# 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

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For Martin Knopp, Division Administrator

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## CERTIFICATION STATEMENT

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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As To Planning
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17900

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As To ITS
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18100-18305

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As To Landscape
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**Revisions**
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| Index Number | Sheet Number | Description |
|---|---|---|
| 001 | 1 thru 3 | Added the following standard abbreviations:<br>℄ Base Line, Base Line Control<br>℄ Flow Line<br>GRI Geosynthetic Research Institute<br>HDPE High Density Polyethylene<br>NPS Nominal Pipe Size |
| | | Deleted the following standard abbreviations:<br>Bbl Barrel<br>FRCP Fiber Reinforced Concrete Pipe<br>FRP Fiber Reinforced Pipe<br>FS Far Side |
| 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. |
| 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" ". |
| 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)". |
| | 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." |
| | 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." |
| 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:<br>Max. Bar Spacing Provided < Max. Bar Spacing Required x (Steel Area Provided/Min. Steel Area Required)² " |
| 205 | 1 of 6 | Changed maximum size of allowed PVC pipe to 36". |
| | 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. |
| | 3 of 6 | NOTES: deleted note 4; table "PIPE ARCH: SPIRAL RIB: ¾" x¾" x 7½" 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. |
| 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". |
| 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. |
| 213 | 1 of 1 | In PLAN view changed "1/2" Exp. Joint (Typ)" to "1/2" Preformed Joint Filler (Typ)". |
| 218 | 2 of 2 | "STEEL GRATE", "TOP VIEW", for the overall dimension on the left side of the grate, inserted "44¼" ". For the small dimension at the upper left corner of the grate, inserted "3½" ". |
| 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)". |
| 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 "5½" to "4½" ". |
| | | "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". |
| 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 ½L + ½ x 3 Bar) for grating. |
| 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.)". |
| 232 | 1 thru 7 | Index was expanded due to font size change. |
| 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. |
| 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." |
| 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." |
| 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." |
| 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." |
| 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." |
| 260 | 1 of 1 | "GENERAL NOTES" Note 3 changed "Specification Section 962" to "Specification Section 975". |
| 261 | 1 of 3 | "GENERAL NOTES" Note 4 changed "Specification Section 962" to "Specification Section 975". |
| 264 | 1 thru 2 | Index was expanded due to font size change. General note 3 changed. |
| 270 | 1 of 1 | "GENERAL NOTES" Note 2 changed "Specification Section 941-1.5" to "Specification Section 449". Changed Note 3. |
| 272 | 6 of 6 | Reordered "GENERAL NOTES" and changed "Class I concrete" to "Class NS concrete". |
| 273 | 1 thru 7 | Index was expanded due to font size change. |
| | 7 of 7 | "GENERAL NOTES", Note 8, deleted "Class I concrete" and substituted "Class NS concrete". |
| 280 | 1 thru 3 | Index was expanded due to font size change. |
| | 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." |
| 282 | 1 thru 3 | Index was expanded due to font size change. |
| | 1 of 3 | "FRONT ELEVATION" and "SECTION AA" details changed "1/2" Exp. Matl. " to "1/2" Preformed Joint Filler". |
| | 2 of 3 | "PLAN" and "SECTION AA" details changed "1/2" Exp. Matl. " to "1/2" Preformed Joint Filler". |
| 284 | 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." |
| 287 | 1 thru 4 | Sheet 3 is new. Renumbered other sheets. |
| | 1 of 4 | Changed all 3 occurrences of "Class I concrete" to "Class NS concrete". |
| 288 | 1 of 1 | New Index added "DEEP WELL INJECTION BOX". |
| 289 | 6 of 7 | Changed "FLARED ENDWALL" to "FLARED WINGWALL" and "STRAIGHT ENDWALL" to "STRAIGHT WINGWALL". |
| 291 | 1 of 5 | Changed "Class I Concrete" to "Class NS". |
| | 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. |

**Revisions**
**Design Standards 2010**

| Index Number | Sheet Number | Description |
|---|---|---|
| 295 | 1 of 1 | "GENERAL NOTES" Note 2 changed "Specification Section 962" to "Specification Section 975". |
| 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. |
| 305 | 1 & 4 of 4 | Deleted bar spacing table and revised notes (Sheet 1); Changed width of outside lanes (Sheet 4). |
| 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. *". |
| | | "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." |
| | | "Note 3" , deleted. |
| | 2 of 2 | "NOTES FOR CONCRETE SIDEWALKS ON UNCURBED ROADWAYS", Changed Note 2 to "Provide detectable warnings that extend the full width of the sidewalk and 24" deep from the edge of pavement where sidewalks adjoin the following vehicular ways:<br>side roads and streets<br>driveways with signalized entrances<br>driveways with entrance volumes greater than 600 vpd<br>driveways with entrance speeds of 25 mph or greater<br>right in – right out composite driveways. |
| 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. |
| | 1 of 26 | "GENERAL NOTES" Note 17 changed "Specification Section 971" to "Specification Section 975". |
| | 2 of 26 | New sheet added showing limits of pay for guardrail, details of shoulder treatment and miscellaneous asphalt for guardrail approach end treatments. |
| | 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) |
| | 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. |
| 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." |
| | | "ANCHOR PLATE BOLTS", upper note, changed "?" to "3/4"". |
| 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. |
| | | 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." |
| 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." |
| 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. |
| | | 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." |
| 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". |
| | | "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." |
| | 2 of 3 | Changed Bicycle Railing to "Special Height Bicycle Railing" and Post "B" to Post "B1". |
| | 3 of 3 | Changed 83 degrees to 93 degrees in CONVENTIONAL REINFORCING STEEL BENDING DIAGRAM Cross-slope table. |
| 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." |
| | | "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." |
| 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." |
| | | "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." |
| 470 | 1 of 3 | Added Field testing proof loads to the ADHESIVE BONDED ANCHORS AND DOWELS 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." |
| | | 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." |
| | 3 of 3 | Changed offset of 7/8" dia. anchor bolts to 2 3/4" from back edge of base plate in SECTION B-B. |
| 471 | 2 of 4 | "SECTION A-A" and "SECTION B-B", changed "Resilient Pad" to "Neoprene Pad". |
| 472 | 2 of 4 | "SECTION A-A" and "SECTION B-B", changed "Resilient Pad" to "Neoprene Pad". |
| 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". |

## Revisions
## Design Standards 2010

| Index Number | Sheet Number | Description |
|---|---|---|
| 475 | 2 of 4 | "SECTION A-A" and "SECTION B-B", changed "Resilient Pad" to "Neoprene Pad". |
| 476 | 2 of 4 | "SECTION A-A" and "SECTION B-B", changed "Resilient Pad" to "Neoprene Pad". |
| 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.<br><br>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." |
| | 2 of 2 | CONVENTIONAL REINFORCING STEEL BENDING DIAGRAM, added Bars 5E, 5F and 4G for Index No. 484 |
| 484 | 1-10 of 10 | New Index added TRAFFIC RAILING (VERTICAL FACE RETROFIT) SPREAD FOOTING APPROACH |
| 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. |
| | 4 of 9 | Updated values for COMTRAC 70.70; Deleted AMOCO 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 SYNTEEN 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. |
| 505 | 1-4 of 4 | Sheet 3 is new. Renumbered other sheets. |
| 515 | 5 of 7 | In second symbolized note changed "Section 102-6" to "Section 102-8". |
| | 6 of 7 | "PAVEMENT STRUCTURE FOR TURNOUTS AND AUXILLIARY LANES TABLE 515-1", "NOTES", Note 5, Deleted "Class I concrete" substituted "Class NS concrete". |
| 518 | 3 of 3 | Revised width of rigid pavement outside travel lane and changed location of rumble strip. |
| 520 | 1 of 1 | "GENERAL NOTES", Note 7, Deleted "Class I Concrete (Retaining Walls)" and substituted "Class NS Concrete" |
| 546 | 1 of 6 | Added detail "PLAN", "PICTORIAL" and ** note. Index sheets reordered. |
| | 5 of 6 | Under "NOTES FOR 4-LANE DIVIDED ROADWAY", Note 1, changed reference from "Sheet 6" to "Sheet 2". |
| 600 | 2 of 13 | OVERHEAD WORK, deleted "OPTION 4 - - -" and substituted the following:<br>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:<br>(a) Beam, girder and segment placement.<br>(b) Deck form placement and removal.<br>(c) Concrete deck placement.<br>(d) Railing construction located at edge of deck.<br>(e) Structure demolition.<br><br>DEFINITIONS, added the following after definition of TRAVEL WAY:<br>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.<br>b. Auxiliary Lane: The designated widths of roadway pavement marked to separate speed change, turning, passing and climbing maneuvers from through traffic.<br><br>CLEAR ZONE WIDTHS FOR WORK ZONES, deleted the text "travel" in the first sentence and substituted "traffic".<br><br>Replaced chart "CLEAR ZONE WIDTHS FOR WORK ZONES". |
| 600 | 3 of 13 | LANE WIDTHS, in the second sentence, change the word "expected" to "excepted". |
| | 5 of 13 | Changed note under "SIGN COVERING AND INTERMITTENT WORK STOPPAGE SIGNING"; added information for the use of the new "PROJECT INFORMATION SIGN". |
| | 6 of 13 | GENERAL NOTES, deleted note 1, substituted the following:<br>"1. All signs shall be post mounted when work operations exceed one day except for:<br>a) Road closure signs mounted in accordance with the vendor drawing for the Type III Barricade shown on the QPL.<br>b) Pedestrian advanced warning or regulatory signs mounted on sign supports shown on the QPL."<br><br>"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" ".<br><br>POST AND FOUNDATION TABLE FOR WORK ZONE SIGNS, expanded Note 2 by adding: "unless otherwise specified in the vendor drawing on the QPL."<br><br>POST MOUNTED SIGN NOTES, added new notes 1 and 12. |
| | 7 of 13 | Added new sheet showing Project Information Sign and renumbered index. |
| 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."<br><br>Added new heading "DURATION NOTE" and placed the following note under this heading:<br>1. ROAD WORK AHEAD sign may be omitted if all of the following conditions are met:<br>a) Work operations are 60 minutes or less.<br>b) Speed is 45 mph or less.<br>c) No sight obstructions to vehicles approaching the work area for a distance of 600 feet.<br>d) Vehicles in the work area have high-intensity, rotating, flashing, oscillating, or strobe lights operating.<br>e) Volume and complexity of the roadway has been considered. |
| 625 | 1 of 1 | New Index added "TEMPORARY ROAD CLOSURE- 5 MINUTES OR LESS". |
| 655 | 1-3 of 3 | New Index added "TRAFFIC PACING-LIMITED ACCESS". |
| 667 | 1-6 of 6 | New Index added "TOLL PLAZAS". |
| 801 | 1 of 3 | "GENERAL NOTES", Note 15 and 21, deleted "Class I" and substituted "Class NS". |
| 802 | 1-3 of 3 | Added tolerance to ground clearance; revised Notes 7a and 7b; rearranged sheets. |
| | 1 of 3 | "GENERAL NOTES", Note 6 and 13, deleted "Class I concrete" and substituted "Class NS concrete" for all occurrences. |
| 803 | 1 of 1 | "GENERAL NOTES", Note 4, deleted both occurrences of "Class I" and substituted "Class NS". |
| 810 | 2 of 4 | Deleted "Section 971" and substituted "Section 975" in ANCHOR RODS, NUTS AND WASHERS note. |
| 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 Pedestrain and Bicyle 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 Pedestrain and Bicyle 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 Pedestrain and Bicyle Railing designation. Corrected height dimension on steps to top of nosing. |

## Revisions
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| Index Number | Sheet Number | Description |
|---|---|---|
| 851 | 1 of 2 | Changed Pedestrain and Bicyle Railing designation. |
| | 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 ¼" in DETAIL "B". |
| 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 5 | Added "DETAIL FOR NON-CONTINUOUS RAILING AT CORNERS" detail. Changed Pedestrain and Bicyle Railing designation; maximum ramp length for slopes less than 6.25%; and minimum clear picket opening at post to ¾". |
| | 3 of 5 | Changed Pedestrain and Bicyle 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; ¼" 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 ⅛", handrail and top rail fillet weld size to ¼", and base plate fillet weld size to ⅜". |
| | 5 of 5 | Added DETAIL "F" and note (*) to ANCHOR BOLT TABLE. Changed Pedestrain and Bicyle Railing designation. Corrected height dimension on steps to top of nosing. |
| 861 | 1 of 2 | Changed designation of 54" tall railing to "Special Height Bicycle Railing". |
| | 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 ¼" and "Steel Sleeve" to "Aluminum Sleeve" in DETAIL "B". |
| 870 | 1 of 5 | Deleted Pedestrian and Bicycle designations from DESIGN LIVE LOADS and ALTERNATE DESIGN notes. |
| | 2 of 5 | Deleted 4'-6" Bicycle Railing option and "**" note. Changed maximum ramp length for slopes less than 6.25%. |
| | 3 of 5 | Deleted 4'-6" Bicycle Railing option. |
| | 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 ¼" joint tolerance in DETAIL "D". Deleted Intermediate Rails from DETAILS "B" and "C". |
| | 5 of 5 | Added DETAIL "F". Deleted 4'-6" Bicycle Railing option. Corrected height dimension on steps to top of nosing. |
| 880 | 1 of 5 | Deleted Pedestrian and Bicycle designations from DESIGN LIVE LOADS and ALTERNATE DESIGN notes. |
| | 2 of 5 | Deleted 4'-6" Bicycle Railing option and "**" note. Changed maximum ramp length for slopes less than 6.25%. |
| | 3 of 5 | Deleted 4'-6" Bicycle Railing option. |
| | 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 ¼ joint tolerance in DETAIL "D". Deleted Intermediate Rails from DETAILS "B" and "C". |
| | 5 of 5 | Added DETAIL "F". Deleted 4'-6" Bicycle Railing option. Corrected height dimension on steps to top of nosing. |
| 5100 | 2 of 2 | Changed to plastic sleeve expansion joint and "Premoulded Expansion Material" to "Preformed Joint Filler". Changed wall and expansion joint key. |
| 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 O.2; Deleted note H.3. |
| 5201 | 1 of 1 | Texture Type "I" (Cut Coral Block) added. |
| 5202 | 1 of 4 | Added precast post cap; Changed clearance tolerance on stepped panel and Neoprene Pad options. |
| | 3 of 4 | Changed #4 Bar Mark to Bars P5 and P6 for Pile/Post Options A, B, & E; changed Texture Thickness to 1¼" Max. |
| 5203 | 1 of 5 | Added precast post cap; Changed clearance tolerance on stepped panel and Neoprene Pad options. |
| | 3 of 5 | Changed #4 Bar Mark to Bars P5 & P6 for Pile/Post Options A, B & E, and changed texture thickness dimension to ¼" Max. |
| | 4 of 5 | New sheet added for 45 degree corner post. |
| | 5 of 5 | Renumbered from Sheet 4 of 4. |
| 5204 | 1 of 1 | Changed "Ribbed" to "Slotted" in PLUG DETAIL. |
| 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'. |
| | 2 of 7 | Added tolerance between Top of Precast Collar and Auger Cast Pile; Changed "Composite Bearing Pads" to "Fiber Reinforced Bearing Pads". |
| | 5 of 7 | Changed "Composite Bearing Pads" to "Fiber Reinforced Bearing Pads". |
| | 7 of 7 | Added "Octangonal Precast Collar" details and tolerance between Top of Precast Collar and Auger Cast Pile; Changed "Composite Bearing Pads" to "Fiber Reinforced Bearing Pads". |
| 5206 | 1 of 1 | Added "POST LENGTH WITH CAP" column, BARS D, P5 thru P8 to table and bar bending details for corner posts. |
| 5207 | 1 of 1 | New Index added "PRECAST SOUND BARRIERS-PRECAST POST CAPITAL". |
| 5210 | 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 RELECTIVE RAILING MARKER SPACING table. |
| 5211 | 3 of 3 | Changed "Ribbed" to "Slotted" in NEOPRENE DIAPHRAGM PLUG DETAIL. Corrected Anchor Pin daimeter on FIRE HOSE ACCESS DETAIL. |
| 5212 | 2 of 2 | Added note for "Full Depth Structural Asphalt" above junction slab and changed coping dimension to 6" Min. |
| 5300 | 3 of 19 | Increased max. gap at back of precast coping and added timber blocking. |
| | 6 of 19 | Added note for "Full Depth Structural Asphalt" above junction slab and increased max. gap at back of precast coping. |
| | 7 of 19 | Added note for "Full Depth Structural Asphalt" above junction slab. |
| | 12 & 15 of 19 | Increased max. gap at back of precast coping. Corrected size of Bar 5U1 in BILL OF REINFORCING TABLE |
| 11200 | 1-2 of 2 | Deleted sheet 2 |
| | 1 of 2 | Revised and rearranged notes, sheet renumbered to 1 of 2. |
| | 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". |
| 11300 | 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. |
| 11310 | 1 of 5 | Deleted A307 bolts and Palnut (Note 4e). Changed foundation concrete (Note 7). Changed to ½" mesh (Note 9). Deleted grout pad and notes (former Notes 7c & 9). Added CSL tube note (Note 14). |
| | 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. |
| | 5 of 5 | Changed bolt spacing connection details. |
| 11320 | 1 of 5 | Deleted A307 bolts and Palnut (Note 4e). Changed foundation concrete (Note 7). Changed to ½" mesh (Note 9). Deleted grout pad and notes (former Notes 7c & 9). Added CSL tube note (Note 14). |
| | 2 of 5 | Changed foundation standoff distance. Deleted grout pad and added wire screen. |
| | 4 of 5 | Changed bolt spacing connection details. |
| | 5 of 5 | Changed drilled shaft detail. Added CSL tubes. |
| 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". |
| | 2 of 8 | Changed maximum limits of sign cluster area and width in NOTE. |
| | 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. |
| | 5 of 8 | Modified "DRIVEN POST DETAIL IN CONCRETE". |
| 17302 | 1 of 1 | CASE II, and CASE VIII dimensions and notes revised. |
| 17328 | 1 of 1 | Weigh Station and combination Weigh Station and Inspection Station signing details separated. |

**Revisions**
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| 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. |
| 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. |
| | 4 of 4 | Deleted note 2 |
| 17346 | 1-14 of 14 | Completely revised and renumbered. |
| 17347 | 1-4 of 4 | New Index BICYCLE MARKINGS added. |
| 17349 | 1 of 1 | Case I and Case II revised; 18" x 18" marker detail revised; notes at bottom right revised. |
| 17355 | 1 of 11 | Revised signs FTP-9A-06 & FTP-9B-06 and notes. |
| | 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". |
| | 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. |
| | 9 of 11 | Revised sign FTP-82-08 and arrow detail. Added Sign FTP-83-08. |
| 17356 | 1 of 1 | Removed signal head from detail. Single point attachment details deleted from Index. (Deleted sheet 1.) |
| 17359 | 1 of 2 | Changed delineators to object markers; revised reference notes; sign W13-1 made optional. RURAL NARROW BRIDGE TREATMENT, changed the OM3L on the right side of the roadways to an OM3R. |
| | 2 of 2 | Notes revised; inserts reorganized |
| 17500 | 1 of 3 | Deleted concrete pole detail, added METAL POLE DETAIL AND WIRING DIAGRAM. |
| | 2 of 3 | Note 7, deleted "class I Concrete (Miscellaneous)" replaced with "Concrete and reinforcing for slabs around poles and pull boxes shall be included in the price for pull box or pole." |
| | 3 of 3 | Note 7, deleted "class I Concrete (Miscellaneous)" replaced with "Concrete and reinforcing for slabs around poles and pull boxes shall be included in the price for pull box or pole." |
| 17501 | 1 of 1 | Deleted note 28. |
| 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). |
| | 4 of 7 | Added ID plate and changed base plate thickness. Deleted grout pad. Changed drilled shaft reinforcing. |
| | 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. |
| | 6 of 7 | Grout notes and details removed, new wire screen. |
| | 7 of 7 | Note 3, changed "Concrete class" to "concrete NS" |
| 17503 | 1 of 1 | Index deleted. |
| 17504 | 1 of 1 | Dimensions 5'-6" added for height of meter base. Pole type changed from type "N" to type "P". |
| 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. |
| 17515 | 1 of 8 | Added median barrier mounted light poles. Moved notes to sheet 2. |
| | 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 8 | Sheet renumberd from 2 to 3. Added double arm configuration to ARM ELEVATION. |
| | 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. |
| | 5-8 of 8 | New Sheets for median barrier mounted light pole. |
| 17600 | 2 of 3 | Added detail for pole foundation to be used only behind guardrail. |
| | 3 of 3 | GENERAL NOTES, note 2, changed "Class II Concrete" to "Class I Concrete"; changed note 4. |
| 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). |
| | 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. |
| | 3 of 3 | Changed note in VIEW E-E; Added 1/4" and 3/8" cable clamps and changed weld criteria. Changed clevis size. |
| 17725 | 1 of 2 | Round pole note revised; pole height dimensions added to Type P-III through P-VIII; Copper Ground note changed. |
| | 2 of 2 | Notes revised and rearranged, D(feet) changed to H(feet) in both tables. |
| 17727 | 1-2 of 2 | Schedule 40 aluminum pipe (T6061) added as an alternate to stainless steel pipe in assembly details and signal head notes. Added backplates to signal head details. |
| 17736 | 1 of 1 | Added notes 5 & 6. |
| 17743 | 1 of 3 | Updated assembly dimensions. Changed drilled shaft reinforcing. |
| | 2 of 3 | Updated assembly dimensions. Changed drilled shaft reinforcing. Changed T3-BF. |
| | 3 of 3 | Updated assembly dimensions. Changed drilled shaft reinforcing. |
| 17745 | 1 of 5 | QPL requirements added in new note 17; added backplates to pole detail; Notes 6 & 14 revised, deleted note 19. |
| | 2 of 5 | Revised foundation reinforcing details, Section AA, Section DD and Foundation Plan details. |
| 17748 | 1 of 1 | Option 1 deleted and Options 2 and 3 renumbered; Note 1 revised. Added backplates to signal head displays. |
| 17784 | 1 of 2 | Dimensions revised on Figures A & B. Note 5 and Note to Designers revised. |
| | 2 of 2 | Revised details and spacing for signs FTP-68A-06 and FTP-68B-06, also located bolt holes outside of sign message. |
| 17890 | 2-3 of 3 | Added backplates to signal head displays. |
| 17900 | 7 of 7 | Changed pole type call outs, deleted "N-III" and substituted "P-III". |
| 18111 | 1-2 of 2 | Index totally revised. |
| 18113 | 1-2 of 2 | Index totally revised. |
| 20110 | 1 of 1 | Changed Insert Detail for Diaphragm Reinforcing. |
| 20199 | 1 of 1 | Changed BEAM CAMBER AND BUILD-UP NOTES. |
| 20210 | 2 of 2 | Added "Type Q" Epoxy to Note 9. |
| 20299 | 1 of 1 | Changed BEAM CAMBER AND BUILD-UP NOTES. |
| 20500 | 1 of 1 | Added Type C Pads for larger skew ranges. Changed specification of elastomer from "durometer" to "shear modulus". |
| 20501 | 1 of 1 | Changed Note 4. |
| 20502 | 1 of 1 | Changed Note 4. |
| 20602 | 1 of 1 | Changed EDC location to 1D from tip of pile. |
| 20900 | 2 of 2 | Changed coping width and End Bent lug from 6" to 5½" thickness. |
| 20910 | 2 of 2 | Changed coping width and End Bent lug from 6" to 5½" thickness. |
| 21100 | 1 of 3 | Deleted redundant notes from Specification Section 458. |
| | 3 of 3 | Changed Sidewalk Cover Plate edge treatment. |
| 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". |
| | 2 of 2 | Changed Sidewalk Cover Plate edge treatment. |
| 21200 | 1 of 2 | Added "Anchor Plate (dashed lines) (provide Design) to ELEVATION VIEW and TYPICAL SECTION. Added design of anchor bolts and accessories. |
| | 2 of 2 | Added design of anchor bolts and accessories. |
| 21600 | 1 of 7 | Clarified INSTRUCTIONS TO DESIGNER for variable end span lengths. |
| | 3 of 7 | Added vertical dimensions between deck surface and underside of bearings, including depth of Truss Panel. |
| 21802 | 1 of 1 | Changed "Methyl Methacrylate" to "High Molecular Weight Methacrylate". |
| 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 |
| AASHO | American Association Of State Highway Officials |
| AASHTO | American Association Of State Highway And Transportation Officials |
| ABC | Asphalt Base Course |
| Abd. | Abandoned |
| ABS | Acrylonitrite-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 |
| AOS | 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 ℄ | Base Line, Base Line Control |
| Bldg. | Building |
| Blkhd. | Bulkhead |
| BLON | 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 ℄ | 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 |
| COMM | 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 |
| Ctlvr. | 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 |

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.

| | |
|---|---|
| F | Fill, Farad |
| F or Final | Final Quantity |
| F & I | Furnish & Install |
| F to F | Face to Face |
| FA | Federal Aid or Fine Aggregate |
| FAC | Florida Administrative Code |
| FAP | Federal Aid Project |
| FC | Friction Course |
| FD | French Drain |
| Fdn. | Foundation |
| FDOT | Florida Department Of Transportation |
| FE | Floor Elevation |
| Fed. | Federal |
| Fert. | Fertilizer |
| FES | Flared End Section |
| FETS | Flared End Terminal Section |
| FH | Fire Hydrant |
| FHWA | Federal Highway Administration |
| Fig. | Figure |
| Fin. | Finish |
| F.L., FL or ℄ | Flow Line |
| FL, Fl. or Fla. | Florida |
| Flex. | Flexible |
| FNQ | Fuse (Type Slow Burn) |
| FOC | Fiber Optics Cable |
| FPM or fpm | Feet Per Minute |
| FPS or fps | Feet Per Second |
| FR or Fr. | Frame |
| Frang. | Frangible |
| Freq. | Frequency |
| F.S. | Florida Statutes |
| Ft. | Foot or Feet |
| FTB | Floating Turbidity Barrier |
| FTBA | Florida Transportation Builder Association |
| FTP | Florida Traffic Plans |
| Furn. | Furnish |
| G | Giga or Gauss |
| g | Gram or Gravity |
| Galv. | Galvanized |
| Ga. | Gauge or Gage |
| Ga. or Gal. | Gallon |
| Gar. | Garage |
| GD | Gutter Drain |
| GFI | Ground Fault Interrupter |
| GIP | Galvanized Iron Pipe |
| GM | Gas Main |
| GP | Grade Point |
| Gr. | Grade, Guardrail or Grate |
| Gr. or Gro. | Gross |
| GRC | Galvanized Rigid Steel Conduit |
| Grd. | Ground |
| GRI | Geosynthetic Research Institute |
| gross km | Gross Kilometer |
| Gr. Wt. or gr. wt. | Gross Weight |
| Gttr. | Gutter |
| H | Henry |
| h | Hour or Hecto |
| ha | Hectare |
| HAR | Highway Advisory Radio |
| HB | Hay Bales |
| HC | Horizontal Clearance |
| HD | High Density or Heavy Duty |
| HD or Hd. | Head |
| HDPE | High Density Polyethylene |
| Hdwl. | Headwall |
| HH | Heavy Hex |
| Hndrl | Handrail |
| HOA | Hand/Off/Automatic |
| Horiz. or Hor. | Horizontal |
| HP | High Pressure or Horsepower |
| Hr. | Hour |
| HS | High Strength |
| HSHV | High Strength Horizontal Vertical |
| Hse. | House |
| Ht. | Height |
| HW or H.W. | High Water or Hot Water |
| Hwy. | Highway |
| Hyd. | Hydraulic |
| Hz | Hertz |
| I | External Angle (Delta), Interstate |
| Intchg. or Ichg. | Interchange |
| IES | Illuminating Engineering Society |
| ID, I.D. | Inside Diameter or Identification |
| IMC | Intermediate Metal Conduit |
| In. | Inch or Inches |
| Inc. | Incorporated or Including |
| Incl. or Inc. | Included |
| Ind. | Industry or Industrial |
| INV. or Inv. | Invert |
| IP | Iron Pipe |
| Install. | Installed |
| Isect. | Intersection |
| Isl. | Island |
| IR | Iron Rod |
| ITE | Institute Of Transportation Engineers |
| ITS | Intelligent Transportation Systems |
| J | Joule |
| JB | Junction Box |
| Jct. | Junction |
| Jt. | Joint |
| K | Design Hour Factor or Kelvin |
| k | Kilo (prefix) |
| kg | Kilogram |
| kg/m | Kilogram Per Meter |
| kg/m² | Kilogram Per Square Meter |
| kg/m³ | Kilogram Per Cubic Meter |
| Kilo | One Thousand |
| Kip | 1000 Pounds |
| km | Kilometer |
| km/h | Kilometer Per Hour |
| kn | Knot |
| kN | Kilonewton |
| kPa | Kilopascal |
| ksi | Kips Per Square Inch |
| kV | Kilovolt |
| kVA | Kilovolt Ampere |
| kWh | Kilowatthour |
| L | Length, Length Of Curve, Liter, Left |
| 2-L | Two-Lane |
| 2L1W | Two-Lane One-Way |
| 2L2W | Two-Lane Two-Way |
| LA or L/A | Limited Access |
| Lat. | Lateral or Latitude |
| Lb. | Pound |
| LBS. | Pounds |
| lb/sy | Pounds Per Square Yard |
| LBR | Limerock Bearing Ratio |
| LC | Long Chord |
| LEO | Law Enforcement With Flashing Lights And Radar |
| LFD | Load Factor Design |
| Lgth. | Length |
| Lin. | Linear |
| lm | Lumen |
| Lmrk. | Limerock |
| LOS | Limit Of Clear Sight |
| Loc., LO | Location |
| Long. | Longitude |
| LRFD | Load Resistance Factor Design |
| LS | Length Of Spiral |
| LT | Left Turn |
| Lt. | Left |
| Ltd. | Lighted or Limited |
| Lum. | Luminaire |
| L/W | Lightweight |
| lx | Lux |
| M | Mass, Middle Ordinate Length or Mega |
| m | Meter or Milli |
| m² | Square Meter or Meter Square |
| m³ | Cubic Meter or Meter Cubed |
| m³ /m | Cubic Meter Per Meter |
| m/s | Meters Per Second |
| Mach. | Machine |
| Maint. | Maintenance |
| Matl. | Material |
| Max. | Maximum |
| MB | Median Barrier |
| MBM | Thousand (Feet) Board Measure |
| MD | Machine Direction (Geotextiles) |
| Med. | Median |
| Mega | One Million |
| Memb. | Member |
| MES | Mitered End Section |
| Mess. | Message |
| Mfg. | Manufactured or Manufacturer |
| MG | 1000 Gallons |
| MH, M.H. | Manhole, Mounting Height |
| MHW | Mean High Water |
| µ | Micro |
| Mi. | Mile |
| Micro | One-Millionth |
| Mid. | Middle |
| Mil | One-Thousandth Of An Inch |
| Mil. | Military |
| Milli | One-Thousandth |
| Min. | Minimum or Minute |
| Misc. | Miscellaneous |
| mL | Milliliter |
| MLW | Mean Low Water |
| mm | Millimeter |
| Mobl. | Mobilization |
| Mod. | Modify or Modified |
| Mol | Mole |
| Mon. | Monument |
| MOT | Maintenance Of Traffic |
| MP | Mile Post |
| MPa | Megapascal |
| MPH or mph | Miles Per Hour |
| MSL | Mean Sea Level |
| MSTCSD | Minimum Specifications For Traffic Control Signal Devices |
| Mtd. | Mounted |
| MUTCD | Manual On Uniform Traffic Control Device |
| MUTS | Manual On Uniform Traffic Studies |
| N | North or Newton |
| N/m | Newtons Per Meter |
| N/m² | Newtons Per Square Meter |
| N/m³ | Newtons Per Cubic Meter |
| N/mm² | Newtons Per Square Millimeter |
| NA or N/A | Not Available or Not Applicable |
| N & C | Nail & Cap |
| N & D | Nail & Disk |
| NAVD | National American Vertical Datum |
| NB | Northbound |
| NC | National Coarse or Normal Crown |
| NCHRP | National Cooperative Research Program |
| NDCBU | Neighborhood Delivery And Collection Box Unit |
| NE | Northeast |
| net km | Net Kilometer |
| NEMA | National Electrical Manufacturers Association |
| NGVD | National Geodetic Vertical Datum of 1929 |
| NGS | National Geodetic Survey |
| NHS | National Highway System |
| NHW | Normal High Water |
| NIC | Not In Contract |
| NJ | New Jersey |
| N m | Newton Meter |
| No. | Number |
| Nom. | Nominal |
| Norm. | Normal |
| N.P. | Non Plastic |
| NPS | Nominal Pipe Size |
| NPT | National Pipe Thread |
| NRCP | Non-Reinforced Concrete Pipe |
| NS | Non Stress, Not Suitable or Near Side |
| NT, N&T | Non Traffic, Nail & Tin |
| NTS | Not To Scale |
| NW | Northwest |
| Opass | Overpass |
| O to O, o to o or O.O. | Out to Out |
| OA | Overall |
| O.B.G. | Optional Base Group |
| OC or O.C. | On Center |
| OD or O.D. | Outside Diameter |
| OE | Overhead Electric |
| OH, OHD or Ohd. | Overhead |
| Opt. | Option, Optional or Optically |
| OT | Overhead Telephone |
| Oz. | Ounce |
| Ω | Ohm |
| P | Passenger Car & Light Delivery Truck |
| P or Plan | Plan Quantity |
| Pa | Pascal |
| Par. | Parallel |
| Pa•s | Pascal Second |
| Part. | Participation or Partition |
| Pavt. | Pavement |
| PC | Point Of Curvature |
| PCBC | Precast Concrete Box Culvert |
| PCC | Point Of Compound Curvature or Plain Cement Concrete |
| PCE | Permanent Construction Easement |
| PE | Professional Engineer |
| Ped | Pedestrian or Pedestal |
| Pen. | Penetration |
| PG | Profile Grade |
| PGL | Profile Grade Line |
| Ph. | Phase |
| pH | Measure Of Acidity or Alkalinity |
| PI | Point Of Intersection |
| Pkg. | Parking |
| Pkwy. | Parkway |
| PL or ℄ | Property Line or Plate |
| PM | 12:00 Noon Until 11:59 Midnight |
| POC | Point On Curve |
| POST | Point On Semi-Tangent |
| POT | Point On Tangent |
| PP | Power Pole |
| PPB | Pier Protection Barrier |
| Pr. | Pair |
| PRC | Point Of Reverse Curvature |
| Prcst. | Precast |
| Prest. | Prestressed |
| Prob. | Probability |
| Prod. | Product, Production, Producer or Produced |
| Prog. | Program or Progression |
| Proj. | Project or Projection |
| PRM | Permanent Reference Monument |
| Prop. | Proposed |
| Prov. | Provisions |
| PRS | Portable Regulatory Sign |
| PS & E | Plans, Specifications And Estimates |
| PSF or psf | Pounds Per Square Foot |
| PSI or psi | Pounds Per Square Inch |
| PT | Point Of Tangency or Pressure Treated |
| PVC | Polyvinyl Chloride |
| PW | Pressure Water |

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.

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

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## UNITS OF MEASURE

US MEASUREMENT

| | |
|---|---|
| AC | Acre |
| AS | Assembly |
| BU | Bushel |
| CF | Cubic Foot |
| CO | Cleanout |
| CY | Cubic Yard |
| EA | Each |
| ED | Each Day |
| GA | Gallon |
| GM | Gross Mile |
| LB | Pound |
| LF | Linear Foot |
| LM | Lane Mile |
| LO | Per Location |
| LS | Lump Sum |
| LU | Luminaire |
| MB | Thousand Board Measure |
| MG | Thousand Gallons |
| MH | Man Hour |
| NM | Net Mile |
| PA | Per Analysis |
| PB | Per Building |
| PE | Pile |
| PI | Per Intersection |
| PL | Plant |
| PM | Per Mile |
| PS | Per Set |
| PW | Per Well |
| SI | Square Inch |
| SF | Square Foot |
| SY | Square Yard |
| TN | Ton |

METRIC MEASUREMENT

| | |
|---|---|
| AS | Assembly |
| CO | Cleanout |
| DA | Day |
| EA | Each |
| ED | Each Day |
| GK | Gross Kilometer |
| HA | Hectare |
| HR | Hour |
| KG | Kilogram |
| KL | Kiloliter |
| KM | Kilometer |
| LI | Liter |
| LK | Lane Kilometer |
| LO | Per Location |
| LS | Lump Sum |
| LS/AS | Lump Sum Per Assembly |
| LS/DA | Lump Sum Per Day |
| LS/EA | Lump Sum Per Each |
| LS/HA | Lump Sum Per Hectare |
| LS/KG | Lump Sum Per Kilogram |
| LS/LS | Lump Sum Per Lump Sum |
| LS/MT | Lump Sum Per Metric Ton |
| LS/MI | Lump Sum Per Linear Meter |
| LS/M2 | Lump Sum Per Square Meter |
| LU | Luminaire |
| MH | Man Hour |
| MO | Month |
| MT | Metric Ton |
| MI | Meter |
| M2 | Square Meter |
| M3 | Cubic Meter |
| NK | Net Kilometer |
| PA | Per Analysis |
| PB | Per Building |
| PI | Per Intersection |
| PL | Plant |
| PW | Per Well |

# 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
- P — 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

- Railroad
- Double Track Railroad
- Abandoned Railroad
- Railroad Station
- Grade Crossing
- Railroad Above
- Railroad Below
- Military Field
- Commercial Or Municipal Airport
- Landing Area Or Strip
- Runways

- FF — Free Ferry
- TF — 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
- M — Meandered Lake
- Marsh Or Swamp
- Mangroves
- Levee Or Dike
- Levee Or Dike With Road
- Highway Bridge
- 3 — 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
- WP — Wayside Park Or Small Park
- WP — Park With Boat Ramp
- B — 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
- FM — Farmers Market
- Game Preserve
- Game Checking Station
- Bird Sanctuary
- Fire Control Headquarters
- Lookout Tower
- FS — Fire Station
- Patrol Or Police Station
- Correctional Institution Or Road Camp
- DOT — Department of Transportation Facility
- Coast Guard Station
- A — Armory
- J — Junkyard
- F — Sanitary Fill
- S — Sewage Disposal Plant
- I — Incinerator
- Power Plant
- Power Substation
- Communications Facility
- Locked Gate Or Fence
- WOOD — Triangulation Station

### GENERAL NOTE

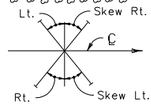
1. Symbols on this Index are intended for use on all Roadway, Signing And Marking, Signalization, and Lighting projects. For work zone traffic control symbols refer to Index 600. When additional or similar symbols are used, legends or notations may be required for clarity.

# 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
- AL ACHUA — Triangulation Station
- B.M. NO. 112 — Bench Mark
- Point Of Intersection
- North Arrow
- TYP. TYPE PAV'T WALK — 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
- 12' — Gate
- Pump Island
- Storage Tank (Surface)
- Storage Tank (Underground)
- Mine Or Quarry
- B P — Borrow Pit
- Church
- S — Store
- RES — Residence
- B — Barn
- 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 Conrete Box Culverts

- Concrete
- Wood
- e — Rate Of Superelevation

## UTILITY ADJUSTMENT SYMBOLS

| EXISTING | PROPOSED | |
|---|---|---|
| | | Manhole |
| | | Fire Hydrant |
| | | Meter (Type) |
| | | Valve (Type) |
| | | Valve Box (Type) |
| | | Valve Cover (Type) |
| | | Vent (Type) |
| | | Pump Station |
| | | Sewage Pump Station |
| | | Cleanout |
| | | Cable TV Service Box |
| | | Power Pole |
| | | Telephone Pole |
| | | Combination Pole |
| | | Guy Wire And Anchor Pin |
| | | Guy Pole Deadman |
| | | Tower |
| | | Light Pole |
| | | Transformer |

| EXISTING | PROPOSED | |
|---|---|---|
| W - - - - 6" - - - - W | W W W W W W 6" M M M M M M | Water Main |
| NPW - - - 6" - - - NPW | NPW NPW 6" NPW NPW | Non Potable Water |
| S - - - - 8" - - - - S | S S S S S S 8" S S S S S | Sanitary Sewer |
| G - - - - 6" - - - - G | G G G G G G 6" G G G G G G | Gas |
| RD - - - - 4" - - - - RD | RD RD RD 4" RD RD | Roof Drain |
| PET - - - 8" - - - PET | PET PET 8" PET PET | Petroleum |
| STM - - - 12" - - - STM | STM STM 12" STM STM | Steam |
| CAS - - - 12" - - - CAS | CAS CAS 12" CAS CAS | Casing |
| DT - - - 4"x4" - - - DT | DT DT 4"x4" DT DT | Duct |
| BE - - (7.5 kV) - - BE | BE BE (7.5 kV) BE BE | Buried Electric |
| OE - - (7.5 kV) - - OE | OE OE (7.5 kV) OE OE | Overhead Electric |
| BTV - - - 3" - - - BTV | BTV BTV 3" BTV BTV | Buried Cable Television |
| OTV - - - -2" - - - OTV | OTV OTV 2" OTV OTV | Overhead Cable Television |
| BT - - - - 2" - - - - BT | BT BT BT 2" BT BT BT | Buried Telephone |
| OT - - - - 2" - - - - OT | OT OT OT 2" OT OT OT | Overhead Telephone |
| BFO - - - 2" - - - BFO | BFO BFO 2" BFO BFO | Buried Fiber Optic |
| OFO - - - -1" - - - - OFO | OFO OFO 1" OFO OFO | Overhead Fiber Optic |

See General Note, Sheet 1 of 3

# 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) |
| W - D W | | Walk - Dont Walk |
| FDW | | Flashing Dont Walk |
| 5 | | Signal Face Number |
| | | Signal Lens |
| P | | Programmed Signal Head |
| | | Messenger Wire |
| 3 | | Pole Tabulation Cross Reference |
| *3 | | Pole Tabulation Cross Reference (Joint Use Pole) |
| | | Signal Phase |

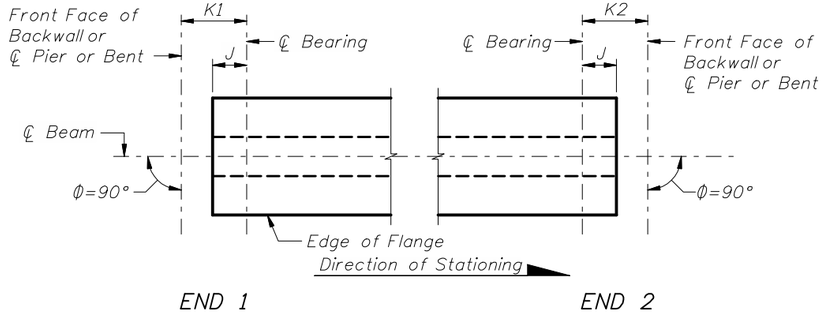
## LIGHTING SYMBOLS

| 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 |

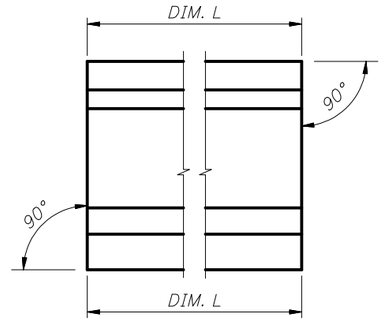
## SIGNING AND PAVEMENT MARKING SYMBOLS

| | |
|---|---|
| | Pavement Arrow |
| | Single Solid Line |
| | Double Solid Line |
| | Skip Line |
| | Stop Bar |
| | Traffic Sign (Post Mounted) |
| | Traffic Sign (Overhead) |
| 13 | Sign Number |
| 700-83 | Sign Item Number |
| | Traffic Flow Arrow |

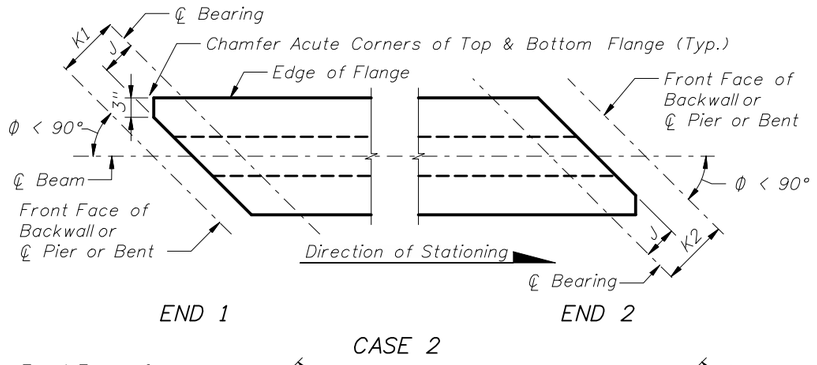
See General Note, Sheet 1 of 3



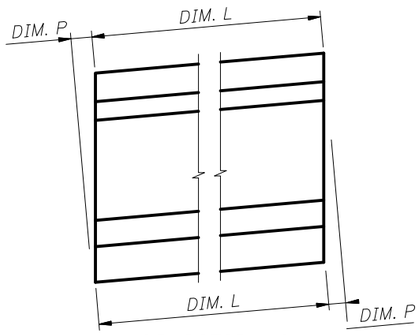

CASE 1



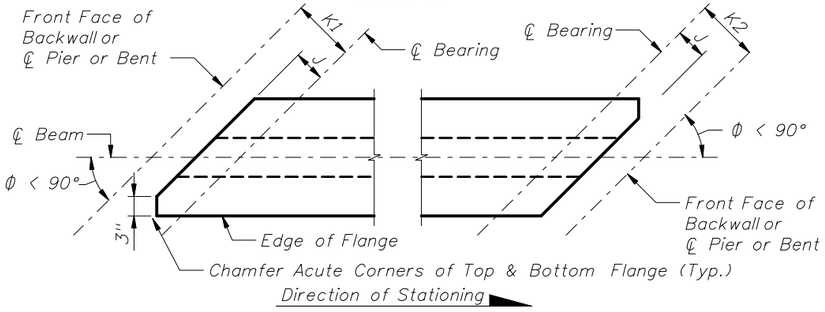

CONDITION 1
(P = 0.0)



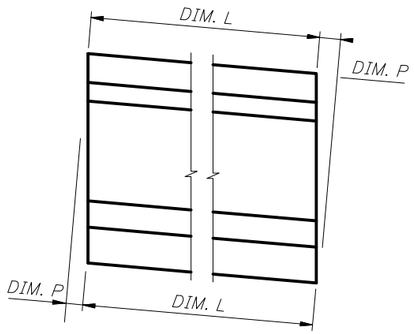

CASE 2




CONDITION 2




CASE 3

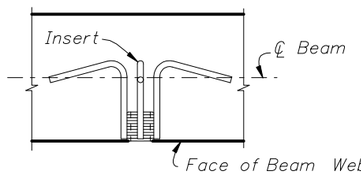



CONDITION 3

## SCHEMATIC PLAN VIEWS AT BEAM ENDS

## SCHEMATIC END ELEVATIONS OF BEAMS

(Showing Vertical Bevel of Beam End)




PLAN SECTION THRU BEAM WEB AT INSERT FOR DIAPHRAGM REINFORCING

(When Intermediate Diaphragms are Required by Design)

### INSERT NOTES

1. Provide 1"ϕ, zinc-electroplated, ferrule wing nut or coil inserts, UNC threads, 1/0 minimum gage wire, not more than 4" in depth with a minimum ultimate tensile strength of 11,400 lbs. in 4,000 p.s.i. concrete.
2. If inserts are needed on both sides (faces) of beam webs, an assembly as long as the thickness of the beam web, consisting of two (2) ferrule or coil inserts attached by two (2) or more struts may be utilized. The connecting struts shall have a minimum ultimate tensile strength of 11,400 lbs.
3. Inserts for diaphragm reinforcing are required at each end of each intermediate diaphragm shown on the Beam Framing Plan. See Superstructure and Beam Framing Plans for longitudinal location of inserts for each face of beam.

### BEAM NOTES

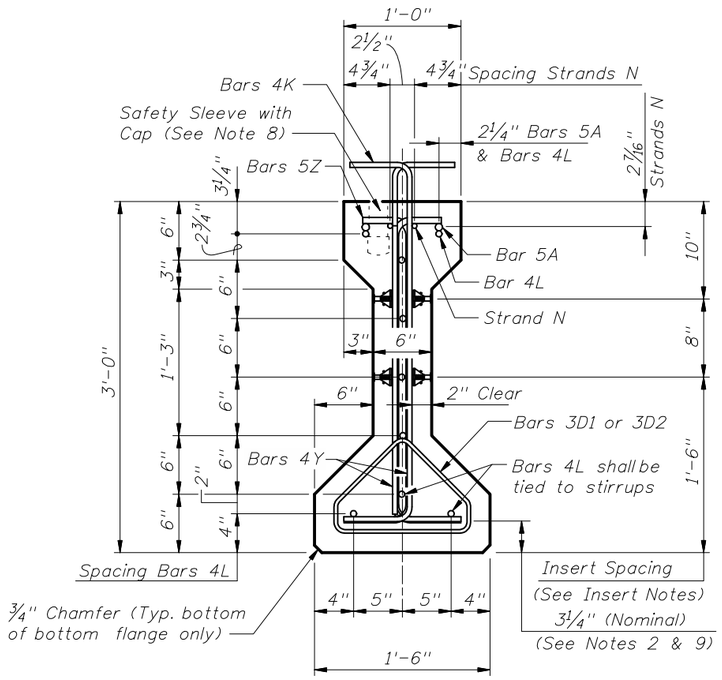
1. All bar dimensions are out-to-out.
2. Place one (1) Bar 4K or 5K or 5Z at each location as detailed alternating the direction of the ends for each bar (see "ELEVATION AT END OF BEAM", Index Nos. 20120, 20130, 20140, 20150, 20160, 20172 and 20178).
3. Bars 4L shall be bent prior to the beam leaving the prestressing yard. Bars 4L shall be bent parallel to the ends of the beams.
4. Caution should be used with Bars 4L in the ends of exterior beams to assure the bent portion of the bar is properly oriented so that the bar will be embedded in the diaphragm concrete.
5. Strands N shall be either ASTM A416, Grade 250 or Grade 270, seven-wire strands ⅜" ϕ or larger, stressed to 10,000 lbs. each.
6. Unless otherwise noted, the minimum concrete cover for reinforcing steel shall be 2".
7. At option of the Contractor, welded deformed wire reinforcement may be used in lieu of Bars 3D, 4K, 5K, 4L and 5Z except as noted below, provided the wire sizes and spacing match those shown on the Standard Beam Details sheet for these bars. In this event, Bars 4K or 5K and 5Z may be fabricated with the omission of the lower outstanding leg provided that two longitudinal wires are placed (welded) at the lower end of the bar. The first (lower) wire shall be located 1" from the end of Bars 4K or 5K and 5Z and the second wire 2" minimum from the first wire, but no less than ¼ of the beam depth from mid-depth of the beam. In addition, Bars 5Z may consist of pairs of bars with the cross sectional area of the pair equal to or greater than the shown conventional single bar. Welded wire reinforcement shall conform to ASTM A497.
8. Install Safety Sleeves 1'-10" from ends of beam and spaced on 8'-0" (Max.) centers. Shift Bars 4K or 5K locally to allow placement. Safety Sleeves shall be :
   2½" NPS x 5" Sch. 40 PVC Pipe with Cap for Type III, IV, V, VI, FBT 72 and FBT 78 Beams;
   1½" NPS x 5" Sch. 40 PVC Pipe with Cap for Type II Beams.
   Holes shall be free of debris and water prior to casting deck.
9. For beams with skewed end conditions, the end reinforcement, defined as Bars 3D1, 3D2, 4K, 5K, 4M1, 4M2, 4Y or 5Y and 5Z placed within the limits of the spacing for Bars 3D (approximately 1.5 times the overall beam depth) in "ELEVATION AT END OF BEAM", shall be placed parallel to the skewed end of the beam. Bars 4K or 5K and 4M3 located beyond the limits of Bars 3D shall be placed perpendicular to the longitudinal axis of the beam. Placement of Bars 3D1, 3D2, 4M1 and 4M2 correspond to END 1 and END 2 respectively, as shown in the beam "ELEVATION". For Bars 3D1 and 3D2, Dimension B and the overall length shall be adjusted to fit the width of the bottom flange measured parallel to the skew. For Bars 4M1 and 4M2 the overall length shall be adjusted to fit the width of the top flange as measured parallel to the skew. Fan Bars 4M1 and 4M2 as needed to maintain minimum clearance (1½") between the bars at the transition to Bars 4M3 and field cut to length to maintain minimum cover.
10. Bars 4M1, 4M2 and 4M3 are applicable to AASHTO Beam Types V and VI, and Florida Bulb-T's.
11. For Beams with vertically beveled end conditions when "DIM. P" exceeds 1", Bars 3D1, 3D2, 4K, 5K, 4Y or 5Y and 5Z shall be placed parallel to the end of the beam, within the limits of Bar 4L.
12. Welded deformed wire reinforcement shall not be used for the end reinforcement (Bars 3D1, 3D2, 4K or 5K and 5Z) for beams with skewed end conditions or vertically beveled end conditions when "DIM. P" exceeds 1".
13. Bars 4K or 5K and 5Z shall be placed and tied to the fully bonded strands in the bottom row (see "STRAND PATTERN").
14. At the Contractor's option Bars 3D1 and 3D2 may be fabricated as a two-piece bar with a 1'-2" lap splice of the bottom legs.
15. For referenced Dimensions, Angles and Case Numbers see Table of Beam Variables in Structures Plans.

### INSTRUCTIONS TO DESIGNER:

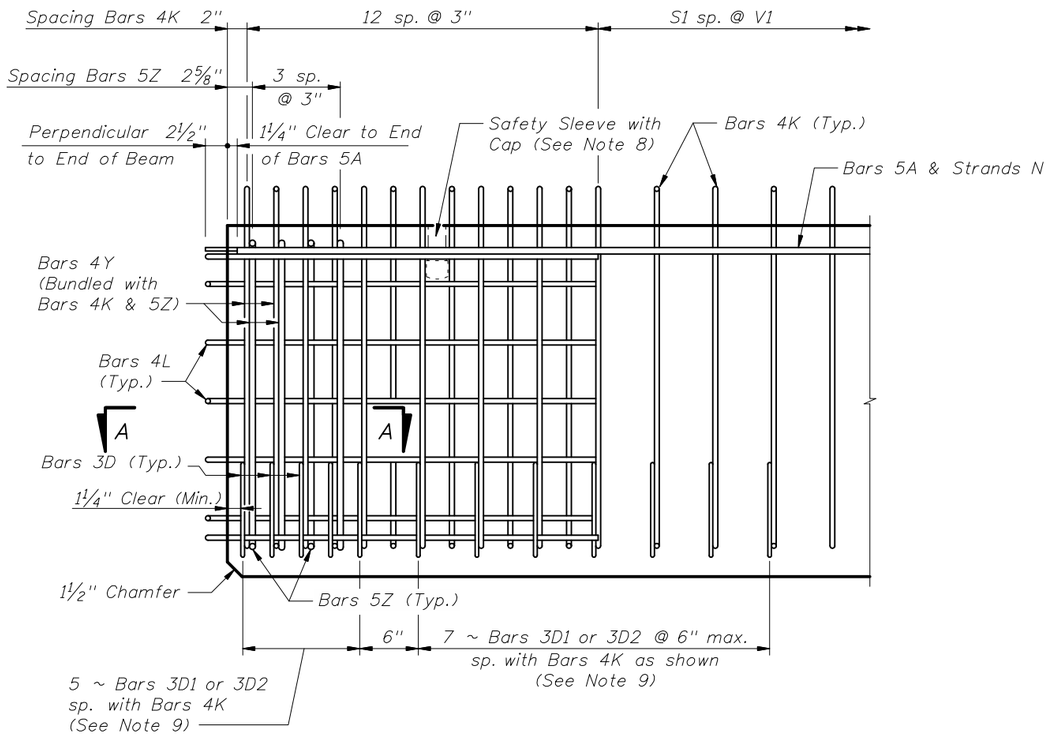
To limit vertical splitting forces in the webs of beams, the maximum prestress force at the beam ends from fully bonded strands must be limited to the following:

| Beam Type | Max. Bonded Prestress Force | Index No. | Last Revision Date |
|---|---|---|---|
| AASHTO Type II | 755 Kips | 20120 | 7/1/05 |
| AASHTO Type III | 1100 Kips | 20130 | 7/1/05 |
| AASHTO Type IV | 1470 Kips | 20140 | 7/1/05 |
| AASHTO Type V | 1630 Kips | 20150 | 7/1/05 or later |
| AASHTO Type VI | 1815 Kips | 20160 | 7/1/05 or later |
| Florida Bulb-T 72 | 1470 Kips | 20172 | 7/1/05 or later |
| Florida Bulb-T 78 | 1730 Kips | 20178 | 7/1/05 or later |

No losses shall be applied when calculating the Bonded Prestress Force. The reinforcing in the ends of the beams must not be modified without the approval of the State Structures Design Engineer.




END VIEW

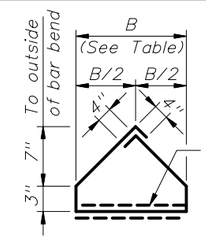



ELEVATION AT END OF BEAM
(Flanges Not Shown For Clarity)

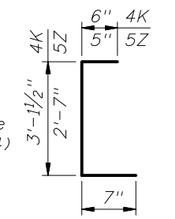
## BILL OF REINFORCING STEEL FOR ONE BEAM ONLY

| MARK | NOTE NUMBERS | SIZE | NUMBER REQUIRED | LENGTH (NOTE 1) |
|---|---|---|---|---|
| A | — | 5 | 4 | 12'-0" |
| D1 | 9, 11 & 14 | 3 | 12 | See Table |
| D2 | 9, 11 & 14 | 3 | 12 | See Table |
| K | 2, 9, 11 & 13 | 4 | See Table | 4'-3" |
| L | 3 & 4 | 4 | 18 | 4'-0" |
| N | 5 | ⅜" Ø Strand | 2 | DIM L+5" |
| Y | 9 & 11 | 4 | 8 | 2'-6" |
| Z | 2, 9, 11 & 13 | 5 | 8 | 3'-7" |
| | | | | |

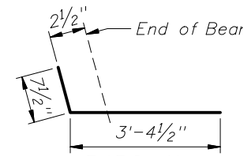
## BENDING DIAGRAMS (See Note 1)



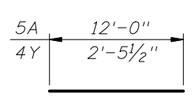

BARS 3D1 & 3D2




BARS 4K & 5Z




BARS 4L



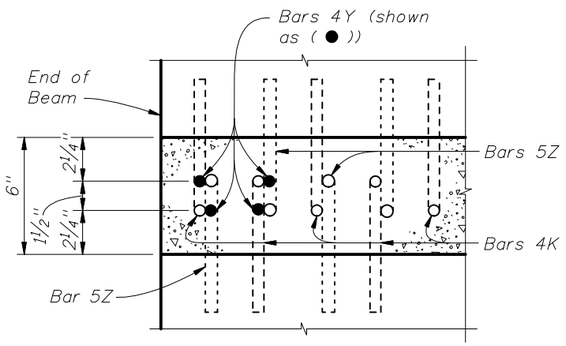

BARS 5A & 4Y

NOTES:

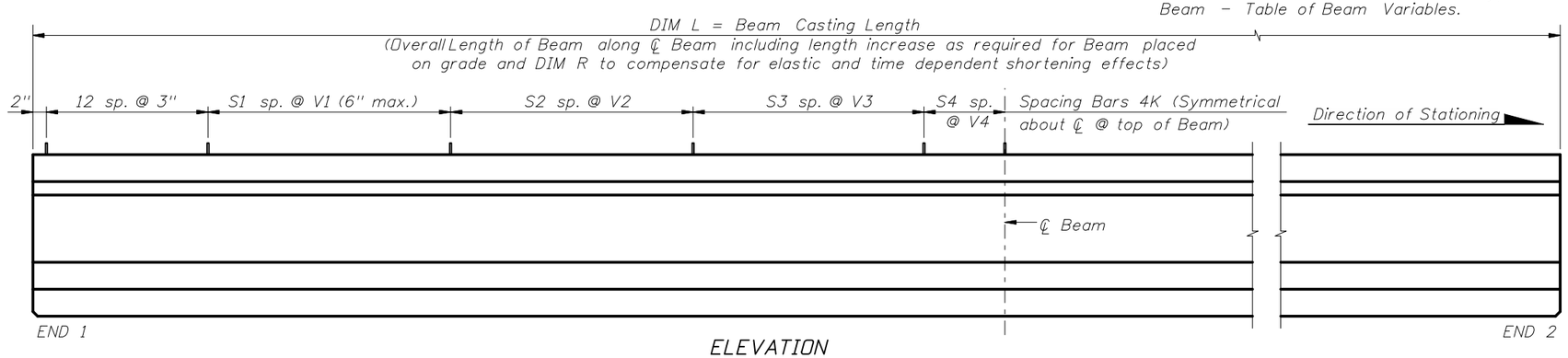
Work this Index with Index No. 20110 - Typical AASHTO and Bulb-T Beam Details and Notes and the AASHTO Type II Beam - Table of Beam Variables in Structures Plans.

For referenced notes, see Index No. 20110.

For Dimensions L, R, V1 thru V4 and number of spaces S1 thru S4, see AASHTO Type II Beam - Table of Beam Variables.




SECTION A-A
(Showing Bars 4K, 4Y & 5Z Only)



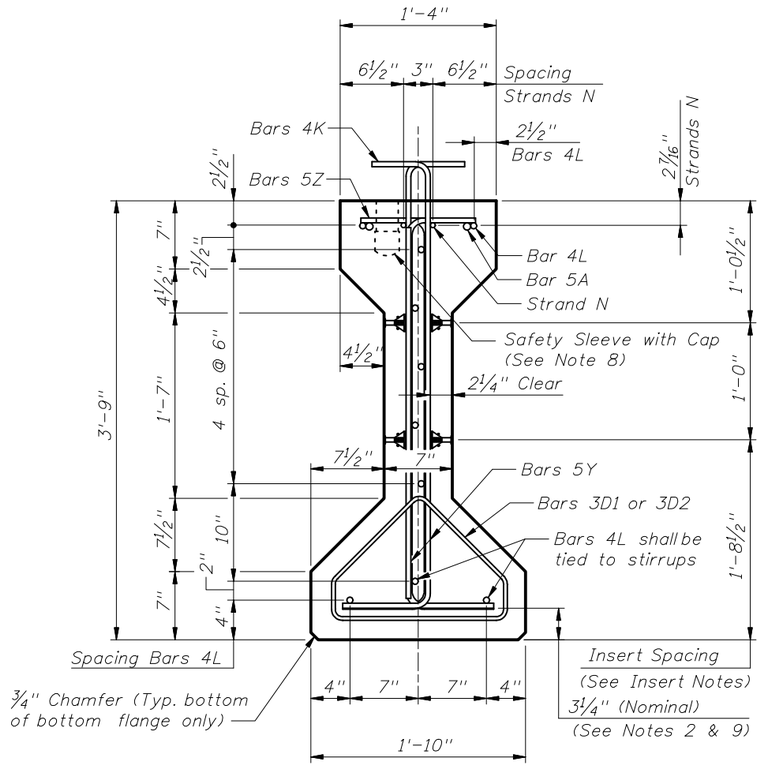

ELEVATION

2010 FDOT Design Standards

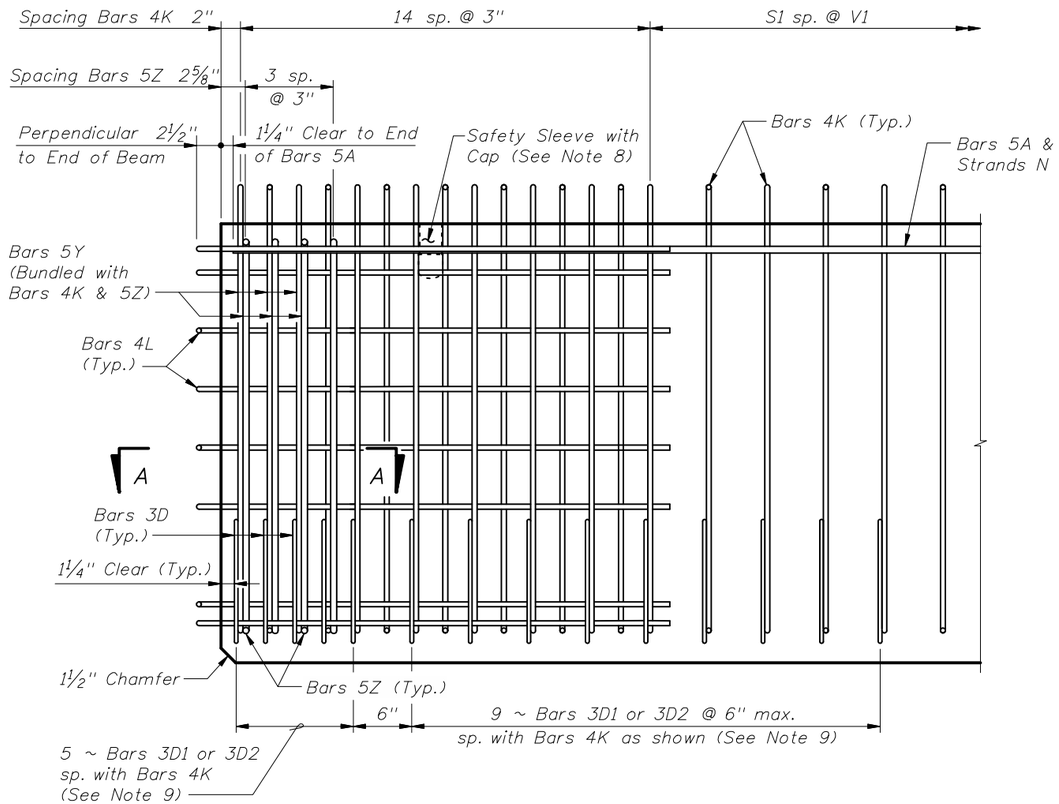
# AASHTO TYPE II BEAM - STANDARD DETAILS

| Last Revision | Sheet No. |
|---|---|
| 07/01/05 | 1 of 1 |

Index No. 20120




END VIEW

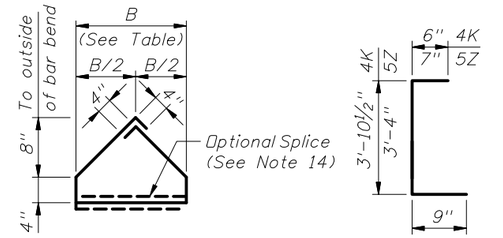



ELEVATION AT END OF BEAM
(Flanges Not Shown For Clarity)

## BILL OF REINFORCING STEEL FOR ONE BEAM ONLY

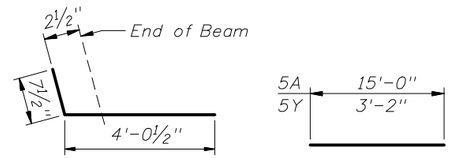
| MARK | NOTE NUMBERS | SIZE | NUMBER REQUIRED | LENGTH (NOTE 1) |
|---|---|---|---|---|
| A | — | 5 | 4 | 15'-0" |
| D1 | 9, 11 & 14 | 3 | 14 | See Table |
| D2 | 9, 11 & 14 | 3 | 14 | See Table |
| K | 2, 9, 11 & 13 | 4 | See Table | 5'-2" |
| L | 3 & 4 | 4 | 20 | 4'-8" |
| N | 5 | ⅜" Ø Strand | 2 | DIM L+5" |
| Y | 9 & 11 | 5 | 12 | 3'-2" |
| Z | 2, 9, 11 & 13 | 5 | 8 | 4'-8" |

## BENDING DIAGRAMS (See Note 1)




BARS 3D1 & 3D2

BARS 4K & 5Z




BARS 4L

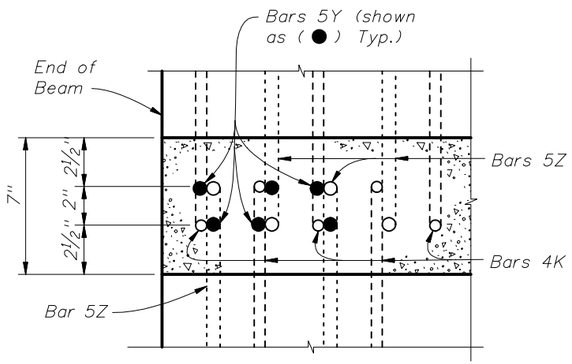
BARS 5A & 5Y

NOTES:

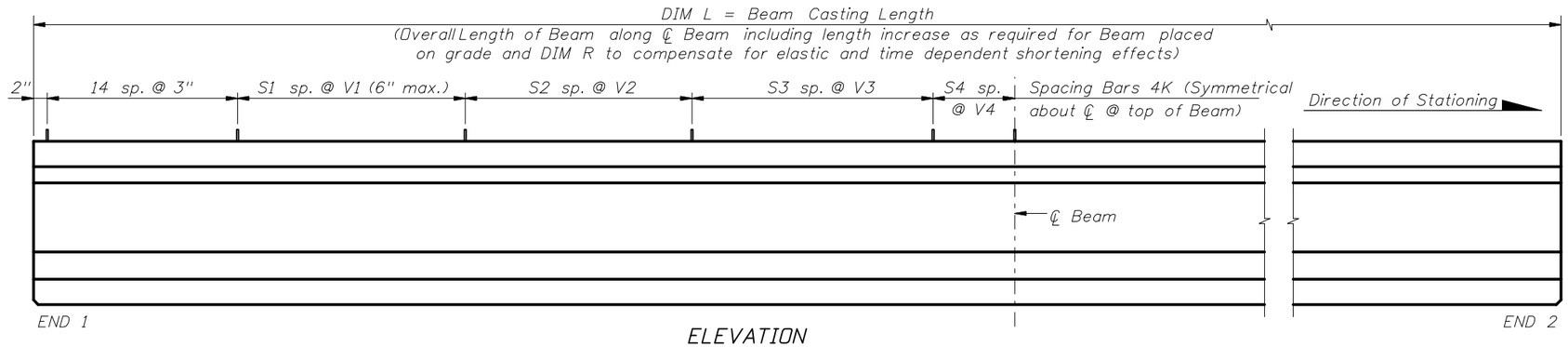
Work this Index with Index No. 20110 – Typical AASHTO and Bulb-T Beam Details and Notes and the AASHTO Type III Beam – Table of Beam Variables in Structures Plans.

For referenced notes, see Index No. 20110.

For Dimensions L, R, V1 thru V4 and number of spaces S1 thru S4, see AASHTO Type III Beam – Table of Beam Variables.




SECTION A-A
(Showing Bars 4K, 5Y & 5Z Only)



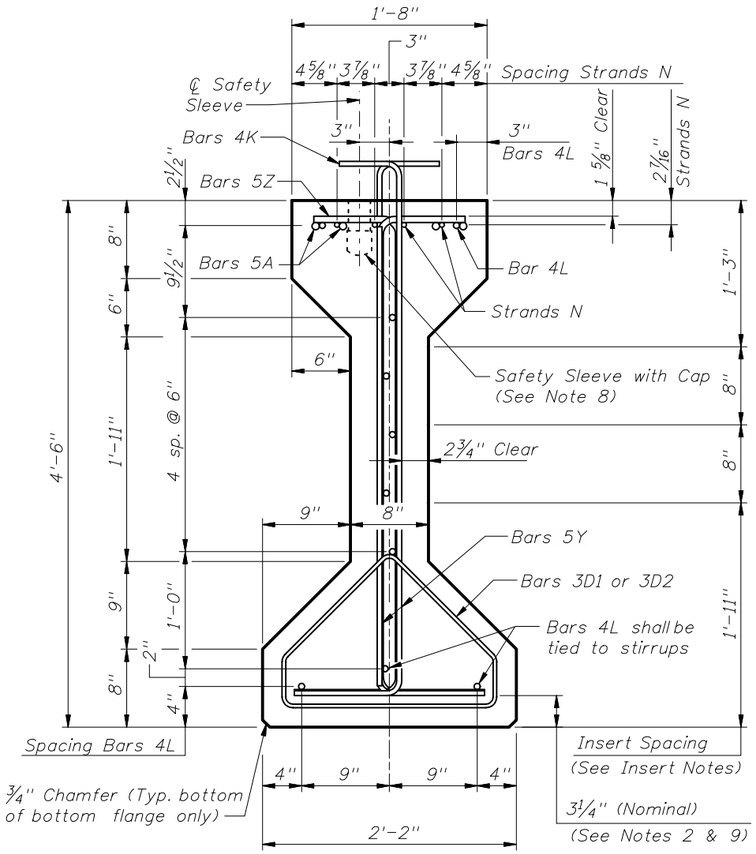

ELEVATION

2010 FDOT Design Standards

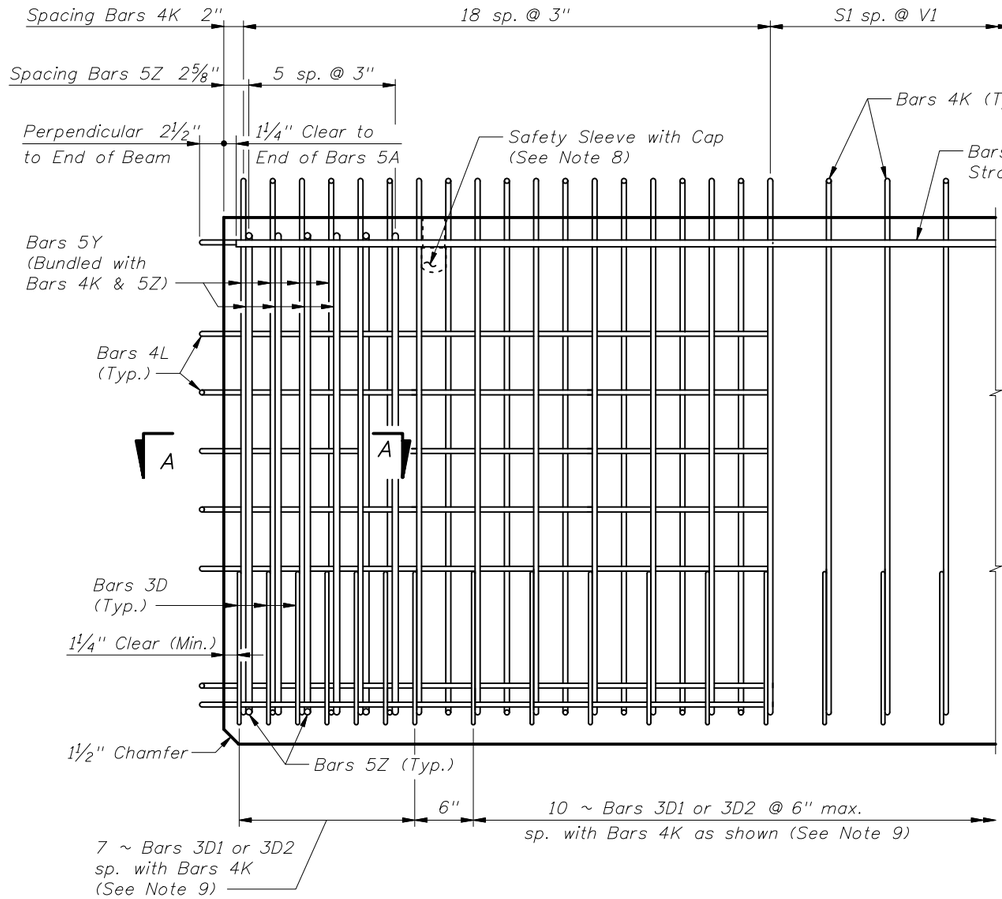
# AASHTO TYPE III BEAM - STANDARD DETAILS

| Last Revision | Sheet No. |
|---|---|
| 07/01/05 | 1 of 1 |

Index No. 20130




END VIEW

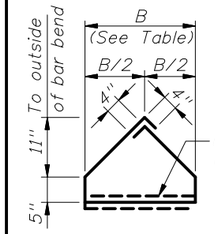



ELEVATION AT END OF BEAM
(Flanges Not Shown For Clarity)

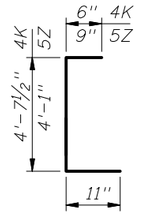
## BILL OF REINFORCING STEEL FOR ONE BEAM ONLY

| MARK | NOTE NUMBERS | SIZE | NUMBER REQUIRED | LENGTH (NOTE 1) |
|---|---|---|---|---|
| A | — | 5 | 8 | 18'-0" |
| D1 | 9, 11 & 14 | 3 | 17 | See Table |
| D2 | 9, 11 & 14 | 3 | 17 | See Table |
| K | 2, 9, 11 & 13 | 4 | See Table | 6'-1" |
| L | 3 & 4 | 4 | 20 | 5'-6" |
| N | 5 | ⅜" Ø Strand | 4 | DIM L+5" |
| Y | 9 & 11 | 5 | 16 | 3'-11" |
| Z | 2, 9, 11 & 13 | 5 | 12 | 5'-9" |

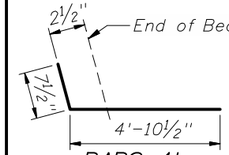
## BENDING DIAGRAMS (See Note 1)



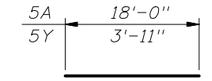

BARS 3D1 & 3D2




BARS 4K & 5Z




BARS 4L



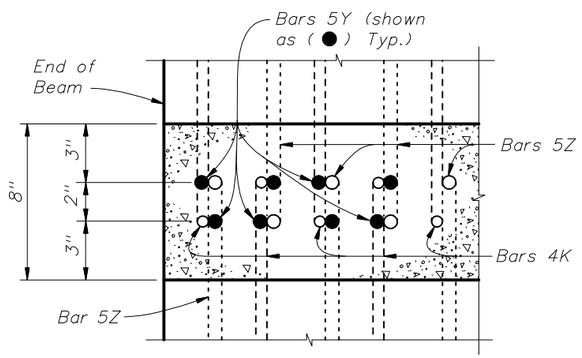

BARS 5A & 5Y

NOTES:

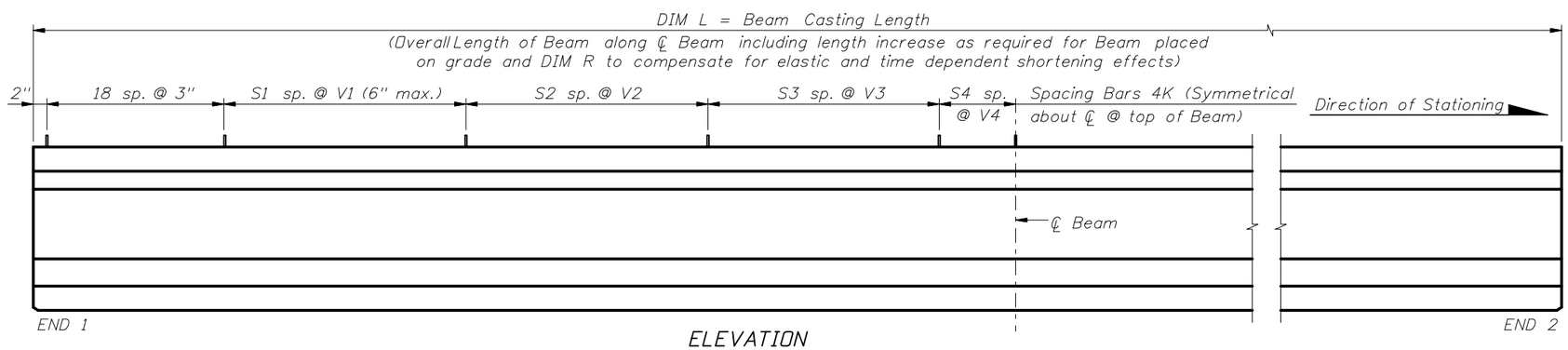
Work this Index with Index No. 20110 - Typical AASHTO and Bulb-T Beam Details and Notes and the AASHTO Type IV Beam - Table of Beam Variables in Structures Plans.

For referenced notes, see Index No. 20110.

For Dimensions L, R, V1 thru V4 and number of spaces S1 thru S4, see AASHTO Type IV Beam - Table of Beam Variables.




SECTION A-A
(Showing Bars 4K, 5Y & 5Z Only)



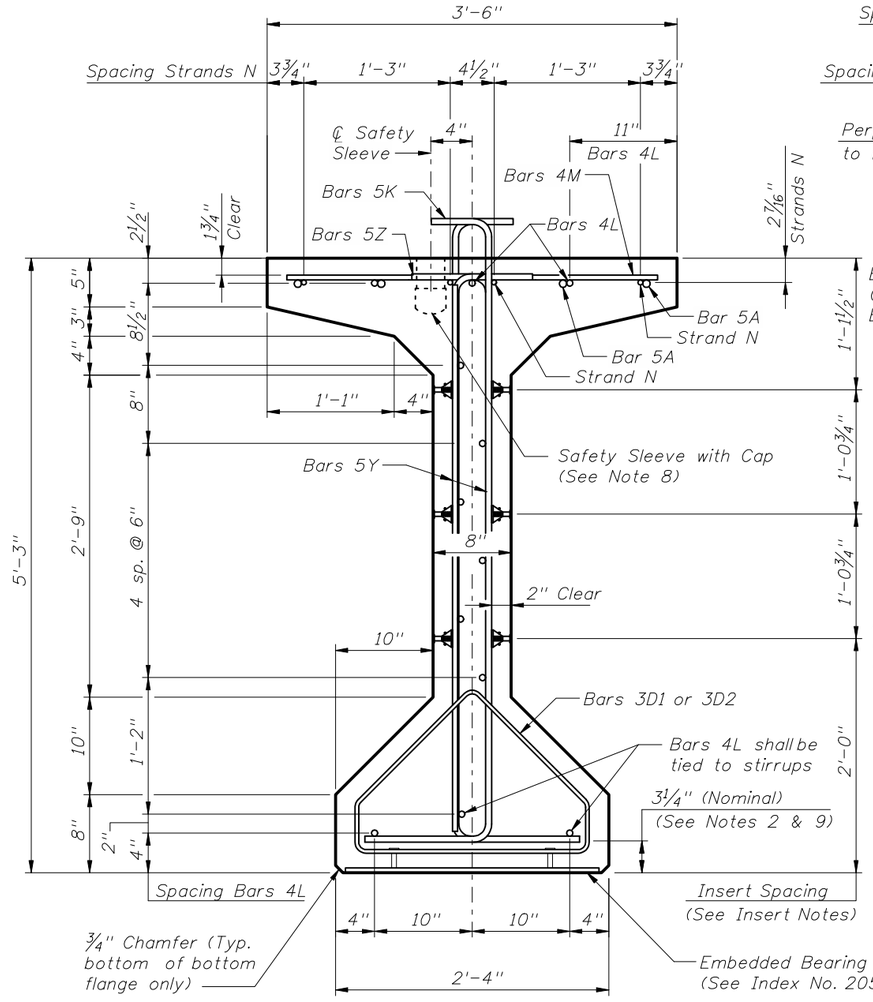

ELEVATION

2010 FDOT Design Standards

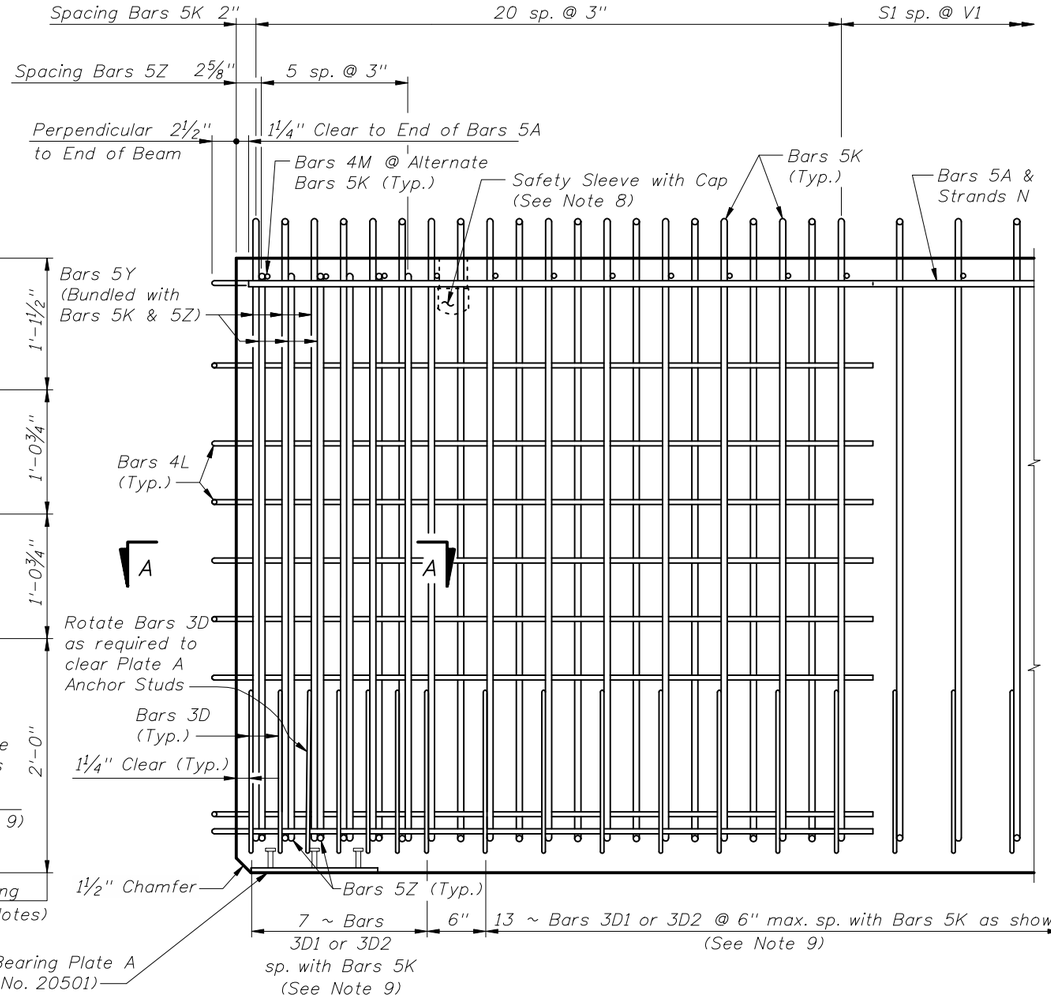
# AASHTO TYPE IV BEAM - STANDARD DETAILS

| Last Revision | Sheet No. |
|---|---|
| 07/01/05 | 1 of 1 |

Index No. 20140




END VIEW

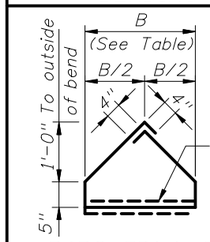



ELEVATION AT END OF BEAM
(Flanges Not Shown For Clarity)

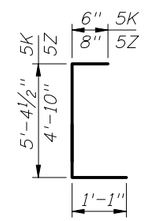
## BILL OF REINFORCING STEEL FOR ONE BEAM ONLY

| MARK | NOTE NUMBERS | SIZE | NUMBER REQUIRED | LENGTH (NOTE 1) |
|---|---|---|---|---|
| A | — | 5 | 8 | 21'-0" |
| D1 | 9, 11 & 14 | 3 | 20 | See Table |
| D2 | 9, 11 & 14 | 3 | 20 | See Table |
| K | 2, 9, 11 & 13 | 5 | See Table | 7'-0" |
| L | 3 & 4 | 4 | 24 | 6'-3" |
| M1 | 9 & 10 | 4 | 14 | See Table |
| M2 | 9 & 10 | 4 | 14 | See Table |
| M3 | 9 | 4 | See Table | 3'-2" |
| N | 5 | ⅜" ℄ Strand | 4 | DIM L+5" |
| Y | 9 & 11 | 5 | 12 | 4'-8" |
| Z | 2, 9, 11 & 13 | 5 | 12 | 6'-7" |

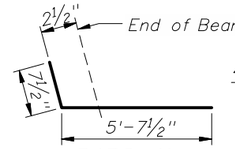
## BENDING DIAGRAMS (See Note 1)



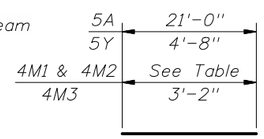

BARS 3D1 & 3D2




BARS 5K & 5Z




BARS 4L



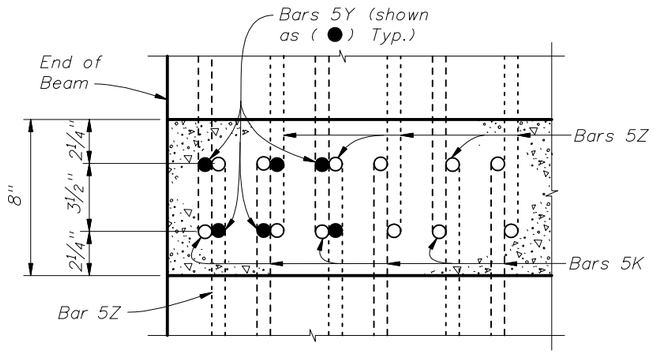

BARS 5A, 4M1, 4M2, 4M3 & 5Y

NOTES:

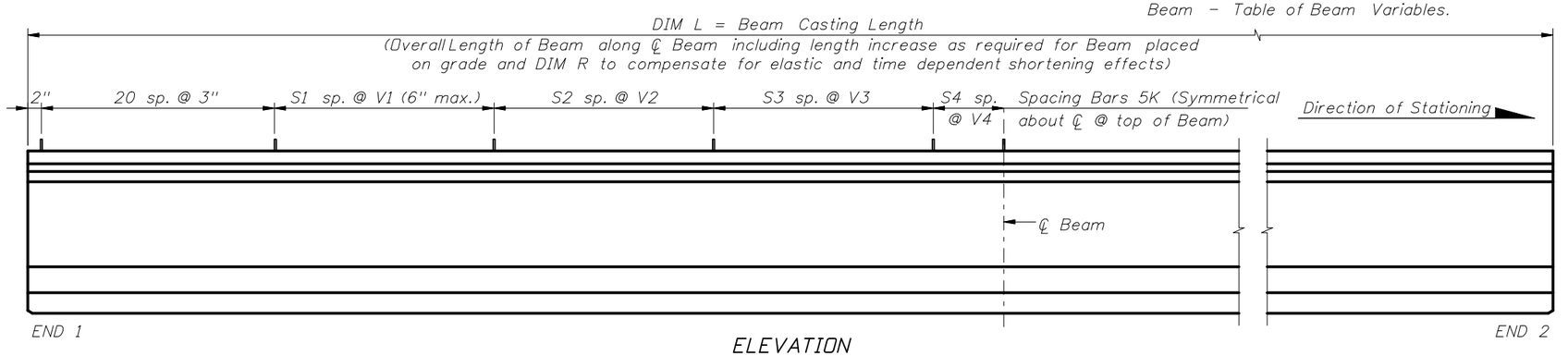
Work this Index with Index No. 20110 - Typical AASHTO and Bulb-T Beam Details and Notes and the AASHTO Type V Beam - Table of Beam Variables in Structures Plans.

For referenced notes, see Index No. 20110.

For Dimensions L, R, V1 thru V4 and number of spaces S1 thru S4, see AASHTO Type V Beam - Table of Beam Variables.




SECTION A-A
(Showing Bars 5K, 5Y & 5Z Only)



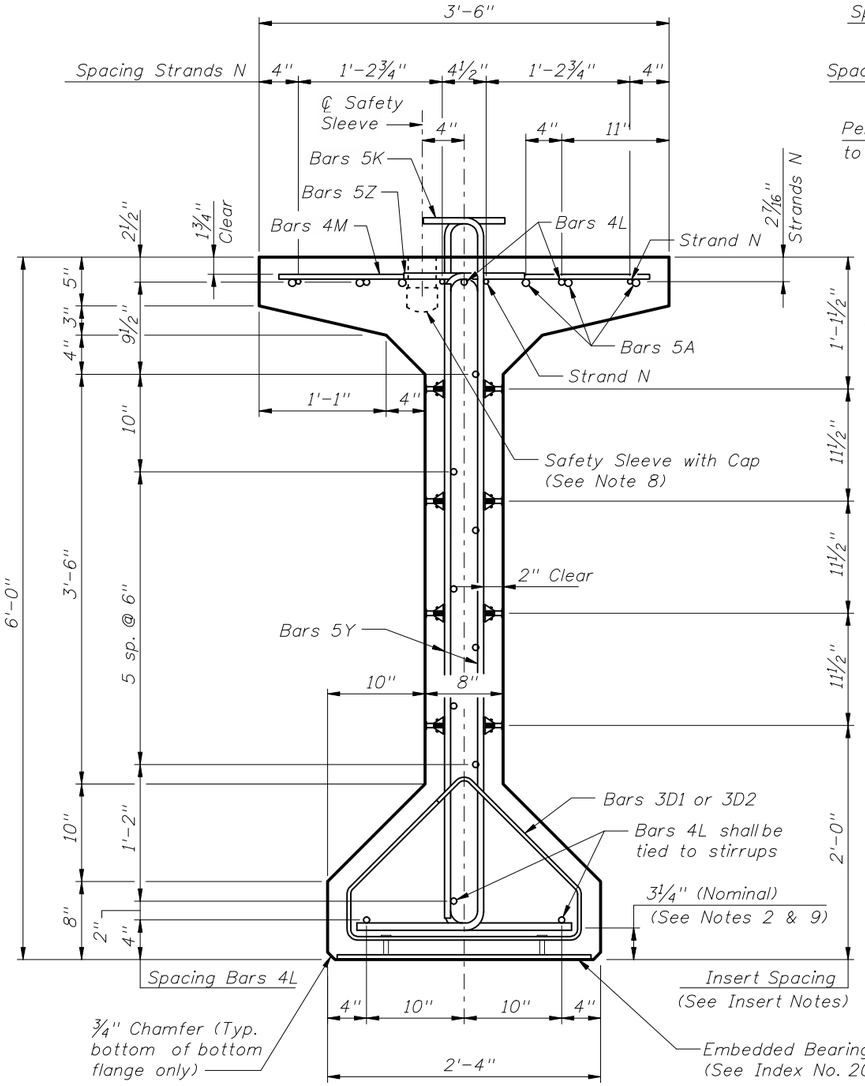

ELEVATION

2010 FDOT Design Standards

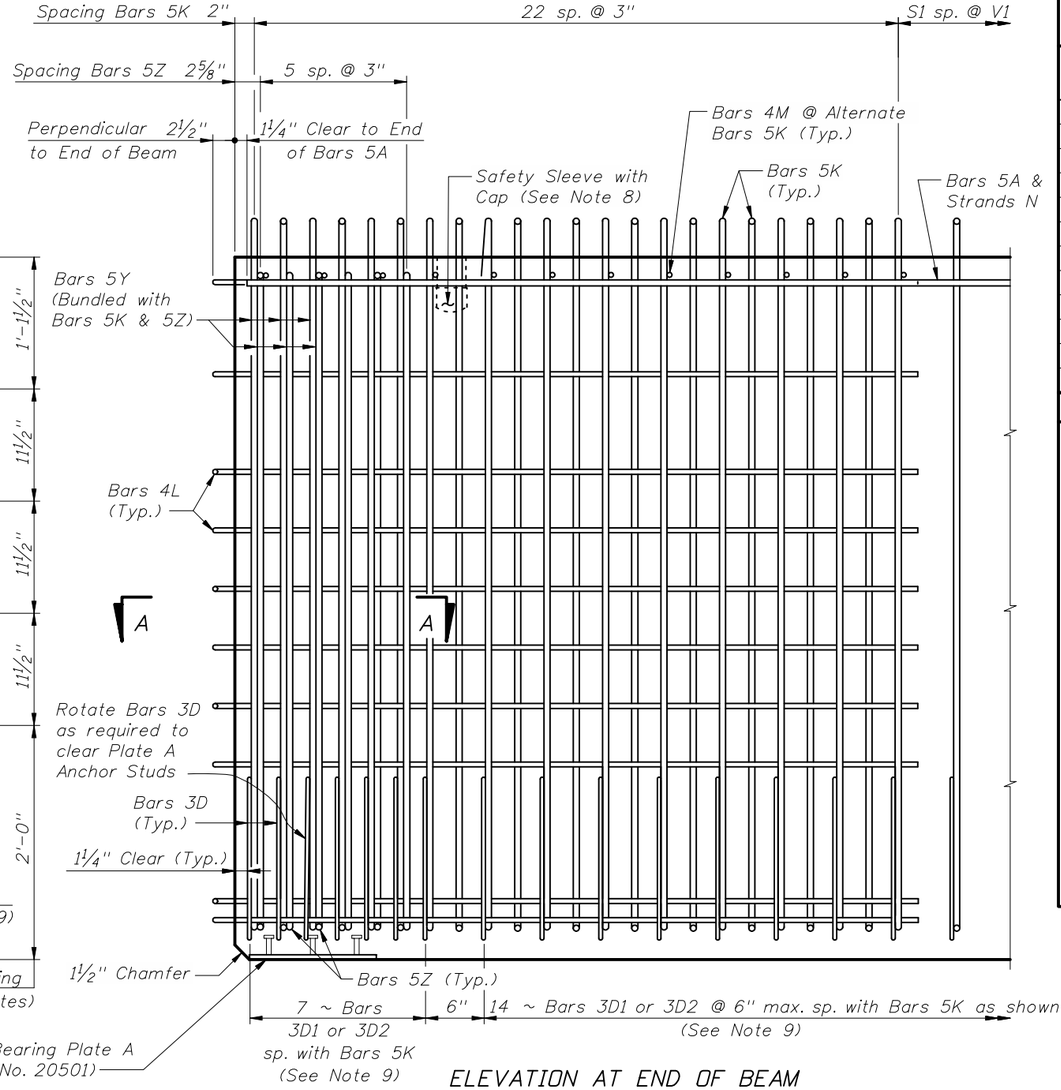
# AASHTO TYPE V BEAM - STANDARD DETAILS

| Last Revision | Sheet No. |
|---|---|
| 01/01/06 | 1 of 1 |

Index No. 20150




END VIEW

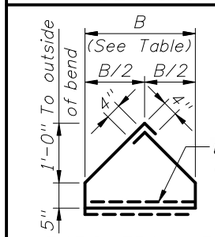



ELEVATION AT END OF BEAM
(Flanges Not Shown For Clarity)

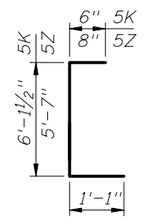
## BILL OF REINFORCING STEEL FOR ONE BEAM ONLY

| MARK | NOTE NUMBERS | SIZE | NUMBER REQUIRED | LENGTH (NOTE 1) |
|---|---|---|---|---|
| A | — | 5 | 12 | 24'-0" |
| D1 | 9, 11 & 14 | 3 | 21 | See Table |
| D2 | 9, 11 & 14 | 3 | 21 | See Table |
| K | 2, 9, 11 & 13 | 5 | See Table | 7'-9" |
| L | 3 & 4 | 4 | 26 | 6'-8" |
| M1 | 9 & 10 | 4 | 15 | See Table |
| M2 | 9 & 10 | 4 | 15 | See Table |
| M3 | 9 | 4 | See Table | 3'-2" |
| N | 5 | ⅜" ℗ Strand | 4 | DIM L+5" |
| Y | 9 & 11 | 5 | 12 | 5'-5" |
| Z | 2, 9, 11 & 13 | 5 | 12 | 7'-4" |

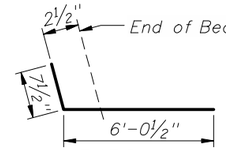
## BENDING DIAGRAMS (See Note 1)




BARS 3D1 & 3D2




BARS 5K & 5Z




BARS 4L

| | |
|---|---|
| 5A | 24'-0" |
| 5Y | 5'-5" |
| 4M1 & 4M2 | See Table |
| 4M3 | 3'-2" |

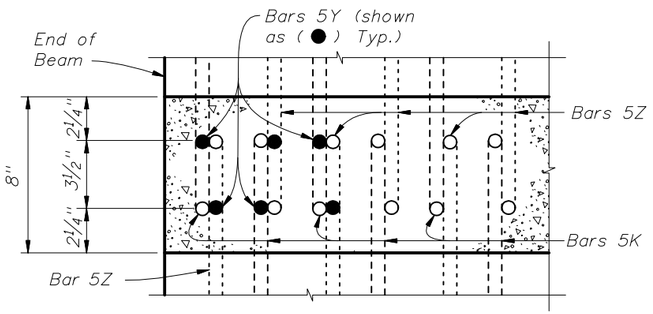
BARS 5A, 4M1, 4M2, 4M3 & 5Y

NOTES:

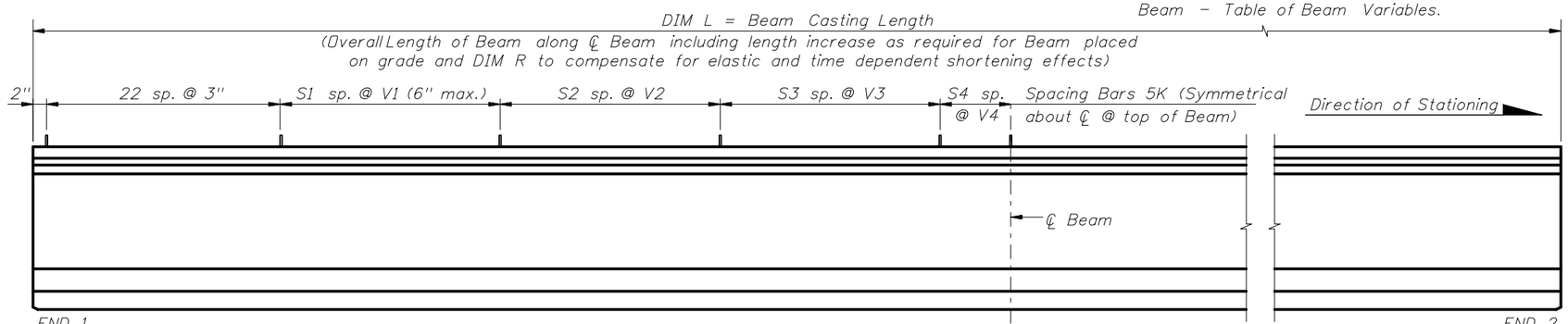
Work this Index with Index No. 20110 - Typical AASHTO and Bulb-T Beam Details and Notes and the AASHTO Type VI Beam - Table of Beam Variables in Structures Plans.

For referenced notes, see Index No. 20110.

For Dimensions L, R, V1 thru V4 and number of spaces S1 thru S4, see AASHTO Type VI Beam - Table of Beam Variables.




SECTION A-A
(Showing Bars 5K, 5Y & 5Z Only)



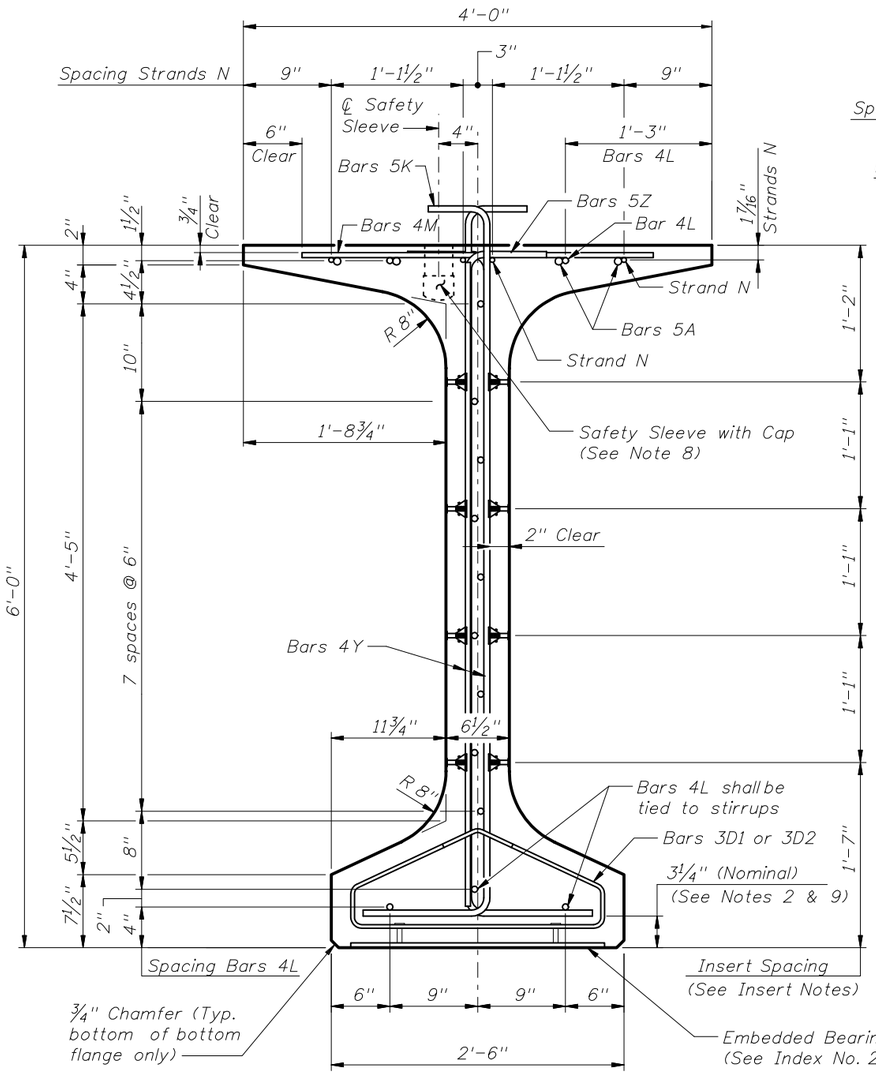

ELEVATION

2010 FDOT Design Standards

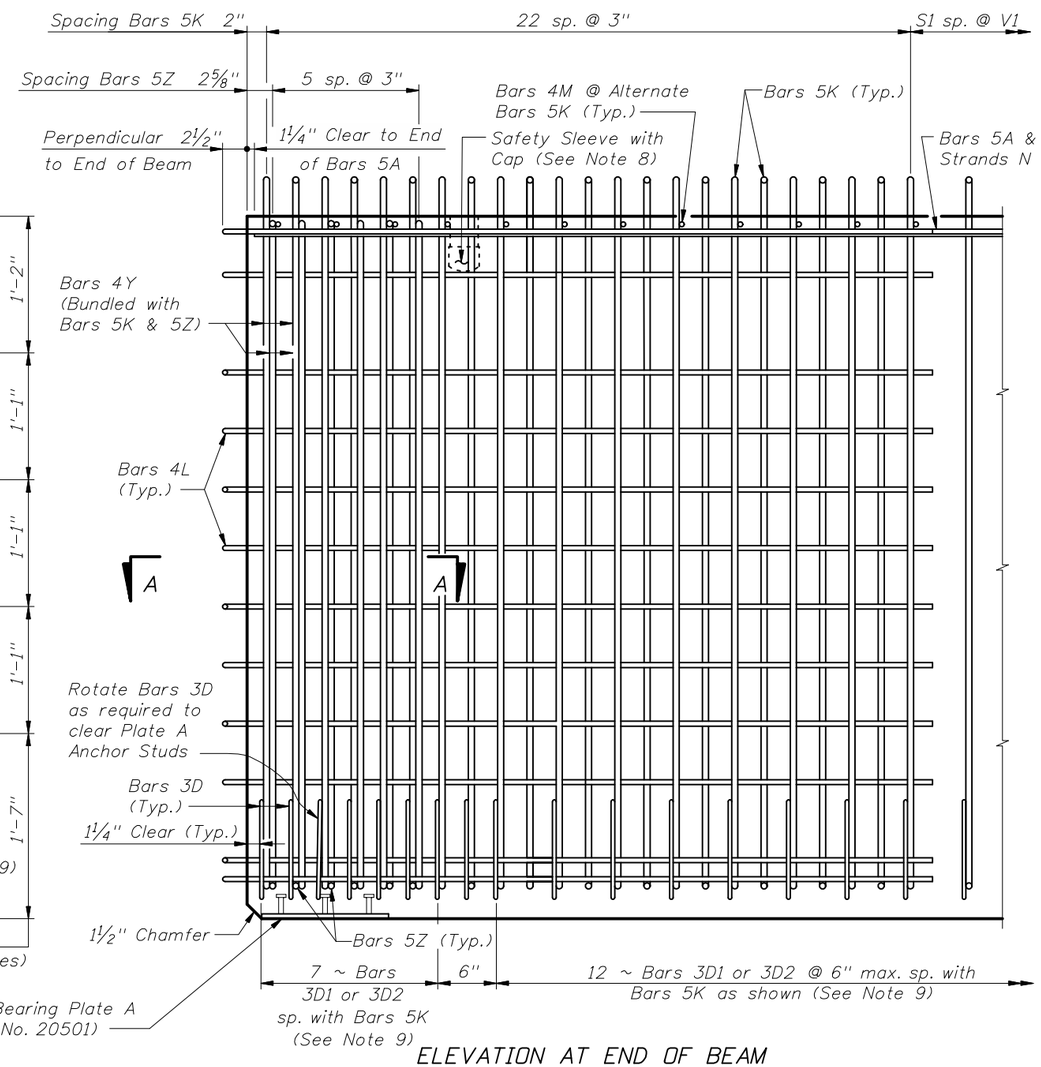
# AASHTO TYPE VI BEAM - STANDARD DETAILS

| Last Revision | Sheet No. |
|---|---|
| 01/01/06 | 1 of 1 |

Index No. 20160




END VIEW

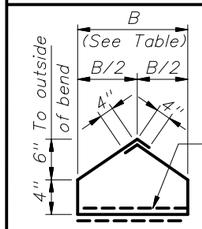



ELEVATION AT END OF BEAM
(Flanges Not Shown For Clarity)

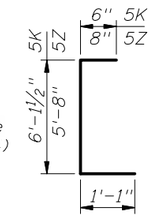
## BILL OF REINFORCING STEEL FOR ONE BEAM ONLY

| MARK | NOTE NUMBERS | SIZE | NUMBER REQUIRED | LENGTH (NOTE 1) |
|---|---|---|---|---|
| A | — | 5 | 8 | 24'-0" |
| D1 | 9, 11 & 14 | 3 | 19 | See Table |
| D2 | 9, 11 & 14 | 3 | 19 | See Table |
| K | 2, 9, 11 & 13 | 5 | See Table | 7'-9" |
| L | 3 & 4 | 4 | 28 | 6'-8" |
| M1 | 9 & 10 | 4 | 14 | See Table |
| M2 | 9 & 10 | 4 | 14 | See Table |
| M3 | 9 | 4 | See Table | 3'-0" |
| N | 5 | ⅜" ℗ Strand | 4 | DIM L+5" |
| Y | 9 & 11 | 4 | 8 | 5'-6" |
| Z | 2, 9, 11 & 13 | 5 | 12 | 7'-5" |

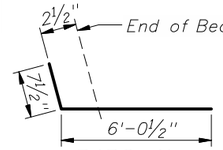
## BENDING DIAGRAMS (See Note 1)




BARS 3D1 & 3D2




BARS 5K & 5Z




BARS 4L

| | |
|---|---|
| 5A<br>4Y | 24'-0"<br>5'-6" |
| 4M1 & 4M2<br>4M3 | See Table<br>3'-0" |

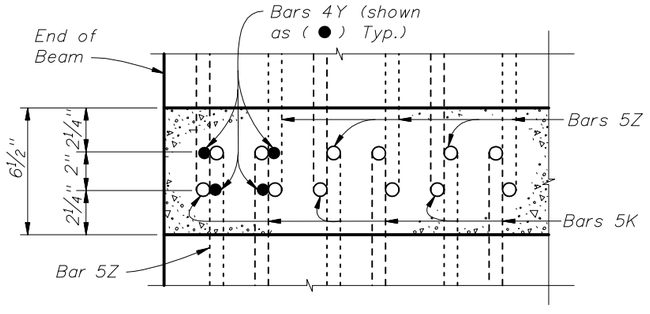
BARS 5A, 4M1, 4M2, 4M3 & 4Y

NOTES:

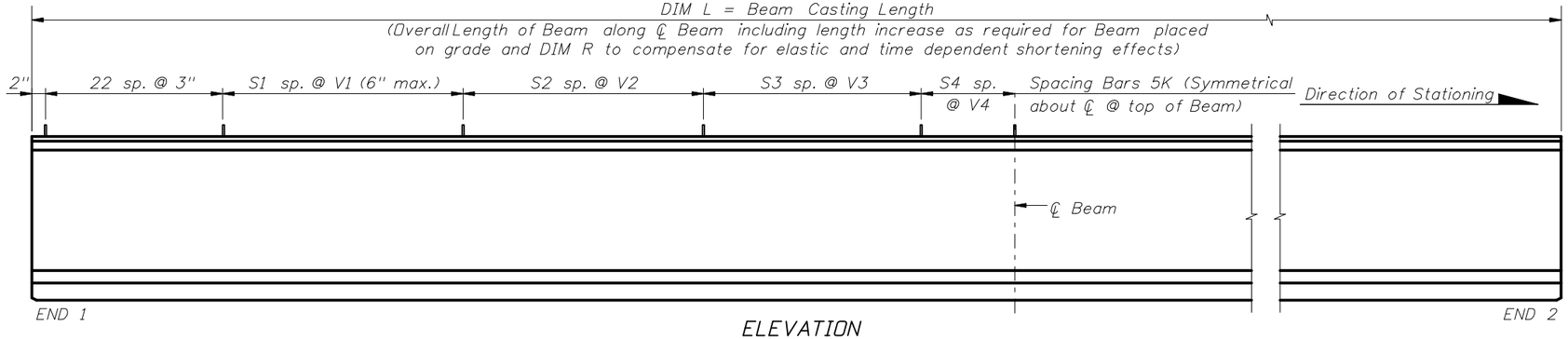
Work this Index with Index No. 20110 - Typical AASHTO and Bulb-T Beam Details and Notes and the Florida Bulb-T 72 Beam - Table of Beam Variables in Structures Plans.

For referenced notes, see Index No. 20110.

For Dimensions L, R, V1 thru V4 and number of spaces S1 thru S4, see Florida Bulb-T 72 Beam - Table of Beam Variables.




SECTION A-A
(Showing Bars 5K, 4Y & 5Z)



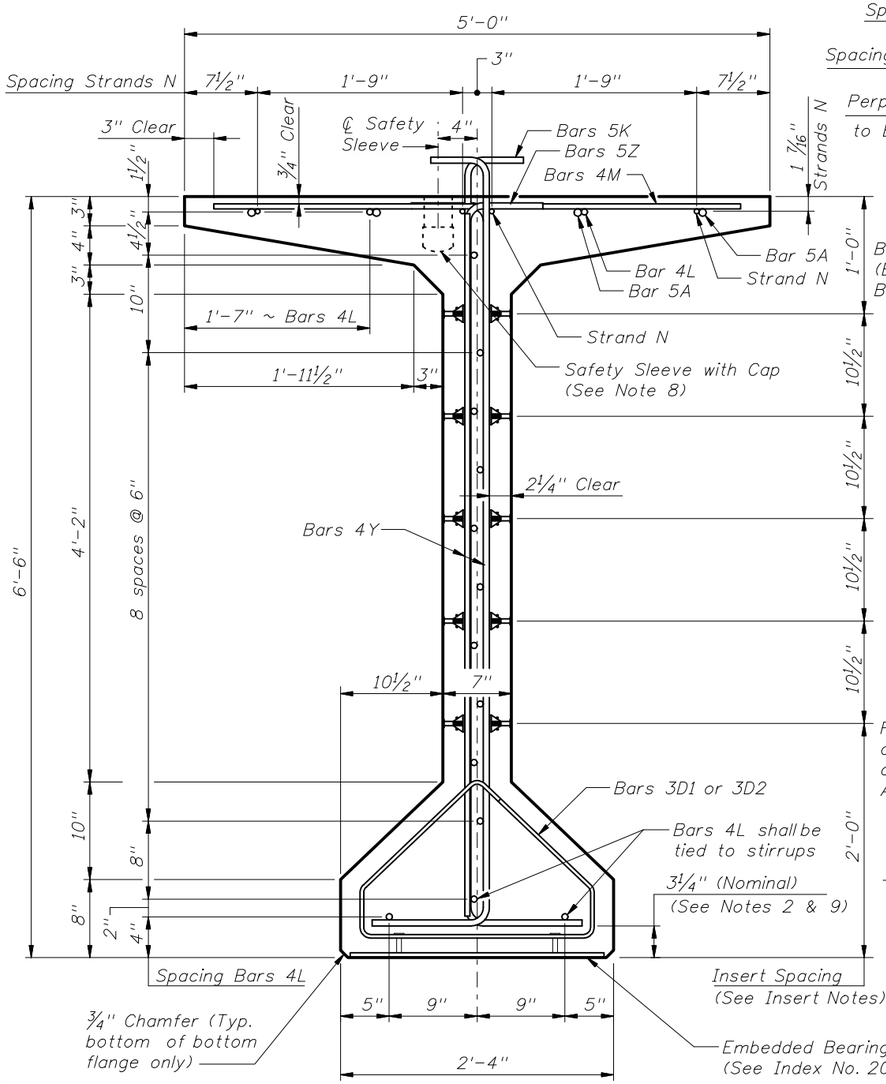

ELEVATION

2010 FDOT Design Standards

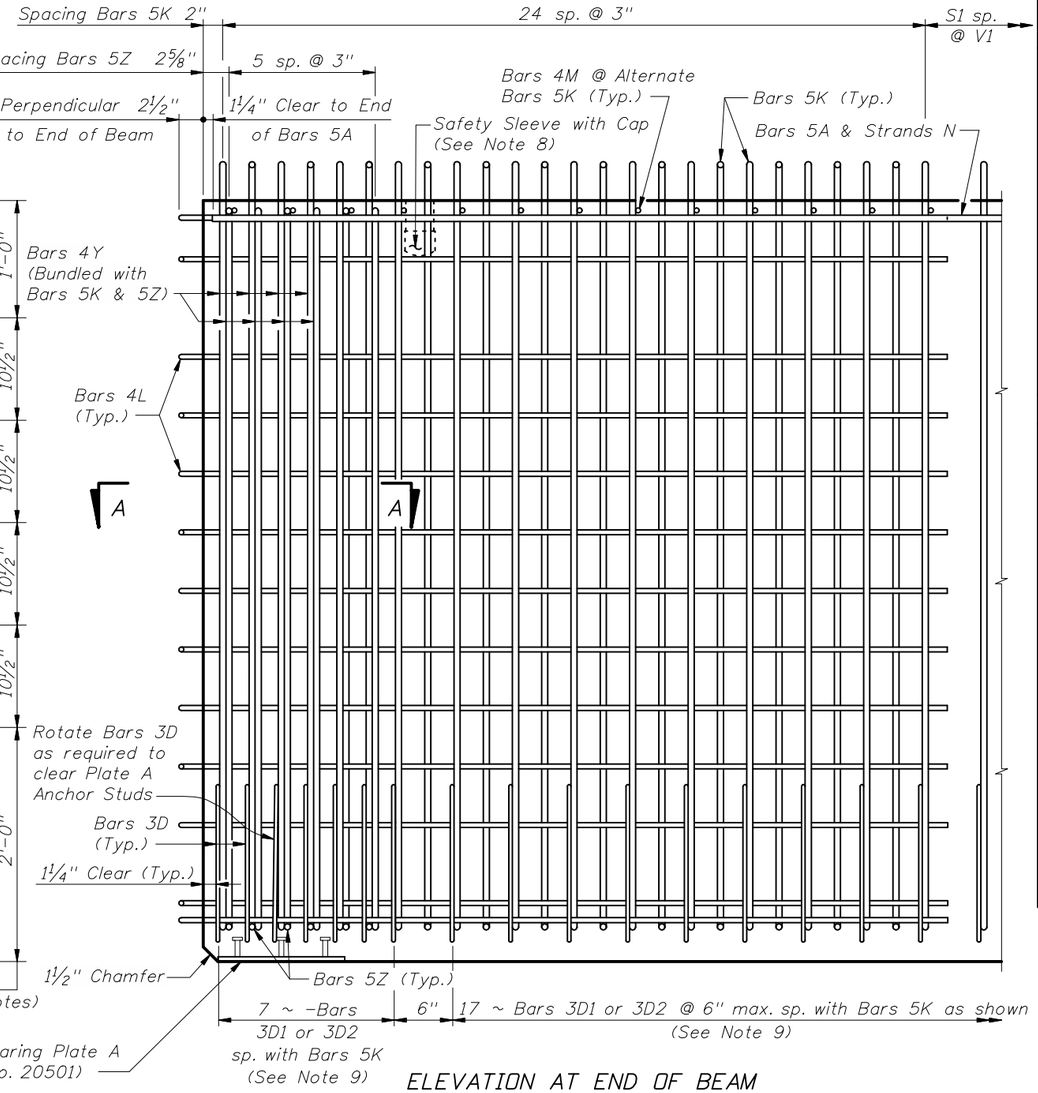
# FLORIDA BULB-T 72 BEAM - STANDARD DETAILS

| Last Revision | Sheet No. |
|---|---|
| 07/01/09 | 1 of 1 |

Index No. 20172




END VIEW

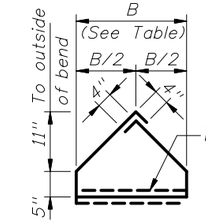



ELEVATION AT END OF BEAM
(Flanges Not Shown For Clarity)

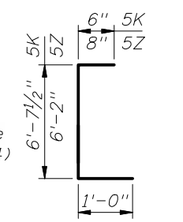
## BILL OF REINFORCING STEEL FOR ONE BEAM ONLY

| MARK | NOTE NUMBERS | SIZE | NUMBER REQUIRED | LENGTH (NOTE 1) |
|---|---|---|---|---|
| A | — | 5 | 8 | 26'-0" |
| D1 | 9, 11 & 14 | 3 | 24 | See Table |
| D2 | 9, 11 & 14 | 3 | 24 | See Table |
| K | 2, 9, 11 & 13 | 5 | See Table | 8'-2" |
| L | 3 & 4 | 4 | 30 | 7'-2" |
| M1 | 9 & 10 | 4 | 17 | See Table |
| M2 | 9 & 10 | 4 | 17 | See Table |
| M3 | 9 | 4 | See Table | 4'-6" |
| N | 5 | ⅜" ℗ Strand | 4 | DIM L+5" |
| Y | 9 & 11 | 4 | 16 | 6'-0" |
| Z | 2, 9, 11 & 13 | 5 | 12 | 7'-10" |

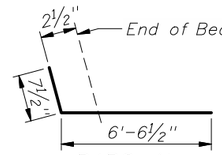
## BENDING DIAGRAMS (See Note 1)




BARS 3D1 & 3D2




BARS 5K & 5Z




BARS 4L

| | |
|---|---|
| 5A | 26'-0" |
| 4Y | 6'-0" |
| 4M1 & 4M2 | See Table |
| 4M3 | 4'-6" |

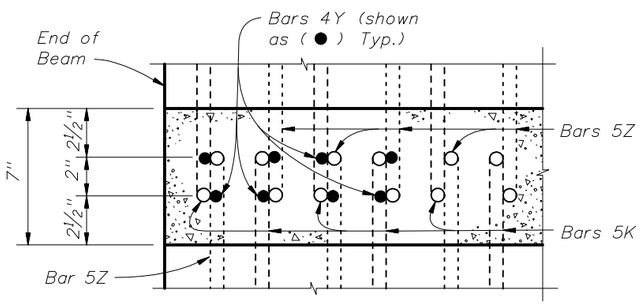
BARS 5A, 4M1, 4M2, 4M3 & 4Y

NOTES:

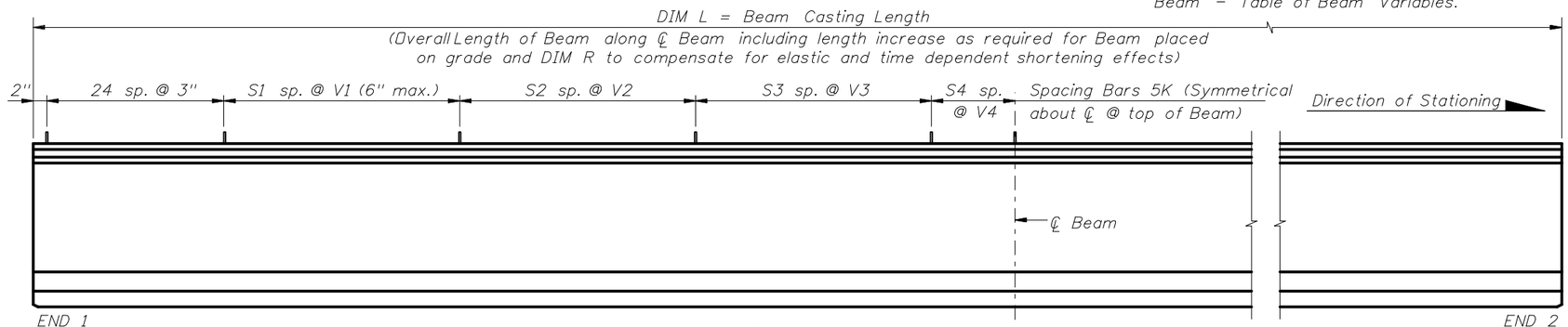
Work this Index with Index No. 20110 - Typical AASHTO and Bulb-T Beam Details and Notes and the Florida Bulb-T 78 Beam - Table of Beam Variables in Structures Plans.

For referenced notes, see Index No. 20110.

For Dimensions L, R, V1 thru V4 and number of spaces S1 thru S4, see Florida Bulb-T 78 Beam - Table of Beam Variables.




SECTION A-A
(Showing Bars 5K, 4Y & 5Z Only)



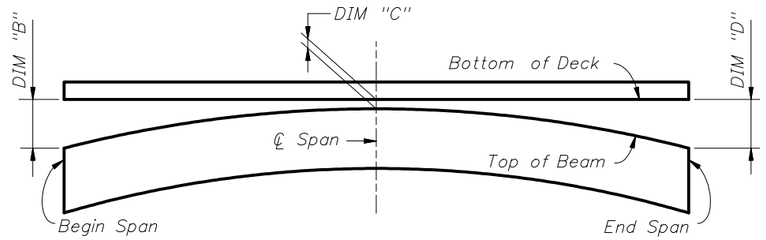

ELEVATION

2010 FDOT Design Standards

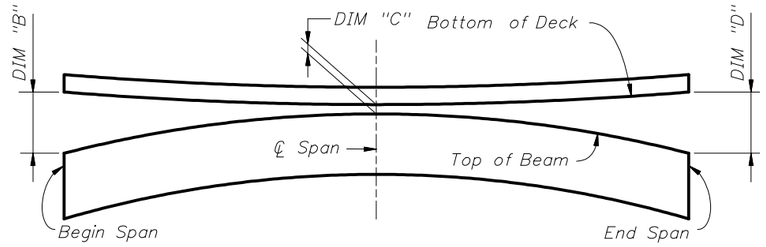
# FLORIDA BULB-T 78 BEAM - STANDARD DETAILS

| Last Revision | Sheet No. |
|---|---|
| 01/01/06 | 1 of 1 |

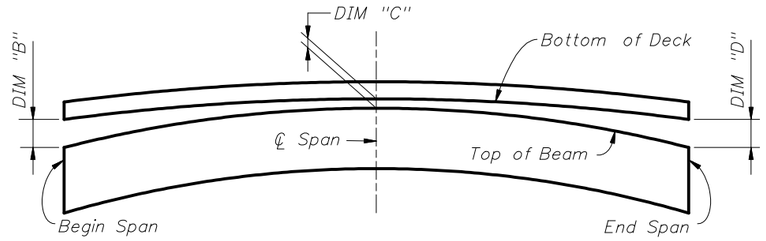
Index No. 20178



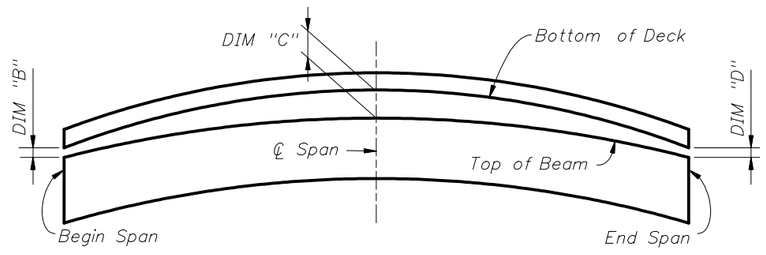

BUILD-UP DIAGRAM FOR TANGENT SPANS
(ALONG ℄ BEAM) (CASE 1)




BUILD-UP DIAGRAM FOR SAG VERTICAL CURVE SPANS
(ALONG ℄ BEAM) (CASE 2)




BUILD-UP DIAGRAM FOR CREST VERTICAL CURVE SPANS
– CONTROL AT ℄ SPAN
(ALONG ℄ BEAM) (CASE 3)

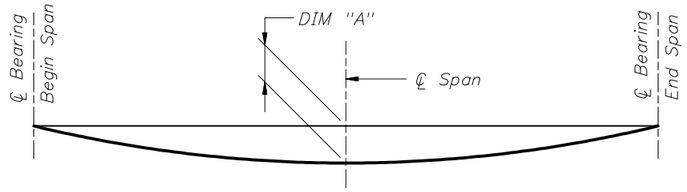



BUILD-UP DIAGRAM FOR CREST VERTICAL CURVE SPANS
– CONTROL AT BEGIN OR END SPAN
(ALONG ℄ BEAM) (CASE 4)

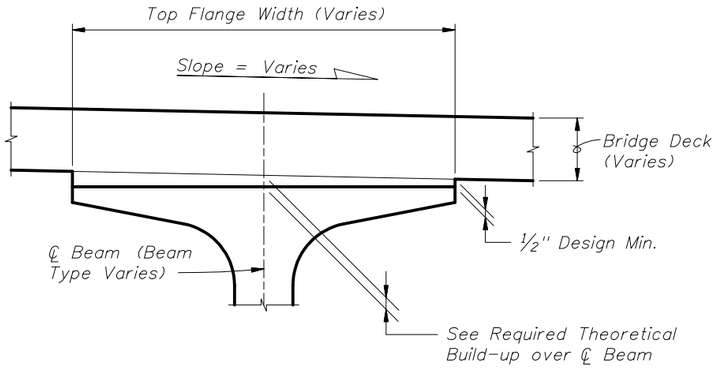
## BEAM CAMBER AND BUILD-UP NOTES:

The build-up values given in the table are based on theoretical beam cambers. The Contractor shall monitor beam cambers for the purpose of predicting camber values at the time of the deck pour. If the predicted cambers based on field measurements differ more than +/- ½" from the theoretical "Net Beam Camber @ 120 Days" shown in the Data Table, obtain approval from the Engineer to modify the build-up dimensions as required. When the measured beam cambers create a conflict with the bottom mat of deck steel, notify the Engineer a minimum a 21 days prior to casting.

DIM "A" includes the weight of the Stay-In-Place Formwork.




DEAD LOAD DEFLECTION DIAGRAM




BUILD-UP OVER BEAMS

### INSTRUCTIONS TO DESIGNER:

Although not shown here in the Diagrams or Notes, the effect of Horizontal Curvature, when present, needs to be considered for the Build-up Calculations.

NOTE:
Work this Index with the Build-up and Deflection Data Table for AASHTO and Bulb-T Beams in Structures Plans.