REPORT ON TEMPORARY TRESTLING.*

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Temporary trestles as applied to railway work may be divided into two general classes: (1) Those built in the construction of the line and (2) those used for bridging washouts and burnouts.

The first class is the most important and varies in size and cost from a couple of logs run out as stringers over a framework of a cap and two or three short struts resting upon the ground and filled in from trolleys to large and well-built trestles of several bents which are filled in before the structure decays by train haul. The highest and largest temporary trestle of which I could find any record was constructed on the North Alabama Railroad. It was 116 ft. high and 690 feet long, with 6 storeys—five over 80 feet high and seventeen over 60 feet high. The main thing in structures of this kind is cheapness consistent with getting the work done expediently.

Contractors have many and various ways of making fills. One of the commonest is to lay the trolley track upon two log stringers supported at the end by the embankment and at the other by a framed bent. The stringers are afterwards taken up as it is advisable to have as little material that will decay in the fills as possible. For small fills of six to ten ft. the above method answers very satisfactorily but for higher ones more secure bents must be used. These are generally composed of a bottom sill securely founded, four posts—the two centre ones being straight and the outer ones having a batter varying with the general conditions of ⅙ to 1/12 or even straight. The sill is notched slightly to receive the posts, which are also securely fastened with dowels and drift bolts. The cap is usually about ten inches in diameter with the posts notched into it 1½ to 2 inches and drift bolted with ½ to ¾-inch drift bolts.

The writer has seen several of these trestles in actual use, and as the general outlines and method of construction are mainly the same, one of the larger will be described more in detail.

The trestle is situated in Residency, N.T.C. Railway, near Grand Falls, N.B. It was constructed by M. G. Henniger, at his own expense, solely for the purpose of handling the material which was excavated in a neighbouring cut. The cut, an exceptionally large one, was being taken out by a steam shovel and the problem was to find a method of making an embankment that would permit of sufficient cars being kept at the shovel to keep it working all the time. The fill averaged 30′-40″ in depth and a single storey trestle was built over it, as is shown in the photographs. A small 12-ton Dinkey ran side-dump cars on a 3-foot guage track over the trestle. The chief difficulty encountered was to prevent large stones from displacing the batter posts.

Each bent was composed of (1) a bottom sill of hardwood 1½ to 2 feet in diameter; (2) three posts, the centre one being vertical and the two outer having a batter of one to six-inches. The posts were long, straight timbers 30 to 40 feet in length, depending upon the location of the bent and of various sizes, none smaller than 5-inch diameter at the small end being used. (3) The cap was nine feet in length and 12 to 15 inches in diameter. (4) Three longitudinal stringers notched over the caps and drift bolted to them with ½-inch bolts. Sway and longitudinal braces composed of straight timbers three to six inches in diameter and securely fastened to the posts and sills by ½-inch bolts.

Method of Construction.

A peg was driven to mark the centre of each bent, and small stakes were set at each side to mark the location of the batter posts. A level surface was secured on which to place the lower sill. No effort was taken to make the bed level all the way across. Instead mud sills were placed longitudinally on the lower side, and earth dug out from underneath them until the sill was level. This did away with adzing or shimming the sill, which is always an objectionable feature. Where the ground was soft more bearing was secured by using more and longer mud sills.

The foundation being completed, the posts and cap for a bent were hauled by horses to the site just ahead of the foundation. The sill was then rolled over and the posts were toe-nailed and drift-balted into position. The cap was next drift-bolted to the posts by ¾-in. drift bolts. When the bent was all assembled the cross-braces were placed and securely fastened by ½-inch bolts. For heights over twenty feet two sets of braces were used.

To raise the bent one 2-shive block was fastened around the centre of the cap and the centre post and another block anchored to the preceding bent which had already been erected and securely braced. One and a half-inch rope was used and one horse hauled the bent up easily. To prevent the bent from going too far a 1-inch snubbing-rope was anchored at any convenient point and two temporary struts from the sill of the preceding bent to the sill of the bent which was being raised prevented the bottom from slipping. When erected the bent was pinched over so as to be centred on the alignment stake then plumbed and tied to the preceding bent with sash braces and waling braces.

Costs.

From accurate cost-keeping during the construction of the greater part of this trestle, namely, 900 feet out of a total length of 1,150 feet I found the cost to be distributed as follows for one bent:—

Hauling logs, including felling and trimming—	
Labour, 30 hours at 20c.	$ 6.00
Foreman, 5 hours at 30c.	1.50
Team, 5 hours at 40c.	2.00
	$ 9.50
Making and Raising Bent—	
Labor, 36 hours at 20c.	7.20
Foreman, 6 hours at 30c.	1.80
Team, 5 hours at 40c.	2.00
	$11.50
Cost of timber (standing) approximate..	0.50
Cost of iron for bolts, etc., 30 lbs. at 4c.	1.20
Depreciation and interest on tools......	0.05
Total	$22.25
Panel length 16 ft. therefore cost per foot $\frac{2225}{16}$	1.39

The second class of temporary trestles, namely, those used in bridging burnouts and washouts, while not so numerous as those used in construction are nevertheless very important. Here the first essential is speed. Traffic must not be delayed any longer than is absolutely necessary. The actual costs do not enter materially into the question as the object is to get trains across as soon as possible, allowing the more permanent work to be put in later.

When a washout or burnout occurs the first information necessary is the definite location of the break in the track. The next question is what kind of structures are destroyed, length, depth of opening, characteristics of stream and

(Continued on page 251).

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