

VILLAGE OF HANOVER PARK  
2121 LAKE STREET  
HANOVER PARK, ILLINOIS 60133

CONTRACT

THIS AGREEMENT made this 7th day of April, 2016 by and between the Village of Hanover Park, an Illinois municipal corporation hereinafter called the "Owner" and the RJN Group located at 200 West Front Street, Wheaton, IL 60187 hereinafter called the "Contractor".

**WITNESSETH:**

WHEREAS, the Owner has heretofore solicited Bid Proposals for all labor and materials necessary to complete the work specified in the 2016 Flow Monitoring Proposal for Professional Engineering Services.

WHEREAS, the Owner has found that the Contractor is the lowest responsible bidder for said work and has awarded the Contractor this contract for said work.

NOW, THEREFORE, for and in consideration of their mutual promises and agreements, the parties hereto do hereby agree as follows:

1. The Contractor agrees to furnish all materials, supplies, tools, equipment, labor and other services necessary to commence and complete the engineering services for the 2016 flow monitoring in accordance with the conditions and prices stated in the Invitation To Bid, Instructions To Bidders - General Conditions, Special Conditions, Specifications and Bid Proposal all of which are made a part hereof and herein called the "Contract Documents".
2. The Owner will pay the Contractor in the amounts, manner and at times as set forth in the Contract Documents.

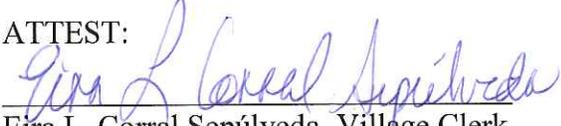
IN WITNESS WHEREOF, the parties hereto have executed, or caused to be executed by their duly authorized officials, this Contract as of the day and year first above written:

OWNER: VILLAGE OF HANOVER PARK

BY: 

Juliana A. Maller, Village Manager

ATTEST:

  
Eira L. Corral Sepúlveda, Village Clerk

CONTRACTOR:

BY: 

Signature

Print Name and Title: Michael N. Young, Senior Vice President

IF CORPORATION ATTEST AND SEAL BELOW



Valerie Kelley, Corporate Secretary

March 7, 2016

Mr. T.J. Moore  
Public Works & Engineering Director  
Village of Hanover Park  
2041 Lake St  
Hanover Park, Illinois 60133

**SUBJECT:        PROPOSAL FOR PROFESSIONAL ENGINEERING SERVICES  
                     2016 FLOW MONITORING  
                     MWRD TRIBUTARY AREA**

Dear Mr. Moore:

RJN Group, Inc. (RJN) is pleased to submit this proposal to the Village of Hanover Park, Illinois (Village) for sanitary sewer flow monitoring and analysis of a portion of the sanitary sewer system tributary to the MWRD treatment plant. This includes metering most of the flow that is north of West Lake Street.

### **PROJECT UNDERSTANDING**

The portions of the Village of Hanover Park that are north of West Lake Street have sanitary sewers that are generally tributary to the Metropolitan Water Reclamation District of Greater Chicago's Hanover Treatment Water Reclamation Plant (WRP). MWRD has imposed an Infiltration and Inflow Control Plan (IICP) on all tributaries in order to reduce the amount of excess flow being conveyed to their treatment facilities during wet-weather events. The IICP requires that tributaries complete Sanitary Sewer Evaluation Survey (SSES) on at least ten percent of their systems and perform rehabilitation of the high level defects found by the end of the year 2019.

Hanover Park has identified their IICP priority areas as those with large amounts of reported basement backups and sanitary sewer overflows. However, the other areas within the Village may also be contributing large amounts of excess I/I to the WRP. In an effort to understand and quantify the severity of Rain Derived Infiltration and Inflow (RDII) it is recommended that the Village divide the entire MWRD tributary into discrete meter basins that will provide substantial understanding of the response to wet-weather events.

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## **PROJECT APPROACH**

The MWRD tributary portion of the Village was divided into nine (9) meter basins of similar size. Two rain gauges will also be installed in the area to correlate the meter data with specific rain events. The nine meter locations are shown on the attached map. RJN will coordinate with Village staff on the location of the rain gauges. The meters and rain gauges will be installed for a 120 day flow monitoring period.

An I/I analysis will be completed on the flow monitoring data. Based on the analysis, RJN will identify and evaluate the severity of I/I, the severity of base infiltration, and the options to reduce the risk of backups in this area. This will probably include flow reduction, but may also include capacity improvements and storage options.

## **EQUIPMENT**

RJN owns hundreds of meters from many different manufacturers that are leaders in the industry. After site investigations, RJN will determine the best technology to be used to measure the flow at the selected locations. Flow parameters collected will include, but are not limited to, crown-mounted ultrasonic depth, submerged peak velocity, and submerged pressure depth for redundancy and surcharge conditions.

Each meter will be fitted with a telemetry unit that will allow off-site wireless collection of the data. A specialized sector of RJN, the Data Group, will be collecting the data on a regular basis through the use of the telemetry units.

The rain gauges to be used will be a Texas Instruments tipping bucket with a Telog RG-32 recorder and telemetry unit. This will total the amount of rainfall in inches every five minutes while in operation.

Any and all components may need to be replaced at any time. Since the probes are located in the sewers, they are typically the most likely item needing replacement. The meter also includes batteries and desiccant that need to be replaced on a regular basis. As part of this proposal, RJN will provide and install any of these needed items in order for the meters to remain in service and will, in addition cover, the wireless charges for each site.

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## **METER MAINTENANCE AND CALIBRATION**

The meter equipment requires regular maintenance. This proposal includes routine maintenance and any corrective maintenance that may be needed, and is identified by the data analyst during the weekly review cycle. The corrective maintenance is directed by the data analyst that identifies a maintenance need based on the data from the meter. This could be an immediate need where there is a risk of losing data or it could be a “next visit” need such as batteries starting to run low.

The standard calibration schedule for short term meters (less than 6 month duration) is once on install, once within two weeks of install, and every 4-5 weeks thereafter. The calibration includes manual depth and velocity readings taken by the field staff to confirm that the meter is reading to manufacturer’s operating standards. As part of this proposal, RJN will take full responsibility for all needed maintenance and calibrations.

## **DATA HANDLING**

RJN utilizes a host software support application program for remote wireless flow meter and rain gauge data collection. On a weekly basis, all data recorded and stored in the meter is collected by the host system. The system utilizes a client/server architecture to store all project flow and rainfall data. On a weekly basis, flow meter measurements are posted to the web site for viewing by authorized parties.

Web module software allows any networked computer (with the appropriate access rights) access to the data stored using a common web browser (e.g. Microsoft Internet Explorer). The web module enables the users to view the data and download it in Microsoft Excel format. The RJN data group reviews the flow monitoring and rainfall data at least once per week. The analysis of the data includes the identification of data gaps, hydraulic anomalies and monitor performance issues. Any equipment service needs will be immediately conveyed to the RJN field service crews. The data is processed and edited in accordance with the field confirmations to produce final data sets for each site. The final data is posted when completed.

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## **PROPOSED SCOPE OF SERVICES**

Our proposed scope of services is as follows:

### **TASK 1 – FLOW MONITORING**

1. Provide the rental of nine (9) flow meter units with, at a minimum, one velocity and dual depth sensors with data telemetry for the duration of the project. Provide the rental of two (2) rain gauges for the duration of the project.
2. Investigate targeted sites for flow meter and rain gauge installation. Determine the meter sites that are hydraulically suitable for flow monitoring. Prepare Investigation Site Reports for approval by Village.
3. Prepare flow meters and rain gauges for installation. Install nine meters and two rain gauges at approved locations.
4. During installation, calibrate each flow meter by taking manual depth and velocity measurements and comparing with meter readings. Perform tipping tests on rain gauges.
5. Provide standard traffic control measures (portable signs and cones) at each site in or near a roadway. If additional traffic control is needed it will specifically requested as an item requested from the Village.
6. Prepare the host system for handling the flow data and posting the data for viewing and access by Village staff. Review the data at least twice per week during the “settling in” period, once per week thereafter, and report any equipment service needs to the field crews.
7. Take a second round of calibration measurements within two weeks of installation. Utilize the calibrations to adjust the data and prepare final data sets.
8. Provide flow meter and rain gauge maintenance as necessary to keep meters in proper operation for the duration of the monitoring period. Calibrate each meter at least two additional times within the 120-day flow monitoring period.
9. Procure spare parts and replacement equipment, such as batteries, probes, and desiccants, as needed to keep flow meters and rain gauges working and within operating

standards.

10. Perform final calibration measurements at each site (for a total of 5 calibrations) and remove the flow meters and rain gauges.

#### TASK 2 – FLOW DATA ANALYSES

1. Process the collected raw data. Analyze the processed data for wet- and dry-weather flow patterns. Create hydrographs for each meter and determine wet-weather peaking factors at standard storm recurrence and durations for each basin.
2. Perform an inflow and infiltration analysis, including:
  - Inflow peaking factors;
  - Regression analysis for peaking factor prediction;
  - Scattergraphs and hydrographs; and
  - Capacity analysis including downstream control and surcharging assessment.

#### TASK 3 – REPORT

1. Prepare and submit three copies of a draft report outlining flow monitoring results with recommendations.
2. Include the following in the report:
  - Details on each flow meter and rain gauge location;
  - Summary of the flow and rainfall data collected;
  - Conclusions from the flow metering, including evidence of downstream control, surcharging, hydraulic bottlenecks, and levels of I/I;
  - Adequacy of the existing system to handle existing flows and recommendations for capacity improvements (if any);
  - Recommendations for the next appropriate steps including reduction in I/I.
3. Incorporate Village comments and submit up to three copies of the final report. Provide a pdf of the final report and a flash drive containing all digital documents and processed flow-monitoring data.

#### TASK 4 – PROJECT MANAGEMENT

1. Provide project management services for the duration of the project. Attend up to two meetings with Village staff.

#### **ITEMS REQUESTED FROM VILLAGE**

We request the following items from the Village:

1. Access to the manholes for site inspections.
2. Traffic control assistance as needed for high traffic areas.
3. Two secured sites for rain gauge installations. This can be lift stations, public works facility, or other public buildings in the area.

#### **SCHEDULE**

The key schedule parameters for this project are as follows:

- The site investigations will begin within two weeks of a notice to proceed or by March 25, 2016, whichever is later.
- Flow meters will be installed within three weeks of site investigations. The flow-monitoring period will begin when the last meter has been installed successfully and will continue for 120 days (4 months).
- The draft report will be submitted to the Village within three months of the end of the flow-monitoring period.
- The final report will be submitted within four weeks of receipt of Village comments on the draft report.

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**PROPOSED FEE**

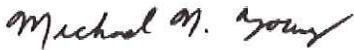
This scope of services will be invoiced on a unit price basis for a cost of \$89,600 per the fee table below.

Task #	Task	Quantity	Unit	\$/Unit	Total
1001	Site Investigation (9 Sites)	9	meter	\$400	\$3,600
1002	Meter Prep and Installation	9	meter	\$900	\$8,100
1003	Meter Maint, Cal, and DA (120 Days)	36	me-mo	\$1,800	\$64,800
1004	Rain Gauge Investigation and Install (2 Sites)	2	gauge	\$500	\$1,000
1005	Rain Gauge Maint, Cal, and DA (120 Days)	8	ga-mo	\$200	\$1,600
1006	I/I Analysis, Draft/Final Report	1	LS	\$8,500	\$8,500
1007	Project Management and Meetings	1	LS	\$2,000	\$2,000
				<b>TOTAL :</b>	<b>\$89,600</b>

It is our pleasure to submit this proposal to the Village of Hanover Park. Please feel free to contact Cathy at (630) 682-4700 x354 if you would like to discuss this proposal in detail. We are looking forward to the opportunity to begin working with the Village on this important project.

Sincerely,

RJN Group, Inc.



Michael N. Young, P.E.  
 Principal



Catherine Morley, P.E.  
 Senior Project Manager



Thomas J. Romza, P.E.  
 Project Manager