SMITH

Sewer Systems for Small Cities & Villages

Civil Engineering

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SEWER SYSTEMS FOR SMALL CITIES AND VILLAGES

BY

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THESIS

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March 12, 1913.

I hereby recommend that the thesis prepared by WILLIAM WALTER SMITH, A.B., B. S., entitled SEWER SYSTEMS FOR SMALL CITIES AND VILLAGES, be accepted as fulfilling this part of the requirements for the degree of Civil Engineer.

[Signature]

Head of Department in Charge of Major Work.

Recommendation concurred in:

[Signature]

Committee on Final Examination.
SEWER SYSTEMS FOR SMALL CITIES AND VILLAGES

With Special Application To
Farmer City, Illinois.

Together with Data on Designs, Plans, Specifications, Ordinances, and Other Legal Forms for a Combined System of Sewers for that City.
PREFACE

Of necessity, villages, towns and small cities are giving much attention to municipal improvement and especially to the betterment of sanitary conditions. Of first importance in the movement is the matter of providing good drainage both for storm water and for sewage. For many reasons, this "small" but important work very frequently falls to the lot of the young engineer, naturally not of great actual experience in this field. For him, in a way, this thesis is prepared - not as an infallible guide, but as a mere recitation of the experience of a fellow engineer in a similar situation.

So far as possible, with reference to engineering and legal matters, the endeavor has been made to secure an arrangement chronological in order. As is always the case after a task is completed, the author now sees where improvements in design and construction might have been made. Such constitutes experience.

The legal counsel in behalf of the city were Herrick and Herrick of Farmer City, Illinois, whose advice has been very helpful and who successfully defended the improvement through the Circuit and the Supreme Courts.

The author sincerely trusts that this thesis will be of some value in guiding the young engineer along the road leading to experience.

Philadelphia, Pa., January--1913.
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Chapter I
NECESSITY AND ADVANTAGES OF SEWERS

Convenience and Health

During the evolution of a country district into a built-up village or city, certain physical changes take place which, though possibly not affecting the rainfall, nevertheless increase the run-off. The porous soil of the tilled field becomes the more impervious sod of the lawn. The water falling on the roofs of the buildings immediately joins that on the exposed ground surface. Sidewalks and improved roadways absorb little. Later, street pavements add to the increased amount of water which must be cared for quickly by underground drainage. In fact, drains and sewers should be laid before a street is paved.

The advance in civilization, together with the increased wealth of the nation, has brought about the desire for and the possibility of greater conveniences and comforts for both the public and the home. In the more closely built-up village, attention must be given to the purity of the drinking water. Since neighbors are not so far apart, one cannot live so much to and for himself. Unsanitary barnyards, privies and cesspools must be eliminated. To protect the drinking water, to lessen the danger of such epidemics as typhoid fever, sewers are necessary for removing the contaminating agencies. One life, needlessly and selfishly lost, is worth many times the sewer tax levied on any single property holder.

Commercial Advantages

Recent and more prolonged industrial changes, along with
the growth and development of villages and towns into cities, are bringing about a commercial revolution. The nation in general has just awakened to the fact that agriculture is no longer its one principal industry. The manufacturing interests are already enormous, and manufacturing in this country is scarcely in its infancy. For various reasons, heretofore these factories have centered in the great cities. The present-day trend is away from the large centers to villages and smaller cities. The causes are not difficult to discern. Labor troubles, especially sympathetic strikes, have much to do with the change. The growth of individual business, the lack of room for expansion (except at enormous expense), and the general unsanitary conditions in congested cities are other factors. Interstate and state commerce commissions are effecting equitable adjustments of freight rates so that it is now frequently economical and advisable to move the manufacturing plant to the crude product rather than to haul the product to the plant. Municipal taxation and the chances of political graft and extortion are less in small places. The better air, the better homes, the better sanitary conditions, the better moral surroundings—all are conducive to a better class of workman: the result is reflected in the quality of the workmanship and consequently upon the profits side of the factory ledger.

The Application

Many small cities (and among the number, Farmer City, Illinois) have been quick at seeing and making provision to reap the full benefit of their advantages in this industrial change. Rapid means of transportation now enable city business
and working men to live in suburban towns. With the coming of factories and new inhabitants, there is an increase not only in local business but also in the value of real estate, both of the village or the city and the surrounding country. Increased values mean greater local wealth. Live towns, with an eye on the future, are bettering their sanitary conditions.
Chapter II

PRELIMINARY CONSIDERATION OF PROBLEM

Topographic and Economic Situation

The first requisite towards the successful solution of any problem is a careful study of the problem itself. In designing a system of sewers the first step should be towards becoming generally familiar with the topography of the city and of so much surrounding country as might enter into the problem. Such information is of particular advantage in deciding upon the possible routes of the outlet sewer or sewers, the location of the disposal plant, and consequently in the general layout of the entire system. This knowledge can be had only through personal inspection.

In Re Farmer City

Farmer City is located in the corn-belt of central eastern Illinois (DeWitt County) at the intersection of the Illinois Central and Big Four (P. & E.) railroads. On the former it is mid-way between Chicago and St. Louis; on the latter, it is similarly placed with respect to Peoria and Indianapolis. Its population, estimated at 1200 in 1910, is composed principally of retired farmers. It has two small factories, one producing Portland cement products only and the other manufacturing both cement and clay products. The city is unique in owning and successfully operating its water and electric lighting plant. Previous to the construction of sewers, not only was it free from debt, but it also had sufficient money in the treasury for paying the city's share of the cost of the improvement.
The soil of the surrounding country is fertile and productive. The farmers are prosperous. Since it is twenty-five miles from cities offering greater trade opportunities, Farmer City enjoys an unusually good local business. Though it is a city which takes pride in itself, nevertheless in the last twenty years, its population has increased but three hundred. The city council considered this due to the very limited opportunity for the laboring man.

With the intention of bettering the sanitary conditions of the city, of attracting factories, and of increasing population and trade, a movement was begun for improving the city. Before beginning to lay street pavements, it was rightfully decided to plan a complete system of sewers for the entire city and to put in the principal outlet and the laterals for the business and the nearby residential sections. On account of its favorable location, together with municipal light, water, sewers (now partially constructed) and pavements (proposed), Farmer City considers herself prepared to attract prospecting manufacturing capital, especially since the United States Geological Survey and boring tests have shown that the immediate vicinity is underlaid with a fine quality of bituminous coal.

The corporate limits of Farmer City embrace practically all of one full section of land. Seemingly, the city is located on two ridges. In reality, these ridges are merely a continuation of the adjoining level prairies indented by two pronounced stream valleys. Through the center of the city, and in an easterly direction, flows a small stream known as 'The Slough.' This ditch drains 1800 acres of prairie land. Except at flood
times, it carries a very small amount of water, and in mid-
summer, it is often stagnant and offensively odorous. During
spring floods, at John Street, it often flows 600 cubic feet
per second. By a circuitous route, two and one-half miles
in length, it empties into a living stream, Salt Creek, which,
at its lowest stage, flows 30 cubic feet per second. The latter
rarely carries less than five times this amount of water. In
Salt Creek, the waters from The Slough again pass through the
city limits, this time flowing westerly and, at the nearest
place, within 1,200 feet of their first passageway. At the
highest point, the ridge separating the two streams is 16 feet
above the bed of The Slough and 38 feet above the bottom of
Salt Creek.

Formerly a small, open, intermittent branch flowed dia-
gonally through the town from the corner of Indiana and Washing-
ton streets to The Slough at the latter's intersection with Plum
Street. This marshy draw originally carried the flood-waters of
twenty acres of city property and sixty acres of farm land. In
the course of events, ordinary drain tile had supplanted the open
ditch. To improve their property, the residents, especially from
Green to High Streets, have filled in their yards above the sur-
rounding natural ground level. Likewise, to better the roadway, the
streets in question have received similar treatment. The result
was, that sudden floods, especially when the ground was frozen,
piled up the water until it was often three feet deep at the
corner of Water and Washington streets. The pond frequently
extended not only over the adjoining lots but even three blocks
beyond the city limits. The cellars and basements in adjoining
dwellings were flooded. Unsanitary conditions, as ordinarily resulting from such floods, were augmented by the fact that many persons had surreptitiously connected the waste pipes of their toilets and sinks to the identical string of tile which was supposed to drain these cellars and basements. The situation was made even worse and the drains rendered almost useless through a foolish attempt to dry the streets by letting the street water, with its trash and dirt, flow directly into these tile. Ordinary outdoor privy vaults were common. Investigation even disclosed the fact that old wells were in use as cesspools, and some families were making domestic use of water from the same kind of dug-wells in that same immediate vicinity!

Searching investigation will disclose the fact that similar conditions exist in most sewerless villages and cities.

In villages and small cities the volume of house sewage per city block is so small, the existing system of street drainage so poor, and the value of the taxable property so low that separate systems of sewers for house sewage and street drainage are economically impossible. In this respect Farmer City was no exception. Subsequent trenching disclosed that the streets and private property were fairly undermined with drains in which were found specimens representing every phase in the evolution of the ordinary farm drain tile of the butt-joint variety. Guess grading, tree roots, improper usage, both by individuals and city, had rendered nearly all of these drains useless. The money invested and wasted in these unsystematically laid and maintained drains would easily have paid for the system
of sewers installed.

The conditions laid down by the mayor and a committee from the council were:—

1.—That a complete system of sewers should be planned for the entire city with a possible outlay of not more than $50,000.

2.—To make possible at once the construction of a part of the same for the relief of that portion of the city imperiled by floods and to provide immediate service to the business section of the city.

3.—To intercept outside the built-up residence district, the objectionable summer flow of The Slough.

4.—To provide for the future construction of laterals on John and Plum streets north of The Slough, so that either of these streets might be paved from the business section to the railroad depots.

5.—To make possible the immediate securing of the desired results by putting in such a portion of the entire system as might cost not more than $20,000.

6.—To plan a first class system so excellent and so inexpensive as to make it in both ways invulnerable to possible attacks in court.

As a working basis, a cursory study of the city and adjacent country was made especially to aid in determining the location of the outlet sewer. This personal inspection disclosed four possible routes:—

Route 1.—A sewer intercepting The Slough at John Street, thence directly down that street through a deep cut between
Water Street and Clinton Avenue to Salt Creek.

Route 2.-A similar line on Plum Street, one block east of the former route.

Route 3.-A like line on Main Street.

Route 4.-A sewer following the general course of The Slough to Salt Creek.

Route 1 seemed by far the most feasible. However, no statement was made to that effect. As a general rule, at any phase of the work, it is inadvisable to impart information to anyone until a formal report is called for by the power in authority. If unavoidable, a project may be diplomatically and satisfactorily discussed without revealing anything. The reasons are obvious. Snap judgment is frequently proven wrong by subsequent investigation. And often, as in this case, since all four routes involved the entering upon or the taking of private property, financial reasons and local politics made it expedient to give preference to neither. Furthermore, by withholding information and plans, the early alignment of the general public for and against an improvement is prevented and opposition is weakened by being thus delayed in organizing.

Reconnaissance Survey

Of every incorporated village or city, there is a map in the proper county official's office—in Illinois, the recorder's office. Especially in small places where the streets are not designated by sign boards, access to such a map is necessary to facilitate the work preliminary to an estimate. Should the city not have its own map, information sufficient for the time may be had from maps in a country atlas, a copy of which can
usually be found in the office of an attorney, a real estate agent, or newspaper. If need be, a sketch of the map, or so much as may be needed, should be transcribed to the field book. Upon this map should be noted the names of the streets and such prominent marks as railroads, churches, school houses, waterworks, etc., which will aid in determining the exact location in the field. Later, from a local point of view, it may be found convenient to designate a street intersection, as "Jones' Corner," etc. As a check on the map, it is advisable to pace and note distances. Subsequently all distances must be measured and the street names, etc., verified by a comparison with the map on record at the county seat. However, too much confidence must not be placed in maps of others. (See paragraph 2, page 43) If the city has a bench mark, all levels should be referenced to this datum.

As Farmer City had no bench mark, it was decided to reference all levels to a monument of the U. S. Geological Survey located on the right of way of the Big Four R. R. near its intersection with Plum Street. The elevation of this bench, as learned by a letter addressed to the Department of the Interior at Washington, D. C., was 732.456 feet above mean sea level. To systematize and to simplify the work and to save time, a circular system of check bench-marks was established around the limits of the city on permanent objects such as hydrants, concrete right-of-way boundary posts, etc., from which, at any place, level lines could be started and checked. Since the city was comparatively level or evenly sloping and an estimate was desired
in the shortest time possible, elevation readings were, as a rule, taken only at street and alley intersections. Exceptions to this method of procedure were made in the case of long blocks, the few abrupt breaks in contour, and the stream banks and bed of The Slough. Occasionally, readings were also taken on hydrants and other permanent objects to serve, if needed, as reference bench marks. This plan proved very helpful. Ground elevations were read to the nearest tenth of a foot. These elevations were platted on a map of the city (drawn to a scale of 1 inch 200=feet), from which blue prints were made to aid in the design.

Preliminary Estimate

To ascertain whether the improvement could be done within the financial limit and in accordance with conditions laid down by the mayor and committee from the council, a preliminary estimate was required. After a careful study of conditions, John Street was chosen as the route for the main outlet sewer for these reasons:—

1:-Though calling for a two-foot deeper cut at the deepest point, nevertheless, through shortness of route and nature of profile, there would not be so much deep digging and the yardage of excavation would be less on this line than on any other.

2:-The outlet sewer would enter upon only one piece of private property, which was of small value; consequently, the city would be amenable to a small amount of damages. Since there would be only one owner of such private property, the political "outs" could arouse less opposition to the improvement. Looking to future, this small private property was remote from the streets,
highways and residences or residence sites, and would therefore be very suitable for a sewage treatment plant such as state laws will undoubtedly soon require.

3:-The main sewer, so located would, at its upper end, intercept the objectionable summer flow of The Slough at the farthest up-stream point possible and also would afford service to the new (then proposed) township high school. Likewise, it would care for the business section of the city. Moreover, at Water Street, a short principal lateral could be laid which would amply protect the endangered residence section from possibility of future floods.

4:-Business would not be interfered with by construction work on John Street as would be the case on Main Street.

5:-From conversations with layers of drain tile, well diggers and observant inhabitants, it was learned that less sand would be encountered in the deep trenching on John Street than elsewhere and that in general the digging was better.

6:-Moreover, the route selected was shortest, cheapest and best and could consequently be more easily defended in Court.

A secondary principal outlet sewer was designed to give service at some time to that eastern part of the city beyond the top of the southern ridge. This sewer will pick up the laterals at Water and Center Streets and, skirting the foot of the ridge, will conduct the sewage to the outlet of the John Street main or to the future disposal plant.

In the preliminary design for the estimate, the same general method was followed as used for the final design and as described in CHAPTER IV-THE DESIGN. With the principal
outlet route located, the laterals were laid out, the run-off ascertained, and the cuts, the gradients and the sizes of pipe determined. From a slight knowledge of trenching, a study of detailed costs in nearby cities and of bids in technical papers on work of a similar nature, the estimate was deduced. The scheme shown in part below was used to arrive at total of the various sizes of pipe and depth of trenching, upon which the cost estimate was primarily based. Since Farmer City is a country town, the members of the Council were more or less familiar with farm drainage; therefore this general method of arriving at an estimate was such as they could comprehend and discuss more or less intelligently.

Table 1

<table>
<thead>
<tr>
<th>TABULATION OF SEWER ROUTES AND FEET OF PIPE REQUIRED</th>
</tr>
</thead>
<tbody>
<tr>
<td>Feet of Sizes of Pipe and Average Depth of Trench</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>On</th>
<th>From</th>
<th>To</th>
<th>8&quot;</th>
<th>10&quot;</th>
<th>12&quot;</th>
<th>15&quot;</th>
<th>Etc.</th>
<th>Etc.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Rich's'n Grove</td>
<td>State</td>
<td>State</td>
<td>200</td>
<td>5'</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Center</td>
<td>Center</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Lincoln</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Lincoln</td>
<td>Rich's'n Allen</td>
<td>350</td>
<td>6'</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Allen</td>
<td>Grove</td>
<td>Center</td>
<td>550</td>
<td>7'</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Center</td>
<td>Lincoln</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Lincoln</td>
<td>Main</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Etc.</td>
<td>Etc.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Totals of pipe @ size</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

The average cut of all sewers except the main on John Street was eight feet. Below is shown in detail the approximation
by means of which was deduced the estimated cost per lineal
foot of the completed sewer. In the table, vitrified clay pipe
are indicated by "V.C." and concrete pipe by "Con".

Table 2

ITEMIZED APPROXIMATION OF COST PER LINEAL FOOT

<table>
<thead>
<tr>
<th>Size and kind of pipe</th>
<th>Excavation</th>
<th>Pipe in Backplace</th>
<th>Filling</th>
<th>Teaming, Sheathing, Etc.</th>
<th>Total Cost</th>
</tr>
</thead>
<tbody>
<tr>
<td>8&quot; V.C.</td>
<td>$0.18</td>
<td>$0.16</td>
<td>$0.03</td>
<td>$0.03</td>
<td>$0.40</td>
</tr>
<tr>
<td>10&quot; V.C.</td>
<td>0.18</td>
<td>0.20</td>
<td>0.03</td>
<td>0.04</td>
<td>0.45</td>
</tr>
<tr>
<td>12&quot; V.C.</td>
<td>0.19</td>
<td>0.27</td>
<td>0.04</td>
<td>0.05</td>
<td>0.55</td>
</tr>
<tr>
<td>15&quot; V.C.</td>
<td>0.21</td>
<td>0.34</td>
<td>0.04</td>
<td>0.06</td>
<td>0.65</td>
</tr>
<tr>
<td>18&quot; V.C.</td>
<td>0.23</td>
<td>0.45</td>
<td>0.05</td>
<td>0.07</td>
<td>0.80</td>
</tr>
<tr>
<td>21&quot; V.C.</td>
<td>0.25</td>
<td>0.62</td>
<td>0.05</td>
<td>0.08</td>
<td>1.00</td>
</tr>
<tr>
<td>24&quot; V.C.</td>
<td>0.27</td>
<td>0.77</td>
<td>0.06</td>
<td>0.10</td>
<td>1.20</td>
</tr>
<tr>
<td>27&quot; V.C.</td>
<td>0.31</td>
<td>0.99</td>
<td>0.07</td>
<td>0.13</td>
<td>1.50</td>
</tr>
<tr>
<td>33&quot; Con.</td>
<td>See Table 3 below.</td>
<td></td>
<td></td>
<td></td>
<td>5.00</td>
</tr>
</tbody>
</table>

On account of the great variations in depth, in estimating
the cost, the 33-inch outlet sewer was considered in sections.

Table 3

ITEMIZED ESTIMATE OF 33-INCH CONCRETE SEWER

<table>
<thead>
<tr>
<th>Length of Section</th>
<th>Depth of Cut</th>
<th>Excavation</th>
<th>Pipe in Backplace</th>
<th>Filling</th>
<th>Teaming, Sheathing, Cost Etc.</th>
</tr>
</thead>
<tbody>
<tr>
<td>200'</td>
<td>5.0'</td>
<td>$0.20</td>
<td>$1.25</td>
<td>$0.10</td>
<td>$0.45</td>
</tr>
<tr>
<td>900'</td>
<td>11.0'</td>
<td>0.80</td>
<td>1.25</td>
<td>0.20</td>
<td>0.70</td>
</tr>
<tr>
<td>300'</td>
<td>16.5'</td>
<td>1.20</td>
<td>1.25</td>
<td>0.30</td>
<td>1.10</td>
</tr>
<tr>
<td>600'</td>
<td>21.0'</td>
<td>2.05</td>
<td>1.25</td>
<td>0.50</td>
<td>1.60</td>
</tr>
<tr>
<td>400'</td>
<td>24.0'</td>
<td>3.00</td>
<td>1.25</td>
<td>0.75</td>
<td>2.25</td>
</tr>
</tbody>
</table>

Average Cost per Foot for 2400 feet, $4.30
The complete estimate of the cost of the entire system is given under Table 4.

Table 4

COMPLETE PRELIMINARY ESTIMATE OF COST OF ENTIRE SYSTEM

<table>
<thead>
<tr>
<th>Item in Place</th>
<th>Detail</th>
<th>Unit Cost</th>
<th>Total Cost</th>
</tr>
</thead>
<tbody>
<tr>
<td>8&quot; V. C. Pipe</td>
<td>14600'</td>
<td>$0.40</td>
<td>$5840.00</td>
</tr>
<tr>
<td>10&quot; &quot;</td>
<td>9740'</td>
<td>0.45</td>
<td>4383.00</td>
</tr>
<tr>
<td>12&quot; &quot;</td>
<td>5770'</td>
<td>0.55</td>
<td>3173.50</td>
</tr>
<tr>
<td>15&quot; &quot;</td>
<td>7030'</td>
<td>0.65</td>
<td>4569.50</td>
</tr>
<tr>
<td>18&quot; &quot;</td>
<td>2860'</td>
<td>0.80</td>
<td>2288.00</td>
</tr>
<tr>
<td>21&quot; &quot;</td>
<td>3370'</td>
<td>1.00</td>
<td>3370.00</td>
</tr>
<tr>
<td>24&quot; &quot;</td>
<td>870'</td>
<td>1.20</td>
<td>1044.00</td>
</tr>
<tr>
<td>27&quot; &quot;</td>
<td>310'</td>
<td>1.50</td>
<td>465.00</td>
</tr>
<tr>
<td>33&quot; Con.</td>
<td>2400'</td>
<td>4.30</td>
<td>10320.00</td>
</tr>
<tr>
<td>Manholes</td>
<td>170'</td>
<td>30.00</td>
<td>5100.00</td>
</tr>
<tr>
<td>Catch Basins</td>
<td>170'</td>
<td>20.00</td>
<td>3400.00</td>
</tr>
<tr>
<td>Inlets</td>
<td>170'</td>
<td>15.00</td>
<td>2550.00</td>
</tr>
</tbody>
</table>

Total-----------------------------$46,503.00

Court Costs and Lawful Expenses @10%=4,650.30

Grand Total---------------------$51,153.30

Based on the approximate prices in Table 4, above, and the unit lengths in Table 6, page 40,$18700.00 was the estimated cost for that portion of the sewer to serve the business and flooded districts and the adjacent residence section. Since the trenching for the clay pipe sewers in this portion of the work exceeded the 8-foot average, the estimate given the council, after a full explanation of the matter, was $20000.00 actual cost with
possibly $1000.00 additional for court costs and legal expenses. The Committee from the council decided to undertake this much of the improvement.
Chapter III
LOCATION SURVEY

Establishing City Datum

As previously stated, Farmer City had no base of city levels; therefore, the first legal and engineering step toward the construction of the sewer was the establishing, by ordinance, of a city bench-mark. (See Ordinance No. 91, page 114 of Appendix.) A rust-proof pipe of brass was chosen as the bench, which was set in the walls of the City Building and referenced to a fixed point on a permanent stone window sill. The elevation of this bench-mark was computed from that of the Government monument described on page 10. To comply with legal forms and custom, the elevation of this city bench-mark was designated as zero. Nevertheless, throughout the work, since this plane was higher than some parts of the city, sea level elevations were used, so as to avoid positive and negative elevations.

To remove possible legal vulnerability, ORDINANCE No. 92, page 115 was passed, which created the office of public engineer and defined his duties. The engineer on sewer design was appointed to this office.

System of Lines and Levels

Since the lay-out of this part of the system which was to be immediately constructed had been fixed in the work attendant to the preliminary estimate, the matter now resolved itself into describing and measuring the sewer lines and obtaining the elevations at intervals of 100 feet, street intersections, etc., for the purpose of profiles. The same circular system of bench-marks
was used which is described on page 10. Other bench-marks were located in many places on permanent objects, so that anywhere along any sewer line a correct elevation could be determined by one set-up of the instrument. All distances were measured, but hubs were driven only at points of change in direction or at the intersection of sewer lines. Regular stations were temporarily marked by chaining pins to the top of which red flannel markers were tied. The levelman followed closely behind the tapemen. That portion of the line of the outlet sewer on private property (described by distances and angular deflections) was tied to the point of intersection of the south line of Clinton Avenue with the East Quarter Section Line of Section 28 and was referenced to the angular intersection of the sewer line with this quarter-section line. The southern boundary of this section, and consequently of the city limits, was not clearly defined. On determining this line, it was found that the outlet end of the sewer extended ten feet beyond the city limits. To simplify the situation from a legal point of view, the mouth of the sewer was shifted eastward and the line thereby shortened, so as to bring the entire improvement within the city limits.

Field Notes

Below is given a sample page from the field notes. From force of habit, and without extra effort, the rod readings were taken to the second place, but, in general, computations were made to the nearest tenth,
<table>
<thead>
<tr>
<th>Sta.</th>
<th>H.I.</th>
<th>Elev.</th>
<th>Remarks</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>0.14</td>
<td>726.09</td>
<td>Top of Hydrant, Water and John</td>
</tr>
<tr>
<td>0</td>
<td></td>
<td>723.42</td>
<td>= Sta. 16 + 54 John St. Line</td>
</tr>
<tr>
<td>+24.8</td>
<td></td>
<td></td>
<td>W. Property Line, John St.</td>
</tr>
<tr>
<td>1</td>
<td>4.95</td>
<td>721.23</td>
<td></td>
</tr>
<tr>
<td>2</td>
<td>6.28</td>
<td>719.95</td>
<td></td>
</tr>
<tr>
<td>Inst.</td>
<td>726.23</td>
<td></td>
<td></td>
</tr>
<tr>
<td>3</td>
<td>6.30</td>
<td>719.43</td>
<td>In flood times water said to stand 3' deep</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Troublesome Cellar of E. Williams, Floor at 716.5</td>
</tr>
<tr>
<td>+57.0</td>
<td></td>
<td></td>
<td>E. Property Line Washington Street</td>
</tr>
<tr>
<td>+82.5</td>
<td></td>
<td>6.47</td>
<td>C.L. Water &amp; Wash. = Sta. #0 Wash. Line</td>
</tr>
<tr>
<td>4+07.4</td>
<td></td>
<td></td>
<td>W. Prop. L. Wash. St.</td>
</tr>
</tbody>
</table>
Chapter IV
THE DESIGN

Controlling Factors

Previous to attempting the design of sewers for a city, a thorough personal knowledge of its physical conditions is indispensable. Primarily, the basis of design is the quantity of sewage, which for a combined system includes both house sewage and storm-water run-off. In small municipalities, for designing a double-purpose sewer, the relative amount of house sewage is so small that it may be considered negligible. The volume of storm water depends upon the rate of local rainfall for a limited period and the shape, area and nature of the ground contributing the flow.

As a means of obtaining the approximate quantities, the Burkle-Ziegler formula for storm-water run-off was used. In applying this formula to Farmer City, the following conditions were taken into consideration:

1.- The advantageous location of the town with reference to its ridges and the two streams, The Slough and Salt Fork, which provide means of caring for unusual and excessive storm-water flow without much danger of damage.

2.- There were large individual lawns, typical of country towns, and consequently proportionately small impervious roof surface and paved courts to rush the rainfall to the sewers.

3.- The soil is sandy and therefore retardant to run-off.

4.- Doubtless, for years, the streets would be only partially paved.
5. Seldom would the heaviest rainfall occur in winter when the ground was impervious with frost.

The Burkle-Ziegler formula is,

\[ Q = c r A^{\frac{2}{3}} S^{\frac{1}{3}} \]

for which these values, under the conditions, were chosen:

\( c \). The constant for street surfaces, was given a rating of 0.4 for the residence sections and 1.0 for the business districts.

\( r \). The average rate for the heaviest rainfall, was taken as 1 cubic foot per second per acre, which is practically equivalent to a rainfall of 1 inch per hour.

\( S \). The general slope of the ground in feet per 1000.

\( Q \). The cubic feet per second per acre reaching the sewer.

\( A \). The area in acres contributing the run-off.

The Solution

From a plat in the city hall and from field measurements, a map on tracing cloth was made, from which, by means of a 'van dyke', were produced working copies known as 'white prints'. This map was drawn to the scale of 1 inch to 200 feet; and on it at street intersections and other points of control were marked the ground elevations. Stream bottom is indicated by the elevations in brackets thus, (710.6). As the water mains had been placed on the sides of the streets, although no record had been kept of their exact locations, no special attention was given them. There were no gas mains or under ground conduits.

To minimize the excavation on the John Street line (and keeping within the conditions prescribed), so many laterals as
possible were led to the other main sewer planned to skirt the ridge and join the John Street main near its outlet into Salt Fork. By this means the size of John Street sewer could be kept to the minimum. The least depth for service laterals was fixed at 6 feet except where the center of the street, the sewer line, was considerably below the adjacent lawns. Temporarily all the sewer lines were drawn on the map in black pencil. On this same print was blocked out in red the drainage area contributory to each particular run-off inlet or inlets to the sewer. In general the following equation was used in computing drainage areas:

\[
A = \frac{L \times W}{10}
\]

in which \(A\) is the area in acres and \(L\) the length and \(W\) the width of a parallelogram equivalent to the area under consideration measured in chains (66 feet).

By means of a paper scale graduated in chains, these areas were quickly computed. They also were marked in red in their respective places on this map.

In the Table 5, Page 23, is shown the adopted method of design. The run-off is in cubic feet per second. The gradient is in feet per 100 feet. On account of the financial and other conditions imposed, as well as the steep natural slope of the ground surface, the laterals were sometimes given such a gradient as to bring them parallel with the ground surface even though there resulted a greater velocity of flow than was desirable. By this means the amount of excavation was diminished and the cost kept down. The minimum size of pipe was fixed as 8 inches in diameter.
### Table 5

**THE DESIGN AND DATA RELATIVE**

<table>
<thead>
<tr>
<th>Street</th>
<th>Dis.</th>
<th>Area</th>
<th>R.O.</th>
<th>Gra-</th>
<th>Size</th>
<th>Elevation</th>
</tr>
</thead>
<tbody>
<tr>
<td>On</td>
<td>From</td>
<td>To</td>
<td>Feet</td>
<td>Ac's</td>
<td>'sc</td>
<td>Pipe</td>
</tr>
<tr>
<td>Rich'n</td>
<td>Grove</td>
<td>0</td>
<td>0.0</td>
<td>0.0</td>
<td>1.4</td>
<td>8</td>
</tr>
<tr>
<td>Grove</td>
<td>State</td>
<td>250</td>
<td>2.0</td>
<td>0.7</td>
<td>&quot;</td>
<td>8</td>
</tr>
<tr>
<td>State</td>
<td>Center</td>
<td>330</td>
<td>3.0</td>
<td>1.6</td>
<td>0.30</td>
<td>8</td>
</tr>
<tr>
<td>Center</td>
<td>West</td>
<td>330</td>
<td>0</td>
<td>1.6</td>
<td>&quot;</td>
<td>10</td>
</tr>
<tr>
<td>West</td>
<td>Linc'n</td>
<td>330</td>
<td>2.0</td>
<td>2.0</td>
<td>0.25</td>
<td>10</td>
</tr>
<tr>
<td>Linc'n</td>
<td>Rich'n Allen</td>
<td>350</td>
<td>2.0</td>
<td>&quot;</td>
<td>12</td>
<td>721.1</td>
</tr>
</tbody>
</table>

1.-Junction with Division 2.

### Division 2

| Allen    | Grove | 0    | 0.0  | 0.0  | 1.0 | 8   | 727.4   | 722.42 |
| Grove    | State | 250  | 1.7  | 0.6  | "   | 8   | 725.1   | 719.92 |
| State    | Center| 330  | 2.8  | 1.4  | 0.6 | 10  | 723.6   | 717.94 |
| Center   | West | 330  | 0    | 1.4  | "   | 10  | 725.3   | 715.96 |
| West     | Linc'n | 330  | 5.0  | 3.4  | 1.4 | 10  | 721.1   | 711.34 |
| Linc'n   | Main | 620  | 3.4  | 0.25 | 15  | 718.5   | 709.74 |

1.-Junction with Division 1.
2.-Junction with Division 4.

### Division 3

| North    | Plum | 0    | 0.0  | 0.5  | 8   | 732.6   | 726.78 |
| Plum     | Will'm | 250  | 1.7  | 0.4  | "   | 8   | 731.7   | 725.53 |
| Will'm   | Main  | 330  | 2.0  | 1.0  | "   | 8   | 729.9   | 723.38 |
| Main     | East  | 330  | 2.0  | 1.6  | "   | 10  | 728.4   | 722.23 |
| East     | North VanB'n | 360  | 4.0  | 2.3  | "   | 12  | 726.5   | 718.93 |
| VanB'n   | Jak'sn| 330  | 1.2  | 3.0  | "   | 12  | 722.4   | 717.28 |
Table 5

THE DESIGN AND DATA RELATIVE

<table>
<thead>
<tr>
<th>Street</th>
<th>Dis.</th>
<th>Area R.O.</th>
<th>Gra-</th>
<th>Size</th>
<th>Elevation</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>From</td>
<td>To</td>
<td>Feet</td>
<td>Ac's</td>
<td>'/sc dnt'</td>
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**Division 3 (Cont'd.)**

<table>
<thead>
<tr>
<th>Street</th>
<th>Dis.</th>
<th>Area R.O.</th>
<th>Gra-</th>
<th>Size</th>
<th>Elevation</th>
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</thead>
<tbody>
<tr>
<td>Jak'sn</td>
<td>Monroe</td>
<td>330</td>
<td>0.0</td>
<td>3.0</td>
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</tr>
<tr>
<td>Monroe</td>
<td>Mad'sn</td>
<td>400</td>
<td>0.0</td>
<td>3.0</td>
<td>&quot;</td>
</tr>
<tr>
<td>Mad'sn</td>
<td>Alley</td>
<td>Main</td>
<td>180</td>
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<td>&quot;</td>
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</table>

1.-Junction with Division 4.

**Division 4**

<table>
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<tr>
<th>Street</th>
<th>Dis.</th>
<th>Area R.O.</th>
<th>Gra-</th>
<th>Size</th>
<th>Elevation</th>
</tr>
</thead>
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<td>0.0</td>
<td>0.0</td>
<td>0.8</td>
</tr>
<tr>
<td>Monroe</td>
<td>Mads'n</td>
<td>250</td>
<td>2.5</td>
<td>3.8</td>
<td>&quot;</td>
</tr>
<tr>
<td>Mads'n</td>
<td>Dodge</td>
<td>330</td>
<td>0.0</td>
<td>3.8</td>
<td>0.5</td>
</tr>
<tr>
<td>Dodge</td>
<td>Rich'n</td>
<td>340</td>
<td>0.0</td>
<td>3.8</td>
<td>0.2</td>
</tr>
<tr>
<td>Rich'n</td>
<td>Allen</td>
<td>330</td>
<td>1.0</td>
<td>7.2</td>
<td>&quot;</td>
</tr>
<tr>
<td>Allen</td>
<td>High</td>
<td>330</td>
<td>7.2</td>
<td>&quot;</td>
<td>21</td>
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1.-Junction with Division 3.
2.-Junction with Division 2.
3.-Junction with division 5.

**Division 5**

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<th>Dis.</th>
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<th>Gra-</th>
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<th>Elevation</th>
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</thead>
<tbody>
<tr>
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<td>0.0</td>
<td>0.0</td>
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<td>SE.Sq.</td>
<td>N.Sq.</td>
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</tr>
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<tr>
<td>High</td>
<td>Main</td>
<td>Will'm</td>
<td>330</td>
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<td>8.5</td>
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1.-Junction with Division 4.
2.-Junction with Division 6.

**Division 6**

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<thead>
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<th>Street</th>
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<th>Area R.O.</th>
<th>Gra-</th>
<th>Size</th>
<th>Elevation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Will'm</td>
<td>Jack'n</td>
<td>0</td>
<td>0.0</td>
<td>0.0</td>
<td>0.7</td>
</tr>
<tr>
<td>Jack'n</td>
<td>Monroe</td>
<td>240</td>
<td>3.6</td>
<td>0.7</td>
<td>&quot;</td>
</tr>
<tr>
<td>Monroe</td>
<td>Mad'sn</td>
<td>330</td>
<td>2.4</td>
<td>1.2</td>
<td>&quot;</td>
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</table>
Table 5

THE DESIGN AND DATA RELATIVE

<table>
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<th>Street</th>
<th>Dis.</th>
<th>Area</th>
<th>R.O.</th>
<th>Gra-</th>
<th>Size</th>
<th>Elevation</th>
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<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Feet</td>
<td>Ac's</td>
<td>'/sc</td>
</tr>
<tr>
<td>On</td>
<td>From</td>
<td>To</td>
<td></td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>Division 6 (Cont'd.)</td>
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<td>2.0</td>
<td>0.5</td>
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</tr>
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<td>12</td>
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<tr>
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<td>12</td>
</tr>
<tr>
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<td>Will'm Plum</td>
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<td>716.1</td>
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1.-Junction with Division 5.
2.-Junction with Division 7.

Division 7

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<th>0.0</th>
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<th>8</th>
<th>730.5</th>
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<tbody>
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<td>8</td>
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<td>330</td>
<td>1.6</td>
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<td>&quot;</td>
<td>8</td>
<td>729.8</td>
<td>720.08</td>
</tr>
<tr>
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<td>330</td>
<td>1.2</td>
<td>1.9</td>
<td>&quot;</td>
<td>10</td>
<td>724.0</td>
<td>717.77</td>
</tr>
<tr>
<td>Mad's'n</td>
<td>Dodge</td>
<td>330</td>
<td>2.6</td>
<td>2.5</td>
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<td>2.9</td>
<td>&quot;</td>
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<td>721.7</td>
<td>713.08</td>
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</tr>
<tr>
<td>Rich'n Allen</td>
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<td>Plum</td>
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<td>714.9</td>
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1.-Junction with Division 6.
2.-Junction with Division 9.

Division 8

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<td>&quot;</td>
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## Table 5

THE DESIGN AND DATA RELATIVE

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<th>Street</th>
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<th>Size</th>
<th>Elevation</th>
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<th>A's</th>
<th>1/scr</th>
<th>d'nt</th>
<th>Pipe</th>
<th>Ground Grade</th>
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3.-Junction with Divisions 7 and 10.
4.-Junction with Divisions 11 and 12.
5.-Junction with Divisions 13 and 14.
6.-Junction with Divisions 15 and 17.
7.-Junction with Divisions 21 and 22.
8.-Junction with Division 33.
Table 5
THE DESIGN AND DATA RELATIVE

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2.-Junction with Division 9.

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### Table 5
THE DESIGN AND DATA RELATIVE

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<th>Elevation</th>
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#### Division 26

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<th>/sc</th>
<th>d'nt</th>
<th>Pipe</th>
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1.-Junction with Divisions 25 & 27.

#### Division 27

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<th>/sc</th>
<th>d'nt</th>
<th>Pipe</th>
<th>Ground Grade</th>
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2.-Junction with Division 30.

#### Division 28

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1.-Junction with Division 29.

#### Division 29

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<th>/sc</th>
<th>d'nt</th>
<th>Pipe</th>
<th>Ground Grade</th>
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1.-Junction with Division 28.
2.-Junction with Division 30.
Table 5
THE DESIGN AND DATA RELATIVE

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<th>Elevation</th>
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1.-Junction with Division 29.
2.-Junction with Division 27.
3.-Junction with Division 31.

Division 31

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1.-Junction with Division 30.
2.-Junction with Division 32.

Division 32

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<tr>
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<td>R.O.</td>
<td>Gra-</td>
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<td>Ac's</td>
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<td>13.1</td>
<td>&quot;</td>
<td>24</td>
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1.-Junction with Division 31 which diagonally skirts hill so as to keep buried.  
2.-Junction with Division 33.  
3.-Junction with Division 34.  
4.-Junction with Division 35.  

<table>
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<td>Water Diag'l</td>
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1.-Junction with Division 32.  

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<td>Main Alley</td>
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<tr>
<td>Alley Diag'l</td>
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1.-Junction with Division 32.  

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<td>Main</td>
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<tr>
<td>Olive Diag'l</td>
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1.-Junction with Division 32.
Chapter V

PLANS, SPECIFICATIONS, ESTIMATE, LEGAL TEST, ETC.

The Plans

The Committee from the council, now legally formed into the Board of Local Improvements, having determined to proceed with a portion of the improvement, asked for a detailed estimate covering those sections listed in Table 5 as Divisions 9, 11, 13, 15, 16, 18, 20, and 21 and that part of 17 on Water between John and Washington Streets. Vitrified clay pipe was chosen for the smaller sewers. For the 33-inch main it was decided to use concrete, not only because of its inexpensiveness due in part to the local deposits of gravel, but also on account of the great strength necessary at the maximum depth of cut of twenty-six feet. Since reinforced pipe, ready made and cured, were not yet well established, a monolithic pipe (not reinforced and to be built in place) was designed with a 5-inch thickness of shell. At the request of the Board of Local Improvements the thickness was increased to 6 inches, and the design shown in Fig. 1, page 35, was adopted. For greater strength and for fairness to contractors, the under half of the pipe was given a contour varying from a true cylinder and more in accordance with the shape which the exigencies of construction would necessitate. A perfect 5-foot length of this pipe would demand 26.4 cubic feet of concrete. In the estimate it was considered that 1 cubic yard would be required.

Had the entire system been constructed at this one time or even had the streets been paved, it would have been very
Figure 1 - Cross-section of concrete sewer as designed.

Figure 2 - Cross-section of concrete sewer as usually and carelessly built.
economical to have built all manholes, catch basins and inlets of concrete. Under the existing conditions brick was chosen, so that changes could be easily made. To provide ample working room, the manholes were made four feet in diameter. As it happened, this was of advantage during construction, since barely sufficient space was thus secured at the manhole to allow the removal of 5-foot semi-circular sections of steel forms. Two general types of manholes were adopted. Fig. 3, page 37 represents manholes 11 feet deep and less. In Fig. 4, page 37, is shown the design for manholes deeper than 11 feet. The catch basin chosen is illustrated in Fig. 6. On account of the streets being unpaved, an inexpensive 15-inch pipe inlet was installed in accordance with Fig. 5, page 38.

At the outlet end of the 33-inch main in Salt Fork and also at the upper end at The Slough, two concrete retaining walls were built in accordance with ORDINANCE No. 95, page 146. Subsequently the design of the latter was changed into an abutment for a concrete bridge over that small stream. Since this end of the sewer is entirely below the bed of the stream, it is housed in with a grated catch basin with its top at stream-bed level. Within the catch basin is a sluice gate, operated from the top of the retaining wall, which regulates the amount of stream-water taken into the sewer.

The profiles were platted similar to Fig. 7, page 39. The grade line shown is the elevation to which the inside bottom of the sewer was laid. The stations are in 100-foot lengths and "pluses". As a check for the instrument man during the progress of construction, as well as to provide against loss of field
FIGURE 5 -
INEXPENSIVE SEWERPIPE INLET ADAPTABLE
TO UNPAVED STREETS

FIGURE 6 - BRICK
CATCH-BASIN
books, both ground and grade elevations were given as well as cut. Sewer lines, together with change of direction, were indicated on the street plan below the profile.

The sewers and all appurtenances are fully described in Ordinance 95, page 146 of Appendix. Likewise they are covered in the specifications beginning on page 44.

The Estimate

To comply with legal custom, to be similar to estimates which had passed courts, a final estimate was prepared, certified and submitted to the Board of Local Improvements. This estimate was incorporated in the resolution (page 131) which the Board adopted creating a sewer district. In this estimate, to conform with legal advise, materials and excavation were separately itemized. The main sewer is listed in its original length, 40 feet longer than actually constructed. Trenching below the 20-foot level was estimated at $0.60 per cubic yard. Likewise there was sent out a LOCAL IMPROVEMENT NOTICE -- PUBLIC HEARING (page 125) which fully described the contemplated improvement.

Table 6

FINAL ESTIMATE-JOHN STREET SEWER DISTRICT

<table>
<thead>
<tr>
<th>Item</th>
<th>Quantity</th>
<th>Description</th>
<th>Rate</th>
<th>Amount</th>
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<td>2992 &quot; 8 &quot; Vitrified clay</td>
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<td>$0.60</td>
<td></td>
<td>2250.00</td>
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<tr>
<td>Sheathing and shoring</td>
<td></td>
<td></td>
<td></td>
<td>1000.00</td>
</tr>
<tr>
<td>Pumping water from trenches</td>
<td></td>
<td></td>
<td></td>
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<td>32 manholes complete</td>
<td></td>
<td>$48.00</td>
<td></td>
<td>1536.00</td>
</tr>
<tr>
<td>33 catch-basins complete</td>
<td></td>
<td>$30.00</td>
<td></td>
<td>990.00</td>
</tr>
<tr>
<td>16 inlets complete</td>
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<td></td>
<td></td>
<td></td>
<td>$19327.00</td>
</tr>
</tbody>
</table>

The Estimate:

To comply with legal custom, to be similar to estimates which had passed courts, a final estimate was prepared, certified and submitted to the Board of Local Improvements. This estimate was incorporated in the resolution (page 131) which the Board adopted creating a sewer district. In this estimate, to conform with legal advise, materials and excavation were separately itemized. The main sewer is listed in its original length, 40 feet longer than actually constructed. Trenching below the 20-foot level was estimated at $0.60 per cubic yard. Likewise there was sent out a LOCAL IMPROVEMENT NOTICE -- PUBLIC HEARING (page 125) which fully described the contemplated improvement.
Summary of Legal Proceedings

The legal steps incident to the improvement, in full on pages 133 to 201, may be briefly summarized thus:-

1. - Resolution of Board of Local Improvements.
2. - Certificate of mailing notices of public hearing by clerk of board.
3. - Resolution of Board to adhere to resolution.
4. - Ordinance for improvement.
5. - Recommendation of ordinance by Board.
6. - Passing of ordinance by Council.
7. - Petition to County Court praying steps be taken to ascertain compensation for private property taken or damaged, etc.
8. - Order of Court appointing Commissioners to estimate damage, etc.
9. - Commissioners' report to Court on benefits and damages.
10. - Affidavit of ownership of property assessed.
11. - Publication to be made by County Clerk.
12. - Mailing notices to non-residents with addresses known.
13. - Mailing notices to residents.
14. - Trial in court on damage to property taken or damaged and assessed benefits.
15. - Order of Court as to time for filing objections.
16. - Bond to indemnify owner of property taken or damaged.
pending appeal.

17. - Order of Court permitting City to enter land taken.
18. - Hearing objections by Court.
19. - Specifications and form of contract.
20. - Affidavit of posting of notices of letting of sewer contract.
21. - Resolution of Board of Local Improvements designating paper in which to publish notice and advertisement of letting of contract.
22. - Certificate of cost of improvement.
23. - Petition to approve certificate.
24. - Certificate of date of paying first voucher.
25. - Notification of Court of completion and acceptance of improvement.

Test in Courts

At the Public Hearing it developed that a large majority of the property owners within the proposed John Street Sewer District were opposed to the improvement. Nevertheless the Board of Local Improvements had an ordinance prepared for the proposed work (Ordinance 95, page 146), and presented the same to the council. This ordinance was passed.

Immediately record of the proceedings of the Board was filed in the County Court of DeWitt County and the Court was petitioned that ascertainment be made of the benefits and damages accruing from the improvement. (See pages 157 to 164) The Court appointed Commissioners for this purpose (page 164) with instructions that they report their acts. For this re-
port a Special Assessment roll was made covering the items listed on page 165.

In the matter of damage for private property entered upon for the construction of the outlet sewer, the Commissioners' Appraisement of $300.00 (for the temporary use of 1 acre, the removal of a small building and a few rods and fence, and the owner's inconvenience) was sustained by the County Court. Previous to the appointment of commissioners, the Board of Local Improvements had offered $500.00 for the same privileges, but the owner had demanded $1500.00. The Commissioners also assessed a benefit of $290.00 against the same property. Pending the appeal to the State Supreme Court, the City was permitted to enter upon the property by filing of indemnity bond, page 185.

In the Supreme Court, the decision of the lower court was upheld.

On the day set by the County Court for the hearing of the objections, the many objectors, thoroughly organized, attacked the ordinance, the fairness of the assessment roll, and the plans and specifications. A slight error in addition was found in the engineer's estimate. The principal point of attack was the physical impossibility (so claimed) of bringing the sewer from the private property up the alley and into John Street in accordance with the description in the ordinance. The objectors' contention was based on a plat on file in the County Recorder's office, which showed the eastern boundary line of the alley on a line with the western boundary line of John Street. The map was proven incorrect. During the trial the objectors fail-
ed to note, or at least failed to bring out, an error in the location of the upper end of the Market Street sewer terminating on Main Street. This point should have been fixed as 19 feet north of the north line of Water Street instead of south of the south line of that thoroughfare. With slight modifications, the report and the assessment roll of the Commissioners was approved by the Court. The decision of the County Court was sustained by the State Supreme Court.

The Specifications, etc.

The specifications were printed in catalogue form with pages 4 by 6½ inches. The caption on the cover page was:

Board of Local Improvements
Farmer City, Illinois
Specifications and Contract
For
COMBINED SEWER SYSTEM

Page 1

SPECIFICATIONS FOR THE COMBINED SEWER
OF FARMER CITY, ILLINOIS
Provided For By Ordinance No. 95 together with
INSTRUCTIONS TO BIDDERS AND FORMS OF PROPOSAL, CONTRACT & BOND

Wm. Walter Smith, Engineer

THE WORK TO BE DONE

The work to be done is to furnish all tools, materials and labor necessary or required, and to perform, in accordance with the terms and specifications of this contract, the following work, viz: To make all necessary excavations and to put
in place all piling, shoring and bracing of whatever nature essential to execute and to protect the work; to put in place all piling, timber or concrete foundations; to construct all classes of brick or concrete masonry: to construct all pipe and concrete sewers with laterals, manholes, catch-basins, inlets, retaining walls and all appurtenances thereto; to do all back-filling of excavations; to remove, after completion of the sewers, all shoring and bracing not necessary to support the sides of the excavation; to haul away all surplus earth and materials; to restore the surface of all streets, alleys and places to as good a condition as they were prior to excavation; and for a period of six (6) months after the completion of this contract to refill any settlements which may occur, and constantly, for said period, to maintain the refilled trench in a neat and safe condition, and to deliver it over in that condition at the end of that time.

APPROXIMATE QUANTITIES

1.-Vitrified Sewer Pipe, 8 inches in diameter, lineal feet 2992.

2.-Vitrified Sewer Pipe, 10 inches in diameter, lineal feet 2008.

3.-Vitrified Sewer Pipe, 12 inches in diameter, lineal feet 1830.

4.-Vitrified Sewer Pipe, 15 inches in diameter, lineal feet 794.

5.-Vitrified Sewer Pipe, 18 inches in diameter, lineal feet 384.

6.-Concrete Sewer, 33 inches in diameter, lineal feet 2594.
7.-Junctions.

(a) Six-inch Y Junctions on eight-inch pipe, number 62.
(b) Six-inch Y Junctions on ten-inch pipe, number 90.
(c) Six-inch Y Junctions on twelve-inch pipe, number 56.
(d) Six-inch Y Junctions on fifteen-inch pipe, number 16.
(e) Six-inch Y Junctions on eighteen-inch pipe, number 9.
(f) Six-inch Y Junctions on thirty-three-inch concrete pipe, number 16.

8.-Inlets, number 16.

9.-Catch-basins, number 35

10.-Inlet and Catch basin Covers, number 49.

11.-Manholes, number 32.

12.-Manhole Frame and Cover, number 32.

13.-Retaining walls, number 2.

14.-Sluice Gates, number 1.

EXCAVATION

All excavation shall be measured in place and shall be estimated by the cubic yard.

All excavation shall be made in open cut from the surface except where tunneling is expressly permitted or directed by the Board of Local Improvements.

Whenever practicable, the excavation for the invert of the sewer shall be made to conform to the shape of the sewer; otherwise in each case, it shall be done according to such directions as may be given by the Board of Local Improvements.

Whenever, in the opinion of the Board of Local Improvements, the earth foundation is not sufficiently solid or compact, the Contractor shall excavate the trench to such increased depth
as may be ordered; he shall then bring the work up to the required elevation and form by means of timber, concrete or masonry, or any combination of these as the Board of Local Improvements may direct. The price paid for such work shall be ten per cent. in excess of the actual cost of the necessary supervision, labor and materials.

The sides of the trenches where necessary, shall be supported by suitable bracing and shoring, furnished by the Contractor at his own expense, which shall be withdrawn from the trenches as the back-filling progresses. The Contractor will not be paid for such bracing or shoring unless such be left in the trenches by the written order of the Board of Local Improvements; and the price paid therefor shall be that of the current market.

The bottom of the trenches shall be brought true to grade before the pipe is laid and joined therein. Trenches excavated slightly below the required depth by careless or incompetent workmen, shall be filled by the Contractor with fine dry earth thoroughly rammed; trenches excavated considerably below the required depth shall be filled to grade by the Contractor at his own expense in such manner as the Board of Local Improvements may decide.

The Contractor shall, at his own expense, keep the trenches free from water during the progress of the work.

In no case, except by special permission of the Board of Local Improvements, shall water be allowed to run over the invert or foundation, or through the sewer until the cement is satisfactorily hardened.
Excavated material must be so placed, and trenches so bridged as to interfere as slightly as possible with travel on the street or to incommode occupants of adjoining property. When bad or treacherous ground is encountered, the work shall be pushed with the utmost vigor, and shall be continued day and night, should the Board of Local Improvements so direct. The Engineer shall have the right to limit the amount of trench which shall be opened or partly opened at any one time in advance of the completed sewer, and also the amount of trench left unfilled.

BACK-FILLING

Back-filling shall follow directly after the construction of the sewer. The filling of earth around the sewer and above it to the depth of one foot shall be made with the best of the excavated material free from stone, and be done with the utmost care, so as not to disturb the newly built work, and tamped to obtain compactness and solidity. In completing the refilling the earth shall be thoroughly compacted by tamping or water-flushing.

SURPLUS EARTH

All surplus earth not on private right of way shall be hauled to such city property, if in a distance of 2000 feet from where it is excavated, as the Board of Local Improvements may designate; but if no place be designated, the Contractor shall dispose of such surplus earth at his own risk and expense. No surplus earth shall be deposited on private property, if, within the distance specified, it can be used on streets, alleys, or public places. If no such use can be found for surplus
earth, it may, with the consent of the Board of Local Improve-
ments, be deposited on private property.

**PROTECTION OF UNDERGROUND PIPES AND CONDUITS**

The Contractor shall provide at his own cost and expense for an uninterrupted flow in all water pipes, water courses, sewers and drains encountered during the progress of the work; and, upon the completion of the same, he shall leave them in as good condition as he found them. Should it be necessary to move any water pipe, this shall be done in accordance with the instructions of the Board of Local Improvements; and the Con-
tractor shall be allowed for materials furnished and made part of the permanent construction, so far as it may be additional to that indicated upon the plans, and for labor performed on such additional construction, but all other work shall be done at his own expense.

All fire hydrants shall be left uncovered and accessible.

**IRON WORK**

All iron required in this work shall be of the best quality and before used shall be covered with two coats of coal tar pitch or asphaltum paint. All castings shall be of good gray iron unwarped, of required dimensions, and free from scale, sand holes and slag.

**CEMENT**

All cement for the work herein specified shall be of the best quality of Portland cement, dry and free from lumps. The cement shall be put up in strong, sound barrels well lined with paper, or in cloth sacks, and each barrel or sack shall be plain-
ly labeled with the brand of the cement and the name of the manu-
facturer. The Contractor shall keep sufficient cement on hand that ample time may be allowed for the tests and inspection. All cement, on the work or otherwise, must be so stored as to protect it from moisture. No cement shall be used unless the barrel or sack bear the Engineer's stamp of acceptance. In cases of emergency the Engineer may permit a cement of a standard brand to be used after satisfactorily passing the seven (7) day requirements.

All tests of cement shall be made in accordance with the methods proposed by the Committee on Uniform Tests of Cement of the American Society of Civil Engineers, presented to the Society January 21, 1903, and amended January 20, 1904.

Cement proposed to be used in the work shall be subject to the following tests for fineness, time of setting and tensile strength:

1.-Fineness-The cement shall leave a residue of not more than 8 per cent. by weight on a No. 100, or more than 25 per cent. by weight on a No. 200 sieve.

2.-Soundness-Pats of neat cement, stored either in air or water, shall not, within twenty-eight (28) days, show cracks or distortion.

3.-Time of Setting-The cement shall develop initial set in not less than thirty (30) minutes, and shall develop hard set in not less than one (1) hour or more than ten (10) hours.

4.-Tensile Strength-Briquettes made of neat cement, after being kept in air for twenty-four (24) hours, and the remainder of the time in water, shall develop tensile strength per square inch as follows:
After one (1) day, one hundred and sixty (160) pounds.
After seven (7) days, five hundred (500) pounds.
Briquettes made of one part cement and three parts clean sand by weight, shall develop tensile strength per square inch as follows:
After seven (7) days, one hundred and seventy-five (175) pounds.
After twenty-eight (28) days, two hundred and fifty (250) pounds.

WATER
Sufficient water for operating excavating machinery and for mixing mortar and concrete will be furnished at the fire hydrants by the city free of charge to the Contractor, but the Contractor must provide, at his own expense, means of conveying the water to points along the work. If the Contractor unnecessarily wastes water, the City shall attach a meter and shall charge the Contractor fifteen (15) cents per one thousand (1000) gallons for all water used.

SAND
The sand for use in the work herein specified shall be clean, sharp, coarse and free from loam and dirt; and all sticks and gravel shall be removed by screening. Any sand, which in the opinion of the Board of Local Improvements is unfit for use, will be rejected.

GRAVEL
Where required, clean, coarse bank-run gravel shall be used, and the same shall be of a fineness such as to pass a one-inch screen and such that not more than fifty (50) per cent. or less than thirty (30) per cent. will pass a one-quarter-inch
MORTAR

Cement mortar required in this work for brick masonry and for retaining walls shall be composed of one (1) part Portland cement and two (2) parts sand. All other cement mortars required in this work shall be one (1) part Portland cement and one (1) part sand.

CONCRETE

The concrete used in the construction of all sewers and all appurtenances shall be composed of one (1) part cement and five (5) parts gravel, both of the kind and quality hereinbefore specified.

All ingredients for mortar or concrete shall be proportioned and measured by means of a suitable box which shall be filled with the ingredient and struck with a straight edge. No shaking or packing will be allowed.

All mixing shall be done to the satisfaction of the Engineer and on platforms or beds prepared for that purpose or with suitable concrete mixer. Concrete shall be lowered into trenches in a manner to prevent the separation of the ingredients; and it shall be deposited in layers not exceeding nine (9) inches in thickness and shall be tamped to the satisfaction of the Engineer.

All mortar and concrete shall be made fresh for the work in hand and in quantities not larger than required for immediate use. Any mortar or concrete which may have been standing more than one-half (½) hour, or in which the initial set has begun, shall not be retempered or used in any way.
CONCRETE SEWER

The concrete sewer necessary to this work shall be monolithic in construction and shall be made from concrete of the quality hereinabove specified. The internal form of the sewer shall be a circle of thirty-three (33) inches clear diameter. The thickness of the wall of the said pipe shall be six (6) inches except as otherwise indicated on the plans.

CENTERING FOR CONCRETE SEWER

The Contractor shall use either wood or steel centers in constructing the concrete sewer required in this work. The centers shall be so placed and fixed in position that the invert of the finished sewer will conform to line and grade. All centering, at any and all times, shall be subject to the Engineer's approval and no center shall ever be struck out its position without his permission.

WOOD CENTERS

If the Contractor prefer well braced wood centers, he shall use in their construction Number One (1) matched and planed white pine of two (2) inch lag. Each time before being used the centers shall receive one coat of best lard oil, and after each using the said centers shall be scraped clean.

STEEL CENTERS

If the Contractor prefer steel centers, the same must be so designed that the concrete sewer will be monolithic in construction. The centering shall be cleaned after each using and shall receive one coat of best lard oil as often as the Engineer may deem necessary.
RETAINING WALLS

There will be required two (2) retaining walls of concrete of the kind and quality hereinbefore specified. The dimensions are as indicated on the plans.

Beginning one (1) foot below the ground surface, all faces to be exposed shall be faced (not plastered) with one-half \(\frac{1}{2}\) inch of mortar of the kind and quality hereinbefore specified.

VITRIFIED SEWER PIPE

All pipe and specials, unless otherwise specified, shall be of the best quality of hard-burned, salt glazed, vitrified clay pipe of the hub-and-spigot pattern. The dimensions of pipe shall not be less than given in the following table.

<table>
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<th>Size Of Pipe</th>
<th>Depth Of Sockets</th>
<th>Thickness</th>
<th>Annular Space</th>
<th>Annular Length</th>
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<td>6 inch</td>
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</tr>
<tr>
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<td>1(\frac{13}{16}) inch</td>
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<td>10 inch</td>
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<td>12 inch</td>
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<td>(\frac{1}{4}) inch</td>
<td>(\frac{1}{2}) inch</td>
<td>24 inch</td>
</tr>
</tbody>
</table>

Each length shall be straight or evenly curved as required and, when sounded, shall give a clear metallic ring.

No pipe designed to be straight shall vary in straightness more than one eighth (1/8) inch per foot of length, and in internal diameter no pipe shall vary more than one half (\(\frac{1}{2}\)) inch. Pipe shall be free from cracks, breaks, blisters, fire-checks, and all other imperfections.

PIPE SEWERS

Before being lowered into the trench, pipes shall be fitted together in the order in which they are to be used and so as to form a true and smooth line on the lower part of the
pipes when they are laid, and when fitted they shall be so marked with chalk or paint that they may be readily refitted in the trench without disturbing the pipe just previously laid.

Each pipe shall be laid on a firm bed and in perfect conformity with the lines and levels given. All pipes shall be laid with an even bearing on the bottom of the trench, which shall be shaped to conform as nearly as practicable to the form of the pipe. Pits shall be cut in the bottom of the trench of sufficient dimension only to give perfect clearance to the bell of the pipe, and the same shall be carefully and compactly filled as soon as the cementing of each joint is completed.

The pipe joints shall be entirely filled with compacted mortar of the kind and quality hereinbefore specified. Sufficient mortar shall be added to make the joints water-tight. Should it be necessary, on account of flowing water in the trenches, a small gasket of oakum or hemp shall be calked into each joint before the cementing of the same, but the Contractor shall receive no extra compensation for the gasket. All surplus mortar, as well as any other superfluous material, shall be removed from the inside of the pipes before it has time to harden, and the sewer shall be left perfectly clean throughout its entire length.

HOUSE CONNECTIONS

House-connection branches shall be placed for each lot along the line of sewer and such opening shall be closed with a vitrified clay stopper or plug, but the same shall not be cemented in the opening. House-connections along vitrified clay pipe sewers shall be made with six-inch Y branches. No house-connection shall be covered until its exact location, referred to the
man-hole next below, shall have been noted and recorded by the Engineer.

**BRICK**

All brick shall be standard hard-burned sewer brick of uniform size and free from lime and other impurities. They shall have straight edges and square angles, and, when sounded, shall give a clear metallic ring. A limited number of square fragments of brick, not smaller than one-half brick, may be used in outer rings.

**BRICK MASONRY**

All brick masonry shall be made of brick and mortar of the kind and quality hereinbefore specified, and laid in a careful and workmanlike manner. Each brick shall be clean and thoroughly wetted before being laid, and shall be laid with a full, close joint of mortar on its bed, ends and side at one operation. In no case is mortar to be slushed in afterwards. No joint shall exceed one-half \( \frac{1}{2} \) inch in thickness.

**MAN-HOLES**

Man-holes of various kinds--line, intersection and drop--shall be built where shown in the plans or where the Engineer may direct. They shall be circular in section and four (4) feet in internal diameter. The walls, substantially nine (9) inches thick, shall be of brick laid in mortar and the exterior shall be plastered with mortar three-eighths (3/8) inch thick.

The foundation for each man-hole shall be of concrete, eight (8) inches in thickness at the center line of the sewer. The inside bottom of each man-hole shall contain inverts or be grooved.
with channels of depth equal to one-half the diameter of the sewer. From the side top edges of the invert, the inside bottom of the man-hole shall have a rise toward the walls of the man-hole of one (1) inch vertical to one (1) foot horizontal, and this inside bottom shall be built of concrete.

Beginning on the concrete foundation the brick shall be laid three (3) courses of stretchers to one (1) of headers. As the laying progresses wrought iron steps, as shown in the plans, shall be imbedded in the masonry and the outside wall shall be plastered.

From a point four (4) feet below its top, each man-hole which is eleven (11) feet deep or less, shall be corbeled to an internal diameter of two (2) feet at the top. From a point five (5) feet above the inside bottom, each man-hole over eleven (11) feet deep shall be corbeled to an internal diameter of two (2) feet at the top.

The Contractor shall furnish and set in place on all man-hole cast-iron frames and covers of the form and dimensions shown on plans and of the kind and quality hereinabove specified for iron work. All covers, except three (3) solid ones, shall be the type known as perforated and shall have dust or gravel pans.

CATCH BASINS

Catch basins shall be built where shown on the plans or where the Engineer may direct. Each catch basin shall be circular in section, four (4) feet in internal diameter and six (6) feet deep. At a point two (2) feet above the finished bottom, each catch basin shall be corbeled to an internal diameter of two (2)
feet at the top. The walls and foundation shall be constructed as for man-holes with the exception that the mortar plastering shall be on the inside walls.

Each catch-basin shall be fitted with a cast-iron rim and cover of the dimensions shown in the plans and of the quality hereinabove specified for iron work.

INLETS

Inlets shall be built where shown on the plans, or where the Engineer may direct. Each inlet shall consist of one two-foot length of fifteen (15) inch vitrified sewer pipe, the bell of which shall be at the gutter level and the spigot end shall rest upon and be firmly joined to a concrete foundation four (4) inches in thickness. Each inlet shall be connected in a straight line to the nearest catch-basin by means of a vitrified sewer pipe of the size shown in the plans. The connection at the inlet shall be through the side, flush with the inside and at the bottom of the inlet well, and the said connections shall be made watertight by means of mortar and concrete. The inlet shall be fitted with a cast-iron rim and cover of the kind, quality and description as that hereinabove specified for catch basins.

The rim shall rest upon and be firmly fixed to a two-course section of brick pavement, with mortar joints, extending to the outside edge of the said rim. All material for inlets shall be of the kind and quality hereinabove specified for like material.

TIME OF COMMENCEMENT AND COMPLETION

The party of the second part agrees to begin the work herein contracted for within two (2) weeks of the awarding of the contract and to complete fully the work herein specified on
or before the......day after the awarding of the contract, but the party of the first part may extend the time of completion should they deem it for the best interest of the city. For each day after the time specified that the contract remains incomplete, twenty-five (25) dollars will be deducted from the amount due the Contractor, and it is hereby expressly understood that the said sum shall be deemed and taken in all courts to be the liquidated damages for the non-performance of the work in the manner aforesaid and not in the nature of a penalty.

UNNECESSARY DELAYS

In the case of any unnecessary delay, in the opinion of the Engineer, he shall notify the Contractor in writing to that effect. If the Contractor should not, within five (5) days thereafter, take such measures as will, in the judgment of the Engineer, insure the satisfactory completion of the work, the Engineer may then, under the authority of the City, notify the aforesaid Contractor to discontinue all work under this contract, and it is hereby agreed that the Contractor is to respect said notice immediately and to stop work and to cease to have any rights to possession of the ground. The Engineer shall thereupon have power to place such and so many persons as he may deem advisable, by contract or otherwise, to work at and to complete the work herein described, and to use such materials as he shall find upon the line of said work, or to procure other materials for the completion of the same, and to charge the expense of said labor and materials to the aforesaid Contractor, and the expenses so charged shall be deducted and paid by the party of the first part out of such money as may be then due, or at any time there-
after become due, to said Contractor under and by virtue of this agreement, or any part thereof; and in case such expense is less than the sum which would have been payable under this contract if the same had been completed by the party of the second part, the said party of the second part shall be entitled to receive the difference, and in case such expenses is greater, the party of the second part shall pay the amount of such excess so due.

**FINAL INSPECTION**

Upon notification by the Contractor of the completion of the work herein specified, the Board of Local Improvements and the Engineer will carefully inspect all sewers, appurtenances and all other work done by the Contractor. In each stretch of pipe intended to be straight, light shall be visible from one man-hole to the next. Any broken or cracked pipe will be replaced by sound ones. Any deposits found in the sewers, protruding cement or packing, shall be removed and the sewer-bore left clean and free through its entire length. There shall be no appreciable amount of leakage into any stretch of sewer. All man-holes and other appurtenances shall be of the specified size and form and of neat appearance. In general, the work shall comply with these specifications; and, if found not to do so in any respect shall be brought to the proper condition by cleaning, pointing, or, if necessary, by excavating and rebuilding, all at the expense of the Contractor. But if it be found after uncovering any pipe or other work, at the order of the Board of Local Improvements, that no defect exists or that the defect was not due to any fault of the Contractor, then the expense of this shall be borne by the City.
DEFINITIONS

The word "Engineer" as used in these specifications, refers to the engineer in charge of the work.

The "party of the first part" is the City of Farmer City by and for which the work, herein described and referred to, is being done, and the "party of the second part" is the "Contractor", or the person or persons contracting to do the said work.

The words "Board of Local Improvements" is the Board of Local Improvements of Farmer City.

The word "sewer" in its general sense in these specifications refers to the sewer-barrel and to any bends, slants, branches, or other details joined to or forming a part thereof.

The term "grade" as used herein refers to the elevation at which the inside bottom of the sewer-barrel shall be laid.

The word "appurtenance" refers to all man-holes, catch-basins, inlets, and all structures forming a part of the sewerage system but not included in the term sewer.

MEASUREMENTS AND PAYMENTS

Measurements of sewers shall be taken from the center of the uppermost man-hole on each line to the center of the man-hole at its junction with a main or lateral, or to the center line of such main or lateral at the junction, including all branches, man-holes, or other appurtenances along the line.

The depth by which sewer prices will be graded will be measured from the surface of the ground to "grade" as hereinabove defined.

The price bid for sewers shall include furnishing all materials and labor for excavating, shoring, constructing the sewer in accordance with the plans and specifications, back-filling,
restoring the street surface as previously specified, and for all matters in connection therewith heretofore specified as being so included.

Deep-cut connections, extending within twelve (12) feet of the ground surface, shall be paid for at the price bid for "deep-cut connections."

Ordinary man-holes shall be paid for on the basis of twelve (12) feet with an additional amount to be added or deducted for each foot by which the depth is greater or less than twelve (12) feet, the price bid to include excavating and back-filling, furnishing and setting iron castings and steps, and completing the whole as set forth in the plans and specifications.

The price bid for inlets, catch-basins, retaining walls, and other appurtenances shall include the excavating and back-filling, furnishing all materials and constructing each appurtenance in strict conformity to the plans and specifications.

GENERAL STIPULATIONS

It is further expressly agreed between the parties hereto that this contract is made subject to the conditions and stipulations which follow:

The work shall be subject to inspection at any time.
No assignment or transfer of the work shall be made or recognized, but the Contractor will be held responsible for the work until its final completion.

The Contractor shall commence the work at such points as the Board of Local Improvements, through the Engineer, may designate, and shall conform to their directions as to the order of time in which different parts of the work shall be done and to
all their instructions as to the workmanship, character of the work and quality of the material.

Whenever the Contractor is not present on the work, orders will be given to the superintendents or overseers who may have immediate charge thereof, and shall by them be received and strictly obeyed. If any person employed on the work shall refuse or neglect to obey the directions of the Board of Local Improvements through the Engineer as to workmanship, character of work and quality of materials, or shall appear to the said Board of Local Improvements through the Engineer to be incompetent, disorderly or unfaithful as to endanger the proper fulfillment of this contract, he shall, upon the request of said board, be at once discharged and not again employed on any part of the work.

Any work not herein specified which may fairly be implied as included in this agreement, shall be done by the Contractor without extra charge.

The Contractor shall remove, rebuild, and make good, at his own cost, any work which is found to be defectively executed; and omission to condemn work at the time of its construction shall not be construed as an acceptance of defective work, and the Contractor will be required to correct all imperfect work when discovered, before final acceptance of the work herein specified.

The contractor shall put up and maintain such fences, barriers and red lights as will effectually prevent any accident in consequence of his work, and he shall be liable for all damages to person or property occasioned in any way by his acts or neglect, or that of his agents, employees, or workmen, and the City may, at its discretion, withhold the amount of such injury or damage from
any estimate which may be due the Contractor which may be needed to make good such damages or injuries.

To prevent all disputes and litigation, it is further agreed by the parties hereto that the Engineer shall, in all cases, determine the amount or quantity, or the classification of the several kinds of work or material which are to be paid for under this agreement, and that he shall decide all questions relative to the execution of this agreement, and his estimates and decisions shall be final and conclusive.

The Engineer's plans, profiles and drawings are intended to co-operate with and agree with the specifications, and the said plans, profiles and drawings are to be interpreted so that any and all work exhibited in the drawings and not mentioned in the specifications, or vice versa, is to be included the same as if it were mentioned in the specifications and as set forth in the drawing according to the true meaning, spirit and intention of said drawings, explanations and specifications. Such discrepancies, should there be any, shall be interpreted, explained, and adjusted by the Engineer and shall date from the time the Engineer shall give notice thereof.

The Contractor will be furnished with a set of drawings showing the details and dimensions necessary to carry out the work, and the dimensions in figures thereon shall have precedence over the scale.

It is further understood and agreed that the grade line shown on the profiles is the bottom of the inside of the sewer, that the profiles of the work show the approximate work only, and the map, the general location. The Engineer shall have the
right to make alterations in the line, grade, plan, form of dimensions of the work herein contemplated, or any part thereof, either before or after the commencement of the work, but no change shall be made involving any departure from the general scheme of the work and the ordinance. If such alterations diminish the quantity of the work to be done, they shall not constitute a claim for damages or for anticipated profits on the work dispensed with, and any increase or decrease shall be paid for or deducted according to the quantity actually done, and at the price or prices, stipulated for such work in this agreement.

Bidders must satisfy themselves by personal examination of the location of the proposed work, its seeming advantage and difficulty, and by such other means as they may prefer as to the cost thereof and the accuracy of the estimate of quantities, and shall not at any time thereafter dispute or complain of such preliminary estimate and profiles of the Engineer, nor assert that there was any misunderstanding in regard to the nature or amount of work to be done.

Should it be necessary to remove monuments or other permanent records, the Contractor shall not disturb them until given permission by the Engineer.

The Contractor shall provide suitable stakes, plank and forms, and render such assistance to the Engineer as may be necessary to establish lines and grades for the guidance of his work, and shall carefully preserve said points at all times.

During freezing weather, all work requiring the use of mortar or concrete shall be suspended unless the Board of Local
Improvements otherwise direct. During the suspension of the work for any cause, it must be suitably covered to preserve it from injury from the weather or otherwise, and, if the Board of Local Improvements so direct, all rubbish and surplus material shall be removed.

The Board of Local Improvements reserve the right to reject any and all proposals and to make awards in such manner as they consider best for the interests of the City of Farmer City. Proposals received after the time advertised for the opening of bids shall be returned unopened. Each bidder is required to make a statement of what sewer work he has done, and to give reference that will enable the Board to judge of his business standing.

STATE OF ILLINOIS )
COUNTY OF DeWITT ) SS.
CITY OF FARMER CITY)  
PLANS AND SPECIFICATIONS of The Combined Sewer for Farmer City, Illinois, filed in the office of the City Clerk of Farmer City, this third day of August A. D. 1908.

TOM YOUNG, City Clerk.

INSTRUCTIONS TO BIDDERS

Permission will not be given for the withdrawal modification or explanation of any bid.

Bidders are requested to make a statement in their proposals of their names and addresses and the names and addresses of all persons interested with them therein, of what sewer work they have done and to give reference that will enable the Board of Local Improvements to judge of their business standing. The
price per unit for each separate item must be written in the bid, both in words and figures, whether or not there is an indicated approximate quantity for such unit, likewise the total price (the approximate quantity \( \times \) the unit price bid) must be stated in figures under the column "Total;") and from this "total" must be computed and indicated the "Grand Total" for the approximate quantities of the entire work.

The sluice gate required for this work is of steel, the design to be furnished by the contractor, and the same shall be set as shown in the plans. The said gate shall have a clear circular opening two (2) feet in diameter, and the guides for the gate proper shall be so constructed that the gate may be tightly closed or opened partially, or entirely, by means of a rising stem operated from a floor-stand on the retaining wall.

PROPOSAL

TO THE BOARD OF LOCAL IMPROVEMENTS

FARMER CITY, ILLINOIS.

Gentlemen:

The undersigned, after a personal examination of the location of the projected improvement, propose to do all the work and to furnish all of the materials in accordance with the printed form of contract and specifications, a copy of which is here-with annexed, and to enter into and to execute a contract in the form of said enclosed specifications and contract for the execution of said work at the unit prices named, to wit:
<table>
<thead>
<tr>
<th>Size of Sewer in Inches</th>
<th>Depth of Cut in Feet</th>
<th>Price In Figures</th>
<th>Approx. Price X Lineal Feet</th>
<th>TOTAL Price X Lineal Feet</th>
</tr>
</thead>
<tbody>
<tr>
<td>33</td>
<td>- to 6</td>
<td>200</td>
<td></td>
<td></td>
</tr>
<tr>
<td>6-10</td>
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<td></td>
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<tr>
<td>10-14</td>
<td></td>
<td>750</td>
<td></td>
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<tr>
<td>14-18</td>
<td></td>
<td>200</td>
<td></td>
<td></td>
</tr>
<tr>
<td>18-22</td>
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<td>500</td>
<td></td>
<td></td>
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<tr>
<td>22-26</td>
<td></td>
<td>500</td>
<td></td>
<td></td>
</tr>
<tr>
<td>18</td>
<td>6-10</td>
<td></td>
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<tr>
<td>10-14</td>
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<td>384</td>
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<tr>
<td>14-18</td>
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<td></td>
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</tr>
<tr>
<td>15</td>
<td>6-10</td>
<td>244</td>
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<tr>
<td>10-14</td>
<td></td>
<td>550</td>
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</tr>
<tr>
<td>12</td>
<td>- 6</td>
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<tr>
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<td>700</td>
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<td></td>
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<td></td>
<td>730</td>
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<td></td>
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<tr>
<td>14-18</td>
<td></td>
<td>400</td>
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<td></td>
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<tr>
<td>18-22</td>
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<td></td>
</tr>
<tr>
<td>10</td>
<td>- 6</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>6-10</td>
<td></td>
<td>190</td>
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</tr>
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<td></td>
<td>1718</td>
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<td></td>
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<tr>
<td>14-18</td>
<td></td>
<td>100</td>
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<tr>
<td>18-22</td>
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<td></td>
</tr>
<tr>
<td>8</td>
<td>- 6</td>
<td>1242</td>
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<tr>
<td>6-10</td>
<td></td>
<td>630</td>
<td></td>
<td></td>
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<tr>
<td>10-14</td>
<td></td>
<td>1120</td>
<td></td>
<td></td>
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<tr>
<td>14-18</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
(In printed specifications, column space was left for "Price Written.")

**Junctions—6-inch Y on vitrified pipe—**

<table>
<thead>
<tr>
<th>Size</th>
<th>Quantity</th>
<th>Price per Unit</th>
</tr>
</thead>
<tbody>
<tr>
<td>8-inch</td>
<td>62</td>
<td></td>
</tr>
<tr>
<td>10-inch</td>
<td>90</td>
<td></td>
</tr>
<tr>
<td>12-inch</td>
<td>56</td>
<td></td>
</tr>
<tr>
<td>15-inch</td>
<td>16</td>
<td></td>
</tr>
<tr>
<td>18-inch</td>
<td>9</td>
<td></td>
</tr>
</tbody>
</table>

**Junctions—6-inch vitrified pipe set in cement sewer—**

<table>
<thead>
<tr>
<th>Size</th>
<th>Quantity</th>
<th>Price per Unit</th>
</tr>
</thead>
<tbody>
<tr>
<td>33-inch</td>
<td>16</td>
<td></td>
</tr>
</tbody>
</table>

**Stoppers for 6-inch pipe—**

<table>
<thead>
<tr>
<th>Description</th>
<th>Quantity</th>
<th>Price per Unit</th>
</tr>
</thead>
<tbody>
<tr>
<td>233 vitrified plugs</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Deep-cut connections extending from junctions up—**

- 30 consisting of 134 feet of 6-inch vitrified pipe at $ per lineal foot.

**Inlets—**

<table>
<thead>
<tr>
<th>Description</th>
<th>Quantity</th>
<th>Price per Unit</th>
</tr>
</thead>
<tbody>
<tr>
<td>16 complete</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Catch-basins—**

<table>
<thead>
<tr>
<th>Description</th>
<th>Quantity</th>
<th>Price per Unit</th>
</tr>
</thead>
<tbody>
<tr>
<td>33 complete</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Manholes, 370 vitrified feet—**

<table>
<thead>
<tr>
<th>Description</th>
<th>Quantity</th>
<th>Price per Unit</th>
</tr>
</thead>
<tbody>
<tr>
<td>33 manholes</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

- 12 feet deep at $ each.

**Price per foot to be added or deducted for each foot by which the depth of each manhole is greater or less than twelve (12) feet.**

**Retaining Walls—**

- 2 Total volume 30 cubic yards at $ per cubic yard.

**Sluice Gates—**

<table>
<thead>
<tr>
<th>Description</th>
<th>Quantity</th>
<th>Price per Unit</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

- Grand total for Entire Work $.

- Enclosed is a certified check for $.
which sum, in the event the said contract is awarded to me (us), is to be forfeited to the President of the Board of Local Improvements, in his official capacity, of the City of Farmer City, if I (we) fail to enter into said contract with approved securities on or before the twentieth (20th) day of April, A. D. 1909.

Respectfully,

________________________________________

________________________________________

________________________________________

(Signature and Address of Contractor.)

The names and addresses of all persons interested with (me) (us) in this bid are:

________________________________________

________________________________________

________________________________________

I have done the following sewer work:

________________________________________

________________________________________

________________________________________

________________________________________

As to (my) (our) business standing (I) (we) refer to

Respectfully,

________________________________________
NOTE—Each bid shall be placed in a sealed envelope addressed to "The Board of Local Improvements, Farmer City, Illinois, and shall be endorsed "Proposal for Building Sewer."

CONTRACT

PARTIES TO AGREEMENT

1. This Agreement, made and concluded this.............

...........................day of..........................

A.D. 19...., between


party of the second part, and the City of Farmer City, a municipal corporation in the State of Illinois, party of the first part.

CONDITIONS

2. Witnesseth, that the said party of the second part, for and in consideration of the payments to be made by the said City of Farmer City, as herein set forth, hereby covenants and agrees to furnish all tools, labor and material for the construction of


according to the ordinance, plans, profiles and specifications for the construction of said work on file in the office of the City Clerk of the City of Farmer City, Illinois, which said ordinance, plans, profiles and specifications are hereby made a part
and portion of this contract.

PERIOD OF WORK

3. Said work to be begun on or before the ............

.............day of ................... 190 ; to progress regularly and uninterruptedly after it shall have been begun, excepting as shall be otherwise ordered by the Board of Local Improvements of said city, and be finished and fully completed on or before the.....................day of................... 190 ; the time of beginning, rate of progress and time of completion being essential conditions of this contract.

BOND

4. The Contractor shall furnish a bond satisfactory to the Board of Local Improvements for the sum of..................

........ thousand dollars, as a guarantee that said Contractor will faithfully perform the work in accordance with the terms of this agreement; and any extension of the time for the completion of this contract or any alteration authorized by this contract shall in no means relieve any person, persons, or corporation signing the bond required to be given under this contract.

INDEMNIFY CITY

5. Said Contractor will be held responsible for all accidents, and hereby agrees to indemnify and protect the City from all suits, claims and actions brought against it, and all costs and damages to which the City may be put by reason of any injury or alleged injury to the person or property of another, resulting from negligence or carelessness in the performance of the work, or in guarding the same, or from any improper or defective materials used in its prosecution.
DIRECTION OF BOARD

6. It is expressly understood and agreed that the entire improvement shall be done in a thorough and workmanlike manner under the direction of the Board of Local Improvements and to the entire satisfaction of said Board of Local Improvements. All loss or damage arising out of the nature of the work to be done, or from any detention or other unforeseen obstructions or difficulties which may be encountered in the prosecution of the work, or from the action of the elements, shall be sustained by the Contractor.

LOCAL LABOR

7. The Contractor hereby expressly agrees that he will employ local labor so far as may be practicable, and in all cases local labor, either skilled or common, shall have the preference, other things being equal.

ALCOHOLIC LIQUORS

8. All work under this contract shall be executed without the use of alcoholic liquors. The use of the same shall be considered sufficient cause for declaring the forfeiture of this contract.

PAY INSPECTORS

9. If from any cause the Contractor shall fail to complete the work within the specified time for doing the same, and the time of this contract be extended, then the Contractor shall pay the expense of the Inspectors and all other expense caused by the City by reason of such failure.

EXTRA TIME FORFEITURE

10. Should the work, under this agreement, not be finished within the time herein specified, the Contractor shall forfeit
the sum of Twenty-five Dollars ($25.00) to the City of Farmer City as liquidated damages for each and every day which shall lapse after the expiration of the time herein agreed upon for the completion of said work, which amount shall be retained from the contract price of said work; provided, the Board of Local Improvements may remit said forfeit if in its judgment it seems right so to do.

SUB-CONTRACTORS

11. This agreement shall not be assigned nor any part of the work sub-contracted without the written consent of the Board of Local Improvements endorsed thereon, and in no case shall such consent relieve the party of the first part from the obligations herein entered into by the said party, or change the terms of this agreement.

CITY ORDINANCES

12. It is further stipulated and agreed by and between the parties hereto that all ordinances now in force in the City of Farmer City respecting and regulating public improvements not conflicting with the terms of this contract shall be a part and parcel of this contract.

NUMBERS OF INSPECTORS

13. The number of Inspectors to be employed under this contract shall be determined by the Board of Local Improvements; but if on account of the disregard of the specifications on the part of the Contractor additional Inspectors shall be required, such additional Inspectors shall be employed by said Board as it may deem necessary to secure a faithful compliance with the contract and the pay of such additional Inspectors shall
be charged to said Contractor and be deducted from the amount due said Contractor on final settlement under this contract.

**INCOMPETENT MEN**

14. Any person employed on the work who shall refuse or neglect to obey the directions of the President of the Board of Local Improvements, the Engineer or the Inspector of said work, or any person who shall be deemed incompetent, or who shall be guilty of any disorderly conduct, or shall commit any trespass on any public or private property in the vicinity of the work, shall at once be removed from the work by the Contractor when so required by said President, Engineer or Inspector.

**FORCE REQUIRED**

15. It is hereby provided and agreed that the said work shall be prosecuted with such force as the Board of Local Improvements may deem adequate for its completion within the time specified, and at any time the Contractor shall refuse or neglect to prosecute the work with a force sufficient in the opinion of said Board of Local Improvements for its completion within said specified time, or if in any event the said Contractor shall fail to proceed with the work in accordance with the terms of the agreement, then the said City, through its Board of Local Improvements, shall have the full power and authority to take the work out of the hands of said Contractor and to employ workmen to complete the unfinished work and to deduct the expense thereof from any money that may be due or may become due and owing to said Contractor on account of the prosecution of the work under this contract according to the provisions thereof, or to relet the same to other Contractors, as provided for herein.
CITY PAY LABORS

16. It is further agreed that all funds becoming due said Contractor under this contract shall be and are subject to the provisions of Section 23 of an act entitled, "An act to revise the law in relation to mechanic's liens," approved May 18, 1903, and in force July 1, 1903.

FORFEITURE

17. The Board of Local Improvements shall have the right and power to declare this contract forfeited, or any part thereof, for the violation of any terms, conditions or limitations herein contained, at any time during the continuance thereof.

CONTRACTOR NOT RELIEVED

18. In case the said Board of Local Improvements shall deem it necessary to declare any portion or section of this contract forfeited, it is hereby expressly stipulated and understood that such declaration or forfeiture shall not in any way relieve the Contractor from the covenants and conditions of this contract, but the same shall be valid and binding on said Contractor.

ALTERATIONS

19. Should the Board of Local Improvements of said City deem it proper or necessary in the execution of the work to make any alterations which shall increase or diminish the expense, such alterations shall not vitiate or annul the contract or agreement hereby entered into, but said Board shall determine the value of the work so added or omitted, such value to be added to or to be deducted from the contract price, as the case may be.
RETURNS OF ENGINEER—EXTRA WORK

20. The Contractor further agrees that the returns and estimates of the Engineer, as approved by the Board of Local Improvements, shall be the account by which the amount of work done shall be computed, and that he shall not be entitled to demand or to receive payment for any work upon, in or about said work as extra work unless ordered in writing by the Engineer and approved by the Board of Local Improvements.

PAYMENTS

21. The said City of Farmer City hereby covenants and agrees, in consideration of the covenants and agreements in this contract specified to be kept, to pay said party of the second part when this contract shall be wholly carried out and completed on the part of said Contractor, and when said work shall have been finally accepted by said Board of Local Improvements, the prices given in the proposal hereto attached and made a part of this contract.

ESTIMATES

22. It is further agreed by the parties hereto that on or about the first day of each month during the progress of this work an estimate shall be made on the relative value of the completed work done during the previous month; and upon the estimate of the Engineer, approved by the Board of Local Improvements, the said City of Farmer City shall, on or about the 10th day of the month, make payment of said estimates, deducting fifteen (15) per cent from the same as an agreed compensation to be retained by the said City of Farmer City and forfeited by said Contractor
as agreed and liquidated damages in case the whole amount of the work herein named shall not be done in accordance with this agreement and the plans, profiles and specifications therefor; and whenever the work under this contract shall have been completed by said Contractor to the entire satisfaction of the Board of Local Improvements, the said city of Farmer City, within thirty (30) days thereafter, shall pay to said Contractor a sum amounting to ninety-five (95) per cent. of the contract price, according to the showing of the final estimate, less any amounts already paid on monthly estimates.

**FINAL PAYMENT**

23. It is further agreed by and between the said first and second parties that the remaining five (5) per cent. of the final estimate shall be retained by said City of Farmer City until six (6) months after completion of said work, as a guarantee on the part of the Contractor that he will make good and perfect any defects in said work that may be discovered during the said period; and it is further agreed by the said Contractor that should he fail or neglect to make such repairs upon the notice of the Board of Local Improvements, then said Board shall have the right and is authorized to make said repairs and to deduct the cost of same from money due said Contractor on final payment. Upon the expiration of aforesaid period and upon the approval and acceptance of the whole work by the Board of Local Improvements, and their certificate of the same to the City Council, then the said City of Farmer City, by action of its Council, shall empower and authorize the City Treasurer to pay the said Contractor the aforesaid five (5) per cent., or so much thereof as shall remain due after
deducting any expenses which the City has incurred by the negligence of the Contractor to make necessary repairs and fully complete said work, in final settlement of all claims arising or holding under the terms and conditions of this contract.

EXCESS ASSESSMENT

24. It is also understood and agreed that there shall be reserved by the City any excess of the assessments or special taxes levied for said improvements over and above the actual cost thereof, so that the same may be rebated to the property owners when the actual cost shall be ascertained. And that in case the said party of the second part shall receive any of the bonds issued in anticipation of the collection of any of said deferred installments of said assessment, the same shall be paid wholly out of the respective installments of said special assessment or tax mentioned or designated in such bond, when collected; and the aggregate of all payments to be made on account of said improvement shall not exceed the amount of said special assessment or special tax actually collected and paid into the City Treasury.

SIGNATURES

IN TESTIMONY WHEREOF, the said part...of the second part ha...hereto set......hand and seal., and the said City of Farmer City has caused this agreement to be signed by its Board of Local Improvements, countersigned by its City Clerk, and approved by the President of the Board of Local Improvements and Mayor of the City of Farmer City on the day and year first above written.

______________________________

______________________________

______________________________

(Contractor)
CITY OF FARMER CITY

BY

____________________________________________

____________________________________________

Board of Local Improvements.

Approved:

____________________________________________

President Board of Local Improvements.

Approved:

____________________________________________

Mayor.

Countersigned:

____________________________________________

City Clerk.

BOARD OF LOCAL IMPROVEMENTS,
FARMER CITY, ILLINOIS

CONTRACTOR'S BOND

Know All Men By These Presents, That..................

____________________________________________

of the County of.............in the State of ..............

as principal and..................

____________________________________________

of the County of.............and State of..................

do hereby acknowledge..................to be

held and firmly bound unto the CITY OF FARMER CITY in the penal

sum of..................

........... Dollars, good and lawful money of the United States,

for the payment of which said sum of money well and truly to be

made, we bind ourselves, our heirs, executors and administrators,

jointly and severally, firmly by these presents.
SEALED with our seals and dated this ............... day of ............... A. D. 190.

The condition of the above obligation is such, that whereas, the above bounden ..................................................

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Now, if the said ..................................................

shall in all respects, well and truly keep and perform the said contract on .................................................. part, in accordance with the terms thereof, the said ordinance heretofore mentioned and the plans, profiles and specifications relating to the same on file in the office of the City Clerk of said City, in the time and manner as respectively therein prescribed, and indemnify
save and keep harmless, and at..............own cost and expense, and without any cost or expense to the said City of Farmer City, appear in and defend the City of Farmer City aforesaid, from and against any and all liabilities, suits, judgments, costs, damages and expenses, which may in any wise arise or come against said City of Farmer City in consequence of the entering into or granting of such contract, or which may in any wise result from the carelessness or neglect of said ....................agents, employees or workmen in any respect whatever, or which may result on account of any infringement of any patent by reason of the materials, machinery, device or apparatus used in the performance of said contract, and pay to said City any sum or sums of money determined by the Board of Local Improvements of said City, to be due said City by reason of any failure or neglect in the performance of the requirements of this contract, the said ordinance or the plans, profiles and specifications on file in the office of the said City Clerk of said City, and pay all claims and demands whatsoever which may accrue to each and every person who shall be employed by said ................………….

.................................................................
or by....................Assignee or Assignees, Sub-Contractor or Sub-Contractors, or by any Officer or Agent thereof, in or about the performance of said contract, then this obligation to be null and void, otherwise to remain in full force and effect.

And it is hereby expressly understood and agreed and made a condition hereof, that any judgment rendered against said City, as aforesaid, in any suit for damages occasioned by the carelessness or neglect of said ......................
or.................Agents, Employees, or workmen in the premises, shall be conclusive against each and all parties to this obligation, as to amount, liability, and all other things pertaining thereto. And when a copy of any process, that may be served upon the said CITY OF FARMER CITY in any suit or legal proceedings of any kind against it, growing out of any claim or demand made against it by reason of the aforesaid contract made and entered into by the said CITY OF FARMER CITY and the said..............shall be delivered by the said CITY OF FARMER CITY to the said..............................or any of...............agents, servants or employees, or to any of the sureties upon this bond, such copy of such process shall be conclusive notice upon each and all the parties to this obligation, of the pendency of such suit or legal proceeding, and the said.........................................................., and the sureties upon this bond shall immediately take notice of the same and appear in and defend the said CITY OF FARMER CITY therein as they are herein obligated to do.

.............................................(SEAL)
.............................................(SEAL)
.............................................(SEAL)
.............................................(SEAL)

Approved.................190...

Ex-Officio President Board of Local Improvements.

Letting of Contract

With all legal obstructions removed, the work was advertised according to law in the "American Contractor" and local papers. The specifications, proposal, contract and contractor's
bond were published in pamphlet form and, in quantity, together with the bound blue-print plans, were placed on file at the offices of the newspapers carrying advertisement of the work and at other fixed places. A few copies of the plans were sent on special request. The itemized plan of proposal was used with the idea of eliminating "extra" work and high charges for the same and also to obtain comparative information as to how contractors bid.

On the day appointed, contractors and materials men arrived for the public opening of the bids, which were read aloud. The lowest bidder was announced and the relative positions of the others. For the purpose of comparison, the various proposals are itemized in tables below with the sum total for each division of the work. Each bidder is represented by a letter in accordance with a subsequent explanation.

Table 7 - Itemized Proposals

<table>
<thead>
<tr>
<th>Cut Feet</th>
<th>Lin. Feet</th>
<th>A</th>
<th>B</th>
<th>C</th>
<th>D</th>
<th>E</th>
<th>F</th>
<th>G</th>
</tr>
</thead>
<tbody>
<tr>
<td>- - 6</td>
<td>200</td>
<td>$2.65</td>
<td>$2.70</td>
<td>$3.63</td>
<td>$4.00</td>
<td>$2.40</td>
<td>$3.00</td>
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</tr>
<tr>
<td>6 - 10</td>
<td>444</td>
<td>2.90</td>
<td>2.76</td>
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<td>2.70</td>
<td></td>
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</tr>
<tr>
<td>10 - 14</td>
<td>750</td>
<td>3.15</td>
<td>3.24</td>
<td>3.75</td>
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<td></td>
</tr>
<tr>
<td>14 - 18</td>
<td>200</td>
<td>4.10</td>
<td>3.72</td>
<td>4.50</td>
<td>4.40</td>
<td></td>
<td></td>
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</tr>
<tr>
<td>18 - 22</td>
<td>500</td>
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<td>4.80</td>
<td>5.50</td>
<td>5.90</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>22 - 26</td>
<td>--</td>
<td>5.00</td>
<td>5.18</td>
<td>7.00</td>
<td>8.30</td>
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</tr>
<tr>
<td>Total Bid</td>
<td>7849.10</td>
<td>10197.60</td>
<td>9216.22</td>
<td>10376.00</td>
<td>9869.44</td>
<td>1205.50</td>
<td>12198.80</td>
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</tr>
</tbody>
</table>
### 18-Inch Clay Pipe

<table>
<thead>
<tr>
<th>Cut Feet</th>
<th>Lin. Feet</th>
<th>A</th>
<th>B</th>
<th>C</th>
<th>D</th>
<th>E</th>
<th>F</th>
<th>G</th>
</tr>
</thead>
<tbody>
<tr>
<td>6 - 10</td>
<td></td>
<td>$1.00</td>
<td>$1.63</td>
<td>$1.50</td>
<td></td>
<td>1.27</td>
<td></td>
<td></td>
</tr>
<tr>
<td>10 - 14</td>
<td>384</td>
<td>1.50</td>
<td>1.00</td>
<td>&quot;</td>
<td>&quot;</td>
<td>1.44</td>
<td>1.36</td>
<td>1.90</td>
</tr>
<tr>
<td>14 - 18</td>
<td></td>
<td>1.50</td>
<td>&quot;</td>
<td>&quot;</td>
<td>--</td>
<td>2.20</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td></td>
<td>$576.00</td>
<td>384.00</td>
<td>625.92</td>
<td>576.00</td>
<td>552.96</td>
<td>552.24</td>
<td>729.60</td>
</tr>
</tbody>
</table>

### 15-Inch Clay Pipe

<table>
<thead>
<tr>
<th>Cut Feet</th>
<th>Lin. Feet</th>
<th>A</th>
<th>B</th>
<th>C</th>
<th>D</th>
<th>E</th>
<th>F</th>
<th>G</th>
</tr>
</thead>
<tbody>
<tr>
<td>6 - 10</td>
<td>244</td>
<td>$1.20</td>
<td>$0.70</td>
<td>$0.82</td>
<td>$0.95</td>
<td>$0.96</td>
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<td>$1.10</td>
</tr>
<tr>
<td>10 - 14</td>
<td>550</td>
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<td>0.90</td>
<td>&quot;</td>
<td>&quot;</td>
<td>1.14</td>
<td>1.15</td>
<td>1.30</td>
</tr>
<tr>
<td>14 - 18</td>
<td></td>
<td>1.25</td>
<td>&quot;</td>
<td>&quot;</td>
<td>--</td>
<td>1.74</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Total Bid</strong></td>
<td></td>
<td>$952.80</td>
<td>665.80</td>
<td>651.08</td>
<td>754.30</td>
<td>861.24</td>
<td>876.50</td>
<td>983.40</td>
</tr>
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</table>

### 12-Inch Clay Pipe

<table>
<thead>
<tr>
<th>Cut Feet</th>
<th>Lin. Feet</th>
<th>A</th>
<th>B</th>
<th>C</th>
<th>D</th>
<th>E</th>
<th>F</th>
<th>G</th>
</tr>
</thead>
<tbody>
<tr>
<td>- - 6</td>
<td></td>
<td>$0.50</td>
<td>&quot;</td>
<td>$0.80</td>
<td>$0.50</td>
<td></td>
<td></td>
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</tr>
<tr>
<td>6 - 10</td>
<td>700</td>
<td>0.90</td>
<td>0.60</td>
<td>0.74</td>
<td>&quot;</td>
<td>0.79</td>
<td>0.50</td>
<td>1.00</td>
</tr>
<tr>
<td>10 - 14</td>
<td>730</td>
<td>&quot;</td>
<td>0.80</td>
<td>&quot;</td>
<td>&quot;</td>
<td>1.05</td>
<td>0.65</td>
<td>1.50</td>
</tr>
<tr>
<td>14 - 18</td>
<td>400</td>
<td>&quot;</td>
<td>1.25</td>
<td>&quot;</td>
<td>&quot;</td>
<td>1.32</td>
<td>1.00</td>
<td>2.20</td>
</tr>
<tr>
<td>18 - 22</td>
<td></td>
<td>1.50</td>
<td>&quot;</td>
<td>&quot;</td>
<td></td>
<td>1.69</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Total Bid</strong></td>
<td></td>
<td>$1647.00</td>
<td>1504.00</td>
<td>1354.00</td>
<td>1464.00</td>
<td>1847.50</td>
<td>1224.50</td>
<td>2675.00</td>
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</table>

### 10-Inch Clay Pipe

<table>
<thead>
<tr>
<th>Cut Feet</th>
<th>Lin. Feet</th>
<th>A</th>
<th>B</th>
<th>C</th>
<th>D</th>
<th>E</th>
<th>F</th>
<th>G</th>
</tr>
</thead>
<tbody>
<tr>
<td>- - 6</td>
<td></td>
<td>$0.40</td>
<td>&quot;</td>
<td>$0.80</td>
<td>$0.30</td>
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<td></td>
<td></td>
</tr>
<tr>
<td>6 - 10</td>
<td>190</td>
<td>0.75</td>
<td>0.45</td>
<td>0.68</td>
<td>&quot;</td>
<td>0.62</td>
<td>0.40</td>
<td>0.80</td>
</tr>
<tr>
<td>10 - 14</td>
<td>1718</td>
<td>&quot;</td>
<td>0.60</td>
<td>&quot;</td>
<td>&quot;</td>
<td>0.81</td>
<td>0.60</td>
<td>1.20</td>
</tr>
<tr>
<td>14 - 18</td>
<td>100</td>
<td>&quot;</td>
<td>1.00</td>
<td>&quot;</td>
<td>&quot;</td>
<td>1.05</td>
<td>1.00</td>
<td>1.50</td>
</tr>
<tr>
<td>18 - 22</td>
<td></td>
<td>1.25</td>
<td>&quot;</td>
<td>&quot;</td>
<td></td>
<td>1.60</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Total Bid</strong></td>
<td></td>
<td>$1506.10</td>
<td>1216.30</td>
<td>1365.44</td>
<td>1606.40</td>
<td>1613.38</td>
<td>1206.80</td>
<td>2263.60</td>
</tr>
</tbody>
</table>


### 8- INCH CLAY PIPE

<table>
<thead>
<tr>
<th>Cut Feet</th>
<th>Lin. Feet</th>
<th>A</th>
<th>B</th>
<th>C</th>
<th>D</th>
<th>E</th>
<th>F</th>
<th>G</th>
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</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>$0.65</td>
<td>$0.35</td>
<td>$0.56</td>
<td>$0.55</td>
<td>$0.47</td>
<td>$0.20</td>
<td>$0.30</td>
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<tr>
<td>6 - 10</td>
<td>630</td>
<td></td>
<td>0.40</td>
<td></td>
<td></td>
<td>0.56</td>
<td>0.45</td>
<td>0.60</td>
</tr>
<tr>
<td>10 - 14</td>
<td>1120</td>
<td></td>
<td>0.60</td>
<td></td>
<td></td>
<td>0.75</td>
<td>0.60</td>
<td>1.00</td>
</tr>
<tr>
<td>14 - 18</td>
<td></td>
<td></td>
<td></td>
<td>1.00</td>
<td></td>
<td></td>
<td></td>
<td>1.06</td>
</tr>
</tbody>
</table>

**Total Bid**: $1944.80 1358.70 1675.52 1645.60 1776.54 1328.10 1870.60

### JUNCTIONS - 6-Inch Y on Various Pipe

<table>
<thead>
<tr>
<th>On</th>
<th>A</th>
<th>B</th>
<th>C</th>
<th>D</th>
<th>E</th>
<th>F</th>
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</thead>
<tbody>
<tr>
<td>8&quot;</td>
<td>$0.50</td>
<td>$0.25</td>
<td>$0.50</td>
<td>$0.50</td>
<td>$0.30</td>
<td>$0.50</td>
<td>$0.45</td>
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<tr>
<td>10&quot;</td>
<td>0.65</td>
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<td>0.40</td>
<td>0.65</td>
<td>0.70</td>
</tr>
<tr>
<td>12&quot;</td>
<td>0.80</td>
<td>0.35</td>
<td>0.90</td>
<td>0.80</td>
<td>0.50</td>
<td>0.80</td>
<td>0.90</td>
</tr>
<tr>
<td>15&quot;</td>
<td>1.30</td>
<td>0.60</td>
<td>1.25</td>
<td>1.20</td>
<td>0.75</td>
<td>1.25</td>
<td>1.20</td>
</tr>
<tr>
<td>18&quot;</td>
<td>1.90</td>
<td>0.851</td>
<td>1.60</td>
<td>2.00</td>
<td>0.90</td>
<td>2.00</td>
<td>1.50</td>
</tr>
<tr>
<td>*33&quot;</td>
<td>0.20</td>
<td>0.25</td>
<td>0.35</td>
<td>0.25</td>
<td>0.30</td>
<td>1.00</td>
<td>0.12</td>
</tr>
</tbody>
</table>

*Concrete pipe.

### STOPPERS For 6-Inch Pipe

| $0.05 | $0.03 | $0.05 | $0.20 | $0.10 | $0.00 | $0.04 |

### Deep-Cut House Connections (Lin. Ft.)

| $0.10 | $0.25 | $0.20 | $0.50 | $0.30 | $0.25 | $0.10 |

### Inlets Complete

| $10.00 | $15.00 | $10.00 | $14.00 | $13.00 | $10.00 | $9.00 |

### Catch basins complete

| $24.00 | $25.00 | $30.00 | $35.00 | $36.00 | $25.00 | $28.00 |

### Man Holes Complete - 12-Foot Depth

| $30.00 | $31.44 | $42.00 | $40.00 | $40.00 | $35.00 | $48.00 |

Extra: $2.50 $2.00 $1.50 $3.00 $3.50 $3.00 $2.50
Concrete Retaining Walls—Per cubic yard

<table>
<thead>
<tr>
<th>A</th>
<th>B</th>
<th>C</th>
<th>D</th>
<th>E</th>
<th>F</th>
<th>G</th>
</tr>
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<tbody>
<tr>
<td>$5.00</td>
<td>$5.00</td>
<td>$8.00</td>
<td>$7.00</td>
<td>$7.00</td>
<td>$6.00</td>
<td>$6.00</td>
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</table>

Sluice Gate

<p>| | | | | | | |</p>
<table>
<thead>
<tr>
<th></th>
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<th></th>
<th></th>
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<th></th>
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</thead>
<tbody>
<tr>
<td>$120.00</td>
<td>$75.00</td>
<td>$100.00</td>
<td>$75.00</td>
<td>$100.00</td>
<td>$55.00</td>
<td>$75.00</td>
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</table>

Sum Total of Bids

<p>| | | | | | | |</p>
<table>
<thead>
<tr>
<th></th>
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<th></th>
<th></th>
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</thead>
<tbody>
<tr>
<td>$16888.15</td>
<td>$17777.77</td>
<td>$18187.23</td>
<td>$19491.10</td>
<td>$19725.06</td>
<td>$19759.94</td>
<td>$24177.74</td>
</tr>
</tbody>
</table>

B = Dearborn & Jackson, Cedar Rapids, Iowa.
C = Federal Improvement Company, Chicago, Ill.
D = E. R. Harding Company.
E = J. J. Dougherty, Ottawa, Ill.
F = J. W. Turner Improvement Co., Des Moines, Iowa.
G = Roetzel & Chipman, Evansville, Ind.

The Board of Local Improvements deferred the letting of the contract until the ability of the lowest bidder, Howes Bros. Co., Chicago, could be looked into and until they should furnish surety bond. In spite of misgivings as to the ability of this firm, and for fear of legal obstruction and probable charges of graft, the contract was awarded to the lowest bidder.
Chapter VI
CONSTRUCTION AND COST

Materials and Machinery

With regard to preferences of makes and brands, the contractor was informed that any make of materials which would pass specifications, and only such kinds, would be allowed on the work.

Medusa and Owl brands of Portland cement were used. They were tested at the Engineering Testing Laboratory of the University of Illinois and passed the requirements of the American Society for Testing Materials.

The sand and gravel were obtained from the pit of H. M. Cox in the northeastern part of the city. Like most pit materials the gravel ran uneven and was high in sand and low in pebbles. Full 50% would pass a 1/4-inch screen. The coarser particles ranged from 1/4 to 3/4-inch. Likewise the material contained considerable clay, from 5 to 10%. The use of sand and gravel of very poor quality found in the sewer trench was forbidden.

Water for the concrete and the machinery was furnished free of charge by the City.

For the concrete sewer barrel, semi-circular forms were used, a three piece 16-foot section of wood forms for the invert and 5-foot Blaw collapsible steel forms for the crown.

The contract for the vitrified clay pipe went to the Whitehall Sewer Pipe Co., Whitehall, Ill. These pipe were of unusually good quality and finish.

The manhole, catch basin and inlet castings were made by the Burr Foundry Company, Champaign, Ill.
The clay brick were purchased from the local firm of Arbogast and Company. Likewise lumber and other incidentals were obtained in Farmer City.

In accordance with the specifications, local labor was given preference and, as is usually the case, was found inadequate and inefficient. This greatly handicapped the construction.

All excavation was done by machinery except the first 400 feet of the outlet sewer and the last 700 feet of the Market Street line on Main Street. The machine used was the Chicago Excavator, leased from the Municipal Engineering and Contracting Company of Chicago, Illinois. This machine was of the well-known traction type, fitted with a 70 H. P. boiler, water tank and coal box. The "caterpillar" tractors afforded a wide distribution of the weight of the massive machine and a good purchase on the ground for moving forward.

The actual excavation was done by an adjustable tail, which in operation extended downward from the rear of the machine at an angle of about 55 degrees with the horizontal. This excavating tail consists of buckets and cutters spaced four feet on a continuous chain working over rollers attached to a rigid framework. As the entire machine moved forward automatically, the cutters on their upward movement loosened the earth, which was caught up by the buckets and carried upward and dumped upon a wide roller curtain belt. The belt piled the excavated materials on one side as to allow a clear working space along the sewer bank. The cutting width of the machine was adjustable from 2 feet 3 inches to 5 feet. On this work it made its record
for depth by reaching 26 feet.

On the pipe sewers a mechanical back-filler, made by the same company, was attached to the excavator. This machine mounted on trucks and operated by steam generated in the excavator's boiler, caught the dirt from the roller curtain-belt and by means of a similar device (kept trough-shaped by free wooden pulleys) carried the spoil back 50 feet and dumped it into the trench upon the pipe in place. The pipe-laying kept pace with the excavator within the 50 feet of open trench.

The concrete was mixed in the Grand Continuous Mixer, manufactured by the Hall-Holmes Manufacturing Company of Jackson, Mich. This machine was of the ordinary hopper and propeller-blade type and was operated by a 2 1/2 H. P. gasoline engine.

Laying Out The Work

During the location survey all points of change of direction and of intersection of sewers had been marked with hubs. Consequently, previous to construction, there was little to be done except to lay out a line parallel to the sewer line and 12 feet distant. Over a rope on the ground between stakes on this parallel line, passed the pointer or guide, extending from the machine, by means of which the trench was dug to perfect alignment. The skilled operator of the machine knew at all times the exact depth of the trench needed and was able to operate the excavating tail so that it was necessary to remove only 4 to 8 inches by hand.

Inspecting The Work

On account of the method of trenching, grade stakes had to be set behind the excavator. The grade was established
by means of a strong grade cord stretched on 2 by 4-inch wooden cross-arms nailed to heavy uprights driven firmly unto the ground at intervals of 25 feet. This grade cord was located on the sewer line and was carried parallel to the grade of the sewer at a fixed distance above the same. Consequently, by means of a steel tape and a plumb-bob, it was an easy matter to set the forms or lay the pipe to line and grade.

Ordinarily, with regard to the trenching, an engineer has no direct concern other than grade, alignment, shape of trench bottom, disposal of ground water, the making and laying of the pipe and the back-filling. Owing to incompetent superintendence on this work, the engineer and his assistant were compelled, for the most part, practically to take charge of the construction. The bracing in the trench was kept as closely as possible to the excavating tail of the trenching machine and parallel with its sloping position. For sheathing, 2 by 8-inch pieces were used (either skeleton or solid according to the nature of the spoil encountered) and were temporarily held in place by adjustable jacks bearing against opposite pieces and, depending on conditions, set 4 to 6 feet apart. In the permanent bracing, 4 by 8-inch rangers, spaced 6 feet vertically, supplanted most of the jacks of the temporary bracing. To render the bracing more rigid, care had to be exercised to see that the rangers on opposite sides of the trench were at the same elevation and that the jacks were placed at right-angles to the trench walls. Since in solid ground the sheathing did not extend to the bottom of the trench, this arrangement of jacks minimized the probability of slipping timbers and possible caving.
The bottom of the trench was cut to conform to the shape of the sewer pipe. On the concrete line, at the option of the contractor, a light wooden templet was used as a guide. Only on this sewer was ground water in quantity encountered. This was not unexpected and was cared for, on first indication, by laying in the hollow of the trench an under-drain of cull 6-inch clay tile. The under-drain opened at intervals into the finished concrete pipe and afforded protection to the green concrete until it was set up.

After measurements from the grade line showed the proper depth of trench, the wooden forms for the lower half of the concrete sewer were set on 6-inch concrete cubes, or on clay bricks, and to line and grade. It was to the contractor's interest to see that the trench was not too deep; no refilling was allowed.

So long as he tried, the contractor was able to adjust the lengths of the sheathing so that the ends did not project above the ground level. By this arrangement it was possible to lay a temporary track of timbers over the trench and to locate upon it the mixer mounted on trucks. The gravel and cement were distributed beside the trench, which arrangement materially reduced the labor. The delivery end of the mixer opened directly into a galvanized iron spout by means of which the concrete was placed around the sewer moulds with almost no shoveling. After the lower form was set, little inspection was needed other than watching the cement-feed on the continuous mixer. This frequently clogged due to the adhesion between the cement and the metal parts of the feed. The machine was moved forward as necessary and was tested and set every morning and noon to insure
the correct proportions. The concrete was mixed mushy wet for the invert and only sufficiently wet to tamp well for the crown.

The work was so planned that the invert forms were set in the morning and filled in the afternoon. Usually the next morning these forms could be removed and the crown forms placed. To secure good joint between crown and invert, all foreign matter was carefully removed from the top of the invert shell and the joint was sprinkled. With the crown forms in position, the upper part of the sewer was built. The thickness of the shell was frequently tested by a wooden guage. The contractor might have used less concrete, and saved money, by employing quarter-circle shaping-boards at each side of the crown of the sewer. Usually at these points the concrete was 8 to 10 inches thick.

After 24 hours, it was generally possible to remove the crown forms. This was accomplished by collapsing them by tightening the diametrically placed turn-buckles. The forms dropped three inches upon tracks made of 2 by 4-inch pieces resting on the sides of the invert and cross-braced upon each other. Short sections of gas pipe on the turn-buckle rods served as rollers on the tracks. By means of block and tackle, anchored to the timbering, it was possible for three men to pull forward five of these five-foot forms coupled together. By a continuation of the track, the same forms were easily set in place for more crown. A record was kept in the field book of when each section of the sewer was placed, merely as a reference in removing the forms. Forms were not withdrawn until the engineer had given permission.
House connections were placed according to the desire of the owner of the adjacent property. A notice had been printed in the paper requesting property owners to drive a stake in their yards opposite the point where they wished connections with the sewer. The City brought all connections up within 12 feet of the surface. If a property owner so wished, he might arrange with the contractor to lay his private drain, but permit for direct connecting with the sewer was not given by the City until the improvement was completed and accepted. The connections on the pipe lines were of the usual Y-type. On the outlet sewer a direct T-connection was made by imbedding in the concrete shell a 6-inch section (not counting the bell) of 6-inch vitrified pipe with the bell end up. All house connections were carefully referenced to the center of the nearest manhole and the location recorded before any back-filling was permitted.

On the pipe sewers the mechanical back-filling immediately followed the pipe-laying. Depending on the setting up of the concrete, influenced by temperature and moisture, on the outlet sewer no back-filling was allowed until the crown was three days old. Then the first two feet of fill was placed by hand. Afterwards the filling was completed by stages by means of teams and scrapers. Water-settling of fill was allowed. The timbering was pulled gradually as the filling progressed. Where there were indications of caving, sufficient sheathing was left in place to prevent it. On the engineer's approval, allowance was made the contractors for lumber so left.

The vitrified clay pipe were carefully examined before being laid. As a test for soundness, each length was given a
sharp tap with a hammer to see that it rang true. All pipe rejected were spotted with white paint and had to be removed from the work at once. Particular attention was given to the use of sufficient mortar for the joints and to the wiping of the joints on the inside of the sewer by means of a wad of hay in a sack dragged through the pipe.

Upon completion all sewers were inspected. By means of a long rope and a low truck, the inspectors were dragged through the 33-inch concrete sewers. The barrel was found to be remarkably smooth and free from flaws. The pipe sewers passed the usual light test from manhole to manhole.

Winter (1909-1910) prevented the finishing of the last 700 feet of the Market Street line on Main Street. During the winter the contractor failed and the City was forced in the spring to complete the work by day labor and hand trenching. The Court was then notified of the completion of the improvement and its acceptance by the City.

**Difficulties in Collecting Cost Data**

During the construction of this improvement many things interfered which made the acquirement of dependable cost data almost impossible. The city engineer, who had designed the work and who had intended to see to its construction, was called elsewhere. The assistant engineer, who was in charge during the building of the concrete sewer and until his return to his studies at the University of Illinois, did as well as possible under the adverse conditions. Throughout his time of service, to help the work along and to secure cost data, he not only aided in superintending the work but also kept the contractor's accounts.
His successor was not so rapid and versatile, and was unable to analyze and collect the cost data as the work progressed. The contractor managed the construction badly at all times, and, after the departure of the assistant engineer, kept no accurate system of accounts. He lessened the efficiency of his working force by continuous change of personnel and by frequently shifting men from one kind of work to another. His superintendents lacked construction knowledge. In one instance, regardless of the engineer's warning, 100 feet of trench 23 feet deep was left open, and without the sewer being built, from Saturday night over Sunday and Monday, a legal holiday. Rain fell Monday night, Tuesday and Wednesday, and the trench caved. To open up the trench cost $465.00, besides $50.00 for piling of surplus dirt on the adjacent lawns and extra expense for back-filling. A few hours work Saturday night and Sunday would have prevented this needless loss. This was the most costly piece of mismanagement, yet there were many smaller, unnecessary and wasteful expenses which easily totaled as much. For instance, trying to thaw the sewer line of the frozen street by building corn-cob fires on the surface of the ground! Good management would easily have reduced the total cost of the system by $2,000.00.

Cost of Concrete Sewer

In treating the outlet sewer the total cost will be deduced by considering separately the items of excavation and back-filling, timbering, and concrete. With the mechanical excavator used, depth of trenching had not so much weight as the kinds of materials and difficulties encountered. For this reason the construction of the main sewer naturally divides itself into three
sections:—

1. - The Division of Easy Trenching.
2. - The Division of Deep Cutting.
3. - The Division of Difficulties.

The Division of Easy Trenching extended from the outlet, up the slope of the steep hill to Clinton Avenue. Its length was 854 feet. No sand or boulders and very little water was encountered. The soil was firm, solid clay. The average depth was 11 feet. It was here that the contractor’s work was profitable and might have been made more so had he pushed the construction. Unfortunately, he considered that all the excavations would be equally easy. For curves of cost and progress of this section, see page 98.

The Division of Deep Cutting reached from Clinton Avenue to Water Street, a length of 800 feet. The greatest depth of trench was 26 feet, while the average was 21.6 feet. On account of the needless cave-in previously mentioned, this section was troublesome and expensive to the contractor. The original trench was only 3 feet 4 inches wide at the ground level and 23 feet deep. (The remaining 5 inches necessary for the sewer was hollowed out of the side-walls of the trench.) The re-opened trench of the caved-in portion, was 15 feet wide at the top. On the whole, the increased depth called for a larger force which the contractor did not supply. Consequently, the timbering of the trench and construction of the sewer barrel could not keep pace with the excavator, which worked less than half-time. The efficiency of this machine may be judged from the fact that on July 8, 1909, it opened 35 feet of trench 25
FIGURE 10 - DIVISION OF DIFFICULTIES - - GRAPHS OF DAILY COST OF LABOR ON SEWER IN BLACK AND PROGRESS IN STATIONS OF FINISHED SEWER BARREL IN RED
feet 6 inches deep in one hour. See page 99 for the cost and progress curves of this section.

The Division of Difficulties lay between Water Street and the upper end of the sewer and was 930 feet long. The first 500 feet of this section was underlaid, at the depth of 8 to 10 feet, with pockets of quick sand and an abundance of water. Even by throwing straw into the trench the machine was unable to handle the sand, which had to be removed by hand after the trench was tightly sheathed. Consequently the excavation was expensive. The remaining length of trench presented no difficulties, and the work progressed rapidly. The cost and progress curves of this section are shown on page 100.

The cost of the excavation proper for the concrete sewer is ascertainable through consideration of the rent charges for the machine and the amount of coal used on this portion of the work. The excavator was leased to construct both the main and the laterals for the lump sum of $2700.00. To this must be added the freight charges from Chicago of $154.75, which makes the services of the machine stand at $2,854.75. The contractor's estimated cost of the main sewer was $7850.00, which sum was 54.6 per cent. of his estimated cost of the entire work, $14,377.25, which the machine was to accomplish. Therefore 54.6 per cent. of the lease price may be charged to the 2,100 feet of the main sewer, which was the length excavated by the machine. Thus the rent cost of the excavator per lineal foot of the concrete sewer is $0.74.

The cost of back-filling the trench is included in the charges for labor.
Soft coal for the trenching machine was delivered on the work for $3.00 per ton. The average amount of coal used per lineal foot of trench was 55 pounds. Thus the cost for coal per lineal foot was practically $0.08.

The total lumber bill (for the entire improvement) for sheathing and other purposes was $2,050.70. Doubtless half of the lumber was used on the main sewer and is chargeable to it. From the sum total is deducted the cost of the lumber left in the trenches by the order of the engineer, for which lumber the City paid. Though an equal amount of timbering was not used everywhere along the sewer, nevertheless the charges can scarcely be considered in any other manner. On this basis, the sheathing cost $0.40 per lineal foot of trench.

Table 8

<table>
<thead>
<tr>
<th>COST OF MACHINE EXCAVATION ON CONCRETE SEWER</th>
</tr>
</thead>
<tbody>
<tr>
<td>Rent of excavator.................................$0.74</td>
</tr>
<tr>
<td>Coal for excavator................................0.08</td>
</tr>
<tr>
<td>Lumber for sheathing...............................0.40</td>
</tr>
<tr>
<td>Total cost per lineal foot.......................$1.22</td>
</tr>
</tbody>
</table>

The cost of the sewer barrel can readily be determined from the charges for the materials entering into the concrete and the labor expended. A cubic yard of gravel and a barrel of cement were delivered on the work for $1.00 and $1.20 respectively. The proportions of the concrete were 1 part portland cement to 5 parts bank-run gravel. For a cubic yard of such concrete in place, there will be required, according to Baker's "Treatise on Masonry Construction", 1.61 barrels of cement and 1.13 yards of pit gravel. On this basis, which checked closely
with observations, the materials for a yard of concrete cost $3.06. Since the area of the section of sewer barrel as designed was 5.3 square feet, one cubic yard of concrete should have made 5.1 lineal feet of sewer at a cost of 0.60 per foot. The totals of materials used on the work were found to exceed the theoretical amounts by 15 per cent. Therefore the average cost of materials per lineal foot of sewer was $0.69. This excess use of concrete is directly chargeable to poor superintendence. No use of shaping-boards was made to keep the lower parts of the crown to a circular shape. The templet for rounding the bottom of the trench was seldom put to use.

In the Table 9 is shown the total cost of a lineal foot of sewer barrel including the labor of mixing and placing the concrete based on field book records. The cost of the mixer and tools used and the rent of the crown forms are not included. The latter charge was not obtainable. The mixer was bought for $350.00 and, on completion of the work, was sold for $100.00. These items would therefore increase the total cost but little.

Table 9

COST OF CONCRETE SEWER BARREL

<table>
<thead>
<tr>
<th>Item of Charge</th>
<th>Number of men</th>
<th>Wage per hr.</th>
<th>Time in Minutes</th>
<th>Cost per 16' Length</th>
<th>Cost per Lin. Ft.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Materials</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>$0.690</td>
</tr>
<tr>
<td>Placing, etc.*</td>
<td>6</td>
<td>$0.25</td>
<td>52</td>
<td>$1.30</td>
<td>0.083</td>
</tr>
<tr>
<td>Invert forms*</td>
<td>3</td>
<td>0.25</td>
<td>45</td>
<td>0.57</td>
<td>0.036</td>
</tr>
<tr>
<td>Crown forms*</td>
<td>3</td>
<td>0.25</td>
<td>25</td>
<td>0.69</td>
<td>0.043</td>
</tr>
<tr>
<td>Moving mixer*</td>
<td>3</td>
<td>0.25</td>
<td>25</td>
<td>0.32</td>
<td>0.020</td>
</tr>
<tr>
<td>Superintendence</td>
<td>1</td>
<td>0.50</td>
<td>177</td>
<td>1.50</td>
<td>0.094</td>
</tr>
</tbody>
</table>

Total cost per lineal foot..........................$0.966
*This item covers labor charges only.

The progress curves, shown on pages 98 to 100 were platted from the time book and records of the contractor, the log of the operator of the excavator, and the field notes of the engineer. The red line indicates the progress of the completed sewer in stations from day to day. The daily cost of labor is platted in black. When the red line becomes horizontal, no advance in the construction of the sewer barrel is indicated. On pages 105 to 108, are curves representing graphically the contract price of the improvement in red, the actual expense to the contractor in black, and the engineer's estimate in a broken line. The red line above the black indicates a profit to the contractor; below, a loss. These curves are platted from the total expense including the cost of all materials, the rent of the excavator, and the labor on the excavation, on the concrete and on the construction of the man-holes, catch-basins and inlets. The grand total of these expenses was $10,402.00, or an average of $4.10 per lineal foot. The sum total paid the contractor for the outlet sewer was $8,712.00. The loss of the contractor was $1,690.00. The contract price was $2.65 per lineal foot for depths up to 10 feet and $3.15 for greater depths. The final estimate of the engineer for the same, based on the actual length built, was $10,740.00, but this estimate represented the calculated cost plus 25 per cent. profit. The loss of $1,690.00 was no great handicap with which to begin the work on the pipe laterals, as the contractor's prices, on the whole, were considerably higher than those of the other bidders as may be seen from Table 7 on pages 84 to 87 inclusive.
FIGURE 11 -- GRAPHS SHOWING RELATION BETWEEN ACCUMULATIVE ACTUAL COST (SOLID BLACK), CONTRACT PRICE (RED) AND ENGINEER'S ESTIMATE (BROKEN BLACK)
FIGURE 11 (CONTINUED) -- SEE PAGE 105
Cost of Pipe Sewers

The cost of the vitrified clay pipe sewers was not obtainable for reasons previously noted. Nevertheless data of some value will be given. On this, the easiest portion of the work, the contractor seemed to have lost heart and managed even more badly than previously.

The cost of the excavation on the various lateral sewers cannot be compiled on account of lack of records in the field book of the instrument man. Because of shortage of pipe and insufficiency of labor, the mechanical excavator and back-filler could work only about one-third of the time. What might have been accomplished can readily be seen from the machine records below:

| Table 10 |
|-----------------|--------|--------|-------|
| RECORDS OF EXCAVATOR AND BACK-FILLER |
| Length | Width | Depth | Hours |
| 495'  | 2' - 3" | 10' - 0" | 6 |
| 525'  | 2' - 3" | 12' - 0" | 4 |
| 200'  | 2' - 3" | 14' - 6" | 6 |
| 175'  | 2' - 3" | 16' - 6" | 3 |

When winter set in and rendered further work impossible, the machine company shipped its excavator back to Chicago. The contractor failed and the City was forced to finish the work in the spring.

The cost to the contractor of the excavation on the clay pipe laterals can be approximated from a consideration of the leasing charges for the machine and the proportionate distribution of the contract price for both the main and lateral sewers.
The excavator was leased for $2,700.00. The freight from Chicago was $154.75, which makes the total cost of the machine to the contractor equal to $2,854.75. The total length of the laterals was 6,766 feet. Therefore (not deducting the 600 feet not finished by the excavator) the machine was leased for $0.19 per lineal foot of lateral sewer.

Though the trench was only 2 feet 3 inches wide and 10 feet deep on the laterals, in comparison to 3 feet 4 inches and 16 feet of the main, nevertheless it is safe to assume that the cost for coal was the same, since on the laterals the excavator pulled the back-filler. Therefore the cost of coal per lineal foot of trench is assumed at $0.08. (See page 101 for data relative to coal on outlet sewer.)

For timbering, $900.00 was chargeable to the laterals, or an average of $0.13 per lineal foot.

Table 11

<table>
<thead>
<tr>
<th>APPROXIMATE COST OF EXCAVATION ON LATERALS</th>
</tr>
</thead>
<tbody>
<tr>
<td>Rent of excavator.................................. $0.19</td>
</tr>
<tr>
<td>Coal for excavator and back-filler............. 0.08</td>
</tr>
<tr>
<td>Lumber for sheathing.................................. 0.13</td>
</tr>
<tr>
<td>Total cost per lineal foot ...................... $0.40</td>
</tr>
</tbody>
</table>

The Whitehall Sewer Pipe Company furnished the vitrified pipe for the following prices per lineal foot:

Table 12

<table>
<thead>
<tr>
<th>COST OF VITRIFIED CLAY PIPE</th>
</tr>
</thead>
<tbody>
<tr>
<td>Size</td>
</tr>
<tr>
<td>Price</td>
</tr>
</tbody>
</table>
Because of insufficient records, the cost of laying the pipe cannot be computed.

On the acceptance of the entire improvement by the City, the Board of Local Improvements filed with the Court the itemized cost of the sewer system. See page 198 of the Appendix.

**Table 13**

**TOTAL COST OF SEWER SYSTEM**

<table>
<thead>
<tr>
<th>Description</th>
<th>Amount</th>
</tr>
</thead>
<tbody>
<tr>
<td>Contract price</td>
<td>$16,888.15</td>
</tr>
<tr>
<td>Extra work, materials, etc.</td>
<td>126.93</td>
</tr>
<tr>
<td>Court Costs and lawful expenses</td>
<td>4,627.78</td>
</tr>
</tbody>
</table>

**Total cost of sewer** $21,642.86

The final estimate of the engineer as given on page was $21,344.00 of which $1207.00 was the approximation for court costs and lawful expenses. While the engineer surmised that the improvement would twice be tested in the County and Supreme Courts, he could not make direct allowance in the estimate for so great an expense. In fact the legal rate of estimate for court and lawful expenses is 10 per cent. on the actual cost estimate. Nevertheless the actual cost of the improvement and the estimate are unusually close.
Chapter VII

DEDUCTIONS AND SUGGESTIONS

The engineer with college experience only is liable to have some hesitancy and a feeling of uncertainty in the preparation of engineering plans and papers which must be presented to the Court and may possibly be attacked by opposing lawyers aided by other engineers. If the young engineer has a thorough knowledge of the improvement, there is no reason why he should fear for his treatment of the work. When possible, and when the design is finished, it is always advisable to consult with a more experienced and a very competent engineer. The attorneys for the improvement will be able to aid, at least from a legal point, in the preparation of the ordinance. This ordinance should be full enough to describe the work completely but not replete with minor, unnecessary details, which afford more possible opportunities for attack by the opposition.

In connection with court proceedings, a word of caution may not be amiss to young engineers who may be witnesses in court. An engineer's judgment of a matter should be fair and impartial, practically on the same high plane as that of the Court. If he is personally interested in a work, he may advise his attorneys as to what points should or should not be brought out when he is on the stand. However, he must always give his evidence with the thought in mind that his reputation as an engineer is at stake.

The proposal and contract should always be shaped so as
to minimize the chance for extra work and to fix the price for such as may be necessary. Moreover it is not always best and cheapest in the long run to let the contract to the lowest bidder. Thorough investigation should be made not only of the lowest bidder's ability but also of his financial standing and that of his surety bondsmen.

The usage of ready-made reinforced concrete pipe is now established, and such pipe are in general preferable to monolithic pipe made in place. They should be made and cured under reliable, competent city inspection. With ready-made pipe, a mechanical excavator and back-filler can be used, which will not only shorten the time of construction but will also decrease the cost by reducing expense for back-filling, timbering and manual labor.

If a monolithic pipe built in place is desirable, metal forms are to be preferred to wooden. Collapsible full round (or other shaped) forms are preferable to half sections. Pit or bank-run materials should not be used. Screening and correct proportions should be specified, and this should not increase the cost of the concrete, since a saving in cement will be effected. Batch concrete mixers, on the whole, are better and more dependable than continuous mixers.

The field book of an engineer should be so kept at all times so that another may take the book and proceed with the work. All facts relative to the work should be so noted that the book will be admitted as evidence in Court. Items relating to cost are always of value.

Insistence should be made that all inspectors on the work be persons of engineering knowledge.
Chapter VIII

APPENDIX

Legal Papers Incident to Improvement

Herewith are given the legal papers appertaining to the work and arranged in chronological order.

ORDINANCE NO. 91

An Ordinance establishing a basis of City Levels and City Grades and providing a penalty for the disturbance of any of the indicia of said Plane.

Be it ordained by the City Council of the City of Farmer City:

Section 1.-Base of City Levels and Bench Marks: That the permanent grades of streets and alleys in the City of Farmer City hereinafter fixed are referred to a plane as the basis or datum for all city levels. Said plane referred to is the top of a brass pipe one-half (\(\frac{1}{2}\)) inch in external diameter firmly imbedded in and projecting one and three-quarters (\(1\frac{3}{4}\)) inches from the junction of the facing and ordinary brick of the south wall of the City Hall, and at a point in the wall aforesaid one (1) foot east of the southwest corner of said building.

The elevation of this city datum plane, as calculated from the datum plane monument of the United States Geological Survey located eighteen (18) feet south of the center of the main track of the Peoria and Eastern Railway Company (The Cleveland, Cincinnati, Chicago and St. Louis Railway Company, Lessee) and on the east side of Plum street, and according to the Department of the Interior at a mean sea level elevation of seven
hundred thirty-two and four hundred and fifty-six thousands (732,456) feet is seven hundred twenty-seven and three hundred and forty-four thousands (727,344) feet, which elevation is zero (0) and is seventy-three thousandths (0.073) feet lower than the upper southwest corner of the stone window sill ten (10) feet from the southwest corner of said City Hall.

Section 2.-It shall be unlawful for any person in said city to deface or injure the brick, or in any manner disfigure any monument, stone, brick, base, pipe or other indicia locating or marking any grade in said city.

Any person violating any of the provisions of this section shall, on conviction, forfeit and pay not less than three ($3.00) nor more than one hundred dollars ($100.00) for each and every offense.

Passed June 2, 1908.

Approved June 2, 1908.

C. D. Rock, Mayor.

Attest: Tom Young, City Clerk.

ORDINANCE NO. 92

An Ordinance creating the office of Public Engineer—defining his duties.

Be it ordained by the City Council of the City of Farmer City:

Section 1.-Office created—term. There is hereby created the office of Public Engineer of the City. He shall hold his office for the term of one year until his successor is appointed and qualified; provided that said office of public
engineer may be discontinued by ordinance at any time, to take
effect at the expiration of the then fiscal year, and no officer
filling any office so discontinued shall have any claim against
the said City for any compensation after said discontinuance.

Section 2.—Appointment. The public engineer shall be
appointed by the mayor by and with the advice and consent of the
city council. Such appointment may be made as soon as may be
reasonably done after the passage and publication of this ordi-
nance, but thereafter such public engineer shall be appointed by
the mayor by and with the advice and consent of the city council
on the first Monday in May, 1909, or as soon thereafter as may
be, and annually thereafter.

Section 3.—Oath—bond. Before entering upon the duties
of his office said public engineer shall take the oath prescribed
by law for other city officers, and shall execute a bond to the
city in the penal sum of one thousand dollars with such sureties
as shall be approved by the city council conditioned for the
faithful performance of the duties of his office.

Section 4.—Compensation. The compensation of said
public engineer shall be determined and fixed by the city council,
and no order, resolution or ordinance to change the same shall be
passed within one month after its introduction and publication.

Section 5.—Qualifications of. No person shall be per-
mitted to occupy the office of public engineer who is not reason-
ably skillful in civil engineering and surveying and able to read,
write and speak the English language, or who is not, at the time
of his appointment, a citizen of the United States.
Section 6.—Duties of. That in addition to any other duties required of said public engineer, he shall, when so ordered by the city council, ascertain and establish the grade of every street, avenue, alley, lane, or other public place or square within the corporate limits of the city of Farmer City, and mark the grade of any such street, alley, lane, avenue, public square, or public place in some substantial and permanent manner. He shall, from time to time, examine all public works in the course of erection, and shall preserve and file in his office, in a manner convenient for reference, all the plats, surveys, maps, papers and books pertaining to his office. He shall also make the necessary surveys of streets, lanes, avenues, alleys, and public squares, and all other surveys required by the city, and shall also mark the line of any lot on any public or private property; make correct levelings of all streets, lanes, avenues, and alleys, the grade whereof is not yet established, and leveling plans and estimates of any street, lane, alley or avenue the grading whereof shall be changed or altered; make such land marks, either for surveying or leveling, by planting stones, stakes or otherwise, as he shall deem necessary or useful in field operations, and mark out all streets, lanes, avenues and alleys authorized to be opened by the ordinances of said city; he shall construct and keep in his office a corrected map of the city, showing thereon the several additions thereto, the streets, lanes, avenues, alleys, squares, buildings and city property and bridges, and generally all such conspicuous and permanent typographical information as he shall deem necessary, and from time to time correct or alter the same, as circumstances may require; he shall also report to the city council, at their
last stated meeting in each month, a general abstract of all the operations of his department since the previous report, the work executed, and which remains to be executed, and such other information as he shall deem of interest to the city, or the council may require.

Section 7. - Surveying streets. Whenever any new street, lane, avenue or alley is established, or any alteration made in the existing streets, lanes, avenues or alleys, or any addition is made to the City of Farmer City, the public engineer shall survey the same, by running the center line thereof, and noting the width of the street on each side of the line, the intersection of certain streets therewith, and shall make levelings thereof, and report to the city council a plan and measurement for the grade thereof and the grade of the intersections therewith.

Section 8. - Survey to be made by Engineer. The said public engineer shall do and perform within said city, all engineering and surveying, and such other duties pertaining to his office as may hereafter from time to time be prescribed by ordinance, resolution, or order of the city council; he shall, when requested so to do, survey any private lot in said city into as many parts or divisions as may be desired, and put down the necessary stakes; designate, when requested by any person about to build a house or erect a fence, or grade or make a sidewalk, the line of the street, lane, avenue or alley, on which such house or fence is to be erected, or sidewalk made, and also the grade of such street, lane, avenue or alley, and make out and deliver to individuals certificates of all surveys made at their request; and he shall superintend the construction and repairs of all side-
walks in said city, and see that the work is done in accordance
with the ordinance relative thereto.

Section 9.-Plans, Profiles and Specifications of Im-
provements. Whenever any public improvement shall be ordered
by the city council, a plan or profile of such public improve-
ment, accompanied with specifications for doing of the same as
prescribed by the ordinance of the city council ordering such im-
provement, shall be made and placed on file in the office of the
city clerk, which said plan, profile and specifications shall,
at all times, be open for public inspection in said office, and
no contract shall be let for the making of any public improvement
except in the manner prescribed in these ordinances.

Section 10.-Sewers and Drains-Connections-Permit.
The public engineer shall prescribe the manner and point of pierc-
ing and opening any of the sewers or drains, in any of the public
places of the city, and the form, size and material of the connec-
tion made therewith, and shall have authority to grant permits
to make lateral connections with said sewers, which said permit
when granted to any person or persons, shall specify the point
in such sewer such lateral connection shall be made, the form,
size and material to be used in making such connections, how the
same shall be connected at each end of such lateral, the hour of
the day when the street or public thoroughfare may be dug up for
such purpose and the property for which such connection is made.
Which said permits shall be granted subject to the wishes and de-
sires of the city council in said matter, and the city council
may at any time revoke any such permission or may make special
restrictions regarding the same.
Section 11.—Connecting with Sewers, etc., without Permit. No connections shall be made with any sewer or drain in any of the public streets, avenues, alleys or other public places in said city, without the written permit of the public engineer, as provided in the foregoing section of this ordinance; and the person making or attempting to make any connection or opening into any such sewer or drain, without first having obtained such permission, or, having obtained such permission, makes such connection in a manner different from the mode prescribed in such permit issued by said public engineer, shall subject such person making the same, and the person directing it, respectively, to a penalty of not exceeding fifty dollars.

Section 12.—Connecting with Sewers—How Authorized. The public engineer may, when authorized by the city council, grant permission to persons to construct, at their expense, sewers or drains, to lay pipes to connect with any sewers or drains, built in any of the streets, alleys or public places in the city, in the manner and subject to the provisions, hereinafter prescribed, and also subject to the further provisions, that such permission shall not be granted by the public engineer to any person, firm or corporation, except upon the agreement, in writing, of the person, firm or corporation, applying for such permission, that said work shall be performed by some person or persons duly licensed therefor, or under the supervision or direction of some such person, firm or corporation to whom such permission is given, and will indemnify the City of Farmer City against any loss or damage which it may sustain by reason of injuries resulting from the work so permitted to be done.
Section 13.—Sewers, City's Rights, Etc.—Reserved.
No person, firm or corporation, constructing any work under the provisions of the preceding section of this ordinance, shall have any claim against the city, if the work so permitted, at any time after the same may be completed, is ordered to be taken up by the authority of the city council; nor shall any such person, firm or corporation have any exemption from an assessment lawfully imposed, for constructing sewers or drains in the vicinity of their property, and the constructing of any sewers or drains, by any person, firm or corporation, under the provisions of the preceding section of this ordinance, shall be deemed and taken as an acquiescence in the provisions of this section, whether the same be set forth in the permit of the public engineer authorizing such work or not, and shall be binding upon the heirs, administrators, successors, or assigns of any such person, firm or corporation.

Section 14.—Sewer Connections, Etc.—Public Engineer to Grant Permits. It is hereby made the duty of the public engineer to provide the city with permits to be used for the purposes specified in Section 10 of this ordinance. Such permits shall be made in book form, well bound, and numbered in duplicate, from one upwards, and shall contain upon their face a brief summary of the provisions of the preceding sections. Upon application to the public engineer by any person for such permit, he shall fill out the same in duplicate to the person, firm or corporation applying therefor, which duplicates shall be signed by the public engineer, and the person, firm or corporation asking such permit, one of which shall be delivered to the applicant, and the other
to remain undetached in the said book of permits, in the office of said public engineer, and shall be by him safely kept for any future use or reference by the city.

Section 15.—Record of Permits and of Sewer Service Pipes Constructed by City—How to be kept. The public engineer shall keep a record, in a plain and permanent manner, of all permits granted by him to any person, firm or corporation, for any of the purposes specified in these ordinances, in which he shall enter the name of the person, firm or corporation, to whom such permit was issued, for what purpose, the amount of moneys received, and from whom, for the replacing or repairing of any street, alley, avenue or other public place, dug up or disturbed under such permit, and the amount of moneys received, and from whom, as engineer's fees, on account of estimates furnished by said engineer, and he shall make report of, and pay over to the proper department of the city government, monthly, all such funds. He shall also keep, or cause to be kept in a book prepared for that particular purpose, a record of all sewer service pipes laid by the city and the exact location of the same; and no person shall be permitted to use the same nor to lay other service pipes to avoid paying for the same, until the service pipes laid by the city shall have been paid for by such person.

Section 16.—Annual Report to City Council. The public engineer shall, on or before the first day of May in each year, prepare and present to the City Council, a report under oath, showing the receipt and expenditures, and the entire work of his department during the previous fiscal year. Said report shall contain a detailed statement of all receipts and from what sources;
the total amount of expenditures and for what purposes; the regular employees in his department and their respective salaries; the public improvements made and of what character; and the cost of the same, and whether payable out of the general corporate fund or by special assessment; the amount expended for repairs and the nature and cost of the same.

Section 17.-Records. It shall be his duty to provide himself at the expense of the city, with well bound books, in which he shall carefully and legibly record and write down every leveling made by him and every grade as established by ordinance, and also every survey made for individuals, giving therein the names of the persons the survey of whose lot is so recorded, and describing, as near as possible, the metes and bounds of the lot, and noting the date on which the survey was made; and such records shall be subject to the inspection of any person who may think himself interested. In addition to the foregoing records it shall be the duty of the public engineer to keep records of all plats or subdivisions of property in the city.

Section 18.-Fees of. The public engineer and surveyor shall be entitled to the following fees, to-wit: For surveying every private lot in the city, marking corners and giving certificate thereof, the sum of three dollars; for surveying, marking corners, and giving certificate as above, and subdividing the lot, an additional fee of one dollar for each subdivision; for designating the line or grade of any street, lane, avenue or alley on which any person is desirous of building a house or erecting a fence, grading, or making a sidewalk, the sum of fifty cents for each line or grade so designated, the whole of said fees to be
paid by the applicant or owner of each lot. Which fees shall be paid over each month by the said public engineer to the city treasurer of said city.

Section 19.—Reports to be made monthly. It shall be the duty of said public engineer to make monthly reports to the city treasurer of all moneys received by his office, arising from fees, or other official acts, and to pay over to said city treasurer, at such time, all such funds, and he shall also make quarterly report of such matters to the City Council, all of which said reports shall be written in detail, and verified by the oath of said engineer. He shall also, on the fifteenth and on the thirtieth days of each and every month, make a written report to the city clerk showing the name of each person employed by him, the time worked, and the kind of labor performed, the amount due each person for such work and the locality where the same was performed.

Section 20.—Local Improvements. The public engineer shall regularly attend the meeting of the board of local improvements, furnish all estimates for the same as required by law, and actively assist in the superintendence of all public improvements, contracts for which shall have been let by said board.

Passed June 2, 1908.

Approved June 2, 1908.

C. D. Rock, Mayor.

Attest: Tom Young, City Clerk.
LOCAL IMPROVEMENT NOTICE

PUBLIC HEARING

Whereas, the Board of Local Improvements of the City of Farmer City, Illinois, has, upon due consideration, determined that a sewer district should be formed and established in said City as follows:

Beginning at a point in Sangster's Oak Grove Addition to the City of Farmer City where the north line of Clinton Avenue intersects the line between Lot No. Thirteen (13) and Lot No. Fourteen (14) in Block No. Three (3) of said Addition, thence running northwardly on said line between said lots and a prolongation of said line last named to a point which is the common corner to Lots No. Three (3), Four (4), Thirteen (13), and Fourteen (14), in Block No. Two (2) in said Addition; thence westwardly on a line and on the prolongation of the line between Lots No. Four (4) to Eight (8) inclusive, and Thirteen (13) to Nine (9) inclusive of said Block No. Two (2) to a point in the west boundary line of the City limits; thence northwardly along the west boundary line of the City limits to a point which is the intersection of said line with the prolongation of the division line between Lots Nos. Eight (8) to Four (4) inclusive and Lots Nos. Nine (9) to Thirteen (13) inclusive of Block No. One (1) of said Addition; thence eastwardly along said division line prolongation last named in said Block No. One (1) and division line as prolonged to a point which is the common corner to Lots No. Three (3), Four (4) Thirteen (13) and Fourteen (14) of said block No. One (1), thence northwardly on a line and on a prolongation of the line between Lot No. Four (4) and Lots No. Three (3), Two (2) and One (1)
of said Block No. One (1) to the center line of Water Street; thence eastwardly along the center line of Water Street to a point where said line intersects the prolongation of the line between Lot No. Eleven (11) and Lot No. Twelve (12) of Block No. Two (2) of Watson's Second Addition to the City of Farmer City; thence northwardly between the aforesaid last named lots to the common corner of Lots No. One (1), Two (2), Eleven (11), and Twelve (12) of said Block No. Two (2) of said Watson's Second Addition; thence eastwardly on the line and prolongation of the line between said Lots No. One (1), and Twelve (12) last named, and continuing through Block No. One (1) of said Addition along the line last named as prolonged to the west boundary line of John Street; thence northwardly along the west boundary line of John Street to a point where the prolongation of the south boundary line of Lot No. Eight (8) of Block No. Thirty-two (32) of Weedman and McCord's Addition to the City of Farmer City intersects the west boundary line of John Street; thence eastwardly to a point which is the southwest corner of said Lot No. Eight (8) last named; thence southwardly along the east boundary line of John Street to the point of its intersection with the center line of the alley of Block No. Six (6) of the original Town of Mt. Pleasant, now City of Farmer City; thence eastwardly along said center line and prolongation of said center line of said alley through Blocks No. Six (6), Five (5) and Four (4) of the original Town of Mt. Pleasant, now City of Farmer City, to the point of its intersection with the center line of Main Street; thence southwardly on the center line of and the prolongation of the center line of Main Street to the point of its inter-
section with the prolongation of the center line of the alley in Block No. Ten (10) of the original Town of Mt. Pleasant, now City of Farmer City; thence eastwardly along the center line of said alley to the point of intersection of said center line with the center line of the north and south alley in said Block No. Ten (10) last named at a distance of One Hundred and Twenty-eight and three-tenths (128.3) feet from the east boundary line of Main street; thence southwardly along said center line of said north and south alley to the center line of Green Street; thence eastwardly Seven and nine-tenths (7.9) feet along the center line of Green Street; thence southwardly through Block No. Fifteen (15) of said original Town of Mt. Pleasant, now City of Farmer City, along the center line of the alley in said Block No. Fifteen (15) to the center line of Water Street; thence westwardly Forty (40) feet along the center line of Water Street; thence southwardly through Lot No. One (1) in William McKinley's Sub-division of a part of the East Half (½) of the Southwest Quarter (¼) of Section No. Twenty-eight (28), Township Twenty-one (21) North, Range Five (5) East of the Third Principal Meridian on a line parallel with Main Street to the southeast corner of Lot No. One (1) in Block No. One (1) of C. H. Moore's Addition to the City of Farmer City, thence westwardly along the division line between Lot No. One (1) and Lot No. Two (2) of said Block No. One (1) last named to Main Street; thence crossing Main Street to the division line between Lot No. Four (4) and Lot No. Five (5) of Block No. Two (2) of C. H. Moore's Addition and along said division line to the center line of the north and south alley between Lots No. Two (2) to No. Nine (9) inclusive and Lot No.
Fifteen (15) of said Block last named; thence southwardly along the center line of said alley last named to its intersection with the center line of the alley between the north and south halves of said Block No. Two (2) last named; thence westwardly along the center line of said alley to the western boundary line of said Block No. Two (2) last named; thence southwardly along said western boundary line of said Block last named to a point one hundred and twenty-five (125) feet south of the south boundary line of Clinton Avenue; thence southwestwardly on a line parallel with and one hundred and twenty-five (125) feet from the south boundary line of said Clinton Avenue to the center line of the alley at the east side of Block No. One (1) of Watson's First Addition to Farmer City; thence northwardly to the intersection of the center line of John Street with the north boundary line of said Clinton Avenue; thence in a southwestwardly direction along said north boundary line of Clinton Avenue to the point of beginning:

AND WHEREAS, said Board has further determined that said sewer district should be improved by the construction of an outlet sewer, together with a main and lateral sewers therein:

AND WHEREAS, for the purpose of providing an adequate outlet for said sewerage system it will be necessary to acquire private property therefor, which will be damaged by the taking thereof:

AND WHEREAS, the private property to be taken and acquired by said City in the construction of said proposed system of sewerage is described as follows:

A strip of land Sixty-six (66) feet wide and Six Hundred
and Sixty-four (664) feet long, being a strip of land thirty-three (33) feet wide on each side of the center line thereof, and which said center line is described as follows:

Beginning at a point on the West Quarter Section line of Section No. Twenty-eight (28), Township Twenty-one (21) North, Range Five (5) East of the Third Principal Meridian at a point One Hundred and Eighteen (118) feet south of the south boundary line of Clinton Avenue and continuing southeastwardly on a line intersecting said quarter section line with an angle of Twenty-eight (28) degrees and Fifty (50) minutes (28°-50') to a second point Four Hundred and Seventy-nine (479) feet from the point of commencement; thence with a deflection of Nineteen (19) degrees and Thirty-four (34) minutes (19°-34') from the aforesaid line terminating Four Hundred and Seventy-nine (479) feet from said point in the quarter section line on a line southwardly One Hundred and Eighty-five (185) feet to a point in the stream known as Salt Creek;

AND WHEREAS, this Board upon due consideration thereof has determined that said proposed improvement is a necessary local improvement, and will be beneficial to the property to be affected thereby:

AND WHEREAS, the Public Engineer of said City, together with the President of the Board of Local Improvements of said City, have filed with this Board an itemized estimate of the cost of said improvement, which estimate is itemized to the satisfaction of this Board and hereby approved and adopted by this Board in the following form, to-wit:
To the Board of Local Improvements of the City of Farmer City, Illinois:

GENTLEMEN:—In pursuance with your request we severally herewith submit to you an itemized estimate of the cost of a system of combined sewers for storm water, surface drainage, and sanitary purposes in John Street and other streets, avenues and places of the City of Farmer City. The said estimate includes the cost of all materials and labor, and all lawful expenses attending the said improvement; and the sum is Twenty-one Thousand, Three Hundred and Thirty-four (21,334) Dollars.

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<th>LINEAL FEET</th>
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<th>KIND OF PIPE</th>
<th>COST IN PLACE PER LINEAL FOOT</th>
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<td>Total</td>
<td>$21,334.00</td>
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I hereby certify that the estimate above does not exceed the probable cost of the said improvement and the lawful expenses attending the same.

Dated July 15, 1908. WM. WALTER SMITH, City Engineer

I hereby certify that the estimate above does not exceed the probable cost of said improvement and the lawful expenses...
attending the same.

Dated July 15, 1908.

G. D. ROCK

President of the Board of Local Improvements.

Now, THEREFORE, BE IT RESOLVED, that there is hereby established a sewer district which is bounded and described as follows:

Beginning at a point in Sangster's Oak Grove Addition to the City of Farmer City, where the north line of Clinton Avenue intersects the line between Lot No. Thirteen (13) and Lot No. Fourteen (14) in Block No. Three (3) of said Addition, thence running northwardly on said line between said lots and a prolongation of said line last named to a point which is a common corner to Lots No. Three (3), Four (4), Thirteen (13) and Fourteen (14) in Block No. Two (2) in said Addition; thence westwardly on a line and on the prolongation of the line between Lots No. Four (4) to eight (8) inclusive and Thirteen (13) to Nine (9) inclusive of said Block No. Two (2) to a point in the west boundary line of the City limits; thence northwardly along the west boundary line of the City limits to a point which is the intersection of said line with the prolongation of the division line between Lots No. Eight (8) to Four (4) inclusive and Lots Nos. Nine (9) to Thirteen (13) inclusive of Block No. One (1) of said Addition; thence eastwardly along said division line prolongation last named in said Block No. One (1) and division line as prolonged to a point which is the common corner to Lots No. Three (3), Four (4), Thirteen (13) and Fourteen (14) of said Block No. One (1); thence northwardly on a line and on the prolongation of the line between Lot No. Four (4) and Lots No. Three (3), Two (2) and One (1) of said Block No. One (1) to the center line of
Water Street; thence eastwardly along the center line of Water Street to a point where said line intersects the prolongation of the line between Lot No. Eleven (11) and Lot No. Twelve (12) of Block No. Two (2) of Watson's Second Addition to the City of Farmer City; thence northwardly between the aforesaid last named lots to the common corner of Lots No. One (1), Two (2), Eleven (11) and Twelve (12) of said Block No. Two (2) of said Watson's Second Addition; thence eastwardly on the line and prolongation of the line between said Lots One (1) and Twelve (12) last named and continuing through Block No. One (1) of said Addition along the line last named as prolonged to the west boundary line of John Street; thence northwardly along the west boundary line of John Street to a point where the prolongation of the south boundary line of Lot No. Eight (8) of Block No. Thirty-two (32) of Weedman & McCord's Addition to the City of Farmer City intersects the west boundary line of John Street; thence eastwardly to a point which is the southwest corner of said Lot No. Eight (8) last named; thence southwardly along the east boundary line of John Street to the point of its intersection with the center line of the alley of Block No. Six (6) of the original Town of Mt. Pleasant, now City of Farmer City; thence eastwardly along the said center line and prolongation of the said center line of said alley through Blocks No. Six (6), Five (5) and Four (4) of the original Town of Mt. Pleasant, now City of Farmer City, to the point of its intersection with the center line of Main Street; thence southwardly on the center line of and the prolongation of the center line of Main Street to the point of its intersection with the prolongation of the center line of the alley in Block.
No. Ten (10) of the original Town of Mt. Pleasant, now City
of Farmer City; thence eastwardly along the center line of
said alley to the point of intersection of said center line with
the center line of the said north and south alley in said Block
No. Ten (10) last named at a distance of One Hundred and Twenty-
eight and three-tenths (128.3) feet from the boundary line of
Main Street; thence southwardly along said center line of said
north and south alley to the center line of Green Street; thence
eastwardly Seven and nine-tenths (7.9) feet along the center line
of Green Street; thence southwardly through Block No. Fifteen
(15) of said original Town of Mt. Pleasant, now City of Farmer
City, along the center line of the alley in said Block No. Fif-
teen (15) to the center line of Water Street; thence westwardly
forty (40) feet along the center line of Water Street; thence
southwardly through Lot No. One (1) in William McKinley's Sub-
division of a part of the East Half (1/2) of the Southwest Quarter
(1/4) of Section No. Twenty-eight (28), Township Twenty-one (21)
North, Range Five (5) East of the Third Principal Meridian on a
line parallel with Main Street to the southeast corner of Lot
No. One (1) in Block No. One (1) of C. H. Moore's Addition to
the City of Farmer City; thence westwardly along the division
line between Lot No. One (1) and Lot No. Two (2) of said Block
No. One (1) last named to Main Street; thence crossing Main
Street to the division line between Lot No. Four (4) and Lot
No. Five (5) of Block No. Two (2) of C. H. Moore's Addition and
along said division line to the center line of the north and
south alley between Lots No. Two (2) to Nine (9) inclusive and
Lot No. Fifteen (15) of said Block last named; thence southwardly
along the center line of said alley last named to its intersection with the center line of the alley between the north and south halves of the said Block No. Two (2) last named; thence westwardly along the center line of said alley to the western boundary line of said Block No. Two (2) last named; thence southwardly along said western boundary line of said Block last named to a point One Hundred and Twenty-five (125) feet south of the south boundary line of said Clinton Avenue; thence southwestwardly on a line parallel with and One Hundred and Twenty-five (125) feet from the south boundary line of said Clinton Avenue to the center line of the alley at the east side of Block No. One (1) of Watson's First Addition to Farmer City; thence northwardly to the intersection of the center line of John Street with the north boundary line of said Clinton Avenue; thence in a southwesterly direction along said north boundary line of Clinton Avenue to the point of beginning.

BE IT FURTHER RESOLVED, that it will be necessary, in the making and construction of said local improvement, for said city to take, acquire and damage the following property, to-wit:

A strip of land Sixty-six (66) feet wide and Six Hundred and Sixty-four (664) feet long, being a strip of land Thirty-three (33) feet wide on each side of the center line thereof, and which center line is described as follows:

Beginning at a point on the West Quarter Section line of Section No. Twenty-eight (28), Township Twenty-one (21) North, Range Five (5) East of the Third Principal Meridian at a point One Hundred and Eighteen (118) feet south of the south boundary line of Clinton Avenue and continuing southeastwardly on a line
intersecting said quarter section line with an angle of Twenty-eight degrees and Fifty minutes (28°-50') to a second point Four Hundred and Seventy-nine (479) feet from the point of commencement; thence; with a deflection of Nineteen (19) degrees and Thirty-four (34) minutes (19°-34') from the aforesaid line terminating Four Hundred and Seventy-nine (479) feet from said point in said quarter section line, on a line southwardly One Hundred and Eighty-five (185) feet to a point in the stream known as Salt Creek.

BE IT FURTHER RESOLVED, that there be constructed the following sewer as an outlet to the system of sewerage within said sewer district, to-wit:

A main outlet sewer with an internal diameter of Thirty-three (33) inches, commencing at a point in the bed of Salt Creek Nineteen (19) feet north and Two Hundred and Fifty-five (255) feet east of the southeast corner of the West Half ($\frac{1}{2}$) of the West Half ($\frac{1}{2}$) of Section Twenty-eight (28), in Township Twenty-one (21) North, Range Five (5) East of the Third (3rd) Principal Meridian, in the County of DeWitt and State of Illinois, running thence in a general northwesterly course to a point in the alley at the head of John Street and One Hundred and Eighteen (118) feet south of Clinton Avenue in said City.

BE IT FURTHER RESOLVED, that said sewer district be improved by the construction of an outlet main sewer and lateral sewers as follows:

A main sewer with an internal diameter of Thirty-three (33) inches, commencing at a point in the alley at the head of John Street and one hundred and eighteen (118) feet south of
Clinton Avenue, running thence North along the said alley and John Street to a point Forty-four (44) feet north of the center line of High Street.

A lateral sewer with an internal diameter of Twelve (12) inches, commencing at the point of intersection of the center line of John Street with Clinton Avenue, running thence easterly along Clinton Avenue to the point of intersection of the center line of Clinton Avenue and Plum Street; thence continuing along Clinton Avenue with a sewer with an internal diameter of Ten (10) inches to the center line of Main Street; thence northwardly along Main Street to a point Seventeen (17) feet south of the south line of Water Street.

A lateral sewer with an internal diameter of eighteen (18) inches, commencing at the point of intersection of the center line of John Street with Water Street, running thence west along Water Street to the center line of Washington Street; from thence continuing with a sewer with an internal diameter of fifteen (15) inches south along Washington Street to the center line of Indiana Street; from thence continuing south along Washington Street with a sewer with an internal diameter of Twelve (12) inches to the center line of Franklin Street; from thence continuing south along Washington Street with a sewer with an internal diameter of Eight (8) inches to a point Ninety-three (93) feet north of Clinton Avenue.

A lateral sewer with an internal diameter of Fifteen (15) inches, commencing at the intersection of the center line of Washington Street with Indiana Street, running thence west along Indiana Street Four Hundred and Forty-four and Six-tenths (444.6) feet.
A lateral sewer with an internal diameter of Ten (10) inches, commencing at the intersection of the center line of Water Street with John Street, running thence east along Water Street to the center line of Plum Street; thence continuing east along Water Street with a sewer with an internal diameter of Eight (8) inches to a point Eighty-five and Five-tenths (85.5) feet west of the west line of Main Street.

A lateral sewer with an internal diameter of Eight (8) inches, commencing at the intersection of Plum Street with the center line of Water Street; thence running south along Plum Street to a point Seventy-seven (77) feet north of the north line of Clinton Avenue.

A lateral sewer with an internal diameter of Ten (10) inches, commencing at the intersection of Green Street with the center line of John Street, running thence east along Green Street to the center line of Plum Street, continuing thence east along Green Street with a sewer Eight (8) inches in internal diameter to a point Eighty-one and Five-tenths (81.5) feet west of the west line of Main Street.

A lateral sewer with an internal diameter of Twelve (12) inches, commencing at the point of intersection of Market Street with the center line of John Street; thence running east along Market Street to a point Sixteen and one-tenth (16.1) feet east of the west line of Main Street on the west side of the Public Square; thence running southeastwardly along Main Street to a point Ninety-eight (98) feet north of Green Street; thence continuing south along Main Street with a sewer Ten (10) inches in internal diameter to a point Nineteen (19) feet north of the
north line of Water Street.

The whole improvement to conform to the proper grade and specifications to be established in the ordinance providing for the construction of said improvement; and also by constructing the necessary catch basins, manholes, inlets, retaining walls and sluice gates appurtenant to said improvement.

BE IT FURTHER RESOLVED, that Tuesday, July 28th, 1908, at two o'clock P. M. be, and the same is hereby fixed as the day and hour for the public hearing and consideration of this resolution in regard to said proposed improvement, at which day and hour this Board shall meet in the Council Chamber in the City Building of said City of Farmer City, Illinois, in open session, then and there to hear the representations of any person or persons desiring to be heard on the subject of, or the nature of said improvement, the necessity therefor, and the cost thereof as estimated.

BE IT FURTHER RESOLVED, that the Secretary of this Board shall not less than five (5) days prior to the time for the public hearing and consideration of this resolution, send by mail, post paid, directed to the person or persons who paid the general taxes for the last preceding year on each lot, block, tract or parcel of land fronting said proposed improvement, a notice of the time and place of such public consideration or hearing, together with the substance of this resolution and estimate of the cost of said proposed improvement, and a notice that the nature, kind, character, extent and estimated cost of said proposed improvement may be changed by said Board at the public consideration thereof, and that such Board will take such further
action thereon as the law may require and to it shall seem meet, and that if, upon such public consideration, the said Board shall deem such proposed improvement desirable, it shall adopt a resolution and prepare and submit an ordinance as provided by the statute.

You are hereby notified that said Board of Local Improvements will meet in the Council Chamber in the City Building in said City of Farmer City, Illinois, on Tuesday, July 28th, A. D. 1908, at 2 o'clock P. M. in open session, which time and place has been fixed by said Board in the foregoing resolution as the time and place for the public consideration and hearing of said proposed improvement. And said Board will, then and there, hear the representation of any person desiring to be heard on the subject of the necessity for said proposed improvement, the nature thereof, and the cost as estimated.

You are further notified that the nature, time, character, extent and estimated cost of the said proposed improvement may be changed by the said Board at the public consideration thereof and if, upon said hearing, the Board shall deem said proposed improvement desirable, it shall adopt a resolution therefor and prepare and submit and ordinance therefor, and take such further action as the law may require.

Dated July 18th, A. D. 1908.

BOARD OF LOCAL IMPROVEMENTS OF
FARMER CITY, ILLINOIS.

C. D. Rock, President.

Henry L. Williams, Secretary.

Epamy Covey.
1. WHEREAS, the Board of Local Improvements of the City of Farmer City, Illinois, did, on the 16th day of July A. D. 1908, adopt a resolution creating a Sewer District in said city, and which said sewer district is specifically described in said resolution which is of record in the proceedings of this Board:

2. AND WHEREAS, the said resolution did further provide that said sewer district be improved by the making and construction therein of a local improvement, to-wit: a system of sewers described as follows: (Followed by description as given on pages 133 to 140.)

The whole improvement to conform to the proper grade and specifications to be established in the ordinance providing for the construction of said improvement; and also by constructing the necessary catch basins, manholes, inlets, retaining walls and sluice gates appurtenant to said improvement.

3. AND WHEREAS, said resolution did further provide that in the making and construction of said local improvement, that it would be necessary for said city to take, acquire and damage the following property, to-wit: (Described in resolution on pages 136 and 137.)

4. AND WHEREAS, said resolution did further provide that Tuesday, July 28th, 1908, at two o'clock P. M. be, and the same was hereby fixed as the day and hour for the public hearing and consideration of said resolution in regard to said proposed improvement, at which day and hour said Board of Local Improvements would meet in the Council Chamber in the City Building of said City, in open session, then and there to hear the representations of any person or persons desiring to be heard on the
subject of, or the nature of said improvement, the necessity therefor, and the cost therefor as estimated.

5. AND WHEREAS, said Board of Local Improvements has given notice of the said time and place of such public consideration or hearing by sending by mail, postage prepaid, directed to the person who paid the general taxes for the last preceding year on each lot, block, tract or parcel of land fronting on the proposed improvement, not less than five (5) days prior to the aforesaid time set for such public hearing. Which said notice contained the substance of the said resolution above referred to as adopted by said Board of Local Improvement and the estimate of the cost of the proposed improvement, and a notification that the extent, nature, kind, character, and estimated cost of such proposed improvement might be changed by said Board at the public consideration thereof, and that if, upon such hearing, the Board should deem such improvement desirable, it shall adopt a resolution therefor and prepare and submit an ordinance therefor:

6. AND WHEREAS, said Board of Local Improvements, at the aforesaid time and place fixed in said notice for the said public hearing, did meet and hear the representations of any and all persons desiring to be heard on the subject of the necessity for the proposed improvement, the nature thereof, or the cost as estimated, as well as all objections to the proposed improvement and any and all estimates thereof:

7. AND WHEREAS, said Board of Local Improvements, after fairly and impartially having heard at the time and place last aforesaid any and all persons desiring to be heard on the subject of the necessity for the proposed improvement, the nature thereof,
or the cost as estimated together with all objections to the proposed improvement, or any or all of the elements thereof is of the opinion that such improvement is desirable.

8. THEREFORE, BE IT RESOLVED, by the said Board of Local Improvements that said scheme of local improvements provided for by such resolution of this Board adopted on July 16th, A. D. 1908, be, and the same is hereby adhered to.

9. BE IT FURTHER RESOLVED, that said Board of Local Improvements do forthwith cause an ordinance to be prepared for said Local Improvement above mentioned.

Dated July 28th, 1908.

(Signed) C. D. Rock, President.
(Signed) H. L. Williams, Secretary.
(Signed) Epamy Covey.

Board of Local Improvements of
Farmer City, Illinois.
State of Illinois }
County of DeWitt } ss.
City of Farmer City }

IN THE MATTER OF THE CONSTRUCTION OF THE FOLLOWING DESCRIBED PROPOSED IMPROVEMENT

A main outlet sewer with an internal diameter of thirty-three (33) inches, etc., in accordance with description of sewers as in resolution, pages 137 to 140.

Henry L. Williams being first duly sworn on his oath says, that he is a member of the Board of Local Improvements of said City of Farmer City, and Secretary of said Board.

That on the 20th day of July A. D. 1908, being not less than five days prior to the time set for the public consideration and hearing in the matter of the above proposed improvement, he mailed at and in the post office in the City of Farmer City, Illinois, postage prepaid, correctly addressed to the usual post office address of the person or persons who paid the general taxes for the preceding year on each lot, block or parcel of land fronting on the proposed improvement, a notice, a true copy of which notice is hereto attached, marked "Exhibit A" and made a part of this affidavit.

Further affiant saith not.

(Signed) Henry L. Williams

Subscribed and sworn to before me this 28th day of July A. D. 1908.

(Signed) Lyle G. Herrick

Notary Public
TO THE HONORABLE MAYOR AND CITY COUNCIL OF THE CITY OF FARMER CITY, ILLINOIS

GENTLEMEN:—We, the undersigned Board of Local Improvements of the City of Farmer City, respectfully show that all steps necessary and required by law to be taken for constructing a system of combined sewers in John Street and other streets, avenues and places in the said city, more particularly shown in the ordinance presented herewith, have been so taken and done. That the undersigned have caused an ordinance to be prepared for said improvement, which ordinance entitled, "An Ordinance providing for a system of combined sewers in John Street and other streets, avenues and places in the City of Farmer City, Illinois," is hereto attached and submitted to Your Honorable Body herewith. That the undersigned herewith recommends the passage of said ordinance and the making of the improvement therein described.

That an estimate of the cost of said improvement was duly made in writing by the City Engineer of said City of Farmer City, and the President of the Board of Local Improvements of said City, over their respective signatures, itemized to the satisfaction of the undersigned as by law required, which estimate is presented herewith.

We would therefore respectfully recommend the above described improvement as being necessary and desirable.

Dated at Farmer City, Illinois, August 3rd, A. D. 1908, and respectfully submitted,

BOARD OF LOCAL IMPROVEMENTS OF THE CITY OF FARMER CITY
By C. D. ROCK, President.
H. L. WILLIAMS, Secretary
EPAMY COVEY.
TO THE BOARD OF LOCAL IMPROVEMENTS OF THE CITY
OF FARMER CITY, ILLINOIS.

GENTLEMEN:—In pursuance with your request we severally
herewith submit to you an itemized estimate of the cost of a
system of combined sewers for storm water, surface drainage,
and sanitary purposes in John Street and other streets, avenues
and places of the City of Farmer City. The said estimate includes
the cost of all materials and labor and all lawful expenses attend-
ing the said improvement; and the sum is Twenty-one Thousand
Three Hundred and Thirty-four (21,334) Dollars. (For tabular
estimate see Table 6, page 40.

I hereby certify that the estimate above does not exceed
the probable cost of the said improvement and the lawful expenses
attending the same. WM. WALTER SMITH,

Dated July 15, 1908. City Engineer.

I hereby certify that the estimate above does not exceed
the probable cost of the said improvement and the lawful expenses
attending the same. C. D. ROCK,

President of the Board of Local Improvements.

Dated July 15, 1908.
ORDINANCE NO. 95

AN ORDINANCE PROVIDING FOR A SYSTEM OF COMBINED SEWERS IN JOHN STREET AND OTHER STREETS, AVENUES AND PLACES IN THE CITY OF FARMER CITY, ILLINOIS.

Be it Ordained by the City Council of the City of Farmer City:

Section 1. That a local improvement be made in the City of Farmer City, County of DeWitt and State of Illinois, the nature, character, locality and description of which are as in this ordinance provided.

Section 2. That a combined system of sewers for storm water, surface drainage, and sanitary purposes be constructed in the streets, avenues and places in said City from the point, to the point and of the size and kind as follows:

<table>
<thead>
<tr>
<th>STREET, AVENUE, OR PLACE</th>
<th>Size Kind</th>
</tr>
</thead>
<tbody>
<tr>
<td>Diem.</td>
<td>In.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>In the W^1/2</th>
<th>A point in the bed A point in alley 33 C.S.P.</th>
</tr>
</thead>
<tbody>
<tr>
<td>of Sec. 28, of Salt Creek-Said at head of John</td>
<td></td>
</tr>
<tr>
<td>Tp. 21 N., point being 19 feet Street and 118 feet</td>
<td></td>
</tr>
<tr>
<td>R. 5 E. 3 P., North and 255 feet South of the South M.</td>
<td></td>
</tr>
<tr>
<td>East of SE. Cor. of line of Clinton</td>
<td></td>
</tr>
<tr>
<td>the W^1/2 of W^1/2 of Sec. Avenue.</td>
<td></td>
</tr>
<tr>
<td>28, Tp. 21 N., R. 5</td>
<td></td>
</tr>
<tr>
<td>E. 3 P. M.</td>
<td></td>
</tr>
</tbody>
</table>

| Alley at head of John Street and 118 feet John Street, South of the South line of Clinton Ave. |
|CLUITON AVENUE and |
|From point in alley The center lines of 33 C.S.P. |
|at head of John |
|Clinton Avenue and |
|John Street |
|A point 44 feet North 33 C.S.P. of the center line of High Street. |
|Clinton Avenue |
|The center line of John Street. |
|The center line of Plum Street. 12 V.S.P. |
|Clinton Avenue |
|The center line of Plum Street |
|The center line of Main Street. 10 V.S.P. |
|Etc. |
|Etc. |
|Etc. |
In all Streets, avenues and public places the sewers hereinabove provided shall be constructed along the "sewer line"; which line is the center line of all streets, avenues, and public places.

In the above table, counting from the left, the first column designates the street, avenue or place in which the sewer shall be constructed. The second and third columns indicate respectively the initial and terminal points of that part of the system designated in the first column. Columns four and five state the size and kind of pipe to be used in the construction of each particular part of the system.

The term "V.S.P." as used in the above table means Vitri- fied Sewer Pipe.

The term "C.S.P." as used in the above table means Concrete Sewer Pipe.

The term "concrete sewer pipe" as used in the table above means that in the part of the system so designated the conduit for the sewage shall be of cement concrete construction. The said concrete sewer shall be cylindrical in form, monolithic in construction, and with walls of a thickness of six (6) inches.

All concrete in this ordinance required shall be made and composed of one (1) part by measure of Portland cement equal in quality to the best American Portland cement and five (5) parts by measure of bank-run gravel of a quality such that it shall be free from loam, clay, and animal and vegetable matter, and graduated in sizes from pebbles one and one-half (1 1/2) inches in diameter to sand grains.

The concrete shall be made by thoroughly mixing the propor-
tioned ingredients dry; after which sufficient water shall be added and the ingredients again mixed until all particles of the gravel are covered with a cement mortar coating. The concrete so made shall be immediately spread and compacted into place so as to exclude all voids therefrom. All concrete provided for herein, when made shall be immediately used, and not at all after it once sets.

The term "vitrified sewer pipe" as used in the above table means that in the part of the system so designated the conduit for the sewage shall be of the best quality of standard, hard-burned, salt-glazed, vitrified clay tile pipe of the "bell and spigot" pattern, and not less than two (2) feet in length, with walls of a thickness of not less than thirteen-sixteenths (13-16) of an inch. Each pipe shall be straight, or evenly curved as may be required, and in cross section shall not vary more than one-half (\( \frac{1}{2} \)) inch from a circle.

In laying the vitrified sewer pipe the spigot end shall be fitted snugly into the bell of the adjoining pipe, and the space between shall be entirely and tightly filled with cement mortar of the kind and quality herein below specified.

Cement mortar in this ordinance required for brick masonry shall be composed of one (1) part by measure of Portland cement of the kind and quality hereinbefore prescribed, and two (2) parts by measure of clean, well graduated sand. The ingredients of the mortar shall be thoroughly mixed dry, after which sufficient water shall be added and the mixing continued until the mortar shall have been brought to the proper consistency.
All other mortar in this ordinance required shall be composed of one (1) part of cement and one (1) part of sand of the kind and quality and mixture hereinabove prescribed.

All mortar provided for herein, when made, shall be at once used and not at all after it once sets.

The sewers herein provided for shall be placed in the ground at the grade or elevation herein given in such manner as to have a firm and even bearing so as to remain permanently at such grade or elevation and so as to leave the interior smooth and free from all obstructions to the flow therein. The grade or elevation of sewers herein provided for is measured from the inside bottom or invert of said sewers and is calculated from the sea level elevation of the Farmer City datum as established by ordinance No. Ninety-one (91) passed and approved June 2d, A. D. 1908.

Manholes shall be located on the line of the sewer and at the points as in the table next below indicated.

<table>
<thead>
<tr>
<th>Line of</th>
<th>Place of Elevation in Street, Avenue or Place</th>
<th>Elevations in feet &amp; decimals of feet at manhole inlet and manhole outlet Inlet Outlet</th>
</tr>
</thead>
<tbody>
<tr>
<td>In the W. 1/2 of Sec. 28, Tp. 21 N, outlet in Salt Creek</td>
<td>A point 135 feet from point</td>
<td>696.30 696.70</td>
</tr>
<tr>
<td>R. 5 E. 3d, P. M.</td>
<td>of</td>
<td></td>
</tr>
<tr>
<td>In the W. 1/2 of Sec. 28, Tp. 21 N, outlet in Salt Creek</td>
<td>A point 435 feet from point of</td>
<td>702.75 702.70</td>
</tr>
<tr>
<td>R. 5 E. 3d, P. M.</td>
<td>outlet in Salt Creek</td>
<td></td>
</tr>
<tr>
<td>Alley at head of John Street</td>
<td>A point 685 feet from point of John Street outlet.</td>
<td>703.25 703.25</td>
</tr>
<tr>
<td>John Street Etc.</td>
<td>The center line of Clinton Ave.</td>
<td>703.51 703.51</td>
</tr>
<tr>
<td>Etc.</td>
<td>Etc.</td>
<td>Etc.</td>
</tr>
</tbody>
</table>
The first column of the table last above given designates the street, avenue or place in which the sewer shall be constructed. The second column of said table designates the point where a manhole shall be located, while the third column fixes the elevation calculated, as hereinbefore stated, of the inside bottom or invert of the ends of the sewer entering and leaving the manhole as located by the first and second columns.

"Inlet" as herein used, means that place and that part of the sewer through which the sewage enters the manhole; "outlet" as herein used, means that place and that part of the sewer through which the sewage leaves the manhole.

The grade or elevation as herein fixed, is a straight line drawn between the points of elevation hereinabove given and fixed, and is hereby designated the grade.

There are hereby required to be constructed Thirty-two (32) manholes along the lines of the sewer herein provided for; and said manholes are located at the end of each line of sewer (except at the outlet in Salt Creek and one northwardly therefrom, which two are located as shown by the last preceding table, one at each point where the lines of sewer connect or intersect, and one at each point of change or break in the grade line. The location of said manholes is also shown by the plat thereof now on file in the City Engineer's Office of the said City of Farmer City.

Each manhole at the points hereinbefore fixed, shall be constructed cylindrical in form with an internal diameter of Four (4) feet and shall be centrally located over the line of sewer or centrally over connecting or intersecting lines of
sewer. From a point four (4) feet below its top, each manhole which is eleven (11) feet deep or less, shall be corbelled to an internal diameter of (2) feet at the top. From a point five (5) feet above its inside bottom at the center, each manhole which is more than eleven (11) feet deep, shall be corbelled to an internal diameter of two (2) feet at the top. The bottom of each manhole shall be of concrete of the kind and quality hereinbefore described and shall be eight (8) inches in thickness exclusive of the invert. The inside bottom of each manhole shall contain an invert; that is to say, shall be grooved with a channel in size, shape, and course corresponding to the lower inside half of the sewer leading from the said manhole. From the side top edges of said invert, the inside bottom of said manhole shall have a rise toward the walls of one (1) inch vertical to one (1) foot horizontal, and this shall be made of the hereinbefore specified concrete. Whenever inlets may render it necessary, so much of the inside bottom as herein fixed shall be grooved additionally with a channel corresponding to the inlet and so graded and shaped as to allow an easy entrance of the sewage. All inlets and outlets shall be flush with the inside surface of the walls of the manhole. The walls of each manhole shall be at least eight (8) inches thick and shall rest firmly upon the concrete bottom, and shall be joined thereto. Each wall shall be constructed of standard hard-burned sewer brick laid in mortar of the kind and quality hereinabove specified for brick masonry, and to render the manhole water-tight, each wall shall be plastered on the outside to a thickness of three-eighths (3/8) of an inch with mortar, of the kind and quality hereinbefore
specified.

Beginning two (2) feet from the inside bottom and thence spaced sixteen (16) inches vertically to the top, there shall be imbedded in each manhole wall steps of the best quality of three-quarters (3/4) inch wrought-iron rod so bent and shaped as to extend eight (8) inches into the wall, to protrude therefrom and to form a step four (4) inches by ten (10) inches.

Each manhole shall be fitted with a cast-iron frame and cover weighing at least three hundred and fifteen (315) pounds. The frame and cover shall be cast from the best quality of gray iron of tough and even grain, and both shall be thoroughly coated with coal tar pitch or asphaltum paint before being used in the work. The minimum dimensions of the cylindrical frame shall be:

- Outside diameter of flange, thirty-six (36) inches;
- Height of neck, seven and one half (7½) inches;
- Diameter of opening, twenty-two and three-quarters (22¾) inches.

The cover shall have a rough top and ribbed bottom. All manhole covers, with the exception of the three (3) solid ones noted below, shall be of the type known as "perforated", and all frames for such covers shall be made with lugs or other devices for the hanging of a dust or gravel pan. Manhole covers at points one hundred and eighty-five (185) feet and four hundred and thirty-five (435) feet from the point of the outlet in Salt Creek and at the intersection of John Street and High Street shall be of the type known as "solid". The said covers shall fit snugly into said frames, and shall have a suitable arrangement or device to hold them securely in place and to prevent them from being dislodged by the traffic passing thereover.
There are hereby required to be constructed thirty-three (33) catch-basins near the curb line at the following necessary points along the lines of sewer herein provided for.

<table>
<thead>
<tr>
<th>Location of Catch-Basins and Inlets</th>
<th>Number at Location</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Catch- Basins Inlets</td>
</tr>
<tr>
<td>John Street and Clinton Avenue</td>
<td>2  0</td>
</tr>
<tr>
<td>John Street and Water Street</td>
<td>2  0</td>
</tr>
<tr>
<td>John Street and Green Street</td>
<td>3  0</td>
</tr>
<tr>
<td>John Street and Market Street</td>
<td>2  0</td>
</tr>
<tr>
<td>Clinton Avenue and Plum Street</td>
<td>1  1</td>
</tr>
<tr>
<td>Etc.</td>
<td></td>
</tr>
</tbody>
</table>

Each catch-basin shall be cylindrical in form; four (4) feet in internal diameter, six (6) feet deep, and from a point two (2) feet above its finished bottom shall be corbelled to a diameter of two (2) feet at the top. The walls shall have a thickness of eight (8) inches, and shall be constructed from standard hard-burned sewer brick laid in mortar of the kind and quality hereinabove specified for brick masonry and plastered on the inside of the basin with a thickness of three-eighths (3/8) of an inch of mortar of the kind and quality hereinbefore specified for all work except brick masonry. The said wall shall rest upon a bottom eight (8) inches in thickness made of the kind and quality of concrete hereinbefore prescribed.

Each catch-basin shall be fitted with a circular cast-iron rim and cover, cast from the best quality of gray iron of tough and even grain, and both rim and cover shall be thoroughly coated with coal tar pitch or asphaltum paint before being used in the work. The rim shall weigh not less than one hundred and fifteen (115) pounds and shall have a minimum outside diameter of thirty-four (34) inches and a minimum clear opening of twenty-two and
three-fourths (22\(\frac{3}{4}\)) inches in diameter. The cover shall be a circular grating with a convex upper surface and of a minimum weight of one hundred (100) pounds. The said cover shall fit snugly into the rim and shall have a suitable arrangement or device to hold it securely in place and to prevent it from being dislodged by the traffic passing thereover.

At a point two (2) feet above its inside bottom, each catch-basin shall be connected in a straight line with the line of sewer by means of vitrified sewer pipe of a minimum internal diameter of eight (8) inches and of the kind and quality, and laid in the manner hereinabove stated.

The ends of said drain shall be flush with the inside walls of the catch-basin and sewer proper. Each catch-basin shall have steps of the size, kind and quality as, and shall be placed in the manner as hereinbefore provided for manholes.

There are hereby required to be constructed sixteen (16) inlets at necessary points along the lines of sewer herein provided for and such points are designated in the last preceding table. The wall of each inlet shall consist of one two-foot length of fifteen (15) inch sewer pipe. The bell of which shall be at the gutter level and the spigot end of said pipe shall rest upon and be firmly joined to a concrete foundation four (4) inches in thickness. Each inlet shall be connected in a straight line to the nearest catch-basin by means of vitrified sewer pipe, of a minimum internal diameter of eight (8) inches. The connection at the inlet end shall be through the side, flush with the inside and at the bottom of the inlet well. Such connection shall be made water tight by means of concrete and mortar. The inlet shall
be fitted and covered with a circular cast-iron rim and cover of the kind, quality and description as that previously herein prescribed for catch-basins. The said rim shall rest upon and be firmly fixed to a two-course section of brick pavement extending to the outside edge of said rim. All materials used in said inlets shall be of the kind and quality hereinbefore provided for manholes and catch-basins.

At the outlet in Salt Creek of the thirty-three (33) inch John Street sewer, and also at the upper terminal of the aforesaid sewer in John Street as previously herein described, there is hereby required at each point one concrete retaining wall consisting of a head wall and two wing walls.

The dimensions of each head wall shall be; length eight (8) feet; height eleven (11) feet; width at top one (1) foot; and battered from the top downward and outward on the exposed face one (1) inch to one (1) foot. Each wing shall be of like dimensions and shall be set into the bank of the stream with an angle of forty-five (45) degrees with the head wall.

The elevation of the top of the head wall at Salt Creek shall be six hundred and ninety seven and forty-four hundredths (697.44) feet, which is six (6.0) feet above the inside of the sewer invert and six and eight tenths (6.8) feet above the stream bottom at the point of outlet. The elevation at the top of the head wall at the upper terminal of the aforesaid sewer shall be seven hundred and sixteen and forty-seven hundredths (716.47) feet, which is ten (10.0) feet above the inside of the sewer invert and four and six tenths (4.6) feet above the stream bottom at that terminal point.

The said retaining wall shall be built of concrete and
faced with one-half (\(\frac{1}{2}\)) inch mortar both of the kind and quality hereinabove fixed.

In the retaining wall at and over the upper terminal of the thirty-three (33) inch John Street sewer shall be set a steel sluice gate so constructed as to admit to the said sewer or to restrain therefrom the waters of the small stream at that point. The said sluice gate shall have a clear, circular opening two (2) feet in diameter, and the bottom of said opening shall be at an elevation of seven hundred and seven and fifty-hundredths (707.50) feet.

The said sluice gate and all appurtenances thereof shall be of such strength as to withstand a water pressure exerted by a static head of fifteen (15) feet.

The guides for the gate proper shall be so constructed that the gate may be tightly closed or opened partially, or entirely by means of a stem operated from a floor stand set in the retaining wall.

Section 3. All of said work shall also be done in accordance with the plans and specifications for said proposed improvement, which said plans and specifications are now on file in the office of the City Clerk of the said City of Farmer City, and which are hereby made a part of this ordinance.

Section 4. That the following described real estate in the County of DeWitt in the State of Illinois, be taken or damaged for said local improvement, and which said real estate is described as follows: (See Local Improvement Notice, pages 130 and 131.)

Section 5. There is hereby established a sewer district which is bounded and described as follows: (See Local Improve-
Right, permission and authority are hereby given to the present and future owners of lots and lands lying within the sewer district described to connect with the sewer system herein provided for, and any future sewer, for storm water, surface drainage and sanitary purposes, and to drain the land of said district into the system herein provided for.

Section 6. That the recommendation of the Board of Local Improvements of the City of Farmer City and the estimate of the cost of said improvement made by the city engineer of said city and the president of the Board of Local Improvements of said city, presented to the City Council with this ordinance by said Board, be and the same are hereby approved.

Section 7. All work hereunder shall be done under the supervision of the Board of Local Improvements of the City of Farmer City, and all proceedings hereunder or in this ordinance provided for shall be in conformity with an act of the General Assembly of the State of Illinois, entitled, "An Act Concerning Local Improvements," approved June 14, 1897, and the amendments thereto.

STATE OF ILLINOIS ) IN THE COUNTY COURT
COUNTY OF DEWITT ) SS. TO THE AUGUST TERM A.D. 1908.

To the Hon. Fred C. Hill, Judge of said Court:—

Your petitioner, the City of Farmer City, a municipal corporation in the County of DeWitt and State of Illinois, by V. F. Browne, City Attorney, respectfully represents unto your Honor that it is now, and has been for many years past a municipal corporation, created and existing under and by virtue of the
general laws of the State of Illinois, and that it has adopted and is organized under an act of the General Assembly of the State of Illinois, entitled, "An Act to Provide for the Incorporation of Cities and Villages," approved April 10, 1872, and in force July 1, 1872.

Your petitioner further represents that under and by virtue of the act of the General Assembly of the State of Illinois, entitled, "An Act Concerning Local Improvements," approved June 14, 1897, and in force July 1, 1897, the said City of Farmer City has the power and authority to make local improvement and to condemn private property for the purpose of making local improvements.

Your petitioner further represents that heretofore, to-wit: on the 3rd day of August A. D. 1908, the City Council of said City of Farmer City passed a certain ordinance providing for a system of combined sewers in John Street and other streets, avenues and places in the City of Farmer City for the condemnation of all necessary private property, and for the levy of a special assessment or assessments to pay the cost of said improvement, including the just compensation for private property taken, or damaged, upon the property to be benefited thereby, a certified copy of which said ordinance, duly certified by the City Clerk of said City of Farmer City, under the corporate seal, is hereto attached and made a part of this petition and marked "Exhibit "C".

Your petitioner further shows that said ordinance was presented to the said City Council of the said City of Farmer City, together with the recommendation of the Board of Local
Improvements of the said City of Farmer City that the same be passed, a certified copy of which recommendation is hereto attached and made a part of this petition and marked "Exhibit A."

Your petitioner further shows that a certain estimate of the cost of said proposed improvement was also presented to the City Council aforesaid with the said ordinance and recommendation and the same was approved by said City Council, a certified copy of which said estimate is hereto attached and made a part of this petition and is marked "Exhibit B."

Your petitioner further represents that the making or construction of said improvement as provided for in the aforesaid ordinance will require the taking and damaging of private property and that a description of the lots, blocks, tracts and parcels of land, which will be taken or damaged by the said improvement is as follows:

A strip of land Sixty-six (66) feet wide and Six Hundred and Sixty-four (664) feet long, being a strip of land Thirty-three (33) feet wide on each side of the center line thereof, and which said center line is described as follows:

Beginning at a point on the West Quarter Section line of Section No. Twenty-eight (28) Township Twenty-one (21) North, Range Five (5) East of the Third Principal Meridian at a point One Hundred and Eighteen (118) feet south of the South boundary line of Clinton Avenue and continuing southeastwardly on a line intersecting said Quarter Section line with an angle of Twenty-eight (28) degrees and Fifty minutes (28°-50') to a second point Four Hundred and Seventy-nine (479) feet from the point of commencement thence, with a deflection of Nineteen (19) degrees
and Thirty-four minutes (1° 34') from the aforesaid line terminating Four Hundred and Seventy-nine (479) feet from said point in said quarter section line on a line southwardly One Hundred and Eighty-five (185) feet to a point in the stream known as Salt Creek, all in the said County of DeWitt and State of Illinois.

Your petitioner therefore prays that steps may be taken to ascertain the just compensation to be made for private property to be taken or damaged for the proposed improvement and particularly specified in the aforesaid ordinance and to ascertain what property will be benefitted by said improvement and the amount of such benefit; and that such other and further proceedings may be had herein in accordance with the law as to the Court may seem meet and the nature of the case may require.

City of Farmer City
By V. F. Browne
City Attorney.

Counsel.

To the Honorable Mayor and City Council of the City of Farmer City, Illinois:-

Gentlemen:-

We, the undersigned Board of Local Improvements of the City of Farmer City, respectfully show that all steps necessary and required by law to be taken for constructing a system of combined sewers in John Street and other streets, avenues and places in the said city, more particularly shown in the ordinance presented herewith, have been so taken and done, that the undersigned have caused an ordinance to be pre-
pared for said improvement, which ordinance, entitled "An Ordinance providing for a system of combined sewers in John Street and other streets, avenues and places in the City of Farmer City, Illinois," is hereto attached and submitted to Your Honorable Body herewith. That the undersigned herewith recommends the passage of said ordinance and the making of the improvement therein described.

That an estimate of the cost of said improvement was duly made in writing by the City Engineer of said City of Farmer City, and the President of the Board of Local Improvements of said city over their respective signatures itemized to the satisfaction of the undersigned as by law required, which estimate is presented herewith.

We would therefore respectfully recommend the above described improvement as being necessary and desirable.

Dated At Farmer City, Illinois, August 3rd, A. D. 1908, and respectfully submitted.

Board of Local Improvements of
The City of Farmer City,

(Signed) By C. D. Rock
President
H. L. Williams
Secretary
Epams Covey

"EXHIBIT A."

State of Illinois )
County of DeWitt ) SS.
City of Farmer City )

I, Thomas Young, City Clerk in and for said City of Farmer City, in the County of DeWitt and State of Illinois, and keeper of the official records, files and seal thereof, do hereby
certify that the above and foregoing is a true and correct copy of a recommendation presented by the Board of Local Improvement of the City of Farmer City, Illinois, to the City Council of said City of Farmer City at a regular meeting held on the 3rd day of August A.D. 1908, and was published in the Farmer City Journal, a weekly newspaper of general circulation within the City of Farmer City aforesaid published in the said City of Farmer City on the 7th day of August A.D. 1908, and that said recommendation is now on file in my office as such city clerk.

In witness whereof, I have hereunto set my hand and caused to be affixed the official seal of said City of Farmer City, Illinois, this 18th day of August A.D. 1908.

(Signed) Tom Young
City Clerk.

To The Board of Local Improvements of the
City of Farmer City, Illinois:-

Gentlemen:— In pursuance with your request we severally herewith submit to you an itemized estimate, etc. (See page 132.)

"EXHIBIT B."

I hereby certify, etc.

Wm. Walter Smith
City Engineer.

Dated July 15, 1908.

I hereby certify, etc.

C. D. Rock
President of the Board of Local Improvements.

Dated July 15, 1908.
State of Illinois  
County of DeWitt  
City of Farmer City  

I, Thomas Young, City Clerk in and for the said City of Farmer City, in the County of DeWitt and State of Illinois, and keeper of the official records, files and seal thereof, do hereby certify that the above and foregoing is a true and correct copy of an estimate of the probable cost of the improvement herein described as prepared by the City Engineer and also by the President of the Board of Local Improvements of the said City of Farmer City, which said estimate was submitted to the City Council of said City of Farmer City by said Board, together with its recommendation of the proposed improvement and the ordinance therefore, at a regular meeting thereof, held on the 3rd day of August A. D. 1908, and that said estimate of cost was duly adopted by the City Council of said City of Farmer City at said regular meeting on said date, and was published, together with such recommendation and ordinance aforesaid, in the Farmer City Journal, a weekly secular newspaper of general circulation in the City of Farmer City aforesaid, published in the City of Farmer City aforesaid on the 7th day of August A. D. 1908, and that said estimate of cost is now on file in my office as such city clerk.

In witness whereof, I have hereunto set my hand and caused to be affixed the official seal of said City of Farmer City, Illinois, the 18th day of August A. D. 1908.

(Signed)  Tom Young  
City Clerk.
ORDINANCE NO. 95

AN ORDINANCE PROVIDING FOR A SYSTEM OF COMBINED SEWERS IN JOHN STREET AND OTHER STREETS, AVENUES AND PLACES IN THE CITY OF FARMER CITY, ILLINOIS

(See pages 148 to 159.)

"EXHIBIT C."

State of Illinois } IN COUNTY COURT
County of DeWitt } SS. TO THE AUGUST TERM A. D. 1908.

PRESENT: Hon. Fred C. Hill, Judge.
H. A. Campbell, Sheriff.
Attest: E. F. Campbell, Clerk.

In the Matter of the Petition of the City of Farmer City for the ascertainment of the just compensation to be made for private property to be damaged by the local improvement providing for a system of combined sewers in John Street and other streets, avenues and places in the City of Farmer City, Illinois, and for the ascertainment of the property which will be benefited thereby and the amount of such benefits.

On motion of the petitioner aforesaid, it is considered and ordered by the court, that Clark C. Covey and Nelson Tull be and they are hereby designated and appointed to act with C. D. Rock, President of the Board of Local Improvements of the City of Farmer City, Illinois, as commissioners in this proceeding, and the said commissioners are hereby ordered and directed to investigate and report to this court the just compensation to be made to the respective owners of private property which will be taken or damaged for said improvement, and described in the petition herein; and also what real estate will be benefited by the improvement in said ordinance described, and the amount
of such benefit to the public and to each piece and parcel of real estate.

It is further ordered by the court that the said commissioners are allowed the sum of .......... Dollars as fees for their services herein, and which said amount so allowed shall be taxed as costs and included in the amount to be assessed herein and said allowance of fees aforesaid shall be subject to review and change by the court on motion of any of the parties to this cause.

Enter.

____________________
Judge of said Court.

ASSESSMENT ROLL

"Report and Assessment Roll made by ....................., President of the Board of Local Improvements of the City of Farmer City, Illinois, together with ....................and .......................... Commissioners appointed by the County Court of DeWitt County, Illinois, on the ............day of ......................190 ."

At the top of the sheet were the following items:

1. "Description of Lots, Blocks, Tracts or parcels of land specifically benefited by said improvement. (a)-Lot. (b)-Block. (c)-Addition to Farmer City, Illinois.

2. "Name of owner of said Lots, Blocks, Tracts and parcels against which benefits are assessed.

3. "Residence of such owner.


5. "Amount of Installments. (a)-1st Installment. (b)-2nd Installment. (c)-3rd Installment. (d)-4th Installation. (e)-5th Installment."

Each sheet was ruled and numbered to accommodate 85
In the Matter of Local Improvement of John Street and other streets and places by a system of sewers in the City of Farmer City, Illinois.

Charles D. Rock, on oath states that he is president of the Board of Local Improvements in and for the City of Farmer City, in the County of DeWitt and State of Illinois.

That he has carefully examined the records in the office of the recorder of deeds in and for said County of DeWitt for the names of the owners of records of the several lots, blocks, tracts and parcels of land to be taken or damaged for said improvement, and that the names of such owners are correctly shown in the column or schedule of ownership in the report herewith returned and filed in the matter of the above described improvement.

Affiant further states that he has carefully examined the records in the office of the recorder of deeds in and for said County of DeWitt for the names of the owners of record of the several lots, blocks, tracts and parcels of land against which benefits are assessed in said report, and that the names of said owners are correctly shown in the column or schedule of ownership in said report. Also that he has diligently inquired as to the residence of the said respective owners of record of all of the aforesaid lots, blocks, tracts and parcels of land against which benefits are assessed as aforesaid, by making inquiry, in cases where he did not personally know, of the people...
living in close proximity to said property, and that residences of the owners are correctly stated in the column or schedule of residences in said report, according to the result of the examination made by this affiant. Also that in all cases where affiant had been unable to find or learn the residence of said owner of such record title, that he has made careful examination of the return of the collector's warrant for taxes on real estate for the last preceding calendar year in which taxes were paid thereon to ascertain the person or persons who last paid said general taxes, and has set opposite each such parcel whose owner has not been found, the name of the person or persons who paid the general taxes on said land or parcel for the preceding year in which said taxes were paid, together with his place of residence, wherever, on diligent inquiry, affiant was able to find the same.

That said assessment roll contains the name and address of each such person or persons who paid the general taxes on said lots, blocks, tracts or parcels of land aforesaid during the last year on which it was paid according to the result of such examination and inquiry made as aforesaid by this officer.

Affiant further states that he has visited each of the lots, blocks, tracts and parcels of land to be taken or damaged for said improvement described in said report for the purpose of ascertaining whether or not the same was occupied, and the name and residence of the occupant, if any; and that in every case where said lots, blocks, tracts and parcels of land, or any of them were found by affiant to be occupied upon such investigation, the name of said occupant is stated in said report of said lot, block, tract or parcel of land so occupied, opposite
such parcel, together with the residence of such occupant.

(Signed) Charles D. Rock.

President of the Board of Local Improvements in and for the City of Farmer City, County of DeWitt and State of Illinois.

State of Illinois ( }
County of DeWitt ( }

Charles D. Rock on oath states that the foregoing affidavit by him subscribed is true.

(Signed) Charles D. Rock

Subscribed and sworn to before me this 21st day of October A. D. 1908.

(Signed) Lyle G. Herrick

Notary Public.

State of Illinois ( } SS. In County Court
County of DeWitt ( } October Term A. D. 1908.

In the Matter of the Petition of the City of Farmer City in said State for the ascertaining of the just compensation to be made for private property to be taken or damaged for the construction of a system of sewers in John and other streets and places in the City of Farmer City, Illinois.
To the Honorable County Court of said County:

The undersigned Commissioners, heretofore appointed by this honorable Court on the 18th day of August, A. D. 1908, to investigate and to report to this Court the just compensation to be made to the respective owners of private property which will be taken or damanged for the said improvement, and also what real estate will be benefited by such improvement and the amount of such benefits to each parcel, would respectfully
make report of their acts and doings in the premises as follows:

1st. That we were first duly sworn to make a true and just assessment of the cost of said improvement according to law.

2nd. That we have investigated the just compensation to be made to the respective owners of private property which will be taken or damaged for the said improvement, and also what real estate will be benefited by such improvement, and the amount of such benefits to each parcel.

That after making such investigation we have prepared and filed herewith our report as to such property to be taken or damaged for the said improvement, and which report is hereto attached and marked "A" and in which report we have in one column described the respective parcels of property to be taken or damaged for such improvement; in another column the respective owners of record of the said parcels of land, the name and residence of each such owner being set opposite his own property; in another column the name and residence of the occupant, where the property is occupied, so far as known to such commissioners, or can be found upon diligent inquiry; in another column the amount of the value of each piece or parcel to be taken for such improvement, setting the same opposite the property to which it relates; and in another column the amount of damages, if any, which, in our opinion, will result to any piece or parcel of land not taken by reason of the said improvement, describing each piece or parcel so damaged by a reasonably accurate description.

That Frank E. Shaffer is the owner of all the property to be taken or damaged for such improvement and that we have
assessed his damages by reason of the taking or damaging of such lands for such improvement at the sum of Three Hundred Dollars ($300.00).

3rd. That we have estimated the total cost of said proposed improvement (including value and damages and the estimate of cost) at the sum of Twenty-one Thousand Six Hundred and Thirty-four Dollars ($21,634.00).

That we have estimated and herewith report that the proportion of the total cost of said improvement which will be a benefit to the public is the sum of Eight Thousand Dollars ($8,000.00) and that the residue of the total cost of such improvement, viz: Thirteen Thousand Six Hundred and Thirty-four Dollars ($13,634.00) will be of benefit to the property, and that we have apportioned said sums between the said municipality and such property so that each shall bear its relative equitable proportion.

That we have apportioned and assessed the amount so found to be of benefit to the property in said city upon the several lots, blocks, tracts and parcels of land in the proportion in which they will be severally benefited by such improvement.

That hereto attached and marked "B", "C", "D", "E", "F", & "G", is our report of what lots, blocks, tracts and parcels of land will be specially benefited by the said improvement and all of which are described by a reasonably accurate description together with our apportionment and assessment of the amount so found to be of benefit to the property upon the said several lots, blocks, tracts and parcels of land in the proportion in which they will be severally benefited by said improvement.
4th. We would further certify that we have carefully examined the questions referred to in our report, and that in our opinion the amounts awarded for damages and the value therein, and the assessment district therein shown, and the respective amounts assessed against the private property, and also the apportionment of the cost of said improvement between the public and the private property assessed, and the allowance for property theretofore dedicated are correct, equitable and just.

All of which is respectfully submitted.

Charles D. Rock
Clark C. Covey
Nelson Tull
Commissioners as aforesaid.

Dated October 21st, 1908.

State of Illinois { SS. }
County of DeWitt { } 

C. D. Rock, Clark C. Covey and Nelson Tull, each being duly sworn on his oath says that he has read the foregoing instrument by him subscribed, and that the same and the contents thereof are true.

Charles D. Rock
Clark C. Covey
Nelson Tull

Subscribed and sworn to before me on this 21st day of October A. D. 1908.

Lyle G. Herrick
Notary Public.
State of Illinois  
County of DeWitt  

In County Court  

October Term A. D. 1908.

In the matter of the Petition of the City of Farmer City for ascertaining the just compensation to be made for private property to be taken or damaged for the improvement of John Street and other streets in said City by the construction of a system of sewers.

It appearing to the court that the report of the commissioners duly certified, together with the affidavit of ownership, has been duly filed herein, on, to-wit: the 21st day of October, A. D. 1908.

It is therefore ordered by the court that notice of the pendency of such proceedings, of the parties thereto, of the title of this court out of which summons issued in this case is returnable, together with the time and place of return of said summons in this cause, the description of the property to be taken or damaged, the total cost of the improvement as shown by the estimate and report, the nature of the proceedings, and that a special assessment has been made to raise the cost of said improvement, and the time and place of filing the report thereof, shall be published in the Farmer City Journal, a weekly secular newspaper of general circulation published in the City of Farmer City aforesaid, for four (4) weeks consecutively, at least once in each week, the first of said publications to be at least thirty (30) days prior to the return day of the summons in the above cause.

It is further ordered by the Court that all objections to the confirmation of the several amounts assessed against the
several lots, blocks, tracts and parcels of land against which benefits are assessed in said report, be filed in this court on or before the 23rd day of November A. D. 1908, at nine (9) o'clock A. M.

Dated at Clinton, Illinois, this 21st day of October A. D. 1908.

______________________________
Judge of the County Court of the Court of DeWitt, Ill.

NOTICE OF THE LEVY OF A SPECIAL ASSESSMENT, ETC.

To Non-residents, etc:—

To Owners of property to be taken or damaged: and

To Owners of property assessed for benefits:

In the Matter of the Petition of the City of Farmer City, Illinois, for the ascertaining of the just compensation to be made for private property to be taken or damaged for the construction of a system of sewers in John and other streets and places in the City of Farmer City, Illinois.

To All Whom it May Concern:

To All Non-resident Defendants:

To Owners of Property Assessed for Benefits:

To Owners and Occupants of Property to be taken or damaged by the proposed Improvement: and

To All Defendants whose residence is unknown.

You are hereby notified that on, to-wit: the 3rd day of August A. D. 1908, the City Council of the City of Farmer City, Illinois, passed a certain ordinance for a combined system of sewers for storm water, surface drainage and sanitary purposes in certain streets, avenues, and places in said city, which said
improvement requires, in the construction and making thereof, that the following property be taken or damaged, to-wit:

A strip of land sixty-six (66) feet, etc. (See page 130)

Said ordinance further provides that said improvement shall be paid for by special assessment to be levied upon the property specially benefited thereby as follows:

Eight Thousand Dollars of the cost of said improvement shall be paid by general taxation, and the balance, including the sum of Twelve Hundred and Seven Dollars ($1207.00) which shall be applied towards the payment of the costs and expenses attending the making and return of the assessment roll, collecting said assessment, and other costs by law authorized, shall be paid by special assessment upon the property benefited.

Which said ordinance was duly approved by the mayor of said City of Farmer City on the 3rd day of August A. D. 1908 and published on the 7th day of August A. D. 1908, pursuant to the statute in such case made and provided.

That pursuant to said ordinance a petition has been filed in the County Court of DeWitt County, Illinois, by the City Attorney in the name of said City of Farmer City praying that steps may be taken to ascertain the just compensation to be made for private property to be taken or damaged for said improvement specified in said ordinance, and to ascertain what property, if any, will be benefited by said improvement, and the amount of such benefit.

You are further notified that the matter of said petition is now pending in said County Court, and that pursuant to the prayer of said petition said County Court did, on the 18th
day of August A. D. 1908, appoint Clark C. Covey and Nelson Tull two competent persons, as commissioners to act with C. D. Rock, President of the Board of Local Improvements of said City of Farmer City, to investigate and report the matters referred to in said petition as aforesaid.

You are further notified that pursuant to the performance of their duties in that regard, said commissioners having investigated said matters, did, on the 21st day of October A. D. 1908, file in said County Court their report showing among other things, the name and residence of the several owners of record of the several lots, blocks, tracts, and parcels of land to be taken or damaged as aforesaid; the names and residences of the several owners of record of the lots, blocks, tracts and parcels of land against which benefits are assessed in said report, and the names and residences of the several occupants, if any, of the lots, blocks, tracts and parcels of land to be taken or damaged.

You are further notified that the total cost of said proposed improvement, as shown by the engineer's estimate thereof, is $21,354.00, and that the total cost of said proposed improvement, as shown by the report filed by the commissioners aforesaid, exclusive of the cost of the land to be taken or damaged for said proposed improvement, is $21,334.00, and that the total cost of said proposed improvement, as shown by the report filed by the commissioners as aforesaid, including the value of the lands to be taken or damaged is $21,634.00.

You are further notified that Frank E. Shaffer, who is named in said report as the owner of, as well as the occupant of property to be taken or damaged, is made defendant, and that
against him summons has issued out of the County Court of the said County of DeWitt and State of Illinois, returnable thereto on the 23rd day of November A. D. 1908, at the court house in the City of Clinton, in said County and State.

That the following named persons are defendants to said cause as the owners of property against whom benefits have been assessed for the purpose of the improvement, and the names of which owners, defendants as aforesaid, are as follows:

(Followed by names of 229 persons.)

That all persons other than said Frank E. Shaffer, having or claiming interest in any such premises are made defendants under the designation of "All Whom it May Concern".

Dated at Clinton, Illinois, this 21st day of October, A. D. 1908.

E. F. Campbell
County Clerk

State of Illinois { In County Court
County of DeWitt } SS. November Term A. D. 1908.
City of Farmer City { }

In the Matter of the Petition filed herein by the City of Farmer City, in the County and State aforesaid, to determine the just compensation to be made for the following described property to be taken or damaged, to-wit: etc.

Charles D. Rock being first duly sworn deposes and says that he is President of the Board of Local Improvements of the City of Farmer City aforesaid.

Affiant further states that as such President he is one of the commissioners appointed by the order of this Honorable
Court in the above entitled cause under date of the 18th day of August A. D. 1908.

Affiant further states that as such commissioner he mailed, on the 2nd day of November A. D. 1908, at the post office in said City of Farmer City, postage prepaid, a notice correctly addressed to each of the owners of property (other than the property to be taken or damaged) that has been assessed for benefits in the above proceedings, to the address of said owner or owners, as the same appears in the report of commissioners heretofore filed herein, and that in case said report did not show the address of any of said owner or owners, then said notice was mailed as aforesaid, correctly addressed to each of said owners at the City of Farmer City, Illinois, a true and correct copy of which notice is hereto attached marked "Exhibit A" and made a part of this affidavit.

Said notices were addressed, each marked by affiant as aforesaid, more than fifteen (15) days prior to the 23rd day of November A. D. 1908, said last named day being the return day of the summons to defendants issued in the matter of the above improvement.

Affiant further states that he mailed a notice on the 2nd day of November A. D. 1908, at the post office in said City of Farmer City, postage prepaid and correctly addressed to each of the defendants in the above entitled proceeding whose residence is shown by said commissioners' report to be outside of the State of Illinois, correctly addressed to each such defendant at his place of residence so given in said report; and that where the residence of any defendant in said proceeding is not shown on said report, then to each person or persons paying the general
taxes on the respective lots, blocks, tracts, and parcels of land, the residence of the owners of which is not so shown, correctly addressed to the several persons so paying the taxes at their respective places of residence as shown in said report.

Said notices last named were addressed and mailed as aforesaid more than fifteen (15) days prior to the 23rd day of November A. D. 1908, being the return day of summons, issued in the matter of the above improvement. A true and correct copy of which said notice is hereto attached, marked "Exhibit B" and made a part of this affidavit.

Affiant further states that as to all such defendants as are shown by said report of commissioners to be non-residents of the State of Illinois, or whose residences are shown thereby to be unknown, and to all defendants designated as "All whom it may concern," the clerk of this court caused publication of said last mentioned notice, a true copy of which is annexed hereto and marked "Exhibit B," to be made in the Farmer City Journal, a weekly newspaper of general circulation printed and published in the City of Farmer City, Illinois, for more than four (4) successive weeks, at least once in each such week prior to the 23rd day of November A. D. 1908, the first of such publications being more than thirty (30) days prior to the 23rd day of November A. D. 1908, and which said last named day is the return day of the summons issued in said proceeding. A certificate of publication of said notice, signed by the publishers of said newspaper is attached to a copy of such notice published as aforesaid, which is hereto attached and marked "Exhibit C" and made a part of this
affidavit. Said newspaper being the newspaper which was designated for such purpose by order of this honorable court, duly entered of record in such proceeding on the 21st day of October A. D. 1903.

Affiant further states that he has caused eight (8) copies of the aforesaid notice, a copy of which notice is hereto attached and marked "Exhibit B", to be posted in said City of Farmer City on the 7th day of November A. D. 1903, as follows:

That one of said copies was posted on a pole near the corner of West Water Street and Washington Street;

That one of said copy was posted on a pole near the corner of West Water Street and John Street;

That one of said copies was posted on a pole near the corner of Green Street and Plum Street;

That one of said copies was posted on a pole near the corner of Green Street and John Street;

That one of said copies was posted on Gould's Blacksmith's Shop on Green Street;

That one of said copies was posted on a pole near the corner of Green Street and Main Street;

That one of said copies was posted on the Warner Building at the corner of Main Street and Market Street;

That one of said copies was posted on a pole in front of Kincaid's Shoe Store on Main Street; each and all of said places being public places in said City of Farmer City, and within the boundaries of the proposed sewer district and the proposed improvement. Said notices and each of them were posted as aforesaid more than ten (10) days before the 23rd day of November A. D.
1908, which last named day is the return day of the summons to defendants issued in said proceedings.

Affiant further states that said notices mailed as aforesaid to each person whose property has been assessed for benefits in said proceeding, stated the nature of said improvement, the description of such owner's property assessed therefor, the amount of such assessment, and the date when summons in said cause would be returnable, and when objections thereto may be filed.

Affiant further states that said notices mailed to said owners of property that has been assessed for benefits in the above proceedings, as well as the notices to each of the defendants in the above entitled proceeding whose residence is shown by such commissioners' report to be outside of the State of Illinois, each stated the nature of said improvement, the description of the owner's property assessed therefor, the amount of said assessment, and the date when the summons in said cause would be returnable thereto and when objections thereto may be filed.

Affiant further states that the notice above referred to as being published in said Farmer City Journal made by the clerk of said County Court as aforesaid, was entitled as follows: "Notice of the Levy of a Special Assessment, Etc.; To Non-residents, etc. (as on page 175), and that said notice contained a notice of the pendency of said proceeding aforesaid, the parties thereto, the title of the court, the time and the place of the return of the summons in said cause, the description of the property to be taken or damaged, the total cost of the improvement as shown by the estimate and report, and the nature of the
proceedings. That said notice further stated that a special assessment had been made to raise the cost of said improvement, and the time and place of filing the report thereof.

That said notices posted in said eight public places in said city within the boundaries of said sewer district also were entitled as follows:

"Notice of the Levy of a Special Assessment, Etc. (See quotation above.)"

Further affiant saith not.

(Signed) Charles D. Rock
President of the Board of Local Improvements of the City of Farmer City, Illinois, and one of the commissioners appointed by the Court in said proceeding.

Subscribed and sworn to before me this 21st day of November A. D. 1908.

(Signed) Lyle G. Herrick
Notary Public.

Followed by blank notice marked "Exhibit A" and printed notice marked "Exhibit B."

State of Illinois
County of DeWitt
City of Farmer City

E. A. Williams and B. B. Bates each being first duly sworn on oath states that they are the publishers of the Farmer City Journal, and that said Farmer City Journal is a weekly newspaper of general circulation printed and published in the City of Farmer City, DeWitt County, Illinois.

That the notice hereto attached and made a part hereof,
and marked "Exhibit 1" in the matter of the notice of the levy of a special assessment in the City of Farmer City, Illinois, was published in said newspaper for five successive weeks, the first insertion and first publication thereof being on the 23rd day of October A. D. 1908; the second insertion and second publication thereof being on the 30th day of October A. D. 1908; the third insertion and third publication thereof being on the 6th day of November A. D. 1908; the fourth insertion and fourth publication thereof being on the 13th day of November A. D. 1908; the fifth insertion and fifth publication thereof being on the 20th day of November A. D. 1908.

Further affiant saith not.

(Signed) E. A. Williams

" B. B. Bates

State of Illinois ( )

SS.

County of DeWitt ( )

E. A. Williams and B. B. Bates each being first duly sworn on oath says that the foregoing certificate and affidavit by them severally subscribed is true.

(Signed) E. A. Williams

" B. B. Bates

Subscribed and sworn to before me this 21st day of November A. D. 1908.

(Signed) Lyle G. Herrick

Notary Public.

"Exhibit C"

To this affidavit was appended a clipping of the published "Notice of Levy of Special Assessments, Etc."
State of Illinois  
County of DeWitt  

In County Court, In Probate.  
April Term, A. D. 1909.

In the Matter of the Application of the City of Farmer City for confirmation of the special assessment for local improvement in said City consisting of the construction of a system of sewers in John Street and other streets, avenues and public places in said City, and for ascertaining the compensation for private property to be taken or damaged.

The City of Farmer City, the petitioner in the above cause, hereby elects to proceed with the proposed improvement above mentioned, notwithstanding the alleged appeal of Frank E. Shaffer, prosecuted in said cause from the judgment of condemnation heretofore rendered by this Court on the third day of March, A. D. 1909.

Dated this 12th day of April A. D. 1909.

City of Farmer City

By

Its Mayor.

Attest:

City Clerk.

KNOW ALL MEN BY THESE PRESENTS, that the City of Farmer City a municipal corporation, as principal, and C. D. Rock, L. R. Herrick, G. A. Stensel, J. C. Gould, E. A. Williams and M. C. McIntire as sureties, of the County of DeWitt and State of Illinois, are held and firmly bound into Frank E. Shaffer in the penal sum of Fifteen Hundred Dollars ($1500.00) for the payment of which well and truly to be made, we, and each of us bind
ourselves, our heirs, executors, administrators and assigns, jointly and severally, firmly by these presents.

Dated At Farmer City, Illinois, this 14th day of April A. D. 1909.

THE CONDITION OF THE ABOVE OBLIGATION IS SUCH, That
Whereas, the City of Farmer City, did, on the 3rd day of March A. D., 1909, at a term of the County Court in Probate of said County then being holden within and for said county, obtain a judgment of condemnation for the following described lands, to-wit

A strip of land Sixty-six (66) feet, etc.

The amount of damages of the said Frank E. Shaffer for the above lands so condemned, damaged and taken being fixed by the judgment of said Court at the sum of Three Hundred Dollars ($300.00).

And Whereas, the said Frank E. Shaffer did, on the 5th day of April A. D. 1909, file with the County Court in Probate of said County of DeWitt his certain appeal bond in said cause to the Supreme Court of said State:

NOW, if the said City of Farmer City shall well and truly pay any judgment which may be finally awarded to or in favor of the said Frank E. Shaffer, his heirs, administrators, or assigns, for the above described premises, and any other lands involved in said suit, as well as the costs of said suit, then the above obligation to be null and void, otherwise to remain
in full force and virtue.

City of Farmer City

By _____________

Its Mayor.

Attest:

____________________

City Clerk

____________________(SEAL)

____________________(SEAL)

____________________(SEAL)

____________________(SEAL)

____________________(SEAL)

State of Illinois ( ) SS. In County Court, In Probate,

County of DeWitt ( ) April Term, A. D. 1909.

In the Matter of the Local Improvement in the City of Farmer City, consisting of a system of combined sewers in John Street, and other streets, avenues and public places in said City of Farmer City.

And now on this day comes the petitioner herein by its attorneys, and moves the Court to enter an order herein that the petitioner, the City of Farmer City, shall have the right at any time hereafter, to take possession of, or damage the property hereinafter described;

And thereupon, the Court having heard the evidence in this cause, and being fully advised in the premises, doth find:

That said City of Farmer City has in this Court heretofore secured an order of condemnation for the following described
premises, to-wit:

A strip of land Sixty-six (66) feet wide, etc. (See page 130)

and that a judgment was entered in favor of Frank E. Shaffer, the owner of said premises and who was in the actual possession thereof at the time said judgment of condemnation was rendered, by the terms of which said judgment the damages of the said Frank E. Shaffer for the above lands to be taken or damaged by the said City of Farmer City was fixed at the sum of Three Hundred Dollars ($300.00) as well as the costs of that suit:

And it further appearing to the Court from the evidence that said City of Farmer City has heretofore, pursuant to the order of this Court, duly entered of record herein, deposited with the County Treasurer of said County of DeWitt the sum of Three Hundred Dollars ($300.00) which said sum is the amount of damages awarded to the said Frank E. Shaffer for the taking or damaging by said City of the aforesaid premises by the proposed construction of a system of combined sewers in John Street and other streets, avenues, alleys and public places in said city:

And it further appearing to the Court from the evidence herein that the said City of Farmer City has paid to the Clerk of this Court the full amount of any and all costs accrued in said cause, as well as all Court Costs in and about the proceedings incurred for said local improvement above referred to:

And it further appearing to the Court that said City has heretofore filed in writing its election to proceed with said local improvement, and also its election in writing that judgment
should be entered in said cause for the amount of the damages
fixed by the judgment of said Court for the damages aforesaid
to the said Frank E. Shaffer by reason of the taking and damaging
of the aforesaid premises:

And it further appearing to the Court from the evidence
that the said Frank E. Shaffer has heretofore, to-wit: on the
5th day of April A. D. 1909, filed an appeal bond in said cause,
which bond has been approved by the Court;

And it further appearing to the Court that this Court
has heretofore, by an order of this Court, fixed the amount of
the bond which the said City should file by reason of the alleged
appeal of said Frank E. Shaffer from the judgment aforesaid at the
sum of Fifteen Hundred Dollars ($1500.00):

And it further appearing to the Court that in pursuance
of the order of this Court said City of Farmer City has this day
filed its bond in this court in the sum of Fifteen Hundred Dollars
($1500.00), with good and sufficient sureties thereon and which
bond and sureties thereon have been approved by the Court, and
the terms of which bond secure payment to the said Frank E.
Shaffer, his heirs and assigns, of any future compensation which
may at any time be finally awarded for the property in question,
as well as any other lands involved in said suit, and costs:

It is therefore ordered, adjudged and decreed by the
Court that the petitioner, the City of Farmer City, shall have the
right at any time hereafter, to take possession of or damage
the property hereinbefore described, as follows, to-wit:

That said petitioner be permitted to construct, and op-
erate its aforesaid system of sewers upon, in and along said
premises aforesaid so as to be taken and damaged by it as aforesaid.

Enter.

County Judge.

BE IT RESOLVED by the Board of Local Improvements of the City of Farmer City, that the Farmer City Journal, a weekly newspaper published in Farmer City, DeWitt County, Illinois, be hereby adopted as the newspaper in which notice shall be made by advertisement by the Board of Local Improvements that bids will be received for the construction of the local improvement, being a system of sewers in John Street and other streets, alleys and places in said City of Farmer City.

That said notice shall state the time of opening of such bids, and shall further state where the specifications for said improvement are to be found, and whether the contractor is to be paid in cash or in bonds. If in bonds, then the rate of interest such vouchers or bonds shall draw.

Be It Further Resolved, that the notice of the receiving of said bids shall be substantially in the following form:

NOTICE OF LETTING OF CONTRACT FOR SEWER

NOTICE IS HEREBY GIVEN that the Board of Local Improvements of the City of Farmer City, Illinois, will receive proposals or bids until the hour of the opening of the same, as hereinafter set forth, for the construction of the proposed improvement consisting of about two (2) miles of combined sewers in the sewer district provided by Ordinance Ninety-five (95) of Farmer City, Illinois.
Some approximate quantities of the proposed improvement are as follows: 2600 lineal feet of 23-inch concrete sewer; 3000 lineal feet of 8 to 18-inch vitrified pipe; excavation of all depths up to 26 feet; 32 manholes aggregating 370 vertical feet.

The plans and specifications are now on file in the office of the City Clerk of said city, and in the office of The American Contractor, Chicago, Illinois.

Said bids or proposals shall be delivered to the President of the Board of Local Improvements and will not be considered unless accompanied by a check, certified to by some responsible bank, payable to the order of the President of said Board of Local Improvements, in his official capacity, for not less than 10 per centum of the aggregate of said proposal or bid.

The contractor shall be paid in bonds bearing five percent (5%) interest per annum, pursuant to the Statute of the State of Illinois, governing local improvements, in so far as he is not paid in cash.

Said proposals or bids shall be opened, examined and publicly declared by said Board at a meeting thereof to be held in the City Council Chamber in the City Hall in the said City of Farmer City, Illinois, at the hour of two (2) o'clock P. M. on the sixth (6th) day of April A.D. 1909.

(Signed) C. D. Rock, President of the Board.

" H. L. Williams

" Epamy Covey,
Board of Local Improvements of the City of Farmer City, Ill.

Dated this 25th day of March A.D. 1909.

Be it Further Resolved, by the Board of Local Improvements
that a like copy of the above notice be also published in the Decatur Herald, a newspaper of general circulation published at Decatur, Illinois; in the Bloomington Pantagraph, a public newspaper of general circulation published at Bloomington, Illinois; and the American Contractor, a newspaper of general circulation published at Chicago, Illinois.

NOTICE TO PROPERTY OWNERS

Public notice is hereby given that in pursuance to the statute in such case made and provided, an award of the contract will be made to Howes Brothers Company, a corporation, not less than ten (10) days from the 6th day of April A. D. 1909, for the local improvement consisting of a system of combined sewers in John Street and other streets, alleys and public places in the City of Farmer City, Illinois, as provided for by Ordinance No. Ninety-five (95) of said city, unless the owners of a majority of the frontage of the lots or lands abutting upon said proposed improvement, or their agents, shall enter into a written contract within ten (10) days after the first posting and publishing hereof to do said work and make said improvement at ten (10) per centum less than the price at which the same has been awarded, which is as follows: Sixteen Thousand and Eight Hundred Eighty-Eight Dollars and Fifteen Cents ($16,888.15).

Dated at Farmer City, Illinois, this 7th day of April A. D. 1909.

C. D. Rock,
H. L. Williams.
Epamy Covey,
Board of Local Improvements, Farmer City, Ill.
City of Farmer City

C. D. Rock, Mayor
Tom Young, City Clerk

State of Illinois
County of DeWitt

H. L. Williams on oath states that on the 8th day of April A. D. 1909 he posted 11 copies of the annexed notice in the following public places within said sewer district and in the City of Farmer City, Ill., to-wit:

1 in front of Eppstein's Shoe Store.
1 at Corner of Main and Water Streets, Elliott's Store.
1 at Leisey Building.
1 at Corner of Water and Plum Streets.
1 at Corner of John and Water Streets.
1 between Plum Street and Clinton Avenue.
1 at Corner of Clinton Avenue and Main Street.
1 at Corner of Clinton Avenue and Plum Street.
1 at Corner of Clinton Avenue and John Street.
1 at Corner of Main Street and Water Street, Collier's Store.
1 between Main and Green Streets.

Further affiant saith not.

(Signed) H. L. Williams.

Subscribed and sworn to before me this 20th day of April A. D. 1909

(Signed) Lott R. Herrick,
Notary Public.
United States of America

State of Illinois

DeWitt County

Improvement Bond

Series Number

City of Farmer City

Bond Number

The City of Farmer City, in DeWitt County, Illinois, for value received, promises to pay to the bearer on the 2nd day of January, 1910, the sum of ONE HUNDRED DOLLARS, with interest thereon from date hereof at the rate of five per centum per annum, payable annually on presentation of the coupons here-to annexed.

Both principal and interest on this bond are payable at the office of the Treasurer of the City of Farmer City, Ill.

This bond is issued to anticipate the collection of a part of the second installment of a special assessment levied for the purpose of providing for a system of combined sewers in John Street and other streets, avenues and places in the City of Farmer City, Illinois, which said installment bears interest from the 12th day of July A. D. 1909, and this bond and the interest thereon are payable solely out of said installments when collected.

This bond is redeemable at the option of said City at the time of any annual payment of interest on twenty days notice being given by the proper authorities of said city in a newspaper published in said County.

IN TESTIMONY WHEREOF, said City of Farmer City has caused these presents to be signed by the Mayor and City Clerk of said City, and to be sealed with the corporate seal of said City.
Dated this ___________ day of ___________ A. D. 1909.

City of Farmer City

________________________________________
Mayor.

Attest: ________________________________

City Clerk.

Coupon No. 1 $5.00

The City of Farmer City, DeWitt County, Illinois, promises
to pay the bearer, at the office of the City Treasurer of said
City on the ___________ day of ___________ 190 on the surrender
of this coupon, the sum of five dollars, being the annual interest
on improvement bond No. ___________ Series No. ___________ dated the ___
_________ day of ___________ 190 issued in anticipation of special
assessment named in said bond, said sum to be paid solely out
of the fund levied for said purpose when collected.

Dated the ___________ day of ___________ 190.

City of Farmer City.

By ________________________________

Mayor.

Attest:

________________________________________
City Clerk.

Coupon No. 2 (Same as Coupon No. 1).

PUBLISHERS' CERTIFICATE

(With "Notice to Property Owners" attached.)

We, the undersigned, publishers of the Farmer City Journal, a weekly newspaper published in the City of Farmer City, DeWitt County, Illinois, do hereby certify that the Advertisement
or Notice hereto attached, in the matter of
Publication Notice—Notice to Property Owners, etc.

was published in said paper 2 successive weeks, the first insertion being on the 9th day of April 1909, and the last on the 16th day of April 1909.

Given under our hand this......day of......190

Fee $3.60

Williams & Bates
Publishers

Received Payment $3.60

Williams & Bates,
Publishers.

State of Illinois { }
County of DeWitt { SS.
City of Farmer City }

I, John W. Kendall, Secretary of the Board of Local Improvements of the City of Farmer City, Illinois, do hereby certify that the first voucher for moneys payable on the improvement provided by ordinance No. 95 of said City, being an ordinance entitled "An Ordinance providing for a system of combined sewers in John Street and other streets, avenues and places in the City of Farmer City, Illinois", was issued by said City on the 12th day of July A. D. 1909.

That the amount of said order was Thirteen Hundred and Forty-five dollars and Eighty-eight Cents ($1345.88).

Dated at Farmer City, Illinois this 29th day of July A. D. 1909.

(Signed) John W. Kendall
Secretary of the Board of Local Improvements of the City of Farmer City, Ill.
State of Illinois  
County of DeWitt  
City of Farmer City  

SS.

The Board of Local Improvements of the City of Farmer City, Illinois, hereby certifies that the first voucher for moneys payable on the improvement provided by ordinance No. 95 of said City, being an ordinance entitled "An Ordinance providing for a system of combined sewers in John Street and other streets, avenues and places in the City of Farmer City, Illinois", was issued by said City on the 12th day of July A. D. 1909.

The amount of said order was Thirteen Hundred and Forty-five Dollars and Eighty-eight Cents ($1345.88).

Dated at Farmer City, Illinois, this 29th day of July A. D. 1909.

Board of Local Improvements of the City of Farmer City, Ill.

(Signed)  
Charles P. Arbogast  
John W. Kendall  
W. L. Weedman

To the Honorable Fred C. Hill, Judge of said Court:

The undersigned Board of Local Improvements of the City of Farmer City, Illinois, hereby certify to this Honorable Court the cost of the local improvement done under and by virtue of an ordinance of said City, being Ordinance No. 95 entitled, "An Ordinance providing for a system of combined sewers in John street and other streets, avenues and places in said City of
Farmer City, Illinois," as follows:

W. W. Smith, Engineer $930.85
Pentagraph Printing & Stationery Co. Printing Bonds, etc. 55.30
Chas. Cottingham, Engineer. 106.00
Gale S. Dunbar, Inspector. 27.87
Wilbur Manock, Rodman. 6.00
American Contractor, Printing. 16.50
S. G. Arbogast, Inspector. 98.25
W. R. Pryor, Inspector. 30.00
The Journal, Printing. 248.30
Interest On Bonds. 43.83
Decatur Herald, Printing. 26.50
University of Illinois, Testing Cement. 7.00
Frank E. Shaffer, Damage. 300.00
E. F. Campbell, Court Costs. 650.05
Herrick & Herrick, Attorney Fees. 750.00
Carter-Harrold Abstract Company. 65.00
D. H. Roberts, Witness. 25.00
J. G. Melluish, Witness. 25.00
Emma Longmate. 4.00
Local Board of Improvements, Trip to Decatur. 8.48
C. D. Rock, Expense to Clinton. 6.10
Howes Bros. Company, Sewer. 17015.08
2½ Collection on $13,191.83 262.75
Herrick & Herrick, Services and Court costs paid by them. 155.00
Estimated interests to accrue on bonds 780.00
Total cost. $21642.86
The undersigned do further certify that the acceptance of said work done under said ordinance was accepted on the 8th day of June A. D. 1910, by the Board of Local Improvements of said City, with the condition in said acceptance that the work had not been constructed within the time limit provided by the terms of the contract for said work, and with the further exception that the payments for materials had not been made by the contractor as provided by the terms of said contract, and that there were then a number of claims unpaid for materials and other articles claimed to have been furnished by various individuals and concerns in and about the construction of said system of sewers.

That said work was finally accepted by the City, subject to the same exceptions as hereinabove set forth, on the 20th day of June A. D. 1910.

The undersigned further certify that there are contested claims pending and undetermined against said City by reason of said work, amounting to about Two Thousand Dollars ($2000.00).

The undersigned further certify that said improvement as finally accepted, conforms substantially to the requirements of the original ordinance for the construction of said improvement.

All of which is respectfully submitted.

____________________________________
____________________________________

Board of Local Improvements of the City of Farmer City, Illinois.
State of Illinois } SS.  In County Court
County of DeWitt }    July Term, A. D. 1910.

In the Matter of the Local Improvement in the City of Farmer City, Illinois, provided by Ordinance No. 95, of said City, which Ordinance is entitled "An Ordinance providing for a system of combined sewers in John Street and other streets, avenues, and places in said City of Farmer City, Illinois."

To the Honorable Fred C. Hill, Judge of said Court:

Your petitioners, the Board of Local Improvements of the City of Farmer City, Illinois, respectfully represent unto your Honor, that the local improvement contemplated and provided for by Ordinance No. 95, of said City of Farmer City, being entitled "An Ordinance providing for a system of combined sewers in John Street and other streets, avenues and places in said City of Farmer City, Illinois", has been completed, and that said work has been accepted by the said City of Farmer City, on the 20th day of June A. D. 1910, and that said Board of Local Improvements has, on this day, filed in this court, this being the court in which the assessment for said local improvement was confirmed, their certificate in writing of the cost of said local improvement, together with the amount estimated by the Board to be required to pay the accruing interests on the bonds issued under the terms of said Ordinance, and a copy of which said report of said Board and their certificate is hereto attached marked "Exhibit A", and made a part of this petition.

Your petitioners would therefore pray that this honorable Court consider and determine whether or not the facts stated in said certificate are true, and that this Court will fix a time
and place for the hearing upon this petition.

All of which is respectfully submitted.

C. P. Arbogast
John W. Kendall
W. L. Weedman

Board of Local Improvements
of the City of Farmer City,
Illinois.

Attorneys for said City
of Farmer City, Illinois.