1. Use reinforcing steel conforming to ASTM A615, Grade 60 (420), for rebar being welded to loops.

2. Loop ends consist of smooth round bars conforming to ASTM A307 (Grade 36, Class 50) or other applicable ASTM Grade 36 bar equivalent. The smooth round bar ends must be weldable.

3. Cold read the loops by using a jig that will produce an accurate radius without breaking the bar. Do not heat the bar to facilitate bending.

4. Field weld to loop fabrication section via requirements using A153, Grade A (30 ksi) or other applicable epoxy coating material. No additional welding is permitted on the smooth round bars or reinforcing steel.

5. Use the alternate #8 (20 mm) dia. hole for specific sites sensitive to steel galvanizing standards. Galvanize in accordance with AASHTO M 270 (Grade 36) or other applicable ASTM Grade 36. For specific sites sensitive to galvanizing standards, use the alternative #8 (20 mm) dia. hole #4 (10 mm) washer (see detail).

6. All rebar bars must have a minimum yield strength of 40 ksi (275 MPa) and shall contain a minimum of 0.01% by weight of carbon. The rebar shall be Grade 60 (420) steel.

7. USE THE ALTERNATE #8 (20 mm) DIA. HOLE FOR SPECIFIC SITES SENSITIVE TO STEEL GALVANIZING STANDARDS.

NOTES:

- USE CLASS DECK CONCRETE OR EQUIVALENT.
- REINFORCING STEEL CONSISTS OF DEFORMED BARS CONFORMING TO ASTM A615, GRADE 60 (420).
- CONNECT EACH 10' (3.05 m) SECTION WITH CONNECTING PINS AS DETAILLED AND CONFORMING TO ASTM A527 (Grade 36, Class 50), OR BETTER. CONNECTORS FOR END 7 TAPERED END REQUIREMENT ARE SHOWN WITH SLIGHT TAPER TO FACILITATE FORM REMOVAL. RECTANGULAR CUTOUTS ARE ACCEPTABLE.
- THE CONTRACTOR IS RESPONSIBLE FOR THE PROPER FIT-UP OF THE PRECAST CONCRETE BARRIER RAIL ASSEMBLY AND FOR THE SUPPORTING NUMBER PLATE (SEE DETAIL). THE CONTRACTOR SHOULD USE THE ALTERNATIVE 8" (200 MM) DIA. HOLE WITH 2" (50 MM) SQUARE WASHER (SEE DETAIL) THAT PROPER FIT-UP CAN BE MAINTAINED ON ALL ROADWAY ALIGNMENT. CONNECTORS MUST BE SUFFICIENT TO FACILITATE FABRICATION, MOUNTING, AND TO PROVIDE SUFFICIENT SUPPORT FOR THE PRECAST CONCRETE BARRIER RAIL. ASSEMBLE AND PIN SUFFICIENT NUMBER OF PRECAST CONCRETE BARRIER RAIL TO FACILITATE FORM REMOVAL. RECTANGULAR CUTOUTS ARE ACCEPTABLE.
- THE CONTRACTOR IS RESPONSIBLE FOR THE PROPER FIT-UP OF THE PRECAST CONCRETE BARRIER RAIL ASSEMBLY AND FOR THE SUPPORTING NUMBER PLATE (SEE DETAIL). THE CONTRACTOR SHOULD USE THE ALTERNATIVE 8" (200 MM) DIA. HOLE WITH 2" (50 MM) SQUARE WASHER (SEE DETAIL) THAT PROPER FIT-UP CAN BE MAINTAINED ON ALL ROADWAY ALIGNMENT. CONNECTORS MUST BE SUFFICIENT TO FACILITATE FABRICATION, MOUNTING, AND TO PROVIDE SUFFICIENT SUPPORT FOR THE PRECAST CONCRETE BARRIER RAIL. ASSEMBLE AND PIN SUFFICIENT NUMBER OF PRECAST CONCRETE BARRIER RAIL TO FACILITATE FORM REMOVAL. RECTANGULAR CUTOUTS ARE ACCEPTABLE.
- USE THE ALTERNATE #8 (20 mm) DIA. HOLE FOR SPECIFIC SITES SENSITIVE TO STEEL GALVANIZING STANDARDS.
1. Use reinforcing steel conforming to ASTM A 706 [706M], Grade 60 [420] for rebar being welded to loops.

2. Loop Ends consist of smooth round bars conforming to ASTM A 270 [270M], Grade 250 [185].

3. Cold bend the loops by using a JIG that will produce an accurate radius without marring the bar. Do not heat the bar to facilitate bending.

4. Hold bar to loop bending section for a minimum using loop 3/4" dia. Erroneous and do not tack weld the pieces together prior to welding.

5. No additional welding is permitted on the smooth round bars or reinforcing steel.

OPTIONAL LOOP FABRICATION REQUIREMENTS

1. Use continuous smooth round bars conforming to ASTM A 270 [270M] Grade 250 [185] to fabricate the optional loops.

2. Cold bend the loops by using a JIG that will produce an accurate radius without marring the bar. Do not heat the bar to facilitate bending.

3. No additional welding is permitted on the smooth round bars or reinforcing steel.

NOTE:

- Use Class Deck Concrete or Equivalent.
- Reinforcing Steel consists of deformed bars conforming to ASTM A 706 [706M], Grade 60 [420].
- Connect each 10' section with connecting pins as detailed and conforming to Component #1099, Class DECK or better. Connecting pins need not be painted.
- Outputs on ends of each section are shown with slight taper to facilitate form removal. Minimum outputs are acceptable.

The Contractor is responsible for the proper fit-up of the precast concrete barrier rail assemblies and pin number of precast sections in the fabricating plant to assure proper alignment, as well as to maintain the alignment, cutouts on ends of each section are shown with slight taper to facilitate form removal, minimum outputs are acceptable.

- Attach reflectors to rail every 30 [9.15 m]. Use aluminum foil reflective sheeting, reflective paint, or equivalent material, to reflect light to the barrier assembly. As well as to maintain the alignment, cutouts on ends of each section are shown with slight taper to facilitate form removal, minimum outputs are acceptable.

- Use Class Deck Concrete or Equivalent.
- Reinforcing Steel consists of deformed bars conforming to ASTM A 706 [706M], Grade 60 [420].
- Connect each 10' section with connecting pins as detailed and conforming to Component #1099, Class DECK or better. Connecting pins need not be painted.
- Outputs on ends of each section are shown with slight taper to facilitate form removal. Minimum outputs are acceptable.

The Contractor is responsible for the proper fit-up of the precast concrete barrier rail assemblies and pin number of precast sections in the fabricating plant to assure proper alignment, as well as to maintain the alignment, cutouts on ends of each section are shown with slight taper to facilitate form removal, minimum outputs are acceptable.

- Attach reflectors to rail every 30 [9.15 m]. Use aluminum foil reflective sheeting, reflective paint, or equivalent material, to reflect light to the barrier assembly. As well as to maintain the alignment, cutouts on ends of each section are shown with slight taper to facilitate form removal, minimum outputs are acceptable.

- Use Class Deck Concrete or Equivalent.
- Reinforcing Steel consists of deformed bars conforming to ASTM A 706 [706M], Grade 60 [420].
- Connect each 10' section with connecting pins as detailed and conforming to Component #1099, Class DECK or better. Connecting pins need not be painted.
- Outputs on ends of each section are shown with slight taper to facilitate form removal. Minimum outputs are acceptable.

The Contractor is responsible for the proper fit-up of the precast concrete barrier rail assemblies and pin number of precast sections in the fabricating plant to assure proper alignment, as well as to maintain the alignment, cutouts on ends of each section are shown with slight taper to facilitate form removal, minimum outputs are acceptable.

- Attach reflectors to rail every 30 [9.15 m]. Use aluminum foil reflective sheeting, reflective paint, or equivalent material, to reflect light to the barrier assembly. As well as to maintain the alignment, cutouts on ends of each section are shown with slight taper to facilitate form removal, minimum outputs are acceptable.

- Use Class Deck Concrete or Equivalent.
- Reinforcing Steel consists of deformed bars conforming to ASTM A 706 [706M], Grade 60 [420].
- Connect each 10' section with connecting pins as detailed and conforming to Component #1099, Class DECK or better. Connecting pins need not be painted.
- Outputs on ends of each section are shown with slight taper to facilitate form removal. Minimum outputs are acceptable.

The Contractor is responsible for the proper fit-up of the precast concrete barrier rail assemblies and pin number of precast sections in the fabricating plant to assure proper alignment, as well as to maintain the alignment, cutouts on ends of each section are shown with slight taper to facilitate form removal, minimum outputs are acceptable.

- Attach reflectors to rail every 30 [9.15 m]. Use aluminum foil reflective sheeting, reflective paint, or equivalent material, to reflect light to the barrier assembly. As well as to maintain the alignment, cutouts on ends of each section are shown with slight taper to facilitate form removal, minimum outputs are acceptable.
**Right End View**

**Loop Detail**

**Use Fabrication Requirements:***

1. Use reinforcing steel conforming to ASTM A 615 (1997) Grade 60 [420].
2. Loop Ends consist of smooth round bars conforming to ASTM A 372 (2000), Grade 60 [420].
3. Cold bend the loops by using a jig that will produce an accurate radius without marring the bar. Do not heat the bar to facilitate bending.
4. Weld bar to loop using Section 556 requirements using 3/8" (9.5 mm) Order Rod. Do not tack weld the pieces together prior to welding.
5. No additional welding is permitted on the smooth round bars or reinforcing steel. Units shown in brackets (1) are metric and are in Millimeters (mm). Unless otherwise noted are shown.

**Optional Loop Fabrication Requirements:***

1. Use continuous smooth round bars conforming to ASTM A 371 (2000), Grade 60 [420] to fabricate the optional loop.
2. Cold bend the loops by using a jig that will produce an accurate radius without marring the bar. Do not heat the bar to facilitate bending.
3. As welding is permitted on the smooth round bars or reinforcing steel.

**Notes:**

1. Use Class Deck Concrete or Equivalent.
2. Reinforcing Steel consists of deformed bars conforming to ASTM A 615 (1997), Grade 60 [420].
3. Connect each 10'-0" [3.05 m] section with connecting pins as detailed and conforming to Section 556 (2000), Grade 60 [420] or better. Connecting pins need not be painted.
4. Cutouts in left end of each section are shown with black paper to facilitate form removal. Rectangular cutouts are acceptable.
5. The Contractor is responsible for the proper fill-up of the precast concrete barrier rail. Assemble and pin sufficient number of sections to be fabricated to satisfy proper fill-up. The fill-up can be maintained on all roadway alignment curves as well as on tangents. This is to be determined early in fabrication.
6. See Dyg. No. 606-00 for information on the adjacent concrete barrier rail. Section the optional tapered end detail and also be used here.
7. Galvanize or epoxy coat loops and connecting pins after fabrication/finishing. Empty Loop in accordance with Section 556 (2000). Galvanize or epoxy coat reinforcing steel and bars class 60 or other applicable ASTM Galvanizing Standards.

**See Note:**

* 3/4" (19 mm) CHAMFER ENTIRE OPENING (OR SUFFICIENTLY ROUNDED SO THAT A SMOOTH EDGE RESULT.) 1/2" (13 mm) CHAMFER IS ACCEPTABLE.

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**Reference:**

Dwg. No. 605-20

**Concrete Barrier Rail Terminal Section (One-Way Departure)**