

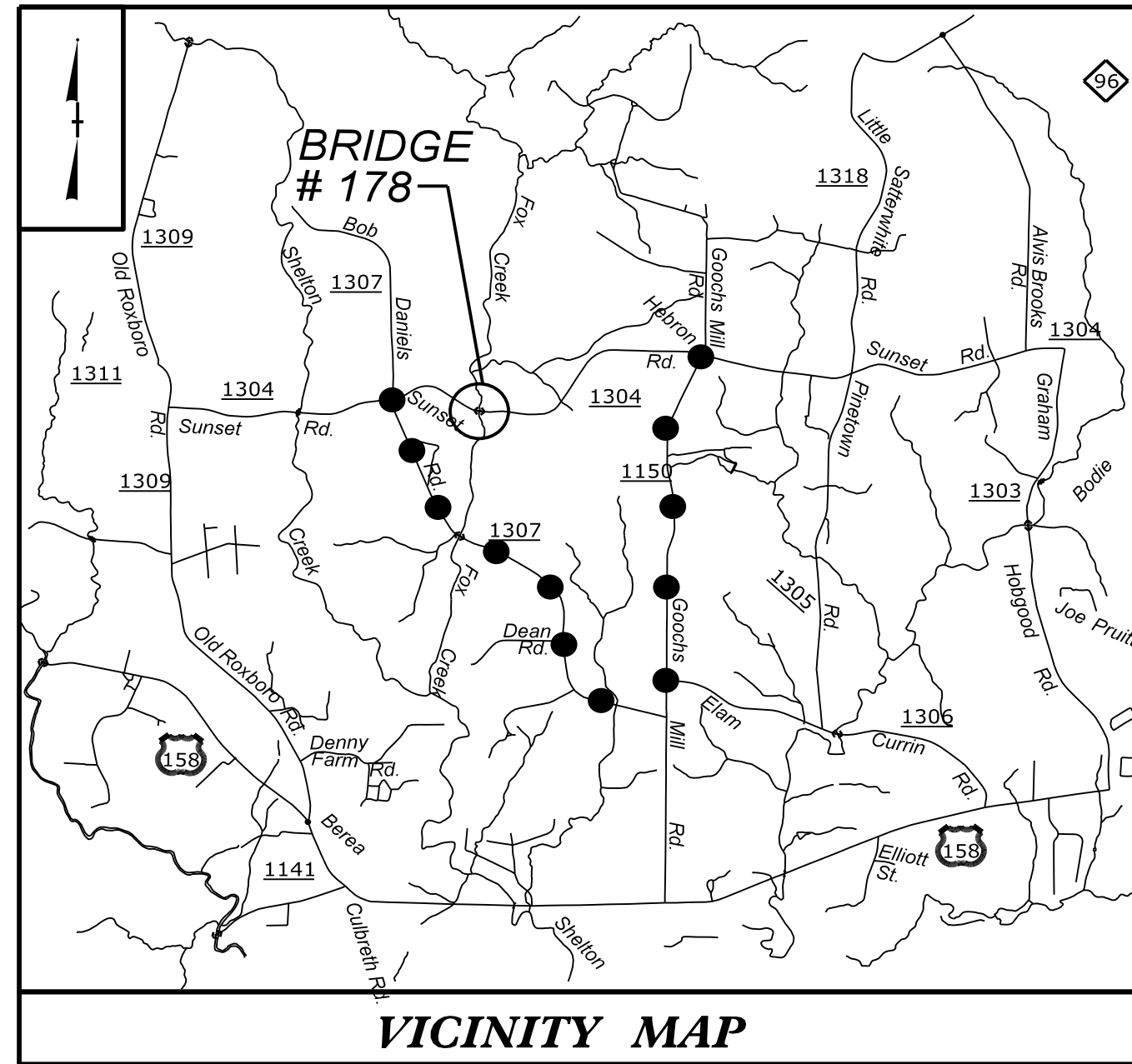
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TIP PROJECT: B-5157

CONTRACT: C203723

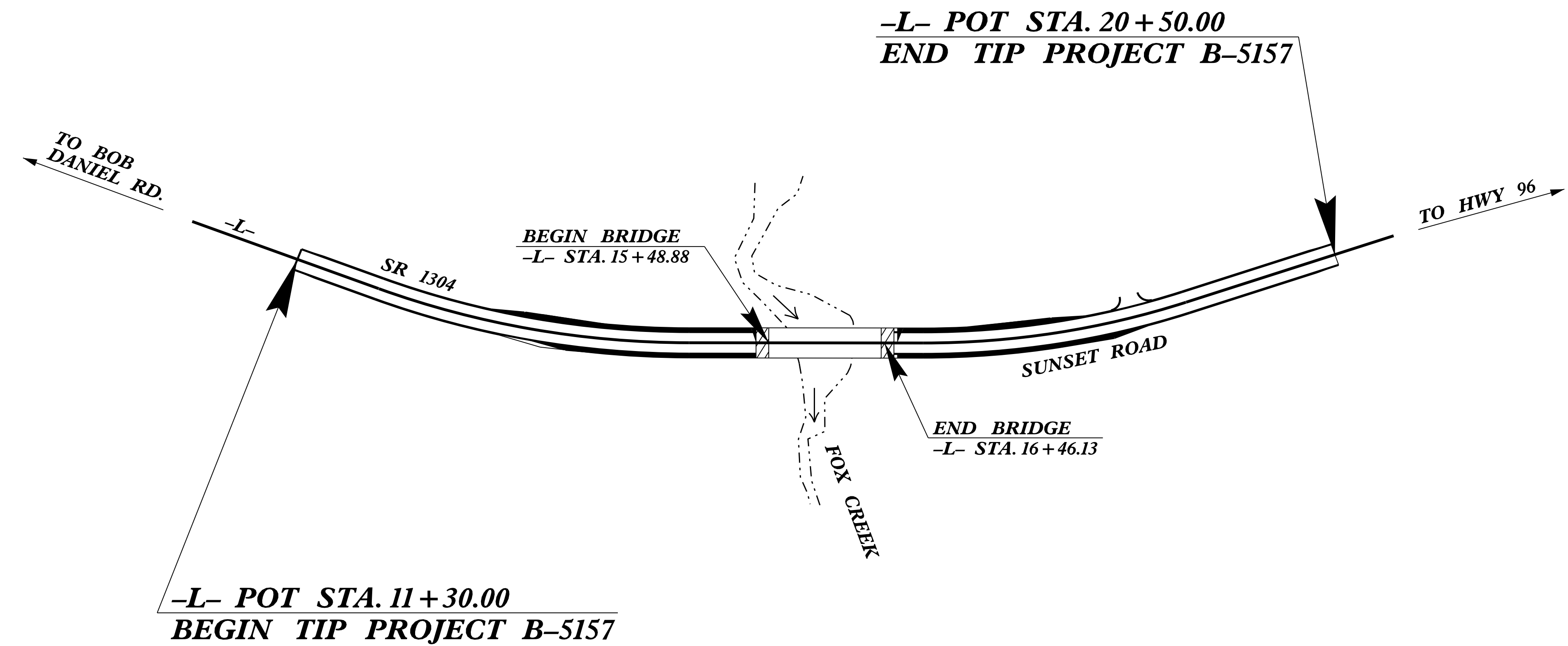


STATE OF NORTH CAROLINA
 DIVISION OF HIGHWAYS
GRANVILLE COUNTY

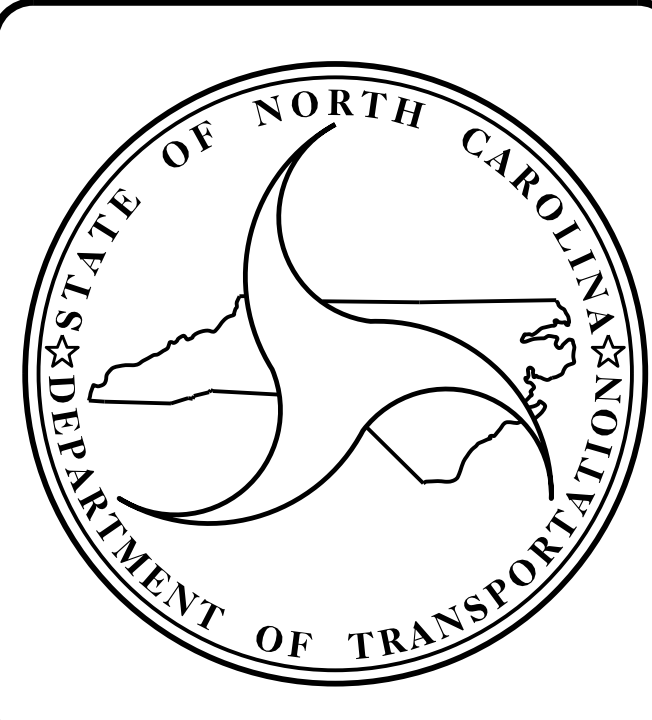
LOCATION: BRIDGE NO. 178 OVER FOX CREEK ON SR 1304
 (SUNSET ROAD)

TYPE OF WORK: GRADING, PAVING, DRAINAGE AND STRUCTURE

| STATE | STATE PROJECT REFERENCE NO. | SHEET NO. | TOTAL SHEETS |
|-----------------|-----------------------------|----------------|--------------|
| N.C. | B-5157 | | |
| STATE PROJ. NO. | F.A. PROJ. NO. | DESCRIPTION | |
| 42332.1.1 | BRZ-1304(10) | P.E. | |
| 42332.2.FD1 | BRZ-1304(10) | RW & UTILITIES | |
| 42332.3.FD1 | BRZ-1304(10) | CONST. | |
| | | | |
| | | | |
| | | | |



STRUCTURE



DESIGN DATA

| | |
|-------------------|-------------|
| ADT 2016 = | 225 |
| ADT 2036 = | 305 |
| K = | 10 % |
| D = | 60 % |
| T = | 5 % * |
| V = | 35 MPH |
| * TTST = | 2% DUAL 3% |
| FUNC CLASS = | RURAL LOCAL |
| SUB-REGIONAL TIER | |

PROJECT LENGTH

| | | |
|--|---|-------------|
| LENGTH OF ROADWAY TIP PROJECT B-5157 | = | 0.156 MILES |
| LENGTH OF STRUCTURE TIP PROJECT B-5157 | = | 0.018 MILES |
| TOTAL LENGTH TIP PROJECT B-5157 | = | 0.174 MILES |

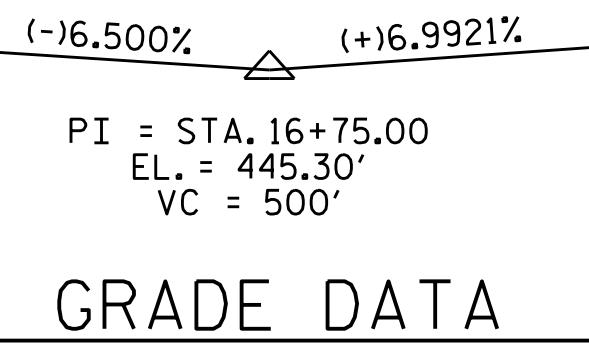
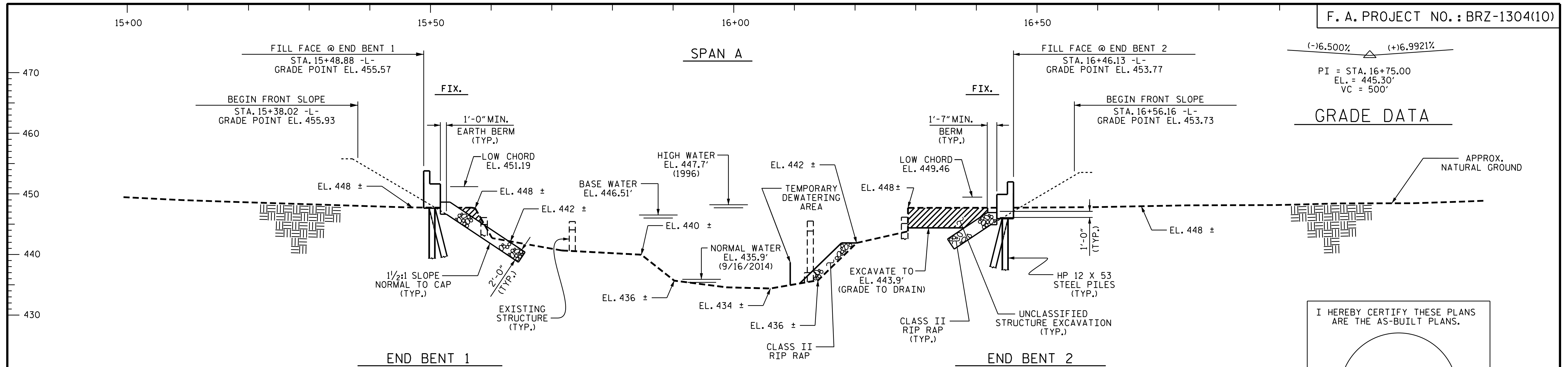
Prepared In the Office of:
DIVISION OF HIGHWAYS
 STRUCTURES MANAGEMENT UNIT
 1000 BIRCH RIDGE DR.
 RALEIGH, N.C. 27610

2012 STANDARD SPECIFICATIONS

LETTING DATE :
 APRIL 19, 2016

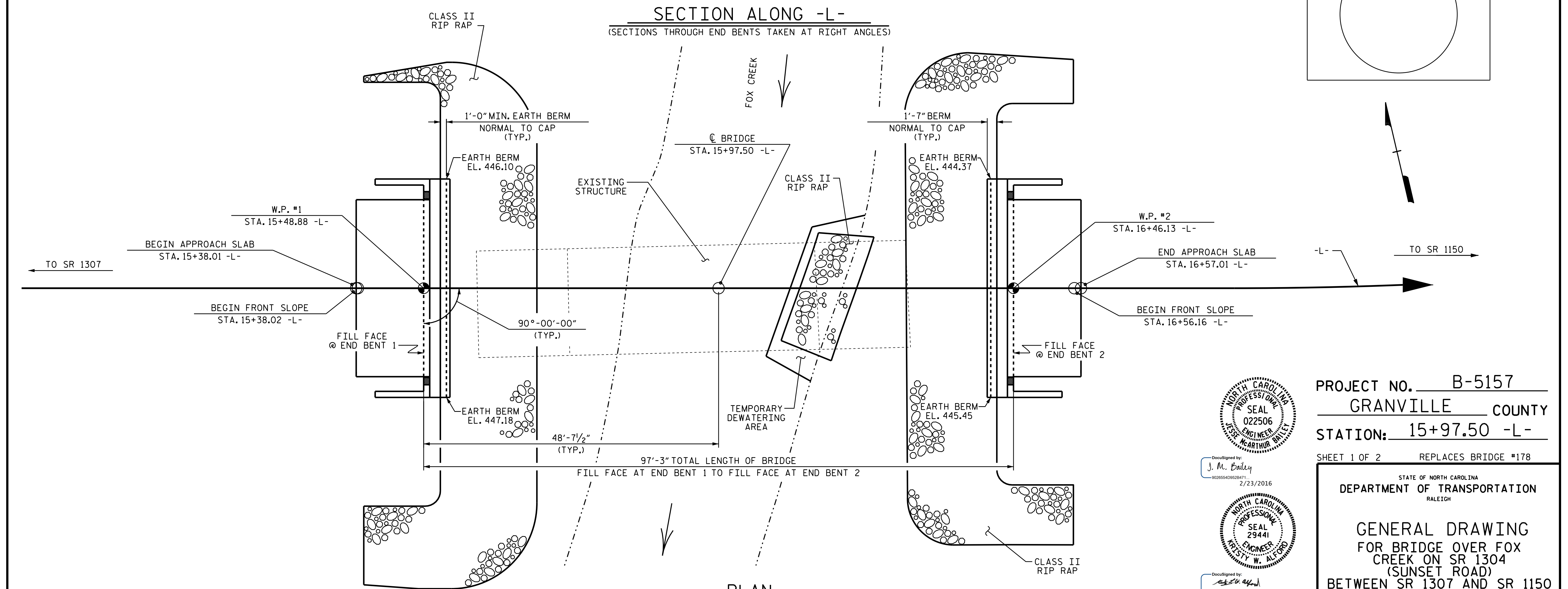
J.M. BAILEY, PE
 PROJECT ENGINEER

K.W. ALFORD, PE
 PROJECT DESIGN ENGINEER

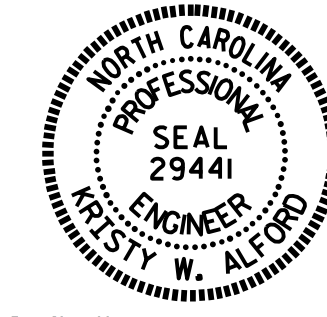


APPROX. NATURAL GROUND

I HEREBY CERTIFY THESE PLANS ARE THE AS-BUILT PLANS.



PLAN
(PILES NOT SHOWN IN FOR CLARITY)



PROJECT NO. B-5157
GRANVILLE COUNTY
 STATION: 15+97.50 -L-

SHEET 1 OF 2 REPLACES BRIDGE #178

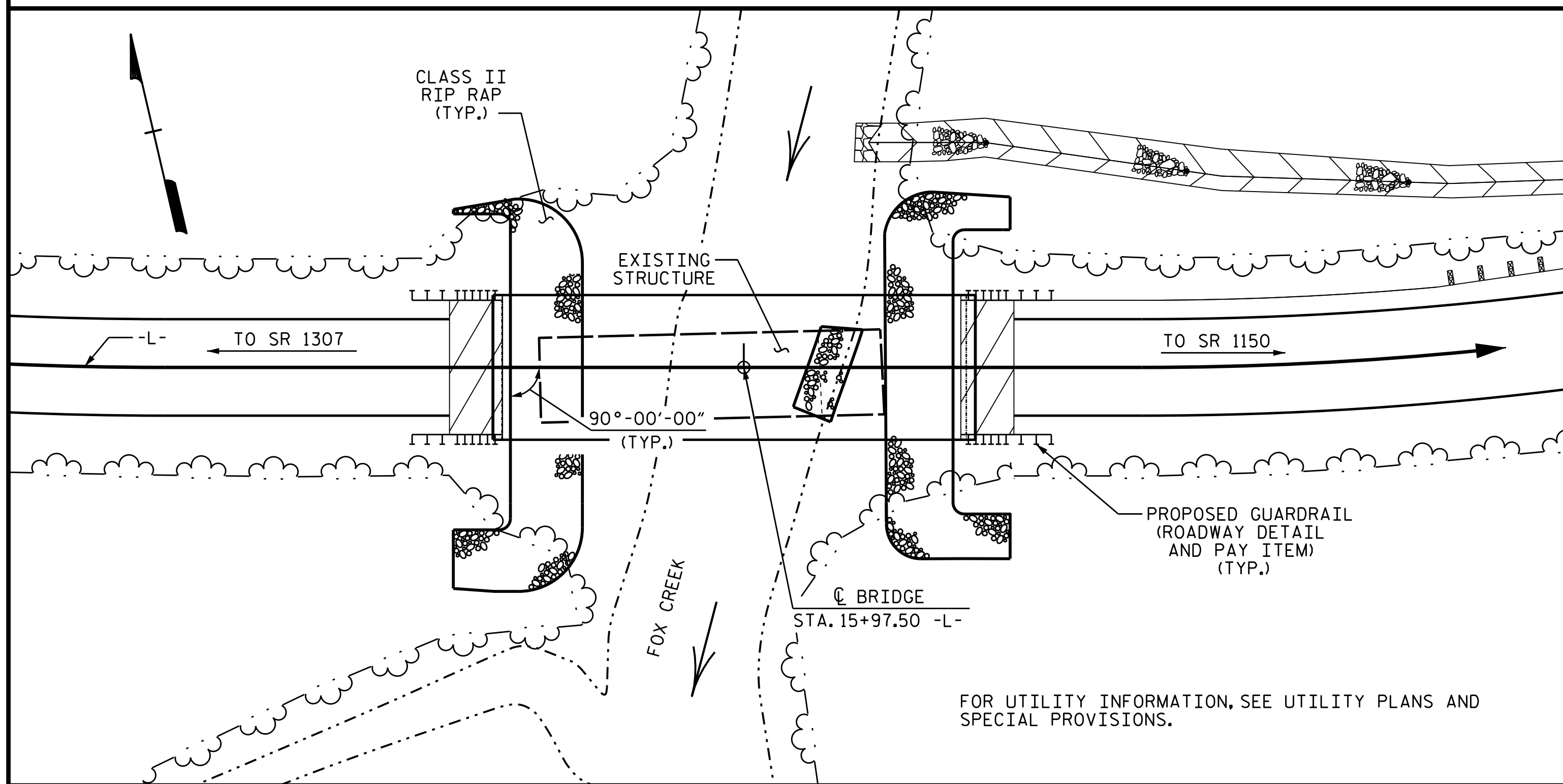
STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH
GENERAL DRAWING
 FOR BRIDGE OVER FOX
 CREEK ON SR 1304
 (SUNSET ROAD)
 BETWEEN SR 1307 AND SR 1150

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

DRAWN BY : K.W. ALFORD DATE : 12/2015
 CHECKED BY : J.P. ADAMS DATE : 12/2015

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

BENCH MARK NO. 50: RR SPIKE SET IN 30" GUM, STA. 17+05 -L-, 29' RIGHT, ELEV. 446.1'



LOCATION SKETCH

HYDRAULIC DATA

DESIGN DISCHARGE = 2,000 C.F.S
 FREQUENCY OF DESIGN FLOOD = 25 YRS.
 DESIGN HIGH WATER ELEVATION = 445.40'
 DRAINAGE AREA = 8.5 SQ. MI
 BASE DISCHARGE (Q100) = 2,800 C.F.S.
 BASE HIGH WATER ELEVATION = 446.51'

OVERTOPPING FLOOD DATA

OVERTOPPING DISCHARGE = 3,700+ C.F.S.
 FREQUENCY OF OVERTOPPING FLOOD = 500+ YRS.
 OVERTOPPING FLOOD ELEVATION = 453.5' @ STA. 16+84 -L-

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 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. PAYMENT FOR THE SAMPLES OF REINFORCING STEEL SHALL BE CONSIDERED INCIDENTAL TO VARIOUS PAY ITEMS.
 THE TEMPORARY DEWATERING AREA SHALL ALLOW FOR THE EXISTING BENT TO BE REMOVED IN THE DRY. THE TEMPORARY DEWATERING MAY BE ACCOMPLISHED USING A TEMPORARY ROCK CAUSEWAY OR SANDBAGS. A COFFERDAM SHALL NOT BE ALLOWED. SHOULD THE TEMPORARY DEWATERING AREA UTILIZE A ROCK CAUSEWAY, 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 15+97.50 -L-.

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 15+97.50 -L-."

THE MATERIAL SHOWN IN THE CROSS-HATCHED AREA ON SHEET S-1 SHALL BE EXCAVATED FOR A DISTANCE OF 30 FT EACH SIDE OF CENTERLINE ROADWAY AS DIRECTED BY THE ENGINEER. THIS WORK WILL BE PAID FOR AT THE CONTRACT LUMP SUM PRICE FOR UNCLASSIFIED STRUCTURE EXCAVATION. SEE SECTION 412 OF THE STANDARD SPECIFICATIONS.

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

THE EXISTING STRUCTURE CONSISTING OF 3 SPANS, 1 AT 16', 1 AT 40', AND 1 AT 16' WITH A CLEAR ROADWAY OF 19'-0" WITH A TIMBER FLOOR ON I-BEAMS ON TIMBER CAP AND TIMBER PILES AT END BENTS AND BENTS WITH A CONCRETE SILL AT BENT 2 AND LOCATED AT THE PROPOSED STRUCTURE SHALL BE REMOVED. THE EXISTING BRIDGE IS PRESENTLY POSTED FOR LOAD LIMIT. SHOULD THE STRUCTURAL INTEGRITY OF THE BRIDGE DETERIORATE DURING CONSTRUCTION OF THE PROPOSED BRIDGE, A LOAD LIMIT MAY BE REDUCED AS FOUND NECESSARY DURING THE LIFE OF THE PROJECT. FOR REMOVAL OF EXISTING STRUCTURE AT STA. 15+97.50 -L-, SEE SPECIAL PROVISIONS.

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 PLANS FOR REVIEW AND REMOVE THE BRIDGE IN ACCORDANCE WITH ARTICLE 402-2 OF THE STANDARD SPECIFICATIONS.

THE CONTRACTOR SHALL COMPLETELY REMOVE THE EXISTING FOOTING NEAR THE EAST BANK. THE AREA AROUND THE EXISTING FOOTING SHALL BE DE-WATERED OR PROTECTED WITH A TEMPORARY ROCK CAUSEWAY.

FOR EROSION CONTROL MEASURES, SEE EROSION CONTROL PLANS.

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

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 135 TONS PER PILE.

DRIVE PILES AT END BENT 1 AND END BENT 2 TO A REQUIRED DRIVING RESISTANCE OF 225 TONS PER PILE.

STEEL H PILE POINTS ARE REQUIRED FOR STEEL H PILES AT END BENT 2. FOR STEEL PILE POINTS, SEE SECTION 450 OF THE STANDARD SPECIFICATIONS.

OBSERVE A 2 MONTH WAITING PERIOD AFTER CONSTRUCTING THE EMBANKMENT TO WITHIN 2 FT. OF THE FINISHED GRADE BEFORE BEGINNING END BENT CONSTRUCTION AT END BENT 2. FOR BRIDGE WAITING PERIODS, SEE ROADWAY PLANS AND SPECIAL PROVISIONS.

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

TOTAL BILL OF MATERIAL

| | CONSTRUCTION, MAINTENANCE, AND REMOVAL OF TEMP. ACCESS | REMOVAL OF EXISTING STRUCTURE | UNCLASSIFIED STRUCTURE EXCAVATION | CLASS A CONCRETE | BRIDGE APPROACH SLABS | REINFORCING STEEL | HP 12 X 53 STEEL PILES | | STEEL PILE POINTS | VERTICAL CONCRETE BARRIER RAIL | RIP RAP CLASS II (2'-0" THICK) | GEOTEXTILE FOR DRAINAGE | ELASTOMERIC BEARINGS | 3'-0" x 3'-3" PRESTRESSED CONCRETE BOX BEAMS | | ASBESTOS ASSESSMENT |
|----------------|--|-------------------------------|-----------------------------------|------------------|-----------------------|-------------------|------------------------|----------|-------------------|--------------------------------|--------------------------------|-------------------------|----------------------|--|----------|---------------------|
| | | | | | | | NO. | LIN. FT. | | | | | | NO. | LIN. FT. | |
| | LUMP SUM | LUMP SUM | LUMP SUM | CU. YARDS | LUMP SUM | LBS. | | | EACH | LIN. FT. | TONS | SO. YD. | LUMP SUM | | | LUMP SUM |
| SUPERSTRUCTURE | | | | | LUMP SUM | | | | | 190.00 | | | LUMP SUM | 10 | 950.00 | LUMP SUM |
| END BENT 1 | | | | 27.1 | | 4372 | 5 | 190 | | | 160 | 180 | | | | |
| END BENT 2 | | | | 27.1 | | 4372 | 5 | 90 | 5 | | 160 | 180 | | | | |
| TOTAL | LUMP SUM | LUMP SUM | LUMP SUM | 54.2 | LUMP SUM | 8744 | 10 | 280 | 5 | 190.00 | 320 | 360 | LUMP SUM | 10 | 950.00 | LUMP SUM |

PROJECT NO. B-5157
GRANVILLE COUNTY
 STATION: 15+97.50 -L-

SHEET 2 OF 2



DocuSigned by:
 F248889306F40E...

2/23/2016

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

GENERAL DRAWING
 FOR BRIDGE OVER FOX
 CREEK ON SR 1304
 (SUNSET ROAD)
 BETWEEN SR 1307 AND SR 1150

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

DRAWN BY : K.W. ALFORD DATE : 12/2015
 CHECKED BY : J.P. ADAMS DATE : 12/2015

DOCUMENT NOT CONSIDERED
 FINAL UNLESS ALL
 SIGNATURES COMPLETED

LOAD AND RESISTANCE FACTOR RATING (LRFD) SUMMARY FOR PRESTRESSED CONCRETE GIRDERS

LOAD FACTORS:

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

| 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 | | | |
|--------------------|------------|----------------------|-------------------------|-----------------------------|---------------|------------------------|---------------------------|---------------|------|-----------------|-------------------------------------|---------------------------|---------------|------|-----------------|-------------------------------------|------------------|---------------------------|---------------|------|----------------|-----------------|-------------------------------------|--|
| | | | | | | LIVELOAD FACTORS | MOMENT | | | | | SHEAR | | | | | LIVELOAD FACTORS | MOMENT | | | | | | |
| | | | | | | | DISTRIBUTION FACTORS (DF) | RATING FACTOR | SPAN | GIRDER LOCATION | DISTANCE FROM LEFT END OF SPAN (ft) | DISTRIBUTION FACTORS (DF) | RATING FACTOR | SPAN | GIRDER LOCATION | DISTANCE FROM LEFT END OF SPAN (ft) | | DISTRIBUTION FACTORS (DF) | RATING FACTOR | SPAN | | GIRDER LOCATION | DISTANCE FROM LEFT END OF SPAN (ft) | |
| DESIGN LOAD RATING | HL-93(Inv) | N/A | 1 | 1.312 | -- | 1.75 | 0.272 | 1.49 | A | EL | 46.75 | 0.492 | 1.42 | A | EL | 46.75 | 0.80 | 0.272 | 1.31 | A | EL | 46.75 | | |
| | HL-93(0pr) | N/A | -- | 1.845 | -- | 1.35 | 0.272 | 1.94 | A | EL | 46.75 | 0.492 | 1.85 | A | EL | 46.75 | N/A | -- | -- | -- | -- | -- | | |
| | HS-20(Inv) | 36.000 | 2 | 1.804 | 64.941 | 1.75 | 0.272 | 2.05 | A | EL | 46.75 | 0.492 | 1.9 | A | EL | 46.75 | 0.80 | 0.272 | 1.80 | A | EL | 46.75 | | |
| | HS-20(0pr) | 36.000 | -- | 2.466 | 88.777 | 1.35 | 0.272 | 2.66 | A | EL | 46.75 | 0.492 | 2.47 | A | EL | 46.75 | N/A | -- | -- | -- | -- | -- | | |
| LEGAL LOAD RATING | SV | SNSH | 13.500 | -- | 4.246 | 57.316 | 1.4 | 0.272 | 6.04 | A | EL | 46.75 | 0.492 | 5.85 | A | EL | 46.75 | 0.80 | 0.272 | 4.25 | A | EL | 46.75 | |
| | | SNGARBS2 | 20.000 | -- | 3.088 | 61.767 | 1.4 | 0.272 | 4.4 | A | EL | 46.75 | 0.492 | 4.1 | A | EL | 46.75 | 0.80 | 0.272 | 3.09 | A | EL | 46.75 | |
| | | SNAGRIS2 | 22.000 | -- | 2.894 | 63.671 | 1.4 | 0.272 | 4.12 | A | EL | 46.75 | 0.492 | 3.78 | A | EL | 46.75 | 0.80 | 0.272 | 2.89 | A | EL | 46.75 | |
| | | SNCOTTS3 | 27.250 | -- | 2.111 | 57.512 | 1.4 | 0.272 | 3 | A | EL | 46.75 | 0.492 | 2.91 | A | EL | 46.75 | 0.80 | 0.272 | 2.11 | A | EL | 46.75 | |
| | | SNAGGRS4 | 34.925 | -- | 1.735 | 60.582 | 1.4 | 0.272 | 2.47 | A | EL | 46.75 | 0.492 | 2.38 | A | EL | 46.75 | 0.80 | 0.272 | 1.73 | A | EL | 46.75 | |
| | | SNS5A | 35.550 | -- | 1.698 | 60.373 | 1.4 | 0.272 | 2.42 | A | EL | 46.75 | 0.492 | 2.38 | A | EL | 46.75 | 0.80 | 0.272 | 1.70 | A | EL | 46.75 | |
| | | SNS6A | 39.950 | -- | 1.546 | 61.772 | 1.4 | 0.272 | 2.2 | A | EL | 46.75 | 0.492 | 2.16 | A | EL | 46.75 | 0.80 | 0.272 | 1.55 | A | EL | 46.75 | |
| | SNS7B | 42.000 | -- | 1.472 | 61.826 | 1.4 | 0.272 | 2.1 | A | EL | 46.75 | 0.492 | 2.1 | A | EL | 46.75 | 0.80 | 0.272 | 1.47 | A | EL | 46.75 | | |
| | TTST | TNAGRIT3 | 33.000 | -- | 1.882 | 62.108 | 1.4 | 0.272 | 2.68 | A | EL | 46.75 | 0.492 | 2.58 | A | EL | 46.75 | 0.80 | 0.272 | 1.88 | A | EL | 46.75 | |
| | | TNT4A | 33.075 | -- | 1.887 | 62.417 | 1.4 | 0.272 | 2.69 | A | EL | 46.75 | 0.492 | 2.53 | A | EL | 46.75 | 0.80 | 0.272 | 1.89 | A | EL | 46.75 | |
| | | TNT6A | 41.600 | -- | 1.532 | 63.725 | 1.4 | 0.272 | 2.18 | A | EL | 46.75 | 0.492 | 2.2 | A | EL | 46.75 | 0.80 | 0.272 | 1.53 | A | EL | 46.75 | |
| | | TNT7A | 42.000 | -- | 1.534 | 64.411 | 1.4 | 0.272 | 2.18 | A | EL | 46.75 | 0.492 | 2.16 | A | EL | 46.75 | 0.80 | 0.272 | 1.53 | A | EL | 46.75 | |
| | | TNT7B | 42.000 | -- | 1.572 | 66.032 | 1.4 | 0.272 | 2.24 | A | EL | 46.75 | 0.492 | 2.07 | A | EL | 46.75 | 0.80 | 0.272 | 1.57 | A | EL | 46.75 | |
| | | TNAGRIT4 | 43.000 | -- | 1.506 | 64.77 | 1.4 | 0.272 | 2.14 | A | EL | 46.75 | 0.492 | 2.01 | A | EL | 46.75 | 0.80 | 0.272 | 1.51 | A | EL | 46.75 | |
| TNAGT5A | | 45.000 | -- | 1.425 | 64.137 | 1.4 | 0.272 | 2.03 | A | EL | 46.75 | 0.492 | 1.97 | A | EL | 46.75 | 0.80 | 0.272 | 1.43 | A | EL | 46.75 | | |
| TNAGT5B | 45.000 | 3 | 1.413 | 63.564 | 1.4 | 0.272 | 2.01 | A | EL | 46.75 | 0.492 | 1.91 | A | EL | 46.75 | 0.80 | 0.272 | 1.41 | A | EL | 46.75 | | | |

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)

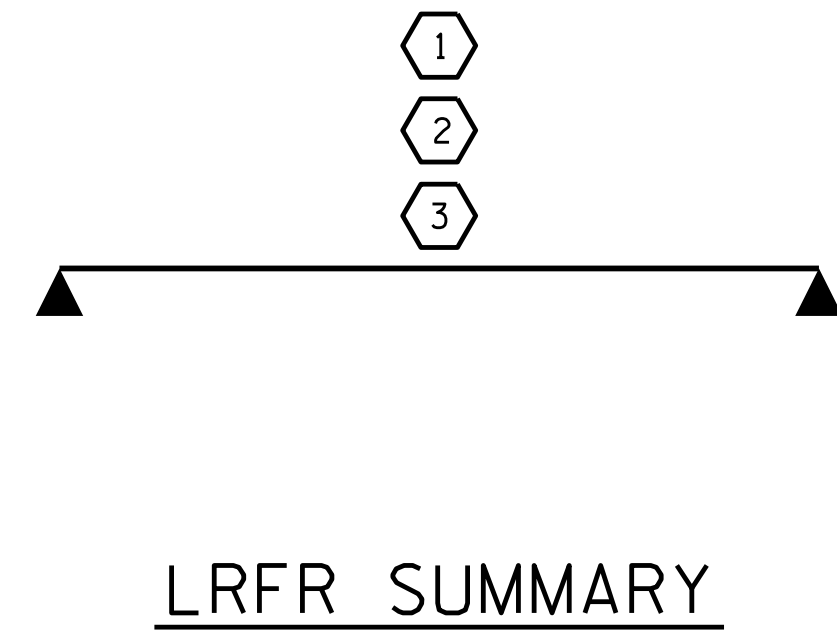
2 DESIGN LOAD RATING (HS-20)

3 LEGAL LOAD RATING **

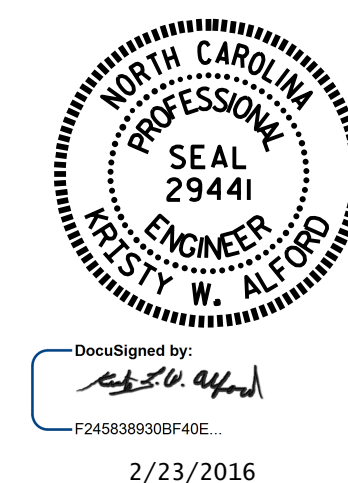
** SEE CHART FOR VEHICLE TYPE

GIRDER LOCATION

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



PROJECT NO. B-5157
GRANVILLE COUNTY
 STATION: 15+97.50 -L-

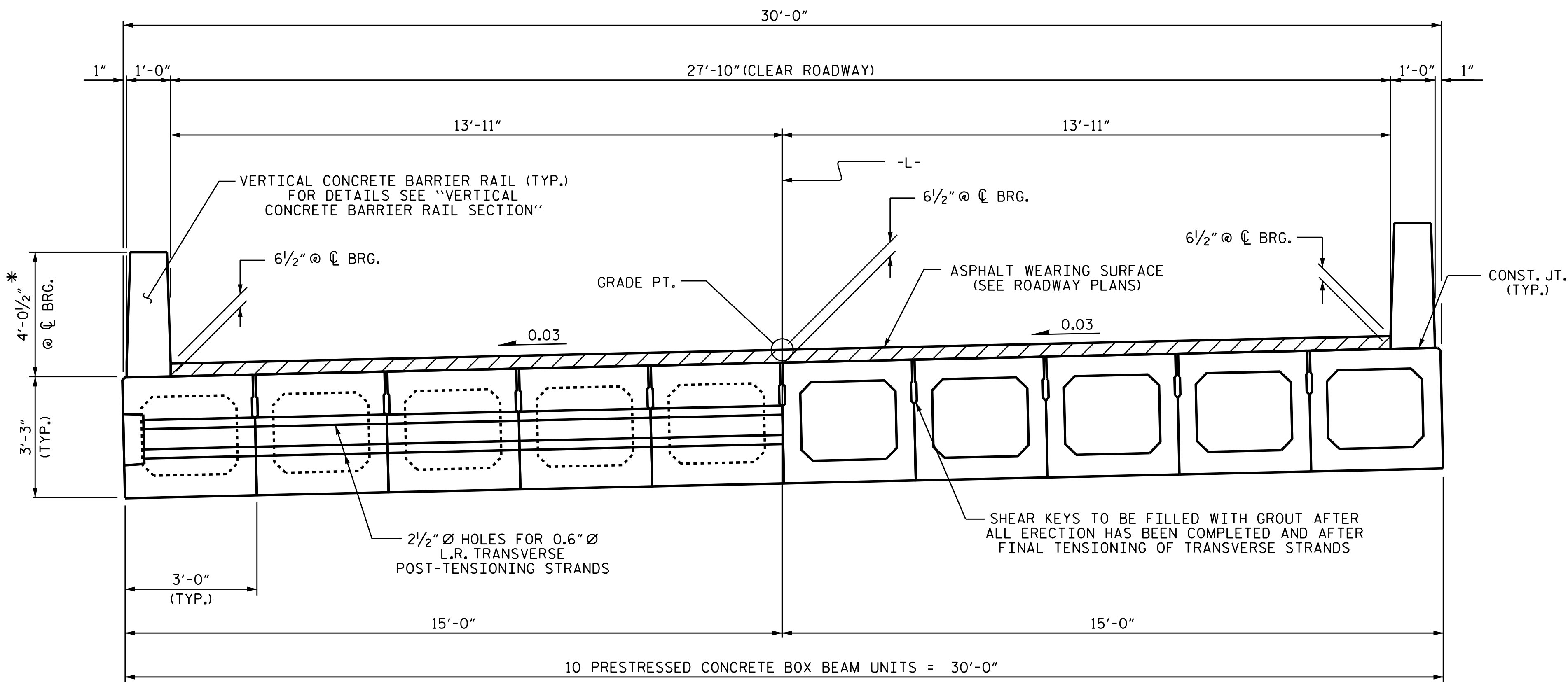


| | | | | | |
|---|-----|-------|-----|-----|--|
| STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION RALEIGH | | | | | |
| STANDARD LRFR SUMMARY FOR 95' BOX BEAM UNIT 90° SKEW (NON-INTERSTATE TRAFFIC) | | | | | |
| REVISIONS | | | | | |
| NO. | BY: | DATE: | NO. | BY: | DATE: |
| 1 | | | 3 | | |
| 2 | | | 4 | | |
| | | | | | SHEET NO. S-3 TOTAL SHEETS 15 |

ASSEMBLED BY : *William J. Parker* DATE : 08/2015
 CHECKED BY : J.P. ADAMS DATE : 9/2015

DRAWN BY : TMG II/II
 CHECKED BY : AAC II/II

DOCUMENT NOT CONSIDERED FINAL
 UNLESS ALL SIGNATURES COMPLETED



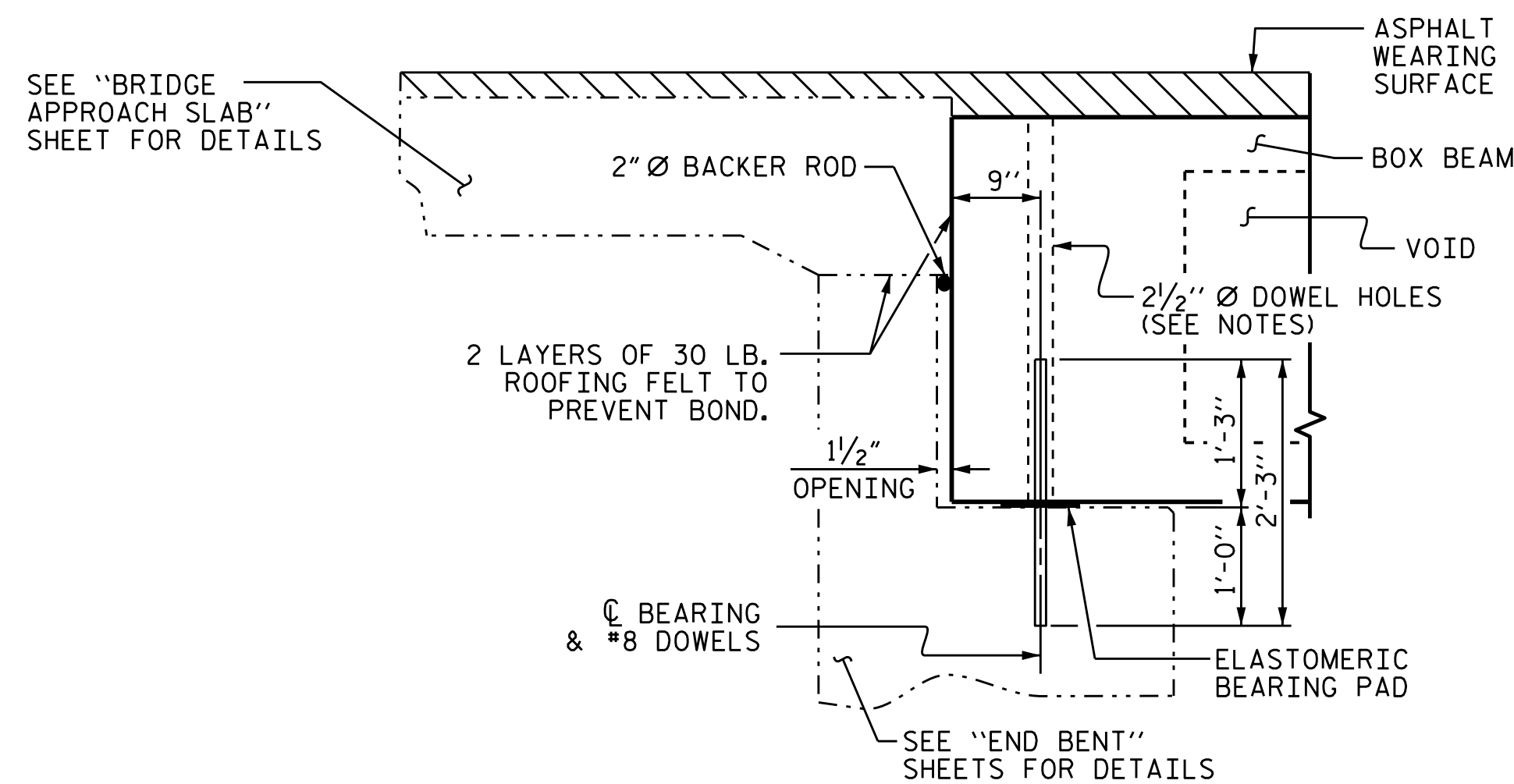
HALF SECTION
AT INTERMEDIATE DIAPHRAGMS

HALF SECTION
THROUGH VOIDS

TYPICAL SECTION

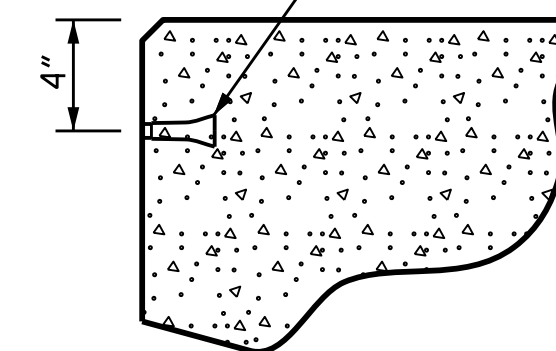
*THE MAXIMUM BARRIER RAIL HEIGHT AND ASPHALT THICKNESS IS SHOWN. THE HEIGHT OF THE BARRIER RAIL AND ASPHALT THICKNESS VARIES WHILE THE TOP OF THE BARRIER RAIL FOLLOWS THE PROFILE OF THE GUTTERLINE. FOR RAIL HEIGHT DETAILS AND ASPHALT THICKNESS, SEE THE "VERTICAL CONCRETE BARRIER RAIL SECTION" DETAIL.

FIXED END



SECTION AT END BENT

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



THREADED INSERT DETAIL

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 6000 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.

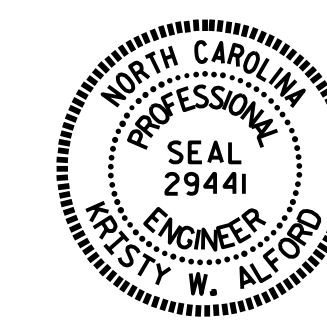
THE PERMITTED THREADED INSERTS IN THE EXTERIOR UNITS SHALL BE SIZED BY THE CONTRACTOR, SPACED AT 4'-0" CENTERS AND GALVANIZED IN ACCORDANCE WITH SECTION 1076 OF THE STANDARD SPECIFICATIONS. STAINLESS STEEL THREADED INSERTS MAY BE USED AS AN ALTERNATE.

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.

PROJECT NO. B-5157
GRANVILLE COUNTY
 STATION: 15+97.50 -L-

SHEET 1 OF 5



DocuSigned by:
 W. Alford

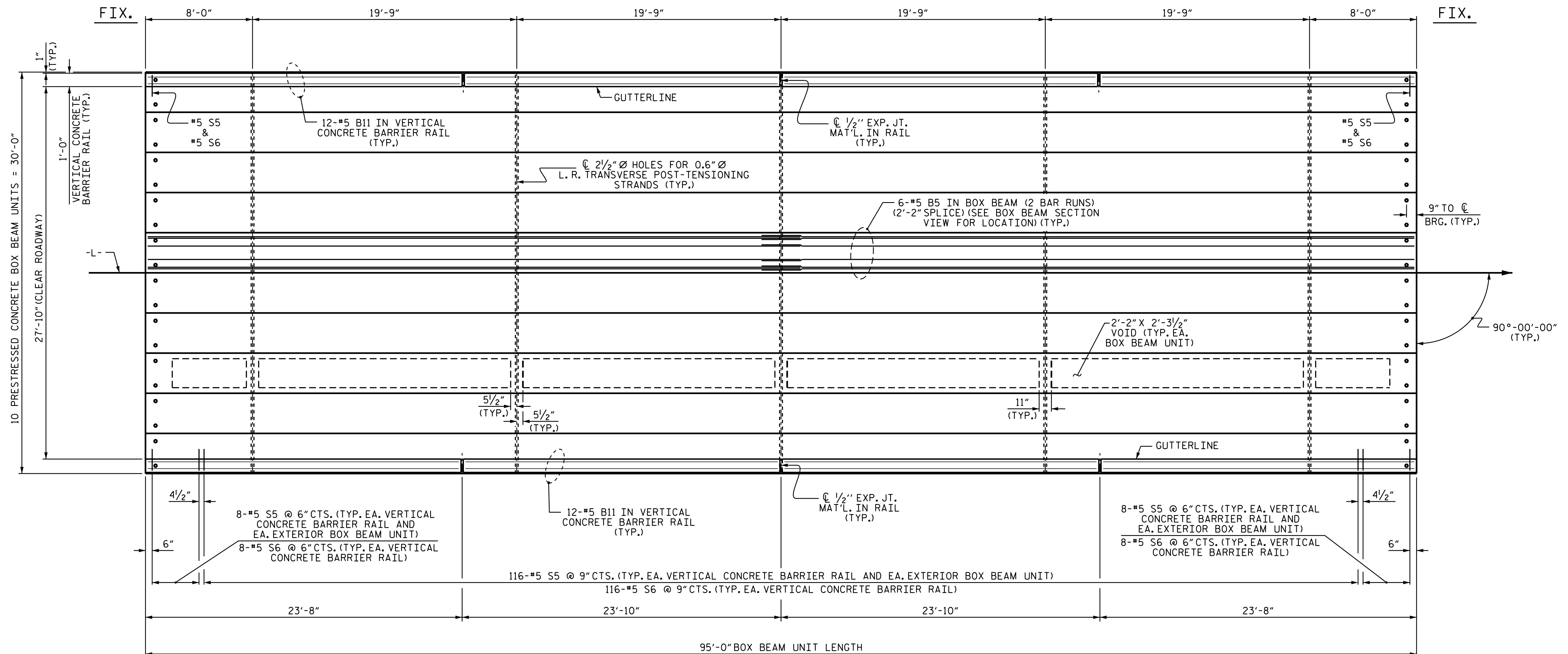
2/23/2016

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

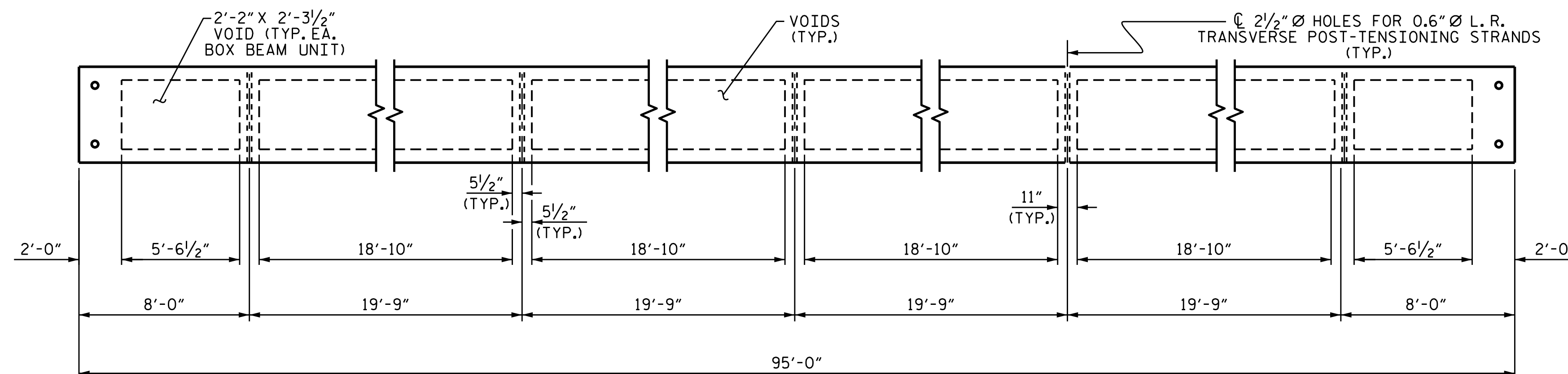
| | |
|---|----------------|
| ASSEMBLED BY : <i>William F. Parker</i> | DATE : 08/2015 |
| CHECKED BY : J.P. ADAMS | DATE : 9/2015 |
| DRAWN BY : DGE 8/11 | REV. 8/14 |
| CHECKED BY : TMG 11/11 | MAA/TMG |

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 | | | 15 |

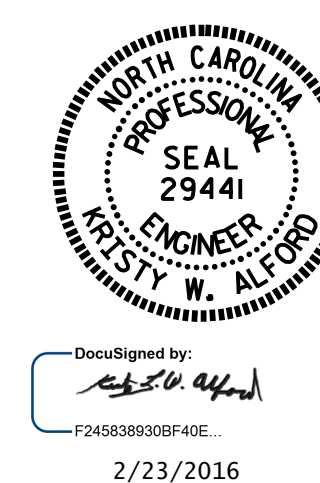


PLAN OF UNIT



DIAPHRAGM AND VOID LAYOUT

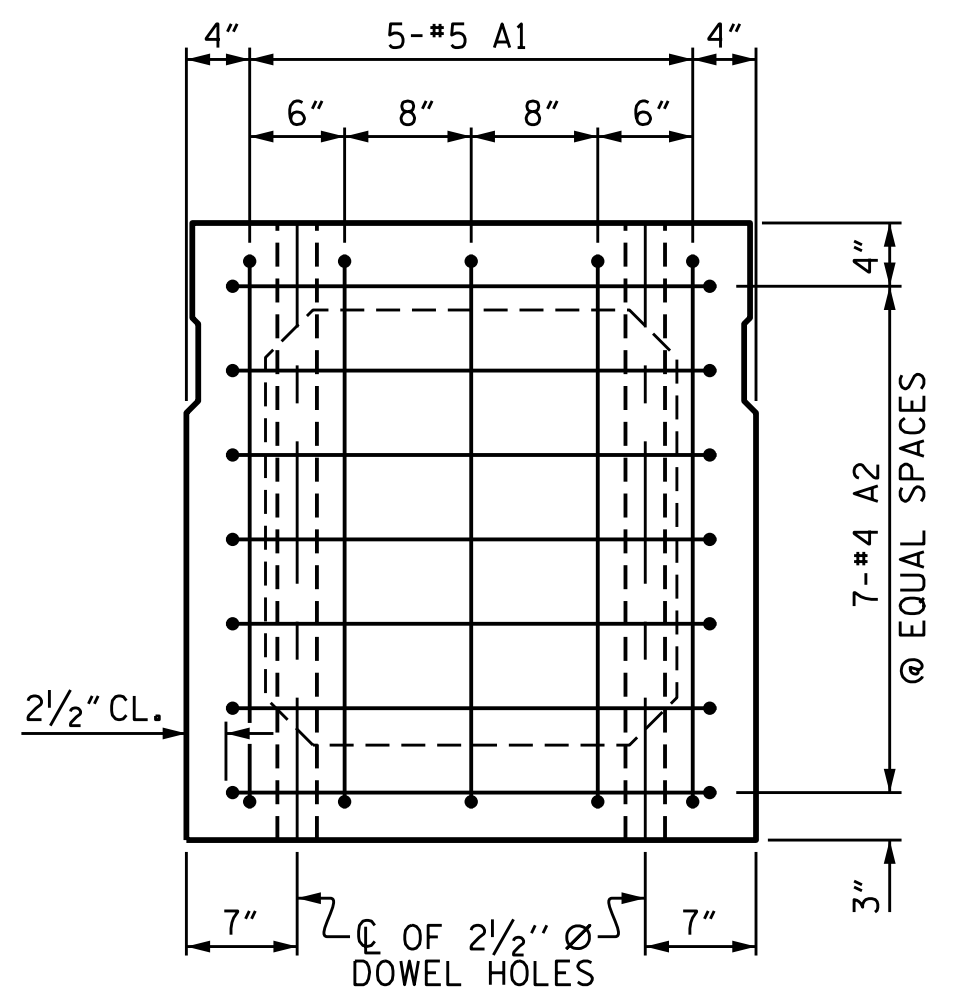
PROJECT NO. B-5157
GRANVILLE COUNTY
 STATION: 15+97.50 -L-
 SHEET 2 OF 5



| | | | | | |
|--|-----|-------|-----|-----|--------------------|
| STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION RALEIGH | | | | | |
| PLAN OF 95' UNIT 27'-10" CLEAR ROADWAY 90° SKEW | | | | | |
| REVISIONS | | | | | |
| NO. | BY: | DATE: | NO. | BY: | DATE: |
| 1 | | | 3 | | |
| 2 | | | 4 | | |
| SHEET NO. S-5 | | | | | TOTAL SHEETS 15 |

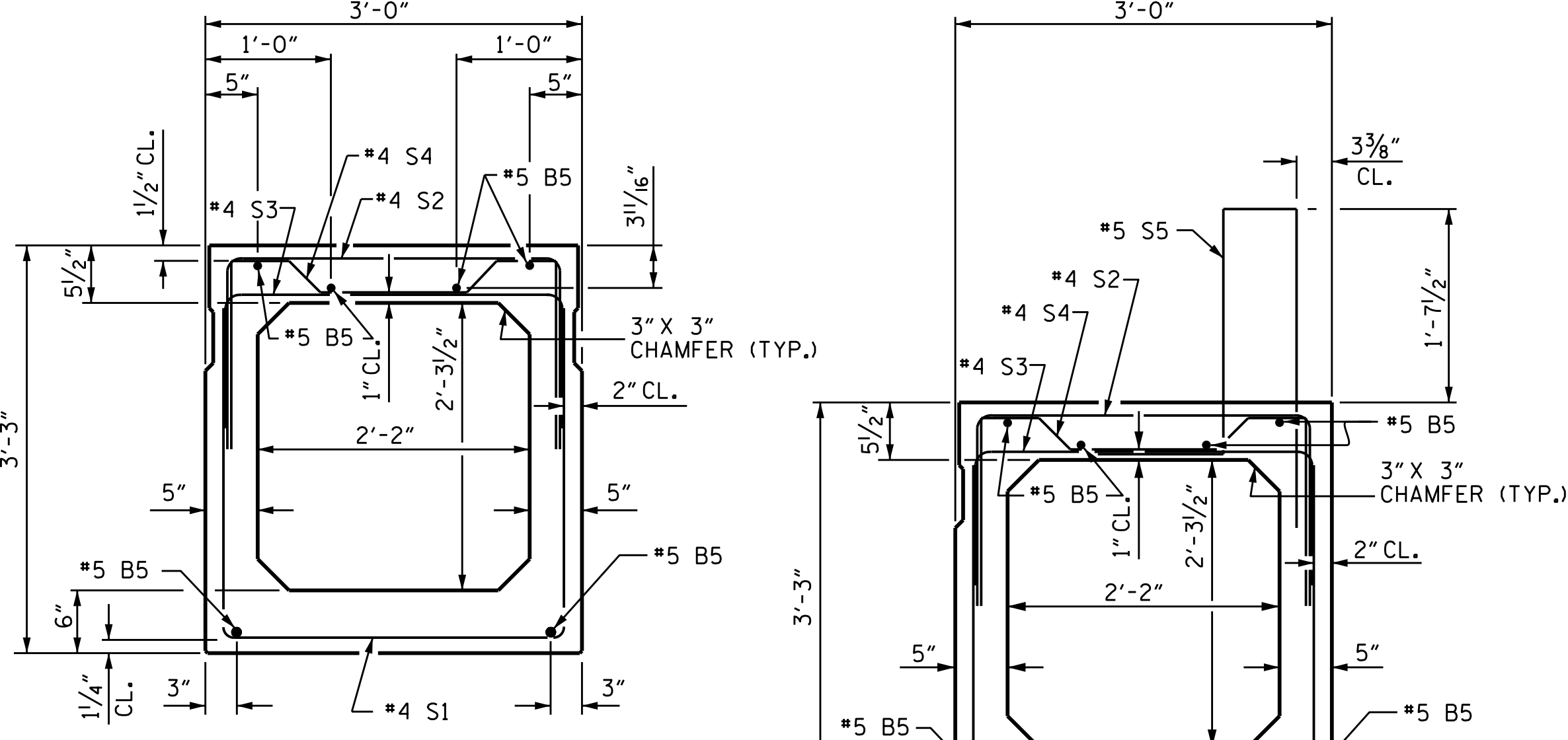
| | |
|--|----------------|
| ASSEMBLED BY: <i>William F. Parker</i> | DATE: 08/31/15 |
| CHECKED BY: J.P. ADAMS | DATE: 9/2015 |
| DRAWN BY: DGE 8/10 | REV. 8/14 |
| CHECKED BY: TMG 11/11 | MAA/TMG |

DOCUMENT NOT CONSIDERED FINAL
 UNLESS ALL SIGNATURES COMPLETED



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.)

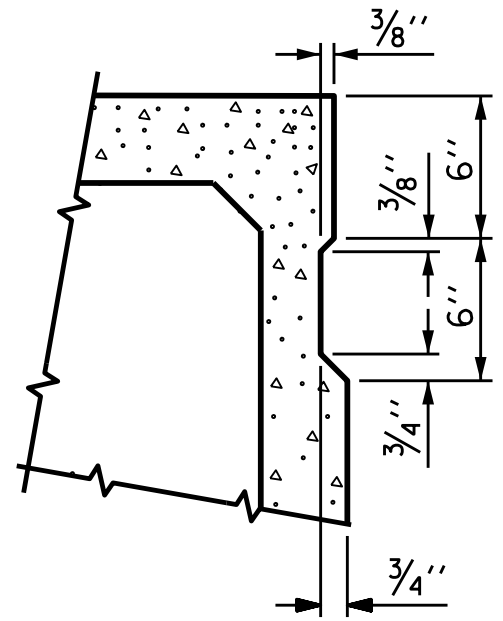


INTERIOR BOX BEAM SECTION

(STRAND LAYOUT NOT SHOWN)

EXTERIOR BOX BEAM SECTION

(STRAND LAYOUT NOT SHOWN)

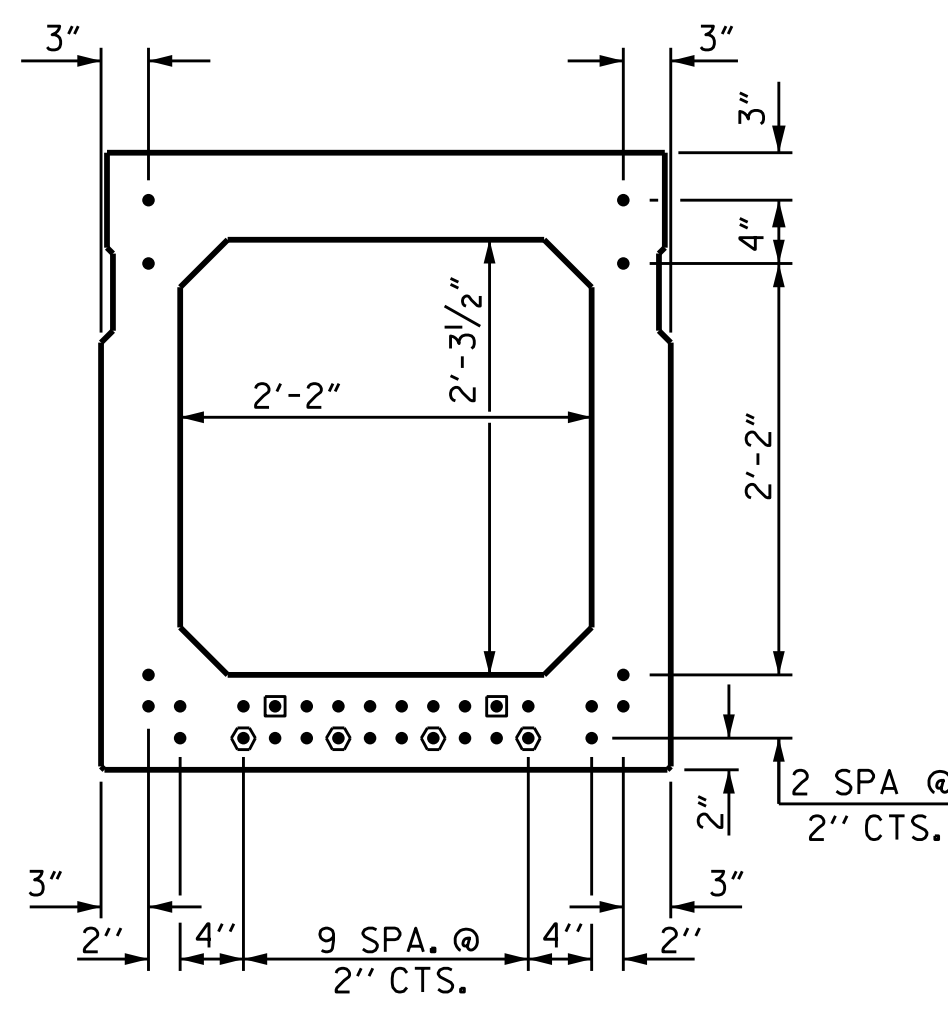


SHEAR KEY DETAIL

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 |

0.6" Ø LOW RELAXATION STRAND LAYOUT



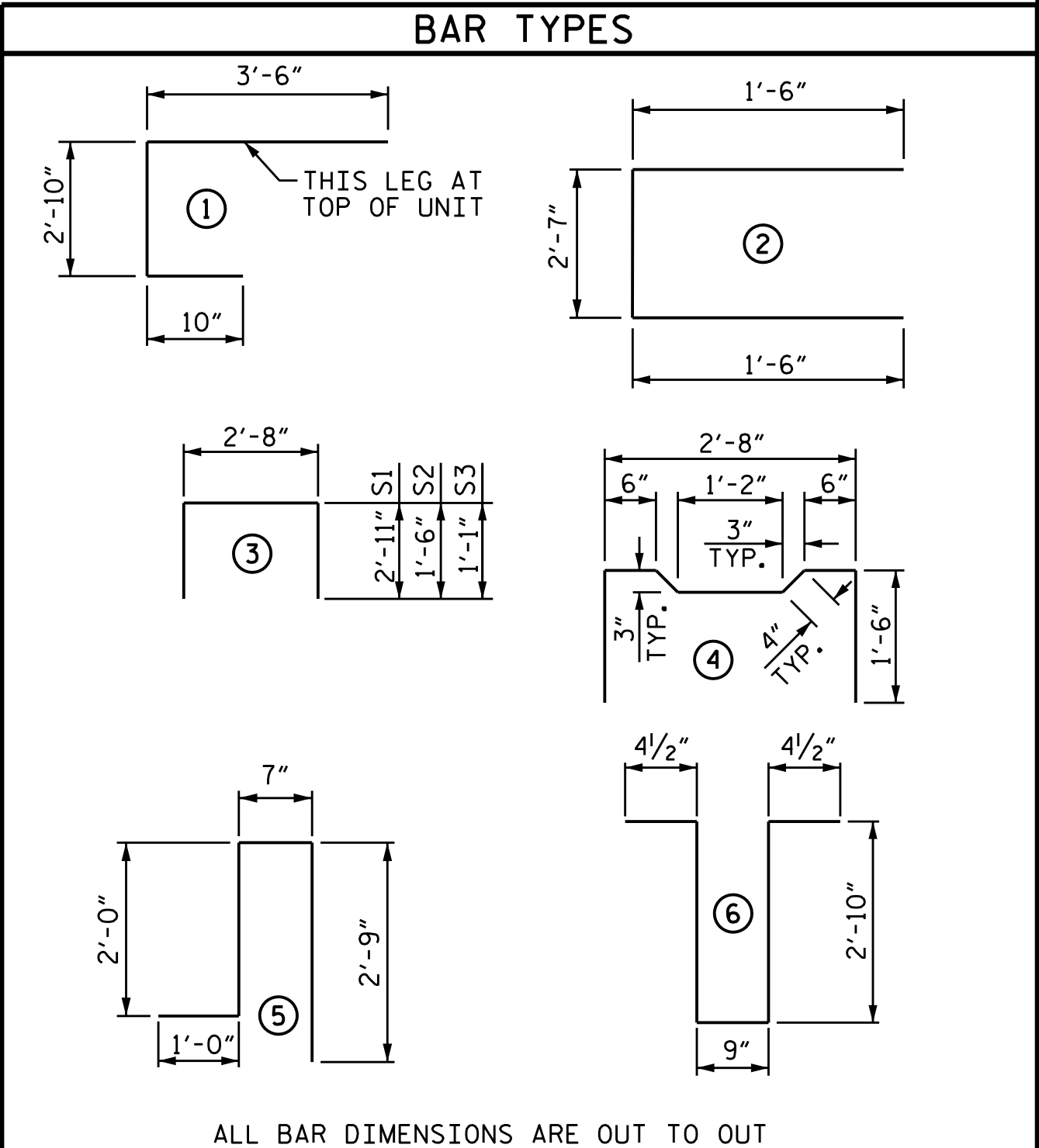
TYPICAL STRAND LOCATION

(32 STRANDS REQUIRED)

DEBONDING LEGEND

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

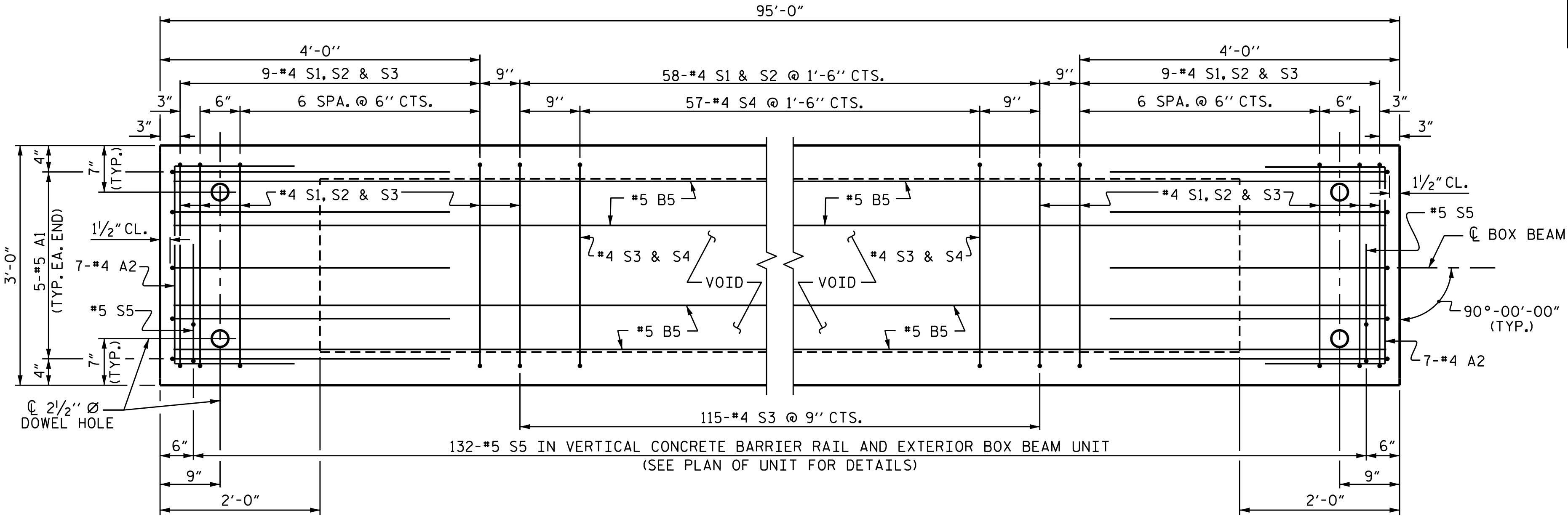
BOND SHALL BE BROKEN ON STRANDS AS SHOWN FOR THE SPECIFIED LENGTH FROM EACH END OF THE BOX BEAM. SEE STANDARD SPECIFICATIONS ARTICLE 1078-7.



ALL BAR DIMENSIONS ARE OUT TO OUT

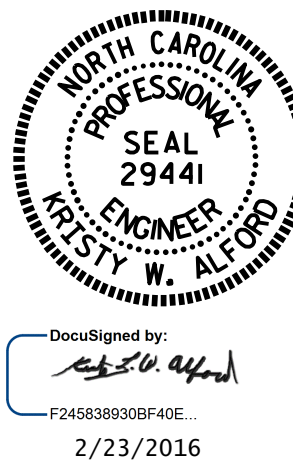
BILL OF MATERIAL FOR ONE BOX BEAM SECTION

| BAR | NUMBER | SIZE | TYPE | EXTERIOR UNIT | | INTERIOR UNIT | |
|-----------------------------|--------|------|------|---------------|----------|---------------|----------|
| | | | | LENGTH | WEIGHT | LENGTH | WEIGHT |
| A1 | 10 | #5 | 1 | 7'-2" | 75 | 7'-2" | 75 |
| A2 | 44 | #4 | 2 | 5'-7" | 164 | 5'-7" | 164 |
| B5 | 12 | #5 | STR | 48'-5" | 606 | 48'-5" | 606 |
| K1 | 15 | #4 | 6 | 7'-2" | 72 | 7'-2" | 72 |
| K2 | 10 | #4 | STR | 2'-7" | 17 | 2'-7" | 17 |
| S1 | 76 | #4 | 3 | 8'-6" | 432 | 8'-6" | 432 |
| S2 | 76 | #4 | 3 | 5'-8" | 288 | 5'-8" | 288 |
| S3 | 133 | #4 | 3 | 4'-10" | 429 | 4'-10" | 429 |
| S4 | 57 | #4 | 4 | 5'-10" | 222 | 5'-10" | 222 |
| * S5 | 132 | #5 | 5 | 6'-4" | 872 | -- | -- |
| REINFORCING STEEL | | | | 2305 | LBS. | 2305 | LBS. |
| * EPOXY COATED REINF. STEEL | | | | 872 | LBS. | | |
| 7500 P.S.I. CONCRETE | | | | 18.7 | CU. YDS. | 18.5 | CU. YDS. |
| 0.6" Ø L.R. STRANDS | | | | No. | 32 | No. | 32 |



PLAN OF BOX BEAM

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



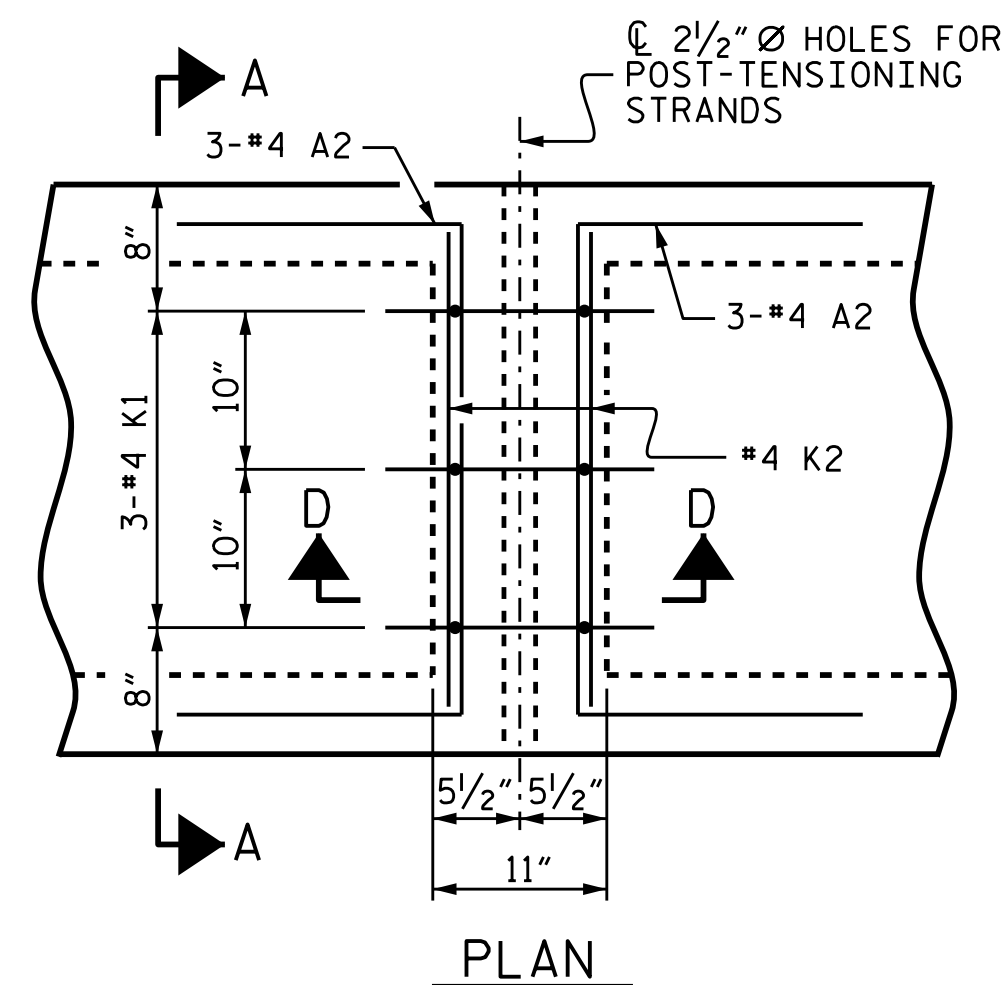
PROJECT NO. B-5157
 GRANVILLE COUNTY
 STATION: 15+97.50 -L-
 SHEET 3 OF 5

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

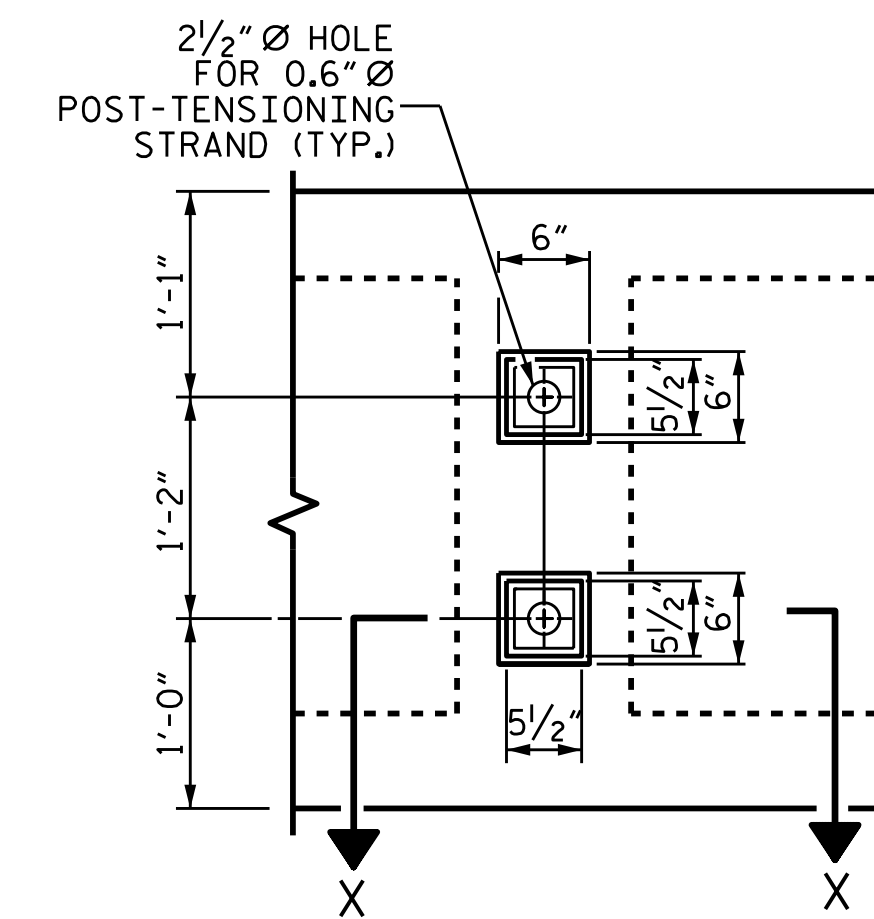
| REVISIONS | | | | | | SHEET NO. S-6 |
|-----------|-----|-------|-----|-----|-------|--------------------|
| NO. | BY: | DATE: | NO. | BY: | DATE: | |
| 1 | | | 3 | | | TOTAL SHEETS 15 |
| 2 | | | 4 | | | |

DOCUMENT NOT CONSIDERED FINAL
 UNLESS ALL SIGNATURES COMPLETED

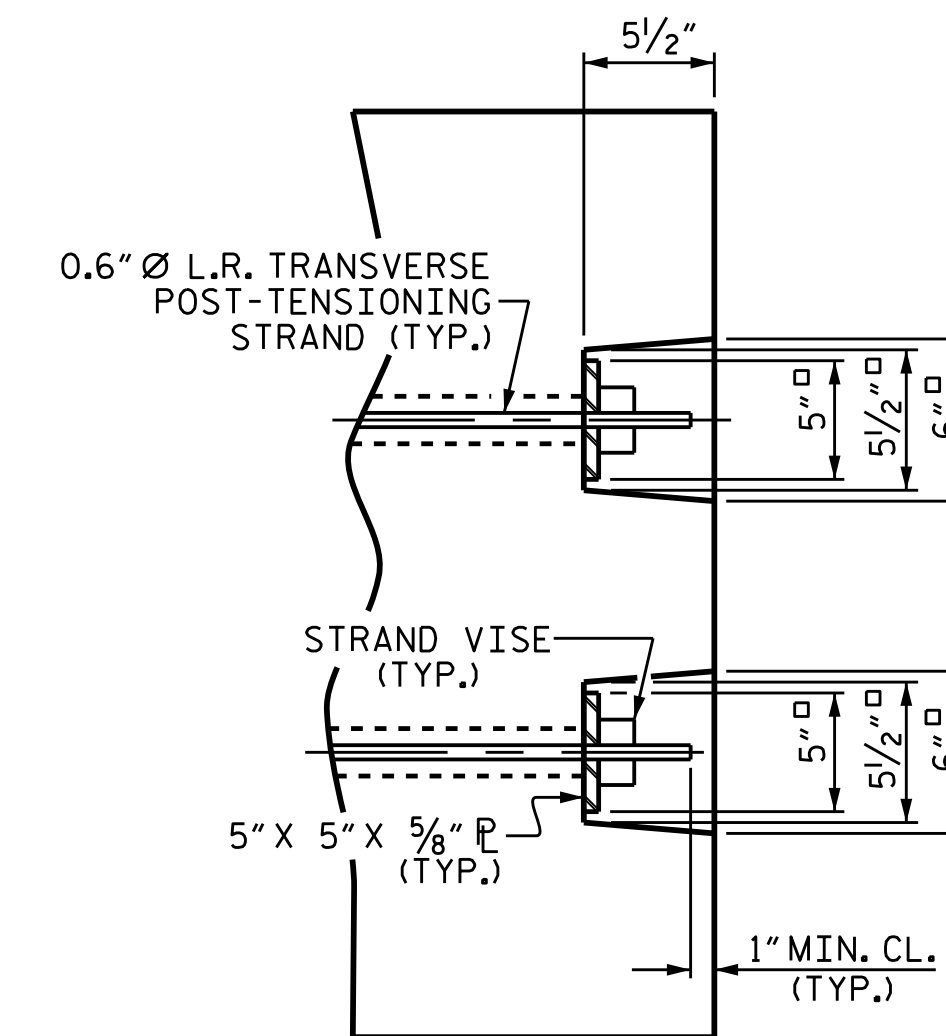
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|---------------------------------|----------------|
| ASSEMBLED BY: William J. Parker | DATE: 08/31/15 |
| CHECKED BY: J.P. ADAMS | DATE: 9/2/2015 |
| DRAWN BY: DGE II/II | REV. 9/14 |
| CHECKED BY: TMG II/II | MAA/TMG |



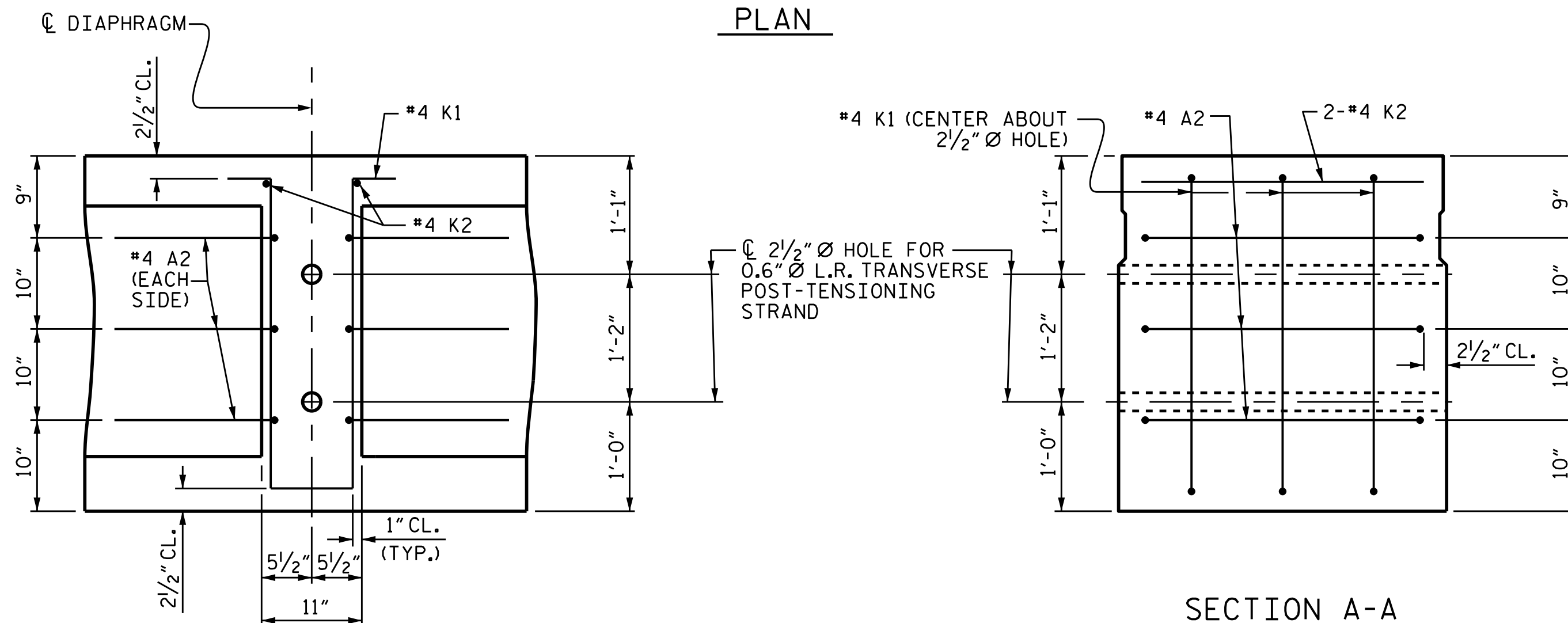
PLAN



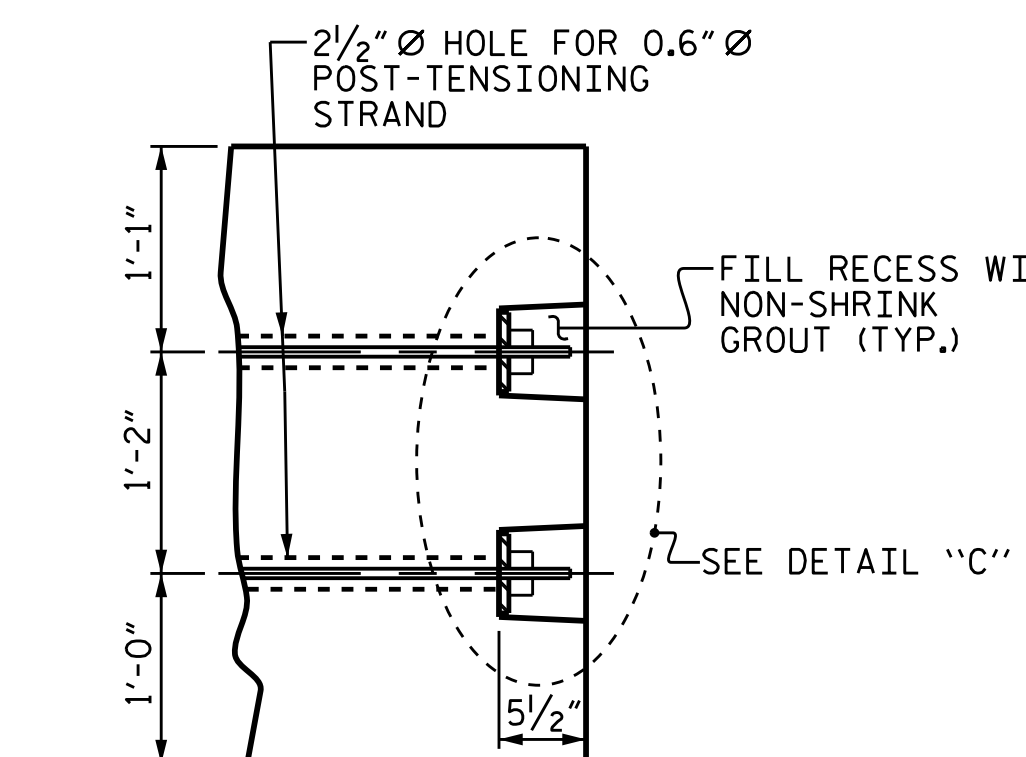
VIEW Y-Y
SHOWING ELEVATION VIEW OF GROUTED RECESS



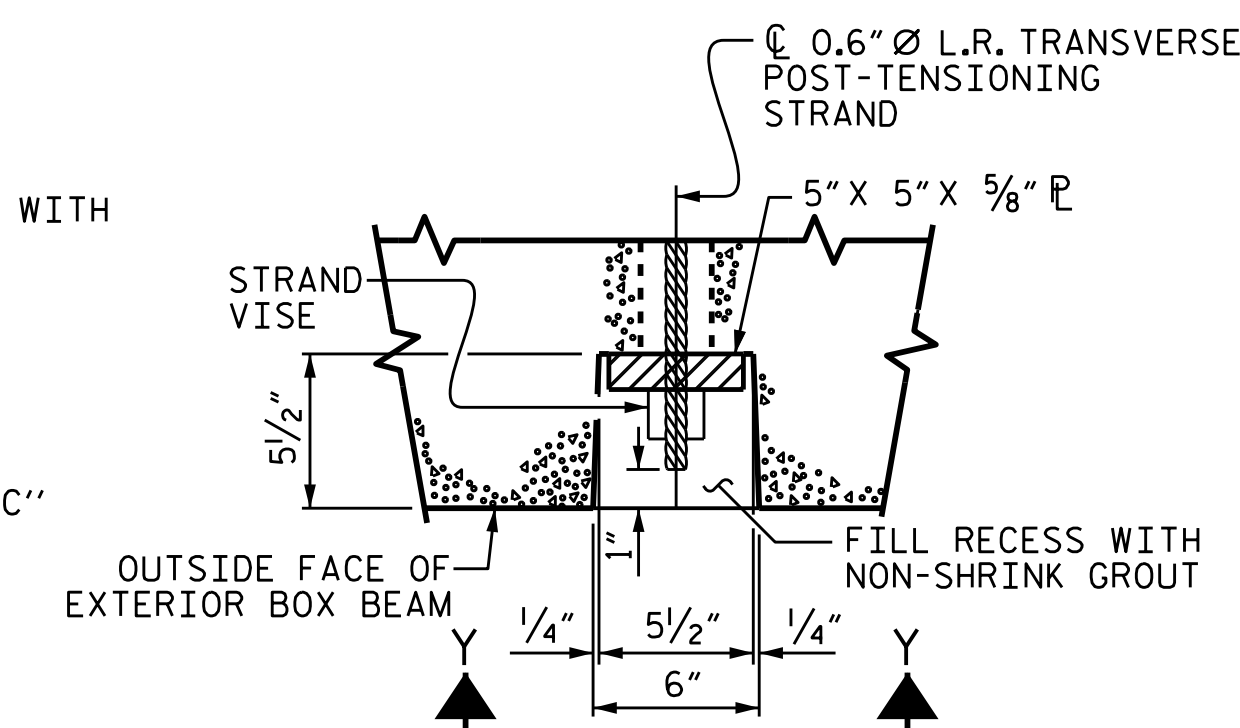
DETAIL "C"



SECTION A-A
VOIDS NOT SHOWN



PART SECTION AT RECESS

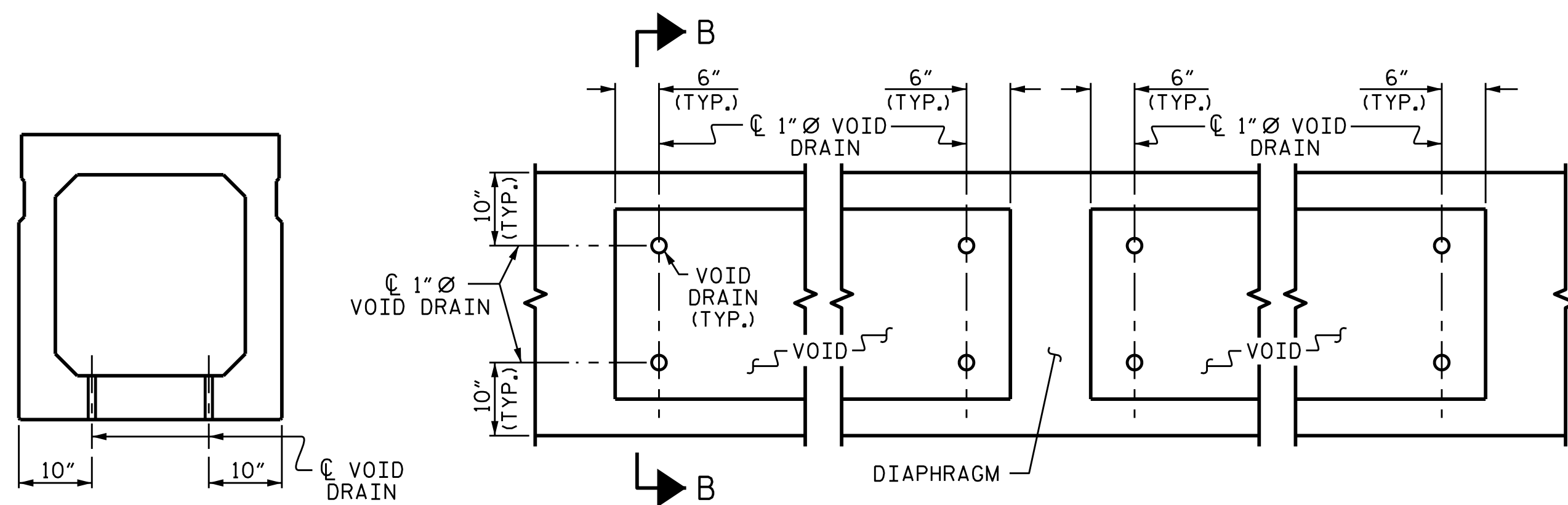


SECTION X-X
SHOWING PLAN VIEW OF GROUTED RECESS

DOUBLE DIAPHRAGM DETAILS

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

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



SECTION B-B

PART PLAN

VOID DRAIN DETAILS

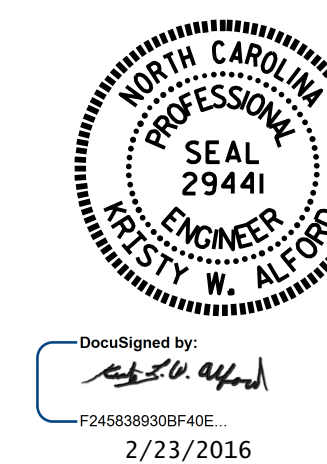
(DIMENSIONS SHOWN ARE TYPICAL FOR EACH VOID)

| DEAD LOAD DEFLECTION AND CAMBER | |
|--|---------------|
| 95' BOX BEAM UNIT (NC & SE) | 3'-0" x 3'-3" |
| CAMBER (SLAB ALONE IN PLACE) | 2" ↑ |
| DEFLECTION DUE TO SUPERIMPOSED DEAD LOAD** | 7/8" ↓ |
| FINAL CAMBER | 1 1/8" ↑ |

** INCLUDES FUTURE WEARING SURFACE

PROJECT NO. B-5157
GRANVILLE COUNTY
STATION: 15+97.50 -L-

SHEET 4 OF 5

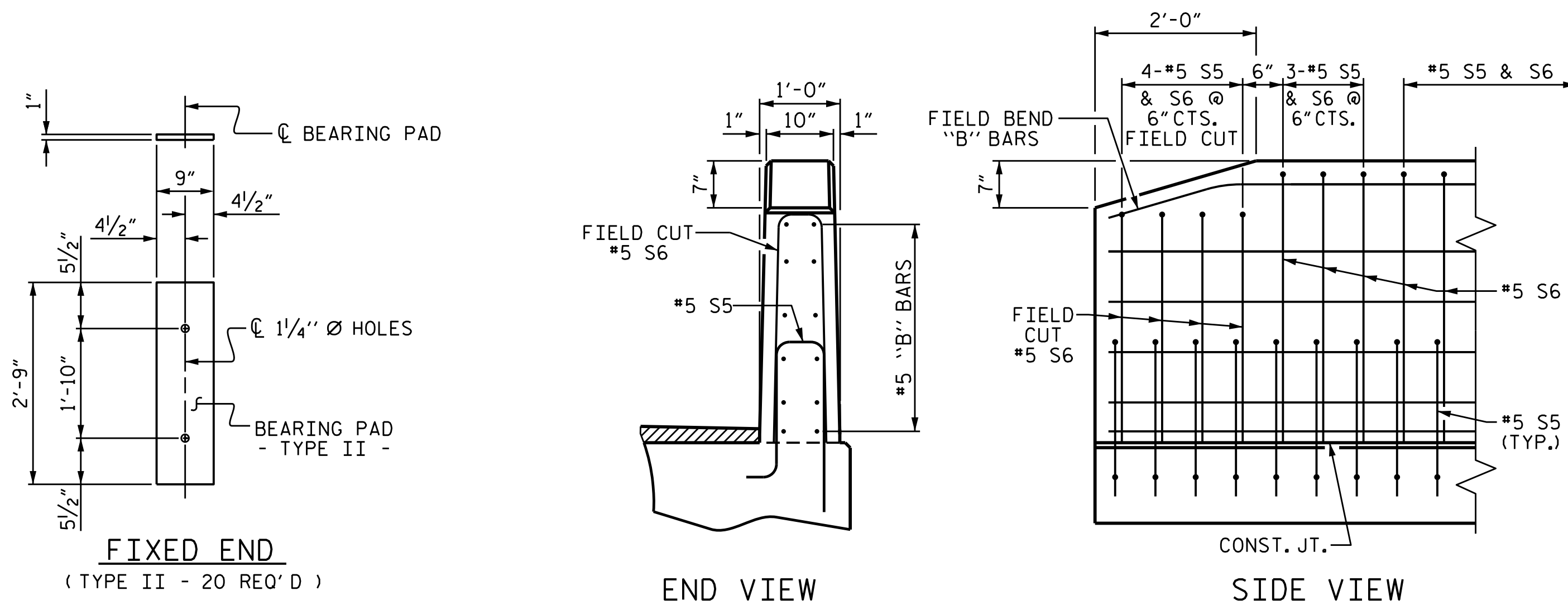
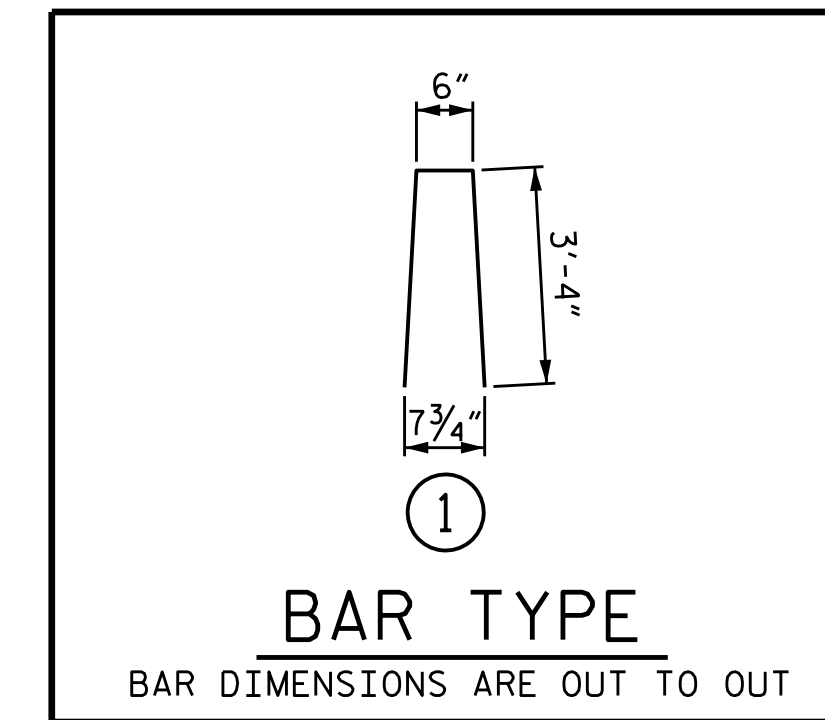


STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH
STANDARD
3'-0" X 3'-3"
PRESTRESSED CONCRETE
BOX BEAM UNIT

| REVISIONS | | | | | | SHEET NO. |
|-----------|-----|-------|-----|-----|-------|-----------------|
| NO. | BY: | DATE: | NO. | BY: | DATE: | S-7 |
| 1 | | | 3 | | | TOTAL SHEETS 15 |
| 2 | | | 4 | | | |

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UNLESS ALL SIGNATURES COMPLETED

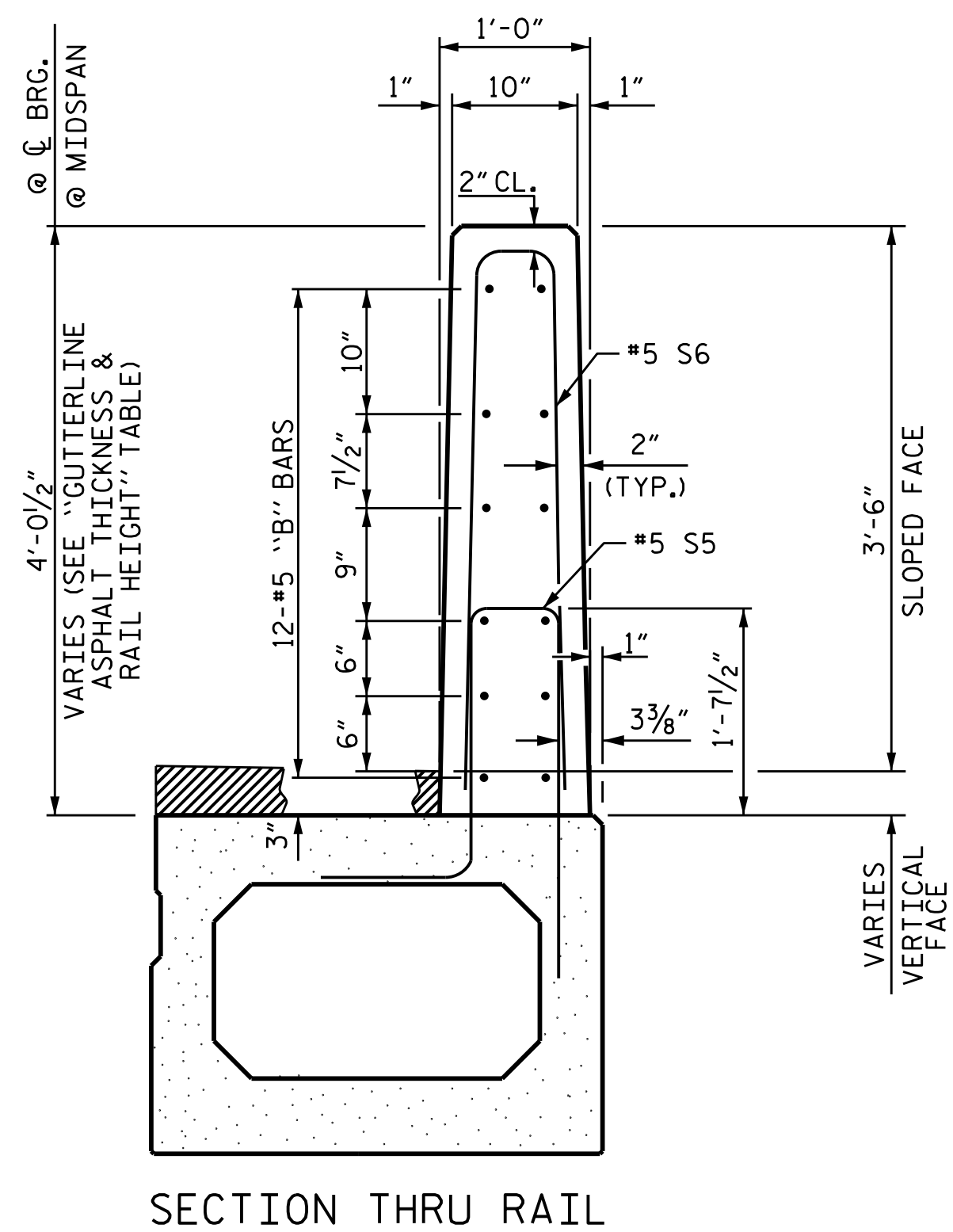
| | |
|---|---------------------|
| ASSEMBLED BY : <i>William J. Parker</i> | DATE : 08/31/15 |
| CHECKED BY : J.P. ADAMS | DATE : 9/20/15 |
| DRAWN BY : DGE II/II | ADDED 7/11/05 |
| CHECKED BY : TMG II/II | REV. 5/1/06 TLA/GM |
| | REV. 10/1/11 MAA/GM |



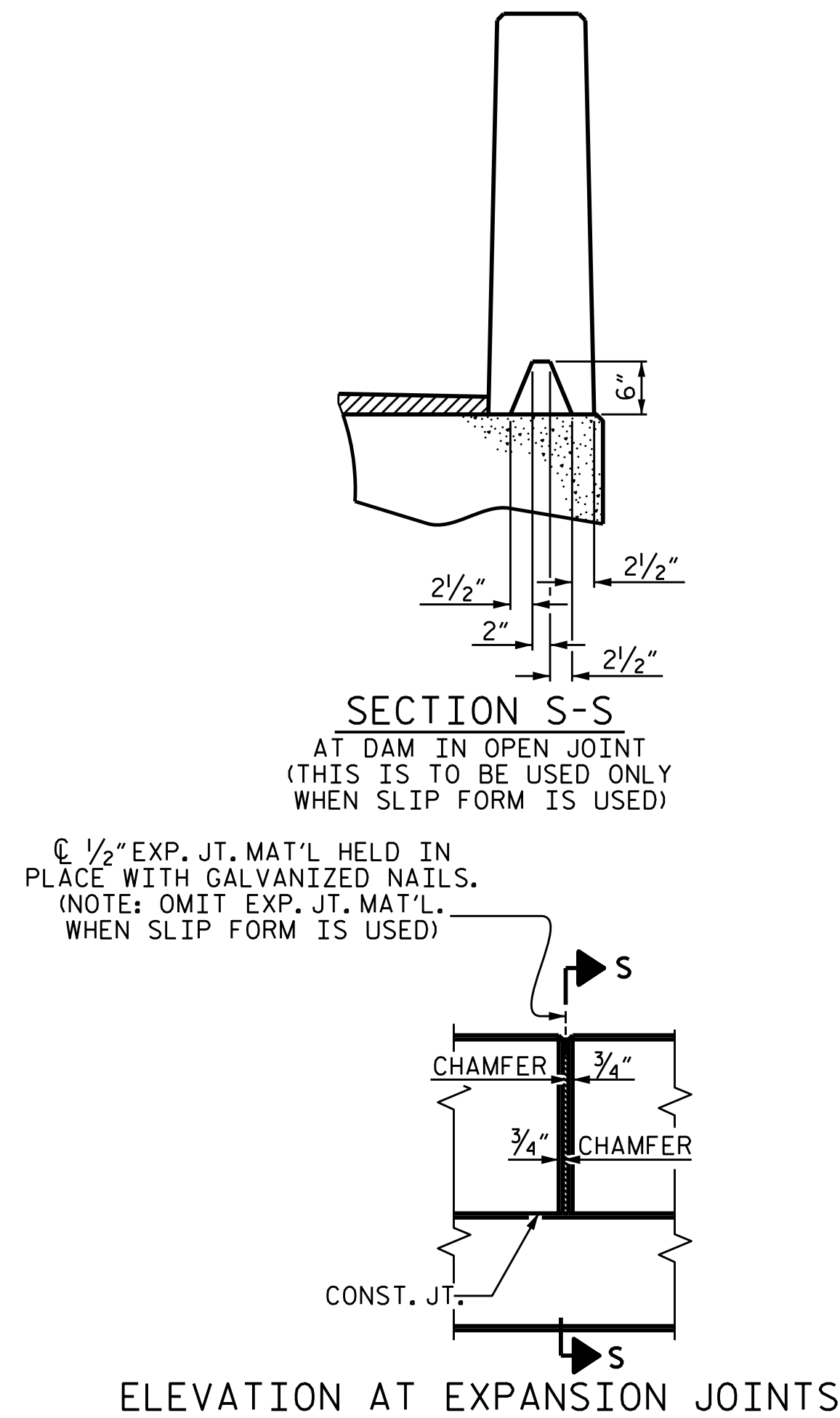
ELASTOMERIC BEARING DETAILS

ELASTOMER IN ALL BEARINGS SHALL BE 60 DUROMETER HARDNESS.

| BILL OF MATERIAL FOR VERTICAL CONCRETE BARRIER RAIL | | | | | |
|---|---------------------------------|------|------|---------|--------|
| BAR | BARS PER PAIR OF EXTERIOR UNITS | SIZE | TYPE | LENGTH | WEIGHT |
| | 95' UNIT | | | | |
| * B11 | 96 | #5 | STR | 23'-4" | 2336 |
| * S6 | 264 | #5 | 1 | 7'-8" | 1973 |
| * EPOXY COATED REINFORCING STEEL | | | | LBS. | 7309 |
| CLASS AA CONCRETE | | | | CU.YDS. | 26.2 |
| TOTAL VERTICAL CONCRETE BARRIER RAIL | | | | LN. FT. | 190.0 |



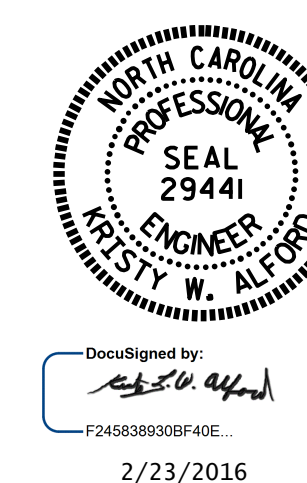
VERTICAL CONCRETE BARRIER RAIL DETAILS



ELEVATION AT EXPANSION JOINTS

| GUTTERLINE ASPHALT THICKNESS & RAIL HEIGHT | | |
|--|--------------------------------------|------------------------|
| | ASPHALT OVERLAY THICKNESS @ MID-SPAN | RAIL HEIGHT @ MID-SPAN |
| 95' UNITS | 1 13/16" | 3'-7 13/16" |

| BOX BEAM UNITS REQUIRED | | | |
|-------------------------|--------|--------|--------------|
| | NUMBER | LENGTH | TOTAL LENGTH |
| EXTERIOR B.B. | 2 | 95'-0" | 190'-0" |
| INTERIOR B.B. | 8 | 95'-0" | 760'-0" |
| TOTAL | 10 | | 950'-0" |



PROJECT NO. B-5157
GRANVILLE COUNTY
 STATION: 15+97.50 -L-
 SHEET 5 OF 5

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

| REVISIONS | | | | | | SHEET NO. |
|-----------|-----|-------|-----|-----|-------|-----------------|
| NO. | BY: | DATE: | NO. | BY: | DATE: | S-8 |
| 1 | | | 3 | | | TOTAL SHEETS 15 |
| 2 | | | 4 | | | |

ASSEMBLED BY: William J. Parker DATE: 08/31/15
 CHECKED BY: J.P. ADAMS DATE: 9/20/15
 DRAWN BY: DGE 10/11 REV. 4/15 MAA/TMG
 CHECKED BY: TMG 11/11

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 UNLESS ALL SIGNATURES COMPLETED

NOTES

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

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

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

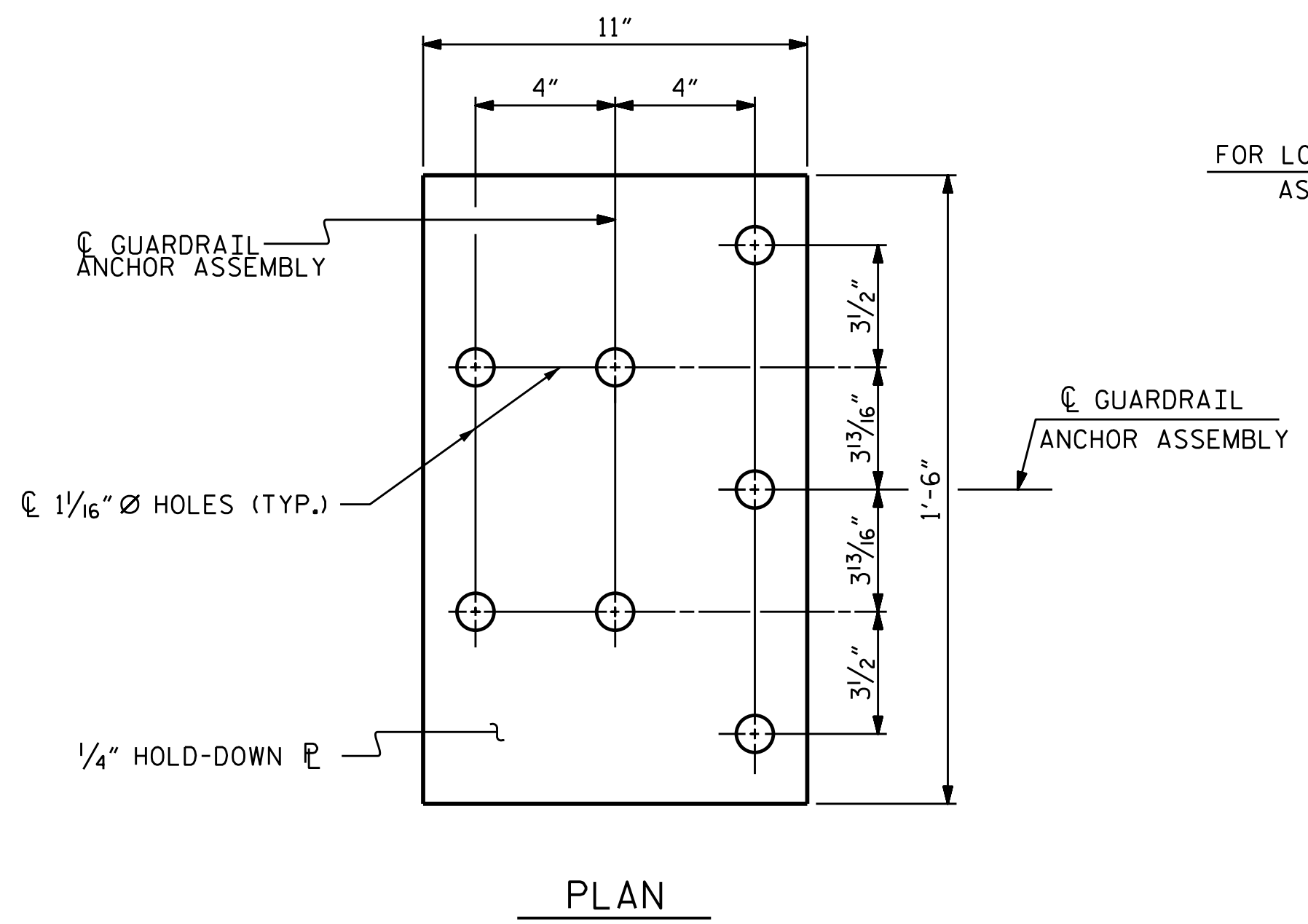
THE GUARDRAIL ANCHOR ASSEMBLY IS REQUIRED AT ALL POINTS WHERE APPROACH GUARDRAIL IS TO BE ATTACHED TO THE END OF BARRIER RAIL. FOR POINTS OF ATTACHMENT, SEE SKETCH.

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

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

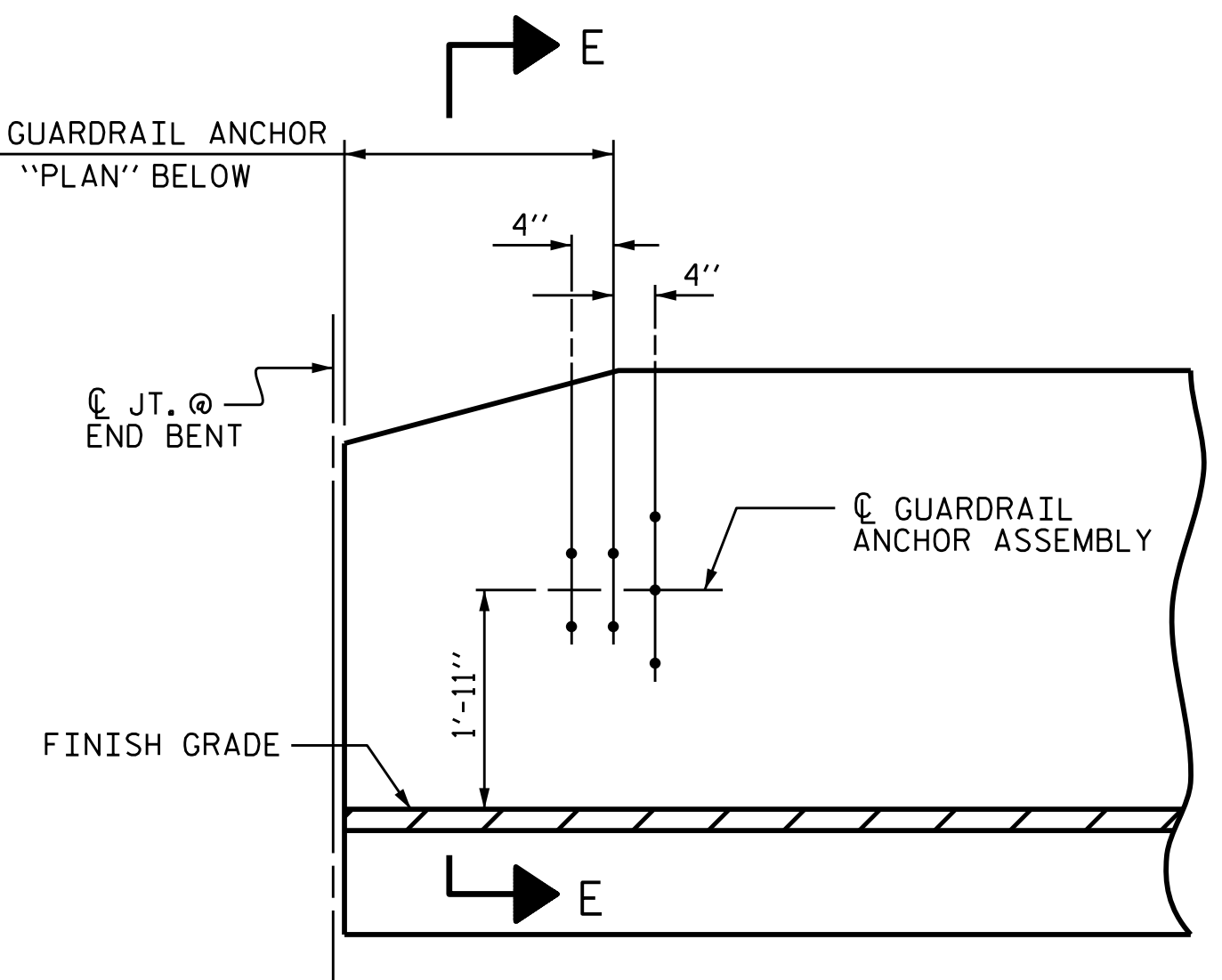
THE VERTICAL REINFORCING BARS MAY BE SHIFTED SLIGHTLY IN THE VERTICAL CONCRETE BARRIER RAIL TO CLEAR ASSEMBLY BOLTS.

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

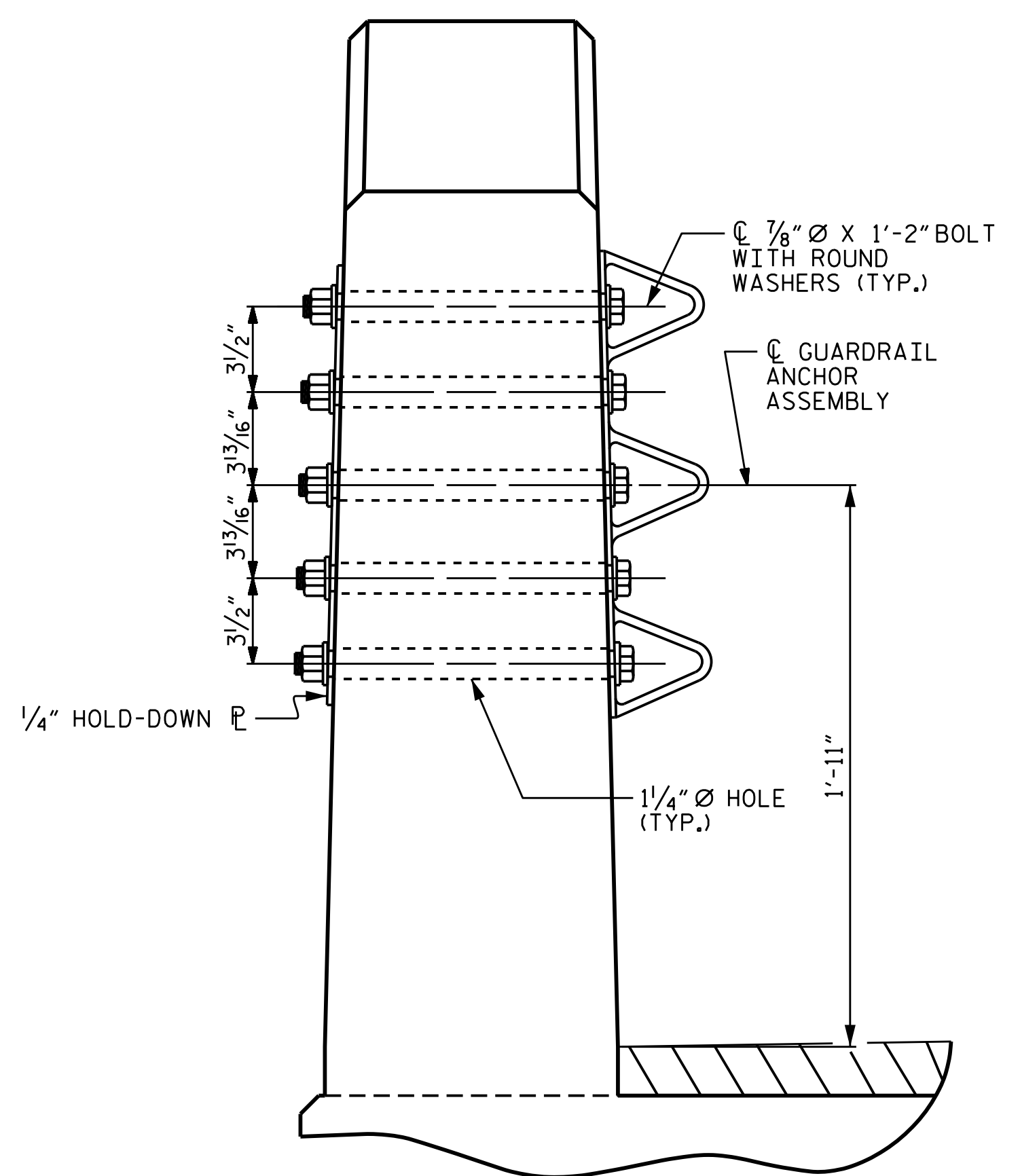


PLAN

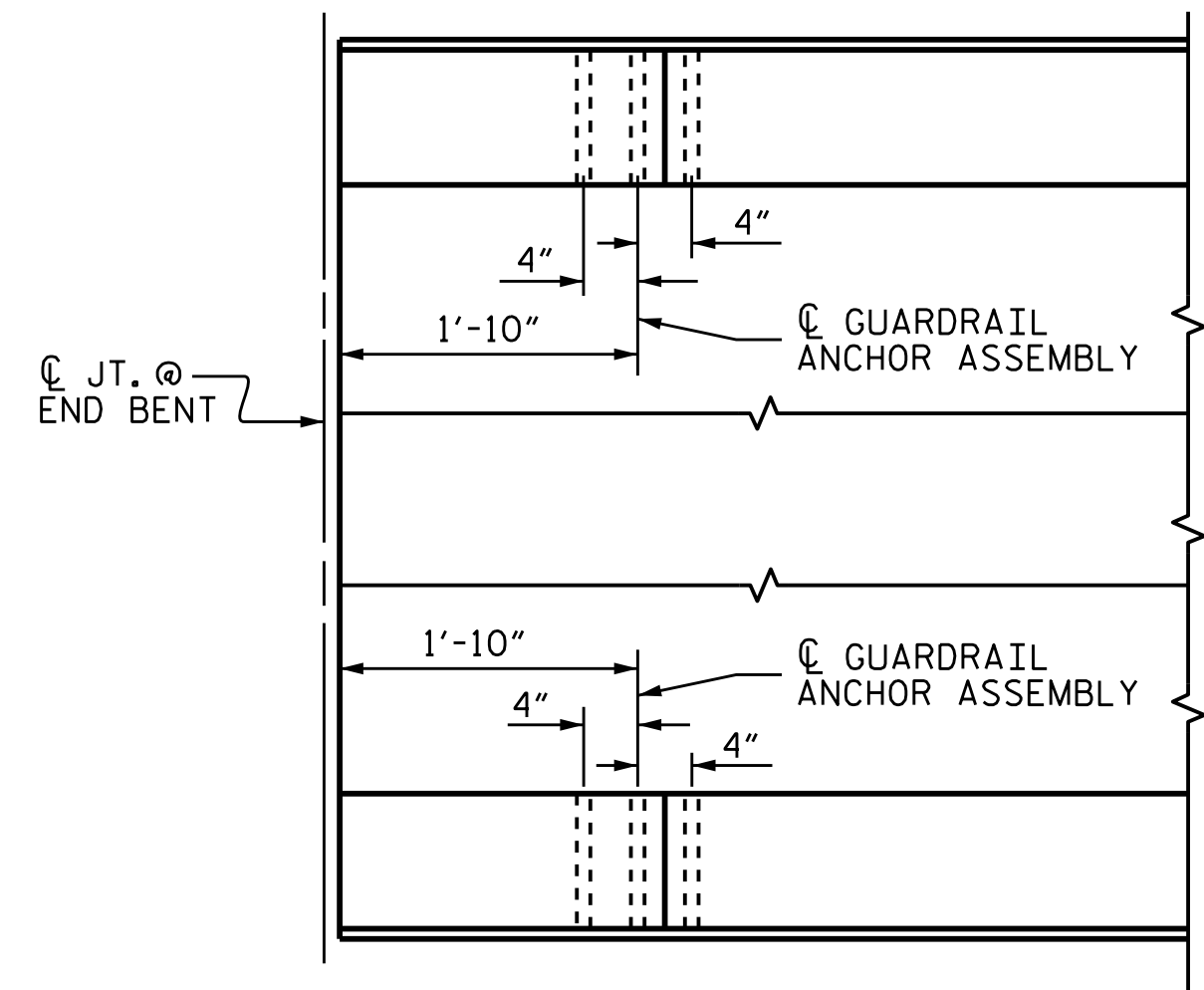
FOR LOCATION OF GUARDRAIL ANCHOR ASSEMBLY, SEE "PLAN" BELOW



ELEVATION



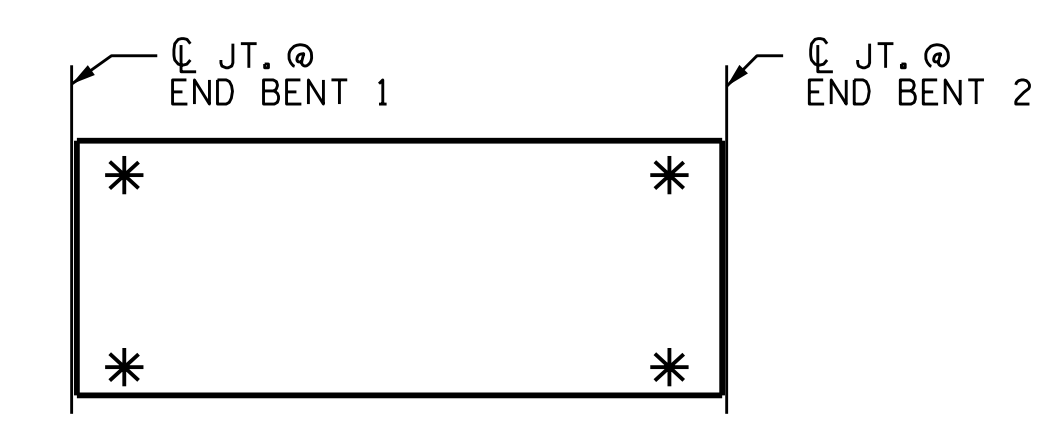
SECTION E-E
GUARDRAIL ANCHOR ASSEMBLY DETAILS



PLAN

LOCATION OF ANCHORS FOR GUARDRAIL

END BENT 1 SHOWN, END BENT 2 SIMILAR.



SKETCH SHOWING POINTS OF ATTACHMENT

* DENOTES GUARDRAIL ANCHOR ASSEMBLY

PROJECT NO. B-5157
GRANVILLE COUNTY
 STATION: 15+97.50 -L-



DocuSigned by:
 F245839300F40E...
 2/23/2016

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

| REVISIONS | | | | | | SHEET NO. |
|-----------|-----|-------|-----|-----|-------|--------------------|
| NO. | BY: | DATE: | NO. | BY: | DATE: | S-9 |
| 1 | | | 3 | | | TOTAL SHEETS 15 |
| 2 | | | 4 | | | |

| | | |
|---|-----------------|---------|
| ASSEMBLED BY : <i>William J. Parker</i> | DATE : 08/31/15 | |
| CHECKED BY : J.P. ADAMS | DATE : 9/20/15 | |
| DRAWN BY : MAA 5/10 | REV. 12/5/11 | MAA/GM |
| CHECKED BY : GM 5/10 | REV. 6/13 | MAA/GM |
| | REV. 1/15 | MAA/TMG |

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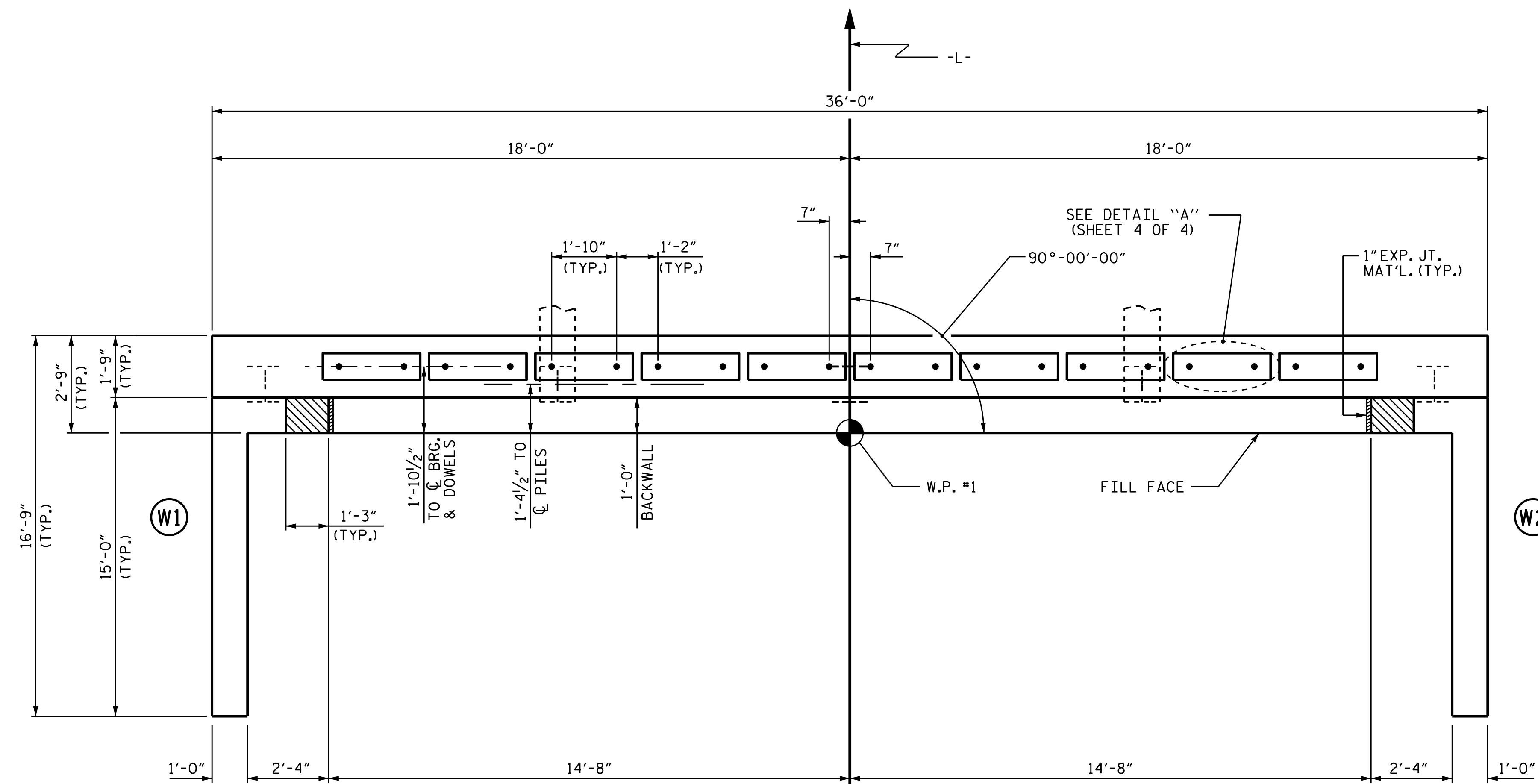
NOTES

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 VERTICAL CONCRETE BARRIER RAIL IS CAST IF SLIP FORMING IS USED.

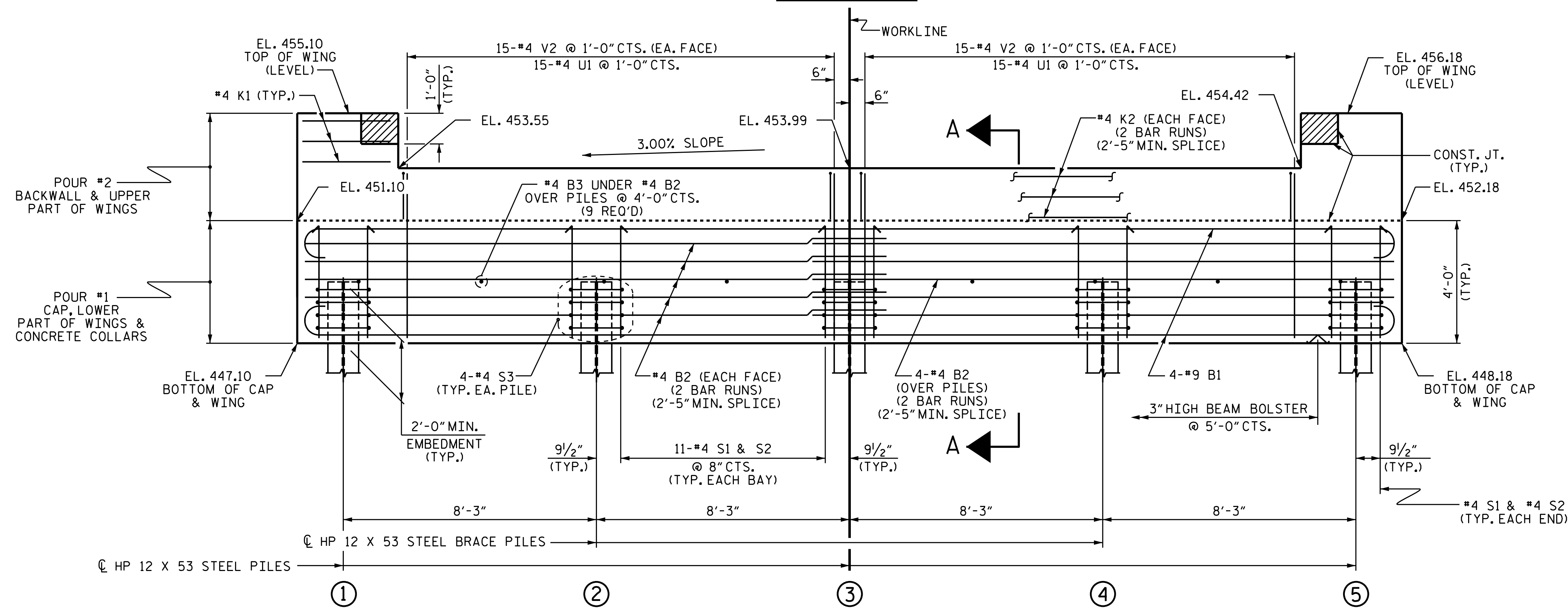
FOR PILE SPLICE DETAILS, SEE SHEET 4 OF 4.

FOR WING DETAILS, SEE SHEET 3 OF 4.



PLAN

| TOP OF PILE ELEVATIONS | |
|------------------------|--------|
| ① | 449.16 |
| ② | 449.41 |
| ③ | 449.66 |
| ④ | 449.90 |
| ⑤ | 450.15 |



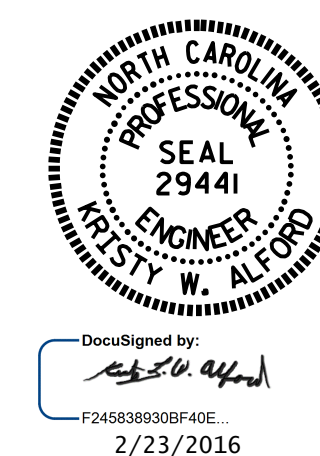
ELEVATION

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-5157
GRANVILLE COUNTY
 STATION: 15+97.50 -L-
 SHEET 1 OF 4

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

SUBSTRUCTURE
 END BENT 1



| | | | |
|----------------|-------------|--------|-----------|
| ASSEMBLED BY : | K.W. ALFORD | DATE : | 12/2015 |
| CHECKED BY : | J.P. ADAMS | DATE : | 12/2015 |
| DRAWN BY : | WJH | 12/11 | REV. 4/15 |
| CHECKED BY : | AAC | 12/11 | MAA/TMG |

| REVISIONS | | | | | | SHEET NO. |
|-----------|-----|-------|-----|-----|-------|-----------------|
| NO. | BY: | DATE: | NO. | BY: | DATE: | S-10 |
| 1 | | | 3 | | | TOTAL SHEETS 15 |
| 2 | | | 4 | | | |

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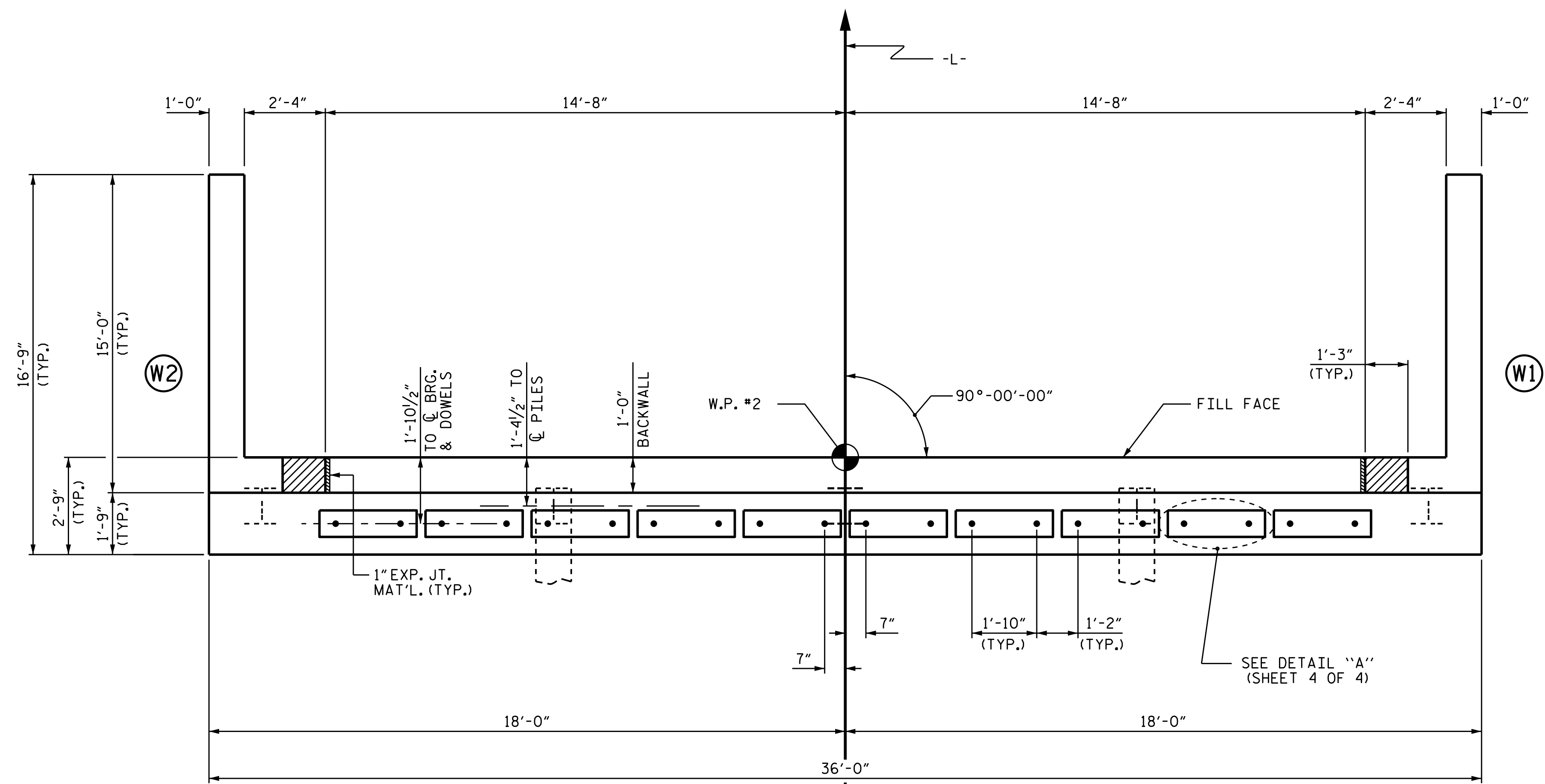
NOTES

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 VERTICAL CONCRETE BARRIER RAIL IS CAST IF SLIP FORMING IS USED.

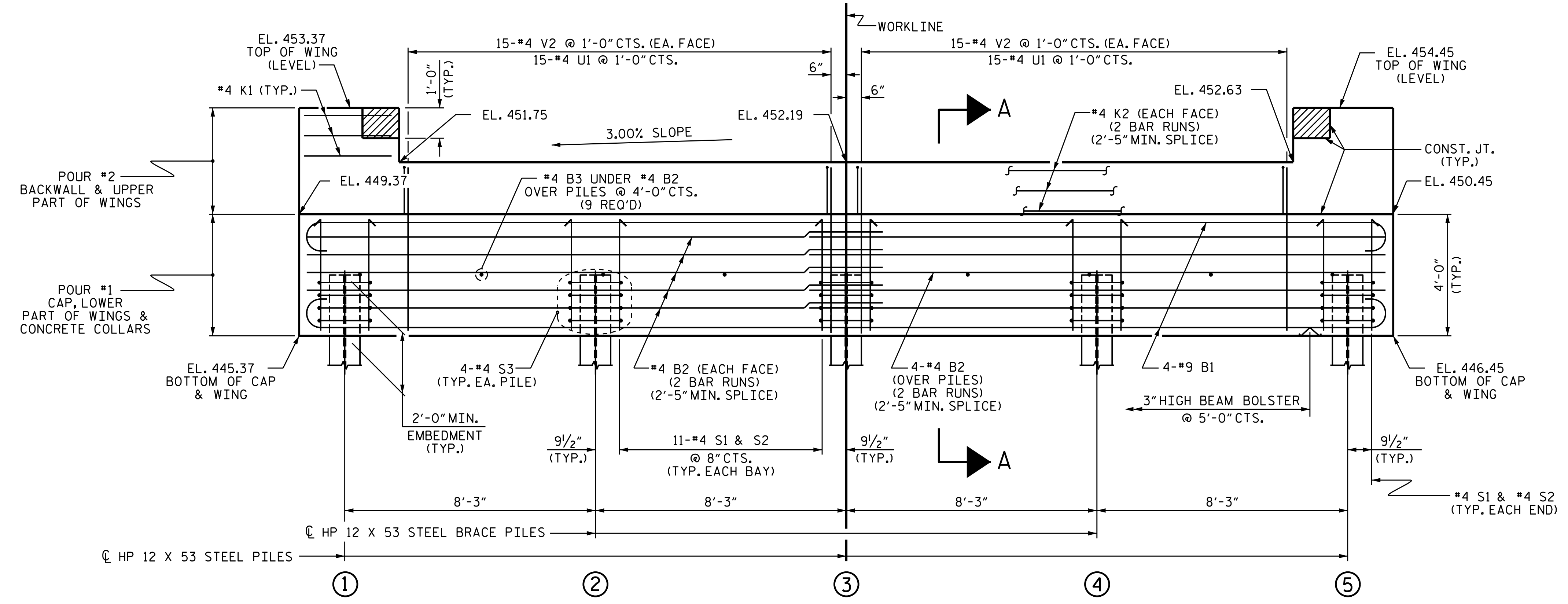
FOR PILE SPLICE DETAILS, SEE SHEET 4 OF 4.

FOR WING DETAILS, SEE SHEET 3 OF 4.



PLAN

| TOP OF PILE ELEVATIONS | |
|------------------------|--------|
| ① | 447.43 |
| ② | 447.68 |
| ③ | 447.93 |
| ④ | 448.17 |
| ⑤ | 448.42 |



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-5157
GRANVILLE COUNTY
 STATION: 15+97.50 -L-

SHEET 2 OF 4

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

SUBSTRUCTURE
 END BENT 2

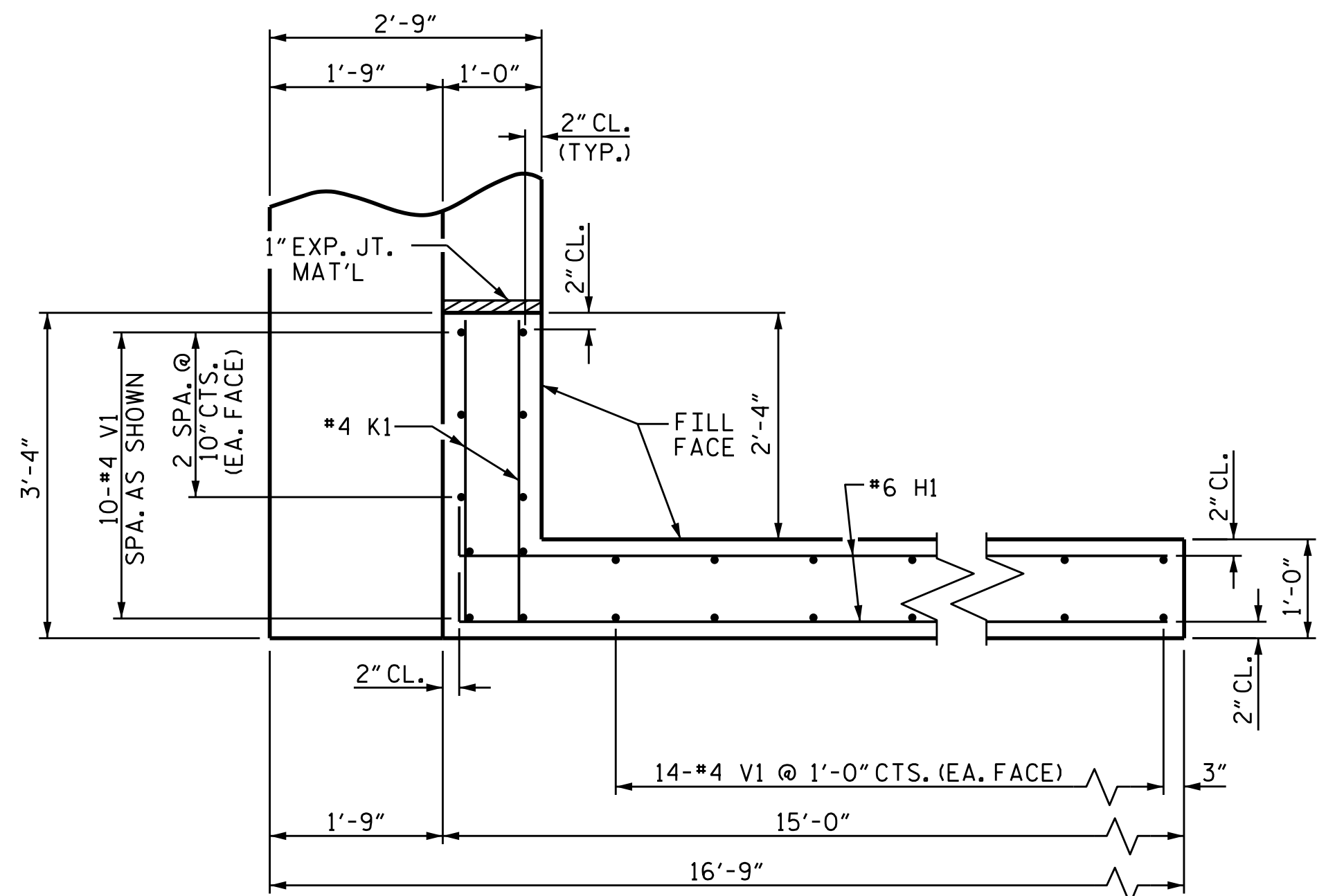


DocuSigned by:
 Kestly W. Alford
 F2458389890F40E
 2/23/2016

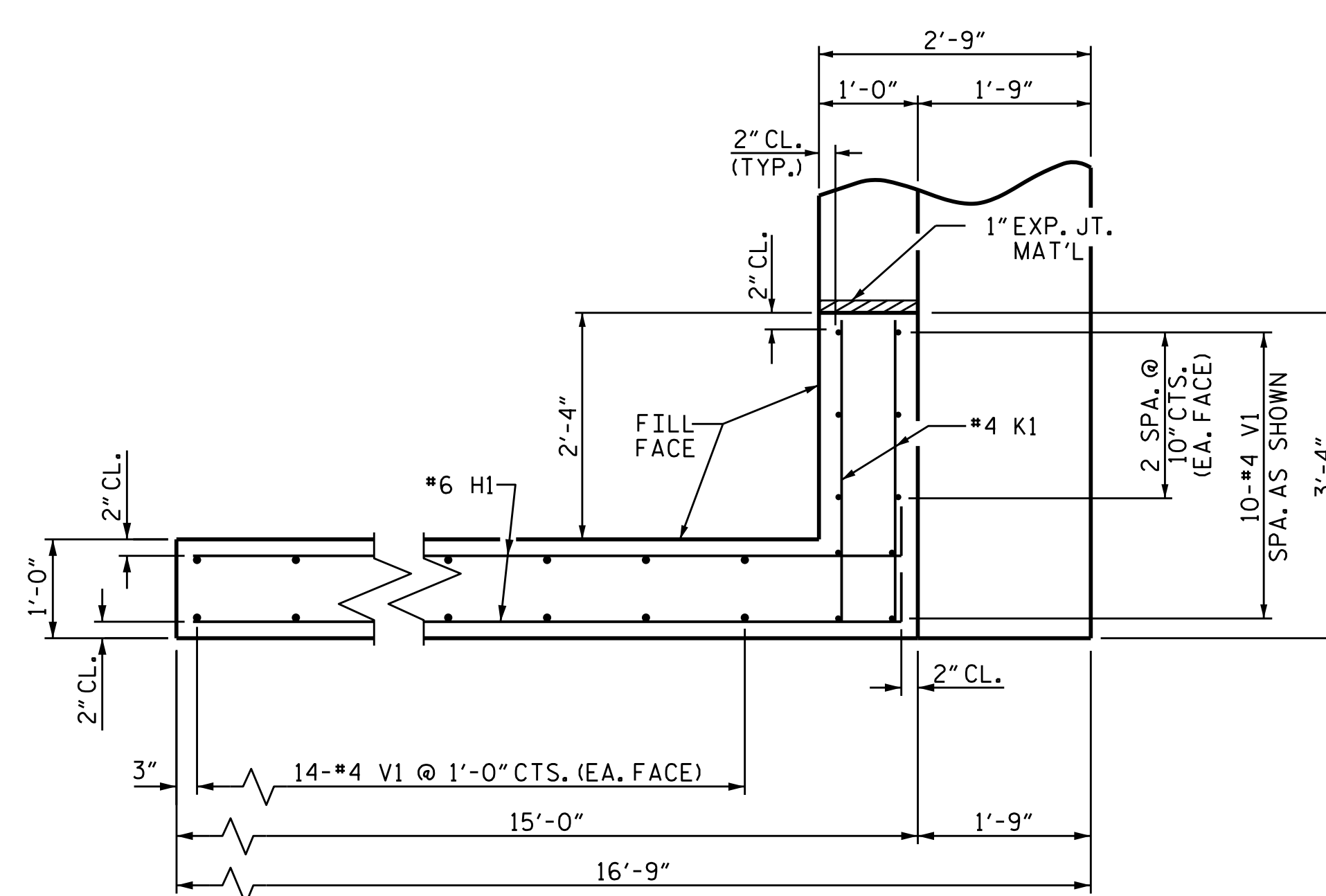
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|-----------|-----|-------|-----|-----|-------|-----------------|
| NO. | BY: | DATE: | NO. | BY: | DATE: | S-11 |
| 1 | | | 3 | | | TOTAL SHEETS 15 |
| 2 | | | 4 | | | |

ASSEMBLED BY : K.W. ALFORD DATE : 12/2015
 CHECKED BY : J.P. ADAMS DATE : 12/2015
 DRAWN BY : WJH 12/11 REV. 4/15 MAA/TMG
 CHECKED BY : AAC 12/11

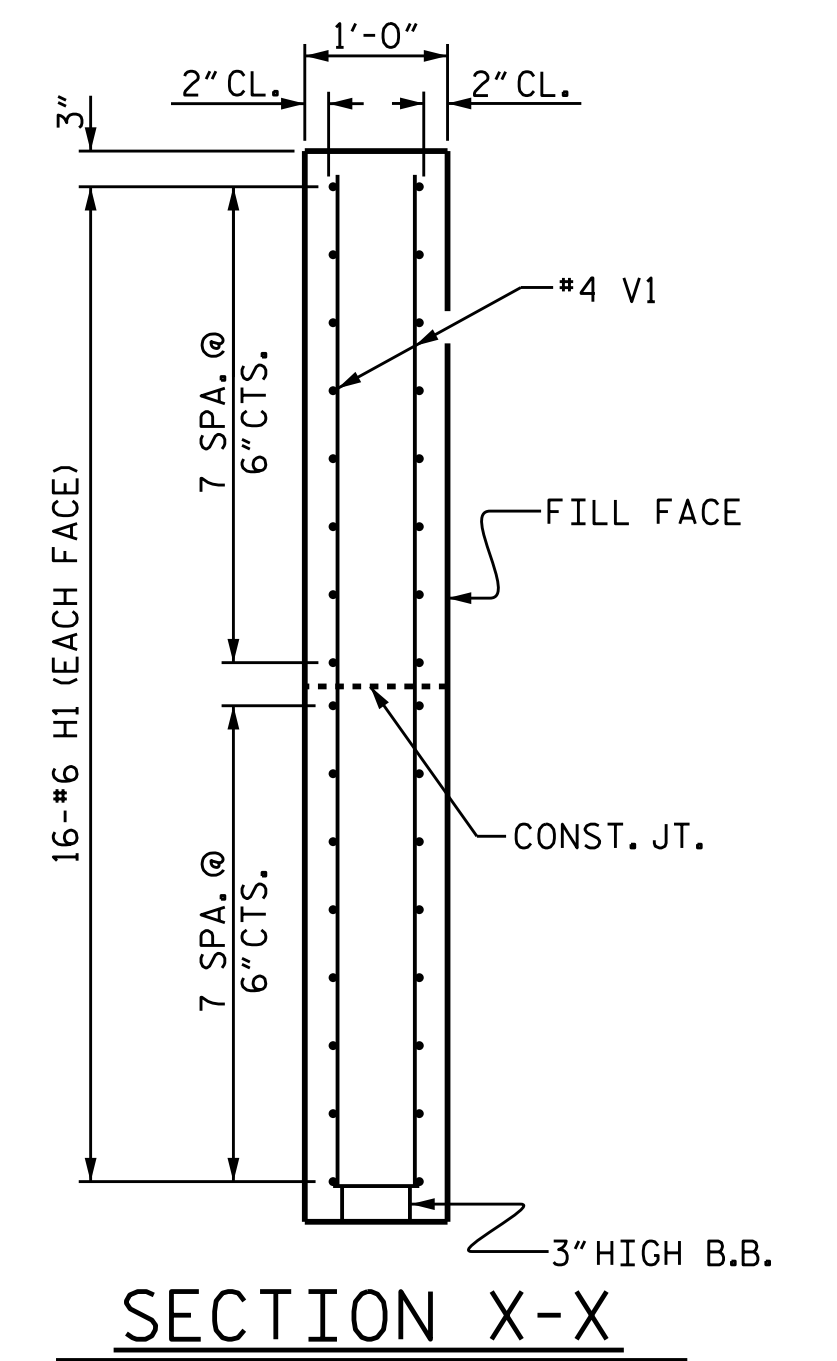
DOCUMENT NOT CONSIDERED FINAL
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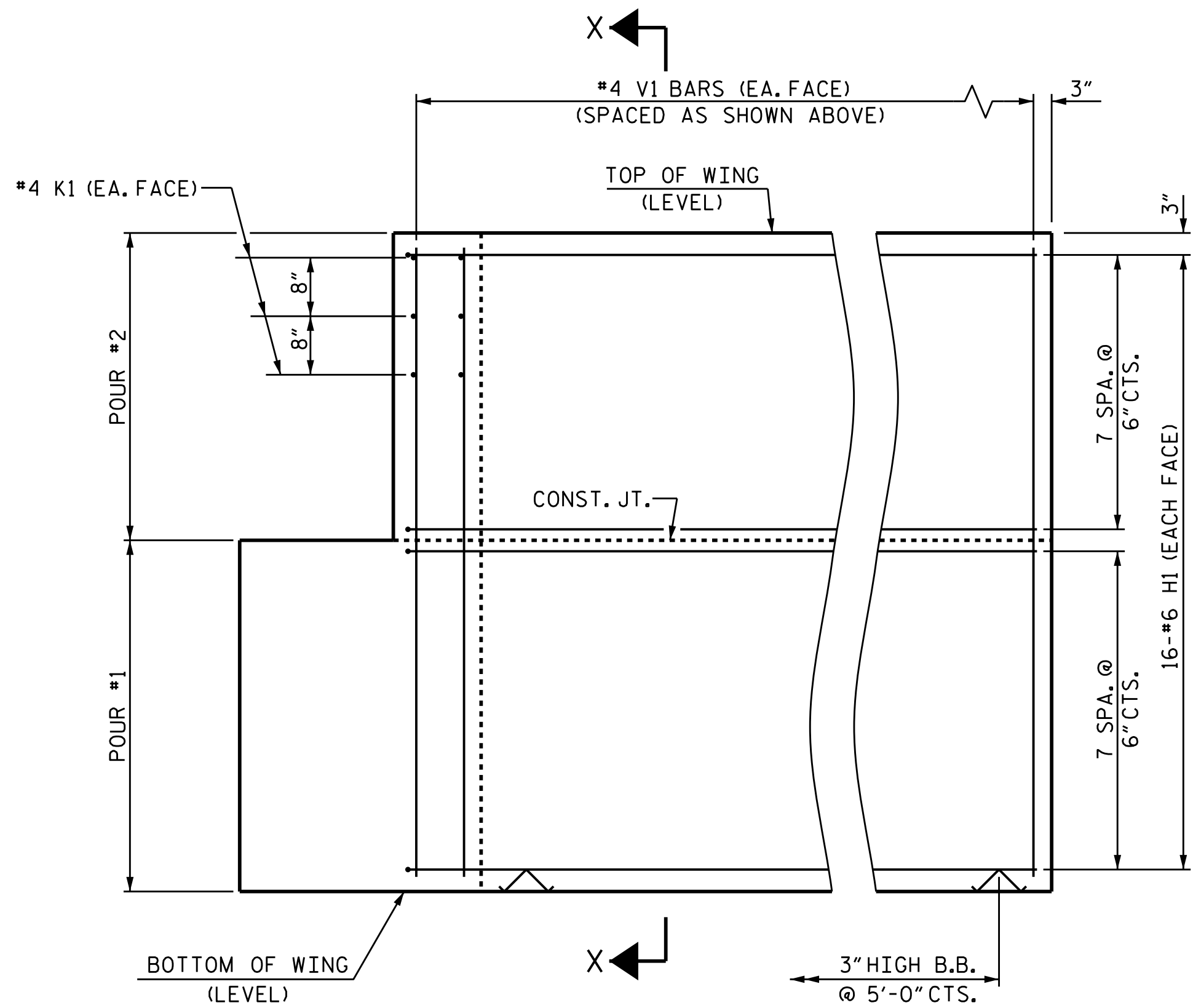
PLAN OF WING (W1)



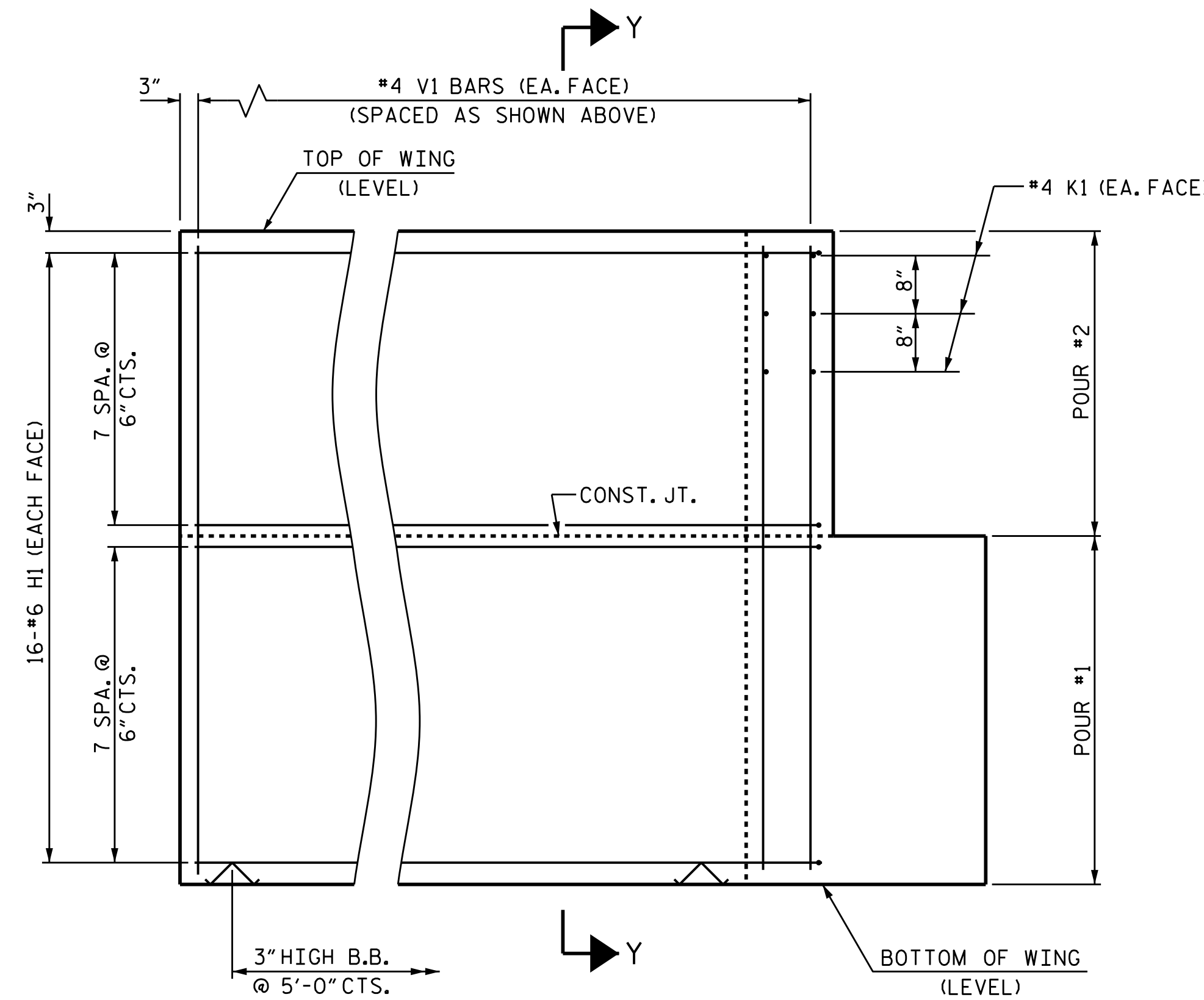
PLAN OF WING (W2)



SECTION X-X

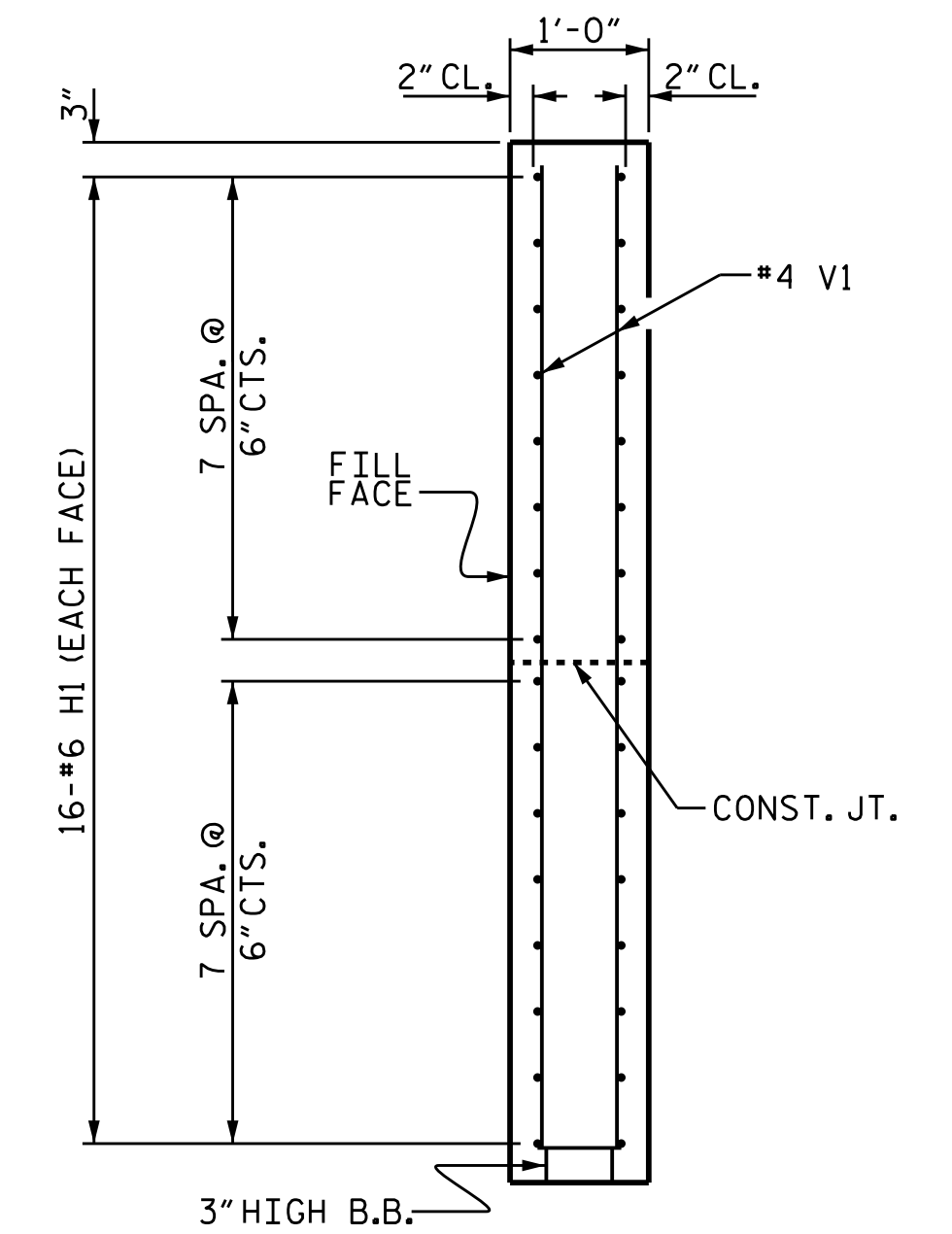


ELEVATION OF WING (W1)



ELEVATION OF WING (W2)

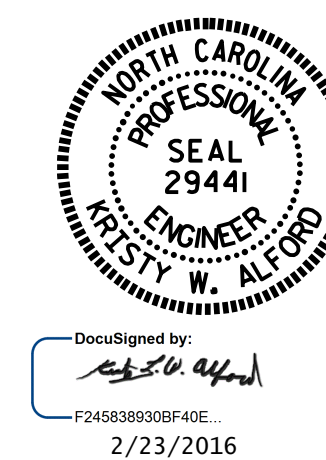
WING DETAILS



SECTION Y-Y

PROJECT NO. B-5157
 GRANVILLE COUNTY
 STATION: 15+97.50 -L-

SHEET 3 OF 4

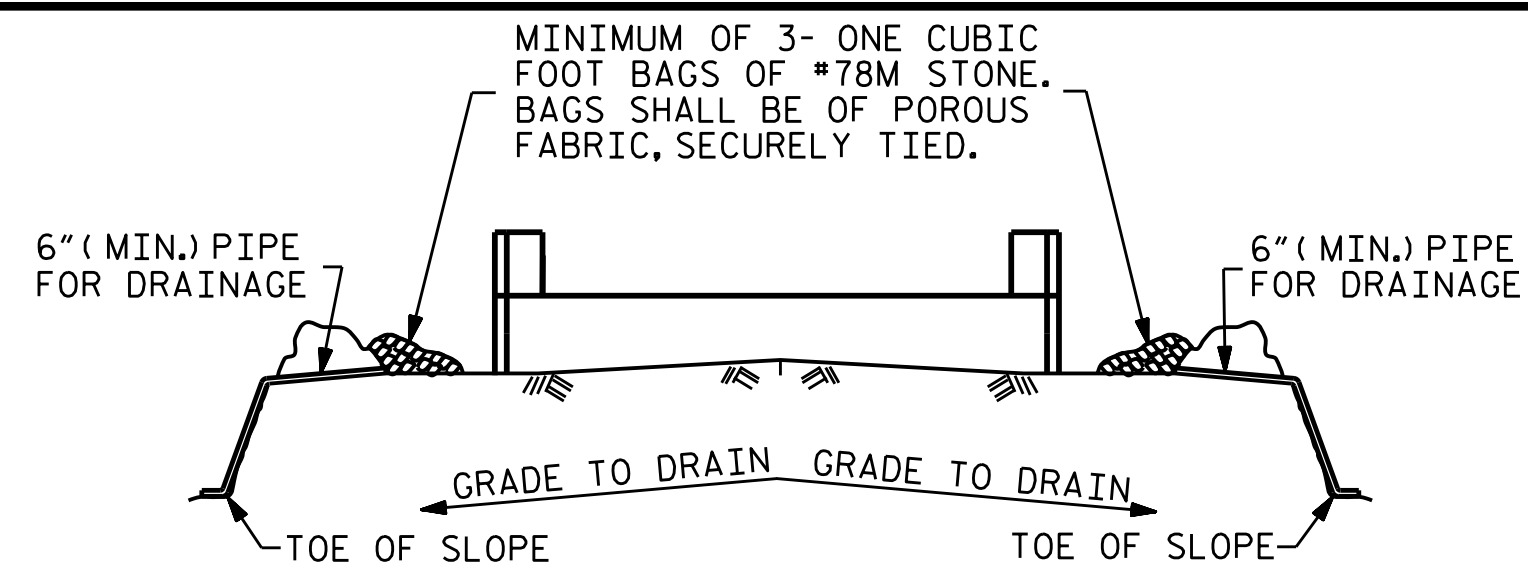


STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH
 SUBSTRUCTURE
 END BENT
 WING DETAILS

| | |
|----------------------------|----------------|
| ASSEMBLED BY : K.W. ALFORD | DATE : 12/2015 |
| CHECKED BY : J.P. ADAMS | DATE : 12/2015 |
| DRAWN BY : WJH 12/11 | REV. 4/15 |
| CHECKED BY : AAC 12/11 | MAA/TMG |

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| REVISIONS | | | | | | SHEET NO. | |
|-----------|-----|-------|-----|-----|-------|-----------------|--|
| NO. | BY: | DATE: | NO. | BY: | DATE: | S-12 | |
| 1 | | | 3 | | | TOTAL SHEETS 15 | |
| 2 | | | 4 | | | | |

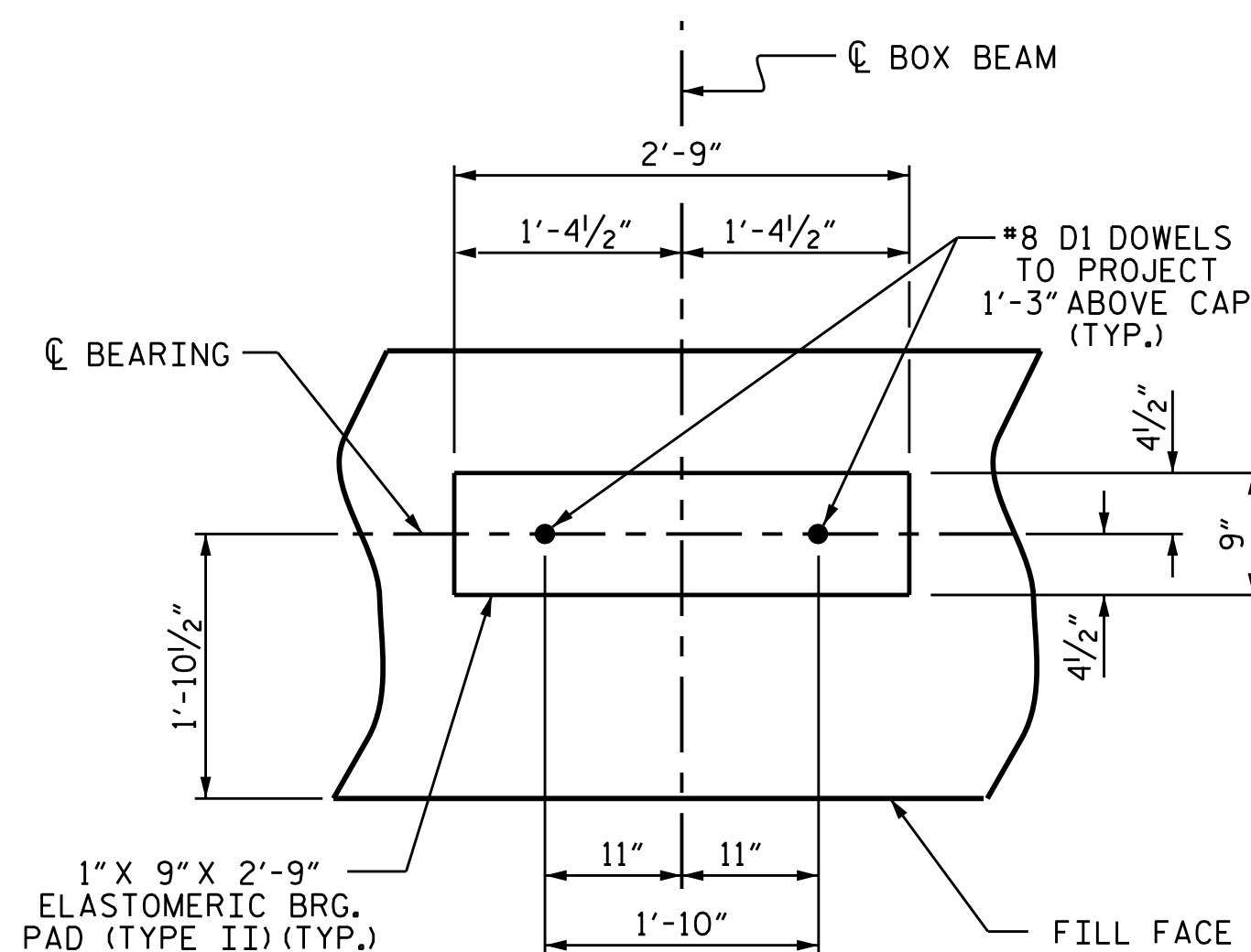


BAGGED STONE AND PIPE SHALL BE PLACED IMMEDIATELY AFTER COMPLETION OF END BENT EXCAVATION. PIPE MAY BE EITHER CONCRETE, CORRUGATED STEEL, CORRUGATED ALUMINUM ALLOY, OR CORRUGATED PLASTIC. PERFORATED PIPE WILL NOT BE ALLOWED.

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.

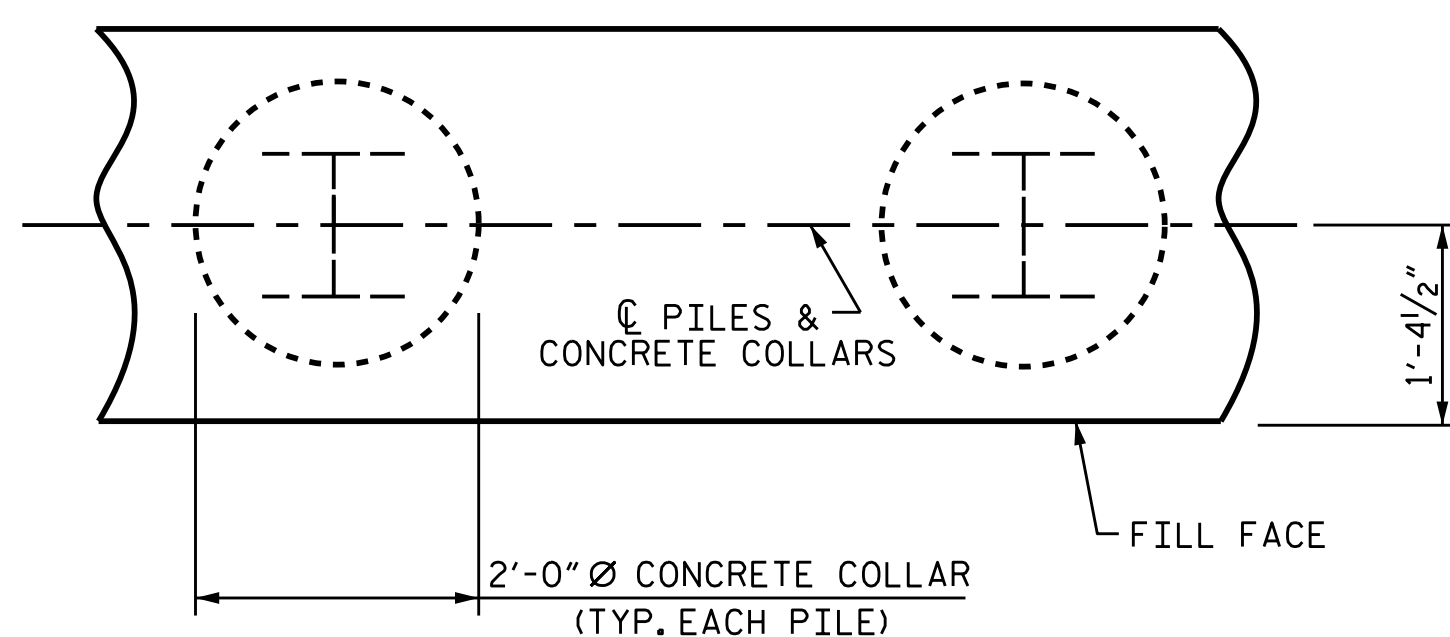
NO SEPARATE PAYMENT WILL BE MADE FOR THIS WORK AND THE ENTIRE COST OF THIS WORK SHALL BE INCLUDED IN THE UNIT CONTRACT PRICE BID FOR THE SEVERAL PAY ITEMS.

TEMPORARY DRAINAGE AT END BENT



DETAIL "A"

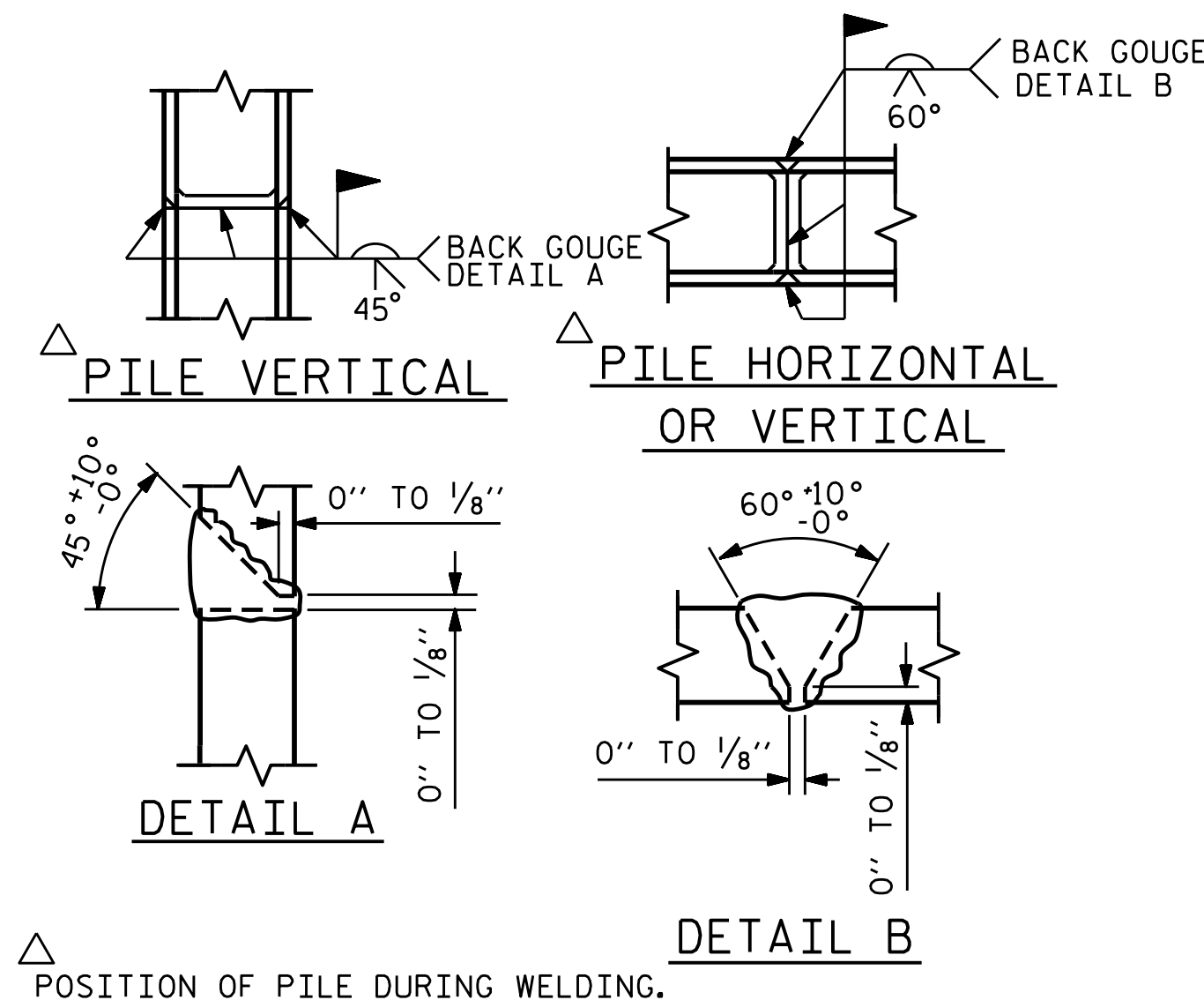
(END BENT 1 SHOWN, END BENT 2 SIMILAR BY ROTATION)



PLAN

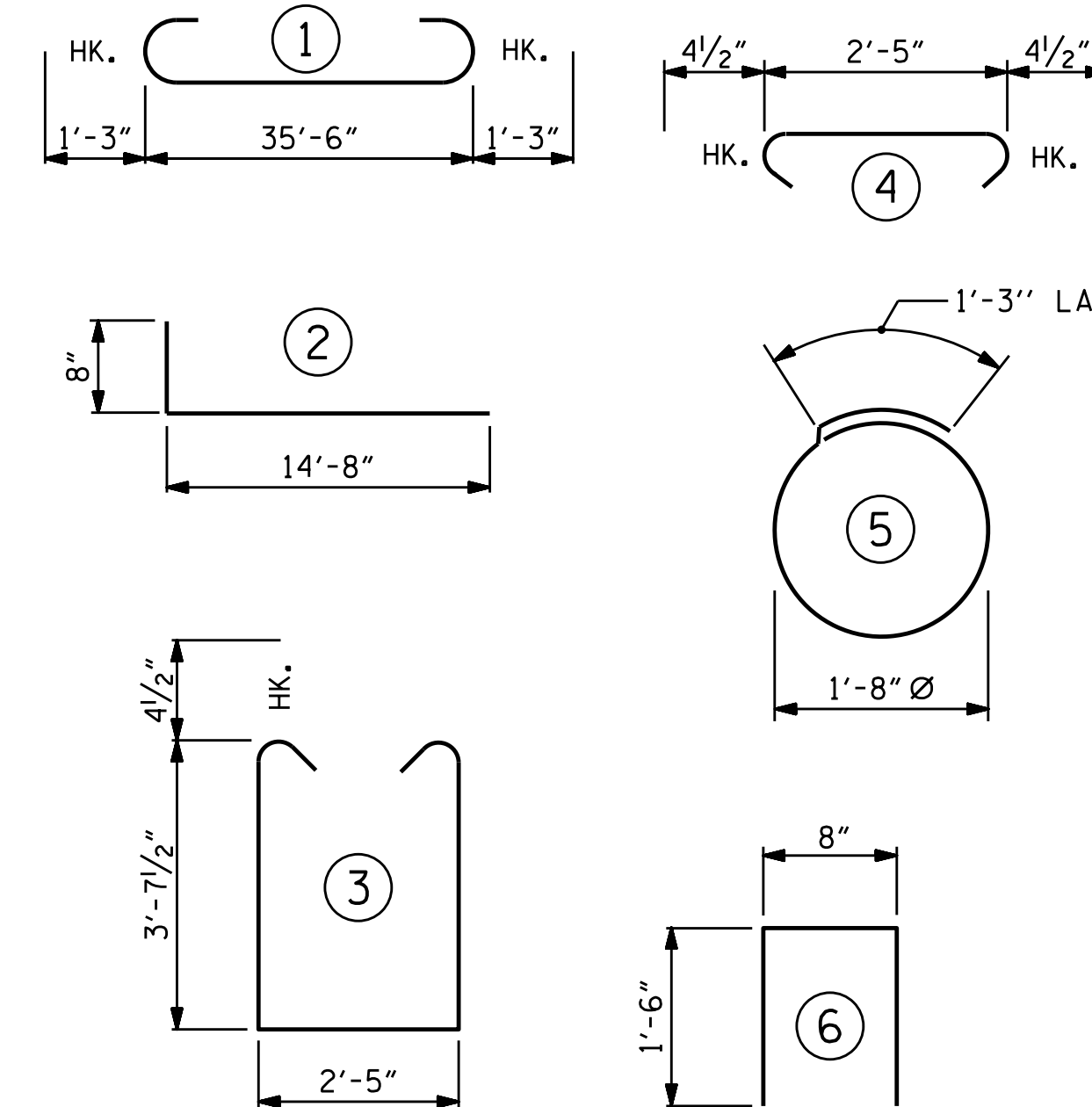
CORROSION PROTECTION FOR STEEL PILES DETAIL

(END BENT 1 SHOWN, END BENT 2 SIMILAR BY ROTATION)



PILE SPLICE DETAILS

BAR TYPES



ALL BAR DIMENSIONS ARE OUT TO OUT.

| END BENT 1 | END BENT 2 |
|------------------------|---------------------------|
| HP 12 X 53 STEEL PILES | HP 12 X 53 STEEL PILES |
| NO: 5 | NO: 5 |
| LIN. FT. = 190 | LIN. FT. = 90 |
| | STEEL PILE POINTS = 5 EA. |

BILL OF MATERIAL

FOR ONE END BENT

| BAR NO. | NO. | SIZE | TYPE | LENGTH | WEIGHT |
|---------|-----|------|------|--------|--------|
| B1 | 8 | #9 | 1 | 38'-0" | 1034 |
| B2 | 28 | #4 | STR | 19'-1" | 357 |
| B3 | 9 | #4 | STR | 2'-5" | 15 |
| D1 | 20 | #8 | STR | 2'-3" | 120 |
| H1 | 64 | #6 | 2 | 15'-4" | 1474 |
| K1 | 12 | #4 | STR | 2'-11" | 23 |
| K2 | 12 | #4 | STR | 19'-1" | 153 |
| S1 | 46 | #4 | 3 | 10'-5" | 320 |
| S2 | 46 | #4 | 4 | 3'-2" | 97 |
| S3 | 20 | #4 | 5 | 6'-6" | 87 |
| U1 | 30 | #4 | 6 | 3'-8" | 73 |
| V1 | 76 | #4 | STR | 7'-8" | 389 |
| V2 | 60 | #4 | STR | 5'-9" | 230 |

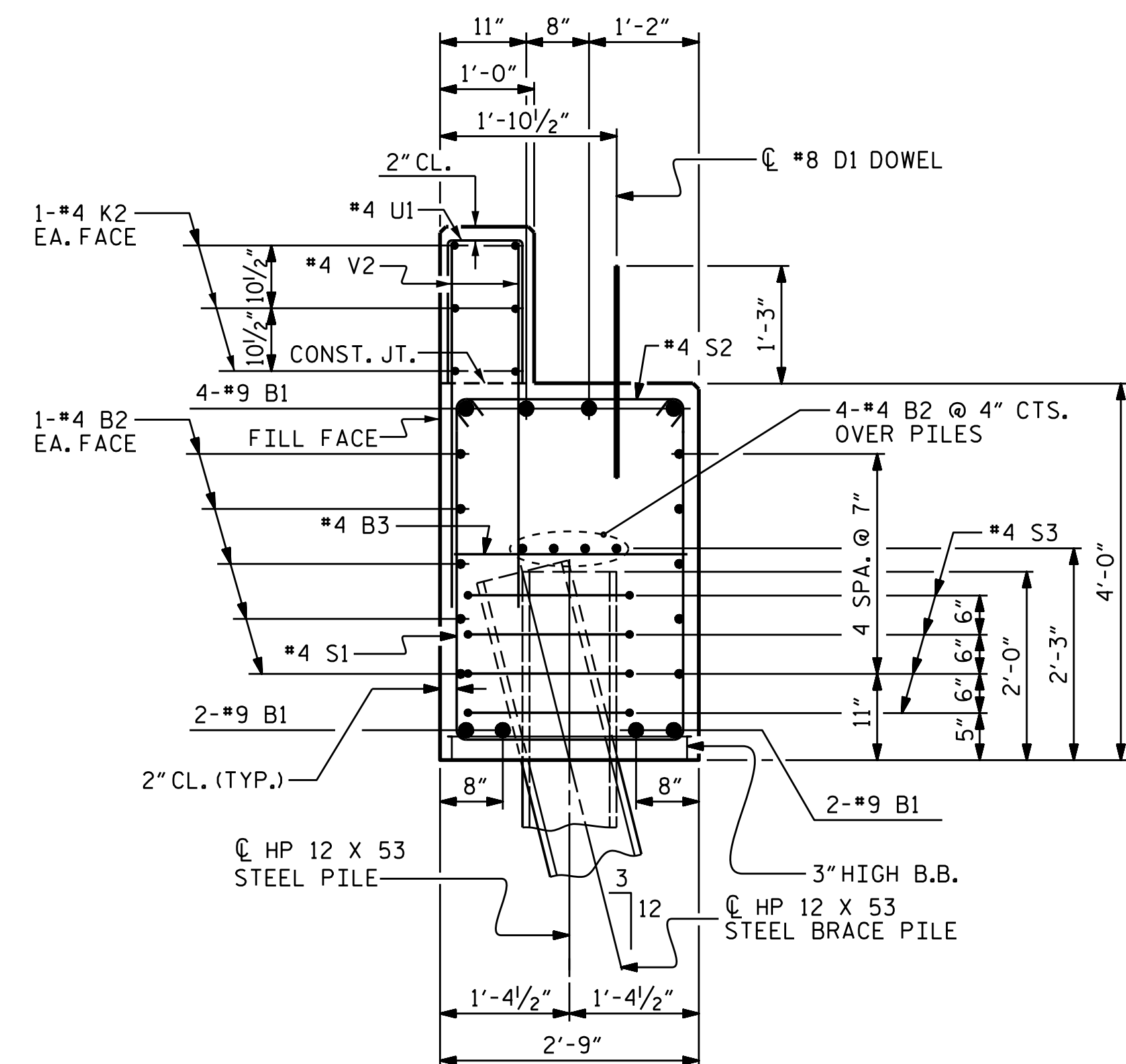
REINFORCING STEEL (FOR ONE END BENT) 4372 LBS.

CLASS A CONCRETE BREAKDOWN (FOR ONE END BENT)

POUR #1 CAP, LOWER PART OF WINGS & COLLARS 19.7 C.Y.

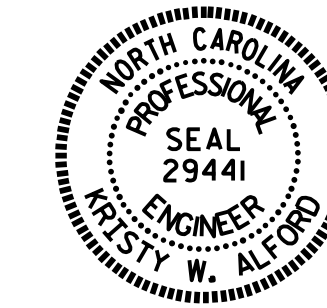
POUR #2 BACKWALL & UPPER PART OF WINGS 7.4 C.Y.

TOTAL CLASS A CONCRETE 27.1 C.Y.



SECTION A-A

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



DocuSigned by:
F245838908F4GE
2/23/2016

PROJECT NO. B-5157
GRANVILLE COUNTY
STATION: 15+97.50 -L-

SHEET 4 OF 4

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUBSTRUCTURE

END BENT 1 & 2
DETAILS

REVISIONS

| NO. | BY: | DATE: | NO. | BY: | DATE: | SHEET NO. |
|-----|-----|-------|-----|-----|-------|-----------------|
| 1 | | | 3 | | | S-13 |
| 2 | | | 4 | | | TOTAL SHEETS 15 |

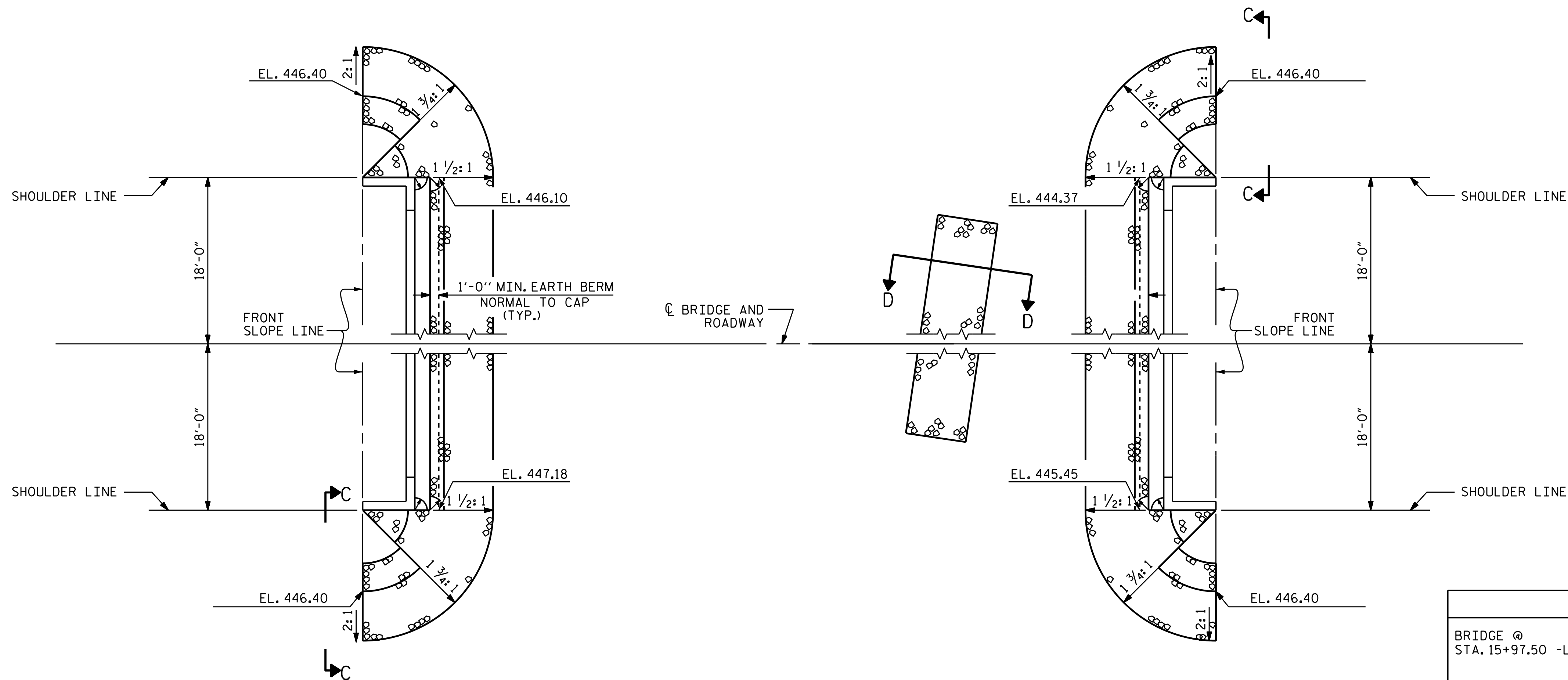
| | |
|----------------------------|----------------|
| ASSEMBLED BY : K.W. ALFORD | DATE : 12/2015 |
| CHECKED BY : J.P. ADAMS | DATE : 12/2015 |
| DRAWN BY : WJH 12/11 | REV. 8/14 |
| CHECKED BY : AAC 12/11 | MAA/TMG |

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jpodams

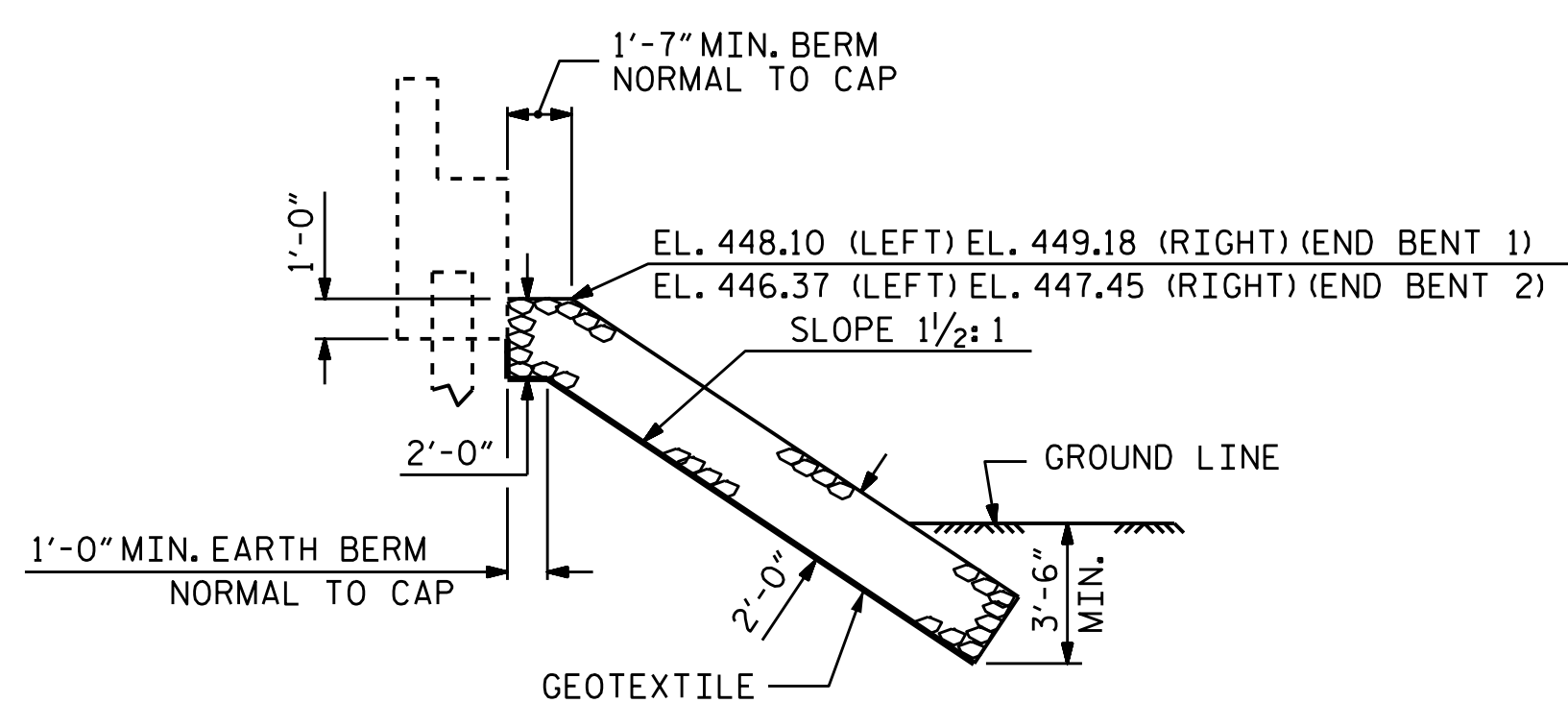
DOCUMENT NOT CONSIDERED FINAL
UNLESS ALL SIGNATURES COMPLETED

STD. NO. EB_30_90S4_39BB

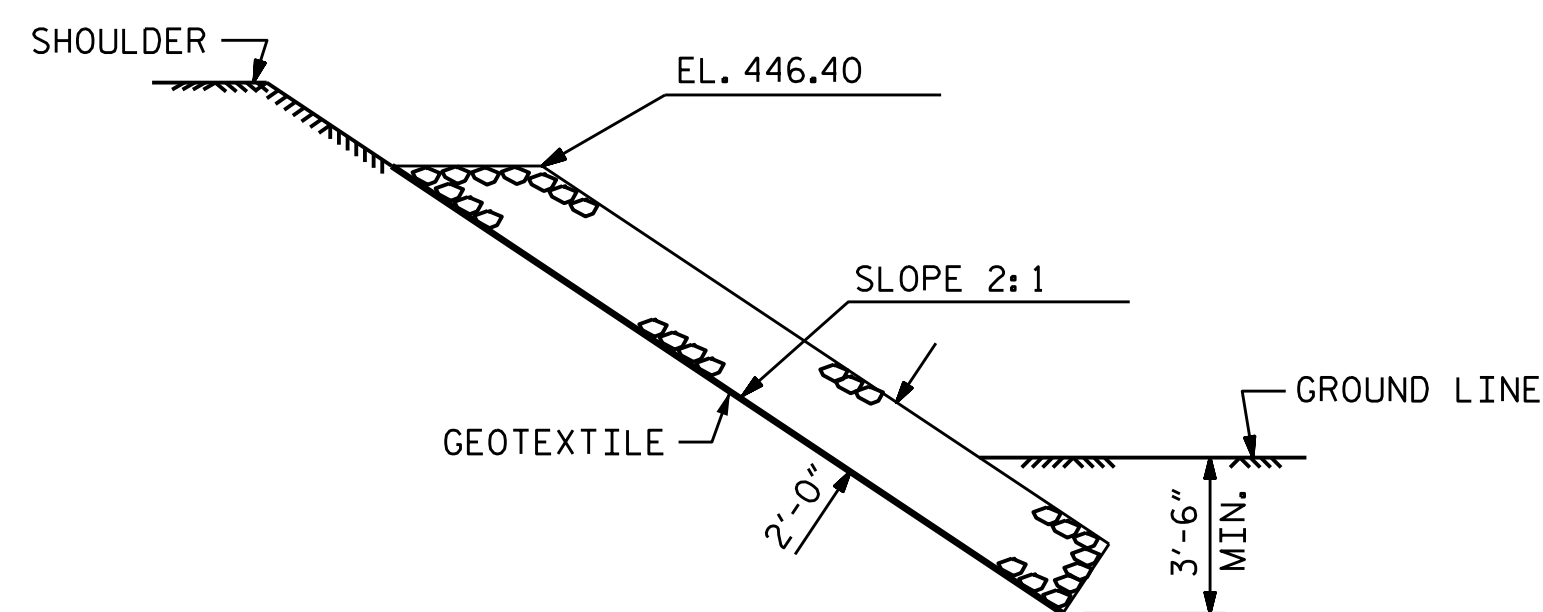
NOTES :
FOR BERM WIDTH DIMENSIONS, SEE GENERAL DRAWING.



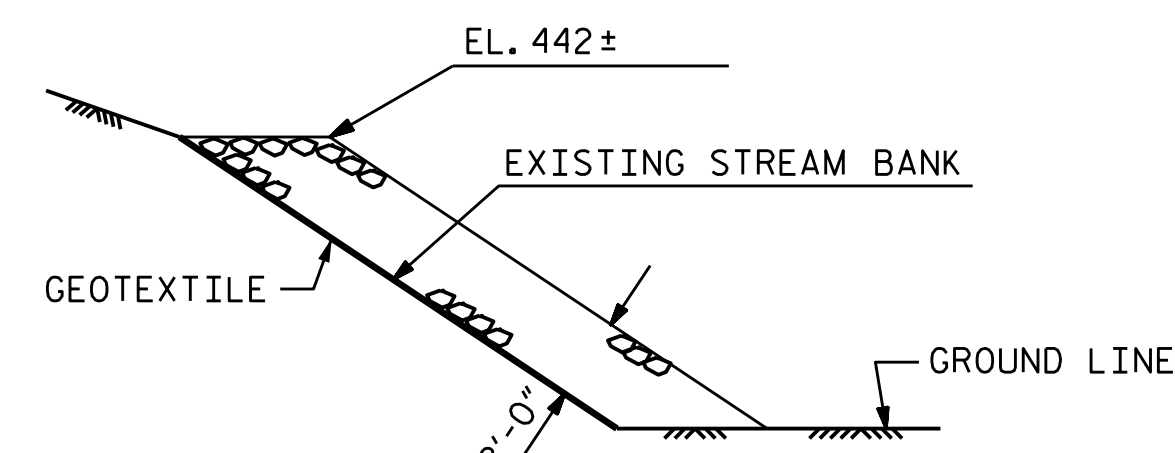
| ESTIMATED QUANTITIES | | |
|-------------------------------|--------------------------------------|----------------------------|
| BRIDGE @ STA. 15+97.50 -L- | RIP RAP CLASS II (2'-0" THICK) | GEOTEXTILE FOR DRAINAGE |
| | TONS | SQUARE YARDS |
| END BENT 1 | 160 | 180 |
| END BENT 2 | 160 | 180 |



SECTION
BERM RIP RAPPED

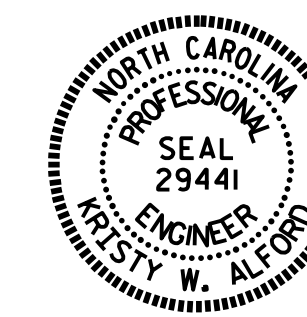


SECTION C-C



SECTION D-D

PROJECT NO. B-5157
GRANVILLE COUNTY
STATION: 15+97.50 -L-



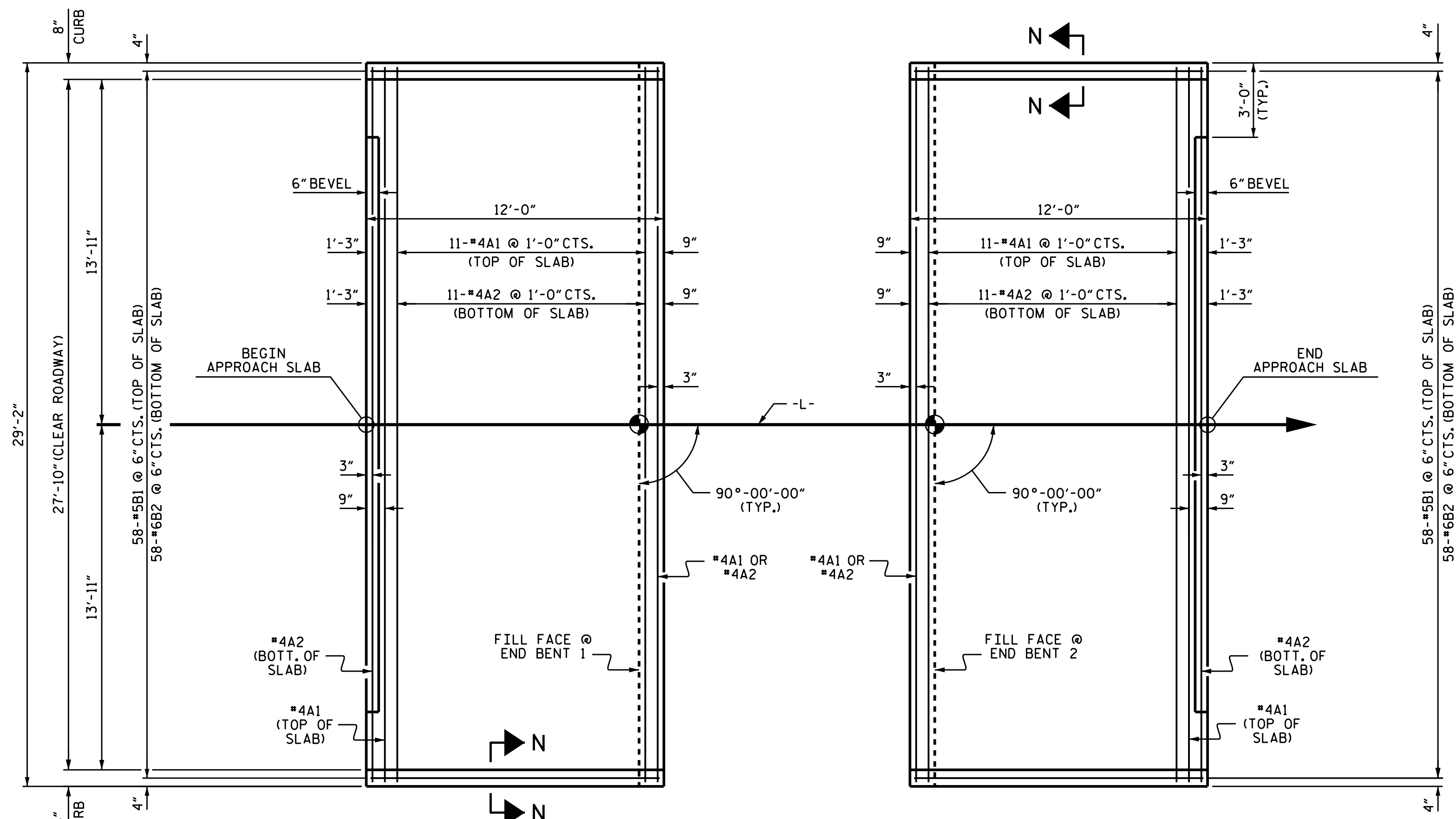
DocuSigned by:
Westy W. Alford
2/23/2016

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

ASSEMBLED BY : K.W. ALFORD DATE : 12/2015
CHECKED BY : J.P. ADAMS DATE : 12/2015
DRAWN BY : REK 1/84 REV. 5/1/06R TLA/GM
CHECKED BY : ROU 1/84 REV. 10/1/11 MAA/GM
REV. 12/2/11 MAA/GM

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| REVISIONS | | | | | | SHEET NO. |
|-----------|-----|-------|-----|-----|-------|--------------|
| NO. | BY: | DATE: | NO. | BY: | DATE: | S-14 |
| 1 | | | 3 | | | TOTAL SHEETS |
| 2 | | | 4 | | | 15 |



NOTES

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

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

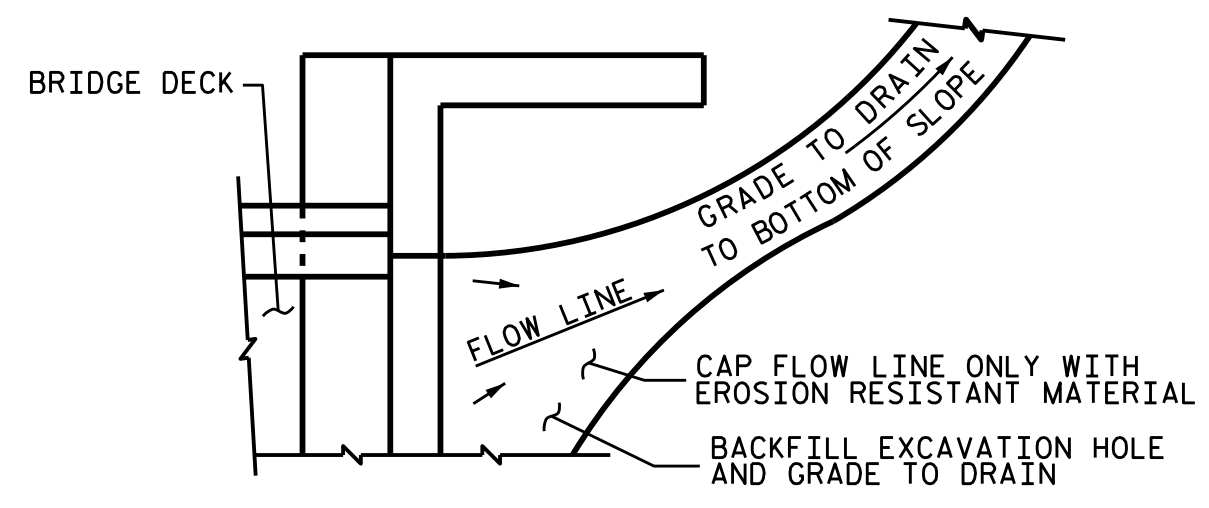
#78M STONE BACKFILL (CLASS V SELECT MATERIAL) SHALL BE IN ACCORDANCE WITH STANDARD SPECIFICATIONS SECTION 1016.

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

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

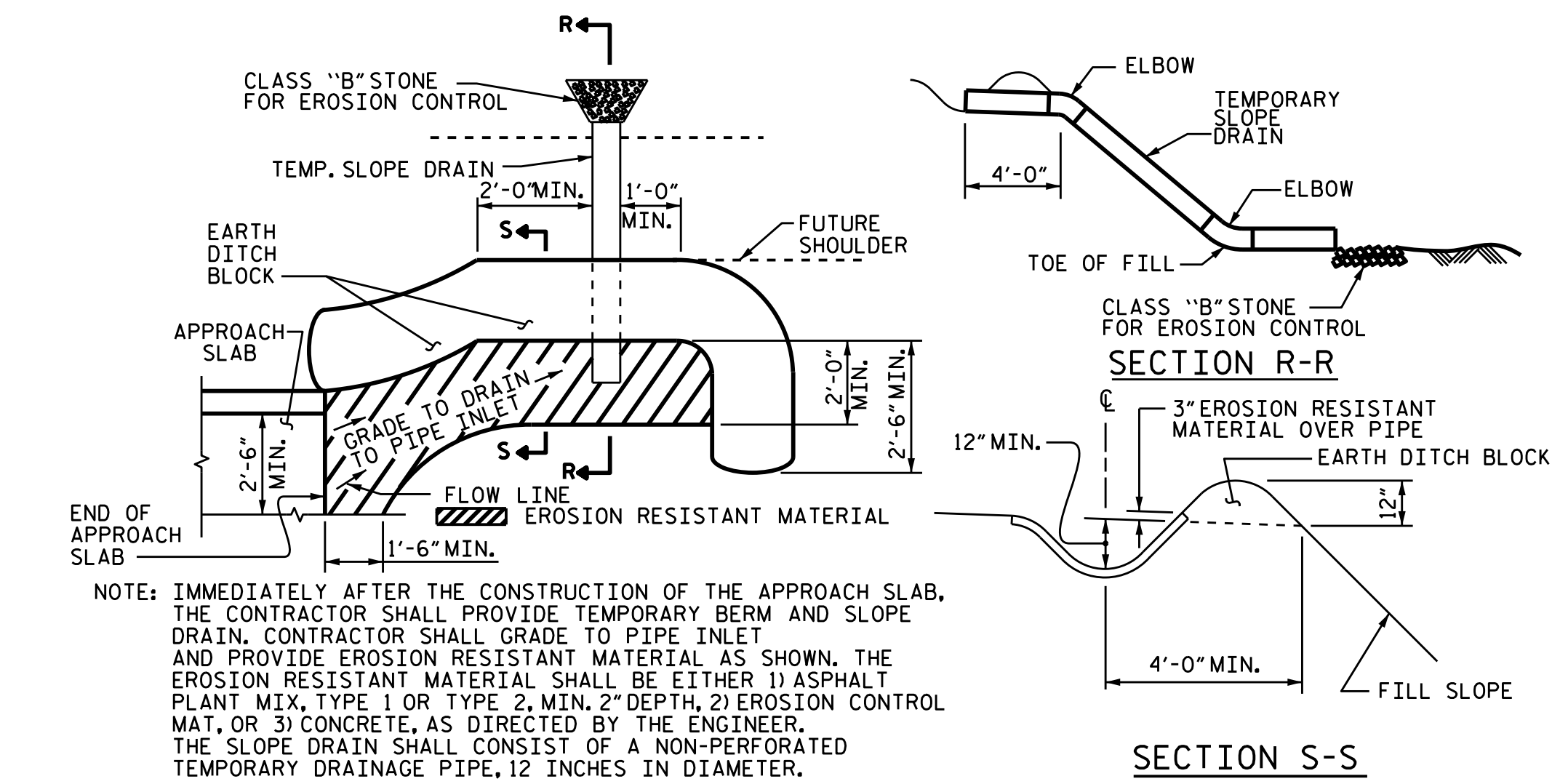
AREA BETWEEN THE WINGWALL AND APPROACH SLAB SHALL BE GRADED TO DRAIN THE WATER AWAY FROM THE FILL FACE OF THE BRIDGE AND SHALL BE PAVED, SEE ROADWAY PLANS.

APPROACH SLAB GROOVING IS NOT REQUIRED.



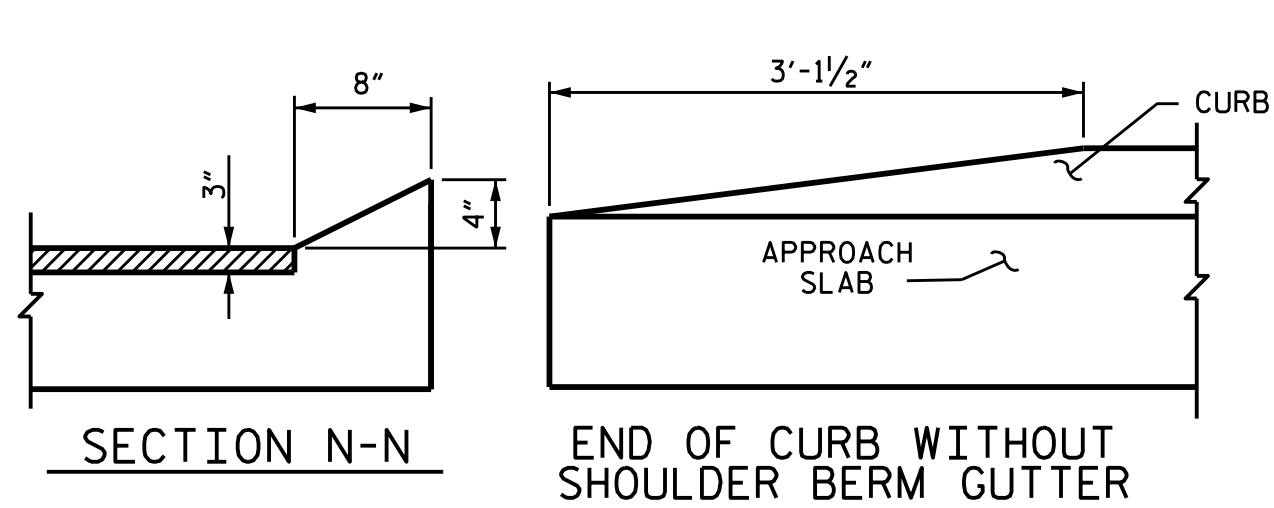
NOTE: IF THE APPROACH SLAB IS NOT CONSTRUCTED IMMEDIATELY AFTER THE BACKFILLING OF THE END BENT EXCAVATION, GRADE TO DRAIN TO BOTTOM OF THE SLOPE AND PROVIDE EROSION RESISTANT MATERIAL, SUCH AS FIBERGLASS ROVING OR AS DIRECTED BY THE ENGINEER TO PREVENT SOIL EROSION AND TO PROTECT THE AREA ADJACENT TO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

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



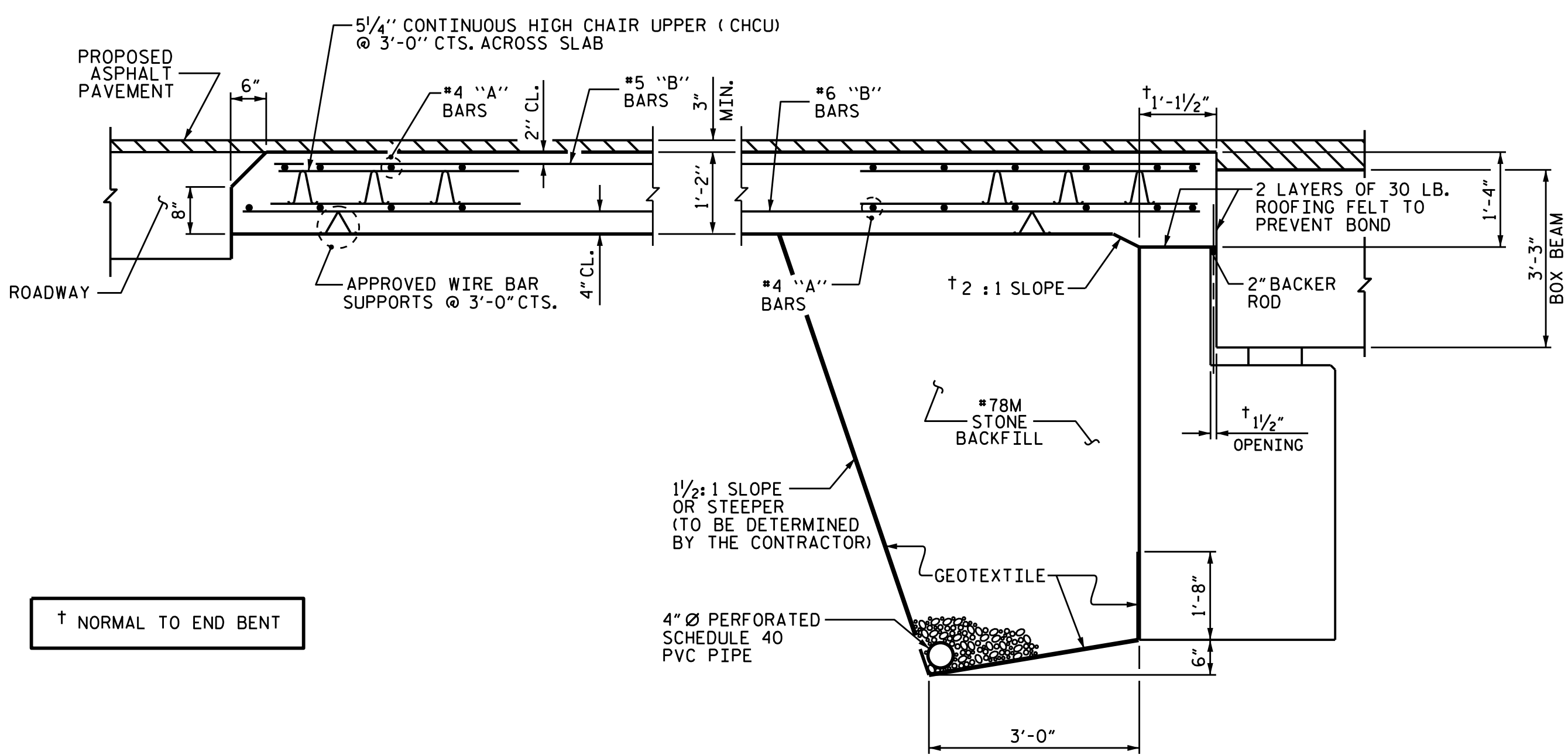
CURB DETAILS

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



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 F245839308F40E...
 2/23/2016

| BILL OF MATERIAL | | | | | | |
|---------------------------------|-----|------|------|---------|--------|------|
| APPROACH SLAB AT EB 1 | | | | | | |
| BAR | NO. | SIZE | TYPE | LENGTH | WEIGHT | |
| *A1 | 13 | #4 | STR | 28'-10" | 250 | |
| A2 | 13 | #4 | STR | 28'-10" | 250 | |
| *B1 | 58 | #5 | STR | 11'-2" | 676 | |
| B2 | 58 | #6 | STR | 11'-8" | 1016 | |
| REINFORCING STEEL | | | | | LBS. | 1266 |
| *EPOXY COATED REINFORCING STEEL | | | | | LBS. | 926 |
| CLASS AA CONCRETE | | | | | C. Y. | 15.4 |
| APPROACH SLAB AT EB 2 | | | | | | |
| BAR | NO. | SIZE | TYPE | LENGTH | WEIGHT | |
| *A1 | 13 | #4 | STR | 28'-10" | 250 | |
| A2 | 13 | #4 | STR | 28'-10" | 250 | |
| *B1 | 58 | #5 | STR | 11'-2" | 676 | |
| B2 | 58 | #6 | STR | 11'-8" | 1016 | |
| REINFORCING STEEL | | | | | LBS. | 1266 |
| *EPOXY COATED REINFORCING STEEL | | | | | LBS. | 926 |
| CLASS AA CONCRETE | | | | | C. Y. | 15.4 |



SECTION THRU SLAB

ASSEMBLED BY: William J. Parker DATE: 08/31/15
 CHECKED BY: J.P. ADAMS DATE: 9/2015
 DRAWN BY: MAA 11/11
 CHECKED BY: AAC 11/11
 REV. 9-15 MAA/TMG

PROJECT NO. B-5157
 GRANVILLE COUNTY
 STATION: 15+97.50 -L-

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH
 STANDARD BRIDGE APPROACH SLAB FOR PRESTRESSED CONCRETE BOX BEAM UNIT (SUB-REGIONAL TIER) 90° SKEW

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

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

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.

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