

A PAGE OF COSTS

ACTUAL, ESTIMATED and CONTRACTED

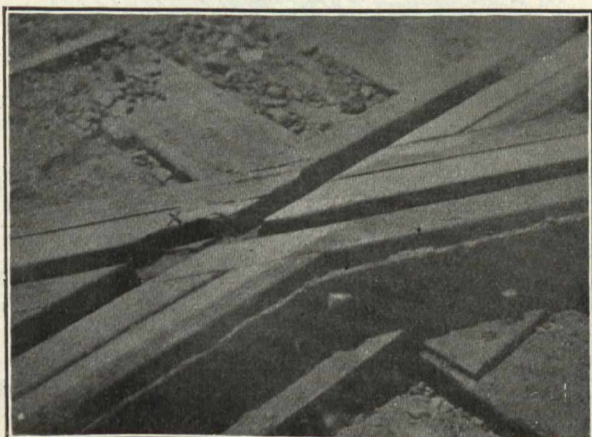
COST OF TRACK WORK.

At the last quarterly meeting of the Street Railway Association of the State of New York some very interesting figures were given relative to the cost per foot of track for the installations of Thermit welded joints and Clark joints.

The figures relating to the cost of Thermit joints were introduced by Mr. M. J. French, engineer of maintenance of way of the Utica & Mohawk Valley Railway Company, and itemized as follows:

The Itemized Labor Cost Per Foot of Single Track on Whitesboro' Street.

Placing and removing temporary track, per linear foot.	\$0.31
Excavation, including hauling, per cubic yard, partly concrete, \$1.05, or per foot on track.....	.46
Hauling away old materials, including old rails, wooden ties, scrap, old paving materials and cobbles, per foot of track .....	.03
Delivering track materials per foot of single track.....	.04
Track laying and surfacing per foot of single track.....	.19
Delivering concrete materials, including loading and hauling of sand 19 miles by work train, and breaking of old concrete and stone to use in new concrete, per foot of single track .....	.13
Concreting, including dry mixture under ties and under rail bases, per cubic yard. \$1.51; or concreting per foot single track .....	.45
Placing track basins, two basins being located every 500 ft. of single track; price per basin \$8.64, or per foot of track .....	.02
Thermit welding, including labor on molds and crucibles, per joint, \$1.24; per foot of track .....	.04
Delivery of paving materials, including loading of blocks at storeyard, per foot single track .....	.11
Cleaning up street, including removal of unused materials, broken bricks, and regrading of lawns between sidewalk and curb, per foot of track.....	.06
Flagmen and switchmen .....	.01
Engineering, superintendence and inspection (not including time of foreman) .....	.09
Brick paving .....	.21
Timekeeping and watching .....	.05
Total cost	\$2.19



The Cross Indicates Where Thermit Nickel Steel was to be Welded In.

Speaking of the Thermit joint, Mr. French said that in 1905, when relaying the track on Genesee Street, he had applied 700 Thermit welds. Welds had failed in both 1906 and 1907, but he thought that the later breaks were due to the running of heavier equipment. On a line laid in 1907, he put in 206 Thermit joints and the following spring found five

breaks, a little less than 2 per cent. It was his belief that a railway company could well afford to have such a small percentage of failures, in view of the excellent bonding and fine riding track which the Thermit joint affords. At the same time, he was in favor of the Clark joint, because it did not have the line of recrystallization or reheating, which is the cause of most breaks in Thermit welds.

It might be explained here, for the benefit of those who may not be familiar with the Clark joint, that it consists of a fish-plate bolted to the rails by means of drive fit bolts driven into reamed holes passing through both plates and rails. A Thermit steel shoe is then welded about the base of the rails for the purpose of giving the joint high electrical conductivity. The joints which Mr. French installed were on 100-pound A.S.C.E. T-rail and consisted of the regular 36-inch angle plates with 13/16-inch holes spaced for drilling 2 1/2 inches x 6 inches x 7 inches from the rail end to allow for tie clips. The lower flange of the joint was sheared off so as not to project beyond the rail base, and the plates were slotted to receive the steel tie clips. The 13/16-inch holes were reamed with Ludlow adjustable reamers operated by a Cleveland electric drilling machine.

The total cost of materials per single foot of track on a street on which Clark joints were installed was given by Mr. French as follows:

	Dollars.
Crushed stone, figured as all new stone .....	.285
All stone used was screened from excavated material.	
Concrete sand, labor only, given in labor items:	
Portland cement for concrete at \$1.23 per barrel.....	.287
Steel ties complete, with clips and bolts, \$1.66 each....	.443
T-rail, 100-lb. A.S.C.E., \$33.80 per gross ton, 60-ft. length	1.006
Clark joint plates, per pair, sheared and slotted, \$1.45 each .....	.0483
Joint bolts, 1 1/4 in. x 4 3/4 in., each 9.53 cents.....	.0191
Tie-rods, 3/8 in. x 2 in. x 5 ft. 2 in., each 26.3 cents...	.0351
Track inlets with connections, Syracuse type \$8.75 each	.0360
Thermit, 8 pound per joint at 25 cents .....	.0667
Welding supplies, crucibles, thimbles, etc. ....	.005
Paving sand, 1 cu. yd. to 27 ft. of track at 63 cents....	.0233
Paving blocks 42 per sq. yd., price \$25.50 per M.....	1.146
Portland cement, for grouting and flushing, mixed (1:2 covers 20 linear ft.) .....	.0615

Total cost of materials per foot of track.....3.4620
Add 10 per cent. for use of tools and power346

Total cost for materials and power 3.808

The actual labor cost per foot of track was:

Excavation, while cars were operating, 0.365 cu. yd....	.01455
Hauling old materials to storeyard .....	.0797
Delivery of track materials .....	.0398
Track laying, including drilling for and placing tie rods .....	.1379
Delivery of concrete materials, including loading of sand at Little Falls bed and hauling 15 miles ....	.1141
Concreting track to pavement grade, 0.233 cu. yd....	.3509
Placing track inlets, per basin \$1.04 .....	.0034
Placing Clark joints, reaming and bolting up.....	.0230
(Cost per joint, 68 cents; if holes had been reamed by electric power, cost would have been 35 cents.)	
Welding joints, including making of molds and crucibles .....	.0325
(Cost per joint, 97 cents, including four combination joints.)	

Delivery of paving materials, sand, cement and blocks .1297
Street paving, pounding, grouting and rail batter.... .2607
(or .2356 per sq. yd.).