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

J. Chris Richter

For Martin Knopp, Division Administrator

State of Florida, Department Of Transportation
Roadway Design Office
Mail Station 32
605 Suwannee Street
Tallahassee, Florida 32399-0450

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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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State Structures Design Engineer
Robert V. Robertson, Jr.
P.E. No. 36160

Sig: _____

Date:

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State Roadway Design Engineer
David C. O'Hagan
P.E. No. 33713

Sig: _____

Date:

As To Planning
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17900

Manager, Traffic Data Section
Transportation Statistics Office
Richard L. Reel, Jr.
P.E. No. 22400

Sig: _____

Date:

As To ITS
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Deputy State Traffic
Operations Engineer
Mark C. Wilson
P.E. No. 46780

Sig: _____

Date:

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State Transportation
Landscape Architect
Jeff H. Caster
LA0001592

Sig: _____

Date:

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Index Number	Sheet Number	Description
001	1 thru 3	Added the following standard abbreviations: ℄ Base Line, Base Line Control ℄ Flow Line GRI Geosynthetic Research Institute HDPE High Density Polyethylene NPS Nominal Pipe Size Deleted the following standard abbreviations: Bbl Barrel FRCP Fiber Reinforced Concrete Pipe FRP Fiber Reinforced Pipe FS Far Side
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: 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."
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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.

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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: side roads and streets driveways with signalized entrances driveways with entrance volumes greater than 600 vpd driveways with entrance speeds of 25 mph or greater right in – right out composite driveways.
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".

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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. 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: OPTION 4 (OVERHEAD WORK MAINTAINING TRAFFIC WITH NO ENCROACHMENT BELOW THE OVERHEAD WORK AREA) Traffic shall be detoured, shifted, diverted or paced as to not encroach in the area directly below the overhead work operations in accordance with the appropriate standard index drawing or detailed in the plans. This option applies to, but not limited to, the following construction activities: (a) Beam, girder and segment placement. (b) Deck form placement and removal. (c) Concrete deck placement. (d) Railing construction located at edge of deck. (e) Structure demolition. DEFINITIONS, added the following after definition of TRAVEL WAY: a. Travel Lane: The designated widths of roadway pavement marked to carry through traffic and to separate it from opposing traffic or traffic occupying other lanes. b. Auxiliary Lane: The designated widths of roadway pavement marked to separate speed change, turning, passing and climbing maneuvers from through traffic. CLEAR ZONE WIDTHS FOR WORK ZONES, deleted the text "travel" in the first sentence and substituted "traffic". Replaced chart "CLEAR ZONE WIDTHS FOR WORK ZONES".
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: "1. All signs shall be post mounted when work operations exceed one day except for: a) Road closure signs mounted in accordance with the vendor drawing for the Type III Barricade shown on the QPL. b) Pedestrian advanced warning or regulatory signs mounted on sign supports shown on the QPL." "2 POST SIGN SUPPORT MOUNTING DETAILS", updated text to include a tolerance between sign supports. Insert "+/- 3" " after "1'-6" "and insert "+/- 6" "after "2'-6" ". POST AND FOUNDATION TABLE FOR WORK ZONE SIGNS, expanded Note 2 by adding: "unless otherwise specified in the vendor drawing on the QPL." 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." Added new heading "DURATION NOTE" and placed the following note under this heading: 1. ROAD WORK AHEAD sign may be omitted if all of the following conditions are met: a) Work operations are 60 minutes or less. b) Speed is 45 mph or less. c) No sight obstructions to vehicles approaching the work area for a distance of 600 feet. d) Vehicles in the work area have high-intensity, rotating, flashing, oscillating, or strobe lights operating. e) Volume and complexity of the roadway has been considered.
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.

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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.

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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.

STATE OF FLORIDA DEPARTMENT OF TRANSPORTATION

2010 FDOT Design Standards

STANDARD ABBREVIATIONS

Last Revision 07/01/09

Sheet No. 2 of 3

Index No. 001

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

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.

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

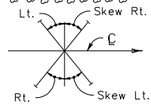
1. Symbols on this Index are intended for use on all Roadway, Signing And Marking, Signalization, and Lighting projects. For work zone traffic control symbols refer to Index 600. When additional or similar symbols are used, legends or notations may be required for clarity.

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

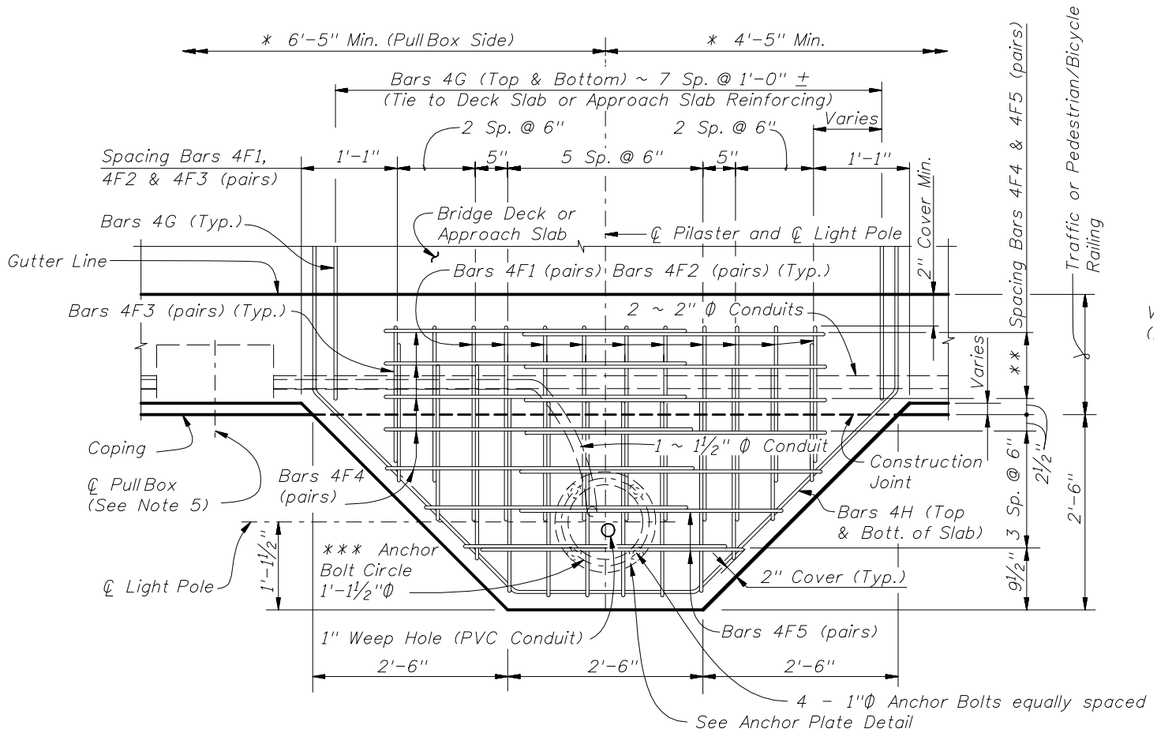
LIGHTING SYMBOLS

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



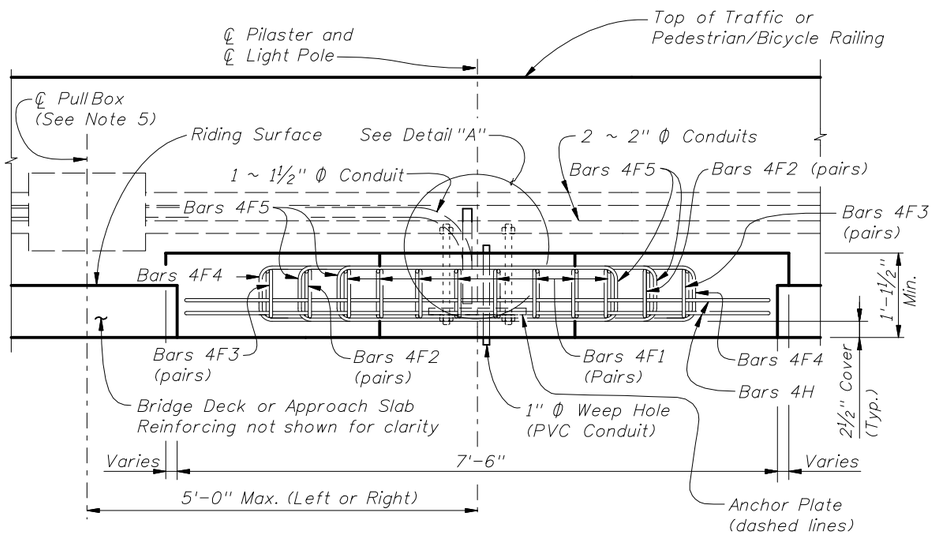
* Slip Forming Method of Construction is not allowed within the limits shown.

** For Index No. 820 - Pedestrian/Bicycle Railing, this dimension is 4½". For all other Railings, this dimension is 2 Eq. Sp. @ 6" Max.

*** Anchor Bolt pattern orientation shall be as shown.

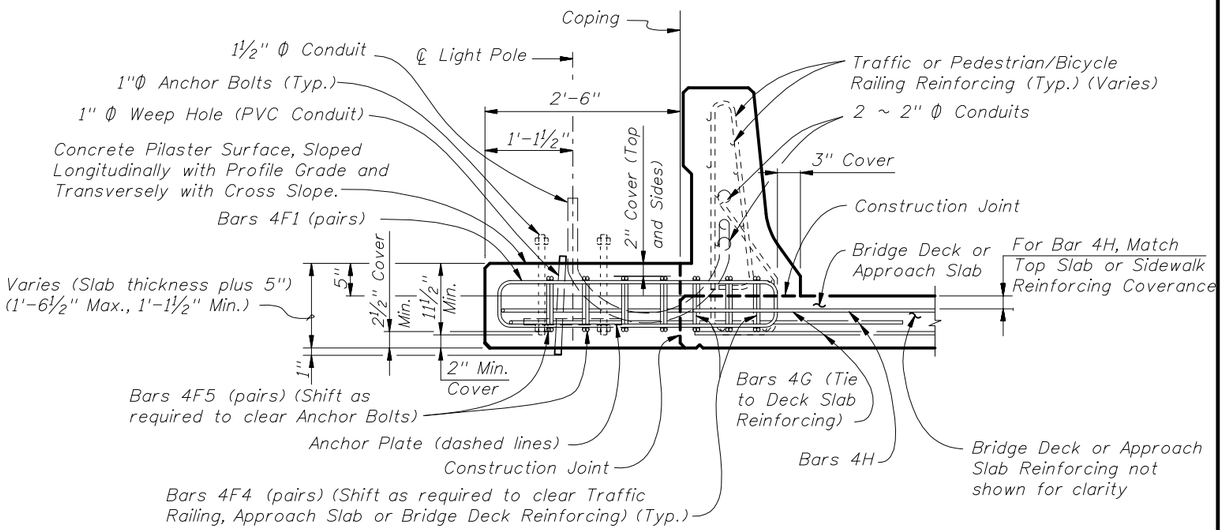
PLAN VIEW

(Anchor Plate not shown for clarity)

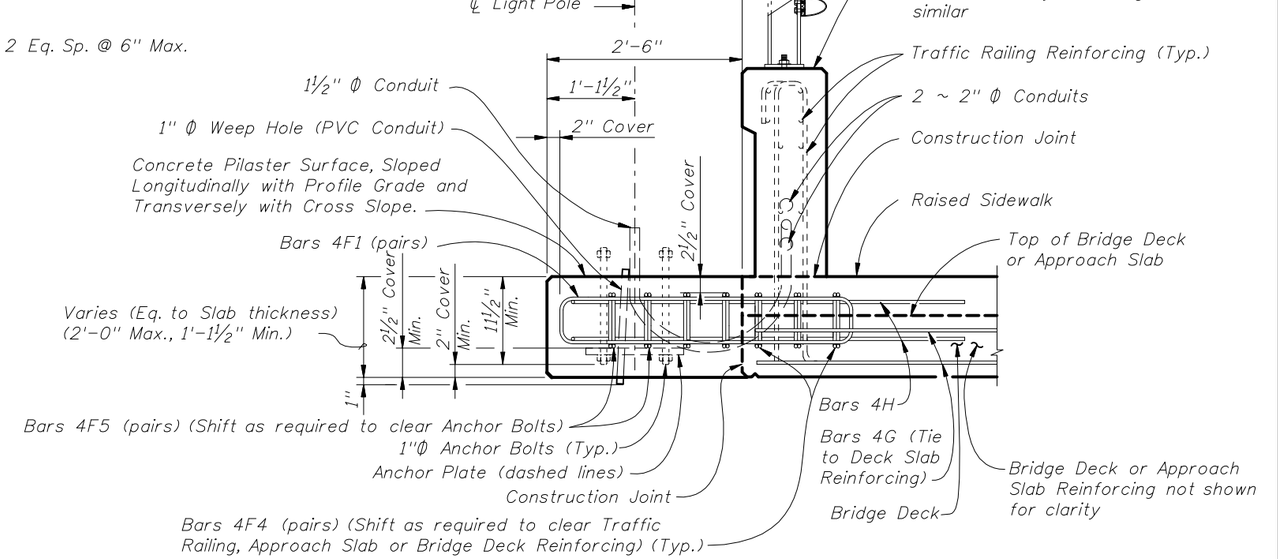


ELEVATION VIEW

(Bars 4G not shown for clarity)



TYPICAL SECTION AT LIGHT POLE PILASTER FOR APPROACH SLAB OR BRIDGE DECK THICKNESS LESS THAN 1'-1½".



TYPICAL SECTION AT LIGHT POLE PILASTER FOR APPROACH SLAB OR BRIDGE DECK THICKNESS 1'-1½" OR GREATER

CROSS REFERENCE: For Detail "A", Anchor Plate Detail and Light Pole Pilaster Notes, see Sheet 2.

NOTE: Anchor Bolt, Nuts, Washers and Anchor Plate are dashed for clarity.

STATE OF FLORIDA DEPARTMENT OF TRANSPORTATION	2010 FDOT Design Standards	Last Revision 01/01/09	Sheet No. 1 of 2
	LIGHT POLE PILASTER		Index No. 21200

CONVENTIONAL REINFORCING STEEL BENDING DIAGRAMS

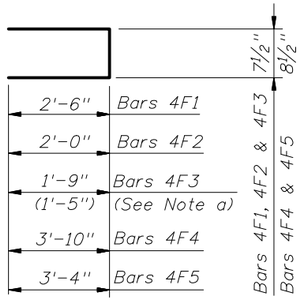
REINFORCING STEEL NOTES:

a. When Pilaster is attached to Pedestrian/Bicycle Railing – Index No. 820 and the Bridge Deck or Approach Slab thickness is less than 1'-1½", Bars 4F3 shall have leg length and bar length shown in parentheses.

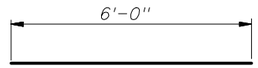
b. The number of bars shown in parentheses is for Bars 4F4 when Pilaster is attached to Pedestrian/Bicycle Railing – Index No. 820, and the Bridge Deck or Approach Slab thickness is less than 1'-1½".

c. Lap Splices for Bars 4F1, 4F2 & 4F3 shall be a minimum of 1'-4". Lap Splices for Bars 4F4 & 4F5 shall be minimum of 1'-8".

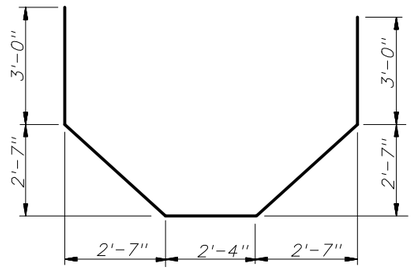
d. All bar dimensions in the bending diagrams are out to out.



BARS 4F1, 4F2, 4F3, 4F4 & 4F5



BAR 4G



BAR 4H

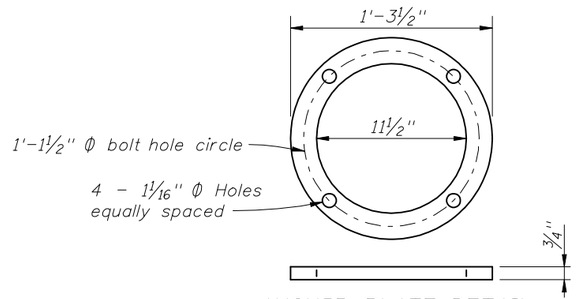
BILL OF REINFORCING STEEL				
MARK	SIZE	NO. REQD.	LENGTH	NOTES
F1	4	16	5'-8"	c
F2	4	4	4'-8"	c
F3	4	4	4'-2" (3'-6")	a, c
F4	4	10 (8)	8'-5"	b, c
F5	4	4	7'-5"	c
G	4	16	6'-0"	–
H	4	2	15'-8"	–

INSTRUCTIONS TO DESIGNER:

In order to minimize vibration of Light Poles due to traffic, locate pilasters near substructure supports.

Locate ℄ Pilaster minimum 3'-10" away from ℄ Traffic Railing Open Joint and edge of End Bent Wingwall.

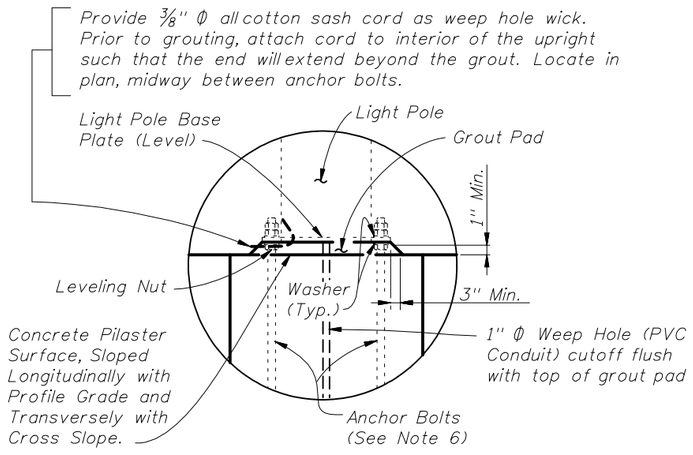
Design of the additional Bridge Deck Reinforcement is based on the minimum transverse top slab reinforcing required by Structures Design Guidelines.



ANCHOR PLATE DETAIL

ESTIMATED LIGHT POLE PILASTER QUANTITIES PER LIGHT POLE PILASTER		
ITEM	UNIT	QUANTITY
Concrete Per Pilaster Thickness	CY/In.	0.040
Reinforcing Steel	Lb.	244.16 (231.19)

(The Reinforcing Steel quantity shown in parenthesis is for a Pilaster attached to Pedestrian/Bicycle Railing – Index No. 820 with Bridge Deck or Approach Slab thinner than 1'-1½")



DETAIL "A"

CROSS REFERENCE:
For location of Detail "A" see Sheet 1.

LIGHT POLE PILASTER NOTES

1. Concrete and Reinforcing Steel required for the construction of the Pilaster shall meet the same requirements as the Traffic Railing or Pedestrian/Bicycle Railing the Pilaster is attached to. Grout shall comply with Specification Section 934.

2. Light Pole Pilaster may be used with the following:
   - Index No. 420 – Traffic Railing (32" F Shape),
   - Index No. 422 – Traffic Railing (42" Vertical Shape),
   - Index No. 423 – Traffic Railing (32" Vertical Shape),
   - Index No. 424 – Traffic Railing (Corral Shape),
   - Index No. 425 – Traffic Railing (42" F Shape),
   - Index No. 820 – Pedestrian/Bicycle Railing,
   - Index No. 821 – Aluminum Pedestrian/Bicycle Bullet Railing for Traffic Railing (32" F Shape), or
   - Index No. 5210 – Traffic Railing /Sound Barrier (Bridge).

   Unless otherwise noted, Traffic Railing (32" F Shape) is shown in all Views and Sections on Sheet 1 of 2. The Pilaster details for other Traffic Railings or Pedestrian/Bicycle Railing are similar.

3. The Pilaster and Deck are designed to resist the following Working Loads from the Light Pole applied at the top of the Pilaster:

Axial Dead Load	=	1.560 Kip
Wind Load Moment about Transverse Axis	=	40.60 Kip-Ft.
Wind Load Moment about Longitudinal Axis	=	28.30 Kip-Ft.
Deadload Moment about Longitudinal Axis	=	1.690 Kip-Ft.
Maximum Shear	=	1.380 Kip
Torsion about Pole Axis	=	3.560 Kip-Ft.

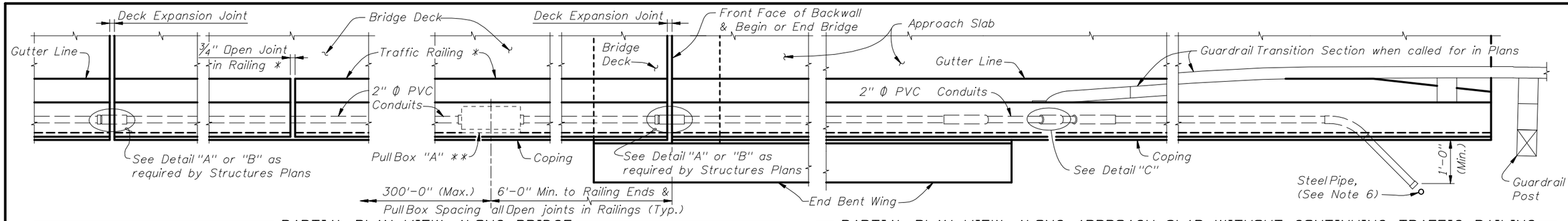
4. Materials:
   Anchor Bolts: ASTM F1554 Grade 55.
   Nuts: ASTM A563 Grade a Heavy-Hex.
   Washers: ASTM F436 Type 1.
   All Nuts, Bolts and Washers shall be galvanized by ASTM F2329.

   Anchor Plate: ASTM A 709 Grade 36 or ASTM A36.

5. For Conduit, Pull Box, Expansion/Deflection Fitting and adjacent Reinforcing Steel Details, see Utility Conduit Detail Sheets.

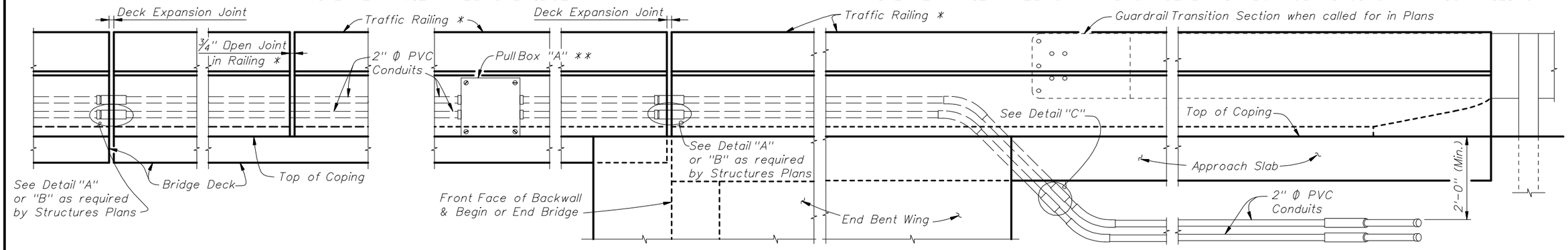
6. Anchor Bolts must be installed plumb.

7. PAYMENT: The cost of Anchor Bolts, Nuts, Washers and Anchor Plates shall be included in the Bid Price for Light Poles. The cost of all Labor, Concrete and Reinforcing Steel required for the Construction of the Pilasters, Grout Pads, Pull Boxes, and Miscellaneous Hardware required for the completion of the Electrical System, shall be included in the Bid Price for the Traffic Railing or Pedestrian/Bicycle Railing the Pilaster is attached to.



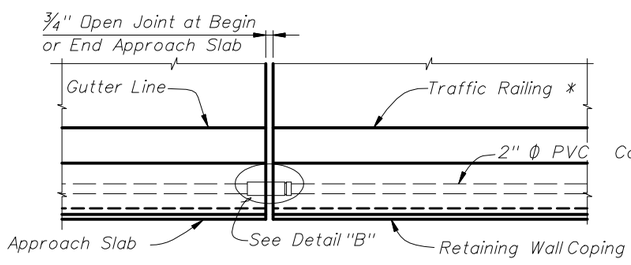
PARTIAL PLAN VIEW ALONG BRIDGE

PARTIAL PLAN VIEW ALONG APPROACH SLAB WITHOUT CONTINUING TRAFFIC RAILING

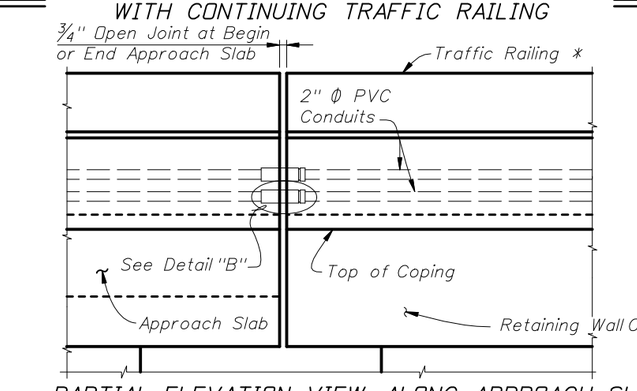


PARTIAL ELEVATION VIEW ALONG BRIDGE

PARTIAL ELEVATION VIEW ALONG APPROACH SLAB WITHOUT CONTINUING TRAFFIC RAILING

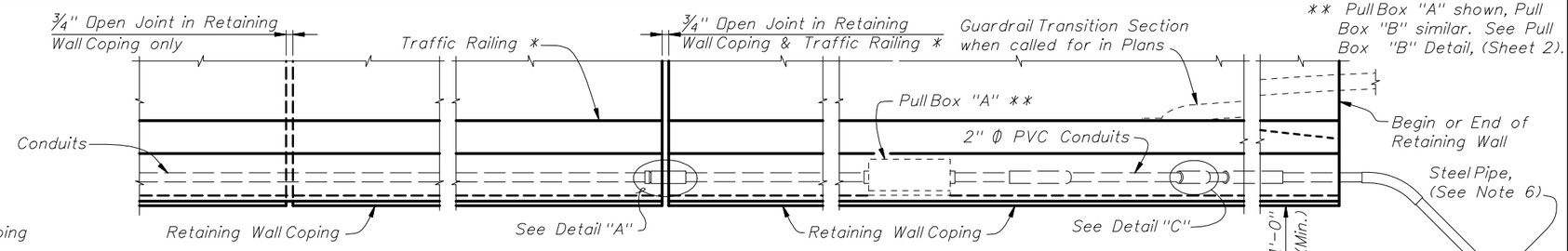


PARTIAL PLAN VIEW ALONG APPROACH SLAB WITH CONTINUING TRAFFIC RAILING

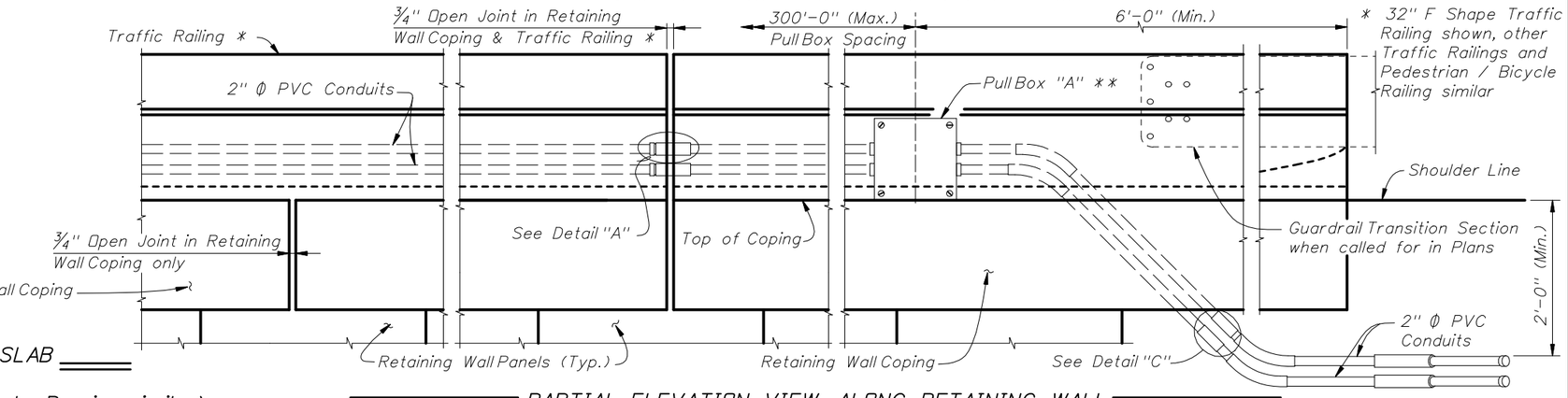


PARTIAL ELEVATION VIEW ALONG APPROACH SLAB WITH CONTINUING TRAFFIC RAILING

(Retaining Wall Mounted Traffic Railing shown, Roadway Concrete Barrier similar)



PARTIAL PLAN VIEW ALONG RETAINING WALL



PARTIAL ELEVATION VIEW ALONG RETAINING WALL

2010 FDOT Design Standards

UTILITY CONDUIT DETAILS

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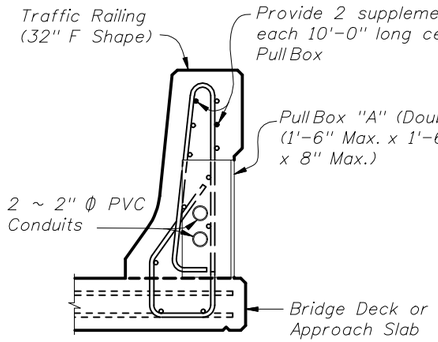
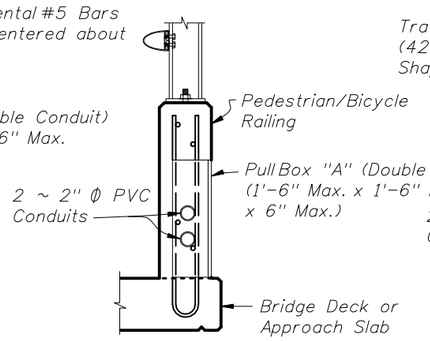
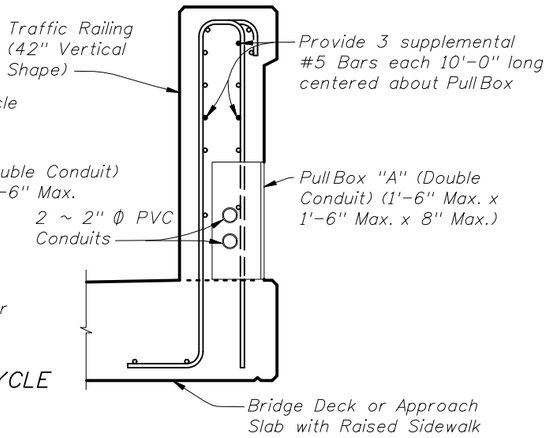


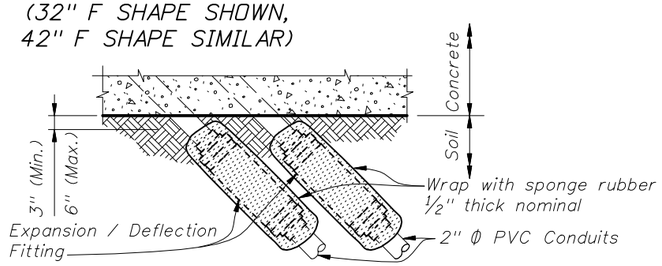
SECTION THRU TRAFFIC RAILING AT PULL BOX (32" F SHAPE SHOWN, 42" F SHAPE SIMILAR)



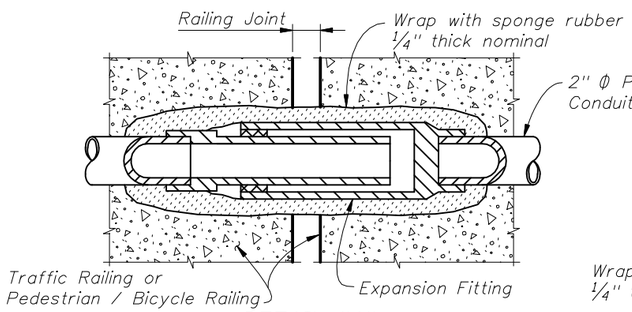
SECTION THRU PEDESTRIAN / BICYCLE RAILING AT PULL BOX



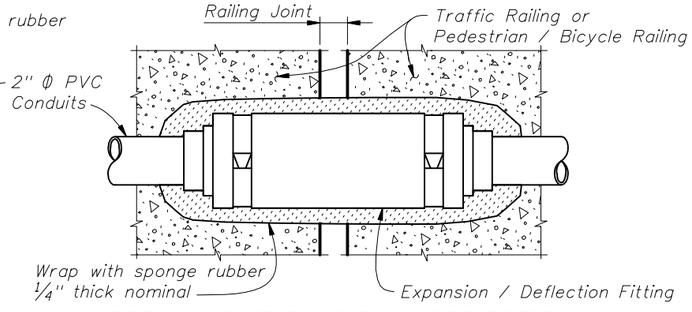
SECTION THRU TRAFFIC RAILING AT PULL BOX (42" VERTICAL SHAPE SHOWN, 32" VERTICAL SHAPE SIMILAR)



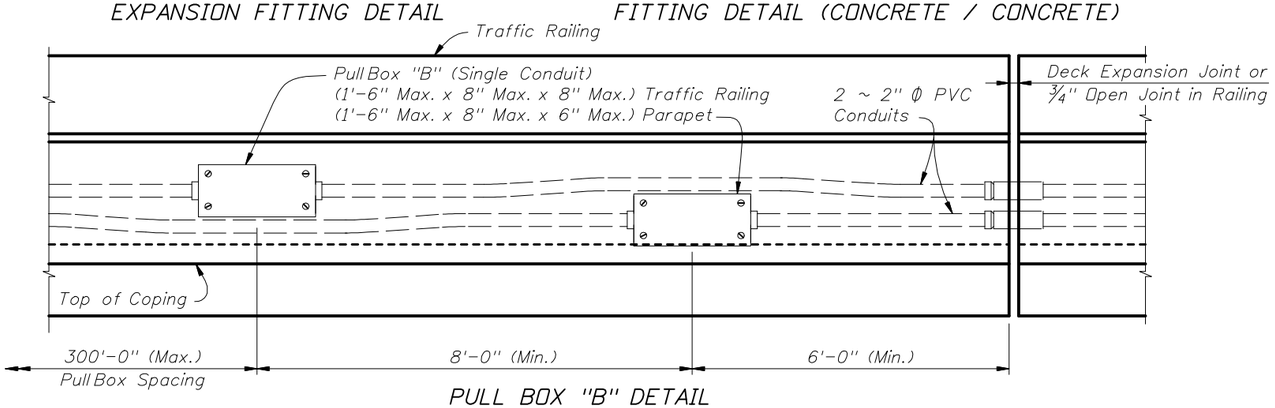
DETAIL "C" EXPANSION / DEFLECTION FITTING DETAIL (CONCRETE / SOIL)



DETAIL "A" EXPANSION FITTING DETAIL



DETAIL "B" EXPANSION / DEFLECTION FITTING DETAIL (CONCRETE / CONCRETE)



PULL BOX "B" DETAIL

UTILITY CONDUIT GENERAL NOTES:

1. Furnish and install approved Conduits and Fittings in accordance with the Specifications, this Standard, the National Electric Code (NEC) and as directed by the Engineer.

2. Furnish Schedule 80 PVC Rigid Nonmetallic Conduits in accordance with NEMA TC-2 and UL Standard 651 and Fittings in accordance with NEMA TC-3 and UL Standard 514b. Furnish conduit and fittings with UL labels: Conduit - on each 10 foot length; Fittings - stamped or molded on each fitting. Connect Conduit and Fittings using solvent cement in accordance with manufacturer's recommendations.

3. Furnish and install NEMA Type 4X non-metallic, or galvanized steel Pull Boxes sized in accordance with NEC requirements and the maximum limits shown. Provide gasketed weatherproof covers for the Pull Boxes. Permanently label the covers of the Pull Boxes to indicate the utility contained within. Letters and symbols shall be a minimum of 0.5" tall and may be stamped or molded into Pull Box covers. Install Pull Boxes adjacent to Begin and End Bridges, Begin and End Retaining Walls and at additional locations as required. Omit Pull Boxes at Begin or End Retaining Walls adjacent to bridges. Position Pull Box openings as shown, do not place Pull Box openings on the traffic face of Traffic Railings.

4. Furnish and install Expansion Fittings at locations shown in the Plans. Certify that Expansion Fittings used at a given location are rated to accommodate the anticipated movement at that location: along bridge decks - see Structures Plans, Expansion Joint Data Table; along retaining walls and other unspecified locations - 2" minimum.

5. Furnish and install Expansion / Deflection Fittings at locations shown in the Plans. Certify that Expansion / Deflection Fittings used at a given location are rated to accommodate a minimum rotation of 30 degrees and the anticipated movement at that location: along bridge decks - see Structures Plans, Expansion Joint Data Table; along retaining walls and other unspecified locations - 0.7" minimum.

6. Stub out and cap conduits and drive steel pipe to permanently locate ends as shown unless otherwise shown in Plans.

7. Shift vertical railing reinforcement symmetrically to provide 2" clearance to Pull Boxes. Space shifted vertical reinforcement at 3" centers minimum. Cut horizontal railing reinforcement to provide 2" clearance to Pull Boxes and provide supplemental reinforcement as shown. Shift a maximum of 1" but do not cut railing reinforcement to facilitate conduit, Expansion Fitting and Expansion / Deflection Fitting placement. Do not bundle conduits or conduits and horizontal reinforcement.

8. Unless otherwise shown in the Plans, include the cost of furnishing and installing Conduit, Pull Boxes, Expansion and Expansion / Deflection Fittings and all associated hardware required to complete the installation in the cost for the Traffic Railing or Pedestrian Railing (Parapet) that the conduit is installed in.

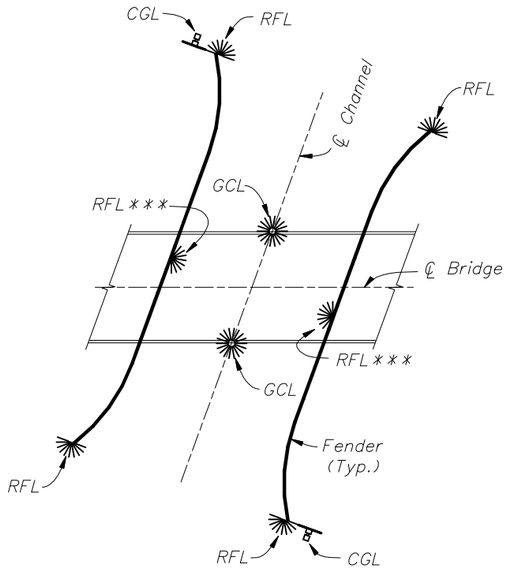
INSTRUCTIONS TO DESIGNER:

Verify the applicability of this Standard for a given project. Coordinate with the District Utility Coordinator to determine the present and future utility requirements at the project location. Provide supplemental designs, notes, details, wiring diagrams and wiring specifications in the Plans as required to complement this Standard.

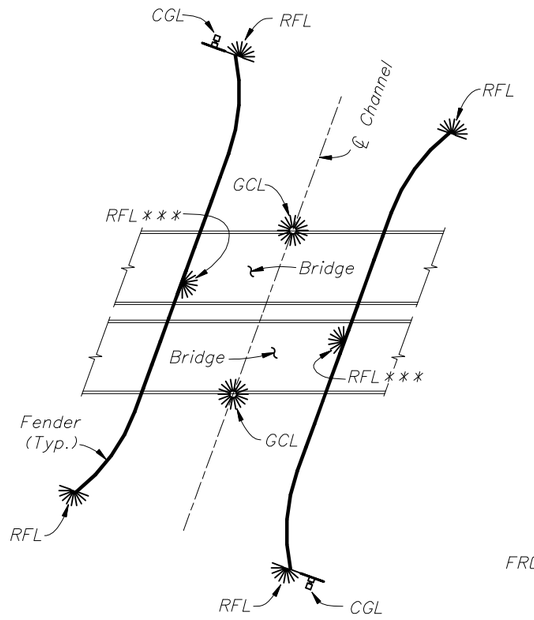
Specify in the Structures Plans the type of Pull Boxes required: Pull Box "A" - multiple raceways; Pull Box "B" - single raceways. Generally, multiple raceway Pull Boxes can be used where utilities contained within individual raceways (conduits) can share a common Pull Box. Single raceway Pull Boxes should be used where it is desirable or required that utilities contained within individual raceways (conduits) be isolated from each other.

Specify the type of fittings required at Expansion Joint locations on bridges: Expansion Fittings or Expansion / Deflection Fittings. Generally, Expansion Fittings can be typically used for bridges on tangent or large radius curved alignments where little or no transverse movement is expected at Expansion Joints. Expansion / Deflection Fittings are typically required for bridges on curved alignments or combined curved and tangent alignments where transverse movement is expected at Expansion Joints.

For electrical service, specify the use of THWN or XHHW conductors only.



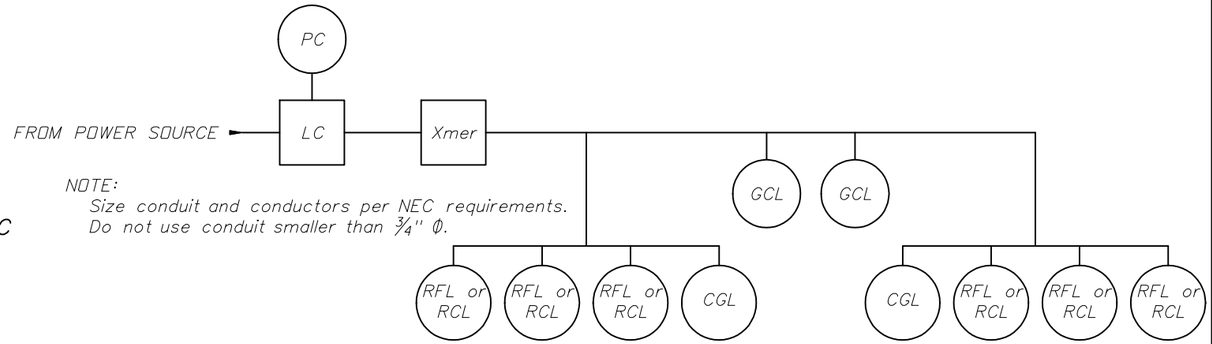
NAVIGATION LIGHT SYSTEM SCHEMATIC
FOR SINGLE BRIDGE WITH FENDERS



NAVIGATION LIGHT SYSTEM SCHEMATIC
FOR DUAL BRIDGES WITH FENDERS

NAVIGATION LIGHT NOTES:

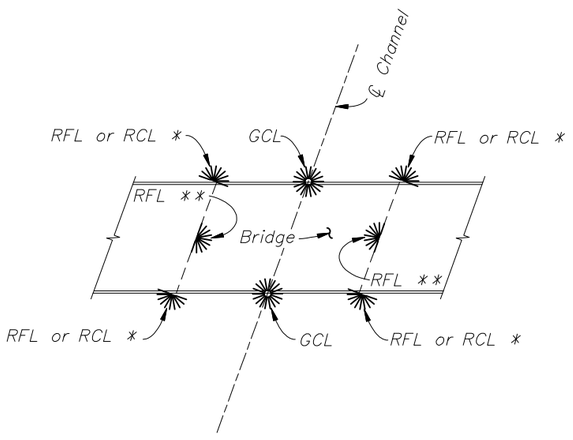
1. Provide Navigation Light System in compliance with Specifications Section 510.



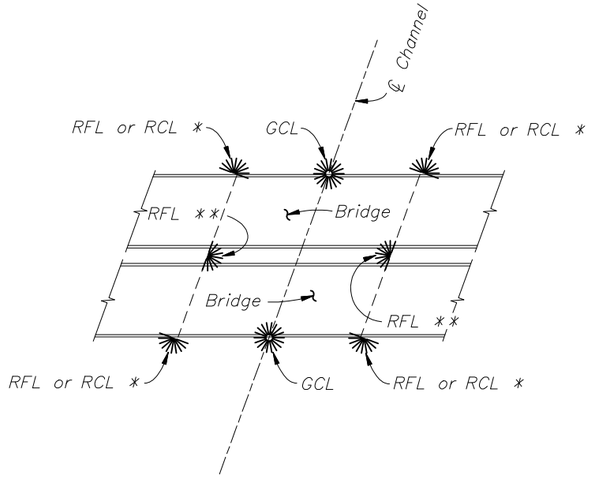
NOTE:
Size conduit and conductors per NEC requirements.
Do not use conduit smaller than ¾" Ø.

TYPICAL ELECTRICAL SCHEMATIC DIAGRAM

POWER CONDUCTORS			
DISTANCE (feet)	VOLTS	CONDUCTOR	TRANSFORMER
0 - 75	120	#12 AWG	N/A
75 - 500	120 or 240	#10 AWG	N/A
500-1000	240	#10 AWG	N/A
1000-2000	480	#10 AWG	2 KVA
2000-5000	480	#8 AWG	2 KVA
5000-10000	480	#6 AWG	2 KVA
over 10000	480	#4 AWG	2 KVA



NAVIGATION LIGHT SYSTEM SCHEMATIC
FOR SINGLE BRIDGE WITHOUT FENDERS



NAVIGATION LIGHT SYSTEM SCHEMATIC
FOR DUAL BRIDGES WITHOUT FENDERS

LEGEND

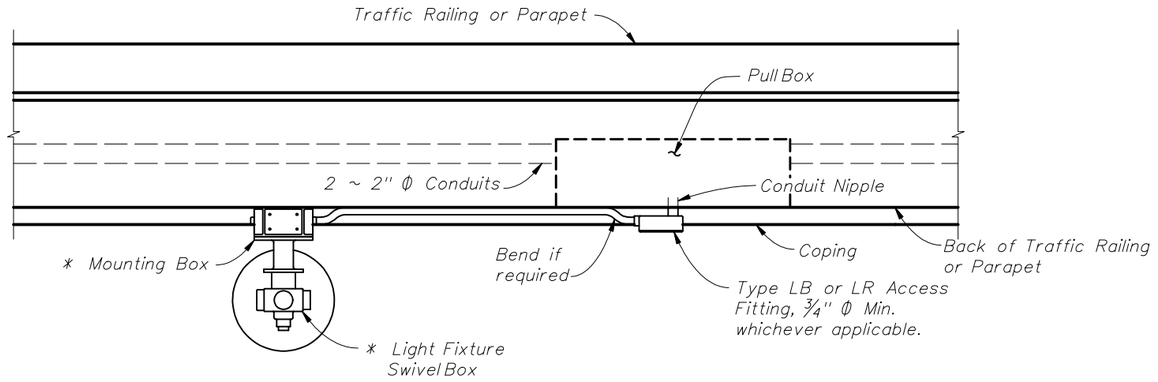
SYMBOL	DESCRIPTION
LC	Lighting Contactor
PC	Photocell Control
Xmer	Transformer (If Required)
RFL or RCL	Red Pier/Fender Light Red Channel Margin Light
GCL	Green Center Channel Light
CGL	Clearance Gauge Light
CM	Channel Margin or Pier inner surface whichever defines Channel Edge.

INSTRUCTIONS TO DESIGNER:

1. Provide design of CGL locations, configurations and its supporting structures.
2. Provide design of RFL locations and configurations in Fender System drawings if applicable.
3. If actual conditions differ from the typical configurations shown on this sheet, design Navigation Light System to comply with Code of Federal Regulations Title 33, Chapter 1, Part 118.
4. Provide automatic lock positions for service and operating.
5. Specify Service Chain mounting location.

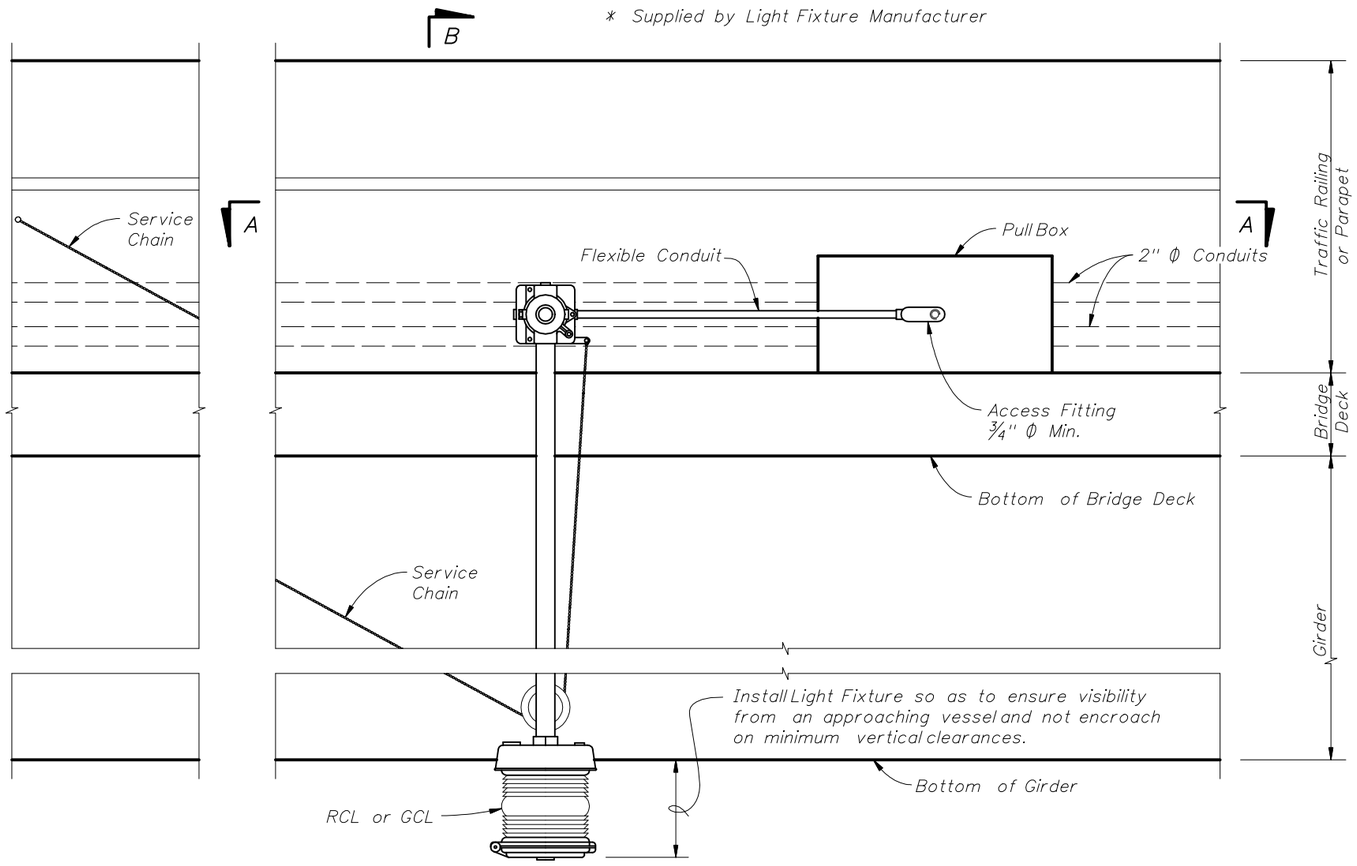
* Use RFL when Pier is at Channel Edge and see CFR, Title 33, part 118 for Mounting Height restrictions. Use RCL otherwise.
** Mounted only on the Pier that defines CM, otherwise does not apply.
*** RFL to be located at mid length of straight portion of fender.

CROSS REFERENCES:
1. For Navigation Light System notes and legend, see Sheet 1.
2. See Utility Conduit Detail sheets for pull box dimensions & locations.

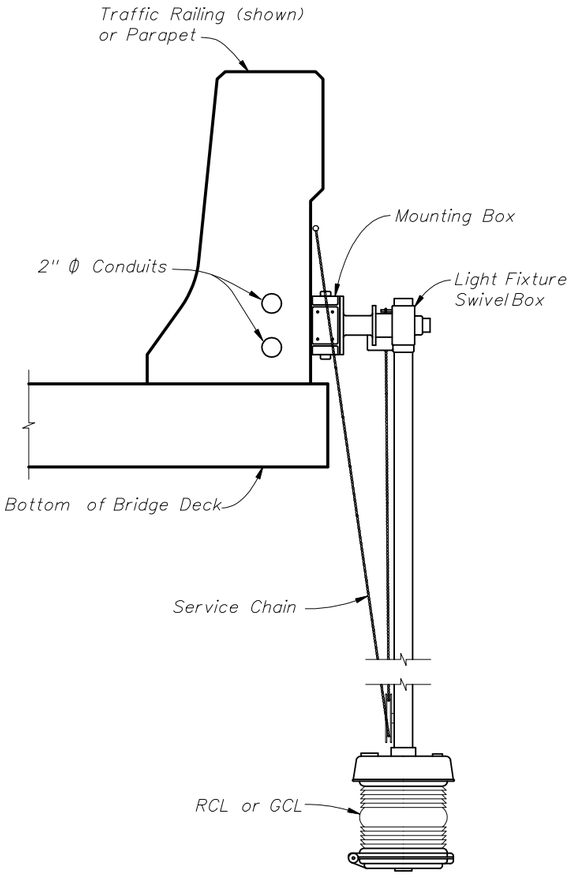


GCL OR RCL MOUNTING DETAILS (SCHEMATIC)
VIEW A-A
(Traffic Railing - 32" F Shape shown, other railings similar)

* Supplied by Light Fixture Manufacturer



GCL OR RCL MOUNTING DETAILS (SCHEMATIC)
ELEVATION VIEW
(Traffic Railing (32" F Shape) shown, other railings similar)



SECTION B-B
TYPICAL POSITION OF RCL OR GCL
RELATIVE TO SUPERSTRUCTURES

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NAVIGATION LIGHT SYSTEM DETAILS (FIXED BRIDGES)

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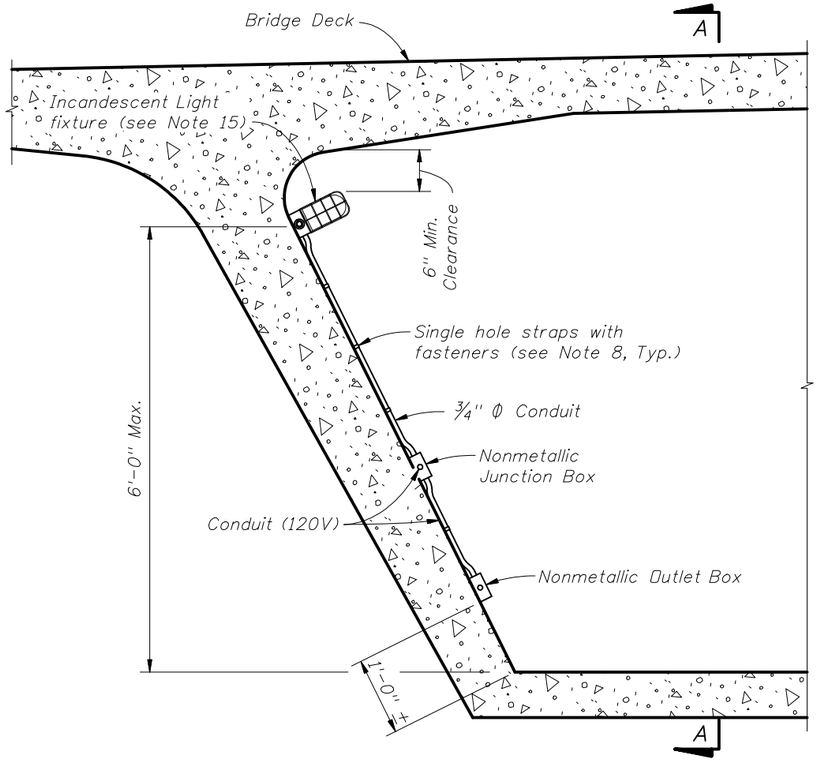
BOX GIRDER MAINTENANCE LIGHTING NOTES:

1. Submit shop drawings to the Engineer detailing the layout of the maintenance lighting system for the entire structure. The shop drawings must include, but not be limited to, the following items:
   a. Conduit layout and installation details through diaphragms, around post-tensioning (PT) ducts, lateral bracing and cross frames as necessary.
   b. Conduit access through box girder end diaphragms with minimum 1" clearance in all directions.
   c. Conduit expansion fitting details.
   d. Fastener details for the interior electrical system.
   e. Single line diagram showing mini power centers, switches, contactors, timers, etc.
   f. Mini power center details including circuit breaker details.
   g. Mini power center mounting details if required.
   h. Feeder schedule.
2. Ensure installation meets all requirements of the latest edition of the National Electrical Code (NEC) and local ordinances. Install grounding in accordance with NEC Article 250. Maintain separation between 480V and 120V Conductors / Conduits throughout.
3. Furnish all labor, equipment, materials, and incidentals required for a complete and functional installation.
4. Use only new, unused and Underwriters Laboratories (UL) listed equipment and materials for outdoor use.
5. Furnish and install polyvinyl chloride (PVC) conduit in conformance with UL Section 651, NEC Section 347 and NEMA TC-2, UV-resistant and schedule 80. Bend conduits as necessary to connect to loads.
6. Provide PVC sleeve 2" bigger in diameter than conduit to accommodate construction tolerance.
7. Install a UL labeled expansion fitting for specified PVC conduit at all structure expansion joints. Provide certification that the expansion fitting meets the following minimum requirements: Compatibility with the connected conduits, waterproof, UV protected and allows longitudinal movement equal to that of the Expansion Joint.
8. Use only Alloy 316 stainless steel supporting hardware. Provide minimum $\frac{3}{16}$" Ø fasteners. For concrete or SIP form mounting, provide anchor bolts (expansion, drop-in or adhesive) suitable for dynamic loading (due to vibration caused by traffic). Install fasteners to avoid conflicts with reinforcing steel and PT ducts. For structural steel mounting, do not attach fasteners to main members, i.e. webs and flanges.
9. Furnish power distribution at 480V AC, 1 phase, with step down transformers at regular intervals. Furnish 7.5 KVA mini power center with eight 20A breakers as the step down transformer, feeding a maximum of 20 lamps and 20 receptacles. Each mini power center will provide power to no more than 1000' of bridge, preferably 500' on each side of the mini power center. 480V top feed, 120V bottom feed to maintain separation.
10. Furnish and install lighting contactors to switch the 480V AC feeding the mini power centers.
11. Furnish and install copper conductors, Type XHHW. Do not use any conductor larger than #4 AWG.
12. Provide enough slack in all interior cable terminations to allow for minor shifting of the structure.
13. Furnish and install National Electric Manufacturers Association (NEMA) Type 4X (non-metallic) surface mounted boxes sized in conformance with the NEC.
14. Furnish and install 120V duplex receptacles (GFI, NEMA Type 5-20R), in non-metallic outlet boxes at 50' maximum on centers. Provide each receptacle with a gasketed weather-protective outdoor plate. Maximum wire size to connect to receptacles is #12 AWG.
15. Furnish and install surface mounted, fully enclosed, incandescent light fixtures with gasketed clear globes and wire guards at 50' maximum on centers. Provide 100 watt, 130 volt, vibration resistant and brass base incandescent lamps.
16. Locate switches at each end of each span and at every access door.
17. Provide six hour reset timers for each circuit to turn off the lighting system automatically.
18. Include the cost of the box maintenance lighting system in the pay item for Lighting - Inside Box Girder. Tabulate items in the plans.

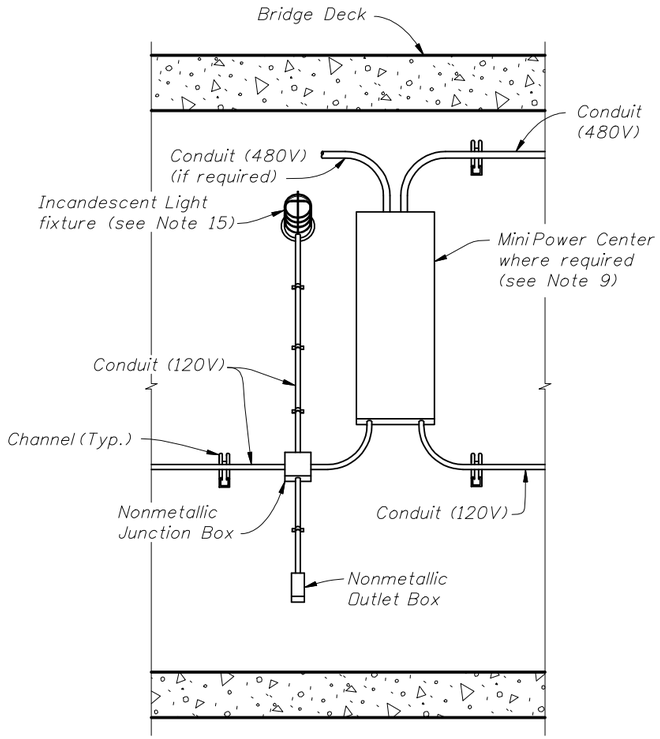
INSTRUCTIONS TO DESIGNER:

1. This Standard does not show all structure elements and is not intended to show the exact location of conduit runs. Coordinate these with the other trades to avoid conflicts. Coordinate all lighting fixtures and equipment locations with the Structure Plans.
2. Tabulate in the plans and include in the TRNS*PORT, for bid purposes, the pay items for the maintenance lighting system such as conductors, conduit, electrical work, etc.

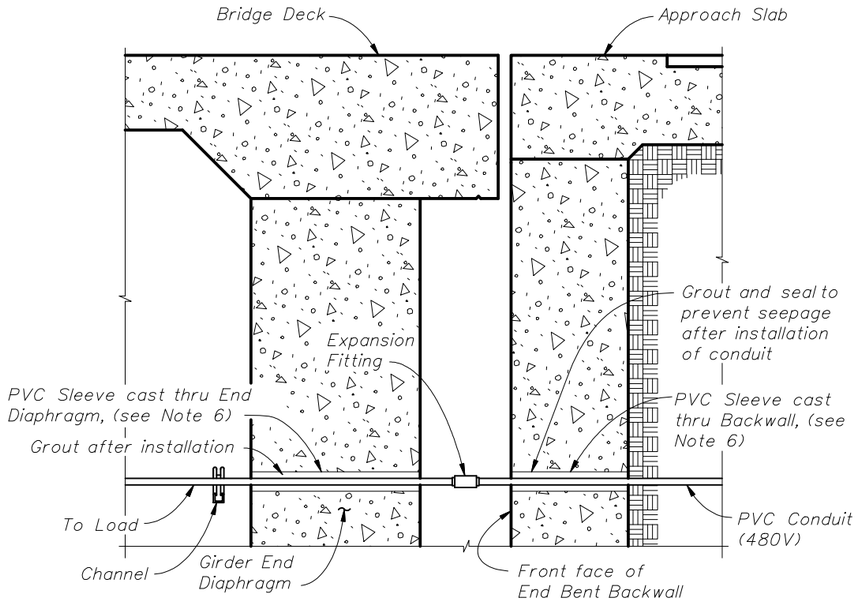
CROSS REFERENCES:
1. For Maintenance Light Details, see Sheet 2.
2. For actual bridge section, see Structures Plans.



LIGHTING DETAILS FOR CONCRETE BOX GIRDER BRIDGE

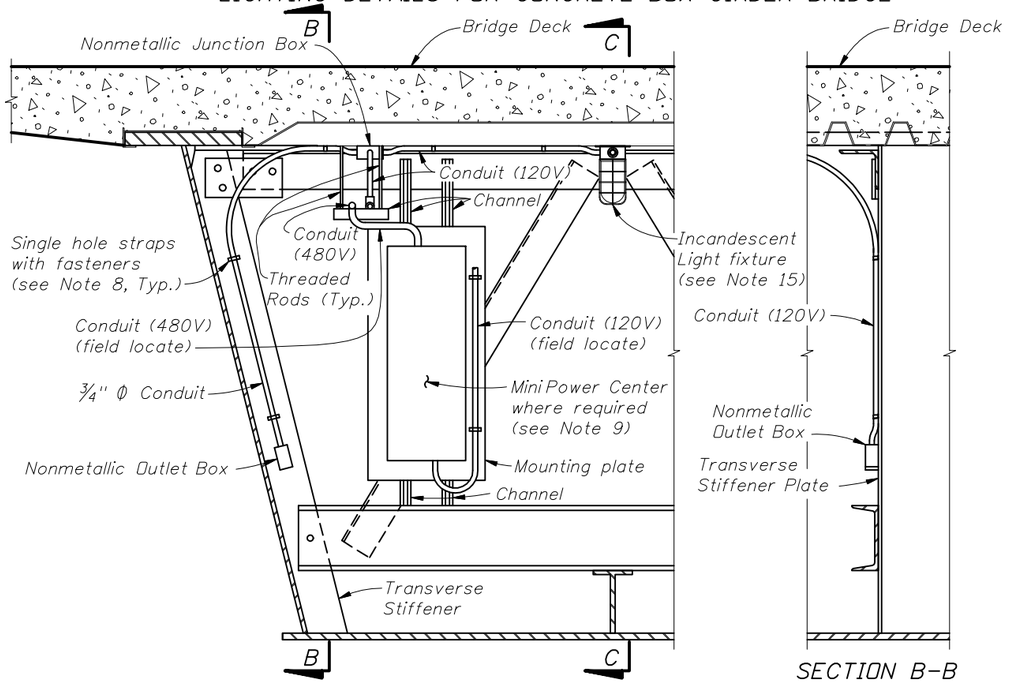


SECTION A-A



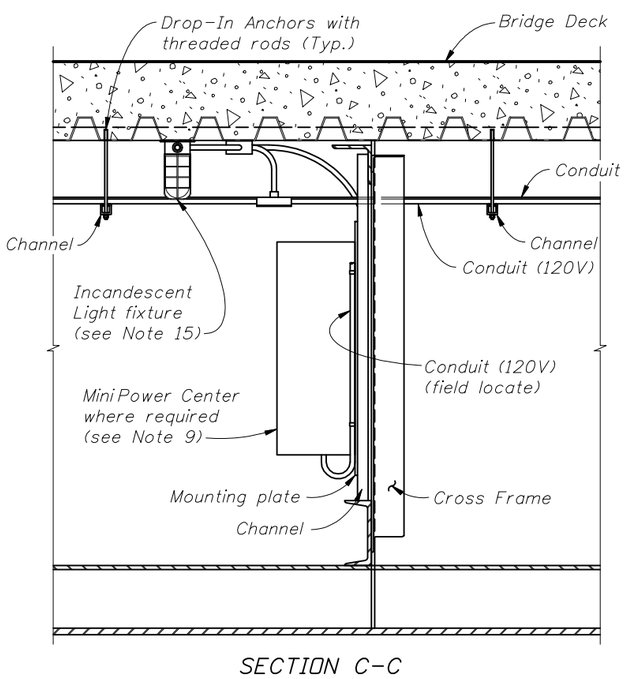
CONCRETE BOX GIRDER BRIDGE SECTION THRU END BENTS

CROSS REFERENCE:
1. For Box Girder Maintenance Lighting Notes see Sheet 1.

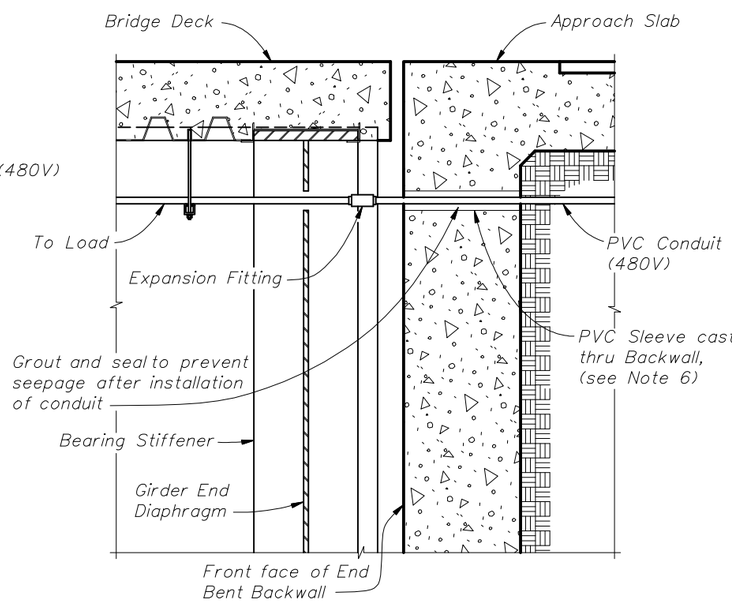


SECTION B-B

LIGHTING DETAILS FOR STEEL BOX GIRDER BRIDGE
(Cross Frame section shown, other Transverse Stiffener sections similar)



SECTION C-C



STEEL BOX GIRDER BRIDGE SECTION THRU END BENTS

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MAINTENANCE LIGHTING FOR BOX GIRDERS

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