

**CITY OF WELLSBURG  
BROOKE COUNTY, WEST VIRGINIA**

**CONTRACT #II – WATER TREATMENT PLANT IMPROVEMENTS**

**ADDENDUM #1**

**FEBRUARY 26, 2021**

**THRASHER PROJECT #101-010-01117**

TO WHOM IT MAY CONCERN:

A Pre-Bid Conference was held on Tuesday, February 23, 2021 on the above-referenced project. A copy of the sign-in sheet is included with this Addendum. The following are clarifications and responses to questions posed by Contractors for the above-referenced project.

**A. SPECIFICATIONS**

1. Replace specification Section 012000 – Price and Payment Procedures in its entirety with the attached specification.
2. Insert specification Section 263213 – Packaged Engine Generators into project Detailed Specifications in its entirety.
3. Under Section 432357 – Progressive Cavity Pumps, Part 2, 2.1.A, add “Netzsch” as an acceptable manufacturer. The rotor and stator shall be capable of being removed without removing the pump suction and discharge piping. Acceptance does not relieve the Contractor or manufacturer from meeting requirements of drawings and specifications.
4. Under Section 444613 – Sludge Conveyors, Part 2, 2.1A, add “Charter Machines” as an acceptable manufacturer. Acceptance does not relieve the Contractor or manufacturer from meeting requirements of drawings and specifications.

**B. DRAWINGS**

1. NOT APPLICABLE

## C. QUESTIONS AND RESPONSES

### QUESTION:

1. Can the Engineer provide geotechnical report?

### RESPONSE:

Yes. The Contractor shall sign and return a Geotechnical Evaluation/Report Waiver to the Engineer. The Engineer will provide a copy of the report to the Contractor upon receipt of the signed Geotechnical Evaluation/Report Waiver. A copy of the wavier is attached to this Addendum.

### QUESTION:

2. Should 60 feet be used as the basis of the bid for helical piles?

### RESPONSE:

No. The Bid Form has been revised to include a total vertical footage of helical pile installation. Bid Form shall be replaced with the attached.

### QUESTION:

3. How can the plan holders list be viewed?

### RESPONSE:

The plan holders list is available on QuestCDN.

## D. GENERAL

1. Sign-In Sheet from the Pre-Bid Conference are included with this Addendum #1.
2. Last day for receiving questions will be COB, March 2, 2020.
3. B&O Taxes are required for this project at a rate of 1% of gross.
4. The Engineer's Estimate of Probably Cost is \$2,727,000.
5. Bidders are hereby notified to acknowledge receipt of all addenda in space provided on the Bid Form.
6. Certified payrolls are required with Federal Wage Rates. Interviews with employees will also be performed to confirm compliance with Federal Wage Rates. Wage rate schedule is attached.

If you have any questions or comments, please feel free to contact me at your earliest convenience. As a reminder, bids will be received until 2:00 p.m. on Tuesday, March 9, 2021 at City of Wellsburg, 70 Town Square, Wellsburg, WV. Good luck to everyone and thank you for your interest in the project.

Sincerely,  
THE THRASHER GROUP, INC.



Jonathan G. Carter  
Water Resources Market Leader

**CITY OF PADEN CITY  
WETZEL/TYLER COUNTY, WEST VIRGINIA  
MEADOW HEIGHTS WATER SYSTEM IMPROVEMENTS**

**PRE-BID CONFERENCE**  
Thursday, February 23, 2017

**Thrasher Project #101-010-1040**

<b>Name</b>	<b>Representing</b>	<b>Phone #</b>	<b>Email Address</b>
Ryan Schuster	The Thrasher Group	330-451-2042	rschuster@thethrashergroup.com
Scott Wangler	The Thrasher Group	330-451-2042	swangler@thethrashergroup.com
Jonathan Carpenter	The Thrasher Group	304-343-7601	jcarpenter@thethrashergroup.com
Steve Maguschak	City of Wellsburg	304-737-2104	wellsburgcitymgr@comcast.net
Tony Closson	J.F. Allen Company	304-460-7424	tclosson@jfallenco.com
Will Allison	Alex E. Paris Contracting Company	724-947-2235	aparis@alexparis.com
Louis Piccin	Cast and Baker	614-374-8306	lpiccin@castandbaker.com
Bernie Dunlap	Stonegate Construction	304-482-2721	bdunlap@stonegatedigs.com
Bob Litman	Litman Excavating	740-202-0421	info@litmanexcavating.com
Barb Zimnox	BHJ-MPC	304-797-9666	bzimnox@bhjmpc.org

Name	Representing	Phone #	Email Address
*Jodie	Moran Construction	740-444-4773	
*Brian	Catrell	740-537-2481	
* Dave Lash	Cast and Baker	614-374-8306	
* Josh Austin	Kent Companies	330-874-6308	
* Mark Stoll	Foster Supply	304-755-8241	
* Tim Cunningham	Savage Construction	304-242-3100	
* Brent Will	Curtis Power Solutions	800-573-9200	
* Frank Floyer	James White Construction	304-748-8181	
*Name and Company collected by role call			

**GEOTECHNICAL EVALUATION/REPORT WAIVER  
CITY OF WELLSBURG  
WATER SYSTEM IMPROVEMENTS  
CONTRACT #2 –WATER TREATMENT PLANT IMPROVEMENTS**

The undersigned hereby agrees that the City of Wellsburg, The Thrasher Group, Inc., and/or American Geotech, Inc, will not be held liable or responsible for any information contained in the soils boring report, which may be used in the preparation of the Contractor's bid. The report is being provided for information purposes only, and does not guarantee the accuracy or completeness of the information.

**By:** \_\_\_\_\_

**Company:** \_\_\_\_\_

**Date:** \_\_\_\_\_

**CITY OF WELLSBURG  
BROOKE COUNTY, WEST VIRGINIA  
WATER SYSYER IMPROVEMENTS  
WATER TREATMENT PLANT  
THRASHER PROJECT #101-010-1117**

**BID FORM**

**ARTICLE 1 – BID RECIPIENT**

1.01 This Bid is submitted to:

City of Wellsburg  
70 Town Square  
Wellsburg, WV 26070

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 – BIDDER’S ACKNOWLEDGEMENTS**

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

**ARTICLE 3 – BIDDER’S REPRESENTATIONS**

3.01 In submitting this Bid, Bidder represents that:

A. Bidder has examined and carefully studied the Bidding Documents, and any data and reference items identified in the Bidding Documents, and hereby acknowledges receipt of the following Addenda:

<u>Addendum No.</u>	<u>Addendum Date</u>
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_____	_____
_____	_____
_____	_____

- B. Bidder has visited the Site, conducted a thorough, alert visual examination of the Site and adjacent areas, and become familiar with and satisfied itself as to the general, local, and Site conditions that may affect cost, progress, and performance of the Work.
- C. Bidder is familiar with and has satisfied itself as to all Laws and Regulations that may affect cost, progress, and performance of the Work.
- D. Bidder has carefully studied all: (1) reports of explorations and tests of subsurface conditions at or adjacent to the Site and all drawings of physical conditions relating to existing surface or subsurface structures at the Site that have been identified in the Supplementary Conditions, especially with respect to Technical Data in such reports and drawings, and (2) reports and drawings relating to Hazardous

Environmental Conditions, if any, at or adjacent to the Site that have been identified in the Supplementary Conditions, especially with respect to Technical Data in such reports and drawings.

- E. 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 any Site-related reports and drawings identified in the Bidding Documents, with respect to the effect of such information, observations, and documents on (1) the cost, progress, and performance of the Work; (2) the means, methods, techniques, sequences, and procedures of construction to be employed by Bidder; and (3) Bidder's safety precautions and programs.
- F. Bidder agrees, based on the information and observations referred to in the preceding paragraph, that no further examinations, investigations, explorations, tests, studies, or data are necessary for the determination of this Bid for performance of the Work at the price bid and within the times required, and in accordance with the other terms and conditions of the Bidding Documents.
- G. 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.
- H. Bidder has given Engineer written notice of all conflicts, errors, ambiguities, or discrepancies that Bidder has discovered in the Bidding Documents, and confirms that the written resolution thereof by Engineer is acceptable to Bidder.
- I. The Bidding Documents are generally sufficient to indicate and convey understanding of all terms and conditions for the performance and furnishing of the Work.
- J. The submission of this Bid constitutes an incontrovertible representation by Bidder that Bidder has complied with every requirement of this Article, and that without exception the Bid and all prices in the Bid are premised upon performing and furnishing the Work required by the Bidding Documents.

#### **ARTICLE 4 – BIDDER'S CERTIFICATION**

4.01 Bidder certifies that:

- A. 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;
- B. Bidder has not directly or indirectly induced or solicited any other Bidder to submit a false or sham Bid;
- C. Bidder has not solicited or induced any individual or entity to refrain from bidding; and
- D. Bidder has not engaged in corrupt, fraudulent, collusive, or coercive practices in competing for the Contract. For the purposes of this Paragraph 4.01.D:
  - 1. "corrupt practice" means the offering, giving, receiving, or soliciting of any thing of value likely to influence the action of a public official in the bidding process;
  - 2. "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;
  - 3. "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; and
  - 4. "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.



## ARTICLE 5 – BASIS OF BID

### GENERAL

The Bidder shall take notice of and shall be responsible for any local or state taxes levied and applicable, and the cost for the same shall be included as part of the submitted Bid.

The total Bid cost stated includes a complete operating installation including furnishing and installation of any and all changes or additions in plans, piping, mechanical work, additional electrical work, accessories, controls, etc. necessary to accommodate alternative equipment systems or materials used in construction.

### **BID PROPOSAL**

The Bidder agrees to perform all required Work described in the detailed Specifications and as shown on the Plans for the complete construction and placing in satisfactory operation the Water System Improvements, Water Treatment Plant. The Project "Sequence of Construction" has been detailed in the Drawings and Specification Division 1, Project Summary, Section 011000, Part-2 Execution. The Bidder agrees to perform all the Work proposed for the total of the following Bid prices.

5.01 Bidder will complete the Work in accordance with the Contract Documents for the following price(s):

**PROPOSED  
WATER SYSTEM IMPROVEMENTS  
WATER TREATMENT PLANT  
FOR THE  
CITY OF WELLSBURG  
BROOKE COUNTY, WEST VIRGINIA  
THRASHER PROJECT #101-010-1117**

**BID SCHEDULE**

*NOTE: Bid Unit PRICE amounts are to be shown in both words and figures. In case of discrepancy, the amount shown in words will govern. Bids shall include sales tax and all other applicable taxes and fees.*

Item #	Qty.	UNIT	DESCRIPTION	UNIT PRICE	UNIT PRICE WRITTEN IN WORDS	TOTAL PRICE
1	1	LS	Mobilization/Demobilization			
2	3,380	CY	Sludge Lagoon Excavation and Fill			
3	1	LS	WTP Improvements			
4	3,900	VF	Helical Pile			

**TOTAL BID:** \_\_\_\_\_  
\_\_\_\_\_ (\$ \_\_\_\_\_ )  
\_\_\_\_\_

**(Amounts are to be shown in both words and figures. In case of discrepancy, the amount shown in words will govern.)**

**NOTE: THE CONTRACTOR'S UNIT PRICES SHALL INCLUDE PURCHASE AND INSTALLATION, COMPLETE IN PLACE, PER BID ITEM IN ACCORDANCE WITH THE DETAILED SPECIFICATIONS.**

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 Bid items will be based on actual quantities, determined as provided in the Contract Documents.

**METHOD OF AWARD**

If at the time this contract is to be awarded, the lowest total bid submitted by a qualified, responsible Bidder does not exceed the amount of funds then estimated by the Owner, as available to finance the contract, the construction contract will be awarded. If such bids exceed such amount, the Owner may reject all bids.

The owner may award the contract on the Total Bid submitted by a qualified responsible Bidder as listed in the contract to produce the lowest bid within the funds available for financing.

- A. Unit prices have been computed in accordance with paragraph 13.03.A of the General Conditions.
- B. Bidder acknowledges that estimated quantities are not guaranteed, and are solely for the purpose of comparison of Bids, and final payment for all Unit Price Bid items will be based on actual quantities, determined as provided in the Contract Documents.

**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 calendar days indicated in the Agreement.
- 6.02 Bidder accepts the provisions of the Agreement as to liquidated damages.

**ARTICLE 7 – ATTACHMENTS TO THIS BID**

- 7.01 The following documents are submitted with and made a condition of this Bid:
  - A. Bid Opening Requirements

**ARTICLE 8 – DEFINED TERMS**

- 8.01 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 9 – BID SUBMITTAL**

BIDDER: *[Indicate correct name of bidding entity]*

\_\_\_\_\_

By: \_\_\_\_\_  
*[Signature]*

\_\_\_\_\_

*[Printed name]*  
*(If Bidder is a corporation, a limited liability company, a partnership, or a joint venture, attach evidence of authority to sign.)*

Attest: \_\_\_\_\_  
*[Signature]*

\_\_\_\_\_

Title: \_\_\_\_\_

Submittal Date: \_\_\_\_\_

Address for giving notices:  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

Telephone Number: \_\_\_\_\_

Fax Number: \_\_\_\_\_

Contact Name and e-mail address: \_\_\_\_\_  
\_\_\_\_\_

Bidder's License No.: \_\_\_\_\_  
*(where applicable)*

*NOTE TO USER: Use in those states or other jurisdictions where applicable or required.*

## SECTION 012000 - PRICE AND PAYMENT PROCEDURES

### PART 1 - GENERAL

#### 1.1 SECTION INCLUDES

- A. Schedule of Values.
- B. Application for Payment.
- C. Change procedures.
- D. Defect assessment.
- E. Measurement and Payment.
- F. Unit prices.
- G. Alternates.

#### 1.2 SCHEDULE OF VALUES

- A. Submit printed schedule on Progress Estimate schedule on EJCDC C-620 or Contractor's standard form or electronic media printout will be considered for this use.
- B. Submit Schedule of Values in duplicate within twenty (20) days after date established in Notice to Proceed.
- C. Format: Use Table of Contents of this Project Manual. Identify each line item with number and title of major Specification Section. Also identify Site mobilization, bonds and insurance, and demobilization.
- D. Include within each line item, direct proportional amount of Contractor's overhead and profit.
- E. Revise schedule to list approved Change Orders with each Application for Payment.

#### 1.3 APPLICATION FOR PAYMENT

- A. Submit five (5) copies of each Application for Payment on EJCDC C-620 - Contractor's Application for Payment.
- B. Content and Format: Use Schedule of Values for listing items in Application for Payment.
- C. Submit updated construction schedule with each Application for Payment.
- D. Payment Period: Submit at intervals stipulated in the Agreement.

- E. Submit submittals with transmittal letter as specified in Section 013300 - Submittal Procedures.
- F. Substantiating Data: When Engineer requires substantiating information, submit data justifying dollar amounts in question. Include the following with Application for Payment:
  - 1. Partial release of liens from major Subcontractors and vendors.
  - 2. Record Documents as specified in Section 017000 - Execution and Closeout Requirements, for review by Owner, which will be returned to Contractor.
  - 3. Affidavits attesting to off-Site stored products.
  - 4. Construction Progress Schedule, revised and current as specified in Section 013300 - Submittal Procedures.

#### 1.4 CHANGE PROCEDURES

- A. Submittals: Submit name of individual who is authorized to receive change documents and is responsible for informing others in Contractor's employ or Subcontractors of changes to the Work.
- B. Carefully study and compare Contract Documents before proceeding with fabrication and installation of Work. Promptly advise Engineer of any error, inconsistency, omission, or apparent discrepancy.
- C. Requests for Interpretation (RFI) and Clarifications: Allot time in construction scheduling for liaison with Engineer; establish procedures for handling queries and clarifications.
  - 1. Use Request for Information Form for requesting interpretations (provided by Engineer upon request).
  - 2. Engineer may respond with a direct answer on the Request for Information form, separate Engineer Response, EJCDC C-942 - Field Order, or EJCDC C-940 - Work Change Directive Form.
- D. Engineer will advise of minor changes in the Work not involving adjustment to Contract Sum/Price or Contract Time by issuing supplemental instructions on EJCDC C-942.
- E. Engineer may issue Notice of Change including a detailed description of proposed change with supplementary or revised Drawings and Specifications, a change in Contract Time for executing the change with stipulation of overtime work required and with the period of time during which the requested price will be considered valid. Contractor will prepare and submit estimate within 10 days.
- F. Contractor may propose changes by submitting a request for change to Engineer, describing proposed change and its full effect on the Work. Include a statement describing reason for the change and the effect on Contract Sum/Price and Contract Time with full documentation and a statement describing effect on the Work by separate or other Contractors.
- G. Stipulated Sum/Price Change Order: Based on Proposal Request or Word Change Directive and Contractor's maximum price quotation or Contractor's request for Change Order as approved by Engineer.

- H. Unit Price Change Order: For Contract unit prices and quantities, the Change Order will be executed on a fixed unit price basis. For unit costs or quantities of units of that which are not predetermined, execute Work under Work Change Directive. Changes in Contract Sum/Price or Contract Time will be computed as specified for Time and Material Change Order.
  - I. Work Directive Change: Engineer may issue directive, on EJCDC C-940 - Work Change Directive, instructing Contractor to proceed with change in the Work, for subsequent inclusion in a Change Order. Document will describe changes in the Work and designate method of determining any change in Contract Sum/Price or Contract Time. Promptly execute change.
  - J. Time and Material Change Order: Submit itemized account and supporting data after completion of change, within time limits indicated in Conditions of the Contract. Engineer will determine change allowable in Contract Sum/Price and Contract Time as provided in Contract Documents.
  - K. Maintain detailed records of Work done on time and material basis. Provide full information required for evaluation of proposed changes and to substantiate costs for changes in the Work.
  - L. Document each quotation for change in Project Cost or Time with sufficient data to allow evaluation of quotation.
  - M. Change Order Forms: EJCDC C-941 - Change Order.
  - N. Execution of Change Orders: Engineer will issue Change Orders for signatures of parties as provided in Conditions of the Contract.
  - O. Correlation of Contractor Submittals:
    - 1. Promptly revise Schedule of Values and Application for Payment forms to record each authorized Change Order as separate line item and adjust Contract Sum/Price.
    - 2. Promptly revise Progress Schedules to reflect change in Contract Time, revise sub-schedules to adjust times for other items of Work affected by the change, and resubmit.
    - 3. Promptly enter changes in Record Documents.
- 1.5 DEFECT ASSESSMENT
- A. Replace the Work, or portions of the Work, not conforming to specified requirements.
  - B. If, in the opinion of Engineer or Owner, it is not practical to remove and replace the Work, Engineer or Owner will direct appropriate remedy or adjust payment.
  - C. The defective Work may remain, but unit sum/price will be adjusted to new sum/price at discretion of Owner.
  - D. Defective Work will be partially repaired according to instructions of Engineer, and unit sum/price will be adjusted to new sum/price at discretion of Owner.
  - E. Individual Specification Sections may modify these options or may identify specific formula or percentage sum/price reduction.
  - F. Authority of Owner to assess defects and identify payment adjustments is final.

- G. Nonpayment for Rejected Products: Payment will not be made for rejected products for any of the following reasons:
1. Products wasted or disposed of in a manner that is not acceptable.
  2. Products determined as unacceptable before or after placement.
  3. Products not completely unloaded from transporting vehicle.
  4. Products placed beyond lines and levels of the required Work.
  5. Products remaining on hand after completion of the Work.
  6. Loading, hauling, and disposing of rejected products.

## 1.6 MEASUREMENT AND PAYMENT

### A. General Requirements:

1. Contractor shall take measurements and compute quantities. Engineer will verify measurements and quantities.
2. Unit Quantities: Quantities and measurements indicated on Bid Form are for Contract purposes only. Actual quantities provided shall determine payment.
  - a. When actual Work requires more or fewer quantities than those quantities indicated, provide required quantities at contracted unit sum/prices.
  - b. When actual Work requires 25 percent or greater change in quantity than those quantities indicated, Owner or Contractor may claim a Contract Price adjustment.
3. Payment Includes: Full compensation for required labor, products, tools, equipment, plant and facilities, transportation, services and incidentals; erection, application, or installation of item of the Work; overhead and profit.
4. Final payment for Work governed by unit prices will be made on basis of actual measurements and quantities accepted by Engineer multiplied by unit sum/price for Work incorporated in or made necessary by the Work.

### B. Measurement of Quantities:

1. Weigh Scales: Inspected, tested, and certified by applicable West Virginia weights and measures department within past year.
2. Platform Scales: Of sufficient size and capacity to accommodate conveying vehicle.
3. Metering Devices: Inspected, tested, and certified by applicable West Virginia department within past year.
4. Measurement by Weight: Concrete reinforcing steel, rolled or formed steel, or other metal shapes will be measured by handbook weights. Welded assemblies will be measured by handbook or scale weight.
5. Measurement by Volume: Measured by cubic dimension using mean length, width, and height or thickness.
6. Measurement by Area: Measured by square dimension using mean length and width or radius.
7. Linear Measurement: Measured by linear dimension, at item centerline or mean chord.  
Stipulated Sum/Price Measurement: Items measured by weight, volume, area, or linear means or combination, as appropriate, as completed item or unit of the Work.

### C. Unit Price Schedule:

1. Bid Item 1 – Mobilization



- a. This Bid item shall include all costs associated with the performance of construction preparatory operations including, but not limited to, the movement of equipment and personnel to and from the Project Site; establishing and decommissioning the Field Office, storage buildings, and other facilities necessary to conduct Work under this Contract; payment of all bonding costs incurred by the Contractor; all materials and equipment required for unloading and reloading; and all costs associated with demobilization.
  - b. Payment shall be made at the lump sum (LS) price Bid for Mobilization, but in no case shall the total lump sum Bid Price exceed 5% of the total Bid.
  - c. The payment request for mobilization on the first estimate shall not exceed 3% of the total bid price for this contract. The balance of the lump sum bid item shall be considered demobilization and shall be paid at project closeout.
2. Bid Item 2 – Sludge Lagoon Excavation and Fill
- a. This Bid item shall include all required labor, materials, equipment and all other costs associated with the abandonment of the sludge lagoons as shown on the Drawings or as directed by the Engineer, and final grading over the sludge lagoon. The sludge lagoon excavation and fill shall be paid for by the cubic yard, times the Bid price.
  - b. Payment shall be based on cubic yard of fill material used to fill the lagoons after excavation is complete as determined by the Contractor and confirmed by the Engineer. The Engineer has final authority for measured quality.
3. Bid Item No. 3 – WTP Improvements
- a. Scope of Work
    - 1) The LUMP SUM price bid for this bid item shall include costs associated with the Wellsburg Water Treatment Plant improvements as shown in the Contract Documents. These costs include but are not limited to:
      - a) Construction of a new building addition;
      - b) Furnish and construction of belt filter press, including polymer feed system, and sludge pump;
      - c) Furnish and replacement of gravity filter media;
      - d) Furnish and construction of chlorination system;
      - e) Furnish and construction of backwash water pump;
      - f) Furnish and construction of piping, valves, and all appurtenance;
      - g) Furnish and construction of all appurtenances to automate gravity filter systems, including providing a Leopold field representative;
      - h) Furnish and construction chlorine contact tank;
      - i) Furnish and construction of yard piping;
      - j) Remove existing fence and replace as directed in contract documents;
      - k) Final grading of site;
      - l) Support and protection of existing utilities;
      - m) Survey control and controlling grade;
      - n) Furnishing, installing, operating, and maintaining dewatering;
      - o) Furnish and construction of HVAC;
      - p) Demo and construction process piping;
      - q) Demo and construction electrical;

- r) Pavement and site restoration including labor, equipment and materials necessary for the furnishing and placing of topsoil, finish grading, seeding, mulching, fertilizing, landscaping, and watering necessary to establish growth over the disturbed areas; and
- s) Performance testing, verification of process controls and instrumentation, and other activities associated with the commissioning of the pump station following completion of WORK items described above.

b. Measurement and Payment

- 1) Payment will be made at the LUMP SUM price for this Bid Item following acceptance of the work by OWNER and in accordance with the General Terms and Conditions.
- 2) Partial payment of the lump sum item will be paid based on the approved schedule of values for work completed.

4. Bid Item 4 – Helical Pile

- a. This Bid item shall include all required labor, materials, equipment and all other costs associated with the construction of helical piles as shown on the Drawings or as directed by the Engineer, and installed complete in place.
- b. Payment shall be based on vertical feet of helical pile constructed as determined by the Contractor and confirmed by the Engineer. The Engineer has final authority for measured quality.

1.7 ALTERNATES - Not Used

PART 2 - PRODUCTS - Not Used

PART 3 - EXECUTION - Not Used

END OF SECTION 012000

## SECTION 263213 - PACKAGED ENGINE GENERATORS

### PART 1 - GENERAL

#### 1.1 SUMMARY

- A. This Section includes packaged diesel-engine generator sets with the following features and accessories:
  - 1. Engine generator set.
  - 2. Muffler.
  - 3. Outdoor enclosure.
  - 4. Starting battery.
  - 5. Base-Mounting fuel oil tank.

#### 1.2 DEFINITIONS

- A. Standby Rating: Power output rating equal to the power the generator set delivers continuously under normally varying load factors for the duration of a power outage.
- B. Operational Bandwidth: The total variation from the lowest to highest value of a parameter over the range of conditions indicated, expressed as a percentage of the nominal value of the parameter.
- C. Steady-State Voltage Modulation: The uniform cyclical variation of voltage within the operational bandwidth, expressed in Hertz or cycles per second.

#### 1.3 SUBMITTALS

- A. Product Data: Include data on features, components, ratings, and performance. Include the following:
  - 1. Dimensioned outline plan and elevation drawings of engine generator set and other components specified.
  - 2. Thermal damage curve for generator.
  - 3. Time-current characteristic curves for generator protective device.
- B. Shop Drawings: Indicate fabrication details, dimensions, weights, loads, required clearances, method of field assembly, components, and location and size of each field connection.
  - 1. Wiring Diagrams: Detail wiring for power and control connections and differentiate between factory-installed and field-installed wiring.
- C. Field Test and Observation Reports: Test results and inspection records as specified in Part 3.
- D. Certified summary of prototype-unit test report.
- E. Certified Test Reports: For components and accessories that are equivalent, but not identical, to those tested on prototype unit.

- F. Certified Summary of Performance Tests: Demonstrate compliance with specified requirement to meet performance criteria for sensitive loads.
- G. Factory Test Reports: For units to be shipped for this Project, showing evidence of compliance with specified requirements.
- H. Sound measurement test report.
- I. Maintenance Data: For each packaged engine generator and accessories. Include the following:
  - 1. Detail operating instructions for both normal and abnormal conditions.

#### 1.4 QUALITY ASSURANCE

- A. Manufacturer Qualifications: Maintain a service center capable of emergency maintenance and repairs at the Project with eight hours' maximum response time.
- B. Source Limitations: Obtain packaged engine generator and auxiliary components specified in this Section through one source from a single manufacturer.
- C. Electrical Components, Devices, and Accessories: Listed and labeled as defined in NFPA 70, Article 100, by a testing agency acceptable to authorities having jurisdiction.
- D. Comply with NFPA 70.
- E. Comply with NFPA 99.

#### 1.5 DELIVERY, STORAGE, AND HANDLING

- A. Deliver engine generator set and system components to their final locations in protective wrappings, containers, and other protection that will exclude dirt and moisture and prevent damage from construction operations. Remove protection only after equipment is safe from such hazards.

#### 1.6 WARRANTY

- A. General Warranty: Special warranty specified in this Article shall not deprive Owner of other rights Owner may have under other provisions of the Contract Documents and shall be in addition to, and run concurrent with, other warranties made by Contractor under requirements of the Contract Documents.
- B. Special Warranty: Written warranty, executed by manufacturer agreeing to repair or replace packaged engine generator and auxiliary components that fail in materials or workmanship within specified warranty period.
  - 1. Warranty Period: Five years from date of Substantial Completion.

1.7 MAINTENANCE SERVICE

- A. Maintenance: At Substantial Completion, begin 12 months' full maintenance by skilled employees of the manufacturer's designated service organization. Include quarterly exercising to check for proper starting, load transfer, and running under load. Include routine preventive maintenance as recommended by manufacturer and adjusting as required for proper operation. Maintenance agreements shall include parts and supplies as used in the manufacture and installation of original equipment.

1.8 EXTRA MATERIALS

- A. Furnish extra materials described below that match products installed and that are packaged with protective covering for storage and identified with labels describing contents.
  - 1. Filters: One set each of lubricating oil, fuel, and combustion-air filters.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

- A. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
  - 1. Caterpillar, Inc.; Engine Div.
  - 2. Kohler Co; Generator Division.
  - 3. Cummins, Power Generation.
  - 4. Generac
- B. Refer to Electrical Drawings for sizing requirements.

2.2 ENGINE GENERATOR SET

- A. Furnish a coordinated assembly of compatible components.
- B. Output Connections: Three phase, four wire.
- C. Safety Standard: Comply with ASME B15.1.
- D. Nameplates: Each major system component is equipped with a conspicuous nameplate of component manufacturer. Nameplate identifies manufacturer of origin and address, and model and serial number of item.
- E. Limiting dimensions indicated for system components are not exceeded.
- F. Skid: Adequate strength and rigidity to maintain alignment of mounted components without depending on a concrete foundation. Skid is free from sharp edges and corners. Lifting attachments are arranged to facilitate lifting with slings without damaging any components.

## 2.3 GENERATOR-SET PERFORMANCE

- A. Steady-State Voltage Operational Bandwidth: 4 percent of rated output voltage from no load to full load.
- B. Steady-State Voltage Modulation Frequency: Less than 1 Hz.
- C. Transient Voltage Performance: Not more than 20 percent variation for 50 percent step-load increase or decrease. Voltage recovers to remain within the steady-state operating band within three seconds.
- D. Steady-State Frequency Operational Bandwidth: 0.5 percent of rated frequency from no load to full load.
- E. Steady-State Frequency Stability: When system is operating at any constant load within rated load, there are no random speed variations outside the steady-state operational band and no hunting or surging of speed.
- F. Transient Frequency Performance: Less than 5 percent variation for a 50 percent step-load increase or decrease. Frequency recovers to remain within the steady-state operating band within five seconds.
- G. Output Waveform: At no load, harmonic content measured line to line or line to neutral does not exceed 5 percent total and 3 percent for single harmonics. The telephone influence factor, determined according to NEMA MG 1, shall not exceed 50.
- H. Sustained Short-Circuit Current: For a three-phase, bolted short circuit at system output terminals, the system will supply a minimum of 250 percent of rated full-load current for not less than 10 seconds and then clear the fault automatically, without damage to any generator system component.

## 2.4 SERVICE CONDITIONS

- A. Environmental Conditions: Engine generator system withstands the following environmental conditions without mechanical or electrical damage or degradation of performance capability:
  - 1. Ambient Temperature: 5 to 40 deg C.
  - 2. Relative Humidity: 0 to 95 percent.
  - 3. Altitude: Sea level to 1000 feet.

## 2.5 ENGINE

- A. Comply with NFPA 37.
- B. Fuel: Fuel oil, Grade DF-2.
- C. Rated Engine Speed: 1800 rpm.
- D. Lubrication System: Pressurized by a positive-displacement pump driven from engine crankshaft. The following items are mounted on engine or skid:

1. Filter and Strainer: Rated to remove 90 percent of particles 5 micrometers and smaller while passing full flow.
  2. Thermostatic Control Valve: Controls flow in system to maintain optimum oil temperature. Unit is capable of full flow and is designed to be fail-safe.
  3. Crankcase Drain: Arranged for complete gravity drainage to an easily removable container with no disassembly and without use of pumps or siphons or special tools or appliances.
- E. Engine Fuel System: Comply with NFPA 37. System includes the following:
1. Main Fuel Pump: Mounted on engine. Pump ensures adequate primary fuel flow under starting and load conditions.
  2. Relief/Bypass Valve: Automatically regulates pressure in fuel line and returns excess fuel to source.
- F. Coolant Jacket Heater: Electric-immersion type, factory installed in coolant jacket system. Comply with NFPA 110 requirements for Level 1 equipment.

## 2.6 GOVERNOR

- A. Type: Adjustable isochronous, with speed sensing.

## 2.7 ENGINE COOLING SYSTEM

- A. Description: Closed loop, liquid cooled, with radiator factory mounted on engine generator-set skid and integral engine-driven coolant pump.
- B. Radiator: Rated for specified coolant.
- C. Coolant: Solution of 50 percent ethylene-glycol-based antifreeze and 50 percent water, with anticorrosion additives as recommended by engine manufacturer.
- D. Temperature Control: Self-contained, thermostatic-control valve modulates coolant flow automatically to maintain optimum constant coolant temperature as recommended by engine manufacturer.
- E. Coolant Hose: Flexible assembly with inside surface of nonporous rubber and outer covering of aging-, ultraviolet-, and abrasion-resistant fabric.
1. Rating: 50-psig maximum working pressure with 180 deg F coolant, and noncollapsible under vacuum.
  2. End Fittings: Flanges or steel pipe nipples with clamps to suit piping and equipment connections.
- F. Coolant piping external to engine generator set. Use ASTM B 88, Type L copper tubing with brazed joints, sized as recommended by diesel engine manufacturer. Refer to Division 15 Section "Basic Mechanical Materials and Methods" for basic piping installation and joint construction. Refer to Division 15 Section "Hydronic Piping" for materials and installation requirements for piping.

## 2.8 FUEL SUPPLY SYSTEM

- A. Comply with NFPA 30 and NFPA 37.
- B. Base-Mounted Fuel Oil Tank: Factory-installed and -piped, listed and labeled fuel oil tank. Features include the following:
  - 1. Tank level indicator.
  - 2. Capacity: Fuel for twenty four hours' continuous operation at 100 percent rated power output.
  - 3. Vandal-resistant fill cap.
  - 4. Double wall.
  - 5. Leak detection and low level alarm.
- C. Interior Fuel Oil Piping: As specified in Division 15 Section "Fuel Oil Piping."

## 2.9 ENGINE EXHAUST SYSTEM

- A. Muffler: Residential type, sized as recommended by engine manufacturer. Measured sound level at a distance of 10 feet from exhaust discharge, is 95 dBA or less.
- B. Connections from Engine to Exhaust System: Flexible section of corrugated stainless-steel pipe.

## 2.10 STARTING SYSTEM

- A. Description: 12 or 24-V electric, with negative ground and including the following items:
  - 1. Components: Sized so they will not be damaged during a full engine-cranking cycle with ambient temperature at maximum specified in "Environmental Conditions" Paragraph in "Service Conditions" Article above.
  - 2. Cranking Motor: Heavy-duty unit that automatically engages and releases from engine flywheel without binding.
  - 3. Cranking Cycle: As required by NFPA 110 for system level specified.
  - 4. Cranking Cycle: 60 seconds.
  - 5. Battery: Adequate capacity within ambient temperature range specified in "Environmental Conditions" Paragraph in "Service Conditions" Article above to provide specified cranking cycle at least twice without recharging.
  - 6. Battery: Adequate capacity within ambient temperature range specified in "Environmental Conditions" Paragraph in "Service Conditions" Article above to provide specified cranking cycle at least three times without recharging.
  - 7. Battery Cable: Size as recommended by generator set manufacturer for cable length indicated. Include required interconnecting conductors and connection accessories.
  - 8. Battery Compartment: Factory fabricated of metal with acid-resistant finish and thermal insulation. Thermostatically controlled heater is arranged to maintain battery above 10 deg C regardless of external ambient temperature within range specified in "Environmental Conditions" Paragraph in "Service Conditions" Article above. Include accessories required to support and fasten batteries in place.
  - 9. Battery-Charging Alternator: Factory mounted on engine with solid-state voltage regulation and 35-A minimum continuous rating.



## 2.11 CONTROL AND MONITORING

- A. Functional Description: When the mode-selector switch on the control and monitoring panel is in the automatic position, remote-control contacts in one or more separate automatic-transfer switches initiate starting and stopping of the generator set. When the mode-selector switch is switched to the on position, the generator set manually starts. The off position of the same switch initiates generator-set shutdown. When the generator set is running, specified system or equipment failures or derangements automatically shut down the generator set and initiate alarms. Operation of a remote emergency-stop switch also shuts down the generator set.
- B. Functional Description: Switching on-off switch on the generator control panel to the on position starts the generator set. The off position of the same switch initiates generator-set shutdown. When the generator set is running, specified system or equipment failures or derangements automatically shut down the generator set and initiate alarms.
- C. Configuration: Operating and safety indications, protective devices, basic system controls, and engine gages are grouped on a common control and monitoring panel mounted on the generator set. Mounting method isolates the control panel from generator-set vibration.
- D. Indicating and Protective Devices and Controls: Include the following:
  - 1. AC voltmeter.
  - 2. AC ammeter.
  - 3. AC frequency meter.
  - 4. DC voltmeter (alternator battery charging).
  - 5. Engine-coolant temperature gage.
  - 6. Engine lubricating-oil pressure gage.
  - 7. Running-time meter.
  - 8. Ammeter-voltmeter, phase-selector switch(es).
  - 9. Generator-voltage adjusting rheostat.
  - 10. Start-stop switch.
  - 11. Overspeed shutdown device.
  - 12. Coolant high-temperature shutdown device.
  - 13. Coolant low-level shutdown device.
  - 14. Oil low-pressure shutdown device.
  - 15. Fuel tank derangement alarm.
  - 16. Fuel tank high-level shutdown of fuel supply alarm.
  - 17. Generator overload.
- E. Supporting Items: Include sensors, transducers, terminals, relays, and other devices, and wiring required to support specified items. Locate sensors and other supporting items on engine, generator, or elsewhere as indicated. Where not indicated, locate to suit manufacturer's standard.

## 2.12 GENERATOR OVERCURRENT AND FAULT PROTECTION

- A. Generator Circuit Breaker: Molded-case, electronic-trip type; 100 percent rated; complying with UL 489.
  - 1. Tripping Characteristics: Adjustable long-time and short-time delay and instantaneous.
  - 2. Trip Settings: Matched to generator thermal damage curve as closely as possible.

3. Shunt Trip: Connected to trip breaker when generator set is shut down by other protective devices.
  4. Mounting: Adjacent to or integrated with control and monitoring panel.
- B. Generator Protector: Microprocessor-based unit that continuously monitors current level in each phase of generator output, integrates generator heating effect over time, and predicts when thermal damage of the alternator will occur. When signaled by the protector or other generator-set protective devices, a shunt-trip device in the generator disconnect switch shall open the switch to disconnect the generator from the load circuits. Protector performs the following functions:
1. Initiates a generator overload alarm when the generator has operated at an overload equivalent to 110 percent of full-rated load for 60 seconds. Indication for this alarm is integrated with other generator-set malfunction alarms.
  2. Under single or three-phase fault conditions, regulates the generator to 300 percent of rated full-load current for up to 10 seconds.
  3. As heating effect on the generator of overcurrent approaches the thermal damage point of the unit, the protector switches the excitation system off, opens the generator disconnect switch, and shuts down the generator set.
  4. Senses clearing of a fault by other overcurrent devices and controls recovery of rated voltage to avoid overshoot.

#### 2.13 GENERATOR, EXCITER, AND VOLTAGE REGULATOR

- A. Comply with NEMA MG 1 and specified performance requirements.
- B. Drive: Generator shaft is directly connected to engine shaft. Exciter is rotated integrally with generator rotor.
- C. Electrical Insulation: Class H or Class F.
- D. Stator-Winding Leads: Brought out to terminal box to permit future reconnection for other voltages if required.
- E. Construction prevents mechanical, electrical, and thermal damage due to vibration, overspeed up to 125 percent of rating, and heat during operation at 110 percent of rated capacity.
- F. Excitation uses no slip or collector rings, or brushes, and is arranged to sustain generator output under short-circuit conditions as specified.
- G. Enclosure: Dripproof.
- H. Instrument Transformers: Mounted within generator enclosure.
- I. Voltage Regulator: Solid-state type, separate from exciter, providing performance as specified.
  1. Adjusting rheostat on control and monitoring panel provides plus or minus 5 percent adjustment of output- voltage operating band.
- J. Windings: Two-thirds pitch stator winding and fully linked amortisseur winding.

- K. Subtransient Reactance: 12 percent, maximum.

#### 2.14 OUTDOOR GENERATOR-SET ENCLOSURE

- A. Description: Vandal-resistant, weatherproof steel housing, wind resistant up to 100 mph. Multiple panels are lockable and provide adequate access to components requiring maintenance. Panels are removable by one person without tools. Instruments and control are mounted within enclosure.
- B. Muffler Location: External to enclosure.
- C. Engine Cooling Airflow through Enclosure: Adequate to maintain temperature rise of system components within required limits when unit operates at 110 percent of rated load for two hours with ambient temperature at top of range specified in system service conditions.

#### 2.15 FINISHES

- A. Outdoor Enclosures: Manufacturer's standard enamel over corrosion-resistant pretreatment and compatible standard primer.

#### 2.16 SOURCE QUALITY CONTROL

- A. Factory Tests: Include prototype testing and Project-specific equipment testing (testing of equipment manufactured specifically for this Project).
- B. Prototype Testing: Performed on a separate engine generator set using same engine model, constructed of identical or equivalent components and equipped with identical or equivalent accessories.
  - 1. Tests: Comply with those required for Level 1 energy converters in Paragraphs 3.2.1, 3.2.1.1, and 3.2.1.2 of NFPA 110.
  - 2. Generator Tests: Comply with IEEE 115.
  - 3. Components and Accessories: Items furnished with installed unit that are not identical to those on tested prototype have been tested to demonstrate compatibility and reliability.
- C. Project-Specific Equipment Tests: Factory test engine generator set and other system components and accessories before shipment. Perform tests at rated load and power factor. Include the following tests.
  - 1. Full load run.
  - 2. Maximum power.
  - 3. Voltage regulation.
  - 4. Transient and steady-state governing.
  - 5. Single-step load pickup.

## PART 3 - EXECUTION

### 3.1 EXAMINATION

- A. Examine areas, equipment foundations, and conditions, with Installer present, for compliance with requirements for installation and other conditions affecting packaged engine generator performance.
  - 1. Proceed with installation only after unsatisfactory conditions have been corrected.
- B. Examine roughing-in of cooling-system piping systems and electrical connections. Verify actual locations of connections before packaged engine generator installation.

### 3.2 INSTALLATION

- A. Set packaged engine generator set on concrete bases.
  - 1. Support generator-set mounting feet on rectangular metal blocks and shims or on metal wedges having small taper, at points near foundation bolts to provide 3/4- to 1-1/2-inch gap between pump base and foundation for grouting.
  - 2. Adjust metal supports or wedges until generator is level.
- B. Install packaged engine generator to provide access for periodic maintenance, including removal of drivers and accessories.
- C. Install cooling-system piping, accessories, hangers and supports, and anchors for complete installation.
  - 1. Extend drain piping from heat exchangers to point of disposition.
- D. Install exhaust-system piping for diesel engines. Extend to point of termination outside structure. Size piping according to manufacturer's written instructions.
- E. Electrical Wiring: Install electrical devices furnished by equipment manufacturers but not specified to be factory mounted.
  - 1. Verify that electrical wiring is installed according to manufacturers' submittal and installation requirements in Division 26 Sections. Proceed with equipment startup only after wiring installation is satisfactory.

### 3.3 CONNECTIONS

- A. Piping installation requirements are specified in Division 40 Sections. Drawings indicate general arrangement of piping and specialties. The following are specific connection requirements:
  - 1. Install piping adjacent to packaged engine generator to allow service and maintenance.
  - 2. Connect water supply to cooling system.
  - 3. Connect cooling-system water supply and drain piping to diesel-engine heat exchangers. Install flexible connectors at connections to engine generator and remote radiator.
  - 4. Connect exhaust-system piping to diesel engines.

- B. Electrical wiring and connections are specified in Division 26 Sections.
- C. Ground equipment.
  - 1. Tighten electrical connectors and terminals according to manufacturer's published torque-tightening values. If manufacturer's torque values are not indicated, use those specified in UL 486A and UL 486B.

### 3.4 IDENTIFICATION

- A. Identify system components according Division 26 Section "Basic Electrical Materials and Methods."

### 3.5 FIELD QUALITY CONTROL

- A. Manufacturer's Field Service: Engage a factory-authorized service representative to inspect field-assembled components and equipment installation, including piping and electrical connections, and to assist in testing. Report results in writing.
- B. Testing: Owner will engage a qualified testing agency to perform field quality-control testing.
- C. Testing: Perform field quality-control testing under the supervision of the manufacturer's factory-authorized service representative.
- D. Tests: Include the following:
  - 1. Tests recommended by manufacturer.
  - 2. InterNational Electrical Testing Association Tests: Perform each visual and mechanical inspection and electrical and mechanical test stated in NETA ATS for emergency engine generator sets, except omit vibration baseline test. Certify compliance with test parameters for tests performed.
  - 3. Battery Tests: Measure charging voltage and voltages between available battery terminals for full-charging and float-charging conditions. Check electrolyte level and specific gravity under both conditions. Test for contact integrity of all connectors. Perform an integrity load test and a capacity load test for the battery. Verify acceptance of charge for each element of battery after discharge. Verify measurements are within manufacturer's specifications.
  - 4. Battery-Charger Tests: Verify specified rates of charge for both equalizing and float-charging conditions.
  - 5. System Integrity Tests: Methodically verify proper installation, connection, and integrity of each element of engine generator system before and during system operation. Check for air, exhaust, and fluid leaks.
- E. Coordinate tests with tests for transfer switches and run them concurrently.
- F. Retest: Correct deficiencies identified by tests and observations and retest until specified requirements are met.

- G. Report results of tests and inspections in writing. Record adjustable relay settings and measured insulation resistances, time delays, and other values and observations. Attach a label or tag to each tested component indicating satisfactory completion of tests.
- H. Test instruments shall have been calibrated within the last 12 months, traceable to standards of the National Institute for Standards and Technology, and adequate for making positive observation of test results. Make calibration records available for examination on request.

### 3.6 COMMISSIONING

- A. Battery Equalization: Equalize charging of battery cells according to manufacturer's written instructions. Record individual cell voltages.
- B. Contractor shall completely fill the fuel tank for start-up and then re-fill the prior to placing into service.

### 3.7 CLEANING

- A. On completion of installation, inspect system components. Remove paint splatters and other spots, dirt, and debris. Repair damaged finish to match original finish. Clean components internally using methods and materials recommended by manufacturer.

### 3.8 DEMONSTRATION

- A. Engage a factory-authorized service representative to train Owner's maintenance personnel to adjust, operate, and maintain packaged engine generators as specified below:
  - 1. Coordinate this training with that for transfer switches.
  - 2. Train Owner's maintenance personnel on procedures and schedules for starting and stopping, troubleshooting, servicing, and maintaining equipment.
  - 3. Review data in maintenance manuals.
  - 4. Schedule training with Owner, through Engineer, with at least seven days' advance notice.
  - 5. Minimum Instruction Period: Eight hours.

END OF SECTION 263213