RAILROAD ENGINEERING IN HARLEM.

Progress of the Work of Elevating the Central's Tracks in Park Avenue.

With little noise and no fuss, the work of elevating the tracks at the upper end of Manhattan Island of the New-York Central and Hudson River Railroad and other railroads running out of the Grand Central Station, has been going on for several months, and it has progressed so far that now a good idea can be obtained of the magnitude of the undertaking.

The grade of the railroad was altered in 1875 to secure greater speed and lessen the danger to life. Open cuts and tunnels were made on Park Avenue, between the Grand Central Station and the Harlem River, with a viaduct from Ninety-sixth to One Hundred and Fifteenth Street. The Harlem Railroad had the right to run into the city at grade, and to get rid of that right the city joined with the railroad company to do this work. It was completed in 1875, at a cost of about $6,000,000, of which the city paid $3,000,000. The present work is made necessary because the Federal Government has directed that the railroad bridge at the upper end of Park Avenue must be twenty-four feet above high-water mark. Part of the cost of the work will be borne by the city.

From the end of the tunnel at Ninety-sixth Street there is now a down-grade to One Hundred and Sixteenth Street. The new grade will begin at One Hundred and Sixth Street, and will run up at about the same rate as the present one runs down. When completed, the new tracks will be about sixteen feet above Park Avenue.

The problem of elevating the tracks for a mile and a half without delaying traffic has been successfully solved by the engineers. A wooden trestle has been completed outside of the viaduct from One Hundred and Sixth Street to One Hundred and Fifteenth Street and over the open cuts from there to the Harlem River. While the work of building the permanent elevated structure is going on, trains will be run over the trestles from One Hundred and Sixth Street to One Hundred and Fifteenth Street, and then switched back to the present tracks.

When the trestle beside the viaduct is ready for use, which will be soon, all the masonry above the south side of One Hundred and Eleventh Street will be removed, and from that point to the Harlem River an elevated steel structure fifty-six feet wide will be erected. It will be supported on three lines of pillars, one in the middle of the roadway and one on each side. The avenue under this structure will be 140 feet wide, 110 feet from curb to curb, the only obstructions being the three lines of pillars.

The most difficult part of the problem was the changing of the track from fifteen feet or more below the grade of the avenue to the same distance above, in view of the fact that the middle supporting columns would have to be placed in the middle of the present depression above One Hundred and Fifteenth Street, interfering with two of the four tracks. To overcome this difficulty, the piers which will support the side pillars were built into the retaining wall of the present open cut, and are now ready to receive the pillars. To build the centre columns was impossible at the present time without interfering with the passage of the trains, so large wooden trusses have been stretched across the open cut, and these will support the centre of the new steel structure until the trains can be switched upon it. Then the cut will be filled up, the centre piers built, and the pillars for the support of the middle of the viaduct placed in position. The wooden trusses having then accomplished the object for which they were intended, will be removed. There are double trusses at One Hundred and Twenty-fifth Street, and the side pillars will not be put into position there until the new elevated station at that point is ready for use. Then the underground station now in use will be abandoned.

The new bridge across the Harlem River will be twenty-four feet in the clear above high-water mark. The new steel trestle will connect with the bridge on the south end, and on the north end two approaches will connect the bridge with the land. Then will come a stone viaduct to the south side of One Hundred and Thirty-eighth Street, and a steel trestle to a point just north of the present Mott Haven station. From this point the tracks will run on a stone viaduct gradually decreasing in height until the road joins the present grade at about One Hundred and Forty-ninth Street.

The Elmira Bridge Company and the New-Jersey Steel Company were awarded the contracts for the steel and iron work, for $1,500,000. It is computed that the masonry work and piers will cost $100,000, the temporary work $100,000, the bridge over the Harlem River $1,000,000, and the improvements at Mott Haven and north of the Harlem River $500,000, making the total cost of the improvements $3,200,000. Of this money the city will pay $850,000. It is expected that it will be two years from the present time before the work is completed.

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