

SECTION 20300

CROSSTIE REPLACEMENT

PART 1 - GENERAL

1.01 DESCRIPTION

- A. Section includes specifications for production timber crosstie replacement and spot timber crosstie replacement.

1.02 GENERAL

- A. Section 01005, Contractor's Personnel and Equipment: Includes general requirements and submittals regarding railroad construction equipment used for work of this Section.

1.03 REFERENCES

- A. Caltrain Standard Drawings
- B. American Railway Engineering and Maintenance of Way Association (AREMA):
 - 1. Manual for Railway Engineering (Manual)

1.04 DEFINITIONS

- A. Production crosstie replacement generally refers to work areas of 500 track feet or longer, where rate of tie replacement consists of replacing an average of 1000 crossties per mile of track, between the limits indicated on the Contract Drawings, and as required by the Engineer. The actual rate may vary, plus or minus 200 ties per mile of track. No tie replacement will be required through the limits of at-grade vehicular or pedestrian crossings.
- B. Spot tie replacement refers to localized replacement of one or more crossties in a specific area, generally less than 500 track feet in length.

1.05 SYSTEM DESCRIPTION

- A. Perform work on this Section in accordance with applicable provisions of the AREMA Manual.

1.06 SUBMITTALS

- A. Submit diagrams showing location and function of each person and each piece of equipment in the tie gang.
- B. Submit plan and schedule for removal of existing ties, installation of new ties, and handling of all ties. This submittal shall be consistent with plans and schedules of Sections 01011, Work Planning, and 01310, Schedules.

1.07 DELIVERABLES

- A. For production crosstie replacement work, submit an as-built track alignment report with tabulation of the vertical and horizontal positions of the prework and final track alignments.
- B. For spot tie replacement work, submit a summary report of work performed, numbers and locations of the ties replaced, and level of ballast renewal.

PART 2 - PRODUCTS

2.01 CONTRACTOR-FURNISHED MATERIALS

- A. Furnish ties, spikes, and superelevation tags compatible to each of the existing track and as specified in the Contract Documents.
- B. Refer to Section 20130, Timber Crossties and Switch Ties, for timber ties replacement work.
- C. Refer to Section 20110, Ballast and Walkway Aggregate, for ballast for crosstie replacement work.

PART 3 - EXECUTION

3.01 INSPECTION

- A. Prior to commencement of the crosstie replacement work, inspect and verify areas indicated on Contract Drawings, marked in the field, or as required by the Engineer for crosstie replacement.

3.02 GENERAL

- A. Replace defective ties as marked in the quantities identified in the Contract Documents and within the Contract limits.
- B. Perform work in such manner to best utilize time allowed under the available working time limits.
- C. Perform work in accordance with applicable parts of Section 20400, Track Construction, except as modified or amended herein.

3.03 PRODUCTION CROSSTIE REPLACEMENT

- A. Refer to Section 01011, Work Planning. For production ties, assign work crew and equipment capable of installing a minimum of 800 ties per 6-hour work window with four (4) trains per hour passing on the adjacent track under a Form B.
- B. Remove existing crossties without excessively splintering them. Dispose of these crossties including associated debris in accordance with GP 7.16, Disposal of Material Outside of the Work Site. Do not raise or hump the track more than

one (1) inch when removing ties. Remove debris from crosstie renewal prior to surfacing operations.

- C. Remove and dispose of existing cut spikes and rail anchors.
- D. Reuse existing tie plates with the following exception: Worn, bent or cracked plates and plates less than 14-inch long shall be replaced with new plates. Position plates so that the batter of plate will cant rail to gauge side and be centered over the width of the tie to obtain proper bearing of rail. Ensure that outside (field side) shoulders of tie plates have full bearing against base of rail. Set spikes with a self propelled driver/setter machine.
- E. Center tie plates over the width of the tie, except that the plate shall be positioned up to 1/2 inch off-center if necessary to avoid spiking into an existing tie split.
- F. Use the standard spiking pattern in the Caltrain Standard Drawings. Keep respiking of new timber ties to a minimum. Replace ties that have been excessively respiked, as determined by the Engineer, or ties that have been respiked due to the Contractor's carelessness.
- G. Replace 50% of existing anchors with new ones. Install anchors tight against the tie.
- H. When replacing crossties with resilient fastening system, reinstall resilient fasteners in accordance with the requirements of Section 20400, Track Construction.
- I. Place new crossties square to the line of rail spaced on 19 1/2 inch centers. Crosstie position at joints shall result in a "suspended joint", with new ties spaced so that center of the space between ties will coincide with center of joint bars.
- J. Prior to completing work for the day, line and tamp all newly installed crossties with a production/switch tamper. Replenish ballast as necessary with new mainline ballast. This initial tamping pass shall result in ties being held securely, and provide a solid, balanced bearing on the ballast.
- K. Upon completion of a continuous segment not to exceed one mile of crosstie replacement, perform a final line, stabilize, and surface and dress of the track to eliminate all localized humping or surface irregularities. Final line, stabilize, surface, and dress in accordance with Section 20400, Track Construction.
- L. Install superelevation tags on completed ballasted track in accordance with Caltrain Standard Drawings.

3.04 SPOT CROSSTIE REPLACEMENT

- A. Perform spot crosstie replacement in accordance with criteria given for production crosstie replacement

- B. Excavate the tie cribs and ends so that the old ties can be removed and new ties installed without jacking the rails, or otherwise distorting or "humping" the track.
- C. Repair any track that is distorted or humped, as a result of the Contractor's operation.
- D. Install rail anchors in accordance with Caltrain Standard Drawings.
- E. Spot tie replacement includes powered hand-machine tamping and dressing of track.

3.05 FIELD QUALITY CONTROL

- A. After completion of spot tie replacement, perform inspection on post-work track condition. The crosstie replacement work is not accepted as complete until the Engineer has checked and verified the final track condition.
- B. Refer to deliverables specified herein for reports required in connection with completion of tie replacement work.

END OF SECTION