

MILLIONS IN PUBLIC WORKS.

The Annual Report of the Engineering Department of Omaha.

PAVEMENTS, GRADES, SEWERS.

A Million and a Half Dollars Expended Last Year and an Equal Amount Required for 1886-City Improvement in Detail.

To the honorable, the Mayor and City Council, Gentlemen—I herewith submit my annual exhibit of the public works of the city of Omaha, for the year ending April 1st, 1886.

Summarized, the public work of 1885 is as follows: Grading 194,782 cubic yards, \$2,708 07 Average 18c per yard, 22,614 10

Adding these results to summaries of paving, curbing and sewer work heretofore done, we have following exhibit of the permanent public works of the city at this date:

Curbing set, twenty miles. Sewers laid, 111,295 lineal feet, or very nearly twenty-two miles.

Paved streets, mostly 30 feet between curbs, aggregating 324,107 square yards, nine and one-half miles.

Paved alleys, twenty feet wide, 15,302 square yards, one and three-fourths miles.

Total paved streets, square yards, eleven and one-fourth miles.

These improvements aggregate in cost as follows:

For curbing, \$193,000

For sewers, 495,785

For paving, 1,000,000

Total, \$1,688,785

Having thus presented an outline of the public works as carried out to date, I will proceed in detail.

The grading during the past year was necessarily limited, the city having to pay one-half of the cost out of the general fund, which was overdrawn at the outset.

The floating debt, would not have been available at all. The streets graded were on the lines of main sewers at Burt and North Seventeenth street, requiring much work for their protection and repair.

The largest part, however, of the year's grading expenditures were for finishing the grading of west Farnam street from Twenty-ninth street to the city limits, contracted for the preceding year, and of a part of our eighteenth street. The latter work was done at the request of the Board of Education and as partly graded is in a worse condition than if no work had been done.

To give the people on that thoroughfare a benefit, they have a right to look for in the special tax levied, the grading of this street ought to be completed from Williams street south to Union street early this season.

The grading already under contract for 1886 and now in progress is Harney street from Fifteenth street to the west line of McCormick's addition, Sixteenth, Seventeenth, Eighteenth, Nineteenth and Twentieth streets, from Farnam to Howard and St. Mary's Avenue, Burt street from Twenty-third west to Division street and Davenport street from Sixteenth to Twenty-second street.

The work already done under contract, necessary in connection with the Sixteenth street viaduct will require about \$30,000 out of the general fund.

The grading already under consideration in apportioning work for the coming season.

CHANGES OF GRADES. Numerous changes of grades have been urged and made during the year, owing in many instances, to slanting intersections, and more to a change in public sentiment favoring more radical cuts and fills to insure better streets regarding local property interests. The construction of the Eleventh and Sixteenth streets viaducts will call for additional changes at an early date—changes for the latter line are already under consideration and a report thereon will be submitted to the council. The south end of the Eleventh street viaduct terminates at a grade of fifteen feet. Only this, of course, cannot meet public requirements, and will necessarily have to be cut so as to come within a six foot grade to Mason street at least, and thence east to Tenth street.

DISPUTED GRADES. There are still two streets within the old townsite on which there are grades of disputed validity, viz: Capitol avenue from Sixteenth to Twentieth streets, and Chicago street from Sixteenth to Twenty-second streets. The Capitol avenue grade under a court decision affecting that question, is either the Phillips or Creighton grade so-called, but which is known as the Meredith grade. As the Meredith and Creighton systems did not specifically establish the grades of north and south streets, the Phillips system did, there is a conflict between the two systems as adopted at the crossings of both Chicago street and Capitol avenue. Both of these streets must be adjusted to the respective street elevations upon them can be considered.

Where sidewalks of six or eight feet in width answer the purposes of travel the objection to cutting down of streets can, in many cases, be avoided by extending the walks to the curb lines and terracing the remaining space between the walks and property lines, thus avoiding much damage to private property. This will be practicable in the case of Phillips and Chicago street. Davenport street, now under contract will be graded in this way.

In the past year very little guttering has been done separately from the paving, and but for the provisions of the charter, the curbing might be included in the paving contracts. The price of curbs has ranged from 90 cents to \$1.07 per lineal foot, the lowest price being that for Bora sand stone, and the rest the Colorado sand stone. Indications this year are that we will get a wider field of stone to select from, and it is possible that granite curbs can be secured at prices not far above those of the inferior stones. Excepting in cases of re-curbing, for which a general levy is provided, all curbing is done for special tax. This under recent enactment, is paid for in annual installments at 7 per cent interest, the same as for paving. The curbing for the year 1886 will aggregate about 40,000 feet.

SEWERS. But very little sewer work has been done in the past year. Numerous applications for new districts were made, but owing to want of funds to extend the mains as outlets they were necessarily ignored. District 38, comprising a tract of low, wet ground near the St. Paul railroad tracks, was created, and as the tabular exhibit shows, about three-fourths of a mile of pipe was laid. These have already fulfilled their purpose, viz: draining the wet grounds through which they pass. The main branch of the North Omaha sewer, eight feet in diameter, was extended 178 feet to the creek line of Seventeenth street, so as to admit of the opening and grading of that thoroughfare. We now have altogether twenty-two miles of sewers constructed by the city, all of which, with the exception of the two pipe lines between Douglas and Harney streets, are doing excellent service. Those two lines are of the Waring system, laid four years ago. They are each about two-thirds of a mile in length and six inches in diameter. The former is to carry about 250,000 gallons each daily, which is in excess of their capacity under ordinary flow, and hence they run under a head most of the time. They were designed for sewage only, but calculated on that basis to run one-third full, so that when the first few hydraulic elevators were built shortly after their completion they were allowed to connect with them, as a limited discharge of that nature would assist in flushing the sewers, but hydraulic elevators have increased in use so rapidly that they now tax these pipes far beyond their capacity and cause backwater. Either the larger number of these elevators must be cut off and connected with the storm sewer on Farnam street, or else these two lines must be taken up and replaced with larger pipes, in which event they should also be lowered about three feet. If this is not done then the lines must be divided at about Thirteenth street, the upper part to be taken up and replaced with storm sewer. The objection to this is that in the event of excessive storms, back-water will carry sewage into connected buildings. This can in my opinion be avoided by forcing the excess of water into rain water pipes so as to reduce the quantity of rain water going into the sewers on such occasions to an extent within the limit of the sewer under the heaviest rain. By thoroughly cleaning and clearing out the undergrowth and weeds, the planting of bluegrass, cutting out roadways, pathways, etc., the grounds have become quite attractive, and are being used as a resort during the summer season that they should be improved and beautified on a more liberal scale than has been done in the past few years.

Last fall, under direct supervision of the council, line of four-inch water pipe was laid from Twenty-ninth, formerly Park avenue, to the line of hitching posts within Hanson Park, which was then connected by water pipes, in a trench around the park house and to the tank at the northwest end of the grounds. No other improvement has been made. For the purpose, however, of properly draining the park, the water in the bridges, lakes or ponds, etc., within the park, I have begun an accurate topographical survey of the grounds, taking elevation of the corners of every fifty feet square of the entire area. The survey and an accurate contour map of the grounds, will be finished within about two weeks. We will then be ready to accurately design a future sewerage system for the grounds and make estimates without further delay.

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There is still a large amount of unsubdivided real estate within the city that can be regulated. A practice largely entered into by parties seeking to evade the law relating to additional lots, is to surround the lots with a fence, and by means and bounds with the reservation of enough ground in each case for streets. These reserved tracts usually are represented to the county appraisers as streets and exempted from the tax lists of the city as well as the city authorities should adopt some regulations to protect the public from such imposition. No tract of land whether a so-called street, alley or reserve not actually used by the city or county should be exempted from assessment. And if it were publicly known that a street in an unexpected addition is restricted to \$100,000 per year, same as other property, there would be few purchasers in unaccepted additions. I believe that no law makes it compulsory for the public to accept any donation of land, and that as a matter of course, why should not the county authorities act the same as city authorities in relation to additions or allotments outside of the city limits and thereby save the city, when its boundaries are extended, the embarrassment of complicated and irregular streets totally out of harmony with the streets within our present limits.

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PHENOMENAL GROWTH OF THE CITY. In the past few years has been the rapid division of property within and outside the city limits so rapidly that it is difficult to keep pace with them. At the present time there are over 300 additions upon record. Many of these have received the approval of the council, but the streets have been recognized either by establishing grades upon them, or by placing the lots and blocks upon the tax lists and exempting the streets. The inclusion by the city and county in this manner of the streets from the tax lists is practically an acceptance of them as public property.

There is still a large amount of unsubdivided real estate within the city that can be regulated. A practice largely entered into by parties seeking to evade the law relating to additional lots, is to surround the lots with a fence, and by means and bounds with the reservation of enough ground in each case for streets. These reserved tracts usually are represented to the county appraisers as streets and exempted from the tax lists of the city as well as the city authorities should adopt some regulations to protect the public from such imposition. No tract of land whether a so-called street, alley or reserve not actually used by the city or county should be exempted from assessment. And if it were publicly known that a street in an unexpected addition is restricted to \$100,000 per year, same as other property, there would be few purchasers in unaccepted additions. I believe that no law makes it compulsory for the public to accept any donation of land, and that as a matter of course, why should not the county authorities act the same as city authorities in relation to additions or allotments outside of the city limits and thereby save the city, when its boundaries are extended, the embarrassment of complicated and irregular streets totally out of harmony with the streets within our present limits.

way at its highest point, and have a total length of 1500 feet extending from the south side of Leavenworth street to the south side of Pierce street. This is designed to cost about \$30,000, to carry about 250,000 gallons each daily, which is in excess of their capacity under ordinary flow, and hence they run under a head most of the time. They were designed for sewage only, but calculated on that basis to run one-third full, so that when the first few hydraulic elevators were built shortly after their completion they were allowed to connect with them, as a limited discharge of that nature would assist in flushing the sewers, but hydraulic elevators have increased in use so rapidly that they now tax these pipes far beyond their capacity and cause backwater. Either the larger number of these elevators must be cut off and connected with the storm sewer on Farnam street, or else these two lines must be taken up and replaced with larger pipes, in which event they should also be lowered about three feet. If this is not done then the lines must be divided at about Thirteenth street, the upper part to be taken up and replaced with storm sewer. The objection to this is that in the event of excessive storms, back-water will carry sewage into connected buildings. This can in my opinion be avoided by forcing the excess of water into rain water pipes so as to reduce the quantity of rain water going into the sewers on such occasions to an extent within the limit of the sewer under the heaviest rain. By thoroughly cleaning and clearing out the undergrowth and weeds, the planting of bluegrass, cutting out roadways, pathways, etc., the grounds have become quite attractive, and are being used as a resort during the summer season that they should be improved and beautified on a more liberal scale than has been done in the past few years.

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NAMING OF STREETS. The indiscriminate practice of naming streets within additions to compliment friends of the owner or to flatter individuals for some past or expected favor has led to such complications as will require the remaining of streets outside of the old townsite under a system that can be easily carried out in all future subdivisions. The ordinance embodying this system requires a few alterations to cover small defects in minor details, which, owing to the incomplete maps at this date, were almost unavoidable. The aim of the ordinance is to extend to our streets the same system of naming as that of the old townsite to give the name of the largest portion of the street to the several parts corresponding practically to them. The north and south streets are treated in a similar manner up to Twenty-third street, the center line of the streets being the basis for the numbers of the new, and the location of the streets and Jefferson streets, which is next west of Twenty-third street and is on a section line as Twenty-fourth street, and so on. The streets between Twenty-third and Twenty-fourth streets are subdivided into two equal parts, and each of these divisions correspond to the old townsite, which therefore require no change. As there were numerous additions with long and short blocks in which numbered streets frequently conflicted with those of corresponding streets opposite, it was deemed best to name all streets coming half way or nearly so between these base line streets as avenues. This a street between Twenty-third and Twenty-fourth streets proper would be named Twenty-ninth avenue, the avenue always following the street of the same number. This will facilitate the numbering of houses and obviate present complications in that respect.

STREET AND AL