

54.23 SUPPLY AND INSTALLATION, REALIGN OR RESET W-BEAM GUARDRAIL AND POSTS

54.23.1 GENERAL

The Work consists of supplying and installing W-Beam guardrail and posts, wing ends and bridge connectors for use as hazard avoidance barriers. The Work also consists of replacing posts only, replacing steel w-beam only and realigning or resetting guardrail.

54.23.2 MATERIALS

The Contractor shall supply all materials in accordance with the Alberta Transportation Recognised Products list and the applicable drawings contained in the Department's Standard Drawings manual. The Contractor shall satisfy himself that the material provided meets the specified characteristics.

The Contractor may be required to maintain an inventory of materials at locations within the Contract boundaries. The quantities of new barrier sections and posts, which shall be readily available, will be specified in the Special Provisions.

54.23.3 PROCEDURES

54.23.3.1 Installing Guardrail

Standard installations shall be in accordance with drawing TEB 3.12. Installations at bridge approaches shall be in accordance with drawing TEB 3.48, and construction shall always be started at the bridge. A Strong Post System of installation as shown in drawing TEB 3.09, shall be used on some installations when directed by the Engineer.

Posts shall be accurately set to the required depth and alignment in a smooth, continuous installation, as shown in the drawings or as directed by the Engineer. Permissible tolerance for plumb and grade of posts shall be as shown on the applicable drawings. Short irregularities (generally less than 30 metres long) in the paved surface should not affect the curve of the completed rail. In order to avoid trapping the wheels, there can be no more than a 175 mm gap between the edge of pavement and the face of the rail.

Posts shall be installed to minimize settlement or "lean" over time. Excavated material which is unsuitable for use as backfill shall be substituted with granular material by the Contractor at his expense. Backfill shall be thoroughly compacted using mechanical tampers, in layers not exceeding 150 mm, for the full depth of the excavation. Cementitious materials shall not be used for post support unless specifically authorized by the Engineer.

Guardrail laps shall be in the direction of traffic flow. Bolts shall be tightened with hand tools to approximately a torque of 100 N·m. Metal reflectors shall be attached to the top of every third guardrail post.

The Contractor shall take all necessary precautions to eliminate damage to galvanizing. Minor abrasions shall be repaired by painting with two coats of zinc-rich paint. Major abrasions shall be repaired by regalvanizing. The Contractor, at his own cost, shall carry out the repair or replace components to the satisfaction of the Engineer.

Surplus excavated material and debris shall be removed from the site and disposed of by the Contractor at his expense.

When performing guardrail repairs, the Contractor shall check the adjoining posts for splitting, rotting or other damage and report these to the Engineer.

Installations facing traffic shall not be left unfinished and open-ended when the work site is unoccupied, unless protected as detailed in the Traffic Accommodation in Work Zone manual (Drawing TCS-C-1.11A).

The Contractor shall stamp newly installed guardrail posts with the date of installation as directed by the Engineer. The site of the date stamping shall be coated with an approved preservative material when the continuity of the original treatment is compromised.

54.23.3.2 Realigning Guardrail

Work to move guardrail posts back into alignment without having to disassemble the guardrail beam or remove the post(s) from the soil is considered realigning.

54.23.3.3 Resetting Guardrail

Work to restore alignment that involves disassembly of the guardrail beam and removing posts from the ground is considered resetting. (The beam is disassembled when a complete section or more of beam is removed from the posts at each end; splices may or may not be broken during disassembly.) Resetting involves removal of the guardrail sections, removal of the existing posts, reinstalling existing posts wherever possible, supply and installation of new posts when required, reinstallation of the guardrail sections and restoration of the alignment and elevation of the rail.

54.23.4 ACCEPTANCE CRITERIA

The Work will be considered acceptable when the reflectors are installed properly, the rail is correctly lapped and within 20 mm tolerance for plumb and grade, the galvanized integrity of the rail has been preserved, the correct date stamps are on the post and rail, posts are installed square to the rail, the work

site is left in a clean condition and excess spoil removed. Hot dip galvanized coating shall be smooth, free of beading or sharp projections at edges. Coating adherence shall prevent the peeling of any portion of the zinc coating so as to expose the base metal by cutting or prying with a stout knife under considerable pressure (bond check).

Warped or otherwise deformed rails and terminal elements will be rejected, as will those with injurious defects or excessive roughness of the zinc coating.

The Engineer may verify the penetration and retention of the preservative in wooden posts and blocks by the assay method.

If the guardrail appears to be out of tolerance for plumb or grade, measurements of the height of the guardrail will be made with a tape measure on the section out of tolerance, or using a two-foot hand level for plumb.

54.23.5 TIME TO COMPLETE

In urgent situations the Contractor shall complete the Work within 5 calendar days of the issuance of the Work Order. In all other cases, the Work shall be completed within 60 calendar days of the issuance of the Work Order.

54.23.6 MEASUREMENT AND PAYMENT

54.23.6.1 General

Measurement will be made of the number of posts supplied and installed.

Measurement will be in metres of the length of W-Beam guardrail installed, realigned or reset.

When the Contractor performs a combination of resetting and “supply and install” work on the same guardrail installation, the appropriate unit price will be paid for the two different types of work.

54.23.6.2 W-Beam and Elements

Payment for installing guardrail will be made at the unit price bid per metre for "W-Beam Guardrail-Supply and Install". This payment will be full compensation for removal and disposal of existing guardrail, supplying and installing all required straight W-Beam guardrail sections restoration of the initial alignment of the guardrail, , and all labour, materials, equipment, tools and incidentals necessary to complete the Work.

The supply of end terminals, curved W-beam rail, brackets, wing ends, bridge connections, and spacer blocks for strong post system will be paid as Extra Work in accordance with Specification 51.2, General

(For Maintenance Work). Payment for the installation of the beam section elements will be made at the unit price bid per metre for "W-beam Guardrail - Supply and Install". Payment for the installation of the brackets, spacer blocks and other required hardware will be considered incidental to the Work.

54.23.6.3 Posts

Payment for supplying and installing new posts will be made at the applicable unit price bid per post for "Guardrail Posts 1.52 m Wooden - Supply and Install", "Guardrail Posts 2.13m Wooden - Supply and Install", "Guardrail Posts 1.9 m Metal - Supply and Install or "Guardrail Posts Plastic - Supply and Install". Payment will be full compensation for removing and disposing of existing posts, supplying and installing the new posts, detaching and re-attaching of the w-beam (centre bolt), restoration of the initial alignment of the guardrail, and all labour, materials, equipment, tools and incidentals necessary to complete the Work.

54.23.6.4 Realigning

Payment for realigning existing guardrail will be made at the unit price bid per metre for "W-Beam Guardrail - Realigning". This payment will be full compensation for straightening the guardrail sections, re-plumbing and tamping the posts, and all labour, materials, equipment, tools and incidentals necessary to complete the Work.

54.23.6.5 Resetting

Payment for resetting existing guardrail will be made at the unit price bid per metre for "W-Beam Guardrail - Resetting". This payment will be full compensation for removal of the guardrail sections, removal of the existing posts, reinstallation of the existing posts where applicable, reinstallation of the guardrail sections, and all labour, materials, equipment, tools and incidentals necessary to complete the Work.

Payment for the supply and installation of new posts will be made at the applicable unit price bid per post for "Guardrail Posts - Supply and Install" for the specified length.

54.23.6.6 Reduced Time to Complete

In urgent situations where the Contractor is required to complete any type of guardrail Work within 5 calendar days of the issuance of the Work Order, an additional payment per Work Order will be made at the unit price bid per occurrence for "Guardrail - Premium". This payment will be full compensation for complying with the accelerated scheduling required to complete the Work.

54.23.7 WARRANTY

The warranty period for supplying and installing guardrail shall be 1 year. The warranty period for realigning and resetting guardrail is 90 days.