

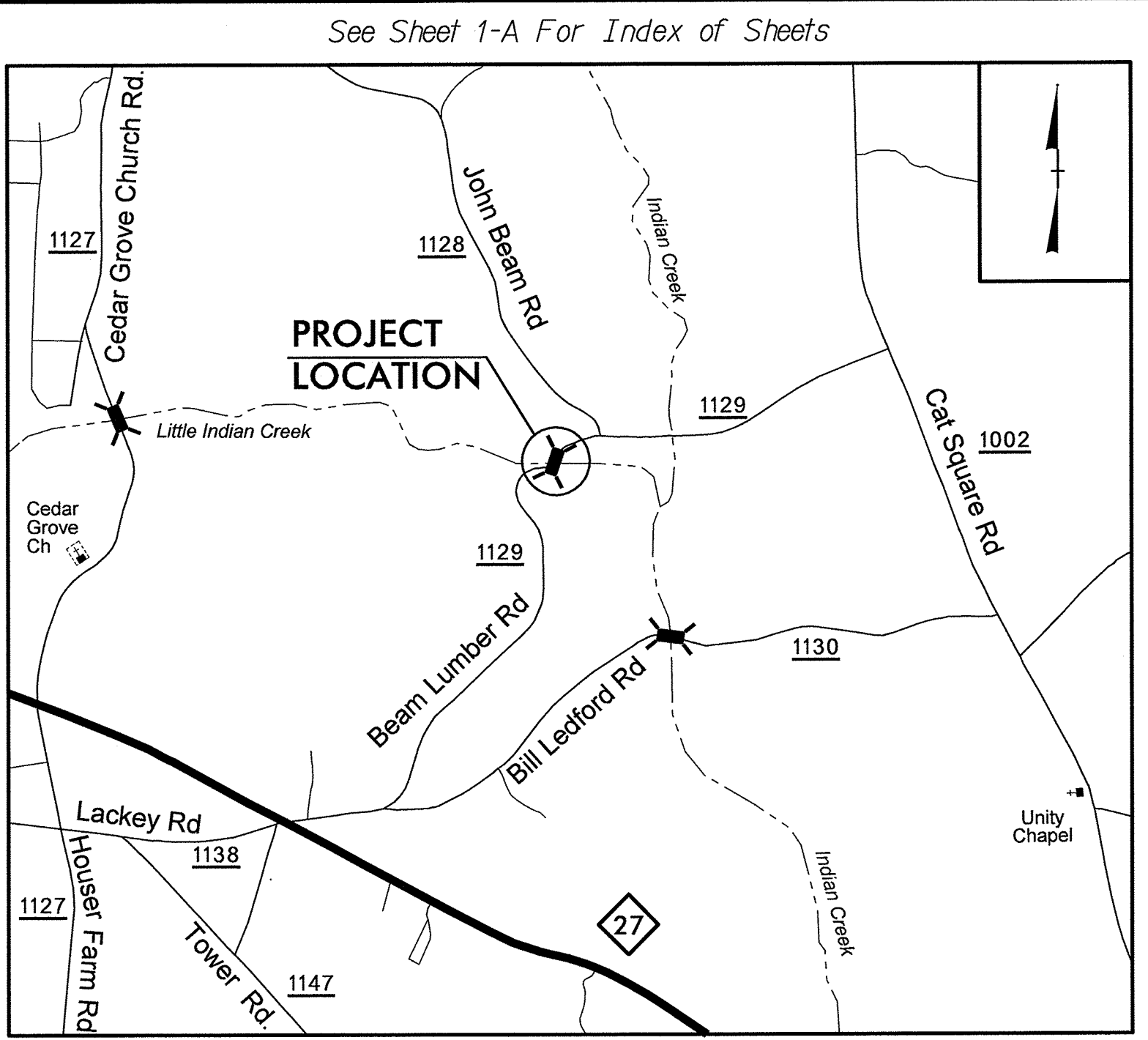
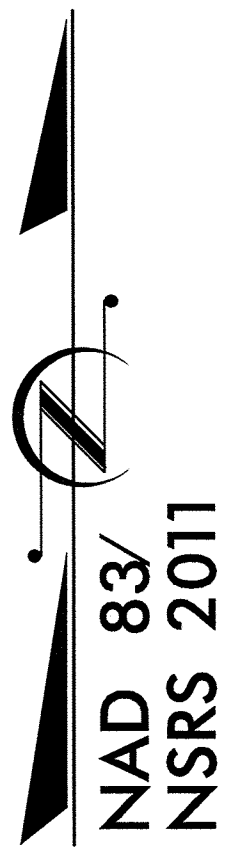
| | | | |
|-----------------|-----------------------------|-------------------|--------------|
| STATE | STATE PROJECT REFERENCE NO. | SHEET NO. | TOTAL SHEETS |
| N.C. | 12B.205512 | 1 | |
| STATE PROJ. NO. | P.A. PROJ. NO. | DESCRIPTION | |
| 12B.205512 | | P.E., RW, CONSTR. | |
| | | | |
| | | | |
| | | | |
| | | | |

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

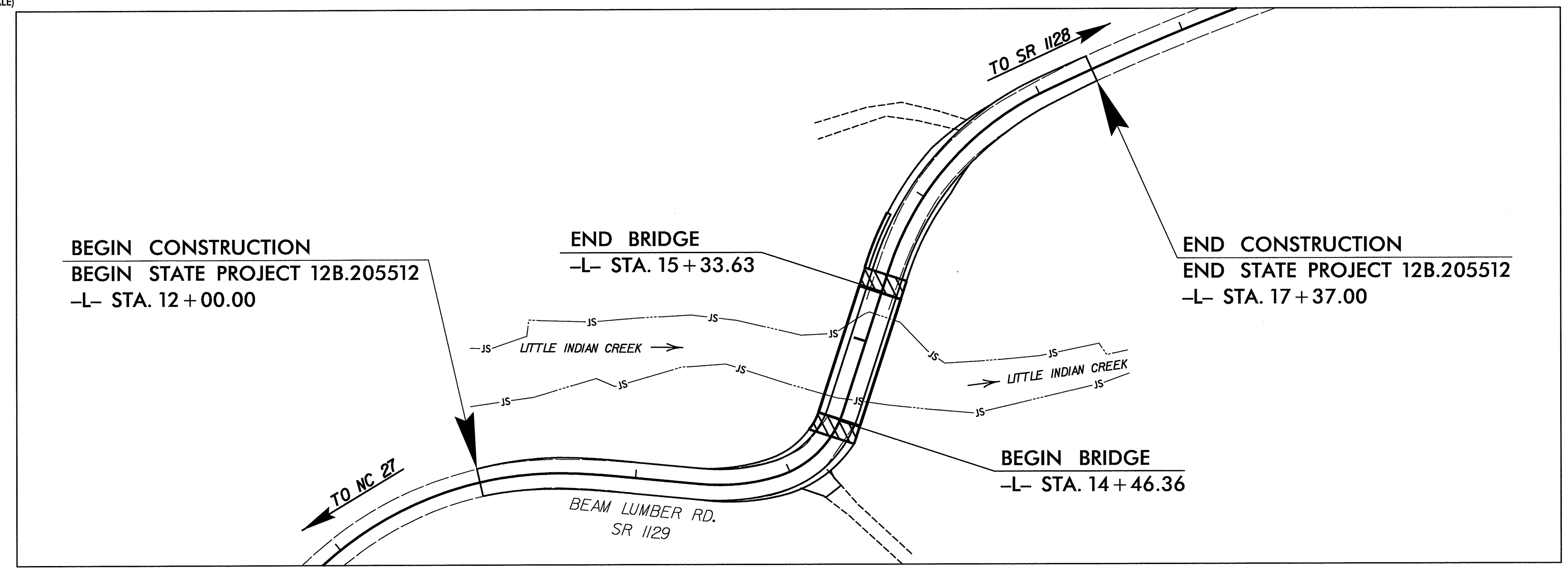
LINCOLN COUNTY

LOCATION: BRIDGE NO. 116 ON SR 1129 OVER LITTLE INDIAN CREEK BETWEEN NC 27 AND SR 1128

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



VICINITY MAP
(NOT TO SCALE)

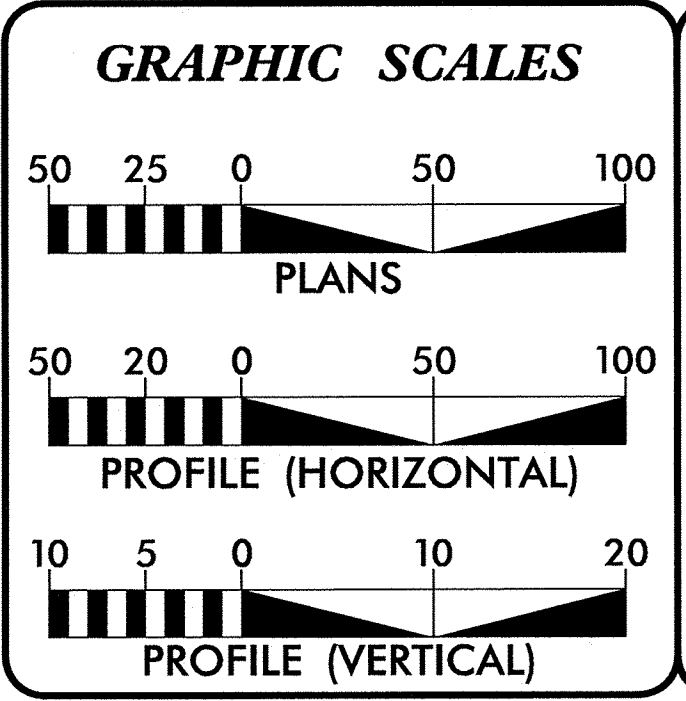


LOCATION SKETCH

HDR HDR Engineering, Inc. of the Carolinas
3733 National Drive, Suite 207 Raleigh, N.C. 27612
N.C.B.E.L.S. License Number: F-0116

STATE PROJECT: 12B.205512

CONTRACT: DL00058



DESIGN DATA

| | |
|------------------|--------|
| ADT 2010 = | 370 |
| ADT 2025 = | 740 |
| DHV = | % |
| D = | % |
| T = | 6 % |
| V = | 25 MPH |
| FUNC CLASS = | |
| LOCAL RURAL | |
| SUBREGIONAL TIER | |

PROJECT LENGTH

| | |
|--|---------------|
| LENGTH ROADWAY STATE PROJECT 12B.205512 | = 0.085 MILES |
| LENGTH STRUCTURES STATE PROJECT 12B.205512 | = 0.017 MILES |
| TOTAL LENGTH STATE PROJECT 12B.205512 | = 0.102 MILES |

Prepared In the Office of:
DIVISION OF HIGHWAYS
1000 Birch Ridge Dr., Raleigh NC, 27610

2012 STANDARD SPECIFICATIONS

RIGHT OF WAY DATE: NOVEMBER 19, 2013

LETTING DATE: MAY 27, 2014

DOMINIC M. WAINWRIGHT, P.E.
PROJECT ENGINEER

JAMES R. RICE, P.E.
PROJECT DESIGN ENGINEER

HYDRAULICS ENGINEER

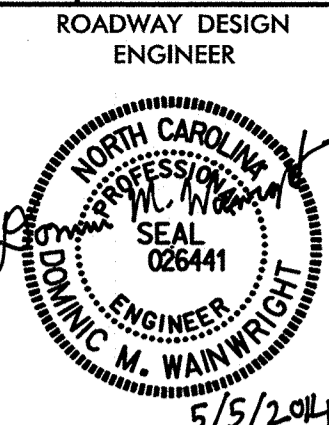
[Signature]
SIGNATURE: **JAMES R. RICE**
P.E. 31986

ROADWAY DESIGN ENGINEER

[Signature]
SIGNATURE: **DOMINIC M. WAINWRIGHT**
P.E. 026441

DIVISION OF HIGHWAYS
STATE OF NORTH CAROLINA

REUBEN D. CHANDLER P.E.
DIVISION ENGINEER



INDEX OF SHEETS

| SHEET NUMBER | SHEET |
|----------------|--|
| 1 | TITLE SHEET |
| 1-A | INDEX OF SHEETS, GENERAL NOTES, AND LIST OF STANDARD DRAWINGS |
| 1-B | CONVENTIONAL SYMBOLS |
| 2 | PAVEMENT SCHEDULE AND TYPICAL SECTIONS |
| 2-A | TYPE III SHOP CURVED ANCHOR UNIT DETAIL |
| 3 | RIGHT-OF-WAY AREA DATA, SUMMARY OF DRAINAGE QUANTITIES, SUMMARY OF GUARDRAIL |
| 4 | PLAN AND PROFILE SHEET |
| EC-1 THRU EC-3 | EROSION CONTROL PLANS |
| X-1 THRU X-13 | CROSS-SECTIONS |
| S-1 THRU S-16 | STRUCTURE PLANS |
| | STRUCTURE STANDARD NOTES |

2012 ROADWAY ENGLISH STANDARD DRAWINGS

The following Roadway Standards as appear in "Roadway Standard Drawings" Highway Design Branch - N. C. Department of Transportation - Raleigh, N. C., Dated January, 2012 are applicable to this project and by reference hereby are considered a part of these plans:

| STD.NO. | TITLE |
|--|---|
| DIVISION 2 - EARTHWORK | |
| 200.02 | Method of Clearing - Method II |
| 225.02 | Guide for Grading Subgrade - Secondary and Local |
| 225.04 | Method of Obtaining Superelevation - Two Lane Pavement |
| DIVISION 3 - PIPE CULVERTS | |
| 300.01 | Method of Pipe Installation |
| 310.10 | Driveway Pipe Construction |
| DIVISION 4 - MAJOR STRUCTURES | |
| 422.11 | Reinforced Bridge Approach Fills - Sub Regional Tier |
| DIVISION 5 - SUBGRADE, BASES AND SHOULDERS | |
| 560.01 | Method of Shoulder Construction - High Side of Superelevated Curve - Method I |
| DIVISION 8 - INCIDENTALS | |
| 840.25 | Anchorage for Frames - Brick or Concrete or Precast |
| 840.29 | Frames and Narrow Slot Flat Grates |
| 840.35 | Traffic Bearing Grated Drop Inlet - for Cast Iron Double Frame and Grates |
| 846.04 | Drop Inlet Installation in Shoulder Berm Gutter |
| 848.02 | Driveway Turnout - Radius Type |
| 862.01 | Guardrail Placement |
| 862.02 | Guardrail Installation |
| 862.03 | Structure Anchor Units |
| 876.02 | Guide for Rip Rap at Pipe Outlets |

GENERAL NOTES:

2012 SPECIFICATIONS
EFFECTIVE: 01-17-12
REVISED: 11/01/11

GRADE LINE:
GRADING AND SURFACING:

THE GRADE LINES SHOWN DENOTE THE FINISHED ELEVATION OF THE PROPOSED SURFACING AT GRADE POINTS SHOWN ON THE TYPICAL SECTIONS. GRADE LINES MAY BE ADJUSTED AT THEIR BEGINNING AND ENDING AND AT STRUCTURES AS DIRECTED BY THE ENGINEER IN ORDER TO SECURE A PROPER TIE-IN.

CLEARING:

CLEARING ON THIS PROJECT SHALL BE PERFORMED TO THE LIMITS ESTABLISHED BY METHOD II.

SUPERELEVATION:

ALL CURVES ON THIS PROJECT SHALL BE SUPERELEVATED IN ACCORDANCE WITH STD. NO. 225.04 USING THE RATE OF SUPERELEVATION AND RUNOFF SHOWN ON THE PLANS. SUPERELEVATION IS TO BE REVOLVED ABOUT THE GRADE POINTS SHOWN ON THE TYPICAL SECTIONS.

SHOULDER CONSTRUCTION:

ASPHALT, EARTH, AND CONCRETE SHOULDER CONSTRUCTION ON THE HIGH SIDE OF SUPERELEVATED CURVES SHALL BE IN ACCORDANCE WITH STD. NO. 560.01.

SIDE ROADS:

THE CONTRACTOR WILL BE REQUIRED TO DO ALL NECESSARY WORK TO PROVIDE SUITABLE CONNECTIONS WITH ALL ROADS, STREETS, AND DRIVES ENTERING THIS PROJECT. THIS WORK WILL BE PAID FOR AT THE CONTRACT UNIT PRICE FOR THE PARTICULAR ITEMS INVOLVED.

DRIVEWAYS:

DRIVEWAYS SHALL BE CONSTRUCTED IN ACCORDANCE WITH STD. 848.02 USING 10' RADII OR RADII AS SHOWN ON THE PLANS. LOCATIONS OF DRIVES WILL BE AS SHOWN ON THE PLANS OR AS DIRECTED BY THE ENGINEER.

GUARDRAIL:

THE GUARDRAIL LOCATIONS SHOWN ON THE PLANS MAY BE ADJUSTED DURING CONSTRUCTION AS DIRECTED BY THE ENGINEER. THE CONTRACTOR SHOULD CONSULT WITH THE ENGINEER PRIOR TO ORDERING GUARDRAIL MATERIAL.

END BENTS:

THE ENGINEER SHALL CHECK THE STRUCTURE END BENT PLANS, DETAILS, AND CROSS-SECTION PRIOR TO SETTING OF THE SLOPE STAKES FOR THE EMBANKMENT OR EXCAVATION APPROACHING A BRIDGE.

UTILITIES:

THE UTILITY OWNER ON THIS PROJECT IS AT&T.
ANY RELOCATION OF EXISTING UTILITIES WILL BE ACCOMPLISHED BY OTHERS.

04/16/11

Note: Not to Scale

*S.U.E. = Subsurface Utility Engineering

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

CONVENTIONAL PLAN SHEET SYMBOLS

BOUNDARIES AND PROPERTY:

| | |
|--|----------|
| State Line | ----- |
| County Line | ----- |
| Township Line | ----- |
| City Line | ----- |
| Reservation Line | ----- |
| Property Line | ----- |
| Existing Iron Pin | ○ EP |
| Property Corner | -----x |
| Property Monument | EDM |
| Parcel/Sequence Number | 123 |
| Existing Fence Line | -x-x-x- |
| Proposed Woven Wire Fence | ○ |
| Proposed Chain Link Fence | □ |
| Proposed Barbed Wire Fence | ◇ |
| Existing Wetland Boundary | -----MLB |
| Proposed Wetland Boundary | -----MLB |
| Existing Endangered Animal Boundary | -----EAB |
| Existing Endangered Plant Boundary | -----EPB |
| Known Soil Contamination: Boundary or Site | -----☠ |
| Potential Soil Contamination: Boundary or Site | -----? |

BUILDINGS AND OTHER CULTURE:

| | |
|-------------------------------|-----|
| Gas Pump Vent or U/G Tank Cap | ○ |
| Sign | ○ S |
| Well | ○ W |
| Small Mine | ⊗ |
| Foundation | ▭ |
| Area Outline | ▭ |
| Cemetery | ▭ † |
| Building | ▭ |
| School | ▭ |
| Church | ▭ |
| Dam | ▭ |

HYDROLOGY:

| | |
|------------------------------------|-----------|
| Stream or Body of Water | ----- |
| Hydro, Pool or Reservoir | ----- |
| Jurisdictional Stream | -----JS |
| Buffer Zone 1 | -----BZ 1 |
| Buffer Zone 2 | -----BZ 2 |
| Flow Arrow | ← |
| Disappearing Stream | ----- |
| Spring | ○ |
| Wetland | ----- |
| Proposed Lateral, Tail, Head Ditch | ----- |
| False Sump | ----- |

RAILROADS:

| | |
|--------------------|-----------------------------------|
| Standard Gauge | ----- |
| RR Signal Milepost | CSX TRANSPORTATION MILEPOST 35 |
| Switch | SWITCH |
| RR Abandoned | ----- |
| RR Dismantled | ----- |

RIGHT OF WAY:

| | |
|--|----------|
| Baseline Control Point | ◆ |
| Existing Right of Way Marker | △ |
| Existing Right of Way Line | ----- |
| Proposed Right of Way Line | -----R/W |
| Proposed Right of Way Line with Iron Pin and Cap Marker | -----R/W |
| Proposed Right of Way Line with Concrete or Granite Marker | -----R/W |
| Existing Control of Access | -----E |
| Proposed Control of Access | -----E |
| Existing Easement Line | -----E |
| Proposed Temporary Construction Easement | -----E |
| Proposed Temporary Drainage Easement | -----TDE |
| Proposed Permanent Drainage Easement | -----PDE |
| Proposed Permanent Drainage / Utility Easement | -----DUE |
| Proposed Permanent Utility Easement | -----PUE |
| Proposed Temporary Utility Easement | -----TUE |
| Proposed Aerial Utility Easement | -----AUE |
| Proposed Permanent Easement with Iron Pin and Cap Marker | -----◆ |

ROADS AND RELATED FEATURES:

| | |
|----------------------------|-----------|
| Existing Edge of Pavement | ----- |
| Existing Curb | ----- |
| Proposed Slope Stakes Cut | -----C |
| Proposed Slope Stakes Fill | -----F |
| Proposed Curb Ramp | -----CR |
| Curb Cut Future Ramp | -----CCFR |
| Existing Metal Guardrail | ----- |
| Proposed Guardrail | ----- |
| Existing Cable Guiderail | ----- |
| Proposed Cable Guiderail | ----- |
| Equality Symbol | ⊕ |
| Pavement Removal | ----- |

VEGETATION:

| | |
|--------------|-------|
| Single Tree | ☼ |
| Single Shrub | ☼ |
| Hedge | ----- |
| Woods Line | ----- |

| | |
|----------|----------|
| Orchard | ----- |
| Vineyard | Vineyard |

EXISTING STRUCTURES:

| | |
|--|--------------|
| MAJOR: | |
| Bridge, Tunnel or Box Culvert | -----CONC |
| Bridge Wing Wall, Head Wall and End Wall | -----CONC WW |
| MINOR: | |
| Head and End Wall | -----CONC HW |
| Pipe Culvert | ----- |
| Footbridge | ----- |
| Drainage Box: Catch Basin, DI or JB | -----CB |
| Paved Ditch Gutter | ----- |
| Storm Sewer Manhole | -----S |
| Storm Sewer | -----S |

UTILITIES:

| | |
|-------------------------------------|--------|
| POWER: | |
| Existing Power Pole | ● |
| Proposed Power Pole | ○ |
| Existing Joint Use Pole | ● |
| Proposed Joint Use Pole | ○ |
| Power Manhole | ⊕ |
| Power Line Tower | ⊗ |
| Power Transformer | ⊗ |
| U/G Power Cable Hand Hole | PH |
| H-Frame Pole | ----- |
| Recorded U/G Power Line | -----P |
| Designated U/G Power Line (S.U.E.*) | -----P |

TELEPHONE:

| | |
|---|-----------|
| Existing Telephone Pole | ● |
| Proposed Telephone Pole | ○ |
| Telephone Manhole | ⊕ |
| Telephone Booth | ⊕ |
| Telephone Pedestal | ⊕ |
| Telephone Cell Tower | ⊕ |
| U/G Telephone Cable Hand Hole | PH |
| Recorded U/G Telephone Cable | -----T |
| Designated U/G Telephone Cable (S.U.E.*) | -----T |
| Recorded U/G Telephone Conduit | -----TC |
| Designated U/G Telephone Conduit (S.U.E.*) | -----TC |
| Recorded U/G Fiber Optics Cable | -----T FO |
| Designated U/G Fiber Optics Cable (S.U.E.*) | -----T FO |

WATER:

| | |
|-------------------------------------|----------------|
| Water Manhole | ⊕ |
| Water Meter | ○ |
| Water Valve | ⊗ |
| Water Hydrant | ⊕ |
| Recorded U/G Water Line | ----- |
| Designated U/G Water Line (S.U.E.*) | ----- |
| Above Ground Water Line | -----A/G Water |

TV:

| | |
|--|------------|
| TV Satellite Dish | ☼ |
| TV Pedestal | ⊕ |
| TV Tower | ⊗ |
| U/G TV Cable Hand Hole | PH |
| Recorded U/G TV Cable | -----TV |
| Designated U/G TV Cable (S.U.E.*) | -----TV |
| Recorded U/G Fiber Optic Cable | -----TV FO |
| Designated U/G Fiber Optic Cable (S.U.E.*) | -----TV FO |

GAS:

| | |
|-----------------------------------|--------------|
| Gas Valve | ◇ |
| Gas Meter | ◇ |
| Recorded U/G Gas Line | -----G |
| Designated U/G Gas Line (S.U.E.*) | -----G |
| Above Ground Gas Line | -----A/G Gas |

SANITARY SEWER:

| | |
|--|-------------------------|
| Sanitary Sewer Manhole | ⊕ |
| Sanitary Sewer Cleanout | ⊕ |
| U/G Sanitary Sewer Line | -----SS |
| Above Ground Sanitary Sewer | -----A/G Sanitary Sewer |
| Recorded SS Forced Main Line | -----FSS |
| Designated SS Forced Main Line (S.U.E.*) | -----FSS |

MISCELLANEOUS:

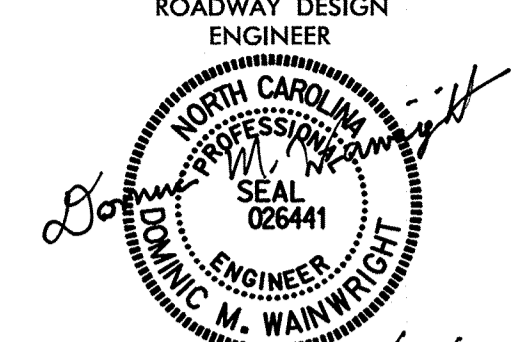

| | |
|--|----------|
| Utility Pole | ● |
| Utility Pole with Base | □ |
| Utility Located Object | ○ |
| Utility Traffic Signal Box | ⊕ |
| Utility Unknown U/G Line | -----UTL |
| U/G Tank; Water, Gas, Oil | ----- |
| Underground Storage Tank, Approx. Loc. | UST |
| A/G Tank; Water, Gas, Oil | ----- |
| Geoenvironmental Boring | ⊕ |
| U/G Test Hole (S.U.E.*) | ⊕ |
| Abandoned According to Utility Records | AATUR |
| End of Information | E.O.I. |

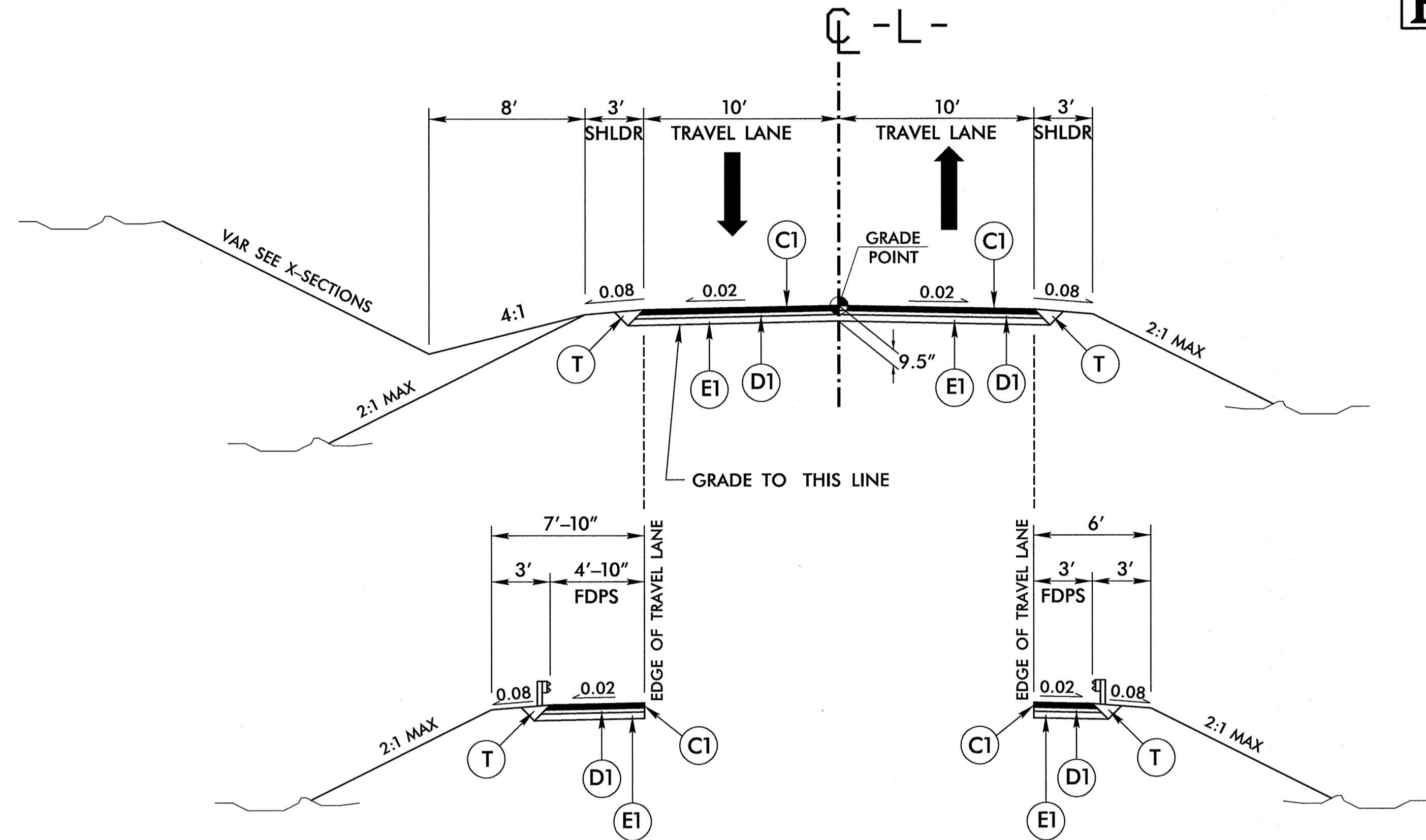
8/17/99

5/2/2014 L:\pco\in116_PDY_TYP.dgn 3:30:32 PM

PAVEMENT SCHEDULE

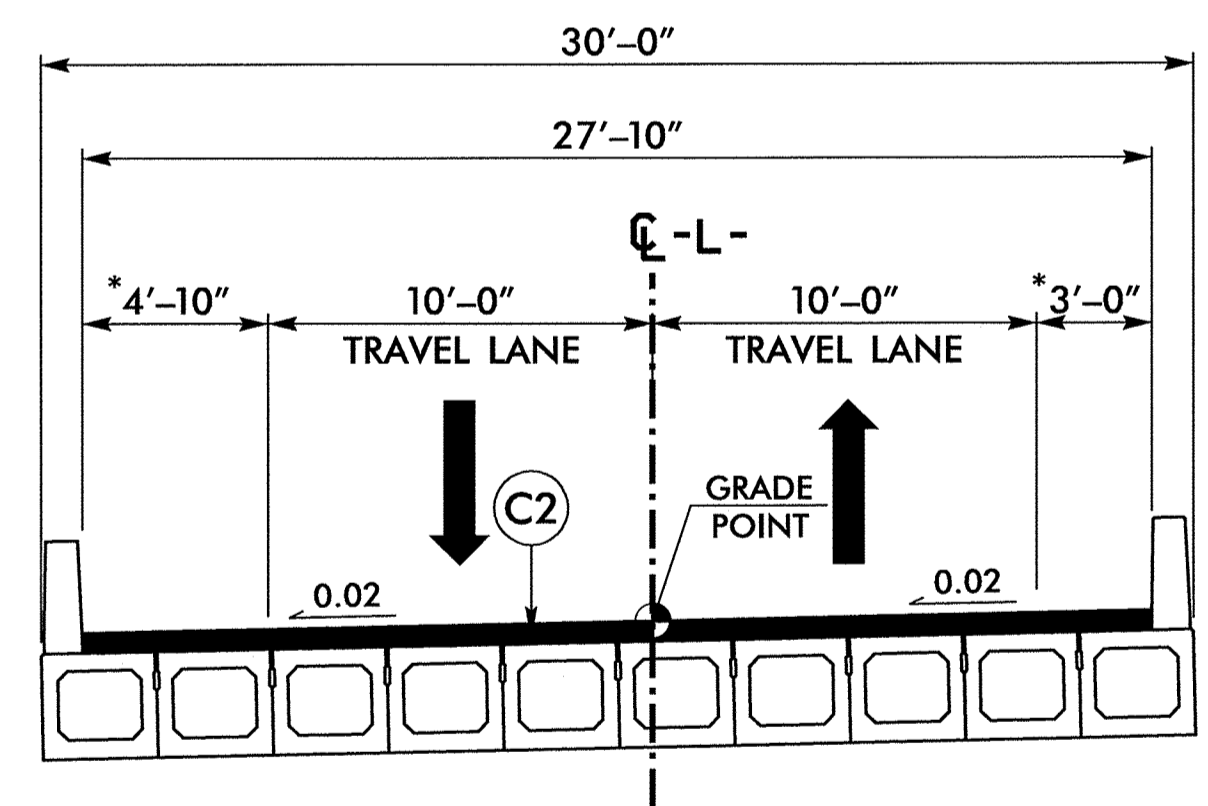
| | |
|----|---|
| C1 | PROP. APPROX. 3.0" ASPHALT CONCRETE SURFACE COURSE, TYPE S9.5B, AT AN AVERAGE RATE OF 168 LBS PER SQUARE YARD IN EACH OF TWO LAYERS. |
| C2 | PROP. VAR. DEPTH ASPHALT CONCRETE SURFACE COURSE, TYPE S9.5B, AT AN AVERAGE RATE OF 112 LBS. PER SQ. YD. PER 1" DEPTH TO BE PLACED IN LAYERS NOT TO EXCEED 2.0" IN DEPTH. |
| C3 | PROP. APPROX. 1.5" ASPHALT CONCRETE SURFACE COURSE, TYPE S9.5B, AT AN AVERAGE RATE OF 168 LBS PER SQUARE YARD. |
| D1 | PROP. APPROX. 2.5" ASPHALT CONCRETE INTERMEDIATE COURSE, TYPE I19.0B, AT AN AVERAGE RATE OF 285 LBS PER SQUARE YARD. |
| E1 | PROP. APPROX. 4.0" ASPHALT CONCRETE BASE COURSE, TYPE B25.0B, AT AN AVERAGE RATE OF 456 LBS PER SQUARE YARD. |
| T | EARTH MATERIAL |
| V | 8" INCIDENTAL STONE BASE |

| | |
|---|----------------|
| PROJECT REFERENCE NO. 12B.205512 | SHEET NO. 2 |
| RW SHEET NO. | |
| ROADWAY DESIGN ENGINEER | |
|  | |
| 5/5/2014 | |
|  HDR Engineering, Inc. of the Carolinas 3733 National Drive, Suite 207 Raleigh, N.C. 27612 N.C.B.E.L.S. License Number: F-0116 | |



TYPICAL SECTION NO. 1

| LINE | FROM STATION | TO STATION |
|------|--------------|------------|
| -L- | 12 + 00.00 | 14 + 46.36 |
| -L- | 15 + 33.63 | 17 + 37.00 |



TYPICAL SECTION NO. 2
BOX BEAM BRIDGE

| LINE | FROM STATION | TO STATION |
|------|--------------|------------|
| -L- | 14 + 46.36 | 15 + 33.63 |

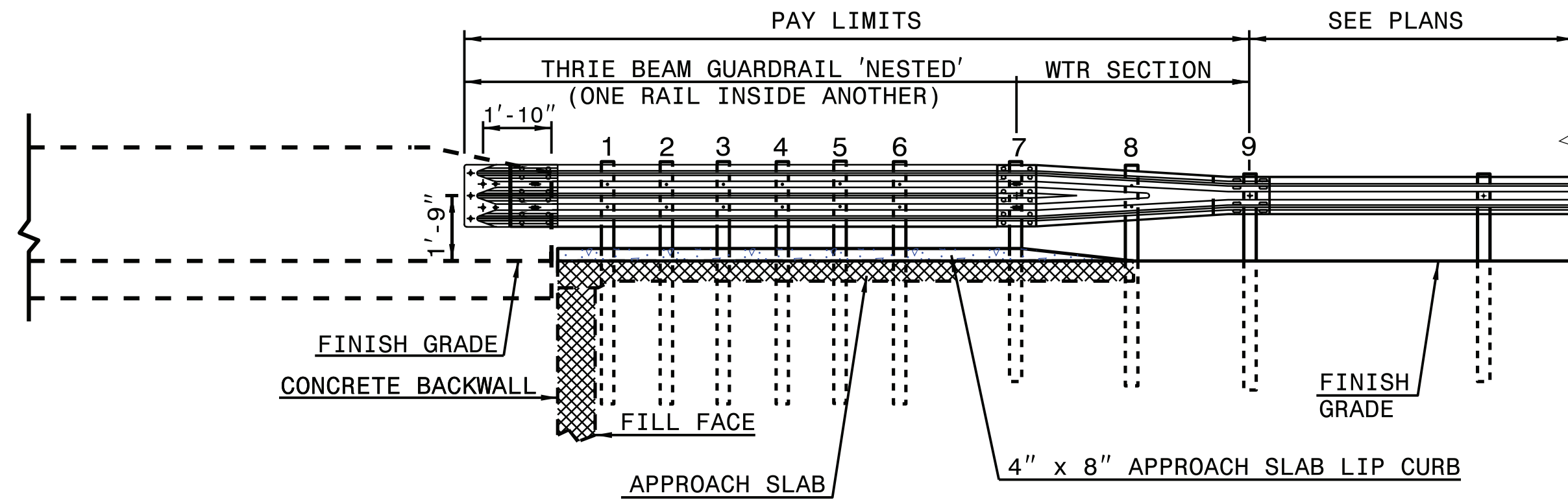
* NOTE: SHOULDER WIDTH VARIES FROM -L- STA. 14 + 46.36 TO 14 + 52.75.

REVISIONS

STATE OF NORTH CAROLINA
 DEPT. OF TRANSPORTATION
 DIVISION OF HIGHWAYS
 RALEIGH, N.C.

ENGLISH DETAIL DRAWING FOR
**TYPE III - SHOP CURVED
 STRUCTURE ANCHOR UNIT**

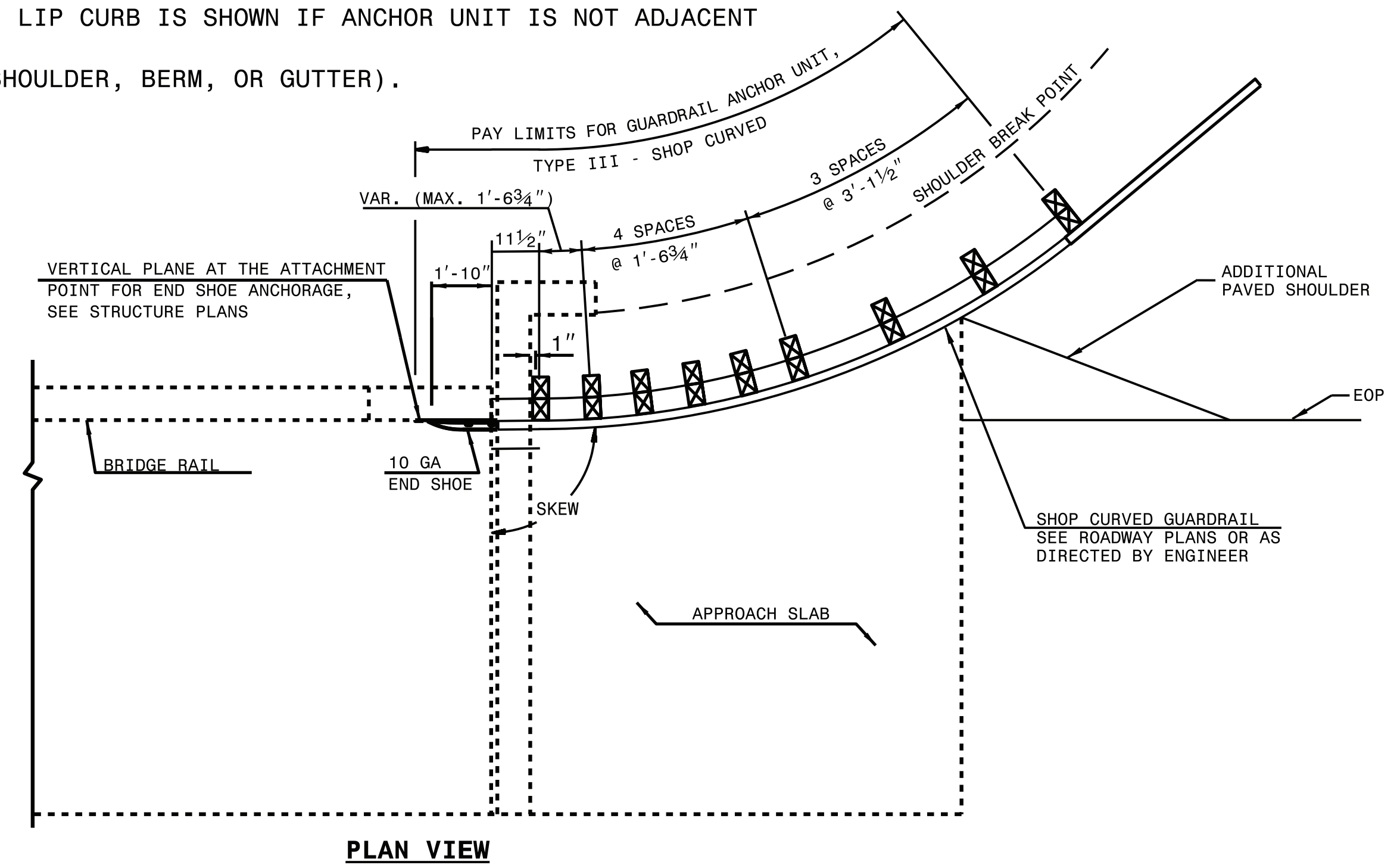
SHEET 1 OF 1
TYPE III SC



ELEVATION

NOTE:

- **POST NOT REQUIRED FOR SKEW ANGLES GREATER THAN 150° OR LESS THAN 30° UNLESS OTHERWISE DIRECTED BY THE ENGINEER.
- *THE DISTANCE FROM END OF BRIDGE RAIL TO CENTER LINE OF THE FIRST POST SHOULD BE 11½" IF CONCRETE BACKWALL IS NOT PRESENT.
- SHOULDER BERM GUTTER MUST BE INSTALLED TO THE LIMITS 8" x 4" LIP CURB IS SHOWN IF ANCHOR UNIT IS NOT ADJACENT TO AN APPROACH SLAB.
- MEASURE GUARDRAIL HEIGHT FROM THE TOP OF ADJACENT SURFACE (SHOULDER, BERM, OR GUTTER).
- USE NO STEEL POSTS WITHIN THE GUARDRAIL ANCHOR UNIT LIMITS.
- LAP JOINTS IN THE DIRECTION OF TRAFFIC FLOW.
- SEE STANDARD 862.03 SHEET 4 FOR POST SECTIONS 1 THRU 9.



PLAN VIEW

**GUARDRAIL ANCHOR UNIT, TYPE III - SHOP CURVED
 FOR ATTACHMENT TO RAIL ON BRIDGE**

SEE ROADWAY PLANS FOR END TREATMENT

STATE OF NORTH CAROLINA
 DEPT. OF TRANSPORTATION
 DIVISION OF HIGHWAYS
 RALEIGH, N.C.

ENGLISH DETAIL DRAWING FOR
**TYPE III - SHOP CURVED
 STRUCTURE ANCHOR UNIT**

SHEET 1 OF 1
TYPE III SC

| | |
|---|---------------|
| CONTRACT STANDARDS AND DEVELOPMENT UNIT Office 919-250-4128 FAX 919-250-4119 | |
| SEE PLATE FOR TITLE | |
| ORIGINAL BY: E.E.Ward | DATE: 4-4-02 |
| MODIFIED BY: T.S.Spell | DATE: 5-29-09 |
| CHECKED BY: | DATE: |
| FILE SPEC.: ward:\usr\details\stand\862stds\typeiiisc.dgn | |

5/14/99
 \$\$\$SYTIME\$\$\$
 \$\$\$CON\$\$\$
 \$\$\$USERNAME\$\$\$

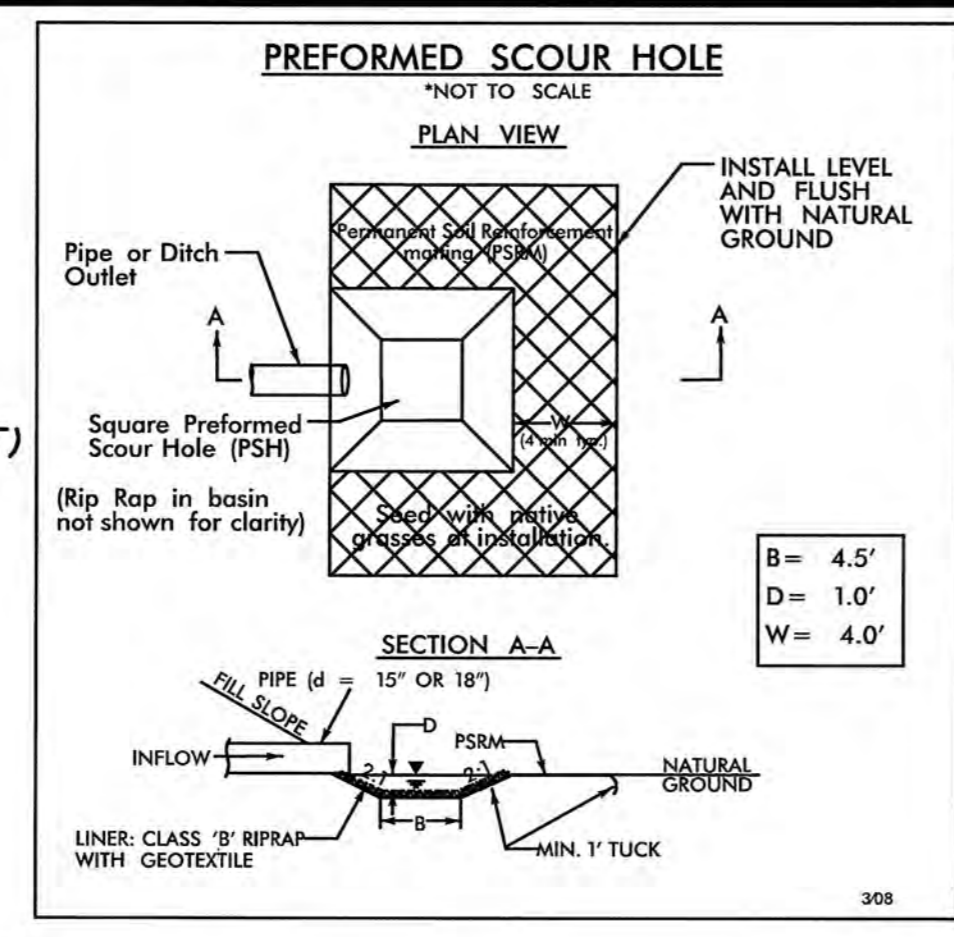
NOTE: THIS PROJECT REQUIRES A DESIGN EXCEPTION FOR DESIGN SPEED.

PI Sta 11+35.82
 $\Delta = 62' 41" 13.7" (RT)$
 $D = 25' 41" 35.4"$
 $L = 243.98'$
 $T = 135.82'$
 $R = 223.00'$
 $V = 25 \text{ MPH}$

PIs Sta 12+62.34
 $\Theta_s = 7' 03" 56.2"$
 $L_s = 55.00'$
 $LT = 36.70'$
 $ST = 18.36'$

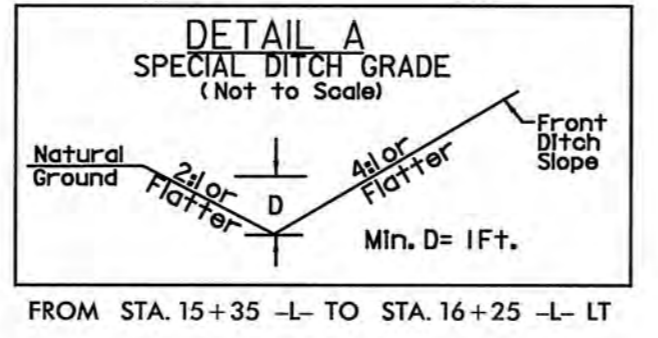
PI Sta 13+67.26
 $\Delta = 22' 14" 23.9" (LT)$
 $D = 45' 06" 53.2"$
 $L = 49.30'$
 $T = 24.96'$
 $R = 127.00'$
 $V = 20 \text{ MPH}$

PI Sta 14+24.78
 $\Delta = 55' 10" 44.2" (LT)$
 $D = 90' 13" 46.5"$
 $L = 61.15'$
 $T = 33.18'$
 $R = 63.50'$
 $V = 15 \text{ MPH}$



PI Sta 16+30.68
 $\Delta = 46' 35" 36.8" (RT)$
 $D = 30' 09" 20.4"$
 $L = 154.51'$
 $T = 81.81'$
 $R = 190.00'$
 $V = 20 \text{ MPH}$

PI Sta 18+27.77
 $\Delta = 7' 54" 23.2" (RT)$
 $D = 3' 10" 59.2"$
 $L = 248.39'$
 $T = 124.39'$
 $R = 1800.00'$
 $V = 45 \text{ MPH}$



| NAME | NORTHING | EASTING | ELEVATION |
|--------|-------------|--------------|-----------|
| BL-1 = | N 648789.23 | E 1281493.42 | 913.24 |
| BL-2 = | N 648913.54 | E 1281641.33 | 895.98 |
| BL-3 = | N 648926.35 | E 1281893.51 | 885.60 |
| GPS1 = | N 649117.33 | E 1281990.03 | 882.99 |
| GPS2 = | N 649220.20 | E 1282266.68 | 882.82 |

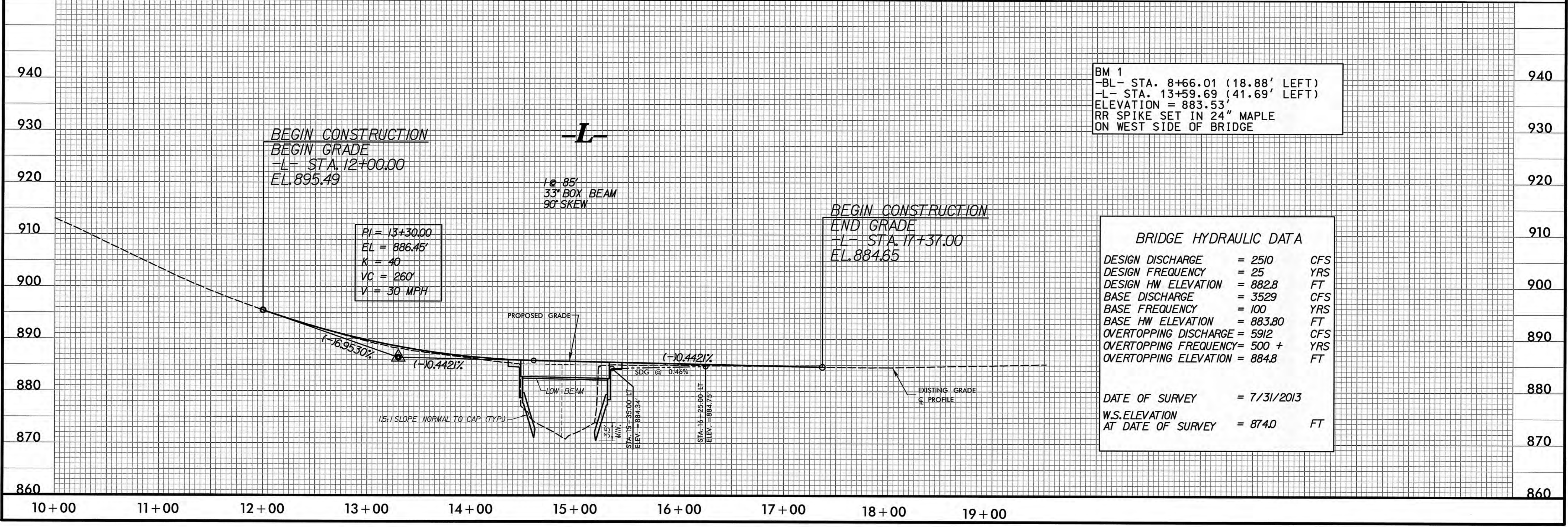
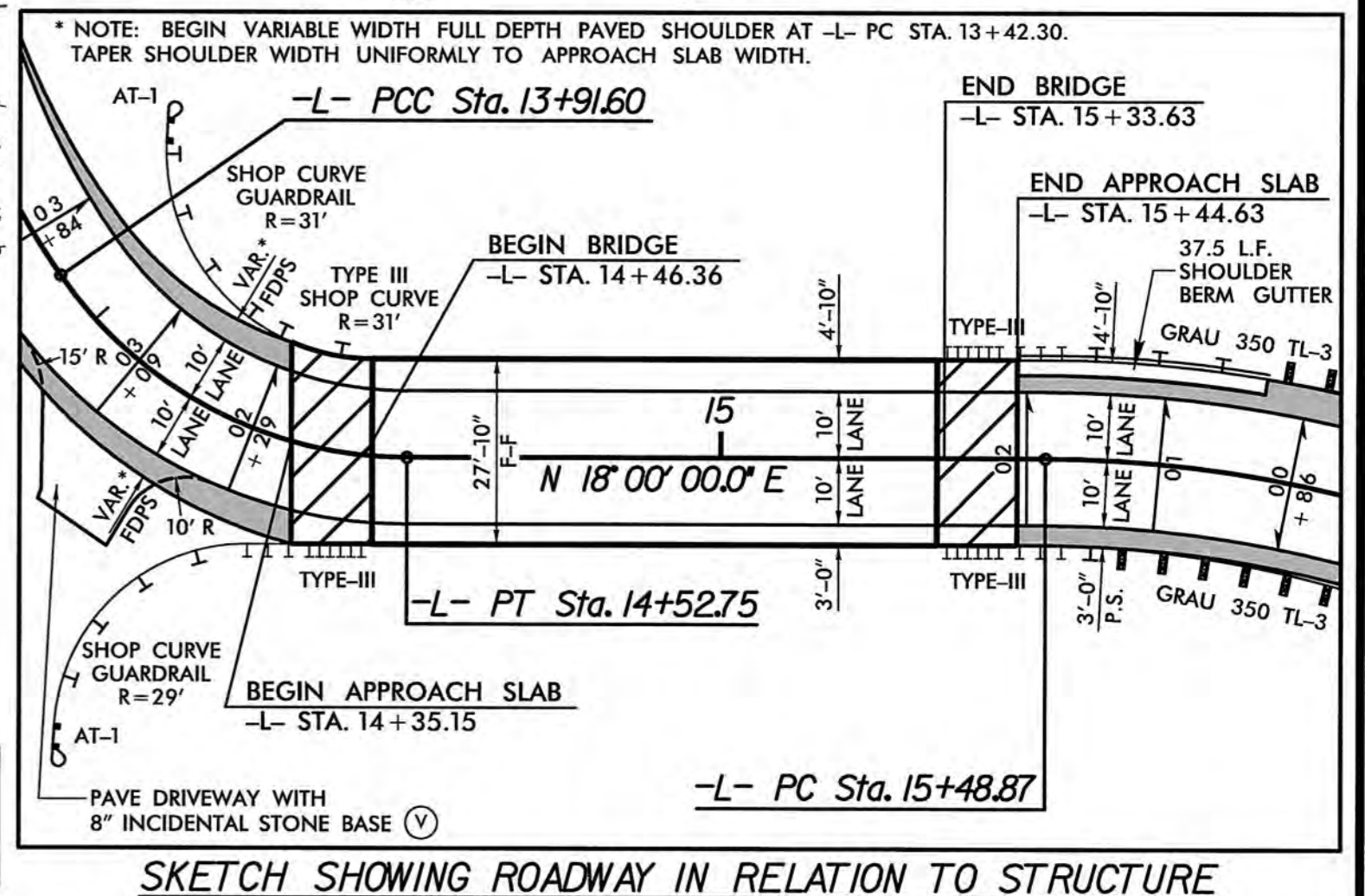
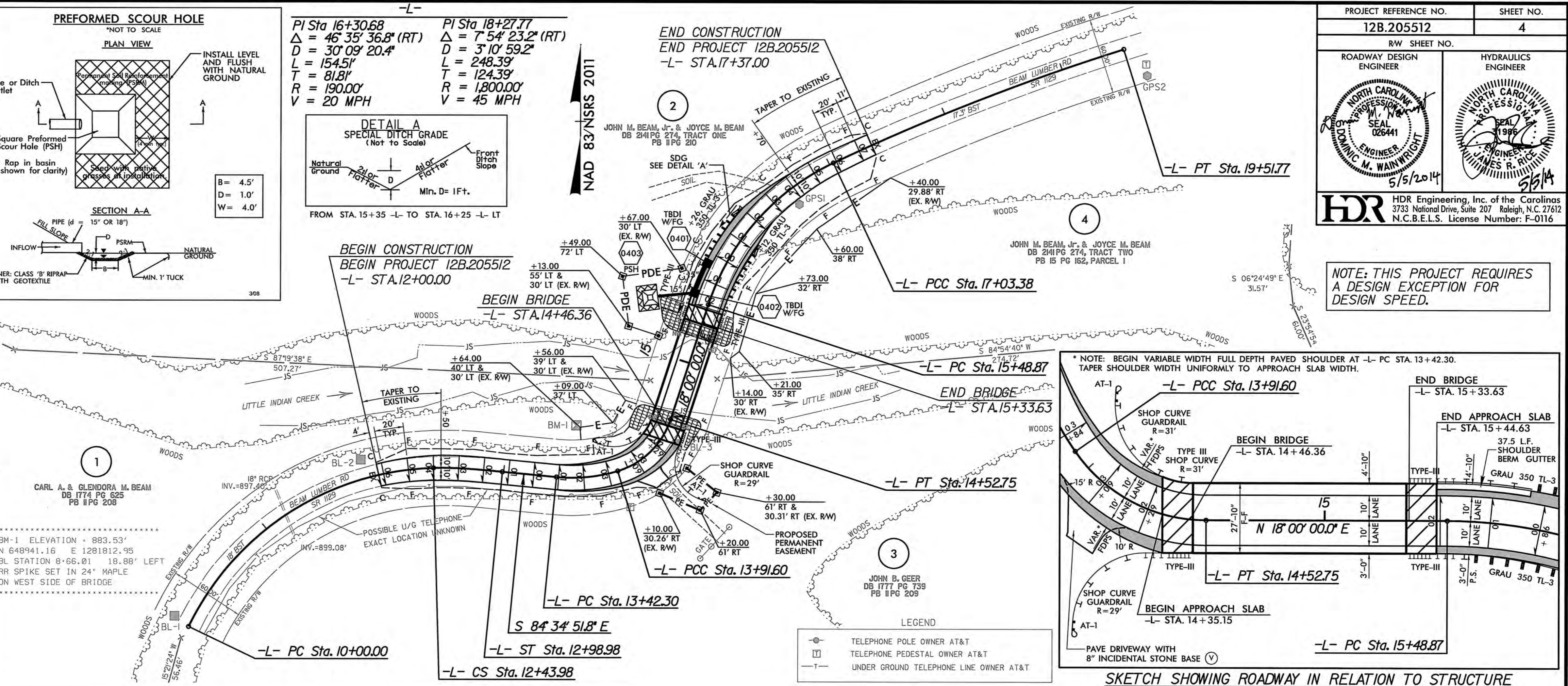
DATUM DESCRIPTION

THE LOCALIZED COORDINATE SYSTEM DEVELOPED FOR THIS PROJECT IS BASED ON THE STATE PLANE COORDINATES ESTABLISHED BY NCGS FOR MONUMENT 54-0116 GPS1 WITH NAD 83/NA 2011 STATE PLANE GRID COORDINATES OF NORTHING: 649117.3280(ft) EASTING: 1281990.0290(ft) ELEVATION: 882.99(ft)

THE AVERAGE COMBINED GRID FACTOR USED ON THIS PROJECT (GROUND TO GRID) IS: 0.99984553

LOCALIZED HORIZONTAL GROUND DISTANCE FROM 54-0116 GPS1 TO -L- STA. 12+00.00 IS
 S 57° 08' 14.13" W 397.92'

ALL LINEAR DIMENSIONS ARE LOCALIZED HORIZONTAL DISTANCES
 VERTICAL DATUM USED IS NAVD 88



BM 1
 -BL- STA. 8+66.01 (18.88' LEFT)
 -L- STA. 13+59.69 (41.69' LEFT)
 ELEVATION = 883.53'
 RR SPIKE SET IN 24" MAPLE
 ON WEST SIDE OF BRIDGE

BRIDGE HYDRAULIC DATA

| | | |
|-----------------------|----------|-----|
| DESIGN DISCHARGE | = 2510 | CFS |
| DESIGN FREQUENCY | = 25 | YRS |
| DESIGN HW ELEVATION | = 882.8 | FT |
| BASE DISCHARGE | = 3529 | CFS |
| BASE FREQUENCY | = 100 | YRS |
| BASE HW ELEVATION | = 883.80 | FT |
| OVERTOPPING DISCHARGE | = 5912 | CFS |
| OVERTOPPING FREQUENCY | = 500 + | YRS |
| OVERTOPPING ELEVATION | = 884.8 | FT |

DATE OF SURVEY = 7/31/2013
 W.S. ELEVATION AT DATE OF SURVEY = 874.0 FT

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 TIME: 4:22:50 PM
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8/17/99

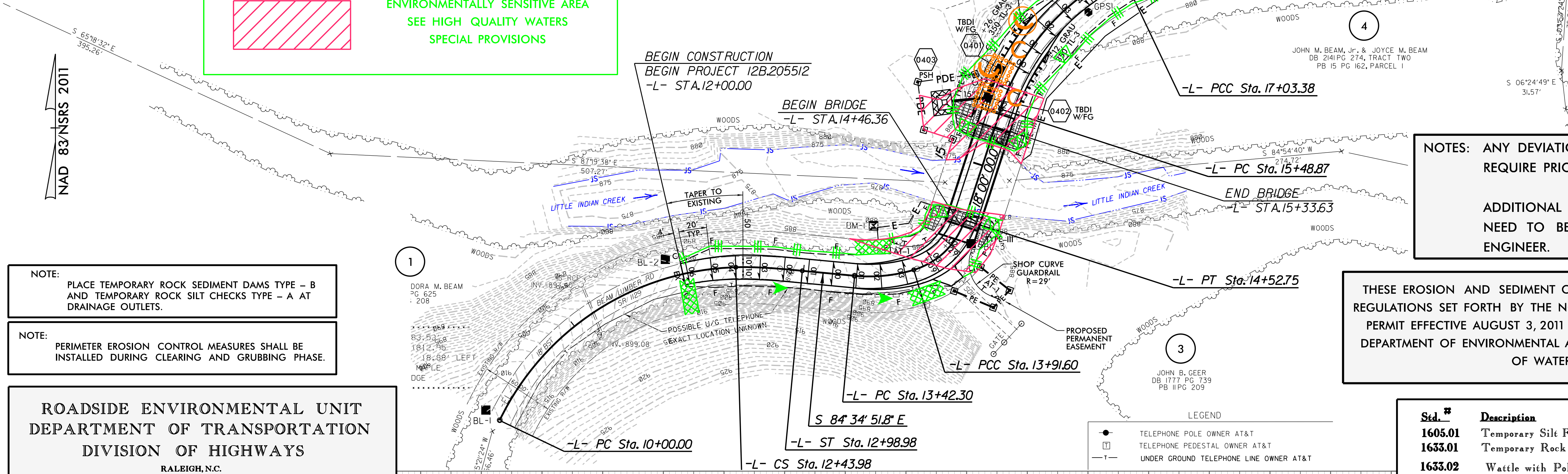
Roadway Standard Drawings
 The following roadway english standards as appear in "Roadway Standard Drawings"- Roadway Design Unit - N. C. Department of Transportation - Raleigh, N. C., dated January 2012 and the latest revision thereto are applicable to this project and by reference hereby are considered a part of these plans.

| | |
|--|--|
| 1605.01 Temporary Silt Fence | 1631.01 Matting Installation |
| 1606.01 Special Sediment Control Fence | 1632.03 Rock Inlet Sediment Trap Type C |
| 1622.01 Slope Drain | 1633.01 Temporary Rock Silt Check Type A |
| | 1633.02 Temporary Rock Silt Check Type B |

EROSION CONTROL PLANS

| | |
|--|-------------------|
| PROJECT REFERENCE NO. 12B.2055/2 | SHEET NO. EC-1 |
| RW SHEET NO. | |
| RYAN F BROWN, E.I. | |
| LEVEL III-A: DESIGNER OF EROSION AND SEDIMENT CONTROL PLANS. CERTIFICATION NUMBER: 602 | |
| HDR HDR Engineering, Inc. of the Carolinas 3733 National Drive, Suite 207 Raleigh, N.C. 27612 N.C.B.E.L.S. License Number: F-0116 | |

 ENVIRONMENTALLY SENSITIVE AREA
 SEE HIGH QUALITY WATERS
 SPECIAL PROVISIONS



NOTE: PLACE TEMPORARY ROCK SEDIMENT DAMS TYPE - B AND TEMPORARY ROCK SILT CHECKS TYPE - A AT DRAINAGE OUTLETS.

NOTE: PERIMETER EROSION CONTROL MEASURES SHALL BE INSTALLED DURING CLEARING AND GRUBBING PHASE.

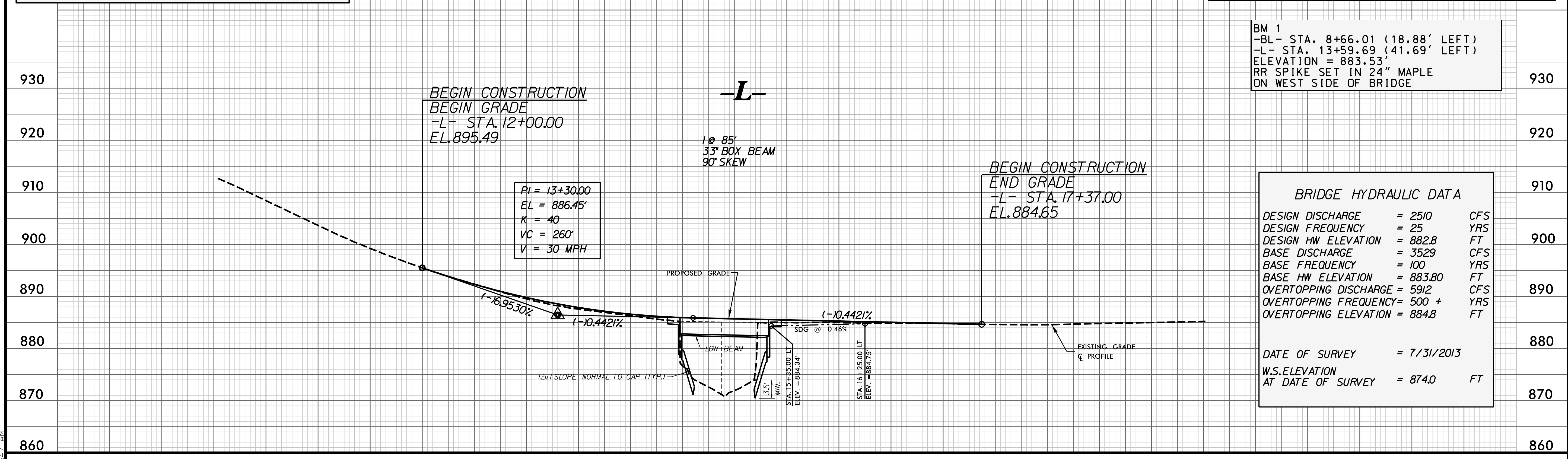
ROADSIDE ENVIRONMENTAL UNIT
DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS
 RALEIGH, N.C.
2012 STANDARD SPECIFICATIONS

NOTES: ANY DEVIATION FROM OPTIONS GIVEN WILL REQUIRE PRIOR APPROVAL BY ENGINEER.
 ADDITIONAL EROSION CONTROL DEVICES MAY NEED TO BE INSTALLED AS DIRECTED BY THE ENGINEER.

THESE EROSION AND SEDIMENT CONTROL PLANS COMPLY WITH THE REGULATIONS SET FORTH BY THE NCG-010000 GENERAL CONSTRUCTION PERMIT EFFECTIVE AUGUST 3, 2011 ISSUED BY THE NORTH CAROLINA DEPARTMENT OF ENVIRONMENTAL AND NATURAL RESOURCES DIVISION OF WATER QUALITY.

| Std. # | Description | Symbol |
|---------|----------------------------------|--------|
| 1605.01 | Temporary Silt Fence | |
| 1633.01 | Temporary Rock Silt Check Type-A | |
| 1633.02 | Wattle with Polyacrylamide (PAM) | |
| 1630.03 | Temporary Silt Ditch | |
| 1633.02 | Temporary Rock Silt Check Type-B | |

BM 1
 -BL- STA. 8+66.01 (18.88' LEFT)
 -L- STA. 13+59.69 (41.69' LEFT)
 ELEVATION = 883.53'
 RR SPIKE SET IN 24" MAPLE
 ON WEST SIDE OF BRIDGE



BRIDGE HYDRAULIC DATA

| | | |
|---------------------------------|-------------|-----|
| DESIGN DISCHARGE | = 2510 | CFS |
| DESIGN FREQUENCY | = 25 | YRS |
| DESIGN HW ELEVATION | = 882.8 | FT |
| BASE DISCHARGE | = 3529 | CFS |
| BASE FREQUENCY | = 100 | YRS |
| BASE HW ELEVATION | = 883.80 | FT |
| OVERTOPPING DISCHARGE | = 5912 | CFS |
| OVERTOPPING FREQUENCY | = 500 + | YRS |
| OVERTOPPING ELEVATION | = 884.8 | FT |
| DATE OF SURVEY | = 7/31/2013 | |
| W.S.ELEVATION AT DATE OF SURVEY | = 874.0 | FT |

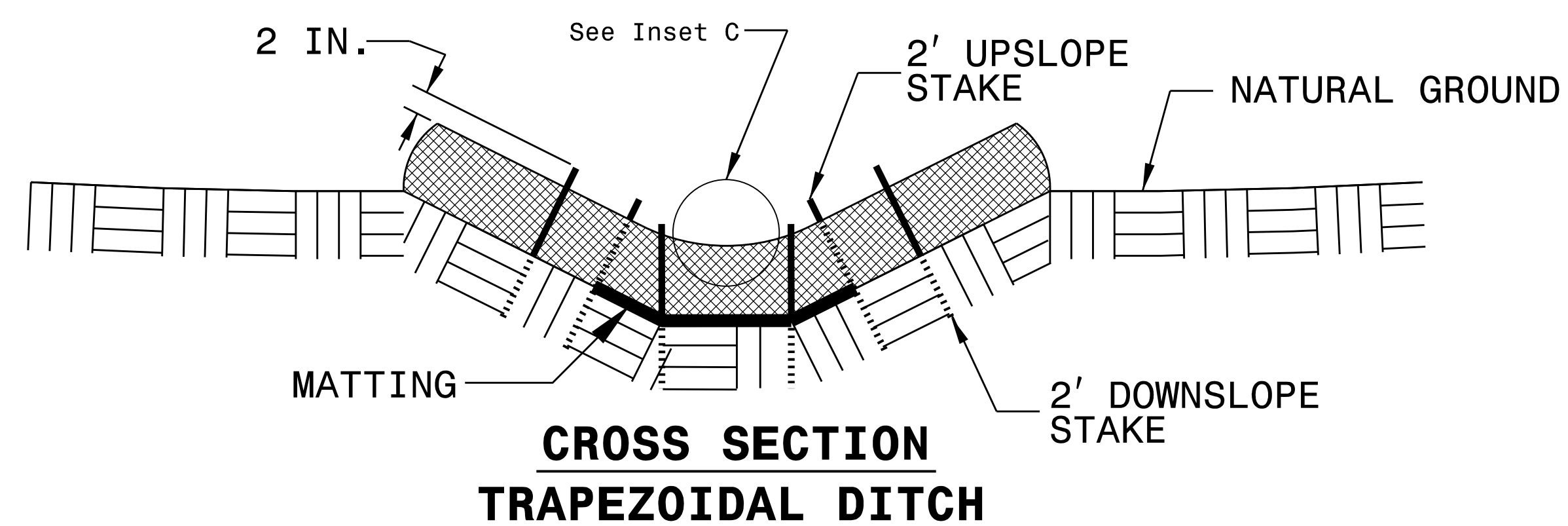
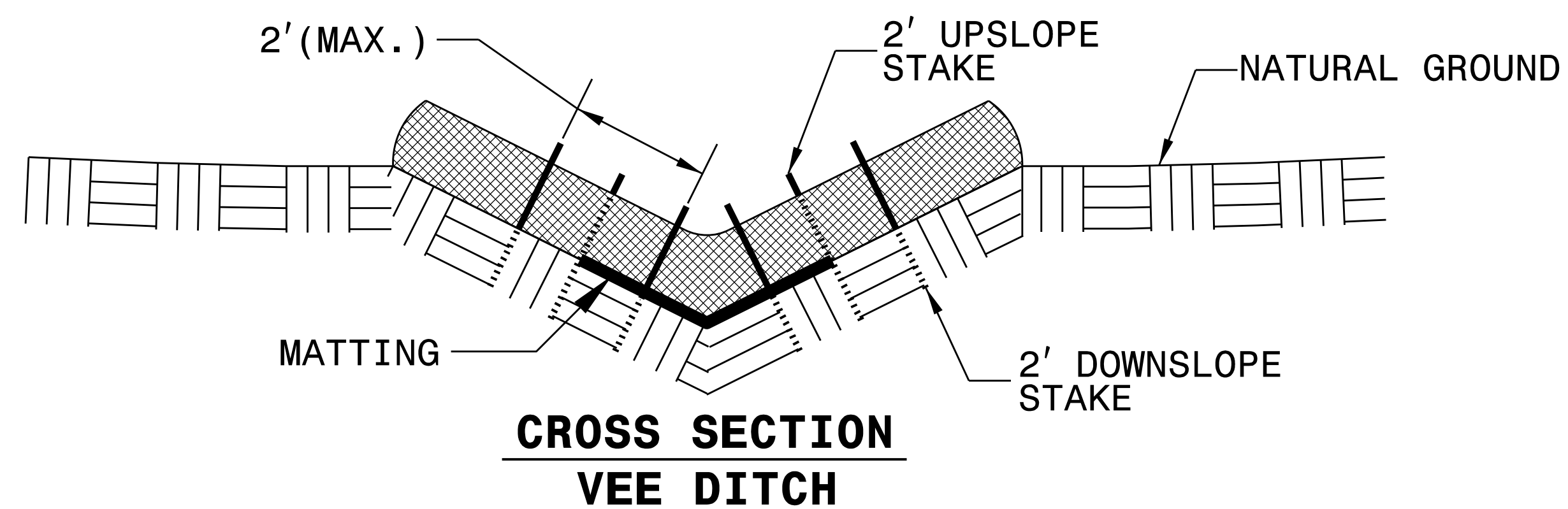
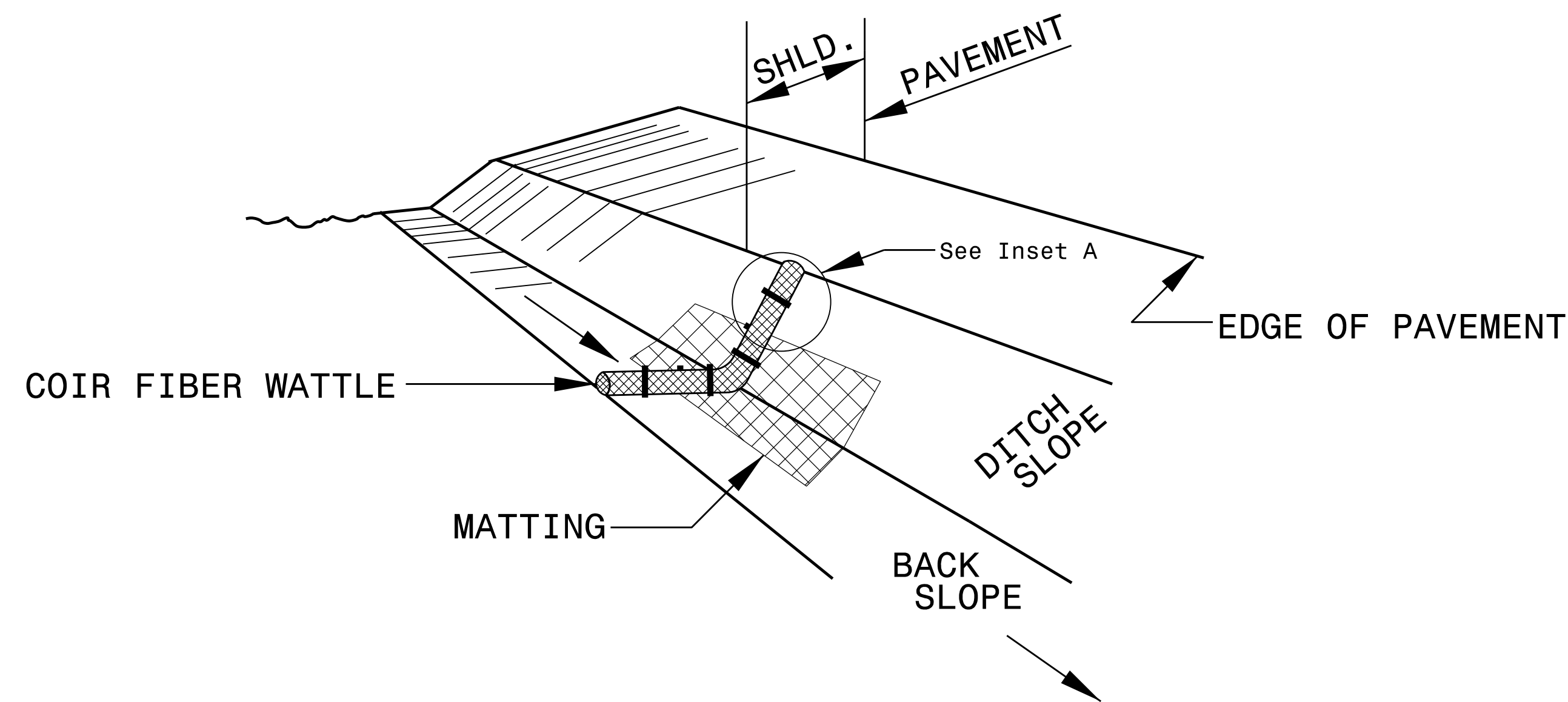
5/5/2016 HYD_EC_PSH.dgn

DIVISION OF HIGHWAYS
STATE OF NORTH CAROLINA

SOIL STABILIZATION TIMEFRAMES

| <i>SITE DESCRIPTION</i> | <i>STABILIZATION TIME</i> | <i>TIMEFRAME EXCEPTIONS</i> |
|--|---------------------------|--|
| PERIMETER DIKES, SWALES, DITCHES AND SLOPES | 7 DAYS | NONE |
| HIGH QUALITY WATER (HQW) ZONES | 7 DAYS | NONE |
| SLOPES STEEPER THAN 3:1 | 7 DAYS | IF SLOPES ARE 10' OR LESS IN LENGTH AND ARE NOT STEEPER THAN 2:1, 14 DAYS ARE ALLOWED. |
| SLOPES 3:1 OR FLATTER | 14 DAYS | 7 DAYS FOR SLOPES GREATER THAN 50' IN LENGTH. |
| ALL OTHER AREAS WITH SLOPES FLATTER THAN 4:1 | 14 DAYS | NONE, EXCEPT FOR PERIMETERS AND HQW ZONES. |

COIR FIBER WATTLE WITH POLYACRYLAMIDE (PAM) DETAIL



NOTES:

USE MINIMUM 12 IN. DIAMETER COIR FIBER (COCONUT FIBER) WATTLE.

USE 2 FT. WOODEN STAKES WITH A 2 IN. BY 2 IN. NOMINAL CROSS SECTION.

ONLY INSTALL WATTLE(S) TO A HEIGHT IN DITCH SO FLOW WILL NOT WASH AROUND WATTLE AND SCOUR DITCH SLOPES AND AS DIRECTED.

INSTALL A MINIMUM OF 2 UPSLOPE STAKES AND 4 DOWNSLOPE STAKES AT AN ANGLE TO WEDGE WATTLE TO BOTTOM OF DITCH.

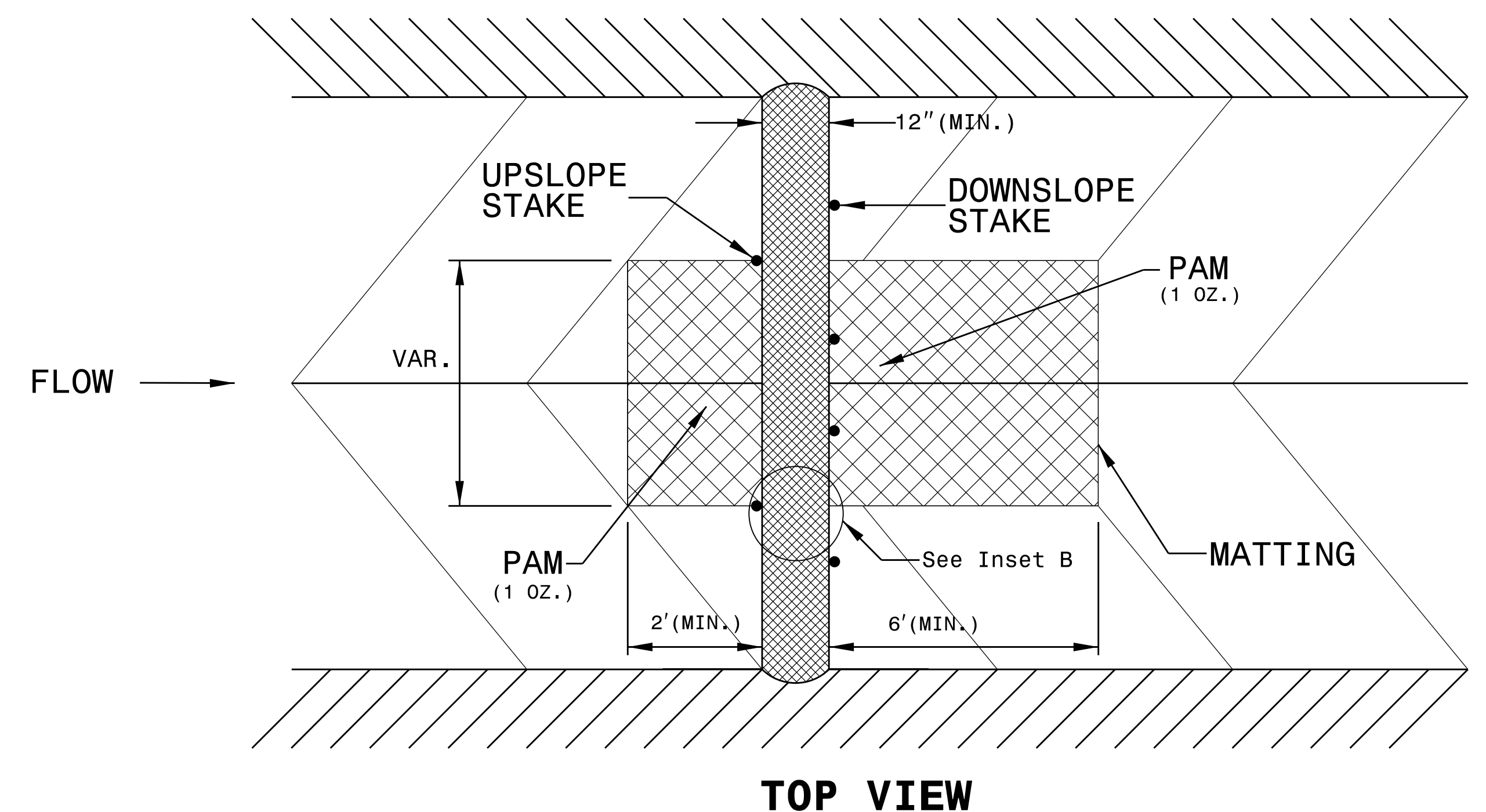
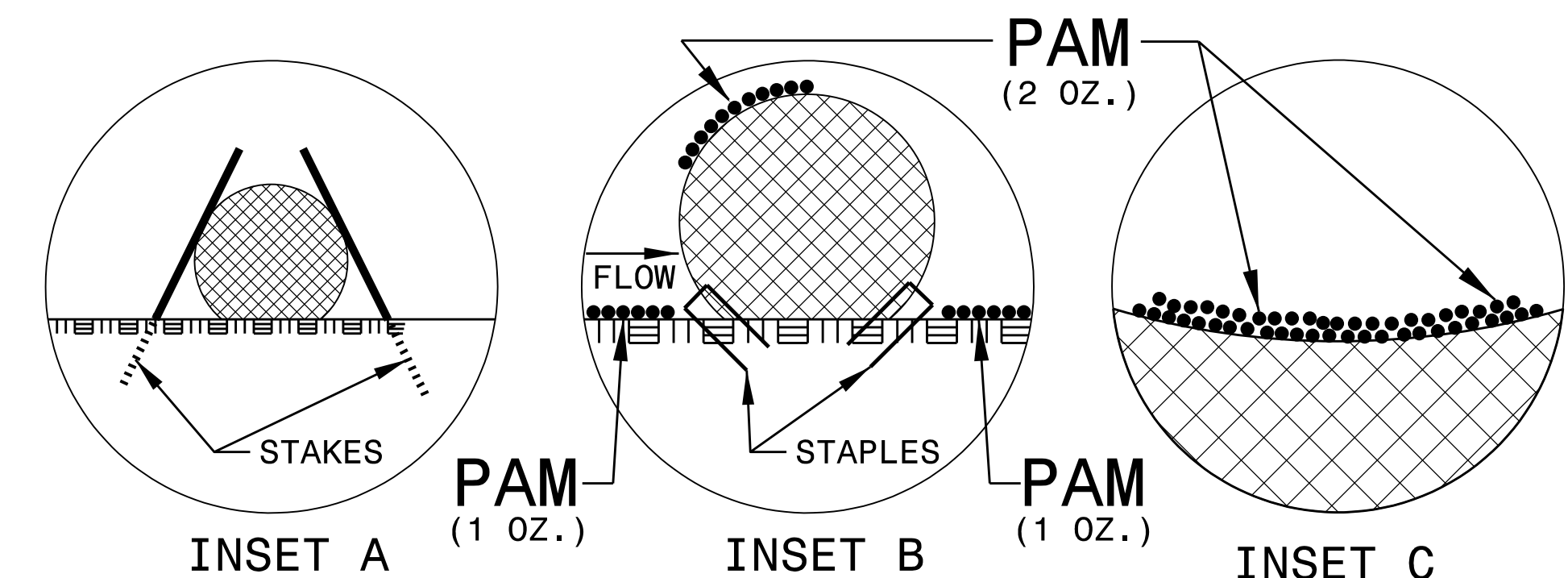
PROVIDE STAPLES MADE OF 0.125 IN. DIAMETER STEEL WIRE FORMED INTO A U SHAPE NOT LESS THAN 12" IN LENGTH.

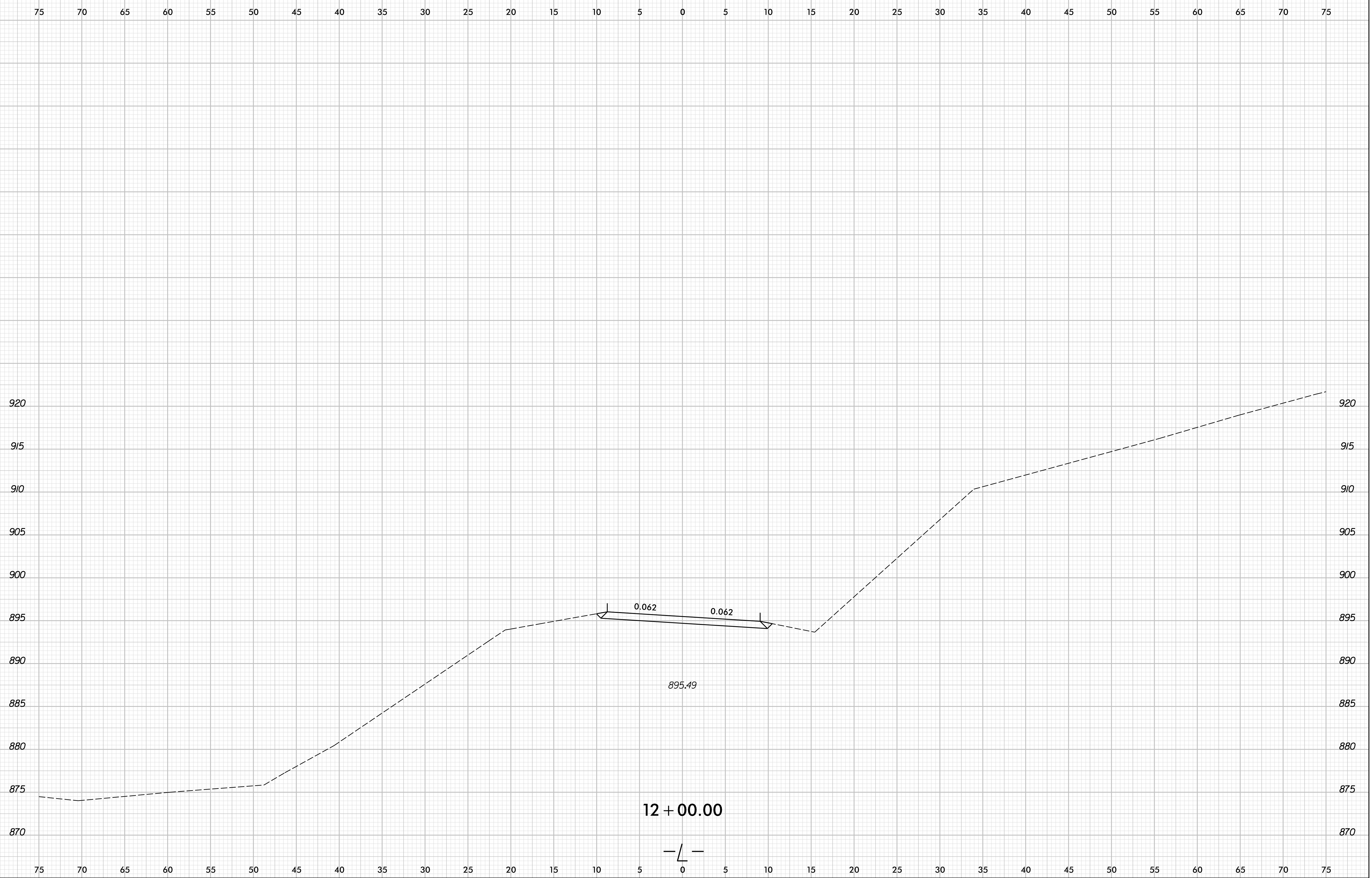
INSTALL STAPLES APPROXIMATELY EVERY 1 LINEAR FOOT ON BOTH SIDES OF WATTLE AND AT EACH END TO SECURE IT TO THE SOIL.

INSTALL MATTING IN ACCORDANCE WITH SECTION 1631 OF THE STANDARD SPECIFICATIONS.

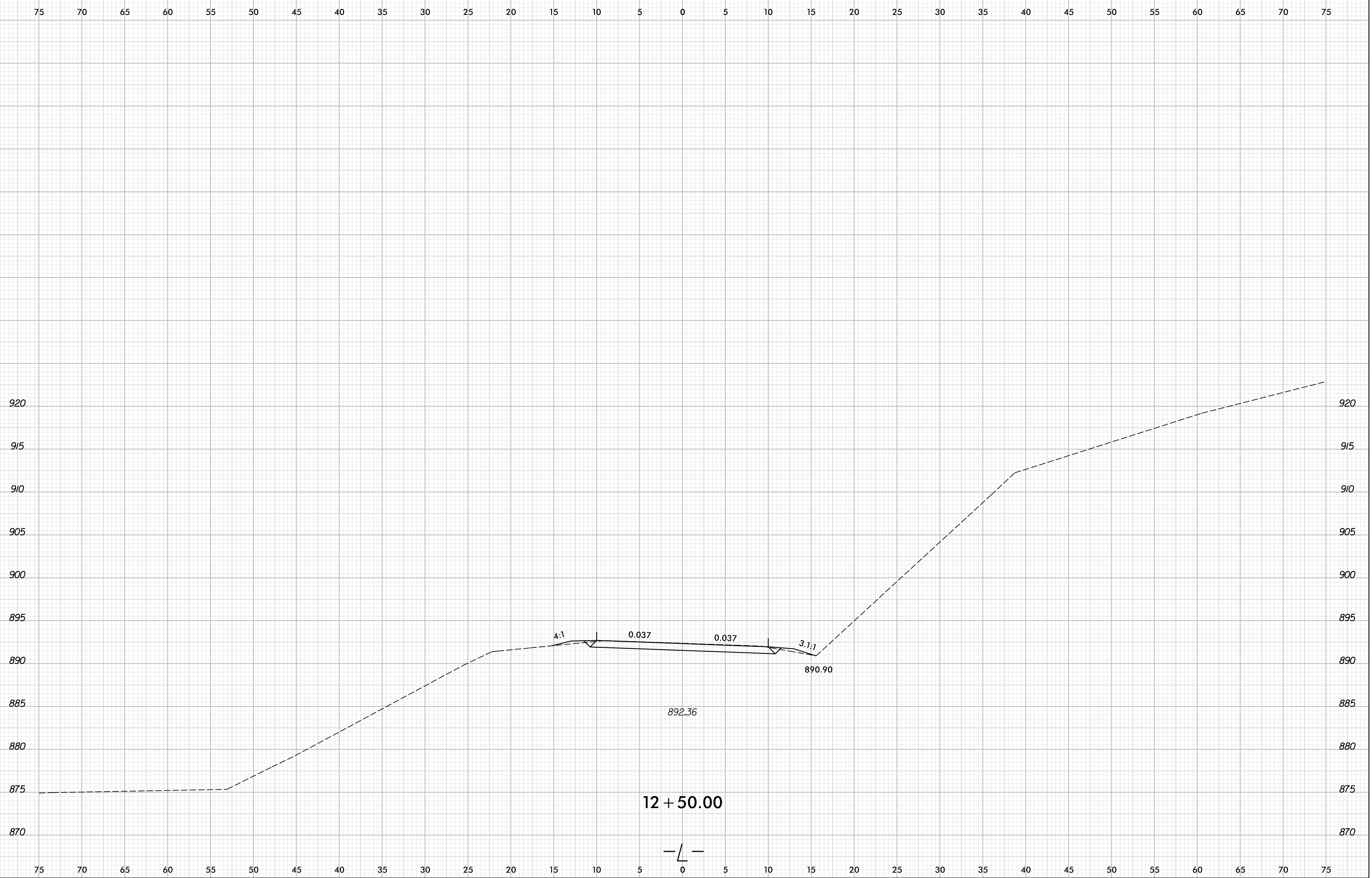
PRIOR TO POLYACRYLAMIDE (PAM) APPLICATION, OBTAIN A SOIL SAMPLE FROM PROJECT LOCATION, AND FROM OFFSITE MATERIAL, AND ANALYZE FOR APPROPRIATE PAM FLOCCULANT TO BE APPLIED TO EACH WATTLE.

INITIALLY APPLY 2 OUNCES OF ANIONIC OR NEUTRALLY CHARGED PAM OVER WATTLE WHERE WATER WILL FLOW AND 1 OUNCE OF PAM ON MATTING ON EACH SIDE OF WATTLE. REAPPLY PAM AFTER EVERY RAINFALL EVENT THAT IS EQUAL TO OR EXCEEDS 0.50 IN.





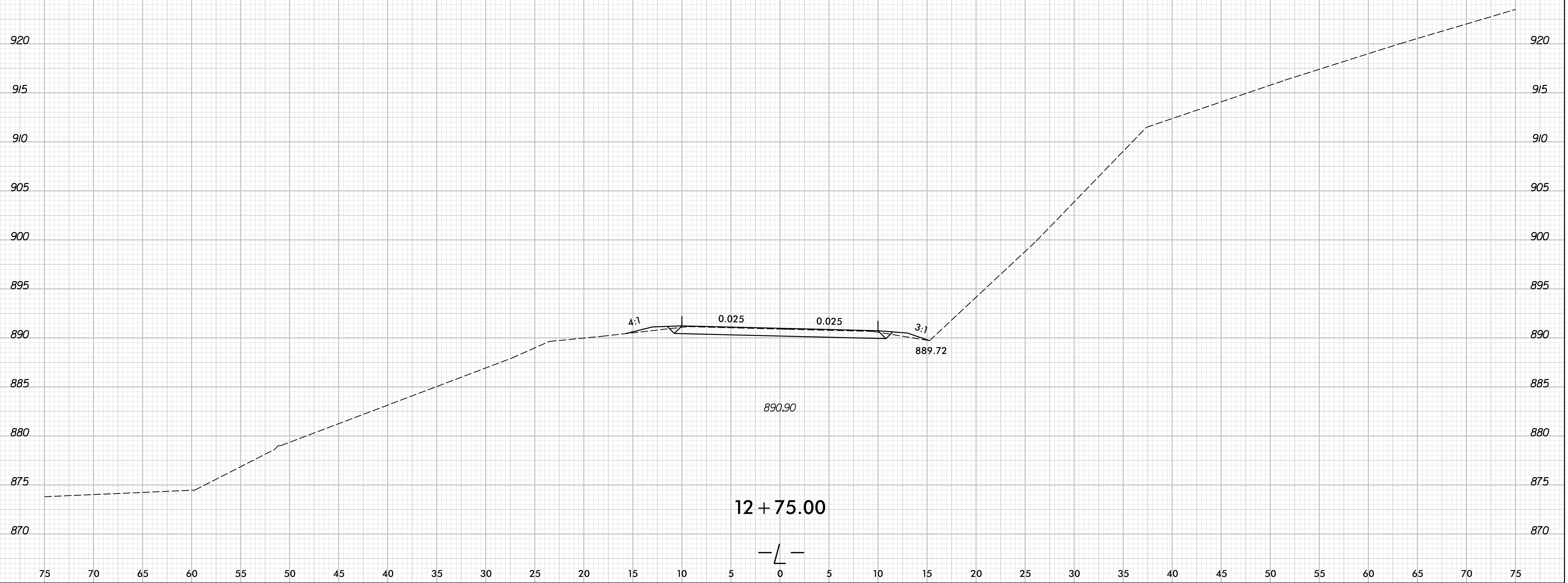




8/23/99

| | | |
|---------|---------------------|-----------|
| 0 2.5 5 | PROJ. REFERENCE NO. | SHEET NO. |
| | 12B.205512 | X-4 |

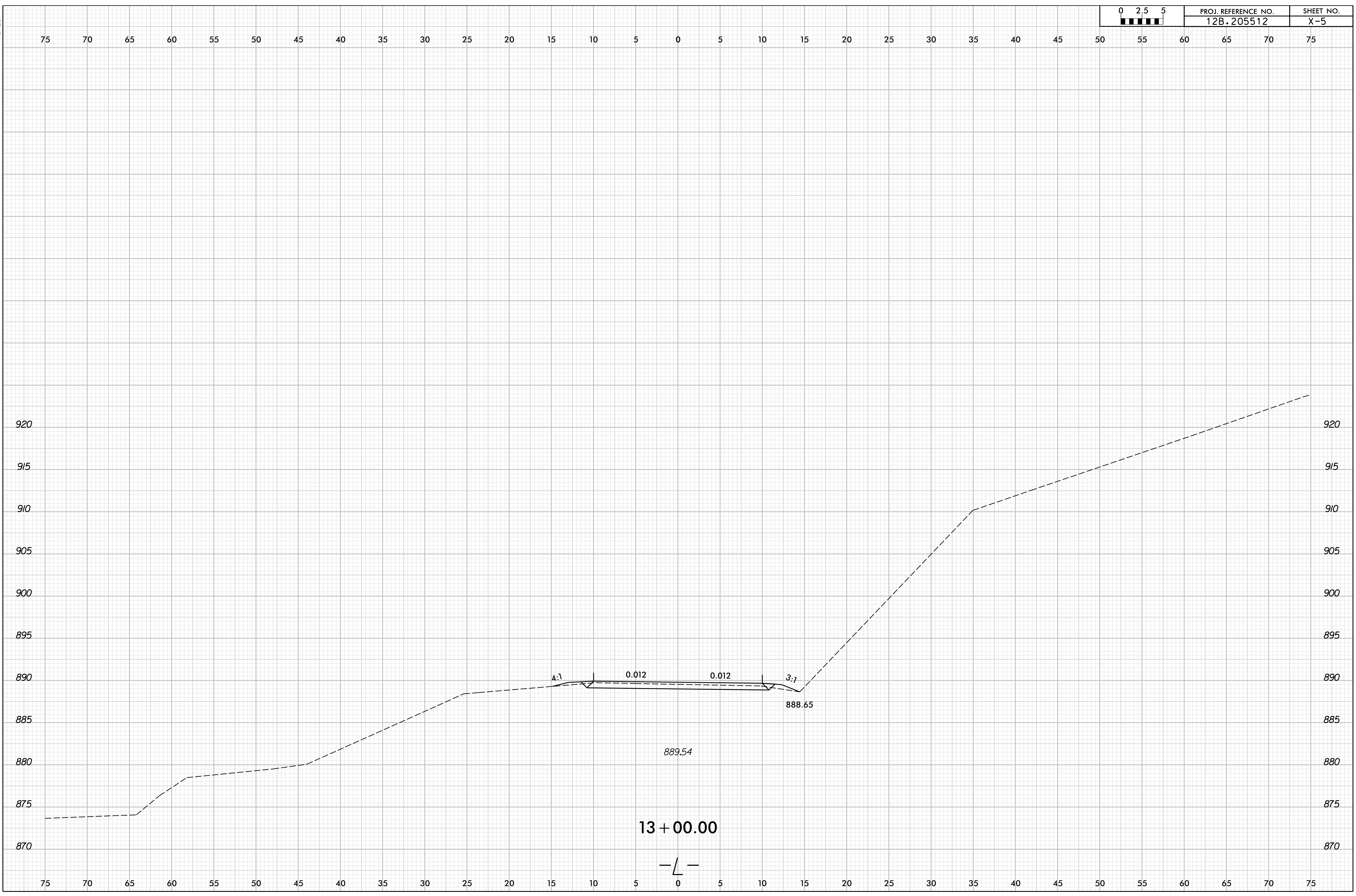
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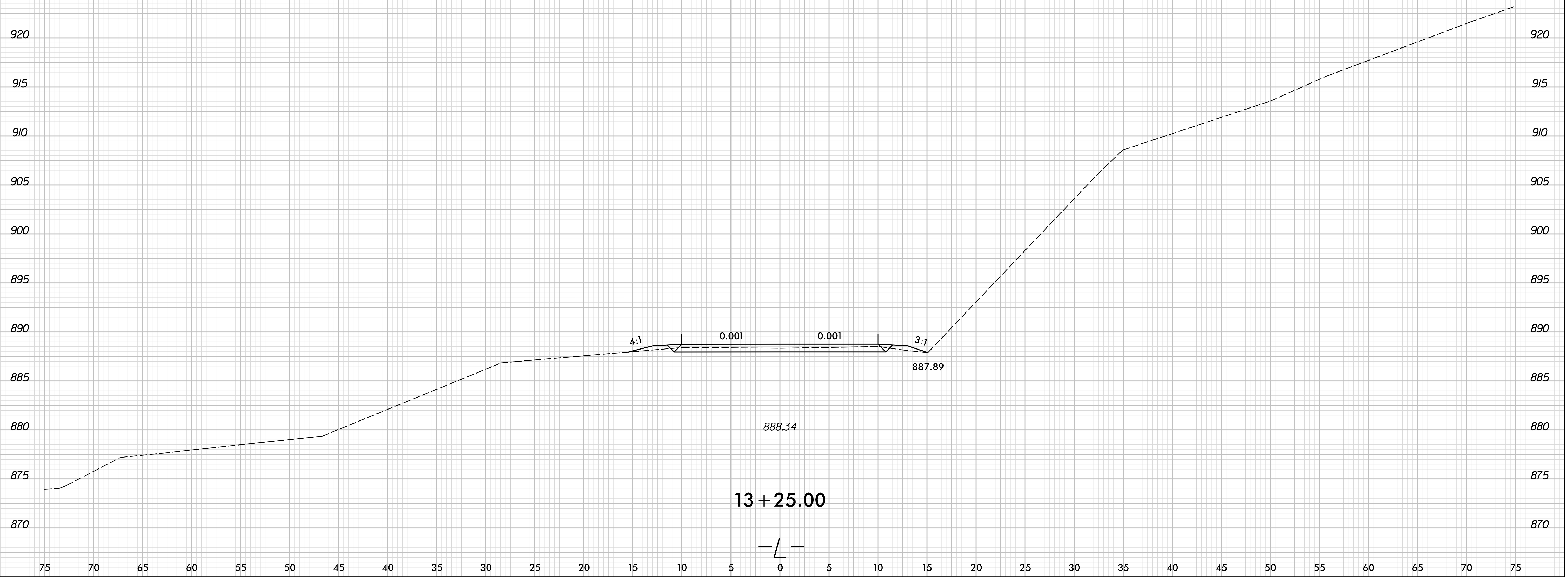
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| | | |
|---------|---------------------|-----------|
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| | 12B.205512 | X-5 |

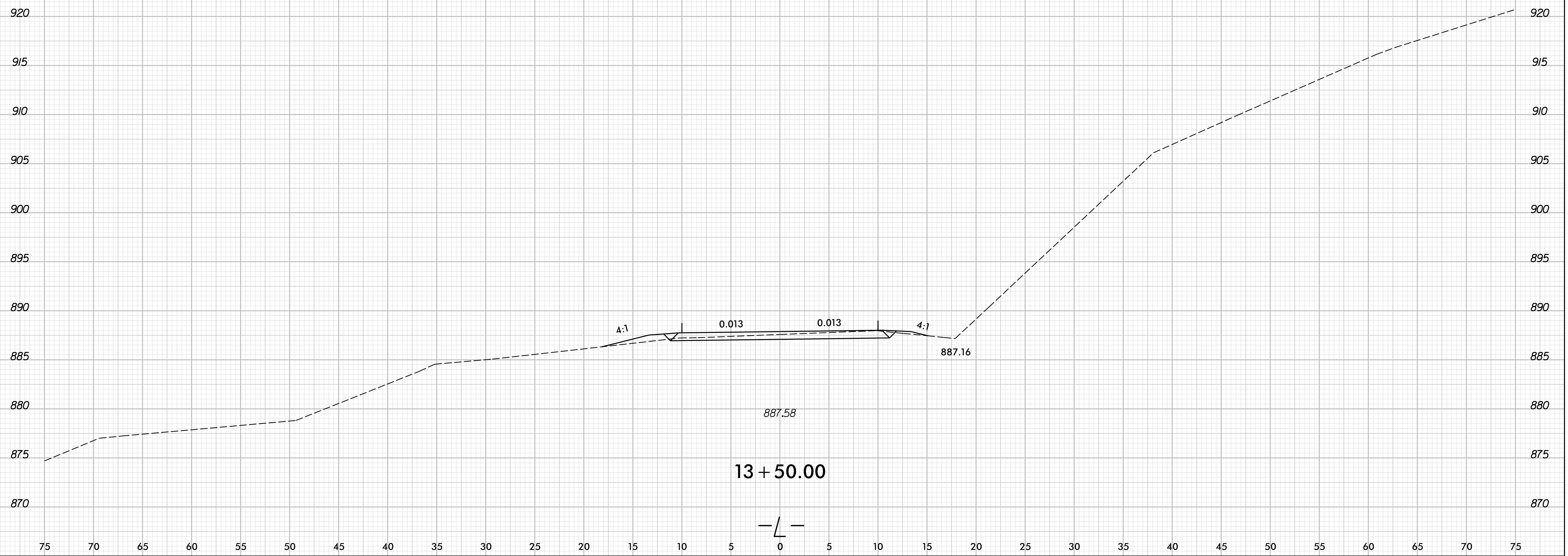


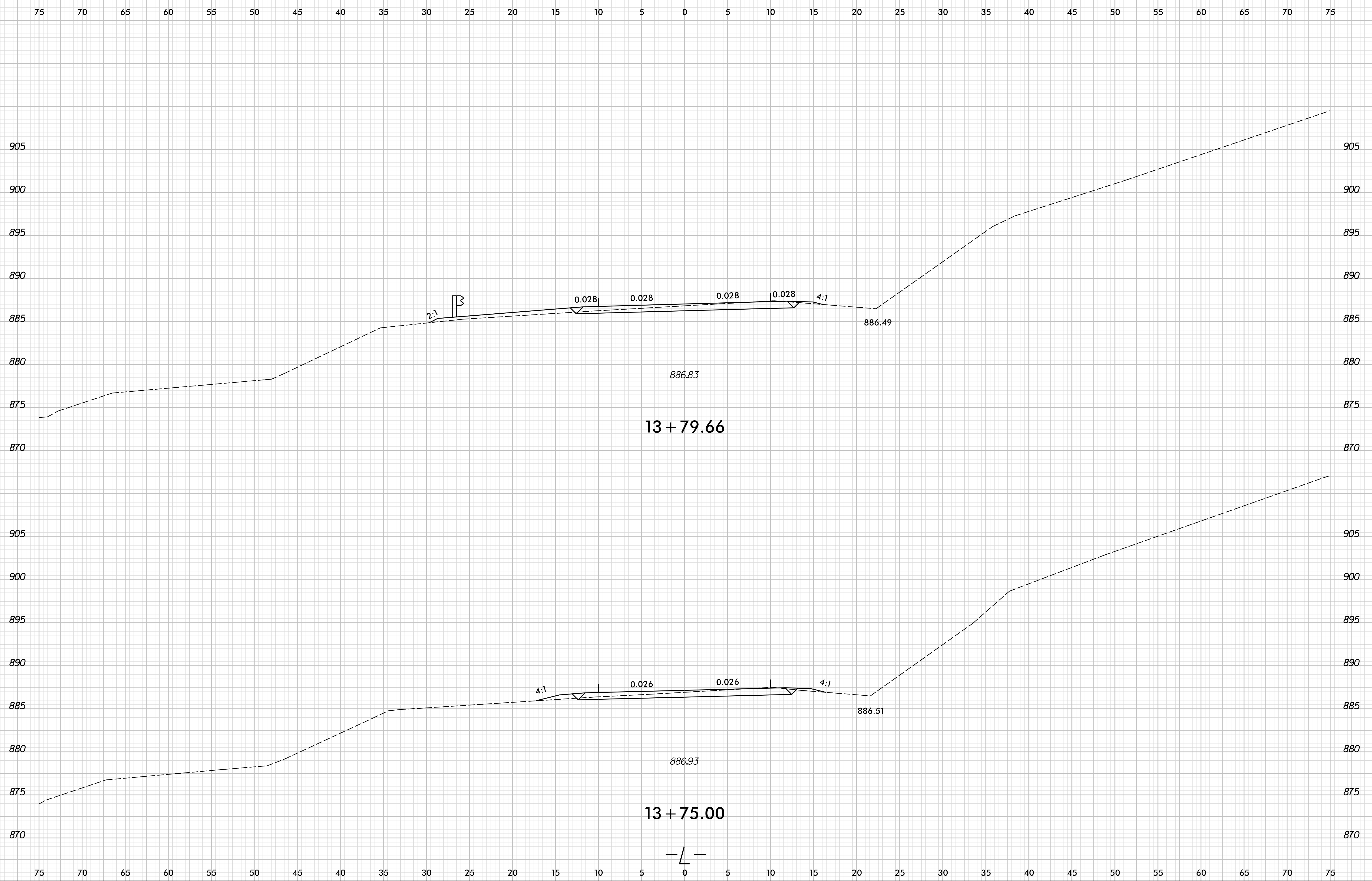
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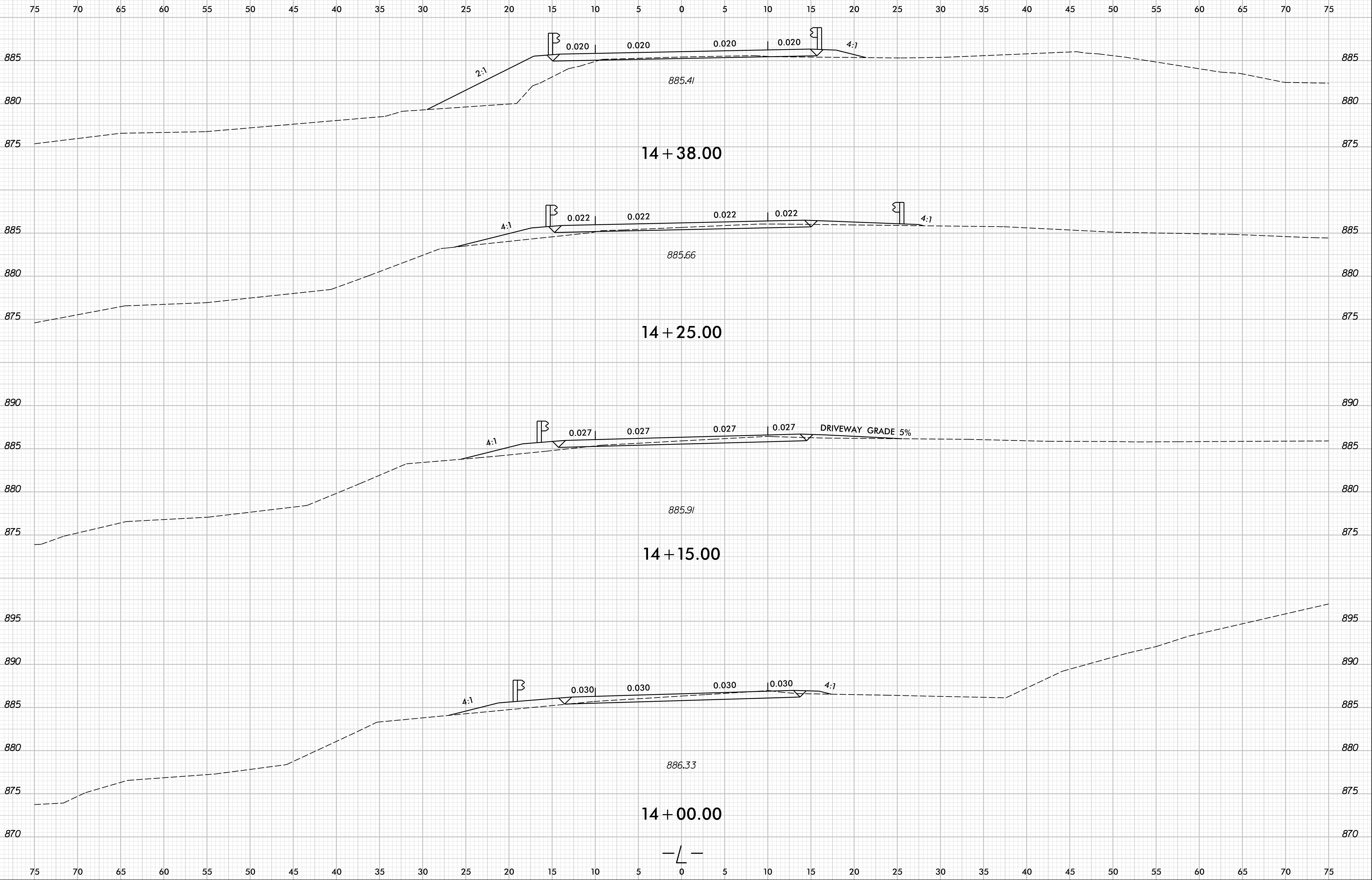
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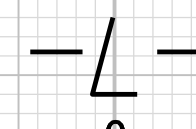
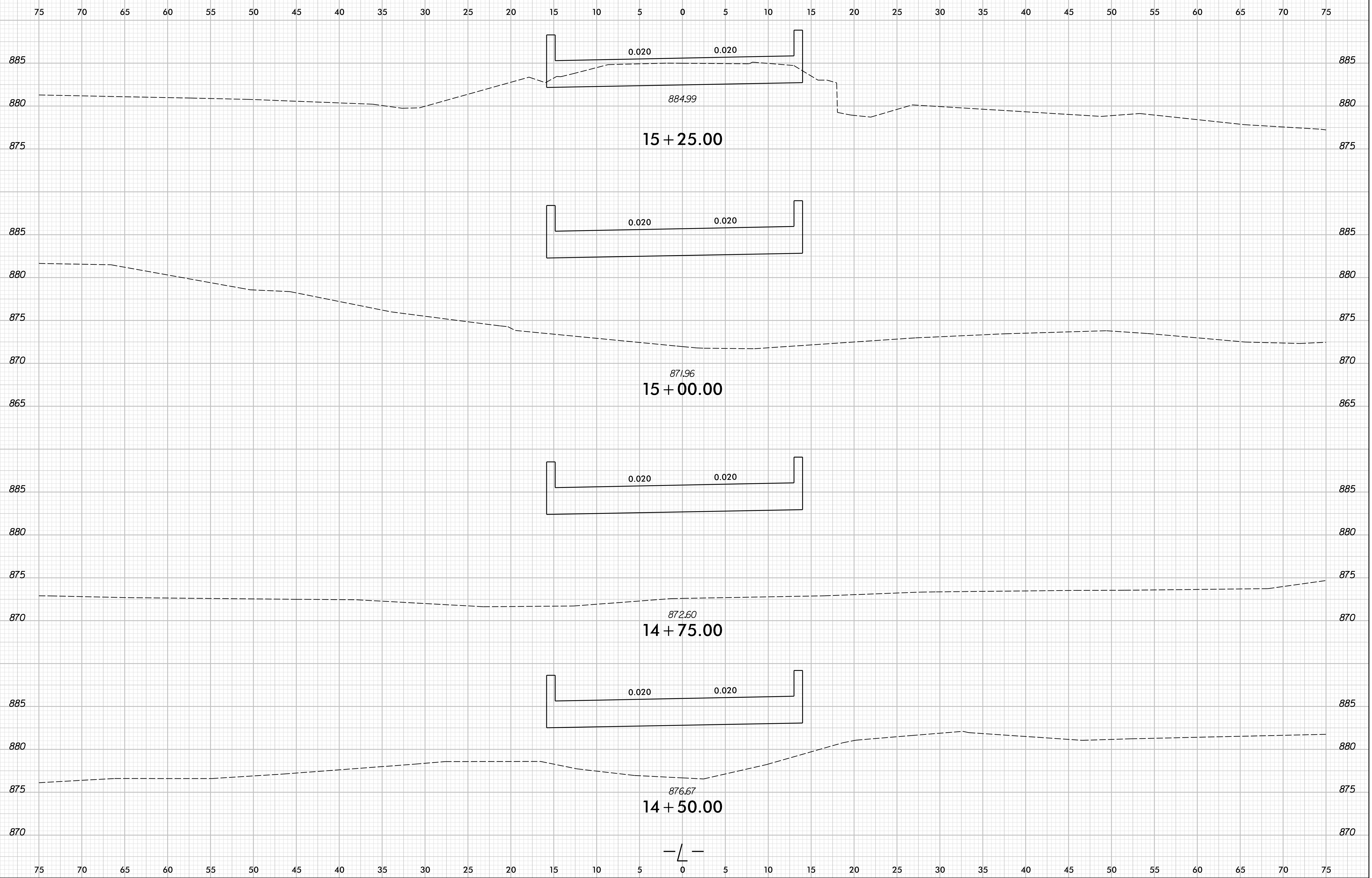


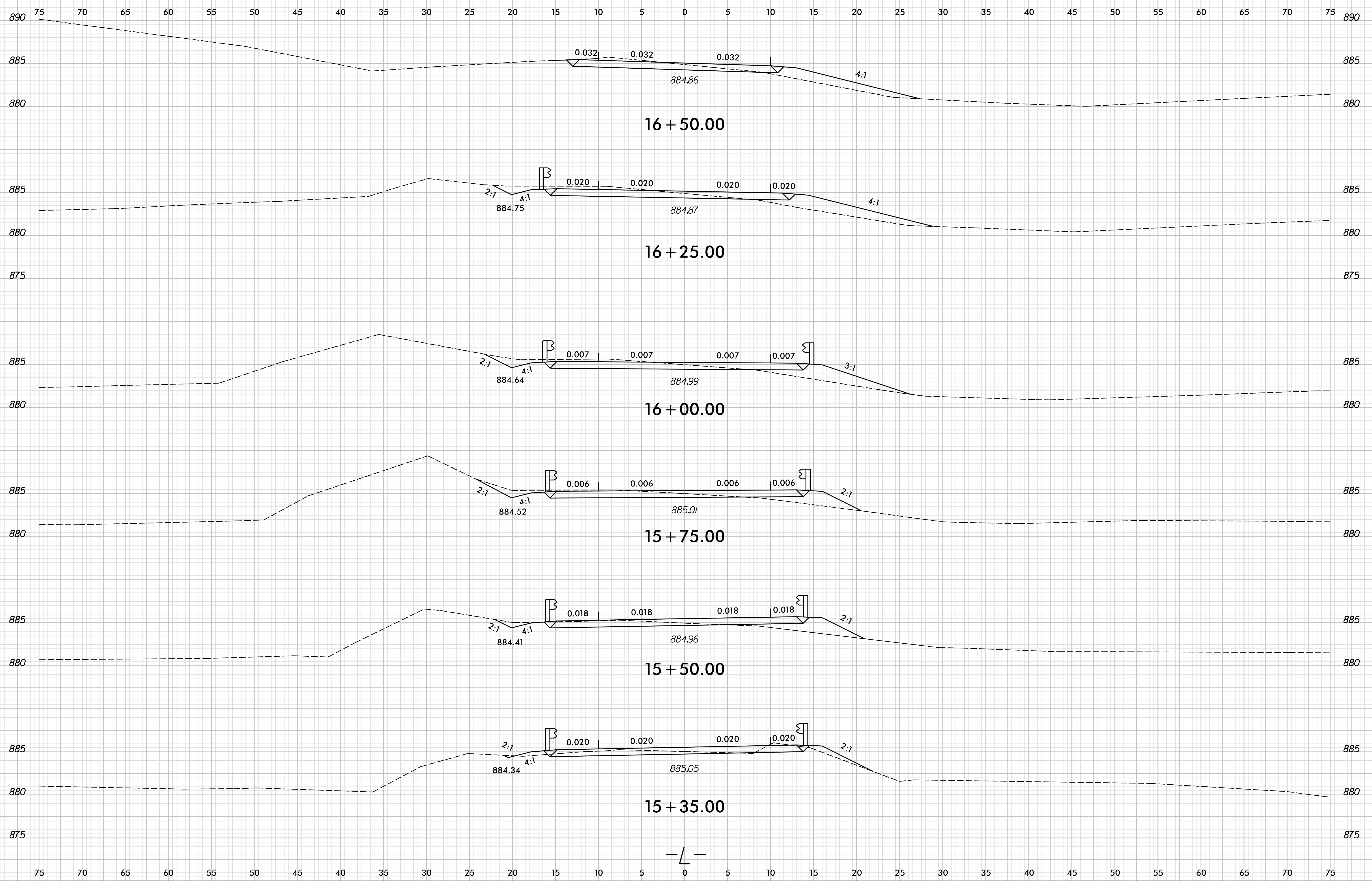
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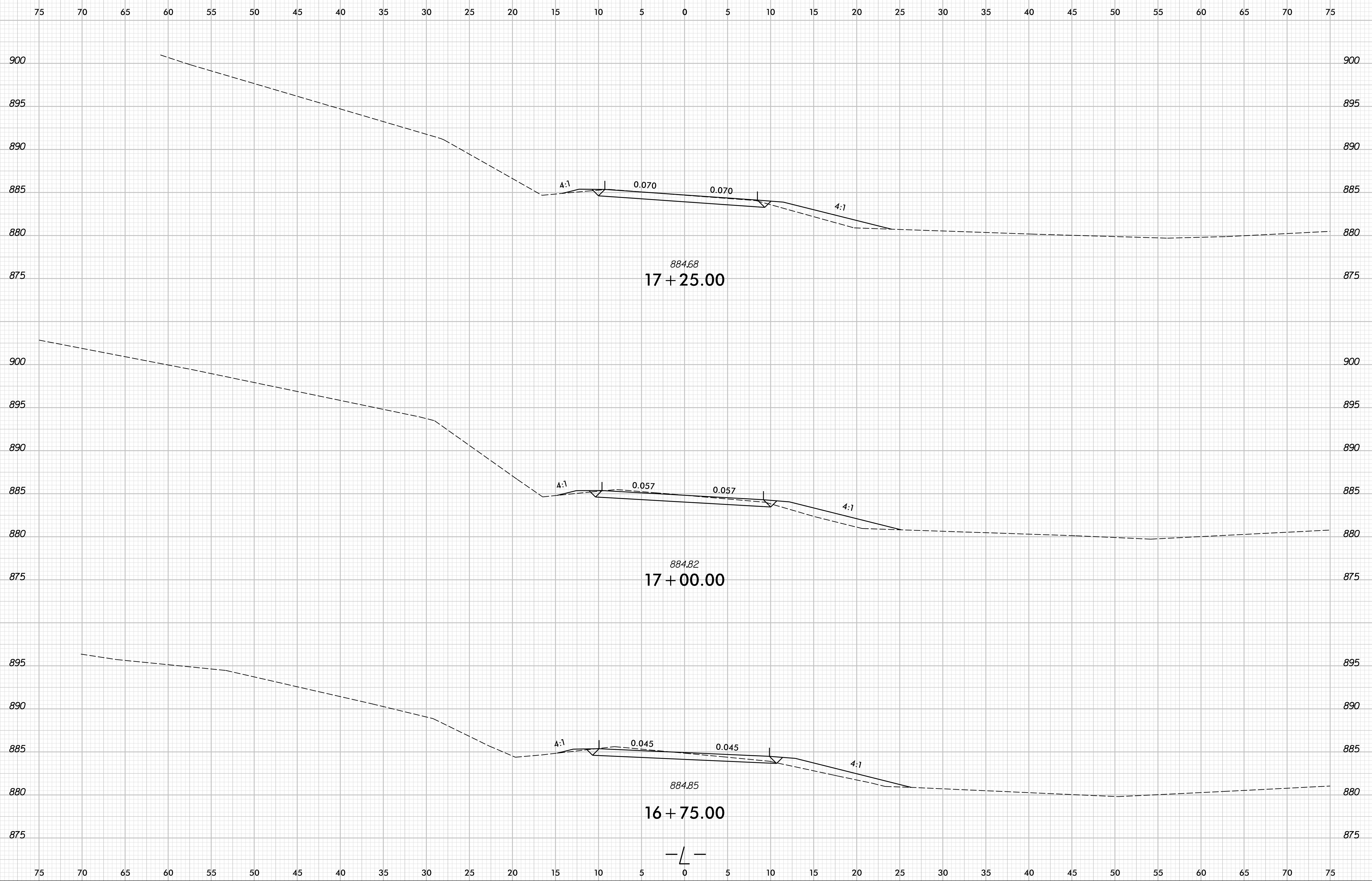




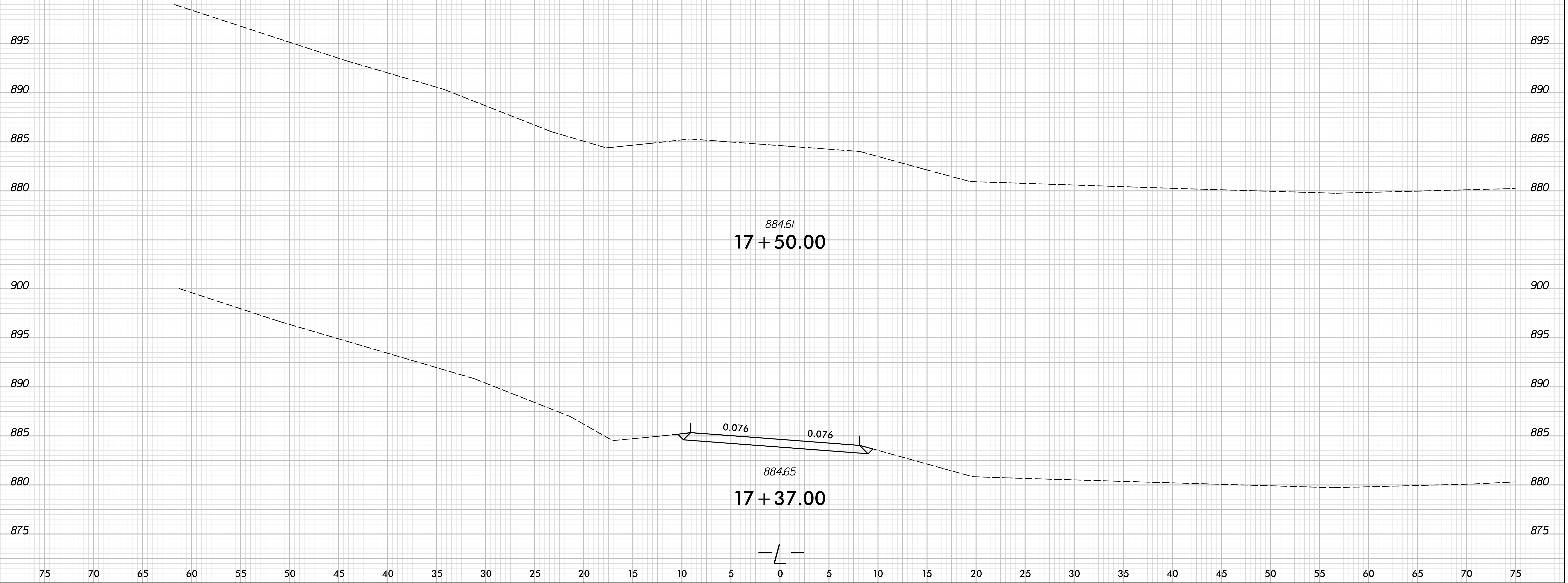


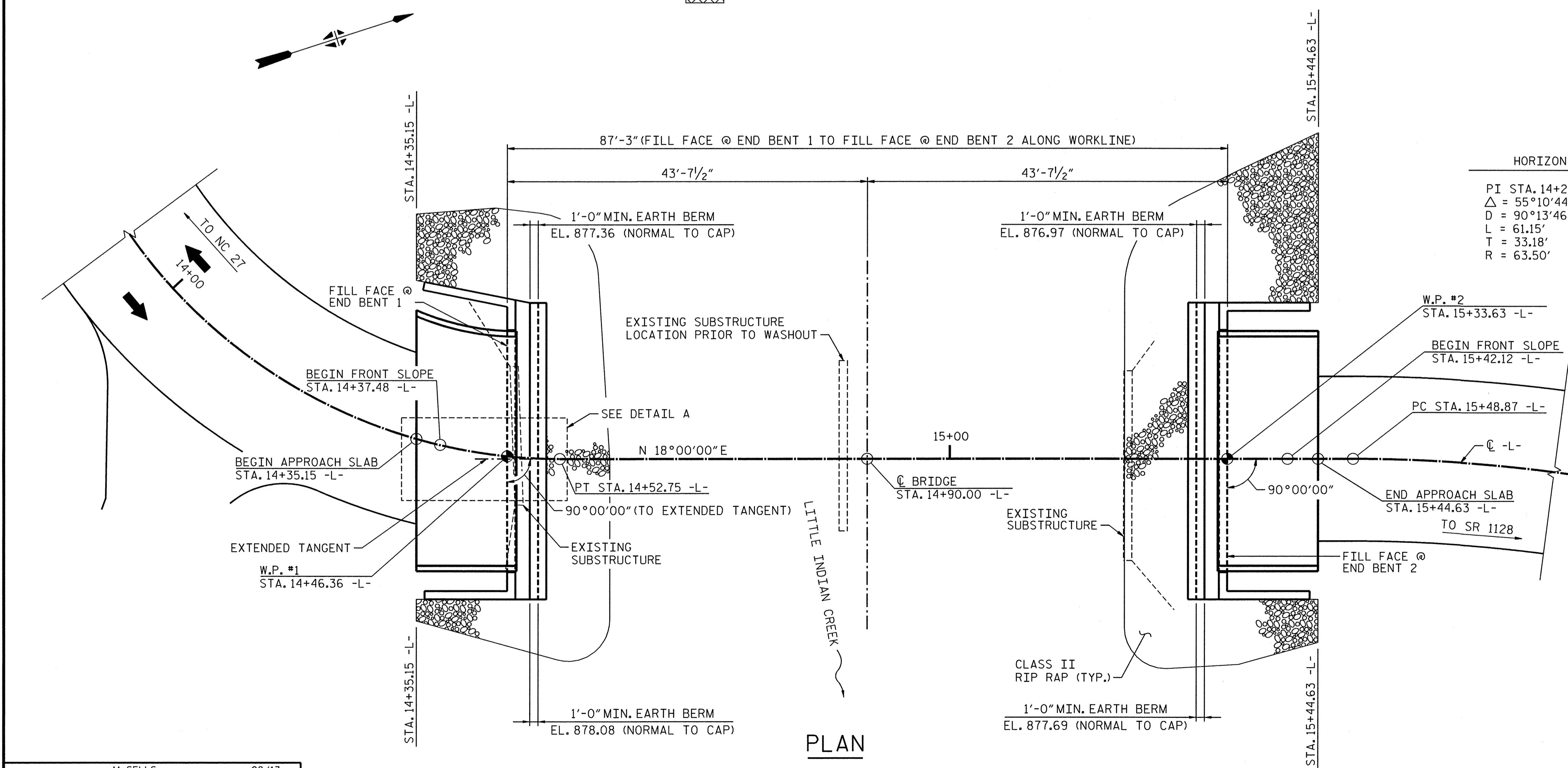
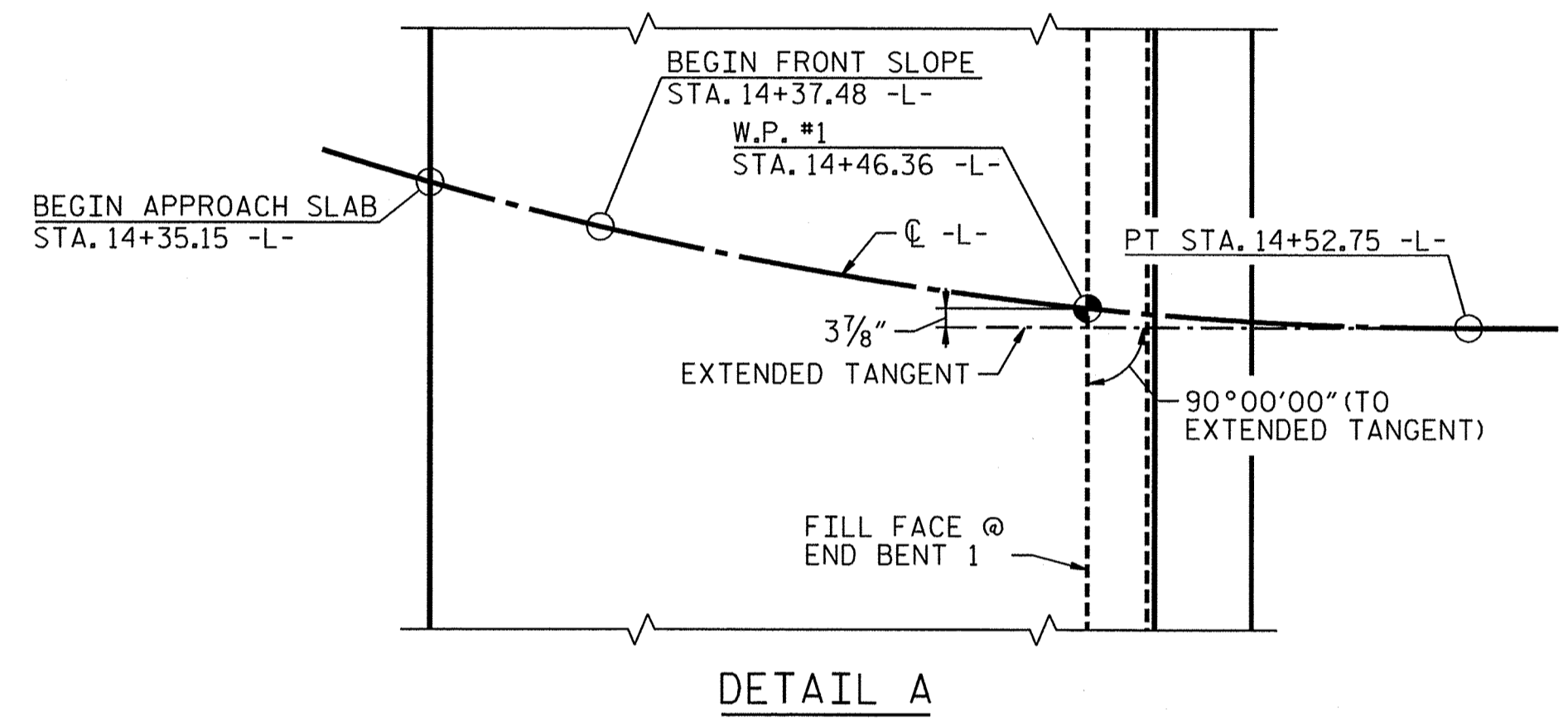
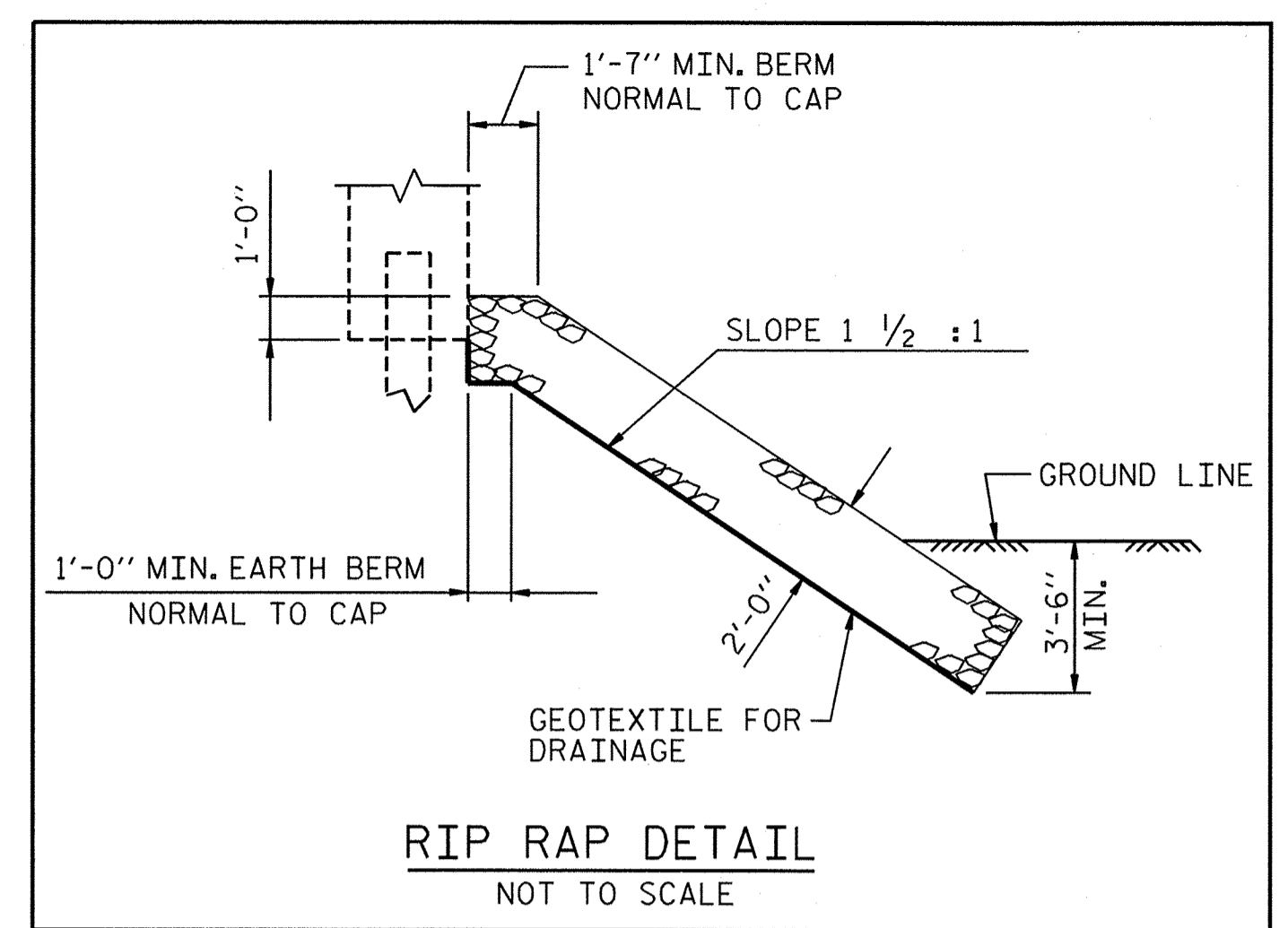
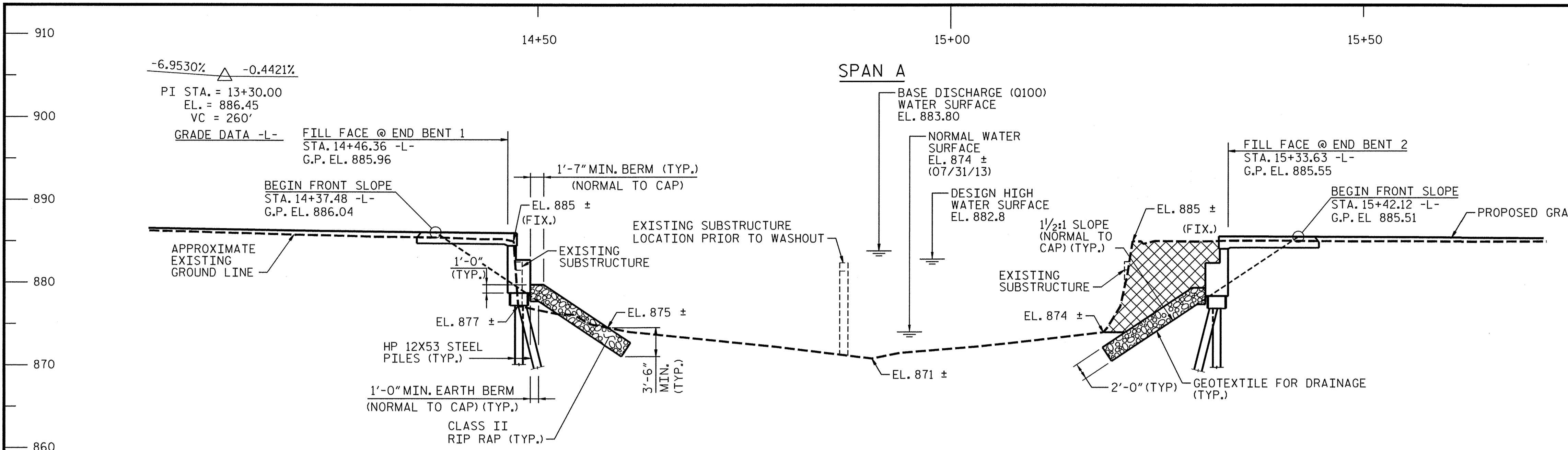






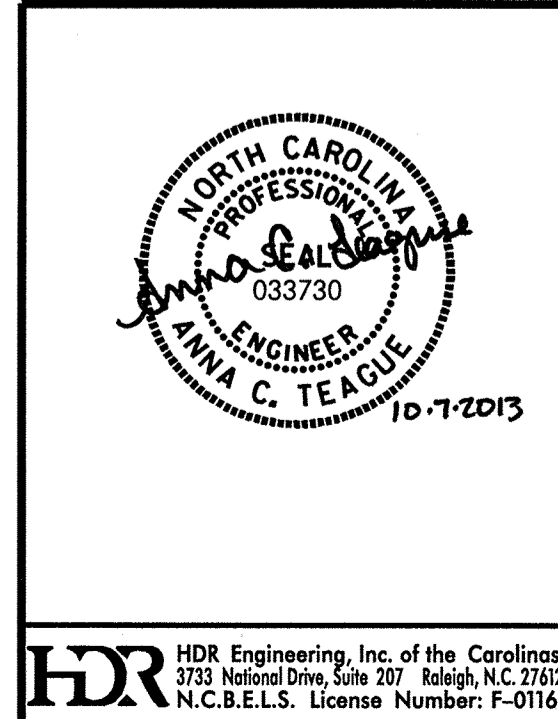
75 70 65 60 55 50 45 40 35 30 25 20 15 10 5 0 5 10 15 20 25 30 35 40 45 50 55 60 65 70 75





I HEREBY CERTIFY THESE PLANS ARE THE AS-BUILT PLANS

PROJECT NO. 12B.205512
LINCOLN COUNTY
STATION: 14+90.00 -L-
SHEET 1 OF 2 REPLACES BRIDGE NO. 116



STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

GENERAL DRAWING
BRIDGE ON SR 1129
OVER LITTLE INDIAN CREEK
BETWEEN NC 27 & SR 1128

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

DRAWN BY: M. SELLS DATE: 08/13
CHECKED BY: A. TEAGUE DATE: 08/13

HDR Engineering, Inc. of the Carolinas
3733 National Drive, Suite 207 Raleigh, N.C. 27612
N.C.B.E.L.S. License Number: F-0116

BENCHMARK: BM 1, RAILROAD SPIKE IN 24" MAPLE, 41.69' LT. OF STA. 13+59.69 -L-, EL. = 883.53'

| HYDRAULIC DATA | |
|-----------------------------|-----------------|
| DESIGN DISCHARGE | = 2510 CFS |
| FREQUENCY OF DESIGN FLOOD | = 25 YR |
| DESIGN HIGH WATER ELEVATION | = 882.8 |
| DRAINAGE AREA | = 12.04 SQ. MI. |
| BASE DISCHARGE (Q100) | = 3529 CFS |
| BASE HIGH WATER ELEVATION | = 883.80 |

| OVERTOPPING FLOOD DATA | |
|--------------------------------|------------|
| OVERTOPPING DISCHARGE | = 5912 CFS |
| FREQUENCY OF OVERTOPPING FLOOD | = > 500 YR |
| OVERTOPPING FLOOD ELEVATION | = 884.8 |

NOTES:

ASSUMED LIVE LOAD = HL-93 OR ALTERNATE LOADING.
 FOR OTHER DESIGN DATA AND GENERAL NOTES, SEE SHEET SN.
 THIS BRIDGE HAS BEEN DESIGNED IN ACCORDANCE WITH THE AASHTO LRFD BRIDGE DESIGN SPECIFICATIONS.
 THIS BRIDGE IS LOCATED IN SEISMIC ZONE 1.
 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.
 REMOVAL OF THE REMAINDER 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 MATERIAL SHOWN IN THE CROSS-HATCHED AREA SHALL BE EXCAVATED FOR A DISTANCE OF 20 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. 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.
 THE EXISTING STRUCTURE CONSISTING OF 2 SPANS (1 @ 40'-8", 1 @ 35'-8") WITH A TIMBER DECK ON I-BEAMS AND A CLEAR ROADWAY OF 19'-5" ON STEEL CAPS AND PILES AND TIMBER CAP AND PILES, AND LOCATED AT OR NEAR THE PROPOSED SITE SHALL BE REMOVED.
 THE EXISTING SUPERSTRUCTURE AND PORTIONS OF THE SUBSTRUCTURE HAVE BEEN WASHED OUT DUE TO FLOODING. THE CONTRACTOR IS RESPONSIBLE FOR THE LOCATION, RECOVERY AND REMOVAL OF THE WASHED OUT PORTIONS OF THE EXISTING STRUCTURE.
 FOR PILES, SEE SECTION 450 OF THE STANDARD SPECIFICATIONS.
 PILES AT END BENT NO. 1 ARE DESIGNED FOR A FACTORED RESISTANCE OF 130 TONS PER PILE.
 DRIVE PILES AT END BENT NO. 1 TO A REQUIRED DRIVING RESISTANCE OF 220 TONS PER PILE.

PILES AT END BENT NO. 2 ARE DESIGNED FOR A FACTORED RESISTANCE OF 130 TONS PER PILE.
 DRIVE PILES AT END BENT NO. 2 TO A REQUIRED DRIVING RESISTANCE OF 220 TONS PER PILE.
 STEEL H-PILE POINTS ARE REQUIRED FOR STEEL H-PILES AT END BENTS 1 AND 2. FOR STEEL PILES POINTS, SEE SECTION 450 OF THE STANDARD SPECIFICATIONS.
 FOR EROSION CONTROL MEASURES, SEE EROSION CONTROL PLANS.
 ASPHALT WEARING SURFACE IS INCLUDED IN ROADWAY QUANTITY ON ROADWAY PLANS.
 THIS STRUCTURE HAS BEEN DESIGNED IN ACCORDANCE WITH "HEC 18, EVALUATING SCOUR AT BRIDGES".
 INASMUCH AS THE PAINT SYSTEM ON THE EXISTING STRUCTURAL STEEL CONTAINS LEAD, THE CONTRACTOR'S ATTENTION IS DIRECTED TO ARTICLE 107-1 OF THE STANDARD SPECIFICATIONS. ANY COSTS RESULTING FROM COMPLIANCE WITH APPLICABLE STATE OR FEDERAL REGULATIONS PERTAINING TO HANDLING OF MATERIALS CONTAINING LEAD BASED PAINT SHALL BE INCLUDED IN THE BID PRICE FOR "REMOVAL OF EXISTING STRUCTURE AT STATION 14+90.00 -L-".
 FOR UTILITY INFORMATION, SEE ROADWAY PLANS.

TOTAL BILL OF MATERIAL

| | REMOVAL OF EXISTING STRUCTURE AT STA. 14+90.00 -L- LUMP SUM | UNCLASSIFIED STRUCTURE EXCAVATION AT STA. 14+90.00 -L- LUMP SUM | CLASS A CONCRETE CU. YDS. | BRIDGE APPROACH SLABS STA. 14+90.00 -L- LUMP SUM | REINFORCING STEEL LBS. | HP 12 x 53 STEEL PILES | | STEEL PILE POINTS EACH | VERTICAL CONCRETE BARRIER RAIL LIN. FT. | RIP RAP CLASS II (2'-0" THICK) TONS | GEOTEXTILE FOR DRAINAGE SQ. YDS. | ELASTOMERIC BEARINGS LUMP SUM | 3'-0" X 2'-9" PRESTRESSED CONCRETE BOX BEAMS | |
|----------------|--|--|------------------------------|---|---------------------------|------------------------|----------|---------------------------|--|--|-------------------------------------|----------------------------------|--|----------|
| | | | | | | NO. | LIN. FT. | | | | | | NO. | LIN. FT. |
| SUPERSTRUCTURE | | | | LUMP SUM | | | | | 170.00 | | | LUMP SUM | 10 | 850.0 |
| END BENT NO. 1 | | | 24.0 | | 3380 | 5 | 60 | 5 | | 117 | 130 | | | |
| END BENT NO. 2 | | LUMP SUM | 23.8 | | 3356 | 5 | 75 | 5 | | 140 | 155 | | | |
| TOTAL | LUMP SUM | LUMP SUM | 47.8 | LUMP SUM | 6736 | 10 | 135 | 10 | 170.00 | 257 | 285 | LUMP SUM | 10 | 850.0 |

PROJECT NO. 12B.205512

LINCOLN COUNTY

STATION: 14+90.00 -L-

SHEET 2 OF 2

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
 RALEIGH

GENERAL DRAWING
 BRIDGE ON SR 1129
 OVER LITTLE INDIAN CREEK
 BETWEEN NC 27 & SR 1128

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

HDR Engineering, Inc. of the Carolinas
 3783 National Drive, Suite 207 Raleigh, N.C. 27612
 N.C.E.L.S. License Number: F-0116

DRAWN BY : M. SELLS DATE : 08/13
 CHECKED BY : A. TEAGUE DATE : 08/13

PLOT DRIVER: NCDOT_pdf.mcnno.eng_50.ppt
 USER: msellis
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 TIME: 2:32:04 PM
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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 | 1.401 | -- | 1.75 | 0.273 | 1.73 | A | EL | 41.75 | 0.497 | 1.54 | A | EL | 8.35 | 0.80 | 0.273 | 1.40 | A | EL | 41.75 | | |
| | HL-93(OPr) | N/A | -- | 1.994 | -- | 1.35 | 0.273 | 2.25 | A | EL | 41.75 | 0.497 | 1.99 | A | EL | 8.35 | N/A | -- | -- | -- | -- | -- | | |
| | HS-20(InV) | 36.000 | 2 | 1.882 | 67.762 | 1.75 | 0.273 | 2.33 | A | EL | 41.75 | 0.497 | 1.99 | A | EL | 8.35 | 0.80 | 0.273 | 1.88 | A | EL | 41.75 | | |
| | HS-20(OPr) | 36.000 | -- | 2.584 | 93.027 | 1.35 | 0.273 | 3.02 | A | EL | 41.75 | 0.497 | 2.58 | A | EL | 8.35 | N/A | -- | -- | -- | -- | -- | | |
| LEGAL LOAD RATING | SV | SNSH | 13.500 | -- | 4.355 | 58.789 | 1.4 | 0.273 | 6.74 | A | EL | 41.75 | 0.497 | 6.03 | A | EL | 8.35 | 0.80 | 0.273 | 4.35 | A | EL | 41.75 | |
| | | SNGARBS2 | 20.000 | -- | 3.199 | 63.989 | 1.4 | 0.273 | 4.95 | A | EL | 41.75 | 0.497 | 4.26 | A | EL | 8.35 | 0.80 | 0.273 | 3.20 | A | EL | 41.75 | |
| | | SNAGRIS2 | 22.000 | -- | 3.011 | 66.245 | 1.4 | 0.273 | 4.66 | A | EL | 41.75 | 0.497 | 3.94 | A | EL | 8.35 | 0.80 | 0.273 | 3.01 | A | EL | 41.75 | |
| | | SNCOTTS3 | 27.250 | -- | 2.166 | 59.016 | 1.4 | 0.273 | 3.35 | A | EL | 41.75 | 0.497 | 3.01 | A | EL | 8.35 | 0.80 | 0.273 | 2.17 | A | EL | 41.75 | |
| | | SNAGGRS4 | 34.925 | -- | 1.792 | 62.595 | 1.4 | 0.273 | 2.77 | A | EL | 41.75 | 0.497 | 2.47 | A | EL | 8.35 | 0.80 | 0.273 | 1.79 | A | EL | 41.75 | |
| | | SNS5A | 35.550 | -- | 1.754 | 62.349 | 1.4 | 0.273 | 2.71 | A | EL | 41.75 | 0.497 | 2.49 | A | EL | 8.35 | 0.80 | 0.273 | 1.75 | A | EL | 41.75 | |
| | | SNS6A | 39.950 | -- | 1.602 | 63.995 | 1.4 | 0.273 | 2.48 | A | EL | 41.75 | 0.497 | 2.27 | A | EL | 8.35 | 0.80 | 0.273 | 1.60 | A | EL | 41.75 | |
| | SNS7B | 42.000 | -- | 1.525 | 64.059 | 1.4 | 0.273 | 2.36 | A | EL | 41.75 | 0.497 | 2.22 | A | EL | 8.35 | 0.80 | 0.273 | 1.53 | A | EL | 41.75 | | |
| | TTST | TNAGRIT3 | 33.000 | -- | 1.951 | 64.392 | 1.4 | 0.273 | 3.02 | A | EL | 41.75 | 0.497 | 2.7 | A | EL | 8.35 | 0.80 | 0.273 | 1.95 | A | EL | 41.75 | |
| | | TNT4A | 33.075 | -- | 1.958 | 64.758 | 1.4 | 0.273 | 3.03 | A | EL | 41.75 | 0.497 | 2.64 | A | EL | 8.35 | 0.80 | 0.273 | 1.96 | A | EL | 41.75 | |
| | | TNT6A | 41.600 | -- | 1.594 | 66.309 | 1.4 | 0.273 | 2.47 | A | EL | 41.75 | 0.497 | 2.34 | A | EL | 8.35 | 0.80 | 0.273 | 1.59 | A | EL | 41.75 | |
| | | TNT7A | 42.000 | -- | 1.598 | 67.128 | 1.4 | 0.273 | 2.47 | A | EL | 41.75 | 0.497 | 2.3 | A | EL | 8.35 | 0.80 | 0.273 | 1.60 | A | EL | 41.75 | |
| | | TNT7B | 42.000 | -- | 1.645 | 69.07 | 1.4 | 0.273 | 2.54 | A | EL | 41.75 | 0.497 | 2.17 | A | EL | 8.35 | 0.80 | 0.273 | 1.64 | A | EL | 41.75 | |
| | | TNAGRIT4 | 43.000 | -- | 1.571 | 67.556 | 1.4 | 0.273 | 2.43 | A | EL | 41.75 | 0.497 | 2.11 | A | EL | 8.35 | 0.80 | 0.273 | 1.57 | A | EL | 41.75 | |
| | | TNAGT5A | 45.000 | -- | 1.484 | 66.8 | 1.4 | 0.273 | 2.3 | A | EL | 41.75 | 0.497 | 2.08 | A | EL | 8.35 | 0.80 | 0.273 | 1.48 | A | EL | 41.75 | |
| TNAGT5B | | 45.000 | 3 | 1.469 | 66.118 | 1.4 | 0.273 | 2.27 | A | EL | 41.75 | 0.497 | 2 | A | EL | 8.35 | 0.80 | 0.273 | 1.47 | A | EL | 41.75 | | |

LOAD FACTORS:

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

NOTES:

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

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

CONTROLLING LOAD RATING

1 DESIGN LOAD RATING (HL-93)

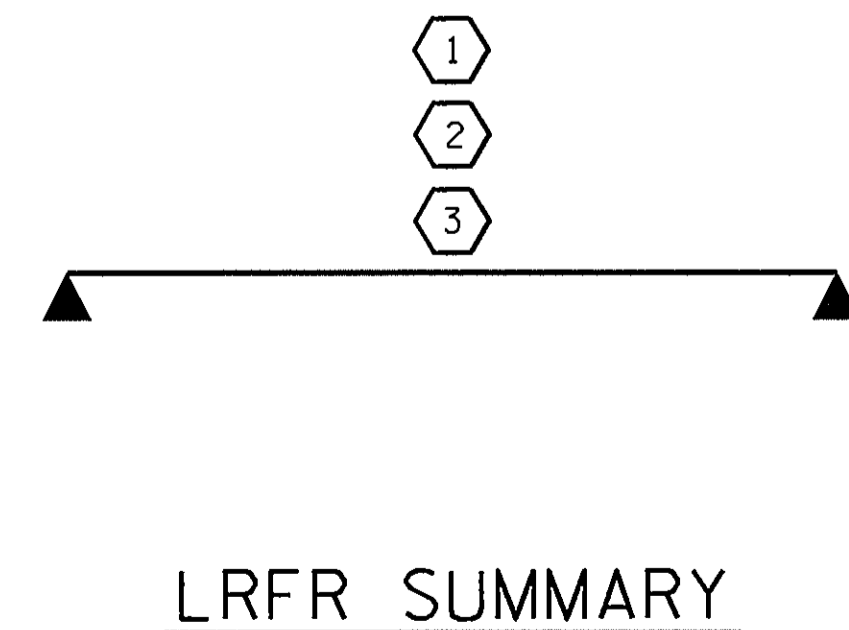
2 DESIGN LOAD RATING (HS-20)

3 LEGAL LOAD RATING **

** SEE CHART FOR VEHICLE TYPE

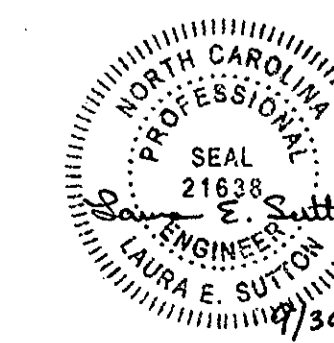
GIRDER LOCATION

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



PROJECT NO. 12B.205512
LINCOLN COUNTY
 STATION: 14+90.00 -L-

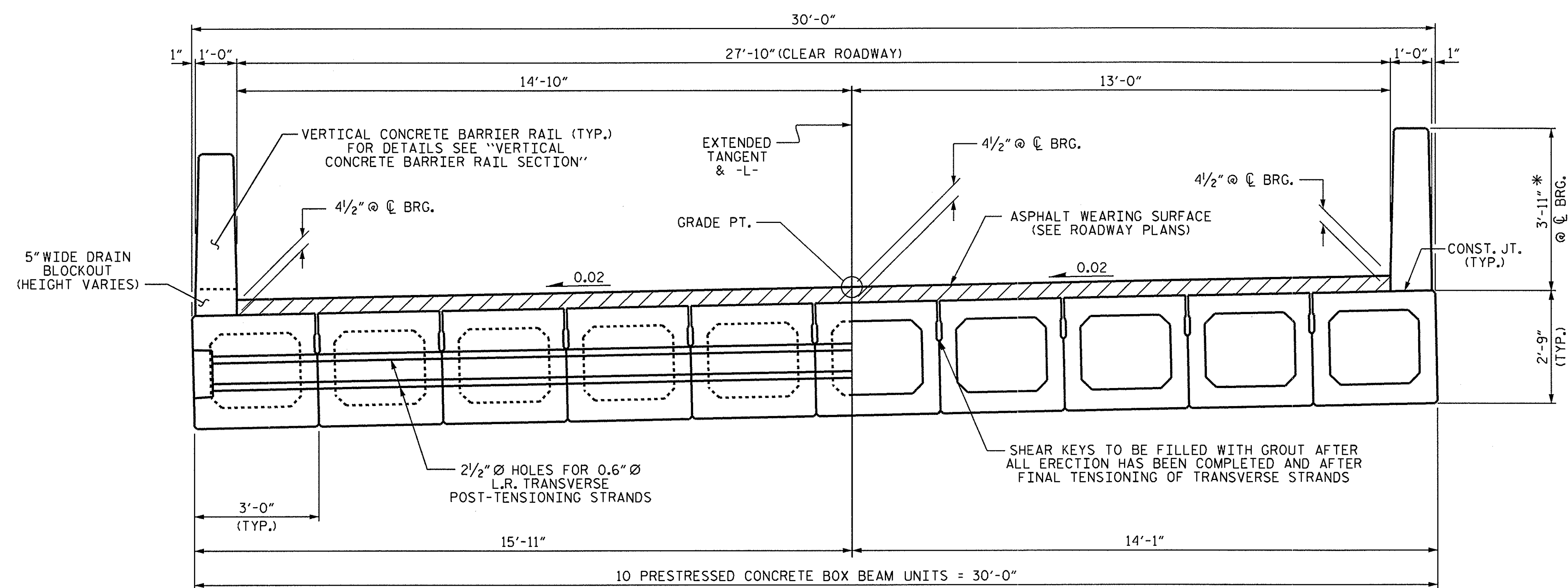
ASSEMBLED BY : L. E. SUTTON DATE : 9/12/13
 CHECKED BY : B. N. GRADY DATE : 9/16/13
 DRAWN BY : TMG II/II
 CHECKED BY : AAC II/II



STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

STANDARD
 LRFR SUMMARY FOR
 85' BOX BEAM UNIT
 90° SKEW
 (NON-INTERSTATE TRAFFIC)

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

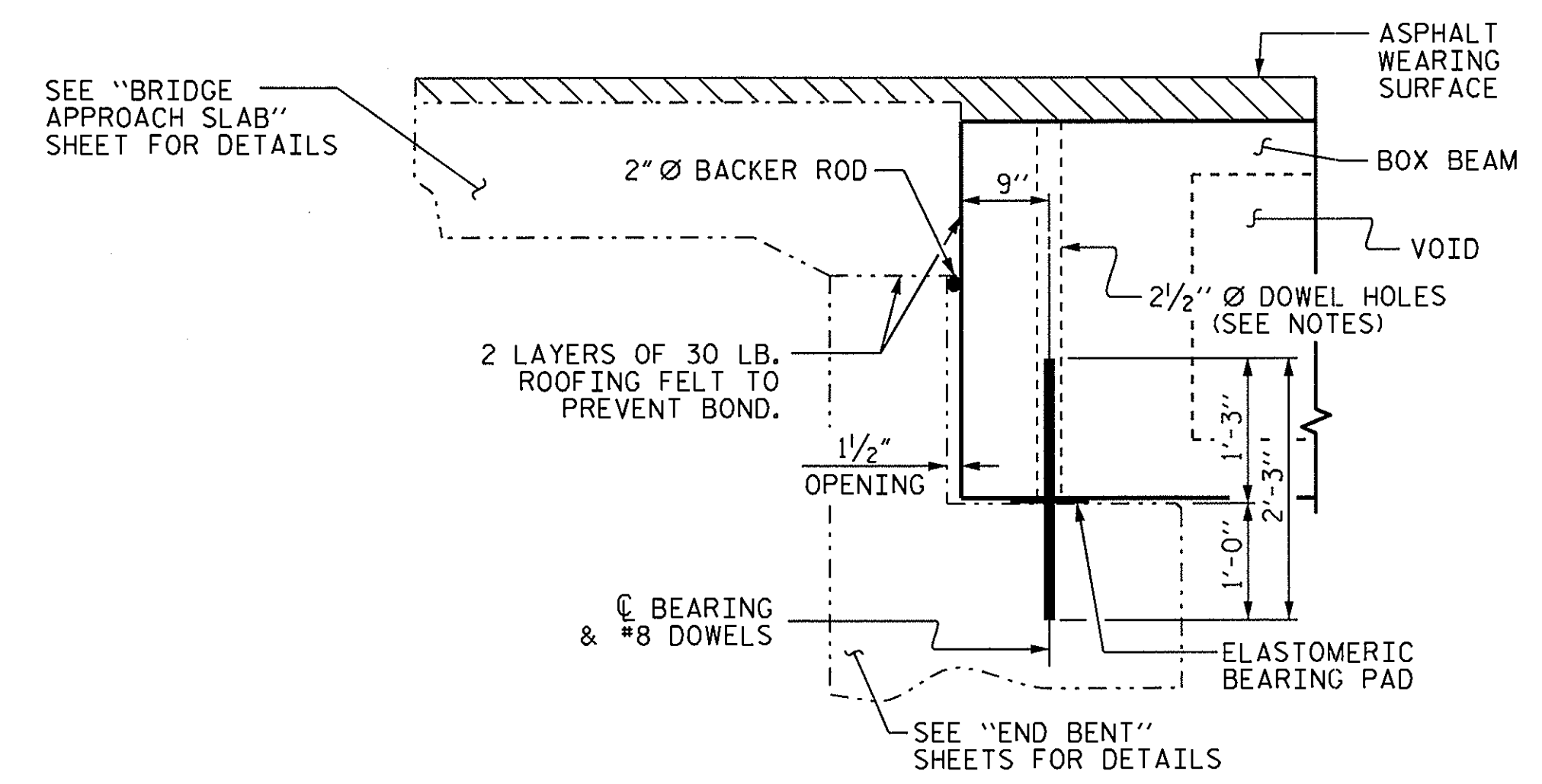


HALF SECTION AT INTERMEDIATE DIAPHRAGMS HALF SECTION THROUGH VOIDS

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 CUTTERLINE. FOR RAIL HEIGHT DETAILS AND ASPHALT THICKNESS, SEE THE "VERTICAL CONCRETE BARRIER RAIL SECTION" DETAIL.

FIXED END



SECTION AT END BENT

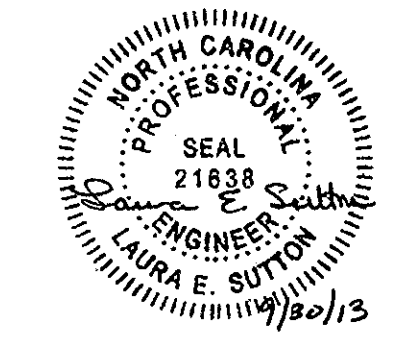
NOTES

- ALL PRESTRESSING STRANDS SHALL BE 7-WIRE LOW RELAXATION GRADE 270 STRANDS AND SHALL CONFORM TO AASHTO M203 EXCEPT FOR SAMPLING REQUIREMENTS WHICH SHALL BE IN ACCORDANCE WITH THE STANDARD SPECIFICATIONS.
- ALL REINFORCING STEEL CAST WITH THE BOX BEAM SECTIONS SHALL BE GRADE 60 AND SHALL BE INCLUDED IN THE UNIT PRICE BID FOR PRESTRESSED CONCRETE BOX BEAMS.
- RECESSES FOR TRANSVERSE STRANDS SHALL BE GROUTED AFTER THE TENSIONING OF THE STRANDS.
- THE 2 1/2" Ø DOWEL HOLES AT FIXED ENDS OF BOX BEAM SECTIONS SHALL BE FILLED WITH NON-SHRINK GROUT.
- THE BACKER RODS SHALL CONFORM TO THE REQUIREMENTS OF TYPE M BOND BREAKER. SEE SECTION 1028 OF THE STANDARD SPECIFICATIONS.
- ALL REINFORCING STEEL IN VERTICAL CONCRETE BARRIER RAILS SHALL BE EPOXY COATED.
- PRESTRESSING STRANDS SHALL BE CUT FLUSH WITH THE BOX BEAM UNIT ENDS.
- APPLY EPOXY PROTECTIVE COATING TO BOX BEAM UNIT ENDS.
- VERTICAL GROOVED CONTRACTION JOINTS, 1/2" IN DEPTH, SHALL BE TOOLED IN ALL EXPOSED FACES OF THE BARRIER RAIL AND IN ACCORDANCE WITH ARTICLE 825-10(B) OF THE STANDARD SPECIFICATIONS. A VERTICAL CONTRACTION JOINT SHALL BE LOCATED AT EACH THIRD POINT BETWEEN BARRIER RAIL EXPANSION JOINTS. ONLY ONE CONTRACTION JOINT IS REQUIRED AT MIDPOINT OF BARRIER RAIL SEGMENTS LESS THAN 20 FEET IN LENGTH AND NO CONTRACTION JOINTS ARE REQUIRED FOR THOSE SEGMENTS LESS THAN 10 FEET IN LENGTH.
- THE LOCATION OF THE VOID DRAINS MAY BE SHIFTED SLIGHTLY WHERE NECESSARY TO CLEAR PRESTRESSING STRANDS OR TRANSVERSE REINFORCING STEEL.
- THE TRANSFER OF LOAD FROM THE ANCHORAGES TO THE BOX BEAM UNIT SHALL BE DONE WHEN THE CONCRETE HAS REACHED A COMPRESSIVE STRENGTH OF NOT LESS THAN 6000 PSI.
- FOR GROUT FOR STRUCTURES, SEE SPECIAL PROVISIONS.
- THE DRAIN OPENING AT THE CUTTERLINE SHALL BE 4" X 5". THE HEIGHT OF THE BLOCKOUT IN THE VERTICAL CONCRETE BARRIER RAIL SHALL EXTEND FROM THE TOP OF THE BOX BEAM UNIT TO THE TOP OF THE DRAIN OPENING.
- APPLY EPOXY PROTECTIVE COATING TO EXTERIOR FACE OF THE EXTERIOR BOX BEAM UNITS THAT REQUIRE DRAINS IN THE BARRIER RAIL.

PROJECT NO. 12B.205512
LINCOLN COUNTY
 STATION: 14+90.00 -L-

SHEET 1 OF 5

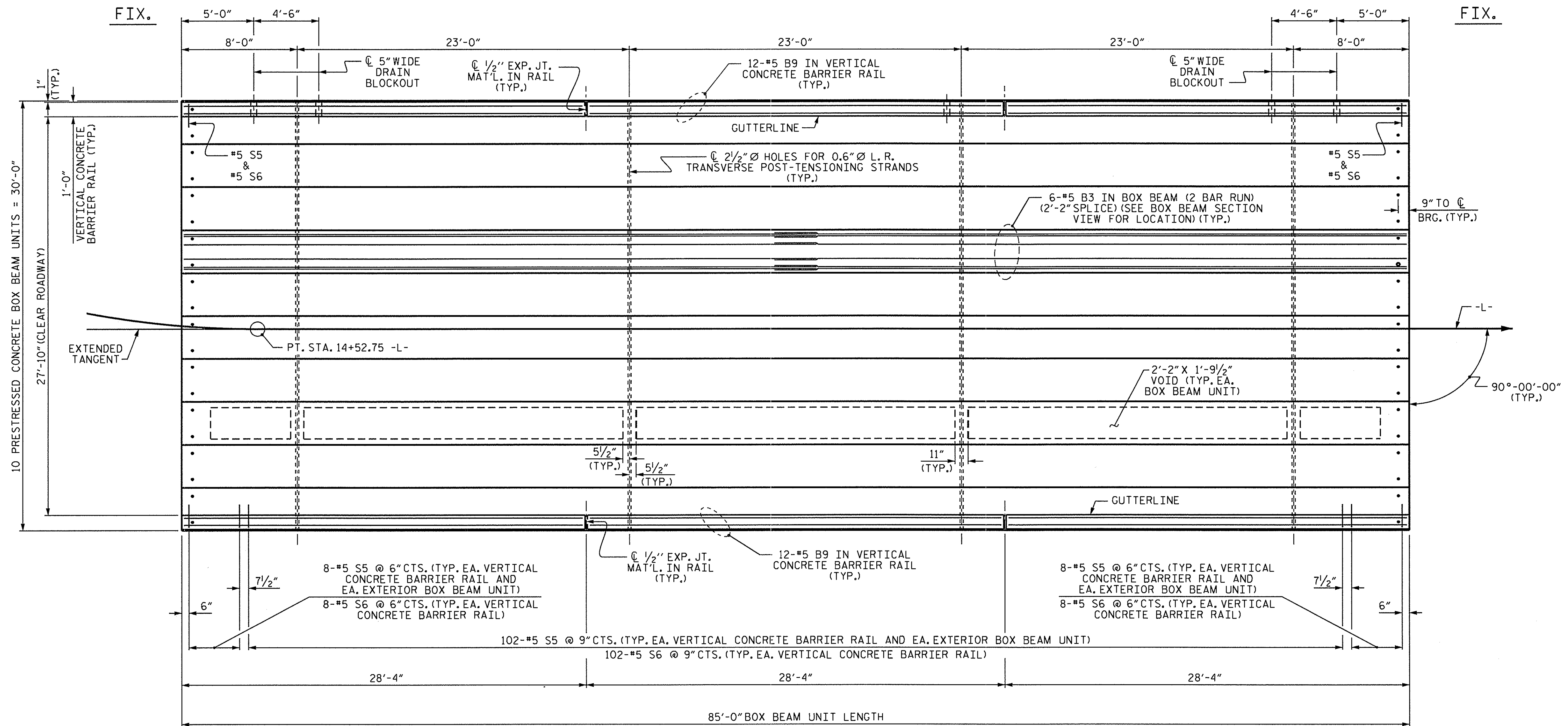
STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH
 STANDARD
 3'-0" X 2'-9"
 PRESTRESSED CONCRETE
 BOX BEAM UNIT



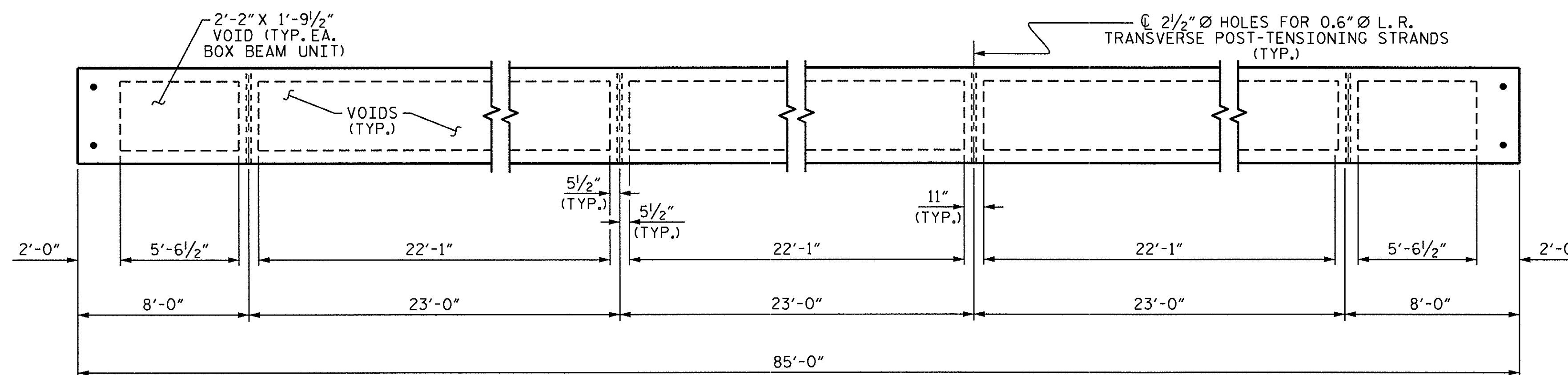
ASSEMBLED BY : L. E. SUTTON DATE : 9/12/13
 CHECKED BY : B. N. GRADY DATE : 9/16/13
 DRAWN BY : DGE 8/II
 CHECKED BY : TMG 11/II

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

STD. NO. STD.33PCBB1_30



PLAN OF UNIT



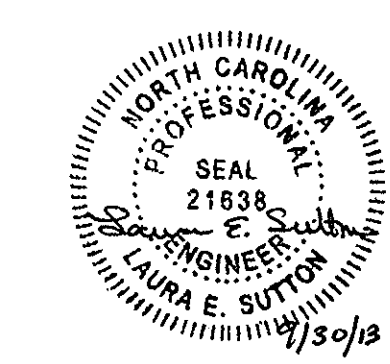
DIAPHRAGM AND VOID LAYOUT

PROJECT NO. 12B.205512
LINCOLN COUNTY
 STATION: 14+90.00 -L-

SHEET 2 OF 5

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

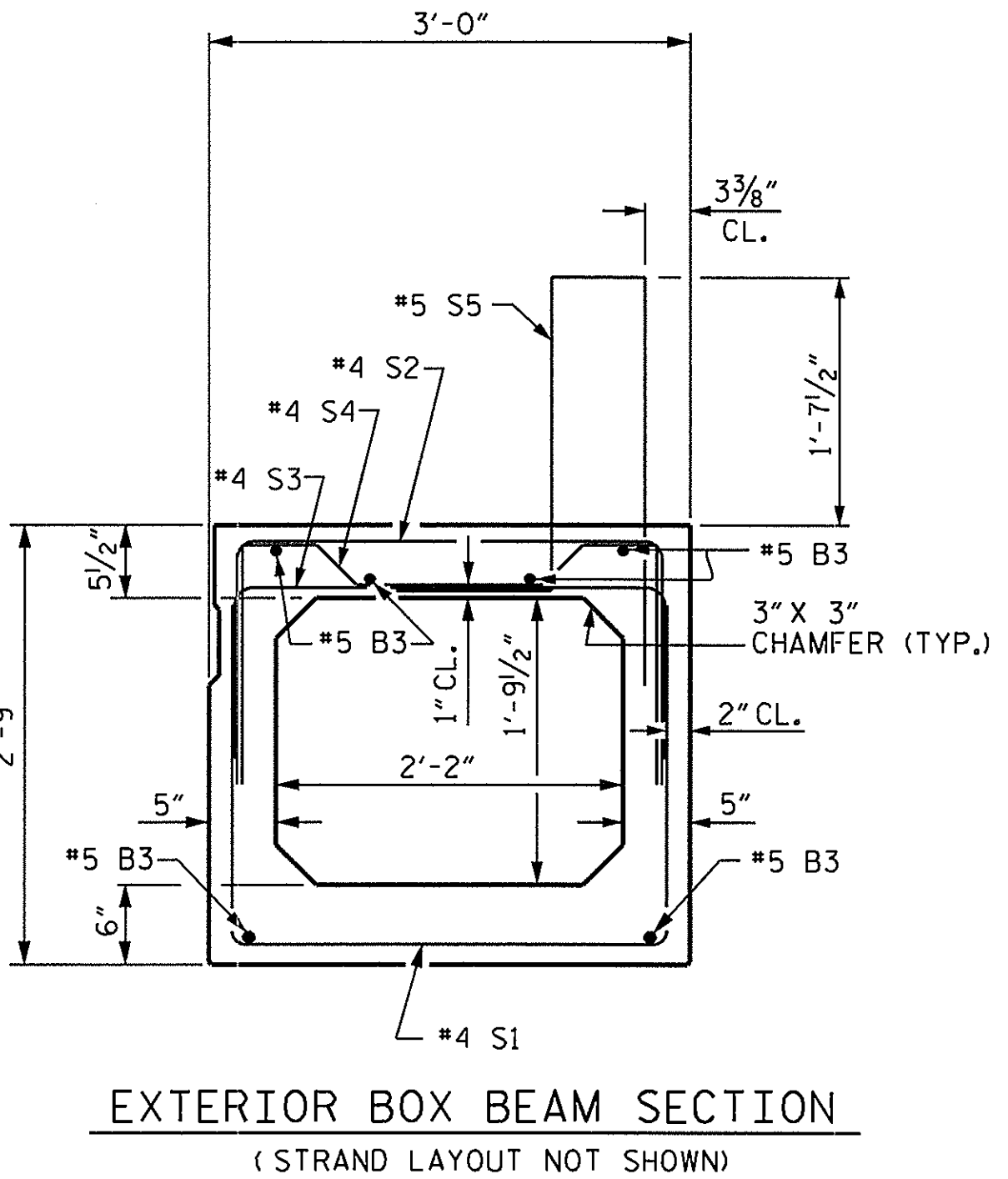
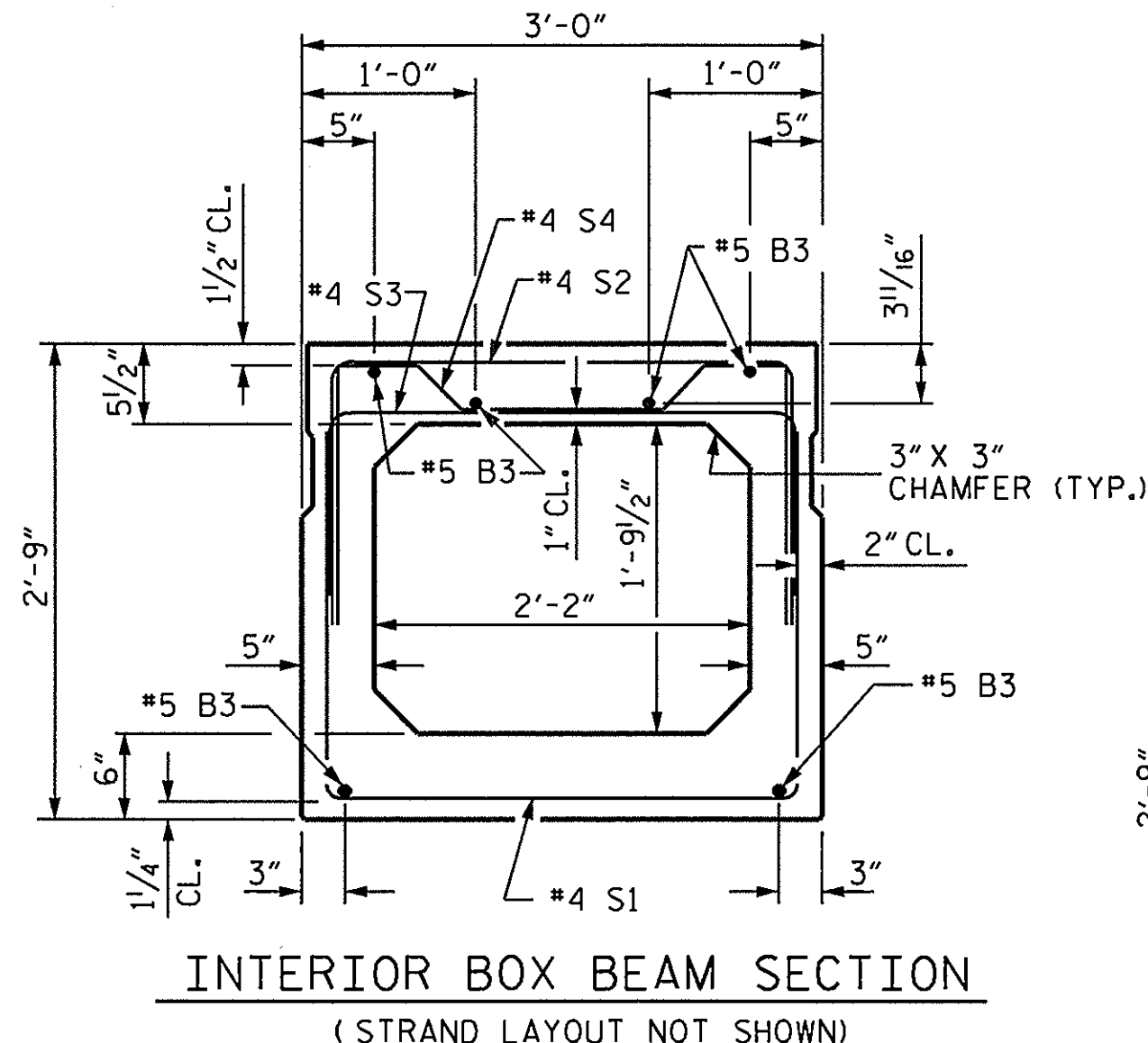
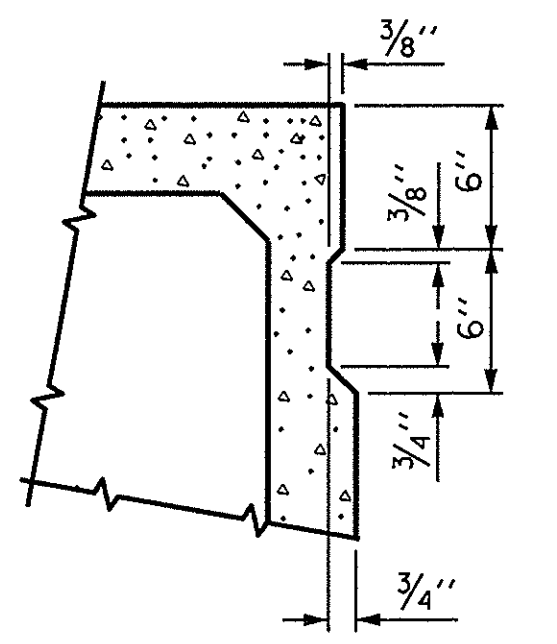
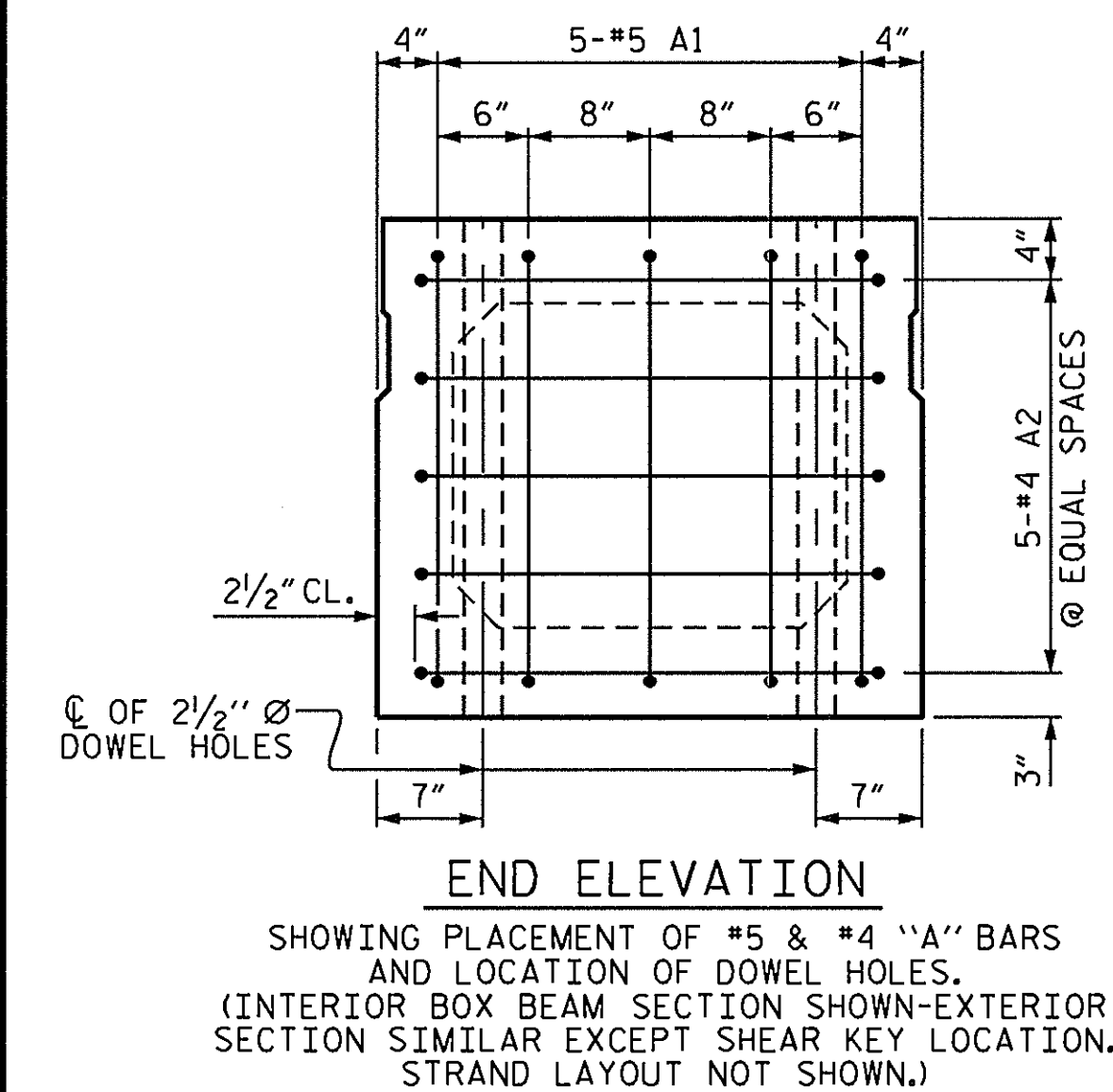
PLAN OF 85' UNIT
 27'-10" CLEAR ROADWAY
 90° SKEW



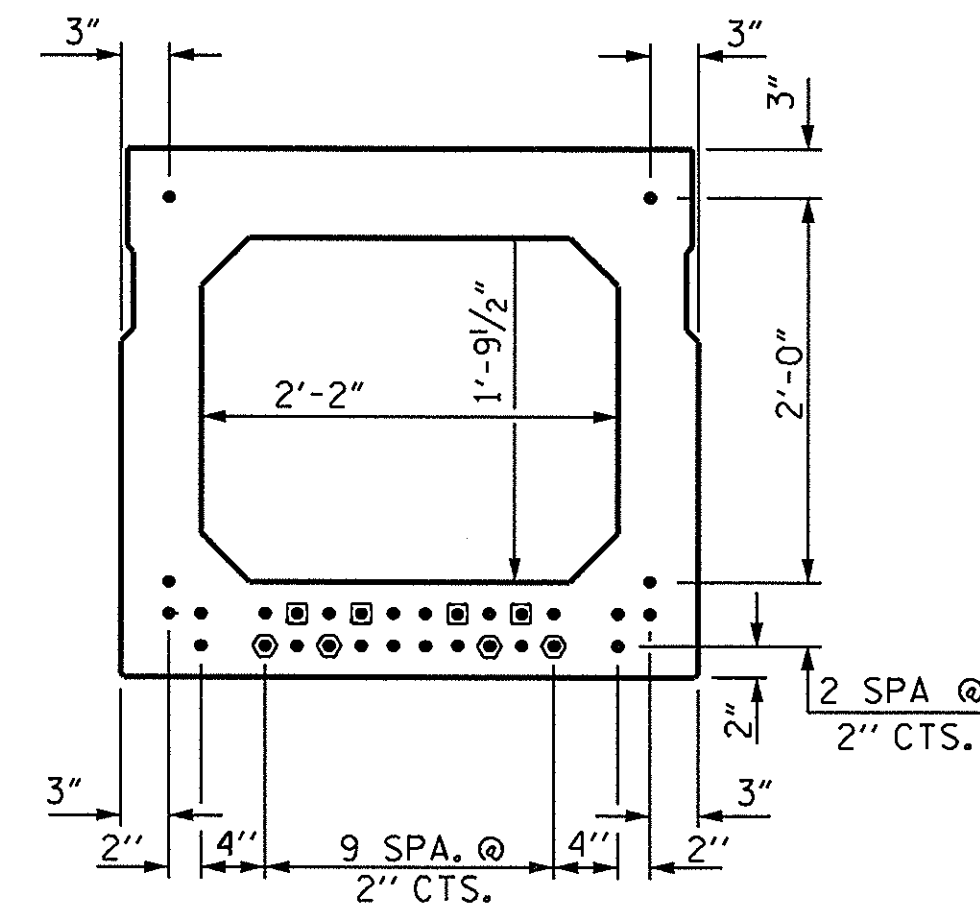
ASSEMBLED BY : L. E. SUTTON DATE : 9/12/13
 CHECKED BY : B. N. GRADY DATE : 9/16/13

DRAWN BY : DGE 8/II
 CHECKED BY : TMG 11/II

| REVISIONS | | | | | | SHEET NO. |
|-----------|-----|-------|-----|-----|-------|--------------|
| NO. | BY: | DATE: | NO. | BY: | DATE: | S-5 |
| 1 | | | 3 | | | TOTAL SHEETS |
| 2 | | | 4 | | | 16 |



0.6" Ø LOW RELAXATION STRAND LAYOUT

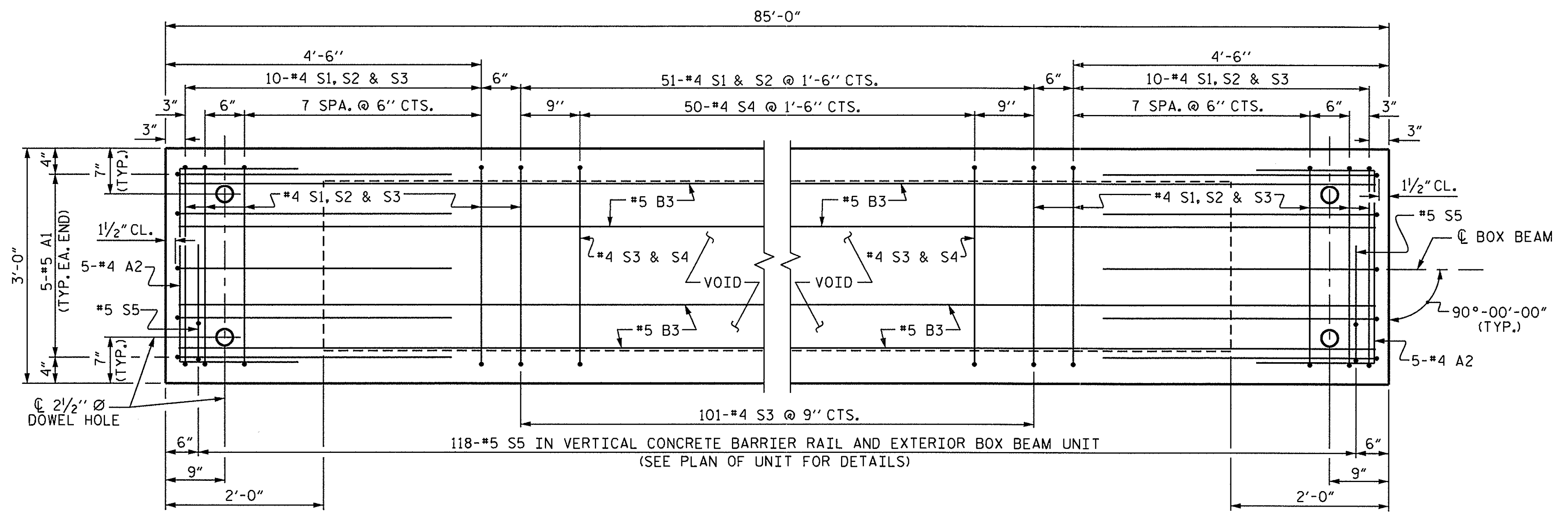


| GRADE 270 STRANDS | |
|---------------------------------------|-------------|
| | 0.6" Ø L.R. |
| AREA (SQUARE INCHES) | 0.217 |
| ULTIMATE STRENGTH (LBS. PER STRAND) | 58,600 |
| APPLIED PRESTRESS (LBS. PER STRAND) | 43,950 |

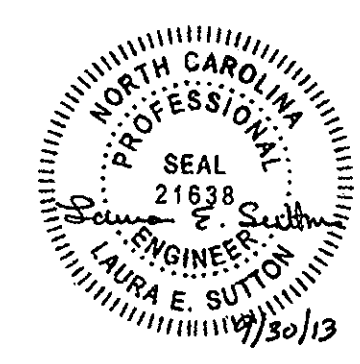
BAR TYPES

ALL BAR DIMENSIONS ARE OUT TO OUT.

| BILL OF MATERIAL FOR ONE BOX BEAM SECTION | | | | | | | |
|---|------|------|---------------|--------|---------------|--------|--|
| BAR NUMBER | SIZE | TYPE | EXTERIOR UNIT | | INTERIOR UNIT | | |
| | | | LENGTH | WEIGHT | LENGTH | WEIGHT | |
| A1 | 10 | #5 | 6'-8" | 70 | 6'-8" | 70 | |
| A2 | 34 | #4 | 5'-7" | 127 | 5'-7" | 127 | |
| B3 | 12 | #5 | STR | 43'-5" | 43'-5" | 543 | |
| K1 | 12 | #4 | 6 | 49 | 6'-2" | 49 | |
| K2 | 8 | #4 | STR | 2'-7" | 14 | 2'-7" | |
| S1 | 71 | #4 | 3 | 356 | 7'-6" | 356 | |
| S2 | 71 | #4 | 3 | 269 | 5'-8" | 269 | |
| S3 | 121 | #4 | 3 | 391 | 4'-10" | 391 | |
| S4 | 50 | #4 | 4 | 195 | 5'-10" | 195 | |
| *S5 | 118 | #5 | 5 | 779 | | | |
| REINFORCING STEEL | | | LBS. 2,014 | | LBS. 2,014 | | |
| * EPOXY COATED REINF. STEEL | | | LBS. 779 | | | | |
| 8000 P.S.I. CONCRETE | | | CU. YDS. 15.1 | | CU. YDS. 15.0 | | |
| 0.6" Ø L.R. STRANDS | | | No. 30 | | No. 30 | | |



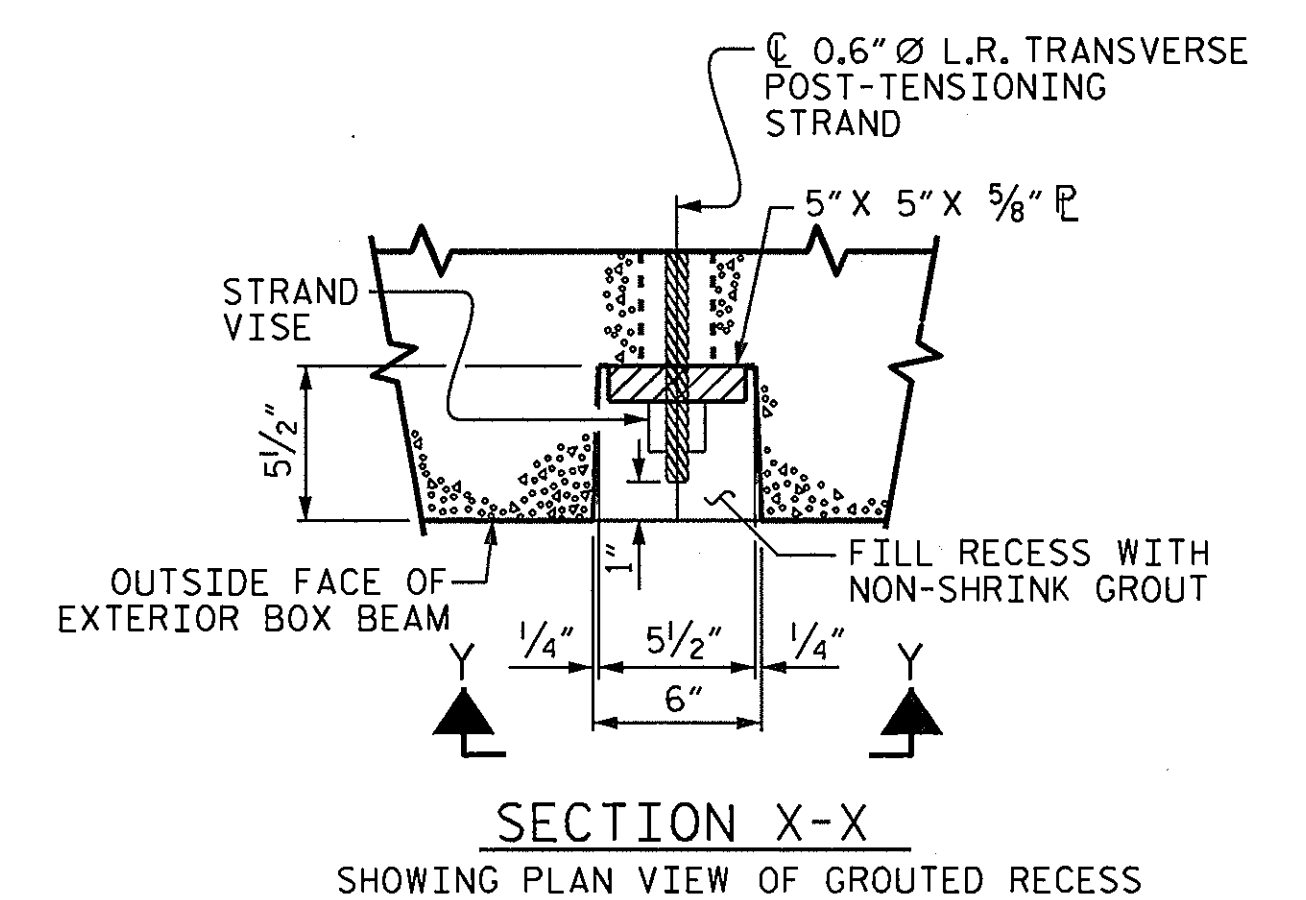
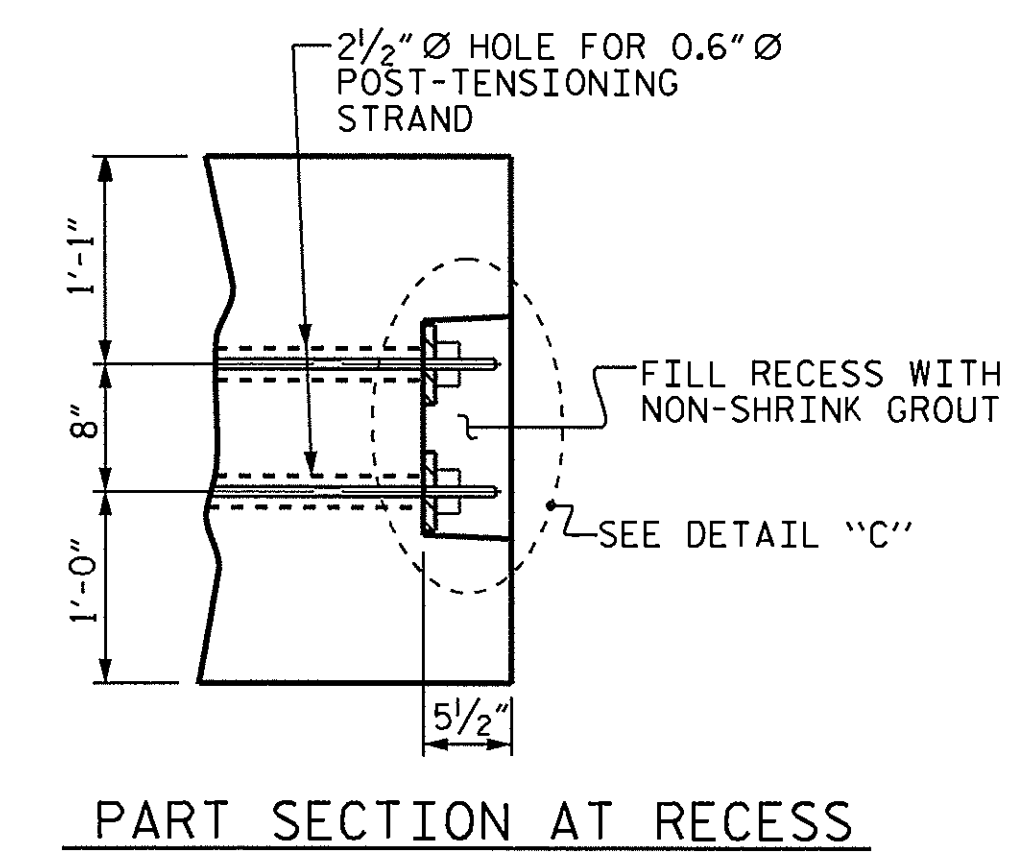
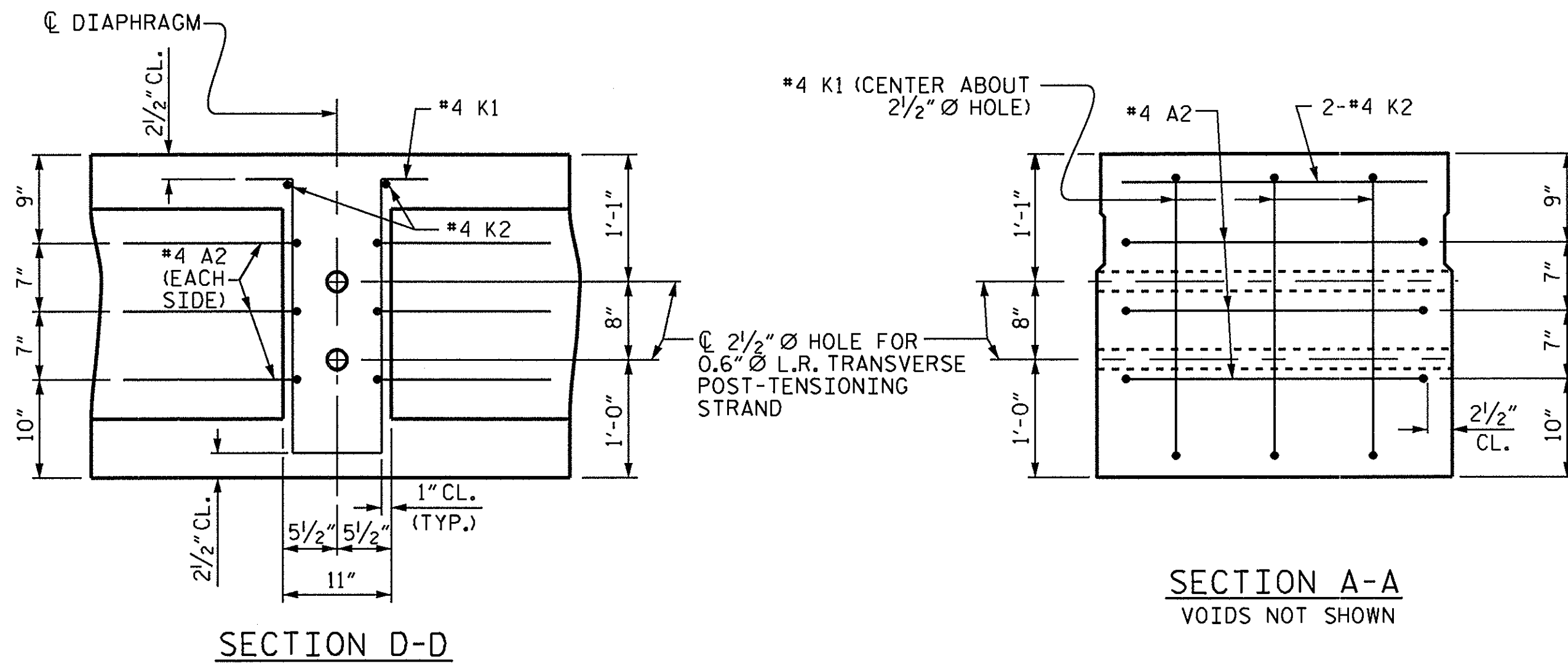
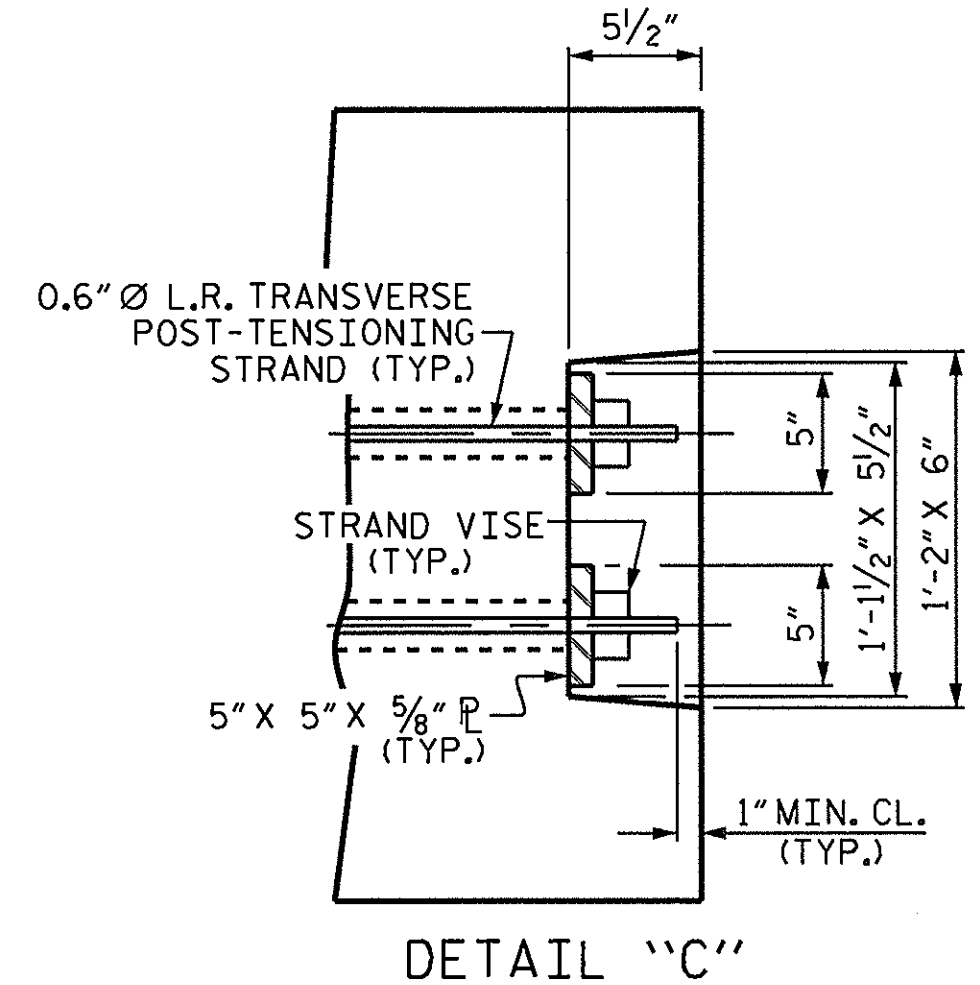
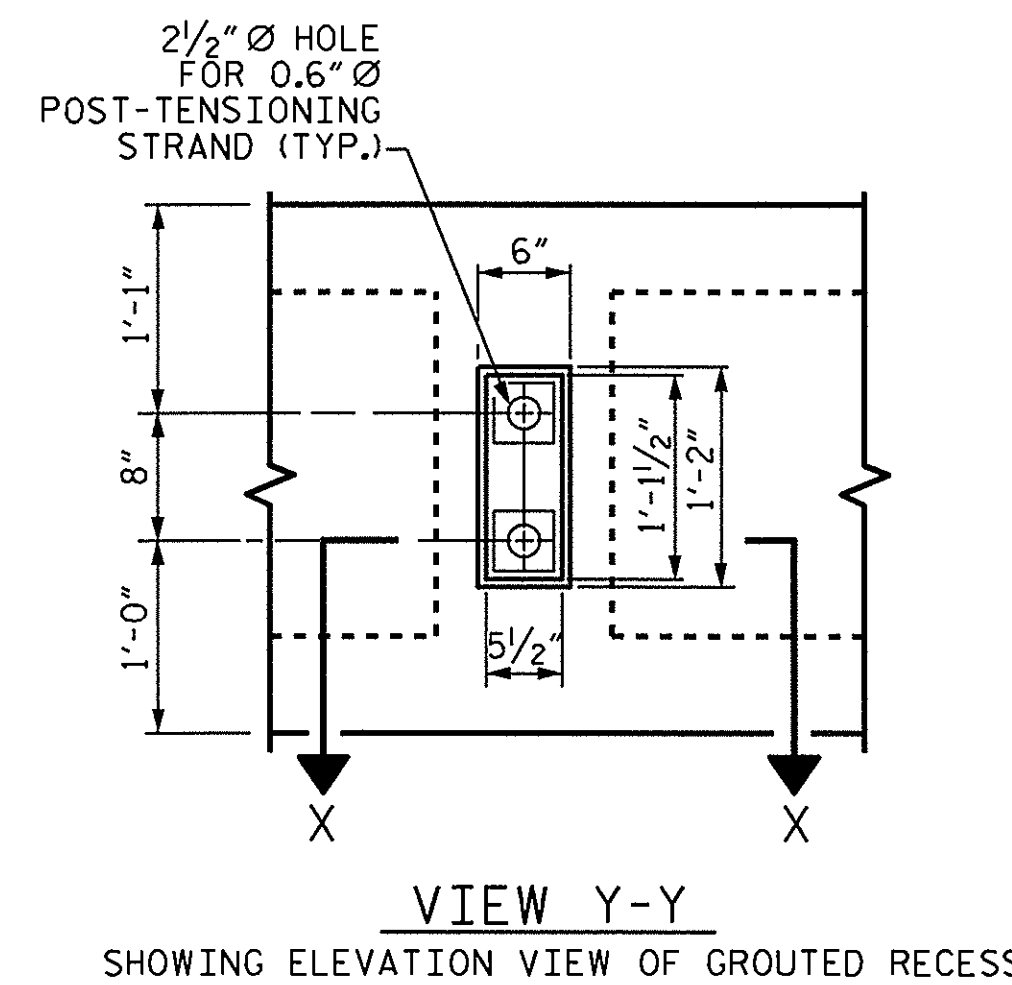
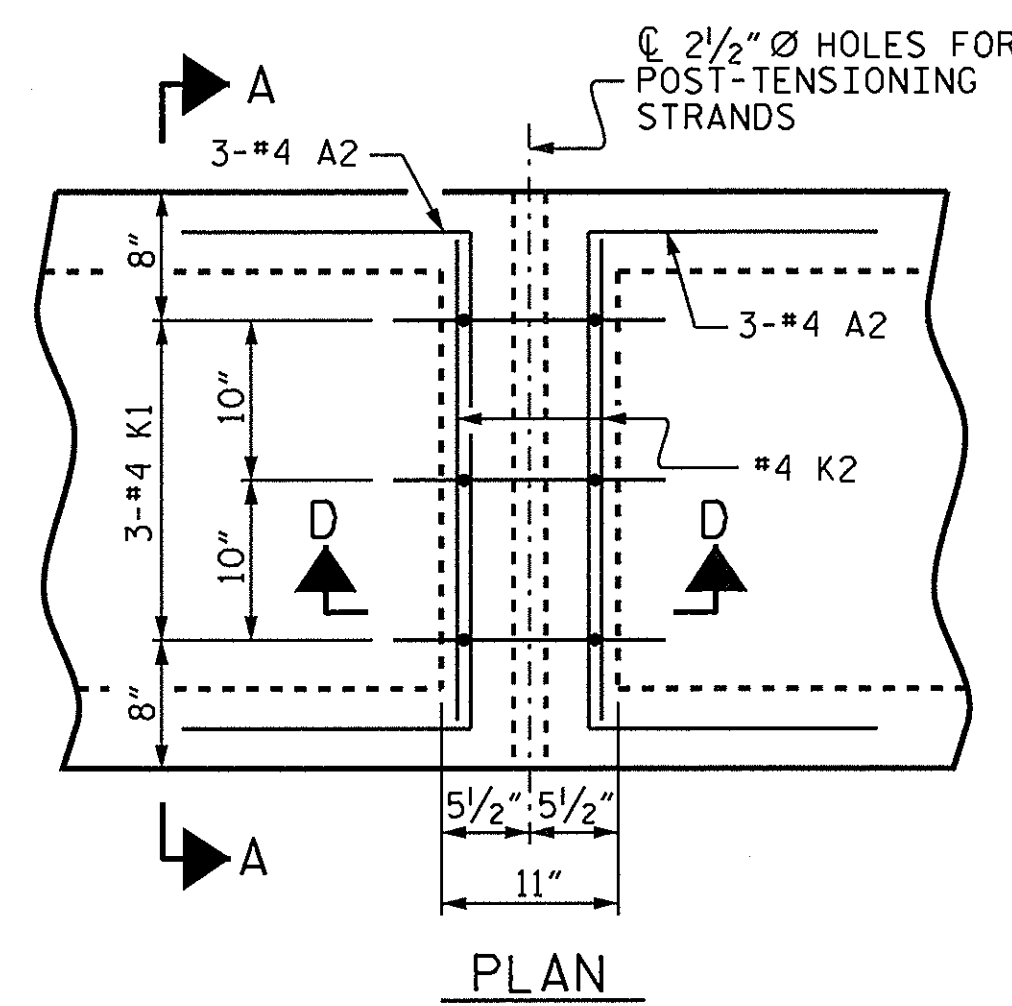
PROJECT NO. 12B.205512
 LINCOLN COUNTY
 STATION: 14+90.00 -L-
 SHEET 3 OF 5



ASSEMBLED BY: L. E. SUTTON DATE: 9/12/13
 CHECKED BY: B. N. GRADY DATE: 9/16/13
 DRAWN BY: DGE 10/11
 CHECKED BY: TMG 11/11

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

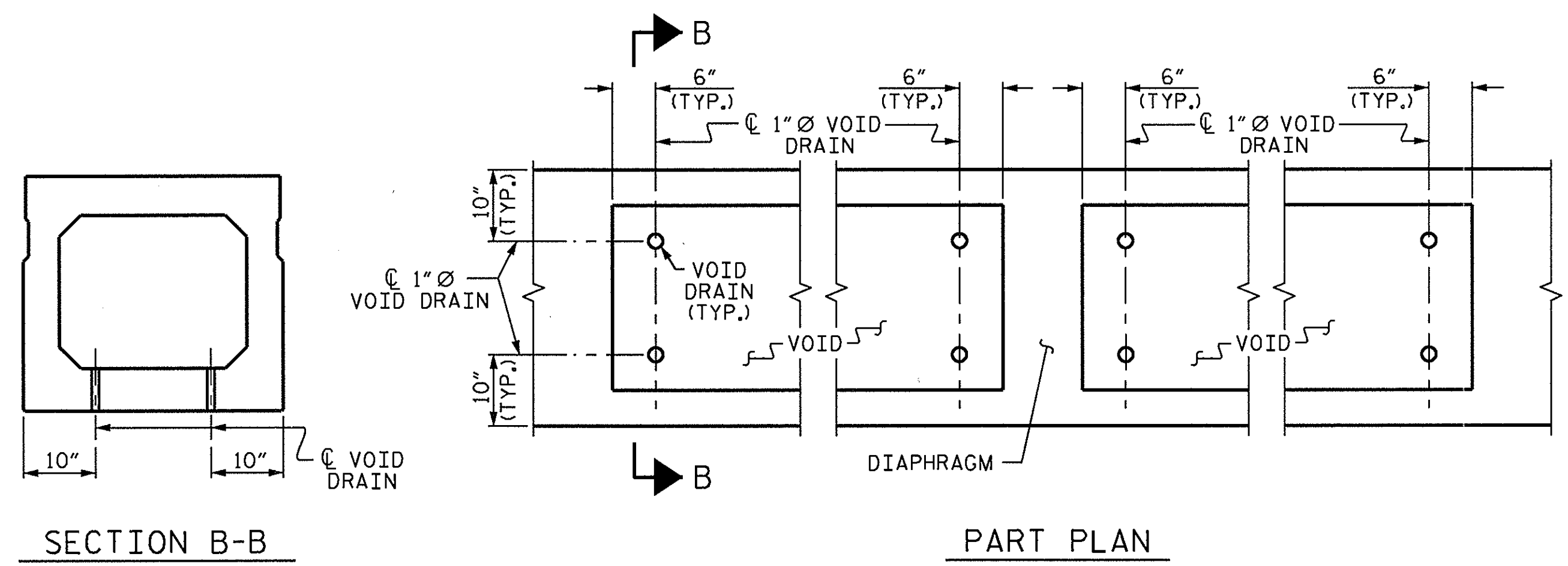
| REVISIONS | | | | | | SHEET NO. S-6 |
|-----------|-----|-------|-----|-----|-------|--------------------|
| NO. | BY: | DATE: | NO. | BY: | DATE: | |
| 1 | | | 3 | | | TOTAL SHEETS 16 |
| 2 | | | 4 | | | |



DOUBLE DIAPHRAGM DETAILS

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

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



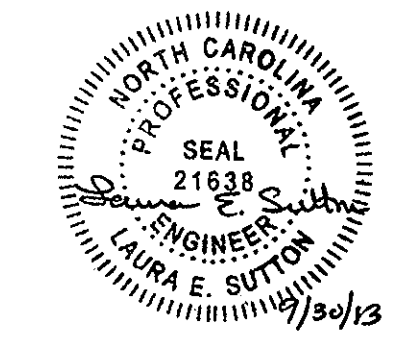
VOID DRAIN DETAILS
(DIMENSIONS SHOWN ARE TYPICAL FOR EACH VOID)

| DEAD LOAD DEFLECTION AND CAMBER | |
|---|----------------------------------|
| 85' & 90' BOX BEAM UNIT (NC & SE) | 3'-0" x 2'-9" 0.6" Ø L.R. STRAND |
| CAMBER (SLAB ALONE IN PLACE) | 3 3/4" ↑ |
| DEFLECTION DUE TO SUPERIMPOSED DEAD LOAD* | 3/4" ↓ |
| FINAL CAMBER | 3" ↑ |

* INCLUDES FUTURE WEARING SURFACE

PROJECT NO. 12B.205512
LINCOLN COUNTY
STATION: 14+90.00 -L-

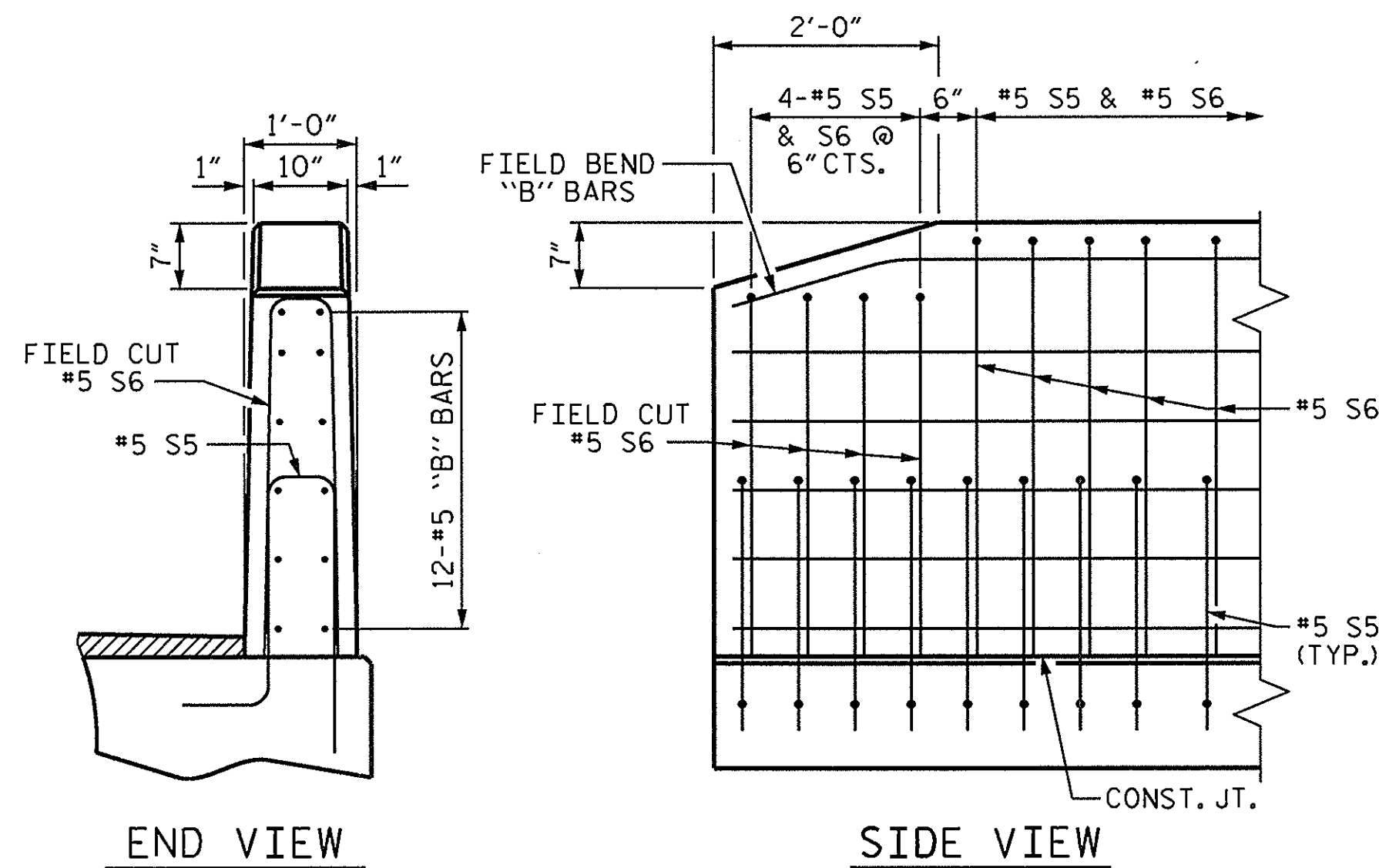
SHEET 4 OF 5



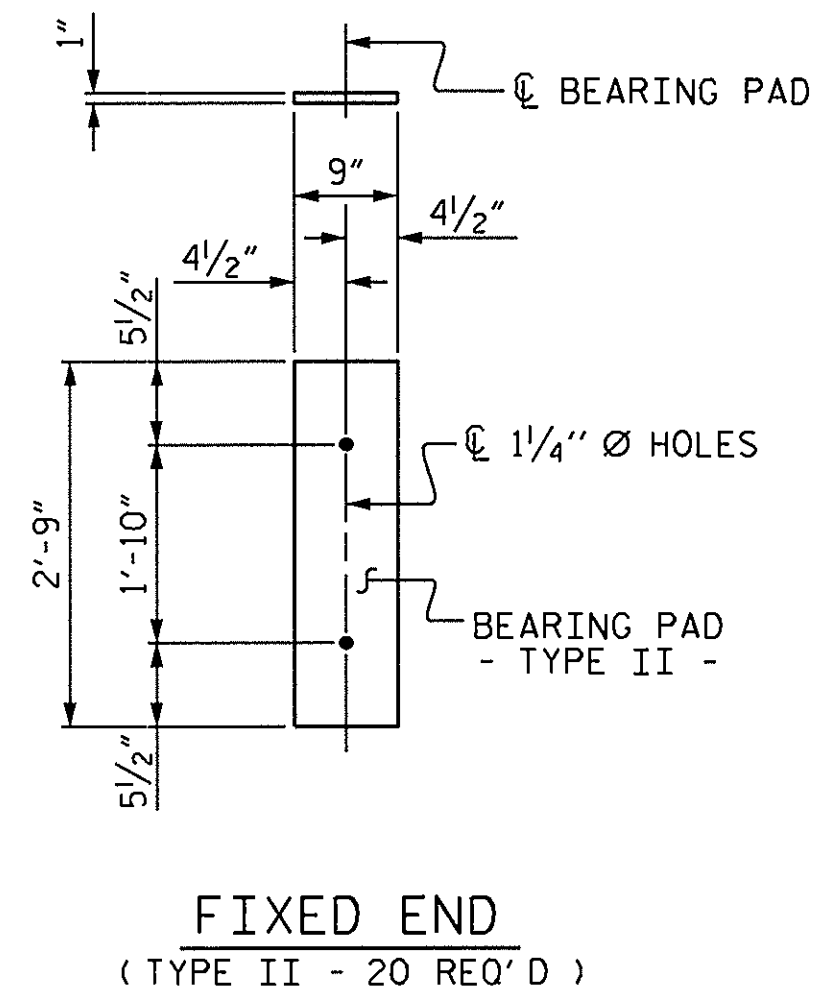
STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH
STANDARD
3'-0" X 2'-9"
PRESTRESSED CONCRETE
BOX BEAM UNIT
90° SKEW

| REVISIONS | | | | | | SHEET NO. S-7 TOTAL SHEETS 16 |
|-----------|-----|-------|-----|-----|-------|--|
| NO. | BY: | DATE: | NO. | BY: | DATE: | |
| 1 | | | 3 | | | |
| 2 | | | 4 | | | |

ASSEMBLED BY : L. E. SUTTON DATE : 9/12/13
CHECKED BY : B. N. GRADY DATE : 9/16/13
DRAWN BY : DGE 10/11
CHECKED BY : TMG 11/11



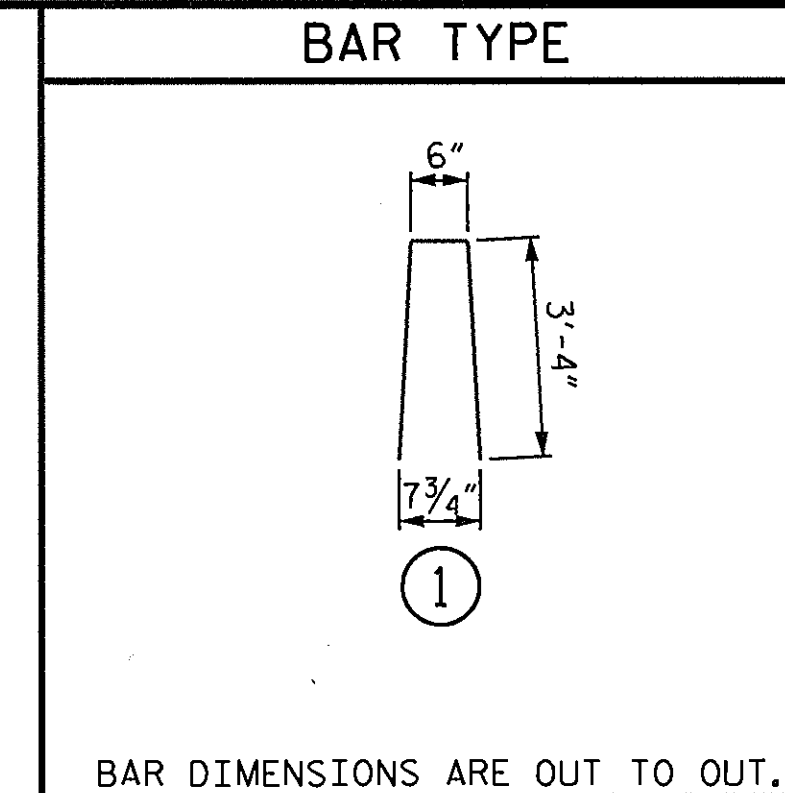
END OF RAIL DETAILS



ELASTOMERIC BEARING DETAILS

ELASTOMER IN ALL BEARINGS SHALL BE 60 DUROMETER HARDNESS.

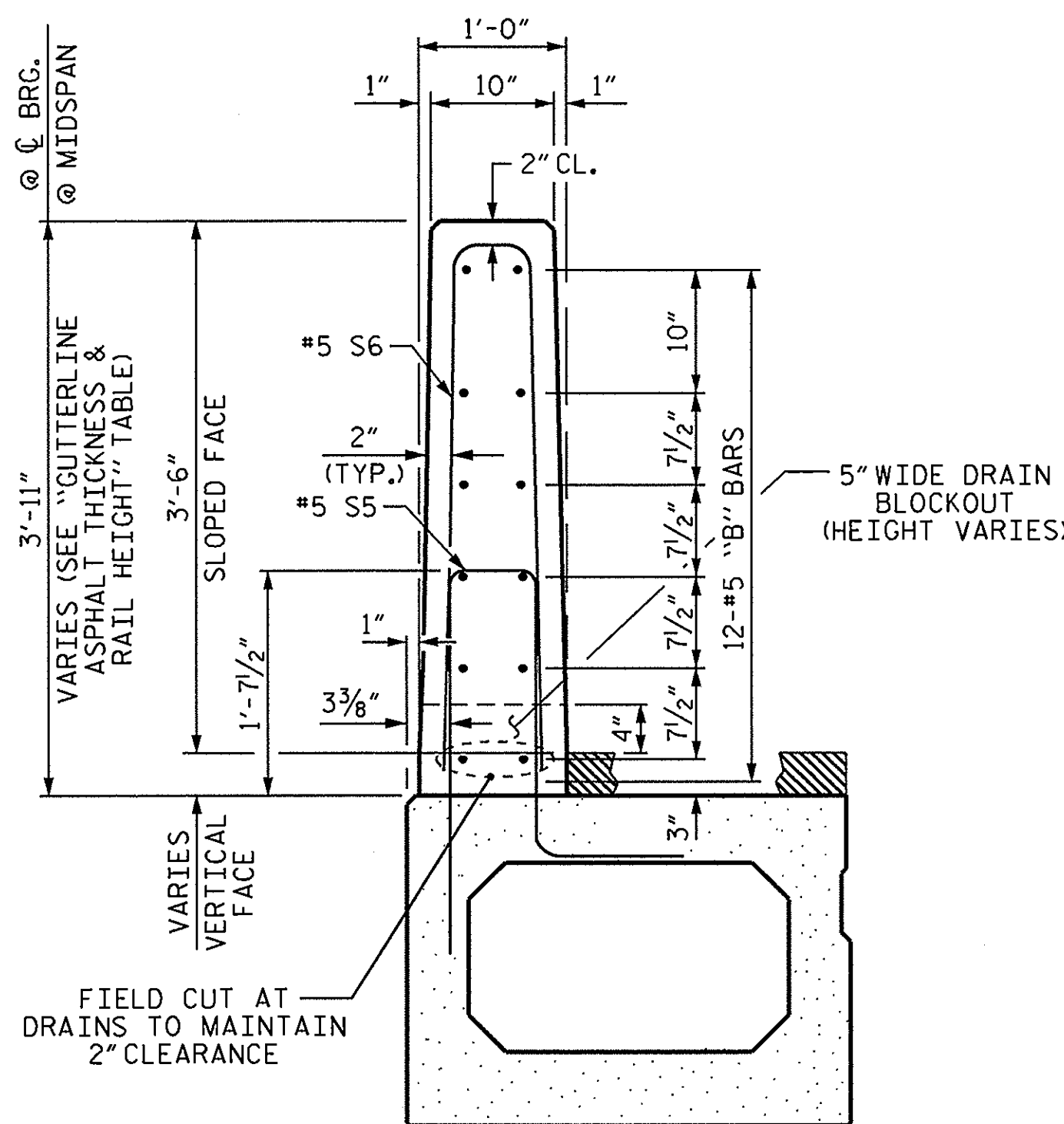
| BOX BEAM UNITS REQUIRED | | | |
|-------------------------|--------|--------|--------------|
| | NUMBER | LENGTH | TOTAL LENGTH |
| 85' UNIT | | | |
| EXTERIOR B.B. | 2 | 85'-0" | 170'-0" |
| INTERIOR B.B. | 8 | 85'-0" | 680'-0" |
| TOTAL | 10 | | 850'-0" |



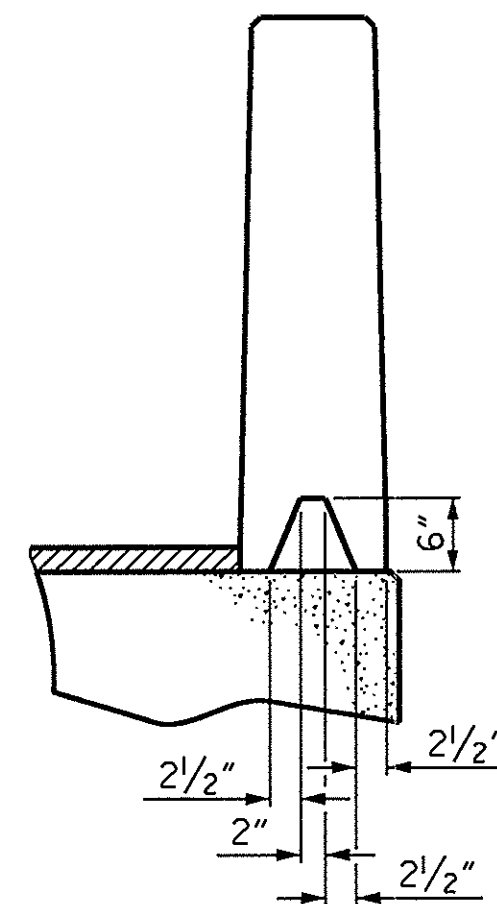
BAR DIMENSIONS ARE OUT TO OUT.

| BILL OF MATERIAL FOR VERTICAL CONCRETE BARRIER RAIL | | | | | |
|---|---------------------------------|------|------|----------|--------|
| BAR | BARS PER PAIR OF EXTERIOR UNITS | SIZE | TYPE | LENGTH | WEIGHT |
| | 85' UNIT | | | | |
| * B9 | 72 | #5 | STR | 27'-11" | 2096 |
| * S6 | 236 | #5 | 2 | 7'-2" | 1764 |
| * EPOXY COATED REINFORCING STEEL | | | | LBS. | 3,860 |
| CLASS AA CONCRETE | | | | CU.YDS. | 22.8 |
| TOTAL VERTICAL CONCRETE BARRIER RAIL | | | | LIN. FT. | 170.00 |

| GUTTERLINE ASPHALT THICKNESS & RAIL HEIGHT | | |
|--|--------------------------------------|------------------------|
| | ASPHALT OVERLAY THICKNESS @ MID-SPAN | RAIL HEIGHT @ MID-SPAN |
| 85' UNITS | 1 1/2" | 3'-8" |

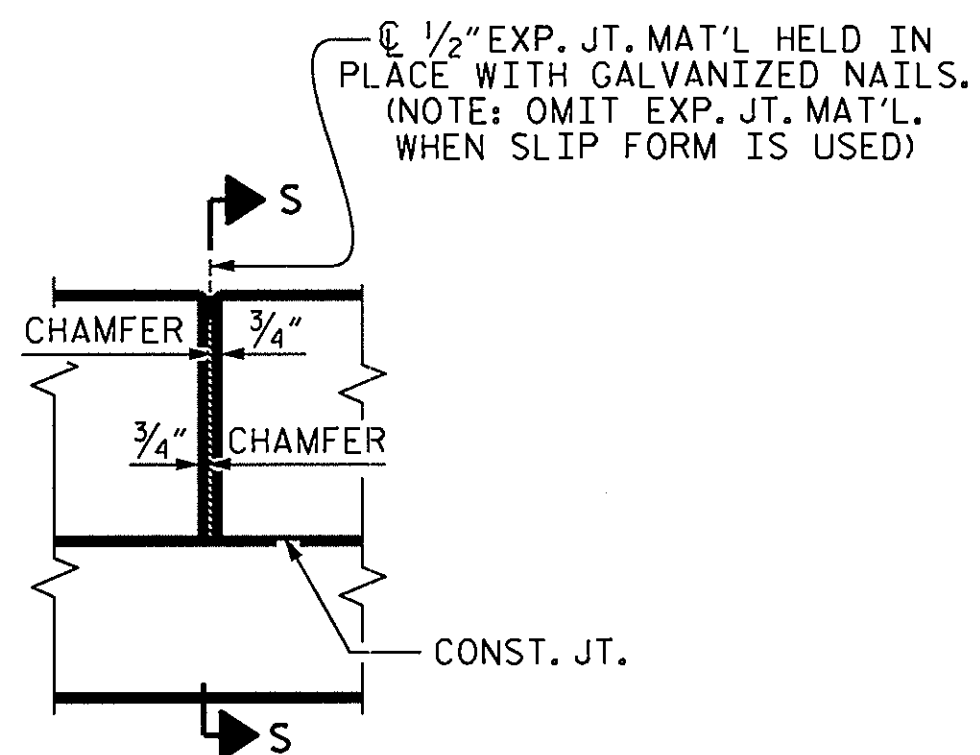


SECTION THRU RAIL



ELEVATION AT EXPANSION JOINTS

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



VERTICAL CONCRETE BARRIER RAIL DETAILS

PROJECT NO. 12B.205512
LINCOLN COUNTY
STATION: 14+90.00 -L-

SHEET 5 OF 5

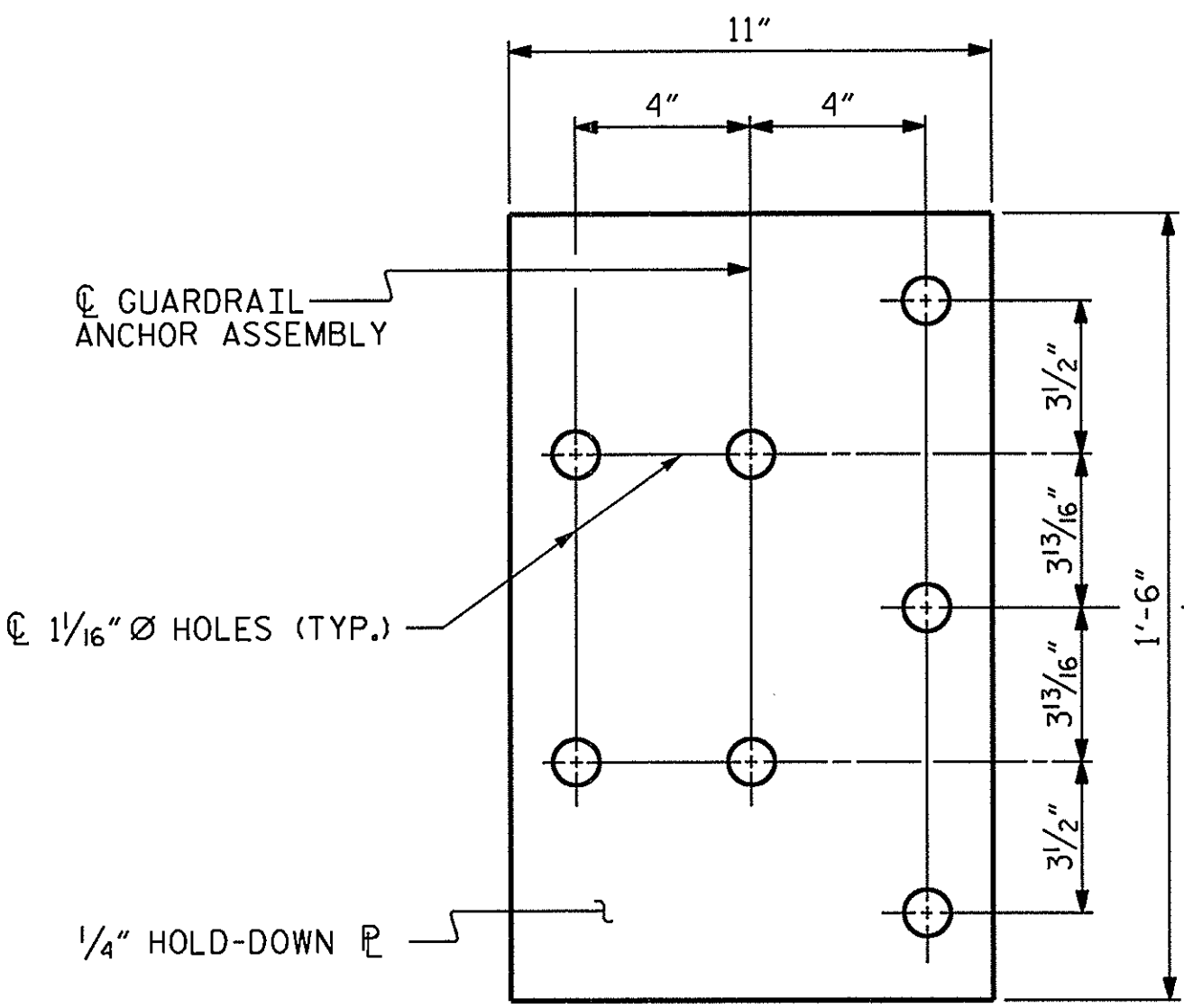
STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

3'-0" X 2'-9"
PRESTRESSED CONCRETE
BOX BEAM UNIT
90° SKEW

| REVISIONS | | | | | | SHEET NO. |
|-----------|-----|-------|-----|-----|-------|-----------------|
| NO. | BY: | DATE: | NO. | BY: | DATE: | |
| 1 | | | 3 | | | S-8 |
| 2 | | | 4 | | | TOTAL SHEETS 16 |

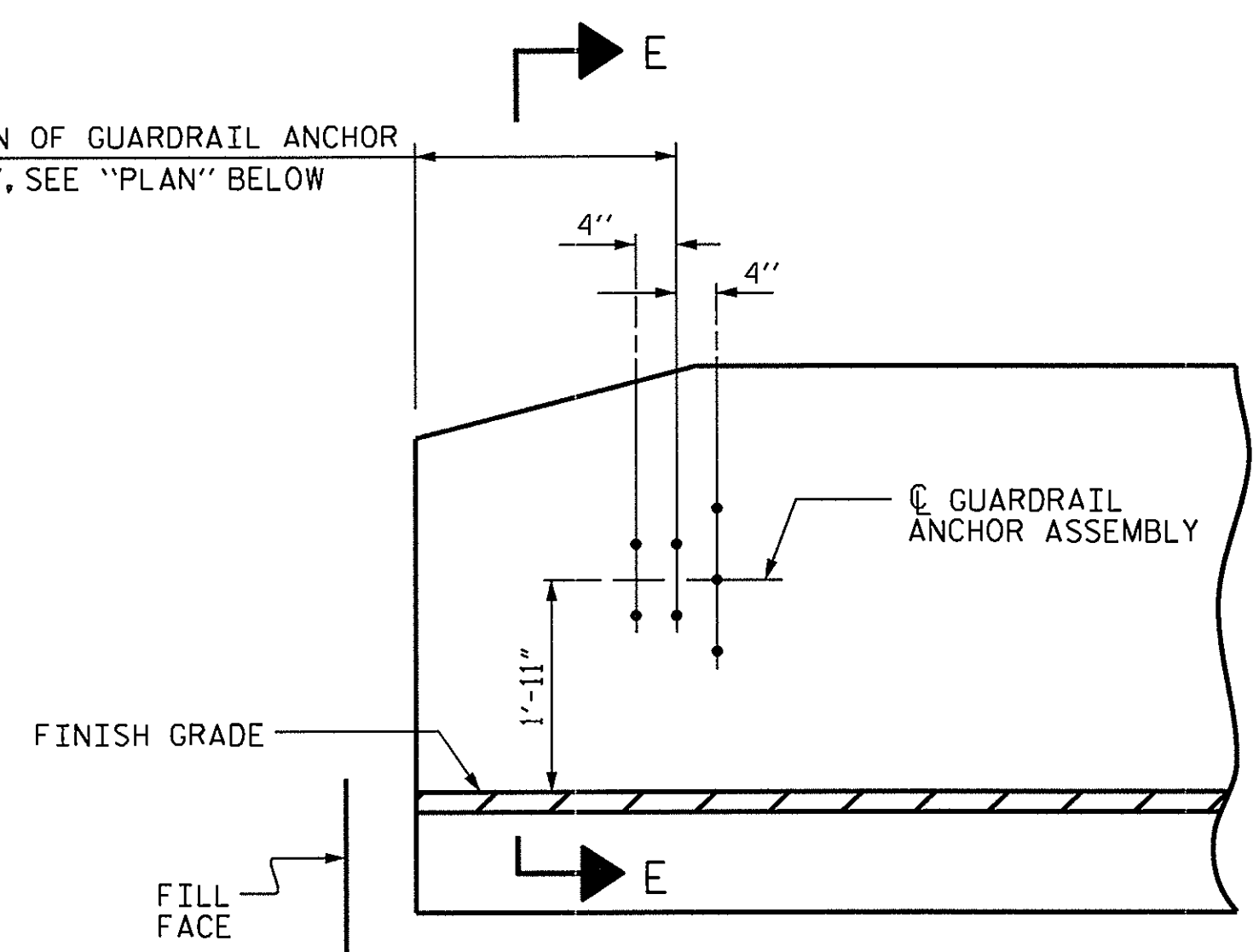


ASSEMBLED BY : L. E. SUTTON DATE : 9/12/13
CHECKED BY : B. N. GRADY DATE : 9/16/13
DRAWN BY : DGE 10/11
CHECKED BY : TMC 11/11

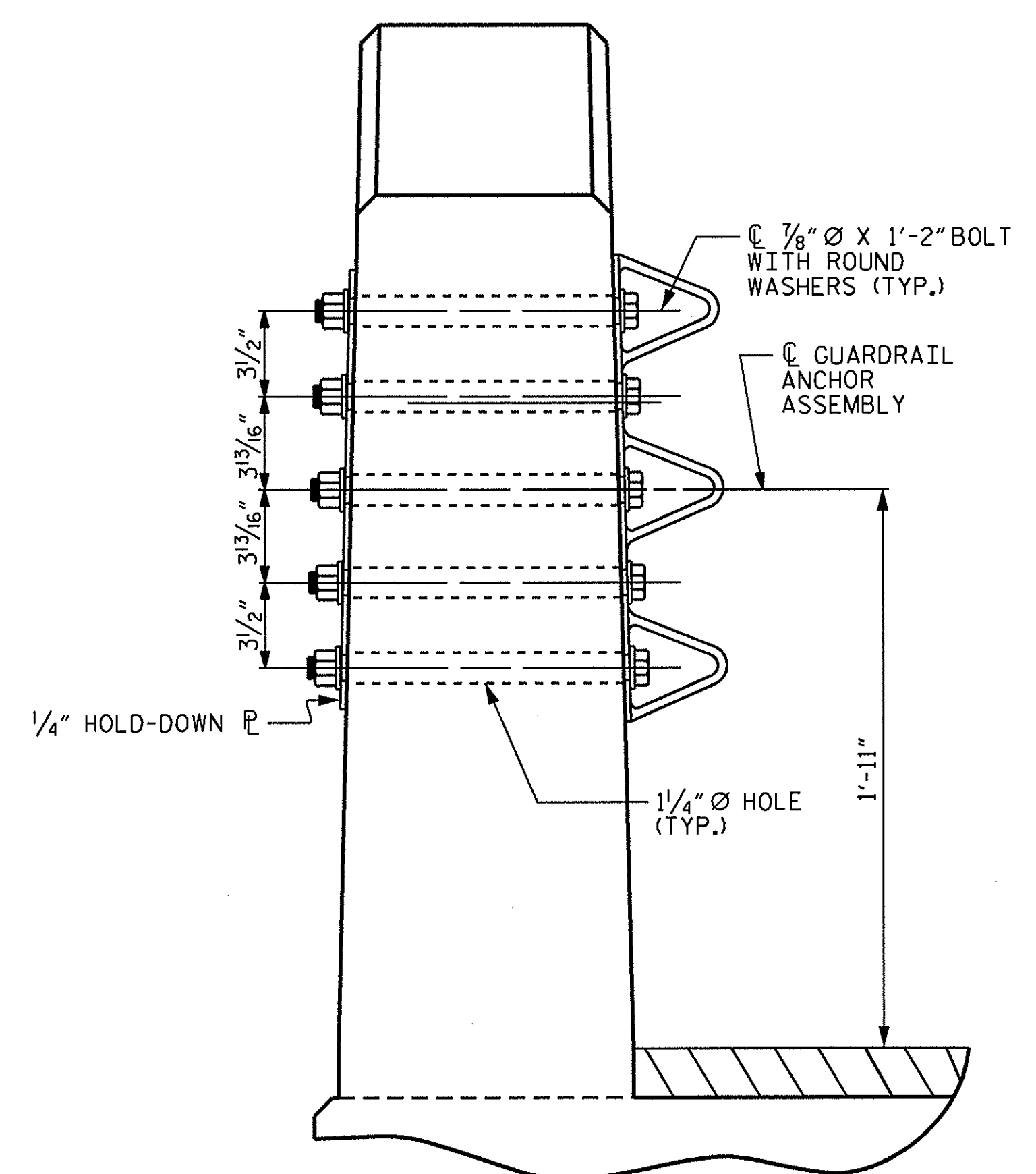


PLAN

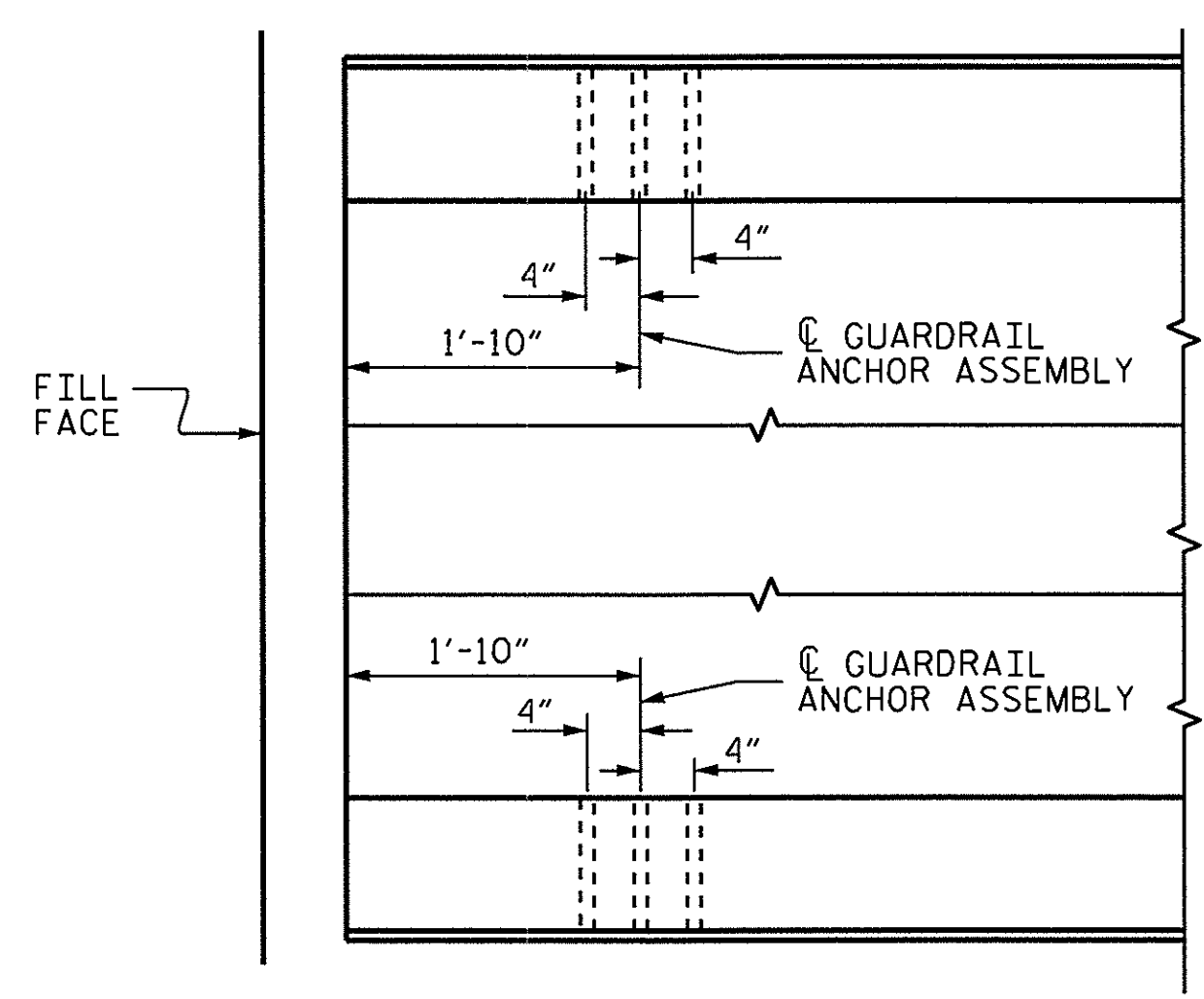
FOR LOCATION OF GUARDRAIL ANCHOR ASSEMBLY, SEE "PLAN" BELOW



ELEVATION



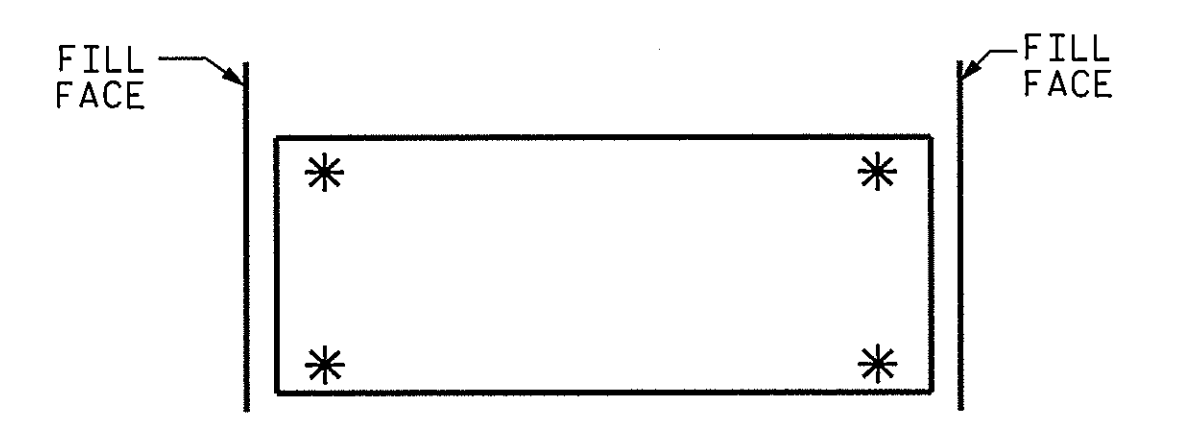
SECTION E-E
GUARDRAIL ANCHOR ASSEMBLY DETAILS



PLAN

LOCATION OF ANCHORS FOR GUARDRAIL

END BENT 1 SHOWN, END BENT 2 SIMILAR.



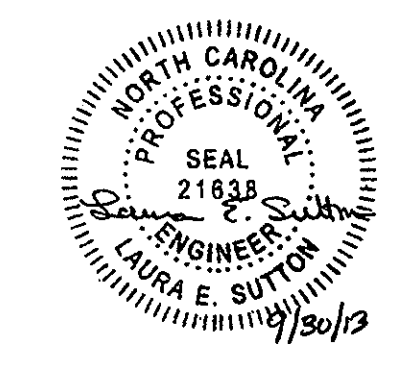
SKETCH SHOWING POINTS OF ATTACHMENT

* DENOTES GUARDRAIL ANCHOR ASSEMBLY

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 1/4" 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.

PROJECT NO. 12B.205512
LINCOLN COUNTY
 STATION: 14+90.00 -L-



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

| | |
|-----------------------------|---------------------|
| ASSEMBLED BY : L. E. SUTTON | DATE : 9/12/13 |
| CHECKED BY : B. N. GRADY | DATE : 9/16/13 |
| DRAWN BY : MAA 5/10 | REV. 10/1/11 MAA/GM |
| CHECKED BY : GM 5/10 | REV. 12/5/11 MAA/GM |
| | REV. 6/13 MAA/GM |

| REVISIONS | | | | | | SHEET NO. |
|-----------|-----|-------|-----|-----|-------|--------------|
| NO. | BY: | DATE: | NO. | BY: | DATE: | S-9 |
| 1 | | | 3 | | | TOTAL SHEETS |
| 2 | | | 4 | | | 16 |

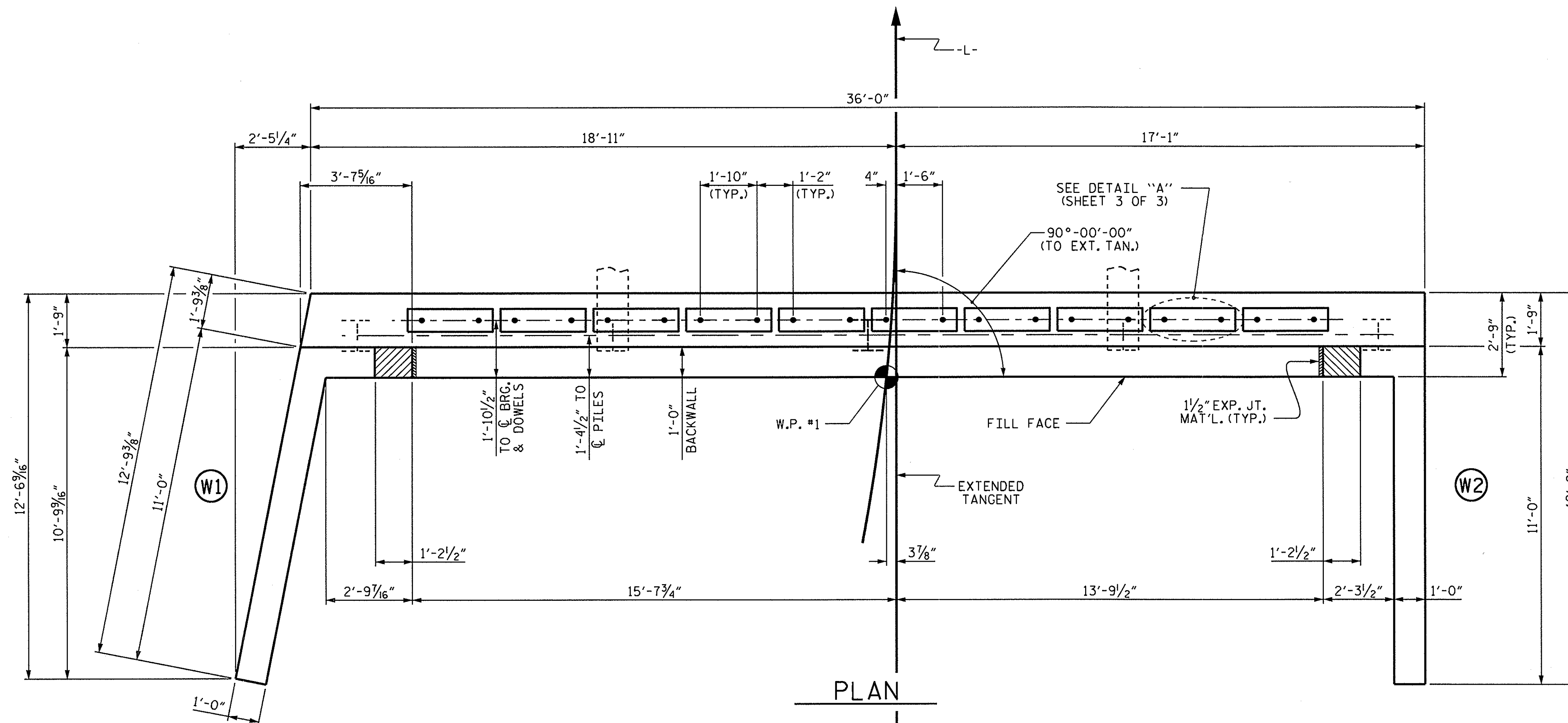
NOTES

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

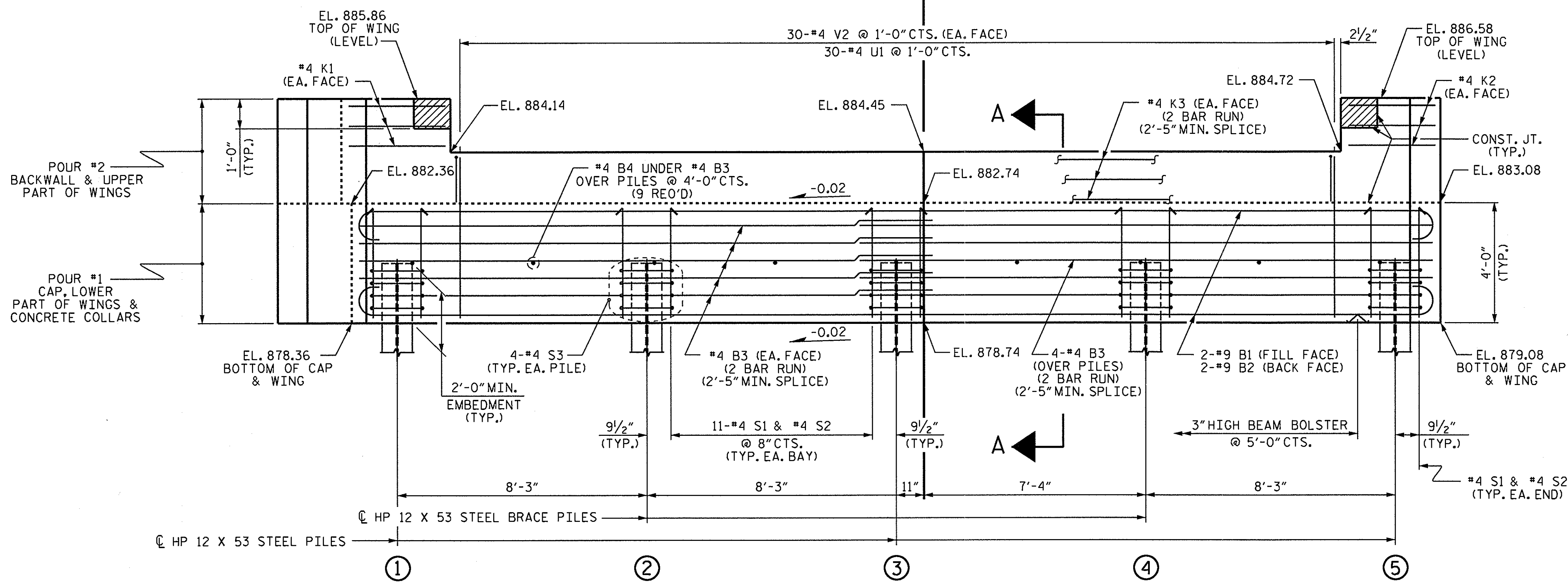
THE CONCRETE IN THE SHADED AREA OF THE WING SHALL BE POURED AFTER THE VERTICAL CONCRETE BARRIER RAIL IS CAST IF SLIP FORMING IS USED.

FOR PILE SPLICE DETAILS, SEE SHEET 3 OF 3.

FOR WING DETAILS, SEE SHEET 2 OF 3.



PLAN



ELEVATION

| TOP OF PILE ELEVATIONS | |
|------------------------|--------|
| ① | 880.40 |
| ② | 880.57 |
| ③ | 880.73 |
| ④ | 880.90 |
| ⑤ | 881.06 |

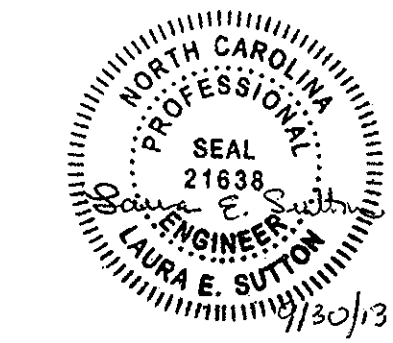
PROJECT NO. 12B.205512
LINCOLN COUNTY
 STATION: 14+90.00 -L-

SHEET 1 OF 3

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

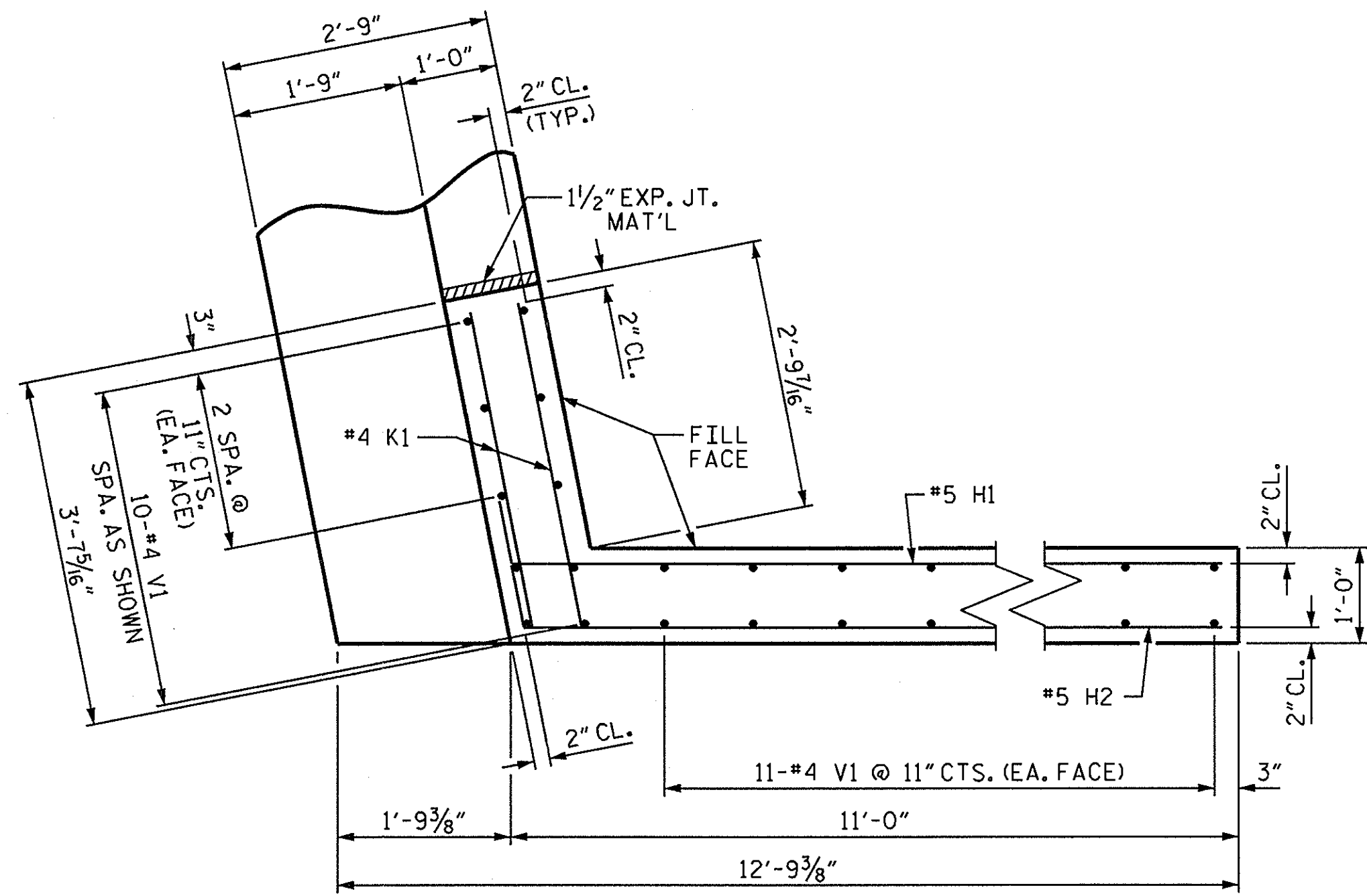
SUBSTRUCTURE
END BENT 1

| REVISIONS | | | | | | SHEET NO. |
|-----------|-----|-------|-----|-----|-------|--------------|
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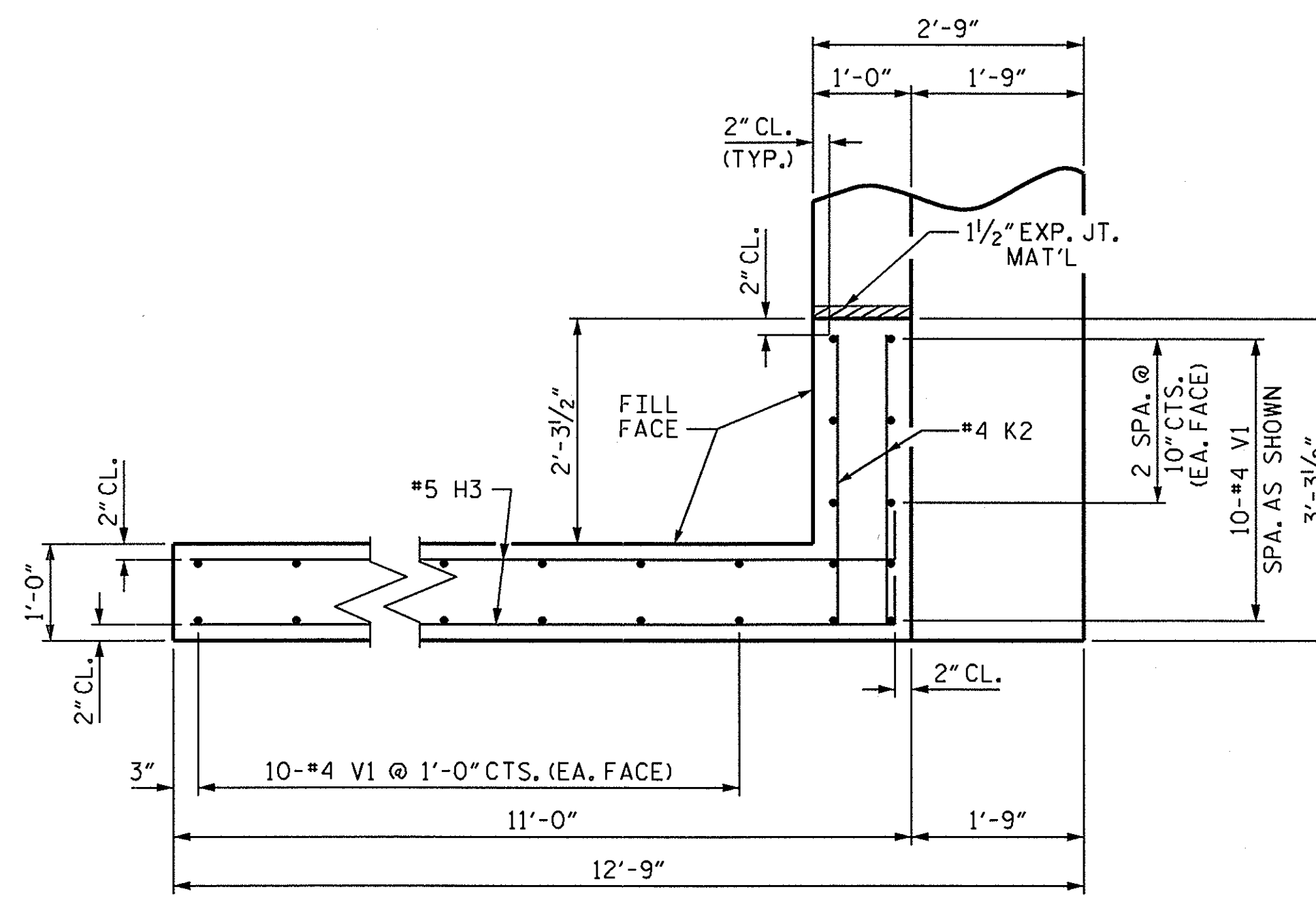


DRAWN BY : L. E. SUTTON DATE : 9/17/13 DESIGN ENGINEER OF RECORD:
 CHECKED BY : B. N. GRADY DATE : 9/17/13 B. N. GRADY DATE : 9/30/13

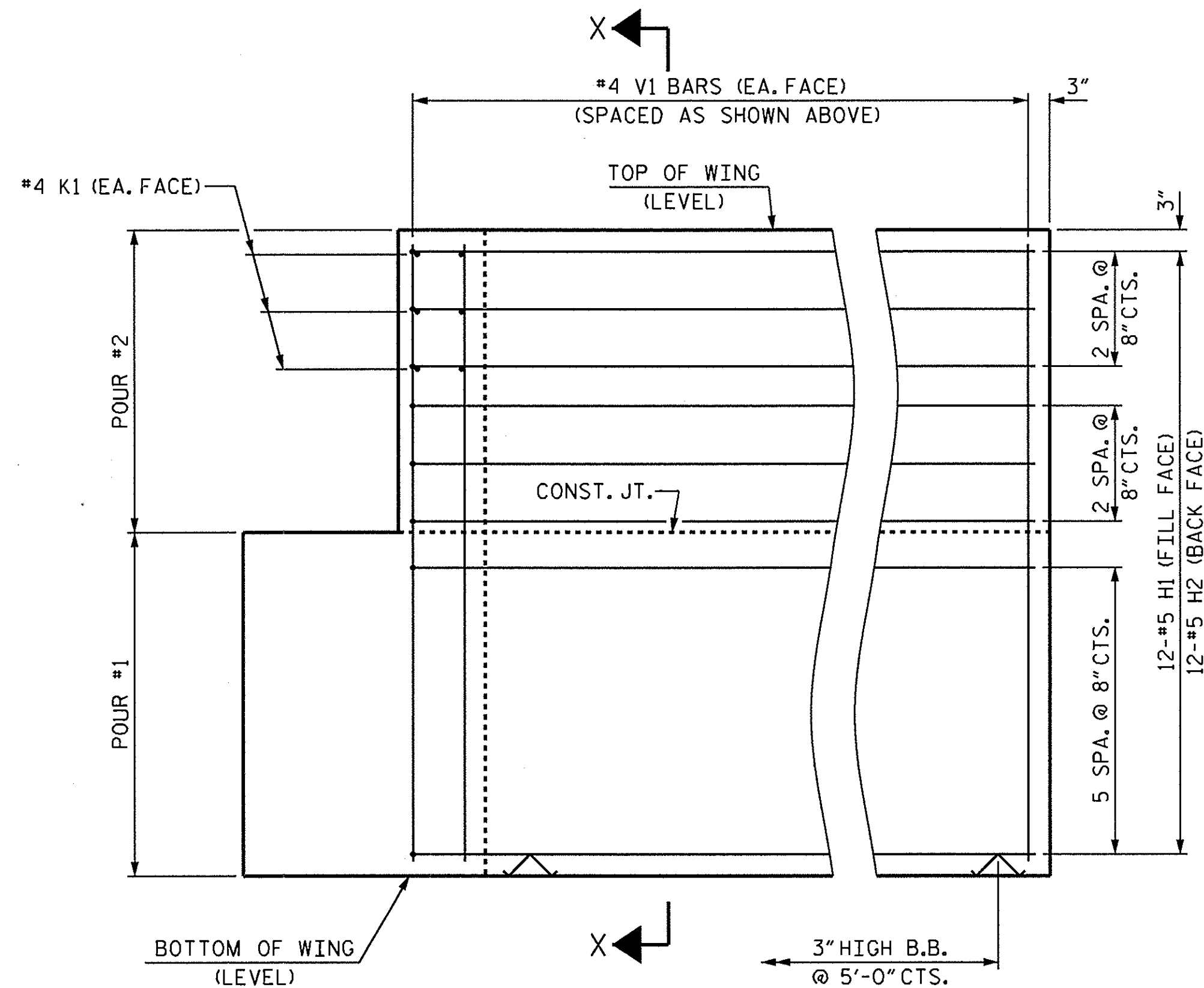
FOR SECTION A-A, SEE SHEET 3 OF 3.
 CONCRETE COLLARS FOR STEEL PILES NOT SHOWN IN PLAN AND ELEVATION VIEWS FOR CLARITY.
 SEE "CORROSION PROTECTION FOR STEEL PILES DETAIL", SHEET 3 OF 3.



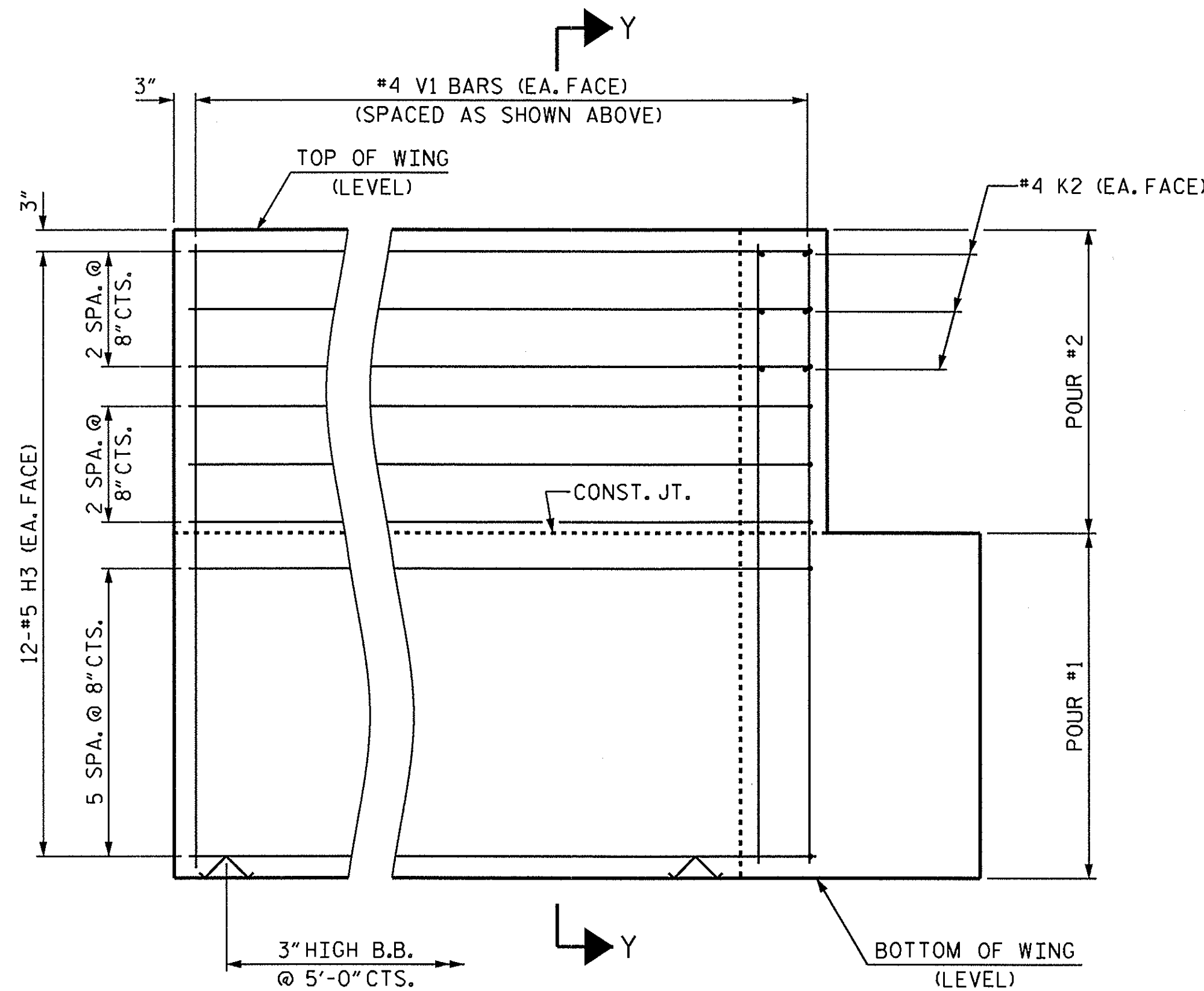
PLAN OF WING (W1)



PLAN OF WING (W2)

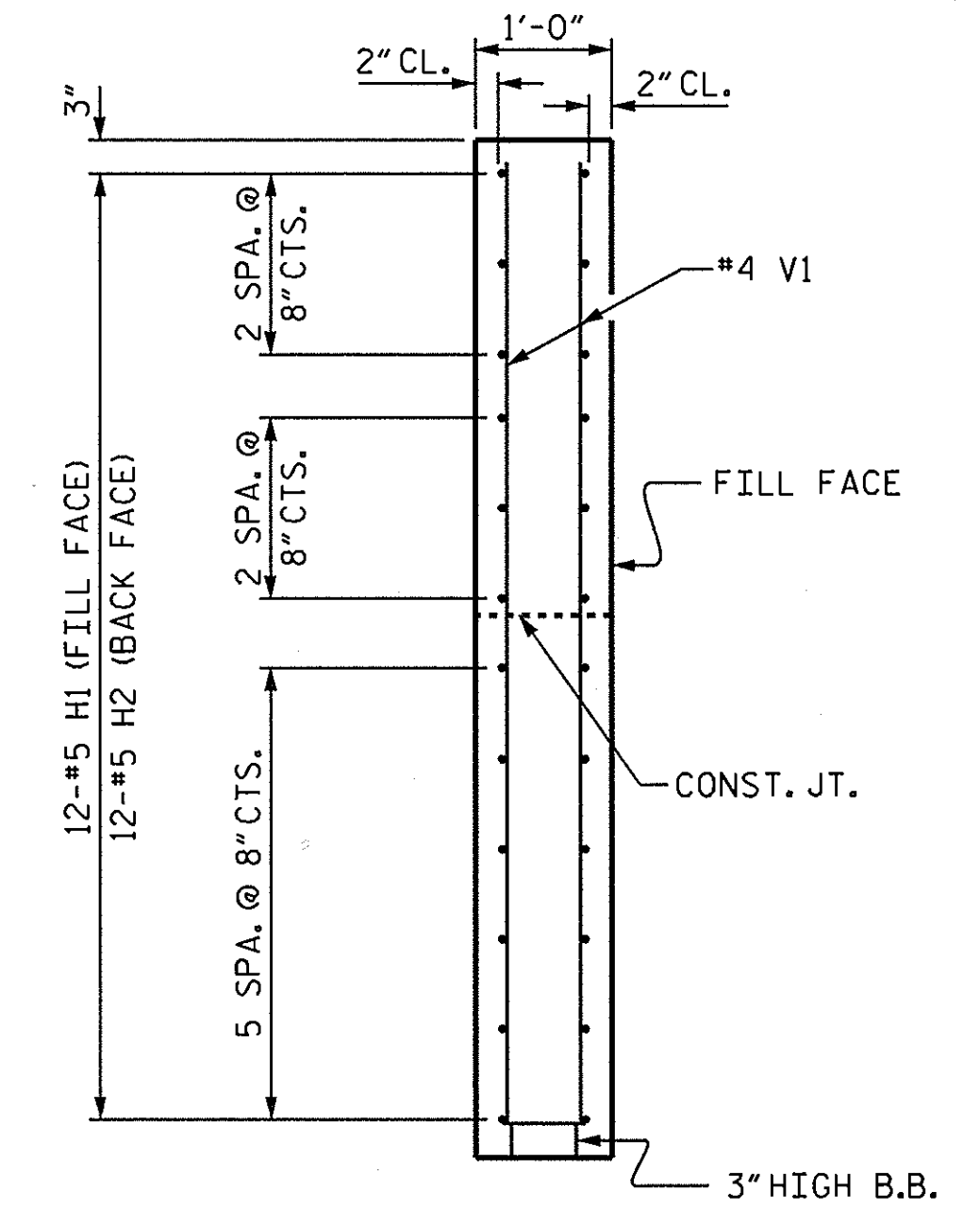


ELEVATION OF WING (W1)

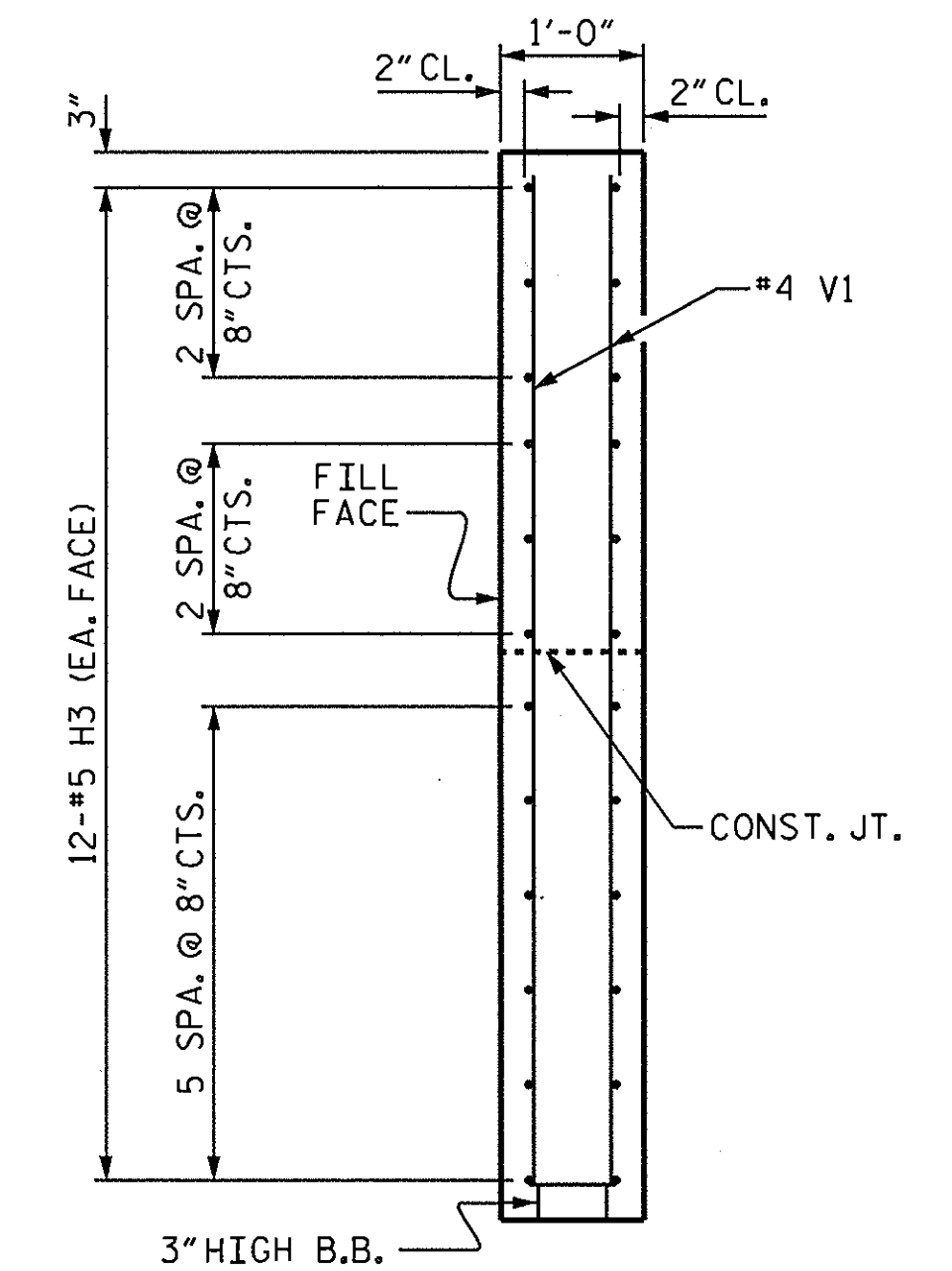


ELEVATION OF WING (W2)

WING DETAILS



SECTION X-X



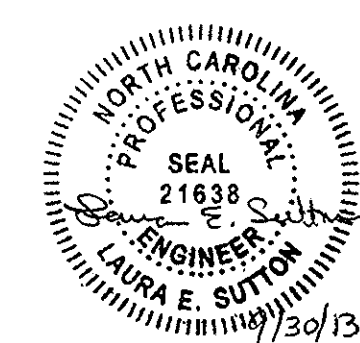
SECTION Y-Y

PROJECT NO. 12B.205512
 LINCOLN COUNTY
 STATION: 14+90.00 -L-

SHEET 2 OF 3

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

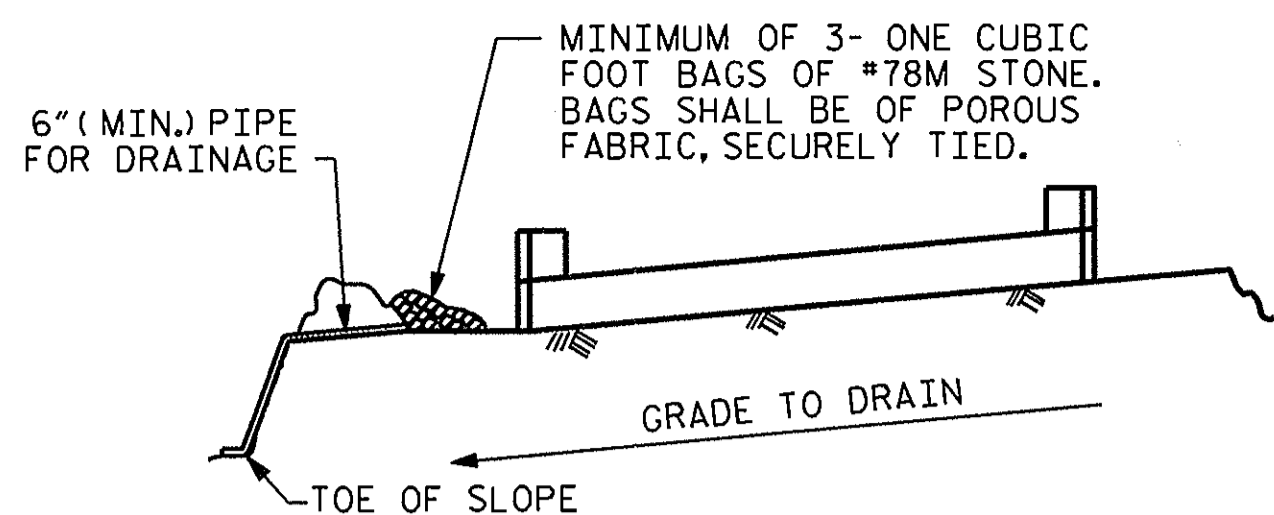
SUBSTRUCTURE
 END BENT 1
 WING DETAILS



DRAWN BY: L. E. SUTTON DATE: 9/17/13
 CHECKED BY: B. N. GRADY DATE: 9/17/13
 DESIGN ENGINEER OF RECORD: B. N. GRADY DATE: 9/30/13

30-SEP-2013 10:03
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 ISUTTON

| REVISIONS | | | | | | SHEET NO. | |
|-----------|-----|-------|-----|-----|-------|--------------|----|
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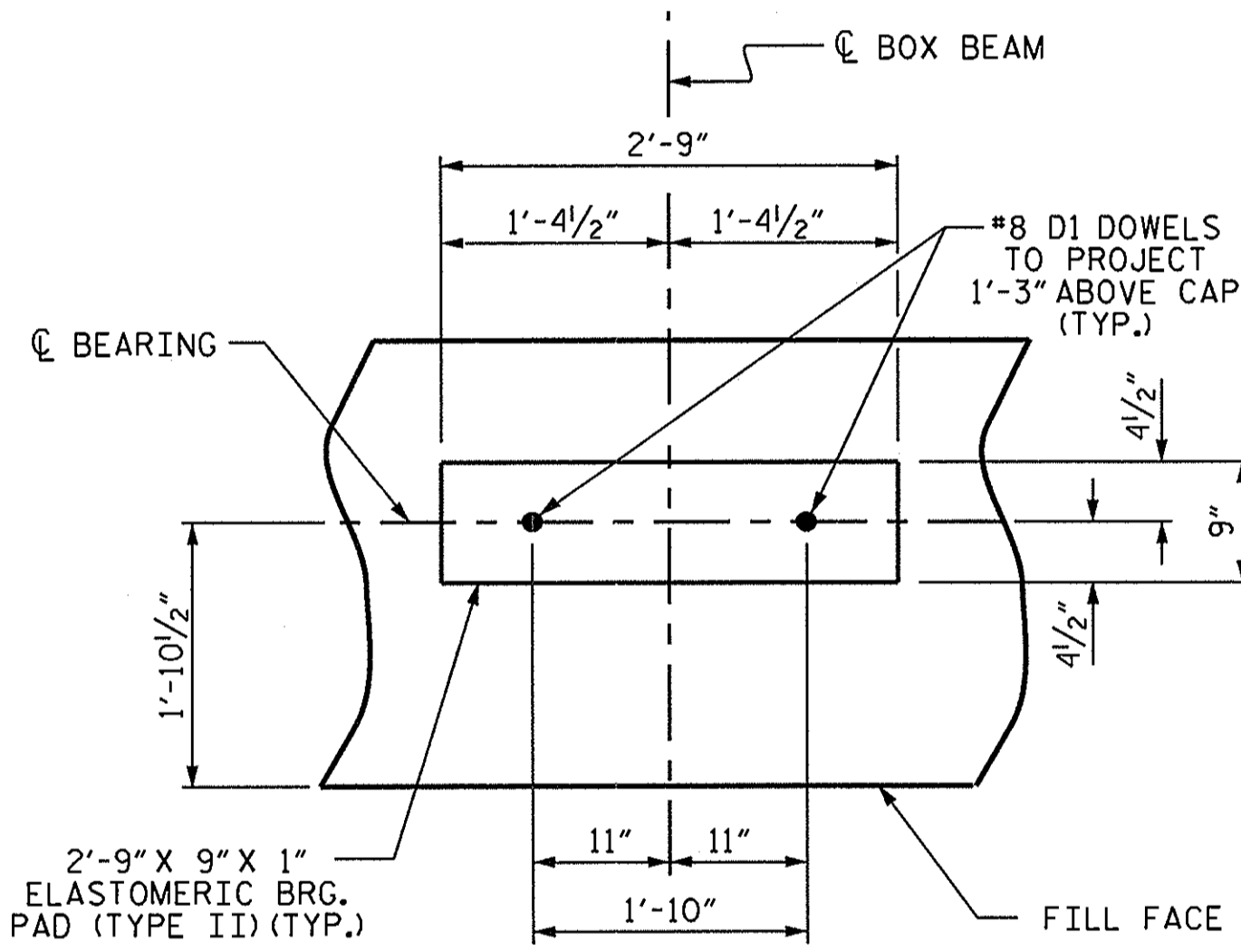


BAGGED STONE AND PIPE SHALL BE PLACED IMMEDIATELY AFTER COMPLETION OF END BENT EXCAVATION. PIPE MAY BE EITHER CONCRETE, CORRUGATED STEEL, CORRUGATED ALUMINUM ALLOY, OR CORRUGATED PLASTIC. PERFORATED PIPE WILL NOT BE ALLOWED.

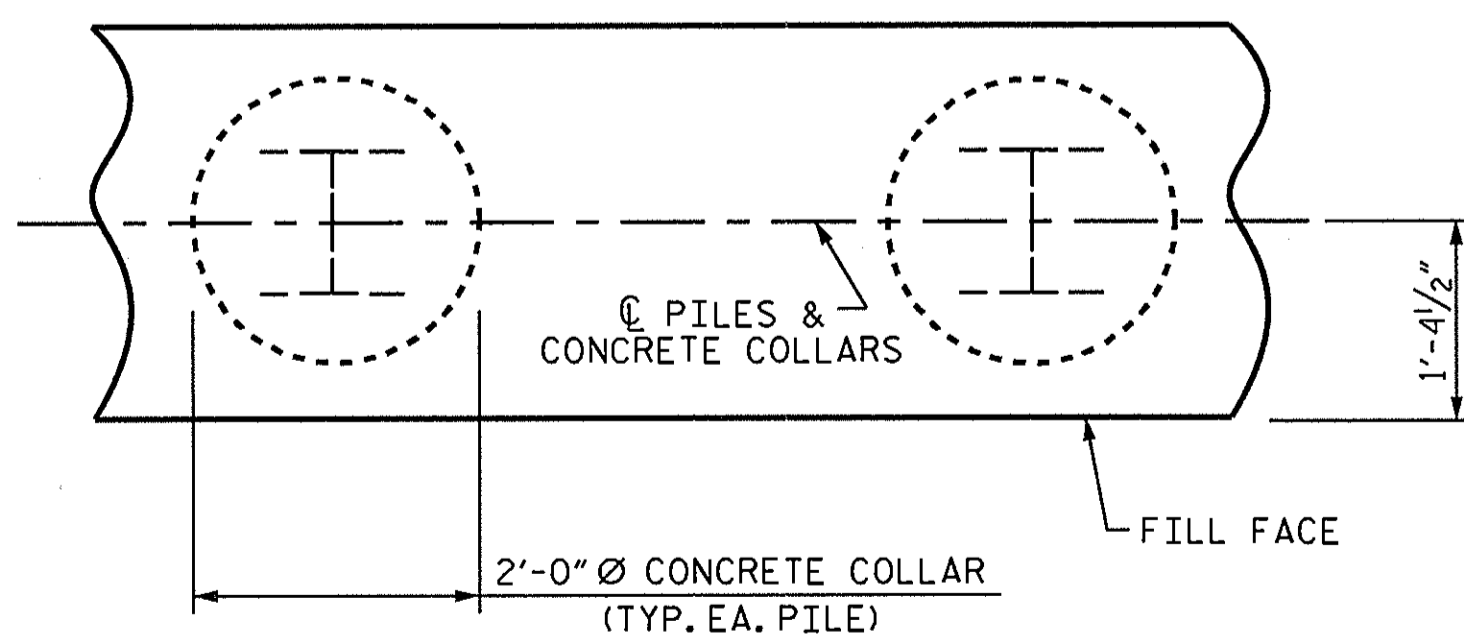
BAGGED STONE SHALL REMAIN IN PLACE UNTIL THE ENGINEER DIRECTS THAT IT BE REMOVED. THE CONTRACTOR SHALL REMOVE AND DISPOSE OF SILT ACCUMULATIONS AT BAGGED STONE WHEN SO DIRECTED BY THE ENGINEER. BAGS SHALL BE REMOVED AND REPLACED WHENEVER THE ENGINEER DETERMINES THAT THEY HAVE DETERIORATED AND LOST THEIR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

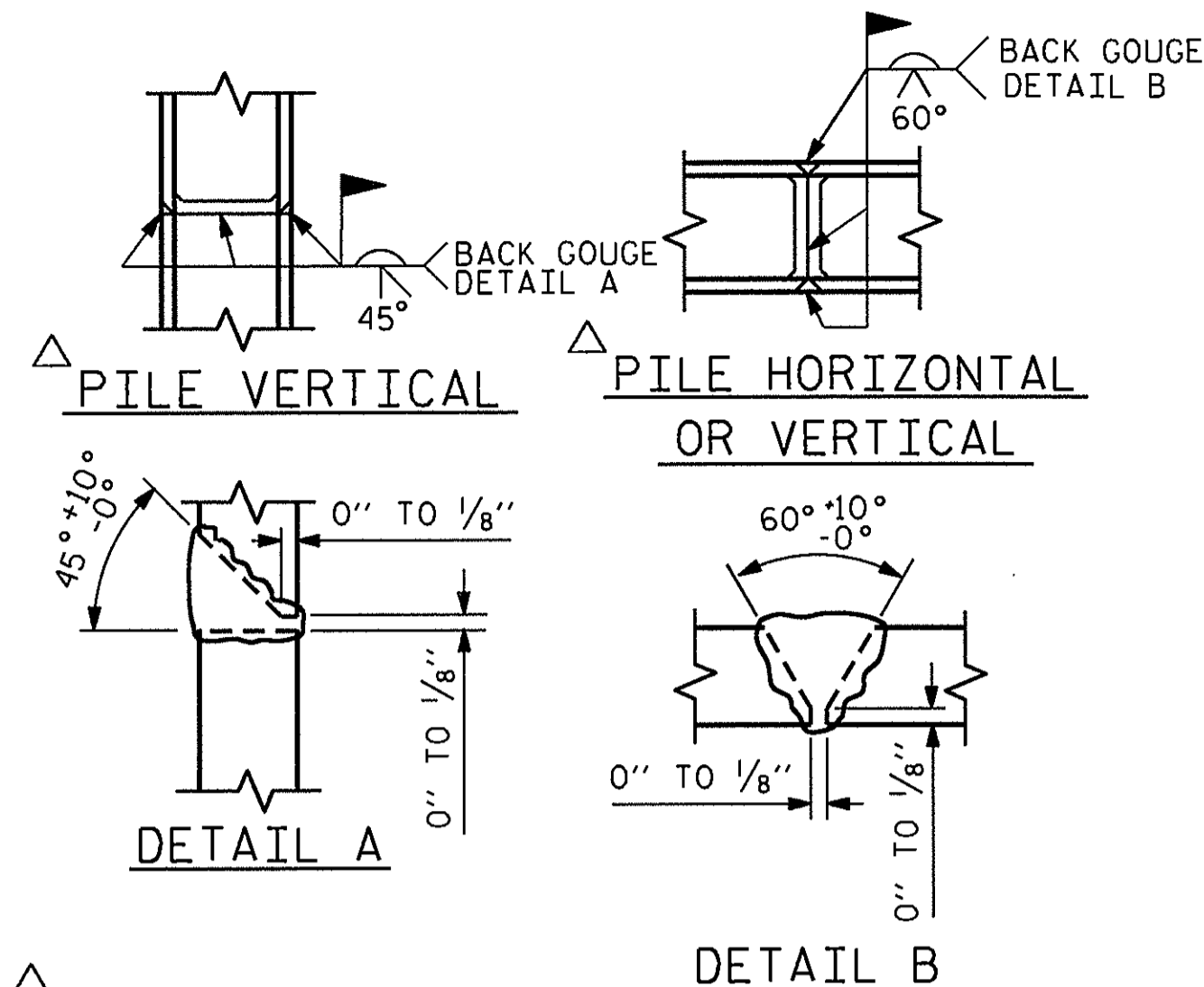
TEMPORARY DRAINAGE AT END BENT



DETAIL "A"



PLAN

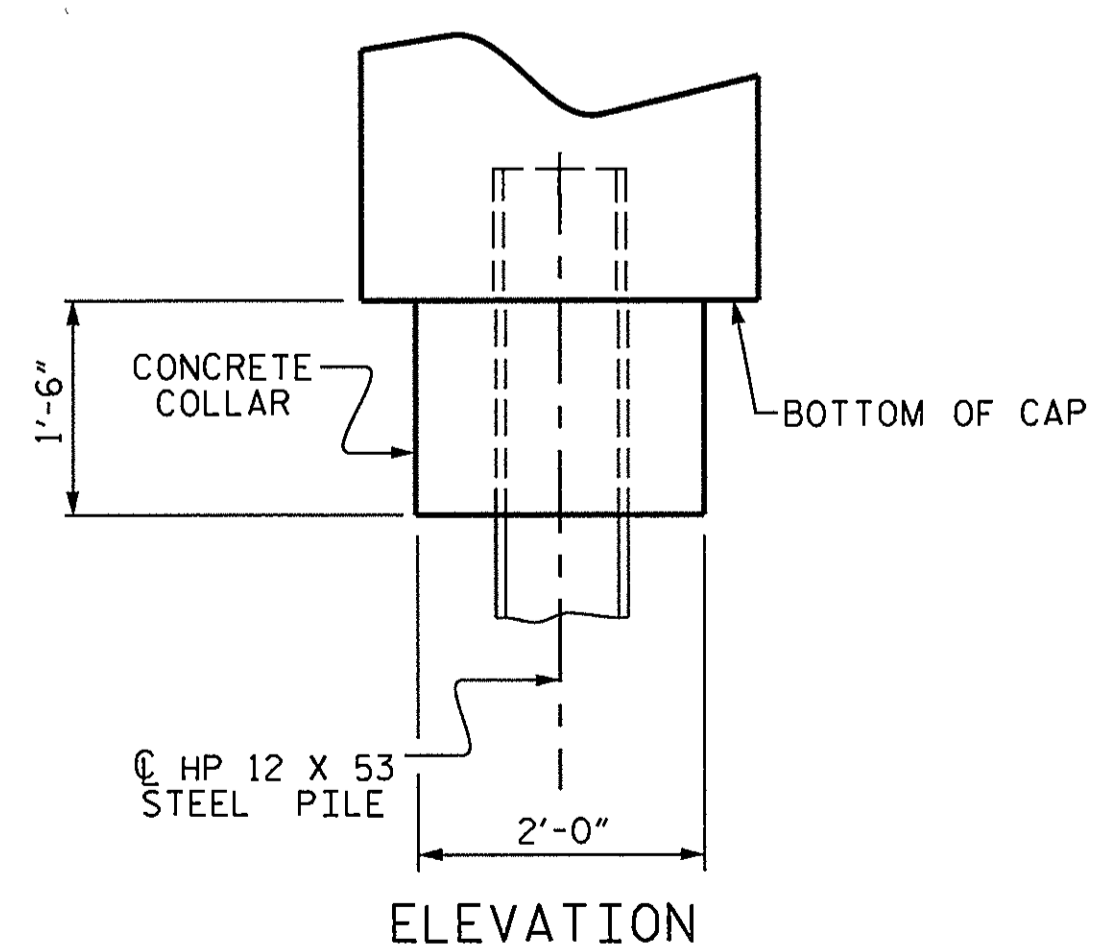


POSITION OF PILE DURING WELDING.

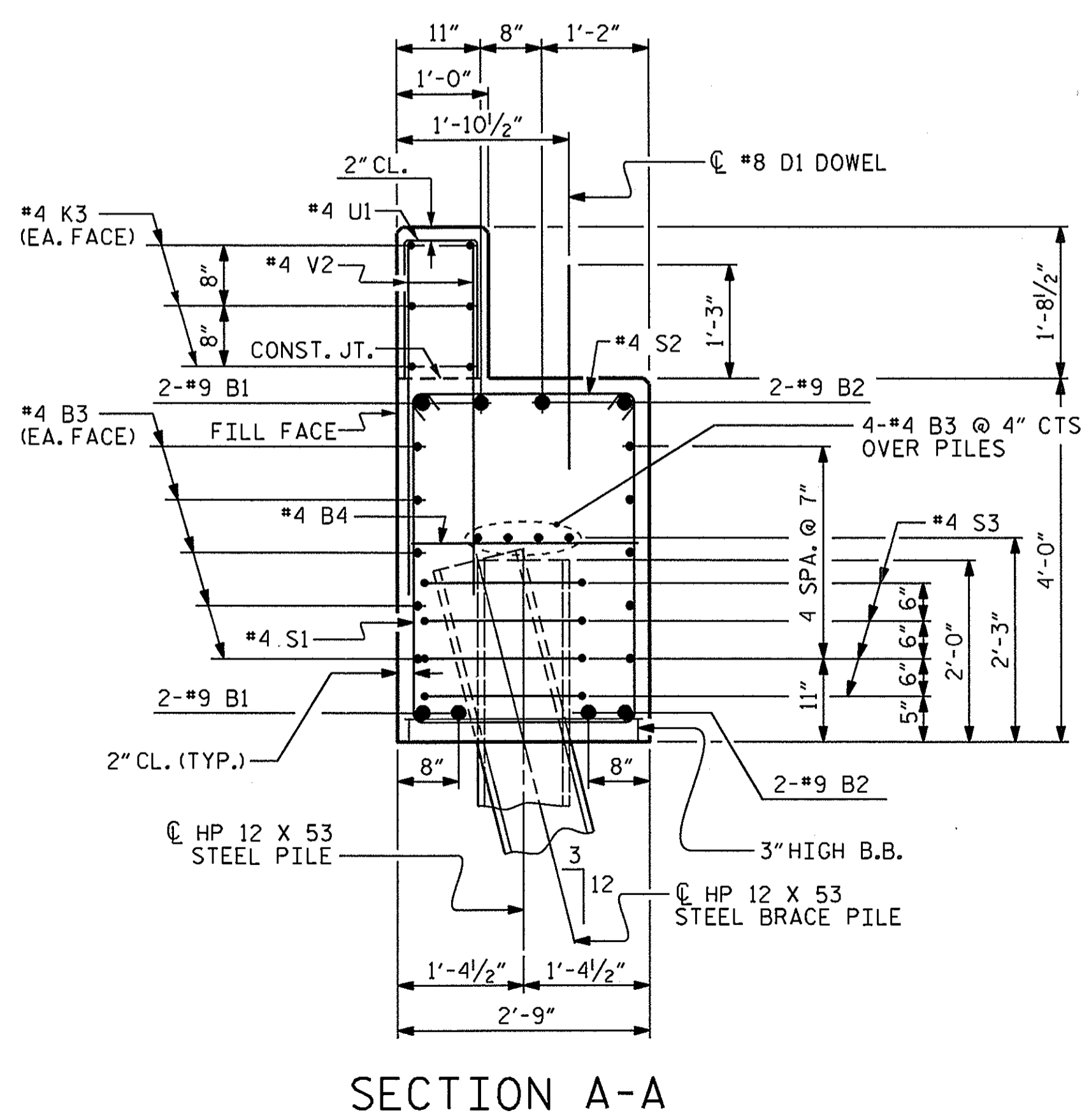
PILE SPLICE DETAILS

| BAR TYPES | | | | | BILL OF MATERIAL | | | | |
|--|-----|------|------|--------|------------------|-------|--|--|--|
| | | | | | END BENT 1 | | | | |
| BAR | NO. | SIZE | TYPE | LENGTH | WEIGHT | | | | |
| B1 | 4 | #9 | 1 | 38'-4" | 521 | | | | |
| B2 | 4 | #9 | 1 | 38'-0" | 517 | | | | |
| B3 | 28 | #4 | STR | 19'-4" | 362 | | | | |
| B4 | 9 | #4 | STR | 2'-5" | 15 | | | | |
| D1 | 20 | #8 | STR | 2'-3" | 120 | | | | |
| H1 | 12 | #5 | 2 | 11'-7" | 145 | | | | |
| H2 | 12 | #5 | 2 | 11'-6" | 144 | | | | |
| H3 | 24 | #5 | 3 | 11'-6" | 288 | | | | |
| K1 | 6 | #4 | STR | 3'-4" | 13 | | | | |
| K2 | 6 | #4 | STR | 2'-11" | 12 | | | | |
| K3 | 12 | #4 | STR | 19'-4" | 155 | | | | |
| S1 | 46 | #4 | 4 | 10'-5" | 320 | | | | |
| S2 | 46 | #4 | 5 | 3'-2" | 97 | | | | |
| S3 | 20 | #4 | 6 | 6'-6" | 87 | | | | |
| U1 | 30 | #4 | 7 | 3'-8" | 73 | | | | |
| V1 | 62 | #4 | STR | 7'-2" | 297 | | | | |
| V2 | 60 | #4 | STR | 5'-4" | 214 | | | | |
| REINFORCING STEEL | | | | | LBS. | 3,380 | | | |
| CLASS A CONCRETE BREAKDOWN | | | | | | | | | |
| POUR #1 CAP, LOWER PART OF WINGS & COLLARS | | | | | C.Y. | 18.6 | | | |
| POUR #2 BACKWALL & UPPER PART OF WINGS | | | | | C.Y. | 5.4 | | | |
| TOTAL CLASS A CONCRETE | | | | | C.Y. | 24.0 | | | |
| HP 12 X 53 STEEL PILES NO. = 5 | | | | | LIN. FT. | 60 | | | |
| STEEL PILE POINTS | | | | | EA. | 5 | | | |

ALL BAR DIMENSIONS ARE OUT TO OUT.



ELEVATION



SECTION A-A

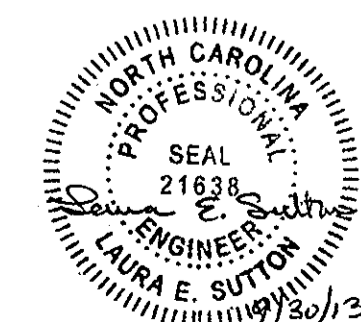
(CONCRETE COLLAR NOT SHOWN FOR CLARITY. SEE "CORROSION PROTECTION FOR STEEL PILES DETAIL.")

PROJECT NO. 12B.205512
 LINCOLN COUNTY
 STATION: 14+90.00 -L-

SHEET 3 OF 3

| STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION RALEIGH | | | | | |
|--|-----|-------|-----|-----|-----------------|
| SUBSTRUCTURE END BENT 1 DETAILS | | | | | |
| REVISIONS | | | | | SHEET NO. |
| NO. | BY: | DATE: | NO. | BY: | DATE: |
| 1 | | | 3 | | |
| 2 | | | 4 | | |
| | | | | | S-12 |
| | | | | | TOTAL SHEETS 16 |

DRAWN BY: L. E. SUTTON DATE: 9/27/13
 CHECKED BY: B. N. GRADY DATE: 9/30/13
 DESIGN ENGINEER OF RECORD: B. N. GRADY DATE: 9/30/13



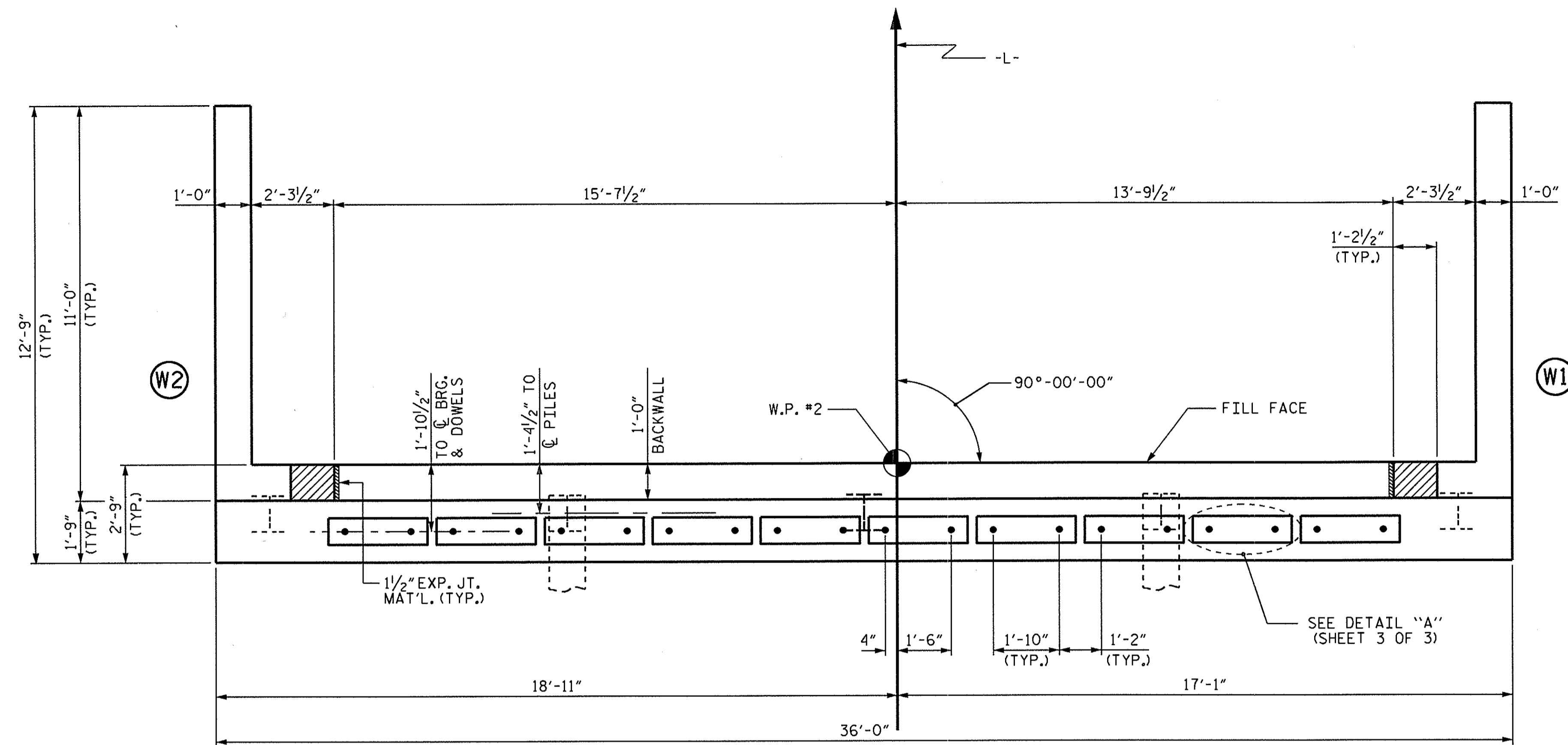
NOTES

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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.

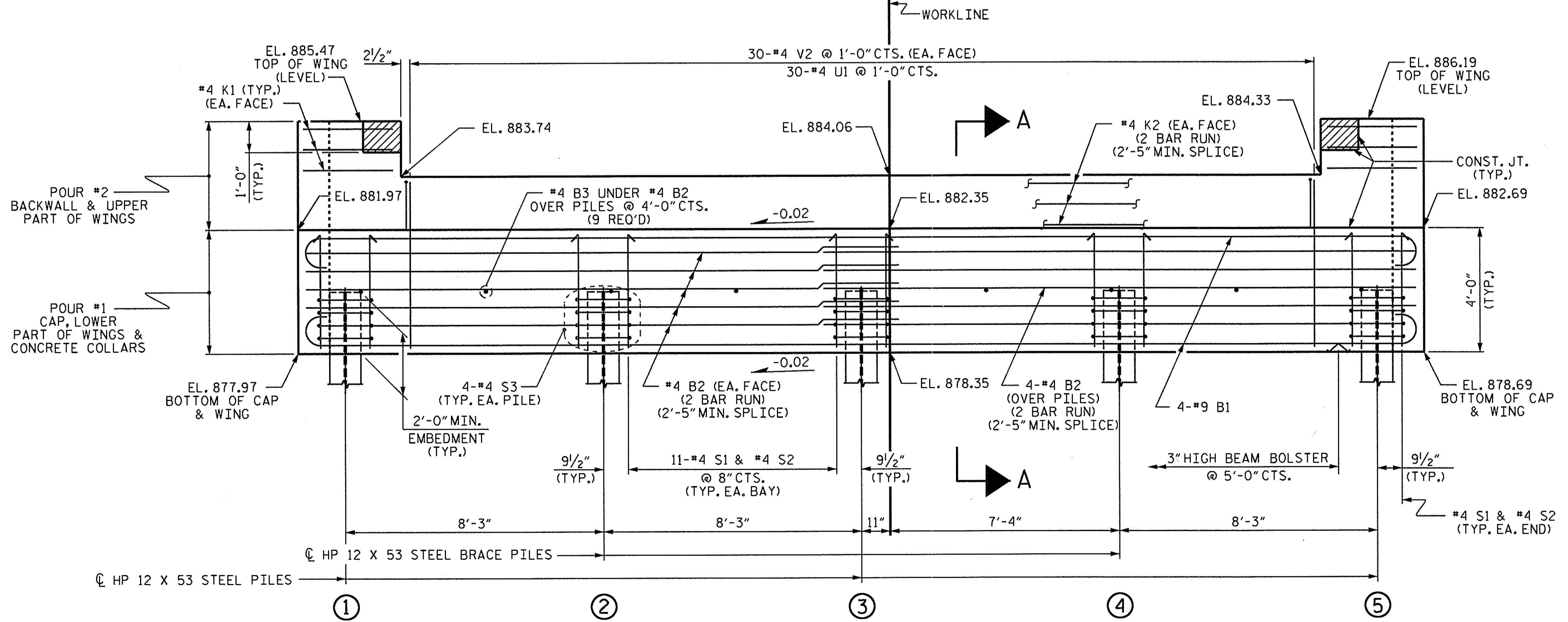
FOR PILE SPLICE DETAILS, SEE SHEET 3 OF 3.

FOR WING DETAILS, SEE SHEET 2 OF 3.



PLAN

| TOP OF PILE ELEVATIONS | |
|------------------------|--------|
| ① | 880.01 |
| ② | 880.18 |
| ③ | 880.34 |
| ④ | 880.51 |
| ⑤ | 880.67 |



ELEVATION

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

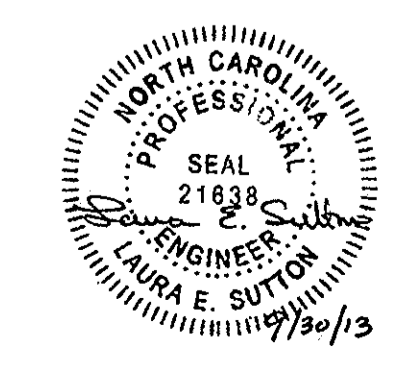
PROJECT NO. 12B.205512
LINCOLN COUNTY
 STATION: 14+90.00 -L-

SHEET 1 OF 3

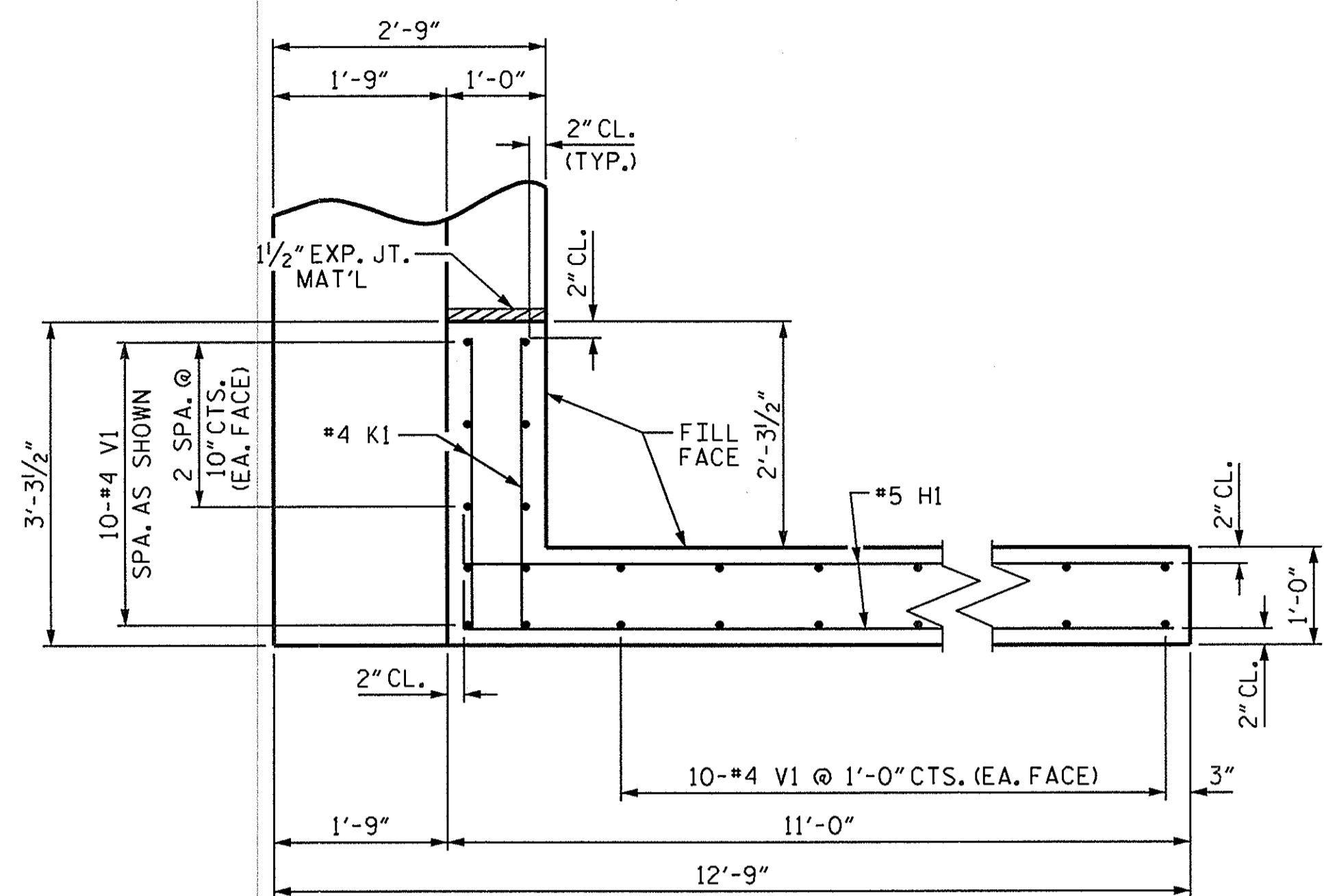
STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

SUBSTRUCTURE
END BENT 2

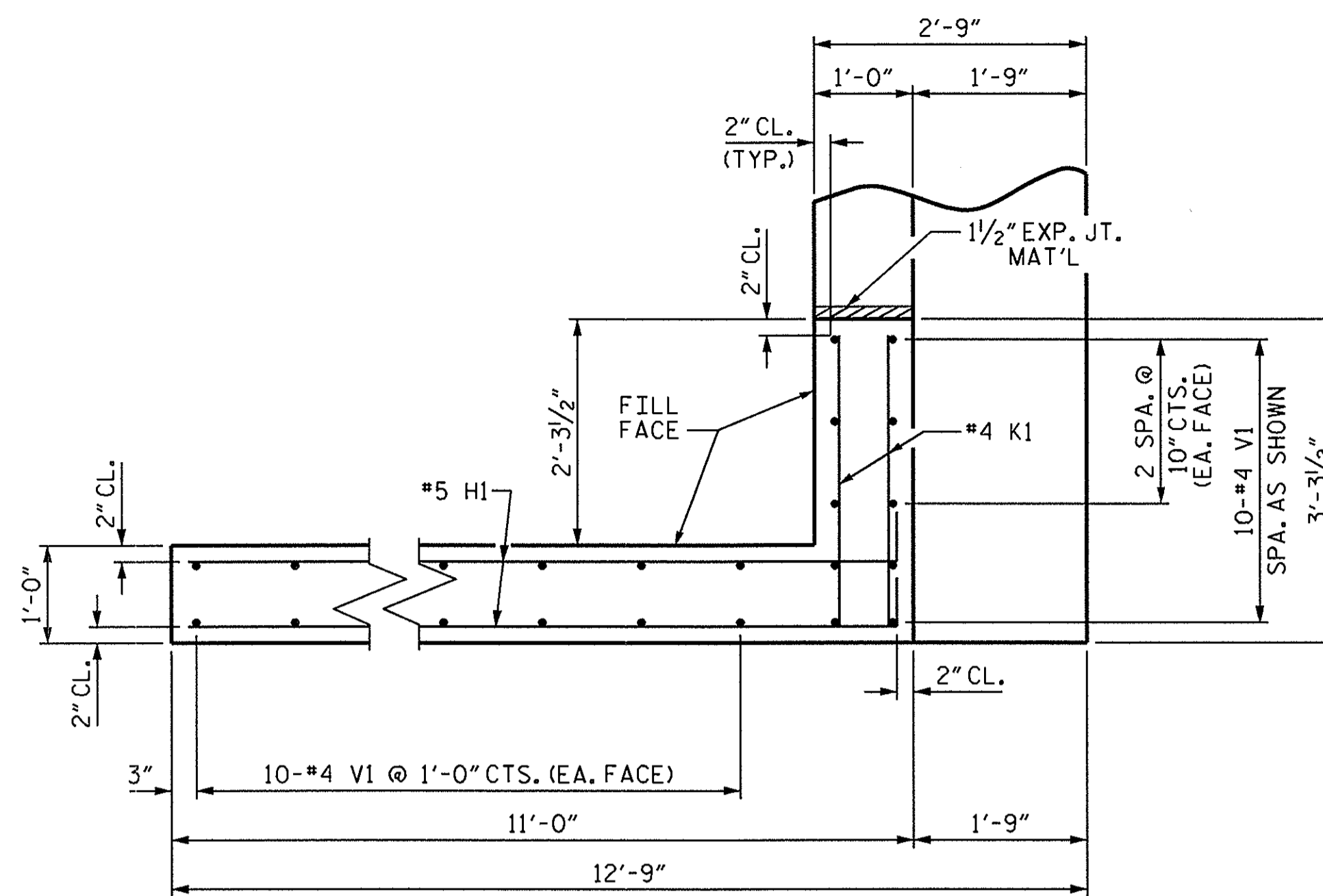
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| NO. | BY: | DATE: | NO. | BY: | DATE: | S-13 |
| 1 | | | 3 | | | TOTAL SHEETS 16 |
| 2 | | | 4 | | | |



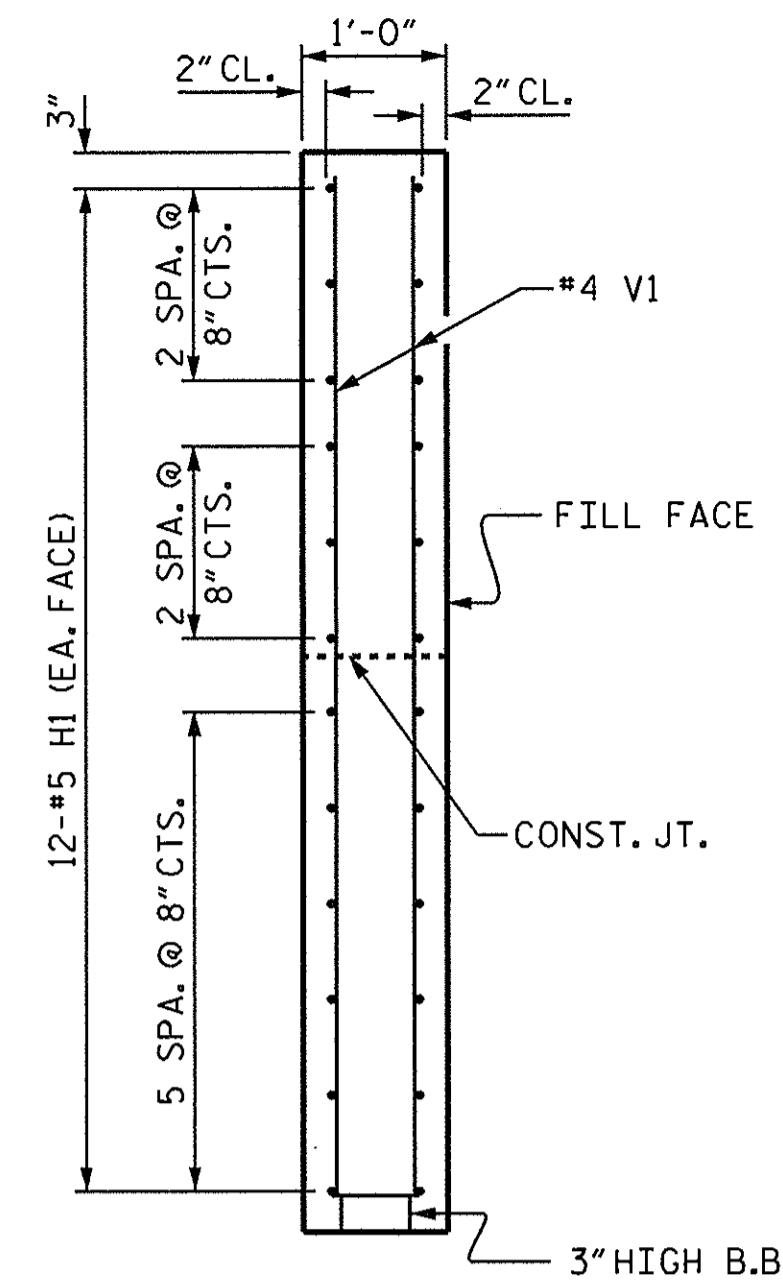
ASSEMBLED BY : L. E. SUTTON DATE : 9/16/13
 CHECKED BY : B. N. GRADY DATE : 9/16/13
 DRAWN BY : WJH 12/11
 CHECKED BY : AAC 12/11



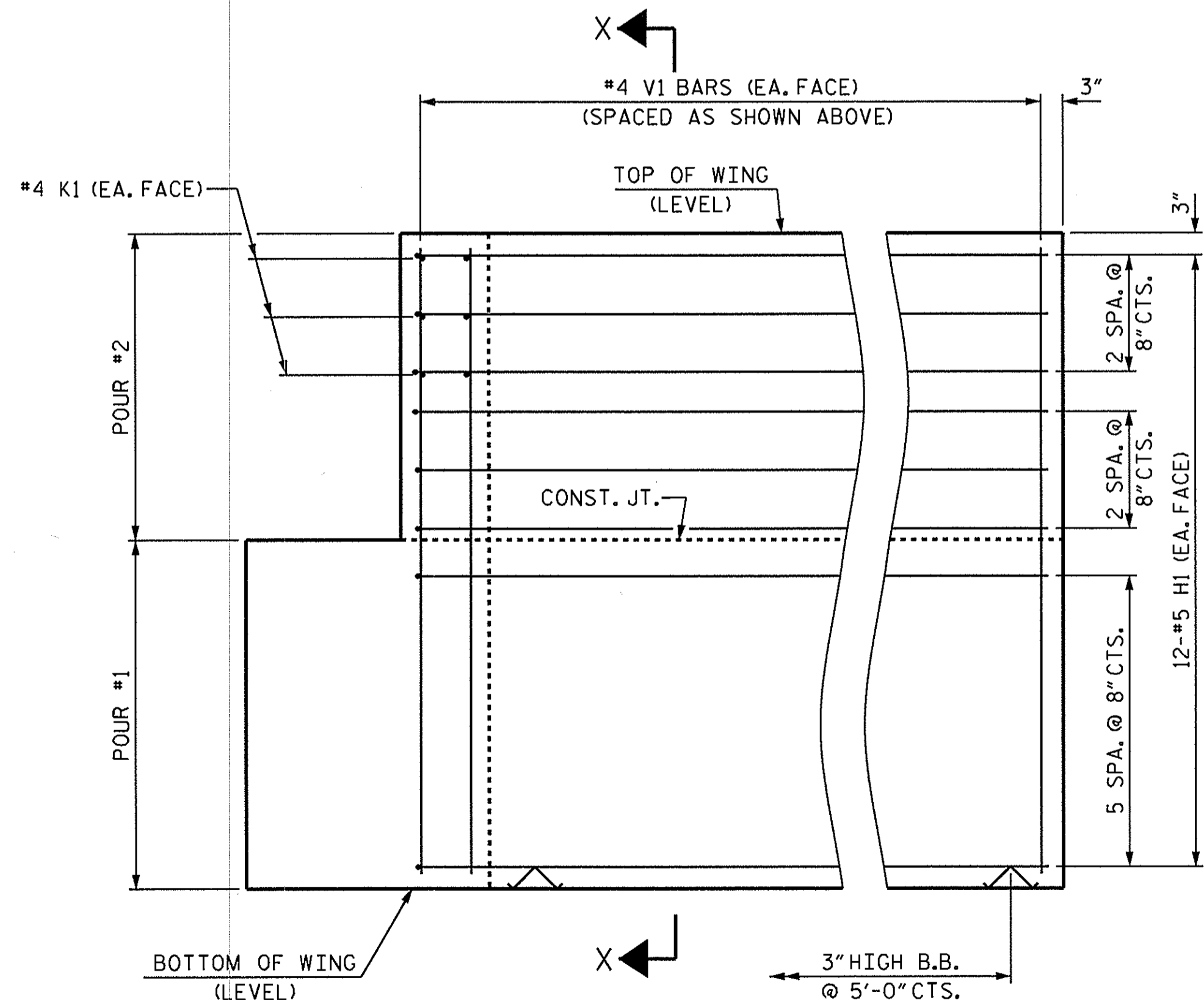
PLAN OF WING (W1)



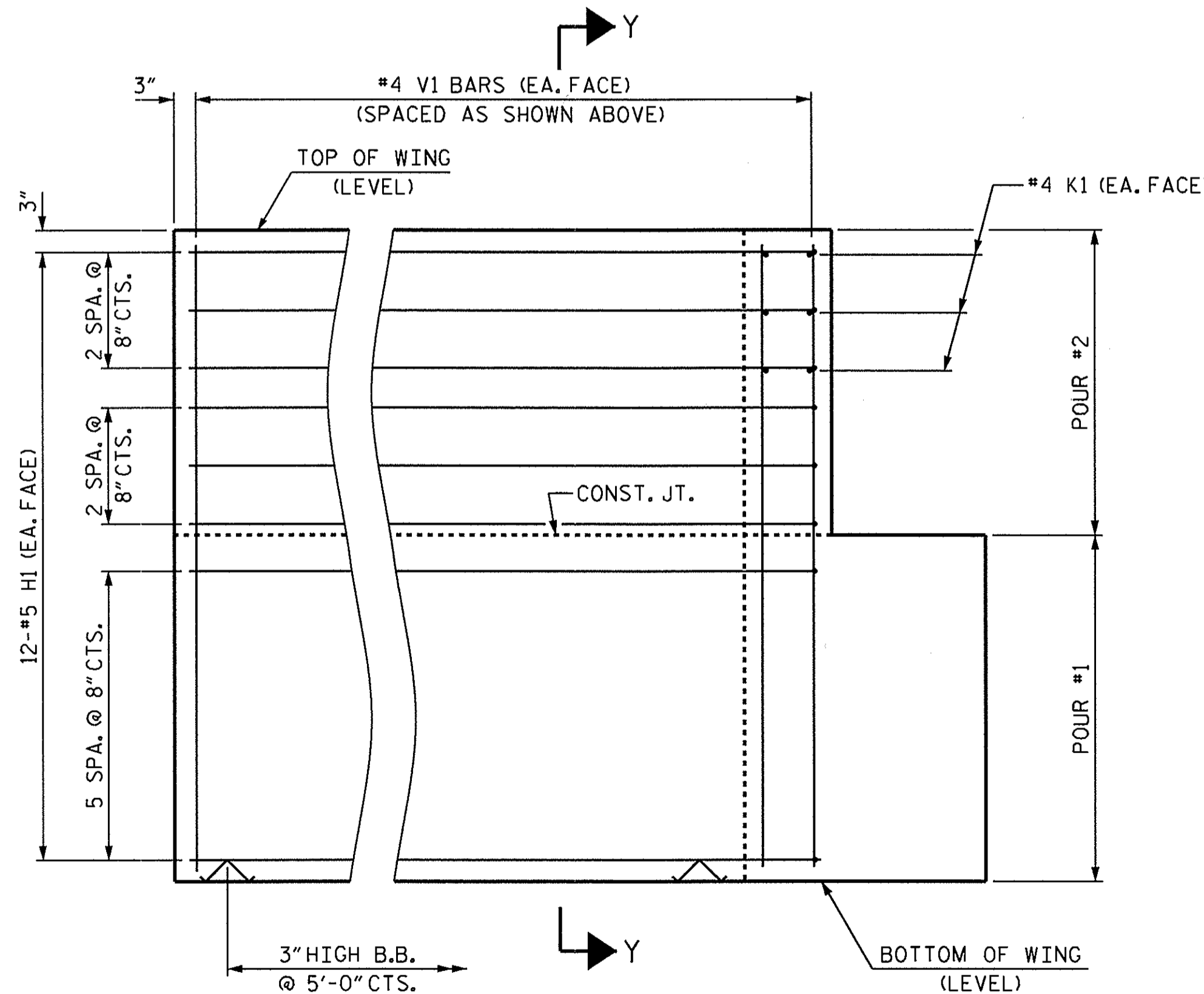
PLAN OF WING (W2)



SECTION X-X

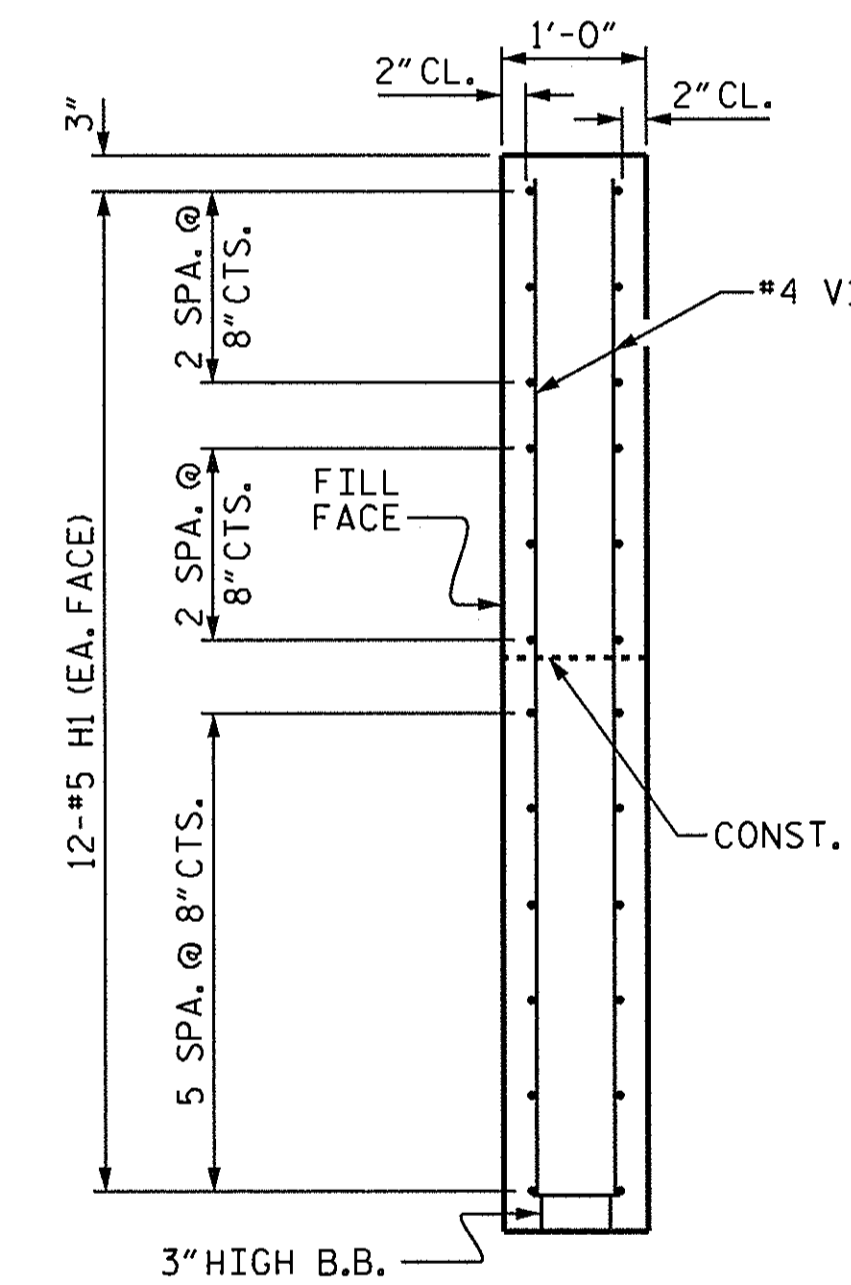


ELEVATION OF WING (W1)



ELEVATION OF WING (W2)

WING DETAILS



SECTION Y-Y

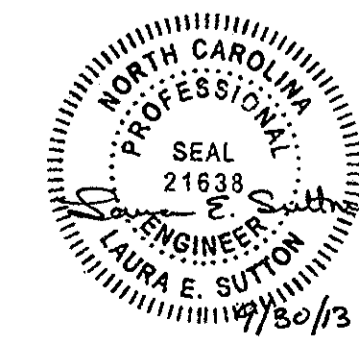
PROJECT NO. 12B.205512
 LINCOLN COUNTY
 STATION: 14+90.00 -L-

SHEET 2 OF 3

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

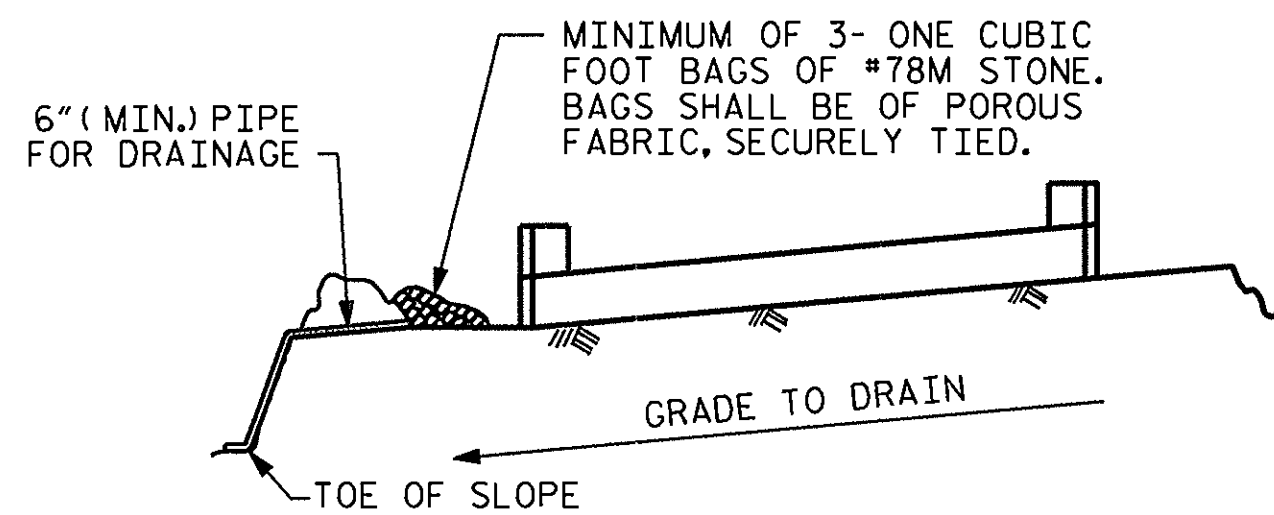
SUBSTRUCTURE
 END BENT 2
 WING DETAILS

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| 1 | | | 3 | | | TOTAL SHEETS 16 | |
| 2 | | | 4 | | | | |



ASSEMBLED BY : L. E. SUTTON DATE : 9/16/13
 CHECKED BY : B. N. GRADY DATE : 9/16/13
 DRAWN BY : WJH 12/11
 CHECKED BY : AAC 12/11

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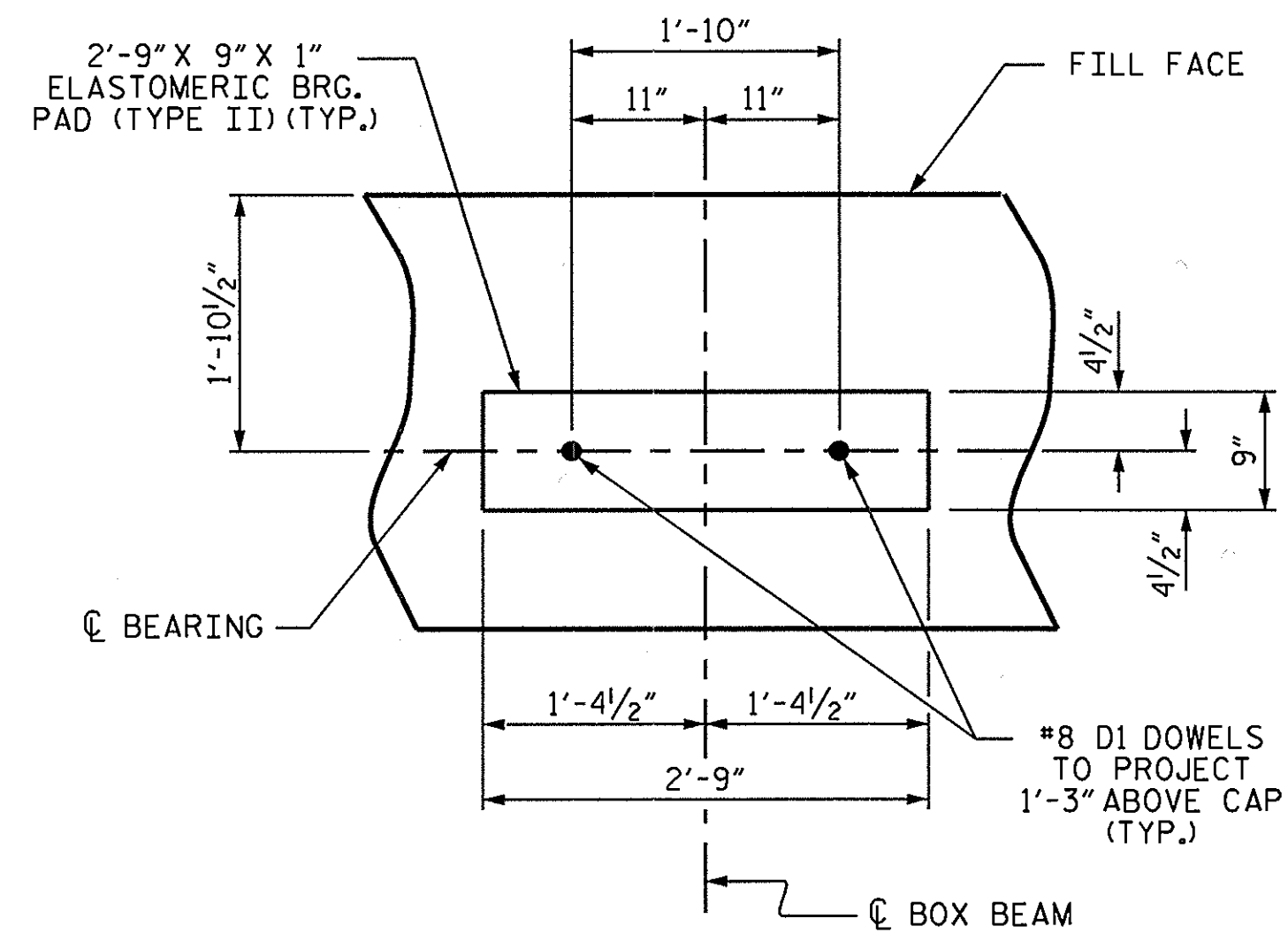


BAGGED STONE AND PIPE SHALL BE PLACED IMMEDIATELY AFTER COMPLETION OF END BENT EXCAVATION. PIPE MAY BE EITHER CONCRETE, CORRUGATED STEEL, CORRUGATED ALUMINUM ALLOY, OR CORRUGATED PLASTIC. PERFORATED PIPE WILL NOT BE ALLOWED.

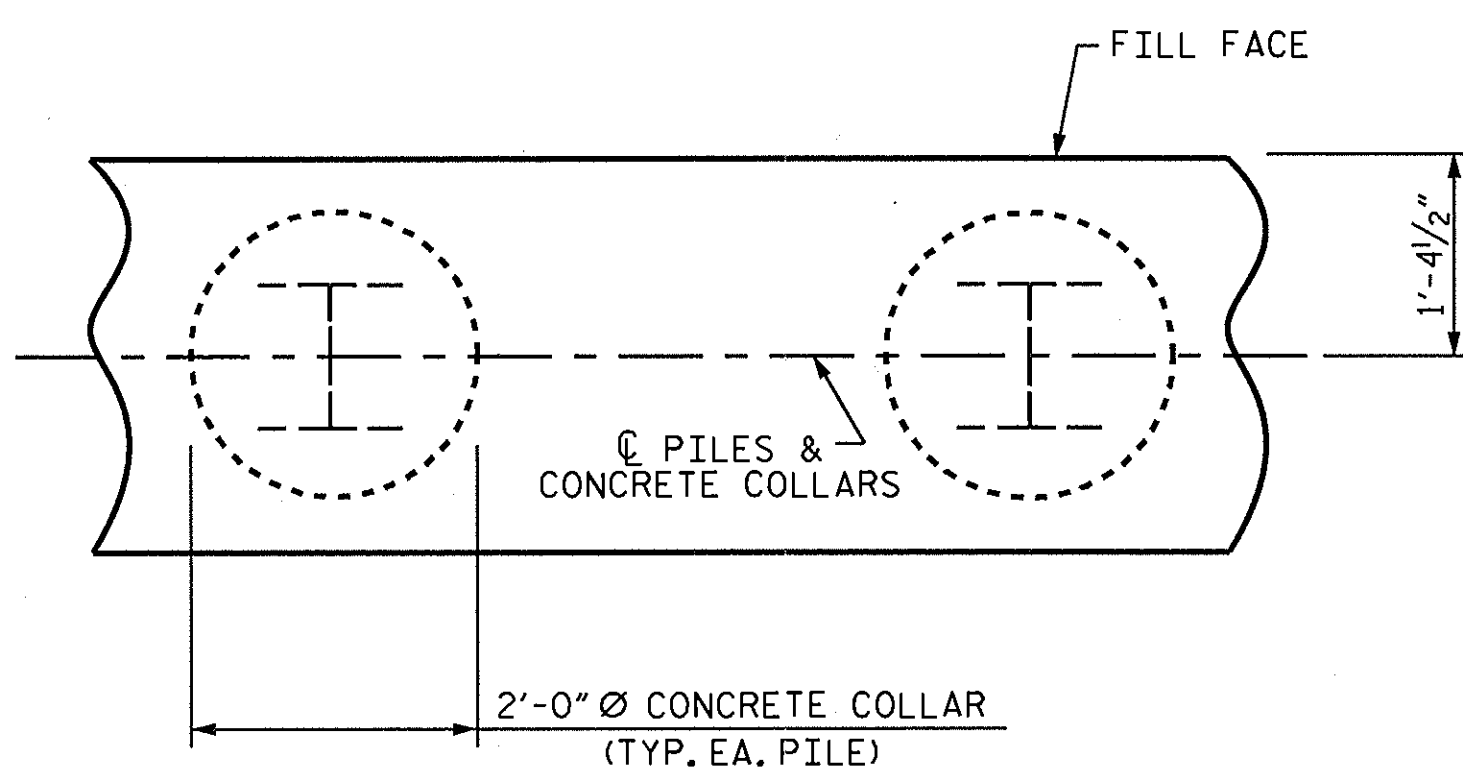
BAGGED STONE SHALL REMAIN IN PLACE UNTIL THE ENGINEER DIRECTS THAT IT BE REMOVED. THE CONTRACTOR SHALL REMOVE AND DISPOSE OF SILT ACCUMULATIONS AT BAGGED STONE WHEN SO DIRECTED BY THE ENGINEER. BAGS SHALL BE REMOVED AND REPLACED WHENEVER THE ENGINEER DETERMINES THAT THEY HAVE DETERIORATED AND LOST THEIR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

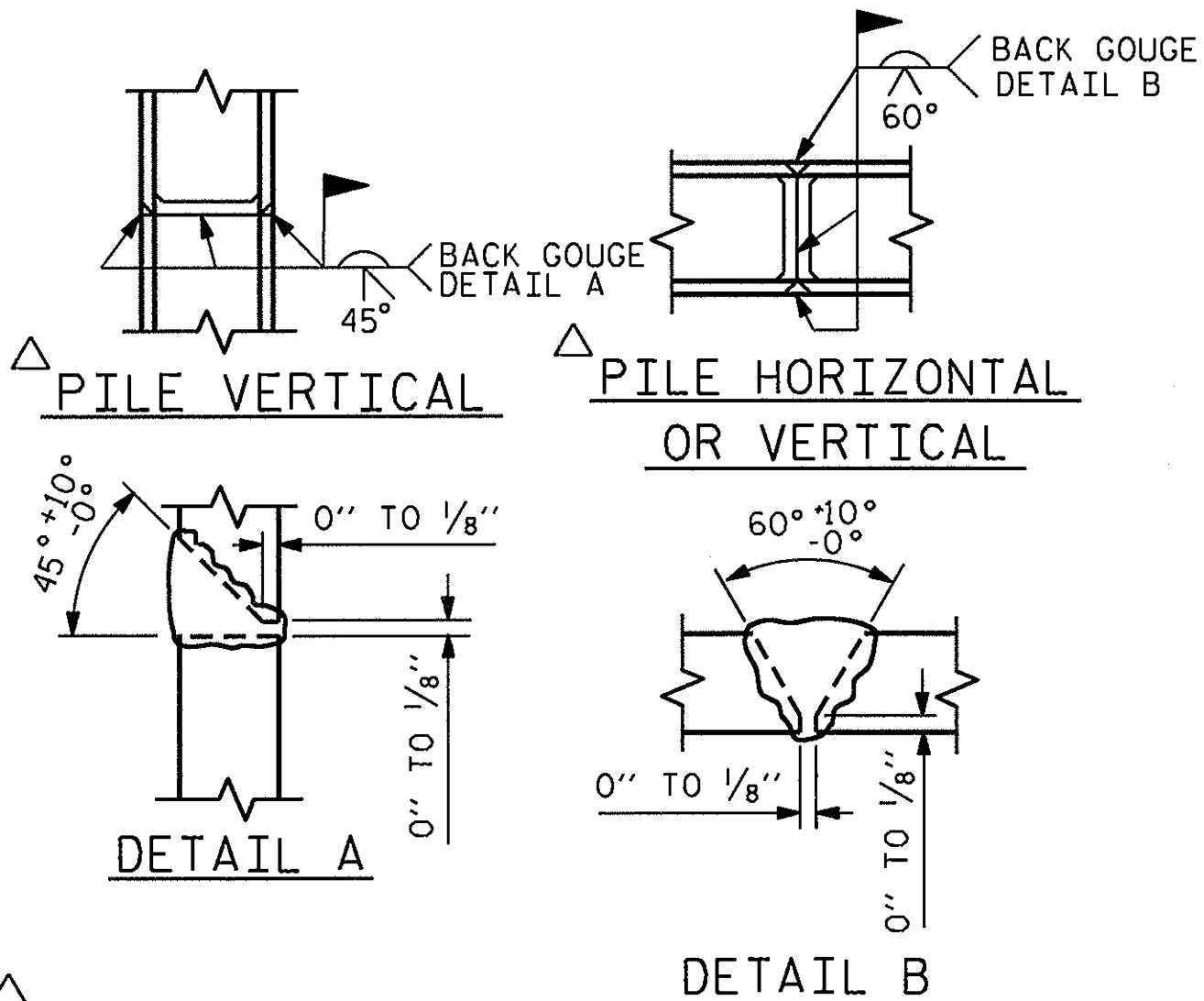


DETAIL "A"



PLAN

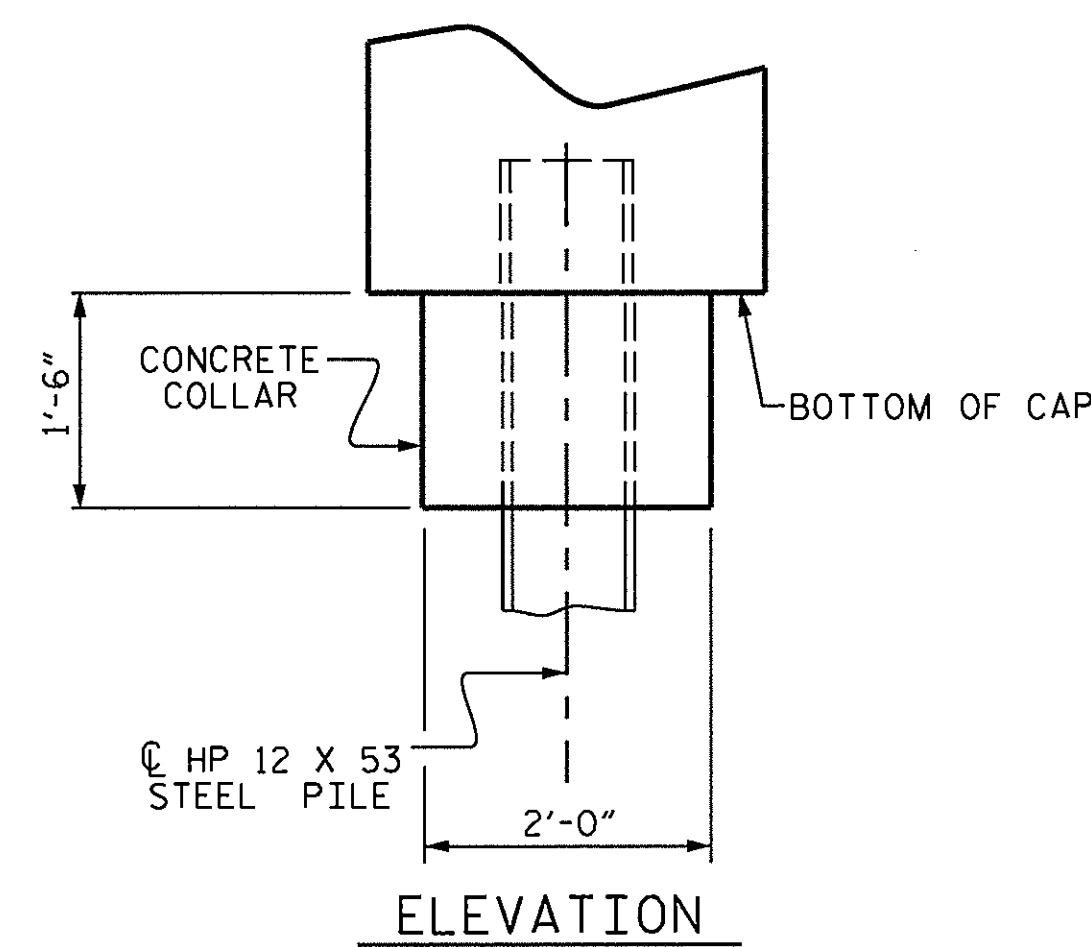
CORROSION PROTECTION FOR STEEL PILES DETAIL



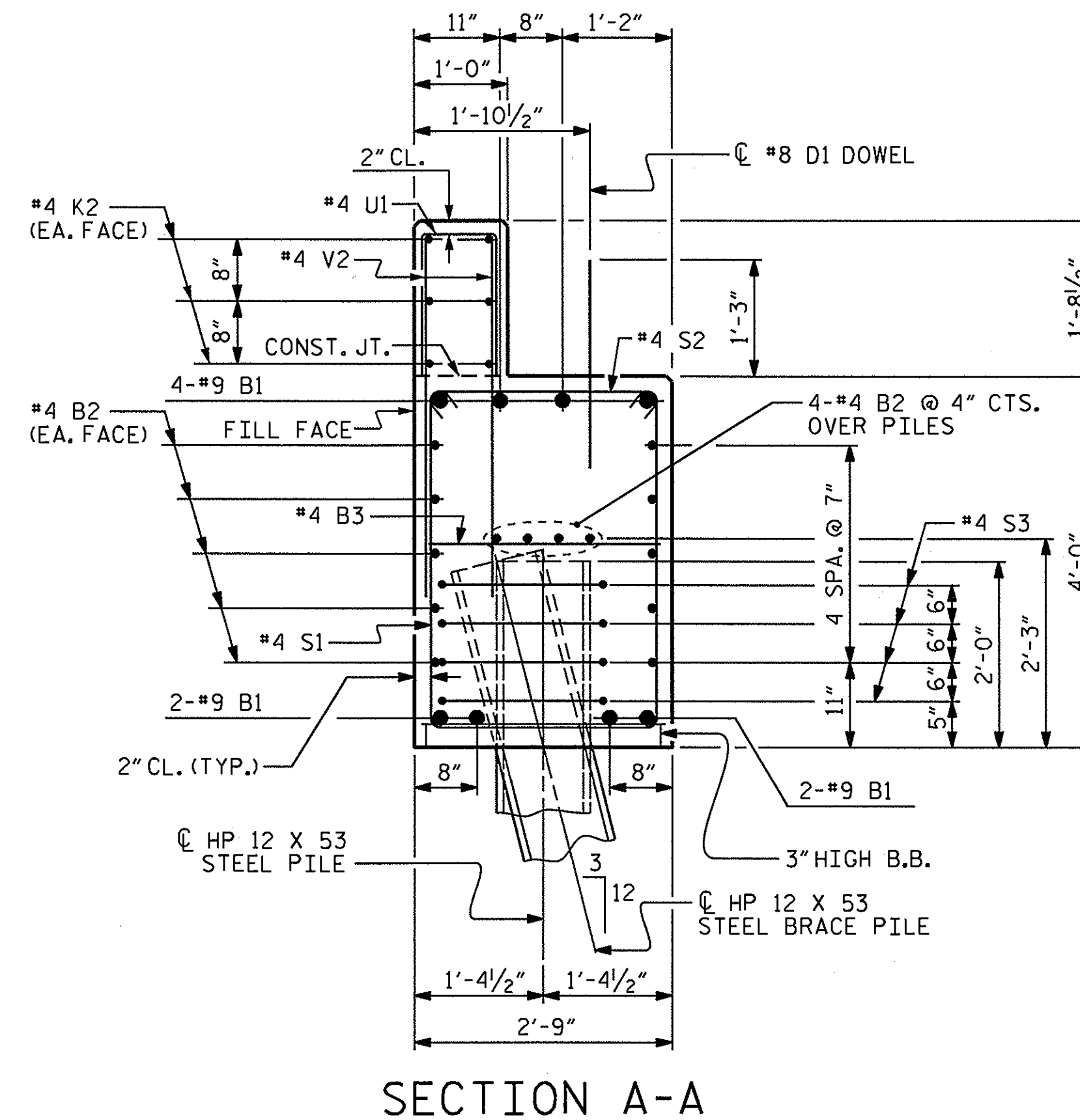
PILE SPLICE DETAILS

| BAR TYPES | | BILL OF MATERIAL | | | | |
|--|------|------------------|----------|--------|------|--|
| | | END BENT 2 | | | | |
| BAR NO. | SIZE | TYPE | LENGTH | WEIGHT | | |
| B1 | #9 | 1 | 38'-0" | 1034 | | |
| B2 | #4 | STR | 19'-1" | 357 | | |
| B3 | #4 | STR | 2'-5" | 15 | | |
| D1 | #8 | STR | 2'-3" | 120 | | |
| H1 | #5 | 2 | 11'-6" | 576 | | |
| K1 | #4 | STR | 2'-11" | 23 | | |
| K2 | #4 | STR | 19'-1" | 153 | | |
| S1 | #4 | 3 | 10'-5" | 320 | | |
| S2 | #4 | 4 | 3'-2" | 97 | | |
| S3 | #4 | 5 | 6'-6" | 87 | | |
| U1 | #4 | 6 | 3'-8" | 73 | | |
| V1 | #4 | STR | 7'-2" | 287 | | |
| V2 | #4 | STR | 5'-4" | 214 | | |
| REINFORCING STEEL | | | LBS. | 3,356 | | |
| CLASS A CONCRETE BREAKDOWN | | | | | | |
| POUR #1 CAP, LOWER PART OF WINGS & COLLARS | | | | C.Y. | 18.5 | |
| POUR #2 BACKWALL & UPPER PART OF WINGS | | | | C.Y. | 5.3 | |
| TOTAL CLASS A CONCRETE | | | | C.Y. | 23.8 | |
| HP 12 X 53 STEEL PILES NO. = 5 | | | LIN. FT. | 75 | | |
| STEEL PILE POINTS | | | EA. | 5 | | |

ALL BAR DIMENSIONS ARE OUT TO OUT.



ELEVATION



SECTION A-A

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

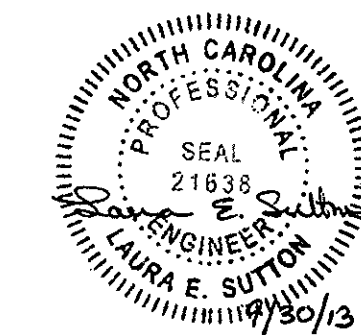
PROJECT NO. 12B.205512
LINCOLN COUNTY
 STATION: 14+90.00 -L-

SHEET 3 OF 3

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

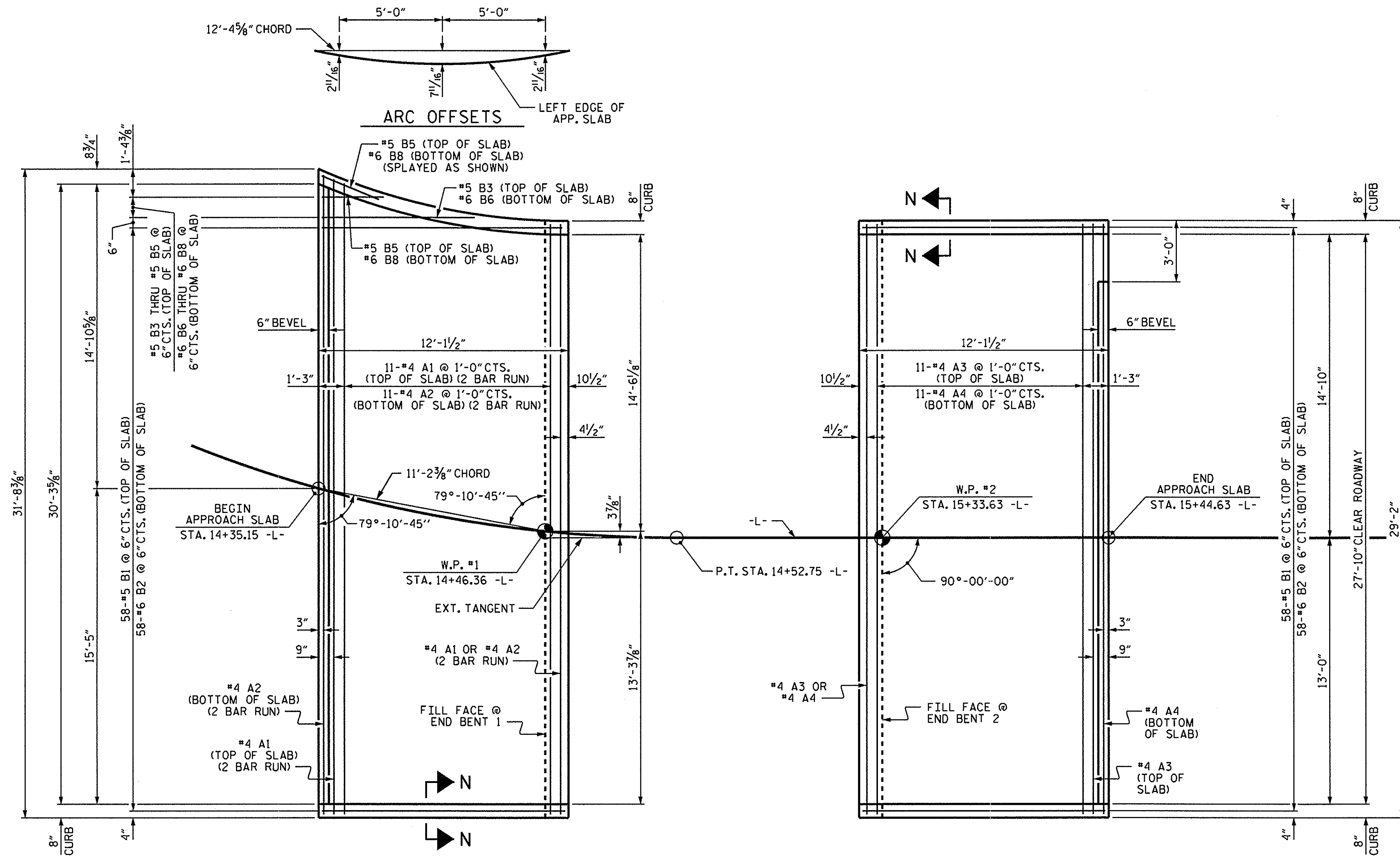
SUBSTRUCTURE
 END BENT 2
 DETAILS

| REVISIONS | | | | | | SHEET NO. |
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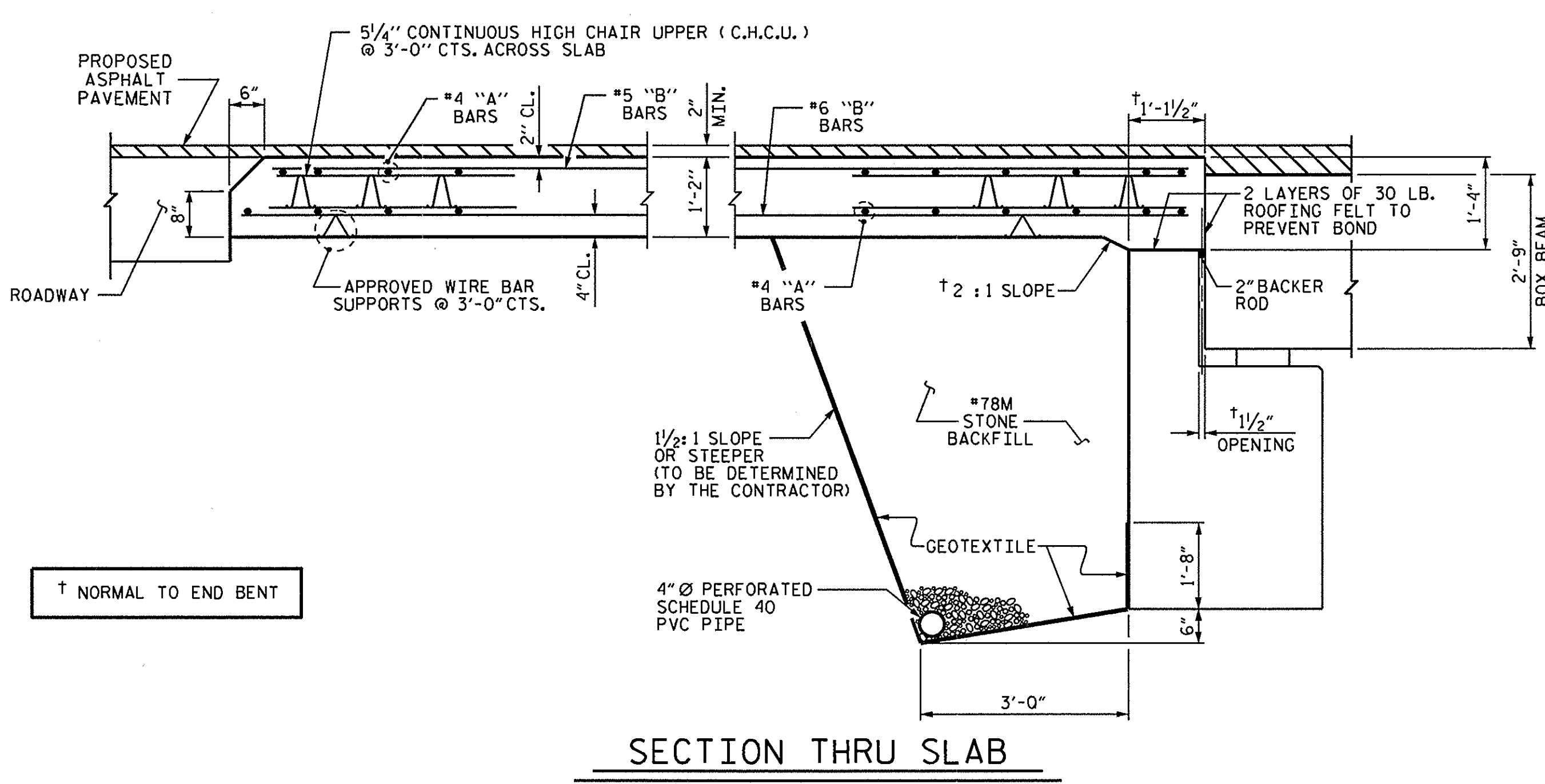
ASSEMBLED BY : L. E. SUTTON DATE : 9/27/13
 CHECKED BY : B. N. GRADY DATE : 9/30/13

DRAWN BY : WJH 12/11
 CHECKED BY : AAC 12/11

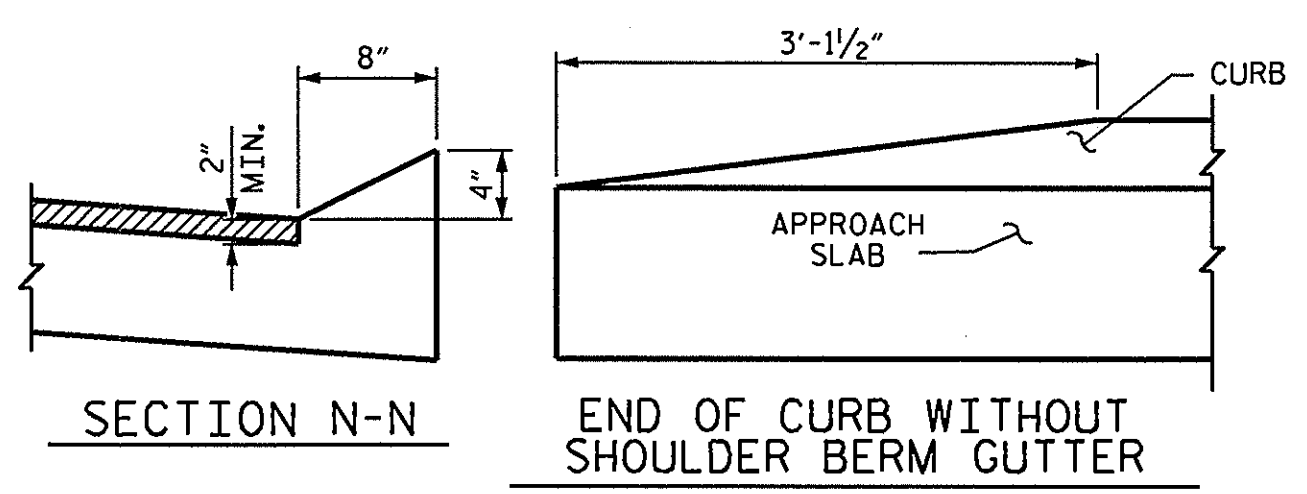


PLAN @ END BENT 1

PLAN @ END BENT 2



SECTION THRU SLAB



CURB DETAILS

NOTES

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

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

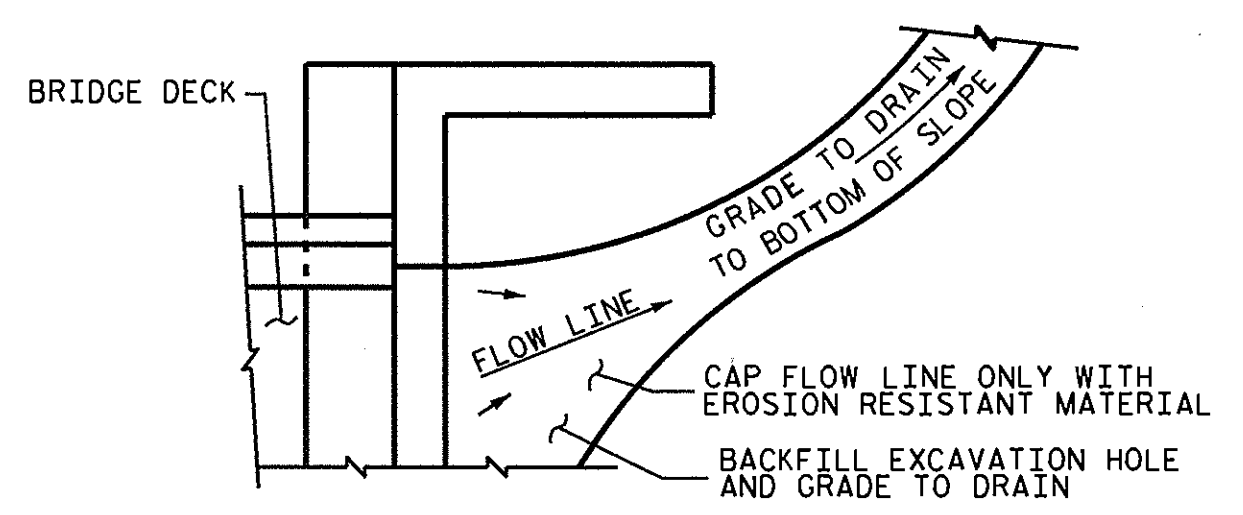
#78M STONE BACKFILL (CLASS V SELECT MATERIAL) SHALL BE IN ACCORDANCE WITH STANDARD SPECIFICATIONS SECTION 1016.

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

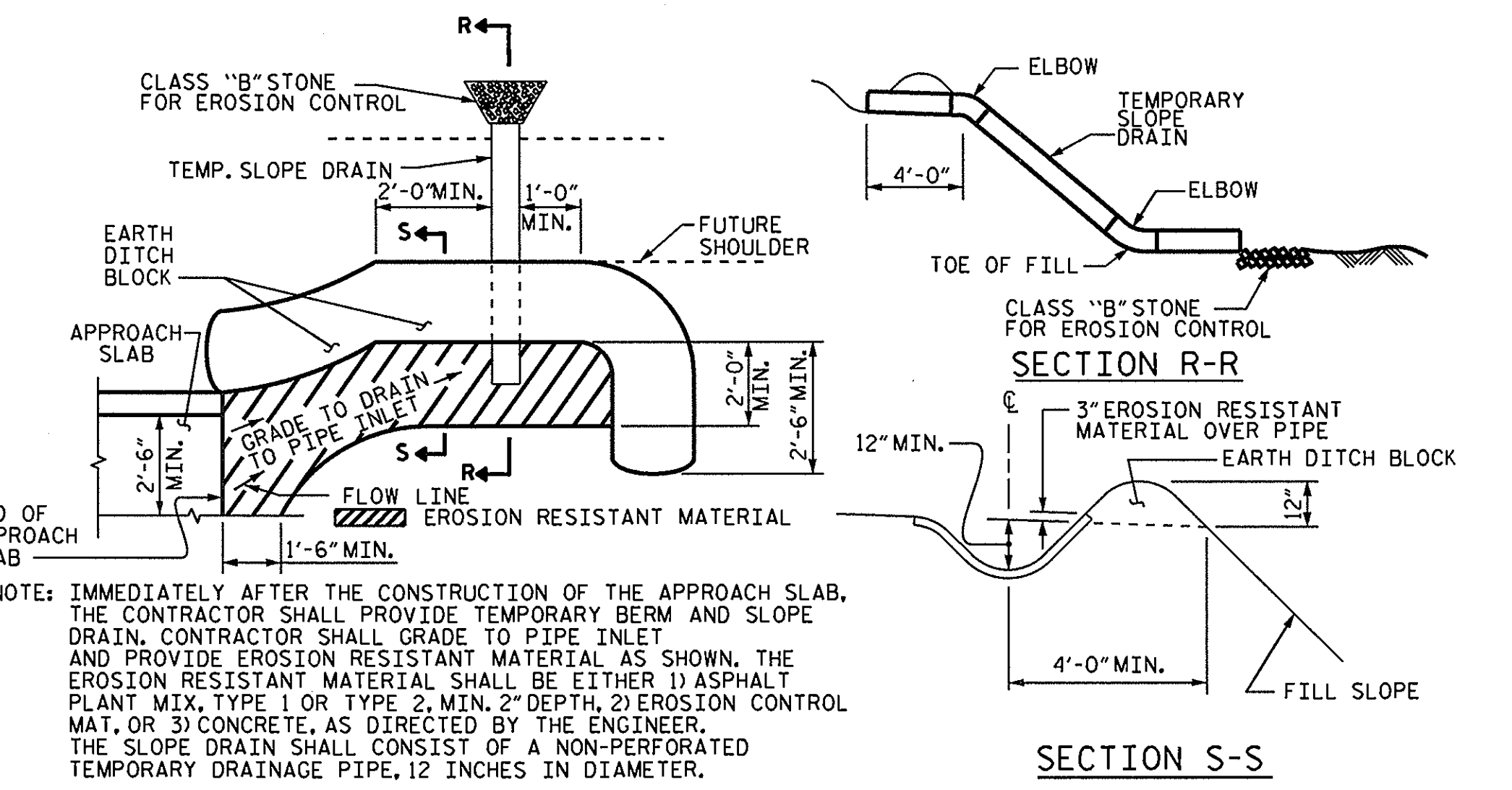
FOR THE 4" Ø DRAINAGE PIPE OUTLET(S), SEE ROADWAY STANDARD DRAWINGS.

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

APPROACH SLAB GROOVING IS NOT REQUIRED.



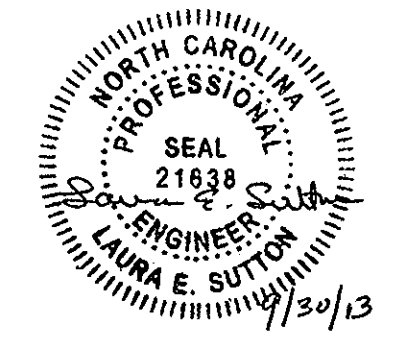
NOTE: IF THE APPROACH SLAB IS NOT CONSTRUCTED IMMEDIATELY AFTER THE BACKFILLING OF THE END BENT EXCAVATION, GRADE TO DRAIN TO THE BOTTOM OF THE SLOPE AND PROVIDE EROSION RESISTANT MATERIAL, SUCH AS FIBERGLASS ROVING OR AS DIRECTED BY THE ENGINEER TO PREVENT SOIL EROSION AND TO PROTECT THE AREA ADJACENT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



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

| BILL OF MATERIAL | | | | | |
|-----------------------------------|------|------|--------|---------|-------|
| APPROACH SLAB AT END BT. 1 | | | | | |
| BAR NO. | SIZE | TYPE | LENGTH | WEIGHT | |
| *A1 | 26 | #4 | STR | 16'-8" | 289 |
| A2 | 26 | #4 | STR | 16'-7" | 288 |
| *B1 | 58 | #5 | STR | 11'-2" | 676 |
| B2 | 58 | #6 | STR | 11'-8" | 1016 |
| *B3 | 1 | #5 | STR | 6'-11" | 7 |
| *B4 | 1 | #5 | STR | 4'-4" | 5 |
| *B5 | 2 | #5 | STR | 2'-6" | 5 |
| B6 | 1 | #6 | STR | 7'-5" | 11 |
| B7 | 1 | #6 | STR | 4'-10" | 7 |
| B8 | 2 | #6 | STR | 3'-0" | 9 |
| REINFORCING STEEL | | | | LBS. | 1,331 |
| *EPOXY COATED REINFORCING STEEL | | | | LBS. | 982 |
| CLASS AA CONCRETE | | | | C. Y. | 16.0 |
| APPROACH SLAB AT END BT. 2 | | | | | |
| BAR NO. | SIZE | TYPE | LENGTH | WEIGHT | |
| *A3 | 13 | #4 | STR | 28'-10" | 250 |
| A4 | 13 | #4 | STR | 28'-10" | 250 |
| *B1 | 58 | #5 | STR | 11'-2" | 676 |
| B2 | 58 | #6 | STR | 11'-8" | 1016 |
| REINFORCING STEEL | | | | LBS. | 1,266 |
| *EPOXY COATED REINFORCING STEEL | | | | LBS. | 926 |
| CLASS AA CONCRETE | | | | C. Y. | 15.6 |

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



DRAWN BY: L. E. SUTTON DATE: 9/17/13
 CHECKED BY: B. N. GRADY DATE: 9/17/13
 DESIGN ENGINEER OF RECORD: B. N. GRADY DATE: 9/30/13

PROJECT NO. 12B.205512
 LINCOLN COUNTY
 STATION: 14+90.00 -L-

| STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION RALEIGH | | | | | |
|--|-----|-------|-----|-----|-----------------|
| BRIDGE APPROACH SLAB FOR PRESTRESSED CONCRETE BOX BEAM UNIT (SUB-REGIONAL TIER) 90° SKEW | | | | | |
| REVISIONS | | | | | SHEET NO. |
| NO. | BY: | DATE: | NO. | BY: | DATE: |
| 1 | | | 3 | | |
| 2 | | | 4 | | |
| | | | | | S-16 |
| | | | | | TOTAL SHEETS 16 |

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

SPECIAL NOTES:

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

ENGLISH

JANUARY, 1990

STD. NO. SN