

CITY of NOVI CITY COUNCIL

Agenda Item C
January 5, 2009

SUBJECT: Approval to award a contract for engineering and surveying services for the City Land Survey Benchmark Re-Establishment project to Stantec Consulting Michigan, Inc., for a not-to-exceed fee of \$61,400.

SUBMITTING DEPARTMENT: Engineering *RA*

CITY MANAGER APPROVAL: *[Signature]*

EXPENDITURE REQUIRED	\$60,000 (Land Survey Benchmarks) \$1,400 (Pressure Reducing Valve Elevations)
AMOUNT BUDGETED	\$60,000 (Land Survey Benchmarks)
APPROPRIATION REQUIRED	\$1,400
LINE ITEM NUMBER	101-447.00-805.000 (Land Survey Benchmarks) 592-592.00-805.021 (Update Water Master Plan)

BACKGROUND INFORMATION:

The City of Novi has a vertical land survey benchmark network that was established in the late 1980s and updated in the late 1990s. The benchmarks in the network serve as reference points for construction projects by providing precise vertical elevation information throughout the City. This network plays an important role in site development and capital construction projects by establishing a project's vertical control. Vertical control is critical to setting a building's finished floor elevation, determining a detention basin's outlet elevation, establishing a dam's 100-year storm flood protection elevation, determining utility invert elevations, or identifying floodplains. Many of the City's benchmarks were established many years ago and either cannot be located or have been disturbed or damaged so that they are no longer accurate.

The finished product will be a comprehensive benchmark network with each point's elevation. This will allow the points to be added to the GIS system, making them easier to locate in the field. The new format will also allow the data to be posted on the City's website for access by the users (i.e., consultants, engineers, land surveyors, developers, and City staff).

The attached Request for Proposals (RFP) was sent to the six engineering consulting firms that have been pre-qualified for roadway engineering work.

The engineering scope consists of completing the land survey for benchmark elevations and a second alternate scope (Task B) that is discussed in further detail in the attached memo from Brian Coburn dated December 22, 2008. The additional \$1,400 for Task B is proposed to be funded from the Water & Sewer Fund as a recommendation from the Water System Master Plan.

Four proposals were received and each was evaluated using Qualifications Based Selection (QBS) procedures, with a greater weight assigned to the consultant's approach to the project. The results of staff review of the proposals are as follows:

Firm	Benchmark (Task A)	PRV Elevations (Task B)	Total Engineering Fee	Staff Review Score	Rank
Stantec Consulting Michigan	\$60,000	\$1,400	\$61,400	1625	1
Spalding DeDecker	\$53,750	\$4,000	\$57,750	1405	2
Anderson Eckstein & Westrick	\$60,000	\$4,000	\$64,000	1102.5	3
Orchard Hiltz & McCliment	\$60,000	\$4,000	\$64,000	867.5	4

Of the four firms that submitted proposals, Stantec had the highest staff review score and met all requirements listed in the RFP (see attached Stantec proposal dated December 18, 2008 and Engineering staff's proposal scoring summary for reference). Although Spalding DeDecker proposed the lowest fee, Stantec will provide more benchmarks as part of the finished product than Spalding DeDecker.

Stantec has completed engineering services for many recent projects for the City including the 2008 Sidewalk/Pathway Program, Water Study Master Plan (2008), and Eleven Mile and Meadowbrook Road Signalization.

The project is slated for completion by the end of fiscal year 2008-09.

RECOMMENDED ACTION: Approval to award a contract for engineering and surveying services for the City Land Survey Benchmark Re-Establishment project to Stantec Consulting Michigan, Inc., for a not-to-exceed fee of \$61,400.

	1	2	Y	N
Mayor Landry				
Council Member Crawford				
Council Member Gatt				

	1	2	Y	N
Council Member Margolis				
Council Member Mutch				
Council Member Staudt				

SCORING SUMMARY

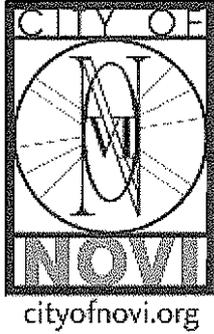
Project Description: Benchmarks

RANK 1= LOW, x= BEST (x = number of firms repoding)

TOTAL SCORES	<i>Item weight:</i>	15	40	25	20	Totals	Rank
	1	2	3	4			
Anderson Eckstein & Westrick	7.5	12.5	12	9.5	1102.5	3	
Orchard Hiltz & McCliment	7.5	6	7	17	867.5	4	
Stantec	15	19	18	9.5	1625	1	
Spalding DeDecker	20	12.5	13	14	1405	2	
TOTALS	50	50	50	50			

SCORING CRITERIA

1. Engineering Fee
2. Evaluation of Approach and Understanding of Project, Evaluation of Schedule, and Proposed Staff
3. Analysis of subjective statements applicable to the project as required on the RFP (Value added items)
4. Evaluation of past performance on City projects



MEMORANDUM

TO: ROB HAYES, PE; CITY ENGINEER
FROM: BRIAN COBURN, P.E.; CIVIL ENGINEER *BLC*
SUBJECT: PRV ELEVATIONS AND PRESSURE DISTRICT BOUNDARY
DATE: DECEMBER 22, 2008

The attached excerpt from the recently completed Water System Master Plan includes a Tier 1 recommendation to: 1) perform a survey of all system pressure reducing valve (PRV) elevations, 2) review the hydraulic grade line required to maintain proper system pressures within each pressure district and 3) redevelop pressure settings for each individual PRV. The second and third parts of the recommendation can be completed by Engineering and Water & Sewer staff, the first task (completing the survey elevations) must be completed by consultant.

The land survey benchmark project provides a perfect opportunity to save on the cost of the survey work to obtain the PRV elevations. The consultant's surveyors will be completing their work in close proximity to most of the City's PRV locations and can therefore incorporate the additional survey into the project with little effort.

The Water System Master Plan was estimated to cost \$50,000. We were able to complete and deliver the finished product last month for a final cost of \$39,000. The PRV elevations survey (identified as optional Task B in the RFP) could be funded from the unused portion of this account.

RECOMMENDATIONS

Stantec has generated several recommendations based on the review and analysis of the water system. Recommended improvements were developed with the goal of meeting storage, pressure and fire flow requirements for existing conditions and build-out conditions. Additional recommendations are provided based on issues that were identified during data collection and system calibration. The recommendations are provided based upon a 3 tier system as follows:

TIER LEVEL	PRIORITY
Tier 1	High Priority projects with immediate achievable benefits to operations and maintenance of the system or necessary to meet Tier 2 recommendations.
Tier 2	Medium Priority projects with achievable benefits to operations and maintenance of the system but require additional feasibility studies and/or longer term financial planning or provide moderate flow, water quality improvements and system redundancy.
Tier 3	Lower Priority projects that are growth driven and can be provided by development, provide future development support, or provide some flow and water quality improvements.

These tiered recommendations are shown in **Figure E-1** and summarized below with their corresponding Capitol Improvement Plan (CIP) numbers.

Tier 1

PRV Improvements

Estimated Cost \$706,000

CIP# 091-07 Perform a survey of all system PRV transducer elevations, review the hydraulic grade line required to maintain proper system pressures within each pressure district and redevelop pressure settings for each individual PRV. Estimated cost for this improvement is \$4,000. 

- Establish a hydraulic grade line of 1,091 feet at the High/Intermediate Pressure District boundary. An estimated cost for this improvement is not provided since it can be completed by City Staff.
- Establish a hydraulic grade line of 1,025 feet at the Intermediate/Lower Pressure District boundary. An estimated cost for this improvement is not provided since it can be completed by City Staff.



**NOTICE - CITY OF NOVI
REQUEST FOR PROPOSALS**

**ENGINEERING SERVICES FOR
THE RE-ESTABLISHMENT OF CITY LAND SURVEY BENCHMARKS**

The City of Novi will receive sealed proposals for **Engineering Services for the Re-Establishment of City Land Survey Benchmarks** according to the specifications of the City of Novi.

Sealed proposals will be received until **3:00 P.M.** prevailing Eastern Time, **Thursday, December 18, 2008.** Proposals shall be addressed as follows:

**CITY OF NOVI
OFFICE OF THE CITY CLERK
45175 W. Ten Mile Rd.
Novi, MI 48375-3024**

All proposals must be signed by a legally authorized agent of the proposing firm.

OUTSIDE OF ENVELOPES MUST BE PLAINLY MARKED

**“Engineering Services for
the Re-Establishment of City Land Survey Benchmarks”**

AND MUST BEAR THE NAME OF THE PROPOSER.

The City reserves the right to accept any or all alternative proposals and award the contract to other than the lowest bidder, to waive any irregularities or informalities or both; to reject any or all proposals; and in general to make the award of the contract in any manner deemed by the City, in its sole discretion, to be in the best interest of the City of Novi.

Sue Morianti
Purchasing Manager
smorianti@cityofnovi.org

Notice dated: December 4, 2008



REQUEST FOR PROPOSALS CITY OF NOVI

ENGINEERING SERVICES FOR THE RE-ESTABLISHMENT OF CITY LAND SURVEY BENCHMARKS

December 4, 2008

This Request for Proposals (RFP) for RE-ESTABLISHMENT OF CITY LAND SURVEY BENCHMARKS is being sent to the firms selected in the Roadway Qualification Process completed on March 19, 2007.

PROJECT DESCRIPTION

Task A—Base Project:

The City of Novi has an existing benchmark network that was established in the late 1980s and updated in the late 1990s. The benchmark network is used to provide access to a common vertical datum throughout the City of Novi for private development and public infrastructure projects. Since the last update of the benchmark network, there have been a number of projects (private development, road widening, etc.) that may have caused the removal, destruction or alteration of the known benchmarks. The existing benchmarks have been included in Exhibit B.

The project will re-establish the benchmark system and will provide a deliverable that will be incorporated into the City's GIS database.

The project shall be completed by June 30, 2008. The budget for the project is \$60,000.

Task B—Alternate Project:

The City of Novi has identified a need to obtain the actual elevations of each of its eleven pressure reducing valves (at eight sites). The elevations will be used by staff to establish HGL settings for each of the PRV stations. More detail about the PRV sites is included in Exhibit B.

The project shall be completed by June 30, 2008. The budget for the project is \$4,000.

SCOPE OF SERVICES

The selected consultant shall conduct the following activities upon authorization by the City Council and the City Engineer:

Task A—Base Project:

The selected consultant shall provide a system that incorporates the benchmarks from the Flood Insurance Rate Maps, Oakland County, and USGS data, etc. and establishes a new city network of benchmarks. The City is requesting a minimum of eight benchmarks per section. The City desires more benchmarks per section, but the effort is governed by the available budget. The consultant should maximize the budget to provide the maximum number of benchmarks within the budgeted amount. As such, the review of the proposals will focus on approach to the project, not the fee.

The consultant shall use the existing benchmarks as a guide to show the general location and number of existing benchmarks for each section. However, it is not the City's intent to reuse the existing benchmarks as it will likely take more effort to attempt to locate, verify and check the existing list than to create new benchmarks.

The new benchmarks shall be created in fixed locations that have little chance of disturbance over the next ten years. The city owned assets (hydrants, manholes, building, etc) located outside of potential development areas are preferred over privately owned assets (power poles, etc). These locations can be discussed in further detail at the initial project meeting.

The finished product will be delivered as a personal geodatabase file that will be added to the City's standard GIS layers. The geodatabase will include the x, y, and z coordinates of the benchmark, a description of the benchmark, and a benchmark number.

Deliverables:

- Benchmark data as required above shall be provided in ESRI Personal Geodatabase format (version 9.2 or later) and shall be delivered on CD/DVD media. The data model shall include the following fields at a minimum: x, y, and z coordinates of the benchmark, a description of the benchmark, and a benchmark number.
 1. The x and y coordinates are intended for general location and can be determined to sub-meter accuracy, but survey grade precision is preferred if it has no impact on cost.
 2. The z coordinate shall accurately establish the vertical elevation to 0.01 feet.
 3. The general description shall assist the surveyor in finding the point in the field, such as "X on north rim of sanitary manhole in front yard of house #39955."
 4. The benchmark number shall be a numbering system agreeable to the consultant and the City.
- The consultant shall provide a Progress Status Report to the Engineering Department every other Friday (beginning on 1/9) using the form provided by the Engineering Department.

Task B—Optional Addition:

Concurrent with Task A, the selected consultant shall obtain the elevation of all system PRV transducers. There are a total of 11 valves at eight locations. The City will facilitate access to all locations with 48 hour notice. The elevations can be obtained without confined space entry into the vault. The data will be used by staff to determine hydraulic grade line and PRV settings. The locations and descriptions for each PRV can be found in Exhibit B.

Deliverables:

- Excel spreadsheet file listing the location, elevation of the valve, description of the valve.

DOCUMENT AND FILE FORMAT

All documents shall be submitted to the City of Novi in an electronic format as specified by the Engineering Division.

CONSULTANT QUALIFICATIONS

The Consultant has been pre-qualified to provide engineering consulting services for 2007-2008 Roadway Projects.

CONSULTANT SELECTION

As a pre-qualified consultant, the selection for this roadway project will be based on the fee proposal, which is labeled as Exhibit A, in addition to the consultant's project understanding, approach, schedule, staffing plan, and past performance on City engineering projects.

<u>Criteria</u>	<u>Weight</u>
Engineering Fee	15%
Evaluation of Approach and Understanding of Project, Evaluation of Schedule, and Proposed Staff	40%
Analysis of subjective statements applicable to the project as required on the RFP (Value added items)	25%
Evaluation of past performance on City projects	20%

By submitting a proposal, the consultant agrees that neither the firm, sub-contractors, nor suppliers will discriminate against any person with respect to hiring or employment on the basis of religion, race, color, national origin, age, sex, height, weight, marital status, or a handicap that is unrelated to the individual's ability to perform tasks particular to a job or position.

The selected consultant will enter into an agreement with the City of Novi to perform the services listed in this Request for Proposals. The City's standard Consulting Engineering Agreement is included as Exhibit C.

PROPOSAL SUBMITTALS

To be considered, sealed fee proposals (an one UNBOUND original and five bound copies) must arrive at the Purchasing Department, 45175 W. Ten Mile Road, Novi, Michigan 48375 on or **before 3:00 PM** Local Prevailing Time, **Thursday, December 18, 2008 addressed to City Clerk's office**, and clearly labeled RE-ESTABLISHMENT OF CITY LAND SURVEY BENCHMARKS. There will be no exceptions to this requirement and the City of Novi shall not be held responsible for late, lost, or misdirected proposals. Submitted proposals shall include:

- The completed fee proposal (Exhibit A)
- A proposed schedule for the project
- A rate sheet or fee schedule depicting the Consultant's hourly rates that could be applied to additional work as may be necessary, for each category of staff that would work on the project.
- A detailed discussion of the proposed approach to the project, in detail (including any value-added concepts and related costs/savings that would improve the overall project (i.e., cost savings, time savings, innovation, etc.)).

USE OF CITY LOGO IN YOUR PROPOSAL IS PROHIBITED.

In the hiring of employees for the performance of work under this contract, neither the contractor, subcontractor, nor any person acting in their behalf shall by reason of race, creed, color, age, height, weight, sex, sexual preference or handicap discriminate against any person qualified to perform the work required in the execution of the contract.

All proposals must remain valid for one hundred twenty (120) days from due date and cannot be withdrawn during this period.

Questions regarding this Request for Proposals may be directed to:

City Engineer, Rob Hayes, P.E. (248) 735-5606

-or-

Civil Engineer, Brian Coburn, P.E. (248) 735-5632

The City of Novi reserves the right to accept any or all alternative proposals and to award the project to other than the firm with the lowest fee proposal, waive any irregularities or informalities, or both, to reject any or all proposals, and in general, to make award in any manner deemed by the City, in its sole discretion, to be in the best interests of the City of Novi.

Exhibits

- A - Fee Proposal
- B- Background Information
- C - Engineering Consultant Agreement



**EXHIBIT A
FEE PROPOSAL
CITY OF NOVI**

**ENGINEERING SERVICES FOR THE
RE-ESTABLISHMENT OF CITY LAND SURVEY BENCHMARKS**

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 September 25, 2008, 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	Description	Total Fee
Task A—Base Project	Establish City Land Survey Benchmarks	\$
Task B—Optional Addition	Provide elevations for each pressure reducing valve	\$

PLEASE TYPE:

Company Name: _____

Address: _____

Agent's Name: _____

Agent's Title: _____

Agent's Signature: _____

Telephone Number: _____ Fax Number: _____

E-mail Address: _____ Date: _____

Proposal of Professional Services for:

**Engineering Services for the Re-Establishment of
City Land Survey Benchmarks**

Prepared for: **City of Novi**

Prepared by:
Stantec Consulting Michigan, Inc.
3959 Research Park Drive
Ann Arbor, MI 48108
Ph: 734-761-1010
Fax: 734-761-1200
www.stantec.com

December, 2008



Stantec



Stantec Consulting Michigan Inc.
3959 Research Park Drive
Ann Arbor MI 48108-2216
Tel: (734) 761-1010
Fax: (734) 761-1200

Stantec

December 18, 2008

Ms. Sue Morianti
Purchasing Manager
City of Novi
45175 W. Ten Mile Rd.
Novi, Michigan 48375-3024

Dear Ms. Morianti:

**Reference: Surveying Services for the Re-Establishment of
City Land Survey Benchmarks**

Thank you for the opportunity to provide our proposal for the Re-establishment of City Land Survey Benchmarks project. Based upon your RFP dated December 4, 2008, Stantec Consulting Michigan Inc. (Stantec) is pleased to submit this proposal for Professional Surveying Services for the Re-establishment of new City Land Survey Benchmarks.

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

- We have state of the art survey equipment that can be utilized on this project to provide a technically sound, efficient and complete product to the City.
- We have an extremely talented pool of professional survey staff that can be utilized on a project such as this, with four (4) registered professional surveyors on our project team.

We understand the importance of this project to the City, have the staff allocated to execute the work and 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.

A handwritten signature in black ink, appearing to read "George A. Tsakoff".

George A. Tsakoff
Associate, Civil Group Manager
Tel: (734) 214-1887
Fax: (734) 761-1200
george.tsakoff@stantec.com

STANTEC CONSULTING MICHIGAN INC.

A handwritten signature in black ink, appearing to read "Brad Fish".

Brad Fish, PS
Survey Project Manager
Tel: (734) 214-2579
Fax: (734) 761-1200
brad.fish@stantec.com

Attachment: Proposal

TABLE OF CONTENTS



Proposal for:
The Re-Establishment of City Land Survey Benchmarks

Prepared for:
City of Novi, Michigan

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Submitted by:
Stantec Consulting Michigan, Inc.
3959 Research Park Drive
Ann Arbor, Michigan 48108-2216
(734) 761-1010
FAX (734) 761-1200
www.stantec.com

December, 2008



Stantec

SECTION I

Project Understanding/Approach/Deliverables



PROJECT UNDERSTANDING

Stantec understands that the City of Novi has an existing benchmark network that was established in the late 1980's and updated in the late 1990's. The benchmark system was established to provide a common vertical datum throughout the City of Novi for private development and public infrastructure projects. Due to the rapid rate of land development in the City over the past 10 years, the benchmark system may have been compromised in some areas due to construction operations over this time period. As the Base Task for this project, the City of Novi desires to re-establish this benchmark system that will provide the highest number of new benchmarks within an established City budget. It is preferable to establish new benchmarks on City owned assets (hydrants, manholes, buildings, etc.). The benchmark system is also desired to be compatible with the City's GIS system database and should be compiled in ESRI Personal Geo-database format (version 9.2 or later).

Stantec further understands that the City of Novi has allowed for an Optional Task on this project to obtain the actual elevations of each of its eleven (11) pressure reducing valves that are located at eight (8) individual sites throughout the City. We understand that these elevations will be used by City staff to establish hydraulic grade line settings for each of the PRV stations. This information will be useful with the City Water System Model that was recently updated by Stantec.

PROJECT APPROACH

Based on the project scope presented in the RFP, Stantec has prepared our base project and optional project approach to maximize the accuracy level and quantity of new benchmarks provided to the City of Novi. Stantec proposes to accomplish this goal by utilizing the following two key items:

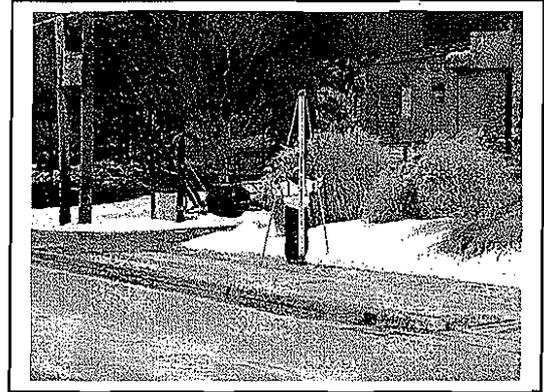
- State of the art survey equipment
- Streamlined and efficient benchmark looping process

Equipment Summary

The Stantec Ann Arbor Office currently owns state of the art survey equipment that can be utilized on a project for creating a new municipal benchmark system. The benefits of this equipment will be seen in the efficiency and accuracy in which a level loop can be routed through the City to result in a highly accurate new benchmark system. The results will be realized by the City in the abundance of new benchmarks that will be provided, well beyond the minimum of eight (8) benchmarks per City Section required in the RFP. A quick summary of the equipment list to be utilized by Stantec on this project is as follows.

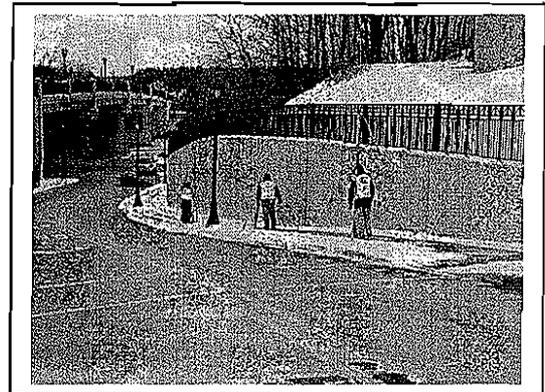
Type of Survey Equipment	Common Uses of Survey Equipment	Accuracy of Survey Equipment	Ownership of Survey Equipment
Leica DNA03 level with 3 meter invar rods	First and Second Order NGS Benchmarks, Highly Accurate Leveling	Major level loops up to 0.01 mm, resulting in minor loops guaranteed to 0.01 feet accuracy	Very limited, only a few consulting firms in the State of Michigan own this equipment
Leica 1200 Global Positions System Receiver	X and Y Coordinates, Topographic Surveys, Boundary Surveys	0.01 feet accuracy is possible, but not guaranteed for direct grade shots	Readily available to most Civil Engineering Consultants in Michigan

The Stantec Ann Arbor Office is one of only a few consulting firms in the State of Michigan that owns the Leica DNA03 level (with 3 meter invar rods) equipment. As noted above in the table, this equipment is capable of establishing 1st order and 2nd order benchmarks with accuracy level to the fifth digit (nearest 0.01 mm). Although this level of accuracy is not necessary for the vertical elevation of the final benchmarks, it will aide the Stantec team in establishing the major and minor survey control loops throughout the City in an efficient and highly accurate manner. This will allow Stantec to guarantee benchmarks to within 0.01 feet accuracy for the City. Further discussion on the level looping process proposed by Stantec as part of this project is contained in the following section.



Benchmark Looping Process

The new benchmark system will be based on 2nd order Class I monuments set by the National Geodetic Survey (NGS), on the height modernization project for the Michigan Department of Transportation (MDOT) which was completed in 2007. Stantec will employ the same high accuracy equipment and procedures used by NGS, to run precision digital level loops (as shown on Figure 1 in the proposal Appendix) throughout the City. A Leica DNA03 level with 3 meter invar rods will be used to accomplish this initial task with measurements taken to 0.01 mm accuracy, ensuring correctness of all major control loops (run along north/south section roads) and ensuring benchmark accuracy to within 0.01 feet in all areas of the City.



During the establishment of the major control loops, every attempt will be taken to set benchmarks approximately 700 feet apart to allow for the densification and quality control for minor control loops (run along east/west mile roads and the interior of each section), also shown in the Figure located in the Appendix.

The initial minor control looping system mentioned above will be carried to better than 0.01 feet accuracy off of the major control looping. Again, every attempt will be taken to set a new benchmark every 700 feet on the minor looping system depending on the specific location and availability of City owned or non-City owned assets. Finally, subsequent phases of minor control level loops will be run on the interior roads of a section to increase the density of the benchmark system, providing a minimum of forty (40) accessible benchmarks per section. Subsequent phasing of minor looping systems may occur between the limits of major looping lines or between the limits of the initial phase of minor looping lines. Regardless, the accuracy of this system for all new benchmarks will be within the 0.01 feet requirement by taking advantage of the accuracy of the NGS system on Eight Mile Road.

Concurrently with running level loops, Stantec will be employing Leica 1200 GPS receivers utilizing corrections from the Livonia Continuously Operating Reference System (CORS) to locate an x and y coordinate for each new benchmark. With corrections from the CORS, x and y coordinates will in most cases have centimeter accuracy. The only exception would be when obstructions do not allow this level of accuracy,



in which case sub-meter locations will be taken. There will be no cost difference to the City between the two methods of collection.

By using the NGS monuments along Eight Mile Road as a basis for our control, we will be setting the stage for future GPS Real Time Kinematic GPS users that employ corrections from the MDOT CORS. As NGS updates the Geoid with new benchmark locations, surveyors will get real-time GPS locations with elevations, matching the new City of Novi Benchmark System. This will be an efficient tool for future construction projects within the City of Novi.

Stantec will also locate a sampling of existing benchmarks from the City of Novi, Flood Insurance Rate Maps, Oakland County and USGS benchmark systems. This will be done to show a comparison of the new benchmark network to these old networks with a correction for each system. Stantec assumes that enough benchmarks will be available and accessible to create this comparison system.

Optional Task B

Although the level looping approach described above is of greatest importance to establishing an accurate survey infrastructure for the setting of benchmarks throughout the City, it will also lend itself to making the optional task of the RFP more efficient and accurate. While the Stantec survey staff is running level loops throughout the City and setting an abundance of benchmarks, Stantec will notify the City to provide access to certain PRV stations on certain days for access. Stantec will be able to run off of the newly established benchmark system and obtain grade shots on the PRV transducers as requested by the City. Because these elevations will be used for water modeling purposes such as establishing hydraulic grade lines and station settings, Stantec understands that extreme accuracy is not absolutely necessary, but we still propose to provide accuracy to within 0.02 feet for these elevations.

PROJECT DELIVERABLES

As part of this project, Stantec will provide specific project deliverables throughout the course of the work. A summary of the deliverables for this project is summarized in the table below:

Deliverable Description	Paper Media	Electronic Media
Kick-off Meeting Agenda and Summary	-	PDF (sent via e-mail)
Progress Report Updates (Bi-weekly)	-	Word (City template sent via e-mail)
Benchmark Data in ESRI Personal Geo-database Format (Version 9.3)	-	CD (delivered to City)
Spreadsheet with listing of the location, elevation and description of the pressure reducing valve	-	Excel (sent via-e-mail)



The Benchmark data to be delivered to the City will include links within the GIS based system to the following fields:

- X and Y Coordinates for horizontal location of the benchmark. As described above in our approach, accuracy in most cases will be provided to the nearest centimeter, but will always be greater than sub-meter. X and Y Coordinates will be in Michigan South State Plane coordinates (North American Datum 1983) along with Latitude-Longitude.
- Z - Coordinate for the vertical elevation of the benchmark. As described above in our approach, vertical accuracy will be provided within 0.01 feet due to the extreme accuracy of our level looping system. The Z - Coordinate will be on the North American Vertical Datum of 1988.
- General descriptor for the benchmark to assist in field location of the benchmark. The descriptor will be detailed enough for the surveyor to locate the benchmark by house/building address or some other entity, and the physical characteristic of the benchmark.
- Benchmark numbering system. The benchmark numbering system will be a unique number and will be given to benchmarks as agreed upon between the City of Novi and Stantec. An initial proposal by Stantec for this numbering system would be to utilize a 3-digit numbering system for the benchmarks. The first number would represent the Section location of the benchmark, the second digit would represent the ¼ Section location of the benchmark, and the third digit would represent the sequence number for the benchmark.
- Benchmark digital images**

** This is a Value Added Item with further description in that section of the proposal starting on the next page.



Stantec

SECTION II

Value-Added Items / Staffing Plan Summary



VALUE-ADDED ITEMS (No Additional Cost to the City for these items)

2nd Order Class I Level Looping System

As described above in our Project Approach, Stantec proposes to utilize state of the art survey equipment to take full advantage of the benchmark system on Eight Mile Road that was recently established to 2nd order Class I monuments set by the NGS as part of the height modernization project for the MDOT. Because our equipment can carry this level of accuracy throughout the City, the major level loops set by Stantec as part of this project will maintain a 2nd order accuracy level and guarantee that all benchmarks set in the City will be within the 0.01 feet accuracy required as part of this proposal. Although GPS equipment is capable of providing 0.01 feet accuracy, it cannot be guaranteed with direct survey shots from the GPS receiver. Therefore level looping is necessary to guarantee this level of accuracy for all benchmarks to be set within the City.

Benchmark Photography

At the time of survey control, Stantec will capture two digital images (close-up and distance) of the new benchmarks. These digital images will be hyperlinked to the benchmark point within the ArcGIS software. The hyperlink will be created by adding an attribute within the control monument feature class table that allows for the image path to be referenced. Within the ArcGIS software, the user will be able to activate the hyperlink by clicking on the feature. The digital image will launch within the imaging software installed on the computer. The added benefit of this feature includes the following:

- Assistance with retrieving the monument when necessary for control purposes
- Visualization of the condition of each monument
- Increased value in record keeping

Expertise and Depth of Project Team

We have assembled a highly experienced and technically sound team of surveying professionals to provide exceptional services to the City for this project. Our team includes four (4) licensed professional surveyors with an abundance of experience in projects related to all areas of surveying, including the work outlined in this proposal.

Our project team will be led by two members of the Stantec Ann Arbor Office Survey Group. Brad Fish will be the Lead Surveyor for this project and will supervise all technical operations. All operations will be staged out of the Ann Arbor Office. Jason White, PS will supervise all field operations as the Crew Chief in coordination with Brad. The remaining professional surveying staff assigned to the project, R.J. Lumbrezer, Tom Silva and Jesse Barden, all out of the Stantec Toledo Office, will support the Ann Arbor Group with their surveying expertise and professional services to provide an expedited schedule to the City of Novi for the final deliverable. Additional staff descriptions are provided in the staffing plan summary below and professional resumes for our technical staff are included in the proposal Appendix.



STAFFING PLAN SUMMARY

The following are short biographies for each of our team members described above in our value added section, along with management and quality control team members.

George A. Tsakoff will serve as Client Representative and provide overall project management and coordination effort to maintain an efficient project process between the City and Stantec. George has extensive project and client management experience with several of Stantec's established municipal clients including the City of Novi. Over the past six 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.

Bradly D. Fish, PS will serve as Lead Surveyor for this project. Brad has a Bachelor's of Surveying Engineering Degree from Ferris State University and over 14 years of experience in surveying, including the blue booking of two NGS Monuments. As the Lead Surveyor with Stantec's Ann Arbor Office, Brad manages survey projects from inception to completion. His experience includes remonumentation, ALTA/ACSM title surveys, boundary surveys, construction layout, topographic surveys, and site surveys for both municipal based clients and private sector clients. Brad will be responsible for the Monument Replacement, including field data collection, manipulation of collected data, and quality control.

Jason White, PS will serve as Survey Crew Chief for this project. Jason has eight years of experience in surveying and is a Licensed Surveyor in Michigan. As Crew Chief with Stantec's Ann Arbor office, Jason manages all aspects of field work including serving as liaison with the client when necessary, managing data, and performing calculations. His experience includes remonumentation, ALTA/ACSM title surveys, boundary surveys, construction layout, topographic surveys, hydrographic surveys, and site surveys.

R. J. Lumbrezer, PS, will serve as Surveyor for this project to provide assistance to the Lead Surveyor and provide QAQC. R.J. has over 22 years of surveying experience in Northwestern Ohio. Prior to joining Stantec he was the owner of his own survey firm. Mr. Lumbrezer has been managing the Toledo Office Survey Department for the past seven years. Mr. Lumbrezer is experienced in coordinating survey activities, topographic surveys, ALTA/ACSM Land Title Surveys, construction layout, aerial controls, mortgage location surveys, preparation of legal descriptions and easements, preparing right-of-way acquisition plans and assisting in the CAD design of subdivisions.

Thomas E. Silva, PS will serve as Surveyor for this project to provide assistance to the Lead Surveyor and provide QAQC. Tom has 22 years of experience in the field of surveying and engineering. His expertise in preparing surveys includes boundary, topographic, ALTA/ACSM Land Title, mortgage location, flood elevation certificates, subdivision and site plans. Mr. Silva is responsible for performing all phases of survey work which include Project Management, Reducing and Interpreting Field Notes, performing Geometric and Trigonometric computations on various types of surveys, resolving conflicts between deeds and field measurements, running benchmark level circuits, construction layout and preparing legal descriptions and survey drawings. Mr. Silva is also an adjunct faculty member with Owens Community College, teaching in the Survey Technology program.

VALUE-ADDED ITEMS / STAFFING PLAN SUMMARY



Stantec

Jesse Barden will serve as Survey Field Technician for this project. Mr. Barden has over 12 years of experience in the field of surveying. His experience includes roadway and bridge layouts, construction staking, boundary and topographic surveys, mortgage location surveys, courthouse research, preparing legal descriptions and subdivision layout. Mr. Barden has also had experience with GPS equipment and re-establishing section corners while working at the Fulton County Engineers office.



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SECTION III

Project Schedule

PROJECT SCHEDULE



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PROJECT SCHEDULE

We have prepared our project schedule based on recent experience with similar projects, and to account for our experienced project team assigned to the work. Based on these items, we are able to provide an aggressive timeline to expedite the delivery of the new benchmark system to the City. Our final deliverable date for the benchmark system on compact disc (Task A) and for the PRV transducer grade shots on excel spreadsheet (Task B) is May 15, 2009.

Please refer to the attached project schedule for additional details.



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City of Novi, Michigan Re-Establishment of City Land Survey Benchmarks

Proposed Project Schedule

Task Name	Jan '09			Feb '09				Mar '09				Apr '09				May '09				
	1/4	1/11	1/18	1/25	2/1	2/8	2/15	2/22	3/1	3/8	3/15	3/22	3/29	4/5	4/12	4/19	4/26	5/3	5/10	5/17
Kick-off Meeting	◆																			
Complete Level Looping, Establish Benchmark System, Obtain PRV Elevations																				
Benchmark Deliverable																				◆
PRV Elevation Deliverable																				◆

Project: Benchmarks Land Survey
Date: Thu 12/18/08

Task



Milestone ◆

Summary





Stantec

SECTION IV
Fee and Rate Information
Required Fee Proposal Form

FEE AND RATE INFORMATION



Stantec

FEE PROPOSAL

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

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.

FEE AND RATE INFORMATION



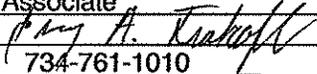
**EXHIBIT A
FEE PROPOSAL
CITY OF NOVI**

**ENGINEERING SERVICES FOR THE
RE-ESTABLISHMENT OF CITY LAND SURVEY BENCHMARKS**

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 December 4, 2008, 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
Task A-Base Project	Establish City Land Survey Benchmarks (average of 40 new accessible benchmarks per City Section)	\$ 60,000
Task B-Optional Addition	Provide elevations for each pressure reducing valve.	\$ 1,500

PLEASE TYPE:

Company Name: Stantec Consulting Michigan, Inc.
Address: 3959 Research Park Drive, Ann Arbor, MI 48108
Agent's Name: George A. Tsakoff
Agent's Title: Associate
Agent's Signature: 
Telephone Number: 734-761-1010 Fax Number: 734-761-1200
E-Mail Address: george.tsakoff@stantec.com Date: December 18, 2008



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2008 Fee Schedule

Title	Hourly Rate	Description
Technician	\$43 - \$49	<ul style="list-style-type: none"> • Entry-level position • Works under the supervision of a senior professional • Recent graduate from an appropriate post-secondary program or equivalent • Generally, less than four years experience
Engineering Assistant Construction Technician Environmental Technician	\$55 - \$67	<ul style="list-style-type: none"> • Junior-level position • Independently carries out assignments of limited scope using standard procedures, methods and techniques • Assists senior staff in carrying out more advanced procedures • Completed work is reviewed for feasibility and soundness of judgment • Graduate from an appropriate post-secondary program or equivalent • Generally, four years work experience
Senior CADD Technician Project Engineer Designer Senior Engineering Designer	\$74 - \$87	<ul style="list-style-type: none"> • Fully qualified professional position • Carries out assignments requiring general familiarity within a broad field of the respective profession • Makes decisions by using a combination of standard methods and techniques • Actively participates in planning to ensure the achievement of objectives • Works independently to interpret information and resolve difficulties • Graduate from an appropriate post-secondary program, with credentials or equivalent • Generally, six years experience
Senior Designer Senior Project Engineer Project Manager	\$95 - 113	<ul style="list-style-type: none"> • First level supervisor of first complete level of specialization • Provides applied professional knowledge and initiative in planning and coordinating work programs • Adapts established guidelines as necessary to address unusual issues • Decisions accepted as technically accurate, however may on occasion be reviewed for soundness of judgment • Graduate from an appropriate post-secondary program, with credentials or equivalent • Generally, nine years experience
Senior Project Manager Associate Registered Surveyor	\$123 - \$144	<ul style="list-style-type: none"> • Highly-specialized technical professional or supervisor of groups of professionals • Provides multidiscipline knowledge to deliver innovative solutions in related field of expertise • Participates in short and long range planning to ensure the achievement of objectives • Makes responsible decisions on all matters, including policy recommendations, work methods, and financial controls associated with large expenditures • Reviews and evaluates technical work • Graduate from an appropriate post-secondary program, with credentials or equivalent • Generally, ten years experience with extensive, broad experience
Principal	\$152 - \$181	<ul style="list-style-type: none"> • Senior level consultant or management function • Recognized as an authority in a specific field with qualifications of significant value • Provides multidiscipline knowledge to deliver innovative solutions in related field of expertise • Independently conceives programs and problems for investigation • Participates in discussions to ensure the achievement of program and/or project objectives • Makes responsible decisions on expenditures, including large sums or implementation of major programs and/or projects • Graduate from an appropriate post-secondary program, with credentials or equivalent • Generally, fifteen years experience with extensive professional and management experience
Survey Crew	\$147	



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APPENDIX A

Benchmark Looping System Figure



LEGEND

-  ANTICIPATED MAJOR CONTROL LOOP
-  ANTICIPATED MINOR CONTROL LOOP
-  2ND ORDER CLASS 1 NGS MONUMENT



Stantec

Stantec Consulting Michigan Inc. Legend
 3959 Research Park Drive
 Ann Arbor MI U.S.A.
 48108-2216
 Tel. 734.761.1010
 Fax. 734.761.1200
 www.stantec.com

Notes

Client/Project
 CITY OF NOVI
 VERTICAL CONTROL
 Figure No.
 1.0
 Title



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APPENDIX B

Personnel Profiles

Brad has over 13 years of experience in surveying and is a licensed surveyor in Michigan. As Survey Project Manager and Field Coordinator with Stantec, Brad manages survey projects from inception to completion. His experience includes remonumentation, ALTA/ACSM title surveys, boundary surveys, construction layout, topographic surveys, hydrographic surveys, and site surveys.

Brad has provided professional surveying services at military facilities, for the power industry, and on transportation projects, as well as for development and utility projects for the public and private sectors. He is experienced in specialized hydrographic survey tasks, which involves topographic mapping underneath a body of water. Additionally, he understands the unique requirements of power and gas transmission projects.

EDUCATION

BS, Surveying Engineering, Ferris State University, Big Rapids, Michigan, 1995

Microsoft Certified Systems Engineer, NT, Technology Integration Group - Technical Education Center, Miramar, California, 1999

REGISTRATIONS

Professional Land Surveyor #49277, State of Michigan

PROFESSIONAL ASSOCIATIONS

Member, Michigan Society of Professional Surveyors

PROJECT EXPERIENCE

Oil & Gas

17 Mile Oil Line, Oakland County, Michigan* (Surveyor)

Route survey including boundary, topographic data collection and profile, layout of easement, and layout of centerline pipeline.

Well Location Surveys, Michigan* (Surveyor)

Boundary calculation for pad and well location, topographic data collection for site drawings, and grade certifications for drilling for various well locations.

Power

Palisades Nuclear Power Plant, South Haven, Michigan* (Surveyor)

Leveling through several monuments, concrete pads, and interior building points to monitor settling. Also, traversing through the same points to monitor horizontal movement. Project required high accuracy monitoring.

Accident Site Surveys for Consumers Power Company, Michigan* (Surveyor)

Data collection for site reconstruction, wire heights, and points of contact.

Various Power Line Route Surveys, Michigan* (Surveyor)

Boundary calculation, topographic data collection for profile, layout of easement, layout of power poles, and layout of centerline.

Consumers Energy Power Plant, Jackson, Michigan* (Surveyor)

Boundary determination, building layout, utility layout, parking layout, and grade certifications.

Retail / Commercial

Home Depot, San Marcos, California* (Surveyor)

Utility layout, building layout, and curb and gutter layout.

Family Video, Jackson, Michigan* (Surveyor)

Boundary determination, building layout, utility layout, parking layout, and grade certifications.

* denotes projects completed with other firms

Bradly D. Fish, MS
Survey Project Manager

ALTA/ACSM Title Surveys of Multiple Sites, Michigan* (Surveyor)

ALTA/ACSM title surveys of multiple sites in Jackson, Branch, Washtenaw, Wayne, and Oakland counties to facilitate commercial real estate transactions.

Roadways

Fletcher and Williams Street Improvement and Utility Replacement, Wayne, Michigan (Surveyor)

Layout of sanitary sewer, storm sewer, water, and back of curb along Fletcher and Williams streets.

MDOT Mapping Project, Michigan* (Surveyor)

Project included bridges, overpasses, shoulder, edge of bituminous, centerline, manholes, and culverts for a four mile section of I-94 at the I-275 Interchange.

US 23, Michigan* (Surveyor)

Construction layout of rest area ramps, centerline, edge of bituminous, and slope staking for ditches.

Surveys / Geomatics

Meadowbrook Road / Eleven Mile Road Intersection Improvements, Novi, Michigan (Surveyor)

Provided right-of-way determination, topographic mapping for design, and construction layout surveying. Also provided easement preparation.

2008 Pathway Gap Improvements, Novi, Michigan (Surveying)

Provided right-of-way determination, topographic mapping and construction layout surveying.

Winslow Drain Topographic Survey, Van Buren Township, Michigan (Surveyor)

Donahue Drain Topographic Survey, West Bloomfield, Michigan (Surveyor)

Provided topographic survey, including cross-sectioning and right-of-way determination, and prepared new center-line alignment.

Ore Lake Pressure Sewer Upgrades Survey, Hamburg Township, Michigan (Surveyor)

Provided survey control, easements, and supplemental topographic survey.

John Hix Road Reconstruction Surveying, Wayne, Michigan (Surveyor)

Provided topographic mapping, right-of-way determination, and construction layout services.

Canton Center Road, Hanford Road, and Napier Road Water Main Improvements Survey, Canton, Michigan (Surveyor)

Provided right-of-way determination and topographic mapping.

Ayrshire Subdivision PA 132, Ann Arbor, Michigan (Surveyor)

Provided boundary surveys, right-of-way determination, topographic mapping and construction layout surveying.

PA 132 Boundary Surveys, Novi, Michigan (Surveyor)

Provided boundary surveys, parcel splits for four city-owned properties.

Summit Drive Vacated Right-of-Way, Novi, Michigan (Surveyor)

Provided right-of-way and boundary determination surveys for the transfer of right-of-way from City to property owners.

Motts Childrens Hospital at the University of Michigan, Ann Arbor, Michigan (Project Manager)

Fuller and Olson Parks Soccer Field Renovation Project, Ann Arbor, Michigan (Survey Department Manager)

Provided topographic mapping, and construction layout services.

Broadway Bridge NGS Monument Replacement, Ann Arbor, Michigan (Project Manager)

Replaced a first order vertical Class II NGS Monument. Also blue-booked the data with NGS.

* denotes projects completed with other firms

Bradly D. Fish MS
Survey Project Manager

**NGS Monument Replacement, Ann Arbor, Michigan
(Project Manager)**

Replaced a first order, horizontal and vertical Class II NGS Monument. Also blue-booked the data with NGS.

**Easy Street Alternative Roadway Design, Ann Arbor,
Michigan (Survey Department Manager)**

Provided topographic mapping, right-of-way determination, and construction layout services.

**Warren Tank Plant ALTA/ACSM Title Survey, Warren,
Michigan (Surveyor)**

This survey involved locating existing buildings, utilities, and easements as they affect this industrial parcel of land. Title documents were reviewed and evaluated as part of the site certification.

**Newburgh Bridge Reconstruction, Wayne, Michigan
(Surveyor)**

Construction layout of new triple-span bridge, spanning the Rouge River in western Wayne County. A detailed foundation as-built of the existing pilings was completed and forwarded to the structural engineer for verification of computations.

**Pond Verification, Pittsfield Township, Michigan
(Surveyor)**

Verification of volume and grades for all new detention ponds constructed in Pittsfield Township.

**Berea – Water Treatment Plant Site Development, Berea,
Ohio (Surveyor)**

Hydrographic survey of an intake pond to determine the volume of silt to be removed to facilitate the construction of a new retaining wall.

**Bowling Green – River Intake Hydrographic Survey, City
of Bowling Green, Ohio (Surveyor)**

Hydrographic survey of 1500 feet of the Maumee River to locate deep channels to aid in the design of a new intake for a water treatment facility.

**Remonumentation Program, Jackson County, Michigan*
(Surveyor)**

Recovery of government section corners, witness verification, excavation to verify position and conflicting information, and compilation and assisting in the presentation of data to the Jackson County peer review committee for acceptance. A new Land Corner Recordation form was also completed for recordation to help preserve and perpetuate physical government corner locations.

**United States Marine Corps, Coronado, California*
(Surveyor)**

Topographic data collection for volume determinations at North Island.

**Daryl's Downtown Condominium, Jackson, Michigan*
(Surveyor)**

Data collection, design, boundary layout, and condominium preparation.

**United States Marine Corps, Camp Pendleton,
California* (Surveyor)**

Slope staking for a new levee along the Santa Margarita River and construction layout of roads, bridge, pump station, building, and parking areas.

Alpine School District, Alpine, California* (Surveyor)

Construction layout of building, parking areas, and soccer and football fields.

**United States Marine Corps, Miramar, California*
(Surveyor)**

Construction layout of building, sidewalk, and curb and gutter.

PA 132 Boundary Surveys, Michigan* (Surveyor)

Boundary surveys of various size and complexity to facilitate private sector conveyance of title for various clients.

Urban Land

**Rosa Rita Shores and Rosa Rita Shores Extension,
Brooklyn, Michigan* (Surveyor)**

Data collection, design, lot layout, and plat preparation for an amended plat.

* denotes projects completed with other firms

Bradly D. Fish, PLS
Survey Project Manager

Saddleback Hill Subdivision, Lakeside, California*
(Surveyor)

*Layout of lots, setbacks, building, water lines, roads, and
design and layout of retaining walls.*

* denotes projects completed with other firms

Jason P. White PS
Survey Crew Chief



Stantec

Jason has five years of experience in surveying and is a Licensed Professional Surveyor in Michigan. As Survey Crew Chief with Stantec, Jason manages all aspects of field work including serving as liaison with the client, managing data, and performing calculations. His experience includes remonumentation, ALTA/ACSM title surveys, boundary surveys, construction layout, topographic surveys, hydrographic surveys, site surveys, architectural, and engineering surveys.

EDUCATION

BS, Survey Engineering, Ferris State University, Big Rapids, Michigan, 2003

REGISTRATIONS

Professional Land Surveyor #55012, State of Michigan

PROFESSIONAL ASSOCIATIONS

Member, Michigan Society of Professional Surveyors

PROJECT EXPERIENCE

Surveys / Geomatics

Meadowbrook Road / Eleven Mile Road Intersection Improvements, Novi, Michigan (Surveyor)

Provided right-of-way determination, topographic mapping for design, and construction layout surveying. Also provided easement preparation.

2008 Pathway Gap Improvements, Novi, Michigan (Surveyor)

Provided right-of-way determination, topographic mapping and construction layout surveying.

Winslow Drain Topographic Survey, Van Buren Township, Michigan (Surveyor)

Donahue Drain Topographic Survey, West Bloomfield, Michigan (Surveyor)

Provided topographic survey, including cross-sectioning and right-of-way determination, and prepared new center-line alignment.

Ore Lake Pressure Sewer Upgrades Survey, Hamburg Township, Michigan (Surveyor)

Provided survey control, easements, and supplemental topographic survey.

John Hix Road Reconstruction Surveying, Wayne, Michigan (Surveyor)

Provided topographic mapping, right-of-way determination, and construction layout services.

Canton Center Road, Hanford Road, and Napier Road Water Main Improvements Survey, Canton, Michigan (Surveyor)

Provided right-of-way determination and topographic mapping.

Ayrshire Subdivision PA 132, Ann Arbor Township, Michigan (Surveyor)

Provided boundary surveys, right-of-way determination, topographic mapping and construction layout surveying.

Motts Womens and Childrens Hospital at the University of Michigan, Ann Arbor, Michigan (Surveyor)

PA 132 Boundary Surveys, Novi, Michigan (Surveyor)

Provided boundary surveys, parcel splits for four city-owned properties.

Summit Drive Vacated right-of-Way, Novi, Michigan (Surveyor)

Provided right-of-way and boundary determination surveys for the transfer of right-of-way from City to property owners.

Bowling Green River Intake Hydrographic Survey, Bowling Green, Ohio (Crew Chief)

Hydrographic survey of 1500 feet of the Maumee River to locate deep channels to aid in the design of a new intake for a water treatment facility.

* denotes projects completed with other firms

Jason P. White ^{RS}
Survey Crew Chief

**Berea Water Treatment Plant Site Development, Berea,
Ohio (Crew Chief)**

Hydrographic survey of an intake pond to determine the volume of silt to be removed to facilitate the construction of a new retaining wall.

**Warren Tank Plant ALTA/ACSM Title Survey, Warren,
Michigan (Crew Chief)**

This survey involved locating existing buildings, utilities, and easements as they affect this industrial parcel of land. Title documents were reviewed and evaluated as part of the site certification.

**Pittsfield Township Pond Verification, Pittsfield Township,
Michigan (Crew Chief)**

Verification of volume and grades for all new detention ponds constructed in Pittsfield Township.

**Wayne Street Improvement and Utility Replacement,
Wayne, Michigan (Crew Chief)**

Layout of sanitary sewer, storm sewer, water, and back of curb along Fletcher and Williams streets.

**Newburgh Bridge Reconstruction, Wayne, Michigan
(Crew Chief)**

Construction layout of new triple-span bridge, spanning the Rouge River in western Wayne County. A detailed foundation as-built of the existing pilings was completed and forwarded to the structural engineer for verification of computations.

Mr. Lumbrezer has over 22 years of surveying experience in northwestern Ohio. Mr. Lumbrezer is an experienced project manager and estimator for local contractors. He has experience coordinating survey activities, boundary and topographic surveys, ALTA/ACSM Land Title Surveys, construction layout, aerial controls, mortgage location surveys, preparation of legal descriptions and easements and preparing right-of-way acquisition plans.

Mr. Lumbrezer has been a Township Trustee for Royalton Township for the last six years and recently elected to the Board of Directors for the Ohio Township Association.

REGISTRATIONS

Professional Land Surveyor #8029, State of Ohio

PROJECT EXPERIENCE

Boundary Surveys

Toledo - Lucas County Port Authority - Lot Splits, Toledo, Ohio (Project Manager)

Performed two lot splits for sale to Lucas County Port Authority.

Cemetery Addition Layout, Berkey, Ohio (Project Manager)

Performed cemetery addition layout boundary survey.

Park Entrance Village of Berkey, Berkey, Ohio (Project Manager)

Performed park entrance boundary survey.

Construction Surveys

US 20 & SR 420 Interchange, Lemoyne, Ohio (Project Manager)

Handled construction layout of roadway, bridges, storm, water and sanitary services.

Central & McCord Intersection Improvements, Toledo, Ohio (Project Manager)

Construction layout of roadway, storm, water and sanitary services.

Metcalf Field - Phases I & II, Ohio (Project Manager)

Toledo Express Airport - Runway Improvements, Toledo, Ohio (Project Manager)

Toledo Express Airport - Wildlife Perimeter Fencing, Toledo, Ohio (Project Manager)

Henry County Road 13-A & Timberstone Athletic Fields, Whitehouse, Ohio (Project Manager)

Church and Elm Street Reconstruction, Pioneer, Ohio (Project Manager)

Health and Human Services Department Renovations, University of Toledo, Toledo, Ohio (Project Manager)

Sylvania & Brinhaven Intersection Improvements, Toledo, Ohio (Project Manager)

Handled construction layout of roadway, storm, water and sanitary services.

Finzel and Weckerly Intersection Improvements, Whitehouse, Ohio (Project Manager)

Handled construction layout of roadway, storm, water and sanitary services.

Salisbury and Holloway Intersection Improvements, Monclova, Ohio (Project Manager)

Handled construction layout of roadway, storm, water and sanitary services.

Bancroft and King Intersection Improvements, Toledo, Ohio (Project Manager)

Handled construction layout of roadway, storm, water and sanitary services.

R.J. Lumbrezer r s

Associate, Survey/Geomatics

Garden & Holloway Intersection, Maumee, Ohio (Project Manager)

Handled construction layout of roadway, storm, water and sanitary services.

McCord Road Storm Sewer Layout, Sylvania, Ohio (Project Manager)

Fulton and Swanton Streets Water Main Layout, Metamora, Ohio (Survey Project Manager)

Paulding Dairy Queen Site Design, Paulding, Ohio (Project Manager)

Holy Trinity Schools, Amboy Township, Ohio (Project Manager)

Skye Cinema Site Design, Wauseon, Ohio (Survey Project Manager)

Horseshoe Bend, Plat II, Perrysburg, Ohio (Survey Project Manager)

Performed construction staking: water line, sanitary sewer, storm sewer, and curbed street layout, in addition to boundary and topographic surveys.

Topographic Surveys

Wildwood Park, Toledo, Ohio (Project Manager)

Performed topographic work for sanitary sewer design.

Pearson Park, Oregon, Ohio (Project Manager)

Performed topographic work for sanitary sewer design.

Secor Park Water Line, Toledo, Ohio (Project Manager)

Performed topographic work for water main design.

Sycamore Woods, Springfield Township, Ohio (Survey Project Manager)

Performed boundary and topographic surveys and subdivision plat.

The Falls at River's Edge, Plat I, Hometown Center Commercial Site, Perrysburg, Ohio (Survey Project Manager)

Performed boundary and topographic surveys and subdivision plat.

Windmill Crossing Subdivision Plat IV, Holland, Ohio (Survey Project Manager)

Performed boundary and topographic surveys and subdivision plat.

Fallen Timbers Pedestrian Bridge, Maumee, Ohio (Survey Project Manager)

Performed topographical survey across US 24 for the Fallen Timbers Pedestrian Bridge design, boundary and right-of-way determination.

First Call for Help & Putnam County Electric Building Extension, Ohio (Project Manager)

Cable Antenna Tower Designs, Ohio (Project Manager)

Performed boundary and topographical surveys for cable antenna tower designs at various sites throughout Ohio.

Swanton Street & Ten Mile Creek Crossing, Metamora, Ohio (Project Manager)

Locate Water Mains

Fulton County Engineer's Office, Various Projects, Fulton County, Ohio (Project Manager)

* denotes projects completed with other firms



Mr. Silva has more than 22 years of experience in the field of surveying and engineering. Mr. Silva is responsible for performing all phases of survey work. Work experience includes initial field time estimates, courthouse/property research, utilities contact, client/property owner contact, reducing and interpreting field notes, performing geometric and trigonometric computations on various types of surveys, resolving conflicts between deeds and field measurements, data file preparation, property staking, running benchmark level circuits, resetting lost points, construction layout, preparing legal descriptions, preparing drawings for boundary surveys, topographic surveys, ALTA/ACSM Land Title Surveys, elevation surveys, site plans and final subdivision plats.

Mr. Silva's area of expertise includes ALTA/ACSM Land Title Surveys, boundary surveys, legal descriptions, flood elevation certificates, mortgage location surveys, project management, subdivision plats, condominium drawings, annexation plats, dedication plats and topographical surveys.

REGISTRATIONS

Professional Land Surveyor #7805, State of Ohio

PROFESSIONAL ASSOCIATIONS

Professional Land Surveyors, Toledo Chapter Past President, State of Ohio

PROJECT EXPERIENCE

ALTA Surveys

Food Town / Pharm, Various, Ohio* (Project Manager)
Completed ALTA/ACSM land title surveys at 12 store locations.

Crown Plaza / Marriott Hotel, Toledo, Ohio* (Project Manager)

First Federal and Charter One Bank, Toledo, Ohio* (Project Manager)
Completed ALTA/ACSM Land Title Surveys for all branches in the Toledo area.

Kenwood Gardens Apartment Complex, Toledo, Ohio* (Project Manager)
Completed an ALTA/ACSM Land Title Survey for 30-Acres of the apartment complex.

Woodville Mall, Northwood, Ohio* (Project Manager)

Boundary Surveys

Tift Ditch Widening, Toledo, Ohio* (Project Manager)

Hasty Road, Ottawa Hills, Ohio* (Project Manager)
Survey & staking of existing right-of-way for beautification project.

Dana Corporation World Headquarters, Toledo, Ohio* (Project Manager)
Completed boundary and topographic survey

Eisenbraun Ditch Widening and Enclosure, Toledo, Ohio* (Project Manager)

French Creek Business Park, Sheffield, Ohio* (Project Manager)
Completed a boundary survey & final subdivision plat for 260-acres of business park.

Notre Dame Academy, Toledo, Ohio* (Project Manager)
Completed a boundary and topographic survey for the design of expansion.

* denotes projects completed with other firms

Thomas E. Silva P.S.

Project Manager, Survey/Geomatics

Oak Harbor Public Library, Oak Harbor, Ohio* (Project Manager)

Boundary and topographic survey for the design of the expansion.

100-Acre Commercial Development, Fremont, Ohio* (Project Manager)

Completed a boundary survey, annexation plat, split survey and dedication plat.

Sunset Meadows Residential Development, Michigan* (Project Manager)

Boundary and topographic survey and final subdivision plat.

City of Sylvania Administration Buildings, Sylvania, Ohio* (Project Manager)

Boundary and topographic survey for the design of the expansion.

Monclova Elementary School, Monclova, Ohio* (Project Manager)

Boundary and topographic survey for the design of the expansion.

Valentine Theater, Toledo, Ohio* (Project Manager)

Completed a boundary survey and final subdivision plat.

Wetland Reserve Program, Ohio* (Project Manager)

Defined areas for the WRP (Wetland Reserve Program).

COSI, Toledo, Ohio* (Project Manager)

Completed a boundary survey of former portside as well as defined lease areas.

Quarry Lakes Business Park* (Project Manager)

Completed a boundary and topographic survey, preliminary plat and the final subdivision plat for an 150-Acre Industrial Development.

Way Public Library, Perrysburg, Ohio* (Project Manager)

Prepared boundary and topographic survey and legal description for re-routing of existing public alley.

Bowman Park, Toledo, Ohio* (Project Manager)

Boundary and Topographic Survey

Willard Industrial Park, Willard, Ohio* (Project Manager)

Completed a boundary survey and final subdivision plat for a 77-acre industrial development.

Sterling House Assisted Living Centers, Various, Ohio* (Project Manager)

Completed Boundary & Topographic surveys as well as ALTA/ACSM Land Title Surveys for several assisted living centers located in Austintown, Alliance, Beavercreek, Canton, Middletown, New Philadelphia, Salem, Youngstown, Bowling Green and Newark Ohio.

Owens Corning World Headquarters, Toledo, Ohio* (Project Manager)

Boundary & topographic survey of former Commodore Island and Middlegrounds for design of new headquarters.

Various Toledo Parks, Toledo, Ohio* (Project Manager)

Boundary and Topographic Survey for Reynolds Road, Joe E. Brown and River Road parks.

Reynolds Road Metropark, Toledo, Ohio* (Project Manager)

Toledo Express Airport, Toledo, Ohio* (Project Manager)

Bike Trail along Blanchard River, Findlay, Ohio* (Project Manager)

Springville Marsh 200-acres, Seneca County, Ohio (Project Manager)

Site Surveys

Libbey Owens Ford, Rossford, Ohio* (Project Manager)

Staking for construction of new furnace.

* denotes projects completed with other firms

Thomas E. Silva P.E.

Project Manager, Survey/Geomatics

Ann Arbor Railroad, Ottawa Yard Expansion, Toledo, Ohio* (Project Manager)

Layout of staking for the construction of pavement, drainage and railroad spurs.

North Star Steel Plant, Delta, Ohio* (Project Manager)

Performed layout of staking for grading and construction of ditches, roads and railroad spurs.

Surveys / Geomatics

Home Depot, Findlay, Ohio* (Project Manager)

Performed boundary and topographic survey, ALTA/ACSM land title survey and water & sanitary sewer easements.

Quarry Lakes Business Park, Ohio* (Project Manager)

Completed a boundary and topographic survey, preliminary plat and final subdivision plat for an 150-acre industrial development.

Harbor Bay Estates Residential Development, Sandusky, Ohio* (Project Manager)

Performed boundary and topographic survey, ALTA/ACSM land title survey, and final subdivision plat for 80-acres.

Lowe's Regional Distribution Center* (Project Manager)

Performed a boundary and topographic survey of 110-acres and completed the preliminary and final subdivision plats.

Carnegie Cove Residential Development, Columbus, Ohio* (Project Manager)

Performed a boundary and topographic survey, preliminary plat and final subdivision plat.

Cambridge Residential Development, Perrysburg, Ohio* (Project Manager)

Performed a boundary & topographic survey, preliminary plat and final subdivision plat.

84 Lumber, Findlay, Ohio* (Project Manager)

Completed a topographic survey, lot split survey and ALTA/ACSM Land Title Survey for 84 Lumber.

Various Restaurants, Ohio* (Project Manager)

Completed several boundary and topographic surveys, split survey and ALTA/ACSM Land Title Survey for area restaurants. These restaurants included Applebee's, Damon's, Outback Steakhouse, Steak 'n Shake, Taco Bell and Pizza Hut.

Sun Oil Refinery and Tank Farm, Toledo, Ohio* (Project Manager)

Completed a topographic survey of existing tank dikes, as well as performed volume calculations of the capacity of the tank dikes. A boundary and ALTA/ACSM Land Title Survey was also completed at the wastewater treatment facility.

Marble Cliff Residential Development, Toledo, Ohio* (Project Manager)

Boundary & Topographic Survey, ALTA/ACSM Land Title Survey and Final Subdivision Plat.

Eastern Woods Medical Development, Findlay, Ohio* (Project Manager)

Completed a Boundary & Topographic Survey, Split Survey, ALTA/ACSM Land Title Survey and the Final Subdivision Plat.

Topographic Surveys

Holnam's Inc.* (Project Manager)

Performed a topographic survey and volume calculations.

Daimler/Chrysler Jeep Plant, Toledo, Ohio* (Project Manager)

Topographic survey of entire site at 25-foot intervals before and after stripping of the soils. This was done for the purpose of calculating the volume of dirt taken out.

Anthony Wayne Local School District, Toledo, Ohio* (Project Manager)

Topographic survey of High School and Middle School for design of expansion.

* denotes projects completed with other firms

Jesse Barden

Crew Chief, Survey/Geomatics



Stantec

As Crew Chief, Mr. Barden has over 12 years of experience in the field of surveying. His experience includes ALTA/ACSM Land Title Surveys, boundary and topographic surveys, mortgage location surveys, courthouse research, preparing legal descriptions, subdivision layout, and construction staking of roadways, utilities, buildings, and bridges.

Mr. Barden also has experience with GPS equipment and re-establishing section corners while working at the Fulton County Engineers office.

EDUCATION

Bachelor of Education, Adrian College, Adrian, Michigan, 2001

PROJECT EXPERIENCE

Surveys / Geomatics

Metcalf Field, Ohio (Crew Chief)

Mr. Barden provided construction layout for a runway project.

Main Street Bridge, Sylvania, Ohio (Crew Chief)

Mr. Barden was responsible for construction stakeout of a bridge structure.

Diamler Chrysler Bridge, Toledo, Ohio (Crew Chief)

Mr. Barden was responsible for field survey tasks as crew chief.

SR 250, Ohio (Crew Chief)

Mr. Barden provided field surveying for a box culvert and bridge replacement project on SR 250 included topographic mapping.

Various Intersection Improvements, Lucas County, Ohio (Crew Chief)

These intersection improvement projects included construction layout of intersection widening, storm sewer, waterline and sanitary sewer, and slope stakes for drainage improvements, as well as traffic signalization:

- Garden & Holloway
- Bancroft & King
- Salisbury & Holloway
- Sylvania & Brinhaven

Ferndale Avenue, Sheffield Lake, Ohio (Crew Chief)

Completed construction layout for 4,300 LF of roadway-widening which included 18 intersections. On average, all of the intersection improvements extended north and south of Ferndale Avenue. Layout of storm sewer and 950 LF of off road storm sewer were completed as well.

US Route 20 & SR 420 Interchange, Wauseon, Ohio (Crew Chief)

Crew chief for the construction layout of roadway, bridges, and storm sewers.

Central & McCord Intersection Improvements, Toledo, Ohio (Crew Chief)

Completed construction layout for roadway, storm sewer, water line, sanitary sewer, and traffic signalization.

* denotes projects completed with other firms

Jesse Barden

Crew Chief, Survey/Geomatics

Various ALTA/ACSM Land Title Surveys, Ohio (Crew Chief)

Mr. Barden has extensive field experience in completing ALTA/ACSM Land Title Surveys from the Minimum Standard Detail Requirements up to and including all of the items on Optional Table A of the requirements. Project experience includes:

- Sterling Stores/Circle K - Kenton, St. Marys, and Van Wert, Ohio
- Wauseon Commons Shopping Center - Wauseon, Ohio
- Auglaize Commons Shopping Center - Wapakoneta, Ohio
- Sun Capital - Lyons, Ohio
- Westgate Chapel - Toledo, Ohio
- Toys-R-Us Stores - Toledo, Miamisburg, and Niles, Ohio
- Kmart Stores - Toledo and Englewood, Ohio
- Hampshire Heights Apartments - Toledo, Ohio
- University Park Apartments - Toledo, Ohio
- Otterbein Retirement Communities - Centerville and Mainville, Ohio
- Castle Store & Lock - Hamilton, Ohio
- 25 Acres - Warrensville Heights, Ohio
- Hampton Inn - Orange, Ohio
- Cell Tower Sites - Bloomfield, Oxford, and Findlay Ohio
- Paulding Medical Building - Paulding, Ohio
- Millennia Housing - Port Clinton, Ohio
- Country Brook Apartments - Dayton, Ohio

Various Residential Subdivisions, Ohio (Crew Chief)

Oversaw the completion of a boundary and topographic surveys and the preparation of subdivision plats, as well as all field crew operations for construction staking of water line, sanitary sewer, storm sewer, and curbed street layout:

- Otterbein Retirement Communities - Springfield, Perrysburg, and Monclova Township
- Horseshoe Bend, Plat II
- Windmill Crossing Subdivision, Plat IV
- The Falls at River's Edge, Plat I
- Sycamore Woods

Marathon Ashland Pipeline Topographic Surveys (Crew Chief)

Mr. Barden completed topographic surveys for tank dike volume calculations and for the design and construction of new infrastructure. Sites have been throughout several states.

Springville Marsh, Seneca County, Ohio (Crew Chief)

Mr. Barden assisted in the boundary retracement survey at this 200-acre natural preserve. The project entailed courthouse research where records were compiled of the existing parcel and adjoining parcel deeds, section corner monumentation, and any previous surveys.

* denotes projects completed with other firms