



Memo

TO: Committee of the Whole
FROM: Ed Andrews, Public Works Director
DATE: August 11, 2017
SUBJECT: Lawndale Ave Engineering

The engineering design and start of a portion of the reconstruction of Lawndale Ave from Walnut Street to Knollcrest Drive was budgeted for in the current fiscal year.

This project is unique in that it will be one of the first City projects to address full pavement reconstruction and the renewal of underground utilities such as the 4" water main and sanitary sewer. This project would also serve as the template for addressing aging water services and sanitary laterals.

It is also planned to upgrade portions of the storm sewer to include sump collection lines so that any sump pump connections to the sanitary sewer could be redirected appropriately.

Staff has requested that Mohr & Kerr Engineering prepare a proposal for discussion based on similar projects they have performed for the Village of Morton and Dunlap.

Lawndale Avenue is classified as a Minor Collector.

Consideration of advancing this proposal to a formal contract is being brought before Committee of the Whole as a follow-up to discussion at the Public Works Committee meeting of August 7th.

cc: File



SCOPE OF SERVICES FOR CONSULTING ENGINEERING SERVICES

MOHR & KERR ENGINEERING & LAND SURVEYING, PC

LAWNDALE AVENUE

This Exhibit forms an integral part of the agreement between the City of Washington (hereinafter referred to as the CITY) and Mohr & Kerr Engineering & Land Surveying, PC (hereinafter referred to as the CONSULTANT) relative to the transportation facility described as follows:

Description: Lawndale Avenue, from East Jefferson Street to Knollcrest Drive

1 PURPOSE

The purpose of this Exhibit is to describe the scope of work and the responsibilities of the CONSULTANT and the CITY in connection with the design and preparation of a complete set of construction contract plans and special provisions, if necessary, for:

Reconstruction of Lawndale Avenue, including reconstructed pavement, new combination curb/gutter/sidewalk, driveways, storm sewer and inlets, watermain and services, sanitary sewer and laterals, a sump drain system and other related construction items.

The general objective is for the CONSULTANT to prepare a set of plans to be used by the successful contractor to build the project, and by the CITY to ensure the project is built as designed and to specifications.

The Scope of Services establishes which items of work are specifically included in this contract, and also which of the items of work will be the responsibility of the CONSULTANT or the CITY.

All plans and design documents are to be prepared with Standard English values in accordance with all applicable CITY manuals and guidelines.

The CONSULTANT shall be aware that as a project is developed, certain modifications and/or improvements to the original recommendation may be required. The CONSULTANT is to incorporate these refinements into the design and will consider this effort to be an anticipated and integral part of the work. This will not be a basis for any supplemental fee request.

The CONSULTANT shall demonstrate good project management practices while working on this project. These include communication with the CITY and others as necessary, management of time and resources, and documentation.

The CITY will provide contract administration, management services, and technical reviews of all work associated with the development and preparation of the contract plans.

2 PROJECT DESCRIPTION

The CONSULTANT shall investigate the status of the project and become familiar with concepts and commitments developed from the special assessment process. The CONSULTANT shall use approved concepts as a basis for the design unless otherwise directed by the City.

General Scope includes reconstruction of Lawndale Avenue, including reconstructed pavement, new combination curb/gutter/sidewalk, driveways, storm sewer and inlets, watermain and services, sanitary sewer and laterals, a sump drain system and other related construction items.

2.1 Roadway

Specification Package Preparation: CONSULTANT will prepare specification/bid package in accordance with CITY standards and requirements. Project is intended to be a unit price contract.

Plan Type: Roadway Plans will be typical Plan & Profiles drawn at a scale of no less than 1" = 20'. Cross Section will be prepared every 50' and at all driveway locations. Sidewalks and sidewalk crossings will be designed to meet current ADA standards.

Limits: Lawndale Avenue, from East Jefferson Street to Knollcrest Drive.

Typical Section: Typical Sections will be created for any significant changes in section.

Pavement Design: CONSULTANT shall coordinate borings and pavement design with a geotechnical engineer.

Intersections/Ramps: Intersection/ramp details will be provided at intersection of all side streets as required.

Retaining Walls: If required, retaining walls shall be designed to replace any existing walls that conflict or require reconstruction.

2.2 Drainage

CONSULTANT will analyze existing drainage system and design storm sewer system and sump drain system for the improvement.

2.3 Water and Sanitary Utility Plans

Plan Type: Utility Plans will be typical Plan & Profiles drawn at a scale of no less than 1" = 20' with all information required to obtain IEPA permits.

Limits: Lawndale Avenue, from East Jefferson Street to Knollcrest Drive. Sanitary sewer may go past these limits to Farm Creek.

Design: CONSULTANT will develop concept designs and estimates for a total reconstruction of the sanitary sewer and a project that would line the existing main and laterals. The final design will be determined based on cost, quality and impact to the construction schedule. Water will be designed sized based on the City model and will likely be directionally drilled.

2.4 Utility Coordination

CONSULTANT will coordinate the following utility relocation/adjustments:

Gas and Electric with Ameren

Telecomm with Frontier, MTCO and Comcast

2.5 Post Office Coordination

CONSULTANT will coordinate relocation of mail boxes during construction with US Postal Service.

2.6 Permits

CONSULTANT will apply for the following Permits in the name of the CITY:

IEPA – Consultant will prepare SWPP, City will apply for NOI for Storm Water Discharge

IEPA – Water Main Construction and Operating Permit

IEPA – Sewer Main Construction and Operating Permit

2.7 Survey

CONSULTANT will provide a topographic and right of way survey of the project limits.

2.8 Project Schedule

Within ten (10) days after the Notice-To-Proceed, and prior to the CONSULTANT beginning work, the CONSULTANT shall provide a detailed project activity/event schedule for CITY and CONSULTANT scheduled activities required to meet the desired bid date. The schedule shall indicate all required submittals.

Periodically, throughout the life of the project, the schedule shall be reviewed and, with the approval of the CITY, adjusted as necessary to incorporate changes in the work concept and progress to date.

2.9 Submittals

The CONSULTANT shall furnish plans and documents as required by the CITY to adequately control, coordinate, and approve the plans. The CONSULTANT shall distribute phase submittals as directed by the CITY. The CITY will determine the specific number of copies required prior to each submittal.

2.10 Provisions for Work

All maps, plans and designs are to be prepared with English values in accordance with all applicable current manuals, memorandums, guidelines including but not limited to:.

General

- IDOT Standard Specifications for Road and Bridge Construction in Illinois
- IDOT Drainage Manual
- Illinois Accessibility Code
- Standard Specifications for Water and Sewer Construction in Illinois

3 PROJECT COMMON and PROJECT GENERAL TASKS

Project Common Tasks

Cost Estimates: The CONSULTANT shall be responsible for producing a construction cost estimate and reviewing and updating the cost estimate when scope changes occur and/or at milestones of the project. Once the quantities have been developed the CONSULTANT shall be responsible for preparing a cost estimate.

Technical Special Provisions: The CONSULTANT shall provide Technical Special Provisions for all items of work not covered by the Standard Specifications for Road and Bridge Construction.

Field Reviews: Includes all trips required to obtain necessary data for all elements of the project.

Technical Meetings: Includes meetings with CITY and/or Agency staff, between disciplines and subconsultants, such as local governments, progress review meetings (phase review), and miscellaneous meetings. The CONSULTANT shall prepare, and submit to the CITY's Project Manager for review, the meeting minutes for all meetings attended by them. The meeting minutes are due within five (5) days of attending the meeting.

Quality Assurance/Quality Control: The CONSULTANT shall be responsible for the professional quality, technical accuracy and coordination of all surveys, designs, drawings, specifications and other services furnished by the CONSULTANT under this contract.

Supervision: Includes all efforts required to supervise all technical design activities.

Coordination: Includes all efforts to coordinate with all disciplines of the project to produce a final set of construction documents.

Project General Tasks

Project General Tasks, described in Sections 3.1 through 3.3 below, represent work efforts that are applicable to the project as a whole and not to any one or more specific project activity. The work described in these tasks shall be performed by the CONSULTANT when included in the project scope.

3.1 Project Development Report

The CONSULTANT shall prepare a PDR in an abbreviated form in case funding becomes available, the CITY/CONSULTANT will be able to finalize and submit.

3.2 Specifications Package Preparation

The CONSULTANT shall prepare and provide a specifications package prepared in accordance with the CITY's requirements. The specifications package shall address all items and areas of work and include any Mandatory Specifications, Modified Special Provisions, and Technical Special Provisions. The CITY will provide an applicable example to be used to prepare the specifications package.

The specifications package must be submitted for review at least 30 days prior to the contract package advertisement date. The submittal shall consist of (1) the complete specifications package, and (2) a copy of the final project plans.

3.3 Electronic Delivery

The CONSULTANT shall deliver final contract plans in electronic format.

4 ROADWAY & UTILITY PLANS

The CONSULTANT shall prepare Roadway, Utility, Drainage, Traffic Control, Utility Adjustment Sheets, plan sheets, notes, and details. The plans shall include the following sheets necessary to convey the intent and scope of the project for the purposes of construction.

4.1 Cover Sheet

4.2 Schedule of Quantities

4.3 Typical Section Sheets

4.4 General Notes/Pay Item Notes

4.5 Summary of Quantities

4.6 Plan/Profile Sheet showing proposed Utilities and Drainage

4.7 Intersection/Ramp Layout Details

4.8 Miscellaneous Detail Sheets

4.9 Highway Standards

4.10 Cross Sections

4.11 Traffic Control Plan Sheets

4.12 Utility Adjustment Sheets

4.13 Erosion Control Plan/SWPPP

5 DRAINAGE ANALYSIS

The CONSULTANT shall be responsible for designing a drainage system. The work will include the engineering analysis for any or all of the following:

5.1 Design of Storm Drains

Develop a “working drainage map”, determine runoff, inlet locations, and pipe sizes. Calculate hydraulic losses (friction, utility conflict and, if necessary, minor losses). Determine Design Tailwater and, if necessary, outlet scour protection.

6 UTILITIES

The CONSULTANT shall identify utility facilities ensuring no conflicts exist between utility facilities and the CITY’s construction project.

6.1 Identify Existing Utilities

Identify all utilities in the corridor; check Existing Plans and visual observation.

6.2 Make Utility Contacts

Send letters and two sets of plans to each utility.. Includes contact by phone for meeting coordination. Request type, size, location, easements, any cost relocation, and justification for any utility relocation. Include the design schedule.

6.3 Relocation Coordination

The CONSULTANT shall be responsible for transmitting/coordinating the appropriate plans to each utility in order to identify any condition that may require a Utility relocation.

6.4 Preliminary Utility Meeting

The CONSULTANT shall schedule (time and place), notify participants, and conduct a preliminary utility meeting with all affected utilities for the purpose of presenting the project, review the current design schedule, evaluate the utility information collected, provide follow-up information, and discuss any future design issues that may impact utilities. This is also an opportunity for the utilities to present proposed facilities. The CONSULTANT shall keep accurate minutes and distribute a copy to all attendees.

6.5 Individual/Field Meetings

The CONSULTANT shall meet with each Utility separately throughout the project design duration to provide guidance in the interpretation of plans, review changes to the plans and schedules, and assist in the development of the Utilities plans and work schedules.

6.6 Collect and Review Plans and Data from Utilities

Make Determinations (Compensable Interest, Easements, Coordinate, Analyze). Ensure information (utility type, material and size) is sent to the designer for inclusion in the plans.

6.7 Review Utility Markups and Work Schedules and Processing of Schedules and Agreements

Review utility marked up plans individually as they are received for content and coordinate review with the designer. Send color markups and schedules to the appropriate CITY office(s) for review and comment if required.

6.8 Utility Constructability Review

Review utility schedules against construction contract time, and phasing for compatibility.

7 CONSTRUCTION

The CONSULTANT shall provide construction observation and administration for the limits of the construction contract.

7.1 General

CONSULTANT is the CITY's agent at the specific construction site, will confer with CITY on progress and status of the project.

7.2 Schedules

CONSULTANT shall review schedule and periodically update the CITY of any potential changes.

7.3 Meetings

The CONSULTANT shall attend all meetings including, preconstruction meetings, progress meetings, job conferences and other project related meetings.

7.4 Liaison

The CONSULTANT shall serve as the CITY's liaison with the Contractor and shall work directly with the Contractor's assigned superintendent.

7.5 Interpretation of Contract Documents

The CONSULTANT shall provide interpretations of the contract documents to the Contractor. Any issues that affect cost shall be with advise of the CITY.

7.6 Modifications

The CONSULTANT shall consider and evaluate Contractor's suggestions for modifications in drawings and specifications and report any recommendations to the CITY.

7.7 Review of Work

The CONSULTANT shall conduct full time site observation of Contractor's work in progress to assist in determining if the work is in accordance with the plans and documents. The CONSULTANT shall report to the CITY whenever they believe that any part of the work will not produce a completed project that generally conforms to the plans and documents or will not meet the integrity of the design or has been damaged. The CONSULTANT will advise the contractor that the work shall be corrected.

7.8 Inspection and Test

The CONSULTANT shall observe, record and report to the CITY appropriate details relative to test procedures. Testing will be conducted by a subcontracted third party. CONSULTANT shall coordinate all testing.

7.9 Records

The CONSULTANT shall maintain orderly files for correspondence, job conferences, as built in field, field orders, work change directives, addenda, any additional issued drawings, clarifications, and interpretation of contract documents, progress reports, shop drawings, samples an all other project related documents.

CONSULTANT shall prepare a daily report recording Contractors hours on site, weather conditions, data relative to questions or change orders, field orders, work change directives, site visitors, daily activities, decisions, observations in general, and specific observations in more detail as in the case of observing testing.

CONSULTANT shall record names, addresses, and phone numbers of Contractor's, subcontractors, and major suppliers of materials and equipment.

CONSULTANT shall provide CITY with original set of all records following project completion.

CONSULTANT shall maintain of full set of as built plans and specifications throughout the project.

7.10 Pay Request

The CONSULTANT shall review applications for payment with Contractor with the unit prices and work completed. CONSULTANT shall make a recommendation to the City regarding payment.

7.11 Project Completion

Conduct final inspection with the CITY and prepare a punch list of items to be completed or corrected.

Observe and document that all final items have been completed or corrected and make recommendation concerning acceptance and issuance of final approval and acceptance by the CITY.

Mohr & Kerr Engineering & Land Surveying, P.C
 Man Hour Estimate
 City of Washington - Lawnedale Ave Reconstruction
 8/4/2017

| Scope Item | Professional Engineer | | | Professional Land Surveyor | | | Senior Design Engineer | | | Engineering Technician | | | 1 Man Survey Crew | | | Senior Construction Inspector | | | | | | |
|---------------------------------|-----------------------|----------|-------------|----------------------------|----------|------------|------------------------|------|-------------|------------------------|------|------------|-------------------|------|------------|-------------------------------|------|--------|--|--|------------|-------------|
| | Hours | Rate | Total | Hours | Rate | Total | Hours | Rate | Total | Hours | Rate | Total | Hours | Rate | Total | Hours | Rate | Total | | | | |
| 2.5 Post Office Coordination | 6 | \$112.00 | \$672.00 | | | \$0.00 | | | \$0.00 | | | \$0.00 | | | \$118.00 | | | \$0.00 | | | \$0.00 | \$672.00 |
| 2.6 Permits | 12 | \$112.00 | \$1,344.00 | | | \$0.00 | | | \$101.00 | | | \$0.00 | | | \$118.00 | | | \$0.00 | | | \$76.00 | \$1,420.00 |
| 2.7 Survey | 4 | \$112.00 | \$448.00 | 40 | \$112.00 | \$4,480.00 | | | \$101.00 | | | \$0.00 | | | \$118.00 | | | \$0.00 | | | \$76.00 | \$5,004.00 |
| 2.8 Project Schedule | 4 | \$112.00 | \$448.00 | | | \$0.00 | | | \$101.00 | | | \$0.00 | | | \$118.00 | | | \$0.00 | | | \$76.00 | \$1,072.00 |
| 2.9 Submittals | 4 | \$112.00 | \$448.00 | | | \$0.00 | | | \$101.00 | | | \$0.00 | | | \$118.00 | | | \$0.00 | | | \$76.00 | \$1,072.00 |
| 3.1 Project Development Report | 40 | \$112.00 | \$4,480.00 | | | \$0.00 | | | \$101.00 | | | \$0.00 | | | \$118.00 | | | \$0.00 | | | \$76.00 | \$5,036.00 |
| 3.2 Specifications Preparation | 24 | \$112.00 | \$2,688.00 | | | \$0.00 | | | \$101.00 | | | \$0.00 | | | \$118.00 | | | \$0.00 | | | \$76.00 | \$3,452.00 |
| 3.3 Electronic Delivery | 2 | \$112.00 | \$224.00 | | | \$0.00 | | | \$101.00 | | | \$0.00 | | | \$118.00 | | | \$0.00 | | | \$76.00 | \$3,752.00 |
| 4.1 Cover Sheet | 16 | \$112.00 | \$1,792.00 | | | \$0.00 | | | \$101.00 | | | \$0.00 | | | \$118.00 | | | \$0.00 | | | \$76.00 | \$2,644.00 |
| 4.2 Schedule of Quantities | 2 | \$112.00 | \$224.00 | | | \$0.00 | | | \$101.00 | | | \$0.00 | | | \$118.00 | | | \$0.00 | | | \$76.00 | \$3,444.00 |
| 4.3 Typical Sections | 4 | \$112.00 | \$448.00 | | | \$0.00 | | | \$101.00 | | | \$0.00 | | | \$118.00 | | | \$0.00 | | | \$76.00 | \$4,244.00 |
| 4.4 General Notes | 4 | \$112.00 | \$448.00 | | | \$0.00 | | | \$101.00 | | | \$0.00 | | | \$118.00 | | | \$0.00 | | | \$76.00 | \$5,044.00 |
| 4.5 Summary of Quantities | 4 | \$112.00 | \$448.00 | | | \$0.00 | | | \$101.00 | | | \$0.00 | | | \$118.00 | | | \$0.00 | | | \$76.00 | \$5,844.00 |
| 4.6 Plan & Profiles | 16 | \$112.00 | \$1,792.00 | | | \$0.00 | | | \$101.00 | | | \$0.00 | | | \$118.00 | | | \$0.00 | | | \$76.00 | \$6,644.00 |
| 4.7 Intersection Ramp Layouts | 8 | \$112.00 | \$896.00 | | | \$0.00 | | | \$101.00 | | | \$0.00 | | | \$118.00 | | | \$0.00 | | | \$76.00 | \$7,544.00 |
| 4.8 Misc Details | 4 | \$112.00 | \$448.00 | | | \$0.00 | | | \$101.00 | | | \$0.00 | | | \$118.00 | | | \$0.00 | | | \$76.00 | \$8,344.00 |
| 4.9 Highway Standards | 2 | \$112.00 | \$224.00 | | | \$0.00 | | | \$101.00 | | | \$0.00 | | | \$118.00 | | | \$0.00 | | | \$76.00 | \$9,144.00 |
| 4.10 Cross Sections | 16 | \$112.00 | \$1,792.00 | | | \$0.00 | | | \$101.00 | | | \$0.00 | | | \$118.00 | | | \$0.00 | | | \$76.00 | \$10,044.00 |
| 4.11 Traffic Control Plans | 6 | \$112.00 | \$672.00 | | | \$0.00 | | | \$101.00 | | | \$0.00 | | | \$118.00 | | | \$0.00 | | | \$76.00 | \$10,844.00 |
| 4.12 Utility Adjustment Plans | 4 | \$112.00 | \$448.00 | | | \$0.00 | | | \$101.00 | | | \$0.00 | | | \$118.00 | | | \$0.00 | | | \$76.00 | \$11,644.00 |
| 4.13 Erosion Control Plan/SWPPP | 4 | \$112.00 | \$448.00 | | | \$0.00 | | | \$101.00 | | | \$0.00 | | | \$118.00 | | | \$0.00 | | | \$76.00 | \$12,444.00 |
| 5.1 Drainage Analysis | 4 | \$112.00 | \$448.00 | | | \$0.00 | | | \$101.00 | | | \$0.00 | | | \$118.00 | | | \$0.00 | | | \$76.00 | \$13,244.00 |
| 6 Utility Coordination | 16 | \$112.00 | \$1,792.00 | | | \$0.00 | | | \$101.00 | | | \$0.00 | | | \$118.00 | | | \$0.00 | | | \$76.00 | \$14,044.00 |
| TOTAL | | | \$21,728.00 | | | \$4,480.00 | | | \$24,442.00 | | | \$4,830.00 | | | \$7,080.00 | | | \$0.00 | | | \$5,180.00 | \$57,552.00 |

| | | | | | | | | | | | | | | | | | | | | | | |
|----------------|----|----------|------------|--|--|--------|--|--|----------|--|--|--------|--|--|----------|--|--|--------|--|--|---------|------------|
| 7 Construction | 65 | \$112.00 | \$7,280.00 | | | \$0.00 | | | \$101.00 | | | \$0.00 | | | \$118.00 | | | \$0.00 | | | \$76.00 | \$8,116.00 |
|----------------|----|----------|------------|--|--|--------|--|--|----------|--|--|--------|--|--|----------|--|--|--------|--|--|---------|------------|

Assume 22 week Construction Schedule @ 75% Utilization

City of Washington
Lawndale Concept Estimate of Cost
Mohr & Kerr Engineer & Land Surveying, PC
8/1/2017

| Engineer's Estimate | | | | |
|---|-------------------------------|--------------|-------------------|-----------------------|
| Item | Unit | Quan. | Unit Price | Total |
| Earth Excavation | Cu. Yd. | 1,562 | \$33.00 | \$51,546.00 |
| Undercutting Subbase | Cu. Yd. | 118 | \$34.10 | \$4,023.80 |
| Aggregate Base Course CA-6 for Subbase Repair | Ton | 242 | \$29.70 | \$7,187.40 |
| Geotechnical Fabric for Base Repair | Sq. Yd. | 236 | \$2.75 | \$649.00 |
| Furnishing & Placing Top Soil, 4" | Sq. Yd. | 2,400 | \$8.25 | \$19,800.00 |
| Seeding, Cl. 1A | Acre | 0.50 | \$11,000.00 | \$5,500.00 |
| Storm Sewer Structure Protection | Each | 22 | \$286.00 | \$6,292.00 |
| Beaver Dams | Each | 3 | \$236.50 | \$709.50 |
| Stone RipRap, RR-4 | Sq. Yd. | 40 | \$110.00 | \$4,400.00 |
| Geotechnical Fabric for Ground Stabilization | Sq. Yd. | 4,735 | \$2.75 | \$13,021.25 |
| Aggregate Base Course, Ty. B, 9" | Sq. Yd. | 4,735 | \$16.50 | \$78,127.50 |
| Bituminous Materials (Prime Coat) | Gallon | 1,657 | \$4.95 | \$8,202.15 |
| Poly. Bituminous Materials (Prime Coat) | Gallon | 237 | \$6.80 | \$1,564.20 |
| Hot-Mix Asphalt Bind. Cse., IL-19.0, N50 | Ton | 398 | \$126.50 | \$50,347.00 |
| Poly. Hot-Mix Asphalt Surf. Cse., Mix D, N50 | Ton | 398 | \$132.00 | \$52,536.00 |
| P.C.C. Sidewalk, 4" | Sq. Yd. | 710 | \$71.50 | \$50,765.00 |
| P.C.C. Driveway Pavement, 6" | Sq. Yd. | 562 | \$77.00 | \$43,274.00 |
| Comb. Conc. Curb & Gutter, Type M-6.12 | Feet | 3,014 | \$35.20 | \$106,092.80 |
| Driveway Pavement Removal | Sq. Yd. | 562 | \$16.50 | \$9,273.00 |
| Combination Curb & Gutter Removal | Feet | 3,014 | \$10.45 | \$31,496.30 |
| Connect to Existing Water Main | Each | 5 | \$700.00 | \$3,500.00 |
| 8" Ductile Iron, Water Main (Fittings Incidental) | Feet | 1,718 | \$40.00 | \$68,720.00 |
| Fire Hydrant w/ 6" Gate Valve and Valve Box | Each | 3 | \$5,000.00 | \$15,000.00 |
| Fire Hydrant Removal | Each | 3 | \$600.00 | \$1,800.00 |
| Gate Valve and Valve Box | Each | 6 | \$1,000.00 | \$6,000.00 |
| Corporation Stop, 1 1/2" and Box | Each | 31 | \$125.00 | \$3,875.00 |
| Water Service, 1 1/2" | Feet | 823 | \$12.00 | \$9,876.00 |
| Trench Backfill (Storm) | Cu. Yd. | 1,200 | \$55.00 | \$66,000.00 |
| Storm Sewer Removal | Feet | 1,146 | \$49.50 | \$56,727.00 |
| Storm Sewers, Cl. A, Type 2, RCP, 12" | Feet | 645 | \$88.00 | \$56,760.00 |
| Storm Sewers, Cl. A, Type 2, RCP, 18" | Feet | 1,000 | \$100.00 | \$100,000.00 |
| Inlet Manhole, 4' Dia., Type G-1 | Each | 4 | \$4,180.00 | \$16,720.00 |
| MH to be Adjusted w/ New Ty. 1 Fr. & Gr., C.L. | Each | 3 | \$1,650.00 | \$4,950.00 |
| Inlet, Type G-1 | Each | 18 | \$3,960.00 | \$71,280.00 |
| P.R.C.F.E.S., 18" | Each | 1 | \$880.00 | \$880.00 |
| Removing End Sections | Each | 2 | \$400.00 | \$800.00 |
| Removing Inlets | Each | 9 | \$495.00 | \$4,455.00 |
| Removing Manholes | Each | 9 | \$1,210.00 | \$10,890.00 |
| Sump Drains, PVC, SDR 26 | Feet | 822 | \$15.00 | \$12,330.00 |
| Trench Backfill (Sanitary) | Cu. Yd. | 0 | \$66.00 | \$0.00 |
| San. Manholes, 4' Dia., Ty. 1 Fr., C.L. | Each | 7 | \$4,125.00 | \$28,875.00 |
| Sanitary Sewer, PVC, SDR 26, 6" | Feet | 748 | \$99.00 | \$74,052.00 |
| Sanitary Sewer, PVC, SDR 26, 8" | Feet | 979 | \$95.70 | \$93,690.30 |
| Sanitary Sewer Tees, 8" x 8" x 6" | Each | 31 | \$275.00 | \$8,525.00 |
| Sanitary Sewer Cleanouts | Each | 31 | \$682.00 | \$21,142.00 |
| Traffic Control & Protection | L. Sum | 1 | \$9,350.00 | \$9,350.00 |
| | Subtotal | | | \$1,291,004.20 |
| | 15% Design Contingency | | | \$193,650.63 |
| | Total | | | \$1,484,654.83 |