**PLAN VIEW**

- Bars 4F3 (pairs) (Typ.)
- Bars 4G (pairs) (Typ.)
- Bars 4H (pairs) (Typ.)
- Bars 4I (pairs) (Typ.)
- Bars 4J (pairs)

**ELEVATION VIEW**

- Bars 4F3 (pairs)
- Bars 4G (pairs)
- Bars 4H (pairs)
- Bars 4I (pairs)
- Bars 4J (pairs)

**TYPICAL SECTION AT LIGHT POLE PEDESTAL FOR APPROACH SLAB OR BRIDGE DECK THICKNESS LESS THAN 1'-1\(\frac{1}{8}\)" AT COPING**

- Bars 4F5 (pairs) (Shift as required to clear Anchor Bolts)
- Anchor Plate (dashed lines)
- Construction Joint Permitted
- Bars 4F4 (pairs) (Shift as required to clear Traffic Railing, Approach Slab or Bridge Deck Reinforcing) (Typ.)

**DESIGN STANDARDS**

- Anchor Bolt, Nuts, Washers and Anchor Plate are dashed for clarity.
- Anchor Bolt pattern orientation shall be as shown.
- Slip Forming Method of Construction requires the Engineer’s approval within the limits shown.
- Anchor Bolt orientation shall be as shown.

**INDEX NO.**

- 21200

**REVISION NO.**

- 1 of 3
TYPICAL SECTION AT LIGHT POLE PEDESTAL FOR FLAT SLAB OR BRIDGE DECK THICKNESS AT COPING 1'-5\(\frac{1}{2}\)" OR GREATER

CROSS REFERENCE:
For Detail "A", Anchor Plate Detail and Light Pole Pedestal Notes, see Sheet 3.

NOTE: Anchor Bolt, Nuts, Washers and Anchor Plate are dashed for clarity.
Light Pole Pedestal Notes:
1. Concrete and Reinforcing Steel required for the construction of the Pedestal shall meet the same requirements as the Traffic Railing or Pedestrian/Bicycle Railing the Pedestal is attached to.

2. Light Pole Pedestal 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 (Corralling Shape)
   - Index No. 425 - Traffic Railing (42" Vertical Space)
   - Index No. 820 - Pedestrian/Bicycle Railing
   - Index No. 821 - Aluminum Pedestal/Bicycle Bullet Railing for Traffic Railing (32" F Shape)
   - Index No. 3120 - Traffic Railing (Active Wall Bridge).

3. The Pedestal and Deck are designed to resist the following Working Loads (load Case 2) from the Light Pole applied at the top of the Pedestal:
   - Axial Dead Load = 1.34 kip/f.
   - 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 = 1.69 kip-ft.
   - Maximum Shear = 3.59 kip.
   - Torsion about Pole Axis = 3.96 kip-ft.

4. Anchor Bolt Design:
   - Anchor Bolt design is based on the standard Roadway Aluminum Light Pole configurations shown on Index No. 17515 and the following design limitations:
     - Load Case 1: See Table 1
     - Load Case 2: 150 mph Design Wind Speed, 15' arm length, 50' Design Height with a 75' bridge deck height above natural ground or MLW.

5. Anchor Bolts must be installed plumb.

6. For conduit, embedded junction boxes (EJB), expansion/deflection fitting and adjacent reinforcing steel details, see Utility Conduit Detail Sheets.
Conduit General Notes:

1. Furnish and install approved Conduits and Fittings in accordance with the Specifications, this Standard, and 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. Furnish Fittings in accordance with NEMA TC-3 and UL Standard 514b. Conduit and Fittings must have 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 the manufacturer’s recommendations.

3. Furnish and Install Embedded Junction Boxes (EJB) sized in accordance with NEC requirements and the maximum size limits shown. Install EJB adjacent to the Begin and End of Bridges, Begin and End of Retaining Walls, and at other required locations. Omit EJB at Begin or End of Retaining Wall adjacent to Bridges unless a precast Traffic Railing with Junction Box is used. Position EJB as shown.

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. For all Conduit designated for future use, install in accordance with Specification Section 630, either: #12 AWG Pull Wire or Polypropylene cord between every EJB and install #12 AWG Pull Wire from the first and last EJB in Traffic Railing or Parapet to in-ground Junction Box or capped end of Conduit.

7. For all Conduit designated for future use, stub out and cap the Conduit; drive a steel pipe at the End of the Conduit as shown on Sheet 2 unless the plans require an in-ground Junction Box. Show location of stub out with Steel Pipe or in-ground Junction Box as As-Built plans.

8. Shift vertical Railing reinforcement symmetrically to provide 2” clearance to EJB. Space shifted vertical reinforcement at minimum 3” centers. Cut horizontal Railing reinforcement to provide 2” clearance to EJB and provide supplemental reinforcement as shown. Shift reinforcing a maximum of 1” but do not cut Railing reinforcement to facilitate placement of Conduit, Expansion Fittings, and Expansion/Deflection Fittings. Do not bundle conduits, conduits and horizontal reinforcement.

9. Unless otherwise shown in the plans, include the cost of furnishing and installing Conduit, Pull Cords and Wires, EJB, Expansion and Expansion/Deflection Fittings and all associated hardware required to complete the installation in the cost of the Traffic Railing or Pedestrian Railing (Parapet) that the Conduit is installed in.

General Notes:

- Reduce to 6” maximum when installed in Pedestrian/Bicycle Railings.

- Wrap with sponge rubber ⅛” thick nominal

- Expansion Fitting Detail (Concrete / Concrete)

- Expansion Fitting Detail (Concrete / Soil)
Traffic Railing

EJB "B" (Single Conduit)

12'-6" Max x 8' Max x 8' Max Parapet Traffic Railing

(1'-6" Max x 8' Max x 8' Max) Parapet

2 - 2" Ø PVC Conduits

Deck Expansion Joint or
W Open Joint in Railing

Top of Coping

See Detail 'A' or 'B' as required by Structures Plans

EJB "B" DETAIL

300'-0" (Max)

8'-0" (Min)

6'-0" (Min)

EJB Spacing

Description:

This section details the various components of a traffic railing, including:

- **Approach Slab**
  - Traffic Railing
  - Top of Coping
  - Parapet
  - Traffic Railing (32" F Shape)

- **Guardrail Transition Section**
  - Traffic Railing
  - Top of Coping
  - Open Joint in Railing
  - EJB "A" Similar Opening on non-traffic face.

- **Decks**
  - Deck Expansion Joint
  - Bridge Deck or Approach Slab

- **Pedestrian/Bicycle Railings**
  - EJB "B" Similar Opening on non-traffic face.
  - 2 - 2" Ø PVC Conduits

- **Traffic Railing (42" Vertical Shape)**
  - EJB "A" Similar Opening on non-traffic face.

- **EJB Spacing**
  - 300'-0" (Max)

- **Concrete Slab**
  - Top of Coping
  - 32" F Shape

- **Pedestrian/Bicycle Railings**
  - EJB "A" Similar Opening on non-traffic face.

- **Traffic Railing**
  - 2 - 2" Ø PVC Conduits

- **Bridge and Approach Slab Edge Railing**

**SECTION THRU TRAFFIC RAILING AT EJB**

(32" F SHAPE SHOWN, 42" F SHAPE SIMILAR)

**SECTION THRU PEDESTRIAN / BICYCLE RAILING AT EJB**

(42" VERTICAL SHAPE SHOWN, 32" VERTICAL SHAPE SIMILAR)

**PARTIAL ELEVATION VIEW ALONG BRIDGE**

**PARTIAL PLAN VIEW ALONG BRIDGE**

**PARTIAL PLAN VIEW ALONG APPROACH SLAB WITHOUT CONTINUING TRAFFIC RAILING**

**PARTIAL ELEVATION VIEW ALONG APPROACH SLAB WITHOUT CONTINUING TRAFFIC RAILING**

* 32" F-Shape Traffic Railing shown, other Traffic Railings and Pedestrian/Bicycle Railings similar.
** EJB "A" shown, EJB "B" similar. See EJB "B" Detail.
**Bridge and Approach Slab Median Traffic Railing**

**CONDUIT DETAILS**

**NOTES:**

1. Work this sheet with Index No. 421.
2. Adjust horizontal and vertical alignments of conduit as necessary to align with EJB.
3. Use only Galvanized Steel EJB "B" when installed in traffic face of railing. EJB Cover must be a minimum of 0.5" thick galvanized steel.
4. Position EJB such that, with cover plate secured and in place, plate is flush with the railing face. Flush is 0.5" to 1" measured with a horizontal straightedge.
5. Chamfer recess at EJB 0.5" all around with cover removed.

**DESCRIPTION:**

- **07/01/13**
- **INDEX NO.**
- **SHEET NO.**
- **FDOT 2014 DESIGN STANDARDS**
- **REV 07/01/13**
- **CURRENTLY READY FOR RELEASE 2014 BOOK 21210-3 OF 4**

**PARTIAL PLAN VIEW OF MEDIAN TRAFFIC RAILING ALONG BRIDGE**

- 2" Ø PVC Conduits See Note 2

**PARTIAL PLAN VIEW OF MEDIAN TRAFFIC RAILING ALONG APPROACH SLAB**

- 2" Ø PVC Conduits

**PARTIAL ELEVATION VIEW OF MEDIAN TRAFFIC RAILING ALONG BRIDGE**

- 2" Ø Conduits

**PARTIAL ELEVATION VIEW OF MEDIAN TRAFFIC RAILING ALONG APPROACH SLAB**

- 2" Ø PVC Conduits

**SECTION A-A**

- Median Traffic Railing (See Notes 4 & 5)

**CHAMFER DETAIL**

- (See Note 5)

- See Chamfer Detail

- Galvanized Steel EJB "B" (Front Face) without cover

- Provide 2 - 10'-0" long supplemental #5 Bars centered on EJB
**DESIGN STANDARDS**

* 32" F Shape Traffic Railing shown, other Traffic Railings and Pedestrian / Bicycle Railing similar. (See Sheet 2)

** EJB "B" shown EJB "A" similar. See EJB "B" Detail on Sheet 2.

** 32" Open Joint at Begin of End Approach Slab

** 32" Open Joint in Retaining Wall Coping only

** 32" Open Joint in Retaining Wall Coping & Traffic Railing

** 32" Open Joint in Retaining Wall Coping only

Guardrail Transition Section when called for in Plans

Begin or End of Retaining Wall Steel Pipe, (See Sheet 1 Note 7)
**NAVIGATION LIGHT NOTES:**

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

---

**GENERAL:**

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

**CM**

- Red Channel Margin Light (180° visibility)

**CGL**

- Green Center Channel Light (360° visibility)

**RCL**

- Red Pier/Fender Light (180° visibility)

**LEGEND**

- LC: Lighting Contactor
- PC: Photocell Control
- Xmer: Transformer (if Required)
- **RFL or RCL**: Red Channel Margin Light (180° visibility) or Red Pier/Fender Light (180° visibility)
- **GCL**: Green Center Channel Light (360° visibility)
- **CGL**: Clearance Gauge Light
- **CM**: Channel Margin or Pier inner surface whichever defines Channel Edge.

**POWER CONDUCTORS**

<table>
<thead>
<tr>
<th>DISTANCE (feet)</th>
<th>VOLTS</th>
<th>CONDUCTOR</th>
<th>TRANSFORMER</th>
</tr>
</thead>
<tbody>
<tr>
<td>0 - 75</td>
<td>120</td>
<td>#12 AWG</td>
<td>N/A</td>
</tr>
<tr>
<td>75 - 500</td>
<td>120 or 240</td>
<td>#10 AWG</td>
<td>N/A</td>
</tr>
<tr>
<td>500 - 1000</td>
<td>240</td>
<td>#10 AWG</td>
<td>2 KVA</td>
</tr>
<tr>
<td>1000 - 2000</td>
<td>480</td>
<td>#8 AWG</td>
<td>2 KVA</td>
</tr>
<tr>
<td>2000 - 5000</td>
<td>480</td>
<td>#6 AWG</td>
<td>2 KVA</td>
</tr>
<tr>
<td>5000 - 10000</td>
<td>480</td>
<td>#4 AWG</td>
<td>2 KVA</td>
</tr>
<tr>
<td>over 10000</td>
<td>480</td>
<td>#4 AWG</td>
<td>2 KVA</td>
</tr>
</tbody>
</table>

**NOTE:**

Size conduit and conductors per NEC requirements.

**NOTE:**

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

---

**TYPICAL ELECTRICAL SCHEMATIC DIAGRAM**

**SYMBOL**

- LC: Lighting Contactor
- PC: Photocell Control
- Xmer: Transformer (if Required)

- **RFL or RCL**: Red Channel Margin Light (180° visibility) or Red Pier/Fender Light (180° visibility)
- **GCL**: Green Center Channel Light (360° visibility)
- **CGL**: Clearance Gauge Light
- **CM**: Channel Margin or Pier inner surface whichever defines Channel Edge.

---

**NAVIGATION LIGHT SYSTEM SCHEMATIC FOR SINGLE BRIDGE WITH FENDERS**

- RFL or RCL: Red Channel Margin Light (180° visibility) or Red Pier/Fender Light (180° visibility)

---

**NAVIGATION LIGHT SYSTEM SCHEMATIC FOR DUAL BRIDGES WITH FENDERS**

- RFL or RCL: Red Channel Margin Light (180° visibility) or Red Pier/Fender Light (180° visibility)

---

**NAVIGATION LIGHT SYSTEM SCHEMATIC FOR SINGLE BRIDGE WITHOUT FENDERS**

- RFL or RCL: Red Channel Margin Light (180° visibility) or Red Pier/Fender Light (180° visibility)

---

**NAVIGATION LIGHT SYSTEM SCHEMATIC FOR DUAL BRIDGES WITHOUT FENDERS**

- RFL or RCL: Red Channel Margin Light (180° visibility) or Red Pier/Fender Light (180° visibility)

---

**DESCRIPTION:**

- Use RFL when Pier is at Channel Edge and see CFR, Title 33, part 118 for Mounting Height restrictions. Use RCL otherwise.
- **RFL**: RFL to be located at mid length of straight portion of fender.
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 #8 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, for actual bridge section, see Structures Plans. Furnish 75 kVA mini power center with eight 20A breakers at 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 (GF), NEMA Type 5-20R, in non-metallic outlet boxes at 50' maximum on center. Provide each receptacle with a gasketed weather-protective outdoor plate. Maximum wire size to connect to receptacles is #12 AWG.

15. Furnish and install 120V duplex receptacles, in non-metallic outlet boxes at 50' maximum on center. Provide each receptacle with a gasketed weather-protective outdoor plate. Maximum wire size to connect to receptacles is #12 AWG.

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 light system automatically.

18. Include the cost of the box maintenance lighting system in the pay item for Lighting - Inside Box Girder (LS).

CROSS REFERENCES:
1. For Maintenance Light Details, see Sheet 2.
2. For actual bridge section, see Structures Plans.
STEEL BOX GIRDER BRIDGE SECTION THRU END BENTS

MAINTENANCE LIGHTING FOR BOX GIRDER bridge 07/01/05

STEEL BOX GIRDER BRIDGE SECTION THRU END BENTS

CONCRETE BOX GIRDER BRIDGE SECTION THRU END BENTS

CROSS REFERENCE:
1. For Box Girder Maintenance Lighting Notes see Sheet 1.
**ACCESS HATCH ASSEMBLY FOR STEEL BOX SECTIONS**

**INDEX NO.**

**SHEET NO.**

**FDOT 2014 DESIGN STANDARDS**

**DESCRIPTION:**

**HINGE DETAIL**

NOTES:

1. All Structural Steel material in Access Door Assemblies shall conform to ASTM A36 Grade 36.
2. $\frac{1}{2}$" Pipe Grab Rail shall be in accordance with ASTM A53 Grade B for standard weight pipe (Schedule 40).
3. $\frac{1}{2}$" Door Handle Bar and 1" Ladder Brace shall be in accordance with ASTM A36.
4. All bolts shall conform to ASTM A320 or A499. All nuts shall conform to ASTM A563.
5. All exposed edges of plates and openings shall be ground smooth.
6. Place Ladder Brace near the End Bents exclusively and only when the height is reasonable for access by a ladder.
7. See Framing Plan sheets for locations of Access Door Openings.
8. Coat structural steel in accordance with Specification Section 560.
9. All costs associated with Access Hatch Assembly and incidental items will be paid for under the Access Hatch Assembly pay item. No separate payment will be made for coating structural steel.
**DESCRIPTION:**

**INDEX NO:** 21251

**FIND 2014 DESIGN STANDARDS**

**ACCESS HATCH ASSEMBLY FOR CONCRETE BOX SECTIONS**

1. All Structural Steel material in Access Door Assemblies shall conform to ASTM A709 Grade 36.
2. 1 1/2" O Pipe Grab Rail shall be in accordance with ASTM A453 Grade B for standard weight pipe (Schedule 40).
3. 1 1/2" O Door Handle Bar shall be in accordance with ASTM A436.
4. All bolts shall conform to ASTM A307 or A449. All nuts shall conform to ASTM A563 and all washers shall conform to ASTM F-436.
5. All exposed edges of plates and openings shall be ground smooth.
6. See Framing Plan sheets for locations of Access Door Openings.
7. Coat structural steel in accordance with Specification Section 360.
8. No separate payment will be made for coating structural steel.

---

**PLAN VIEW OF ACCESS HATCH ASSEMBLY**

**SECTION THRU ACCESS OPENING**

**HINDE DETAIL**

**DOOR HINGE BAR DETAIL**

**BOTTOM VIEW B-B**

**SLIDE BOLT PLATE DETAIL**

**SLIDE BOLT DETAIL**

**STOP BAR DETAIL**