

SCOPE OF SERVICES

**CIP 611625 - 100001- BLUEPRINT STORMWATER SEWER SYSTEM ASSESSMENT –
5th BY NORTHWEST AND HILLTOP 4**

The ENGINEER shall be responsible for the professional quality, technical accuracy, timely completion, and the coordination of all CCTV data collection, storm sewer system cleaning, CCTV compliance checks and other services furnished for the CITY by the ENGINEER as defined herein in accordance supplemental specifications SS-4 and SS-5. The ENGINEER shall perform professional cleaning and assessment services herein stated which include typical inspection and civil engineering services for sewer system condition assessments, and other approved supplemental services incidental thereto. The ENGINEER shall provide such professional assessment services as may be necessary to accomplish the work required to be performed and shall at his/her cost, furnish all necessary competent personnel, equipment, and materials to perform the work.

Schedule 2 – Compensation; Schedule 2A – Engineering Cost Summary (for Prime and each Sub Consultant); Schedule 2A-1 – Subcontractor Work Identification Form; Schedule 2A-2 – Expenses; Schedule 2B – Maximum Hourly Rates; Schedule 3 - Project Time Schedule, Schedule 4 – Estimate of Cost Allocation by Task Activity, Schedule 5 - Local Workforce Breakdown, Schedule 6 – Sewer Cleaning Unit Costs are attached hereto and part hereof. The ENGINEER shall furnish services in accordance with the provisions of Section 1 through 5 below and as noted in the Schedules. The inclusion of the Schedules attached hereto in no way supersedes the work delineated below.

1. GENERAL

The purpose of this Project is to perform condition assessment and cleaning of the stormwater sewer systems for the project area described below in order to determine the structural integrity of the pipes.

CIP 611625.100001 - 5th by Northwest and Hilltop 4

The project area includes all storm sewers within the 5th by Northwest and Hilltop 4 project areas. The project limits for this project are shown in the attached Appendix A. The approximate length of the sewers to be inspected is 105,736 feet. Based on the existing record plan information the sewers are constructed of varying materials and includes the following storm sewer diameters and storm structures:

Storm Sewer

8"-12"	29,917 LF
15"-18"	27,858 LF
20"-27"	10,748 LF
30"	7,101 LF
>30"	29,913 LF
Unknown Diameter	199 LF

Storm Structures

~~Manholes — 360~~

~~Inlets — 540~~

The ENGINEER shall provide sewer condition assessment and cleaning services as well as ~~manhole inspections and~~ inlet cleaning services in accordance with SS-5 and SS-4. The ENGINEER shall

complete a full compliance verification of all CCTV data collected for structures and segments identified within the project limits.

Location of manholes may be difficult to ascertain in the field. The use of locating equipment may be required to determine the exact location of manholes. Coordinates and elevations have been provided for all manholes that are currently in the model based on the 1929 NGVD datum. However, the City will require updated coordinate locations for all previously unmapped manholes and inlets as part of the field survey work as referenced in Section 4.3.

Access to manholes may be difficult in the field. As part of the condition assessment, the ENGINEER may be required to perform easement research to obtain ingress/egress for sewers located on private property. The ENGINEER shall bear the responsibility for securing Right-of-Entry agreements with all property owners where necessary. As part of these agreements, restoration of damage to any properties shall be the sole responsibility of the ENGINEER.

The ENGINEER shall prepare applications and drawings to obtain street occupancy permits for the design/inspection phase of the work as needed. Drawings shall depict locations of occupancy and required traffic control measures. The ENGINEER shall pay any fees associated with this work and shall submit to the CITY receipts for the fee paid, to be reimbursed for the amount of actual charges.

- 1.1 Consult with the CITY to determine the requirements for the Project.
- 1.2 Review the concept and schedule for the planning effort. Become fully aware of the Project conditions by reviewing all pertinent data, reports, construction plans of existing and proposed facilities, soil borings, topographic and property maps.
- 1.3 Become knowledgeable of and conform to the CITY's requirements for the format for report development namely but not limited to the Sewer Inspection Report, Manhole Inspection Report, Field Survey, PAR's MSIUS's, and all other documents as necessary for the completion of the condition assessment.
- 1.4 Attend progress meetings, electronically submit regular progress reports and provide meeting agendas and minutes for all meetings during the development of the Project. All invoices are to be accompanied by a progress report of sufficient detail to clearly define what work was done in the invoice period. This progress report shall contain breakdowns of the percent of tasks completed by hours and dollars accompanied by an updated schedule reflecting anticipated task completion.

2. **SEWER CONDITION ASSESSMENT**

Note that sewer inspection work may need to be performed at off-peak hours. ENGINEER shall perform the tasks necessary to acquire the proper permits from the Division of Transportation. A Maintenance of Traffic plan may be required to obtain the necessary permits. It should be noted that due to the age of the systems, the casting and chimney dimensions of some structures will vary and could create access issues for larger CCTV equipment.

The purpose of the sewer inspection is to evaluate the condition of the existing sewer and clean the system in accordance with SS-4 and submit the final CCTV data in accordance with SS-5.

As part of the RFP, the ENGINEER shall provide to the City a detailed work plan of approach, procedures, methods, coordination and other pertinent information it will incorporate into the sewer inspection and assessment work.

- 2.1 The ENGINEER shall select a Contractor capable and experienced with inspection and cleaning of sewers of given diameter, conditions and methods referenced having a minimum of 3 years continuous successful experience performing cleaning and inspection work as stated herein. Upon award of this contract, the Engineer shall immediately develop a work plan in consultation with its Contractor to establish the locations for access, and develop a schedule for the completion of the sewer assessment and cleaning.
- 2.2 All work shall meet or exceed the requirements of the National Association of Sewer Service Companies (NASSCO) Recommended Specifications for Sewer Collection System Rehabilitation (latest edition).
- 2.3 Any debris accumulation within the manholes, inlets or other structures, whether it be existing or created as part of the cleaning operations shall be removed from the stormwater system.
- 2.4 Electronic logs shall be provided indicating the location, in relation to adjacent manholes of: each infiltration point, laterals, services, joints, voids, unusual conditions, roots, deposits, scale, corrosion, changes of pipe (material, size, shape, slope), and other discernible features. The logs shall be bound in a three ring binder or spiral binding and shall include a reduced scale plan drawing indicating sewers inspected with manholes cross-referenced on plans and logs.
- 2.5 Measurement for location of laterals, defects, and other features shall be at the ground level by means of a metering device.
- 2.6 If any equipment becomes stuck in the sewer, it shall be removed promptly at no cost to the City. Any damages to public or private property resulting from these activities shall be repaired or replaced at no cost to the City.
- 2.7 If during inspection of the sewer the Contractor locates an area requiring emergency repair, the Contractor shall notify the ENGINEER and CITY immediately.
- 2.8 If during inspection of the sewer the Contractor locates an existing utility within or penetrating the sewer, the Contractor shall notify the ENGINEER and CITY immediately. The ENGINEER shall also determine the owner of said utility.
- 2.9 All inspections will be done one sewer section at a time, resetting the appropriate information (zero out footage indicator, re-label the reach identification information, etc.) if traveling through a manhole on a continuous run. The sewer sections shall correspond to the CITY's GIS database.
- 2.10 Any manhole or sewer entries performed shall meet the minimum requirements as presented in the OSHA Standard, Title 29 CFR 1910.146, Permit Required Confined Spaces. Upon conclusion of the Project, copies of all confined space entry permits must be submitted to DOSD.
- 2.11 Heavy cleaning may be required to remove roots, brick, gravel, and other heavy debris from the storm sewer, however it is not the City's intent to have 100% of the sewer invert cleaned during the evaluation phase of the project. **An allowance shall be included in the contract cost assuming 50% of each diameter pipe in the stormwater category to be video inspected shall require heavy cleaning.** Payment shall be made for heavy cleaning based on evaluation of pre-cleaning videotape and consensus of the City. A copy of the sewer inspection sub-agreement must be submitted to the City for review.
- 2.12 No water, debris, or equipment used in the inspection process shall be allowed to pass downstream during or after the cleaning or inspection operations. Decanting of any cleaning or inspection equipment into unapproved receptacles or locations shall also be prohibited.
- 2.13 The ENGINEER shall provide adequate personnel to assure conformance with the requirements set forth herein regarding sewer cleaning and televising. These personnel shall be qualified and trained to approve heavy cleaning when necessary, assure quality of

the cleaning and televising operations, to follow the City's Environmental Management System (EMS) policies and procedures, and assist with communication with the residents and businesses.

VIDEO RECORDING

- 2.14 Video recording and inspection shall be defined as the use of closed caption video recording equipment within the sewer to assess the sewer condition.
- 2.14.1 All video recordings shall conform to the latest edition of the City of Columbus Supplemental Specification "SS-5 Sewer Video Recording and Inspection".
- 2.14.2 The sewer video inspection shall be completed by a certified operator of NASSCO's Pipeline Assessment and Certification Program (PACP). The Contractor shall use video recording defect logging software that is PACP-certified, which assures that the software can be used to export a database of all inspection and defect details that conform to the NASSCO PACP database standard. All video recordings, digital photos and database information must be transferable/convertible to Peninsular Technologies' PipeTech® software. Any sewer inspection data or video that is not convertible/transferable to PipeTech® software is not acceptable.
- 2.14.3 Acceptable media for the video recordings are digital video disc (DVD). All video recordings shall be identified by City contract number, location, date of inspection, and project name. DVD shall be premium grade and previously unrecorded, and closed out upon completion to preclude further recording or overwriting. All video recordings shall have a visibly clear and continuous on-screen display indicating sewer section identification and distance from the entering manhole, as well as on screen display identifying laterals and any pipe defects which shall be coordinated with the written logs. The video recording shall be organized so that line sections are in order from upstream to downstream.
- 2.14.4 The television camera shall be specifically designed and constructed for sewer inspection with a capacity for radial viewing (360°) to allow proper inspection of service lateral connections. The radial view camera must be solid state color and have remote control of the rotational lens. The camera shall be capable of viewing the complete circumference of the pipe. Cameras incorporating mirrors for viewing sides or using exposed rotating heads are not acceptable. The camera lens shall be an auto-iris type with remote controlled manual override. The camera light head shall include a high-intensity side viewing lighting system to allow illumination of internal sections of lateral sewer connections. Lighting for the camera shall illuminate the entire periphery of the sewer for a distance of 15 feet ahead of the camera. The camera shall have a minimum resolution of 600 lines and shall be operable in 100% humidity conditions. Picture quality and definition shall be to the satisfaction of the Engineer. Communications shall be provided for controlling the winches, pumping unit, and monitor control.
- 2.14.5 The camera unit shall have sufficient quantities of line and video cable to inspect sewers with access as far apart as 2,000 feet.
- 2.14.6 Recording equipment shall be specifically adapted for pipe diameter sizes as required for this project to ensure the position of the camera lens is at, or within a reasonable distance from, the center of the pipe for the duration of the inspection to allow accurate assessment of the entire periphery of the pipe.
- 2.14.7 The Contractor shall schedule the televising activities so that as much of the sewer perimeter as possible be visible during sewer video recording and inspection. If this is not possible due to high flow conditions, it may become necessary to perform inspections during off-peak hours. If it is necessary to perform video and sonar during off-peak hours, it is encouraged that the sequencing of these inspections be appropriately scheduled to

account for variations of flow within the pipe. This schedule shall account for seasonal variations, the typical diurnal pattern, and wet weather/dry weather flows.

- 2.14.8 The camera shall be moved through the sewer with the direction of flow at a uniform slow rate. In no case will the video camera record while moving at a speed greater than 30 feet per minute.

FLOW CONTROL

- 2.15 It is the intent of this contract to perform the condition assessment without the need for bypass pumping. While it is not expected that the flow control will be necessary, if flows are encountered during the initial inspection that are substantial enough to prohibit a thorough assessment of the entire perimeter of a sewer (including off-peak hours), the ENGINEER shall, in consultation with the City and subject to its approval, provide a recommendation as to the need to restrict or interrupt flows in order to acquire sufficient data necessary for the condition assessment. The ENGINEER shall include an allowance for the restriction or interruption of flows on Schedule 6 included with this packet.
- 2.15.1 The ENGINEER shall investigate methods of providing bypass pumping of sewage during inspection operations if necessary. Bypass pumping methods shall follow the required traffic control measures as dictated by the Division of Transportation, where necessary.
- 2.15.2 The method of bypass pumping shall include but not be limited to a recommended sequence of operations; sketches or drawings showing locations of the bypass sewer and construction procedures for crossing streets, all required permit information, applications, fees, etc., to obtain access to streets when required based upon the bypass method selected by the Contractor; locations of manholes from which sewage is to be pumped and locations of receiving manholes. The means and methods of the bypass pumping operation shall be submitted to both the Engineer and the City for review.
- 2.15.3 The bypass shall be made by interrupting the sewer from an upstream manhole, and pumping the sewage to a downstream manhole or adjacent system. The bypass sewer shall be buried where crossing private access drives or public streets and shall have temporary pavement or securely plated (if approved by the City). The bypass sewer may be laid over ground within the established traffic control devices. Check valves shall be placed ahead of all pumping connections. The bypass sewer shall be buried where crossing private access drives or public streets and shall either have temporary pavement or be securely plated (if approved by the CITY). The bypass shall be a header for all bypass pumping. Check valves shall be placed ahead of all piping connections.
- 2.15.4 The Contractor shall release the City from all claims and damages resulting from any inadequacy of the Contractor furnished bypass pumping systems, or the Contractor may ensure full flow capacity through the sewers at the moment flows exceed the capacity of the bypass pumping system. The City shall not be responsible for any damage caused to materials provided the peak flows could have been reasonably anticipated.
- 2.15.5 The Contractor may suggest alternate methods of flow control but, in any event, the method used shall be approved by the Engineer and the City.
- 2.15.6 Under no circumstances will the dumping of raw sewage on private property, streets and roads be allowed nor will surcharge of the sewers be allowed due to insufficient pumping.
- 2.15.7 The Contractor shall provide 48-hour prior written notification to all property owners and or residents that may be affected by the bypass explaining work that is to take place and its time frame. All commercial establishments shall be provided with temporary sewer service if necessary. The means and methods shall be coordinated with the Contractor and the establishments.

3. MANHOLE INSPECTIONS

~~Manhole inspection may need to be performed at off-peak hours. ENGINEER shall perform the tasks necessary to acquire the proper permits from the Transportation Division. A Maintenance of Traffic plan may be required to obtain the necessary permits. It should be noted that due to the age of the systems, the casting and chimney dimensions of some structures will vary and could create access issues for larger CCTV equipment.~~

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~~3.1 Any manhole inspections performed shall meet the minimum requirements as presented in the OSHA Standard, Title 29 CFR 1910.146, Permit Required Confined Spaces. No City personnel or equipment will be available to aid in the performance of this work. Upon conclusion of the Project, copies of all confined space entry permits must be submitted to DOSD.~~

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~~3.2 Manhole inspections reports shall be performed at all locations where ingress/egress is possible.~~

~~3.3 All manhole inspections shall occur prior to acquisition of CCTV.~~

~~3.4 Manhole Inspections shall be performed using the PipeTech mobile application utilizing the City of Columbus standard forms which follow the NASSCO Manhole Assessment Certification Program (MACP), Level 2. Software and licensing costs are not reimbursable and shall be the ENGINEER'S responsibility. An example PipeTech Mobile Application form has been attached in Appendix E.~~

~~3.5 The Contractor shall televise and document all manholes included in the Contact Documents which are not ingress/egress locations when video recording is utilized to inspect the sewer. The operator will pan and zoom up the manhole from the invert for each manhole and obtain the best possible image of the manhole including the cone and corbel section.~~

~~3.6 The ENGINEER shall provide a manhole inspection report summary which includes hard copy and digital versions on disk of the inspections performed. The manhole inspection reports shall contain a sufficient number of photos illustrating the observations documented during the inspections. The ENGINEER shall also submit the PipeTech Mobile Database, both in an Excel and Access database form, to the City.~~

~~3.7 For all bolt down lids encountered, the ENGINEER or its sub-consultants shall follow the City's bolt down casting policy and replace any missing bolts or gaskets found during the investigations with the approved materials.~~

~~3.8 Any manholes that may create access issues for the proposed sewer inspection equipment shall be identified and documented while completing the manhole inspections.~~

4.3. FIELD SURVEY

Note that survey work may need to be performed at off-peak hours. ENGINEER shall perform the tasks necessary to acquire the proper permits from the Division of Transportation. A Maintenance of Traffic plan may be required to obtain the necessary permits. It is not anticipated that field survey work will be required during the initial sewer condition assessment beyond locating manholes and easements.

4.3.1 Field surveys shall be performed solely for the identification of all previously unmapped manholes and structure locations, as well as size, depth, and material of storm sewers. All manholes shall be referenced by utilizing the State Plane Coordinate system and NAVD 88.

4.3.2 Coordinates shall be provided for all unmapped manholes associated with the Project. Coordinates may be determined as part of the work performed in [Section 3 and 4](#) previous [Sections](#). For buried manholes unable to be located in the field by conventional locators, probes, etc., the Engineer shall provide recommendations for their location by use of alternative methods such as ground penetrating radar subject to the approval of the City.

43.3 The ENGINEER shall include costs for the use of a radio sonde in conjunction with the sewer televising work to locate (25) twenty five manholes which may be buried or otherwise not apparent as to their location.

~~54.~~ **SUPPLEMENTAL SERVICES**

~~54.1~~ Advise the CITY as to the necessity of their providing or obtaining from others supplemental services or data needed for the development of the Project, which were not included in the original scope of services.

~~54.2~~ Supplemental services outside of the original scope of services may be contracted for directly by the CITY or subcontracted by the ENGINEER and shall include but not be limited to; archaeologists, environmentalists, photogrammetry and topographic mapping, field or laboratory tests not associated with the soils investigation, and soils investigation. If the ENGINEER elects to utilize sub-contract services, the CITY shall review for approval the sub-agreement and sub-contractor. All supplemental services provided to the prime consultant by subcontractors will be subject to the requirements of the Professional Services Agreement.

~~54.3~~ The cost of the services for any subcontract included in the scope of services shall not exceed the subcontract costs as established by the provisions of this contract, without the explicit, written approval of the Sewer Systems Engineering Section Manager. The ENGINEER shall submit a proposal to the CITY for review and approval of the sub-contractor's sub-agreement that shall detail the services to be provided and establish the costs to perform those services. The amount of payment stipulated in the approved sub-agreement for the services shall not exceed the amount set forth in the appropriate "Cost Summary" Exhibit, or unless approved by the Sewer Systems Engineering Section Manager, as long as the amount does not exceed the total contract amount.

~~54.4~~ For those services contracted for by the ENGINEER to supplement or extend his capability to meet the terms of this Agreement, the ENGINEER shall be responsible for the performance and payment of his sub-contractor.

~~54.5~~ The ENGINEER shall require all sub-consultants to provide the CITY with certificates of insurance naming the CITY an additional insured in accordance with the requirements of Section X of the Professional Services Agreement.