

Chicago Drainage Canal.

(Copy.)

APPENDIX A.

Report of the Board of Engineers, appointed by the United States, on the probable effect of the Chicago Drainage Channel on the levels of the great lakes, addressed to General William P. Craighill, Chief of Engineers, United States Army.

(From the New York *Engineering News* October 3, 1895.)

The board met in Chicago, August 12, 1895, and on August 13th and 14th accompanied the officers of the drainage canal over the line under construction. Every facility and courtesy possible has been extended by the trustees and engineers of the canal for a full investigation of the subject matter. A brief description of the canal is extracted from the printed report furnished the board by these gentlemen :

The main drainage channel of the sanitary district of Chicago is now under contract from its confluence with the south branch of the Chicago River, at Robey Street, in the city of Chicago, to its southern terminus, in Will County, Ill. At the southern end of the channel the controlling works will be located. Beyond these works, the construction contemplated by the district will be the work necessary for conducting the flow from the channel in conjunction with the waters of the Desplaines River, down the declivity to and through the city of Joliet, and making such change in the Illinois and Michigan Canal as the new conditions developed will make necessary.

The first work put under contract extended south-westerly from the Willows Springs Road, and these sections were numbered consecutively, Nos. 1 to 14.

Average length of sections, one mile. Easterly from Willow Springs road, the sections are lettered from A to O, omitting J. The lettered sections are, except for a short distance near Summit, entirely in glacial drift, defined in the specifications thus : "Glacial drift shall comprise the top soil, earth, muck, sand, gravel, clay, hardpan, boulders, fragmentary rock displaced from its original bed, and any other material that overlies the bedrock."

The sections from 1 to 14 were put under contract in July, 1892 ; from A to F were put under contract late in 1892 and early in 1893, and G to M inclusive were contracted for in December, 1893. Sections N and O were put under contract May 2, and Section 15, August 27, 1894. Earth was first broken on "Shovel Day," September 3, 1892, on the rock cut below Lemont.

The Desplaines Valley is traversed by the river from which it takes its name, a stream of wide fluctuations, with no constant and reliable fountain supply. During some seasons its whole discharge would pass through a 6-in. pipe, and at others its volume reaches 800,000 cubic feet per minute. Then it rolls majestically along, flooding the whole valley. Such being the situation, control of this stream was a condition precedent to the successful prosecution of the work upon the main channel. This control has been secured by the outlay of nearly \$1,000,000 in constructing what is known as the River Diversion channel.

About 13 miles of new river channel had to be excavated with the location of the Main Drainage channel, and about 19 miles of levee built to divorce the waters of the Desplaines watershed from the channel which is to receive the waters of Lake Michigan, and pass them on to the Mississippi River, *via* the Lower Desplaines and Illinois Rivers. The width of the river diversion channel on the bottom is 200 feet, side slopes $1\frac{1}{2}$ to 1, grade generally 0.12 feet per 1,000 feet.

At the head of this river diversion it was necessary to provide a safety valve in the form of a spillway, to allow surplus water to flow towards Chicago, because arrangements have not as yet been perfected for carrying the entire flood waters of the Desplaines through Joliet.

This spillway is a concrete dam capped with cut stone, and its wings faced with stone masonry. It is 397 feet long and its crest is 16.25 feet above Chicago datum