

REMOVAL AND REPLACEMENT OF TIMBER CROSS TIES

****From Rutland-Burlington VTRY(3)**

- xx. DESCRIPTION. This work shall consist of removing existing timber cross ties, properly disposing of all removed existing timber cross ties, and installing new timber cross ties, including tie plates and tie attachment hardware, at the locations indicated in the Contract Documents and as directed by the Engineer.

Any excavation required for the removal of tie and ballast necessary to support the tie, incidental to the tie replacement, shall be included as part of this work.

- xxx. GENERAL REQUIREMENTS. Removed timber cross ties will become the property of the Contractor, and shall be removed from the work site and disposed of off the property in an environmentally acceptable manner complying with all applicable federal, state, and local laws, and regulations, rules, and ordinances, including any related to the storage, transportation, treatment and/or disposal of ties.

- xx. MATERIALS. Timber cross ties shall meet the material requirements of the Specification entitled: Chapter 30, Section 3.1 Specifications for Timber Cross Ties, AREMA Manual - current edition. Tie size shall be New AREMA Grade 3 - 6" x 8" x 8'-6" or New AREMA Grade 5 - 7" x 9" x 9'-0" as specified in the Contract Documents.

All cross ties shall have nail plate anti-splitting devices applied at the end of each tie. Anti-splitting devices shall be manufactured from a single heavy gauge galvanized steel plate punched in such a manner as to produce nail like projections which will serve to hold the plate to the end of the tie and prevent splitting when applied. The plates shall be manufactured from a minimum 18 gauge galvanized steel conforming to ASTM A525. The plate shall be at least six (6) inches by seven (7) inches for use with seven (7) by nine (9) inch ties. Anti-splitting devices shall comply with the requirements of the specifications entitled: Chapter 30, Section 3.1.7 Application of Anti-Splitting Devices, AREMA Manual - current edition.

A Type A Certification shall be furnished in accordance with Subsection 700.02 for the cross ties.

A Type D Certification shall be furnished in accordance with Subsection 700.02 for the preservative treatment.

Track spikes shall be new 5/8 inch reinforced throat. They shall meet the dimensional requirements of the detail entitled: Chapter 5, Section 2.2 Design of Cut Track Spikes, AREMA Manual - current edition. The material requirements of the spikes shall be in accordance with the Specification entitled: Chapter 5, Section 2.1 Specifications for Soft-steel Track Spikes AREMA Manual - current edition.

Tie plugs, if used, shall meet the requirements of the Specification entitled: Chapter 30, Section 3.1.5 Specification for Tie Plugs, AREMA Manual - current edition.

- xx. CONSTRUCTION REQUIREMENTS. Where required by the Engineer, tie surfaces shall be cleaned sufficiently to permit the identification of defective ties. The Contractor shall remove only those ties designated by the Engineer as being defective.

Ties shall be removed in such a manner that the existing line and surface of the rails is not disturbed. The crib shall be excavated sufficiently to allow for the installation of the new tie without jacking or otherwise disturbing the rails. New ties shall be handled and placed with either a mechanical tie insertion device or tie tongs. The use of picks will not be permitted. All tie removal, handling, and placing equipment is subject to the approval of the Engineer prior to use.

The Contractor shall take special care and vigilance during handling and unloading of ties to avoid damage to trains, tracks, or other facilities of the Railroad, and will not interfere with the movement of trains or other Railroad operations. Any timber cross tie damaged during handling or installation shall be replaced by the Contractor at no expense to the State.

Tie plates shall be carefully removed to allow for reinstallation. Equipment for this work is subject to the approval of the Engineer prior to use.

New ties shall be placed with the heartwood face down, square with the line of the rails, approximately centered about centerline of track, and sufficiently spaced to permit proper tamping. They shall be spaced in accordance with the existing spacing, unless otherwise noted in the Contract Documents.

Existing tie plates shall be reinstalled. If an existing tie plate is missing, or inappropriate for reuse as determined by the Engineer, a new tie plate of the size and type consistent with the existing shall be installed.

Tie plates shall be installed centered about the width of the tie with the shoulder bearing firmly against the side of the rail base. Under no circumstances shall the shoulder be allowed under any portion of the rail. If the tie plate is a single shoulder plate, the shoulder shall be installed against the field side of the base. If the tie plate is a double shoulder canted plate, then the cant of the plate shall be downward to the gage of the rail.

Existing rail anchors which affect the installation of a new tie shall be removed and reinstalled.

Ties shall be brought up tight to the base of rail and tamped. Ballast shall be placed and tamped, as necessary, to keep the tie tight to the rail.

Rail holding spikes shall be driven vertically and square with the rail. Spikes shall be driven so as to allow 1/8 inch space between the underside of the spike head and the top of the base of the rail. Spikes shall not be overdriven. Spikes shall not be bent against the rail.

Plate holding spikes shall be driven vertically and square with the tie. The spikes shall be driven tight to the tie plate. No spike shall be straightened while being driven. No spike shall be driven against the ends of joint bars. Once driven, no spike shall be removed without the express permission of the Engineer. No spike shall be driven in a slot in a rail joint.

If a spike is allowed to be removed, the resulting hole shall be plugged with a treated tie plug of a size sufficient to completely and tightly fill the hole. Spikes may be driven through a tie plug. If, in the opinion of the Engineer, the tie plug is not completely and tightly filling the spike hole, or if the tie plug is not properly holding a driven spike, the timber cross tie shall be removed and replaced at no expense to the State.

All replacement ties shall be spiked to the existing track gage provided the existing gage is at, or within, the following limits:

<u>Minimum Gage</u>	<u>Maximum Gage</u>
4'-8 1/4"	4'-9 1/4"

If the existing track gage is not within the above limits, gaging will be required. Limits of gaging will be determined by the Engineer.

If the tie to be installed is a joint tie, as defined by the Contract Documents, then spiking shall be deferred until either of the following conditions is satisfied:

- (a) If the rail joint requires a new rail joint assembly, the assembly shall be fully installed.
- (b) If the rail joint assembly requires bolt replacement, the bolts shall be replaced and fully tightened.

After the tie has been fully installed with all required tie plates, spikes, and rail anchors, all remaining ballast which was removed by the operation shall be replaced and properly tamped.

- xx. METHOD OF MEASUREMENT. The quantities of Special Provision (Removal and Replacement of Cross Ties) and Special Provision (Removal and Replacement of Timber Ties) of the size(s) specified to be measured for payment will be the number of existing ties removed and replaced in the complete and accepted work.

xx. BASIS OF PAYMENT. The accepted quantities of Special Provision (Removal and Replacement of Cross Ties) and Special Provision (Removal and Replacement of Timber Ties) of the size(s) specified will be paid for at the Contract unit price per each. Payment will be full compensation for furnishing, transporting, handling, and placing the material specified, including excavation, removal, and disposal of old ties, removing and reinstalling existing tie plates and anchors, furnishing new track spikes and tie plugs as required, and for furnishing all labor, tools, equipment, and incidentals necessary to complete the work.

If existing tie plates are inappropriate for reuse, replacements will be furnished under Contract item 900.620 Special Provision (Furnish and Install Tie Plates).

The furnishing of ballast, tie plates, and any gaging of track outside the area of timber cross tie replacement will be paid for under the appropriate Section 900 Contract item.

Payment will be made under:

<u>Pay Item</u>	<u>Pay Unit</u>
900.620 Special Provision (Removal and Replacement of Cross Ties)(6" X 8" X 8'-6" Ties)	Each
900.620 Special Provision (Removal and Replacement of Timber Ties)(7" X 9" X 9'-0" Ties)	Each
900.620 Special Provision (Removal and Replacement of Cross Ties)(8'-6" Ties) (if more than one size)	Each