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TIP PROJECT: B-5334

CONTRACT: C203989

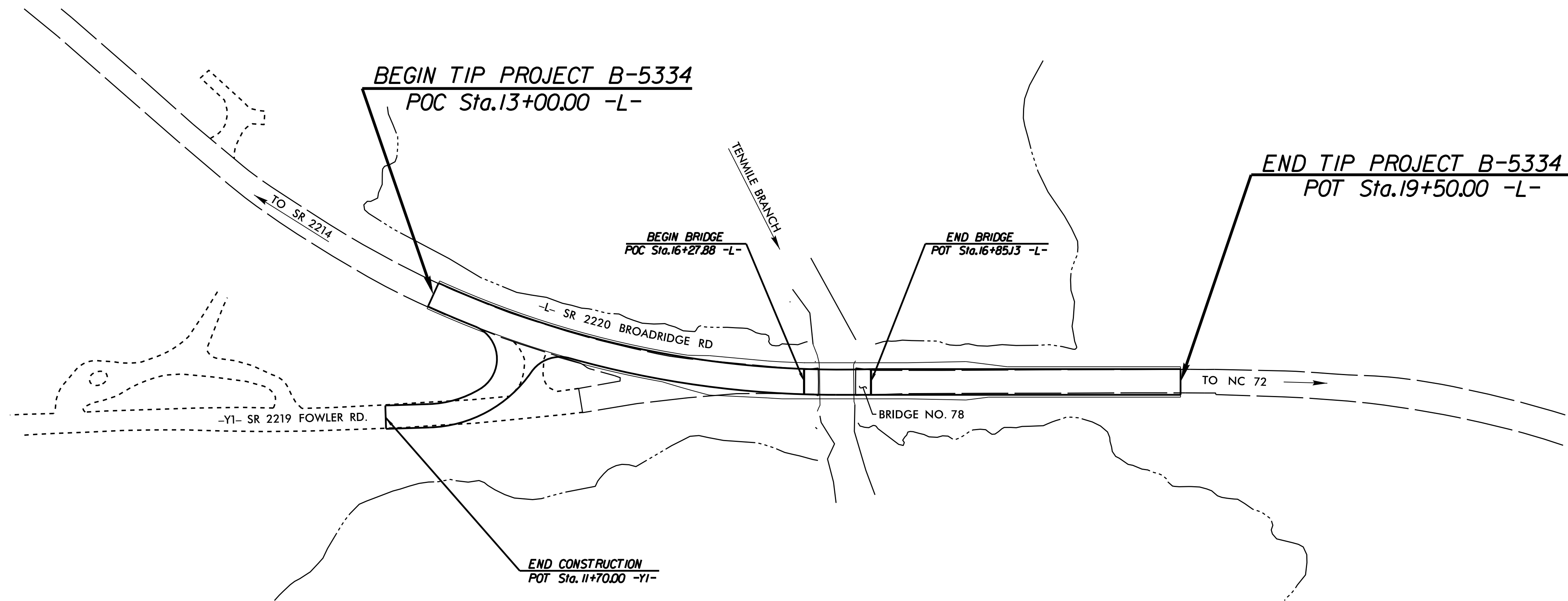
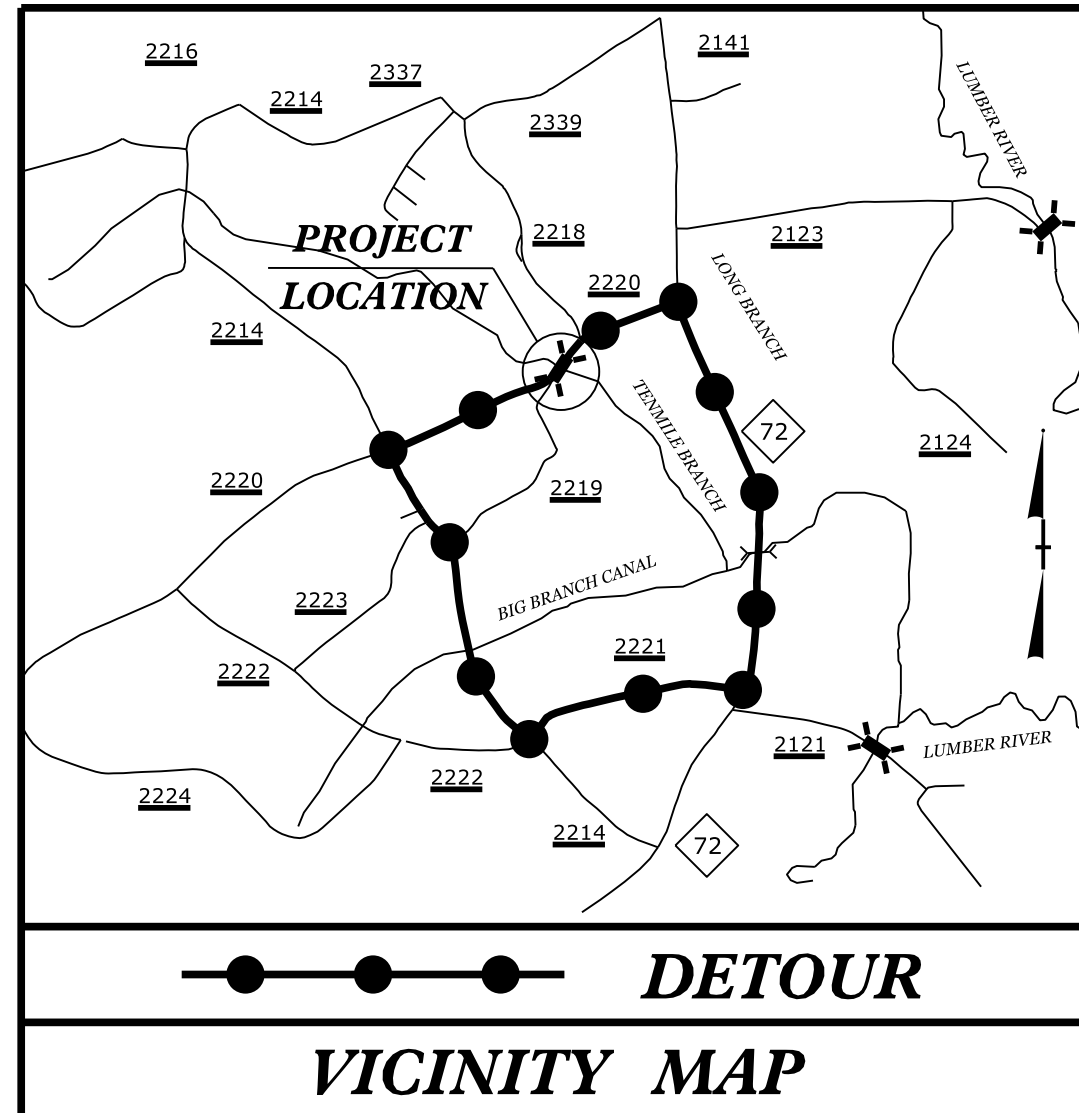
STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

ROBESON COUNTY

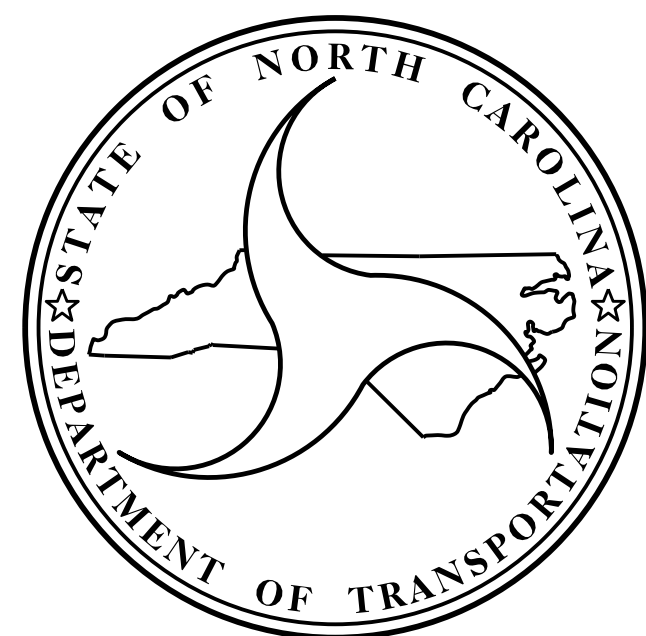
LOCATION: REPLACE BRIDGE 78 OVER TENMILE BRANCH
ON SR 2220 (NORTH BROADRIDGE ROAD)

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

| STATE | STATE PROJECT REFERENCE NO. | SHEET NO. | TOTAL SHEETS |
|-----------------|-----------------------------|-------------|--------------|
| N.C. | B-5334 | | |
| STATE PROJ. NO. | P.A. PROJ. NO. | DESCRIPTION | |
| 46048.1.1 | BRZ-2220(4) | P.E. | |
| 46048.2.1 | - | ROW, UTIL | |
| 46048.3.1 | - | CONST | |
| | | | |
| | | | |
| | | | |



STRUCTURE



DESIGN DATA

ADT 2017 = 1245
ADT 2037 = 1973
K = 10 %
D = 60 %
T = 5 % *
V = 60 MPH
* (TTST 1 %, DUAL 4 %)

FUNC CLASS=LOCAL
SUB-REGIONAL TIER

PROJECT LENGTH

LENGTH ROADWAY TIP PROJECT B-5334 = 0.112 MILE
LENGTH STRUCTURE TIP PROJECT B-5334 = 0.011 MILE
TOTAL LENGTH TIP PROJECT B-5334 = 0.123 MILE

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

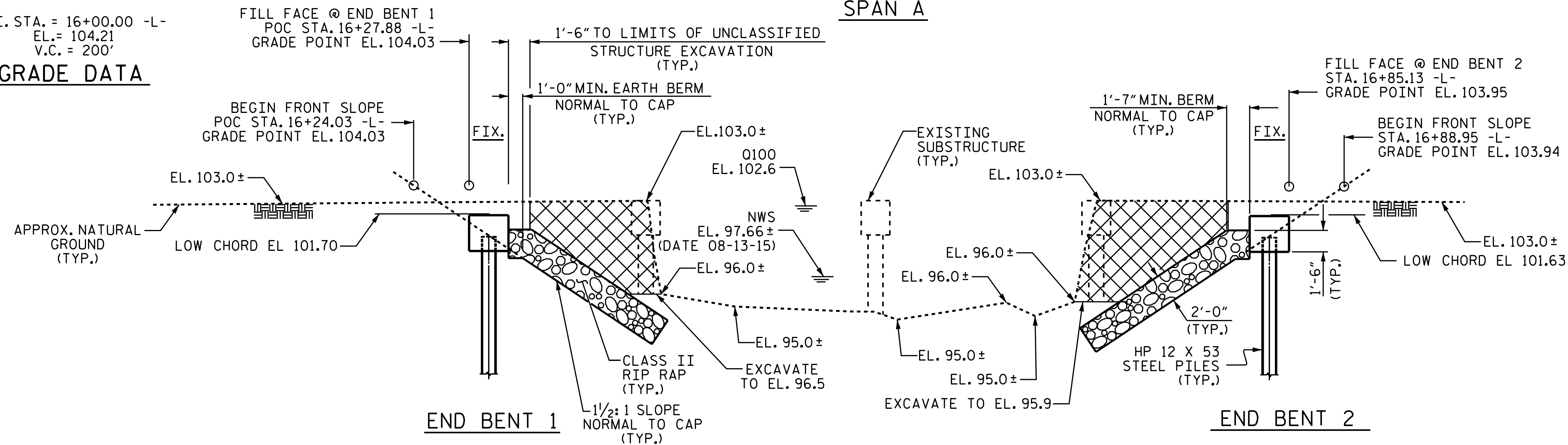
2012 STANDARD SPECIFICATIONS

LETTING DATE : DECEMBER 19, 2017

GREG W. DICKEY, P.E.
PROJECT ENGINEER

ASTER G. ABRAHA, P.E.
PROJECT DESIGN ENGINEER

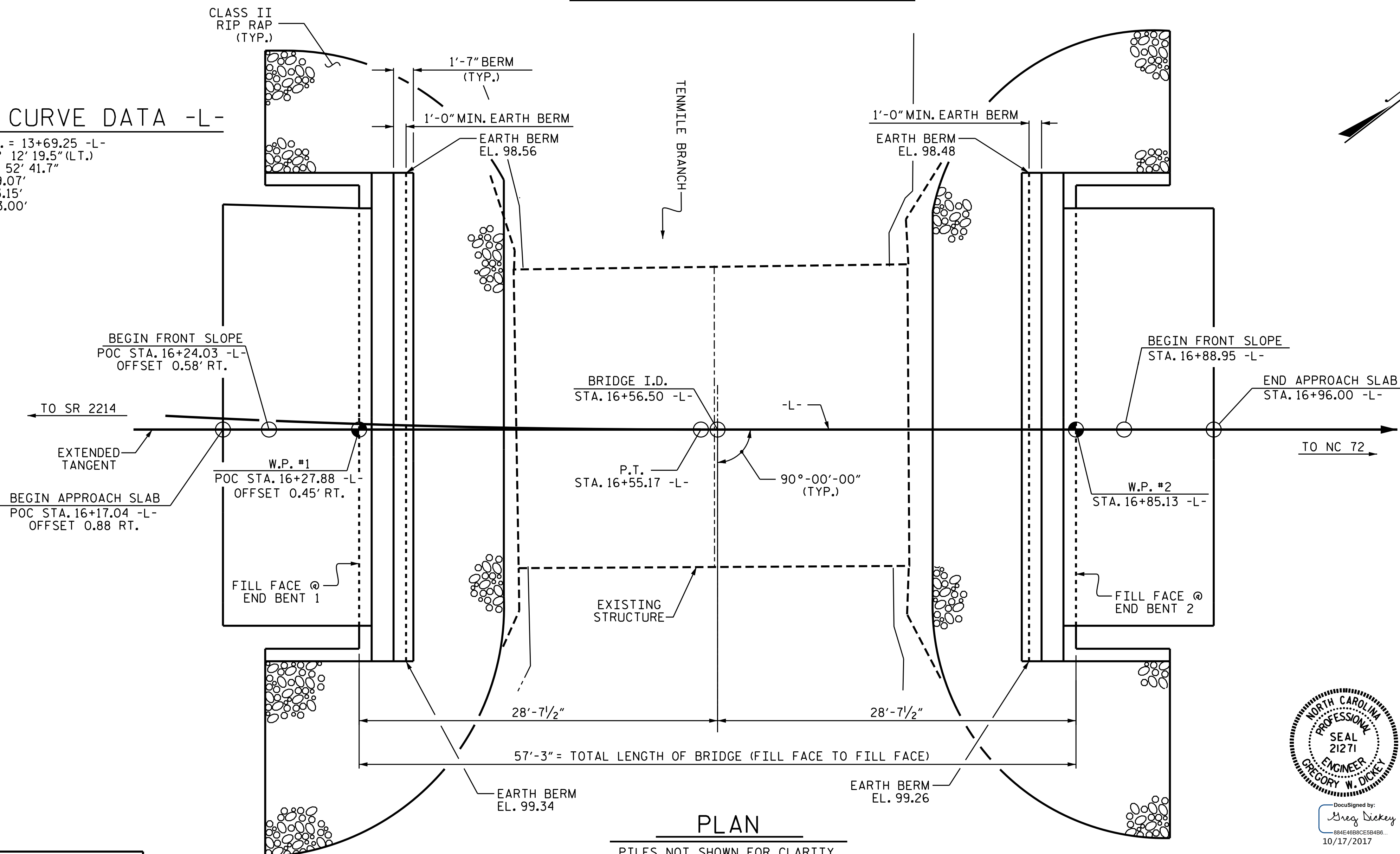
16+00
 +0.4500% Δ -0.3000%
 P.I. STA. = 16+00.00 -L-
 EL. = 104.21
 V.C. = 200'
GRADE DATA



SECTION ALONG -L-

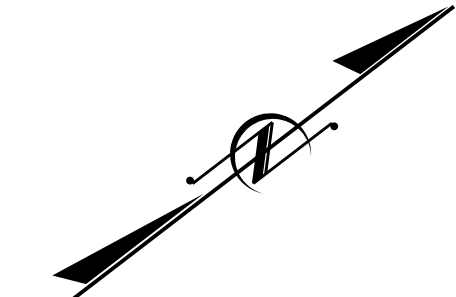
HORIZONTAL CURVE DATA -L-

PI STA. = 13+69.25 -L-
 Δ = 41° 12' 19.5" (L.T.)
 D = 6° 52' 41.7"
 L = 599.07'
 T = 313.15'
 R = 833.00'



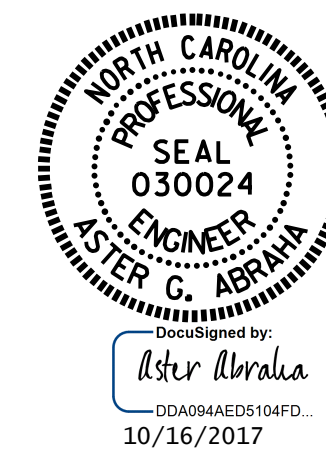
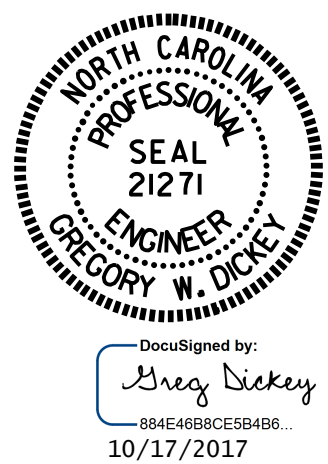
PLAN

PILES NOT SHOWN FOR CLARITY



PROJECT NO. B-5334
ROBESON COUNTY
 STATION: 16+56.50 -L-
 SHEET 1 OF 3 REPLACES BRIDGE NO. 78

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH
GENERAL DRAWING
 FOR BRIDGE OVER TENMILE
 BRANCH ON SR 2220
 BETWEEN SR 2214 AND NC 72



DRAWN BY : H. B. DESAI DATE : 7/27/16
 CHECKED BY : S. B. WILLIAMS DATE : 4/17
 DESIGN ENGINEER OF RECORD: K. P. SEDA DATE : 4/17

DOCUMENT NOT CONSIDERED
 FINAL UNLESS ALL
 SIGNATURES COMPLETED

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

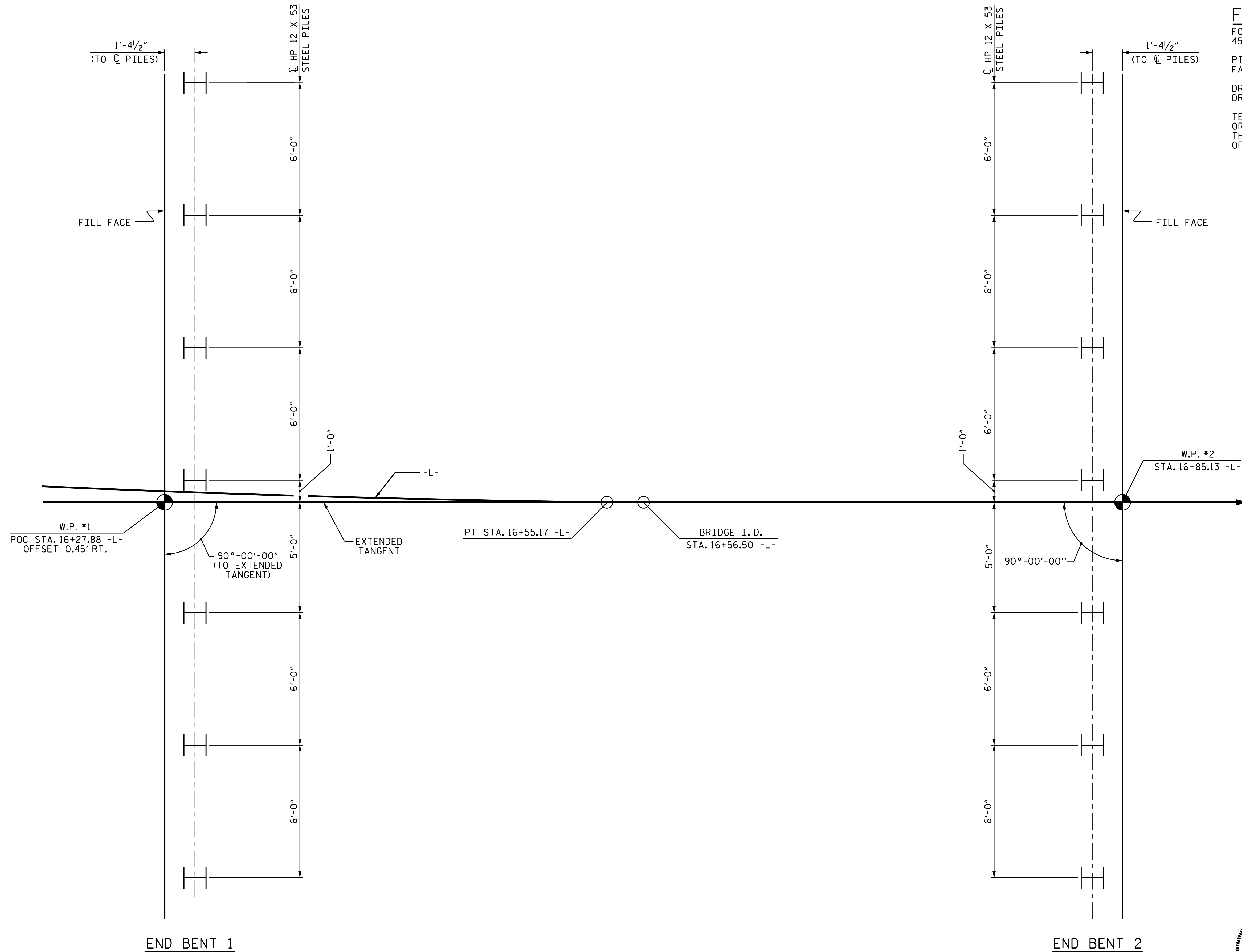
FOUNDATION NOTES

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 75 TONS PER PILE.

DRIVE PILES AT END BENT 1 AND END BENT 2 TO A REQUIRED DRIVING RESISTANCE OF 125 TONS PER PILE.

TESTING PILES WITH THE PDA DURING DRIVING, RESTRIKING OR REDRIVING MAY BE REQUIRED. THE ENGINEER WILL DETERMINE THE NEED FOR PDA TESTING. FOR PDA TESTING, SEE SECTION 450 OF THE STANDARD SPECIFICATIONS.

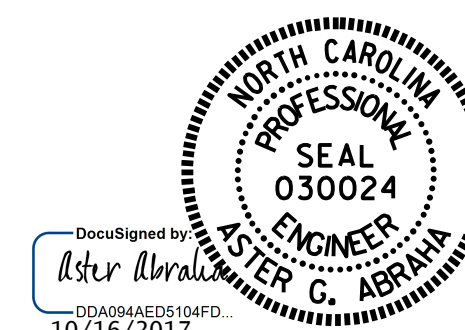


FOUNDATION LAYOUT
DIMENSIONS LOCATING PILES ARE SHOWN TO PILE CENTERLINE.

PROJECT NO. B-5334
ROBESON COUNTY
STATION: 16+56.50 -L-

SHEET 2 OF 3

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH
**GENERAL DRAWING
FOR BRIDGE OVER
TENMILE BRANCH ON
SR 2220 BETWEEN
SR 2214 AND NC 72**

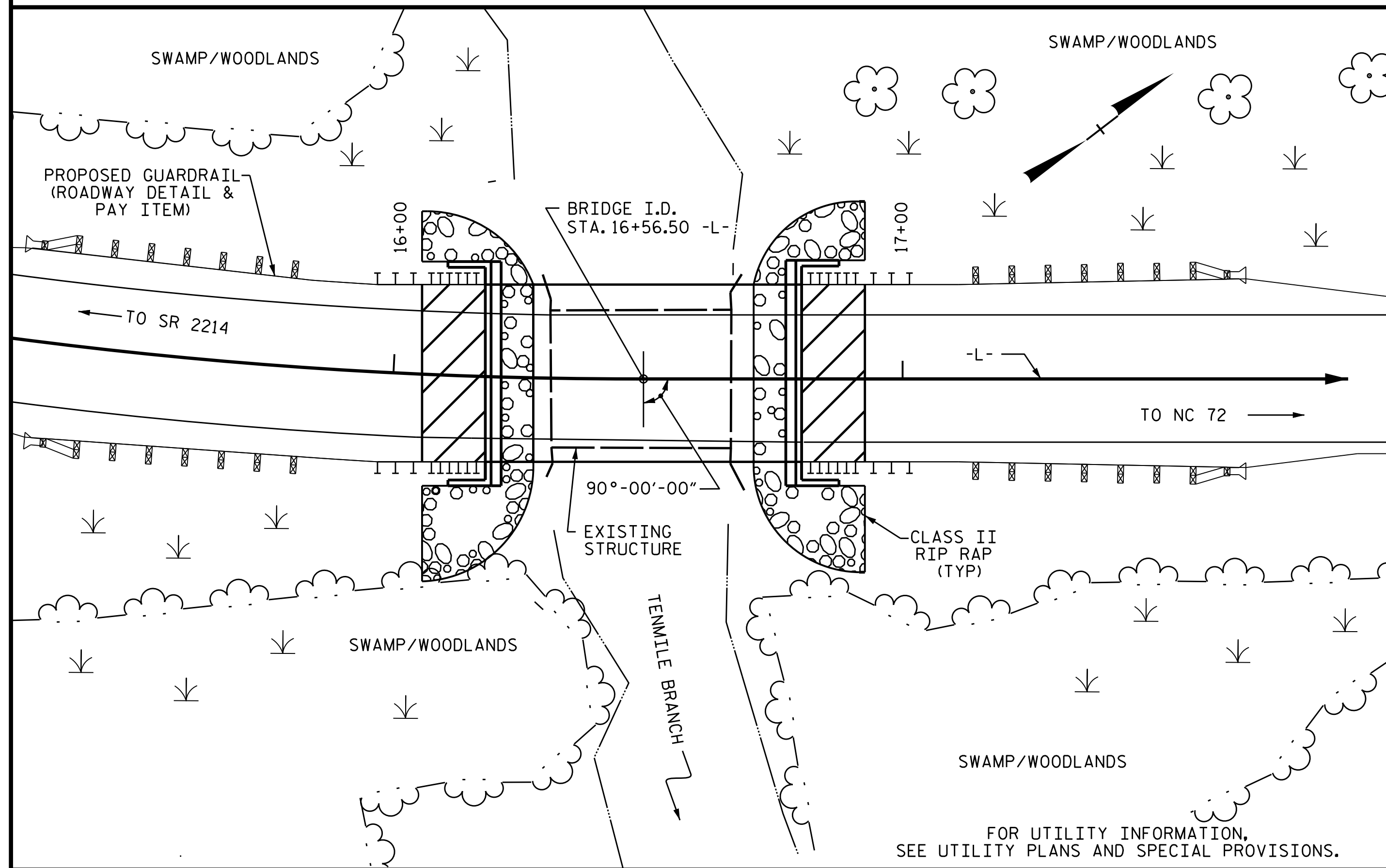


DRAWN BY : H. B. DESAI DATE : 8/19/16
CHECKED BY : S. B. WILLIAMS DATE : 3/17
DESIGN ENGINEER OF RECORD: K. P. SEDAI DATE : 3/31/17

DOCUMENT NOT CONSIDERED
FINAL UNLESS ALL
SIGNATURES COMPLETED

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

BM# 1: R/R SPIKE SET IN 24" Ø OAK, 61' RIGHT OF STA. 14+64.00, EL 101.87'



LOCATION SKETCH

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 2.
- FOR OTHER DESIGN DATA AND GENERAL NOTES, SEE SHEET SN.
- FOR SUBMITTAL OF WORKING DRAWINGS, SEE SPECIAL PROVISIONS.
- FOR FALSEWORK & 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 40 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.
- THE EXISTING STRUCTURE CONSISTING OF 1 SPAN @ 16'-2", 1 SPAN @ 15'-6", WITH A REINFORCED CONCRETE FLOOR ON TIMBER JOIST AND TIMBER CAPS AND PILES AT END BENTS AND INTERIOR BENTS WITH A CLEAR ROADWAY WIDTH OF 24'-1" LOCATED AT THE PROPOSED STRUCTURE SHALL BE REMOVED.
- FOR STRUCTURE REMOVAL, SEE SPECIAL PROVISIONS.
- 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 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.
- THIS STRUCTURE HAS BEEN DESIGNED IN ACCORDANCE WITH "HEC 18-EVALUATING SCOUR AT BRIDGES".
- FOR EROSION CONTROL MEASURES, SEE EROSION CONTROL PLANS.
- ASPHALT WEARING SURFACE IS INCLUDED IN ROADWAY QUANTITY ON ROADWAY PLANS.
- FOR ASBESTOS ASSESSMENT FOR BRIDGE DEMOLITION AND RENOVATION ACTIVITIES, SEE SPECIAL PROVISIONS.

HYDRAULIC DATA

| | |
|-------------------------------|----------------|
| DESIGN DISCHARGE | = 850 C.F.S. |
| FREQUENCY OF DESIGN DISCHARGE | = 25 YRS. |
| DESIGN HIGH WATER ELEVATION | = 101.6 |
| DRAINAGE AREA | = 7.63 SQ.MI. |
| BASE DISCHARGE (Q100) | = 1300 C.F.S. |
| BASE HIGH WATER ELEVATION | = 102.6 C.F.S. |

OVERTOPPING FLOOD DATA

| | |
|--------------------------|---------------|
| OVERTOPPING DISCHARGE | = 2475 C.F.S. |
| FREQUENCY OF OVERTOPPING | = 500+ YRS. |
| OVERTOPPING ELEVATION | = 103.7 |

TOTAL BILL OF MATERIAL

| | REMOVAL OF EXISTING STRUCTURE | PDA TESTING | UNCLASSIFIED STRUCTURE EXCAVATION | CLASS A CONCRETE | BRIDGE APPROACH SLABS | REINFORCING STEEL | PILE DRIVING EQUIPMENT SETUP FOR HP 12 X 53 STEEL PILES | HP 12X53 STEEL PILES | PILE REDRIVES | VERTICAL CONCRETE BARRIER RAIL | RIP RAP CLASS II (2'-0" THICK) | GEOTEXTILE FOR DRAINAGE | ELASTOMERIC BEARINGS | 3'-0" X 1'-9" PRESTRESSED CONCRETE CORROD SLABS | ASBESTOS ASSESSMENT | | |
|----------------|-------------------------------|-------------|-----------------------------------|------------------|-----------------------|-------------------|---|----------------------|---------------|--------------------------------|--------------------------------|-------------------------|----------------------|---|---------------------|--------|----------|
| | LUMP SUM | EACH | LUMP SUM | CU. YDS. | LUMP SUM | LBS. | EACH | NO., LIN.FT. | EACH | LIN.FT. | TONS | SQ. YDS. | LUMP SUM | NO., LIN.FT. | LUMP SUM | | |
| SUPERSTRUCTURE | | | | | LUMP SUM | | | | | 110.25 | | | LUMP SUM | 11 | 605.00 | | |
| END BENT NO. 1 | | | LUMP SUM | 14.2 | | 2,115 | 7 | 7 | 385 | 7 | 185 | 195 | | | | | |
| END BENT NO. 2 | | | LUMP SUM | 14.2 | | 2,115 | 7 | 7 | 385 | 7 | 205 | 215 | | | | | |
| TOTAL | LUMP SUM | 1 | LUMP SUM | 28.4 | LUMP SUM | 4,230 | 14 | 14 | 770 | 14 | 110.25 | 390 | 410 | LUMP SUM | 11 | 605.00 | LUMP SUM |

PROJECT NO. B-5334
ROBESON COUNTY
 STATION: 16+56.50 -L-

SHEET 3 OF 3



STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH
 GENERAL DRAWING
 FOR BRIDGE OVER TENMILE
 BRANCH ON SR 2220
 BETWEEN SR 2214 AND NC 72

DRAWN BY : H. B. DESAI DATE : 8-19-16
 CHECKED BY : S. B. WILLIAMS DATE : 3-17
 DESIGN ENGINEER OF RECORD : K. P. SEDAI DATE : 3-31-17

DOCUMENT NOT CONSIDERED
 FINAL UNLESS ALL
 SIGNATURES COMPLETED

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

LOAD AND RESISTANCE FACTOR RATING (LRFR) 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 | 1.055 | -- | 1.75 | 0.275 | 1.23 | 55' | EL | 27 | 0.523 | 1.23 | 55' | EL | 5.4 | 0.80 | 0.275 | 1.05 | 55' | EL | 27 | | |
| | HL-93(0pr) | N/A | -- | 1.591 | -- | 1.35 | 0.275 | 1.59 | 55' | EL | 27 | 0.523 | 1.59 | 55' | EL | 5.4 | N/A | -- | -- | -- | -- | -- | | |
| | HS-20(Inv) | 36.000 | 2 | 1.322 | 47.585 | 1.75 | 0.275 | 1.54 | 55' | EL | 27 | 0.523 | 1.47 | 55' | EL | 5.4 | 0.80 | 0.275 | 1.32 | 55' | EL | 27 | | |
| | HS-20(0pr) | 36.000 | -- | 1.900 | 68.396 | 1.35 | 0.275 | 1.99 | 55' | EL | 27 | 0.523 | 1.90 | 55' | EL | 5.4 | N/A | -- | -- | -- | -- | -- | | |
| LEGAL LOAD RATING | SV | SNSH | 13.500 | -- | 2.776 | 37.476 | 1.4 | 0.275 | 4.04 | 55' | EL | 27 | 0.523 | 4.17 | 55' | EL | 5.4 | 0.80 | 0.275 | 2.78 | 55' | EL | 27 | |
| | | SNGARBS2 | 20.000 | -- | 2.155 | 43.095 | 1.4 | 0.275 | 3.14 | 55' | EL | 27 | 0.523 | 3.02 | 55' | EL | 5.4 | 0.80 | 0.275 | 2.15 | 55' | EL | 27 | |
| | | SNAGRIS2 | 22.000 | -- | 2.079 | 45.734 | 1.4 | 0.275 | 3.03 | 55' | EL | 27 | 0.523 | 2.83 | 55' | EL | 5.4 | 0.80 | 0.275 | 2.08 | 55' | EL | 27 | |
| | | SNCOTTS3 | 27.250 | -- | 1.384 | 37.708 | 1.4 | 0.275 | 2.01 | 55' | EL | 27 | 0.523 | 2.09 | 55' | EL | 5.4 | 0.80 | 0.275 | 1.38 | 55' | EL | 27 | |
| | | SNAGGRS4 | 34.925 | -- | 1.189 | 41.527 | 1.4 | 0.275 | 1.73 | 55' | EL | 27 | 0.523 | 1.77 | 55' | EL | 5.4 | 0.80 | 0.275 | 1.19 | 55' | EL | 27 | |
| | | SNS5A | 35.550 | -- | 1.160 | 41.255 | 1.4 | 0.275 | 1.69 | 55' | EL | 27 | 0.523 | 1.82 | 55' | EL | 5.4 | 0.80 | 0.275 | 1.16 | 55' | EL | 27 | |
| | | SNS6A | 39.950 | -- | 1.079 | 43.102 | 1.4 | 0.275 | 1.57 | 55' | EL | 27 | 0.523 | 1.68 | 55' | EL | 5.4 | 0.80 | 0.275 | 1.08 | 55' | EL | 27 | |
| | SNS7B | 42.000 | -- | 1.028 | 43.175 | 1.4 | 0.275 | 1.50 | 55' | EL | 27 | 0.523 | 1.67 | 55' | EL | 5.4 | 0.80 | 0.275 | 1.03 | 55' | EL | 27 | | |
| | TTST | TNAGRIT3 | 33.000 | -- | 1.320 | 43.556 | 1.4 | 0.275 | 1.92 | 55' | EL | 27 | 0.523 | 1.98 | 55' | EL | 5.4 | 0.80 | 0.275 | 1.32 | 55' | EL | 27 | |
| | | TNT4A | 33.075 | -- | 1.330 | 43.979 | 1.4 | 0.275 | 1.94 | 55' | EL | 27 | 0.523 | 1.91 | 55' | EL | 5.4 | 0.80 | 0.275 | 1.33 | 55' | EL | 27 | |
| | | TNT6A | 41.600 | -- | 1.101 | 45.811 | 1.4 | 0.275 | 1.60 | 55' | EL | 27 | 0.523 | 1.83 | 55' | EL | 5.4 | 0.80 | 0.275 | 1.10 | 55' | EL | 27 | |
| | | TNT7A | 42.000 | -- | 1.114 | 46.804 | 1.4 | 0.275 | 1.62 | 55' | EL | 27 | 0.523 | 1.71 | 55' | EL | 5.4 | 0.80 | 0.275 | 1.11 | 55' | EL | 27 | |
| | | TNT7B | 42.000 | -- | 1.163 | 48.848 | 1.4 | 0.275 | 1.69 | 55' | EL | 27 | 0.523 | 1.62 | 55' | EL | 5.4 | 0.80 | 0.275 | 1.16 | 55' | EL | 27 | |
| | | TNAGRIT4 | 43.000 | -- | 1.101 | 47.33 | 1.4 | 0.275 | 1.60 | 55' | EL | 27 | 0.523 | 1.56 | 55' | EL | 5.4 | 0.80 | 0.275 | 1.10 | 55' | EL | 27 | |
| TNAGT5A | | 45.000 | -- | 1.031 | 46.405 | 1.4 | 0.275 | 1.50 | 55' | EL | 27 | 0.523 | 1.58 | 55' | EL | 5.4 | 0.80 | 0.275 | 1.03 | 55' | EL | 27 | | |
| TNAGT5B | 45.000 | 3 | 1.013 | 45.582 | 1.4 | 0.275 | 1.47 | 55' | EL | 27 | 0.523 | 1.48 | 55' | EL | 5.4 | 0.80 | 0.275 | 1.01 | 55' | EL | 27 | | | |

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)

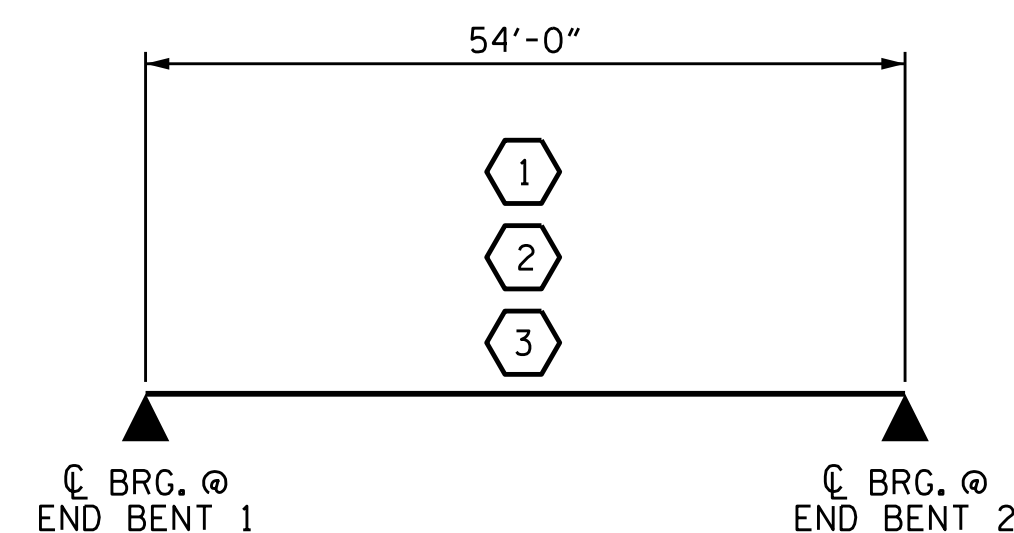
2 DESIGN LOAD RATING (HS-20)

3 LEGAL LOAD RATING **

** SEE CHART FOR VEHICLE TYPE

GIRDER LOCATION

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



LRFR SUMMARY
FOR SPAN A

PROJECT NO. B-5334
ROBESON COUNTY
STATION: 16+56.50 -L-

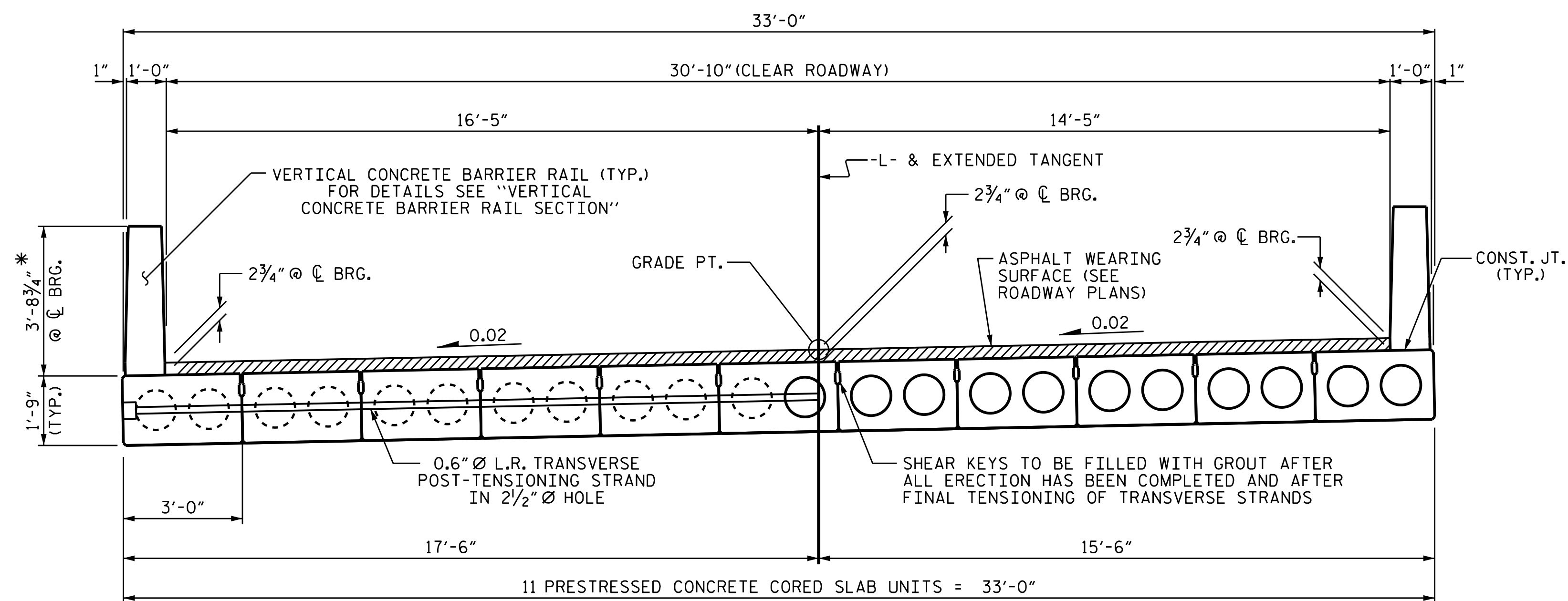


STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH
STANDARD
LRFR SUMMARY FOR
55' CORED SLAB UNIT
90° SKEW
(NON-INTERSTATE TRAFFIC)

ASSEMBLED BY : R. P. PATEL DATE : 08-02-16
CHECKED BY : J. P. MCCARTHA DATE : 08-09-16
DRAWN BY : CVC 6/10
CHECKED BY : DNS 6/10

DOCUMENT NOT CONSIDERED
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SIGNATURES COMPLETED

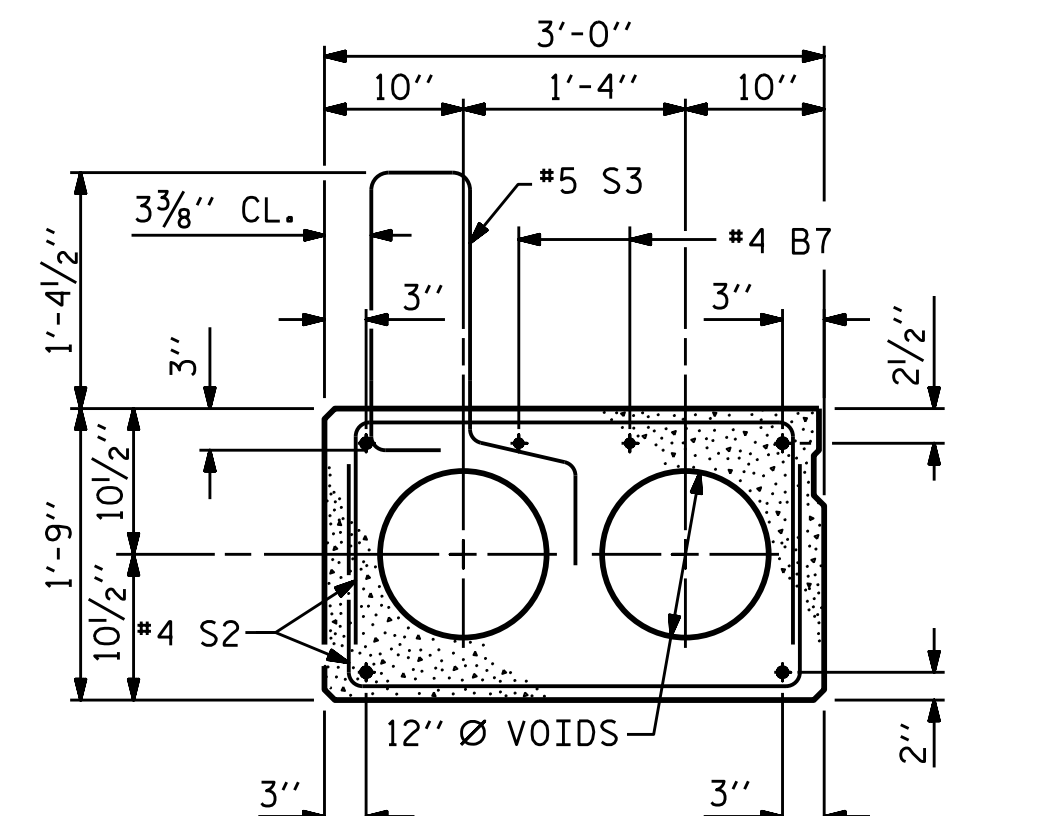
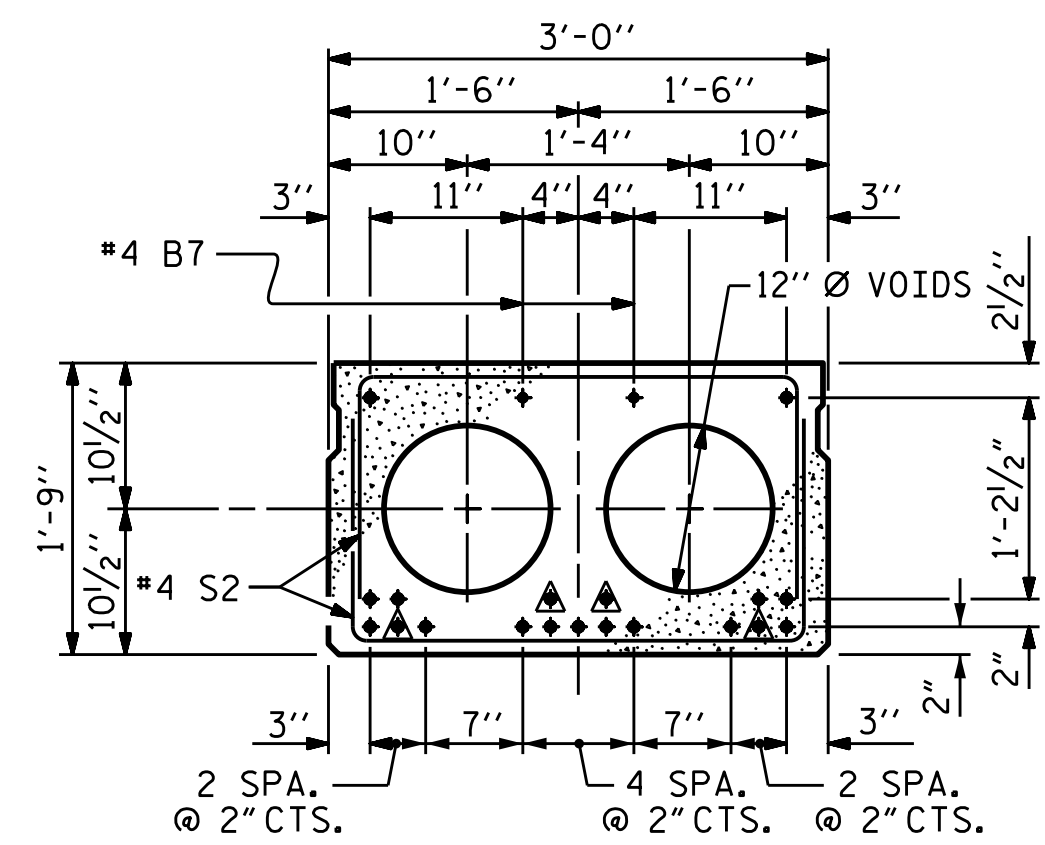
| REVISIONS | | | | | | SHEET NO. |
|-----------|-----|-------|-----|-----|-------|--------------|
| NO. | BY: | DATE: | NO. | BY: | DATE: | S-4 |
| 1 | | | 3 | | | TOTAL SHEETS |
| 2 | | | 4 | | | 14 |



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.



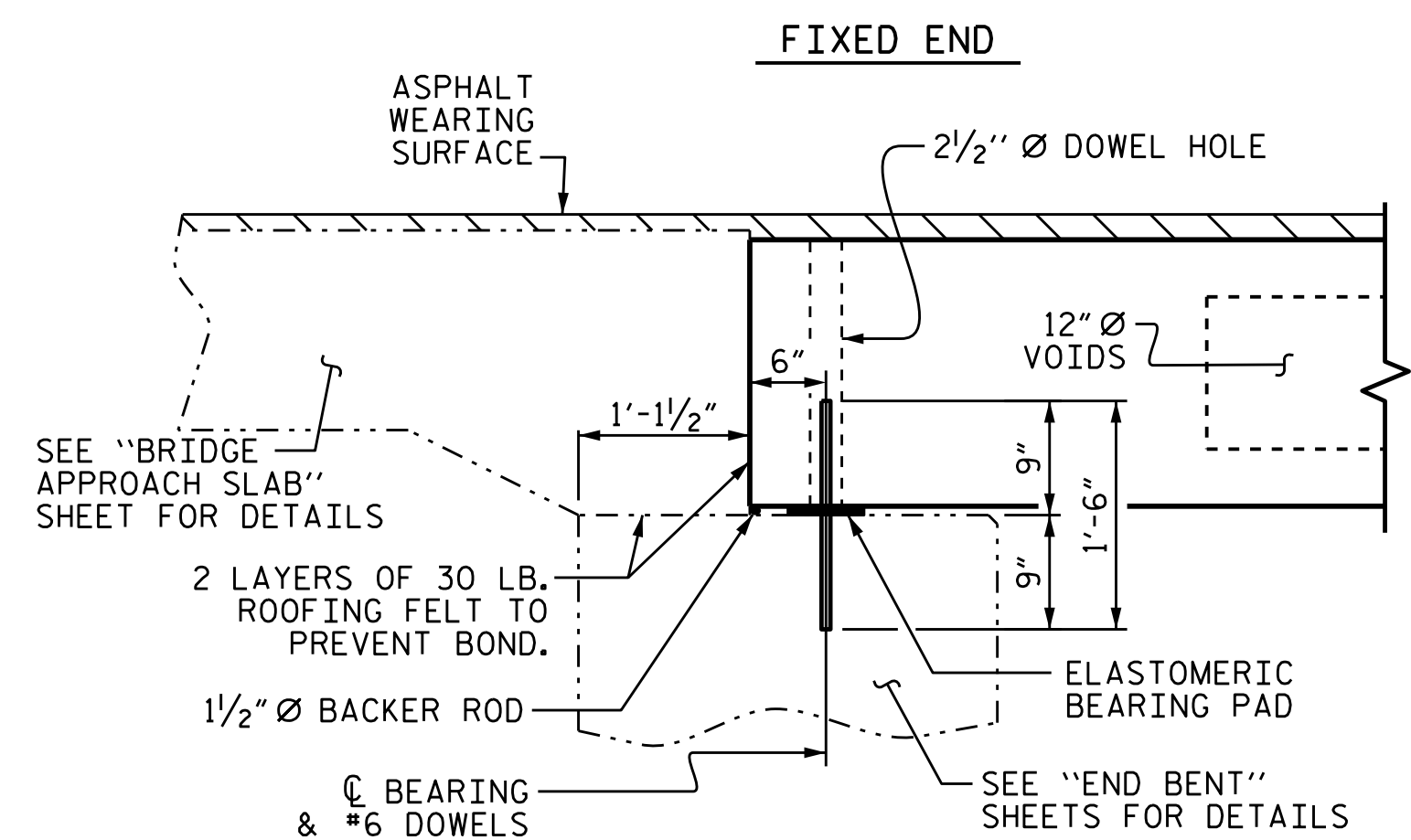
INTERIOR SLAB SECTION (55' UNIT)
 (19 STRANDS REQUIRED)

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

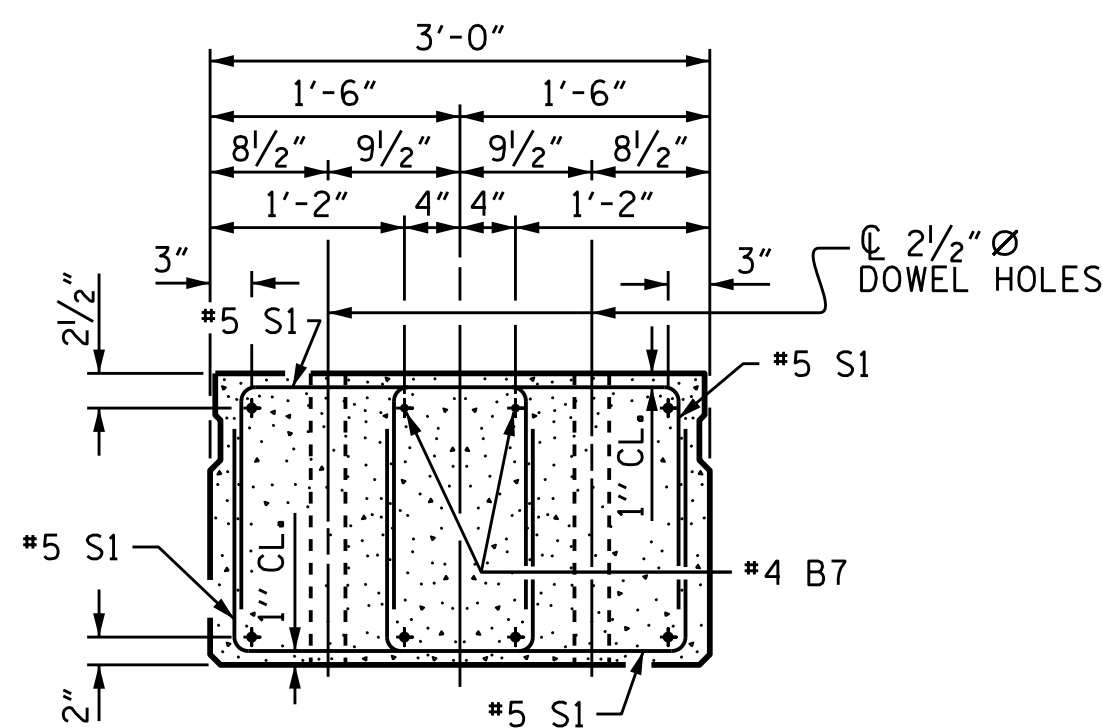
0.6" Ø LOW RELAXATION STRAND LAYOUT

▲ BOND SHALL BE BROKEN ON THESE STRANDS FOR A DISTANCE OF 6'-0" FROM END OF CORED SLAB UNIT. SEE STANDARD SPECIFICATIONS, ARTICLE 1078-7.

DEBONDING LEGEND

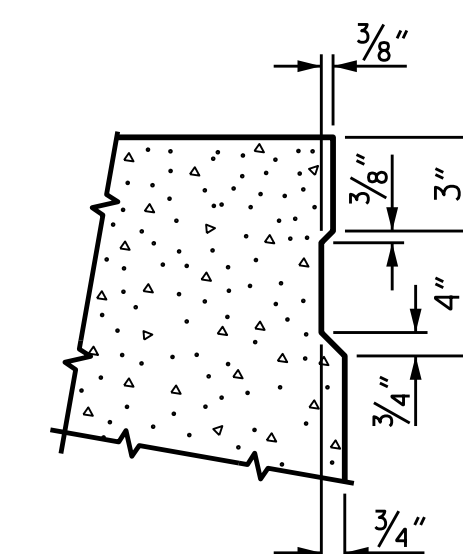


SECTION AT END BENT



END ELEVATION

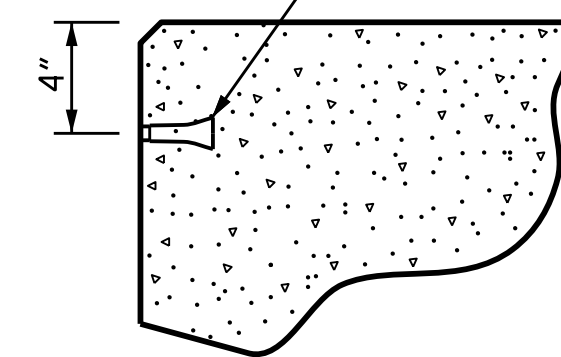
SHOWING PLACEMENT OF DOUBLE STIRRUPS AND LOCATION OF DOWEL HOLES. (STRAND LAYOUT NOT SHOWN.) INTERIOR SLAB UNIT SHOWN-EXTERIOR SLAB UNIT SIMILAR EXCEPT SHEAR KEY LOCATION.



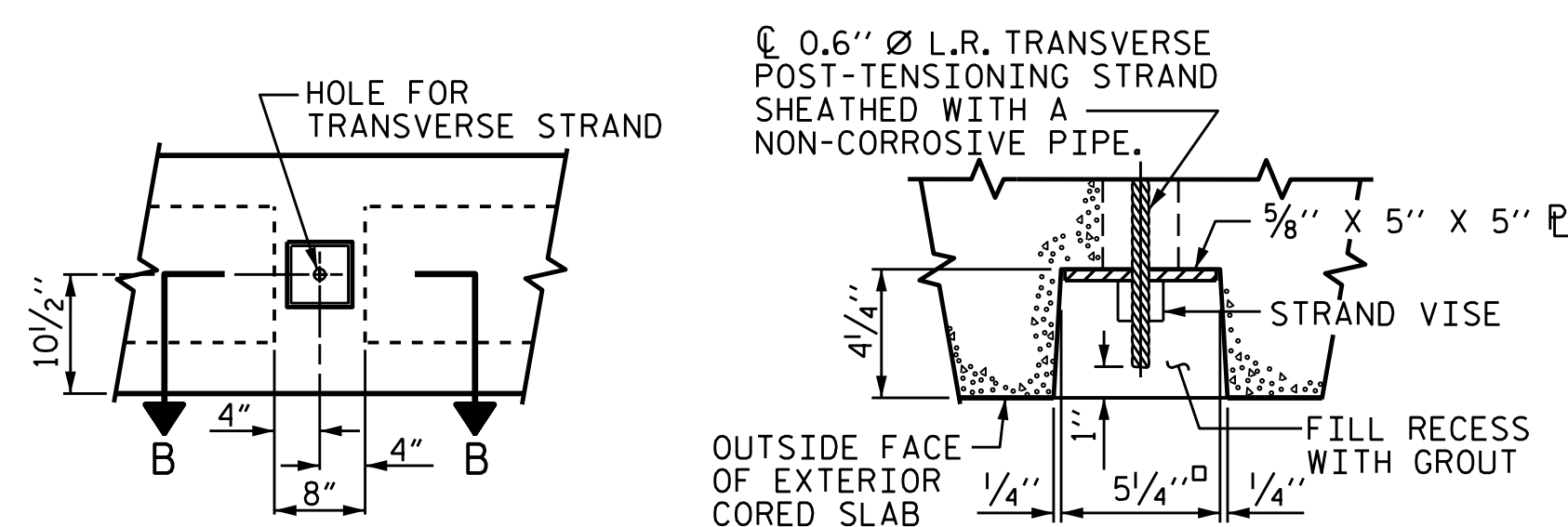
SHEAR KEY DETAIL

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

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



THREADED INSERT DETAIL



ELEVATION VIEW

SECTION B-B

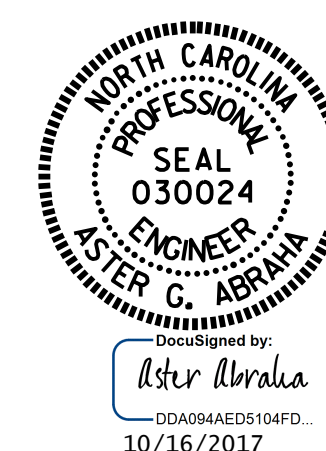
GROUTED RECESS AT END OF POST-TENSIONED STRAND OF CORED SLABS

| | |
|-----------------------------|----------------|
| ASSEMBLED BY : R. P. PATEL | DATE : 8-02-16 |
| CHECKED BY : S. B. WILLIAMS | DATE : 3-17 |
| DRAWN BY : DGE 5/09 | REV. 9/14 |
| CHECKED BY : BCH 6/09 | MAA/TMG |

16-OCT-2017 16:30
 R:\Structures\Final Plans\B-5334-SMU.TS.770078.dgn
 dabr.dwg

PROJECT NO. B-5334
ROBESON COUNTY
 STATION: 16+56.50 -L-

SHEET 1 OF 3

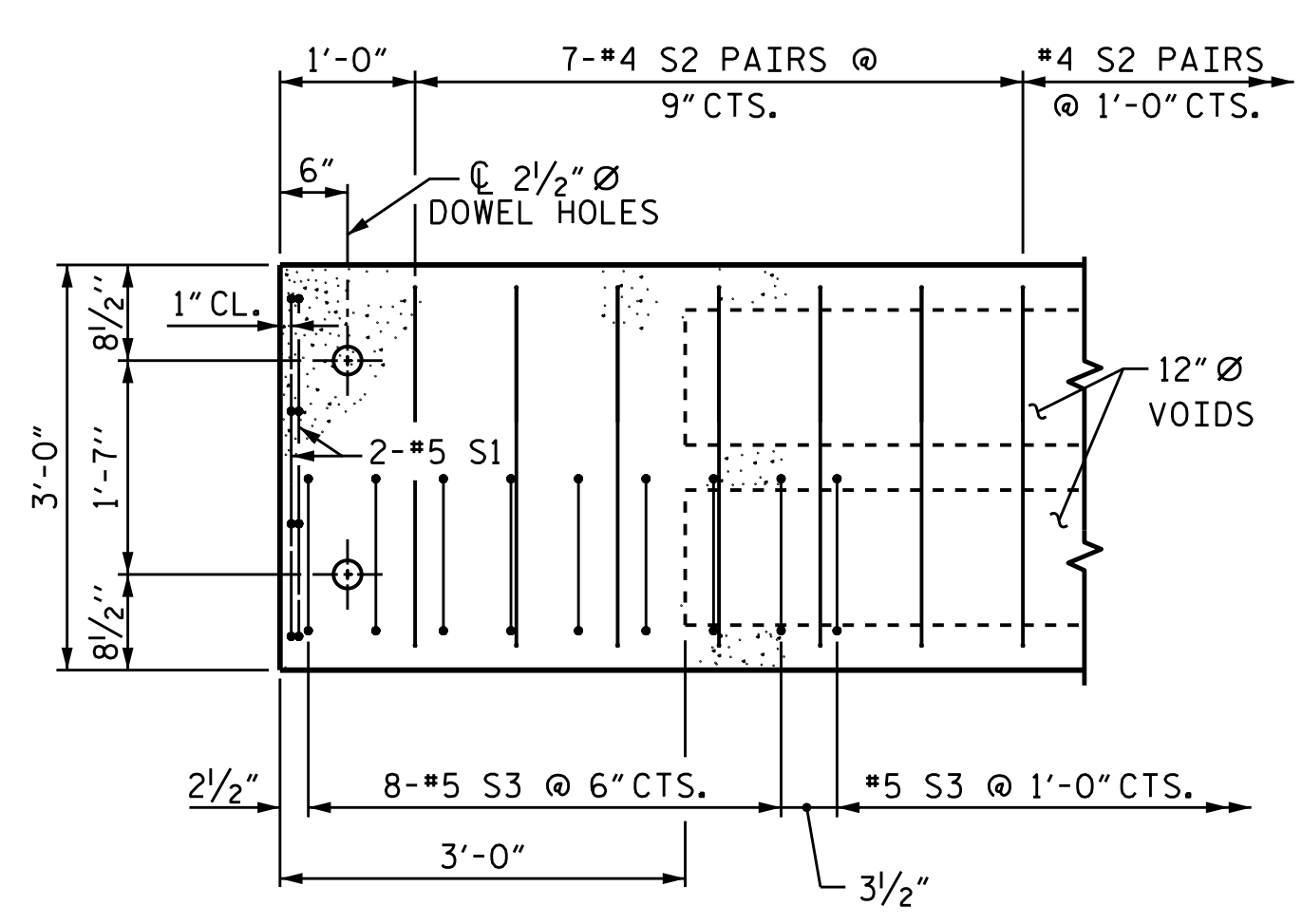
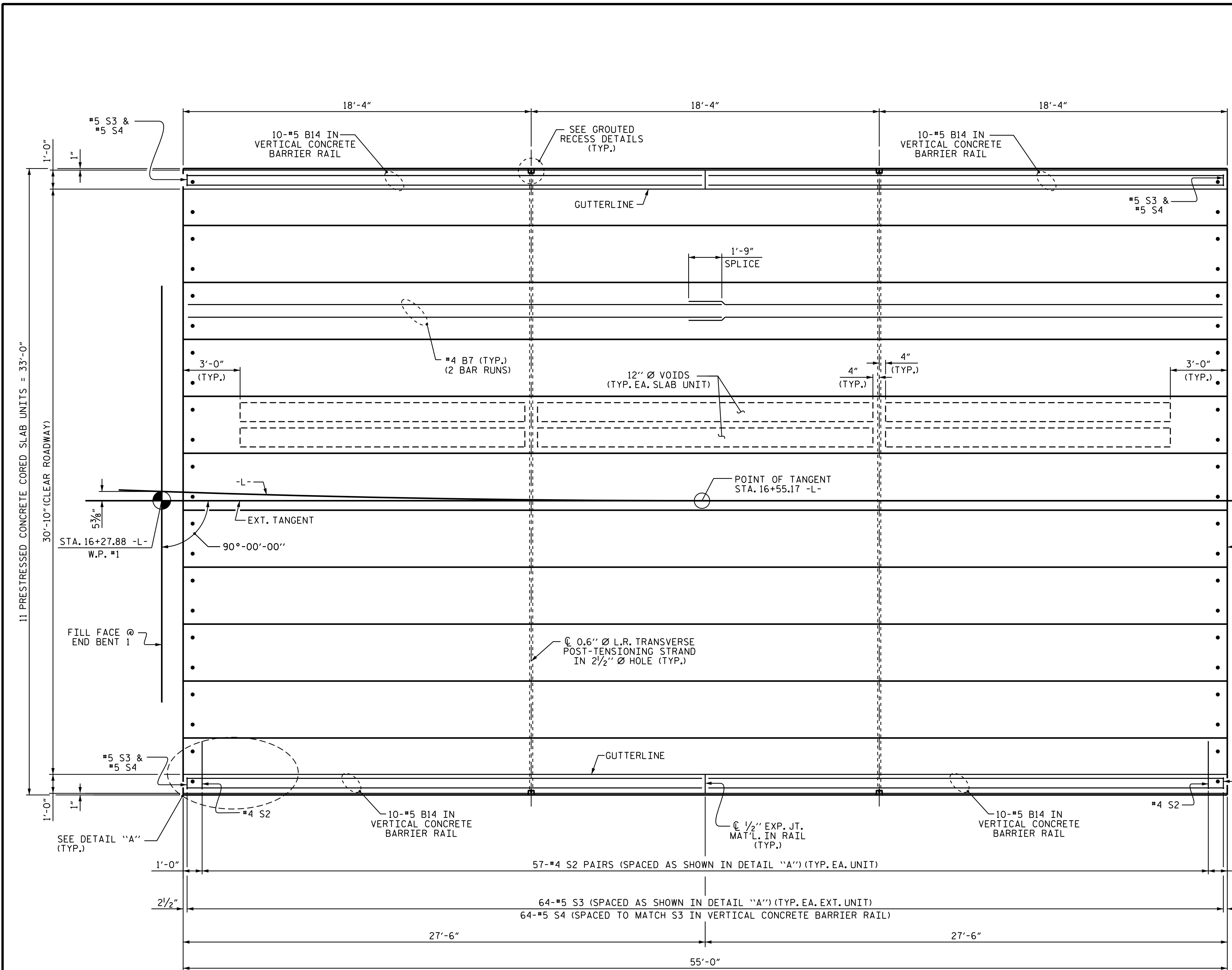


STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH
 STANDARD
 3'-0" X 1'-9"
 PRESTRESSED CONCRETE
 CORED SLAB UNIT
 90° SKEW

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

| REVISIONS | | | | | | SHEET NO. |
|-----------|-----|-------|-----|-----|-------|-----------------|
| NO. | BY: | DATE: | NO. | BY: | DATE: | S-5 |
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| 2 | | | 4 | | | |

STD. NO. 21" PCS2_33_90S

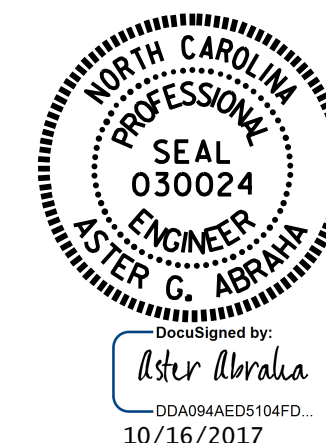


DETAIL "A"
 (TYPICAL EACH END OF UNIT)
 NOTE: EXTERIOR UNIT SHOWN - INTERIOR UNIT SIMILAR EXCEPT OMIT #5 S3 BARS.

PLAN OF UNIT

PROJECT NO. B-5334
ROBESON COUNTY
 STATION: 16+56.50 -L-

SHEET 2 OF 3

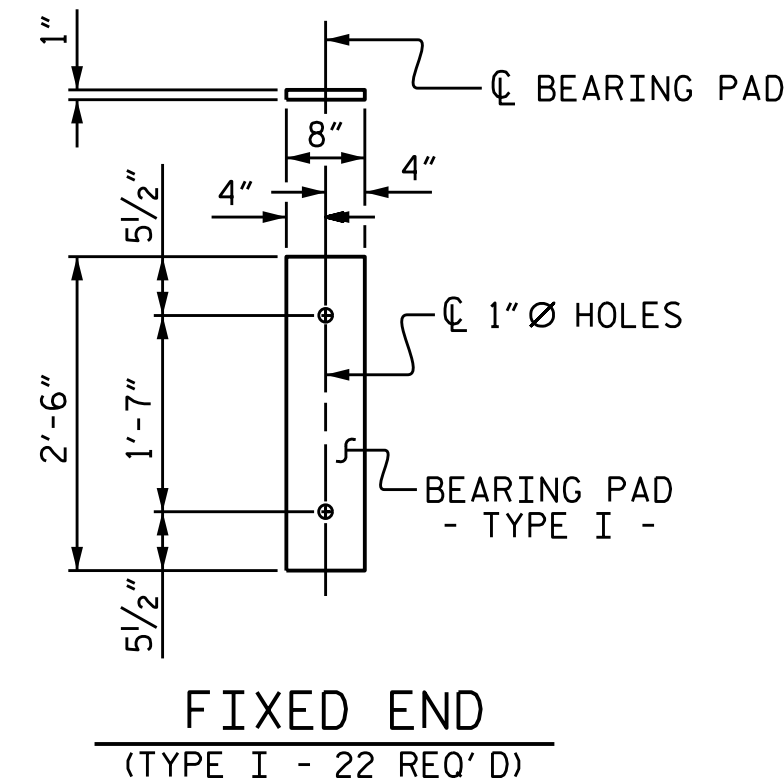


STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH
 PLAN OF 55' UNIT
 30'-10" CLEAR ROADWAY
 90° SKEW

| | |
|-----------------------------|----------------------|
| ASSEMBLED BY : R. P. PATEL | DATE : 6-16-16 |
| CHECKED BY : J. P. MCCARTHA | DATE : 8-9-16 |
| DRAWN BY : DGE 3/09 | REV. 12/5/11 MAA/AAC |
| CHECKED BY : BCH 3/09 | REV. 8/14 MAA/TMG |

DOCUMENT NOT CONSIDERED
 FINAL UNLESS ALL
 SIGNATURES COMPLETED

| REVISIONS | | | | | | SHEET NO. | |
|-----------|-----|-------|-----|-----|-------|-----------------|--|
| NO. | BY: | DATE: | NO. | BY: | DATE: | S-6 | |
| 1 | | | 3 | | | TOTAL SHEETS 14 | |
| 2 | | | 4 | | | | |



ELASTOMERIC BEARING DETAILS

ELASTOMER IN ALL BEARINGS SHALL BE 50 DUROMETER HARDNESS.

BILL OF MATERIAL FOR ONE 55' CORED SLAB UNIT

| | | | | EXTERIOR UNIT | | INTERIOR UNIT | |
|----------------------------------|--------|------|------|---------------|--------|---------------|--------|
| BAR | NUMBER | SIZE | TYPE | LENGTH | WEIGHT | LENGTH | WEIGHT |
| B7 | 4 | #4 | STR | 28'-3" | 75 | 28'-3" | 75 |
| S1 | 8 | #5 | 3 | 4'-3" | 35 | 4'-3" | 35 |
| S2 | 114 | #4 | 3 | 5'-4" | 406 | 5'-4" | 406 |
| * S3 | 64 | #5 | 1 | 5'-7" | 373 | | |
| REINFORCING STEEL | | | | LBS. | 516 | | 516 |
| * EPOXY COATED REINFORCING STEEL | | | | LBS. | 373 | | |
| 6500 P.S.I. CONCRETE | | | | CU. YDS. | 7.8 | | 7.8 |
| 0.6" Ø L.R. STRANDS | | | | No. | 19 | | 19 |

DEAD LOAD DEFLECTION AND CAMBER

| | | 3'-0" x 1'-9" |
|--|--|--------------------|
| 55' CORED SLAB UNIT | | 0.6" Ø L.R. STRAND |
| CAMBER (SLAB ALONE IN PLACE) | | 1/2" ↑ |
| DEFLECTION DUE TO SUPERIMPOSED DEAD LOAD** | | 3/8" ↓ |
| FINAL CAMBER | | 1/8" ↑ |

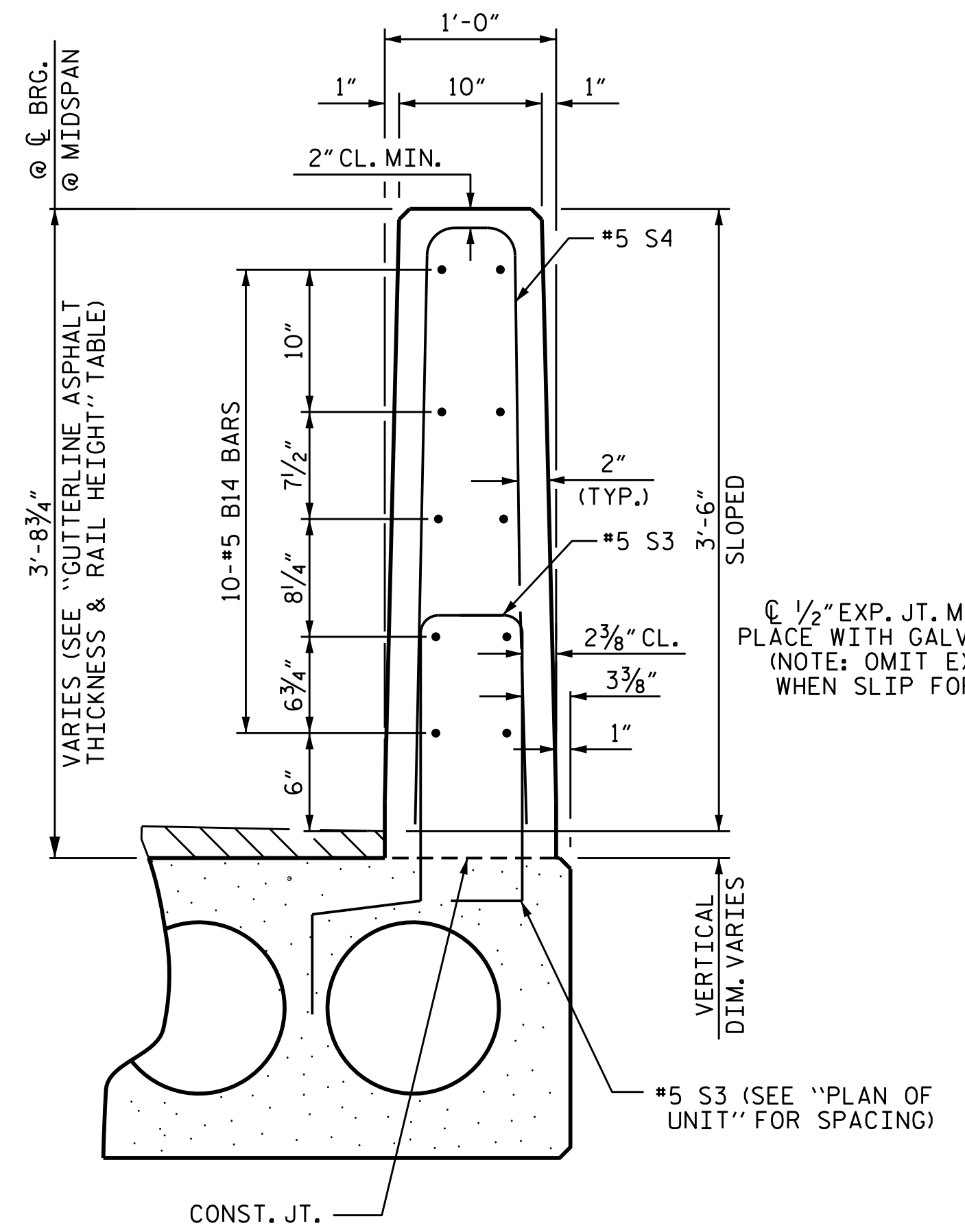
* INCLUDES FUTURE WEARING SURFACE

GRADE 270 STRANDS

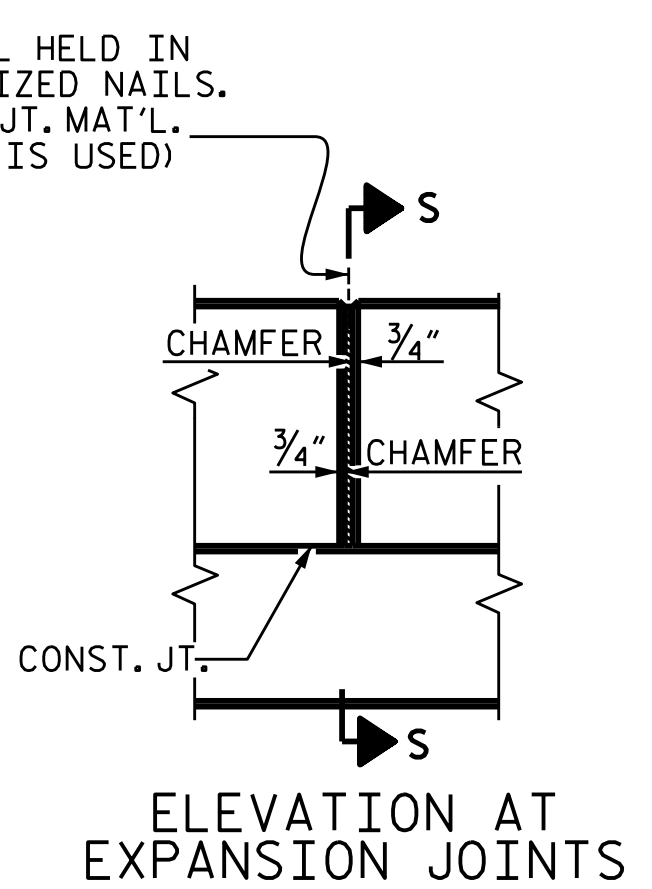
| | | 0.6" Ø L.R. |
|-------------------------------------|--|-------------|
| AREA (SQUARE INCHES) | | 0.217 |
| ULTIMATE STRENGTH (LBS. PER STRAND) | | 58,600 |
| APPLIED PRESTRESS (LBS. PER STRAND) | | 43,950 |

CORED SLABS REQUIRED

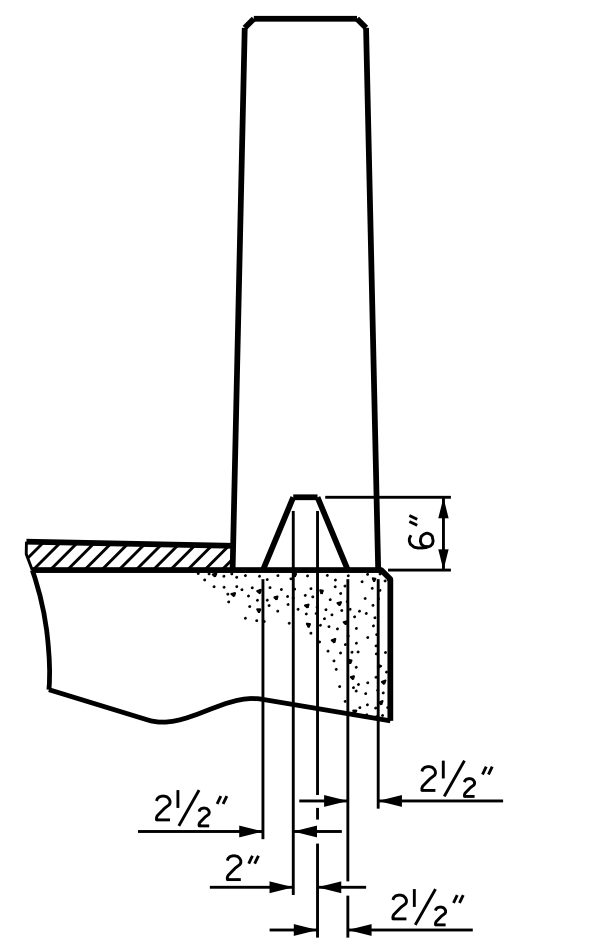
| | NUMBER | LENGTH | TOTAL LENGTH |
|---------------|--------|--------|--------------|
| 55' UNIT | | | |
| EXTERIOR C.S. | 2 | 55'-0" | 110'-0" |
| INTERIOR C.S. | 9 | 55'-0" | 495'-0" |
| TOTAL | 11 | | 605'-0" |



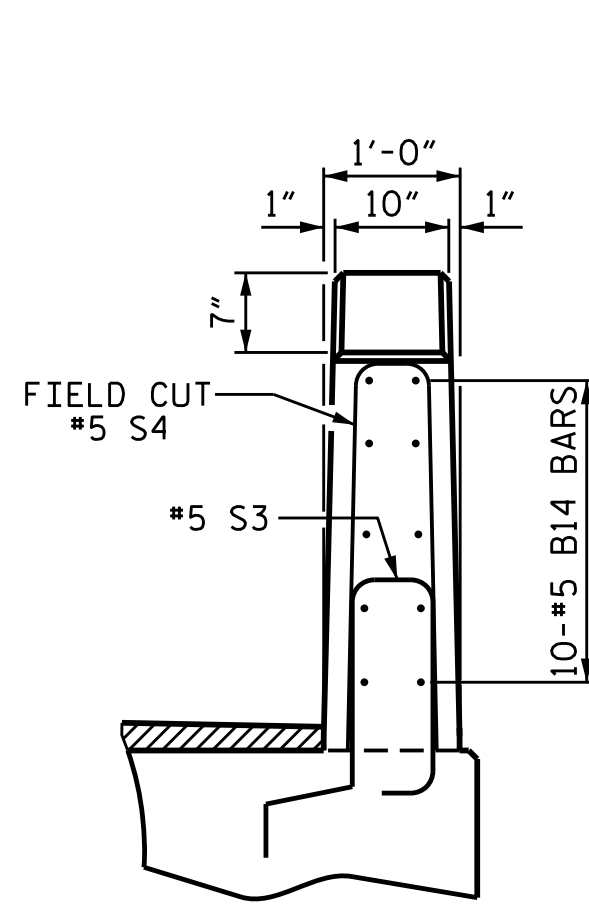
VERTICAL CONCRETE BARRIER RAIL SECTION



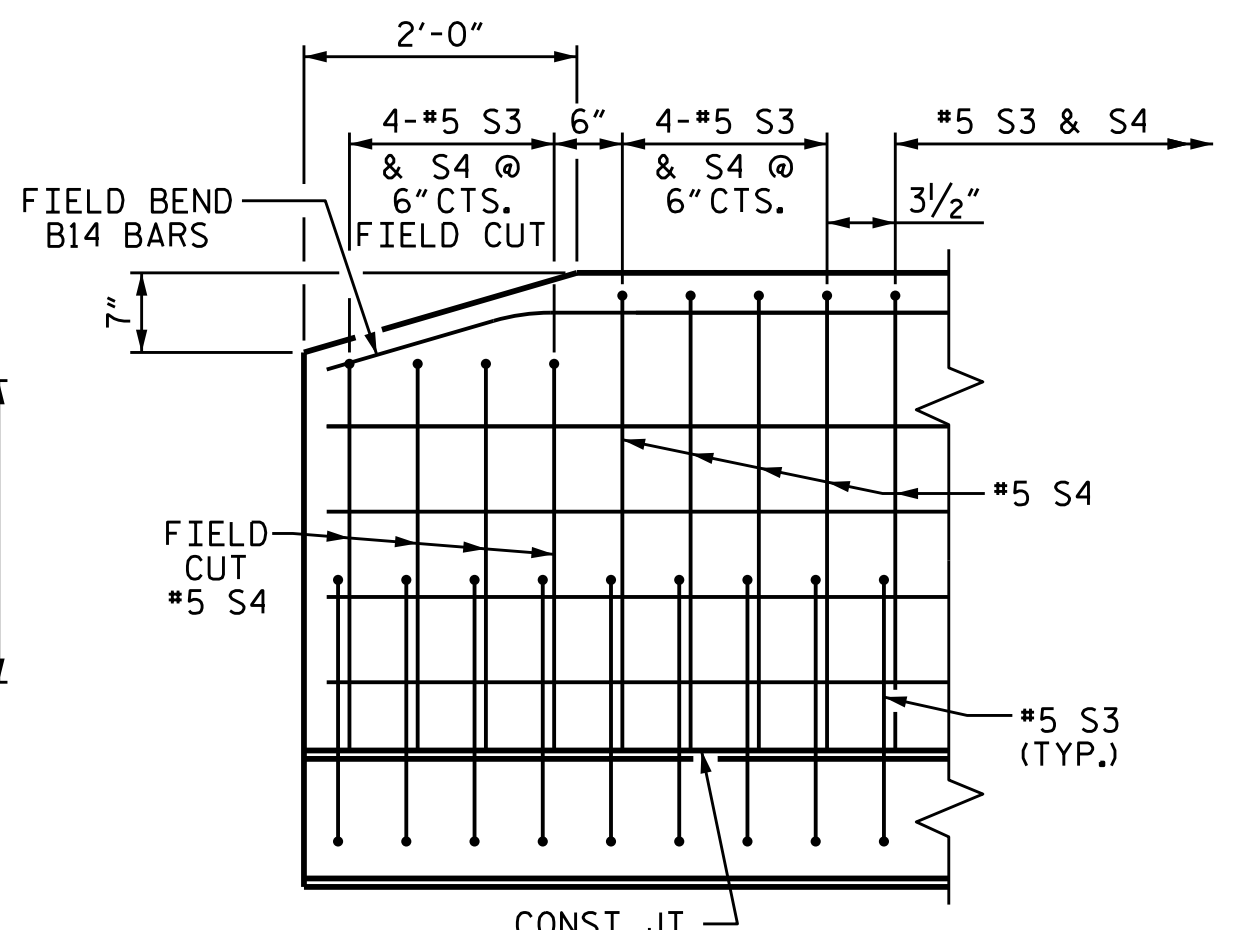
ELEVATION AT EXPANSION JOINTS



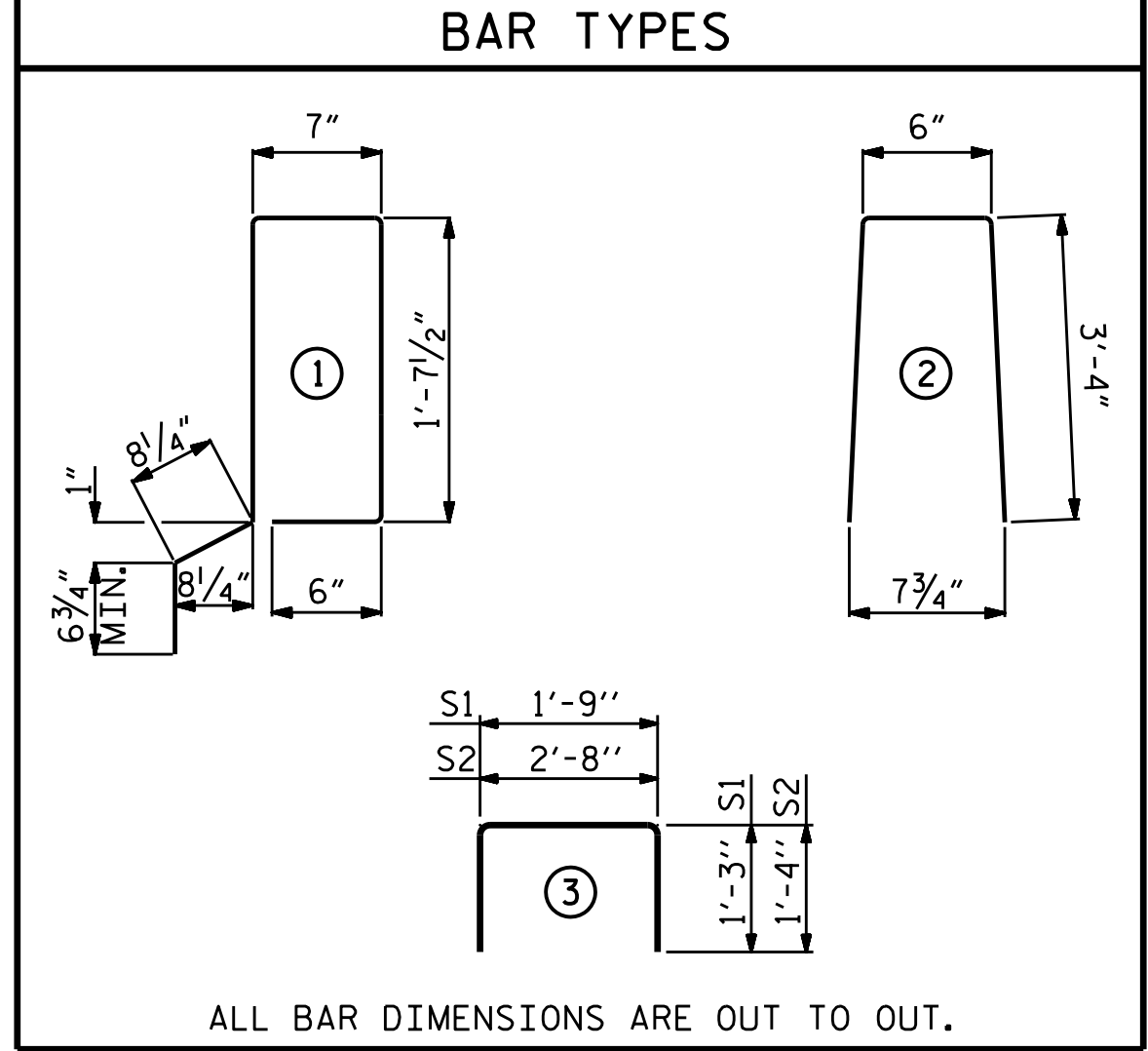
SECTION S-S
AT DAM IN OPEN JOINT
(THIS IS TO BE USED ONLY WHEN SLIP FORM IS USED)



END VIEW



SIDE VIEW



CONCRETE RELEASE STRENGTH

| UNIT | PSI |
|----------|------|
| 55' UNIT | 4900 |

BILL OF MATERIAL FOR VERTICAL CONCRETE BARRIER RAIL

| BAR | BARS PER PAIR OF EXTERIOR UNITS | TOTAL NO. | SIZE | TYPE | LENGTH | WEIGHT |
|--------------------------------------|---------------------------------|-----------|------|------|----------|--------|
| | 55' UNIT | | | | | |
| * B14 | 40 | 40 | #5 | STR | 27'-1" | 1130 |
| * S4 | 128 | 128 | #5 | 2 | 7'-2" | 957 |
| * EPOXY COATED REINFORCING STEEL | | | | | LBS. | 2087 |
| CLASS AA CONCRETE | | | | | CU. YDS. | 14.1 |
| TOTAL VERTICAL CONCRETE BARRIER RAIL | | | | | LN. FT. | 110.25 |

GUTTERLINE ASPHALT THICKNESS & RAIL HEIGHT

| | ASPHALT OVERLAY THICKNESS | RAIL HEIGHT |
|----------|---------------------------|-------------|
| | @ MID-SPAN | @ MID-SPAN |
| 55' UNIT | 1 5/8" | 3'-7 7/8" |

NOTES

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

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

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

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

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

WHEN CORED SLABS ARE CAST, AN INTERNAL HOLD-DOWN SYSTEM SHALL BE EMPLOYED TO PREVENT VOIDS FROM RISING OR MOVING SIDWAYS. AT LEAST SIX WEEKS PRIOR TO CASTING CORED SLABS, THE CONTRACTOR SHALL SUBMIT TO THE ENGINEER FOR REVIEW AND COMMENT, DETAILED DRAWINGS OF THE PROPOSED HOLD-DOWN SYSTEM. IN ADDITION TO STRUCTURAL DETAILS, LOCATION AND SPACING OF THE HOLD-DOWNS SHALL BE INDICATED.

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

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

APPLY EPOXY PROTECTIVE COATING TO CORED SLAB UNIT ENDS.

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 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.

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

THE TRANSFER OF LOAD FROM THE ANCHORAGES TO THE CORED SLAB UNIT SHALL BE DONE WHEN THE CONCRETE HAS REACHED A COMPRESSIVE STRENGTH OF NOT LESS THAN THE REQUIRED STRENGTH SHOWN IN THE "CONCRETE RELEASE STRENGTH" TABLE.

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.

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ROBESON COUNTY
 STATION: 16+56.50 -L-

SHEET 3 OF 3

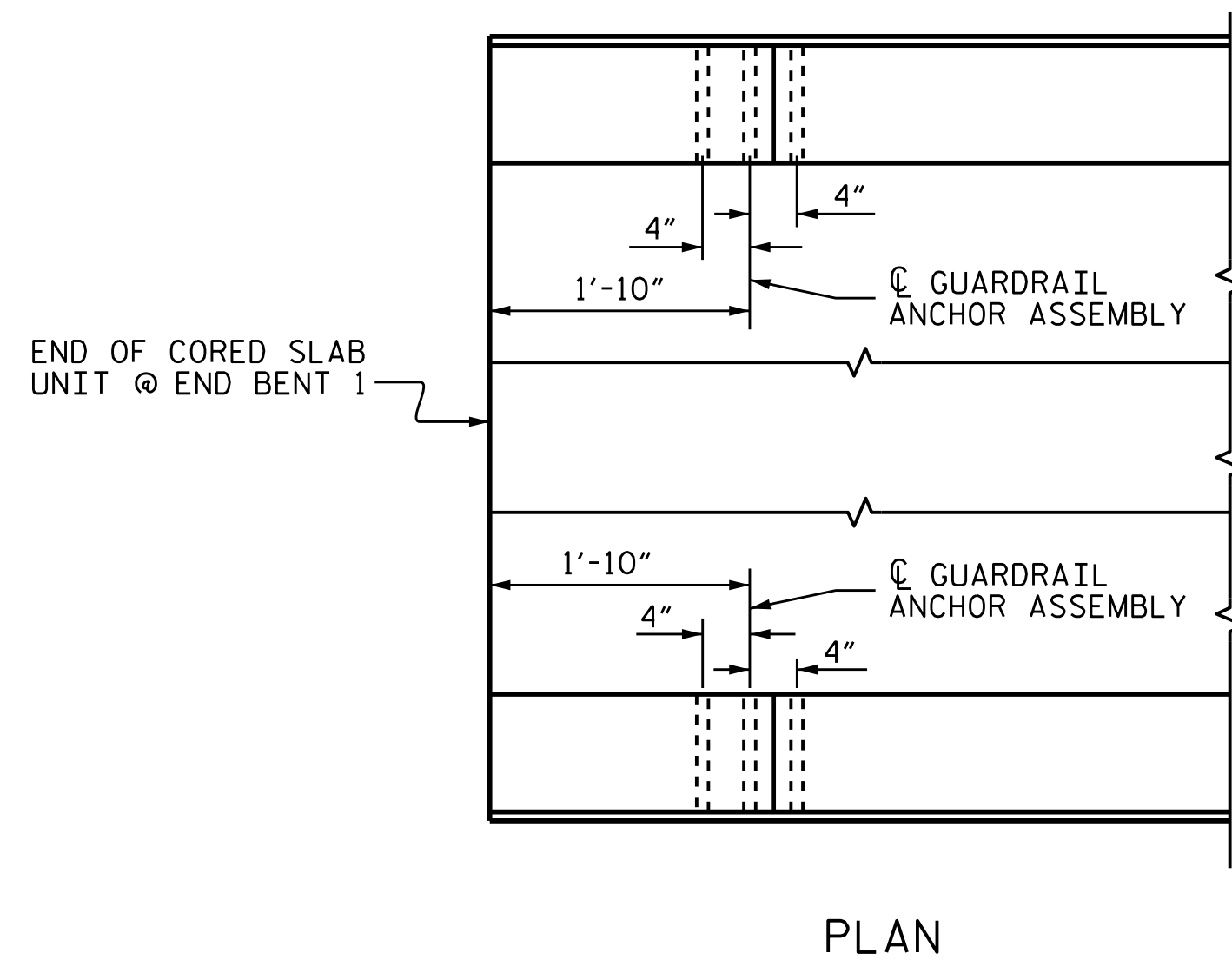
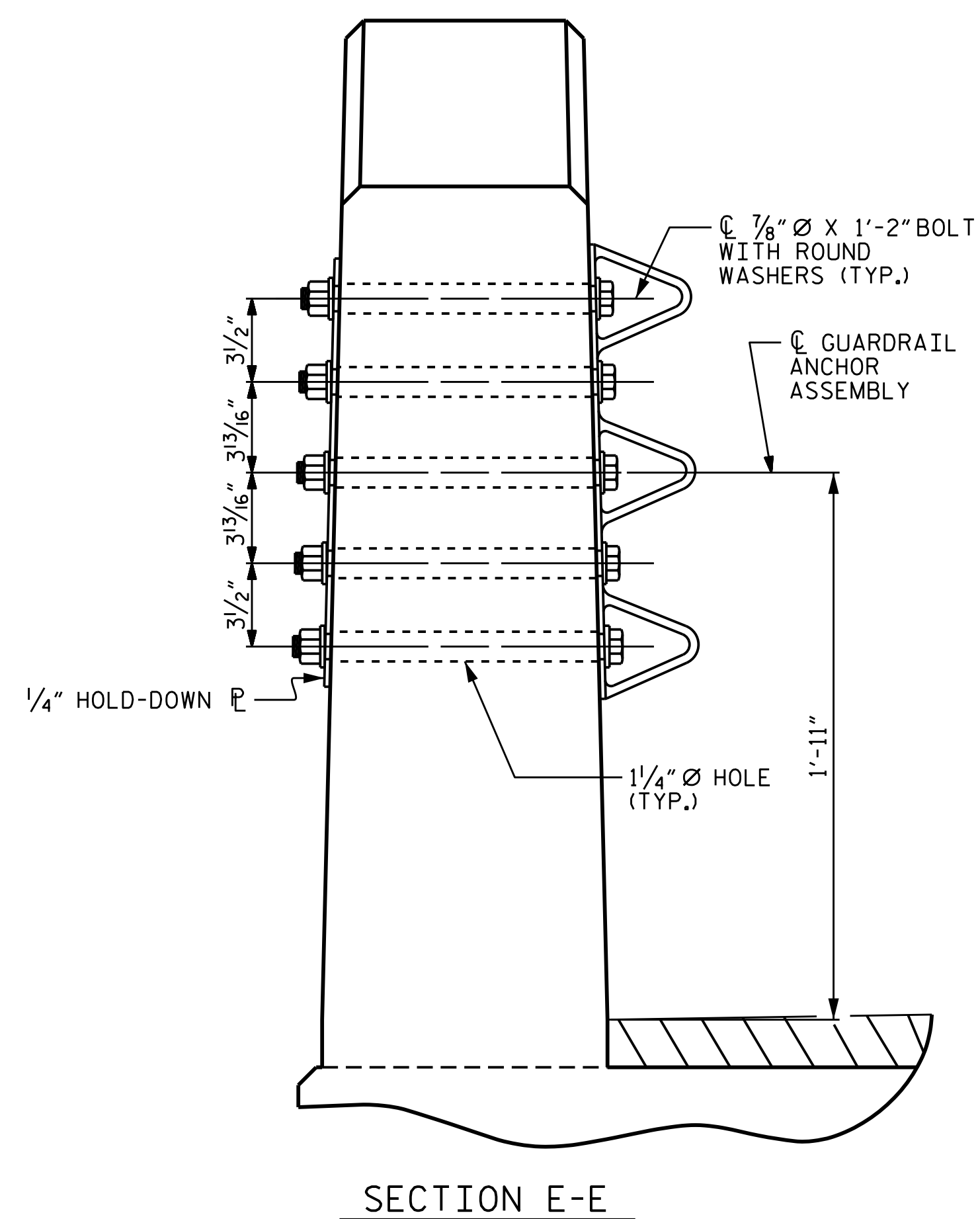
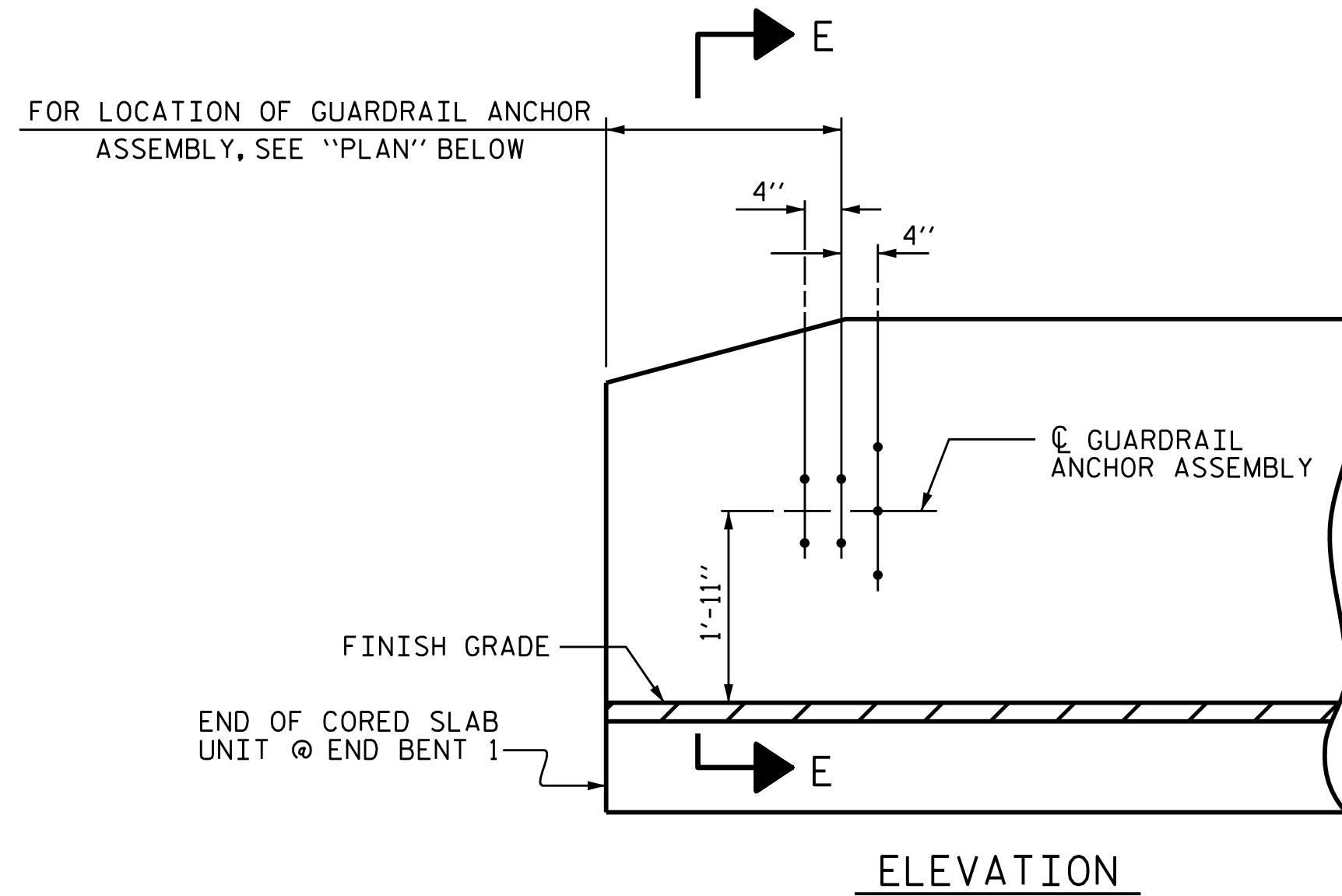
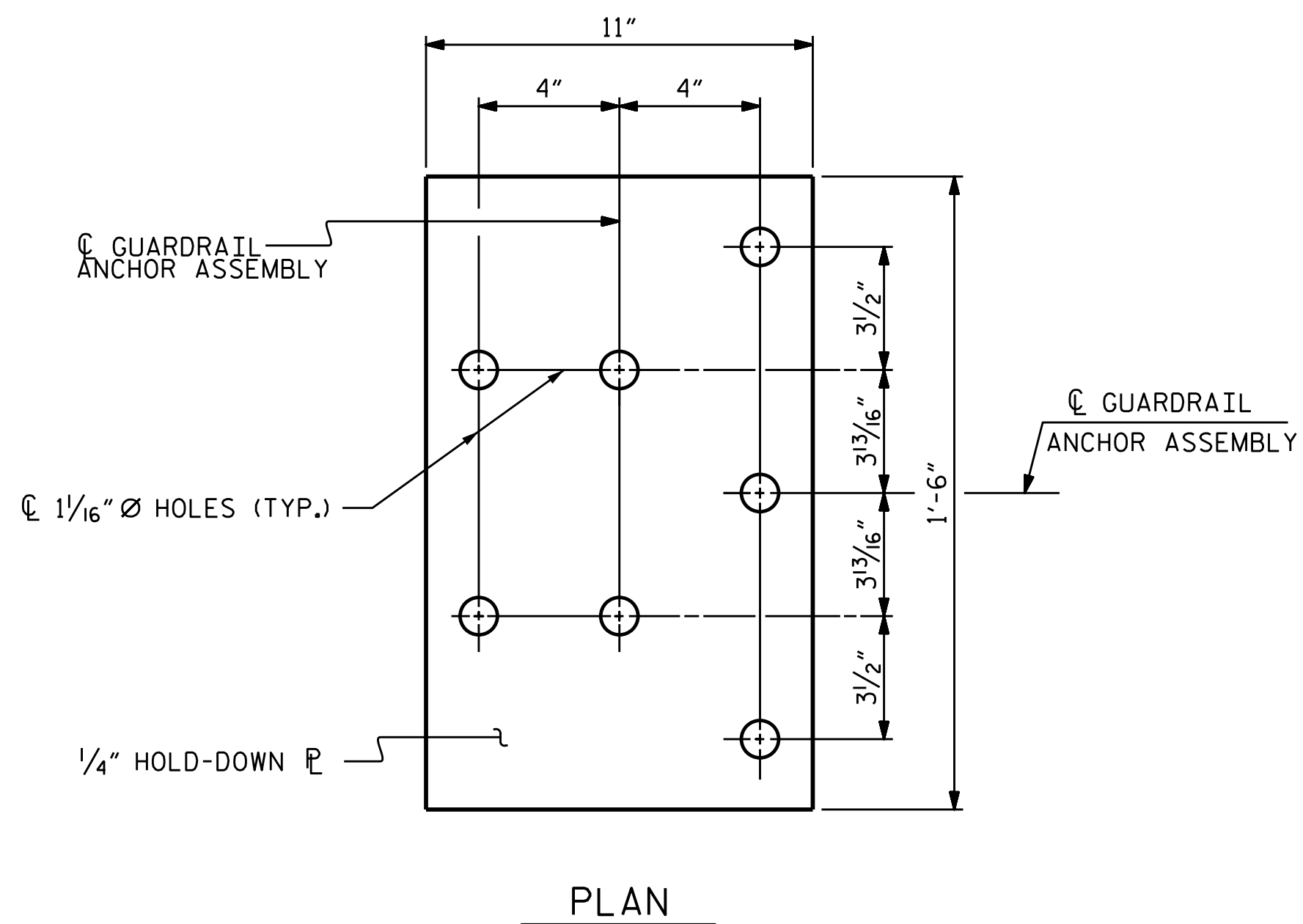


STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH
 STANDARD
 3'-0" X 1'-9"
 PRESTRESSED CONCRETE
 CORED SLAB UNIT
 90° SKEW

| REVISIONS | | | | | | SHEET NO. |
|-----------|-----|-------|-----|-----|-------|--------------|
| NO. | BY: | DATE: | NO. | BY: | DATE: | S-7 |
| 1 | | | 3 | | | TOTAL SHEETS |
| 2 | | | 4 | | | 14 |

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| | |
|-----------------------------|-----------------|
| ASSEMBLED BY : R. P. PATEL | DATE : 08-02-16 |
| CHECKED BY : J. P. MCCARTHA | DATE : 08-10-16 |
| DRAWN BY : DGE 5/09 | REV. 11/14 |
| CHECKED BY : BCH 6/09 | MAA/TMC |



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.



SKETCH SHOWING POINTS OF ATTACHMENT

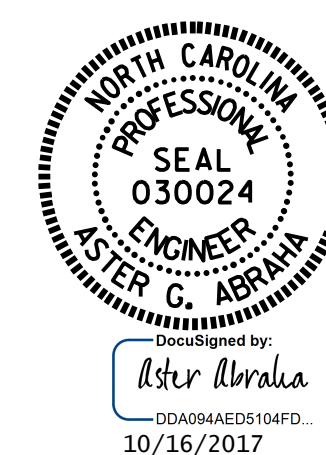
* DENOTES GUARDRAIL ANCHOR ASSEMBLY

GUARDRAIL ANCHOR ASSEMBLY DETAILS

LOCATION OF ANCHORS FOR GUARDRAIL

END BENT 1 SHOWN, END BENT 2 SIMILAR

PROJECT NO. B-5334
ROBESON COUNTY
 STATION: 16+56.50 -L-

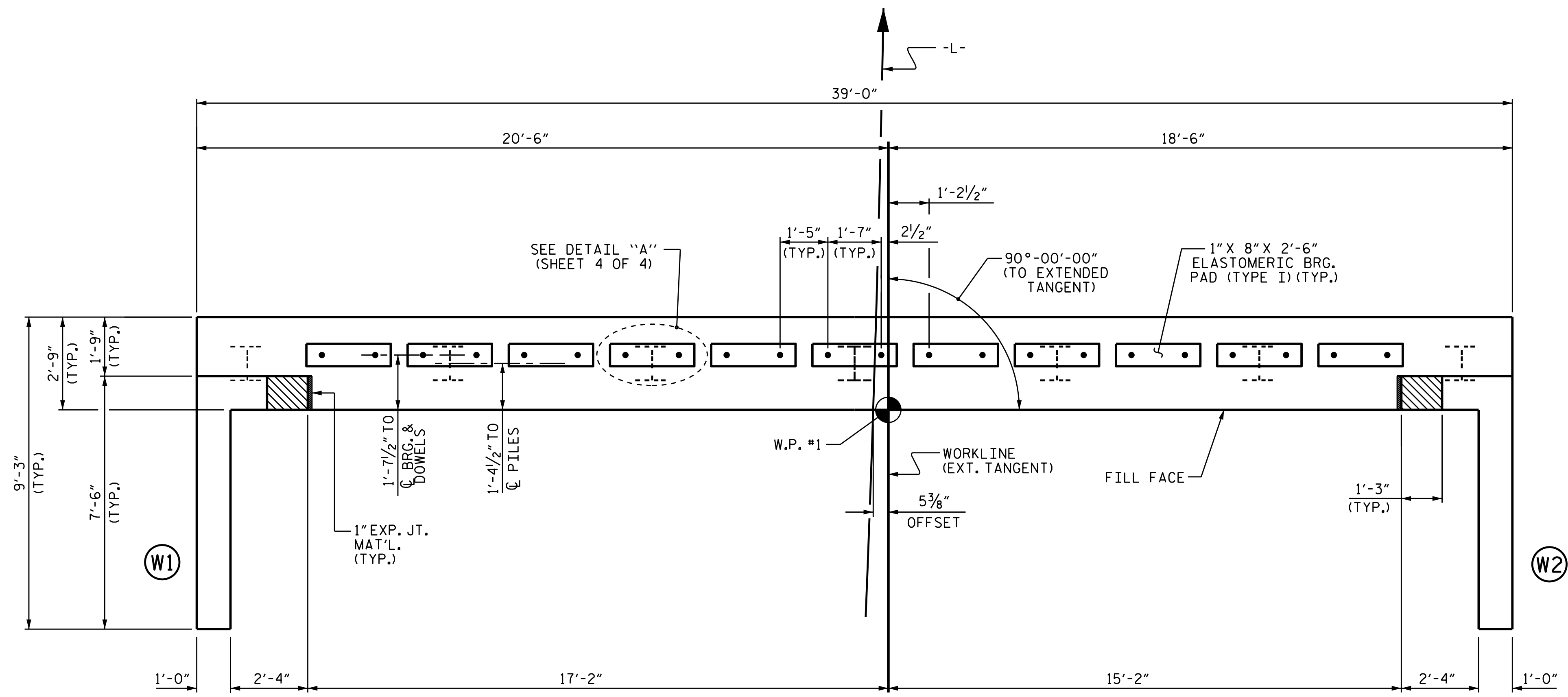


STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH
 STANDARD
 GUARDRAIL ANCHORAGE
 DETAILS
 FOR VERTICAL CONCRETE
 BARRIER RAIL

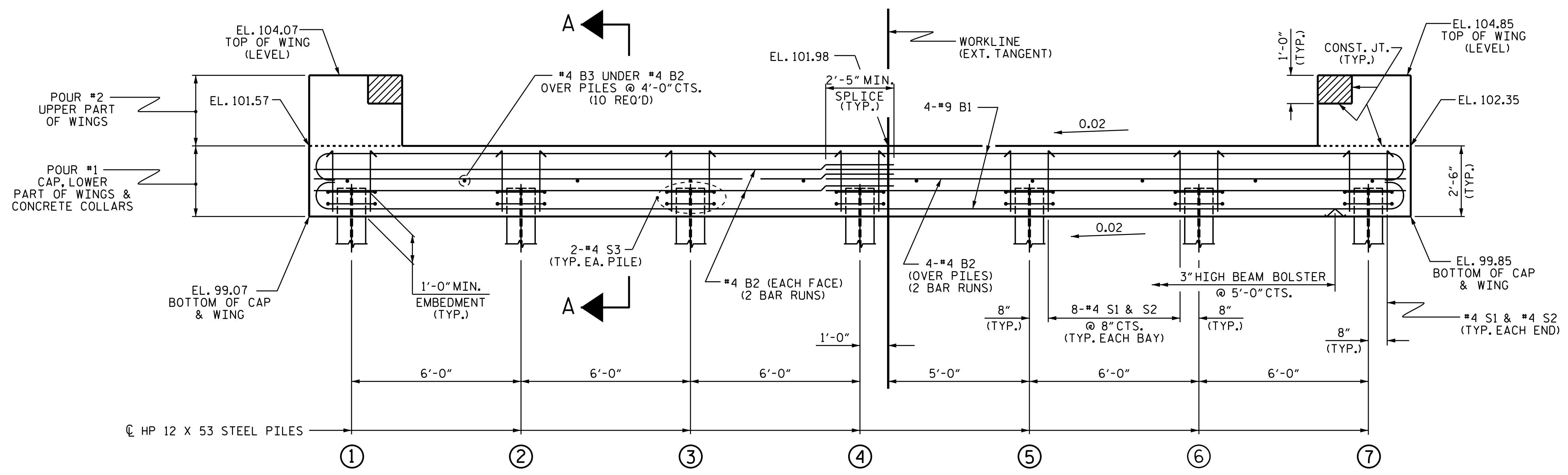
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| ASSEMBLED BY : R. P. PATEL | DATE : 08-02-16 |
| CHECKED BY : J. P. MCCARTHA | DATE : 08-10-16 |
| DRAWN BY : MAA 5/10 | REV. 12/5/11 MAA/GM |
| CHECKED BY : GM 5/10 | REV. 6/13 MAA/GM |
| | REV. 1/15 MAA/TMG |

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| NO. | BY: | DATE: | NO. | BY: | DATE: | TOTAL SHEETS |
| 1 | | | 3 | | | 8 |
| 2 | | | 4 | | | 14 |



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.

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.

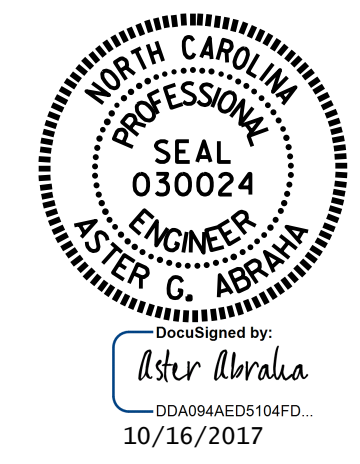
FOR WING DETAILS, SEE SHEET 3 OF 4.

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

| TOP OF PILE ELEVATIONS | |
|------------------------|--------|
| ① | 100.10 |
| ② | 100.22 |
| ③ | 100.34 |
| ④ | 100.46 |
| ⑤ | 100.58 |
| ⑥ | 100.70 |
| ⑦ | 100.82 |

PROJECT NO. B-5334
ROBESON COUNTY
 STATION: 16+56.50 -L-

SHEET 1 OF 4



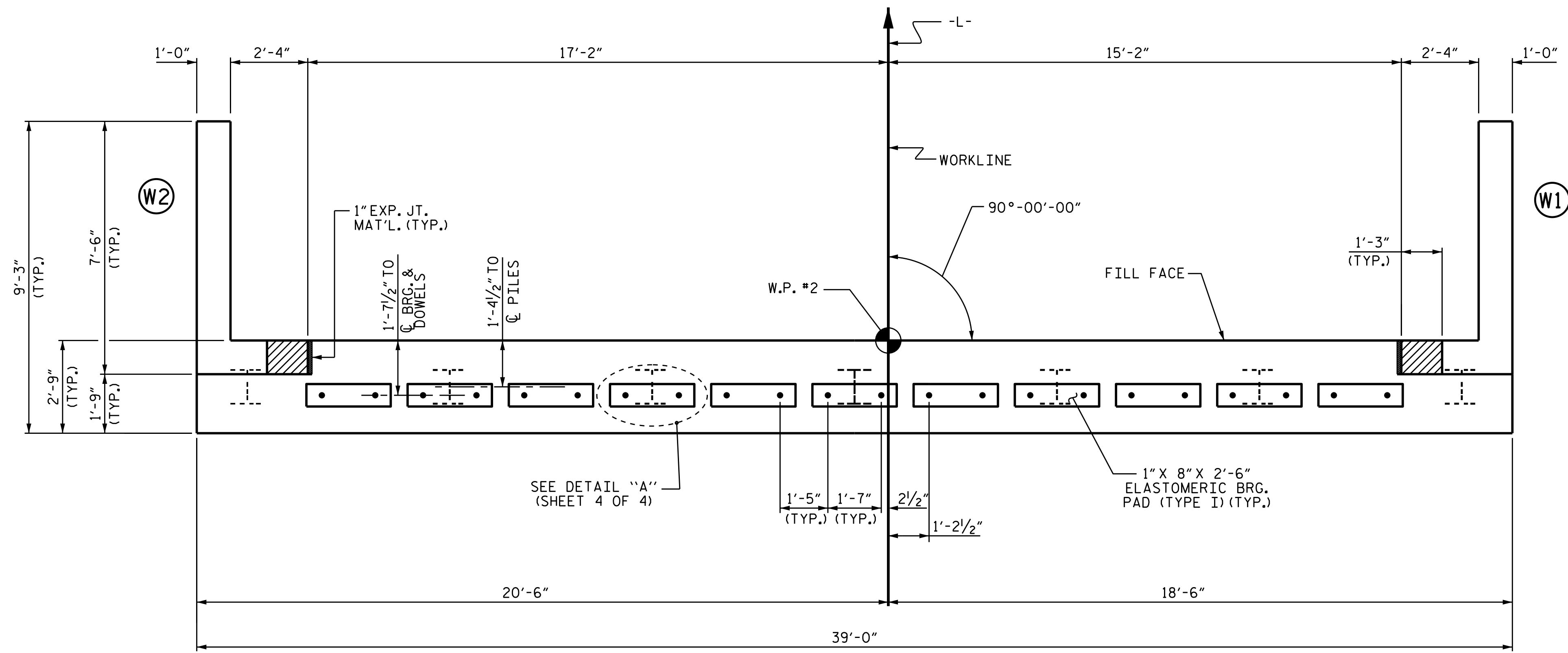
STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

SUBSTRUCTURE
 END BENT No. 1

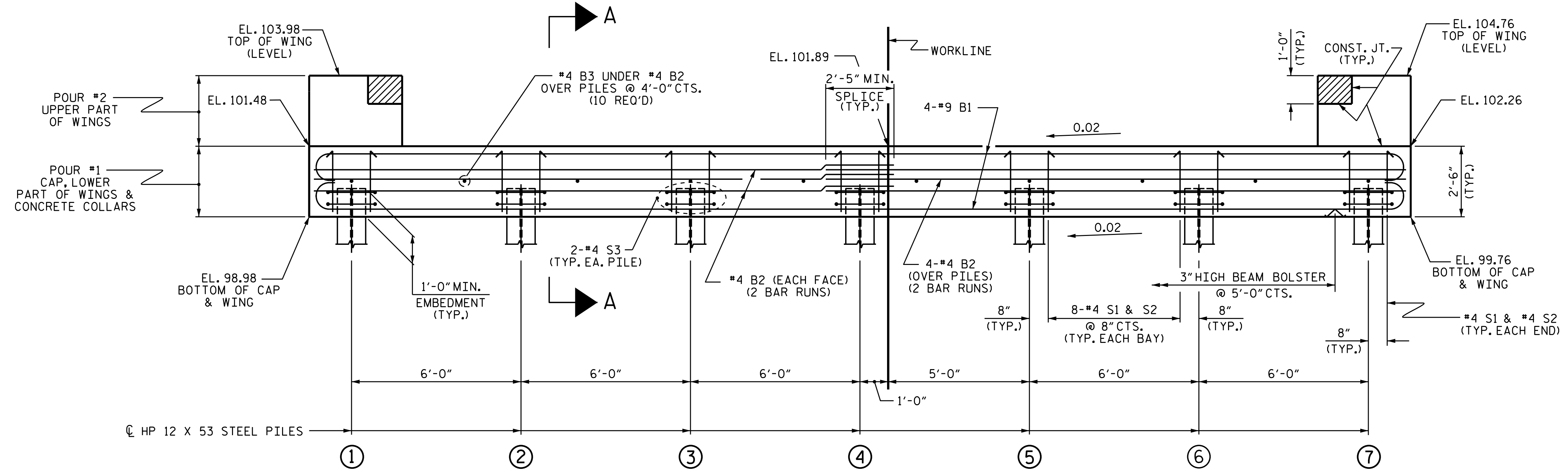
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| ASSEMBLED BY : R. P. PATEL | DATE : 08-02-16 |
| CHECKED BY : S. B. WILLIAMS | DATE : 3/17 |
| DRAWN BY : DGE 01/10 | REV. 4/15 |
| CHECKED BY : MKT 01/10 | MAA/TMG |

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| REVISIONS | | | | | | SHEET NO. |
|-----------|-----|-------|-----|-----|-------|--------------|
| NO. | BY: | DATE: | NO. | BY: | DATE: | S-9 |
| 1 | | | 3 | | | TOTAL SHEETS |
| 2 | | | 4 | | | 14 |



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.

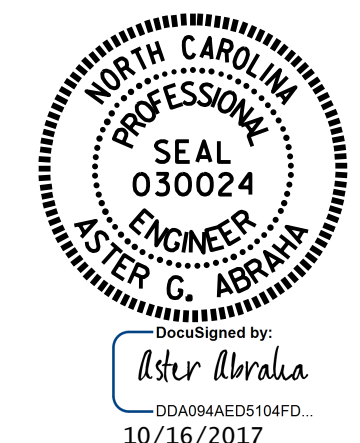
NOTES

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

| TOP OF PILE ELEVATIONS | |
|------------------------|--------|
| ① | 100.02 |
| ② | 100.14 |
| ③ | 100.26 |
| ④ | 100.38 |
| ⑤ | 100.50 |
| ⑥ | 100.62 |
| ⑦ | 100.74 |

PROJECT NO. B-5334
ROBESON COUNTY
 STATION: 16+56.50 -L-

SHEET 2 OF 4



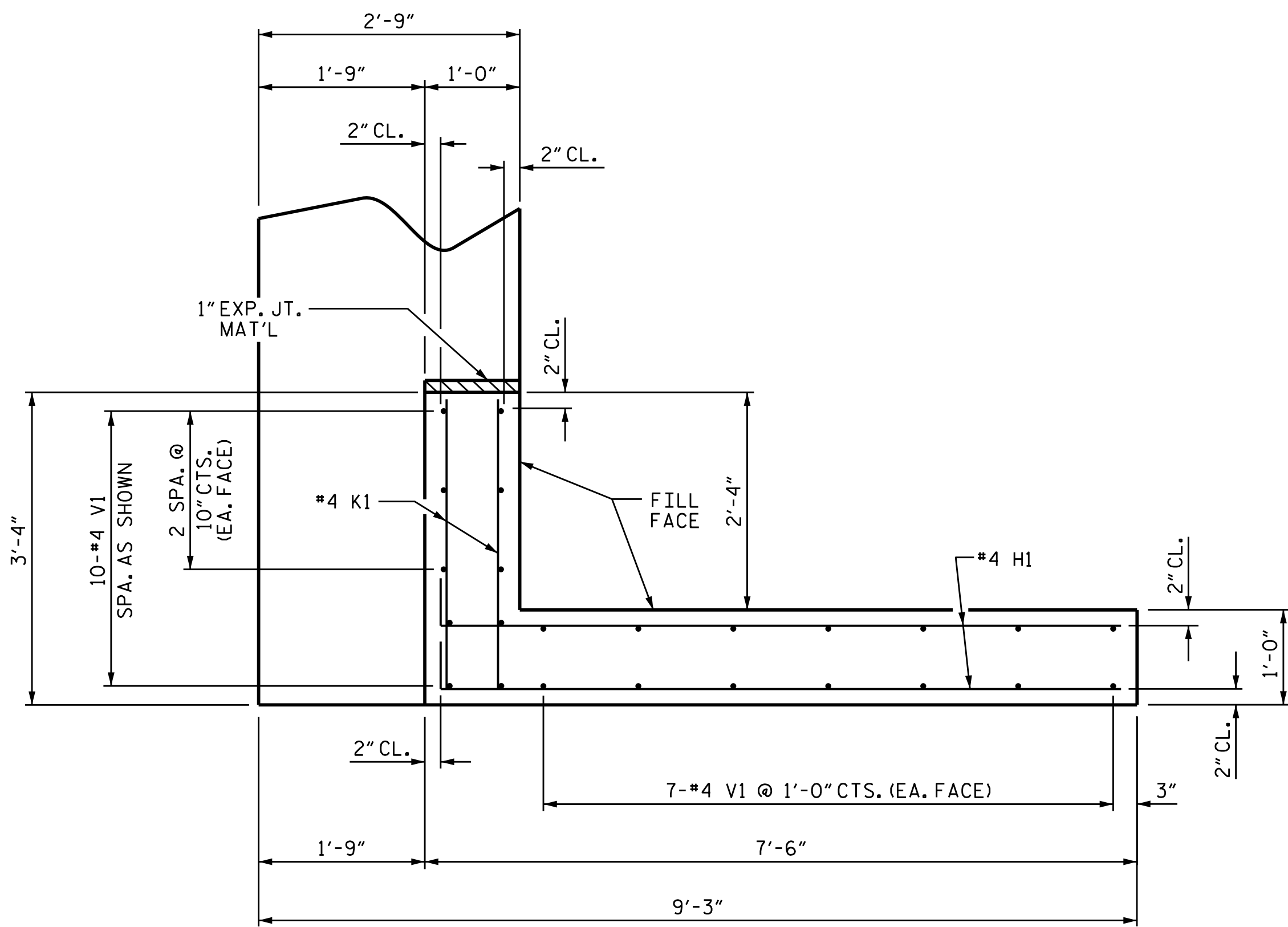
STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

SUBSTRUCTURE
 END BENT No. 2

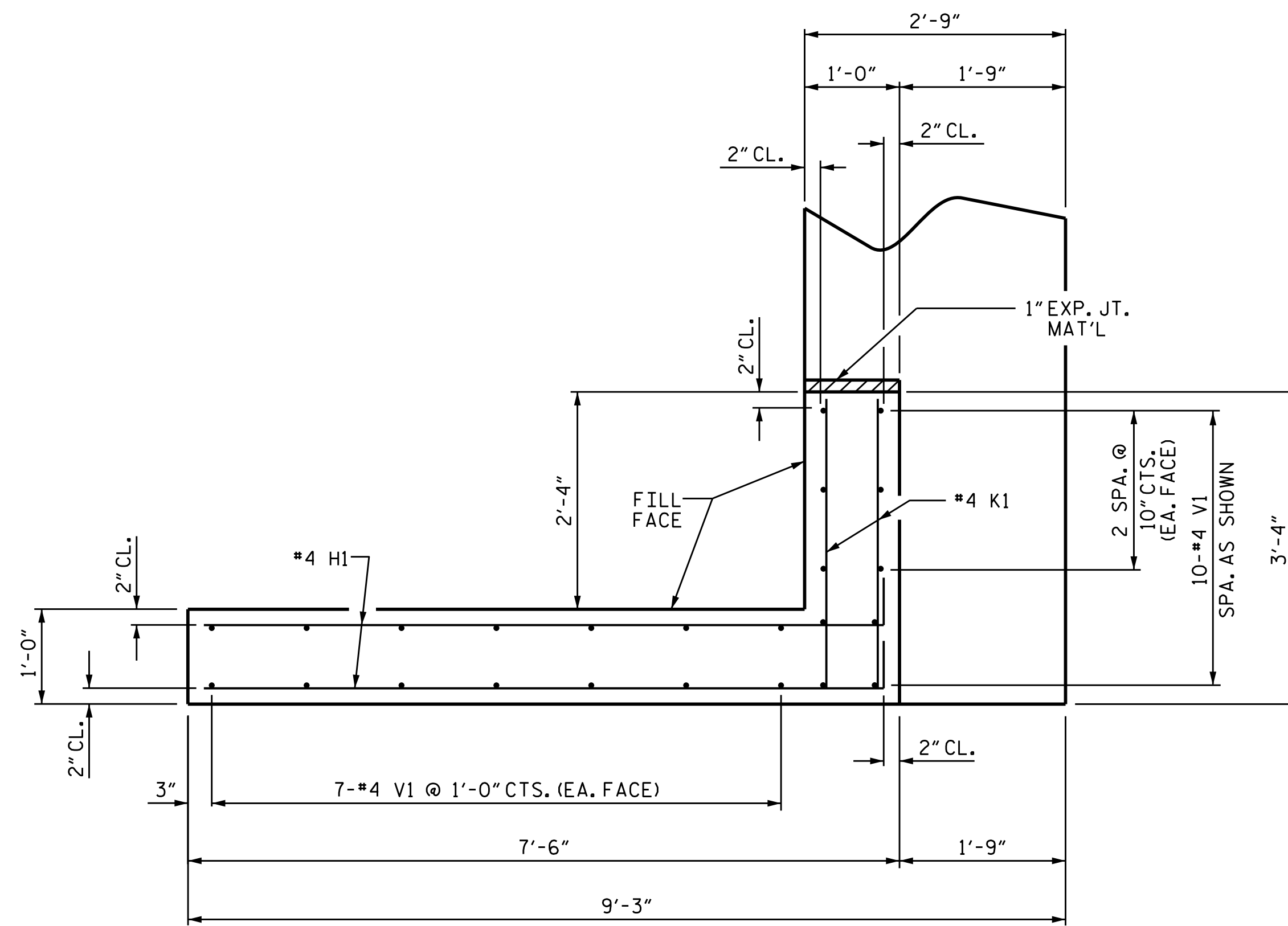
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| ASSEMBLED BY : R. P. PATEL | DATE : 08-02-16 |
| CHECKED BY : S. B. WILLIAMS | DATE : 3/17 |
| DRAWN BY : DGE | 01/10 |
| CHECKED BY : MKT | 01/10 |
| REV. 4/15 | MAA/TMG |

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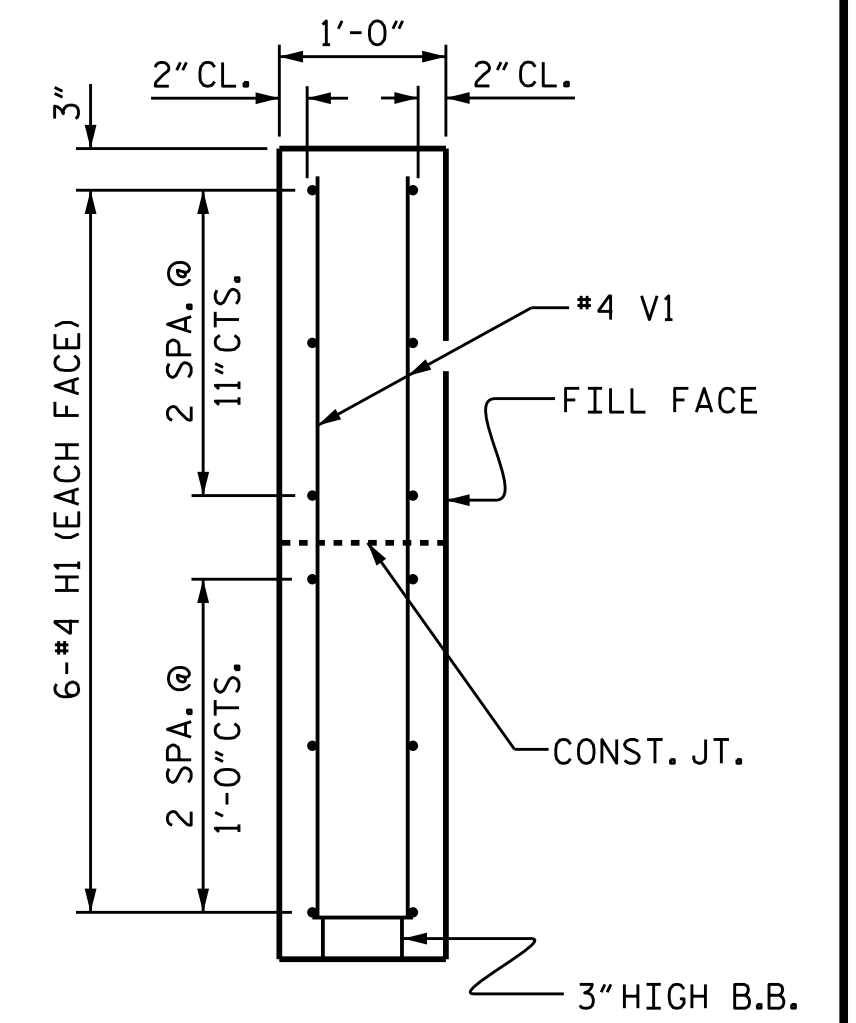
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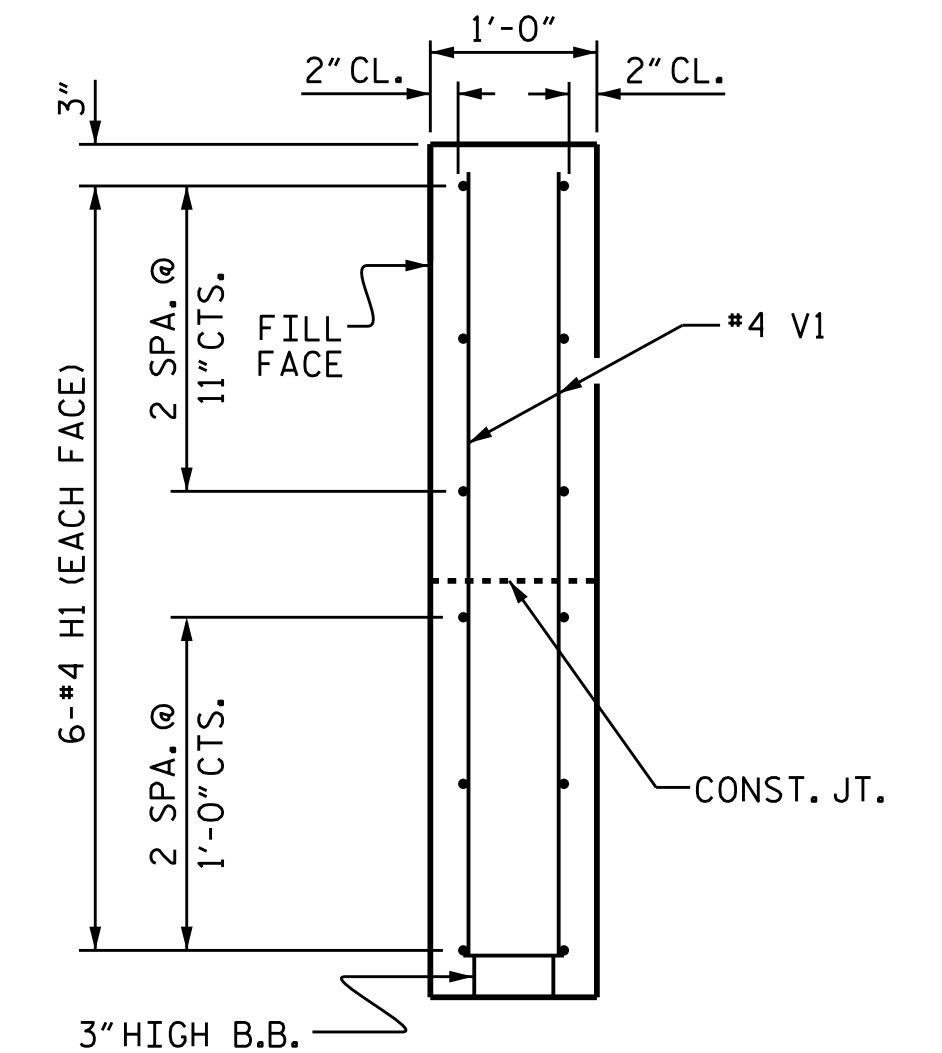
PLAN OF WING (W1)



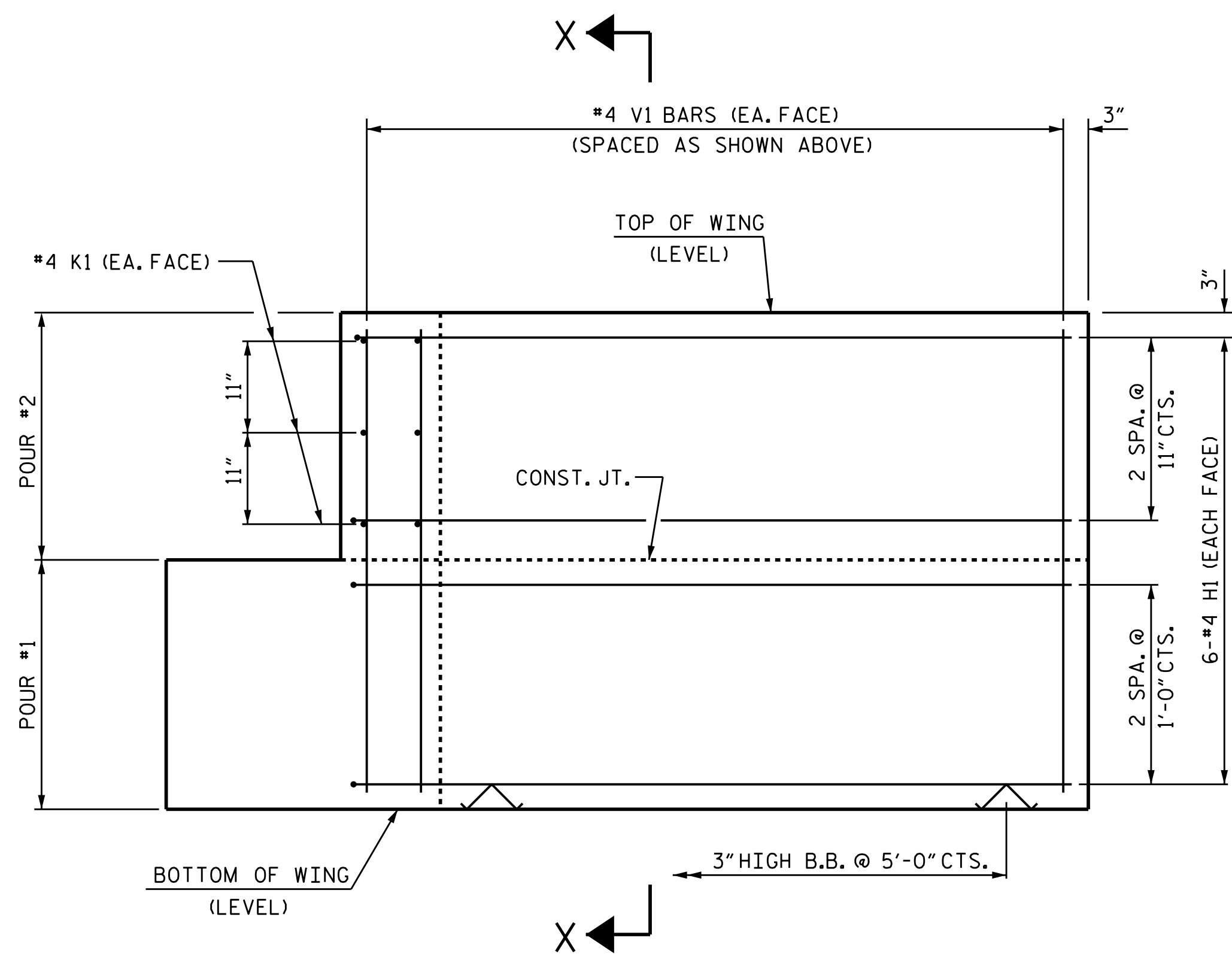
PLAN OF WING (W2)



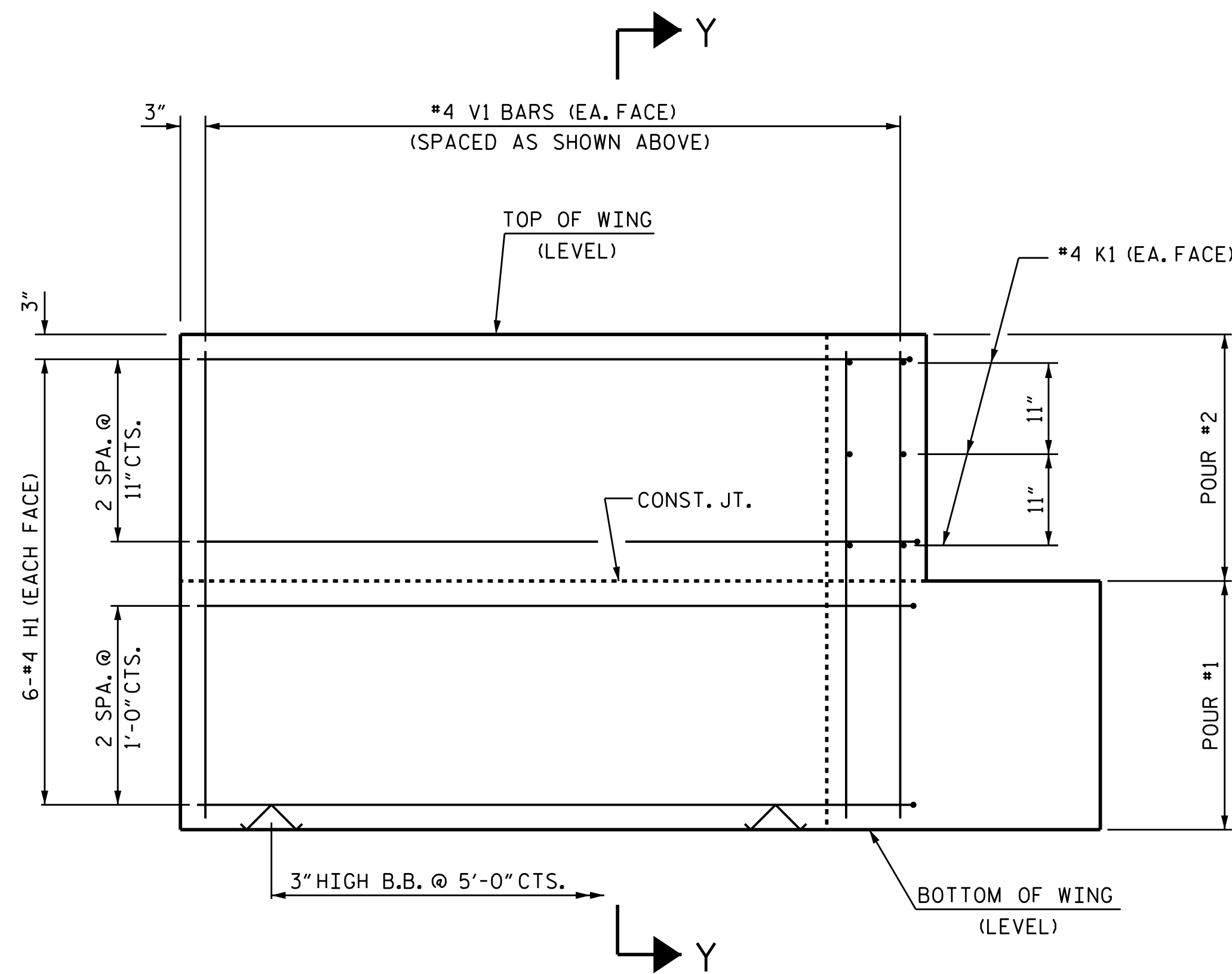
SECTION X-X



SECTION Y-Y



ELEVATION OF WING (W1)

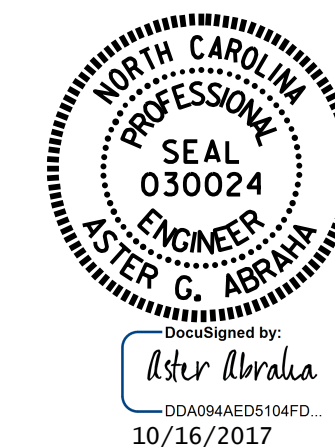


ELEVATION OF WING (W2)

WING DETAILS

ASSEMBLED BY : R. P. PATEL DATE : 08-02-16
 CHECKED BY : S. B. WILLIAMS DATE : 3/17
 DRAWN BY : DGE 02/10
 CHECKED BY : MKT 02/10 REV. 4/15 MAA/TMG

16-OCT-2017 16:30
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 SIGNATURES COMPLETED

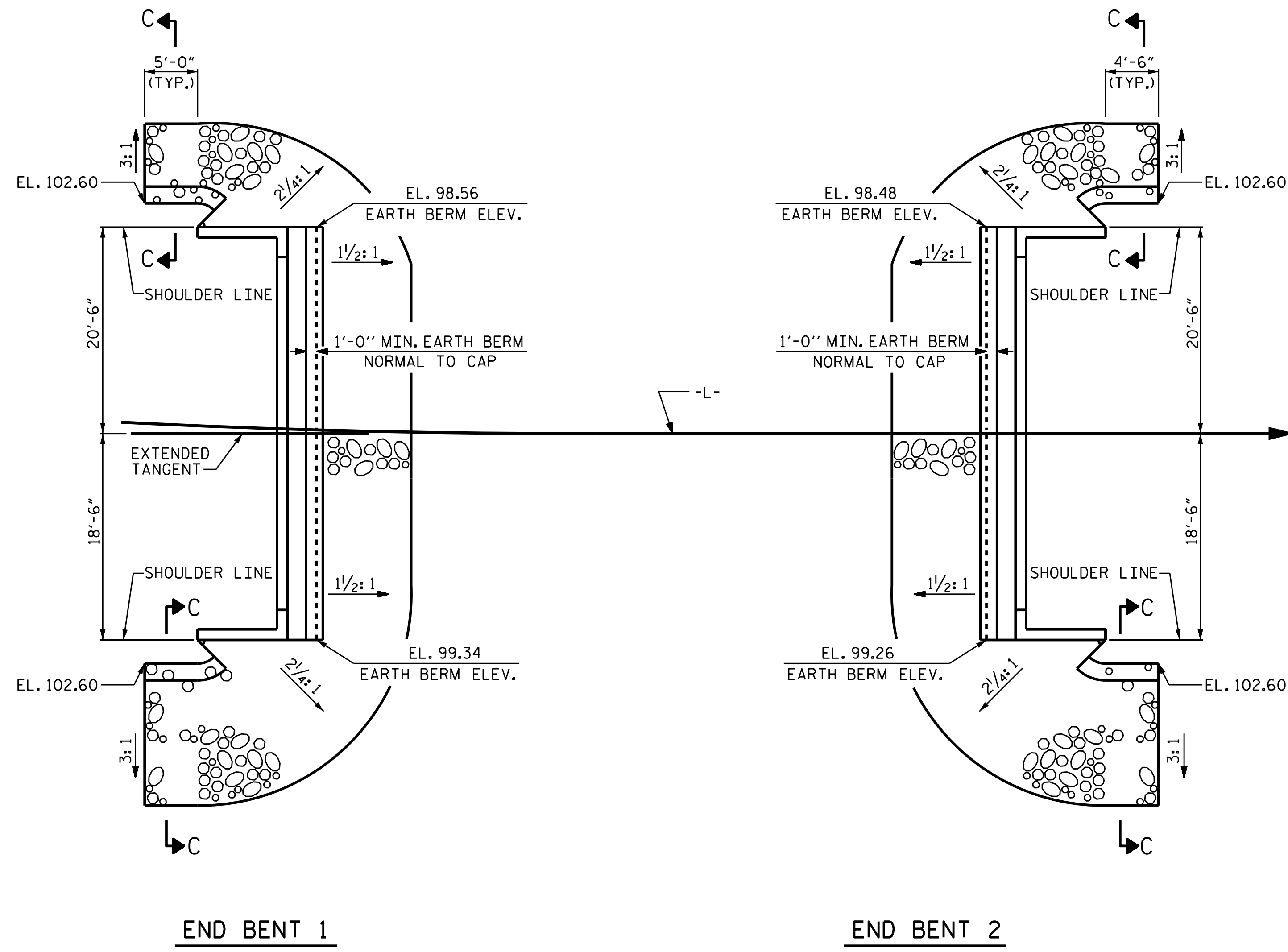
PROJECT NO. B-5334
ROBESON COUNTY
 STATION: 16+56.50 -L-
 SHEET 3 OF 4

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

SUBSTRUCTURE
 END BENT
 WING DETAILS

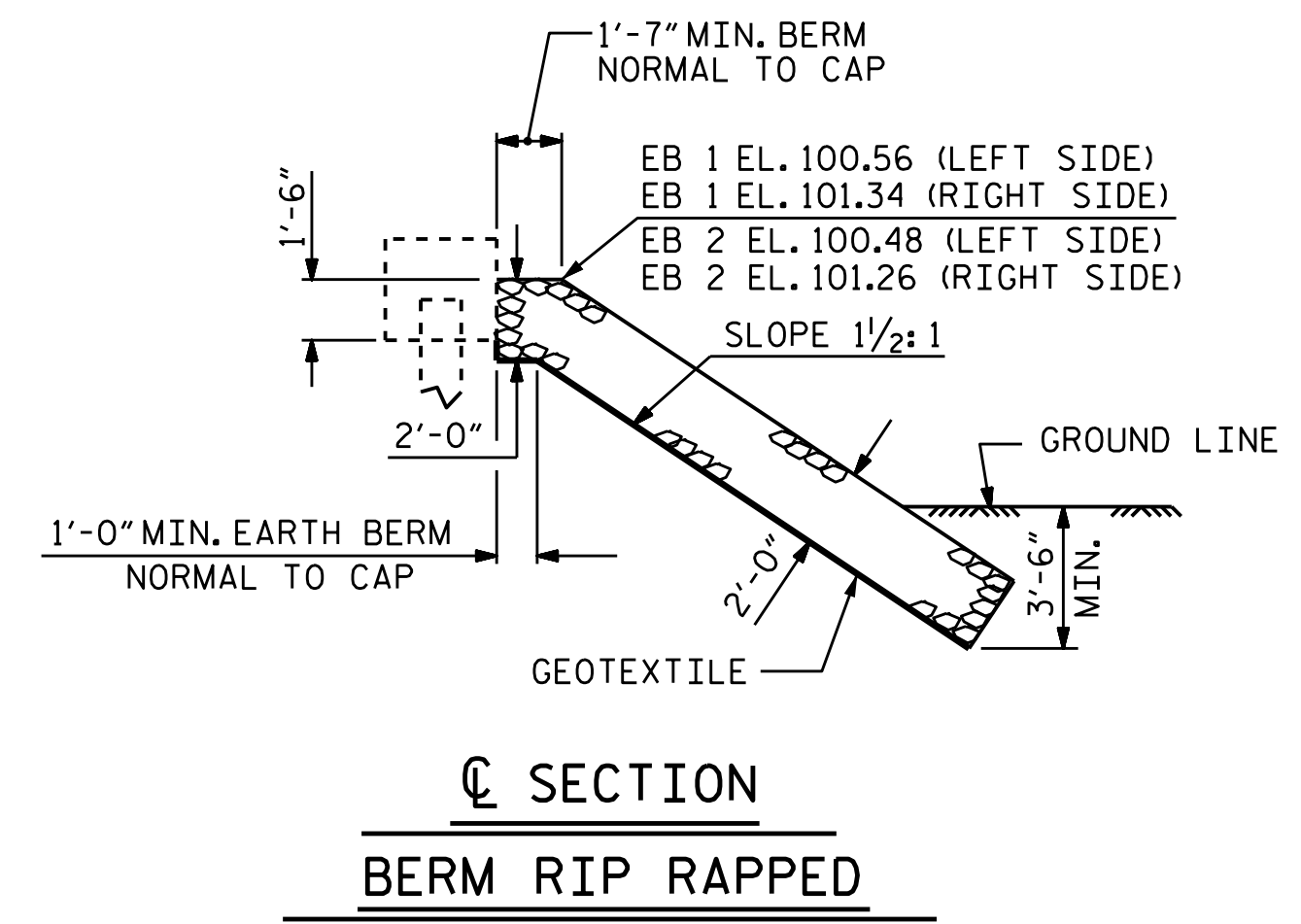
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|-----------|-----|-------|-----|-----|-------|-----------------|--|
| NO. | BY: | DATE: | NO. | BY: | DATE: | S-11 | |
| 1 | | | 3 | | | TOTAL SHEETS 14 | |
| 2 | | | 4 | | | | |

STD. NO. EB-33-90S

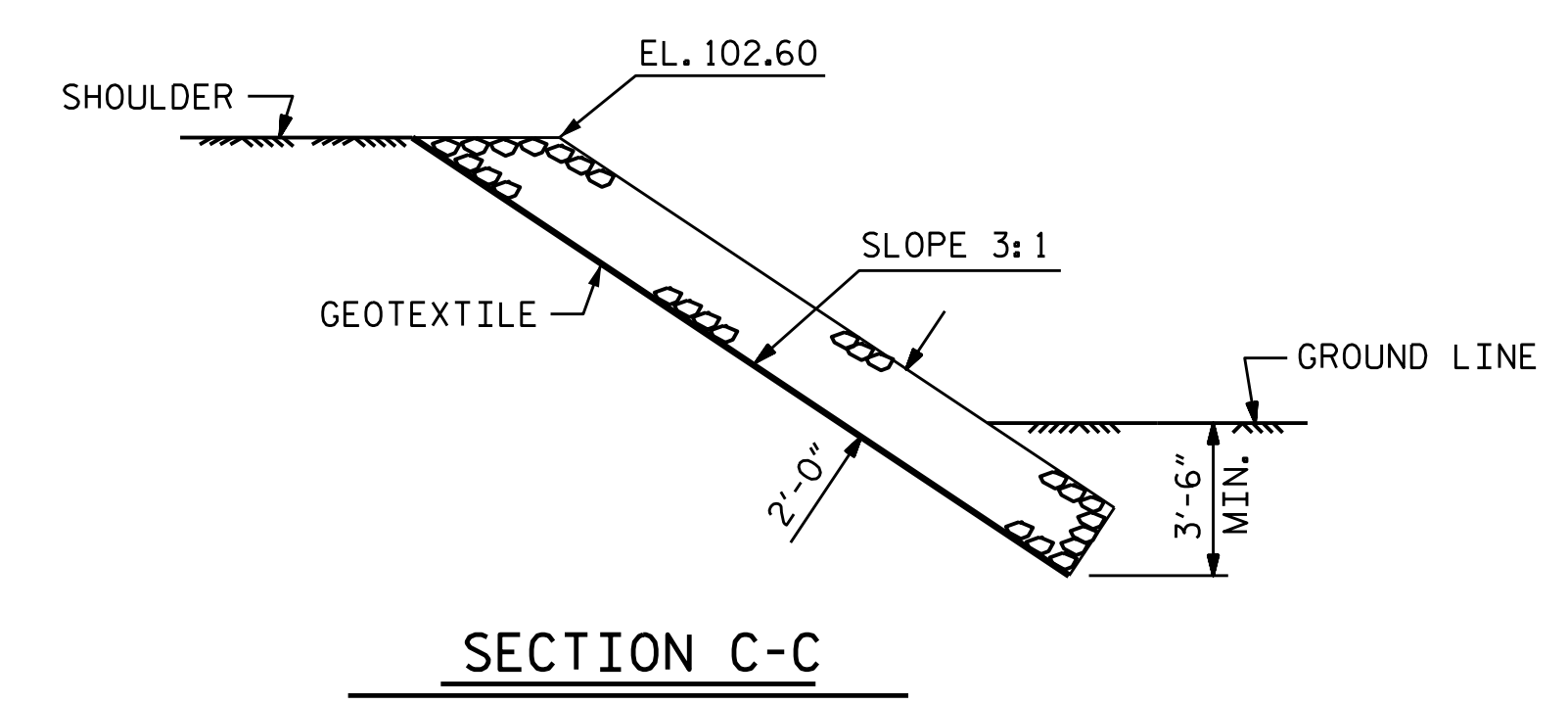


PLAN

| ESTIMATED QUANTITIES | | |
|-------------------------------|--------------------------------------|----------------------------|
| BRIDGE @ STA. 16+56.50 -L- | RIP RAP CLASS II (2'-0" THICK) | GEOTEXTILE FOR DRAINAGE |
| | TONS | SQUARE YARDS |
| END BENT 1 | 185 | 195 |
| END BENT 2 | 205 | 215 |

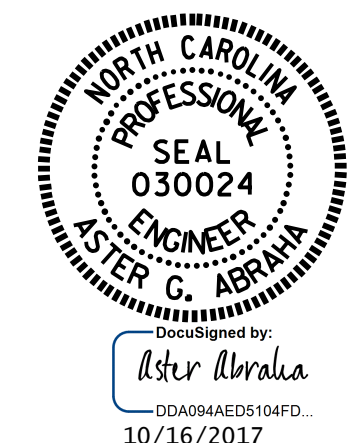


SECTION
BERM RIP RAPPED



SECTION C-C

PROJECT NO. B-5334
ROBESON COUNTY
 STATION: 16+56.50 -L-

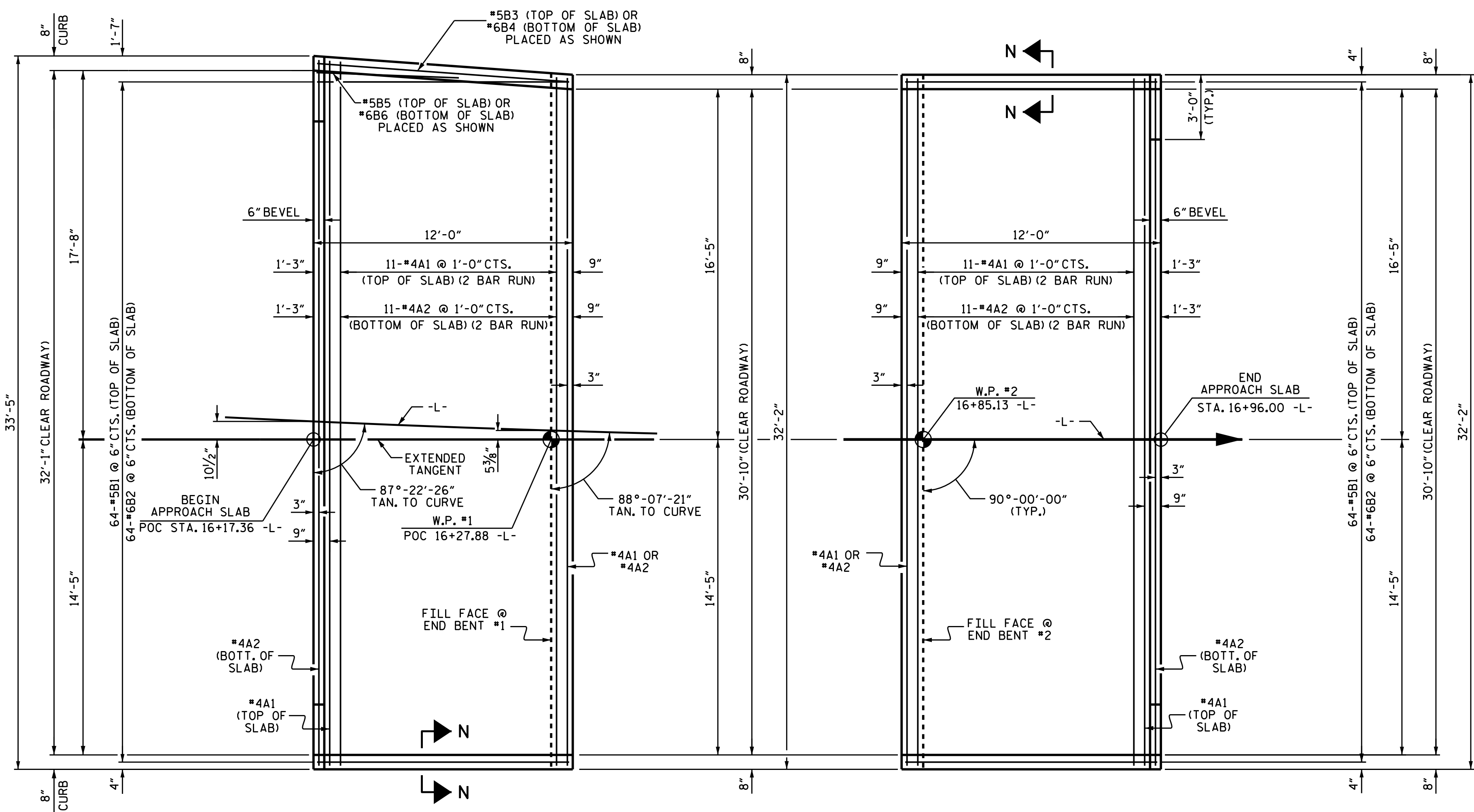


STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH
 STANDARD
 RIP RAP DETAILS

| | |
|-----------------------------|---------------------|
| ASSEMBLED BY : M.K. BEARD | DATE : 8/11/16 |
| CHECKED BY : S. B. WILLIAMS | DATE : 3/17 |
| 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 |

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 | | | 14 |

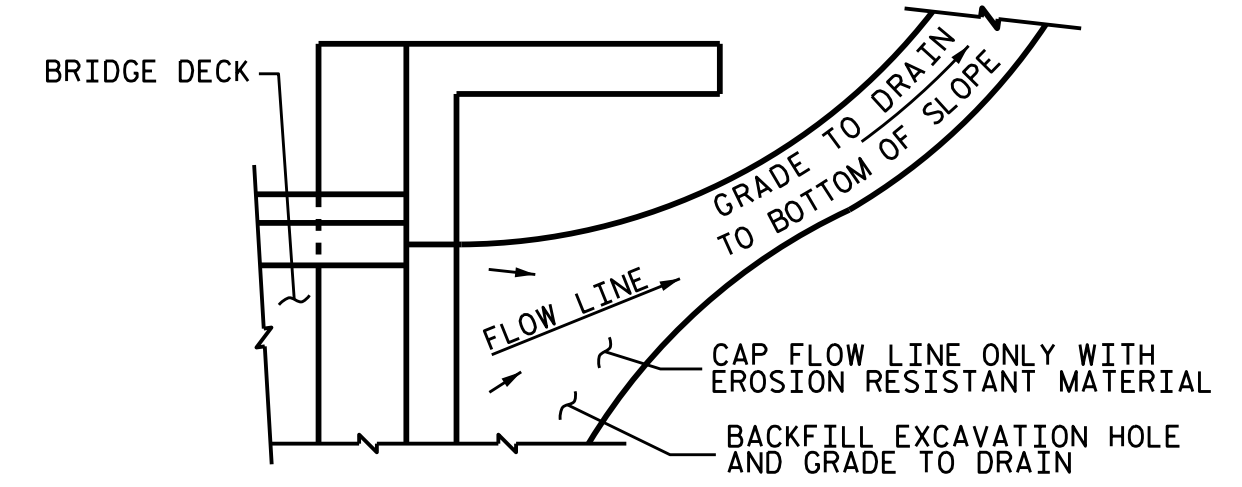


PLAN @ END BENT #1

PLAN @ END BENT #2

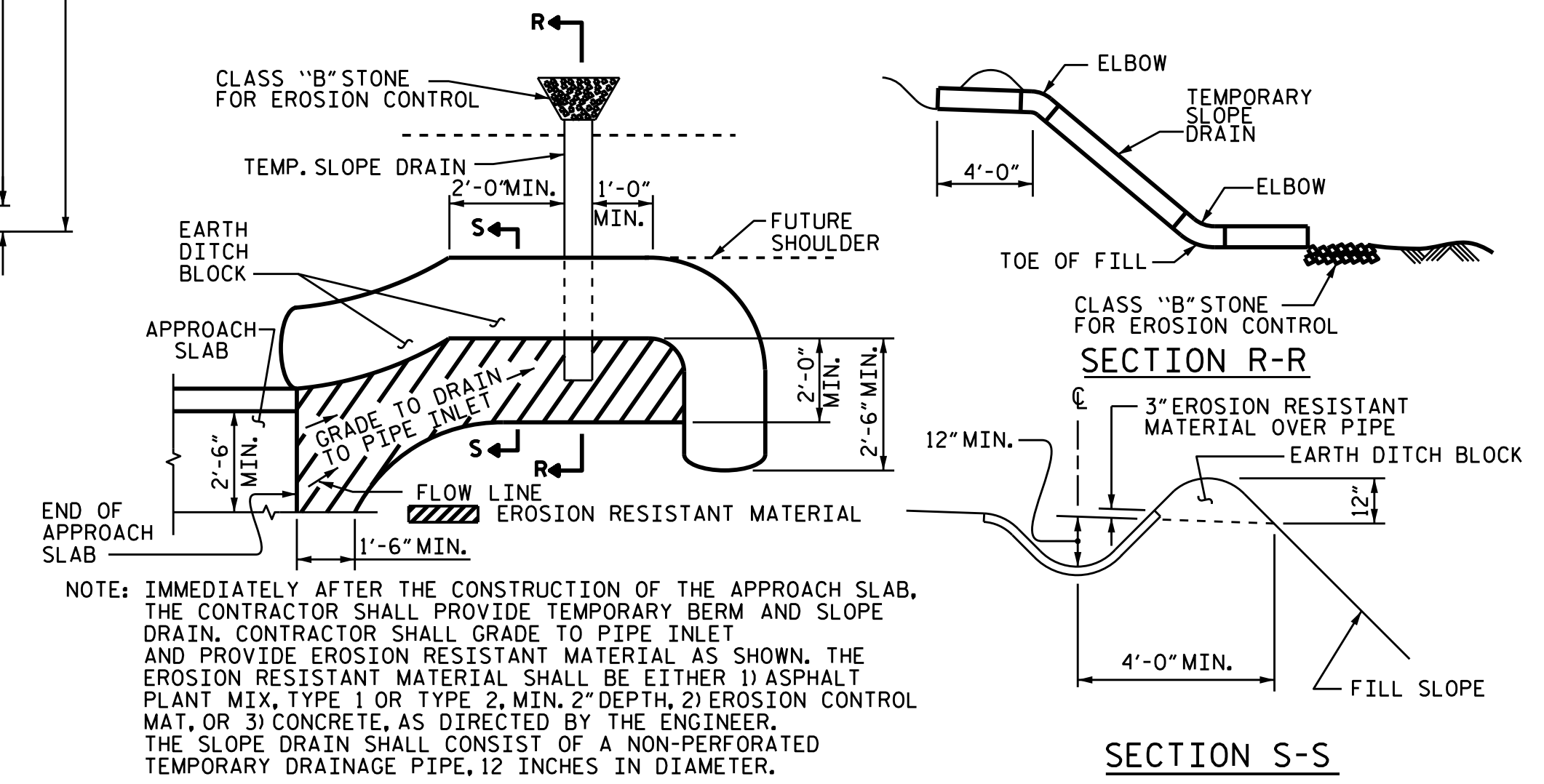
NOTES

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.
 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 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

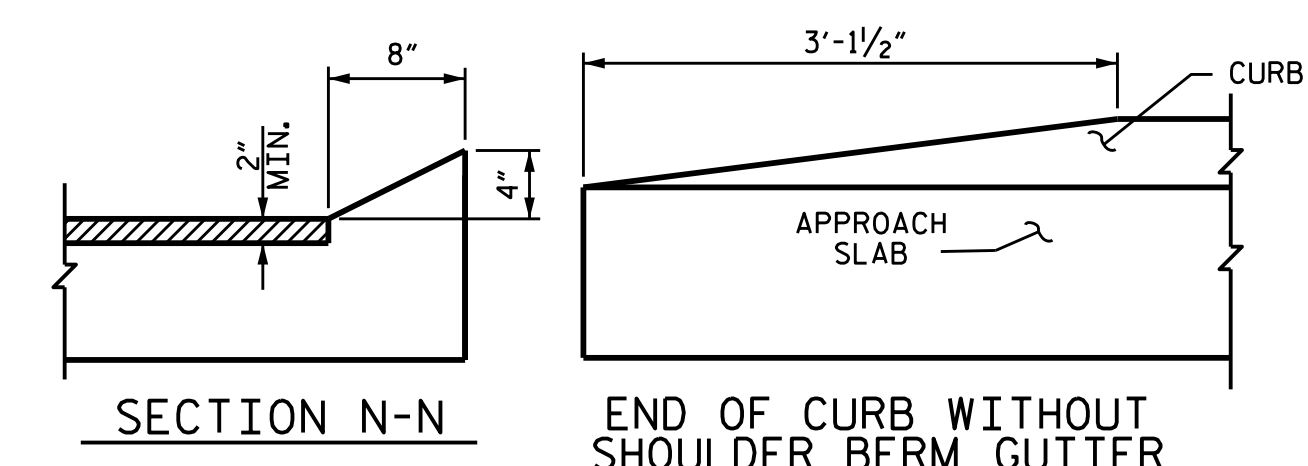


PLAN VIEW

TEMPORARY BERM AND SLOPE DRAIN DETAILS

(TO BE USED WHEN SHOULDER BERM GUTTER IS REQUIRED)

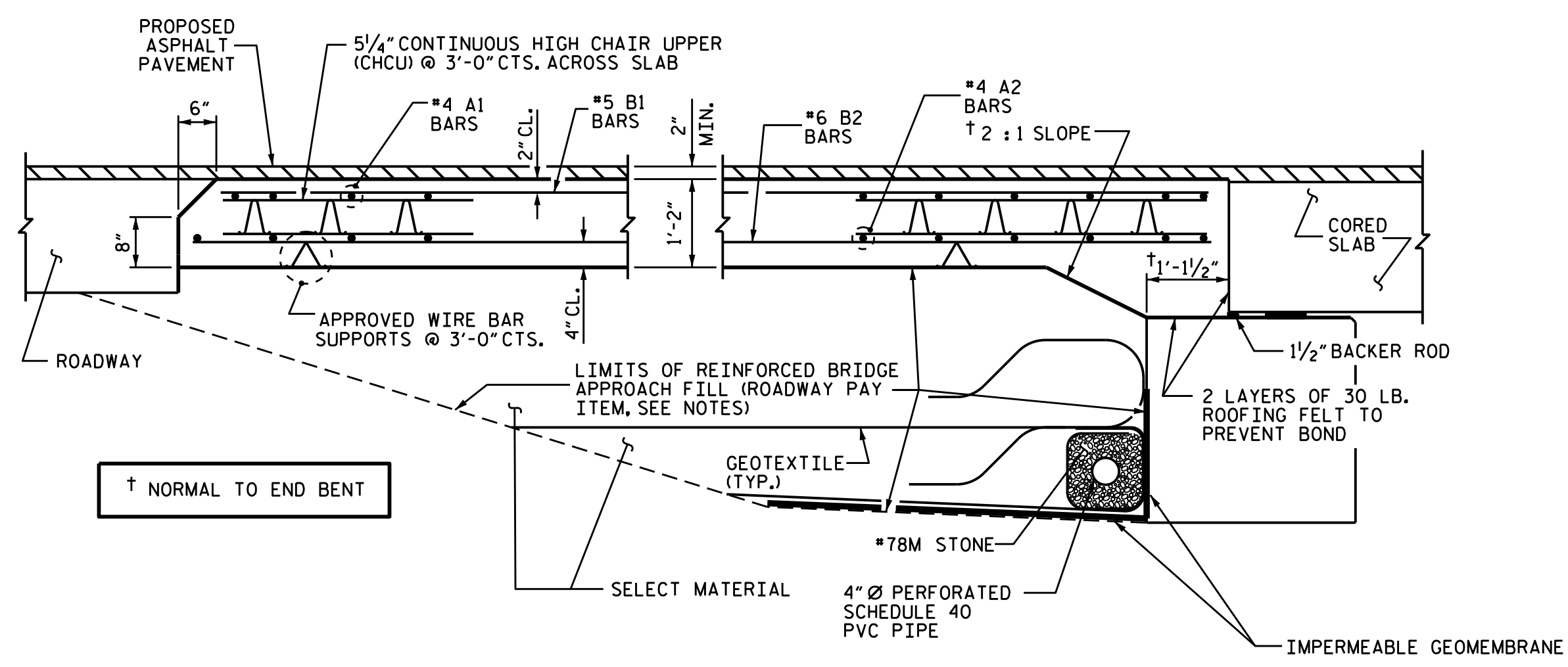
| SPLICE LENGTHS | | |
|----------------|--------------|----------|
| BAR SIZE | EPOXY COATED | UNCOATED |
| #4 | 2'-0" | 1'-9" |
| #5 | 2'-6" | 2'-2" |
| #6 | 3'-10" | 2'-7" |



SECTION N-N

END OF CURB WITHOUT SHOULDER BERM GUTTER

CURB DETAILS



SECTION THRU SLAB

| BILL OF MATERIAL | | | | | |
|---------------------------------|-----|------|------|---------|--------|
| APPROACH SLAB AT EB #1 | | | | | |
| BAR NO. | NO. | SIZE | TYPE | LENGTH | WEIGHT |
| *A1 | 26 | #4 | STR | 17'-6" | 304 |
| A2 | 26 | #4 | STR | 17'-5" | 302 |
| *B1 | 64 | #5 | STR | 11'-2" | 745 |
| B2 | 64 | #6 | STR | 11'-8" | 1121 |
| *B3 | 1 | #5 | STR | 11'-6" | 12 |
| B4 | 1 | #6 | STR | 11'-6" | 17 |
| *B5 | 1 | #5 | STR | 6'-6" | 7 |
| B6 | 1 | #6 | STR | 6'-6" | 10 |
| REINFORCING STEEL | | | | LBS. | 1450 |
| *EPOXY COATED REINFORCING STEEL | | | | LBS. | 1068 |
| CLASS AA CONCRETE | | | | C. Y. | 18.7 |
| APPROACH SLAB AT EB #2 | | | | | |
| *A1 | 26 | #4 | STR | 16'-11" | 294 |
| A2 | 26 | #4 | STR | 16'-9" | 291 |
| *B1 | 64 | #5 | STR | 11'-2" | 745 |
| B2 | 64 | #6 | STR | 11'-8" | 1121 |
| REINFORCING STEEL | | | | LBS. | 1412 |
| *EPOXY COATED REINFORCING STEEL | | | | LBS. | 1039 |
| CLASS AA CONCRETE | | | | C. Y. | 18.4 |

ASSEMBLED BY : R. P. PATEL DATE : 08-02-16
 CHECKED BY : S. B. WILLIAMS DATE : 3-17
 DRAWN BY : SHS/MAA 5-09
 CHECKED BY : BCH 5-09
 REV. 9-15 MAA/TMG

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

PROJECT NO. B-5334
 ROBESON COUNTY
 STATION: 16+56.50 -L-

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

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

SHEET NO. S-14
 TOTAL SHEETS 14

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