GOURDIE-FRASER
123 West Front Street
Traverse City, Michigan 49684

Date: October 25, 2024

ADDENDUM NUMBER #1

PROJECT	BIDS DUE	
Charter Township of Union	Date:	October 29, 2024
DWSRF Project DW-7705A	Time:	10:00 AM
2024 Water System Upgrades	Location:	Charter Township of Union
Division C: Water Treatment Plant Upgrades		5228 South Isabella Rd
GFA Project No: 23349		Mt Pleasant, MI 48858

The Addendum is issued prior to the receipt of bid proposals to amend the Contract Documents as follows. Bidders shall acknowledge receipt of this addendum by means of acknowledging on Page 1 of the Bid Form (EJCDC C-410).

CLARIFICATIONS

1. Contractor is responsible for all local permits and fees. Plumbing, Mechanical and Electrical permits through Isabella County and Building Permit through Union Township.

2. Project does NOT require AIS or BABA but is encouraged however it does require compliance with Davis Bacon and payroll certification.

3. The contractor is responsible for paying sales tax for all equipment and materials purchased and installed that are associated with this project.

4. Contractor is responsible for providing conduit and wiring for electrical and telemetry and to coordinate with Perceptive for final telemetry wiring requirements and locations.

5. The contractor shall be responsible for coordinating work and connections to well and water main with Division A and Division B contractors.

BIDDING DOCUMENTS

1. C-410 Bid Form shall be stricken in its' entirety and replaced with the attached document. The bid tab has been updated to include a Natural Gas Allowance and misc. corrections.

2. Wage Determination Decision Number: MI20240001 dated 10/11/2024 is attached and shall supersede and replace the existing one.

3. Wage Determination Decision Number : MI20240039 dated 10/11/2024 is attached and shall supersede and replace the existing one.

4. Specification 01270 Measurement & Payment shall be stricken in its' entirety and replaced with the attached document. It has been updated to include a Natural Gas Allowance and misc. corrections.

5. Specification 09900, Section 3.06 Exterior Paint Schedule the following shall be added after A. Ferrous Metal:

B. Concrete Masonry Units: Provide the following finishes over exterior masonry block units applied at rate recommended by manufacturer.

    1. Latex System: MPI EXT 4.2A.
        a. Prime Coat: Interior/exterior latex block filler.
        b. Intermediate Coat: Exterior latex matching topcoat.
        c. Top Coat: Exterior latex semigloss.

C. Dimension Lumber

    1. Latex System: MPI EXT 6.2M.
        a. Prime Coat: Exterior latex wood primer.
        b. Intermediate Coat: Exterior latex matching topcoat.
        c. Top Coat: Exterior latex semigloss. Apply topcoat to all existing wood surfaces.

6. Specification 11242 shall be stricken in its' entirety and replaced with the attached document. The Chemical Feed Equipment specification has been updated to reflect changes to the proposed chemical feed pump in Section 2.02 B and F.

7. Specification 11460 shall be stricken in its' entirety and replaced with the attached document. The Specification has been updated to reflect changes to Section 1.1.B 2.2.B.1 and 2.2.C.1

8. Specification 11400 shall have the following shall be stricken and replaced the following and replace the existing and to be incorporated into the bid documents

    - Section 2.03.A - Min Capacity = 1,000 US GPM @ 220 FT and Max Capacity = 1,200 US GPM @ 175 FT

    - Section 2.03.C - NPSHR = 25 ft.

    - Section 2.05.B: A certified pump net positive suction head test (NPSH Test) shall be performed at the factory after completion of the performance test to measure the ability of the pump to avoid cavitation in the inlet section of the pump

9. The attached Perceptive Controls Scope of Work shall be incorporated into Specification 17000 and become part of the contract documents.

DRAWINGS

1. Sheet C4.1 Clarification Dumpster Detail: Tie down connectors to be provided by contractor and installed during concrete pad installation. Enclosure installed by owner.

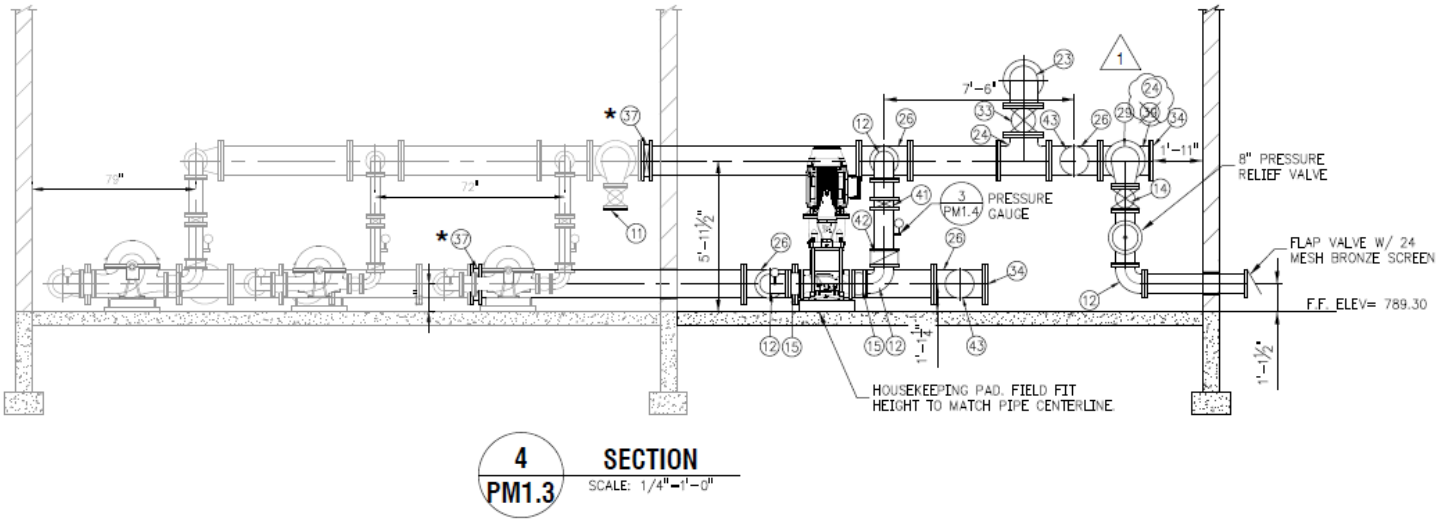
2. Sheet A1.1 Clarification Filter Room Demolition: North wall of filter room where CMU to be saw cut and removed shall be 8' wide by 10' tall. North wall of chemical / maintenance room shall sawcut and removed to limits needed to accommodate 8'x8' proposed garage door.

3. Sheet A1.7 Clarification Window Schedule: Windows proposed to be provided shall be of similar make and model as the existing and shall include thermal break, be insulated and have aluminum trim.

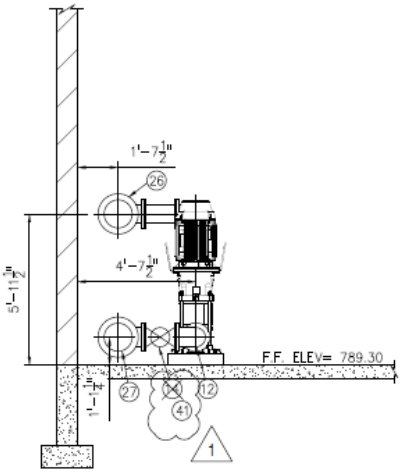
4. Sheet PM1.3 Clarification on Pressure Filter Backwash Piping: Pressure filter backwash piping as shown on section 2 is called out as PVC Schedule 80 and shall also be socket type and not flanged.

5. Sheet PM1.3 Section 4 and 5: The following shall be incorporated into the drawing sheet superseding the current section and incorporated into the bid documents.

    - Section 4 shall be stricken and replaced with the below (clouded for clarity) to reflect a correction to install a tee instead of a cross



    - Section 5 shall be stricken and replaced with the below (clouded for clarity) to reflect a correction to install a butterfly valve instead of gate valve



6. Sheet PM3.1 and S3.1 Clarifications for Mission WTP Gravity Filter:

    a. Filter is currently filled with media, approximately 4 ft deep anthracite and gravel media. Contractor responsible to remove and dispose of at approved facility.

    b. The filter is not bolted/secured to the concrete pad. Below filter media is layer of clay tile grouted in place to the concrete pad. Thickness of concrete pad is unknown and expected to be 10”-18” thick with reinforcement. All removals and replacement pad are to be included in the bid price.

    c. Removal and replacement of roof to include 13’x13’ covered roof area only and is to include splicing and welding to existing roof membrane.

    d. The estimated approximate weight of the Gravity Filter is 20,000 lbs. This weight is a rough estimate provided by the equipment manufacturer. Information about this exact filter is unavailable due to the age of equipment and acquisition of manufacturing company.

    e. Flowmeter shall include remote read digital display. Display shall be mounted by MDP as coordinated with owner and include associated wiring and conduit. All electrical and telemetry wiring and conduit for flowmeter shall be provided and installed by contractor. Material shall be EMT and include SST brackets

7. Sheet M1.1, Clarification for Louvers: Mechanical contractor to provide new and NOT relocate existing Louver, L-1, equivalent to 24”x24” Greenheck ESD-435 and install in place of EX-L-1.

8. Sheet 2.2 and Sheet E1.2 Proposed Pole Building Electrical Service Addition: Contractor shall be responsible for providing underground electric supply and 100 Amp panel to service the building and costs to be included in the cost of the building:

    a. For the new Proposed Storage Building shown on Sheet C2.2, provide the following:

        i. A new 50A/3P circuit breaker in the existing Main Distribution Panel (E-MDP),

        ii. 4#6, 1#8 E.G.C., 1”C from E-MDP to new transformer #XFMR-PB,

        iii. XFMR-PB: 30 kVA (480V, three phase to 120/208V, three phase) dry-type transformer (Square D #EE30T3H),

        iv. 4#3, 1#6 SSBJ, 1-1/4”C from #XFMR-PB to New Panel #PB,

        v. Panel #PB: 100-amp main circuit breaker, 120/208V, three phase, 30-space, NEMA 1 panelboard (Square D NQ) with ten (10) 20A/1P circuit breakers

vi. Grounding electrode conductors/system at the new pole building, including #6 G.E.C. to building steel, and two (2) 3/4" x 10'-0" copper clad ground rods, and #4 G.E.C. to building concrete footing,

vii. Place XFMR-PB and Panel #PB near the entry man door

9. Sheet ED1.1 Clarification on Electrical Power Floor Plan: In Control Room #113, disconnect and remove the existing SCADA panel, and replace it with the new TONKA panel in its place as noted on Sheet E1.1P. The contractor shall coordinate with Perceptive Controls.

10. Sheet E1.1P Clarification on Electrical Power Floor Plan:

    a. New Panel #E1A shall be installed on the north wall of the existing Iron Filter Room, instead of the south wall as shown. The contractor shall coordinate final location with owner.

    b. For the New HS Pump #4, the conduits shall be (2) -1" conduits for 24vDC and ethernet/ 4-20mA to the new TONKA panel for telemetry / programming and will be filled with conductors/cabling as supplied and installed by Contractor. Contractor shall coordinate with Perceptive on final size and type and owner on location.

    c. From each Chemical Feed Skid System, 2" conduit for power and (2) 1" conduits for ethernet / 4-20 mA and 24vDC for telemetry per skid to the new Tonka panel in Control Room #113. Conductors/ cabling shall be 6-14 THHN and 1-16-2 shielded cable to control speed. Conduit shall be to each skid and wiring shall be installed to each pump (2 pumps per skid). Wiring and Conduit shall be provided and installed by the Contractor. Contractor shall coordinate with Perceptive on final size, type and programming and owner on location.

This Addendum No. 1 becomes part of the Contract Documents as of this date and supersedes the information in the originally issued Contract Documents where applicable. The Contractor shall acknowledge receipt of the Addendum in the Bid Schedule included with his/her bid.

BID FORM FOR CONSTRUCTION CONTRACT

The terms used in this Bid with initial capital letters have the meanings stated in the Instructions to Bidders, the General Conditions, and the Supplementary Conditions.

ARTICLE 1—OWNER AND BIDDER

1.01 This Bid is submitted to: **Charter Township of Union, 5228 South Isabella Road, Mt Pleasant, MI 48858**

1.02 The undersigned Bidder proposes and agrees, if this Bid is accepted, to enter into an Agreement with Owner in the form included in the Bidding Documents to perform all Work as specified or indicated in the Bidding Documents for the prices and within the times indicated in this Bid and in accordance with the other terms and conditions of the Bidding Documents.

ARTICLE 2—ATTACHMENTS TO THIS BID

2.01 The following documents are submitted with and made a condition of this Bid:

A. Required Bid security;

B. List of Proposed Subcontractors;

C. List of Proposed Suppliers;

D. Evidence of authority to do business in the state of the Project; or a written covenant to obtain such authority within the time for acceptance of Bids;

E. Contractor's license number as evidence of Bidder's State Contractor's License or a covenant by Bidder to obtain said license within the time for acceptance of Bids;

F. Required Bidder Qualification Statement with supporting data; and

G. C-451 – Bidders Experience Form

H. Certification Regarding Debarment, Suspension, & Other Responsibility Matters

I. Davis-Bacon Compliance Certification

ARTICLE 3—BASIS OF BID—LUMP SUM BID AND UNIT PRICES

3.01 **Deleted**

3.02 *Unit Price Bids*

A. Bidder will perform the following Work at the indicated unit prices:

Item No.	Description	Unit	Estimated Quantity	Bid Unit Price	Bid Amount
ISABELLA WATER TREATMENT PLANT					
SITE					
1	Mobilization, Max 5%	LS	1	$	$
2	Site Clearing & Grubbing	AC	1.22	$	$
3	Site Grading	AC	1.22	$	$
4	Asphalt Surface Removal	SF	10,600	$	$
5	Concrete Pad / Apron Removal	SF	280	$	$
6	Dumpster Removal, Including Enclosure	LS	1	$	$
7	Water Main Abandonment, Including Cut & Cap	LS	1	$	$
8	Relocate Existing Hydrant (Live Tap)	EA	1	$	$
9	Pole Building, 20'x30', Including Concrete Pad and Electric Service	LS	1	$	$
10	SESC Controls, Silt Fence	LF	800	$	$
11	Asphalt Pavement, 4EL Top/Base 330#/Syd	SY	2,000	$	$
12	6" Aggregate Base	CY	340	$	$
13	Raised Bit Curb	LF	300	$	$
14	Asphalt Spillway, Including Rip Rap	EA	2	$	$
15	Standard Concrete Walk	SF	120	$	$
16	Concrete Pad	SF	420	$	$
17	Concrete Dumpster Pad	SF	100	$	$
18	Drainage Swale	LF	90	$	$
19	Backwash / Stormwater Basin Expansion	SF	49,500	$	$
20	Bollards	EA	10	$	$
21	Connect to Existing Water Main, All sizes	EA	2	$	$
22	Connect to Existing (Live Tap), Including Tapping Sleeve & Valve (all Sizes)	EA	2	$	$
23	2" Yard Hydrant (Live Tap)	EA	1	$	$
24	2" Water Sample Line (Post), HDPE DR 9	LF	20	$	$
25	16" C900 Water Main	LF	300	$	$
26	12" C900 Water Main	LF	40	$	$
27	8" C900 Water Main	LF	120	$	$
28	Insertion Valve, All Sizes	EA	2	$	$
29	Site Restoration	LS	1	$	$
Facility					
30	Filter Roon Existing Building Demolition & Removals	LS	1	$	$
31	Pump Room Existing Building Demolition & Removals	LS	1	$	$
32	Chem Feed / Storage Room Existing Building Demolition & Removals	LS	1	$	$
33	Maintenance Room Existing Building Demolition & Removals	LS	1	$	$
34	Filter Room Building Expansion, Including Doors & Windows	SF	2500	$	$
35	Filter Room Expansion - Electrical, Plumbing, HVAC & lighting	LS	1	$	$
36	Pump Room Building Expansion, Including Doors & Windows	SF	430	$	$

37	Pump Room Expansion - Electrical, Plumbing, HVAC & lighting	LS	1	$	$
38	Chemical Feed & Storage Room Expansion, Including Doors & Windows	SF	250	$	$
39	Chemical Feed & Storage Room Expansion - Electrical, Plumbing, HVAC & lighting	LS	1	$	$
40	Maintenance Garage Building Expansion, Including Doors & Windows	SF	610	$	$
41	Maintenance Garage Expansion - Electrical, Plumbing, HVAC & Lighting	LS	1	$	$
42	Existing Process Piping Removal & Abandonments	LS	1	$	$
43	Proposed Process Piping, Including Valves, Fittings & Appurtenances	LS	1	$	$
44	Instrumentation (Flowmeters & Transducers)	LS	1	$	$
45	Horizontal Pressure Filter, Including Face Piping, Valves, Fittings, Aerator & Panels	LS	1	$	$
46	Horizontal Pressure Filter Room Electrical/Controls, Wiring & Conduit	LS	1	$	$
47	Horizontal Pressure Filter Backwash Piping	LS	1	$	$
48	Backwash Pit, Including Grating & Discharge Connection	LS	1	$	$
49	Trench Drain, Including Grating	LF	40	$	$
50	3” Sch 80 PVC Airwash Piping, including Valves, Fittings & Appurtenances, Including Demolition of Existing	LF	30	$	$
51	Chemical Feed, Sample Line & Compressed Air Poly Tubing	LS	1	$	$
52	Proposed High Service Pump #4	LS	1	$	$
53	Pump Room Electrical/Controls, Wiring & Conduit	LS	1	$	$
54	Proposed Chemical Feed Skids	EA	3	$	$
55	Chemical Feed Pump	EA	1	$	$
56	Chemical Feed Room Electrical / Controls, Wiring & Conduit	LS	1	$	$
57	2”& 4" Sch 40 PVC Conduit & Fittings for Chemical Feed, Including Demolition of Existing	LF	60	$	$
58	2” Sch 40 PVC Conduit & Fittings for Compressed Air, Including Demolition of Existing	LS	1	$	$
59	SCADA Allowance (Instrumentation / Control Contractor)	LS	1	$85,000.00	$85,000.00
60	Facility Restoration	LS	1	$	$
MISSION WATER TREATMENT PLANT					
1	Mobilization, Max 5%	LS	1	$	$
2	Gravity Filter Removal, 12’ Dia.	LS	1	$	$
3	Roof Removal and Replacement	LS	1	$	$
4	Mechanical Piping, Valves & Fitting Modifications	LS	1	$	$
5	Concrete Pad Removal and Replacement	LS	1	$	$
6	Flow Meter including Electrical & Conduit	LS	1	$	$

7	8” C900 Transmission Main	LF	20	$	$
8	8” Gate Valve	EA	1	$	$
9	Connect to Existing Water Main	EA	1	$	$
10	SESC and Restoration	LS	1	$	$
11	SCADA Allowance (Instrumentation / Control Contractor)	LS	1	$5,000.00	$5,000.00
WELL SITE NO. 12					
1	Mobilization, Max 5%	LS	1	$	$
2	Well House Building	SF	300	$	$
3	Generator Set	LS	1	$	$
4	Automatic Transfer Switch	LS	1	$	$
5	Mechanical Piping, Valves, & Fittings	LS	1	$	$
6	Instrumentation (Flowmeter & Transducer)	LS	1	$	$
7	Wellhouse Electrical, Lighting & HVAC	LS	1	$	$
8	Connect to Existing Water Main, 8”	EA	2	$	$
9	8” C900 Water Main	LF	100	$	$
10	Site Electrical Allowance	LS	1	$60,000.00	$60,000.00
11	Fiber Optic Allowance	LS	1	$3,500.00	$3,500.00
12	SESC and Restoration	LS	1	$	$
13	SCADA Allowance (Instrumentation / Control Contractor)	LS	1	$60,000.00	$60,000.00
14	Natural Gas Allowance	LS	1	$25,000.00	$25,000.00
Total of All Unit Price Bid Items					$

B. Bidder acknowledges that:

1. each Bid Unit Price includes an amount considered by Bidder to be adequate to cover Contractor’s overhead and profit for each separately identified item, and

2. estimated quantities are not guaranteed, and are solely for the purpose of comparison of Bids, and final payment for all Unit Price Work will be based on actual quantities, determined as provided in the Contract Documents.

ARTICLE 4—DELETED

ARTICLE 5—DELETED

ARTICLE 6—TIME OF COMPLETION

6.01 Bidder agrees that the Work will be substantially complete and will be completed and ready for final payment in accordance with Paragraph 15.06 of the General Conditions on or before the dates or within the number of days indicated in the Agreement.

6.02 **Deleted**

6.03 **Deleted**

6.04 Bidder accepts the provisions of the Agreement as to liquidated damages.

ARTICLE 7—BIDDER'S ACKNOWLEDGEMENTS: ACCEPTANCE PERIOD, INSTRUCTIONS, AND RECEIPT OF ADDENDA

7.01 *Bid Acceptance Period*

A. This Bid will remain subject to acceptance for 90 days after the Bid opening, or for such longer period of time that Bidder may agree to in writing upon request of Owner.

7.02 *Instructions to Bidders*

A. Bidder accepts all of the terms and conditions of the Instructions to Bidders, including without limitation those dealing with the disposition of Bid security.

7.03 *Receipt of Addenda*

Bidder hereby acknowledges receipt of the following Addenda:

Bidders are responsible to research Addendums and Acknowledge Addendums on the Bid form. Addendums will be posted, at least three (3) days prior to Bid Opening, on the GFA website at www.gfa.tc, go into the Project Center, Advertisements for Bids, then select the appropriate Project. Failure of any Bidder to obtain any such addendum or interpretation shall not relieve such Bidder from any obligation under his Bids as submitted. All Addendas, so issued, shall become part of the Contract Documents.

Addendum Number	Addendum Date

ARTICLE 8—BIDDER'S REPRESENTATIONS AND CERTIFICATIONS

8.01 *Bidder's Representations*

A. In submitting this Bid, Bidder represents the following:

1. Bidder has examined and carefully studied the Bidding Documents, including Addenda.
2. Bidder has visited the Site, conducted a thorough visual examination of the Site and adjacent areas, and become familiar with the general, local, and Site conditions that may affect cost, progress, and performance of the Work.
3. Bidder is familiar with all Laws and Regulations that may affect cost, progress, and performance of the Work.
4. Bidder has carefully studied the reports of explorations and tests of subsurface conditions at or adjacent to the Site and the drawings of physical conditions relating to existing surface or subsurface structures at the Site that have been identified in the Supplementary Conditions, with respect to the Technical Data in such reports and drawings.
5. Bidder has carefully studied the reports and drawings relating to Hazardous Environmental Conditions, if any, at or adjacent to the Site that have been identified in the Supplementary Conditions, with respect to Technical Data in such reports and drawings.
6. Bidder has considered the information known to Bidder itself; information commonly known to contractors doing business in the locality of the Site; information and

observations obtained from visits to the Site; the Bidding Documents; and the Technical Data identified in the Supplementary Conditions or by definition, with respect to the effect of such information, observations, and Technical Data on (a) the cost, progress, and performance of the Work; (b) the means, methods, techniques, sequences, and procedures of construction to be employed by Bidder, if selected as Contractor; and (c) Bidder's (Contractor's) safety precautions and programs.

7. Based on the information and observations referred to in the preceding paragraph, Bidder agrees that no further examinations, investigations, explorations, tests, studies, or data are necessary for the performance of the Work at the Contract Price, within the Contract Times, and in accordance with the other terms and conditions of the Contract.

8. Bidder is aware of the general nature of work to be performed by Owner and others at the Site that relates to the Work as indicated in the Bidding Documents.

9. Bidder has given Engineer written notice of all conflicts, errors, ambiguities, or discrepancies that Bidder has discovered in the Bidding Documents, and of discrepancies between Site conditions and the Contract Documents, and the written resolution thereof by Engineer is acceptable to Contractor.

10. The Bidding Documents are generally sufficient to indicate and convey understanding of all terms and conditions for performance and furnishing of the Work.

11. The submission of this Bid constitutes an incontrovertible representation by Bidder that without exception the Bid and all prices in the Bid are premised upon performing and furnishing the Work required by the Bidding Documents.

8.02 *Bidder's Certifications*

A. The Bidder certifies the following:

1. This Bid is genuine and not made in the interest of or on behalf of any undisclosed individual or entity and is not submitted in conformity with any collusive agreement or rules of any group, association, organization, or corporation.

2. Bidder has not directly or indirectly induced or solicited any other Bidder to submit a false or sham Bid.

3. Bidder has not solicited or induced any individual or entity to refrain from bidding.

4. Bidder has not engaged in corrupt, fraudulent, collusive, or coercive practices in competing for the Contract. For the purposes of this Paragraph 8.02.A:

a. Corrupt practice means the offering, giving, receiving, or soliciting of anything of value likely to influence the action of a public official in the bidding process.

b. Fraudulent practice means an intentional misrepresentation of facts made (a) to influence the bidding process to the detriment of Owner, (b) to establish bid prices at artificial non-competitive levels, or (c) to deprive Owner of the benefits of free and open competition.

c. Collusive practice means a scheme or arrangement between two or more Bidders, with or without the knowledge of Owner, a purpose of which is to establish bid prices at artificial, non-competitive levels.

d. Coercive practice means harming or threatening to harm, directly or indirectly, persons or their property to influence their participation in the bidding process or affect the execution of the Contract.

BIDDER hereby submits this Bid as set forth above:

Bidder:

_____

(typed or printed name of organization)

By: _____

(individual's signature)

Name: _____

(typed or printed)

Title: _____

(typed or printed)

Date: _____

(typed or printed)

If Bidder is a corporation, a partnership, or a joint venture, attach evidence of authority to sign.

Attest: _____

(individual's signature)

Name: _____

(typed or printed)

Title: _____

(typed or printed)

Date: _____

(typed or printed)

Address for giving notices:

_____

_____

Bidder's Contact:

Name: _____

(typed or printed)

Title: _____

(typed or printed)

Phone: _____

Email: _____

Address:

_____

_____

_____

Bidder's Contractor License No.: (if applicable) _____

"General Decision Number: MI20240001 10/11/2024

Superseded General Decision Number: MI20230001

State: Michigan

Construction Types: Highway (Highway, Airport & Bridge xxxxx and Sewer/Incid. to Hwy.)

Counties: Michigan Statewide.

Note: Contracts subject to the Davis-Bacon Act are generally required to pay at least the applicable minimum wage rate required under Executive Order 14026 or Executive Order 13658. Please note that these Executive Orders apply to covered contracts entered into by the federal government that are subject to the Davis-Bacon Act itself, but do not apply to contracts subject only to the Davis-Bacon Related Acts, including those set forth at 29 CFR 5.1(a)(1).

If the contract is entered into on or after January 30, 2022, or the contract is renewed or extended (e.g., an option is exercised) on or after January 30, 2022:	. Executive Order 14026 generally applies to the contract. . The contractor must pay all covered workers at least $17.20 per hour (or the applicable wage rate listed on this wage determination, if it is higher) for all hours spent performing on the contract in 2024.
If the contract was awarded on or between January 1, 2015 and January 29, 2022, and the contract is not renewed or extended on or after January 30, 2022:	. Executive Order 13658 generally applies to the contract. . The contractor must pay all covered workers at least $12.90 per hour (or the applicable wage rate listed on this wage determination, if it is higher) for all hours spent performing on that contract in 2024.

The applicable Executive Order minimum wage rate will be adjusted annually. If this contract is covered by one of the Executive Orders and a classification considered necessary for performance of work on the contract does not appear on this wage determination, the contractor must still submit a conformance request.

Additional information on contractor requirements and worker protections under the Executive Orders is available at http://www.dol.gov/whd/govcontracts.

Modification Number	Publication Date
0	01/05/2024
1	02/23/2024
2	04/05/2024

3	04/19/2024
4	04/26/2024
5	05/03/2024
6	05/17/2024
7	05/24/2024
8	06/07/2024
9	06/14/2024
10	06/28/2024
11	07/12/2024
12	07/26/2024
13	08/02/2024
14	08/23/2024
15	10/11/2024

CARP0004-004 06/01/2019

REMAINDER OF STATE

	Rates	Fringes
CARPENTER (Piledriver).....	$ 27.62	20.59

CARP0004-005 06/01/2018

LIVINGSTON (Townships of Brighton, Deerfield, Genoa, Hartland, Oceola & Tyrone), MACOMB, MONROE, OAKLAND, SANILAC, ST. CLAIR AND WAYNE COUNTIES

	Rates	Fringes
CARPENTER (Piledriver).....	$ 30.50	27.28

ELEC0017-005 06/01/2024

STATEWIDE

	Rates	Fringes
Line Construction		
Groundman/Driver.....	$ 32.00	33%+7.31
Journeyman Signal Tech, Communications Tech, Tower Tech & Fiber Optic Splicers.	$ 47.35	33%+7.31
Journeyman Specialist.....	$ 54.45	33%+7.31
Operator A.....	$ 40.09	33%+7.31
Operator B.....	$ 37.46	33%+7.31

Classifications

Journeyman Specialist: Refers to a crew of only one person working alone.
Operator A: Shall be proficient in operating all power equipment including: Backhoe, Excavator, Directional Bore and Boom/Digger truck.
Operator B: Shall be proficient in operating any 2 of the above mentioned pieces of equipment listed under Operator A.

ENGI0324-003 06/01/2024

ALCONA, ALPENA, ARENAC, BAY, CHEBOYGAN, CLARE, CLINTON, CRAWFORD, GENESEE, GLADWIN, GRATIOT, HURON, INGHAM, IOSCO, ISABELLA, JACKSON, LAPEER, LENAWEE, LIVINGSTON, MACOMB,

MIDLAND, MONROE, MONTMORENCY, OAKLAND, OGEMAW, OSCODA, OTSEGO, PRESQUE ISLE, ROSCOMMON, SAGINAW, ST. CLAIR, SANILAC, SHIAWASSEE, TUSCOLA, WASHTENAW AND WAYNE COUNTIES:

	Rates	Fringes
OPERATOR: Power Equipment (Steel Erection)		
GROUP 1	$ 55.42	25.25
GROUP 2	$ 56.42	25.25
GROUP 3	$ 53.92	25.25
GROUP 4	$ 54.92	25.25
GROUP 5	$ 52.42	25.25
GROUP 6	$ 53.42	25.25
GROUP 7	$ 52.15	25.25
GROUP 8	$ 53.15	25.25
GROUP 9	$ 51.70	25.25
GROUP 10	$ 52.70	25.25
GROUP 11	$ 50.97	25.25
GROUP 12	$ 51.97	25.25
GROUP 13	$ 50.61	25.25
GROUP 14	$ 51.61	25.25
GROUP 15	$ 49.97	25.25
GROUP 16	$ 46.77	25.25
GROUP 17	$ 32.29	12.40
GROUP 18	$ 35.78	25.25

FOOTNOTE:

Paid Holidays: New Year's Day, Memorial Day, Fourth of July, Labor Day, Thanksgiving Day and Christmas Day.

POWER EQUIPMENT OPERATOR CLASSIFICATIONS

GROUP 1: Engineer when operating combination of boom and jib 400' or longer

GROUP 2: Engineer when operating combination of boom and jib 400' or longer on a crane that requires an oiler

GROUP 3: Engineer when operating combination of boom and jib 300' or longer

GROUP 4: Engineer when operating combination of boom and jib 300' or longer on a crane that requires an oiler

GROUP 5: Engineer when operating combination of boom and jib 220' or longer

GROUP 6: Engineer when operating combination of boom and jib 220' or longer on a crane that requires an oiler

GROUP 7: Engineer when operating combination of boom and jib 140' or longer

GROUP 8: Engineer when operating combination of boom and jib 140' or longer on a crane that requires an oiler

GROUP 9: Tower crane & derrick operator (where operator's work station is 50 ft. or more above first sub-level)

GROUP 10: Tower crane & derrick operator (where operator's work station is 50 ft. or more above first sub-level) on a crane that requires an oiler

GROUP 11: Engineer when operating combination of boom and jib 120' or longer

GROUP 12: Engineer when operating combination of boom and jib 120' or longer on a crane that requires an oiler

GROUP 13: Crane operator; job mechanic and 3 drum hoist and excavator

GROUP 14: Crane operator on a crane that requires an oiler

GROUP 15: Hoisting operator; 2 drum hoist and rubber tired backhoe

GROUP 16: Forklift and 1 drum hoist

GROUP 17: Compressor or welder operator

GROUP 18: Oiler

ENGI0324-004 06/01/2024

AREA 1: ALLEGAN, BARRY, BERRIEN, BRANCH, CALHOUN, CASS, EATON, HILLSDALE, IONIA, KALAMAZOO, KENT, LAKE, MANISTEE, MASON, MECOSTA, MONTCALM, MUSKEGON, NEWAYGO, OCEANA, OSCEOLA, OTTAWA, ST. JOSEPH, VAN BUREN

AREA 2: ANTRIM, BENZIE, CHARLEVOIX, EMMET, GRAND TRAVERSE, KALKASKA, LEELANAU, MISSAUKEE AND WEXFORD COUNTIES:

	Rates	Fringes
OPERATOR: Power Equipment (Steel Erection)		
AREA 1		
GROUP 1	$ 55.02	25.25
GROUP 2	$ 52.15	25.25
GROUP 3	$ 50.61	25.25
GROUP 4	$ 46.77	25.25
GROUP 5	$ 32.29	12.40
GROUP 6	$ 35.78	25.25
AREA 2		
GROUP 1	$ 55.02	25.25
GROUP 2	$ 52.15	24.25
GROUP 3	$ 50.61	25.25
GROUP 4	$ 46.77	25.25
GROUP 5	$ 32.29	12.40
GROUP 6	$ 35.78	25.25

FOOTNOTES:

Crane operator with main boom and jib 300' or longer: $1.50 additional to the group 1 rate. Crane operator with main boom and jib 400' or longer: $3.00 additional to the group 1 rate.
PAID HOLIDAYS: New Year's Day, Memorial Day, Fourth of July, Labor Day, Thanksgiving Day and Christmas Day.

POWER EQUIPMENT OPERATOR CLASSIFICATIONS:

GROUP 1: Crane Operator with main boom & jib 400', 300', or 220' or longer.

GROUP 2: Crane Operator with main boom & jib 140' or longer, Tower Crane; Gantry Crane; Whirley Derrick.

GROUP 3: Regular Equipment Operator, Crane, Dozer, Loader, Hoist, Straddle Wagon, Mechanic, Grader and Hydro Excavator.

GROUP 4: Air Tugger (single drum), Material Hoist Pump 6"" or over, Elevators, Brokk Concrete Breaker.

GROUP 5: Air Compressor, Welder, Generators, Conveyors

GROUP 6: Oiler and fire tender

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* ENGI0324-005 09/01/2024

AREA 1: GENESEE, LAPEER, LIVINGSTON, MACOMB, MONROE, OAKLAND, ST. CLAIR, WASHTENAW AND WAYNE COUNTIES

AREA 2: ALCONA, ALLEGAN, ALGER, ALPENA, ANTRIM, ARENAC, BARAGA, BARRY, BAY, BENZIE, BERRIEN, BRANCH, CALHOUN, CASS, CHARLEVOIX, CHEBOYGAN, CHIPPEWA, CLARE, CLINTON, CRAWFORD, DELTA, DICKINSON, EATON, EMMET, GLADWIN, GOGEBIC, GRAND TRAVERSE, GRATIOT, HILLSDALE, HOUGHTON, HURON, INGHAM, IONIA, IOSCO, IRON, ISABELLA, JACKSON, KALAMAZOO, KALKASKA, KENT, KWEENAW, LAKE, LEELANAU, LENAWEE, LUCE, MACKINAC, MANISTEE, MARQUETTE, MASON, MECOSTA, MENOMINEE, MIDLAND, MISSAUKEE, MONTCALM, MONTMORENCY, MUSKEGON, NEWAYGO, OCEANA, OGEMAW, ONTONAGON, OSCEOLA, OSCODA, OTSEGO, OTTAWA, PRESQUE ISLE, ROSCOMMON, SAGINAW, SANILAC, SCHOOLCRAFT, SHIAWASSEE, ST. JOSEPH, TUSCOLA, VAN BUREN AND WEXFORD COUNTIES

	Rates	Fringes
OPERATOR: Power Equipment (Underground construction (including sewer))		
AREA 1:		
GROUP 1	$ 43.48	25.25
GROUP 2	$ 38.75	25.25
GROUP 3	$ 38.02	25.25
GROUP 4	$ 37.45	25.25
GROUP 5	$ 27.85	12.10
AREA 2:		
GROUP 1	$ 43.48	25.25
GROUP 2	$ 38.75	25.25
GROUP 3	$ 38.02	25.25
GROUP 4	$ 37.45	25.25
GROUP 5	$ 27.85	12.10

POWER EQUIPMENT OPERATOR CLASSIFICATIONS

GROUP 1: Backfiller tamper; Backhoe; Batch plant operator (concrete); Clamshell; Concrete paver (2 drums or larger); Conveyor loader (Euclid type); Crane (crawler, truck type or pile driving); Dozer; Dragline; Elevating grader; Endloader; Gradall (and similar type machine); Grader; Mechanic; Power shovel; Roller (asphalt); Scraper (self-propelled or tractor drawn); Side boom tractor (type D-4 or equivalent and larger); Slip form paver; Slope paver; Trencher (over 8 ft. digging capacity); Well drilling rig; Concrete pump with boom operator; Hydro Excavator

GROUP 2: Boom truck (power swing type boom); Crusher; Hoist; Pump (1 or more - 6-in. discharge or larger - gas or diesel- powered or powered by generator of 300 amperes or more - inclusive of generator); Side boom tractor (smaller than type D-4 or equivalent); Tractor (pneu-tired, other than backhoe or front end loader); Trencher (8-ft. digging capacity and smaller);Vac Truck and End dump operator;

GROUP 3: Air compressors (600 cfm or larger); Air compressors (2 or more-less than 600 cfm); Boom truck (non-swinging, non- powered type boom); Concrete breaker (self-propelled or truck mounted - includes compressor); Concrete paver (1 drum-1/2 yd. or larger); Elevator (other than passenger); Maintenance person; Pump (2 or more-4-in. up to 6-in. discharge-gas or diesel powered - excluding submersible pumps); Pumpcrete machine (and similar equipment); Wagon drill (multiple); Welding machine or generator (2 or more-300 amp. or larger - gas or diesel powered)

GROUP 4: Boiler; Concrete saw (40 hp or over); Curing machine (self-propelled); Farm tractor (with attachment); Finishing machine (concrete); Hydraulic pipe pushing machine; Mulching equipment; Pumps (2 or more up to 4-in. discharge, if used 3 hours or more a day, gas or diesel powered - excluding submersible pumps); Roller (other than asphalt); Stump remover; Trencher (service); Vibrating compaction equipment, self-propelled (6 ft. wide or over); Sweeper (Wayne type); Water wagon and Extend-a boom forklift

Group 5: Fire Person, Oiler

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* ENGI0324-006 06/01/2024

GENESEE, MACOMB, MONROE, OAKLAND, WASHTENAW, WAYNE, ALCONA, ALGER, ALLEGAN, ALPENA, ANTRIM, ARENAC, BARAGA, BARRY, BAY, BENZIE, BERRIEN, BRANCH, CALHOUN, CASS, CHARLEVOIX, CHEBOYGAN, CHIPPEWA, CLARE, CLINTON, CRAWFORD, DELTA, DICKINSON, EATON, EMMET, GLADWIN, GOGEBIC, GRAND TRAVERSE, GRATIOT, HILLSDALE, HOUGHTON, HURON, INGHAM, IONIA, IOSCO, IRON, ISABELLA, JACKSON, KALAMAZOO, KALKASKA, KENT, KEWEENAW, LAKE, LAPEER, LEELANAU, LENAWEE, LIVINGSTON, LUCE, MACKINAC, MANISTEE, MARQUETTE, MASON, MECOSTA, MENOMINEE, MIDLAND, MISSAUKEE, MONTCALM, MONTMORENCY, MUSKEGON, NEWAYGO, OCEANA, OGEMAW, ONTONAGON, OSCEOLA, OSCODA, OTSEGO, OTTAWA, PRESQUE ISLE, ROSCOMMON, SAGINAW, ST. CLARE, ST. JOSEPH, SANILAC, SCHOOLCRAFT, SHIAWASSEE, TUSCOLA, VAN BUREN AND WEXFORD COUNTIES

	Rates	Fringes
Power equipment operators: (AIRPORT, BRIDGE & HIGHWAY CONSTRUCTION)		
GROUP 1	$ 43.71	25.25
GROUP 2	$ 42.56	25.25
GROUP 3	$ 35.83	25.55
GROUP 4	$ 35.27	25.25

POWER EQUIPMENT OPERATOR CLASSIFICATIONS

GROUP 1: Paver Operator (5 bags or more); Slip Form Paver; Asphalt Paver (self propelled); Shovel (Excavator) installing utilities over 20 feet in depth.

Group 2: Asphalt plant operator; crane operator (does not include work on bridge construction projects when the crane operator is erecting structural components); Dragline operator; Shovel (Excavator) operator; Locomotive operator; Elevating grader operator; Pile driving operator; Roller operator (asphalt); Blade grader operator; Trenching machine operator (ladder or wheel type); Auto-grader; Self-propelled or tractor-drawn scraper; Conveyor loader operator (Euclid type); Bulldozer; Hoisting engineer; Tractor operator; Finishing machine operator (asphalt); Mechanic; Pump operator (6-in. discharge or over, gas, diesel powered or generator of 300 amp. or larger); Shouldering or gravel distributing machine operator (self-propelled); Backhoe (with over 3/8 yd. bucket); Side boom tractor (type D-4 or equivalent or larger); Tube finisher (slip form paving); Gradall (and similar type machine); Asphalt planner (self- propelled); Batch plant (concrete-central mix); Slurry machine (asphalt); Concrete pump (3 in. and over); Roto-mill; Swinging boom truck (over 12 ton capacity); Hydro demolisher (water blaster); Farm-type tractor with attached pan; Vacuum truck operator; Batch Plant (concrete dry batch); Concrete Saw Operator (40h.p. or over; Tractor Operator (farm type); Finishing Machine Operator (concrete); Grader Operator (self-propelled fine grade or form (concrete); tractor operator (farm type with attachment); Wagon Drill operator; Boom or winch hoist truck operator.

GROUP 3: Screening plant operator; Washing plant operator; Crusher operator; Backhoe (with 3/8 yd. bucket or less); Side boom tractor (smaller than D-4 type or equivalent); Sweeper (Wayne type and similar equipment); Greese Truck; Air Compressor Operator (600 cu.ft. per min or more); Air Compressor Operator (two or more, less than 600 cfm); End Loader operator (1 yard Capacity and over); Side boom tractor (type D or equivalent or larger; Endloader operator *under 1 yard capacity; Trencher (service).

GROUP 4: Boiler fire tender; Concrete Breaker; Oiler; Fire tender; Trencher (service); Flexplane operator; Cleftplane operator; Roller operator (other than asphalt); Curing equipment operator (self-propelled); Power bin operator; Plant drier operator (asphalt); Vibratory compaction equipment operator (6 ft. wide or over); Guard post driver operator (power driven); All mulching equipment; Stump remover; Concrete pump (under 3-in.); Mesh installer (self-propelled); End dump;Skid steer.

ENGI0324-007 05/01/2024

ALGER, BARAGA, CHIPPEWA, DELTA, DICKINSON, GOGEBIC, HOUGHTON, IRON, KEWEENAW, LUCE, MACKINAC MARQUETTE, MENOMINEE, ONTONAGON AND SCHOOLCRAFT COUNTIES:

	Rates	Fringes
OPERATOR: Power Equipment (Steel Erection)		
Compressor, welder and forklift	$ 40.90	25.00
Crane operator, main boom & jib 120' or longer	$ 47.37	25.00

Crane operator, main boom & jib 140' or longer	$ 47.37	24.60
Crane operator, main boom & jib 220' or longer	$ 48.26	25.00
Mechanic with truck and tools	$ 46.50	25.00
Oiler and fireman	$ 39.96	25.00
Regular operator	$ 44.72	25.00

ENGI0324-008 10/01/2023

ALCONA, ALGER, ALLEGAN, ALPENA, ANTRIM, ARENAC, BARAGA, BARRY, BAY, BENZIE, BERRIEN, BRANCH, CALHOUN, CASS, CHARLEVOIX, CHEBOYGAN, CHIPPEWA, CLARE, CLINTON, CRAWFORD, DELTA, DICKINSON, EATON, EMMET, GENESEE, GLADWIN, GOGEBIC, GRAND TRAVERSE, GRATIOT, HILLSDALE, HOUGHTON, HURON, INGHAM, IONIA, IOSCO, IRON, ISABELLA, JACKSON, KALAMAZOO, KALKASKA, KENT, KEWEENAW, LAKE, LAPEER, LEELANAU, LENAWEE, LIVINGSTON, LUCE, MACKINAC, MACOMB, MANISTEE, MARQUETTE, MASON, MECOSTA, MENOMINEE, MIDLAND, MISSAUKEE, MONTCALM, MONTMORENCY, MONROE, MUSKEGON, NEWAYGO, OAKLAND, OCEANA, OGEMAW, ONTONAGON, OSCEOLA, OSCODA, OTSEGO, OTTAWA, PRESQUE ISLE, ROSCOMMON, SAGINAW, ST. CLARE, ST. JOSEPH, SANILAC, SCHOOLCRAFT, SHIAWASSEE, TUSCOLA, VAN BUREN, WASHTENAW, WAYNE AND WEXFORD COUNTIES

	Rates	Fringes
OPERATOR: Power Equipment (Sewer Relining)		
GROUP 1	$ 37.37	15.44
GROUP 2	$ 35.33	15.44

SEWER RELINING CLASSIFICATIONS

GROUP 1: Operation of audio-visual closed circuit TV system, including remote in-ground cutter and other equipment used in connection with the CCTV system

GROUP 2: Operation of hot water heaters and circulation systems, water jetters and vacuum and mechanical debris removal systems

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ENGI0325-012 05/01/2024

	Rates	Fringes
Power equipment operators - gas distribution and duct installation work:		
GROUP 1	$ 37.98	25.25
GROUP 2	$ 34.75	25.25

SCOPE OF WORK: The construction, installation, treating and reconditioning of pipelines transporting gas vapors within cities, towns, subdivisions, suburban areas, or within private property boundaries, up to and including private meter settings of private industrial, governmental or other premises, more commonly referred to as ""distribution work,"" starting from the first metering station, connection, similar or related facility, of the main or cross country pipeline and including duct installation.

Group 1: Backhoe, crane, grader, mechanic, dozer (D-6

equivalent or larger), side boom (D-4 equivalent or larger), trencher(except service), endloader (2 yd. capacity or greater).

GROUP 2: Dozer (less than D-6 equivalent), endloader (under 2 yd. capacity), side boom (under D-4 capacity), backfiller, pumps (1 or 2 of 6-inch discharge or greater), boom truck (with powered boom), tractor (wheel type other than backhoe or front endloader). Tamper (self-propelled), boom truck (with non-powered boom), concrete saw (20 hp or larger), pumps (2 to 4 under 6-inch discharge), compressor (2 or more or when one is used continuously into the second day) and trencher(service). Oiler, hydraulic pipe pushing machine, grease person and hydrostatic testing operator.

IRON0008-007 06/01/2022

ALGER, BARAGA, CHIPPEWA, DELTA, DICKINSON, GOGEBIC, HOUGHTON, IRON, KEWEENAW, LUCE, MACKINAC MARQUETTE, MENOMINEE, ONTONAGON AND SCHOOLCRAFT COUNTIES:

	Rates	Fringes
Ironworker - pre-engineered metal building erector	$ 23.70	6.95
IRONWORKER		
General contracts $10,000,000 or greater	$ 38.14	28.70
General contracts less than $10,000,000	$ 38.14	28.70

Paid Holidays: New Year's Day, Memorial Day, July 4th, Labor Day, Thanksgiving Day & Christmas Day.

IRON0025-002 06/01/2024

ALCONA, ALPENA, ARENAC, BAY, CHEBOYGAN, CLARE, CLINTON, CRAWFORD, GENESEE, GLADWIN, GRATIOT, HURON, INGHAM, IOSCO, ISABELLA, JACKSON, LAPEER, LIVINGSTON, MACOMB, MIDLAND, MONTMORENCY, OAKLAND, OGEMAW, OSCODA, OTSEGO, PRESQUE ISLE, ROSCOMMON, SAGINAW, SANILAC, SHIAWASSEE, ST. CLAIR, TUSCOLA, WASHTENAW AND WAYNE COUNTIES:

	Rates	Fringes
Ironworker - pre-engineered metal building erector		
ALLEGAN, ANTRIM, BARRY, BENZIE, BRANCH, CALHOUN, CHARLEVOIX, EATON, EMMET, GRAND TRAVERSE, HILLSDALE, IONIA, KALAMAZOO, KALKASKA, KENT, LAKE, LEELANAU, MANISTEE, MASON, MECOSTA, MISSAUKEE, MONTCALM, MUSKEGON, NEWAYGO, OCEANA, OSCEOLA, OTTAWA, ST. JOSEPH, VAN BUREN AND WEXFORD COUNTIES:	$ 35.55	33.14
Bay, Genesee, Lapeer, Livingston (east of		

Burkhardt Road), Macomb, Midland, Oakland, Saginaw, St. Clair, The University of Michigan, Washtenaw (east of U.S. 23) & Wayne...$ 25.81 26.43
IRONWORKER
Ornamental and Structural...$ 34.50 38.44
Reinforcing.....$ 33.43 37.15

IRON0055-005 07/01/2022

LENAWEE AND MONROE COUNTIES:

	Rates	Fringes
IRONWORKER		
Pre-engineered metal buildings.....	$ 23.59	19.35
All other work.....	$ 33.00	27.20

IRON0292-003 06/01/2020

BERRIEN AND CASS COUNTIES:

	Rates	Fringes
IRONWORKER (Including pre-engineered metal building erector).....	$ 31.75	22.84

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* LABO0005-006 10/01/2022

	Rates	Fringes
Laborers - hazardous waste abatement: (ALCONA, ALPENA, ANTRIM, BENZIE, CHARLEVOIX, CHEBOYGAN, CRAWFORD, EMMET, GRAND TRAVERSE, IOSCO, KALKASKA, LEELANAU, MISSAUKEE, MONTMORENCY, OSCODA, OTSEGO, PRESQUE ISLE AND WEXFORD COUNTIES - Zone 10)		
Levels A, B or C.....	$ 17.45	12.75
class b.....	$ 18.64	12.90
Work performed in conjunction with site preparation not requiring the use of personal protective equipment;		
Also, Level D.....	$ 16.45 **	12.75
class a.....	$ 17.64	12.90
Zone 10		
Laborers - hazardous waste abatement: (ALGER, BARAGA, CHIPPEWA, DELTA, DICKINSON, GOGEBIC, HOUGHTON, IRON, KEWEENAW, LUCE, MACKINAC, MARQUETTE, MENOMINEE, ONTONAGON AND SCHOOLCRAFT COUNTIES - Zone 11)		
Levels A, B or C.....	$ 25.18	12.90
Work performed in conjunction with site		

preparation not requiring the use of personal protective equipment; Also, Level D.....$ 22.58 12.90

Laborers - hazardous waste abatement: (ALLEGAN, BARRY, BERRIEN, BRANCH, CALHOUN, CASS, IONIA COUNTY (except the city of Portland); KALAMAZOO, KENT, LAKE, MANISTEE, MASON, MECOSTA, MONTCALM, MUSKEGON, NEWAYGO, OCEANA, OSCEOLA, OTTAWA, ST. JOSEPH AND VAN BUREN COUNTIES - Zone 9)

Levels A, B or C.....$ 21.88 13.26

Work performed in conjunction with site preparation not requiring the use of personal protective equipment; Also, Level D.....$ 20.80 12.90

Laborers - hazardous waste abatement: (ARENAC, BAY, CLARE, GLADWIN, GRATIOT, HURON, ISABELLA, MIDLAND, OGEMAW, ROSCOMMON, SAGINAW AND TUSCOLA COUNTIES - Zone 8)

Levels A, B or C.....$ 23.74 12.95

Work performed in conjunction with site preparation not requiring the use of personal protective equipment; Also, Level D.....$ 20.80 12.90

Laborers - hazardous waste abatement: (CLINTON, EATON AND INGHAM COUNTIES; IONIA COUNTY (City of Portland); LIVINGSTON COUNTY (west of Oak Grove Rd., including the City of Howell) - Zone 6)

Levels A, B or C.....$ 26.33 12.95

Work performed in conjunction with site preparation not requiring the use of personal protective equipment; Also, Level D.....$ 24.64 12.90

Laborers - hazardous waste abatement: (GENESEE, LAPEER AND SHIAWASSEE COUNTIES - Zone 7)

Levels A, B or C.....$ 24.20 13.80

Work performed in conjunction with site preparation not requiring the use of personal protective equipment; Also, Level D.....$ 23.20 13.80

Laborers - hazardous waste abatement: (HILLSDALE, JACKSON AND LENAWEE COUNTIES - Zone 4)

Levels A, B or C.....$ 27.13 14.95

Work performed in conjunction with site preparation not requiring the use of personal protective equipment; Also, Level D.....$ 24.17 12.90

Laborers - hazardous waste abatement: (LIVINGSTON COUNTY (east of Oak Grove Rd. and south of M-59, excluding the city of Howell); AND WASHTENAW COUNTY - Zone 3)

Levels A, B or C.....$ 29.93 14.20

Work performed in conjunction with site preparation not requiring the use of personal protective equipment; Also, Level D.....$ 28.93 14.20

Laborers - hazardous waste abatement: (MACOMB AND WAYNE COUNTIES - Zone 1)

Levels A, B or C.....$ 29.93 16.90

Work performed in conjunction with site preparation not requiring the use of personal protective equipment; Also, Level D.....$ 28.93 16.90

Laborers - hazardous waste abatement: (MONROE COUNTY - Zone 4)

Levels A, B or C.....$ 31.75 14.90

Work performed in conjunction with site preparation not requiring the use of personal protective equipment; Also, Level D.....$ 31.75 14.90

Laborers - hazardous waste abatement: (OAKLAND COUNTY and the Northeast portion of LIVINGSTON COUNTY bordered by Oak Grove Road on the West and M-59 on the South - Zone 2)

Level A, B, C.....$ 29.93 16.90

Work performed in conjunction with site preparation not requiring the use of personal protective equipment; Also, Level D.....$ 28.93 16.90

Laborers - hazardous waste abatement: (SANILAC AND ST. CLAIR COUNTIES - Zone 5)

Levels A, B or C.....$ 26.21 16.62

Work performed in conjunction with site preparation not requiring the use of personal protective equipment; Also, Level D.....$ 24.75 16.35

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* LABO0259-001 09/01/2024

AREA 1: MACOMB, OAKLAND AND WAYNE COUNTIES
AREA 2: ALCONA, ALGER, ALLEGAN, ALPENA, ANTRIM, ARENAC, BARAGA, BARRY, BAY, BENZIE, BERRIEN, BRANCH, CALHOUN, CASS, CHARLEVOIX, CHEBOYGAN, CHIPPEWA, CLARE, CLINTON, CRAWFORD, DELTA, DICKINSON, EATON, EMMET, GENESEE, GLADWIN, GOGEBIC, GRAND TRAVERSE, GRATIOT, HILLSDALE, HOUGHTON, HURON, INGHAM, IONIA, IOSCO, IRON, ISABELLA, JACKSON, KALAMAZOO, KALKASKA, KENT, KEWEENAW, LAKE, LAPEER, LEELANAU, LENAWEE, LIVINGSTON, LUCE, MACKINAC, MANISTEE, MARQUETTE, MASON, MECOSTA, MENOMINEE, MIDLAND, MISSAUKEE, MONROE, MONTCALM, MONTMORENCY, MUSKEGON, NEWAYGO, OCEANA, OGEMAW, ONTONAGON, OSCEOLA, OSCODA, OTSEGO, OTTAWA, PRESQUE ISLE, ROSCOMMON, SAGINAW, ST. CLARE, ST. JOSEPH, SANILAC, SCHOOLCRAFT, SHIAWASSEE, TUSCOLA, VAN BUREN, WASHTENAW AND WEXFORD COUNTIES

	Rates	Fringes
Laborers - tunnel, shaft and caisson:		
AREA 1		
GROUP 1	$ 27.86	22.11
GROUP 2	$ 29.86	22.11
GROUP 3	$ 25.86	22.11
GROUP 4	$ 23.97	16.93
GROUP 5	$ 24.22	16.93
GROUP 6	$ 24.55	16.93
GROUP 7	$ 17.83	16.93
AREA 2		
GROUP 1	$ 30.00	17.45
GROUP 2	$ 32.00	17.45
GROUP 3	$ 28.00	17.45
GROUP 4	$ 29.57	16.93
GROUP 5	$ 25.76	16.93
GROUP 6	$ 26.07	16.93
GROUP 7	$ 25.57	16.93

SCOPE OF WORK: Tunnel, shaft and caisson work of every type and description and all operations incidental thereto, including, but not limited to, shafts and tunnels for sewers, water, subways, transportation, diversion, sewerage, caverns, shelters, aquafers, reservoirs, missile silos and steel sheeting for underground construction.

TUNNEL LABORER CLASSIFICATIONS

GROUP 1: Tunnel, shaft and caisson laborer, dump, shanty, hog house tender, testing (on gas) and watchman

GROUP 2: Manhole, headwall, catch basin builder, bricklayer tender, mortar machine and material mixer

GROUP 3: Air tool operator (jackhammer, bush hammer and grinder), first bottom, second bottom, cage tender, car pusher, carrier, concrete, concrete form, concrete repair, cement invert laborer, cement finisher, concrete shoveler, conveyor, floor, gasoline and electric tool operator, gunite, grout operator, welder, heading dinky person, inside lock tender, pea gravel operator, pump, outside lock tender, scaffold, top signal person, switch person, track, tugger, utility person, vibrator, winch operator, pipe jacking, wagon drill and air track operator and concrete saw operator (under 40 h.p.)

GROUP 4: Tunnel, shaft and caisson mucker, bracer, liner plate, long haul dinky driver and well point

GROUP 5: Tunnel, shaft and caisson miner, drill runner, key board operator, power knife operator, reinforced steel or mesh (e.g. wire mesh, steel mats, dowel bars, etc.)

GROUP 6: Dynamite and powder

GROUP 7: Restoration laborer, seeding, sodding, planting, cutting, mulching and top soil grading; and the restoration of property such as replacing mailboxes, wood chips, planter boxes, flagstones, etc.

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* LABO0334-001 09/01/2024

	Rates	Fringes
Laborers - open cut:		
ZONE 1 - MACOMB, OAKLAND AND WAYNE COUNTIES:		
GROUP 1	$ 27.71	22.11
GROUP 2	$ 29.71	22.11
GROUP 3	$ 25.87	22.11
GROUP 4	$ 23.71	16.72
GROUP 5	$ 24.17	16.72
GROUP 6	$ 22.00	16.72
GROUP 7	$ 17.84	16.72
ZONE 2 - LIVINGSTON COUNTY (east of M-151 (Oak Grove Rd.)); MONROE AND WASHTENAW COUNTIES:		
GROUP 1	$ 29.65	17.45
GROUP 2	$ 31.65	17.45
GROUP 3	$ 27.65	17.45
GROUP 4	$ 25.10	16.72
GROUP 5	$ 25.25	16.72
GROUP 6	$ 22.55	16.72
GROUP 7	$ 22.11	16.72
ZONE 3 - CLINTON, EATON, GENESEE, HILLSDALE AND INGHAM COUNTIES; IONIA COUNTY (City of Portland); JACKSON, LAPEER AND LENAWEE COUNTIES; LIVINGSTON COUNTY (west of M-151 Oak Grove Rd.); SANILAC, ST. CLAIR AND SHIAWASSEE COUNTIES:		
GROUP 1	$ 27.84	17.45
GROUP 2	$ 29.84	17.45
GROUP 3	$ 25.84	17.45
GROUP 4	$ 23.30	16.72
GROUP 5	$ 23.44	16.72
GROUP 6	$ 20.74	16.72
GROUP 7	$ 22.23	16.72
ZONE 4 - ALCONA, ALLEGAN, ALPENA, ANTRIM, ARENAC, BARRY, BAY, BENZIE, BERRIEN, BRANCH, CALHOUN, CASS, CHARLEVOIX, CHEBOYGAN, CLARE, CRAWFORD, EMMET, GLADWIN, GRAND TRAVERSE,		

GRATIOT AND HURON
COUNTIES; IONIA COUNTY
(EXCEPT THE CITY OF
PORTLAND); IOSCO,
ISABELLA, KALAMAZOO,
KALKASKA, KENT,
LAKE,LEELANAU, MANISTEE,
MASON, MECOSTA, MIDLAND,
MISSAUKEE, MONTCALM,
MONTMORENCY, MUSKEGON,
NEWAYGO, OCEANA, OGEMAW,
OSCEOLA, OSCODA, OTSEGO,
OTTAWA, PRESQUE ISLE,
ROSCOMMON, SAGINAW, ST.
JOSEPH, TUSCOLA, VAN BUREN
AND WEXFORD COUNTIES:

GROUP 1	$ 26.32	17.95
GROUP 2	$ 28.32	17.95
GROUP 3	$ 24.32	17.95
GROUP 4	$ 22.33	16.72
GROUP 5	$ 22.45	16.72
GROUP 6	$ 19.67	16.72
GROUP 7	$ 22.30	16.72

ZONE 5 - ALGER, BARAGA,
CHIPPEWA, DELTA,
DICKINSON, GOGEBIC,
HOUGHTON, IRON,
KEWEENAW, LUCE, MACKINAC,
MARQUETTE, MENOMINEE,
ONTONAGON AND SCHOOLCRAFT
COUNTIES:

GROUP 1	$ 26.09	18.45
GROUP 2	$ 28.09	18.45
GROUP 3	$ 24.09	18.45
GROUP 4	$ 22.56	16.72
GROUP 5	$ 22.64	16.72
GROUP 6	$ 19.99	16.72
GROUP 7	$ 22.45	16.72

SCOPE OF WORK:

Open cut construction work shall be construed to mean work which requires the excavation of earth including industrial, commercial and residential building site excavation and preparation, land balancing, demolition and removal of concrete and underground appurtenances, grading, paving, sewers, utilities and improvements; retention, oxidation, flocculation and irrigation facilities, and also including but not limited to underground piping, conduits, steel sheeting for underground construction, and all work incidental thereto, and general excavation. For all areas except the Upper Peninsula, open cut construction work shall also be construed to mean waterfront work, piers, docks, seawalls, breakwalls, marinas and all incidental work. Open cut construction work shall not include any structural modifications, alterations, additions and repairs to buildings, or highway work, including roads, streets, bridge construction and parking lots or steel erection work and excavation for the building itself and back filling inside of and within 5 ft. of the building and foundations, footings and piers for the building. Open cut construction work shall not include any work covered under Tunnel, Shaft and Caisson work.

OPEN CUT LABORER CLASSIFICATIONS

GROUP 1: Construction laborer

GROUP 2: Mortar and material mixer, concrete form person, signal person, well point person, manhole, headwall and catch basin builder, headwall, seawall, breakwall and dock builder

GROUP 3: Air, gasoline and electric tool operator, vibrator operator, driller, pump person, tar kettle operator, bracer, rodder, reinforced steel or mesh person (e.g., wire mesh, steel mats, dowel bars, etc.), welder, pipe jacking and boring person, wagon drill and air track operator and concrete saw operator (under 40 h.p.), windlass and tugger person and directional boring person

GROUP 4: Trench or excavating grade person

GROUP 5: Pipe layer (including crock, metal pipe, multi-plate or other conduits)

GROUP 6: Grouting man, audio-visual television operations and all other operations in connection with closed circuit television inspection, pipe cleaning and pipe relining work and the installation and repair of water service pipe and appurtenances

GROUP 7: Restoration laborer, seeding, sodding, planting, cutting, mulching and top soil grading; and the restoration of property such as replacing mailboxes, wood chips, planter boxes, flagstones, etc.

LABO0465-001 06/01/2024

LABORER: Highway, Bridge and Airport Construction

AREA 1: GENESEE, MACOMB, MONROE, OAKLAND, WASHTENAW AND WAYNE COUNTIES

AREA 2: ALLEGAN, BARRY, BAY, BERRIEN, BRANCH, CALHOUN, CASS, CLINTON, EATON, GRATIOT, HILLSDALE, HURON, INGHAM, JACKSON, KALAMAZOO, LAPEER, LENAWEE, LIVINGSTON, MIDLAND, MUSKEGON, SAGINAW, SANILAC, SHIAWASSEE, ST. CLAIR, ST. JOSEPH, TUSCOLA AND VAN BUREN COUNTIES

AREA 3: ALCONA, ALPENA, ANTRIM, ARENAC, BENZIE, CHARLEVOIX, CHEBOYGAN, CLARE, CRAWFORD, EMMET, GLADWIN, GRAND TRAVERSE, IONIA, IOSCO, ISABELLA, KALKASKA, KENT, LAKE, LEELANAU, MANISTEE, MASON, MECOSTA, MISSAUKEE, MONTCALM, MONTMORENCY, NEWAYGO, OCEANA, OGEMAW, OSCEOLA, OSCODA, OTSEGO, OTTAWA, PRESQUE ISLE, ROSCOMMON AND WEXFORD COUNTIES

AREA 4: ALGER, BARAGA, CHIPPEWA, DELTA, DICKINSON, GOGEBIC, HOUGHTON, IRON, KEWEENAW, LUCE, MACKINAC, MARQUETTE, MENOMINEE, ONTONAGON AND SCHOOLCRAFT COUNTIES

	Rates	Fringes
LABORER (AREA 1)		
GROUP 1	$ 34.01	14.45
GROUP 2	$ 34.14	14.45
GROUP 3	$ 34.32	14.45
GROUP 4	$ 34.40	14.45

GROUP 5	$ 34.61	14.45
GROUP 6	$ 34.91	14.45
LABORER (AREA 2)		
GROUP 1	$ 31.87	14.45
GROUP 2	$ 32.07	14.45
GROUP 3	$ 32.31	14.45
GROUP 4	$ 32.66	14.45
GROUP 5	$ 32.53	14.45
GROUP 6	$ 32.87	14.45
LABORER (AREA 3)		
GROUP 1	$ 31.12	14.45
GROUP 2	$ 31.33	14.45
GROUP 3	$ 31.62	14.45
GROUP 4	$ 32.06	14.45
GROUP 5	$ 31.68	14.45
GROUP 6	$ 32.11	14.45
LABORER (AREA 4)		
GROUP 1	$ 32.02	14.45
GROUP 2	$ 31.73	14.45
GROUP 3	$ 32.52	14.45
GROUP 4	$ 32.96	14.45
GROUP 5	$ 32.58	14.45
GROUP 6	$ 33.01	14.45

LABORER CLASSIFICATIONS

GROUP 1: Asphalt shoveler or loader; asphalt plant misc.; burlap person; yard person; dumper (wagon, truck, etc.); joint filling laborer; miscellaneous laborer; unskilled laborer; sprinkler laborer; form setting laborer; form stripper; pavement reinforcing; handling and placing (e.g., wire mesh, steel mats, dowel bars); mason's tender or bricklayer's tender on manholes; manhole builder; headwalls, etc.; waterproofing,(other than buildings) seal coating and slurry mix, shoring, underpinning; pressure grouting; bridge pin and hanger removal; material recycling laborer; horizontal paver laborer (brick, concrete, clay, stone and asphalt); ground stabilization and modification laborer; grouting; waterblasting; top person; railroad track and trestle laborer; carpenters' tender; guard rail builders' tender; earth retention barrier and wall and M.S.E. wall installer's tender; highway and median installer's tender(including sound, retaining, and crash barriers); fence erector's tender; asphalt raker tender; sign installer; remote control operated equipment.

GROUP 2: Mixer operator (less than 5 sacks); air or electric tool operator (jackhammer, etc.); spreader; boxperson (asphalt, stone, gravel); concrete paddler; power chain saw operator; paving batch truck dumper; tunnel mucker (highway work only); concrete saw (under 40 h.p.) and dry pack machine; roto-mill grounds person.

GROUP 3: Tunnel miner (highway work only); finishers tenders; guard rail builders; highway and median barrier installer; earth retention barrier and wall and M.S.E. wall installer's (including sound, retaining and crash barriers); fence erector; bottom person; powder person; wagon drill and air track operator; diamond and core drills; grade checker; certified welders; curb and side rail setter's tender.

GROUP 4: Asphalt raker

GROUP 5: Pipe layers, oxy-gun

GROUP 6: Line-form setter for curb or pavement; asphalt screed checker/screw man on asphalt paving machines.

LABO1076-005 04/01/2024

MICHIGAN STATEWIDE

	Rates	Fringes
LABORER (DISTRIBUTION WORK)		
Zone 1	$ 27.16	13.45
Zone 2	$ 25.42	13.45
Zone 3	$ 23.55	13.45
Zone 4	$ 22.92	13.45
Zone 5	$ 22.95	13.45

DISTRIBUTION WORK - The construction, installation, treating and reconditioning of distribution pipelines transporting coal, oil, gas or other similar materials, vapors or liquids, including pipelines within private property boundaries, up to and including the meter settings on residential, commercial, industrial, institutional, private and public structures. All work covering pumping stations and tank farms not covered by the Building Trades Agreement. Other distribution lines with the exception of sewer, water and cable television are included.

Underground Duct Layer Pay: $.40 per hour above the base pay rate.

Zone 1 - Macomb, Oakland and Wayne
Zone 2 - Monroe and Washtenaw
Zone 3 - Bay, Genesee, Lapeer, Midland, Saginaw, Sanilac, Shiawassee and St. Clair
Zone 4 - Alger, Baraga, Chippewa, Delta, Dickinson, Gogebic, Houghton, Iron, Keweenaw, Luce, Mackinac, Marquette, Menominee, Ontonagon and Schoolcraft
Zone 5 - Remaining Counties in Michigan

PAIN0022-002 07/01/2008

HILLSDALE, JACKSON AND LENAWEE COUNTIES; LIVINGSTON COUNTY (east of the eastern city limits of Howell, not including the city of Howell, north to the Genesee County line and south to the Washtenaw County line); MACOMB, MONROE, OAKLAND, WASHTENAW AND WAYNE COUNTIES:

	Rates	Fringes
PAINTER	$ 25.06	14.75

FOOTNOTES: For all spray work and journeyman rigging for spray work, also blowing off, $0.80 per hour additional (applies only to workers doing rigging for spray work on off the floor work. Does not include setting up or moving rigging on floor surfaces, nor does it apply to workers engaged in covering up or tending spray equipment. For all sandblasting and spray work performed on highway bridges, overpasses, tanks or steel, $0.80 per hour additional. For all brushing, cleaning and other preparatory work (other than spraying or steeplejack work) at scaffold heights of

fifty (50) feet from the ground or higher, $0.50 per hour additional. For all preparatorial work and painting performed on open steel under forty (40) feet when no scaffolding is involved, $0.50 per hour additional. For all swing stage work-window jacks and window belts-exterior and interior, $0.50 per hour additional. For all spray work and sandblaster work to a scaffold height of forty (40) feet above the floor level, $0.80 per hour additional. For all preparatorial work and painting on all highway bridges or overpasses up to forty (40) feet in height, $0.50 per hour additional. For all steeplejack work performed where the elevation is forty (40) feet or more, $1.25 per hour additional.

PAIN0312-001 06/01/2018

EXCLUDES: ALLEGAN COUNTY (Townships of Dorr, Fillmore, Heath, Hopkins, Laketown, Leighton, Manlius, Monterey, Overisel, Salem, Saugatuck and Wayland); INCLUDES: Barry, Berrien, Branch, Calhoun, Cass, Hillsdale, Kalamazoo, St. Joseph, Van Buren

	Rates	Fringes
PAINTER		
Brush and roller	$ 23.74	13.35
Spray, Sandblast, Sign Painting	$ 24.94	13.35

PAIN0845-003 05/10/2018

CLINTON COUNTY; EATON COUNTY (does not include the townships of Bellevue and Olivet); INGHAM COUNTY; IONIA COUNTY (east of Hwy. M 66); LIVINGSTON COUNTY (west of the eastern city limits of Howell, including the city of Howell, north to the Genesee County line and south to the Washtenaw County line); AND SHIAWASSEE COUNTY (Townships of Bennington, Laingsbury and Perry):

	Rates	Fringes
PAINTER	$ 25.49	13.74

PAIN0845-015 05/10/2018

MUSKEGON COUNTY; NEWAYGO COUNTY (except the Townships of Barton, Big Prairie, Brooks, Croton, Ensley, Everett, Goodwell, Grant, Home, Monroe, Norwich and Wilcox); OCEANA COUNTY; OTTAWA COUNTY (except the townships of Allendale, Blendone, Chester, Georgetown, Holland, Jamestown, Olive, Park, Polkton, Port Sheldon, Tallmadge, Wright and Zeeland):

	Rates	Fringes
PAINTER	$ 25.49	13.74

PAIN0845-018 05/10/2018

ALLEGAN COUNTY (Townships of Dorr, Fillmore, Heath, Hopkins, Laketown, Leighton, Manlius, Monterey, Overisel, Salem, Saugatuck and Wayland); IONIA COUNTY (west of Hwy. M-66); KENT,

MECOSTA AND MONTCALM COUNTIES; NEWAYGO COUNTY (Townships of Barton, Big Prairie, Brooks, Croton, Ensley, Everett, Goodwell, Grant, Home, Monroe, Norwich and Wilcox); OSCEOLA COUNTY (south of Hwy. #10); OTTAWA COUNTY (Townships of Allendale, Blendone, Chester, Georgetown, Holland, Jamestown, Olive, Park, Polkton, Port Sheldon, Tallmadge, Wright and Zeeland):

	Rates	Fringes
PAINTER	$ 25.49	13.74

FOOTNOTES: Lead abatement work: $1.00 per hour additional.

PAIN1011-003 06/02/2022

ALGER, BARAGA, CHIPPEWA, DELTA, DICKINSON, GOGEBIC, HOUGHTON, IRON, KEWEENAW, LUCE, MACKINAC, MARQUETTE, MENOMINEE, ONTONAGON AND SCHOOLCRAFT COUNTIES:

	Rates	Fringes
PAINTER	$ 24.66	14.99

FOOTNOTES: High pay (bridges, overpasses, watertower): 30 to 80 ft.: $.65 per hour additional. 80 ft. and over: $1.30 per hour additional.

PAIN1474-002 06/01/2010

HURON COUNTY; LAPEER COUNTY (east of Hwy. M-53); ST. CLAIR, SANILAC AND TUSCOLA COUNTIES:

	Rates	Fringes
PAINTER	$ 23.79	12.02

FOOTNOTES: Lead abatement work: $1.00 per hour additional. Work with any hazardous material: $1.00 per hour additional. Sandblasting, steam cleaning and acid cleaning: $1.00 per hour additional. Ladder work at or above 40 ft., scaffold work at or above 40 ft., swing stage, boatswain chair, window jacks and all work performed over a falling height of 40 ft.: $1.00 per hour additional. Spray gun work, pick pullers and those handling needles, blowing off by air pressure, and any person rigging (setting up and moving off the ground): $1.00 per hour additional. Steeplejack, tanks, gas holders, stacks, flag poles, radio towers and beacons, power line towers, bridges, etc.: $1.00 per hour additional, paid from the ground up.

PAIN1803-003 06/01/2024

ALCONA, ALPENA, ANTRIM, ARENAC, BAY, BENZIE, CHARLEVOIX, CHEBOYGAN, CLARE, CRAWFORD, EMMET, GLADWIN, GRAND TRAVERSE, GRATIOT, IOSCO, ISABELLA, KALKASKA, LAKE, LEELANAU, MANISTEE, MASON, MIDLAND, MISSAUKEE, MONTMORENCY AND OGEMAW COUNTIES; OSCEOLA COUNTY (north of Hwy. #10); OSCODA, OTSEGO, PRESQUE ISLE, ROSCOMMON, SAGINAW AND WEXFORD COUNTIES:

	Rates	Fringes
PAINTER		
Work performed on water, bridges over water or moving traffic, radio and powerline towers, elevated tanks, steeples, smoke stacks over 40 ft. of falling heights, recovery of lead-based paints and any work associated with industrial plants, except maintenance of industrial plants	$ 29.35	19.05
All other work, including maintenance of industrial plant	$ 29.35	19.05

FOOTNOTES: Spray painting, sandblasting, blowdown associated with spraying and blasting, water blasting and work involving a swing stage, boatswain chair or spider: $1.00 per hour additional. All work performed inside tanks, vessels, tank trailers, railroad cars, sewers, smoke stacks, boilers or other spaces having limited egress not including buildings, opentop tanks, pits, etc.: $1.25 per hour additional.

PLAS0514-001 06/01/2023

ZONE 1: GENESEE, LIVINGSTON, MACOMB, MONROE, OAKLAND, SAGINAW, WASHTENAW AND WAYNE COUNTIES

ZONE 2: ALCONA, ALGER, ALLEGAN, ALPENA, ANTRIM, ARENAC, BARAGA, BARRY, BAY, BENZIE, BERRIEN, BRANCH, CALHOUN, CASS, CHARLEVOIX, CHEBOYGAN, CHIPPEWA, CLARE, CLINTON, CRAWFORD, DELTA, DICKINSON, EATON, EMMET, GLADWIN, GOGEBIC, GRAND TRAVERSE, GRATIOT, HILLSDALE, HOUGHTON, HURON, INGHAM, IONIA, IOSCO, IRON, ISABELLA, JACKSON, KALAMAZOO, KALKASKA, KENT, KEWEENAW, LAKE, LAPEER, LEELANAU, LENAWEE, LUCE, MACKINAC, MANISTEE, MARQUETTE, MASON, MECOSTA, MENOMINEE, MIDLAND, MISSAUKEE, MONTCALM, MONTMORENCY, MUSKEGON, NEWAYGO, OCEANA, OGEMAW, ONTONAGON, OSCEOLA, OSCODA, OTSEGO, OTTAWA, PRESQUE ISLE, ROSCOMMON, SANILAC, SCHOOLCRAFT, SHIAWASSEE, ST. CLAIR, ST. JOSEPH, TUSCOLA, VAN BUREN AND WEXFORD COUNTIES

	Rates	Fringes
CEMENT MASON/CONCRETE FINISHER		
ZONE 1	$ 33.00	18.51
ZONE 2	$ 31.50	18.51

PLUM0190-003 05/01/2015

ALCONA, ALGER, ALLEGAN, ALPENA, ANTRIM, ARENAC, BARAGA, BARRY, BAY, BENZIE, BERRIEN, BRANCH, CALHOUN, CASS, CHARLEVOIX, CHEBOYGAN, CHIPPEWA, CLARE, CLINTON, CRAWFORD, DELTA, DICKINSON, EATON, EMMET, GENESEE, GLADWIN, GOGEBIC, GRAND TRAVERSE, GRATIOT, HILLSDALE, HOUGHTON, HURON, INGHAM, IONIA, IOSCO, IRON, ISABELLA, JACKSON, KALAMAZOO, KALKASKA, KENT, KEWEENAW, LAKE, LAPEER, LEELANAU, LENAWEE, LIVINGSTON, LUCE, MACKINAC, MACOMB, MANISTEE, MARQUETTE, MASON, MECOSTA, MENOMINEE, MIDLAND, MISSAUKEE, MONTCALM, MONTMORENCY, MONROE,

MUSKEGON, NEWAYGO, OAKLAND, OCEANA, OGEMAW, ONTONAGON, OSCEOLA, OSCODA, OTSEGO, OTTAWA, PRESQUE ISLE, ROSCOMMON, SAGINAW, ST. CLARE, ST. JOSEPH, SANILAC, SCHOOLCRAFT, SHIAWASSEE, TUSCOLA, VAN BUREN, WASHTENAW, WAYNE AND WEXFORD COUNTIES

	Rates	Fringes
Plumber/Pipefitter - gas distribution pipeline:		
Welding in conjunction with gas distribution pipeline work	$ 33.03	20.19
All other work:	$ 24.19	12.28

TEAM0007-004 06/01/2024

AREA 1: ALCONA, ALGER, ALLEGAN, ALPENA, ANTRIM, ARENAC, BARAGA, BARRY, BAY, BENZIE, BERRIEN, BRANCH, CALHOUN, CASS, CHARLEVOIX, CHEBOYGAN, CHIPPEWA, CLARE, CLINTON, CRAWFORD, DELTA, DICKINSON, EATON, EMMET, GLADWIN, GOGEBIC, GRAND TRAVERSE, GRATIOT, HILLSDALE, HOUGHTON, HURON, INGHAM, IONIA, IOSCO, IRON, ISABELLA, JACKSON, KALAMAZOO, KALKASKA, KENT, KEWEENAW, LAKE, LAPEER, LEELANAU, LENAWEE, LUCE, MACKINAC, MANISTEE, MARQUETTE, MASON, MECOSTA, MENOMINEE, MIDLAND, MISSAUKEE, MONTCALM, MONTMORENCY, MUSKEGON, NEWAYGO, OCEANA, OGEMAW, ONTONAGON, OSCEOLA, OSCODA, OTSEGO, OTTAWA, PRESQUE ISLE, ROSCOMMON, SAGINAW, SANILAC, SCHOOLCRAFT, SHIAWASSEE, ST. CLAIR, ST. JOSEPH, TUSCOLA, VAN BUREN AND WEXFORD COUNTIES

AREA 2: GENESEE, LIVINGSTON, MACOMB, MONROE, OAKLAND, WASHTENAW AND WAYNE COUNTIES

	Rates	Fringes
TRUCK DRIVER		
AREA 1		
Euclids, double bottoms and lowboys	$ 32.55	.75 + a+b
Trucks under 8 cu. yds.	$ 32.30	.75 + a+b
Trucks, 8 cu. yds. and over	$ 32.40	.75 + a+b
AREA 2		
Euclids, double bottoms and lowboys	$ 32.65	.75 + a+b
Trucks under 8 cu. yds.	$ 32.40	.75 + a+b
Trucks, 8 cu. yds. and over	$ 32.50	.75 + a+b

Footnote:
a. $470.70 per week
b. $68.70 daily

TEAM0247-004 04/01/2013

AREA 1: ALCONA, ALGER, ALLEGAN, ALPENA, ANTRIM, ARENAC, BARAGA, BARRY, BAY, BENZIE, BERRIEN, BRANCH, CALHOUN, CASS, CHARLEVOIX, CHEBOYGAN, CHIPPEWA, CLARE, CLINTON, CRAWFORD, DELTA, DICKINSON, EATON, EMMET, GLADWIN, GOGEBIC, GRAND TRAVERSE, GRATIOT, HILLSDALE, HOUGHTON, HURON, INGHAM, IONIA, IOSCO, IRON, ISABELLA, JACKSON, KALAMAZOO, KALKASKA, KENT, KEWEENAW, LAKE, LAPEER, LEELANAU, LENAWEE, LUCE, MACKINAC, MANISTEE, MARQUETTE, MASON, MECOSTA, MENOMINEE, MIDLAND, MISSAUKEE, MONTCALM, MONTMORENCY, MUSKEGON, NEWAYGO, OCEANA, OGEMAW,

ONTONAGON, OSCEOLA, OSCODA, OTSEGO, OTTAWA, PRESQUE ISLE, ROSCOMMON, SANILAC, SCHOOLCRAFT, SHIAWASSEE, SAGINAW, ST. CLAIR, ST. JOSEPH, TUSCOLA, VAN BUREN AND WEXFORD COUNTIES

AREA 2: GENESEE, LIVINGSTON, MACOMB, MONROE, OAKLAND, WASHTENAW AND WAYNE COUNTIES

	Rates	Fringes
Sign Installer		
AREA 1		
GROUP 1	$ 21.78	11.83
GROUP 2	$ 25.27	11.8375
AREA 2		
GROUP 1	$ 22.03	11.83
GROUP 2	$ 25.02	11.8375

FOOTNOTE:

a. $132.70 per week, plus $17.80 per day.

SIGN INSTALLER CLASSIFICATIONS:

GROUP 1: performs all necessary labor and uses all tools required to construct and set concrete forms required in the installation of highway and street signs

GROUP 2: performs all miscellaneous labor, uses all hand and power tools, and operates all other equipment, mobile or otherwise, required for the installation of highway and street signs

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TEAM0247-010 04/01/2018

AREA 1: LAPEER AND SHIAWASSEE COUNTIES

AREA 2: GENESEE, MACOMB, MONROE, OAKLAND, ST. CLAIR, WASHTENAW AND WAYNE COUNTIES

	Rates	Fringes
TRUCK DRIVER (Underground construction)		
AREA 1		
GROUP 1	$ 23.82	19.04
GROUP 2	$ 23.91	19.04
GROUP 3	$ 24.12	19.04
AREA 2		
GROUP 1	$ 24.12	19.04
GROUP 2	$ 24.26	19.04
GROUP 3	$ 24.45	19.04

PAID HOLIDAYS: New Year's Day, Memorial Day, Fourth of July, Labor Day, Thanksgiving Day and Christmas Day.

SCOPE OF WORK: Excavation, site preparation, land balancing, grading, sewers, utilities and improvements; also including but not limited to, tunnels, underground piping, retention, oxidation, flocculation facilities, conduits, general excavation and steel sheeting for underground construction. Underground construction work shall not include any

structural modifications, alterations, additions and repairs to buildings or highway work, including roads, streets, bridge construction and parking lots or steel erection.

TRUCK DRIVER CLASSIFICATIONS

GROUP 1: Truck driver on all trucks (EXCEPT dump trucks of 8 cubic yards capacity or over, pole trailers, semis, low boys, Euclid, double bottom and fuel trucks)

GROUP 2: Truck driver on dump trucks of 8 cubic yards capacity or over, pole trailers, semis and fuel trucks

GROUP 3: Truck driver on low boy, Euclid and double bottom

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* SUMI2002-001 05/01/2002

	Rates	Fringes
FLAG PERSON	$ 10.10 **	0.00
LINE PROTECTOR (ZONE 1: GENESEE, MACOMB, MONROE, OAKLAND, WASHTENAW AND WAYNE)	$ 22.89	13.45
LINE PROTECTOR (ZONE 2: STATEWIDE (EXCLUDING GENESEE, MACOMB, MONROE, OAKLAND, WASHTENAW AND WAYNE)	$ 20.19	13.45
Pavement Marking Machine (ZONE 1: GENESEE, MACOMB, MONROE, OAKLAND, WASHTENAW AND WAYNE COUNTIES) Group 1	$ 30.52	13.45
Pavement Marking Machine (ZONE 1: GENESEE, MACOMB, MONROE, OAKLAND, WASHTENAW AND WAYNE) Group 2	$ 27.47	13.45
Pavement Marking Machine (ZONE 2: STATEWIDE (EXCLUDING GENESEE, MACOMB, MONROE, OAKLAND, WASHTENAW AND WAYNE COUNTIES) Group 1	$ 26.92	13.45
Pavement Marking Machine (ZONE 2: STATEWIDE (EXCLUDING GENESEE, MACOMB, MONROE, OAKLAND, WASHTENAW AND WAYNE) Group 2	$ 24.23	13.45

WORK CLASSIFICATIONS:

PAVEMENT MARKER GROUP 1: Drives or operates a truck mounted striper, grinder, blaster, groover, or thermoplastic melter for the placement or removal of temporary or permanent pavement markings or markers.

PAVEMENT MARKER GROUP 2: Performs all functions involved for

the placement or removal of temporary or permanent pavement markings or markers not covered by the classification of Pavement Marker Group 1 or Line Protector.

LINE PROTECTOR: Performs all operations for the protection or removal of temporary or permanent pavement markings or markers in a moving convoy operation not performed by the classification of Pavement Marker Group 1. A moving convoy operation is comprised of only Pavement Markers Group 1 and Line Protectors.

WELDERS - Receive rate prescribed for craft performing operation to which welding is incidental.

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** Workers in this classification may be entitled to a higher minimum wage under Executive Order 14026 ($17.20) or 13658 ($12.90). Please see the Note at the top of the wage determination for more information. Please also note that the minimum wage requirements of Executive Order 14026 are not currently being enforced as to any contract or subcontract to which the states of Texas, Louisiana, or Mississippi, including their agencies, are a party.

Note: Executive Order (EO) 13706, Establishing Paid Sick Leave for Federal Contractors applies to all contracts subject to the Davis-Bacon Act for which the contract is awarded (and any solicitation was issued) on or after January 1, 2017. If this contract is covered by the EO, the contractor must provide employees with 1 hour of paid sick leave for every 30 hours they work, up to 56 hours of paid sick leave each year. Employees must be permitted to use paid sick leave for their own illness, injury or other health-related needs, including preventive care; to assist a family member (or person who is like family to the employee) who is ill, injured, or has other health-related needs, including preventive care; or for reasons resulting from, or to assist a family member (or person who is like family to the employee) who is a victim of, domestic violence, sexual assault, or stalking. Additional information on contractor requirements and worker protections under the EO is available at https://www.dol.gov/agencies/whd/government-contracts.

Unlisted classifications needed for work not included within the scope of the classifications listed may be added after award only as provided in the labor standards contract clauses (29CFR 5.5 (a) (1) (iii)).

The body of each wage determination lists the classification and wage rates that have been found to be prevailing for the cited type(s) of construction in the area covered by the wage determination. The classifications are listed in alphabetical order of ""identifiers"" that indicate whether the particular rate is a union rate (current union negotiated rate for local), a survey rate (weighted average rate) or a union average rate (weighted union average rate).

Union Rate Identifiers

A four letter classification abbreviation identifier enclosed in dotted lines beginning with characters other than ""SU"" or ""UAVG"" denotes that the union classification and rate were prevailing for that classification in the survey. Example: PLUM0198-005 07/01/2014. PLUM is an abbreviation identifier of the union which prevailed in the survey for this classification, which in this example would be Plumbers. 0198 indicates the local union number or district council number where applicable, i.e., Plumbers Local 0198. The next number, 005 in the example, is an internal number used in processing the wage determination. 07/01/2014 is the effective date of the most current negotiated rate, which in this example is July 1, 2014.

Union prevailing wage rates are updated to reflect all rate changes in the collective bargaining agreement (CBA) governing this classification and rate.

Survey Rate Identifiers

Classifications listed under the ""SU"" identifier indicate that no one rate prevailed for this classification in the survey and the published rate is derived by computing a weighted average rate based on all the rates reported in the survey for that classification. As this weighted average rate includes all rates reported in the survey, it may include both union and non-union rates. Example: SULA2012-007 5/13/2014. SU indicates the rates are survey rates based on a weighted average calculation of rates and are not majority rates. LA indicates the State of Louisiana. 2012 is the year of survey on which these classifications and rates are based. The next number, 007 in the example, is an internal number used in producing the wage determination. 5/13/2014 indicates the survey completion date for the classifications and rates under that identifier.

Survey wage rates are not updated and remain in effect until a new survey is conducted.

Union Average Rate Identifiers

Classification(s) listed under the UAVG identifier indicate that no single majority rate prevailed for those classifications; however, 100% of the data reported for the classifications was union data. EXAMPLE: UAVG-OH-0010 08/29/2014. UAVG indicates that the rate is a weighted union average rate. OH indicates the state. The next number, 0010 in the example, is an internal number used in producing the wage determination. 08/29/2014 indicates the survey completion date for the classifications and rates under that identifier.

A UAVG rate will be updated once a year, usually in January of each year, to reflect a weighted average of the current negotiated/CBA rate of the union locals from which the rate is based.

State Adopted Rate Identifiers

Classifications listed under the ""SA"" identifier indicate that the prevailing wage rate set by a state (or local) government was adopted under 29 C.F.R ◆1.3(g)-(h). Example: SAME2023-007 01/03/2024. SA reflects that the rates are state adopted. ME refers to the State of Maine. 2023 is the year during which the state completed the survey on which the listed classifications and rates are based. The next number, 007 in the example, is an

internal number used in producing the wage determination. 01/03/2024 reflects the date on which the classifications and rates under the ?SA? identifier took effect under state law in the state from which the rates were adopted.

WAGE DETERMINATION APPEALS PROCESS

1.) Has there been an initial decision in the matter? This can be:

* an existing published wage determination
* a survey underlying a wage determination
* a Wage and Hour Division letter setting forth a position on a wage determination matter
* a conformance (additional classification and rate) ruling

On survey related matters, initial contact, including requests for summaries of surveys, should be with the Wage and Hour National Office because National Office has responsibility for the Davis-Bacon survey program. If the response from this initial contact is not satisfactory, then the process described in 2.) and 3.) should be followed.

With regard to any other matter not yet ripe for the formal process described here, initial contact should be with the Branch of Construction Wage Determinations. Write to:

Branch of Construction Wage Determinations
Wage and Hour Division
U.S. Department of Labor
200 Constitution Avenue, N.W.
Washington, DC 20210

2.) If the answer to the question in 1.) is yes, then an interested party (those affected by the action) can request review and reconsideration from the Wage and Hour Administrator (See 29 CFR Part 1.8 and 29 CFR Part 7). Write to:

Wage and Hour Administrator
U.S. Department of Labor
200 Constitution Avenue, N.W.
Washington, DC 20210

The request should be accompanied by a full statement of the interested party's position and by any information (wage payment data, project description, area practice material, etc.) that the requestor considers relevant to the issue.

3.) If the decision of the Administrator is not favorable, an interested party may appeal directly to the Administrative Review Board (formerly the Wage Appeals Board). Write to:

Administrative Review Board
U.S. Department of Labor
200 Constitution Avenue, N.W.
Washington, DC 20210

4.) All decisions by the Administrative Review Board are final.

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END OF GENERAL DECISION"

"General Decision Number: MI20240039 10/11/2024

Superseded General Decision Number: MI20230039

State: Michigan

Construction Type: Heavy

County: Isabella County in Michigan.

Heavy, Includes Water, Sewer Lines and Excavation (Excludes Hazardous Waste Removal; Coal, Oil, Gas, Duct and other similar Pipeline Construction)

Note: Contracts subject to the Davis-Bacon Act are generally required to pay at least the applicable minimum wage rate required under Executive Order 14026 or Executive Order 13658. Please note that these Executive Orders apply to covered contracts entered into by the federal government that are subject to the Davis-Bacon Act itself, but do not apply to contracts subject only to the Davis-Bacon Related Acts, including those set forth at 29 CFR 5.1(a)(1).

If the contract is entered into on or after January 30, 2022, or the contract is renewed or extended (e.g., an option is exercised) on or after January 30, 2022:	. Executive Order 14026 generally applies to the contract. . The contractor must pay all covered workers at least $17.20 per hour (or the applicable wage rate listed on this wage determination, if it is higher) for all hours spent performing on the contract in 2024.
If the contract was awarded on or between January 1, 2015 and January 29, 2022, and the contract is not renewed or extended on or after January 30, 2022:	. Executive Order 13658 generally applies to the contract. . The contractor must pay all covered workers at least $12.90 per hour (or the applicable wage rate listed on this wage determination, if it is higher) for all hours spent performing on that contract in 2024.

The applicable Executive Order minimum wage rate will be adjusted annually. If this contract is covered by one of the Executive Orders and a classification considered necessary for performance of work on the contract does not appear on this wage determination, the contractor must still submit a conformance request.

Additional information on contractor requirements and worker protections under the Executive Orders is available at http://www.dol.gov/whd/govcontracts.

Modification Number	Publication Date
0	01/05/2024

1	03/08/2024
2	07/05/2024
3	07/12/2024
4	07/26/2024
5	10/11/2024

CARP0706-007 06/01/2024

	Rates	Fringes
CARPENTER (Form Work Only).....	$ 33.11	23.64

ELEC0275-004 06/01/2022

Townships of Bloomfield, Coldwater, Deerfield, Fremont, Gilmore, Nottawa, Rolland & Sherman

	Rates	Fringes
ELECTRICIAN.....	$ 34.41	9.274+28%

ELEC0557-010 06/01/2020

Townships of Lincoln & Coe

	Rates	Fringes
ELECTRICIAN.....	$ 34.25	23.13

ELEC0692-016 06/01/2023

Townships of Chippewa, Denver, Isabella, Union, Vernon & Wise

	Rates	Fringes
ELECTRICIAN.....	$ 36.00	38.03%+9.93

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* ENGI0325-021 09/01/2024

POWER EQUIPMENT OPERATORS: Underground Construction (Including Sewer)

	Rates	Fringes
POWER EQUIPMENT OPERATOR		
GROUP 1.....	$ 43.48	25.25
GROUP 2.....	$ 38.75	25.25
GROUP 3.....	$ 38.02	25.25
GROUP 4.....	$ 37.45	25.25

POWER EQUIPMENT OPERATOR CLASSIFICATIONS

GROUP 1: Backhoe/ Excavator, Boring Machine, Bulldozer, Crane, Scraper, Loader, Trencher (over 8 ft. digging capacity)

GROUP 2: Trencher (8-ft digging capacity and smaller)

GROUP 3: Boom Truck (non-swinging, non- powered type boom)

GROUP 4: Broom/ Sweeper, Fork Truck, Tractor

ENGI0326-021 06/01/2024

EXCLUDES UNDERGROUND CONSTRUCTION

	Rates	Fringes
OPERATOR: Power Equipment		
Group 1	$ 47.28	25.25
Group 2	$ 43.93	25.25
Group 3	$ 41.28	25.25
Group 4	$ 39.57	25.25
Group 5	$ 31.23	25.25

FOOTNOTES:

Crane operator with main boom and jib 300' or longer: $1.50 per hour above the group 1 rate.
Crane operator with main boom and jib 400' or longer: $3.00 per hour above the group 1 rate.

PAID HOLIDAYS: New Year's Day, Memorial Day, Fourth of July, Labor Day, Thanksgiving Day and Christmas Day.

POWER EQUIPMENT OPERATOR CLASSIFICATIONS

GROUP 1: Crane operator with main boom and jib 400', 300', or 220' or longer.

GROUP 2: Crane operator with main boom and jib 140' or longer, tower crane, gantry crane, whirley derrick

GROUP 3: Backhoe/Excavator; Bulldozer; Compactor; Crane; Scraper; Loader

GROUP 4: Boom truck (non-swinging)

GROUP 5: Oiler

IRON0025-006 06/01/2024

	Rates	Fringes
IRONWORKER		
Reinforcing	$ 33.43	37.15
Structural	$ 35.55	35.83

LABO0334-003 09/01/2022

SCOPE OF WORK:
OPEN CUT CONSTRUCTION: Excavation of earth and sewer, utilities, and improvements, including underground piping/conduit (including inspection, cleaning, restoration, and relining)

	Rates	Fringes
LABORER		
(4) Grade Checker	$ 22.73	12.95

PLAS0016-030 04/01/2014

	Rates	Fringes

CEMENT MASON/CONCRETE FINISHER...$ 25.47 12.38

PLUM0085-011 05/01/2023

	Rates	Fringes
PLUMBER/PIPEFITTER	$ 43.50	22.10

TEAM0007-010 06/01/2024

	Rates	Fringes
TRUCK DRIVER		
Lowboy/Semi-Trailer Truck	$ 32.55	.75 + a+b

FOOTNOTE:
a. $470.70 per week.
b. $68.70 daily.

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* SUMI2010-037 11/09/2010

	Rates	Fringes
CARPENTER, Excludes Form Work	$ 23.97	6.29
LABORER: Common or General	$ 19.79	5.95
LABORER: Landscape	$ 10.89 **	1.74
LABORER: Mason Tender - Cement/Concrete	$ 15.97 **	3.51
LABORER: Pipelayer	$ 15.28 **	3.99
OPERATOR: Bobcat/Skid Steer/Skid Loader	$ 12.98 **	6.12
OPERATOR: Grader/Blade	$ 15.50 **	3.62
OPERATOR: Roller	$ 13.74 **	7.93
TRUCK DRIVER: Dump Truck	$ 14.06 **	1.25

WELDERS - Receive rate prescribed for craft performing operation to which welding is incidental.

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** Workers in this classification may be entitled to a higher minimum wage under Executive Order 14026 ($17.20) or 13658 ($12.90). Please see the Note at the top of the wage determination for more information. Please also note that the minimum wage requirements of Executive Order 14026 are not currently being enforced as to any contract or subcontract to which the states of Texas, Louisiana, or Mississippi, including their agencies, are a party.

Note: Executive Order (EO) 13706, Establishing Paid Sick Leave for Federal Contractors applies to all contracts subject to the Davis-Bacon Act for which the contract is awarded (and any solicitation was issued) on or after January 1, 2017. If this contract is covered by the EO, the contractor must provide employees with 1 hour of paid sick leave for every 30 hours they work, up to 56 hours of paid sick leave each year.

Employees must be permitted to use paid sick leave for their own illness, injury or other health-related needs, including preventive care; to assist a family member (or person who is like family to the employee) who is ill, injured, or has other health-related needs, including preventive care; or for reasons resulting from, or to assist a family member (or person who is like family to the employee) who is a victim of, domestic violence, sexual assault, or stalking. Additional information on contractor requirements and worker protections under the EO is available at https://www.dol.gov/agencies/whd/government-contracts.

Unlisted classifications needed for work not included within the scope of the classifications listed may be added after award only as provided in the labor standards contract clauses (29CFR 5.5 (a) (1) (iii)).

The body of each wage determination lists the classification and wage rates that have been found to be prevailing for the cited type(s) of construction in the area covered by the wage determination. The classifications are listed in alphabetical order of ""identifiers"" that indicate whether the particular rate is a union rate (current union negotiated rate for local), a survey rate (weighted average rate) or a union average rate (weighted union average rate).

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A four letter classification abbreviation identifier enclosed in dotted lines beginning with characters other than ""SU"" or ""UAVG"" denotes that the union classification and rate were prevailing for that classification in the survey. Example: PLUM0198-005 07/01/2014. PLUM is an abbreviation identifier of the union which prevailed in the survey for this classification, which in this example would be Plumbers. 0198 indicates the local union number or district council number where applicable, i.e., Plumbers Local 0198. The next number, 005 in the example, is an internal number used in processing the wage determination. 07/01/2014 is the effective date of the most current negotiated rate, which in this example is July 1, 2014.

Union prevailing wage rates are updated to reflect all rate changes in the collective bargaining agreement (CBA) governing this classification and rate.

Survey Rate Identifiers

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date for the classifications and rates under that identifier.

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A UAVG rate will be updated once a year, usually in January of each year, to reflect a weighted average of the current negotiated/CBA rate of the union locals from which the rate is based.

State Adopted Rate Identifiers

Classifications listed under the ""SA"" identifier indicate that the prevailing wage rate set by a state (or local) government was adopted under 29 C.F.R ◆1.3(g)-(h). Example: SAME2023-007 01/03/2024. SA reflects that the rates are state adopted. ME refers to the State of Maine. 2023 is the year during which the state completed the survey on which the listed classifications and rates are based. The next number, 007 in the example, is an internal number used in producing the wage determination. 01/03/2024 reflects the date on which the classifications and rates under the ?SA? identifier took effect under state law in the state from which the rates were adopted.

WAGE DETERMINATION APPEALS PROCESS

1.) Has there been an initial decision in the matter? This can be:

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* a survey underlying a wage determination
* a Wage and Hour Division letter setting forth a position on a wage determination matter
* a conformance (additional classification and rate) ruling

On survey related matters, initial contact, including requests for summaries of surveys, should be with the Wage and Hour National Office because National Office has responsibility for the Davis-Bacon survey program. If the response from this initial contact is not satisfactory, then the process described in 2.) and 3.) should be followed.

With regard to any other matter not yet ripe for the formal process described here, initial contact should be with the Branch of Construction Wage Determinations. Write to:

Branch of Construction Wage Determinations
Wage and Hour Division
U.S. Department of Labor
200 Constitution Avenue, N.W.
Washington, DC 20210

2.) If the answer to the question in 1.) is yes, then an interested party (those affected by the action) can request review and reconsideration from the Wage and Hour Administrator (See 29 CFR Part 1.8 and 29 CFR Part 7). Write to:

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U.S. Department of Labor
200 Constitution Avenue, N.W.
Washington, DC 20210

The request should be accompanied by a full statement of the interested party's position and by any information (wage payment data, project description, area practice material, etc.) that the requestor considers relevant to the issue.

3.) If the decision of the Administrator is not favorable, an interested party may appeal directly to the Administrative Review Board (formerly the Wage Appeals Board). Write to:

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U.S. Department of Labor
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Washington, DC 20210

4.) All decisions by the Administrative Review Board are final.

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END OF GENERAL DECISION"

SECTION 01270 – MEASUREMENT AND PAYMENT

PART 1 - GENERAL

1.01 SUMMARY

A. Bid price includes all labor, tools, equipment, materials, transportation, testing, permits and applicable fees, and all accessories and related work not paid for separately in order to complete the installation according to the plans and specifications.

B. All measurement and payment will be based on completed work, ready for use, performed in strict accordance with the Plans and Specifications.

C. Owner reserves the right to delete and / or adjust any line item or quantity on the BID FORM.

D. All work shall conform to all applicable OSHA standards.

E. Owner reserves the right to delete divisions from this contract.

1.02 APPLICATION FOR PAYMENT

A. Pay period: Begins on the 1st of the month and continues through the end of the following month. Contractor shall submit payment application on the 25th of the following month.

B. Payment requests shall be submitted on the forms included in the Bid Documents.

1.04 PAY ITEM DESCRIPTIONS

ISABELLA WATER TREATMENT PLANT

SITE

1. Mobilization, Max 5%: The completed work for mobilization will be paid for at the contract lump sum (LS) price. This payment shall be payment in full for equipment and material delivery, transportation and storage, bonds, insurances, permits and fees, all coordination with the Township, Engineers, Regulatory Agencies, utility companies and all other labor and materials.

2. Site Clearing & Grubbing: The completed work for clearing and grubbing shall be paid for at the contract unit price lump sum (LS) as quoted in the proposal. This price will be based on all demolition, any miscellaneous removals, , utility coordination, traffic maintenance, and exploratory excavation, within the project area as shown on the plans or as directed by the Engineer. The work shall include, but is not limited to, the removal, disposal and/or abandonment of trees, tree stumps, bushes, brush, subbase, removal of poor soils and replacement with good soils, stockpile, salvage and screening of topsoil, dewatering, and other items which may be within the project construction area not paid for under a separate bid item. All cleared or grubbed material must be legally disposed of off-site. Disposal of non-salvageable items are to be the responsibility of the contractor at no additional cost. The price will consist of all labor, material, and equipment necessary to complete the site clearing and grubbing work for the project. Any concrete and/or bituminous damaged

outside of the limits defined on the drawings will be repaired/replaced at no additional cost to the project.

3. Site Grading: The completed work for Site Grading shall be paid for at the contract unit price lump sum (LS) as quoted in the proposal. This price will be based on subgrade undercutting, material stockpiling, excavation, embankment, structure backfilling, compaction (including subbase per MDOT Granular Class II material standards), ditching, construction access stabilization/restoration, and grading necessary to construct the project to the grades and lines indicated on the plans and specifications. The price will consist of all labor, material and equipment necessary to complete the grading and site preparation work for the project. Any concrete and/or bituminous damaged outside of the limits defined on the drawings will be repaired/replaced at no additional cost to the project.

4. Asphalt Surface Removal: The completed work for asphalt road / driveway removal shall be paid for at the unit price by the square foot (SF) based on the actual quantity removed, as indicated in the standard details, over the entire as shown on the plans. This unit price shall include, but not be limited to, subbase, aggregate base, bituminous surfacing removed and offsite disposal, saw cutting, and all other labor, materials and equipment necessary to complete the work according to the plans and specifications. Any bituminous, concrete or gravel damage outside the limits will be repaired/replaced at no additional cost to project.

5. Concrete Pad / Apron Removal: The completed work for concrete surface removal will be paid for at the contract unit price per square foot (SF). Payment shall be based on the actual quantity removed as indicated on the plans. The unit price shall include removal including bollards, offsite disposal, sawcutting, or all backfilling, labor, equipment, furnishing materials, accessories, and all related items not paid for separately necessary to complete the removal according to the plans and specifications. Any bituminous, concrete or gravel damage outside the limits will be repaired/replaced at no additional cost to project.

6. Dumpster Removal, Including Enclosure: The complete work for Dumpster Removal shall be paid for at the contract unit price of lump sum (LS) and shall include all work necessary to remove and disposal, removal and disposal of existing dumpster enclosure and all accessories, and any other labor, materials, and equipment required to complete the work according to the plans and specifications.

7. Water Main Abandonment, Including Cut & Cap: The completed work for cut and cap the existing water main in-place shall be paid for at the contract lump sum (LS). Payment shall be based on locations noted on the plans for abandonment and cutting / capping and shall include, but not be limited to, all investigation to locate water main, flowable fill, concrete thrust blocking / tie rods, placing valve in closed position and removal of box / stem, excavation, dewatering, backfilling, stone bedding, density of backfilled materials, labor, equipment, furnishing all materials, accessories and all related items not paid for separately necessary to complete the installation according to the plans and approved methods. (see Standard Details).

8. Relocate Existing Hydrant: **:** The completed work for relocation of fire hydrant assembly, as shown on the plans and detailed in the specifications, will be paid for at the contract unit price per each (EA). Payment shall be based on the actual quantity relocated. Removal of the existing hydrant by shutting down the existing hydrant valve and installing a plug at the downstream side of the valve and removing the valve box/ stem at locations as identified and installation of hydrant via use of a tapping sleeve and valve, to connect to

location specified on plans allowing the hydrant to be connected without taking the main out of service. Payment includes, but is not limited to, all excavation, dewatering, backfilling, thrust blocking, stone bedding, density of backfilled materials, labor, equipment, removal of existing equipment and storage of equipment, installation of existing equipment, tapping sleeve and valve, concrete thrust block and tie rods, furnishing all materials, accessories, labor and all related items not paid for separately necessary to complete the installation according to the Detail.

9. Pole Building, 20'x30', Including Concrete Pad and electric service: The complete work for the Building shall be paid for at a contract unit price lump sum (LS). Payment shall be based on the actual quantity constructed. The unit price shall include, but not limited to all earthwork, materials, labor, equipment, furnishing materials, accessories, and all related items not paid for separately necessary to complete the work according to the plans and specifications. Scope of work includes, concrete flatwork, backfilling, density of backfilled material, labor, equipment, furnishing materials, accessories, , concrete, aggregate and sand subbase, equipment pads, treated lumber posts, doors, foundation, steel, , trusses, concrete pads, underground electric, panel, breakers, and all other equipment, materials and labor required to complete the work in accordance with the plans and specifications.

10. SESC Controls, Including Silt Fence: The completed work for soil erosion and control will be paid for at the contract price per linear foot (LF) as quoted in the proposal. Payment shall include, but not limited to, all labor, equipment and materials to install erosion control fencing and other temporary measures as mandated by the County and Township and as shown on the plans or as required by the Engineer.

11. Asphalt Pavement, 4EL Top / Base Course 330#/SYD: The completed work for asphalt shall be paid for at the contract unit price by the square yard (SY). Payment shall be based on field measurements of the actual quantity constructed within the area as defined on the bid drawings. This unit price shall include, but are not limited to, bituminous surfacing, pavement sawcuts, pavement joints, tack coating, valve box adjustments to grade, and all other labor, materials, and equipment necessary to complete the work according to the plans and specifications. This item shall include traffic control, signing and any work involved with the temporary closure and the re-routing of traffic. Any asphalt, concrete and/or bituminous damaged outside of the limits defined on the drawings will be repaired/replaced at no additional cost to the project.

12. 6" Aggregate Base: The completed work for aggregate base shall be paid for at the contract unit price by the square yard (CY) on the basis of the actual quantity constructed for placing a 6" aggregate base as designated on the project plans. This cubic yard price shall include subgrade undercutting, subbase, aggregate base, gavel surfacing, companction efforts, and all other labor, materials and equipment necessary to complete the work according to the plans and specifications. Any damage outside the limits will be repaired/replaced. This cost shall be included in the cost of the project.

13. Raised Bit Curb: The complete work for Raised Bit Curb will be paid for at the contract unit price per foot (FT). Payment shall be based on the actual quantity constructed as indicated on plans and specifications. This unit price shall include, but are not limited to, bituminous raised edge, bituminous surfacing, pavement sawcuts, pavement joints, and all other labor, materials, and equipment necessary to complete the work according to the plans and specifications.

14. Asphalt Spillway, Including Rip Rap: The complete work for Asphalt Spillway will be paid for at the contract unit price per each (EA). Payment shall be based on the actual number constructed as indicated on plans and specifications. This unit price shall include, but are not limited to, bituminous leveling course, bituminous surfacing, pavement sawcuts, pavement joints, all stone, rock, cobblestone, geotextile fabric, granular subbase, and all other labor, materials, and equipment necessary to complete the work according to the plans and specifications.

15. Standard Concrete Walk: The completed work for installation of concrete sidewalk will be paid for at the contract unit price per square foot (SF). Payment shall be based on the actual quantity constructed as indicated on plans and within the one-on-one influence slope of the pipe placement. The unit price shall include all backfilling, density of backfilled material, labor, equipment, furnishing materials, accessories, and all related items not paid for separately necessary to complete the placement according to the plans and specifications.

16. Concrete Pad: The completed work for the concrete pad will be paid for at contract price per square foot (SF). Payment shall include, but is not limited to, backfilling, density of backfilled material, labor, equipment, furnishing materials, accessories, all structural rebar, reinforcement, admixtures, forms, concrete, aggregate and sand subbase, and any other labor, materials, and equipment necessary to complete the work according to the plans and specifications.

17. Concrete Dumpster Pad: The completed work for the concrete pad will be paid for at contract price per square foot (SF). Payment shall include, but is not limited to, all structural rebar, forms, concrete, aggregate and sand subbase, supports, hardware, and any other labor, materials, and equipment necessary to complete the work according to the plans and specifications.

18. Drainage Swale: The completed work for Drainage Swale shall be paid for at the contract unit price per linear foot (LF). This payment shall include, but not be limited to, earthwork, mulch blanket, seed, mulch, fertilizer, and all other labor, materials and equipment to complete the work as detailed in the plans and specifications.

19. Backwash / Stormwater Basin Expansion: The completed work for backwash / stormwater basin expansion shall be paid for at the contract unit price square foot (SF) as quoted in the proposal. Price will include all topsoil stripping, screening, and spreading, hauling, dewatering, and peat/organic soil removal necessary to construct the project as indicated on the plans and specifications. This price will include all subgrade undercutting, material stockpiling, excavation, embankment, structure backfilling, compaction (including subbase per MDOT Granular Class II material standards), ditching, construction access stabilization/restoration, and grading necessary to construct the project to the grades and lines indicated on the plans and specifications. The price will consist of all labor, material and equipment necessary to complete the grading and site preparation work for the project. Any surfaces damaged outside of the limits defined on the drawings will be repaired/replaced at no additional cost to the project. Payment shall also include, but not be limited to, all removal and/or replacement of topsoil, grading, any earthwork related to backwash / stormwater basin and all other required earthwork, any other labor, equipment, or materials required to completed the work as specified.

20. Bollards: The completed work for bollards will be paid for at the contract unit price each (EA). Payment shall be based on the actual number of bollards installed as indicated on

the plans or as directed by the Engineer. The unit price shall include all labor, materials, furnishings, and equipment required to complete the installation of the bollards in accordance with the plans and specifications.

21. Connect to Existing Water Main, All Sizes: The completed work for the connection to the existing water main will be paid for at the contract unit price each (EA). Payment shall be based on the actual number of connections made as indicated on the plans or as directed by the Engineer. The unit price shall include exploration to field locate, pressure testing, all fittings, megalugs, concrete thrust blocking / tie rod and accessories necessary to complete the work according to the plans and specifications.

22. Connect to Existing (Live Tap), including Tapping Sleeve & Valve (All Sizes): The completed work for installation and testing of a tapping sleeve and valve of the size as shown on the plans and detailed in the specifications, will be paid for at the contract unit price each (EA). Payment shall be based on the actual quantity constructed of the size specified. Payment includes, but is not limited to, all exploration, excavation, dewatering,, backfilling, stone bedding, density of backfilled materials, labor, equipment, furnishing all materials, accessories and all related items not paid for separately necessary to complete the installation according to the plans and approved methods, all valve materials, labor, equipment, tapping of the existing main, testing, and all other related work necessary to complete the installation according to the plans and specifications. (See Standard Details in the plans).

23. 2” Yard Hydrant, Live Tap: The completed work for installation and testing of 2” yard hydrant assemblies, as shown on the plans and detailed in the specifications, will be paid for at the contract unit price per each (EA) as quoted in the proposal. Payment shall be based on the actual quantity constructed. In addition, fire hydrant assemblies shall consist of a 2” FTP inlet, non-turning rod, locking mechanism, main guard 2” blow-off hydrant with camlock outlet, and all the pipe and fittings necessary to connect the assembly to the water main as per the Plans and Specifications (see Details).

24. 2” Water Sample Line (Post), HDPE DR9: The completed work for the water sample line installation and testing, as shown on the plans and specifications, will be paid for at the contract unit price per linear foot (LF). Payment shall be based on the horizontal field measurements from the point of beginning (connect to existing) to the point where the new water main ends. In addition, payment shall also include, but not be limited to, all fittings, pressure testing, bacti, chlorination, all excavation, dewatering, backfilling, stone bedding,, density of backfilled materials, labor, equipment, furnishing all materials, accessories and all related items not paid for separately necessary to complete the installation according to the plans and approved methods. (See Standard Details in the plans). Tap of main to be performed by DPW staff.

25. 16” C900 Water Main: The completed work for the water main installation and testing, as shown on the plans and specifications, will be paid for at the contract unit price per linear foot (LF). Payment shall be based on the horizontal field measurements from the point of beginning (connect to existing) to the point where the new water main ends. In addition, payment shall also include, but not be limited to, investigation of existing water main, leads and utilities, all fittings, pressure testing, bacti, chlorination, all excavation, dewatering, backfilling, bagging of main, tracer wire, stone bedding, , density of backfilled materials, labor, equipment, furnishing all materials, accessories and all related items not paid for separately necessary to complete the installation according to the plans and approved

methods. (See Standard Details in the plans).

26. 12" C900 Water Main: The completed work for the water main installation and testing, as shown on the plans and specifications, will be paid for at the contract unit price per linear foot (LF). Payment shall be based on the horizontal field measurements from the point of beginning (connect to existing) to the point where the new water main ends. In addition, payment shall also include, but not be limited to, investigation of existing water main, leads and utilities, all fittings, pressure testing, bacti, chlorination, all excavation, dewatering, backfilling, stone bedding, bagging of main, tracer wire, stockpiling in location coordinated with Township, density of backfilled materials, labor, equipment, furnishing all materials, accessories and all related items not paid for separately necessary to complete the installation according to the plans and approved methods. (See Standard Details in the plans).

27. 8" C900 Water Main: The completed work for the water main installation and testing, as shown on the plans and specifications, will be paid for at the contract unit price per linear foot (LF). Payment shall be based on the horizontal field measurements from the point of beginning (connect to existing) to the point where the new water main ends. In addition, payment shall also include, but not be limited to, investigation of existing water main, leads and utilities, all fittings, pressure testing, bacti, chlorination, bagging of main and tracer wire, all excavation, dewatering, backfilling, stone bedding, stockpiling in location coordinated with Township, density of backfilled materials, labor, equipment, furnishing all materials, accessories and all related items not paid for separately necessary to complete the installation according to the plans and approved methods. (See Standard Details in the plans).

28. Insertion Valves, All Sizes: The completed work for installation and testing of insertion valves of the size and type, as shown on the plans and detailed in the specifications, will be paid for at the contract unit price per each (EA). Payment shall be based on the actual quantity constructed of the size and type specified. Payment shall include, but not be limited to, all materials, labor, equipment, furnishing all materials, accessories and all related items not paid for separately necessary to complete the installation according to the plans and approved methods. Payment shall be based on the actual quantity constructed of the size and type specified. (See Standard Details in the plans).

29. Site Restoration: The completed work for restoration will be paid for at the contract lump sum (LS) price. This payment shall be payment in full for SESC measures, raking, seedbed preparation, providing seed, fertilizer, mulch and any labor or equipment necessary to complete the work as per the plans and specifications. If winter seeding is necessary, spring seeding will be required and included in the cost of this item. This item includes the restoration of any area where construction activity has taken place, and includes the work required to restore areas to their pre-construction conditions or better.

FACILITY

30. Filter Room Existing Building Demolition & Removals: The complete work for Filter Room Building Demolition & Removals shall be paid for at the contract unit price of lump sum (LS) and shall include all work necessary to demolish and remove components of the building to facilitate expansion as shown on plans and specifications. Included, but not limited to, removal, disposal, and/or salvage of all construction materials and components including water service lines, plumbing and electricity service, conduit and wiring

removals, disconnections and capping, HVAC removals and salvage, structural removals, man doors and overhead door, concrete floor / footing removals, and accessories to be salvaged and reused, storage of salvaged equipment, temporary supports and bracing, and all other equipment and labor necessary to complete the work in accordance with the plans and specifications. Any damage outside the limits will be repaired/replaced. This cost shall be included in the cost of the project.

31. Pump Room Existing Building Demolition & Removals: The complete work for Filter Room Building Demolition & Removals shall be paid for at the contract unit price of lump sum (LS) and shall include all necessary work to demolish and remove components of the building to facilitate expansion as shown on plans and specifications. Included, but not limited to, removal, disposal, and/or salvage of all construction materials and components including water service lines, plumbing and electricity service, conduit and wiring removals, disconnections and capping, HVAC equipment removals and salvage, structural removals, man doors and overhead door, concrete floor / footing removals, and accessories to be salvaged and reused, storage of salvaged equipment, temporary supports and bracing, and all other equipment and labor necessary to complete the work in accordance with the plans and specifications. Any damage outside the limits will be repaired/replaced. This cost shall be included in the cost of the project.

32. Chemical Feed / Storage Room Existing Building Demolition & Removals: The complete work for Filter Room Building Demolition & Removals shall be paid for at the contract unit price of lump sum (LS) and shall include all work necessary to demolish and remove components of the building to facilitate expansion as shown on plans and specifications. Included, but not limited to, removal, disposal, and/or salvage of all construction materials and components including water service lines, plumbing and electricity service, conduit and wiring removals, disconnections and capping, HVAC equipment removal and salvage, structural removals, man doors and overhead door, concrete floor / footing removals, and accessories to be salvaged and reused, storage of salvaged equipment, temporary supports and bracing, and all other equipment and labor necessary to complete the work in accordance with the plans and specifications. Any damage outside the limits will be repaired/replaced. This cost shall be included in the cost of the project.

33. Maintenance Room Existing Building Demolition & Removals: The complete work for Filter Room Building Demolition & Removals shall be paid for at the contract unit price of lump sum (LS) and shall include all work necessary to demolish and remove components of the building to facilitate expansion as shown on plans and specifications. Included, but not limited to, removal, disposal, and/or salvage of all construction materials and components including water service lines, plumbing and electricity service, conduit and wiring removals, disconnections and capping, HVAC equipment removal and salvage, structural removals, man doors and overhead door, concrete floor / footing removals, and accessories to be salvaged and reused, storage of salvaged equipment, temporary supports and bracing, and all other equipment and labor necessary to complete the work in accordance with the plans and specifications. Any damage outside the limits will be repaired/replaced. This cost shall be included in the cost of the project.

34. Filter Room Building Expansion, including Doors & Windows: The complete work for the Filter Room Building Expansion shall be paid for at a contract unit price per square foot (SF). Payment shall be based on the actual quantity constructed. The unit price shall include, but not limited to all earthwork, materials, labor, equipment, furnishing materials, accessories, and all related items not paid for separately necessary to complete the work

according to the plans and specifications. Scope of work includes excavation, foundation and footing, masonry, concrete flatwork, equipment pads, steel joist and decking, doors, membrane, scuppers, insulation, windows, foundation, painting, and all other equipment, materials and labor required to complete the work in accordance with the plans and specifications.

35. Filter Room Expansion – Electrical, Plumbing, HVAC, & Lighting: The completed work for Filter Room electrical, plumbing, HVAC and lighting will be paid for at the contract lump sum (LS) price. This payment shall include, but is not limited to, all electrical/controls wiring & conduit, plumbing including piping, floor drains and roof drains, water service line including RPZ relocation, piping, fittings and valves, exhaust fans, louvers, HVAC equipment relocations, interior and exterior lighting, water service lines including piping, fittings and valves, as shown on drawings and called for in specifications. Included, but not limited to, wires, conduit, raceways, supports, junction boxes, relays, pipes, valves, fittings, ducts, heaters, louvers, connections to existing, testing, permits and fees, and all other labor, materials, and equipment required to complete construction in accordance with the plans and specifications.

36. Pump Room Building Expansion, including Doors & Windows: The complete work for the Pump Room Building Expansion shall be paid for at a contract unit price per square foot (SF). Payment shall be based on the actual quantity constructed. The unit price shall include, but not limited to all earthwork, materials, labor, equipment, furnishing materials, accessories, and all related items not paid for separately necessary to complete the work according to the plans and specifications. Scope of work includes excavation, foundation and footing, masonry, concrete flatwork, equipment pads, steel joist and decking, membrane and scuppers, doors, windows, insulation, foundation, painting, and all other equipment, materials and labor required to complete the work in accordance with the plans and specifications.

37. Pump Room Expansion – Electrical, Plumbing, HVAC, & Lighting: The completed work for Pump Room electrical, plumbing, HVAC and lighting will be paid for at the contract lump sum (LS) price. This payment shall include, but is not limited to, all electrical/controls wiring & conduit, water service lines including valves and fittings, plumbing including piping, sample line conduit, floor drains and roof drains, exhaust fans, louvers, HVAC equipment relocation and connections, garage door opener relocation and connection, interior and exterior lighting as shown on drawings and called for in specifications. Included, but not limited to, wires, conduit, raceways, supports, junction boxes, relays, pipes, valves, fittings, ducts, heaters, louvers, testing, connection to existing, permits and fees, and all other labor, materials, and equipment required to complete construction in accordance with the plans and specifications.

38. Chemical Feed / Storage Room Building Expansion, including Doors & Windows: The complete work for the Chemical Feed & Storage Room Building Expansion shall be paid for at a contract unit price per square foot (SF). Payment shall be based on the actual quantity constructed. The unit price shall include, but not limited to all earthwork, materials, labor, equipment, furnishing materials, accessories, and all related items not paid for separately necessary to complete the work according to the plans and specifications. Scope of work includes excavation, foundation and footing, insulation, masonry, concrete flatwork, equipment pads, steel joist and decking, membrane and scuppers, doors, windows, foundation, painting, and all other equipment, materials and labor required to complete the work in accordance with the plans and specifications.

39. Chemical Feed / Storage Room Expansion – Electrical, Plumbing, HVAC, & Lighting: The completed work for Chemical Room electrical, plumbing, HVAC and lighting will be paid for at the contract lump sum (LS) price. This payment shall include, but is not limited to, all electrical/controls wiring & conduit, plumbing including eyewash, piping, floor drains and roof drains, water service line including fittings and valves, exhaust fans, louvers, interior and exterior lighting, HVAC equipment relocation and connection, including connections to existing as shown on drawings and called for in specifications. Included, but not limited to, wires, conduit, raceways, supports, junction boxes, relays, pipes, valves, fittings, ducts, heaters, louvers, testing, connection to existing, permits and fees, and all other labor, materials, and equipment required to complete construction in accordance with the plans and specifications.

40. Maintenance Garage Building Expansion, including Doors and Windows: The complete work for the Maintenance Garage Building Expansion shall be paid for at a contract unit price per square foot (SF). Payment shall be based on the actual quantity constructed. The unit price shall include, but not limited to all earthwork, materials, labor, equipment, furnishing materials, accessories, and all related items not paid for separately necessary to complete the work according to the plans and specifications. Scope of work includes excavation, foundation and footing, masonry, insulation, concrete flatwork, equipment pads, steel joist and decking, membrane and scuppers, doors, windows, foundation, painting, and all other equipment, materials and labor required to complete the work in accordance with the plans and specifications.

41. Maintenance Garage Expansion – Electrical, Plumbing, HVAC, & Lighting: The completed work for Maintenance Garage electrical, plumbing, HVAC and lighting will be paid for at the contract lump sum (LS) price. This payment shall include, but is not limited to, all electrical/controls wiring & conduit, plumbing including piping, floor drains and roof drains, water service line including fittings and valves, exhaust fans, louvers, interior and exterior lighting, HVAC equipment and garage door opener relocation and connection, including connections to existing as shown on drawings and called for in specifications. Included, but not limited to, wires, conduit, raceways, supports, junction boxes, relays, pipes, valves, fittings, ducts, heaters, louvers, testing, connection to existing, permits and fees, and all other labor, materials, and equipment required to complete construction in accordance with the plans and specifications.

42. Existing Process Piping Removal & Abandonments: The completed work for Existing Process Pipe Removals & Abandonments shall be paid for at the contract unit price per lump sum (LS). Payment shall include, but not be limited to, removal, disposal and abandonment of all process piping, valves, fittings, and appurtenances as described on the plans, temporary support and restraint, wall patching, grout and painting and all other materials, labor, equipment and accessories required to complete the work in accordance with the plans and specifications.

43. Proposed Process Piping, Including Valves, Fittings & Appurtenances: : The completed work for the Proposed Process Piping, as shown on the plans and specifications, will be paid for at the contract unit price per lump sum (LS). Payment shall include, but not be limited to, all pipe, spool pieces, fittings, connections, joints, bends, supports, valves, sample taps, gauges, painting, waterproofing and linkseal, screens, appurtenances and all other materials, labor, equipment, furnishing all materials, testing, bacti, restraints, supports and brackets, accessories and all related items not paid for separately necessary to complete the installation according to the plans and approved methods.

44. Instrumentation (Flow Meters & Transducers): Shall be paid for on a lump sum basis (LS) and shall include, but not limited to, wiring, conduit, level transmitter/transducer removal of existing and relocation, flow meter, removal of existing remote readers and installation of new remote heads, extra spool piece, disinfection, testing, calibration, and all other equipment and labor necessary to complete the work according to the plans and specifications.

45. Horizontal Pressure Filter, Including Face Piping, Valves, Fittings, Aerator, & Panels: The completed work for installation and testing of the Horizontal Pressure Filter, as shown on the plans and detailed in the specifications, will be paid for at the contract unit price lump sum (LS). Payment shall be based on work completed as indicated on the plans and as directed by the Engineer. This item shall also include, but not be limited to, pressure filter, media, face piping, valves, control panel, pressure aerator, and connections to piping compliant with manufacturer's recommendation, anchoring, piping, fittings, valves, conduit, pressure testing and sampling, labor, equipment, furnishing materials, painting, accessories (as required), labor installation, furnishing materials, start-up, and applicable permits and fees for all accessories and related work not paid for separately in order to install and test the filter as shown on the plans, specifications and as directed by the Owner and Engineer. All programming to be provided by Owners' SCADA Integrator through SCADA Allowance Bid Item.

46. Horizontal Pressure Filter Room Electrical/Controls, Wiring & Conduit: The completed work shall be paid for on a lump sum basis (LS). Payment shall include all electrical/controls wiring & conduit as shown on drawings and called for in specifications as coordinated with SCADA Contractor and Manufacturer. Included, but not limited to, wires, conduit, raceways, supports, junction boxes, relays, installation of Tonka Panel and coordination with integration / programming operations with SCADA panel, testing, permits and fees, and all other labor, materials, and equipment required to complete construction in accordance with the plans and specifications.

47. Horizontal Pressure Filter Backwash Piping: The complete work for pressure filter backwash piping shall be paid for on a lump sum basis (LS) and shall include all piping related to backwash required to complete the system as not provided through Tonka package, including but not limited to, piping, fittings, valves, valve actuators, bends, testing, and all other materials, labor, equipment, furnishing all materials, accessories and all related items not paid for separately necessary to complete the installation according to the plans and approved methods.

48. Backwash Pit, Including Grating & Discharge Connection: The completed work for the backwash pit will be paid for at the contract lump sum (LS) price. This payment shall include all work for construction of the backwash pit structure and includes but is not limited to all structural concrete, forming, structural rebar, anchors, ties, water seals, grout, aluminum grating, labor, backwash discharge piping connection to existing piping, SDR 35 piping and connection to existing discharge line, fittings, bends, investigation to locate existing discharge line, all excavation, dewatering, backfilling, stone bedding, density of backfilled materials, labor, equipment, furnishing all materials, accessories and all related items not paid for separately necessary to complete the installation according to the plans and approved methods.

49. Trench Drain, Including Grating: The completed work for the trench drain will be paid for at the contract linear foot (LF) price. This payment shall include all work for construction

of the trench drain structure and includes but is not limited to all structural concrete, forming, structural rebar, anchors, ties, water seals, grout, grate, backfilling, stone bedding, density of backfilled materials, aluminum grating, labor, equipment, accessories and all related items, not paid for separately, necessary to complete the installation according to the plans and specifications.

50. 3" Sch 80 PVC Airwash Piping, Valves, Fittings & Appurtenances, Including Demolition of Existing: The completed work for Airwash piping shall be paid for on a lump sum basis (LS) and shall include all materials and equipment related to 3" sch 80 PVC Airwash piping not paid for separately, necessary to complete the work in accordance with the plans and specifications. Included but not limited to, demolition, removals, disposals, and installation of new piping, fittings, valves, hangers, supports, connection to existing, and all other labor, materials, and labor to complete the work as described in the plans and specifications.

51. Chemical Feed Sample Line & Compressed Air Poly Tubing: The completed work for chemical feed sample line and compressed air poly tubing shall be paid for on a lump sum basis (LS). Payment shall include, but is not limited to, all flexible tubing, fittings, connections to sample sink in laboratory, connection to aerator and sample tap lines and chemical injection taps, adaptors, supports, hangers, and all other labor, materials, and equipment necessary to complete the work as described in the plans and specifications.

52. Proposed High Service Pump #4: The completed work for installation and testing of the high service pump, as shown on the plans and detailed in the specifications, will be paid for at the contract unit price lump sum (LS). Payment shall be based on the work completed as indicated on the plans or as directed by the Engineer. This item shall also include, but not be limited to, pump, motor, check valve, flex restrain, pressure gauges, house keeping pad, connections and installation per manufacturer's recommendation, anchoring, piping, fittings, testing, testing and sampling, labor, equipment, furnishing materials, painting, accessories (as required), labor installation, furnishing materials, start-up, and applicable permits and fees for all accessories and related work not paid for separately in order to install and test the pumps as shown on the plans, specifications and as directed by the Owner and Engineer. All programming to be provided by Owners' SCADA Integrator through SCADA Allowance Bid Item.

53. Pump Room Electrical/Controls, Wiring & Conduit: The completed work shall be paid for on a lump sum basis (LS). Payment shall include all electrical/controls wiring & conduit as shown on drawings and called for in specifications. Included, but not limited to, wires, conduit, raceways, supports, junction boxes, relays, installation of VFD, testing, permits and fees, and all other labor, materials, and equipment required to complete construction in accordance with the plans and specifications. VFD purchase and programming to be provided by Owners' SCADA Integrator through SCADA Allowance Bid Item.

54. Chemical Feed Skids: The completed work for chemical feed skid will be paid for at the contract unit price each (EA). Payment shall be based on the actual number of skids provided as indicated on the plans or as directed by the Engineer. Payment includes but is not limited to the supply, installation, calibration and testing of chemical feed pump skid, flow indicators, chemical feed piping, installation of pre and post chlorine pumps as supplied by owner, sample taps, connections to existing, and all other equipment and labor necessary to complete the work and install compliant with manufacturer recommendations. All programming to be provided by Owners' SCADA Integrator through SCADA

Allowance Bid Item.

55. Chemical Feed Pump: The completed work for the Chemical Feed Pump, as shown on the plans and detailed in the specifications, shall be paid for at the contract unit price each (EA). Payment shall be based on the actual number of pumps provided on the plans and per the specifications Payment includes but is not limited to the removal and storage of existing equipment and supply, installation, calibration and testing of chemical feed pump chemical feed tubing, pump install onto skid unit, sample taps, connections to existing, and all other equipment and labor necessary to complete the work and install compliant with manufacturer recommendations. All programming to be provided by Owners' SCADA Integrator through SCADA Allowance Bid Item.

56. Chemical Feed Room Electrical/Controls, Wiring & Conduit: The completed work shall be paid for on a lump sum basis (LS). Payment shall include all electrical/controls wiring & conduit as shown on drawings and called for in specifications. Included, but not limited to, wires, conduit, raceways, supports, junction boxes, relays, testing, permits and fees, and all other labor, materials, and equipment required to complete construction in accordance with the plans and specifications. All programming to be provided by Owners' SCADA Integrator through SCADA Allowance Bid Item.

57. 2" & 4" Sch 40 PVC Conduit & Fittings for Chemical Feed, Including Demolition of Existing: The completed work for Air release piping shall be paid for on a lump sum basis (LS) and shall include all materials and equipment related to sch 40 PVC conduit/piping not paid for separately, necessary to complete the work in accordance with the plans and specifications. Included but not limited to, demolition, removals, disposals, piping, fittings, hangers, supports, and all other labor, materials, and labor to complete the work as described in the plans and specifications.

58. 2" Sch 40 PVC Conduit & Fittings for Compressed Air, Including Demolition of Existing: The completed work for Air release piping shall be paid for on a lump sum basis (LS) and shall include all materials and equipment related to sch 40 PVC conduit/piping not paid for separately, necessary to complete the work in accordance with the plans and specifications. Included but not limited to, demolition, removals, disposals, piping, fittings, hangers, supports, and all other labor, materials, and labor to complete the work as described in the plans and specifications.

59. SCADA Allowance (Instrumentation / Control Contractor): These costs include coordination and fees incurred by Township Integrator (Perceptive Controls, Contact: Larry West) to provide programming, SCADA equipment, Variable Frequency Drive and coordination efforts with contractor and manufacturers. Eligible costs include, SCADA equipment, VFD's, programming and configuration with existing Township telemetry and startup, refer to attached Scope of Services provided by Perceptive. Any additions and/or reductions in the allowance must be approved through the Contract Change Order process. Upon completion of the project and submission of the final application for payment, the contractor will not be paid for any positive balance remaining in "SCADA Allowance".

60. Facility Restoration: The completed work for facility restoration will be paid for at the contract lump sum (LS) price. This payment shall be payment in full any labor or equipment necessary to complete restoration of the treatment facility back to pre-construction standards or better in all areas where construction activities have taken place.

MISSION WATER TREATMENT PLANT

1. Mobilization, Max 5%: The completed work for mobilization will be paid for at the contract lump sum (LS) price. This payment shall be payment in full for equipment and material delivery, transportation and storage, bonds, insurances, permits and fees, all coordination with the Township, Engineers, Regulatory Agencies, utility companies and all other labor and materials.

2. Gravity Filter Removal.: The complete work for removal of existing gravity filter shall be paid for at the contract price lump sum (LS). Payment shall include, but is not limited to, removal and disposal of existing materials and accessories, removal of existing piping and fittings, temporary and permanent supports and any other labor, materials, and equipment necessary to complete removal of gravity filter in accordance with the plans and specifications. If filter media is found within vessel, it must be disposed of as a special waste in an approved landfill by contractor at their expense. Proof of disposal shall be provided to owner.

3. Roof Removal & Replacement: Shall be paid for on a lump sum basis (LS) and shall include, but is not limited to, removal, disposal, and replacement of the existing roof as required for removal of the existing gravity filter to the extents shown and detailed on the plans and specifications. Disposal of non-salvageable items are to be the responsibility of the contractor at no additional cost. The price will consist of all labor, material, and equipment necessary to complete the work as shown on the plans and detailed in the specifications.

4. Mechanical Piping, Valves, & Fittings Modifications: Shall be paid for on a lump sum basis (LS) and shall include all modifications to piping required to connect to the existing watermain as shown on the plans and specifications. Work includes, but is not limited to, piping, valves, fittings, restraints, hangers, supports and anchors, applicable pipe taps, pressure gauges, sample taps, valves, disinfection, pressure testing, permits and all other equipment and labor necessary to complete the proposed pressure filter piping.

5. Concrete Removal & Replacement: The completed work for the concrete foundation modification/restoration will be paid for at the contract lump sum (LS) price. This payment shall include all work for restoration of the concrete foundation in location of existing gravity filter to be removed and includes but is not limited to removal of all concrete including rebar, and installation of new concrete including , forming, structural rebar, reinforcement, anchors, ties, grout, backfilling, stone bedding, density of backfilled materials, labor, equipment, accessories and all related items, not paid for separately, necessary to complete the installation according to the plans and specifications.

6. Flow Meter, including Electrical & Conduit: The completed work shall be paid for on a lump sum basis (LS). Payment shall include all electrical/controls wiring & conduit as shown on drawings and called for in specifications. Included, but not limited to, flow meter, wires, conduit, raceways, supports, junction boxes, relays, remote display calibration, testing, permits and fees, and all other labor, materials, and equipment required to complete construction in accordance with the plans and specifications. All programming to be provided by Owners' SCADA Integrator through SCADA Allowance Bid Item.

7. 8" C900 Transmission Main: The completed work for the water main installation and testing, as shown on the plans and specifications, will be paid for at the contract unit price per linear foot (LF). Payment shall be based on the horizontal field measurements from the point of beginning (connect to existing) to the point where the new water main ends. In addition, payment shall also include, but not be limited to, investigation of existing water main, leads and utilities, all fittings, pressure testing, bacti, chlorination, all excavation, dewatering, backfilling, stone bedding, stockpiling in location coordinated with Township, density of backfilled materials, labor, equipment, furnishing all materials, accessories and all related items not paid for separately necessary to complete the installation according to the plans and approved methods. (See Standard Details in the plans).

8. 8" Gate Valve: The completed work for installation and testing of gate valves of the size and type, as shown on the plans and detailed in the specifications, will be paid for at the contract unit price per each (EA). Payment shall be based on the actual quantity constructed of the size and type specified. Payment shall include, but not be limited to, all excavation, dewatering, backfilling, stone bedding, density of backfilled materials, concrete thrust block and tie rods and bagging, labor, equipment, furnishing all materials, accessories and all related items not paid for separately necessary to complete the installation according to the plans and approved methods. (See Standard Details in the plans).

9. Connect to Existing Water Main: The completed work for the connection to the existing water main will be paid for at the contract unit price each (EA). Payment shall be based on the actual number of connections made as indicated on the plans or as directed by the Engineer. The unit price shall include pressure testing, all fittings, and accessories necessary to complete the work according to the plans and specifications.

10. SESC Control & Restoration: The completed work for restoration will be paid for at the contract lump sum (LS) price. This payment shall be payment in full for SESC measures, raking, seedbed preparation, providing seed, fertilizer, mulch and any labor or equipment necessary to complete the work as per the plans and specifications. Payment shall also include all equipment and materials to install erosion control fencing and other temporary measures as mandated by the County and Township and as shown on the plans or as required by the Engineer If winter seeding is necessary, spring seeding will be required and included in the cost of this item. This item includes the restoration of any area where construction activity has taken place, and includes the work required to restore areas to their pre-construction conditions or better.

11. SCADA Allowance (Instrumentation / Control Contractor): These costs include coordination and fees incurred by Township Integrator (Perceptive Controls, Contact: Larry West) to provide programming, SCADA equipment, coordination efforts with contractor and manufacturers. Eligible costs include, SCADA equipment, programming and configuration with existing Township telemetry and startup, refer to attached Scope of Services provided by Perceptive. Any additions and/or reductions in the allowance must be approved through the Contract Change Order process. Upon completion of the project and submission of the final application for payment, the contractor will not be paid for any positive balance remaining in "SCADA Allowance".

WELL SITE NO. 12

1. Mobilization, Max 5%: The completed work for mobilization will be paid for at the contract lump sum (LS) price. This payment shall be payment in full for equipment and material delivery, transportation and storage, bonds, insurances, permits and fees, all coordination with the Township, Engineers, Regulatory Agencies, utility companies and all other labor and materials.

2. Well House Building: The complete work for the Pump Room Building Expansion shall be paid for at a contract unit price per square foot (SF). Payment shall be based on the actual quantity constructed. The unit price shall include, but not limited to all earthwork, materials, labor, equipment, furnishing materials, accessories, and all related items not paid for separately necessary to complete the work according to the plans and specifications. Scope of work includes excavation, foundation and footing, masonry, concrete flatwork, equipment pads, insulation, trusses, roof, doors, windows, foundation, painting, and all other equipment, materials and labor required to complete the work in accordance with the plans and specifications.

3. Generator Set: The work to complete Natural Gas Generator Set shall be paid for at the contract unit price per each (EA) as quoted in the proposal. Payment shall be based on the actual number of generators, which includes, but is not limited to, materials shown in plans and detailed in the specifications. Included, but not limited to, supply and installation of proposed equipment, concrete pad, testing, site wiring, conduit, gas service connection, regulatory valve, coordination with Consumers, pressure testing, relays, raceways, junction boxes, etc. and all other equipment and labor necessary to complete the generator set not paid for separately, necessary to complete the installation according to the plans and specifications. All programming to be provided by Owners' SCADA Integrator through SCADA Allowance Bid Item.

4. Automatic Transfer Switch (ATS): The complete work for the ATS shall be paid for at the contract unit price per each (EA) as quoted in the proposal. Payment shall be based on the actual number of automatic transfer switches installed, which includes, but is not limited to, materials shown in plans and detailed in the specifications. Included, but not limited to, supply and installation of proposed equipment, ATS and accessories, testing, site wiring, conduit, connections, relays, raceways, junction boxes, etc. and all other equipment and labor necessary to complete the automatic transfer switch not paid for separately, necessary to complete the installation according to the plans and specifications.

5. Mechanical Piping, Valves, & Fittings: Shall be paid for on a lump sum basis (LS) and shall include all site piping as shown on the plans and specifications. Work includes, but is not limited to, excavation, salvage and reuse of existing piping and fittings, backfill, density testing, piping, fittings, restraints, hangers and anchors, applicable pipe taps, pressure gauges, sample taps, flow meters, valves, dewatering, disinfection, pressure testing, permits and all other equipment and labor necessary to complete the well house piping.

6. Instrumentation (Flow Meter & Transducer): Shall be paid for on a lump sum basis (LS) and shall include, but not limited to, wiring, conduit, level transmitter/transducer, flow meter, electrical supply, disinfection, and all other equipment and labor necessary to complete the work according to the plans and specifications. All programming to be provided by Owners' SCADA Integrator through SCADA Allowance Bid Item.

7. Well House Electrical, Lighting, & HVAC: Shall be paid for on a lump sum basis (LS) and shall include all work to install flow meters, pumps, pressure transducers as shown on the plans and specifications. This shall include, but is not limited to, electrical/controls wiring & conduit, plumbing, heating, cooling, ventilation, and interior and exterior lighting as shown on drawings and called for in specifications. Included, but not limited to, wires, conduit, raceways, supports, junction boxes, installation of VFD, relays, pipes, valves, fittings, ducts, heaters, louvers, testing, permits and fees, and all other equipment and labor necessary to complete the work according to the plans and specifications. VFD purchase and programming to be provided by Owners' SCADA Integrator through SCADA Allowance Bid Item.

8. Connect to Existing Water Main, 8": The completed work for the connection to the existing water main will be paid for at the contract unit price each (EA). Payment shall be based on the actual number of connections made as indicated on the plans or as directed by the Engineer. The unit price shall include pressure testing, all fittings, and accessories necessary to complete the work according to the plans and specifications.

9. 8" C900 Water Main: The completed work for the water main installation and testing, as shown on the plans and specifications, will be paid for at the contract unit price per linear foot (LF). Payment shall be based on the horizontal field measurements from the point of beginning (connect to existing) to the point where the new water main ends. In addition, payment shall also include, but not be limited to, investigation of existing water main, leads and utilities, all fittings, pressure testing, bacti, chlorination, all excavation, dewatering, backfilling, stone bedding, density of backfilled materials, labor, equipment, furnishing all materials, accessories and all related items not paid for separately necessary to complete the installation according to the plans and approved methods. (See Standard Details in the plans).

10. Site Electrical Allowance: These costs include coordination and fees incurred by contractor to provide electrical service to the Well and Well House. Price shall include, but is not limited to, coordination and fees incurred by the electric company, and additionally shall include, but is not limited to, restoration, conduit, transformer and pad (as applicable), meterbox and all associated labor and materials. Any additions and/or reductions in the allowance must be approved through the Contract Change Order process. Costs is intended to utilized existing 6" conduit that was installed by others parallel to watermain and from end point run underground to wellhouse and well. Upon completion of the project and submission of the final application for payment, the contractor will not be paid for any positive balance remaining in "Site Electrical Allowance".

11. Fiber Optic Allowance: These costs include coordination and fees incurred by contractor to provide fiber optic service to the Well House. Eligible costs include, utility company coordination, materials, conduit, connections, and any other labor, materials and equipment required to complete the utility connection as described. Costs is intended to utilized existing 2" conduit that was installed by others parallel to watermain and from end point run underground to wellhouse. Any additions and/or reductions in the allowance must be approved through the Contract Change Order process. Upon completion of the project and submission of the final application for payment, the contractor will not be paid for any positive balance remaining in "Fiber Optic Allowance".

12. SESC Controls & Restoration: The completed work for restoration will be paid for at the contract lump sum (LS) price. This payment shall be payment in full for SESC measures,

raking, seedbed preparation, providing seed, fertilizer, mulch and any labor or equipment necessary to complete the work as per the plans and specifications. Payment shall also include all equipment and materials to install erosion control fencing and other temporary measures as mandated by the State and Township and as shown on the plans or as required by the Engineer If winter seeding is necessary, spring seeding will be required and included in the cost of this item. This item includes the restoration of any area where construction activity has taken place, and includes the work required to restore areas to their pre-construction conditions or better.

13. SCADA Allowance (Instrumentation / Control Contractor): SCADA Allowance (Instrumentation / Control Contractor): These costs include coordination and fees incurred by Township Integrator (Perceptive Controls, Contact: Larry West) to provide programming Eligible costs include, SCADA equipment and VFD, programming and configuration with existing Township telemetry, coordination with trades, and startup. Any additions and/or reductions in the allowance must be approved through the Contract Change Order process. Upon completion of the project and submission of the final application for payment, the contractor will not be paid for any positive balance remaining in "SCADA Allowance".

14. Natural Gas Allowance: These costs include coordination and fees incurred by contractor to provide natural gas service to the Well House. Eligible costs include, all utility company coordination, gas service, meter box, materials, piping, fittings, valves, connections, and any other labor, materials and equipment required to complete the utility connection as described and as required by the utility company. Any additions and/or reductions in the allowance must be approved through the Contract Change Order process. Upon completion of the project and submission of the final application for payment, the contractor will not be paid for any positive balance remaining in "Natural Gas Allowance".

PART 2 – PRODUCTS
Not used

PART 3 – EXECUTION
Not used

END OF SECTION 01270

SECTION 11242 – CHEMICAL FEED EQUIPMENT

PART 1 – GENERAL

1.01 SUMMARY

A. Chemical metering skid system shall be a complete turnkey system and inclusive polyethylene structure, piping, and any ancillary components to ensure the reliable metering of chemical into a treatment process. Liquid handling devices will be supplied and installed by the Owner. The skid shall permit the installation of any Blue-White Industries Municipal FLEXFLO peristaltic metering pumps.

B. The key components of skid system are as follows:
   a. PVC Calibration Column
   b. Back Pressure Valve
   c. Discharge Pressure Gauge with Guard
   d. Discharge Pressure Switch with Guard
   e. Fabricated Polypropylene Shelf with pre-piped Back Panel in the following configuration, duplex-duty/standby.
   f. Flow Meter with Strainer

C. Accessories of this system are as follows:
   a. PVC Piping / Unions
   b. EDPM Seals
   c. ¼" ID PE Tubing

1.02 RELATED SECTIONS

A. SECTION 09900 – PAINTING

1.03 QUALITY ASSURANCE

A. Chemical Metering System (skid) shall be manufactured by the existing chemical metering pump manufacturer (Blue White) and shall provide skid package accessories as a complete turnkey system. Skids manufactured by third parties such as separate skid fabricators, pump distributors or pump representatives are not acceptable.

B. Regulatory Requirements:
   1. Comply with standards of authorities having jurisdiction for potable-water-service piping, including materials, installation, testing, and disinfection.

C. Piping materials shall bear label, stamp, or other markings of specified testing agency.

D. NSF Compliance:
   1. Comply with NSF 14 for plastic potable-water-service piping. Include marking "NSF-pw" on piping.

   2. Comply with NSF 61 for materials for water-service piping and specialties for domestic water.

1.04 FIELD MEASUREMENTS

A. The Contractor shall become familiar with details of the work, verify all dimensions in the field, and shall advise the Engineer of any discrepancy before performing the work.

1.05 DELIVERY AND STORAGE

A. Material and equipment delivered and placed in storage shall be stored with protection from the weather, excessive humidity and excessive temperature variation, dirt, dust, or other contaminants.

B. Shipping
   a. Ship the Chemical Metering System completely assembled and ready for installation. Ship tubing separately for field installation and process line connection by contractor.
   b. Pack all additional spare parts in containers bearing labels clearly designating contents and pieces of equipment for which intended.
   c. Deliver spare parts at the same time as pertaining equipment. Deliver to Owner after completion of work.

C. Receiving
   a. Contractor to inspect and inventory items upon delivery to site.
   b. Contractor to store and safeguard equipment, material, instructions, and spare parts in accordance with manufacturer's written instructions.

1.06 SHOP DRAWINGS

A. Product Data: For equipment, valving, and all piping products to be used in the work.

B. The submittals shall be submitted to the Engineer for review and approval prior to installation.

PART 2 – PRODUCTS

2.01 CHEMCIALS

A. Disinfecting Agent: AWWA B300, “Hypochlorites”. Sodium-hypochlorite (NaCl) solution with 12.5% chlorine in bulk quantity.
B. Corrosion Scale Inhibitor: AWWA B500, “Orthophosphates”, Orthophosphate (PO_4) solution with 50% orthophosphate in bulk quantity.

2.02 CHEMICAL METERING PUMP

A. General: Chemical Metering Pump to be provided for phosphate dosing application. Phosphate Pump supplied and installed by Contractor.

B. Metering Pump: positive displacement, peristaltic type tubing pump with a variable speed DC motor, non-spring-loaded roller assembly located in the pumphead, integral tube failure detection system, and peristaltic pump tubing assembly with attached connection fittings. Flex-Pro M3 model shall be capable of output volumes from 0.0002 to 33.3 gallons per hour.

   1. There shall be no valves, diaphragms, springs, or dynamic seals in the fluid path.

Process fluid shall contact the pump tubing assembly and connection fittings only.

2. Capable of self-priming at the maximum rated pressure of up to 125 PSI.
3. Capable of running dry without damage.
4. Pump rollers shall be capable of operating in either direction at the maximum rated pump pressure.
5. Pump rollers shall be capable of operating in either direction without output variation.
6. Suction lift shall be 30 feet of water.
7. Pump shall be warranted by the manufacturer for a period of five years. Warranty shall include chemical damage to the pump head and roller assembly for a period of two years.

C. Pump Head: single, unbroken track with a clear removable cover.
   1. Tube failure detection sensors shall be wholly located in the pumphead. Tube failure detection system shall not trigger with water contact. Float switch type switches alone shall not be used. Process fluid waste ports or leak drains alone shall not be provided as the sole means of protection.
   2. Squeeze rollers with encapsulated ball bearings shall be directly coupled to a one-piece thermoplastic rotor. Four Nylon rollers shall be provided; two squeeze rollers for tubing compression shall be located 180 degrees apart and two guide rollers that do not compress the tubing shall be located 180 degrees apart. The roller diameters and occlusion gap shall be factory set to provide the optimum tubing compression; field adjustment shall not be required. Spring-loaded or hinged rollers shall not be used.
   3. Rotor assembly shall be installed on a D-shaped, chrome plated motor shaft and removable without tools.
   4. For tubing installation and removal, rotor assembly shall be rotated by the motor drive at 6 RPM maximum when the pumphead cover is removed. Hand cranking of the rotor assembly shall not be required.
   5. Pump head and tubing compression surface shall be corrosion resistant Valox thermoplastic.
   6. The pump head cover shall be clear, annealed acrylic thermoplastic with an integral ball bearing fitted to support the overhung load on the motor shaft. Cover shall include an imbedded magnetic safety interlock which will limit the motor rotation speed to 6 RPM when removed.
   7. Cover shall be positively secured to the pump head using four thumb screws. Tools shall not be required to remove the pump head cover.

D. Pump Tube Assembly
   1. To ensure pump performance and accuracy, only tubing provided by the manufacturer is acceptable.
   2. Pump tube shall be assembled to connection fittings of PVDF material.
   3. Connection fittings shall be permanently attached to the tubing at the factory. To prevent tubing misalignment and ensure accuracy, fittings shall insert into keyed slots located in the pump head and secured in place by the pump head cover.
   4. Connection fittings shall be 1/2” M/NPT.
   5. Tube sizes and connections shall be measured in inches.
   6. Tube style to be as manufacturer recommended.

E. Drive System: Shall be factory installed and totally enclosed in a NEMA 4X, (IP66) wash-down enclosure. Capable of operating on 110/130VAC 50/60 Hz, or 208/250VAC 50/60 Hz, single phase supply, user configurable via a selection switch located in the junction box.

1. Motor:
    a. Reversible, 1/8 HP DC gear motor rated for continuous duty.
    b. Motor shall include overload protection.
    c. The maximum gear motor RPM shall be 130 RPM
2. Enclosure:
    a. Pressure cast aluminum with acidic liquid iron phosphate three-stage clean and coat pretreatment and exterior grade corrosion resistant polyester polyurethane powder coat.
    b. Rated NEMA 4X (IP66).
    c. Provided with 316SS floor/shelf level mounting brackets and hardware.
    d. A wiring compartment shall be provided for connection of input/output signal wires and alarm output loads to un-pluggable type terminal block connectors. Terminal board shall be positively secured to the rear of the pump housing by two polymeric screws and fully enclosed by the wiring compartment cover. The terminal board shall not be disturbed by the removal of the wiring compartment cover. Ribbon cables shall not be used in the wiring compartment. Conduit hubs, liquid-tight connectors, connector through holes and tapped holes shall be sized in U.S. inches.

F. Control Circuitry:
1. All control circuitries shall be integral to the pump and capable of adjusting the pump motor speed from 0.01% to 100.0% in 0.01% increments less than 10% motor speed, in 0.01% and in 0.1% increments greater than 10% motor speed (10,000:1 turndown ratio).
2. The pump output shall be capable of being manually controlled via front panel touchscreen. The pump motor speed shall be adjustable from 0.01% to 100.0% in 0.01% increments less than 10% motor speed and in 0.1% increments greater than 10% motor speed.
3. The pump output shall be capable of being remotely controlled via 4-20mA analog input. The input resolution shall be 0.01 of input value and capable of adjusting the pump motor speed from 0% to 100.0% motor speed in 0.1% increments. Four values shall be user configurable to define the low and high points on the output slope: a low input value, the required pump percentage of motor speed at the low input value, a high input value, the required pump percentage of motor speed at the high input value.
4. The pump output shall be capable of being remotely controlled via TTL/CMOS digital high-speed pulse type input and an AC sine wave type pulse input in the range of 0 to 1,000 Hz. The frequency resolution shall be 1 Hz and capable of adjusting the pump motor speed from 0% to 100.0% motor speed in 0.1% increments. Four values shall be user configurable to define the low and high points on the output slope: a low input value, the required pump percentage of motor speed at the low input value, a high input value, the required pump percentage of motor speed at the high input value.
5. The pump output shall be capable of being remotely controlled via pulse triggered batching. The pump shall accept a TTL/CMOS digital pulse type input and a contact closure type pulse input in the range of 1 to 5,629,499,534,21,312 pulses per batch. The batch time shall be adjustable from 1 to 5,629,499,534,21,312 seconds. The pump motor speed during the batch shall be adjustable from 0% to 100.0% motor speed in 0.1% increments.
6. Pump shall be capable of remote priming via non-powered contact closure loop
7. The pump output shall be capable of being controlled via EtherNet/IP, Modbus TCP/IP, or Profibus. Device configuration shall be as follows:

Control and Status Mapping for Profibus and EtherNet/IP:

Ethernet/IP and Profibus: Output Data (PLC to Pump) - Pump Control

Offset	Name	Description
0 - 1	Motor Percent Speed	Up to 2 decimal places, with most significant Offset representing the whole number and least significant Offset representing the decimal number. (Eg. 50.15 => MSB = 50, LSB = 15)
2	Motor Direction	0 = Clockwise, 1 = Counter-clockwise.
3	Run State	Set the current run state of the pump by toggling the corresponding bits, where 0 = deactivated and 1 = activated. Bit 0 = Prime, Bit 1 = Start, Bit 2 = Stop
4	Reset Alarms	Reset alarms (TFD/DFD, FVS) on the pump. 0 = nothing, 1 = reset alarms. Only reset on a 0 -> 1 transition
5	Reset Tube Stats	Reset tube revolutions counter and hours ran
6	Cyclic Counter Direction	Cyclic counter direction (debugging purpose only). 0 = count up, 1 = count down
7	Cyclic Counter Speed	Cyclic counter speed (debugging purpose only). 0 = counter not incremented/decremented. Values > 0 = number of cycles it takes to increment/decrement the counter by one

Ethernet/IP and Profibus: Input Data (Pump to PLC) - Pump Status

Offset	Name	Description
0	Run Status	Current run state of the pump represented by each bit, where 0 = Deactivated and 1 = Activated. Bit 0 = Prime, Bit 1 = Control Active, Bit 2 = Motor Running
1	Cover Status	0 = Cover Attached, 1 = Cover Detached
2	Motor Direction	0 = Clockwise, 1 = Counter-clockwise
3	TFD/DFD status	0 = No TFD/DFD alarm, 1 = TFD/DFD alarm
4	FVS status	0 = No FVS alarm, 1 = FVS alarm
5	Relay Output	Relay output statuses represented by each bit, where 0 = not triggered, and 1 = triggered. Bit 0 = Dry Contact 1, Bit 1 = Dry Contact 2, Bit 3 = Dry Contact 3, Bit 4 = Standard Relay
6 - 7	4-20 mA Output	Range: 400 - 2000 mA, where MSB represents the whole number and LSB represents the decimal number. Eg. 4.50 mA => Offset 6 = 4, Offset 7 = 50
8 - 9	Frequency Output	Range: 0 - 1000 Hz, where the MSB represent thousands and hundreds digits and LSB represents the tens and ones digits. Eg. 985 Hz => Offset 8 = 85, Offset 9 = 09
10 - 11	Motor Percent Speed	Up to 2 decimal places, with most significant Offset representing the whole number and least significant Offset representing the decimal number. (Eg. 50.15 => MSB = 50, LSB = 15)
12 - 15	Firmware Version	Firmware version in semantic versioning format. Channel can be one of three values: 0 = stable, a(0x61) = alpha, b(0x62) = beta. Example: (1.0.5-beta => Offset 15: 1, Offset 14: 0, Offset 13: 5, Offset 12: b(0x62))
16 - 19	Tube Revolutions	Current tube revolution counter
20 - 23	Tube Hours	Number of hours ran for current tube
24 - 25	Cyclic Counter	Cyclic counter (debugging purpose only)

Control and Status Mapping for Modbus TCP/IP:

Modbus TCP: Input Registers (3x Reference, Pump to PLC, 16-bit word) - Pump Status

Register	Name	Description
0000	Run Status and Cover Status	LSB is the current run state of the pump, represented by each bit, where 0 = Deactivated and 1 = Activated. Bit 0 = Prime, Bit 1 = Control Active, Bit 2 = Motor Running. MSB is the cover status, where 0 = Cover Attached, 1 = Cover Detached
0001	Motor Direction and TFD/DFD status	LSB is the motor direction where 0 = Clockwise, 1 = Counter-clockwise. MSB is the TFD/DFD status where 0 = No TFD/DFD alarm, 1 = TFD/DFD alarm
0002	FVS status and Relay Output	LSB is the FVS status where 0 = No FVS alarm, 1 = FVS alarm. MSB is the relay output statuses represented by each bit, where 0 = not triggered, and 1 = triggered. Bit 0 = Dry Contact 1, Bit 1 = Dry Contact 2, Bit 3 = Dry Contact 3, Bit 4 = Standard Relay
0003	4-20 mA Output	Range: 400 - 2000 mA, where MSB represents the whole number and LSB represents the decimal number. Eg. 4.50 mA => MSB = 4, LSB = 50
0004	Frequency Output	Range: 0 - 1000 Hz, where the MSB represent thousands and hundreds digits and LSB represents the tens and ones digits. Eg. 985 Hz => Byte 8 = 85, Byte 9 = 09
0005	Motor Percent Speed	Up to 2 decimal places, with MSB representing the whole number and LSB representing the decimal number. (Eg. 50.15 => MSB = 50, LSB = 15)
0006	Firmware Patch and Build	Firmware patch number and build channel. LSB is the firmware build channel. Channel can be one of three values: 0 = stable, a(0x61) = alpha, b(0x62) = beta. MSB is the firmware patch number Example: (1.0.5-beta => MSB is 5, LSB = b(0x62))
0007	Firmware Major and Minor Version	Firmware major and minor version. MSB is the major version and LSB is the minor version Example: (1.0.5-beta => MSB = 1 and LSB = 0)
0008 - 0009	Tube Revolutions	Current tube revolution counter
0010 - 0011	Tube Hours	Number of hours ran for current tube
0012	Cyclic Counter	Cyclic counter (debugging purpose only)

Modbus TCP: Holding Registers (4x Reference, PLC to Pump, 16-bit word) - Pump Control

Register	Name	Description
0000	Motor Percent Speed	Up to 2 decimal places, with MSB representing the whole number and LSB representing the decimal number. (Eg. 50.15 => MSB = 50, LSB = 15)
0001	Motor Direction and Run State	LSB is the motor direction where 0x00 = Clockwise, 0x01 = Counter-clockwise. MSB is to set the current run state of the pump by toggling the corresponding bits, where 0 = deactivated and 1 = activated. Bit 0 = Prime, Bit 1 = Start, Bit 2 = Stop
0002	Reset Alarms and Tube Stats	LSB is to reset alarms (TFD/DFD, FVS) on the pump, where 0x00 = nothing, 0x01 = reset alarms. Only reset on a 0 -> 1 transition. MSB is to reset tube revolutions counter and hours ran
0003	Cyclic Counter Direction and Speed	LSB is to set cyclic counter direction, where 0 = count up and 1 = count down. MSB is to set the cyclic counter speed, where 0 = counter not incremented/decremented. Values > 0 = number of cycles it takes to increment/decrement the counter by one. These are meant for debugging purposes only

8. Provide a front panel touchscreen control for stop/start, configuration menu access and navigation, operating mode selection, display options selection, tube info data, and reverse direction.
9. Provide a multi-color LCD touchscreen display for menu driven configuration settings, pump output value, service alerts, tube failure detection (TFD) system and flow verification system (FVS) alarms status, remote input signal values, tubing life timer value. Display color shall be green when indicating run operation, blue when in idle, yellow when in stand-by, and red to indicate an alarm condition exists.
10. Provide for remote stop/start pump via non-powered contact closure loop.
11. Provide a user selectable 4-20mA and 0-1,000Hz output signal which are scalable and proportional to pump output volume.
12. Provide four contact closure alarm outputs. Three rated at 1A-115VAC, 0.8A-30VDC and one rated at 6A-250VAC, 5A-30VDC. Each alarm output shall be assignable to monitor any of the following pump functions: TFD system, FVS system, motor run/stop, motor failed to respond to commands, motor is running in reverse, general alarm (TFD, FVS, and/or motor over current), input signal failure, output signal failure, remote/local control status, revolution counter (tube life) set-point, or monitor which of the nine different pump operating modes is currently active.
13. Provide a six-digit password protected configuration menu.
14. Provide a flow verification system with programmable alarm delay time from 1-1000 seconds. FVS system shall monitor the FVS flow sensor while pump is running only. System shall not monitor pump while not running.

2.03 FLOW VERIFICATION SENSOR

A. Shall output high-speed digital pulse signal or 4-20 mA, while pump is running only, to verify chemical injection.
   1. Flow verification sensor shall be an ultrasonic transit time sensor.
   2. Wetted components shall be PVDF (optional PVC), PEEK, and TFE/P (optional EP).
   3. End fittings shall be PVDF with optional PVC slip fittings. All are included.
   4. Sensor operating range shall be as follows:

Code	Flow Range (GPH)	Flow Range (LPH)	Flow Range (mL/min)
A	0.158-79.2	0.597-299.4	10.0-5,000

   5. Shall provide a scalable 4-20 mA sourcing output.
   6. Shall provide a scalable 0-10,000 Hz open collector frequency output
   7. Shall provide a programmable Form C Solid State Relay rated for a maximum load capacity of 24 VDC and 100 mA.
      a. Programmable for high/low flow rate alarm.
      b. Programmable to energize on specified flow total.
   8. Power Requirements: 5 VDC; 5 Watts maximum.
   9. Shall be certified to NSF Standard 61 Drinking Water System Components.
   10. Accuracy shall be +/- 0.75% full scale. Accuracy shall be +/- 0.25% at the field calibrated setpoint.

2.04 SAFETY

A. The pump shall be certified to NSF Standard 61 Drinking Water System Components, UL standard 778 motor operated pump and CSA standard C22.2 process control equipment.

B. Manufactured to ISO 9001:2015 requirements and processes.

C. Tube Failure Detection (TFD) system sensors shall be wholly located in the pump head. TFD system will stop the pump within three seconds of leak detection. To prevent false alarms due to rain, wash-down, condensation, etc., tube failure detection system shall not trigger with water contact. Process fluid waste ports or leak drains shall not be provided.

D. Pump head cover shall include an imbedded magnetic safety interlock which will stop the pump when removed. Pump rotor speed shall be limited to 6 RPM when cover is removed.

2.04 METERING PUMP SKID

A. Manufacturers
   1. Blue White

B. Chemical Metering Skid System Configuration
   1. Duplex-Duty/Standby
   2. There shall be one solid polyethylene wall for support mounting of piping and skid components.
   3. A polyethylene pump shelf for each pump shall be securely attached to the wall skid using 18-8 stainless steel hardware.
   4. Wall mounting fiberglass Unistrut to be attached to the back of the wall skid to aid in installation.
   5. Four handles shall be provided on each skid to aid in installation.
   6. Custom engineered universal mounting brackets shall secure each of the ball valves to the skid structure. Valve mounting brackets shall be PA12. Valve mounting brackets shall be secured by threaded inserts in the skid structure by 18-8 stainless steel hardware.
   7. Skid piping shall be ½" diameter schedule 80 PVC.
   8. Vented true-union ball valves shall be PVC with PTFE shaft bearings and seals.
   9. Unions shall be schedule 80 PVC.
   10. Seals may be specified as EPDM.
   11. System shall have a two-year manufacturer's warranty.

C. Check Valves
   1. Shall be located on the discharge side of the piping system at the pump injection point to prevent the back flow of fluid through the system.
   2. The check valve shall be PVC with a 1.0 – 1.5 PSI cracking pressure and manufactured by Hayward Flow Control.
   3. The maximum outlet working pressure shall be 150 psi.

D. Pressure Relief Valve
   1. Located in the discharge side of the piping system to prevent pressure in the system. Fluid shall be returned to the inlet side of the system if the pre-set maximum system pressure is exceeded.
   2. The valve shall be PVC (optional CPVC, or PVDF) with a PTFE diaphragm seal manufactured by Griffco Valve Inc.
   3. The pressure adjustment screw and lock nut shall be constructed out of PET.
   4. Infinite adjustment increments from 10 to 150 psi shall be possible.

E. Pump Connections
   1. Shall be flexible, ¼" Polyethylene tubing rated for continuous duty.

F. Inlet Strainer

1. Located on the suction side of the piping system.
2. The Y-type dampener shall PVC with removable screen (1/32" mesh) manufactured by Hayward Flow Control Systems.

G. Calibration Column
   1. Located on the inlet side of the system to permit metering pump output volume calibration.
   2. Valves shall permit the cylinder to be filled by gravity or by by-passing the chemical metering pump output into the cylinder.
   3. The PVC cylinder shall be manufactured by Griffco Valve Inc. with PVC end caps.
   4. An outlet vent shall be provided with ¼" ID tubing barb connection.
   5. Size: 3 gph (100mL)

H. Pulsation Dampener
   1. Located on the discharge side of the system to reduce pulsation
   2. A ball valve shall be provided to permit the dampener to be removed for service.
   3. The dampener shall be CPVC with 10 cubic inches of volume manufactured by Blacoh.

I. Back Pressure Valve
   1. Located on the discharge side of the system to regulate pressure.
   2. A back-pressure valve shall be PVC with 0-150 PSI pressure range.
   3. The Pressure adjustment screw and lock nut shall be constructed out of PET.
   4. Adjustment increments from 10 to 150 psi shall be possible.

J. Pressure Gauge with Guard
   1. Located on the discharge side of the system to indicate system pressure.
   2. The liquid filled gauge shall be stainless steel and include a blow-out plug manufactured by McDaniel.
   3. The gauge shall be bottom mounted to the guard with ¼" NPT stainless steel threads.
   4. The temperature compensated oil filled gauge guard shall be PVC.
   5. Size: 100 psi

K. Pressure Switch with Guard
   1. Located on the discharge side of the system to signal a high pressure condition.
   2. The switch body shall be 316 stainless steel.
   3. The switch shall be bottom mounted to the guard with ¼" NPT stainless steel threads.
   4. Switch shall be single setpoint SPDT type.

L. Flow Meter
   1. Shall output high-speed digital pulse signal or 4-20 mA, while pump is running only, to verify chemical injection.
   2. Flow meter shall be of ultrasonic transit time technology.
   3. Wetted components shall be PVDF, PVC.
   4. End fittings shall be PVDF with optional PVC or CPVC slip fittings. All are included.
   5. Flow meter operating range shall be as follows: 50-5000 mL/min (0.158-79.2 gph)
   6. Shall provide a scalable 4-20 mA sourcing output.
   7. Shall provide a scalable 0-10,000 Hz open collector frequency output
   8. Shall provide a programmable Form C Solid State Relay rated for a maximum load capacity of 24 VDC and 100 mA.
      i. Programmable for high/low flow rate alarm.
      ii. Programmable to energize on specified flow total.

9. Power Requirements: 5 VDC; 5 Watts maximum.
10. Shall be certified to NSF Standard 61 Drinking Water System Components.
11. Accuracy shall be +/- 0.75% full scale. Accuracy shall be +/- 0.25% at the field calibrated setpoint.
12. Display:
    i. Shall provide the flow rate, flow total readout, chemical profile, and meter status.
    ii. Shall be programmable in volume units of milliliters, liters, or gallons and time units of minutes, hours, or days.
    iii. Rated NEMA 4X (IP66) for both integral and remote display.
    iv. Integral display shall be of LED type and display meter condition.

M. Piping
1. Polyvinylchloride (PVC) Pipe and fittings shall be manufactured of Rigid Poly Vinyl Chloride (PVC) schedule 80. Fittings shall be heavy-duty Schedule 80 molded fittings.

2.05 ACCESSORIES

A. General: The following accessories shall be supplied with each chemical metering pump skid.
1. Solution Tank: To be provided by Owner
2. Eyewash station: Existing to be utilized/relocated by contractor.
3. Injection Tap: Corporation stop with retractable quill shall be provided, including shut-off lever handle. Nozzles shall be ¾" NPT constructed of CPVC with 125 psi pressure rating. Existing to be relocated by contractor as noted on plans.
4. Pre/Post Chlorine pumps provided by Owner and installed by contractor.

2.05 PIPING AND TUBING

A. Conduit Piping: In accordance with ASTM D 1784, SCH 40 PVC, with solvent welded joints and fittings.

B. Flexible Tubing: Polyethylene tubing with compression fittings, rated at 150 psi, ¼" diameter.

PART 3 - EXECUTION

3.01 INSTALLATION, GENERAL

A. Hard Piping: Hard piping, valves and fittings shall be used for all piping 1-inch diameter and smaller and shall be used for the transportation of chemicals. Pipe, valves and fittings shall be carefully laid to line and grade. Care shall be taken to keep the pipe clean and free from dirt and other foreign materials. Saddles, posts, wall brackets, pipe hangers, or other devices shall adequately support piping along floors, walls, or ceilings.

B. Flexible Tubing: Hard piping, valves and fittings shall be used for all piping ½" diameter and smaller shall be used for the transportation of chemicals. Pipe, valves and fittings shall be carefully laid to line and grade. Care shall be taken to keep the pipe clean and free from dirt and other foreign materials. Saddles, posts, wall brackets, pipe hangers, or other devices shall adequately support piping along floors, walls, or ceilings.

C. Equipment and Accessories: Shall be installed per the manufacture’s latest published directions.

D. All piping, fittings and valves shall be installed per the manufacturer’s latest published directions.

E. Contractor shall install items in accordance with manufacturer's printed instructions and as indicated and specified.

F. Contractor to connect suction, discharge, vent and drain connections as required.

G. Contractor shall supply shielded signal wiring and conduit for wiring of the required remote input and output to the connectors and conduit/wiring for power supply. Contractor shall also provide all programming to allow remote operation to energize based upon flow, dosage adjustments and alarms as provided by Instrumentation / Controls contractor through SCADA allowance.

END OF SECTION 11242

SECTION 11460 - IRON REMOVAL EQUIPMENT

PART 1 - GENERAL

1.1 GENERAL

A. This specification describes Owner furnished equipment to be offloaded, inspected and installed by the contractor. The equipment described herein is as manufactured by Tonka Water a Kurita Brand Minneapolis, MN. No other equipment manufacturer will be accepted.

B. It is the intent of this specification to detail the supply of equipment that will be furnished by the contractor as related to the iron removal filters. Therefore, the filtration equipment manufacturer shall provide the filtration equipment and all appurtenances described in this section of the specification including but not limited to; face piping, valves, and controls.

1.2 QUALITY ASSURANCE

A. Reference Standards. AWWA, ANSI, ASME, FDA, and NSF.

1.3 SUBMITTALS/SHOP DRAWINGS

A. Two (2) sets of submittal information shall be transmitted to the engineer for approval. Equipment shall not be fabricated until manufacturer receives written approval of submitted information.

B. Four (4) sets of O&M manuals shall be provided.

PART 2 - PRODUCTS

2.1 MATERIALS/EQUIPMENT

A. All components of the system herein described shall be fabricated and manufactured from new, unused materials, free from defects, of the highest quality possible.

B. The materials and equipment shall be of the configuration, quantity and design features as described on the Equipment Schedule found in this specification.

2.2 DETAILS OF CONSTRUCTION

A. Vessel

1. All pressure vessels shall conform to the Equipment Schedule and be constructed in accordance with Section VIII of the ASME code and bear stamp.

2. All flanges, plates, angles, channels, beams, etc., including side shell to head connections, shall be joined by full penetration welds, each side, continuous welding. Flanges shall be factory welded on split centers prior to shipment.

B. Vessel Interior Construction

1. Simultaneous Air/Water Backwash Collection System.

    a. Simultaneous air/water backwash collector troughs:
        i. Designed to accept a sustained backwash flow of air and water simultaneously without loss of media and without inhibiting the removal of suspended solids. Sustained is defined as a single duration greater than 10 minutes at specified air and water rates achieving a collapse-pulse action while backwash water overflows the trough.
        ii. Factory installed in each vessel as shown on Plans and as detailed in Equipment Schedule. Systems with troughs installed by contractor are not acceptable.
        iii. Material: Type 304 stainless steel.
        iv. Plastic troughs are not acceptable.
        v. Mounting hardware: Type 316 stainless steel.
        vi. Simultaneous air/water flow (all ratings per square foot of filter area):
            1. 3 cfm/sq. ft. air and 3-5 gpm/sq. ft. water during the combined air/water mode.
            2. 15 gpm/sq. ft. of water without air.
        vii. Overflow type troughs without deep, overlapping baffles.
            1. Designed with weir edges along the entire length of trough to allow for equal distribution and collection of water.
            2. Include a quiescent zone for media/solids separation and a return chute for continuous return of settled media to the filter bed.
            3. Provide separate area for return chute, not impeding flow of water sent to trough.
            4. Systems utilizing the same area for media return and water collection are not acceptable.
        viii. Pipe collectors with submerged or semi-submerged orifice collection points are not acceptable.
        ix. Collection systems with surface penetrating baffles that impede the horizontal flow of water to the trough edge are not acceptable.
        x. Hung settling tubes or Lamella-type plates are not acceptable.
        xi. Alternative backwash methods that do not incorporate simultaneous air and water for a sustained duration are not acceptable. These include:
            1. backwashing with water only.
            2. air followed by water.
            3. combined air and water for short periods, limited by filter geometry, (freeboard combined air/water backwash using upturned elbows).
        xii. Media loss guarantee: Less than one inch per year when backwashing in accordance with the methods described herein.

2. Underdrain System

    a. The underdrain shall consist of a PVC header lateral system, factory installed. Concrete subfill is required to be installed up to the level of the nozzles. Once the concrete is cured the caps are to be removed and Tonka provided nozzles are to be installed by the contractor. The underdrain laterals shall be fitted with 1″ openings to accept Tonka underdrain nozzles located on 12″ centers throughout the entire cross section of the underdrain area.

b. The underdrain diffuser nozzles shall be non-metallic self-cleaning nozzles. They shall be mounted in the header lateral on 12″ centers with orifice control area of the underdrain diffuser nozzle equal to 0.3% of the total filter bed measured at the surface of the filter media. Nozzles shall be provided with peripheral slot openings as required to collect and distribute flow laterally. Slot openings shall be tapered inward to prevent lodging of support gravel in the slot opening. Diffuser nozzles using pressed or crimped sheet metal which are tack welded to the underdrain plate are not acceptable due to galvanic corrosion potential with the weld. Toggle-bolted designs are not permitted due to their inherent loosening potential

3. Airwash System

a. The airwash system shall consist of a PVC header lateral system, installed by contractor (the headers are factory installed only). Graded gravel is required to be installed first by contractor. The airwash laterals shall be fitted with 1″ openings to accept Tonka airwash orifices located on 6″ centers, structurally supported from filter sidewalls. Upon installation of laterals, final gravel layers can be placed.

b. Airwash system to utilize existing airwash blower.

C. Vessel Miscellaneous Components

1. Each filter cell shall be equipped with two one 6″x 8″ handhole, and one 14”x18” manway , rated for the working pressure of the vessel. The handhole shall be placed on the top head for access observation, the manway slightly lower into the filter for purposes of media loading.

2. Structural steel legs shall be provided for support of the vessels. Anchor bolts shall be furnished by the installing contractor.

3. A 2″ air release half coupling shall be provided in the top head center. Gauge taps shall be furnished in the influent and effluent nozzle connections (½″ NPT tap with plug). Contractor to provide piping to air release.

4. A 2″ NPT half coupling shall be provided in the effluent pipe connection for drain purposes. Contractor to provide piping to drain.

2.3 SUPPORT GRAVELS AND FILTRATION MEDIA

A. The support gravel shall consist of hard rounded stones with an average specific gravity of not less than 2.5. It shall not contain more than 2% of weight of pieces in which the length is three times the width. The gravel shall be free of shale, mica, clay, sand, dirt and organic impurities.

B. The support gravels shall be placed in the tank as follows:

Layer	Depth	Size
Bottom	4"	3/4" x 1/2"

4th	4"	1/2" x 1/4"
3rd	4"	1/4" x 1/8"
2nd	3″	0.8 - 1.2 mm torpedo sand
Top	30″	0.35 – 0.80 mm IMAR

C. The bottom layer of the screened support gravel shall be placed by hand to avoid damage to the diffuser assemblies. Each layer shall be placed and leveled before the addition of the next layer is started. A gravel-less underdrain shall not be acceptable.

D. The filter media shall be placed on top of the support gravel and shall consist of the material, size and uniformity coefficient as shown on the attached Equipment Schedule.

E. The support gravels and filter media shall be procured from a manufacturer that complies with AWWA B-100 standards. Installation of support gravels and filter media shall be under the direct supervision of an employee of the filter manufacturer experienced in this procedure.

2.4 FACE PIPING

A. All piping and fittings shall be schedule 80. Flanges on all welded piping shall be slip-on weld type of ANSI construction and bolt pattern.

B. Filter face piping shall be provided by the filter manufacturer to the limits shown on the plans. Contractor to fit up and install piping, all pipe supports, and hangers by installing contractor

2.5 VALVES

A. Filter function valves shall be electronically actuated and shall be provided by the filter equipment manufacturer. Valve size shall be as specified on the attached Equipment Schedule.

B. All filter function valves shall be lug style butterfly valves, and shall be one-piece disc through shaft constructed with resilient seats to ASTM A-126 Class B for mounting between two bolted flanges without the need for gaskets. Disc construction shall be ductile iron with a polyester coating. Valve shaft shall be one-piece stainless steel and supported on Teflon coated stainless steel or inert nylon bearings. Seat shall be EPDM or Buna N material. Valves supplied shall be Bray Series 31.

C. Electric actuators shall be Bray Series 70. Actuators will be rigidly mounted without swivel movement during valve operation.

1. Provide electric motor operators for valves in locations indicated on plans and on the Equipment Schedule.

2. Motor Operator Construction:

a. Quarter turn type with cast aluminum TYPE 4 water tight housing.
b. Auxiliary open and closed limit switches 24vdc for PLC feedback.
c. Open and closed torque switches.
d. End of travel mechanical stops.
e. Declutching handwheel manual override.

f. Self-locking worm gears.
g. Position indicator.
h. Anti-condensation heater.

3. Operator Power Control:

a. Provided from the Tonka Water control panel (120 V and 20 valves or less) OR by others (3 phase power of high valve count).
b. Voltage: 120VAC, single phase.
c. Modulating service control: 4-20 mA input modulating card.

D. Where manual actuators are specified in the Equipment Schedule they shall be handwheel type gear with cast iron housing and handwheel, position indicator, and have adjustable open and closed position stops.

1. Manual actuators (as identified in the equipment schedule):

a. Handwheel type gear with position indicator.
b. Housing and handwheel material: cast iron
c. Include adjustable open and closed position stops

2.6 INSTRUMENTATION

A. Loss of Head Gauge Panel.

1. The Contractor shall install a Tonka Water aluminum loss of head gauge panel completely factory fabricated from 3/16" brushed aluminum plate having a textured finish, with minimum dimensions of 18" x 19", one per filter

2. The gauge panel shall have the following 4-½" flush-mounted gauges:

a. Inlet header (0-100 psi)
b. Effluent header (0-100 psi)
c. Loss of head - between influent and effluent headers (0-10 psi differential pressure gauge with switch)

3. Panel shall be equipped with the following components:

a. Phenolic nameplates identifying gauges and sample taps.
b. Two flush mounted sample taps for influent and effluent locations.
c. Manufacturer nameplate, aluminum construction.

4. Manufacturer shall furnish mounting hardware (brackets, U-bolts, nuts, washers, etc.) for affixing to face piping. Installation of panel shall be by Contractor, including any fittings, tubing or shut off valves.

B. Backwash Rate of Flow Panel, one per filter.

1. The Contractor shall install a Tonka Water a Kurita Brand aluminum backwash rate of flow panel completely factory fabricated from 3/16" brushed aluminum plate having a textured finish, with minimum dimensions of 9"x12".

2. The gauge panel shall have the following 4-½" flush mounted gauges: one high rate backwash rate of flow, calibrated in gpm.

3. The above gauge shall work in conjunction with, and shall be calibrated with, a 1/8" stainless steel sharp edged orifice plate. The orifice plate shall be sized and placed into the backwash effluent piping so that the proper high-rate backwash flow rate is maintained and measured. Installed by Contractor with Tonka's supervision.

4. Panel shall be equipped with the following components:

   a. Phenolic nameplate identifying gauge.
   b. Manufacturer nameplate, aluminum construction.

5. Manufacturer shall furnish mounting hardware (brackets, U-bolts, nuts, washers, etc.) for affixing to face piping. Installation of panel shall be by Contractor.

2.7 AUTOMATIC FILTER CONTROLS

A. General. The filter manufacturer shall furnish an automatic control system consisting of a PLC-based control panel with necessary hardware, components, timers, enclosure, relays, switches, alarms, I/O, Human Machine Interface (HMI) display, and other items necessary for a complete operational system. The automatic filter control system shall be essentially as described below.

B. Hardware.

1. PLC. The automatic control panel shall be PLC-based using current OPTO communication hardware with digital and analog I/O modules as coordinated with the Township. Programming will be performed by Perceptive Controls, Contact: Larry West at (269) 275-9358 as provided through SCADA allowance. SCADA contractor will be responsible for communications hardware and driver to interface with the filter PLC. Contractor will be responsible for installation of PLC and supply and installation of communication conduit and wiring between Filter PLC and SCADA PLC. Ethernet cable communications to be provided by Contractor between PLC and SCADA as completed by Perceptive through the SCADA Allowance.

2. Components. All HOA switches, lights, and indicators shall be NEMA 12 rated, Optomux or equal. Nameplates shall be black Phenolic with white lettering indicating all functions, displays, indication, etc.

3. Panel shall include one 15 minute UPS (uninterruptible power supply), UL rated, and shall be furnished to automatically trickle charge. Adequately sized NiCad batteries shall be included to insure function and indication for an uninterrupted power outage of 15 minutes duration.

4. Include the 120V, single phase breakers necessary to power the electrically actuated filter function valves as specified herein. Wiring between the panel and the individual valve actuators is by the installing contractor. Breakers shall be prior to the UPS; the UPS will not include power to filter function valves.

5. Enclosure. UL/NEMA 4/12 rated enclosure, suitable for either pedestal or wall mounting, containing space for separate back panel mounting of PLC, power supply, I/O racks, wiring terminal blocks properly labeled and numbered, circuit breakers, switches, recorders, communication modem, etc., all as required for a complete operating system. Enclosure shall be UL rated and bear the 508 UL stamp prior to shipment. Enclosure shall be painted with a high gloss enamel paint, blue in color and installed by the contractor.

6. Timers. Countdown timers shall be part of the PLC to indicate the following:
   a. Backwash
   b. Rinse
   c. Filter to waste (as required)

C. Functional Control Description.

1. General: During automatic operation the PLC shall control the filter functions and shall indicate and communicate filter status to the remote SCADA system as required.

2. Filtration consists of opening filter influent and effluent valves, which are their normal positions. As filter develops headloss throughout the filter run, differential pressure will be sensed.

3. At the selected differential pressure, as sensed by the differential sensing pressure transducers, the filter backwash panel shall automatically acknowledge backwash is required and
   a. Call-out to remote SCADA system for either the well or high service pumps to supply water using output relays installed in the panel.
   b. Call-out to existing Airwash Blower to turn on to initiate Simul-Wash

   Backwash will be either manually initiated by the operator at the PLC or automatically as programmed. Automatic backwash initiation shall be based on head-loss with a 7-day timer over-ride. The backwash procedure will automatically sequence through the pre-set backwash procedure without operator action.

4. The backwash sequence shall be:

Step	Description	Duration
1	Water wash	Panel face mounted adjustable timer, 0-20 minutes.

5. The system utilizes air and water simultaneously (Simul-Wash) to create a sustained collapse-pulse action in the filter bed for a minimum of 10 minutes, followed by a short high-rate water-only backwash for media reclassification. Filter backwashing with air followed by water wash or simultaneous air and water for short periods limited by filter geometry are not acceptable.

6. The simultaneous air and water backwash (Simul-Wash) step incorporates air at 3 cfm/ft^2 and water at approximately 3-5 gpm/ft^2. Backwash rates will vary based on water temperature and media type. Rates are set at commissioning to ensure proper collapse-pulse action and optimal media cleansing. Proper collapse-pulse

in accordance with the parameters described herein shall be verified by performance testing at the time of commissioning.

7. Following the air/water backwash step, incorporate a water-only step at the low flow rate for a duration as necessary to purge air from the media bed.

8. Following the air purge step, incorporate a water-only backwash step at rate sufficient for media fluidization for a duration as necessary to ensure proper reclassification of the filter media.

9. Use separate rate set valves to attain the proper low and high backwash rates necessary for simultaneous air/water backwashing and media reclassification. Set rate set valves in the field at the time of commissioning by the manufacturer's field technician.

10. After the backwash procedure is complete, the filter is placed into a filter to waste mode. The filter is placed back into service automatically. A watch dog timer programmed into the PLC is provided to place the filter back into service after a pre-selected time for filter to waste.

11. Optional Supplemental Backwash. The plant operator will have an option to choose to use additional backwash water from either the system or pump room (high service pumps) as programmed only at the remote SCADA system.

12. Upon completion of backwash, the PLC will lock-out the respective pump operation to remote SCADA system for the pump to turn-off.

D. Power Failure. If power to the PLC is lost, the uninterruptible power supply shall engage and shall continue automatic operation of the filter control panel (all function and indication) for a minimum of 15 minutes. If after 15 minutes power has not been restored to the filter control panel, then all valves shall fail to "service" condition, meaning that all filters shall be placed into normal service mode. If a filter is in backwash then the backwash process will be placed in hold until the return of power at which time it will resume and complete the process. There will also be an existing diesel generator onsite.

E. Alarms. If required, the following alarms shall be indicated at the remote SCADA system: backwash required; backwash abort; high clearwell water level; high NTU; high wash water waste holding; backwash hold; and other alarm conditions affecting filter operation.

F. Communications Modem. The filter control panel shall contain capability for use of a communication modem allowing remote access to the filter control panel PLC to monitor and troubleshoot the filter and to effect program changes remotely from the factory. Program changes may also be made from a laptop without the use of a modem for communication.

G. Remote Access Capability. The system control panel shall contain capability for remote screen mirroring, through Ethernet, of the system control panel PLC and OIT to monitor and operate the system, using customer supplied internet access/VPN.

H. Supply wireless capable tablet with VNC viewer for remote access via VPN.

I. Remote Programming Capability. The system control panel shall contain router and VPN gateway that includes capability for remote programming, through Ethernet, of the system

control panel PLC, and OIT to troubleshoot and make changes to the system, using customer supplied internet access/VPN.

J. Shop Testing Prior to Shipment. Prior to shipment the filter control panel shall be fully tested with all alarms, indication and I/O fully simulated at the factory prior to shipment. All alarm functions and other control parameters, verified by factory certification as to inspector and date inspected. Testing shall be subject to verified witnessing by the engineer if required.

2.8 PAINTING

A. The interior of the filter above the underdrain plate shall be sandblasted and protected from corrosion by proper application of approved coatings for potable water in accordance with NSF 61. The exterior of the vessel shall be sandblasted and prime painted at the factory.

B. Surface preparation:

1. Interior - Sandblast to near white blast cleaning (SSPC-SP10).

2. Exterior - Sandblast to commercial blast cleaning (SSPC-SP6).

C. Coating:

1. Interior - Stripe coating: hand-apply one coat Tnemec Series 20 tank white to all welds and hard to reach areas using high quality natural or synthetic bristle brush, to a dry film thickness of 3-5 mils. Prime coating: Tnemec Series 20 Beige primer to a dry mil thickness of 3-5 mils before any rust can form. Finish coating: Tnemec Series 20 tank white to a dry mil thickness of 4-6 mils for a total dry film thickness of 7-11 mils.

2. Exterior - Stripe coating: hand-apply one coat Tnemec Series 20 tank white to all welds and hard to reach areas using high quality natural or synthetic bristle brush, to a dry film thickness of 3-5 mils. Prime coating: Tnemec Series 20 Beige primer to a dry mil thickness of 3-5 mils before any rust can form. The exterior finish coat shall be applied by others with compatible system, color coordinated with owner.

D. The total paint system shall be the product of and be applied in accordance with the recommendations of one manufacturer. Alternate paint systems must be pre-approved by engineer. Contractor shall purchase an adequate amount of touch-up paint, if required.

PART 3 - EXECUTION

3.1 INSTALLATION

A. Delivery and Storage.

1. Upon delivery of the equipment to the jobsite, the contractor shall take inventory of the shipment and immediately report to the equipment manufacturer any discrepancies between the equipment manufacturers' packing lists and shipping documents.

2. The contractor shall be responsible for off-loading and protection of all equipment against damage and during on-site storage and installation. All media must be stored on pallets in a manner that protects it from UV, radiation and weather. Damaged equipment and materials will be replaced by the contractor at the contractor's expense.

B. Manufacturer's Instructions. Installation shall be as shown on the plans and in accordance with the manufacturer's recommendations, installation instructions and assembly drawings. Manufacturer's installation instructions and assembly drawings shall be submitted and approved by the engineer prior to shipment of equipment. Installation of the filtration system shall be in strict accordance with the details shown on the drawings and in complete conformance to manufacturer's instructions and procedures. (SEE ATTACHMENT)

3.2 FACTORY SERVICES AND START-UP

A. Installation Supervision. The contractor shall coordinate with the treatment equipment manufacturer to provide factory supervision (as outlined on the Equipment Schedule) or direction during critical phases of installation. Critical phases will include setting of equipment, installation of internals, installation of controls, wiring instrumentation and other components critical to the successful operation of the system.

B. Media Installation. Installation of media shall be under the direct supervision of an employee of the filter manufacturer experienced in this procedure, in accordance with the Equipment Schedule.

C. System Start-Up and Training

1. The contractor will verify in writing that the project is ready for manufacturer's field services. Copies of written verification shall be given to the manufacturer, engineer and owner prior to scheduling field services.

2. The contractor shall provide the services of a factory representative during start-up of the treatment equipment. The contractor shall provide the number of days on site for start-up supervision as outlined in the Equipment Schedule. At a minimum, the equipment manufacturer's technician shall perform the following start-up functions:

   a. Inspect the final installation to assure proper installation, connection and wiring of all equipment of the manufacturer's supply.
   b. Start-up of the equipment in the presence of the Contractor and Owner's operating personnel.
   c. Training of Owner's operating personnel in proper operation and maintenance procedures, start-up/shutdown procedures, response to emergency conditions, and troubleshooting. The responsibility of the Contractor and the factory service representative with regard to start-up shall be fulfilled when the start-up is complete, the equipment is functioning properly, operating personnel have been trained and the equipment has been accepted by the Owner.

D. Post Start-Up Activities

1. Upon completion of the work, the manufacturer's field technician shall submit to the Engineer, three (3) copies of a written report outlining the equipment start-up, names of owner personnel trained and a listing of any deficiencies of equipment or materials as a result of his inspection, adjustments, corrections, repairs and start-up. The report shall include descriptions of the inspection, adjustments, corrections and repairs made, and shall certify that the equipment:

a. Has been installed per manufacturer's requirements.
b. Has been started and placed on line.
c. Has been tested per manufacturer's instructions.
d. Operator personnel have been instructed and trained.

3.3 WARRANTY

A. Combined Air/Water Backwash Process Verification:

1. For filter optimization, the backwash process shall incorporate collapse pulse action during the backwash process as described in "Optimum Backwash of Dual Media Filters and GAC Filter-Adsorbers with Air Scour," ISBN 0-89867-576-6, © American Water Works Association. These specifications incorporate the backwash flow rates in accordance with this research in order to minimize the wastewater production and maximize the cleaning of the filter bed.

2. Manufacturers shall provide certification following commissioning that the unit will be run within accepted collapse-pulse ranges during backwash. These ranges are identified in Section 2.2.B of the specification. A representative of the Owner will witness and verify in writing that the system is operating according to specified collapse-pulse rates at the time commissioning is completed, and that they have been trained in this operation. A copy of the commissioning report containing this owner verification shall be provided to the engineer and shall be required before final payment to the contractor can be made.

B. Backwash Waste Production Warranty:

1. The Owner considers water conservation an intrinsic part of this project. As such, all Contractors shall provide with their bid a wastewater generation calculation using the form listed on the Equipment Schedule. Failure to use this form will result in the bid being declared as non-responsive and will be rejected.

2. This plant is designed based on Tonka Water's maximum backwash volume guarantee. If a Bidder supplies a system which produces more wastewater than Tonka Water, they shall be held responsible for all costs associated with this increased wastewater production, including but not limited to: expanding the wash water holding tank/lagoon system, revising decant pumps, revising all plans including engineers review time, or other wastewater disposal costs.

C. Effluent Performance Warranty

1. During start-up, the equipment manufacturer's representative shall perform raw water and filtered effluent field tests to confirm performance of the equipment. Analytical methods employed for field testing shall be performed by a digital colorimeter.

2. The equipment shall be warranted for a period of one year from the date of placing it on-line. The treatment water effluent during this period of time shall be as detailed in the Equipment Schedule.

3. Sampling for conformance shall be taken during the middle of a filter run. All adjustments necessary to comply with this guarantee shall be made at the Contractor's expense.

EXCERPT FROM TONKA WATER A KURITA BRAND

MANUAL FOR INSTRUCTIONS AND

PROCEDURES FOR INSTALLATION

OF THE FILTERS

AND EQUIPMENT SCHEDULE

EQUIPMENT SCHEDULE

2.1 Materials and Equipment
Maximum Design Flow Rate: 800 GPM/Filter
Maximum Filter Surface Loading Rate: 3.2 GPM/SFT

2.2.A Vessel Construction

Number of Vessels:	One (2 cells per Filter)
Vessel Diameter:	10′
Vessel Length:	26’
Design Working Pressure:	100 psi
Hydrostatic Test Pressure:	130 psi
ASME Stamp Required	Yes
Surface Area per Filter:	247

2.2.B Vessel Misc. Components
1/2” Sample Taps as follows:

- Influent
- Effluent
- Interface of IMAR media
- Nozzle Sizing:

Influent	10″
Effluent	10″
Drain	4″
Air Scour	3″
Air Release	2″

2.3 Valves

Function	Size	Actuator	Quantity
Raw water inlet	6″	Electric	2
Backwash Effluent	10″	Electric	2
Airwash Influent	3″	Electric	2
Filter Effluent/Backwash inlet	10″	Electric	2
Simulwash Influent	6″	Electric	2
Simulwash Rate Set	6″	Electric	1
Backwash Effluent Rate Set	10″	Electric	1
Filter to Waste	6″	Electric	1

3.2.A Factory Services & Start-Up

Equipment Installation Supervision:	1 day
Media Installation Supervision:	1 day
Start-up & Operator Instruction:	3 days
Minimum number of trips required:	3 trips

3.3.B Backwash Waste Production Warranty

Filter Draindown	= 925 gal
Simultaneous air/water backwash @ 3 gpm/sq.ft. x 247 sq. ft./vessel x 10 min continuous	= 3710 gal
Water only wash (air purge) @ 3 gpm/sq. ft. x 247 sq. ft./vessel x 2 min continuous	= 742 gal
Water only wash (re-stratification) @ 10 gpm/sq. ft. x 247 sq. ft./vessel x 3 min continuous	= 3710 gal
Total backwash water per vessel	= 18172 gal

Note: Calculations shall be based on Ten State Standards durations. Excludes filter-to-waste.

UNION TOWNSHIP, MI

INSTALLATION INSTRUCTIONS FOR PVC HEADER / LATERAL UNDERDRAIN, CONCRETE SUBFILL, DIFFUSER NOZZLES, AIRWASH HEADER, SUPPORT GRAVELS, AIRWASH GRID AND FILTRATION MEDIA

NOTE: Read through all instructions before beginning installation. Call your Tonka Project Manager, Shop Manager or Customer Service Representative with any questions.

PART 1 - QUALIFICATIONS OF INSTALLING PERSONNEL

1.01 GENERAL

A. Installation should be performed by personnel who are experienced and knowledgeable about water treatment equipment and pipe installation. If included in the Tonka scope of supply, Tonka may send a field technician to supervise installation of the components. It is the installing contractor's responsibility to provide an adequate number of qualified personnel to perform the actual installation. The quantity of installers is dependent upon the size and scope of the installation, but generally 3-5 workers are adequate.

B. As a minimum, installing personnel should have a good working knowledge of the following tools, equipment, materials and procedures for media installation:

- Conveyor
- Concrete funnel with flexible hose
- Lighting
- PVC glue and primer
- Plywood to support weight of installers
- Chalk line
- 9/16" wrench & socket
- Interior ladder
- Short handled shovel
- Garden hose
- Straight edge
- Tape measure
- Source of water for dust suppression and for verifying media level (if required)
- Scaffolding
- Blowers for ventilation
- Dust masks
- Forklift and/or pallet jack
- Levels (bubble type)
- Level with rod (transit or surveyor's type)
- 2 x 4 lumber for leveling gravel
- Rake
- Side cutters/utility knife
- Basic mechanic's tools
- OSHA safety requirements for work and materials of the type described herein
- 17 mm wrench and 6- sided socket

1.02 FACTORY ASSISTANCE

A. Please call the Tonka factory if at any time the installing personnel require drawing interpretation, advice or assistance in any area of these instructions. Failure to do so may result in a void warranty.

PART 2 - PRECAUTIONARY MEASURES

2.01 SAFETY

A. Tonka assumes no responsibility for on-site safety procedures. It is the duty of the installer to be familiar with local and site-specific regulations concerning safety, occupational health and overall training and preparation for the installation.

B. Tonka recommends a minimum of two people working at any one time within the filtration vessel.

C. Tonka recommends that special care and attention be given to ventilation and lighting requirements for this site. Installer should follow local procedures on these important issues.

D. Material Safety Data Sheets (MSDS) are available if not included in the shipment of media. These MSDS contain important safety and handling data for review by the installer. All installers should be familiar with the contents of all MSDS'.

2.02 PREPARATION OF THE WORK AREA

A. The work area should be clean, clear, lighted, and properly prepared. Inside of filters should be clean and free of all visible dirt, dust and debris. All such foreign matter shall be removed and the filters wiped clean with oil-free cloths prior to beginning media installation.

Remember: The filter vessels are to treat potable drinking water, and should be kept clean and free from debris, dust and dirt at all times. Failure to do so may result in contamination of the filter and possible void of warranty.

B. Shoes, clothing and tools should be free of dirt, mud, debris, etc. prior to entering the work area. Many safety equipment manufacturers have for sale disposable shoe coverings and clothing for this purpose (TYVEK, etc.).

C. All parts, shipments, components, tools, etc. should be assembled near to the work area prior to commencement of work.

D. All safety equipment and tools (stepladders, hoists, gloves, ventilation, etc.) required shall be assembled and in good service condition, ready for use.

E. A work plan should be discussed and implemented by the installing contractor. This plan shall be communicated to all installing personnel and reviewed by Tonka Equipment Company prior to beginning installation.

PART 3 - GENERAL DESCRIPTION OF INSTALLATION

3.01 OVERALL SEQUENCE OF INSTALLATION

A. Install and or inspect the underdrain system. The underdrain system consists of a header/lateral arrangement with Tonka ABS plastic diffuser nozzles on 12″ centers. The

laterals are secured to support angles, which are located at the interface of the support gravel and the concrete sub-fill.

B. Verify the filter is both level and plum, horizontally and vertically.

C. Install concrete sub-fill (not supplied by Tonka). Use 3000 lb. cement with maximum aggregate of ¾" (preferably pea size material). The top of the concrete should be finished level with the top of the underdrain nozzle couplings. Do not allow the concrete to cover the red nozzle plugs. Allow 24-hours for the concrete to cure before installing support gravels.

D. Underdrain Nozzles. The nozzles should be installed as soon as reasonably possible (4 hours) after the concrete has been poured to prevent the red plugs from being fused into the laterals.

E. Graded Gravels. Gravels are to be hand-placed, starting with the coarsest layer first and then adding successively finer layers. It is important that the gravels are hand-placed carefully in order to avoid damage to the underdrain system.

F. Airwash Grid. The airwash header is often factory installed. The airwash laterals should be installed after the bottom layers of gravels are in place. The airwash grid consists of the headers, laterals, and pipe supports. The grid is independently supported from the bottom and sides of the vessel. The grid should be rigid prior to placement of final gravel layers.

G. Final gravel layer shall be placed under and up to the midpoint of the airwash grid.

H. Torpedo sand and filtration media shall be placed above the support gravels.

3.02 WORK TECHNIQUE

A. Underdrain and Nozzle inspection/checking: by hand, and visually.

B. Concrete subfill installation: pumped

C. Airwash header installation: by hand using wrenches, pliers and tools.

D. Gravel placement: by hand, visually

E. Airwash grid installation: by hand and visually

F. Media installation: by hand or pneumatically (silica sand only)

G. Other: The installer is responsible for all precautionary measures to ensure a complete, sanitary and approved installation. Tonka personnel may be asked to supervise, advise or otherwise instruct personnel as to recommended techniques; however, the installing contractor is responsible for ensuring such advice, recommendations and techniques are appropriate for the site, and are properly supervised during installation.

PART 4 - INSTALLATION STEPS

NOTE: Proper installation is extremely important for effective filter operation. It is important to keep the filter interior clean and free from foreign matter or other contamination.

The following are our recommended procedures for proper installation. Please call your Tonka Project Manager if there are any questions regarding this information (763-559-2837)

4.01 PVC HEADER / LATERAL UNDERDRAIN INSTALLATION (for reference purposes only – this normally done at the factory – see drawing #34444)

A. Loosely bolt support angles to sidewall clips with supplied ⅜″ hardware. U-bolt header to T-shelf. Refer to the drawing #34444 for details of support angles.

B. Using standard PVC pipe solvent and cement glue the underdrain laterals into the underdrain headers where shown. There are letter marks on the laterals corresponding to identically marked header locations. Ensure that each marked header aligns with each corresponding lateral, prior to gluing. While Glue is still pliable, rotate the lateral to where the black line on the lateral faces up. This is the proper lateral orientation. Hold in place for approximately 30 seconds to allow glue to set. Make sure laterals are resting on support angles, and underdrain nozzle connections are facing up. Plug underdrain nozzle connections to prevent cement from entering threaded connections. Tonka will supply plugs.

C. Adjust support angles so laterals lay level then tighten bolts on support angles. Secure laterals to support angles with plastic ties. If you run out of plastic ties notify factory and additional plastic ties will be sent. Trim off tails as required.

D. Install concrete grout subfill flush with threaded openings. Use 3000 lb. Cement with maximum aggregate pf ¾″ (preferable pea size material). Avoid getting cement over threaded connections.

4.02 UNDERDRAIN NOZZLE INSTALLATION

A. IF NOZZLES HAVE BEEN FACTORY INSTALLED, they should be visually checked at this time. Nozzles should be hand tightened only, and should be free of all cracks, debris and signs of damage. If any factory installed nozzles appear to be damaged or are missing, call the Tonka factory. For field installations, there should be a few extra nozzles included with the shipment.

1. Gravel Layer Measurement. A level line should be marked on the inside wall of each filter cell corresponding to the top of each gravel and filter media layer.
2. If applicable, verify that media retaining nozzles for sample tap locations have been installed

B. IF NOZZLES NEED TO BE FIELD INSTALLED, then follow these steps:

1. After concrete sets up, remove temporary plastic plugs from underdrain openings, taking care not to allow them to fall into the underdrain area.

2. Locate the black ABS nozzles with the shipment, and locate the 100% Virgin Teflon pipe thread sealant shipped by the Tonka factory.

   NOTE: Use of thread sealant other than that furnished by the Tonka factory is unauthorized, and will result in void of underdrain warranty. Regular pipe sealant deteriorates ABS plastic!

3. Apply Tonka furnished sealant to the ABS plastic diffuser nozzle threads prior to screwing into place. Nozzles should bottom out without use of channel-lock pliers or other tools. Call Tonka factory if there is any difficulty in getting nozzle to seat.

   NOTE: Only hand-tighten the nozzles. Do not use tools such as wrenches, pliers, etc.

4. Wipe off excess pipe sealant, and take care not to stand on, kick or drop objects onto nozzles. Should the installer suspect nozzle installation to be defective in any way, then contact Tonka or remove and replace defective nozzles.

4.03 GRADED SUPPORT GRAVEL INSTALLATION

Support gravels are to be installed in the following layers, as per Drawing #34038

Layer (Bottom, second, etc.)	Depth (Inches)	Approx. No. of Bags Per Cell (2 Cells per Filter)	Gravel Size
Subfill	--	--	Concrete
Bottom	4″	38	¾″ x ½″
Second	4″	39.5	½″ x ¼″
Third	4″	40	¼″ x ⅛″

The number of bags of gravel shown above is an approximation only. Support gravels should be installed at the actual depths indicated above.

A. Airwash Header. Check to ensure that the airwash header is properly installed per drawings. Lateral connections along the header should be equipped with red plugs. Gravels should be placed only after the airwash header is properly in place.

   If airwash header is to field installed, taking care no gravels or debris has entered the airwash header, installed to the location ash shown. Install center threaded rod support where shown, and bolt the end of the header to the support shelf using the furnished U-bolts and nuts, taking care to ensure lateral connections are straight, true and level. This can be done by temporarily dry-fitting two opposing laterals and checking for level. Use plastic shims as needed to avoid any stress on the header pipe. All flange bolts, pipe clamps, supports, etc. should then be checked for tightness.

NOTE: If airwash lateral support angles are installed, these may be removed for gravel installation, if desired. If they are removed, first match –mark and set aside for later installation. Airwash lateral support angles may be used for plank or plywood work surface support; however ensure that angles are level and are securely fastened at ends and intermediate supports.

B. Gravel Placement. The first layer of support gravel is installed by lifting the bagged material to the top of the filter cell, and by transferring it carefully to a person within the cell.

Do not drop bags or loose gravel onto the underdrain nozzles, or damage may result.

The gravel should then be carefully poured onto the underdrain system and between the diffuser nozzles.

NOTE: Tonka has had good experience using portable conveyors for bag elevating, and clean concrete funnels with flexible discharge spouts with pinch control for gravel placement. Good coordination between in-vessel and out-of-vessel personnel is essential in order for these methods to be effective.

C. Lower Gravel Layer Leveling. Gravels should be hand leveled to the pre-marked elevations at the filter vessel walls. After hand leveling, several straight-edge-and-bubble level measurements should be taken to ensure layer is uniformly level across vessel. In cases of large cells (i.e., greater than 10' x 10') a surveyor's level and rod should be used to check layer surface.

NOTE: It may be possible to use water to check the level of the top of gravel layers. Specific site conditions will determine if this is feasible.

NOTE: Tonka recommends using clean, stiff-bristled brooms for leveling the gravel layers in order to prevent damage to the nozzles. Brooms have lower potential to damage nozzles than steel tooling does.

It will be necessary to work off clean planks or plywood while installing the remaining gravels and filtration media, to avoid damage to the underdrain system and to avoid disturbance of media gradations.

E. Quality Check. After these layers are satisfactorily installed and checked, proceed to airwash grid installation.

4.04 AIRWASH GRID INSTALLATION

Make sure filter vessel is properly ventilated and personnel are properly protected when using PVC solvent cleaner and cement. Laterals and support steel are to be installed per drawing #34443

A. Support Angle Installation. If not factory installed, install the steel airwash lateral support angles to the locations shown. Hand tighten. The flat part of the angles (leg) should be horizontal, facing up, to form a bearing surface for the laterals. Final elevation adjustments will be made in a subsequent step.

B. Airwash Lateral Installation.

1. Remove temporary plastic plugs, including any plugs that may be installed and painted over in steel pipe stubs.
2. Using standard PVC pipe solvent and cement, glue the ¾″ airwash lateral into the airwash headers where shown. There are letter marks on the laterals corresponding to identically marked header locations. Ensure that each marked header aligns with each corresponding lateral, prior to gluing. While glue is still pliable, rotate

the lateral to where the black line on the later faces up, this is proper lateral orientation. Hold in place for approximately 30 seconds to allow glue to set.

NOTE: Do not grip the airwash protective screens. Do not bend airwash lateral or install into improperly-leveled header.

3. Adjust support angles so the flat sides of the angles touch the bottom side of the laterals. Check to be certain those airwash laterals are straight, true and level-adjust angle supports as needed, and tighten. Check and tighten all steel-to-steel angle connections, being careful not to induce stress on any of the plastic pipe grid. Secure the airwash laterals to the steel supports with plastic ties, tow per connection, furnished by Tonka. Tighten and cut off the tails as required. Contact the factory if extra ties are needed.

C. Top Gravel Layer Installation. Install the final layer of gravel in the same manner as previous layers. It may be necessary to smooth out and re-level the gravels under the airwash grid prior to final gravel layer placement. The top of the final gravel layer should be approximately (+/- ¼″) at the centerlines of the airwash header and laterals. Contact the factory if out of tolerance.

The vessel is now ready for media installation.

4.05 INSTALLATION OF TORPEDO SAND AND MEDIA

A. General. The filter media should be installed in the same manner as the gravel layers, in the same sequence:

1. Elevations measured and marked at the filter cell walls.

2. Media placed and leveled.

Media layers should be as shown on Drawing #5067 (Sheet 3 of 3)

Layer (Bottom, second, etc.)	Depth (Inches)	Approx. No. of Bags Per Cell (2 Cells per Filter)	Media
Fourth	3″	30.5	0.8-1.2 mm Torpedo Sand
Fifth	18″	190	Sand
Top	12″	123	Anthracite (Sand & Anthracite are the IMAR Media as supplied by TONKA Equipment)

The number of bags of media shown above is an approximation only. Media should be installed at the actual depths indicated above.

B. Precautionary Measures. Precautionary measures regarding care, placement, protection, leveling, measurement, personnel protection, safety, etc. should be taken in the same manner as discussed above for gravel placement.

C. Backwashing and Skimming. If backwashing and skimming of fines is required, then follow engineered approved procedures for this operation. Tonka on-site supervision may be required for this procedure.

After installation of the gravels and media, do not attempt to introduce water or operate the filter until authorized to do so by Tonka. The Tonka project manager or field technician should be notified prior to initial backwashing and start-up.

PART 5 - QUALITY ASSURANCE

A. Protection of Installed Equipment. The installed vessels should be secured and adequately protected until start-up in order to prevent contamination.

B. After installation is complete, the area around the filters should be cleaned up and any unused components should be adequately stored.

1. Contact the Tonka Project Manager to schedule start-up of the filters.

Tonka Water a Kurita Brand
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Minneapolis, MN 55445
(866) 663-7633
Website: www.kuritaamerica.com

END OF SECTION 011460

Subject: Quote, Union Township, WTP Improvements and well12
Quote: 20241001LW01
Date: 10/1/2024
This quote is good for 30 days.

Perceptive Controls, Inc

Scope

- WTP Improvements and add well 12

Deliverables

- Pricing includes the following hardware:
  - Well # 12 SCADA panel.
  - Well #12 40horse VFD.
  - WTP new SCADA PLC and cards to be implemented into the new Tonka Panel.
  - Tonka panel provided by others.
  - New 100horse High service pump VFD.

Services

- Labor includes:
  - All typical support engineering, design, submittals, and construction.
  - Onsite support to assist with temporary panel move at WTP as discussed.
  - PLC, HMI, and SCADA programming to add Well 12, well 12 generator, New filter, HS Pump, and chemical feeding equipment (3 skids at plant), and additional fm, transducer, etc.
  - SCADA integration for Mission WTP flow meter.
  - Onsite Commission and start up. Coordination with contractors and manufacturers
  - Remote programming assistance.

Terms

- **Schedule of Values**

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Best Regards,

Lawrence West

Lawrence “Larry” West