0" | 5'-4" | 5'-7" | 6'-4" | |
| 16 | 30 | 2'-8" | 3'-0" | 3'-5" | 3'-10" | 4'-3" | 4'-7" | 5'-0" | 5'-5" | 6'-3" | |
| | 40 | 2'-8" | 3'-0" | 3'-5" | 3'-10" | 4'-3" | 4'-7" | 5'-0" | 5'-5" | 6'-3" | |
| | 50 | 2'-8" | 3'-0" | 3'-5" | 3'-10" | 4'-3" | 4'-7" | 5'-0" | 5'-5" | 6'-3" | |

TABLE 1-2 (FOR USE ON OVER 2'-0" TO 2'-6" OVERHANG (L) & 54" HORIZONTAL LEG LENGTH OF THE OVERHANG BRACKET)

| AVG. SLAB THICKNESS (in) | BRACKET DIMENSION (in) | SCREED LOAD PER BRACKET | | | | | | | | | 45° HANGER SWL (lbs) |
|--------------------------|------------------------|-------------------------|-----------|-----------|-----------|-----------|-----------|-----------|----------|--------|----------------------|
| | | 2500 lbs. | 2250 lbs. | 2000 lbs. | 1750 lbs. | 1500 lbs. | 1250 lbs. | 1000 lbs. | 750 lbs. | 0 lbs. | |
| 10 | 30 | 2'-4" | 2'-9" | 3'-3" | 3'-8" | 5'-1" | 4000 | | | | |
| | 40 | 3'-1" | 3'-6" | 4'-0" | 4'-5" | 4'-11" | 5'-3" | 5'-5" | 5'-7" | 6'-7" | |
| | 50 | 3'-1" | 3'-6" | 4'-0" | 4'-5" | 4'-11" | 5'-3" | 5'-5" | 5'-7" | 6'-7" | |
| 12 | 30 | 2'-1" | 2'-6" | 2'-11" | 3'-4" | 4'-6" | 4000 | | | | |
| | 40 | 2'-9" | 3'-2" | 3'-7" | 4'-0" | 4'-5" | 4'-10" | 5'-3" | 5'-7" | 6'-5" | |
| | 50 | 2'-9" | 3'-2" | 3'-7" | 4'-0" | 4'-5" | 4'-10" | 5'-3" | 5'-7" | 6'-5" | |
| 14 | 30 | 2'-6" | 2'-10" | 3'-3" | 3'-7" | 4'-0" | 4'-4" | 4'-9" | 5'-1" | 6'-3" | |
| | 40 | 2'-6" | 2'-10" | 3'-3" | 3'-7" | 4'-0" | 4'-4" | 4'-9" | 5'-1" | 6'-3" | |
| | 50 | 2'-6" | 2'-10" | 3'-3" | 3'-7" | 4'-0" | 4'-4" | 4'-9" | 5'-1" | 6'-3" | |
| 16 | 30 | 2'-3" | 2'-7" | 2'-11" | 3'-4" | 3'-8" | 4'-0" | 4'-4" | 4'-8" | 5'-8" | |
| | 40 | 2'-3" | 2'-7" | 2'-11" | 3'-4" | 3'-8" | 4'-0" | 4'-4" | 4'-8" | 5'-8" | |
| | 50 | 2'-3" | 2'-7" | 2'-11" | 3'-4" | 3'-8" | 4'-0" | 4'-4" | 4'-8" | 5'-8" | |

TABLE 1-3 (FOR USE ON OVER 2'-6" TO 3'-0" OVERHANG (L) & 54" HORIZONTAL LEG LENGTH OF THE OVERHANG BRACKET)

| AVG. SLAB THICKNESS (in) | BRACKET DIMENSION (in) | SCREED LOAD PER BRACKET | | | | | | | | | 45° HANGER SWL (lbs) |
|--------------------------|------------------------|-------------------------|-----------|-----------|-----------|-----------|-----------|-----------|----------|--------|----------------------|
| | | 2500 lbs. | 2250 lbs. | 2000 lbs. | 1750 lbs. | 1500 lbs. | 1250 lbs. | 1000 lbs. | 750 lbs. | 0 lbs. | |
| 10 | 30 | 2'-1" | 2'-6" | 2'-11" | 3'-4" | 4'-6" | 4000 | | | | |
| | 40 | 2'-9" | 3'-2" | 3'-7" | 4'-0" | 4'-5" | 4'-10" | 5'-3" | 5'-7" | 6'-7" | |
| | 50 | 2'-9" | 3'-2" | 3'-7" | 4'-0" | 4'-5" | 4'-10" | 5'-3" | 5'-7" | 6'-7" | |
| 12 | 30 | 2'-2" | 2'-7" | 3'-0" | 3'-5" | 4'-9" | 4000 | | | | |
| | 40 | 2'-5" | 2'-10" | 3'-2" | 3'-6" | 3'-11" | 4000 | | | | |
| | 50 | 2'-5" | 2'-10" | 3'-2" | 3'-6" | 3'-11" | 4000 | | | | |
| 14 | 30 | 2'-0" | 2'-4" | 2'-8" | 3'-8" | 4000 | | | | | |
| | 40 | 2'-2" | 2'-6" | 2'-10" | 3'-2" | 3'-6" | 3'-10" | 4'-2" | 4'-6" | 5'-6" | |
| | 50 | 2'-2" | 2'-6" | 2'-10" | 3'-2" | 3'-6" | 3'-10" | 4'-2" | 4'-6" | 5'-6" | |
| 16 | 30 | 2'-1" | 2'-5" | 2'-9" | 3'-10" | 4'-1" | 5'-0" | 4000 | | | |
| | 40 | 2'-0" | 2'-4" | 2'-7" | 2'-11" | 3'-2" | 3'-6" | 3'-10" | 4'-1" | 5'-0" | |
| | 50 | 2'-0" | 2'-4" | 2'-7" | 2'-11" | 3'-2" | 3'-6" | 3'-10" | 4'-1" | 5'-0" | |

TABLE 1-4 (FOR USE ON OVER 3'-0" TO 3'-6" OVERHANG (L) & 54" HORIZONTAL LEG LENGTH OF THE OVERHANG BRACKET)

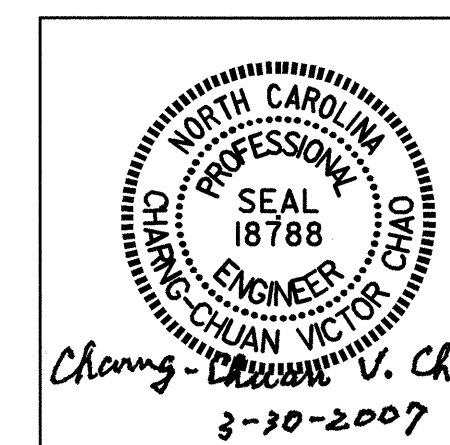
| AVG. SLAB THICKNESS (in) | BRACKET DIMENSION (in) | SCREED LOAD PER BRACKET | | | | | | | | | 45° HANGER SWL (lbs) |
|--------------------------|------------------------|-------------------------|-----------|-----------|-----------|-----------|-----------|-----------|----------|--------|----------------------|
| | | 2500 lbs. | 2250 lbs. | 2000 lbs. | 1750 lbs. | 1500 lbs. | 1250 lbs. | 1000 lbs. | 750 lbs. | 0 lbs. | |
| 10 | 30 | 2'-3" | 2'-11" | 3'-7" | 4'-1" | 4'-5" | 4'-9" | 5'-9" | 4000 | | |
| | 40 | 2'-1" | 2'-5" | 2'-9" | 3'-10" | 4'-1" | 4'-5" | 4'-9" | 5'-9" | 6000 | |
| | 50 | 2'-4" | 2'-8" | 3'-0" | 3'-4" | 3'-8" | 4'-1" | 4'-5" | 4'-9" | 5'-9" | |
| 12 | 30 | 2'-2" | 2'-6" | 2'-10" | 3'-4" | 3'-8" | 4'-1" | 4'-5" | 4'-9" | 5'-9" | |
| | 40 | 2'-2" | 2'-6" | 2'-10" | 3'-4" | 3'-8" | 4'-1" | 4'-5" | 4'-9" | 5'-9" | |
| | 50 | 2'-2" | 2'-6" | 2'-10" | 3'-4" | 3'-8" | 4'-1" | 4'-5" | 4'-9" | 5'-9" | |
| 14 | 30 | 2'-0" | 2'-4" | 2'-8" | 3'-8" | 4000 | | | | | |
| | 40 | 2'-0" | 2'-4" | 2'-8" | 3'-8" | 4000 | | | | | |
| | 50 | 2'-0" | 2'-4" | 2'-8" | 3'-8" | 4000 | | | | | |
| 16 | 30 | 2'-1" | 2'-5" | 2'-9" | 3'-10" | 4'-1" | 5'-0" | 4000 | | | |
| | 40 | 2'-1" | 2'-5" | 2'-9" | 3'-10" | 4'-1" | 5'-0" | 4000 | | | |
| | 50 | 2'-1" | 2'-5" | 2'-9" | 3'-10" | 4'-1" | 5'-0" | 4000 | | | |

DEFINITIONS

- SLPB = SCREED LOAD PER BRACKET ($R \times W$)
- R = SCREED LOAD FACTOR, OBTAINED FROM TABLE 2
- W = WHEEL LOAD
- S = BRACKET SPACING
- T = AVERAGE SLAB THICKNESS
- SWL = SAFE WORKING LOAD
- K = DIMENSION DEFINED ON "BRIDGE OVERHANG BRACKET SUMMARY" ON SHEET 2
- L = OVERHANG MEASURED FROM EDGE OF TOP FLANGE TO EDGE OF SUPERSTRUCTURE

PROJECT NO. B-3481
 JOHNSTON COUNTY
 STATION: 19+25.00 -L-

SHEET 1 OF 3



STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

STANDARD OVERHANG FALSEWORK

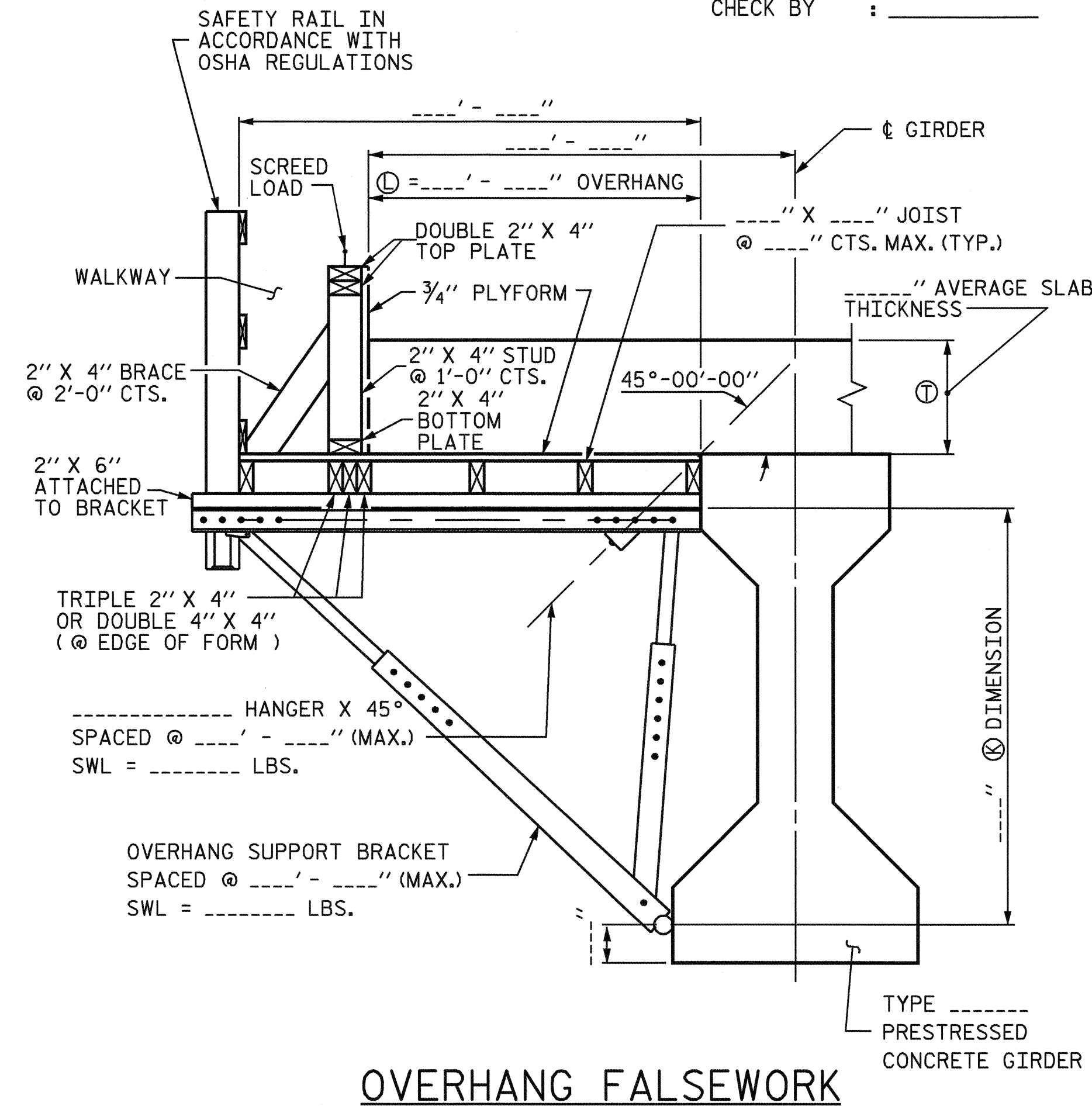
AASHTO TYPES
 III, IV, V, AND VI

| REVISIONS | | | | | | SHEET NO. |
|-----------|-----|-------|-----|-----|-------|-----------------|
| NO. | BY: | DATE: | NO. | BY: | DATE: | 5-29 |
| 1 | | | 3 | | | TOTAL SHEETS 31 |
| 2 | | | 4 | | | |

| | |
|------------------------------|-------|
| ASSEMBLED BY: | DATE: |
| CHECKED BY: | DATE: |
| DRAWN BY: R. WRIGHT 06/04 | REV. |
| CHECKED BY: C. V. CHAO 06/04 | |

BRIDGE OVERHANG BRACKET SUMMARY

TOTAL SCREED WEIGHT = _____ LBS. PROJECT No. : _____
 NUMBER OF SCREED WHEELS = _____ COUNTY : _____
 SCREED WHEEL LOAD (W) = _____ LBS. STATION : _____
 SCREED LOAD PER BRACKET = _____ LBS. DESCRIPTION : _____
 DATE : _____
 DESIGN BY : _____
 CHECK BY : _____



OVERHANG FALSEWORK

NOTES

DESIGN INCLUDES CONSTRUCTION LIVE LOAD 20 PSF ON THE AREA SUPPORTED AND 75 PLF AT THE OUTSIDE DECK OF OVERHANGS.
 REQUIRED MINIMUM DIAGONAL LEG CAPACITY: 3600 LB WORKING LOAD
 THE CONTRACTOR HAS THE OPTION OF SUBMITTING HIS OWN DESIGN FOR OVERHANG FALSEWORK IN ACCORDANCE WITH THE SPECIAL PROVISIONS.
 SUBMITTALS UTILIZING THE INSTRUCTIONS AND PROCEDURES DESCRIBED ON SHEET 1 OF 3 SHALL BE IN ACCORDANCE WITH THE APPLICABLE SECTIONS OF THE SPECIFICATIONS AND SPECIAL PROVISIONS, EXCEPT THAT CALCULATIONS FOR OVERHANG FALSEWORK NEED NOT BE SEALED BY A REGISTERED ENGINEER.
 FOR OVERHANG FALSEWORK BRACING DESIGN, SEE SHEET 3 OF 3.

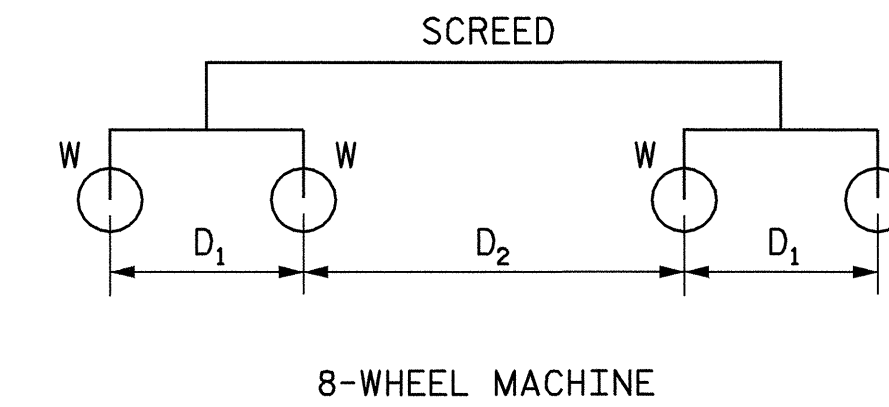
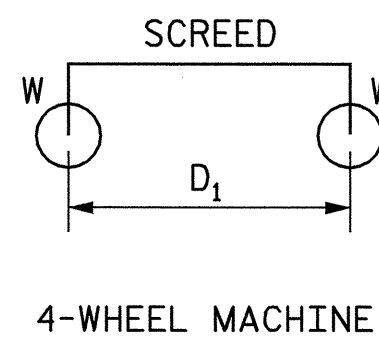


TABLE 2: SCREED LOAD FACTOR "R"

| 4 WHEEL MACHINE | |
|-----------------|------|
| S/D1 | R |
| <= 1.0 | 1.00 |
| 1.1 | 1.09 |
| 1.2 | 1.17 |
| 1.3 | 1.23 |
| 1.4 | 1.29 |
| 1.5 | 1.33 |
| 1.6 | 1.38 |
| 1.7 | 1.41 |
| 1.8 | 1.44 |
| 1.9 | 1.47 |
| 2.0 | 1.50 |
| 2.2 | 1.55 |
| 2.4 | 1.58 |
| 2.6 | 1.62 |
| 2.8 | 1.64 |
| 3.0 | 1.67 |
| 3.5 | 1.71 |
| 4.0 | 1.75 |

| | | THE SCREED LOAD FACTOR R (FOR 8 WHEEL MACHINE) | | | | | | | | | | | | | | | | | |
|------------------|--------|--|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|
| | | S/D ₂ | | | | | | | | | | | | | | | | | |
| S/D ₁ | | <= 1.0 | 1.1 | 1.2 | 1.3 | 1.4 | 1.5 | 1.6 | 1.7 | 1.8 | 1.9 | 2.0 | 2.2 | 2.4 | 2.6 | 2.8 | 3.0 | 3.5 | 4.0 |
| | <= 1.0 | <= 1.0 | 1.00 | 1.09 | 1.17 | 1.23 | 1.29 | 1.33 | 1.38 | 1.41 | 1.44 | 1.47 | 1.50 | 1.55 | 1.58 | 1.62 | 1.64 | 1.67 | 1.71 |
| 1.1 | 1.1 | 1.09 | 1.18 | 1.26 | 1.32 | 1.38 | 1.42 | 1.47 | 1.50 | 1.54 | 1.56 | 1.59 | 1.64 | 1.67 | 1.71 | 1.73 | 1.76 | 1.81 | 1.84 |
| 1.2 | 1.2 | 1.17 | 1.26 | 1.33 | 1.40 | 1.45 | 1.50 | 1.54 | 1.58 | 1.61 | 1.64 | 1.67 | 1.71 | 1.75 | 1.78 | 1.81 | 1.83 | 1.88 | 1.92 |
| 1.3 | 1.3 | 1.23 | 1.32 | 1.40 | 1.46 | 1.52 | 1.56 | 1.61 | 1.64 | 1.68 | 1.70 | 1.73 | 1.78 | 1.81 | 1.85 | 1.87 | 1.90 | 1.95 | 1.98 |
| 1.4 | 1.4 | 1.29 | 1.38 | 1.45 | 1.52 | 1.57 | 1.62 | 1.66 | 1.70 | 1.73 | 1.76 | 1.79 | 1.83 | 1.87 | 1.90 | 1.93 | 1.95 | 2.00 | 2.07 |
| 1.5 | 1.5 | 1.33 | 1.42 | 1.50 | 1.56 | 1.62 | 1.67 | 1.71 | 1.75 | 1.78 | 1.81 | 1.83 | 1.88 | 1.92 | 1.95 | 1.98 | 2.00 | 2.10 | 2.17 |
| 1.6 | 1.6 | 1.38 | 1.47 | 1.54 | 1.61 | 1.66 | 1.71 | 1.75 | 1.79 | 1.82 | 1.85 | 1.88 | 1.92 | 1.96 | 1.99 | 2.04 | 2.08 | 2.18 | 2.25 |
| 1.7 | 1.7 | 1.41 | 1.50 | 1.58 | 1.64 | 1.70 | 1.75 | 1.79 | 1.82 | 1.86 | 1.89 | 1.91 | 1.96 | 2.00 | 2.05 | 2.11 | 2.16 | 2.25 | 2.32 |
| 1.8 | 1.8 | 1.44 | 1.54 | 1.61 | 1.68 | 1.73 | 1.78 | 1.82 | 1.86 | 1.89 | 1.92 | 1.94 | 1.99 | 2.06 | 2.12 | 2.17 | 2.22 | 2.32 | 2.39 |
| 1.9 | 1.9 | 1.47 | 1.56 | 1.64 | 1.70 | 1.76 | 1.81 | 1.85 | 1.89 | 1.92 | 1.95 | 1.97 | 2.04 | 2.11 | 2.18 | 2.23 | 2.28 | 2.38 | 2.45 |
| 2.0 | 2.0 | 1.50 | 1.59 | 1.67 | 1.73 | 1.79 | 1.83 | 1.88 | 1.91 | 1.94 | 1.97 | 2.00 | 2.09 | 2.17 | 2.23 | 2.29 | 2.33 | 2.43 | 2.50 |
| 2.2 | 2.2 | 1.55 | 1.64 | 1.71 | 1.78 | 1.83 | 1.88 | 1.92 | 1.96 | 1.99 | 2.04 | 2.09 | 2.18 | 2.26 | 2.32 | 2.38 | 2.42 | 2.52 | 2.59 |
| 2.4 | 2.4 | 1.58 | 1.67 | 1.75 | 1.81 | 1.87 | 1.92 | 1.96 | 2.00 | 2.06 | 2.11 | 2.17 | 2.26 | 2.33 | 2.40 | 2.45 | 2.50 | 2.60 | 2.67 |
| 2.6 | 2.6 | 1.62 | 1.71 | 1.78 | 1.85 | 1.90 | 1.95 | 1.99 | 2.05 | 2.12 | 2.18 | 2.23 | 2.32 | 2.40 | 2.46 | 2.52 | 2.56 | 2.66 | 2.73 |
| 2.8 | 2.8 | 1.64 | 1.73 | 1.81 | 1.87 | 1.93 | 1.98 | 2.04 | 2.11 | 2.17 | 2.23 | 2.29 | 2.38 | 2.45 | 2.52 | 2.57 | 2.62 | 2.71 | 2.79 |
| 3.0 | 3.0 | 1.67 | 1.76 | 1.83 | 1.90 | 1.95 | 2.00 | 2.08 | 2.16 | 2.22 | 2.28 | 2.33 | 2.42 | 2.50 | 2.56 | 2.62 | 2.67 | 2.76 | 2.83 |
| 3.5 | 3.5 | 1.71 | 1.81 | 1.88 | 1.95 | 2.00 | 2.10 | 2.18 | 2.25 | 2.32 | 2.38 | 2.43 | 2.52 | 2.60 | 2.66 | 2.71 | 2.76 | 2.86 | 2.93 |
| 4.0 | 4.0 | 1.75 | 1.84 | 1.92 | 1.98 | 2.07 | 2.17 | 2.25 | 2.32 | 2.39 | 2.45 | 2.50 | 2.59 | 2.67 | 2.73 | 2.79 | 2.83 | 2.93 | 3.00 |

TABLE 3: ALLOWABLE SPAN LENGTH OF JOISTS AND JOIST SPACINGS

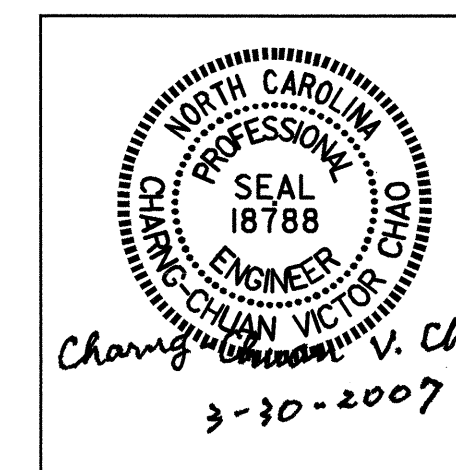
| AVG. SLAB THICKNESS (IN) | LUMBER JOIST SIZE (IN X IN) | JOIST SPACINGS | | | |
|--------------------------|-----------------------------|----------------|---------|---------|---------|
| | | 15 IN | 12 IN | 10 IN | 8 IN |
| 10 | 2 X 4 | — | 4' - 6" | 4' - 9" | 5' - 0" |
| | 4 X 4 | 5' - 9" | 6' - 3" | 6' - 6" | 6' - 7" |
| 12 | 2 X 4 | — | 4' - 3" | 4' - 9" | 5' - 0" |
| | 4 X 4 | 5' - 3" | 6' - 0" | 6' - 3" | 6' - 5" |
| 14 | 2 X 4 | — | 4' - 0" | 4' - 6" | 5' - 0" |
| | 4 X 4 | — | 5' - 6" | 6' - 0" | 6' - 4" |
| 16 | 2 X 4 | — | 4' - 0" | 4' - 3" | 4' - 9" |
| | 4 X 4 | — | 5' - 3" | 5' - 9" | 6' - 3" |

PROJECT NO. B-3481
JOHNSTON COUNTY
 STATION: 19+25.00 -L-

SHEET 2 OF 3

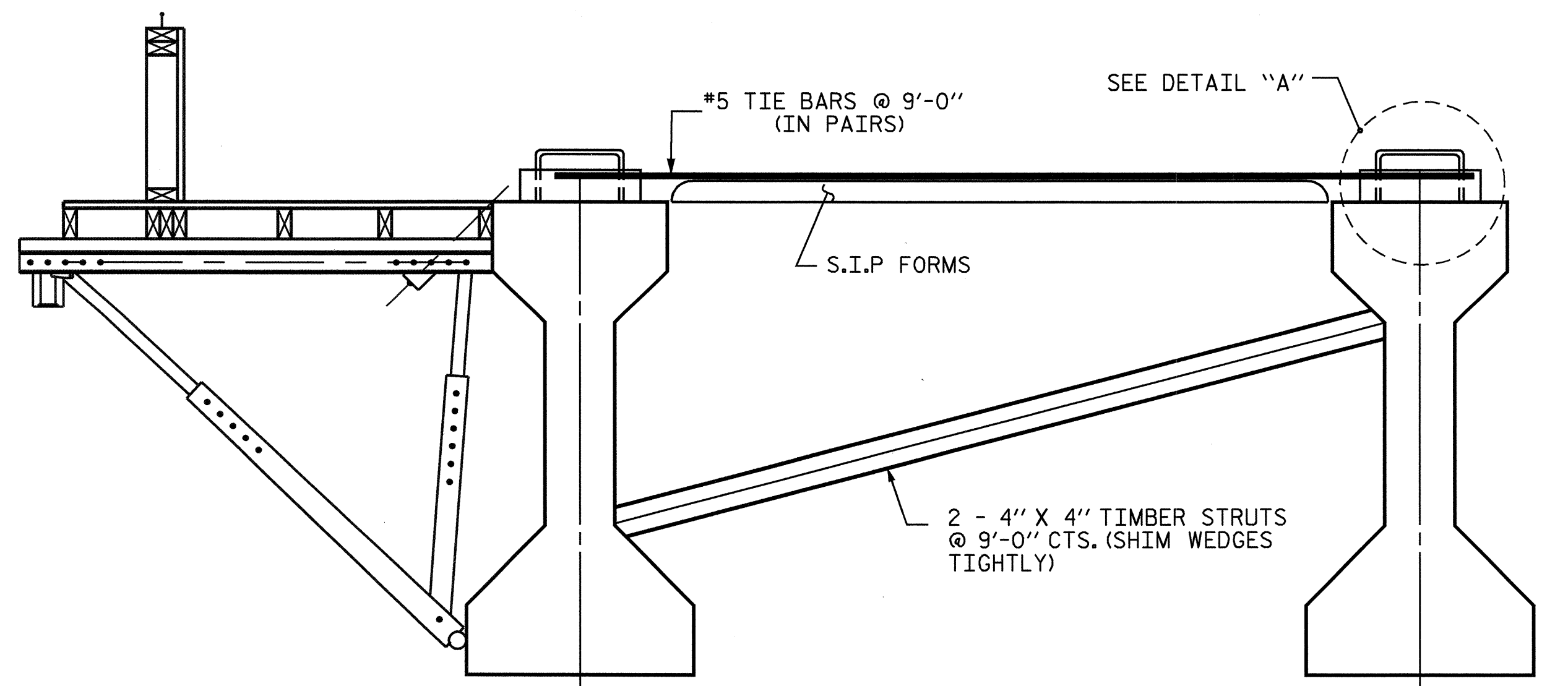
STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

STANDARD OVERHANG FALSEWORK
 AASHTO TYPES III, IV, V, AND VI



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

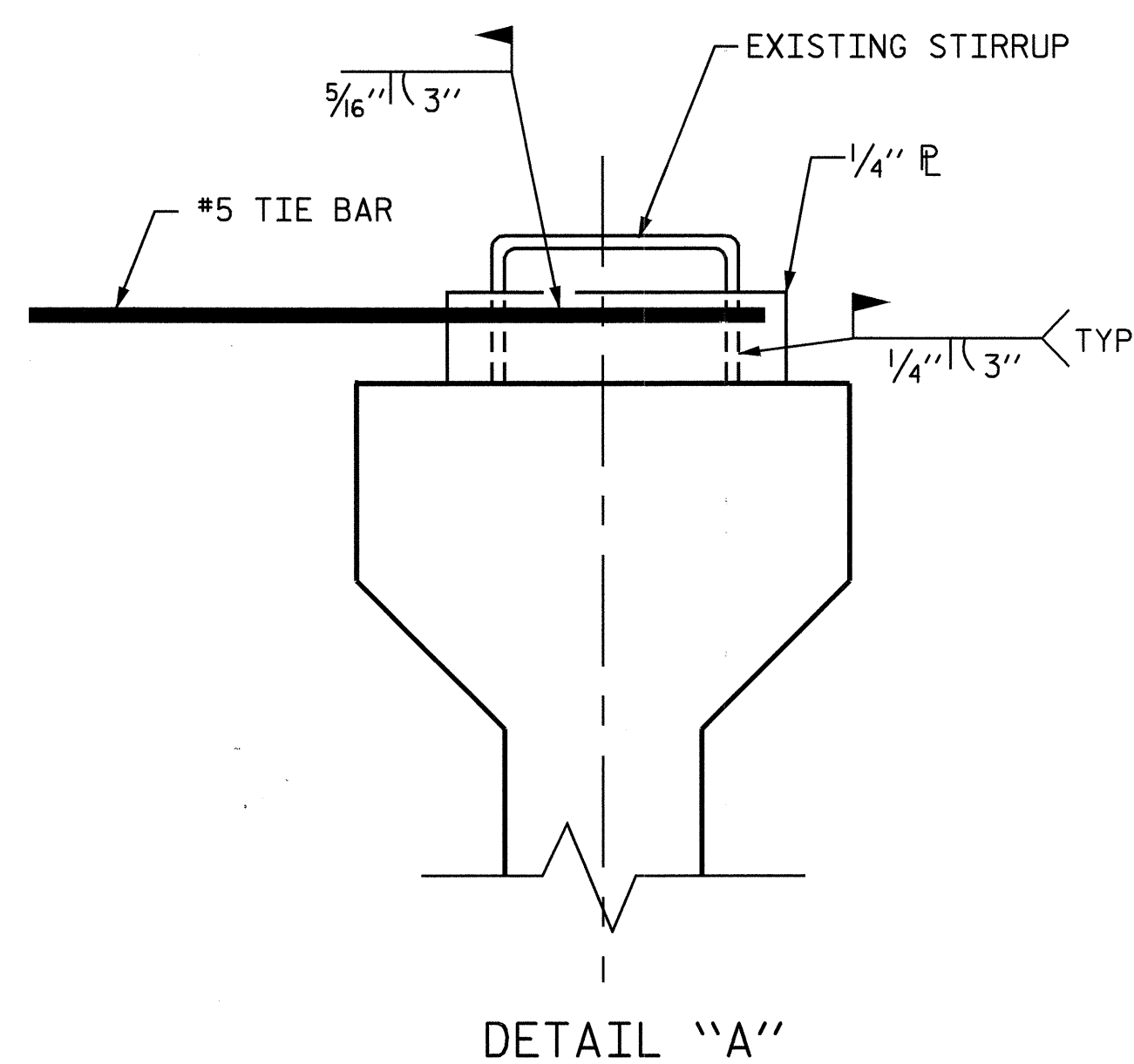
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| ASSEMBLED BY: | DATE: |
| CHECKED BY: | DATE: |
| DRAWN BY: R. WRIGHT 06/04 | REV. |
| CHECKED BY: C. V. CHAO 06/04 | |



EXTERIOR GIRDER

INTERIOR GIRDER

DETAIL OF REQUIRED OVERHANG FALSEWORK BRACING SYSTEM



NOTES:

EACH #5 TIE BAR SHALL BE WELDED TO ONE STIRRUP LOOP AS SHOWN IN DETAIL "A". #5 TIE BARS SHALL BE WELDED TO TWO ADJACENT STIRRUPS OF THE EXTERIOR GIRDER AND THE ADJACENT INTERIOR GIRDER BETWEEN PERMANENT DIAPHRAGMS. WELD STEEL PLATES IN BETWEEN THE TIE BARS AND THE STIRRUP LOOP. WELDING TWO TIE BARS TO THE SAME STIRRUP LOOP SHALL NOT BE PERMITTED.

MAXIMUM SPACING BETWEEN THE BRACING (TIE BARS-TIMBER STRUT) IS 9'-0" CTS. #5 TIE BARS SHALL BE LOCATED OVER A TIMBER STRUT.

INSTALL TIE BARS AND TIMBER STRUTS PRIOR TO PLACEMENT OF CONCRETE OR SCREED WEIGHT ONTO THE OVERHANG FALSEWORK.

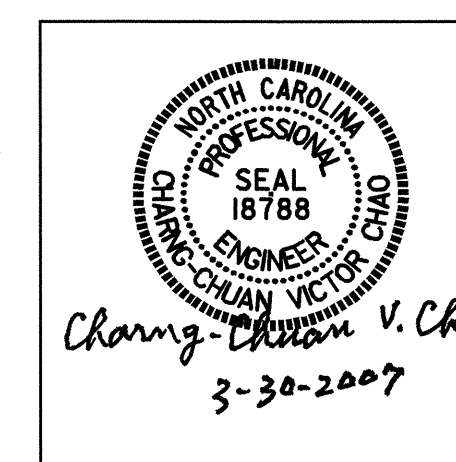
PROJECT NO. B-3481
JOHNSTON COUNTY
 STATION: 19+25.00 -L-

SHEET 3 OF 3

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

STANDARD OVERHANG FALSEWORK

AASHTO TYPES
 III, IV, V, AND VI



DRAWN BY: R. WRIGHT 06/04 DATE : _____
 CHECKED BY: C. V. CHAO 06/04 DATE : _____

30-MAR-2007 09:36
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 vchao

| REVISIONS | | | | | | SHEET NO. |
|-----------|-----|-------|-----|-----|-------|--------------|
| NO. | BY: | DATE: | NO. | BY: | DATE: | 5-31 |
| 1 | | | 3 | | | TOTAL SHEETS |
| 2 | | | 4 | | | 31 |

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