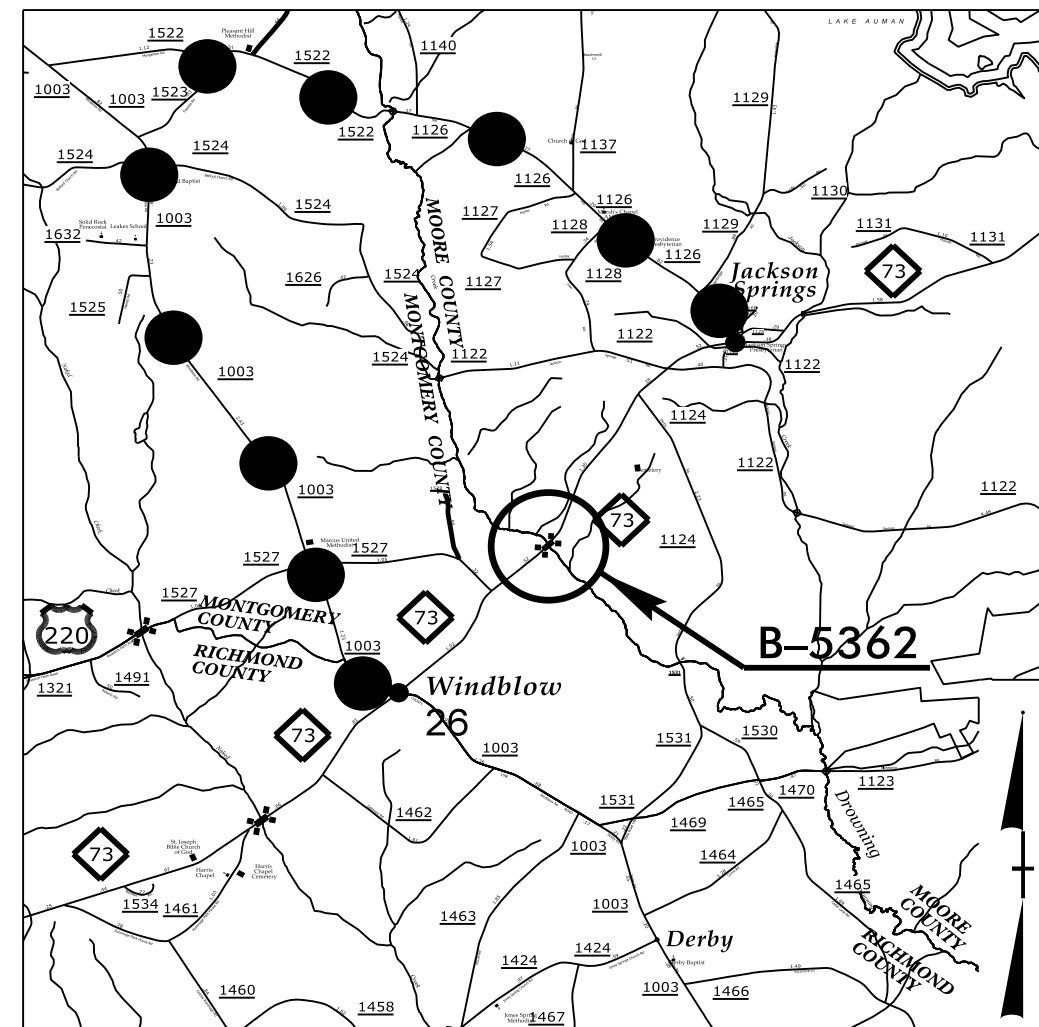


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and sealed by the individuals whose names and license
numbers appear on each page, on the dates appearing
with their signature on that page.**

**This file or an individual page
shall not be considered a certified document.**

CONTRACT: C203976 TIP PROJECT: B-5362



VICINITY MAP

● ● ● OFFSITE DETOUR

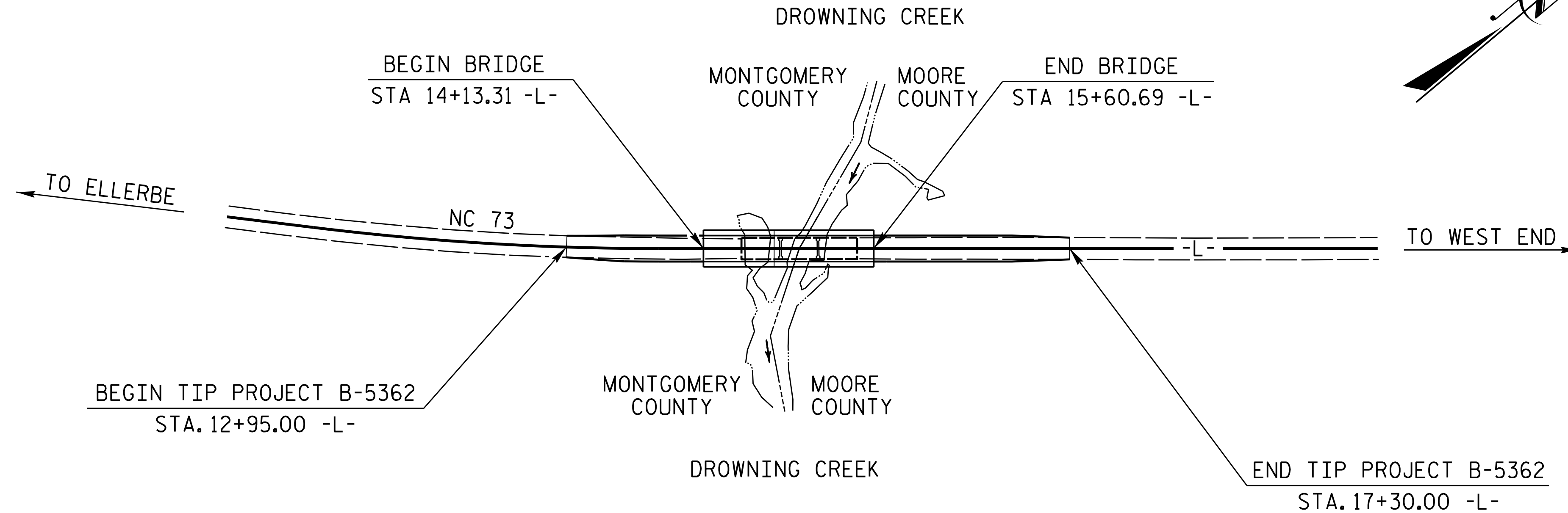
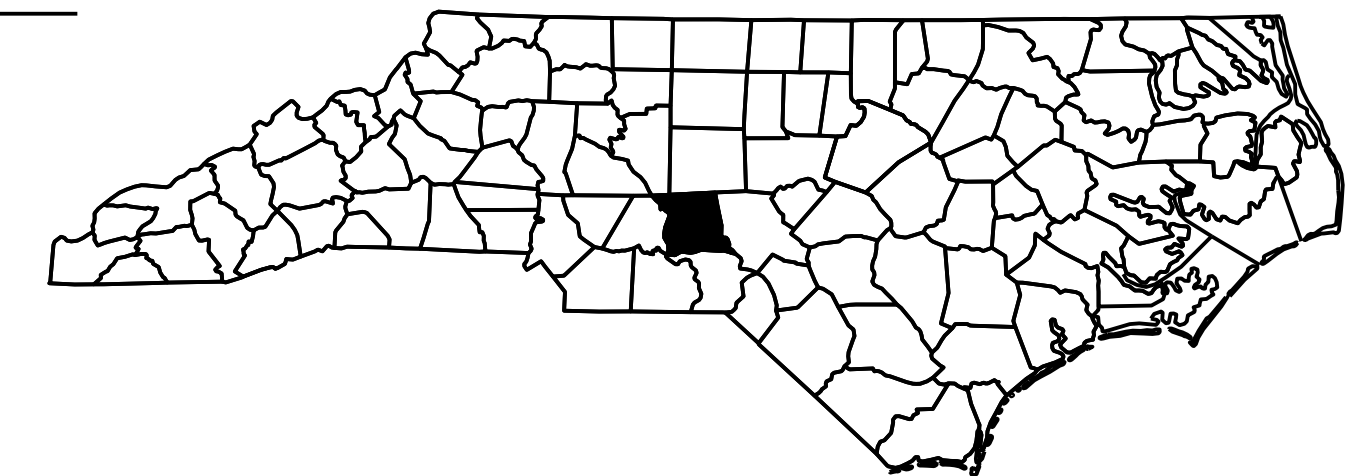
STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

MONTGOMERY/MOORE COUNTIES

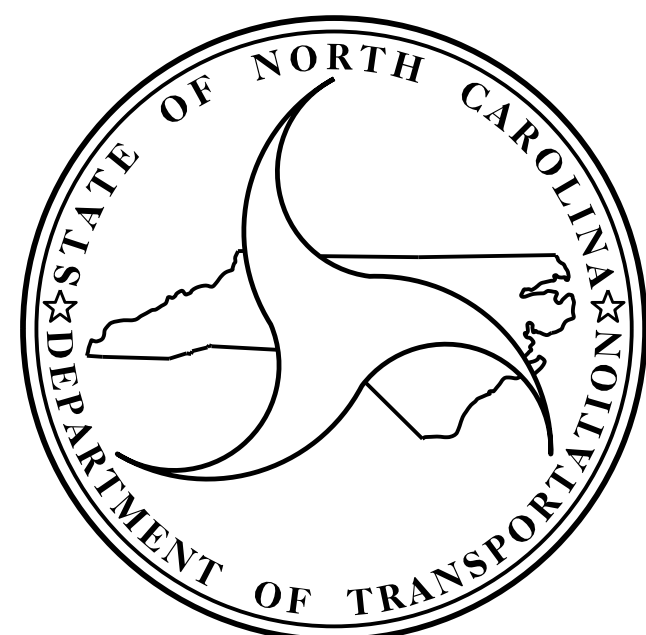
LOCATION: BRIDGE #53 OVER DROWNING CREEK ON NC 73

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

| STATE | STATE PROJECT REFERENCE NO. | SHEET NO. | TOTAL SHEETS |
|-----------------|-----------------------------|--------------|--------------|
| N.C. | B-5362 | | |
| STATE PROJ. NO. | F.A. PROJ. NO. | DESCRIPTION | |
| 46077.1.1 | BRSTP-0073(31) | P. E. | |
| 46077.2.1 | | R/WUTIL. | |
| 46077.3.1 | | CONSTRUCTION | |
| | | | |
| | | | |



STRUCTURE



DESIGN DATA
 ADT 2017 = 1,674
 ADT 2040 = 2,100
 DHV = 10 %
 D = 65 %
 T = 10 % *
 V = 55 MPH
 * TTST 3% + DUAL 7%
 FUNC. CLASS. = MAJOR COLLECTOR
 REGIONAL TIER

PROJECT LENGTH

LENGTH ROADWAY TIP PROJECT B-5362 = 0.054 MILE
 LENGTH STRUCTURE TIP PROJECT B-5362 = 0.028 MILE
 TOTAL LENGTH TIP PROJECT B-5362 = 0.082 MILE

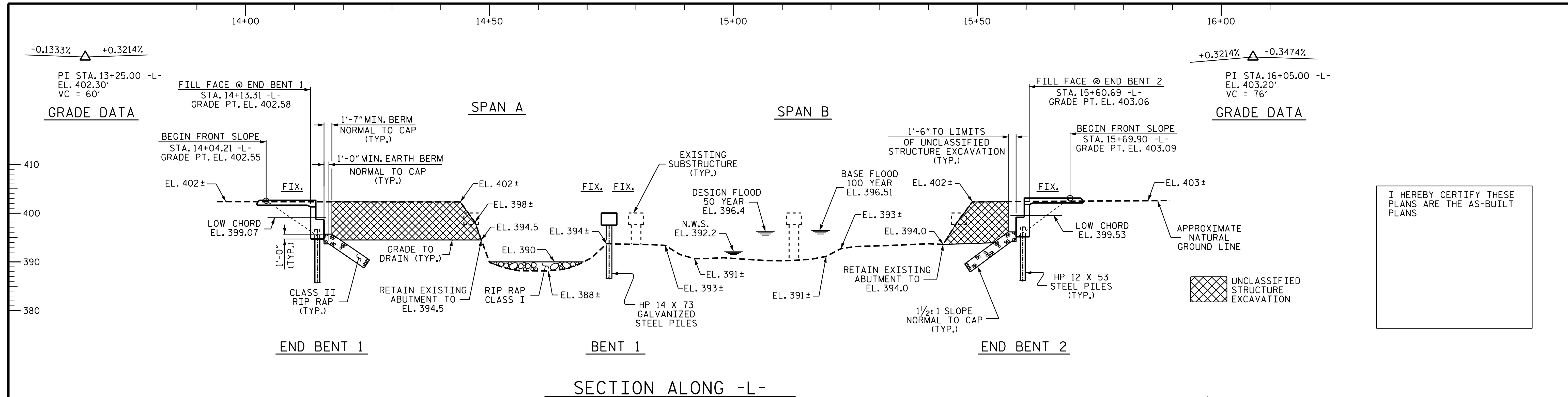
Prepared In the Office of:
DIVISION OF HIGHWAYS
 STRUCTURES MANAGEMENT UNIT
 1000 BIRCH RIDGE DR.
 RALEIGH, N.C. 27610

2012 STANDARD SPECIFICATIONS

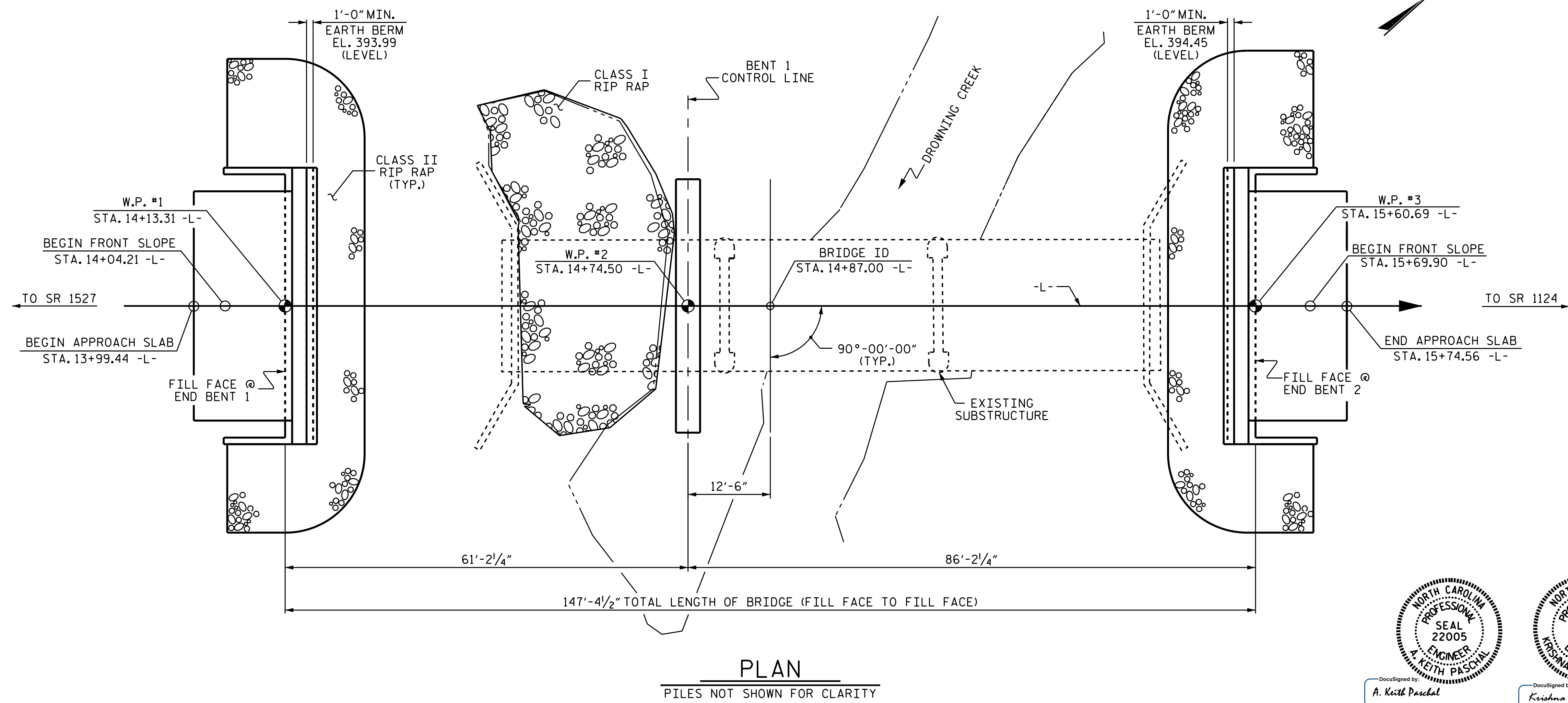
LETTING DATE : OCTOBER 17, 2017

A. KEITH PASCHAL, P.E.
PROJECT ENGINEER

KRISHNA P. SEDAI, P.E.
PROJECT DESIGN ENGINEER



I HEREBY CERTIFY THESE PLANS ARE THE AS-BUILT PLANS



PROJECT NO. B-5362
MONTGOMERY COUNTY
 STATION: 14+87.00 -L-
 SHEET 1 OF 3 REPLACES BRIDGE No. 53

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

GENERAL DRAWING
 FOR BRIDGE OVER DROWNING
 CREEK ON NC 73 BETWEEN
 SR 1527 AND SR 1124

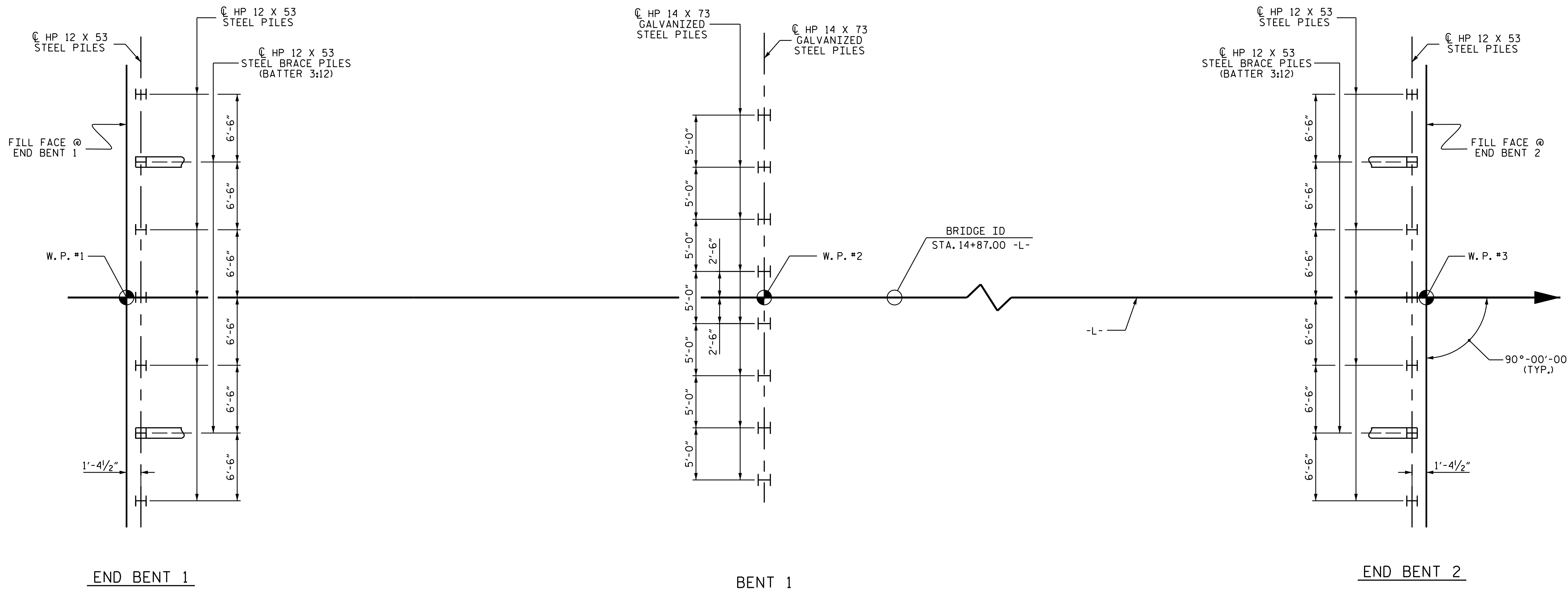
PROFESSIONAL SEAL
 SEAL 22005
 ENGINEER
 A. KEITH PASCHAL
 DocuSigned by:
 A. Keith Paschal
 8/15/2017

PROFESSIONAL SEAL
 SEAL 031583
 ENGINEER
 KRISHNA PRASAD SEDAI
 DocuSigned by:
 Krishna P. Sedai
 8/15/2017

DRAWN BY : A. SORSENGINH DATE : 7/2016
 CHECKED BY : E. K. POPE DATE : 4/2017
 DESIGN ENGINEER OF RECORD: A. SORSENGINH DATE : 7/2017

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

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED



FOUNDATION LAYOUT

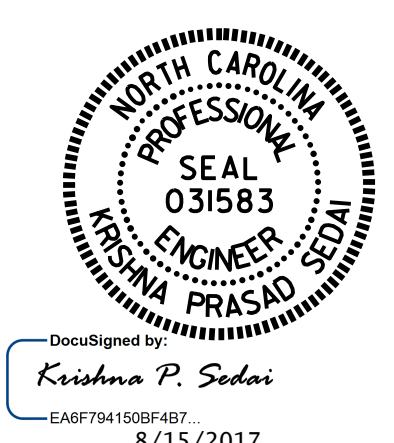
DIMENSIONS LOCATING PILES
ARE SHOWN TO THE CENTERLINE OF PILES.

NOTES

- FOR PILES, SEE GEOTECHNICAL SPECIAL PROVISIONS AND SECTION 450 OF THE STANDARD SPECIFICATIONS.
- PILES AT END BENT 1 AND END BENT 2 ARE DESIGNED FOR A FACTORED RESISTANCE OF 105 TONS PER PILE.
- PILES AT BENT 1 ARE DESIGNED FOR A FACTORED RESISTANCE OF 159 TONS PER PILE.
- DRIVE PILES AT END BENT 1 AND END BENT 2 TO A REQUIRED DRIVING RESISTANCE OF 175 TONS PER PILE.
- DRIVE PILES AT BENT 1 TO A REQUIRED DRIVING RESISTANCE OF 266 TONS PER PILE. THIS REQUIRED DRIVING RESISTANCE INCLUDES ADDITIONAL RESISTANCE FOR DOWDRAG OR SCOUR.
- INSTALL PILES AT BENT 1 TO A TIP ELEVATION NO HIGHER THAN 374.0.
- THE SCOUR CRITICAL ELEVATION FOR BENT 1 IS ELEVATION 382.0 SCOUR CRITICAL ELEVATIONS ARE USED TO MONITOR POSSIBLE SCOUR PROBLEMS DURING THE LIFE OF THE STRUCTURE.

PROJECT NO. B-5362
MONTGOMERY COUNTY
 STATION: 14+87.00 -L-

SHEET 2 OF 3



STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

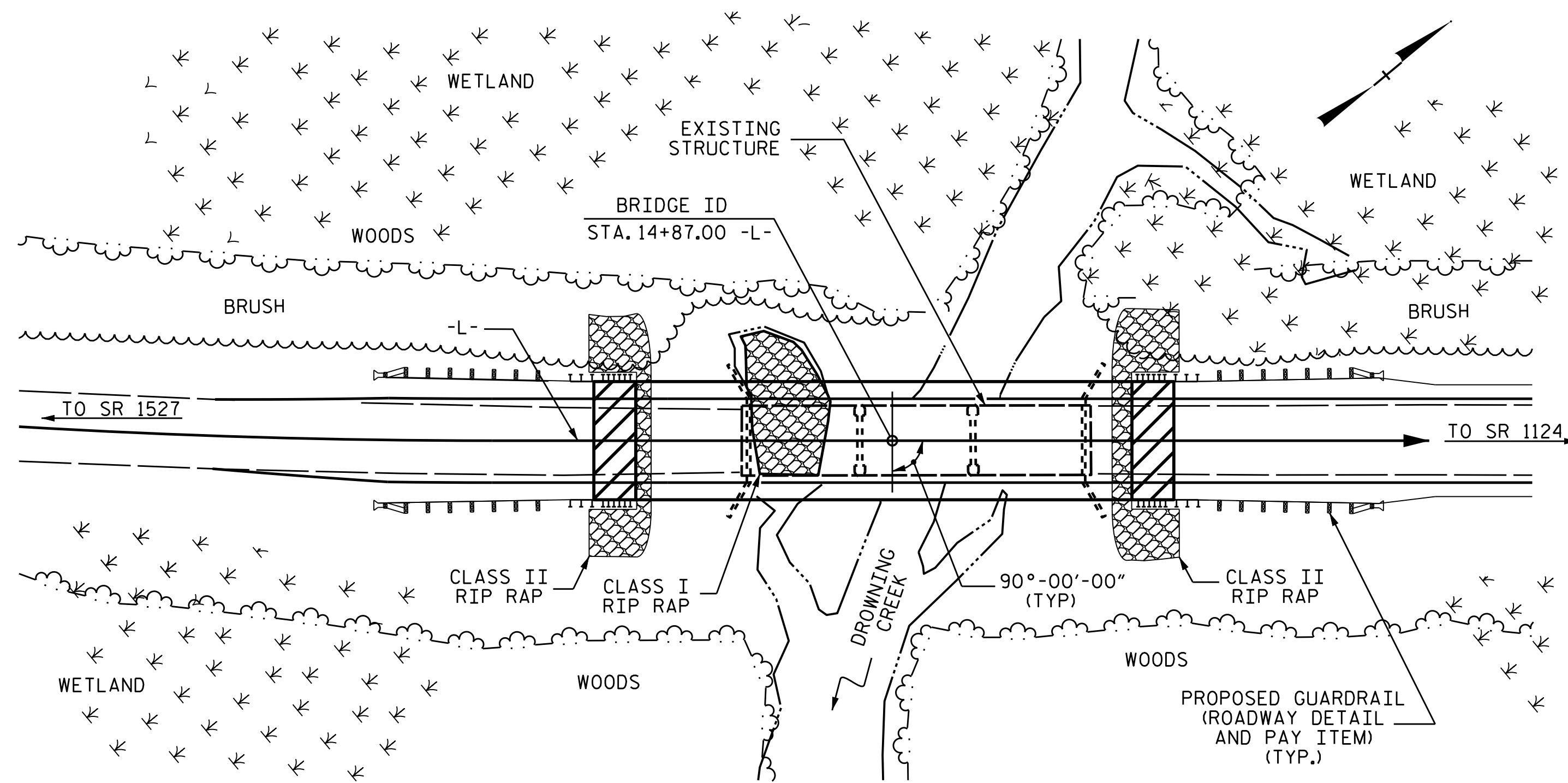
GENERAL DRAWING
 FOR BRIDGE OVER DROWNING
 CREEK ON NC 73 BETWEEN
 SR 1527 AND SR 1124

| | | | |
|----------------------------|---------------|--------|--------|
| DRAWN BY : | A. SORSENGINH | DATE : | 7/2016 |
| CHECKED BY : | E. K. POPE | DATE : | 4/2017 |
| DESIGN ENGINEER OF RECORD: | A. SORSENGINH | DATE : | 7/2017 |

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

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

BM #1: RR SPIKE IN BASE OF 18" ASH TREE, 57' RIGHT OF STA. 14+57.00 -L-, ELEV. 396.00'



HYDRAULIC DATA

| | |
|-----------------------------|----------------|
| DESIGN DISCHARGE | = 1,200 C.F.S |
| FREQUENCY OF DESIGN FLOOD | = 50 YRS. |
| DESIGN HIGH WATER ELEVATION | = 396.4 |
| DRAINAGE AREA | = 31.9 SQ. MI. |
| BASE DISCHARGE (Q100) | = 1,300 C.F.S |
| BASE HIGH WATER ELEVATION | = 396.51 |

OVERTOPPING FLOOD DATA

| | |
|--------------------------|---------------|
| OVERTOPPING DISCHARGE | = 9,000 C.F.S |
| FREQUENCY OF OVERTOPPING | = 500++ YRS. |
| OVERTOPPING ELEVATION | = 402.1 * |

* OVERTOPPING ELEVATION EQUALS NORMAL CROWN AT SAG LOCATION, STATION 10+10.00 -L-

FOR UTILITY INFORMATION, SEE UTILITY PLANS AND SPECIAL PROVISIONS.

LOCATION SKETCH

TOTAL BILL OF MATERIAL

| | REMOVAL OF EXISTING STRUCTURE | UNCLASSIFIED STRUCTURE EXCAVATION | CONCRETE WEARING SURFACE | GROOVING BRIDGE FLOORS | CLASS A CONCRETE | BRIDGE APPROACH SLABS | REINFORCING STEEL | PILE DRIVING EQUIPMENT SETUP FOR HP 12 X 53 STEEL PILES | PILE DRIVING EQUIPMENT SETUP FOR HP 14 X 73 GALVANIZED STEEL PILES |
|----------------|-------------------------------|-----------------------------------|--------------------------|------------------------|------------------|-----------------------|-------------------|---|--|
| | LUMP SUM | LUMP SUM | SO. FT. | SO. FT. | CU. YDS. | LUMP SUM | LBS. | EA. | EA. |
| SUPERSTRUCTURE | | | 4765 | 5144 | | | | | |
| END BENT 1 | | LUMP SUM | | | 27.4 | | 3763 | 7 | |
| BENT 1 | | | | | 12.7 | | 2932 | | 8 |
| END BENT 2 | | LUMP SUM | | | 27.4 | | 3763 | 7 | |
| TOTAL | LUMP SUM | LUMP SUM | 4765 | 5144 | 67.5 | LUMP SUM | 10458 | 14 | 8 |

TOTAL BILL OF MATERIAL

| HP 12 X 53 STEEL PILES | | HP 14 X 73 GALVANIZED STEEL PILES | | CONCRETE BARRIER RAIL | RIP RAP CLASS I | RIP RAP CLASS II (2'-0" THICK) | GEOTEXTILE FOR DRAINAGE | ELASTOMERIC BEARINGS | 3'-0" X 2'-9" PRESTRESSED CONCRETE BOX BEAMS | | ASBESTOS ASSESSMENT |
|------------------------|---------|-----------------------------------|---------|-----------------------|-----------------|--------------------------------|-------------------------|----------------------|--|---------|---------------------|
| NO. | LIN.FT. | NO. | LIN.FT. | LIN.FT. | TONS | TONS | SO.YDS. | LUMP SUM | NO. | LIN.FT. | LUMP SUM |
| | | | | 290 | | | | LUMP SUM | 24 | 1740.0 | |
| 7 | 105 | | | | | 80 | 90 | | | | |
| | | 8 | 240 | | 90 | | 105 | | | | |
| 7 | 140 | | | | | 100 | 110 | | | | |
| 14 | 245 | 8 | 240 | 290 | 90 | 180 | 305 | LUMP SUM | 24 | 1740.0 | LUMP SUM |

NOTES

- ASSUMED LIVE LOAD = HL-93 OR ALTERNATE LOADING.
- THIS BRIDGE HAS BEEN DESIGNED IN ACCORDANCE WITH THE AASHTO LRFD BRIDGE DESIGN SPECIFICATIONS.
- THIS BRIDGE IS LOCATED IN SEISMIC ZONE 1.
- FOR OTHER DESIGN DATA AND GENERAL NOTES, SEE SHEET SN.
- 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.
- THE MATERIAL SHOWN IN THE CROSS-HATCHED AREA ON SHEET S-1 SHALL BE EXCAVATED FOR A DISTANCE OF 30 FEET LEFT SIDE OF END BENT 1 AND EACH SIDE OF END BENT 2, AND 55 FEET RIGHT SIDE OF END BENT 1 FROM CENTERLINE ROADWAY AS DIRECTED BY THE ENGINEER. THIS WORK WILL BE PAID FOR AT THE CONTRACT LUMP SUM PRICE FOR UNCLASSIFIED STRUCTURE EXCAVATION. SEE SECTION 412 OF THE STANDARD SPECIFICATIONS.
- FOR EROSION CONTROL MEASURES, SEE EROSION CONTROL PLANS.
- THIS STRUCTURE HAS BEEN DESIGNED IN ACCORDANCE WITH "HEC 18-EVALUATING SCOUR AT BRIDGES."
- FOR CONCRETE WEARING SURFACE, SEE SPECIAL PROVISIONS.
- THE EXISTING STRUCTURE CONSISTING OF 3 SPANS; 1 @ 32'-3", 1 @ 32'-7", 1 @ 32'-1" WITH A CLEAR ROADWAY WIDTH OF 20'-0" ON A REINFORCED CONCRETE DECK GIRDER FLOOR SYSTEM WITH A 5" ASPHALT WEARING SURFACE ON A SUBSTRUCTURE CONSISTING OF FULL HEIGHT ABUTMENT END BENTS AND INTERIOR BENT WITH REINFORCING CONCRETE CAP AND PILES 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 FURTHER DETERIORATE, THIS LOAD LIMITATION MAY BE REDUCED AS FOUND NECESSARY DURING THE LIFE OF THE PROJECT.

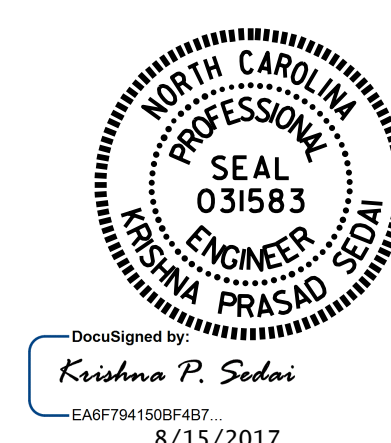
THE SUBSTRUCTURE OF THE EXISTING BRIDGE INDICATED ON THE PLANS IS FROM THE BEST INFORMATION AVAILABLE. SINCE THIS INFORMATION IS SHOWN FOR THE CONVENIENCE OF THE CONTRACTOR, THE CONTRACTOR SHALL HAVE NO CLAIM WHATSOEVER AGAINST THE DEPARTMENT OF TRANSPORTATION FOR ANY DELAYS OR ADDITIONAL COST INCURRED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

REMOVAL OF THE EXISTING BRIDGE SHALL BE PERFORMED IN A MANNER THAT PREVENTS DEBRIS FROM FALLING INTO THE WATER. THE CONTRACTOR SHALL SUBMIT DEMOLITION PLAN FOR REVIEW AND REMOVE THE BRIDGE IN ACCORDANCE WITH ARTICLE 402-2 OF THE STANDARD SPECIFICATIONS.

FOR ASBESTOS ASSESEMENT FOR BRIDGE DEMOLITION AND RENOVATION ACTIVITIES, SEE SPECIAL PROVISIONS.

PROJECT NO. B-5362
MONTGOMERY COUNTY
 STATION: 14+87.00 -L-

SHEET 3 OF 3



STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

GENERAL DRAWING
 FOR BRIDGE OVER DROWNING
 CREEK ON NC 73 BETWEEN
 SR 1527 AND SR 1124

DRAWN BY : A. SORSENGINH DATE : 7/2016
 CHECKED BY : E. K. POPE DATE : 4/2017
 DESIGN ENGINEER OF RECORD: A. SORSENGINH DATE : 7/2017

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

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

LOAD AND RESISTANCE FACTOR RATING (LRFR) SUMMARY FOR PRESTRESSED CONCRETE BOX BEAMS

| LEVEL | VEHICLE | WEIGHT (W) (TONS) | CONTROLLING LOAD RATING # | MINIMUM RATING FACTORS (RF) | TONS = W X RF | STRENGTH I LIMIT STATE | | | | | | | | | | SERVICE III LIMIT STATE | | | | | COMMENT NUMBER | | | |
|--------------------------|------------|----------------------|---------------------------------|-----------------------------------|---------------|------------------------|------------------------------|---------------|------|-----------------|---|------------------------------|---------------|------|-----------------|---|---------------------|------------------------------|---------------|------|----------------|-----------------|---|--|
| | | | | | | MOMENT | | | | | SHEAR | | | | | MOMENT | | | | | | | | |
| | | | | | | LIVELOAD FACTORS | DISTRIBUTION FACTORS (DF) | RATING FACTOR | SPAN | GIRDER LOCATION | DISTANCE FROM LEFT END OF SPAN (ft) | DISTRIBUTION FACTORS (DF) | RATING FACTOR | SPAN | GIRDER LOCATION | DISTANCE FROM LEFT END OF SPAN (ft) | LIVELOAD FACTORS | DISTRIBUTION FACTORS (DF) | RATING FACTOR | SPAN | | GIRDER LOCATION | DISTANCE FROM LEFT END OF SPAN (ft) | |
| DESIGN LOAD RATING | HL-93(Inv) | N/A | 1 | 1.14 | -- | 1.75 | 0.272 | 1.54 | A | EL | 29.25 | 0.513 | 1.22 | A | EL | 5.85 | 0.80 | 0.272 | 1.14 | A | EL | 29.250 | | |
| | HL-93(OPr) | N/A | -- | 1.59 | -- | 1.35 | 0.272 | 2.00 | A | EL | 29.25 | 0.513 | 1.58 | A | EL | 5.85 | N/A | -- | -- | -- | -- | -- | | |
| | HS-20(Inv) | 36.000 | 2 | 1.45 | 52.087 | 1.75 | 0.272 | 1.95 | A | EL | 29.25 | 0.513 | 1.47 | A | EL | 5.85 | 0.80 | 0.272 | 1.45 | A | EL | 29.250 | | |
| | HS-20(OPr) | 36.000 | -- | 1.91 | 68.788 | 1.35 | 0.272 | 2.53 | A | EL | 29.25 | 0.513 | 1.91 | A | EL | 5.85 | N/A | -- | -- | -- | -- | -- | | |
| LEGAL LOAD RATING | SV | SNSH | 13.500 | -- | 3.11 | 41.955 | 1.40 | 0.272 | 5.24 | A | EL | 29.25 | 0.513 | 4.25 | A | EL | 5.85 | 0.80 | 0.272 | 3.11 | A | EL | 29.250 | |
| | | SNGARBS2 | 20.000 | -- | 2.38 | 47.643 | 1.40 | 0.272 | 4.02 | A | EL | 29.25 | 0.513 | 3.06 | A | EL | 5.85 | 0.80 | 0.272 | 2.38 | A | EL | 29.250 | |
| | | SNAGRIS2 | 22.000 | -- | 2.29 | 50.266 | 1.40 | 0.272 | 3.85 | A | EL | 29.25 | 0.513 | 2.86 | A | EL | 5.85 | 0.80 | 0.272 | 2.28 | A | EL | 29.250 | |
| | | SNCOTTS3 | 27.250 | -- | 1.55 | 42.194 | 1.40 | 0.272 | 2.61 | A | EL | 29.25 | 0.513 | 2.13 | A | EL | 5.85 | 0.80 | 0.272 | 1.55 | A | EL | 29.250 | |
| | | SNAGGRS4 | 34.925 | -- | 1.32 | 46.070 | 1.40 | 0.272 | 2.22 | A | EL | 29.25 | 0.513 | 1.79 | A | EL | 5.85 | 0.80 | 0.272 | 1.32 | A | EL | 29.250 | |
| | | SNS5A | 35.550 | -- | 1.29 | 45.796 | 1.40 | 0.272 | 2.17 | A | EL | 29.25 | 0.513 | 1.83 | A | EL | 5.85 | 0.80 | 0.272 | 1.29 | A | EL | 29.250 | |
| | | SNS6A | 39.950 | -- | 1.19 | 47.650 | 1.40 | 0.272 | 2.01 | A | EL | 29.25 | 0.513 | 1.68 | A | EL | 5.85 | 0.80 | 0.272 | 1.19 | A | EL | 29.250 | |
| | TTST | SNS7B | 42.000 | -- | 1.14 | 47.723 | 1.40 | 0.272 | 1.92 | A | EL | 29.25 | 0.513 | 1.67 | A | EL | 5.85 | 0.80 | 0.272 | 1.14 | A | EL | 29.250 | |
| | | TNAGRIT3 | 33.000 | -- | 1.46 | 48.104 | 1.40 | 0.272 | 2.46 | A | EL | 29.25 | 0.513 | 1.99 | A | EL | 5.85 | 0.80 | 0.272 | 1.46 | A | EL | 29.250 | |
| | | TNT4A | 33.075 | -- | 1.47 | 48.525 | 1.40 | 0.272 | 2.47 | A | EL | 29.25 | 0.513 | 1.93 | A | EL | 5.85 | 0.80 | 0.272 | 1.47 | A | EL | 29.250 | |
| | | TNT6A | 41.600 | -- | 1.21 | 50.342 | 1.40 | 0.272 | 2.04 | A | EL | 29.25 | 0.513 | 1.81 | A | EL | 5.85 | 0.80 | 0.272 | 1.21 | A | EL | 29.250 | |
| | | TNT7A | 42.000 | -- | 1.22 | 51.320 | 1.40 | 0.272 | 2.06 | A | EL | 29.25 | 0.513 | 1.73 | A | EL | 5.85 | 0.80 | 0.272 | 1.22 | A | EL | 29.250 | |
| | | TNT7B | 42.000 | -- | 1.28 | 53.602 | 1.40 | 0.272 | 2.15 | A | EL | 29.25 | 0.513 | 1.62 | A | EL | 5.85 | 0.80 | 0.272 | 1.28 | A | EL | 29.250 | |
| | | TNAGRIT4 | 43.000 | -- | 1.21 | 51.837 | 1.40 | 0.272 | 2.03 | A | EL | 29.25 | 0.513 | 1.56 | A | EL | 5.85 | 0.80 | 0.272 | 1.21 | A | EL | 29.250 | |
| TNAGT5A | 45.000 | -- | 1.13 | 50.927 | 1.40 | 0.272 | 1.91 | A | EL | 29.25 | 0.513 | 1.57 | A | EL | 5.85 | 0.80 | 0.272 | 1.13 | A | EL | 29.250 | | | |
| TNAGT5B | 45.000 | 3 | 1.11 | 50.116 | 1.40 | 0.272 | 1.88 | A | EL | 29.25 | 0.513 | 1.49 | A | EL | 5.85 | 0.80 | 0.272 | 1.11 | A | EL | 29.250 | | | |

LOAD FACTORS:

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

NOTES:

MINIMUM RATING FACTORS ARE BASED ON THE STRENGTH I AND SERVICE III LIMIT STATES.
ALLOWABLE STRESSES FOR SERVICE III LIMIT STATE ARE AS REQUIRED FOR DESIGN.

CONTROLLING LOAD RATING

1 DESIGN LOAD RATING (HL-93)

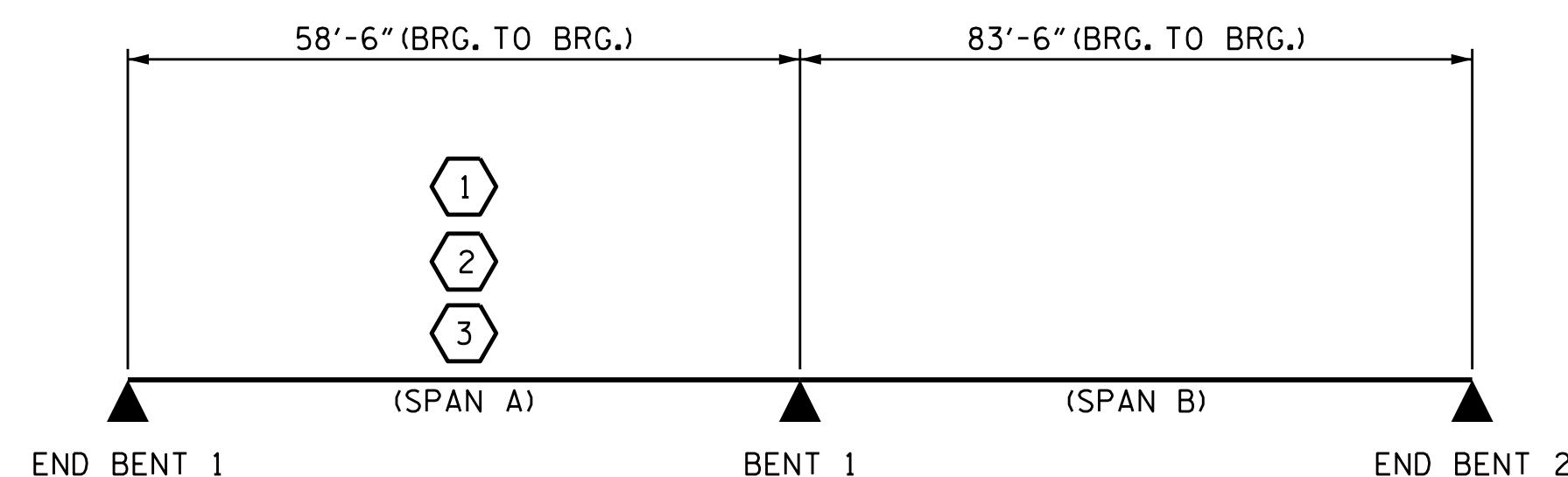
2 DESIGN LOAD RATING (HS-20)

3 LEGAL LOAD RATING **

** SEE CHART FOR VEHICLE TYPE

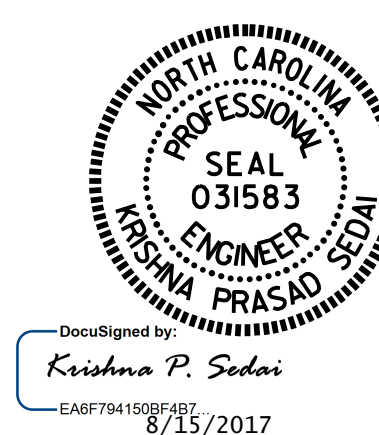
GIRDER LOCATION

I - INTERIOR GIRDER
EL - EXTERIOR LEFT GIRDER
ER - EXTERIOR RIGHT GIRDER



LRFR SUMMARY

PROJECT NO. B-5362
MONTGOMERY COUNTY
 STATION: 14+87.00 -L-



STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH
 LRFR SUMMARY FOR
 PRESTRESSED CONCRETE
 BOX BEAM UNIT
 (NON-INTERSTATE TRAFFIC)

DRAWN BY : H. A. LOCKLEAR DATE : 5/2016
 CHECKED BY : E. K. POPE DATE : 5/2017
 DESIGN ENGINEER OF RECORD: H. A. LOCKLEAR DATE : 5/2017

DOCUMENT NOT CONSIDERED
 FINAL UNLESS ALL
 SIGNATURES COMPLETED

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

NOTES

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

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

FLAME CUTTING OF THE TRANSVERSE POST-TENSIONING STRAND IS NOT ALLOWED.

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

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

THE BACKER RODS SHALL CONFORM TO THE REQUIREMENTS OF TYPE M BOND BREAKER. SEE SECTION 1028 OF THE STANDARD SPECIFICATIONS.

THE TRANSFER OF LOAD FROM THE ANCHORAGES TO THE BOX BEAM UNIT SHALL BE DONE WHEN THE CONCRETE HAS REACHED A COMPRESSIVE STRENGTH OF NOT LESS THAN 6,000 PSI.

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

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

APPLY EPOXY PROTECTIVE COATING TO BOX BEAM UNIT ENDS.

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

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

FOR GROUT FOR STRUCTURES, SEE SPECIAL PROVISIONS.

THE PERMITTED THREADED INSERTS ARE DETAILED AS AN OPTION FOR THE CONTRACTOR TO ATTACH FALSEWORK AND FORMWORK DURING CONSTRUCTION.

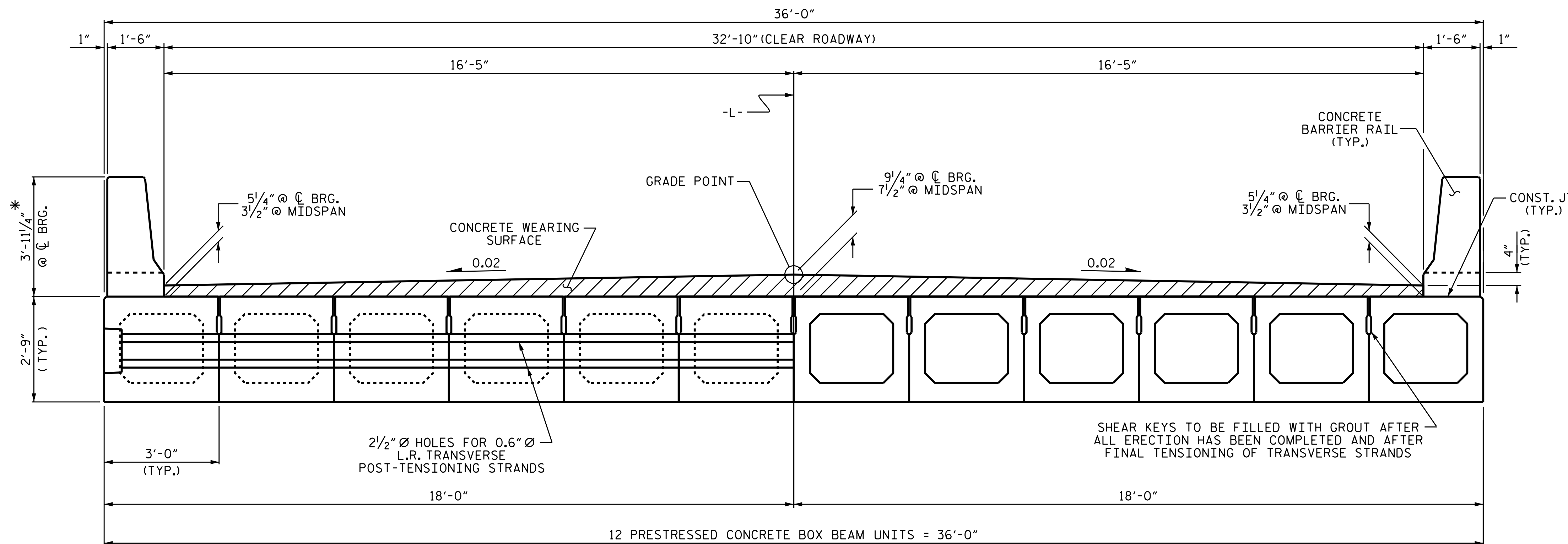
THE PERMITTED THREADED INSERTS IN THE EXTERIOR UNITS SHALL BE SIZED BY THE CONTRACTOR, SPACED AT 4'-0" CENTERS AND GALVANIZED IN ACCORDANCE WITH SECTION 1076 OF THE STANDARD SPECIFICATIONS. STAINLESS STEEL THREADED INSERTS MAY BE USED AS AN ALTERNATE.

THE PERMITTED THREADED INSERTS SHALL BE GROUTED BY THE CONTRACTOR IMMEDIATELY FOLLOWING REMOVAL OF THE FALSEWORK.

THE COST OF THE PERMITTED THREADED INSERTS SHALL BE INCLUDED IN THE PRICE BID FOR THE PRECAST UNITS.

THE DRAIN OPENING AT THE GUTTERLINE SHALL BE 4" X 5". THE HEIGHT OF THE BLOCKOUT IN THE VERTICAL CONCRETE BARRIER RAIL SHALL EXTEND FROM THE TOP OF THE BOX BEAM UNIT TO THE TOP OF THE DRAIN OPENING.

APPLY EPOXY PROTECTIVE COATING TO EXTERIOR FACE OF THE EXTERIOR BOX BEAM UNITS THAT REQUIRE DRAINS IN THE BARRIER RAIL.



HALF SECTION
AT INTERMEDIATE DIAPHRAGMS

HALF SECTION
THROUGH VOIDS

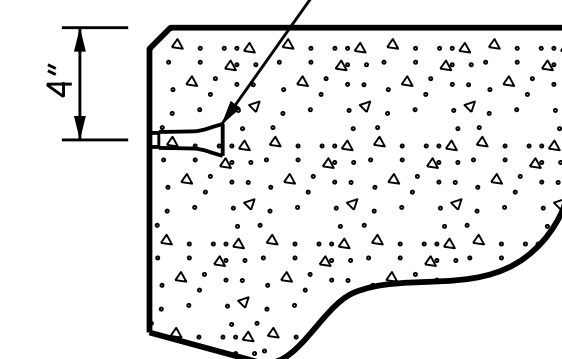
TYPICAL SECTION

* THE MAXIMUM BARRIER RAIL HEIGHT AND CONCRETE WEARING SURFACE THICKNESS ARE SHOWN. THE HEIGHT OF THE BARRIER RAIL AND CONCRETE WEARING SURFACE THICKNESS VARIES WHILE THE TOP OF THE BARRIER RAIL FOLLOWS THE PROFILE OF THE GUTTERLINE. FOR RAIL HEIGHT DETAILS AND CONCRETE WEARING SURFACE THICKNESS, SEE THE "CONCRETE BARRIER RAIL SECTION" DETAIL.

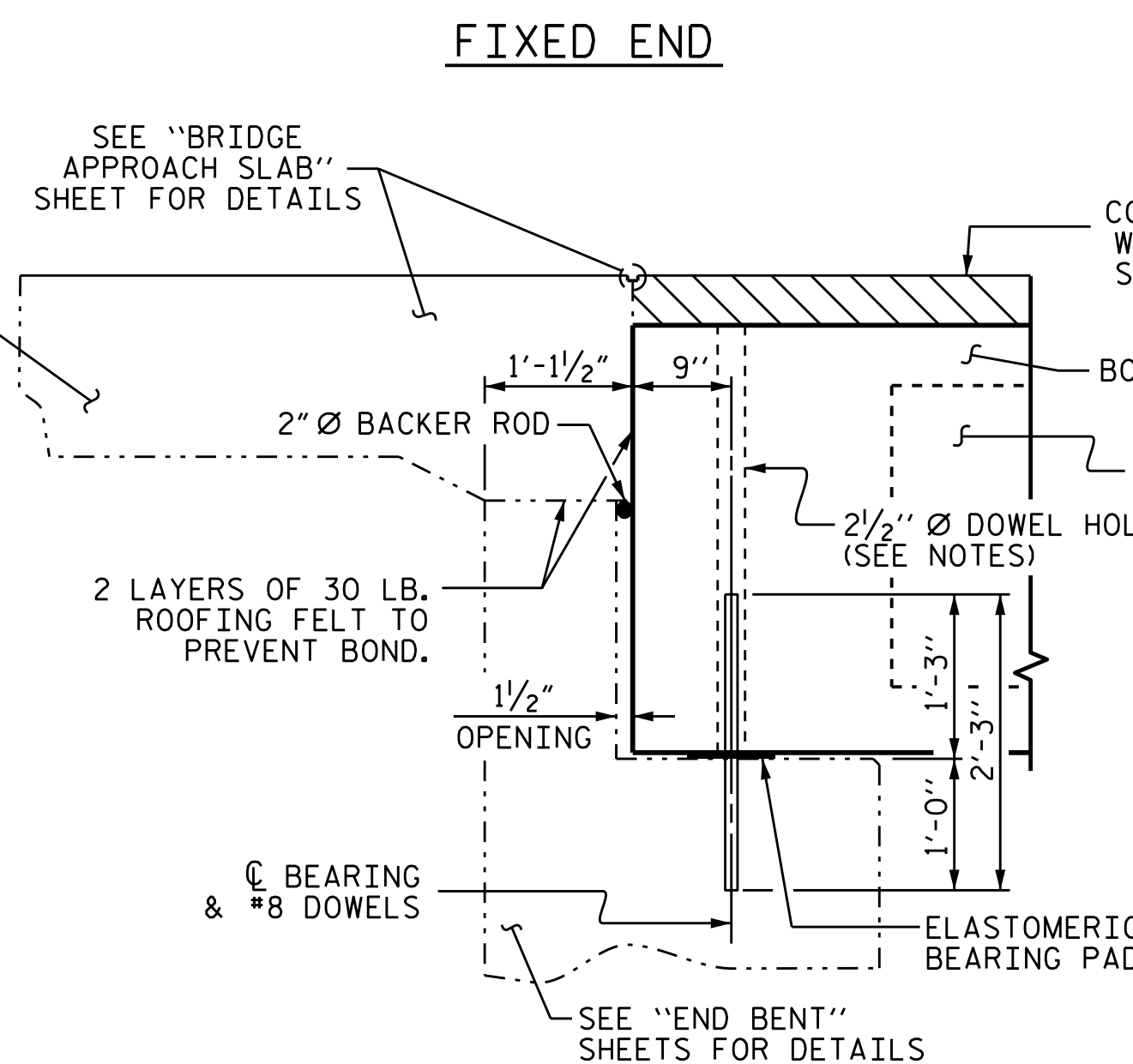
NOTES

GROOVED CONTRACTION JOINTS, 1/2" IN DEPTH, SHALL BE TOOLED IN THE TOP OF WEARING SURFACE AT INTERIOR BENTS WITH CONTINUOUS CONCRETE WEARING SURFACE IN ACCORDANCE WITH ARTICLE 825-10(B) OF THE STANDARD SPECIFICATIONS.

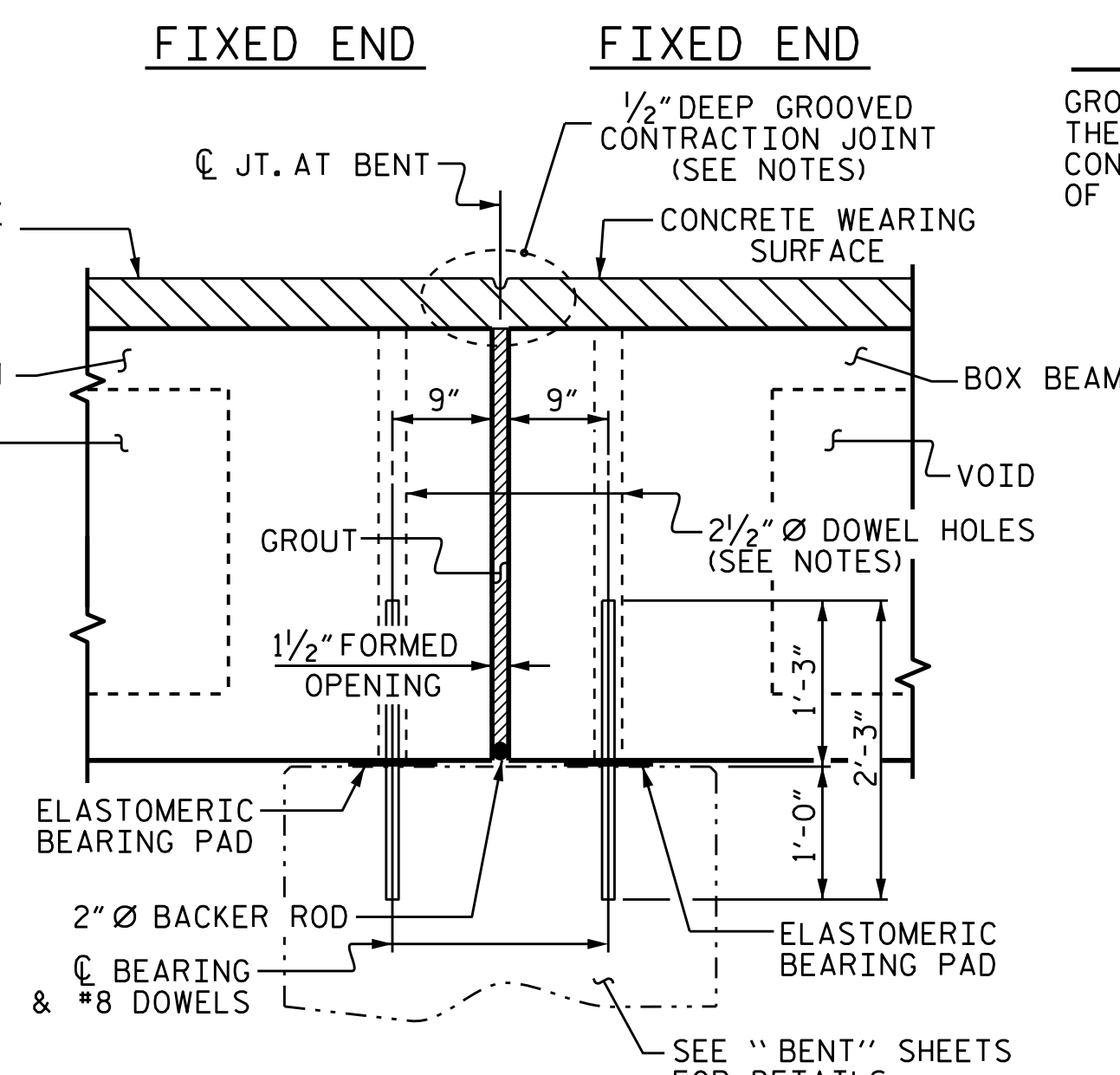
PERMITTED THREADED INSERT CAST IN OUTSIDE FACE OF EXTERIOR UNIT AND RECESSED 3/8" SIZE TO BE DETERMINED BY CONTRACTOR.



THREADED INSERT DETAIL



SECTION AT END BENT



SECTION AT BENT

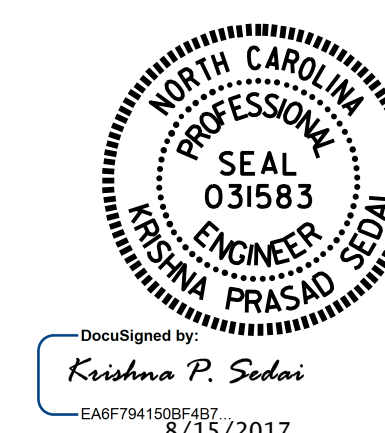
DRAWN BY : A. SORSENGIH DATE : 7/2016
 CHECKED BY : E. K. POPE DATE : 3/2017
 DESIGN ENGINEER OF RECORD : H. A. LOCKLEAR DATE : 3/2017

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MONTGOMERY COUNTY
 STATION: 14+87.00 -L-

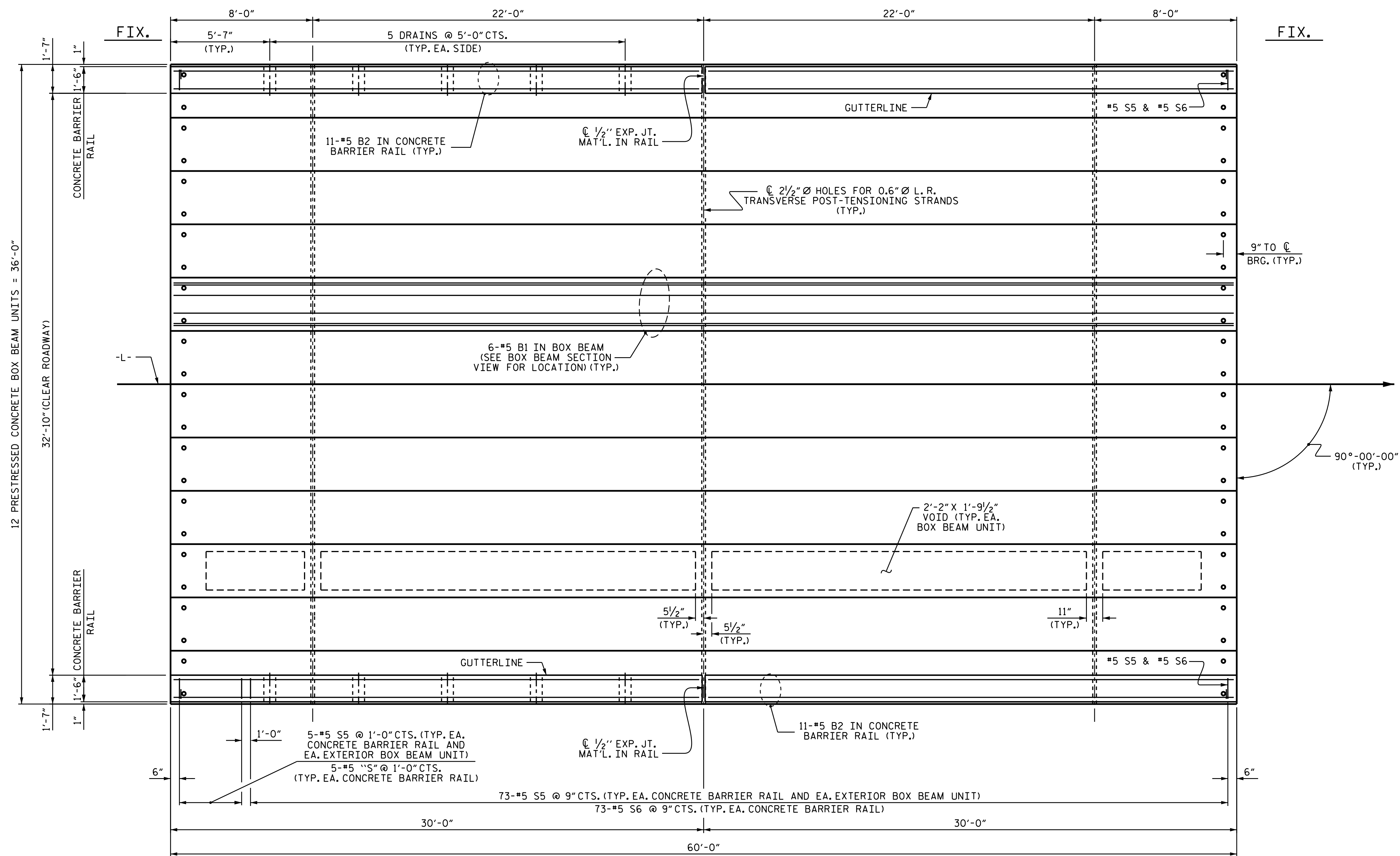
SHEET 1 OF 7



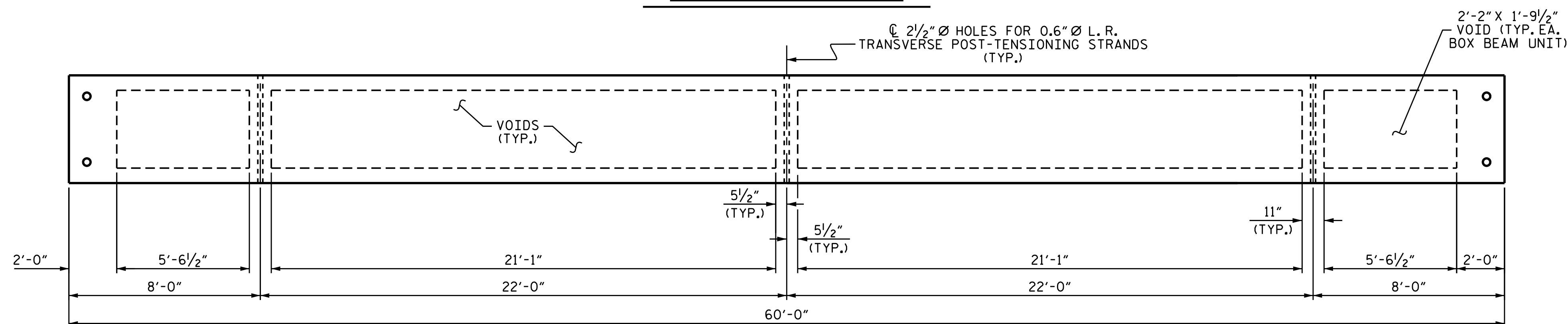
STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH
 3'-0" X 2'-9"
 PRESTRESSED CONCRETE
 BOX BEAM UNIT
 90° SKEW

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

TOTAL SHEETS: 21



PLAN OF UNIT



DIAPHRAGM AND VOID LAYOUT

PROJECT NO. B-5362

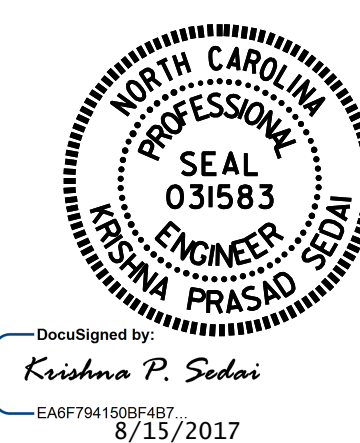
MONTGOMERY COUNTY

STATION: 14+87.00 -L-

SHEET 2 OF 7

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

PLAN OF 60' UNIT
32'-10" CLEAR ROADWAY
90° SKEW
SPAN A

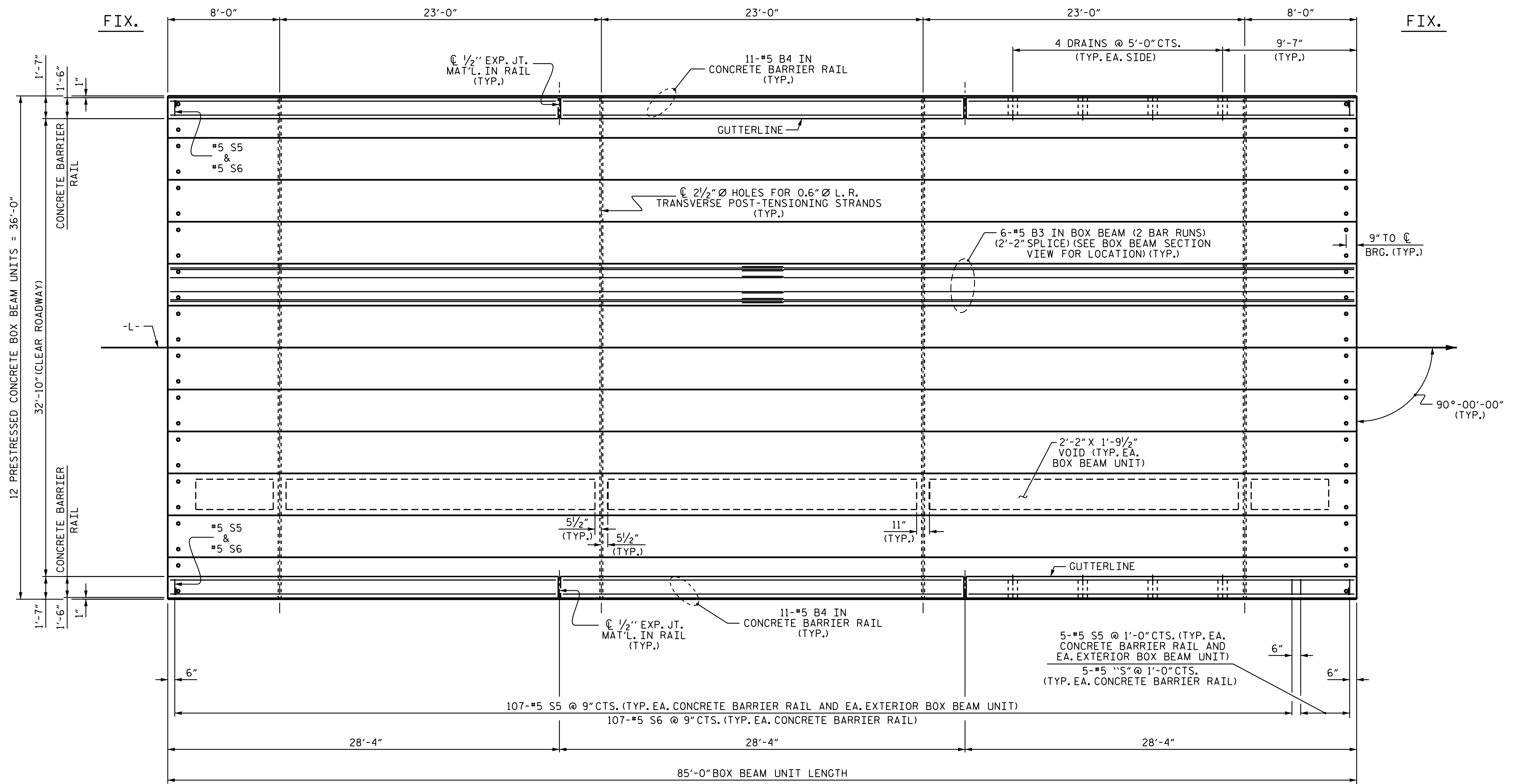


DRAWN BY : A. SORSENGINH DATE : 7/2016
CHECKED BY : E. K. POPE DATE : 3/2017
DESIGN ENGINEER OF RECORD: H. A. LOCKLEAR DATE : 3/2017

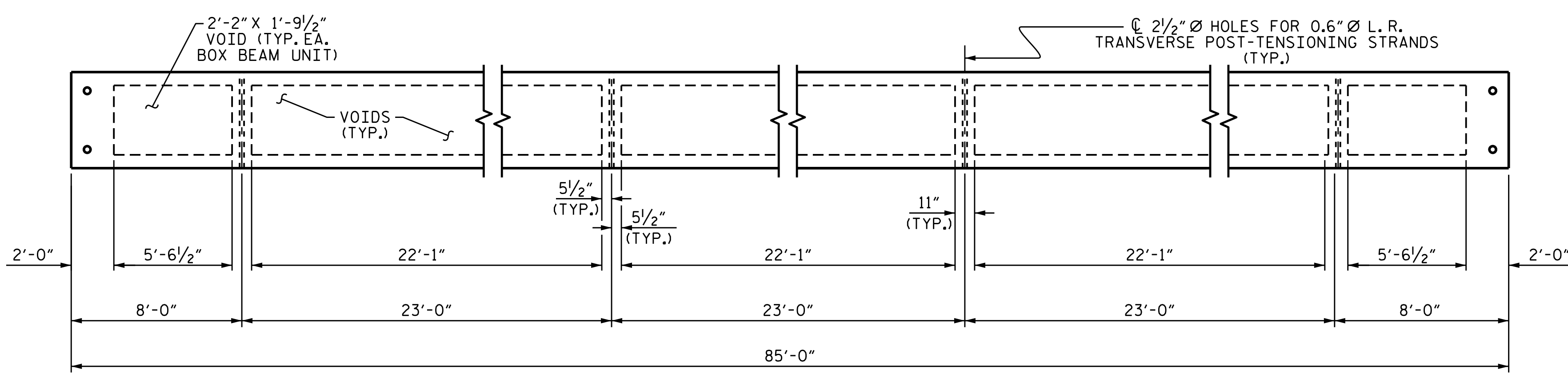
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| REVISIONS | | | | | | SHEET NO. |
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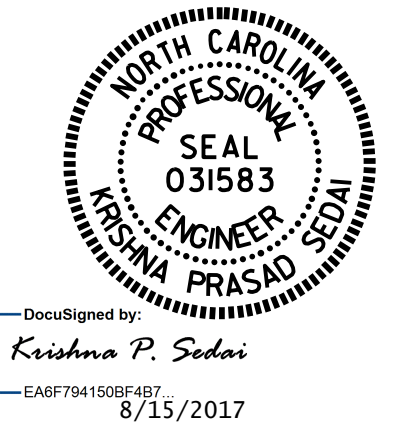
PLAN OF UNIT



DIAPHRAGM AND VOID LAYOUT

PROJECT NO. B-5362
MONTGOMERY COUNTY
 STATION: 14+87.00 -L-

SHEET 3 OF 7

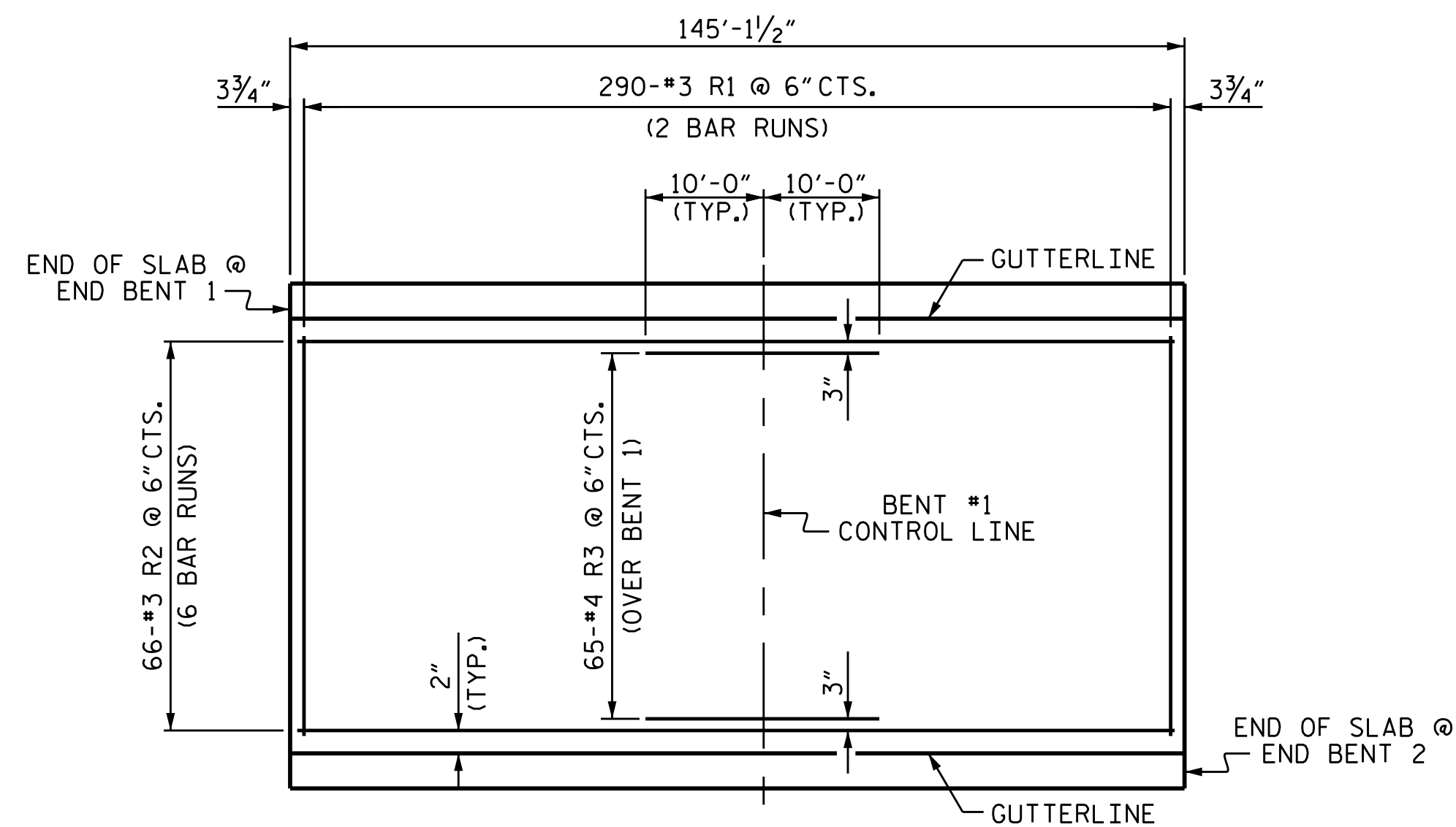


STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH
 PLAN OF 85' UNIT
 32'-10" CLEAR ROADWAY
 90° SKEW
 SPAN B

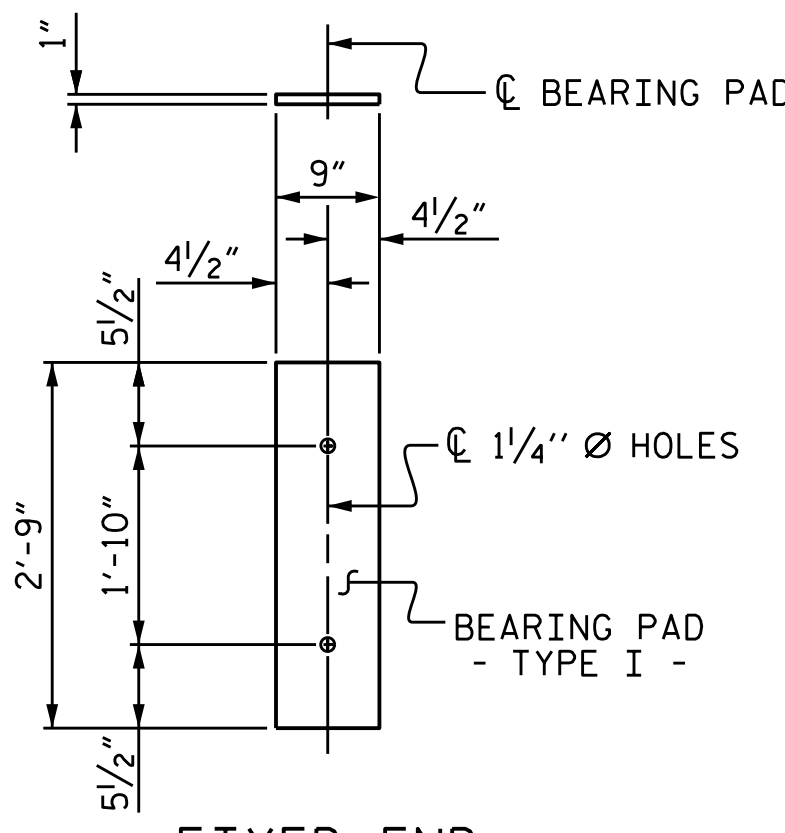
DRAWN BY : A. SORSENGINH DATE : 7/2016
 CHECKED BY : E. K. POPE DATE : 3/2017
 DESIGN ENGINEER OF RECORD: H. A. LOCKLEAR DATE : 3/2017

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| 1 | | | 3 | | | TOTAL SHEETS |
| 2 | | | 4 | | | 21 |

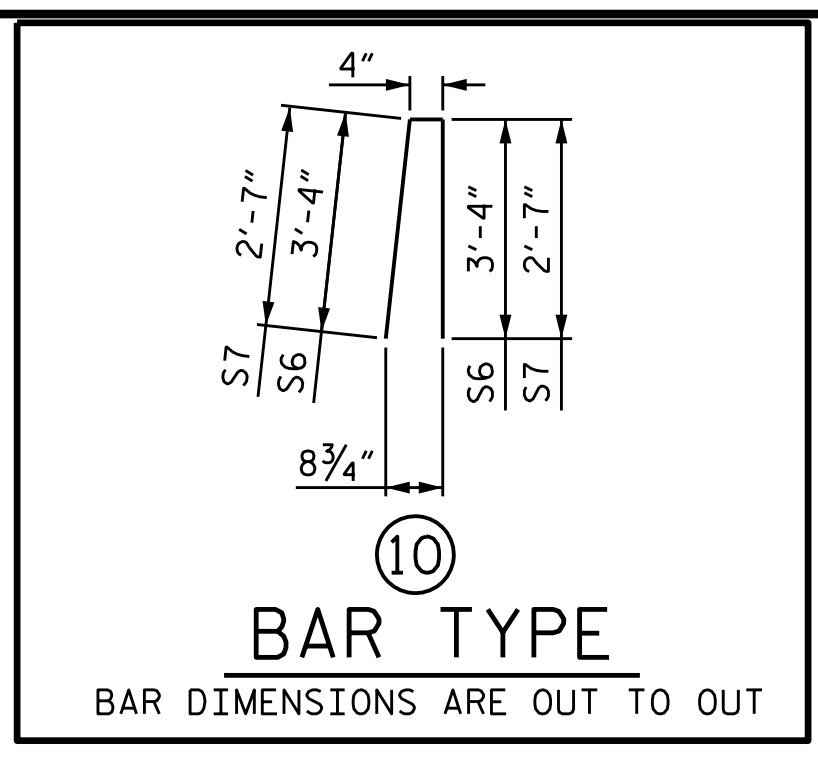


PLAN SHOWING CONCRETE WEARING SURFACE REINFORCING STEEL



FIXED END (TYPE I - 48 REQ'D)

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



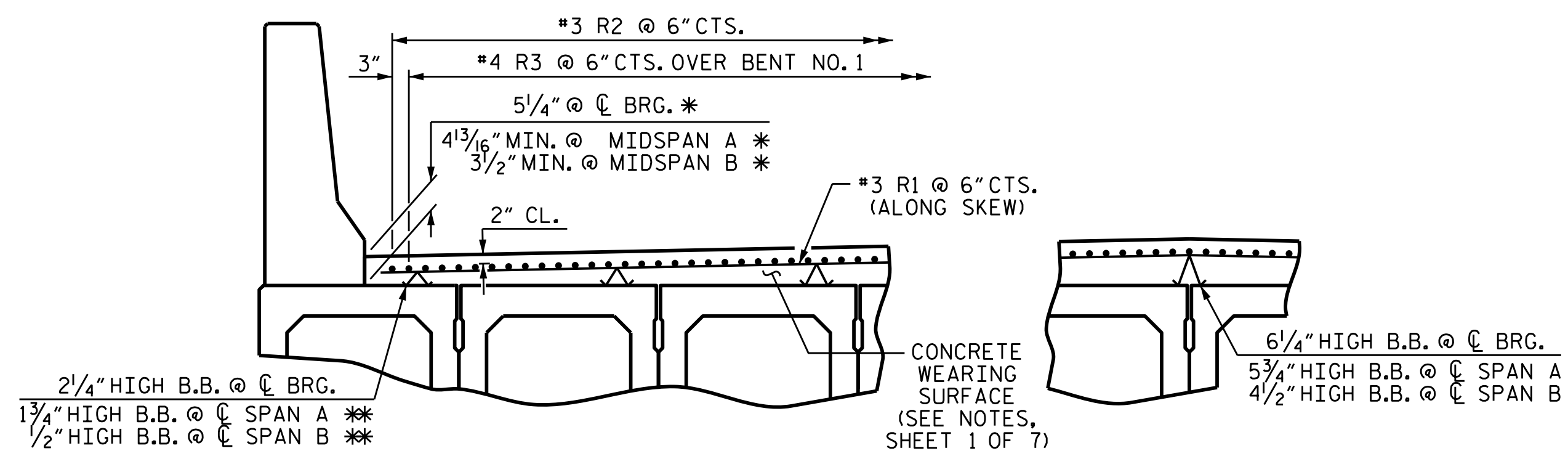
| BILL OF MATERIAL FOR CONCRETE BARRIER RAIL | | | | | | |
|--|---------------|-----------|------|------|---------|--------|
| BAR | BARS PER SPAN | TOTAL NO. | SIZE | TYPE | LENGTH | WEIGHT |
| *B2 | 44 | 44 | #5 | STR | 29'-7" | 1358 |
| *B4 | 66 | 66 | #5 | STR | 27'-11" | 1922 |
| *S6 | 152 | 220 | #5 | 10 | 7'-0" | 2716 |
| *S7 | 4 | 4 | #5 | 10 | 5'-6" | 46 |
| * EPOXY COATED REINFORCING STEEL | | | | | LBS. | 6042 |
| CLASS AA CONCRETE | | | | | CU.YDS. | 45.7 |
| TOTAL LIN. FT. OF CONCRETE BARRIER RAIL | | | | | | 290 |

| BILL OF MATERIAL FOR CONCRETE WEARING SURFACE | | | | | | |
|---|-----|------|------|---------|---------|------|
| BAR | NO. | SIZE | TYPE | LENGTH | WEIGHT | |
| *R1 | 580 | #3 | STR | 16'-11" | 3689 | |
| *R2 | 396 | #3 | STR | 25'-3" | 3760 | |
| *R3 | 65 | #4 | STR | 20'-0" | 868 | |
| * EPOXY COATED REINFORCING STEEL | | | | | LBS. | 8317 |
| CONCRETE WEARING SURFACE | | | | | SO. FT. | 4765 |

| GROOVING BRIDGE FLOORS | |
|------------------------|-------------|
| APPROACH SLABS | 840 SQ.FT. |
| BRIDGE DECK | 4304 SQ.FT. |
| TOTAL | 5144 SQ.FT. |

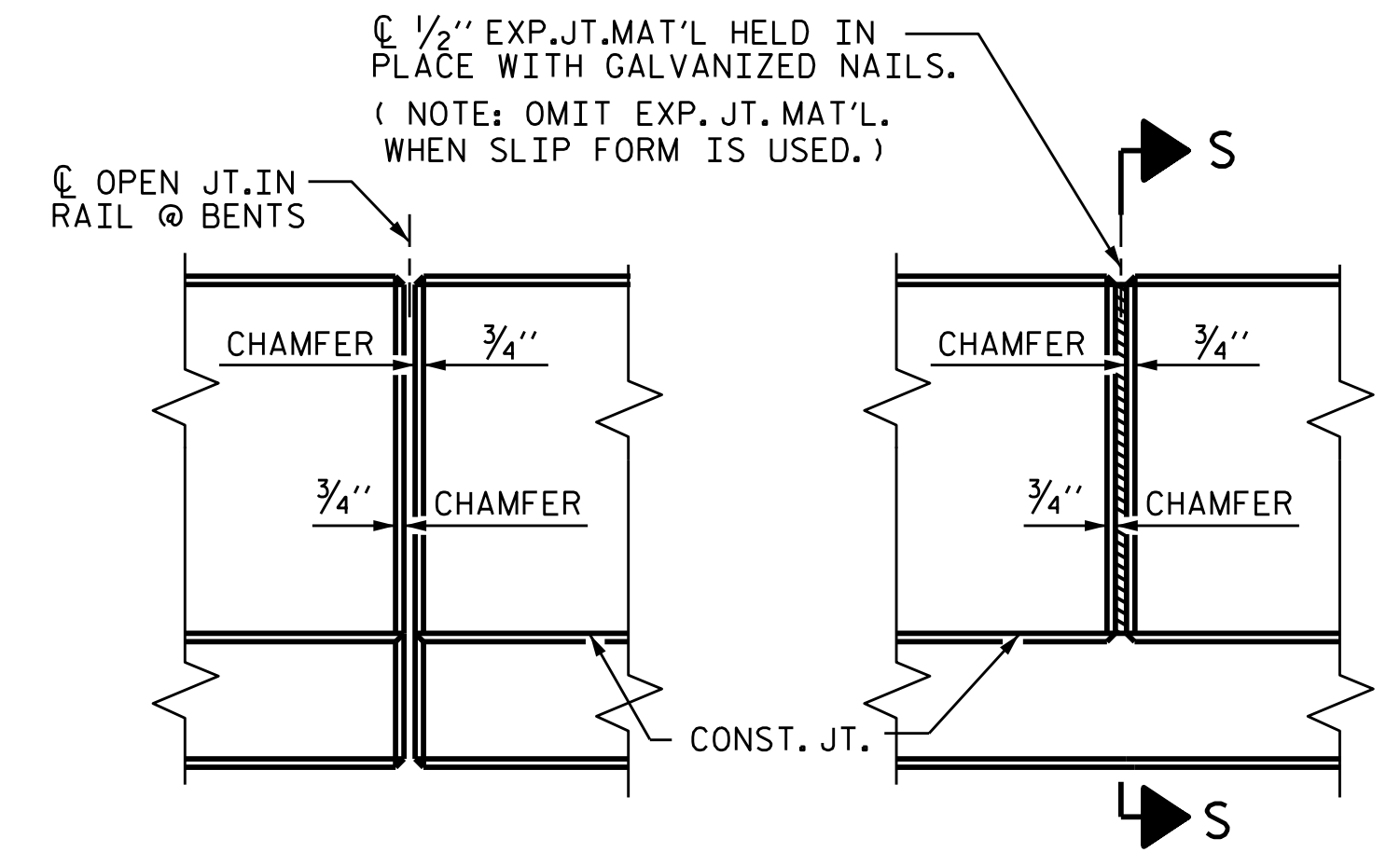
| SPLICE LENGTH CHART | |
|---------------------|--------------|
| BAR SIZE | EPOXY COATED |
| #3 | 1'-3" |
| #4 | 1'-8" |

| BOX BEAM UNITS REQUIRED | | | | |
|-------------------------|---------------|--------|--------------|---------|
| | NUMBER | LENGTH | TOTAL LENGTH | |
| SPAN A | EXTERIOR B.B. | 2 | 60'-0" | 120'-0" |
| | INTERIOR B.B. | 10 | 60'-0" | 600'-0" |
| SPAN B | EXTERIOR B.B. | 2 | 85'-0" | 170'-0" |
| | INTERIOR B.B. | 10 | 85'-0" | 850'-0" |
| TOTAL | 24 | | 1740'-0" | |

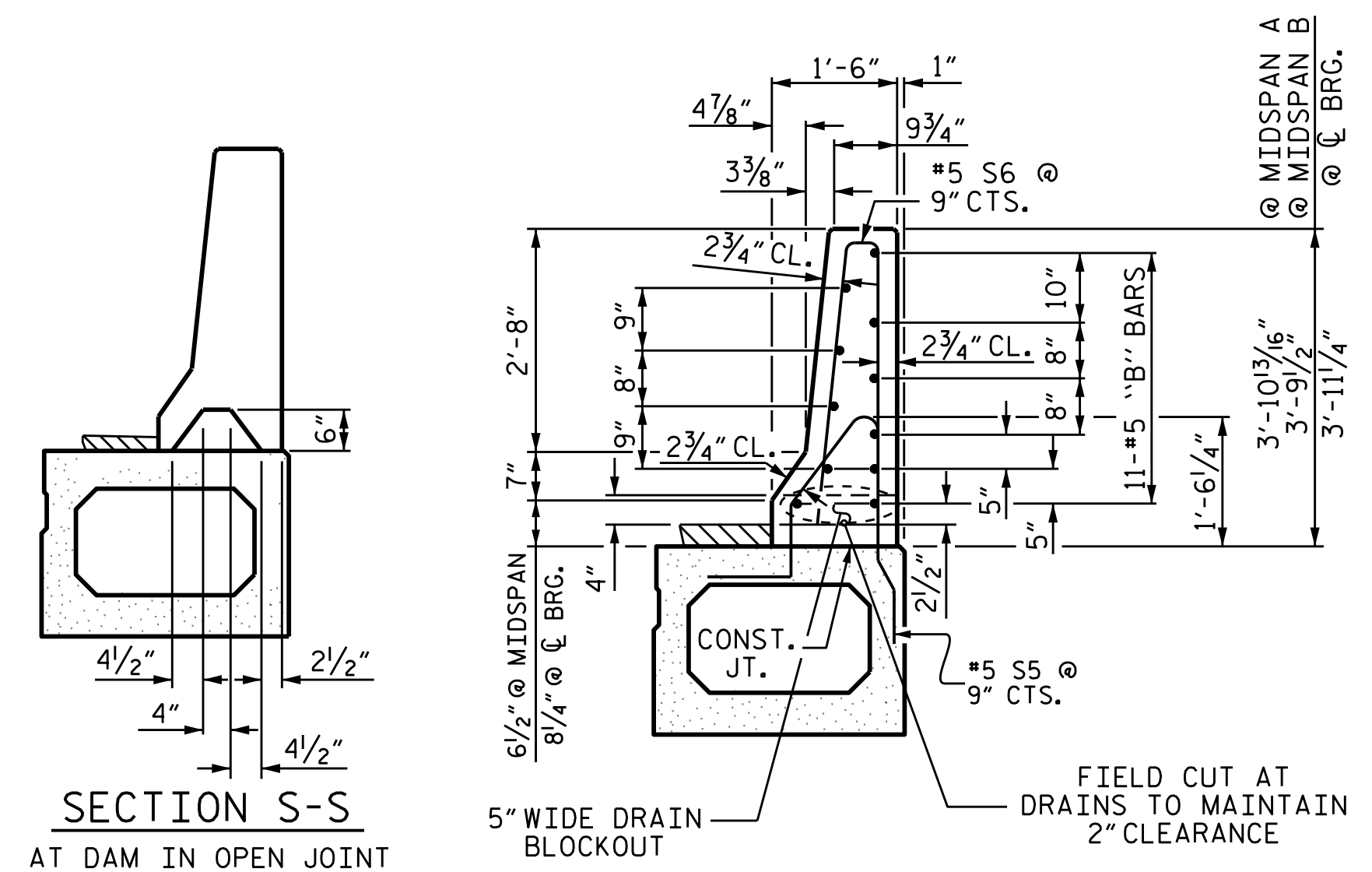


REINFORCING FOR CONCRETE WEARING SURFACE

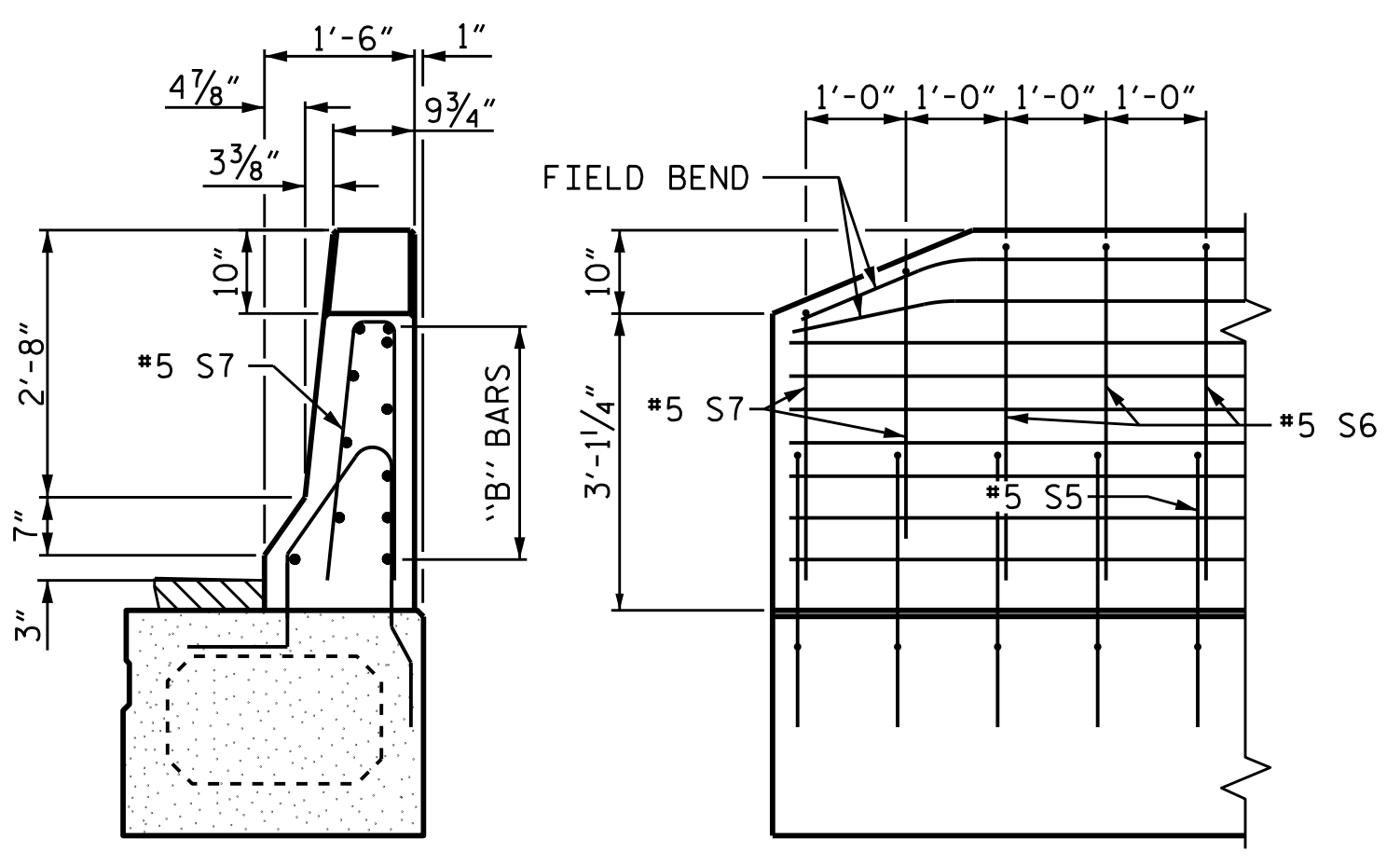
* BASED ON PREDICTED FINAL CAMBER AND THEORETICAL GRADE LINE ELEVATIONS
 ** BEAM BOLSTERS (B.B) SHALL BE SPACED AT 2'-0" CENTERS.



ELEVATION AT EXPANSION JOINTS BARRIER RAIL DETAILS

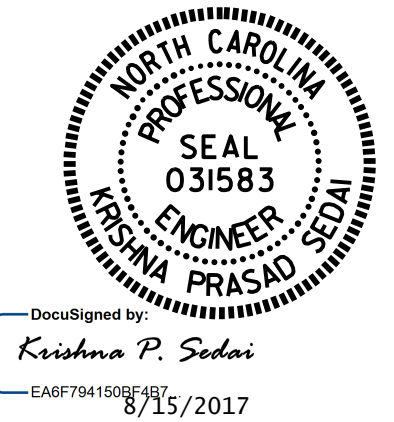


BARRIER RAIL DETAILS



END OF RAIL DETAILS

PROJECT NO. B-5362
 MONTGOMERY COUNTY
 STATION: 14+87.00 -L-
 SHEET 4 OF 7

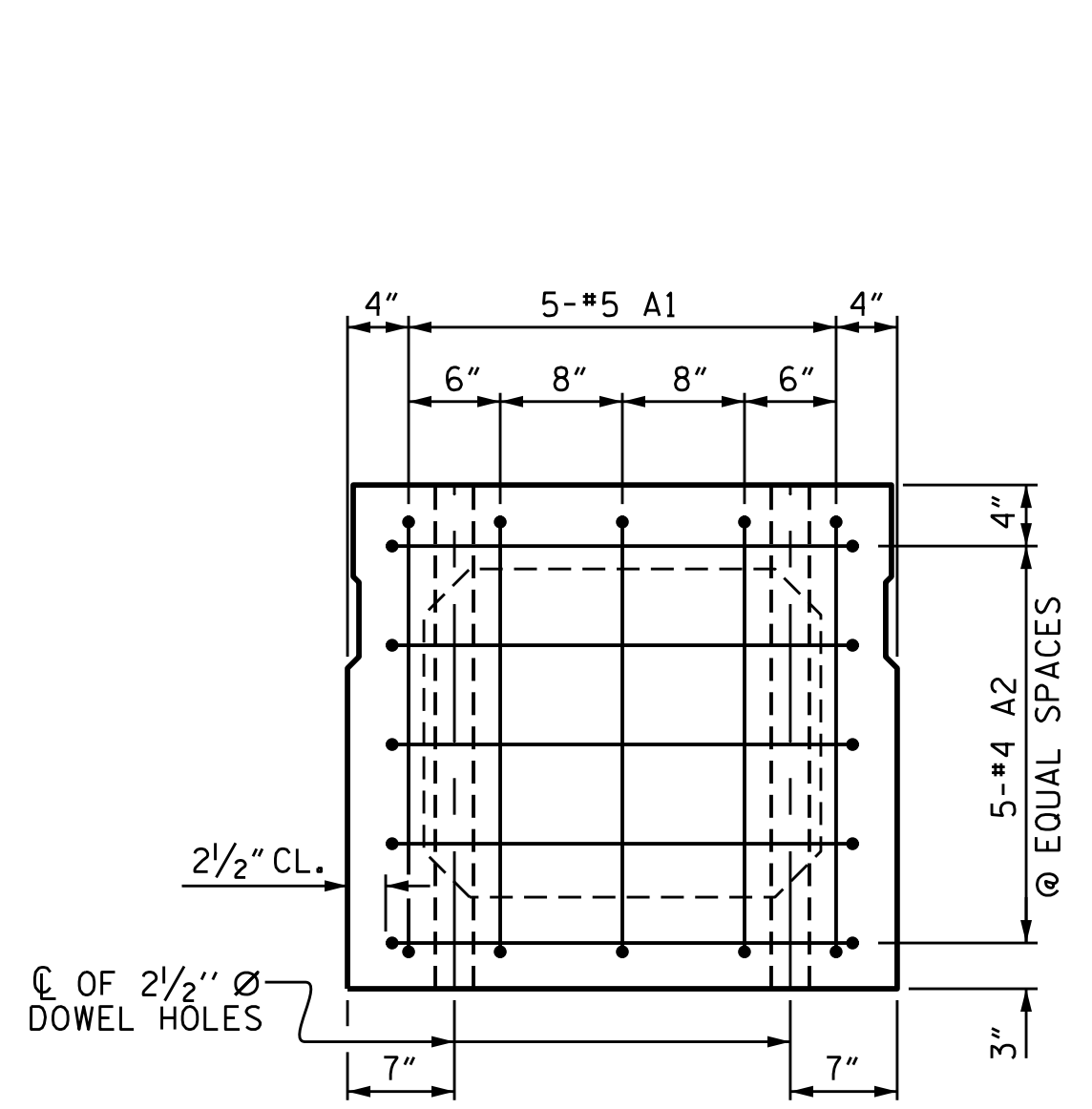


STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH
 3'-0" X 2'-9"
 PRESTRESSED CONCRETE
 BOX BEAM UNIT
 DETAILS

DRAWN BY : A. SORSENGINH DATE : 7/2016
 CHECKED BY : E. K. POPE DATE : 3/2017
 DESIGN ENGINEER OF RECORD : H. A. LOCKLEAR DATE : 3/2017

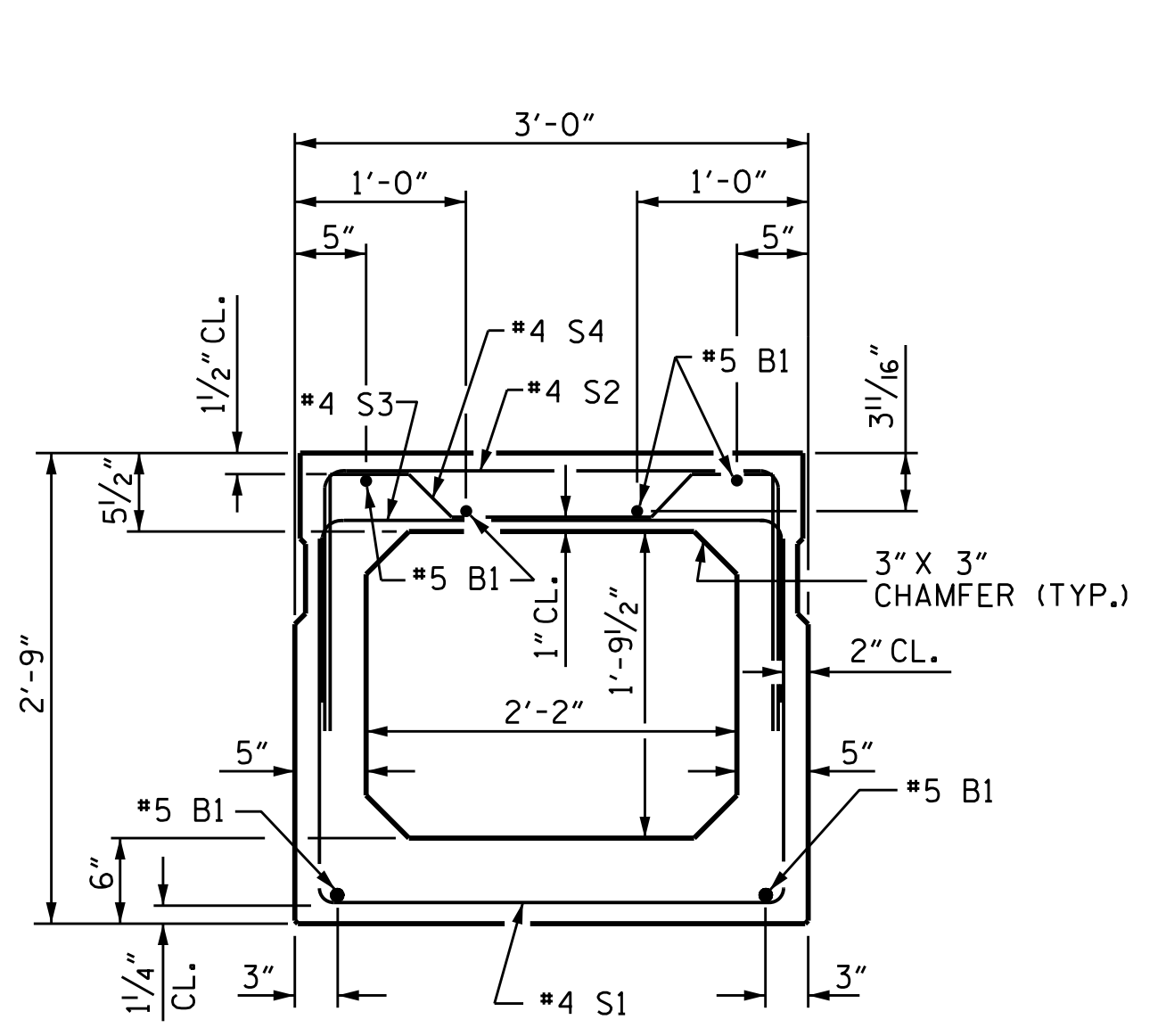
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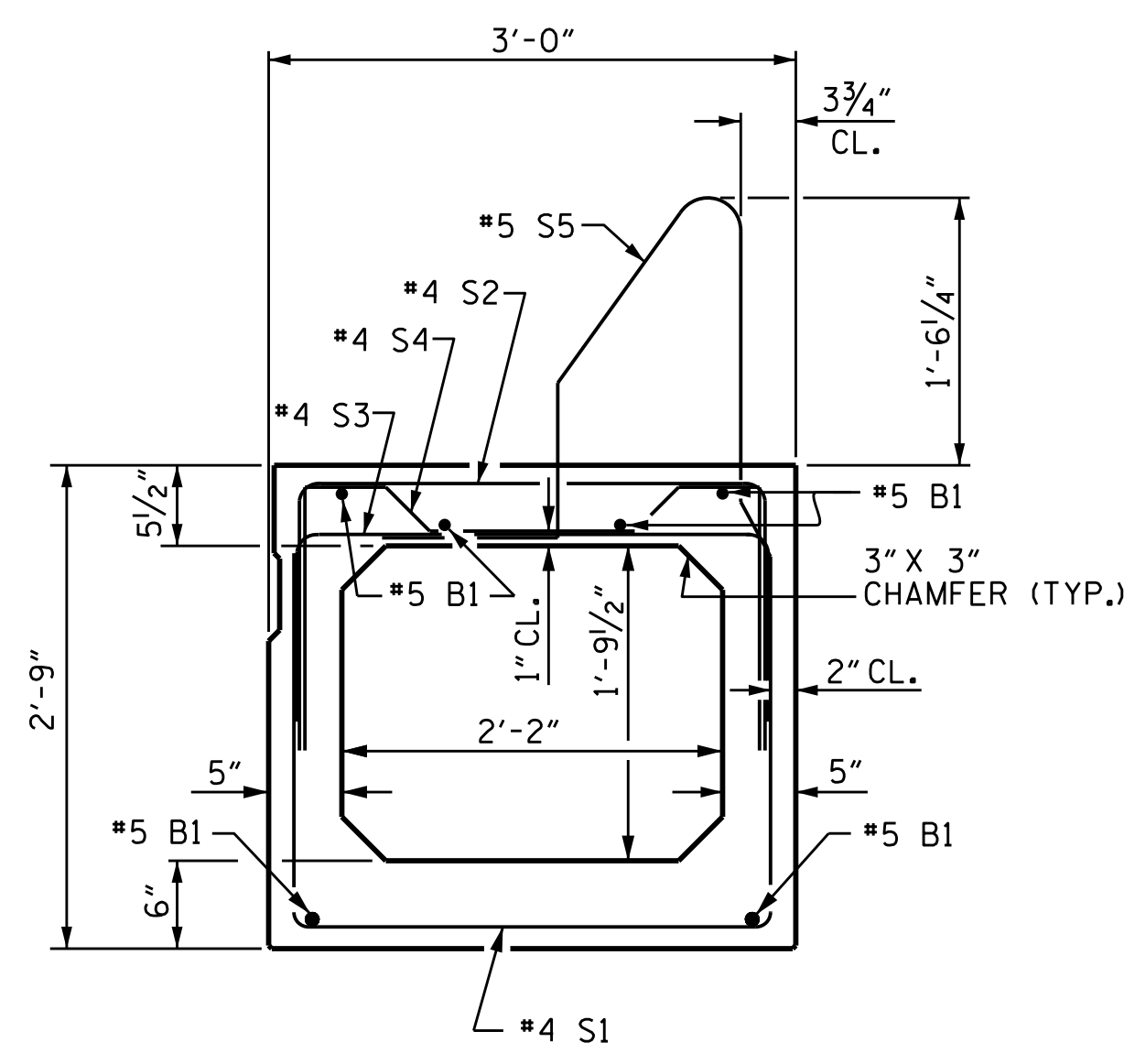


END ELEVATION

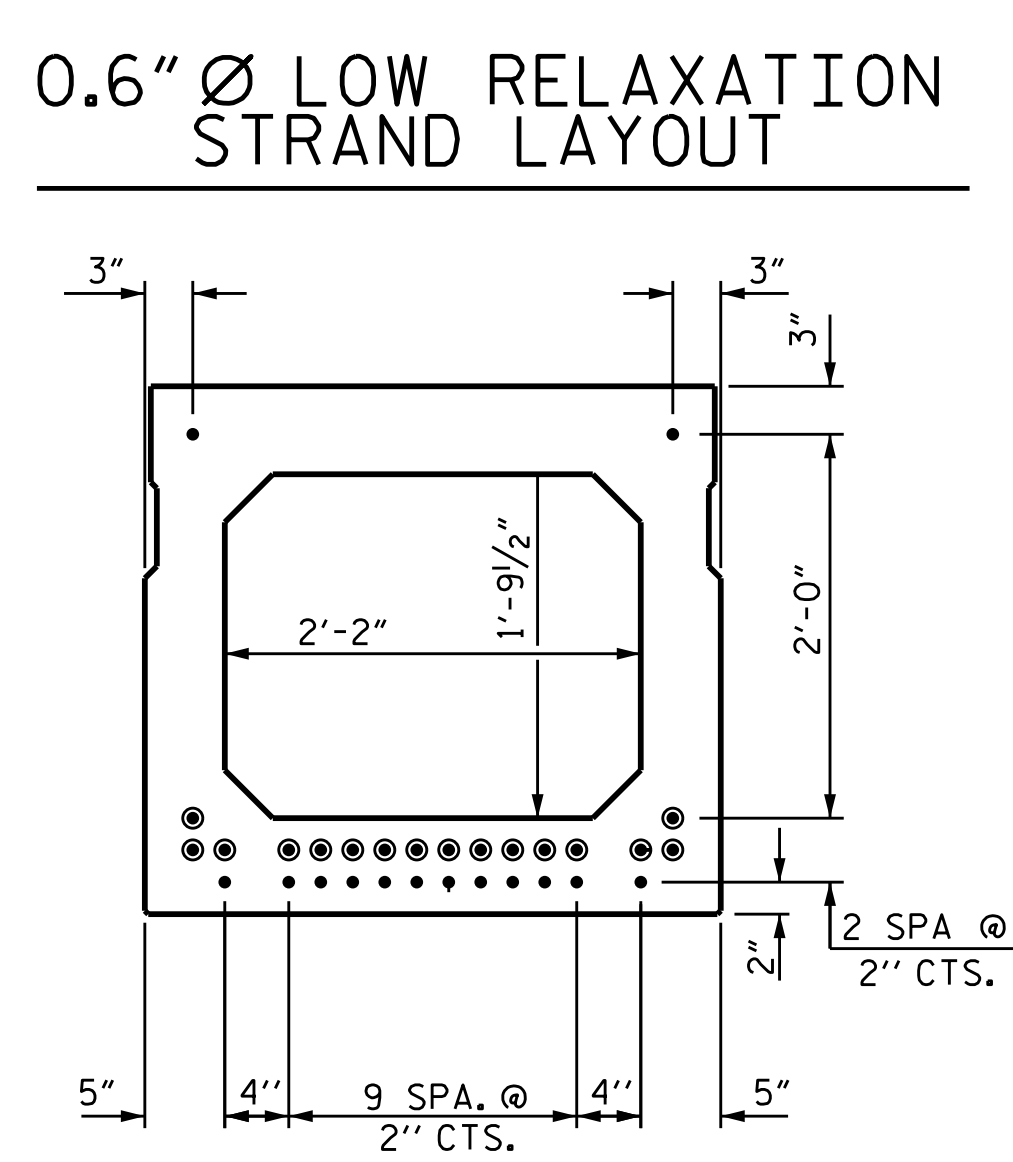
SHOWING PLACEMENT OF #5 & #4 "A" BARS AND LOCATION OF DOWEL HOLES. (INTERIOR BOX BEAM SECTION SHOWN-EXTERIOR SECTION SIMILAR EXCEPT SHEAR KEY LOCATION. STRAND LAYOUT NOT SHOWN.)



INTERIOR BOX BEAM SECTION
(STRAND LAYOUT NOT SHOWN)



EXTERIOR BOX BEAM SECTION
(STRAND LAYOUT NOT SHOWN)



TYPICAL STRAND LOCATION
(14 STRANDS REQUIRED)

DEBONDING LEGEND

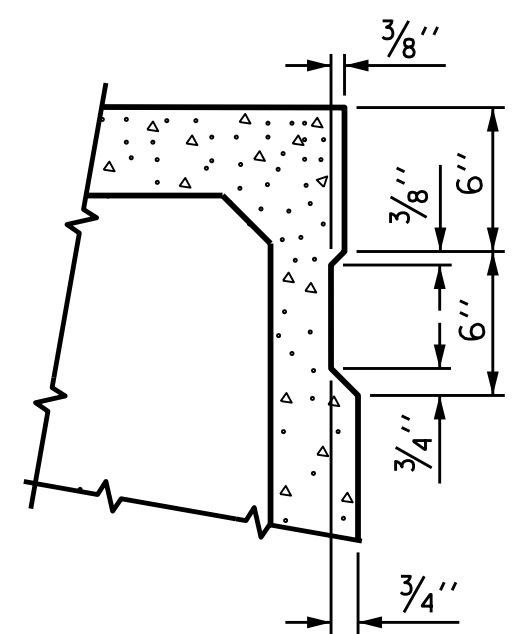
- FULLY BONDED STRANDS
- OPTIONAL FULL LENGTH DEBONDED STRANDS. THESE STRANDS ARE NOT REQUIRED. IF THE FABRICATOR CHOOSES TO INCLUDE THESE STRANDS IN THE BOX BEAM UNIT, THE STRANDS SHALL BE DEBONDED FOR THE FULL LENGTH OF THE UNIT AT NO ADDITIONAL COST.

BAR TYPES

ALL BAR DIMENSIONS ARE OUT TO OUT

BILL OF MATERIAL FOR ONE BOX BEAM SECTION

| | | | | EXTERIOR UNIT | | INTERIOR UNIT | |
|-----------------------------|--------|------|------|---------------|----------|---------------|----------|
| BAR | NUMBER | SIZE | TYPE | LENGTH | WEIGHT | LENGTH | WEIGHT |
| A1 | 10 | #5 | 1 | 6'-8" | 70 | 6'-8" | 70 |
| A2 | 28 | #4 | 2 | 5'-7" | 104 | 5'-7" | 104 |
| B1 | 6 | #5 | STR | 59'-8" | 373 | 59'-8" | 373 |
| K1 | 9 | #4 | 6 | 6'-2" | 37 | 6'-2" | 37 |
| K2 | 6 | #4 | STR | 2'-7" | 10 | 2'-7" | 10 |
| S1 | 54 | #4 | 3 | 7'-6" | 271 | 7'-6" | 271 |
| S2 | 54 | #4 | 3 | 5'-8" | 204 | 5'-8" | 204 |
| S3 | 87 | #4 | 3 | 4'-10" | 281 | 4'-10" | 281 |
| S4 | 33 | #4 | 4 | 5'-10" | 129 | 5'-10" | 129 |
| * S5 | 78 | #5 | 5 | 6'-1" | 495 | -- | -- |
| REINFORCING STEEL | | | | 1479 | LBS. | 1479 | LBS. |
| * EPOXY COATED REINF. STEEL | | | | 495 | LBS. | | |
| 5000 P.S.I. CONCRETE | | | | 10.7 | CU. YDS. | 10.6 | CU. YDS. |
| 0.6" Ø L.R. STRANDS | | | | No. 14 | | No. 14 | |

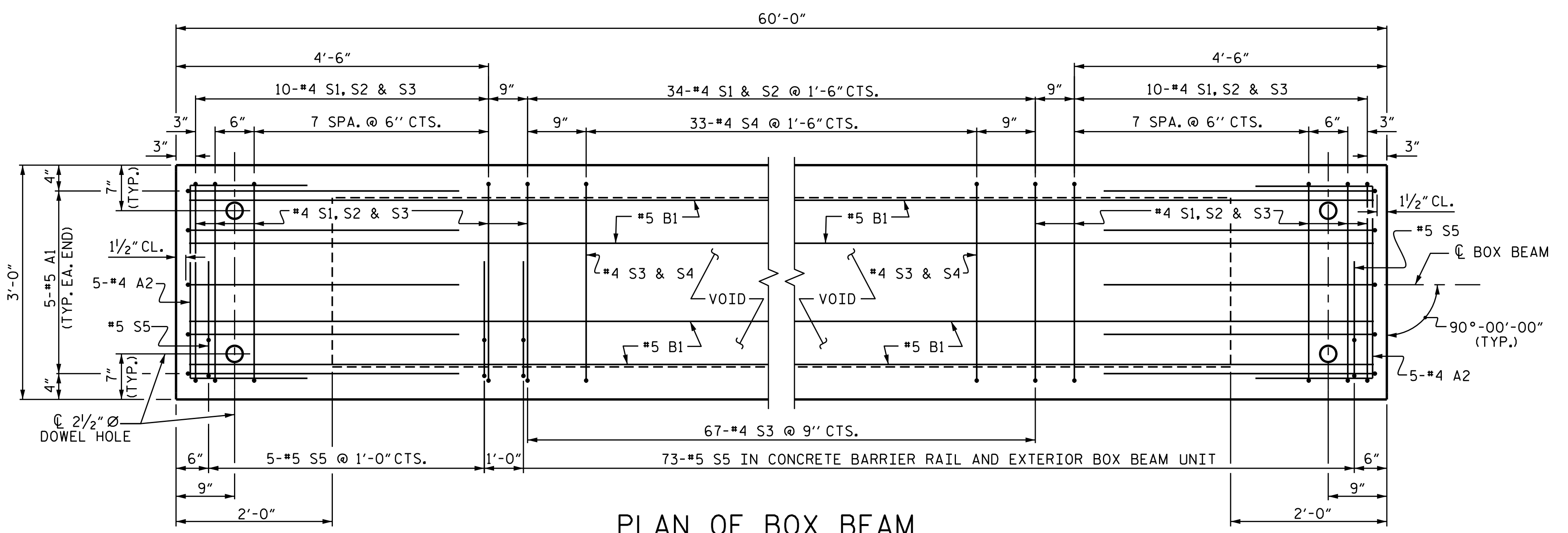


SHEAR KEY DETAIL

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

GRADE 270 STRANDS

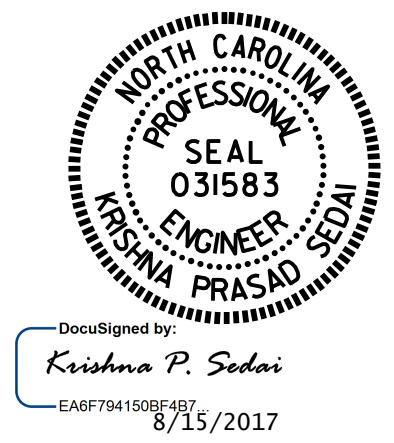
| | 0.6" Ø L.R. |
|---------------------------------------|-------------|
| AREA (SQUARE INCHES) | 0.217 |
| ULTIMATE STRENGTH (LBS. PER STRAND) | 58,600 |
| APPLIED PRESTRESS (LBS. PER STRAND) | 43,950 |



PLAN OF BOX BEAM

EXTERIOR UNIT SHOWN, INTERIOR UNIT SIMILAR EXCEPT OMIT #5 S5 BARS. FOR LOCATION OF DIAPHRAGMS, SEE "PLAN OF UNIT". FOR THREADED INSERTS, SEE "THREADED INSERT DETAIL". FOR REINFORCING STEEL IN DIAPHRAGMS, SEE "DOUBLE DIAPHRAGM DETAILS".

DRAWN BY : A. SORSENGINH DATE : 7/2016
 CHECKED BY : E. K. POPE DATE : 3/2017
 DESIGN ENGINEER OF RECORD : H. A. LOCKLEAR DATE : 3/2017



PROJECT NO. B-5362
 MONTGOMERY COUNTY
 STATION: 14+87.00 -L-

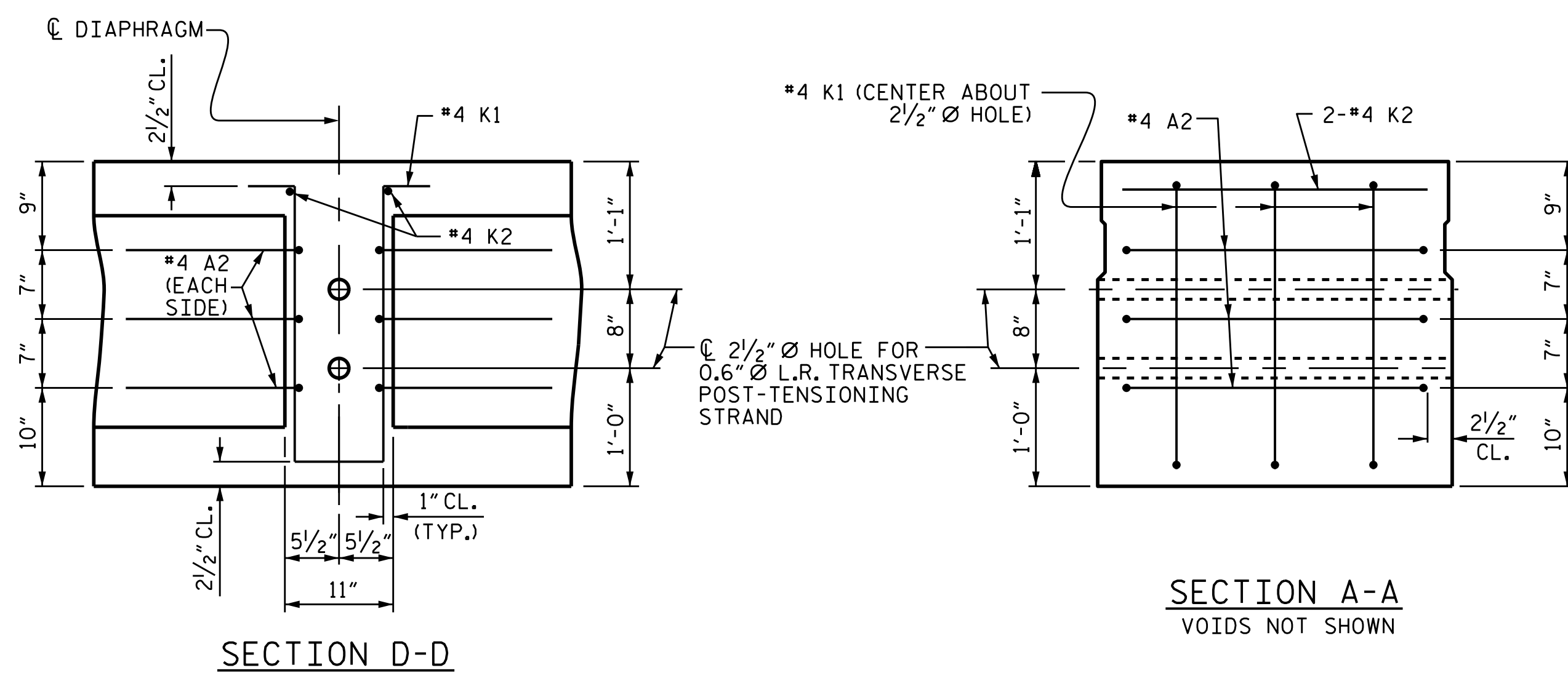
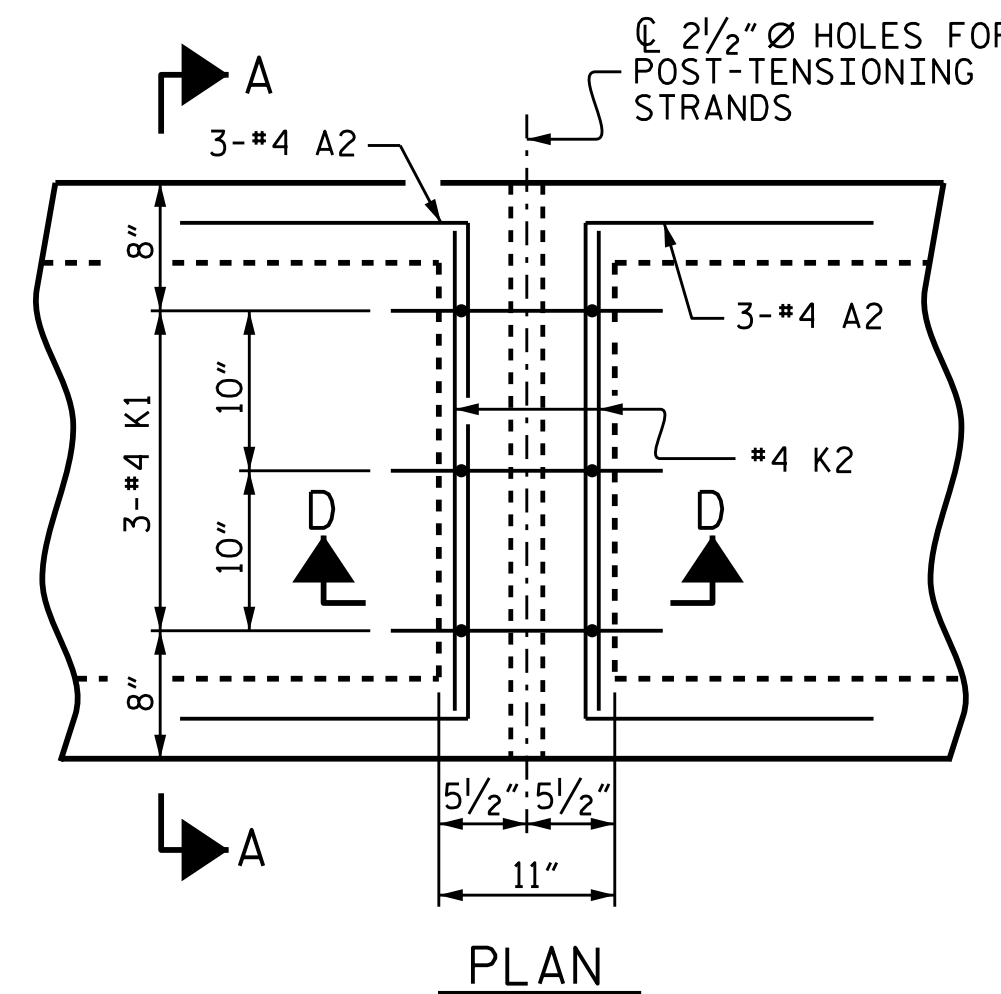
SHEET 5 OF 7

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

3'-0" X 2'-9"
PRESTRESSED CONCRETE
BOX BEAM UNIT
SPAN A

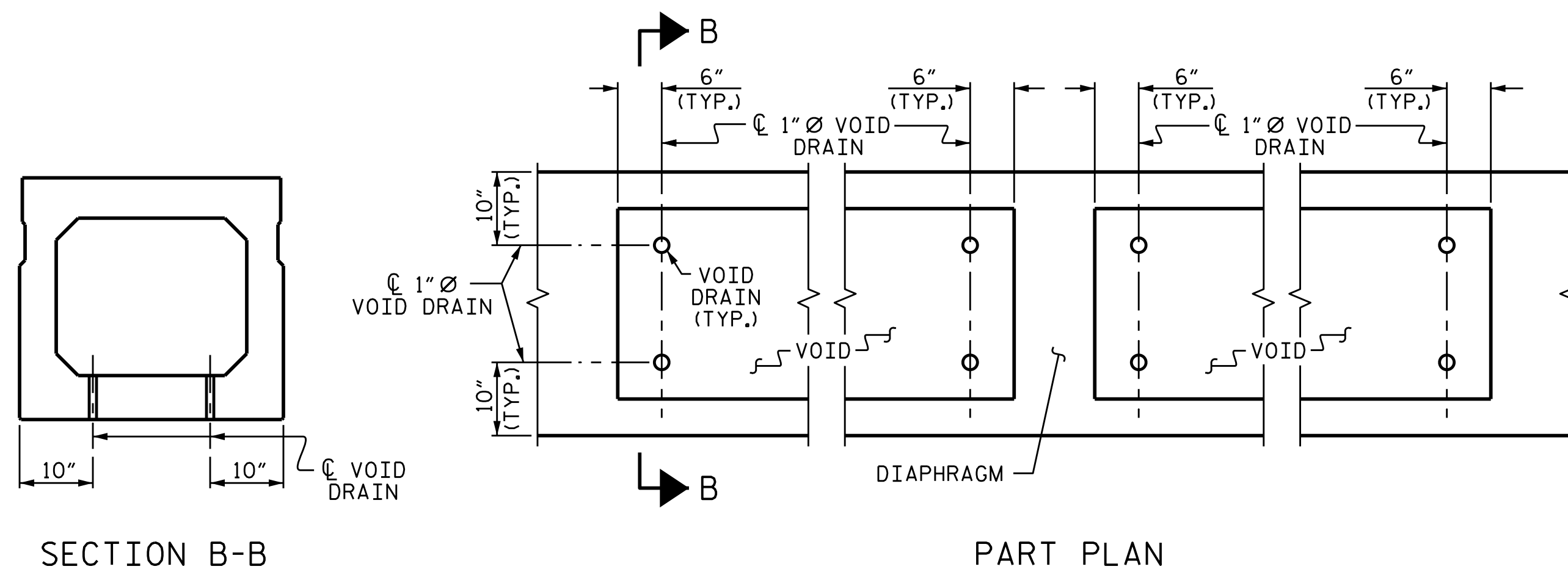
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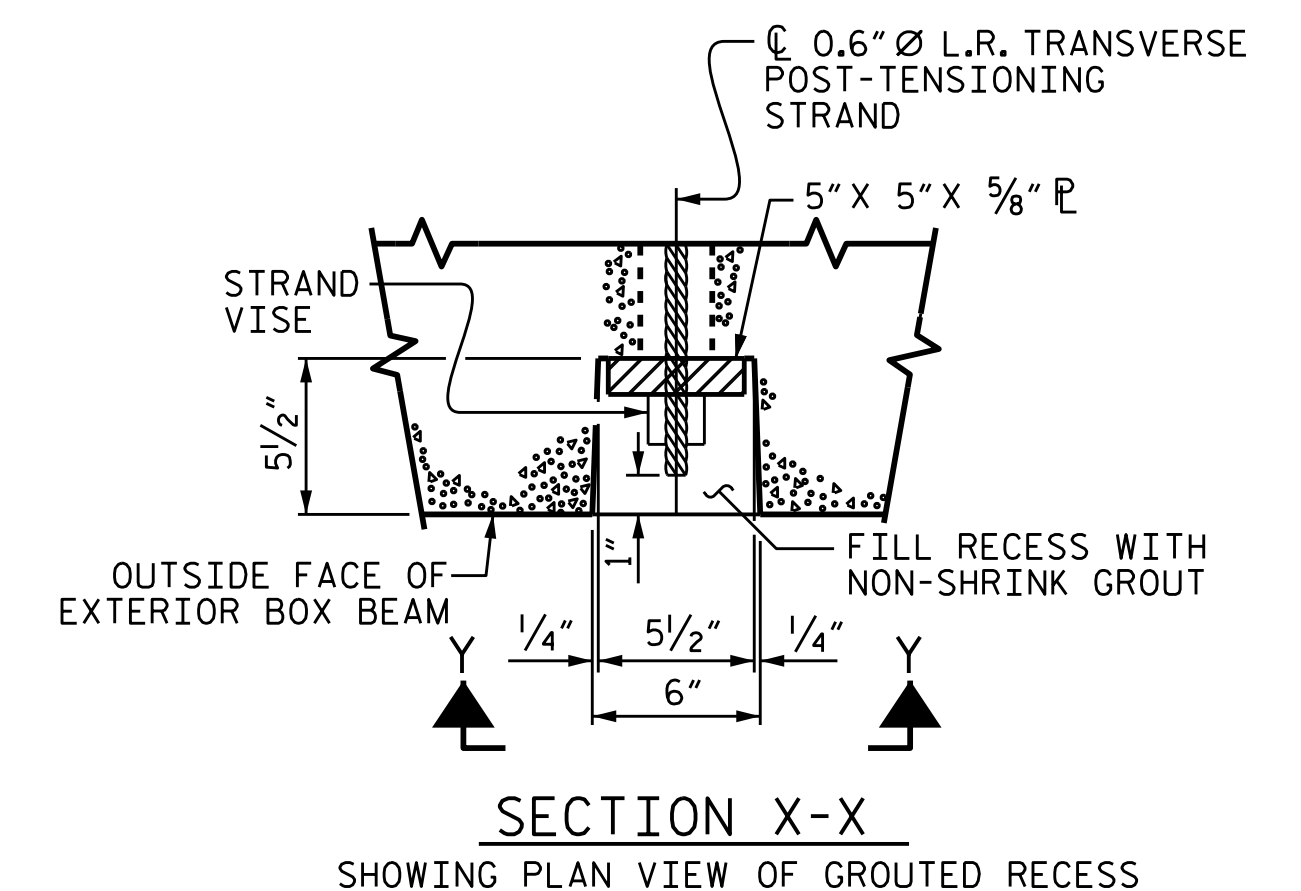
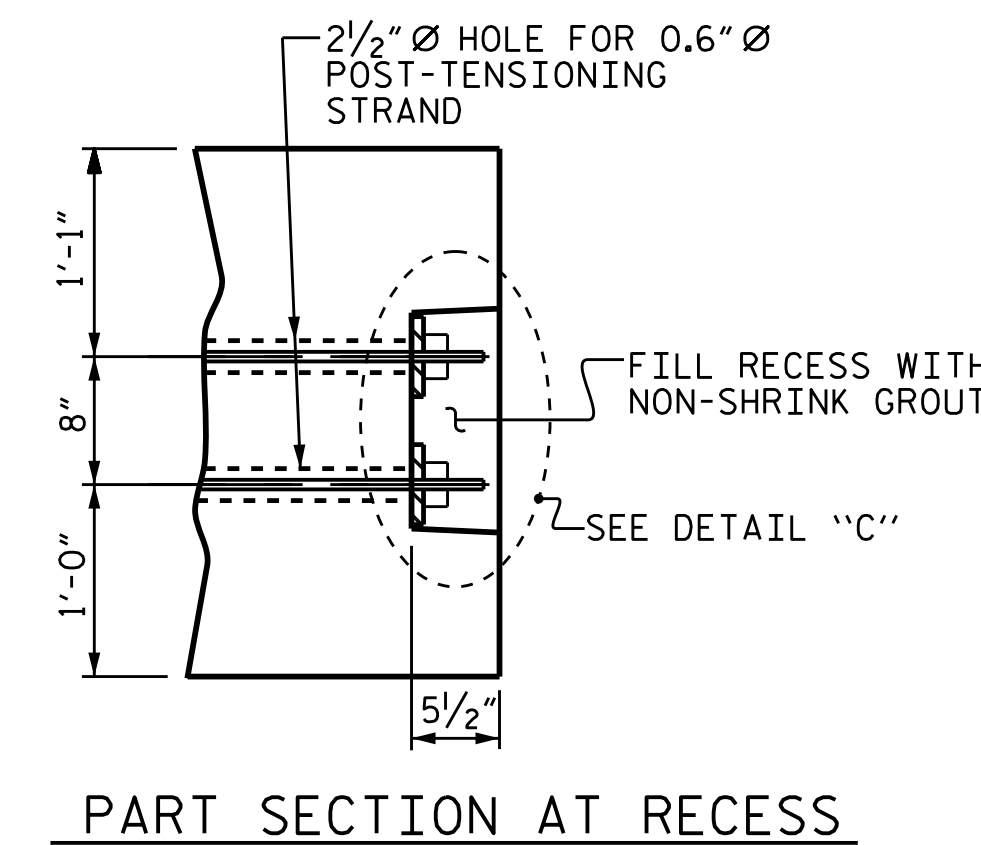
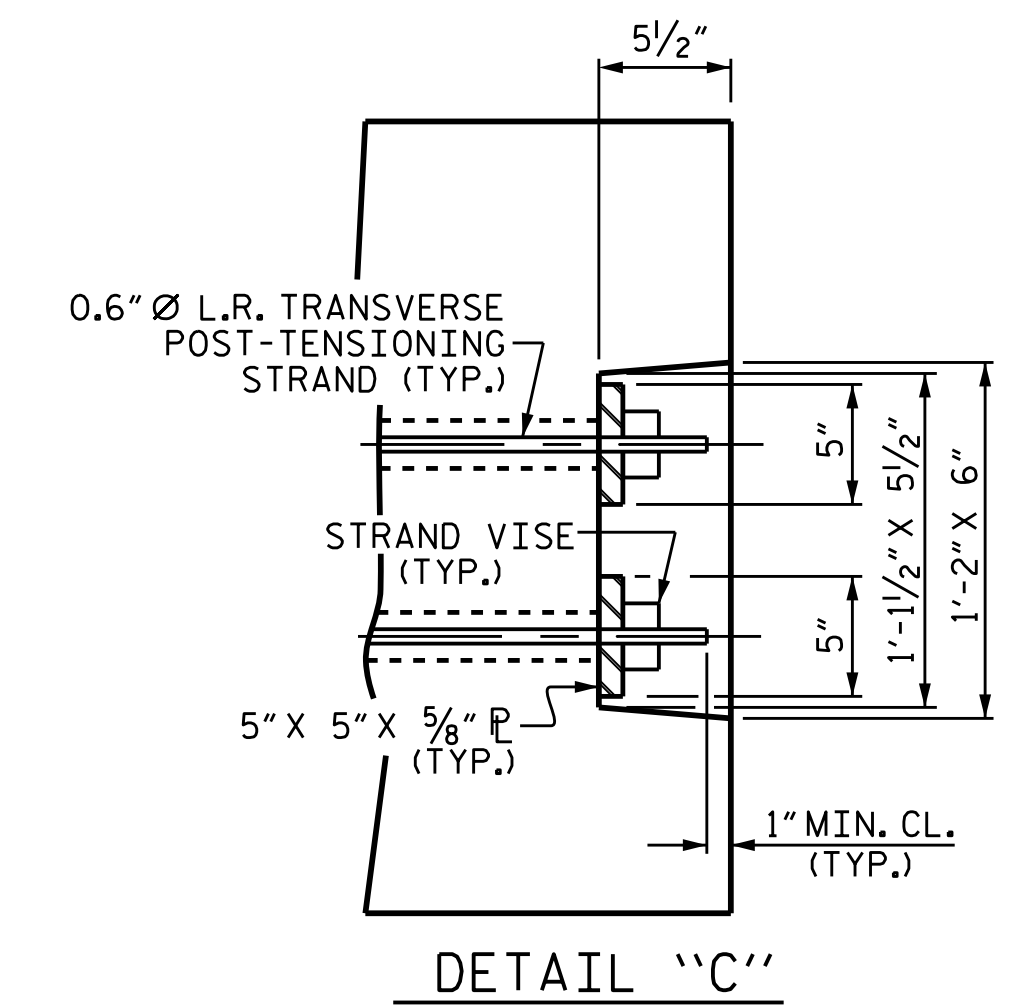
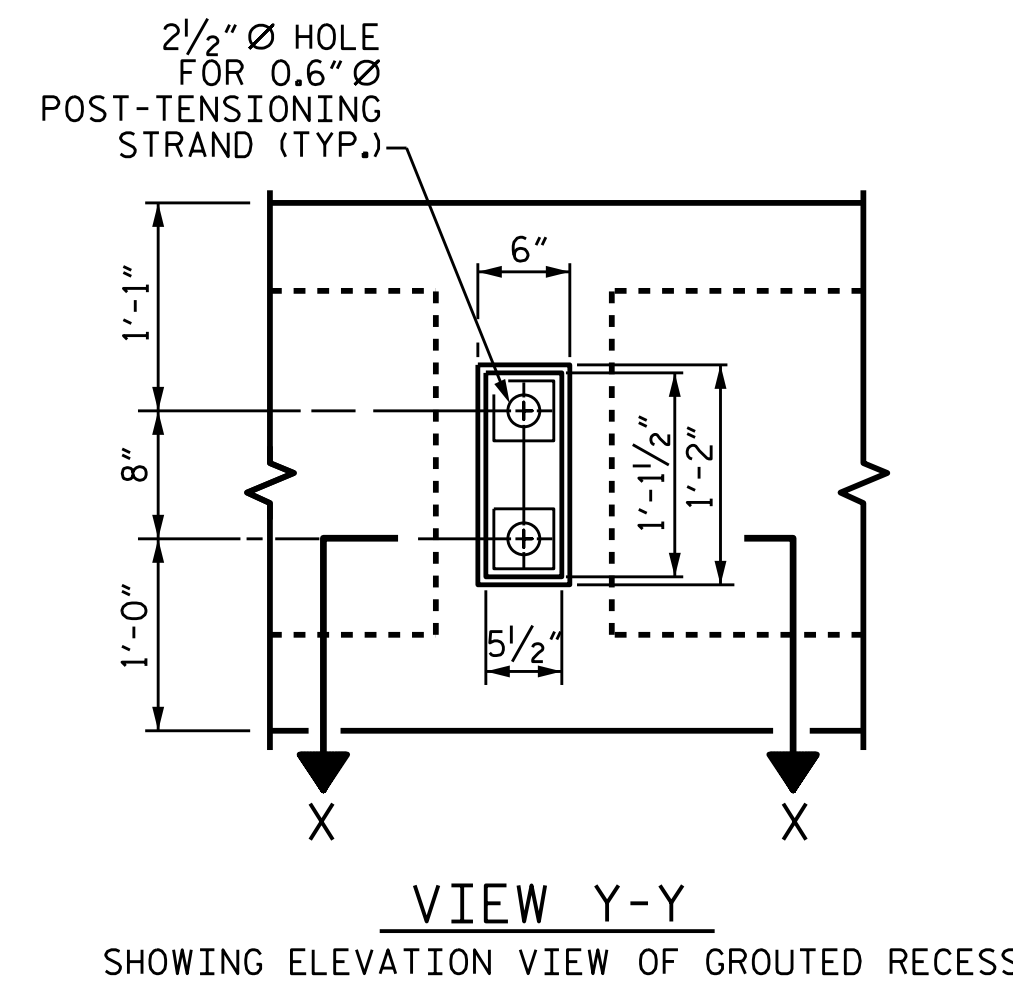
DOUBLE DIAPHRAGM DETAILS

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



VOID DRAIN DETAILS

(DIMENSIONS SHOWN ARE TYPICAL FOR EACH VOID)

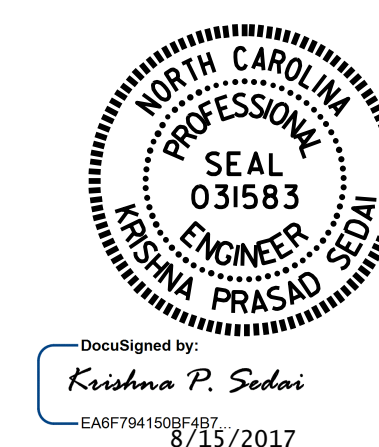


GROUDED RECESS DETAIL AT END OF POST-TENSIONED STRANDS OF EXTERIOR BOX BEAM

| DEAD LOAD DEFLECTION AND CAMBER | | |
|--|--------------------|---------|
| | 3'-0" x 2'-9" | |
| | 0.6" Ø L.R. STRAND | |
| | SPAN A | SPAN B |
| CAMBER (SLAB ALONE IN PLACE) | 3/4" | 2 3/4" |
| DEFLECTION DUE TO CONCRETE WEARING SURFACE | 3/16" | 9/16" |
| FINAL CAMBER | 9/16" | 2 3/16" |

PROJECT NO. B-5362
MONTGOMERY COUNTY
 STATION: 14+87.00 -L-

SHEET 7 OF 7



STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH
 3'-0" X 2'-9"
 PRESTRESSED CONCRETE
 BOX BEAM UNIT

DRAWN BY : A. SORSENGINH DATE : 7/2016
 CHECKED BY : E. K. POPE DATE : 3/2017
 DESIGN ENGINEER OF RECORD: H. A. LOCKLEAR DATE : 3/2017

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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.)

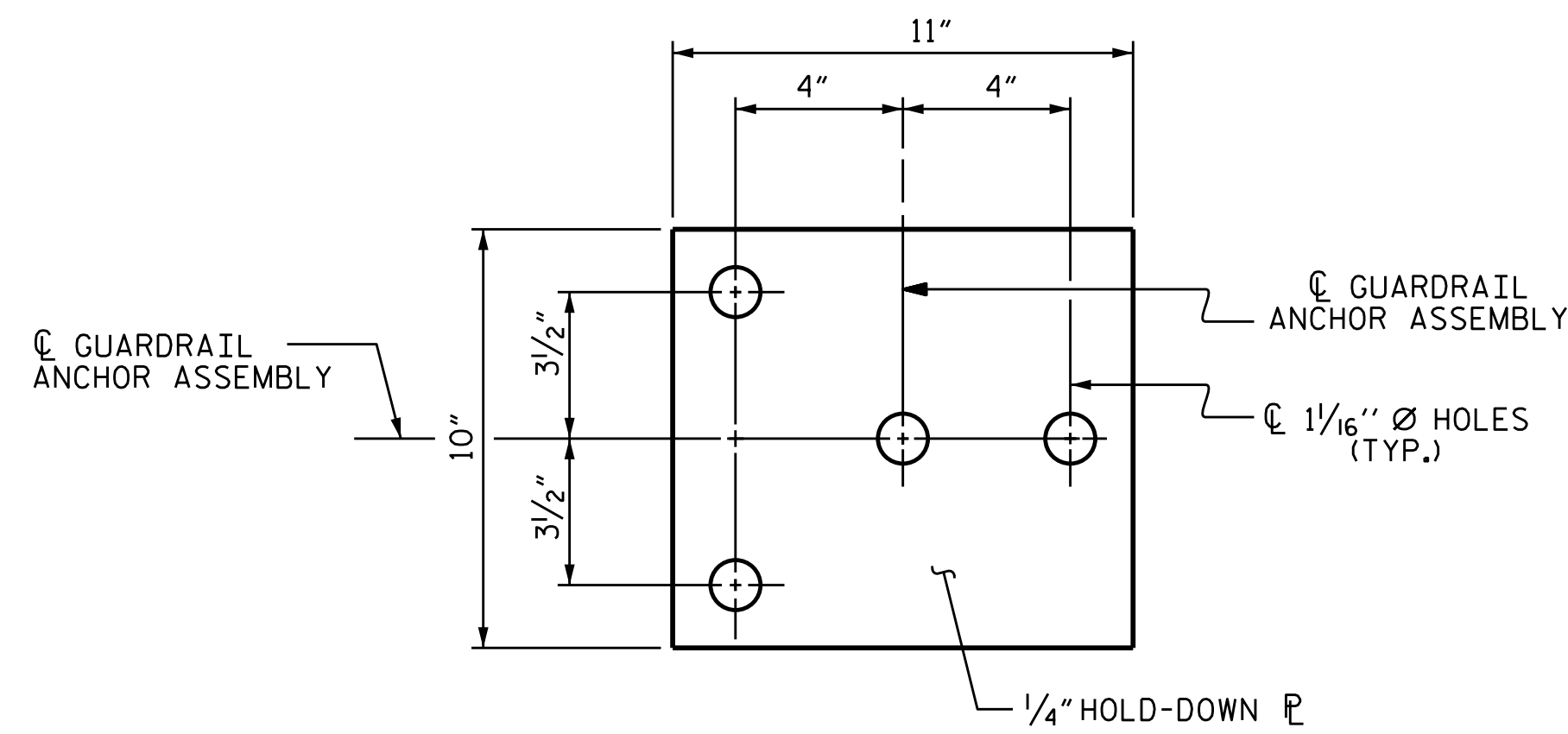
THE GUARDRAIL ANCHOR ASSEMBLY IS REQUIRED AT ALL POINTS WHERE APPROACH GUARDRAIL IS TO BE ATTACHED TO THE END OF BARRIER RAIL. FOR POINTS OF ATTACHMENT, SEE SKETCH.

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

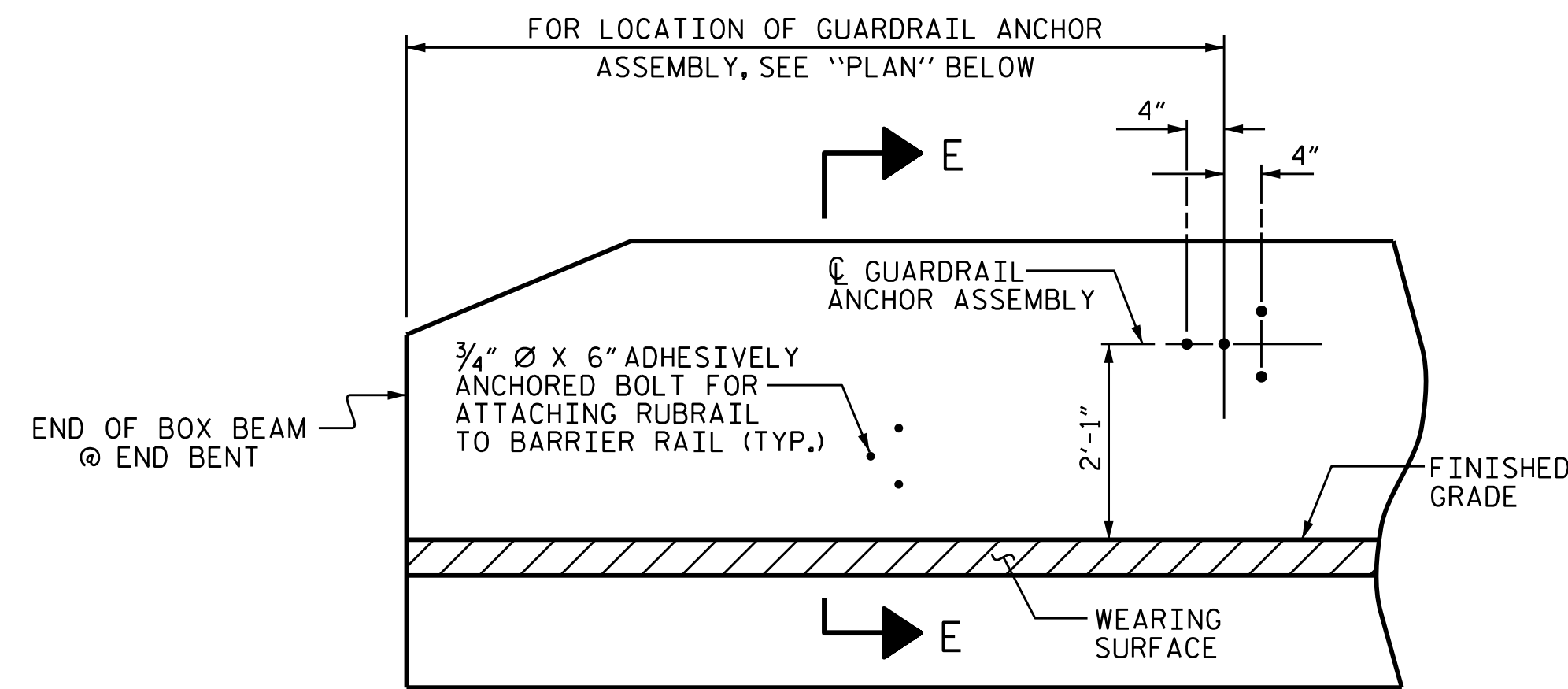
THE COST OF THE GUARDRAIL ANCHOR ASSEMBLY SHALL BE INCLUDED IN THE UNIT CONTRACT PRICE BID FOR CONCRETE BARRIER RAIL.

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.

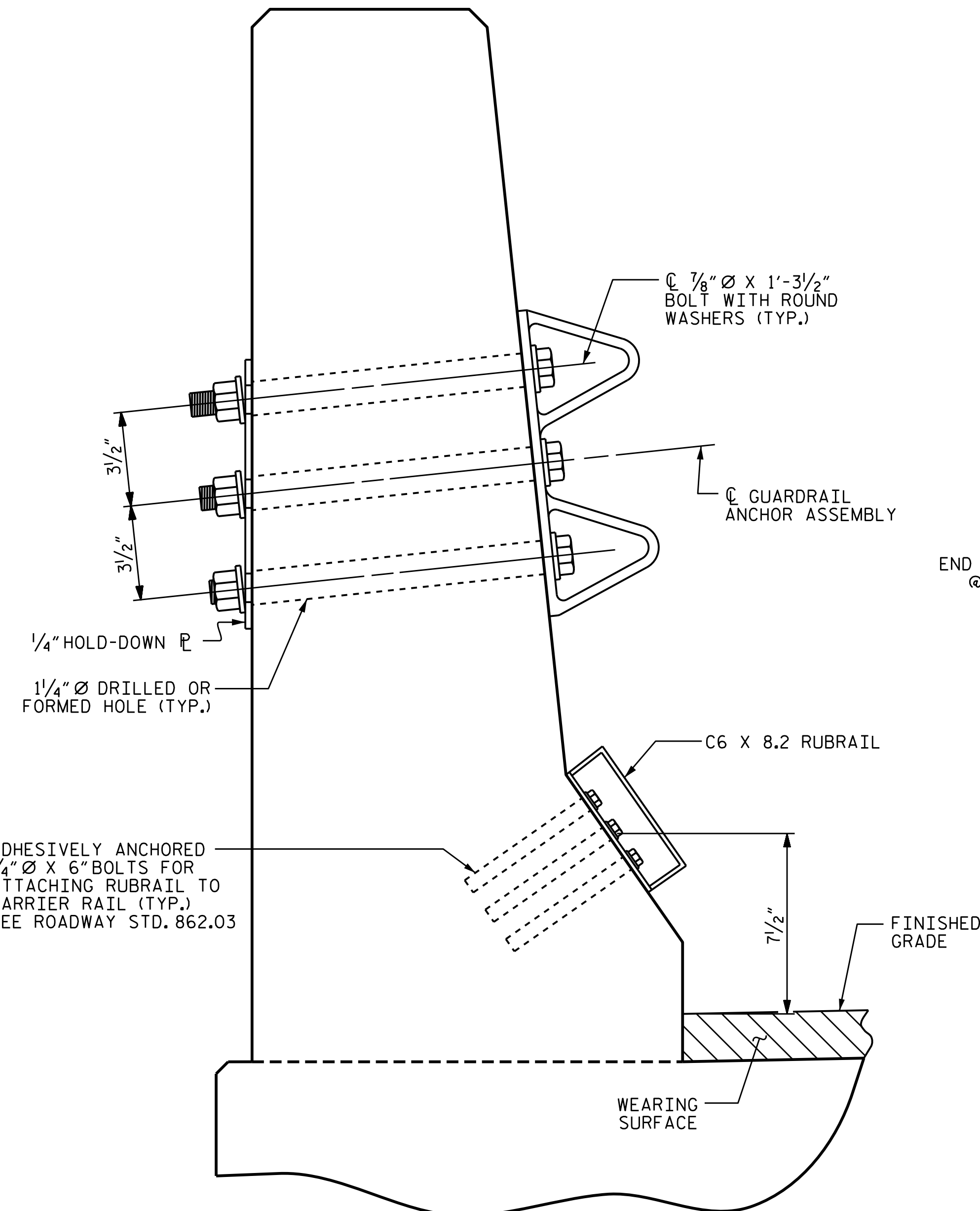
THE C6 X 8.2 RUBRAIL IS TO BE ADHESIVELY ANCHORED TO THE RAIL USING THREE 3/4" Ø X 6" BOLTS WITH WASHERS. LEVEL ONE FIELD TESTING IS REQUIRED, AND THE YIELD LOAD OF THE 3/4" Ø BOLT IS 12 KIPS. FOR ADHESIVELY ANCHORED ANCHOR BOLTS OR DOWELS, SEE STANDARD SPECIFICATIONS. SEE ROADWAY STANDARD 862.03 FOR DETAILS AND LOCATION OF THE RUBRAIL.



PLAN

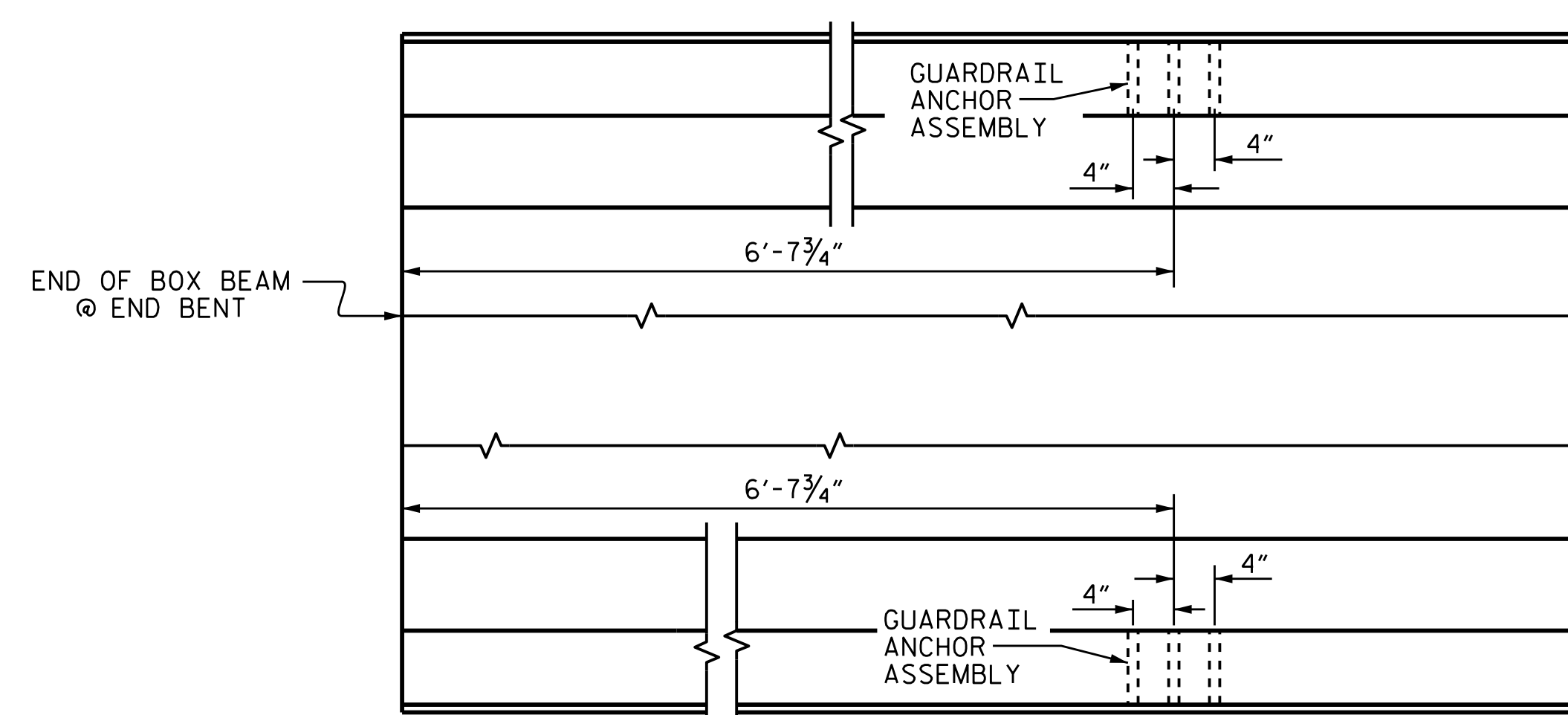


ELEVATION



SECTION E-E

GUARDRAIL ANCHOR ASSEMBLY DETAILS



PLAN

LOCATION OF ANCHORS FOR GUARDRAIL

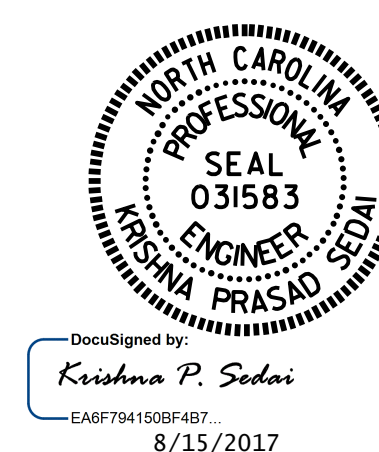
END BENT 1 SHOWN, END BENT 2 SIMILAR.



SKETCH SHOWING POINTS OF ATTACHMENTS

* DENOTES GUARDRAIL ANCHOR ASSEMBLY

PROJECT NO. B-5362
MONTGOMERY COUNTY
 STATION: 14+87.00 -L-



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

| | | | |
|----------------|--------------|--------|--------------|
| ASSEMBLED BY : | A. SORSENGIH | DATE : | 7/2016 |
| CHECKED BY : | E. K. POPE | DATE : | 3/2017 |
| DRAWN BY : | TLA | 5/06 | REV. 10/1/11 |
| CHECKED BY : | GM | 5/06 | REV. 7/12 |
| | | | REV. 6/13 |
| | | | MAA/GM |
| | | | MAA/GM |
| | | | MAA/GM |

DOCUMENT NOT CONSIDERED
 FINAL UNLESS ALL
 SIGNATURES COMPLETED

| REVISIONS | | | | | | SHEET NO. |
|-----------|-----|-------|-----|-----|-------|--------------|
| NO. | BY: | DATE: | NO. | BY: | DATE: | S-12 |
| 1 | | | 3 | | | TOTAL SHEETS |
| 2 | | | 4 | | | 21 |

NOTES

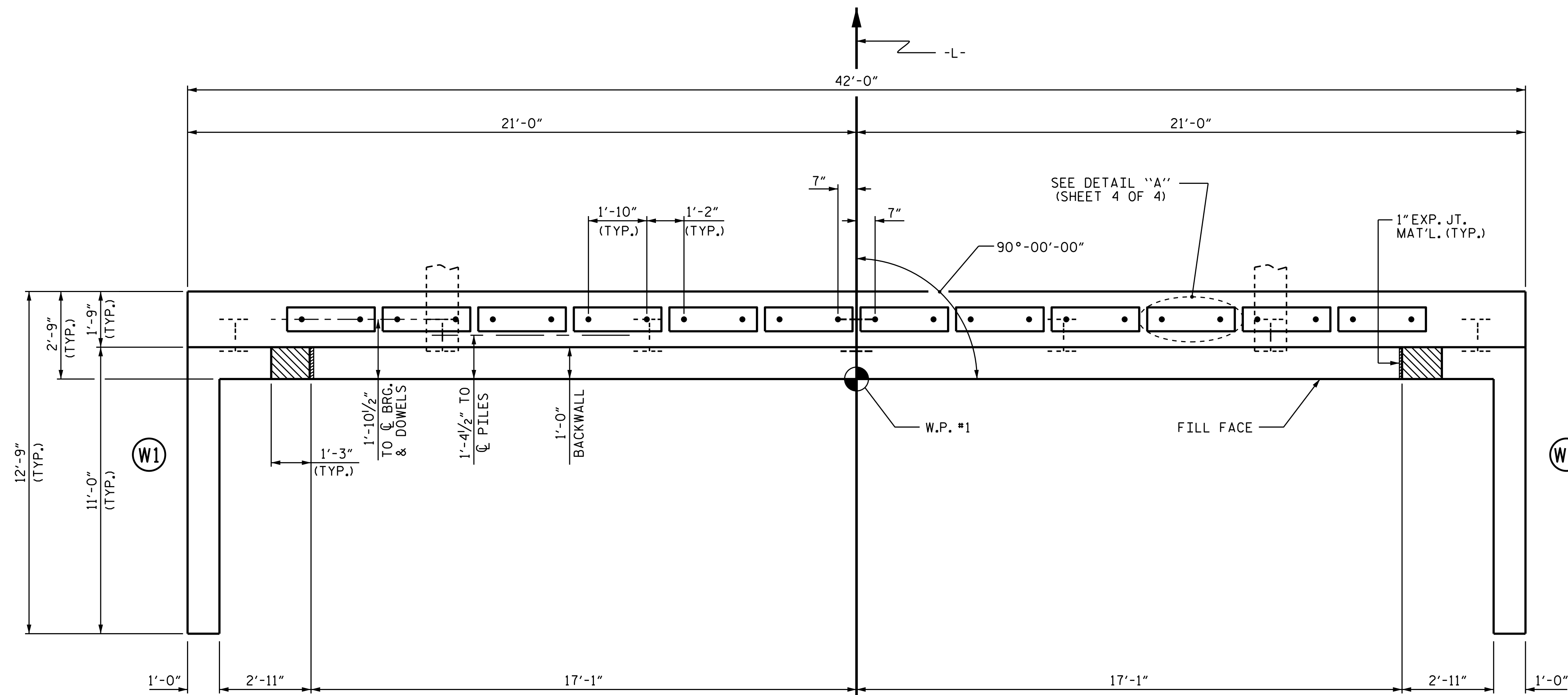
STIRRUPS IN CAP MAY BE SHIFTED AS NECESSARY TO CLEAR DOWELS.

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

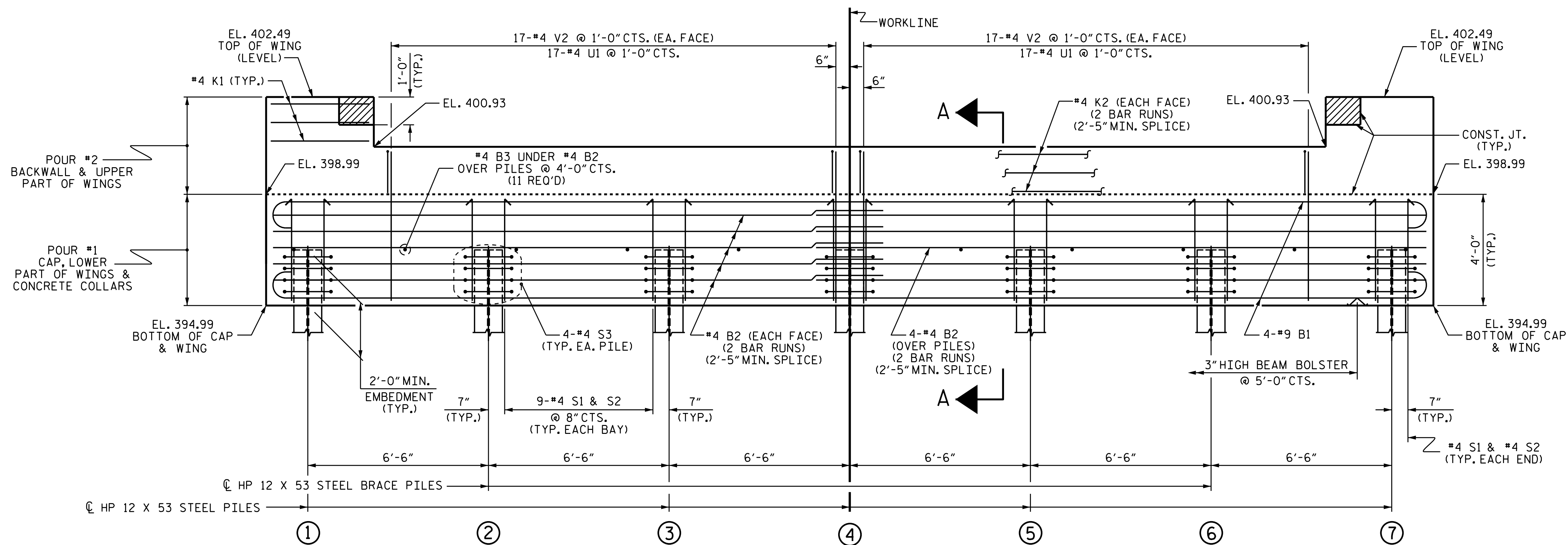
FOR PILE SPLICE DETAILS, SEE SHEET 4 OF 4.

FOR WING DETAILS, SEE SHEET 3 OF 4.

INSTALL THE 4" DIA. DRAIN PIPE THROUGH THE WINGWALL AS REQUIRED. FOR REINFORCED BRIDGE APPROACH FILLS, SEE ROADWAY PLANS. REINFORCING STEEL IN THE WINGWALL MAY BE SHIFTED AS NECESSARY TO CLEAR THE DRAIN PIPE.



PLAN



ELEVATION

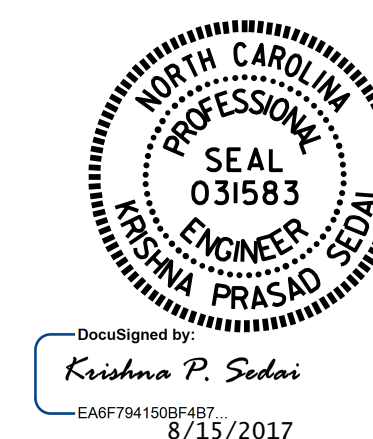
WINGS NOT SHOWN FOR CLARITY.
FOR SECTION A-A, SEE SHEET 4 OF 4.
CONCRETE COLLARS FOR STEEL PILES NOT SHOWN IN PLAN AND ELEVATION VIEWS FOR CLARITY.
SEE "CORROSION PROTECTION FOR STEEL PILES DETAIL", SHEET 4 OF 4.

PROJECT NO. B-5362
MONTGOMERY COUNTY
STATION: 14+87.00 -L-

SHEET 1 OF 4

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUBSTRUCTURE
END BENT 1



| | | | |
|----------------|---------------|-----------|---------|
| ASSEMBLED BY : | A. SORSENGINH | DATE : | 7/2016 |
| CHECKED BY : | E. K. POPE | DATE : | 3/2017 |
| DRAWN BY : | WJH 12/11 | REV. 4/15 | MAA/TMG |
| CHECKED BY : | AAC 12/11 | | |

DOCUMENT NOT CONSIDERED
FINAL UNLESS ALL
SIGNATURES COMPLETED

| REVISIONS | | | | | | SHEET NO. |
|-----------|-----|-------|-----|-----|-------|--------------|
| NO. | BY: | DATE: | NO. | BY: | DATE: | S-13 |
| 1 | | | 3 | | | TOTAL SHEETS |
| 2 | | | 4 | | | 21 |

NOTES

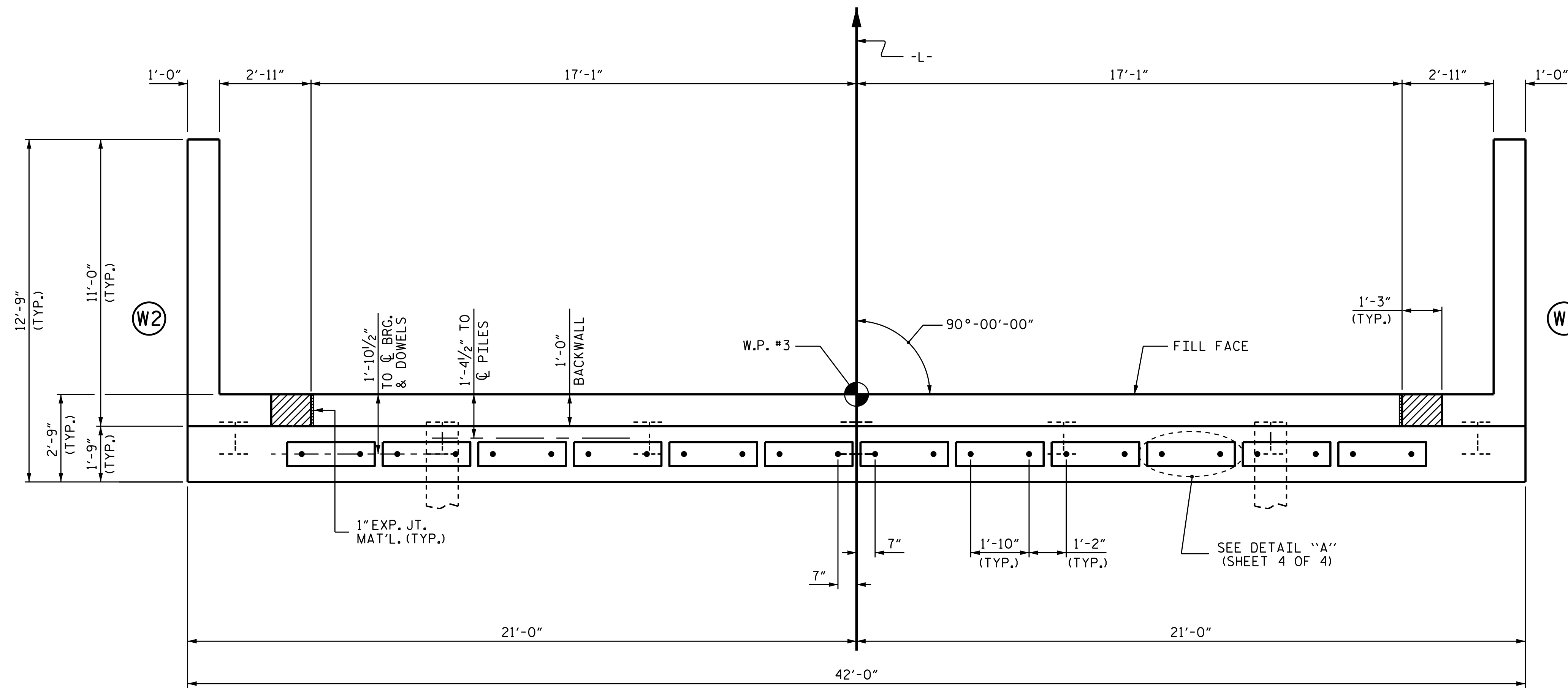
STIRRUPS IN CAP MAY BE SHIFTED AS NECESSARY TO CLEAR DOWELS.

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

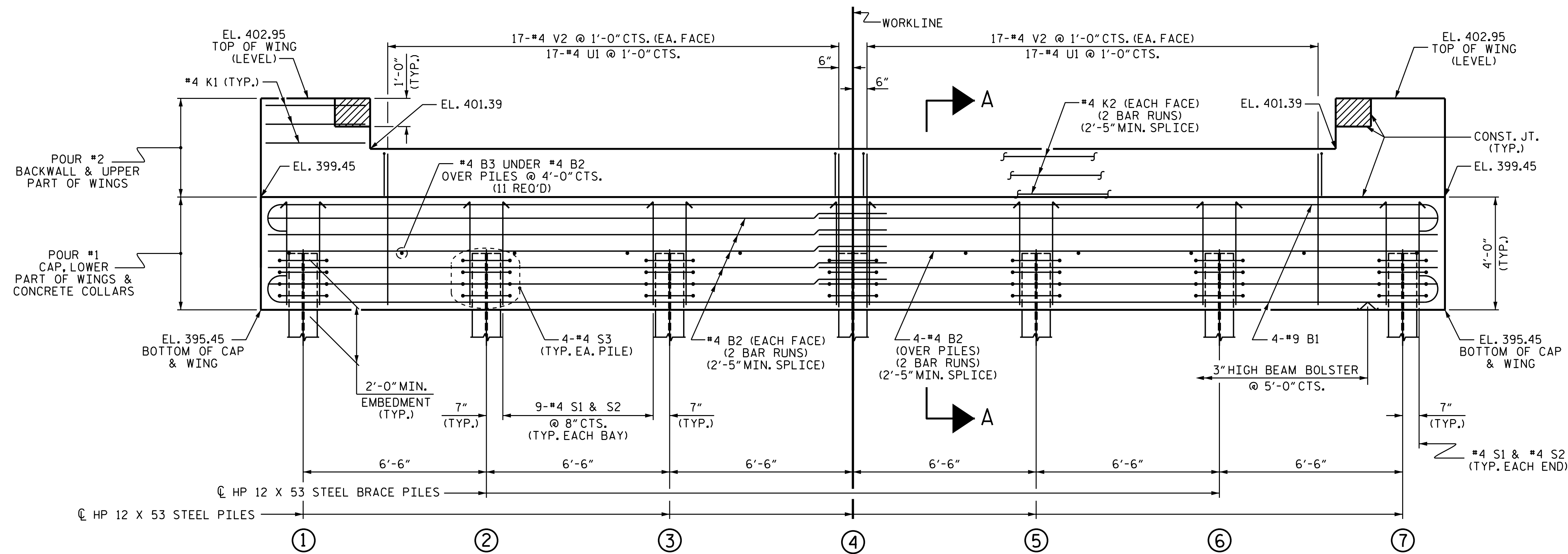
FOR PILE SPLICE DETAILS, SEE SHEET 4 OF 4.

FOR WING DETAILS, SEE SHEET 3 OF 4.

INSTALL THE 4" DIA. DRAIN PIPE THROUGH THE WINGWALL AS REQUIRED. FOR REINFORCED BRIDGE APPROACH FILLS, SEE ROADWAY PLANS. REINFORCING STEEL IN THE WINGWALL MAY BE SHIFTED AS NECESSARY TO CLEAR THE DRAIN PIPE.



PLAN



ELEVATION

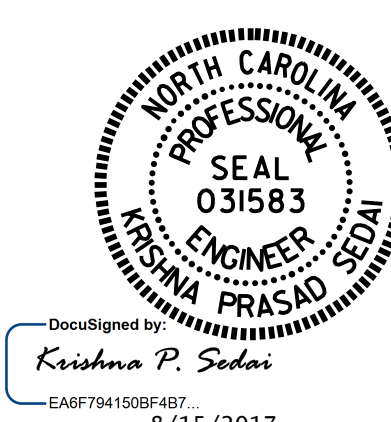
WINGS NOT SHOWN FOR CLARITY.
FOR SECTION A-A, SEE SHEET 4 OF 4.
CONCRETE COLLARS FOR STEEL PILES NOT SHOWN IN PLAN AND ELEVATION VIEWS FOR CLARITY.
SEE "CORROSION PROTECTION FOR STEEL PILES DETAIL", SHEET 4 OF 4.

PROJECT NO. B-5362
MONTGOMERY COUNTY
STATION: 14+87.00 -L-

SHEET 2 OF 4

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

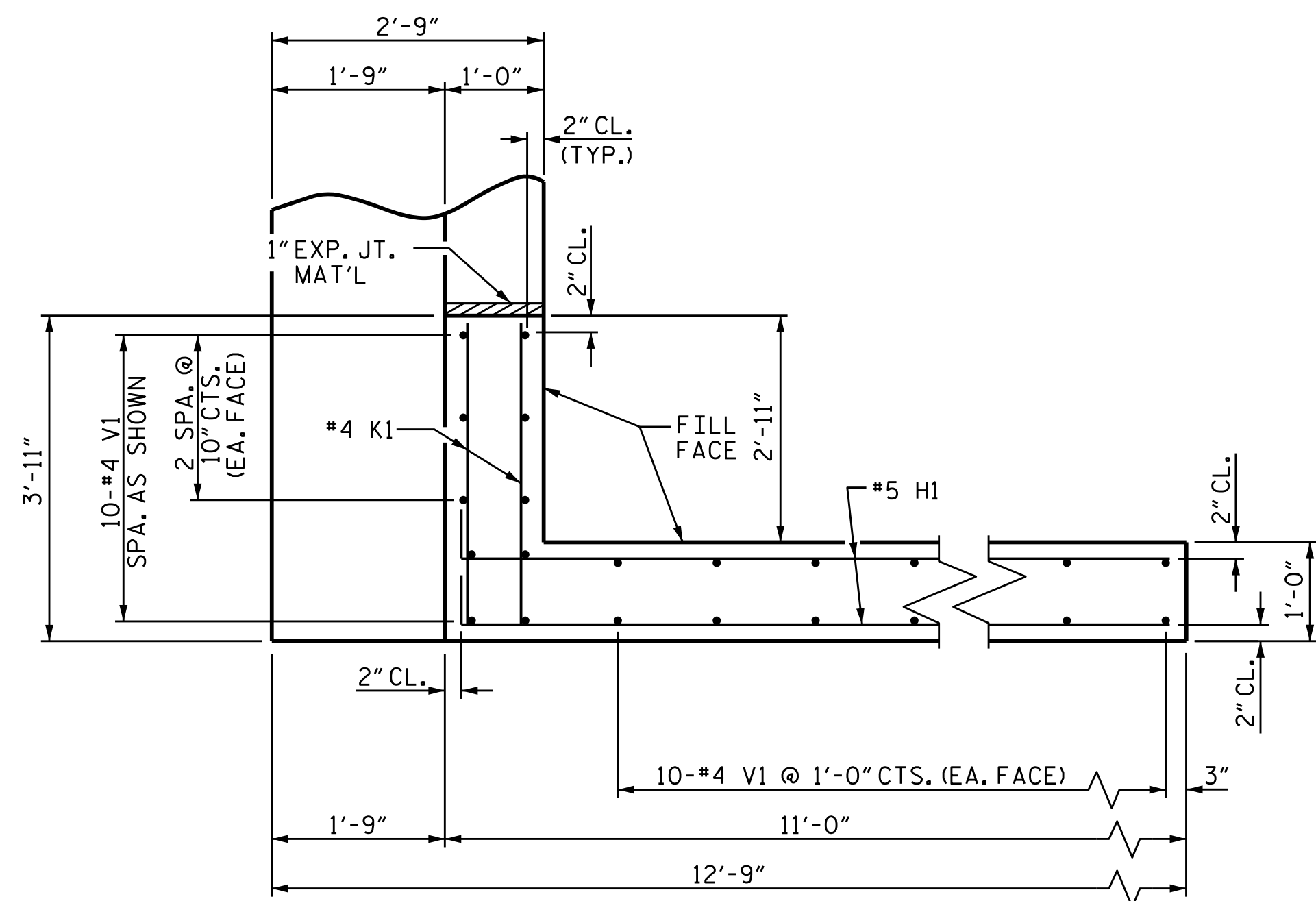
SUBSTRUCTURE
END BENT 2



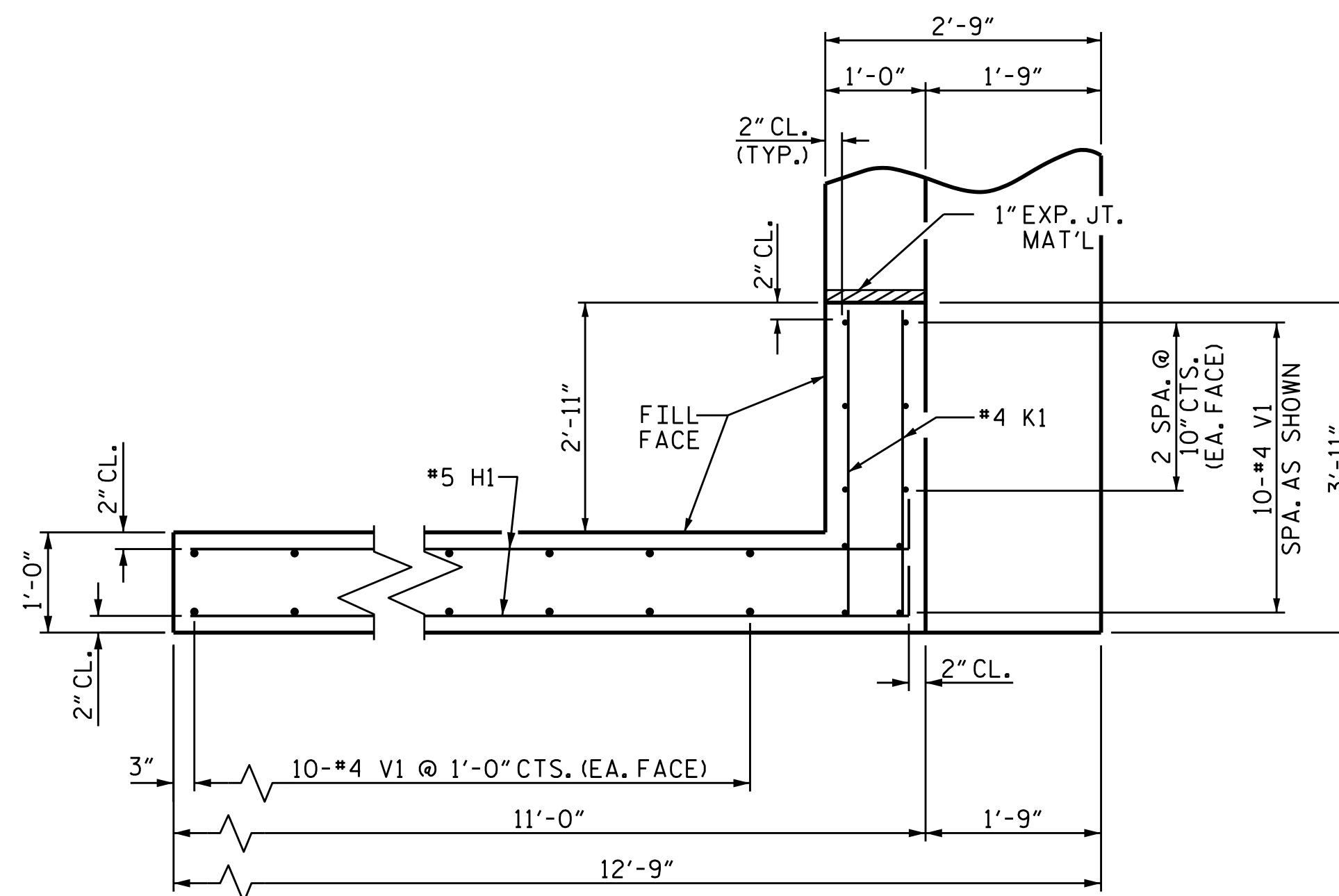
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|----------------|---------------|-----------|---------|
| ASSEMBLED BY : | A. SORSENGINH | DATE : | 7/2016 |
| CHECKED BY : | E. K. POPE | DATE : | 3/2017 |
| DRAWN BY : | WJH 12/11 | REV. 4/15 | MAA/TMG |
| CHECKED BY : | AAC 12/11 | | |

DOCUMENT NOT CONSIDERED
FINAL UNLESS ALL
SIGNATURES COMPLETED

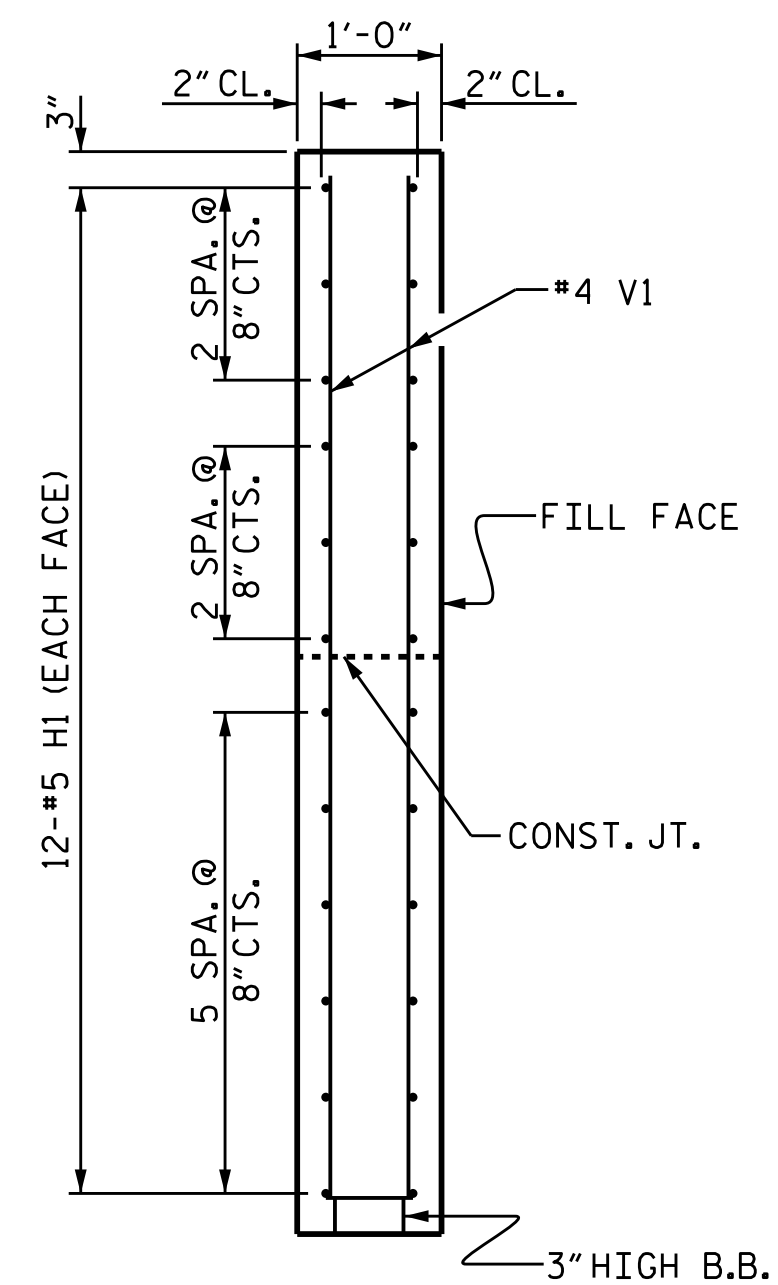
| REVISIONS | | | | | | SHEET NO. |
|-----------|-----|-------|-----|-----|-------|--------------|
| NO. | BY: | DATE: | NO. | BY: | DATE: | S-14 |
| 1 | | | 3 | | | TOTAL SHEETS |
| 2 | | | 4 | | | 21 |



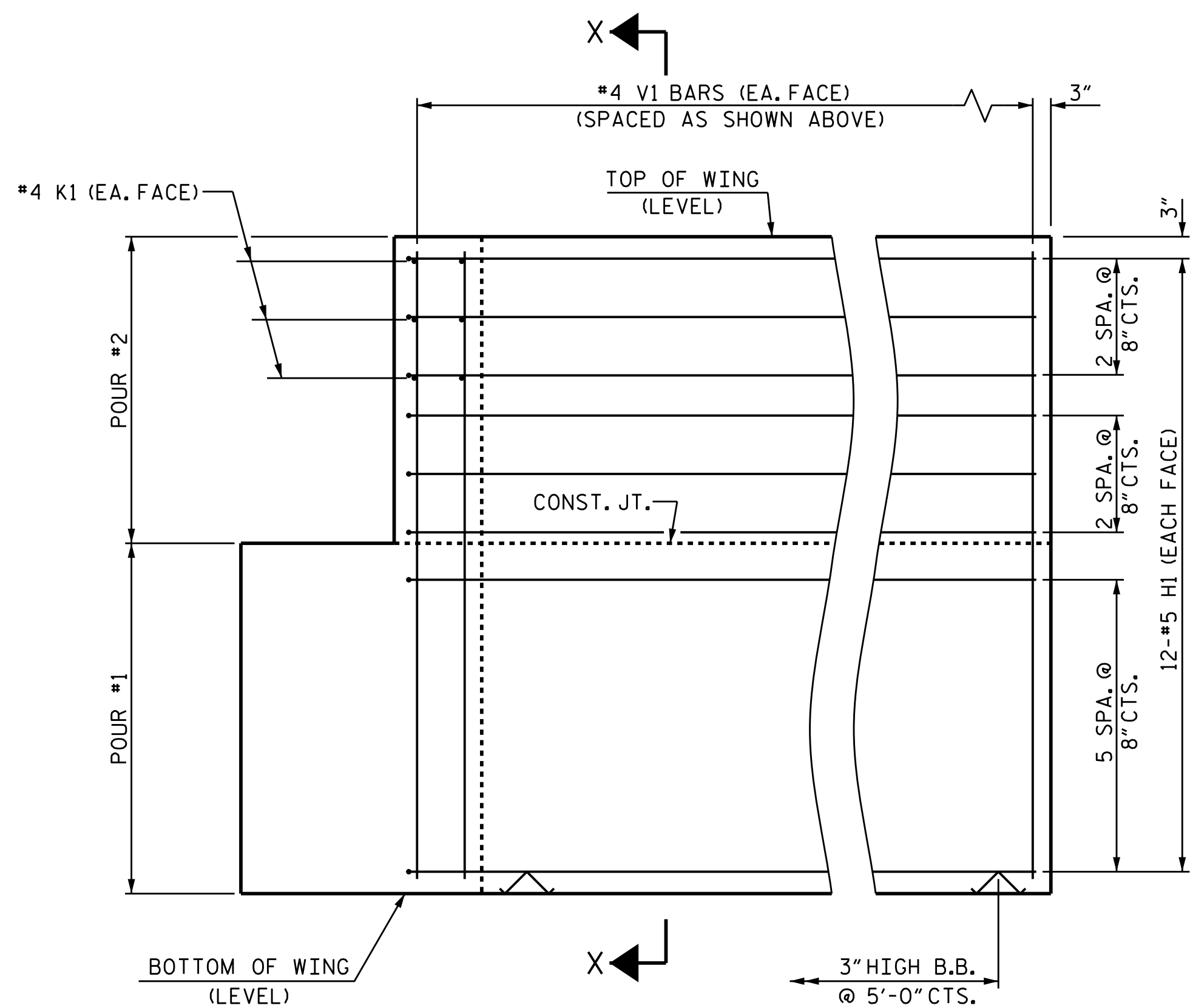
PLAN OF WING (W1)



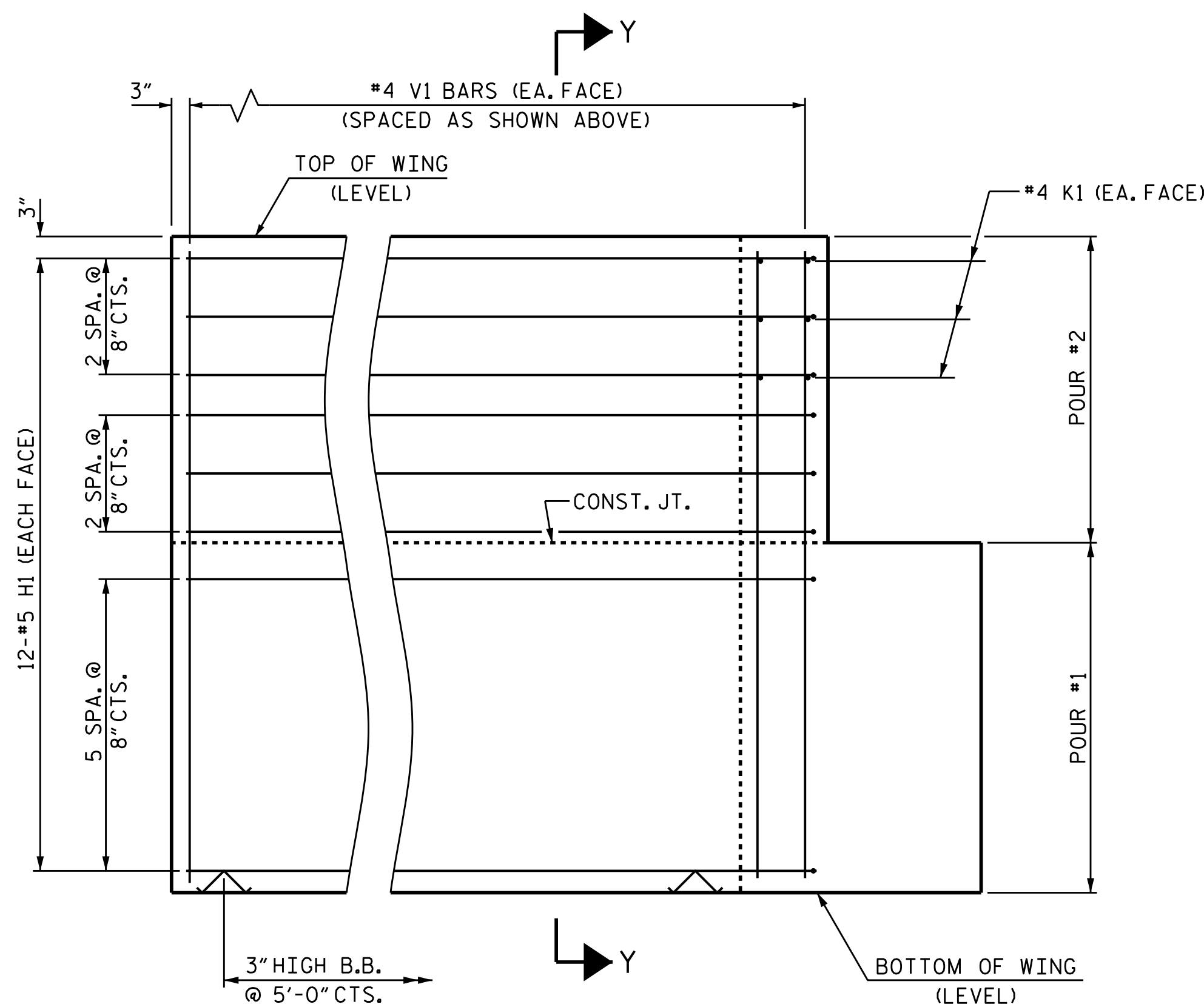
PLAN OF WING (W2)



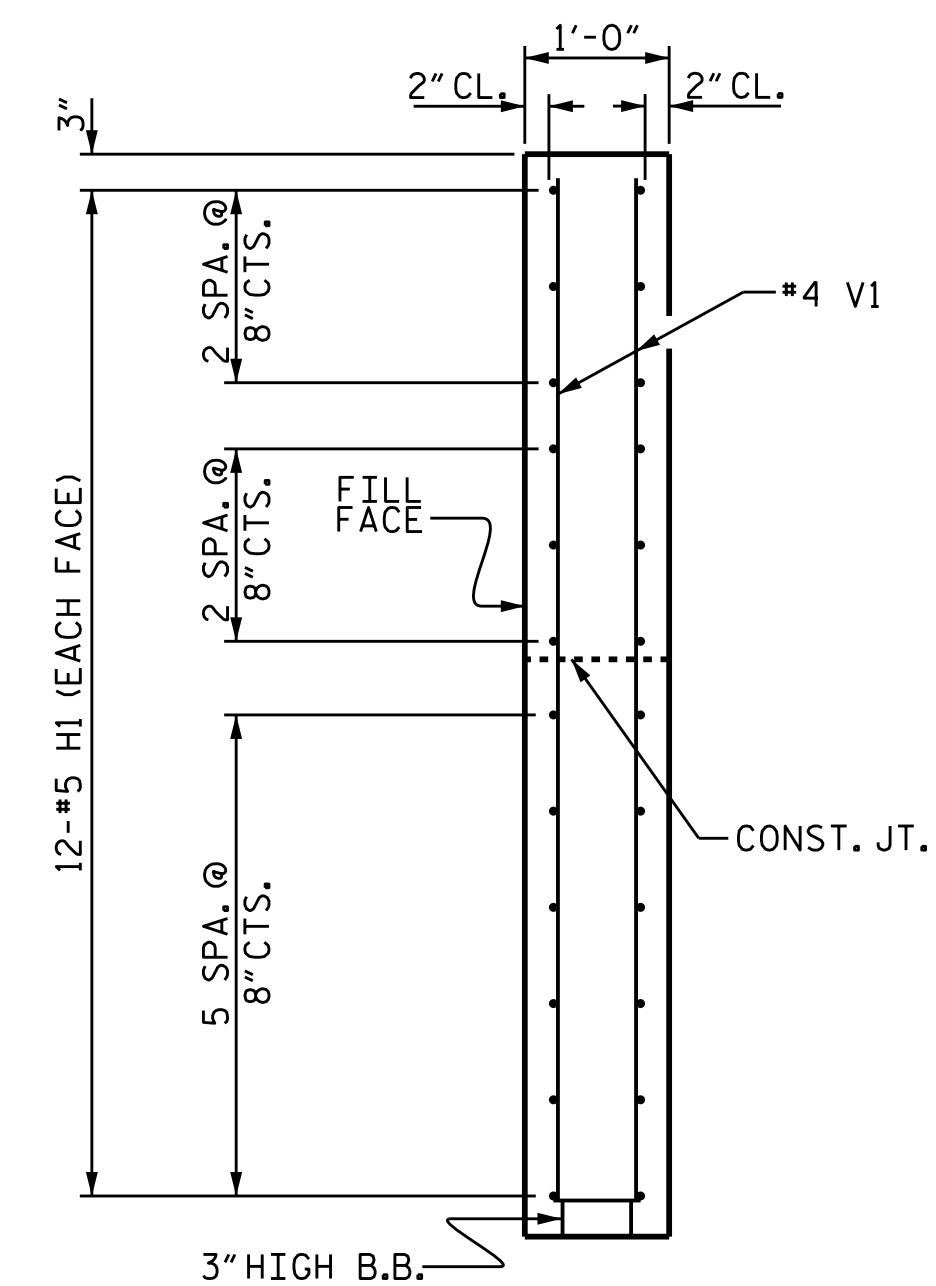
SECTION X-X



ELEVATION OF WING (W1)



ELEVATION OF WING (W2)

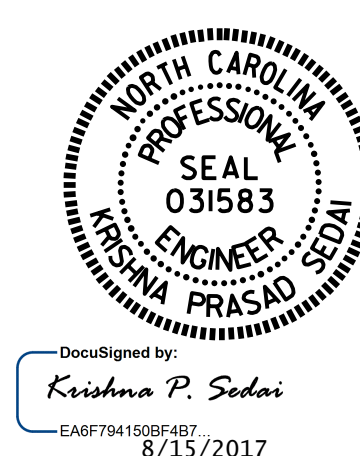


SECTION Y-Y

WING DETAILS

PROJECT NO. B-5362
 MONTGOMERY COUNTY
 STATION: 14+87.00 -L-

SHEET 3 OF 4



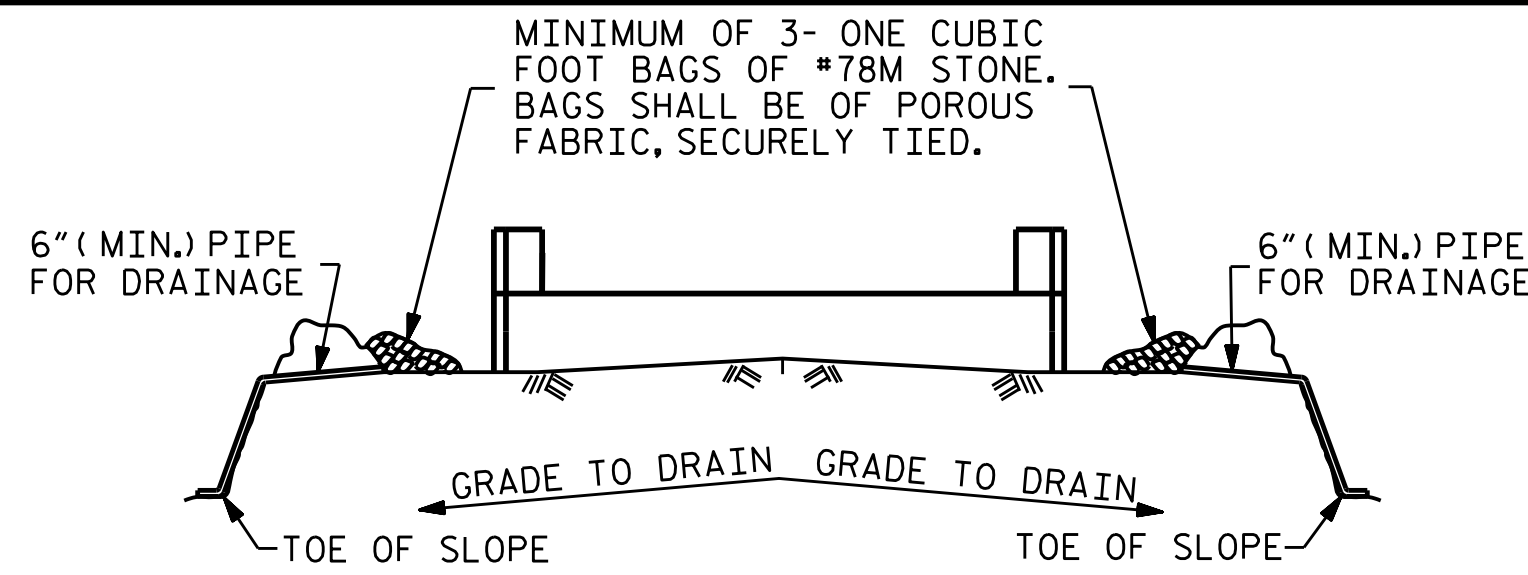
STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

SUBSTRUCTURE
 END BENT
 WING DETAILS

| | |
|------------------------------|---------------|
| ASSEMBLED BY : A. SORSENGINH | DATE : 7/2016 |
| CHECKED BY : E. K. POPE | DATE : 3/2017 |
| DRAWN BY : WJH 12/11 | REV. 4/15 |
| CHECKED BY : AAC 12/11 | MAA/TMG |

DOCUMENT NOT CONSIDERED
 FINAL UNLESS ALL
 SIGNATURES COMPLETED

| REVISIONS | | | | | | SHEET NO. |
|-----------|-----|-------|-----|-----|-------|--------------|
| NO. | BY: | DATE: | NO. | BY: | DATE: | S-15 |
| 1 | | | 3 | | | TOTAL SHEETS |
| 2 | | | 4 | | | 21 |

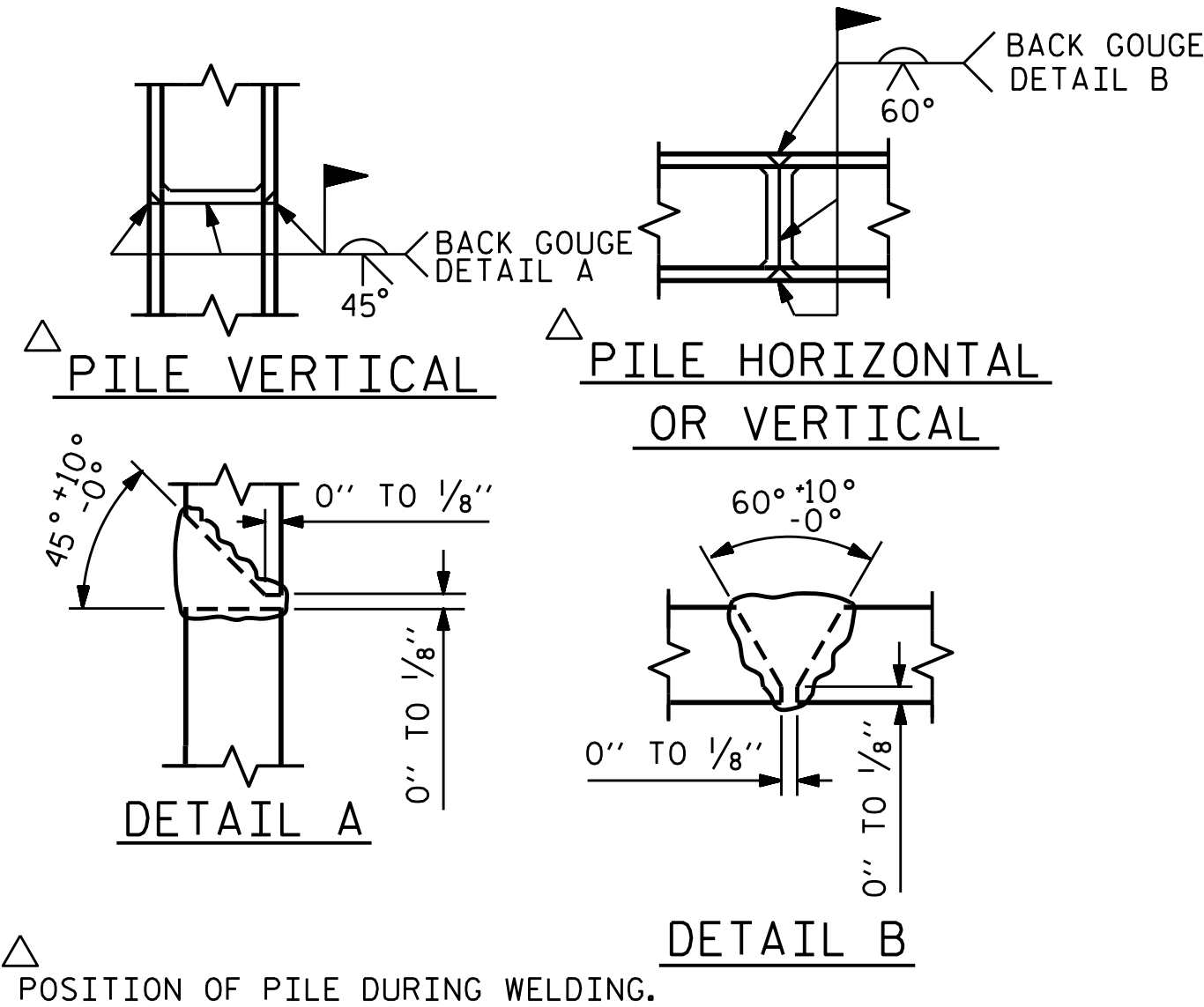


BAGGED STONE AND PIPE SHALL BE PLACED IMMEDIATELY AFTER COMPLETION OF END BENT EXCAVATION. PIPE MAY BE EITHER CONCRETE, CORRUGATED STEEL, CORRUGATED ALUMINUM ALLOY, OR CORRUGATED PLASTIC. PERFORATED PIPE WILL NOT BE ALLOWED.

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.

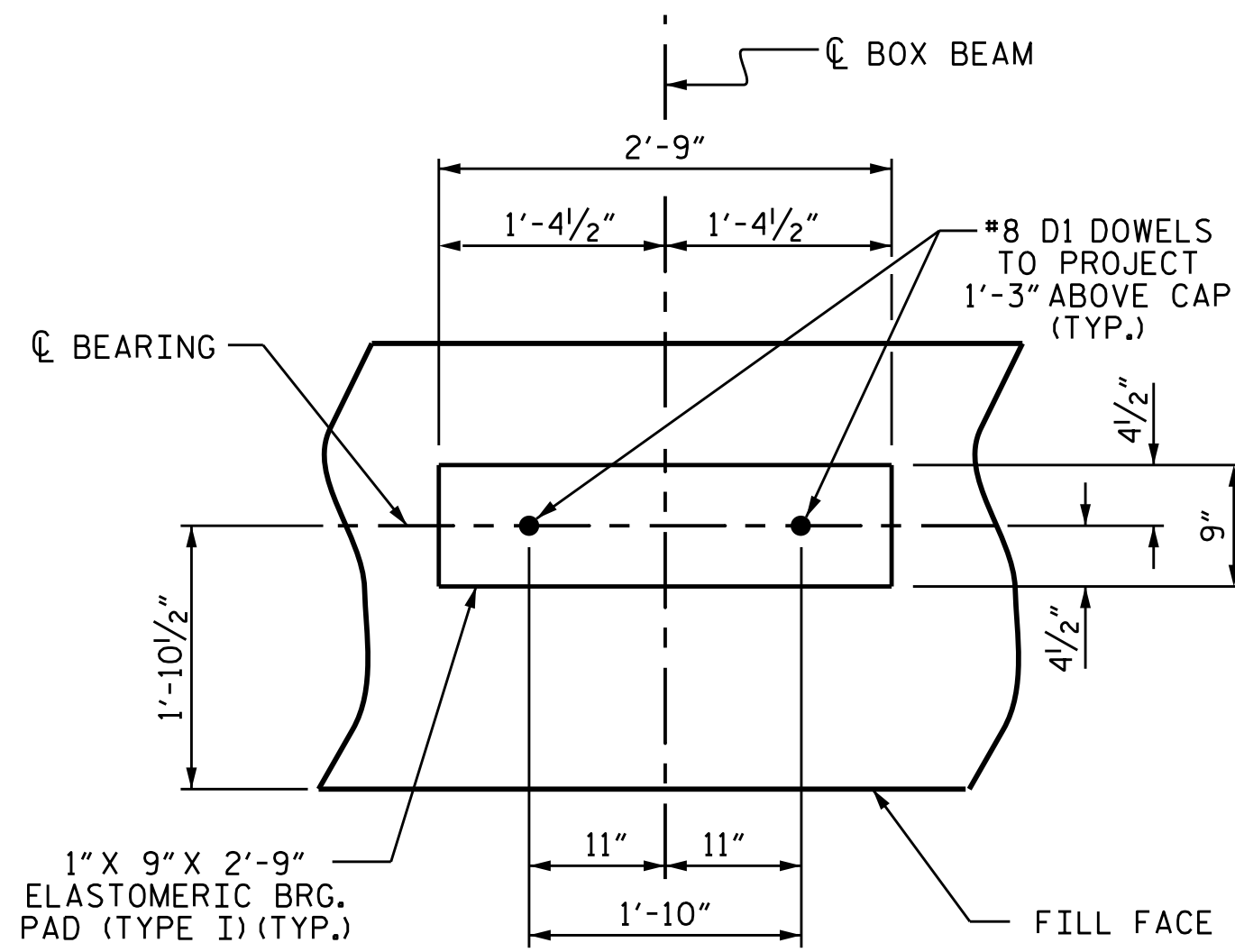
TEMPORARY DRAINAGE AT END BENT



PILE SPLICE DETAILS

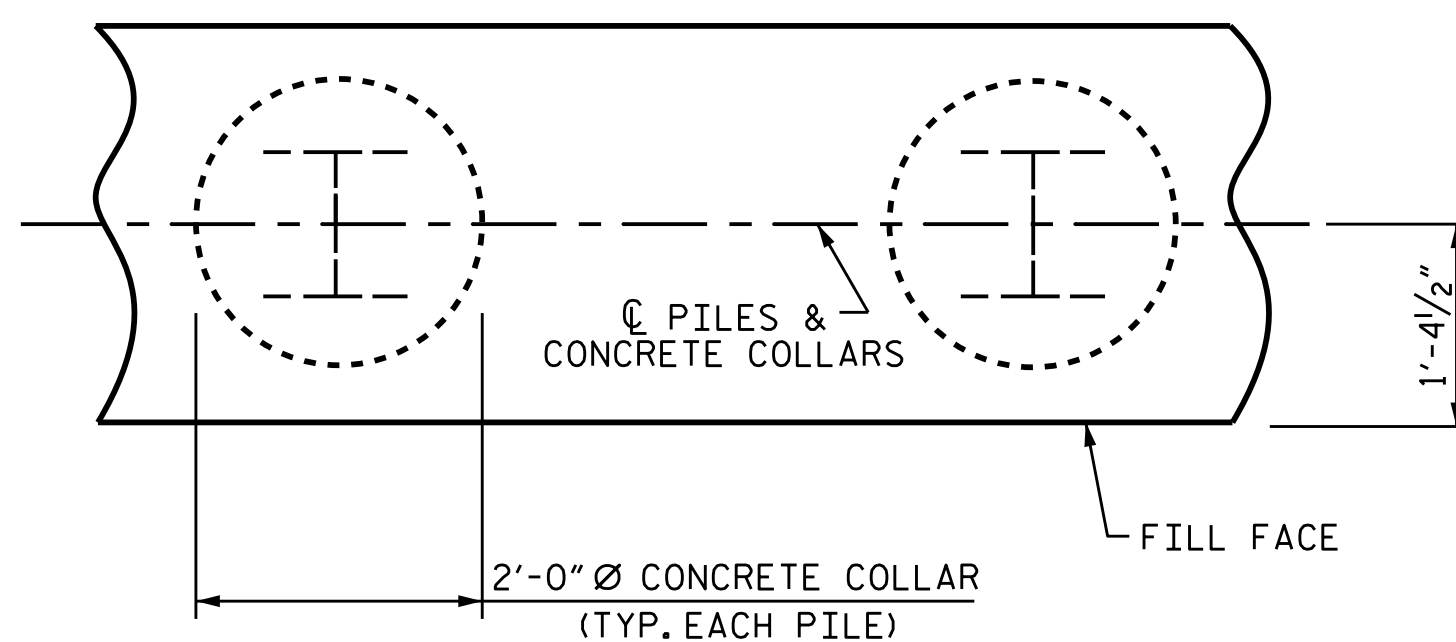
| BAR TYPES | |
|---|---|
| | |
| | |
| | |
| ALL BAR DIMENSIONS ARE OUT TO OUT. | |
| END BENT No. 1 HP 12 X 53 STEEL PILES NO: 7 LIN. FT.= 105 | END BENT No. 2 HP 12 X 53 STEEL PILES NO: 7 LIN. FT.= 140 |
| PILE DRIVING EQUIPMENT SETUP FOR HP 12 X 53 STEEL PILES 7 EACH | PILE DRIVING EQUIPMENT SETUP FOR HP 12 X 53 STEEL PILES 7 EACH |

| BILL OF MATERIAL FOR ONE END BENT | | | | | |
|---|-----|------|------|--------|-----------|
| BAR | NO. | SIZE | TYPE | LENGTH | WEIGHT |
| B1 | 8 | #9 | 1 | 44'-0" | 1197 |
| B2 | 28 | #4 | STR | 22'-1" | 413 |
| B3 | 11 | #4 | STR | 2'-5" | 18 |
| D1 | 24 | #8 | STR | 2'-3" | 144 |
| H1 | 48 | #5 | 2 | 11'-4" | 567 |
| K1 | 12 | #4 | STR | 3'-7" | 29 |
| K2 | 12 | #4 | STR | 22'-1" | 177 |
| S1 | 56 | #4 | 3 | 10'-5" | 390 |
| S2 | 56 | #4 | 4 | 3'-2" | 118 |
| S3 | 28 | #4 | 5 | 6'-6" | 122 |
| U1 | 34 | #4 | 6 | 3'-7" | 81 |
| V1 | 60 | #4 | STR | 7'-2" | 287 |
| V2 | 68 | #4 | STR | 4'-10" | 220 |
| REINFORCING STEEL (FOR ONE END BENT) | | | | | 3763 LBS. |
| CLASS A CONCRETE BREAKDOWN (FOR ONE END BENT) | | | | | |
| POUR #1 CAP, LOWER PART OF WINGS & COLLARS | | | | | 21.3 C.Y. |
| POUR #2 BACKWALL & UPPER PART OF WINGS | | | | | 6.1 C.Y. |
| TOTAL CLASS A CONCRETE | | | | | 27.4 C.Y. |



DETAIL "A"

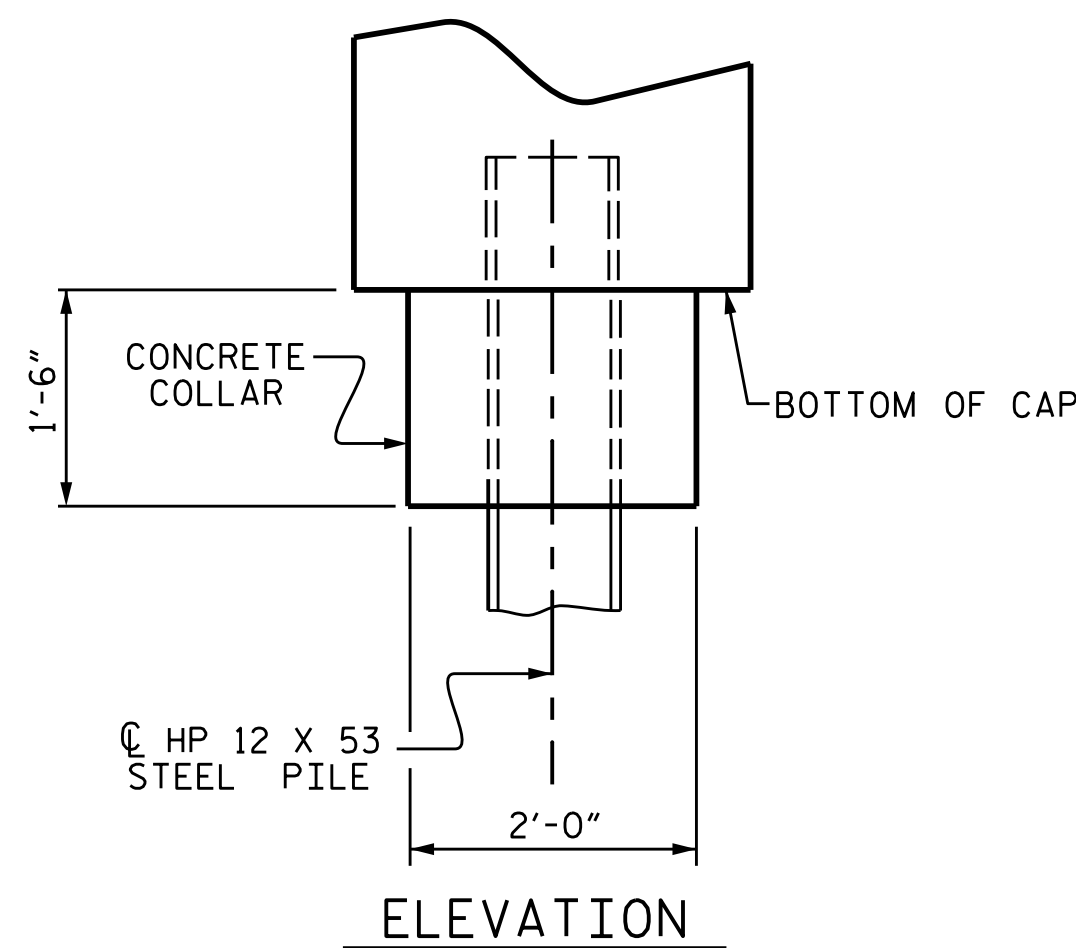
(END BENT No. 1 SHOWN, END BENT No. 2 SIMILAR BY ROTATION)



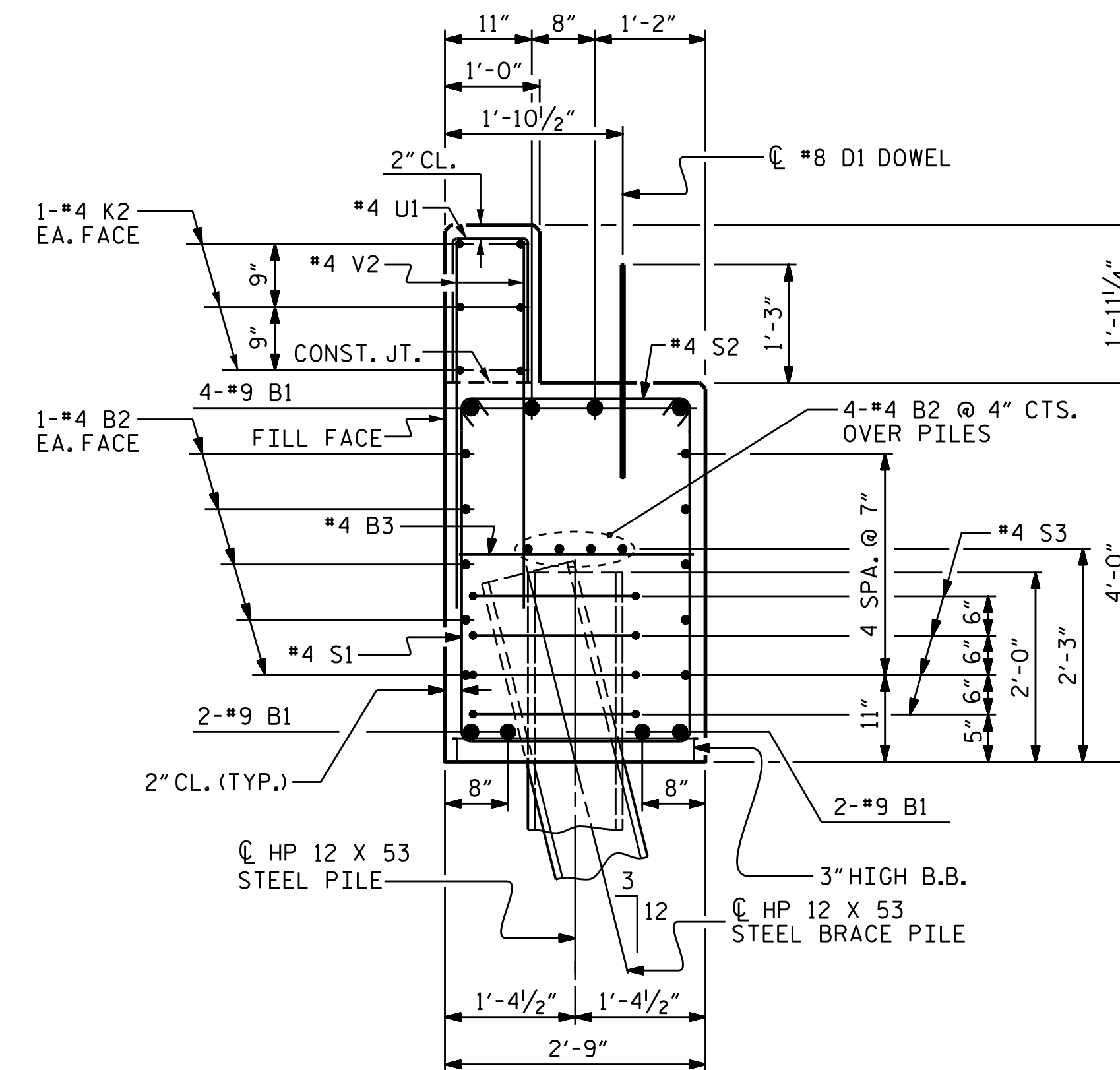
PLAN

CORROSION PROTECTION FOR STEEL PILES DETAIL

(END BENT No. 1 SHOWN, END BENT No. 2 SIMILAR BY ROTATION)

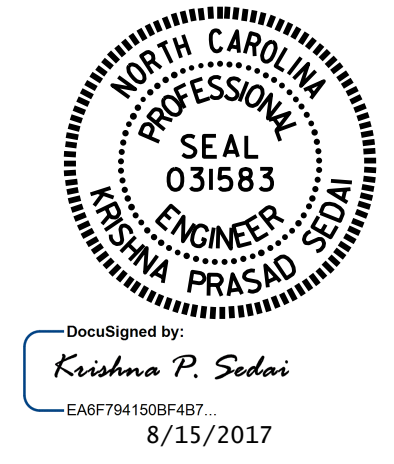


ELEVATION



SECTION A-A

(CONCRETE COLLAR NOT SHOWN FOR CLARITY. SEE "CORROSION PROTECTION FOR STEEL PILES DETAIL.")



PROJECT NO. B-5362
MONTGOMERY COUNTY
STATION: 14+87.00 -L-

SHEET 4 OF 4

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUBSTRUCTURE
END BENT 1 & 2
DETAILS

| REVISIONS | | | | | | SHEET NO. |
|-----------|-----|-------|-----|-----|-------|--------------|
| NO. | BY: | DATE: | NO. | BY: | DATE: | S-16 |
| 1 | | | 3 | | | TOTAL SHEETS |
| 2 | | | 4 | | | 21 |

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

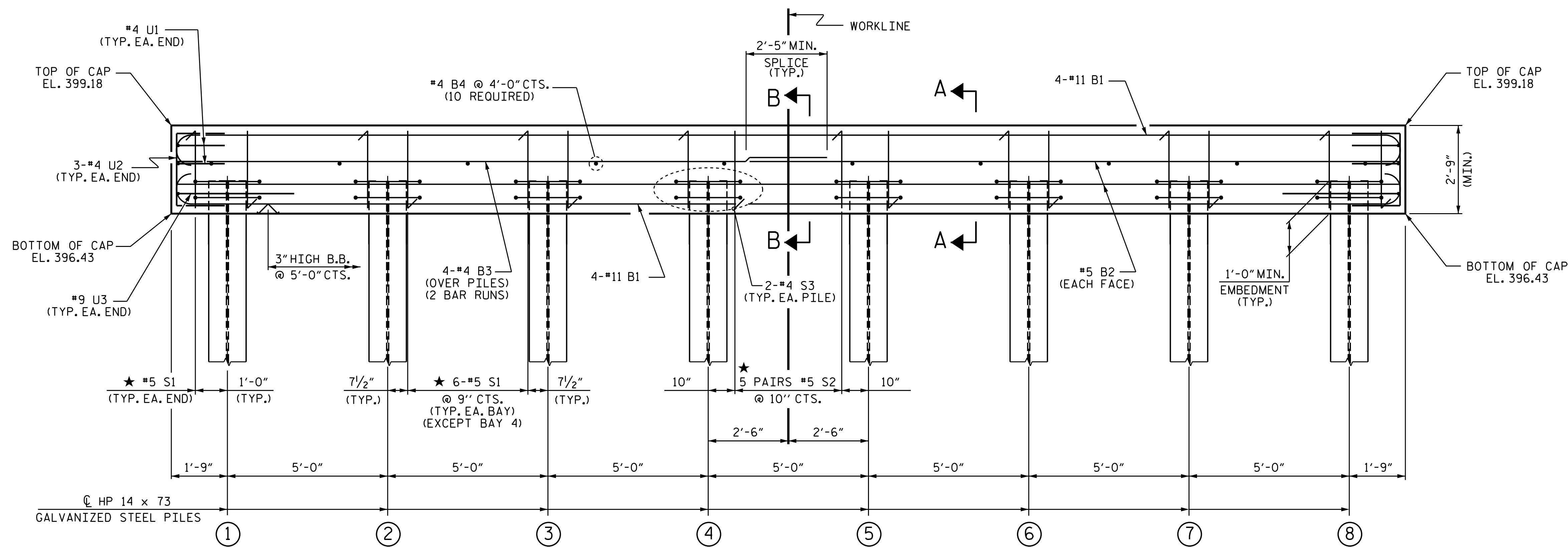
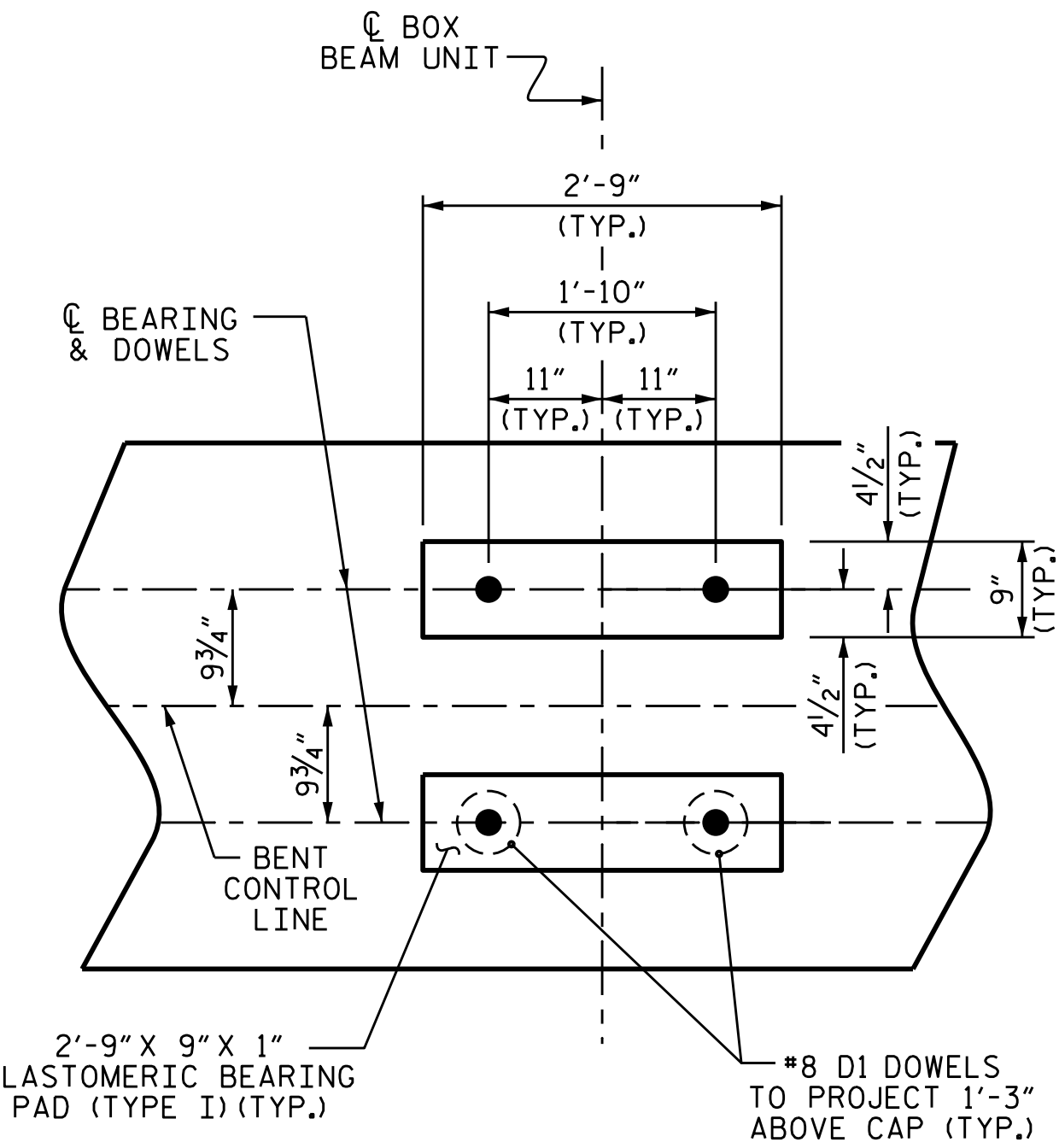
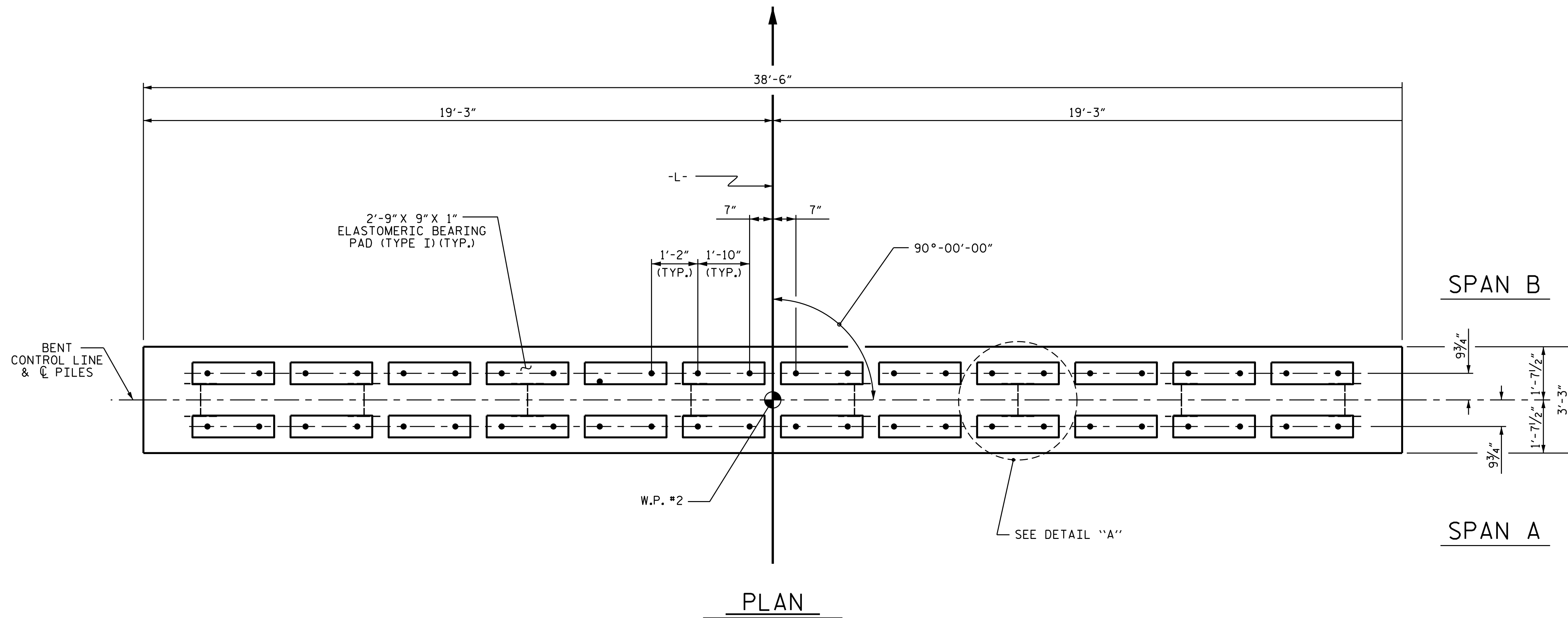
| | |
|-----------------------------|---------------|
| ASSEMBLED BY : A. SORSENGIN | DATE : 7/2016 |
| CHECKED BY : E. K. POPE | DATE : 3/2017 |
| DRAWN BY : WJH 12/11 | REV. 8/14 |
| CHECKED BY : AAC 12/11 | MAA/TMG |

NOTES

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

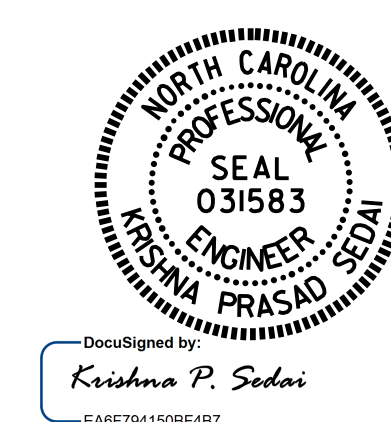
★ INVERT ALTERNATE STIRRUPS.

GALVANIZE THE FULL LENGTH OF EACH INTERIOR BENT PILE IN ACCORDANCE WITH SECTION 1076 OF THE STANDARD SPECIFICATIONS.



PROJECT NO. B-5362
MONTGOMERY COUNTY
 STATION: 14+87.00 -L-

SHEET 1 OF 2



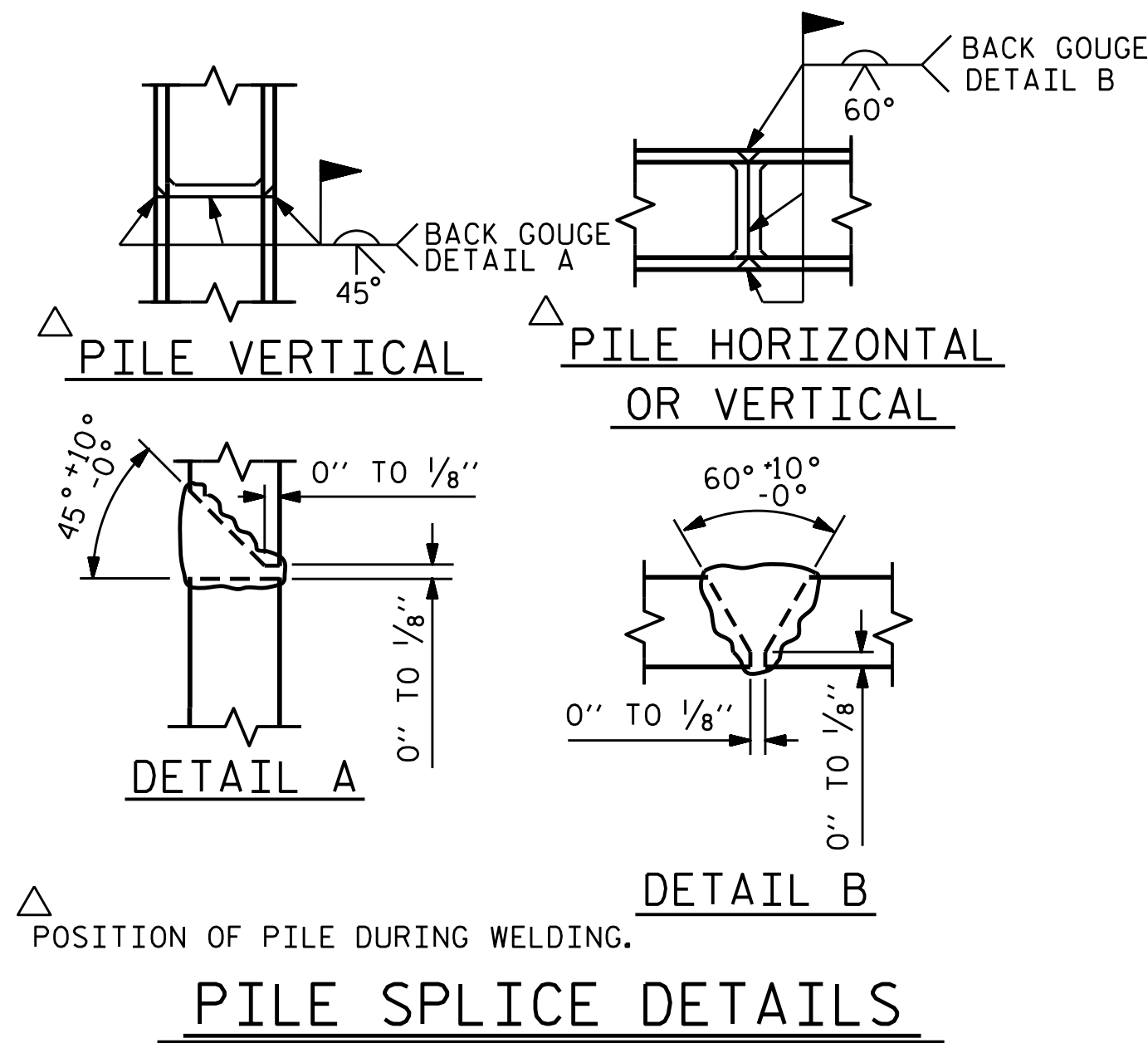
STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

SUBSTRUCTURE
 BENT 1

DRAWN BY : A. SORSENGINH DATE : 4/2017
 CHECKED BY : E. K. POPE DATE : 4/2017
 DESIGN ENGINEER OF RECORD: H. A. LOCKLEAR DATE : 4/2017

| REVISIONS | | | | | | SHEET NO. |
|-----------|-----|-------|-----|-----|-------|--------------|
| NO. | BY: | DATE: | NO. | BY: | DATE: | S-17 |
| 1 | | | 3 | | | TOTAL SHEETS |
| 2 | | | 4 | | | 21 |

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

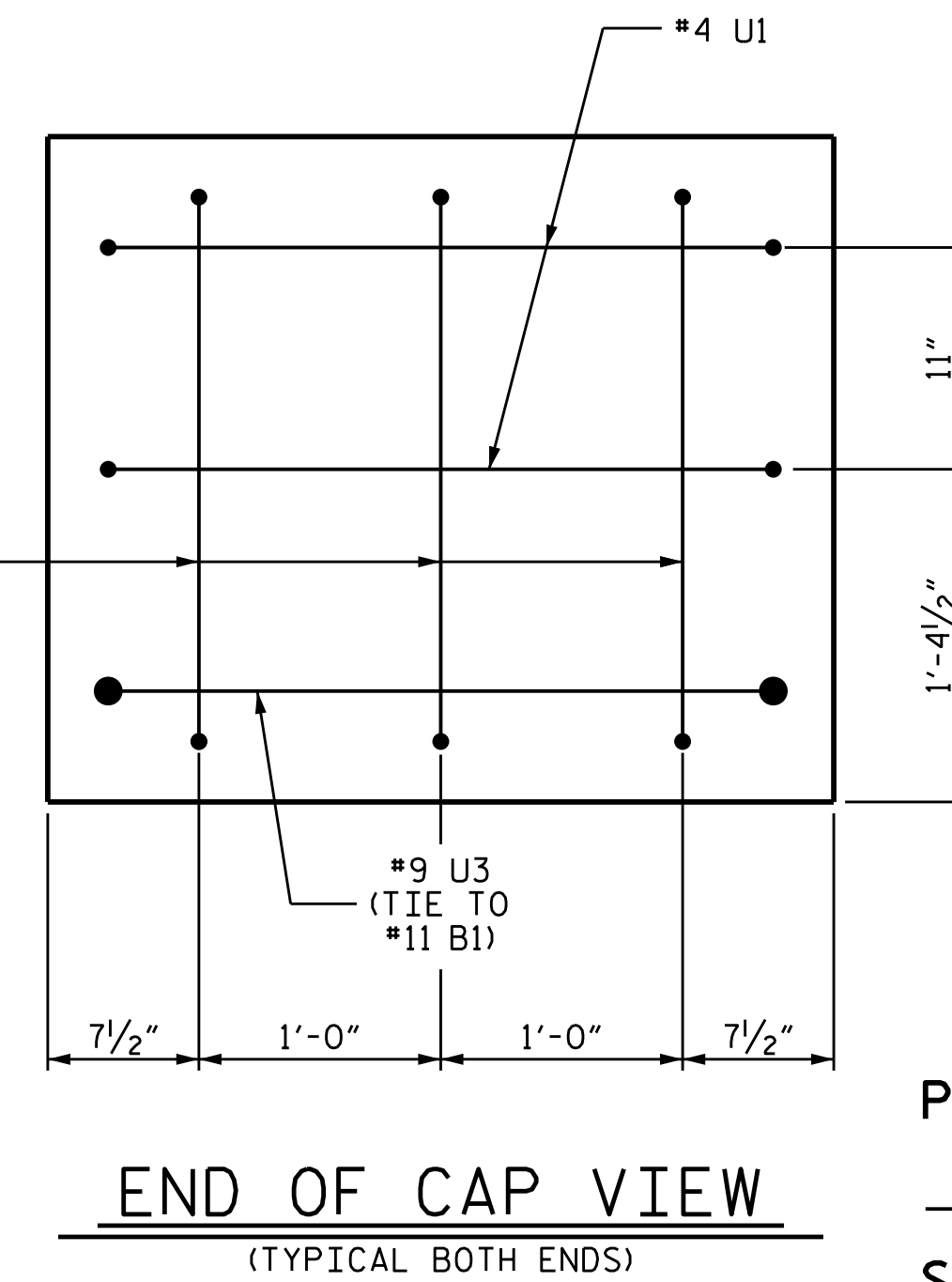
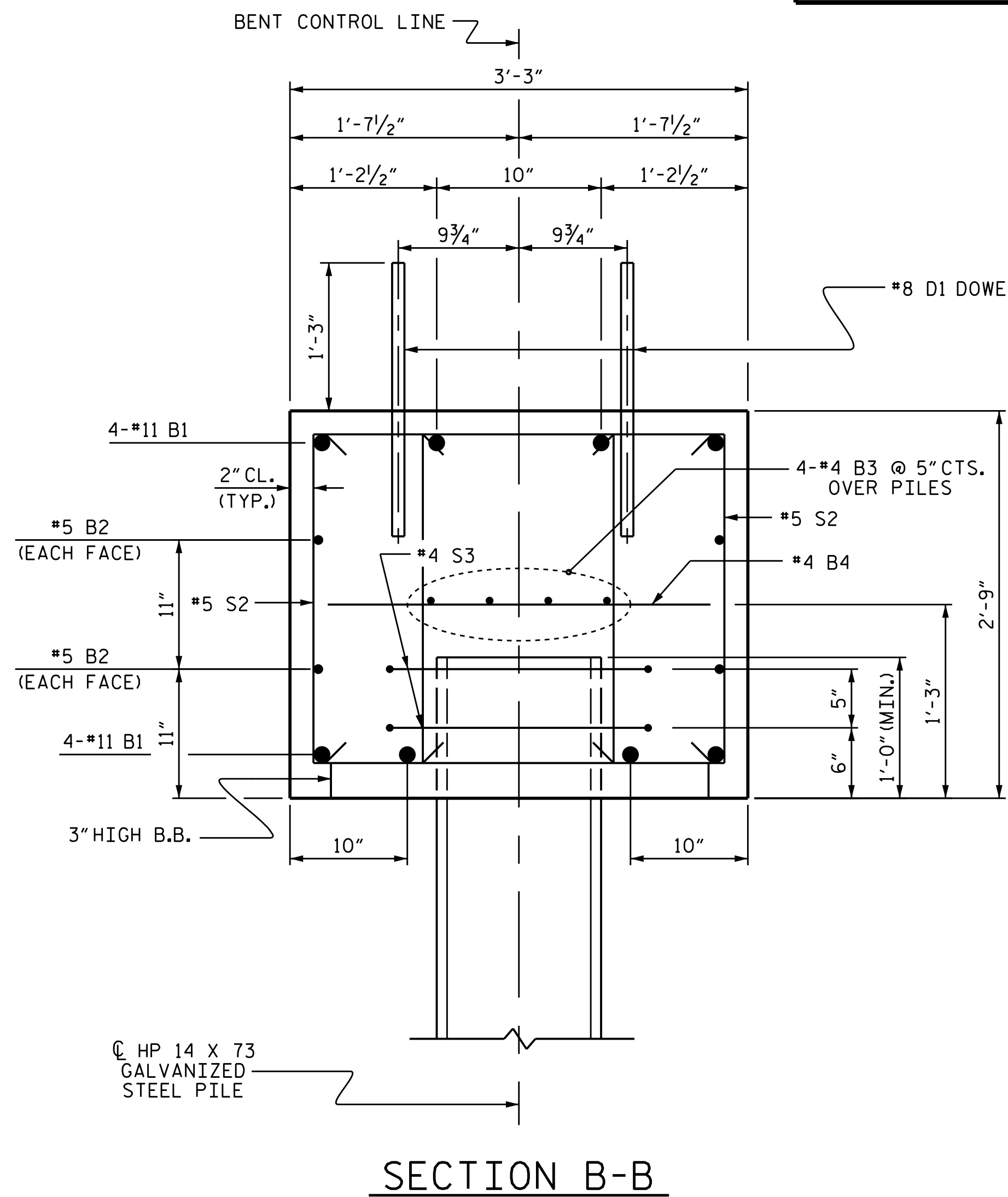
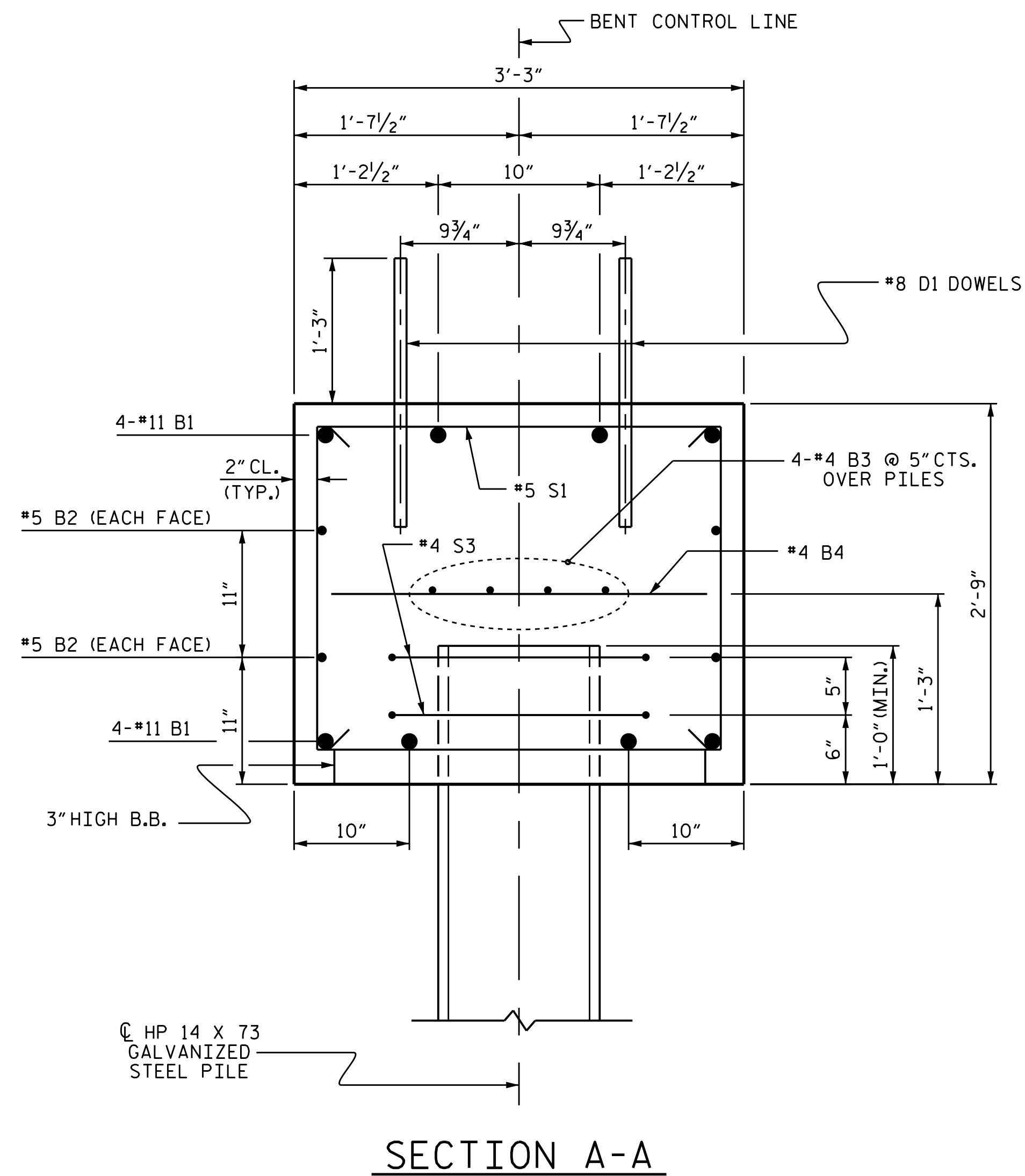


BAR TYPES

BILL OF MATERIAL

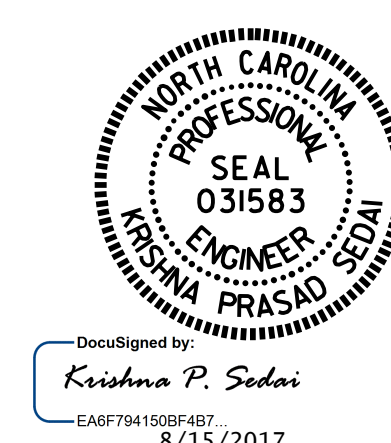
| BAR | NO. | SIZE | TYPE | LENGTH | WEIGHT |
|--|-----|------|------|--------|--------------|
| B1 | 8 | #11 | 1 | 41'-2" | 1750 |
| B2 | 4 | #5 | STR | 38'-2" | 159 |
| B3 | 8 | #4 | STR | 20'-4" | 109 |
| B4 | 10 | #4 | STR | 2'-11" | 19 |
| D1 | 48 | #8 | STR | 2'-3" | 288 |
| S1 | 38 | #5 | 2 | 8'-7" | 340 |
| S2 | 10 | #5 | 2 | 7'-8" | 80 |
| S3 | 16 | #4 | 3 | 7'-7" | 81 |
| U1 | 4 | #4 | 4 | 5'-10" | 16 |
| U2 | 6 | #4 | 4 | 5'-3" | 21 |
| U3 | 2 | #9 | 4 | 10'-1" | 69 |
| REINFORCING STEEL | | | | | 2932 LBS |
| CLASS A CONCRETE BREAKDOWN | | | | | |
| TOTAL CLASS A CONCRETE | | | | | 12.7 C.Y. |
| HP 14 X 73 GALVANIZED STEEL PILES | | | | | |
| No. 8 | | | | | LIN. FT. 240 |
| PILE DRIVING EQUIPMENT SETUP FOR HP 14 X 73 GALVANIZED STEEL PILES | | | | | No. 8 |

ALL BAR DIMENSIONS ARE OUT TO OUT.



PROJECT NO. B-5362
MONTGOMERY COUNTY
 STATION: 14+87.00 -L-

SHEET 2 OF 2



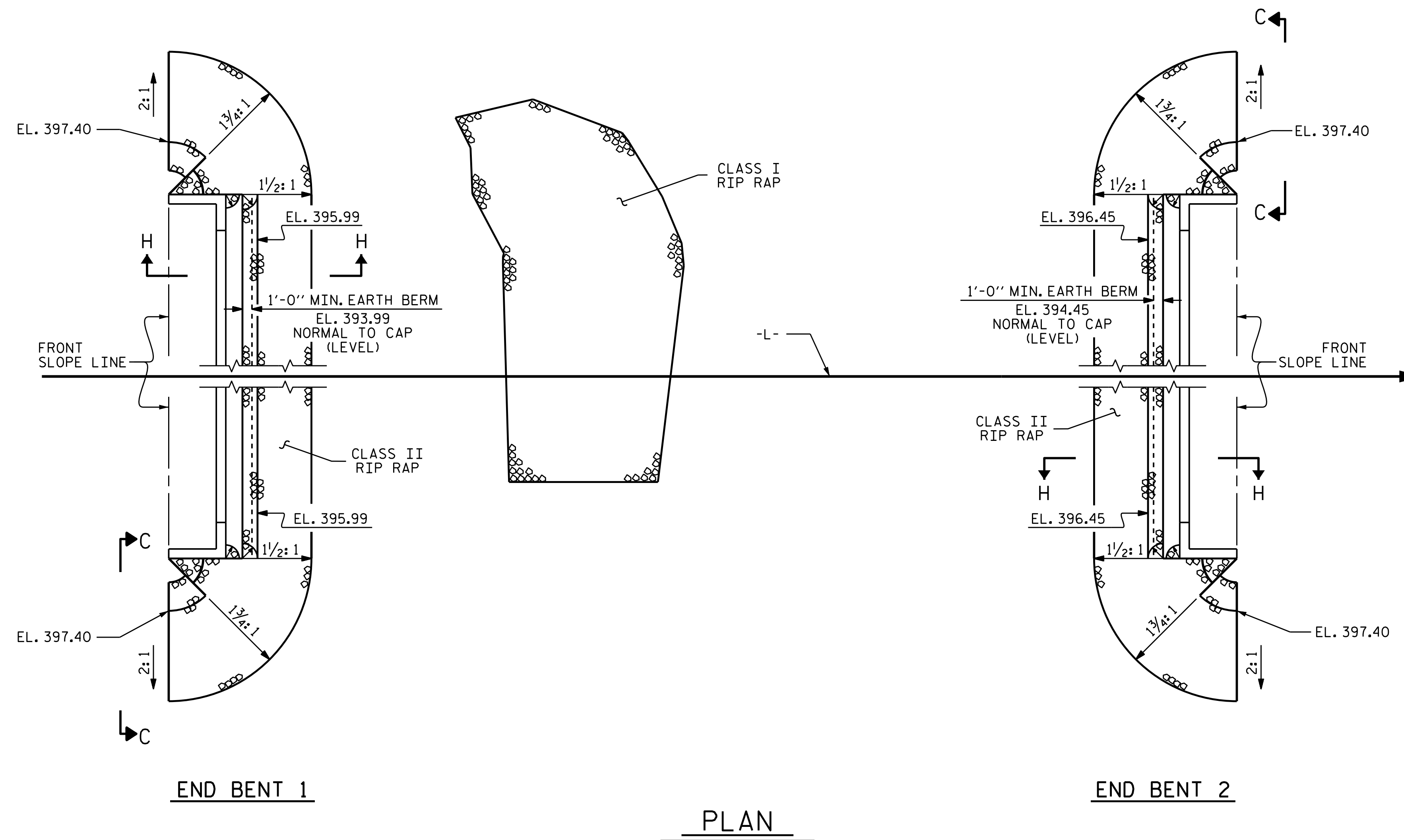
STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

SUBSTRUCTURE
BENT 1

DRAWN BY : A. SORSENGINH DATE : 4/2017
 CHECKED BY : E. K. POPE DATE : 4/2017
 DESIGN ENGINEER OF RECORD: H. A. LOCKLEAR DATE : 4/2017

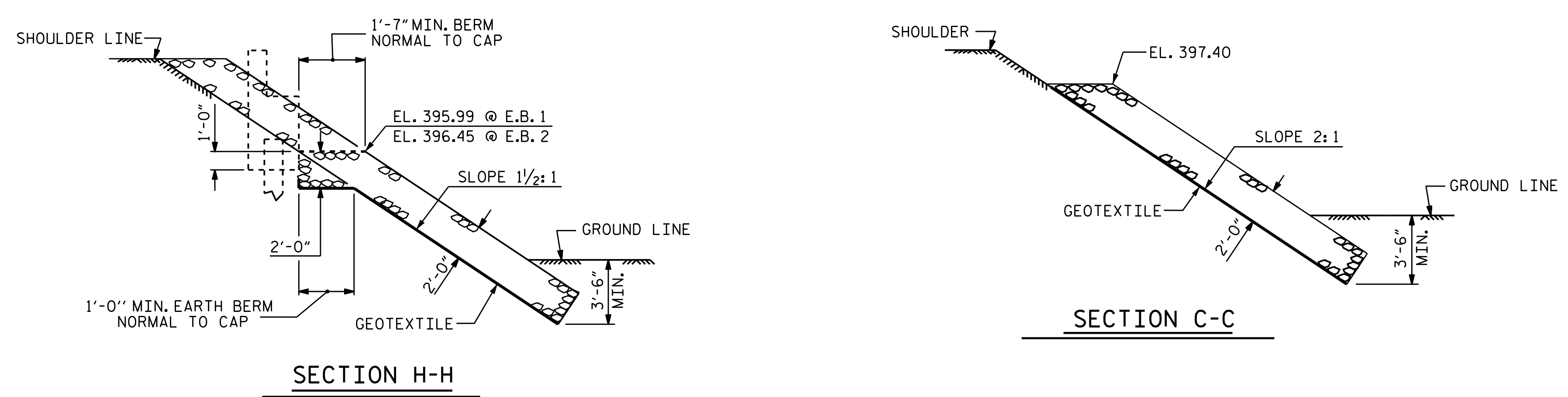
DOCUMENT NOT CONSIDERED
 FINAL UNLESS ALL
 SIGNATURES COMPLETED

| REVISIONS | | | | | | SHEET NO. |
|-----------|-----|-------|-----|-----|-------|--------------|
| NO. | BY: | DATE: | NO. | BY: | DATE: | S-18 |
| 1 | | | 3 | | | TOTAL SHEETS |
| 2 | | | 4 | | | 21 |

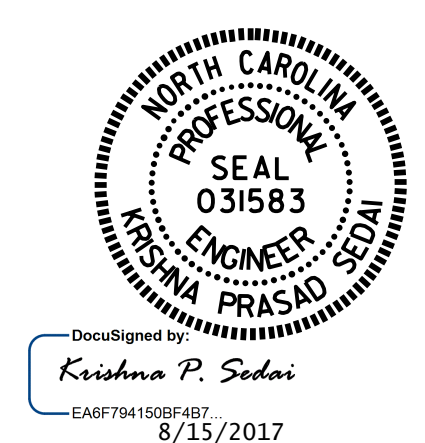


| ESTIMATED QUANTITIES | | | |
|----------------------------|-----------------|--------------------------------|-------------------------|
| BRIDGE @ STA. 14+87.00 -L- | RIP RAP CLASS I | RIP RAP CLASS II (2'-0" THICK) | GEOTEXTILE FOR DRAINAGE |
| | TONS | TONS | SQUARE YARDS |
| END BENT 1 | | 80 | 90 |
| END BENT 2 | | 100 | 110 |
| * CREEK BANK | 90 | | 105 |

* CREEK BANK QUANTITY IS LISTED UNDER BENT 1 FOR THE TOTAL BILL OF MATERIAL.



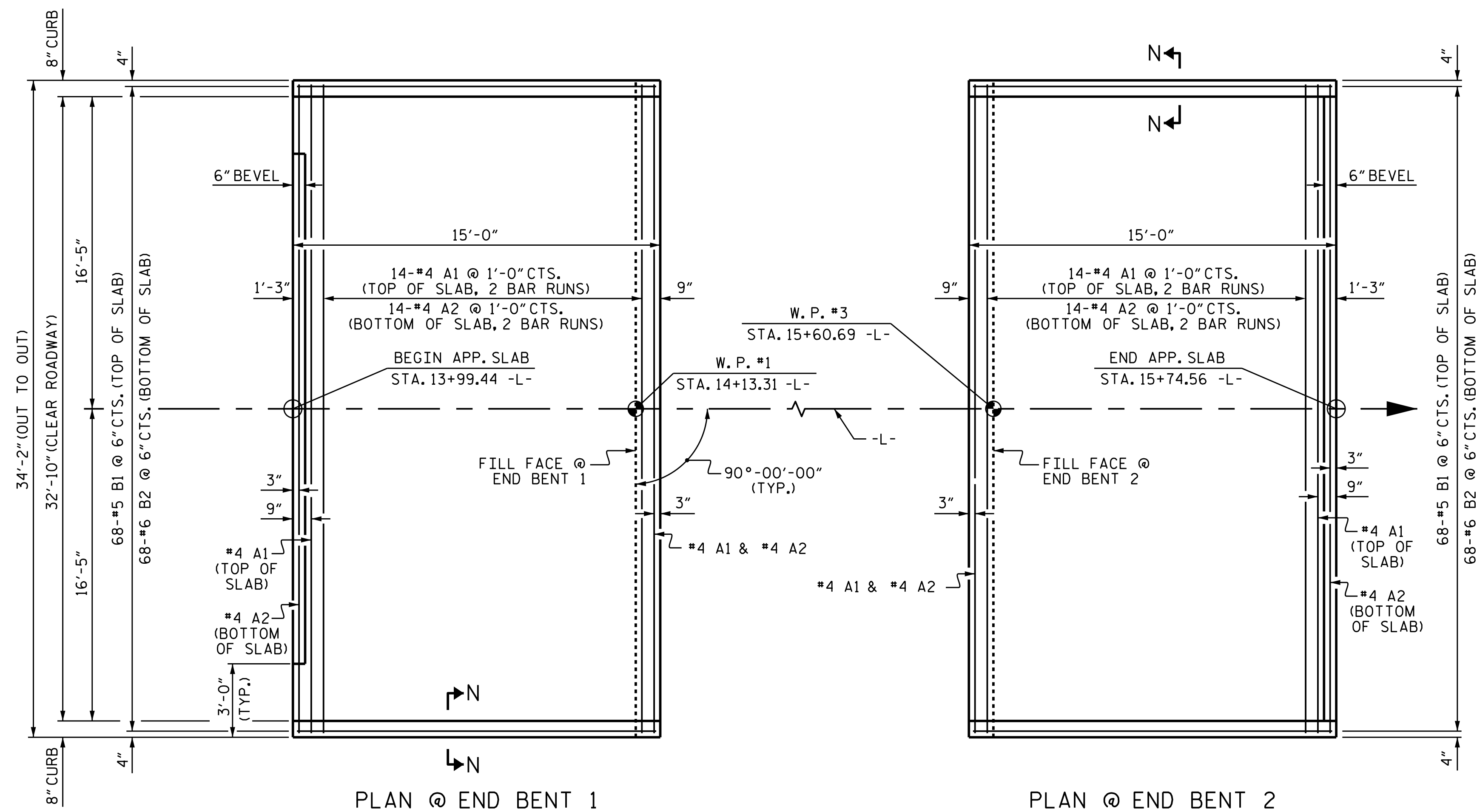
PROJECT NO. B-5362
MONTGOMERY COUNTY
 STATION: 14+87.00 -L-



| STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION RALEIGH | | | | | |
|--|-----|-------|-----|-----|-------|
| —RIP RAP DETAILS— | | | | | |
| REVISIONS | | | | | |
| NO. | BY: | DATE: | NO. | BY: | DATE: |
| 1 | | | 3 | | |
| 2 | | | 4 | | |

| | | | |
|----------------|---------------|---------------|--------|
| ASSEMBLED BY : | A. SORSENGINH | DATE : | 7/2016 |
| CHECKED BY : | E. K. POPE | DATE : | 4/2017 |
| DRAWN BY : | REK 1/84 | REV. 5/1/06R | TLA/GM |
| CHECKED BY : | RDU 1/84 | REV. 10/1/11 | MAA/GM |
| | | REV. 12/21/11 | MAA/GM |

DOCUMENT NOT CONSIDERED
 FINAL UNLESS ALL
 SIGNATURES COMPLETED



PLAN @ END BENT 1

PLAN @ END BENT 2

DIMENSIONS SHOWN ARE TYPICAL FOR BOTH APPROACH SLABS

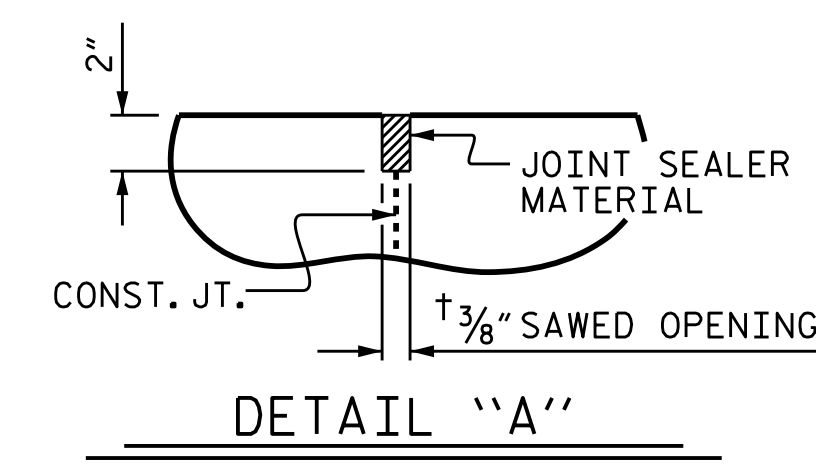
NOTES

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

FOR REINFORCED BRIDGE APPROACH FILL INCLUDING GEOTEXTILE, 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.

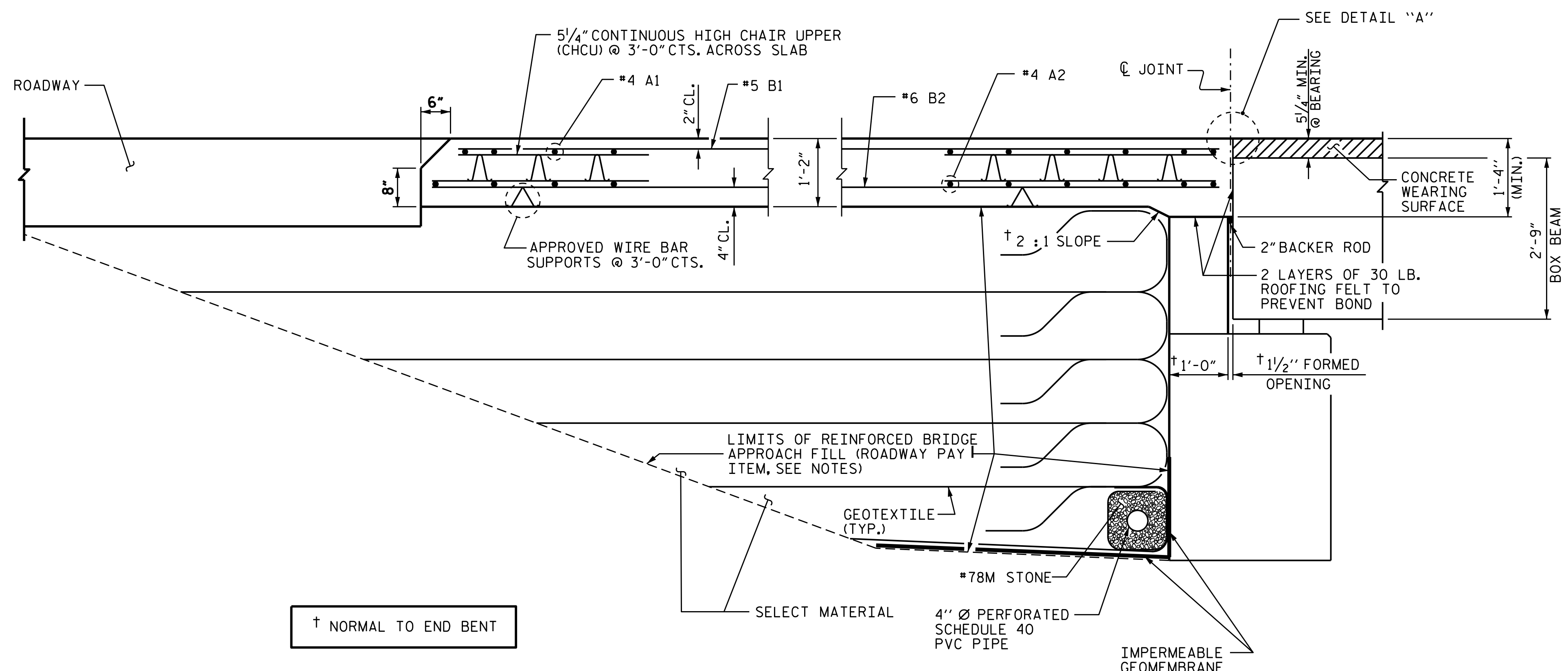
THE JOINT OPENING AT THE APPROACH SLAB/DECK INTERFACE SHALL BE SAWSAWED NO MORE THAN 12 HOURS AFTER THE APPROACH SLAB IS CAST. THE JOINT SHALL BE CLEANED OF ALL DEBRIS BEFORE THE SEALANT IS APPLIED. THE JOINT SEALER MATERIAL SHALL CONFORM TO THE REQUIREMENTS OF SECTION 1028-3 OF THE STANDARD SPECIFICATIONS.



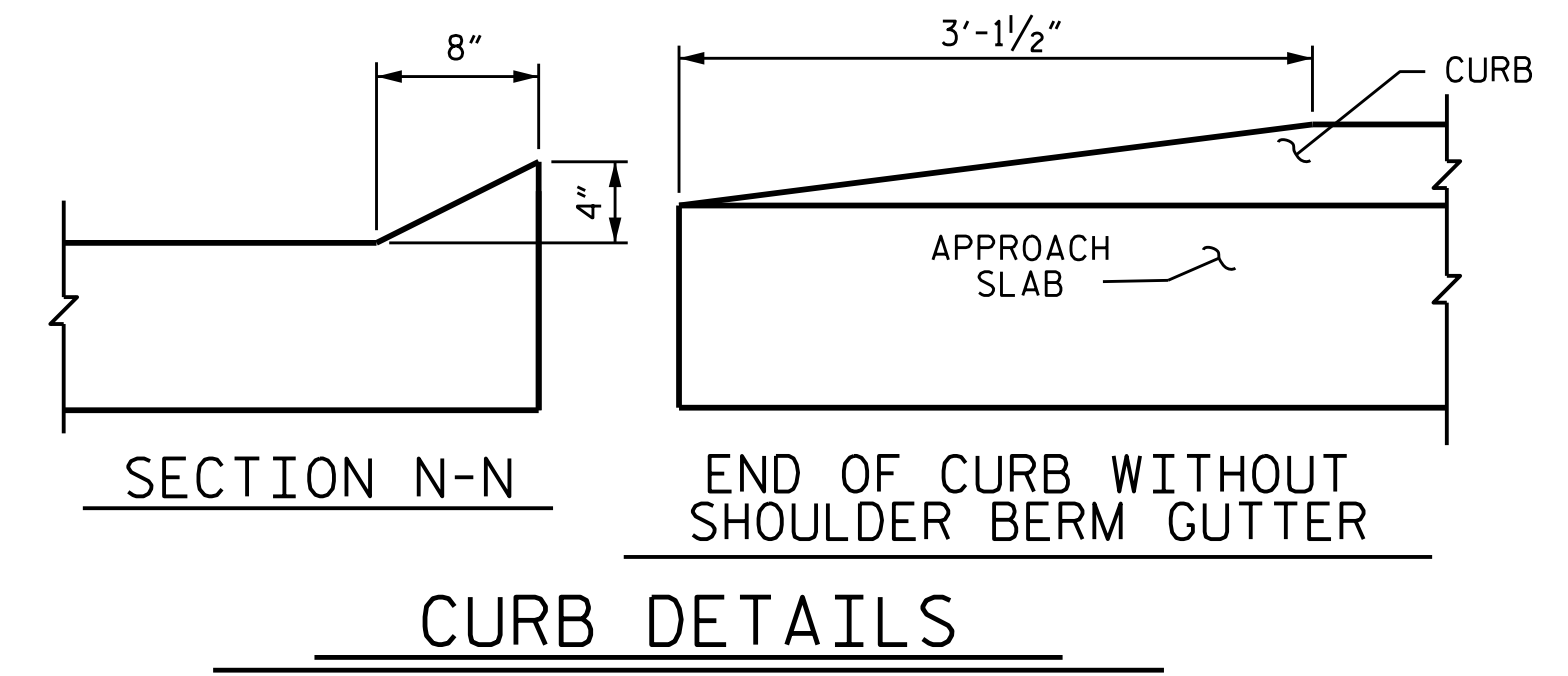
DETAIL "A"

| BILL OF MATERIAL | | | | | |
|----------------------------------|-----|------|------|---------|--------|
| APPROACH SLAB AT EB 1 | | | | | |
| BAR | NO. | SIZE | TYPE | LENGTH | WEIGHT |
| * A1 | 32 | #4 | STR | 17'-11" | 383 |
| A2 | 32 | #4 | STR | 17'-10" | 381 |
| * B1 | 68 | #5 | STR | 14'-2" | 1005 |
| B2 | 68 | #6 | STR | 14'-8" | 1498 |
| REINFORCING STEEL | | | | LBS. | 1879 |
| * EPOXY COATED REINFORCING STEEL | | | | LBS. | 1388 |
| CLASS AA CONCRETE | | | | C. Y. | 25.3 |
| APPROACH SLAB AT EB 2 | | | | | |
| BAR | NO. | SIZE | TYPE | LENGTH | WEIGHT |
| * A1 | 32 | #4 | STR | 17'-11" | 383 |
| A2 | 32 | #4 | STR | 17'-10" | 381 |
| * B1 | 68 | #5 | STR | 14'-2" | 1005 |
| B2 | 68 | #6 | STR | 14'-8" | 1498 |
| REINFORCING STEEL | | | | LBS. | 1879 |
| * EPOXY COATED REINFORCING STEEL | | | | LBS. | 1388 |
| CLASS AA CONCRETE | | | | C. Y. | 25.3 |

| SPLICE LENGTHS | | |
|----------------|--------------|----------|
| BAR SIZE | EPOXY COATED | UNCOATED |
| #4 | 2'-0" | 1'-9" |
| #5 | 2'-6" | 2'-2" |
| #6 | 3'-10" | 2'-7" |

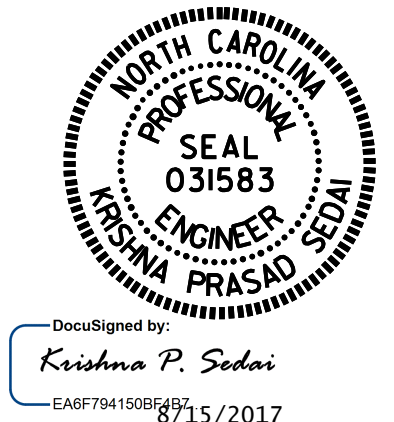


SECTION THRU SLAB



CURB DETAILS

PROJECT NO. B-5362
MONTGOMERY COUNTY
 STATION: 14+87.00 -L-
 SHEET 1 OF 2

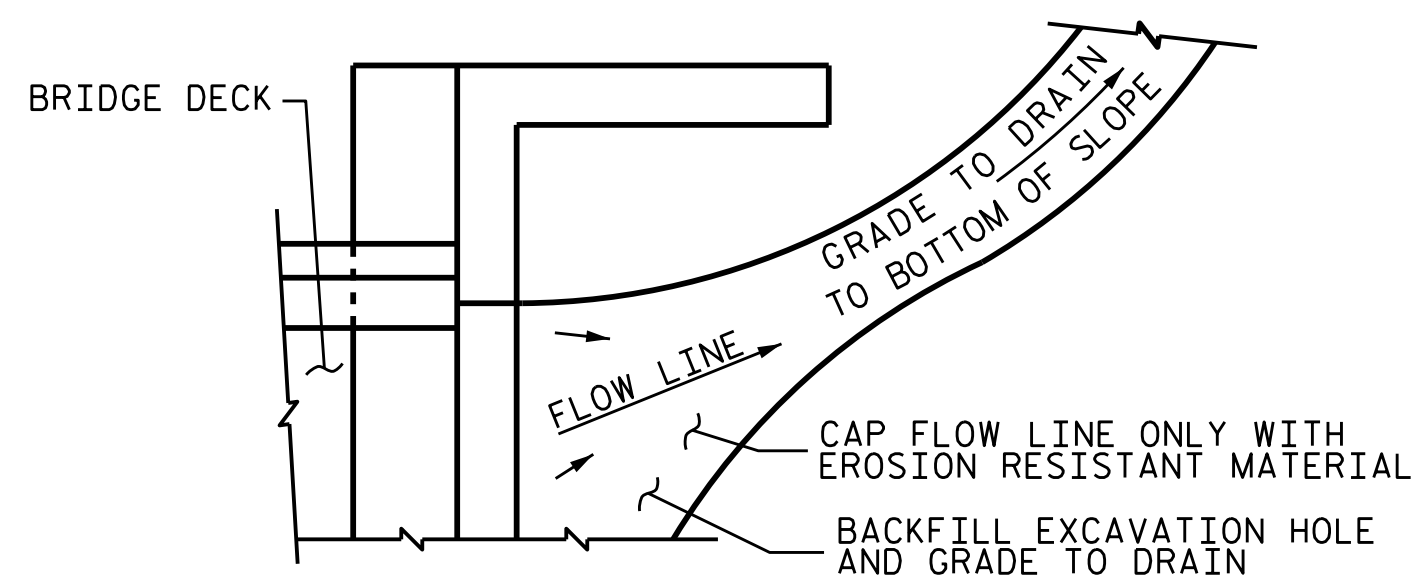


STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH
 STANDARD
 BRIDGE APPROACH SLAB
 FOR PRESTRESSED CONCRETE
 BOX BEAM

| | |
|------------------------------|----------------------|
| ASSEMBLED BY : A. SORSENGINH | DATE : 4/2017 |
| CHECKED BY : E. K. POPE | DATE : 4/2017 |
| DRAWN BY : FCJ 6/87 | REV. 10/11/11 MAA/GM |
| CHECKED BY : EGA 6/87 | REV. 12/21/11 MAA/GM |
| | REV. 6/13 MAA/GM |

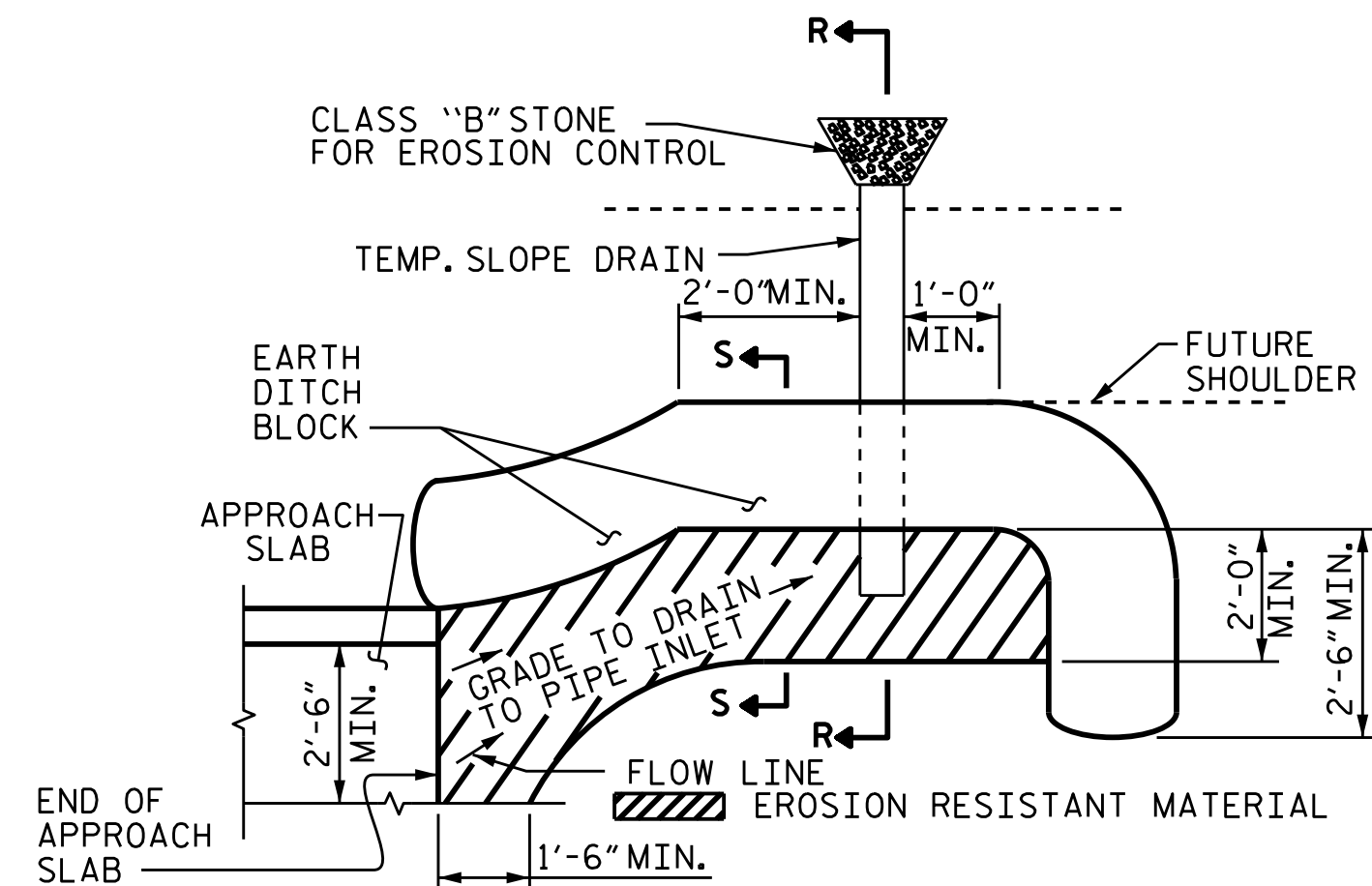
| REVISIONS | | | | | | SHEET NO. |
|-----------|-----|-------|-----|-----|-------|--------------|
| NO. | BY: | DATE: | NO. | BY: | DATE: | S-20 |
| 1 | | | 3 | | | TOTAL SHEETS |
| 2 | | | 4 | | | 21 |

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED



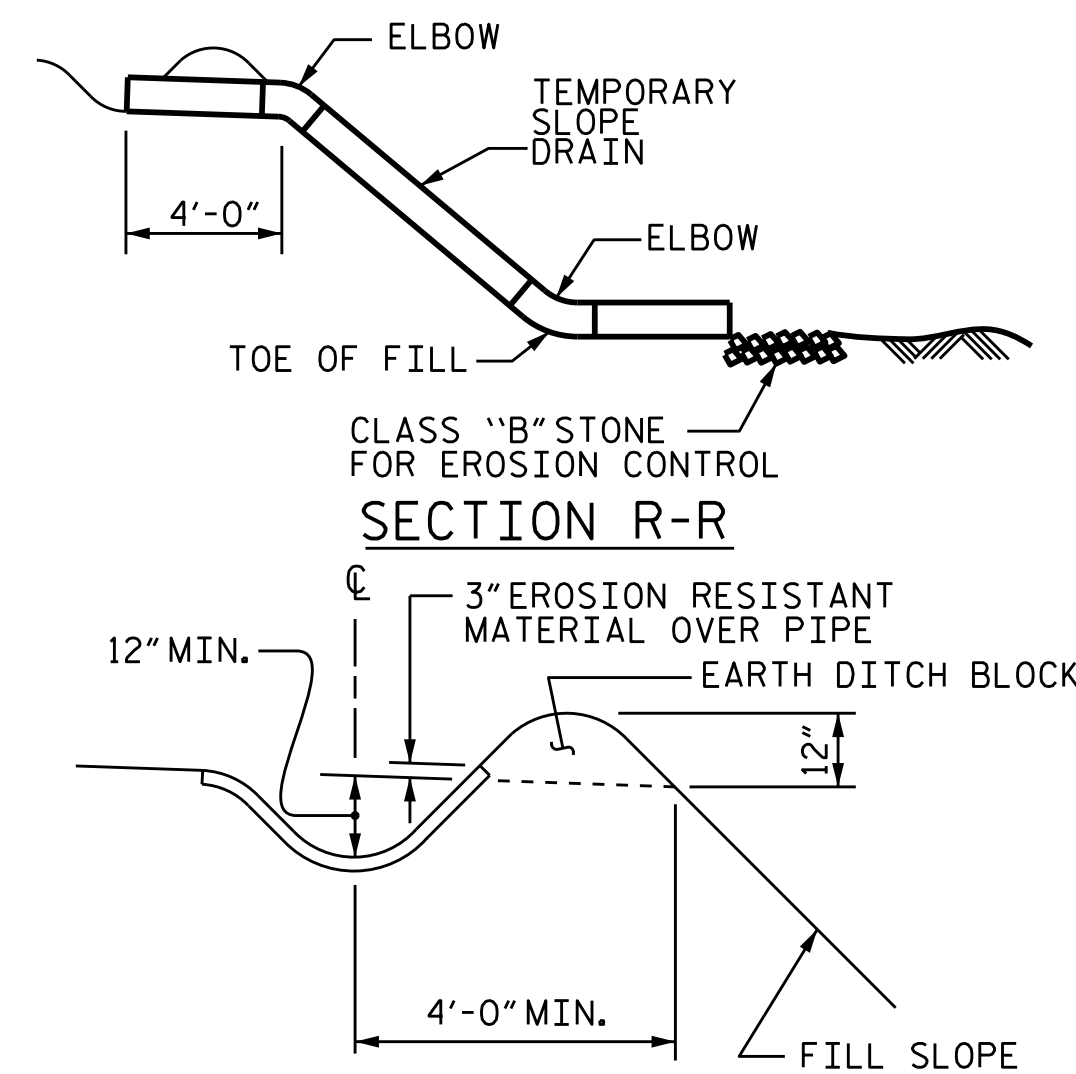
NOTE: IF THE APPROACH SLAB IS NOT CONSTRUCTED IMMEDIATELY AFTER THE BACKFILLING OF THE END BENT EXCAVATION, GRADE TO DRAIN TO THE BOTTOM OF THE SLOPE AND PROVIDE EROSION RESISTANT MATERIAL, SUCH AS FIBERGLASS ROVING OR AS DIRECTED BY THE ENGINEER TO PREVENT SOIL EROSION AND TO PROTECT THE AREA ADJACENT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

TEMPORARY DRAINAGE DETAIL



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



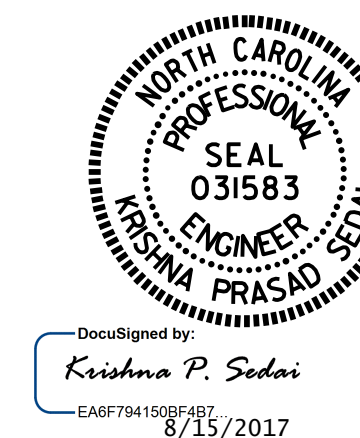
SECTION S-S

TEMPORARY BERM AND SLOPE DRAIN DETAILS

(TO BE USED WHEN SHOULDER BERM GUTTER IS REQUIRED)

PROJECT NO. B-5362
MONTGOMERY COUNTY
 STATION: 14+87.00 -L-

SHEET 2 OF 2



DocuSigned by
 Krishna P. Sudai
 EA6F7041508FAE7
 8/15/2017

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

**BRIDGE APPROACH
 SLAB DETAILS**

DRAWN BY : A. SORSENGINH DATE : 4/2017
 CHECKED BY : E. K. POPE DATE : 4/2017
 DESIGN ENGINEER OF RECORD: H. LOCKLEAR DATE : 4/2017

10-JUL-2017 11:16
 W:\Structures\Final Plans\401.041.B5362.SMU.AS.021.610053.dgn
 kpaschal

DOCUMENT NOT CONSIDERED
 FINAL UNLESS ALL
 SIGNATURES COMPLETED

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

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 2012 "STANDARD SPECIFICATIONS FOR ROADS AND STRUCTURES" OF THE N. C. DEPARTMENT OF TRANSPORTATION.

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

CONCRETE:

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

CONCRETE CHAMFERS:

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

DOWELS:

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

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

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

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

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

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

REINFORCING STEEL:

ALL REINFORCING STEEL SHALL BE DEFORMED. DIMENSIONS RELATIVE TO PLACEMENT OF REINFORCING ARE TO CENTERS OF BARS UNLESS OTHERWISE INDICATED IN THE PLANS. DIMENSIONS ON BAR DETAILS ARE TO CENTERS OF BARS OR ARE OUT TO OUT AS INDICATED ON PLANS.

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

STRUCTURAL STEEL:

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

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

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

HANDRAILS AND POSTS:

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

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

SPECIAL NOTES:

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

ENGLISH

JANUARY, 1990