

## **PART 1 - GENERAL**

### **1.1 DESCRIPTION**

- .1 This section specifies the requirements for supply and installation of vehicle W-beam guide rail, including posts and associated hardware.

### **1.2 RELATED WORK**

- .1 Section 06 05 73 - Wood Treatment.

### **1.3 REFERENCES**

- .1 American Association of State Highway and Transportation Officials (AASHTO)
  - .1 AASHTO M180-2000(2004), Standard Specification for Corrugated Sheet Steel Beams for Highway Guardrails.
- .2 ASTM International
  - .1 ASTM A123/A123M-09, Standard Specification for Zinc (Hot-Dip Galvanized) Coatings on Iron and Steel Products.
  - .2 ASTM A307-07b, Standard Specification for Carbon Steel Bolts and Studs, 60 000 PSI Tensile Strength.
- .3 CSA International
  - .1 CAN/CSA O80 Series-08, Wood Preservation.

### **1.4 SUBMITTALS**

- .1 Provide shop drawings in accordance with Section 01 33 00 - Submittal Procedures.

### **1.5 DELIVERY, STORAGE AND HANDLING**

- .1 Packing, shipping, handling and unloading:
  - .1 Deliver, store and handle materials in accordance with Section 01 61 00 - Common Product Requirements.
  - .2 Deliver, store and handle materials in accordance with manufacturer's written instructions.

### **1.6 WASTE MANAGEMENT AND DISPOSAL**

- .1 Separate waste materials for reuse and recycling in accordance with Section 01 74 21 - Construction/Demolition Waste Management and Disposal.

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**1.7 MEASUREMENT FOR PAYMENT**

- .1 **Guide Rail:** Measure supply and erection of roadside steel W-beam guide rail including posts (including excavation in rock/common) and necessary hardware in metres of guide rail installed and measured from outer tips of steel W-beam guide rail, including guide rail used in anchorages and terminal sections.

**PART 2 - PRODUCTS**

**2.1 MATERIALS**

- .1 Steel W-beam guide rail as indicated and as follows:
  - .1 Steel rail and terminal sections: to AASHTO M180, class A Type 1 zinc coated.
  - .2 Bolts, nuts and washers: to ASTM A307, hot dip galvanized to ASTM A123/A123M.
- .2 Sawn timber posts:
  - .1 Species: Hemlock or Douglas Fir (CCA or ACA Treated).
  - .2 Type: pressure treated in accordance with Section 06 05 73.
  - .3 Grade: No. 1 Structural Grade.
  - .4 Dimensions: as indicated on the drawings.

**PART 3 - EXECUTION**

**3.1 EXAMINATION**

- .1 **Verification of Conditions:** verify that conditions of substrate previously installed under other Sections or Contracts are acceptable for guide rail installation in accordance with manufacturer's written instructions.
  - .1 Visually inspect substrate in presence of Departmental Representative.
  - .2 Inform Departmental Representative of unacceptable conditions immediately upon discovery.
  - .3 Proceed with installation only after unacceptable conditions have been remedied and after receipt of written approval to proceed from Departmental Representative.

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**3.2 PREPARATION**

- .1 Temporary Erosion and Sedimentation Control:
  - .1 Provide temporary erosion and sedimentation control measures to prevent soil erosion and discharge of soil-bearing water runoff or airborne dust to adjacent properties and walkways, according to requirements of authorities having jurisdiction.
    - .1 Inspect, repair, and maintain erosion and sedimentation control measures during construction until permanent vegetation has been established.
    - .2 Remove erosion and sedimentation controls and restore and stabilize areas disturbed during removal.

**3.3 ERECTION**

- .1 Set posts by instrument for alignment, and locations as indicated and as directed by Departmental Representative.
  - .1 Excavate post holes to depths as indicated and to diameter of 360 mm plus or minus 20 mm.
    - .1 Compact bottom to provide firm foundation.
    - .2 Set post plumb and square in hole.
  - .2 Backfill around posts using excavated material and compact in uniform layers not exceeding 150 mm compacted thickness.
  - .3 Cut off tops of posts as indicated on the drawings.
  - .4 Treat cut tops with 2 coats of preservative, as per Section 06 05 73.
  - .5 Erect steel W-beam components to details as indicated.
  - .6 Tighten nuts to 100 N • m torque.
    - .1 Maximum protrusion of bolt 12 mm beyond nut.

**3.4 TOUCH UP**

- .1 Galvanized steel-touch up:
  - .1 Clean damaged surfaces with wire brush removing loose and cracked coatings.
    - .1 Apply 2 coats of organic zinc-rich paint to damaged areas.
    - .2 Pre-treat damaged surfaces in accordance with manufacturer's written recommendations for zinc-rich paint.

**PART 3 - EXECUTION**  
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**3.5 CLEANING**

- .1 Progress Cleaning: clean in accordance with Section 01 74 11 - Cleaning.
  - .1 Leave Work area clean at end of each day.
- .2 Final Cleaning: upon completion remove surplus materials, rubbish, tools and equipment in accordance with Section 01 74 11 - Cleaning.
- .3 Waste Management: separate waste materials for reuse and recycling in accordance with Section 01 74 21 - Construction/Demolition Waste Management and Disposal

**3.6 PROTECTION**

- .1 Protect installed products and components from damage during construction.
- .2 Repair damage to adjacent materials caused by guide rail installation.