

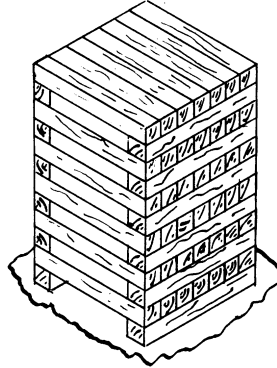


DATA SHEET

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The information presented here is of general nature to be of the most benefit. Special track situations were not considered because of limited application.

Wooden ties are delivered to railroad premises in class groups for inspection. The two class groups are: Untreated Wood, such as chestnut, larches and redwood, and Treated Wood such as red oak, cedar and cypress. The treated ties are impregnated with a preservative to resist decay and prolong the life of the tie.



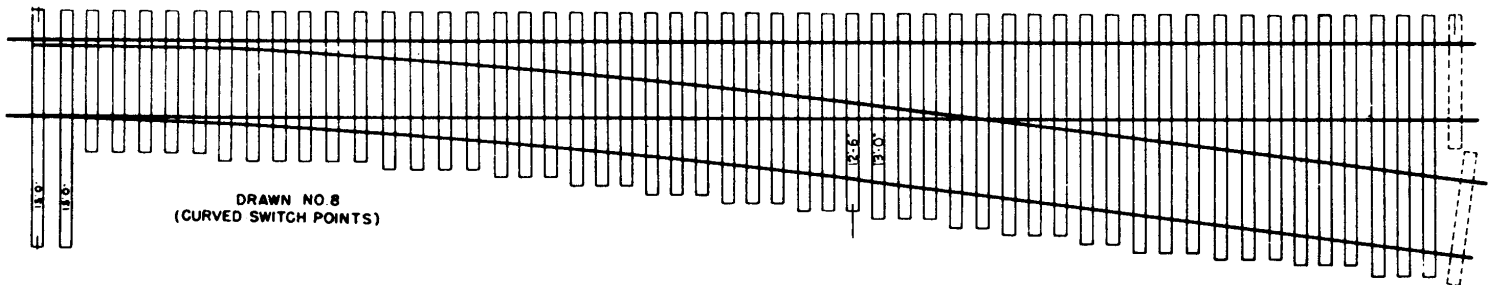
Ties are stacked as follows: 6" above the ground in alternate layers of 2 and 7 ties to a maximum of 12 ties. Ties that are removed because of decay or wear are usually scrapped by burning. Ties with 5 years or more of life are reused on secondary and yard trackage.

Sheet #:	D9n
Title:	TIES
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Originally Compiled by:	Robert E. Warren, Jr.
References:	AREA: Specifications for Cross Ties & Switch Ties; Bill of Switch Ties, Plan #912-58; D&RGW Ry. Diagram of switch ties for Narrow Gauge Turnouts
Source Material:	American Railway Engineering Association, Chicago, IL; Denver & Rio Grande Western Ry., Denver, CO; White Pass & Yukon Route, Vancouver, BC; Metropolitan Transit Authority, Boston, MA; New York City Transit Authority, Brooklyn, NY; City of Shaker Heights, Shaker Heights, OH; American Concrete Cross Tie Corp., Tampa, FL
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STANDARD GAUGE RAILROADS

SIZE	DIMENSION
1	6 x 6
2	6 x 7
3A	6 x 8
3B	7 x 7
4	7 x 8
5	7 x 9
LENGTHS 8', 8'-6", 9'	

Sizes 1, 2 and 3B are used mainly in yards and on secondary trackage. Other sizes are used on mainline and on other important trackage. Each railroad sets its own standards as to size and usage, usually according to the amount of traffic to be borne. Spacing is usually 20"-21" center to center on primary trackage with 22"-23" used on light traffic secondary trackage. Ballast is recommended to be 2" below the tops of the ties at tie centers, dropping to 3"-4" at the ends of the ties. This sloping is introduced to promote drainage from the track. Below are lists of the various size ties required in laying the most commonly found switches and crossovers on model railroad layouts.



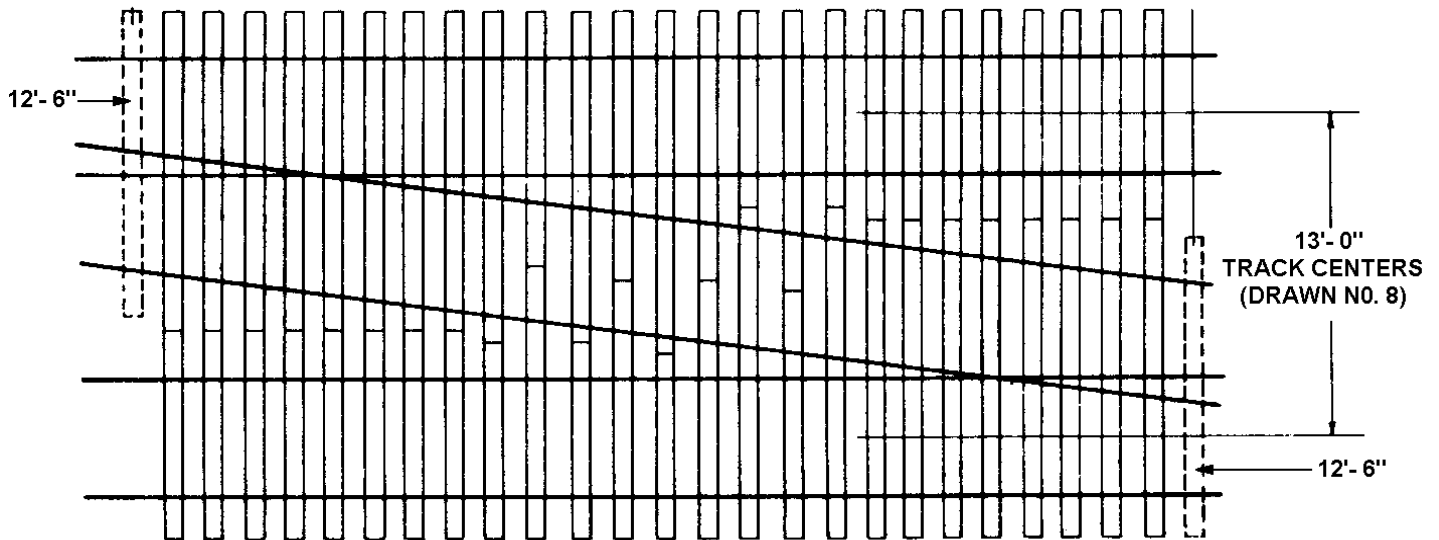
FROG #	LENGTHS AND QUANTITIES OF TIES															
	9'-0"	9'-6"	10'-0"	10'-6"	11'-0"	11'-6"	12'-0"	12'-6"	13'-0"	13'-6"	14'-0"	14'-6"	15'-0"	15'-6"	16'-0"	16'-6"
5	5	5	3	3	2	2	2	1	2	1	1	2	3	2	2	2
6	5	5	3	3	2	3	2	2	2	1	2	2	3	3	2	2
7	5	6	4	3	3	3	2	2	2	2	2	2	4	3	3	2
8	5	6	4	3	3	3	3	3	3	2	3	2	5	3	3	3



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FROG #	LENGTHS AND QUANTITIES OF TIES														
	7'-6"	8'-0"	8'-6"	9'-0"	9'-6"	10'-0"	10'-6"	11'-0"	11'-6"	12'-0"	12'-6"	13'-0"	13'-6"	14'-0"	15'-0"
5	1	4	8	10	10	6	8	6	4	4	2	8	4	1	4
6	2	2	10	10	10	6	9	7	6	4	4	10	2	2	4
7	2	4	12	10	12	8	9	9	6	4	4	12	4	2	4
8	1	4	16	10	12	10	8	8	8	6	6	16	4	1	4

NARROW GAUGE RAILROADS

Information given here is drawn from the last two common carrier narrow gauge railroads in North America.

White Pass & Yukon Route

- 6"x8"x6'-6" ties, ballast 2" below top of ties and 21" centerline spacing.

Denver & Rio Grande Western Railway

- 3"x8"x6' ties, with ballast 1" below top of tie at center and 3" below at edge of tie.

Spacing varies with length of rail.

39' rails-- 21-1/4" spacing

33' rails-- 22" spacing

30' rails-- 22-1/2" spacing

NARROW GAUGE			
SIZE	LENGTH OF TIES	NO. 10	NO. 8 1/2
		15' HAND THROW	15' HAND THROW
6"x 8" PIECES	6'-0"	3	3
	6'-6"	8	9
	7'-0"	6	4
	7'-6"	2	3
	8'-0"	4	2
	8'-6"	2	3
	9'-0"	3	2
	9'-6"	3	3
	10'-0"	3	2
	10'-6"	3	2
	11'-0"	2	2
	11'-6"	3	2
	12'-0"	2	2
	14'-0"	2	2

LIST OF SWITCH TIES



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ELECTRIC RAILWAYS

Information obtained indicates that most electric roads used standards similar to those of standard roads or of individual nature, depending upon traffic and loading, standards too numerous to be listed here.

RAPID TRANSIT SYSTEMS

Information concerning rapid transit systems and street car lines indicates that most systems have their own individual standards. The information given below is presented to give the modeler a representative idea of the standards followed.

Metropolitan Transit Authority, Boston, Mass.

Ballasted track: 6"x8"x8' tie with 24" spacing. With third rail, every third tie is lengthened to 8'-9" to support third rail insulator. Elevated structures: 6-1/4"x8"x8'-6" ties with 16" spacing on tangent track. Every fourth tie lengthened to 9' to support the third rail insulator. Ties are beveled on curves so outer rail may be as much as 4-1/2" higher than inner rail.

New York City Transit Authority

6"x8"x8'-6" tie with 18" spacing at rail joints and 22-1/2" spacing on intermediate ties. Ballast 1" below top of tie except at turnouts where it is 3" below tie top. On elevated structures, 18" spacing used throughout, with a 9' tie every eight feet to support the third rail insulator.

STREET CAR LINES

Metropolitan Transit Authority

6"x8"x8' tie, with 24" spacing. This applies to both open and paved tracks.

Shaker Heights Rapid Transit

6"x8"x8'-6" ties numbering 18 for a 33' rail and 22 for a 39' rail. Ballast is 2" below top of tie. This line operates open track on an exclusive private right of way. Paved tracks at highway crossings use the same size tie and spacing.

CONCRETE TIES

Recent experimentation has produced the MR - 2 Prestressed Concrete Tie. These ties are approximately 50% larger than timber ties, allowing for much wider spacing. The rail is held to the tie with Uniclips and bolts with 5 ply hickory (or black gum) phenolic-glue-laminated tie pads mounted between rail base and tie top.

Spacing varies from 26" on the Duluth, Missabe and Iron Range and 30" on the Canadian National to 32" spacing at the Ideal Cement Co. in Tampa, Florida.



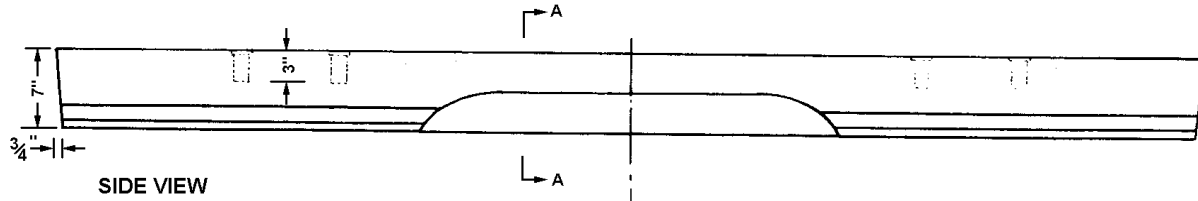
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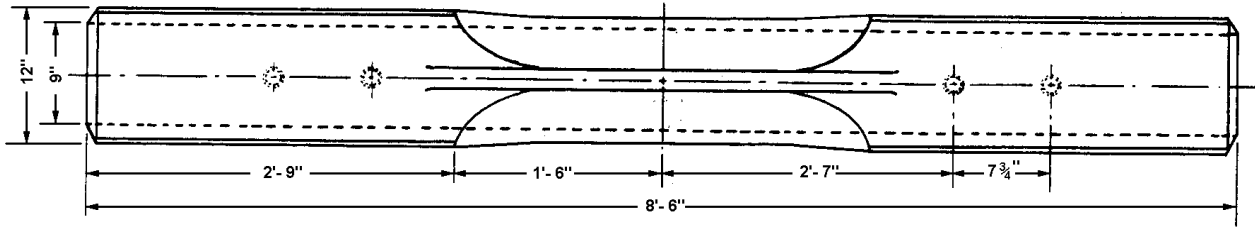
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SIDE VIEW



SECTION A-A



BOTTOM VIEW

CONCRETE TIE

