

Attachment A

BURLINGTON NORTHERN SANTA FE

SPECIFICATIONS FOR CROSS TIES AND SWITCH TIES

I. GENERAL

101. Scope:

- (a) This specification shall cover the manufacturing of grade 3, 4, 5 & SG cross ties and switch ties in accordance with these specifications.
- (b) Before manufacturing, producers shall identify the kind of wood, type, grade, and number of ties required by BNSF.

II. MATERIAL

201. Size: Cross Ties

- (a) Except as hereinafter provided, cross tie minimum length shall be as specified in the purchase order.
- (b) The sections between 20 inches and 40 inches from either side of centerline of the tie are designated as the rail bearing areas.
- (c) Ties shall be graded by tie thickness and width measurement and be assigned grades in accordance with the following table:

<u>GRADE</u>	<u>THICKNESS AND WIDTH MEASUREMENTS</u>
#5	7" Thick x 9" Wide
#4	7" Thick x 8" Wide
#3	6" Thick x 8" Wide
SG	7" Thick x 8" or 9" Wide

- (d) Determinations of grade are to be made on the narrower of the horizontal surfaces.
- (e) The thickness and width specified for each of the above grades are minimum. Ties more than 0.5" thicker or wider than specified dimensions may not be accepted. Length will be limited to 4" oversize. SG ties will be a minimum length of 8'4".

201.1 Size: Switch Ties

(a) Except as hereinafter provided, switch ties shall be furnished in lengths as specified in the purchase order. Lengths will be in full one foot increments after treating plant has double end trimmed.

(b) The section between points 12 inches in from either end of the tie is designated the rail bearing area.

(c) Switch ties will have thickness and width measurement in accordance with the following table:

THICKNESS AND WIDTH MEASUREMENTS

7" Thick x 9" Wide

8" Thick x 10" Wide

(d) The thickness and width specified for each of the above are minimum. Ties more than 0.5" thicker or wider than specified dimensions will be culled.

202. Manufacture:

(a) The following species will be accepted for use as cross ties and/or switch ties.

HARDWOODS - OAK GROUP

Red Oak White Oak

HARDWOODS - MIXED GROUP

Gum White Ash Cherry Black Walnut
Birch Hard Maple White Beech Locust

Hickory and Red Sycamore (Only if specifically allowed by the BNSF representative)

SOFTWOODS - PINE GROUP (Only if specifically listed on Purchase order)

Bull Pine Ponderosa Pine Black Pine
Lodge Pole Pine Coastal Hem-Fir Jack Pine
Norway Pine

SOFTWOODS - FIR GROUP

Douglas Fir

Larch

True Western Hemlock

(b) Other species will not be accepted unless specifically ordered.

(c) Except as hereinafter provided, all ties shall be straight, well sawn, be square at the ends, have bottom and top parallel, and have bark entirely removed.

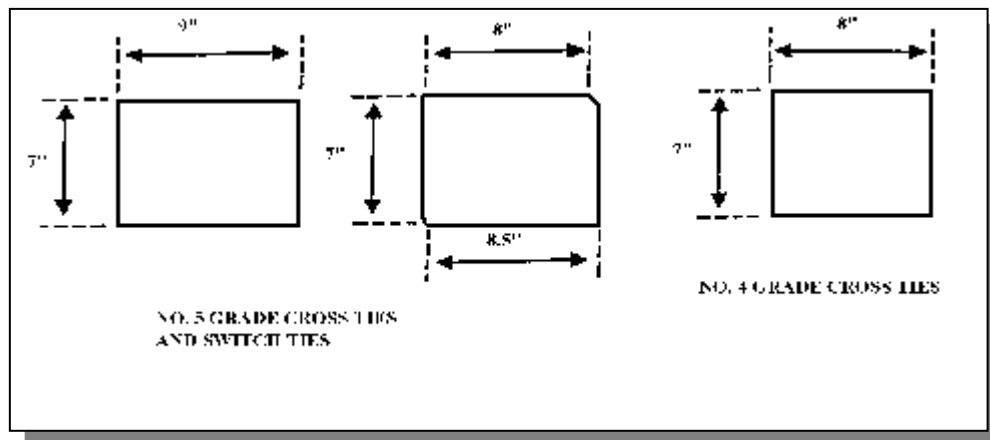
(1) Straightness - A tie is considered straight:(1) when a straight line along the top from the middle of one end to the middle of the other end is everywhere more than 2 inches from the side of the tie, and (2) when a straight line along a side from the middle of one end to the middle of the other end is everywhere more than 2 inches from the top and bottom of the tie.

(2) Well Sawn - A tie will be considered well sawn when its surfaces top, bottom, sides, and ends are sawn even.

(3) Parallel Surfaces - The top and bottom of a tie is considered parallel if any difference in the thickness at the sides or ends does not exceed 1/2 inch.

(4) Face - In the rail bearing area:

Switch ties and No. 5 Grade cross ties on top or bottom shall be 7" x 9" in cross section with a maximum of 1" of cumulative wane in the rail bearing areas. No. 4 Grade cross ties shall not have less than a 7" x 8" cross section. No. 3 Grade cross ties shall not have less than a 6" x 8" cross section. A maximum of 1/2" cumulative wane will be allowed on the bottom surface of switch ties and No. 5 Grade cross ties only. SG ties will be accepted with a maximum wane of 1 1/2" in the rail bearing area and 1/2" on the bottom of the tie in the rail bearing area. See drawing below.



(5) Face - Outside the rail bearing areas:

A maximum of 1-1/2" cumulative wane will be permitted outside the rail bearing area on all grade ties. A maximum of 1/2" cumulative wane will be allowed on the bottom surface of No. 5, No. 4 and No. 3 Grade cross ties and switch ties only. A maximum of 2" cumulative wane will be permitted on a SG tie.

III. QUALITY

301. General:

Except as hereinafter provided, all ties shall be free from any defects that may impair their durability or strength, such as decay, splits, large shakes, slanting grain, large or numerous holes or knots.

302. Decay:

No decay is allowed.

303. Holes:

(a) A large hole inside the rail bearing area is defined as being more than 1/2 inch in diameter and 3 inches deep.

(b) A large hole outside the rail bearing area is defined as being more than 1 inch in diameter and 3 inches deep.

(c) Numerous holes are defined as having any number equaling a large hole in damaging effect. Such holes may be caused in manufacture or otherwise.

(d) Mechanically damaged ties shall be replaced by the party that damages the tie.

304. Knots:

(a) A large sound knot exceeding 1/4 of the width of the surface on which it appears shall be rejected.

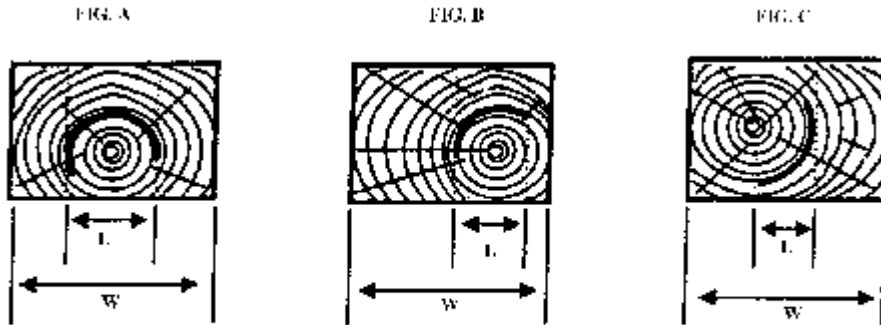
(b) Numerous knots equaling a large knot in damaging effect shall not be accepted.

305. Shake:

(a) A shake is a separation along the grain, most of which occurs between the rings of annual growth. Fire scar will be considered as shake.

(b) The procedure illustrated in Figures A, B, and C shall be used in determining the length of a shake. Shake that is not more than 1/3 the width of the tie will be allowed, provided it does not extend nearer than 1 " to any surface.

(c) Shake exposed on any surface shall not be accepted.



306. Split:

(a) A split is a separation of the wood extending from one surface to an opposite or adjacent surface.

(b) In unseasoned ties, splits that do not extend into the rail plate area will be accepted providing an approved anti-splitting device has been applied.

(c) In a seasoned tie, a split no more than 1/4" wide and/or less than 7 inches toward the rail area is acceptable. Splits exceeding the 1/4" limit are acceptable provided that the length of the split does not penetrate the rail bearing area and provided that subsequent to the application of approved anti-splitting devices in accordance with current requirements of Burlington Northern Santa Fe "Specifications for Application of Anti-splitting Devices", the split is sufficiently closed as to bring the tie back to its originally sawn dimension.

307. Bark Seams:

A bark seam or pocket is a patch of bark partially or wholly enclosed in the wood. Bark seams will be allowed outside the rail bearing area if they are not more than 2" below the surface, 1/4" in width and not more than 4" long.

308. Slanting Grain:

Except in woods with interlocking grain, a slant in grain in excess of 1 in 15 will not be permitted.

309. Resistance to Wear:

When so ordered, ties from needle-leaf trees (conifers) shall be compact wood throughout the top one fourth of the tie, where any inch of radius from the pith shall have six or more rings of annual growth.

310. Boxed Heart:

Ties with the pith must have the heart boxed with the pith located no closer than 1" to any surface. If the pith comes to any surface and shows signs of splitting it will not be accepted.

IV. INSPECTION

401. Ties will be pre-inspected at suitable and convenient places, at point of shipment and then reinspected at destination, as satisfactory to the railroad. The inspection should take place as promptly as possible after being sawn to prevent splitting, checking, stain and fungi buildup.
402. Inspectors will make a reasonably close examination of the top, bottom sides and ends of each tie. Ties too muddied for ready examination will be culled. In any dispute concerning or not covered by the above specifications, acceptance of the tie is the decision of the BNSF representative.
403. All ties are at the owner's risk until accepted by BNSF. All culled ties shall be purchased by the BNSF at an amount agreed to by purchaser and seller.
404. Ties forwarded in cars shall be separated according to size as stipulated in the contract or order.

BURLINGTON NORTHERN SANTA FE

SPECIFICATIONS FOR ANTI-SPLITTING DEVICES

I. GENERAL

101. Scope:

This specification prescribes requirements and methods for the design and application of anti-splitting devices in cross ties and switch ties.

102. Multiple Nail End Plate (end plate)

A. Plate Design

1. Structural type, Grade "C", 18 gauge galvanized steel, ASTM-A446 Standard or better with ultimate strength of 55,000 psi and yield strength of 40,000 psi.
2. Galvanizing per ASTM-A525, G60 coating.
3. 4 - 5 teeth per square inch.
4. 1/2 inch to 9/16 inch length of tooth.

B. Plate Size

1. End plate shall be 6" x 7" for No. 5, No. 4, SG cross ties and switch ties.
2. End plate shall be 5" x 6" for No. 3 cross ties.

C. Plate Application

1. Ties shall be selectively end plated. A plate shall be applied to both ends of any tie plated. Application shall be subject to maximum split dimensions as stated in Burlington Northern Santa Fe's "Specifications for Cross Ties and Switch Ties" Section 306.

2. End plates will be applied to cross ties by a mechanical device capable of exerting sufficient pressure to close splits, bringing the tie back to its original sawn dimensions, and with capacity to drive a nail end plate into the end of the tie with a pressure plate. Ties to be end plated shall have flat smooth sawn ends with no spurs. Application by hammer should be avoided. If such means must be used, a large flat headed hammer, such as an S-iron hammer should be employed.

3. Nail end plates shall be securely applied along all edges flat, against tie face and present a smooth, even edge with rounded corners so as to prevent any accidents.

4. Ties shall be plated promptly to avoid further damage as directed by BNSF representative.

103. Use of "S" Irons

The use of "S" irons will be allowed in special circumstances as directed by the BNSF representative.