

Track And Paving

One of the heaviest items of expense entering into the cost of street railway construction is "track and roadway." That this part of the entire property is expensive is apparent to the casual observer, but comparatively few persons realize how great the account is and what ratio it bears to the total outlay.

The average life of a rail used on the Omaha street railways does not exceed 12 years. Some last longer; others not so long, much depending on the frequency and weight of the cars passing over them.

When the first horse car track was put down in 1868-69 it cost about \$6,000 a mile. The estimated cost of the heavy construction which the future of Omaha demands is about \$30,000 a mile.

While there is no comparison between the two types of track, yet all of the increased expense is not represented by the improvements themselves. A large part of the advance is due to higher prices for metal, ties, ballast, paving and labor.

The street railway tracks of this city have gone through at least four separate and distinct phases. These may be listed as follows, the pound weights being by the yard:

- First—25-pound iron "T" rail.
- Second—25 and 35-pound iron "strap" rail.
- Third—45-pound steel girder rail.
- Fourth—73-pound steel girder rail with continuous joints.

The first type of construction was used for the horse cars prior to paving. The strap rail was substituted when the streets were paved. The 45-pound steel rail was used for the first electric railways, and for a number of years afterwards. The 73-pound rail of the present has been "standard" on the local system for some ten years. Its finish is in sight, and a 100-pound rail is contemplated for the next change.

With each change from lighter to heavier rails came the necessity of heavier foundations and ballast.

Much of the track and roadway reconstruction from time to time (this kind of work is always in progress) was not worn out and might have sufficed for years longer, were it not for the constantly increasing size and weight of the cars. The first electric cars were 24 feet long, weighed but 9 tons, and ran on four wheels. They were followed by 25-foot, 30-foot and finally by 42-foot cars, the weight increasing to about 20 tons, and the single giving way to the large double trucks.

The first electric cars were too heavy for the old horse car rails and roadway, and it was necessary to reconstruct the track at once.

The 20-ton, double truck cars could not be operated with safety and comfort to the passengers on the 45-pound rails. It was absolutely necessary again to put in heavier track construction.

When the horse car lines were being electrified and 45-pound rails were going down on a good foundation of crushed rock with concrete between and over the ties to hold the paving, citizens told General Manager Smith that the track would outlast his connection with the system. These

prophets were wrong. Their predictions were discredited years ago.

There is at the present time considerable dispute among engineers as to what really is the best type of street railway track construction. That common in Omaha is by no means the heaviest or most expensive known, yet it has been adequate for satisfactory service up to the present time.

The 73-pound steel girder rails are 7 inches high. They are laid on white oak ties, 6x8 inches and 7 feet long in size and two feet apart from center to center. Under the ties is from 5 to 6 inches of packed rock, gravel and cinders, and concrete is used to fill the space between the rails and above the ties to a height of two inches.

The question of welding the rails together has been discussed by the Company from time to time, but the practice has not been adopted because of the satisfaction given up to the present by the continuous rail joints long in use.

Lines on unpaved streets and highways are equipped with 60 and 70-pound steel "T" rails.

The City has always required the Company to bear the cost of paving between the rails. This requirement has caused the expenditure of approximately \$1,000,000 by the Company and its predecessors for paving. The expense of reconstruction is greatly increased by the cost of taking up and relaying paving. On paved streets where the improvement is 40 feet wide, the Company's proportion of the total work is about 25 per cent.

The Company has always endeavored to carry out the official orders of the City with reference to track, roadway and paving. The City has followed a reasonable course and the Company has not been forced to great expense trying out experiments in various forms of construction. As a result paving between and along the rails with brick or granite on asphalt streets was a settled policy in Omaha long before other cities stopped wasting large sums trying to maintain asphalt over the tracks. This is not possible owing to the constant vibration caused by the car traffic.

In closing this instalment it may be stated that the Company, recognizing the near necessity of heavier and more costly tracks and roadway on the principal lines, is keeping in close touch with the best practice and development. Its engineers are constantly studying and observing the present and prospective needs, and the manner in which similar conditions are being met in the larger cities.

It is our desire to maintain our tracks and roadway according to the most approved specifications.

G. W. WATTLES, President,
Omaha and Council Bluffs Street Railway Co.

(The Next Installment Will Describe the "Car Building and General Repair Shops.")

