

REMOVAL AND REPLACEMENT OF BRIDGE TIES

****From Chester STP GMRC(4)**

- xx. DESCRIPTION. This work shall consist of removing existing bridge ties, properly disposing of all removed existing bridge ties, and installing new timber bridge ties, including tie plates and tie attachment hardware, as detailed in the Plans and as directed by the Engineer.
- xx. MATERIALS.
- (a) Timber. Bridge ties shall be solid-sawn Grade No. 1 or better Oak meeting the requirements of Chapter 7, Section 1.14 "Specifications for Timber Bridge Ties" of the AREMA Manual. Bridge ties shall be surfaced two sides (S2S) on the top and bottom sides, and dapped (notched) for stringer flanges on the bottom side as shown in the Plans.
 - (b) Preservative Treatment. All timber shall be treated with creosote preservative in accordance with the requirements of Chapter 30, Section 3.6 "Wood Preserving" and Section 3.7 "Specifications for Treatment" of the AREMA Manual. Minimum creosote preservative retention shall be 8 pounds of creosote per cubic foot of timber for all members. The preservative treatment to be used shall be a Creosote, Creosote Solution, or Creosote-Petroleum blend conforming to AWWA specifications P1/P13, P2, and P3, respectively.
 - (c) Field-Applied Preservative Treatment. Field-applied preservative treatment shall meet the requirements of Section 726 and shall be approved by the Engineer prior to use.
 - (d) Connection Hardware.
 - (1) General. Any threaded rod, bolts, washers, nuts, or other connection hardware required for installation of new timber shall meet the requirements of Chapter 7 - Timber Structures, Section 1.12 "Specifications of Fasteners for Timber Trestles" of the AREMA Manual. All connection hardware shall be galvanized unless otherwise noted.
 - (2) Bridge Tie to Stringer Top Flange Connectors. Bridge tie to stringer top flange connectors shall be either HCP-15 Bridge Tie Anchors by Rails Company (www.railsco.com, 973-763-4320) with 0.75" diameter ASTM A307 hex-head bolts with nuts and washers, Sealtite Hook Bolts with Sealtite Spring Locks and Washer Nuts by Lewis Bolt & Nut Company (www.lewisbolt.com, 800-328-3480), or an approved equal.
- xx. CONSTRUCTION REQUIREMENTS. Installation of new timber bridge ties required to complete the work shall be performed in accordance with Chapter 7 - Timber Structures, Part 3 "Construction, Maintenance and Inspection of Timber Structures" of the AREMA Manual.

Holes for bolts connecting bridge ties to stringer top flanges shall be drilled the same diameter as the bolt. Bridge tie to stringer top

flange connectors shall be installed in accordance with the manufacturer's instructions.

All field cut ends and connection holes in timber members shall be treated with an approved field-applied preservative treatment.

- xx. TIE PLATES FOR TIMBER TIES. Tie plates shall be installed on all new ties. The standard rail fastening for timber ties shall be double shoulder tie plates with cut track spikes. Tie plates shall conform to the requirements of the AREMA Manual, Chapter 5, Specifications for Steel Tie Plates. Tie Plates shall utilize the appropriate design for tie plates as given in the AREMA Manual, Chapter 5, Section 1, Design of Tie Plates for use with AREMA Rail Sections. Tie plates for use with 115 lb. rail shall be per AREMA Plan No. 8, Punching A. Tie plates for use with 136 lb. rail shall be per AREMA Plan No. 12, Punching A.

Tie plates shall be new unless otherwise shown on the Plans or specified in the Special Provisions. Relay tie plates must be designed to fit the rail with which used, and meet the design requirements for new tie plates. Corrosion, substantial losses of material (particularly at the spike holes), substantial wear of the rail seat, and shoulders and lack of flatness will not be permitted.

- xx. OTHER TRACK MATERIALS. Cut track spikes shall be used to secure rail and tie plates. For new track construction, two spikes per plate shall be installed in each tie plate for tangent track and curves less than 1°30'. For curves greater than 1°30' but less than 6°, three spikes per plate shall be installed. For curves greater than 6°, four spikes per plate shall be installed. The spiking pattern shall be as directed by the Railroad. Individual ties installed in existing track shall have the same number of spikes installed in accordance with the existing spiking pattern.

Cut track spikes shall conform to the requirements of the AREMA Manual, Chapter 5, Specifications for High-Carbon Steel Track Spikes, 6 in. length, 5/8 in. reinforced throat design.

Rail anchors will be new spring type, such as Wooding, Verona, Unit, or approved equal. Anchors shall conform to the requirements of the AREMA Manual, Chapter 5, Specifications for Rail Anchors and be applied as specified.

New rail anchors must firmly grip the bottom of the rail to which they are applied, to provide longitudinal rail restraint. Rail anchors shall not be installed at ties which support rail joints, where they will interfere with bond wire, boot legs, insulated joints, and other signal or track appliances or within 2 inches from the edge of any weld to prevent nicks or gouges within the heat affected zones of the welds. Rail anchors shall be capable of application and removal without requiring special tools, requiring only a sledge. Rail anchors shall be applied in the pattern as shown in AREMA Chapter 5, Section 5.4. Each tie within 200 feet of the edge of a bridge, turnout, and highway grade crossing; and ties within the area of a highway grade crossing shall be box anchored.

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Provide new, treated soft wood tie plugs in accordance with current AREMA Chapter 7, Article 7-1-29 specification for tie plugs. Treat tie plugs with a 60/40 creosote petroleum solution.

- xx. METHOD OF MEASUREMENT. The quantity of Special Provision (Removal and Replacement of Bridge Ties) to be measured for payment will be the number of existing bridge ties removed and replaced in the complete and accepted work.
- xx. BASIS OF PAYMENT. The accepted quantity of Special Provision (Removal and Replacement of Bridge Ties) 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 removal and disposal of old ties, furnishing and installing tie plates where required, furnishing new spikes and tie plugs as required, and for furnishing all labor, tools, equipment, and incidentals necessary to complete the work.

Payment will be made under:

<u>Pay Item</u>	<u>Pay Unit</u>
900.620 Special Provision (Removal and Replacement of Bridge Ties)	Each