

DESIGN STANDARDS

FOR DESIGN, CONSTRUCTION, MAINTENANCE AND UTILITY
OPERATIONS ON THE STATE HIGHWAY SYSTEM

2010

TOPIC NO. 625-010-003

Approved For Use On Federal Aid Projects


For Martin Knopp, Division Administrator

State of Florida, Department Of Transportation
Roadway Design Office
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I hereby certify that this Design Standard Book was compiled under my responsible charge from designs prepared, examined, adopted and implemented by the Florida Department of Transportation in accordance with established procedures, and as approved by the Federal Highway Administration.

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**Revisions
Design Standards 2010**

| Index Number | Sheet Number | Description | Index Number | Sheet Number | Description |
|--------------|--------------|--|--------------|--------------|---|
| 001 | 1 thru 3 | Added the following standard abbreviations: B Base Line, Base Line Control F Flow Line GRI Geosynthetic Research Institute HDPE High Density Polyethylene NPS Nominal Pipe Size Deleted the following standard abbreviations: Bbl Barrel FRCP Fiber Reinforced Concrete Pipe FRP Fiber Reinforced Pipe FS Far Side | 233 | 1 thru 2 | Index was expanded due to font size change. |
| | | | 234 | 1 thru 2 | Index was expanded due to font size change. |
| | | | | 2 of 2 | Under Pavement & Sodding detail changed "1/2" Exp. Joint" to "1/2" Preformed Joint Filler". |
| | | | 235 | 1 of 2 | "GENERAL NOTES", Note 3, deleted "Alternate B" replaced with "Index 200"; Note 8 changed "Specification Section 962" to "Specification Section 975". |
| | | | 245 | 1 of 1 | "GENERAL NOTES" Note 2, delete and replace with the following: "Concrete shall be Class I (Structural), except ASTM C478 (4000 psi) concrete may be substituted for precast items manufactured in plants meeting the requirements of Section 449 of the Specifications. Box shall be reinforced with No. 3 bars (Grade 60) on 8" centers both ways, sides and bottom. |
| 002 | 2 of 3 | Deleted Hand Drafting Symbols | | | |
| 102 | 2 of 3 | NOTES FOR SYNTHETIC BALES OR BALE TYPE BARRIERS, Note 2, deleted the text "trenched 3" to 4" and" from the first sentence. | 250 | 1 of 2 | "GENERAL NOTES" Note 5, deleted and replaced with the following: "Concrete shall be Class I (Structural), except ASTM C478 (4000 psi) concrete may be substituted for precast items manufactured in plants meeting the requirements of Section 449 of the Specifications." |
| 104 | 2 of 2 | RURAL DIVIDED detail, changed "5' Shoulder Pavement" to "4' Shoulder Pavement". | | | |
| 105 | 1 of 1 | TREATMENT I, Criteria for using Treatment I, replaced text of the last bullet with the following: "resurfacing build-up is less than 3" " | 251 | 1 of 2 | "GENERAL NOTES" Note 4, deleted and replaced with the following: "Concrete shall be Class II, except ASTM C478 (4000 psi) concrete may be substituted for precast items manufactured in plants meeting the requirements of Section 449 of the Specifications." |
| 200 | 1 of 5 | TOP SLAB REINFORCING STEEL DIAGRAM (ALTERNATE B) to the notes "2 Additional Bars A @ 5" O.C." and "2 Additional Bars B @ 5" Max. O.C. Each Side Of Opening", added "(Minimum #4 Bars)". | 252 | 1 of 2 | "GENERAL NOTES" Note 4, deleted and replaced with the following: "Concrete shall be Class II, except ASTM C478 (4000 psi) concrete may be substituted for precast items manufactured in plants meeting the requirements of Section 449 of the Specifications." |
| | 2 of 5 | Note 9, Delete second sentence and substitute, "Additional bars used to restrain hole formers for precast structures with grouted pipe connections, may be left flush with the hole surface." | 253 | 1 of 2 | "GENERAL NOTES" Note 4, deleted and replaced with the following: "Concrete shall be Class II, except ASTM C478 (4000 psi) concrete may be substituted for precast items manufactured in plants meeting the requirements of Section 449 of the Specifications." |
| | 4 of 5 | SLAB AND WALL DESIGN TABLE NOTES, added the following to the end of Note 10: "See Index No. 201, Sheet 4 for allowable bar spacing adjustments when larger areas of reinforcing are substituted." | 255 | 1 of 2 | "GENERAL NOTES" Note 4, deleted and replaced with the following: "Concrete shall be Class II, except ASTM C478 (4000 psi) concrete may be substituted for precast items manufactured in plants meeting the requirements of Section 449 of the Specifications." |
| 201 | 4 of 5 | "Revised title of notes to ""NOTES FOR PRECAST OPTIONS AND EQUIVALENT REINFORCEMENT SUBSTITUTION"" and added the following to Note 4, ""When an increased area of reinforcing is provided, then the maximum bar spacing may be increased by the squared ratio of increased steel area, but not to exceed 12 inches: Max. Bar Spacing Provided < Max. Bar Spacing Required x (Steel Area Provided/Min. Steel Area Required) ² " | 260 | 1 of 1 | "GENERAL NOTES" Note 3 changed "Specification Section 962" to "Specification Section 975". |
| 205 | 1 of 6 | Changed maximum size of allowed PVC pipe to 36". | 261 | 1 of 3 | "GENERAL NOTES" Note 4 changed "Specification Section 962" to "Specification Section 975". |
| | 2 of 6 | ROUND PIPE DIMENSIONS, deleted the column, "Wall Thickness (In.) Class III" and subcolumn "NRCHP" and heading "SRCP". Also deleted the ** note at the bottom of the table. | 264 | 1 thru 2 | Index was expanded due to font size change. General note 3 changed. |
| | 3 of 6 | NOTES: deleted note 4; table "PIPE ARCH: SPIRAL RIB: 3/4" x 3/4" x 7 1/2" RIB SPACING..." deleted references to note 4; table "ROUND PIPE - SPIRAL RIB", "Maximum Height of Fill (Ft.)", "Sheet Thickness In Inches (Gage)", "0.138 (10)" added measurements. | 270 | 1 of 1 | "GENERAL NOTES" Note 2 changed "Specification Section 941-1.5" to "Specification Section 449". Changed Note 3. |
| 210 | 1 of 1 | Delete General Note 4, and substitute the following: "For precast units the rear wall and apron may be precast as a separate piece from the top slab. Provide a minimum of 7 ~ #4 dowels in accordance with Index No. 201 "OPTIONAL CONSTRUCTION JOINTS". | 272 | 6 of 6 | Reordered "GENERAL NOTES" and changed "Class I concrete" to "Class NS concrete". |
| 211 | 1 thru 5 | Revised index completely 3 sheets added, Reinforcing configuration and C.I.P. details revised; precast and WWR details added. Changed Note 4 to allow 4'-0" round risers. | 273 | 1 thru 7 | Index was expanded due to font size change. |
| 213 | 1 of 1 | In PLAN view changed "1/2" Exp. Joint (Typ)" to "1/2" Preformed Joint Filler (Typ)". | | 7 of 7 | "GENERAL NOTES", Note 8, deleted "Class I concrete" and substituted "Class NS concrete". |
| 218 | 2 of 2 | "STEEL GRATE", "TOP VIEW", for the overall dimension on the left side of the grate, inserted "44 1/4" ". For the small dimension at the upper left corner of the grate, inserted "3 1/2" ". | 280 | 1 thru 3 | Index was expanded due to font size change. |
| 219 | 1 of 2 | In PLAN view and Section HH changed "Expansion Joint (Typ)" and "Expansion Material Joint" to "1/2" Preformed Joint Filler (Typ)". | | 1 of 3 | "DISSIMILAR TYPES CONCRETE JACKET FOR CONNECTING DISSIMILAR TYPES OF PIPE AND CONCRETE PIPES WITH DISSIMILAR JOINTS" detail, added the note, "Alternate connection must be approved by the State Drainage Engineer." |
| 220 | 1 of 3 | "GUTTER INLET TYPE S", "SECTION BB", Changed the vertical dimension between the top of the inlet and the grate elevation from "5 1/2" to "4 1/2" ". "SECTION AA", at the top right corner, for precast thickness changed " 6" " to " 3" " (same as left side). "SECTION BB", at the top, changed "3'-11" Precast" to " 4'-3" Precast". "PLAN", at the top, changed " 3'-11" Precast to " 4'-3" Precast". | 282 | 1 thru 3 | Index was expanded due to font size change. |
| 230 | 1 of 2 | In "PLAN" view changed "1/2" Exp. Joint (typ)" to "1/2" Preformed Joint Filler (Typ)". Section E-E, Changed 4Z15.9 shape to built up section (3.5 x 3 x 1/2 L + 1/2 x 3 Bar) for grating. | | 1 of 3 | "FRONT ELEVATION" and "SECTION AA" details changed "1/2" Exp. Matl. " to "1/2" Preformed Joint Filler". |
| 231 | 1 of 3 | "DITCH BOTTOM INLET TYPE B", "SECTION BB", upper left side, deleted the dimension "2'-6" (Min.)" and replaced with "1'-10" (Min.)". | 284 | 2 of 3 | "PLAN" and "SECTION AA" details changed "1/2" Exp. Matl. " to "1/2" Preformed Joint Filler". |
| 232 | 1 thru 7 | Index was expanded due to font size change. | 287 | 1 of 1 | Deleted note "1" and substituted the following: "1. Spillway to be paid for as Shoulder Gutter, LF." Deleted note "2", and substituted the following: "2. If spillway empties into an unpaved ditch the detail should be modified as necessary." |
| | | | 288 | 1 thru 4 | Sheet 3 is new. Renumbered other sheets. |
| | | | 289 | 1 of 4 | Changed all 3 occurrences of "Class I concrete" to "Class NS concrete". |
| | | | 291 | 1 of 1 | New Index added "DEEP WELL INJECTION BOX". |
| | | | 292 | 6 of 7 | Changed "FLARED ENDWALL" to "FLARED WINGWALL" and "STRAIGHT ENDWALL" to "STRAIGHT WINGWALL". |
| | | | 299 | 1 of 5 | Changed "Class I Concrete" to "Class NS". |
| | | | 292 | 5 of 5 | Changed "Bond Beam" to "Link Slab", and "Class I Concrete" to "Class NS". |
| | | | 292 | 2 of 14 | "GENERAL NOTES" note 1, changed AASHTO LRFD Bridge Specifications, to "4th Edition"; added note 10. |

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| Index Number | Sheet Number | Description | Index Number | Sheet Number | Description |
|--------------|--------------|--|--------------|--------------|--|
| 295 | 1 of 1 | "GENERAL NOTES" Note 2 changed "Specification Section 962" to "Specification Section 975". | 421 | 1 of 3 | Changed REFLECTIVE RAILING MARKERS note, "Reflective Railing Markers shall meet Specification Section 993. Install markers on top of the Traffic Railing along the centerline at the spacing shown in the table above. Reflector color (white or yellow) shall match the color of the near edgeline. The cost of the reflective markers shall be included in the Contract Unit Price for the Traffic Railing." |
| 300 | 1 thru 2 | Index was expanded due to change in font. | | | |
| 304 | 6 of 6 | Added alternate location of detectable warnings on linear ramps. Added note "On curb ramps, landings and flush transitions perpendicular to the curb line: Rows of domes shall be aligned with the centerline of the ramp. (See Pictorial View A)" at top of sheet. Added Rail Road Crossing PLAN view. | 422 | 1 of 3 | Added the following to the NAME, DATE AND BRIDGE NUMBER note: "The Name shall be as shown in the General Notes in the Structures Plans."; Changed REFLECTIVE RAILING MARKERS note. |
| 305 | 1 & 4 of 4 | Deleted bar spacing table and revised notes (Sheet 1); Changed width of outside lanes (Sheet 4). | | | Changed REFLECTIVE RAILING MARKERS note, "Reflective Railing Markers shall meet Specification Section 993. Install markers on top of the Traffic Railing 2" from the face on the traffic side at the spacing shown in the table above. Reflector color (white or yellow) shall match the color of the near edgeline. The cost of the reflective markers shall be included in the Contract Unit Price for the Traffic Railing." |
| 307 | 2 of 3 | "UTILITY CONFLICT PIPES THRU STORM SEWER STRUCTURES" changed to "UTILITY CONFLICT PIPES THRU STORM DRAIN STRUCTURES" | | | |
| 310 | 1 of 2 | "SIDEWALK WITH EDGE BEAM FOR SURFACE MOUNTED RAILINGS", "Clear Width", deleted "3' Min." and substituted "4' Min. *". | 423 | 1 of 3 | Added the following to the NAME, DATE AND BRIDGE NUMBER note: "The Name shall be as shown in the General Notes in the Structures Plans."; Bicycle Railing to "Special Height Bicycle Railing" and Post "B" to Post "B1". |
| | | "NOTES FOR CONCRETE SIDEWALK ON CURBED ROADWAYS", deleted "Note 1", and substituted the following: "1. Sidewalks shall be constructed in accordance with Section 522 of the FDOT Standard Specifications. Public sidewalk curb ramps shall include detectable warnings and be constructed in accordance with Index No. 304. Detectable warnings are not required where sidewalks intersect urban flared turnouts." | | | "TRAFFIC RAILING-(32" VERTICAL SHAPE)", deleted the "REFLECTIVE RAILING MARKERS" note and substituted the following: "Reflective Railing Markers shall meet Specification Section 993. Install markers on top of the Traffic Railing 2" from the face on the traffic side at the spacing shown in the table above. Reflector color (white or yellow) shall match the color of the near edgeline. The cost of the reflective markers shall be included in the Contract Unit Price for the Traffic Railing." |
| | | "Note 3" , deleted. | | 2 of 3 | Changed Bicycle Railing to "Special Height Bicycle Railing" and Post "B" to Post "B1". |
| | 2 of 2 | "NOTES FOR CONCRETE SIDEWALKS ON UNCURBED ROADWAYS", Changed Note 2 to "Provide detectable warnings that extend the fullwidth of the sidewalk and 24" deep from the edge of pavement where sidewalks adjoin the following vehicular ways: side roads and streets driveways with signalized entrances driveways with entrance volumes greater than 600 vpd driveways with entrance speeds of 25 mph or greater right in - right out composite driveways. | | 3 of 3 | Changed 83 degrees to 93 degrees in CONVENTIONAL REINFORCING STEEL BENDING DIAGRAM Cross-slope table. |
| 400 | 1 thru 26 | Index expanded by one sheet due to font size change and added new sheet 2, "APPROACH END ANCHORAGE DETAILS", Index renumbered. | 424 | 1 of 7 | Added the following to the NAME, DATE AND BRIDGE NUMBER note: "The Name shall be as shown in the General Notes in the Structures Plans." |
| | 1 of 26 | "GENERAL NOTES" Note 17 changed "Specification Section 971" to "Specification Section 975". | 425 | 1 of 3 | Added the following to the NAME, DATE AND BRIDGE NUMBER note: "The Name shall be as shown in the General Notes in the Structures Plans." |
| | 2 of 26 | New sheet added showing limits of pay for guardrail, details of shoulder treatment and miscellaneous asphalt for guardrail approach end treatments. | | | "TRAFFIC RAILING - (CORRAL SHAPE)", deleted the "REFLECTIVE RAILING MARKERS" note and substituted the following: "Reflective Railing Markers shall meet Specification Section 993. Install markers on top of the Traffic Railing 2" from the face on the traffic side at the spacing shown in the table above. Reflector color (white or yellow) shall match the color of the near edgeline. The cost of the reflective markers shall be included in the Contract Unit Price for the Traffic Railing." |
| | 3 of 26 | Corrected spelling of guardrail in last paragraph. | | | |
| | 15 of 26 | "LOCATIONS ON FRONT SLOPES", deleted the details for guardrail on slope and rubrail termination and the chart for lateral placement on slopes. (See sheet 26) | | | "TRAFFIC RAILING - (42" F SHAPE)", added the following note: "REFLECTIVE RAILING MARKERS: Reflective Railing Markers shall meet Specification Section 993. Install markers on top of the Traffic Railing 2" from the face on the traffic side at the spacing shown in the table above. Reflector color (white or yellow) shall match the color of the near edgeline. The cost of the reflective markers shall be included in the Contract Unit Price for the Traffic Railing." |
| | 16 of 26 | Deleted "REFLECTORS- DETAIL M" (See sheet 17) | | | |
| | 26 of 26 | Added "GUARDRAIL ON SLOPES", details for guardrail on slope and rubrail termination and the chart for lateral placement on slopes. | 470 | 1 of 3 | Added Field testing proof loads to the ADHESIVE BONDED ANCHORS AND DWELS note; "TRAFFIC RAILING-(THRIE BEAM RETROFIT) GENERAL NOTES & DETAILS", deleted the "BRIDGE NAME PLATE" note and substituted the following: "If a portion of the existing Traffic Railing is to be removed that carries the bridge name, number and or date, or if the installation of the Traffic Railing (Thrie Beam Retrofit) will obscure the bridge name, number and or date, then replace the information that has been removed or obscured, with 3" tall black lettering on white nonreflective sheeting applied to the top of the adjacent guardrail. The information must be clearly visible from the right side of the approaching travel lane. The sheeting and adhesive backing shall comply with Specification Section 994 and may comprise of individual decals of letters and numbers." |
| 410 | 1 thru 25 | Index completely revised and reorganized. | | | |
| 411 | 2 of 10 | Changed tangent offsets In Detail 'A' to "2.49'-Design Speed ≤45 mph; 1.76' - Design Speed ≥50 mph". | | | |
| | 4 of 10 | Changed tangent offsets In Detail 'B' to "2.49'-Design Speed ≤45 mph; 1.76' - Design Speed ≥50 mph". | | | |
| 414 | 1 of 15 | Updated Specification reference Section 971 to 975; Added steel option to ALTERNATE DESIGN note. | | | |
| | 5 of 15 | Added PTFE tape option to anchor bolt details. | | | |
| 415 | 4 of 10 | "NOTES FOR WALL END SHIELDING", Note 1, changed the second sentence to: "Except where the plans designate a particular type crash cushion for a specific location, the contractor has the option to construct any of the redirective crash cushions listed on the Qualified Products List, subject to the uses and limitations described on their respective drawings." | | 3 of 3 | Added the following note: "NEOPRENE PADS: Neoprene pads must be plain pads with a durometer hardness of 60 or 70 and meet the requirements of Specification Section 932, except that testing of the finished pad will not be required." |
| | | "ANCHOR PLATE BDLTS", upper note, changed "?" to "3/4". | 471 | 2 of 4 | Changed offset of 7/8" dia. anchor bolts to 2 3/4" from back edge of base plate in SECTION B-B. |
| 420 | 1 of 3 | Added the following to the NAME, DATE AND BRIDGE NUMBER note: "The Name shall be as shown in the General Notes in the Structures Plans."; Changed REFLECTIVE RAILING MARKERS note. | 472 | 2 of 4 | "SECTION A-A" and "SECTION B-B", changed "Resilient Pad" to "Neoprene Pad". |
| | | Changed REFLECTIVE RAILING MARKERS note, "Reflective Railing Markers shall meet Specification Section 993. Install markers on top of the Traffic Railing 2" from the face on the traffic side at the spacing shown in the table above. Reflector color (white or yellow) shall match the color of the near edgeline. The cost of the reflective markers shall be included in the Contract Unit Price for the Traffic Railing." | 473 | 2 of 4 | "SECTION A-A" and "SECTION B-B", changed "Resilient Pad" to "Neoprene Pad". |
| | | | 474 | 2 of 4 | "SECTION A-A" and "SECTION B-B", changed "Resilient Pad" to "Neoprene Pad". |
| | | | | 4 of 4 | "SECTION C-C", changed "Resilient Pad" to "Neoprene Pad". |

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| Index Number | Sheet Number | Description | Index Number | Sheet Number | Description |
|--------------|--------------|--|--------------|--------------|--|
| 475 | 2 of 4 | "SECTION A-A" and "SECTION B-B", changed "Resilient Pad" to "Neoprene Pad". | 600 | 3 of 13 | LANE WIDTHS, in the second sentence, change the word "expected" to "excepted". |
| 476 | 2 of 4 | "SECTION A-A" and "SECTION B-B", changed "Resilient Pad" to "Neoprene Pad". | | 5 of 13 | Changed note under "SIGN COVERING AND INTERMITTENT WORK STOPPAGE SIGNING"; added information for the use of the new "PROJECT INFORMATION SIGN". |
| 480 | 1 of 2 | "TRAFFIC RAILING-(VERTICAL FACE RETROFIT) GENERAL NOTES & DETAILS", added the following to the "ADHESIVE-BONDED ANCHORS AND DOWELS" note, "The field testing proof loads required by Specification Section 416 shall be 23,800 lbs. for Dowel Bars 6D on the inside face (traffic side) of the railing (1'-0" embedment) and 18,500 lbs for Dowel Bars 6D along the outside face of the traffic railing (5" min. embedment)." Added NEOPRENE PADS note. Also deleted the "REFLECTIVE RAILING MARKERS" note and substituted the following: "Reflective Railing Markers shall meet Specification Section 993. Install markers on top of the Traffic Railing 2" from the face on the traffic side at the spacing shown in the table below. Reflector color (white or yellow) shall match the color of the near edgeline." | | 6 of 13 | GENERAL NOTES, deleted note 1, substituted the following: "1. All signs shall be post mounted when work operations exceed one day except for: a) Road closure signs mounted in accordance with the vendor drawing for the Type III Barricade shown on the QPL. b) Pedestrian advanced warning or regulatory signs mounted on sign supports shown on the QPL." "2. POST SIGN SUPPORT MOUNTING DETAILS", updated text to include a tolerance between sign supports. Insert "+/- 3" " after "1'-6" " and insert "+/- 6" " after "2'-6" " . POST AND FOUNDATION TABLE FOR WORK ZONE SIGNS, expanded Note 2 by adding: "unless otherwise specified in the vendor drawing on the QPL." |
| | 2 of 2 | CONVENTIONAL REINFORCING STEEL BENDING DIAGRAM, added Bars 5E, 5F and 4G for Index No. 484 | | | POST MOUNTED SIGN NOTES, added new notes 1 and 12. |
| 484 | 1-10 of 10 | New Index added TRAFFIC RAILING (VERTICAL FACE RETROFIT) SPREAD FOOTING APPROACH | | 7 of 13 | Added new sheet showing Project Information Sign and renumbered index. |
| 500 | 2 of 2 | "HALF SECTION" detail, deleted "Storm Sewer Mains" replaced with "Storm Drain Trunk Lines" | | | |
| 501 | 3-9 of 9 | Changed the REQUIRED TEST METHOD for Burst Strength, Soil-Geosynthetic Friction, Creep Reduction Factor & Joint Overlap to ASTM D 6706. | 605 | 1 of 1 | "GENERAL NOTES", deleted the text of "Note 8" and substituted the following: "The two channelizing devices directly in front and directly at the end of the work area may be omitted provided vehicles in the work area have high intensity rotating, flashing, oscillating or strobe lights operating." Added new heading "DURATION NOTE" and placed the following note under this heading: 1. ROAD WORK AHEAD sign may be omitted if all of the following conditions are met: a) Work operations are 60 minutes or less. b) Speed is 45 mph or less. c) No sight obstructions to vehicles approaching the work area for a distance of 600 feet. d) Vehicles in the work area have high-intensity, rotating, flashing, oscillating, or strobe lights operating. e) Volume and complexity of the roadway has been considered. |
| | 4 of 9 | Updated values for COMTRAC 70.70; Deleted AMOCD 2006, 2016 & 2044; Added GEOTEX 315ST, 2x2HF, 4x4, 3x3HF, 4x4HF & 4x6 woven geogrids. | | | |
| | 5 of 9 | Changed Joint Strength Overlap value to 1.2 for all Marafi products. | | | |
| | 6 of 9 | Deleted Application Usage 3 & 4 for SYNTEN SF 11 & SF 12. | | | |
| | 7 of 9 | Added Fornir 20 | | | |
| | 8 of 9 | Changed Creep Resistance and Creep Reduction Factors for TENSAR BX 1120, BX 1200, BX 1220 & BX 1500 | | | |
| | 9 of 9 | Updated values for TENAX MS 220 & TENAX MS 330. Added Combigrid 30/30, Secugrid 20/20 & 30/30 extruded geogrids. | 625 | 1 of 1 | New Index added "TEMPORARY ROAD CLOSURE- 5 MINUTES OR LESS". |
| 505 | 1-4 of 4 | Sheet 3 is new. Renumbered other sheets. | 655 | 1-3 of 3 | New Index added "TRAFFIC PACING-LIMITED ACCESS". |
| 515 | 5 of 7 | In second symbolized note changed "Section 102-6" to "Section 102-8". | 667 | 1-6 of 6 | New Index added "TOLL PLAZAS". |
| | 6 of 7 | "PAVEMENT STRUCTURE FOR TURNOUTS AND AUXILIARY LANES TABLE 515-1", "NOTES", Note 5, Deleted "Class I concrete" substituted "Class NS concrete". | 801 | 1 of 3 | "GENERAL NOTES", Note 15 and 21, deleted "Class I" and substituted "Class NS". |
| 518 | 3 of 3 | Revised width of rigid pavement outside travellane and changed location of rumble strip. | 802 | 1-3 of 3 | Added tolerance to ground clearance; revised Notes 7a and 7b; rearranged sheets. |
| 520 | 1 of 1 | "GENERAL NOTES", Note 7, Deleted "Class I Concrete (Retaining Walls)" and substituted "Class NS Concrete" | | 1 of 3 | "GENERAL NOTES", Note 6 and 13, deleted "Class I concrete" and substituted "Class NS concrete" for all occurrences. |
| 546 | 1 of 6 | Added detail "PLAN", "PICTORIAL" and ** note. Index sheets reordered. | 803 | 1 of 1 | "GENERAL NOTES", Note 4, deleted both occurrences of "Class I" and substituted "Class NS". |
| | 5 of 6 | Under "NOTES FOR 4-LANE DIVIDED ROADWAY", Note 1, changed reference from "Sheet 6" to "Sheet 2". | 810 | 2 of 4 | Deleted "Section 971" and substituted "Section 975" in ANCHOR RODS, NUTS AND WASHERS note. |
| 600 | 2 of 13 | OVERHEAD WORK, deleted "OPTION 4 - - -" and substituted the following: OPTION 4 (OVERHEAD WORK MAINTAINING TRAFFIC WITH NO ENCROACHMENT BELOW THE OVERHEAD WORK AREA) Traffic shall be detoured, shifted, diverted or paced as to not encroach in the area directly below the overhead work operations in accordance with the appropriate standard index drawing or detailed in the plans. This option applies to, but not limited to, the following construction activities: (a) Beam, girder and segment placement. (b) Deck form placement and removal. (c) Concrete deck placement. (d) Railing construction located at edge of deck. (e) Structure demolition. DEFINITIONS, added the following after definition of TRAVEL WAY: a. Travel Lane: The designated widths of roadway pavement marked to carry through traffic and to separate it from opposing traffic or traffic occupying other lanes. b. Auxiliary Lane: The designated widths of roadway pavement marked to separate speed change, turning, passing and climbing maneuvers from through traffic. CLEAR ZONE WIDTHS FOR WORK ZONES, deleted the text "travel" in the first sentence and substituted "traffic". Replaced chart "CLEAR ZONE WIDTHS FOR WORK ZONES". | 811 | 3 of 3 | Deleted "Section 971" and substituted "Section 975" in ANCHOR RODS, NUTS AND WASHERS note. |
| | | | 812 | 2 of 4 | Deleted "Section 971" and substituted "Section 975" in ANCHOR RODS, NUTS AND WASHERS note. |
| | | | 820 | 1 of 1 | Changed Top Rail to "Special Height Bicycle Railing" and added new Post "B2" for 3'-6" height Pedestrian/Bicycle Railing. |
| | | | 821 | 1 of 1 | Changed designation of 4'-6" tall railing to "Special Height Bicycle Railing" and added 3'-6" tall Pedestrian/Bicycle Railing. |
| | | | 822 | 1 of 2 | Changed designation of 4'-6" tall railing to "Special Height Bicycle Railing" and "Post B" to "Post B1"; Added "Post B2" details. |
| | | | 850 | 1 of 5 | Changed "Pedestrian Railing" to "Pedestrian/Bicycle Railing" and "Bicycle Railing" to "Special Height Bicycle Railing"; Added anchor bolt requirements to SHOP DRAWINGS note. |
| | | | | 2 of 5 | Added "DETAIL FOR NON-CONTINUOUS RAILING AT CORNERS" detail. Changed Pedestrian and Bicycle Railing designation; maximum ramp length for slopes less than 6.25%; and minimum clear picket opening at post to 3/4". |
| | | | | 3 of 5 | Changed Pedestrian and Bicycle Railing designation. |
| | | | | 4 of 5 | Added requirement for set screw to be set flush against outside face of rail and 18-8 Alloy option in DETAILS "D" & "E", option to notch post in SECTION G-G, and 1/4" joint tolerance in DETAIL "D". |
| | | | | 5 of 5 | Added DETAIL "F" and note (*) to ANCHOR BOLT TABLE. Changed Pedestrian and Bicycle Railing designation. Corrected height dimension on steps to top of nosing. |

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| Index Number | Sheet Number | Description | Index Number | Sheet Number | Description |
|--------------|--------------|--|--------------|------------------|--|
| 851 | 1 of 2 | Changed Pedestrian and Bicycle Railing designation. | 5204 | 1 of 1 | Changed "Ribbed" to "Slotted" in PLUG DETAIL. |
| | 2 of 2 | Added requirement for set screw to be set flush against outside face of rail and 18-8 Alloy option in DETAIL "B". Changed field splice joint tolerance to 1/4" in DETAIL "B". | 5205 | 1, 3, 4 & 6 of 7 | Added note in Elevation Views to 'Extend post 2" above high side wall panel when post caps are shown in the plans'. |
| 860 | 1 of 5 | Changed "Pedestrian Railing" to "Pedestrian/Bicycle Railing" and "Bicycle Railing" to "Special Height Bicycle Railing"; Added anchor bolt requirements to SHOP DRAWINGS note. Added filler metal ER4043 to WELDING note. | | 2 of 7 | Added tolerance between Top of Precast Collar and Auger Cast Pile; Changed "Composite Bearing Pads" to "Fiber Reinforced Bearing Pads". |
| | 2 of 5 | Added "DETAIL FOR NON-CONTINUOUS RAILING AT CORNERS" detail. Changed Pedestrian and Bicycle Railing designation; maximum ramp length for slopes less than 6.25%; and minimum clear picket opening at post to 3/4". | | 5 of 7 | Changed "Composite Bearing Pads" to "Fiber Reinforced Bearing Pads". |
| | 3 of 5 | Changed Pedestrian and Bicycle Railing designation. | 5206 | 7 of 7 | Added "Octagonal Precast Collar" details and tolerance between Top of Precast Collar and Auger Cast Pile; Changed "Composite Bearing Pads" to "Fiber Reinforced Bearing Pads". |
| | 4 of 5 | Added requirement for set screw to be set flush against outside face of rail and 18-8 Alloy option in DETAILS "D" & "E"; option to notch post in SECTION G-G; 1/4" joint tolerance in DETAIL "D"; Type B (Nonwelded) connection detail in SECTION A-A. Changed Expansion Joint sleeve embedded length to 10" in DETAIL "D" and picket fillet weld size to 1/8", handrail and top rail fillet weld size to 1/4", and base plate fillet weld size to 3/8". | 5207 | 1 of 1 | Added "POST LENGTH WITH CAP" column, BARS D, P5 thru P8 to table and bar bending details for corner posts. |
| | 5 of 5 | Added DETAIL "F" and note (*) to ANCHOR BOLT TABLE. Changed Pedestrian and Bicycle Railing designation. Corrected height dimension on steps to top of nosing. | 5210 | 1 of 1 | New Index added "PRECAST SOUND BARRIERS-PRECAST POST CAPITAL". |
| 861 | 1 of 2 | Changed designation of 54" tall railing to "Special Height Bicycle Railing". | 5211 | 2 of 5 | Changed NAME, DATE AND BRIDGE NUMBER note, and "Ribbed" to "Slotted" in NEOPRENE DIAPHRAGM PLUG DETAIL. Added REFLECTIVE RAILING MARKERS note and SELECTIVE RAILING MARKER SPACING table. |
| | 2 of 2 | Added requirement for set screw to be set flush against outside face of rail and 18-8 Alloy option in DETAIL "B". Changed field splice joint tolerance to 1/4" and "Steel Sleeve" to "Aluminum Sleeve" in DETAIL "B". | 5212 | 3 of 3 | Changed "Ribbed" to "Slotted" in NEOPRENE DIAPHRAGM PLUG DETAIL. Corrected Anchor Pin diameter on FIRE HOSE ACCESS DETAIL. |
| 870 | 1 of 5 | Deleted Pedestrian and Bicycle designations from DESIGN LIVE LOADS and ALTERNATE DESIGN notes. | 5300 | 2 of 2 | Added note for "Full Depth Structural Asphalt" above junction slab and changed coping dimension to 6" Min. |
| | 2 of 5 | Deleted 4'-6" Bicycle Railing option and "*" note. Changed maximum ramp length for slopes less than 6.25%. | | 3 of 19 | Increased max. gap at back of precast coping and added timber blocking. |
| | 3 of 5 | Deleted 4'-6" Bicycle Railing option. | | 6 of 19 | Added note for "Full Depth Structural Asphalt" above junction slab and increased max. gap at back of precast coping. |
| | 4 of 5 | Added requirement for set screw to be set flush against outside face of rail and 18-8 Alloy option in DETAILS "D" & "E"; and 1/4" joint tolerance in DETAIL "D". Deleted Intermediate Rails from DETAILS "B" and "C". | | 7 of 19 | Added note for "Full Depth Structural Asphalt" above junction slab. |
| | 5 of 5 | Added DETAIL "F". Deleted 4'-6" Bicycle Railing option. Corrected height dimension on steps to top of nosing. | 11200 | 12 & 15 of 19 | Increased max. gap at back of precast coping. Corrected size of Bar 5U1 in BILL OF REINFORCING TABLE |
| 880 | 1 of 5 | Deleted Pedestrian and Bicycle designations from DESIGN LIVE LOADS and ALTERNATE DESIGN notes. | | 1-2 of 2 | Deleted sheet 2 |
| | 2 of 5 | Deleted 4'-6" Bicycle Railing option and "*" note. Changed maximum ramp length for slopes less than 6.25%. | | 1 of 2 | Revised and rearranged notes, sheet renumbered to 1 of 2. |
| | 3 of 5 | Deleted 4'-6" Bicycle Railing option. | 11300 | 2 of 2 | Renumbered sheet 3 of 3 to sheet 2 of 2 revised and rearranged notes. Deleted "Class 1 (Special) Concrete" replaced with "Class 1 Concrete". |
| | 4 of 5 | Added requirement for set screw to be set flush against outside face of rail and 18-8 Alloy option in DETAILS "D" & "E"; and 1/4" joint tolerance in DETAIL "D". Deleted Intermediate Rails from DETAILS "B" and "C". | 11310 | 1 of 1 | Hanger table values revised; connection bolt size revised; sign depth for horizontal splice changed to 10'. U-Bolt material spec (A325) added to Typical Detail of Sign & Truss Connection. |
| | 5 of 5 | Added DETAIL "F". Deleted 4'-6" Bicycle Railing option. Corrected height dimension on steps to top of nosing. | 11320 | 1 of 5 | Deleted A307 bolts and Palnut (Note 4e). Changed foundation concrete (Note 7). Changed to 1/2" mesh (Note 9). Deleted grout pad and notes (former Notes 7c & 9). Added CSL tube note (Note 14). |
| 5100 | 2 of 2 | Changed to plastic sleeve expansion joint and "Premoulded Expansion Material" to "Preformed Joint Filler". Changed wall and expansion joint key. | | 2 of 5 | Changed foundation standoff distance and changed drilled shaft detail. Deleted grout pad and added wire screen. Added CSL tubes. Changed FC & FL reinforcing. |
| 5200 | 1 of 1 | Post caps added to note C.1.b; Changed note K.2 to allow 8 ft height panels. Added note K.11; Changed notes H.1, H.2 and D.2; Deleted note H.3. | | 5 of 5 | Changed bolt spacing connection details. |
| 5201 | 1 of 1 | Texture Type "I" (Cut Coral Block) added. | | 1 of 5 | Deleted A307 bolts and Palnut (Note 4e). Changed foundation concrete (Note 7). Changed to 1/2" mesh (Note 9). Deleted grout pad and notes (former Notes 7c & 9). Added CSL tube note (Note 14). |
| 5202 | 1 of 4 | Added precast post cap; Changed clearance tolerance on stepped panel and Neoprene Pad options. | | 2 of 5 | Changed foundation standoff distance. Deleted grout pad and added wire screen. |
| | 3 of 4 | Changed #4 Bar Mark to Bars P5 and P6 for Pile/Post Options A, B, & E; changed Texture Thickness to 1 1/4" Max. | | 4 of 5 | Changed bolt spacing connection details. |
| 5203 | 1 of 5 | Added precast post cap; Changed clearance tolerance on stepped panel and Neoprene Pad options. | | 5 of 5 | Changed drilled shaft detail. Added CSL tubes. |
| | 3 of 5 | Changed #4 Bar Mark to Bars P5 & P6 for Pile/Post Options A, B & E, and changed texture thickness dimension to 1/4" Max. | 11860 | 1 of 8 | Changed SINGLE COLUMN GROUND SIGN NOTES, Note 11, and GUIDE TO USE THIS STANDARD, Note 4 and example. Modified concrete classification. Modified "ALUMINUM COLUMN (POST) SELECTION TABLE". |
| | 4 of 5 | New sheet added for 45 degree corner post. | | 2 of 8 | Changed maximum limits of sign cluster area and width in NOTE. |
| | 5 of 5 | Renumbered from Sheet 4 of 4. | | 3 of 8 | Added Aluminum Soil Plate details and notes. Changed Post and Foundation Table depth values. Modified "ALUMINUM COLUMN (POST) SELECTION TABLE". |
| | | | | 4 of 8 | Deleted "Signs at 90°" note. Added "For" note. Changed number of Z-brackets for STOP and RECTANGULAR sign. Changed '1" Min.' to '0" Min.' and sign panel edge distance in VIEW A-A. Modified U-bolt size. Changed panel overhang length. |
| | | | 17302 | 5 of 8 | Modified "DRIVEN POST DETAIL IN CONCRETE". |
| | | | 17328 | 1 of 1 | CASE II, and CASE VIII dimensions and notes revised. |
| | | | | 1 of 1 | Weigh Station and combination Weigh Station and Inspection Station signing details separated. |

**Revisions
Design Standards 2010**

| Index Number | Sheet Number | Description | Index Number | Sheet Number | Description |
|---------------------|---------------------|---|---------------------|---------------------|---|
| 17344 | 2, 3, 4 & 6 of 6 | SCHOOL SIGNS AND MARKINGS, on each sheet, in the Distance table at the bottom of the sheet, deleted the "A" column. Also deleted the "A" dimension from the detail drawings. | 17725 | 1 of 2 | Round pole note revised; pole height dimensions added to Type P-III through P-VIII; Copper Ground note changed. |
| 17345 | 2 of 4 | NORMAL TAPERED ENTRANCE WITH ADDED LANE, note in lower left corner, arrow now points to the reflective markers on the LEFT side of the ramp. | | 2 of 2 | Notes revised and rearranged, D(feet) changed to H(feet) in both tables. |
| | 4 of 4 | Deleted note 2 | 17727 | 1-2 of 2 | Schedule 40 aluminum pipe (T6061) added as an alternate to stainless steel pipe in assembly details and signalhead notes. Added backplates to signalhead details. |
| 17346 | 1-14 of 14 | Completely revised and renumbered. | 17736 | 1 of 1 | Added notes 5 & 6. |
| 17347 | 1-4 of 4 | New Index BICYCLE MARKINGS added. | 17743 | 1 of 3 | Updated assembly dimensions. Changed drilled shaft reinforcing. |
| 17349 | 1 of 1 | Case I and Case II revised; 18" x 18" marker detail revised; notes at bottom right revised. | | 2 of 3 | Updated assembly dimensions. Changed drilled shaft reinforcing. Changed T3-BF. |
| 17355 | 1 of 11 | Revised signs FTP-9A-06 & FTP-9B-06 and notes. | | 3 of 3 | Updated assembly dimensions. Changed drilled shaft reinforcing. |
| | 7 of 11 | For all signs with 1-800 phone number, deleted "1-800-998-RIDE" and substituted "1-8XX-XXX-XXXX" and below each sign added note: "Design Project Manager or Transit Administrator will supply correct 1-8XX number". | 17745 | 1 of 5 | QPL requirements added in new note 17; added backplates to pole detail; Notes 6 & 14 revised, deleted note 19. |
| | 8 of 11 | Revised sign FTP-68A-06, bolt holes located outside of sign message, notes revised. Sign FTP-69-06 and FTP-68B-06 message and spacing revised. | 17748 | 2 of 5 | Revised foundation reinforcing details, Section AA, Section DD and Foundation Plan details. |
| | 9 of 11 | Revised sign FTP-82-08 and arrow detail. Added Sign FTP-83-08. | | 1 of 1 | Option 1 deleted and Options 2 and 3 renumbered; Note 1 revised. Added backplates to signalhead displays. |
| 17356 | 1 of 1 | Removed signalhead from detail. Single point attachment details deleted from Index. (Deleted sheet 1.) | 17784 | 1 of 2 | Dimensions revised on Figures A & B. Note 5 and Note to Designers revised. |
| 17359 | 1 of 2 | Changed delineators to object markers; revised reference notes; sign W13-1 made optional. RURAL NARROW BRIDGE TREATMENT, changed the DM3L on the right side of the roadways to an DM3R. | 17890 | 2-3 of 3 | Added backplates to signalhead displays. |
| | 2 of 2 | Notes revised; inserts reorganized | 17900 | 7 of 7 | Changed pole type callouts, deleted "N-III" and substituted "P-III". |
| 17500 | 1 of 3 | Deleted concrete pole detail, added METAL POLE DETAIL AND WIRING DIAGRAM. | 18111 | 1-2 of 2 | Index totally revised. |
| | 2 of 3 | Note 7, deleted "class I Concrete (Miscellaneous)" replaced with "Concrete and reinforcing for slabs around poles and pullboxes shall be included in the price for pullbox or pole." | 18113 | 1-2 of 2 | Index totally revised. |
| | 3 of 3 | Note 7, deleted "class I Concrete (Miscellaneous)" replaced with "Concrete and reinforcing for slabs around poles and pullboxes shall be included in the price for pullbox or pole." | 20110 | 1 of 1 | Changed Insert Detail for Diaphragm Reinforcing. |
| 17501 | 1 of 1 | Deleted note 28. | 20199 | 1 of 1 | Changed BEAM CAMBER AND BUILD-UP NOTES. |
| 17502 | 3 of 7 | Changed Note 9. Added Notes 10 & 11. Changed Notes 11 & 12. Deleted grout pad notes (former Notes 4 & 9). Added CSL tube note (Note 11). | 20210 | 2 of 2 | Added "Type Q" Epoxy to Note 9. |
| | 4 of 7 | Added ID plate and changed base plate thickness. Deleted grout pad. Changed drilled shaft reinforcing. | 20299 | 1 of 1 | Changed BEAM CAMBER AND BUILD-UP NOTES. |
| | 5 of 7 | Changed Weld symbol in SECTION A-A. Added padlock tab to HANDHOLE RING. Added Section E-E detail and bottom baseplate washer to SECTION C-C. Deleted grout pad and added wire screen. Added CSL tubes. | 20500 | 1 of 1 | Added Type C Pads for larger skew ranges. Changed specification of elastomer from "durometer" to "shear modulus". |
| | 6 of 7 | Grout notes and details removed, new wire screen. | 20501 | 1 of 1 | Changed Note 4. |
| | 7 of 7 | Note 3, changed "Concrete class" to "concrete NS" | 20502 | 1 of 1 | Changed Note 4. |
| 17503 | 1 of 1 | Index deleted. | 20602 | 1 of 1 | Changed EDC location to 1D from tip of pile. |
| 17504 | 1 of 1 | Dimensions 5'-6" added for height of meter base. Pole type changed from type "N" to type "P". | 20900 | 2 of 2 | Changed coping width and End Bent lug from 6" to 5½" thickness. |
| 17505 | 1 of 2 | Mercury Vapor Luminaires changed to Induction Luminaires. Luminaire chart deleted, dimensions revised on spacing detail note and added to structure detail. | 20910 | 2 of 2 | Changed coping width and End Bent lug from 6" to 5½" thickness. |
| 17515 | 1 of 8 | Added median barrier mounted light poles. Moved notes to sheet 2. | 21100 | 1 of 3 | Deleted redundant notes from Specification Section 458. |
| | 2 of 8 | New Sheet for Notes. Change Note 7 for QPL Criteria. Modified concrete classification. Added notes for median barrier mounted light pole and foundation. | | 3 of 3 | Changed Sidewalk Cover Plate edge treatment. |
| | 3 of 8 | Sheet renumbered from 2 to 3. Added double arm configuration to ARM ELEVATION. | 21110 | 1 of 2 | Deleted redundant notes from Specification Section 458. Changed last line of title of bottom left detail to "DECK WITH SLOPES 2% OR GREATER". |
| | 4 of 8 | Allowed fusion weld reinforcing cage (*) and changed foundation concrete note. Added 1" dimension to Double Nuts in FOUNDATION. Modified concrete classification. Renumbered sheet from 3 of 3 to 4 of 8. | | 2 of 2 | Changed Sidewalk Cover Plate edge treatment. |
| | 5-8 of 8 | New Sheets for median barrier mounted light pole. | 21200 | 1 of 2 | Added "Anchor Plate (dashed lines) (provide Design) to ELEVATION VIEW and TYPICAL SECTION. Added design of anchor bolts and accessories. |
| 17600 | 2 of 3 | Added detail for pole foundation to be used only behind guardrail. | | 2 of 2 | Added design of anchor bolts and accessories. |
| | 3 of 3 | GENERAL NOTES, note 2, changed "Class II Concrete" to "Class I Concrete"; changed note 4. | 21600 | 1 of 7 | Clarified INSTRUCTIONS TO DESIGNER for variable end span lengths. |
| 17723 | 1 of 3 | Changed Note 5i, 6 and 7. Added Note 8. Deleted grout pad and notes (former Notes 4d & 7). Added CSL tube note (Note 9). | | 3 of 7 | Added vertical dimensions between deck surface and underside of bearings, including depth of Truss Panel. |
| | 2 of 3 | Changed number of bolts in VIEW B-B, number and size of foundation reinforcing bars, and TABLE OF STRAIN POLE VARIABLES. Added foundation standoff distance and washer for base plate. Deleted grout pad and added wire screen. Added CSL tubes. Changed drilled shaft reinforcing. | 21802 | 1 of 1 | Changed "Methyl Methacrylate" to "High Molecular Weight Methacrylate". |
| | 3 of 3 | Changed note in VIEW E-E; Added ¼" and ⅜" cable clamps and changed weld criteria. Changed clevis size. | 21803 | 1-2 of 3 | Revised call-outs for Grout Outlets; Changed "Methyl Methacrylate" to "High Molecular Weight Methacrylate". |
| | | | | 3 of 3 | Shrink wrap deleted from Duct Coupler Detail. Revised call-outs for Duct Couplers; Changed "Methyl Methacrylate" to "High Molecular Weight Methacrylate". |

A Area or Amperes
AAA American Automobile Association
AADT Annual Average Daily Traffic
AASHTO American Association Of State Highway Officials
AASHTO American Association Of State Highway And Transportation Officials
ABC Asphalt Base Course
Abd. Abandoned
ABS Acrylonitrile-Butadiene-Styrene Pipe
AC, Ac. Acre
AC or Asph. Conc. Asphaltic Concrete
Accel. Acceleration
ACI American Concrete Institute
Act. Actuated
ADA The Americans With Disabilities Act
Adh. Adhesive
Adj. Adjust
ADT Average Daily Traffic
AFAD Automatted Flagger Assistance Device
Agg. Aggregate
Ah. Ahead
AISC American Institute Of Steel Construction
Alt. Alternate
Al. Aluminum
AM 12:00 Midnight Until 11:59 Noon
ANSI American National Standards Institute
ADS Apparent Opening Size
Appl.. Applied, Application
Apprh. Approach
Approx. Approximate
ARTBA American Road & Transportation Builders Association
Artf. Artificial
Asph. Asphalt
Assem. Assembly
Assn. Association
Assoc. Associate, Association
ASTM American Society For Testing And Materials
ATPB Asphalt Treated Permeable Base
Attn. Attention
Attnuatr. Attenuator
Aux. or Auxil. Auxiliary
Ave. Avenue
AWG American Wire Gauge
AWS American Welding Society
Az Azimuth

B to B Back to Back
Basc. Bascule
Bd. or Bnd. Bond or Bonded
BC Bottle Cap or Bolt Circle
B/C, B.C. Back Of Curb
BCCMP Bituminous Coated Corrugated Metal Pipe Culvert
BCPA Bituminous Coated Pipe Arch Culvert
BCPCMP Bituminous Coated And Paved Corrugated Metal Pipe Culvert
BCPPA Bituminous Coated And Paved Pipe Arch Culvert
BCT Breakaway Cable Terminal
BCWE Base Clearance Water Elevation
BE Buried Electric
Beg. Begin
Bit. Bituminous
Bk. Back
BL, BLC, or B̄ Base Line, Base Line Control
Bldg. Building
Blkhd. Bulkhead
BLDN Begin Length Of Need
Blvd. Boulevard
BM Bench Mark
Bndry. Boundary
Bdr. Border
Bot. Bottom
BO Basin Outlet
BOS Beginning Of Survey
BP Borrow Pit
Bq. Becquerel

Br. Bridge
Brg. Bearing
Brkwy. Breakaway
BT Buried Telephone Cable or Duct
Btfly. Butterfly
BW Barbed Wire, Bottom Width or Both Ways
C Cantilever Length, Cut, Colorless, Coulomb or Cycle Length
°C Degree Celsius
C & G Curb And Gutter
CA Coarse Aggregate
Cap. Capacity
CAP Corrugated Aluminum Pipe
Caps. Capital Letters
CASP Corrugated Aluminized Steel Pipe
CATV Cable Television
CB Catch Basin
CBC Concrete Box Culvert
CBS Concrete Box Structure
CC, C/C, C to C, or C.C. Center to Center, Crash Cushion
CCEW Center to Center Each Way
CCTV Closed-Circuit Television
CD Cross Drain, Cross Direction (Geotextiles)
cd Candela
Cem. Cement or Cemetery
Cem'd. Cemented
CFS Cubic Feet Per Second
Ch. Channel
Chchg. Channel Change
Chg. Changeable
CI Cast Iron
CIP Cast Iron Pipe
CIPL, C.I.P., C-I-P Cast In Place
circ. Circumference
Ckt. Circuit
Cl. or Clear Clearance
CL, C/L or C̄ Center Line
CM Concrete Monument
CMB Concrete Median Barrier
CMP Corrugated Metal Pipe
CMPA Corrugated Metal Pipe Arch
Co. County or Company
Col. Column
Com. Commercial or Common
CDMM Committee or By Committee
Comp. Composite
Con. Connect or Connection
Conc. Concrete
Const. Construct or Construction
Contrl. Controller
Cont. Continuation
Contr. Contractor
Coord. Coordinate
Cor. Corner
Corr. Corrugated
CP Concrete Pipe
CPE Corrugated Polyethylene Pipe
CPT Cone Penetration Test
CR Control Radius or County Road
CRA Clear Recovery Area
Crs. or Cse. Course
CS Curve To Spiral
CSP Corrugated Steel Pipe
CT Clear Trunk
CTPB Cement Treated Permeable Base
Ctivr. Cantilever
Ctr., Ctrs. Center
CU or Cu Copper
Culv. Culvert
Cwt. Hundredweight
CY, Cu. Yd., CY, or C.Y. Cubic Yard
Cyl. Cylindrical

D Degree Of Curvature, Depth, Density, Distance, Diameter or Directional Distribution
DA Drainage Area or Deflection Angle
DBH Diameter At Breast Height
DBI Ditch Bottom Inlet
Dbl. Double
DCS Degree Of Curvature (Spiral)
DD Dry Density
DDHV Directional Design Hour Traffic
Decel. Deceleration
Deg. Degree
Delin. Delineators
Demobl. Demobilization
Dept. Department
Det. Detour, Detection, Detectable
DFE Design Flood Elevation
DGN or Dgn. Design
DHV Design Hourly Volume
DHW Design High Water
DT Ditch
DI Drop Inlet
Dia. or D Diameter
Dim. Dimension
Disp. Disposal
Dist. Distance
DLS District Location Surveyor
DMM Domestic Mail Manual
DOT Department Of Transportation
DPI or D.P.I. Ditch Point Intersection
Dr. or DR. Drain, Drive or Design Review
DR Design Review
Driv. Driven
Drwy. Driveway
DS Design Speed
DSL Design Service Life
Dwg. Drawing
E East or External Distance
e Rate Of Superelevation
E to E End to End
EA or Ea. Each
EB Eastbound
EIA Electronic Industries Alliance
El. or Elev. Elevation
Elast. Elastomeric
Elec. Electric
Ellip. Elliptical
Embk. Embankment
Emul. Emulsified
Encl. Enclosure
Engr. Engineer
EOS End Of Survey or Equivalent Opening Size
E.P. or EOP Edge Of Pavement
EPDM Ethylene Propylene Diene Monomer
Eq. Equation or Equal
Equip. Equipment
Esmt. Easement
Est. or Estm. Estimate
Est. Establish or Established
Etc. or etc. Et Cetera (And So Forth)
ETP Electronic Tough Pitch
EW Endwall
Ex. Except, Example
Exc. or Excav. Excavation
Exist. Existing
Exp. Expansion
Ext. Extension
Exwy. Expressway

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STANDARD ABBREVIATIONS

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| | | | | | | | |
|-----------------------|--|-------------------|--|-------------------|---|------------------------|--|
| F | Fill, Farad | HW or H.W. | High Water or Hot Water | M | Mass, Middle Ordinate Length or Mega | N m | Newton Meter |
| F or Final | Final Quantity | Hwy. | Highway | m | Meter or Milli | No. | Number |
| F & I | Furnish & Install | Hyd. | Hydraulic | m ² | Square Meter or Meter Square | Nom. | Nominal |
| F to F | Face to Face | Hz | Hertz | m ³ | Cubic Meter or Meter Cubed | Norm. | Normal |
| FA | Federal Aid or Fine Aggregate | | | m ³ /m | Cubic Meter Per Meter | N.P. | Non Plastic |
| FAC | Florida Administrative Code | I | External Angle (Delta), Interstate | m/s | Meters Per Second | NPS | Nominal Pipe Size |
| FAP | Federal Aid Project | Intchg. or Ichg. | Interchange | Mach. | Machine | NPT | National Pipe Thread |
| FC | Friction Course | IES | Illuminating Engineering Society | Maint. | Maintenance | NRCP | Non-Reinforced Concrete Pipe |
| FD | French Drain | ID, I.D. | Inside Diameter or Identification | Matl. | Material | NS | Non Stress, Not Suitable or Near Side |
| Fdn. | Foundation | IMC | Intermediate Metal Conduit | Max. | Maximum | NT, N&T | Non Traffic, Nail & Tin |
| FDDT | Florida Department Of Transportation | In. | Inch or Inches | MB | Median Barrier | NTS | Not To Scale |
| FE | Floor Elevation | Inc. | Incorporated or Including | MBM | Thousand (Feet) Board Measure | NW | Northwest |
| Fed. | Federal | Incl. or Inc. | Included | MD | Machine Direction (Geotextiles) | | |
| Fert. | Fertilizer | Ind. | Industry or Industrial | Med. | Median | Opass | Overpass |
| FES | Flared End Section | INV. or Inv. | Invert | Mega | One Million | Q to Q, o to o or O.D. | Out to Out |
| FETS | Flared End Terminal Section | IP | Iron Pipe | Memb. | Member | QA | Overall |
| FH | Fire Hydrant | Install. | Installed | MES | Mitered End Section | Q.B.G. | Optional Base Group |
| FHWA | Federal Highway Administration | Isect. | Intersection | Mess. | Message | QC or Q.C. | On Center |
| Fig. | Figure | Isl. | Island | Mfg. | Manufactured or Manufacturer | OD or O.D. | Outside Diameter |
| Fin. | Finish | IR | Iron Rod | MG | 1000 Gallons | OE | Overhead Electric |
| F.L., FL or \bar{F} | Flow Line | ITE | Institute Of Transportation Engineers | MH, M.H. | Manhole, Mounting Height | OH, OHD or Ohd. | Overhead |
| FL, Fl. or Fla. | Florida | ITS | Intelligent Transportation Systems | MHW | Mean High Water | Opt. | Option, Optional or Optically |
| Flex. | Flexible | | | μ | Micro | OT | Overhead Telephone |
| FNQ | Fuse (Type Slow Burn) | J | Joule | Mi. | Mile | Oz. | Ounce |
| FDC | Fiber Optics Cable | JB | Junction Box | Micro | One-Millionth | Ω | Ohm |
| FPM or fpm | Feet Per Minute | Jct. | Junction | Mid. | Middle | P | Passenger Car & Light Delivery Truck |
| FPS or fps | Feet Per Second | Jt. | Joint | Mil | One-Thousandth Of An Inch | P or Plan | Plan Quantity |
| FR or Fr. | Frame | | | Mil. | Military | Pa | Pascal |
| Frang. | Frangible | K | Design Hour Factor or Kelvin | Milli | One-Thousandth | Par. | Parallel |
| Freq. | Frequency | k | Kilo (prefix) | Min. | Minimum or Minute | Pa.s | Pascal Second |
| F.S. | Florida Statutes | kg | Kilogram | Misc. | Miscellaneous | Part. | Participation or Partition |
| Ft. | Foot or Feet | kg/m | Kilogram Per Meter | mL | Milliliter | Pavt. | Pavement |
| FTB | Floating Turbidity Barrier | kg/m ² | Kilogram Per Square Meter | MLW | Mean Low Water | PC | Point Of Curvature |
| FTBA | Florida Transportation Builder Association | kg/m ³ | Kilogram Per Cubic Meter | mm | Millimeter | PCBC | Precast Concrete Box Culvert |
| FTP | Florida Traffic Plans | Kilo | One Thousand | mobl. | Mobilization | PCC | Point Of Compound Curvature or Plain Cement Concrete |
| Furn. | Furnish | Kip | 1000 Pounds | Mod. | Modify or Modified | PCE | Permanent Construction Easement |
| | | km | Kilometer | Mol | Mole | PE | Professional Engineer |
| | | km/h | Kilometer Per Hour | Mon. | Monument | Ped | Pedestrian or Pedestal |
| G | Giga or Gauss | kn | Knot | MOT | Maintenance Of Traffic | Pen. | Penetration |
| g | Gram or Gravity | kN | Kilonewton | MP | Mile Post | PG | Profile Grade |
| Galv. | Galvanized | kPa | Kilopascal | MPa | Megapascal | PGL | Profile Grade Line |
| Ga. | Gauge or Gage | ksi | Kips Per Square Inch | MPH or mph | Miles Per Hour | Ph. | Phase |
| Ga. or Gal. | Gallon | kV | Kilovolt | MSL | Mean Sea Level | pH | Measure Of Acidity or Alkalinity |
| Gar. | Garage | kVA | Kilovolt Ampere | MSTCSD | Minimum Specifications For Traffic Control Signal Devices | PI | Point Of Intersection |
| GD | Gutter Drain | kWh | Kilowatthour | | | Pkg. | Parking |
| GFI | Ground Fault Interrupter | | | Mtd. | Mounted | Pkwy. | Parkway |
| GIP | Galvanized Iron Pipe | L | Length, Length Of Curve, Liter, Left | MUTCD | Manual On Uniform Traffic Control Device | PL or \bar{P} | Property Line or Plate |
| GM | Gas Main | 2-L | Two-Lane | MUTS | Manual On Uniform Traffic Studies | PM | 12:00 Noon Until 11:59 Midnight |
| GP | Grade Point | 2L1W | Two-Lane One-Way | | | POC | Point On Curve |
| Gr. | Grade, Guardrail or Grate | 2L2W | Two-Lane Two-Way | N | North or Newton | PDST | Point On Semi-Tangent |
| Gr. or Gro. | Gross | LA or L/A | Limited Access | N/m | Newtons Per Meter | POT | Point On Tangent |
| GRC | Galvanized Rigid Steel Conduit | Lat. | Lateral or Latitude | N/m ² | Newtons Per Square Meter | PP | Power Pole |
| Grd. | Ground | Lb. | Pound | N/m ³ | Newtons Per Cubic Meter | PPB | Pier Protection Barrier |
| GRI | Geosynthetic Research Institute | LBS. | Pounds | N/mm ² | Newtons Per Square Millimeter | Pr. | Pair |
| gross km | Gross Kilometer | lb/sy | Pounds Per Square Yard | NA or N/A | Not Available or Not Applicable | PRC | Point Of Reverse Curvature |
| Gr. Wt. or gr. wt. | Gross Weight | LBR | Limerock Bearing Ratio | N & C | Nail & Cap | Prct. | Precast |
| Gttr. | Gutter | LC | Long Chord | N & D | Nail & Disk | Prest. | Prestressed |
| | | LED | Law Enforcement With Flashing Lights And Radar | NAVD | National American Vertical Datum | Prob. | Probability |
| H | Henry | LFD | Load Factor Design | NB | Northbound | Prod. | Product, Production, Producer or Produced |
| h | Hour or Hecto | Lgth. | Length | NC | National Coarse or Normal Crown | Prog. | Program or Progression |
| ha | Hectare | Lin. | Linear | NCHRP | National Cooperative Research Program | Proj. | Project or Projection |
| HAR | Highway Advisory Radio | lm | Lumen | NDCBU | Neighborhood Delivery And Collection Box Unit | PRM | Permanent Reference Monument |
| HB | Hay Bales | Lmrk. | Limerock | NE | Northeast | Prop. | Proposed |
| HC | Horizontal Clearance | LDS | Limit Of Clear Sight | net km | Net Kilometer | Prov. | Provisions |
| HD | High Density or Heavy Duty | Loc., LD | Location | NEMA | National Electrical Manufacturers Association | PRS | Portable Regulatory Sign |
| HD or Hd. | Head | Long. | Longitude | NGVD | National Geodetic Vertical Datum of 1929 | PS & E | Plans, Specifications And Estimates |
| HDPE | High Density Polyethylene | LRFD | Load Resistance Factor Design | NGS | National Geodetic Survey | PSF or psf | Pounds Per Square Foot |
| Hdl. | Headwall | LS | Length Of Spiral | NHS | National Highway System | PSI or psi | Pounds Per Square Inch |
| HH | Heavy Hex | LT | Left Turn | NHW | Normal High Water | PT | Point Of Tangency or Pressure Treated |
| Hndrl | Handrail | Lt. | Left | NIC | Not In Contract | PVC | Polyvinyl Chloride |
| HDA | Hand/Off/Automatic | Ltd. | Lighted or Limited | NJ | New Jersey | PW | Pressure Water |
| Horiz. or Hor. | Horizontal | Lum. | Luminaire | | | | |
| HP | High Pressure or Horsepower | L/W | Lightweight | | | | |
| Hr. | Hour | lx | Lux | | | | |
| HS | High Strength | | | | | | |
| HSHV | High Strength Horizontal Vertical | | | | | | |
| Hse. | House | | | | | | |
| Ht. | Height | | | | | | |

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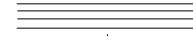

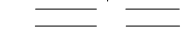
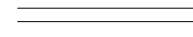

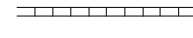
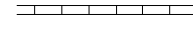

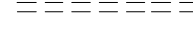
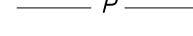
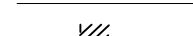

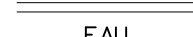

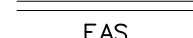
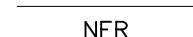
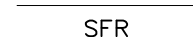
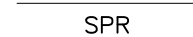

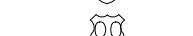
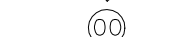
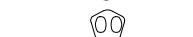



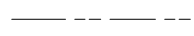
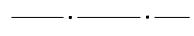
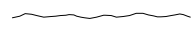
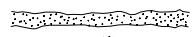







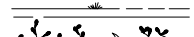
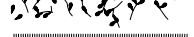






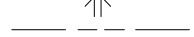
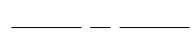

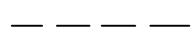
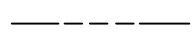



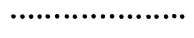
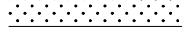
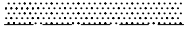
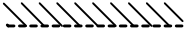
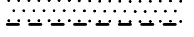
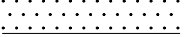















































| | | | | UNITS OF MEASURE | |
|----------------------|---|----------------|---|------------------|---|
| | | | | US MEASUREMENT | |
| Q | Peak Discharge or Flow Volume | SRASP | Spiral Rib Aluminized Steel Pipe | V | Volt, Velocity, Volume or Hourly Volume |
| QPL | Qualified Products List | SRCP | Steel Reinforced Concrete Pipe | Var. | Varies, Variable or Variance |
| R | Right | SRD | State Road Department | VC | Vertical Curve |
| R or Rad. | Radius | SRSP | Spiral Rib Steel Pipe | VCP | Vitrified Clay Pipe |
| R or Rng. | Range | SS | Sanitary Sewer | VECP | Value Engineering Change Proposal |
| rad | Radian | SSMD | Solid State Modular Design | Veh. | Vehicle |
| rad/s | Radian Per Second | ST | Surface Treatment or Spiral To Tangent | Vert. | Vertical |
| RBAC | Rock Base Asphaltic Concrete | St. or ST. | Street | VF | Vertical Foot |
| RBST | Rock Base Surface Treatment | Sta. | Station | Vh | Verified Horizontal Location |
| RC | Reverse Crown | Stab. | Stability or Stabilization | VMS | Variable Message Sign |
| RCP | Reinforced Concrete Pipe | STB | Staked Turbidity Barrier | Vol. | Volume |
| RCPA | Reinforced Concrete Pipe Arch | Std. | Standard | VP | Vertical Panel |
| Rd. | Road or Round | Stg. | Strong | VPD or Vpd. | Vehicles Per Day |
| Rdsd. | Roadside | Stge. | Storage | VPH or Vph. | Vehicles Per Hour |
| Rdwy. | Roadway | Stl. | Steel | VPHPL or Vphpl. | Vehicles Per Hour Per Lane |
| Rec. | Recovery | Str. | Structure | VRMS | Volts Root Mean Square |
| Rect. | Reticuline or Rectangular | Sty. | Story | Vv | Verified Vertical Elevation |
| Ref. | Reference | SU | Single Unit Trucks | Vvh | Verified Vertical Elevation And Horizontal Location |
| Refl. | Reflective | Sub. or Subs. | Subsoil | VW | Variable Width |
| Reg. | Region, Regular, Registered or Regulation | Sub. or Subst. | Substitute | W | Width, Wide, West or Watt |
| Reinf. | Reinforced or Reinforcing | Subgr. | Subgrade | W/C | Water-Cement Ratio |
| Rejuv. | Rejuvenation | Suppts. | Supports | WB | Westbound |
| Reloc. | Relocated | SUR or Sur. | Survey | Wb. | Weber |
| Rem. | Removal | Surf. | Surface | WB40 | Intermediate Semi Trailer |
| Repl. | Replace | SW | Southwest | WB50 | Large Semi Trailer |
| Req. or Reqd. | Required | SW or Swk. | Sidewalk | WB62 | Interstate Semi Trailer |
| Res. | Residence or Residential | Sys. or Syst. | System | WB67D | Tandem Semi Trailer |
| RGS | Rigid Galvanized Steel | Sv | Sievert | WM | Water Main |
| RHW | Insulation (Moisture & Heat Resistant Rubber) | Sym. | Symmetrical | W.P.I. | Work Program Item |
| RM | Reference Monument | T | Tangent, Length Of Curve, Percent Trucks, Tesla, | WT | Water Table Or Weight |
| r/min | Revolution Per Minute | T, TWP or Twp. | Township | WWF | Welded Wire Fabric |
| RP | Reference Point | t | Metric Ton | WWR | Welded Wire Reinforcing |
| rpm | Revolution Per Minute | tan. | Tangent | X | Coordinate Value (East-West Direction) or Extra |
| RPM | Raised Reflective Pavement Markers | TBM | Temporary Bench Mark | X Rd. | Cross Road |
| r/s | Revolution Per Second | TC | Tangent To Curve | Xing. | Crossing |
| RR | Railroad | TCB | Temporary Concrete Barrier | Xsec. | Cross Section |
| RSDU | Radar Speed Display Unit | TCE | Temporary Construction Easement | Y | Coordinate Value (North-South Direction) |
| Rsf. | Resurface | TCP | Terra Cotta Pipe | Yd. | Yard |
| Rt. | Right | TCZ | Traffic Control Zone | Yr. | Year |
| RU | Rack Unit | TDLC | Transportation Design For Livable Communities | | |
| R/W, RDW | Right Of Way | Tel. | Telephone | | |
| RX | Receive | Temp. | Temperature or Temporary | | |
| S or s | Speed, South, Siemens, Or Second | Theo. | Theoretical | | |
| SAHM | Sand-Asphalt Hot Mix | THRMP/LSTC | Thermoplastic | | |
| SAN or San. | Sanitary | THW or THWN | Insulation (Flame Retardant, Moisture And Heat Resistant Thermoplastic) | | |
| SB | Southbound | Thick. | Thickness | | |
| SBAC | Shell Base Asphaltic Concrete | Tk | Thick, Thickness or Truck | | |
| SBRM | Sand Bituminous Road Mix | Tn. | Ton | | |
| SBST | Shell Base Surface Treatment | Traf. | Traffic | | |
| SC | Seal Coat or Spiral To Curve | Trans. | Transition, Transverse, Translate or Transportation | | |
| Sch. | Schedule | Treat. | Treatment | | |
| SCST | Sand-Clay Surface Treatment | TS | Tangent To Spiral | | |
| SD | Side Drain, Storm Drain | TSC | Length Of Tangent (Spiral Curve) | | |
| SE | Southeast | TTC | Temporary Traffic Control | | |
| Sec. | Second | TVSS | Transient Voltage Surge Suppression | | |
| Sect. | Section | TX | Transmit | | |
| Sed. | Sediment | Typ. | Typical | | |
| Sep. | Separator | Upass. | Underpass | | |
| Seq. | Sequential | UG | Underground | | |
| Serv. | Service | UL | Underwriters Laboratories | | |
| SF | Adjustment Factor In Percent, Silt Fence | Ult. | Ultimate | | |
| SG | Subgrade | Ultd. | Unlimited | | |
| SG | Specific Gravity | Unddr. | Underdrains | | |
| Sh. or Sht. | Sheet | Undrdwy. | Underroadway | | |
| Shldr. | Shoulder | UNL or Undl. | Unloaded | | |
| SHW | Seasonal High Water | Untr. | Untreated | | |
| SIP | Stay In Place | UPS | Uninterruptible Power Supply | | |
| SP | Superpave | USC & GS | US Coast and Geodetic Survey (now National Geodetic Survey) | | |
| Spa. | Space | USGS | US Geological Survey | | |
| Spcg. or Sp. | Spacing | USPS | United States Postal Service | | |
| Spec. | Specification | Util. | Utilities | | |
| SPT | Standard Penetration Test | UV | Ultraviolet | | |
| Sq. Ft., SF, or S.F. | Square Foot | | | | |
| Sq. In. | Square Inch | | | | |
| Sq. Yd., SY or S.Y. | Square Yard | | | | |
| SR or S.R. | State Road | | | | |
| SRAP | Spiral Rib Aluminum Pipe | | | | |

The abbreviations listed are the standard for contract plans production. This list is not all inclusive. Other Department accepted abbreviations may be used when deemed more appropriate. Where special abbreviations are used a descriptive tabulation may be necessary in the plans.



STANDARD ABBREVIATIONS

STANDARD SYMBOLS FOR KEY MAP

| | | | |
|--|--|--|--|
|  Highway With Full Control of Access  Highway With Frontage Roads  Highway Interchange  Proposed Controlled Access Highway  Divided Highway  Hard Surfaced Road  Soil, Gravel Or Shell Surfaced Road  Graded And Drained Road  Unimproved Road  Primitive Road  Private Road  Streets In Inset Or Delimited Areas  Extension Of Local Roads Within Cities  FAI Federal Aid Interstate Highway  FAU Federal Aid Urban Highway  FAP Federal Aid Primary Highway  FAS Federal Aid Secondary Highway  NFR National Forest Road  SFR State Forest Road  SPR State Park Road  Interstate Highway  US Numbered Highway  State Highway  County Road |  Free Ferry  Toll Ferry  Canal Or Drainage Ditch  Intracoastal Waterway  Narrow Stream  Wide Stream  Dam  Dam Or Spillway With Lock  Dam With Road  Flood Control Structure  Lake, Reservoir Or Pond  Intermittent Pond  Meandered Lake  Marsh Or Swamp  Mangroves  Levee Or Dike  Levee Or Dike With Road  Highway Bridge  Small Bridges Closely Spaced  Drawbridge  Highway Grade Separation  Tunnel  State Boundary Line  County Boundary Line  Civil Township Boundary  Extended Township Line  Land Grant Line  Land Section Line  State Survey Section Line  Survey By Others  Location Of Inset Boundary Within Map  Military Reservation Boundary  College Or University Boundary  Corporate Limits  Delimited Area, Population Est.  Reservation, Forest Or Park Boundary  Wildlife Refuge Boundary |  Residential Area Under Development  Lighthouse  State Capital  County Seat  Other City Or Village  Seminole Indian Village  Welcome Station  Wayside Park Or Small Park  Park With Boat Ramp  Boat Ramp  Museum  Recreational Area Or Historic Site  Scenic Site  Post Office  School  Church  Cemetery  Church And Cemetery  Hospital, Health Center Or Rest Home  Toll House, Port Of Entry Or Weight Station  Fair Grounds, Race Course Or Rodeo Arena  Mine Or Strip Mine  Governmental Research Station |  Agricultural Inspection Station  Farmers Market  Game Preserve  Game Checking Station  Bird Sanctuary  Fire Control Headquarters  Lookout Tower  Fire Station  Patrol Or Police Station  Correctional Institution Or Road Camp  Department of Transportation Facility  Coast Guard Station  Armory  Junkyard  Sanitary Fill  Sewage Disposal Plant  Incinerator  Power Plant  Power Substation  Communications Facility  Locked Gate Or Fence  Triangulation Station |
|--|--|--|--|

GENERAL NOTE

1. Symbols on this Index are intended for use on all Roadway, Signing And Marking, Signalization, and Lighting projects. For work zone traffic control symbols refer to Index 600. When additional or similar symbols are used, legends or notations may be required for clarity.



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STANDARD SYMBOLS

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STANDARD SYMBOLS FOR PLAN SHEETS

GENERAL SYMBOLS

| | |
|--|---|
| | State Line |
| | County Line |
| | Township Line |
| | Section Line |
| | City Line |
| | Base Or Survey Line |
| | Right-Of-Way |
| | Easement Line |
| | Limited Access Line |
| | Fence Line |
| | National Or State Park Or Forest |
| | Grant Line |
| | Railroad (Drainage Maps) |
| | Railroad (Detail Plans) |
| | Fence (Limited Access) |
| | Box Culvert |
| | Bridge |
| | Pipe Culvert-Mitered End Section |
| | Pipe Culvert-Straight Endwall |
| | Pipe Culvert-U-Type Endwall |
| | Pipe Culvert-Median Drain |
| | Pipe Culvert-Other End Treatments |
| | 18" SD Storm Drain (Proposed) |
| | 18" SD Storm Drain (Existing) |
| | Inlet |
| | Manhole |
| | Tied Longitudinal Joint |
| | Keyed Longitudinal Joint |
| | Doweled Transverse Expansion Joint |
| | Doweled Transverse Contraction Joint |
| | Transverse Contraction Joint Without Dowels |
| | Survey Reference Point |
| | ALACHUA Triangulation Station |
| | B.M. NO. 112 Bench Mark |
| | Point Of Intersection |
| | North Arrow |
| | Edges Of Existing Pavement And Sidewalk |
| | Guardrail |
| | c.c. Crash Cushion (Attenuator) |
| | Piling Pier Column |
| | Concrete Monument |
| | Base Line |
| | Centerline |
| | Flow Line |
| | Property Line |
| | Delta Angle |
| | Approximate |
| | Round Or Diameter |

| | |
|--|--|
| | Curb |
| | Curb And Gutter |
| | Water Well, Spring |
| | Levee |
| | MP 327 Railroad Mile Post |
| | Railroad Signal With Gate |
| | Railroad Switch |
| | Gate |
| | Pump Island |
| | Storage Tank (Surface) |
| | Storage Tank (Underground) |
| | Mine Or Quarry |
| | Borrow Pit |
| | Church |
| | Store |
| | RES Residence |
| | B Barn |
| | S School |
| | Synthetic Bales |
| | Silt Fence |
| | Floating Turbidity Barrier |
| | Staked Turbidity Barrier |
| | Stream |
| | Shore Line |
| | Marsh |
| | Wetland Boundary (Proposed) |
| | Wetland Boundary (Existing) |
| | Hedge |
| | Trees |
| | Edge Of Wooded Area |
| | Shrubbery |
| | Grove Or Orchard |
| | Definition Of Skew For Cross Drains And Barrels Of Concrete Box Culverts |
| | Rt. Skew Lt. |
| | Concrete |
| | Wood |
| | e Rate Of Superelevation |

UTILITY ADJUSTMENT SYMBOLS

| EXISTING | PROPOSED | | EXISTING | PROPOSED | |
|----------|----------|-------------------------|----------|----------|---------------------------|
| | | Manhole | | | Water Main |
| | | Fire Hydrant | | | Non Potable Water |
| | | Meter (Type) | | | Sanitary Sewer |
| | | Valve (Type) | | | Gas |
| | | Valve Box (Type) | | | Roof Drain |
| | | Valve Cover (Type) | | | Petroleum |
| | | Vent (Type) | | | Steam |
| | | Pump Station | | | Casing |
| | | Sewage Pump Station | | | Duct |
| | | Cleanout | | | Buried Electric |
| | | Cable TV Service Box | | | Overhead Electric |
| | | Power Pole | | | Buried Cable Television |
| | | Telephone Pole | | | Overhead Cable Television |
| | | Combination Pole | | | Buried Telephone |
| | | Guy Wire And Anchor Pin | | | Overhead Telephone |
| | | Guy Pole Deadman | | | Buried Fiber Optic |
| | | Tower | | | Overhead Fiber Optic |
| | | Light Pole | | | |
| | | Transformer | | | |

See General Note, Sheet 1 of 3



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STANDARD SYMBOLS

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STANDARD SYMBOLS FOR PLAN SHEETS

TRAFFIC SIGNALS SYMBOLS

| EXISTING | PROPOSED | |
|----------|----------|---|
| | | Traffic Signal Head (Span Wire Mounted) |
| | | Traffic Signal Head (Pedestal Mounted) |
| | | Traffic Signal Head (Mast Arm Mounted) |
| | | Traffic Signal Pole (Concrete, Wood, Metal) |
| | | Vehicle Detector (Loop) |
| | | Signal Cable (On Messenger Wire) |
| | | Conduit |
| | | Vehicle Detector (Points) |
| | | Pedestrian Detector |
| | | Pedestrian Signal Head (Pole Or Pedestal Mounted) |
| | | Controller Cabinet (Base Mounted) |
| | | Controller Cabinet (Pole Mounted) |
| | | Walk - Dont Walk |
| | | Flashing Dont Walk |
| | | Signal Face Number |
| | | Signal Lens |
| | | Programmed Signal Head |
| | | Messenger Wire |
| | | Pole Tabulation Cross Reference |
| | | Pole Tabulation Cross Reference (Joint Use Pole) |
| | | Signal Phase |

LIGHTING SYMBOLS

| EXISTING | PROPOSED | |
|----------|----------|--|
| | | Pole & Luminaire |
| | | Existing Pole & Luminaire To Be Removed |
| | | Final Position Of Relocated Or Adjusted Pole & Luminaire |
| | | High Mast Lighting Tower |
| | | City Or Utility Owned Luminaire & Pole |
| | | PVC (Polyvinyl Chloride) Lighting Conduit And Conductors |
| | | Rigid Galvanized Lighting Conduit And Conductors |
| | | Lighting Pull-Box |
| | | Light Distribution Point |
| | | Joint Use Pole |
| | | Pier Cap Underdeck Luminaire |
| | | Pendant Hung Underdeck Luminaire |

SIGNING AND PAVEMENT MARKING SYMBOLS

| | |
|--|-----------------------------|
| | Pavement Arrow |
| | Single Solid Line |
| | Double Solid Line |
| | Skip Line |
| | Stop Bar |
| | Traffic Sign (Post Mounted) |
| | Traffic Sign (Overhead) |
| | Sign Number |
| | Sign Item Number |
| | Traffic Flow Arrow |

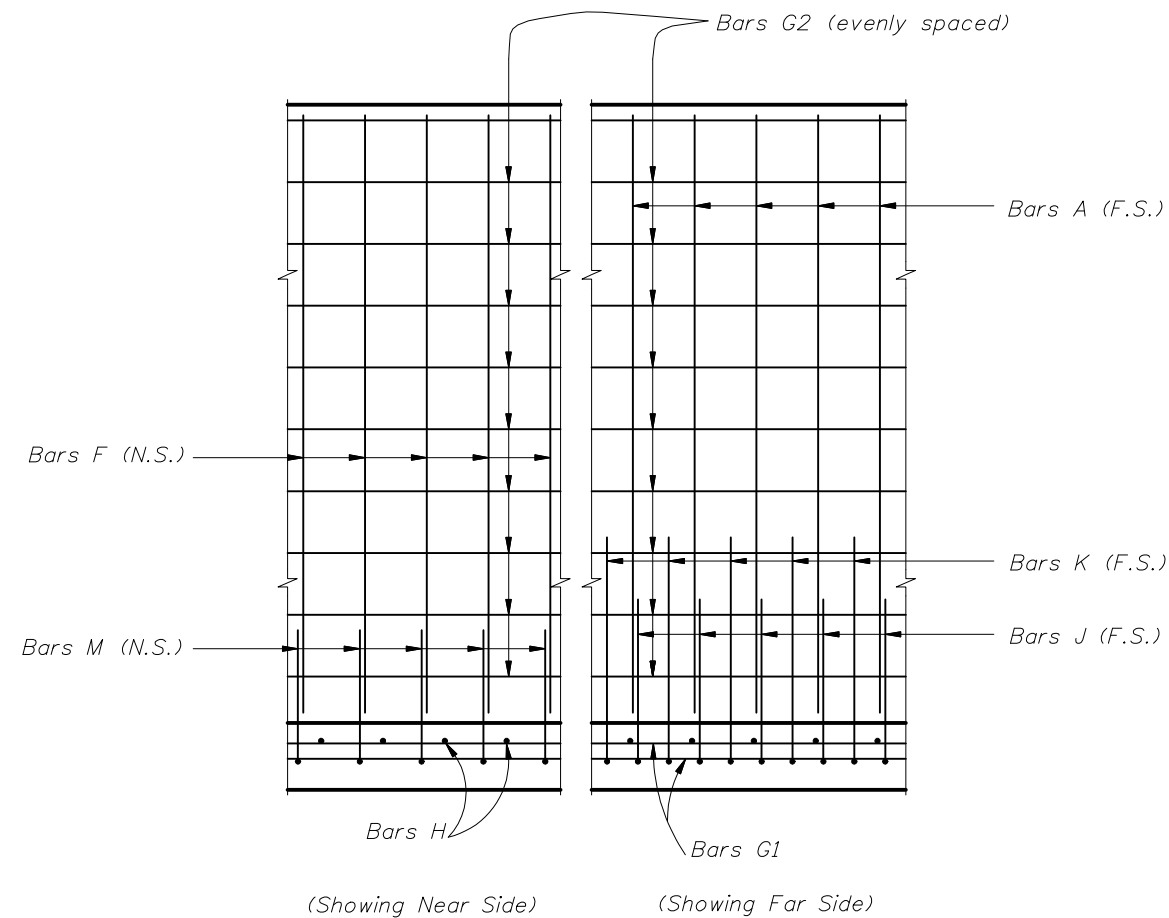
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2010 FDOT Design Standards

STANDARD SYMBOLS

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VIEW A-A
(Shear key not shown)

NOTES

DESIGN SPECIFICATIONS:

Design according to FDOT Structures Manual (current edition).

MATERIALS:

All reinforcing steel shall conform to ASTM A615 Grade 60.

SURFACE FINISH:

A Class 5 Applied Finish Coating shall be applied to the top of the wall and the exposed face above ground line.

ARCHITECTURAL TREATMENT:

Alternate Architectural Treatments may be substituted for the Striated Pattern shown when approved by the Engineer. Concrete required for Architectural Treatment is not included in the quantities.

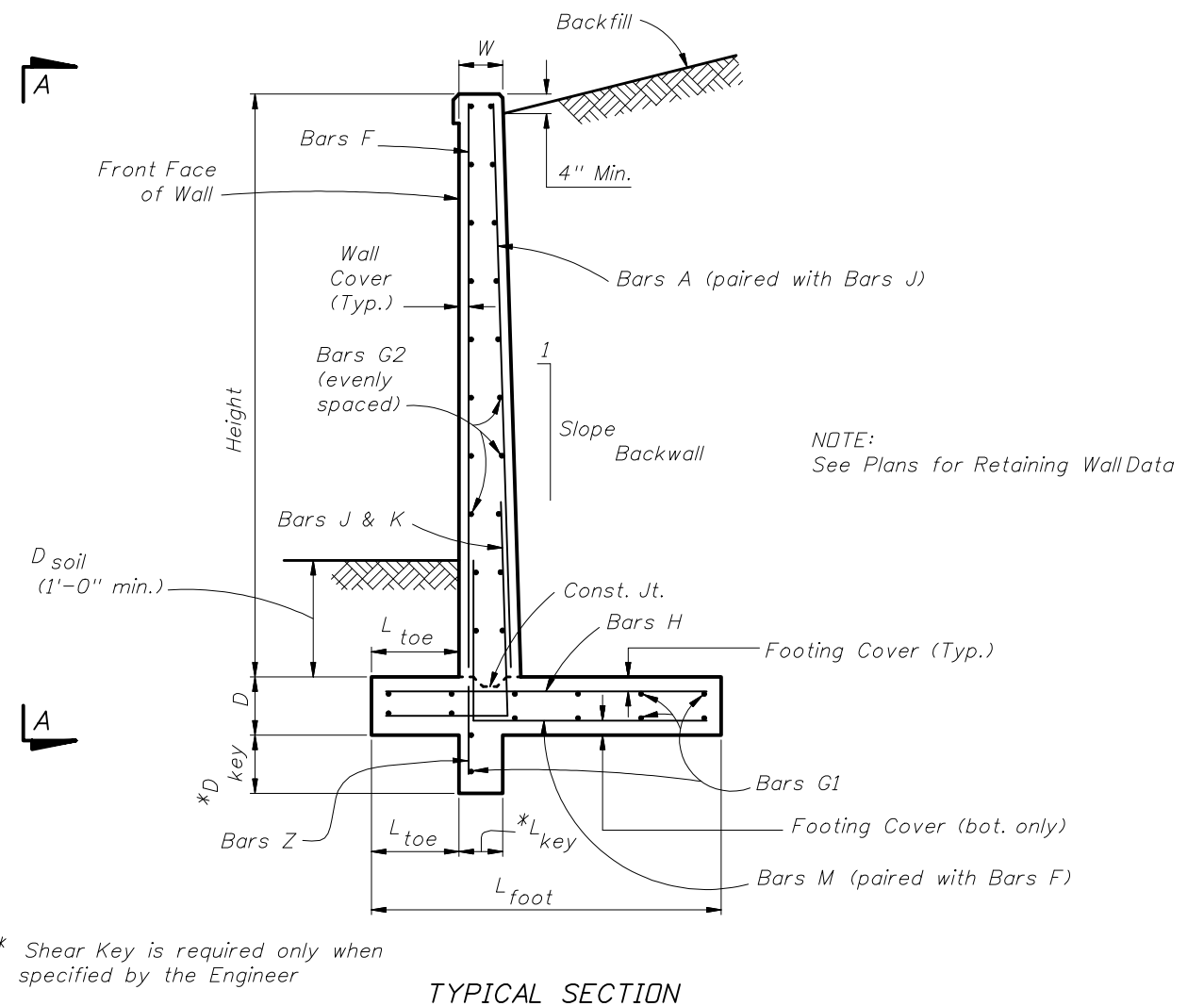
TRAFFIC RAILING BARRIER:

If there is a Traffic Railing Barrier on the wall, Wall Joints and Barrier V-Grooves shall align and Wall Expansion Joints and Barrier Open Joints shall align.

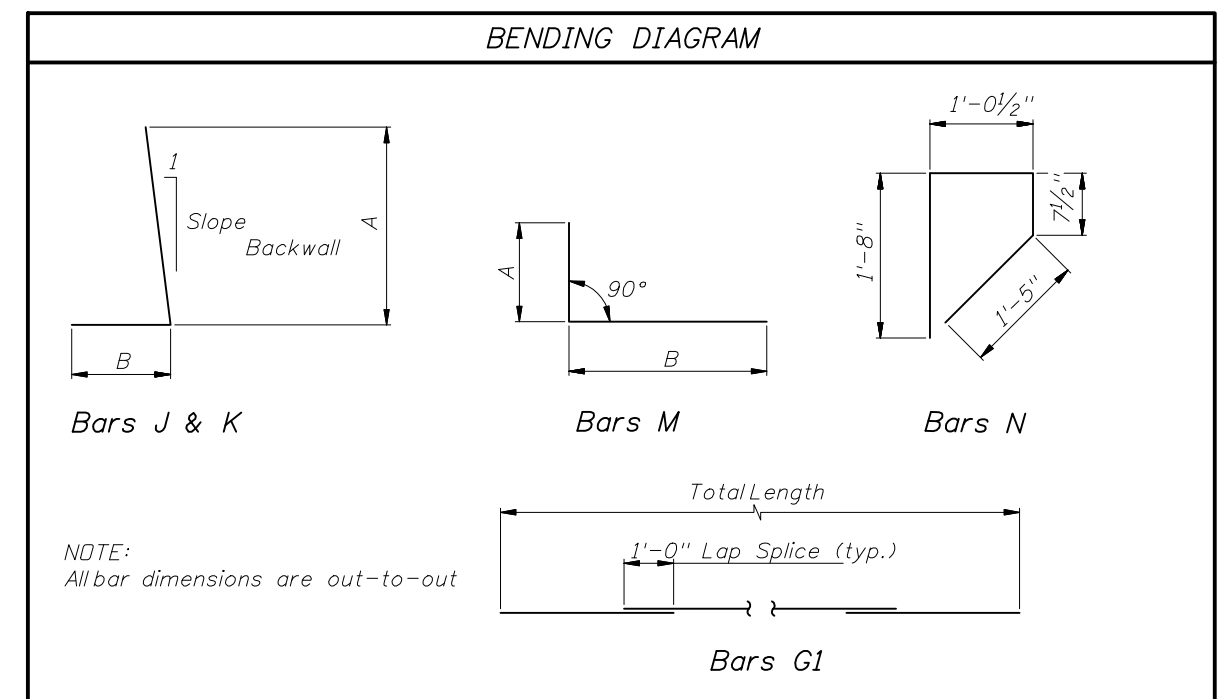
FOUNDATION: Prepare the soil below the footing in accordance with the requirements for spread footings in Specification Section 455.

PAYMENT:

All Retaining Wall costs, including all miscellaneous costs, shall be paid for at the unit contract price for either Class II, III or IV Concrete (Retaining Walls) (CY) and Reinforcing Steel (Retaining Walls) (LBS). Retaining Wall quantities shall not include concrete nor reinf. steel for Traffic Railings. Traffic Railing (including Bars 5V) shall be paid for under Concrete Traffic Railing (Bridge).



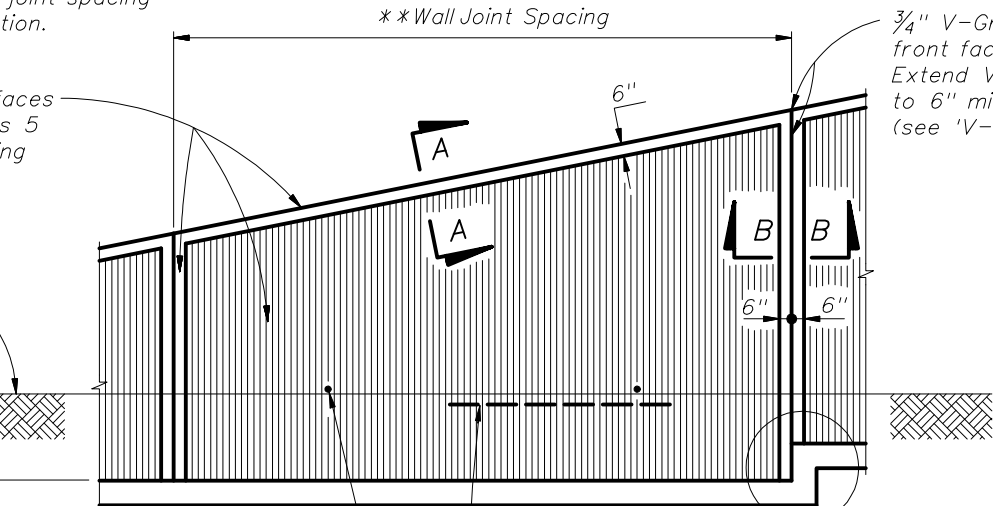
TYPICAL SECTION



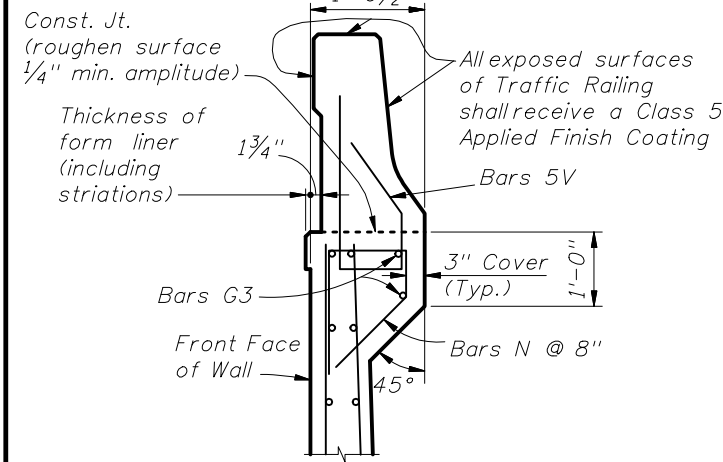
**Wall joint spacing 25 ft. maximum.
At minimum, every fourth wall joint to be an expansion joint.
See Plans for actual wall joint spacing and expansion joint location.

All exposed wall surfaces shall receive a Class 5 Applied Finish Coating

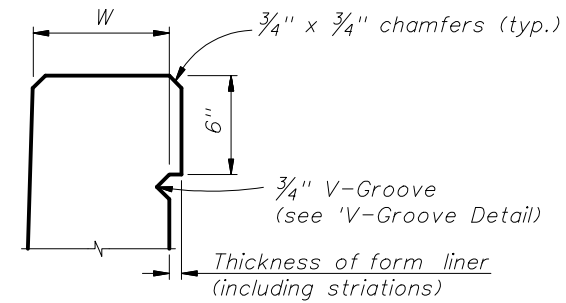
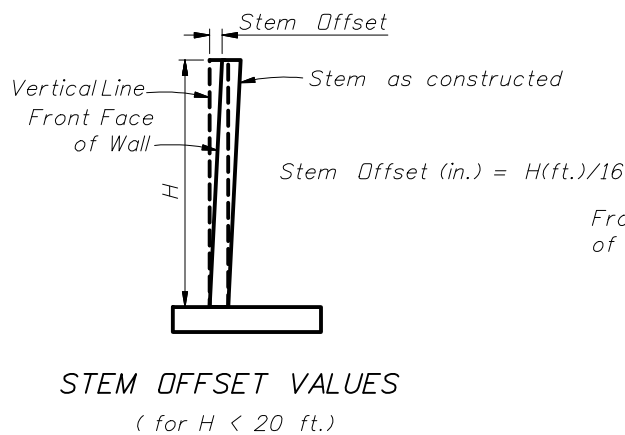
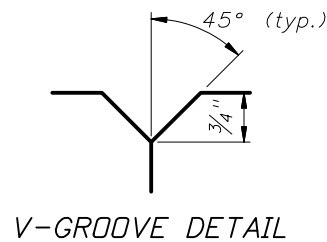
Ground Line
Top of Footing Level (typ.)



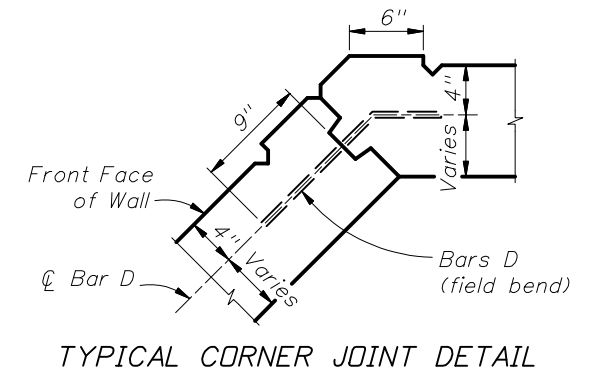
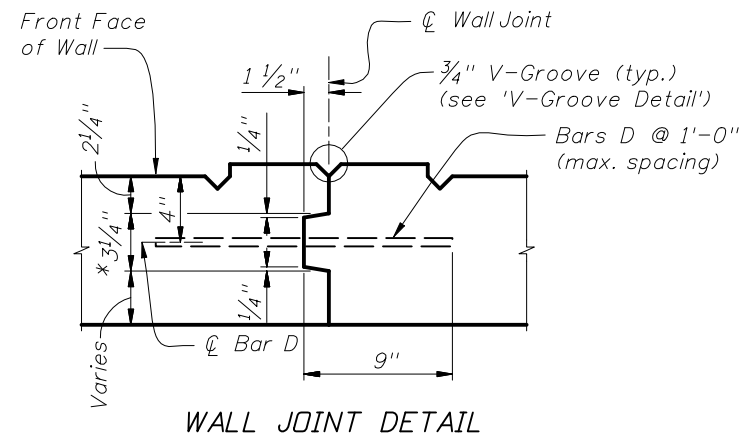
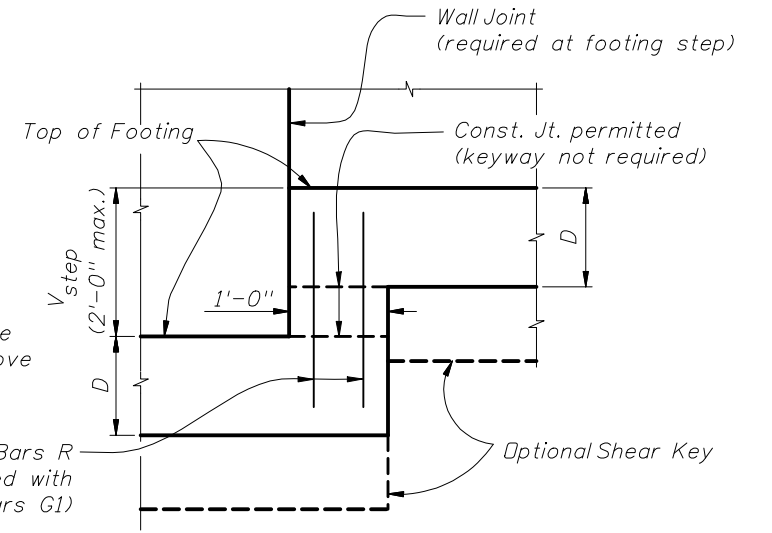
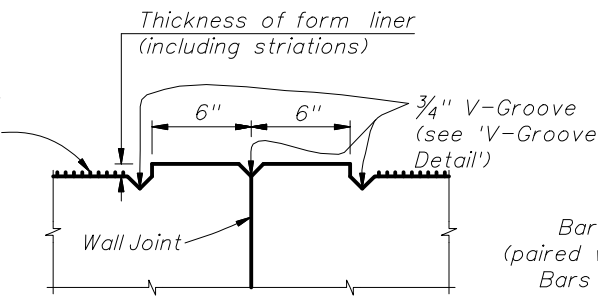
FRONT ELEVATION



TRAFFIC RAILING ON WALL DETAIL
(for Traffic Railing details see Index No. 420)



Striated Surface shall consist of uniform vertical grooves of 1/8" to 1/4" depth and spacing



3" Ø PVC Drain Pipe. Slope down 1/2" from back to front of wall and extend 1/2" beyond both front face and back face of wall.

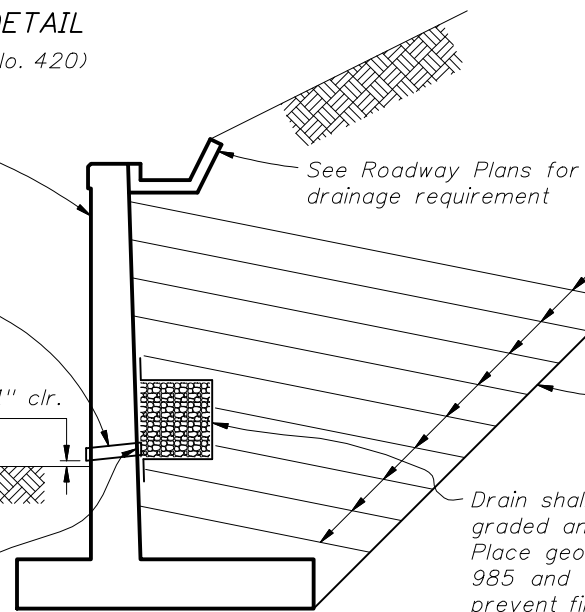
Front Face of Wall

1" clr.

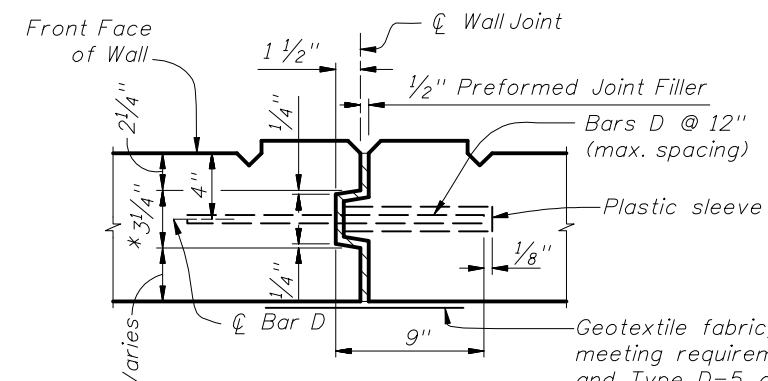
Final Groundline.

Inside ends of weep holes shall be covered with 1.0 square foot of galvanized mesh with 1/4" openings

TYPICAL BACKFILL DETAIL



*Key to stop at top of footing and 6" from top of wall. Joint across footing and top of wall to be straight line.



Geotextile fabric, 1'-0" wide and full height of fill, meeting requirements of FDOT Specification 985 and Type D-5 of Index No. 199. Apply an adhesive approved by the Engineer to the back of wall for attachment of fabric material.



NOTES

A. DESIGN SPECIFICATIONS:

1. AASHTO Standard Specifications for Highway Bridges (Current Edition),
2. AASHTO Guide Specifications for Structural Design of Sound Barriers (Current Edition)
3. Florida Department of Transportation's Plans Preparation Manual, Volume I (Current Edition).

B. DESIGN CRITERIA:

The Precast Sound Barriers are pre-designed and based on the criteria in the Plans Preparation Manual, Volume I and the following soil conditions: Sites with soil SPT N values between 10 and 40.

C. CONCRETE AND GROUT:

1. Concrete Class and Compressive Strength:
 - a. Cast-in-Place Collars: Class IV ($f'c = 5500$ psi)
 - b. Precast Panels, Collars and Post Caps: Class IV ($f'c = 5500$ psi)
 - c. Posts: Class IV ($f'c = 5500$ psi)
2. Grout for Auger Cast Piling:
 - a. Maximum Working Compressive Strength = 2200 psi
 - b. Minimum 28 Day Strength = 5500 psi
3. Minimum Compressive Strength for Form Removal and Handling of Posts and Panels:
 - a. 2,500 psi for horizontally cast post and panels.
 - b. 2,000 psi for vertically cast panels or when tilt-up form tables are used for horizontally cast panels.

D. REINFORCING STEEL:

1. Reinforcing steel shall conform to ASTM A 615, Grade 60.
2. Welded wire fabric shall conform to ASTM A 185 (smooth wire) or ASTM A 497 (deformed wire).
3. Concrete Cover of 2" shall be provided, unless otherwise noted.
4. In addition to the requirements of Specification Section 415, tie post and pile stirrups at the following locations as a minimum:
 - a. Post Stirrups - Tie at all four corner bars and at every third interior bar intersection.
 - b. Pile Stirrups - Tie to the main vertical reinforcing at alternate intersections for circular configurations and for rectangular configurations at the four corners and at every third interior bar intersection.

E. SURFACE FINISHES:

Provide a Class 5 Finish in accordance with Specification Section 400, unless otherwise shown on the Wall Control Drawings. See Index No. 5201 for texture finish options.

F. PILING:

Construct Auger Cast Piling in accordance with the Plans and Specification Section 455.

G. UTILITIES:

Field verify the locations of all overhead and underground utilities shown in the Wall Control Drawings.

H. NEOPRENE PADS AND RESILIENT PADS:

1. Neoprene Pads for Panel Bearing Points Between the Stacked Panels:
The Neoprene pads for the panel bearing points shall be Plain Pads, Grade 50 durometer hardness in accordance with Specifications Sections 932-2.1.
2. Neoprene Pads for Collar Bearing Points:
Neoprene Pads shall be Fiber Reinforced Pads, Grade 50, 60 or 70 durometer hardness in accordance with Specification Section 932-2.1. Plain Pads may be substituted for Fiber Reinforced Pads when sufficient bearing area is available on the concrete collar, as follows:
 - a. 10' post spacing: 4" x 4" x 1/2" Plain Pads, Grade 50 durometer hardness.
 - b. 20' post spacing and < 18' wall height: 4" x 4" x 1/2" Plain Pads, Grade 50 durometer hardness.
 - c. 20' post spacing and ≥ 18' wall height: 4" x 5" x 1/2" Plain Pads, Grade 50 durometer hardness.

J. CASTING TOLERANCES:

1. Overall Height & Width: $\pm 1/4$ "
2. Thickness: $\pm 1/4$ "
3. Plane of side mold: $\pm 1/16$ "
4. Openings: $\pm 1/2$ "
5. Out of Square: 1/8" per 6 ft., but not more than 3/8" total along any side
6. Warping: 1/16" per foot distance to nearest corner
7. Bowing: 1/240 panel dimension
8. Surface Smoothness for Type "A" (Smooth) Surface Texture Option: $\pm 1/16$ " along a 10 ft. straightedge.

K. SOUND BARRIER WALL NOTES:

1. Distance between piles shall be a maximum of 20 ft. from centerline to centerline. These Sound Barrier Wall Standard Indexes allow for 5 Pile/Post connection options based on either 10 or 20 ft. post spacing. The panel system depicted in Index Nos. 5202 through 5204 is based on a 20 ft. post spacing.
2. Walls greater than 12 ft. in height shall consist of 2 or 3 stacked panels (upper and lower), each less than 12 ft. in height. The height of the upper panel shall be a minimum 8 ft. or greater as necessary to accommodate any graphic relief (if applicable). The lower panel(s) shall be not less than 4 ft. in height. Walls equal to or less than 12 ft. in height shall consist of either a single panel or 2 stacked panels with an 8 ft. upper panel provided that any graphic relief (if applicable) will fit within the upper panel.
3. Horizontal panel joints shall be located outside of the graphic relief (if applicable). Horizontal panel joints shall be held at a constant elevation for a given wall, where possible.
4. Posts shall be "H" type cross-section with panels installed from above. Panels shall not be installed until auger cast piles and C.I.P. collars have reached their 28 day design strength.
5. See Index No. 5205 for the five pile/post connection options. The Contractor may choose any of these options, unless specifically excluded in the Wall Control Drawings.
6. All posts shall be held plumb in auger cast piles with an installation template. The template shall be adjustable for horizontal placement, vertical placement and plumbness of posts. The template shall be such that the installation tolerances can be held. Template shall remain in place for a minimum of 12 hours after post installation.
7. The Contractor shall be responsible for meeting OSHA requirements. Any utility adjustments, charges for power stoppages, all realignments, special erection methods, etc. to meet these requirements shall be included in bid.
8. Structural Steel shall be in accordance with ASTM A 36.
9. Structural Steel - Pile/Post Connection Option D: Post assemblies shall be shop fabricated in accordance with Specification Section 460. Welding details and welding operations shall be in accordance with the current edition of ANSI/AWS D1.1 Welding Code. Field welding is not permitted.
10. Structural Steel with Concrete Casting - Pile/Post Connection Option C: Store steel posts in a location protected against environmental conditions. Prior to pouring the concrete around the structural post, post shall be free of loose rust, scale, dirt, paint, oil and foreign material.
11. Shimming of wall panels above the pile collar, beneath the bearing pads is permitted up to a maximum of 1 1/2" height. Shims must be either stainless steel (Type 304 or 316) or engineered polymer (copolymer or multipolymer) plastic. Plastic shims must have a minimum compressive strength of 8,000 psi without any fractures. Stacking of shims is permitted as follows:
 - a. For shimming height of 1" or less, provide up to 4 ~ 1/4" shims;
 - b. For shimming heights greater than 1", use a minimum 3/4" thick single shim and up to 3 ~ 1/4" shims. Stacked shim plates must be bonded together with a compatible epoxy adhesive.

L. VECP OR CONTRACTOR REDESIGN:

1. In no case will VECP's or Contractor Redesigns be allowed to modify foundation designs, or post spacing.
2. Substitution of proprietary panels or systems not listed in the Wall Control Drawings will not be allowed.

M. QUALIFIED PRODUCTS LIST:

Manufacturers seeking approval of proprietary sound barrier panels, posts and foundations or systems for inclusion on the Qualified Products List as pre-approved suppliers must submit a QPL Product Evaluation Application along with design documentation, vendor drawings and other information as required in the Sound Barrier QPL Acceptance Criteria showing the proprietary product is designed to meet all specified requirements. Project specific Shop Drawings are required for sound barrier projects in accordance with Specification Section 534.

N. ALTERNATES

The Contractor shall construct the standard precast 20'-0" panel option depicted in the plans or shall construct one of the proprietary sound barrier panel or proprietary system options (panel and foundation) listed in the Wall Control Drawings.

O. FINISH COATING:

1. All wall areas not shown to receive an anti-graffiti coating shall be coated in accordance with Specification Section 400 of the Specifications with a Class 5 Applied Finish Coating. The color of the system shall be same as the anti-graffiti system or as directed by the Engineer.
2. Structural Steel Post Assembly Coating System - Pile/Post Connection Option D: The steel post assembly shall receive a shop applied three-coat system comprised of one coat of inorganic zinc primer and two coats of Type M coal tar-epoxy in accordance with Specifications Section 560. The limits of the coating system shall be the exposed surface area of the post assembly from the top of post to 2'-0" below Top of Collar (Elev. A). After the post assembly is installed, it shall be coated with an approved compatible Class 5 Applied Finish Coating in accordance with Specification Section 400 or an anti-graffiti coating. The color of the Class 5 Coating shall match the color of the panel unless otherwise noted in the plans. All components of coating system shall be on the Department's Qualified Products List. The material supplier shall certify compatibility of paint system.

P. TEST WALL:

The Contractor shall construct a test wall at the beginning of the project consistent with Specification Section 534. The Contractor shall demonstrate that all casting and erection tolerances can be met in order to assure that the prefabricated elements fit together as intended.



2010 FDOT Design Standards

PRECAST SOUND BARRIERS - GENERAL NOTES

Last Revision

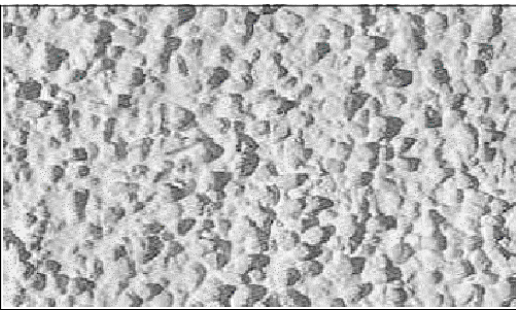
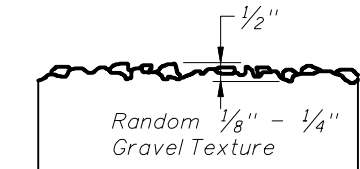
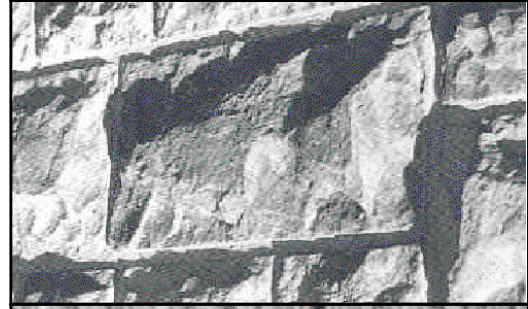
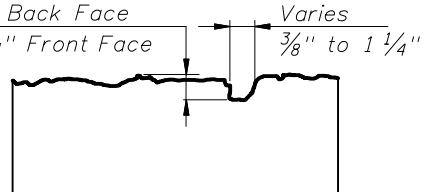
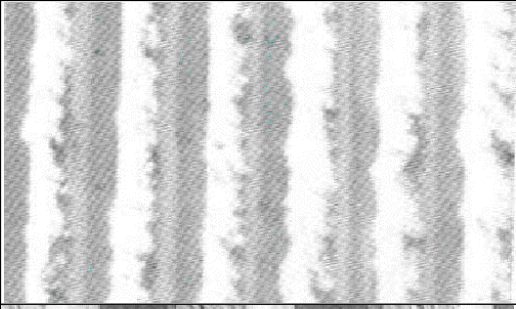
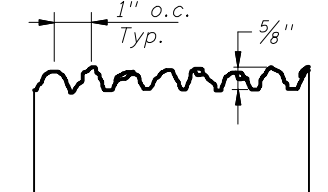

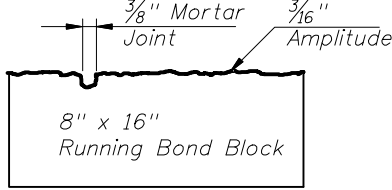
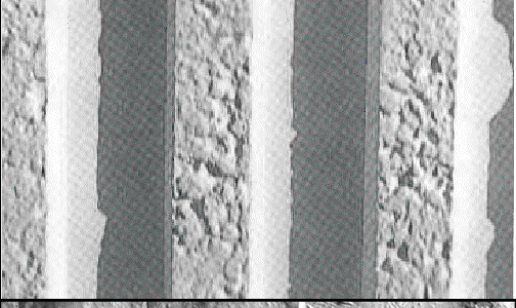
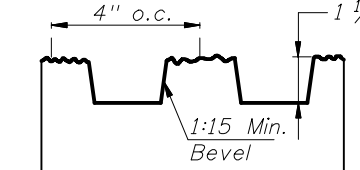
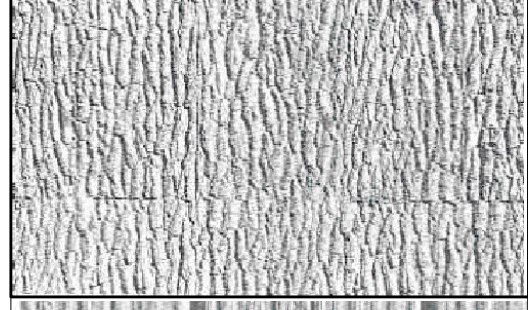
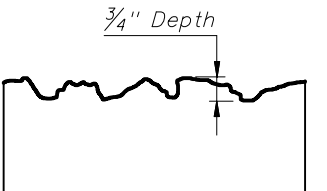
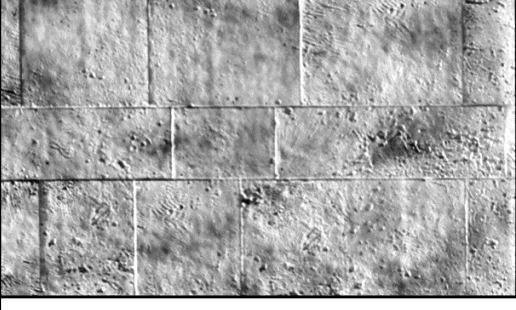
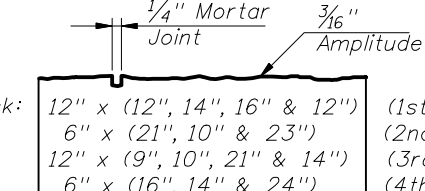
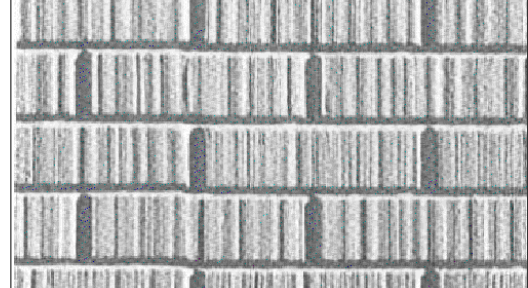
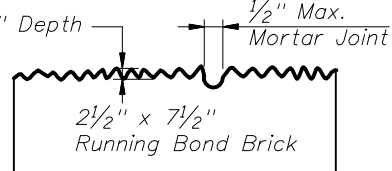
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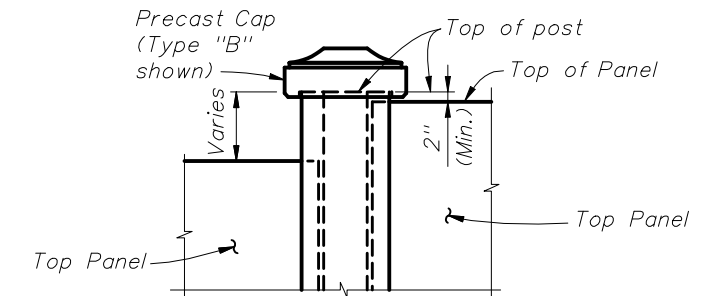
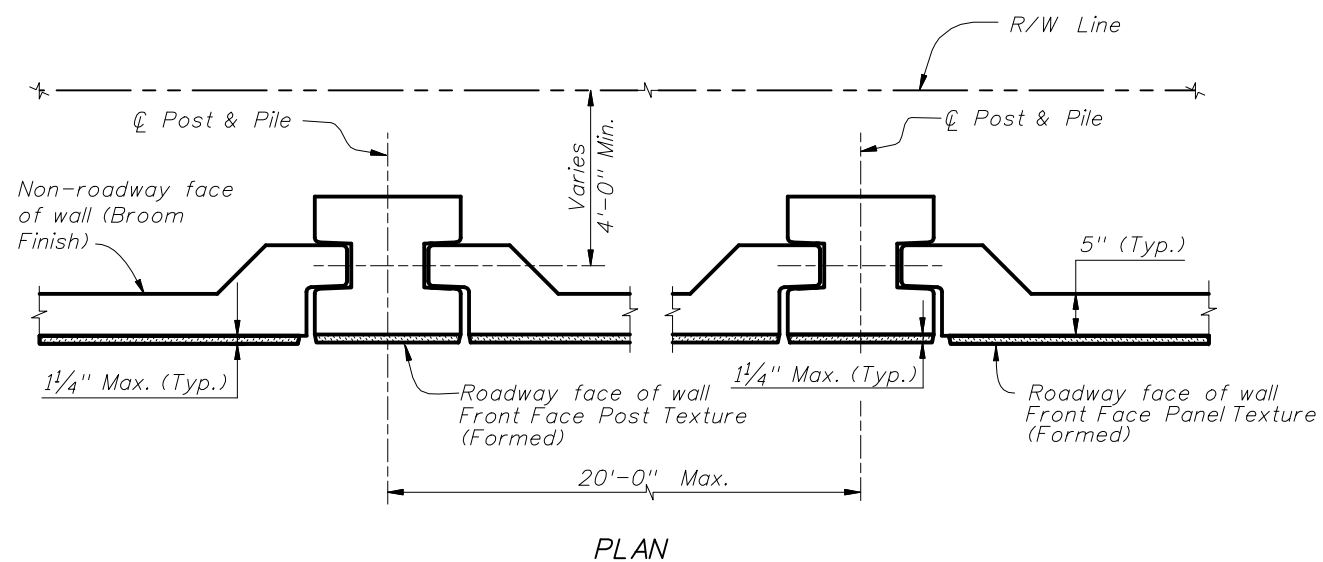
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Index No.

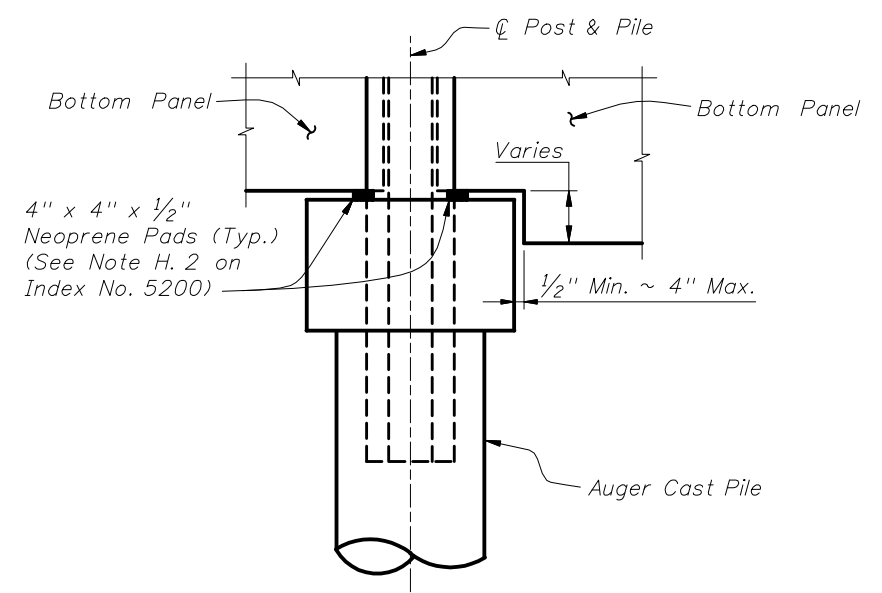
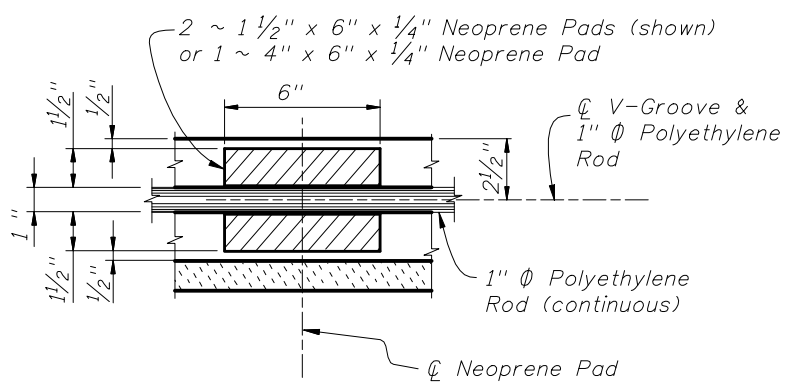
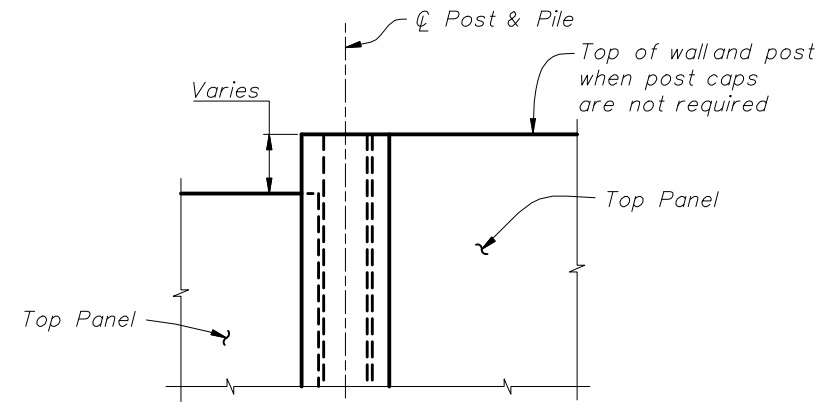
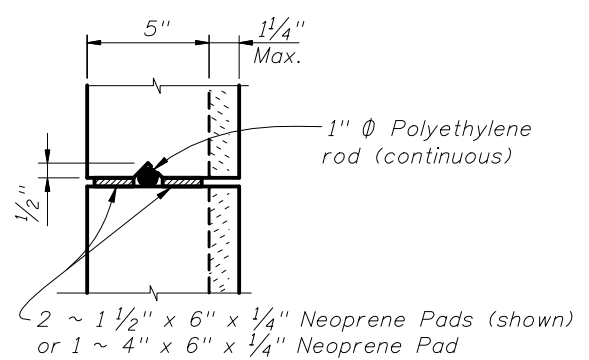
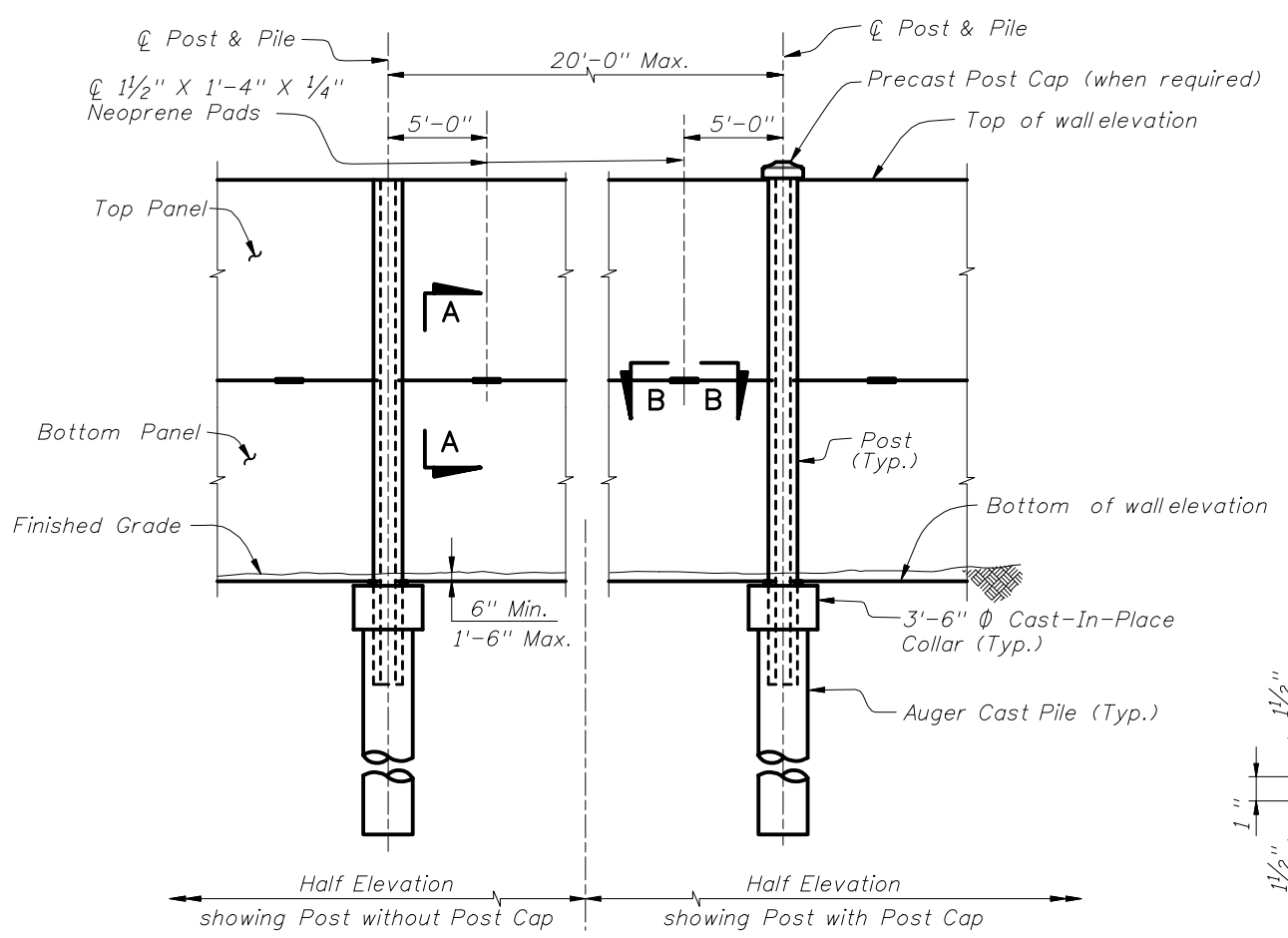
5200

| | | | | | | | | | | | |
|---|--|---|--|-----------------------------|--------------|-----------------------|--------------|----------------------------|--------------|-----------------------|--------------|
| | <p>Type "A" SMOOTH</p> |  | <p>Type "F" PEA GRAVEL</p>  | | | | | | | | |
|  | <p>Type "B" ASHLAR STONE</p>  |  | <p>Type "G" VERTICAL FRACTURED FIN</p>  | | | | | | | | |
|  | <p>Type "C" SPLIT FACE RUNNING BOND BLOCK</p>  |  | <p>Type "H" TRAPEZOID VERTICAL FINNS W/ FRACTURED FACE (COLORADO DRAG AGGREGATE)</p>  | | | | | | | | |
|  | <p>Type "D" FRACTURED GRANITE</p>  |  | <p>Type "I" CUT CORAL BLOCK (RUNNING BOND)</p>  <p>Running Bond Block:</p> <table border="0"> <tr> <td>12" x (12", 14", 16" & 12")</td> <td>(1st course)</td> </tr> <tr> <td>6" x (21", 10" & 23")</td> <td>(2nd course)</td> </tr> <tr> <td>12" x (9", 10", 21" & 14")</td> <td>(3rd course)</td> </tr> <tr> <td>6" x (16", 14" & 24")</td> <td>(4th course)</td> </tr> </table> | 12" x (12", 14", 16" & 12") | (1st course) | 6" x (21", 10" & 23") | (2nd course) | 12" x (9", 10", 21" & 14") | (3rd course) | 6" x (16", 14" & 24") | (4th course) |
| 12" x (12", 14", 16" & 12") | (1st course) | | | | | | | | | | |
| 6" x (21", 10" & 23") | (2nd course) | | | | | | | | | | |
| 12" x (9", 10", 21" & 14") | (3rd course) | | | | | | | | | | |
| 6" x (16", 14" & 24") | (4th course) | | | | | | | | | | |
|  | <p>Type "E" WIRE-CUT BRICK</p>  | <p>NOTES:</p> <ol style="list-style-type: none"> Surfaces shall be formed, rolled, or pressed using form liners in accordance with the Plans and Specifications (Class 3 Surface Finish). See Wall Control Drawings for project aesthetic requirements. | | | | | | | | | |





Note: See plans for Post Cap requirements.
See Index No. 5207 for Post Cap details.



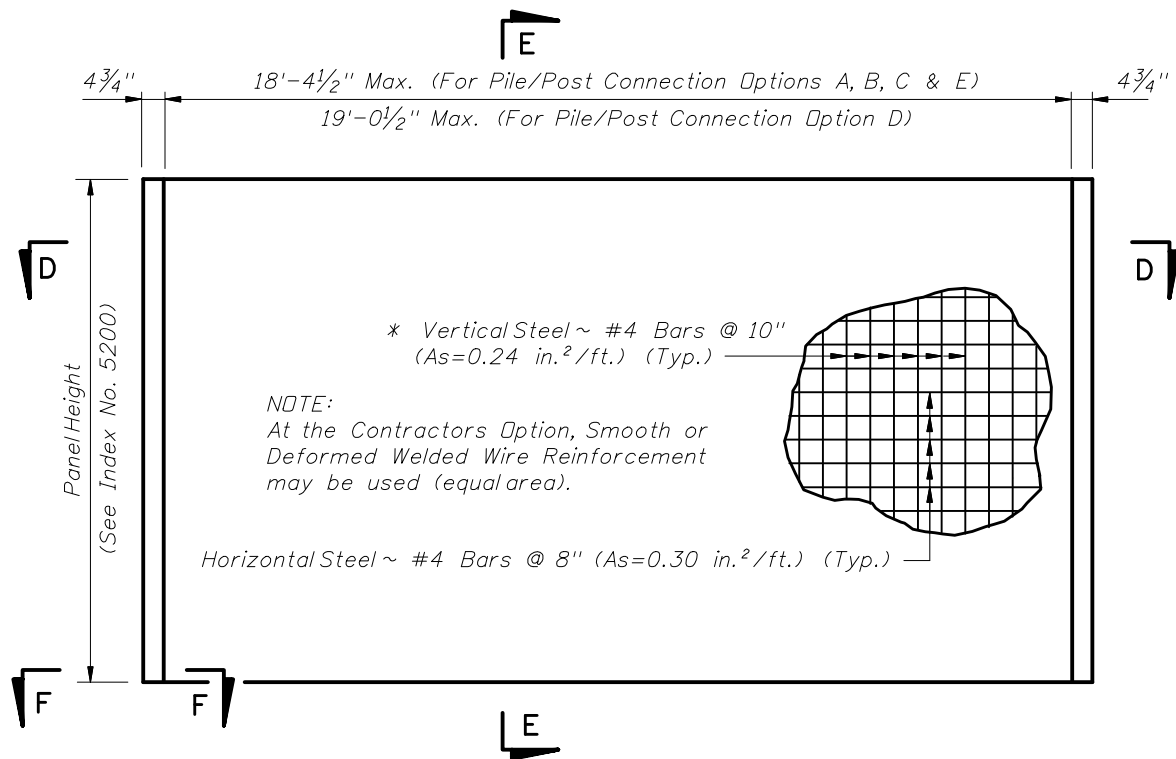
TYPICAL PANELS AND POSTS



2010 FDOT Design Standards

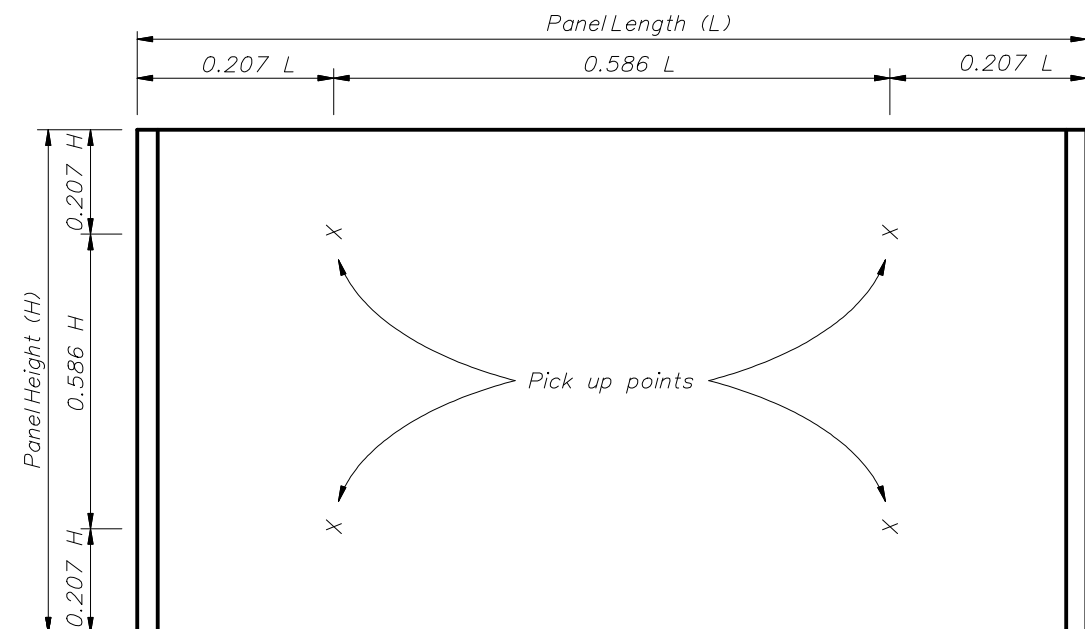
PRECAST SOUND BARRIERS
- FLUSH PANEL OPTION

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| Last Revision | Sheet No. |
| 07/01/08 | 1 of 4 |
| Index No. | |
| 5202 | |

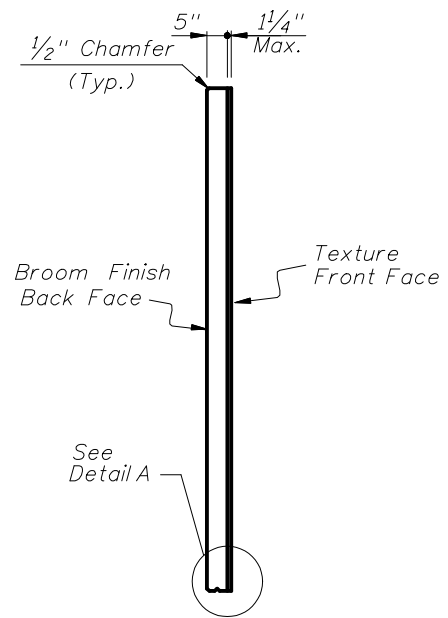


TYPICAL PANEL ELEVATION

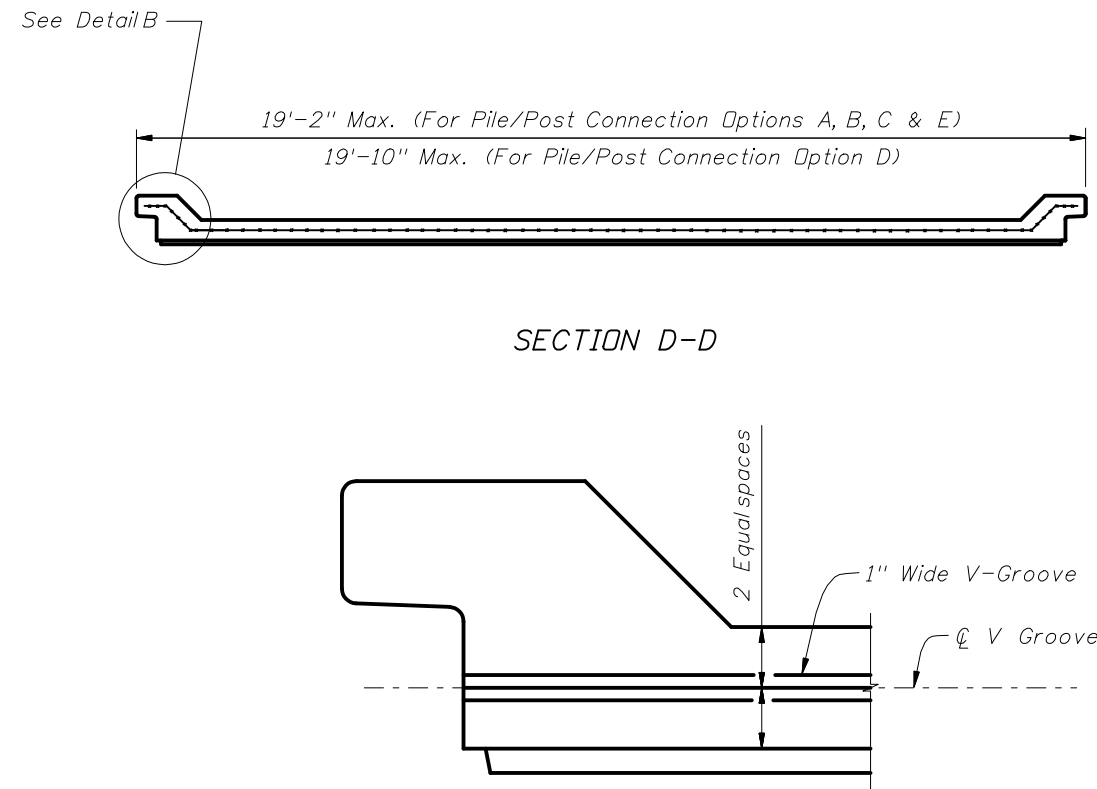
* In lieu of utilizing the pick up points below, panels may be cast vertically or cast horizontally then tilted upright using tilt-tables prior to lifting from form. In this case, the vertical steel may be reduced to #4 Bars @ 1'-3" (As=0.15 in.²/ft.).



REQUIRED PICK UP POINTS FOR PANELS
 (Panels shall be rotated about long axis only)

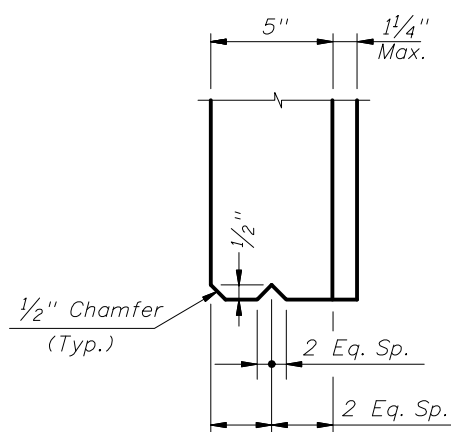


SECTION E-E

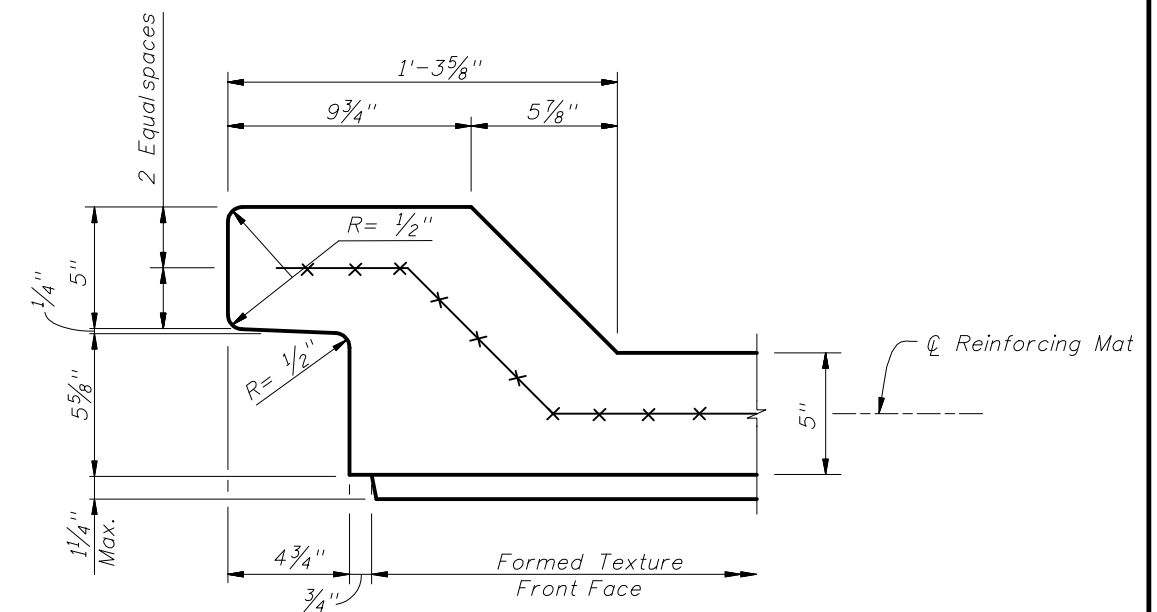


SECTION D-D

SECTION F-F



DETAIL A



DETAIL B
 (Typical both ends)

TYPICAL PANELS AND POSTS

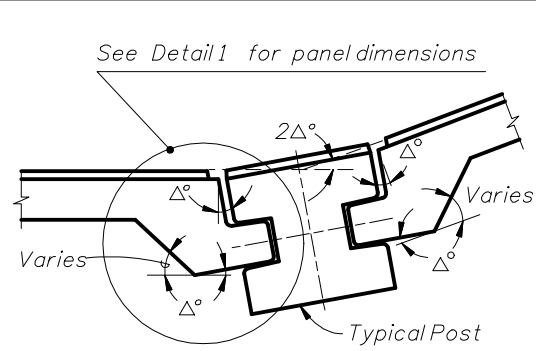


2010 FDOT Design Standards

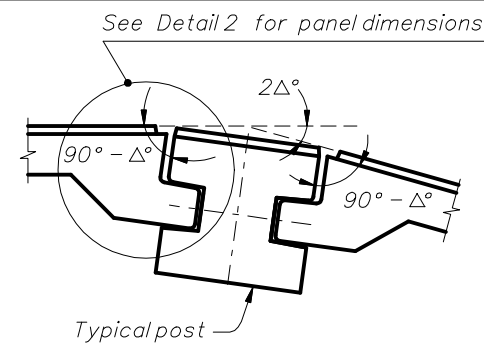
PRECAST SOUND BARRIERS
 - FLUSH PANEL OPTION

Last Revision: 01/01/06
 Sheet No. 2 of 4

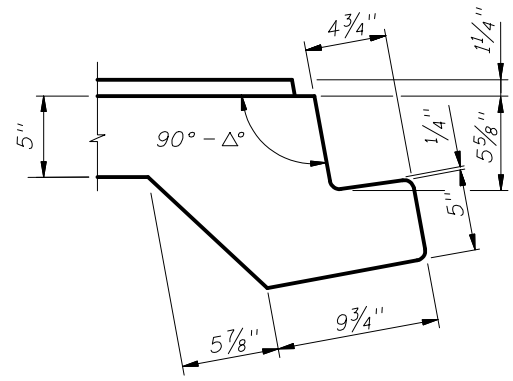
Index No. 5202



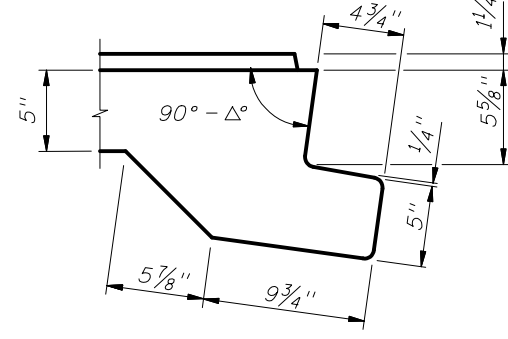
CASE 1
(Interior Angle)



CASE 2
(Exterior Angle)



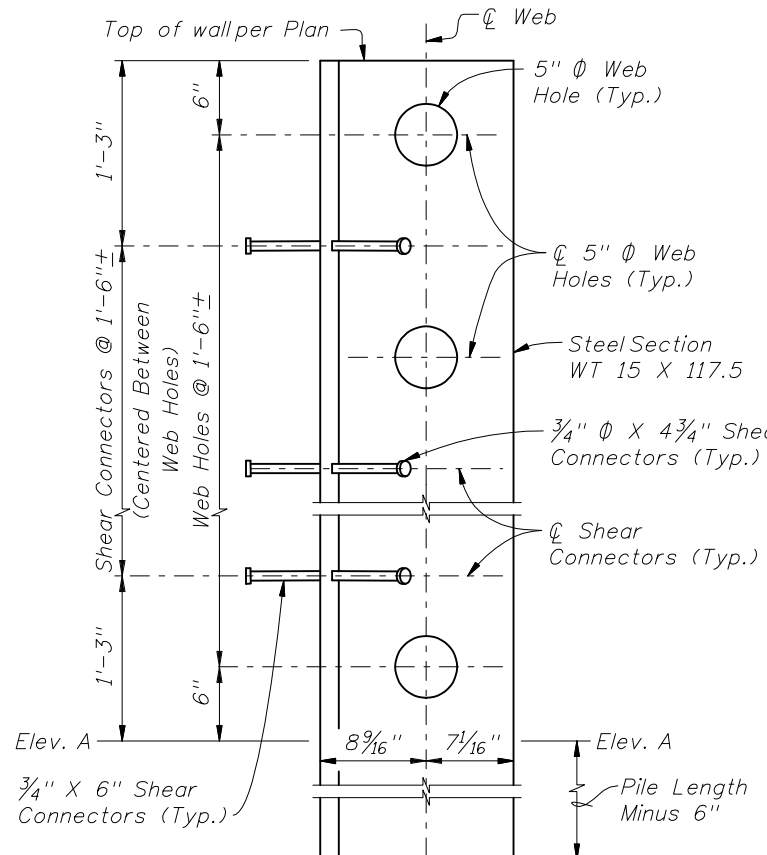
DETAIL 1



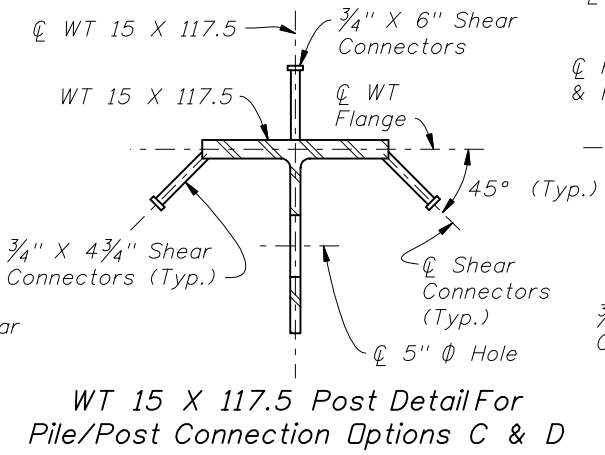
DETAIL 2

PIVOTING POINT DETAILS

NOTE: The shop drawings shall include specific pivoting point details of panel ends at locations where the deflection angle (2Δ) between panels exceeds 7°.

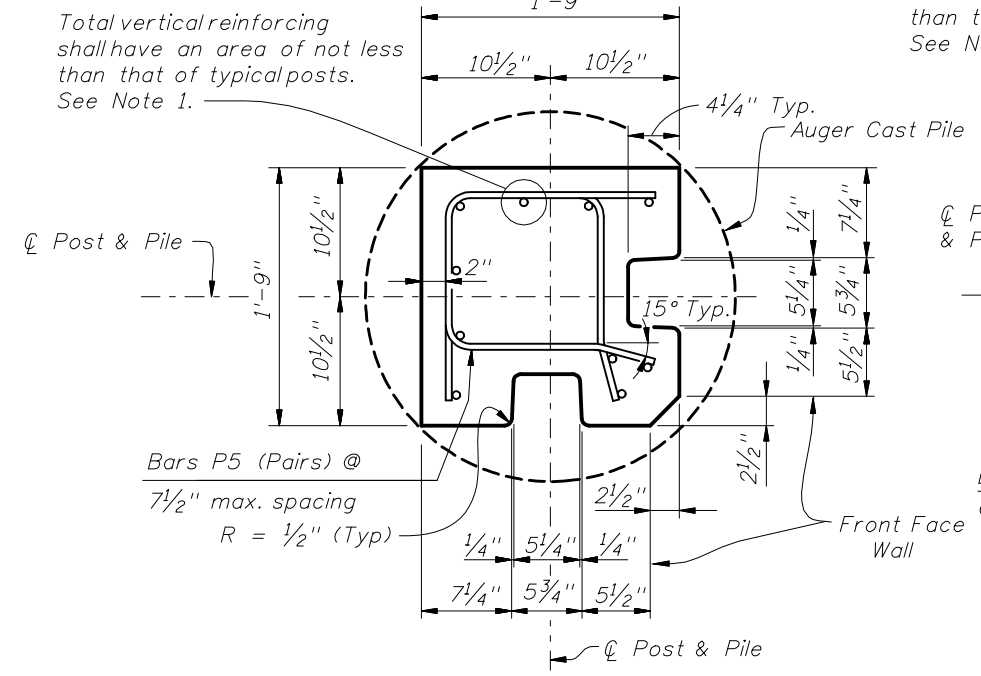


WEB HOLE & SHEAR CONNECTOR SPACING DETAIL
(Concrete not shown for clarity. For limits of concrete see Index No. 5205, Sheet No. 4 of 7.)



WT 15 X 117.5 Post Detail For
Pile/Post Connection Options C & D

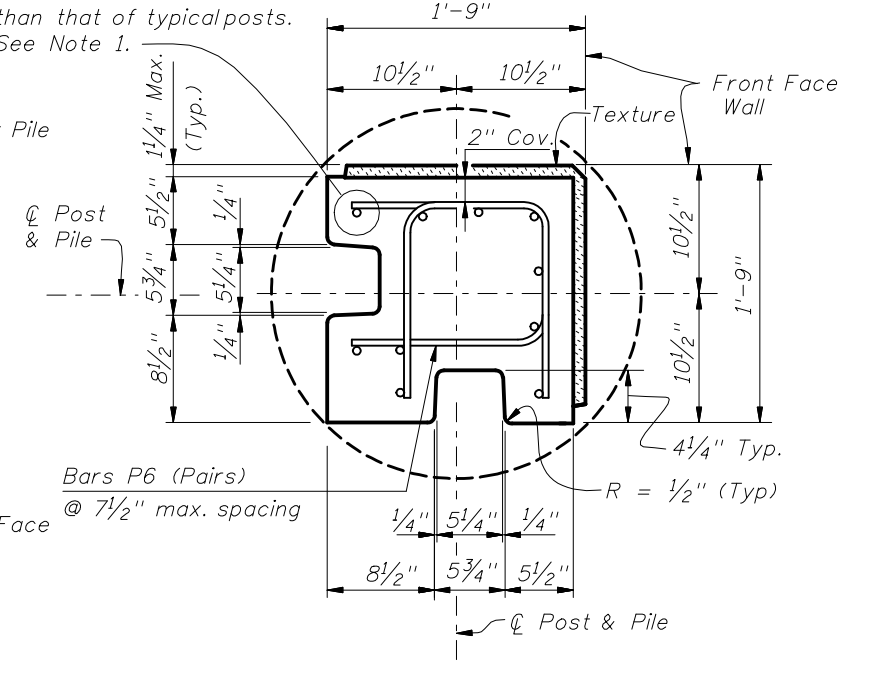
NOTE: The WT 15 X 117.5 Section shall extend into the Auger Cast Pile.



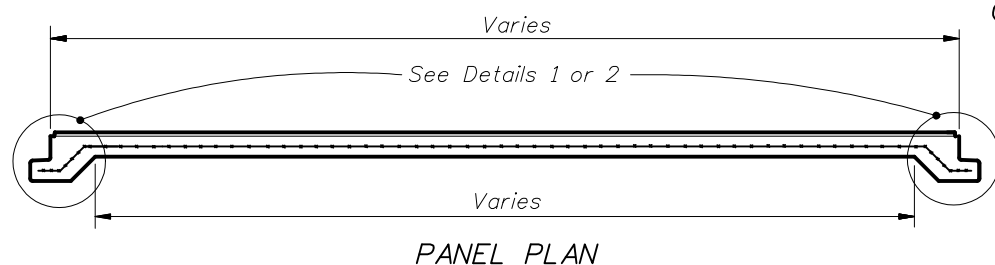
Total vertical reinforcing shall have an area of not less than that of typical posts. See Note 1.

Total vertical reinforcing shall have an area of not less than that of typical posts. See Note 1.

SPECIAL POSTS FOR 90° CORNERS FOR
PILE/POST CONNECTION OPTIONS A, B & E
Collars for Special Posts shall be 3'-6" Ø



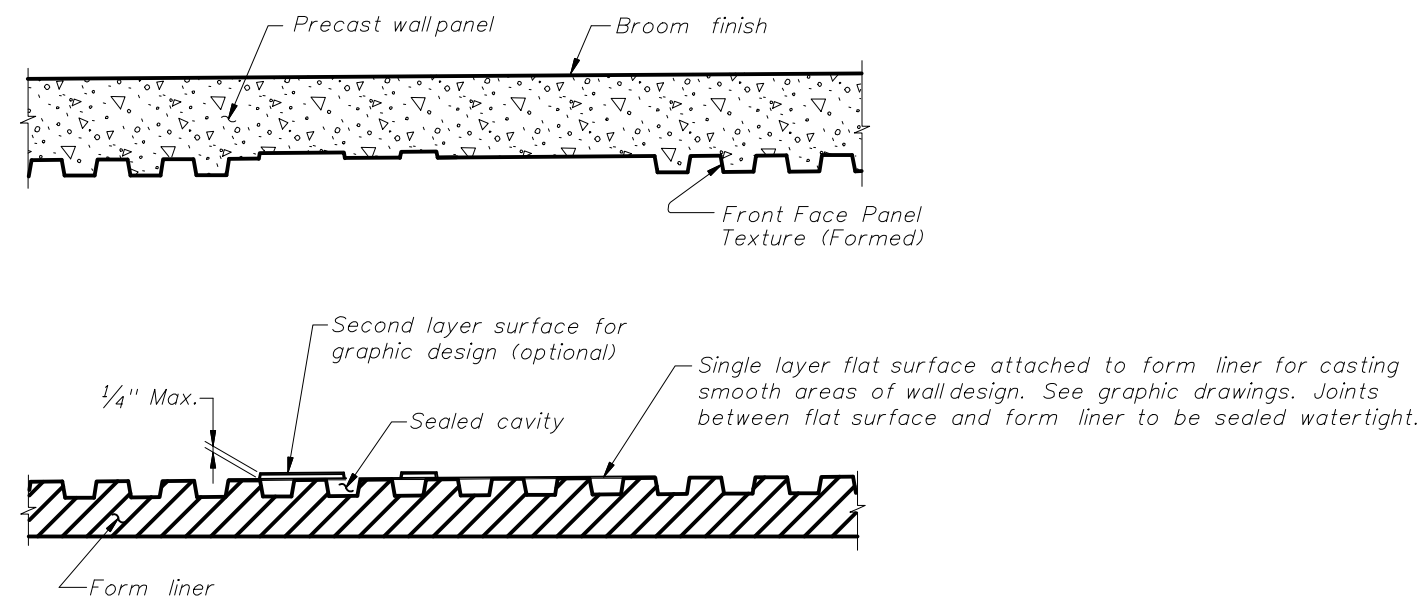
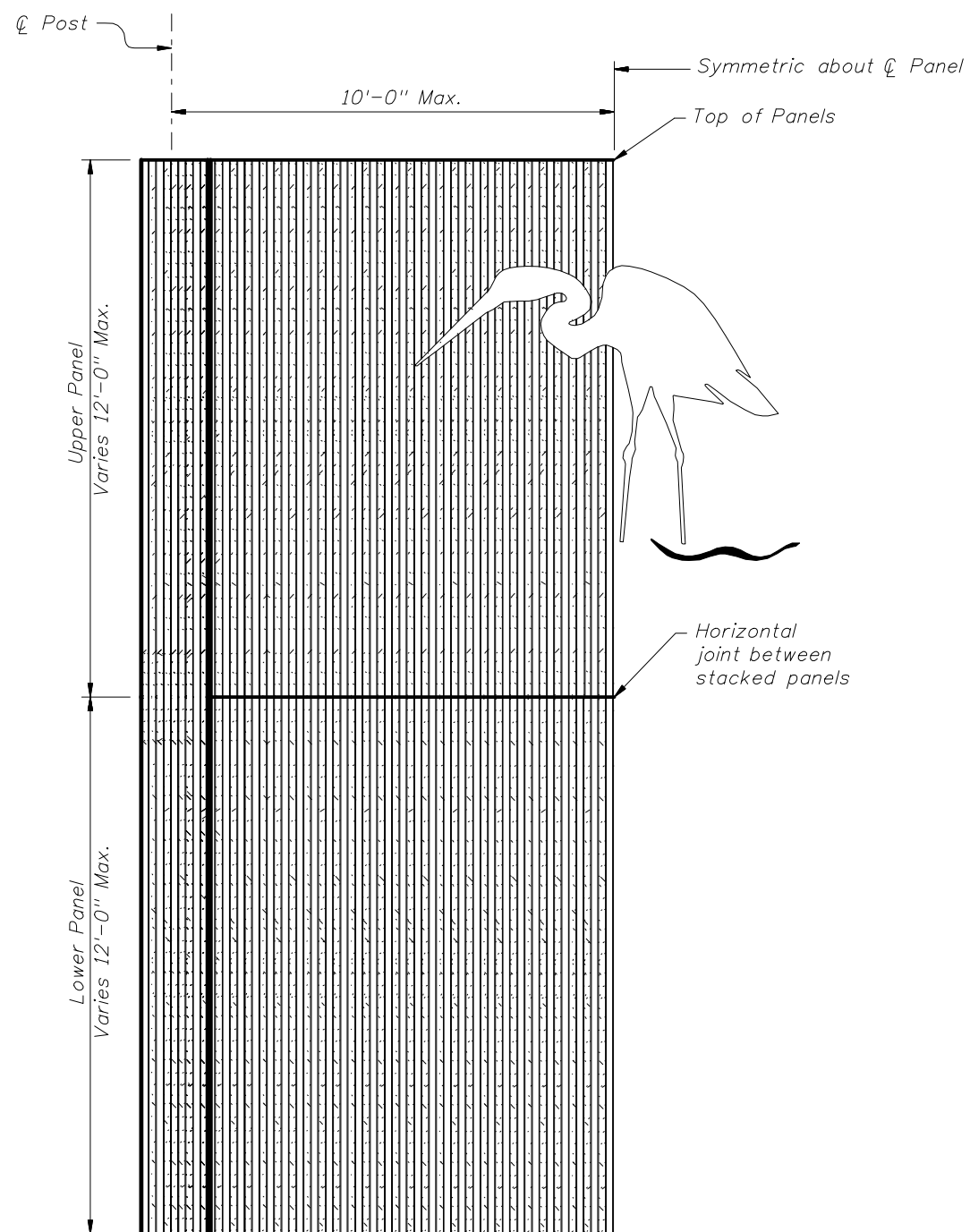
SPECIAL POSTS FOR 90° CORNERS FOR
PILE/POST CONNECTION OPTIONS C & D
Collars for Special Posts shall be 3'-6" Ø



PANEL PLAN

- NOTES:
- For Table of Reinforcing Steel Sizes, see Index No. 5206.
 - For Pile/Post Connection Options A through E, see Index No. 5205.
 - For Post & Pile Lengths, see Index No. 5206.

SPECIAL PANELS AND POSTS



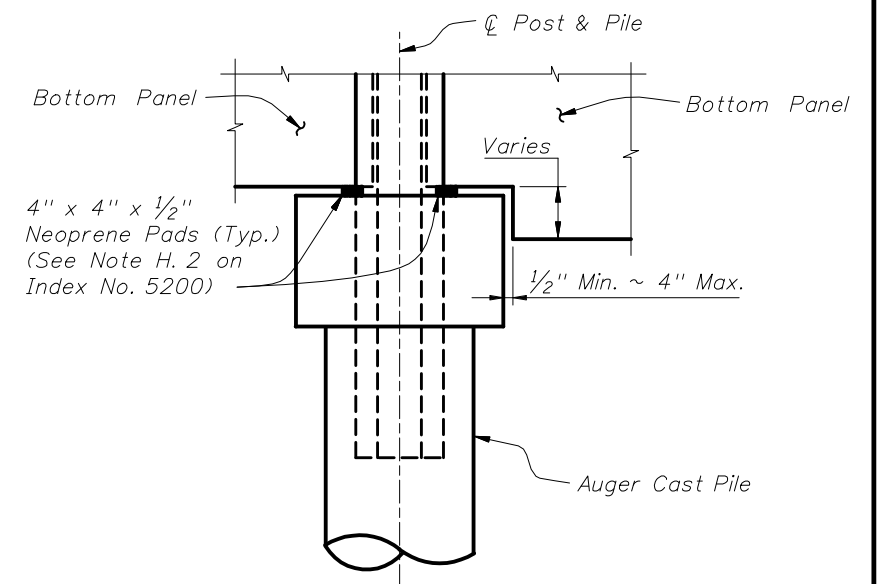
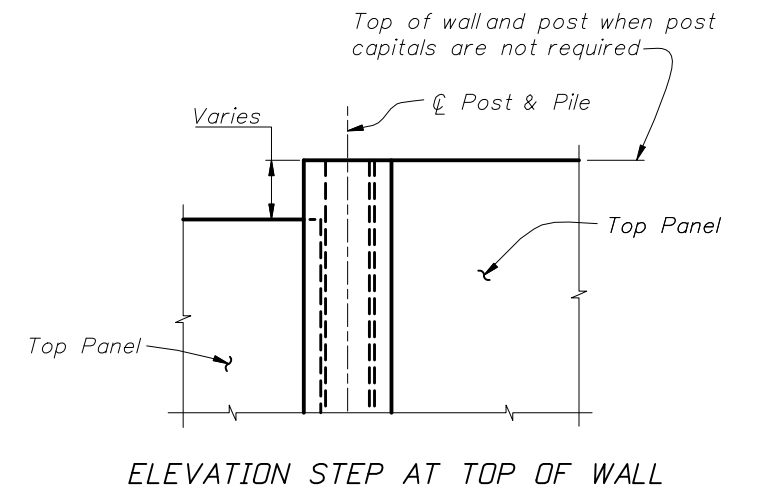
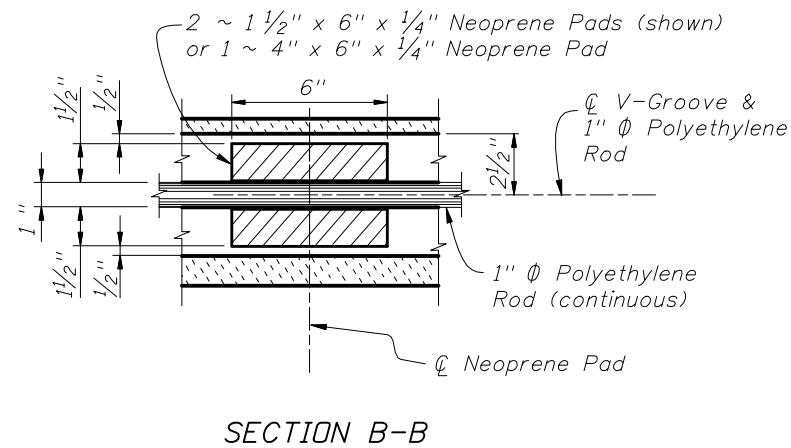
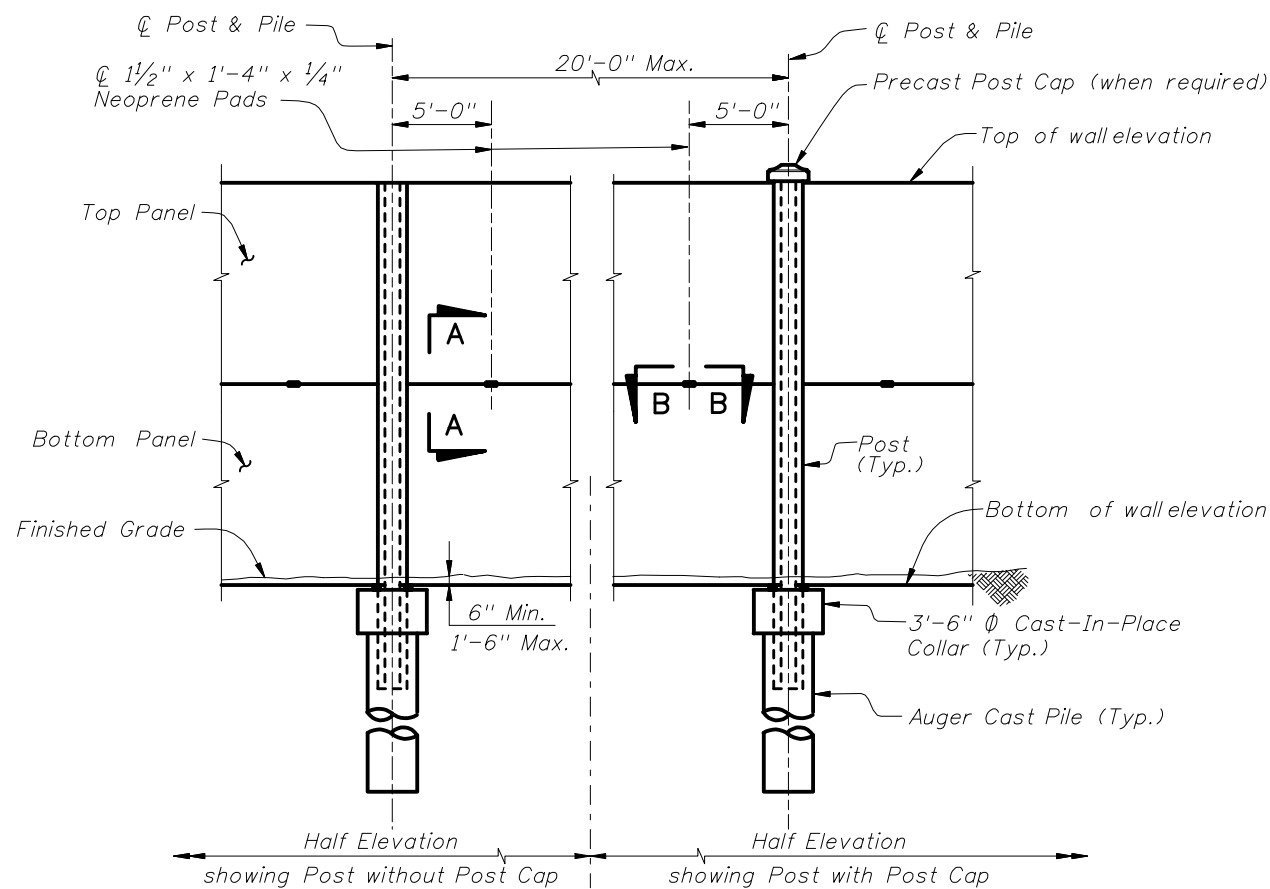
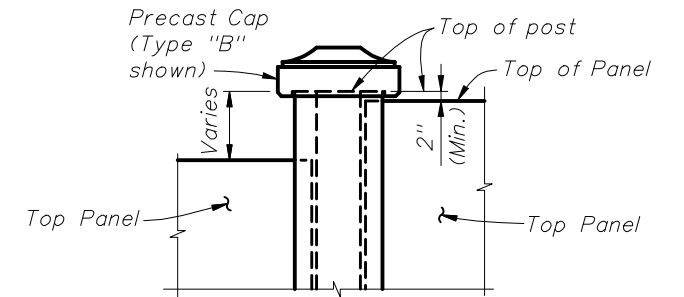
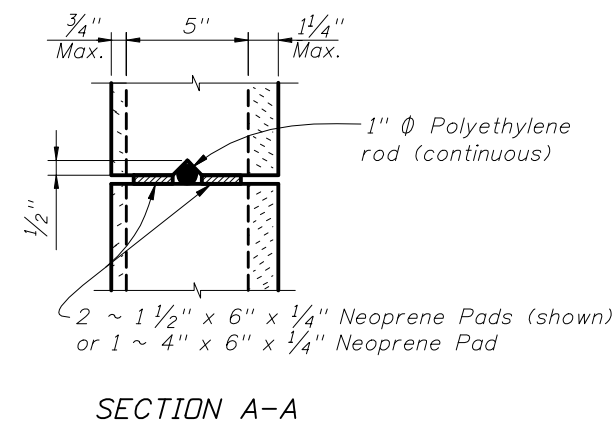
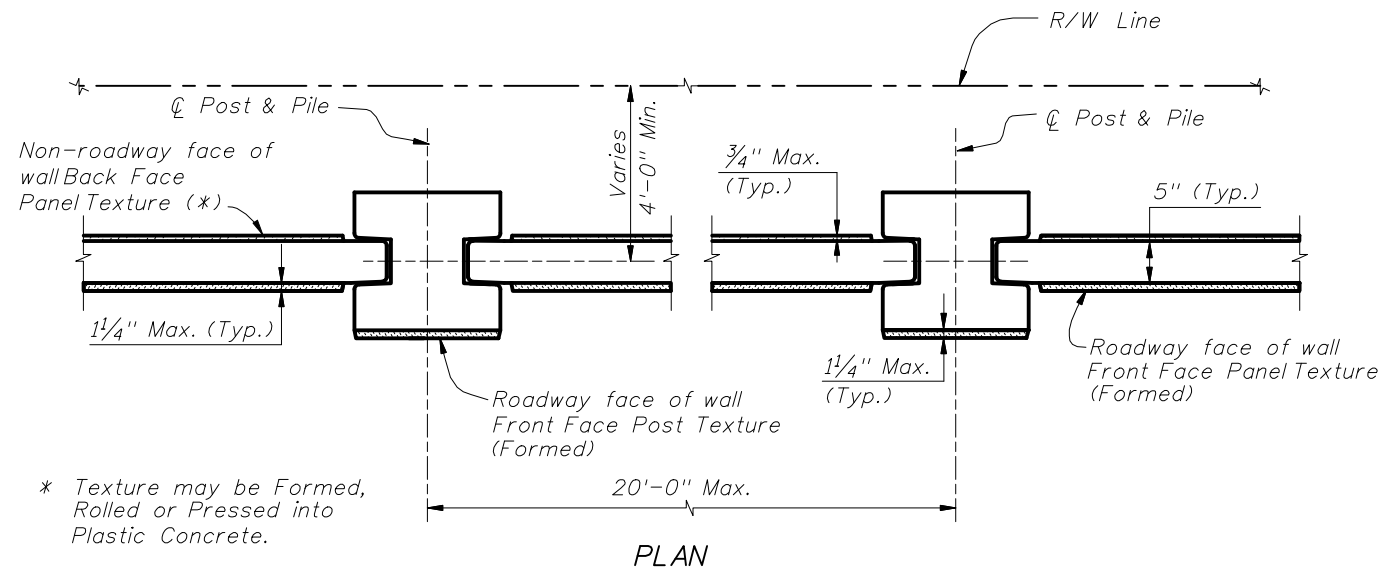
TYPICAL FORMING DETAIL
(Front Face Panel Texture Type "H" Shown.)

NOTES:

1. Broom finish shall be scored in plastic concrete on the back face of precast panels.
2. Contractor shall submit specific form liner samples for approval by the Engineer.
3. Textures and graphics shown are for demonstration purposes only. See Wall Control Drawings for project specific texture and graphic requirements.

HALF ELEVATION
(Pile/Post Connection Options A, B, C and E Shown.)
(Front Face Panel Texture Type "H" and Front Face Post Texture Type "H" Shown.)
(Graphic Type SE-2 Shown.)





TYPICAL PANELS AND POSTS

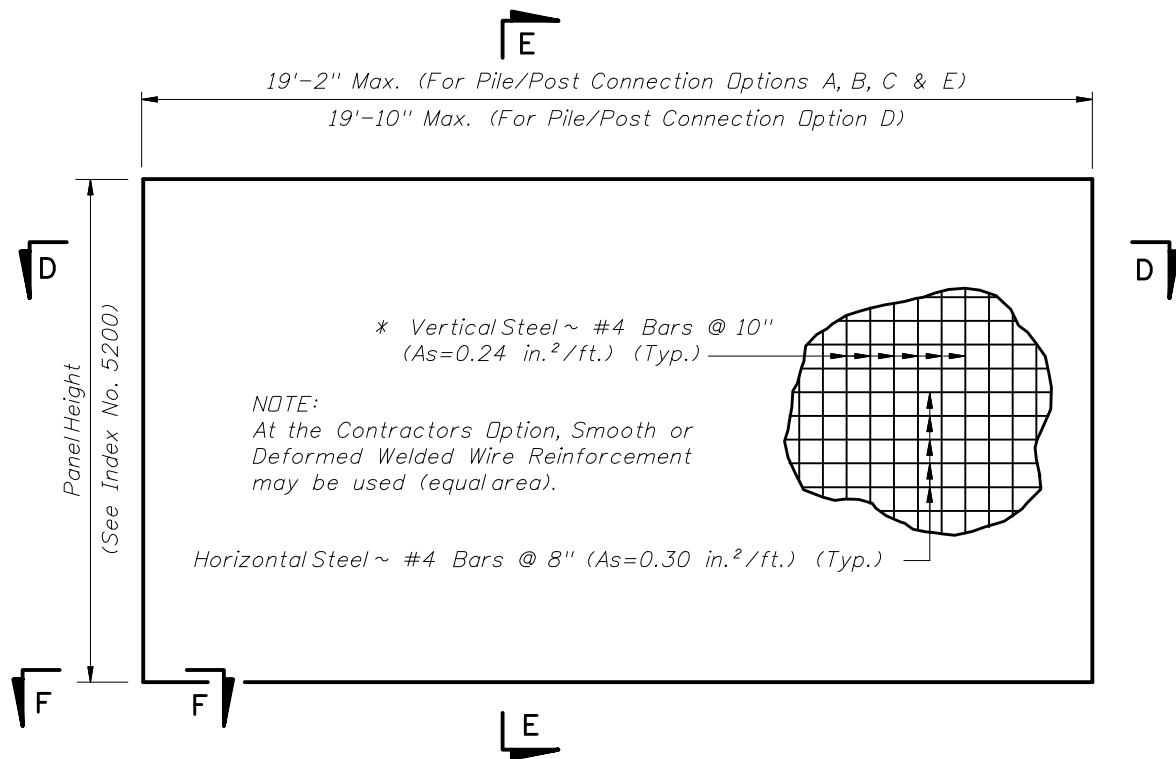


2010 FDOT Design Standards

PRECAST SOUND BARRIERS
- RECESSED PANEL OPTION

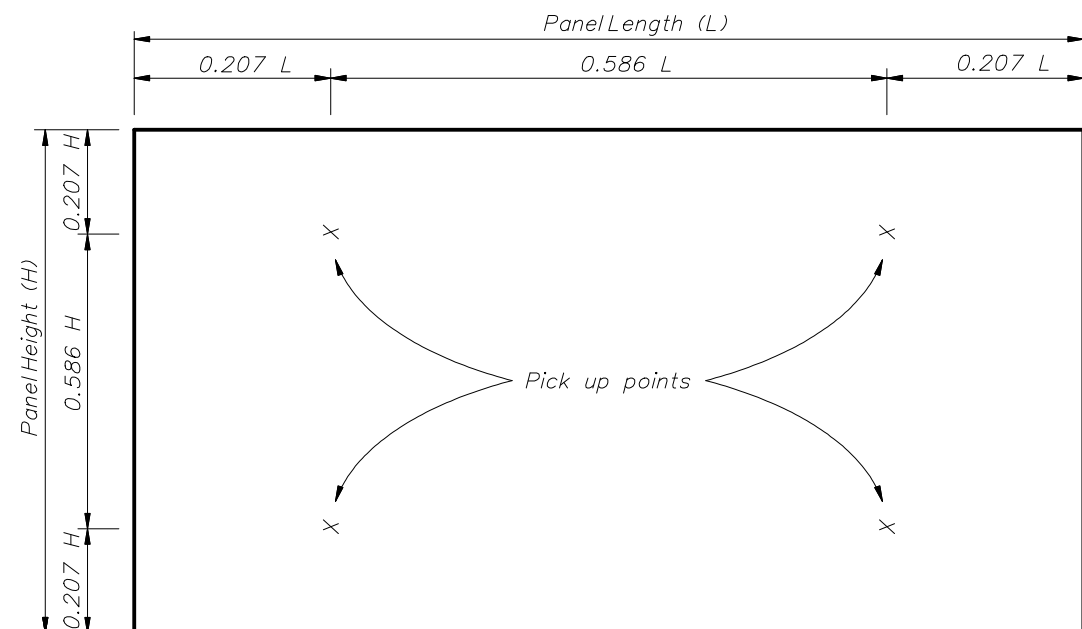
Last Revision 07/01/08
Sheet No. 1 of 5

Index No. 5203

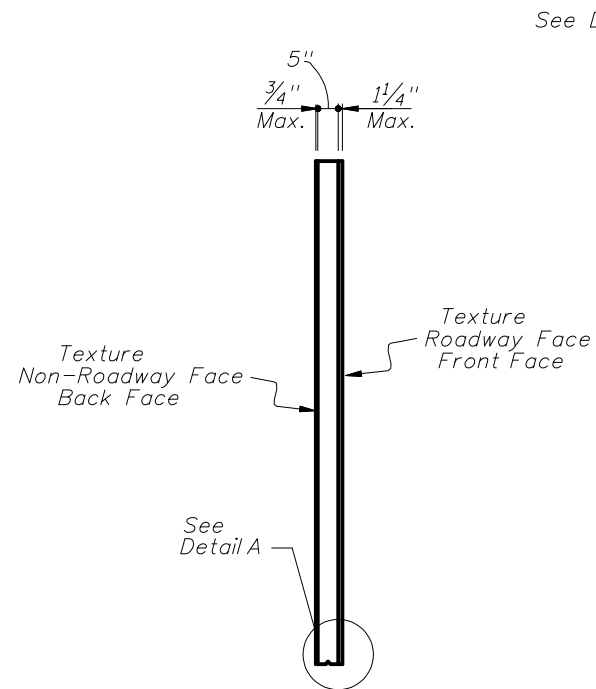


TYPICAL PANEL ELEVATION

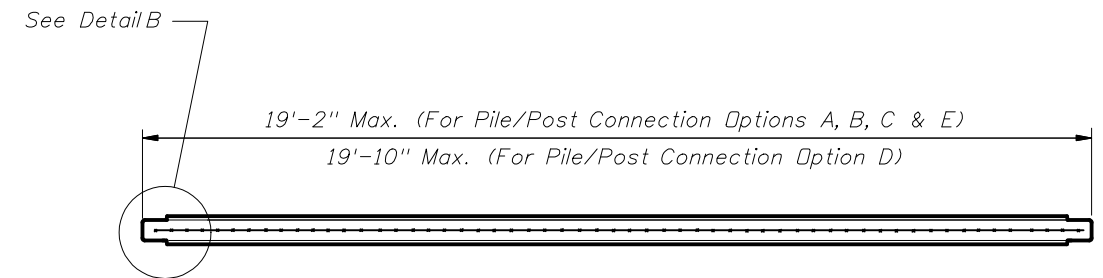
* In lieu of utilizing the pick up points below, panels may be cast vertically or cast horizontally then tilted upright using tilt-tables prior to lifting from form. In this case, the vertical steel may be reduced to #4 Bars @ 1'-3" (As=0.15 in.²/ft.).



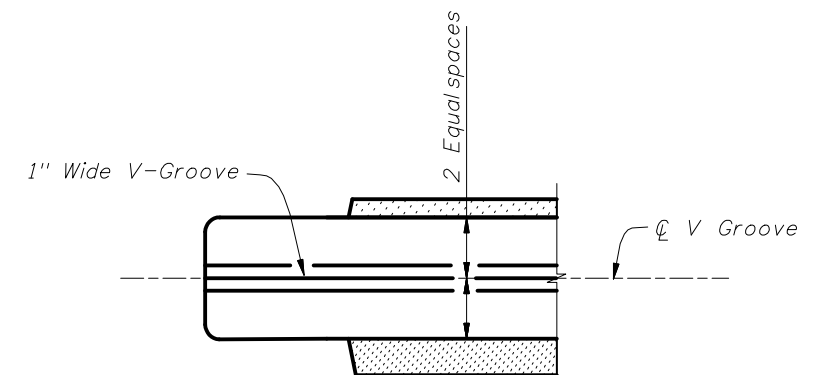
REQUIRED PICK UP POINTS FOR PANELS
(Panels shall be rotated about long axis only)



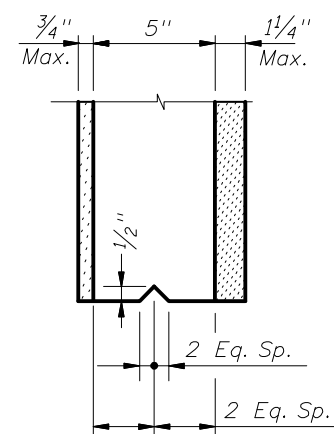
SECTION E-E



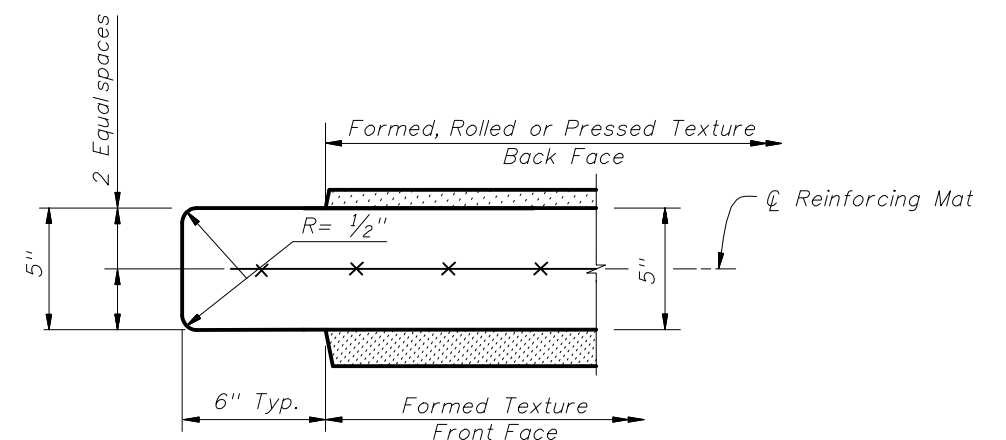
SECTION D-D



SECTION F-F



DETAIL A



DETAIL B
(Typical both ends)

TYPICAL PANELS AND POSTS

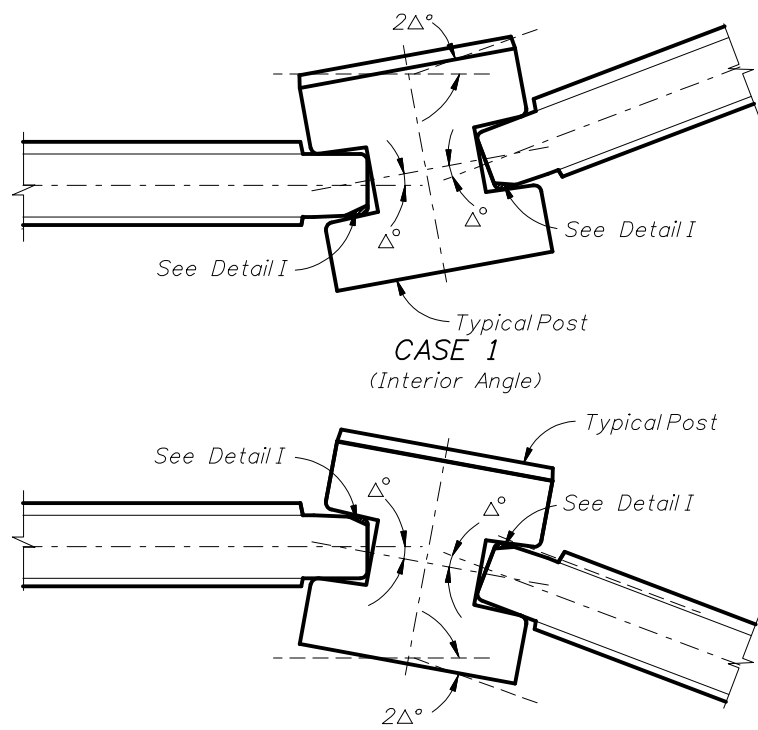


2010 FDOT Design Standards

PRECAST SOUND BARRIERS
- RECESSED PANEL OPTION

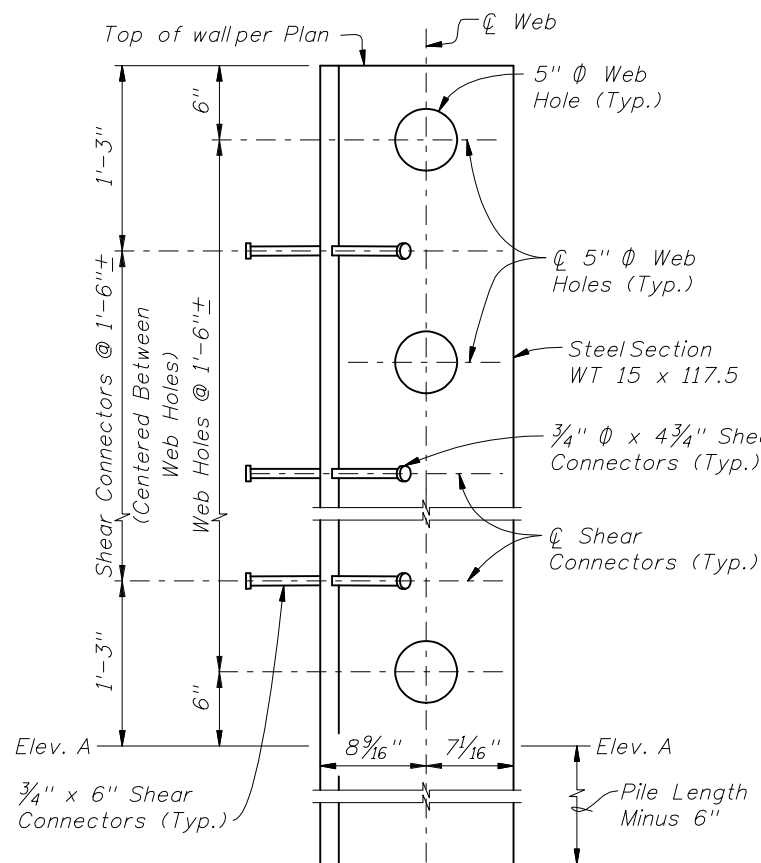
Last Revision 07/01/08 Sheet No. 2 of 5

Index No. 5203

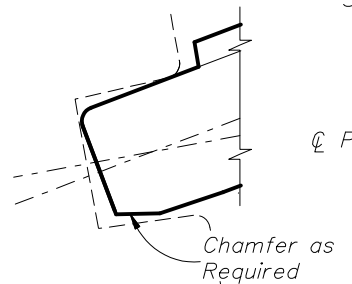


PIVOTING POINT DETAILS

NOTE: The shop drawings shall include specific pivoting point details of panel ends at locations where the deflection angle (2Δ) between panels exceeds 20° .

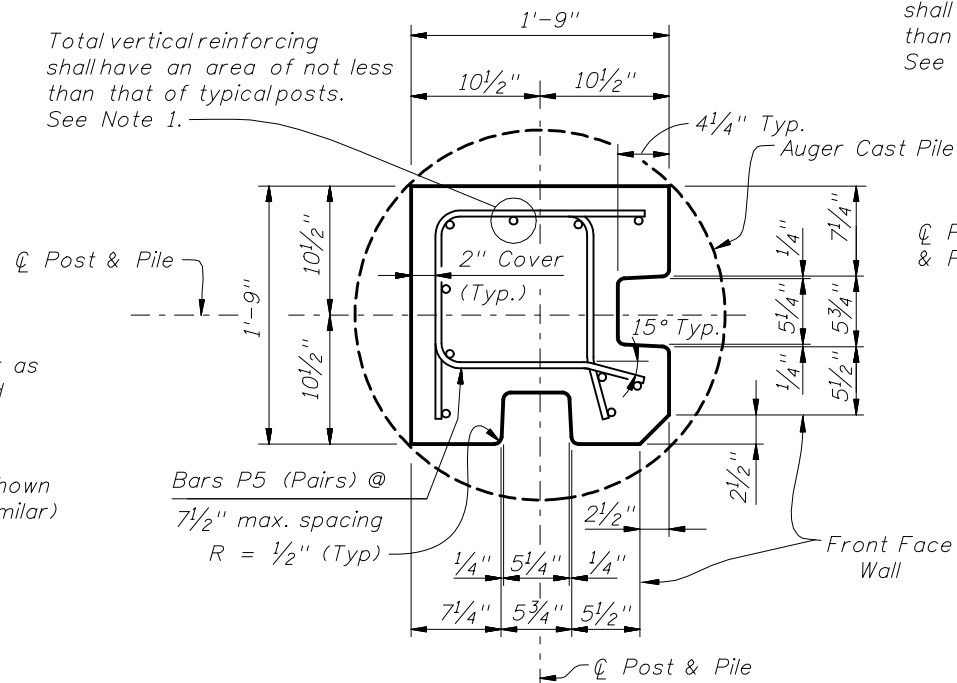


WEB HOLE & SHEAR CONNECTOR SPACING DETAIL
(Concrete not shown for clarity. For limits of concrete see Index No. 5205, Sheet No. 4 of 7.)



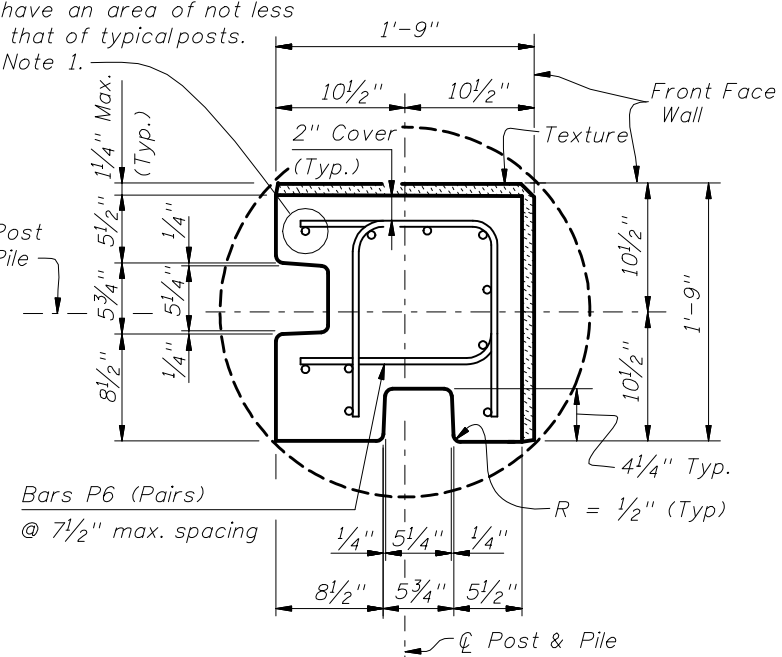
DETAIL I
(Back Face Chamfer Shown Front Face Chamfer Similar)

Total vertical reinforcing shall have an area of not less than that of typical posts. See Note 1.



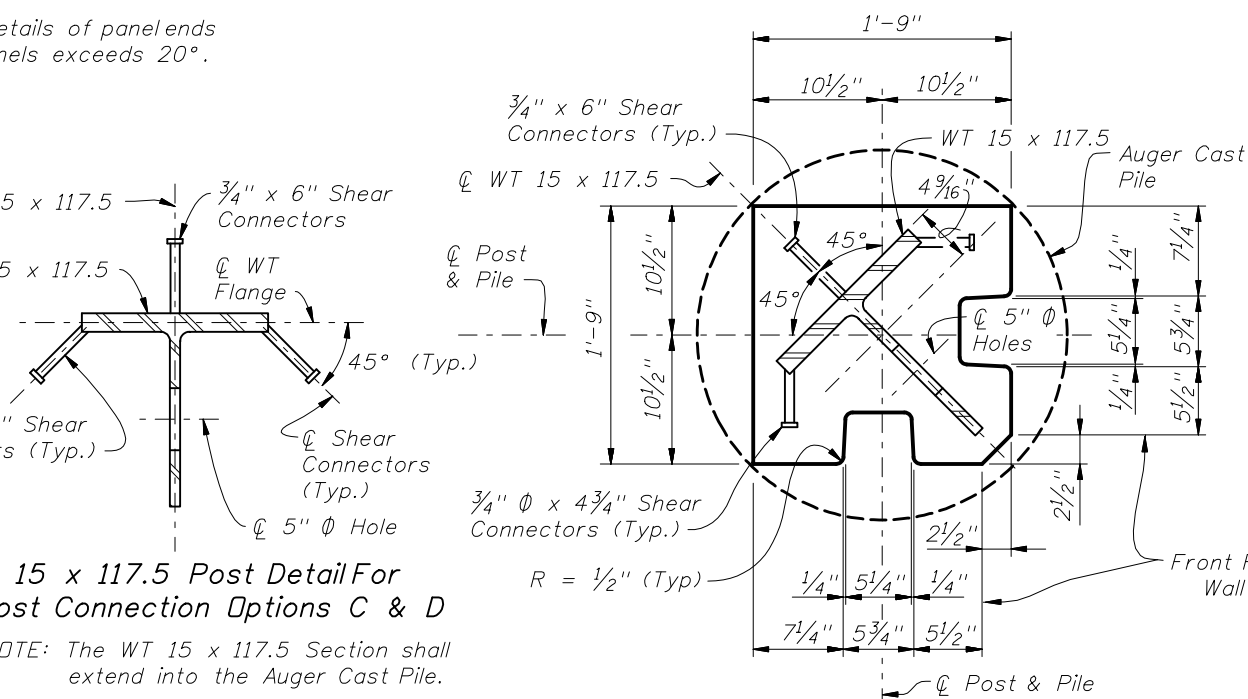
SPECIAL POSTS FOR 90° CORNERS FOR PILE/POST CONNECTION OPTIONS A, B & E
Collars for Corner Posts shall be 3'-6" Φ

Total vertical reinforcing shall have an area of not less than that of typical posts. See Note 1.



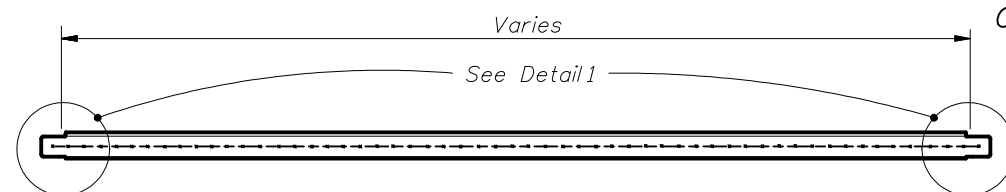
SPECIAL POSTS FOR 90° CORNERS FOR PILE/POST CONNECTION OPTIONS C & D
Collars for Corner Posts shall be 3'-6" Φ

- NOTES:
- For Table of Reinforcing Steel Sizes, see Index No. 5206.
 - For Pile/Post Connection Options A through E, see Index No. 5205.
 - For Post & Pile Lengths, see Index No. 5206.



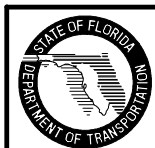
WT 15 x 117.5 Post Detail For Pile/Post Connection Options C & D

NOTE: The WT 15 x 117.5 Section shall extend into the Auger Cast Pile.



PANEL PLAN

SPECIAL PANELS AND 90° CORNER POSTS

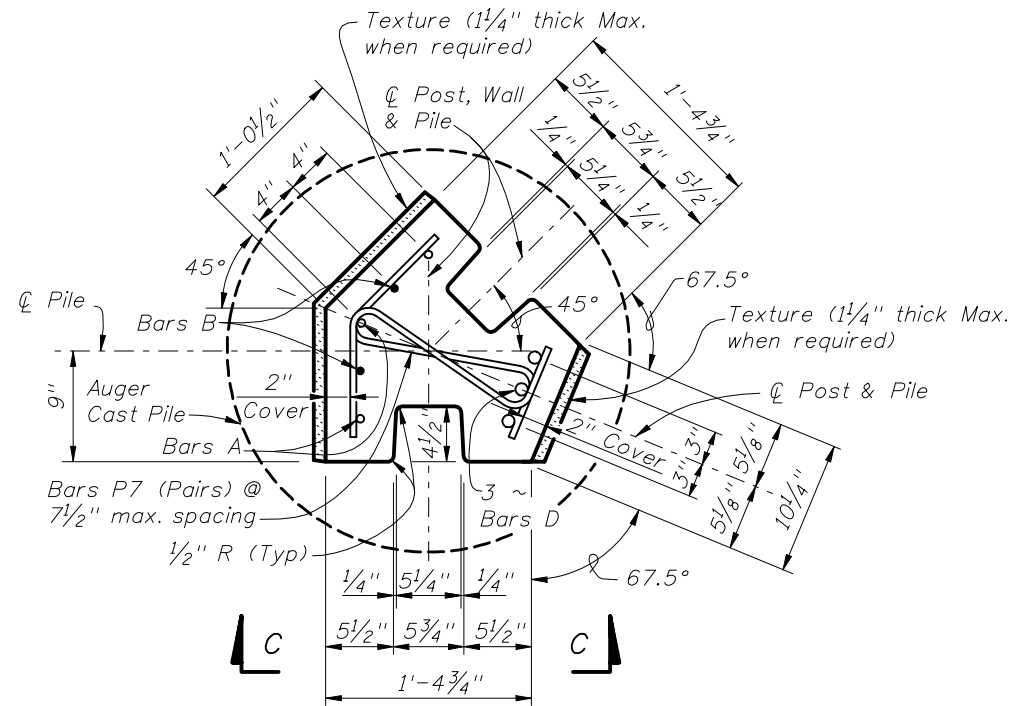


2010 FDOT Design Standards

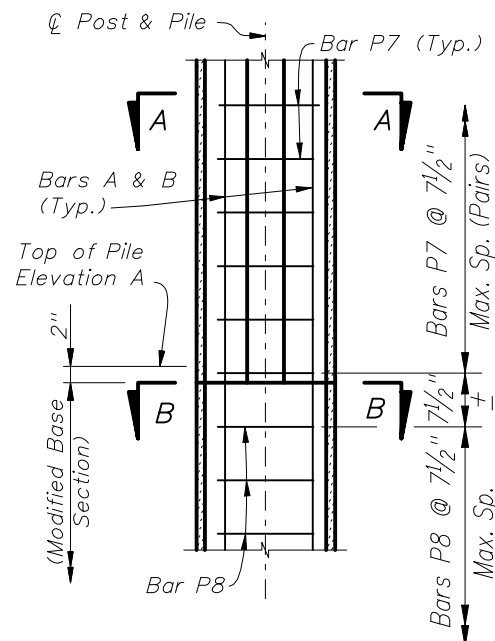
PRECAST SOUND BARRIERS - RECESSED PANEL OPTION

Last Revision 01/01/09 Sheet No. 3 of 5

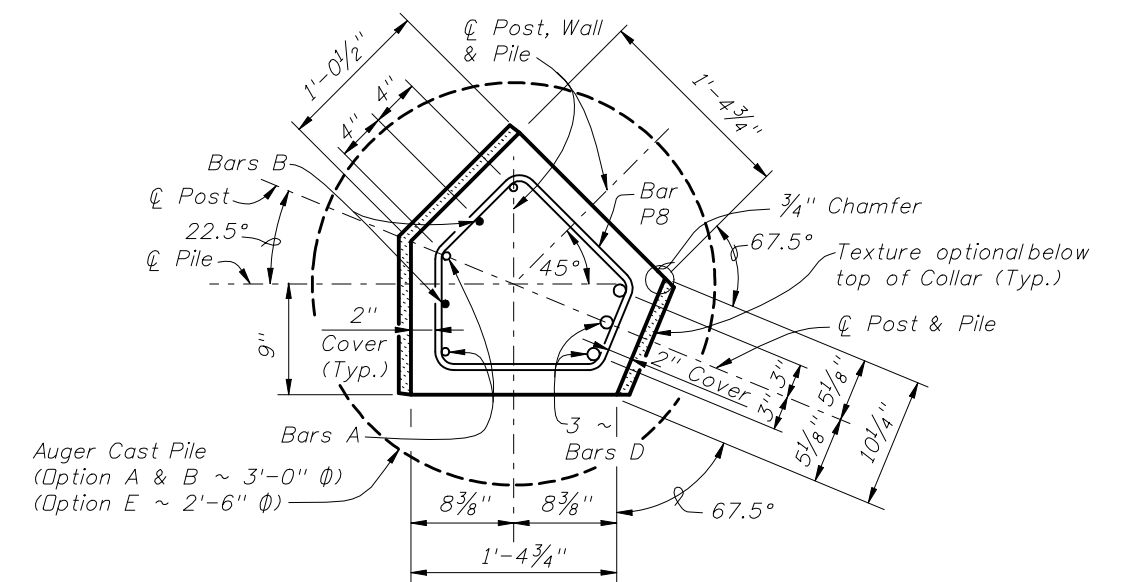
Index No. 5203



SECTION A-A
TYPICAL SECTION ABOVE PILE

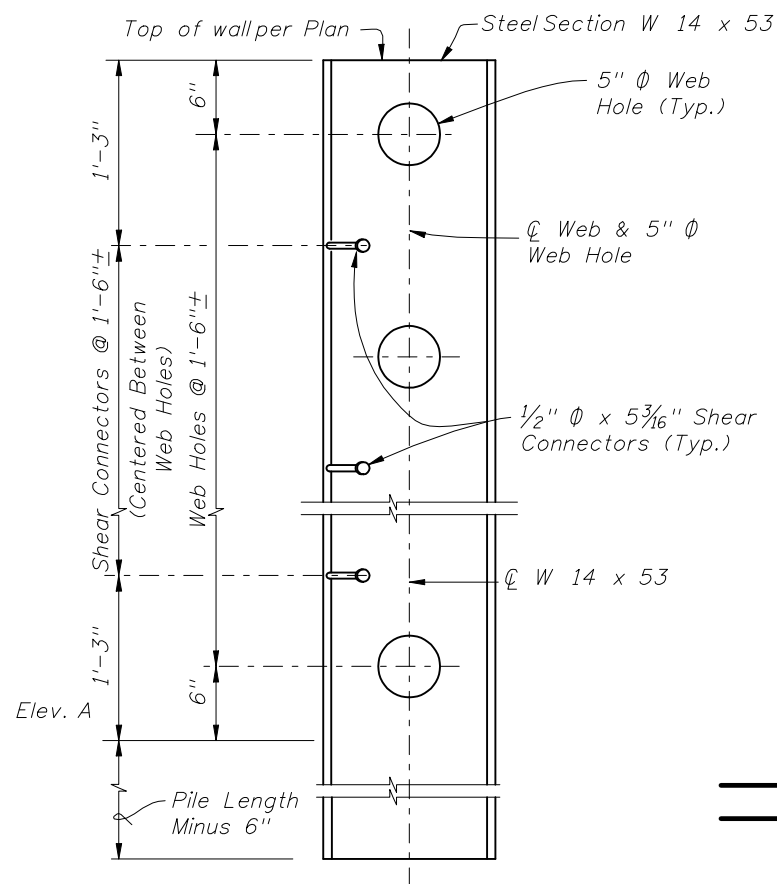


VIEW C-C (PARTIAL ELEVATION)
(Only Front Faces Shown for Clarity)

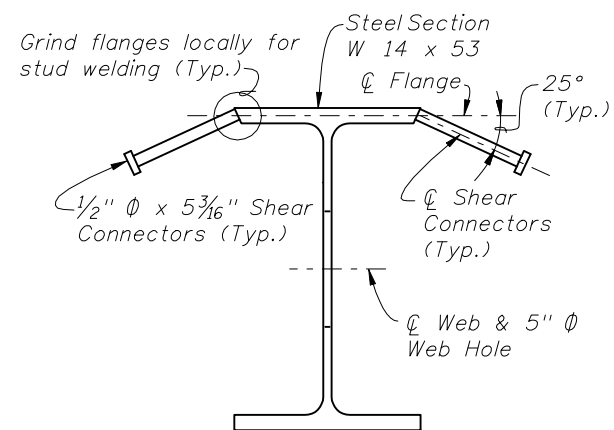


SECTION B-B
PRECAST COLLAR SECTION

**SPECIAL POSTS FOR 45° CORNERS FOR
PILE/POST CONNECTION OPTIONS A, B & E**

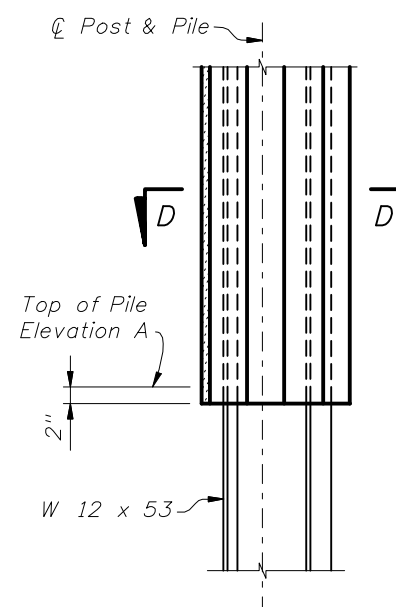


WEB HOLE AND SHEAR CONNECTOR
SPACING DETAIL
(Concrete not shown for clarity)

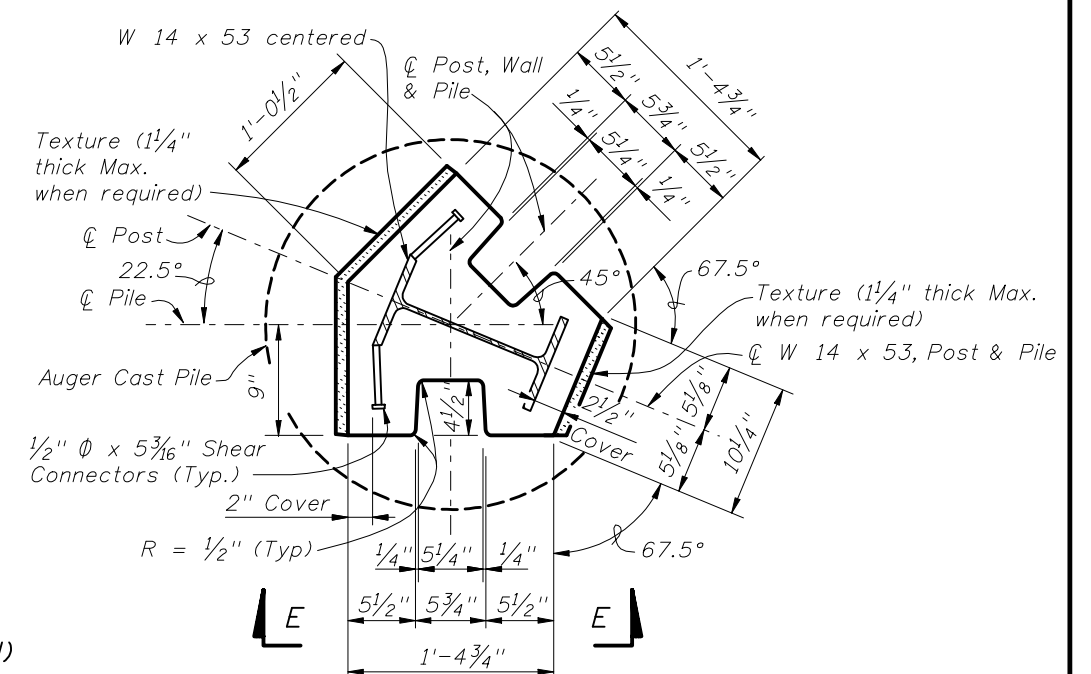


W 14 x 53 POST DETAIL

NOTE: The W 14 x 53 Section shall extend into the Auger Cast Pile.



VIEW E-E (PARTIAL ELEVATION)
(Only Front Faces Shown for Clarity)



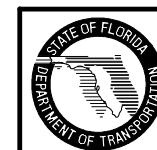
SECTION D-D
TYPICAL SECTION ABOVE PILE

**SPECIAL POSTS FOR 45° CORNERS FOR
PILE/POST CONNECTION OPTIONS C & D**

NOTES:

1. For Table of Reinforcing Steel Sizes, see Index No. 5206.
2. For Pile/Post Connection Options A through E, see Index No. 5205.
3. For Post & Pile Lengths, see Index No. 5206.
4. Shear Connectors shall be 5" long after welding.

SPECIAL 45° CORNER POSTS

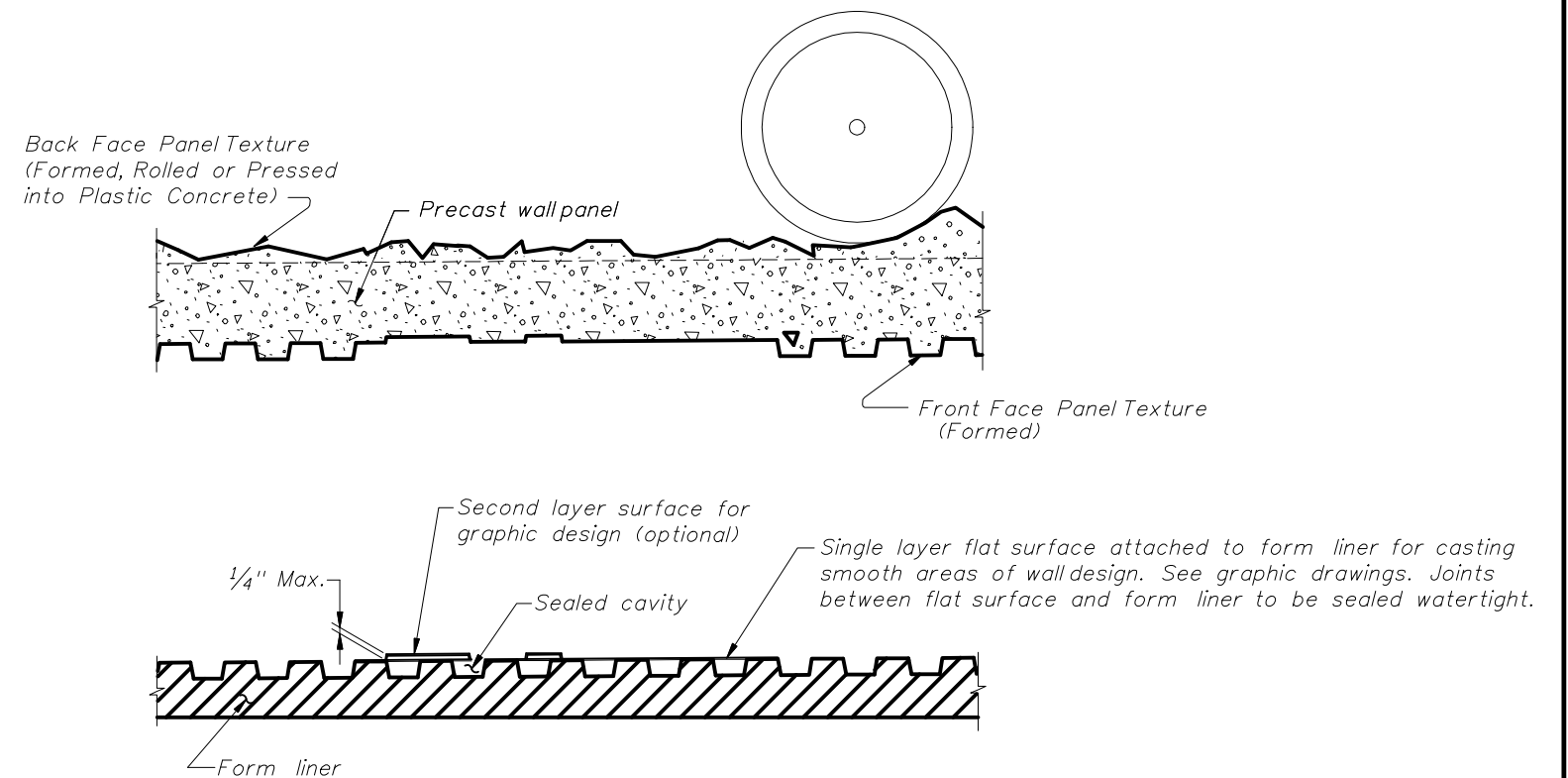
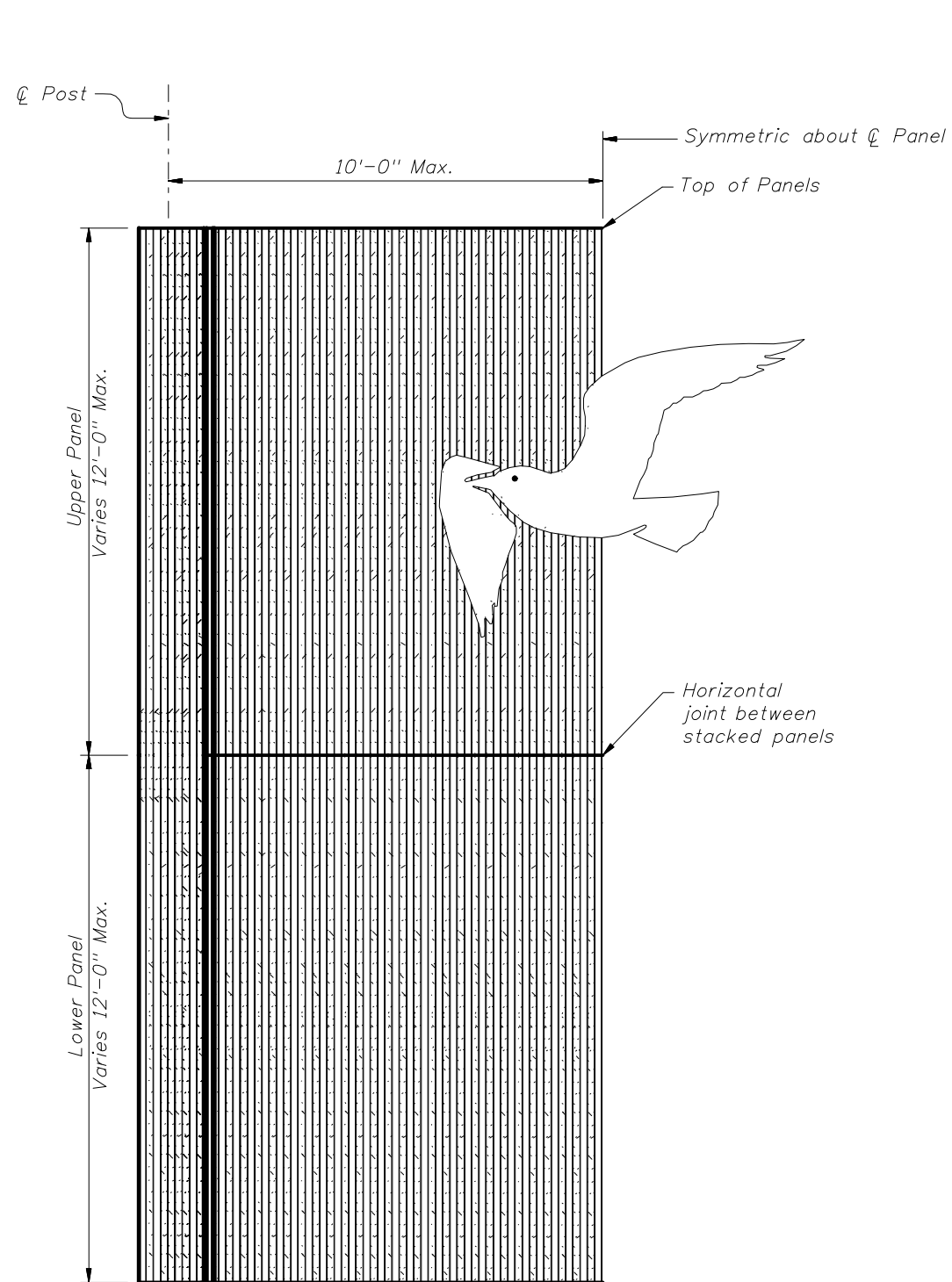


2010 FDOT Design Standards

PRECAST SOUND BARRIERS
- RECESSED PANEL OPTION

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Sheet No. 4 of 5

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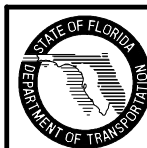


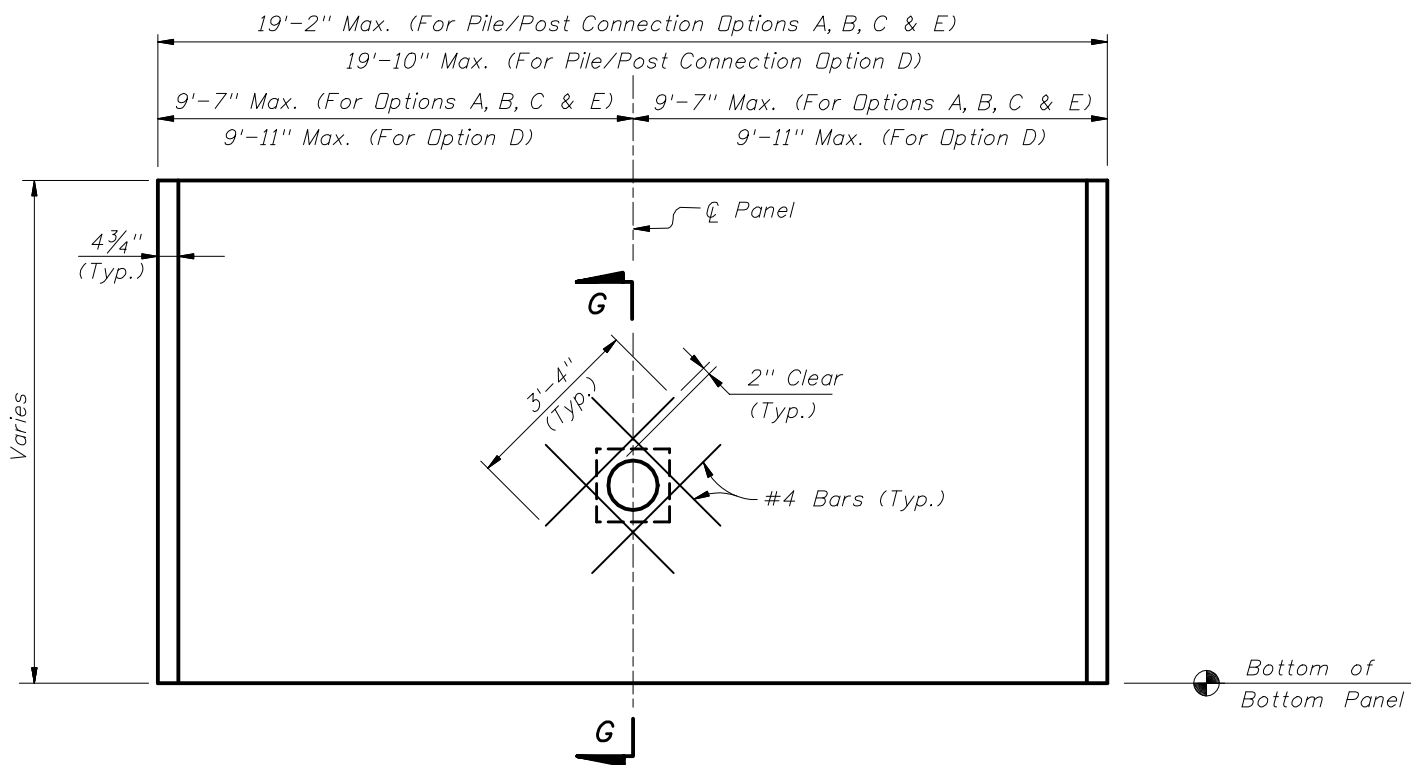
TYPICAL FORMING DETAIL
 (Front Face Panel Texture Type "H" Shown.)
 (Back Face Panel Texture Type "D" Shown.)

NOTES:

1. Contractor shall submit specific form liner samples for approval by the Engineer.
2. Textures and graphics shown are for demonstration purposes only. See Wall Control Drawings for project specific texture and graphic requirements.

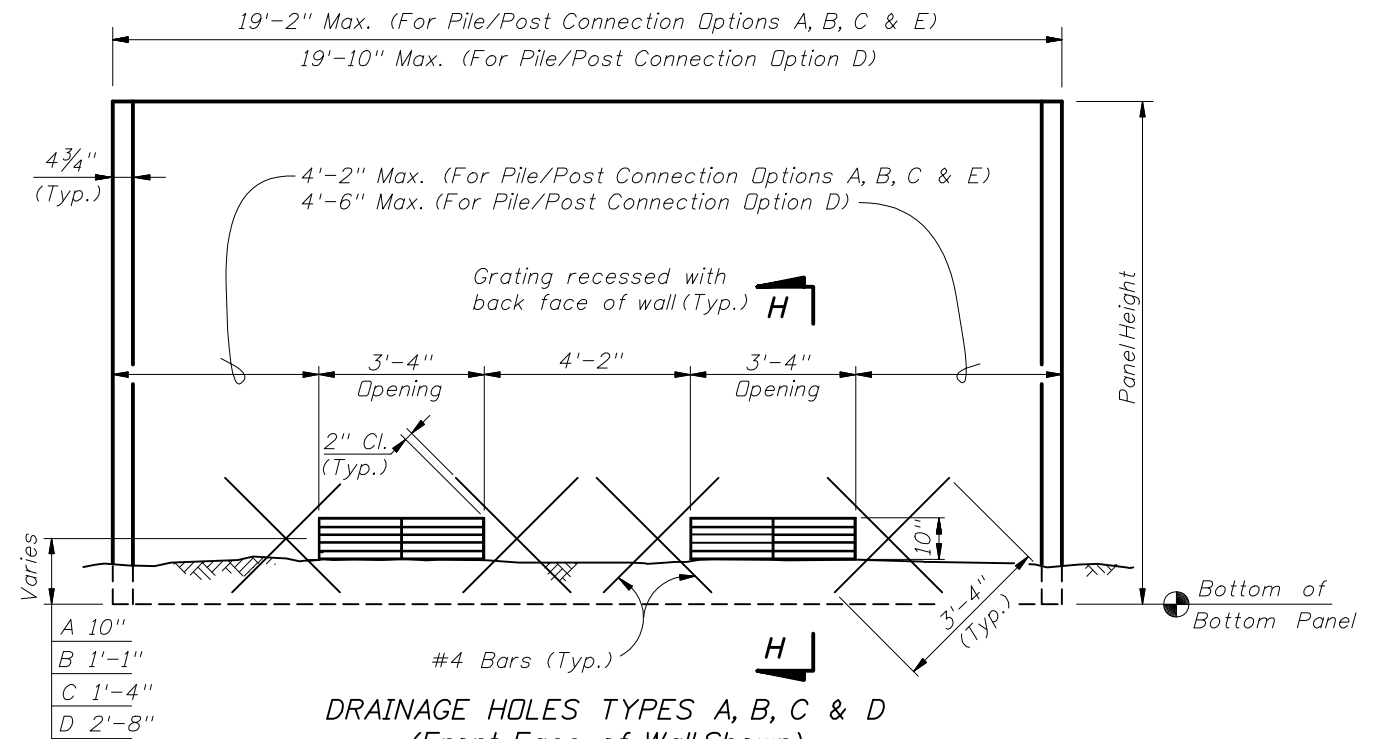
HALF ELEVATION
 (Pile/Post Connection Options A, B, C and E Shown.)
 (Front Face Panel Texture Type "H" and Front Face Post Texture Type "H" Shown.)
 (Graphic Type LG-3 Shown.)





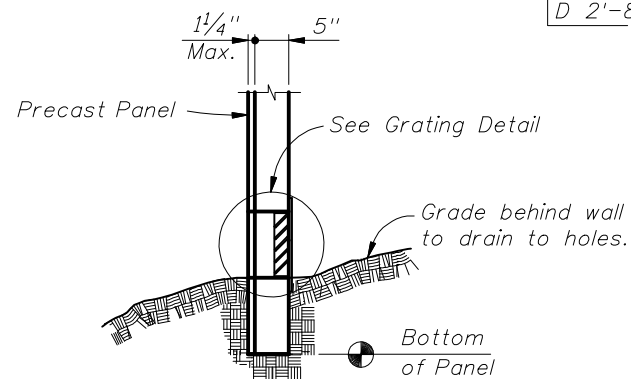
FIRE HOSE ACCESS HOLE TYPICAL DETAIL
 (Front Face of Wall Shown)
 (Flush Panel Option Shown)
 Recessed Panel Option Similar)

NOTE: Fire Hose Access Point to be located at or near fire hydrants

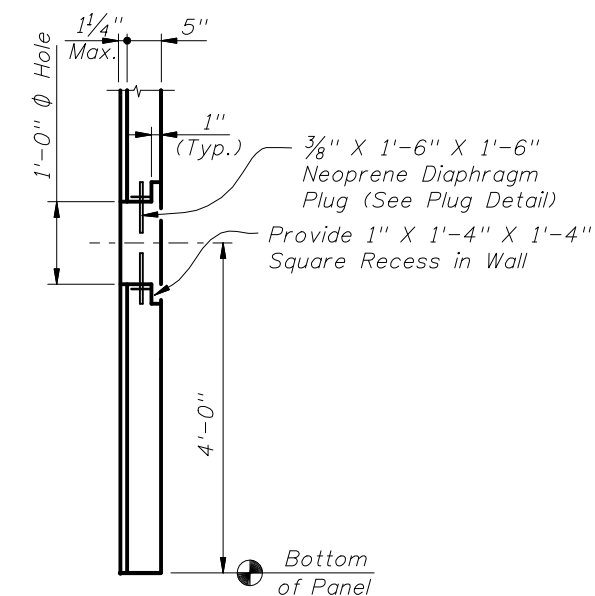


DRAINAGE HOLES TYPES A, B, C & D
 (Front Face of Wall Shown)
 (Flush Panel Option Shown)
 Recessed Panel Option Similar)

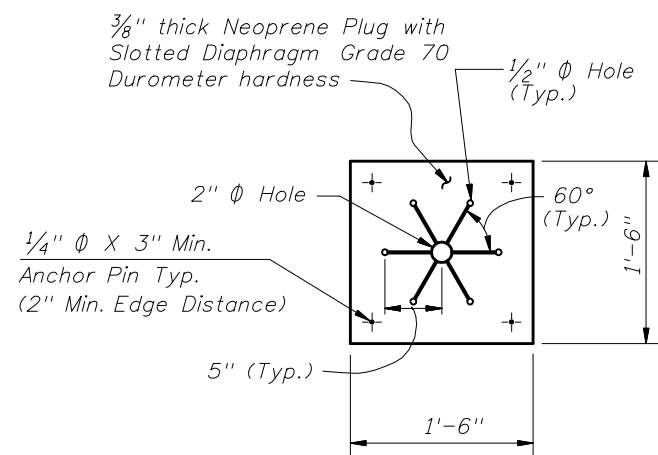
NOTE: Place double mat of welded wire reinforcement in bottom 5'-0" of panels with drainage holes. Hole Types A, B, C and D refer to distance from bottom of panel to center of opening. See Wall Control Drawings.



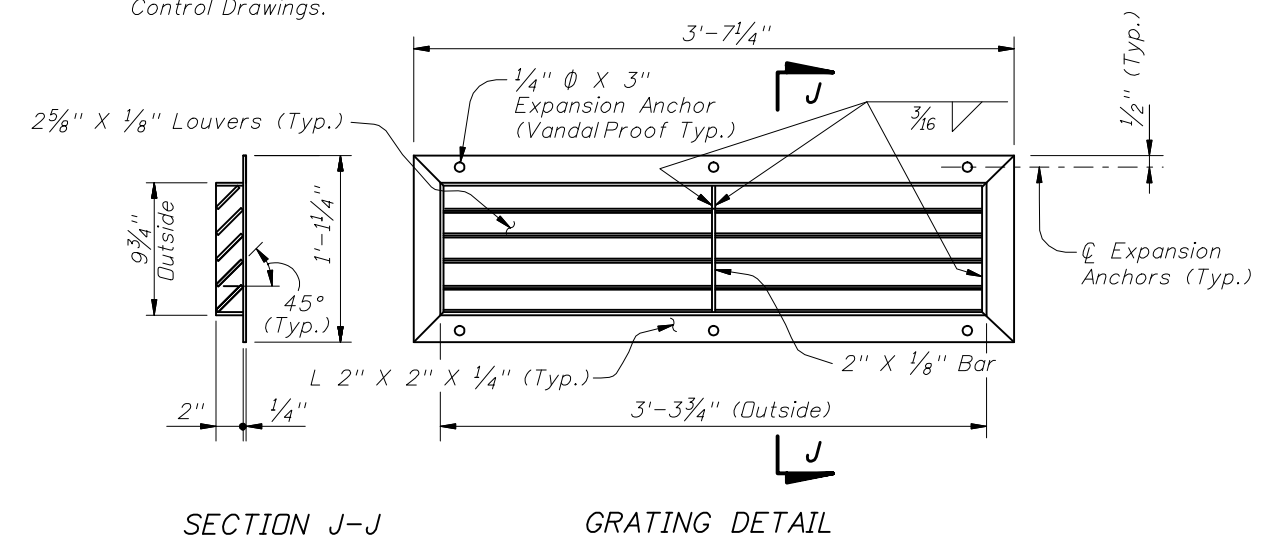
SECTION H-H
 (Flush Panel Option Shown)
 Recessed Panel Option Similar)



SECTION G-G
 (Flush Panel Option Shown)
 Recessed Panel Option Similar)

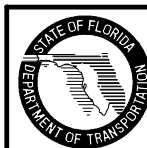


PLUG DETAIL



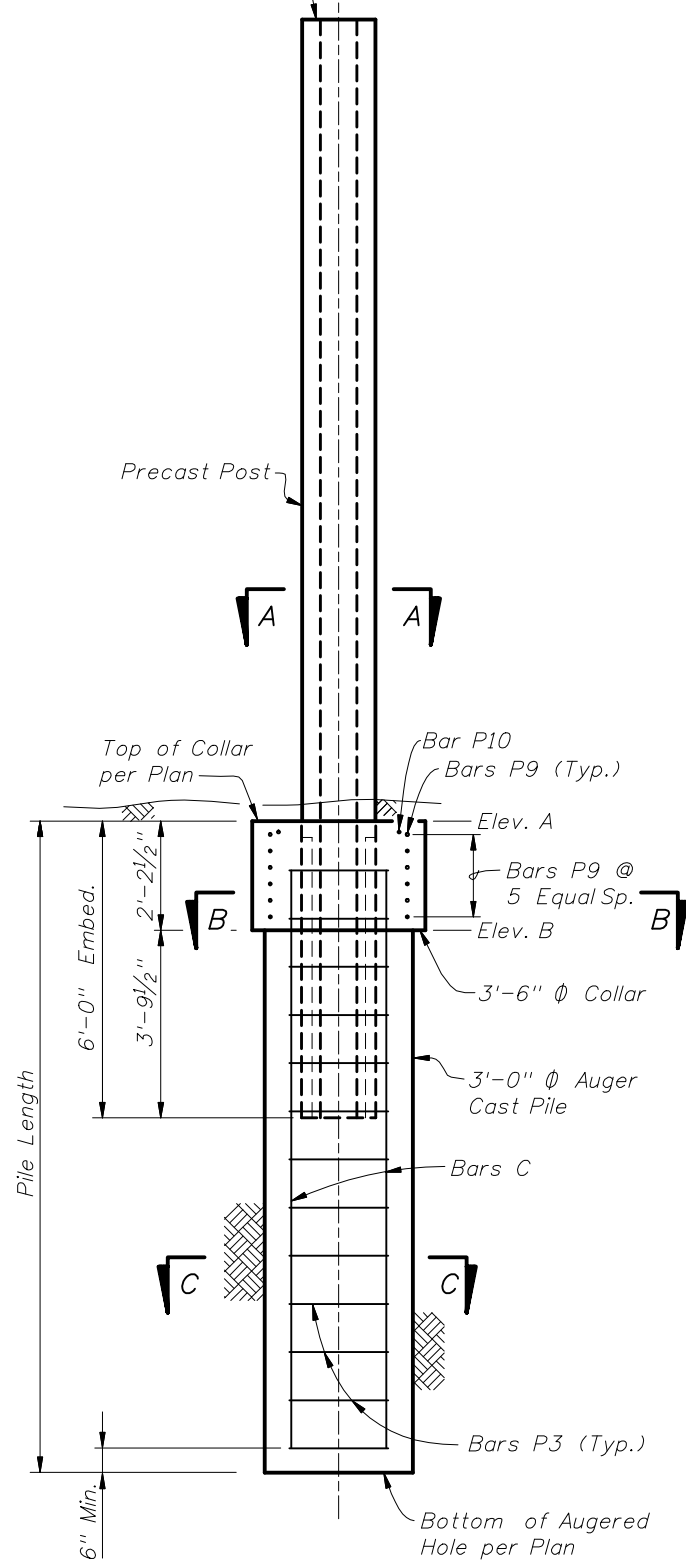
SECTION J-J GRATING DETAIL

NOTES:
 Grating shall be ASTM A 36 steel and shall be hot dip galvanized after assembly in accordance with ASTM Specification A 123.
 Expansion anchors shall be in accordance with ASTM A 307 (Galvanized).
 Welding shall be in accordance with the current edition of the ANSI/AWS D1.1 Welding Code.

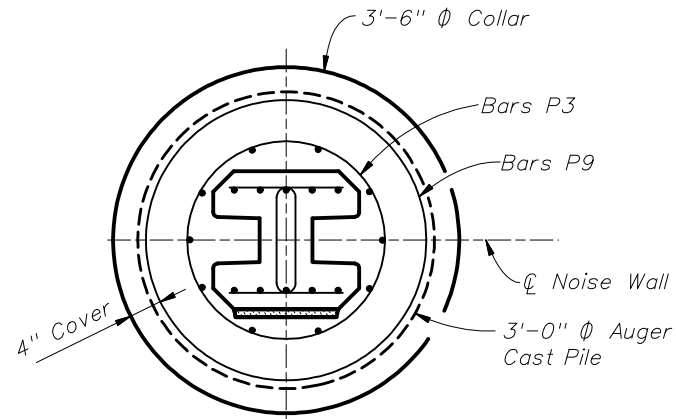


☉ Post, 3'-6" Ø Collar and 3'-0" Ø Auger Cast Pile
 * Top of wall per Plan

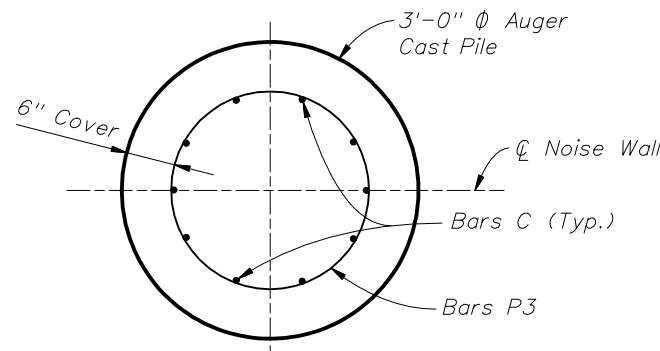
* Extend Post 2" above top of high side wall panel when post caps are shown in plans.



POST IN AUGERED HOLE
 (Cast-In-Place Collar Shown, Precast Collar Similar)

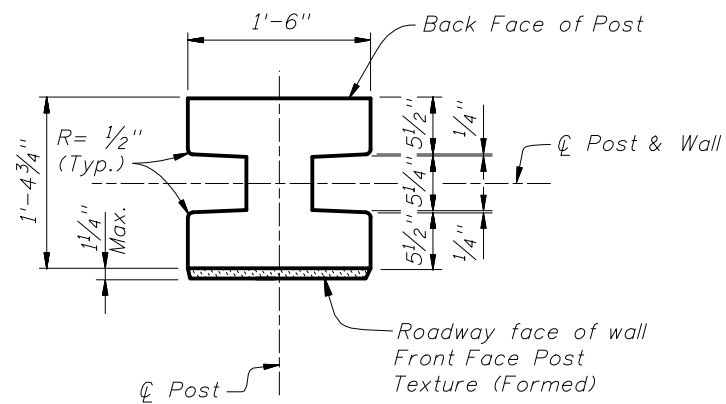


SECTION B-B

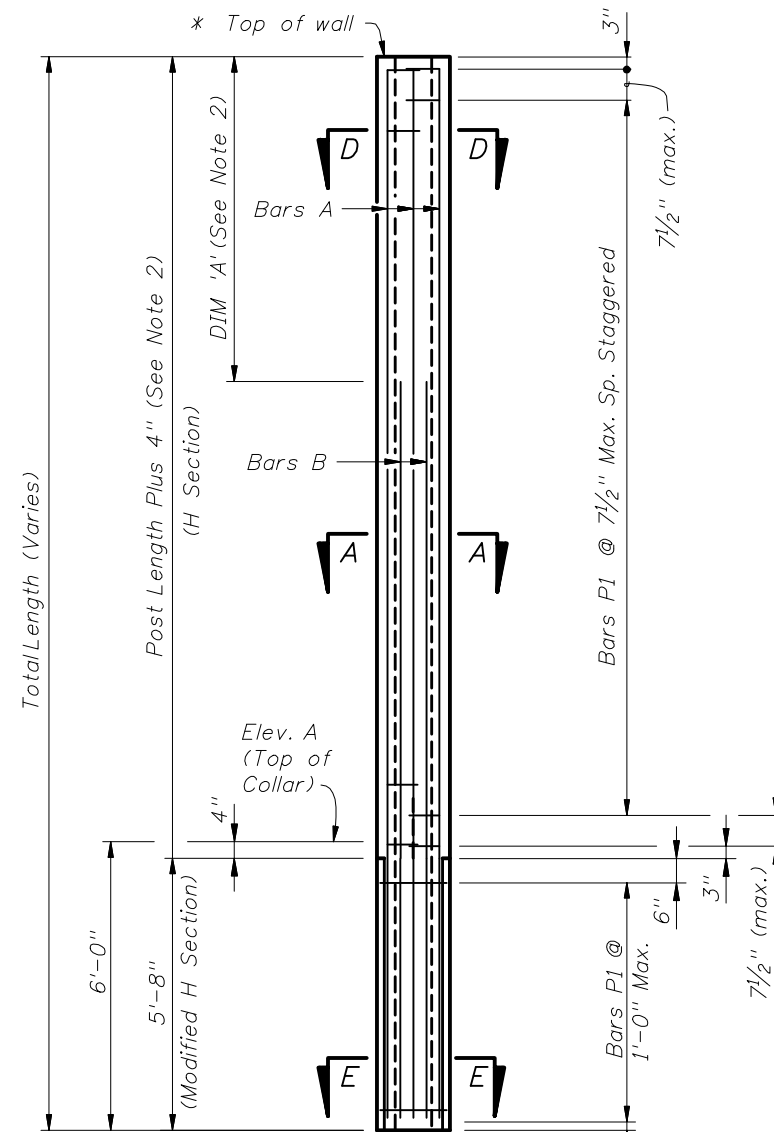


SECTION C-C

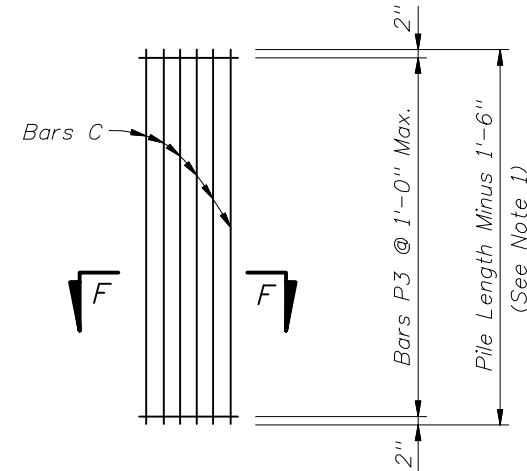
- NOTES:
1. For Post and Pile Lengths, see Index No. 5206.
 2. For Table of Reinforcing Steel Sizes and DIM 'A', see Index No. 5206.
 3. For Precast Collar Option, see Sheet 2.



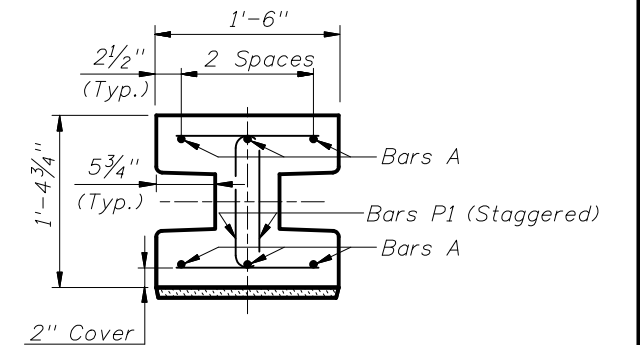
TYPICAL POST SECTION
 (H Section)



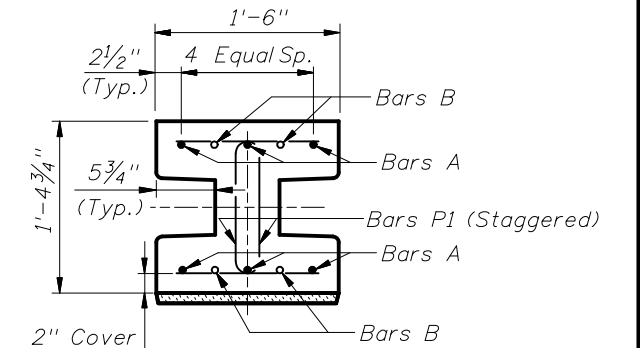
POST DETAIL WITH C-I-P COLLAR
 (Prior to placement in augered hole)



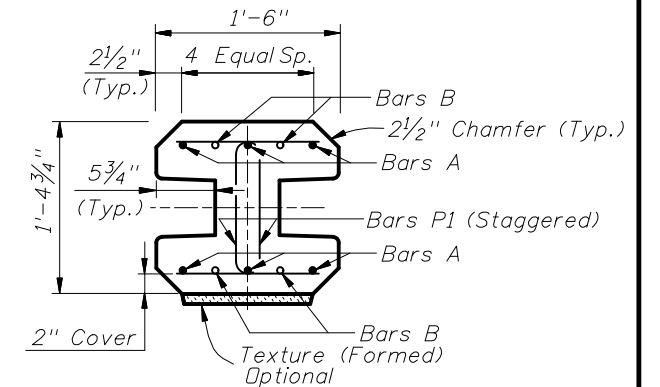
AUGERED PILE REINFORCEMENT DETAIL



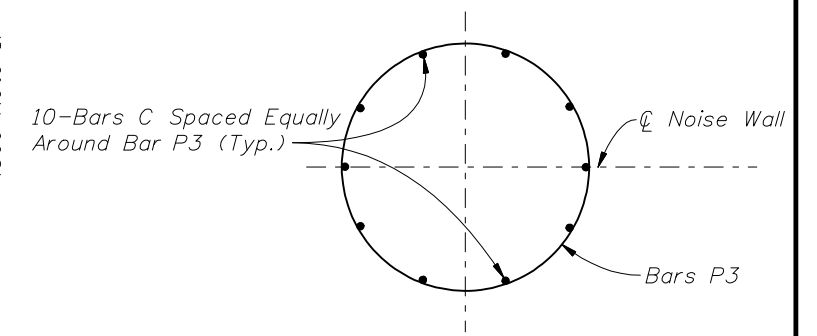
SECTION D-D
 (H Section)



SECTION A-A
 (H Section)



SECTION E-E
 (Modified H Section)



SECTION F-F

PILE/POST CONNECTION OPTION A

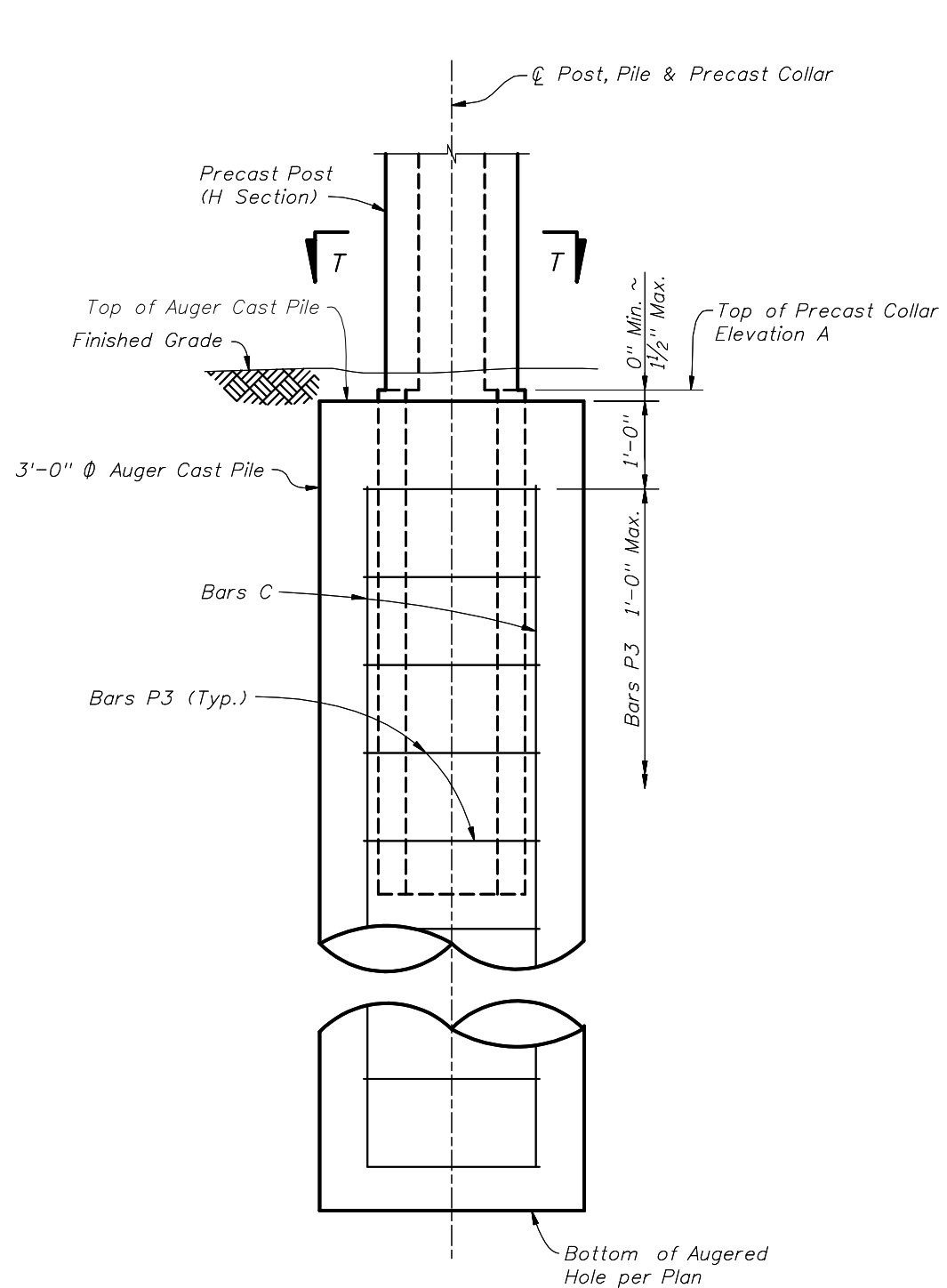


2010 FDOT Design Standards

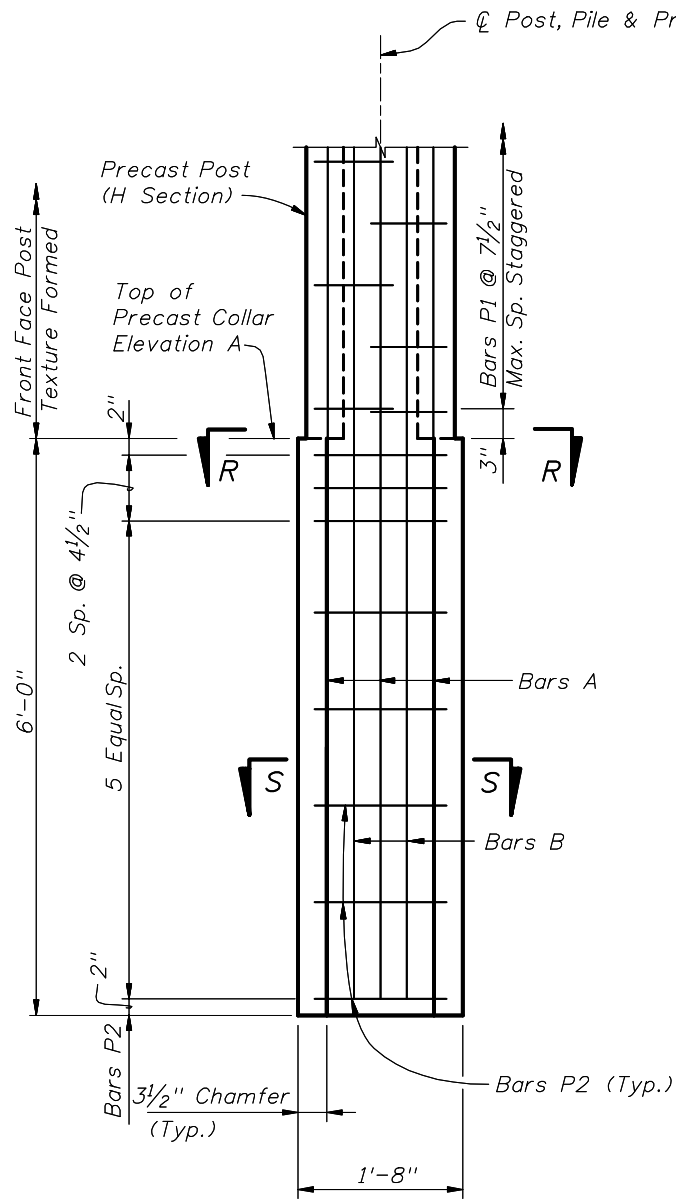
PRECAST SOUND BARRIERS -
 PILE AND POST REINFORCING STEEL

Last Revision 07/01/08
 Sheet No. 1 of 7

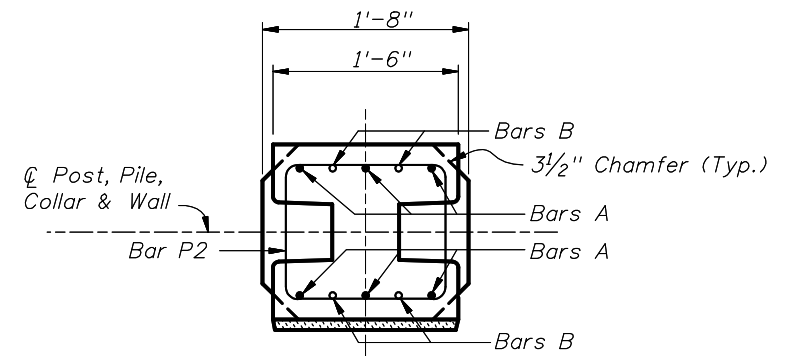
Index No. 5205



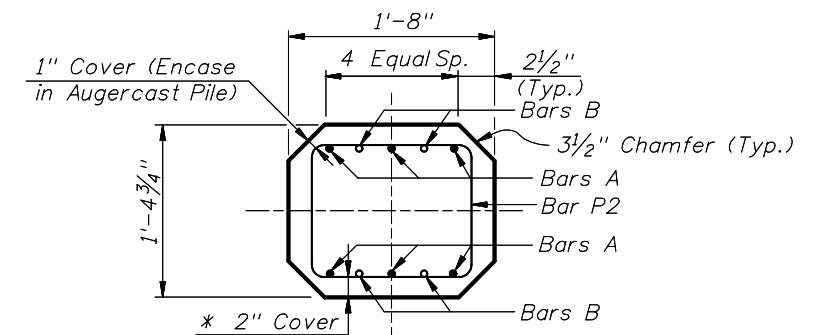
PRECAST COLLAR IN AUGER CAST PILE



PRECAST COLLAR DETAIL

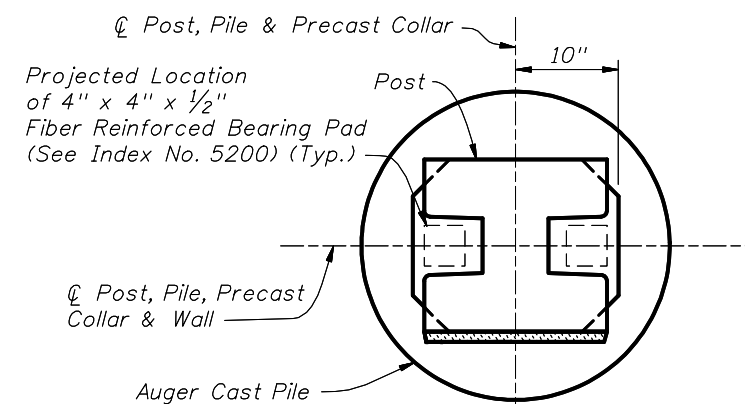


SECTION R-R



SECTION S-S

* - Unless Otherwise Noted.



SECTION T-T

NOTES:

1. For Post and Pile Lengths, see Index No. 5206.
2. For Reinforcing Steel Sizes, see Index No. 5206.
3. For Pile/Post Connection Option A, see Sheet No. 1 of 7.

PRECAST COLLAR FOR PILE/POST CONNECTION OPTION A



2010 FDOT Design Standards

PRECAST SOUND BARRIERS -
PILE AND POST REINFORCING STEEL

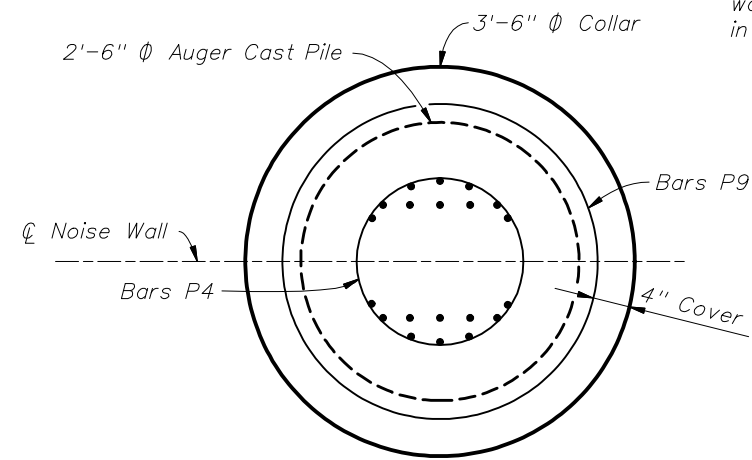
Last Revision 07/01/08

Sheet No. 2 of 7

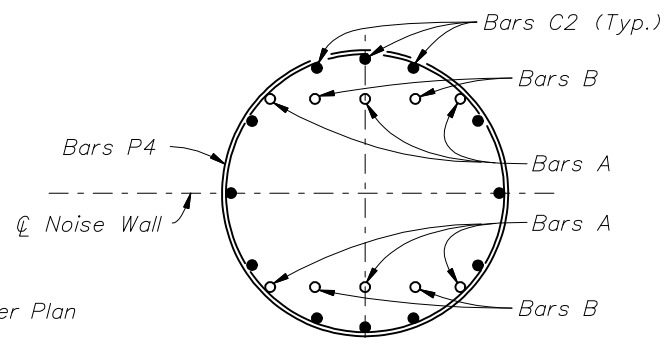
Index No. 5205

* Extend Post 2" above top of high side wall panel when post caps are shown in plans.

☉ Post, 3'-6" Ø Collar and 2'-6" Ø Auger Cast Pile
* Top of wall per Plan

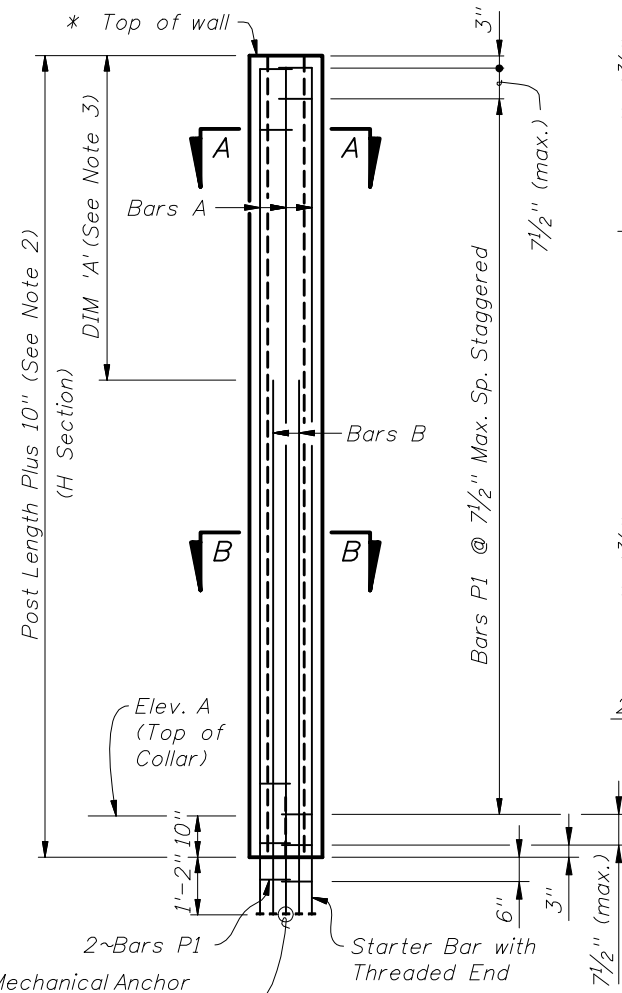


SECTION C-C

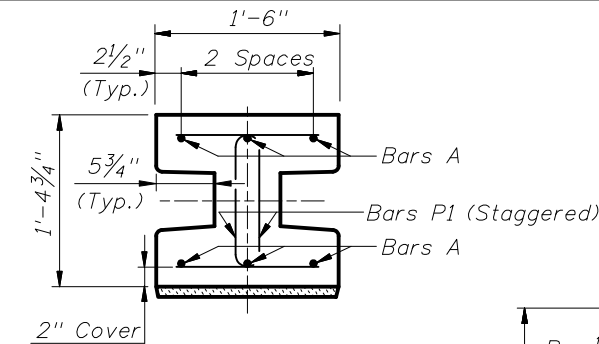


SECTION C-C (Showing Post & Pile Reinforcement)

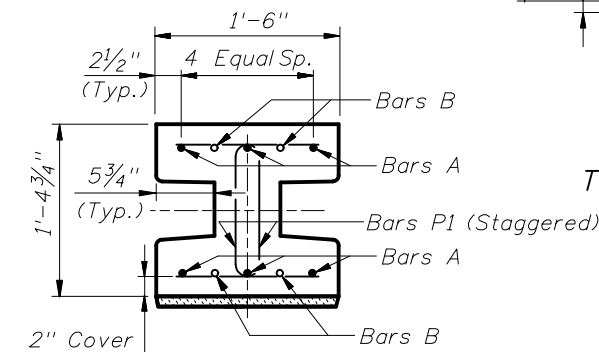
Legend:
○ Post Bars A or Bars B
● Pile Bars C2



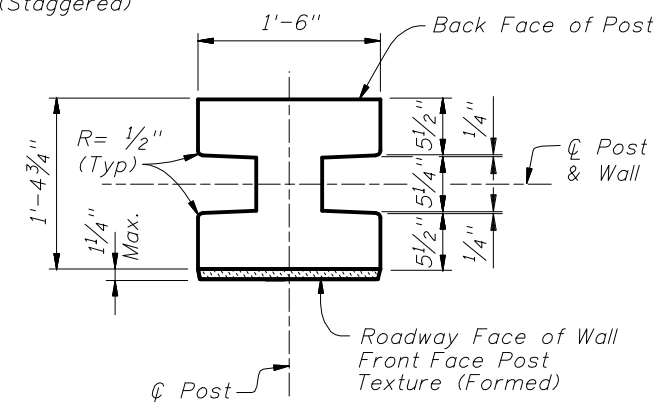
POST DETAIL



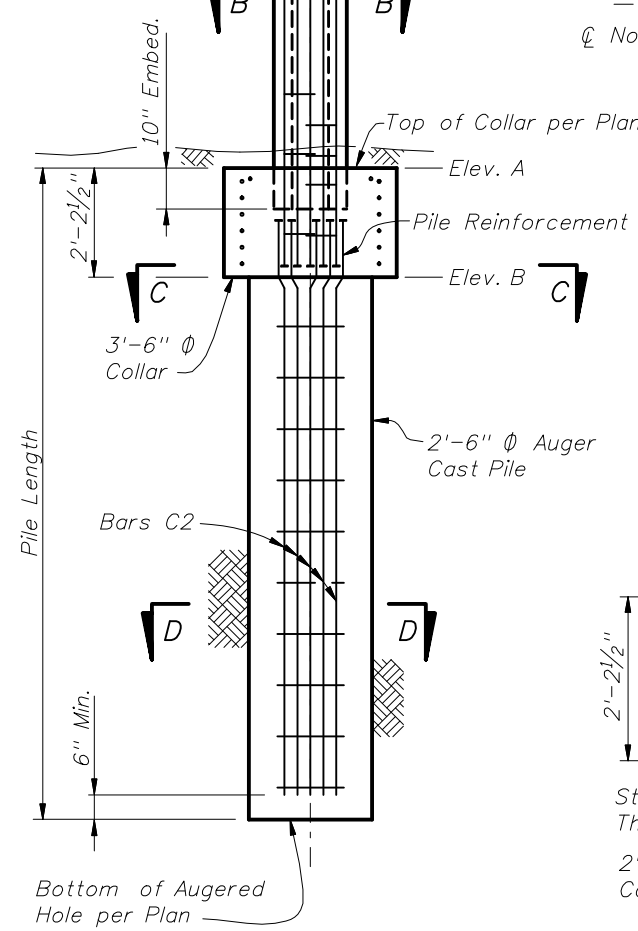
SECTION A-A (H Section)



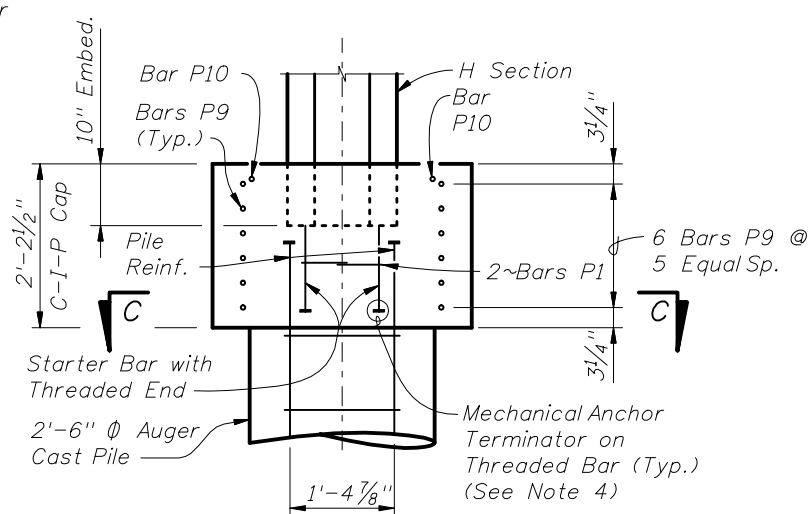
SECTION B-B (H Section)



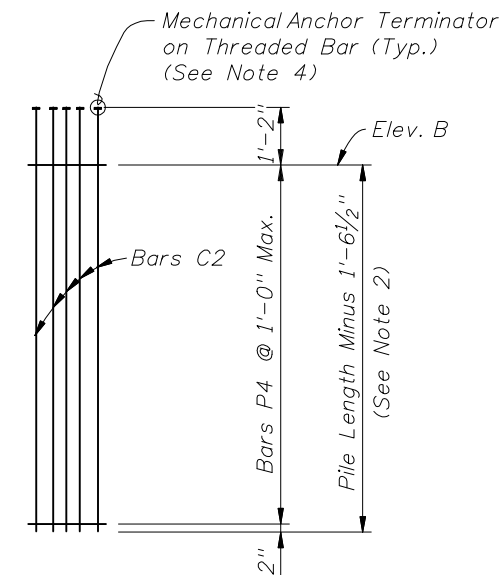
TYPICAL POST SECTION (H Section)



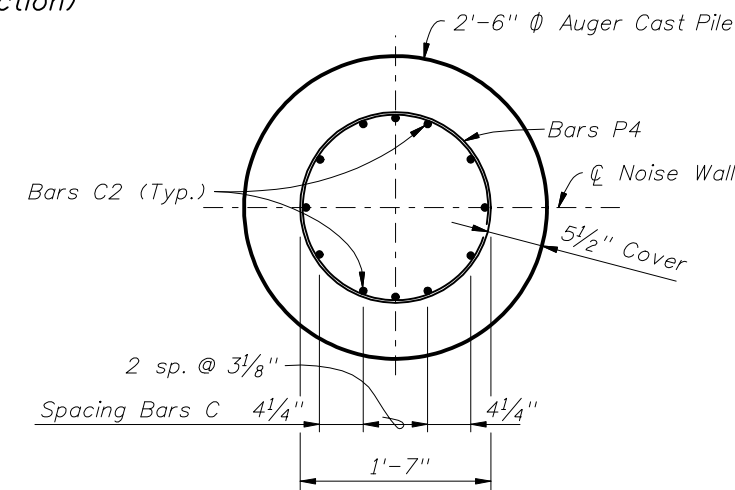
POST IN AUGERED HOLE



LAP AND COLLAR DETAIL (Looking Down the Wall)



AUGERED PILE REINFORCEMENT DETAIL



Section D-D (Showing 2'-6" Auger Cast Pile)

- NOTES:
1. A precast collar shall not be permitted with this Pile/Post Connection Option.
 2. For Post and Pile Lengths, see Index No. 5206.
 3. For Table of Reinforcing Steel Sizes and DIM 'A', see Index No. 5206.
 4. Mechanical Anchor Terminators shall develop 125% of the specified yield strength of the bar.

PILE/POST CONNECTION OPTION B

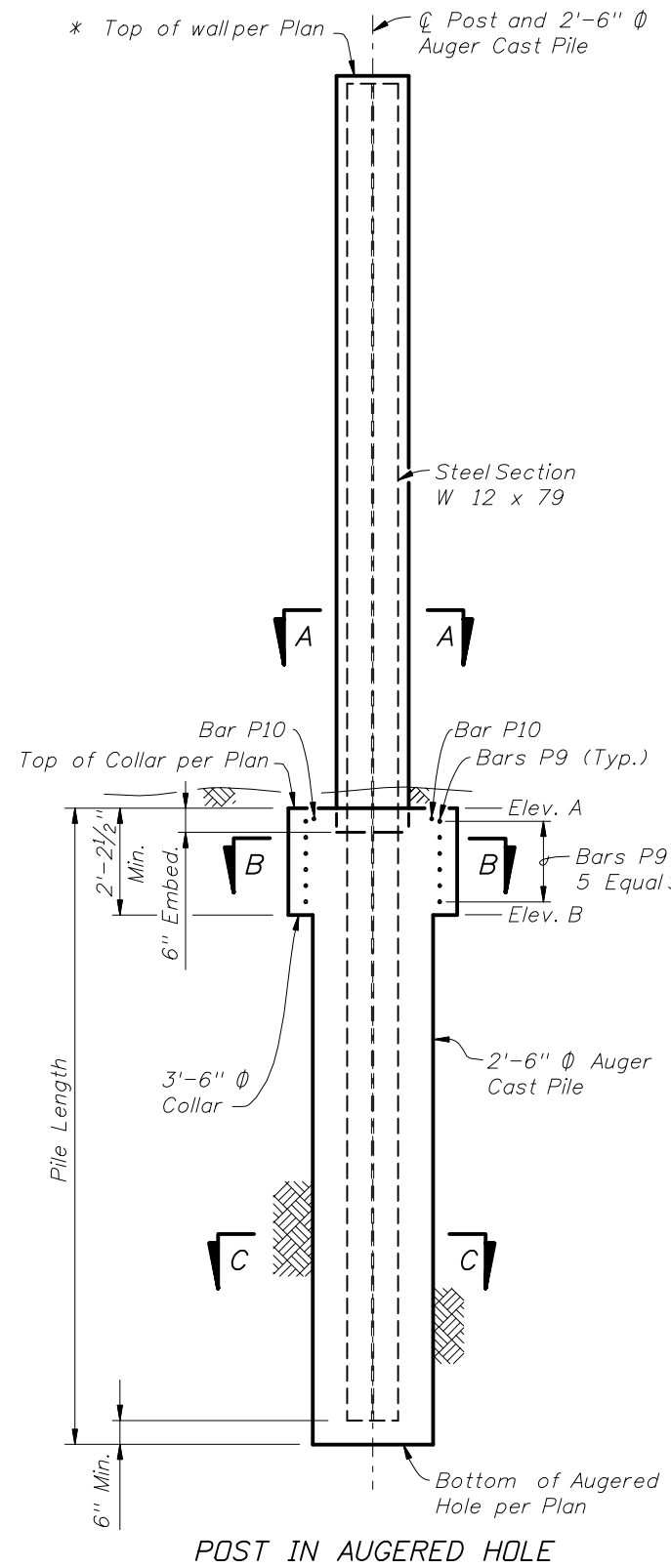


2010 FDOT Design Standards

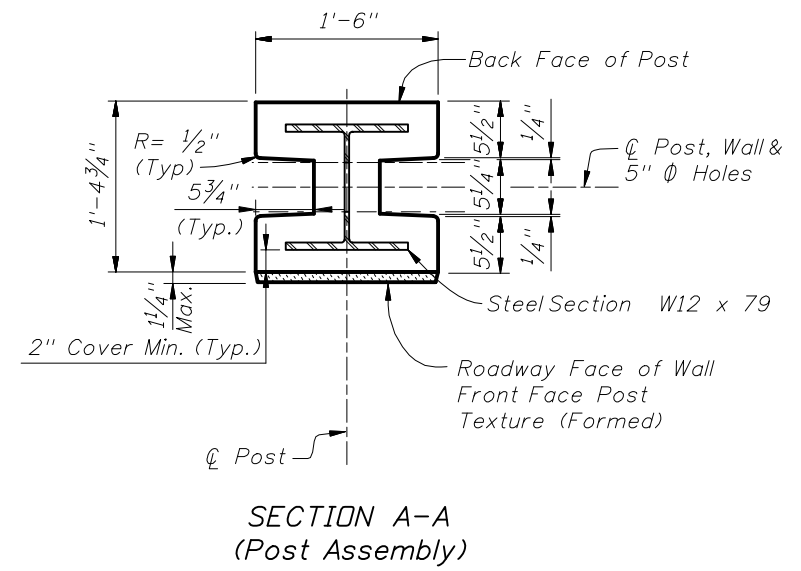
PRECAST SOUND BARRIERS -
PILE AND POST REINFORCING STEEL

| | |
|---------------|-----------|
| Last Revision | Sheet No. |
| 07/01/08 | 3 of 7 |
| Index No. | |
| 5205 | |

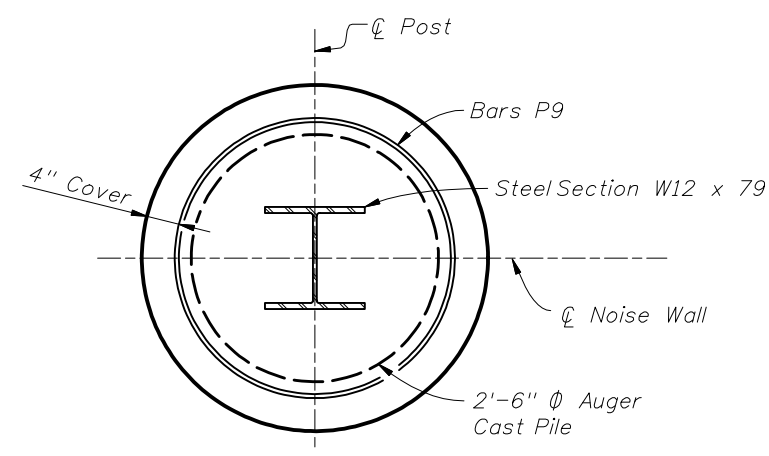
* Extend Post 2" above top of high side wall panel when post caps are shown in plans.



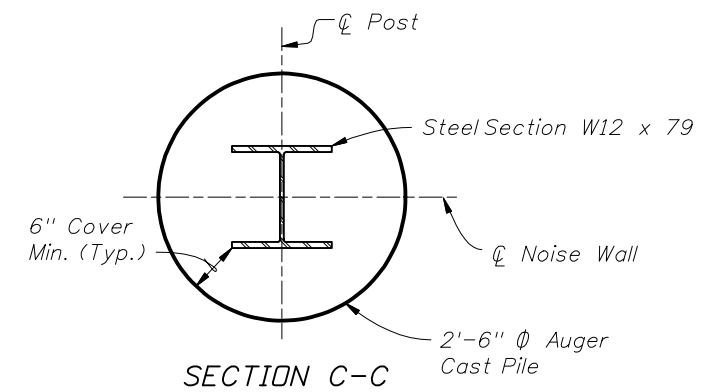
POST IN AUGERED HOLE



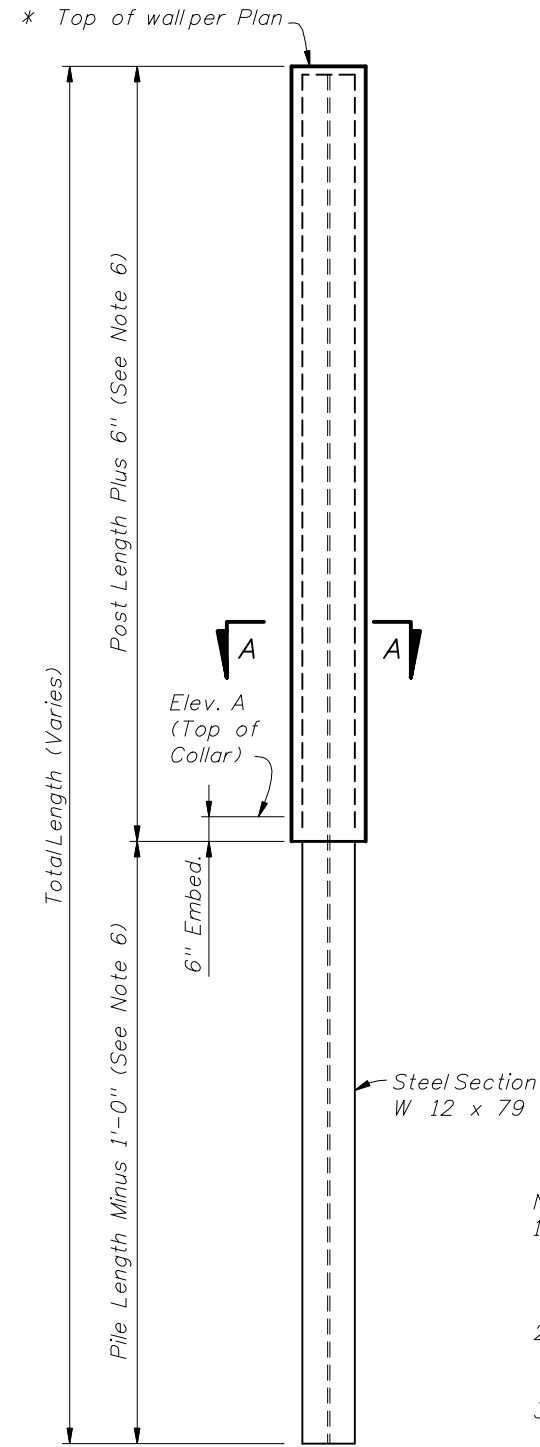
SECTION A-A
(Post Assembly)



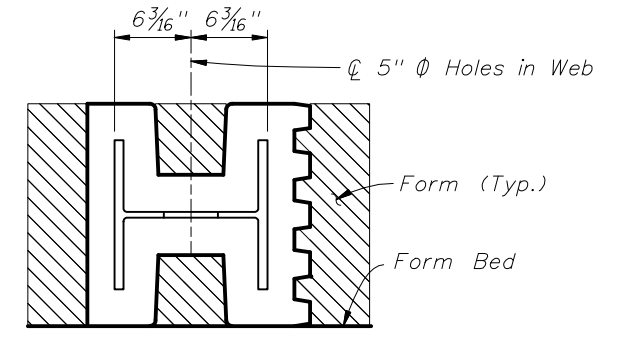
SECTION B-B



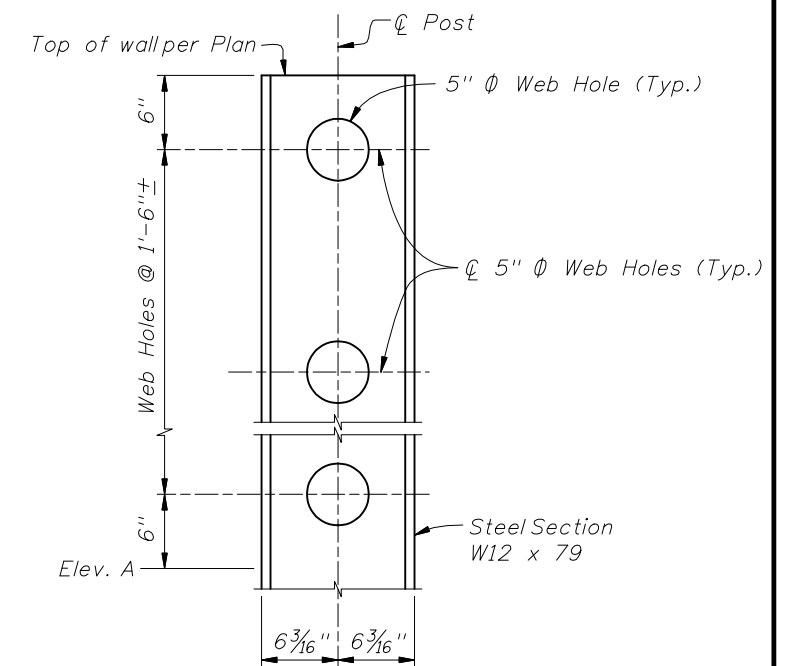
SECTION C-C



POST ASSEMBLY DETAIL



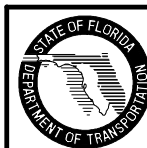
HORIZONTAL CASTING ORIENTATION
(Front Face Post Texture Type "H" Shown)

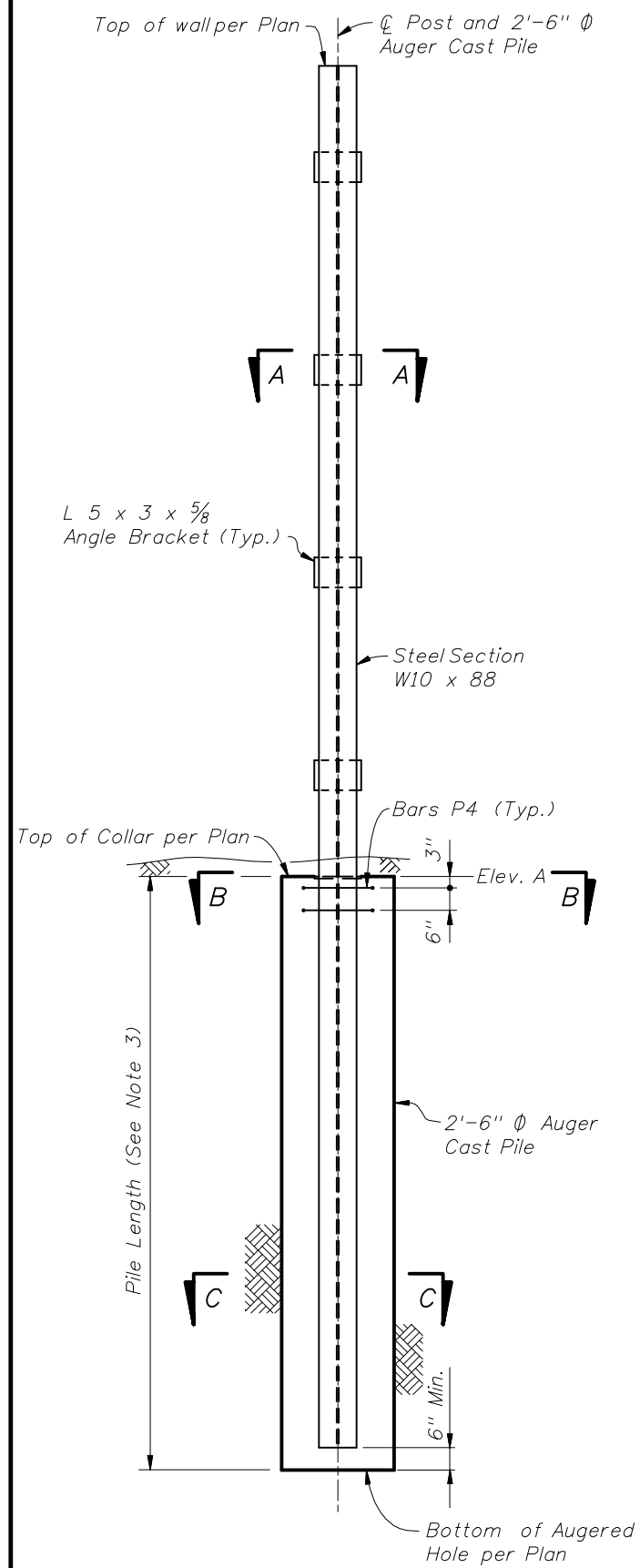


WEB HOLE SPACING DETAIL

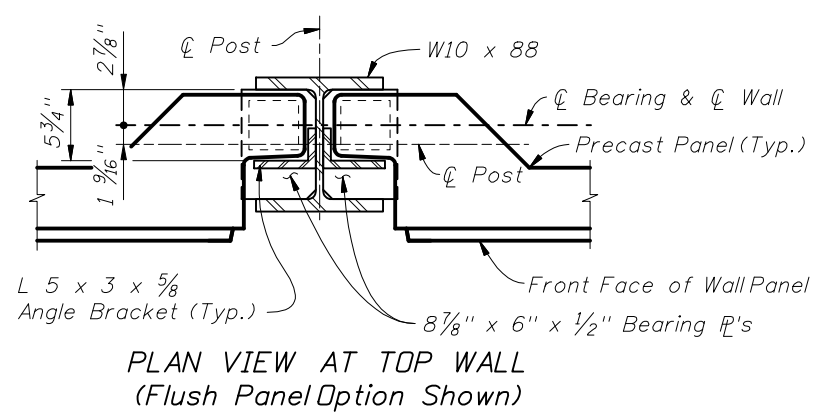
- NOTES:
1. The W12 x 79 load carrying member is coated with concrete for durability, aesthetic reasons and to make the connection to the panels.
 2. The steel and concrete post assembly is not a reinforced concrete design.
 3. The steel and concrete post assembly shall be cast vertical or cast horizontal according to the casting orientation shown above.
 4. All Structural Steel shall be in accordance with ASTM A 36.
 5. A precast collar shall not be permitted with this Pile/Post Connection Option.
 6. For Post and Pile Lengths, see Index No. 5206.

PILE/POST CONNECTION OPTION C

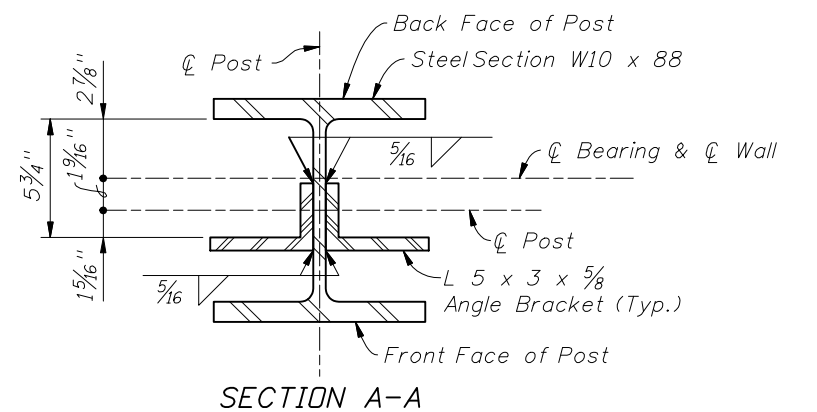




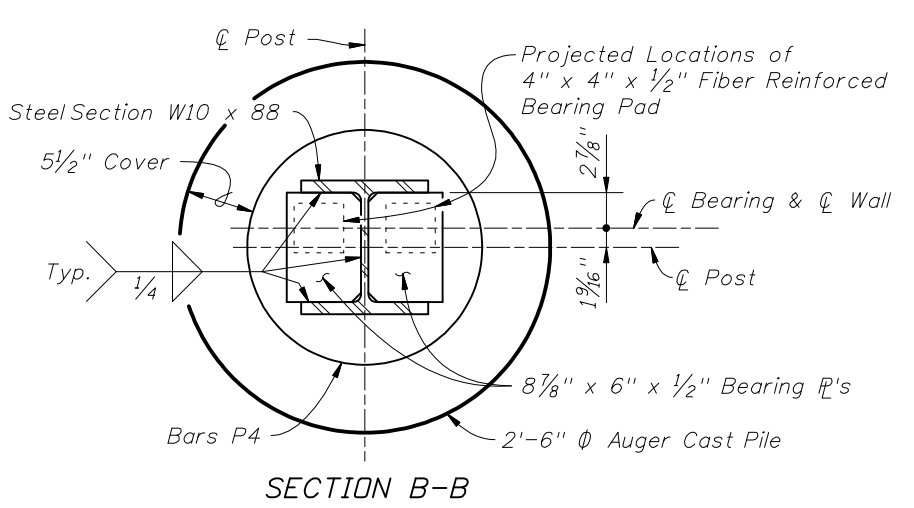
POST IN AUGERED HOLE



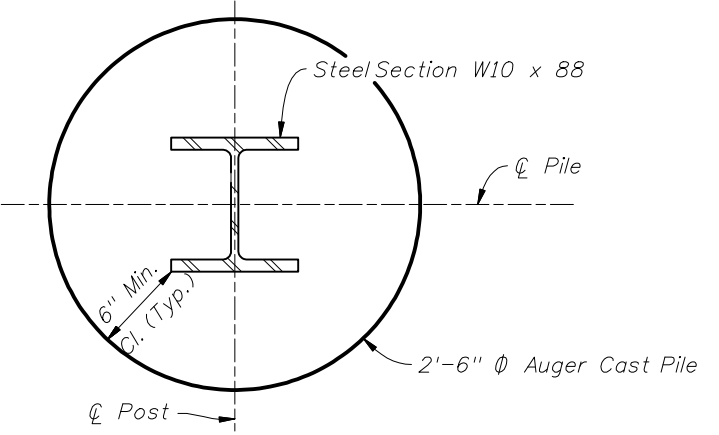
PLAN VIEW AT TOP WALL
(Flush Panel Option Shown)



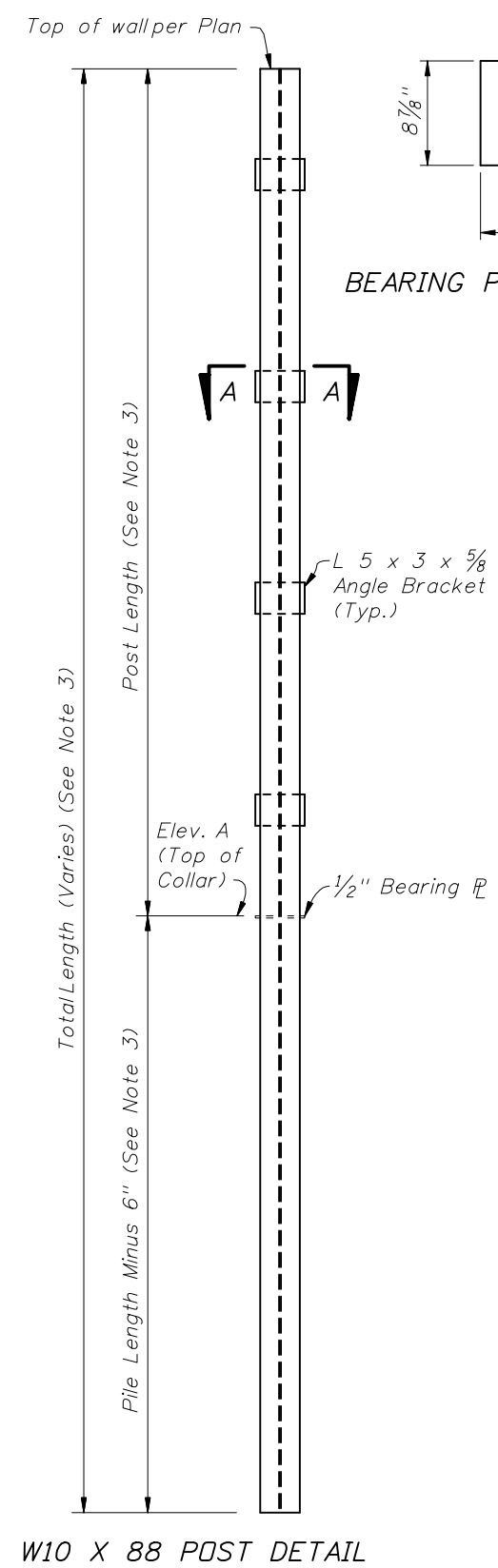
SECTION A-A



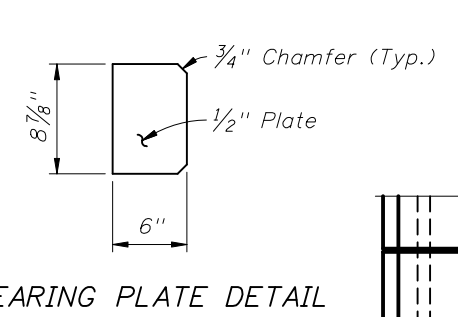
SECTION B-B



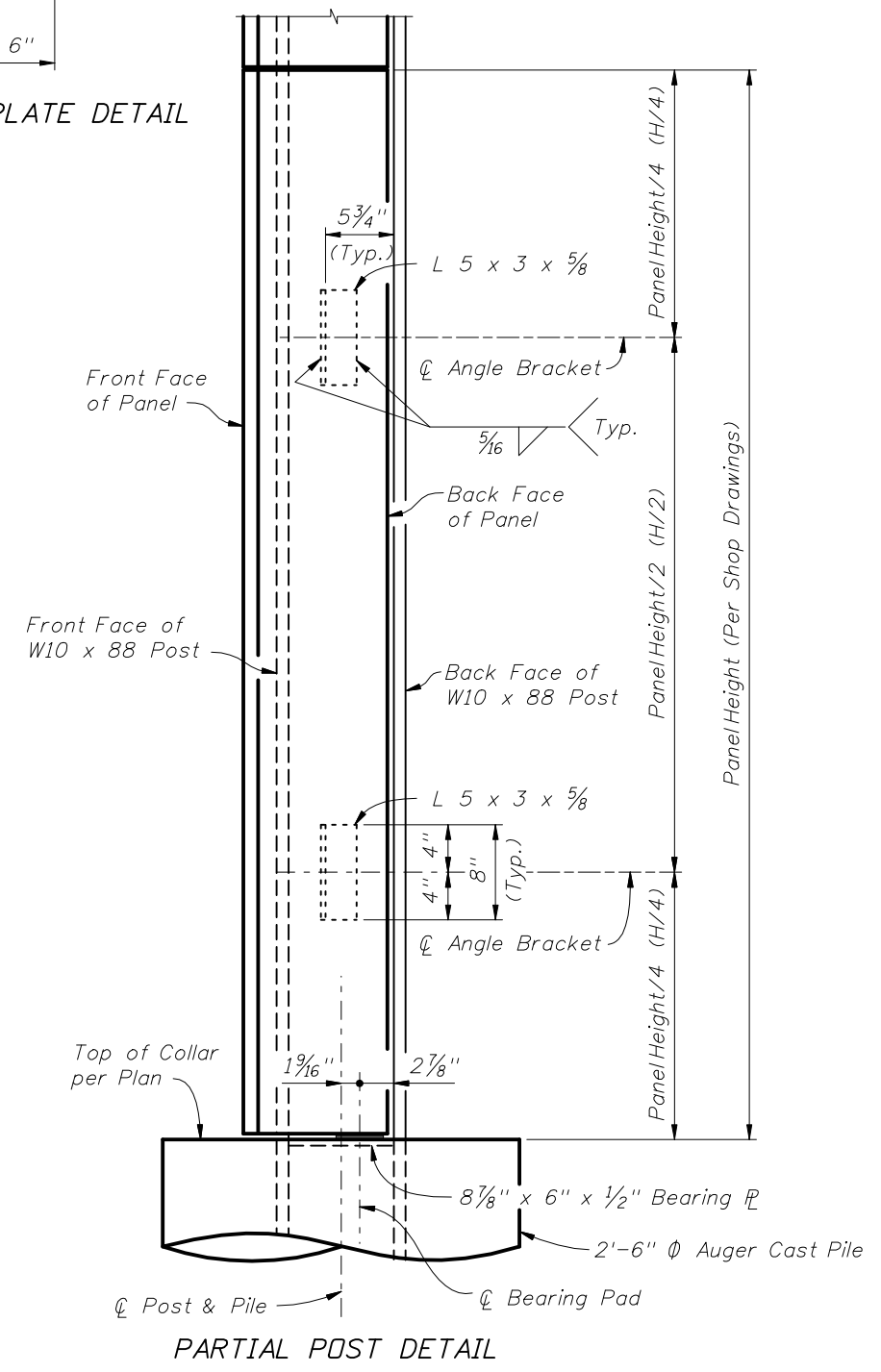
SECTION C-C



W10 X 88 POST DETAIL



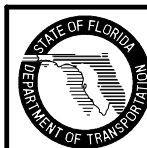
BEARING PLATE DETAIL



PARTIAL POST DETAIL

- NOTES:
1. All Structural Steel shall be in accordance with ASTM A 36.
 2. For this Pile/Post Connection Option the Wall Panel Length increased by 8" to 9'-10" and 19'-10" respectively for the 10'-0" and 20'-0" post spacing.
 3. For Post and Pile Lengths, see Index No. 5206.

PILE/POST CONNECTION OPTION D



Ø Post, 3'-6" Ø Collar and
2'-6" Ø Auger Cast Pile

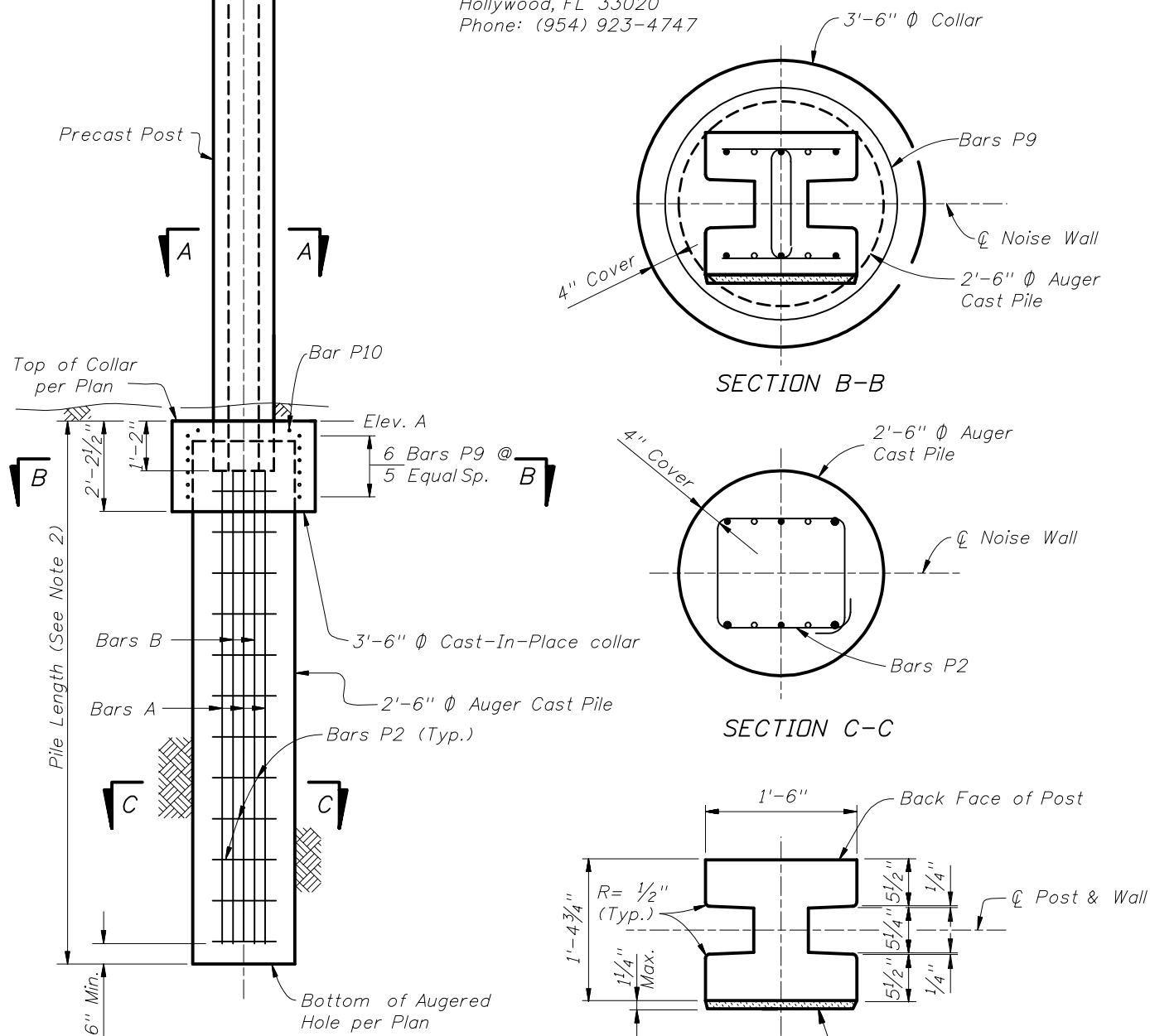
* Top of wall per Plan

NOTES:

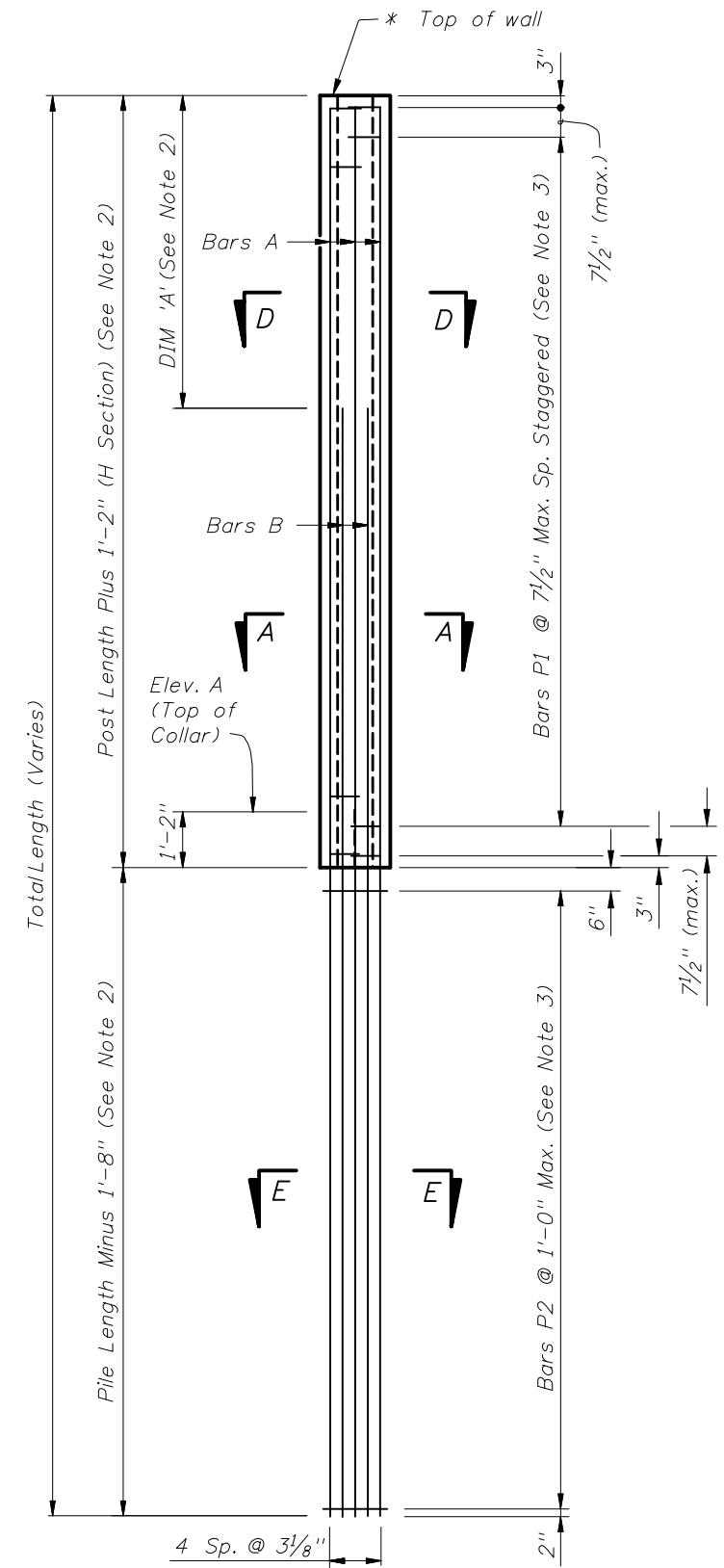
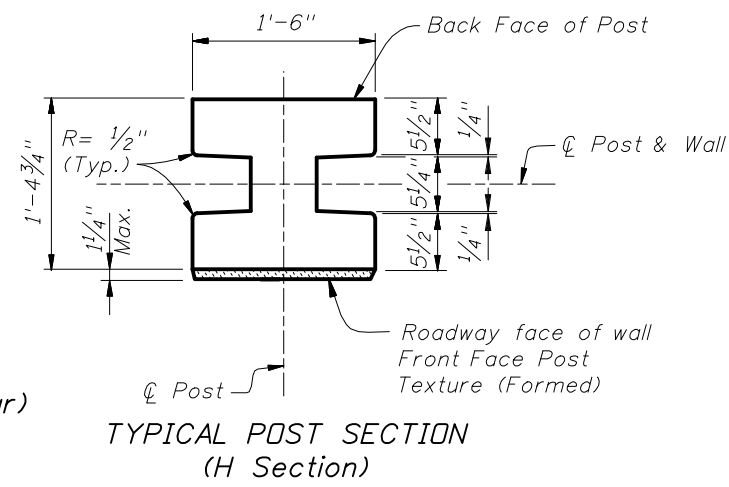
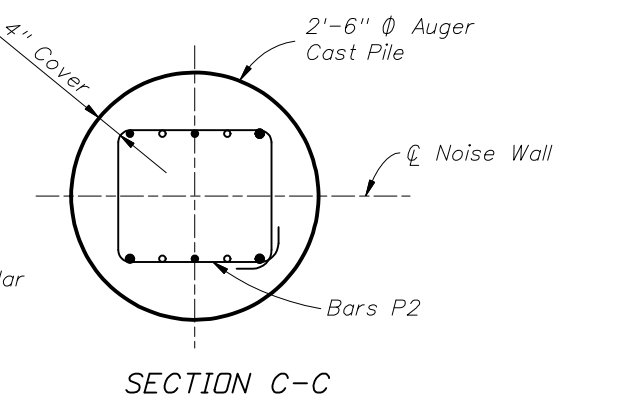
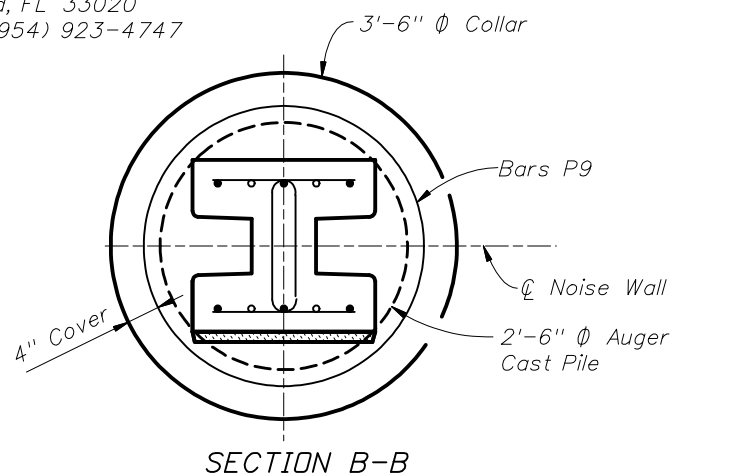
1. The construction of this option utilizes a patented process covered by patents held by State Contracting and Engineering Inc. Any use of this design is subject to the rights of the patent holder (U.S. Patent Nos. 5,234,288 & 5,429,455) and all patent royalties or license fees shall be the sole responsibility of the user.
2. For Post and Pile Lengths, see Index No. 5206.
3. For Table of Reinforcing Steel Sizes and DIM 'A', see Index No. 5206.
4. For Precast Collar Option, see Sheet No. 7 of 7.

To use this design contact:
State Contracting and Engineering, Corp.
3800 North 29th Avenue
Hollywood, FL 33020
Phone: (954) 923-4747

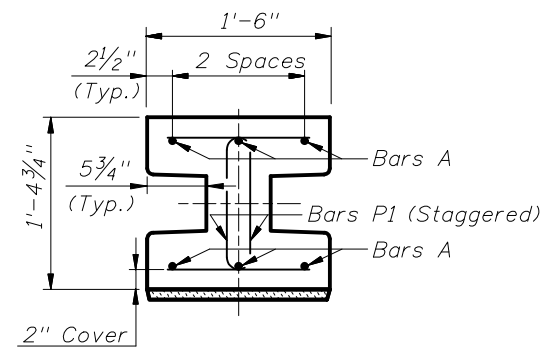
* Extend Post 2" above top of high side wall panel when post caps are shown in plans.



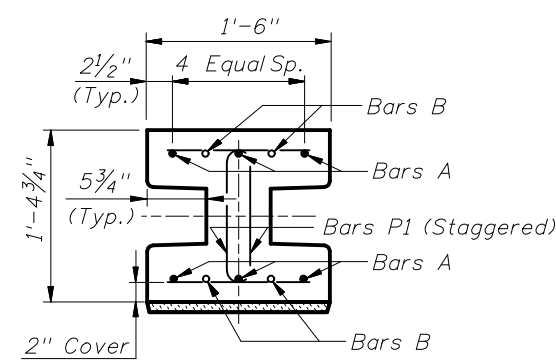
POST IN AUGERED HOLE
(Cast-In-Place Collar Shown, Precast Collar Similar)



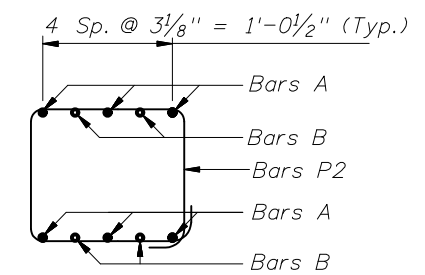
GROUND MOUNTED POST REINFORCEMENT
(Prior to placement in augered hole)



SECTION D-D
(H Section)



SECTION A-A
(H Section)

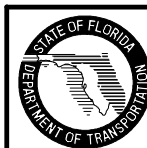


SECTION E-E

KEITH and SCHNARS, P.A.
ENGINEERS - PLANNERS - SURVEYORS
6500 NORTH ANDREWS AVENUE
FORT LAUDERDALE, FL 33309-2132
CERTIFICATE OF AUTHORIZATION NO. 1337

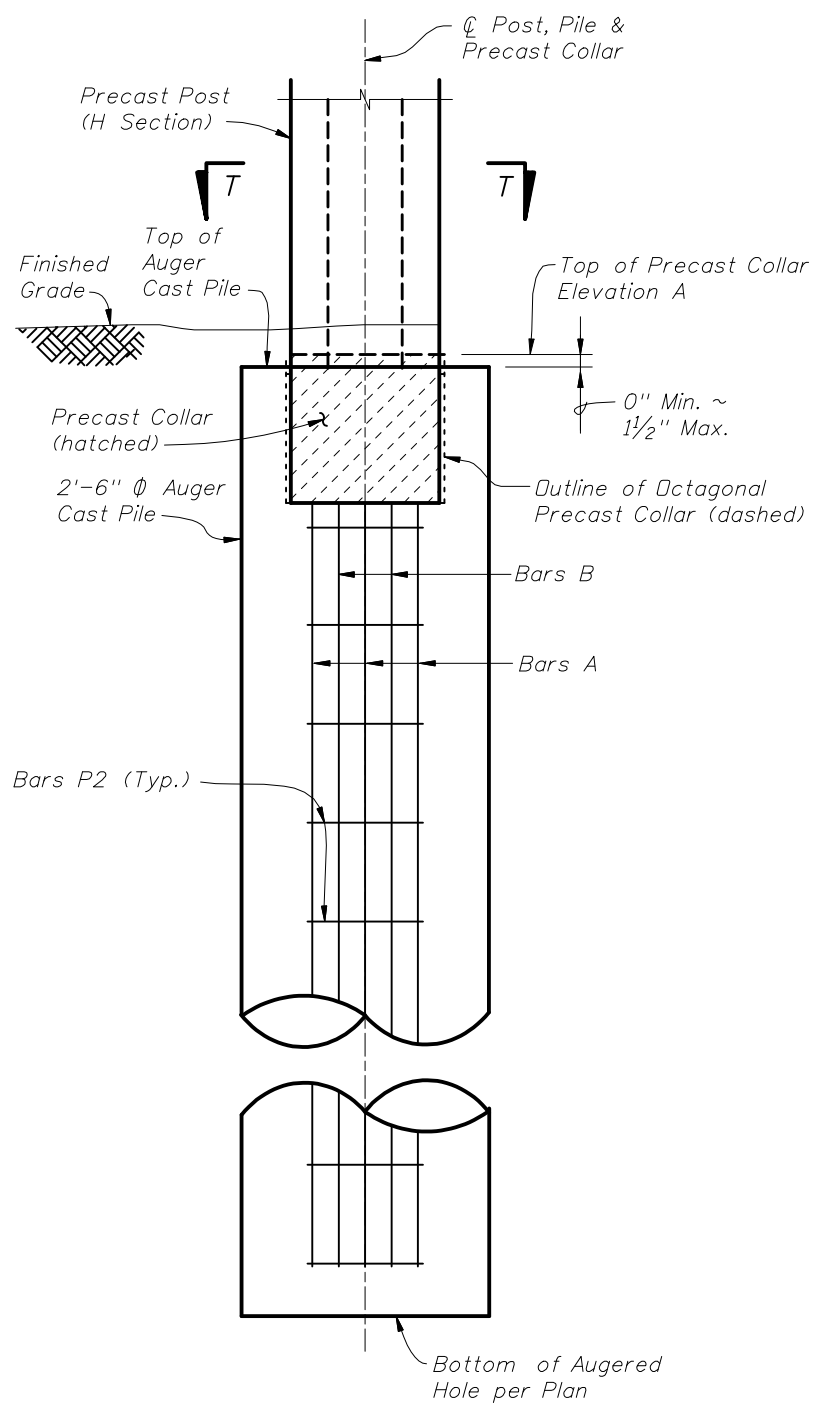


STATE CONTRACTING & ENGINEERING CORP.
PILE/POST CONNECTION OPTION E

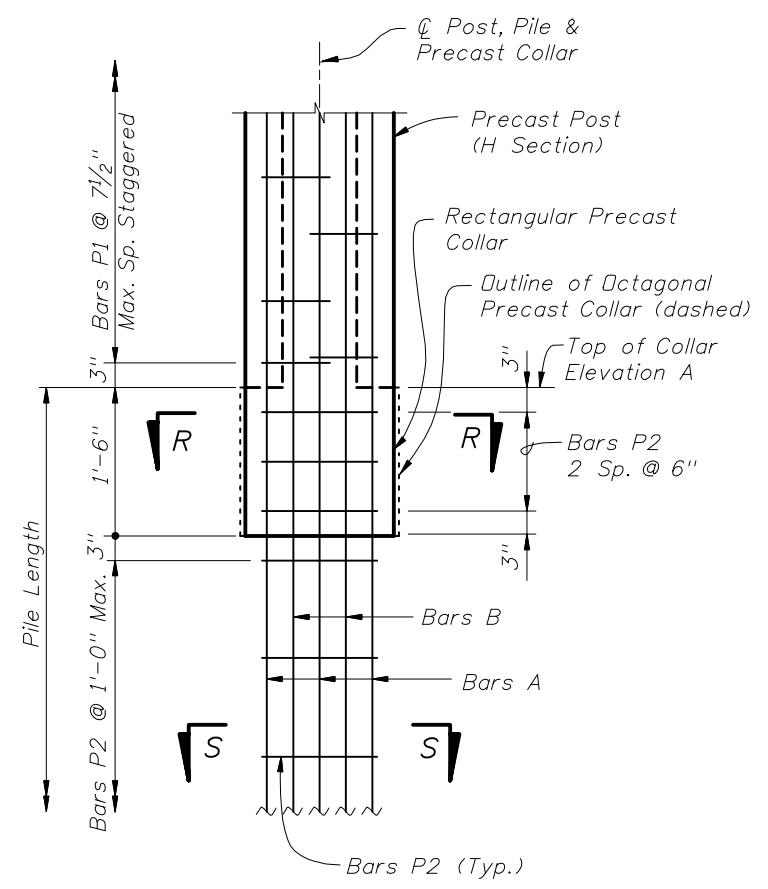


2010 FDOT Design Standards
**PRECAST SOUND BARRIERS -
PILE AND POST REINFORCING STEEL**

| | |
|---------------|-----------|
| Last Revision | Sheet No. |
| 07/01/08 | 6 of 7 |
| Index No. | |
| 5205 | |

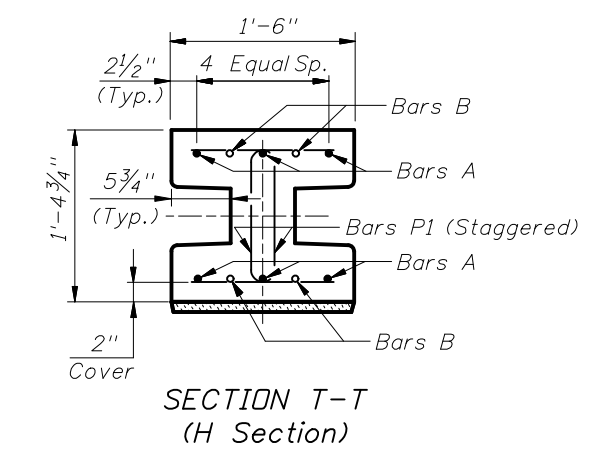


PRECAST COLLAR IN AUGER CAST PILE

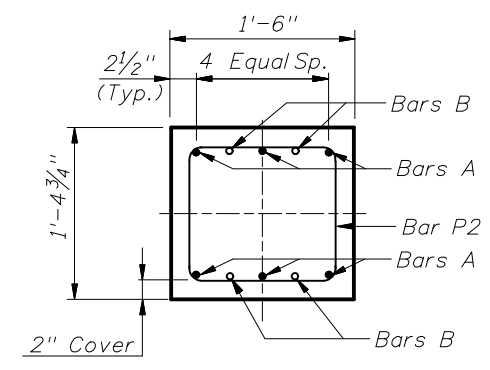


PRECAST COLLAR DETAIL

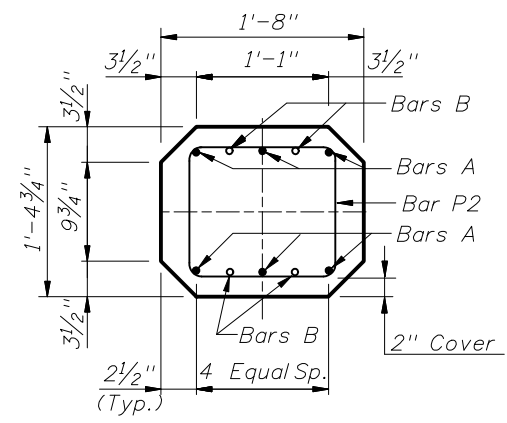
- NOTES:
1. For Post and Pile Lengths, see Index No. 5206.
 2. For Reinforcing Steel Sizes, see Index No. 5206.
 3. For Pile/Post Connection Option E, see Sheet No. 6 of 7.



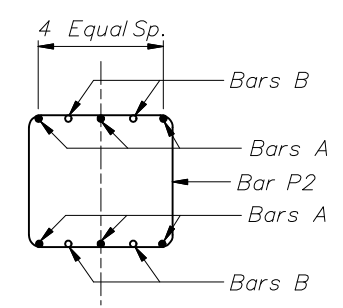
SECTION T-T (H Section)



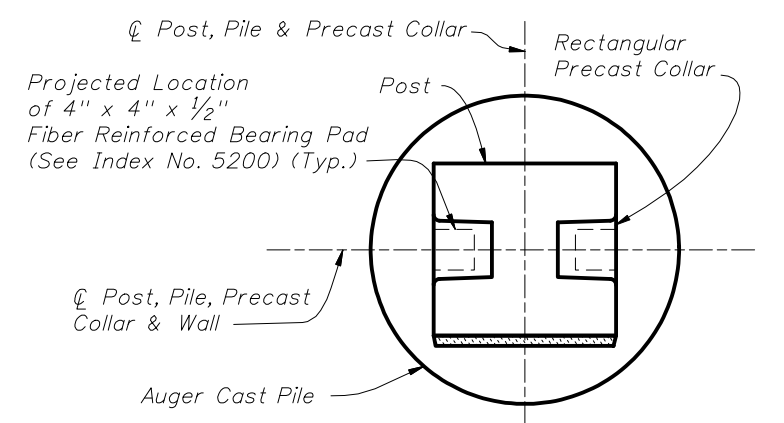
SECTION R-R (Rectangular Precast Collar)



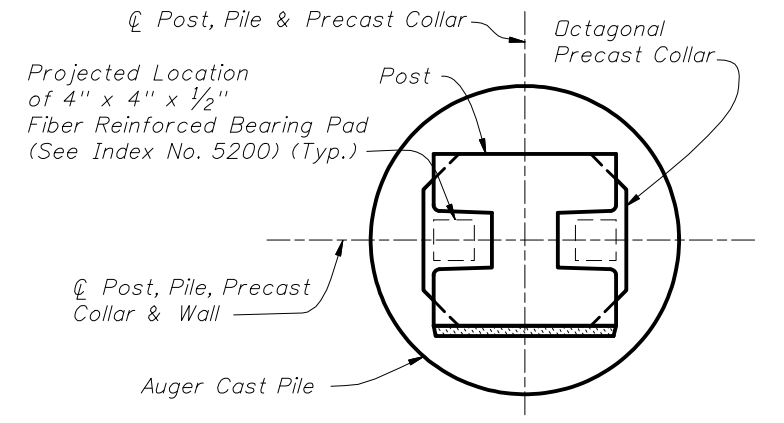
SECTION R-R (Octagonal Precast Collar)



SECTION S-S



SECTION T-T (Showing Rectangular Precast Collar and Auger Cast Pile)

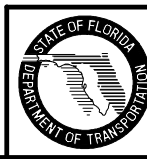


SECTION T-T (Showing Octagonal Precast Collar and Auger Cast Pile)

KEITH and SCHNARS, P.A.
ENGINEERS - PLANNERS - SURVEYORS
6500 NORTH ANDREWS AVENUE
FORT LAUDERDALE, FL 33309-2132
CERTIFICATE OF AUTHORIZATION NO. 1337

State Contracting & Engineering Corp.

STATE CONTRACTING & ENGINEERING CORP.
PRECAST COLLAR FOR PILE/POST CONNECTION OPTION E



2010 FDOT Design Standards

**PRECAST SOUND BARRIERS -
PILE AND POST REINFORCING STEEL**

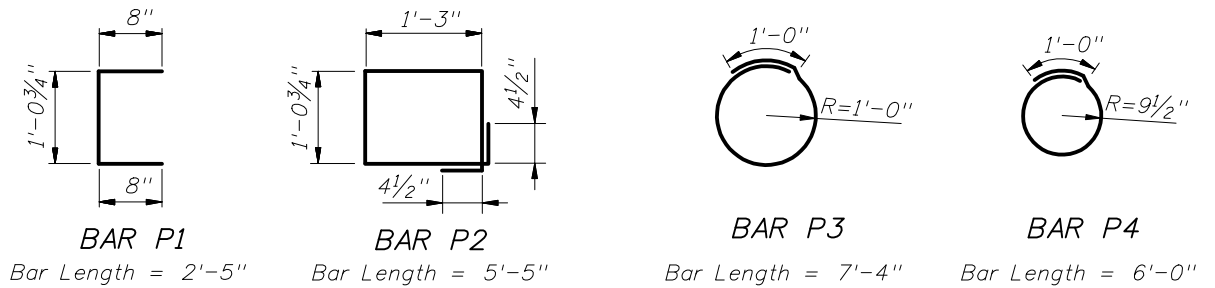
Last Revision 07/01/08 Sheet No. 7 of 7

Index No. **5205**

BAR BENDING DETAILS

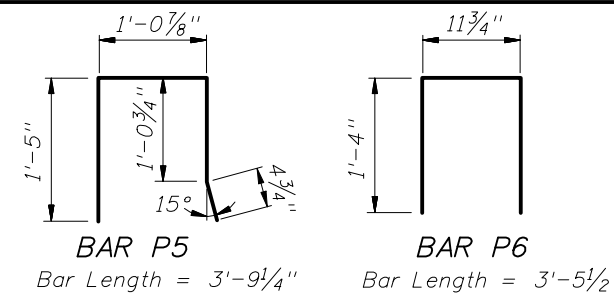
All bar dimensions in bending diagrams are out-to-out. All bars not shown in the bending diagrams are straight.

POST & PILE



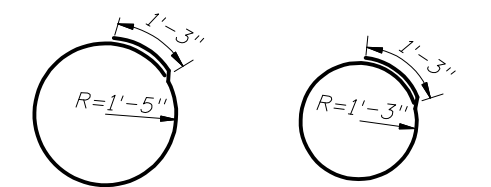
BAR P1 Bar Length = 2'-5"
BAR P2 Bar Length = 5'-5"
BAR P3 Bar Length = 7'-4"
BAR P4 Bar Length = 6'-0"

90° CORNER POST & PILE



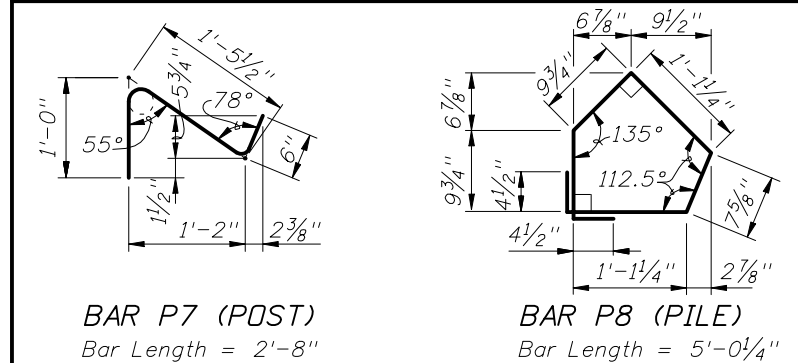
BAR P5 Bar Length = 3'-9 1/4"
BAR P6 Bar Length = 3'-5 1/2"

CAST-IN-PLACE COLLAR



BAR P9 Bar Length = 10'-2"
BAR P10 Bar Length = 9'-2"

45° CORNER POST & PILE

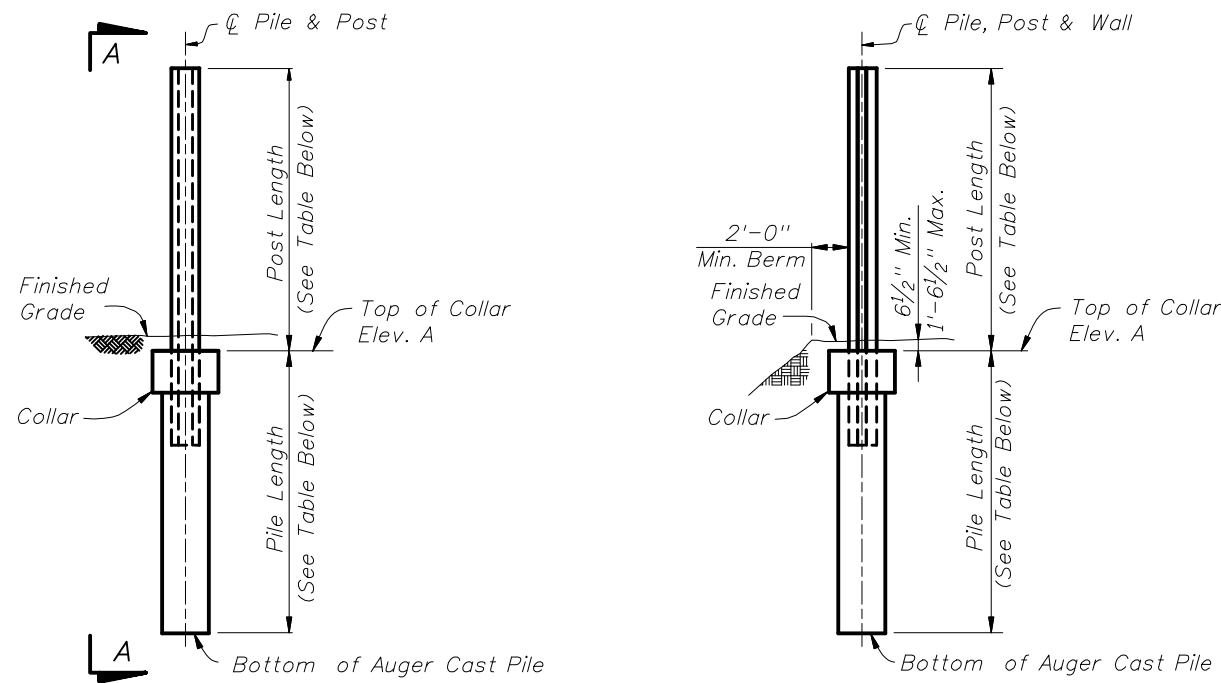


BAR P7 (POST) Bar Length = 2'-8"
BAR P8 (PILE) Bar Length = 5'-0 1/4"

NOTES:

- Bars A, B & P1 are used in Options A, B & E.
- Bars C are only used in Option A.
- Bars C2 are only used in Option B.
- Bars P2 are used in Options A & E.
- Bars P3 are only used in Option A.
- Bars P4 are only used in Option B.
- Bars P5 & P6 are only used in 90° Corner Posts.
- Bars P7 & P8 are only used in 45° Corner Posts.
- Bars P9 & P10 are used in the Cast-In-Place Collar Options.

For Bar Designations, See Index No. 5205.



PILE/POST ELEVATION
 (Pile/Post Connection Option A Shown)

VIEW A-A
 (Pile/Post Connection Option A Shown)

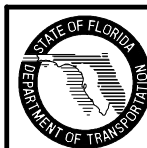
POST AND PILE DIMENSIONS

TABLE OF REINFORCING STEEL

| WALL TYPE | POST LENGTH WITHOUT CAP | POST LENGTH WITH CAP | PILE LENGTH OPTION A | | PILE LENGTH OPTIONS B, C, D & E | | PILE/POST REINFORCING | | | | | | | | | | CAST-IN-PLACE COLLAR | | |
|-----------|-------------------------|----------------------|----------------------|---------------------|---------------------------------|---------------------|-----------------------|--------|---------|---------------------|--------|--------|---------|-------------------|--------------------------------------|---------|----------------------|--------|----|
| | | | 10'-0" POST SPACING | 20'-0" POST SPACING | 10'-0" POST SPACING | 20'-0" POST SPACING | 10'-0" POST SPACING | | | 20'-0" POST SPACING | | | BARS C | BARS C2 | BARS P1, P2, P3, P4, P5, P6, P7 & P8 | BARS P9 | BARS P10 | | |
| | | | | | | | BARS A | BARS B | | BARS D | BARS A | BARS B | | | | | | BARS D | |
| | | | SIZE | SIZE | DIM 'A' | SIZE | SIZE | SIZE | DIM 'A' | SIZE | SIZE | SIZE | SIZE | SIZE | SIZE | SIZE | SIZE | | |
| A | 12'-0 1/2" | 12'-2 1/2" | 11'-0" | 14'-0" | 12'-0" | 15'-0" | #4 | #4 | 10'-0" | #4 | #5 | #5 | 9'-0" | #6 | #9 | #7 | #4 | #5 | #5 |
| B | 13'-0 1/2" | 13'-2 1/2" | 11'-0" | 15'-0" | 12'-0" | 16'-0" | #4 | #4 | 10'-7" | #5 | #5 | #5 | 8'-10" | #7 | #9 | #7 | #4 | #5 | #5 |
| C | 14'-0 1/2" | 14'-2 1/2" | 12'-0" | 16'-0" | 13'-0" | 17'-0" | #4 | #4 | 10'-5" | #5 | #6 | #6 | 10'-4" | #7 | #9 | #7 | #4 | #5 | #5 |
| D | 15'-0 1/2" | 15'-2 1/2" | 12'-0" | 17'-0" | 13'-0" | 18'-0" | #5 | #5 | 12'-11" | #6 | #6 | #6 | 10'-3" | #8 | #9 | #7 | #4 | #5 | #5 |
| E | 16'-0 1/2" | 16'-2 1/2" | 13'-0" | 17'-0" | 14'-0" | 18'-0" | #5 | #5 | 12'-9" | #6 | #7 | #7 | 11'-10" | #8 | #9 | #7 | #4 | #5 | #5 |
| F | 17'-0 1/2" | 17'-2 1/2" | 14'-0" | 18'-0" | 14'-0" | 19'-0" | #5 | #5 | 12'-7" | #6 | #7 | #7 | 11'-8" | #9 | #9 | #7 | #4 | #5 | #5 |
| G | 18'-0 1/2" | 18'-2 1/2" | 14'-0" | 19'-0" | 15'-0" | 20'-0" | #6 | #6 | 14'-11" | #7 | #8 | #8 | 13'-1" | #10 | #9 | #7 | #4 | #5 | #5 |
| H | 19'-0 1/2" | 19'-2 1/2" | 15'-0" | 20'-0" | 15'-0" | 21'-0" | #6 | #6 | 14'-10" | #7 | #8 | #8 | 13'-0" | #10 | #9 | #7 | #4 | #5 | #5 |
| I | 20'-0 1/2" | 20'-2 1/2" | 15'-0" | 21'-0" | 16'-0" | 22'-0" | #6 | #6 | 14'-9" | #8 | #9 | #9 | 14'-3" | #11 | #9 | #7 | #4 | #5 | #5 |
| J | 21'-0 1/2" | 21'-2 1/2" | 16'-0" | 22'-0" | 16'-0" | 24'-0" | #6 | #6 | 14'-8" | #8 | #9 | #9 | 14'-2" | #11 | #9 | #7 | #4 | #5 | #5 |
| K | 22'-0 1/2" | 22'-2 1/2" | 16'-0" | 23'-0" | 17'-0" | 26'-0" * | #7 | #7 | 17'-1" | #8 | #9 | #9 | 14'-1" | 2~ #14 & 1~ #9 | #9 | #7 | #4 | #5 | #5 |

* For SteelPost Option "D", use 30'-0".

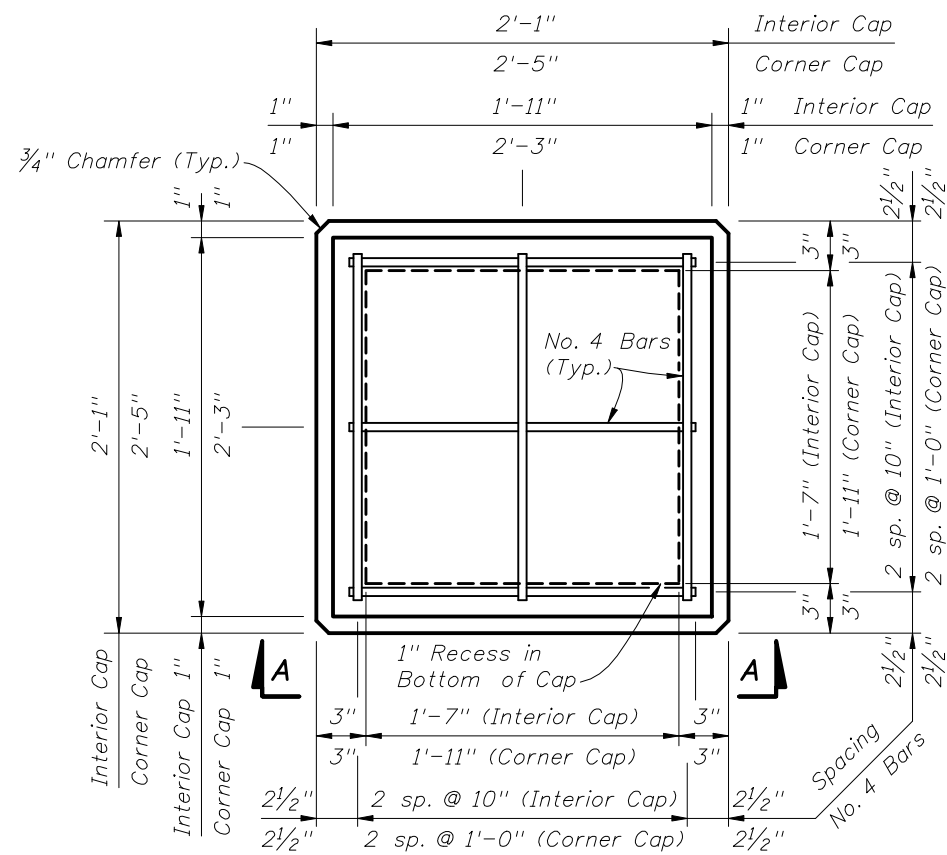
NOTE: USE THIS INDEX ONLY WHEN SOIL SPT N VALUES ARE BETWEEN 10 AND 40



2010 FDOT Design Standards

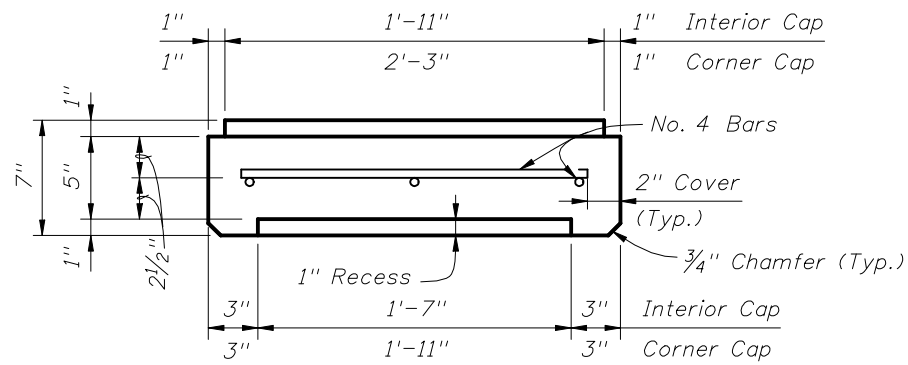
**PRECAST SOUND BARRIERS -
 PILE DEPTH AND REINFORCING SUMMARY**

Last Revision: 07/01/08
 Sheet No. 1 of 1
 Index No. 5206



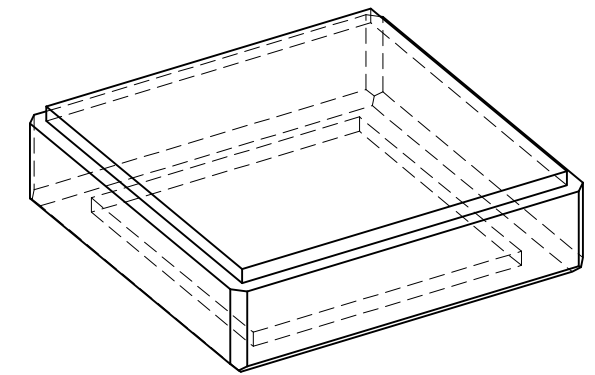
PLAN VIEW

(Type "A" Cap Shown, Type "B" & "C" Caps Similar)

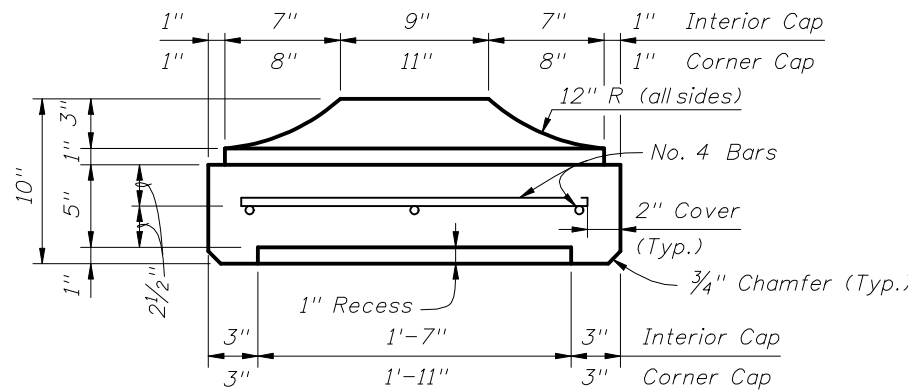


SECTION C-C

TYPE "A" CAP DETAILS

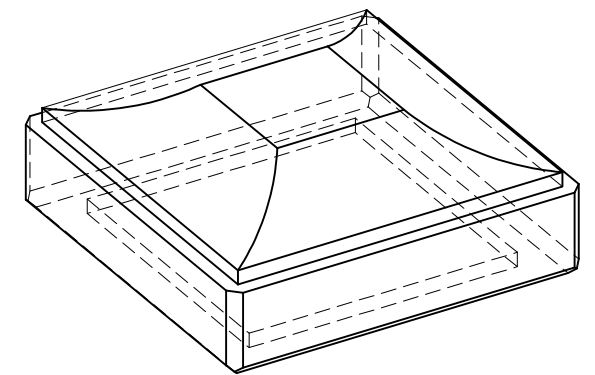


PICTORIAL VIEW

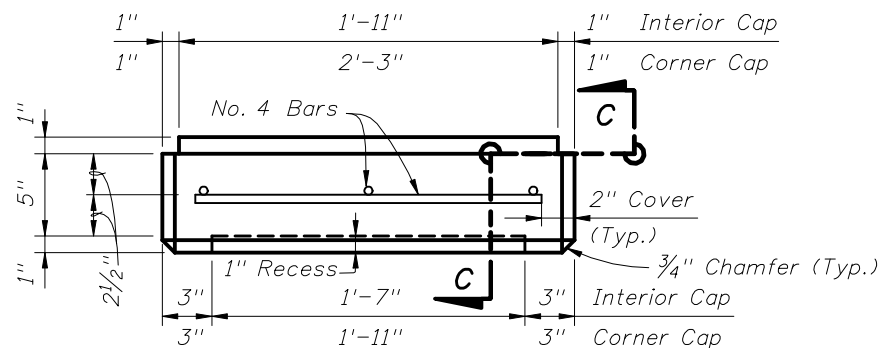


SECTION C-C

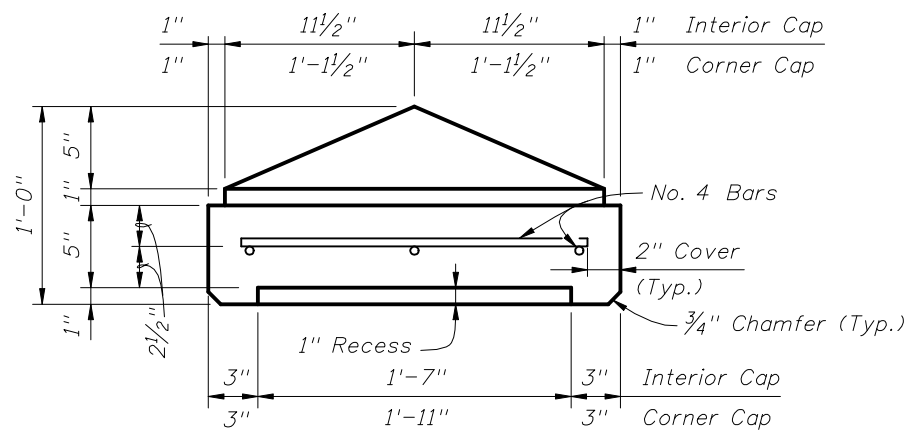
TYPE "B" CAP DETAILS



PICTORIAL VIEW

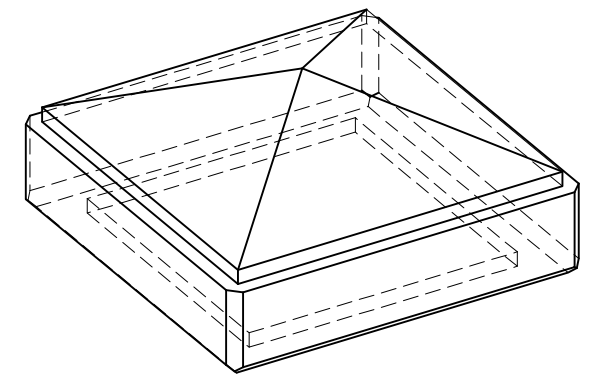


VIEW A-A SHOWN, VIEW B-B SIMILAR
(Type "A" Cap Shown, Type "B" & "C" Caps Similar)

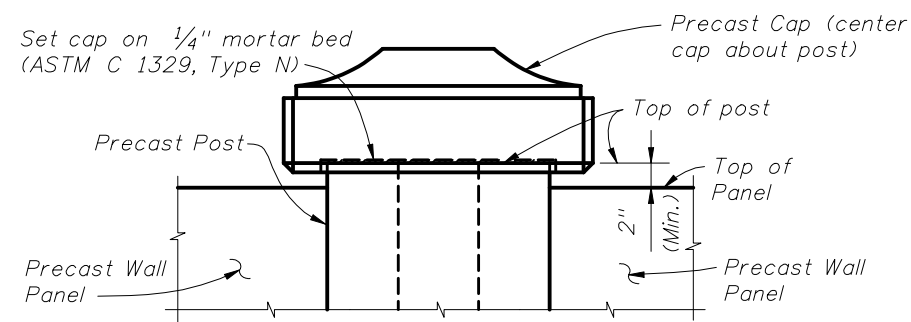


SECTION C-C

TYPE "C" CAP DETAILS



PICTORIAL VIEW



CAP PLACEMENT DETAIL

(Type "B" Cap Shown, Type "A" & "C" Caps Similar)

NOTE: See Index No. 5200 for concrete and reinforcing notes.

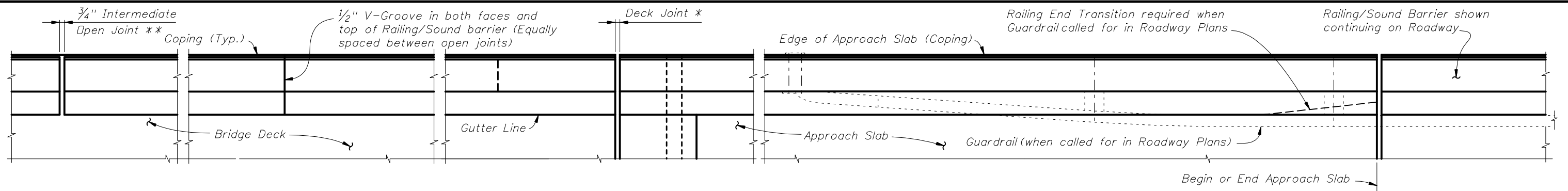


2010 FDOT Design Standards

**PRECAST SOUND BARRIERS
- PRECAST POST CAPITAL**

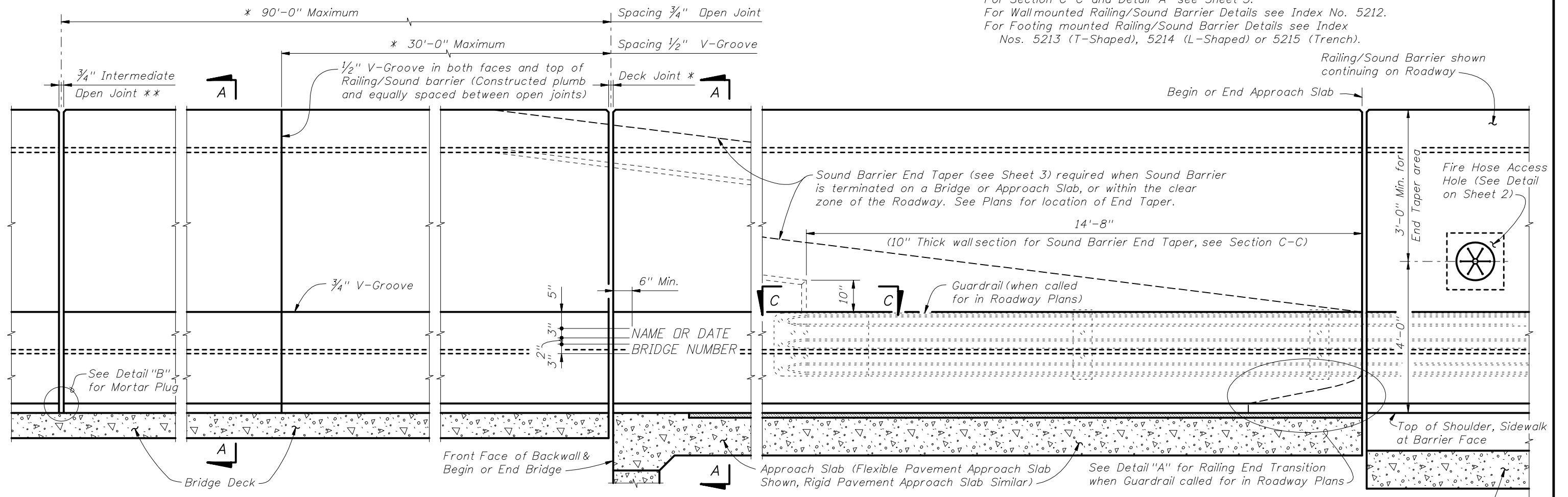
Last Revision 07/01/08 Sheet No. 1 of 1

Index No. **5207**



PLAN (BRIDGE MOUNTED RAILING/SOUND BARRIER SHOWN, WALL OR FOOTING MOUNTED RAILING/SOUND BARRIER SIMILAR) (Reinforcing Steel not shown for clarity)

CROSS REFERENCE:
 For Detail "B" and V-Groove Lettering Detail see Sheet 2.
 For Section A-A see Sheet 4.
 For Section C-C and Detail "A" see Sheet 5.
 For Wall mounted Railing/Sound Barrier Details see Index No. 5212.
 For Footing mounted Railing/Sound Barrier Details see Index Nos. 5213 (T-Shaped), 5214 (L-Shaped) or 5215 (Trench).

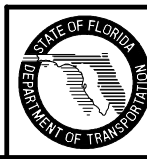


ELEVATION OF INSIDE FACE OF RAILING/SOUND BARRIER (BRIDGE MOUNTED RAILING/SOUND BARRIER SHOWN, WALL OR FOOTING MOUNTED RAILING/SOUND BARRIER SIMILAR) (Reinforcing Steel not shown for clarity)

T-Shaped Spread Footing Shown, L-Shaped Spread Footing, Trench Footing Similar and Junction Slab similar

- * On Bridges see Superstructure and Approach Slab Sheets for actual dimensions and joint orientation. Open Railing/Sound Barrier Joints at Deck Expansion Joint locations shall match the dimensions of the Deck Joint. For treatment of Railing/Sound Barrier walls on skewed bridges see Index No. 490. Deck Joint at Begin Bridge or End Bridge shown, Deck Joint at ϕ Pier or Intermediate Bent, Junction Slab or Footing similar.
- ** $\frac{3}{4}$ " Intermediate Open Joints shall be constructed plumb and provided at :
 - (1) - Substructure supports where superstructure slab is continuous.
 - (2) - Midspan where span length exceeds 90 ft.
 - (3) - Intermediate locations (equally spaced) between midspan and substructure supports where span length exceeds 180 ft.
 - (4) - Construction Joints for Junction Slabs and Footings

INSTRUCTIONS TO DESIGNER:
FORM LINERS : Form liners providing a textured finish are permitted on the outside face of the Traffic Railing Barrier/Soundwall with the following provisions: (1) The maximum amplitude of the form liner on the lower 2'-8" section shall be limited to 1" depth; (2) Any form liner used above 2'-8", must provide a thickened concrete section to maintain 2" cover. Full details of this thickened section and the form liner shall be provided in the plans. Form liners on the inside face of the Traffic Railing Barrier/Soundwall are not recommended.
END TAPER LOCATION : When the Soundwall terminates on the bridge, the End Taper shall be located at an open joint. When the Soundwall terminates on the Approach Slab, the End Taper shall terminate at Begin or End Approach Slab as shown above.



TRAFFIC RAILING/SOUND BARRIER NOTES

This railing has been structurally evaluated to be equivalent or greater in strength to a safety shape/sound barrier combination railing which has been crash tested to NCHRP Report 350 TL-4 Criteria. The Transverse Design Force for the design of bridge deck overhang shall be 54 kips applied horizontally at 3'-6" height above the deck.

CONSTRUCTION REQUIREMENTS : The Traffic Railing/Sound Barrier and joints shall be constructed plumb, they shall not be constructed perpendicular to the roadway surface. Slip forming is not permitted.

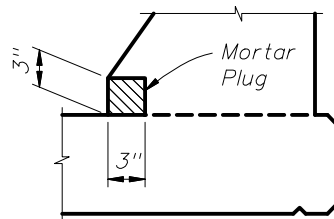
CONCRETE AND REINFORCING STEEL : For Railing/Sound Barrier on bridges see General Notes. For Wall and Footing mounted Railing/Sound Barrier, concrete shall be Class II for slightly aggressive environments and Class IV for moderately or extremely aggressive environments. All reinforcing steel shall be Grade 60.

NAME, DATE AND BRIDGE NUMBER : For Railing/Sound Barrier on bridges, the Name and Bridge Number shall be placed on the Traffic Railing so as to be seen on the driver's right side when approaching the bridge. The Date shall be placed on the driver's left side when approaching the bridge. The Name shall be as shown in the General Notes in the Structures Plans. The Date shall be the year the bridge is completed. For a widening when the existing railing is removed, use both the existing date and the year of the widening. Black plastic letters and figures 3" in height may be used, as approved by the Engineer, in lieu of the letters and figures formed by 3/8" V-Grooves. V-Grooves shall be formed by preformed letters and figures.

MARKERS : For Railing/Sound Barrier on bridges, Elevation Markers shall be placed on top of the Traffic Railing/Sound Barrier or Bridge Deck at the end bents as directed by the Engineer. Markers are to be furnished by the Florida Department of Transportation and installed by the Contractor. The cost of installing the markers shall be included in the Contract Unit Price for the Railing/Sound Barrier.

REFLECTIVE RAILING MARKERS : Reflective Railing Markers shall meet Specification Section 993. Install markers 2'-4" above the riding surface at the spacing shown in the table below. Reflector color (white or yellow) shall match the color of the near edgeline. The cost of the reflective markers shall be included in the Contract Unit Price for the Traffic Railing/Sound Barrier.

| REFLECTIVE RAILING MARKER SPACING | |
|---|---------------|
| Distance - Edge of Travel Lane to Face of Railing | Spacing (Ft.) |
| < 4' | 40' |
| 4' to 8' | 80' |
| > than 8' | None Required |

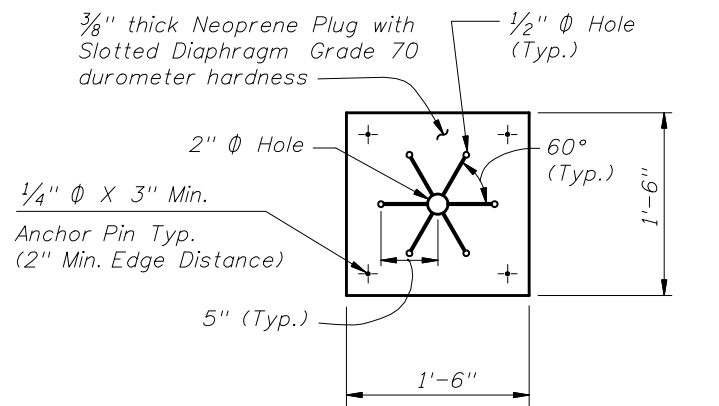


DETAIL "B" - SECTION AT INTERMEDIATE OPEN JOINT

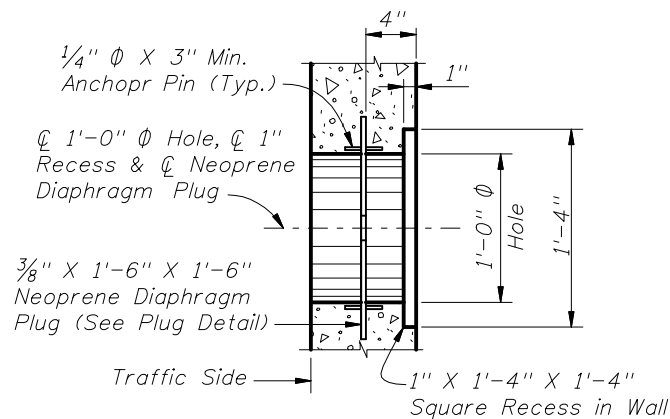
NOTE: At Intermediate Open Joints, the lower 3" portion of the open joint shall be plugged by filling it with mortar in accordance with Section 400 of the Specifications.

| ESTIMATED TRAFFIC RAILING/SOUND BARRIER QUANTITIES | | |
|--|-------|----------|
| ITEM | UNIT | QUANTITY |
| Concrete (Railing) | CY/LF | 0.104 |
| Concrete (Sound Barrier) | CY/LF | 0.145 |
| Reinforcing Steel (Typical) | LB/LF | 78.57 |
| Additional Reinf. @ Open Joint | LB | 430.24 |

(The above quantities are based on the bridge mounted typical section, 2% deck cross slope and railing on low side of deck.)

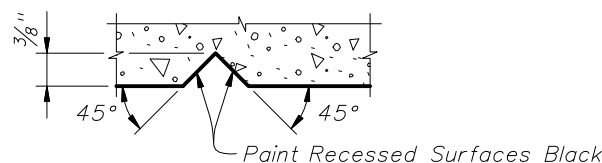


NEOPRENE DIAPHRAGM PLUG DETAIL



TYPICAL SECTION FIRE HOSE ACCESS DETAIL

NOTE: Fire hose access holes are required at or near fire hydrant locations. Field cut reinforcement as required to maintain 2" minimum cover at access holes. Locate fire hose access holes a minimum of 10'-0" from 3/4" open joints when possible.

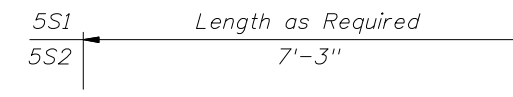


SECTION THRU RECESSED "V" GROOVE TO FORM INSCRIBED LETTERS AND FIGURES

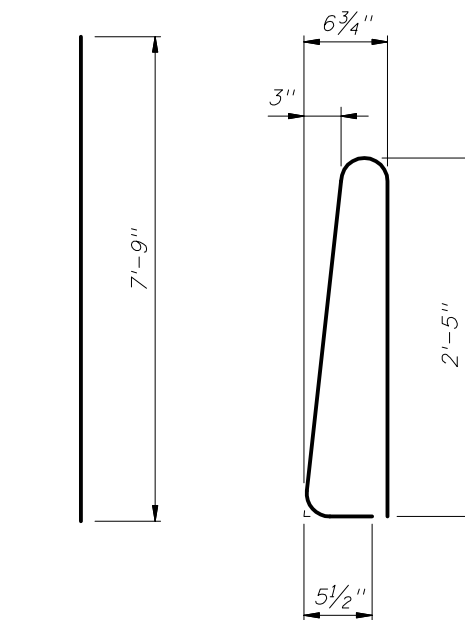
REINFORCING STEEL BENDING DIAGRAMS

| BILL OF REINFORCING STEEL | | |
|---------------------------|------|-----------|
| MARK | SIZE | LENGTH |
| P | 5 | 5'-7" |
| R | 5 | 7'-9" |
| S1 | 5 | As Req'd. |
| S2 | 5 | 7'-3" |
| V (Bridge and Wall) | 5 | 5'-1" |
| V (Footing) | 5 | 7'-7" |

| BRIDGE CROSS-SLOPE | | LOW GUTTER | | HIGH GUTTER | |
|------------------------|-----------|------------|-----|-------------|-----|
| | | ØA | ØB | ØA | ØB |
| BRIDGE MOUNTED | 0% to 2% | 90° | 90° | 90° | 90° |
| | 2% to 6% | 93° | 87° | 87° | 93° |
| | 6% to 10% | 96° | 84° | 84° | 96° |
| WALL & FOOTING MOUNTED | | 90° | 90° | 90° | 90° |

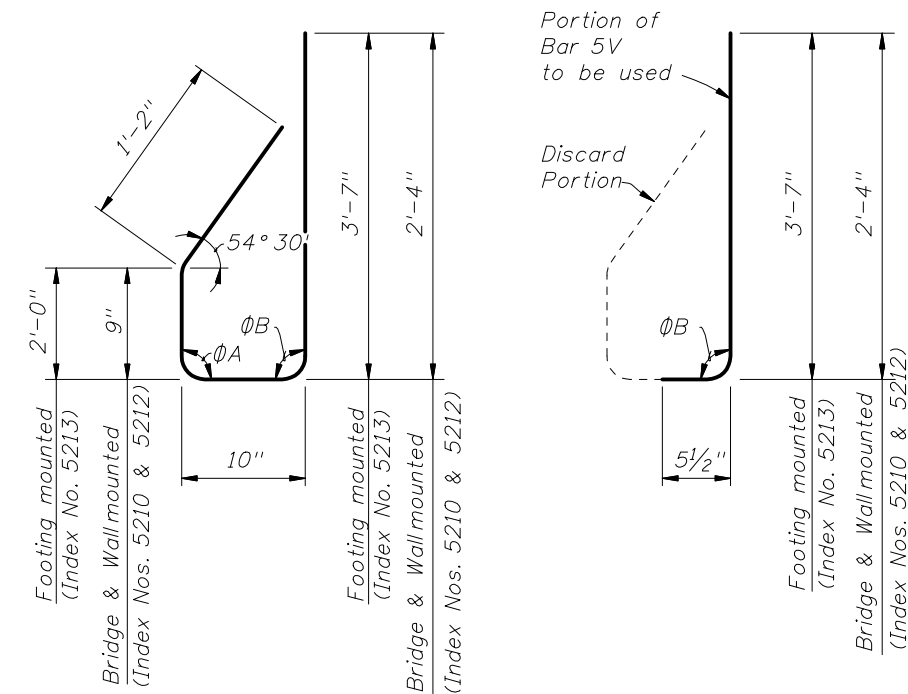


BARS 5S1 & 5S2



BAR 5R (Field Cut for End Taper)

STIRRUP BAR 5P



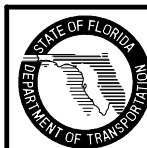
STIRRUP BAR 5V

END STIRRUP BAR 5V To Be Field Cut (One Required per Railing End Transition)

REINFORCING STEEL NOTES:

- All bar dimensions in the bending diagrams are out to out.
- All reinforcing steel at the open joints shall have a 2" minimum cover.
- Bars 5S1 may be continuous or spliced at the construction joints. Lap splices for Bars 5S1 shall be a minimum of 2'-2".
- The Contractor may use Welded Wire Reinforcement when approved by the Engineer. Welded Wire Reinforcement shall conform to ASTM A 497.
- Bars 5R shall be one continuous bar. No mechanical couplers or lap splices are permitted.
- See Index Nos. 5214 and 5215 for Bars 5V and 5T in L-shaped and Trench footings.

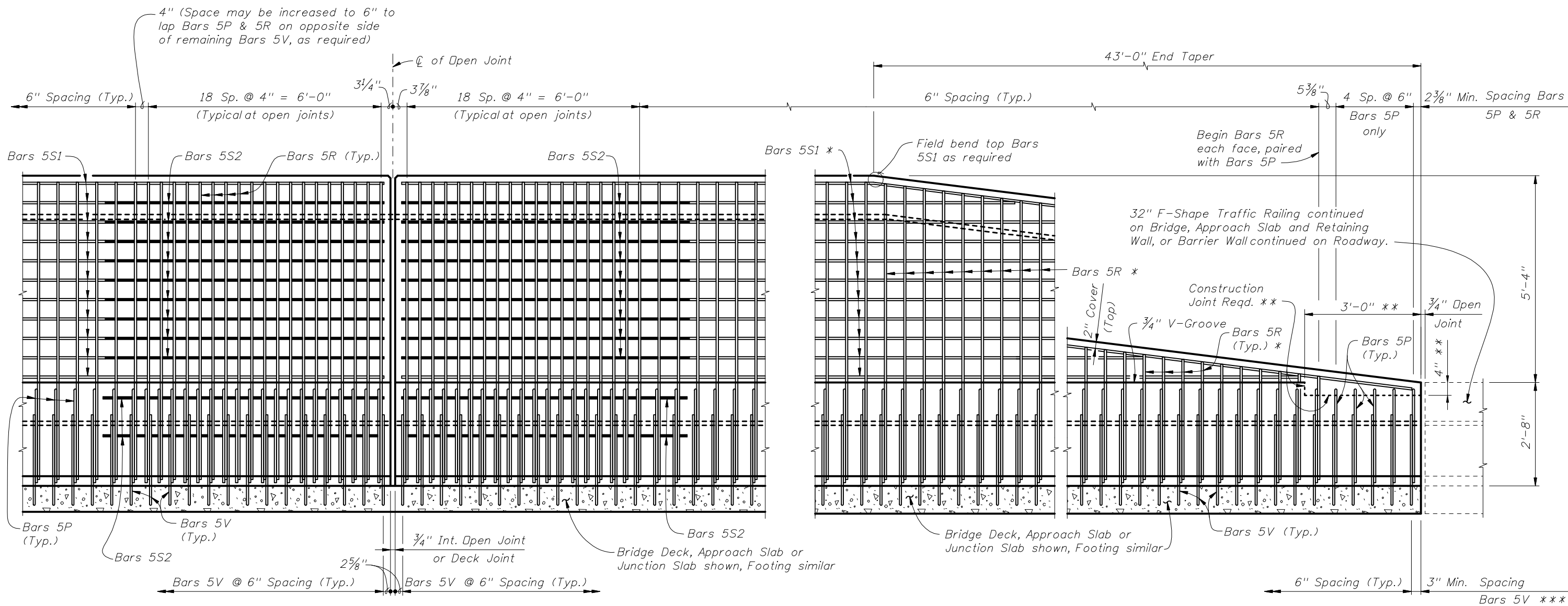
CROSS REFERENCE: For locations of Detail "B", see Sheet 1.



2010 FDOT Design Standards

TRAFFIC RAILING/SOUND BARRIER (8'-0")

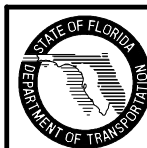
| | |
|---------------------------|---------------------|
| Last Revision 01/01/09 | Sheet No. 2 of 5 |
| Index No. 5210 | |

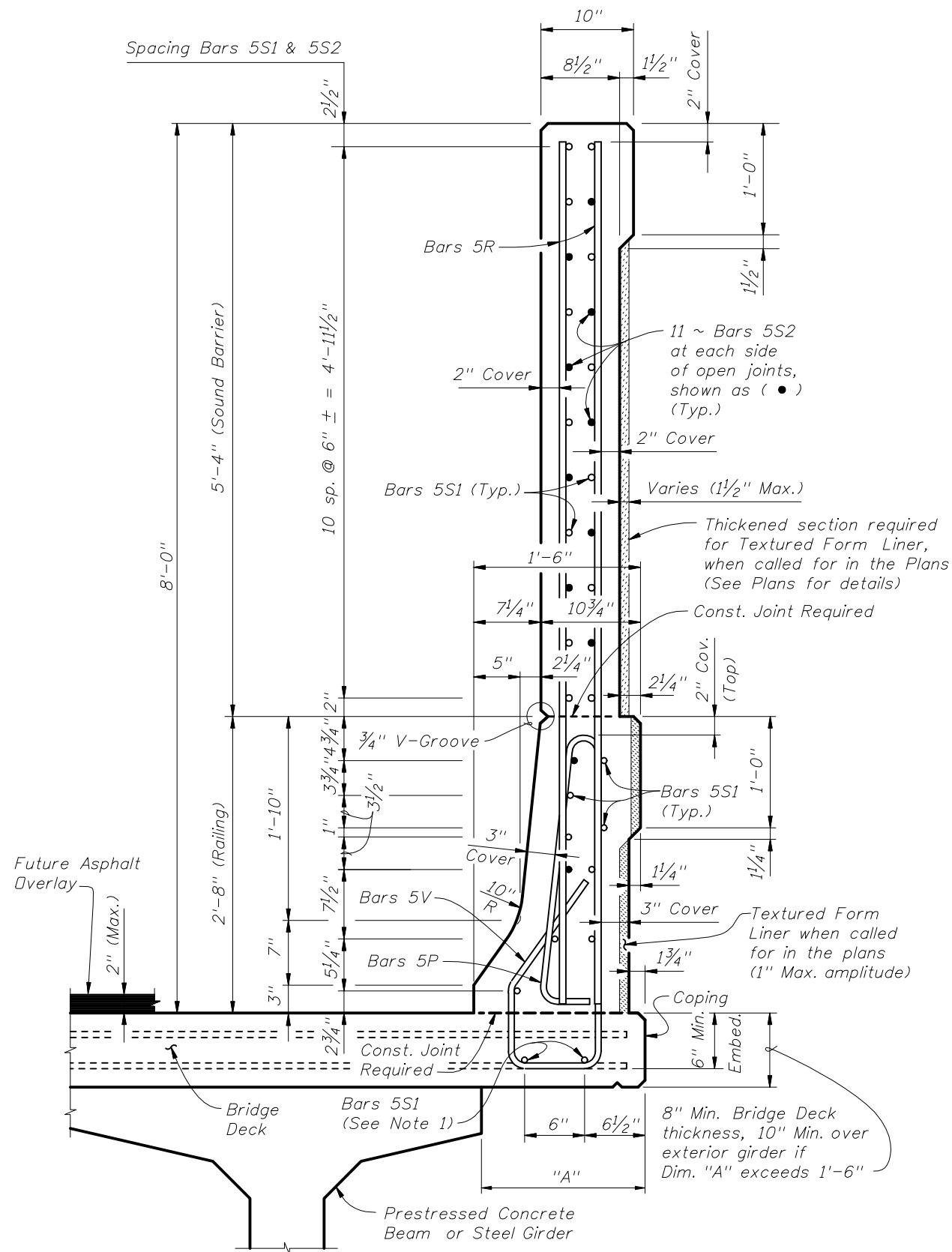


ELEVATION OF RAILING/SOUND BARRIER REINFORCING STEEL
 (INTERMEDIATE OPEN JOINT SHOWN, DECK JOINT SIMILAR)
 (Bars 5S1 in Barrier not shown for clarity)

ELEVATION OF RAILING/SOUND BARRIER END TAPER (ADJACENT TO TRAFFIC RAILING
 SHOWN, GUARDRAIL ATTACHMENT SIMILAR SEE DETAIL "A" BELOW)
 (Bars 5S1 in Railing not shown for clarity)

- NOTES:
- * Field Cut Bars 5R & 5S1 to maintain clearance.
 - ** Terminate 3/4" V-groove at construction joint & cast top of railing with End Taper.
 - *** Bar spacing shown for Bars 5V applies only to bridge mounted Railing/Sound Barrier. See Index No. 5212 for spacing of Bars 5V in junction slabs and Index Nos. 5213 (T-Shaped), 5214 (L-Shaped) or 5215 (Trench) for Bars 5V spacing in footings.



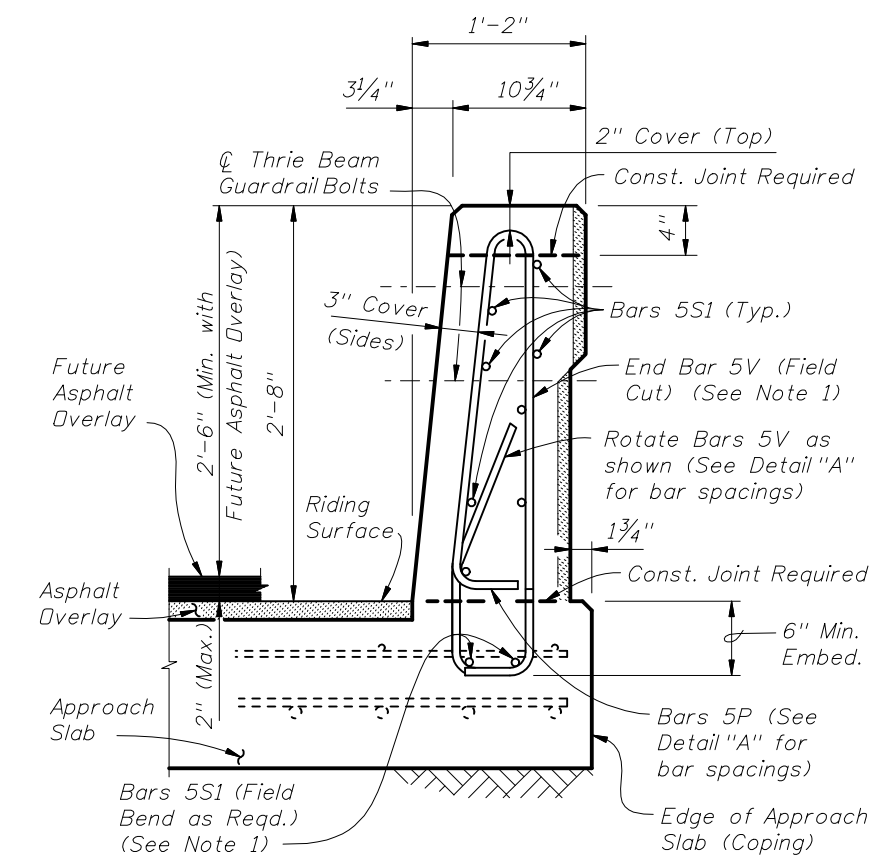


SECTION A-A
TYPICAL SECTION THRU TRAFFIC RAILING/SOUND BARRIER
 (Section Thru Bridge Deck Shown, Section Thru Approach Slab, Junction Slab or Footing Similar)

INSTRUCTIONS TO DESIGNER:
 For Bridge Decks up to a maximum thickness of 9", the two Bars 5S1 placed in the Bridge Deck may substitute for the longitudinal deck steel located within the limits of Bars 5V, provided that the total area of longitudinal deck steel beneath the barrier, as required by calculation, is not reduced. Show these bars on the Superstructure Sheets with the deck steel.

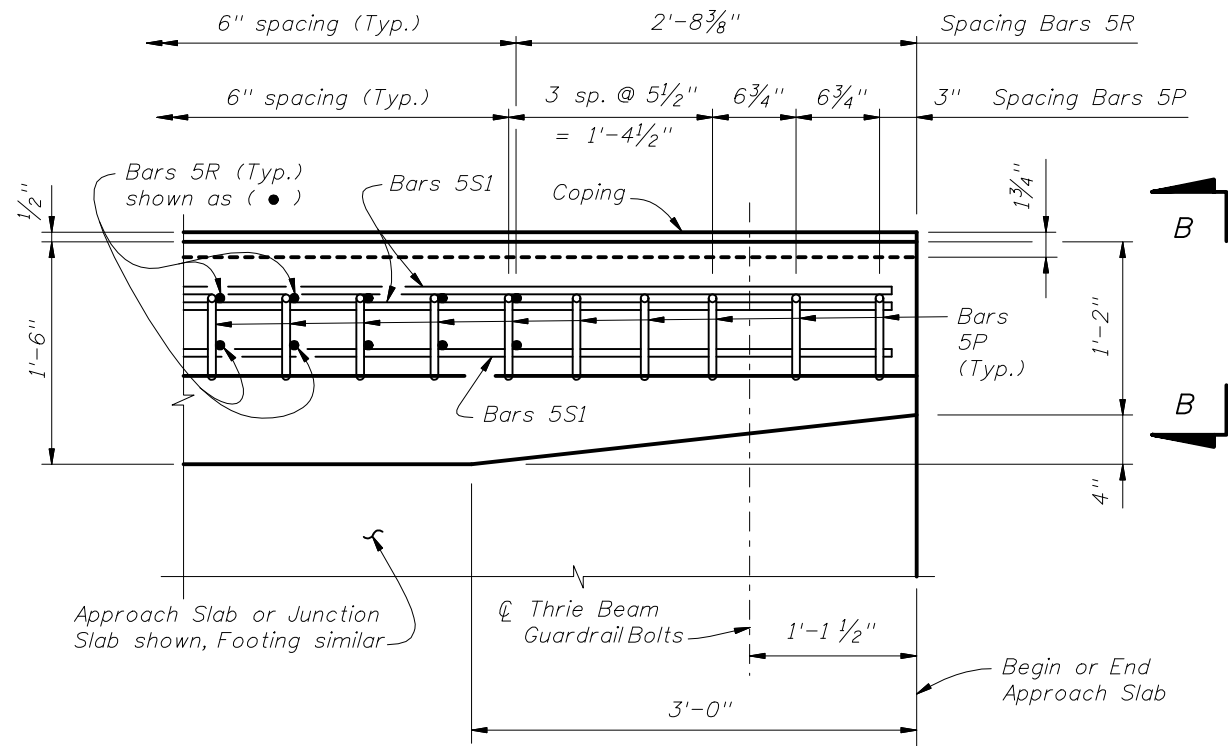
NOTES:
 1. Bottom Bars 5S1 and End Bar 5V are not present in L-Shaped (Index No. 5214) or Trench (Index No. 5215) Footings. For Bridge Mounted installations, see the Superstructure Sheets for Deck Steel. Omit Bars 5S1 if not specifically shown on the Superstructure Sheets.

CROSS REFERENCE:
 For locations of Section A-A see Sheet 1.
 For location of View B-B, see Sheet 5.

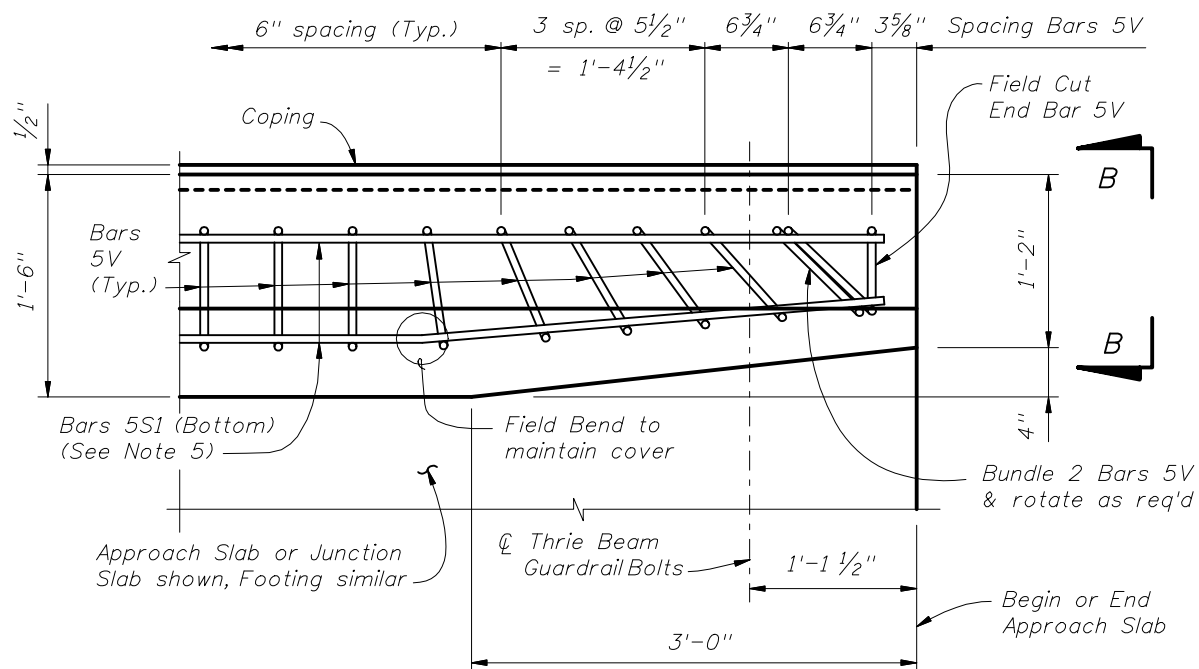


VIEW B-B
END VIEW OF RAILING END TRANSITION FOR GUARDRAIL ATTACHMENT AT END OF APPROACH SLAB
 (Flexible Pavement Approach Slab Shown, Rigid Pavement Approach Slab, Junction Slab or Footing Similar)





PLAN - RAILING END TRANSITION
(Showing Bars 5P, 5R, and Bars 5S1) (Bars 5V,
Soundwall & Reinforcement not shown for Clarity)

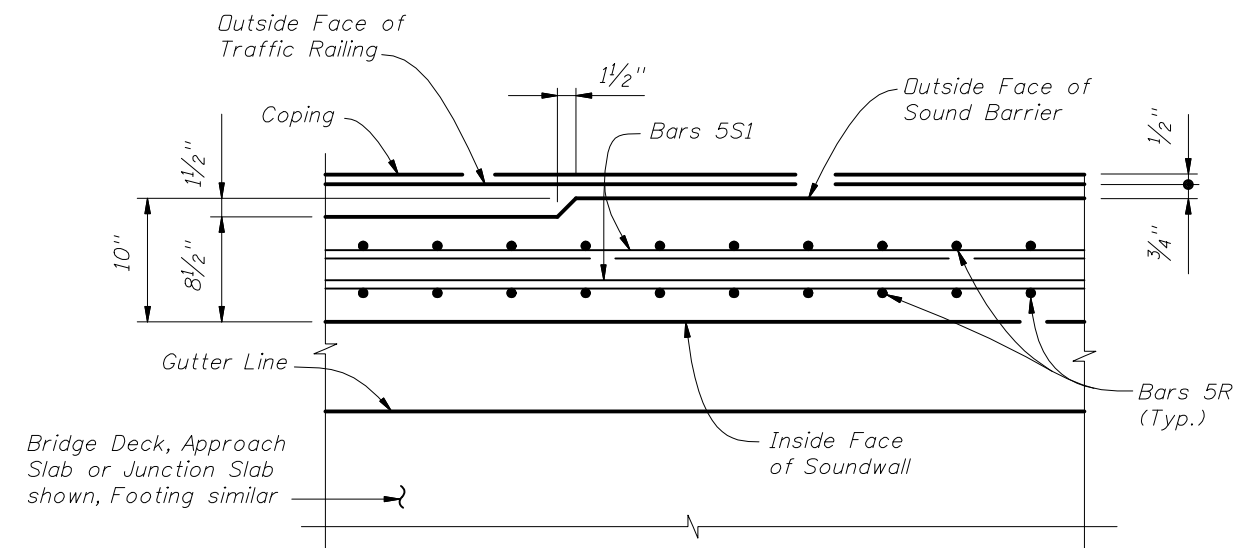


PLAN - RAILING END TRANSITION
(Showing Bars 5V and Bars 5S1) (Bars 5P, 5R,
Soundwall & Reinforcement not shown for Clarity)

DETAIL "A"

DETAIL "A" NOTES:

1. Rotate Bars 5P & 5V in Railing End Transition to maintain cover. Begin placing Railing Bars 5P and 5V at the railing end and proceed toward the guardrail (thrie beam) terminal connector to ensure placement of guardrail bolt holes. Pair Bars 5R with Bars 5P as shown. Clearance of Bars 5P, 5R & 5V to guardrail bolt holes shall be checked to prevent cutting of bars if holes are to be drilled. Shift bars locally where conflicts occur.
2. For Guardrail connection details see Design Standards Index No. 400.
3. Omit Railing End Transition if a 32" F-Shape Traffic Railing is used beyond the End Taper. See the Plan Sheets. If Railing End Transition is omitted, space Bars 5P, 5R & 5V at 6" as shown above (Typ.).
4. For L-Shaped (Index No. 5214) and Trench (Index No. 5215) footings, Bars 5V and 5T replace Bars 5V as shown at left. Details and bar spacing shown apply except that it is not necessary to rotate Bars 5V and 5T to maintain cover and there is no field cut End Bar 5V.
5. Bottom Bars 5S1 are not present in L-Shaped or Trench Footings.



SECTION C-C
THRU SOUNDWALL END TAPER

CROSS REFERENCE:

- For location of Detail "A" see Sheet 1.
- For location of Section C-C see Sheet 1.
- For View B-B see Sheet 4.

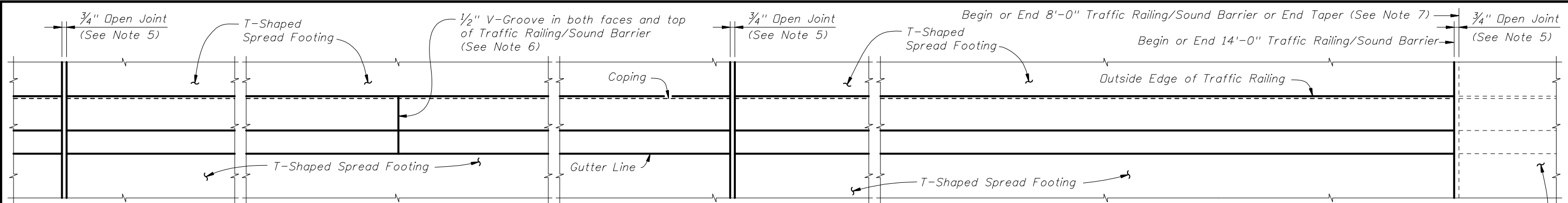


2010 FDOT Design Standards

TRAFFIC RAILING/SOUND BARRIER (8'-0")

Last Revision 07/01/07 Sheet No. 5 of 5

Index No. 5210

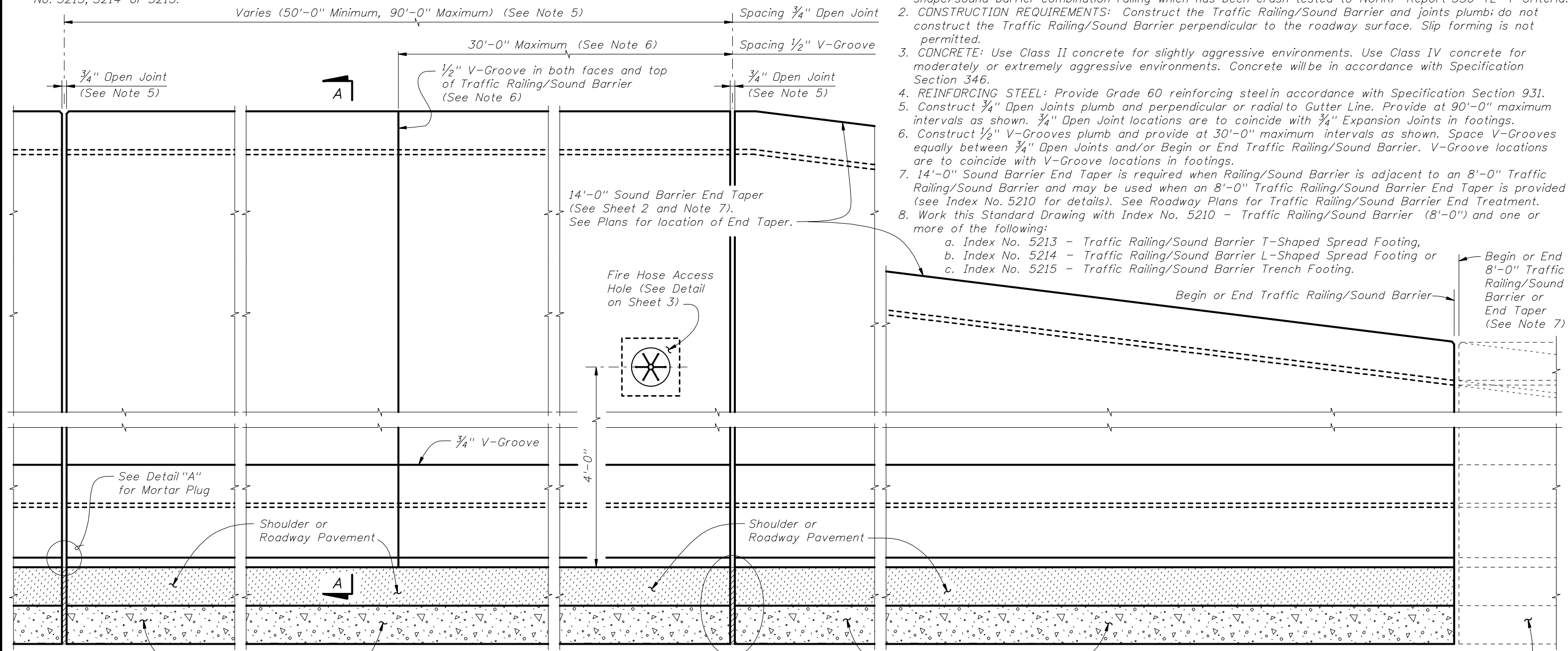


CROSS REFERENCE:
 For Section A-A, Detail "A" and Estimated Quantities, see Sheet 3.
 For Expansion Joint Detail in Footing, see Index No. 5213, 5214 or 5215.

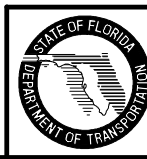
PLAN (Reinforcing Steel not shown for clarity)
 (T-Shaped Spread Footing Shown, L-Shaped Spread Footing and Trench Footing Similar)

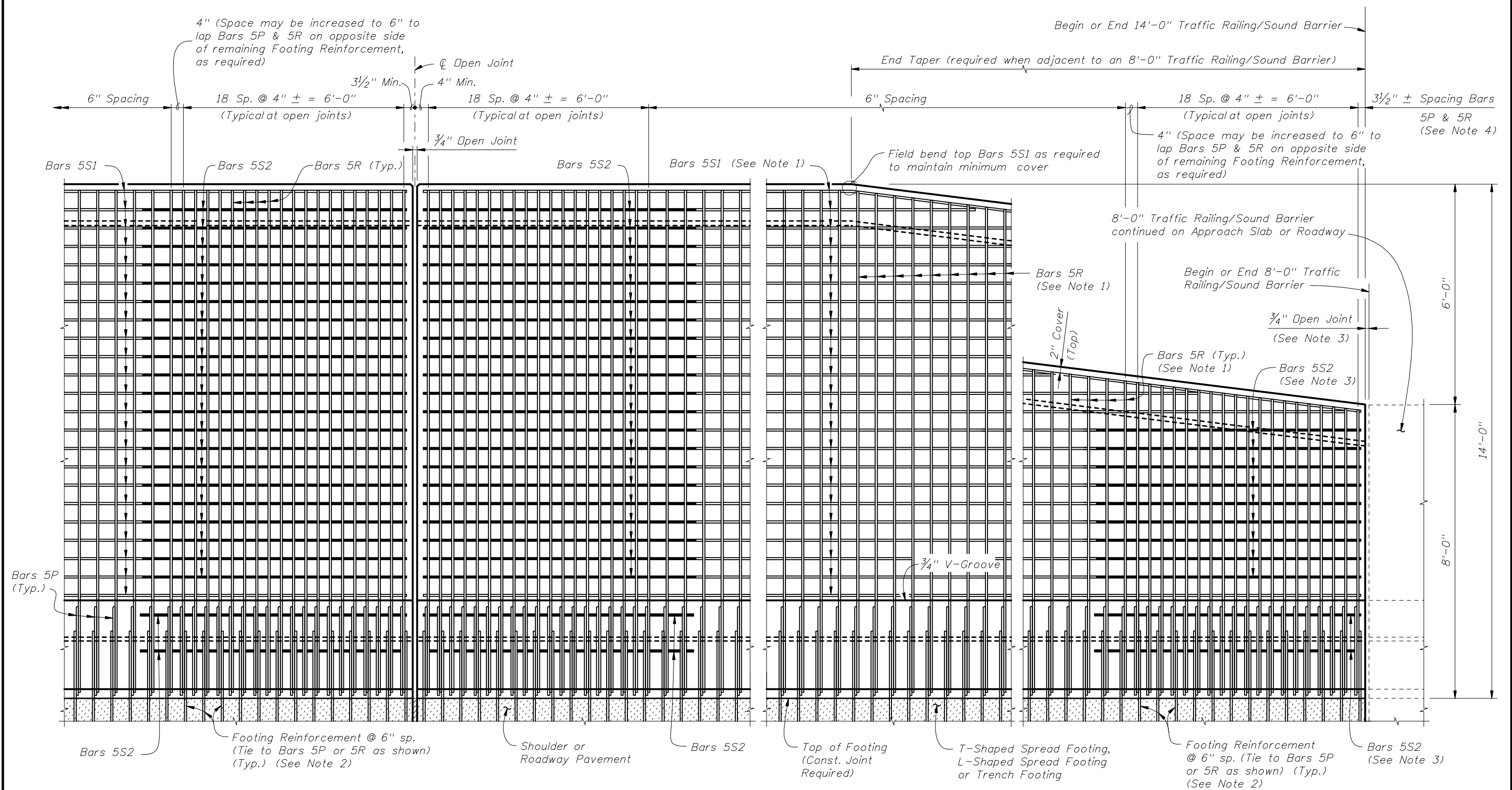
TRAFFIC RAILING/SOUND BARRIER NOTES

1. This railing has been structurally evaluated to be equivalent or greater in strength to a safety shape/sound barrier combination railing which has been crash tested to NCHRP Report 350 TL-4 Criteria.
2. **CONSTRUCTION REQUIREMENTS:** Construct the Traffic Railing/Sound Barrier and joints plumb; do not construct the Traffic Railing/Sound Barrier perpendicular to the roadway surface. Slip forming is not permitted.
3. **CONCRETE:** Use Class II concrete for slightly aggressive environments. Use Class IV concrete for moderately or extremely aggressive environments. Concrete will be in accordance with Specification Section 346.
4. **REINFORCING STEEL:** Provide Grade 60 reinforcing steel in accordance with Specification Section 931.
5. Construct 3/4" Open Joints plumb and perpendicular or radial to Gutter Line. Provide at 90'-0" maximum intervals as shown. 3/4" Open Joint locations are to coincide with 3/4" Expansion Joints in footings.
6. Construct 1/2" V-Grooves plumb and provide at 30'-0" maximum intervals as shown. Space V-Grooves equally between 3/4" Open Joints and/or Begin or End Traffic Railing/Sound Barrier. V-Groove locations are to coincide with V-Groove locations in footings.
7. 14'-0" Sound Barrier End Taper is required when Railing/Sound Barrier is adjacent to an 8'-0" Traffic Railing/Sound Barrier and may be used when an 8'-0" Traffic Railing/Sound Barrier End Taper is provided (see Index No. 5210 for details). See Roadway Plans for Traffic Railing/Sound Barrier End Treatment.
8. Work this Standard Drawing with Index No. 5210 - Traffic Railing/Sound Barrier (8'-0") and one or more of the following:
 - a. Index No. 5213 - Traffic Railing/Sound Barrier T-Shaped Spread Footing,
 - b. Index No. 5214 - Traffic Railing/Sound Barrier L-Shaped Spread Footing or
 - c. Index No. 5215 - Traffic Railing/Sound Barrier Trench Footing.



ELEVATION OF INSIDE FACE OF TRAFFIC RAILING/SOUND BARRIER
 (Reinforcing Steel not shown for clarity)
 (T-Shaped Spread Footing Shown, L-Shaped Spread Footing and Trench Footing Similar)





ELEVATION OF TRAFFIC RAILING/SOUND BARRIER REINFORCING STEEL
(Bars 5S1 in Railing not shown for clarity)

ELEVATION OF TRAFFIC RAILING/SOUND BARRIER END TAPER
(Bars 5S1 in Railing not shown for clarity)

NOTES:

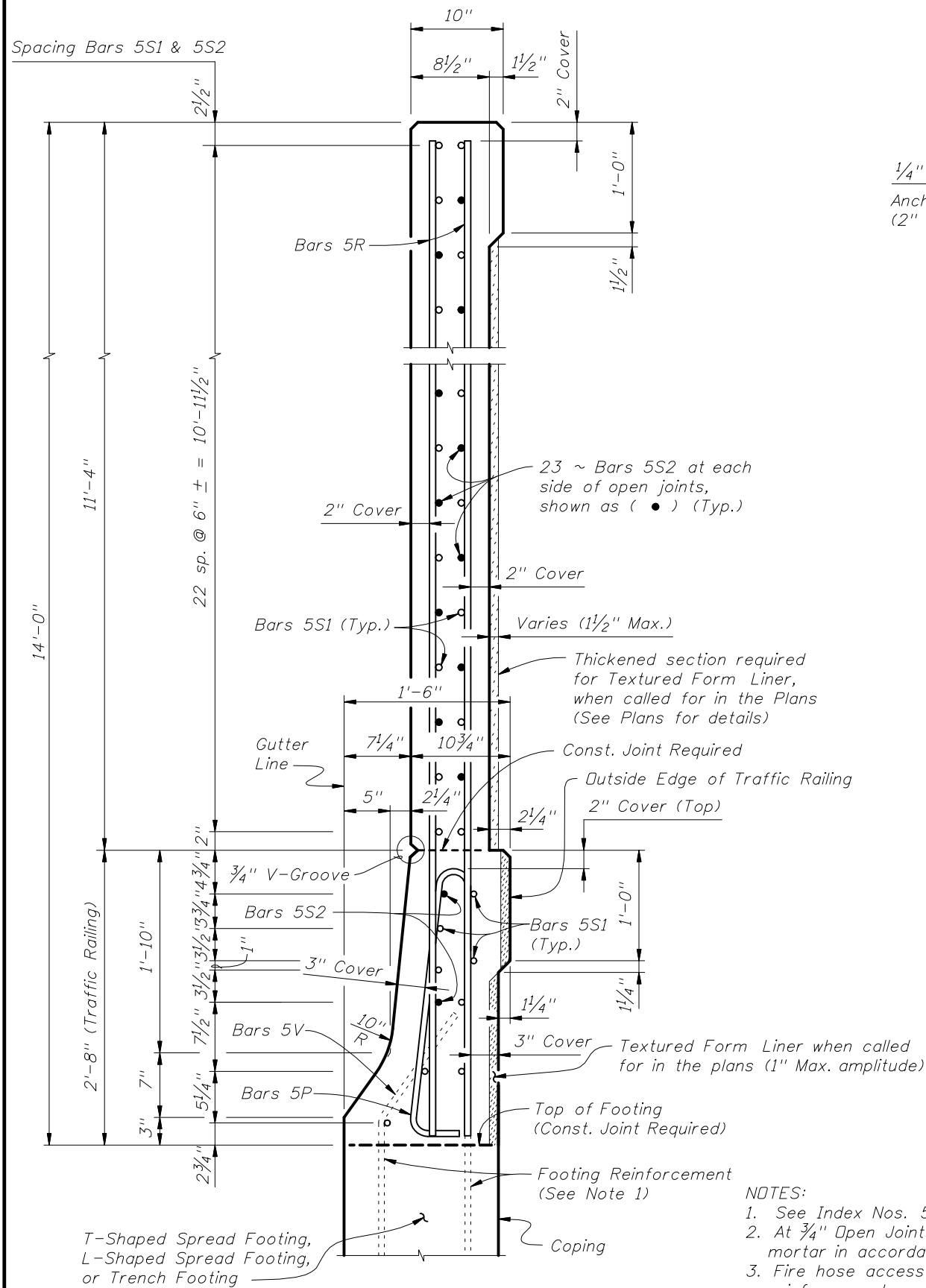
1. Field Cut Bars 5R & 5S1 in Sound Barrier End Taper as required to maintain minimum cover.
2. See Index Nos. 5213, 5214 and 5215 for footing reinforcement.
3. 3/4" Open Joint may be omitted when 8'-0" Railing/Sound Barrier End Taper is adjacent to a 14'-0" Traffic Railing/Sound Barrier End Taper as shown on Sheet 1. See Index No. 5210 for reinforcement details and spacing. Bars 5S2 are not required when 3/4" Open Joint is omitted.
4. Bar spacing shown is along the Gutter Line.



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TRAFFIC RAILING/SOUND BARRIER (14'-0")

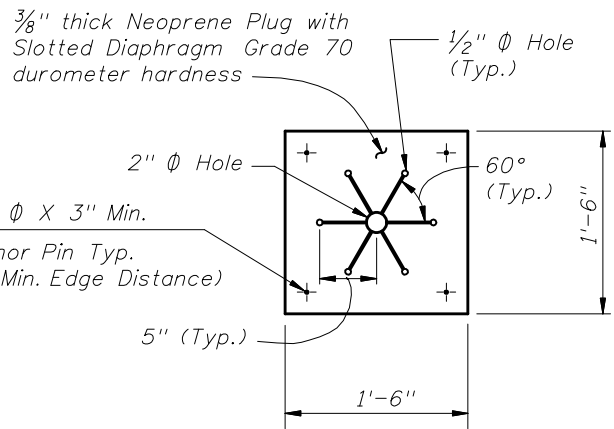
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| Last Revision | Sheet No. |
| 07/01/05 | 2 of 3 |
| Index No. | |
| 5211 | |



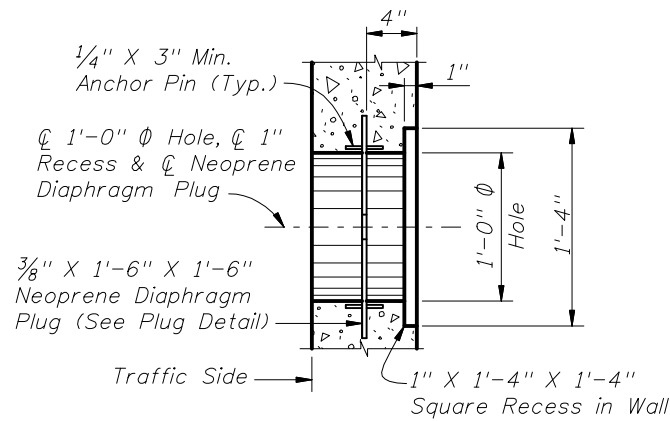
SECTION A-A
TYPICAL SECTION THRU TRAFFIC RAILING/SOUND BARRIER

NOTES:

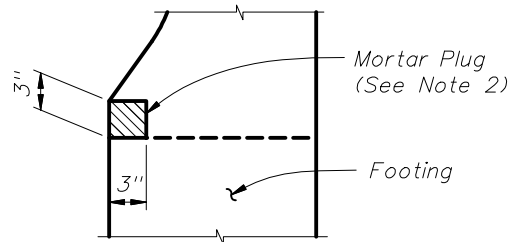
1. See Index Nos. 5213, 5214 and 5215 for footing reinforcement.
2. At 3/4" Open Joints, plug the lower 3" portion of the open joint by filling it with mortar in accordance with Specification Section 400.
3. Fire hose access holes are required at or near fire hydrant locations. Field cut reinforcement as required to maintain 2" minimum cover at access holes. Locate fire hose access holes at least 10'-0" from 3/4" open joints when possible.



NEOPRENE DIAPHRAGM PLUG DETAIL



TYPICAL SECTION
FIRE HOSE ACCESS DETAIL

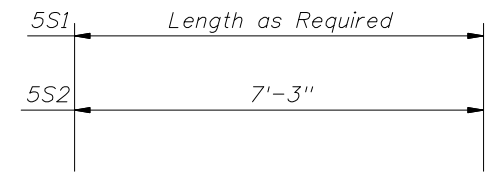


DETAIL "A" -
SECTION AT OPEN JOINT

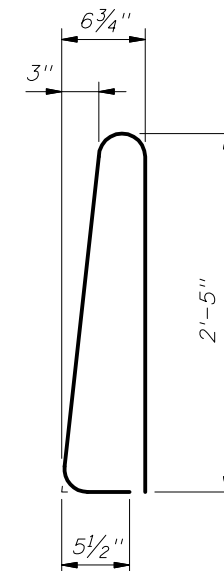
REINFORCING STEEL BENDING DIAGRAMS

BILL OF REINFORCING STEEL

| MARK | SIZE | LENGTH |
|------|------|-----------|
| P | 5 | 5'-7" |
| R | 5 | 13'-9" |
| S1 | 5 | AS REQ'D. |
| S2 | 5 | 7'-3" |



BARS 5S1 & 5S2



STIRRUP
BAR 5P

BAR 5R
(Field Cut for
End Taper)

REINFORCING STEEL NOTES:

1. All bar dimensions in the bending diagrams are out to out.
2. All reinforcing steel at the open joints will have a 2" minimum cover.
3. Bars 5R may be continuous or spliced at construction joints. Lap splices for Bars 5R and 5S1 will be a minimum of 2'-2".
4. The Contractor may use Welded Wire Reinforcement when approved by the Engineer. Welded Wire Reinforcement will conform to ASTM A 497.

ESTIMATED TRAFFIC RAILING BARRIER/SOUNDWALL QUANTITIES

| ITEM | UNIT | QUANTITY |
|--|---------|----------|
| Concrete (Traffic Railing) | CY/Ft. | 0.104 |
| Concrete (Sound Barrier, excluding any thickening) | CY/Ft. | 0.302 |
| Reinforcing Steel (Railing/Sound Barrier) (Typical, excluding Footing Reinforcement) | Lb./Ft. | 103.43 |
| Additional Reinf. @ Open Joint (Railing/Sound Barrier) | Lb. | 761.91 |

CROSS REFERENCE:

For locations of Section A-A and Detail "A", see Sheet 1.



2010 FDOT Design Standards

TRAFFIC RAILING/SOUND BARRIER (14'-0")

Last Revision

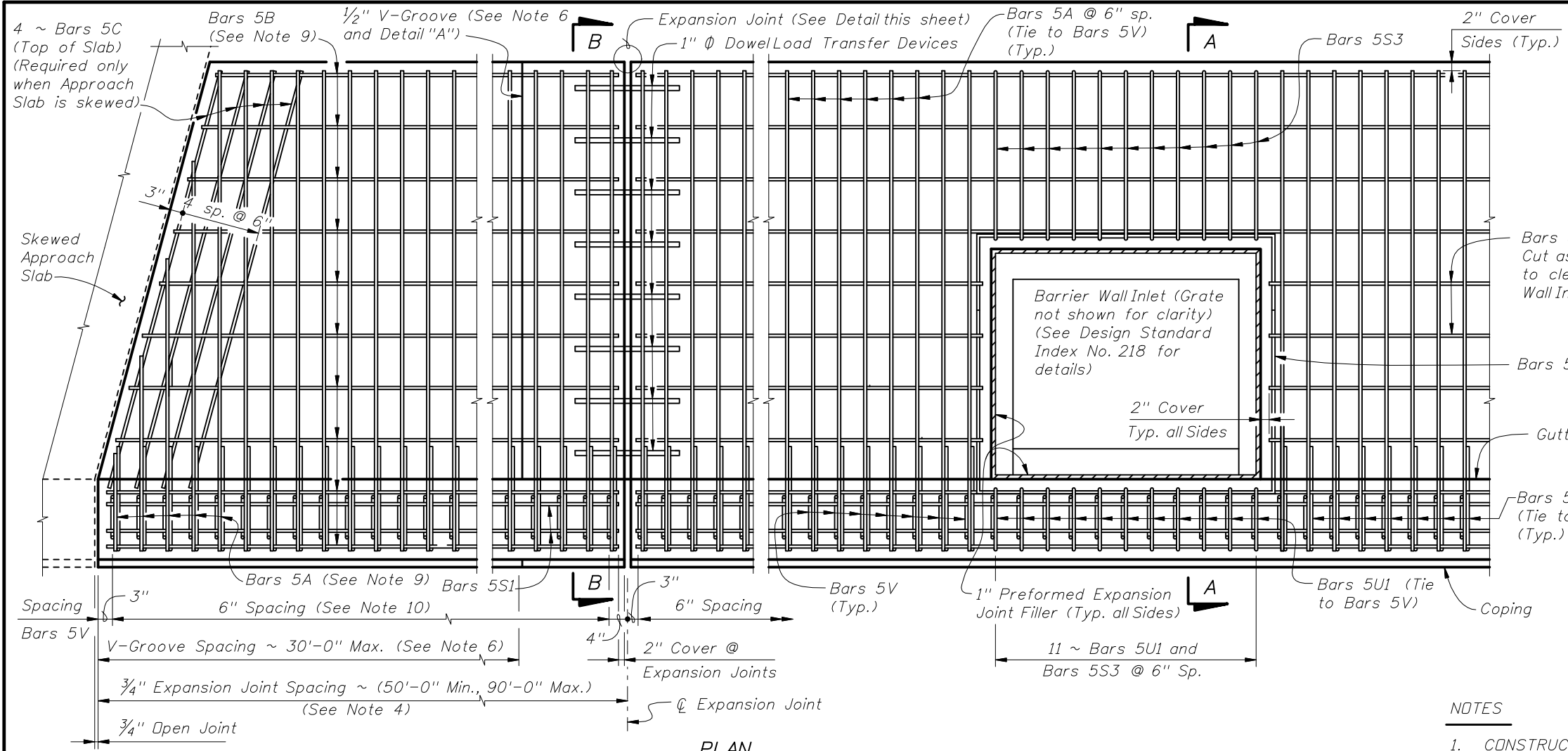
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Sheet No.

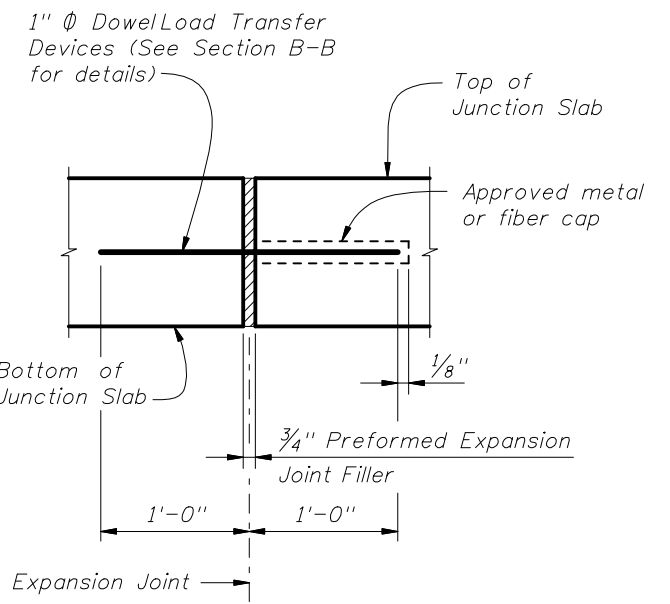
3 of 3

Index No.

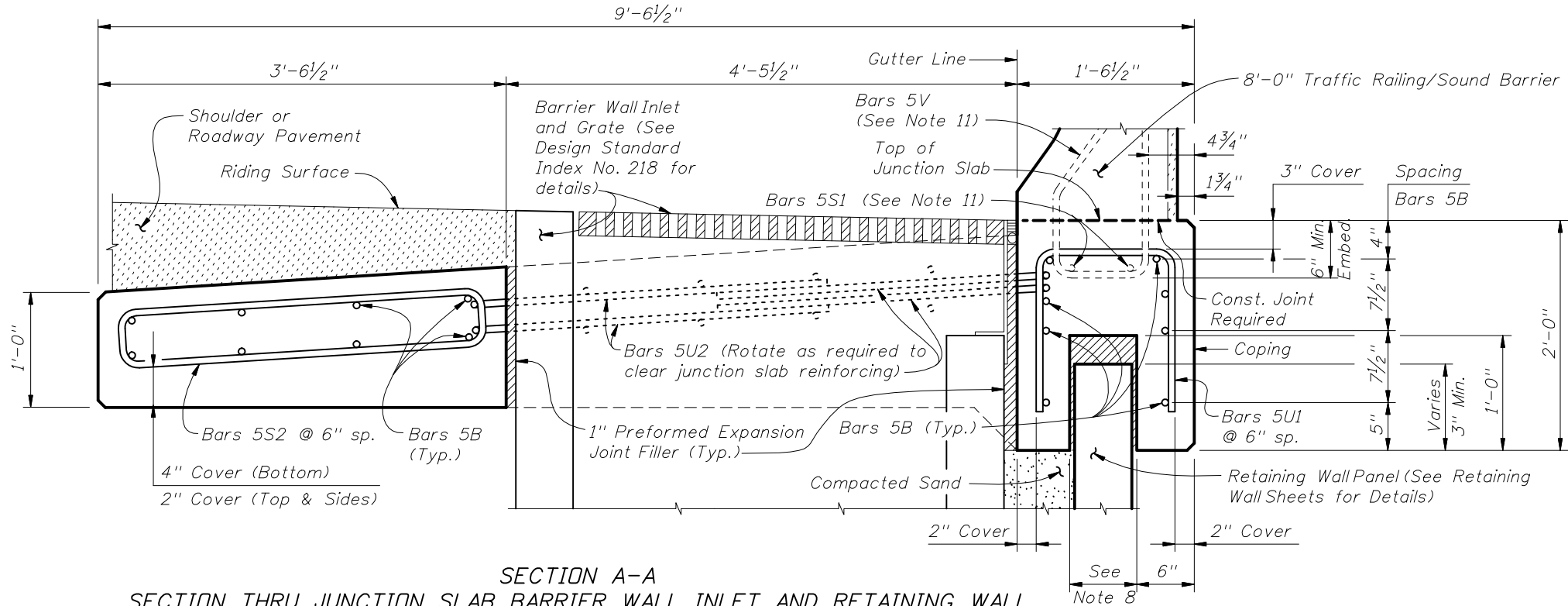
5211



PLAN
JUNCTION SLAB ADJACENT TO SKEWED APPROACH SLAB AND WITH BARRIER WALL INLET



EXPANSION JOINT DETAIL
 (Junction Slab expansion joints are required at 3/4" open joints in Traffic Railing/Sound Barrier)

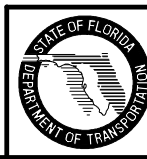


SECTION A-A
SECTION THRU JUNCTION SLAB, BARRIER WALL INLET AND RETAINING WALL

NOTES

- CONSTRUCTION REQUIREMENTS:** Construct the Junction Slab level transversely and expansion joints plumb; do not construct the junction slab perpendicular to the roadway surface. Slip forming is not permitted.
- CONCRETE:** Use Class II concrete for slightly aggressive environments. Use Class IV concrete for moderately or extremely aggressive environments. Concrete will be in accordance with Specification Section 346.
- REINFORCING STEEL:** Provide Grade 60 reinforcing steel in accordance with Specification Section 931. Dowel Load Transfer Devices will be ASTM A 36 smooth round bar and hot-dip galvanized in accordance with Specification Section 962. Install Dowel Load Transfer Devices in accordance with Specification Section 350.
- Construct 3/4" Expansion Joints plumb and perpendicular or radial to Gutter Line. Provide at 90'-0" maximum intervals as shown.
- Provide and install Preformed Expansion Joint Filler in accordance with Specification Section 932.
- Construct 1/2" V-Grooves plumb and provide at 30'-0" maximum intervals as shown. Space V-Grooves equally between 3/4" Expansion Joints and/or Begin or End Junction Slab. V-Groove locations are to coincide with V-Groove locations in the Railing/Sound Barrier.
- FILL REQUIREMENTS:** Shoulder or Roadway Pavement or Fill is required on top of the junction slab for its entire length on the traffic side of the Railing/Sound Barrier. See Section B-B for details.
- Actual allocation & width vary depending on type of Retaining Wall used.
- Field cut Bars 5A and 5B as required to maintain minimum cover for skewed Approach Slab.
- Spacing shown is along the Gutter Line.
- See Index No. 5210 for Bars 5V and 5S1.
- Work this Standard Drawing with the following:
 Index No. 5210 - Traffic Railing/Sound Barrier (8'-0").

CROSS REFERENCE:
 For Section B-B and Detail "A", see Sheet 2.

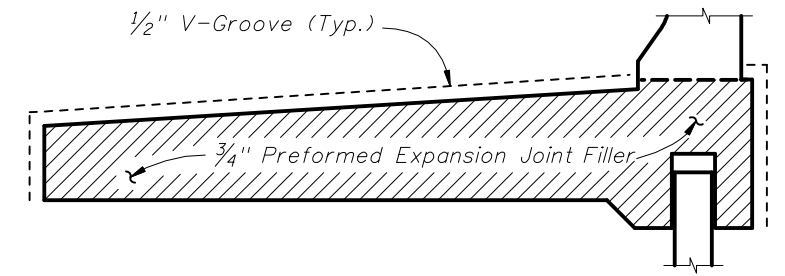
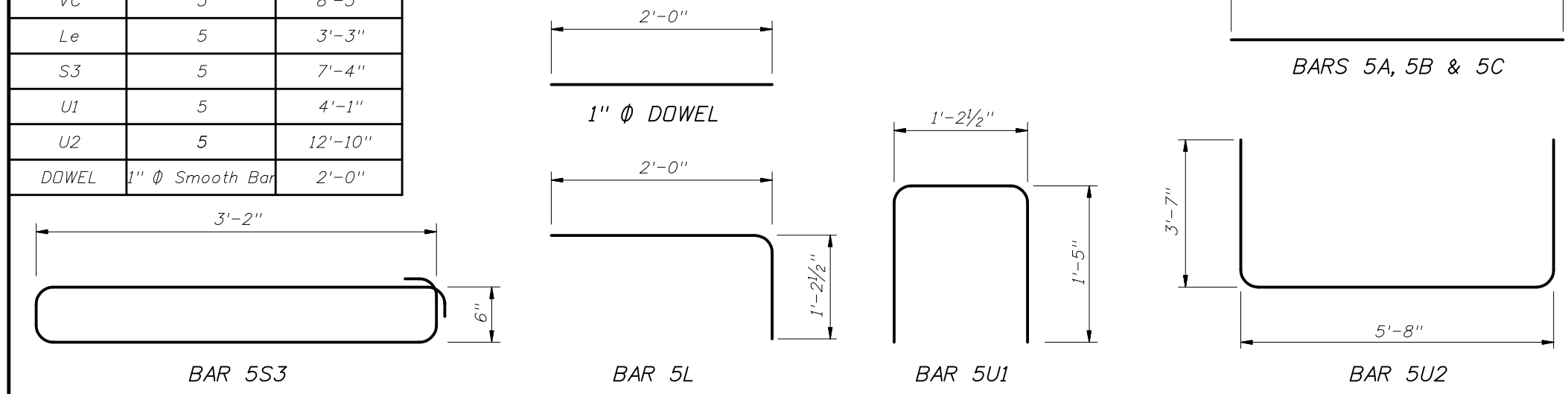


REINFORCING STEEL BENDING DIAGRAMS

| BILL OF REINFORCING STEEL | | |
|---------------------------|----------------------|-----------|
| MARK | SIZE | LENGTH |
| A | 5 | 9'-2" |
| B | 5 | AS REQ'D. |
| VC | 5 | 8'-3" |
| Le | 5 | 3'-3" |
| S3 | 5 | 7'-4" |
| U1 | 5 | 4'-1" |
| U2 | 5 | 12'-10" |
| DOWEL | 1" ϕ Smooth Bar | 2'-0" |

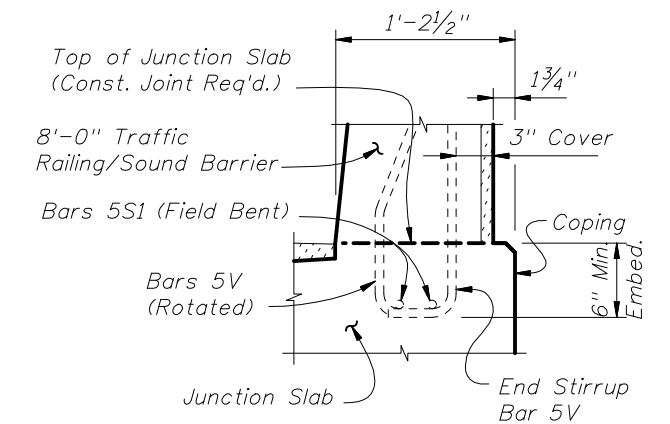
REINFORCING STEEL NOTES:

- All bar dimensions in the bending diagrams are out to out.
- All reinforcing steel at the open joints will have a 2" minimum cover.
- Lap splices for Bars 5B will be a minimum of 2'-2".
- The Contractor may use Welded Wire Fabric when approved by the Engineer. Welded Wire Fabric will conform to ASTM A 497.



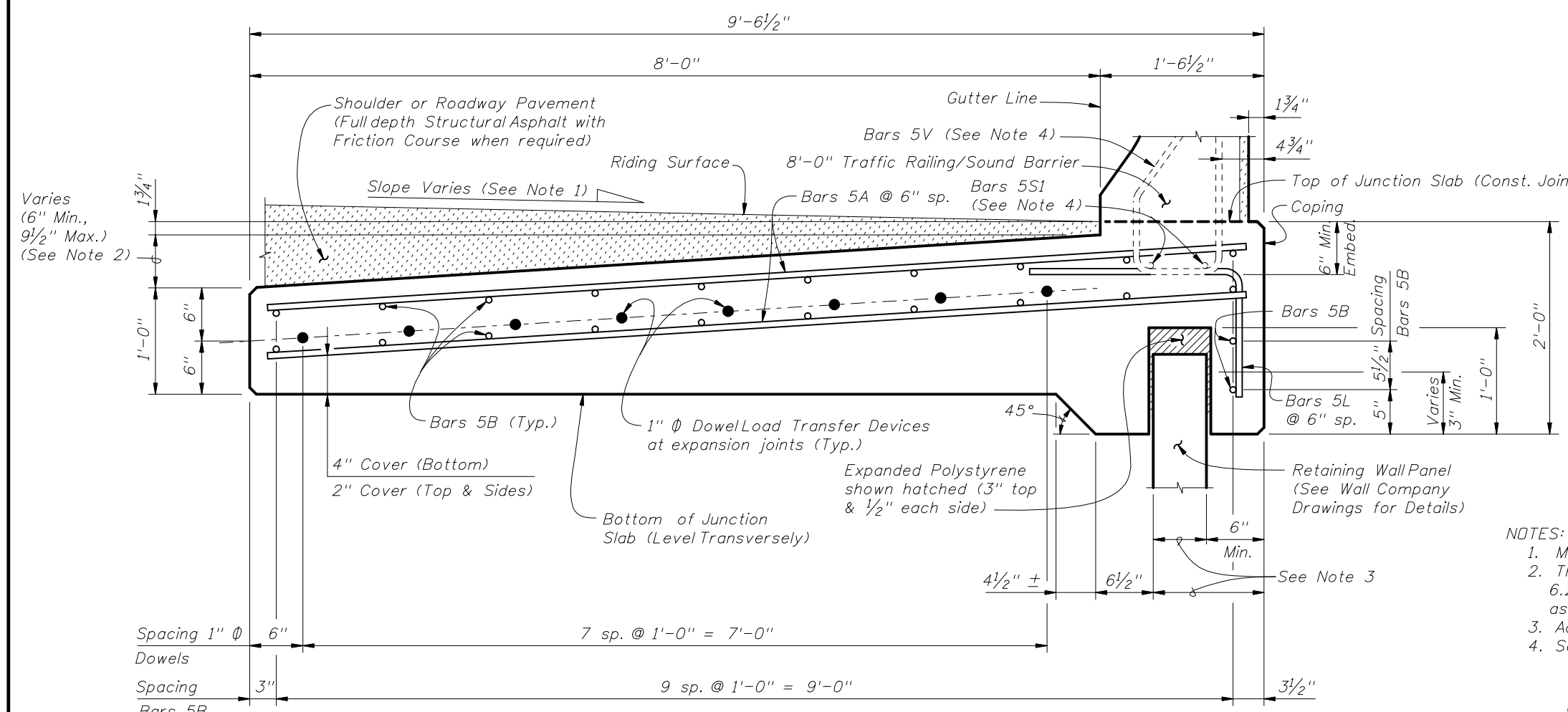
DETAIL "A"

(Showing Locations of 1/2" V-Grooves and 3/4" Preformed Expansion Joint Filler)



PARTIAL END VIEW OF RAILING END TRANSITION FOR GUARDRAIL ATTACHMENT (Showing Bars 5V and Bars 5S1)

NOTE: See Index No. 5210, Detail "A" for details.



**SECTION B-B
TYPICAL SECTION THRU JUNCTION SLAB AND RETAINING WALL**

| ESTIMATED JUNCTION SLAB QUANTITIES | | |
|-------------------------------------|--------|----------|
| ITEM | UNIT | QUANTITY |
| Concrete (Junction Slab) | CY/Ft. | 0.470 |
| Reinforcing Steel (Typical) | LB/Ft. | 67.97 |
| Additional Reinf. @ Expansion Joint | Lb. | 42.72 |

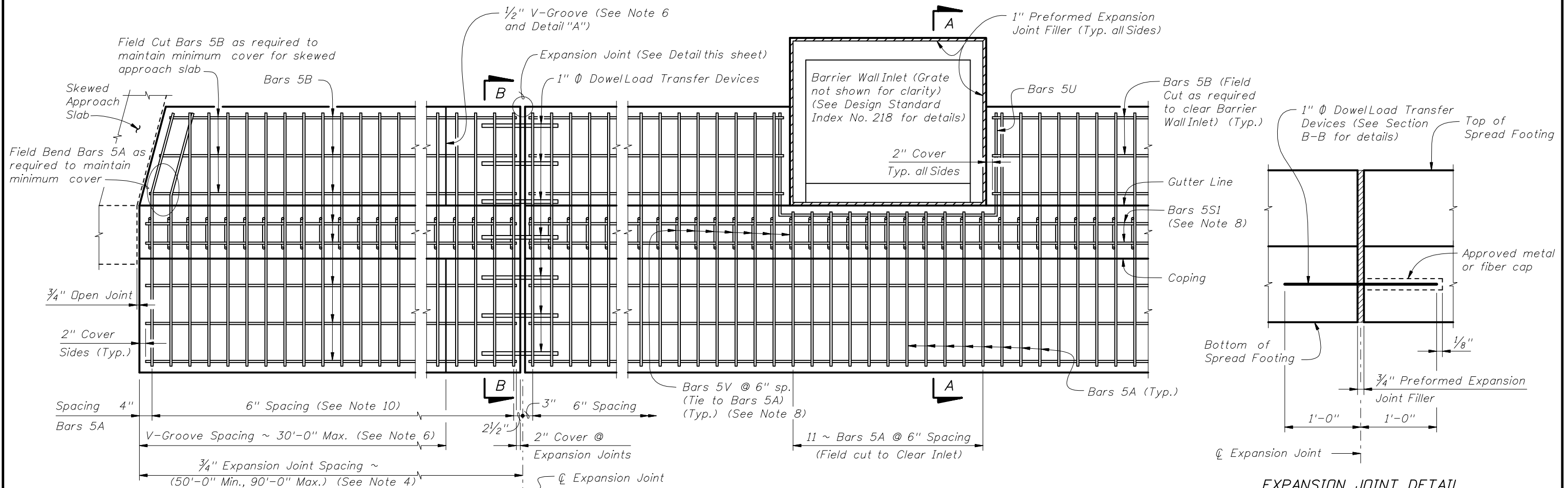
(The above concrete quantities are based on a superelevation of 6.25%.)

NOTES:

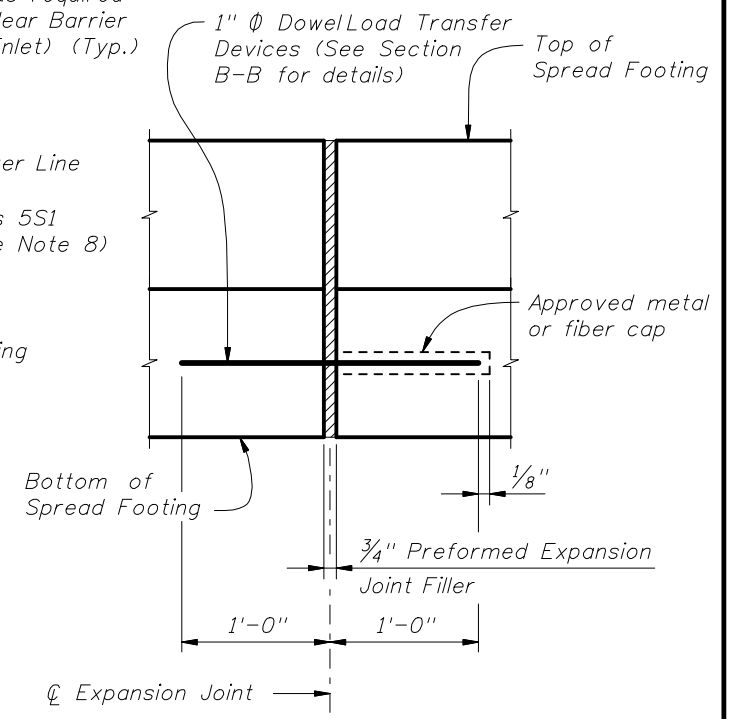
- Match Cross Slope of Travel Lane or Shoulder.
- The minimum dimension of 6" corresponds to a superelevation of 6.25%. For superelevations exceeding 6.25%, increase this dimension as required to match roadway superelevation.
- Actual location & width vary depending on type of Retaining Wall used.
- See Index No. 5210 for Bars 5V and 5S1.

CROSS REFERENCE:
For location of Section B-B, see Sheet 1.

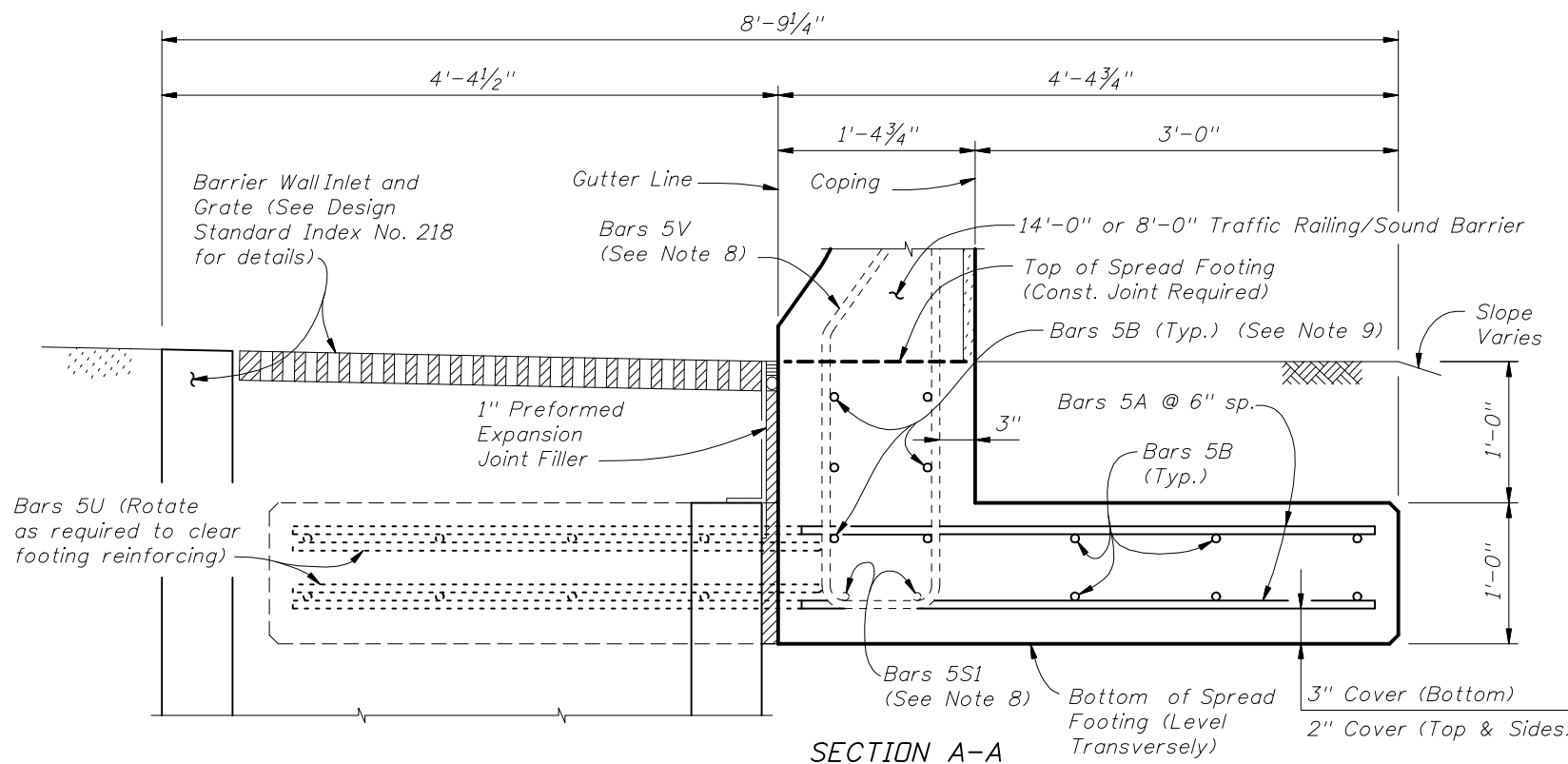




PLAN
SPREAD FOOTING ADJACENT TO SKEWED APPROACH SLAB AND WITH BARRIER WALL INLET



EXPANSION JOINT DETAIL
(Spread Footing expansion joints are required at 3/4" open joints in Traffic Railing/Sound Barrier)

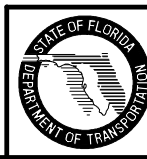


SECTION A-A
SECTION THRU SPREAD FOOTING AND BARRIER WALL INLET
(Bars 5P, 5R and 5S1 in Traffic Railing/Sound Barrier not shown for clarity)

NOTES

1. CONSTRUCTION REQUIREMENTS: Construct the Spread Footing level transversely and expansion joints plumb; do not construct the spread footing perpendicular to the roadway surface. Slip forming is not permitted.
2. CONCRETE: Use Class II concrete for slightly aggressive environments. Use Class IV concrete for moderately or extremely aggressive environments. Concrete will be in accordance with Specification Section 346.
3. REINFORCING STEEL: Provide Grade 60 reinforcing steel in accordance with Specification Section 931. Dowel Load Transfer Devices will be ASTM A 36 smooth round bar and hot-dip galvanized in accordance with Specification Section 962. Install Dowel Load Transfer Devices in accordance with Specification Section 350.
4. Construct 3/4" Expansion Joints plumb and perpendicular or radial to Gutter Line. Provide at 90'-0" maximum intervals as shown.
5. Provide and install Preformed Expansion Joint Filler in accordance with Specification Section 932.
6. Construct 1/2" V-Grooves plumb and provide at 30'-0" maximum intervals as shown. Space V-Grooves equally between 3/4" Expansion Joints and/or Begin or End Spread Footing. V-Groove locations are to coincide with V-Groove locations in the Railing/Sound Barrier.
7. FILL REQUIREMENTS: Shoulder or Roadway Pavement or Fill is required on top (1'-0" minimum depth) for the entire length of the spread footing on both sides of the Railing/Sound Barrier. See Section B-B for details.
8. See Index No. 5210 for Bars 5V and 5S1.
9. Place 6 ~ Bars 5B inside Stirrup Bars 5V as shown.
10. Spacing shown is along the Gutter Line.
11. Work this Standard Drawing with one or both of the following:
 - a. Index No. 5210 - Traffic Railing/Sound Barrier (8'-0").
 - b. Index No. 5211 - Traffic Railing/Sound Barrier (14'-0").

CROSS REFERENCE:
For Section B-B and Detail "A", see Sheet No. 2.



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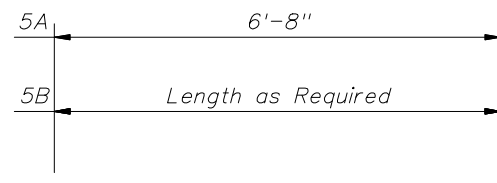
TRAFFIC RAILING/SOUND BARRIER
T-SHAPED SPREAD FOOTING

| | |
|---------------|-----------|
| Last Revision | Sheet No. |
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| Index No. | |
| 5213 | |

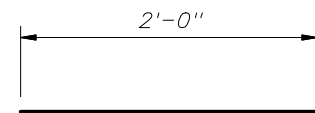
REINFORCING STEEL BENDING DIAGRAMS

BILL OF REINFORCING STEEL

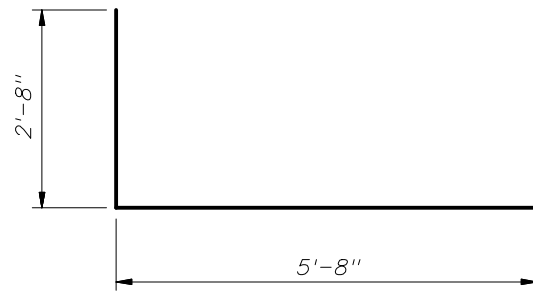
| MARK | SIZE | LENGTH |
|------|---------------------------|-----------|
| A | 5 | 6'-8" |
| B | 5 | AS REQ'D. |
| U | 5 | 11'-0" |
| DWEL | 1" \emptyset Smooth Bar | 2'-0" |



BARS 5A & 5B



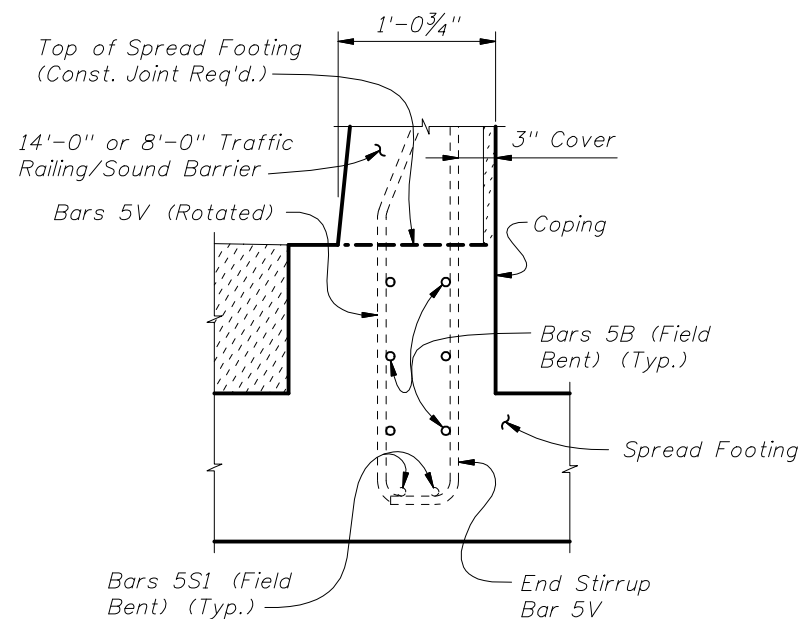
1" \emptyset DOWEL



BAR 5U

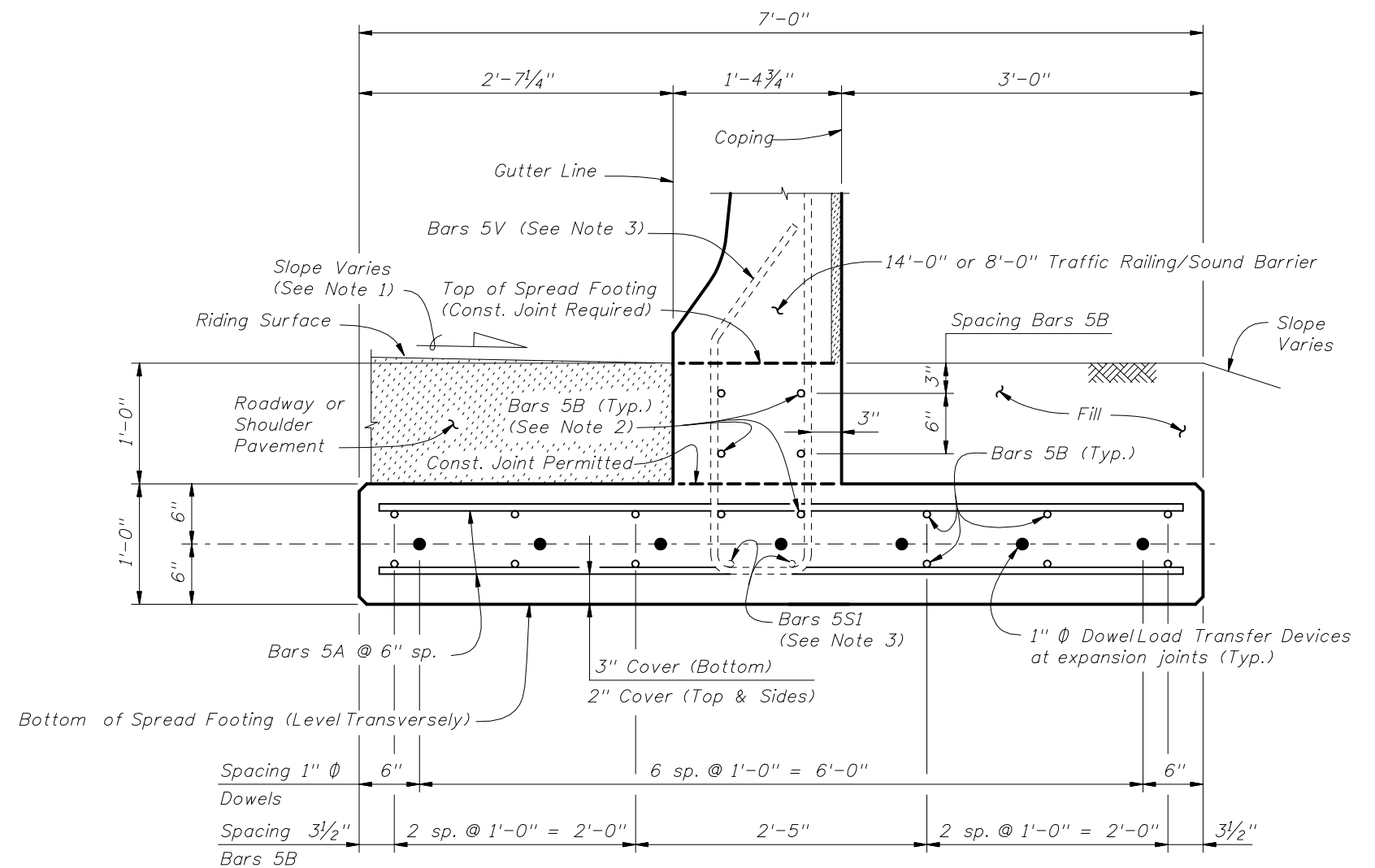
REINFORCING STEEL NOTES:

1. All bar dimensions in the bending diagrams are out to out.
2. All reinforcing steel at the open joints will have a 2" minimum cover.
3. Lap splices for Bars 5B will be a minimum of 2'-2".
4. The Contractor may use Welded Wire Fabric when approved by the Engineer. Welded Wire Fabric will conform to ASTM A 497.



PARTIAL END VIEW OF RAILING END TRANSITION FOR GUARDRAIL ATTACHMENT (Showing Bars 5V, Bars 5S1 and Bars 5B inside of Stirrup Bars 5V)

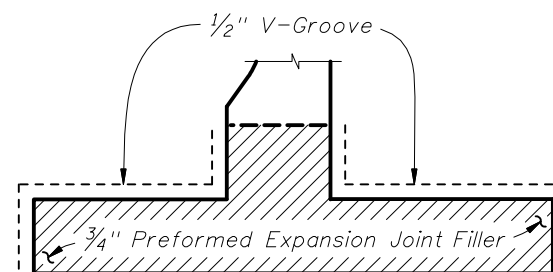
NOTE: See Index No. 5210, Detail "A" for details.



SECTION B-B
TYPICAL SECTION THRU SPREAD FOOTING
(Bars 5P, 5R and 5S1 in Traffic Railing/Sound Barrier not shown for clarity)

NOTES:

1. Match Cross Slope of Travel Lane or Shoulder.
2. Place 6 ~ Bars 5B inside Stirrup Bars 5V as shown.
3. See Index No. 5210 for Bars 5V and Bars 5S1.



DETAIL "A"

(Showing Locations of 1/2" V-Grooves and 3/4" Preformed Expansion Joint Filler)

| ESTIMATED T-SHAPED SPREAD FOOTING QUANTITIES | | |
|--|--------|----------|
| ITEM | UNIT | QUANTITY |
| Concrete (Footing) | CY/Ft. | 0.311 |
| Reinforcing Steel (Typical) | LB/Ft. | 51.80 |
| Additional Reinf. @ Expansion Joint | Lb. | 37.38 |

Note: The reinforcing steel quantity accounts for the difference between the shorter Stirrup Bars 5V for junction slabs or bridges and the longer Stirrup Bars 5V for spread footings.

CROSS REFERENCE:

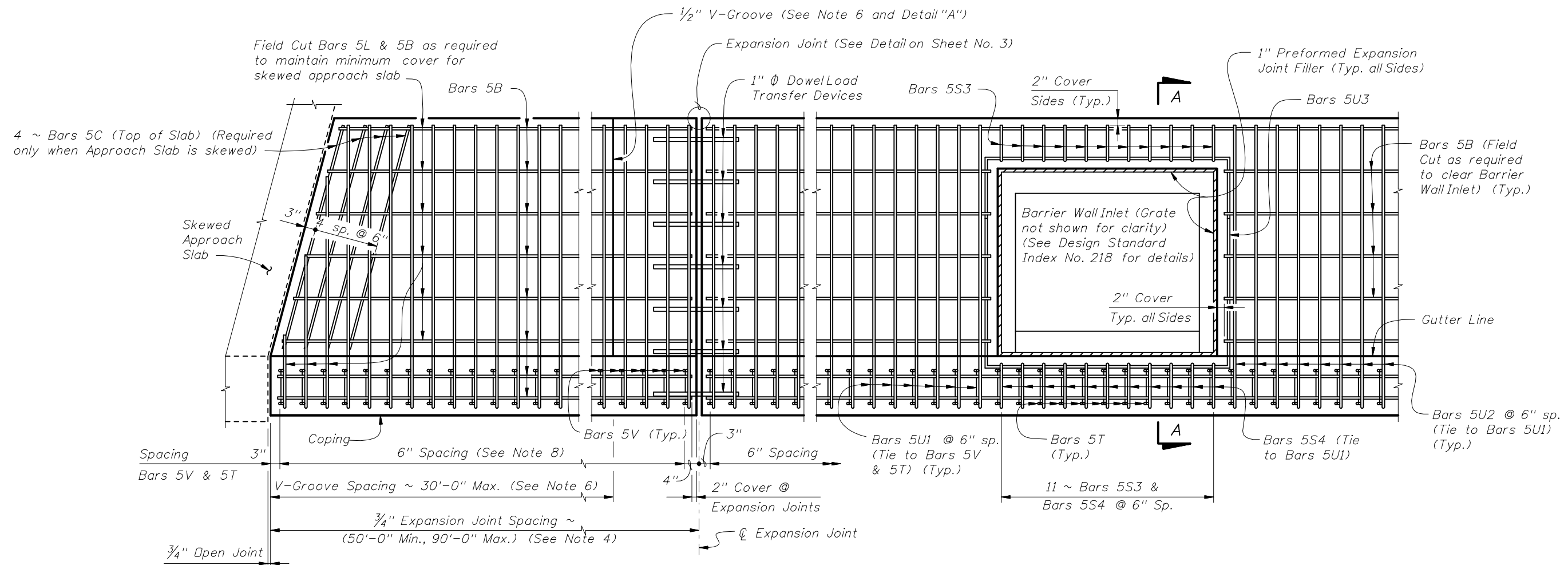
For location of Section B-B, see Sheet 1.



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TRAFFIC RAILING/SOUND BARRIER
T-SHAPED SPREAD FOOTING

| | |
|---------------|-----------|
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PLAN - OPTION B
SPREAD FOOTING ADJACENT TO SKEWED APPROACH SLAB AND WITH BARRIER WALL INLET
(Option A Similar)

NOTES

1. CONSTRUCTION REQUIREMENTS: Construct the Spread Footing level transversely and expansion joints plumb; do not construct the spread footing perpendicular to the roadway surface. Slip forming is not permitted.
2. CONCRETE: Use Class II concrete for slightly aggressive environments. Use Class IV concrete for moderately or extremely aggressive environments. Concrete will be in accordance with Specification Section 346.
3. REINFORCING STEEL: Provide Grade 60 reinforcing steel in accordance with Specification Section 931. Dowel Load Transfer Devices will be ASTM A 36 smooth round bar and hot-dip galvanized in accordance with Specification Section 962. Install Dowel Load Transfer Devices in accordance with Specification Section 350.
4. Construct 3/4" Expansion Joints plumb and perpendicular or radial to Gutter Line. Provide at 90'-0" maximum intervals as shown.
5. Provide and install Preformed Expansion Joint Filler in accordance with Specification Section 932.
6. Construct 1/2" V-Grooves plumb and provide at 30'-0" maximum intervals as shown. Space V-Grooves equally between 3/4" Expansion Joints and/or Begin or End Spread Footing. V-Groove locations are to coincide with V-Groove locations in the Railing/Sound Barrier.
7. FILL REQUIREMENTS: Shoulder or Roadway Pavement and Fill is required on the traffic side of the spread footing for a distance of 4'-0" and the full length of the spread footing (3'-0" minimum depth) on the backside of the spread footing for Option A. Fill is required for a distance of 4'-0" on the backside of the spread footing and the full length of the spread footing (3'-0" minimum depth) on the traffic side of the spread footing for Option B. See Typical Sections on Sheet Nos. 2 and 3 for details.
8. Spacing shown is along the Gutter Line.
9. Work this Standard Drawing with one or both of the following:
 - a. Index No. 5210 - Traffic Railing/Sound Barrier (8'-0").
 - b. Index No. 5211 - Traffic Railing/Sound Barrier (14'-0").

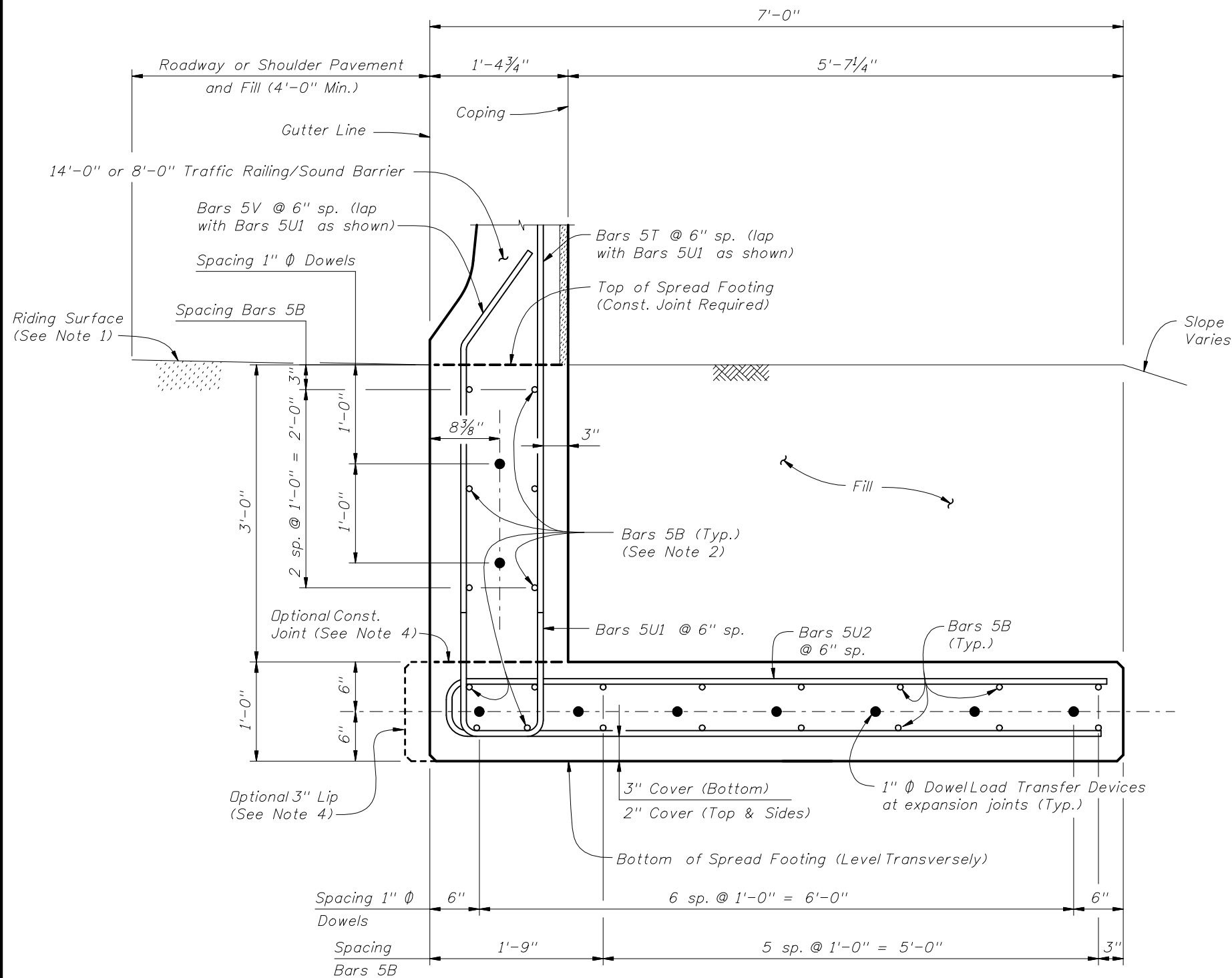
CROSS REFERENCE:
For Detail "A", see Sheet 3.
For Section A-A and Estimated Quantities, see Sheet 4.



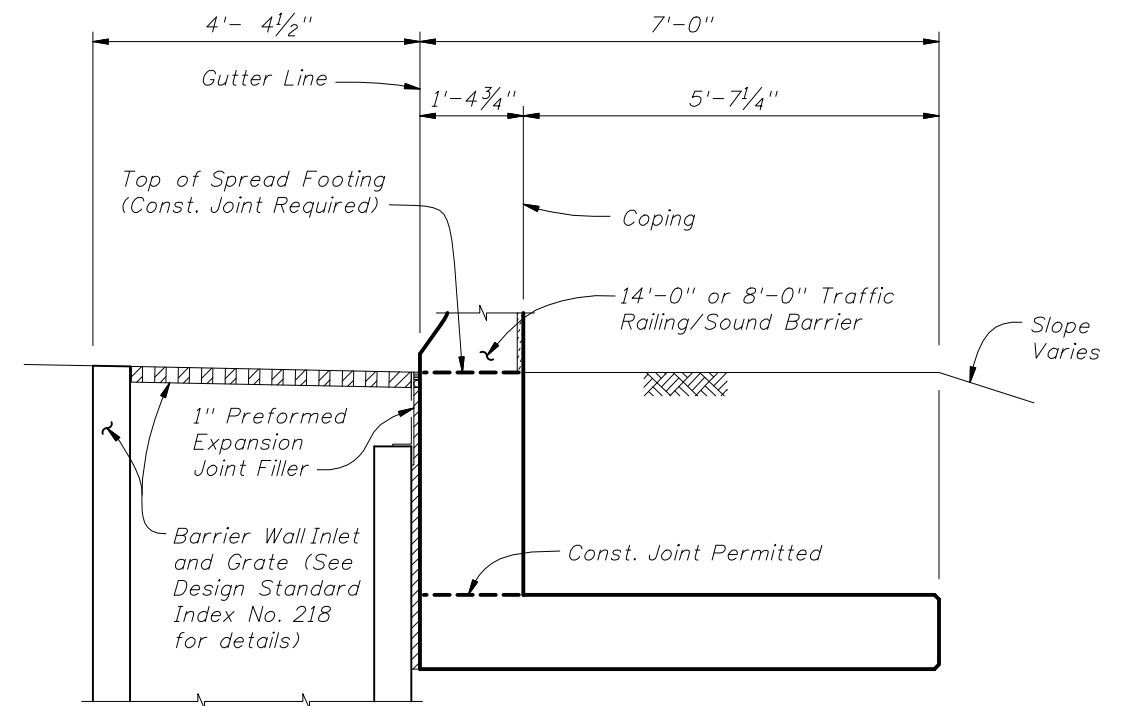
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TRAFFIC RAILING/SOUND BARRIER
L-SHAPED SPREAD FOOTING

| | |
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| Last Revision | Sheet No. |
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| 5214 | |



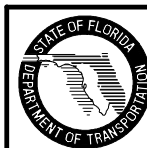
TYPICAL SECTION THRU SPREAD FOOTING - OPTION A
(Bars 5P, 5R and 5S1 in Traffic Railing/Sound Barrier not shown for clarity)



TYPICAL SECTION THRU SPREAD FOOTING AND BARRIER WALL INLET - OPTION A
(Reinforcing Steel not shown for clarity (See Note 3))

NOTES:

1. Match Cross Slope of Travel Lane or Shoulder.
2. Place 10 ~ Bars 5B inside Bars 5U1 as shown.
3. For Reinforcing Steel spacing, see Typical Section Thru Spread Footing - Option A this Sheet.
4. Provide 3" lip when optional construction joint is used.



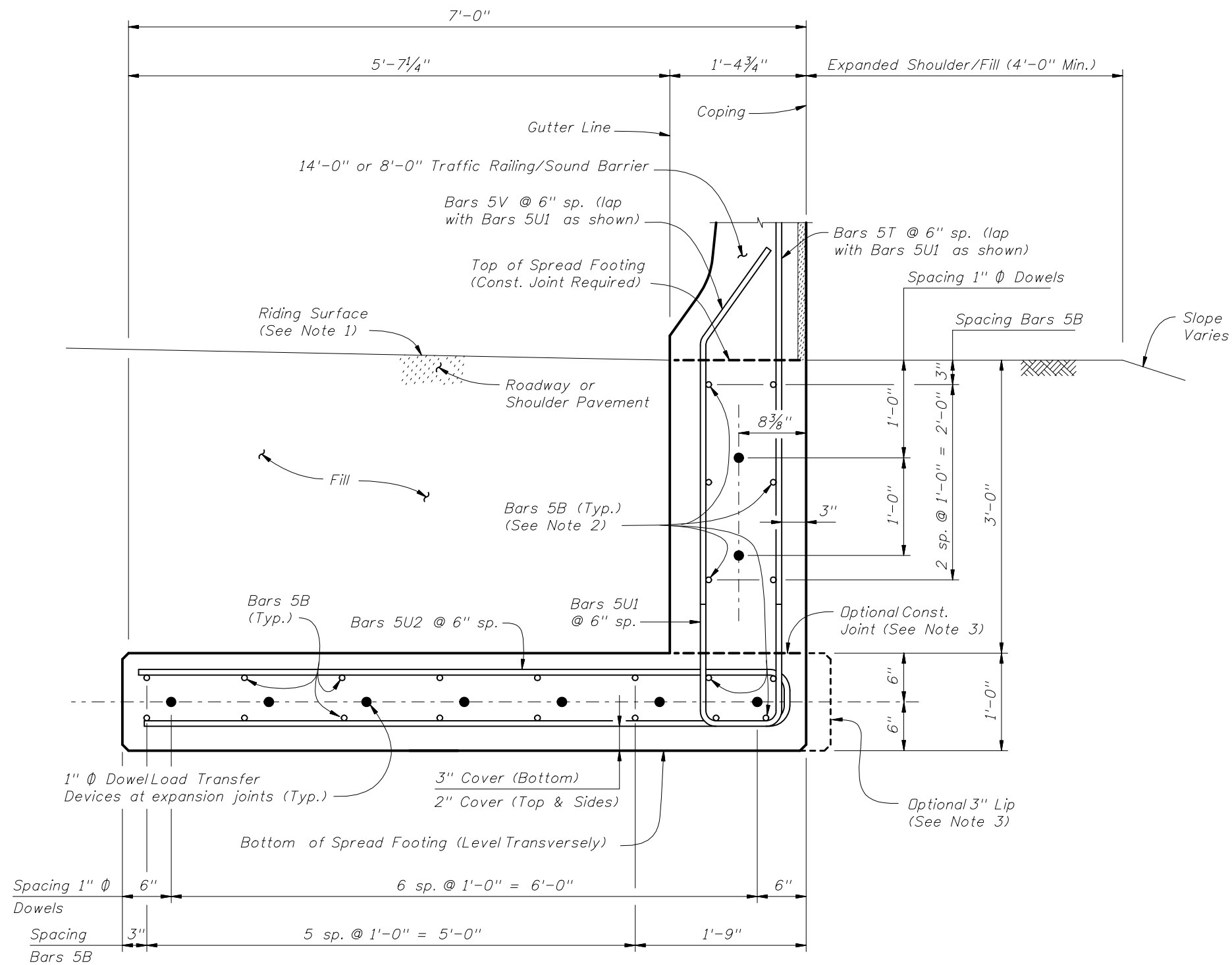
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TRAFFIC RAILING/SOUND BARRIER
L-SHAPED SPREAD FOOTING

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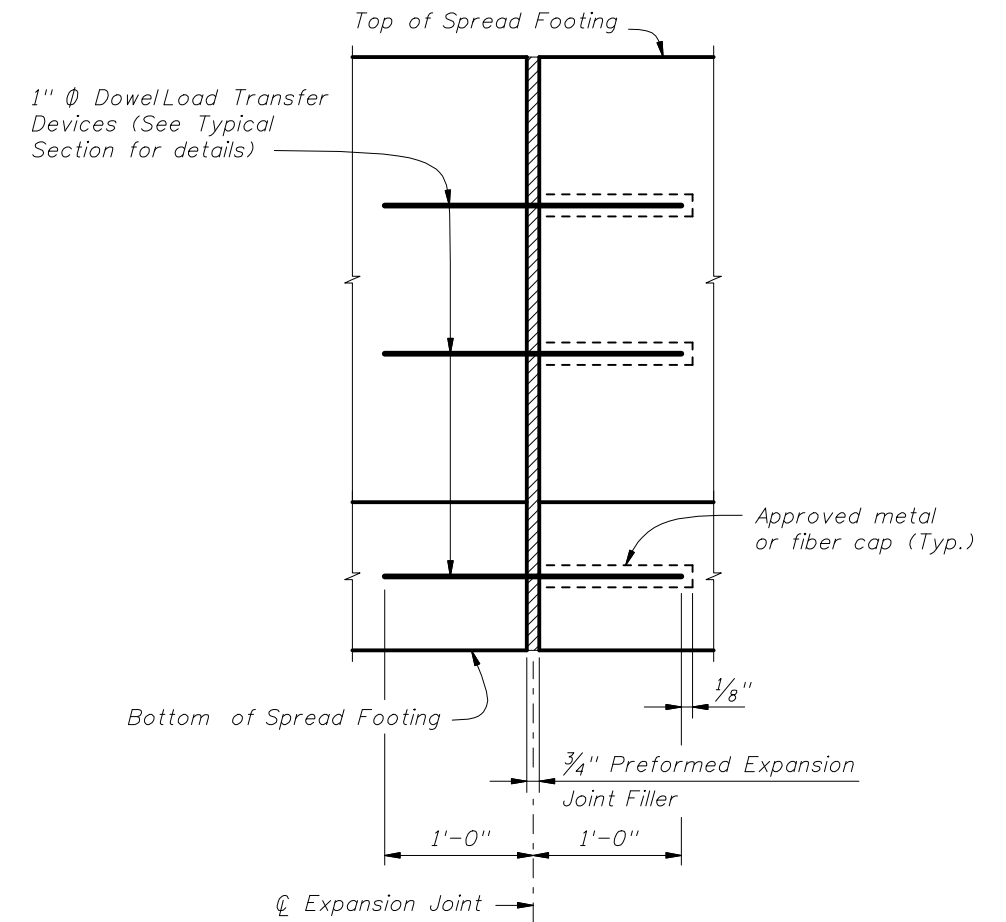
Index No.
5214



TYPICAL SECTION THRU SPREAD FOOTING - OPTION B
 (Bars 5P, 5R and 5S1 in Traffic Railing/Sound Barrier not shown for clarity)

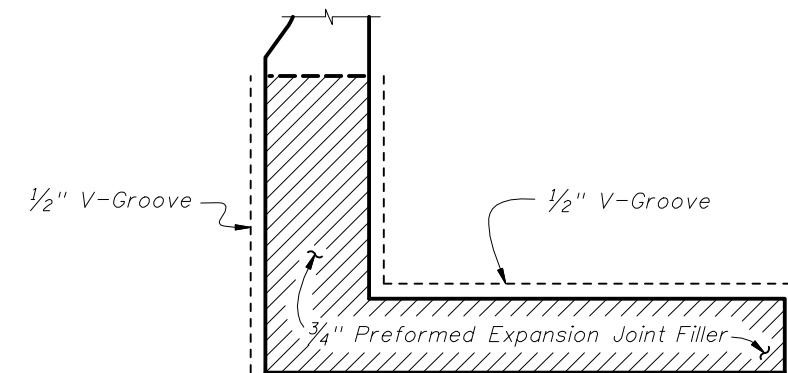
NOTES:

1. Match Cross Slope of Travel Lane or Shoulder.
2. Place 10 ~ Bars 5B inside Bars 5U1 as shown.
3. Provide 3" lip when optional construction joint is used.



EXPANSION JOINT DETAIL

(Spread Footing expansion joints are required at 3/4" open joints in Traffic Railing/Sound Barrier)



DETAIL "A"
 (Option A Shown, Option B Similar)

(Showing Locations of 1/2" V-Grooves and 3/4" Preformed Expansion Joint Filler)



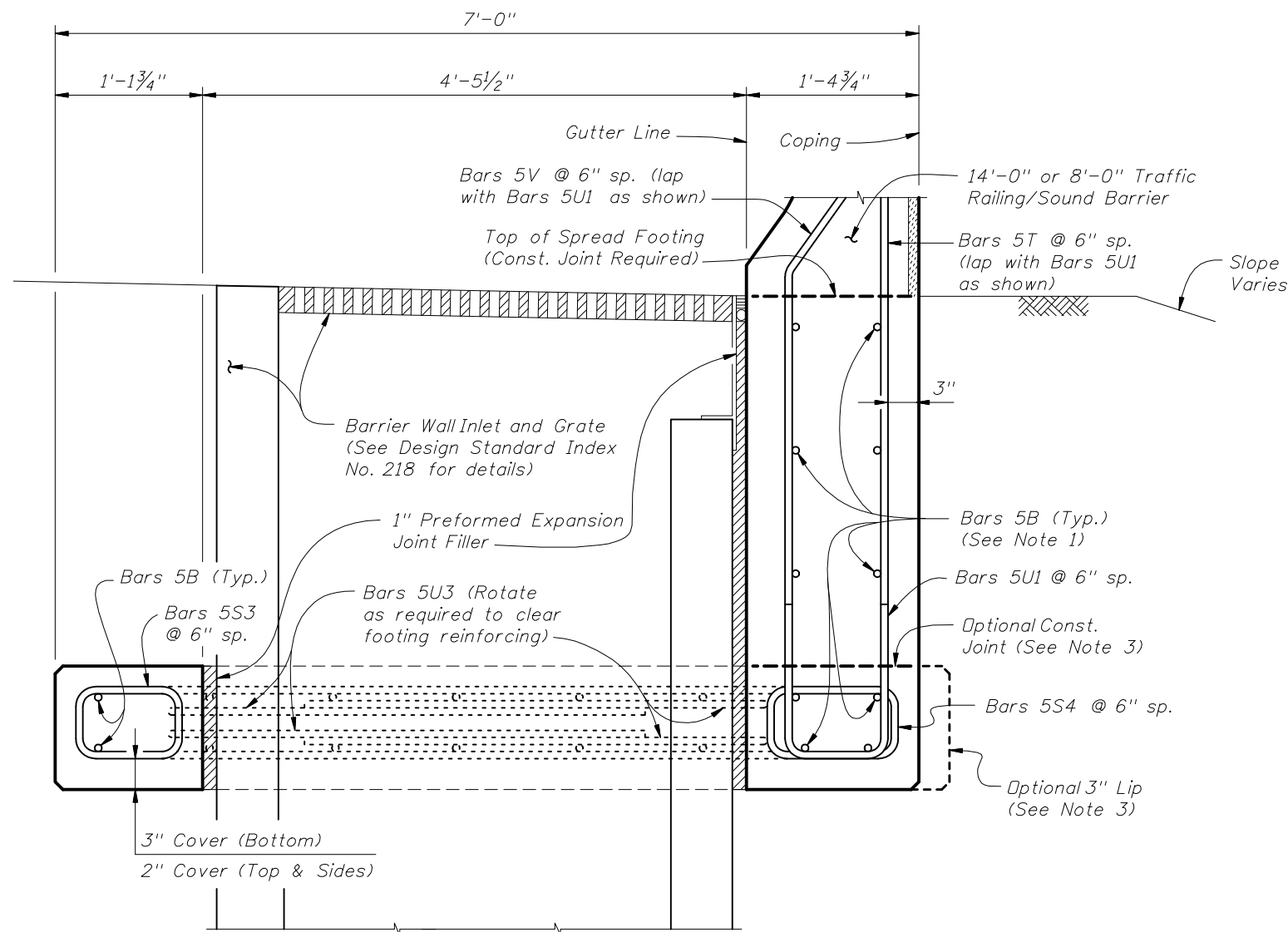
2010 FDOT Design Standards

**TRAFFIC RAILING/SOUND BARRIER
 L-SHAPED SPREAD FOOTING**

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SECTION A-A
TYPICAL SECTION THRU SPREAD FOOTING AND BARRIER WALL INLET - OPTION B
(Bars 5P, 5R and 5S1 in Traffic Railing/Sound Barrier not shown for clarity)

NOTES:

1. Place 10 ~ Bars 5B inside Bars 5U1 as shown.
2. For Reinforcing Steel spacing, see Typical Section Thru Spread Footing - Option B on Sheet 3.
3. Provide 3" lip when optional construction joint is used.

ESTIMATED L-SHAPED SPREAD FOOTING QUANTITIES

| ITEM | UNIT | QUANTITY |
|-------------------------------------|--------|----------|
| Concrete (Footing) | CY/Ft. | 0.414 |
| Reinforcing Steel (Typical) | LB/Ft. | 85.53 |
| Additional Reinf. @ Expansion Joint | Lb. | 48.06 |

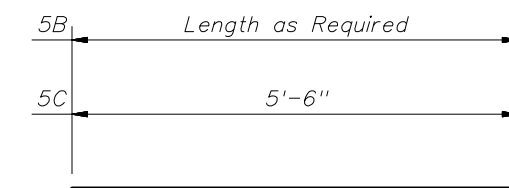
(Subtract 12.69 lb/ft from typical reinforcing steel quantity shown on Index No. 5210 to account for the absence of Stirrup Bars 5V and 5S1 in L-Shaped Spread Footings.)

CROSS REFERENCE:

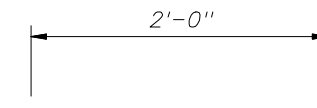
For location of Section A-A, see Sheet 1.

REINFORCING STEEL BENDING DIAGRAMS

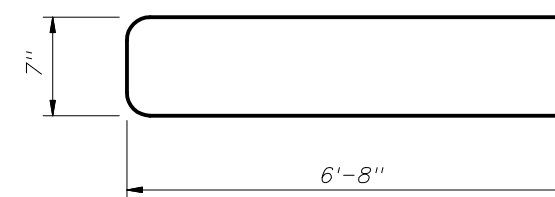
| BILL OF REINFORCING STEEL | | |
|---------------------------|----------------------|----------|
| MARK | SIZE | LENGTH |
| B | 5 | AS REQD. |
| C | 5 | 5'-6" |
| S3 | 5 | 3'-10" |
| S4 | 5 | 4'-3" |
| T | 5 | 4'-3" |
| U1 | 5 | 8'-0" |
| U2 | 5 | 13'-11" |
| U3 | 5 | 12'-10" |
| V | 5 | 3'-10" |
| DOWEL | 1" ϕ Smooth Bar | 2'-0" |



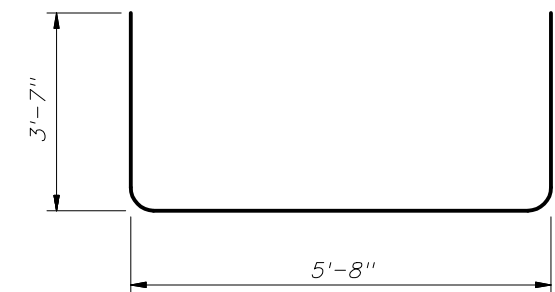
BARS 5B & 5C



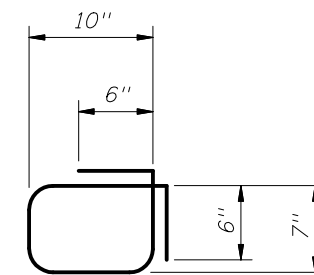
1" ϕ DOWEL



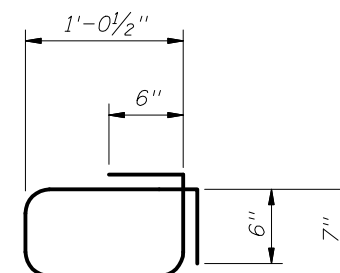
BAR 5U2



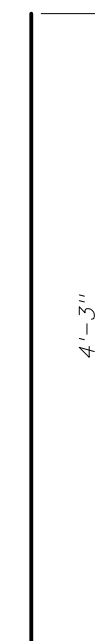
BAR 5U3



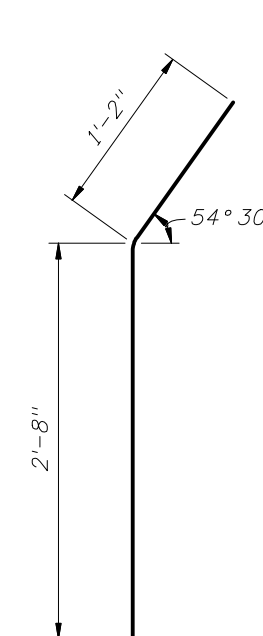
BAR 5S3



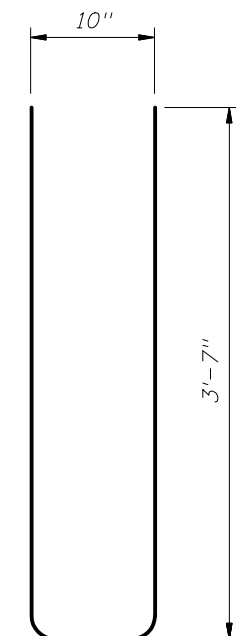
BAR 5S4



BAR 5T



BAR 5V



BAR 5U1

REINFORCING STEEL NOTES:

1. All bar dimensions in the bending diagrams are out to out.
2. All reinforcing steel at the open joints will have a 2" minimum cover.
3. Lap splices for Bars 5B will be a minimum of 2'-2".
4. Lap splices Bars 5T and 5V with 5U1 will be a minimum of 2'-2".
5. The Contractor may use Welded Wire Fabric when approved by the Engineer. Welded Wire Fabric will conform to ASTM A 497.



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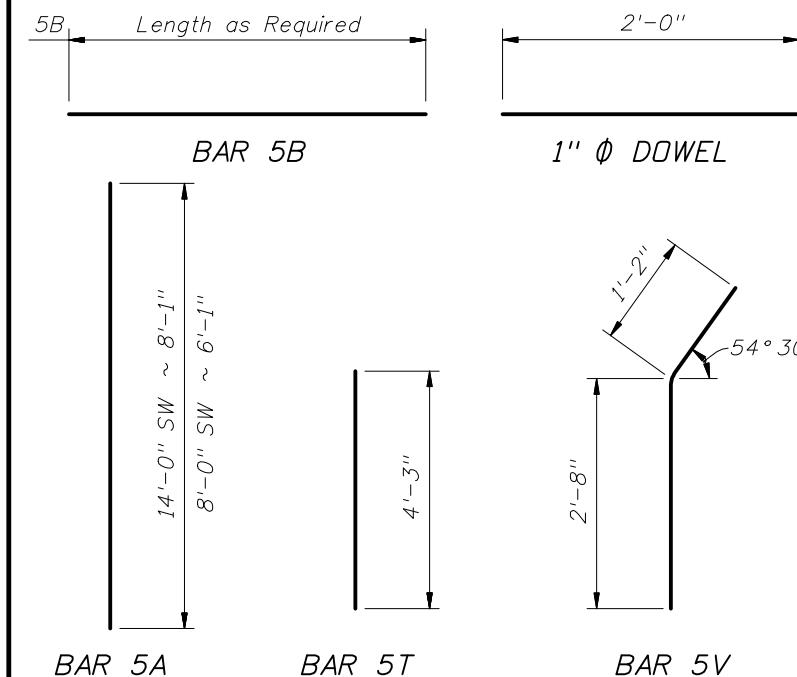
TRAFFIC RAILING/SOUND BARRIER
L-SHAPED SPREAD FOOTING

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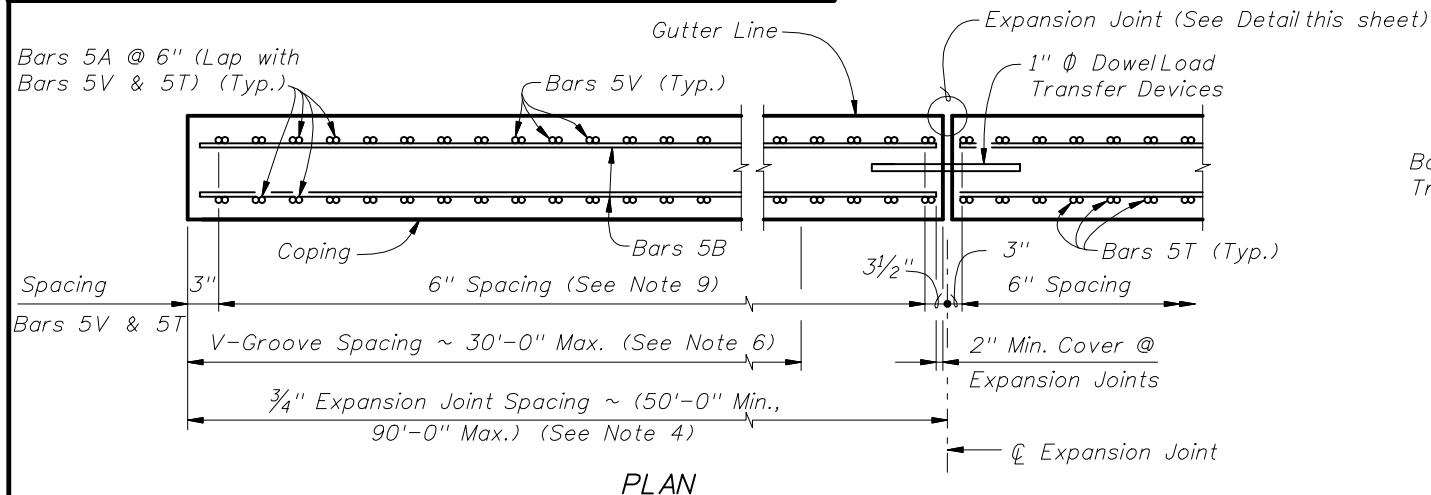
REINFORCING STEEL BENDING DIAGRAMS

BILL OF REINFORCING STEEL

| MARK | SIZE | LENGTH |
|---------------|----------------------|----------|
| A (8'-0" SW) | 5 | 6'-1" |
| A (14'-0" SW) | 5 | 8'-1" |
| B | 5 | AS REQD. |
| T | 5 | 4'-3" |
| V | 5 | 3'-10" |
| DOWEL | 1" ϕ Smooth Bar | 2'-0" |



- REINFORCING STEEL NOTES:**
- All bar dimensions in the bending diagrams are out to out.
 - All reinforcing steel at the open joints will have a 2" minimum cover.
 - Lap splices for Bars 5B will be a minimum of 2'-2".
 - Lap splices Bars 5T and 5V with 5U1 will be a minimum of 2'-2".
 - The Contractor may use Welded Wire Fabric when approved by the Engineer. Welded Wire Fabric will conform to ASTM A 497.



NOTES

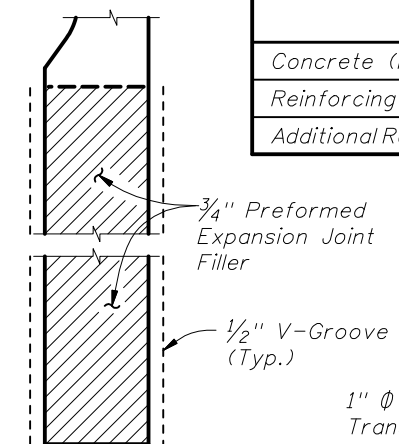
- CONSTRUCTION REQUIREMENTS:** Construct the Trench Footing and expansion joints plumb; do not construct the Trench Footing perpendicular to the roadway surface. Slip forming is not permitted.
- CONCRETE:** Use Class II concrete for slightly aggressive environments. Use Class VI concrete for moderately or extremely aggressive environments. Concrete will be in accordance with Specification Section 346.
- REINFORCING STEEL:** Provide Grade 60 reinforcing steel in accordance with Specification Section 931. Dowel Load Transfer Devices will be ASTM A 36 smooth round bar and hot-dip galvanized in accordance with Specification Section 962. Install Dowel Load Transfer Devices in accordance with Specification Section 350.
- Construct $\frac{3}{4}$ " Expansion Joints plumb and perpendicular or radial to Gutter Line. Provide at 90'-0" maximum intervals as shown.
- Provide and install Preformed Expansion Joint Filler in accordance with Specification Section 932.
- Construct $\frac{1}{2}$ " V-Grooves plumb and provide at 30'-0" maximum intervals as shown. Space V-Grooves equally between $\frac{3}{4}$ " Expansion Joints and/or Begin or End Trench Footing. V-Groove locations are to coincide with V-Groove locations in the Railing/Sound Barrier.
- FILL REQUIREMENTS:** Fill is required a distance of 4'-0" on both sides for the entire depth of the trench footing. See Typical Section for details.
- Match Cross Slope of Travel Lane or Shoulder.
- Spacing shown is along the Gutter Line.
- Work this Standard Drawing with one or both of the following:
 - Index No. 5210 - Traffic Railing/Sound Barrier (8'-0").
 - Index No. 5211 - Traffic Railing/Sound Barrier (14'-0").

LEGEND: SW = Traffic Railing Barrier/Soundwall

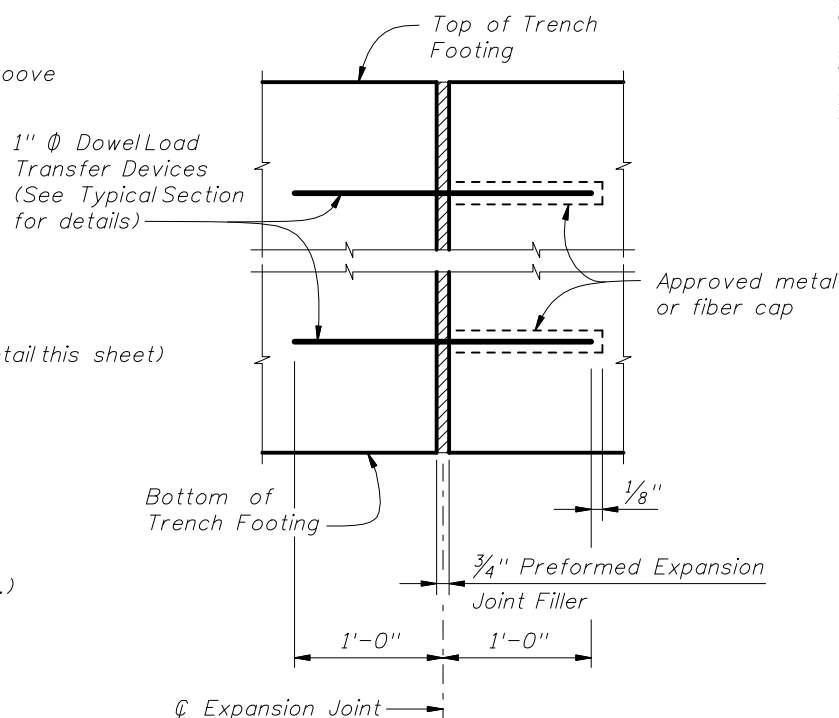
ESTIMATED TRENCH FOOTING QUANTITIES

| ITEM | UNIT | QUANTITY | |
|-------------------------------------|-------|----------|-----------|
| | | 8'-0" SW | 14'-0" SW |
| Concrete (Footing) | CY/FT | 0.336 | 0.439 |
| Reinforcing Steel (Typical) | LB/FT | 56.84 | 69.36 |
| Additional Reinf. @ Expansion Joint | LB | 32.04 | 42.72 |

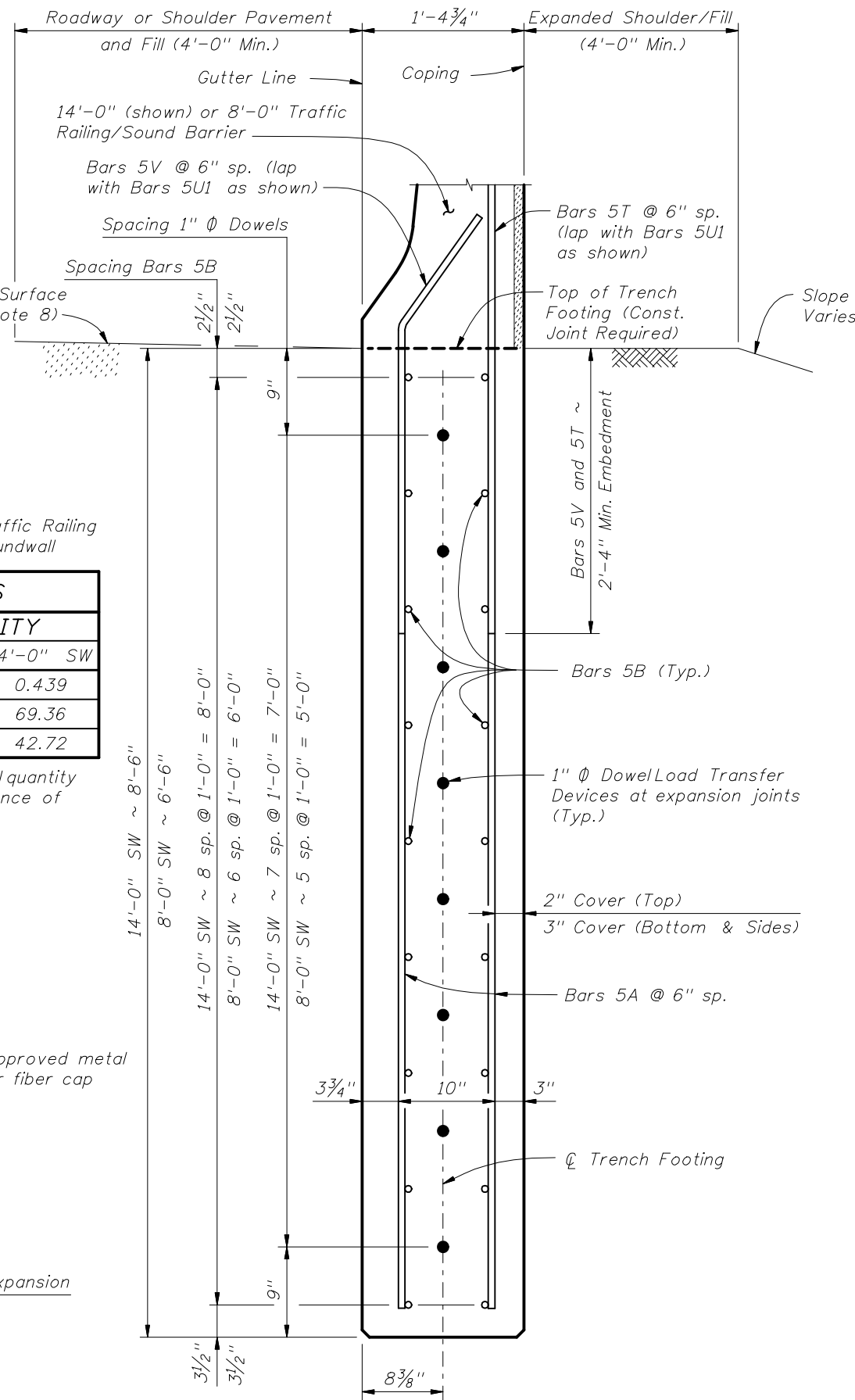
(Subtract 12.69 lb/ft from typical reinforcing steel quantity shown on Index No. 5210 to account for the absence of Stirrup Bars 5V and 5S1 in Trench Footings.)



DETAIL "A"
(Showing Locations of $\frac{1}{2}$ " V-Grooves and $\frac{3}{4}$ " Preformed Expansion Joint Filler)



EXPANSION JOINT DETAIL
(Trench Footing expansion joints are required at $\frac{3}{4}$ " open joints in Traffic Railing/Sound Barrier)



TYPICAL SECTION THRU TRENCH FOOTING
(Bars 5P, 5R and 5S1 in Traffic Railing Barrier/Soundwall not shown for clarity)



2010 FDOT Design Standards

**TRAFFIC RAILING/SOUND BARRIER
TRENCH FOOTING**

| | |
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NOTES

SPECIFICATIONS:

1. General Specifications:

The Florida Department of Transportation "Standard Specifications for Road and Bridge Construction", Current Edition and Supplements as Amended.

2. Design Specifications:

- Florida Department of Transportation (FDOT) "Structures Design Guidelines", Current Edition.
- American Association of State Highway and Transportation Officials (AASHTO) "LRFD Bridge Design Specifications", Current Edition.
- AASHTO-AGC-ARTBA Task Force 27 (Ground Modification Techniques), "Insitu Soil Improvement Techniques", January 1990.

DESIGN CRITERIA:

- Design is based on the assumption that the material contained within the reinforced soil volume, methods of construction and quality of prefabricated materials are in accordance with Specification Section 548 and the reinforced backfill is free of subsurface drainage of water (seepage).
- It is the responsibility of the Engineer of Record to determine that the maximum factored bearing pressure shown for the wall does not exceed the factored bearing resistance of the foundation for that specific wall location.
- The Wall Company is responsible for internal stability of the wall. External stability design, including foundation and slope stability, is the responsibility of the Engineer of Record.

SOIL PARAMETERS:

- See Wall Control Drawings for soil characteristics of foundation material to be used in the design of the wall system. The Contractor will provide soil design parameters for backfill material based on the actual soil characteristics utilized at the site. Provide the values of unit weight, cohesion and internal friction angle in the Shop Drawings.

MATERIALS:

- Concrete class and minimum compressive strength (f'c):
 - Except for precast wall facing panels and leveling pads, use Class II concrete for slightly aggressive environments and Class IV concrete for moderately or extremely aggressive environments. Provide all concrete, except for precast wall facing panels and leveling pads in accordance with Specification Section 346. Provide concrete for precast wall facing panels and leveling pads in accordance with Specification Section 548.
 - For precast wall facing panels only, see Wall Control Drawings.
- Provide reinforcing steel for systems with non-metallic soil reinforcement and metallic soil reinforcement above the 100 year flood elevation in accordance with Specification Section 548. For reinforcing steel requirements for systems with metallic soil reinforcement below the 100 year flood elevation see Wall Company Drawings.
- Provide soil reinforcement in accordance with Specification Section 548.
- Payment for Dowel Bars 4D used with precast or C.I.P. coping will be made under Retaining Wall System (Permanent).
- For additional material notes see Wall Company General Notes.

CONSTRUCTION:

- Walls will be constructed in accordance with Specification Section 548 and the Wall Company's instructions.
- For location and alignment of retaining walls, see Wall Control Drawings.
- If present, consider in design and analysis and locate manholes and drop inlets as shown on wall elevations.
- Refer to Wall Control Drawings of individual walls for minimum reinforcement strip/mesh length, factored bearing resistances, minimum wall embedment and anticipated long term and differential settlements.
- The Contractor is responsible for water retention as needed during construction.
- It is the Contractor's responsibility to determine the location of any guardrail posts behind retaining wall panels. Prior to placement of the top layer of soil reinforcement, individual reinforcing strips/mesh may be skewed (15° maximum) to avoid the post locations if authorized by the Engineer. No cutting of soil reinforcement is allowed unless shown on Shop Drawings and approved by the Engineer. Any damage done to the soil reinforcement due to installation of the guardrail will be repaired by the Contractor at the Contractor's expense. Repair method will be approved by the Engineer.

- If existing or future structures, pipes, foundations or guardrail posts within the reinforced soil volume interfere with the normal placement of soil reinforcement and specific directions have not been provided on the plans, the Contractor will notify the Engineer to determine what course of action should be taken.
- The Contractor is responsible for gradually displacing upper layer(s) of soil reinforcement downward (15° maximum from horizontal) to avoid cutting soil reinforcement and conflicts with paving and subgrade preparation. The Contractor's attention is directed especially to situations where roadway superelevation and/or soil mixing are anticipated.
- Finish sidewalks in accordance with Specification Section 522.
- All exposed concrete surfaces will receive a Class 5 Applied Finish Coating in accordance with Specification Section 400. Refer to Typical Sections on Sheet 2 and the following notes for limits of applied finish:
 - The inside, backside and top of Traffic Railings and Pedestrian/Bicycle Railings.
 - Exposed surfaces of coping on top of retaining wall. Other coatings, colors or textures will be applied as required in the Wall Control Drawings.
- For concrete facing panel surface treatment, see Wall Control Drawings. Extend surface treatment a minimum of 6" below final ground line.
- Piles within the soil volume will be driven prior to construction of the retaining wall. The portion of the pile within the soil volume will be wrapped with polyethylene sheeting in accordance with Specification Section 459. Drive piles located within the soil volume prior to construction of the retaining wall, unless a method to protect the structure, acceptable to both the Engineer and Wall Company, is proposed and approved in writing.
- A structural extension of the connection of the retaining wall panel to soil reinforcement will be used whenever necessary to avoid cutting or excessive skewing (greater than 15°) of the soil reinforcement around obstructions (i.e. piles, pipes, etc.).
- For Mechanically Stabilized Earth (MSE) Walls, steps in leveling pads will occur at panel interfaces. Panels will not cantilever more than 2" past the end of the leveling pad.
- The top of the leveling pad or footing will be 2'-0" minimum below final ground line.
- The height of panels in the bottom course of MSE Walls must not be less than half the height of a standard panel.

QUALIFIED PRODUCTS LIST:

- Manufacturers seeking approval of proprietary retaining wall systems for inclusion on the Qualified Products List as pre-approved wall system suppliers must submit a QPL Product Evaluation Application along with design documentation, vendor drawings, wall system construction manual and other information as required in the Retaining Wall System QPL Acceptance Criteria showing the proprietary wall system is designed to meet all specified requirements. Project specific Shop Drawings are required for QPL approved wall systems (see Shop Drawing Requirements below).

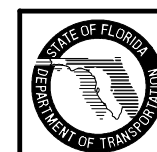
SHOP DRAWING REQUIREMENTS

The successful bidder will submit the final design of the wall for review as Shop Drawings. Details and Design Criteria shown on Shop Drawings shall not deviate from those shown on the approved QPL Vendors Drawings. The Shop Drawings will include detailed design computations and all details, dimensions and quantities necessary to construct the wall. The design and fully detailed plans will be prepared as required by current FDOT standards at time of bidding and will include, but not be limited to, presentation of required information as follows:

- Provide an elevation view of the wall indicating:
 - Elevations/Stations at the top of wall, top of leveling pad or footing and bottom of footing for Begin/End Retaining Wall, all breaks in vertical alignment, all whole stations and every 25 foot station increments.
 - Panel designations and the length, size and designation of soil reinforcement in elevation view.
 - Location of the proposed final ground line.
- Provide a plan view detailing the horizontal alignment and offsets from the horizontal control line(s) to the exterior face of the wall.
- Show in plan and elevation all utilities, sign supports, light pole pilasters, drainage structures, drainage pipes, etc. that affect the wall(s). Locate in the plan view all piles within the reinforced earth volume, including those for future widening, as shown on Foundation Layout Drawings.

- Provide general notes and design parameters on the Shop Drawings. Include design soil characteristics and all other pertinent notes required for design and construction of the walls. Provide factored bearing resistances and factored bearing pressures for each wall height increment.
- Show the limits of the soil volume (see Typical Sections at right for details).
- Show complete details of each precast wall facing panel, slip joint and all other concrete elements incorporated in the wall. Include reinforcing bar size and spacing, complete bar bending diagrams and required embedment(s).
- Show complete details of leveling pads and/or footings, including all steps in leveling pads.
- Show complete details for construction of wall around obstructions. Show details for placement of soil reinforcement at acute corners and at interfaces with temporary walls.
- Show complete details addressing conflicts between soil reinforcement, precast concrete facing panels and embedments in the reinforced soil volume. Provide full details of railings, coping, sign supports, light pole pilasters, acute corners, etc.
- Show complete details where walls of different types intersect/influence one another.
- Provide fully detailed design calculations for each wall height increment detailed in the Shop Drawings. Submit Shop Drawings and design calculations signed and sealed by a Professional Engineer registered in the State of Florida.

GENERAL NOTES



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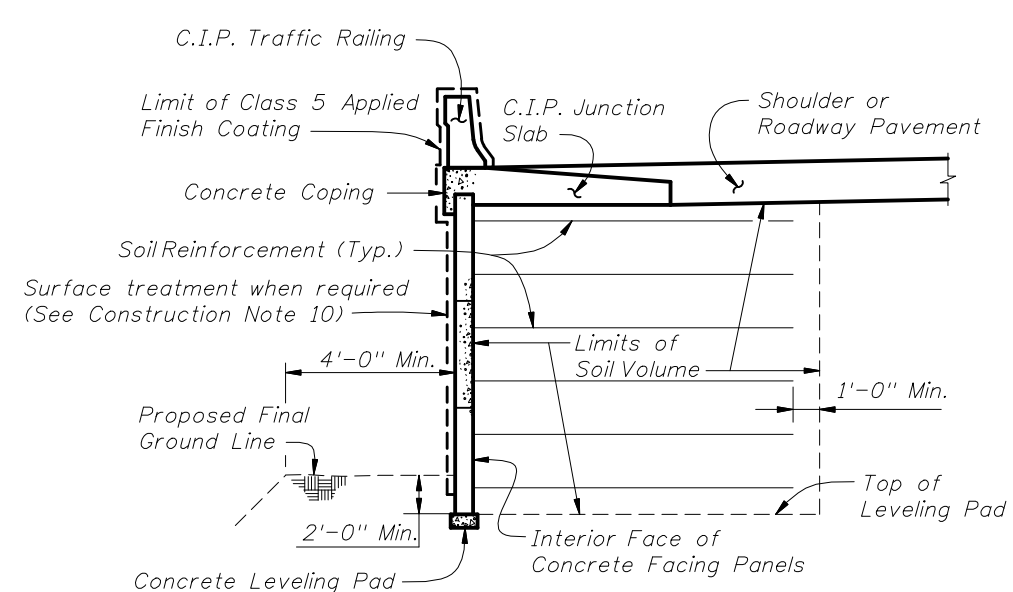
PERMANENT RETAINING WALL SYSTEMS

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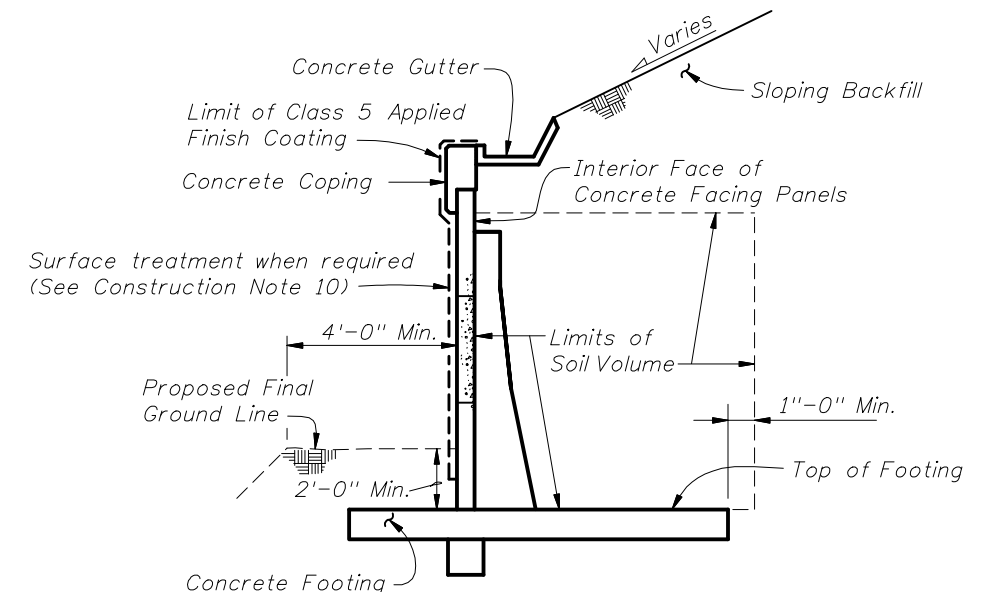
FDOT WALL TYPE TABLE NOTES

1. Listed in the Plans; Wall Type combines both Settlement Limitations and Durability Factors.
2. Amount of wall settlements that will occur in its design life and includes both short and long term settlements. Short term settlements occur during wall construction and may contain elastic deformation and densification settlement. Long term settlements continue after the completion of the wall and may include consolidation and secondary consolidation/creep settlements.
3. Settlements along the alignment of and perpendicular to the wall face; usually are not uniform. Expansion joints for the cast-in-place walls and slip joints for MSE walls are provided to control wall and wall panel cracks, respectively.
4. Includes all underground walls and walls submerged in water.
5. For concrete requirements, see Specification Section 346 using slightly aggressive environment.
6. For concrete requirements, see Specification Section 346 using extremely aggressive environment.
7. "Other Allowable Wall Types" listed with an "✓", have Settlement Limitations and Durability Factors greater than those required by the "Wall Type" (Column 1).

| TABLE OF FDOT WALL TYPES | | | | | | | | | | | | | | | |
|--------------------------|----------|-----------------------------------|--------------------|-----------------|-----------------|-----------------|---|----|----|----|----|----|----|----|----|
| Wall Type ¹ | QPL Item | Typical Wall Construction | Durability Factors | | | | Other Allowable Wall Types ⁷ | | | | | | | | |
| | | | Concrete Cover | Concrete Class | Calcium Nitrate | Soil Strap Type | 1A | 1B | 1C | 1D | 2A | 2B | 2C | 2D | 2E |
| Type 1 | No | Cantilever, and Counterfort Walls | Project Specific | | | | Project Specific | | | | | | | | |
| Type 1A | Yes | | 2" | II | No | n/a | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Type 1B | | | 2" | IV | No | | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | |
| Type 1C | | | 3" | IV | No | | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | |
| Type 1D ⁴ | | | 3" | IV | Yes | | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | |
| Type 2 | No | MSE Walls | Project Specific | | | | Project Specific | | | | | | | | |
| Type 2A | Yes | | 2" | II ⁵ | No | metal | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | | |
| Type 2B | | | 2" | IV ⁵ | No | | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | | |
| Type 2C | | | 3" | IV ⁵ | No | | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | | |
| Type 2D | | | 3" | IV ⁶ | Yes | | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | | |
| Type 2E | | | 3" | IV ⁶ | No | | plastic | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | |
| Type 2F ⁴ | | | 3" | IV ⁶ | Yes | | | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | |
| Type 3 | Yes | Temporary Walls | n/a | | | metal/plastic | | | | | | | | | |

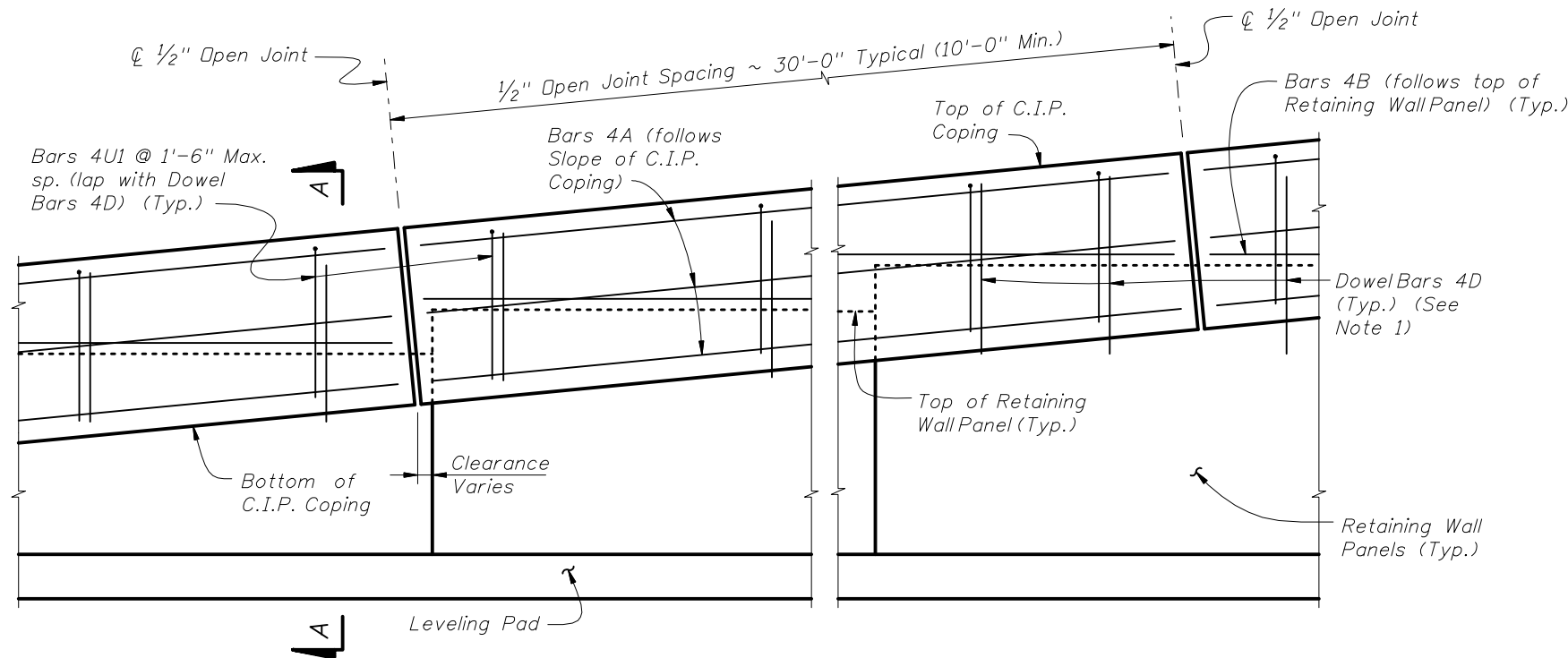


TYPICAL RETAINING WALL SECTION WITH A TRAFFIC RAILING (MSE Wall Type Shown, Others Similar) (Showing Limits of the Reinforced Soil Volume)

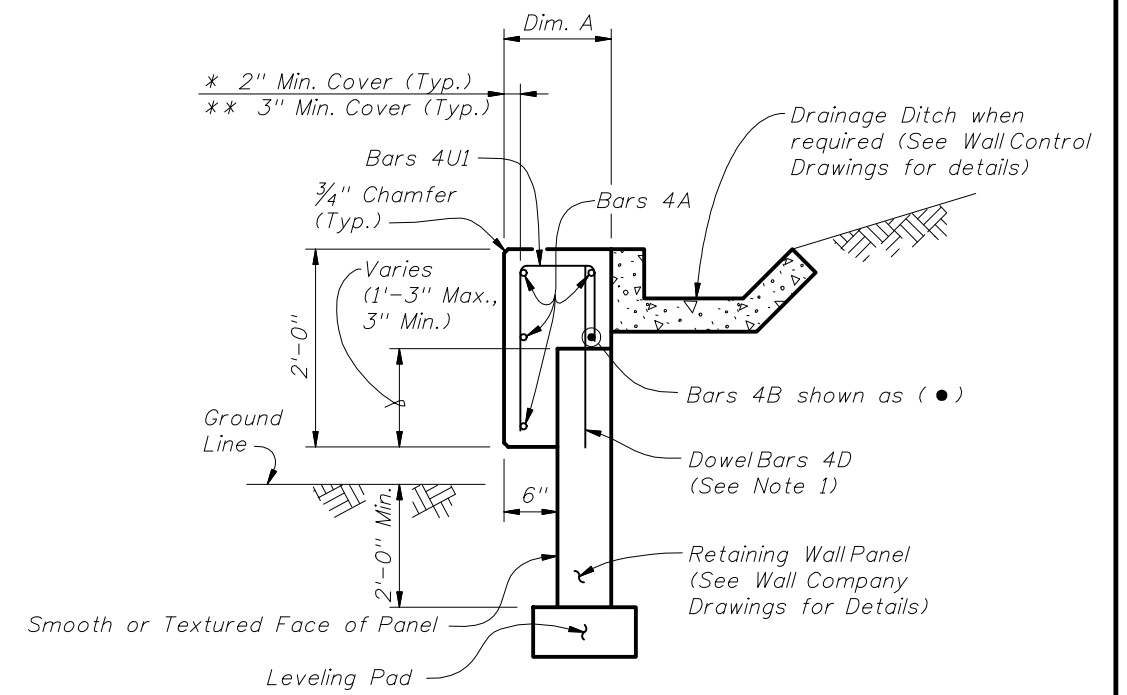


TYPICAL RETAINING WALL SECTION WITHOUT A TRAFFIC RAILING (Counterfort Wall Type Shown, Others Similar) (Showing Limits of the Soil Volume)





C.I.P. COPING - PARTIAL ELEVATION VIEW

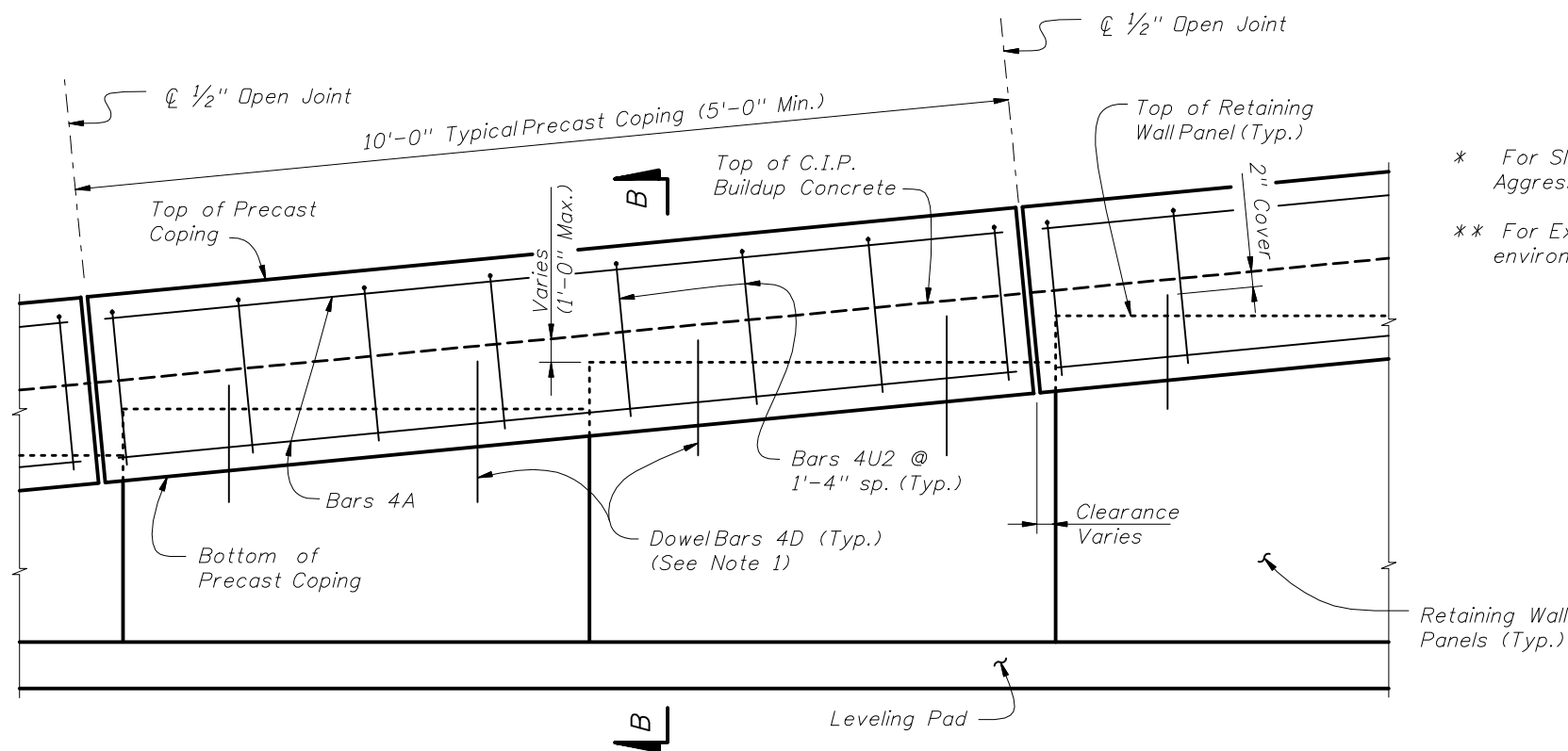


SECTION A-A
C.I.P. COPING

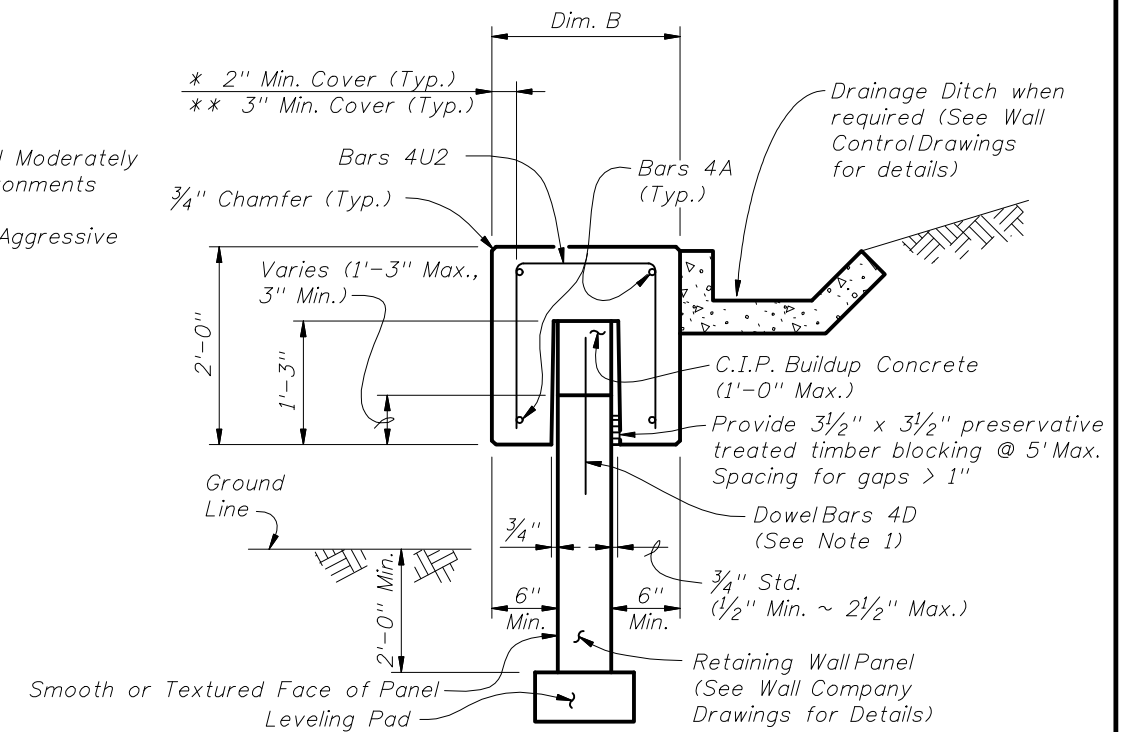
| | |
|--------|--------------------------|
| Dim. A | Panel width + 6" |
| Dim. B | Panel width + 1'-0" Min. |

PRECAST AND C.I.P. COPING NOTES:

1. Dowel Bars 4D extend 1'-0" above the top of retaining wall panel. Field cut as necessary to maintain 2" minimum cover. See Wall Company Drawings for number and spacing of Dowel Bars 4D.



PRECAST COPING - PARTIAL ELEVATION VIEW



SECTION B-B
PRECAST COPING

PRECAST AND C.I.P. COPING DETAILS

- * For Slightly and Moderately Aggressive environments
- ** For Extremely Aggressive environments.



REINFORCING STEEL BENDING DIAGRAMS - PRECAST AND C.I.P. COPINGS

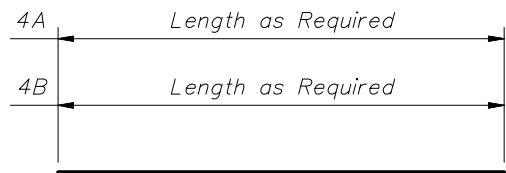
BILL OF REINFORCING STEEL

| MARK | SIZE | LENGTH # S or M | LENGTH # E |
|------|------|------------------|------------------|
| A | 4 | AS REQD. | AS REQD. |
| B | 4 | AS REQD. | AS REQD. |
| D | 4 | 2'-0" | 2'-0" |
| U1 | 4 | Panel width + 4" | Panel width + 3" |
| U2 | 4 | Panel width + 8" | Panel width + 6" |
| U3 | 4 | Panel width + 4" | Panel width + 3" |

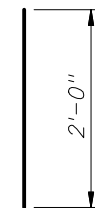
REINFORCING STEEL NOTES:

- All bar dimensions in the bending diagrams are out to out.
- All reinforcing steel at the open joints will have a 2" minimum cover.
- Bars 4A may be continuous or spliced at the construction joints. Lap splices for Bars 4A will be a minimum of 1'-8".
- The Contractor may use Welded Wire Reinforcement when approved by the Engineer. Welded Wire Reinforcement will conform to ASTM A 497.

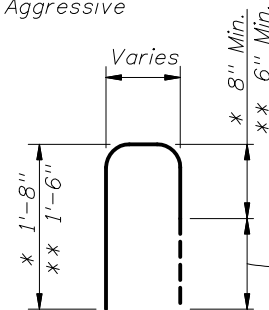
S = Slightly Aggressive
 M = Moderately Aggressive
 E = Extremely Aggressive



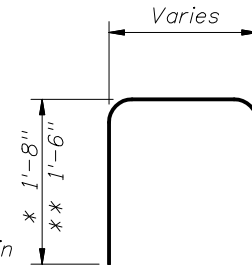
BARS 4A & 4B



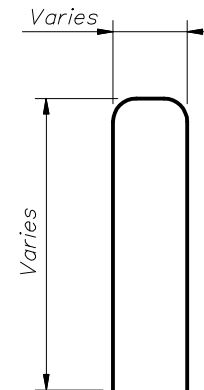
DOWEL BAR 4D



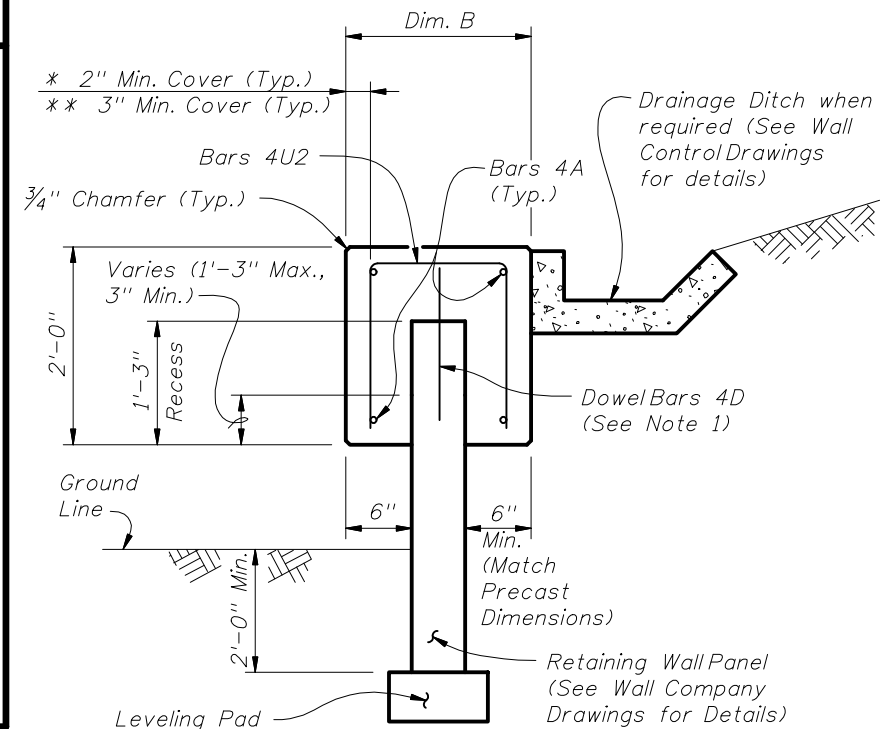
BAR 4U1



BAR 4U2

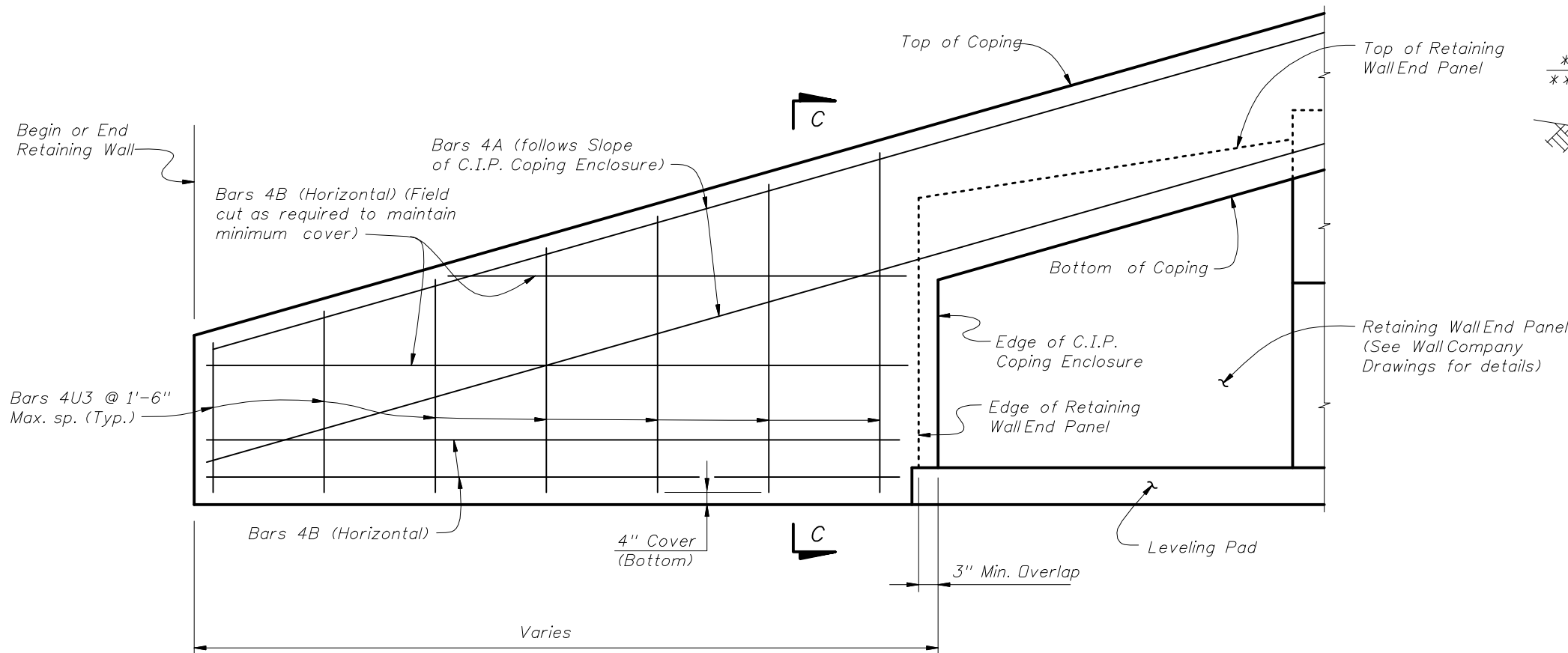


BAR 4U3

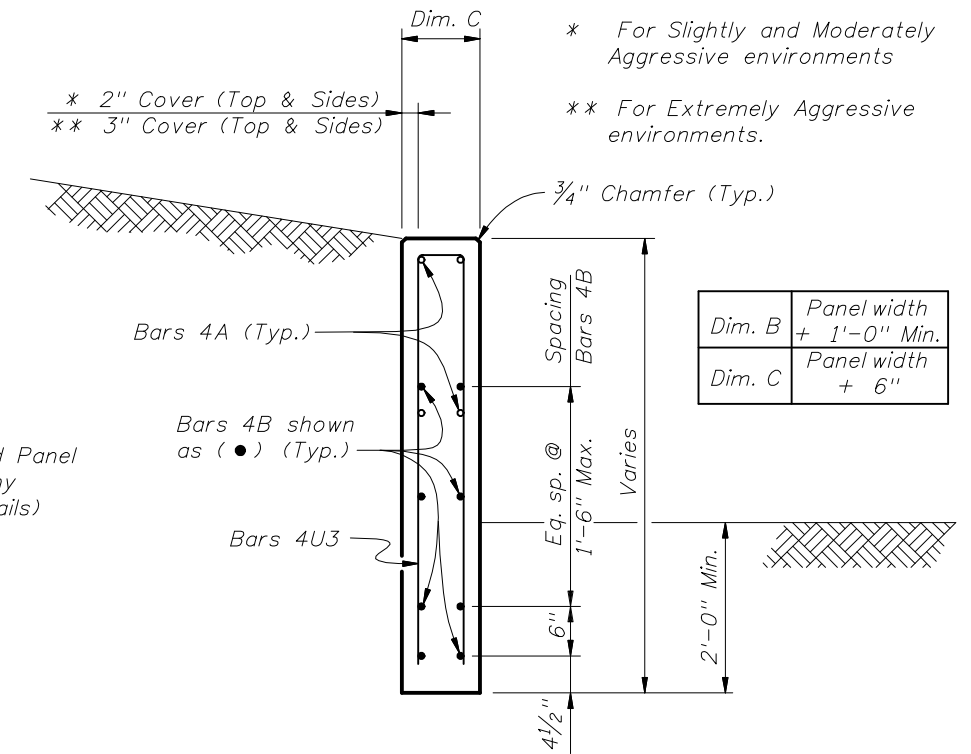


C.I.P. COPING USED WITH PRECAST COPING

Note: When precast coping units do not fit the entire length of the retaining wall, use this similar C.I.P. coping for short portions between precast coping units. This C.I.P. coping may also be used for vertical copings.



C.I.P. COPING ENCLOSURE DETAIL



SECTION C-C

PRECAST AND C.I.P. COPING DETAILS

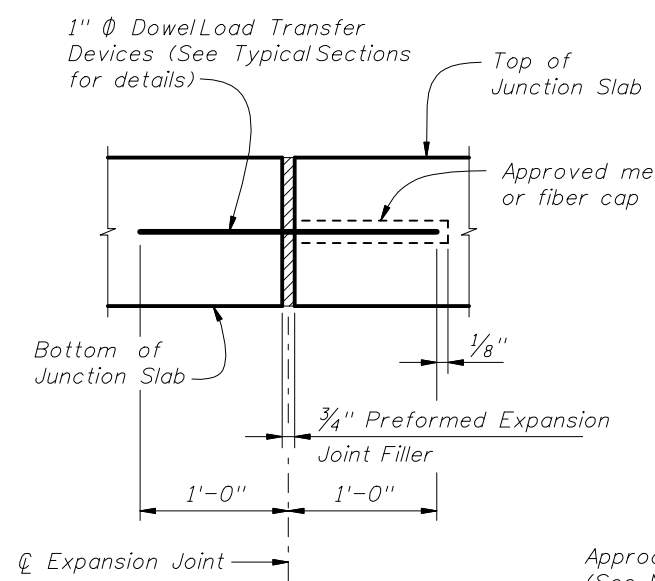


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PERMANENT RETAINING WALL SYSTEMS

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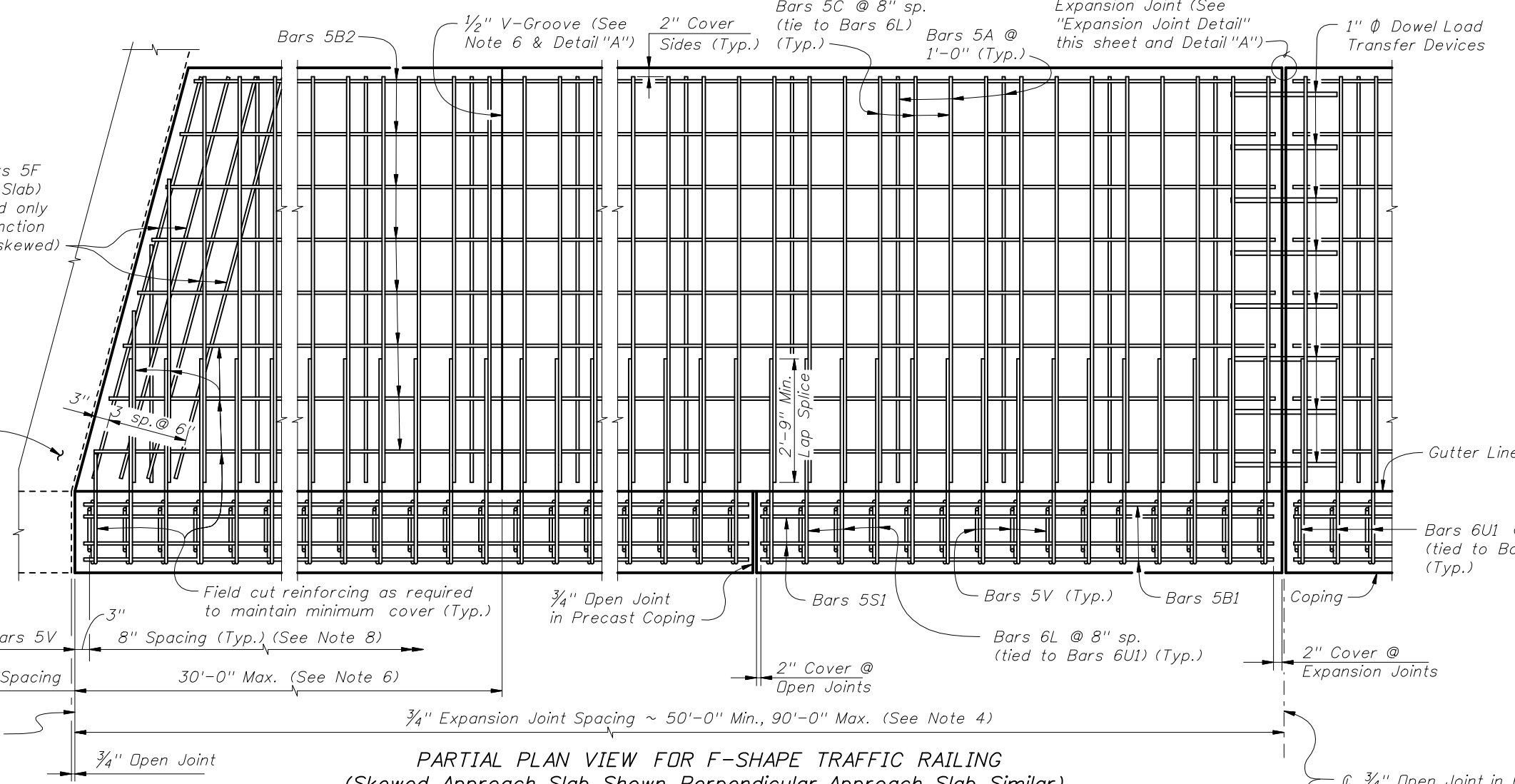
Index No. 5300



EXPANSION JOINT DETAIL

(Junction Slab expansion joints are to coincide with 3/4" open joints in Traffic Railing)

CROSS REFERENCE: For Detail "A", see Sheet 7 of 19.

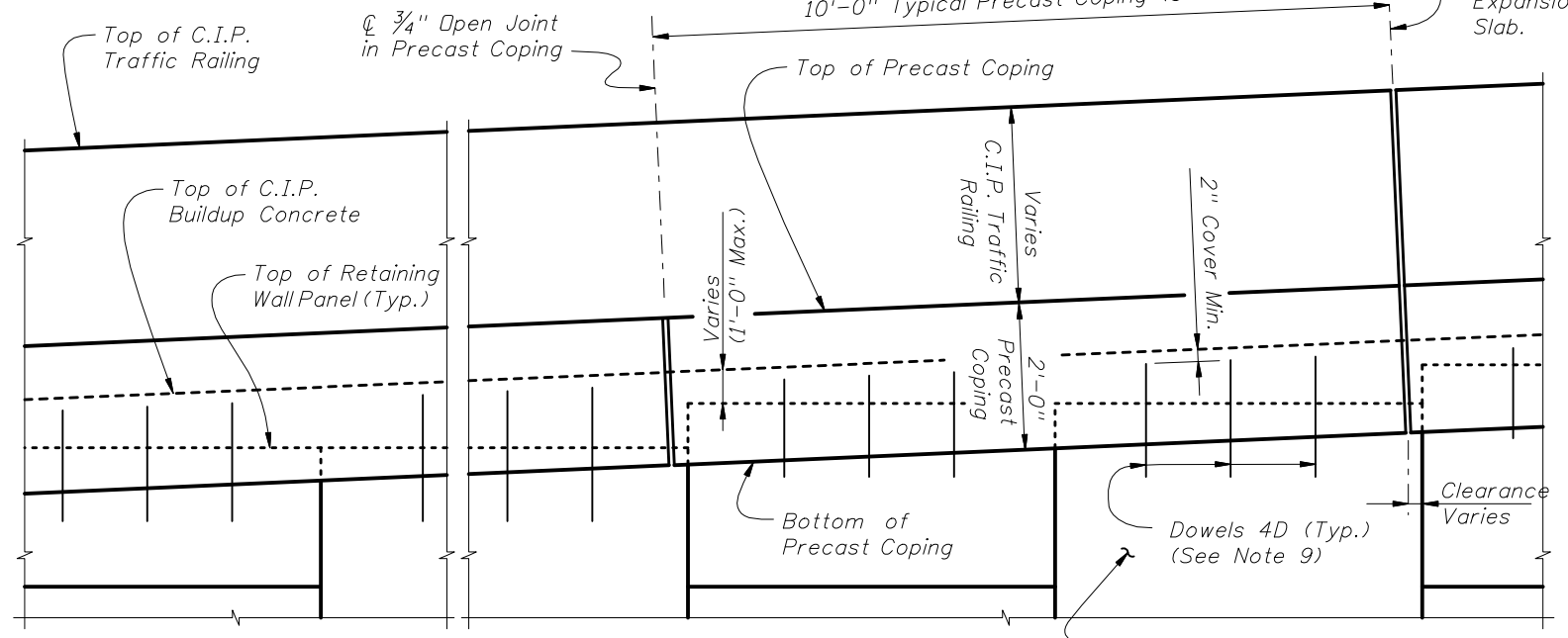


PARTIAL PLAN VIEW FOR F-SHAPE TRAFFIC RAILING

(Skewed Approach Slab Shown, Perpendicular Approach Slab Similar)
(Precast Coping Shown, C.I.P. Coping Similar) (Traffic Railing not Shown for Clarity)

JUNCTION SLAB NOTES:

1. CONSTRUCTION REQUIREMENTS: Construct the Junction Slab level transversely and expansion joints plumb; do not construct the junction slab or C.I.P. coping perpendicular to the roadway surface. Slip forming is not permitted.
2. APPLICATIONS: This junction slab is only applicable for a TL-4 crash test rating. Precast Traffic Railings are not allowed.
3. REINFORCING STEEL: Dowel Load Transfer Devices will be ASTM A 36 smooth round bar and hot-dip galvanized in accordance with Specification Section 962. Install Dowel Load Transfer Devices in accordance with Specification Section 350.
4. Construct 3/4" Expansion Joints in junction slabs and C.I.P. copings plumb and perpendicular or radial to the Gutter Line. Provide at 90'-0" maximum intervals as shown.
5. Provide and install Preformed Expansion Joint Filler in accordance with Specification Section 932.
6. Construct 1/2" V-Grooves in junction slabs and C.I.P. copings plumb and provide at 30'-0" maximum intervals as shown. Space V-Grooves equally between 3/4" Expansion Joints and/or Begin or End Junction Slab. V-Groove locations are to coincide with V-Groove locations in the Traffic Railing.
7. FILL REQUIREMENTS: Shoulder or Roadway Pavement or Fill is required on top of the junction slab for its entire length on the traffic side of the Traffic Railing. See Typical Sections on Sheet Nos. 6 and 7 of 19 for details.
8. Spacing shown is along the Gutter Line.
9. For Precast Coping only, Dowel Bars 4D are to extend 1'-0" above the top of retaining wall panel. Field cut as necessary to maintain 2" minimum cover to the top of the buildup concrete. See Wall Company Drawings for number and spacing of Dowel Bars 4D.
10. Work this Index with the following:
Index No. 420 - Traffic Railing - (32" F-Shape)
Index No. 425 - Traffic Railing - (42" F-Shape).
11. The following Indexes contain details of the intersection of the retaining wall at approach slabs:
Index No. 20900 - Approach Slabs (Flexible Pavement Approaches)
Index No. 20910 - Approach Slabs (Rigid Pavement Approaches)



PARTIAL ELEVATION VIEW

(Precast Coping and Junction Slab Reinforcing not Shown for Clarity)
(Precast Coping Shown, C.I.P. Coping Similar)

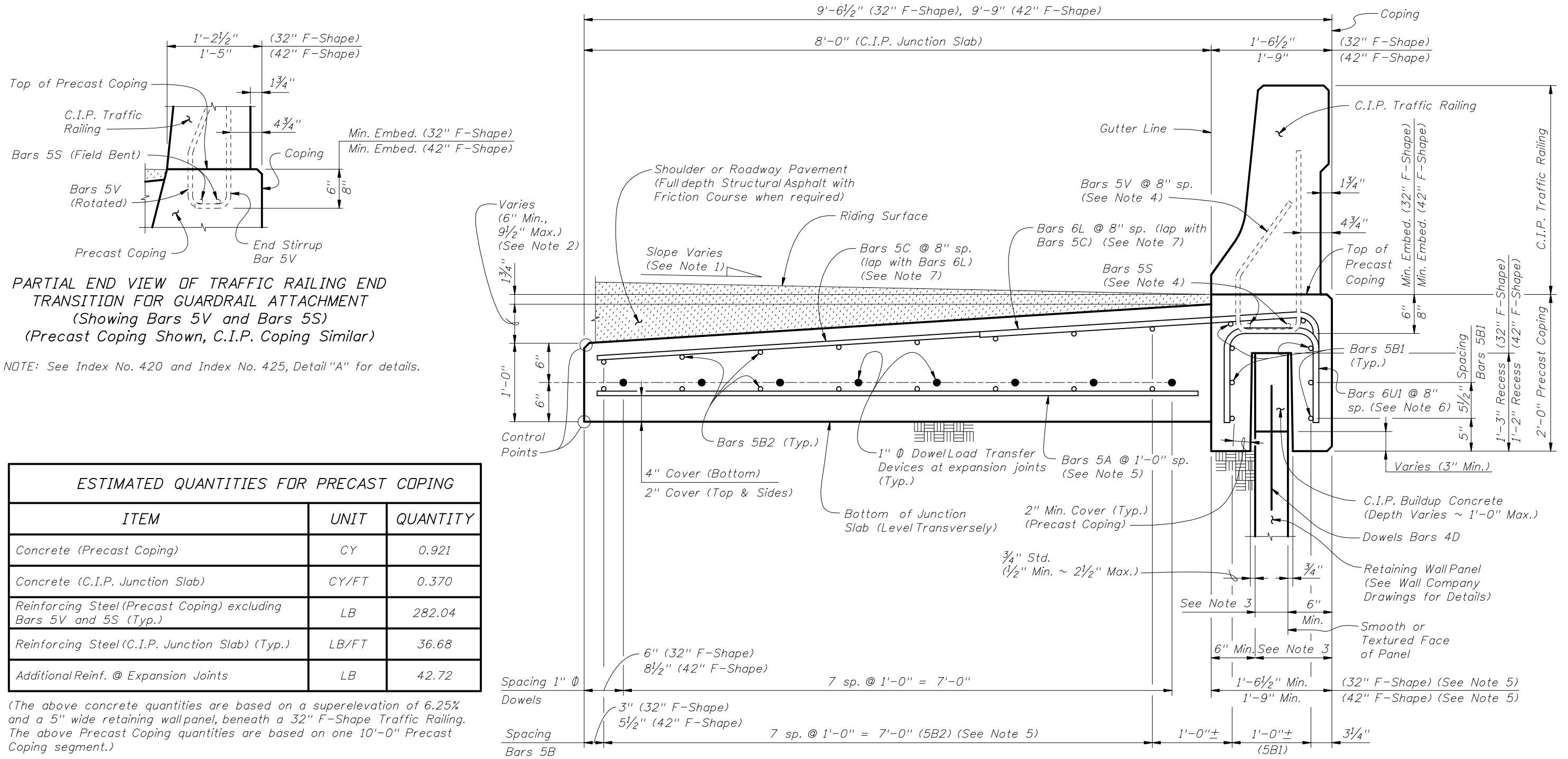
PRECAST OR C.I.P. COPING WITH C.I.P. JUNCTION SLAB DETAILS



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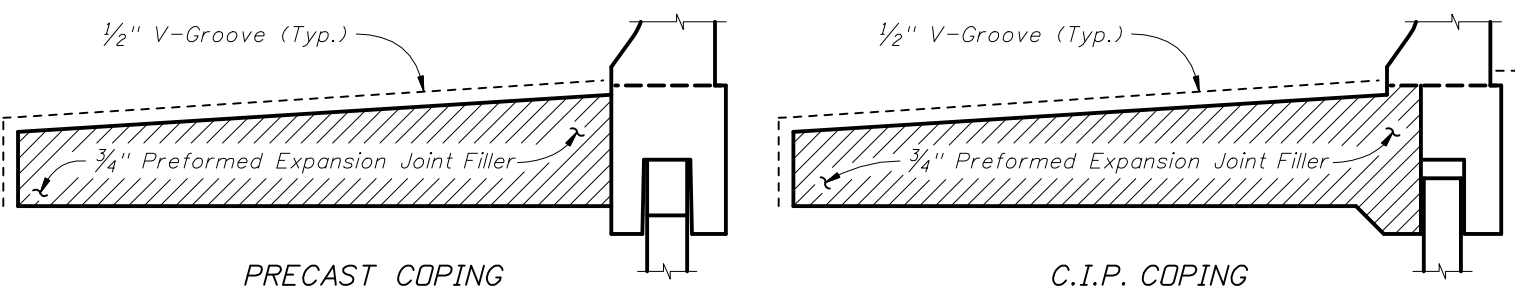
PARTIAL END VIEW OF TRAFFIC RAILING END TRANSITION FOR GUARDRAIL ATTACHMENT (Showing Bars 5V and Bars 5S) (Precast Coping Shown, C.I.P. Coping Similar)

NOTE: See Index No. 420 and Index No. 425, Detail "A" for details.

| ESTIMATED QUANTITIES FOR PRECAST COPING | | |
|--|-------|----------|
| ITEM | UNIT | QUANTITY |
| Concrete (Precast Coping) | CY | 0.921 |
| Concrete (C.I.P. Junction Slab) | CY/FT | 0.370 |
| Reinforcing Steel (Precast Coping) excluding Bars 5V and 5S (Typ.) | LB | 282.04 |
| Reinforcing Steel (C.I.P. Junction Slab) (Typ.) | LB/FT | 36.68 |
| Additional Reinf. @ Expansion Joints | LB | 42.72 |

(The above concrete quantities are based on a superelevation of 6.25% and a 5" wide retaining wall panel, beneath a 32" F-Shape Traffic Railing. The above Precast Coping quantities are based on one 10'-0" Precast Coping segment.)

TYPICAL SECTION THRU PRECAST COPING WITH C.I.P. JUNCTION SLAB AND RETAINING WALL AT EXPANSION JOINTS



DETAIL "A"

(Showing Locations of 1/2" V-Grooves and 3/4" Preformed Expansion Joint Filler)

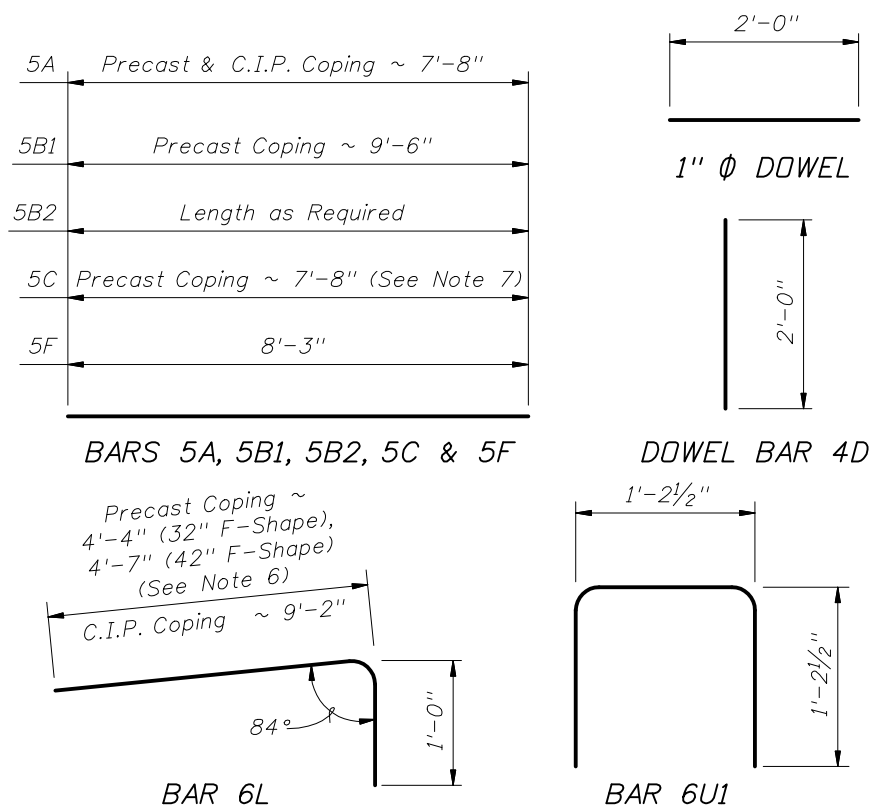
- JUNCTION SLAB NOTES:**
1. Match Cross Slope of Travel Lane or Shoulder.
 2. The minimum dimension of 6" corresponds to a superelevation of 6.25%. For superelevations exceeding 6.25%, increase this dimension (i.e., shift control points down) as required to match roadway superelevation.
 3. Actual width varies depending on type of Retaining Wall used.
 4. See Index No. 420 and Index No. 425 for Bars 5S and 5V.
 5. The Precast Coping width is based on a maximum 6 1/2" wide Retaining Wall Panel. If the Retaining Wall Panel is wider than 6 1/2", increase the width by the difference between the two Retaining Wall Panel widths. Increase the length of Bars 6L and decrease the length of Bars 5A & 5C as required when the coping width is increased and adjust spacing of Bars 5B2 as required to maintain 2" minimum cover.
 6. Increase the width (1'-2 1/2") of Bars 6U1 as required to maintain 2" minimum cover when recess width exceeds 8".
 7. At the Contractor's option, mechanical couplers may be used to splice reinforcing. Complete details, including reinforcement lengths are required in the Shop Drawings. Mechanical couplers shall develop 125% of the bar yield strength.

PRECAST OR C.I.P. COPING WITH C.I.P. JUNCTION SLAB DETAILS (F-SHAPE TRAFFIC RAILINGS)

REINFORCING STEEL BENDING DIAGRAMS - JUNCTION SLAB

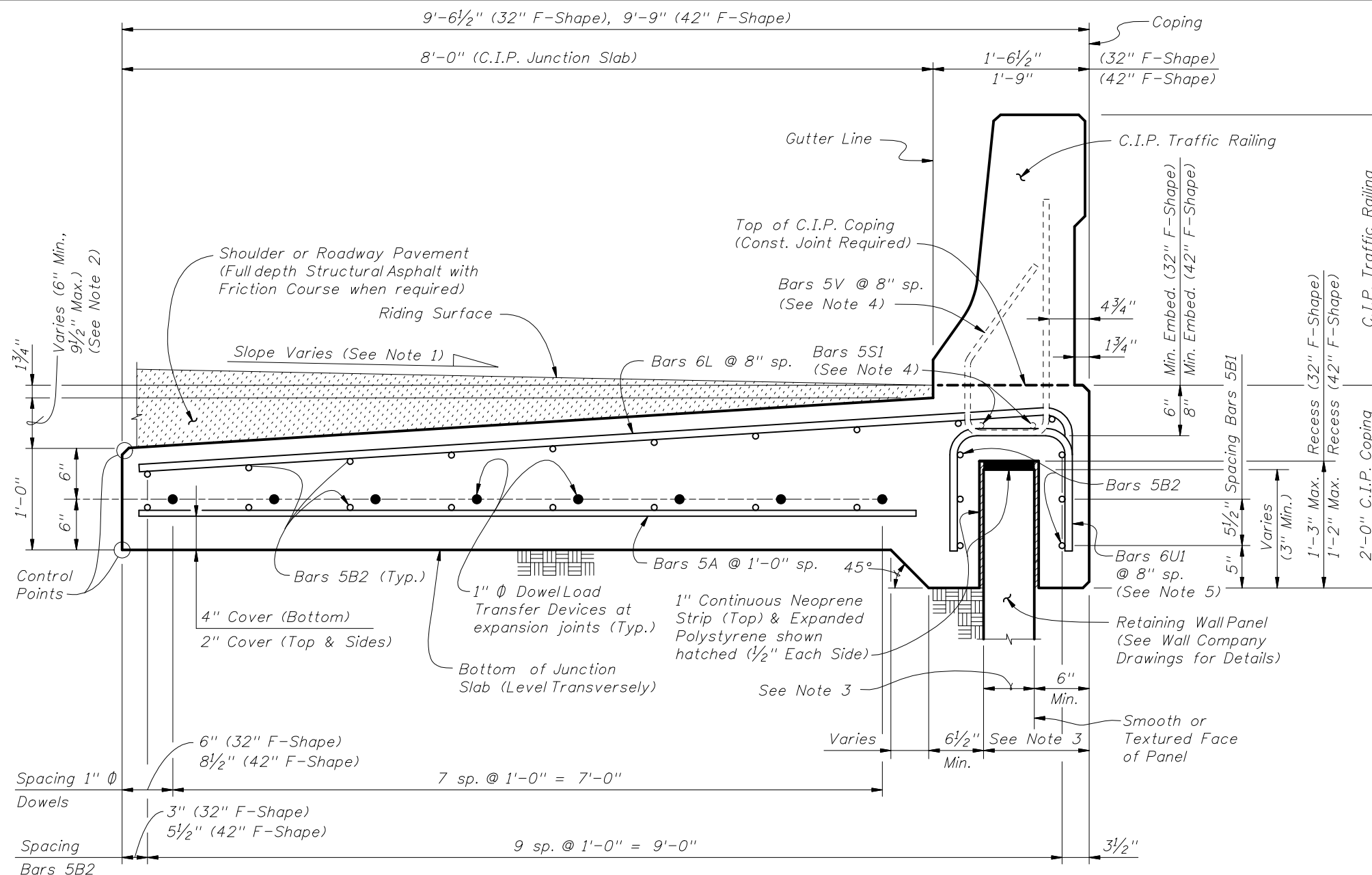
BILL OF REINFORCING STEEL

| MARK | SIZE | LENGTH | | |
|-----------------|------------------|----------------|---------------|---------------|
| | | PRECAST COPING | | C.I.P. COPING |
| | | (32" F-SHAPE) | (42" F-SHAPE) | |
| A | 5 | 7'-8" | 7'-8" | 7'-8" |
| B1 | 5 | 9'-6" | 9'-6" | N/A |
| B2 | 5 | AS REQD. | AS REQD. | AS REQD. |
| C | 5 | 7'-8" | 7'-8" | N/A |
| D | 4 | 2'-0" | 2'-0" | N/A |
| F | 5 | 8'-3" | 8'-3" | 8'-3" |
| L | 6 | 5'-4" | 5'-7" | 10'-2" |
| U1 | 6 | 3'-8" | 3'-8" | 3'-8" |
| 1" ϕ Dowel | Smooth Steel Bar | 2'-0" | 2'-0" | 2'-0" |



REINFORCING STEEL NOTES:

- All bar dimensions in the bending diagrams are out to out.
- All reinforcing steel at expansion joints will have a 2" minimum cover.
- Lap splices for Bars 5B2 will be a minimum of 2'-2".
- For Precast Coping only, lap splice Bars 6L with Bars 5C. Lap splices will be a minimum of 2'-9".
- See Index No. 420 and Index No. 425 for Bars 5S and 5V.
- Dimension shown is for lap splice option. For mechanical coupler option, this dimension is 1'-4 1/2" (32" F-Shape) or 1'-7" (42" F-Shape).
- Dimension shown is for lap splice option. For mechanical coupler option, this dimension is 7'-9".
- The Contractor may use Welded Wire Reinforcement when approved by the Engineer. Welded Wire Reinforcement will conform to ASTM A 497.



TYPICAL SECTION THRU C.I.P. COPING AND JUNCTION SLAB AND RETAINING WALL AT EXPANSION JOINTS

ESTIMATED QUANTITIES FOR C.I.P. COPING

| ITEM | UNIT | QUANTITY |
|---|---------|----------|
| Concrete | CY/Ft. | 0.468 |
| Reinforcing Steel (Typical) excluding Bars 5V and 5S (Typ.) | Lb./Ft. | 64.20 |
| Additional Reinf. @ Expansion Joint | Lb./Ft. | 42.72 |

(The above concrete quantities are based on a superelevation of 6.25% and a 5" wide retaining wall panel, beneath a 32" F-Shape Traffic Railing.)

JUNCTION SLAB NOTES:

- Match Cross Slope of Travel Lane or Shoulder.
- The minimum dimension of 6" corresponds to a superelevation of 6.25%. For superelevations exceeding 6.25%, increase this dimension (i.e., shift control points down) as required to match roadway superelevation.
- Actual width varies depending on type of Retaining Wall used.
- See Index No. 420 and Index No. 425 for Bars 5S and 5V.
- Increase the width (1'-2 1/2") of Bars 6U1 as required to maintain 2" minimum cover when recess width exceeds 8".

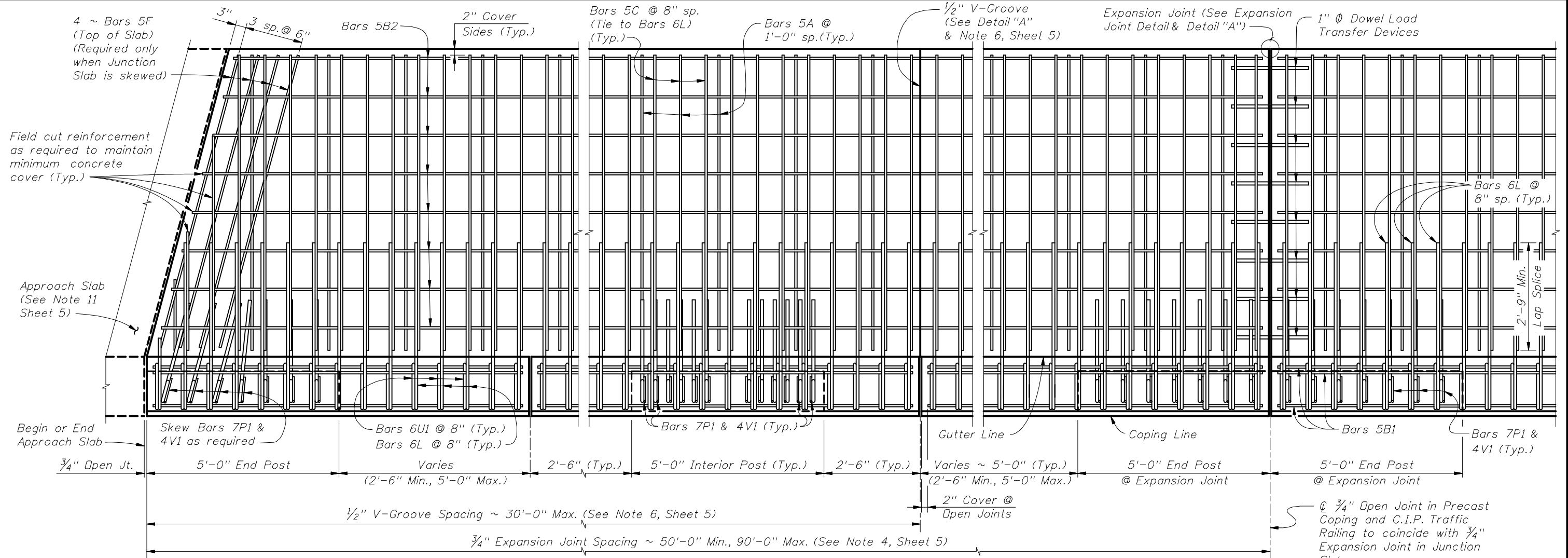
PRECAST OR C.I.P. COPING WITH C.I.P. JUNCTION SLAB DETAILS (F-SHAPE TRAFFIC RAILINGS)



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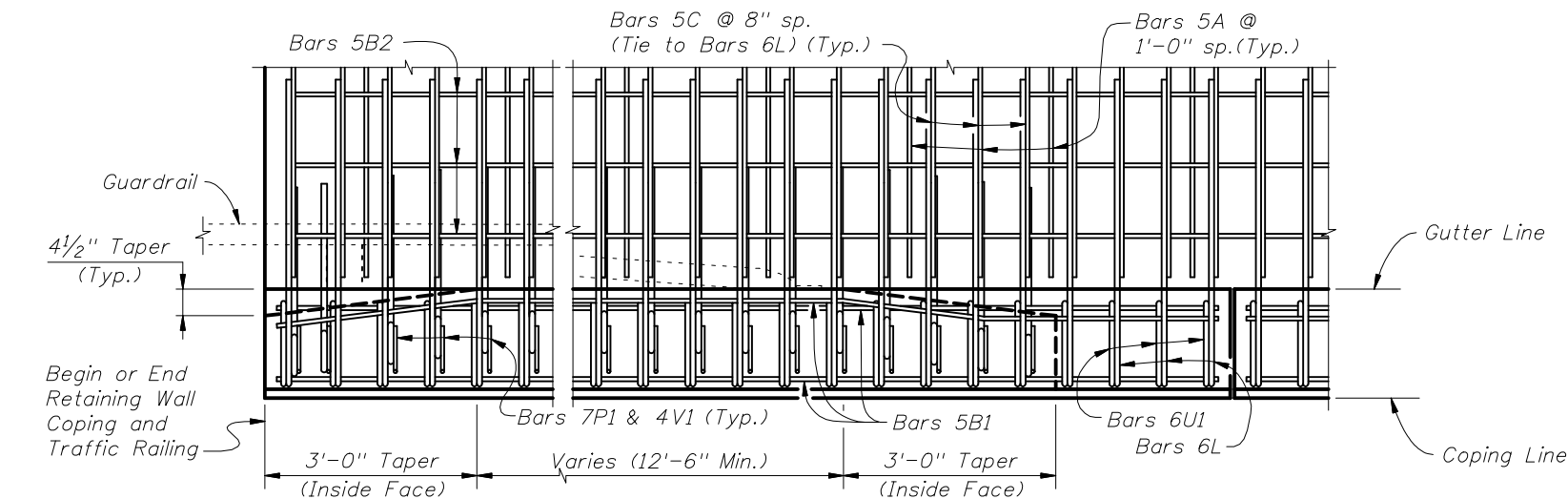
PERMANENT RETAINING WALL SYSTEMS

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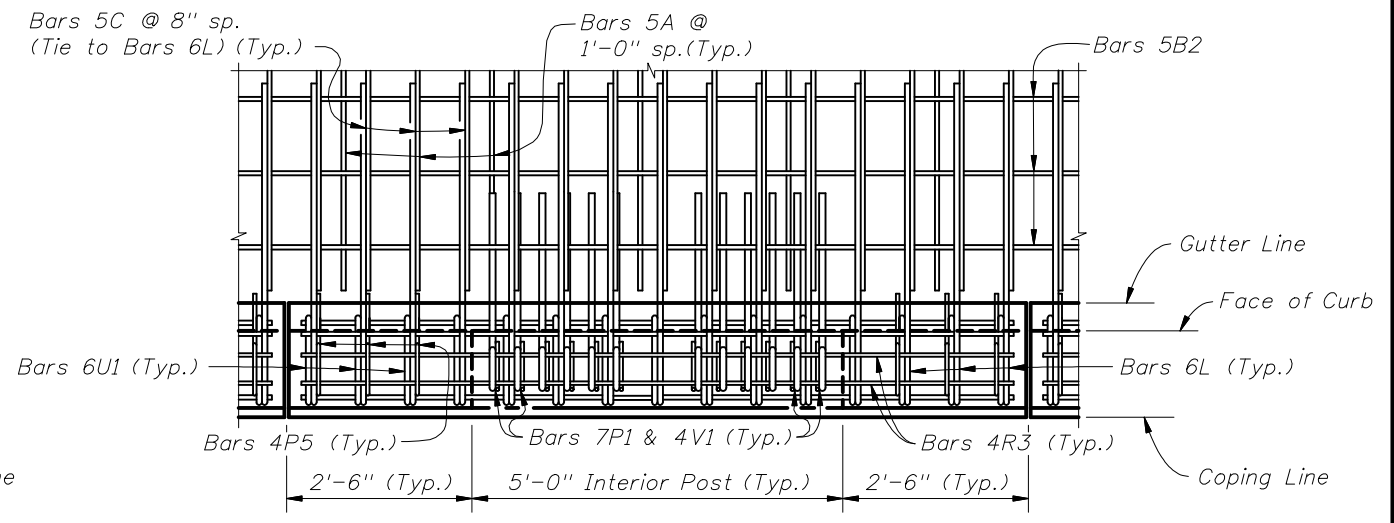


PLAN VIEW
 (Skewed Approach Slab shown, Perpendicular Approach Slab similar)
 (Precast Coping shown, C.I.P. Coping similar)
 (Traffic Railing reinforcement not shown, except for Bars 7P1 & 4V1)

- CROSS REFERENCES:**
1. For Detail "A" see Sheet 6 of 19.
 2. For "Expansion Joint Detail" see Sheet 5 of 19.
 3. For "Junction Slab Notes" see Sheet 5 of 19.



PARTIAL PLAN VIEW OF GUARDRAIL TRANSITION AT BEGIN OR END RETAINING WALL
 (Precast Coping shown, C.I.P. Coping similar)
 (Traffic Railing reinforcement not shown, except for Bars 7P1 & 4V1)



PARTIAL PLAN VIEW OF COPING WITH CURB
 (Precast Coping shown, C.I.P. Coping similar)
 (Traffic Railing reinforcement not shown, except for Bars 4P5, 4R3, 7P1 & 4V1)

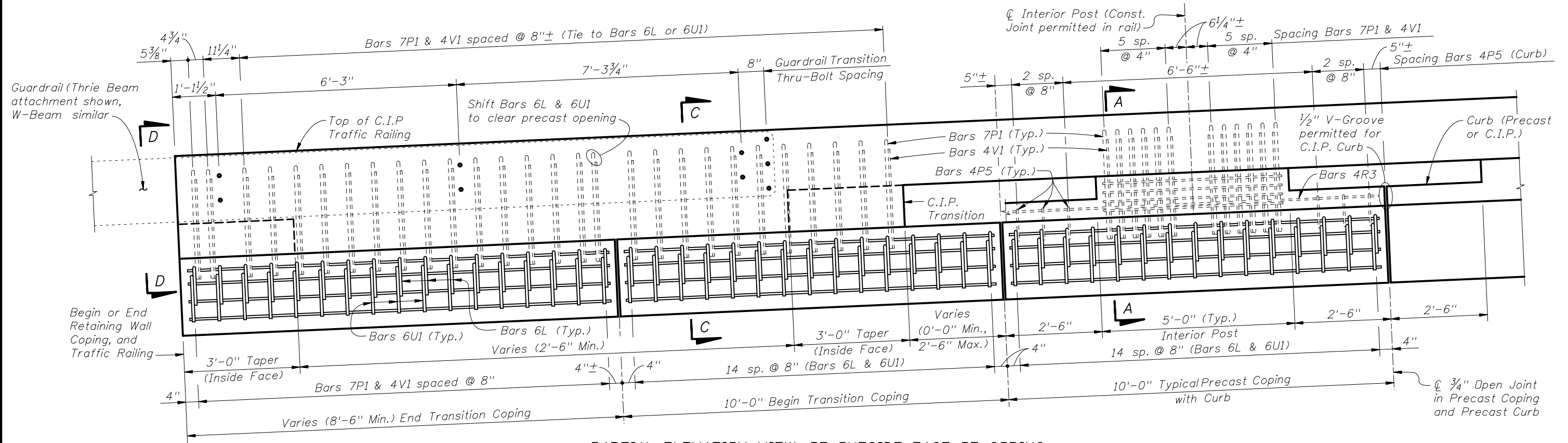
PRECAST OR C.I.P. COPING WITH JUNCTION SLAB (CORRAL SHAPE TRAFFIC RAILING)



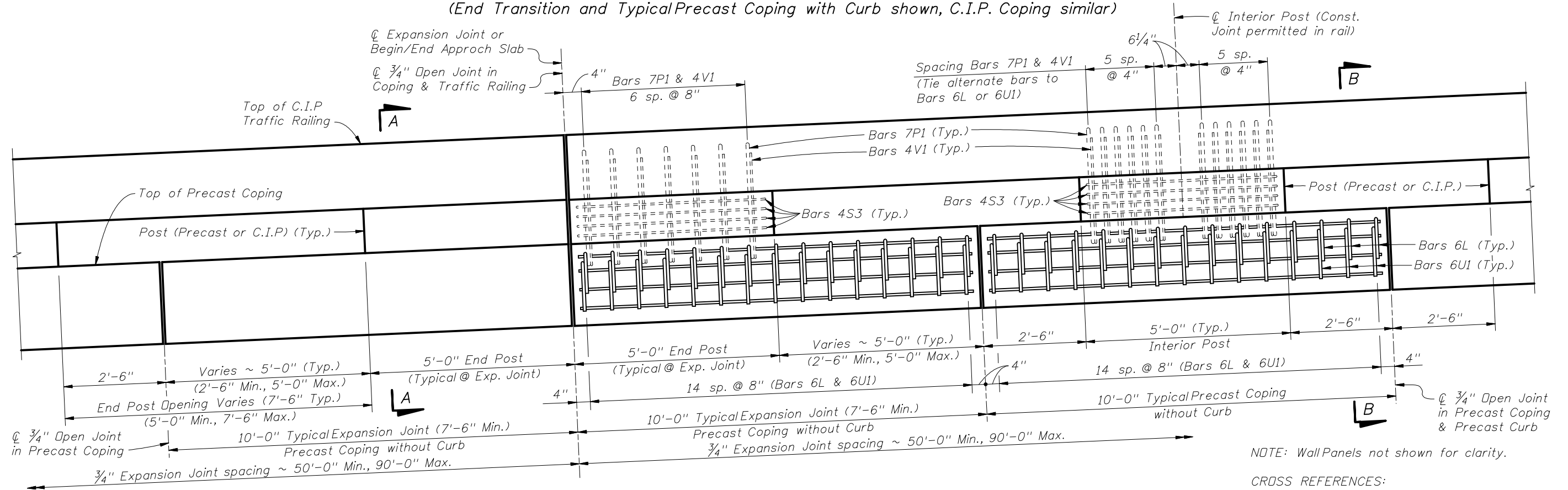
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PARTIAL ELEVATION VIEW OF OUTSIDE FACE OF COPING
(End Transition and Typical Precast Coping with Curb shown, C.I.P. Coping similar)



PARTIAL ELEVATION VIEW OF OUTSIDE FACE OF COPING
(Precast Coping at Expansion Joint and Typical Precast Coping without Curb shown, C.I.P. Coping similar)

NOTE: Wall Panels not shown for clarity.

- CROSS REFERENCES:
1. For Sections A-A, B-B, C-C & D-D, see Sheet 10 of 19.
 2. For Junction Slab Notes, see Sheet 5 of 19.

PRECAST OR C.I.P. COPING WITH JUNCTION SLAB (CORRAL SHAPE TRAFFIC RAILING)



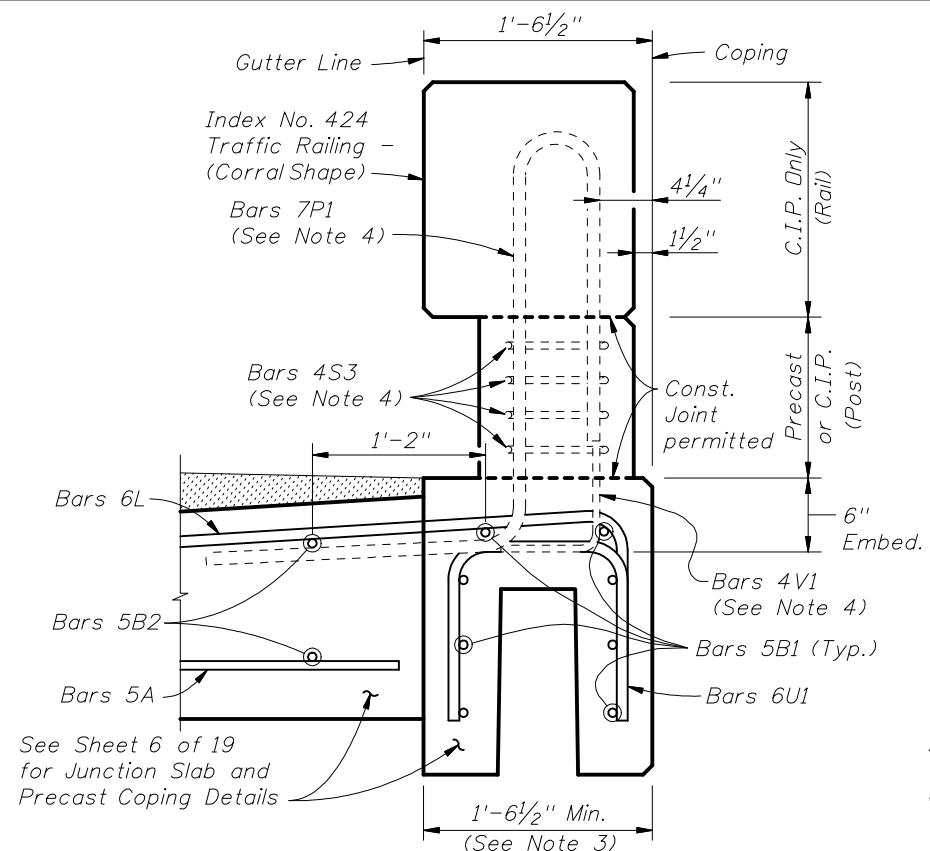
2010 FDOT Design Standards

PERMANENT RETAINING WALL SYSTEMS

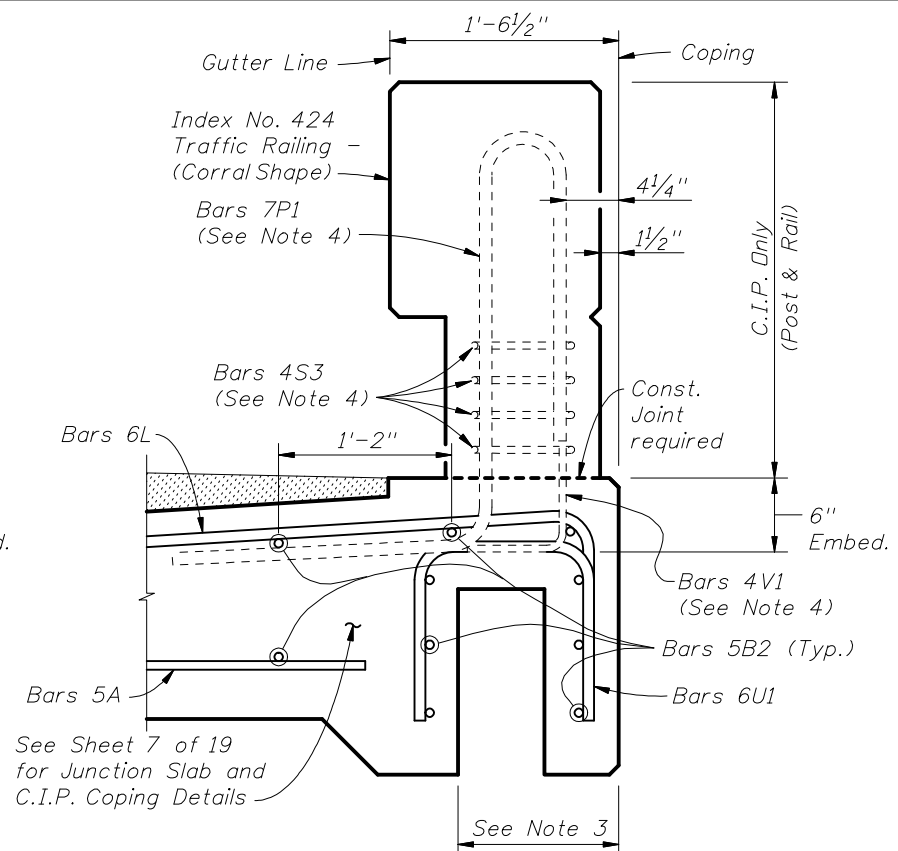
Last Revision
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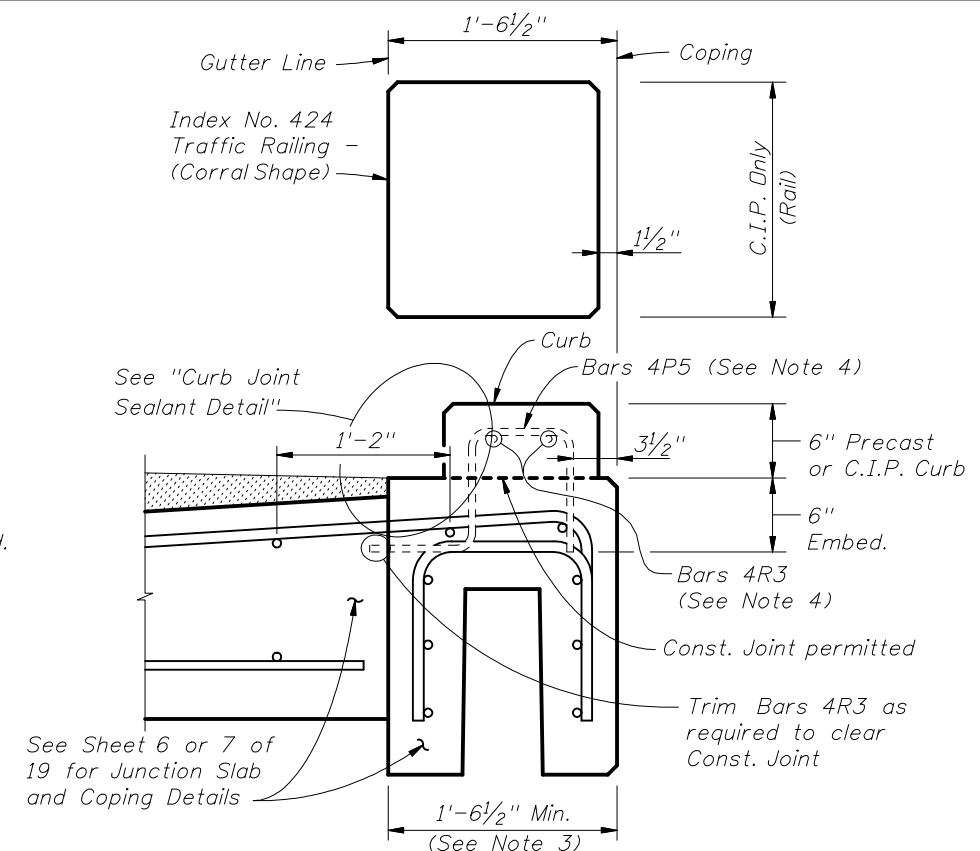
Index No.
5300



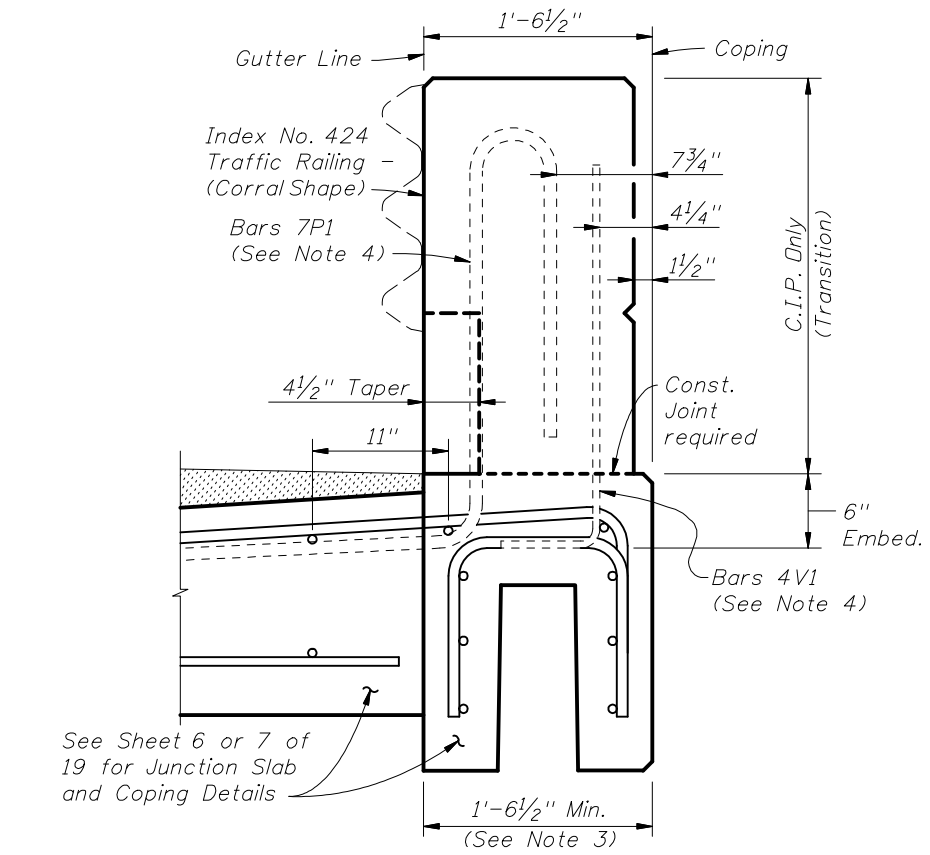
SECTION A-A
(TYPICAL SECTION PRECAST COPING WITHOUT CURB)



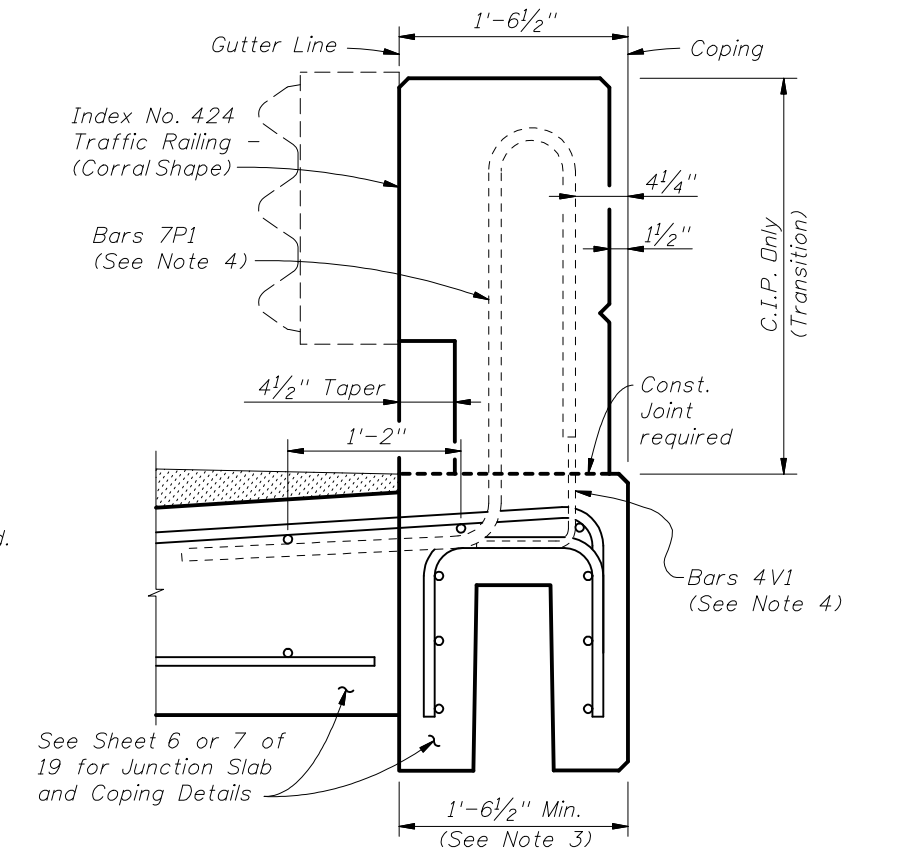
SECTION A-A
(TYPICAL SECTION C.I.P. COPING WITHOUT CURB)



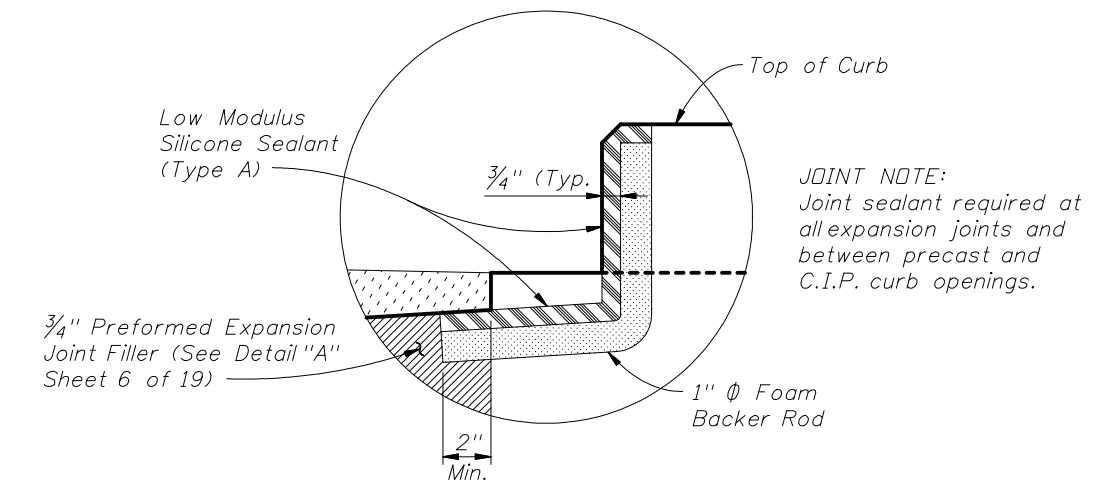
SECTION B-B
(TYPICAL SECTION WITH CURB)
(Precast Coping Shown, C.I.P. Coping Similar)



SECTION C-C
(TYPICAL SECTION TRANSITION COPING)
(Precast Coping shown, C.I.P. Coping similar)



END VIEW D-D
(TYPICAL SECTION COPING TRANSITION)
(Precast Coping shown, C.I.P. Coping similar)



- NOTES:**
1. See Sheets 6 & 7 of 19 for Junction Slab and Coping details.
 2. Slip Forming of C.I.P. Traffic Railing is not permitted.
 3. Actual width varies depending on type of Retaining Wall used.
 4. See Index No. 424 for Traffic Railing details and Bars 7P1, 4P5, 4R3, 4S3 & 4V1. Bars 5R2 and 5U are not required in Retaining Wall Coping.

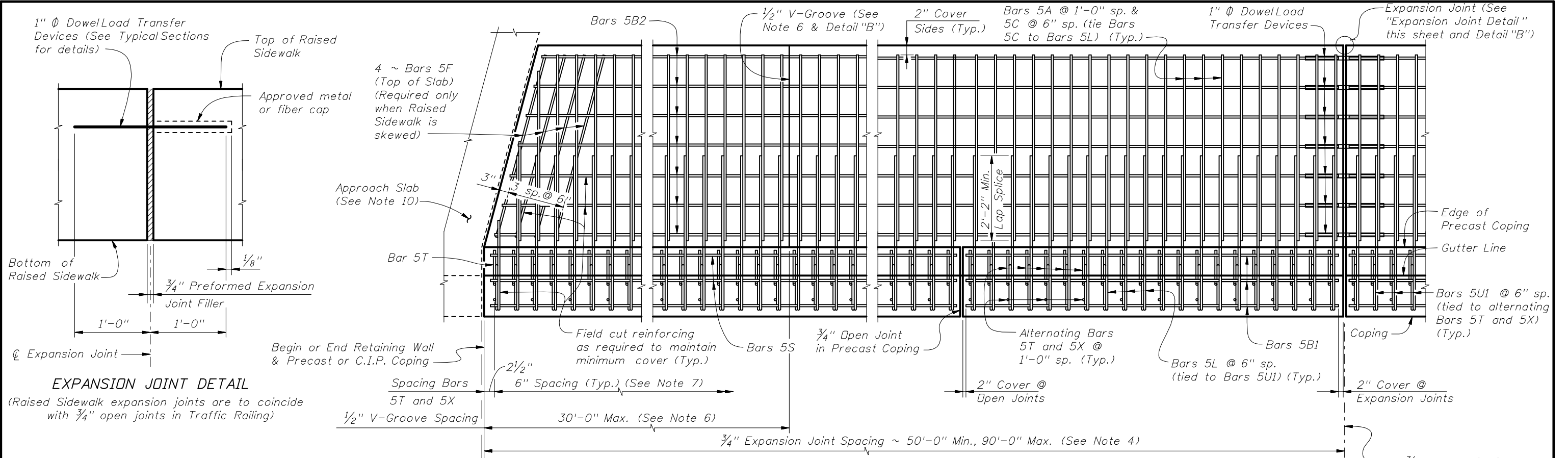
PRECAST OR C.I.P. COPING WITH JUNCTION SLAB (CORRAL SHAPE TRAFFIC RAILING)



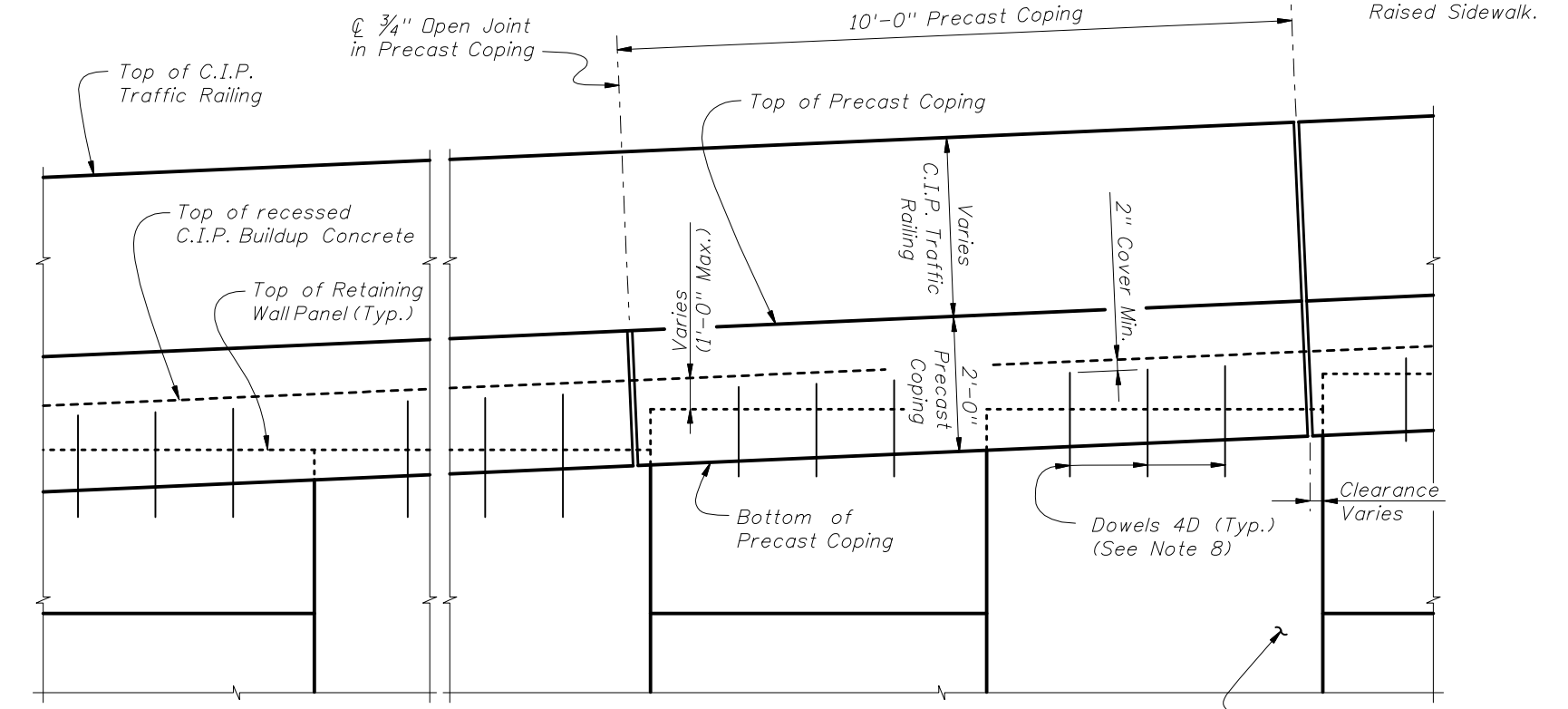
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PERMANENT RETAINING WALL SYSTEMS

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PARTIAL PLAN VIEW FOR VERTICAL SHAPE TRAFFIC RAILING
 (Skewed Approach Slab Shown, Perpendicular Approach Slab Similar)
 (Precast Coping Shown, C.I.P. Coping Similar) (Traffic Railing not Shown for Clarity)



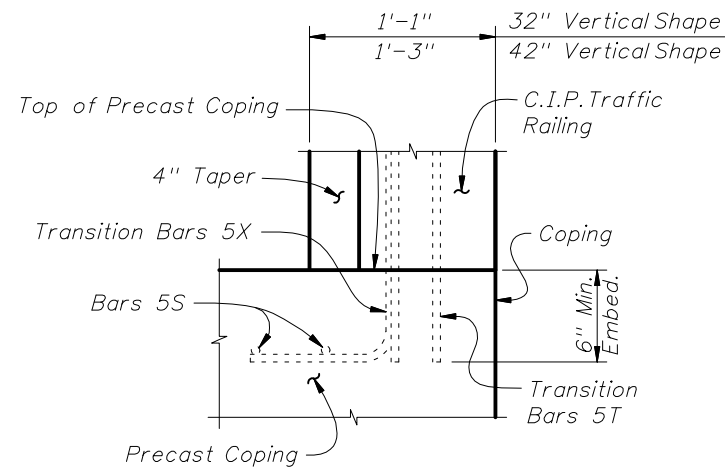
PARTIAL ELEVATION VIEW
 (Precast Coping & Raised Sidewalk Reinforcing not Shown for Clarity)
 (Precast Coping Shown, C.I.P. Coping Similar) **PRECAST OR C.I.P. COPING WITH C.I.P. RAISED SIDEWALK DETAILS**

RAISED SIDEWALK NOTES:

1. **CONSTRUCTION REQUIREMENTS:** Construct the raised sidewalk level transversely and expansion joints plumb; do not construct the raised sidewalk or C.I.P. coping perpendicular to the roadway surface. Slip forming is not permitted.
2. **APPLICATIONS:** This raised sidewalk is only applicable for a TL-4 crash test rating. Precast Traffic Railings are not allowed.
3. **REINFORCING STEEL:** Dowel Load Transfer Devices will be ASTM A 36 smooth round bar and hot-dip galvanized in accordance with Specification Section 962. Install Dowel Load Transfer Devices in accordance with Specification Section 350.
4. Construct $\frac{3}{4}$ " Expansion Joints in raised sidewalk and C.I.P. copings plumb and perpendicular or radial to the Gutter Line. Provide at 90'-0" maximum intervals as shown.
5. Provide and install Preformed Expansion Joint Filler in accordance with Specification Section 932.
6. Construct $\frac{1}{2}$ " V-Grooves in raised sidewalk and C.I.P. coping plumb and provide at 30'-0" maximum intervals as shown. Space V-Grooves equally between $\frac{3}{4}$ " Expansion Joints and/or Begin or End Raised Sidewalk. V-Groove locations are to coincide with V-Groove locations in the Traffic Railing.
7. Spacing shown is along the Gutter Line.
8. For Precast Coping only, Dowel Bars 4D are to extend 1'-0" above the top of retaining wall panel. Field cut as necessary to maintain 2" minimum cover to the top of the buildup concrete. See Wall Company Drawings for number and spacing of Dowel Bars 4D.
9. Work this Index with the following:
 Index No. 422 - Traffic Railing - (42" Vertical Shape)
 Index No. 423 - Traffic Railing - (32" Vertical Shape)
10. The following Indexes contain details of the intersection of the retaining wall at approach slabs:
 Index No. 20900 - Approach Slabs (Flexible Pavement Approaches)
 Index No. 20910 - Approach Slabs (Rigid Pavement Approaches)

CROSS REFERENCE: For Detail "B", see Sheet 12 of 19.



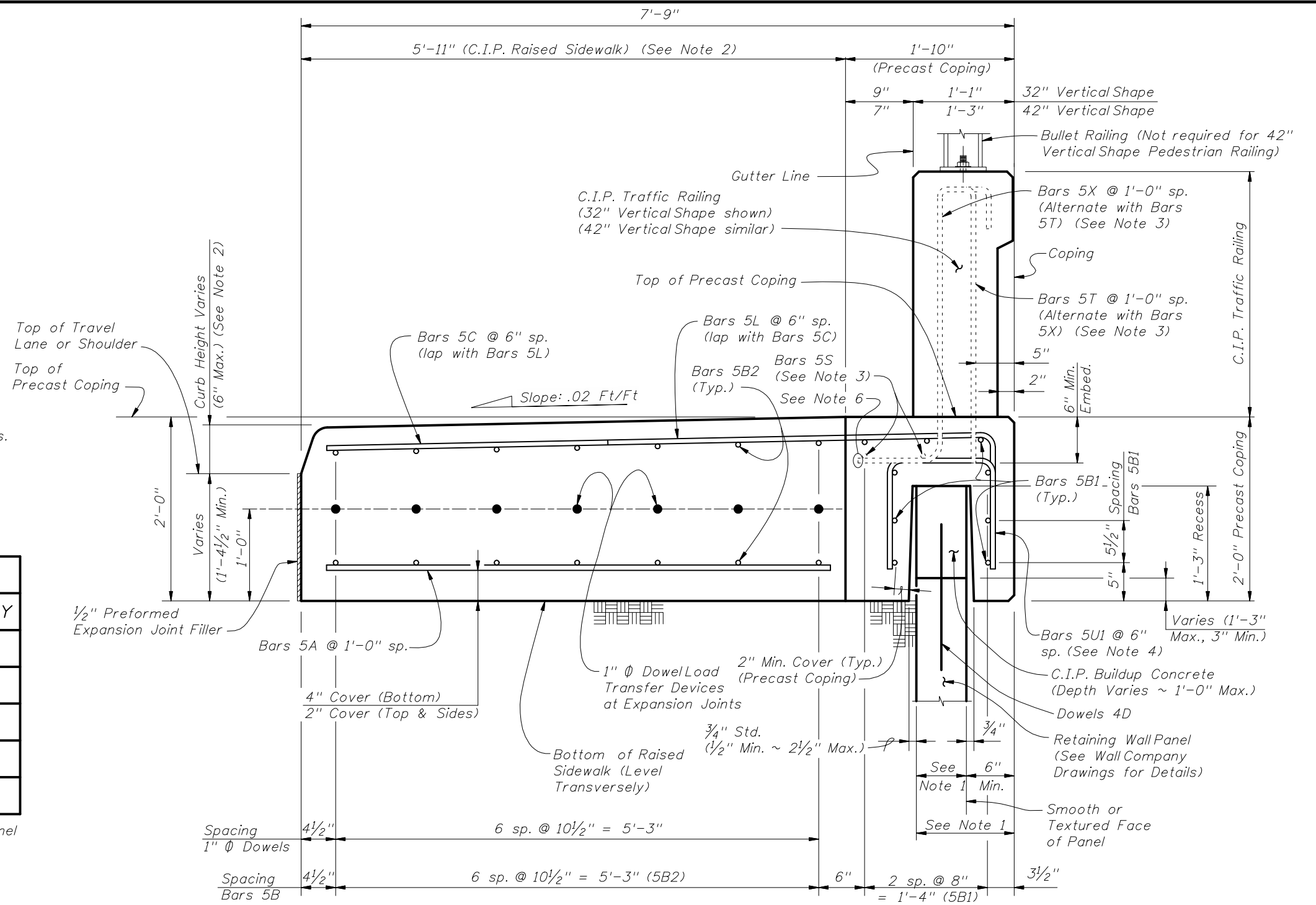


PARTIAL END VIEW OF TRAFFIC RAILING END TRANSITION FOR GUARDRAIL ATTACHMENT
(Showing Bars 5S, Bars 5T and Bars 5X)
(Precast Coping Shown, C.I.P. Coping Similar)

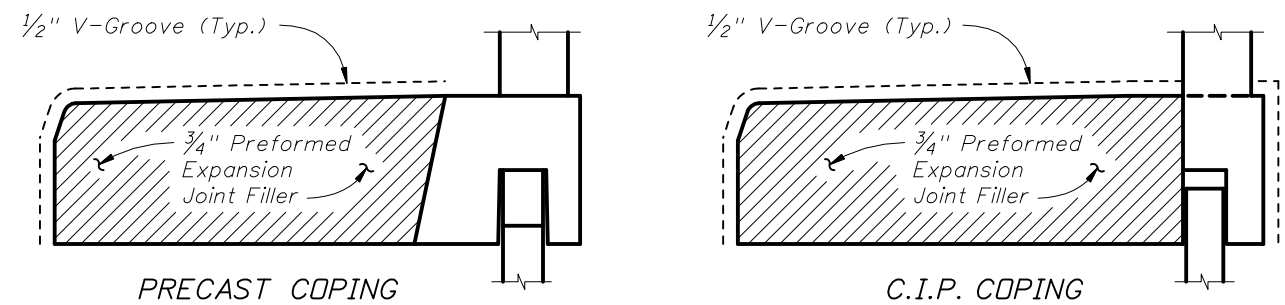
NOTE: See Index No. 422 and Index No. 423, Railing End Detail for details.

| ESTIMATED QUANTITIES FOR PRECAST COPING | | |
|--|---------|----------|
| ITEM | UNIT | QUANTITY |
| Concrete (Precast Coping) | CY | 1.136 |
| Concrete (C.I.P. Raised Sidewalk) | CY/Ft. | 0.424 |
| Reinforcing Steel (Precast Coping) excluding Bars 5T, 5X and 5S (Typ.) | Lb. | 269.96 |
| Reinforcing Steel (C.I.P. Raised Sidewalk) (Typ.) | Lb./Ft. | 31.73 |
| Additional Reinf. @ Expansion Joints | Lb. | 37.38 |

(The above concrete quantities are based on a 5" wide retaining wall panel and a Type D Concrete Curb (See Note 2). The above Precast Coping quantities are based on one 10'-0" Precast Coping segment.)



TYPICAL SECTION THRU PRECAST COPING WITH C.I.P. RAISED SIDEWALK AND RETAINING WALL AT EXPANSION JOINTS



DETAIL "B"
(Showing Locations of 1/2" V-Grooves and 3/4" Preformed Expansion Joint Filler)

RAISED SIDEWALK NOTES:

- Actual width varies depending on type of Retaining Wall used.
- Match roadway curb shape (Type) and height. See Roadway Plans and Index No. 300. 5'-11" dimension is based on a 32" Vertical Shape Traffic Railing with a Type D curb adjacent to a 6'-0" wide sidewalk. Adjust this dimension as required for other curb types or transitions at Begin or End Retaining Wall.
- See Index No. 422 and Index No. 423 for Bars 5S, 5T & 5X and Bullet Railing details. Adjust vertical dimension of Bars 5T and 5X, see Reinforcing Steel Note 5.
- Increase the width (1'-2 1/2") of Bars 5U1 as required to maintain 2" minimum cover when recess width exceeds 8".
- At the Contractor's option, mechanical couplers may be used to splice reinforcing. Complete details, including reinforcement lengths are required in the Shop Drawings. Mechanical couplers shall develop 125% of the bar yield strength.
- Trim end of Bars 5T and 5X to clear construction joint for 42" Vertical Shape Traffic Railing.

PRECAST OR C.I.P. COPING WITH C.I.P. RAISED SIDEWALK DETAILS (VERTICAL SHAPE TRAFFIC RAILINGS)



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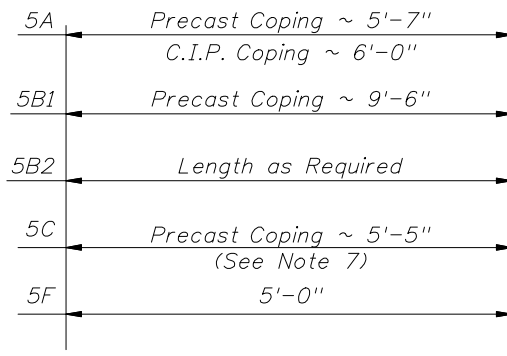
PERMANENT RETAINING WALL SYSTEMS

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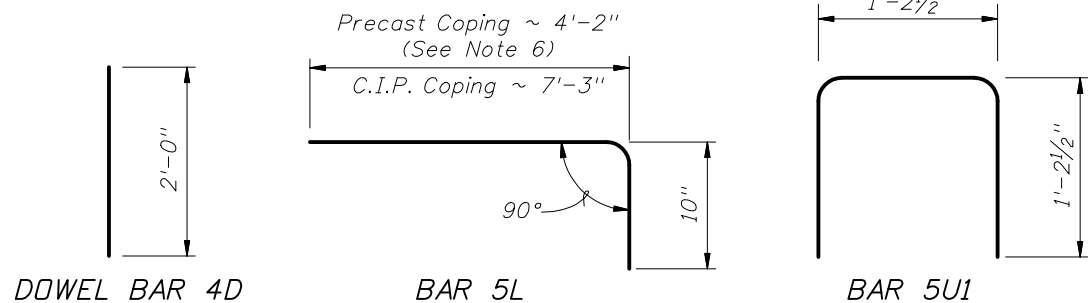
REINFORCING STEEL BENDING DIAGRAMS - RAISED SIDEWALK

BILL OF REINFORCING STEEL

| MARK | SIZE | LENGTH | |
|------------|------------------|----------------|---------------|
| | | PRECAST COPING | C.I.P. COPING |
| A | 5 | 5'-7" | 6'-0" |
| B1 | 5 | 9'-6" | N/A |
| B2 | 5 | AS REQD. | AS REQD. |
| C | 5 | 5'-5" | N/A |
| D | 4 | 2'-0" | N/A |
| F | 5 | 5'-0" | 5'-0" |
| L | 5 | 5'-0" | 8'-1" |
| U1 | 5 | 3'-8" | 3'-8" |
| 1" Ø Dowel | Smooth Steel Bar | 2'-0" | 2'-0" |



BARS 5A, 5B1, 5B2, 5C & 5F



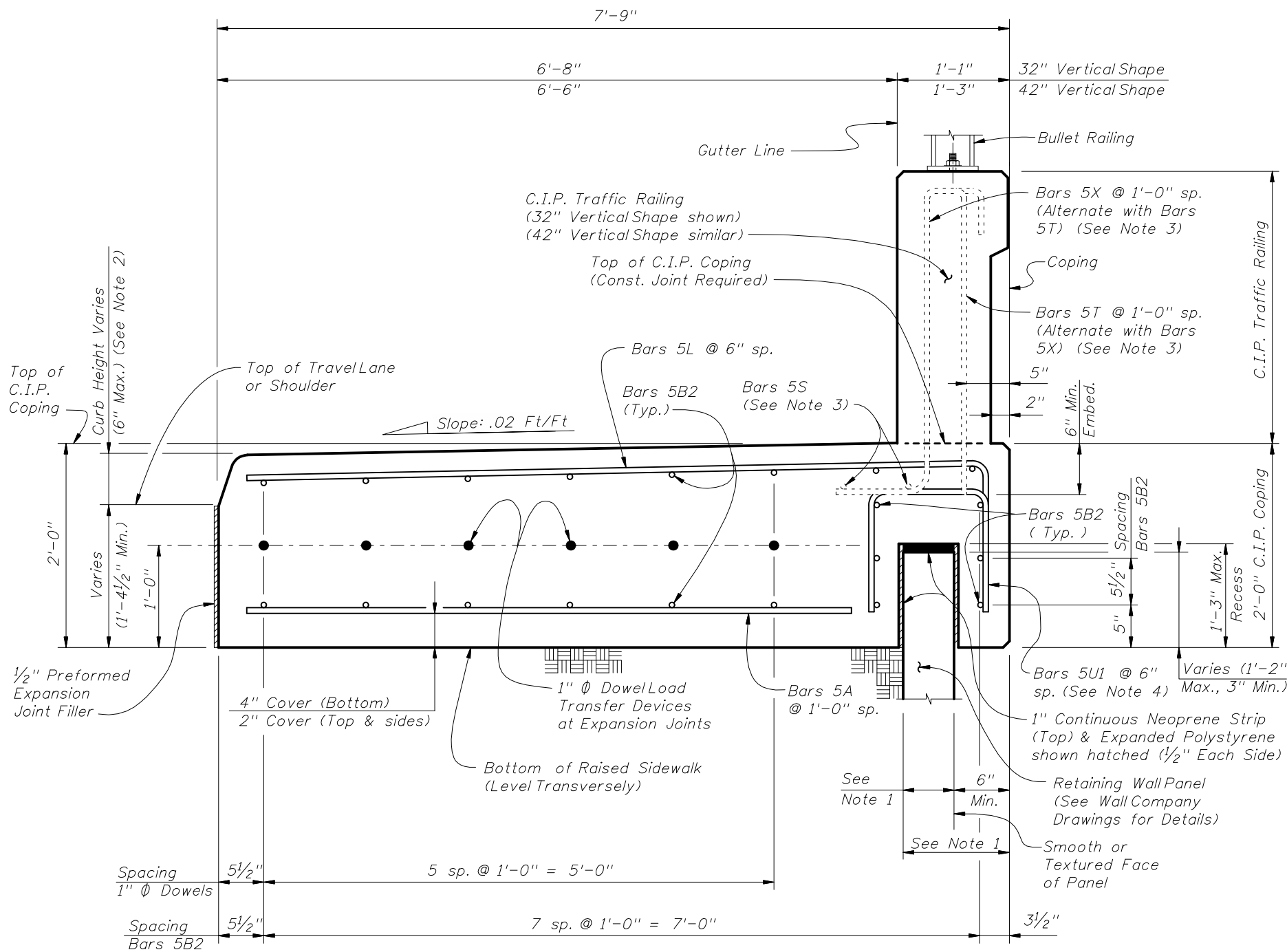
REINFORCING STEEL NOTES:

- All bar dimensions in the bending diagrams are out to out.
- All reinforcing steel at expansion joints will have a 2" minimum cover.
- Lap splices for Bars 5B will be a minimum of 2'-2".
- Lap splice Bars 5L with Bars 5C. Lap splices will be a minimum of 2'-2".
- See Index No. 422 and Index No. 423 for Bars 5S, 5T and 5X. Adjust vertical dimensions of Stirrup Bars 5T and 5X to 3'-0" for 32" Vertical Shape or 3'-10" for 42" Vertical Shape.
- Dimension shown is for lap splice option. For mechanical coupler option, this dimension is 1'-8".
- Dimension shown is for lap splice option. For mechanical coupler option, this dimension is 5'-8".
- The Contractor may use Welded Wire Reinforcement when approved by the Engineer. Welded Wire Reinforcement will conform to ASTM A 497.

ESTIMATED QUANTITIES FOR C.I.P. COPING

| ITEM | UNIT | QUANTITY |
|---|---------|----------|
| Concrete | CY/Ft. | 0.538 |
| Reinforcing Steel (Typical) excluding Bars 5T, 5X and 5S (Typ.) | Lb./Ft. | 51.63 |
| Additional Reinf. @ Expansion Joints | Lb. | 32.04 |

The above concrete quantities are based on a 5" wide retaining wall panel and a Type D Concrete Curb (See Note 2).

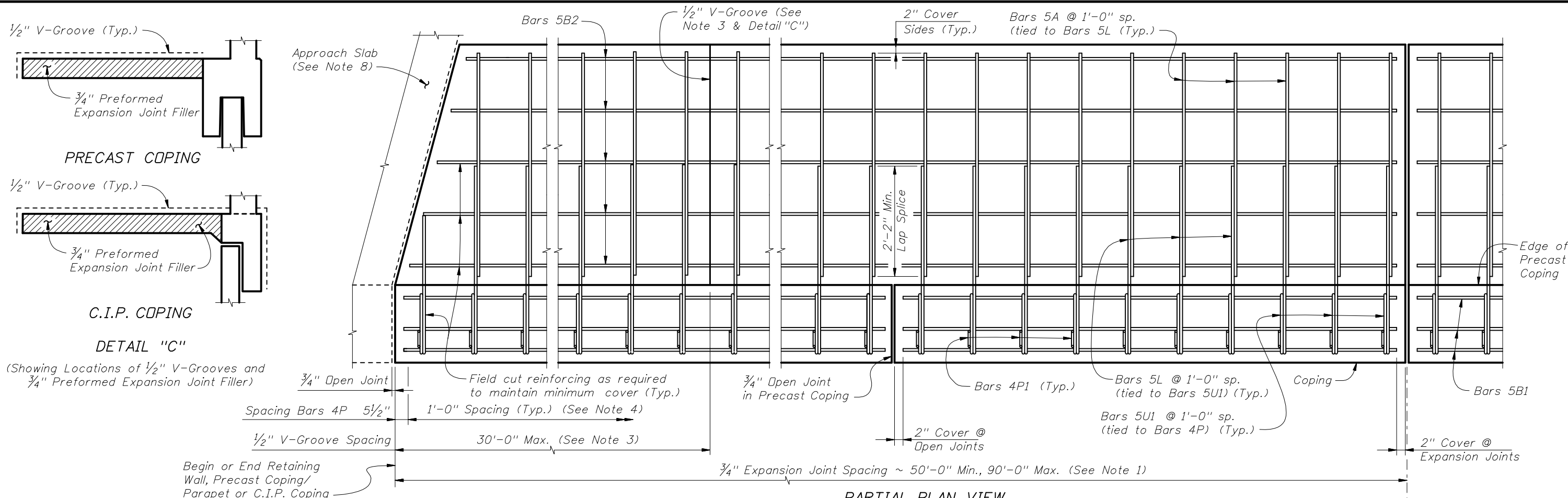


TYPICAL SECTION THRU C.I.P. COPING AND RAISED SIDEWALK AND RETAINING WALL AT EXPANSION JOINTS

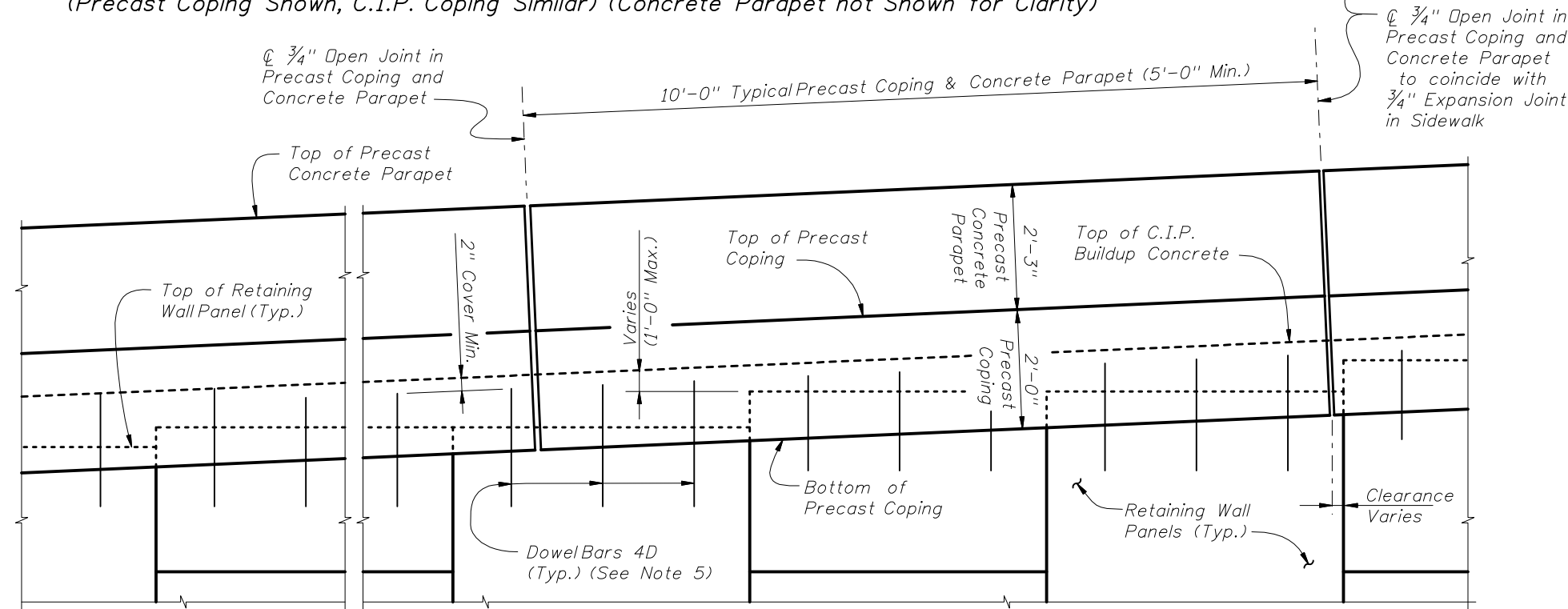
RAISED SIDEWALK NOTES:

- Actual width varies depending on type of Retaining Wall used.
- Match roadway curb shape (Type) and height. See Roadway Plans and Index No. 300. 6'-8" dimension is based on a 32" Vertical Shape Traffic Railing with a Type D curb adjacent to a 6'-0" wide sidewalk. Adjust this dimension as required for other curb types or transitions at Begin or End Retaining Wall.
- See Index No. 422 and Index No. 423 for Bars 5S, 5T & 5X and Bullet Railing details. Adjust vertical dimension of Bars 5T and 5X, see Reinforcing Steel Note 5.
- Increase the width (1'-2 1/2") of Bars 5U1 as required to maintain 2" minimum cover when recess width exceeds 8".

PRECAST OR C.I.P. COPING WITH C.I.P. RAISED SIDEWALK DETAILS (VERTICAL SHAPE TRAFFIC RAILINGS)



PARTIAL PLAN VIEW
 (Skewed Approach Slab Shown, Perpendicular Approach Slab Similar)
 (Precast Coping Shown, C.I.P. Coping Similar) (Concrete Parapet not Shown for Clarity)

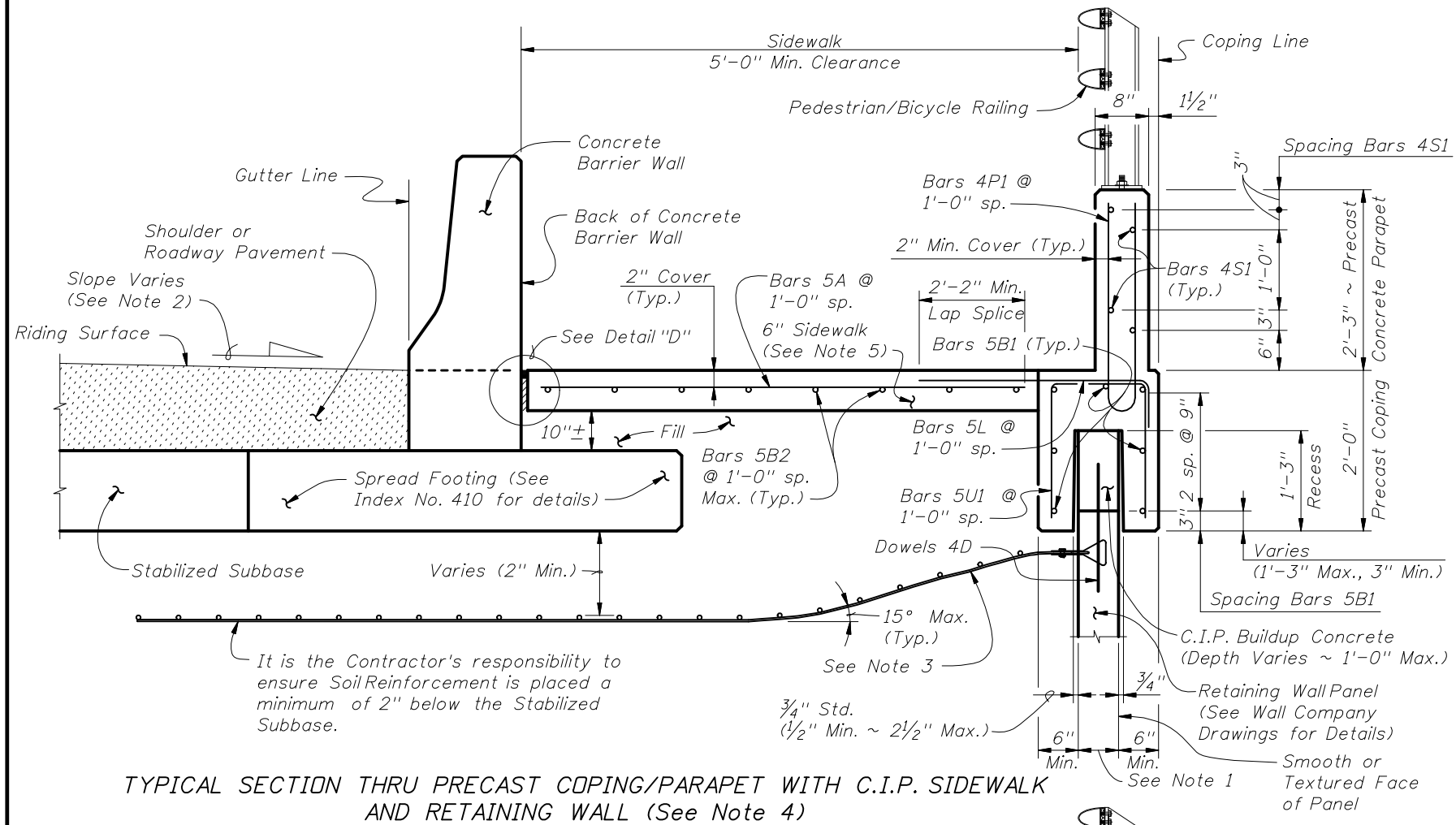


PARTIAL ELEVATION VIEW
 (Precast Coping and Sidewalk Reinforcing not Shown for Clarity)
 (Precast Coping Shown, C.I.P. Coping Similar)

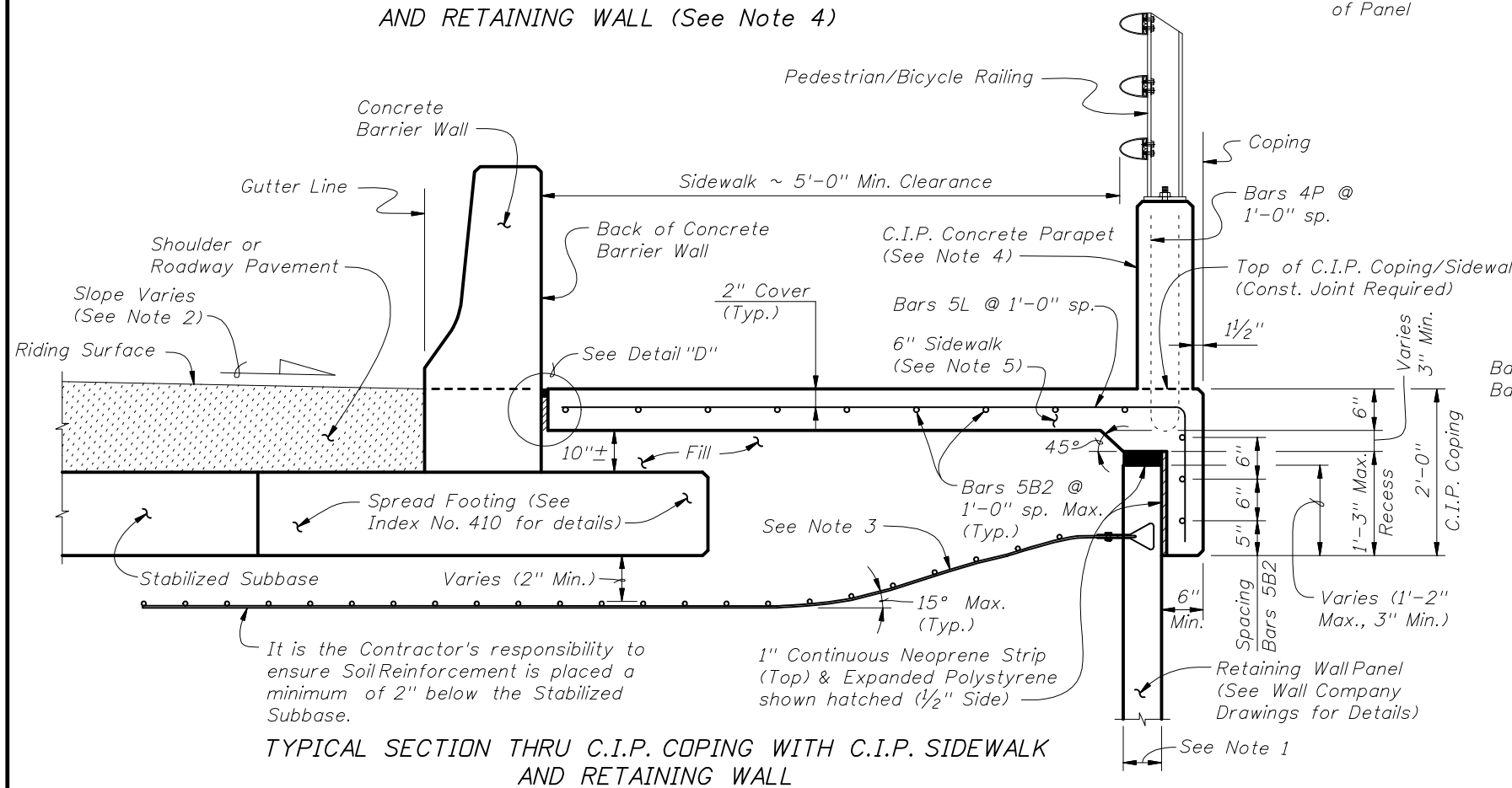
- PRECAST COPING/PARAPET AND SIDEWALK NOTES:**
1. Construct $\frac{3}{4}$ " Expansion Joints in sidewalk and C.I.P. coping plumb and perpendicular or radial to the Gutter Line. Provide at 90'-0" maximum intervals as shown.
 2. Provide and install Preformed Expansion Joint Filler in accordance with Specification Section 932.
 3. Construct $\frac{1}{2}$ " V-Grooves in sidewalk and C.I.P. coping plumb and provide at 30'-0" maximum intervals as shown. Space V-Grooves equally between $\frac{3}{4}$ " Expansion Joints and/or Begin or End Sidewalk. For C.I.P. Coping only, V-Groove locations are to coincide with V-Groove locations in the Concrete Parapet.
 4. Spacing shown is along the Gutter Line.
 5. For Precast Coping only, Dowel Bars 4D are to extend 1'-0" above the top of retaining wall panel. Field cut as necessary to maintain 2" minimum cover to the top of the buildup concrete. See Wall Company Drawings for number and spacing of Dowel Bars 4D.
 6. Work this Index with the following:
 Index No. 410 - Concrete Barrier Wall
 7. For C.I.P. Coping only, work this Index with the following:
 Index No. 820 - Pedestrian/Bicycle Railing.
 8. The following Indexes contain details of the intersection of the retaining wall at approach slabs:
 Index No. 20900 - Approach Slabs (Flexible Pavement Approaches)
 Index No. 20910 - Approach Slabs (Rigid Pavement Approaches)

PRECAST COPING/PARAPET OR C.I.P. COPING WITH C.I.P. SIDEWALK DETAILS





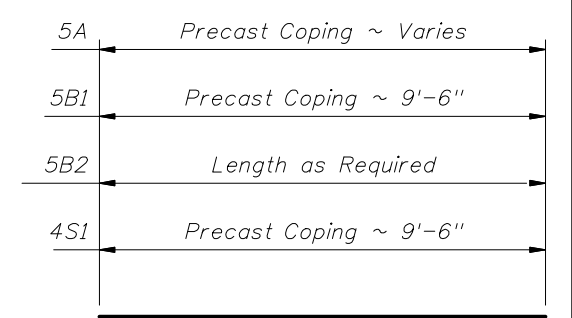
TYPICAL SECTION THRU PRECAST COPING/PARAPET WITH C.I.P. SIDEWALK AND RETAINING WALL (See Note 4)



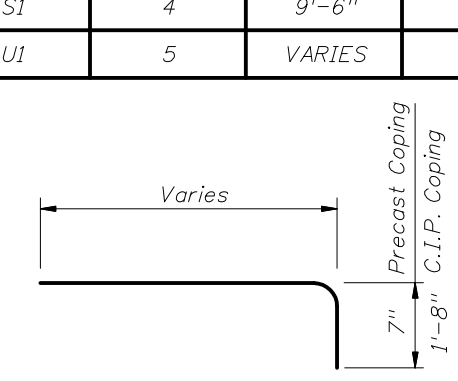
TYPICAL SECTION THRU C.I.P. COPING WITH C.I.P. SIDEWALK AND RETAINING WALL

REINFORCING STEEL BENDING DIAGRAMS - COPING/PARAPET AND SIDEWALK

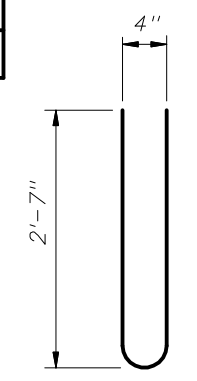
| BILL OF REINFORCING STEEL | | | |
|---------------------------|------|----------------|---------------|
| MARK | SIZE | LENGTH | |
| | | PRECAST COPING | C.I.P. COPING |
| A | 5 | VARIES | N/A |
| B1 | 5 | 9'-6" | N/A |
| B2 | 5 | AS REQD. | AS REQD. |
| D | 4 | 2'-0" | N/A |
| L | 5 | VARIES | VARIES |
| P1 | 4 | 5'-5" | N/A |
| S1 | 4 | 9'-6" | N/A |
| U1 | 5 | VARIES | N/A |



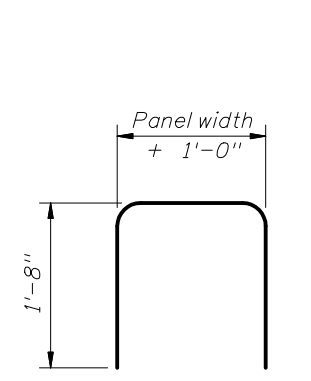
BARS 5A, 5B1, 5B2 & 4S1



BAR 5L



BAR 4P1



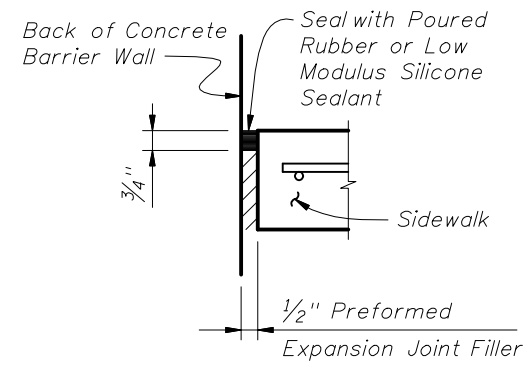
BAR 5U1

REINFORCING STEEL NOTES:

1. All bar dimensions in the bending diagrams are out to out.
2. All reinforcing steel at expansion joints will have a 2" minimum cover.
3. Lap splices for Bars 5B2 will be a minimum of 2'-2".
4. For Precast Coping only, lap splice Bars 5L with Bars 5A. Lap splices will be a minimum of 2'-2".
5. For C.I.P. only, see Index No. 820 for Bars 4P and 4S.
6. The Contractor may use Welded Wire Reinforcement when approved by the Engineer. Welded Wire Reinforcement will conform to ASTM A 497.

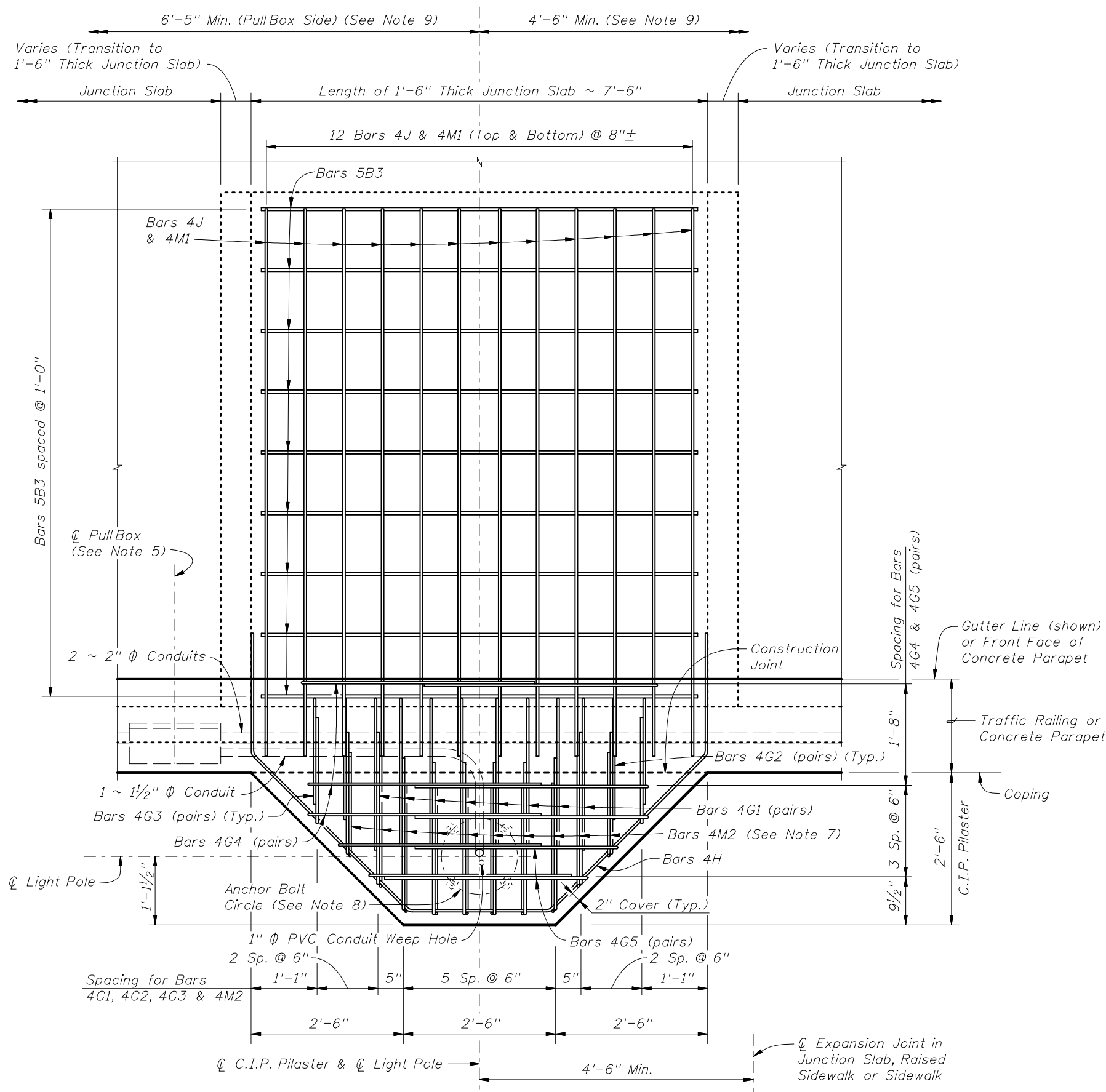
PRECAST COPING/PARAPET AND SIDEWALK NOTES:

1. Actual width varies depending on type of Retaining Wall used.
2. Match Cross Slope of Travel Lane or Shoulder.
3. Gradually deflect/displace Soil Reinforcement downward as required. Soil Reinforcement is shown deflected downward for illustrative purposes only and is not to scale. See Wall Company Drawings for details.
4. C.I.P. Concrete Parapet shown, Vertical Shape Traffic Railing similar. Complete details and dimensions of Vertical Traffic Railings are required in the Shop Drawings.
5. Match cross slope of connecting sidewalk or as shown in the Wall Control Drawings.



DETAIL "D"

PRECAST COPING/PARAPET OR C.I.P. COPING WITH C.I.P. SIDEWALK DETAILS



PLAN VIEW
 (Junction Slab reinforcing not shown for clarity)
 (Junction Slab Shown, Raised Sidewalk or Sidewalk Similar)

LIGHT PILASTER NOTES:

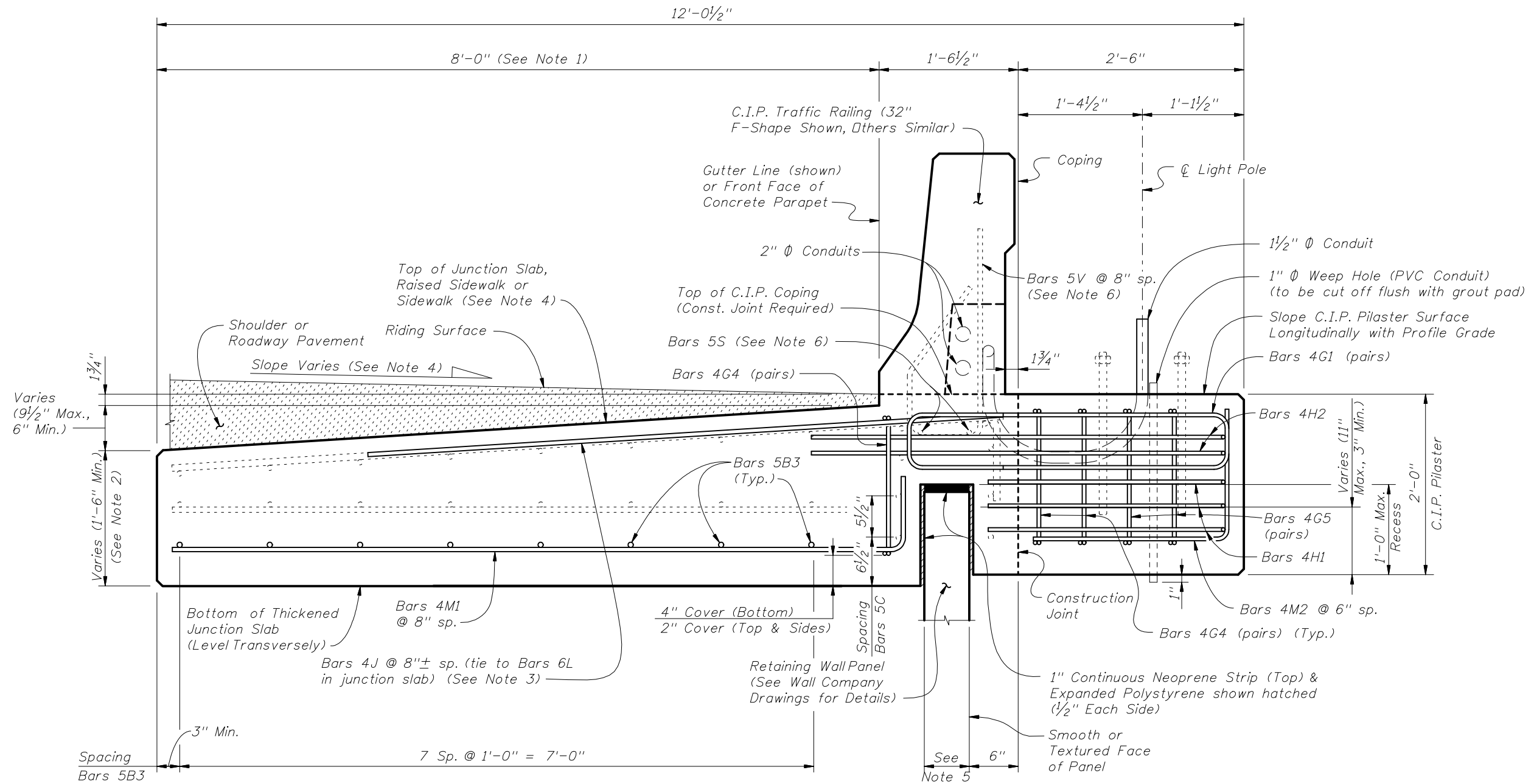
- The pilaster and junction slab are designed to resist the following working loads from the light pole applied at the top of the Pilaster:

| | | |
|---|---|--------------|
| Axial Deadload | = | 1.560 kip |
| Windload Moment about Transverse Axis (*) | = | 40.60 kip-ft |
| Windload Moment about Longitudinal Axis (*) | = | 28.30 kip-ft |
| Deadload Moment about Longitudinal Axis (*) | = | 1.690 kip-ft |
| Maximum Shear | = | 1.380 kip |
| Torsion about Pole Axis | = | 3.560 kip-ft |

 (*) - Axis refers to Bridge Axis.
- Provide grout in accordance with Specification Section 934.
- It is the Contractor's responsibility to provide anchor bolts, nuts, washers and anchor plates that effectively transmit the light pole loads to the pilaster and fit the reinforcing cage. Submit calculations for anchor bolt design and embedment depth, signed and sealed by a Professional Engineer registered in the State of Florida to the Engineer for review and approval prior to construction.
- Install Anchor Bolts plumb.
- For conduit, pull box and expansion/deflection fitting details, see Utility Conduit Detail Drawings.
- The cost of anchor bolts, nuts, washers and anchor plates will be included in the Bid Price for Light Poles. Include the cost of all labor, concrete and reinforcing steel required for construction of the pilasters, grout pads, pull boxes and miscellaneous hardware required for the completion of the electrical system in the Bid Price for either the Traffic Railing or Concrete Parapet that the pilaster is behind.
- Field Cut Bars 4M2 as required to maintain clearance.
- Anchor Bolt pattern orientation will be as shown.
- Slip Forming Method of construction is not allowed within the limits shown.
- Reinforcing shown for light pole pilasters is in addition to typical reinforcing for C.I.P. Junction Slabs and Raised Sidewalks (Bars 5A and 5B2). Omit Junction Slab Bars 6U1 and Raised Sidewalk Bars 5U1 within light pole pilaster limits.
- Work this Sheet with the following as appropriate:
 - Sheet Nos. 5 thru 10 of 19 - Precast or C.I.P. Coping with C.I.P. Junction Slab Details
 - Sheet Nos. 11, 12 and 13 of 19 - Precast or C.I.P. Coping with C.I.P. Raised Sidewalk Details
 - Sheet Nos. 14 and 15 of 19 - Precast Coping/Parapet or C.I.P. Coping with C.I.P. Sidewalk Details

CROSS REFERENCE: For Estimated Quantities, see Sheet No. 18 of 19.

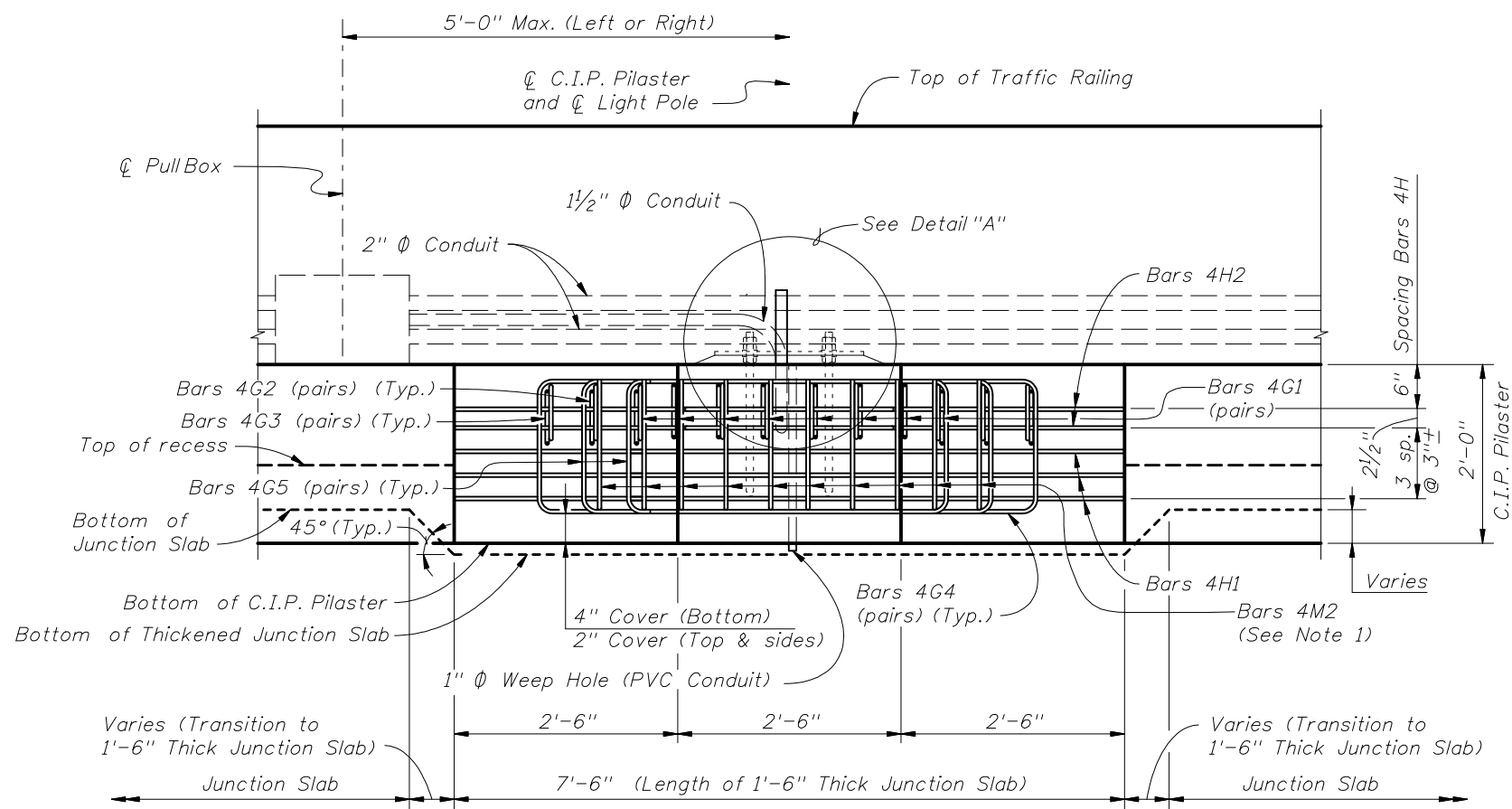




TYPICAL SECTION AT LIGHT POLE PILASTER
 (Traffic Railing Shown, Concrete Parapet Similar)
 (Junction Slab Shown, Raised Sidewalk or Sidewalk Similar)

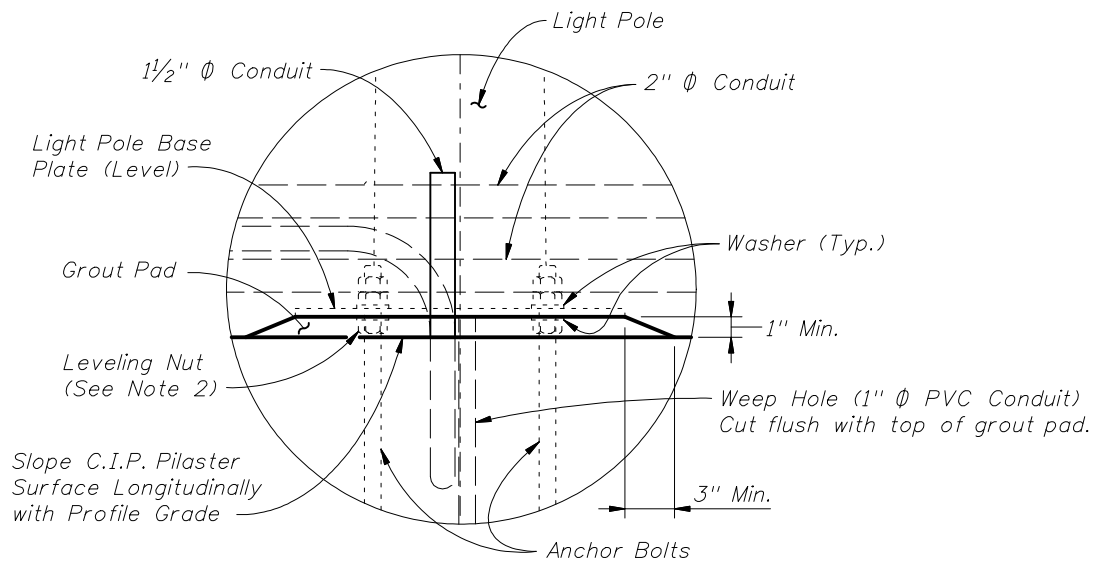
- NOTES:**
1. The 8'-0" dimension shown is for Junction Slabs. This dimension must be a minimum of 5'-0" for all applications.
 2. For junction slabs, increase the 1'-0" depth dimension to 1'-6". For raised sidewalks, increase the 2'-0" depth dimension to 2'-6". For sidewalks, increase 6" depth dimension to 1'-6". The minimum length of the Junction Slabs, Raised sidewalks and Sidewalks is 50'-0", measured along the Gutter Line.
 3. Bars 4J are only required when pilasters are behind a Traffic Railing.
 4. Match the slope of the adjoining junction slab and shoulder or roadway pavement, raised sidewalk or sidewalk.
 5. Actual width varies depending on type of Retaining Wall used.
 6. See Index No. 420 for Bars 5V and 5S.

C.I.P. LIGHT POLE PILASTER DETAILS



ELEVATION VIEW
 (Junction Slab Reinforcing & Bars 4J not Shown for Clarity)
 (Traffic Railing Shown, Concrete Parapet Similar)
 (Junction Slab Shown, Raised Sidewalk or Sidewalk Similar)

- NOTES:**
1. Field Cut Bars 4M2 as required to maintain minimum cover.
 2. Maximum clearance between leveling nut and top of pilaster will not exceed anchor bolt diameter.



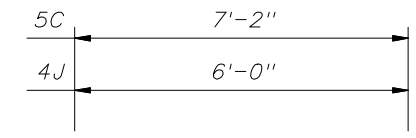
DETAIL "A"

| ESTIMATED QUANTITIES | | |
|------------------------------------|------|----------|
| ITEM | UNIT | QUANTITY |
| Concrete (Pilaster) | CY | 0.926 |
| Concrete (Thickened Junction Slab) | CY | 1.180 |
| Reinforcing Steel | Lb. | 431.65 |

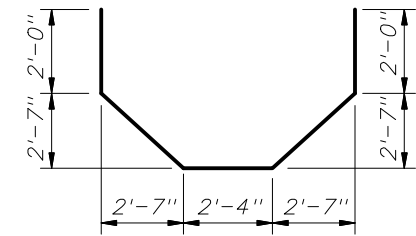
(The quantities above are for one C.I.P. Light Pole Pilaster. The concrete quantity for the thickened junction slab is based on a 6" increase in thickness and a 5" wide retaining wall panel. Adjust thickened concrete quantity as required for raised sidewalks and sidewalks.)

REINFORCING STEEL BENDING DIAGRAMS - LIGHT PILASTER

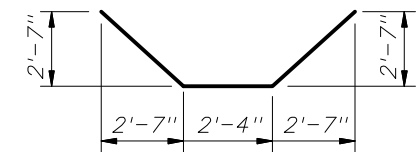
| BILL OF REINFORCING STEEL | | | |
|---------------------------|------|-----------|--------|
| MARK | SIZE | NO. REQD. | LENGTH |
| B3 | 5 | 8 | 7'-2" |
| G1 | 4 | 16 | 5'-8" |
| G2 | 4 | 4 | 4'-8" |
| G3 | 4 | 4 | 4'-2" |
| G4 | 4 | 6 | 9'-2" |
| G5 | 4 | 4 | 8'-2" |
| H1 | 4 | 3 | 9'-8" |
| H2 | 4 | 2 | 13'-8" |
| J | 4 | 24 | 6'-0" |
| M1 | 4 | 12 | 8'-10" |
| M2 | 4 | 10 | 3'-8" |



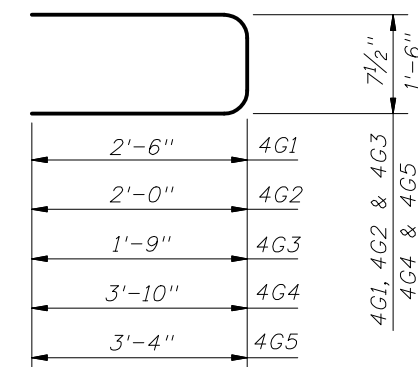
BARS 5B3 & 4J



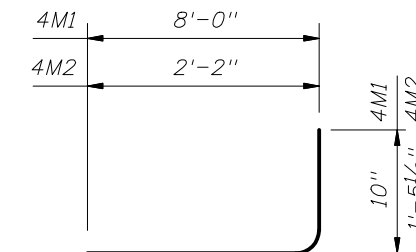
BAR 4H2



BAR 4H1



BARS 4G1, 4G2, 4G3, 4G4 & 4G5



BAR 4M1 & 4M2

REINFORCING STEEL NOTES:

1. All bar dimensions in the bending diagrams are out to out.
2. Lap splices for Bars 4G1, 4G2 & 4G3 will be a minimum of 1'-4". Lap splices for Bars 4G4 & 4G5 will be a minimum of 1'-8".
3. The Contractor may use Welded Wire Reinforcement when approved by the Engineer. Welded Wire Reinforcement will conform to ASTM A 497.

C.I.P. LIGHT POLE PILASTER DETAILS



2010 FDOT Design Standards

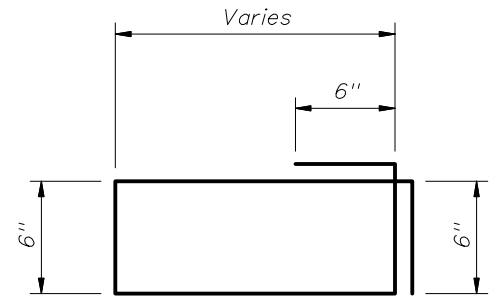
PERMANENT RETAINING WALL SYSTEMS

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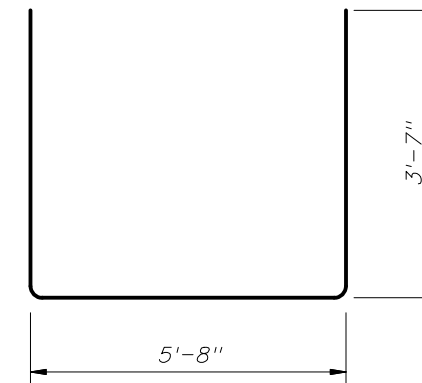
REINFORCING STEEL BENDING DIAGRAMS - DRAINAGE

BILL OF REINFORCING STEEL

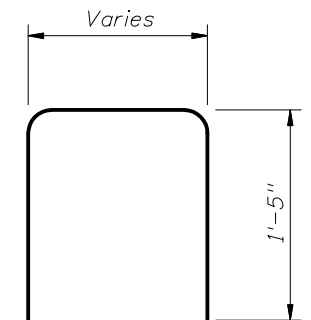
| MARK | SIZE | LENGTH |
|------|------|-----------|
| S2 | 5 | VARIABLES |
| U2 | 6 | VARIABLES |
| U3 | 5 | 14'-2" |



BAR 5S2



BAR 5U3



BAR 6U2

REINFORCING STEEL NOTES:

1. All bar dimensions in the bending diagrams are out to out.
2. All reinforcing steel at open joints will have a 2" minimum cover.
3. See Sheet Nos. 5 thru 15 of 19 for Bars 5A, 5B2 and 6U1 (or 5U1).
4. The Contractor may use Welded Wire Reinforcement when approved by the Engineer. Welded Wire Reinforcement will conform to ASTM A 497.

NOTES:

1. Spacing shown is along the Gutter Line. Spacing shown is for C.I.P. Junction Slab. For C.I.P. Raised Sidewalks or Sidewalks, match bar spacing and size shown in Typical Sections (i.e., 11 ~ Bars 5U2 and 5S2 @ 6" spacing for Raised Sidewalks).
2. Dimensions shown are for junction slabs. The 3'-6 1/2" dimension must be a minimum of 1'-0" for raised sidewalks.
3. Actual location & width vary depending on type of Retaining Wall used.
4. See Index No. 420 and 425 for Bars 5V and 5S.
5. 1" Continuous Neoprene Strip (Top) & Expanded Polystyrene shown hatched (1/2" Each Side).
6. Locate ϕ Barrier Wall Inlet a minimum of 10'-0" away from ϕ Expansion Joints in Junctions Slab, Raised Sidewalk or Sidewalk, C.I.P. Coping and Traffic Railing or Concrete Parapet.
7. Work this Sheet with the following as appropriate:
 Sheet Nos. 5 thru 10 of 19 - Precast or C.I.P. Coping with C.I.P. Junction Slab Details
 Sheet Nos. 11, 12 and 13 of 19 - Precast or C.I.P. Coping with C.I.P. Raised Sidewalk Details
 Sheet Nos. 14 and 15 of 19 - Precast Coping/Parapet or C.I.P. Coping with C.I.P. Sidewalk Details

Bars 5B2 (Field Cut as required to clear Barrier Wall Inlet) (Typ.)

ϕ Barrier Wall Inlet

10'-0" Min.

Bars 5S2

ϕ Expansion Joint in Junction Slab, Raised Sidewalk or Sidewalk, C.I.P. Coping and Traffic Railing or Concrete Parapet

1" Preformed Expansion Joint Filler (Typ. all Sides)

Bars 6L (Top) (Typ.)

Bars 5A (Bottom) (Typ.)

Bars 5U3

Gutter Line

Bars 6U1 (Typ.)

Barrier Wall Inlet (Grate not shown for clarity) (See Index No. 218 for details)

2" Cover (Typ. all Sides)

8 ~ Bars 6U2 & 5S2 @ 8" sp. (See Note 3)

PLAN VIEW
(Junction Slab Shown, Raised Sidewalk Similar)

9'-6 1/2" (See Note 4)

3'-6 1/2" (See Note 4)

4'-5 1/2"

Gutter Line

1'-6 1/2" Min.

C.I.P. Traffic Railing (32" F-Shape shown, 42" F-Shape similar)

Bars 5V (See Note 6)

Top of C.I.P. Coping Const. Joint Required

Bars 5S (See Note 6)

4 3/4"

1 3/4"

3" Cover

Spacing

Bars 5B2

See Note 5

6" Min Embed

4"

7 1/2"

7 1/2"

5"

Varies (1'-2" Max., 3" Min.)

1'-3" Max. Recess

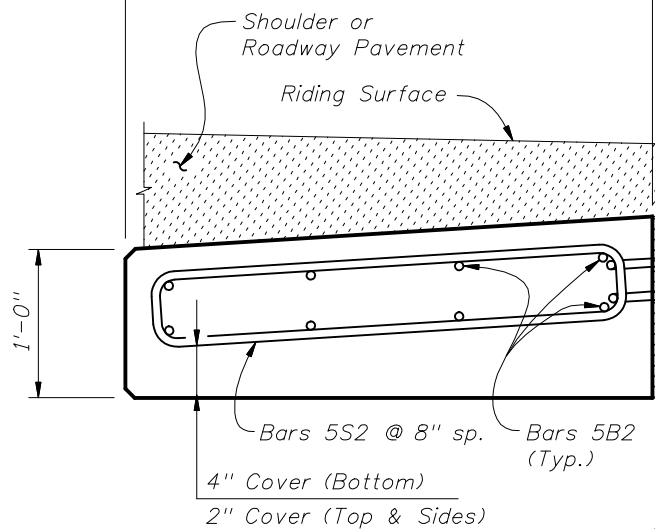
2'-0"

2" Cover

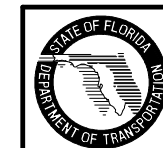
2" Cover

See Note 3

6"



SECTION A-A
SECTION THRU JUNCTION SLAB, BARRIER WALL INLET AND RETAINING WALL
(Junction Slab Shown, Raised Sidewalk Similar)



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PERMANENT RETAINING WALL SYSTEMS

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NOTES

SPECIFICATIONS:

1. General Specifications:
The Florida Department of Transportation "Standard Specifications for Road and Bridge Construction", Current Edition and Supplements as Amended.
2. Design Specifications:
 - a. Florida Department of Transportation (FDOT) "Structures Design Guidelines", Current Edition.
 - b. American Association of State Highway and Transportation Officials (AASHTO) "LRFD Bridge Design Specifications", Current Edition.
 - c. AASHTO-AGC-ARTBA Task Force 27 (Ground Modification Techniques), "Insitu Soil Improvement Techniques", January 1990.

DESIGN CRITERIA:

1. Design is based on the assumption that the material contained within the reinforced soil volume, methods of construction and quality of prefabricated materials are in accordance with Specification Section 548.
2. It is the responsibility of the Engineer to determine that the factored bearing pressure shown for the wall does not exceed the factored bearing resistance of the foundation for that specific wall location.
3. The Wall Company is responsible for internal stability of the wall. External stability design, including foundation and slope stability, is the responsibility of the Engineer.

SOIL PARAMETERS:

1. See wall control drawings for soil characteristics of foundation material to be used in the design of the wall system. The Contractor must provide soil design parameters for backfill material based on the actual soil characteristics utilized at the site. Provide the values of unit weight, cohesion and internal friction angle in the Shop Drawings.

MATERIALS:

1. Provide soil reinforcement in accordance with Specification Section 548.
2. For additional material notes, see Wall Company General Notes.

CONSTRUCTION:

1. Walls must be constructed in accordance with Specification Section 548 and the Wall Company's instructions.
2. For location and alignment of retaining walls, see Wall Control Drawings.
3. If present, consider in design and analysis and locate manholes and drop inlets as shown on wall elevations.
4. Refer to Plan and Elevation sheets of individual walls for minimum reinforcement strip/mesh length, factored bearing resistances, minimum wall embedment and anticipated long term and differential settlements.
5. It is the Contractor's responsibility to determine the location of any guardrail posts behind retaining wall panels. Prior to placement of the top layer of soil reinforcement, individual reinforcing strips/mesh may be skewed horizontally (15° maximum) to avoid the post locations if authorized by the Engineer. No cutting of soil reinforcement is allowed unless shown on shop drawings and approved by the Engineer. Any damage done to the soil reinforcement due to installation of the guardrail must be repaired by the Contractor at the Contractor's expense. All repair methods must be approved by the Engineer.
6. If existing or future structures, pipes, foundations or guardrail posts within the reinforced soil volume interfere with the normal placement of soil reinforcement and specific directions have not been provided on the plans, the Contractor must notify the Engineer to determine what course of action should be taken.
7. The Contractor is responsible for gradually deflecting upper layer(s) of soil reinforcement downward (15° maximum from horizontal) to avoid cutting soil reinforcement and conflicts with paving and subgrade preparation. The Contractor's attention is directed especially to situations where roadway superelevation and/or soil mixing are anticipated.

CONSTRUCTION (CON'T.):

8. Piles within the soil volume must be driven prior to construction of the retaining wall. The portion of the pile within the soil wall volume must be wrapped with polyethylene sheeting in accordance with Specification Section 459. Drive piles located within soil volume prior to construction of the retaining wall, unless a method to protect the structure, acceptable to both the Engineer and Wall Company, is proposed and approved in writing.
9. A structural extension of the connection of the retaining wall panel to soil reinforcement must be used whenever necessary to avoid cutting or excessive skewing (greater than 15°) of the soil reinforcement around obstructions (i.e., piles, pipes, etc.).

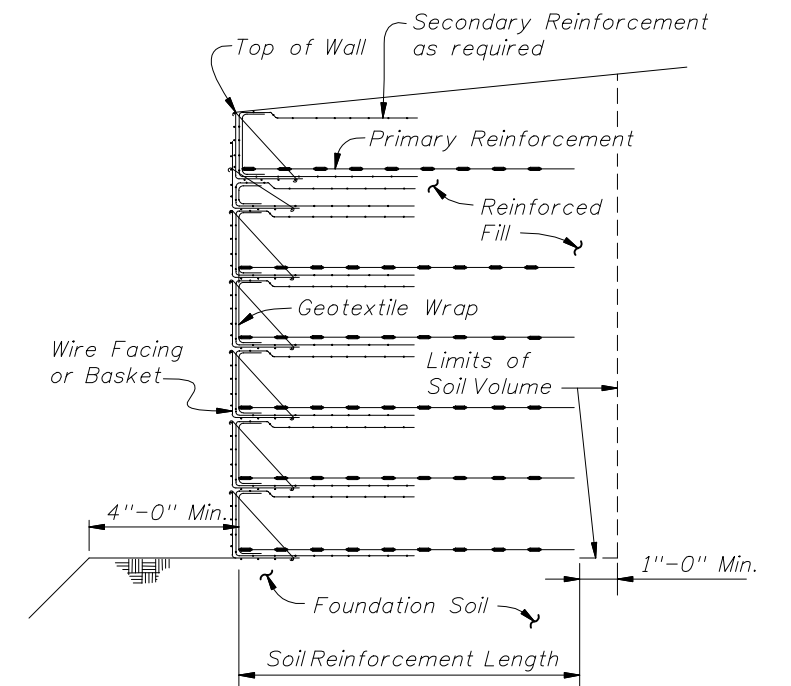
QUALIFIED PRODUCTS LIST

1. Manufacturers seeking approval of proprietary retaining wall systems for inclusion on the Qualified Products List as pre-approved wall system suppliers must submit a QPL Product Evaluation Application along with design documentation, vendor drawings, wall system construction manual and other information as required in the Retaining Wall System QPL Acceptance Criteria showing the proprietary wall system is designed to meet all specified requirements. Project specific Shop Drawings are required for QPL approved wall systems (see Shop Drawing Requirements below).

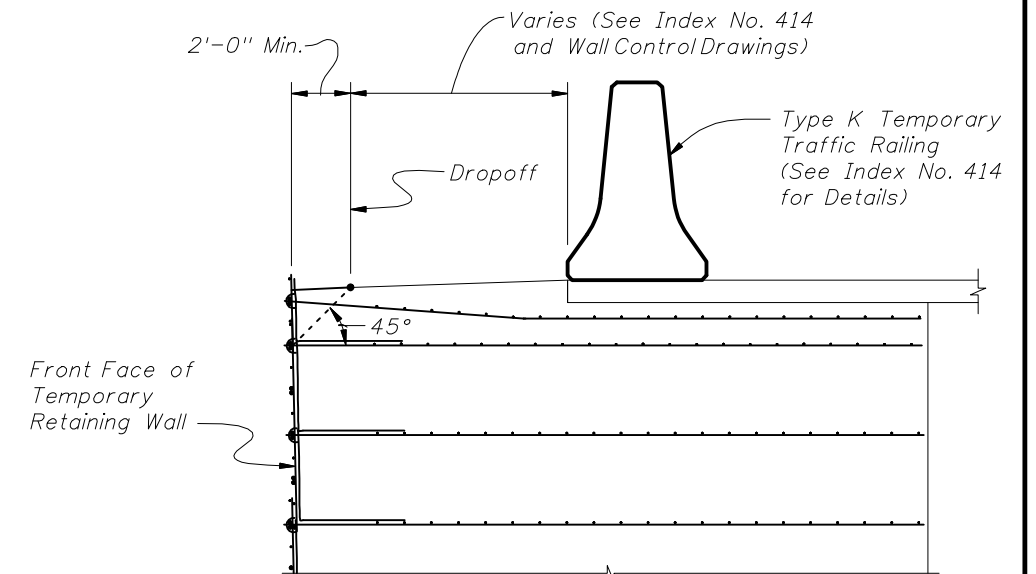
SHOP DRAWING REQUIREMENTS

The successful bidder must submit the final design of the wall for review as Shop Drawings. Details and Design Criteria shown on the Shop Drawings must not deviate from those shown on the approved QPL Vendor Drawings. The Shop Drawings must include detailed design computations and all details, dimensions and quantities necessary to construct the wall. The design and fully detailed plans must be prepared as required by FDOT Specification Section 548 and must include, but not be limited to, presentation of required information as follows:

1. Provide an elevation view of the wall indicating:
 - a. Elevations/Stations at the top and bottom of wall, for Begin/End Retaining Wall, all breaks in vertical alignment, all whole stations and every 25 foot station increments.
 - b. Length, size and designation of soil reinforcement in elevation view.
 - c. Location of the proposed final ground line.
2. Provide a plan view detailing the horizontal alignment and offsets from the horizontal control line(s) to the exterior face of the wall.
3. Show in plan and elevation all utilities, drainage structures, drainage pipes, etc. that affect the wall(s). Locate in the plan view all piles within the reinforced earth volume, as shown on Foundation Layout Drawings.
4. Provide general notes and design parameters on the Shop Drawings. Include design soil characteristics and all other pertinent notes required for construction of the walls. Provide the factored bearing resistance and factored bearing pressure for each wall height increment.
5. Show the limits of the reinforced soil volume.
6. Show complete details for construction of wall around obstructions. Show details for placement of soil reinforcement at acute corners.
7. Show complete details addressing conflicts between soil reinforcement and embedments in the reinforced soil volume.
8. Show complete details where walls of different types intersect/influence one another.
9. Provide fully detailed design calculations for each wall height increment detailed in the Shop Drawings. Submit Shop Drawings and design calculations signed and sealed by a Professional Engineer registered in the State of Florida.



**TYPICAL RETAINING WALL SECTION
(Showing Limits of the Reinforced Soil Volume)**



**TEMPORARY TRAFFIC RAILING
PLACEMENT DETAIL**

GENERAL NOTES AND DETAILS



2010 FDOT Design Standards

TEMPORARY RETAINING WALL SYSTEMS

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