

PART 1 - GENERAL

1.1 REFERENCES

- .1 American Association of State Highway and Transportation Officials (AASHTO)
 - .1 AASHTO M180-2012(R2017), Corrugated Sheet Steel Beams for Highway Guardrails.
- .2 American Society for Testing and Materials (ASTM International)
 - .1 ASTM A 307-14 e1, Specification for Carbon Steel Bolts and Studs, 60 000 PSI Tensile Strength.
 - .2 ASTM A653 / A653M – 17, Standard Specification for Steel Sheet, Zinc-Coated (Galvanized) or Zinc-Iron Alloy-Coated (Galvannealed) by the Hot-Dip Process
- .3 Canadian Standards Association (CSA International)
 - .1 CAN/CSA-O80 Series-08(R2012), Wood Preservation.
 - .2 CAN/CSA-G164-M92 (R2003), Hot Dip Galvanizing of Irregularly Shaped Articles.

1.2 MEASUREMENT
FOR PAYMENT

- .1 All costs related to the supply and installation of guide rail including terminal sections to be included in the Lump Sum bid.

1.3 SUBMISSIONS

- .1 Submit product data in accordance with Section 01 33 00

PART 2 - PRODUCTS

2.1 MATERIALS

- .1 Rail element:
 - .1 Corrugated steel W-beam with corrugations symmetrical about the horizontal axis and such that the edges and centre of the rail element may contact each post.
 - .2 Individual rail elements shall be of the W-beam type consisting of 3 mm thick (12 gauge) rail of length not less than 4125 mm, having post bolt slots 3810 mm apart centre to centre, unless indicated elsewhere in which case one additional post bolt plot will be placed at mid-span.

- .3 The rail elements shall be hot-dip galvanized before or after fabricating in accordance with ASTM A653 / A653M - 17 Standard Specification for Steel Sheet, Zinc-Coated (Galvanized) or Zinc-Iron Alloy-Coated (Galvannealed) by the Hot-Dip Process
- .2 Rail terminal sections as illustrated on the drawings. The metal and galvanizing shall be of the same thickness and quality as is stipulated for the rail sections.
- .3 All bolts, nuts and washers shall conform to the specifications of ASTM A307 or A3125/3125M, except the rail splice bolts shall be button headed.
 - .1 Post bolts shall have shoulders of such shape and size that they fit into the bolt slot in the rails and prevent the bolt from turning.
 - .2 Post bolts shall be 16mm diameter and 500 mm long.
 - .3 Post bolt washers for the back of posts shall be 45 mm in diameter and 4 mm thick.
 - .4 Splices for anchors shall be 125 mm galvanized spikes.
 - .5 Bolts, nuts, washers and other fittings shall be hot-dip galvanized in accordance with ASTM A-153.
 - .6 The Contractor shall supply the bolts, nuts, washers and spikes.
- .4 Silver signal reflectors and yellow signal reflectors shall be of size 75 mm x 100 mm. The Contractor shall supply both types of signal reflectors.
- .5 Nails for securing signal reflectors: 30 mm galvanized flat head nails.
- .6 Timber for posts and offset block:
 - .1 Well-seasoned structural grade lumber free from loose knots or other defects, dressed on four sides.
 - .2 Posts shall have dimensions as indicated.
 - .3 After cutting to size, posts shall be pressure treated with wood preservative. The minimum weight of preservative retained per cubic metre of timber shall be 130 kg with empty cells.
 - .4 Reflector strips:
 - .1 70 mm x 75 mm on metal backing.
 - .2 Placed on each post

- .7 Field treatment of wood preservative to be in accordance with CSA 080.

PART 3 - EXECUTION

3.1 INSTALLATION

- .1 Galvanized materials shall be loaded, hauled and handled in such a manner that galvanizing will not be damaged. All bare, abraded, and damaged surfaces shall be cleaned, pre-treated if required and coated with cold galvanizing compound as outlined above.
- .2 Guide rail shall be placed to lengths, lines and grades as directed by Departmental Representative.
- .3 Auger post holes and compact bottom to provide firm foundation. Set post plumb and square in hole,
- .4 Backfill in 150 mm layers with material, free of large rock, placed in layers of thickness and not greater than 100 mm. Compact each layer before placing succeeding layer.
- .5 Should the backfill be dry then each layer shall be moistened before tamping.
- .6 All backfill shall be compacted to 95% of Standard Proctor Density (ASTM D698- 78).
- .7 The Contractor shall bore holes in the posts for the post bolts and treat the holes with two (2) coats of wood preservative before driving the bolts.
- .8 Rail elements and terminal sections shall be lapped so that the exposed ends will not face approaching traffic.
- .9 When the attachment of the rail elements to the posts has been completed, the tops of the posts shall be cut to a point 75 mm above the top of the rail. The tops of the posts to be treated with two (2) coats of wood preservative after cutting.

- .10 Signal reflectors shall be attached to all posts. Silver reflectors shall be placed facing oncoming traffic and yellow reflectors shall be placed on the opposite side.
 - .11 The Contractor shall drill nail holes in the reflectors, bend the reflectors to the required shape and secure the reflectors with 30 mm galvanized flat head nails as shown on drawings
- 3.2 Touch-up
- .1 Clean damaged surfaces with brush removing loose and cracked coatings. Apply two coats of organic zinc-rich paint to damaged areas in accordance with manufacturer's instructions.

END OF SECTION 34 17 39