City of Durham, Public Works Department
Request for Proposal (RFP)
Project: Municipal Separate Storm Sewer System (MS4) Inspections (SD-2021-06)

July 27, 2021

Addendum No. 2

Request for Proposal (RFP)
RFQ No. SD-2021-06
Municipal Separate Storm Sewer System (MS4) Inspections

1. Exhibit A, Standard Operating Procedure.
    a. Replace Exhibit A, Standard Operating Procedure, of the RFP, dated June 28, 2021 with Exhibit A, MACP Standard Operating Procedure and PACP Standard Operating Procedure, attached to this addendum and dated July 27, 2021.
2. Example itpipes templates may be downloaded from the project web page or using the link below.
    a. https://durhamnc.gov/DocumentCenter/View/39623/Durham-itpipes-Templates-07272021

Exhibit A: MACP Standard Operating Procedure

The City requires a comprehensive CCTV inspection performed of stormwater structures. This Standard Operating Procedure (SOP) defines the process for CCTV inspection.

The City requires the Contractor to adhere to the chosen inspection coding system, currently NASSCO MACP for their inspection software. An itpipes template file is available (Durham MACP Template.tpl) for use by the Contractor.

1. Video Inspection:
    a. Video Requirements:
        i. Video inspection Operators shall be certified in the National Association of Sewer Service Companies (NASSCO) Manhole Assessment and Certification Program (MACP).
            1. Contractor shall have all recorded inspections and necessary playback equipment readily accessible for review by the Engineer or Resident Project Representative at all times.
        ii. Whenever possible, Contractor shall complete the inspection of a manhole or structure in one continuous run.
        iii. Camera:
            1. Camera shall move through the storm manhole in a stable condition and at a uniform rate throughout the inspection, stopping when necessary to ensure proper documentation of internal conditions, features, or defects.
            2. Camera shall be positioned to reduce the risk of distortion.
            3. Camera should be able to pan/tilt to inspect the full circumference of all joints, pipeline connections, suspected defects, etc. to verify the integrity of the structure and conclusively determine the nature and extent of all suspected defects.
        iv. Contractor shall display at least 75% of the structure wall at all times during inspection so that defects, features, and other notable information can be collected.
            1. Contractor shall reduce the flow by use of pipe plugging or bypass pumping when necessary or as directed.
            2. At least 90% of the structure's bench and channel shall be free of solids, sediment, or debris.
                a. If the structure is less than 90% free of solids, sediment, and debris Contractor shall submit photographs of the structure to the Engineer to determine if the structure should be cleaned.
                    i. The Engineer or Resident Project Representative may make this determination at the Site using the Contractor's video inspection equipment.
                b. Contractor shall clean the structure as directed by the Engineer or Resident Project Representative.
        v. The video will be recorded in color and MPEG 4 (H264) format at a minimum resolution 640x480 with 3,000 Kbps bit rate or approved equal.
        vi. Video shall include a running depth indicator that is clearly visible on the screen for the full length of the inspection.
        vii. Each manhole, or structure shall be recorded as a separate video file identified with an initial text screen and completed in accordance with MACP video inspection form Header instructions as follows:
            1. MH_Name (Manhole/Access Point No.)
            2. City
            3. Street
            4. Location (Location Code)
            5. Surface Type
            6. Inspection_Date (Date)
            7. Surveyed By

8. Certificate Number
9. Purpose of Survey
10. Inspection Level
11. Manhole Use

viii. Once the inspection of the storm manhole, or structure is underway, specific data should be continuously displayed on the monitor and recording. The size and position of the data being displayed should be such as to not interfere with the picture, yet shall be easily readable when viewed. At minimum, the following data should be continuously displayed:
   1. MH_Name (Manhole/Access Point No)
   2. Street
   3. Distance (Depth)

ix. Video shall include the entire depth of the structure measured in tenths of a foot.

x. The severity of each defect or observation shall be recorded and rated using standard MACP codes as outlined in the NASSCO PACP Reference Manual.

Section 2: Weekly & Final Submittals

Weekly Submittals

The City's goal is to receive inspections digitally on a monthly basis.
Note: If the Contractor is using multiple CCTV units, it is the Contractor's responsibility to include a single consolidated inspection database that contains all inspections from all the CCTV equipment.

1. Deliverables.
   a. All inspections and related media are to be delivered to the City via Digital Transmission (upload).
      i. Each submission shall have a singular database containing all related inspection data.
         1. Each inspection shall have:
            a. A single continuous video.
            b. Minimum of one snapshot for each observation logged.
      ii. Video inspection files shall become the property of the City.

Submittal Acceptance/Rejection

The submittals will be reviewed for Data Integrity and Data Quality and accepted or rejected by the City or their representative. If for any reason there is a delay in providing data to the City, this may delay the timeline below. We will attempt to notify the Contractor if this occurs.

1. Review: Data Integrity will be reviewed for acceptance or rejection within 5 business days.
   a. Acceptance/Rejection:
      i. Validate the database is compatible and not corrupted.
      ii. Compare to GIS attribute data
         1. The specific fields being checked that are:
            a. All MACP required fields populated
         2. New found assets will be flagged in a database field tbd.
      iii. Checking the data content
         1. Check for DPU Project ID number entry
      iv. Basic inspection process check

1. Validate no missing media
    a. Video
    b. Snapshots 2 Minimum
        i. One at ground level above the structure
        ii. One during the inspection.
    c. Log assets with missing video including the video name.

v. QAQC notifications
    1. These items are specific to the qaqc process.
        a. Sent to the notification group
        b. The log should be in Excel Format
        c. Title to the email: “QAQC Summary Manholes”
            i. Email should be for the entire submittal
                1. Contain the Excel log results.

2. If rejected, the City or their representative will notify the Contractor via email. It is the Contractor's responsibility to correct any and all reasons for rejection at no additional cost to the City. If corrections are made to a submittal, a re-submittal is required.
    a. If the re-submittal is rejected, the Contractor must organize additional re-submittals with the City
3. If accepted, the City or their representative will import the inspections into their Master Inspection database.

Section 3: Definition of Terms

1. **CCTV Inspection** - Operation necessary to complete a true-color audio-visual inspection for verification of existing internal storm structure conditions.
2. **Contractor** - the company providing video inspection services of the City sewer system.
3. **Data Integrity** - Data Integrity ensures data submitted is in the required format.
4. **Data Quality** - Data Quality ensures the data submitted adheres to the City’s requirements.
5. **City** - City of Durham Public Works Stormwater & GIS Division or designated agent/representative.
6. **Operator** - the NASSCO certified worker conducting the video inspection.

Exhibit A - PACP Standard Operating Procedure

Section 1: General Description and Requirements

The City requires a comprehensive video inspection performed of stormwater pipes. This Standard Operating Procedure (SOP) defines the process for video inspection.

The City requires the Contractor to adhere to the chosen inspection coding system, currently PACP version 7, for their inspection software. An itpipes template file is available (Durham PACP Template.tpl) for use by the Contractor.

1. Video Inspection:
    a. Video Requirements:
        i. Video inspection Operators shall be certified in the National Association of Sewer Service Companies (NASSCO) Pipe Assessment and Certification Program (PACP).
            1. Contractor shall have all recorded inspections and necessary playback equipment readily accessible for review by the Engineer or Resident Project Representative at all times.
        ii. Whenever possible, Contractor shall complete the inspection of a section of storm sewer in one continuous run.
        iii. Camera:
            1. Camera shall move through the storm sewer in a stable condition and at a uniform rate throughout the inspection, stopping when necessary to ensure proper documentation of internal conditions, features, or defects.
                a. Camera shall travel no faster than 30-feet per minute.
            2. Camera shall be constructed for video inspection of storm pipeline, including:
                a. Mounted on a tractor to keep the camera centered in the pipe.
            3. Camera shall be positioned to reduce the risk of distortion.
            4. Camera shall be positioned centrally within the storm sewer.
                a. The top of the storm sewer shall correspond to the top of the lens unless adjusting the lens to view a particular defect or feature.
            5. Camera should be able to pan/tilt to inspect the full circumference of all joints, pipeline connections, suspected defects, etc. to verify the integrity of the pipe and conclusively determine the nature and extent of all suspected defects.
        iv. Contractor shall display at least 75% of the pipe wall at all times during inspection so that defects, features, and other notable information can be collected.
            1. Contractor shall reduce the flow by use of pipe plugging or bypass pumping when necessary.
            2. At least 90% of the pipeline shall be free of solids, sediment, or debris.
                a. If the pipe is less than 90% free of solids, sediment, and debris Contractor shall submit photographs of the pipeline to the Engineer to determine if the pipeline should be cleaned.
                    i. The Engineer or Resident Project Representative may make this determination at the Site using the Contractor's video inspection equipment.
                b. Contractor shall clean the pipeline as directed by the Engineer or Resident Project Representative.

v. The video will be recorded in color and MPEG 4 (H264) format at a minimum resolution 640x480 with 3,000 Kbps bit rate or approved equal.

vi. Video shall include a running footage indicator that is clearly visible on the screen for the full length of the video inspection.

vii. Each pipeline segment (structure to structure) shall be recorded as a separate video file identified with an initial text screen and completed in accordance with PACP video inspection form Header instructions as follows:

1. ML_Name (Pipe Facility ID)
2. Street
3. US_MH (Upstream MH)
4. DS_MH (Downstream MH)
5. Material
    a. Brick
    b. Concrete
    c. Corrugated Metal Pipe
    d. Ductile Iron
    e. High Density Polyethylene Pipe
    f. Poly Vinyl Chloride
    g. Reinforced Concrete Pipe
    h. Unreinforced Concrete Pipe
    i. Vitrified Clay Pipe
    j. Unknown
6. Pipe_Shape (Shape)
    a. Arch
    b. Box
    c. Circular
    d. Elliptical
    e. Unknown
7. Pipe_Height (Diameter)
8. Pipe_Width (Width)
    a. Only if Pipe_Shape is not “Circular”
9. Section_Length (Total Length)
10. Location (Location Code)
11. Inspection_Date (Date)
12. Inspection_Direction (Direction)

viii. Once the inspection of the storm sewer is underway, specific data should be continuously displayed on the monitor and recording. The size and position of the data should be such as to not interfere with the picture, yet shall be easily readable when viewed. At minimum, the following data should be continuously displayed:

1. ML_Name (Pipe Facility ID)
2. US_MH (Upstream MH)
3. DS_MH (Downstream MH)
4. Distance

ix. Video shall include the entire length of the pipeline measured in tenths of a foot.

x. Audio:
    1. The audio portion of the recordings shall provide a voice narrative of general information and observations made during the inspections.
        a. The narrator's voice should be clear and discernible.
            i. Voice descriptions shall include the following information:
                1. Pipe Facility ID
                2. Upstream Manhole
                3. Downstream Manhole
                4. Direction of inspection
                5. Descriptions
                6. Defects
                7. Infiltration
                8. Leaking
                9. Service Connections
                10. General Observations
                11. Unusual or severe conditions

xi. The severity of each defect or observation shall be recorded and rated using standard PACP codes as outlined in the NASSCO PACP Reference Manual.

Section 2: Weekly & Final Submittals

Weekly Submittals

The City's goal is to receive inspections digitally on a weekly basis.
Note: If the Contractor is using multiple video units, it is the Contractor's responsibility to include a single consolidated inspection database that contains all inspections from all the video equipment.

1. Deliverables.
    a. All inspection information for each Project Site shall be submitted to the City within five (5) calendar days of completion of fieldwork.
    b. All inspections and related media are to be delivered to the City via Digital Transmission (upload).
        i. Each submission shall have a singular database containing all related inspection data.
            1. Each inspection shall have:
                a. A single continuous video.
                b. Minimum of one snapshot for each observation logged.
        ii. Video inspection files shall become the property of the City.

Submittal Acceptance/Rejection

The submittals will be reviewed for Data Integrity and Data Quality and accepted or rejected by the City or their representative. If for any reason there is a delay in providing data to the City, this may delay the timeline below. We will attempt to notify the Contractor if this occurs.

1. Review: Data Integrity will be reviewed for acceptance or rejection within 3 business days.
    a. Acceptance/Rejection:
        i. Validate the database is compatible and not corrupted.
        ii. Compare to GIS attribute data
            1. The specific fields being checked that are:
                a. ML_Name (Pipe Facility ID)
                b. City
                c. Street
                d. US_MH (Upstream MH)
                e. DS_MH (DS Manhole)
                f. Material
                g. Pipe_Shape (Shape)
                h. Pipe Height (Diameter)
                i. Asset_Use (Sewer Use)
            2. New found assets will be flagged in a database field tbd.
        iii. Checking the data content
            1. Segments that have more than two inspections for an asset (1 upstream and 1 downstream)
            2. List of segments that do not have a reversal and are not complete.
            3. Check for Complete inspections within 20* feet of the mapped length.
                a. Will include initial and reversal inspected lengths to verify the inspection is complete.
                b. Will validate single inspections are within 20 ft of mapped length.
            4. Check for Over televised inspections.
                a. Calculation created by comparing inspected length to mapped length.
                b. Displayed in percentage
            5. Optional - Check for contract number entry
        iv. Basic inspection process check
            1. Validate each inspection has
                a. Start code - Access point (typically AMH) at 0ft
                b. Water level at 0 ft.
                c. End code - Abandoned or Access point.
            2. Validate no missing media
                a. Video
                b. Snapshots 3 Minimum
                c. Log assets with missing video including the video name.
        v. QAQC notifications
            1. These items are specific to the qaqc process.
                a. Sent to the notification group
                b. The log should be in Excel Format
                c. Title to the email: “QAQC Summary”
                    i. Email should be for the entire submittal
                        1. Contain the Excel log results.

2. If rejected, the City or their representative will notify the Contractor via email.
    a. It is the Contractor's responsibility to correct any and all reasons for rejection at no additional cost to the City. If corrections are made to a submittal, a re-submittal is required.
    b. If the re-submittal is rejected, the Contractor must organize additional re-submittals with the City
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