

## **SECTION 643**

### **SALVAGE AND SALVAGE AND REINSTALLATION OF GUIDE RAIL**

#### **INDEX**

**643.01 SCOPE**

**643.02 ENVIRONMENTAL REQUIREMENTS**

**643.03 MATERIALS**

**643.03.01 Rail Sections and Rail Terminal Sections**

**643.03.02 Bolts, Nuts, Washers and Spikes**

**643.03.03 Signal Reflectors**

**643.03.04 Nails for Reflectors**

**643.03.05 New Posts and Anchors**

**643.03.06 Re-usable Posts and Anchors**

**643.03.07 Wood Preservative**

**643.04 DISMANTLING OF EXISTING GUIDE RAIL**

**643.05 REMOVAL AND SALVAGE OF EXISTING POSTS**

**643.06 BACKFILLING POST HOLES**

**643.07 INSTALLATION**

**643.08 MEASUREMENT FOR PAYMENT**

**643.09 BASIS OF PAYMENT**

**643.09.01 Basis of Payment for Salvage and Reinstallation of Guide Rail with New Posts**

**643.09.02 Basis of Payment for Salvage and Reinstallation of Guide Rail with Salvaged Posts**

**643.09.03 Basis of Payment for Salvage of Guide Rail**

**643.01 SCOPE**

This specification covers the requirements for the salvage of existing guide rail, including buried ends, terminal ends and hardware, and posts from one location, and where stipulated, the reinstallation of the guide rail at another location using either the salvaged

rail, including buried ends, terminal ends and hardware and salvaged posts, or the salvaged rail including buried ends, terminal ends and hardware, and new posts.

## **643.02 ENVIRONMENTAL REQUIREMENTS**

Guiderail posts located in Protected Water Supply areas shall only be chromated copper arsenate treated type.

## **643.03 MATERIALS**

### **643.03.01 Rail Sections and Rail Terminal Sections**

Only salvaged rail sections, angled rail sections and rail terminal sections deemed acceptable by the Owner's Representative shall be used in the re-assembly.

### **643.03.02 Bolts, Nuts, Washers and Spikes**

All bolts, nuts and washers shall conform to the specifications of ASTM F3125M, except that rail splice bolts shall be button headed.

Post bolts and splice bolts shall have shoulders of such shape and size that they fit into the bolt slots in the rails and thus prevent the bolt from turning.

Post bolts shall be 16 millimetres in diameter and 200 millimetres long unless otherwise required. Post bolt washers for the back of the post shall be 45 millimetres round and 4 millimetres thick.

Bolts for anchors shall be 16 millimetres in diameter and 350 millimetres long unless otherwise required and washers shall be 45 millimetres round and 4 millimetres thick.

Spikes for anchors shall be 125 millimetre galvanized spikes.

Bolts, nuts washers and other fittings shall be hot-dip galvanized in accordance with the specification of ASTM Designation A-153.

The Contractor shall supply the bolts, nuts washers and spikes.

However, should any of the salvaged bolts, nuts and washers be suitable for re-use, as deemed by the Owner's Representative, then the Contractor may use these components.

### **643.03.03 Signal Reflectors**

Silver signal reflectors and yellow signal reflectors shall be of size 75 millimetres x 100 millimetres. The Department will supply both types of signal reflector free to the

Contractor at the following district depots: White Hills in St. John's, Clarenville, Grand Falls, Deer Lake and Goose Bay.

**643.03.04 Nails for Reflectors**

Nails for securing signal reflectors, shall be supplied by the Contractor and shall consist of 30 millimetre galvanized flat head nails.

**643.03.05 New Posts and Anchors**

Timber for new posts and anchors shall be sound, well seasoned structural grade lumber.

Only birch wood will be acceptable for new 150 millimetres x 150 millimetres guide rail posts. Hemlock or other approved species will be acceptable for 200 millimetres x 200 millimetres guide rail posts.

Posts shall have minimum dimensions of 150 millimetres x 150 millimetres x 2400 millimetres, except in the particular case of posts to be used in Tender Items worded "Guided Rail with Additional Posts", as shown in Form 1282, in which case posts shall have minimum dimensions of 200 millimetres x 200 millimetres x 2400 millimetres.

Anchors shall consist of either one piece of 150 millimetres x 150 millimetres x 450 millimetres timber, or two pieces of 38 millimetres x 140 millimetres x 450 millimetres lumber.

Posts and anchors shall be pressure treated with an acceptable wood preservative.

The minimum required depth of penetration of wood preservative shall be 13 millimetres. To determine penetration, a borer core shall be taken from 20 pieces in each charge. If 80% of the borings meet the penetration requirements, the charge shall be accepted.

The minimum retention of preservative shall be as follows:

PRESERVATIVE	MINIMUM RETENTION	METHOD OF DETERMINATION
PENTACHOROPHENOL	6.4 kg/m <sup>3</sup>	BY ASSAY
CHROMATED COPPER ARSENATE	6.4 kg/m <sup>3</sup>	BY ASSAY
OTHER	IN ACCORDANCE WITH CSA 080M	

Incising will normally be required. However, this requirement will be waived if specifications for both penetration and retention are satisfied.

If requested by the Owner's Representative, the Contractor shall provide penetration and retention test reports for the guide posts and guide rail posts supplied for the project.

Where the contract item is given as "Salvage and Reinstallation of Guide Rail with New Posts" then, the Contractor shall supply all the required wood preservative treated new posts and anchors.

#### **643.03.06 Re-usable Posts and Anchors**

Only salvaged posts and anchors deemed acceptable by the Owner's Representative shall be used in the re-assembly, and then only if the contract item is given as, "Salvage and Reinstallation of Guide Rail with Salvaged Posts". Where the contract item is given as, "Salvage and Reinstallation of Guide Rail with New Posts" then, salvaged posts shall not be used.

#### **643.03.07 Wood Preservative**

Wood preservative for use in treating field cut ends of posts shall be of the same type and chemical composition as that used in the original treatment.

The Contractor shall supply the wood preservative.

#### **643.04 DISMANTLING OF EXISTING GUIDE RAIL**

The Contractor shall exercise care in dismantling and removing rails and terminal sections so that they are not damaged and remain suitable for re-use. The rails and terminal sections shall be transported to, and stored at, a secure storage site provided by the Contractor at their own expense, pending their re-assembly at a new location.

Where the contract item is given as "Salvage of Guiderail" then the salvaged guide rail sections and all suitable hardware shall be transported to, and stored at, the nearest Department Depot. All salvaged guide rail hardware, including: bolts, nuts, and washers shall be separated, crated and labelled by the Contractor upon return. Guide rail sections shall be neatly stockpiled as directed by the Depot Supervisor.

Should any material, designated for salvage and reinstallation or just salvage, be damaged or lost by the Contractor, then the Contractor shall be charged with the costs of replacement with equivalent new material. Damaged material shall become the property of the Contractor and shall be disposed of.

### **643.05 REMOVAL AND SALVAGE OF EXISTING POSTS**

The Contractor shall exercise care in excavating posts so that they are not damaged and remain suitable for re-use.

Where the contract item is given as, "Salvage and Reinstallation of Guide Rail with New Posts" or "Salvage Existing Guide Rail" then, the salvaged posts shall be transported to, and stored at, the nearest Department Depot.

However, should the contract item be given as, "Salvage and Reinstallation of Guide Rail with Salvaged Posts" then, the posts shall be transported to and stored at, a secure storage site provided by the Contractor at their own expense pending their re-use at a new location.

Should any post designated for salvage, be damaged or lost by the Contractor, then the Contractor shall be charged with the cost of replacement. Damaged posts shall become the property of the Contractor and shall be disposed of.

### **643.06 BACKFILLING POST HOLES**

The Contractor shall backfill to the required grade using the excavated materials if suitable. Should the excavated material be unsuitable, or should there be insufficient suitable backfill material from the excavation, then the Owner's Representative will direct that material from a cut or from a borrow area will be used to complete the backfilling.

Backfilling shall be placed in layers not exceeding 200 millimetres in thickness loose measurement. Each layer shall then be compacted to the required compaction before a further layer is placed.

Backfill consisting of other material or other material borrow shall be compacted to not less than 95% of the Standard Proctor Density (ASTM D698).

In rock backfill material where Standard Proctor tests cannot be carried out, compaction shall be continued until a compaction is achieved that is equivalent to that obtained in a fill when there is no visible movement of fill under a vibrating vibratory compactor with vibratory roller of length not less than one decimal five metres.

The backfilled hole or trench shall be levelled and trimmed to provide slight contours and adequate drainage.

## **643.07           INSTALLATION**

For reinstallation, the rail sections, buried end sections, terminal sections and posts shall be transported to the location where they are required.

Guide rail shall be placed to the lengths, lines and grades set by the Owner's Representative. The guide rail shall be installed in accordance with the requirements of Forms 1279 and 1280 except where directed otherwise by the Owner's Representative.

An angled rail section shall be placed at each end of a run of guide rail unless directed otherwise by the Owner's Representative.

The end post at an angled rail section shall have an anchor secured to the bottom of the post.

Where a 150 millimetres x 150 millimetres x 450 millimetres timber anchor is used it shall be secured to the post by means of a galvanized nut and 16 millimetre diameter bolt x 350 millimetres long together with two 45 millimetres round 4 millimetres thick galvanized washers.

Where a double 38 millimetres x 140 millimetres x 450 millimetres lumber anchor is used it shall be secured to the post by means of four 125 millimetre galvanized spikes. Field boring and cutting to length of anchors will be permitted, provided that the hole is treated with two coats of wood preservative before driving the bolts and provided that the cut end is treated with two coats of wood preservative before burying.

Where the contract item is given as, "Salvage and Reinstallation of Guide Rail with Salvaged Posts" then, posts with the original anchors may be used provided that the anchor is sound. Should the anchor have been damaged during salvage then the Contractor shall replace the anchor on the post using new materials.

The Contractor shall excavate holes for the posts such that when placed in the holes the bottom of the posts are at least 1500 millimetres below the ground surface.

Posts shall be set plumb and to the established lines and grades and shall be placed at 3810 millimetre intervals, unless directed otherwise by the Owner's Representative.

The posts shall be firmly backfilled with selected material, free of large rock, placed in layers of thickness not greater than 100 millimetres. Each layer shall be thoroughly compacted before the next layer is placed. Should the backfill be dry then each layer shall be moistened before tamping.

All backfill shall be compacted to 95% of Standard Proctor Density (ASTM D698).

All surplus excavated material shall be disposed of along the sides of fill, or in other locations as directed by the Owner's Representative.

The rails shall be secured to even lines such that the centre of the rail is 635 millimetres above the edge of pavement.

The Contractor shall bore holes in the posts for the post bolts and treat the holes with two coats of wood preservative before driving the bolts.

Rail elements and terminal sections shall be lapped so that the exposed ends will not face approaching traffic.

The bolted connections of the rail element to the post shall be capable of withstanding a 22.5 kilo newton pull at right angles to the lines of the railing.

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 millimetres above the top of the rail as shown on Form 1279 and Form 1280. The tops of the posts shall be treated with two coats of wood preservative after cutting.

Signal reflectors shall be attached to posts at terminal sections, posts at the buried end sections, and to every fourth post in a length of guide rail. Silver reflectors shall be placed facing oncoming traffic and yellow reflectors shall be placed on the opposite side except for divided highway. On divided highways, silver reflectors will be placed facing oncoming traffic on the outside shoulder and yellow reflectors will be placed facing traffic on the median shoulder.

The Contractor shall drill nail holes in the reflectors, bend the reflectors to the required shape and secure the reflectors with 30 millimetre galvanized flat head nails as shown on Form 1281.

When reinstalling salvaged posts, the original reflectors shall be removed and new reflectors shall be attached.

## **643.08 MEASUREMENT FOR PAYMENT**

Measurement for payment for the Salvage and Reinstallation of Guide Rail shall be the length of the reinstalled guide rail placed within the limits designated by the Owner's Representative, measured in metres, rounded to one decimal place, measured end to end along the face of the railing and terminal sections.

Measurement for payment for the Salvage of Guiderail shall be the length of the existing guiderail to be salvaged within the limits designated by the Owner's representative, measured in metres, rounded to one decimal place, measured end to end along the face of the railing and terminal sections.

## **643.09 BASIS OF PAYMENT**

### **643.09.01 Basis of Payment for Salvage and Reinstallation of Guide Rail with New Posts**

Payment at the contract price for Salvage and Reinstallation of Guide Rail with New Posts, shall be compensation in full for all labour, materials and use of equipment to: dismantle the rail sections, transport the rail sections and terminal sections to a secure storage site provided by the Contractor at their own expense, store the rail sections, excavate and salvage the guide rail posts and transport them to the nearest Department Depot, backfill and compact the excavation, excavate holes for posts at the required new location, supply new preserved wood posts and anchors, transport the stored rail sections and rail terminal sections from the storage site to the place of installation, supply the bolts, nuts, washers and spikes, assemble and secure the anchors to the posts, assemble the guide rail to the required lines and grade, bend rail sections where required to a uniform radius, backfill post holes, compact backfill, dispose of surplus excavation material, trim posts, supply and apply wood preservative to cut ends and drill holes, and install reflectors.

### **643.09.02 Basis of Payment for Salvage and Reinstallation of Guide Rail with Salvaged Posts**

Payment at the contract price for Salvage and Reinstallation of Guide Rail with Salvaged Posts, shall be compensation in full for all labour, materials and use of equipment to: dismantle the rail sections, excavate and salvage the guide rail posts, transport the rail parts and posts to a secure storage site provided by the Contractor at their own expense, store the rail parts and posts, backfill and compact the excavation, excavate holes for posts at the required new location, transport the stored rail parts and posts from the storage site to the place of installation, supply the bolts, nuts, washers and spikes, supply assemble, and secure new anchors where the original anchors are damaged, assemble the guide rail to the required lines and grade, bend rail sections where required to a



uniform radius, backfill post holes, compact backfill, dispose of surplus excavation material, trim posts, supply and apply wood preservative to cut ends and drill holes, remove original reflectors, and install new reflectors.

### **643.09.03 Basis of Payment for Salvage of Guide Rail**

Payment at the contract price for Salvage of Guide Rail, shall be compensation in full for all labour, materials and use of equipment to: dismantle the rail sections, salvage all suitable hardware, excavate and salvage the guiderail posts and transport the rail sections, hardware and posts to the nearest Department Depot and stockpile the salvaged materials as directed