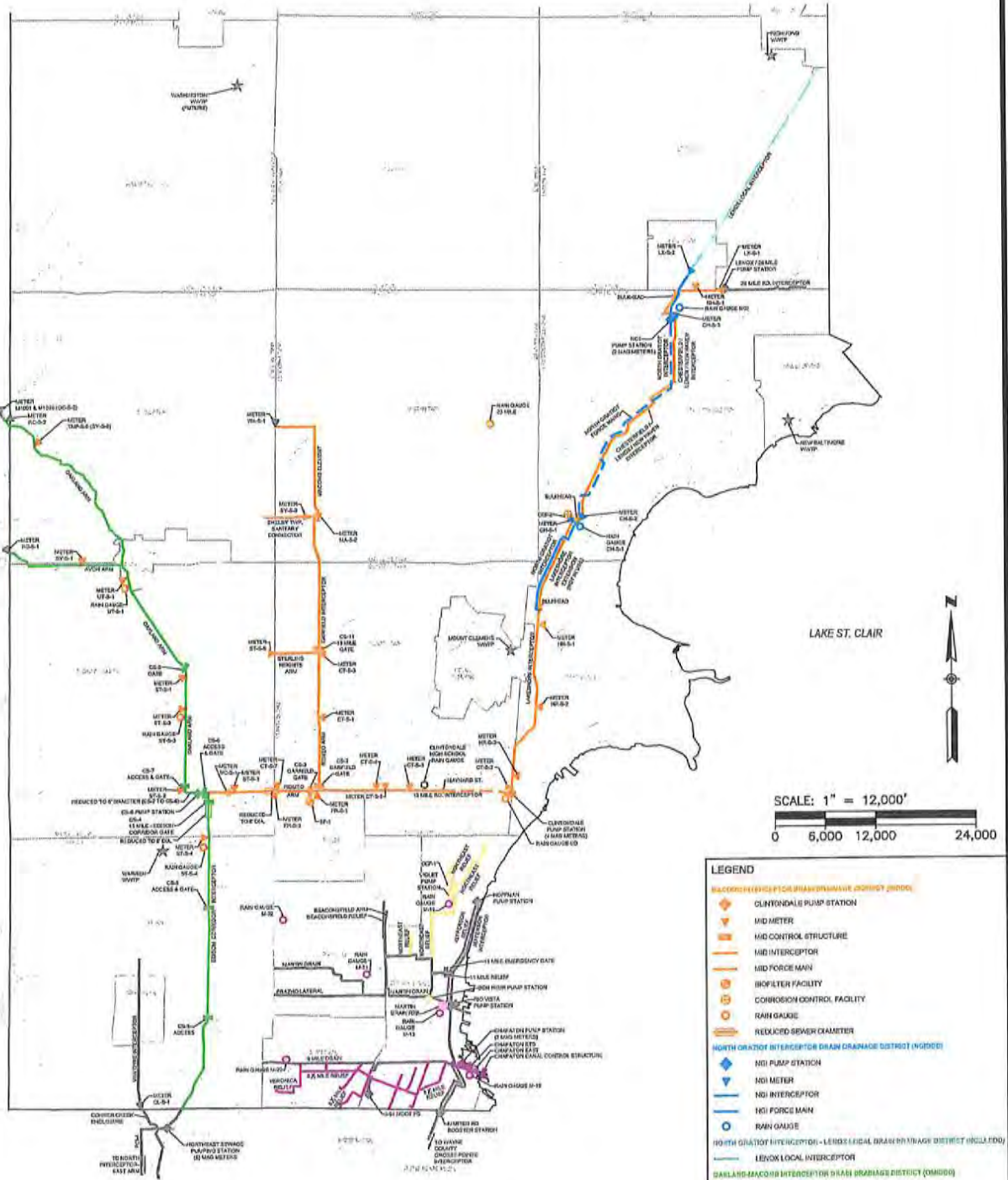


EIGHT AND ONE-HALF MILE RELIEF DRAIN
INTRA-COUNTY DRAINAGE BOARD
NOVEMBER 18, 2019
10:00 A.M.
AGENDA

	Page
1. Call of meeting to order and roll call	
2. Approval of Agenda for November 18, 2019	
3. Approval of Minutes for October 21, 2019	3
4. Public Participation	
5. Project Updates – Vince Astorino	
6. Change Order #1 Fischbeck As-Needed Engineering Services – Vince Astorino	5
Motion: To approve Change Order #1 to allocate an additional \$100,000 to the Fishbeck As-Needed Contract (8 ½ Mile District share \$75,000).	
7. Chapaton and Martin RTB Disinfection System Replacement Design – Vince Astorino	12
Motion: To award the disinfection system design contract to Wade Trim in the total amount of \$157,230 (8 ½ Mile District share \$107,780).	
8. Consideration for approval of invoices (see attached)	47
9. Financial Report – Bruce Manning	48
10. Adjourn	

MACOMB COUNTY WASTEWATER SYSTEMS



Candice S. Miller
 MACOMB COUNTY PUBLIC WORKS COMMISSIONER



- LEGEND**
- CLINTONVILLE INTERCEPTOR - LEVOX LOCAL DRAINAGE DISTRICT (MILL P.D.)
 - CLINTONVILLE PUMP STATION
 - MID METER
 - MID CONTROL STRUCTURE
 - MID INTERCEPTOR
 - MID FORCE MAIN
 - BIOPURIFIER FACILITY
 - CORROSION CONTROL FACILITY
 - RAIN GAUGE
 - REDUCED SEWER DIAMETER
 - NORTH ORKSTROY INTERCEPTOR - DRAIN DRAINAGE DISTRICT (MIDCO)
 - NDI PUMP STATION
 - NDI METER
 - NDI INTERCEPTOR
 - NDI FORCE MAIN
 - RAIN GAUGE
 - NORTH GRANTON INTERCEPTOR - LEVOX LOCAL DRAINAGE DISTRICT (MILL P.D.)
 - LEVOX LOCAL INTERCEPTOR
 - BARLAND/MACOMB INTERCEPTOR - DRAIN DRAINAGE DISTRICT (MIDCO)
 - CS-6 PUMP STATION
 - OMD METER
 - OMD CONTROL STRUCTURE
 - OMD INTERCEPTOR
 - REDUCED SEWER DIAMETER
 - 1/2 MILE RELIEF DRAIN DRAINAGE DISTRICT
 - CHAPATON WEST PUMP STATION
 - CHAPATON RETENTION TREATMENT BASIN
 - CHAPATON CANAL CONTROL GATE
 - 1/2 MILE INTERCEPTOR
 - RAIN GAUGE
 - SISKIWOOD PUMP STATION
 - CORROSION CONTROL FACILITY
 - SISKIWOOD INTERCEPTOR
 - MARTIN DRAIN RETENTION TREATMENT BASIN
 - OTHER SYSTEMS
 - PUMP STATION
 - METER
 - WWTP
 - INTERCEPTOR

An adjourned meeting of the Intra-County Drainage Board for the **EIGHT AND ONE-HALF MILE RELIEF DRAIN** was held in the Office of the Macomb County Public Works Commissioner, 21777 Dunham, Clinton Township, Michigan, on October 21, 2019, at 10:03 A.M.

PRESENT: Candice S. Miller, Chair
Bryan Santo, Member
Veronica Klinefelt, Member

ALSO PRESENT: Harold Haugh, Marvin Sauger, Jim Carabelli, Macomb County Board of Commissioners; Vince Astorino, Operations & Flow Manager, Brian Baker, Chief Deputy, Jeff Bednar, P.E., Environmental Resources Manager, Stephen Downing, Construction & Maintenance Manager, Bruce Manning, Financial Manager, Tom Stockel, Construction Engineer, Kellie Kource, Drain Account Specialist, Dan Heaton, Communications Manager, Macomb County Public Works

The meeting was called to order by the Chair, Candice Miller. A motion was made by Mr. Santo, supported by Ms. Klinefelt to approve the agenda as presented.

Adopted: YEAS: 3
NAYS: 0

Minutes of the meeting of September 9, 2019 were presented. A motion was made by Ms. Klinefelt, supported by Mr. Santo to approve the minutes as presented.

Adopted: YEAS: 3
NAYS: 0

The meeting was opened to public participation, then closed, there being no comments from the public.

Mr. Astorino updated the board that the two big projects, the canal expansion and in-system storage are moving along well. There is a meeting October 22 on the boat launch possible movement and to discuss recreational opportunities at the canal point. We should hit 10 million gallons in system storage with only one gate location. We will do an open house on Monday, October 28 for Shore Club and Harbour Club residents to let them know what is going on with the project.

Mr. Astorino informed the board that every time we take on water at Chapaton we have to flush the basin out. To do that we bring in Lake St. Clair water, and we have filled a canal out there with about 3 million gallons. We came up with a way to have a pipe go directly to the lake which should save the residents around \$230,000 a year in treatment costs. We also want to look at ways within the basin itself to make it better.

A motion was made by Ms. Klinefelt, supported by Mr. Santo to approve the change order #1 to Wade Trim in the amount of \$75,000 to evaluate options for replacement of the current flushing system.

Adopted: YEAS: 3
NAYS: 0

A motion was made by Ms. Klinefelt, supported by Mr. Santo to receive and file the project update by Mr. Astorino.

Adopted: YEAS: 3
NAYS: 0

The Chair presented the invoices totaling \$300,352.53 to the board for review and approval.

A motion was made by Mr. Santo, supported by Ms. Klinefelt to approve the invoices as presented.

Adopted: YEAS: 3
NAYS: 0

A motion to receive and file the financial report given by Mr. Manning was made by Mr. Santo and supported by Ms. Klinefelt.

Adopted: YEAS: 3
NAYS: 0

There being no further business, it was moved by Ms. Klinefelt, supported by Mr. Santo, that the meeting of the Eight and One-Half Mile Relief Drain Board be adjourned.

Adopted: YEAS: 3
NAYS: 0

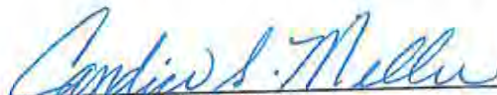
The meeting was adjourned at 10:16 a.m.



Candice S. Miller, Chair
Macomb County Public Works Commissioner

STATE OF MICHIGAN
COUNTY OF MACOMB

I certify that the foregoing is a true and correct copy of proceedings taking by the Intra-County Drainage Board for the Drainage District shown on the attached set of minutes, on October 21, 2019 the original of which is on file in the Public Works Commissioner's Office. Public notice of the meeting was given pursuant to Act No. 267, Public Acts of Michigan, 1975, including, in the case of a special or rescheduled meeting or a meeting secured for more than 36 hours, notice by posting at least 18 hours prior to the time set for the meeting.



Candice S. Miller, Chair
Macomb County Public Works Commissioner

DATED: 10/21/19



Candice S. Miller

Public Works Commissioner
Macomb County

To: 8 ½ Mile Relief Drain Drainage District Board Members

CC: FILE

From: Vincent Astorino, Operations & Flow Manager

Date: November 12, 2019

Subject: Change Order #1 Approval Request for As-Needed Engineering Services – FTCH

In early 2019, a competitive bid was issued on MITN for consultants to submit a Statement of Qualifications and Rate Schedule for as-needed engineering services. The Board approved the recommendation to award a contract to FTCH with an overall budget of \$198,919.00. The three drain districts known as the 8.5 Mile Drain Drainage District (8MRDDD), Martin Sanitary Diversion Drainage District (MSDDD), and Southeast Macomb Wastewater Drain System (SEMCWDS) were all included in this. That budget was allocated out as follows:

- 8MRDDD = \$151,919
- MSDDD = \$37,000
- SEMCWDS = \$10,000

The 2019/2020 MIDDD budget allocated a total of \$100,000 for As-Needed Engineering Services for the 3 drain districts. The budgeted split was broken out as follows:

- 8MRDDD = \$75,000
- MSDDD = \$15,000
- SEMCWDS = \$10,000

The MCPWO Engineering staff has determined a need to allocate additional funds to the As-Needed Engineering Consultant FTCH. The attached change order will allocate an additional \$100,000 to FTCH. The As-Needed Engineering Services contracts have allowed the MCPWO Engineering staff to quickly and efficiently obtain services for smaller tasks.

A draft copy of the change order has been attached for reference. On behalf of the MCPWO Engineering staff please approve this request to allocate \$100,000 to FTCH as Change Order #1 on the 8MRDDD as-needed contract.

Attachments: Change Order No. 1 – FTCH
2020 Rates

Change Order No.

1

Date of Issuance: 11/18/19
Owner: 8 1/2 Mile Relief Drain
Drainage District
Engineer: Fishbeck, Thompson,
Carr & Huber, Inc.

Effective Date: 11/19/19
Owner's Contract No.: WWS-2019-001
Engineer Contract No.: 19005
Contract Name: SE Macomb As-Needed

The Contract is modified as follows upon execution of this Change Order:

Add \$100,000 to the existing contract to provide as-needed engineering services at the direction of MCPWO Engineering staff. Updated hourly rate and fee schedule is attached.

Funds breakdown as follows:

- Task 1 - 8 1/2 Mile Relief Drain Drainage District - \$75,000
- Task 2 - Martin Sanitary Diversion Drainage District - \$15,000
- Task 3 - Southeast Macomb County Wastewater Disposal System - \$10,000

The original Contract Sum was: \$ 198,919.00

The net change from previously approved Change Orders No. to No: \$ 0

The Contract Sum prior to this Change Order: \$ 198,919.00

The Contract Sum prior to this Change Order will be increased by: \$ 100,000.00

The new Contract Sum, including this Change Order, will be: \$ 298,919.00

The Contract Time will be unchanged by: 0 (days)

The date of Substantial Completion as of the date of this Change Order, therefore, is:

ACCEPTED:
By: _____
Owner (Authorized Signature)

ACCEPTED:
By: _____
Engineer (Authorized Signature)

Title _____
Date _____
;

Title _____
Date _____
;

**Macomb County Public Works Office
SEMSD Area - As Needed Engineering Services**

Task Closed. Final Adjusted Fee
11/4/19

MCPWO Task No.	Tasks	Original Budget	Current Budget	FTCH	NTH	AEW	ASI	HRC
WO19005								
Task 1	8 1/2 Mile Relief Drain Drainage District							
Task 1.a	General As Needed	\$2,020.00	\$34.85	\$7,413.00	\$30,150.00	\$23,100.00		
Task 1.b	Chapaton Structural Integrity Study	\$60,663.00	\$60,663.00	\$7,146.00	\$9,110.00			
Task 1.c	Design of Repairs of 9MEB & 8 1/2 Interceptor	\$16,256.00	\$16,256.00	\$250.00			\$5,000.00	
Task 1.d	In-System Storage Prelim Design As Needed	\$5,250.00	\$5,250.00	\$22,183.40				
Task 1.e	Office Improvements Study	\$25,000.00	\$22,183.40	\$7,500.00				
Task 1.f	Maps	\$7,500.00	\$7,500.00	\$193.50			\$3,872.00	
Task 1.g	Chapaton Sampling Plan	\$4,200.00	\$4,065.50	\$2,084.25				
Task 1.h	Chapaton Survey	\$2,100.00	\$2,084.25	\$142.00			\$2,835.00	
Task 1.i	Chapaton Bar Screen Hydraulic Isolation	\$4,725.00	\$2,977.00	\$9,730.00				
Task 1.j	Chapaton Environmental Study	\$3,030.00	\$9,730.00	\$3,000.00				
Task 1.k	Chapaton Flow Meter Drawings	\$3,000.00	\$3,000.00	\$675.00			\$13,500.00	
Task 1.l	Chapaton High Water Protection	\$14,175.00	\$14,175.00	\$4,000.00				
Task 1.l	Chapaton 3D Diagram	\$4,000.00	\$4,000.00					
	Sub-Total	\$151,919.00	\$151,919.00	\$64,352.00	\$39,260.00	\$23,100.00	\$25,207.00	\$0.00
WO19006								
Task 2	Martin Sanitary Diversion Drainage District							
Task 2.a	General As Needed	\$5,325.00	\$7,826.15	\$7,826.15				
Task 2.b	Hydraulic Accumulator Design Replacement	\$10,000.00	\$10,000.00	\$10,000.00				
Task 2.c	Equipment Hatch Cover Design replacement	\$12,000.00	\$12,000.00	\$12,000.00				
Task 2.d	Martin Sampling Plan (ASI)	\$3,675.00	\$2,159.85	\$102.85			\$2,057.00	
	Martin Flow Meter Drawings	\$6,000.00	\$5,014.00	\$5,014.00				
	Sub-Total	\$37,000.00	\$37,000.00	\$34,943.00	\$0.00	\$0.00	\$2,057.00	\$0.00
WO19007								
Task 3	Southeast Macomb County WW Disposal System							
	General As Needed	\$10,000.00	\$10,000.00	\$10,000.00				
	Sub-Total	\$10,000.00	\$10,000.00	\$10,000.00	\$0.00	\$0.00	\$0.00	\$0.00
	Total	\$198,919.00	\$198,919.00	\$109,295.00	\$39,260.00	\$23,100.00	\$27,264.00	\$0.00



2020 Fishbeck Fee Schedule for Professional Services

The following is FTCH's comprehensive schedule with hourly rates for each of the applicable staff classifications. The hourly rates include overhead and profit. These rates apply to all the engineering fields we are submitting on and will remain for the duration of the 1-year contract.

Category	Role	2020 Rate
Project Management	Project Manager	\$175
Engineering (Civil, Mechanical, Electrical, Structural, Process)	Senior Engineer	\$175
	Engineer	\$136
	Staff Engineer	\$116
Inspection	Senior Technician	\$120
	Technician	\$99
	Staff Technician	\$77
Surveying	Senior Surveyor	\$136
	Surveyor	\$120
	Survey Specialist	\$110
GIS Mapping/CADD	Senior Technician	\$143
	Technician	\$110
	Staff Technician	\$93
Environmental Scientist	Senior Environmental Specialist	\$165
	Environmental Specialist	\$120
	Staff Environmental Specialist	\$99
Specialist	Senior Engineering Specialist	\$160
	Senior Estimator	\$171
Architecture	Senior Architect	\$175
	Architect	\$136
	Staff Architect	\$116
Administrative	Principal	\$218
	Senior Associate	\$192
	Associate	\$175
	Clerical/Production Support	\$74

Invoices are rendered every four weeks and payment is due upon receipt.

Direct Expenses

Category	Rate
Mileage/Passenger Vehicles	\$0.56/mile
Field and Services Vehicles	\$0.95/mile (\$37/day minimum)
Global Positioning Unit	\$50/hour
Survey Robot	\$35/hour
Flow Monitor	\$650/month
Equipment Schedule	Separate Schedule
Expenses and Outside Services	Cost plus 5%



EXHIBIT "A"

HOURLY-BASE FEE SCHEDULE

PROFESSIONAL SERVICES

Where it is agreed that fees for services will be based upon the time worked on the project, such fees will be computed at the following rates:

<u>Classification Hourly Rate</u>	<u>2020 Rates</u>
Principal Engineer/Surveyor/Architect	\$175.00
Project Manager	\$171.50
Senior Project Engineer	\$161.00
Project Engineer/Project Surveyor/ Resident Project Representative	\$146.00
Operation and Maintenance Specialist	\$140.00
Graduate Engineer/Surveyor/Architect	\$120.50
Team Leader/Designer	\$120.50
Drafter/Technician	\$ 99.50
Clerical	\$ 48.00
One-person Survey Crew (Crew Chief) w/Truck and Equipment	\$171.50
Two-person Survey Crew (Crew Chief and Instrument Man w/Truck and Equipment)	\$235.50
Three-person Survey Crew (Crew Chief and Instrument Man and Assistant w/Truck and Equipment)	\$290.50
Three Person Sewer Crew	\$340.00
Four Person Sewer Crew	\$415.00
Construction Observer	\$ 99.50

If necessary, the Consultant would serve on litigation or as an expert witness at a rate of 1.5 times the current hourly rate.

These rates are inclusive of all overhead items that are normal business operations. No reimbursable for normal business operations will be allowed, i.e., mileage, faxes, phone bills, etc.

Hourly-Basis Fee Schedule to be adjusted beginning January 1, 2021.

Effective January 1, 2020.



// 2019 FEE AND RATE SCHEDULE PROFESSIONAL SERVICES

PERSONNEL

Fees for our services will be based upon the time worked on the project by professional, technical and clerical personnel according to the following schedule:

	PER HOUR
Technician I*	\$55
Word Processor*	\$60
Technician II*	\$65
Technician III*	\$75
Technician IV* / Lab Technician*	\$80
CADD Operator	\$85
Staff Professional	\$110
Senior Technician/Certified Welding Inspector*	\$100
Senior Staff Professional	\$125
Project Professional	\$140
Senior Project Professional	\$155
Principal Engineer	\$175
Senior Principal Engineer	\$200
Corporate Officer	\$225

*For these personnel, overtime work will be charged at a rate equal to 1.33 times the Standard Rate.

A premium of 25 percent will be added to hourly rates for expert testimony and depositions, including preparation time.

NTH Consultants and Professionals include Engineers, Geologists, Environmental Specialists, Architects, Roofing Specialists, Industrial Hygienists, Environmental Health Specialists, Scientists, Asbestos Specialists, and Environmental Chemists. NTH Technicians include Engineering, Environmental, Construction Materials, and Environmental Health technical specialists.

NTH operates on a strong project management system, and a Project Manager is appointed for each project. Project Managers are selected from our staff of Senior Project Professionals, Principal Engineers and Senior Principal Engineers.

EXPENSES

The following expenses, when incurred in direct connection with the project, will be charged at the rate shown:

Transportation, Lodging and Subsistence for Travel	Cost + 10%
Printing, Reproduction, Photographs, Long Distance Telephone and Telecopier Charges, Shipping Charges and Material Purchases	Cost + 10%
Project Mileage for Company-Owned Vehicles	\$1.00 / Mile
Cellular Phone (Field Projects)	\$15 / Day
CADD Supply Charge	\$6 / Hour

Rental of Specialized Field, Laboratory or Monitoring Equipment will be billed as indicated on NTH Schedule of Equipment Usage Rates.

SUBCONTRACTORS / SUBCONSULTANTS

On projects requiring subcontractors or subconsultants, we will obtain the services of reputable contractors or consultants to perform such work. The fees of these contractors or consultants plus a 15% service charge will be added to our invoices.

INVOICES

Progress invoices will be submitted to the client monthly and a final bill will be submitted upon completion of our services. Invoices for cost plus and time and materials projects will show charges for different personnel and expense classifications. Each invoice is due on presentation and is past due thirty (30) days from invoice date. Client agrees to pay a finance charge of one percent (1%) per month on past due accounts. We reserve the right to suspend or terminate work under our agreement upon failure of the client to pay invoices when due.

INCREASES

Fee schedule increases made by our firm on an overall client basis will be applied to work on all projects as the increases become effective.



2020 Hourly Labor Billing Rates

<u>Classification</u>	<u>Rate</u>
Principal Engineer	\$170.00 (Ridgway)
Senior Project Manager	\$146.00 - \$157.00 (Michalski, Curson, Minor)
Project Manager	\$130.00 (Szlaga, Wood)
Project Engineer	\$88.00 - \$115.00 (Wahrman, McConnell, Wiebe)
Staff Engineer	\$73.00 - \$85.00 (Campbell, Dandayudham, Walker, Dywer, Kelly)
CADD	\$58.00 - \$96.00 (Hawley, Herold)
Technician	\$51.00 - \$82.00 (Malburg, Davis, Gorday)
Controller	\$119.00 (Capobres)
Clerical	\$65.00 (Lynn)

Overhead Rate = 145%

Profit = 15%

Mark-Up on Other Direct Costs = 5%



To: 8 ½ Mile Relief Drain Drainage District Board Members
Martin Sanitary Diversion Drainage District Board Members

CC: File

From: Vincent Astorino, Operations & Flow Manager

Date: November 12, 2019

Subject: Chapaton and Martin RTB Disinfection System Replacement Design Recommendation

The Macomb County Public Works Office (MCPWO) has identified that a critical capital improvement need for the Chapaton and Martin RTB's is the replacement of the disinfection systems. These are systems that were installed in approximately 1978 and have exceeded the end of their useful life. Due to this, MCPWO has budgeted in the 19/20 budget cycle to undergo the complete replacement of these systems. Chapaton has budgeted \$1,000,000 dollars and Martin has budgeted \$200,000 for the complete cost of the project.

Wade Trim was awarded a contract to evaluate these systems in 2018 as part of a publicly bid project on MITN. As part of that evaluation, they came to the same conclusion as the MCPWO staff that the systems were in need of replacement.

MCPWO then put together a request for proposal and sent it out to two qualified firms to perform the design and construction administration of the work. Those firms were Tetra Tech and Wade Trim, both of which have a vast amount of experience with disinfection systems and either one would be perfect for the job.

Since both firms were pre-qualified and would score high from a technical standpoint, scoring for this proposal was strictly based off of cost and they are as follows:

- Tetra Tech = \$169,250
- **Wade Trim = \$157,230**

This work will be split between Chapaton and Martin. This has been done by using separate task numbers for the project. The split to each district is as follows for the low scoring firm:

- Task 1 (Chapaton) = \$107,780
- Task 2 (Martin) = \$49,450

MCPWO staff is recommending to award the contract to Wade Trim in the total amount of \$157,230 to design the replacement of the disinfection systems. Their proposal has been attached for reference.



/// CHAPATON AND MARTIN RETENTION TREATMENT BASIN DISINFECTION IMPROVEMENTS

8½ MILE RELIEF DRAIN DRAINAGE DISTRICT & MARTIN SANITARY
DIVERSION DRAINAGE DISTRICT

NOVEMBER 8, 2019



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Section 1

/// LETTER OF INTRODUCTION



Wade Trim Associates, Inc.
25251 Northline Road • Taylor, MI 48180
734.947.9700 • www.wadetrim.com

November 8, 2019

8 $\frac{1}{2}$ Mile Relief Drain & Martin Sanitary Diversion Drainage Districts
Macomb County Public Works Office
21777 Dunham Road
Clinton Township, MI 48036

Attention: Vincent Astorino

Re: Chapaton & Martin Retention Treatment Basin Disinfection Improvements
MCPWO Project No. WWS-2019-017

Dear Selection Committee:

The Macomb County Public Works Office (MCPWO) has elected to select an engineering consultant to provide services for improvements to the disinfection system in the Chapaton Retention Treatment Basin (CRTB) and Martin Retention Treatment Basin (MRTB) facilities. These disinfection improvements will result in a new simplified and automated system tied into SCADA that will increase reliability and ease of maintenance so that protection of our waterways can continue without interruption.

Wade Trim recently completed a detailed review of the existing disinfection study at the Chapaton RTB and the Martin RTB as part of the Basin Segmentation and Disinfection System Upgrade Study. As part of this study Wade Trim was able to meet with MCPWO staff, review documentation and ultimately gain intimate knowledge of the existing disinfection system that will allow us to move expeditiously to meet the milestone schedule dates outlined in this request for proposal.

Wade Trim excels in the planning, design and construction management of wastewater collection system and treatment improvements and rehabilitations. We have helped some of the nation's largest utilities expand and rehabilitate their collection systems developing specialized expertise to address wastewater and wet weather capacity and water quality issues. Expert design skills are needed to support rehabilitation and upgrade efforts and manage wet weather flows. Wade Trim brings this skill set steeped in a rich history of successfully addressing these challenges. Wade Trim will lead this effort and will provide project management services as well as a local engineering team. A large engineering support staff provides the additional resources needed to deliver successful projects. A review of our resumes reveals the depth of experience and knowledge gained working with regional utilities with similar aging infrastructure, wet weather capacity, and water quality concerns as MCPWO.

To conduct the Chapaton and Martin Basins improvements, Wade Trim has assembled a project team with expertise in CSO RTB disinfection design and construction that can provide the creative and innovative solutions required. Our Project Manager, John Arvai, PE, has comprehensive knowledge of the challenges of designing

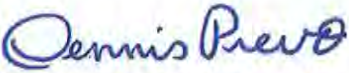
and constructing water and wastewater projects within confined areas that also require critical sequencing and phasing of the work to keep facilities operational. To complement John's expertise, he will be supported by experienced technical CSO design experts in process disinfection and electrical. Jeff Reynhout, PE, Process Disinfection, has 43 years of CSO experience and has worked on multiple disinfection throughout the Michigan and the midwest. Alan Schwab, PE, Electrical/I&C, has 25 years of industry experience and has provided electrical engineering for similar systems as Chapaton and Martin RTBs.

We believe the keys to success for this project are to design easy-to-access and maintainable equipment, to make sure equipment performs as expected, the system enhances control of TRC, and to effectively manage design and construction budgets. Our team is eager for the opportunity to continue our work with Macomb County on this important project that will protect our water, reduce operational costs, and improve facility efficiencies. Please call us at 313.961.3650 to discuss any questions or obtain any further information needed.

Very truly yours,
Wade Trim Associates, Inc.



John Arvai, PE
Project Manager



Dennis Prevo, PE
Senior Vice President

/// KEY PERSONNEL

Successful planning, design, and construction management of engineering projects depend on a range of skills and disciplines to deliver final projects that meet client needs and objectives. The ultimate success of a project hinges on the people, their experience, and their commitment to the team and the project. Wade Trim is confident that our team members have the capacity to make sure completed projects are a success for the 8½ Mile Relief Drain Drainage District and the Martin Sanitary Diversion Drainage District. Our professionals understand the value of delivering service seamlessly from local and multiple office locations. We have identified key personnel to provide their specialized expertise. In this section you will find brief bios and resumes of our key personnel.



JOHN ARVAI, PE
Project Manager
Cost Estimating & Constructability



23 Years of Industry Experience

✓ Currently serving as the Project Manager for the Chapaton RTB Canal Upgrade

✓ Familiar with MCPWO practices and procedures

Our team will be led by John Arvai who will serve as Project Manager and will also perform Cost Estimating and Constructability review for this project. John is currently serving as Project Manager for the Chapaton RTB Canal Upgrades as well as the MIDD As-Needed Engineering Services projects and is aware of MCPWO expectations. John's vast and extensive understanding of design and construction in a municipal environment provides him with the ability to integrate cost saving measures into the project.

John Arvai has also served as project manager and lead estimator on large municipal water/wastewater system construction work, which has included new construction, renovation and improvements at water/wastewater treatment plants, pump stations, reservoirs, and distribution systems. Thru these experiences, John has gained a large base of knowledge in the water and wastewater industry, which includes sequencing and phasing of work, demolition, deep shafts, dewatering, bypass pumping, excavation, structural concrete, process mechanical and equipment, electrical and instrumentation including SCADA. John's firm understanding of project management, schedule development, the construction process, constructability, value engineering and the importance of building, managing and maintaining relationships helps to ensure assigned projects successfully meet schedule milestones and budgets.

/// KEY PERSONNEL



STEVE KALINOWSKI, PE
QA/QC



40 Years of Industry Experience

✓ Implemented solutions to control wet weather flows throughout Macomb, Oakland, and Wayne county sewer districts

Steve Kalinowski, PE, brings in-depth understanding of collection systems based on his extensive work history planning, designing, and supporting construction services and post-construction activities for storage systems in Wayne and Oakland counties. He also brings diverse project experience evaluating and designing solutions to address the range of collection system issues including CSOs, basement flooding, and inflow and infiltration. His hydrologic and hydraulics expertise covers model development, alternative evaluation and designing system input. Steve manages a project from initial evaluation to pinpoint the problem through solution development and post-project monitoring. He has developed and implemented solutions to control wet weather flows throughout southeastern Michigan.



JEFFREY REYNHOUT, PE
Process Disinfection



43 Years of Industry Experience

✓ Implemented disinfection on many facilities from less than 1 mgd to 945 mgd

Jeffrey Reynhout, PE, is a Process Engineer attentive to operator friendly designs and good equipment selection. He embraces the concept that in addition to achieving regulatory requirements, treatment processes must be practical to operate and maintain. He has worked as project manager on several disinfection projects for Grand Rapids, Detroit, Wayne County, and Indiana including the Market Avenue project leading design on a 32 MG RTB including a new 1 BGD pump station, flushing, and disinfection systems. Jeff has also led the process design and provided QA/QC for improvements at CSO facilities from 50 MGD to 945 MGD. Much of his wastewater treatment experience has involved designing and constructing improvements and additions to existing facilities with minimal impact on day-to-day plant operations.



JIM WHITE, PE
Structural



33 Years of Industry Experience

✓ Expertise in structural analysis of pump stations, WWTPs, CSOs, and equalization basins

James White, PE, has worked on a variety of structural projects and has been involved in planning, design and construction phases gaining valuable knowledge of client expectations throughout a project. Jim has served as project manager and structural engineer on a variety of infrastructure projects including seawalls, dams, wet weather pollution control facilities, pump stations and industrial/commercial structures. His recent design experience has focused on tunnel-related structures, seawall repair and replacements along the Detroit River, multi-million dollar combined sewer overflow and sanitary retention facilities and wastewater treatment plants.

/// KEY PERSONNEL



ALAN SCHWAB, PE
Electrical/I&C



25 Years of Industry Experience

✓ Engineered the hardware and software and provided testing and implementation of electrical control systems for WWTPs

Alan Schwab, PE, is a seasoned electrical engineer with extensive design and field engineering experience. He provides project management for field instrumentation and start up for electrical control systems. He has engineered the hardware and software and provided testing and implementation of electrical control systems for water/wastewater treatment plants and automated material handling systems in automotive plants. He has spent many years in the field inspecting, testing, evaluating, and up-starting electrical equipment including MCCs, motors, generators. His design experience allows him to possess knowledge of being able to evaluate the condition and performance of electrical equipment. Alan is also a proficient report writer which will allow him to document valuable needed information in the field while conducting tests and inspections that will ultimately be used to prepare the evaluation summary on all findings and test results.



JOHN GOLDEN
BIM



29 Years of Industry Experience

✓ BIM and virtual design professional with experience on several CSO projects

John Golden is a BIM Specialist, BIM Technical Lead, and Virtual Design and Construction professional with 29 years of experience. He is familiar with architectural, structural, mechanical, electrical, civil, automotive, and land development projects. John is an imaginative individual and excels at problem solving and innovative use of tools and resources. He also has extensive experience with residential, commercial, office, manufacturing, industrial, design and construction.

JOHN ARVAI, PE

PROJECT MANAGER /
COST ESTIMATING & CONSTRUCTABILITY



EDUCATION

- » MS, Construction Management, Eastern Michigan University
- » BS, Civil and Environmental Engineering, University of Michigan

REGISTRATION

- » Professional Engineer, MI
- » 30-hour Occupational Safety and Health Training

QUALIFICATIONS

- » 23 years of experience serving as project manager and lead estimator on municipal, water and wastewater construction projects
- » Experienced with municipal requirements and industry standards

REPRESENTATIVE PROJECT EXPERIENCE

- Chapaton RTB Canal Upgrade, Macomb County Public Works Office, MI. Project Manager for the design of a new gate structure and canal basin expansion in order to create an additional 12 to 15 MG of capture volume. The project requires considerable geotechnical, hydraulic, and site engineering design work. Approximately 1,400 feet of the existing canal cross section will be converted into additional storage by increasing the width and depth. This project will increase MCPWO to retain additional volume leaving the RTB prior to discharging into Lake St. Clair and allows MCPWO to send the captured volume back thru the RTB into their sewer system. The project is presently at the 60% design phase.
- Retention Treatment Basins (RTBs) Segmentation and Disinfection System Upgrade Study, Macomb County Public Works Office, MI. Project Manager for feasibility study exploring improvements to the Chapaton (28-MG storage capacity) and Martin (10-MG storage capacity) RTBs to better manage treatment and retention of flows within the RTBs. Disinfection systems were evaluated with a focus on upgrading chemical feed pumps and improving dosing efficiency. Segmentation options for first flush capture tank were also evaluated. A targeted first flush capture design volume was established and utilized to develop first flush segmentation options for review. Computational fluid dynamics (CFD) modeling is being used to verify the flow through the basin and effectiveness of the preferred first flush segmentation option. Aerial mapping and a bathymetric survey of the Chapaton canal was also performed.
- Macomb Interceptor Drain Drainage District (MIDD) As-Needed Engineering Services, Macomb County Public Works Office, MI. Project Manager. Wade Trim has performed work tasks at the Clintondale and North Gratiot Interceptor (NGI) Pump Stations. At Clintondale, issues related to air relief valves and electrical items were evaluated and solutions recommended in a technical memorandum. At NGI, we designed the replacement sluice gates and the addition of a new, smaller dry weather pump. The project has bid and we are currently moving toward award of the start of construction.
- Saddle Creek CSO Retention Treatment Basin (RTB), Omaha PWD, NE. Project team member on this 315-MGD RTB performing constructability reviews and managing the construction schedule and cost estimate development at concept confirmation, 60% design stage and 90% design stage. Leading contractor outreach program effort. Assisting with value engineering and mass concrete quality control review and specification development.
- Preliminary Planning EHRT Evaluation, Allegheny County Sanitary Authority. Project team member on this HRT basin and pump station project assisting with cost estimate development and constructability review for conceptual options at different locations.
- Gravois and Hafner Storage Studies, St. Louis Metropolitan Sewer District, MO. Project team member assisting with basin and pump station cost estimate and constructability review for various basin options at different locations.

- PC-789, Pump Station 1 Rack and Grit and MPI Sampling Station 1 Improvements, Great Lakes Water Authority (GLWA), Detroit, MI. Lead Estimator and Project Manager for the \$20,915,000 modifications and improvements project for the existing grit and screening handling system. Project included bar screen, conveyor and grit equipment replacement, electrical and instrumentation and controls improvements and process piping system.
- PC-787, Replacement of Belt Filter Presses for Complex I and Upper Level Complex II, GLWA, Detroit, MI. Project Manager for the \$30,200,000 construction project to replace 10 belt filter presses for Complex I and 12 upper level belt filter presses for Complex II dewatering, SFE booster pumps, sludge belt conveyors, sludge grinders, and all related supportive equipment including control panels and associated wiring.
- G.W. Kuhn Drain Regulator Reconstruction and Improvements, Contract No. 5, Oakland County Water Resources Commissioner, MI. Renovated 5 existing sewage regulator chambers consisting of excavation, shoring, concrete demolition, gate demolition, traffic control, flow isolation, bypass pumping, and cast-in-place concrete. The \$1,240,000 project also included new hatches, fiberglass ladders, platforms, and manual and electric regulator gates with control panels and related instrumentation, as well as site restoration.
- GWK Drainage District Asset Management Plan (AMP), Oakland County Water Resources Commissioner, MI. Senior Project Manager assisting with the development of GWK AMP that is part of a larger initiative to develop AMPs for all OCWRC assets. Horizontal assets include sewers and manholes under the jurisdiction of WRC. Vertical assets include the Retention Treatment Basin, associated flushing system and Dequindre Pump Station.
- Miller Road Pump Station Rehabilitation, City of Dearborn, MI. Project Manager for a \$6,580,000 construction project that included isolation and bypass pumping of existing sewage influent which allowed demolition of existing superstructure as well as removal and replacement of all pumps, shafts, motors, piping, valves, electrical and instrumentation in the pump station.
- Saline WWTP Improvements, Phase II, City of Saline, MI. Lead Estimator and Project Manager for \$3,072,000 construction project that replaced rotating biological contactor drives, motors and bearings, replacement of sludge digester precast cover, repairs to odor control unit, other structural repairs, and electrical and instrumentation improvements.
- DB-112 Springwells WTP Emergency Grating, GLWA, Detroit, MI. Project team member on this design build renovation performing quality assurance reviews of contract plans and specifications at the 50% design stage and the 90% design stage. Renovation work includes replacement of deteriorated steel platforms and support framing in 5 areas of the low lift and high lift stations along with process removals and installation.
- PC-674 Connor Station and Fox Creek Building Rehabilitation, Detroit Water and Sewerage Department (DWSD), Detroit, MI. Project Manager for construction of \$27,200,000 project that required sequenced removal and replacement of 4 sanitary sewage pumps (Max Capacity of 229 MGD), drive shafts and motors, electrical, instrumentation and controls in the sanitary pump station. Existing vacuum priming system for 8 storm water pumps (Max Capacity of 2,544 MGD) was replaced including electrical, instrumentation and controls in the storm pump station. Work included sluice gate and actuator replacements, site, architectural and mechanical renovations.
- DWS-823 Michigan Avenue Booster Pumping Station Rehabilitation, DWSD, Detroit, MI. Project Manager for the \$2,200,000 construction project that included removal and replacement of 2 reservoir pumps, shafts, motors and associated piping and valves in the booster pump station. Project also included electrical, instrumentation and HVAC improvements as well as architectural building repairs.

STEVEN KALINOWSKI, PE

QA/QC



EDUCATION

- » BS, Civil Engineering, Michigan State University

REGISTRATION

- » Professional Engineer, MI

QUALIFICATIONS

- » 40 years of experience evaluating and designing , cost-effective solutions to address drainage issues, control flooding, and disinfection for regional and local municipal systems
- » Developed and implemented solutions to control wet weather flows throughout Macomb, Oakland, and Wayne county sewer districts

REPRESENTATIVE PROJECT EXPERIENCE

- Chapaton RTB Canal Upgrade, Macomb County Public Works Office, MI. Design Lead for the design of a new gate structure and canal basin expansion in order to create an additional 12 to 15 MG of capture volume. The project requires considerable geotechnical, hydraulic, and site engineering design work. Approximately 1,400 feet of the existing canal cross section will be converted into additional storage by increasing the width and depth. This project will increase MCPWO to retain additional volume leaving the RTB prior to discharging into Lake St. Clair and allows MCPWO to send the captured volume back thru the RTB into their sewer system. The project is presently at the 60% design phase.
- Retention Treatment Basins (RTBs) Segmentation and Disinfection System Upgrade Study, Macomb County Public Works Office, MI. Design Lead for feasibility study exploring improvements to the Chapaton (28-MG storage capacity) and Martin (10-MG storage capacity) RTBs to better manage treatment and retention of flows within the RTBs. Disinfection systems were evaluated with a focus on upgrading chemical feed pumps and improving dosing efficiency. Segmentation options for first flush capture tank were also evaluated. A targeted first flush capture design volume was established and utilized to develop first flush segmentation options for review. Computational fluid dynamics (CFD) modeling is being used to verify the flow through the basin and effectiveness of the preferred first flush segmentation option. Aerial mapping and a bathymetric survey of the Chapaton canal was also performed.
- Priority 1B Improvements, Wayne County, MI. Design Task Manager for disinfection system improvements at three existing CSO RTBs located in Dearborn Heights, Redford Township, and the City of River Rouge. Design evaluations included review of all aspects of existing disinfection systems, and selection of improvement recommendations to upgrade and replace aging equipment with new technology and instrumentation for improved treatment efficiency and enhanced operation and maintenance. Selected improvements included use of peristaltic hose pumps, upgrades to distribution piping and valves, and instrumentation and controls for more efficient chemical dosing and treatment. Design evaluations were conducted in collaboration with County engineering and operations staff to confirm equipment features and preferences for improving automated processes for basin operations and maintenance.
- Upper Duck All Bundle, Metropolitan Sewer District of Greater Cincinnati, OH. System Design Lead for wet weather improvements bundle that includes conveyance sewers, regulator improvements, sewer separation and bioretention basins to address SSO and CSO in areas tributary to the Duck Creek Interceptor.
- North Huron Valley/Rouge Valley Wastewater Control System, Wayne County, MI. Project Engineer for the planning and design of system improvements including a 17 mile parallel relief interceptor, 2.2 million gallon wet sanitary retention basin, and a wet weather lift station. Project included design and construction of a permanent flow monitoring system consisting of approximately 35 flow meters and rain gauges, and a telemetry system for remote site data collection and analysis.

- Middlebelt Transport Storage Tunnel, Oakland County WRC, MI. Hydraulic/Hydrologic Lead for design and construction of a 7,600-foot-long, 9-foot-diameter tunnel along Middlebelt Road in Farmington Hills to address system bottlenecks and prevent potential SSOs along the Farmington Interceptor.
- Village Oaks. Chaucer Court Drainage Area Study, City of Ann Arbor, MI. Project Manager for investigation and evaluation of improvement alternatives to address surface flooding in a residential area. Includes hydrologic/hydraulic modeling analysis to determine runoff impacts of upstream properties on the storm sewer and detention basin systems tributary to the Malletts Creek. Local residents and the Washtenaw County Water Resources Commissioner staff are major stakeholders in the study.
- Holland Road Drainage Improvements, City of Taylor, MI. Completed a storm drainage project within the LeBlanc Drainage District consisting of a detention basin, open drain clean out, and storm sewer construction. The detention basin design incorporated features to create new wetland areas as a wetland mitigation project.
- Ecorse Creek Pollution Abatement Drain No. 3, , Wayne County, MI. Managed a drainage improvement project consisting of a 36-acre-foot retention basin, pump station, and 10,000 linear feet of 12-inch through 78-inch storm sewers. The project was designed to serve as a water hazard for the Taylor Meadows Golf Course development constructed on the site. Project included establishment of a new county drainage district to consolidate existing districts served by the improvements on the Wayne County Long and Schloff Drains. Duties included concept, design, construction engineering, and startup.
- Allen Park District One Tunnel, City of Allen Park, MI. Project Manager for wet weather storage and transport tunnel located within major urban area crossing several railroads, gas and oil pipelines, major interstate highway, as well as residential area and college campus. The project includes 3,400 lineal feet of 96-inch diameter sewer in soft ground tunnel, 1,400 lineal feet of 14-inch diameter force main, 3,000 lineal feet of 18- to 60-inch diameter connecting and/or relief sewers, 400 lineal feet of 15- to 18-inch pipe-bursting, and a new 28.4 cfs submersible pumps station with below ground mechanical room and above ground electrical and generating room.
- Lower Rouge Equalization Basin and Pump Station, Western Townships Utilities Authority. Project Manager for the design of a pumping and equalization storage expansion to an existing facility. The existing pump station is designed to be upgraded with new pumps and piping to provide 120 MGD firm capacity to equalization and/or treatment. A second equalization basin of 5.5 MG is being constructed to double the storage capacity of the existing facility. Installation of larger pumps in an existing wet well was verified by physical modeling. The project site design included restoration of the entire site with native prairie grass plantings and storm water management features to reduce the quantity and improve quality of runoff from the site, including a prairie grass roof over the basin, 6,000 cubic foot capacity rain garden, grass pavers for maintenance access drive, and a storm water retention pond with sediment forebays and vegetative swales.
- South Omaha Area Industrial Project, City of Omaha PWD, NE. Conveyance Task Lead for study and design phase for new interceptor to address wet weather overflows by diverting high strength meat packing waste from the collection system directly to the WWTP. Developed and evaluated alternatives for diversion of flows through new interceptor that included sewer separation, gravity sewer tunnel, and a lift station with a combination force main and gravity sewer. Final solution included a 17.4-MGD lift station and dual force main to handle highly variable flow and facilitate future cleaning with built-in pigging system.
- Downriver Wastewater Management Study, Wayne County, MI. A flow monitoring program to establish existing flows within the regional interceptor system. Responsibilities included data analysis for determining existing conditions, evaluating sewer capacity, developing alternatives for system improvements, and a permanent flow monitoring scheme.

JEFFREY REYNHOUT, PE

PROCESS DISINFECTION



EDUCATION

- » BS, Civil Engineering, Michigan Technological University

REGISTRATION

- » Professional Engineer: MI, MO, NE, NY, OH, PA, TN, VA

QUALIFICATIONS

- » 43 years of design and construction experience, including WWTP improvements design
- » Attentive to operator-friendly designs and good equipment selection
- » Adept in construction sequencing to maintain continuous operations and minimize impacts
- » Implemented UV disinfection on many facilities from less than 1 mgd to 62 mgd, including enclosed tubes and open channel of various types
- » Lead Process Mechanical Engineer for Wade Trim

REPRESENTATIVE PROJECT EXPERIENCE

- Market Avenue Retention Basin, Grand Rapids, MI. Project manager and lead designer on this 32 MG RTB, including a new 1 BGD pump station, flushing and disinfection systems. Disinfection included sodium hypochlorite flow paced chemical addition, and sodium bisulfite in preparation for TRC control, the only CSO facility in the state to have this feature. The first CSO facility constructed under new state guidelines in the 1980s, and first to use computer-based controls.
- LS 507 CSO facility, Indianapolis, Indiana. Lead designer for the improvements to the LS 507 CSO facility, constructed in a flood plain and lacking screening, disinfection and dichlorination capability. The project included design and construction of horizontal fine screens, dry weather pumping, metering, NaOCl disinfection and bisulfite dichlorination, all constructed in the confines of the existing facility. Challenges included keeping equipment protected from flooding, maintaining access, and construction of improvements when facility was in service.
- 3 Basins Project, Wayne County, MI. Lead process designer for three demonstration basins for Inkster, Dearborn Heights and Redford Townships, each facility including new pump stations, screening equipment and disinfection. Each demonstration basin had different features to provide regulatory agencies with information for ongoing practices for controlling CSO issues.
- Milk River Intercounty Drainage Board Wayne County, MI. Project Manager and lead designer on the major improvement to the existing pump station and 4 MG reservoir. Improvements in the multi-staged project included refurbishment to some existing 1500 and 1750 Hp pumps, new 28 MG basin, new disinfection facilities, new flushing system, new mile long river recirculation system, and new DCSO effluent aeration system. Challenges included public engagement, keeping existing facility in service, and meeting SRF schedules.
- Baby Creek CSO High Rate Treatment Detroit, MI. Project Manager and lead designer on this 5,000 cfs facility, constructed in Patton Park on the border between Detroit and Dearborn. Facility was needed to provide fine screening and disinfection for the protection of the Rouge River. Challenges overcome were public acceptance, difficult hydraulics, and high flow rates.
- Rouge River Outfall, Detroit, MI. Served on the oversight committee for the benefit of the WRRF staff in reviewing and offering comment on this design build work to provide new NaOCl disinfection facility construction at the crowded WRRF site. Facility provided for the disinfection of wastewater plant discharges to Rouge River when the Detroit River outfall was hydraulically limited.
- Mill Creek WWTP Pump Station Rehabilitation, Metropolitan Sewer District of Greater Cincinnati, OH. Provided QA/QC and advised on pumping station processes for the 450 MGD rehabilitation design on the upgrade of a raw sewage pump station.

- Pontiac WWTP Capacity Evaluation and Compliance Assessment, Oakland County WRC, Pontiac, MI. Evaluated each unit process at the Auburn and East Blvd. WWTPs, and determined a nominal capacity for average and max day flows. Compared flows with firm capacity in support of County's due diligence for acquiring the facility.
- Pontiac Auburn WWTP Mechanical Screen Replacement and Digester Mixing Improvements, Oakland County WRC, Pontiac, MI. Project Manager for new mechanical bar screens and digester mixing. Evaluated several mixing technologies and settled on linear motion mixer. Also added new fixed steel cover to project during design.
- Southerly WWTP First Stage Final Settling Improvements, NEORS, Cleveland, OH. Senior Project Engineer responsible for evaluation and design of replacement pumps, piping, meters and controls for 21 existing return activated sludge pumps, and 3 new activated sludge pumps to serve 10 refurbished and 1 new final settling tanks. Also evaluating and designing grease receiving and storage facility to accommodate an average of 25,000 gallons per day of grease trap waste, to be mixed with plant skimmings and incinerated in the new fluid bed incinerators, part of the Reusable Energy Project.
- Canonsburg Township WWTP Improvements, Canonsburg Houston Joint Authority, PA. Performed biddability/constructability reviews and provided QA/QC for headworks pumping and screening, primary tanks, anaerobic digester rehabilitation, and other improvements.
- District No. 3 WWTP Expansion and Improvements, Genesee County Drain Commissioner, MI. Senior Project Engineer responsible for planning, design and construction activities for improvements and expansion to headworks, raw sewage pumping, primary and secondary treatment and disinfection. The expansion increased treatment average daily flow capacity from 3.8 MGD to 11 MGD. During the study phase, the plant's performance was thoroughly evaluated to determine the most cost-effective design. Completed in 2008, the project was constructed under three contracts to minimize the impact on plant operations and fast track improvements that enhanced operations.
- WWTP Expansion, Ypsilanti Communities Utilities Authority, Washtenaw County, MI. Performed QA/QC and design consultation of all wet processes to expand capacity from 29 to 45 MGD. Designed UV disinfection system to handle peak flow of 63 MGD.
- Wyandotte WWTP Improvements, Wayne County Department of Environment, MI. Performed value engineering for medium pressure UV disinfection and pure oxygen activated sludge improvements for 225-MGD WWTP.
- WWTP Expansion, City of Lansing, MI. Responsible for QA/QC of design improvements to expand tertiary plant to 37 MG. Wrote process and controls section of O&M manual.
- Brush Creek WWTP Solids Process and Handling Upgrades and Improvements, Western Westmoreland Municipal Authority, PA. Performing biddability/constructability reviews and providing QA/QC for anaerobic digester rehabilitation, solids dewatering, waste-activated sludge system and laboratory facilities improvements for this 4.4-MGD facility.
- Holland WWTP Study and Expansion, City of Holland, MI. Project Engineer responsible for wastewater treatment plant planning report recommending short-term and long-term solutions for needed plant improvements and expanded capacity. Implemented recommendations for expansion of the existing facility from design through construction at this pure oxygen treatment facility.
- St. Clair County WWTP Improvements, St. Clair County, MI. Project Manager responsible for planning, design and construction to replacing failing RBCs with oxidation towers. Required careful sequence of construction criteria as the entire secondary process was replaced while maintaining compliance with the plant's discharge permit.
- Mount Clemens WWTP Expansion and Upgrade, City of Mt. Clemens, MI. Project Engineer for this major expansion and upgrade, revising this extended air/lagoon plant to an oxidation ditch secondary with tertiary filters. Existing facilities were integrated in the design of the new plant.

JIM WHITE, PE
STRUCTURAL



EDUCATION

- » BS, Civil Engineering, Structural Emphasis, University of Toledo

REGISTRATION

- » Professional Engineer: MI, FL, PA, TN

QUALIFICATIONS

- » 33 years of structural engineering experience for collection and treatment system rehabilitations
- » Expertise covers structural analysis of pump stations, WWTPs, CSO, and equalization basins

REPRESENTATIVE PROJECT EXPERIENCE

- Mill Creek WWTP Raw Sewage Pump Station Rehabilitation, Metropolitan Sewer District of Greater Cincinnati, OH. Project Manager for \$7.5 million rehabilitation of 360 MGD North Pump Station that works with the 155 MGD South Pump Station to provide an ultimate raw sewage pumping capacity of 450 MGD to the WWTP. The station includes 9 pumps of which 3 are variable frequency drives. All of the existing pumps are being rehabilitated and new motors installed. Structural rehabilitation of the 50-foot wet well includes concrete repairs and application of a new protective coating. Two, 96-inch diameter steel force mains are also receiving interior coatings to extend their service life. Architectural upgrades to the building are also part of the project.
- Duck Key WWTP Expansion, the Florida Keys Aqueduct Authority, FL. Lead Structural Designer (FKAA) for upgrade of Duck Key Wastewater Treatment Facility to meet advanced wastewater treatment effluent limits by 2010 and provide centralized service to Hawk's Cay, Conch Key and Duck Key. The facility consists of two separate treatment plants and a reclaimed water storage and pumping system.
- A. Ragnone WWTP Wet Weather Basin and Pump Station Improvements, Genesee County Drain Commissioner, Montrose Township, MI. Project Manager for a new 2 mg wet weather treatment basin located adjacent to the WWTP. The basin is designed to provide a surface overflow rate of 2,000 gpd/sf for solids removal and 15 minutes of contact time for disinfection at a peak flow rate of 50 mgd. The project includes a 50 mgd pump station and a 48-inch diameter effluent force main leading to a junction chamber to blend with the plant discharge to accomplish the NPDES permit limits. After the event, the basin uses a series of flushing gates to flush settled solids and grit back to the Brent Run Pump Station.
- Districts 3 and 7 WWTP Wastewater Treatment Plant Improvements, Genesee County Drain Commissioner, MI. Structural Engineer for the design team of consultants and project manager for construction phase of a \$20 million expansion to upgrade a 7.2 MGD tertiary wastewater treatment plant to carry an average day flow of 11.0 MGD and a maximum flow of 22 MGD. Improvements were performed to treat additional sanitary sewage discharge from Tyrone Township, Fenton Township, and Hartland Township
- North Key Largo Wastewater Treatment Plant Advanced Treatment and Wastewater Reuse, North Key Largo Utility Corporation, North Key Largo, FL. Structural designer for the upgrade and expansion of a 0.55 mgd wastewater treatment facility for the Ocean Reef community to meet Advanced Wastewater Treatment (AWT) effluent limits and to implement effluent reuse. The existing treatment process will be retrofitted with a four-stage Bardenpho biological treatment system used in conjunction with Membrane Biological Reactor (MBR) technology. The project includes ultraviolet disinfection systems, diffused air and chemical feed systems, headworks re-design, and hazardous material storage.
- Equalization Basin and Pumping Station, Western Townships Utilities Authority. Lead Structural Engineer for a new 5.5 mg wet weather sanitary basin and associated pump station. Tipping buckets are being used for solids management after the event.

- PC-744, Program Management Services for WWTP Rehabilitation and Upgrade Program, DWSD, Detroit, MI. Analysis of existing underground concrete tanks and load rating. Design of structural modifications to existing underground structures. Evaluation of pumping station structures for Needs Assessment.
- Wet Weather Basin Wall Failure Study and Repair, Genesee County Drain Commissioner. Conducted structural evaluation of a basin wall failure and determined hydrostatic forces from saturated backfill soils created the failure. Evaluated three temporary stabilization systems to maintain use of the facility while long term repair schemes were developed.
- Wayne County CSO Demonstration Basins, Wayne County, MI. Construction engineering support including shop drawing approval. All three basins were designed to provide screening, settling and disinfection to CSO flows. Each basin used a series of tipping buckets to flush settled solids and grit back to a dewatering pump station.
- GWK Drain (Twelve Towns) Retention Treatment Basin, Drain Commissioner of Oakland County, MI. Design coordinator for a 30 mg expansion to an existing 90 mg retention treatment facility. Led the effort to lay out the facility geometrics and develop the construction sequence. The improvements included the design of a new screening and conveyance facility, the addition of a 2,000 foot long baffle and weir system, and a new sodium hypochlorite disinfection system. The project also included the design of a full-coverage, spray nozzle flushing system and a 100 cfs dewatering pump station.
- Three CSO Demonstration Basins, DWSD, Detroit, MI. Construction engineering support during the construction including shop drawing approval. The basins were 2.2, 2.8 and 22 mg respectively. Flush systems included spray nozzles and tipping buckets.
- Palm Bay Belt Filter Press Design, City of Palm Bay, FL. Structural designer for the design of the installation of a belt filter press at the Troutman Wastewater Treatment Plant.
- Elizabeth Lake Pumping Station Rehabilitation Phase II, Drain Commissioner of Oakland County, MI. Lead structural engineer for the rehabilitation of a 31 cfs pump station. Project involved replacement of the entire process, mechanical and electrical systems, and the addition of a 4,200 lf force main, paralleling the original discharge sewer. The major challenge of this project was developing a demolition and construction sequence that permitted continuous operation of the facility during construction.
- Lift Station 1A, Wayne County. Lead structural engineer for a 149 cfs lift station. This pumping station lifts CSO flows to a sufficient elevation from 13 communities to assure that contract capacity flows can be introduced into a surcharged sewer interceptor leading to the Detroit wastewater treatment plant.
- Emergency Evaluation, Omaha DPW, NE. Performed structural evaluation of a concrete-encased, above ground CSO force main that had experienced up to nine inches of settlement resulting in leaks in a primary interceptor.
- Taylor Creek WWTP Reliability and Service Upgrade Project, Metropolitan Sewer District of Greater Cincinnati, OH. Structural Engineer for evaluation of critical operational issues, alternatives evaluation and preliminary design of selected alternatives at 5.5-MGD wastewater treatment plant. Compliance with current regulatory, building, electrical and safety codes as well as with the Ten States Standards was evaluated along with anticipated future regulations and capacity requirement. Alternatives evaluated included clarifier modifications and a new sludge tank.
- Upper Duck All Bundle, MSDGC, Cincinnati, OH. Facility Planning Structural Lead for wet weather improvements bundle that included evaluation of strategic sewer separation, green infrastructure, conveyance sewers, enhanced high rate treatment (EHRT) facilities, CSO regulator improvements and storage tanks (0.6 to 1.2 MG) to address SSO and CSO in areas tributary to the Duck Creek Interceptor.

ALAN SCHWAB, PE

ELECTRICAL / I&C



EDUCATION

- » BS, Electrical Engineering, Lawrence Technological University
- » AS, Chemical Technology, Lawrence Technological University

REGISTRATION

- » Professional Engineer, MI, FL

QUALIFICATIONS

- » Seasoned electrical engineer with 25 years of design and field engineering experience
- » Engineered the hardware and software and provided testing and implementation of electrical control systems for WWTPs

REPRESENTATIVE PROJECT EXPERIENCE

- Mill Creek WWTP Raw Sewage Pump Station Rehabilitation, MSDGC, Cincinnati, OH. Provided site visit, review and troubleshooting assistance for electrical issues during construction of 360-MGD North Pump Station rehabilitation. The station includes 9 pumps of which 3 are variable frequency drives. All of the pumps are being rehabilitated and new motors installed. Co-wrote the motor specification for the new pumps.
- George W. Kuhn Retention Basin, Oakland County Water Resources Commissioner, MI. Electrical Engineer responsible for design drawings and specifications for a new pump station and screening and disinfection facility. Performed electrical design for all wiring, lighting, power distribution equipment, backup generator system, pump controls, and level and flow monitoring. Integrated new control system into the County's existing SCADA communication network.
- Puritan-Fenkell CSO Retention Treatment Basin, DWSD, Detroit, MI. Started and debugged the system for a 2.8-MGD basin providing screening, settling and disinfection to CSOs. Basin uses a series of tipping buckets to flush settled solids and grit into a dewatering pump station after an event.
- Saddle Creek CSO RTB, Omaha PWD, NE. Electrical and Controls Engineer for a 315-MGD RTB with 6.6 MG of storage. Prepared contract bid documents including schematic design for the electrical power system, panel schedules for the electrical power distribution system, schematics for the electrical control system, control panel equipment layout drawings, and specified electrical power distribution and control equipment. Electrical design was performed for all wiring, lighting, power distribution equipment, emergency standby generator, pump controls, screening and disinfection equipment, and flow monitoring. The new control system was integrated into the City's existing SCADA communication network.
- Hubbell-Southfield CSO Retention Treatment Basin, DWSD, Detroit, MI. Designed control panel equipment layout and electrical control system schematics, and specified instrumentation and controls equipment for the 22-MG basin that provides screening, settling and disinfection for flows up to 3,200 cfs. Provided assistance with installation and calibrated the instrumentation equipment. Started and debugged the system.
- South Beaches WWTP Process Improvements Upgrade, Brevard County, FL. Electrical Engineer for the design of a new sodium hypochlorite chemical storage and feed facility to disinfect the discharge from an 8 MGD facility. Disinfection is provided to non-potable public reuse, a deep injection disposal well, and surface water discharge. Project includes 2-3000 gallon bulk storage tanks and new duplex chemical metering pumps with hurricane resistant shelter. Senior Engineer for the replacement of the mechanical bar screen and selection of a washer/compactor unit. Design included debris disposal improvements and upgrading the existing electrical equipment to satisfy NFPA 820 requirements.
- Piney Creek WWTP Improvements, Bethel Park Municipal Authority, Bethel Park, PA Electrical Engineer.

- District No. 3 WWTP Expansion, Genesee County, MI. Electrical/Controls Engineer for project that expanded WWTP treatment average daily flow capacity from 3.8 MGD to 11 MGD. During the study phase, the plant's performance was thoroughly evaluated to determine the most cost-effective design.
- Prospect Woods Pump Station and Kemper Mill Village Pump Station Improvement Projects, MSDGC, Cincinnati, OH. Electrical Engineer for two 180 gpm residential pump stations. They were both new pump stations with new electrical utility power feed, lift station control and SCADA panels, and emergency diesel generator.
- Pontiac WWTP Capacity Evaluation and Compliance Assessment, Oakland County WRC, Pontiac, MI. Conducted field inspection and asset assessment of electrical engineering and instrumentation at the Pontiac WWTP facilities. Assisted in development of recommended improvements for 20-year capital improvement program.
- Troutman WWTP Improvements, City Palm Bay, FL. Electrical/Controls Engineer for a new sludge dewatering facility consisting of a new belt filter press building and sludge feed pumps. Lead Electrical Engineer to create contract bid documents including schematic design for the electrical power system, panel schedules for the electrical power distribution system, schematics for the electrical control system, and control panel equipment layout drawings. Specified electrical power distribution and control equipment. Designed electrical systems for all wiring, lighting, power distribution equipment, pump controls, and flow monitoring. Integrated new control system into the City's SCADA communication network.
- Piney Creek WWTP Improvements – Phase I, Bethel Park Municipal Authority, Bethel Park, PA. Project Manager for design of upgrades to the 5-MGD Bethel Park WWTP. Project includes construction of a new digester cover and vertical draft tube mixing system, new sludge conveyor system for the sludge belt filter presses, new sludge and grit pumping systems, new primary clarifier mechanisms, and various other site access improvements.*
Grit/Odor Control Improvements Project, Western Westmoreland Municipal Authority, PA. Design/Process Engineer for the Grit and Odor Control Improvements Project, which included a new vortex grit removal system, grit pumping and washing, and grit conveyance. The project also included the design of aluminum covers for odor control and odor treatment via carbon. Prepared design calculations, drawings and specifications as well as administered construction and project direction.
- Southerly CSO Early Action Projects, NEORS, Cleveland, OH. Electrical design for CSO control project that included large overflow regulating structures and diversion chambers for future tie-in to a CSO tunnel. Underground regulating and diversion structures were designed to accommodate the extremely dense network of existing utilities, highway structures, other site constraints, and connection to a future tunnel.
- Taylor Meadows Irrigation Pump Station, City of Taylor, MI. Provided QA/QC of electrical and instrumentation and controls for replacement of the golf course irrigation lift station. Project included salvaging existing, 30-foot-deep wet well, demolition of existing pump house, and construction of a new pump house and pump system. Pump house was located near the top of a hill on very poor soils and required design and construction of a helical pier foundation system to adequately support the block pump house.
- Retention Basin Electrical and Security Design, DWSD, Detroit, MI. Designed electrical and instrumentation and controls for 3 retention basins with back-up generation at each facility. The \$100-million project included providing an integrated security system for the facilities that tied into the DWSD's existing system. Key-card entry, camera and DVR capability, security lighting, smoke and motion detection, and security fencing were provided.
- Equalization Basin and Pump Station, Western Townships Utilities Authority, Canton Township, MI. Electrical Controls Engineer for new equalization basin next to an existing storage basin. A new pump station is being designed and an existing station retrofitted to accommodate peak influent flows of 120 MGD. System includes screening, 11 MG of equalization storage, high and low lift pumping, odor control, and flushing systems.

JOHN GOLDEN

BIM



EDUCATION

- » School of Architecture, University of Detroit

REGISTRATION

- » AGC CM-BIM and CANBIM LEED AP BD+C Certified

QUALIFICATIONS

- » BIM and virtual design professional with over 29 years of relative experience on architectural, structural, mechanical, electrical, civil, automotive, and land development projects
- » Ability to communicate effectively with clients, engineers, municipalities, quality and manufacturing personnel, and contractors.

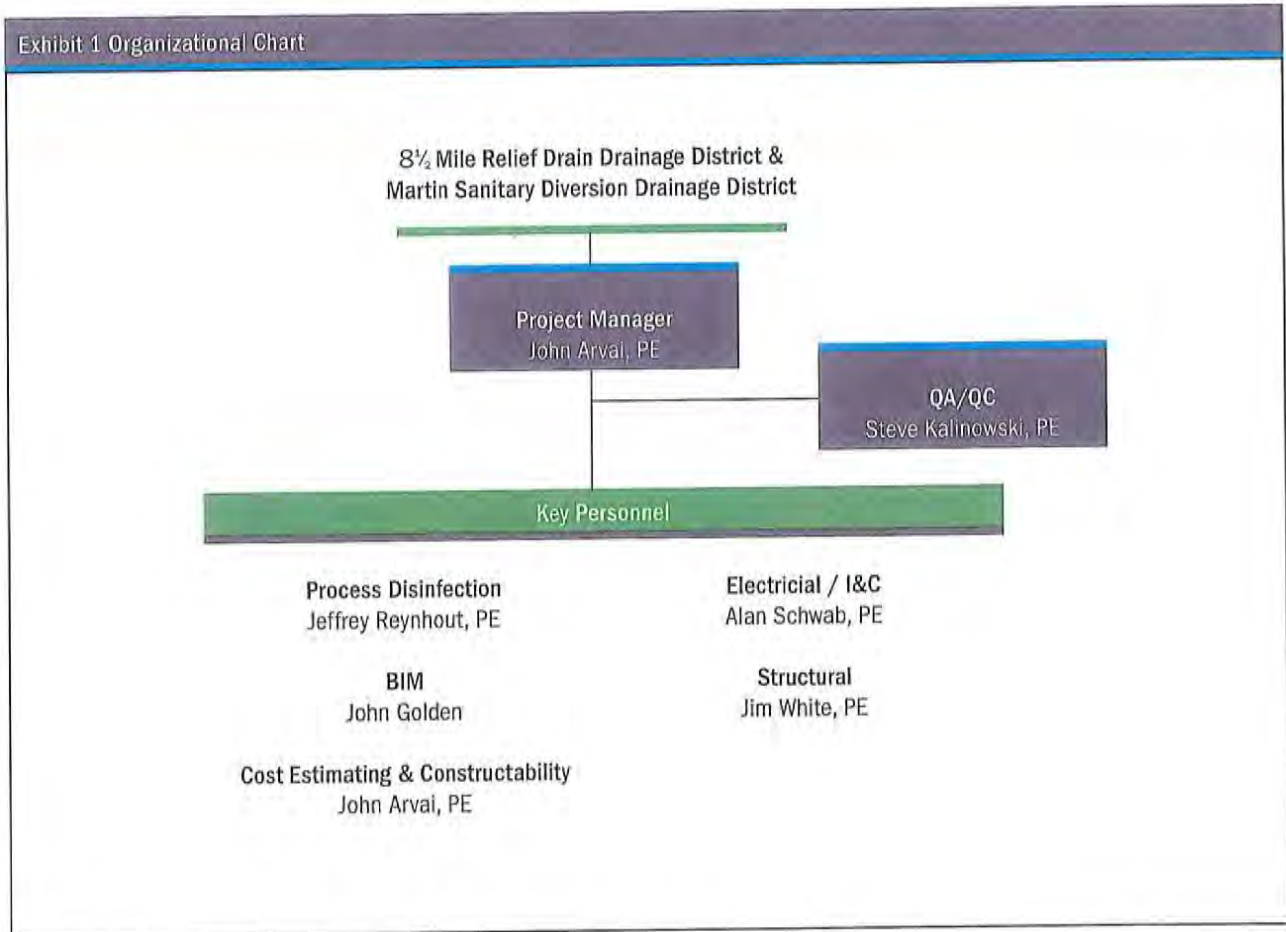
REPRESENTATIVE PROJECT EXPERIENCE

- Retention Treatment Basins (RTBs) Segmentation and Disinfection System Upgrade Study, Macomb County Public Works Office, MI. CAD/BIM Support for feasibility study exploring improvements to the Chapaton (28-MG storage capacity) and Martin (10-MG storage capacity) RTBs to better manage treatment and retention of flows within the RTBs. Disinfection systems were evaluated with a focus on upgrading chemical feed pumps and improving dosing efficiency. Segmentation options for first flush capture tank were also evaluated. A targeted first flush capture design volume was established and utilized to develop first flush segmentation options for review.
- Saddle Creek CSO Retention Treatment Basin (RTB), City of Omaha PWD, NE. CAD/BIM Support for the RTB design project to meet the City's long-term control plan objectives. The site layout included a basis of design report and preliminary and final design of a 160-MGD RTB with a minimum 30-minute disinfection detention time.
- Highland Heights/Silver Grove Equalization Tanks, Wet Weather Pump Stations and Screening Facilities, Sanitary District 1 of Northern Kentucky, KY. CAD/BIM support for the design of 2 equalization basins, wet weather pump stations, discharge control valve chambers, and screening facilities to reduce/eliminate overflows in the Highland Heights/Silver Grove area along Route 8 in Campbell County. Providing modeling of the process piping within the structures as well as BIM coordination with external consultants.
- Miami-Dade Central Pure Oxygen Project, Miami-Dade County, FL. CAD/BIM support for design and installation of a high purity oxygen production facility at Miami-Dade County's 143-MGD Central District Wastewater Treatment Plant (CDWWTP). The new oxygen facility will be placed on a site currently housing the plant's odor control building. After demolition of the building, existing piping that traverses the site will be relocated to avoid interference with construction. One of the main electrical power feeds for the CDWWTP runs along the site. Part of the work includes removing and replacing the service to provide for a more reliable power source. A strong maintenance of plant operation is being employed so that plant capacity is maintained during the entire construction process.
- Regional Technology Lead, IBI Group, Michigan LLC, Southfield, MI. Responsible for aligning BIM execution strategy of IBI Group with needs of clients and projects. Collaboration with other IBI offices, external partners and consultants to facilitate consistent workflow and standards implementation across entire company. Identified and evaluated new BIM technologies and made recommendations based on corporate initiatives, goals, and budgets.
- Sr CAD Designer/VDC Manager, Walbridge, Detroit, MI. Responsible for set-up and management of BIM coordination models from multiple source files including owner, A/E firm, contractor and subcontractor, and equipment suppliers. Evaluation of software and processes for use as construction management tools.

/// ORGANIZATIONAL CHART

Wade Trim has available staff with a variety of expertise to complete the Chapaton and Martin Retention Treatment Basin Disinfection Improvements project. Below you will find an organizational chart that indicates roles and responsibilities of each key team member. These key members will be supported by a strong team bringing comprehensive experience in a wide range of projects and disciplines.

Exhibit 1 Organizational Chart



/// WORK PLAN

UNDERSTANDING OF THE PROJECT

Macomb County operates two combined sewer retention treatment basins (RTBs) that provide disinfection of treated overflows discharged into Lake St. Clair. The Chapaton RTB has a capacity of 28 million gallons and the Martin RTB 10 million gallons. These facilities were originally constructed in the mid-1960s in accordance with the design standards at that time, as single compartment storage basins with no disinfection.

In the late 1970's, disinfection systems were added to both facilities. These systems have performed adequately and have been upgraded in some respects since the original construction. For instance, the hypochlorite tanks which were originally buried concrete tanks have been replaced with fiberglass tanks in an addition to the East Building.

In more recent years automation features have been added to all Chapaton and Martin operations, including disinfection. We are aware that the MCPWO has implemented influent CSO metering and is in the process of implementing a comprehensive TRC real time analysis system in the Chapaton basin.

The purpose of this design project is to develop construction bidding documents which will upgrade the disinfection equipment, piping and instrumentation for another 20-30 years and meet the stated MCPWO goals which are as follows:

- » Increase the reliability of the disinfection distribution system with new and more reliable pumps
- » Develop an automated sequence that is integrated into the MCPWO SCADA system for disinfection at the basins using already existing flow meters and SWAN TRC equipment along with a backup disinfection plan
- » Simplify the disinfectant storage system and process piping
- » Increase usable floor space at both the existing Chapaton East Building and Martin Service Building
- » Create a design allowing disinfection availability during construction

PROJECT APPROACH

BOD - Basis of Design

We suggest that the first step in the development of the BOD is to review existing information and documents associated with the disinfection system, discuss the system with the operations and maintenance staff and perform a building site survey of the disinfection systems. Any new surfacing information that was not previously considered when Wade Trim completed the disinfection study for MCPWO will be considered. Given our extensive knowledge of the disinfection system we anticipate that the development of the BOD will move along quickly which will prove key to meeting the project's milestone schedule.

The BOD development will require the following design decisions be made:

Points of Chemical Application

Currently, sodium hypochlorite is applied at the 9 Mile gravity drain upstream of the basin, at each pump discharge, and at the effluent end of the basin.

These application points will be confirmed in a workshop setting or revised to better suit the present-day operations of the facility.



The chemical feed pumps at both Chapaton and Martin Basins require upgrading because replacement parts are no longer available from suppliers.

Dedicated Hypo Pump per Application Point or Split Chemical Feed

All chemical metering pump systems operate best when dosing control is accomplished by the metering pump, which is manufactured to have repeatability and accuracy of flow control. It is possible to feed several points from a single pump, or from a discharge header, using flow meters and control valves; but this adds additional equipment and software and is more prone to complications and failure. We will need to decide how to arrange the feed pumps with the application points and balance the need for versatility with number of pumps, meters and controls. Flow diagrams that can be reviewed in a workshop setting may be the most efficient way to do this.

Degree of Redundancy

Reasonable redundancy is necessary to allow for equipment failures and maintenance activities, and to satisfy regulatory requirements. Beyond that, the number of spare pumps is largely dependent on the operator's degree of comfort and judgement of the consequences of failure. We will discuss these issues and arrive at a mutual agreement before the basis of design is formally presented.

Minimum and Maximum Dosages

The facility has functioned very well over the years with the capability to feed up to 10 mg/l. Given no failures to disinfect due to pump capacity, we cannot, by calculation, suggest that a larger system of pumps is needed. However, we should consider the ability to feed up to perhaps 20 mg/l if we can still possess the rundown necessary to accommodate smaller events with lower chlorine demands. This merely offers protection against unknown future conditions and doesn't add significant costs to the project.

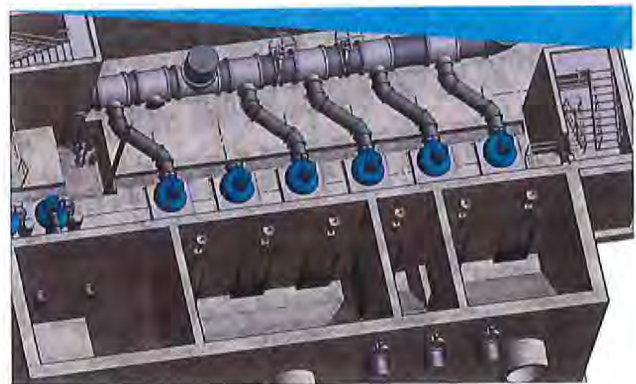
Preliminary Design

Following confirmation from MCPWO on the Basis of Design, preparation of drawings to the 60% point will be developed along with the development of a specification table of contents. As part of the drawing development Wade Trim will utilize BIM Revit to 3D model the Martin Service Building and also update the existing 3D model for the proposed pump room at Chapaton. The Martin BIM model work can progress immediately at the start of the project utilizing existing reference drawings and as built. A 60% review workshop will be held to confirm that the disinfection design is meeting the vision and goals of the project.

Exhibit 2 BIM Benefits

BIM Model Benefits

- » Conceptualization of preliminary design alternatives
- » Identification of conflicts
- » Ability to generate a "virtual removal of equipment" sequence which will identify the scope of the removal and other safety concerns
- » Accurate as-built documentation
- » Efficient construction document preparation and quantity take-offs
- » Future integration with facilities management, program management, and asset management systems



Wade Trim recently used Revit 3D BIM (Building Information Modeling) software to model an existing pump station facility to assess the potential for wet well improvements to improve pump performance for a 45 MGD lift station in Omaha, NE. Our work on Omaha's Saddle Creek Retention Treatment Basin (RTB) project expanded our expertise in BIM, which has in turn improved cost estimation, building performance, scheduling and project flexibility for the City. Likewise, BIM allows for the same project ease for all clients, including a greater ability to view improvements, avoid conflicts and present to stakeholders a better understanding of a given project.

Design review comments from the workshop will be incorporated into the design and approved prior to proceeding to the final design phase.

During the course of the preliminary design progression, we anticipate the following deliverables:

- Project start meeting minutes
- Draft Basis of Design Report
- Final Basis of Design Report
- Monthly progress meeting minutes
- 60% design review documents

Final Design

Following MCPWO approval of the 60% drawings Wade Trim will proceed to the 100% design stage which will include drawings and specifications ready for construction bidding. It will be necessary to have an intermediate workshop to review the design details moving from 60% to 100%. A 100% review workshop will be held to address any final review comments and confirm the design meets the project goals. During this final design stage Wade Trim will prepare permit applications, and engineer's opinion of probable construction cost.

During the course of the final design progression, we anticipate the following deliverables:

- Review meeting minutes
- 100% design review minutes
- Part 41 Permit application and documents
- 3D BIM models
- 100% Design Documents

Bidding Support Services

Wade Trim will assist the MCPWO in facilitating the pre-bid meeting and will prepare handouts and presentations for the meeting detailing the project scope of work as necessary. During the bidding phase, the Wade Trim Team will assist in addressing all bidder questions, issuing bulletins/addenda to the bidders up to the time when bids are received, and assisting MCPWO in reviewing the bids by evaluating the bids as requested and necessary to determine the responsible low bidder. Wade Trim will conduct a pre-award meeting with the apparent low bidder, if needed.

During the course of the bidding phase, we anticipate the following deliverables:

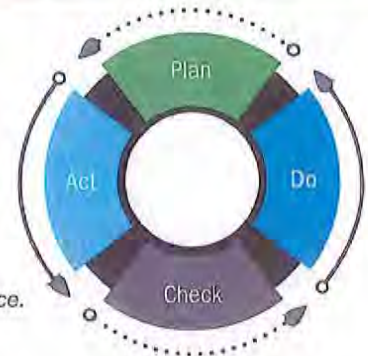
- Pre-bid meeting agenda and meeting minutes
- Addenda
- Bid award recommendation
- Pre-award meeting agenda and meeting summary

Exhibit 3 QA/QC

Wade Trim Commitment to Quality

Quality is not a process or checklist but a culture and mindset at Wade Trim. Quality is reviewed at each team meeting and key decisions are reviewed just like key calculations. Our commitment to quality is demonstrated through our people and contributes to the successful delivery of services to our clients. Our program is continuously improved by the Plan-Do-Check-Act cycle.

Measuring performance and using feedback drive the quality cycle and improve performance.



Continuous Improvement

A corporate initiative named Quality Quest strengthens continuous improvement to quality. A Quality Improvement Advisory Group (QIAG) is responsible for maintaining our Quality Program and has detailed the process to a standards level in our Project Standards Manual.

The long-term effectiveness of the program is safeguarded using corrective and preventive actions that require evaluation of the quality policy, using independent reviewers, quality objectives, audit results, analysis of findings, and actions directed by management to improve the quality process. It has re-energized the quality function and provides the Practice Leads (Hydraulics & Hydrology, Structural, Underground Utilities, etc.) what they need to ensure we have a state-of-the-art QA/QC program. Wade Trim's Chief Technical Officer delivers a Quarterly Report on the status and effectiveness of the program at Quarterly Board Meetings.

Construction Administration Services

Pre-Construction Conference

Wade Trim will organize and facilitate the pre-construction conference including preparing and issuing the agenda and taking minutes. This conference will include appropriate County staff, the contractor, and regulatory agencies. Topics to be discussed include the contract documents, contractor schedule, and roles and responsibilities of each entity. Each entity will have the opportunity to address construction issues that may need coordination or further research to be sure the project construction phase gets off to an efficient start.

Progress Meetings

Monthly progress meetings will be facilitated by Wade Trim and participants will include appropriate MCPWO staff, contractors, utility companies, and regulatory agencies. Meeting topics will include the construction progress and schedule, status of engineering submittals and requests for information (RFIs), delivery of major equipment and materials, and any issues that must be addressed by the construction team. Wade Trim will prepare and issue meeting minutes to the attendees who will have the opportunity to request corrections or clarifications to the minutes before they are finalized for the record.

Perform Shop Drawing/RFI/O&M Manual Review

Wade Trim will review shop drawings, RFI, O&M manuals, and other construction phase documents that require review by the Engineer. Formal responses to each will be prepared by Wade Trim and transmitted back to the contractor, with copies of each Engineer response provided to MCPWO. For particular documents requiring the review of the Engineer, Wade Trim will seek appropriate input from the MCPWO prior to returning the response to the contractor. Some responses may be better suited for MCPWO staff to lead the response, with only support from Wade Trim.

Construction Observation

Wade Trim will provide experienced resident construction staff that will monitor the work during construction activities. Wade Trim Team staff will monitor the progress of the work and prepare an inspector daily report (IDR). The report will include contractor labor force, equipment on site and in use, quantity of work installed, photographs to document progress of the work, weather conditions, visitors to the site, and other relevant construction-related

information. These reports will be prepared by our staff, reviewed by our project manager, and distributed to the team daily. The use of drone technologies can be utilized to allow for aerial views of construction observation and to document progress, which would be very beneficial on a site as large as this one.

Provide Pay Recommendations

Payment applications will be prepared and submitted by the contractor to MCPWO and the Engineer for review and comparison to actual progress of the work. Our construction team will review the payment application and request any changes from the contractor that are necessary to accurately reflect completed work. Once review of the payment application is complete and necessary revisions are made by the contractor, Wade Trim will prepare and submit the official Certificates of Payments to MCPWO for final review and processing.

Issue Clarifications

Wade Trim will respond to Requests for Information (RFI) from the contractor to clarify the design intent or to interpret the contract requirements and prepare formal responses for each to the contractor. As appropriate, MCPWO will be consulted on all RFI responses prior to the transmittal of the response to the contractor and in some cases may decide to lead the response effort.

Furnish Consultation During Construction

The most important and valuable service Wade Trim can offer MCPWO during the construction phase is thoughtful monitoring of the progress and anticipation of issues before urgent needs or crises develop. Wade Trim staff experienced in basin rehabilitation construction projects will be assigned to this project.

Substantial Completion Observation

At the appropriate time, the contractor will request the project be certified as substantially complete. Wade Trim staff will evaluate the status of the work to verify the project has reached substantial completion per the requirements of the contract. This process will include verification that project equipment and processes were properly started-up, commissioned, tested, and turned over to MCPWO. At that time and with MCPWO concurrence, Wade Trim will assemble the proper documentation and prepare a Substantial Completion Certificate for the MCPWO to issue.

Final Walk Through Observation

Prior to final completion, Wade Trim staff will prepare a "punch list" of items that do not conform to the contract documents. A final walk-through will be scheduled by Wade Trim and will include representatives from MCPWO and the contractor to verify project completion. Upon the County's and the Engineer's satisfaction, Wade Trim will prepare a Final Completion Certificate for the County to issue.

Prepare Record Drawings and Close-Out

Record drawings will be prepared for the Chapaton RTB Canal Upgrade project. As part of the project documentation, the contractor will be required to keep a "red line" set of markups to actively represent the work as installed. Wade Trim will meet with the contractor on a monthly basis at a minimum, to review the contractor's "red line" set of markups. Our team will review the markups to verify accuracy with the Engineer's records and the actual as-built conditions. This monthly meeting will facilitate more efficient preparation of the final set of record drawings. Once the work is complete, the contractor will be required to submit the final as-built drawings and documents. Wade Trim will review the final as-built documents, recommend revisions as necessary, and ultimately adopt the as-built drawings as the final record documents for the project. Wade Trim will update the 3D BIM model to reflect construction as-built conditions.

This task will also include project close-out items such as reviewing project records to assure all construction issues have been addressed, reviewing final submittals by the contractor, preparing reconciling change orders and final pay certifications, and assisting with updating the Nexgen database with MCPWO assistance.

TEAM COLLABORATION

Our proposed management approach will be to present our technical evaluations and findings for discussion with MCPWO in a series of monthly meetings, with additional collaborative workshops conducted as necessary to review design and solicit input for key decisions as work progresses. Wade Trim successfully uses this collaborative approach on all of our projects and considers it a core value that guides our management approach.

We have successfully demonstrated this collaborative approach to MCPWO on recent projects for the Chapaton Retention Treatment Basin. The progress meeting/workshop topics were scheduled in advance, included our design project manager and appropriate design discipline leads as required for the specific workshop topic, and provided a forum for interactions with the MCPWO's engineering staff to review and discuss details of the technical development and design evaluations for informed collaborative selections and decisions. The various design evaluations and decisions were documented in a series of Technical Memorandums that were incorporated into the project reports and design files.

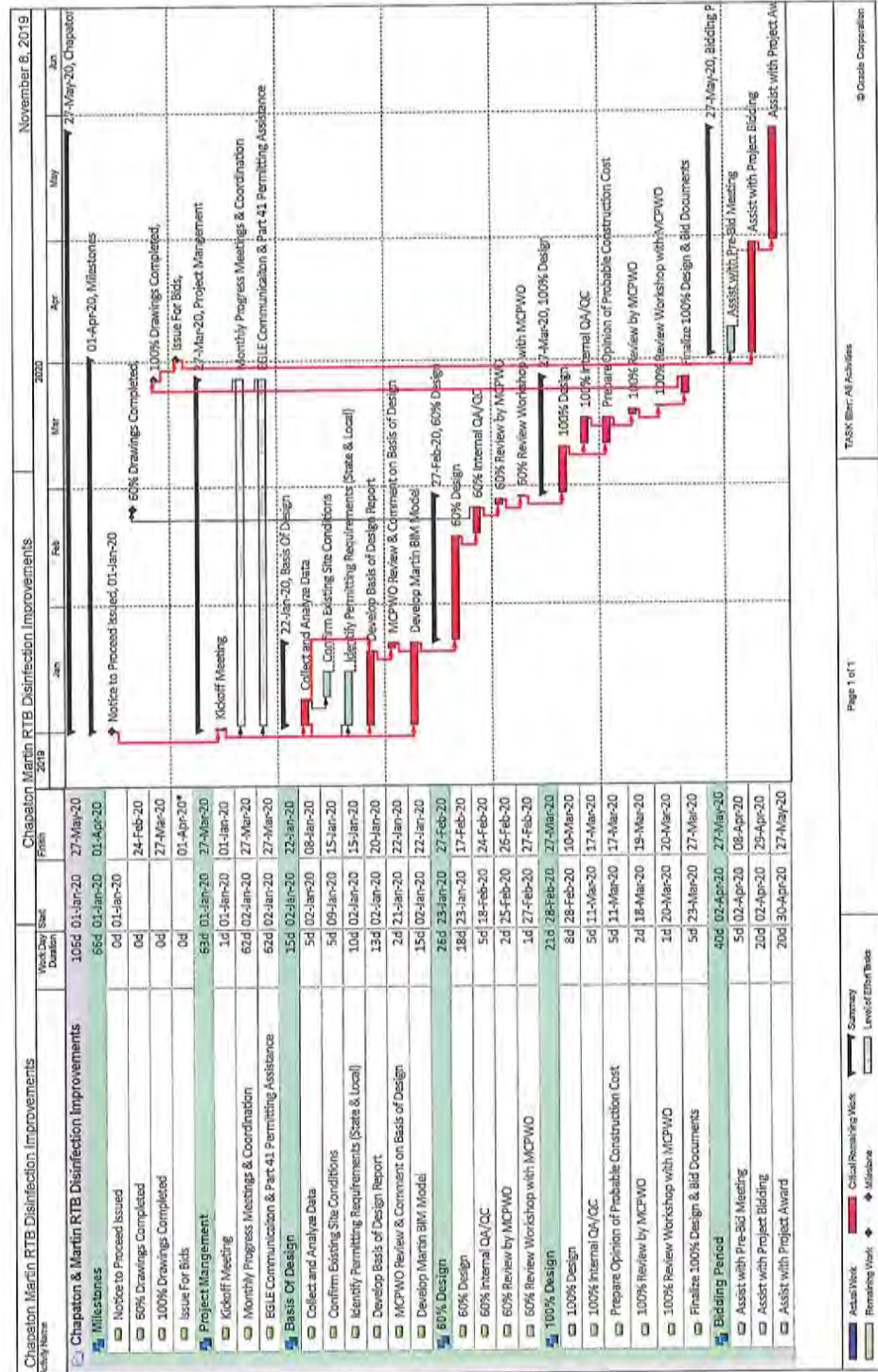
We intend to build on this success using a similar technical approach for this project.

ASSUMPTIONS

- Pumps will be peristaltic type
- Existing storage tanks will be used
- MCPWO will perform SCADA programming, specifications will require PLC programming by Contractor
- New piping to each application point (at Chapaton only) will be designed with corrosion resistant supports
- BIM model will be developed to not more than LOD 300 to convey design intent.

/// SCHEDULE

We firmly believe that agreement on a written Basis of Design sets the stage for efficient, successful design and construction. Following the Basis of Design review and agreement, we can then proceed on preparing a 60% and 100% complete set of documents as outlined below. We encourage MCPWO participation, questions, and direction at any point in the project, but in accordance with the RFP, we show specific meetings and review periods in the design schedule.



/// COST

PROPOSAL FORM

Proposal No. Proposer: Wade Trim Associates, Inc. (print or type company name)

BASE PROPOSAL

The undersigned Proposer, having carefully examined the Proposal Documents and the Scope of Work, the requirements of the Request for Proposal and all subsequent Addenda, all as issued by the Owner, and being familiar with all conditions and requirements of the Scope of Work, hereby proposes and agrees to furnish all material, labor, equipment, tools and supervision; and to furnish all services necessary to complete the Work required in accordance with the Bidding Documents for the following projects, in the following amount:

One-hundred and fifty-seven thousand two-hundred and thirty Dollars \$ 157,230 (Sum to be written out)

Respectfully submitted this 11 day of November, 2019

By: Wade Trim Associates, Inc. (Name of bidding firm or corporation)

Witness:

By: Dennis Prevo (Signature)

Attest: Ralph Picano (Signature)

Dennis Prevo (Type or print name)

By: Ralph Picano (Type or print name)

Title: Senior Vice President (Owner/Partner/President/Vice Pres.)

Title: Corporate Secretary (Corporate Secretary or Assistant Secretary Only)

Address: 500 Griswold Street, Suite 2500 Detroit, MI 48226

Phone: 313.961.3650

License: Professional Engineer, MI, 6201047479

Federal ID No.: 38-1802386

Wade Trim Associates, Inc. Company Name

John Arvai Company Representative

(Affix Corporate Seal Here)

Senior Project Manager Title

November 4, 2019 Date



1682729

PROPOSAL NO.: MCFWO-WWS-2019-RFP-017

Bill Rate	235	250	260	280	300	350	400	450	500	550	600	650	700	750	800	850	900	950	1000	1050	1100	1150	1200	1250	1300	1350	1400	1450	1500	1550	1600	1650	1700	1750	1800	1850	1900	1950	2000	2050	2100	2150	2200	2250	2300	2350	2400	2450	2500	2550	2600	2650	2700	2750	2800	2850	2900	2950	3000	3050	3100	3150	3200	3250	3300	3350	3400	3450	3500	3550	3600	3650	3700	3750	3800	3850	3900	3950	4000	4050	4100	4150	4200	4250	4300	4350	4400	4450	4500	4550	4600	4650	4700	4750	4800	4850	4900	4950	5000	5050	5100	5150	5200	5250	5300	5350	5400	5450	5500	5550	5600	5650	5700	5750	5800	5850	5900	5950	6000	6050	6100	6150	6200	6250	6300	6350	6400	6450	6500	6550	6600	6650	6700	6750	6800	6850	6900	6950	7000	7050	7100	7150	7200	7250	7300	7350	7400	7450	7500	7550	7600	7650	7700	7750	7800	7850	7900	7950	8000	8050	8100	8150	8200	8250	8300	8350	8400	8450	8500	8550	8600	8650	8700	8750	8800	8850	8900	8950	9000	9050	9100	9150	9200	9250	9300	9350	9400	9450	9500	9550	9600	9650	9700	9750	9800	9850	9900	9950	10000	10050	10100	10150	10200	10250	10300	10350	10400	10450	10500	10550	10600	10650	10700	10750	10800	10850	10900	10950	11000	11050	11100	11150	11200	11250	11300	11350	11400	11450	11500	11550	11600	11650	11700	11750	11800	11850	11900	11950	12000	12050	12100	12150	12200	12250	12300	12350	12400	12450	12500	12550	12600	12650	12700	12750	12800	12850	12900	12950	13000	13050	13100	13150	13200	13250	13300	13350	13400	13450	13500	13550	13600	13650	13700	13750	13800	13850	13900	13950	14000	14050	14100	14150	14200	14250	14300	14350	14400	14450	14500	14550	14600	14650	14700	14750	14800	14850	14900	14950	15000	15050	15100	15150	15200	15250	15300	15350	15400	15450	15500	15550	15600	15650	15700	15750	15800	15850	15900	15950	16000	16050	16100	16150	16200	16250	16300	16350	16400	16450	16500	16550	16600	16650	16700	16750	16800	16850	16900	16950	17000	17050	17100	17150	17200	17250	17300	17350	17400	17450	17500	17550	17600	17650	17700	17750	17800	17850	17900	17950	18000	18050	18100	18150	18200	18250	18300	18350	18400	18450	18500	18550	18600	18650	18700	18750	18800	18850	18900	18950	19000	19050	19100	19150	19200	19250	19300	19350	19400	19450	19500	19550	19600	19650	19700	19750	19800	19850	19900	19950	20000	20050	20100	20150	20200	20250	20300	20350	20400	20450	20500	20550	20600	20650	20700	20750	20800	20850	20900	20950	21000	21050	21100	21150	21200	21250	21300	21350	21400	21450	21500	21550	21600	21650	21700	21750	21800	21850	21900	21950	22000	22050	22100	22150	22200	22250	22300	22350	22400	22450	22500	22550	22600	22650	22700	22750	22800	22850	22900	22950	23000	23050	23100	23150	23200	23250	23300	23350	23400	23450	23500	23550	23600	23650	23700	23750	23800	23850	23900	23950	24000	24050	24100	24150	24200	24250	24300	24350	24400	24450	24500	24550	24600	24650	24700	24750	24800	24850	24900	24950	25000	25050	25100	25150	25200	25250	25300	25350	25400	25450	25500	25550	25600	25650	25700	25750	25800	25850	25900	25950	26000	26050	26100	26150	26200	26250	26300	26350	26400	26450	26500	26550	26600	26650	26700	26750	26800	26850	26900	26950	27000	27050	27100	27150	27200	27250	27300	27350	27400	27450	27500	27550	27600	27650	27700	27750	27800	27850	27900	27950	28000	28050	28100	28150	28200	28250	28300	28350	28400	28450	28500	28550	28600	28650	28700	28750	28800	28850	28900	28950	29000	29050	29100	29150	29200	29250	29300	29350	29400	29450	29500	29550	29600	29650	29700	29750	29800	29850	29900	29950	30000	30050	30100	30150	30200	30250	30300	30350	30400	30450	30500	30550	30600	30650	30700	30750	30800	30850	30900	30950	31000	31050	31100	31150	31200	31250	31300	31350	31400	31450	31500	31550	31600	31650	31700	31750	31800	31850	31900	31950	32000	32050	32100	32150	32200	32250	32300	32350	32400	32450	32500	32550	32600	32650	32700	32750	32800	32850	32900	32950	33000	33050	33100	33150	33200	33250	33300	33350	33400	33450	33500	33550	33600	33650	33700	33750	33800	33850	33900	33950	34000	34050	34100	34150	34200	34250	34300	34350	34400	34450	34500	34550	34600	34650	34700	34750	34800	34850	34900	34950	35000	35050	35100	35150	35200	35250	35300	35350	35400	35450	35500	35550	35600	35650	35700	35750	35800	35850	35900	35950	36000	36050	36100	36150	36200	36250	36300	36350	36400	36450	36500	36550	36600	36650	36700	36750	36800	36850	36900	36950	37000	37050	37100	37150	37200	37250	37300	37350	37400	37450	37500	37550	37600	37650	37700	37750	37800	37850	37900	37950	38000	38050	38100	38150	38200	38250	38300	38350	38400	38450	38500	38550	38600	38650	38700	38750	38800	38850	38900	38950	39000	39050	39100	39150	39200	39250	39300	39350	39400	39450	39500	39550	39600	39650	39700	39750	39800	39850	39900	39950	40000	40050	40100	40150	40200	40250	40300	40350	40400	40450	40500	40550	40600	40650	40700	40750	40800	40850	40900	40950	41000	41050	41100	41150	41200	41250	41300	41350	41400	41450	41500	41550	41600	41650	41700	41750	41800	41850	41900	41950	42000	42050	42100	42150	42200	42250	42300	42350	42400	42450	42500	42550	42600	42650	42700	42750	42800	42850	42900	42950	43000	43050	43100	43150	43200	43250	43300	43350	43400	43450	435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**Wade Trim Billing Rate Schedule
Water Resources
With Equipment Billed Separately
Effective January 2019**

Labor Cost Classification Code	Classification Title	2019 Rate Per Hour
299	Professional Engineer V	\$ 205.00
298	Professional Engineer IV	\$ 185.00
297	Professional Engineer III	\$ 160.00
296	Professional Engineer II	\$ 140.00
295	Professional Engineer I	\$ 120.00
294	Engineer IV	\$ 145.00
293	Engineer III	\$ 125.00
292	Engineer II	\$ 105.00
291	Engineer I	\$ 90.00
246	Professional Planner III	\$ 140.00
245	Professional Planner II	\$ 120.00
244	Professional Planner I	\$ 105.00
243	Planner III	\$ 110.00
242	Planner II	\$ 80.00
241	Planner I	\$ 70.00
256	Prof. Landscape Architect III	\$ 150.00
255	Prof. Landscape Architect II	\$ 115.00
254	Prof. Landscape Architect I	\$ 100.00
253	Landscape Architect III	\$ 95.00
252	Landscape Architect II	\$ 85.00
251	Landscape Architect I	\$ 75.00
266	Professional Scientist III	\$ 140.00
265	Professional Scientist II	\$ 100.00
264	Professional Scientist I	\$ 85.00
263	Scientist III	\$ 110.00
262	Scientist II	\$ 75.00
261	Scientist I	\$ 60.00
286	Professional Surveyor III	\$ 140.00
285	Professional Surveyor II	\$ 115.00
284	Professional Surveyor I	\$ 105.00
283	Surveyor III	\$ 100.00
282	Surveyor II	\$ 90.00
281	Surveyor I	\$ 80.00
786	Survey Technician VI	\$ 125.00
785	Survey Technician V	\$ 105.00
784	Survey Technician IV	\$ 95.00
783	Survey Technician III	\$ 80.00

**Wade Trim Billing Rate Schedule
Water Resources
With Equipment Billed Separately
Effective January 2019**

Labor Cost Classification Code	Classification Title	2019 Rate Per Hour
782	Survey Technician II	\$ 65.00
781	Survey Technician I	\$ 50.00
716	Construction Technician VI	\$ 140.00
715	Construction Technician V	\$ 115.00
714	Construction Technician IV	\$ 100.00
713	Construction Technician III	\$ 90.00
712	Construction Technician II	\$ 80.00
711	Construction Technician I	\$ 65.00
726	CADD Technician VI	\$ 115.00
725	CADD Technician V	\$ 105.00
724	CADD Technician IV	\$ 95.00
723	CADD Technician III	\$ 85.00
722	CADD Technician II	\$ 70.00
721	CADD Technician I	\$ 65.00
736	Engineering Specialist II	\$ 165.00
735	Engineering Specialist I	\$ 145.00
734	Engineering Technician IV	\$ 175.00
733	Engineering Technician III	\$ 100.00
732	Engineering Technician II	\$ 75.00
731	Engineering Technician I	\$ 60.00
756	Project Specialist III/Manager	\$ 170.00
755	Project Specialist II	\$ 145.00
754	Project Specialist I	\$ 105.00
753	Project Aide III	\$ 125.00
752	Project Aide II	\$ 90.00
751	Project Aide I	\$ 65.00
203	Senior Principal	\$ 270.00
202	Principal	\$ 265.00
201	Senior Professional	\$ 260.00

Outside expenses and subconsultants at cost times 1.15.

Special billing rates will apply in matters requiring expert witnesses or other consulting as it relates to legal matters.

Reviewed and Revised Annually

**Wade Trim Equipment Billing Schedule
Effective January 2019**

Other Direct Costs	Rate
Survey Equipment	\$6.00/hour
Robotic Survey Equipment	\$15.00/hour
GPS Equipment	\$20.00/hour
Kaarta Hand Held Scanner	\$35.00/hour
Drone	\$100.00/hour
Manhole Lift Cover	\$10.00/hour
SSES - Includes Van and Standard Equipment	\$14.75/hour
SSES - Equipment (Van and Miscellaneous)	\$8.50/hour
Daily Vehicle Charge	\$76.33/day
Construction Vehicle	\$16.00/hour
Field Vehicle	\$0.63/mile
Troxler Nuclear Densometer	\$5.50/hour
Cylinder Breaking	\$12.00/cylinder
Concrete Testing Equipment	\$5.00/hour
Photocopies	\$0.10/copy
Color Copies	\$0.25/copy
Color Printer (per print)	\$0.15/print
OCE Printer	\$1.40/sheet
OCE Printer/Mylars	\$4.00/sheet
Travel	\$0.64/mile
IPAD	\$50.00/day
Laptop Computers	\$9.50/day
Flow Meter (single site)	\$275.00
Flow Meter (dual site)	\$550.00
Sampler (monthly)	\$500.00/monthly
Saximeter	\$12.00/hour
Rain Gauge	\$125.00/monthly
Recorder	\$150.00/monthly

Reviewed and Revised Annually

/// FORMS

OWNER ENGINEER DISCLOSURE FORM

Engineer NAME:	Wade Trim Associates, Inc.
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1. Does the Engineer currently employ a relative of any employee, elected official or appointee of an elected official of Macomb County or the OWNER? Relative is defined as husband or wife, father or mother, son or daughter, brother or sister, uncle or aunt, first cousin, nephew or niece, great uncle or great aunt, grandfather or grandmother, grandson or granddaughter, father-in-law or mother-in-law, son-in-law or daughter-in-law, brother-in-law or sister-in-law, stepfather or stepmother, stepson or stepdaughter, stepbrother or stepsister, half-brother or half-sister, the parents or grandparents of the individual's fiancée.

YES NO

If yes, please answer the following:	
A.	Name of employee or elected official (or appointee):
B.	Position/Title:

2. Does any employee or elected official of the OWNER or Macomb County have an interest in the vendor organization in any of the following capacities, either compensated or non-compensated: director, owner, officer, partner, beneficiary, trustee, member, employee or contractor.

YES NO

If yes, please answer the following:	
A.	Name of employee or elected official (or appointee):
B.	Position/Title:
C.	Department or Agency:
D.	Position/Title with Vendor:

3. Does any current employee or elected official of the OWNER or Macomb County have legal or beneficial ownership of 10% or more of the outstanding stock of the Engineer organization?

YES NO

If yes, please answer the following:	
A.	Name of employee or elected official (or appointee):
B.	Position/Title:
C.	Department or Agency:

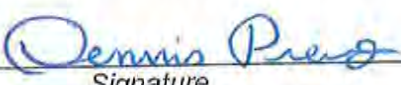
D.	% of Ownership of Vendor Organization:	
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4. In the last five calendar years, has the vendor failed to perform or otherwise deliver on the terms of a contract or agreement with Macomb County, the OWNER, or any other public entity, including suspensions or debarments?

YES NO

If yes, please provide further explanation:

I hereby certify that the information included on this form is complete, true and accurate to the best of my knowledge and belief. I understand that either I or the organization to which this form applies may be subject to sanctions and/or penalties as set forth in the ethics ordinance if any information has been falsified or omitted.

Dennis Prevo	Senior Vice President
<i>Name (Please Print)</i>	<i>Title</i>
	11/04/2019
<i>Signature</i>	<i>Date</i>

NON-COLLUSION AFFIDAVIT

STATE OF

COUNTY OF

Dennis Prevo, being first duly sworn, deposes and says that he/she is authorized on behalf of Wade Trim Associates, Inc. (Proposer Name) who is making the foregoing Proposal(s) that:

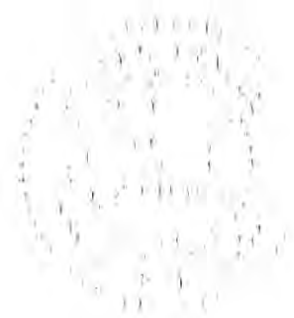
- 1) Such Proposals are genuine and not collusive or a sham.
- 2) This Proposer has not colluded, conspired, connived or agreed, directly or indirectly, with any other Proposer or person to submit a Proposal which is a sham.
- 3) This Proposer has not in any manner agreed with any other persons or businesses to fix the proposed price, overhead, profit, or any cost element of the submitted Proposal.
- 4) This Proposer has not attempted to secure any advantage against any other Proposers through collusion with any other Proposer or employees or representative of the OWNER or Macomb County.
- 5) That the Proposals submitted are true and accurate to the best of my knowledge and belief and are made in good faith.
- 6) This Proposer has not directly or indirectly submitted or disclosed its Proposal or its contents or divulged information or data relative thereto to any association or to any member or agent of any other Proposer to this proposal.

Further, Affiant sayeth not.

Dennis Prevo
Signature

Subscribed and sworn to before me
this 4 day of November, 2019.
[Signature]
Notary Public
County of Oakland,
State of MI
My Commission Expires: 1-21-2023

SHARI L. KRAZEL
Notary Public, State of Michigan
County Of Oakland
My Commission Expires 01-21-2023
Acting in the County of Lapeer



EIGHT AND ONE HALF MILE RELIEF DRAIN 11/5/19

Funding Source	Apportionment	Manager	Vendor	Amount	Invoice Detail	Project Summary	Project Balance		
8 1/2 Mile Relief	Chapter 20 State of MI - 16.04% County of Macomb - 2.25% Dept of Roads - 2.25% Eastpointe - 54.33% St. Clair Shores - 25.13%	Astorino	Colville Electric Co., LLC	\$ 6,447.00	Invoice #190748 - 10.11.19	Light Fixture Replacements - LED			
		Astorino	DTN, LLC	\$ 551.81	Invoice #5636229 - 10.18.19	Storm Sentry			
		Astorino	DTE Energy	\$ 7,953.21	Invoice #19-475 - 9.30.19	Monthly Electric - 09.10.19 - 10.8.19			
		Astorino	De-Cal, Inc.	\$ 1,162.62	Invoice #WO9191866 - 10.16.19	Repair Condensate Drain and Boiler Vent Cap - Chapaton			
		Astorino	Fishbeck, Thompson, Carr & Hubber, Inc.	\$ 4,627.86	Invoice #386733 - 09.30.19	Engineering - Renovations	\$ 90,279.16		
		Astorino	HESCO	\$ 949.84	Invoice #20191526 - 10.10.19	Back Pressure Valves			
		Astorino	HESCO	\$ 3,600.00	Invoice #161025-8 - 09.30.19	Annual Preventative Maintenance	\$ 45,899.00		
		Astorino	Home Depot	\$ 535.54	Invoice #0033550 - 10.10.19	Chapaton Supplies - Tools			
		Astorino	The Macomb Group, Inc.	\$ 1,039.76	Invoice #5732911 - 10.4.19	Chapaton Supplies - Washers/Corner Angle Pipe and Parts			
		Astorino	The Macomb Group, Inc.	\$ 1,999.13	Invoice #5744369 - 10.17.19	Chapaton Switchgear Preventative Maintenance			
		Astorino	Northern Electrical Testing	\$ 41,979.99	Invoice #18773 - 09.30.19	Engineering - In-System Storage Devices			
		Astorino	Tetra Tech	\$ 60,349.83	Invoice #51508604 - 09.30.19		\$ 405,510.67		
					\$ 131,196.59				
					Total				



Mark A. Hackel
County Executive

ONESolution

ACCOUNTS PAYABLE CHECK REQUEST

PUBLIC WORKS DIVISION

1. PREPARED BY (Please Type)	2. PHONE #	3. DATE
Michelle Houvener	95966	10/11/19
4. SET ID		
VPI91016MB		
5. POST DATE		

5. VENDOR NAME (Check to be issued to)			6. ADDR CODE			7. VENDOR NUMBER			8. INVOICE No (MAX=16 CHARACTERS)			9. INVOICE DATE			10. INVOICE DATE			11. INVOICE AMOUNT		
Colville Electric Co., LLC			02			V50164			190748			10/11/2019			\$			6,447.00		

CHILD RECORD DETAIL INFORMATION									
General Ledger					Job Ledger				
12. Org Key	13. Object	14. Cost Center (CGNT)	15. Object	16. Work Order Number	17. Secondary Reference (MAX=16 CHARACTERS)	18. Description (MAX=30 CHARACTERS)	19. Amount	20. DIV	21. MSC
A	8210017M	93001	93001	WO18006	8 1/2 Mile Relief	Replacing light fixtures	\$ 6,447.00	GEN	
B									
C									
D									
E									
F									
G									

23. Total: \$ 6,447.00

24. COMMENTS, INSTRUCTIONS OR ADDITIONAL NOTES:

25. Finance Officer:	blm	8 1/2 Mile Relief
26. Chief Deputy:	AB	N/A
27. Engineers:		11/5/2019
28. Managers:	UB	11/18/2019
29. Coordinator:	AF	
30. Drain:		
31. Project Balance:		
32. Staff Date:		
33. Board Date:		
34. Select For Pay Date:		

Colville Electric Co., LLC

23416 Gratiot Ave.
Eastpointe, MI 48021

*Thanks to our Loyal Customers,
We are growing!
The Same Family Owned Company,
Just a new address.*

Invoice

Invoice #	19-0748
Due Date	Date
11/30/2019	10/31/2019

Bill To
Macomb County DPW 23001 Nine Mile Rd. St. Clair Shores, MI 48080

Job Location
Chapton-East Building

P.O. No.	Terms	Tech
	Net 30	

Date	Description	Quantity	Rate	Amount
	Chapton, East Building			
	Replace existing 2X2 lay in fixtures with LED flat panels.	4	105.50	422.00
	Replace existing 2X4 lay in fixtures with LED flat panels.	50	120.50	6,025.00
			Total	\$6,447.00

*Past Due Invoices Are Subject To 1.5% Per Month Finance Charge.
If you have any questions, please call 586.774.9110*



Mark A. Hackel
County Executive

ONESolution

ACCOUNTS PAYABLE CHECK REQUEST
PUBLIC WORKS DIVISION

1. PREPARED BY (Please Type)	2. PHONE #	3. DATE
Michelle Houvener	95966	10/29/19
4. SET ID		5. POST DATE
V191029MUA		

6. VENDOR NAME (Check to be issued to)		7. VENDOR NUMBER	8. ADDR CODE	9. Invoice No (MAX = 16 CHARACTERS)	10. Invoice Date	11. Invoice Amount
DTN, LLC		V43568	01	5636229	10/18/2019	\$ 1,471.50

General Ledger		Job Ledger		OPTIONAL		18. Description (MAX = 30 CHARACTERS)	19. Amount	20. DIV	21. MISC	22. Sep CK
12. Org Key	13. Object	14. Cost Center (CCNT)	15. Object	16. Work Order Number	17. Secondary Reference (MAX = 16 CHARACTERS)					
A	8210166M	92113	92113		MIDDD	Acct#0322513, 11/15/19-2/14/20	\$ 735.75	GEN	MIDDD	
B	8210017M	92113	92113	WO18006	8 1/2 Mile Relief	Acct#0322513, 11/15/19-2/14/20	\$ 551.81	GEN	GEN	0
C	8210072M	92113			Martin	Acct#0322513, 11/15/19-2/14/20	\$ 110.36	GEN	GEN	0
D	8713018M	92113			SEMCWWDS	Acct#0322513, 11/15/19-2/14/20	\$ 73.58	GEN	GEN	0
E										
F										
G										

23. Total: \$ 1,471.50

24. COMMENTS, INSTRUCTIONS OR ADDITIONAL NOTES:
Storm Sentry

25. Finance Officer:	30. Drain:
<i>[Signature]</i>	Multiple
26. Chief Deputy:	31. Project Balance:
<i>[Signature]</i>	N/A
27. Engineers:	32. Staff Date:
<i>[Signature]</i>	11/5/2019
28. Managers:	33. Board Date:
<i>[Signature]</i>	11/18/2019
29. Coordinator:	34. Select For Pay Date:



Account No.	Invoice No.	Invoice Date
0322513	5636229	18-Oct-2019

We hope you noticed we have a new brand and logo for DTN. We believe it is important for our visual identity and brand promise to truly reflect the Vision, Mission, and Values we introduced in 2017 and live by today.

Our vision is to be *the* independent, trusted source of insights to you, our customers, who feed, protect, and fuel the world. Our mission is to empower you with intelligent and actionable insights that exceed your expectations and enable your success on a daily basis. In short, when you prosper, DTN prospers.

We believe the degree symbol in our logo exemplifies the highest degree of precision and accuracy in which we work every day to provide you with our solution and services.

BETZ, JOSEPH
 MACOMB COUNTY OPW
 21777 DUNHAM
 CLINTON TOWNSHIP, MI 48036

New Charges	\$ 1,471.50
Late Fees	\$ 0.00
Total Due	\$ 1,471.50

Please send your payment 7-10 days before the due date to allow time for payment processing. To ensure proper payment posting, detach and return lower portion with your payment.

Customer Service

Billing Customer Service:

888-826-4282, weatherbilling@dtn.com

Technical Support:

800-485-4000

Postal Correspondence:

DTN

9110 W Dodge Rd Ste 100

Omaha, NE 68114-3334

Be sure to include your name, telephone number and DTN account number whenever you contact us.

Pay My Bill

Online: Visit myaccount.dtn.com to submit payments or update your contact information 24 hours a day.

By Mail: Send your check and payment slip to the address on payment slip below.

By Phone: Call billing customer service at the number provided to pay by credit card or make changes to your account MONDAY THROUGH FRIDAY 7:00AM TO 5:00PM (CST).

Detach and return this payment slip with your check payable to DTN



DTN, LLC
 9110 W Dodge Rd Ste 100
 Omaha, NE 68114-3334

#BWNCVKR
 0322513

000156 000000285



BETZ, JOSEPH
 MACOMB COUNTY OPW
 21777 DUNHAM RD
 CLINTON TOWNSHIP MI 48036-1005



2

T1191016.001-311-00000285

Account No.	Invoice No.	Due Date
0322513	5636229	08-Nov-2019
Amount Due		\$ 1,471.50
Payment enclosed		



DTN, LLC
 26385 NETWORK PLACE
 CHICAGO, IL 60673-1263

10000000056362290000000003225137 00000147150

Account Status			
New Invoice	Due Date	Balance	Total
5636229	08-Nov-2019	\$ 1,471.50	
			\$ 1,471.50
TOTAL DUE			\$ 1,471.50

New Charges

Detailed Charges
 Customer: MACOMB COUNTY OPW, CLINTON TOWNSHIP, MI
 Account Number: 0322513 UserID: MACOMB
 Email: JOSEPH.BETZ@MACOMBGOV.ORG
 Service Period
 11/15/19-02/14/20 WxSentry Trans Online-Platinum \$ 924.00
SUBTOTAL \$ 924.00

Customer: MACOMB COUNTY OPW, CLINTON TOWNSHIP, MI
 Account Number: 0322513 UserID: MACOMB2
 Email: JOSEPH.BETZ@MACOMBGOV.ORG
 Service Period
 11/15/19-02/14/20 WxSentry Transp Online-Std \$ 115.50
SUBTOTAL \$ 115.50

Customer: MACOMB COUNTY OPW, CLINTON TOWNSHIP, MI
 Account Number: 0322513 UserID: MACOMB3
 Email: JOSEPH.BETZ@MACOMBGOV.ORG
 Service Period
 11/15/19-02/14/20 WxSentry Transp Online-Std \$ 144.00
SUBTOTAL \$ 144.00

Customer: MACOMB COUNTY OPW, CLINTON TOWNSHIP, MI

Subject to DTN Terms and Conditions

Customer's acceptance and activation of the DTN goods or services constitutes express acceptance of the Terms and Conditions, a copy of which was provided to Customer upon inception of the service. Any other terms and conditions presented by the Customer, contrary to those provided DTN, do not apply. Canceling service will result in the billing for the duration of the then-current term under the DTN Subscription Agreement.

Services Provided By: DTN, LLC
 Omaha, NE 68114-3334
 Tax ID (EIN) - 20-5551424
 GST: 83187 6255 RT0001

PST
 QC: 1216123332
 SK: 2446102
 MB: 087446-1
 BC: PST-1000-7804

Payment Information

If payment is not received by the due date, late fees and/or collection charges may be assessed. Customer understands that DTN may reduce or disconnect services offered to Customer for non-payment of any charges due. Customer agrees that DTN may charge a reconnection fee in the event that service is disconnected for nonpayment. A \$25.00 USD fee will be assessed for all returned checks. For your convenience, DTN accepts the following credit cards: Master Card, VISA, Discover, and American Express.

TI191018.001-312-00000285

10 Years of Excellence!

For the 10th straight year, we have topped our competitors as the most accurate provider of precipitation and short-term temperature forecasts.

The study was done by ForecastWatch.com: the independent, leading analyst of forecast predictions and actual outcomes within the weather industry.

When your business relies on accurate weather information, you can trust that you are receiving the best possible information from us.

Electronic Payment Information:
 Must reference DTN Account No. and Invoice No.

Banking Details: Remit in USD
 DTN, LLC
 Account No.: 464642771
 (ACH) - ABA (Routing)#: 071000013
 (Wire) - ABA (Routing)#: 021000021
 SWIFT ID: CHASUS33

Bank Address:
 (ACH) - JPMorgan Chase, Chicago, IL
 (Wire) - JPMorgan Chase, New York, NY

Account Number: 0322513 UserID: MACOMB4

Email: JOSEPH.BETZ@MACOMBGOV.ORG

Service Period

11/15/19-02/14/20 WxSentry Transp Online-Std \$ 144.00

SUBTOTAL \$ 144.00

Customer: MACOMB COUNTY OPW, CLINTON TOWNSHIP, MI

Account Number: 0322513 UserID: MACOMB5

Email: JOSEPH.BETZ@MACOMBGOV.ORG

Service Period

11/15/19-02/14/20 WxSentry Transp Online-Std \$ 144.00

SUBTOTAL \$ 144.00

Total New Charges \$ 1,471.50





ONESolution
 ACCOUNTS PAYABLE CHECK REQUEST
PUBLIC WORKS DIVISION

Mark A. Hackel
 County Executive

1. PREPARED BY (Please Type)	2. PHONE #	3. DATE
Michelle Houvener	95966	10/15/19
4. SET ID		5. POST DATE
VPI91016HUA		

6. VENDOR NAME (Check to be Issued to)		7. VENDOR NUMBER	8. ADDR CODE	9. Invoice No (MAX=16 CHARACTERS)	10. Invoice Date	11. Invoice Amount
DTE Energy		V01270	08	19-475	9/30/2019	\$ 7,953.21

General Ledger			Job Ledger			OPTIONAL			CHILD RECORD DETAIL INFORMATION		
12. Org/Key	13. Object	14. Cost Center (CCNT)	15. Object	16. Work Order Number	17. Secondary Reference (MAX=16 CHARACTERS)	18. Description (MAX=30 CHARACTERS)	19. Amount	20. DIV	21. MISC	22. Sep CK	
A	8200017M	92101	92101	WO18006	8 1/2 Mile Relief	Acct #9100-0005-3785, 9/10-10/8	\$ 7,953.21	GEN			
B											
C											
D											
E											
F											
G											

23. Total: \$ 7,953.21

24. COMMENTS, INSTRUCTIONS OR ADDITIONAL NOTES:

25. Finance Officer:	26. Chief Deputy:	27. Engineers:	28. Managers:	29. Coordinator:
<i>KAM</i>	<i>AB</i>		<i>URS</i>	<i>RL</i>
30. Drain:	31. Project Balance:	32. Staff Date:	33. Board Date:	34. Select For Pay Date:
8 1/2 Mile Relief	N/A	11/5/2019	11/18/2019	

910000053785

00000795321 B



Payment Coupon

Account Number	910000053785
Due Date:	November 01, 2019
Total Due:	\$7,953.21

MACOMB COUNTY
MACOMB COUNTY DRAIN COMM
21777 DUNHAM RD
CLINTON TWP MI 48036-1005

Mail Payments to:
DTE Energy
P.O. Box 630795
Cincinnati OH 45263-0795

Please detach and return coupon with account number on check. Agencies are not authorized to accept payment of this bill.

Account Information

MACOMB COUNTY
MACOMB COUNTY DRAIN COMM
21777 DUNHAM RD
CLINTON TWP, MI 48036

Account Number	9100-0005-3785
----------------	----------------

DTE-Energy Federal ID No.	38-3217762
---------------------------	------------

Programs you are enrolled in:

SolarCurrents Program

How to contact us:

Power Outage	See Detail Charges
Billing Inquiry	1-734-397-4309

Please make any inquiry or complaint about this bill to DTE Energy before the Due Date.
DTE Energy is regulated by the Michigan Public Service Commission, Lansing, Michigan

Important Information

For the average Michigan residential customer, renewable energy is estimated to avoid \$3.08 per month of new coal-fired generation costs.



Summary Of Charges

Account Number 9100-0005-3785

Previous Balance as of 09/11/2019	7,075.59
Payment(s) and Credit(s)	- 7,075.59
Remaining Balance	\$0.00

Current Charges

Service Location	Item	Service Type	Rate	Bill Period	Amount
23001 E 9 Mile Rd	7004376662	General Service Municipal Pumping-Net Metering Cat1	EFCND3_WP	09/10 - 10/08/19	7,953.21
		Taxes			0.00
		Miscellaneous Charges			0.00
		Current Bill			\$7,953.21

Amount Due on or before Due Date of 11/01/2019 **\$7,953.21**

Your current charges are due on November 1, 2019. A 2% late payment charge will be applied if paid after the due date.

Detail Charges

For Service at: 23001 E 9 Mile Rd, St Clair Shores, MI 48082

Outage Contact Number: 1-313-235-1300

Invoice: 200001816625

Billing Period: 09/10/2019 through 10/08/2019

Days Billed: 29

Metering Information

Meter Number	Start Date	Start Read	Stop Date	Stop Read	Read Difference	Units Multiplier	Usage Used	Type
6321448	09/10	368.2A	10/08	374.3A	6.1	6,400.0000	39,040.0	P - In-V
6321448	09/10	463.6A	10/08	470.5A	6.9	6,400.0000	44,160.0	P - In-W
6321449	09/10	1.2A	10/08	1.2A	0.0	- 6400.000	0.0	P - Out-V
6321449	09/10	0.0A	10/08	0.0A	0.0	- 6400.000	0.0	P - Out-W
6321451	09/10	0.5A	10/08	0.5A	0.0	6,400.0000	0.0	P - In-V
6321451	09/10	0.5A	10/08	0.5A	0.0	6,400.0000	0.0	P - In-W
Total KVARH							39,040.00	
Total KWH							44,160.00	

Invoice: 200001816625	Service Name: Chapaton Pumping Station	General Service Municipal Pumping-Net Metering Cat1
Item: 7004376662	Cycle: 05	

Billing Status Information

1	On-peak Billing Demand	230	KW	ESTABLISHED	09/17/2019	18:00
3	65% High OP Bill Dmd June-Oct prec 11 mths	1105	KW	ESTABLISHED	09/17/2019	18:00
8	Highest Single Billing Demand	1382	KW	ESTABLISHED	09/12/2019	00:00
A	Current PV High Monthly Demand	1382	KW	ESTABLISHED	09/12/2019	00:00
B	50% of the Contract Capacity for PV	0	KW			
C	Primary Voltage Maximum Demand	4956	KW	ESTABLISHED	05/01/2019	04:30
	Contract Capacity for Location	6738	KW	ESTABLISHED	08/16/2016	05:00
	Power Factor (ratio) for all voltages	74	PCT			
	Total Number of days in the Billing Period	29	DAYS			
	Avg Kilowatthours Used Per Day This Period	1523	KWH			
	Avg Kilowatthours Used Per Day A Year Ago	2880	KWH			
	kWh percentage change from a year ago	-47	PCT			
	Metered outflow	0	KWH			
	Net Delivery Billed (inflow)	44160	KWH			
	Net Inflow (In - Out)	44160	KWH			

Charges for 09/10/2019 through 10/08/2019

Power Supply Charges:

Power Supply Energy:						
Power Supply Capacity Charge	44,160	KWH	@ \$	0.0329700	Per Total KWH	1,455.96
Power Supply Non Capacity Charge	44,160	KWH	@ \$	0.0464000	Per Total KWH	2,049.02
Surcharges:						
Power Supply Cost Recovery Factor	44,160	KWH	@ \$	0.0015600	Per Total KWH	68.89
Sub Total:						3,573.87

Delivery Charges:

Service Charge						11.25
Distribution:						
Distribution Energy	44,160	KWH	@ \$	0.0386600	Per Total KWH	1,707.23
Surcharges:						
Transitional Recovery Mechanism	44,160	KWH	@ \$	0.0010300	Per Total KWH	45.48
Nuclear Surcharge	44,160	KWH	@ \$	0.0008270	Per Total KWH	36.52
Energy Waste Reduction	2	MTR	@ \$	38.5100000		77.02
LIEAF Factor	2	MTR	@ \$	0.9200000		1.84
Sub Total:						1,879.34
Special Facilities Charge						2,500.00

Invoice Subtotal

Michigan State Sales Tax On Taxable Portion

Invoice Total

\$7,953.21





Mark A. Hackel
County Executive

ONESolution

ACCOUNTS PAYABLE CHECK REQUEST

PUBLIC WORKS DIVISION

1. PREPARED BY: (Please Type)	2. PHONE #	3. DATE
Michelle Houvener	95966	10/25/19
4. SET ID		
V191028MB		
5. POST DATE		

PARENT RECORD INFORMATION		
6. VENDOR NAME (Check to be issued to)	7. VENDOR NUMBER	8. ADDR CODE
De-Cal, Inc.	V59694	01
9. INVOICES NO (MAX=16 CHARACTERS)	10. INVOICE DATE	11. INVOICE AMOUNT
WO9191866	10/16/2019	\$ 1,162.62

CHILD RECORD DETAIL INFORMATION										
Line	General Ledger		Job Ledger		16. Work Order Number	17. Secondary Reference (MAX=16 CHARACTERS)	18. Description (MAX=30 CHARACTERS)	19. Amount	20. DIV	21. MISC
	12. Org Key	13. Object	14. Cost Center (CCNT)	15. Object						
A	8210017M	93002	CC0004	93002	WO18006	8 1/2 Mile	Job #9191866 Rpr Condensate Drain	\$ 1,162.62	GEN	
B										
C										
D										
E										
F										
G										

23. Total: \$ 1,162.62

24. COMMENTS, INSTRUCTIONS OR ADDITIONAL NOTES:
Repair condensate drain & Boiler vent cap

25. Finance Officer: <i>BHM</i>	8 1/2 Mile Relief
26. Chief Deputy: <i>PS</i>	N/A
27. Engineers:	11/5/2019
28. Managers: <i>YAS</i>	11/18/2019
29. Coordinator: <i>KRL</i>	
30. Drain:	
31. Project Balance:	
32. Staff Date:	
33. Board Date:	
34. Select For Pay Date:	



DE-CAL, Inc.
 24659 Schoenherr Rd.
 Warren, MI 48089-4775
 Service Phone: 586-619-0281
 Service Fax: 586-486-5242

Service Invoice

Invoice #: WO9191866

Date: 10/16/2019

Billed To: Macomb County Chapaton
 23001 E. 9 Mile Rd.
 St. Clair Shores MI 48080
 Attn: Accounts Payable

Location: Macomb Chapaton Pumping
 23001 E. 9 Mile Rd.
 St. Clair Shores MI 48080

Client PO#:	Employee: Cliff Wilkerson	Due Terms: 30DY
--------------------	----------------------------------	------------------------

Assembly#	Part#	Description	Quantity	Price	Ext Price	Sales Tax
		See Attached	1.0000	1,162.620000	1,162.62	N

Notes:

See work order for details

Chapaton

De-Cal Service Group is a division of De-Cal, Inc.

Please Make Checks Payable to: De-Cal, Inc.

Thank you for your prompt payment!

Amount Due: \$ 1,162.62



De - Cal Service Group

Commercial & Industrial HVAC Service, Building Automation

Chillers, Boilers, Piping & Plumbing

24659 Schoenherr Rd.

Warren, MI 48089

Phone: 586-619-0281

www.de-cal.com

Customer Name:	Macomb Chapaton	Date:		De-Cal Job #	9191866
Job Site Location:					
Description Of Work Performed:	Repair condensate drain & Boiler vent cap	PO #			
		Site Contact:			
LABOR HOURS					
<i>Labor Type</i>	<i>Dates, Technicians</i>	<i>Total Hours</i>	<i>Total</i>		
HVAC Technician		8.0	\$	900.00	
Controls Technician			\$	-	
Boiler Technician			\$	-	
Chiller Technician			\$	-	
OT			\$	-	
DT			\$	-	
Veh/Tool Allowance		1.0	\$	75.00	
MATERIALS/SUBCONTRACTORS UTILIZED					
<i>Unit #</i>	<i>Material Description</i>	<i>Part #</i>	<i>Quantity</i>	<i>Price</i>	
	Consumables		1.0	\$	20.00
	Glue & Primer		1.0	\$	25.00
	Mortar		1.0	\$	37.50
	Misc. PVC Pipes & Fittings		1.0	\$	94.50
				\$	-
				\$	-
				\$	-
				\$	-
				\$	-
				\$	-
				\$	-
				\$	-
				\$	-
				\$	-
Total Work Order				Material Tax %	\$ 10.62
				Sell For	\$ -
				TOTAL BILLING:	\$ 1,162.62



ONESolution

ACCOUNTS PAYABLE CHECK REQUEST
PUBLIC WORKS DIVISION

Mark A. Hackel
County Executive

1. PREPARED BY: (Please Type)	2. PHONE #	3. DATE
Michelle Houvener	95966	10/14/19
4. SET ID		
V8191023MA		
5. POST DATE		

PARENT RECORD INFORMATION	
6. VENDOR NAME (Check to be issued to)	7. VENDOR NUMBER
FTCH	V44063
8. ADDR CODE	9. INVOICE DATE
01	9/30/2019
10. INVOICE AMOUNT	11. INVOICE AMOUNT
386733	\$ 4,627.86

CHILD RECORD DETAIL INFORMATION						
General Ledger	Job Ledger	OPTIONAL	19. Amount	20. DIV	21. MISC	22. Sep CK
12. Org Key	13. Object	14. Cost Center (CCNT)	15. Work Order Number	16. Description (MAX = 30 CHARACTERS)	17. Secondary Reference (MAX = 16 CHARACTERS)	18. Invoice Date
A 8200017M	80138	CC0004	WO19005	Pjt #190051 through 9/30/19	8 1/2 Mile Relief	9/30/2019
B						
C						
D						
E						
F						
G						

23. Total: \$ 4,627.86

REV 09/2018

24. COMMENTS, INSTRUCTIONS OR ADDITIONAL NOTES:
As Needed Services through 9/30/19

25. Finance Officer:	8 1/2 Mile Relief
26. Chief Deputy:	\$90,279.16
27. Engineers:	11/5/2019
28. Managers:	11/18/2019
29. Coordinator:	



Fishbeck, Thompson, Carr & Huber, Inc.
 engineers | scientists | architects | constructors
 Federal I.D. No. 38-1841857 | Incorporated

Payment Options

Remit Wire/ACH payments to Acct: 100094457 ABA: 072413829
 Remit checks to: 1515 Arboretum Drive, SE | Grand Rapids, Michigan 49546

Attention: Mr Vincent Astorino
 Macomb County Public Works Commissioner
 21777 Dunham Road
 Clinton Township, MI 48036
 United States

Invoice : 386733
 Invoice Date : 10/14/2019
 Project : 190051
 Project Name : Macomb Co PW/8.5 As-needed
 Engineering
 Bill Term : 1

For Professional Services Rendered Through 10/4/2019

WO19005

	Fee	Available	Billings		
			To Date	Previous	Current
1 - Task 1 - Genral As Needed	20,195.00	20,195.00	0.00	0.00	0.00
1.A - Task 1a - Chapaton Structural Study	60,663.00	37,020.14	23,642.86	23,642.86	0.00
1.B - Task 1b - 9 Mile Pipe Repair	16,256.00	10,082.63	6,337.37	6,173.37	164.00
Rate Labor					164.00
1.C - Task 1c - In-System Storage As-Needed	5,250.00	5,250.00	0.00	0.00	0.00
1.D - Task 1d - Office Improvements	25,000.00	5,626.10	21,393.90	19,373.90	2,020.00
Rate Labor					2,020.00
1.E - Task 1e - Maps	7,500.00	5,828.00	1,672.00	1,672.00	0.00
1.F - Task 1f - Chapaton Sampling Plan	4,200.00	134.40	4,065.60	4,065.60	0.00
1.G - Task 1g - Chapaton Survey	2,100.00	15.75	2,084.25	2,084.25	0.00
1.H - Task 1h - Chapaton Bar Screen Hydraulic Isolation	4,725.00	4,725.00	0.00	0.00	0.00
1.I - Task 1i - Chapaton Environmental Study	3,030.00	3,030.00	2,443.86	0.00	2,443.86
Rate Labor					1,619.00
Expenses					596.66
Unit Rate Expense					228.20
Total Expense					824.86
1.j - Task 1j - Chapaton Flow Meter Drawings	3,000.00	3,000.00	0.00	0.00	0.00
				Current Billings	<u>4,627.86</u>
				Amount Due This Bill	<u>4,627.86</u>

1.B - Task 1b - 9 Mile Pipe Repair

Rate Labor Class	Hours	Rate	Amount
Senior Engineer	1.00	164.0000	164.00
Total Rate Labor			164.00

1.D - Task 1d - Office Improvements

Rate Labor Class	Hours	Rate	Amount
Senior Architect	2.50	155.0000	387.50
Senior Engineer	1.00	164.0000	164.00
Staff Architect	16.50	89.0000	1,468.50
Total Rate Labor			2,020.00

Total Bill Task: 1.D - Task 1d - Office Improvements

2,020.00

EN - Environmental

Rate Labor Class	Hours	Rate	Amount
Senior Industrial Hygienist	1.00	159.0000	159.00
Staff Technician	18.50	73.0000	1,350.50
Technician	1.50	73.0000	109.50
Total Rate Labor			1,619.00

Expenses

Account / Vendor	Cost	Multiplier	Amount
Subconsultant			
EMLab P&K LLC	529.25	1.05	555.71
EMSL Analytical Inc	39.00	1.05	40.95
Total Subconsultant	568.25		596.66
Total Expenses			596.66

Unit Rate Expenses

Account / Unit	Quantity	Rate	Amount
Mileage			
Mileage - Employee Vehicle	326.00	0.7000	228.20
Total Unit Rate Expenses			228.20

Total Bill Task: EN - Environmental

2,443.86

Total Project: 190051 - Macomb Co PW/8.5 As-needed Engineering

4,627.86

**MACOMB COUNTY PUBLIC WORKS OFFICE
ENGINEERING INVOICE COVER SHEET**

WORK ORDER NUMBER	WO19005
PROJECT NUMBER	WWS-2019-001
PROJECT NAME	As-Needed General Engineering Services
DRAINAGE DISTRICT	Eight and One-Half Mile Relief Drain Drainage District
CONSULTANT NAME	Fishbeck
INVOICE DATE	10/14/2019
INVOICE START DATE	9/7/2019
INVOICE END DATE	10/4/2019
ORIGINAL CONTRACT AMOUNT	\$ 151,919.00
CHANGE ORDER TOTAL	\$ -
Change Order No. 1	
Change Order No. 2	
Change Order No. 3	
Change Order No. 4	
TOTAL REVISED CONTRACT AMOUNT	\$ 151,919.00
(includes all approved change orders only)	
TOTAL AMOUNT PREVIOUSLY INVOICED	\$ 57,011.98
TOTAL AMOUNT DUE THIS INVOICE	\$ 4,627.86
TOTAL BUDGET REMAINING	\$ 90,279.16
(Includes Total Revised Contract Amount Less Total Invoiced Previously and Total Invoiced Current)	



Mark A. Hackel
County Executive

ONESolution

ACCOUNTS PAYABLE CHECK REQUEST

PUBLIC WORKS DIVISION

1. PREPARED BY: (Please Type)	2. PHONE #	3. DATE
Michelle Houvener	95966	10/11/19
4. SET ID	5. POST DATE	
VP191016MB		

6. VENDOR NAME (Check to be issued to)		7. VENDOR NUMBER	8. ADDR CODE	9. Invoice No. (MAX=16 CHARACTERS)	10. Invoice Date	11. Invoice Amount
HESCO		V66420	02	20191526	10/10/2019	\$ 949.84

CHILD RECORD DETAIL INFORMATION											
Line	General Ledger			Job Ledger		OPTIONAL		19. Amount	20. DIV	21. MISC	22. Sep CK
	12. Org Key	13. Object	14. Cost Center (CCNT)	15. Object	16. Work Order Number	17. Secondary Reference (MAX=16 CHARACTERS)	18. Description (MAX=30 CHARACTERS)				
A	8210017M	93002	CC0004	93002	WO18006	8 1/2 Mile Relief	S.O. No. 1013824	\$ 934.00	GEN		
B	8210017M	72901	CC0004	72901	WO18006	8 1/2 Mile Relief	S.O. No. 1013824	\$ 15.84	GEN		0
C											
D											
E											
F											
G											

23. Total: \$ 949.84

REV 09/2018

24. COMMENTS, INSTRUCTIONS OR ADDITIONAL NOTES:

25. Finance Officer:	BHM	8 1/2 Mile Relief
26. Chief Deputy:	AD	N/A
27. Engineers:		11/5/2019
28. Managers:	WJ	11/18/2019
29. Coordinator:	KL	
30. Drain:		
31. Project Balance:		
32. Staff Date:		
33. Board Date:		
34. Select For Pay Date:		



Knowledgeable • Professional • Attentive • Likeable

23905 Freeway Park • Farmington Hills, MI 48335
 Phone: 586.978.7200 • Fax: 586.978.2200
 www.hesco-mi.com

Invoice

Date	Invoice #
10/10/2019	20191526

Bill To
Macomb Cnty PW - Chapaton RTB 23001 E Nine Mile Rd St. Clair Shores, MI 48080

Ship To
Macomb Cnty PW - Chapaton RTB 23001 E Nine Mile Rd St. Clair Shores, MI 48080

S.O. No.	P.O. No.	Terms	Rep	Hesco #	
1013824	Verbal Kris Benda	Net 30	HB	B2019862Q	
Item	Description	Ordered	Invoiced	Rate	Amount
Griffco Valve	BPG100P1TVF Griffco 1" Back pressure valve PVC body, 0-50 psi spring, PTFE/Viton diaphragm, Flanged connections	2	2	467.00	934.00
Freight	Shipping and Handling		1	15.84	15.84
Current Swan Unit					
				Subtotal	\$949.84
				Sales Tax (6.0%)	\$0.00
				Total	\$949.84
				Payments/Credits	\$0.00
				Balance Due	\$949.84



ONESolution
ACCOUNTS PAYABLE CHECK REQUEST
PUBLIC WORKS DIVISION

1. PREPARED BY (Please Type)	2. PHONE #	3. DATE
Michelle Houvener	95966	10/22/19
4. SET/ID	5. POST-DATE	
VP191023MA		

6. VENDOR NAME (Check to be Issued to)	7. VENDOR NUMBER	8. ADDR CODE	9. Invoice No (MAX=16 CHARACTERS)	10. Invoice Date	11. Invoice Amount
HESCO	V66420	62	161025-8	9/30/2019	\$ 3,600.00

General Ledger		Job Ledger		OPTIONAL		CHILD RECORD DETAIL INFORMATION	
12. Org Key	13. Object	14. Cost Center (CCNTY)	15. Work Order Number	17. Secondary Reference (MAX=16 CHARACTERS)	18. Description (MAX=30 CHARACTERS)	19. Amount	20. DIV
A	8200017M	80126	WC18101	8 1/2 Mile Relief	161025 App 8	\$ 3,600.00	GEN
B							
C							
D							
E							
F							
G							

23. Total: \$ 3,600.00 REV 09/2018

24. COMMENTS, INSTRUCTIONS OR ADDITIONAL NOTES:

25. Finance Officer:	<i>Handwritten Signature</i>	8 1/2 Mile Relief
26. Chief Deputy:	<i>Handwritten Signature</i>	\$45,899.00
27. Engineers:		11/5/2019
28. Managers:	<i>Handwritten Signature</i>	11/18/2019
29. Coordinator:	<i>Handwritten Signature</i>	



Unit Billing

HESCO Job: 161025
 Application: 8
 Period: 10/16/2019

Owner: Macomb County Public Works
 21777 Dunham Road
 Clinton Twp MI 48036

Job Location: 161025 Macomb SEMCWDS PM
 21777 Dunham Road
 Clinton Twp MI 48036

Attention: Vince Astorino

Application For Payment On Contract

Contract Sum to Date	63,899.00
Total Complete to Date	18,000.00
Total Retained	0.00
Total Earned Less Retained	18,000.00
Less Previous Billings	14,400.00
Current Payment Due	3,600.00
Balance on Contract	45,899.00

Contractor's Certification of Work

The undersigned contractor certifies that, to the best of the contractor's knowledge, the work on the above named job has been completed in accordance with the plans and specifications to the level of completion indicated on the attached schedule of completion.

[Signature] Date: 10/16/19

Terms: Invoices are due and payable 30DY from the date of invoice. All overdue amounts will be charged a service charge of 0.00 % per anum. Please make checks payable to: HESCO

Thank you for your prompt payment.

SUBMITTED BY:

HESCO
28838 Van Dyke Road
Warren MI 48093

PROJECT: 161025 Macomb SEMCWDS PM
21777 Dunham Road
Clinton Twp MI 48036

HESCO Job: 161025
Application: 8
Period: 10/16/2019

Unit Billing

Schedule of Work Completed

Bid Item Description	Price/Unit	Contract Plus Changes	Previous Units Billed	Current Units Complete	Total Units Complete	Previous Value	Current Value	Total Value
Chapaton 9 Mile Dr	300.00	900.00	1.00	1.00	2.00	300.00	300.00	600.00
Chapaton Dry Flow Pump #1	300.00	900.00	2.00		2.00	600.00		600.00
Chapaton Intermediate Pump #2	300.00	900.00	2.00		2.00	600.00		600.00
Chapaton Wet well	300.00	900.00	2.00		2.00	600.00		600.00
Chapaton North Suction Well Level	300.00	900.00	2.00		2.00	600.00		600.00
Chapaton South Su	300.00	900.00	2.00		2.00	600.00		600.00
Jefferson & 9 Mile Level Sensor	300.00	900.00	2.00	1.00	3.00	600.00	300.00	900.00
Chapaton East	300.00	900.00	1.00		1.00	300.00		300.00
NaOCl Flow to Head Tanks	300.00	900.00	2.00	1.00	3.00	600.00	300.00	900.00
NaOCl Storage Tank 1	300.00	900.00	2.00	1.00	3.00	600.00	300.00	900.00
NaOCl Storage Tank 2	300.00	900.00	2.00	1.00	3.00	600.00	300.00	900.00
NaOCl Storage Tank 3	300.00	900.00	2.00	1.00	3.00	600.00	300.00	900.00
Fisher Porter Mag. Flow Meter (1)	300.00	900.00	1.00	1.00	1.00	300.00	300.00	300.00
Fisher Porter Mag. Flow Meter (2)	300.00	900.00	1.00	1.00	1.00	300.00	300.00	300.00
NaOCl Head Tank Level 1	300.00	900.00	1.00	1.00	1.00	300.00	300.00	300.00
NaOCl Head Tank Level 2	300.00	900.00	2.00	1.00	3.00	600.00	300.00	900.00
Chapaton West Basin Level	300.00	900.00	2.00	1.00	3.00	600.00	300.00	900.00
Chapaton Outfall Building	300.00	900.00	2.00	1.00	3.00	600.00	300.00	900.00
Chapaton Canal Lake Side	300.00	900.00	2.00	1.00	3.00	600.00	300.00	900.00
Chapaton Canal Canal Side	300.00	900.00	2.00	1.00	3.00	600.00	300.00	900.00
Marlin Retention Basin	300.00	900.00	2.00		2.00	600.00		600.00
Drain East of Dry Flow Gates	300.00	900.00	2.00		2.00	600.00		600.00
Drain West of Dry Flow Gates	300.00	900.00	2.00		2.00	600.00		600.00
Basin Level	300.00	900.00	2.00		2.00	600.00		600.00
NaOCl Flow to Head Tanks	300.00	900.00	2.00		2.00	600.00		600.00
NaOCl Storage Tank 1	300.00	900.00	2.00		2.00	600.00		600.00
NaOCl Storage Tank 2	300.00	900.00	2.00		2.00	600.00		600.00

8 1/2 Mile

SUBMITTED BY: HESCO

28838 Van Dyke Road
Warren MI 48093

PROJECT: 161025 Macomb SEMCWDS PM
21777 Dunham Road
Clinton Twp MI 48036

HESCO Job: 161025
Application: 8
Period: 10/16/2019

Unit Billing

Schedule of Work Completed

Bid Itm Description	Price/Unit	Contract Plus Changes	Previous Units Billed	Current Units Complete	Total Units Complete	Previous Value	Current Value	Total Value
Chlorination 1"	300.00	900.00						
Bon Hour Pump Station Flow (Flume)	300.00	900.00	2.00		2.00	600.00		600.00
Effluent (Harper)	300.00	900.00	2.00		2.00	600.00		600.00
Influent Ultrasonic	300.00	900.00	2.00		2.00	600.00		600.00
Influent Pressure Transducer	300.00	900.00						
Violet Pump Station	300.00	900.00	1.00		1.00	300.00		300.00
Wet Well Level (Pr	300.00	900.00						
Wet Well Level (Capacitance)	300.00	900.00	2.00		2.00	600.00		600.00
Proposed Chemical	300.00	900.00	2.00		2.00	600.00		600.00
Proposed Chemical	300.00	900.00	2.00		2.00	600.00		600.00
Proposed Flow Meter By Others	300.00	900.00						
8 1/2 Mile Drian Re	300.00	900.00	1.00		1.00	300.00		300.00
Instrumentation Replacement								
Chapaton NaoCl H	5,200.00	5,200.00						
Chapaton NaoCl H	5,200.00	5,200.00						
Fisher Porter Magn	7,333.00	7,333.00						
Fisher Porter Magn	7,333.00	7,333.00						
Martin Chlorination - 1"	7,333.00	7,333.00						
Totals:		63,899.00	48.00	12.00	60.00	14,400.00	3,600.00	18,000.00

Job # 161025 SEMCWDs Annual PM
2019
Site Visit Worksheet 2019

Site	Technology	Jan-19	Feb-19	Mar-19	Apr-19	May-19	Jun-19	Jul-19	Aug-19	Sep-19	Oct-19	Nov-19	Dec-19
Chapaton													
9 Mile Drain E to Tide Gates	Enviro Ranger Ultrasonic									16PM			
Dry Flow Pump 1	ABB Mag XM		25PM										
Intermediate Pump 2	ABB Mag XM		28PM										
Wet Well Radar Level	Siemens Radar			15PM									
North Suction Wet Well	Drexelbrook			15PM									
South Suction Wet Well	Drexelbrook			15PM									
Jefferson & 9 Mile Level	Hydroranger 100 Ultrasonic									16PM			
Chapaton East													
NaOCl Flow to Head Tanks	Fischer Porter Mag	NOT USED											
NaOCl Storage Tank 1	Hydroranger 100 Ultrasonic									16PM			
NaOCl Storage Tank 2	Hydroranger 100 Ultrasonic									16PM			
NaOCl Storage Tank 3	Hydroranger 100 Ultrasonic									16PM			
Siemens Mag Meter 1	Siemens Mag									16PM			
Siemens Magmeter 2	Siemens Mag									16PM			
NaOCl Head Tank Level 1	Drexelbrook									16PM			
NaOCl Head Tank Level 2	Drexelbrook									16PM			
West Basin Level	Hydroranger 200 Ultrasonic									16PM			
Chapaton Outfall Bldg													
Lake Side	Hydroranger Plus									16PM			
Canal Side	Hydroranger Plus									16PM			
Mardin Retention Basin													
Mardin Drain East	Hydroranger Plus									17PM			
Mardin Drain West	Hydroranger 200									17PM			
Basin Level	Hydroranger 100									17PM			
NaOCl Flow to Head Tanks	Siemens MAG									17PM			
NaOCl Tank 1	Hydroranger 200												
NaOCl Tank 2	Hydroranger 100												
Chlorination 1													
80m Neur PS													
Flow (Flume)													
Affluent (Harper)													
Influent Ultrasonic													
Influent Pressure													
Violet PS													
Wet Well Level Pressure													
Wet Well Level Capacitance	Hydroranger 200												
Proposed Chem Tank 1													
Proposed Chem Tank 2													
Proposed Flow Meter	Fluxem Fluxus												
8 1/2 Mile Drain													
Remote Level Sensor	Hydroranger Plus											15PM	



ONESolution

ACCOUNTS PAYABLE CHECK REQUEST
PUBLIC WORKS DIVISION

Mark A. Hackel
County Executive

1. PREPARED BY (Please Type)	2. PHONE #	3. DATE
Michelle Houvener	95966	10/1/19
4. SET ID		
5. POST DATE		
VPI91016MB		

PARENT RECORD INFORMATION			
6. VENDOR NAME (Check to be issued to)	7. VENDOR NUMBER	8. ADDR CODE	9. Invoice No (MAX=16 CHARACTERS)
Home Depot	V02220	25	0033550
			10. Invoice Date
			10/10/2019
			11. Invoice Amount
			\$ 535.54

CHILD RECORD DETAIL INFORMATION										
General Ledger			Job Ledger		OPTIONAL			22. Sub CK		
L	B	12. Org Key	13. Object	14. Cost Center (CNT)	15. Object	15. Work Order Number	17. Secondary Reference (MAX=16 CHARACTERS)	18. Description (MAX=30 CHARACTERS)	19. Amount	20. DIV
A		8210017M	72613	CC0004	72613	WO18006	8 1/2 Mile Relief	6035 3225 0159 9843, 0033550	\$ 535.54	GEN
B										
C										
D										
E										
F										
G										

23. Total: \$ 535.54

24. COMMENTS, INSTRUCTIONS OR ADDITIONAL NOTES:

25. Finance Officer:	8 1/2 Mile Relief
26. Chief Deputy:	N/A
27. Engineers:	11/5/2019
28. Managers:	11/18/2019
29. Coordinator:	

30. Drain:	
31. Project Balance:	
32. Staff Date:	
33. Board Date:	
34. Select For Pay Date:	

Chap



More saving.
More doing.™

20500 13 MILE RD
ROSEVILLE MI 48066 586-415-9620

2707 00003 81350 10/10/19 10:56 AM
CASHIER PATRICIA

858670005111 SAWHORSEC700 <A>
TOUGHBUILT C700 SAWHORSE ADJ HGT
2@59.97 119.94N

084305355546 HOMER BUCKET <A>
5GAL HOMER BUCKET
5@3.25 16.25N

076174102956 UTILITY KNIFE <A>
DEWALT RETRACTABLE UTILITY KNIFE
14.97N

045242534555 9-IN-1 SQ DRIVE MULTI-BIT SDVR <A>
MKE 9-IN-1 SQ DRIVE MULTI-BIT SDVR
2@14.97 29.94N

008925141556 D 14PC <A>
DIABLO 14PC SET 29.97N

039800131157 MAX AAA30 <A>
ENERGIZER MAX AAA30 15.98N

000346493245 3/8" X5L <A>
BOSCH XTREME 3/8X6 SDS+ HMR BIT
2@8.97 17.94N

000346493276 1/2" X5L <A>
BOSCH XTREME 1/2X6 SDS+ HMR BIT
2@9.97 19.94N

039800006059 ENR MAX C8 <A>
ENERGIZER MAX C 8 13.98N

000346493252 3/8X10 X5L <A>
BOSCH XTREME 3/8X12 SDS+ HMR BIT
2@17.97 35.94N

000346493283 1/2X10 X5L <A>
BOSCH XTREME 1/2X12 SDS+ HMR BIT
2@19.97 39.94N

008925135616 D 9" 5PK <A>
DIABLO STEEL DEMON 9"14/18TPI 5 PACK
18.97N

008925139133 CMMRECIPGT3P <A>
DIABLO 6" CARBIDE MEDIUM METAL 3PK
31.97N

008925094524 4.5" MTL CUT <A>
DIABLO 4-1/2"X7/8" METAL CUTOFF BLDE
10@2.97 29.70N

045242195732 GRINDER <A>
MKE 7A 4-1/2" SM ANG GRINDER CORDED
59.00N

076174937259 FATMAX TAPE <A>
25' X 1-1/4" FAT MAX TAPE
2@14.97 29.94N

NLP Savings \$10.00

019200842518 LY DW 240 <A>
LYSOL DISINFECTING WIPES 3X80 10.97N

SUBTOTAL 535.34
SALES TAX 0.00

TAX EXEMPT
TOTAL \$535.34

XXXXXXXXXXXX9843 HOME DEPOT
AUTH CODE 010872/0033650 USD\$ 535.34
TA

MACOMB COUNTY PUBLIC WORKS
SEMROW TREVOR
AID A00000004999908400305 THD PLCC PROX

PRO XTRA MEMBER STATEMENT

PRO XTRA ###-###-6742 SUMMARY
THIS RECEIPT PD/JOB NAME: CHAPATON TRC
PRO XTRA SPEND THIS VISIT: \$535.34
2019 PRO XTRA SPEND 10/09: \$55,566.60

This purchase qualifies for FUEL DISCOUNTS and 60 DAYS TO PAY on The Home Depot Commercial Credit Card. Ask an Associate to learn more or go to homedepot.com/finance



Mark A. Hackel
County Executive

ONESolution

ACCOUNTS PAYABLE CHECK REQUEST

PUBLIC WORKS DIVISION

1. PREPARED BY (Please Type)	2. PHONE #	3. DATE
Michelle Houvener	95966	10/9/19
4. SET ID		
V19191016MB		
5. POST DATE		

PARENT RECORD INFORMATION	
6. VENDOR NAME (Check to be issued to)	7. VENDOR NUMBER
The Macomb Group, Inc.	V10992
8. ADDR CODE	9. INVOICE NO (MAX=16 CHARACTERS)
01	5732911
10. INVOICE DATE	11. INVOICE AMOUNT
10/4/2019	\$ 1,039.76

CHILD RECORD DETAIL INFORMATION										
Line	General Ledger		Job Ledger		16. Work Order Number	17. Secondary Reference (MAX=16 CHARACTERS)	18. Description (MAX=50 CHARACTERS)	19. Amount	20. DIV	21. MISC
	42. Org Key	43. Object	14. Cost Center (CCNIP)	15. Object						
A	8210017M	93002	CC0004	93002	WO19081	8 1/2 Mile Relief	Cust #109933, Order 3227043	\$ 1,039.76	GEN	
B										
C										
D										
E										
F										
G										

23. Total: \$ 1,039.76

REV 09/2018

24. COMMENTS, INSTRUCTIONS OR ADDITIONAL NOTES:

25. Finance Officer:	8 1/2 Mile Relief
26. Chief Deputy:	N/A
27. Engineers:	11/5/2019
28. Managers:	11/18/2019
29. Coordinator:	
30. Drain:	
31. Project Balance:	
32. Staff Date:	
33. Board Date:	
34. Select For Pay Date:	



3227043



THE MACOMB GROUP, INC
 Branch: 01 MG-STERLING
 6600 E. 15 MILE ROAD
 STERLING HEIGHTS, MI 48312
 USA

586-274-4100

Bill To:
 MACOMB COUNTY PUBLIC WORKS
 23001 E. 9 MILE RD.
 ST CLAIR SHORES, MI 48080
 US

Remit payment to:
 The Macomb Group, Inc.
 PO Box 671664
 DETROIT, MI 48267-1664

INVOICE

INVOICE	Invoice Date
5732911	10/4/2019 08:48:52
ORDER NUMBER	Page
3227043	1 of 1

Ship To:
 MACOMB COUNTY PUBLIC WILL CALL-STERLING
 WILL CALL
 6600 15 MILE RD.
 STERLING HEIGHTS, MI 48312
 US

Ordered By: BOB 586-772-3425

Customer ID: 109933

PO Number	Term Description	Net Due Date	Disc Due Date	Discount Amount
CHAPATOWN RTD	1% 10 NET 30	11/3/2019	10/14/2019	10.40

Order Date	Pick Ticket No	Job Name	Primary Salesrep	Taker
10/1/2019 12:02:55	4704248		1061	115626

Quantities					Item ID	Pricing UOM	Unit Price	Extended Price
Ordered	Shipped	Remaining	UOM Unit Size	Item Description				

Carrier: WILL CALL					Tracking #:				
26.0	26.0	0.0	EA		(010) 134RFPCA606SS304	EA	15.26	396.76	
***SPECIAL ORDER/NON-STOCK ITEM					1.0	3 HOLE 90 CORNER ANGLE SS316	1.0000		
						CA-606-SS316			
100.0	100.0	0.0	EA		(020) B201SS	EA	6.43	643.00	
					1.0	3/8 SS SQUARE WASHER	1.0000		
						304 STAINLESS STEEL			

Total Lines: 2

SUB-TOTAL: 1,039.76
TAX: 0.00
AMOUNT DUE: 1,039.76

WO# 19081

A finance charge will be applied for all invoices not paid within terms. Would you like to receive invoices via fax or email? Contact our A/R department at 586-268-0720 or AR@macombgroup.com. Also, reprint your invoices from our website: www.macombgroup.com.

***Special Order/Non-Stock Returned items are subject to mfg approval.

5732911



ORIGINAL





ONESolution
 ACCOUNTS PAYABLE CHECK REQUEST
PUBLIC WORKS DIVISION

Mark A. Hackel
 County Executive

1. PREPARED BY: (Please Type)	2. PHONE #	3. DATE
Michelle Houvener	95966	10/17/19
4. SET ID		
VP191028MB		
5. POST DATE		

6. VENDOR NAME (Check to be issued to)		7. VENDOR NUMBER	8. ADDR CODE	9. Invoice No. (MAX=16 CHARACTERS)	10. Invoice Date	11. Invoice Amount
The Macomb Group, Inc.		V10992	01	5744369	10/17/2019	\$ 1,999.13

General Ledger		Job Ledger		OPTIONAL		CHILD RECORD DETAIL INFORMATION	
12. Org/Key	13. Object	14. Cost Center (CCNT)	15. Object	16. Work Order Number	17. Secondary Reference (MAX=16 CHARACTERS)	18. Description (MAX=30 CHARACTERS)	19. Amount
A	8210017M	93002	93002	WO19081	8 1/2 Mile Relief	Cust #109933, Order 3227662	1,999.13 GEN
B							
C							
D							
E							
F							
G							

23. Total: \$ 1,999.13
 REV 09/2016

24. COMMENTS, INSTRUCTIONS OR ADDITIONAL NOTES:

25. Finance Officer:	8 1/2 Mile Relief
26. Chief Deputy:	N/A
27. Engineers:	11/5/2019
28. Managers:	11/18/2019
29. Coordinator:	
30. Drain:	
31. Project Balance:	
32. Staff Date:	
33. Board Date:	
34. Select For Pay Date:	



3227662

INVOICE



THE MACOMB GROUP, INC
 Branch: 01 MG-STERLING
 6600 E. 15 MILE ROAD
 STERLING HEIGHTS, MI 48312
 USA

586-274-4100

Remit payment to:
The Macomb Group, Inc.
 PO Box 671664
 DETROIT, MI 48267-1664

INVOICE	Invoice Date
5744369	10/17/2019 09:00:34
ORDER NUMBER	Page
3227662	1 of 2

Bill To:
 MACOMB COUNTY PUBLIC WORKS
 23001 E. 9 MILE RD.
 ST CLAIR SHORES, MI 48080
 US

Ship To:
 MACOMB COUNTY PUBLIC WORKS
 23001 E. 9 MILE RD.
 ST CLAIR SHORES, MI 48080
 US

WO#19081

Ordered By: BOB 586-772-3425

Customer ID: 109933

PO Number	Term Description	Net Due Date	Disc Due Date	Discount Amount
WO-19081	1% 10 NET 30	11/16/2019	10/27/2019	19.99

Order Date	Pick Ticket No	Job Name	Primary Salesrep	Taker
10/2/2019 08:48:23	4713820		1061	115626

Quantities					Item ID Item Description	Pricing UOM Unit Size	Unit Price	Extended Price
Ordered	Shipped	Remaining	UOM Unit Size	Disp.				

Carrier: OUR TRUCK					Tracking #:			
600.0	600.0	0.0	FT	1.0	(010) 12580PVPPE 1-1/4 PVC 80 PIPE PE - 20 FT LENGTH	FT 1.0000	0.97	582.00
50.0	50.0	0.0	EA	1.0	(020) 12580PVSC 1-1/4 PVC 80 SW COUPLING	EA 1.0000	2.80	140.00
20.0	20.0	0.0	EA	1.0	(030) 12580PVS90 1-1/4 PVC 80 SW 90 ELL	EA 1.0000	2.01	40.20
10.0	10.0	0.0	EA	1.0	(040) 12580PVST 1-1/4 PVC 80 SW TEE	EA 1.0000	7.42	74.20
6.0	6.0	0.0	EA	1.0	(050) 20012580PVS 2 X 1-1/4 PVC 80 SW REDUCER	EA 1.0000	10.54	63.24
10.0	10.0	0.0	EA	1.0	(060) 12580PVMA 1-1/4 PVC 80 MALE ADAPTER	EA 1.0000	3.45	34.50
100.0	100.0	0.0	EA	1.0	(070) 1254SSC 1 1/4 304 SS STRUT CLMP	EA 1.0000	4.61	461.00
9.0	9.0	0.0	EA	1.0	(080) 125PVBCVE 1-1/4 HAYWARD PVC S/T BALL CHK VLV EPDM TC10125STE	EA 1.0000	67.11	603.99

A finance charge will be applied for all invoices not paid within terms. Would you like to receive invoices via fax or email? Contact our A/R department at 586-268-0720 or AR@macombgroup.com. Also, reprint your invoices from our website: www.macombgroup.com.

***Special Order and Non-Stock Items may be subject to freight charge.
 ***Special Order/Non-Stock Returned items are subject to mfg approval.

5744369



ORIGINAL



INVOICE



THE MACOMB GROUP, INC
 Branch: 01 MG-STERLING

6600 E. 15 MILE ROAD
 STERLING HEIGHTS, MI 48312
 USA

586-274-4100

Remit payment to:
 The Macomb Group, Inc.
 PO Box 671664
 DETROIT, MI 48267-1664

INVOICE	Invoice Date
5744369	10/17/2019 09:00:34
ORDER NUMBER	Page
3227662	2 of 2

Quantities					Item ID	Pricing UOM	Unit Price	Extended Price
Ordered	Shipped	Remaining	UOM Unit Size	Disp.				

Total Lines: 8

SUB-TOTAL: 1,999.13
TAX: 0.00
AMOUNT DUE: 1,999.13

A finance charge will be applied for all invoices not paid within terms. Would you like to receive invoices via fax or email? Contact our A/R department at 586-268-0720 or AR@macombgroup.com. Also, reprint your invoices from our website: www.macombgroup.com.

***Special Order and Non-Stock Items may be subject to freight charge.
 ***Special Order/Non-Stock Returned items are subject to mfg approval.

ORIGINAL



ONESolution

ACCOUNTS PAYABLE CHECK REQUEST
PUBLIC WORKS DIVISION

Mark A. Hackel
County Executive

1. PREPARED BY (Please Type) Michelle Houvener	2. PHONE # 95966	3. DATE 10/25/19
4. SET ID VP191028MA		
5. POST DATE		

PARENT RECORD INFORMATION	
6. VENDOR NAME (Check to be issued to) Northern Electrical Testing	7. VENDOR NUMBER V03635
8. ADDR CODE 01	9. INVOICE NO. (MAX=16 CHARACTERS) 18773
10. INVOICE DATE 9/30/2019	11. INVOICE AMOUNT \$ 41,979.99

General Ledger		Job Ledger		OPTIONAL		20. DIV.	19. AMOUNT	21. MISC	22. Sep CR
12. Org Key	13. Object	14. Cost Center (CCNT)	15. Object	16. Work Order Number	17. Secondary Reference (MAX=16 CHARACTERS)	18. Description (MAX=30 CHARACTERS)			
A	8200017M	93002	93002		8 1/2 Mile Relief	Job #2019-126, Switchgear	\$ 41,979.99	GEN	
B									
C									
D									
E									
F									
G									

23. Total: \$ 41,979.99

24. COMMENTS, INSTRUCTIONS OR ADDITIONAL NOTES:

25. Finance Officer: <i>[Signature]</i>	30. Drain: 8 1/2 Mile Relief
26. Chief Deputy: <i>[Signature]</i>	31. Project Balance: N/A
27. Engineers: <i>[Signature]</i>	32. Staff Date: 11/5/2019
28. Managers: <i>[Signature]</i>	33. Board Date: 11/18/2019
29. Coordinator: <i>[Signature]</i>	34. Select For Pay Date:



INVOICE



9/30/19

Remit To:
 NORTHERN ELECTRICAL TESTING, INC.
 1991 WOODSLEE DRIVE
 TROY, MI 48063-2236
 248-689-8980
 (fax) 248-689-3418

POWER SYSTEM SPECIALISTS® W019099

LBronson@NorthernTesting.com

<p>SOLD TO: MACOMB COUNTY O.P.W. 23001 WEST NINE MILE ROAD ST. CLAIR SHORES, MI 48080</p> <p>ATTN: PETE TROMBLEY</p> <p>PHONE: 586-772-3425 EMAIL: Pete.Tombly@MacombGov.org</p>	<p>Date: October 16, 2019 Invoice Number: 18773 NET Job #: 2019-126 Customer P.O. # Release # Due Date: November 15, 2019 DUNS NUMBER 03-878-6026</p>
<p style="text-align: center;">DESCRIPTION</p>	<p style="text-align: center;">AMOUNT</p>
<p>RE: Chapaton Pumping Station Switchgear Preventative Maintenance</p> <p>Provided services to perform switchgear maintenance as outlined in our proposal/work order #34734, Rev. 1., dated December 17, 2018.</p> <p>Amount of Contract:</p> <p>Note: A Service Charge of 1.5% of the invoice amount will be charged for each month or portion thereof, for payment after indicated due date.</p>	<p style="text-align: center;">COMPLETE</p> <p style="text-align: right;">\$41,979.99</p>
<p style="text-align: center;">TOTAL AMOUNT OF THIS INVOICE \$41,979.99</p>	



ONESolution
 ACCOUNTS PAYABLE CHECK REQUEST
PUBLIC WORKS DIVISION

Mark A. Hackel
 County Executive

1. PREPARED BY (Please Type)	2. PHONE #	3. DATE
Michelle Houvener	95966	10/25/19
4. SET ID		5. POST DATE
VP19102&MA		

6. VENDOR NAME (Check to be issued to)		7. VENDOR NUMBER	8. ADDR CODE	9. Invoice No. (MAX = 16 CHARACTERS)	10. Invoice Date	11. Invoice Amount
Tetra Tech, Inc.		V16060	02	51508604	9/30/2019	\$ 60,349.83

General Ledger		Job Ledger		OPTIONAL		19. Amount	20. DIV.	21. MISC.	22. Sep. Chk
12. Org Key	13. Object	14. Cost Center (CCNT)	15. Object	16. Work Order Number	17. Secondary Reference (MAX = 16 CHARACTERS)				
A	8200017M	80138	80138	WO19085	8 1/2 Mile Relief	Pjt #200-16347-19001 thru 9/27/19	60,349.83	GEN	
B									
C									
D									
E									
F									
G									

23. Total: \$ 60,349.83 REV 09/2018

24. COMMENTS, INSTRUCTIONS OR ADDITIONAL NOTES:
 In-System Storage Devices

25. Finance Officer:	<i>BTM</i>	8 1/2 Mile Relief
26. Chief Deputy:	<i>ASB</i>	\$405,510.67
27. Engineers:		11/5/2019
28. Managers:	<i>UA</i>	11/18/2019
Coordinator:	<i>KC</i>	



Tetra Tech, Inc.
424 Lewis Hargett Cir.
Ste. 110
Lexington, KY 40503
(859) 223-8000

BILL TO: MACOMB COUNTY
ATTN: WILLIAM MISTEROVICH
115 S GROESBECK HWY
MOUNT CLEMENS, MI 48043

INVOICE NUMBER: 51508604
INVOICE DATE: 10/23/2019
SERVICES THROUGH: 09/27/2019
FEDERAL TAX ID#: 95-4148514
TERMS: NET 30

ESA dated 10July 2019

Client Contact: Vince Astorino. Email vincent.astorino@macombgov.org

PROFESSIONAL SERVICES:

Project Number	200-16347-19001	In-System Storage Devices			
Top Task	01A	Project Management			
EMPLOYEE	TITLE	CURRENT LABOR HOURS	LABOR RATE	CURRENT LABOR AMOUNT	
Geerlings, Eric P.	Project Engineer 1	37.00	\$155.00	\$5,735.00	
Lopez Lopez, Daniela S.	Engineer 2	8.00	\$125.00	\$1,000.00	
Voss, Justin D.	Project Engineer 1	1.00	\$155.00	\$155.00	
TOTAL LABOR		46.00		\$6,890.00	
		SUBTOTAL		\$6,890.00	
		Total Top Task# 01A		\$6,890.00	
Top Task	01AS	Project Management Subcontractors			
SUBCONTRACTOR	TYPE			CURRENT AMOUNT	
FISHBECK THOMPSON CARR & HUBER INC	Subcontractor-External			\$1,046.35	
TOTAL SUBCONTRACTOR CHARGES				\$1,046.35	
		SUBTOTAL		\$1,046.35	
		Total Top Task# 01AS		\$1,046.35	
Top Task	01BS	Infrastructure Survey Subcontractors			
SUBCONTRACTOR	TYPE			CURRENT AMOUNT	
FISHBECK THOMPSON CARR & HUBER INC	Subcontractor-External			\$40,040.98	
TOTAL SUBCONTRACTOR CHARGES				\$40,040.98	
		SUBTOTAL		\$40,040.98	
		Total Top Task# 01BS		\$40,040.98	
Top Task	01D	Basis of Design			
EMPLOYEE	TITLE	CURRENT LABOR HOURS	LABOR RATE	CURRENT LABOR AMOUNT	
Geerlings, Eric P.	Project Engineer 1	14.50	\$155.00	\$2,247.50	
Kaliman, Roger G.	Sr Engineer 1	39.00	\$180.00	\$7,020.00	
Lortz, Thomas J.	CAD Designer	5.00	\$140.00	\$700.00	
Rubel, Brian M.	Program Manager	10.00	\$225.00	\$2,250.00	
Voss, Justin D.	Project Engineer 1	1.00	\$155.00	\$155.00	

BILL TO: MACOMB COUNTY
ATTN: WILLIAM MISTEROVICH
 115 S GROESBECK HWY
 MOUNT CLEMENS, MI 48043

INVOICE NUMBER: 51508604
INVOICE DATE: 10/23/2019
SERVICES THROUGH: 09/27/2019
FEDERAL TAX ID#: 95-4148514
TERMS: NET 30

TOTAL LABOR	69.50	\$12,372.50
	SUBTOTAL	\$12,372.50
	Total Top Task# 01D	\$12,372.50
	Total Project# 200-16347-19001	\$60,349.83
TOTAL AMOUNT DUE THIS INVOICE:		\$60,349.83

Gross Contract Summary	
Contract Amount	\$481,098.00
Previously Billed	\$15,237.50
Current Billing	\$60,349.83
Total Billed to Date	\$75,587.33
Contract Balance Remaining	\$405,510.67

REMIT PAYMENT TO:
 TETRA TECH, INC.
 PO BOX 911967
 DENVER, CO 80291-1967

To ensure accurate posting, please note the invoice number on your check. Interest will be charged on all past-due amounts per contract terms and conditions.



Fishbeck, Thompson, Carr & Huber, Inc.
engineers | scientists | architects | constructors

Federal I.D. No. 38-1841857 | Incorporated

Payment Options

Remit Wire/ACH payments to Acct: 100094457 ABA: 072413829
Remit Checks to: 1515 Arborcure Drive SE Grand Rapids, Michigan 49546

ACH



Attention: Brian Rubel PE
Tetra Tech Mps
710 Avis Drive Suite 100
Ann Arbor, MI 48108
United States

Invoice: 385700
Invoice Date: 9/16/2019
Project: 190884
Project Name: Macomb Co PW/In-system Storage
Bill Term: 1

For Professional Services Rendered Through 9/6/2019

Your Project: xxxxx

WO190xx

	Fee	Available	Billings		
			To Date	Previous	Current
1.A - Task 1A - 8.5 Mile Project Management	5,000.00	5,000.00	1,046.35	0.00	1,046.35
Rate Labor	350.00				
Unit Rate Expense	696.35				
1.B - Task 1B - 8.5 Mile Infrastructure Survey	66,655.00	66,655.00	40,040.98	0.00	40,040.98
Rate Labor	29,790.00				
Expenses	1,455.28				
Unit Rate Expense	8,795.70				
Total Expense	10,250.98				
1.C - Task 1C - 8.5 Mile Utility Survey	16,964.00	16,964.00	0.00	0.00	0.00
1.D - Task 1D - 8.5 Mile BOD	23,248.00	23,248.00	0.00	0.00	0.00
				Current Billings	<u>41,087.33</u>
				Amount Due This Bill	<u>41,087.33</u>

P.O. 1166522:3

P.O. 1166522:2

103976
200-16347-19001
01 AS - 1,046.35
01 BS - 40,040.98
SUB-EXT. 200 FLOW AA

Da to pay when paid
B. Rubel
9/15/19
200-16347-19001

1.A - Task 1A - 8.5 Mile Project Management

Rate Labor Class	Hours	Rate	Amount
Senior Engineer	2.00	175.0000	350.00
Total Rate Labor			350.00
Unit Rate Expenses Account / Unit	Quantity	Rate	Amount
Company Vehicle Use			
Mileage - Company Vehicle	733.00	0.9500	696.35
Total Unit Rate Expenses			696.35
Total Bill Task: 1.A - Task 1A - 8.5 Mile Project Management			1,046.35

1.B - Task 1B - 8.5 Mile Infrastructure Survey

Rate Labor Class	Hours	Rate	Amount
Senior Engineer	4.00	164.0000	656.00
Senior Survey Specialist	15.00	130.0000	1,950.00
Senior Surveyor	98.00	130.0000	12,740.00
Staff Surveyor	157.00	92.0000	14,444.00
Total Rate Labor			29,790.00

Expenses Account / Vendor	Cost	Multiplier	Amount
Equipment/Materials			
Anthony Bartol	52.84	1.10	58.12
Matthew Gaudard	23.96	1.10	26.36
Total Equipment/Materials	76.80		84.48
Meals			
Matthew Gaudard	24.11	1.10	26.52
Subconsultant			
Bio-Care Inc	105.00	1.05	110.25
Travel/Lodging			
Anthony Bartol	404.40	1.10	444.84
Matthew Gaudard	237.17	1.10	260.89
Scott Hopkins	243.10	1.10	267.41
Christian Johnson	237.17	1.10	260.89
Total Travel/Lodging	1,121.84		1,234.03
Total Expenses			1,455.28

Unit Rate Expenses Account / Unit	Quantity	Rate	Amount
Company Vehicle Use			
Mileage - Company Vehicle	3,306.00	0.9500	3,140.70
Total Company Vehicle Use			3,140.70
Equipment Usage			
Global Positioning Survey	28.00	25.0000	700.00
Leica P20 Scanner	4.00	1,000.0000	4,000.00
Total Equipment Usage	32.00		4,700.00
Meals			
Per Diem - Full Day	7.00	65.0000	455.00
Per Diem - Partial Day	10.00	50.0000	500.00
Total Meals	17.00		955.00
Total Unit Rate Expenses			8,795.70
Total Bill Task: 1.B - Task 1B - 8.5 Mile Infrastructure Survey			40,040.98

Total Project: 190884 - Macomb Co PW/In-system Storage

41,087.33



PROJECT STATUS COMMUNICATION

DATE: October 24, 2019

PREPARED BY: Brian Rubel / Eric Geerlings

PROJECT: Macomb Co. In-System Storage Devices

Tt PROJECT NO: 200-16347-19001 CONTACT: Mr. Vince Astorino

Tasks completed or in-progress since last status communication.

September Updates:

Continued review and analysis of the existing SWMM and updated SWMM received on 7/25.
Began Real-Time Control (RTC) scheme rule development for the proposed in-system storage devices.
On September 10th, met with GLWA at Hubbell-Southfield CSO Control Facility to gather info about rectangular channel inflatable dams.
On September 12th, met with FTC&H to review results of 3D pipe scan survey.
Corresponded with manufacturers and vendors of control device equipment, particularly for the three inflatable dam manufacturers.
Continued development of control structure device options for Welsh Family Park that include passive overflow.
Began development of control structure device options for the I-94 site.
Manhole survey field work by FTC&H was completed during the last week of September.

October updates:

On October 10th, held a face to face monthly meeting to review storage structures, devices, and initial RTC results.
On October 11th, MCPWO removed the (I-94) Beaconsfield and Oak location as an option for in-system storage.
On October 17th, held a skype meeting to discuss RTC and Dewatering.

Opportunities for cost avoidance or added value.

Impediments, roadblocks, assistance needed.

Tetra Tech verbally received design information from MCPWO for the Chapaton Pump Station project during September. When Macomb has drawings or written descriptions of the proposed pump set point levels, we'd like to receive them to verify the model and RTC set-up.
Vince Astorino to set up a meeting with the City of St. Clair Shores Parks and Maintenance Department.

Change (or potential change) of scope items or customer concession. (Details on attached Request to Change Authorization)

Schedule:

November 20th is the next scheduled Progress Meeting.

Next task or action items.

1. Initiate Utility and Boundary Survey
2. Initiate Community Enhancement Design and Landscape Architecture
3. Complete SWMM analysis to develop RTC schemes and further refine in-system storage devices
4. Continue using the FTC&H Infrastructure survey data and MCPWO Chapaton Pump Station information to update the SWMM
5. Complete Control Structure Selection
6. Initiate Transient Evaluation
7. Initiate Geotechnical Evaluation
8. Initiate Permit Requirements
9. Initiate Risk Analysis
10. Initiate Feasibility Analysis
11. Hold off on EGGLE Coordination for another month

Please do not hesitate to contact any member of our Team at any time.

Brian Rubel
Project Manager

Phone: (734) 213-4081

Email: Brian.Rubel@tetratech.com

**MACOMB COUNTY PUBLIC WORKS OFFICE
ENGINEERING INVOICE COVER SHEET**

WORK ORDER NUMBER	WO19085	
PROJECT NUMBER	WWS-2019-003	(Tetra Tech# 200-16347-19001)
PROJECT NAME	In-System Storage Devices	
DRAINAGE DISTRICT	Eight and One-Half Mile Relief Drain Drainage District	
CONSULTANT NAME	Tetra Tech of Michigan	
INVOICE DATE	10/24/2019	
INVOICE START DATE	8/24/2019	
INVOICE END DATE	9/27/2019	
ORIGINAL CONTRACT AMOUNT	\$	481,098.00
CHANGE ORDER TOTAL	\$	-
Change Order No. 1		
Change Order No. 2		
Change Order No. 3		
Change Order No. 4		
TOTAL REVISED CONTRACT AMOUNT	\$	481,098.00
(includes all approved change orders only)		
TOTAL AMOUNT PREVIOUSLY INVOICED	\$	15,237.50
TOTAL AMOUNT DUE THIS INVOICE	\$	60,349.83
TOTAL BUDGET REMAINING	\$	405,510.67
(Includes Total Revised Contract Amount Less Total Invoiced Previously and Total Invoiced Current)		

Budget to Actual
 8.5 Mile Relief
 As of October 31, 2019 = 8%

DESCRIPTION	2020 FINAL BUDGET	ENCUMBERED	ACTUAL	REMAINING BUDGET	PCT UTILIZED
REVENUE ACCOUNTS					
Interest Earned	80,000		61,847	18,153	77.3%
Other Revenue	5,000			5,000	0.0%
State Grant	-			-	100.0%
8.5 O&M/Charge Required Revenue	4,279,768		2,139,884	2,139,884	50.0%
PY Revenue-Fund Balance	3,098,050			3,098,050	0.0%
Rental Fee	16,464		1,372	15,092	8.3%
<i>Total Revenue Accounts</i>	<i>7,479,282</i>	<i>-</i>	<i>2,203,103</i>	<i>5,276,179</i>	<i>29.5%</i>
EXPENSE ACCOUNTS					
Application/Permit Fee	3,000			3,000	0.0%
Dues, Training, Conf, Subs.	5,750			5,750	0.0%
Engineering					
As needed Engineering	75,000			75,000	0.0%
Chapaton Improvements-Office Space(New Money)	500,000			500,000	0.0%
Disinfection system upgrade (Design and Construction)	1,000,000			1,000,000	0.0%
HVAC Design	200,000			200,000	0.0%
In System Storage-Design (Additional Funds)	750,000			750,000	0.0%
Flushing Study	75,000			75,000	0.0%
RTB/PS Ventilation Design	120,000			120,000	0.0%
Chapaton Improvements-Lab Relocation	250,000				
Basin Expansion Design	775,000				
In-System Storage Design(Gates on 8.5 Tunnel)	450,000			450,000	0.0%
9 Mile & 8 1/2 Mile Rehab	75,000			75,000	0.0%
New Equipment	23,500			23,500	0.0%
Office Supplies	1,000			1,000	0.0%
Operating Supplies	74,600		1,041	73,559	1.4%
Other Professional Svcs	46,800			46,800	0.0%
Personnel Services	979,953			979,953	0.0%
Repair & Maintenance	148,500		12,664	135,836	8.5%
Pumping and screening improvements	1,150,000			1,150,000	0.0%
SRF Replacement Reserve	259,215			259,215	0.0%
Scada System	243,839		226	243,613	0.1%
Utilities	273,125		675	272,450	0.2%
<i>Total Expense Accounts</i>	<i>7,479,282</i>	<i>-</i>	<i>14,606</i>	<i>6,439,676</i>	<i>0.2%</i>

	O&M Balance 9/30/2019	O&M	Total 10/31/2019
Cash - Operating	8,618,170	2,188,497	10,806,667
Accounts Receivable			0
Assets			0
Liabilities			0
Revenues		2,203,103	2,203,103
Expenditures		14,606	14,606
			0
Equity*	8,618,170		10,806,667

Detail of 2019 Equity*

Disinfection system upgrade (Design and Construction)	100,000	Basin Expansion Design	450,000
RTB/PS Ventilation Design	120,000	Pumping and screening improvements	1,215,000
Chapaton Improvements-Office Space	228,000	PLC Replacements at Chapaton East	40,000
In-System Storage Design (Gates on 8.5 Tunnel)	425,000	SRF Replacement Reserve	1,814,505
9 Mile & 8 1/2 Mile Rehab	67,800	Expansion Reserve (From State)	3,000,000
Scada Reserve	109,025	Capital Reserve	888,840
Phase 1 TRC Basin Equipment	100,000	Basin Structural Integrity Study	60,000