DLZ
ARCHITECTURE • ENGINEERING • PLANNING
SURVEYING • CONSTRUCTION SERVICES

INNOVATIVE IDEAS
EXCEPTIONAL DESIGN
UNMATCHED CLIENT SERVICE

April 12, 2021

Hasmukh Patel, P.E.
Assistant City Engineer
City of Parma
6611 Ridge Road
Parma, Ohio 44129

RE: City of Parma
Krueger Avenue Area Sewer Improvements
Scope of Work and Fee Proposal

Dear Mr. Patel:

Submitted herewith is our scope of work and fee proposal for the referenced project. It is based on our April 9, 2021 meeting with yourself and Mr. Mihelich. DLZ appreciates the opportunity to submit our proposal to provide engineering services to evaluate the Krueger Avenue area sewer system and provide the City of Parma with the most cost-effective engineering solutions.

Task	Fee
Total Base Engineering Fee (Task 1 through Task 4)	$251,629.80
General Engineering Services (If Authorized) Task 5	$98,773.50
Total Engineering Fee (Task 1 through Task 5)	$350,403.30

Should you have any questions or require additional information, please contact me at 216-771-1090.

Sincerely,

Brendan P. Ward, P.E.
Project Manager

Thomas G. Hessler, P.E., P.S.
Director of Water Practice

cc: File CL21003260
J. Mihelich, City of Parma

EXHIBIT A
L-71-21
tabbies

CITY OF PARMA
KRUEGER AVENUE AREA SEWER IMPROVEMENTS
SCOPE OF SERVICES
4/12/21

PROJECT DESCRIPTION

The City of Parma desires to evaluate the Krueger Avenue Area Sewer System and design storm and sanitary sewer improvements based on the following MCIP information developed by the Northeast Ohio Regional Sewer District (NEORSD):

- Along Krueger Avenue west of West 48th during normal 1 and 2-year storm events, numerous recorded incidents of Basement Backups (BBU's) have occurred. Krueger Avenue has a common trench that during heavy rains overflows into the sanitary sewer causing I/I issues.

- The main component of this project is to reduce I/I by addressing both the separation of the common trench as well as addressing the under capacity issues by increasing the storm sewer from Krueger – W. 48th – Torrington – Milford and ultimately into the existing storm sewer on State Road.

- The following project components are anticipated:

    - 1,600-ft. of 12 and 21-inch storm sewers on W. 48th Street
    - 2,320-ft. of 24-inch storm sewers on Torrington Avenue and Milford Road
    - 800 -ft. of 12-inch storm sewers on Wood and Pershing Avenues
    - 1,400 -ft of 12-inch storm sewers on Krueger Avenue
    - Traffic Control
    - Pavement Rehabilitation

- Based upon the most recent SWI-LSSES Candidate Summary for MCIP Projects, the problem along West 48th to Milford Avenue and ultimately into State Road is primarily a capacity problem as well as I/I caused by a common trench for the Storm and Sanitary Sewers in this area. In addition, 16 of 18 homes tested on Krueger had storm drains connected directly into the sanitary sewer and 2 of the 16 could not be assessed from the City side of the street.

DLZ proposes a holistic approach to evaluate the entire Krueger Avenue Area Sewer System. DLZ will evaluate design alternatives and provide the City of Parma with the most cost-effective engineering solution.

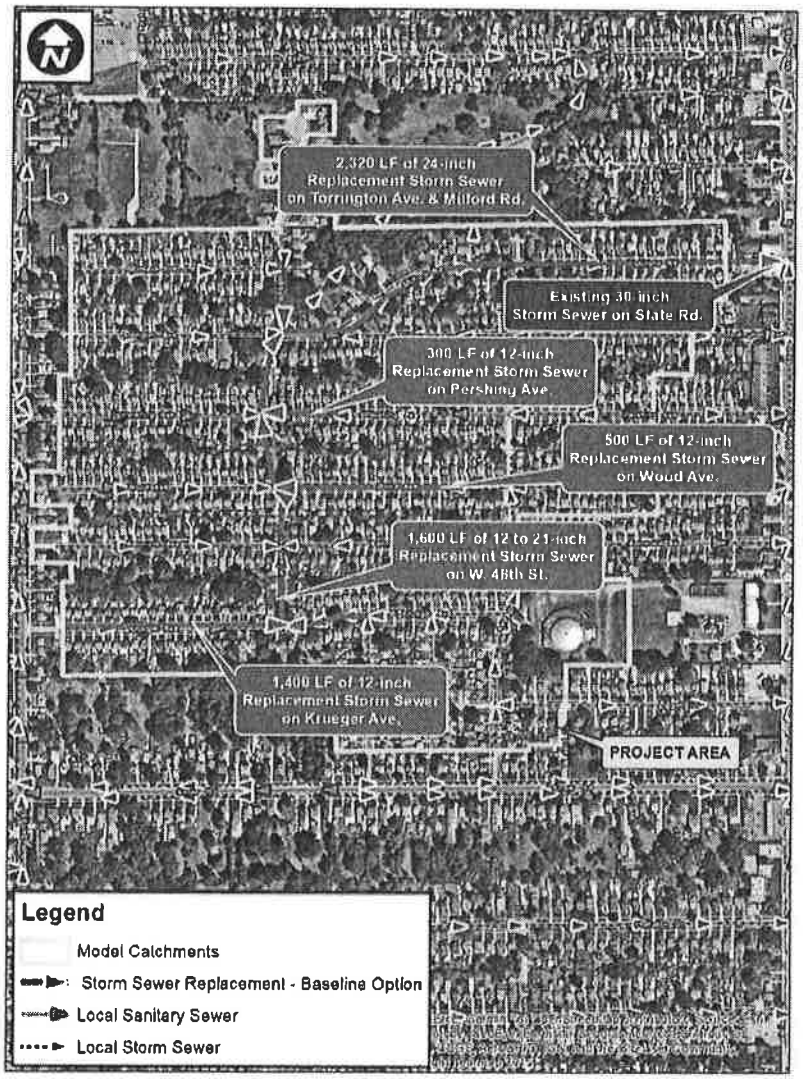
1.0 PRELIMINARY DESIGN PHASE SERVICES

1.1 SURVEYING AND MAPPING

1.1A Survey and Mapping Limits

Survey limits are defined along the proposed replacement sewer routes shown on **Exhibit A**. Survey limits will extend five feet beyond the public right-of-way.

Exhibit A - Site Survey Limits for Baseline Option



DLZ

One roadway is included in the base survey:

West 48th Street	1,700-ft.

1.1B Horizontal and Vertical Control

DLZ will define horizontal and vertical control based on the Ohio North Zone State Plane coordinate system NAD 83(2011) and the NAVD 88 vertical datum. A total of 11 benchmarks will be set for future construction activities. An estimated 20 GCP (Ground Control Points) will be set for the UAV (Unmanned Aerial Vehicle) flight as described below.

1.1C Soil Boring Locations

DLZ will locate the as drilled locations of seven (7) geotechnical soil borings that will be drilled in one phase. The boring locations will be coordinated with the DLZ geotechnical department.

1.1D Topographic Identification

DLZ will perform the minimum field topographical survey within the above-mentioned survey limits. Contours will be developed at a 1-ft. interval created from the natural topography including but not limited to pavements, flow lines, low and high-grade breaks. Planimetric features to be located will include but not limited to structures, signs, entrance drives, valves, curbs, curb ramps, landscape areas, tree lawns, fences, signs, pavements, and pavement types. All trees that are 12-in. or larger will be located and shown as either coniferous or deciduous. The underground utility information will be provided per an (OUPS) Ohio Utilities Protection Service request for pre-planning information and field markings. This information will be derived from field observation when accessible or from record information made available from utility companies, City of Parma, or other government agencies. All utility connections will be made one connection past the above stated survey limits. Utility research and utility contacts will be provided meeting the ASCE 38.02 Quality Level C. It is assumed that DLZ will have unencumbered access to the above stated survey limits.

1.1E Drainage Survey

DLZ will survey and verify drainage features throughout the survey limits. Drainage features include rim elevation, invert elevation, pipe size, and material information. The field survey will provide the required information to analyze existing drainage patterns and identify critical drainage areas. The same methods will also be applied to sanitary sewers.

1.1F Records Research, Right-of-Way Resolve, & Location of Property Corners & Monuments

DLZ will field locate the necessary property corners and monuments to develop the existing road Right-of-Ways as recorded in the Cuyahoga County Recorder's office. The resolved right-of-way and property lines will be based on the most current existing plat of record, legal description,

county, city, and state records. This work will be performed in accordance with the "Minimum Standards for Boundary Surveys in the State of Ohio," as defined by Chapter 4733-37 of the Ohio Administration Code. It is assumed that DLZ will have unencumbered access to the above site survey limits.

1.1G UAV Flight & Aerial Mapping

DLZ will supplement the field survey effort by utilizing the senseFly eBee X fixed wing system and/or the DJI Phantom 4 Pro to autonomously fly the subject survey limits. Flights will be flown at the lowest possible altitude but no higher than 400-ft. AGL (Above Ground Level). Flights will not be performed if winds exceed 20-mph. Other limitations include rain, snow, and FAA - TFR's (temporary flight restrictions). It is recommended that flights do not take place when broken clouds are present restricting either consistent overcast or consistent sun. All flights will be conducted under the Federal Aviation Administration Part 107 regulations performed by a certified Remote Pilot in Command (PIC).

It is assumed that any aerial photos of private property will be used for design and planning purposes only and will not be put on public display without the authorization of the subject property owners.

1.1H Site Survey Deliverables

The existing conditions base map data will be made available in all AutoCAD versions up to AutoCAD 2018. Mapping deliverables will be created at an engineering scale of 1-inch = 20-ft. unless specified otherwise. All existing conditions mapping will be developed in Ohio Department of Transportation drafting standards. All property's will be shown per the Cuyahoga County GIS Auditor's information. It is assumed that no boundary surveys resolving property lines will be required at this time.

1.2 GEOTECHNICAL INVESTIGATION

1.2A Reconnaissance and Planning

DLZ will perform a field reconnaissance of the site and obtain utility clearance through the Ohio Utilities Protection Service (OUPS) and the Ohio Oil & Gas Producers Underground Protection Service (OGPUPS). The proposal presumes that no city permits will be required for the proposed drilling plan.

Based on existing information available for the general project area, clays are expected to be encountered overlying shallow bedrock. Additionally, there is a buried stream present, running along West 48th Street between Pershing Avenue and just north of Milford Avenue.

1.2B Drilling

The drilling program will consist of seven (7) borings drilled to a depth of 20 feet. Borings will be located on paved surfaces and a truck mounted drill rig will be used to drill the borings. The borings will be advanced using conventional hollow stem augering/mud rotary techniques and sampled using a standard 2-inch OD, 1.375-inch ID split spoon sampler in general accordance with ASTM D-1586 Standard Penetration Test (SPT) Method. The borings will be sampled at 2.5-ft. sampling intervals to the completion depths of the borings. When refusal on bedrock is encountered, DLZ will core bedrock to the completion depth of the boring using NQ2, double tube, diamond bit, wireline equipment in accordance with ASTM D 2113 methods.

In all sewer borings, standard penetration data will be developed as warranted and representative samples preserved for geotechnical laboratory testing.

All borings will be backfilled at the completion of drilling. Borings drilled in existing paved surfaces will be sealed and the tops will be capped with cold patch asphalt or quick set concrete (in-kind with the pavement). Borings outside of roadway/paved surfaces will be restored using topsoil and seeding as appropriate. All excess soil cuttings and fluids will be spread on site or mixed with grout/backfill.

1.2C Traffic Control

Each conventional boring will be located within the road right-of-way and will require traffic control. The roadways are expected to have limited through traffic, so traffic control will consist of signs and cones.

1.2D Laboratory Testing

In the laboratory all samples will be classified in accordance with the Unified Soil Classification System (USCS). Laboratory testing will include moisture content determinations, particle-size analyses, and plasticity determinations of a limited number of samples considered to be representative of the subsurface materials encountered by the borings. Additionally, unconfined compressive strength testing will be performed on up to two representative bedrock samples, if material suitable for this type of sampling and testing is encountered in the field. Formal boring logs will be prepared using the field logs and the results of laboratory testing. All samples will be stored in our laboratory for six months and then disposed unless other arrangements are made.

1.2E Subsurface Exploration Report

Upon completion of the field exploration and laboratory testing, DLZ will prepare a written report of the geotechnical exploration, including findings, analysis, and foundation recommendations (bearing capacity), as well as guidance for excavation and groundwater control.

1.3 FLOW MONITORING PROGRAM

DLZ will use 2021 flow monitoring data to supplement and refine the existing hydraulic model which will be used to further expand on the understanding of wet weather flow contribution to the sanitary sewer on W. 48th Street. The data will subsequentially be used to reduce cost of infrastructure in the project area by providing direct solutions to the sources of wet weather contribution.

DLZ's subconsultant, ADS Environmental Services will perform flow and rainfall monitoring including installation and maintenance of three flow monitors and one rain gauge for a duration of two months. Flow monitoring shall be completed at key locations within the collection system for use in calibrating the existing conditions model and at a minimum be compared to the District's eight largest Typical Year storm events and 5-year, 6-hour design storm event. DLZ will be responsible for compiling the following Flow Monitoring Program (FMP) deliverables:

- Site and installation reports.
- Scatter graph for the entire monitoring period with calibration and confirmation measurements overlain.
- Time series plots in one-week increments, including depth, velocity, final flow and rainfall with calibration and measurements overlain.
- Summary of daily minimum, maximum, and average depth and flow and daily rain total (summaries to be presented one per calendar month basis).
- Summary by rainfall events including total rainfall depth, duration, peak 5- minute and 1-hour intensities.
- Summary of calibration and confirmation measurements, including field measurements from actual calibrations and confirmations.
- Final data in standard electronic format (.csv).
- Raw data in standard electronic format (.csv).

The FMP deliverables will be submitted within 6 weeks after completion of the two-month flow monitoring period.

1.4 HYDRAULIC ANALYSIS

1.4A Model Calibration/Refinement

DLZ will refine the existing hydraulic model, shown on **Exhibit B**, developed in InfoWorks ICM as part of the NEORSD's SWI-LSSES Project. The SWI-LSSES Project included hydraulic model development and calibration of approximately 128 acres and 16,680-lf. of 8 to 10-inch sanitary sewer tributary to the Krueger Avenue Area Sewer Improvements Project. DLZ will use 2021 flow monitoring data from three flow meters and one rain gauge to supplement and refine the existing hydraulic model. The information will be used to further expand on the understanding of wet weather flow contribution to the sanitary sewer on W. 48th Street. The data will subsequentially be used to reduce cost of infrastructure in the project area by providing direct solutions to the sources of wet weather contribution. The hydraulic model will be refined using

InfoWorks ICM. The 2021 flow monitoring data will be used to adjust model parameters to better match the dry and wet weather model responses to meet the targeted calibration guidelines in the NEORSD's modeling standards and protocols.

Dry weather flow (DWF) is composed of sanitary wastewater flow and baseflow infiltration. Sanitary flow typically has daily diurnal patterns that vary during the week (e.g., weekend versus weekdays) and/or seasonally. Baseflow infiltration can vary seasonally depending on factors such as groundwater table levels and soil conditions. DWF is represented in the model using four components: 1) population, 2) wastewater generation rate, 3) baseflow infiltration rate, and 4) diurnal peaking factors. Calibration of DWF is an iterative process of adjusting these parameters until model-estimated and monitored DWF responses are within District-specified tolerances.

Wet weather flow (WWF) flow calibration will consist of adjustment of hydrologic and hydraulic parameters to match the flow monitored hydrographs' shape and magnitude, including the peak flow, volume, and depth. Calibration results will be compared with the targeted criteria provided in the District modeling standards and protocols. WWF calibration will begin with the upstream monitors and proceed downstream. WWF parameters to be adjusted during calibration will include adjustment of baseflow and RTK hydrographs based on Rainfall Derived Infiltration and Inflow (RDII). RTK hydrographs are commonly used to model extra inflow during and immediately after rainfall events, caused by seepage of rainwater into defective pipes, manhole covers, etc. The RTK Hydrograph's define the proportion and timing of rainfall falling on the drainage area that enters the system as RDII.

1.4B Alternative Analysis

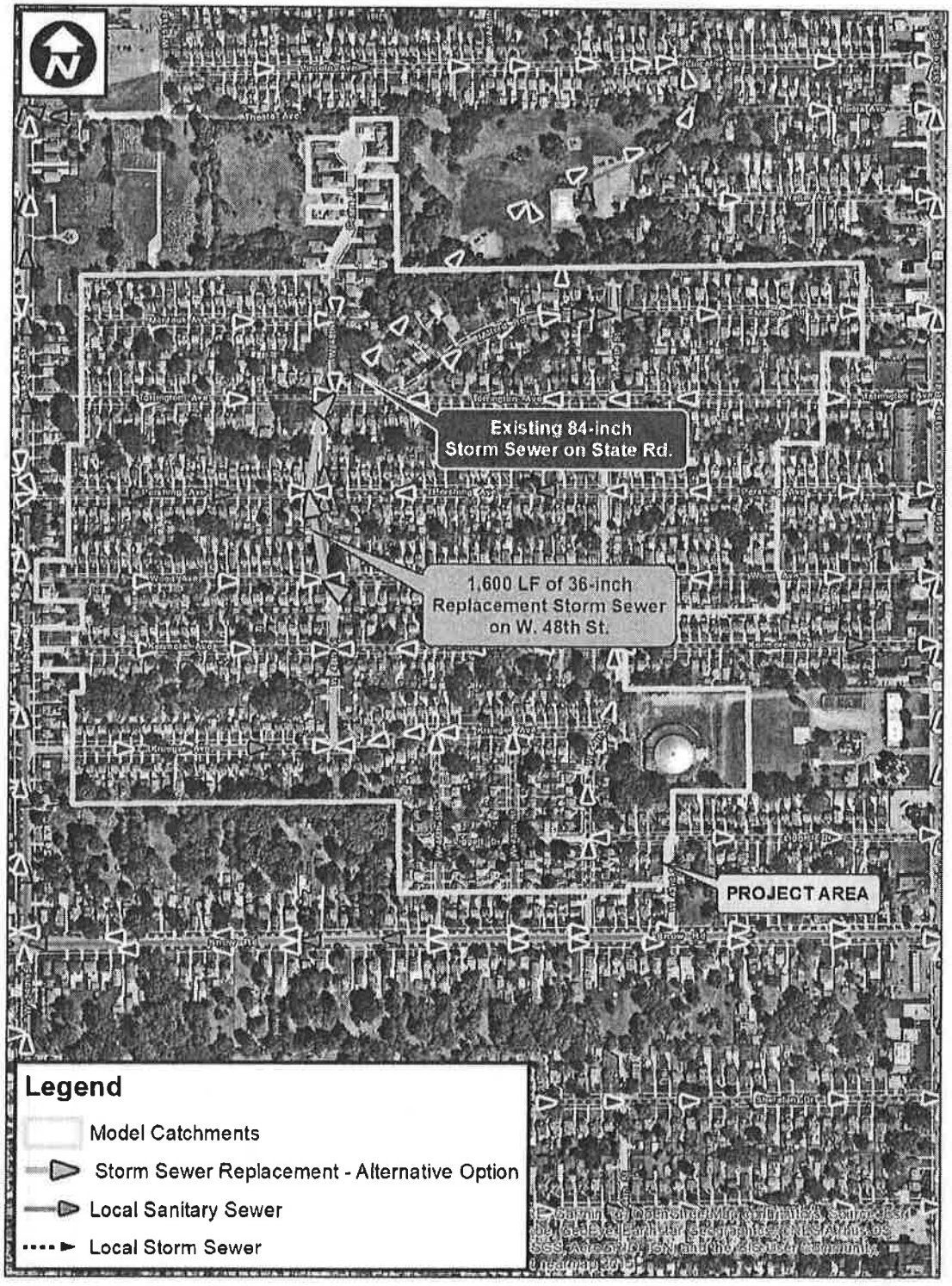
DLZ will evaluate alternative options to limit surcharge to within 10-ft. below ground surface during the 5-year, 6-hour design event. As shown on **Exhibit C**, Alternative Analysis will focus on evaluating the potential benefits of providing a replacement storm sewer along W. 48th Street with connection into the 84-inch culverted stream in Walters Grove Park in addition to eliminating stormwater contributions from sanitary sewers on side streets such as Krueger Avenue, where 16 of 18 homes were confirmed as having storm drains directly connected to the sanitary sewer system under the NEORSD's SWI-LSSES Project. The focus of the evaluation will include impacts to private property and overall construction cost savings, based on the five-step approach below. DLZ will present pros versus cons for each option and present a recommendation to the City of Parma at a scheduled Alternative Analysis coordination meeting. DLZ's five-step approach to alternative analysis includes the following:

1. Perform PACP Inspection of sanitary sewers.
2. Collect RDII information on sanitary sewers using flow monitoring data.
3. Identify major stormwater contributions to sanitary sewers.
4. Refine hydraulic model to support alternative analysis.
5. Identify cost-saving alternatives (i.e. Sewer Rehabilitation, Sewer Upsizing, Stormwater Redirection)

Exhibit B – Model Calibration/Refinement Extents

DLZ

Exhibit C – Alternative Option Overview



1.5 CONDITION ASSESMENT/PACP INSPECTION

DLZ's Subconsultant, C&K Industrial Service will perform CCTV inspection of the sanitary sewers within the project area based on a three-phase approach, as described below. C&K will provide report forms and videos of each inspection which will include approximately 2,850-ft., shown on **Exhibit D**.

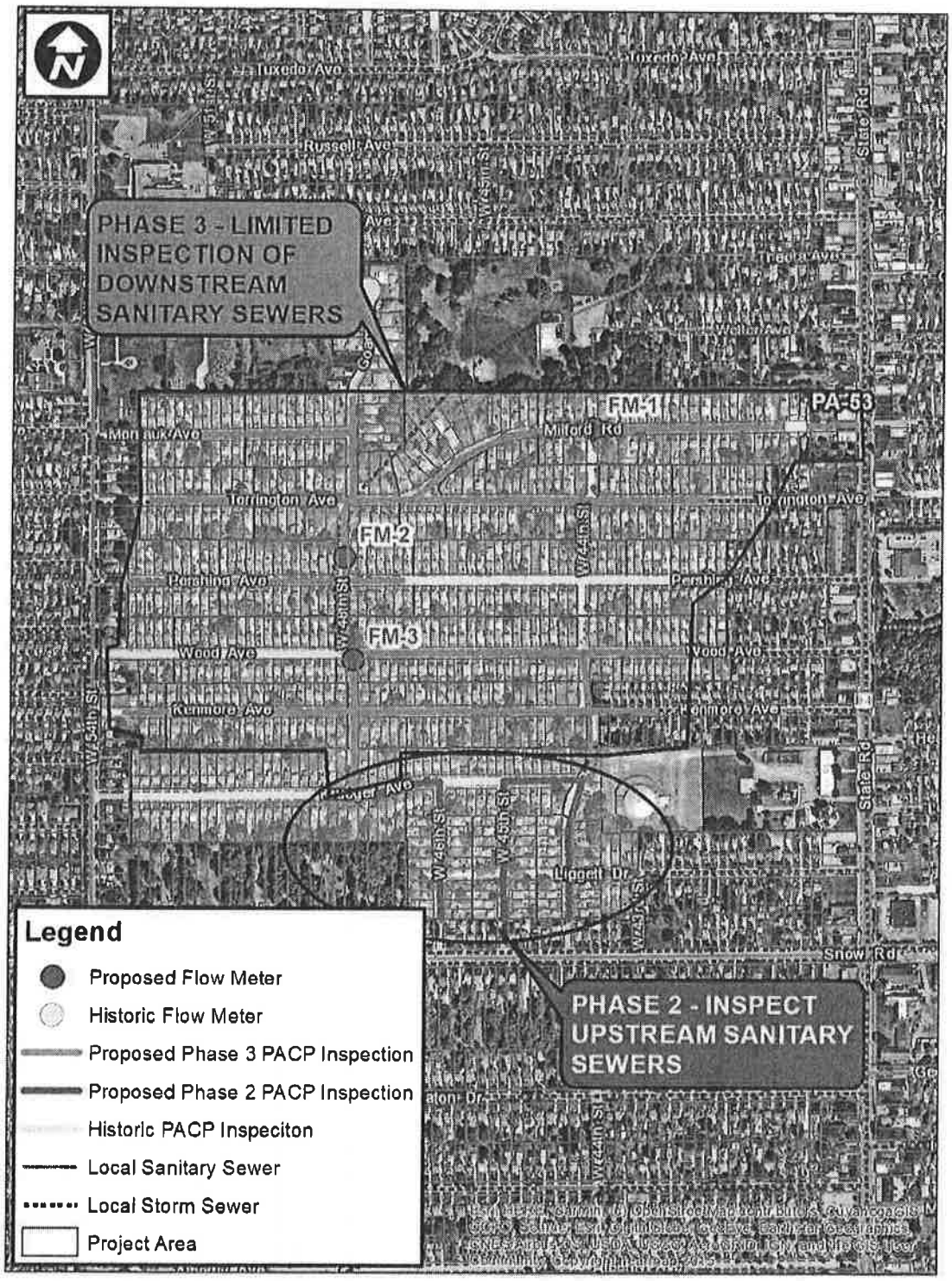
PHASE 1 – REVIEW EXISTING INFORMATION

DLZ will review existing information from the NEORSD's SWI-LSSES Project and from various Cuyahoga Country Projects to identify missing data needs and develop a work plan for performing PACP inspection. The primary objective will be to identify stormwater contributions to the W. 48th Street sanitary sewer.

PHASE 2 – INSPECT UPSTREAM SANITARY SEWERS

C&K will perform PACP inspection upstream of the intersection of W. 48th Street and Krueger Avenue to build off previous efforts performed under the NEORSD's SWI-LSSES Project. The primary objective will be to identify stormwater contributions to the W. 48th Street sanitary sewer, such as the 16 of 18 homes identified on Krueger Avenue as having direct storm drain connections to the sanitary sewer system under the SWI-LSSES Project. The Phase 2 inspection will consist of sanitary sewer on Krueger Avenue, W. 45th Street, W. 46th Street, W. 44th Street, and Liggett Drive, east of the intersection of Krueger Avenue and W. 48th Street.

Exhibit D – PACP Inspection Approach Overview



1.6 PROJECT MANAGEMENT

DLZ's Project Manager will coordinate the work with the City's designated representative. The Project Manager will be responsible for scheduling, staffing, cost control, invoicing, and responding to client requests for information.

During the Preliminary Design Phase, up to two (2) DLZ representatives will attend up to four (4) meetings with the City. The meetings will include: one (1) project kick-off, two (2) flow monitoring meetings, and one (1) alternative analysis meeting. The meetings will be held at City offices. DLZ will prepare and distribute meeting minutes.

DLZ will review all available existing information including as-built record drawings, GIS data, NEORSD's SWI-LSSES Project hydraulic models, GIS data, & reports, and Cuyahoga County project reports.

1.7 PRELIMINARY DESIGN PHASE SERVICES DELIVERABLES

Preliminary Design Phase Services deliverables will include the following:

- DLZ will prepare quantity estimates and estimates of probable construction cost during the Preliminary Design Phase for the purpose of Alternative Analysis. Additionally, a pre-design conceptual planning level construction cost estimate will be prepared at the Pre-Design stage for the City to use for funding applications.

- DLZ will provide the City of Parma with the results of Alternative Analysis through meeting minutes and Microsoft PowerPoint presentation to document the outcome of the Alternative Analysis Coordination Meeting.

- DLZ will provide a prioritized list of PACP inspection results for sanitary sewers inspected as part of Preliminary Design Phase Services. Along with CCTV reports and videos, a database will be provided outlining each sewer reach details and PACP ratings.

2.0 FINAL DESIGN PHASE SERVICES

2.1 Meetings and Coordination

DLZ's Project Manager will coordinate the work with the City's designated representative. The Project Manager will be responsible for scheduling, staffing, cost control, invoicing, and responding to client requests for information.

During the Final Design Phase, up to two (2) DLZ representatives will attend up to seven (7) meetings with the City. The meetings will be held at the 50%, 90%, and final review stages, as well as periodically during the design phase. Three (3) additional meetings will be held with the

NEORSD. The meetings will be held at City or NEORSD offices. DLZ will prepare and distribute meeting minutes.

2.2 Contract Documents

- DLZ will prepare contract plans (detailed drawings) and technical specifications to solicit formal bids for construction of the sewer improvements. We will prepare documents for only one (1) bid package. Plans and specifications (contract documents) will be prepared in general conformance with the Cuyahoga County Uniform Sewer Details and the City of Parma's design policies and practices for constructing sanitary sewers.

- DLZ will prepare 22" x 34" plan drawings for the water and storm sewer improvements using AutoCAD 2018 (or later version) software. The plan views shall show street right-of-way, property lines, property owners, permanent parcel numbers, and field established topographic and utility information within the right-of-way and/or easements. Quantities will be tabulated and shown in the Bid Form.

- Design and plan preparation services will include the following:

  - DLZ will prepare a title sheet, including a vicinity map, sheet index, and signature blocks.

  - DLZ will prepare sheets showing general notes, sheet legends, and abbreviations.

  - DLZ will prepare survey control reference sheets.

  - DLZ will prepare erosion control plans to meet the conditions of the OEPA Construction General Permit (CGP). We assume that the total site disturbance will be less than one-acre. We also assume that the erosion control measures will be limited to inlet protection. DLZ assumes that no post-construction storm water best management practices, as described in Part III.G.2.e of the OEPA Construction General Permit, will be required. The following SWPPP items are not included in the scope of work:

    1. Post-construction BMP designs other than those required for green infrastructure improvements
    2. SWPPP specifications beyond what is provided in the ODNR Rainwater and Land Development Manual.
    3. Design of sediment traps or basins.
    4. SWPPP inspections during and after construction.
    5. SWPPP review fees.
    6. NOI preparation and fee.

  - For the sewer improvements, DLZ will prepare plan-profile sheets at a 1-inch = 20-ft. horizontal and 1-inch = 5-ft. vertical scale. The plans will show layout data, stationing,

elevations, right-of-way lines, adjacent property owners, street names, sewer invert elevations, house lateral connections and other pertinent information. We will not prepare separate profile views for each of the house laterals.

- DLZ will prepare Maintenance of Traffic (MOT) notes and plans for the project sites. Traffic control measures will be based on the Ohio Manual of Uniform Traffic Control Devices (OMUTCD). Our services do not include signalization for MOT.

- DLZ will prepare standard Cuyahoga County or City-furnished details for items such as the sewer trench repair, typical pipe trench, standard manhole, test tee, and typical house lateral.

- DLZ will prepare a bid form, table of contents, and specification cover sheet for the specification booklet. The City will provide the necessary front-end documents for DLZ's use in preparing the specifications. DLZ will prepare technical specifications for such items as sewer piping, earthwork, and seeding, if these items are not covered by ODOT specifications, standard notes, or details.

- DLZ will prepare quantity estimates and estimates of probable construction cost at the 50%, 90%, and final design stages.

- During the Final Design Phase, DLZ will submit .pdf files, two (2) 22" x 34" size plan sets, two (2) 11" x 17" size plans sets, and two bound copies of the specification book to the City at the 50%, 90%, and final review stages of the project. The 50% submittal will include general notes, preliminary sewer plan-profiles, preliminary MOT plans, preliminary standard details, draft technical specifications, and a preliminary cost estimate. The 90% submittal will include updated versions of the 60% documents advanced to a substantially complete stage for the City's review with the addition of erosion control plans. The final review submittal will include contract documents that have addressed the City's review comments and are ready for bidding. For each review stage, DLZ will respond to the City's review comments and incorporate them into the documents, as necessary.

- DLZ will submit plans to the OUPS member utility companies at the 50% and 90% design stages. We will also prepare a utility tracking spreadsheet, respond to utility company inquiries, and note their review comments.

- DLZ anticipates that the following plan sheets will be prepared for this project.

  Title Sheet with Index of Sheet (1)
  Abbreviations, Legends, and Notes Sheet (1)
  General Notes and Sewer Notes (5)
  Key/Survey Control Plans (2)
  MOT Notes (1)
  MOT Plans (3)

Sewer Plan and Profile Sheets – West 48th Street (4)
County Standard Details (4)
Civil Details- Special Connection MH (2), Typical Laterals, Bulkheads (3)
Green Infrastructure Notes/Details (2)
SWPPP Notes and Details (2)

Total of 28 sheets

3.0 BIDDING PHASE SERVICES

At the completion of final design phase, DLZ will provide fifteen (15) full-size plan sets and fifteen (15) bound 8.5" x 11" Specification Books to the City for their use in procuring bids. Additionally, DLZ will provide three (3) full-size plan sets and three (3) bound 8.5" x 11" Specification Books to the City's engineering staff for their use during bidding.

DLZ will prepare for and attend a pre-bid meeting with City representatives and prospective bidders during the bidding phase of the project. DLZ will prepare minutes of the pre-bid meeting and issue them to the City for their distribution. DLZ will assist the City in responding to bidder's questions and prepare up to two (2) minor addenda for issuance by the City.

4.0 OHIO EPA PERMIT TO INSTALL

When the Contract Documents are approximately 90% complete, DLZ will prepare an Ohio EPA Permit to Install (PTI) Application for the City's review and signature. After the application is signed by the City, DLZ will transmit the signed PTI application, including copies of the Contract Documents and PTI fee, to the Ohio EPA. The PTI fee is the summation of the application fee and the plan review fee and is estimated to be a maximum fee of **$15,100.00**. The PTI fee will be paid by DLZ and invoiced to the City for reimbursement.

5.0 GENERAL ENGINEERING SERVICES (IF AUTHORIZED)

PHASE 3 – LIMITED INSPECTION OF DOWNSTREAM SANITARY SEWERS

DLZ will review results of the 2021 flow monitoring program in conjunction with historic PACP inspection reports to develop a limited sanitary sewer inspection plan of sanitary sewers downstream of the intersection of Krueger Avenue and W. 48th Street. C&K will perform PACP inspection of approximately 5,150 ft. downstream of the intersection of W. 48th Street and Krueger Avenue. The objective is to identify the largest sources of wet weather flow contribution into the sanitary sewer system.

ADDITIONAL SURVEY AND MAPPING

If the alternative concept is not proven to be a viable solution, the following additional survey and mapping will be prepared based on the Baseline concept:

Milford Avenue	2,100-ft.
Torrington Avenue	400-ft.
Pershing Avenue	320-ft.
Wood Avenue	530-ft.
Krueger Avenue	1,400-ft.

ADDITIONAL FINAL DESIGN SERVICES

If the alternative concept is not proven to be a viable solution, the following additional plan sheets will be prepared based on the Baseline concept:

MOT Plans (2)
Sewer Plan and Profile Sheets – Torrington/Milford (6)
Sewer Plan and Profile Sheet – Pershing Avenue (1)
Sewer Plan and Profile Sheets – Wood Avenue (1)
Sewer Plan and Profile Sheets - Krueger Avenue (3)

Total of 13 sheets

CONSTRUCTION PHASE SERVICES

If authorized separately by the City, DLZ will provide the services of their Project Manager and/or Staff Engineers for a maximum duration of approximately 26 hours to assist the City in responding to Contractor inquiries regarding the design intent and potential substitutions of materials or system components. The maximum fee for these services shall be **$5,000.00**.

6.0 ITEMS TO BE PROVIDED BY THE CITY

- The City will provide DLZ with one copy all available existing drawings, studies, and reports pertaining to the project.
- The City will pay for all bid advertising, addenda distribution, and permit fees except for the OEPA Permit-to-Install application and review fee, which is included in the scope of services.
- The City will provide DLZ with one Word copy of all required front-end specification documents including General Conditions, Supplementary General Conditions, Special Conditions, EEO Forms, Bid Guarantee Forms, Bid Instructions, Forms of Contract, and Wage Rates.
- The City will provide all City-standard construction details and technical specifications that are relevant to the proposed sewer and MOT work.
- The City will provide their standard letter template for notifying homeowners of property or basement entries.

7.0 ITEMS NOT INCLUDED IN THE PROPOSAL

The following is a general list of work that is not included in this Scope of Services. Although this list is not "All Inclusive," it is provided to serve as a basis for identifying Scope of Service items that are not necessary for this project:

- Street repair outside of the excavation limits.
- Street lighting, streetscaping, landscaping plans, or landscape architecture services.
- Environmental, wetland, cultural resource, or historical-architecture studies.
- Preparation for or participation at public meetings.
- Destructive or non-destructive material testing.
- The services of a graphic artist to perform renderings or artistic interpretations of proposed improvements.
- Appraisals, estimates of property acquisition costs, or discussions with private property owners.
- Traffic studies.

- The preparation of utility relocation plans.
- Construction inspection services.
- Legal reviews, expert testimony, or other services not described herein
- Geotechnical instrumentation.
- Environmental sampling, testing, and engineering of soils.
- Subsurface Utility Exploration (SUE).
- Support of Excavation (SOE) to be designed by Contractor.

8.0 SCHEDULE

DLZ assumes the following schedule for this project:

Complete Preliminary Basis of Design: 26 weeks from NTP
Complete 50% Design Documents: 34 weeks from NTP
Complete 90% Design Documents: 40 weeks from NTP
Complete 100% Design Documents: 43 weeks from NTP

The above schedule assumes that the City will provide review comments on all submittals within 2 weeks of their submission.

9.0 FEE DERIVATION

DLZ's proposed fee for the services described herein is as follows:

Task	Hours	Labor	Expenses	Total
Preliminary Design Phase Services	863	$100,765.50	$36,291.30	$137,056.80
Final Design Phase Services	820	$93,643.00	$247.75	$93,890.75
Ohio EPA Permit to Install	7	$792.00	$15,100.00	$15,892.00
Bidding Services	36	$4,301.00	$489.25	$4,790.25
Base Engineering Fee Subtotal	**1,726**	**$199,501.50**	**$52,128.30**	**$251,629.80**
General Engineering Services (If Authorized)	776	$77,995.50	$20,778.00	$98,773.50
"If Authorized" Fee Subtotal	**776**	**$77,995.50**	**$20,778.00**	**$98,773.50**
Total Engineering Fee				**$350,403.30**

A detailed breakdown of the fee derivations is included in **Attachment A.**

ATTACHMENT A. BREAKDOWN OF FEE DERIVATION

PROJECT: Krueger Avenue Area Sewer Improvements
PROJECT TASK: Summary
CLIENT/OWNER: City of Parma
DATE: 4/12/2021

DESCRIPTION	STAFF-HOURS									
	$83.00	$48.00	$50.00	$35.00	$32.00	$50.00	$29.00	$40.00	$35.00	
	Quality Mgr	Project Mgr	Sr Engr	Engr I	Tech	Survey Mgr	Survey Tech II	Survey Tech I	1-Person Field Crew	**TOTAL**
Task 1 - Preliminary Design Phase Services	4	246	207	242	56	8	10	10	80	**863**
Task 2 - Final Design Phase Services	18	93	281	116	312	0	0	0	0	**820**
Task 3 - OEPA Permit to Install	0	1	2	4	0	0	0	0	0	**7**
Task 4 - Bidding Phase Services	0	10	14	0	12	0	0	0	0	**36**
Task 5 - General Engineering Services (If Authorized)	2	13	115	152	288	8	14	8	176	**776**
Total Labor Hours	24	363	619	514	668	16	24	18	256	**2502**
Total Direct Labor	$1,992.00	$17,424.00	$30,950.00	$17,990.00	$21,376.00	$800.00	$696.00	$720.00	$8,960.00	**$100,908.00**

Total Direct Labor				**$100,908.00**
Indirect Labor at 150% Overhead				**$151,362.00**
Other Direct Costs				
Mileage	500	$	0.56	$280.00
Bid Set Reproductions (10 Full-Size Plans and 10 Spec Books for Bidding)				$600.00
Photos/Mailings/Misc.				$197.00
Flow Monitors - ADS				$12,335.00
CCTV Investigation - C & K Industrial				$32,000.00
Geotechnical Drilling - DLZ				$10,407.00
Geotechnical Laboratory - DLZ				$1,987.30
Ohio EPA -Permit to Install				$15,100.00
Other Direct Costs Total				**$72,906.30**
Profit at 10% of Labor				**$25,227.00**
Total Fee				**$350,403.30**

PROJECT: Krueger Avenue Area Sewer Improvements
PROJECT TASK: Task 1 -Preliminary Design Phase Services
CLIENT/OWNER: City of Parma
DATE: 4/12/2021

	STAFF-HOURS									
	$83.00	$48.00	$50.00	$35.00	$32.00	$50.00	$29.00	$40.00	$35.00	
DESCRIPTION	Quality Mgr	Project Mgr	Sr Engr	Engr I	Tech	Survey Mgr	Survey Tech II	Survey Tech I	1-Person Field Crew	**TOTAL**
Task 1 - Preliminary Design (6 Months)										
Project Management		40								**40**
Kick-off Meeting		6	3							**9**
Evaluate Reports-SW-LSSES		12	24							**36**
Survey and Mapping						8	10	10	80	**108**
Coordinate CCTV Work and Review Videos			3	32						**35**
Confined Space Entry MH Inspections/Offset Measurement			4		40					**44**
Flow Monitoring Program										
Flow Monitoring Meetings (2 Ea)		12								**12**
Flow Monitoring Data Review		12	24							**36**
Flow Monitoring Technical Memorandum	2	24	48							**74**
Geotechnical										
Geotechnical Data Report		2	8	24						**34**
Hydraulic Analysis										
Model Calibration/Refinement		12		96						**108**
Alternatives Analysis		72	24	54	16					**166**
Basis of Design Report										
Preliminary Design Concept	2	54	24	36						**116**
Preliminary Construction Cost Estimate			27							**27**
CCTV Inspection Results Database			18							**18**
Total Labor Hours	4	246	207	242	56	8	10	10	80	**863**
Total Direct Labor	$332.00	$11,808.00	$10,350.00	$8,470.00	$1,792.00	$400.00	$290.00	$400.00	$2,800.00	**$36,642.00**

Total Direct Labor			**$36,642.00**	
Indirect Labor at 150% Overhead			**$54,963.00**	
Other Direct Costs				
Mileage	200	0.56	$112.00	
Reproductions			$0.00	
Photos/Mailings/Misc.			$50.00	
Flow Monitors - ADS			**$12,335.00**	
CCTV Investigation - C & K Industrial			**$11,400.00**	2850 ft @ $ 4.00
Geotechnical Drilling - DLZ			$10,407.00	
Geotechnical Laboratory - DLZ			$1,987.30	
Other Direct Costs Total			**$36,291.30**	
Profit at 10% of Labor			**$9,160.50**	
Total Fee			**$137,056.80**	

PROJECT: Krueger Avenue Area Sewer Improvements
PROJECT TASK: Task 2- Final Design Phase Services
CLIENT/OWNER: City of Parma
DATE: 4/12/2021

DESCRIPTION	No. of Sheets	$83.00 Quality Mgr	$48.00 Project Mgr	$50.00 Sr Engr	$35.00 Engr I	$32.00 Tech	$50.00 Survey Mgr	$29.00 Survey Tech II	$40.00 Survey Tech I	$35.00 1-Person Field Crew	TOTAL
		STAFF-HOURS									
Task 2 - Design (4 Months)											
Project Management (10 hrs per month x 4 mths)			40								**40**
Project Design Meetings with City, Incl Design Review Mtgs (7 each)			21	7							**28**
Coordination Meetings with NEORSD (3 each)			12	6							**18**
Plans											
Title Sheet w/Index of Sheets	1		1	2		8					**11**
Abbreviations, Legends, and Notes	1			2		8					**10**
General Notes and Sewer Notes	5			22		24					**46**
Key Plan/Survey Control Plan	2			4		16					**20**
MOT Notes	1		2	6		8					**16**
MOT Plans	3		2	6	16	24					**48**
W 48th Sewer Plan-Profile (1" 20') - 1,690-ft	4		4	32	48	96					**180**
County Standard Details	4			2		8					**10**
Civil Details- Special Connection MH (2), Typ Laterals, Sewer Bulkheads	3			18	24	48					**90**
Green Infrastructure Notes/Details	2			16	16	40					**72**
SWPPP Notes and Details	2			12		8					**20**
Quality Control Plan Checking (3) Sheets)		6		12							**18**
Specifications			2	60							**62**
Prepare Bid Form				8							**8**
Utility Submittals at 50% and 90% - Tracking and Coordination			2		8	6					**16**
Quantities and Cost Estimate for 50% Submittal				20							**20**
Prepare and Submit 50% Docs			1	2		4					**7**
Review and Incorporate City/NEORSD 50% Comments			2	10	2	4					**18**
Quantities and Cost Estimate for 90% Submittal				20							**20**
Prepare and Submit 90% Docs			1	2		4					**7**
Review and Incorporate City/NEORSD 90% Comments			2	10	2	4					**18**
Prepare and Submit NOI			1	2		2					5
Quality Management		12									**12**
Total Labor Hours	28	18	93	281	116	312	0	0	0	0	**820**
Total Direct Labor		$1,494.00	$4,464.00	$14,050.00	$4,060.00	$9,984.00	$0.00	$0.00	$0.00	$0.00	**$34,052.00**

Total Direct Labor				**$34,052.00**
Indirect Labor at 150% Overhead				**$51,078.00**
Other Direct Costs				
Mileage	200		0.56	$112.00
Reproductions				$100.00
Photos/Mailings/Misc.				$35.75
Other Direct Costs Total				**$247.75**
Profit at 10% of Labor				**$8,513.00**
Total Fee				**$93,890.75**

PROJECT: Krueger Avenue Area Sewer Improvements
PROJECT TASK: Task 3 - Ohio EPA Permit to Install
CLIENT/OWNER: City of Parma
DATE: 4/12/2021

		STAFF-HOURS									
		$83.00	$48.00	$50.00	$35.00	$32.00	$50.00	$29.00	$40.00	$35.00	
DESCRIPTION	No. of Sheets	Quality Mgr	Project Mgr	Sr Engr	Engr I	Tech	Survey Mgr	Survey Tech II	Survey Tech I	1-Person Field Crew	**TOTAL**
Task 3 - Ohio EPA Permit to Install											
Prepare and Submit OEPA PTI			1	2	4						7
Total Labor Hours	0	0	1	2	4	0	0	0	0	0	7
Total Direct Labor		$0.00	$48.00	$100.00	$140.00	$0.00	$0.00	$0.00	$0.00	$0.00	**$288.00**

Total Direct Labor		**$288.00**
Indirect Labor at 150% Overhead		**$432.00**
Other Direct Costs		
Mileage	0.56	$0.00
Reproductions		$0.00
Photos/Mailings/Misc.		$0.00
Ohio EPA -Permit to Install		$15,100.00
Other Direct Costs Total		**$15,100.00**
Profit at 10% of Labor		**$72.00**
Total Fee		**$15,892.00**

PROJECT: Krueger Avenue Area Sewer Improvements
PROJECT TASK: Task 4 - Bidding Services
CLIENT/OWNER: City of Parma
DATE: 4/12/2021

	STAFF-HOURS								
	$48.00	$50.00	$35.00	$32.00	$50.00	$29.00	$40.00	$35.00	
DESCRIPTION	Project Mgr	Sr Engr	Engr I	Tech	Survey Mgr	Survey Tech II	Survey Tech I	1-Person Field Crew	**TOTAL**
Task 4 - Bidding Services									
Project Management	2								**2**
Prepare for and Attend Pre-Bid Meeting, Incl Minutes	4	3							**7**
Respond to Bidder's Questions	1	4							**5**
Prepare up to 2 minor Addenda	2	6		8					**16**
Assemble pdf and CAD files for City	1	1		4					**6**
Total Labor Hours	10	14	0	12	0	0	0	0	**36**
Total Direct Labor	$480.00	$700.00	$0.00	$384.00	$0.00	$0.00	$0.00	$0.00	**$1,564.00**

Total Direct Labor			**$1,564.00**
Indirect Labor at 150% Overhead			**$2,346.00**
Other Direct Costs			
Mileage	50	0.56	$28.00
Bid Set Reproductions (10 Full-Size Plan/Spec Sets for Bidding)			$400.00
Photos/Mailings/Misc.			$61.25
Other Direct Costs Total			**$489.25**
Profit at 10% of Labor			**$391.00**
Total Fee			**$4,790.25**

PROJECT: Krueger Avenue Area Sewer Improvements
PROJECT TASK: Task 5 - General Engineering Services (If Authorized)
CLIENT/OWNER: City of Parma
DATE: 4/12/2021

DESCRIPTION	No. of Sheets	STAFF-HOURS									
		$83.00	$48.00	$50.00	$35.00	$32.00	$50.00	$29.00	$40.00	$35.00	
		Quality Mgr	Project Mgr	Sr Engr	Engr I	Tech	Survey Mgr	Survey Tech II	Survey Tech I	1-Person Field Crew	TOTAL
Task 5 - General Engineering Services (If Authorized)											
Preliminary Design											
Survey and Mapping							8	14	8	176	**206**
Design											
Plans											
MOT Plans	2			4	12	16					**32**
Torrington/Milford Sewer Plan-Profile (1" 20') - 2,320-ft	6		6	48	80	144					**278**
Pershing Ave Sewer Plan-Profile (1" 20') - 300-ft	1			8	10	28					**46**
Wood Ave Sewer Plan-Profile (1" 20') - 500-ft	1			8	10	28					**46**
Krueger Ave Sewer Plan-Profile (1" 20') - 1400-ft	3			24	40	72					**136**
Quality Control Plan Checking (13 Sheets)		2		4							**6**
Construction Services											
Project Management			1								**1**
Attend Pre-Construction Meeting			2	3							**5**
Respond to City Questions During Construction			4	16							**20**
Total Labor Hours	13	2	13	115	152	288	8	14	8	176	**776**
Total Direct Labor		$166.00	$624.00	$5,750.00	$5,320.00	$9,216.00	$400.00	$406.00	$320.00	$6,160.00	**$28,362.00**

Total Direct Labor				**$28,362.00**	
Indirect Labor at 150% Overhead				**$42,543.00**	
Other Direct Costs					
Mileage	50	mi @	$ 0.56	$28.00	
Bid Set Reproductions				$100.00	
Photos/Mailings/Misc				$50.00	
CCTV Investigation - C & K Industrial				**$20,600.00**	5150 ft @ $ 4.00
Other Direct Costs Total				**$20,778.00**	
Profit at 10% of Labor				**$7,090.50**	
Total Fee				**$98,773.50**	