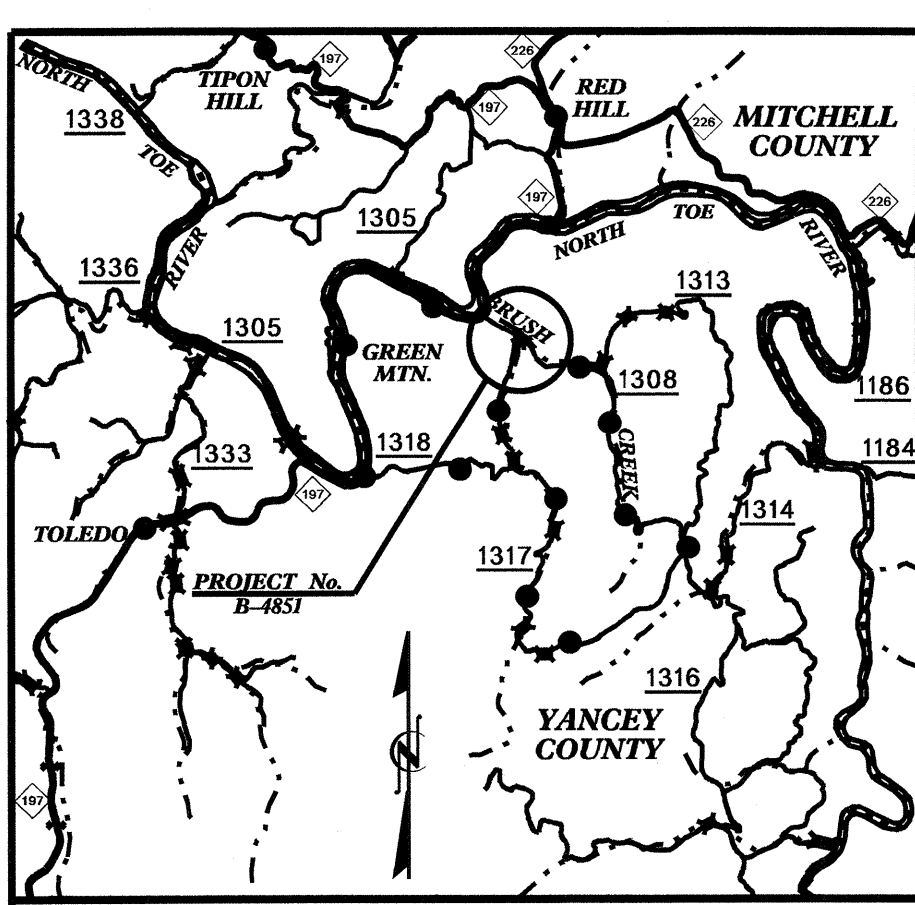


05/08/99

TIP PROJECT NO.: B-4851

CONTRACT NO.: C202781



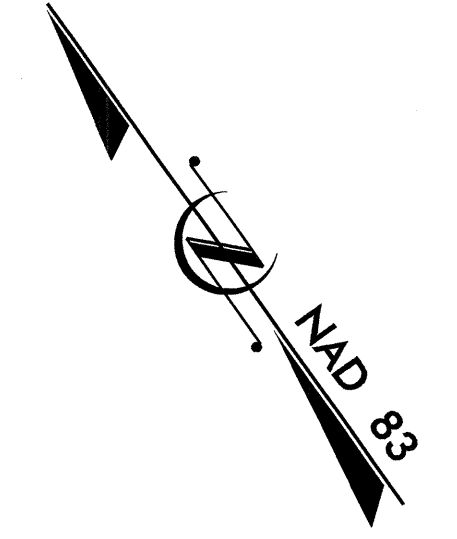
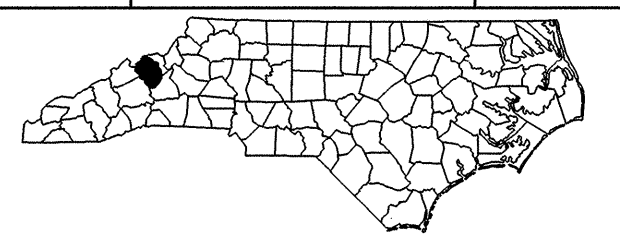
VICINITY MAP
OFF SITE DETOUR

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS
YANCEY COUNTY

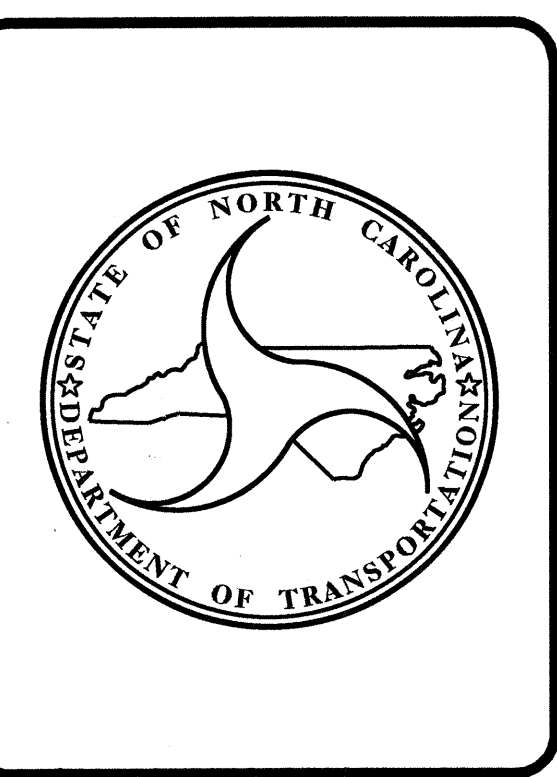
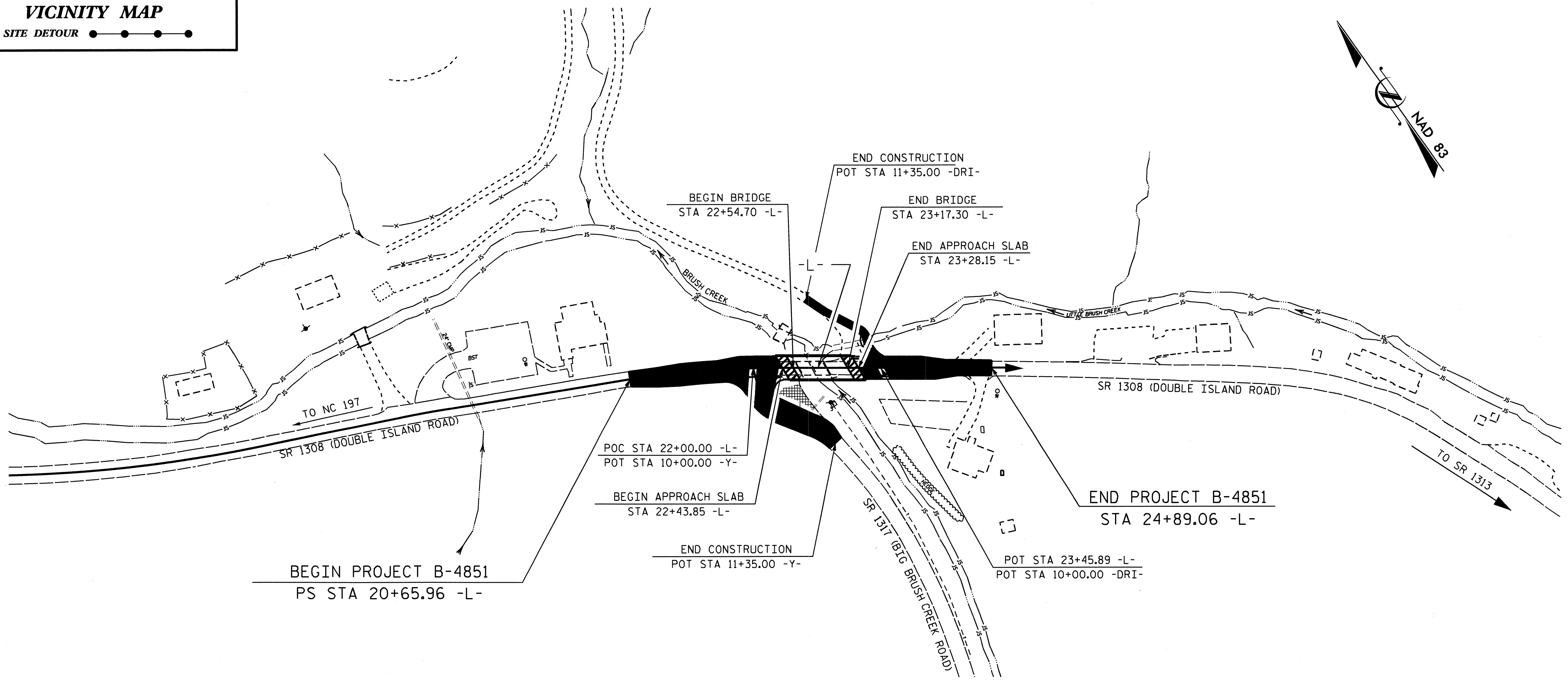
LOCATION: REPLACE BRIDGE No. 31 ON SR 1308
(DOUBLE ISLAND ROAD) OVER BRUSH CREEK

TYPE OF WORK: GRADING, PAVEMENT, WIDENING, DRAINAGE, STRUCTURE

| STATE | STATE PROJECT REFERENCE NO. | SHEET NO. | TOTAL SHEETS |
|-----------------|-----------------------------|--------------|--------------|
| N.C. | B-4851 | | |
| STATE PROJ. NO. | F.A. PROJ. NO. | DESCRIPTION | |
| 38621.1.1 | BRZ-1308 (6) | PE | |
| 38621.2.1 | BRZ-1308 (6) | R / W | |
| 38621.3.1 | BRZ-1308 (6) | CONSTRUCTION | |



STRUCTURE



DESIGN DATA

| | | |
|----------|------------|--------|
| ADT 2011 | = | 665 |
| ADT 2031 | = | 1,200 |
| DHV | = | 11 % |
| D | = | 65 % |
| * T | = | 7 % |
| V | = | 45 MPH |
| * TTST | 6% DUAL 1% | |

FUNCTIONAL CLASSIFICATION
LOCAL
SUB-TIER GUIDELINES

PROJECT LENGTH

| | | |
|-------------------------------------|---|-------------|
| LENGTH ROADWAY TIP PROJECT B-4851 | = | 0.068 MILES |
| LENGTH STRUCTURE TIP PROJECT B-4851 | = | 0.012 MILES |
| TOTAL LENGTH TIP PROJECT B-4851 | = | 0.080 MILES |

PLANS PREPARED IN THE OFFICE OF:
DIVISION OF HIGHWAYS

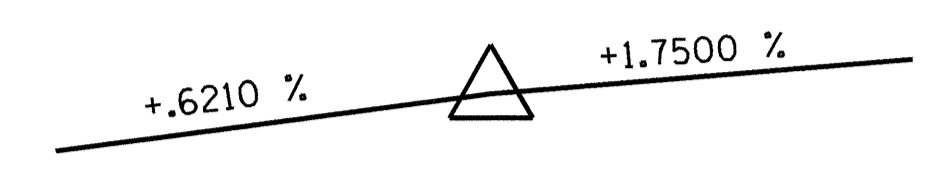
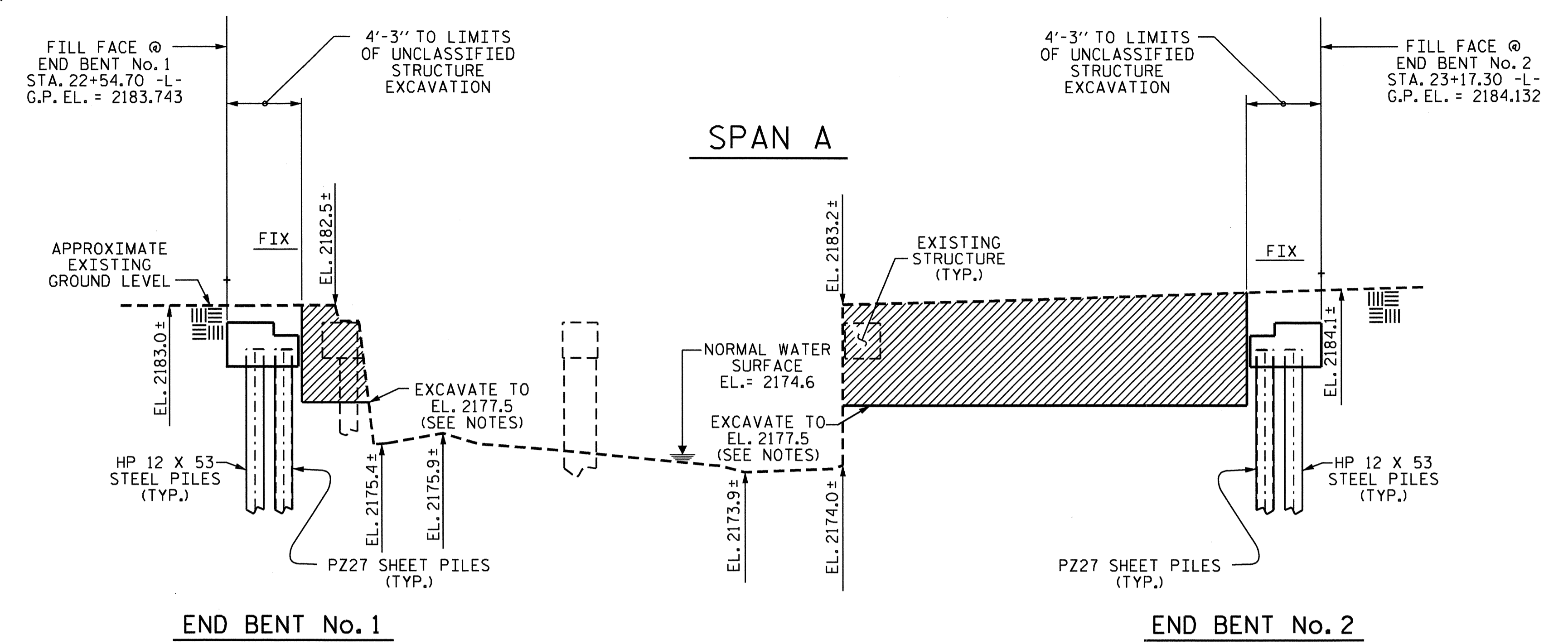
2012 STANDARD SPECIFICATIONS

LETTING DATE:
FEBRUARY 21, 2012

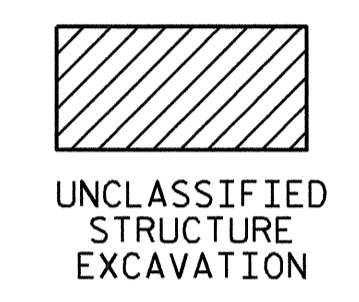
| |
|--|
| Q. H. NGUYEN, P.E. PROJECT ENGINEER |
| MARC G. CHEEK, P.E. PROJECT DESIGN ENGINEER |

| | |
|---|---|
| STRUCTURES MANAGEMENT UNIT 1000 BIRCH RIDGE DRIVE RALEIGH, N.C. 27610 | DIVISION OF HIGHWAYS STATE OF NORTH CAROLINA |
| APPROVED DIVISION ADMINISTRATOR | STATE DESIGN ENGINEER DEPARTMENT OF TRANSPORTATION FEDERAL HIGHWAY ADMINISTRATION |
| DATE | P.E. |

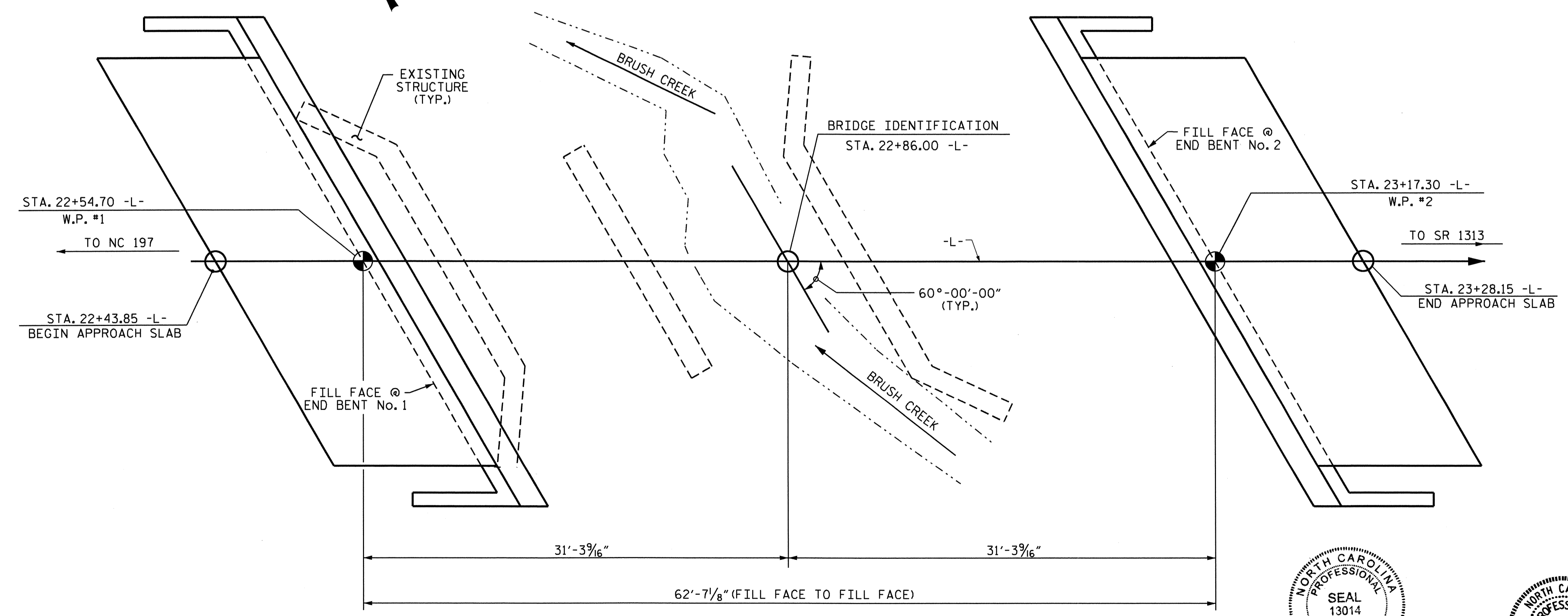
12-DEC-2011 11:59 AM
R:\Structures\Final Plans\B-4851_SD_STR1_01.TSK.dgn
dehodge



GRADE DATA
 P.I. STA. = 23+75.00 -L-
 EL. = 2184.49
 VC = 95'



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



PLAN
 PILES & SHEET PILES NOT SHOWN IN PLAN VIEW

PROJECT NO. B-4851
YANCEY COUNTY
 STATION: 22+86.00 -L-
 SHEET 1 OF 3 REPLACES BRIDGE #31

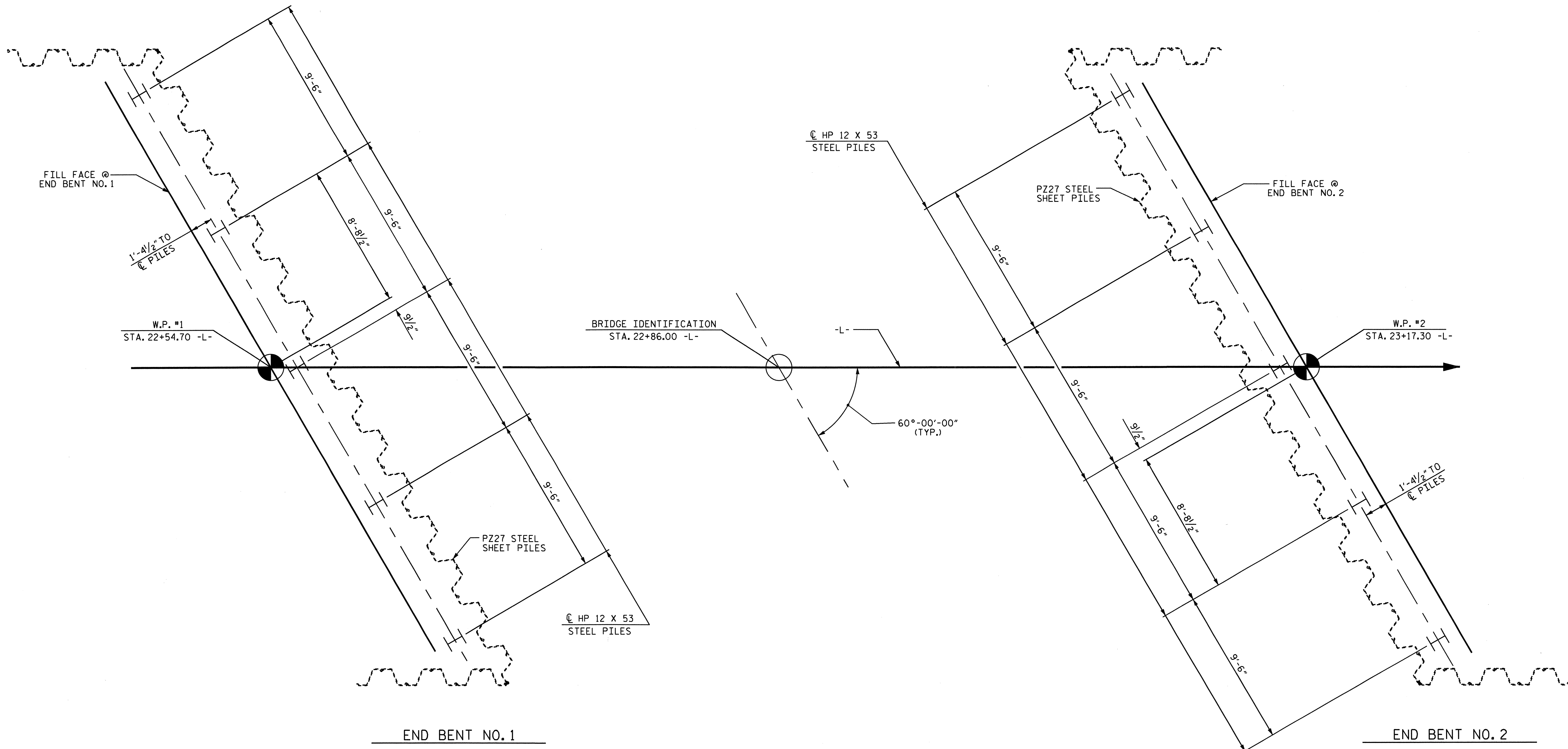
STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH
GENERAL DRAWING
 FOR
 BRIDGE ON S.R. 1308 OVER
 BRUSH CREEK
 BETWEEN NC 197 AND S.R. 1313



Quang H. Nguyen 12-12-11

DRAWN BY : V. X. NGUYEN DATE : 12-17-10
 CHECKED BY : M.G. CHEEK DATE : 12-10

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



FOUNDATION LAYOUT

ALL END BENT PILES ARE HP 12 X 53

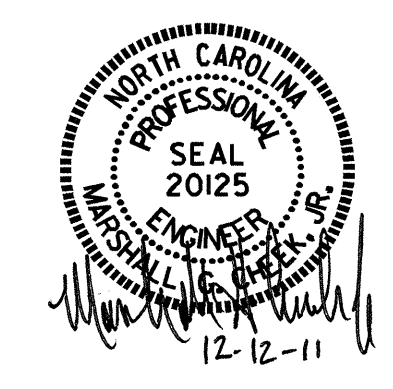
NOTES

- FOR PILES, SEE SECTION 450 OF THE STANDARD SPECIFICATIONS.
- PILE EXCAVATION IS REQUIRED TO INSTALL PILES AT END BENT NO. 1, AND END BENT NO. 2. EXCAVATE HOLES TO ELEVATION 2168.0 FEET.
- FOR PILE EXCAVATION, SEE SECTION 450 OF THE STANDARD SPECIFICATIONS.
- CONCRETE OR GROUT IS REQUIRED TO FILL HOLES FOR PILE EXCAVATION AT END BENT NO. 1, AND END BENT NO. 2.

PROJECT NO. B-4851
YANCEY COUNTY
 STATION: 22+86.00 -L-

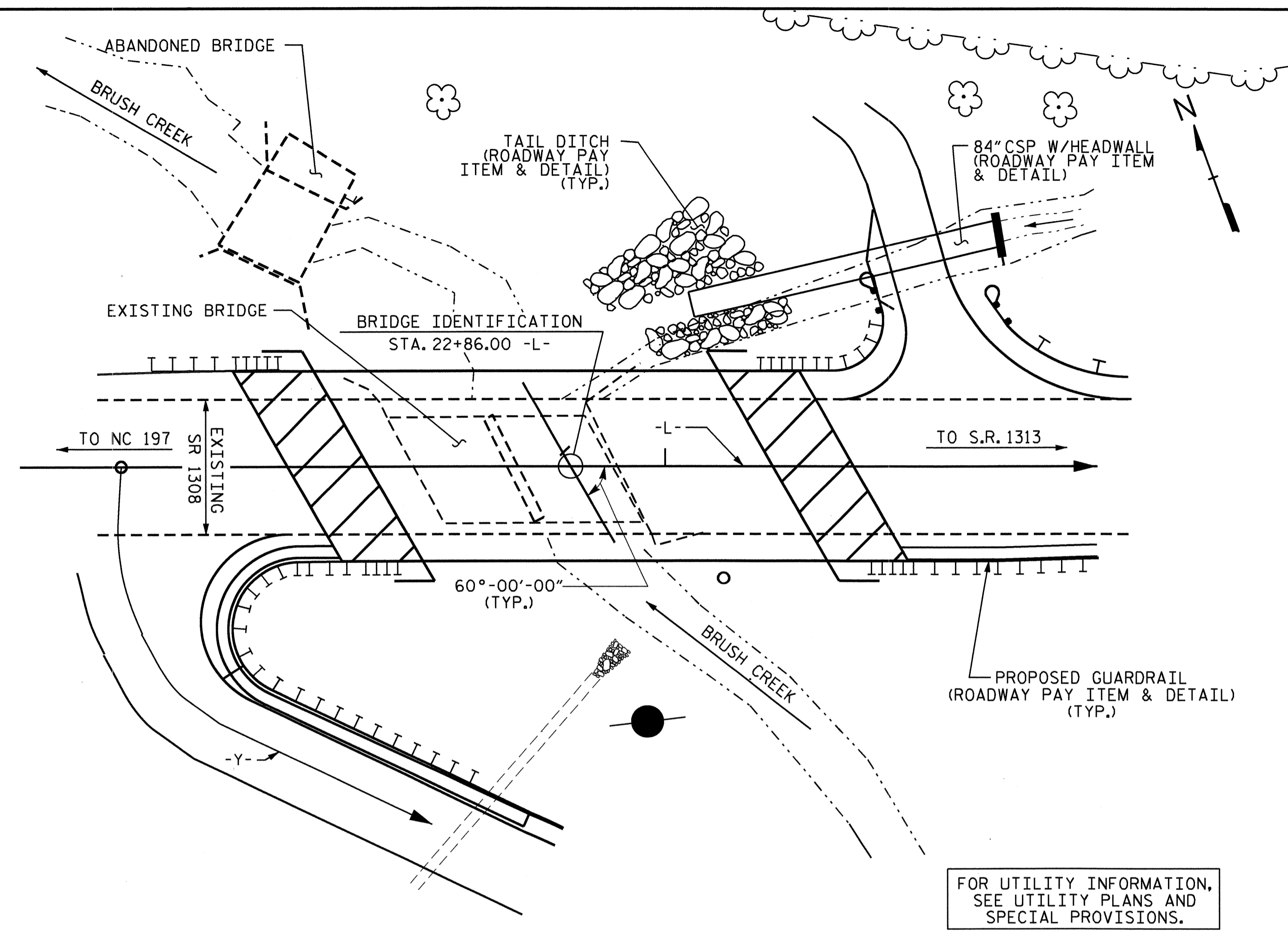
SHEET 2 OF 3

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH
 GENERAL DRAWING
 FOR
 BRIDGE ON SR 1308 OVER
 BRUSH CREEK
 BETWEEN NC 197 AND SR 1313



DRAWN BY : A.L. FIGUEROA DATE : 06-21-11
 CHECKED BY : M.G. CHEEK DATE : 10/11

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



LOCATION SKETCH

NOTES

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.

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 EXISTING 2 SPAN STRUCTURE (1@ 15'-6 1/2", 1@ 15'-8 1/2") CONSISTING OF A TIMBER FLOOR ON TIMBER JOISTS WITH A 5/2" ASPHALT WEARING SURFACE, AND A SUBSTRUCTURE CONSISTING OF RUBBLE MASONRY ABUTMENTS AND A TIMBER CAP/TIMBER POST AND SILL BENT, AND LOCATED AT THE SITE OF THE PROPOSED BRIDGE SHALL BE REMOVED.

ASSUMED LIVE LOAD = HL 93 OR ALTERNATE LOADING.

FOR OTHER DESIGN DATA AND GENERAL NOTES, SEE SHEET SN.

FOR EROSION CONTROL MEASURES, SEE EROSION CONTROL PLANS.

THIS BRIDGE HAS BEEN DESIGNED IN ACCORDANCE WITH THE AASHTO LRFD BRIDGE DESIGN SPECIFICATIONS.

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

THE MATERIAL SHOWN IN THE CROSS-HATCHED AREA SHALL BE EXCAVATED FOR A DISTANCE OF 25 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 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', MAY, 2001.

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

HYDRAULIC DATA

| | |
|-----------------------------|--------------|
| DESIGN DISCHARGE | = 400 C.F.S |
| FREQUENCY OF DESIGN FLOOD | = 25 YRS. |
| DESIGN HIGH WATER ELEVATION | = 2,181.9 |
| DRAINAGE AREA | = 2.75 SQ.MI |
| BASE DISCHARGE (Q100) | = 550 C.F.S. |
| BASE HIGH WATER ELEVATION | = 2,182.5 |

OVERTOPPING FLOOD DATA

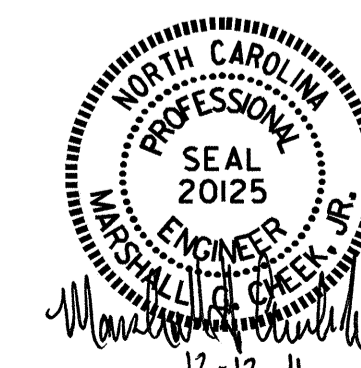
| | |
|--------------------------------|---------------|
| OVERTOPPING DISCHARGE | = >650 C.F.S. |
| FREQUENCY OF OVERTOPPING FLOOD | = +500 YRS. |
| OVERTOPPING FLOOD ELEVATION | = 2,182.8 |

TOTAL BILL OF MATERIAL

| | REMOVAL OF EXISTING STRUCTURE | PILE EXCAVATION IN SOIL | PILE EXCAVATION NOT IN SOIL | UNCLASSIFIED STRUCTURE EXCAVATION | CLASS A CONCRETE | BRIDGE APPROACH SLABS | REINFORCING STEEL | HP 12 X 53 STEEL PILES | | VERTICAL CONCRETE BARRIER RAIL | ELASTOMERIC BEARINGS | 3'-0" X 2'-0" PRESTRESSED CONCRETE CORED SLABS | | 18" STEEL SHEET PILES |
|----------------|-------------------------------|-------------------------|-----------------------------|-----------------------------------|------------------|-----------------------|-------------------|------------------------|----------|--------------------------------|----------------------|--|---------|-----------------------|
| | LUMP SUM | LIN.FT. | LIN.FT. | LUMP SUM | CU.YDS. | LUMP SUM | LBS. | NO. | LIN. FT. | LIN. FT. | LUMP SUM | NO. | LIN.FT. | SO. FT. |
| SUPERSTRUCTURE | LUMP SUM | | | | | LUMP SUM | | | | 120.00 | LUMP SUM | 10 | 600 | |
| END BENT NO.1 | | 40.00 | 15.00 | LUMP SUM | 20.1 | | 2823 | 5 | 75 | | | | | 600 |
| END BENT NO.2 | | 40.00 | 15.00 | LUMP SUM | 20.1 | | 2823 | 5 | 75 | | | | | 620 |
| TOTAL | LUMP SUM | 80.00 | 30.00 | LUMP SUM | 40.2 | LUMP SUM | 5646 | 10 | 150 | 120.00 | LUMP SUM | 10 | 600 | 1220 |

PROJECT NO. B-4851
YANCEY COUNTY
 STATION: 22+86.00 -L-

SHEET 3 OF 3



STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

GENERAL DRAWING
 FOR
 BRIDGE ON SR 1308 OVER
 BRUSH CREEK
 BETWEEN NC 197 AND SR 1313

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

DRAWN BY : V. X. NGUYEN DATE : 12-9-10
 CHECKED BY : M.G. CHEEK DATE : 12-10

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

| LEVEL | VEHICLE | WEIGHT (W) (TONS) | CONTROLLING LOAD RATING | MINIMUM RATING FACTORS (RF) | TONS = W X RF | STRENGTH I LIMIT STATE | | | | | | | | | | SERVICE III LIMIT STATE | | | | | COMMENT NUMBER | | | |
|--------------------------|------------|----------------------|----------------------------|-----------------------------------|---------------|------------------------|------------------------------|---------------|------|-----------------|---|------------------------------|---------------|------|-----------------|---|---------------------|------------------------------|---------------|------|----------------|-----------------|---|--|
| | | | | | | MOMENT | | | | | SHEAR | | | | | MOMENT | | | | | | | | |
| | | | | | | LIVELOAD FACTORS | DISTRIBUTION FACTORS (DF) | RATING FACTOR | SPAN | GIRDER LOCATION | DISTANCE FROM LEFT END OF SPAN (ft) | DISTRIBUTION FACTORS (DF) | RATING FACTOR | SPAN | GIRDER LOCATION | DISTANCE FROM LEFT END OF SPAN (ft) | LIVELOAD FACTORS | DISTRIBUTION FACTORS (DF) | RATING FACTOR | SPAN | | GIRDER LOCATION | DISTANCE FROM LEFT END OF SPAN (ft) | |
| DESIGN LOAD RATING | HL-93(Inv) | N/A | ① | 1.133 | -- | 1.75 | 0.249 | 1.48 | 60' | EL | 29.423 | 0.649 | 1.13 | 60' | EL | 5.885 | 0.80 | 0.249 | 1.52 | 60' | EL | 29.423 | | |
| | HL-93(0pr) | N/A | -- | 1.468 | -- | 1.35 | 0.249 | 1.91 | 60' | EL | 29.423 | 0.649 | 1.47 | 60' | EL | 5.885 | N/A | -- | -- | -- | -- | -- | | |
| | HS-20(Inv) | 36.000 | ② | 1.364 | 49.098 | 1.75 | 0.249 | 1.87 | 60' | EL | 29.423 | 0.649 | 1.36 | 60' | EL | 5.885 | 0.80 | 0.249 | 1.92 | 60' | EL | 29.423 | | |
| | HS-20(0pr) | 36.000 | -- | 1.768 | 63.645 | 1.35 | 0.249 | 2.42 | 60' | EL | 29.423 | 0.649 | 1.77 | 60' | EL | 5.885 | N/A | -- | -- | -- | -- | -- | | |
| LEGAL LOAD RATING | SV | SNSH | 13.500 | -- | 3.938 | 53.159 | 1.4 | 0.249 | 5.03 | 60' | EL | 29.423 | 0.649 | 3.94 | 60' | EL | 5.885 | 0.80 | 0.249 | 4.13 | 60' | EL | 29.423 | |
| | | SNGARBS2 | 20.000 | -- | 2.837 | 56.744 | 1.4 | 0.249 | 3.85 | 60' | EL | 29.423 | 0.649 | 2.84 | 60' | EL | 5.885 | 0.80 | 0.249 | 3.17 | 60' | EL | 29.423 | |
| | | SNAGRIS2 | 22.000 | -- | 2.648 | 58.256 | 1.4 | 0.249 | 3.69 | 60' | EL | 29.423 | 0.649 | 2.65 | 60' | EL | 5.885 | 0.80 | 0.249 | 3.03 | 60' | EL | 29.423 | |
| | | SNCOTTS3 | 27.250 | -- | 1.97 | 53.671 | 1.4 | 0.249 | 2.5 | 60' | EL | 29.423 | 0.649 | 1.97 | 60' | EL | 5.885 | 0.80 | 0.249 | 2.06 | 60' | EL | 29.423 | |
| | | SNAGRS4 | 34.925 | -- | 1.661 | 58.001 | 1.4 | 0.249 | 2.13 | 60' | EL | 29.423 | 0.649 | 1.66 | 60' | EL | 5.885 | 0.80 | 0.249 | 1.75 | 60' | EL | 29.423 | |
| | | SNS5A | 35.550 | -- | 1.696 | 60.293 | 1.4 | 0.249 | 2.08 | 60' | EL | 29.423 | 0.649 | 1.7 | 60' | EL | 5.885 | 0.80 | 0.249 | 1.71 | 60' | EL | 29.423 | |
| | | SNS6A | 39.950 | -- | 1.558 | 62.257 | 1.4 | 0.249 | 1.93 | 60' | EL | 29.423 | 0.649 | 1.56 | 60' | EL | 5.885 | 0.80 | 0.249 | 1.58 | 60' | EL | 29.423 | |
| | SNS7B | 42.000 | -- | 1.51 | 63.41 | 1.4 | 0.249 | 1.84 | 60' | EL | 29.423 | 0.649 | 1.55 | 60' | EL | 5.885 | 0.80 | 0.249 | 1.51 | 60' | EL | 29.423 | | |
| | TTST | TNAGRIT3 | 33.000 | -- | 1.846 | 60.907 | 1.4 | 0.249 | 2.36 | 60' | EL | 29.423 | 0.649 | 1.85 | 60' | EL | 5.885 | 0.80 | 0.249 | 1.94 | 60' | EL | 29.423 | |
| | | TNT4A | 33.075 | -- | 1.787 | 59.108 | 1.4 | 0.249 | 2.37 | 60' | EL | 29.423 | 0.649 | 1.79 | 60' | EL | 5.885 | 0.80 | 0.249 | 1.95 | 60' | EL | 29.423 | |
| | | TNT6A | 41.600 | -- | 1.607 | 66.863 | 1.4 | 0.249 | 1.96 | 60' | EL | 29.423 | 0.649 | 1.67 | 60' | EL | 5.885 | 0.80 | 0.249 | 1.61 | 60' | EL | 29.423 | |
| | | TNT7A | 42.000 | -- | 1.598 | 67.1 | 1.4 | 0.249 | 1.97 | 60' | EL | 29.423 | 0.649 | 1.6 | 60' | EL | 5.885 | 0.80 | 0.249 | 1.62 | 60' | EL | 29.423 | |
| | | TNT7B | 42.000 | -- | 1.499 | 62.942 | 1.4 | 0.249 | 2.06 | 60' | EL | 29.423 | 0.649 | 1.5 | 60' | EL | 5.885 | 0.80 | 0.249 | 1.69 | 60' | EL | 29.423 | |
| | | TNAGRIT4 | 43.000 | -- | 1.447 | 62.223 | 1.4 | 0.249 | 1.95 | 60' | EL | 29.423 | 0.649 | 1.45 | 60' | EL | 5.885 | 0.80 | 0.249 | 1.60 | 60' | EL | 29.423 | |
| TNAGT5A | | 45.000 | -- | 1.455 | 65.474 | 1.4 | 0.249 | 1.83 | 60' | EL | 29.423 | 0.649 | 1.45 | 60' | EL | 5.885 | 0.80 | 0.249 | 1.50 | 60' | EL | 29.423 | | |
| TNAGT5B | 45.000 | ③ | 1.374 | 61.845 | 1.4 | 0.249 | 1.8 | 60' | EL | 29.423 | 0.649 | 1.37 | 60' | EL | 5.885 | 0.80 | 0.249 | 1.48 | 60' | EL | 29.423 | | | |

LOAD FACTORS:

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

NOTES:

MINIMUM RATING FACTORS ARE BASED ON THE STRENGTH I AND SERVICE III LIMIT STATES.

ALLOWABLE STRESSES FOR SERVICE III LIMIT STATE ARE AS REQUIRED FOR DESIGN.

COMMENTS:

- 1.
- 2.
- 3.
- 4.

⊛ CONTROLLING LOAD RATING

① DESIGN LOAD RATING (HL-93)

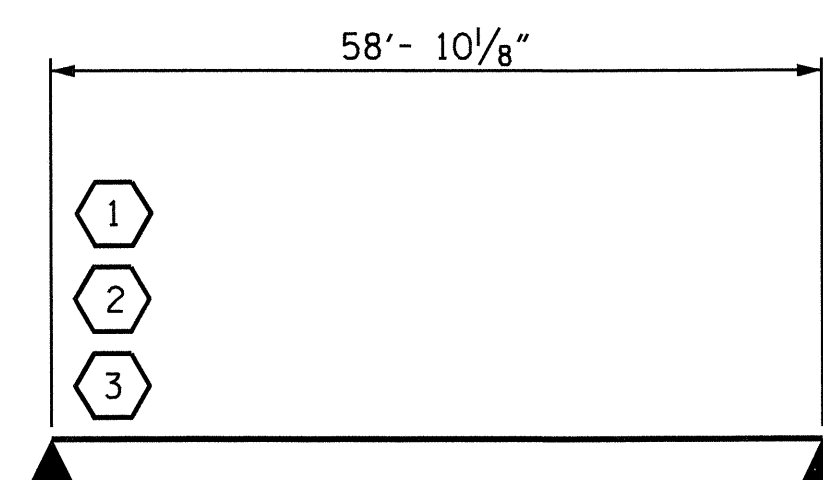
② DESIGN LOAD RATING (HS-20)

③ LEGAL LOAD RATING **

** SEE CHART FOR VEHICLE TYPE

GIRDER LOCATION

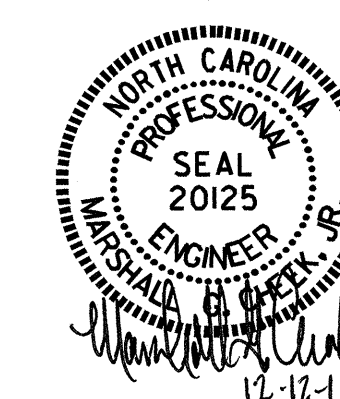
I - INTERIOR GIRDER
EL - EXTERIOR LEFT GIRDER
ER - EXTERIOR RIGHT GIRDER



LRFR SUMMARY

NOTE: SPAN DIMENSIONS ARE FROM C BEARING TO C BEARING

PROJECT NO. B-4851
YANCEY COUNTY
 STATION: 22+86.00 -L-

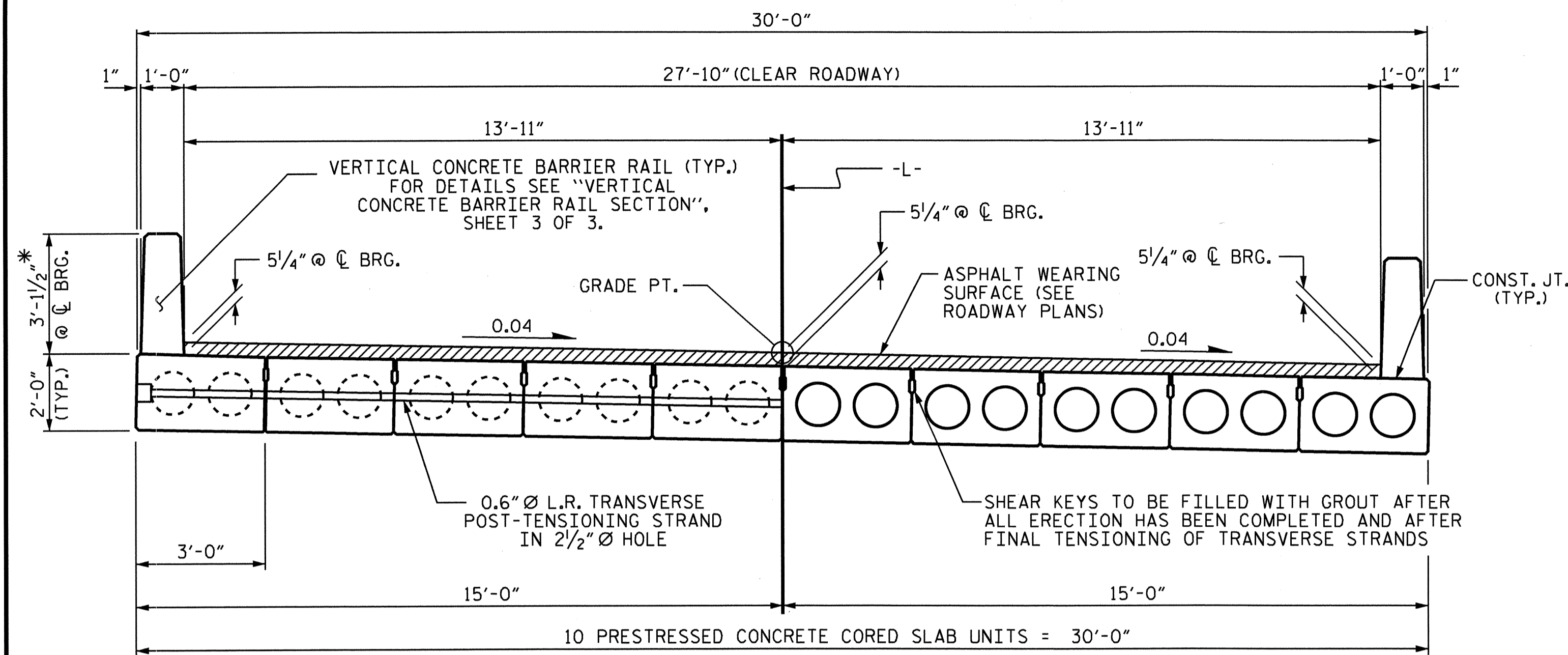


STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

STANDARD
 LRFR SUMMARY FOR
 60' CORED SLAB UNIT
 60° SKEW & 120° SKEW
 (NON-INTERSTATE TRAFFIC)

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

| | |
|------------------------------|-----------------|
| ASSEMBLED BY : A.L. FIGUEROA | DATE : 04-18-11 |
| CHECKED BY : M.G. CHEEK | DATE : 06-11-11 |
| DRAWN BY : CVC 6/10 | |
| CHECKED BY : DNS 6/10 | |

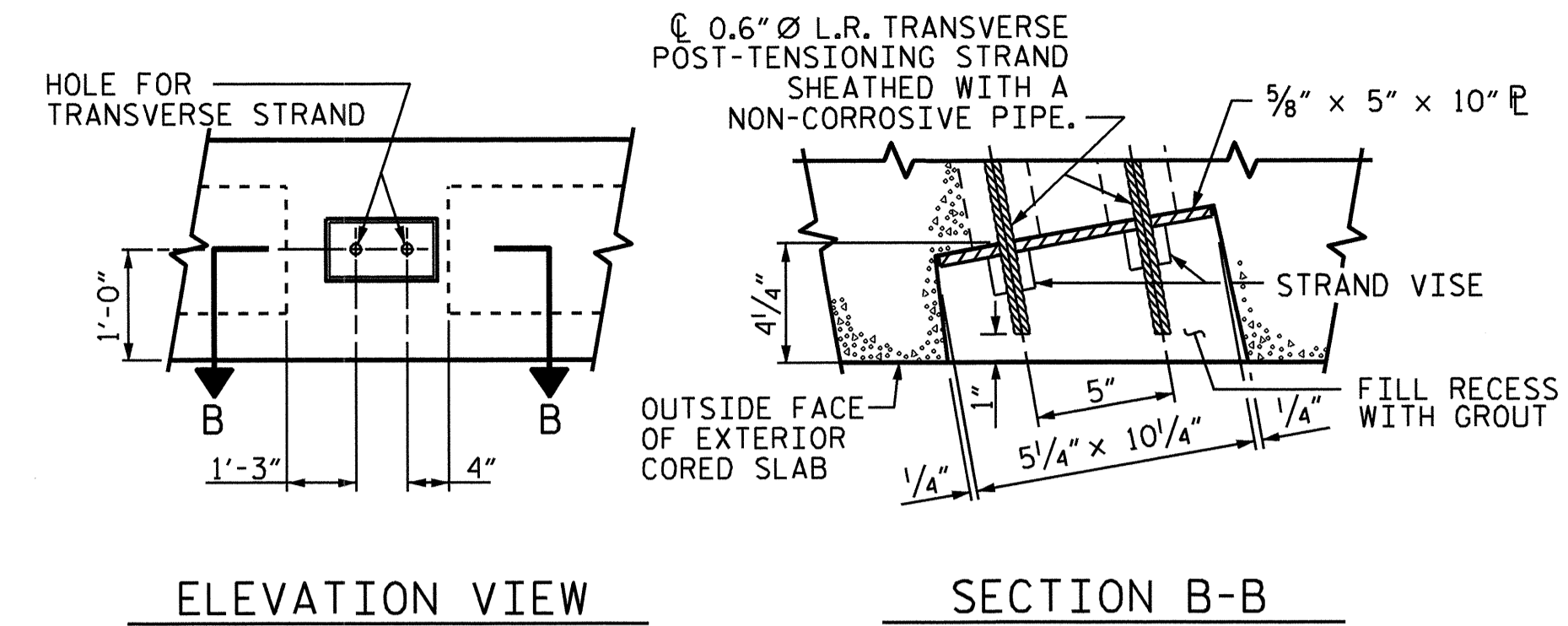


HALF SECTION
AT INTERMEDIATE DIAPHRAGMS

TYPICAL SECTION

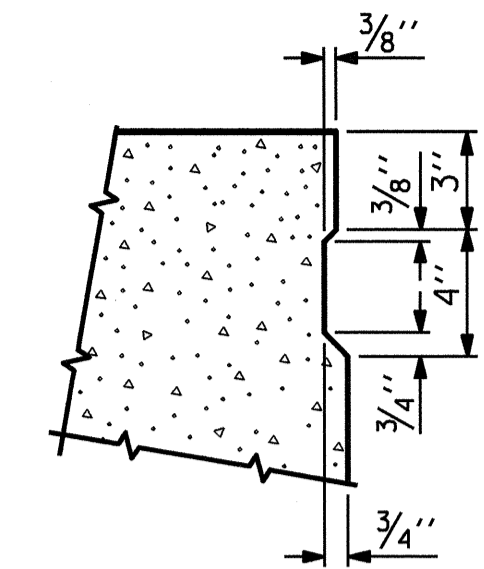
HALF SECTION
THROUGH VOIDS

* - 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, SHEET 3 OF 3.



ELEVATION VIEW

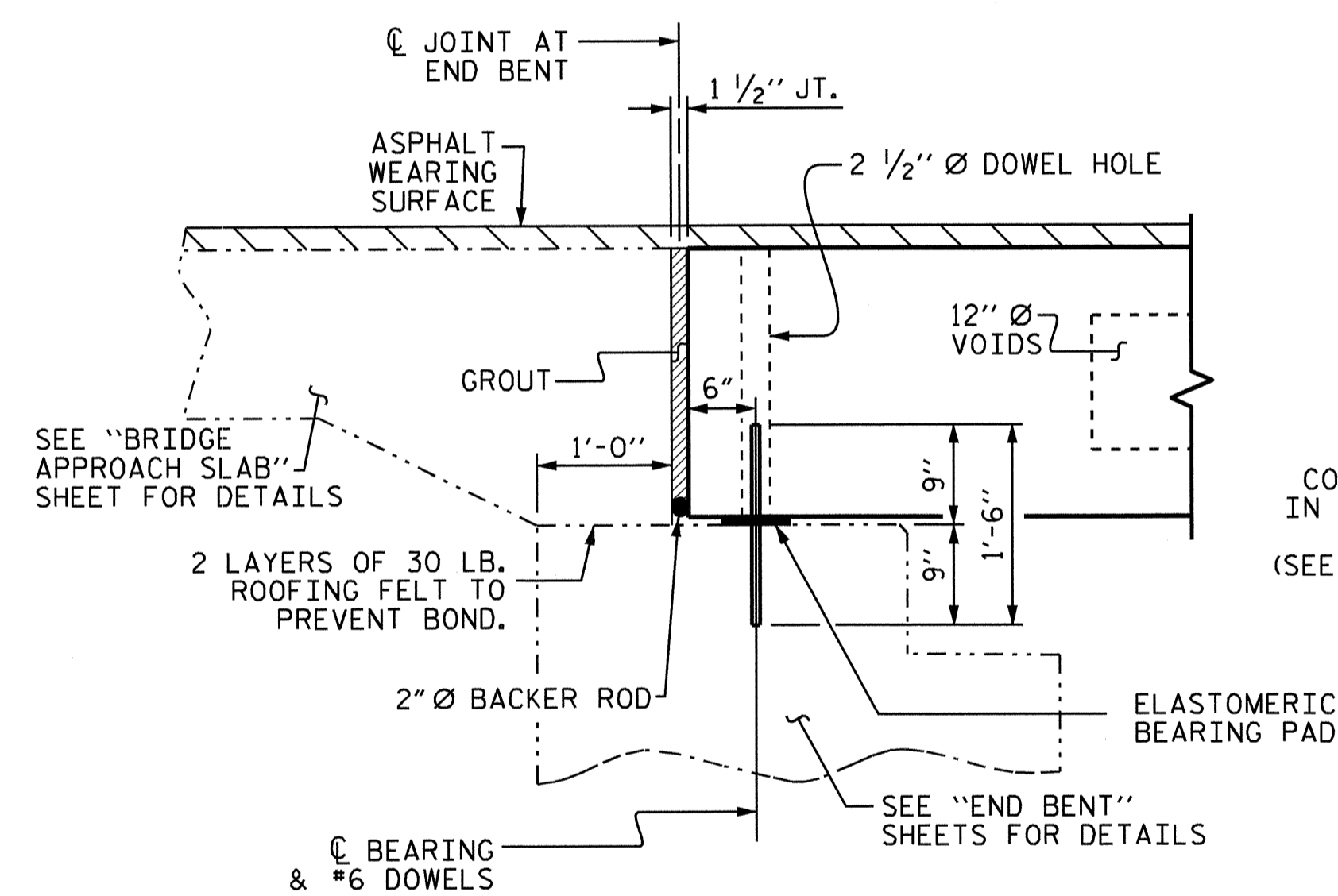
SECTION B-B



SHEAR KEY DETAIL

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

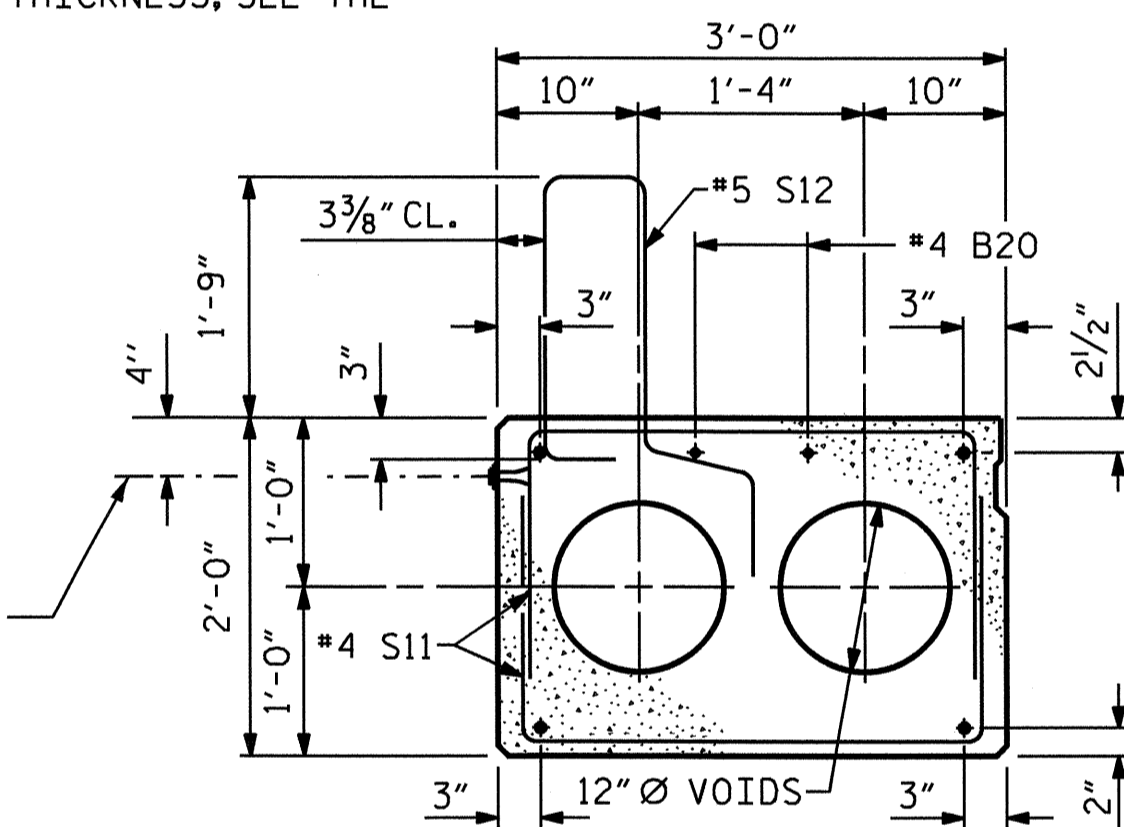
GROUTED RECESS AT END OF
POST-TENSIONED STRAND OF CORED SLABS



SECTION AT END BENT No. 1

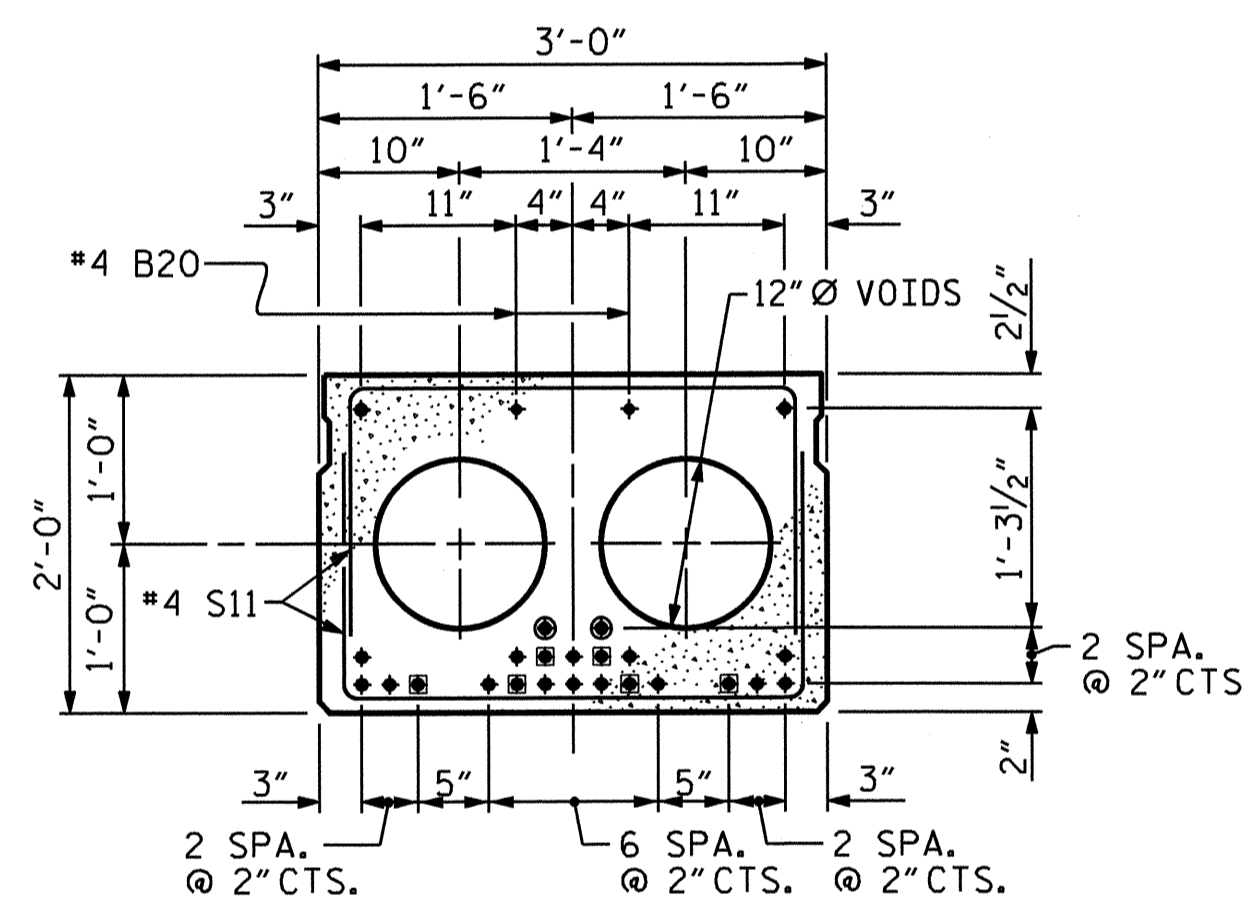
(END BENT No. 2 SIMILAR)

3/4" Ø BOLTS WITH WASHERS IN APPROVED CONCRETE INSERTS CAST IN EXTERIOR CORED SLAB UNITS @ 10'-0" CTS. (SEE NOTES, SHEET 3 OF 3)

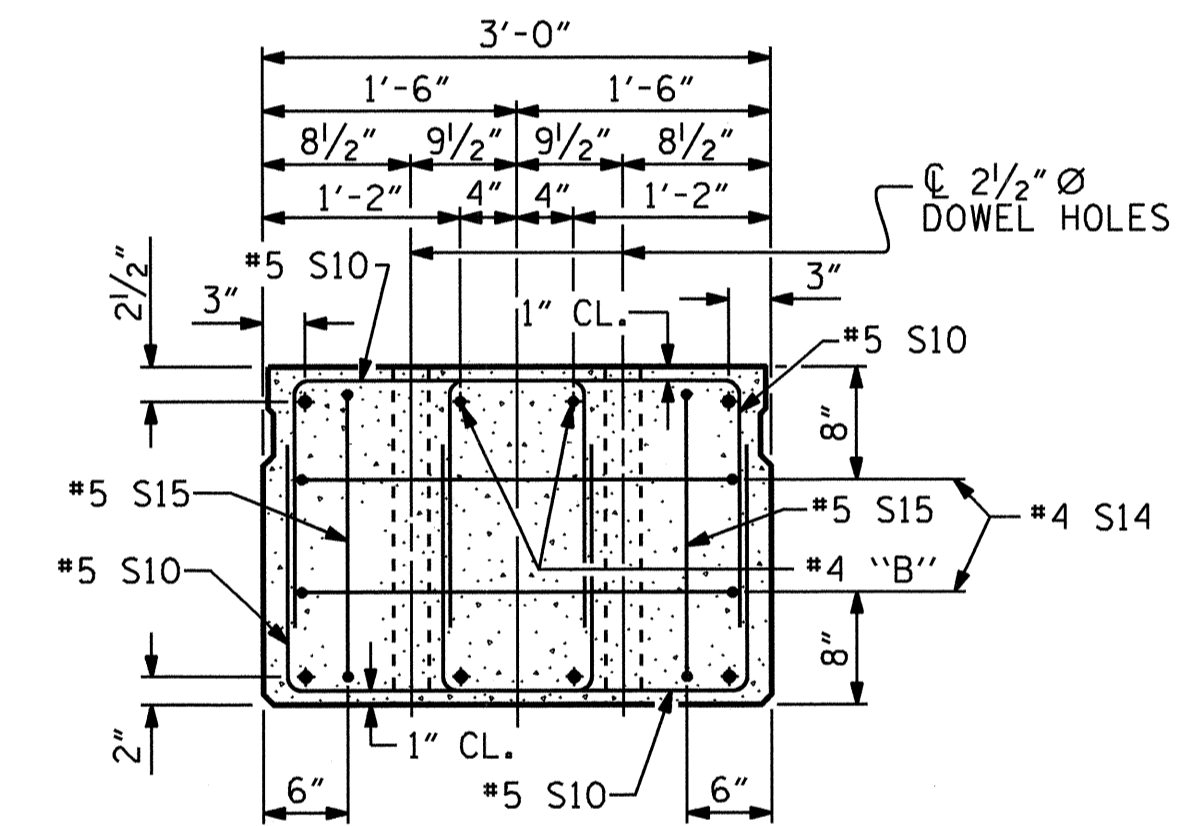


EXTERIOR SLAB SECTION

(FOR PRESTRESS STRAND LAYOUT, SEE INTERIOR SLAB SECTION.)



STRAND LAYOUT FOR 60'-0" UNIT
(22 STRANDS REQUIRED)



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.

INTERIOR SLAB SECTION
0.6" Ø LOW RELAXATION

- BOND SHALL BE BROKEN ON THESE STRANDS FOR A DISTANCE OF 12'-0" FROM END OF CORED SLAB UNIT. SEE STANDARD SPECIFICATIONS, ARTICLE 1078-7.
- OPTIONAL FULL LENGTH DEBONDED STRANDS. THESE STRANDS ARE NOT REQUIRED, IF THE FABRICATOR CHOOSES TO INCLUDE THESE STRANDS IN THE CORED SLAB UNIT, THE STRANDS SHALL BE DEBONDED FOR THE FULL LENGTH OF THE UNIT AT NO ADDITIONAL COST. SEE STANDARD SPECIFICATIONS, ARTICLE 1078-7.

DEBONDING LEGEND



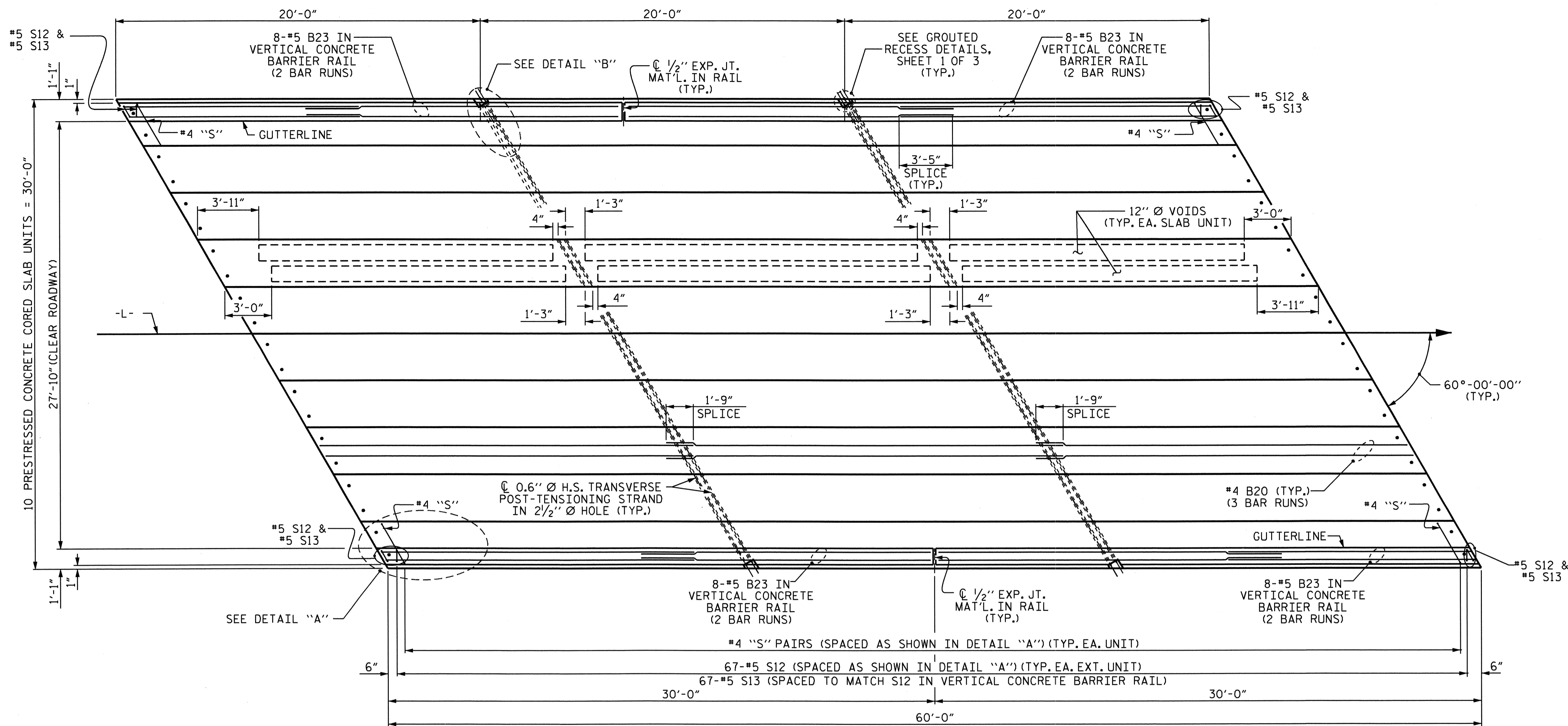
PROJECT NO. B-4851
YANCEY COUNTY
STATION: 22+86.00 -L-

SHEET 1 OF 3

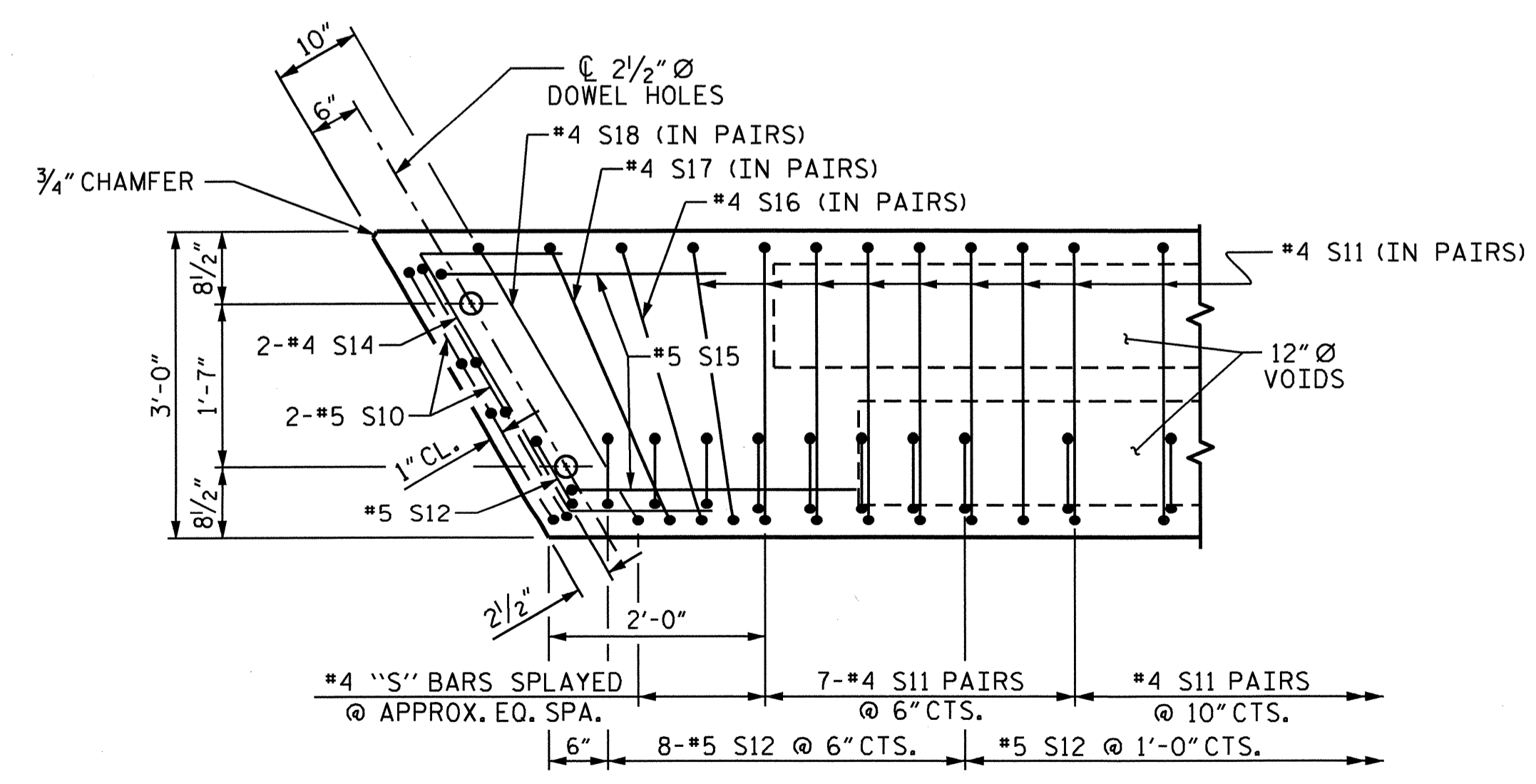
STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH
STANDARD
3'-0" X 2'-0"
PRESTRESSED CONCRETE
CORED SLAB UNIT
60° SKEW

| | |
|------------------------------|-----------------|
| ASSEMBLED BY : A.L. FIGUEROA | DATE : 04-18-11 |
| CHECKED BY : M.G. CHEEK | DATE : 06-10-11 |
| DRAWN BY : MAA 6/10 | |
| CHECKED BY : MKT 7/10 | |

| REVISIONS | | | | | | SHEET NO. |
|-----------|-----|-------|-----|-----|-------|--------------|
| NO. | BY: | DATE: | NO. | BY: | DATE: | S-5 |
| 1 | | | 3 | | | TOTAL SHEETS |
| 2 | | | 4 | | | 15 |

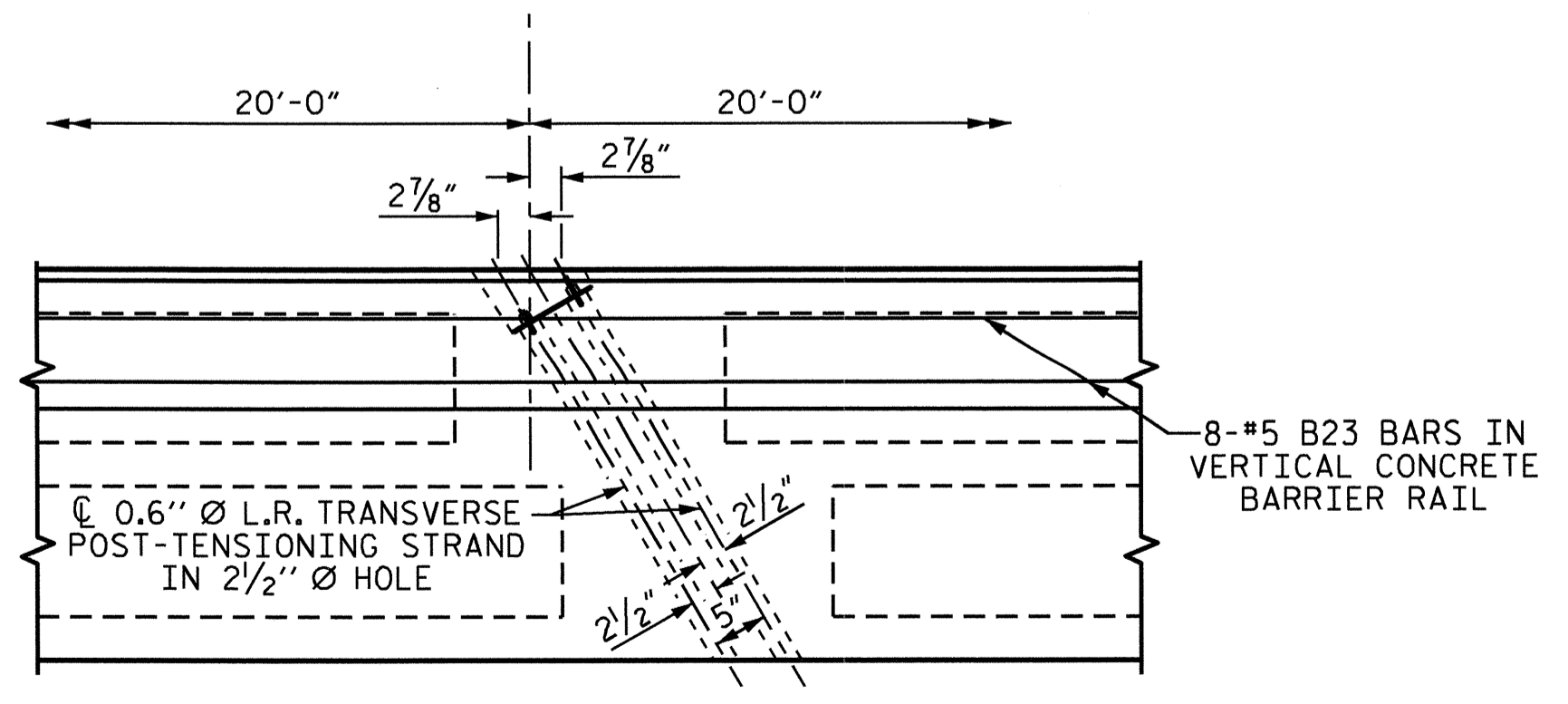


PLAN OF UNIT



DETAIL "A"

NOTE: EXTERIOR UNIT SHOWN - INTERIOR UNIT SIMILAR EXCEPT OMIT #5 S12 BARS.



DETAIL "B"

#4 S11 BARS MAY BE SHIFTED AS NECESSARY TO MAINTAIN 1" CLEAR TO GROUDED RECESS AND 2 1/2" TRANSVERSE POST-TENSIONING STRAND HOLES

ASSEMBLED BY : A.L. FIGUEROA DATE : 04-18-11
 CHECKED BY : M.G. CHEEK DATE : 06-10-11
 DRAWN BY : MAA 6/10
 CHECKED BY : MKT 7/10

17-OCT-2011 08:36
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PROJECT NO. B-4851
 YANCEY COUNTY
 STATION: 22+86.00 -L-
 SHEET 2 OF 3

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH
 STANDARD
 PLAN OF 60'-0" UNIT
 27'-10" CLEAR ROADWAY
 60° SKEW

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

STD. NO. 24PCS_30_60S_60L

| DEAD LOAD DEFLECTION AND CAMBER | |
|--|-------------------------------------|
| 60'-0" CORED SLAB UNIT | 3'-0" x 2'-0" 0.6" Ø L.R. STRAND |
| CAMBER (SLAB ALONE IN PLACE) | 3 3/8" ↑ |
| DEFLECTION DUE TO SUPERIMPOSED DEAD LOAD** | 1/2" ↓ |
| FINAL CAMBER | 2 7/8" ↑ |

** INCLUDES FUTURE WEARING SURFACE

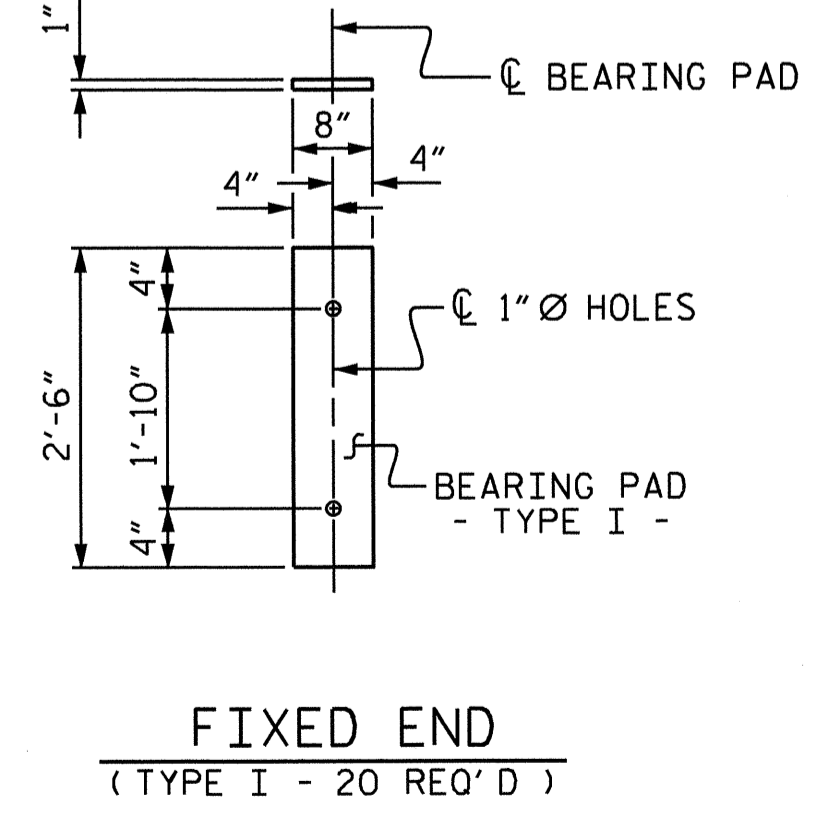
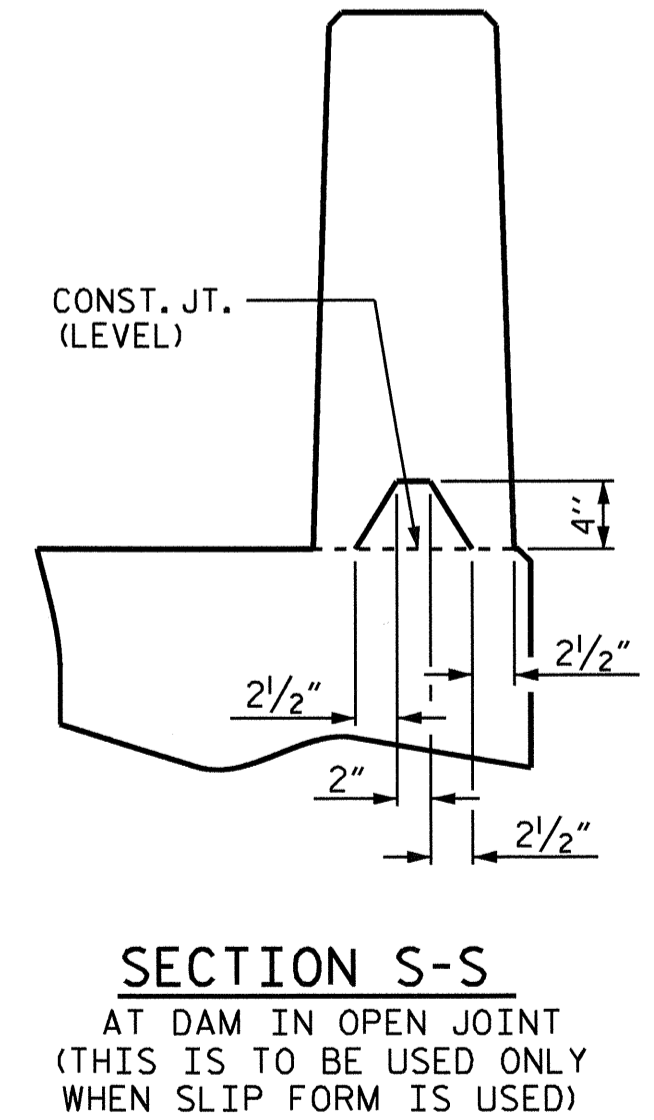
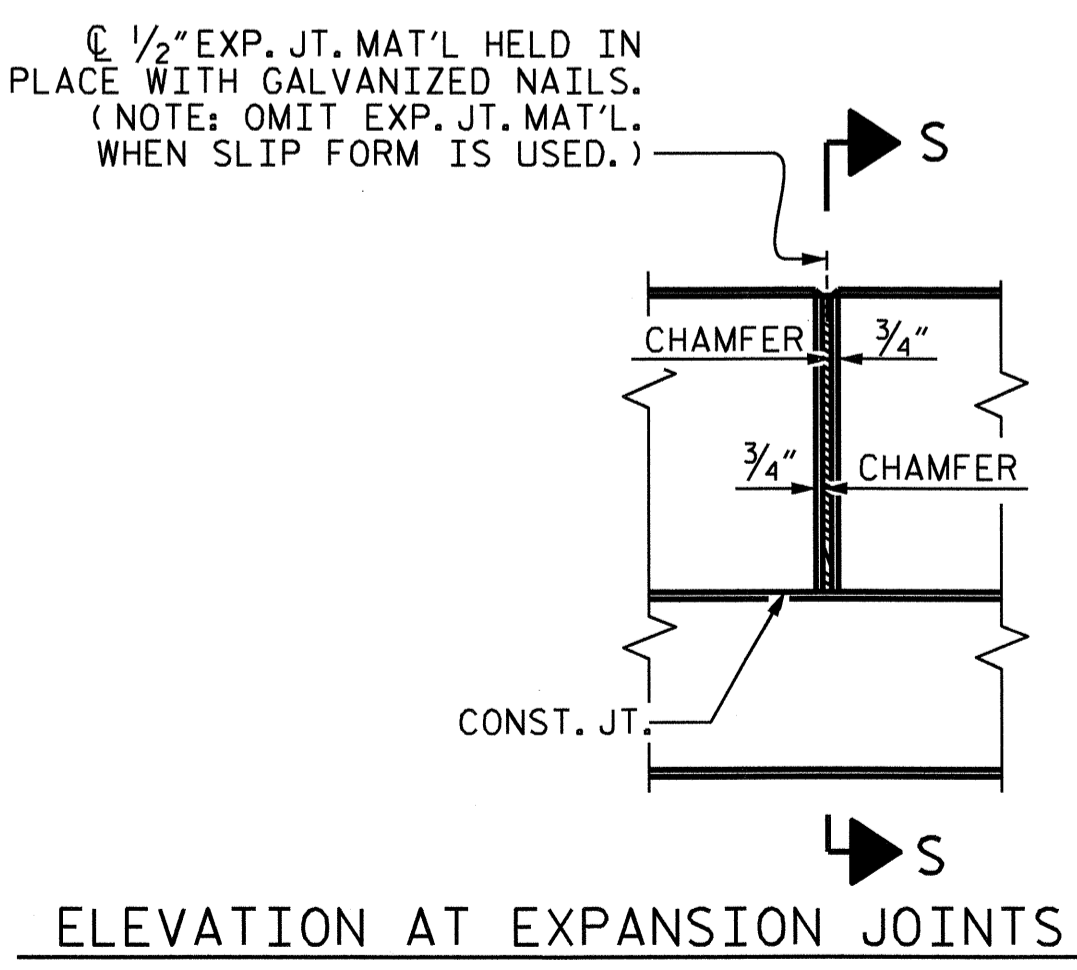
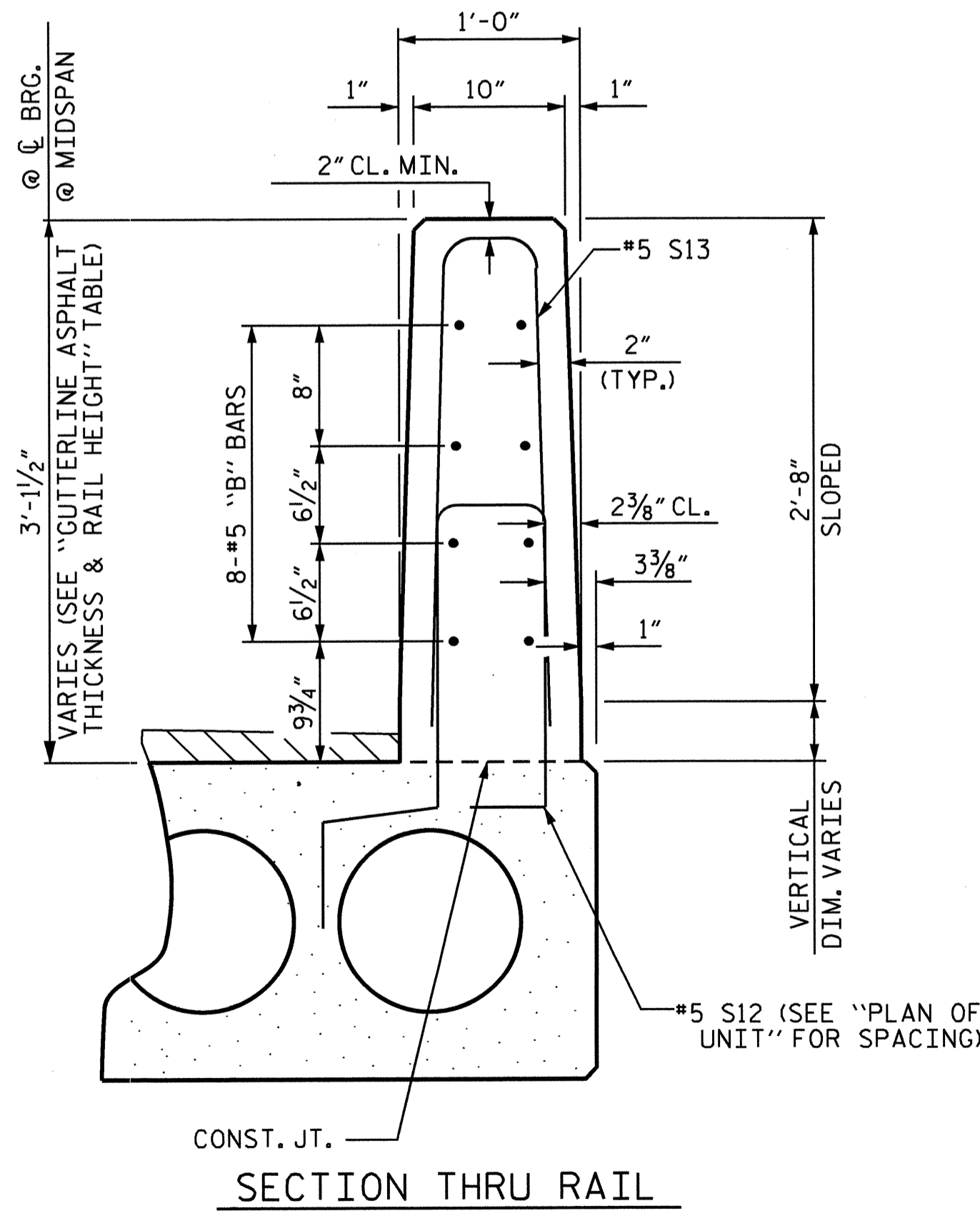
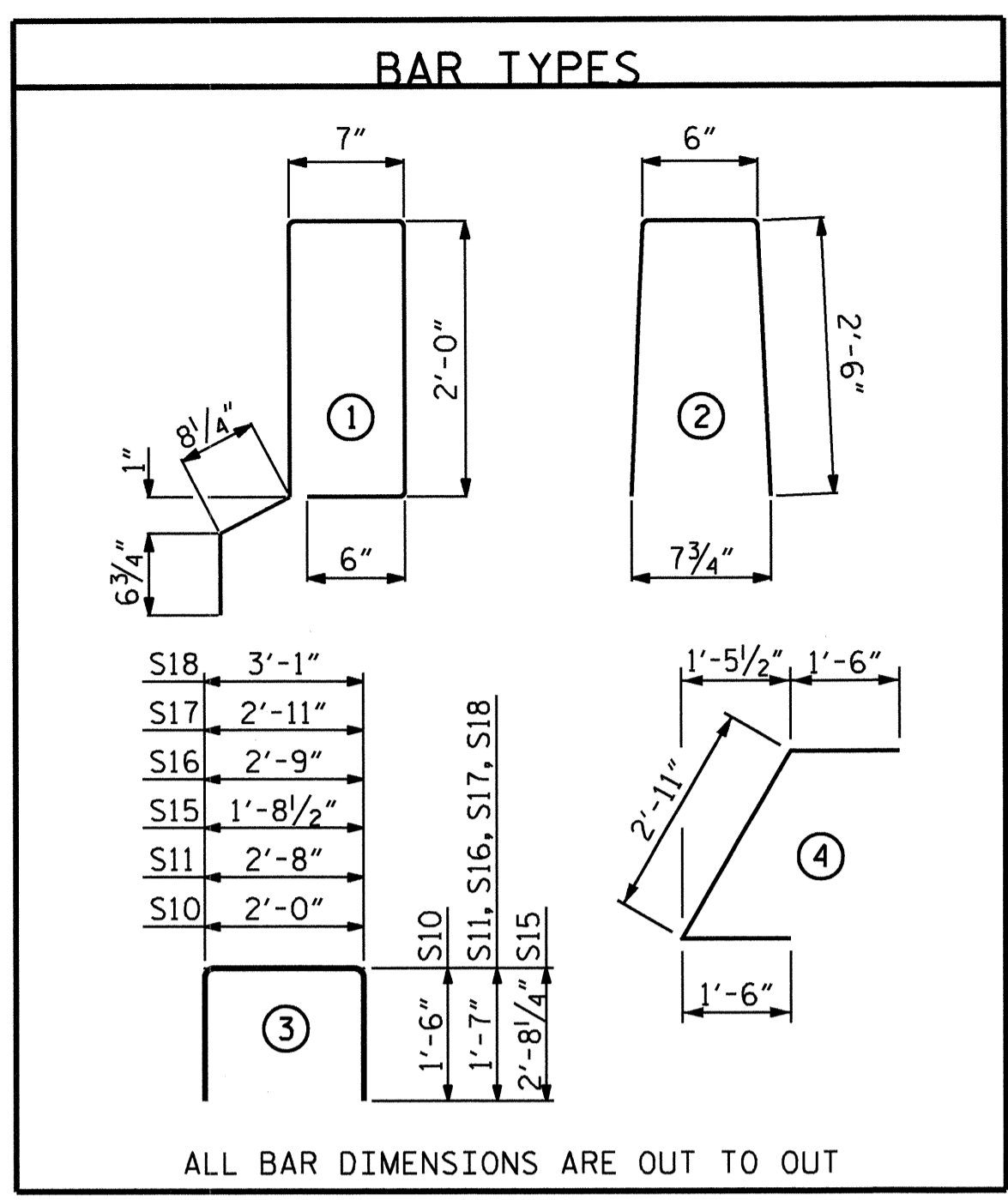
| BILL OF MATERIAL FOR VERTICAL CONCRETE BARRIER RAIL | | | | | | |
|---|---------------------------------|-----------|------|------|---------|--------|
| BAR | BARS PER PAIR OF EXTERIOR UNITS | TOTAL NO. | SIZE | TYPE | LENGTH | WEIGHT |
| *B23 | 64 | 64 | #5 | STR | 16'-11" | 1129 |
| *S13 | 138 | 138 | #5 | 2 | 5'-6" | 792 |
| * EPOXY COATED REINFORCING STEEL | | | | | LBS. | 1921 |
| CLASS AA CONCRETE | | | | | CU.YDS. | 12.7 |
| TOTAL VERTICAL CONCRETE BARRIER RAIL | | | | | LN. FT. | 120.00 |

| CORED SLABS REQUIRED | | | |
|----------------------|--------|--------|--------------|
| 60'-0" UNIT | NUMBER | LENGTH | TOTAL LENGTH |
| EXTERIOR C.S. | 2 | 60'-0" | 120'-0" |
| INTERIOR C.S. | 8 | 60'-0" | 480'-0" |
| TOTAL | 10 | 60'-0" | 600'-0" |

| CONCRETE RELEASE STRENGTH | |
|---------------------------|------|
| UNIT | PSI |
| 60'-0" UNITS | 4800 |

| 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 |

| BILL OF MATERIAL FOR ONE 60'-0" CORED SLAB UNIT | | | | | | | |
|---|--------|---------------|------|----------|---------------|--------|--------|
| | | EXTERIOR UNIT | | | INTERIOR UNIT | | |
| BAR | NUMBER | SIZE | TYPE | LENGTH | WEIGHT | LENGTH | WEIGHT |
| B20 | 6 | #4 | STR | 21'-2" | 85 | 21'-2" | 85 |
| S10 | 8 | #5 | 3 | 5'-0" | 42 | 5'-0" | 42 |
| S11 | 146 | #4 | 3 | 5'-10" | 569 | 5'-10" | 569 |
| *S12 | 69 | #5 | 1 | 6'-4" | 456 | | |
| S14 | 4 | #4 | 4 | 5'-11" | 16 | 5'-11" | 16 |
| S15 | 4 | #5 | 3 | 7'-1" | 30 | 7'-1" | 30 |
| S16 | 4 | #4 | 3 | 5'-11" | 16 | 5'-11" | 16 |
| S17 | 4 | #4 | 3 | 6'-1" | 16 | 6'-1" | 16 |
| S18 | 4 | #4 | 3 | 6'-3" | 17 | 6'-3" | 17 |
| REINFORCING STEEL | | | | LBS. | 791 | | |
| * EPOXY COATED REINFORCING STEEL | | | | LBS. | 456 | | |
| 6000 P.S.I. CONCRETE | | | | CU. YDS. | 10.4 | | 10.4 |
| 0.6" Ø L.R. STRANDS | | | | No. | 22 | | 24 |



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

| GUTTERLINE ASPHALT THICKNESS & RAIL HEIGHT | | |
|--|--------------------------------------|------------------------|
| | ASPHALT OVERLAY THICKNESS @ MID-SPAN | RAIL HEIGHT @ MID-SPAN |
| 60'-0" UNITS | 2 3/8" | 2'-10 5/8" |

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 GROUT.

THE 2" Ø BACKER ROD 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 SIDEWAYS. 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.

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.

ALL REINFORCING STEEL IN VERTICAL CONCRETE BARRIER RAILS 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.

TRANSVERSE POST TENSIONING OF THE CORED SLAB UNITS SHALL BE DONE IN ACCORDANCE WITH THE STANDARD SPECIFICATIONS.

MAINTAIN A SYMMETRIC TENSION FORCE BETWEEN EACH PAIR OF TRANSVERSE POST TENSIONING STRANDS IN THE DIAPHRAGM.

THE #4 S11 STIRRUPS MAY BE SHIFTED AS NECESSARY TO MAINTAIN 1" CLEAR TO THE GROUTED RECESS.

THE 3/4" Ø BOLTS, WASHERS AND CONCRETE INSERTS SHALL BE GALVANIZED IN ACCORDANCE WITH SECTION 1076 OF THE STANDARD SPECIFICATIONS.

THE BOLTS, WASHERS AND CONCRETE INSERTS ARE PROVIDED AS AN OPTION FOR THE CONTRACTOR TO ATTACH MATERIALS TO PREVENT DEBRIS FROM DROPPING INTO THE WATER DURING CONSTRUCTION OF THE VERTICAL CONCRETE BARRIER RAILS.

UPON COMPLETION OF THE BRIDGE CONSTRUCTION, THE 3/4" Ø BOLTS, AND WASHERS SHALL BE REMOVED AND THE CONCRETE INSERTS SHALL BE GROUTED.

THE COST OF THE 3/4" Ø BOLTS, WASHERS, AND INSERTS SHALL BE INCLUDED IN THE PRICE BID FOR PRESTRESSED CONCRETE CORED SLABS.

FOR GROUT FOR STRUCTURES, SEE SPECIAL PROVISIONS.

PROJECT NO. B-4851
YANCEY COUNTY
STATION: 22+86.00 -L-

SHEET 3 OF 3

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

STANDARD
3'-0" X 2'-0"
PRESTRESSED CONCRETE
CORED SLAB UNIT
60° SKEW

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

ASSEMBLED BY : A.L. FIGUEROA DATE : 04-18-11
CHECKED BY : M.G. CHEEK DATE : 06-10-11
DRAWN BY : MAA 6/10
CHECKED BY : MKT 7/10



NOTES

THE GUARDRAIL ANCHOR ASSEMBLY SHALL CONSIST OF A 1/4" HOLD DOWN PLATE AND 7 - 1/8" 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 1/8" Ø GALVANIZED BOLTS, NUTS AND WASHERS. THEY SHALL CONFORM TO OR EXCEED THE MECHANICAL REQUIREMENTS OF ASTM A307. THE USE OF THIS ALTERNATE SHALL BE APPROVED BY THE ENGINEER.)

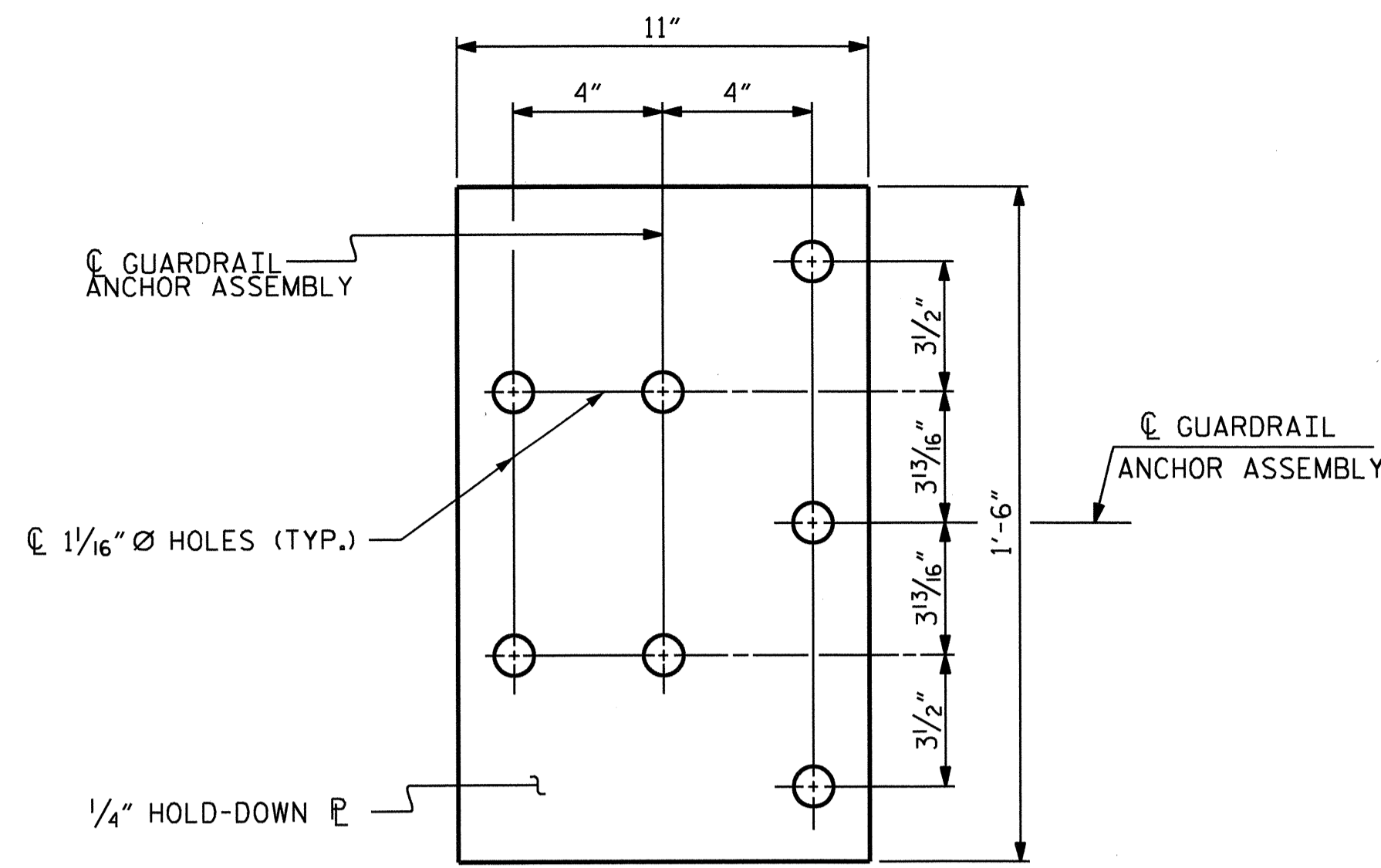
THE GUARDRAIL ANCHOR ASSEMBLY IS REQUIRED AT ALL POINTS WHERE APPROACH GUARDRAIL IS TO BE ATTACHED TO THE END OF BARRIER RAIL. FOR POINTS OF ATTACHMENT, SEE SKETCH.

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

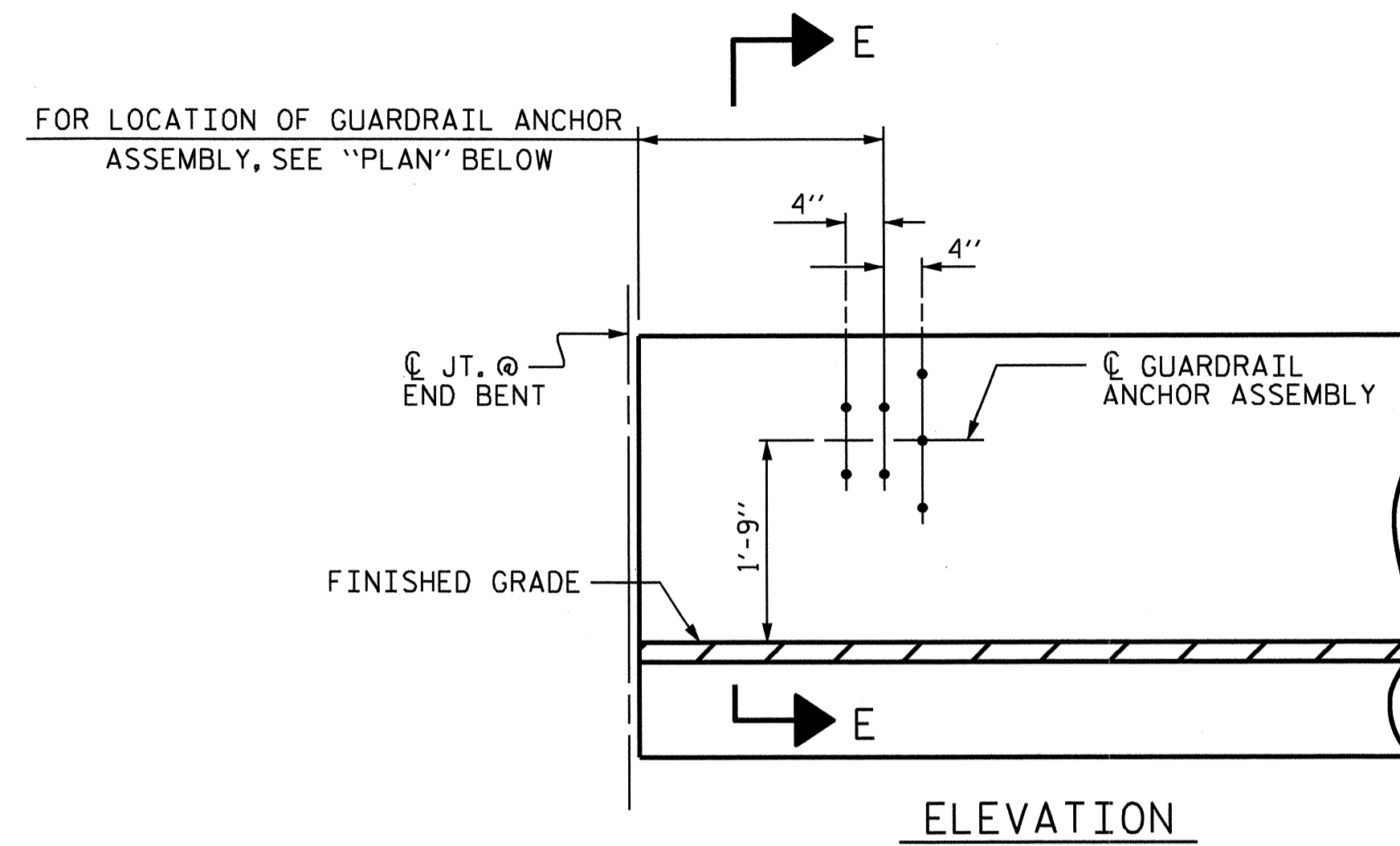
THE COST OF THE GUARDRAIL ANCHOR ASSEMBLY SHALL BE INCLUDED IN THE UNIT CONTRACT PRICE BID FOR VERTICAL CONCRETE BARRIER RAIL.

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

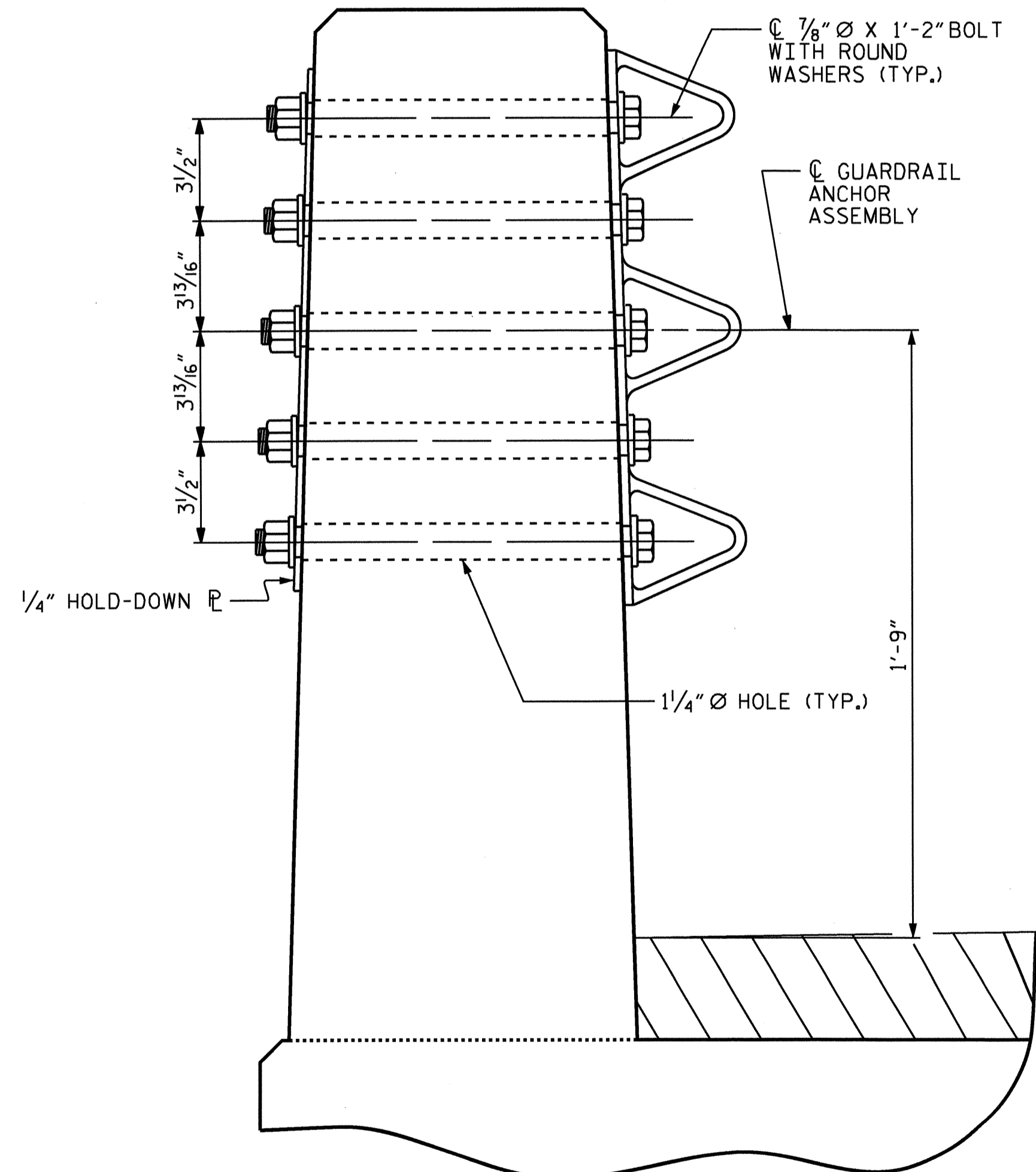
THE 1/4" Ø HOLES SHALL BE FORMED OR DRILLED WITH A CORE BIT. IMPACT TOOLS WILL NOT BE PERMITTED. ANY CONCRETE DAMAGED BY THIS WORK SHALL BE REPAIRED TO THE SATISFACTION OF THE ENGINEER.



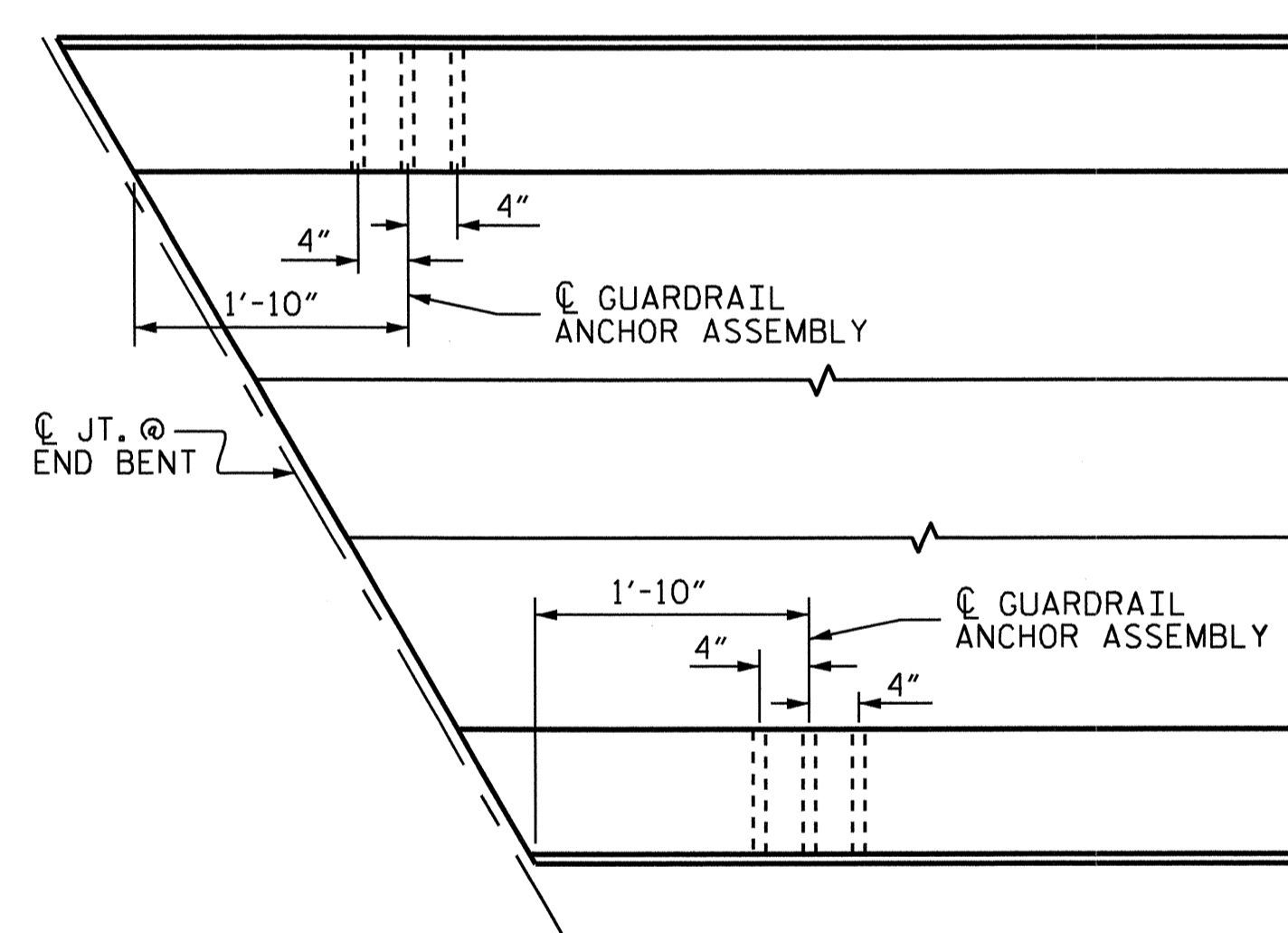
PLAN



ELEVATION



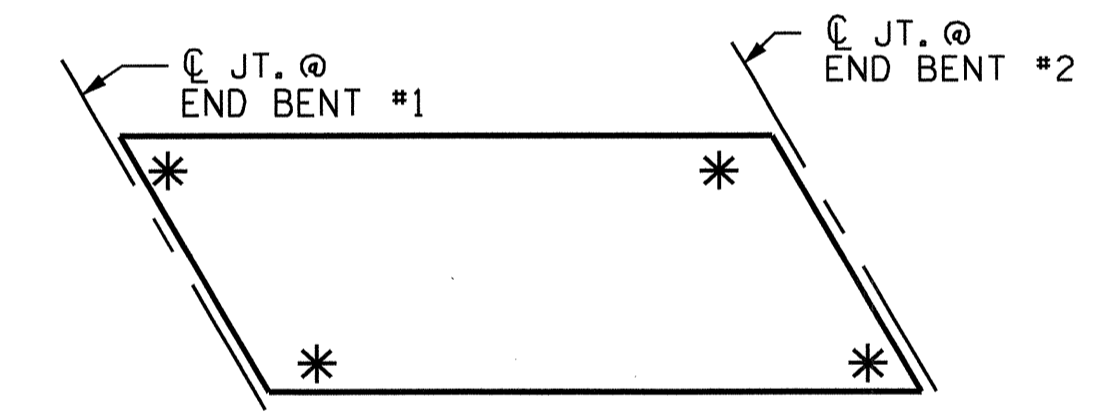
SECTION E-E
GUARDRAIL ANCHOR ASSEMBLY DETAILS



PLAN

LOCATION OF ANCHORS FOR GUARDRAIL

END BENT #1 SHOWN, END BENT #2 SIMILAR.



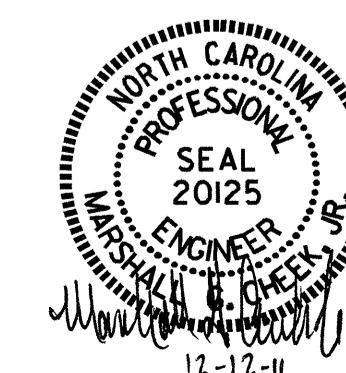
SKETCH SHOWING POINTS OF ATTACHMENT

* DENOTES GUARDRAIL ANCHOR ASSEMBLY

PROJECT NO. B-4851
YANCEY COUNTY
STATION: 22+86.00 -L-

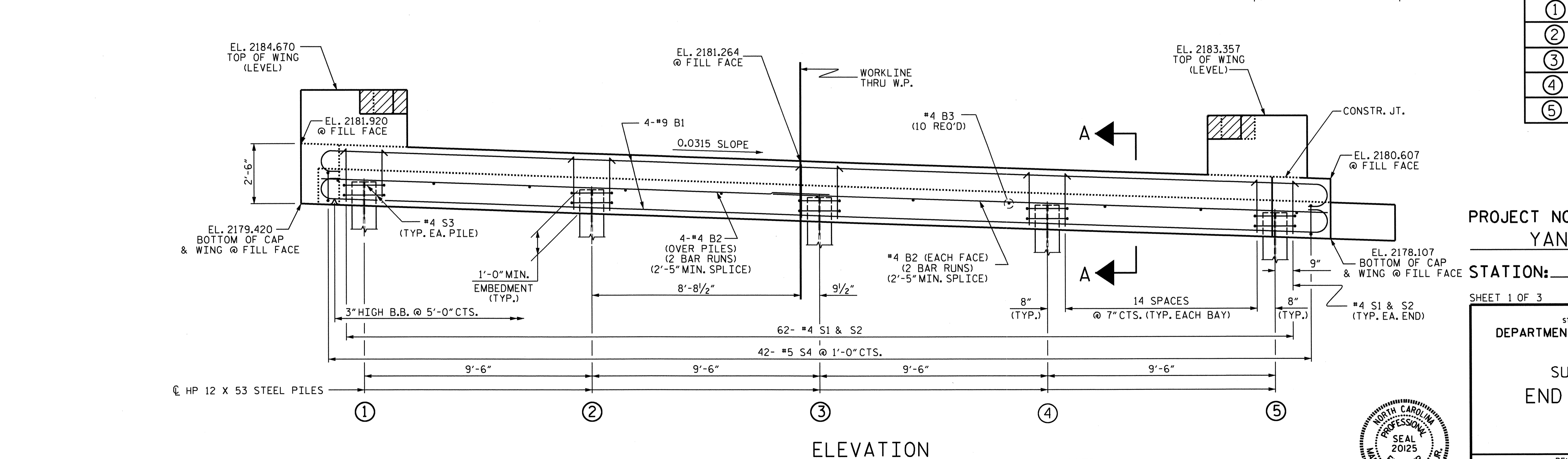
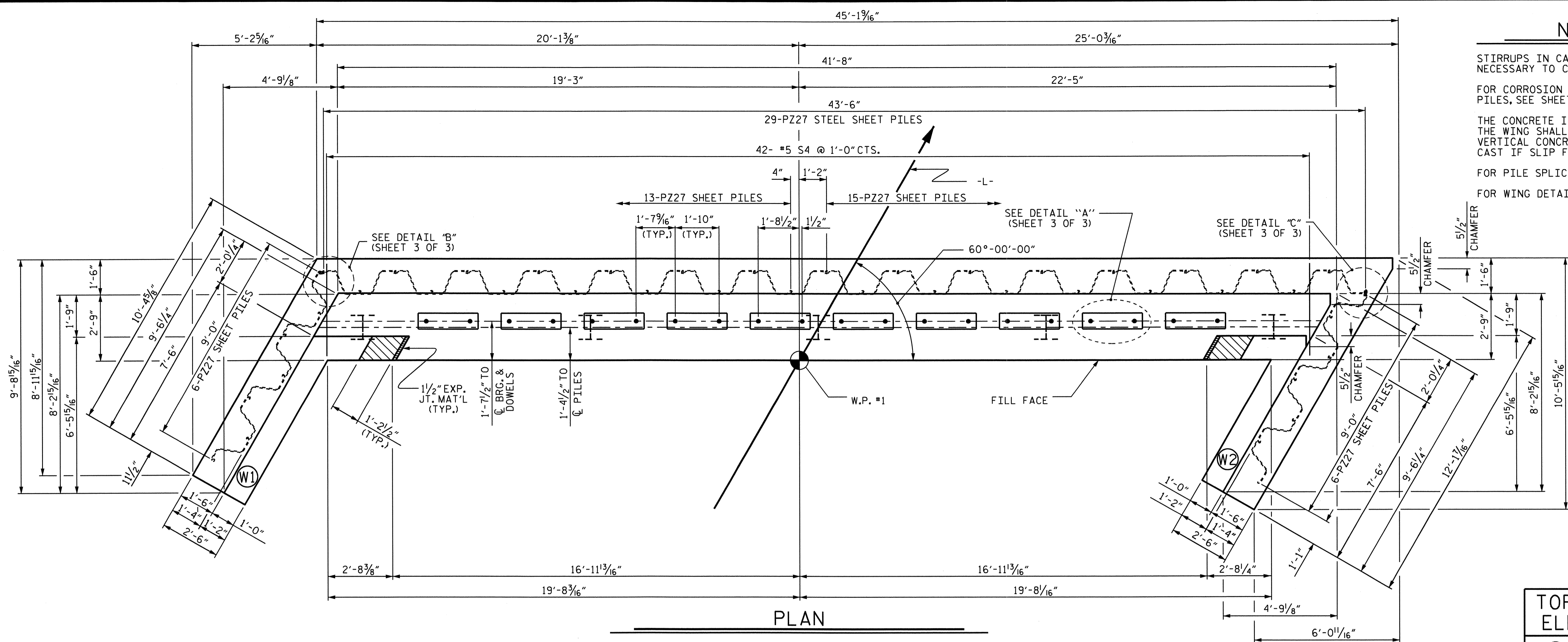
SHEET 1 OF 1

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



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

| | |
|------------------------------|-----------------|
| ASSEMBLED BY : A.L. FIGUEROA | DATE : 04-18-11 |
| CHECKED BY : M.G. CHEEK | DATE : 06-10-11 |
| DRAWN BY : MAA 5/10 | ADDED 5/6/10 |
| CHECKED BY : GM 5/10 | |



NOTES

STIRRUPS IN CAP MAY BE SHIFTED AS NECESSARY TO CLEAR DOWELS.
 FOR CORROSION PROTECTION OF STEEL PILES, SEE SHEET 3 OF 3.
 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 3 OF 3.
 FOR WING DETAILS, SEE SHEET 2 OF 3.

| TOP OF PILE ELEVATIONS | |
|------------------------|----------|
| ① | 2180.354 |
| ② | 2180.054 |
| ③ | 2179.755 |
| ④ | 2179.456 |
| ⑤ | 2179.157 |

PROJECT NO. B-4851
YANCEY COUNTY
 STATION: 22+86.00 -L-

SHEET 1 OF 3

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

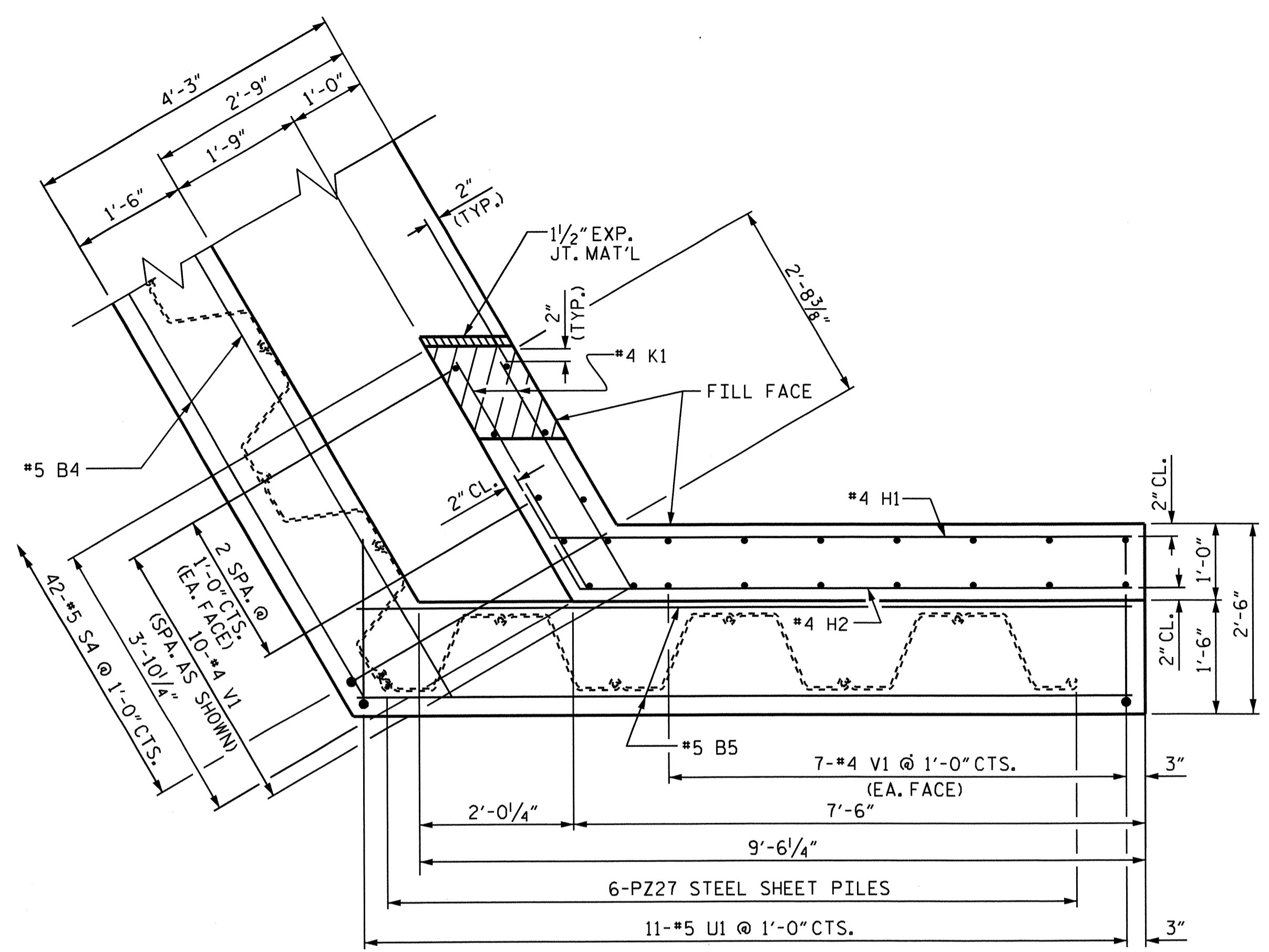
SUBSTRUCTURE
 END BENT No. 1



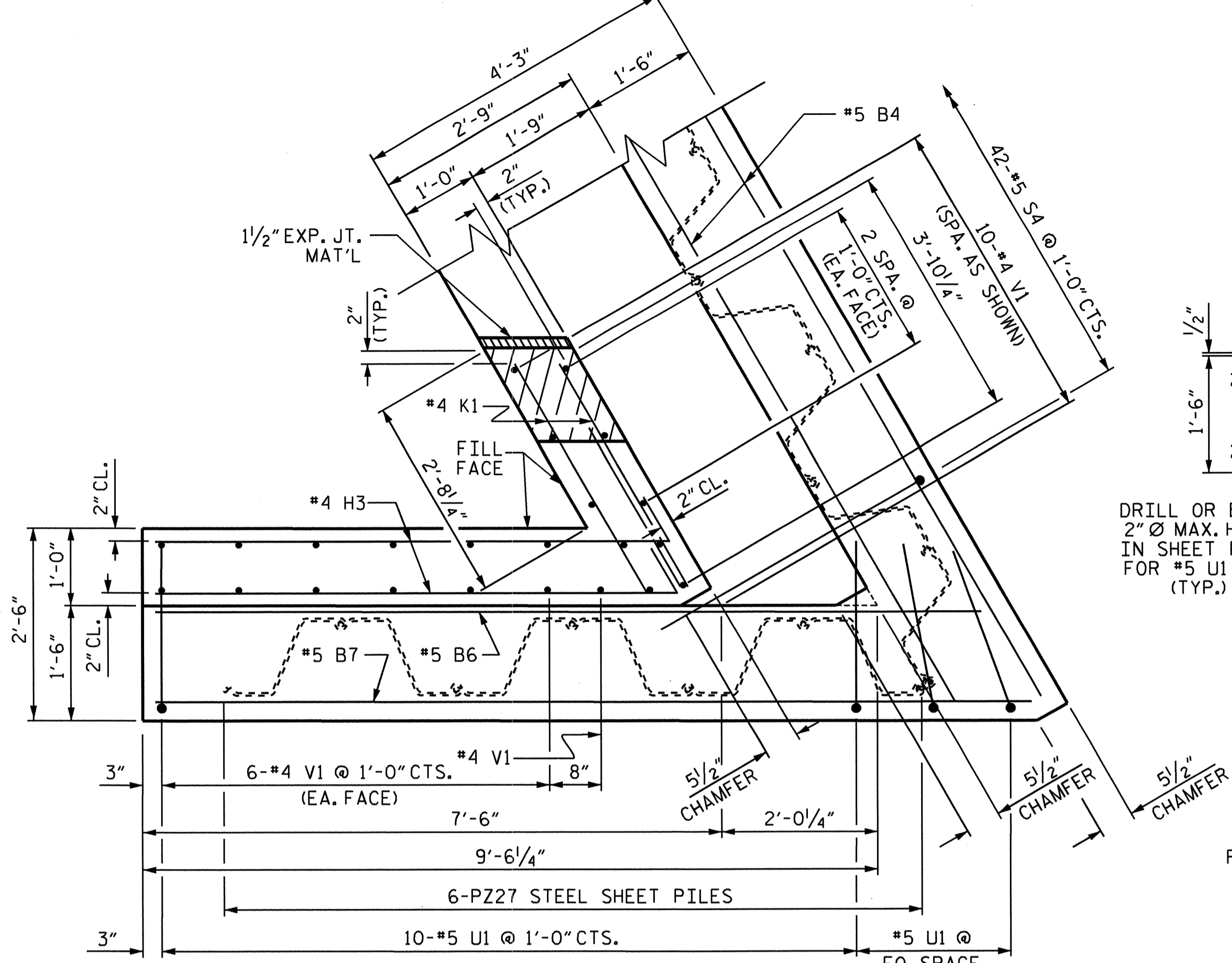
DRAWN BY: A.L. FIGUEROA DATE: 05-31-11
 CHECKED BY: M.G. CHEEK DATE: 06-14-11

WINGS NOT SHOWN FOR CLARITY. FOR SECTION A-A, SEE SHEET 3 OF 3.
 CONCRETE COLLARS FOR STEEL PILES NOT SHOWN IN PLAN AND ELEVATION VIEWS FOR CLARITY.

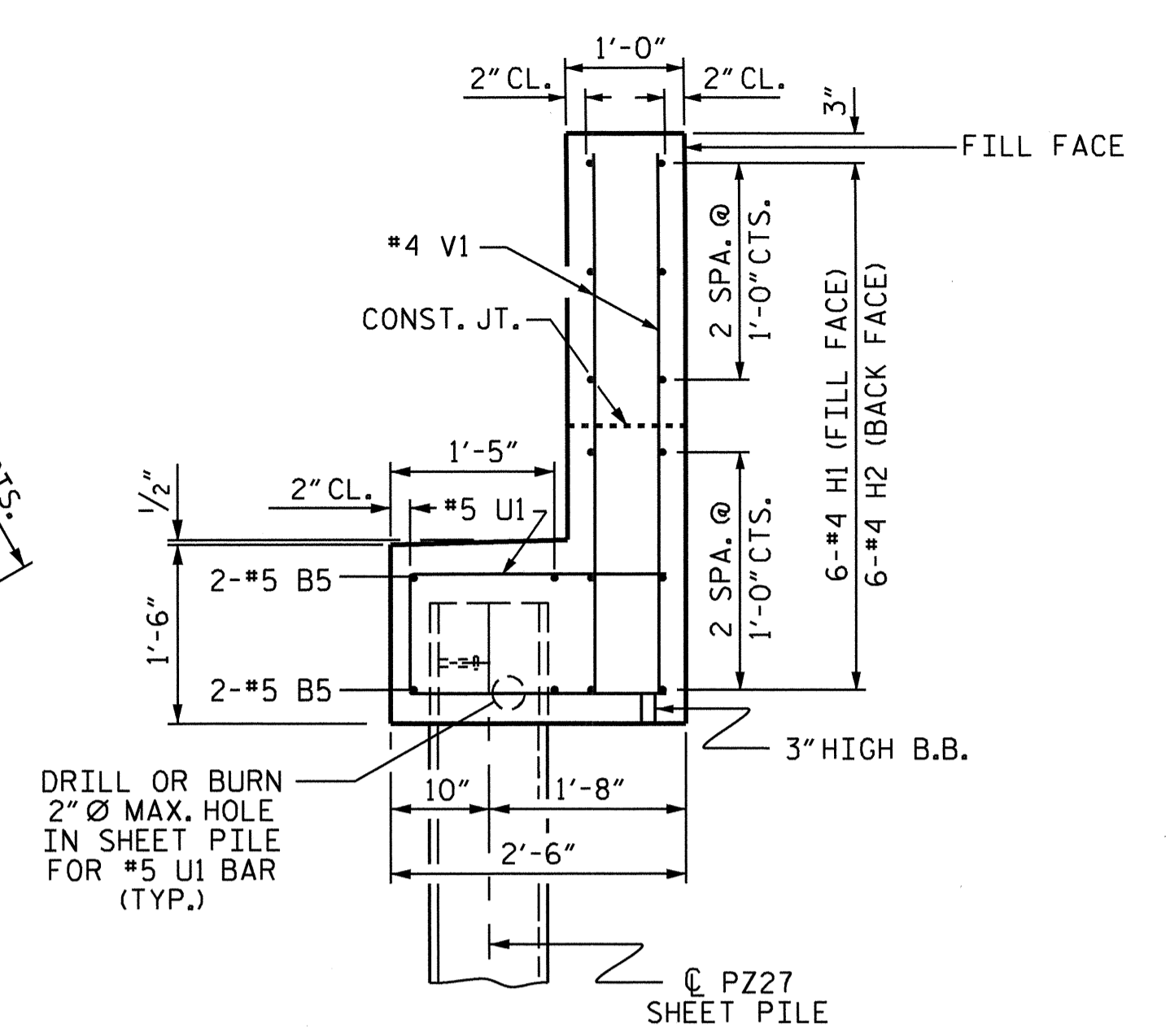
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| 2 | | | 4 | | | 15 |



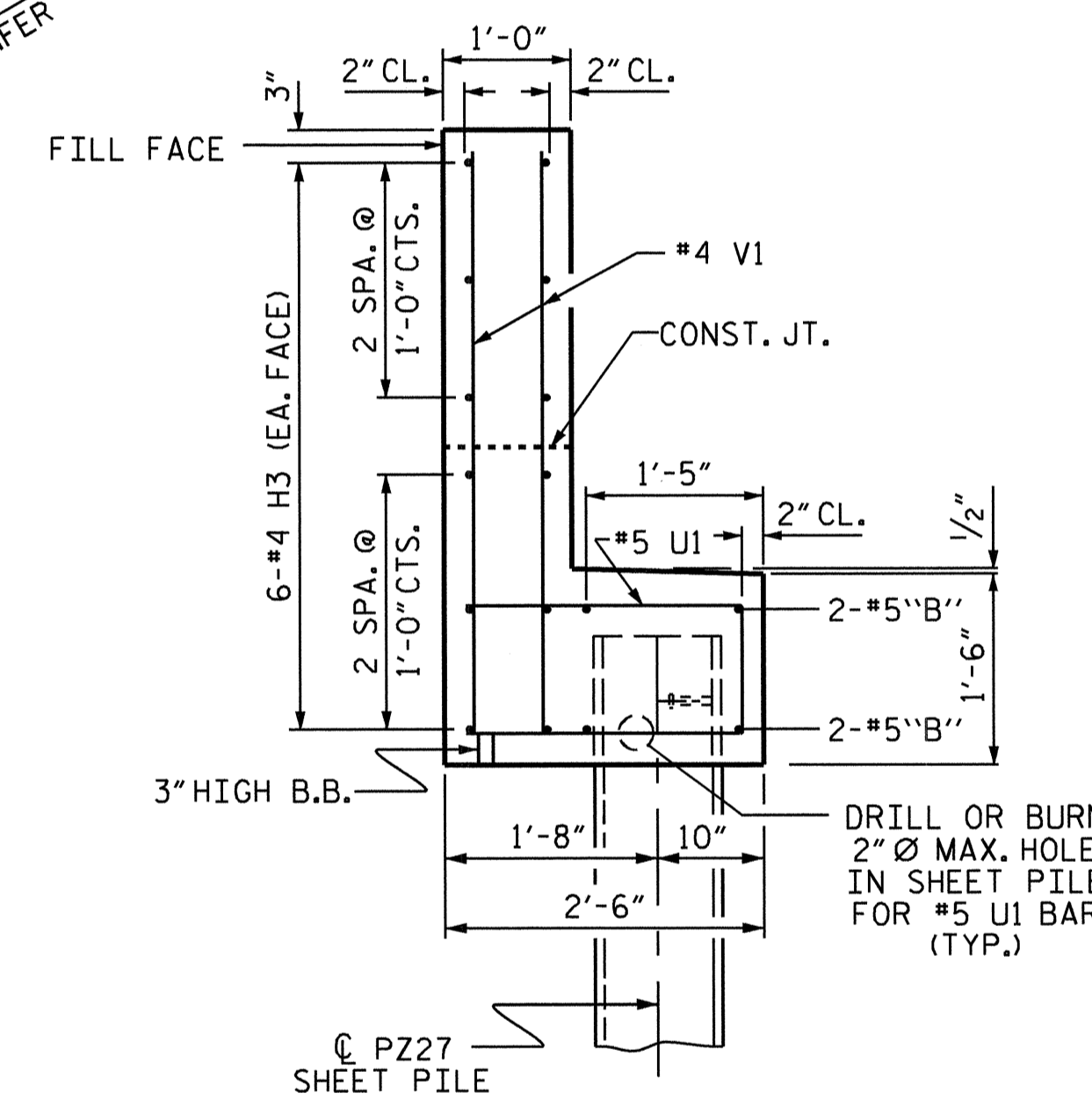
PLAN OF WING (W1)



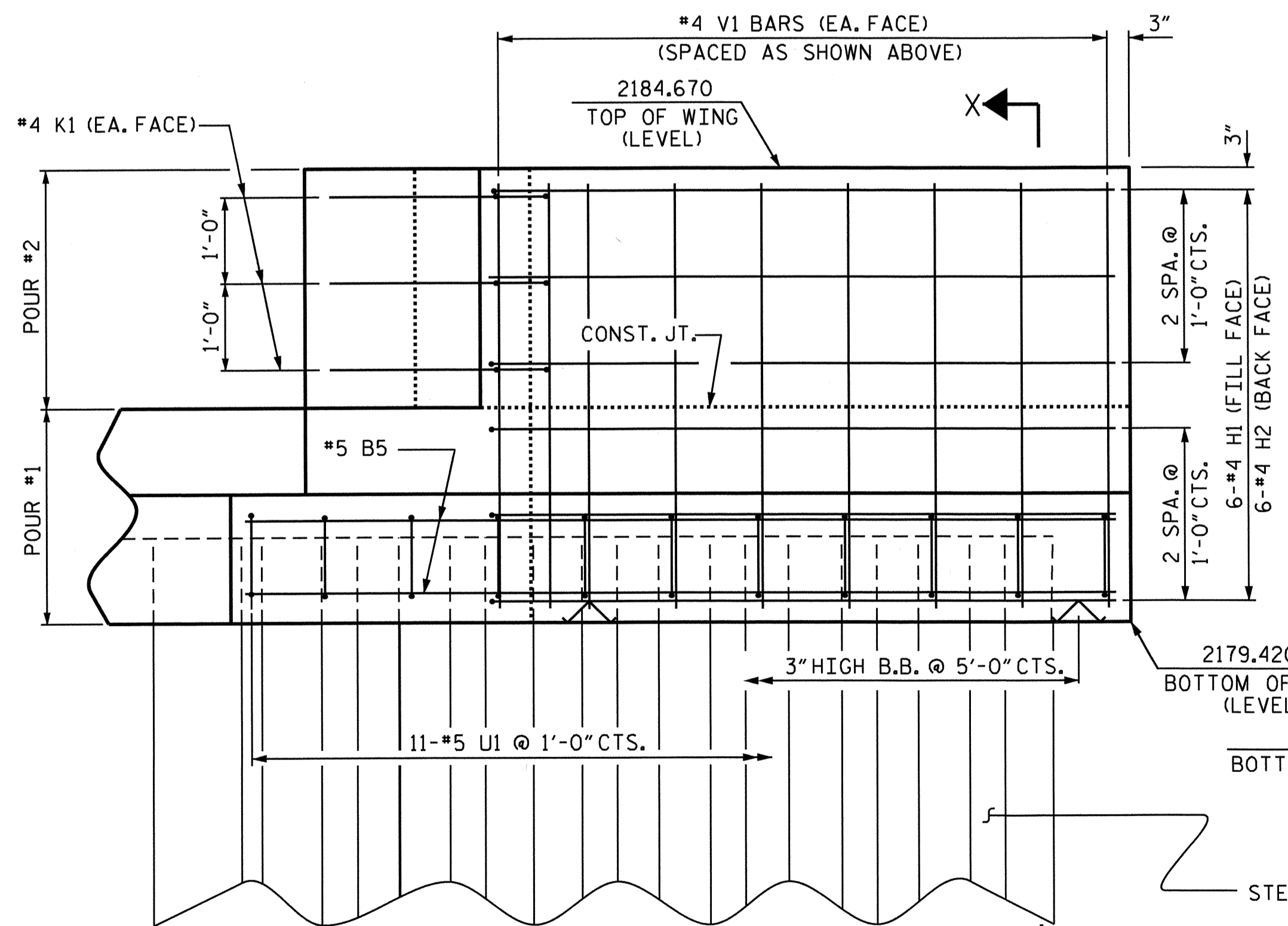
PLAN OF WING (W2)



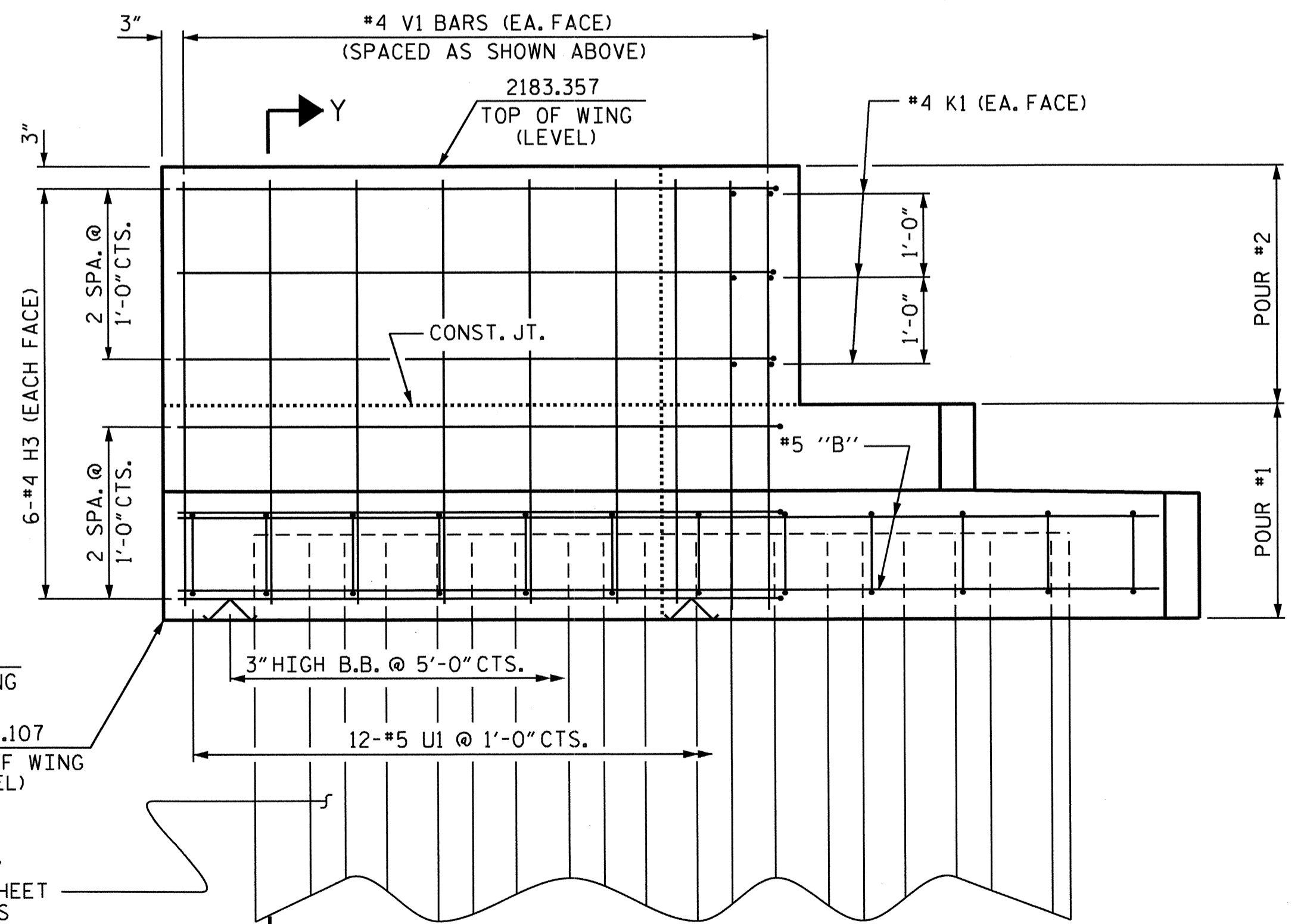
SECTION X-X



SECTION Y-Y



ELEVATION OF WING (W1)



ELEVATION OF WING (W2)

PROJECT NO. B-4851
 YANCEY COUNTY
 STATION: 22+86.00 -L-

SHEET 2 OF 3

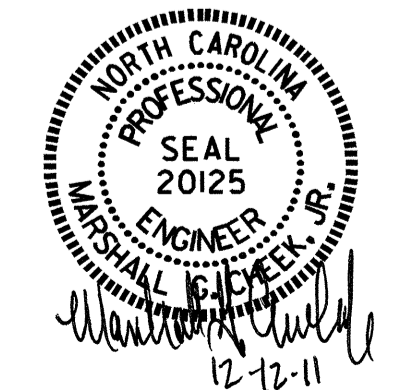
STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

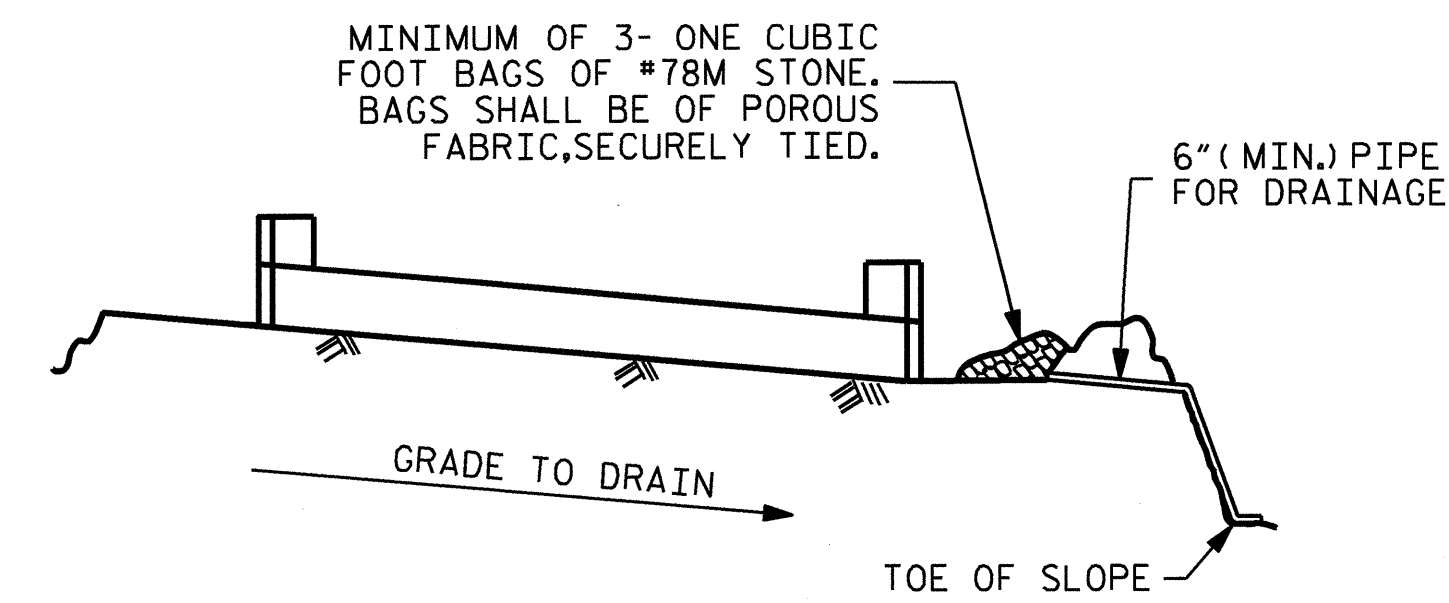
SUBSTRUCTURE
 END BENT NO. 1

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

DRAWN BY : A.L. FIGUEROA DATE : 05-31-11
 CHECKED BY : M.G. CHEEK DATE : 06-14-11

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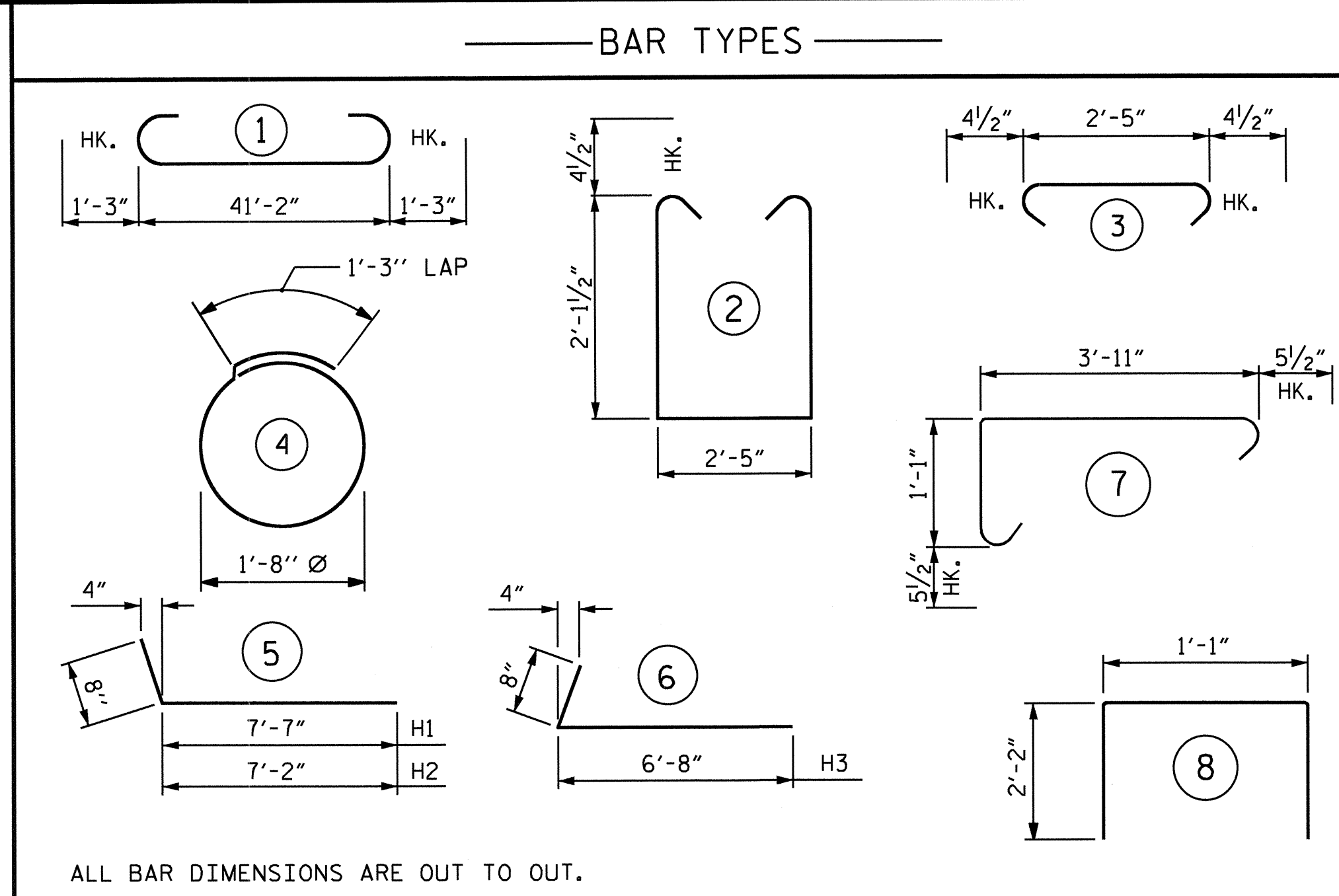
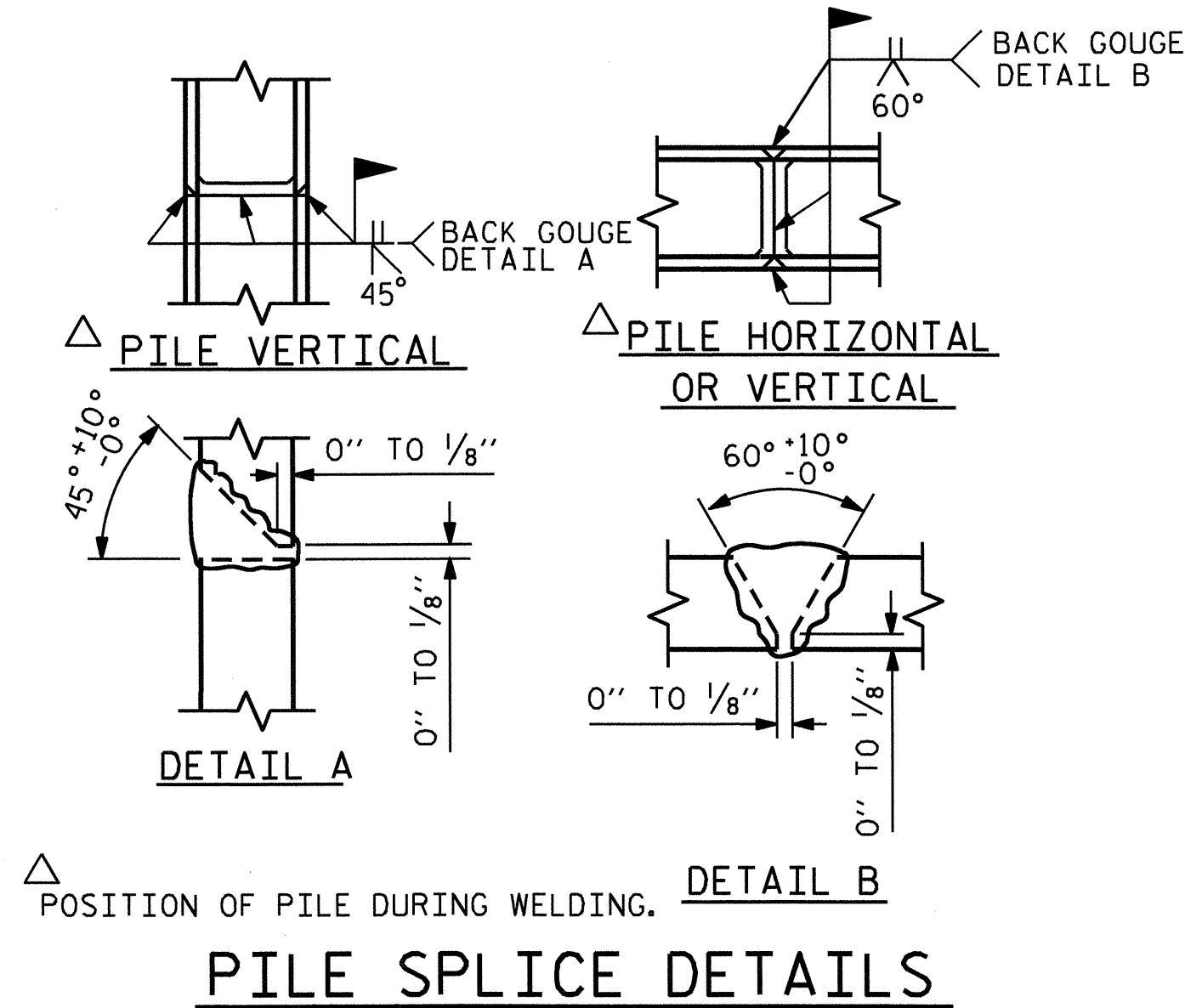


BAGGED STONE AND PIPE SHALL BE PLACED IMMEDIATELY AFTER COMPLETION OF END BENT EXCAVATION. PIPE MAY BE EITHER CONCRETE, CORRUGATED STEEL, CORRUGATED ALUMINUM ALLOY, OR CORRUGATED PLASTIC. PERFORATED PIPE WILL NOT BE ALLOWED.

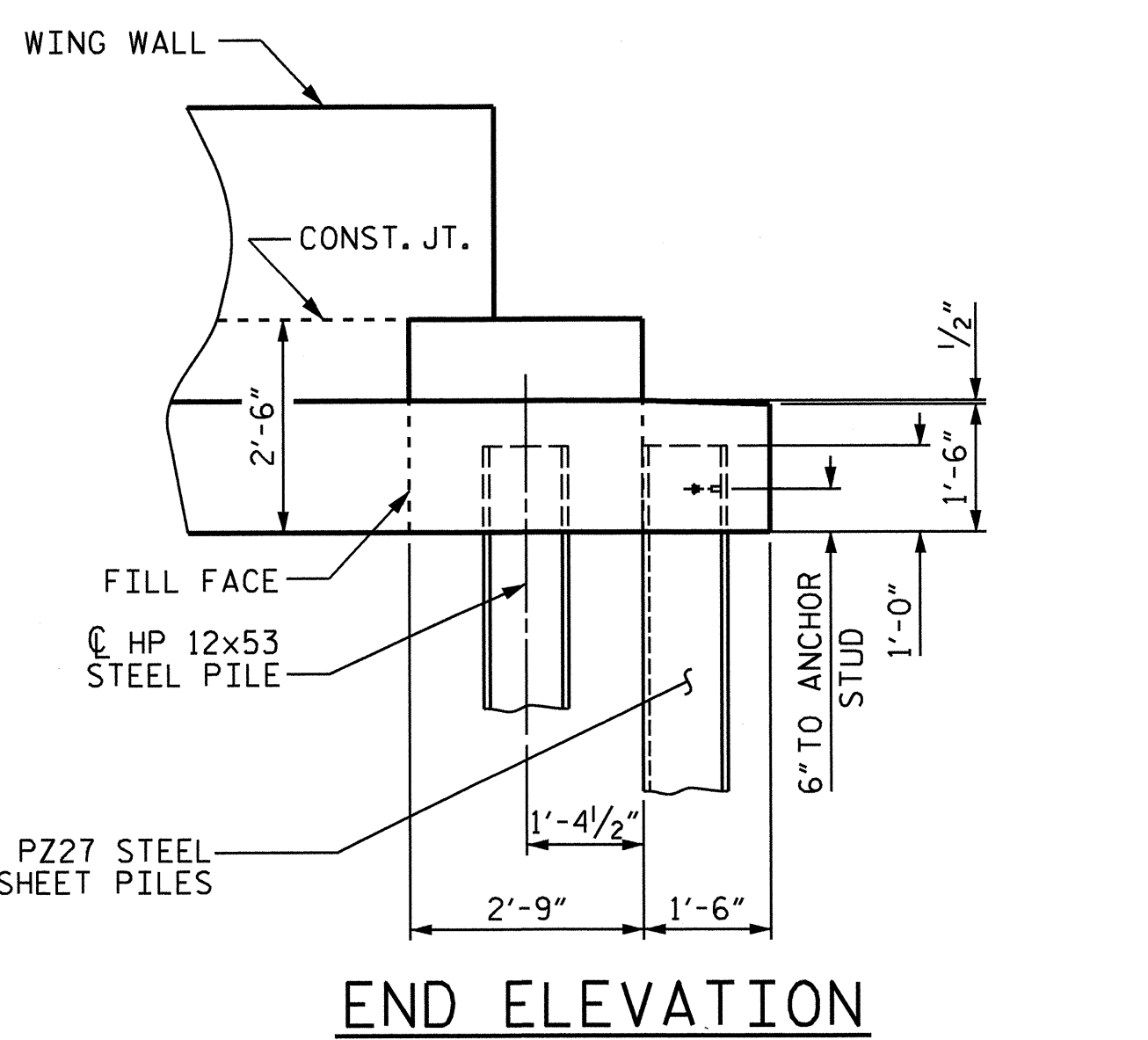
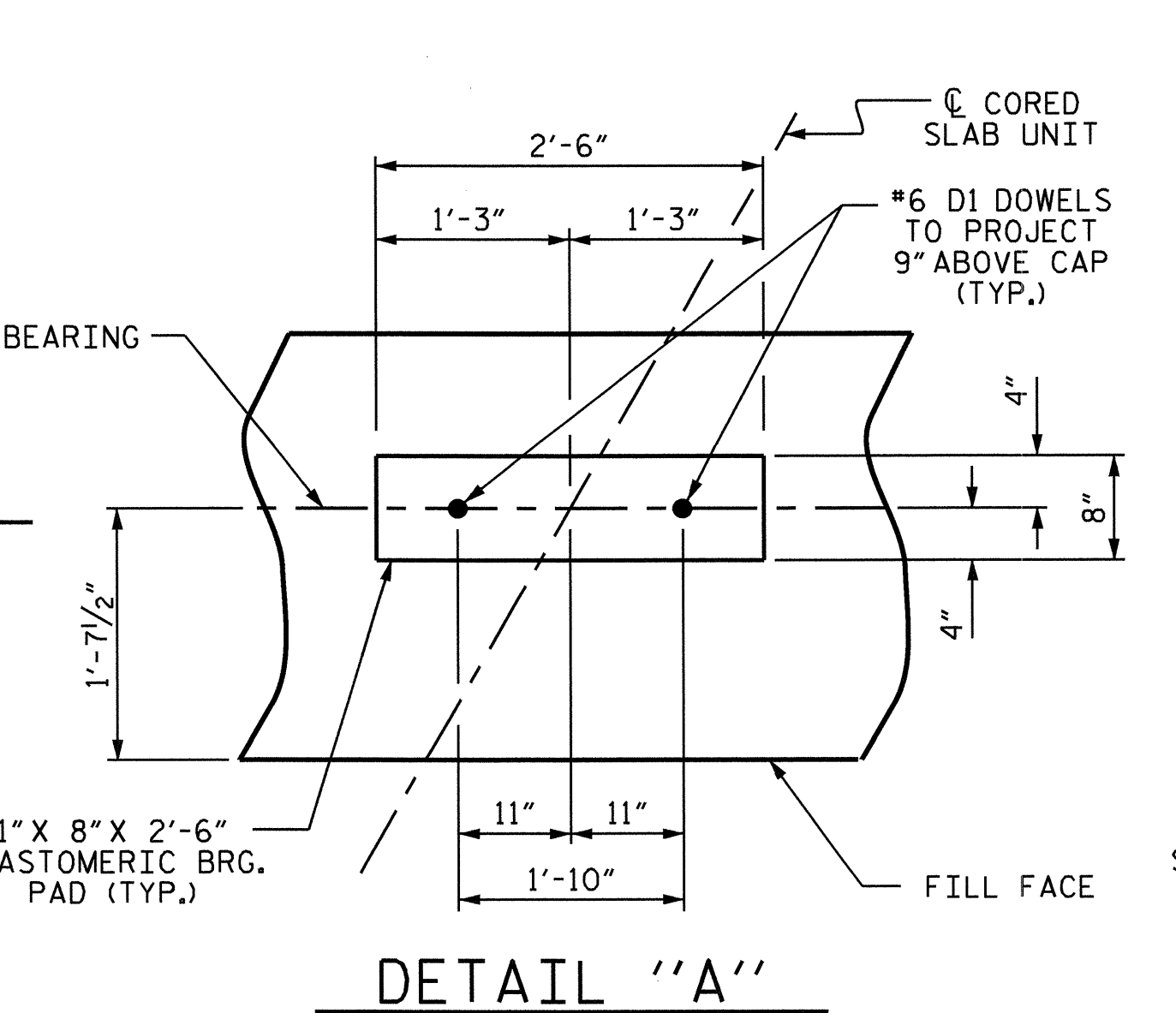
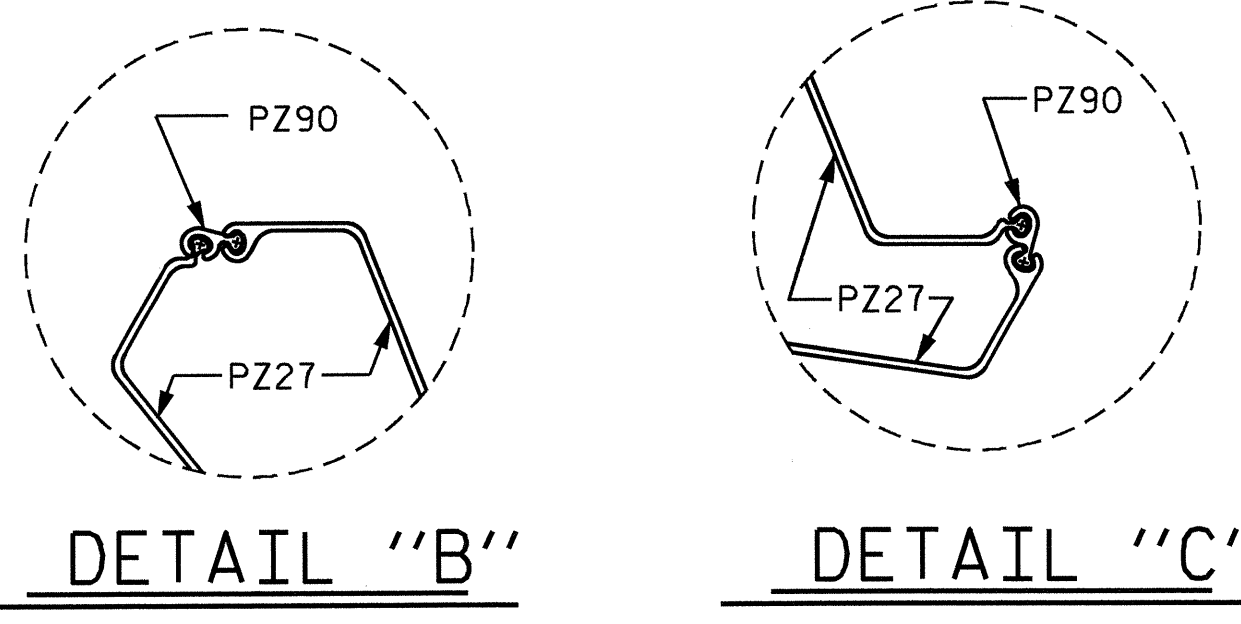
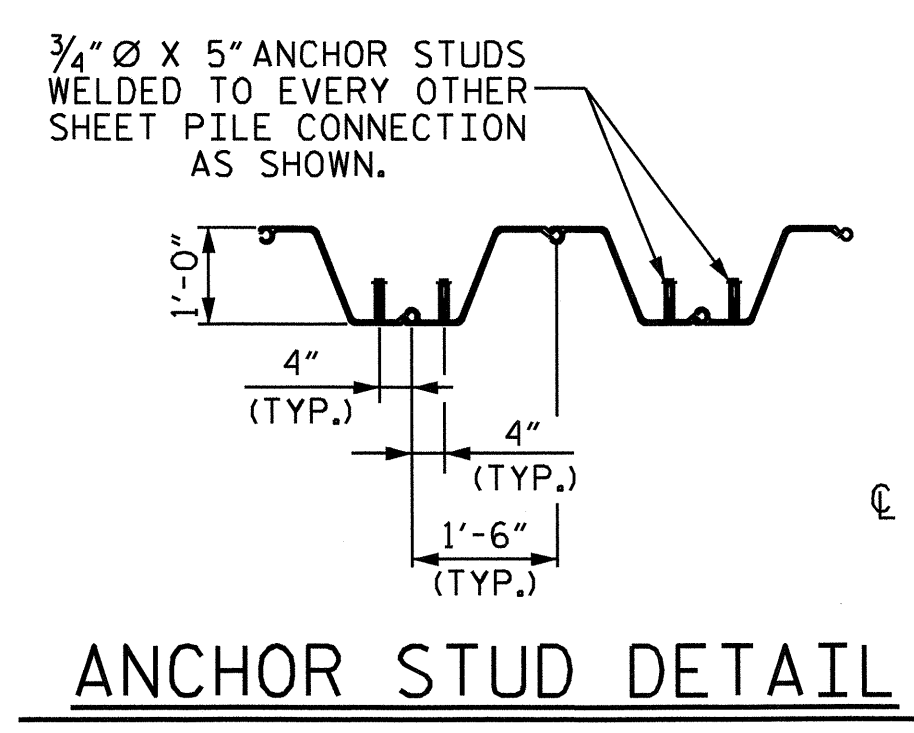
BAGGED STONE SHALL REMAIN IN PLACE UNTIL THE ENGINEER DIRECTS THAT IT BE REMOVED. THE CONTRACTOR SHALL REMOVE AND DISPOSE OF SILT ACCUMULATIONS AT BAGGED STONE WHEN SO DIRECTED BY THE ENGINEER. BAGS SHALL BE REMOVED AND REPLACED WHENEVER THE ENGINEER DETERMINES THAT THEY HAVE DETERIORATED AND LOST THEIR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

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

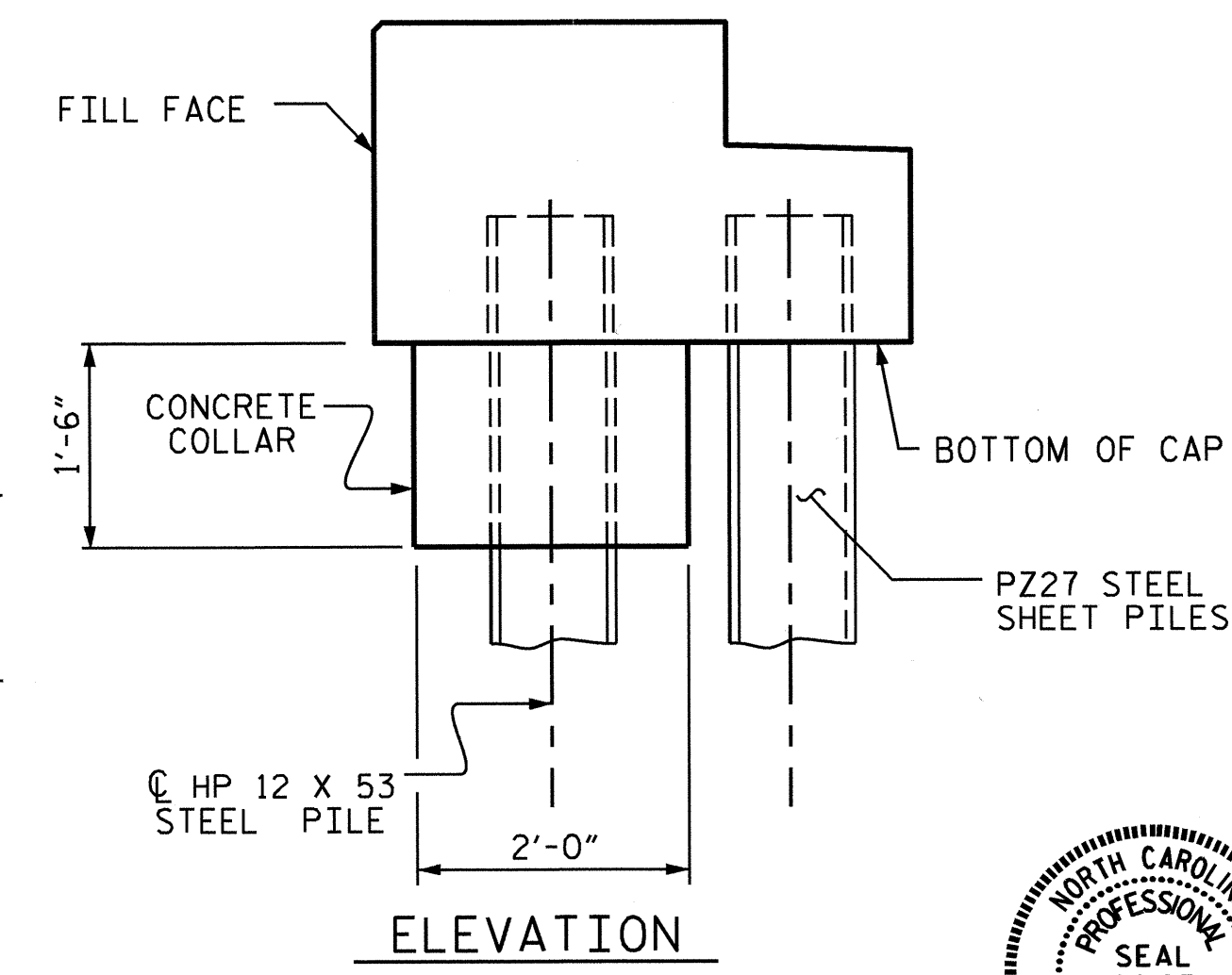
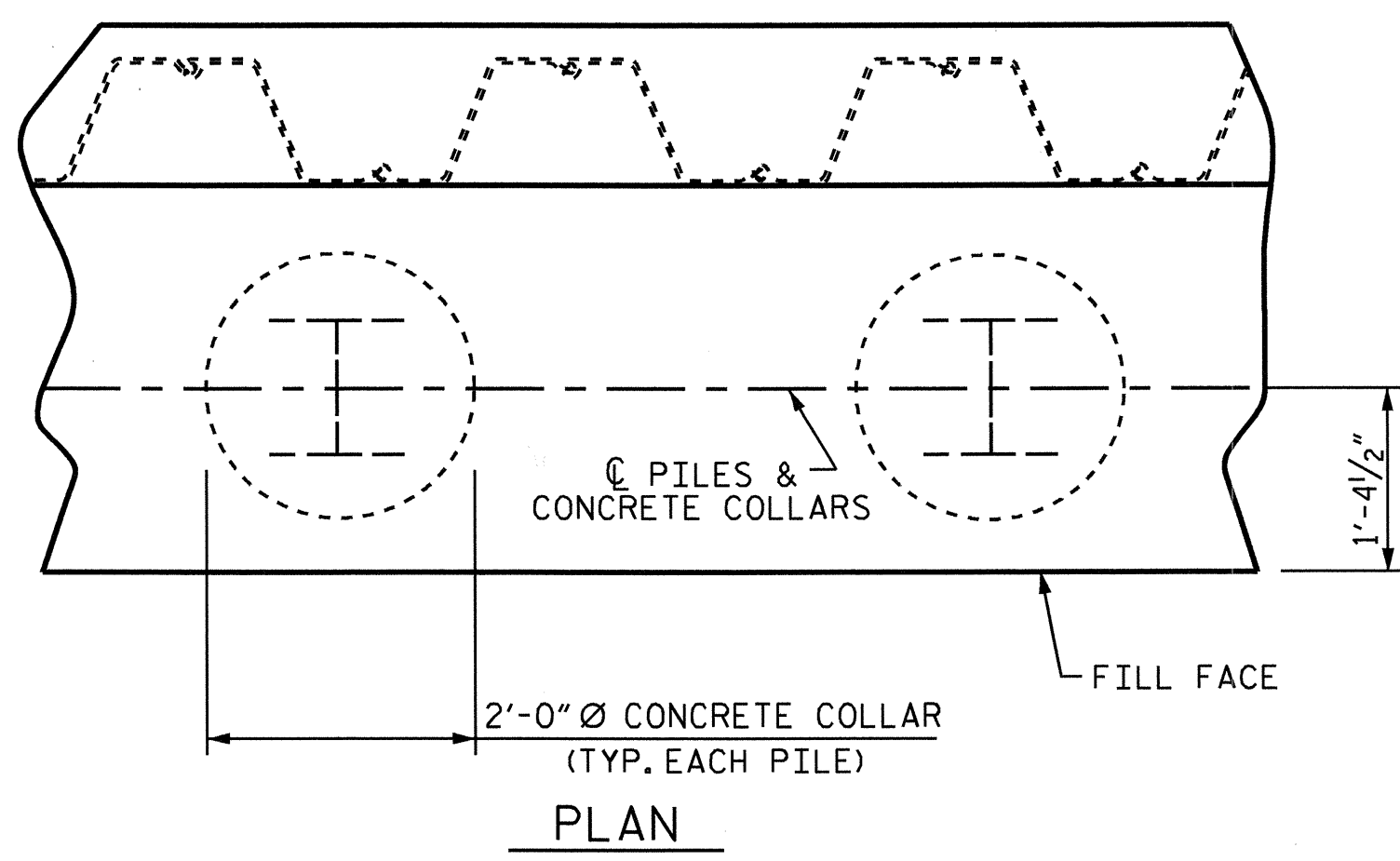
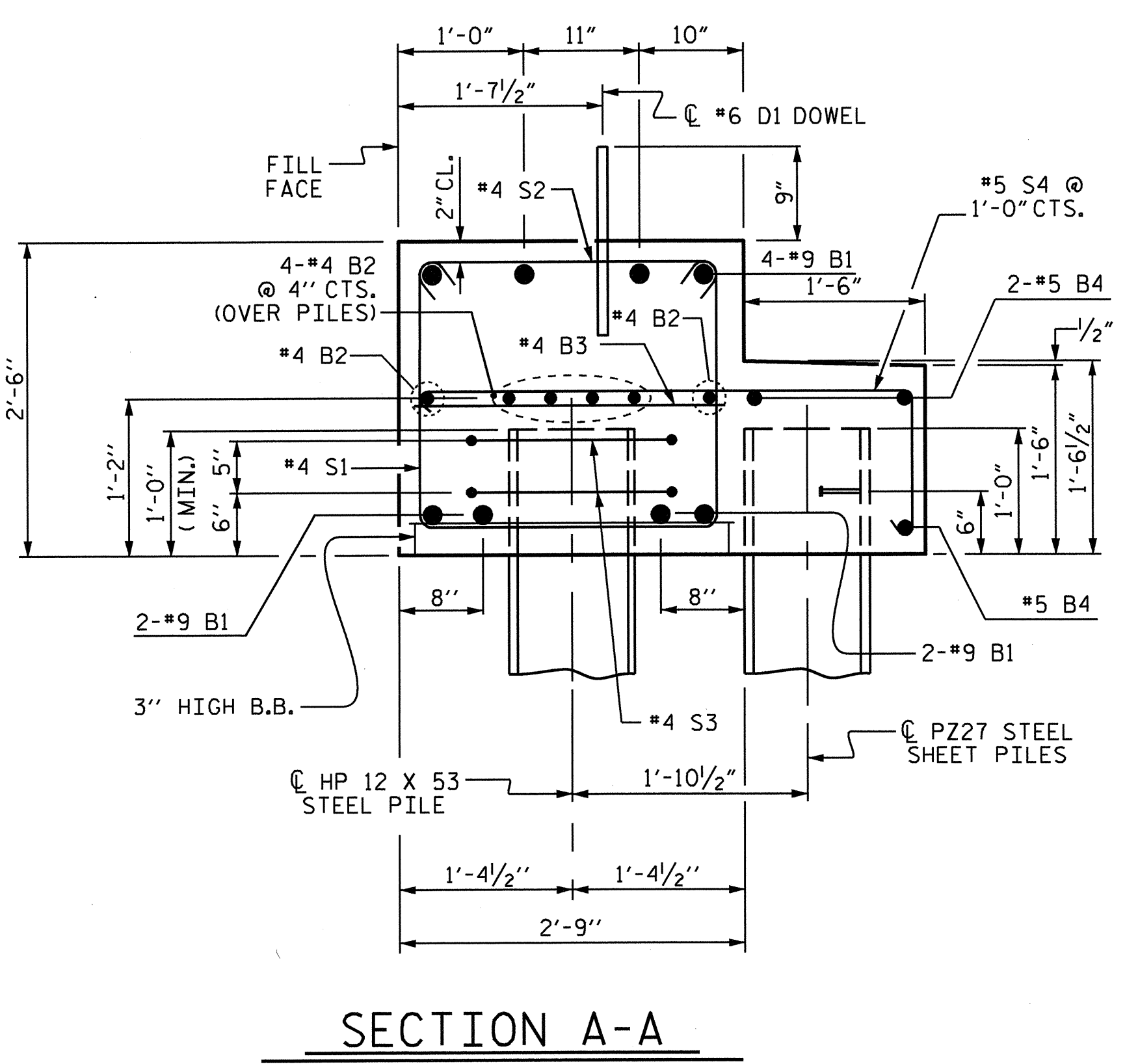
TEMPORARY DRAINAGE AT END BENT



| BILL OF MATERIAL | | | | | |
|------------------|-----|------|------|---------|--------|
| END BENT NO. 1 | | | | | |
| BAR NO. | NO. | SIZE | TYPE | LENGTH | WEIGHT |
| B1 | 8 | 9 | 1 | 43'-8" | 1188 |
| B2 | 12 | 4 | STR | 21'-11" | 176 |
| B3 | 10 | 4 | STR | 2'-5" | 16 |
| B4 | 3 | 5 | STR | 44'-5" | 139 |
| B5 | 4 | 5 | STR | 10'-1" | 42 |
| B6 | 2 | 5 | STR | 10'-8" | 22 |
| B7 | 2 | 5 | STR | 11'-4" | 24 |
| D1 | 20 | 6 | STR | 1'-6" | 45 |
| K1 | 12 | 4 | STR | 3'-3" | 26 |
| H1 | 6 | 4 | 5 | 8'-3" | 33 |
| H2 | 6 | 4 | 5 | 7'-10" | 31 |
| H3 | 12 | 4 | 6 | 7'-4" | 59 |
| S1 | 62 | 4 | 2 | 7'-5" | 307 |
| S2 | 62 | 4 | 3 | 3'-2" | 131 |
| S3 | 10 | 4 | 4 | 6'-6" | 43 |
| S4 | 42 | 5 | 7 | 5'-11" | 259 |
| U1 | 23 | 5 | 8 | 5'-5" | 130 |
| V1 | 47 | 4 | STR | 4'-10" | 152 |



| | |
|--|---------------|
| REINFORCING STEEL | 2,823 LBS. |
| CLASS A CONCRETE BREAKDOWN | |
| POUR #1 CAP, LOWER PART OF WINGS, COLLARS & COPING | 18.0 C.Y. |
| POUR #2 UPPER PART OF WINGS | 2.1 C.Y. |
| TOTAL CLASS A CONCRETE | 20.1 C.Y. |
| HP 12 X 53 STEEL PILES | |
| NO. 5 | 75.00 LN. FT. |
| 18\"/> | |
| NO. PZ27 = 41 | |
| NO. PZ90 = 2 | |
| TOTAL NO. = 43 | 600 SQ. FT. |
| PILE EXCAVATION QUANTITIES | |
| PILE EXCAVATION IN SOIL | 40.00 LN. FT. |
| PILE EXCAVATION NOT IN SOIL | 15.00 LN. FT. |



CORROSION PROTECTION FOR STEEL PILES DETAIL

PROJECT NO. B-4851
YANCEY COUNTY
 STATION: 22+86.00 -L-
 SHEET 3 OF 3

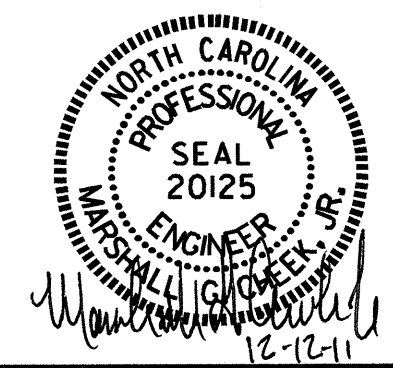
STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

SUBSTRUCTURE
 END BENT NO. 1

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

DRAWN BY: A.L. FIGUEROA DATE: 05-31-11
 CHECKED BY: M.G. CHEEK DATE: 06-14-11

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 dahodge



NOTES

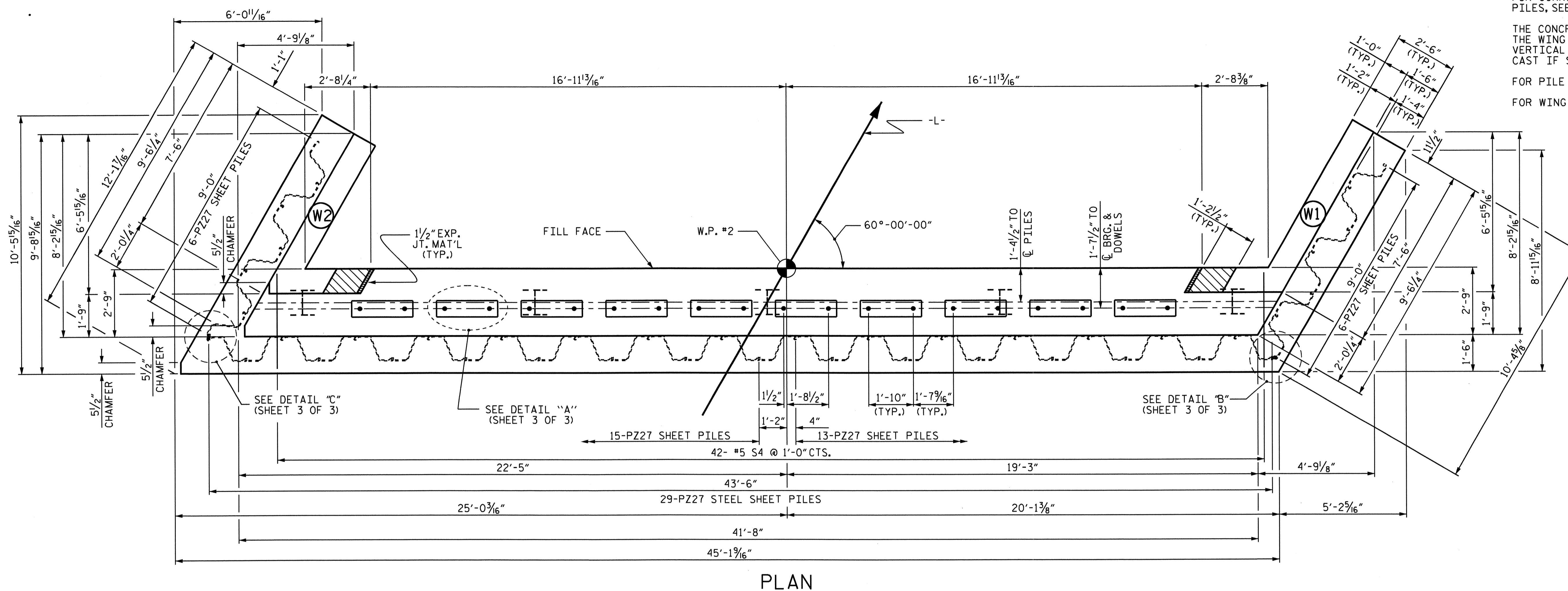
STIRRUPS IN CAP MAY BE SHIFTED AS NECESSARY TO CLEAR DOWELS.

FOR CORROSION PROTECTION OF STEEL PILES, SEE SHEET 3 OF 3.

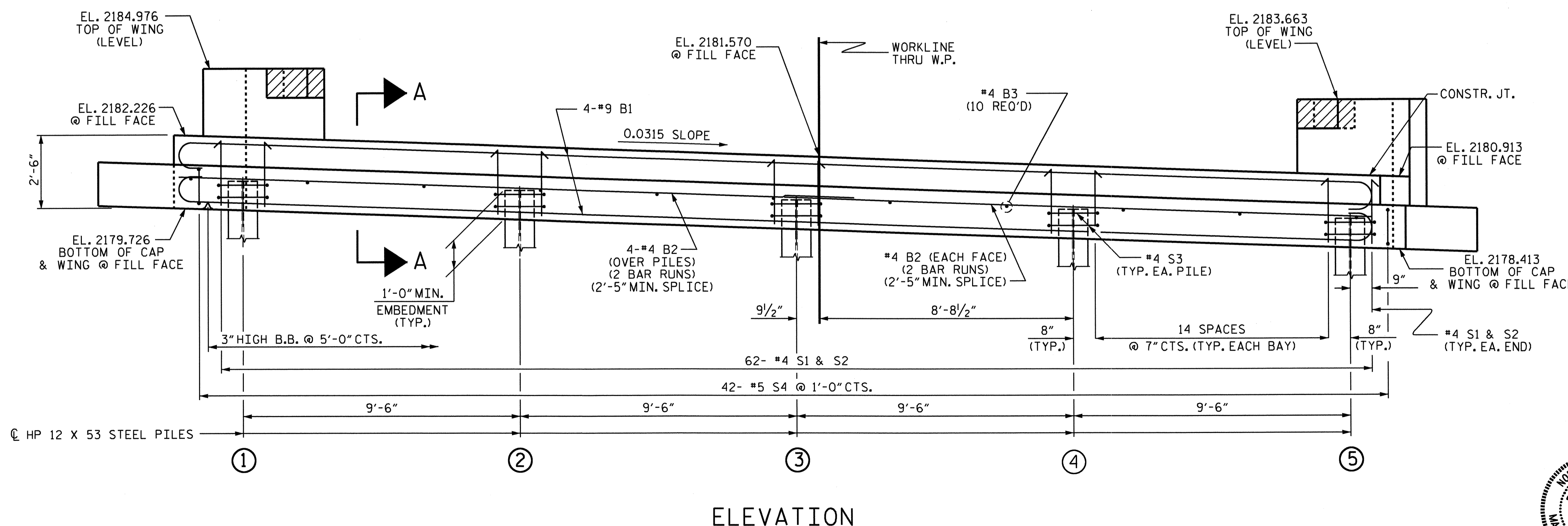
THE CONCRETE IN THE SHADED AREA OF THE WING SHALL BE POURED AFTER THE VERTICAL CONCRETE BARRIER RAIL IS CAST IF SLIP FORMING IS USED.

FOR PILE SPLICE DETAILS, SEE SHEET 3 OF 3.

FOR WING DETAILS, SEE SHEET 2 OF 3.



| TOP OF PILE ELEVATIONS | |
|------------------------|----------|
| ① | 2180.709 |
| ② | 2180.410 |
| ③ | 2180.111 |
| ④ | 2179.811 |
| ⑤ | 2179.512 |

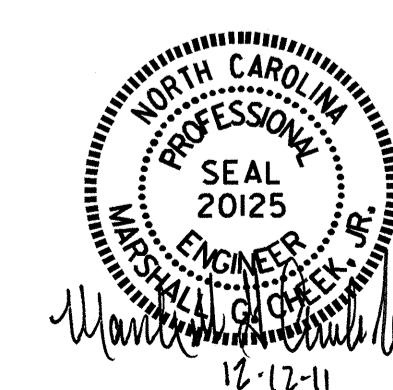


PROJECT NO. B-4851
YANCEY COUNTY
 STATION: 22+86.00 -L-
 SHEET 1 OF 3

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

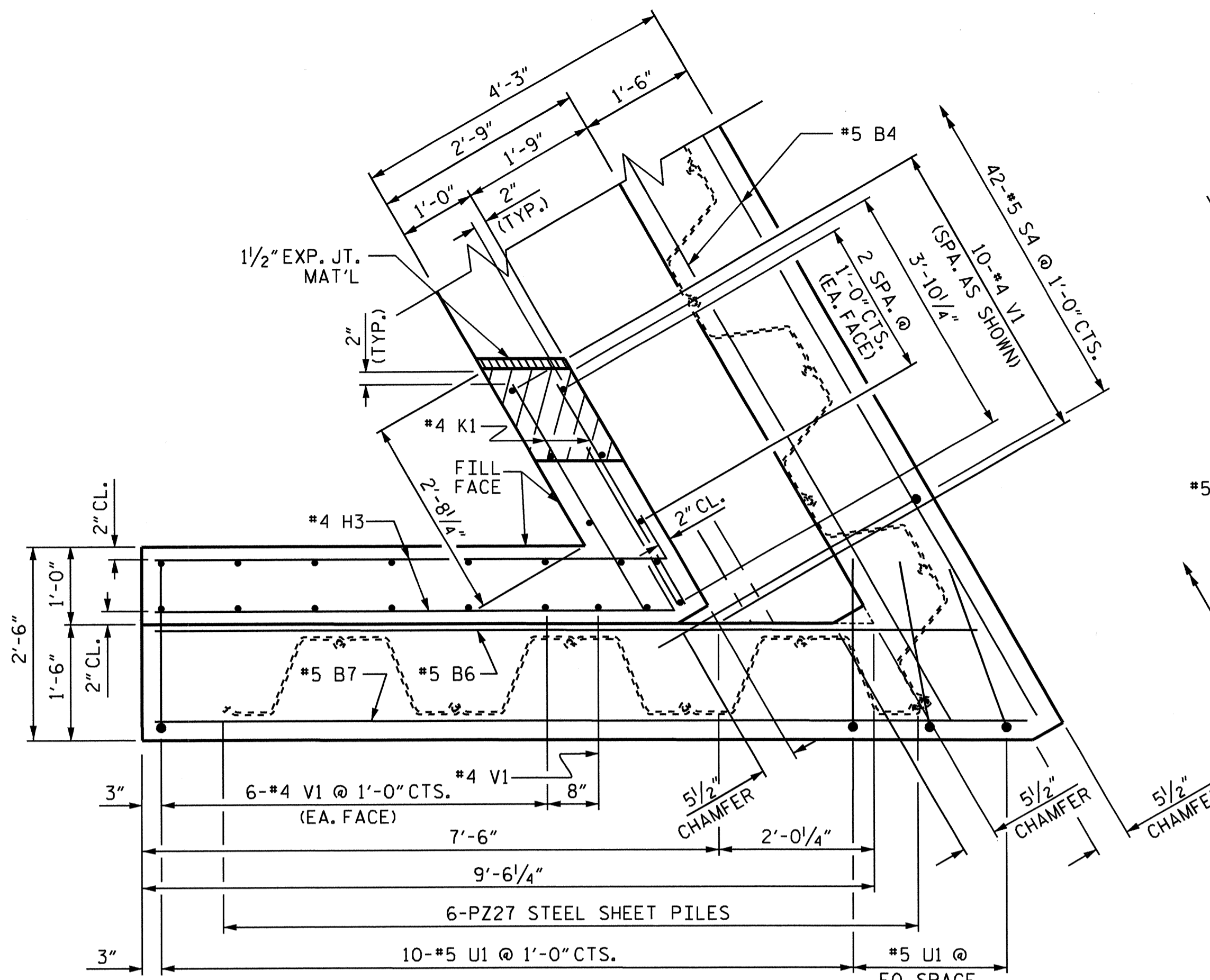
SUBSTRUCTURE
 END BENT No. 2

| REVISIONS | | | | | | SHEET NO. |
|-----------|-----|-------|-----|-----|-------|--------------|
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| 1 | | | 3 | | | TOTAL SHEETS |
| 2 | | | 4 | | | 15 |

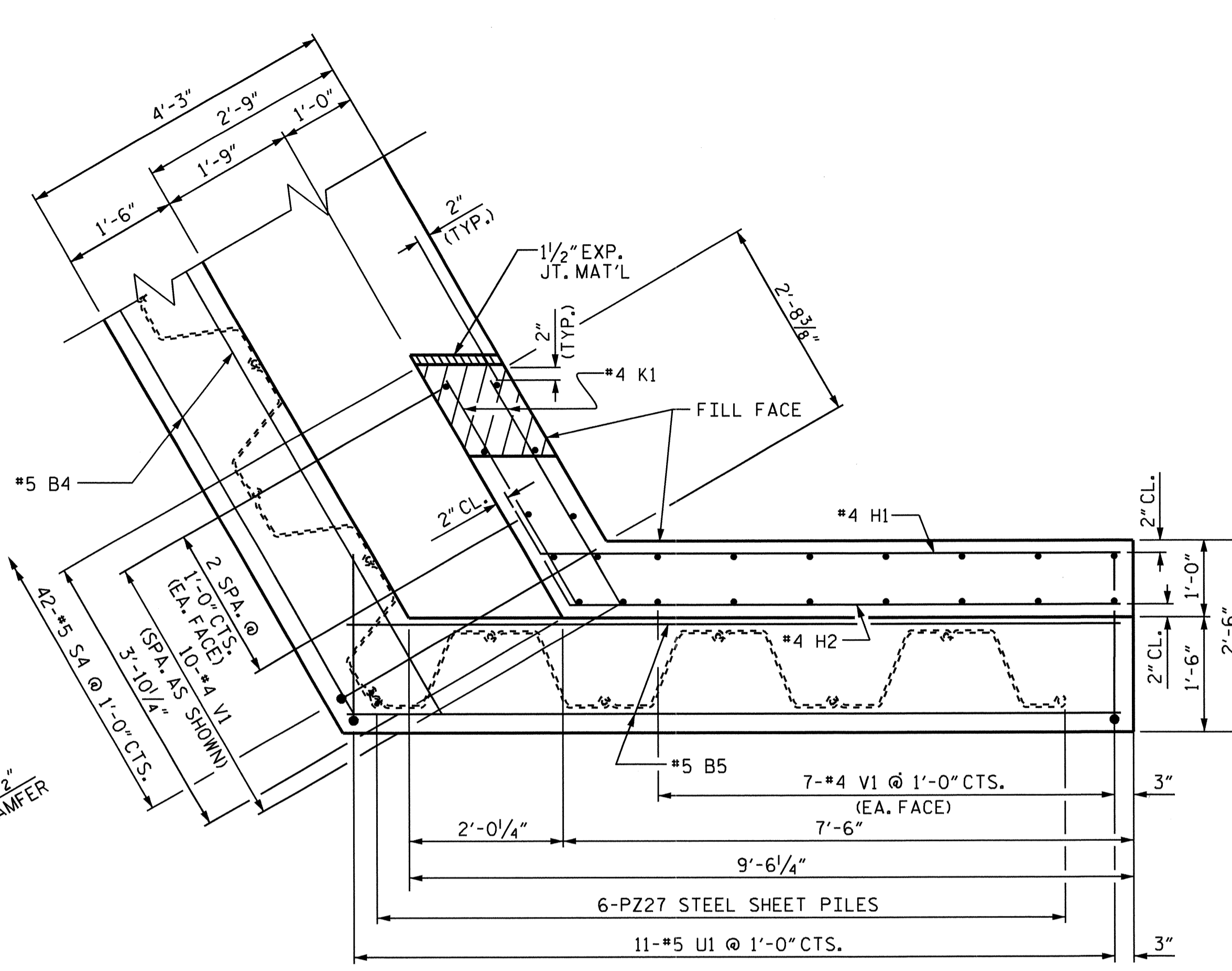


DRAWN BY : A.L. FIGUEROA DATE : 05-31-11
 CHECKED BY : M.G. CHEEK DATE : 06-14-11

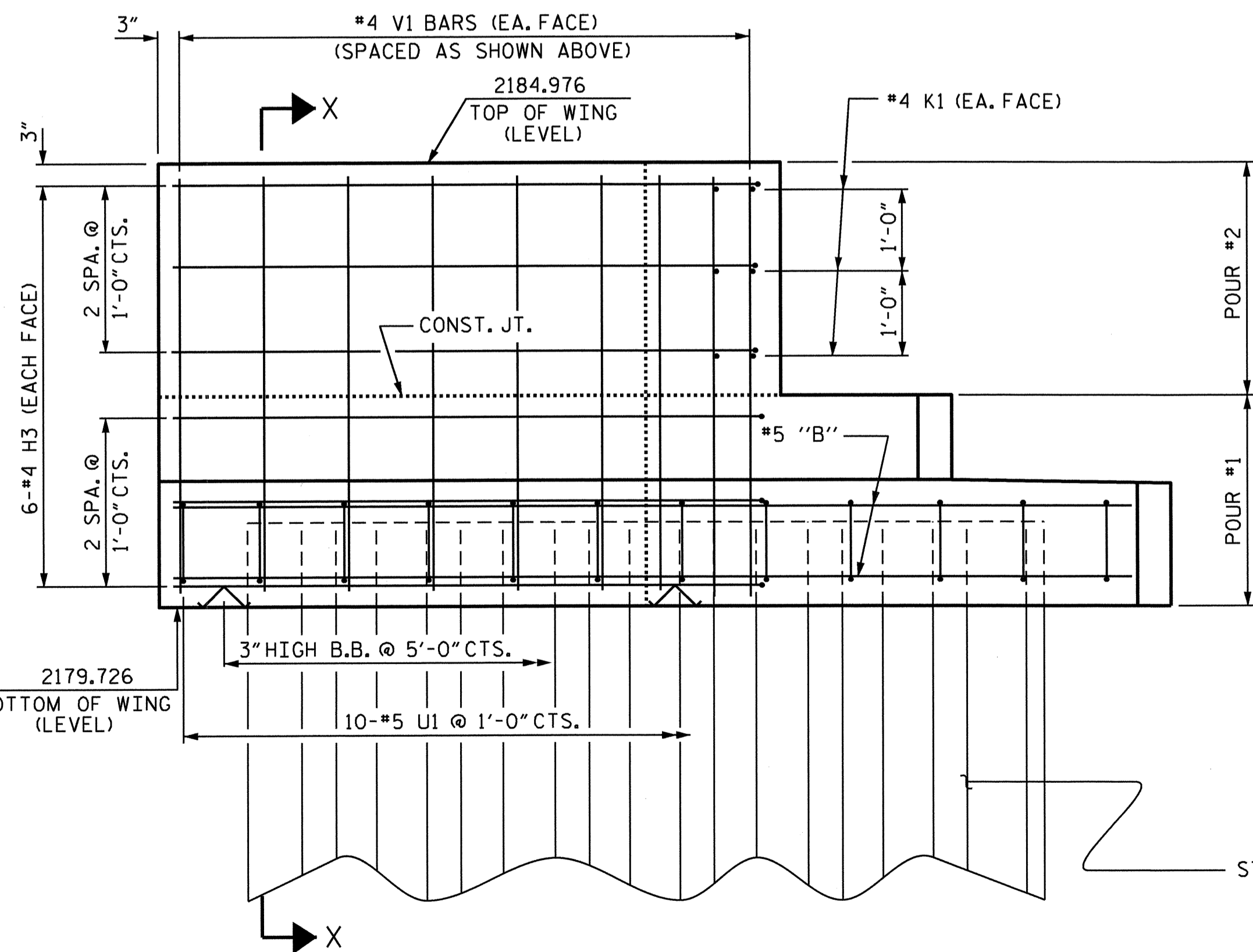
WINGS NOT SHOWN FOR CLARITY. FOR SECTION A-A, SEE SHEET 3 OF 3.
 CONCRETE COLLARS FOR STEEL PILES NOT SHOWN IN PLAN AND ELEVATION VIEWS FOR CLARITY.



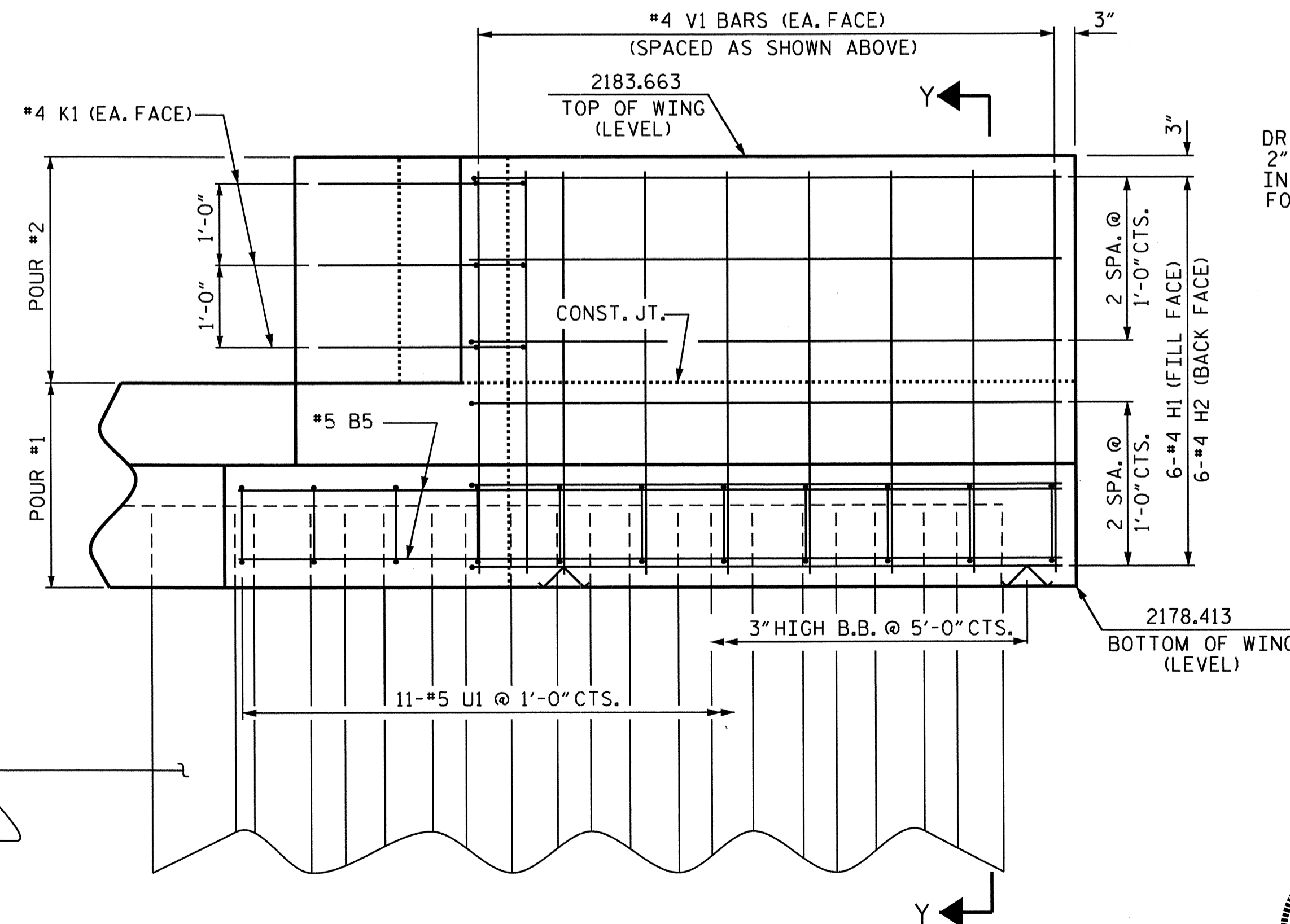
PLAN OF WING (W2)



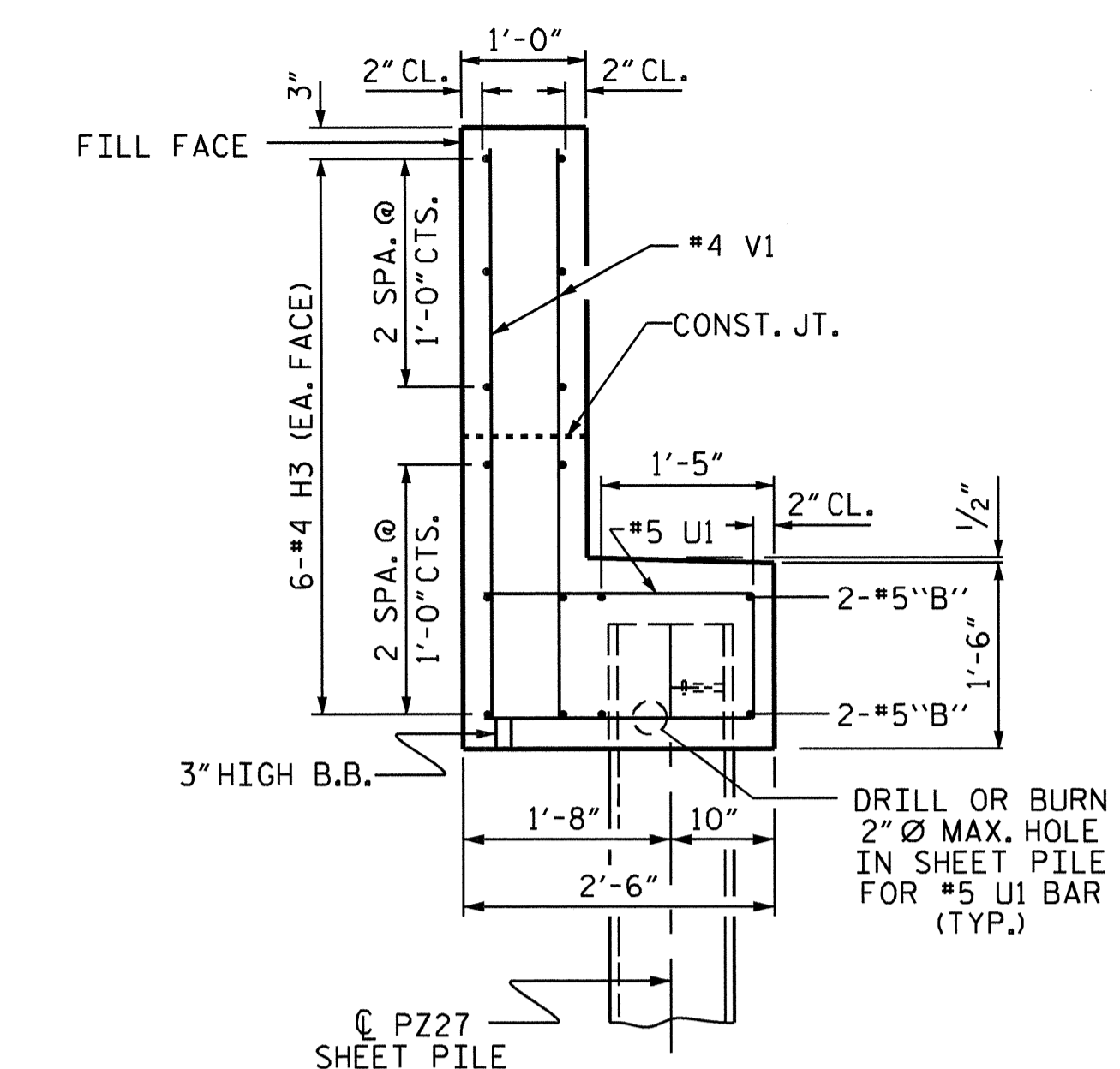
PLAN OF WING (W1)



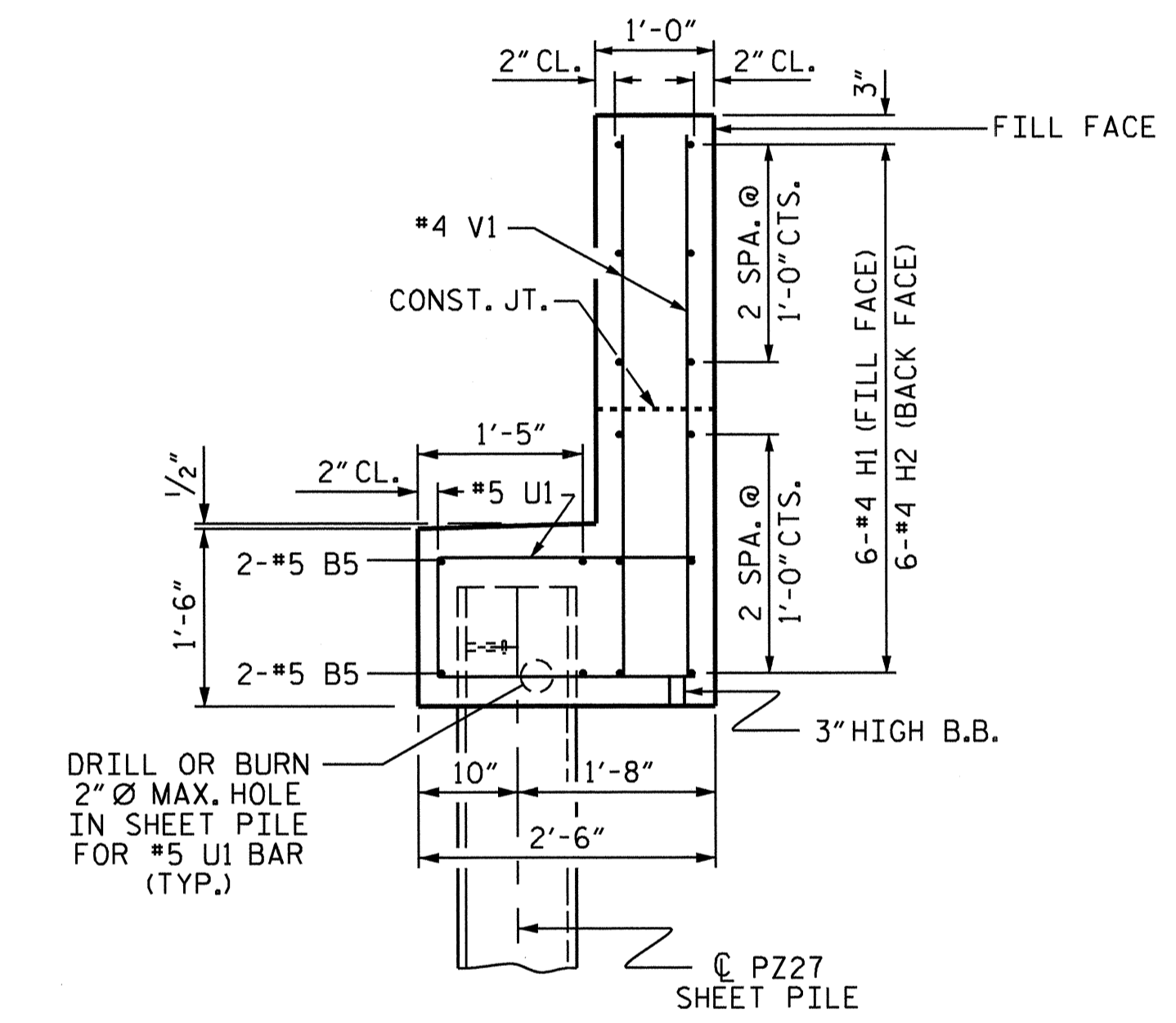
ELEVATION OF WING (W2)



ELEVATION OF WING (W1)



SECTION X-X

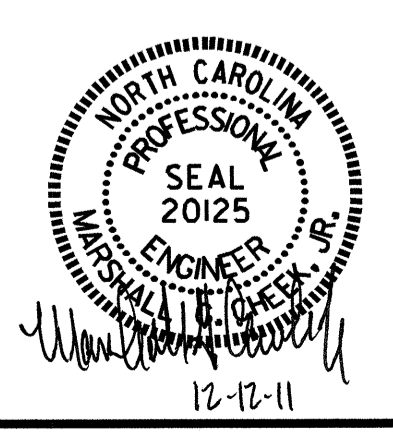


SECTION Y-Y

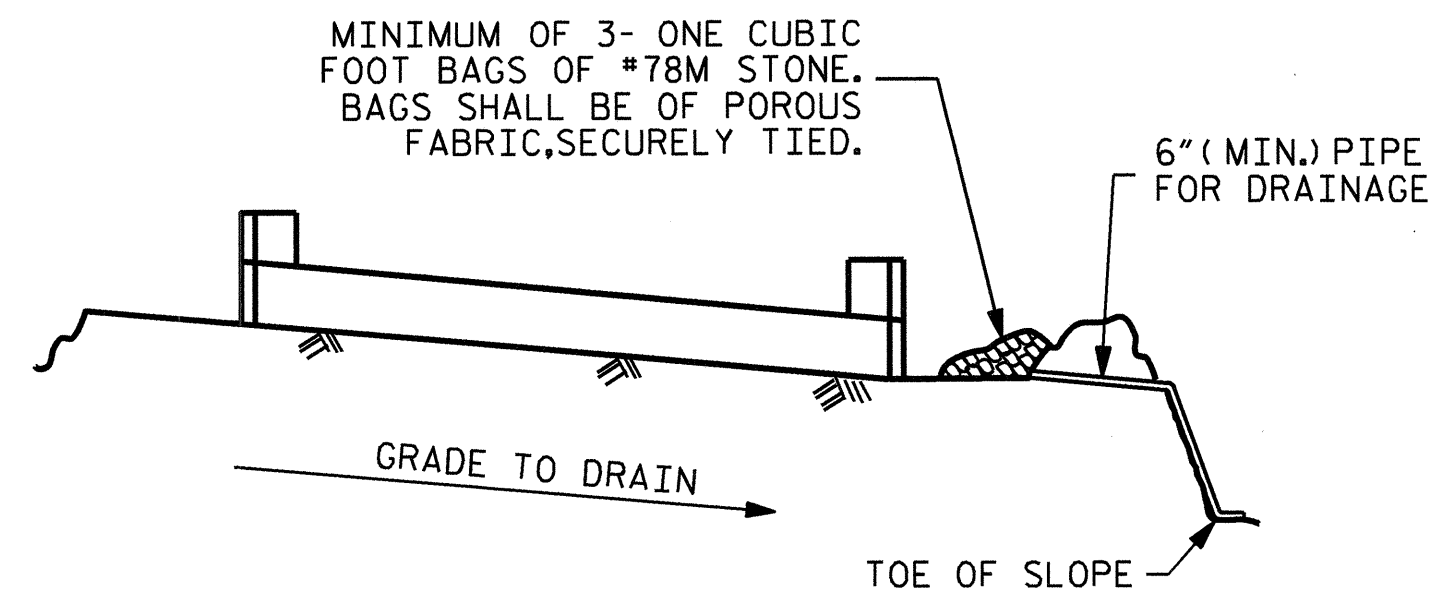
PROJECT NO. B-4851
 YANCEY COUNTY
 STATION: 22+86.00 -L-
 SHEET 2 OF 3

| | | | | | |
|--|-----|-------|-----|-----|---|
| STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION RALEIGH | | | | | |
| SUBSTRUCTURE END BENT NO. 2 | | | | | |
| REVISIONS | | | | | |
| NO. | BY: | DATE: | NO. | BY: | DATE: |
| 1 | | | 3 | | |
| 2 | | | 4 | | |
| | | | | | SHEET NO. S-13 TOTAL SHEETS 15 |

DRAWN BY : A.L. FIGUEROA DATE : 05-31-11
 CHECKED BY : M.G. CHEEK DATE : 06-14-11



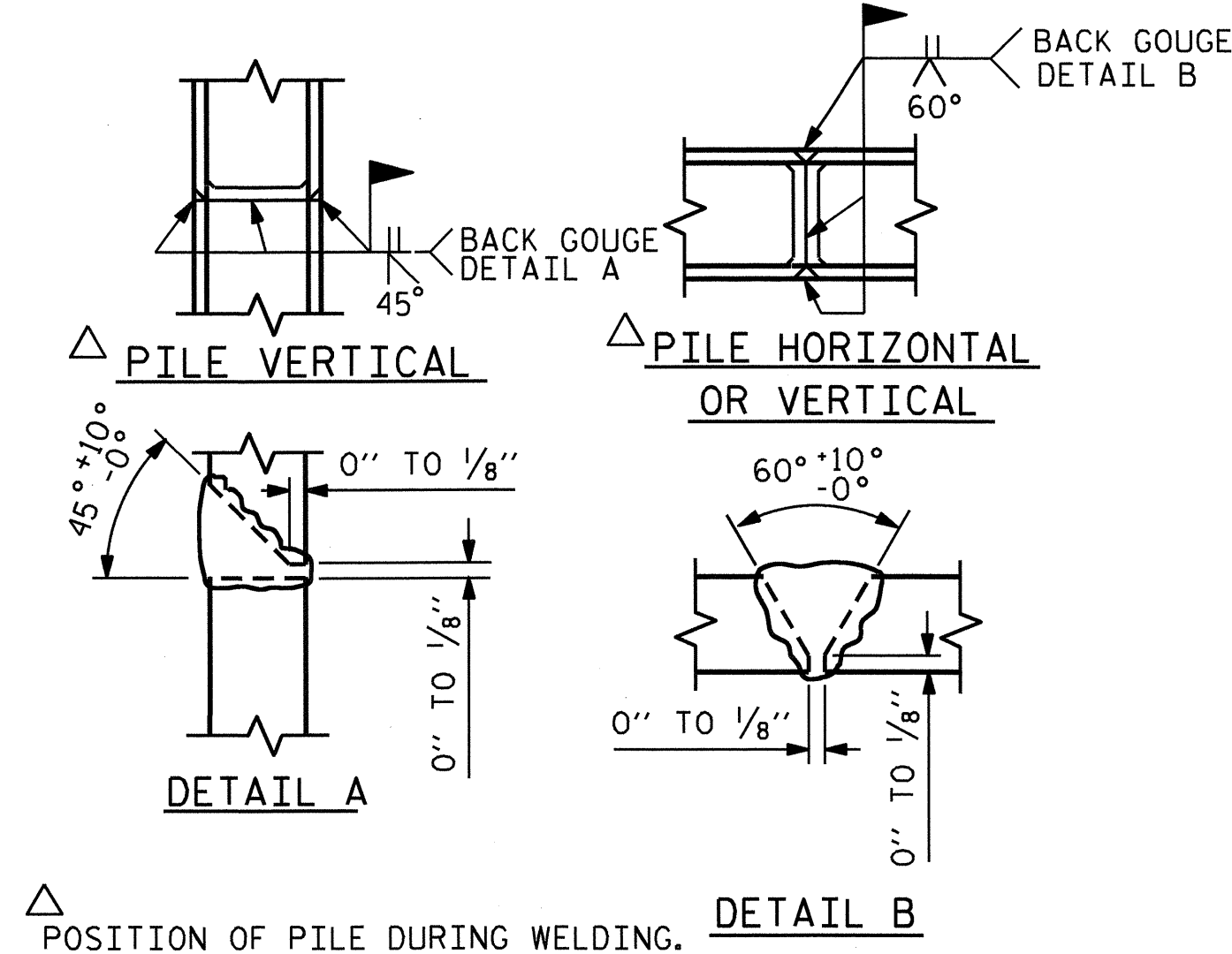
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 wjharris



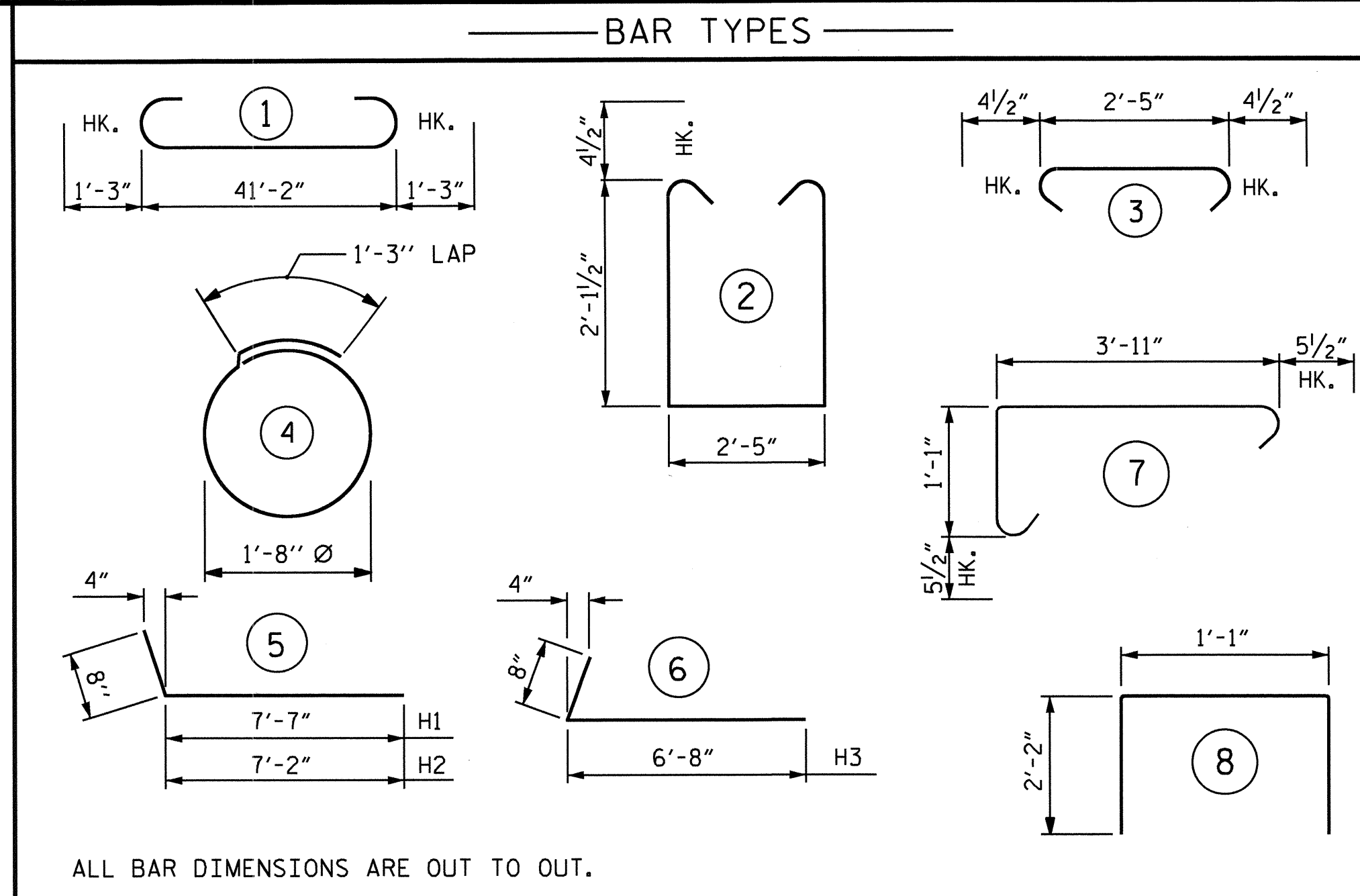
BAGGED STONE AND PIPE SHALL BE PLACED IMMEDIATELY AFTER COMPLETION OF END BENT EXCAVATION. PIPE MAY BE EITHER CONCRETE, CORRUGATED STEEL, CORRUGATED ALUMINUM ALLOY, OR CORRUGATED PLASTIC. PERFORATED PIPE WILL NOT BE ALLOWED.

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.

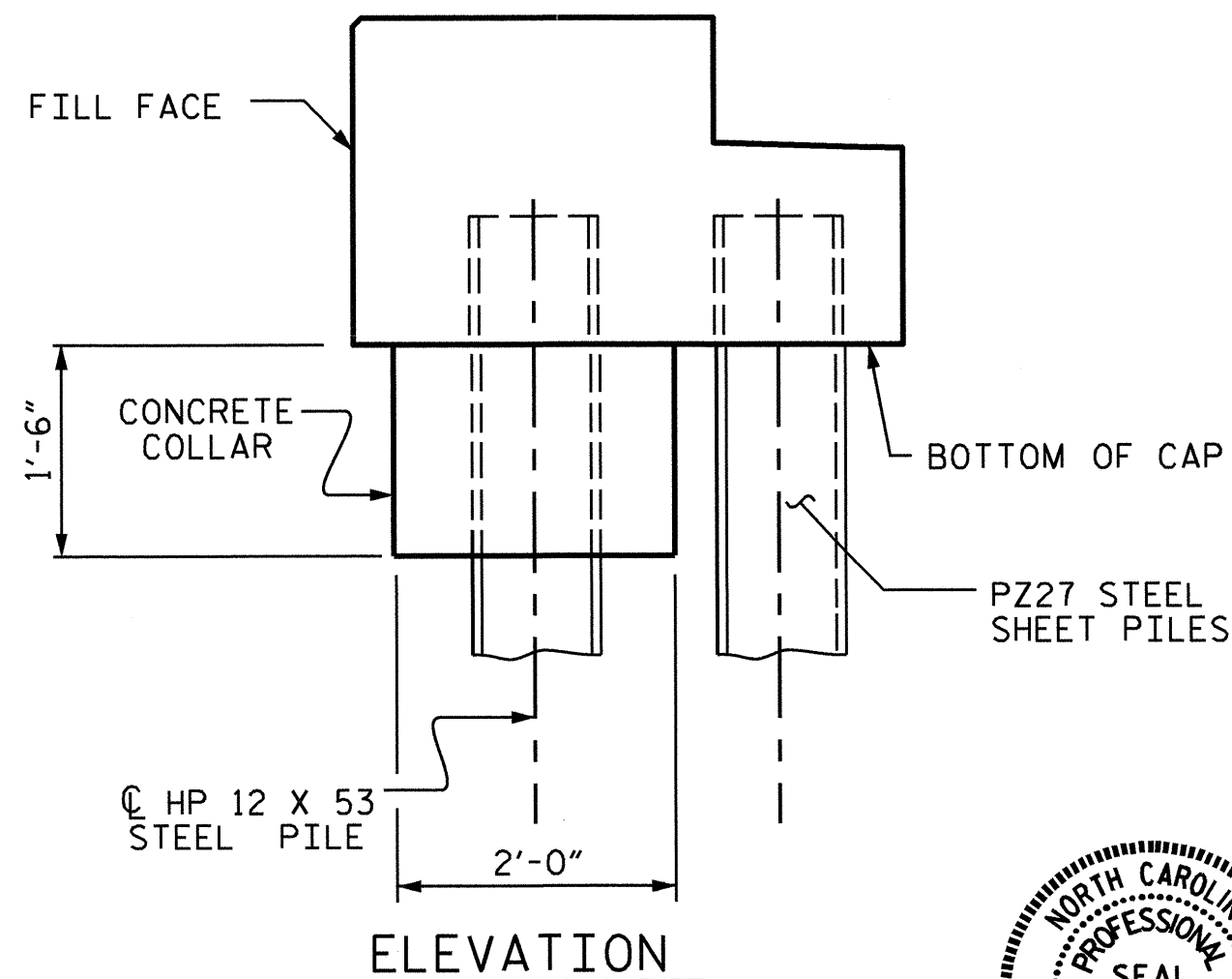
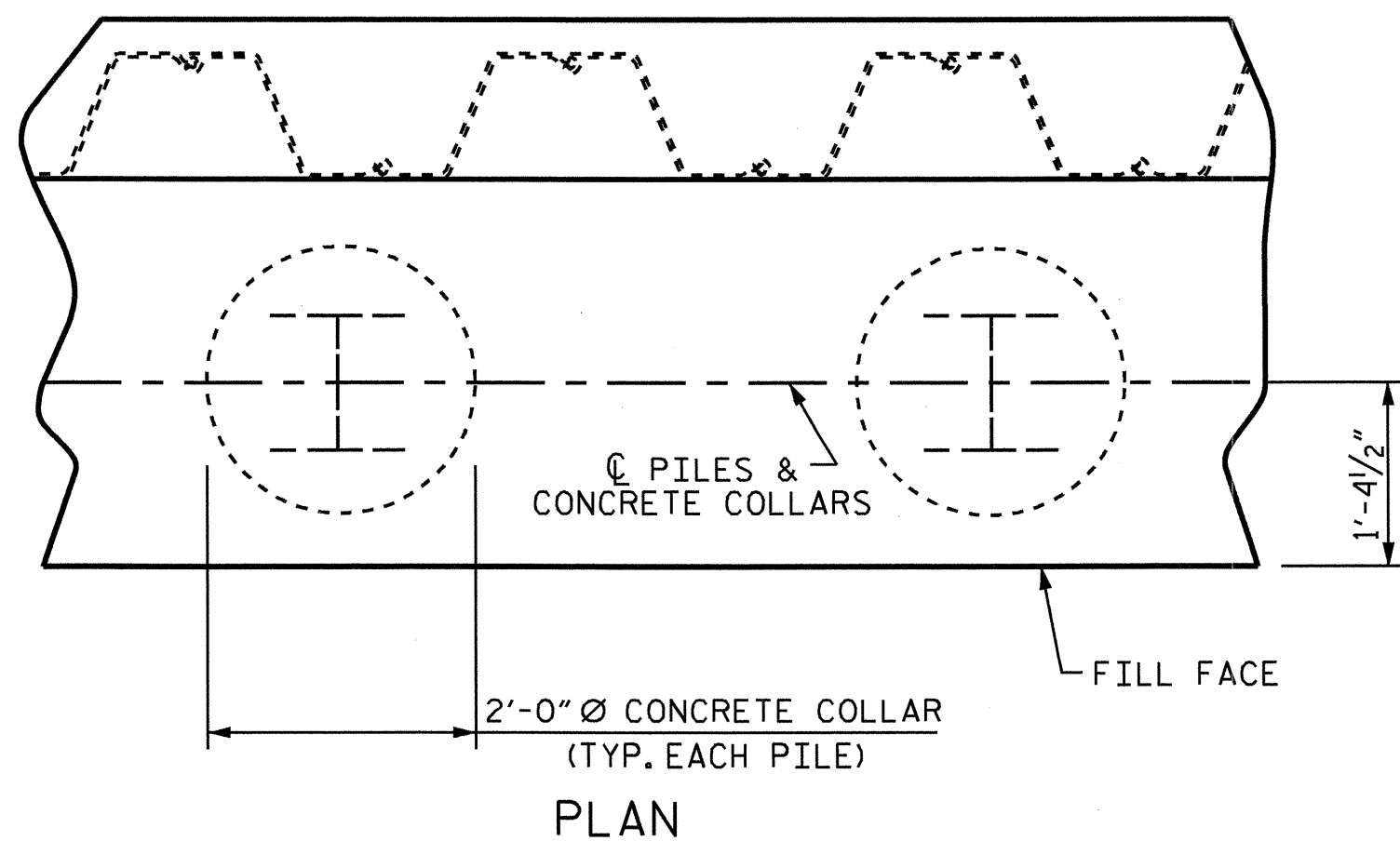
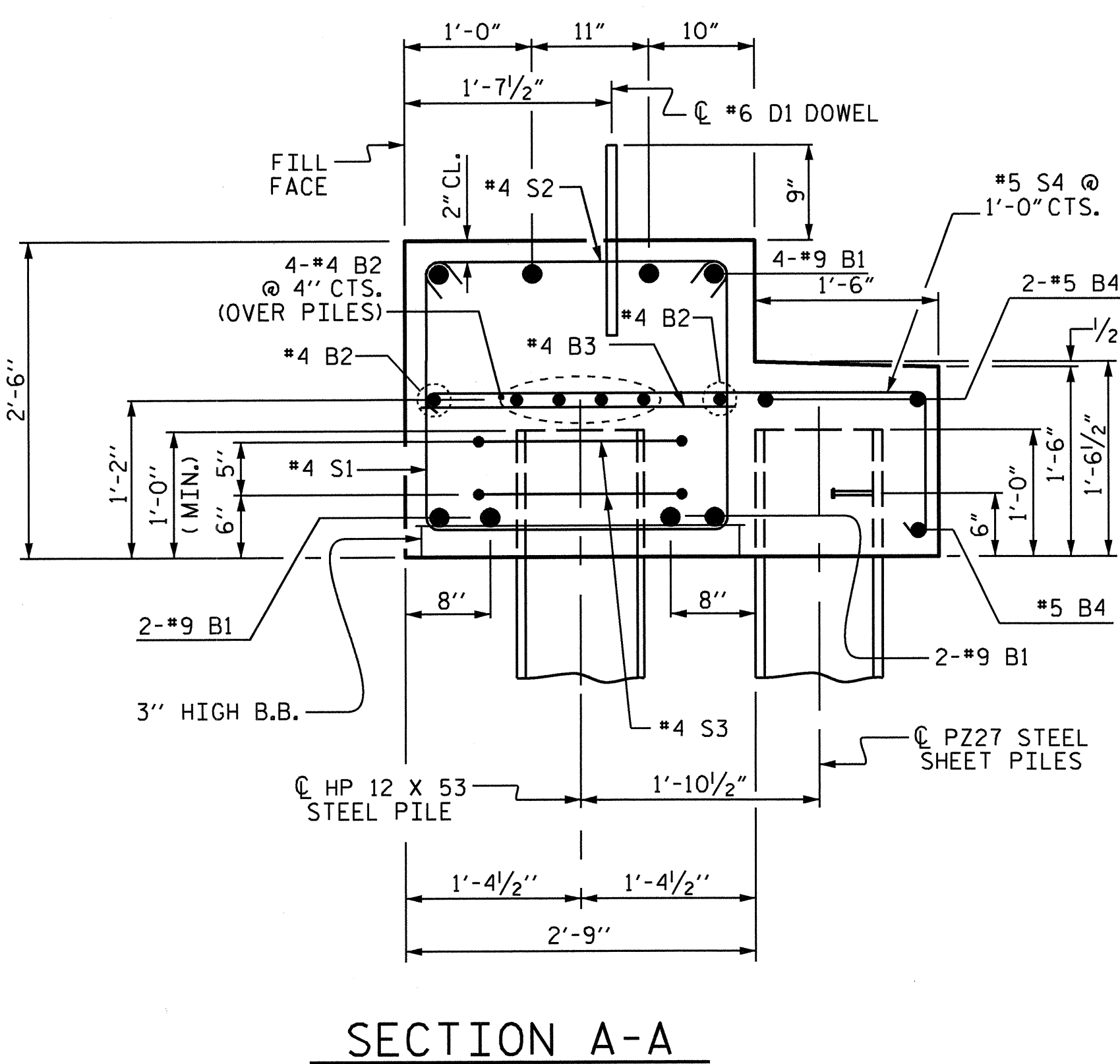
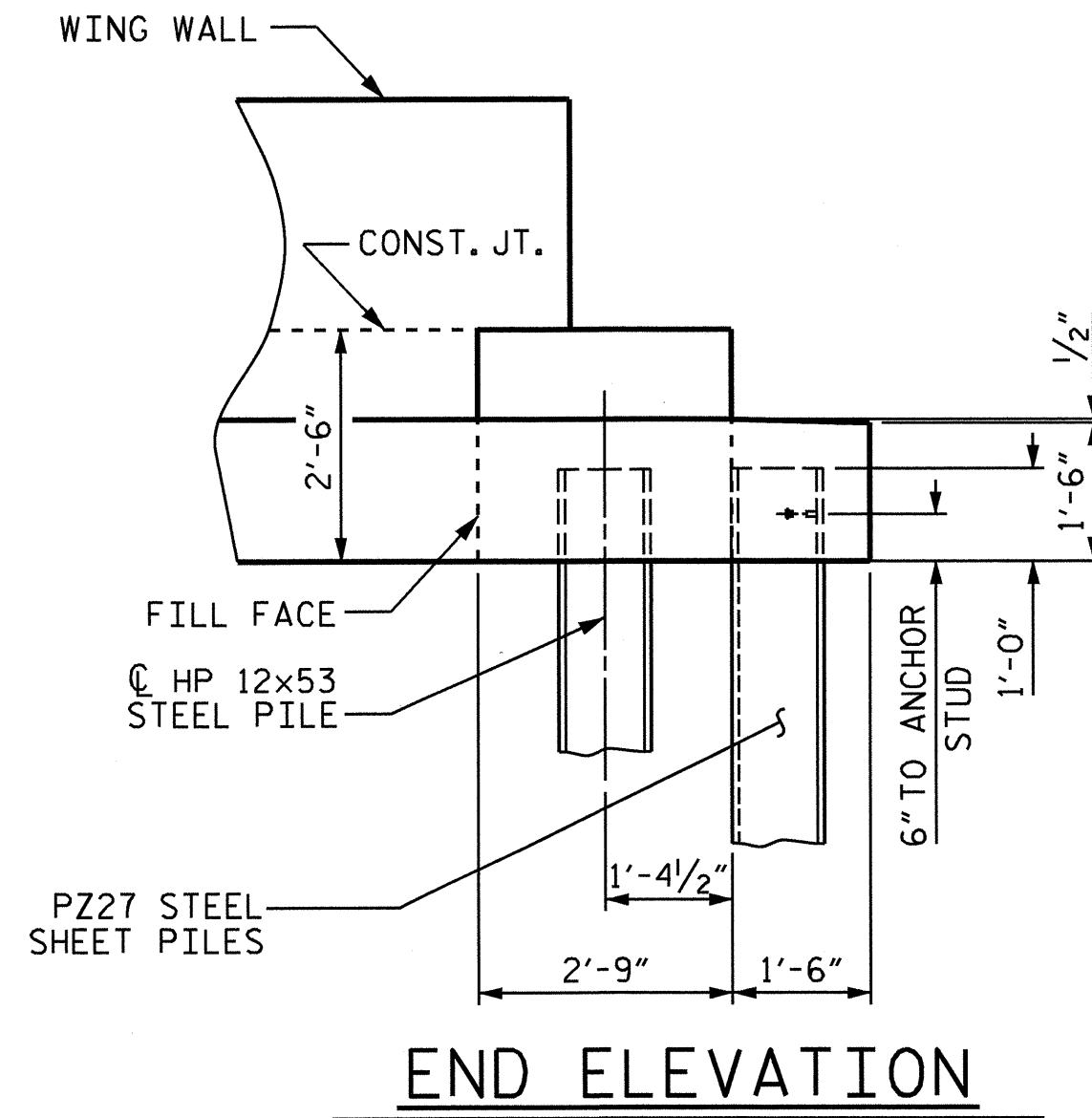
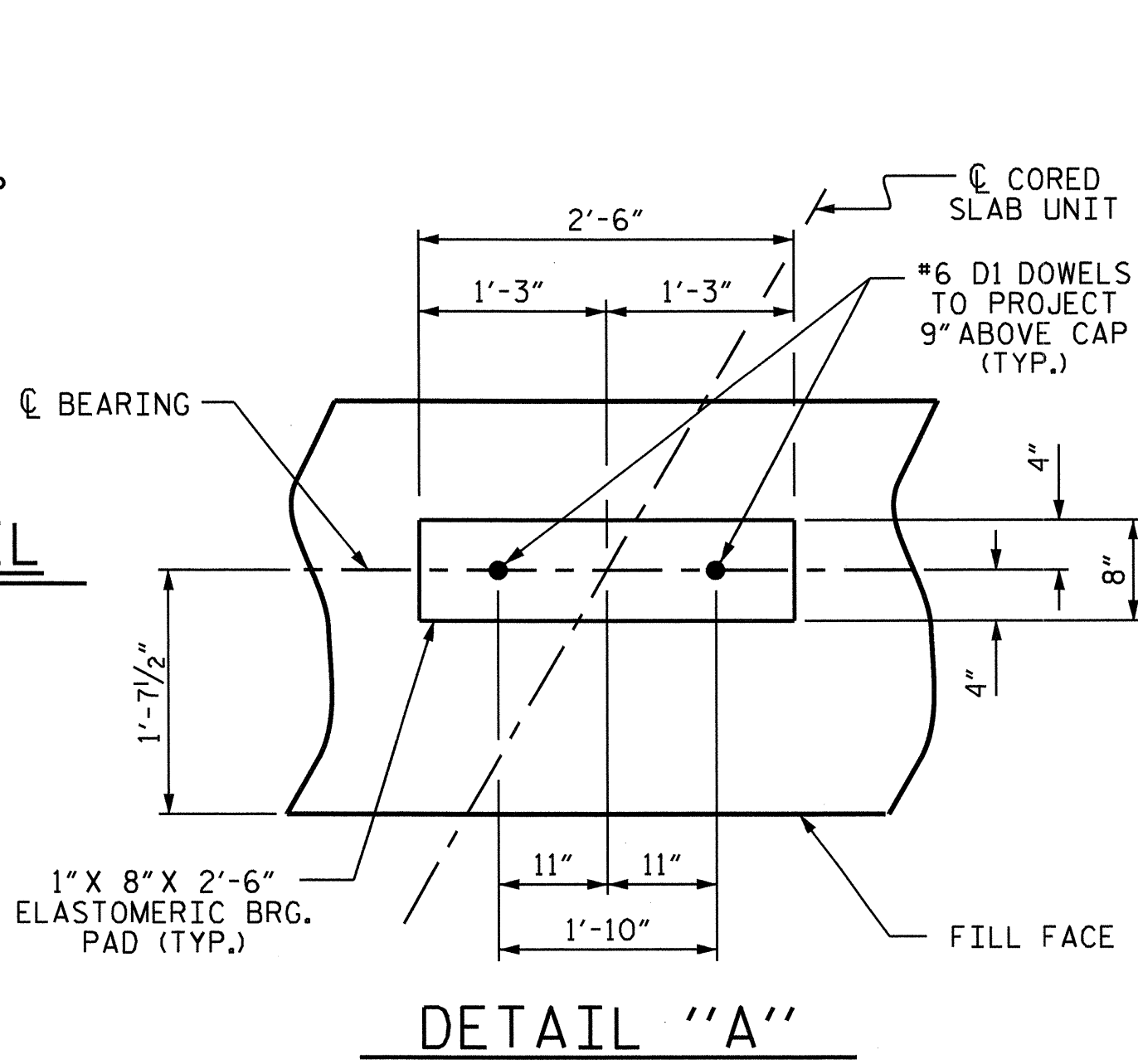
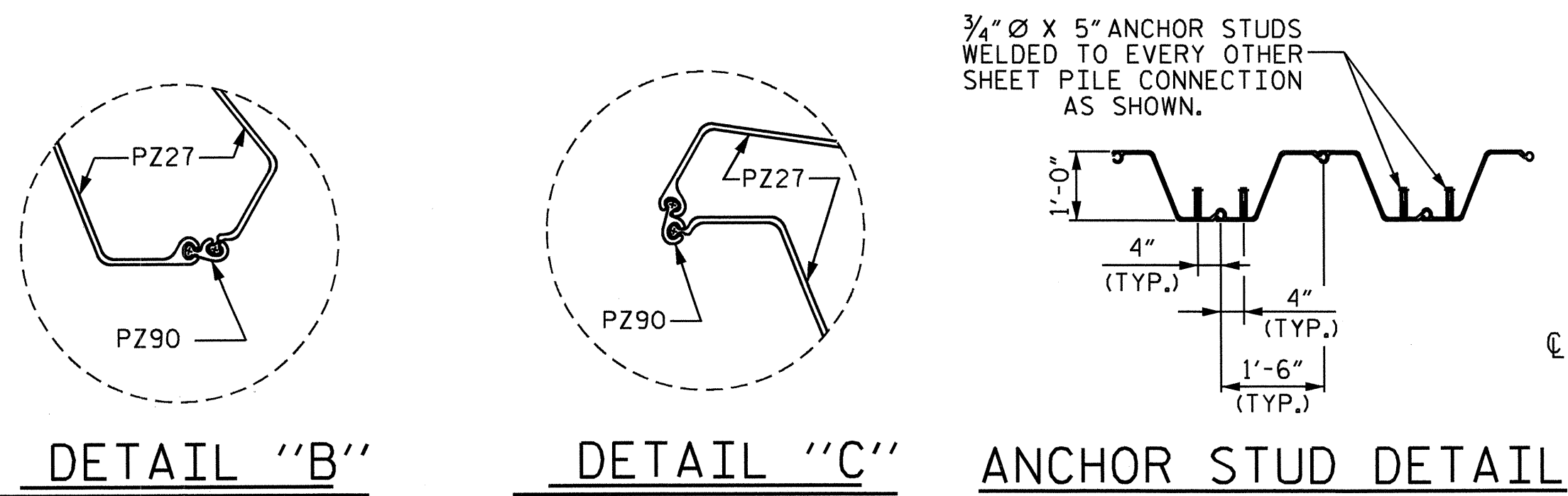


PILE SPLICE DETAILS



| BILL OF MATERIAL | | | | | |
|------------------|-----|------|------|---------|--------|
| END BENT NO. 2 | | | | | |
| BAR | NO. | SIZE | TYPE | LENGTH | WEIGHT |
| B1 | 8 | 9 | 1 | 43'-8" | 1188 |
| B2 | 12 | 4 | STR | 21'-11" | 176 |
| B3 | 10 | 4 | STR | 2'-5" | 16 |
| B4 | 3 | 5 | STR | 44'-5" | 139 |
| B5 | 4 | 5 | STR | 10'-1" | 42 |
| B6 | 2 | 5 | STR | 10'-8" | 22 |
| B7 | 2 | 5 | STR | 11'-4" | 24 |
| D1 | 20 | 6 | STR | 1'-6" | 45 |
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| H1 | 6 | 4 | 5 | 8'-3" | 33 |
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| H3 | 12 | 4 | 6 | 7'-4" | 59 |
| S1 | 62 | 4 | 2 | 7'-5" | 307 |
| S2 | 62 | 4 | 3 | 3'-2" | 131 |
| S3 | 10 | 4 | 4 | 6'-6" | 43 |
| S4 | 42 | 5 | 7 | 5'-11" | 259 |
| U1 | 23 | 5 | 8 | 5'-5" | 130 |
| V1 | 47 | 4 | STR | 4'-10" | 152 |

TEMPORARY DRAINAGE AT END BENT



CORROSION PROTECTION FOR STEEL PILES DETAIL

REINFORCING STEEL 2,823 LBS.

CLASS A CONCRETE BREAKDOWN

POUR #1 CAP, LOWER PART OF WINGS, COLLARS & COPING 18.0 C.Y.

POUR #2 UPPER PART OF WINGS 2.1 C.Y.

TOTAL CLASS A CONCRETE 20.1 C.Y.

HP 12 X 53 STEEL PILES NO. 5 75.00 LN. FT.

18" STEEL SHEET PILES NO. PZ27 = 41 NO. PZ90 = 2 TOTAL NO. = 43 620 SQ. FT.

PILE EXCAVATION QUANTITIES

PILE EXCAVATION IN SOIL 40.00 LN. FT.

PILE EXCAVATION NOT IN SOIL 15.00 LN. FT.

PROJECT NO. B-4851

YANCEY COUNTY

STATION: 22+86.00 -L-

SHEET 3 OF 3

STATE OF NORTH CAROLINA

DEPARTMENT OF TRANSPORTATION

RALEIGH

SUBSTRUCTURE

END BENT NO. 2

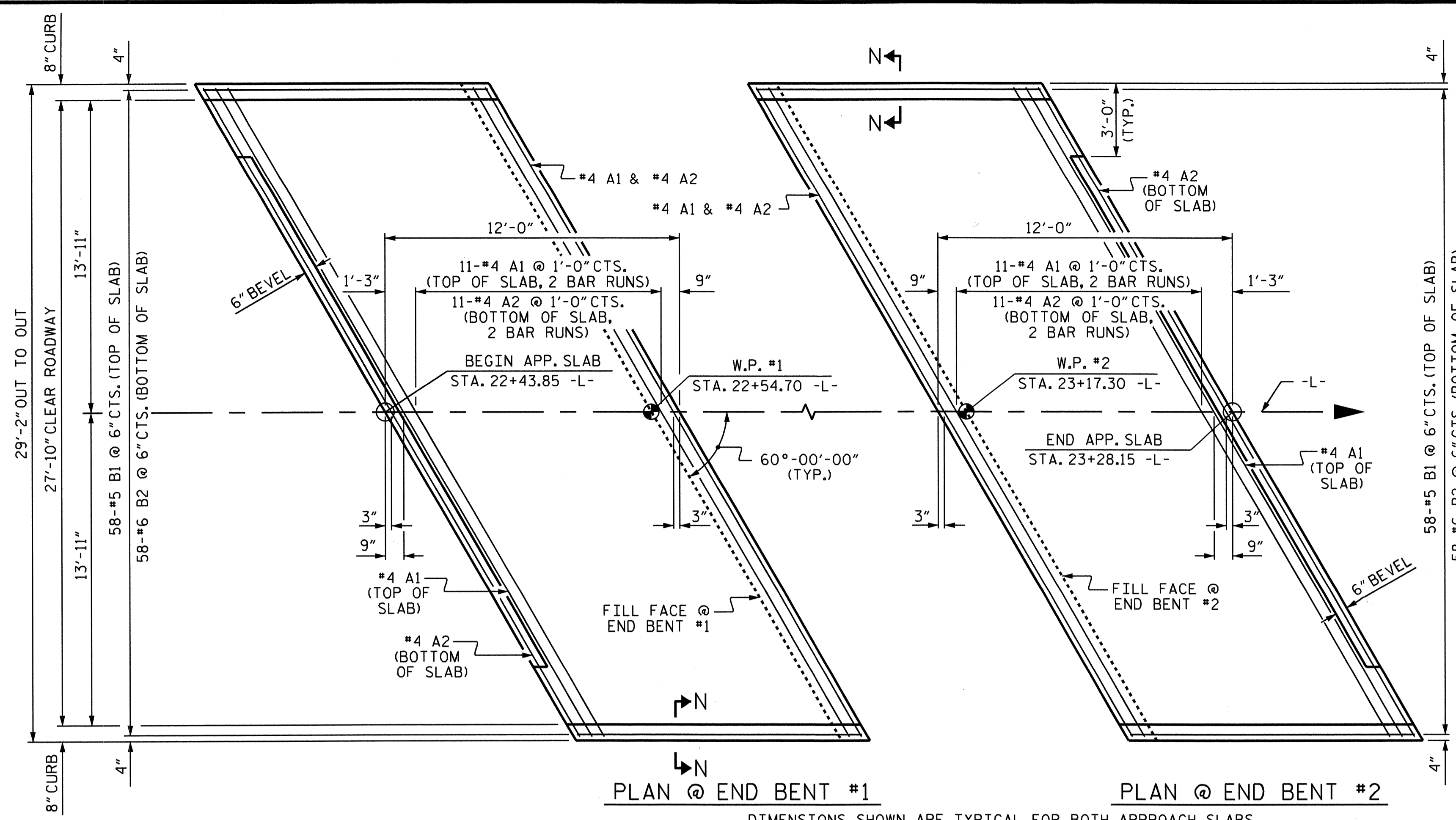
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|-----------|-----|-------|-----|-----|-------|--------------|--|
| NO. | BY: | DATE: | NO. | BY: | DATE: | S-14 | |
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| 2 | | | 4 | | | 15 | |

DRAWN BY: A.L. FIGUEROA DATE: 05-31-11

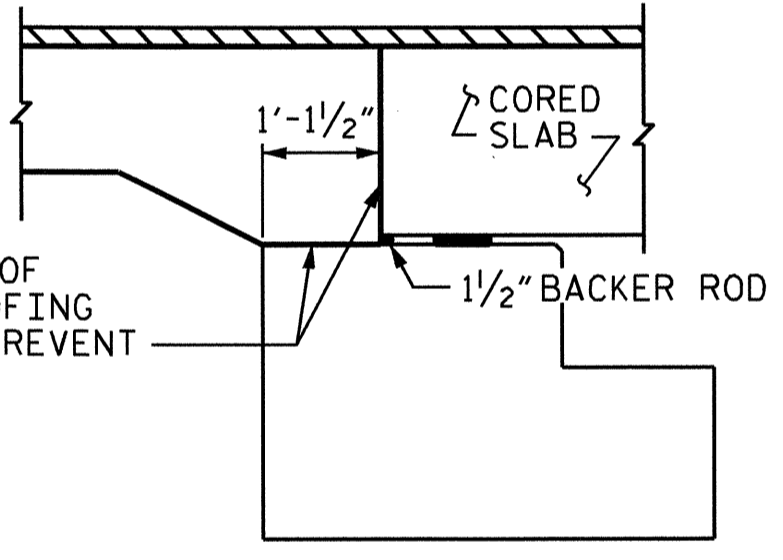
CHECKED BY: M.G. CHEEK DATE: 06-14-11

12-DEC-2011 11:55 R:\Structures\Final Plans\B-4851_SD.EB.dgn dghodge

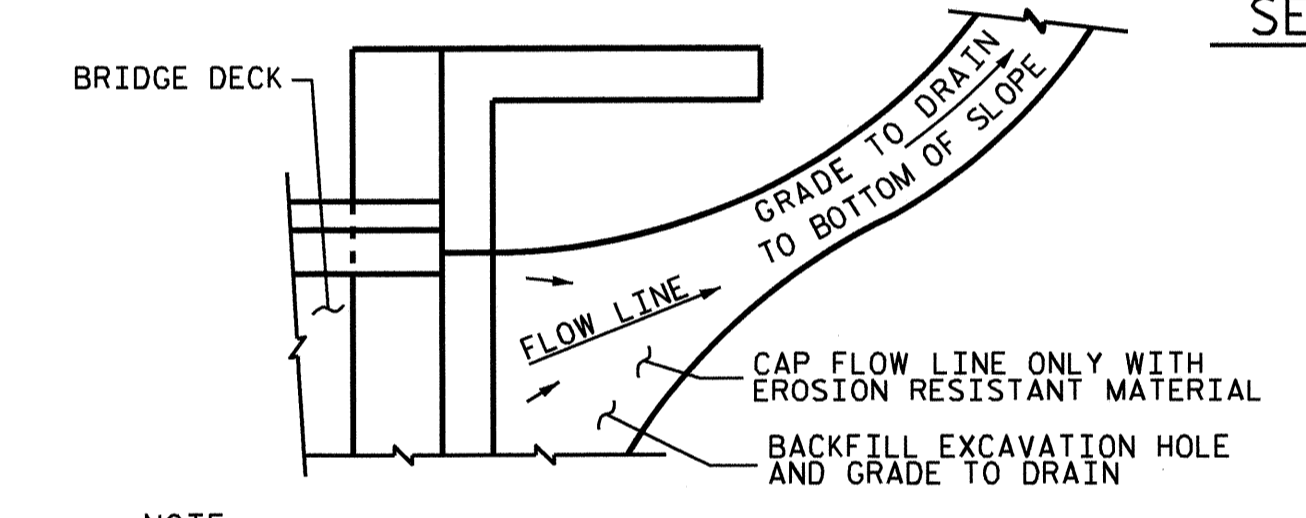




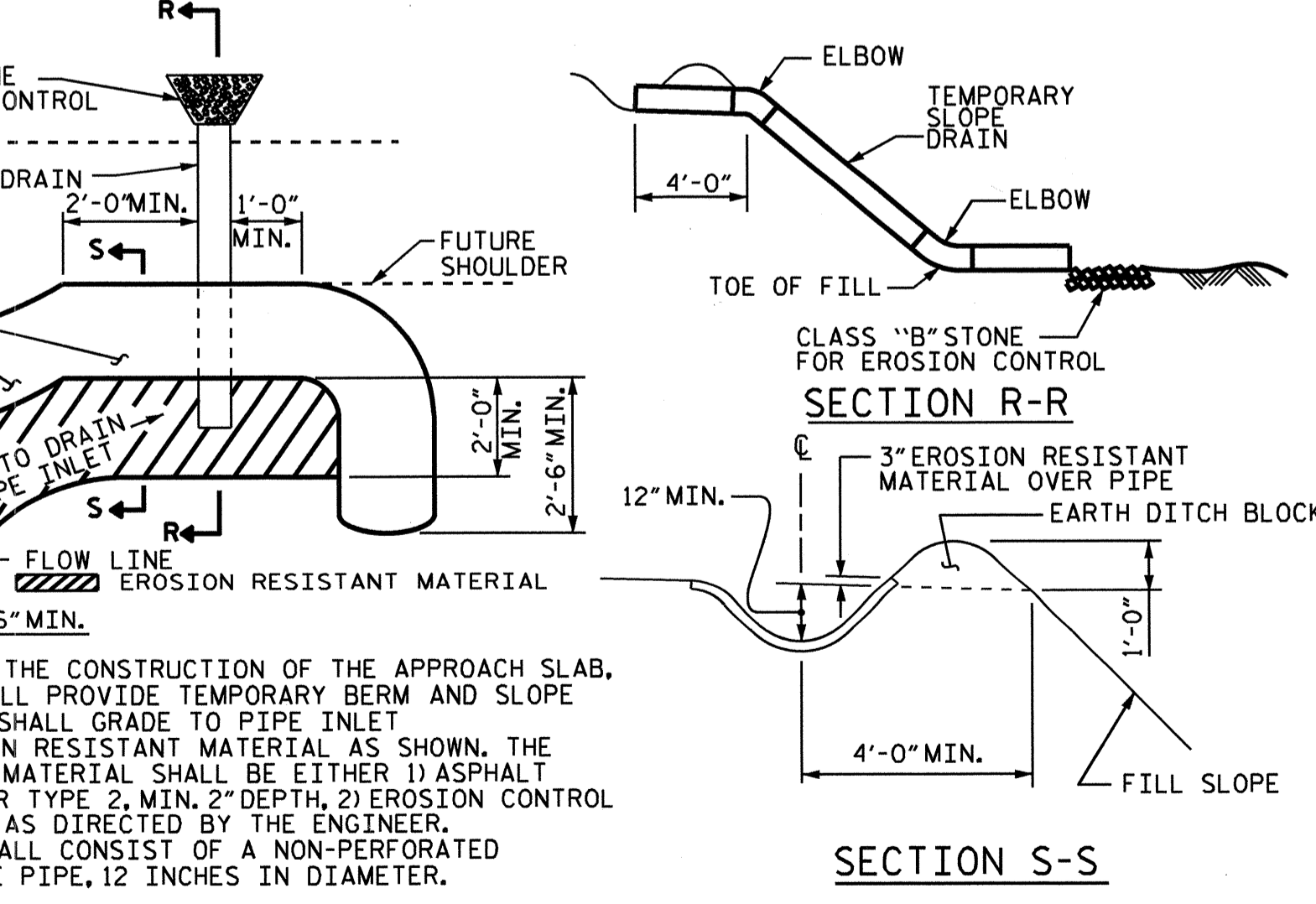
PLAN @ END BENT #1 PLAN @ END BENT #2
DIMENSIONS SHOWN ARE TYPICAL FOR BOTH APPROACH SLABS



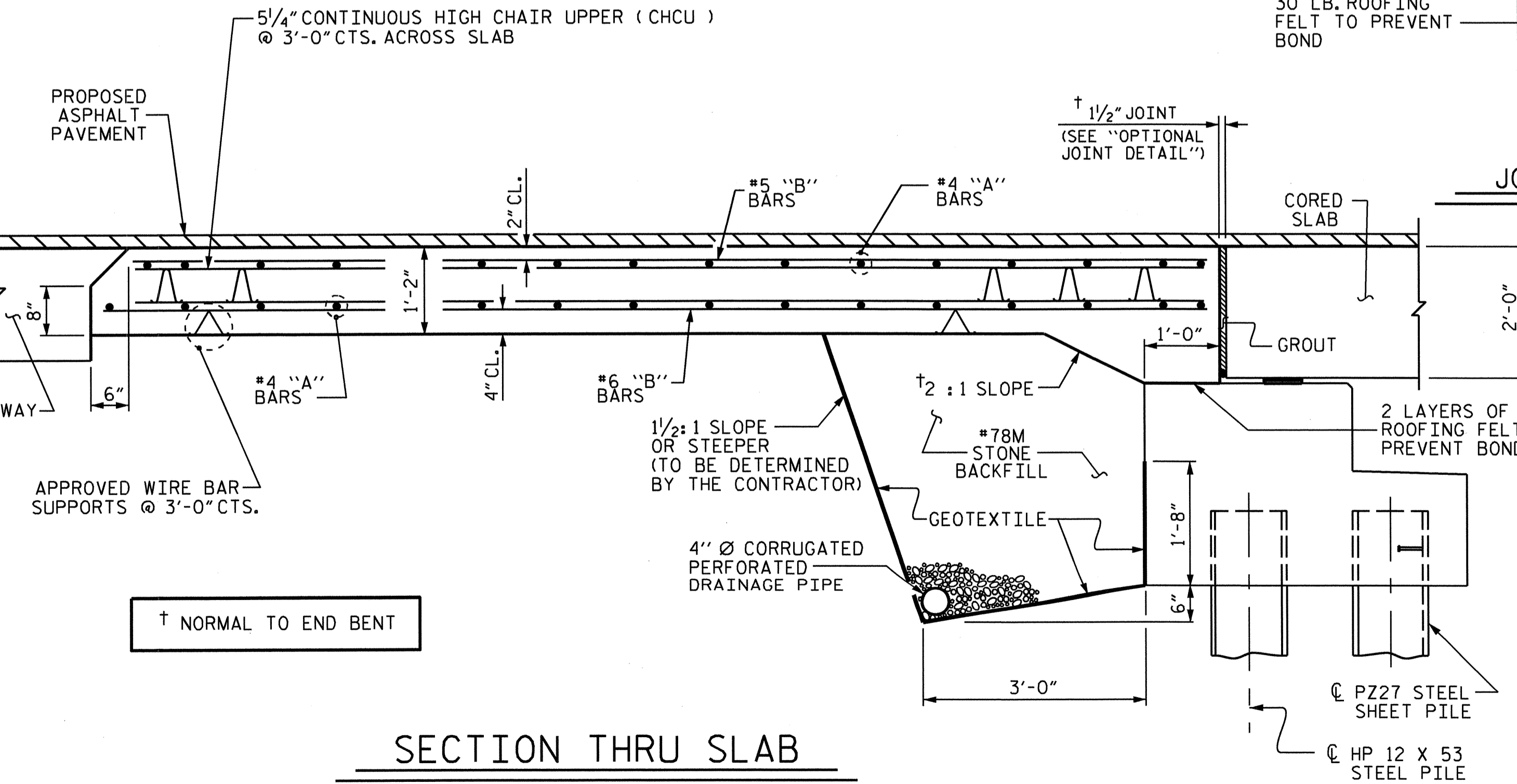
OPTIONAL JOINT DETAIL



TEMPORARY DRAINAGE DETAIL



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



SECTION THRU SLAB

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.

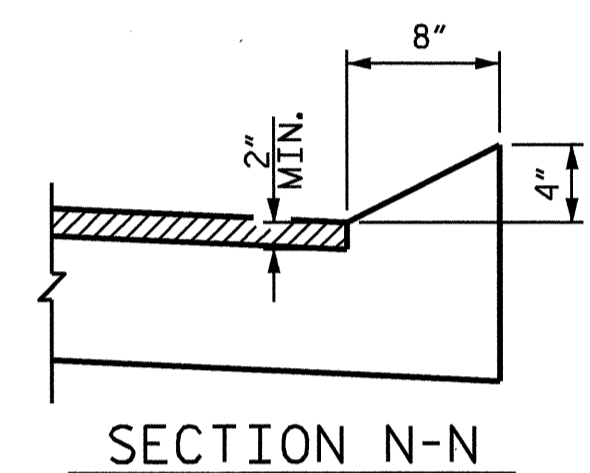
APPROACH SLAB GROOVING IS NOT REQUIRED.

FOR JOINT DETAILS, SEE "PRESTRESSED CONCRETE CORED SLAB UNIT" SHEETS. OPTIONAL JOINT DETAIL".

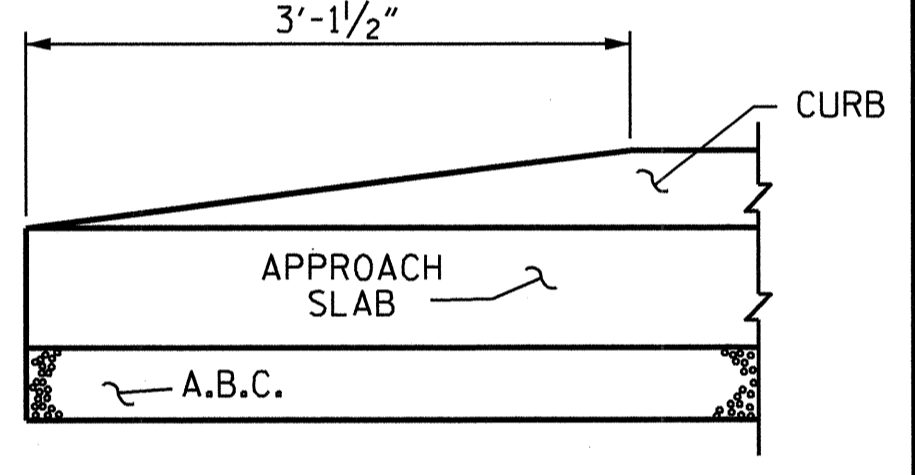
THE JOINT AT THE END BENT SHALL BE GROUTED AS SOON AS PRACTICAL AFTER THE CONSTRUCTION OF THE APPROACH SLABS.

THE CONTRACTOR HAS THE OPTION TO OMIT GROUT BETWEEN THE APPROACH SLAB AND THE CORED SLAB UNITS AND POUR THE APPROACH SLAB DIRECTLY AGAINST THE CORED SLAB UNITS. SEE "OPTIONAL JOINT DETAIL".

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

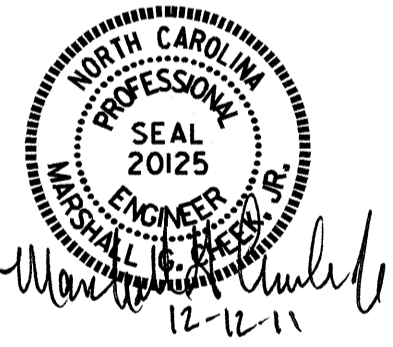


SECTION N-N



END OF CURB WITHOUT SHOULDER BERM GUTTER

CURB DETAILS



PROJECT NO. B-4851
YANCEY COUNTY
STATION: 22+86.00 -L-

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

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

ASSEMBLED BY: A.L. FIGUEROA DATE: 4-18-11
CHECKED BY: M.G. CHECK DATE: 6-10-11
DRAWN BY: KMM 3-08 REV. 9/27/11 MAA/GM
CHECKED BY: GM 3-08 REV. 10/1/11 MAA/GM

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 2006 "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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