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# CITY of NOVI CITY COUNCIL

**Agenda Item 5**
**June 4, 2007**

**SUBJECT:** Approval to award a contract for design and construction engineering services for the Hudson Sanitary Pump Station Improvement project to Stantec, Inc. for a not-to-exceed design fee of $9,000 and a construction engineering fee equal to a fixed 14.5% of construction cost (estimated to be $19,575) for a total of $28,575.

**SUBMITTING DEPARTMENT**: Engineering Department

**CITY MANAGER APPROVAL:**

| | |
|---|---|
| **EXPENDITURE REQUIRED** | **$28,575** |
| **AMOUNT BUDGETED** | **N/A** |
| **APPROPRIATION REQUIRED** | **$29,900** |
| **LINE ITEM NUMBER** | **592-592.00-159.801** |

**BACKGROUND INFORMATION:**

This project resulted from the comprehensive Capacity, Management, Operations and Maintenance (CMOM) Program Phases 1 and 2 that were undertaken by the Engineering Department and Department of Public Works with the consultant Orchard Hiltz & McCliment (OHM). The purpose of this project is to upgrade the equipment within the existing Hudson lift station, which is located on the east side of Meadowbrook Road just north of I-96.

The *Capacity, Management, Operations and Maintenance Program Phase 1* report and the *Pump Station Inventory* indicated that while the station's wet well, valve chamber, and instrumentation are in good condition, it was recommended that the pumps be replaced, the guide rails and lift chains be replaced with stainless steel components, and that the float-based control system be replaced with level sensors.

The new pumps will be designed for the Hudson Sanitary District's built-out capacity of 1,920 gallons per minute (gpm), and the pump motors will have energy-efficient variable frequency drives that will help increase the useful life of the pump motors and reduce energy consumption. (Although we are not seeking LEED certification for the existing station, variable frequency drives qualify as a "green building" component by the Green Building Council.)

The project was initially recommended in the Capital Improvements Program to be implemented with the next two to five years, but has now been given a higher priority because of recently identified problems with the pumps. Namely, one of the three pumps in the station has failed and the impellers on the other two pumps are damaged. Therefore, we are expediting the project to replace the pumps and upgrade the station as soon as possible.

The attached Request for Proposals for design and construction engineering services was sent to the six firms that City Council pre-qualified for utility-related projects. Six proposals were received and each was evaluated using *Qualifications Based Selection* criteria and numerically ranked by Engineering Department staff. The Qualifications Based Selection process evaluates the fee for completing the work and a number of other factors, including: understanding of project requirements; proposed approach, schedule, staffing and work plan; as well as past performance on City projects. The outcome of this process is a recommendation to award the engineering

contract to a firm that has developed a well thought-out approach to the project, identified potential problems and corresponding solutions, and provided a schedule that is feasible and aligned with the City's expectations. These factors are important because they directly affect the success of a project, especially during the construction phase when incomplete design engineering can result in construction contract change orders, thus making the project more expensive.

The Engineering Department's proposal ranking matrix is attached for reference. The following table summarizes the results of the proposal review process:

| Firm | Not-to-Exceed Design Fee | Fixed % of Const | Estimate of Construction Cost | Construction Engineering Fee (% Multiplied by Construction Cost Estimate) | Total Estimated Fee | Staff Review Score | Proposal Rank |
|---|---|---|---|---|---|---|---|
| **Stantec** | **$9,000** | **14.5%** | **$135,000** | **$19,575** | **$28,575** | **456** | 1 |
| Orchard, Hiltz & McCliment | $17,002 | 10.1% | $135,000 | $13,635 | $30,637 | 418 | 2 |
| URS Corporation | $15,000 | 9.9% | $135,000 | $13,365 | $28,365 | 375 | 3 |
| Fishbeck Thompson Carr & Huber | $13,254 | 10.6% | $135,000 | $14,310 | $27,564 | 348 | 4 |
| Spalding DeDecker | $16,000 | 12.0% | $135,000 | $16,200 | $32,200 | 274 | 5 |
| Anderson Eckstein & Westrick | $19,400 | 5.5% | $135,000 | $7,425 | $26,825 | 229 | 6 |

Of the six firms that submitted proposals, Stantec, Inc. received the highest staff review score and had the fourth lowest proposed fee (Stantec's May 24, 2007 proposal is attached). Because of the critical need to keep the Hudson station operational and the failure of one pump and the potential imminent failure of the two remaining pumps, the proposal review focused more on schedule and approach rather than fee. Stantec's proposal was the most comprehensive in that a clear understanding of the project was presented, and the proposed approach was very well thought-out and thoroughly addressed all known issues. In addition, Stantec has qualified staff members that are available to be committed to this project so that the City's tight schedule can be met.

The design phase of this project will be completed in August, and the construction phase will be completed by November 2007.

**RECOMMENDED ACTION:** Approval to award a contract for design and construction engineering services for the Hudson Sanitary Pump Station Improvement project to Stantec, Inc. for a not-to-exceed design fee of $9,000 and a construction engineering fee equal to a fixed 14.5% of construction cost (estimated to be $19,575) for a total of $28,575.

| | 1 | 2 | Y | N |
|---|---|---|---|---|
| **Mayor Landry** | | | | |
| **Mayor Pro Tem Capello** | | | | |
| **Council Member Gatt** | | | | |
| **Council Member Margolis** | | | | |

| | 1 | 2 | Y | N |
|---|---|---|---|---|
| **Council Member Mutch** | | | | |
| **Council Member Nagy** | | | | |
| **Council Member Paul** | | | | |

# Location Map

## Hudson Pump Station


CITY OF NOVI GEOGRAPHIC SYSTEM GIS INFORMATION


*CITY OF NOVI*

*ENGINEERING DIVISION*

45175 W. TEN MILE ROAD
NOVI, MI 48375
(248) 347-0454
WWW.CI.NOVI.MI.US


N
W E
S

0 295 590 1,180 1,770

FEET
1 INCH EQUALS 764 FEET

**MAP INTERPRETATION NOTICE**

Map information depicted is not intended to replace or substitute for any official or primary source. This map was intended to meet National Map Accuracy Standards and use the most recent, accurate sources available to the people of the City of Novi. Boundary measurements and area calculations are approximate and should not be construed as survey measurements performed by a licensed Michigan Surveyor as defined in Michigan Public Act 132 of 1970 as amended. Please contact the City GIS Manager to confirm source and accuracy information related to this map.

**Project Description:** HUDSON PUMP STATION IMPROVEMENTS

**Firms Responding:**

| | Total Score | Rank |
|---|---|---|
| Anderson Eckstein & Westrick | 229 | 6 |
| Fishbeck Thompson Carr & Huber | 348 | 4 |
| Orchard Hiltz & McCliment | 418 | 2 |
| Spalding DeDecker | 274 | 5 |
| Stantec | 456 | 1 |
| URS Corporation | 375 | 3 |

**Detail:**

| *Review Criteria:* | 1. Engineering Fee | 2. Evaluation of Approach, Schedule, and Proposed Staff | 3. Evaluation of Statement of Understanding of Project | 4. Analysis of subjective statements applicable to the project as required on the RFP (Value added items) | 5. Evaluation of past performance on City projects | | |
|---|---|---|---|---|---|---|---|
| *Item weight:* | *5* | *9* | *5* | *3* | *3* | | |
| Anderson Eckstein & Westrick | 1 | 2 | 3 | 4 | 5 | Totals | *Rank* |
| Coburn | 2 | 4 | 4 | 4 | 3 | 87 | *3* |
| Croy | 2 | 1 | 2 | 1 | 3 | 41 | *6* |
| Hayes | 2 | 1 | 2 | 2 | 4 | 47 | *6* |
| Staup | 2 | 2 | 4 | 1 | 1 | 54 | *6* |
| | | | | **Grand Total:** | | **229** | |

| *Item weight:* | *5* | *9* | *5* | *3* | *3* | | |
|---|---|---|---|---|---|---|---|
| Fishbeck Thompson Carr & Huber | 1 | 2 | 3 | 4 | 5 | Totals | *Rank* |
| Coburn | 6 | 2 | 1 | 3 | 2 | 68 | *5* |
| Croy | 6 | 4 | 4 | 4 | 3 | 107 | *2* |
| Hayes | 6 | 3 | 4 | 2 | 5 | 98 | *4* |
| Staup | 6 | 1 | 3 | 4 | 3 | 75 | *5* |
| | | | | **Grand Total:** | | **348** | |

| *Item weight:* | *5* | *9* | *5* | *3* | *3* | | |
|---|---|---|---|---|---|---|---|
| Orchard Hiltz & McCliment | 1 | 2 | 3 | 4 | 5 | Totals | *Rank* |
| Coburn | 1 | 6 | 5 | 5 | 6 | 117 | *1* |
| Croy | 1 | 5 | 4 | 5 | 6 | 103 | *3* |
| Hayes | 1 | 5 | 4 | 5 | 6 | 103 | *2* |
| Staup | 1 | 3 | 6 | 5 | 6 | 95 | *3* |
| | | | | **Grand Total:** | | **418** | |

| *Item weight:* | *5* | *9* | *5* | *3* | *3* | | |
|---|---|---|---|---|---|---|---|
| Spalding DeDecker | 1 | 2 | 3 | 4 | 5 | Totals | *Rank* |
| Coburn | 4 | 1 | 2 | 1 | 5 | 57 | *6* |
| Croy | 4 | 3 | 2 | 3 | 3 | 75 | *5* |
| Hayes | 4 | 2 | 1 | 2 | 2 | 55 | *5* |
| Staup | 4 | 4 | 2 | 3 | 4 | 87 | *4* |
| | | | | **Grand Total:** | | **274** | |

| *Item weight:* | *5* | *9* | *5* | *3* | *3* | | |
|---|---|---|---|---|---|---|---|
| Stantec | 1 | 2 | 3 | 4 | 5 | Totals | *Rank* |
| Coburn | 3 | 5 | 5 | 6 | 2 | 109 | *2* |
| Croy | 3 | 5 | 5 | 6 | 2 | 109 | *1* |
| Hayes | 3 | 6 | 6 | 6 | 1 | 120 | *1* |
| Staup | 3 | 5 | 5 | 6 | 5 | 118 | *1* |
| | | | | **Grand Total:** | | **456** | |

| *Item weight:* | *5* | *9* | *5* | *3* | *3* | | |
|---|---|---|---|---|---|---|---|
| URS Corporation | 1 | 2 | 3 | 4 | 5 | Totals | *Rank* |
| Coburn | 5 | 3 | 4 | 2 | 3 | 87 | *3* |
| Croy | 5 | 3 | 4 | 2 | 4 | 90 | *4* |
| Hayes | 5 | 4 | 4 | 4 | 3 | 102 | *3* |
| Staup | 5 | 6 | 1 | 2 | 2 | 96 | *2* |
| | | | | **Grand Total:** | | **375** | |

# Engineering Services for Hudson Sanitary Sewer Pump Station Improvements

## City of Novi, Michigan


Prepared by:

Stantec Consulting Michigan Inc.
3959 Research Park Drive
Ann Arbor, Michigan 48108-2216
PH: (734) 761-1010
FX: (734) 761-1200
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May, 2007

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Stantec

May 23, 2007

Carol J. Kalinovik
Purchasing Director
City of Novi
45175 W. Ten Mile Rd.
Novi, MI 48375-3024

Dear Ms. Kalinovik:

**Reference: Engineering Services for Hudson Sanitary Sewer Pump Station Improvements RFP**

Thank you for the opportunity to provide our proposal for the Hudson Sanitary Sewer Pump Station Improvements project. Based upon your RFP dated May 9, 2007 and the pre-proposal meeting conducted on May 21, 2007, Stantec Consulting Michigan, Inc. (Stantec) is pleased to submit this proposal for Engineering Services for Hudson Sanitary Sewer Pump Station Improvements.

We believe that we are uniquely positioned to provide the needed services for the following reasons:

- While we are a full service consulting engineering firm, we pride ourselves in our water/wastewater treatment expertise and most suitably, our pump station experience. Our ability to provide expert services is perhaps best exemplified by our extensive experience with the design and construction of wastewater pump stations. *We have designed similar pump station upgrades for over 20 stations in just the last 2 years.* Please refer to our comprehensive Pump Station Experience Matrix provided later in this proposal. In it, we summarize our experience ranging from small submersible stations to large 400 MGD vertical turbine pump stations.

- We possess highly qualified electrical engineers, experienced specifically with the intricacies of pump stations. Our electrical engineers design pump station improvements with adherence to the National Electrical Code, MDEQ and NFPA 820. They are experienced with the installation of VFDs and harmonics, large medium voltage stations, telemetry options and SCADA control. In addition to completing improvements to numerous similar projects, we have recently completed the installation of 900 HP pump motors and VFDs at a wastewater treatment plant influent pump station.

- Our expert wastewater staff located in Ann Arbor includes nine Professional Engineers, two Class A wastewater treatment plant operators, three engineers with Masters Degrees, one Board-certified Environmental Engineer, one PhD in the wastewater field and one electrical engineer on the National Electrical Code Making Panel. We believe in Operations Focused Design whereby soliciting operator staff input throughout the design process, we will produce easy to operate successful projects.

Because this project is fast tracked, we have provided multiple value-added concepts and present them as options to initiate discussion with City Staff. We understand that the City may not desire to implement all of the possible concepts. However, we present the concepts as a reflection of how we approach a project. We approach a project with the following focuses:

- We carefully evaluate the project issues, concerns, and problems
- We thoroughly investigate numerous options with consideration to short and long term solutions
- We analyze the financial implications of decisions made

We believe in this careful approach because the recommendations we present as the consulting experts and the decisions we make together as a team should result in a safe, reliable, easy to operate, and cost efficient project. We understand the importance of this project and we are dedicated to the success of your project. Please do not hesitate to contact us with any questions. Thank you.

Sincerely,

**STANTEC CONSULTING MICHIGAN, INC.**

George A. Tsakoff
Associate
Tel: 734-214-1887
Fax: 734-761-1200
george.tsakoff@stantec.com

Glen R. Wiczorek, PE
Associate
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Fax: 734-761-1200
glen.wiczorek@stantec.com

Attachment: Proposal

Stantec

**Proposal for:**
## Hudson Sanitary Sewer Pump Station Improvements

**Prepared for the:**
## City of Novi, Michigan




**Submitted by:**
**Stantec Consulting Michigan, Inc.**
3959 Research Park Drive
Ann Arbor, Michigan 48108-2216
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May, 2007

# SECTION I

## Project Understanding

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## BACKGROUND

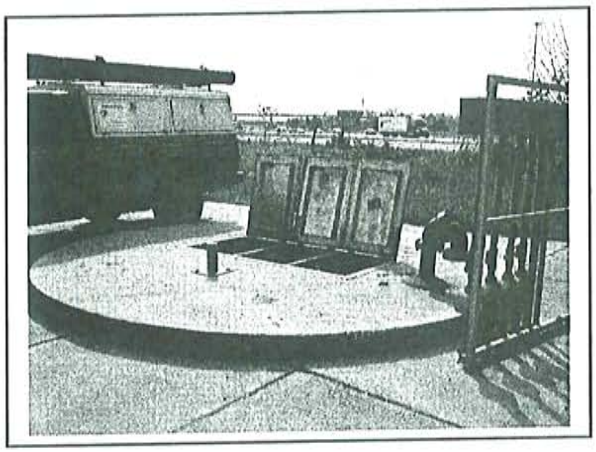
The Hudson sanitary triplex pump station was constructed approximately 15 years ago. The station consists of a 33-foot deep, 12-foot diameter wet well housing 3 submersible pumps. A separate valve and meter vault contains 3 magnetic flow meters, one dedicated to each pump. We understand that one of the pumps has failed and that the impellers on the other two pumps are damaged. The pump station discharges into a 12-inch diameter forcemain, approximately 348-feet long. Emergency backup power is supplied by an on-site 150kW generator housed inside an adjacent building. Access to the pump station is from Meadowbrook Road via a bituminous driveway.

## PROJECT UNDERSTANDING

As presented in the Request for Proposals (RFP), we understand that the City of Novi desires experienced, responsive, cost efficient services to prepare contract documents for the improvements to the Hudson Sanitary Pump Station, including design, bid assistance, construction administration and construction observation.

A description of the necessary improvements as provided in the RFP is as follows:

- Replace the submersible pumps
- Replace the corroded guiderails and lift chains with stainless steel
- Replace the float system with level sensors
- Consider the use of Variable Frequency Drives (VFD)



Hudson Sanitary Pump Station
26670 Meadowbrook Road, Novi, Michigan 48375

We understand these items to be the basic needs of the project and have included additional *value-added* concepts and recommendations for consideration.

## VALUE-ADDED CONCEPTS

Having recently completed many similar projects for other Michigan communities, we provide the following value-added concepts which we believe can *provide cost savings, time savings, improved operations, reduced maintenance or increase longevity to the pump station.* Please note that the concepts are offered as suggestions to initiate discussion or feedback from the City and DPW personnel. We understand that the City may not desire to implement each concept and we therefore present the concepts as options. In the paragraphs to follow, it is our intent to provide a broad range of concepts to help the City ensure that they are carefully investigating the best approach to the short and long term, sustainable operations of its pump station.

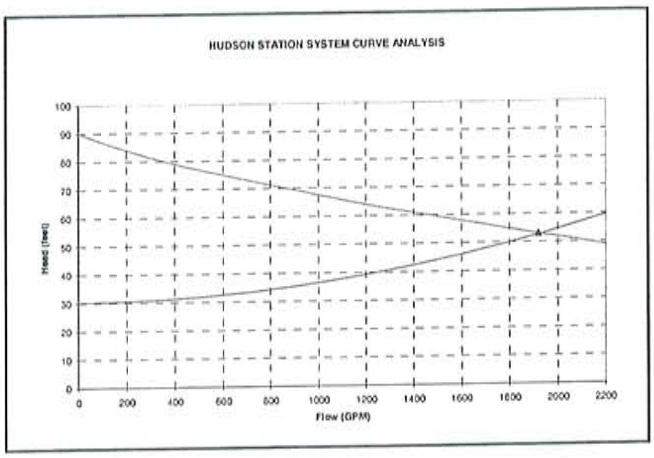
### EQUIPMENT PROCUREMENT STRATEGIES

Perhaps the most beneficial time-saving strategy will be to procure the pumps as quickly as possible. We have recently seen pump lead times of 10-14 weeks for fabrication and delivery

alone. By implementing an efficient Owner furnished procurement strategy, we can fast track the delivery of the pumps while other activities can remain in motion. Additionally, the City can financially benefit as the Contractor's markup on suppliers and subcontractors can be avoided.

We propose to receive bids directly from 3 pump suppliers and negotiate a final *purchase price and delivery date*. By negotiating a purchase price and delivery date, the City can ensure the earliest project completion date. In order to maintain competitive bidding, a total of 3 pump suppliers will be contacted. The City would then enter into a direct purchase agreement with the selected manufacturer.

We have utilized this strategy very successful for numerous communities and pump station projects. We carefully delineate responsibilities between the Owner and Contractor. Please see our detailed project schedule which depicts the delivery of the pumps.




As part of this proposal effort, Stantec has performed some preliminary engineering to expedite the process.

## PRELIMINARY ENGINEERING

The poor conditions of the pumps require immediate repair and replacement. Due to the lengthy process of pump fabrication and delivery, we believe this project warrants some preliminary engineering efforts to get a jump start on the process. Using the available data from Exhibit B in the RFP and making some necessary assumptions, we have developed the system curve for this pump station and forcemain. We have calculated the new design points and have received preliminary packages from two pump manufacturers. These packages include budget pricing, pump curves, horsepowers and cut sheets.

Following a notice to proceed, we would confirm our assumptions, verify the available data and finalize our hydraulic calculations. With specifications already prepared for the pumps, our effort to complete the pump procurement would require minimal effort. Focus would shift to the preparation of construction plans and specifications.

Lastly, we believe that it is important to investigate the reasons for the damage to the existing pumps. If some underlying issue is present, it should be corrected prior to the installation of the new pumps. We understand that the impellers are showing signs of pitting. We will consider hydraulic conditions, manufacturer history, influent flow characteristics and other operational conditions impacting the service life.

## PUMP SELECTION

Stantec and the City will work together as a team in determining the pump selections, including manufacturers and types. In looking to replace the existing ABS pumps, there are up to three manufacturers of submersible pumps that we would recommend. Our recommendations are based not only on the quality and workmanship of the pump, motor, seals and other components, but also the local support that the manufacturers provide. We would further recommend that the City consider standardizing around one or two manufacturers as this increases the staff's familiarity with the pumps, simplifies maintenance and procurement of spare parts. Through the course of the pre-proposal meeting, we

understand that the City has manufacturer preferences of which we have already contacted for preliminary pump selection.

As an alternate to the standard submersible pump, we have assisted many communities in converting their pumps to submersible *chopper* pumps. These communities have found that the characteristics of the wastewater has changed over the recent years with the introduction of many consumer products that find their way into the sewer system. This has resulted in the existing impellers becoming clogged with debris. The installation of chopper pumps rectifies this situation and sacrifices only a small amount of efficiency. We have contacted manufacturers for a preliminary sizing and determined that a 25 or 30 HP motor would be required.

Capacity at the **GENESEE COUNTY DRAIN COMMISSIONER PUMP STATION NO. 9** was increased by replacing two existing 20-horsepower submersible pumps with new 30-horsepower submersible chopper pumps, including new base elbows, anchor bolts, new discharge piping within the wet well, new stainless steel slide rails and lifting chains. The design included the replacement of one variable frequency drive, magnetic flow meters, and electrical upgrades to accommodate the larger pumps. Two separate contracts were prepared for this project –

1) Owner Furnished Procurement of pumps and meters, and
2) Constructions and Installation.

## OPERATIONAL IMPROVEMENTS

We strongly believe in working closely with the City staff and consider the City to be part of the design team. Input and feedback from the City Engineers and DPW staff is very beneficial to the success of the project. City input and feedback will be initiated through progress meetings and workshops.

It was noted during the pre-proposal meeting that the following are desired operational improvements. These and other operational improvements will be fully addressed during the design phase.

1. New safety hatches with grating.
2. New quick connect on the bypass pumping connection.

## VARIABLE FREQUENCY DRIVES

Variable frequency drives (VFDs) offer advantages to the operation of a pump station. They can lengthen the cycle times, reduce the number of starts and stops, maintain water surface levels, increase operator flexibility and provide a soft start to reduce the size of a generator.

But these advantages come with a price. VFDs will cost approximately $9,000 each for an installed 20 HP unit. They will increase the complexity of the controls and add to operations and maintenance costs.

We have reviewed the advantages and disadvantages of VFDs as they specifically apply to the Hudson Station and provide the following comments:

- For motor and starter protection, we typically provide for a cycle time of 10 minutes (or 6 starts/stops per hour). Based on the new firm capacity of 1920 gpm and reusing the existing operating levels depicted in Exhibit B, cycle times do not appear to be a concern. With two pumps cycling, and the third pump as redundant, the cycle time exceeds 10 minutes.
- It is not desirable to use VFDs to maintain levels within a sanitary pump station wet well. While this practice can reduce odors in some particular stations, it does not allow

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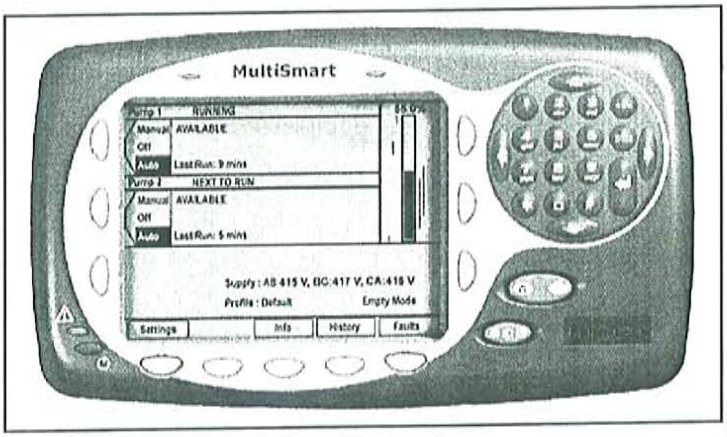
for complete drawdown, thereby allowing grease buildup. By using a control system like a Multitrode unit, it can be easily programmed to perform a complete drawdown once a day and reduce the grease accumulation. Additionally, odor is not an issue at the Hudson Pump Station.

- If a chopper pump is ultimately desired, it will require that the pumps be started at full power to initiate the grinding action of the impeller and to break free any accumulated solid matter around the cutting mechanism. This would then preclude the need for a VFD soft start.
- The existing 150kW generator is adequately sized to start 2 new pumps in series up to 40 HP each. As the new pumps will likely range from 20 to 25 HP, this also precludes the need for a VFD soft start.
- The generator building is a protected, but not conditioned, environment. To avoid VFD tripping and faults, venting and heating modifications would be further recommended.
- The payback period for utilizing VFDs for power savings will be very long at this pump station. Any savings will be further diminished by increased maintenance and operational complications.

Based on our review of this pump station, we believe that VFDs do not offer a significant benefit in terms of performance, operation and capital cost. Ultimately, the VFDs would likely increase maintenance and reduce reliability. It is our recommendation to invest the money elsewhere where an improvement in performance is more evident.

## INSTRUMENTATION AND CONTROLS

For numerous pump stations and municipalities, Stantec has designed the migration of out-dated, troublesome controls and monitoring to a state of the art, robust system. The system that we have successfully employed uses a submersible conductive stick with an advanced pump station control system by Multitrode. Thes system includes the ability withstand grease build-up, offer add-on capabilities, interface with variable frequency drives and have the ability to test the pump motors on weekly bases to predict motor failure. With a geometry based calculation, the system will calculate station discharge flow rate. Also these systems use the cellular backbone for live monitoring, trending and alarm annunciations and have several levels of redundancy. Communities that we are working with have standardized on these system including the City of Fenton, City of Cadillac and Pittsfield Township to name a few.




The MultiSmart is the latest pump station controller provided by Multitrode. This unit has the ability to monitor the incoming power and can be used for event monitoring and data logging.

## ELECTRICAL ISSUES

An area of concern is the existing 208 volt, 200 Ampere, 3 Phase service. After estimating the proposed pump motor sizes, this system will be at 97% of its electrical capacity without the

additional of lighting and other miscellaneous loads. We would recommend migrating to a 480 volt, 200 Ampere, 3 Phase service with matching pump voltages. This would also require rewiring of the generator voltage and installation of a mini-power zone to provide 120 Volt house services. These electrical improvements are not particularly costly as this project already entails replacing the most expensive devices (i.e. the pump motors, etc). Upgrading to a 480 volt service will also bring the Hudson Station in line with other recent pump station upgrades.

Lastly, it was observed that the seal-offs and the junction box are located too close to the wet well and vent. This compliance issue relates to NFPA 820 and the classification of areas. This issue should be addressed during the design phase.

## CONTINGENCY PLAN

The poor conditions of the existing pumps require immediate attention. With the firm capacity of the station already compromised, additional pump failure and a subsequent sewer backup could be very costly.

As a contingency plan, we suggest for discussion purposes, that the City could rebuild the failed pump or purchase an identical ABS submersible pump. For budgeting, we have obtained a price quotation of approximately $13,500 for the purchase of a new pump. We understand that at first glance, this may not appear to be a wise investment as the pump would be undersized for future use. However, in the event of an additional pump failure, the benefits of this contingency plan are as follows:

- The repair or purchase of an identical ABS pump would allow for a simple installation, using the same base plate, base elbow connection, etc. and require no modifications. This would very quickly return the station to its existing firm capacity while the project progresses.
- The cost of the repairs or replacement pump would be less than expensive bypass pumping, manpower, alarming and sewer backups.
- When accounting for design, bidding, award, shop drawing review, fabrication, delivery, installation and startup, the new larger pumps may not be operational for almost 20 weeks from the notice to proceed on the design phase. This contingency plan could be implemented very quickly and provide peace of mind.

## FLOW METER REPLACEMENT AND PIPING MODIFICATIONS

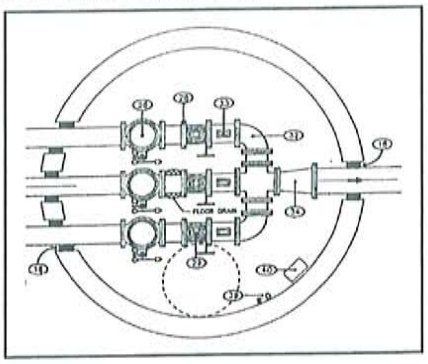
We understand that the three existing flow meters are not used for billing or rate purposes. Therefore, the City may not desire to replace the aging flow meters. As noted previously, the new control systems like the MultiSmart system have the built-in capability of using wet well geometry and level sensing to calculate the station discharge flow rate. It could therefore be stated that a magnetic flow meter would not be necessary at the Hudson Pump Station.

However, for discussion purposes, we present the idea of replacing the three existing magnetic flow meters with one new flow meter inside a new meter manhole. We make this recommendation for the following reasons:

1. If flow meter accuracy is not critical, systems like the MultiSmart will serve their purpose. However, many municipalities like the option of using a magnetic flow meter

as the primary flow measuring device as accuracies will be much greater. An in-line mag meter will allow for the accurate measurement of various pumping configurations.

2. Magnetic flow meters in wastewater service applications, installed in less than ideal conditions, will likely exhibit electrode failure, corroded grounding connections and failure of the liner materials. As these meters have been in service for over 15 years, and installed in a below grade valve vault, we anticipate that these meters are approaching the end of their service life.
3. With the current piping configuration, the meters are not providing accurate readings. With a swing check and plug valve immediately upstream and with a 90 degree short-radius elbow and tee fittings immediately downstream of the flow meters, the resulting turbulence will not yield accurate readings.
4. There are added operational and maintenance costs associated with three separate flow meters.



The existing piping configuration creates turbulence which is likely affecting flow meter accuracy. The current configuration also does not allow for flow meter replacement during operation or bypass pumping.

These deficiencies are supported by the percent difference in flow readings when compared to the drawdown test results provided in Exhibit B of the RFP. We calculate that the flow meter readings vary 18%, 8% and 7% from the drawdown test.

Therefore, as a long term recommendation, we suggest the removal of the existing flow meters and replacement with flanged spool pieces. We recommend coring new penetrations through the valve vault and installing wye fittings to connect to the existing forcemain. This will improve flow and hydraulic characteristics. We further recommend the installation of a new flow meter manhole which would house one new magnetic flow meter and a stainless steel pressure gauge. Additionally, we recommend that the existing discharge piping within the wet well be inspected and possibly replaced if inspection determines the piping to be excessively corroded. Please refer to Figure 1.

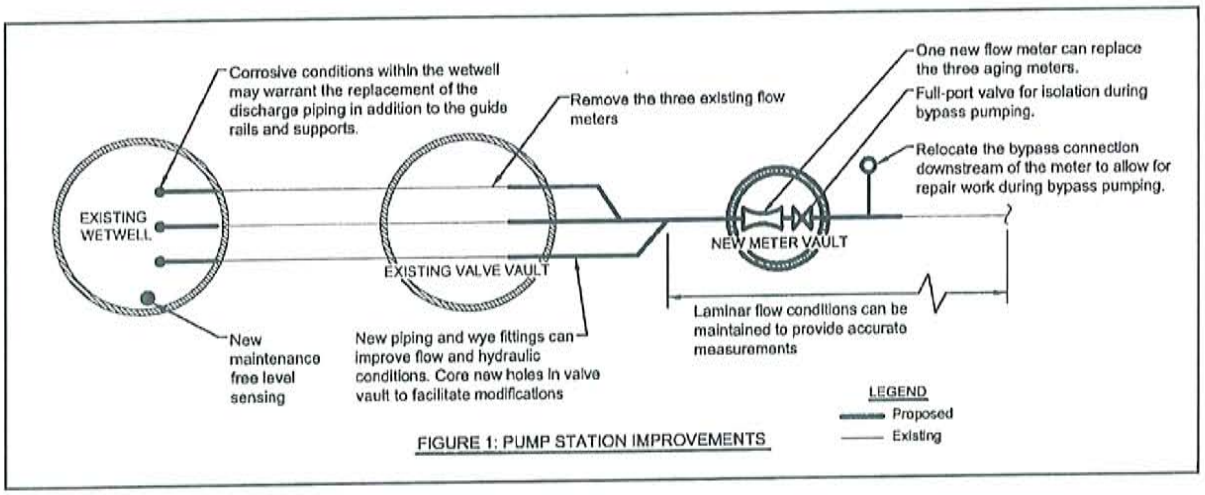



FIGURE 1: PUMP STATION IMPROVEMENTS

Our recommended improvements will improve pump station performance, improve flow meter accuracy, reduce maintenance and future replacement costs.

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## PERMITTING

Having designed and permitted numerous similar pump station projects, we are very familiar with the permit requirements and procedures. Obtaining a permit for this project will be a multi-step process and based upon our experience with similar projects, this process can be rather lengthy.

The permit process will begin with submitting a completed Part 41 Permit application, including design drawings and relevant backup information, to the Oakland County Drain Commissioner (OCDC). OCDC review and approval typically takes 1-2 weeks, after which we typically see the permit package forwarded to the Detroit Water and Sewerage Department (DWSD). We understand through discussions at the pre-proposal meeting, that recent City of Novi pump station expansions did not require submission to DWSD or Wayne County. We have seen that DWSD has recently taken up to 90 days to review and approve similar projects and therefore would represent a bottleneck in the Part 41 Permit application process. However, if the permit process can go from OCDC straight to MDEQ for final review, we have seen that MDEQ review and approval typically takes 3-4 weeks.

After receiving a notice to proceed, we propose to immediately contact MDEQ to discuss the project and emphasize the importance of timely reviews. It should be noted that final design drawings are typically required by the MDEQ before it will issue the permit. It is possible to advertise for bids without an approved permit; however this strategy involves risk that review comments will alter the design. This could prove problematic if it becomes necessary to make any modifications as all communities strive to minimize change orders.

As stated in Exhibit B, we understand that this station was designed to allow for an "ultimate build out capacity of 1,920 gpm." We are making the assumption that the receiving sewer was also designed and permitted to accommodate the flow. Therefore, our proposal does not include any modeling efforts or network analysis to demonstrate to the permitting agencies that there is capacity in the downstream receiving sewers. We will rely on information provided by the City of Novi to address this issue.

# SECTION II

## Work Plan

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## APPROACH / WORK PLAN

We propose to provide the following Scope of Services. Using the tasks requested in the RFP as a basis, we expand by providing the breakdown below:

I. Design Phase
   A. Meet with DPW personnel and inspect the pump station
   B. Continue review of available background information and confirm data
   C. Meet with City Engineering and DPW personnel to discuss pump options, manufacturers, types, preferences, options, etc.
   D. Finalize hydraulic calculations and pump selection
   E. Negotiate purchase price and delivery dates of pumps
   F. Prepare plans and specifications
   G. Prepare cost estimates (30%, 90%)
   H. Prepare permit applications and submit for permitting

II. Bid Assistance
   A. Prepare and distribute contract documents to prospective bidders
   B. Coordinate and facilitate a mandatory pre-bid meeting
   C. Field questions, prepare and distribute addenda
   D. Review bids and recommend award

III. Construction Administration
   A. Review insurance and bonds submitted from contractor
   B. Coordinate and facilitate preconstruction meeting
   C. Review shop drawings
   D. Respond to Requests for Information
   E. Attend progress meetings and coordination meetings
   F. Coordinate with City Engineering and DPW personnel
   G. Process pay applications
   H. Ensure compliance with the contract documents
   I. Prepare record drawings

IV. Construction Observation
   A. Perform inspection of improvements
   B. Provide startup assistance
   C. Attend to residents concerns and complaints
   D. Prepare punch list
   E. Prepare and submit all daily inspection reports with digital photos
   F. Perform soil erosion control inspection

# SECTION III

## Staffing

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## STAFFING PLAN

We have assembled a highly experienced team to provide the best possible design and construction services. Our team is intimately familiar with all aspects of pump stations including design, construction, operations, maintenance, and electrical including power distribution, emergency power, level and flow control, telemetry and SCADA. *Our team has most recently retrofitted and rehabilitated over 20 sanitary pump stations in just the last two years*, providing both design and construction services. These stations encompassed a variety of types including submersible, chopper, above-ground self priming, can stations and others. Each station required uninterrupted service to maintain flow.

**George Tsakoff** will serve as Project Manager and provide overall project coordination between the City and Stantec's technical staff. This coordination will take place between Stantec's Water/Wastewater Department during design phase and with the Construction Department during the construction phase of work. George has extensive project and client management experience with several of Stantec's established municipal clients including the City of Novi. Over the past four (4) years, George has worked with the City of Novi's Engineering, Building and Finance Departments on a mix of private development consultation and public project administration efforts. George is also familiar with City processes, procedures and most importantly the expectations for a high quality project, on-time and within budget.

**Aaron Uranga, PE** will serve as Project Engineer. Aaron holds a Master's Degree in Civil Engineering (Hydraulics) from the University of Michigan and has over 9 years of design, construction and hydraulic modeling experience. His primary responsibilities will include the design and preparation of contract documents, coordinating technical details, serving as a liaison between City of Novi and the contractor, and processing construction paperwork including Bulletins, Change Orders, Requests for Information and Engineer's Certificates. In a similar capacity, Aaron is currently serving as Project Engineer for the Genesee County and Pittsfield Township sanitary pump station improvement projects. Aaron possesses extensive experience with pumping system design and construction for both sanitary and potable water applications. Aaron has provided design and construction engineering services for similar sanitary lift station improvement projects in Pittsfield Township (6 stations), West Bloomfield Township (3 stations) and Genesee County (6 stations).

**Greg Schofer** will serve as Electrical Engineer and will provide review of electrical shop drawings, requests for information, on-site coordination of electrical systems and inspections to ensure adherence to the National Electrical Code, NFPA Section 820, UL and applicable Ten States design standards. Greg posses a wide range of electrical pump station design and construction experience including power distribution, flow control, emergency backup power, telemetry and security. His design and construction service experience includes over 25 pump station systems in the last five years including Pittsfield Township, West Bloomfield Township, WTUA, Genesee County and the City of Fenton. Greg has over 15 years of experience with controls and electrical systems and holds an Associates Degree in Electrical Technology from Schoolcraft College and a four year Technical Degree from National Institute of Technology in industrial controls and automation.

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**Glen Wiczorek, PE** will serve as Quality Assurance and Quality Control Engineering. Glen has over twelve years of management, design and field experience and holds a Bachelor's Degree in Civil and Environmental Engineering from the University of Michigan. Glen is currently serving as the Department Manager for the Water and Wastewater Process group. He possesses extensive pump station design and construction experience encompassing all varieties of pump stations including submersible, wet well/dry pit, self-priming, screw and vertical turbine. Glen has provided management, design and construction services for multi-million dollar pump stations ranging up to 160 million gallons per day. His pump station services have been provided to municipalities throughout Michigan including Pittsfield Township (7 stations), Quincy (2 stations), Cadillac (5 stations), Genesee County (2 stations), Midland (4 stations), Howell (2 stations), Grosse Pointe Park and Pinckney.

**Ted Meadows** will serve as Field Engineer for the construction observation phase. Ted has extensive construction phase and client field management experience with several of Stantec's established municipal clients including the City of Novi. Over the past four (4) years, Ted has worked with the City of Novi's Engineering Department, Building Department and Public Works Department on a mix of private development consultation and public project administration efforts during the construction phase of work. Ted is also familiar with City processes, procedures and the expectations for continuous coordination between the City, Contractor and Stantec management and technical staff.

## PROJECT SCHEDULE

We have prepared a realistic project schedule based on our recent experience with similar projects. We have structured our efforts to begin discussions with the pump manufacturers as soon as possible. Depending on City Council approval, we believe that the selected pump manufacturer can be preparing his shop drawings less than four weeks after we begin design. We have allowed for a reasonable time frame on a number of critical tasks, particularly those tasks that are beyond our control, such as permitting, City Council approval, manufacturer preparation of shop drawings, pump fabrication and delivery.

Fabrication and delivery of the pumps is the critical path for this project. All other activities have been scheduled around the pump delivery to facilitate the shortest possible path to project completion.

Please refer to the attached project schedule for additional details.

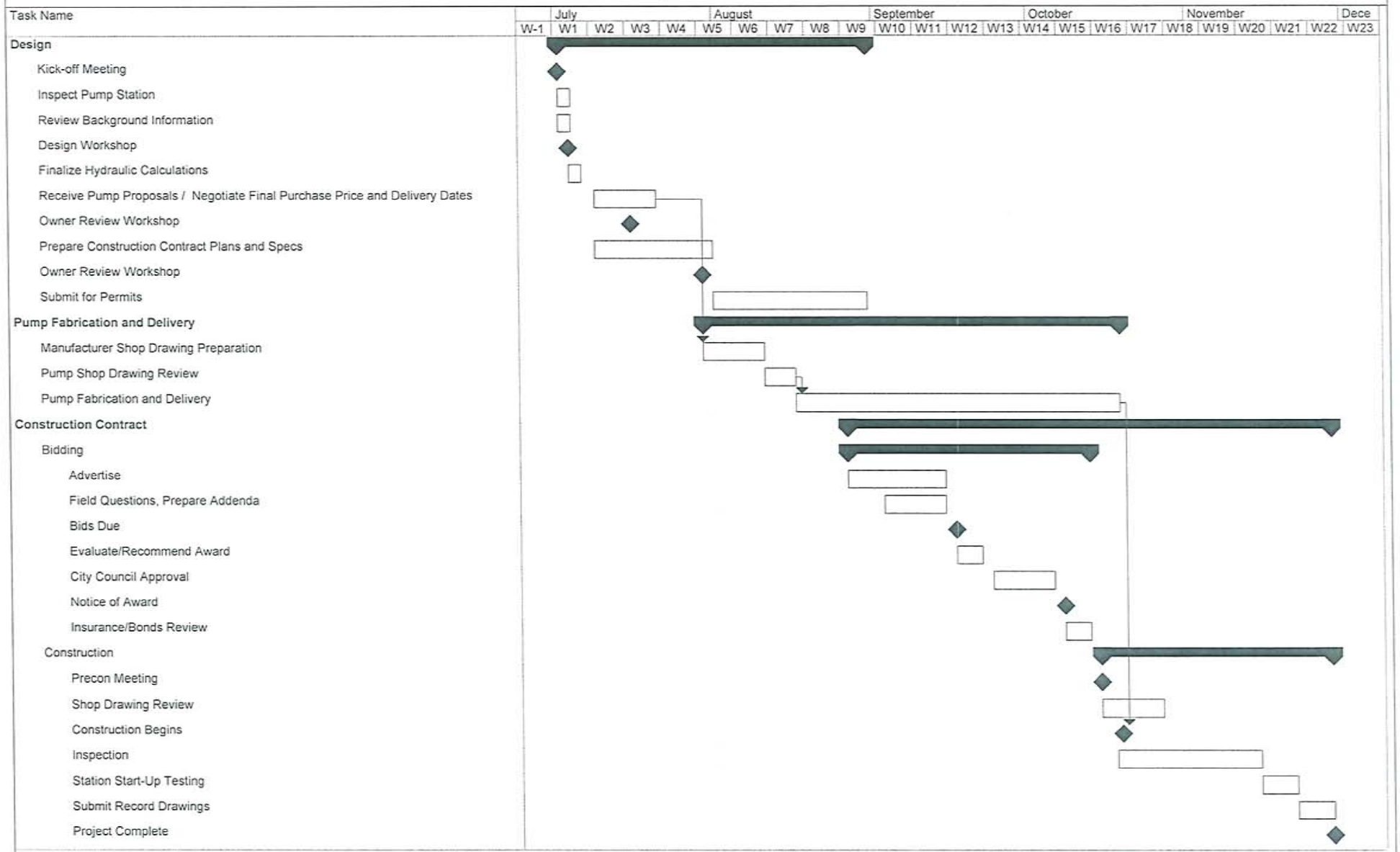
## PAST PERFORMANCE

We have been prequalified to submit proposals for this project.

Stantec has an established track record with the City of Novi Engineering Division. In 2003, Stantec was retained by the City of Novi for professional consulting services for General Civil Engineering on private development projects. From that time, Stantec has established strong relationships with Novi Engineering Staff and has worked to improve and maintain communication, project coordination and technical expertise in the work that has been

performed. In addition to our experience with City private development projects, Stantec has also been involved with the City Engineering Division on several capital improvement projects and is familiar with the expectations and procedures that must be followed in relation to this type of project.

# City of Novi, Michigan
## Hudson Sanitary Sewer Pump Station Improvements
## Project Schedule




Project: Hudson PS Improvements
Date: Wed 5/23/07

| | | | | | |
|---|---|---|---|---|---|
| Task | | Milestone | | External Tasks | |
| Split | . . . . . | Summary | | External Milestone | |
| Progress | | Project Summary | | Deadline | |

# SECTION IV

## Fee and Rate Information

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## FEE PROPOSAL

The completed fee proposal from Exhibit A in the RFP is attached.

Please note the following regarding Exhibit A Fee Proposal:

1. Our Construction Cost Estimate provided on line 2 of Exhibit A was prepared for the requested services only (i.e., pump, guide, chain replacement, and control system). As described in our original proposal, we have provided value-added concepts for consideration and have separately prepared construction cost estimates for these concepts. Please see our attached spreadsheet for details. It is our intent to finalize the City's preferences during the first design workshop. While these decisions will impact the construction cost estimate, there will be no change to our proposed fees regardless of which concepts are selected.
2. We have included our Bid Assistance efforts as part of the Construction Phase Fee. Please see our attached spreadsheet for a detailed breakdown of our proposed hours.

## RATE SCHEDULE

Our rate schedule as requested in the RFP follows. We understand that the rate schedule may be used for additional work as may be necessary.

# CITY OF NOVI

## EXHIBIT A
## FEE PROPOSAL

## ENGINEERING SERVICES FOR
## HUDSON SANITARY PUMP STATION IMPROVEMENTS

We the undersigned propose to furnish to the City of Novi services consistent with the Request for Qualifications dated January 11, 2007 and Request for Proposals dated May 9, 2007, respectively. Design fees will be paid on an hourly basis for actual work performed to a maximum as proposed. A separate fee schedule is being provided should the City request additional work on an hourly basis.

| Project | Phase | Total Fee |
|---|---|---|
| Hudson Sanitary Pump Station Improvements | Design Phase (not-to-exceed fee) | $9,000.00 |
| | Construction Phase<br>Construction Cost Estimate (by engineer for fee determination):$ 144,000.00 | |
| | 14.5 % of Construction Cost (from estimate above) | $ 20,900.00 |
| | **TOTAL ESTIMATED* FEE** | $ 29,900.00 |

*Total Estimated Fee consists of a not-to-exceed design phase fee (which includes geotechnical costs if applicable) and a fixed percentage construction phase fee which is used to estimate an approximate fee amount based on the cost estimate above. The actual construction phase fee will be established when the project is awarded to a contractor by multiplying the fixed percentage provided and the bid price of the successful bidder.

**PLEASE TYPE:**

Company Name: Stantec Consulting Michigan, Inc.

Address: 3959 Research Park Drive, Ann Arbor, MI 48108

Agent's Name: Mr. Ishwar M. Naik, PE

Agent's Title: Principal

Agent's Signature: Ishwar M. Naik /pi

Telephone Number: 734-214-2515 Fax Number: 734-761-1200

E-mail Address: ish.naik@stantec.com Date: May 23, 2007

# ENGINEER'S OPINION OF CONSTRUCTION COST
# STANTEC CONSULTING MICHIGAN, INC.

3959 Research Park Drive, Ann Arbor, Michigan 48108 Tel: (734) 761-1010 FAX: (734) 761-1200

PROJECT: Hudson Sanitary Pump Station Improvements
CLIENT: City of Novi, Michigan
LOCATION: Novi, MI
DATE: 5/23/2007
PROJECT NO. 2075902007
BASIS FOR ESTIMATE: [ x ] CONCEPTUAL [ ] PRELIMINARY [ ] FINAL
WORK: Improvements to an existing submersible pump station

| ITEM NO. | DESCRIPTION | QUANT. | UNIT | UNIT AMOUNT | TOTAL AMOUNT |
|---|---|---|---|---|---|
| BASE BID | | | | | |
| 1 | Mobilization | 1 | LS | $10,000 | $10,000 |
| 2 | General Conditions | 1 | LS | $7,500 | $7,500 |
| 3 | Bypass pumping | 1 | LS | $15,000 | $15,000 |
| 4 | Submersible pumps, 20 HP, guides, lift chains | 3 | EA | $14,000 | $42,000 |
| 5 | Pumps, guides, chain installation | 3 | EA | $6,000 | $18,000 |
| 6 | Multitrode level sensor | 1 | EA | $1,400 | $1,400 |
| 7 | MultiSmart Controller | 1 | EA | $7,000 | $7,000 |
| 8 | Controller Installation | 1 | LS | $4,000 | $4,000 |
| 9 | Electrical | 1 | LS | $15,000 | $15,000 |
| | | | | **SUBTOTAL** | **$119,900** |
| | | | | **Construction Contingencies 20%** | **$23,980** |
| | | | | **BASE BID - GRAND TOTAL** | **$144,000** |

| VALUE ADDED OPTIONAL ITEMS (Installed Costs) | | | | | |
|---|---|---|---|---|---|
| 1 | New safety hatches and grating | 1 | EA | $5,500 | $5,500 |
| 2 | Alternate Pumps: Chopper pumps, 30 HP, guide rails, lift chains | 3 | EA | $28,000 | $84,000 |
| 3 | New 480 Volt electrical service | 1 | LS | $6,500 | $6,500 |
| 4 | Spare ABS pump as Contingency Plan | 1 | EA | $14,000 | $14,000 |
| 5 | New meter vault including meter, manhole, piping modifications, painting, electrical, pavement replacement | 1 | LS | $60,000 | $60,000 |

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# City of Novi, Michigan
## Hudson Sanitary Pump Station Improvements

### Proposed Fee Schedule
### May 23, 2007

| Tasks | Title | Project Manager | Project Engineer | Electrical Engineer | Drafting | QA/QC | Construction Observation | Direct Expenses | Total |
|---|---|---|---|---|---|---|---|---|---|
| | Employee Name | George Tsakoff | Aaron Uranga | Greg Schofer | Jerry Brzys | Glen Wiczorek | Ted Meadows | | |
| | Billing Rate | $119 | $100 | $119 | $91 | $130 | $100 | | |
| A. Design Phase | | | | | | | | | |
| i. | Meet w/ City Engineering and DPW personnel, inspect pump station, review background info, discuss options | 4 | 8 | 8 | | | | | $2,228 |
| ii. | Prepare plans and specifications, negotiate bids from three pump suppliers | 4 | 26 | 4 | 20 | 4 | | $200 | $6,092 |
| iii. | Prepare preliminary cost estimate | | 2 | | | 1 | | | $330 |
| iv. | Permitting | 2 | | | | | | $100 | $338 |
| | | | | | | | | Design Phase Subtotal | $8,988 |
| B. Bid Assistance | | | | | | | | | |
| i. | Prepare and distribute contract documents | | | | | | | $300 | $300 |
| ii. | Coordinate and facilitate pre-bid meeting | 2 | 2 | | | | | | $438 |
| iii. | Field questions, prepare and distribute addenda | 2 | 4 | 2 | 2 | 1 | | $100 | $1,288 |
| iv. | Review bids and recommend award | 3 | | | | | | | $357 |
| | | | | | | | | Bid Assistance Subtotal | $2,383 |
| C. Construction Administration | | | | | | | | | |
| i. | Review insurance / bonds | 2 | | | | | | | $238 |
| ii. | Coordinate and facilitate pre-con meeting | 3 | 3 | | | | | | $657 |
| iii. | Review shop drawings | | 6 | 6 | | | | | $1,314 |
| iv. | Attend progress meetings / coordinate meetings | 8 | 8 | 4 | | | 4 | | $2,628 |
| v. | Coordinate w/City Engineering | | | | | | | | Included |
| vi. | Respond to Requests for Information | | 4 | 4 | | | | | $876 |
| vii. | Process pay applications | 2 | 2 | | | | | | $438 |
| viii. | Prepare record drawings | | | | 4 | | 4 | $100 | $864 |
| | | | | | | | | Construction Administration Subtotal | $7,015 |
| D. Construction Observation | | | | | | | | | |
| i. | Inspection of improvements (full-time during critical activities hidden from view, part-time for above ground) | | | 8 | | | 70 | $500 | $8,452 |
| ii. | Start-up assistance | | 4 | 8 | | | | | $1,352 |
| iii. | Attend to residents concerns and complaints | | | | | | | | Included |
| iv. | Punchlist preparation | | 4 | 6 | | | 6 | | $1,714 |
| v. | Prepare and organize all reports for submission w/digital photos | | | | | | | | Included |
| vi. | Soil erosion control inspection | | | | | | | | Included |
| | | | | | | | | Construction Observation Subtotal | $11,518 |
| *PROJECT SUMMARY* | | | | | | | | | |
| | TOTAL HOURS | 32 | 73 | 50 | 26 | 6 | 84 | | 271 |
| | TOTAL LABOR | $3,808 | $7,300 | $5,950 | $2,366 | $780 | $8,400 | | $28,604 |
| | TOTAL DIRECT EXPENSES | | | | | | | $1,300 | $1,300 |
| | PROJECT GRAND TOTAL | $3,808 | $7,300 | $5,950 | $2,366 | $780 | $8,400 | $1,300 | **$29,904** |

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# 2007 Fee Schedule

| Title | Hourly Rate | Description |
|---|---|---|
| Technician | $41 - $47 | • Entry-level position<br>• Works under the supervision of a senior professional<br>• Recent graduate from an appropriate post-secondary program or equivalent<br>• Generally, less than four years experience |
| Engineering Assistant<br>Construction Technician<br>Environmental Technician | $53 - $65 | • Junior-level position<br>• Independently carries out assignments of limited scope using standard procedures, methods and techniques<br>• Assists senior staff in carrying out more advanced procedures<br>• Completed work is reviewed for feasibility and soundness of judgment<br>• Graduate from an appropriate post-secondary program or equivalent<br>• Generally, four years work experience |
| Senior CADD Technician<br>Project Engineer<br>Designer<br>Senior Engineering Designer | $71 - $84 | • Fully qualified professional position<br>• Carries out assignments requiring general familiarity within a broad field of the respective profession<br>• Makes decisions by using a combination of standard methods and techniques<br>• Actively participates in planning to ensure the achievement of objectives<br>• Works independently to interpret information and resolve difficulties<br>• Graduate from an appropriate post-secondary program, with credentials or equivalent<br>• Generally, six years experience |
| Senior Designer<br>Senior Project Engineer<br>Project Manager | $91 - $109 | • First level supervisor of first complete level of specialization<br>• Provides applied professional knowledge and initiative in planning and coordinating work programs<br>• Adapts established guidelines as necessary to address unusual issues<br>• Decisions accepted as technically accurate, however may on occasion be reviewed for soundness of judgment<br>• Graduate from an appropriate post-secondary program, with credentials or equivalent<br>• Generally, nine years experience |
| Senior Project Manager<br>Associate<br>Registered Surveyor | $119 - $140 | • Highly-specialized technical professional or supervisor of groups of professionals<br>• Provides multidiscipline knowledge to deliver innovative solutions in related field of expertise<br>• Participates in short and long range planning to ensure the achievement of objectives<br>• Makes responsible decisions on all matters, including policy recommendations, work methods, and financial controls associated with large expenditures<br>• Reviews and evaluates technical work<br>• Graduate from an appropriate post-secondary program, with credentials or equivalent<br>• Generally, ten years experience with extensive, broad experience |
| Principal | $149 - $174 | • Senior level consultant or management function<br>• Recognized as an authority in a specific field with qualifications of significant value<br>• Provides multidiscipline knowledge to deliver innovative solutions in related field of expertise<br>• Independently conceives programs and problems for investigation<br>• Participates in discussions to ensure the achievement of program and/or project objectives<br>• Makes responsible decisions on expenditures, including large sums or implementation of major programs and/or projects<br>• Graduate from an appropriate post-secondary program, with credentials or equivalent<br>• Generally, fifteen years experience with extensive professional and management experience |
| Survey Crew | $147 | |

# SECTION V

## Project Experience

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Stantec has performed similar work and offers the following projects as examples of our experience in this category.

# Pittsfield Sanitary Lift Station Improvements

Charter Township of Pittsfield, Michigan

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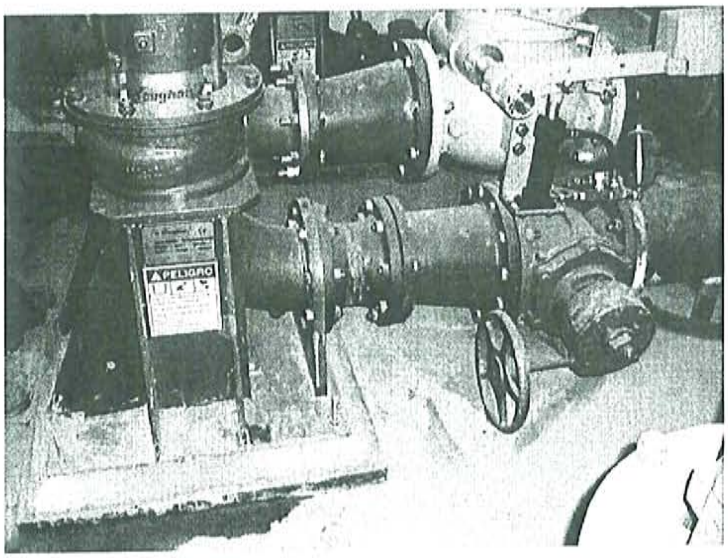
Stantec was retained by the Charter Township of Pittsfield to provide improvements to their existing sanitary lift stations.



Stantec completed the design services for improvements to six can-type sanitary lift stations in order to address pump clogging, station capacity, equipment age and access problems. The improvements consist of new pumps, piping, valves, control systems, electrical system upgrades, and the addition of emergency backup generators. Other elements include the installation of an odor control system at one station.

At each station, the existing electrical and control systems will be replaced with new systems in above-ground enclosures, and the existing portable generator receptacles will be replaced with new permanent natural gas generators and automatic transfer switches. At the Platt and Merritt Road Station, a carbon-based odor control system will be installed to address historic odors complaints associated with this station.

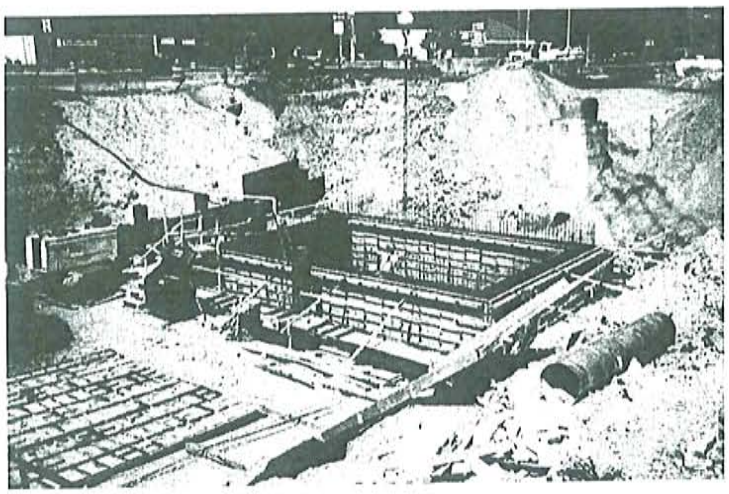
The above-ground electrical and control systems combined with the new pumps will significantly reduce the amount of time spent by Pittsfield Township Utilities personnel entering the stations for pump maintenance.

| | |
|---|---|
| Client | Pittsfield Charter Township |
| Cost | US$1,500,000 |
| Completed | 2008 |

# Pump Station Improvements
Midland, Michigan

Stantec

The project consisted of major sanitary sewer system improvements to enhance the sanitary sewer transport capacity of the system for a 50-year rainfall event.



Stantec completed design and construction services for major sanitary sewer system improvements to enhance the sanitary sewer transport capacity of the system for a 50-year rainfall event. The project included a new major pump station, rehabilitation of a major pump station, replacement of two pump stations and new SCADA system for control and monitoring of all pump stations. Other elements of the project included 13,000 feet of 24-inch and 42-inch force main and 2,000 feet of 36-inch sewer.

The Nelson Pump Station is a new 14.4 mgd submersible pump station including five submersible pumps, valve vault, odor control, standby generator, and PLC based control system. The Valley Pump Station involved the rehabilitation of a wetwell-drywell pump station to increase capacity from 12.7 MGD to 15.7 MGD. The improvements included replacement of three close coupled horizontal solids handling pumps, new MCC, new standby generator and PLC based control system. The Patrick Pump Station included replacement of existing submersible pump station with new submersible pump station to increase capacity of station from 0.7 MGD to 1.3 MGD. The improvements included new pumps, wet well, valve vault, electrical service, and PLC based control

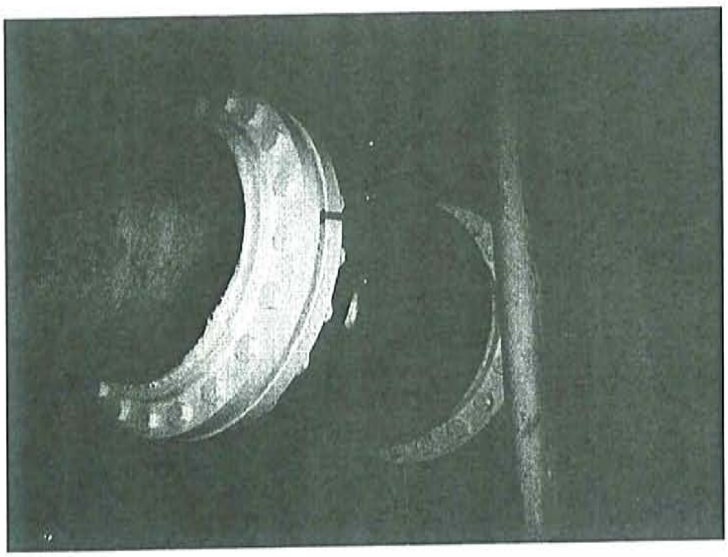
| | |
|---|---|
| Client | City of Midland |
| Cost | US$2,700,000 |
| Completed | 2002 |

# GCDC 2005 Pump Station Upgrades

Genesee County, Michigan

Stantec

Stantec was retained by Genesee County Drain Commissioner's office to perform upgrades to their existing pump stations.



Stantec completed design and construction services for improvements to five sanitary lift stations in order to provide real-time flow metering capability at each station and increase pumping capacity at one station. The project included the installation of ten new magnetic flow meters on the discharge forcemains of the stations and incorporation of these flow meters into an existing SCADA system. Other elements included major upgrades to an existing lift station and Parshall flume metering facility.

Pump Stations 2, 3, 4, 5 and 9 received new magnetic flow meters ranging in size from 14 to 24 inches. Pump Station 9 received replacement of two 20-horsepower submersible pumps with new 30-horsepower submersible chopper pumps, replacement of one variable frequency drive, and electrical upgrades to accommodate the larger pumps. The Davison Gauging Station upgrade consisted of demolition of existing metal building above the Parshall flume. Additional components included construction of a new pre-cast concrete building. Electrical upgrades were also included to provide power to new building and to locate metering, SCADA and radio telemetry equipment in the new building.

| | |
|---|---|
| Client | Genesee County Drain Commissioner |
| Cost | US$470,000 |
| Completed | 2006 |

## SUMMARY OF RECENT WATER AND WASTEWATER PUMPING EXPERIENCE

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| | Water | Wastewater | No. of Pumps | Total Capacity (mgd) | Voltage | | Drive System | | Generator | SCADA | Type of Pumps | Facility | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | 4800 V | 480 V | VFD | Across Line | | | | New | Retrofit |
| **City of Flint**<br>**High Service Pumps**<br>Mr. G. Robert Carlyon<br>Utilities Superintendent<br>(810) 766-7346 | ◆ | | 2 | 40 | | | | ◆ | | | Vertically mounted double suction split case | | ◆ |
| **City of Fenton**<br>**Water Treatment Plant**<br>Mr. Leslie Bland<br>Director of Public Works<br>(810) 629-2261 | ◆ | | 4 | 4 | | ◆ | | ◆ | ◆ | ◆ | Vertical turbine | ◆ | |
| **City of Fenton**<br>**Well No. 8**<br>Mr. Leslie Bland<br>Director of Public Works<br>(810) 629-2261 | ◆ | | 1 | 1 | | ◆ | ◆ | | ◆ | ◆ | Vertical turbine | ◆ | |
| **City of Howell**<br>**Water Treatment Plant**<br>Mr. Terry Wilson<br>Director of Public Works<br>(517) 546-7510 | ◆ | | 4 | 0.5 | | ◆ | | ◆ | ◆ | ◆ | Double suction split case | ◆ | |
| **City of Howell**<br>**Well No. 8**<br>Mr. Terry Wilson<br>Director of Public Works<br>(517) 546-7510 | ◆ | | 1 | 1 | | ◆ | ◆ | | ◆ | ◆ | Vertical turbine | ◆ | |
| **Marquette Township**<br>**Northwoods Booster Station**<br>Mr. Kirk E. Page<br>Super. of Public Works<br>(906) 228-6220 | ◆ | | 4 | 3 | | ◆ | | ◆ | ◆ | ◆ | Double suction split case | ◆ | |
| **City of Berea, Ohio**<br>**Groza Field Booster Station**<br>Mr. James Brown<br>Director of Public Services<br>(440) 826-5816 | ◆ | | 2 | 4 | | ◆ | ◆ | | | ◆ | Double suction split case | ◆ | |
| **City of Berea, Ohio**<br>**Lincoln Street Booster Station**<br>Mr. James Brown<br>Director of Public Services<br>(440) 826-5816 | ◆ | | 2 | 4 | | ◆ | ◆ | | | ◆ | Double suction split case | ◆ | |

| Stantec | Water | Wastewater | No. of Pumps | Total Capacity (mgd) | Voltage | | Drive System | | Generator | SCADA | Type of Pumps | Facility | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | 4800 V | 480 V | VFD | Across Line | | | | New | Retrofit |
| **Grosse Pointe Park Stormwater Pump Station**<br>Mr. Dale Krajniak<br>City Manager<br>(313) 822-6200 | | ♦ | 6 | 400 | ♦ | | | ♦ | | ♦ | Vertical turbine | ♦ | |
| **Western Townships Utilities Authority Lower Rouge Pump Station**<br>Mr. Aaron Sprague<br>(734) 453-2793 | | ♦ | 8 | 103 | | ♦ | ♦ | | ♦ | ♦ | Vertical non-clog | ♦ | |
| **Western Townships Utilities Authority Middle Rouge Pump Station**<br>Mr. Aaron Sprague<br>(734) 453-2793 | | ♦ | 6 | 86 | | ♦ | | ♦ | | ♦ | Screw pumps | ♦ | |
| **City of Adrian West Side Booster Station**<br>Mr. Shane Horn<br>Superintendent<br>(517) 263-0923 | ♦ | | 3 | 3 | | ♦ | | ♦ | ♦ | ♦ | Double suction split case | ♦ | |
| **Northville Township Beck Road Booster Station**<br>Mr. Donald Weaver<br>Director of Water and Sewer Department<br>(248) 662-0495 | ♦ | | 3 | 3 | | ♦ | | ♦ | ♦ | ♦ | Double suction split case | ♦ | |
| **Pittsfield Township Sanitary Lift Stations**<br>Mr. Mike Luptowski<br>Director of Utilities<br>(734) 822-2109 | | ♦ | 15 | 13 | | ♦ | | | ♦ | ♦ | Vertical pedestal | | ♦ |
| **Pittsfield Township Textile Road Booster Station**<br>Mr. Mike Luptowski<br>Director of Utilities<br>(734) 822-2109 | ♦ | | 6 | 18 | | ♦ | ♦ | | ♦ | ♦ | Double suction split case | ♦ | |
| **Pittsfield Township District 3**<br>Mr. Mike Luptowski<br>Director of Utilities<br>(734) 822-2109 | ♦ | | 3 | 3 | | ♦ | ♦ | | ♦ | ♦ | Double suction split case | ♦ | |

| Stantec | Water | Wastewater | No. of Pumps | Total Capacity (mgd) | Voltage | | Drive System | | Generator | SCADA | Type of Pumps | Facility | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | 4800 V | 480 V | VFD | Across Line | | | | New | Retrofit |
| **Pittsfield Township Morgan Road**<br>Mr. Mike Luptowski<br>Director of Utilities<br>(734) 822-2109 | ♦ | | 1 | 2 | | ♦ | | ♦ | ♦ | ♦ | Double suction split case | | ♦ |
| **Genesee County Drain Comm. Brent Run**<br>Mr. Joseph M. Goergen<br>Plant Manager<br>Anthony Ragnone<br>Treatment Plant<br>(810) 232-7662 | | ♦ | 2 | 70 | ♦ | | ♦ | | | ♦ | Vertical non-clog | | ♦ |
| **Genesee County Drain Comm. Flushing Park**<br>Mr. Joseph M. Goergen<br>Plant Manager<br>Anthony Ragnone<br>Treatment Plant<br>(810) 232-7662 | | ♦ | 2 | 50 | ♦ | | ♦ | | | ♦ | Vertical non-clog | | ♦ |
| **City of Midland Nelson Street Pump Station**<br>Mr. Kevin Babinski<br>Plant & Collection Systems Supervisor<br>(989) 837-3502 | | ♦ | 5 | 14 | | ♦ | | ♦ | ♦ | ♦ | Submer-sible | ♦ | |
| **City of Midland Valley Pump Station**<br>Mr. Kevin Babinski<br>Plant & Collection Systems Supervisor<br>(989) 837-3502 | | ♦ | 4 | 15 | | ♦ | ♦ | | ♦ | ♦ | Hori-zontal non-clog | | ♦ |
| **City of Monroe Settled Wastewater Pump**<br>Ms. Connie Ochs<br>Plant Superintendent<br>(734) 241- 5926 | | ♦ | 1 | 18 | | ♦ | ♦ | | | ♦ | Vertical non-clog | | ♦ |
| **West Bloomfield Township Lift Station 3**<br>Mr. Ed Haapala<br>(248) 451-4785 | | ♦ | 3 | 2 | | ♦ | | | ♦ | ♦ | Vertical pedestal | | ♦ |
| **West Bloomfield Township Lift Stations 5 & 10**<br>Mr. Ed Haapala<br>(248) 451-4785 | | ♦ | 4 | 0.4 | | ♦ | | | ♦ | ♦ | Submer-sible | ♦ | |

| Stantec | Water | Wastewater | No. of Pumps | Total Capacity (mgd) | Voltage | | Drive System | | Generator | SCADA | Type of Pumps | Facility | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | 4800 V | 480 V | VFD | Across Line | | | | New | Retrofit |
| **West Bloomfield Township Lift Stations 19, 20 & 22** Mr. Ed Haapala (248) 451-4785 | | ♦ | 6 | 2 | | ♦ | | | ♦ | ♦ | Submer-sible | | ♦ |
| **City of Howell West Street Pump Station** Mr. Terry Wilson Director of Public Works (517) 546-7510 | | ♦ | 2 | 1 | | ♦ | | ♦ | ♦ | ♦ | Above Ground Self-Priming | ♦ | |
| **Village of Quincy South Main St. Pump Station** Mr. Eric Zuzga Village Manager (517) 639-9065 | | ♦ | 2 | 0.5 | | ♦ | | ♦ | | ♦ | Submer-sible | | ♦ |
| **Northville Township Sheldon Road Booster Station** Mr. Donald Weaver Director of Water and Sewer Department (248) 662-0495 | ♦ | | 3 | 3 | | ♦ | ♦ | | ♦ | ♦ | Double Suction Split Case | ♦ | |
| **City of Howell Lake Street Pump Station** Mr. Terry Wilson Director of Public Works (517) 546-7510 | | ♦ | 2 | 0.5 | | ♦ | | ♦ | | ♦ | Above Ground Self Priming | | ♦ |
| **City of Midland East Ashman/Waldo Pump Station** Mr. Kevin Babinski Plant & Collection Systems Supervisor (989) 837-3502 | | ♦ | 2 | 3 | | ♦ | | ♦ | ♦ | ♦ | Submer-sible | | ♦ |
| **Pittsfield Township Lohr Road Pump Station** Mr. Mike Luptowski Director of Utilities (734) 822-2109 | | ♦ | 3 | 2 | | ♦ | | ♦ | ♦ | ♦ | Vertical Solids Handling | | ♦ |
| **Pittsfield Township Michigan Ave. Pump Station** Mr. Mike Luptowski Director of Utilities (734) 822-2109 | | ♦ | 3 | 2 | | ♦ | | ♦ | ♦ | ♦ | Vertical Solids Handling | | ♦ |

| Stantec | Water | Wastewater | No. of Pumps | Total Capacity (mgd) | Voltage | | Drive System | | Generator | SCADA | Type of Pumps | Facility | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | 4800 V | 480 V | VFD | Across Line | | | | New | Retrofit |
| **Pittsfield Township Platt/Merritt Road Pump Station**<br>Mr. Mike Luptowski<br>Director of Utilities<br>(734) 822-2109 | | ♦ | 3 | 1 | | ♦ | | ♦ | ♦ | ♦ | Drypit Chopper | | ♦ |
| **Pittsfield Township Ashford Village Pump Station**<br>Mr. Mike Luptowski<br>Director of Utilities<br>(734) 822-2109 | | ♦ | 2 | 0.3 | | ♦ | | ♦ | ♦ | ♦ | Drypit Chopper | | ♦ |
| **Pittsfield Township Meadow View Pump Station**<br>Mr. Mike Luptowski<br>Director of Utilities<br>(734) 822-2109 | | ♦ | 2 | 0.5 | | ♦ | | ♦ | ♦ | ♦ | Drypit Chopper | | ♦ |
| **City of Midland East Patrick St. Pump Station**<br>Mr. Kevin Babinski<br>Plant & Collection Systems Supervisor<br>(989) 837-3502 | | ♦ | 2 | 1.3 | | ♦ | | ♦ | | ♦ | Submer-sible | | ♦ |
| **City of Cadillac Sunnyside Pump Station**<br>Mr. Larry Campbell<br>Director of Utilities<br>(231) 775-0181 | | ♦ | 2 | 0.2 | | ♦ | | ♦ | | ♦ | Submer-sible | | ♦ |
| **State of Michigan Department of Management and Budget**<br>Mr. Ed Wilkins<br>Project Manager<br>(517) 241-4499 | | ♦ | 2 | 0.6 | | ♦ | | ♦ | | ♦ | Submer-sible | ♦ | |
| **Genesee County Drain Commissioner Pump Station #9**<br>Mr. Tim Davidek<br>Chief of Operations and Maintenance<br>(810) 732-7870 | | ♦ | 2 | 3.4 | | ♦ | ♦ | | | ♦ | Submer-sible Chopper | | ♦ |

# Appendix:

Personnel Profiles

# George A. Tsakoff
PROJECT MANAGER

Stantec

George Tsakoff is an Stantec project manager with exceptional experience in municipal engineering. Currently the Stantec representative to the City of Novi, Northville Township and Salem Township, George has also worked with numerous communities on water, wastewater and infrastructure projects including SAD, municipal complex design, site plan review and construction engineering. As a Project Manager, George is responsible for the basic design and daily activities of a project including the coordination of Stantec's support staff, maintaining work within project budgets, working with permitting agencies and coordinating permitting, client contact and following Stantec's QA/QC guidelines.

EDUCATION

BS, Civil Engineering, Michigan State University, East Lansing, Michigan, 1998

Soil Erosion and Sedimentation Control for Administering Part 91, State of Michigan Department of Environmental Quality, Ann Arbor, Michigan, 2006

Stormwater Management Operator, State of Michigan Department of Environmental Quality, Ann Arbor, Michigan, 2006

PROFESSIONAL ASSOCIATIONS

Member, American Public Works Association

Member, American Society of Civil Engineers

# George A. Tsakoff
PROJECT MANAGER

Stantec

## PROJECT EXPERIENCE

### ROADWAYS

New Model Colony Infrastructure Design, Ontario, California (Project Manager)

Municipal Complex Parking Lot Improvements, Northville Township, Michigan (Project Manager)

Haggerty Road Pathway, Northville Township, Michigan (Project Manager)

Community Park Improvements, Northville Township, Michigan (Project Manager)

Northville Road Bike Path Design and Construction Engineering, Northville Township, Michigan (Project Manager)

Community Park Entrance Drive Design and Construction Engineering, Northville Township, Michigan (Project Manager)

Northville Commons Subdivision Pathway SAD Design and Construction Engineering, Northville Township, Michigan (Project Manager)

2004 Sidewalk Gap Design and Construction Engineering, Novi, Michigan (Project Manager)

Taft and Novi Road Pathway Design, Novi, Michigan (Project Manager)

### WASTEWATER

New Model Colony Infrastructure Design, Ontario, California (Project Manager)

Design and Construction Standards Update, Novi, Michigan (Project Manager)

Development of Design and Construction Standards, Salem Township, Michigan (Project Manager)

Sheldon Road Sanitary Sewer Master Plan Layout, Northville Township, Michigan (Project Manager)

Smock Road Sanitary Sewer SAD, Northville Township, Michigan (Project Manager)

Coldwater Lake Sanitary Sewer Extension, Coldwater, Michigan

RPO Round IIB Activities, Northville Township, Michigan (Project Manager)

Water and Sanitary Sewer Master Plan, Salem Township, Michigan (Project Manager)

### WATER

New Model Colony Infrastructure Design, Ontario, California (Project Manager)

Bradner Road Water Main Design and Construction Engineering, Northville Township, Michigan (Project Manager)

Water and Sanitary Sewer Master Plan, Salem Township, Michigan (Project Manager)

Northville Road Water Main Design and Construction Engineering (Project Manager)

Five Mile Road Water Main Replacement Design and Construction Engineering, Northville Township, Michigan (Project Manager)

Water System Master Plan, Northville Township, Michigan (Project Manager)

Development of Design and Construction Standards, Salem Township, Michigan (Project Manager)

** denotes projects completed with other firms*

Stantec

General Engineering Services, Salem Township, Michigan (Client Manager)

General Engineering Services, Northville Township, Michigan (Client Manager)

Design and Construction Standards Update, Novi, Michigan (Project Manager)

Grand Court/West Park Drive Water Service Design and Construction Engineering, Novi, Michigan (Project Manager)

General Engineering Services, Novi, Michigan (Client Manger)

** denotes projects completed with other firms*

# Aaron A. Uranga PE

SENIOR PROJECT ENGINEER

Stantec

Aaron Uranga is a member of Stantec's Environmental Infrastructure team, which focuses on the engineering of water and wastewater facilities, from project design through project construction. His experience encompasses site development, water and wastewater pumping facility design, resident engineering on water, wastewater, and stormwater construction projects, and stormwater studies and modeling. His modeling experience includes XP-SWMM, HEC-RAS, H2ONET

As a Senior Project Engineer, Aaron's responsibilities include detailed design of water/wastewater facilities, coordination with permitting agencies and coordination between design disciplines. As resident engineer on construction projects, he serves as the owner's onsite representative; with responsibilities including interfacing with the owner, extensive onsite communication with contractors, observing project construction, monitoring project progress, assuring adherence to construction requirements and contract specifications, coordinating construction testing services, reviewing contractor submittals and responding to construction inquiries.

EDUCATION

MS, Civil Engineering (Hydraulics), University of Michigan, Ann Arbor, Michigan, 1999

BS, Civil and Environmental Engineering, University of Michigan, Ann Arbor, Michigan, 1997

REGISTRATIONS

Professional Engineer #49094, State of Michigan

PROFESSIONAL ASSOCIATIONS

Member, American Society of Civil Engineers

# Aaron A. Uranga PE

SENIOR PROJECT ENGINEER

Stantec

## PROJECT EXPERIENCE

### WASTEWATER

2005 Pump Station Upgrades, Genesee County Drain Commissioner, Genesee County, Michigan (Project Engineer)

2006 Sanitary Pump Station Improvements, Pittsfield Township, Michigan (Project Engineer)

Flushing Park Pump 3 and 4 Valve Replacement, Genesee County Drain Commissioner, Genesee County, Michigan (Project Manager)

Sanitary Lift Station 3 Improvements, West Bloomfield, Michigan (Project Manager)

Sanitary Lift Station 5 and 10 Conversion, West Bloomfield, Michigan (Project Manager)

Sanitary Sewer System Master Plan, Cadillac, Michigan (Project Engineer)

Tertiary Filtration Study, City of Cadillac, Michigan (Project Engineer)

### WATER

5 MG Ground Storage Reservoir, Pittsfield Township, Michigan (Project Engineer)

Sewer System Study, Village of Lexington, Michigan (Project Engineer)

Sheldon Road Booster Station, Northville Township, Michigan (Project Engineer)

Textile Road Booster Station, Pittsfield Township, Michigan (Resident Engineer)

Water System Master Plan, City of Southfield, Michigan (Project Engineer)

Water System Study, Northville Township, Michigan (Project Engineer)

Water System Study, Village of Barton Hills, Michigan (Project Engineer)

Water System Study, Ann Arbor Township, Michigan (Project Engineer)

Water System Study, Pittsfield Township, Michigan (Project Engineer)

### OIL & GAS

Fort Hills CS&S Bitumen Production and Bitumen Upgrading Facilities and Infrastructure DBM Preparation, Petro-Canada Oil Sands Inc., Fort McMurray and Sturgeon County, Alberta (Senior Project Engineer)

*Took lead role in the creation of the Basis of Design Document for the wastewater treatment plant including summarizing the design assumptions, influent parameters, and effluent quality requirements. Served as primary point of contact with engineers and representatives for various proposed treatment process equipment including screening, membrane bioreactor, solids dewatering, and UV disinfection. Performed volumetric and mass balance computations to estimate flow equalization requirements, solids generation rate, and onsite solids storage requirements. Assisted in conceptual layout treatment equipment and plant site.*

### HEALTHCARE

Providence Hospital - Combined Sewer Study, Southfield, Michigan (Project Engineer)

** denotes projects completed with other firms*

Aaron A. Uranga PE
SENIOR PROJECT ENGINEER

Stantec

CORPORATE / OFFICE

66K Site Design, Ann Arbor, Michigan (Project Engineer)

Ricardo Inc. Site Design, Ann Arbor, Michigan (Project Engineer)

WATER RESOURCES MANAGEMENT

Cannon Drain CLOMR (Project Engineer)

Clee Drain CLOMR (Project Engineer)

Derbyshire Drain Improvements (Project Engineer)

Fowler Creek Hydraulic Analysis (Project Engineer)

Lincoln Farms Outlet Certification, Augusta Township, Michigan (Project Engineer)

Northeast Area Park Stormwater Demonstration, Washtenaw County, Michigan (Project Engineer)

Outfall Erosion Control, Canton Township, Michigan (Project Engineer)

Quail Ridge Drain Improvements, Northville Township, Michigan (Project Engineer)

Site Erosion Control, Ann Arbor, Michigan (Project Engineer)

Tupper Brook Analysis (Project Engineer)

Vanderbilt at Williamsburg Hydrologic and Hydraulic Analyses (Project Engineer)

West Branch of Paint Creek, Washtenaw County, Michigan (Project Engineer)

Woodland Ridge Hydrologic Analysis, Green Oak Township, Michigan (Project Engineer)

** denotes projects completed with other firms*

# Gregory S. Schofer

IT PROJECT MANAGER

Stantec

Greg Schofer is a multi-disciplined professional serving as a project manager specializing in industrial instrumentation and controls with electrical design capabilities. Greg also serves as the local office IT Department Manager. With years of versatile experience in computers, programmable logic controllers, SCADA systems and water and wastewater electrical systems, Greg has worked closely with numerous municipalities to update and support advanced computer technology and the latest electrical systems.

Experience includes the design and integration of plant controls, integration of communication schemes and plans, electrical power quality studies and electrical systems. Systems that Greg has engineering include Human Machine Interface screens with fault tolerant communication schemes using the latest Programmable Logic Controllers from Allen-Bradley, General Electric, Opto-22 and Bristol Babcock. Greg also has been involved with the latest security practices and policies of Homeland Security Act of the Environmental Protection Agency as it related to water and wastewater treatment plants.

Greg also has been involved in the design, installation and testing of Information Technologies projects. These projects have included fiber optics, infrastructure and facilities design, on-site system reviews and "Turn Key" Graphical Information System solutions.

EDUCATION

AS, Electrical/Electronics Engineering, Schoolcraft College, Livonia, Michigan, 1991

Technical Degree in Electrical/Electronics/Industrial Technologies, National Institute of Technology, Detroit, Michigan, 1989

# Gregory S. Schofer

IT PROJECT MANAGER

Stantec

## PROJECT EXPERIENCE

### CONTROL SYSTEMS

Control Replacement Systems, Western Townships Utilities Authority (WTUA), Michigan

SCADA and Booster Stations, Pittsfield Chater Township, Michigan

Well House and Plant Monitoring, Marshall, Michigan

Genesee County Drain Commissioner - Wide Area Data Collection, Genesee, Michigan

University of Michigan - Point-to-Point Industrial Communication, Lexington and Ann Arbor, Michigan

Wide Area Spread Spectrum Telemetry, Midland, Michigan

Wide Area Motorola MOSCAD Telemetry, Pittsfield Township, Michigan

GIS Server Workstations, Wayne, Michigan

Chemical Feed Building Expansion, Marysville, Michigan

IT Infrastructure/Computer Center, Howell, Michigan

Western Townships Utilities Authority - Controls Upgrade and Replacement, Michigan

IBM Building - Communication and Equipment Layout*

Detroit Water and Sewerage Dept - Communication Infrastructure, Detroit, Michigan

Detroit Water and Sewerage Dept - Chlorination/Dechlorination, Detroit, Michigan

Spread Spectrum Point-to-Point Unlicensed, Fenton, Michigan

Water Controls Claricones and SCADA, Fenton, Michigan

### ELECTRICAL ENGINEERING

Western Townships Utilities Authorities - Middle and Lower Rouge Pump Stations, Canton, Michigan

Western Townships Utilities Authority - 650 HP VFD Replacement, Canton, Michigan

Data Logging and Control Design - Water Treatment Plant, Adrian, Michigan

Communication and Control Design Water and Wastewater Systems, Marshall, Michigan

University of Michigan Medical Center - Electrical Riser Diagrams, Ann Arbor, Michigan

*University Hospital Facilities, Planning and Design*

University of Michigan - Betsey Barbour House and Helen Newberry Residence Hall Facilities, Ann Arbor, Michigan

*Electrical System Study, Planning and Design*

University of Michigan Canton Health Center - Saltz Center, Canton, Michigan

Lexington-Worth Authority Water Filtration Plant, Lexington, Michigan

Standby Generators, West Bloomfield Township, Michigan

Sewage Lift Station, Midland, Michigan

Deep Well Construction - Environmental Disposal System

** denotes projects completed with other firms*

Stantec

Genesee County ARTP - ARTP Enhancement, Genessee County, Michigan

City of Marquette - Water Well Fields and SCADA, Marquette, Michigan

City of Marquette - Master Plan, Marquette, Michigan

OIL & GAS

Fort Hills CS&S Bitumen Production and Bitumen Upgrading Facilities and Infrastructure DBM Preparation, Petro-Canada Oil Sands Inc., Fort McMurray and Sturgeon County, Alberta (Instrumentation & Controls and Electrical Engineer)

*Responsible for the instrumentation, controls, and electrical design aspects for the WWTP based on the process diagrams. Duties included the development of a one-line diagram based on equipment load, controls and instrumentation input/output logic schemes, placement of electrical equipment including sizing and the preparation of an input/output list. Assisted in the sequence of operations related to proposed treatment process.*

# Glen R. Wiczorek PE

ASSOCIATE, ENVIRONMENT

Stantec

Glen Wiczorek possesses a valuable combination of project management, project engineering, resident engineering and construction experience. While his expertise lies with water/wastewater engineering, his varied design experience extends to site development, structural design, building construction and underground utility design. As a versatile Project Manager, Glen is capable of seeing projects through all phases of development including study, design and construction phases. Glen's design phase responsibilities include the development of design basis, coordination with clients, detailed design of water/wastewater systems, supervision of Stantec staff and coordination of all disciplines. His construction phase responsibilities include extensive communication with clients, resident engineers and contractors, attending progress meetings, shop drawing review and all construction administration.

EDUCATION

BS, Civil and Environemental Engineering, University of Michigan, Ann Arbor, Michigan, 1995

REGISTRATIONS

Professional Engineer #46194, State of Michigan

PROFESSIONAL ASSOCIATIONS

Member, American Society of Civil Engineers

Member, American Concrete Institute

Glen R. Wiczorek PE
ASSOCIATE, ENVIRONMENT

Stantec

PROJECT EXPERIENCE

WASTEWATER

15 MGD Submersible Pump Station Design, Midland, Michigan

Above Ground Self-Priming Pump Stations, Howell, Michigan

Anthony Ragnone Treatment Plant - 160 MGD Disinfection Facility Design, Genesee County, Michigan

City of Cadillac WWTP - 36-Inch Diameter Screw Pump Replacement, Cadillac, Michigan

City of Cadillac WWTP - Ferric Chloride Feed System Design, Cadillac, Michigan

City of Cadillac WWTP - Ultraviolet Disinfection Facility Design

City of Marshall WWTP - Bio-Solids Thickening Facility and Lime Stabilization Design, Marshall, Michigan

City of Marysville WWTP - Sodium Hypochlorite Feed System Design, Marysville, Michigan

City of Monroe WWTP - Bio-Solids Thickening System Design, Monroe, Michigan

City of Warren WWTP - Mechanical Integrity Evaluation of Disinfection System, Warren, Michigan

Combined Sewer Overflow Separation, Grosse Pointe Park, Michigan

Linden WWTP - 30-Foot Vertical Step Screen Installation, Genesee County, Michigan

Submersible Pump Station Design, Cadillac, Midland, and Quincy, Michigan

Warren Tank Plant - 150-Acre Stormwater Collection System, Warren, Michigan

WATER

1 MG Elevated Storage Tank, Northville Township, Michigan

13,000 GPM Booster Station, Pittsfield Township, Michigan

30" Water Transmission Main – 25,000 ft, Pittsfield Township, Michigan

5 MG Ground Storage Reservoir, Pittsfield Township, Michigan

Berea WTP - Condition Assessment, City of Berea, Ohio

City of Adrian WTP - Filter Rehabilitation, Valve and Actuator Replacement, Turbidimeter Installation, Adrian, Michigan

City of Monroe WTP - Disinfection Alternatives Study, Monroe, Michigan

City of Monroe WTP - Sodium Hypochlorite Feed System Design, Monroe, Michigan

Northville Booster Station, Northville Township, Michigan

Northville Watermain Improvements, Northville Township, Michigan

Watermain Design, River Rouge, Michigan

** denotes projects completed with other firms*

Glen R. Wiczorek PE
ASSOCIATE, ENVIRONMENT

Stantec

OIL & GAS

Fort Hills CS&S Bitumen Production and Bitumen Upgrading Facilities and Infrastructure DBM Preparation, Petro-Canada Oil Sands Inc., Fort McMurray and Sturgeon County, Alberta (Project Manager)

*Responsible for the conceptual design including the evaluation and summary of various treatment options ultimately leading to the selection of membrane bioreactor, centrifuge dewatering and UV disinfection. Provided oversight for the preparation of the WWTP process flow diagram and the conceptual layout of the facility and site. Managed the development of the DBM for the WWTP overseeing and reviewing the work of the team.*

** denotes projects completed with other firms*

# Theodore M. Meadows

SENIOR CONSTRUCTION TECHNICIAN

Stantec

Ted Meadows has exceptional experience in municipal construction engineering. Currently the construction operations supervisor for projects within the City of Novi and Northville Township, Ted has worked in the construction phase of numerous public works and private development projects on behalf of our municipal clients. As the supervisor of the construction staff, Ted is responsible for the daily construction activities for all projects out of the office including staff scheduling, construction inspection procedures, staff training, as-built plan review, punch lists and project close-out.

EDUCATION

BS, Environmental Science, University of Kansas, Lawrence, Kansas, 1997

MDOT Certified Aggregate Technician, Ferris State University, Big Rapids, Michigan, 2007

MDOT Certified Density Technician, Ferris State University, Big Rapids, Michigan, 2007

Certified for Part 91 Soil Erosion and Sedimentation Control, Michigan Department of Environmental Quality, Jackson, Michigan, 2004

Heat Fusion Techniques, ISCO Industries HDPE Fusion Academy, Howell, Michigan, 2006

Concrete Paving Inspection, Michigan Department of Transportation, Lansing, Michigan, 2007

USDOT HAZMAT Certification, Troxler Electronic Laboratories, Inc., Ann Arbor, Michigan, 2007

Laboratories Certified Radiation Safety Officer, Troxler Electronic Laboratories, Inc., Okemos, Michigan, 2005

Certified Concrete Technician Level I, Michigan Concrete Paving Association, Novi, Michigan, 2007

Certified Concrete Construction Inspection, Michigan Concrete Paving Association, Novi, Michigan, 2007

Concrete Field Testing Technician, American Concrete Institute, Novi, Michigan, 2007

# Theodore M. Meadows

SENIOR CONSTRUCTION TECHNICIAN

Stantec

PROJECT EXPERIENCE

CONSTRUCTION DOCUMENTATION & REPORTING

General Engineering and Construction Services, Northville Township, Michigan (Senior Construction Technician)

General Engineering and Construction Services, City of Novi, Michigan (Senior Construction Technician)

MULTI-UNIT / FAMILY RESIDENTIAL

Lenox Place Subdivision, City of Novi, Michigan (Senior Construction Technician)

Liberty Park Subdivision, City of Novi, Michigan (Senior Construction Technician)

Island Lake 4B-1 Subdivision, City of Novi, Michigan (Senior Construction Technician)

PARKING

Northville Community Park Paving Improvements, Northville Township, Michigan (Senior Construction Technician)

URBAN LAND ENGINEERING

Beck North Phase II Industrial Park, City of Novi, Michigan (Senior Construction Technician)

WASTEWATER

Livingston/Mill Street Repairs, Village of Pinckney, Michigan (Senior Construction Technician)

SAD 170 Phases 1A & 1B, City of Novi, Michigan (Senior Construction Technician)

WATER

File Mile Road Water Main Replacement, Phase I (Senior Construction Technician)

Northville Road Water Main Replacement, Northville Township, Michigan (Senior Construction Technician)

Pump Station Improvements, Village of Lexington, Michigan (Senior Construction Technician)

Intake Improvements, Village of Lexington, Michigan (Senior Construction Technician)

Water Main Improvements, Village of Lexington, Michigan (Senior Construction Technician)

Lexington-Worth Water Main Utility System, Lexington-Worth Township, Michigan (Senior Construction Technician)

Grand Court/West Park Drive Water Service, City of Novi, Michigan (Senior Construction Technician)

Bradner and Franklin Road Water Main Replacement, Northville Township, Michigan (Senior Construction Technician)

** denotes projects completed with other firms*