TOWN OF CAPON BRIDGE
HAMPSHIRE COUNTY, WEST VIRGINIA

CONTRACT #1 – PROPOSED WASTEWATER TREATMENT PLANT EXPANSION
CONTRACT #2 - PROPOSED SANITARY SEWER UPGRADES AND IMPROVEMENTS

ADDENDUM #1

DECEMBER 18, 2020

To Whom It May Concern:

A non-mandatory pre-bid conference was held on Wednesday, December 9, 2019 at 10:00 am for the above referenced project. This addendum addresses questions that were asked at that Pre-Bid conference along with clarifications on these contracts. The sign in sheet from the pre-bid conference has been included with this addendum.

Please note that the approvals/disapprovals of equipment, materials, and products approved "as equal" are made by the Engineer for this specific project based on the best available information and shall not be construed as precedent for approval/disapproval on other future projects.

Please acknowledge receipt of all Addenda in the Bid Opening Requirements and in the Bid Form.

QUESTIONS AND RESPONSES:

QUESTION

1. **If a Contractor submits bids for both contracts and is successful on the first one, is the Contractor able to pull their bid for the second one?**

RESPONSE

Yes, the intent is to open Contract #1 first. We will then pause for 5-10 minutes to give the successful bidder the opportunity to call and ask that their Contract #2 bid not be opened.

QUESTION

2. Do you have an anticipated Notice to Proceed date?

RESPONSE

Our anticipated Notice to Proceed, if the bids are in budget, would be between the end of February and the middle of March. (See Clarification #7)

QUESTION

3. Do you have an Engineer's Estimate on each contract?

RESPONSE

Yes, Contract #1 estimate is $ 1,350,000 and Contract #2 estimate is $ 950,000

QUESTION

4. Is there a permitted waste area that the Contractor can use for the project?

RESPONSE

The Town does not have a permitted waste area that can be used for the project.

QUESTION

5. Is the office trailer only in one contract? If so, which one?

RESPONSE

An office trailer is required for Contract #1 and has been removed from Contract #2. It is the Contractor's responsibility to secure the site. If a parcel is rented or leased, an agreement that holds the Owner and the Engineer harmless is required as outlined in the specifications. Specification Section 015000 – Temporary Facilities and Controls has been revised for both contracts as part of this Addendum.

QUESTION

6. Is the project tax exempt with regards to materials for the infrastructure?

RESPONSE

Yes.

QUESTION

7. Is it okay to bid just one contract or is the Contractor required to bid both?

RESPONSE

No, contractors can bid on one or both. There is no requirement to bid both. There will have to be some coordination between contracts, but it is two separate documents.

QUESTION

8. The contract times for Contract #1 seems short. There is a lot of time in submittals, putting in orders, deliveries, etc. and this does not leave enough time to perform the Work.

RESPONSE

Contract times for Contract #1 have been extended to 300 days to Substantial Completion and 330 days to Final Completion. The Agreement between the Owner and the Contractor has been revised as part of this addendum.

CLARIFICATIONS:

1. The bidding process is a two (2) envelope system. Envelope No. 1 must have the following information presented on the front:

   Name and address of Bidder
   Bid on Contract #__ – _____(Project Name)_____
   Town of Capon Bridge

   Envelope No. 2 labeled "Bid Proposal" shall be placed inside of Envelope #1

   Envelope No. 1 will be opened first and the Bid Opening Requirement items will be checked for compliance as outlined on the Bid Opening Checklist (BOR-1). If such documents are found to be in order, Envelope No. 2 "Bid Proposal", will be opened and will be publicly read aloud. If the documents required to be contained in Envelope No. 1 **are not in order**, Envelope No. 2 "Bid Proposal", **will not be opened** and the Bid will be considered non-responsive.

2. Mailed/Shipped bid packages shall be sent to the attention of Danny Braham at The Thrasher Group, Inc., P.O. Box 940, 600 White Oaks Blvd, Bridgeport, WV 26330. Thrasher's phone number is 1-800-273-6541. Bidders should **not** assume guaranteed early (10:30 am) delivery is available and shall be mailed/shipped in sufficient time. It is the Bidder's responsibility to deliver the Bid on time. Sealed Bids will be received until 2:00 PM local time on January 13, 2021 at which time the Bids received will be publicly opened and read.

3. Contract #1 Bids will be opened first. At the completion of opening Contract #1 Bids, there will be a ten-minute pause before opening of Contract #2 Bids will begin. The Apparent Low Bidder for Contract #1 will have the opportunity to withdraw their Contract #2 Bid during that time if they have submitted Bids for both contracts. If the Apparent Low Bidder on Contract #1 has not submitted a Bid for Contract #2, the opening of Contract #2 Bids will proceed without the ten-minute pause.

4. All work is to be coordinated through the Engineer and the Town to ensure no disruption to the existing collection or water distribution system.

5. Engineer's Approved Equal means material, equipment, or method approved by the engineer for use in the work, as being acceptable as an equivalent in essential attributes to the material, equipment, or method specified in the contract documents.

6. Lakeside Equipment Corporation is an Approved Equal Manufacturer for Specifications Section 462433.01 – Semi-Cylindrical Screen with Integrated Screenings Wash-Press.

7. All land and Rights-of-Way have been obtained. The intent is to Award within 45 days after Bid Opening.

8. To arrange a site visit at the WWTP, contact the Operator Steve Bowers @ 304-813-8545.

9. A Business License from the Town will be required by contractors and sub-contractors performing Work in the Town prior to starting construction. Fee is $50.

10. There will be NO B&O taxes on this project.

11. In order to have questions answered prior to Bid Opening, they must be submitted no later than Monday, January 4th @ 5:00 PM. Submit all questions to Danny Braham via email at dbraham@thethrashergroup.com.

12. The following Specification Sections for Contract #1 – Proposed Wastewater Treatment Plant Expansion have been revised as part of this addendum:

    - 013300 – Submittal Procedures
    - 015000 – Temporary Facilities and Controls
    - 115300 – Laboratory Equipment, Supplies and Chemicals
    - 463111 – Chlorination/Dechlorination Gas Feed Equipment

13. The following Specification Sections for Contract #2 – Proposed Sanitary Sewer Upgrades and Improvements have been revised as part of this addendum:
    - 013300 – Submittal Procedures
    - 015000 – Temporary Facilities and Controls

14. Contract #1 – Proposed Wastewater Treatment Plant Expansion Plan Sheet #i has been revised as part of this Addendum.

If you have any other questions or comments, please feel free to contact Danny Braham at 330-557-5087 at your earliest convenience.

Sincerely,

THE THRASHER GROUP, INC.

DANIEL E. FERRELL, P.E.
Principal-In-Charge

Enclosures: Pre Bid Sign In Sheet

Contract #1
- Agreement Between Owner and Contractor
- Specification 013300
- Specification 015000
- Specification 115300
- Specification 463111
- Plan Sheet #i

Contract #2
- Specification 013300
- Specification 015000

TOWN OF CAPON BRIDGE
HAMPSHIRE COUNTY, WEST VIRGINIA
CONTRACT #1 – PROPOSED WASTEWATER TREATMENT PLANT EXPANSION
CONTRACT #2 - PROPOSED SANITARY SEWER UPGRADES AND IMPROVEMENTS

PRE-BID CONFERENCE

Wednesday, December 9, 2020

Thrasher Project #101-020-1493

Name	Representing	Phone #	Email Address
Dan Ferrell	Thrasher		
Danny Braham	Thrasher	330.557.5087	dbraham@thethrashergroup.com
Gary Walker	Alvarez		
Jan Shipley	Global		
Pam Keplinger	Region 8		
Steve Diehl	LCW		
Max Clatterbuck	LCW		
Katie Alvarez	Alvarez		
William Landsaw	Snyder		

Name	Representing	Phone #	Email Address
Donald Duriez	SES		
Daniel Beck	LCW		
David Rollins	Cummings		
Steve Bowers	Capon Bridge	304.813.8545	

AGREEMENT
BETWEEN OWNER AND CONTRACTOR
FOR CONSTRUCTION CONTRACT (STIPULATED PRICE)

THIS AGREEMENT is by and between Town of Capon Bridge ("Owner") and

("Contractor").

Owner and Contractor hereby agree as follows:

ARTICLE 1 – WORK

1.01 Contractor shall complete all Work as specified or indicated in the Contract Documents. The Work is generally described as follows: Contract #1 – Proposed Wastewater Treatment Plant Expansion.

ARTICLE 2 – THE PROJECT

2.01 The Project, of which the Work under the Contract Documents is a part, is generally described as follows: Proposed Sanitary Sewer Upgrades

ARTICLE 3 – ENGINEER

3.01 The part of the Project that pertains to the Work has been designed by The Thrasher Group, Inc.

3.02 The Owner has retained The Thrasher Group, Inc. ("Engineer") to act as Owner's representative, assume all duties and responsibilities, and have the rights and authority assigned to Engineer in the Contract Documents in connection with the completion of the Work in accordance with the Contract Documents.

ARTICLE 4 – CONTRACT TIMES

4.01 *Time of the Essence*

A. All time limits for Milestones, if any, Substantial Completion, and completion and readiness for final payment as stated in the Contract Documents are of the essence of the Contract.

4.02 *Contract Times: Days*

A. The Work will be substantially completed within 300 days after the date when the Contract Times commence to run as provided in Paragraph 4.01 of the General Conditions, and completed and ready for final payment in accordance with Paragraph 15.06 of the General Conditions within 330 days after the date when the Contract Times commence to run.

4.03 *Liquidated Damages*

A. Contractor and Owner recognize that time is of the essence as stated in Paragraph 4.01 above and that Owner will suffer financial and other losses if the Work is not completed and Milestones not achieved within the times specified in Paragraph 4.02 above, plus any extensions thereof allowed in accordance with the Contract. The parties also recognize the delays, expense, and difficulties involved in proving in a legal or arbitration proceeding the

actual loss suffered by Owner if the Work is not completed on time. Accordingly, instead of requiring any such proof, Owner and Contractor agree that as liquidated damages for delay (but not as a penalty):

1. Substantial Completion: Contractor shall pay Owner $500.00 for each day that expires after the time (as duly adjusted pursuant to the Contract) specified in Paragraph 4.02.A above for Substantial Completion until the Work is substantially complete.
2. Completion of Remaining Work: After Substantial Completion, if Contractor shall neglect, refuse, or fail to complete the remaining Work within the Contract Times (as duly adjusted pursuant to the Contract) for completion and readiness for final payment, Contractor shall pay Owner $500.00 for each day that expires after such time until the Work is completed and ready for final payment.
3. Liquidated damages for failing to timely attain Substantial Completion and final completion are not additive and will not be imposed concurrently.

4.04 ~~*Special Damages*~~ [DELETED]

ARTICLE 5 – CONTRACT PRICE

5.01 Owner shall pay Contractor for completion of the Work in accordance with the Contract Documents the amounts that follow, subject to adjustment under the Contract:

A. For all Work other than Unit Price Work, a lump sum of: $ As described in Bid Form.

All specific cash allowances are included in the above price in accordance with Paragraph 13.02 of the General Conditions.

B. For all Unit Price Work, an amount equal to the sum of the extended prices (established for each separately identified item of Unit Price Work by multiplying the unit price times the actual quantity of that item):

Unit Price Work					
Item No.	**Description**	**Unit**	**Estimated Quantity**	**Unit Price**	**Extended Price**
	As described in Bid Form				
Total of all Extended Prices for Unit Price Work (subject to final adjustment based on actual quantities)					$

The extended prices for Unit Price Work set forth as of the Effective Date of the Contract are based on estimated quantities. As provided in Paragraph 13.03 of the General Conditions, estimated quantities are not guaranteed, and determinations of actual quantities and classifications are to be made by Engineer.

C. Total of Lump Sum Amount and Unit Price Work (subject to final Unit Price adjustment) $ As described in Bid Form.

D. For all Work, at the prices stated in Contractor's Bid, attached hereto as an exhibit.

ARTICLE 6 – PAYMENT PROCEDURES

6.01 *Submittal and Processing of Payments*

A. Contractor shall submit Applications for Payment in accordance with Article 15 of the General Conditions. Applications for Payment will be processed by Engineer as provided in the General Conditions.

6.02 *Progress Payments; Retainage*

A. Owner shall make progress payments on account of the Contract Price on the basis of Contractor's Applications for Payment on or about the 30* day of each month during performance of the Work as provided in Paragraph 6.02.A.1 below, provided that such Applications for Payment have been submitted in a timely manner and otherwise meet the requirements of the Contract. All such payments will be measured by the Schedule of Values established as provided in the General Conditions (and in the case of Unit Price Work based on the number of units completed) or, in the event there is no Schedule of Values, as provided elsewhere in the Contract.

1. Prior to Substantial Completion, progress payments will be made in an amount equal to the percentage indicated below but, in each case, less the aggregate of payments previously made and less such amounts as Owner may withhold, including but not limited to liquidated damages, in accordance with the Contract

a. 90 percent of Work completed (with the balance being retainage). ~~If the Work has been 50 percent completed as determined by Engineer, and if the character and progress of the Work have been satisfactory to Owner and Engineer, then as long as the character and progress of the Work remain satisfactory to Owner and Engineer, there will be no additional retainage~~; and

b. 90 percent of cost of materials and equipment not incorporated in the Work (with the balance being retainage).

B. Upon Substantial Completion of the entire construction to be provided under the contract documents, Owner shall pay an amount sufficient to increase total payments to Contractor to 95 percent of the Work completed, less such amounts set off by Owner pursuant to Paragraph 15.01.E of the General Conditions, and less 100 percent of Engineer's estimate of the value of Work to be completed or corrected as shown on the punch list of items to be completed or corrected prior to final payment.

* Unless adjusted at the Pre Construction Conference.

6.03 *Final Payment*

A. Upon final completion and acceptance of the Work in accordance with Paragraph 15.06 of the General Conditions, Owner shall pay the remainder of the Contract Price as recommended by Engineer as provided in said Paragraph 15.06.

ARTICLE 7 – INTEREST

7.01 All amounts not paid when due shall bear interest at the rate of *1.5* percent per annum.

ARTICLE 8 – CONTRACTOR'S REPRESENTATIONS

8.01 In order to induce Owner to enter into this Contract, Contractor makes the following representations:

A. Contractor has examined and carefully studied the Contract Documents, and any data and reference items identified in the Contract Documents.

B. Contractor has visited the Site, conducted a thorough, alert visual examination of the Site and adjacent areas, and become familiar with and is satisfied as to the general, local, and Site conditions that may affect cost, progress, and performance of the Work.

C. Contractor is familiar with and is satisfied as to all Laws and Regulations that may affect cost, progress, and performance of the Work.

D. Contractor 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. Contractor has considered the information known to Contractor itself; information commonly known to contractors doing business in the locality of the Site; information and observations obtained from visits to the Site; the Contract Documents; and the Site-related reports and drawings identified in the Contract 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 Contractor; and (3) Contractor's safety precautions and programs.

F. Based on the information and observations referred to in the preceding paragraph, Contractor 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.

G. Contractor 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 Contract Documents.

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

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

J. Contractor's entry into this Contract constitutes an incontrovertible representation by Contractor that without exception all prices in the Agreement are premised upon performing and furnishing the Work required by the Contract Documents.

ARTICLE 9 – CONTRACT DOCUMENTS

9.01 *Contents*

A. The Contract Documents consist of the following:

1. This Agreement (pages 1 to ___, inclusive).
2. Performance bond (pages C-610-1 to C-610-__, inclusive).
3. Payment bond (pages C-615-1 to C-615-__, inclusive).
4. Other bonds.
   a. ___ (pages ___ to ___, inclusive).
5. General Conditions (pages C-700-1 to C-700-__, inclusive).
6. Supplementary Conditions (pages C-800-1 to C-800-__ inclusive).
7. Additional Supplemental General Conditions
8. Specifications as listed in the table of contents of the Project Manual.
9. Drawings (not attached but incorporated by reference) consisting of __ sheets with each sheet bearing the following general title: _____
10. Addenda (numbers ___ to ___, inclusive).
11. Exhibits to this Agreement (enumerated as follows):
    a. Contractor's Bid (pages C-410-1 to C-410-__, inclusive).
12. The following which may be delivered or issued on or after the Effective Date of the Contract and are not attached hereto:
    a. Notice to Proceed.
    b. Work Change Directives.
    c. Change Orders.
    d. Field Orders.

B. The documents listed in Paragraph 9.01.A are attached to this Agreement (except as expressly noted otherwise above).

C. There are no Contract Documents other than those listed above in this Article 9.

D. The Contract Documents may only be amended, modified, or supplemented as provided in the General Conditions.

ARTICLE 10 – MISCELLANEOUS

10.01 *Terms*

A. Terms used in this Agreement will have the meanings stated in the General Conditions and the Supplementary Conditions.

10.02 *Assignment of Contract*

A. Unless expressly agreed to elsewhere in the Contract, no assignment by a party hereto of any rights under or interests in the Contract will be binding on another party hereto

without the written consent of the party sought to be bound; and, specifically but without limitation, money that may become due and money that is due may not be assigned without such consent (except to the extent that the effect of this restriction may be limited by law), and unless specifically stated to the contrary in any written consent to an assignment, no assignment will release or discharge the assignor from any duty or responsibility under the Contract Documents.

10.03 *Successors and Assigns*

A. Owner and Contractor each binds itself, its successors, assigns, and legal representatives to the other party hereto, its successors, assigns, and legal representatives in respect to all covenants, agreements, and obligations contained in the Contract Documents.

10.04 *Severability*

A. Any provision or part of the Contract Documents held to be void or unenforceable under any Law or Regulation shall be deemed stricken, and all remaining provisions shall continue to be valid and binding upon Owner and Contractor, who agree that the Contract Documents shall be reformed to replace such stricken provision or part thereof with a valid and enforceable provision that comes as close as possible to expressing the intention of the stricken provision.

10.05 *Contractor's Certifications*

A. Contractor certifies that it has not engaged in corrupt, fraudulent, collusive, or coercive practices in competing for or in executing the Contract. For the purposes of this Paragraph 10.05:

1. "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 or in the Contract execution;

2. "fraudulent practice" means an intentional misrepresentation of facts made (a) to influence the bidding process or the execution of the Contract to the detriment of Owner, (b) to establish Bid or Contract 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.

10.06 *Other Provisions*

A. Owner stipulates that if the General Conditions that are made a part of this Contract are based on EJCDC® C-700, Standard General Conditions for the Construction Contract, published by the Engineers Joint Contract Documents Committee®, and if Owner is the party that has furnished said General Conditions, then Owner has plainly shown all modifications to the standard wording of such published document to the Contractor, through a process such as highlighting or "track changes" (redline/strikeout), or in the Supplementary Conditions.

IN WITNESS WHEREOF, Owner and Contractor have signed this Agreement.

This Agreement will be effective on _____ (which is the Effective Date of the Contract).

OWNER:	CONTRACTOR:
_____	_____
By: _____	By: _____
Title: _____	Title: _____
	(If Contractor is a corporation, a partnership, or a joint venture, attach evidence of authority to sign.)
Attest: _____	Attest: _____
Title: _____	Title: _____
Address for giving notices:	Address for giving notices:
_____	_____
_____	_____
_____	_____
	License No.: _____ *(where applicable)*
(If Owner is a corporation, attach evidence of authority to sign. If Owner is a public body, attach evidence of authority to sign and resolution or other documents authorizing execution of this Agreement.)	*NOTE TO USER: Use in those states or other jurisdictions where applicable or required.*

SECTION 013300 - SUBMITTAL PROCEDURES

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract Documents, including General and Supplementary Conditions and all related Specification Sections, apply to this Section.

1.2 SUMMARY

A. Section includes requirements for the submittal schedule and administrative and procedural requirements for submitting Shop Drawings, Product Data, Samples, and other submittals.

1.3 DEFINITIONS

A. Action Submittals: Written and graphic information and physical Samples that require Engineer's responsive action.

B. Informational Submittals: Written and graphic information and physical Samples that do not require Engineer's responsive action. Submittals may be rejected for not complying with requirements.

1.4 SUBMITTALS

A. Schedule of Submittals: Submit a Schedule of Submittals, arranged in chronological order by required dates established by the construction schedule. Include time required for review, ordering, manufacturing, fabrication and delivery when establishing dates. Include additional time required for making corrections or revisions to submittals noted by Engineer and additional time for handling and reviewing submittals required by those corrections.

1.5 SUBMITTAL ADMINISTRATIVE REQUIREMENTS

A. Engineer's Digital Data Files: Electronic copies of digital data files (PDF) of the Contract Drawings will be provided by Engineer for Contractor's use in preparing submittals.

1. Engineer will furnish Contractor one (1) set of digital data drawing files of the Contract Drawings for use in preparing Shop Drawings.

    a. Engineer makes no representations as to the accuracy or completeness of digital data drawing files as they relate to the Contract Drawings.
    b. Contractor shall execute a data licensing agreement in a form acceptable to Owner and Engineer.

c. Digital data drawing files (PDF) will be provided to the Contractor if required in writing and a waiver provided by the Engineer has been signed by the Contractor.

B. Coordination: Coordinate preparation and processing of submittals with performance of construction activities.

1. Coordinate each submittal with fabrication, purchasing, testing, delivery, other submittals, and related activities that require sequential activity.
2. Coordinate transmittal of different types of submittals for related parts of the Work so processing will not be delayed because of need to review submittals concurrently for coordination.
3. Engineer reserves the right to withhold action on a submittal requiring coordination with other submittals until related submittals are received.

C. Processing Time: Allow time for submittal review, including time for resubmittals, as follows. Time for review shall commence on Engineer's receipt of submittal. No extension of the Contract Time will be authorized because of failure to transmit submittals enough in advance of the Work to permit processing, including resubmittals.

1. Initial Review: Allow twenty (20) days for initial review of each submittal. Allow additional time if coordination with subsequent submittals is required. Engineer will advise Contractor when a submittal being processed must be delayed for coordination.
2. Intermediate Review: If intermediate submittal is necessary, process it in same manner as initial submittal.
3. Resubmittal Review: Allow twenty (20) days for review of each resubmittal.

D. Paper Submittals: Place a permanent label or title block on each submittal item for identification.

1. Indicate name of firm or entity that prepared each submittal on label or title block.
2. Provide a space approximately 6 inches by 8 inches on label or beside title block to record Contractor's review and approval markings and action taken by Engineer.
3. Include the following information for processing and recording action taken:

a. Project name.
b. Date.
c. Name of Engineer.
d. Name of Contractor.
e. Name of Subcontractor.
f. Name of Supplier.
g. Name of manufacturer.
h. Submittal number or other unique identifier, including revision identifier.

1) Submittal number shall use Specification Section number followed by a decimal point and then a sequential number (e.g., 061000.01). Resubmittals shall include an alphabetic suffix after another decimal point (e.g., 061000.01.A).

i. Number and title of appropriate Specification Section.
j. Drawing number and detail references, as appropriate.

k. Location(s) where product is to be installed, as appropriate.
l. Other necessary identification.

4. Additional Paper Copies: Unless additional copies are required for final submittal, and unless Engineer observes noncompliance with provisions in the Contract Documents, initial submittal may serve as final submittal.

   a. Submit six (6) copies of submittal to Engineer.

5. Electronic Copy: One (1) electronic copy (either via flash drive or email) of all submitted information shall be transmitted with submittals for review and comment. The electronic file shall include a copy of all submitted data.

6. Transmittal for Paper Submittals: Assemble each submittal individually and appropriately for transmittal and handling. Transmit each submittal using a transmittal form. Engineer will return without review submittals received from sources other than Contractor.

   a. Transmittal Form for Paper Submittals: Use sample form provided at the end of this Specification section or provide locations on Contractor's form for the following information:

      1) Project name.
      2) Date.
      3) Destination (To:).
      4) Source (From:).
      5) Name and address of Engineer.
      6) Name of Contractor.
      7) Name of firm or entity that prepared submittal.
      8) Names of Subcontractor, manufacturer, and Supplier.
      9) Category and type of submittal.
      10) Submittal purpose and description.
      11) Specification Section number and title.
      12) Specification paragraph number or drawing designation and generic name for each of multiple items.
      13) Drawing number and detail references, as appropriate.
      14) Indication of full or partial submittal.
      15) Transmittal number, numbered consecutively.
      16) Submittal and transmittal distribution record.
      17) Remarks.
      18) Signature of transmitter.

E. Options: Identify options requiring selection by Engineer.

F. Deviations: Identify deviations from the Contract Documents on submittals.

G. Resubmittals: Make resubmittals in same form and number of copies as initial submittal.

1. Note date and content of previous submittal.
2. Note date and content of revision in label or title block and clearly indicate extent of revision.

3. Resubmit submittals until they are marked with approval notation from Engineer's action stamp.

H. Distribution: Furnish copies of final submittals to manufacturers, Subcontractors, Suppliers, fabricators, installers, authorities having jurisdiction, and others as necessary for performance of construction activities. Show distribution on transmittal forms.

I. Use for Construction: Retain complete copies of submittals on Project Site. Use only final action submittals that are marked with the No Exceptions Taken.

PART 2 - PRODUCTS

2.1 SUBMITTAL PROCEDURES

A. General Submittal Procedure Requirements

1. Action Submittals: Submit six (6) paper copies of each submittal unless otherwise indicated. Engineer will return three (3) copies.
2. Informational Submittals: Submit two (2) paper copies of each submittal unless otherwise indicated. Engineer will not return copies.
3. Submit one (1) copy of all submittals via flash drive or email as PDF electronic files.
4. Certificates and Certifications Submittals: Provide a statement that includes signature of entity responsible for preparing certification. Certificates and certifications shall be signed by an officer or other individual authorized to sign documents on behalf of that entity.

    a. Provide a digital signature with digital certificate on electronically-submitted certificates and certifications where indicated.
    b. Provide a notarized statement on original paper copy certificates and certifications where indicated.

B. Product Data: Collect information into a single submittal for each element of construction and type of product or equipment.

1. If information must be specially prepared for submittal because standard published data are not suitable for use, submit as Shop Drawings, not as Product Data.
2. Mark each copy of each submittal to show which products and options are applicable.
3. Include the following information, as applicable:

    a. Manufacturer's catalog cuts.
    b. Manufacturer's product Specifications.
    c. Standard color charts.
    d. Statement of compliance with specified referenced standards.
    e. Testing by recognized testing agency.
    f. Application of testing agency labels and seals.
    g. Notation of coordination requirements.
    h. Availability and delivery time information.

C. Shop Drawings: Prepare Project-specific information, drawn accurately to scale. Do not base Shop Drawings on reproductions of the Contract Documents or standard printed data.

1. Preparation: Fully illustrate requirements in the Contract Documents. Include the following information, as applicable:

a. Identification of products.
b. Schedules.
c. Compliance with specified standards.
d. Notation of coordination requirements.
e. Notation of dimensions established by field measurement.
f. Relationship and attachment to adjoining construction clearly indicated.
g. Seal and signature of professional Engineer if specified.

2. Sheet Size: Except for templates, patterns, and similar full-size drawings, submit Shop Drawings on sheets at least 8-½ inches by 11 inches, but no larger than 30 inches by 42 inches.
3. Submit Shop Drawings in the following format:

a. Three (3) hard copies and one (1) PDF electronic file.

D. Test and Inspection Reports and Schedule of Tests and Inspections Submittals: Comply with requirements specified in Section 014000 - Quality Requirements.

E. Qualification Data: Prepare written information that demonstrates capabilities and experience of firm or person. Include lists of completed projects with project names and addresses, contact information of Engineers and owners, and other information specified.

F. Material Certificates: Submit written statements on manufacturer's letterhead certifying that material complies with requirements in the Contract Documents.

G. Material Test Reports: Submit reports written by a qualified testing agency, on testing agency's standard form, indicating and interpreting test results of material for compliance with requirements in the Contract Documents.

H. Field Test Reports: Submit written reports indicating and interpreting results of field tests performed either during installation of product or after product is installed in its final location, for compliance with requirements in the Contract Documents.

PART 3 - EXECUTION

3.1 CONTRACTOR'S REVIEW

A. Action and Informational Submittals: Review each submittal and check for coordination with other Work of the Contract and for compliance with the Contract Documents. Note corrections and field dimensions. Mark with approval stamp before submitting to Engineer.

B. Contractor's Approval Stamp: Stamp each submittal with a uniform, approval stamp. Include Project name and location, submittal number, Specification Section title and number, name of

reviewer, date of Contractor's approval, and statement certifying that submittal has been reviewed, checked, and approved for compliance with the Contract Documents.

3.2 ENGINEER'S ACTION

A. General: Engineer will not review submittals that do not bear Contractor's approval stamp and will return them without action.

B. Owner Submittal Review: The Engineer will provide one (1) copy of each submittal to the Owner for their review and comments. Upon receiving comments, the Engineer will proceed with Item C.

C. Action Submittals: Engineer will review each submittal, make marks to indicate corrections or revisions required, and return it. Engineer will stamp each submittal with an action stamp and will mark stamp appropriately to indicate action.

D. Informational Submittals: Engineer will review each submittal and will not return it, or will return it if it does not comply with requirements. Engineer will forward each submittal to appropriate party.

E. Incomplete submittals are unacceptable, will be considered nonresponsive, and will be returned for resubmittal without review.

F. Submittals not required by the Contract Documents may not be reviewed and may be discarded.

Submittal Transmittal Form attached

END OF SECTION 013300

SUBMITTAL TRANSMITTAL

Submittal Description: _____ Submittal No: _____

Spec Section or Drawing Number: _____

OWNER:	Routing	Sent	Received
	Contractor/CM		
PROJECT:	CM/Engineer		
	Engineer/CM		
CONTRACTOR:	CM/Contractor		

We are sending you ☐ Attached ☐ Under separate cover via _____
☐ Submittals for review and comment ☐ Product data for information only

Remarks: _____

Item	Copies	Date	Section No.	Description	Review action[a]	Reviewer initials	Review comments attached

[a]Note: NET = No exceptions taken; MCN = Make corrections noted; R&R = Revise and resubmit; R = Rejected Attach additional sheets if necessary.

Contractor

Certify either A or B:

☐ A. We have verified that the material or equipment contained in this submittal meets all the requirements, including coordination with all related Work, specified (no exceptions).

☐ B. We have verified that the material or equipment contained in this submittal meets all the requirements specified except for the attached deviations.

No.	Deviation

Certified by: _____
Contractor's Signature

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SECTION 015000 - TEMPORARY FACILITIES AND CONTROLS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract Documents, including General and Supplementary Conditions and all related Specification Sections, apply to this Section.

1.2 SUMMARY

A. Section includes requirements for temporary utilities, support facilities, and security and protection facilities.

B. Related Requirements

1. Section 011000 - Summary.
2. Section 015700 - Traffic Control.

1.3 USE CHARGES

A. General: Installation and removal of and use charges for temporary facilities shall be included in the Contract Sum unless otherwise indicated. Allow other entities to use temporary services and facilities without cost, including, but not limited to: Owner's Employees, Engineer, testing agencies, and authorities having jurisdiction.

B. Electric Power Service: Electric power from Owner's existing system is not available for use. Contractor shall coordinate with the electric company to provide connections and extensions of services as required for construction operations. Contractor shall include use charges within the Bid Price for the project. No additional payment will be provided for electric power.

C. Telephone and Internet Service: Contractor shall coordinate with the telephone or cable companies to provide connection for services required during construction activities. No additional payment will be provided for telephone and internet.

1.4 INFORMATIONAL SUBMITTALS

A. Site Plan: Show temporary facilities, utility hookups, staging areas, and parking areas for construction personnel.

B. Agreement: Submit proof of Agreement between Contractor and land owner of any rented or leased property for temporary facilities which includes statement to hold the Owner and Engineer harmless.

1.5 QUALITY ASSURANCE

A. Electric Service: Comply with AEP, NECA, NEMA, and UL standards and Regulations for temporary electric service. Install service to comply with NFPA 70.

B. Tests and Inspections: Arrange for authorities having jurisdiction to test and inspect each temporary utility before use. Obtain required certifications and permits.

PART 2 - PRODUCTS

2.1 MATERIALS

A. Chain-Link Fencing: Minimum 2-inch, 0.148-inch-thick, galvanized-steel, chain-link fabric fencing; minimum 6 feet high with galvanized-steel pipe posts; minimum 2-⅜-inch-OD line posts and 2-⅞-inch-OD corner and pull posts, with 1-⅝-inch-OD top rails.

B. Portable Chain-Link Fencing: Minimum 2-inch, 0.148-inch-thick, galvanized-steel, chain-link fabric fencing; minimum 6 feet high with galvanized-steel pipe posts; minimum 2-⅜-inch-OD line posts and 2-⅞-inch-OD corner and pull posts, with 1-⅝-inch-OD top and bottom rails. Provide concrete OR galvanized-steel bases for supporting posts.

2.2 TEMPORARY FACILITIES

A. Field Offices, General: Prefabricated or mobile units with serviceable finishes, temperature controls, and foundations adequate for normal loading.

B. Common-Use Field Office: Of sufficient size to accommodate needs of Owner, Engineer, and construction personnel office activities and to accommodate Project meetings specified in other Division 01 Sections. Keep office clean and orderly.

C. Storage and Fabrication Sheds: Provide sheds sized, furnished, and equipped to accommodate materials and equipment for construction operations.

2.3 EQUIPMENT

A. Fire Extinguishers: Portable, UL rated; with class and extinguishing agent as required by locations and classes of fire exposures.

PART 3 - EXECUTION

3.1 INSTALLATION, GENERAL

A. Locate facilities where they will serve Project adequately and result in minimum interference with performance of the Work. Relocate and modify facilities as required by progress of the Work.

1. Locate facilities to limit Site disturbance as specified in Section 011000 - Summary.

B. Provide each facility ready for use when needed to avoid delay. Do not remove until facilities are no longer needed or are replaced by authorized use of completed permanent facilities.

3.2 TEMPORARY UTILITY INSTALLATION

A. General: Install temporary service or connect to existing service.

1. Arrange with utility company, Owner, and existing users for time when service can be interrupted, if necessary, to make connections for temporary services.

B. Sewers and Drainage: Provide temporary utilities to remove effluent lawfully.

1. Connect temporary sewers to municipal system as directed by authorities having jurisdiction.

C. Water Service: Install water service and distribution piping in sizes and pressures adequate for construction.

D. Sanitary Facilities: Provide temporary toilets, wash facilities, and drinking water for use of construction personnel. Comply with requirements of authorities having jurisdiction for type, number, location, operation, and maintenance of fixtures and facilities.

E. Heating and Cooling: Provide temporary heating and cooling required by construction activities for curing or drying of completed installations or for protecting installed construction from adverse effects of low temperatures or high humidity. Select equipment that will not have a harmful effect on completed installations or elements being installed.

F. Ventilation and Humidity Control: Provide temporary ventilation required by construction activities for curing or drying of completed installations or for protecting installed construction from adverse effects of high humidity. Select equipment that will not have a harmful effect on completed installations or elements being installed. Coordinate ventilation requirements to produce ambient condition required and minimize energy consumption.

G. Electric Power Service: Provide electric power service and distribution system of sufficient size, capacity, and power characteristics required for construction operations.

1. Install electric power service overhead or underground unless otherwise indicated.

H. Lighting: Provide temporary lighting with local switching that provides adequate illumination for construction operations, observations, inspections, and traffic conditions.

1. Install and operate temporary lighting that fulfills security and protection requirements without operating entire system.

I. Telephone Service: Provide temporary telephone service in common-use facilities for use by all construction personnel. Install one (1) telephone line for each field office.

1. At each telephone, post a list of important telephone numbers.

a. Police and fire departments.
b. Ambulance service.
c. Contractor's home office.
d. Contractor's emergency after-hours telephone number.
e. Engineer's office.
f. Owner's office.
g. Principal Subcontractor's field and home offices.

2. Provide superintendent with cellular telephone or portable two-way radio for use when away from field office.

J. Electronic Communication Service: Provide a desktop computer in the primary field office adequate for use by Engineer and Owner to access Project electronic Documents and maintain electronic communications. Equip computer with not less than the following:

1. Processor: Intel Pentium D or Intel CoreDuo, 3.0 GHz processing speed.
2. Memory: 4 gigabyte.
3. Disk Storage: 300 gigabyte hard-disk drive and combination DVD-RW/CD-RW drive.
4. Display: 22-inch LCD monitor with 128 Mb dedicated video RAM.
5. Network Connectivity: 10/100BaseT Ethernet.
6. Productivity Software:

a. Microsoft Office Professional, Windows 7 Professional, including Word, Excel, and Outlook.
b. Adobe Reader 7.0 or higher.
c. WinZip 7.0 or higher.

7. Printer: "All-in-one" unit equipped with printer server, combining color printing, photocopying, scanning, and faxing, or separate units for each of these three functions.
8. Internet Service: Broadband modem, router and ISP, equipped with hardware firewall, providing minimum 5 Mbps upload and 50 Mbps download speeds at each computer.
9. Internet Security: Integrated software, providing software firewall, virus, spyware, phishing, and spam protection in a combined application.

3.3 SUPPORT FACILITIES INSTALLATION

A. General: Comply with the following:

1. Provide construction for temporary offices, shops, and sheds located within construction area or within 30 feet of building lines that is noncombustible according to ASTM E 136. Comply with NFPA 241.
2. Maintain support facilities until Engineer issues a Certificate of Substantial Completion. Remove after Substantial Completion. Personnel remaining after Substantial Completion will be permitted to use temporary facilities, under conditions acceptable to Owner.

B. Temporary Roads and Paved Areas: Construct and maintain temporary roads and paved areas adequate for construction operations. Locate temporary roads and paved areas as indicated on Drawings.

1. Provide dust-control treatment that is nonpolluting and nontracking. Reapply treatment as required to minimize dust.

C. Temporary Use of Permanent Roads and Paved Areas: Locate temporary roads and paved areas in same location as permanent roads and paved areas. Construct and maintain temporary roads and paved areas adequate for construction operations. Extend temporary roads and paved areas, within construction limits indicated, as necessary for construction operations.

1. Coordinate elevations of temporary roads and paved areas with permanent roads and paved areas.
2. Prepare subgrade and install subbase and base for temporary roads and paved areas.
3. Delay installation of final course of permanent hot-mix asphalt pavement until immediately before Substantial Completion. Repair hot-mix asphalt base-course pavement before installation of final course according to Section 321216 - Asphalt Paving.

D. Traffic Controls: Comply with requirements of authorities having jurisdiction.

1. Protect existing Site improvements to remain including curbs, pavement, and utilities.
2. Maintain access for fire-fighting equipment and access to fire hydrants.

E. Parking: Provide temporary parking areas for construction personnel.

F. Dewatering Facilities and Drains: Comply with requirements of authorities having jurisdiction. Maintain Project Site, excavations, and construction free of water.

1. Dispose of rainwater in a lawful manner that will not result in flooding Project or adjoining properties or endanger permanent Work or temporary facilities.
2. Remove snow and ice as required to minimize accumulations.

G. Project Signs: Provide Project signs as indicated. Unauthorized signs are not permitted.

1. Identification Signs: Provide Project identification signs to be located/installed as directed by the Engineer.
2. Temporary Signs: Provide other signs as indicated and as required to inform public and individuals seeking entrance to Project.

a. Provide temporary, directional signs for construction personnel and visitors.

3. Maintain and touchup signs so they are legible at all times.

H. Waste Disposal Facilities: Provide waste-collection containers in sizes adequate to handle waste from construction operations. Comply with requirements of authorities having jurisdiction.

3.4 SECURITY AND PROTECTION FACILITIES INSTALLATION

A. Protection of Existing Facilities: Protect existing vegetation, equipment, structures, utilities, and other improvements at Project Site and on adjacent properties, except those indicated to be removed or altered. Repair damage to existing facilities.

B. Environmental Protection: Provide protection, operate temporary facilities, and conduct construction as required to comply with environmental Regulations and that minimize possible air, waterway, and subsoil contamination or pollution or other undesirable effects.

C. Temporary Erosion and Sedimentation Control: Provide measures to prevent soil erosion and discharge of soil-bearing water runoff and airborne dust to undisturbed areas and to adjacent properties and walkways, according to erosion-control and sedimentation-control Drawings and the requirements of 2003 EPA Construction General Permit or authorities having jurisdiction, whichever is more stringent.

D. Stormwater Control: Comply with requirements of authorities having jurisdiction. Provide barriers in and around excavations and subgrade construction to prevent flooding by runoff of stormwater from heavy rains.

E. Tree and Plant Protection: Install temporary fencing located as indicated or outside the drip line of trees to protect vegetation from damage from construction operations. Protect tree root systems from damage, flooding, and erosion. It is the responsibility of the Contractor to cut down and grind the stump 18-inch below grade of any tree which dies within the temporary easement until Contractor's warranty period expires.

F. Pest Control: Engage pest-control service to recommend practices to minimize attraction and harboring of rodents, roaches, and other pests and to perform extermination and control procedures at regular intervals so Project will be free of pests and their residues at Substantial Completion. Perform control operations lawfully, using environmentally safe materials.

G. Site Fence: Before construction operations begin, furnish and install Site enclosure fence in a manner that will prevent people and animals from easily entering Site except by entrance gates.

1. Extent of Fence: As indicated on Drawings.
2. Maintain security by limiting number of keys and restricting distribution to authorized personnel. Furnish one (1) set of keys to Owner.

H. Security Enclosure and Lockup: Install temporary enclosure around partially completed areas of construction. Provide lockable entrances to prevent unauthorized entrance, vandalism, theft, and similar violations of security. Lock entrances at end of each Work day.

I. Barricades, Warning Signs, and Lights: Comply with requirements of authorities having jurisdiction for erecting structurally adequate barricades, including warning signs and lighting.

J. Temporary Egress: Maintain temporary egress from existing occupied facilities as indicated and as required by authorities having jurisdiction.

END OF SECTION 015000

SECTION 115300 - LABORATORY EQUIPMENT, SUPPLIES AND CHEMICALS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of Contract, including General Conditions and Supplementary Conditions, and specification sections, apply to work of this section.

1.2 DESCRIPTION

A. The Contractor shall furnish, deliver, and install the laboratory equipment and supplies as shown on the plans and as specified herein.

B. Work Included

1. Laboratory Tests
2. Laboratory Equipment and Supplies
3. Laboratory Chemicals

1.3 GENERAL

A. All laboratory equipment shall be amply proportioned for all stresses that may occur during continuous operation and for any additional stresses that may occur during fabrication or construction. Workmanship shall be of the highest quality in all respects.

B. The equipment supplier shall furnish the services of an experienced engineer to check the installation of the equipment and shall file in triplicate, with the Engineer, a certificate stating that the equipment has been installed in accordance with the manufacturer's recommendations and that a satisfactory trial operation has been conducted.

1.4 ACCEPTABLE MANUFACTURERS

A. Laboratory Equipment

1. Hach Company (HC)

1.5 SUBMITTALS

A. Submit manufacturer's product literature and specification for each item specified.

PART 2 - PRODUCTS

2.1 LABORATORY TESTS

A. The laboratory shall be supplied with all necessary equipment, supplies and chemicals to perform the tests listed in this section.

Test	Reference Std. Methods 15th Ed.	Reference EPA Method Manual 1979
Dissolved Oxygen	Portable Probe & Meter	----
pH	Portable Probe & Meter	----
Residue, Filterable	Method 209B	Method 160.1
Residue, Total	Method 209A	Method 160.3
Temperature	Method 212	Method 170.1

2.2 LABORATORY EQUIPMENT AND SUPPLIES

A. All laboratory equipment and supplies to be furnished by the Contractor are included in the following laboratory equipment and supply list. The laboratory equipment and supplies shall be of the best quality and should any workmanship or materials be needed which are not directly or indirectly denoted in the specifications, but are nevertheless necessary to the proper execution, the supplier and the Contractor shall understand and shall provide for the same in their provision for installing this equipment. No second hand or salvaged materials shall be used at any time unless definitely and specifically called for by the specifications.

B. The following equipment and supply list is used solely for the purpose of establishing a standard. Equal laboratory equipment and supplies will be considered as acceptable subject to the approval of the Engineer.

Item	Quantity	Description
Apron	1 Medium weight	neoprene covered, 36 inch length, 24 inch waist
Auto Sampler(All-Weather)	2	Hach SD900 – Refrigerated Sampler. USA Blue Book #28959.
Bottle, Sample		Wide mouth polypropylene with screw caps
	48	250 ml
	12	500 ml
	12	1000 ml
	6	1 gal
Bottle, Washing		Polyethylene squeeze-type with cap and nozzle molded in one piece
	6	250 ml
	6	500 ml

Brush, buret	2	For 25-50 ml buret
	2	For 100 ml buret
Calculator	1	Sharp Model QS 2186, Monroe 2801,desk-type printing calculator
Clock	1	Wall clock, 12 hour, 12 Inch diameter dial 110 volt
Cylinders, Graduated, Polypropylene, Autoclavable		
	2	10 ml
	2	25 ml
	2	50 ml
	2	100 ml
	2	250 ml
	2	500 ml
	2	1000 ml
Electrodes Triple purpose pH	1	SPH4330-3,PS21-2176-02 or Engineer's approved equal
Eye Wash Fountain	1	Deckmounted,Hamilton, Model 32L59 or Engineer's approved equal
Glass Rod	1 lb PYREX 7 mm diameter	12" - 18" lengths
Gloves	2 pr	Rubber, large size
Goggles	2 pr	Shatterproof plastic with sideshields
Microscope, illuminator	1	SP 640, SW 58275 or Engineer's approved equal Complete with replacement bulb
Microscope slides	144	1" x 3"
Microscope slide covers	102	22 mm x 30 mm
Microscope, stereoscopic	1	SP 56K-1, SW 55045 or Engineer's approved equal
Pens Laboratory, Marktex "Tech-Pen"		
	1	Orange Ink
	1	Black Ink

pH Meter (Hach is preferred)	1	SW 30031-80, PS-2435-05 or Engineer's approved equal with Adapter
Policeman	12	TEFLON, 6 inch length
Reference Material including	1	Standard Methods for the Examination of Water and Wastewater, latest edition
	1	Methods for Chemical Analysis of Water and Waste, US EPA 600/4-79-020, latest edition
	1	Chemistry for Sanitary Engineers. Sawyer & McCarty
Stopwatch	1	SP C6565, PS 22-3597-01 or Engineer's approved equal, antimagnetic
Thermometer 76 mm immersion type, 237 mm long, Centigrade, National Bureau of Standards certifiable		
	2	-35° to 50°
	6	-5° to 110°
Tubing, Plastic Tygon, transparent		
	20 ft	3/16" ID x 1/16" thick
	20 ft	¼" ID x 1/16" thick
Turbidimeter, Laboratory	1	HC 47000-00 or Engineer's approved equal

2.3 LABORATORY CHEMICALS

A. All laboratory chemicals to be provided by the Contractor are included in the following laboratory chemical list. The laboratory chemicals shall be of the best grade and quality. Delivery of all laboratory chemicals shall coincide with the operational start-up of the treatment facilities.

B. The following chemical list is used solely for the purpose of establishing a standard of the laboratory chemicals to be provided.

1. Buffer concentrate (phosphate) pH7 (Ampoule) 1 pk.

2. Buffer solution (acetate) pH 4 for chlorine 1 liter

3.	Buffer solution pH 7 (phosphate)	1 liter
4.	Cleaning compound (biodegradable detergent) Alconox	1 lb
5.	Potassium chloride solution for pH cell	500 ml

PART 3 - EXECUTION

3.1 INSTALLATION

A. Install complete, in accordance with the approved layout.

3.2 CLEANING

A. Wrappings and shipping materials shall be removed from the premises, and rooms are to be swept clean.

END OF SECTION 115300

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SECTION 463111 – CHLORINATION/DECHLORINATION GAS FEED EQUIPMENT

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes: Two (2) vacuum-regulated, solution-feed, automatic-switchover, fully automatic-type chlorination controls and all necessary appurtenances.

B. The Contractor shall supply and install a chlorination and de-chlorination system to include the automatic switchover style chlorinator and de-chlorinator, dual 150# cylinder scales for each the chlorine and sulfur dioxide, gas detectors and a flow proportional valve for each system,

1.2 REFERENCE STANDARDS

A. The Chlorine Institute, Inc.: Requirements for vacuum regulator mounting assembly.

B. Mining Safety and Health Administration: Requirements for self-contained breathing apparatus.

C. National Electrical Manufacturers Association:

A. NEMA 4X - Enclosures for Electrical Equipment (1000 Volts Maximum).

D. National Institute for Occupational Safety and Health: Requirements for self-contained breathing apparatus.

1.3 COORDINATION

A. Section 013000 - Administrative Requirements: Requirements for coordination.

B. Coordinate Work of this Section with Plant Operator.

1.4 SCHEDULING

A. Section 013216 - Construction Progress Schedule: Requirements for scheduling.

B. Schedule Work of this Section after finishing concrete work for support pad and prior to connecting piping work.

1.5 SEQUENCING

A. Section 011000 - Summary: Requirements for sequencing.

B. Sequence Work to prevent interference with plant operations.

1.6 SUBMITTALS

A. Section 013300 - Submittal Procedures: Requirements for submittals.

B. A copy of this specification section and all referenced and applicable sections, with addendum updates included and with each paragraph check-marked to indicate specification compliance or marked to indicate requested deviations from specification requirements is required under this section. Check marks (✓) shall denote full compliance with a paragraph as a whole. If deviations from the specifications are indicated, and therefore requested by the Contractor, each deviation shall be underlined and denoted by a number in the margin to the right of the identified paragraph, referenced to a detailed written explanation of the reasons for requesting the deviation. The Engineer shall be the final authority for determining acceptability of requested deviations. The remaining portions of the paragraph not underlined will signify compliance on the part of the Contractor with the specifications. Failure to include a copy of the marked-up specification sections, along with justification(s) for any requested deviations to the specification requirements, with the submittal shall be sufficient cause for rejection of the entire submittal with no further consideration.

C. Product Data:

   A. Submit complete information concerning materials of construction, fabrication, and protective coatings.

D. Shop Drawings:

   A. Indicate materials and equipment, including wiring and control diagrams, performance charts and curves, installation and anchoring requirements, fasteners, and other details.
   B. Submit schematic diagram of each system, including tag marks for each item of equipment cross-referenced to chlorination and dechlorination system equipment lists.

E. Manufacturer's Certificate: Certify that products meet or exceed specified requirements.

F. Test and Evaluation Reports: Submit certified factory test results.

G. Manufacturer's Instructions:

   A. Submit detailed instructions on installation requirements, including storage and handling procedures, anchoring, and layout.
   B. Submit installation, selection, and hookup configuration, with pipe and accessory elevations.
   C. Submit hanging and support requirements and recommendations.

H. Field Quality-Control Submittals: Indicate results of Contractor-furnished tests and inspections.

I. Manufacturer Reports: Indicate that equipment has been installed according to manufacturer's instructions.

J. Qualifications Statements:

   A. Submit qualifications for manufacturer and installer.
   B. Submit manufacturer's approval of installer.

1.7 CLOSEOUT SUBMITTALS

A. Section 017000 - Execution and Closeout Requirements: Requirements for closeout procedures.

B. Project Record Documents: Record actual locations and final orientation of equipment and accessories.

C. Operation and Maintenance Data: Submit maintenance instructions for equipment and accessories.

1.8 QUALITY ASSURANCE

A. Single Source Responsibility: To ensure that all equipment required for the installation of the chlorination/dechlorination equipment and controls is properly coordinated and will function as a unit in accordance with the intent of these specifications, the Contractor shall obtain all the equipment specified under this Section, from a single supplier in whom the responsibility for the proper function of all the equipment, regardless of manufacturer, as an integrated and coordinated system shall be vested. The intent of this paragraph is to establish unit responsibility for all the equipment with the chlorination/dechlorination supplier. The use of the work "responsibility" relating to the equipment supplier is in no way intended to relieve the Contractor's ultimate responsibility for equipment coordination, installation, operation, and guarantee.

B. All materials and components shall be new and unused of first quality by well-known manufacturers. Inferior materials or components shall not be allowed.

C. The system shall be complete with all components, equipment, and appurtenances.

1.9 DELIVERY, STORAGE, AND HANDLING

A. Section 016000 - Product Requirements: Requirements for transporting, handling, storing, and protecting products.

B. Deliver materials in manufacturer's packaging; include installation instructions.

C. Inspection: Accept equipment on-Site in manufacturer's original packaging. Inspect for damage.

D. Store products according to manufacturer's instructions and in areas protected from weather, moisture, or possible damage.

E. Protect systems from entry of foreign materials by using temporary covers and by isolating parts of completed system.

1.10 WARRANTY

A. The chlorination/dechlorination equipment supplier shall warrant the following components:

A. The equipment supplier shall warrant against any defects in material or workmanship to the equipment specified herein for a period of 12 months from the date of Substantial Completion.

B. The supplier shall repair or replace any parts of the equipment specified herein that are found to be defective in workmanship or materials during the warranty period, provide said equipment is operated in accordance with the manufacturer's written operating instructions, and provided that the Owner notifies the manufacturer in writing within 10 days after such defect becomes apparent.

PART 2 - PRODUCTS

2.1 ACCEPTABLE MANUFACTURER

A. Available Manufacturers: Subject to compliance with requirements, manufacturers offering products that may be incorporated in the Work include but are not limited to the following:

A. Hydro Instruments
B. Regal Chlorinators

2.2 GENERAL

A. The Chlorination & De-chlorination system shall be a vacuum operated, solution feed, and automatic switchover type for dispensing chlorine/sulfur dioxide gas from industry standard 150 lbs. cylinders.

B. The chlorination and de-chlorination system shall each have a gas feed capacity of not less than 100 pounds per day.

C. The systems shall convey the gas under vacuum from the direct 150# cylinder mounted vacuum regulators to the ejector assemblies.

D. The systems shall automatically switch the gas supply from an empty cylinder to a full one.

E. The system design shall permit the entire system to be vacuum checked in the field without the use of special tools.

F. The system shall be constructed of materials suitable for wet or dry chlorine gas service.

2.3 DIRECT CYLINDER MOUNTED VACUUM REGULATOR

A. To comply with the standards of The Chlorine Institute, Inc., the vacuum regulator shall mount directly on the 150# cylinder valve by means of a corrosion resistant yoke assembly. The sealing of these mating surfaces shall be achieved by the use of a lead gasket with a minimum of four bolts applying the clamping force on this lead gasket.

B. Each Vacuum Regulator shall have a 100 PPD feed rate capacity.

C. In order to avoid corrosion, each vacuum regulator shall use an inlet capsule constructed of solid Hastelloy C-276 material, which shall carry a lifetime warranty.

D. For maximum durability and in order to avoid cracking, each regulator shall have body parts machined from solid PVC. Injection molded PVC or ABS body parts (which possess insufficient wall thickness), shall not be accepted.

E. The inlet valve stem, bearing washer and vent plug shall all be machined from solid silver for maximum corrosion resistance.

F. Vacuum regulator inlet valve and vent springs shall both be tantalum alloy and shall carry a lifetime warranty.

G. Each vacuum regulator shall have a two-layer ECTFE (Halar) diaphragm, which controls vacuum and a spring loaded, normally closed inlet valve, which closes upon loss of vacuum.

H. Each regulator shall possess an internal switchover mechanism to automatically shift from standby to in-service upon depletion of the on-line cylinder. The regulators shall have a clear status indicator (standby or in-service).

I. Each regulator shall incorporate a pressure relief (vent) valve with separate ports for chlorine feed and chlorine vent. Vacuum regulators, which do not possess integral vent mechanisms, and compromise safety by having a single exit port for vent and feed shall not be acceptable.

J. Connections and tubing shall be provided for venting gas away from the pressure relief (vent) port of each vacuum regulator to the outside atmosphere (outside of the building). The outside end of the vent tubing shall be equipped with an insect screen.

K. Each regulator shall be equipped with a silver screen inlet filter to remove particulate matter from the gas before it enters the inlet safety valve.

L. Each regulator shall have a mechanism to indicate when the cylinder is empty and requires replacement.

2.4 AUTOMATIC CONTROL VALVE

A. General

A. The automatic control valve shall be provided to control 100 PPD of gas feed.
B. The automatic control valve shall be capable of at least 20:1 turn down and accuracy of +/- 2% of full scale.
C. The automatic control valve shall be comprised of a PID controller and automatically controlled variable orifice rate valve. These devices shall be incorporated into one compact unit.
D. The microprocessor based automatic control valve shall be capable of adjusting the gas feed rate based on up to three 4-20mA analog input signals, Modbus RS-485 Communication, or by means of one to four 12-24VDC inputs.
E. The automatic control valve shall allow for the following standard, field selectable control modes:

a. Manual
b. Proportional control (Flow)
c. Set-Point control (Residual/ORP)
d. Compound Loop control (PID)
e. Step-Feed control
f. Dual Input Feed Forward control
g. Dual Set Point control

B. Construction – Enclosure, Motion Control System, Variable Orifice Rate Valve

A. The automatic control valve shall be housed in a corrosion resistant, NEMA 4X (IP66) rated enclosure suitable for installation in corrosive atmospheric environment.
B. Materials of construction shall be of the finest available for the appropriate chemical.
C. For low maintenance and reliable performance, the linear stepper motor shall be joined to the valve stem by a precision machined PVDF shaft. There shall be two precision machined PTFE shaft seals sealing on this PVDF shaft. The gap between these two PTFE shaft seals shall be open to the outside air. To avoid jamming, no rubber or metal parts or threads shall contact the drive assembly.
D. For accurate feed rate control, the length of the variable area orifice portion of the rate valve stem shall be no less than 1.5 inches.
E. A suitably sized v-notch stem shall be provided based on the chemical and feed rate range for each control valve.
F. Motion of the valve shall be achieved by means of a linear stepper motor. The linear stepper motor shall cover a linear motion range of not less than 1.25 inches (31.75 mm) with not less than 2,000 steps.
G. Motion control shall be achieved in software without the use of a feedback potentiometer.
H. To ensure accurate feed rates throughout the range of operation, the software shall incorporate a 10-point valve linearization calibration.

C. User Interface – Display and Keypad

A. The automatic control valve shall include a 2-line, 20-character per line, alphanumeric, LCD display.
B. User controls shall be through a front panel 4-button keypad.
C. Menus and variables shall be displayed in plain English words using easy to read, alphanumeric characters for clear understanding.
D. Control mode, calibrations, and all control parameters shall be password protected and adjustable through the keypad while displayed on the screen.

D. Communication Features (Relays, Modbus, Analog Inputs and Outputs)

A. The automatic control valve shall include half-duplex, two wire type Modbus RS-485 communication.
B. The automatic control valve shall include three analog input channels.
C. Each analog input signal shall be independently user selectable as either 4-20mA or 0-10V.
D. Two 4-20 mA output signals, proportional to the chemical feed rate, shall be provided.
E. The first analog input channel shall be used only for proportional (flow) input signals. The second analog input channel shall be used only for set point (residual or ORP) input signals. The third analog input channel shall be used for one of the following:

a. Remote adjustment of dosage setting
b. Remote adjustment of set-point setting
c. Remote valve positioning
d. Additional input for Dual Set-Point control

F. Four 12-24VDC inputs shall be provided. These inputs can be used for:

a. Step-Feed control
b. External control of AUTO or MANUAL modes
c. External control of DUTY or STANDBY modes

G. Two (2) relay outputs shall be provided for the following user selectable options:

a. Remote indication of alarm conditions.
b. Indication of whether the valve is in AUTO or MANUAL mode.

E. Flow Meter Panel

A. Two (2) flow meter panels shall be provided to indicate the gas flow rate. The gas flow meter shall be wall mounted on a panel with the automatic control valve.
B. The gas flow meter shall be equipped with a control valve for manual feed rate adjustment and be constructed entirely of materials suitable for maximum chemical resistance and maximum service life.
C. The glass flow meter tube shall be at least 6 inches long and indicate flow rates up to 100 PPD and down to a minimum of 1/20 of the maximum value.

F. Bypass Assembly

A. The automatic control valve shall be provided with a bypass piping and valve arrangement to allow for the selection of automatic feed control or bypass (manual) feed control.
B. The selection of manual feed control shall isolate the automatic control valve and allow for the automatic control valve to be disassembled while continuing to feed with manual control.
C. The bypass piping arrangement shall be constructed of socket welded schedule 80 PVC pipe and pipe fittings.
D. The three (3) true union ball valves shall be constructed with seals of suitable material for the specific chemical application.
E. The automatic valve shall be installed onto a ½" thick polypropylene panel suitable for wall mounting.
The automatic valve shall be installed onto a ½" thick polypropylene panel suitable for wall mounting.

2.5 CHLORINE GAS DECTECTION SYSTEM

A. Gas Detector

A. The gas detector shall include a monitor and up to 16 wall mounted electrochemical gas sensors. For this system, the unit will require one gas sensor for chlorine and one for sulfur dioxide.

B. The gas detector shall include a microprocessor-based monitor operating the electrochemical sensors. The microprocessor shall individually monitor each sensor with an automatic scanning process that repeatedly completes a scan of all sensors within less than every 0.1 seconds free of adjustment.
C. The microprocessor-based monitor shall be enclosed in a wall mounting NEMA 4X (IP66) rated housing. The monitor shall include a two (2) line twenty (20) character, alphanumeric, backlit, liquid crystal display (LCD), one red color alarm LED, a 90 dB audible alarm, and four front panel push buttons (keypad).
D. The gas detector and sensors shall be suitable for use in Temperature ranges from 0C to 55C and relative humidity ranging from 15% to 90%.
E. A self-diagnostic alarm shall be provided to detect any communication errors for the electrical hardware.
F. Alteration of the gas detector settings shall be password protected.
G. The gas detector monitor shall allow alarm acknowledgement/silencing and also include an external acknowledge contact input to allow remote acknowledgement / silencing of alarms.
H. The gas detector shall provide RS-485 (Modbus) digital two-way communication.
I. The gas detector shall provide an isolated 4-20 mA output signal for each sensor.
J. A standard twenty-five (25) feet of shielded signal cable shall be provided to connect each sensor to the monitor. Additional cable lengths may be provided up to 300 meters as required.
K. The gas detector shall operate from 90 to 264 Volts (50-60 Hz) AC Power.

B. Alarm Relays

A. The gas detector shall be provided with two selectable common alarm outputs standard. These two common alarm outputs shall be capable of monitoring the following conditions: any sensor low, any sensor high, any sensor signal loss, AC power loss, and low battery.
B. For every four sensors ordered an additional eight relays shall be provided.
C. The two adjustable relays per sensor shall indicate low-level alarm reading (odd relays) and high-level alarm reading (even relays). The low and high level settings shall be adjustable using the password protected keypad/display interface. Each relay may also be programmed to indicate: any sensor low, any sensor high, any signal loss, AC power loss, and low battery.
D. The high-level alarm relay shall be user selected as either latching or non-latching and either failsafe or non-failsafe.
E. The low-level and common alarm relays shall always be non-latching and non-failsafe. Relays shall be dry contacts and rated for a maximum power of 10 A at 250 VAC / 10A at 24 VDC.

C. Gas Sensor

A. All gas sensors shall be of the electrochemical type capable of monitoring the specific gas ordered.
B. All gas sensors shall operate with a 4-20 mA output loop powered signal.
C. The chlorine gas sensor shall have a measurement range of 0.0 to 10.0 ppm and a resolution of 0.1 ppm.

D. The chlorine gas sensor response time shall allow the reading to reach 9.0 PPM within 30 seconds or less.
E. The chlorine gas sensor recovery time shall be such that after exposure to a chlorine gas leak, the sensor reading will recover to 9.00 PPM or less within 3 minutes or less.
F. The gas sensors shall not require the addition of any electrolyte.

2.6 ELECTRONIC CYLINDER SCALES

A. The contractor shall supply two (2) dual cylinder scales for the chlorination system, and one (1) dual cylinder scale for the de-chlorination system. The 150# cylinder scales shall be of the electronic readout / electronic load cell type. Scale platforms shall be constructed of non-corrosive pvc plastic and each sized to accept one 150 lb cylinder. Scale platform shall measure 13-1/2”x18-1/2” and the indicator shall independently monitor two cylinders.

B. Scale shall be of the single load cell design. Weight shall be transferred via a pivoted platform to a single stainless steel canister load cell of the electronic strain gauge type. Load cell shall be mechanically sealed with viton o’rings – potted type load cells shall not be accepted.

C. Flexible cable shall connect load cell to indicator to allow easy remote installation of the readout. Cable length shall be 10’. Cylinder chaining bracket shall be wall mounted and us a double coil chain and a spring loaded snap hook to secure cylinder. Chaining bracket shall have an integral tool rack for storing cylinder change-out tools.

D. Indicator shall carry CE marking and shall be housed in a NEMA 4X, UL approved enclosure. LCD readout shall have a backlighting for readability in low light conditions. Numerical display shall have 6 full active digits and adjustable bar graph display shall read 0-100%. Tare adjust shall be accomplished using a keypad and indicator shall output net weight via a 4-20 mA analog signal for remote monitoring. Scale shall carry a full five (5) year factory warranty. Full accuracy shall be better than 1%. Scale shall be Chlor-Scale 150 with electronic SOLO G2 digital indicator, Model GR150-2 as manufactured by Force Flow of Concord, CA or Engineer Approved Equal.

2.7 PIPE, VALVES AND FITTINGS

A. All piping within the system shall be PVC schedule 80 w/ PVC true union ball valves, pressure gauges, and PVC wye strainer for each system as shown on the drawings. Four (4) pressure gauges with 4-1/2” face shall be installed, one in water supply line and one between the ejector and the injection point of each system.

2.8 DISINFECTION BUILDING

A. Manufacturers:

a. Virtual Polymer Compounds, LLC
b. Dyer Fiberglass, Inc.
c. Engineer Approved Equal

B. Building: Provide custom 8’ x 10’ x 8’ Fiberglass Enclosure on 8” concrete pad, complete with door w/ window, heater, electrical service panel, convenience receptacles, and ventilation fan.

2.8 SELF-CONTAINED BREATHING APPARATUS

A. Manufacturers:

a. Draeger, Inc.
b. MSA
c. Engineer Approved Equal

B. Description:

a. One demand type, suitable for use in chlorine gas atmosphere.
b. Full face mask.
c. Speaking diaphragm to project user's voice through mask.
d. High-pressure air cylinder containing 30-minute air supply.
e. Audible LOW AIR SUPPLY alarm bell.
f. Foam-padded cylinder harness assembly.
g. Cylinder pressure gauge.
h. Approved by National Institute for Occupational Safety and Health and by Mining Safety and Health Administration.

C. Cabinet:

a. Constructed of chemical-resistant fiberglass; suitable for wall mounting outdoors.
b. Corrosion-proof hinges.
c. Stainless-steel door latch.
d. Neoprene door gasket.
e. Interior hardware for mounting self-contained breathing apparatus and spare cylinder.
f. Color: Yellow

PART 3 - EXECUTION

3.1 EXAMINATION

A. Section 017000 - Execution and Closeout Requirements: Requirements for installation examination.

B. Verify layout and orientation of equipment, accessories, and piping connections.

3.2 INSTALLATION

A. Install equipment and accessories as recommended by manufacturer and as indicated on Drawings.

B. Install chlorine vent and vacuum tubing in Schedule 80 PVC pipe to location outside of building wall. Install turned-down elbow and terminate with fine mesh insect screen.

3.3 FIELD QUALITY CONTROL

A. Section 014000 - Quality Requirements: Requirements for inspecting and testing.

B. Performance Testing: Test each piece of chlorination equipment under design conditions for two to four hours to demonstrate proper functioning and automatic regulation of system; test alarms and signal generation; exercise equipment control and manual override where applicable; demonstrate equipment safety features.

C. Equipment Acceptance: Adjust, repair, modify, or replace components failing to perform as specified, and rerun tests; make final adjustments to equipment under direction of manufacturer's representative.

D. Manufacturer Services: Furnish services of manufacturer's representative experienced in installation of products furnished under this Section for not less than **one (1) eight hour day** on-Site for installation, inspection, field testing, and instructing Owner's personnel in maintenance of equipment.

E. Furnish installation certificate from equipment manufacturer's representative attesting equipment has been properly installed and is ready for startup and testing.

3.4 CLEANING

A. Section 017000 - Execution and Closeout Requirements: Requirements for cleaning.

B. Clean portions of chlorine system to remove cutting oil, grease, and other foreign materials; do not use hydrocarbons or alcohols for cleaning residuals from these materials.

C. Before use, dismantle and clean new valves or other equipment received in oily condition. Test valves with clean, dry air at 150 psig for seat tightness before installation.

D. Dry chlorine piping before use using steam and dry air; if steam and dry air are not available, purge completed system with dry cylinder air or nitrogen to remove moisture.

3.5 DEMONSTRATION

A. Section 017000 - Execution and Closeout Requirements: Requirements for demonstration and training.

B. Demonstrate equipment startup, shutdown, routine maintenance, and emergency repair procedures to Owner's personnel.

END OF SECTION 463111

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CONSTRUCTION SEQUENCE OF EVENTS

1. CALL MISS UTILITY 1-800-245-4848.
2. VIDEOTAPING OF PROJECT AREA BY THE CONTRACTOR.
3. LOCATE FIELD OFFICE AND PROVIDE UTILITIES AND STABILIZE.
4. MOBILIZATION.
5. INSTALLATION OF EROSION AND SEDIMENT CONTROL MEASURES PRIOR TO CONSTRUCTION.
6. BEGIN SITE WORK AND CONSTRUCTION OF NEW PACKAGED WASTE WATER TREATMENT PLANT.
7. CONNECT EXISTING SEWER SYSTEM TO NEW PACKAGED WASTE WATER TREATMENT PLANT.
8. PERFORM NEW PACKAGE WASTE WATER TREATMENT PLANT STARTUP.
9. PERFORM EXISTING WASTE WATER TREATMENT PLANT MODIFICATIONS & UPGRADES, AND COMPLETE REMAINING SITE WORK.
10. CLEAN-UP.
11. SUBSTANTIAL COMPLETION.
12. COMPLETE PUNCH LIST ITEMS.
13. FINAL COMPLETION AND DEMOBILIZATION.

EROSION & SEDIMENT CONTROL NOTES

1. ALL EROSION AND SEDIMENT MEASURES TO BE IN ACCORDANCE WITH WEST VIRGINIA ONLINE BMP MANUAL FOR STANDARD GUIDELINES AND SPECIFICATIONS AVAILABLE AT: HTTP://WWW.WVDEP.ORG/DWWM/STORMWATER/INDEX.HTM
2. EROSION AND SEDIMENT CONTROL MEASURES HAVE BEEN SHOWN ON PLANS AND DETAILED IN SPECIFICATIONS.
3. DISTURBED AREA TO BE STABILIZED WITH TEMPORARY AND FINAL SEEDING AS DESCRIBED IN SPECIFICATIONS.
4. WHERE CONSTRUCTION ACTIVITY WILL RESUME ON A PORTION OF THE SITE WITHIN 14 DAYS FROM WHEN ACTIVITIES CEASED, (E.G., THE TOTAL TIME PERIOD THAT CONSTRUCTION ACTIVITY IS TEMPORARILY HALTED IS LESS THAN 14 DAYS) THEN STABILIZATION MEASURES DO NOT HAVE TO BE INITIATED ON THAT PORTION OF THE SITE BY THE SEVENTH DAY AFTER CONSTRUCTION ACTIVITIES HAVE TEMPORARILY CEASED. AREAS WHERE THE SEED HAS FAILED TO GERMINATE ADEQUATELY (UNIFORM PERENNIAL VEGETATIVE COVER WITH A DENSITY OF 70%) WITHIN 30 DAYS AFTER SEEDING AND MULCHING MUST BE RESEEDED IMMEDIATELY, OR A SOON AS WEATHER CONDITIONS ALLOW.
5. TEMPORARY CONSTRUCTION RIGHT-OF-WAY LINES REPRESENT LIMITS OF DISTURBANCE.
6. STORMWATER INLETS & DRAINS MUST BE PROTECTED WITH APPROPRIATE BMPs

INDEX

UTILITY AGENCIES SERVING PROJECT AREA

MISS UTILITY:
MISS UTILITY
1-800-245-4848

WEST VIRGINIA
DIVISION OF HIGHWAYS
DISTRICT FIVE
P.O. BOX 99 (ROUTE 50)
BURLINGTON, WV 26710
(304)-289-3521

TOWN OF CAPON BRIDGE
WATER AND SEWER
1 WHITEACRE LOOP
CAPON BRIDGE, WV 26711
(304)-856-3625

FRONTIER
1-844-244-3082

POTOMAC EDISON
10802 BOWER AVE
WILLIAMSPORT, MD 21795
(800) 686-0011

GENERAL NOTES

1. THIS PLAN DOES NOT GUARANTEE THE EXISTENCE OR LOCATION OF ANY UNDERGROUND UTILITIES. PRIOR TO ANY CONSTRUCTION THE CONTRACTOR SHALL CONTACT ALL PUBLIC AND PRIVATE UTILITY AGENCIES FRANCHISED TO SERVE THE PROJECT AREA AND DETERMINE THE EXISTENCE AND/OR LOCATION OF ALL UNDERGROUND UTILITIES.
2. CONTRACTOR SHALL CONTACT "MISS UTILITY" PRIOR TO ANY CONSTRUCTION. TELEPHONE 1-800-245-4848.
3. IN THE EVENT AN ERROR WITH THE PLANS SEEMS APPARENT, THE MATTER MUST BE TAKEN UP WITH THE ENGINEER FOR CARE-FULL REVIEW BEFORE PROCEEDING WITH CONSTRUCTION.
4. ALL CONSTRUCTION SHALL CONFORM TO THE APPLICABLE STANDARDS AND SPECIFICATIONS PROVIDED IN A SEPARATE BOUND VOLUME.
5. ALL PERMITS MUST BE SECURED PRIOR TO CONSTRUCTION, TO INCLUDE BUT NOT LIMITED TO, WV DOH RIGHTS OF WAY, WV DEP, PUBLIC LANDS, WV DEPARTMENT OF HEALTH, CSX RAILROAD
6. THE CONTRACTOR SHALL COORDINATE ALL STREAM CROSSING INSTALLATIONS PROPOSED SO NOT TO DELAY THE CONSTRUCTION PROCESS. STREAM CROSSINGS ARE TO BE CONSTRUCTED DURING LOW FLOW AND NON-SPAWNING SEASON. (SPAWNING SEASON APRIL 1 TO JUNE 30)
7. ANY EXISTING WV DOH ROAD WAY DISTURBED BY CONSTRUCTION OF PROPOSED SEWER FORCE MAIN OR GRAVITY SEWER LINES SHALL BE REPAIRED AND ROAD SECTION OVERLAID WITH SHOULDER STONE AS DETERMINED NECESSARY BY THE WV DOH SEE SPECIFICATIONS FOR FURTHER DETAILS.
8. ALL CONSTRUCTION SHALL BE DONE IN THE SANITARY SEWER RIGHT OF WAY AND TEMPORARY CONSTRUCTION EASEMENTS AS SHOWN.
9. APPROXIMATE LOCATIONS OF EXISTING WATER, SEWER & GAS LINES HAVE BEEN SHOWN ON PLANS FROM INFORMATION AS SUPPLIED FROM TOWN OF CAPON BRIDGE PREVIOUS WATER & SEWER CONTRACT PLANS, MEMORY, EVIDENCE, AND CITIZENS INFORMATION.
10. A TEN (10) FOOT HORIZONTAL SEPARATION, AS WELL AS EIGHTEEN (18") INCH BELOW THE WATER LINE CROSSING VERTICALLY IS A HEALTH DEPARTMENT RULE AND ALL EFFORTS MUST BE MADE TO MAINTAIN THIS RULE, IN SOME CASES THE WATER LINE MAY HAVE TO BE RELOCATED, IF THE SEWER LINE CANNOT BE SHIFTED TO PROVIDE THE PROPER SEPARATION.
11. MANHOLE RIM ELEVATIONS IN GENERAL WERE FIELD LOCATED, VARIANCES MAY BE SHOWN ON PROFILES DUE TO CONTOUR INTERVALS AND ACCURACY STANDARDS OF CONTOUR MAPPING.
12. PROPERTY LINES SHOWN ON PLANS ARE APPROXIMATE LOCATION AND INFORMATION SHOWN WAS TAKEN FROM TAX MAPS.
11. ALL STAGING/ STORAGE AREAS UTILIZED BY THE CONTRACTOR SHALL BE THE CONTRACTORS RESPONSIBILITY.
12. ALL STAGING/ STORAGE AREAS UTILIZED BY THE CONTRACTOR SHALL BE THE CONTRACTORS RESPONSIBILITY.
13. NO ADDITIONAL COSTS SHALL BE CLAIMED BY THE CONTRACTOR FOR DISPOSAL.
14. CONTRACTORS SUBMITTING BIDS FOR THIS PROJECTS ARE TO ABIDE BY WV CODE 21-11-11 (REQUIREMENT REGARDING PROVIDING CONTRACTOR'S LICENSE NUMBER)

LEGEND

- EXISTING SIGN
- EXISTING TELEPHONE/ELECTRIC POLE
- EXISTING GUARDRAIL
- EXISTING FIRE HYDRANT
- EXISTING WATER VALVE
- EXISTING GRAVITY SEWER
- PROPOSED GRAVITY SEWER
- PROPOSED 4" SERVICE LATERAL
- PROPOSED FORCEMAIN
- EXISTING FIBER LINE
- EXISTING WATER LINE
- EXISTING GAS LINE
- EXISTING FENCE
- PROPOSED FENCE
- EDGE OF WATER
- EXISTING STORM DRAIN
- EXISTING TREE LINE
- EXISTING CONTOUR
- PROPOSED CONTOUR
- EXISTING SPOT ELEVATION
- PROPOSED SPOT ELEVATION
- EXISTING GRAVITY MANHOLE
- PROPOSED GRAVITY MANHOLE
- PROPOSED GRAVITY CLEANOUT
- PROPOSED BORE PIT
- EXISTING ROAD RIGHT OF WAY
- PROPOSED SANITARY SEWER PERMANENT RIGHT OF WAY
- PROPOSED SANITARY SEWER TEMPORARY CONSTRUCTION EASEMENT/ LOD
- EXISTING PROPERTY LINE
- PROPOSED PROPERTY LINE
- PROPOSED BELTED SILT RETENTION FENCING
- LIMITS OF DISTURBANCE
- PROPOSED STONE CHECK DAM
- PROPOSED EROSION CONTROL MATTING
- PROPOSED TEST PIT
- TAX MAP–PARCEL NUMBER
- STONE CONSTRUCTION ENTRANCE
- STRUCTURE TO BE SERVED
- SLOPE PROTECTION
- GRAVEL DW/ ROAD REPAIR
- ASPHALT DW/ ROAD REPAIR
- PROPOSED LINE NUMBER
- DEMOLISH

EDA #01-01-14884
WVIJDC #2018S-1765

DANIEL E. FERRELL REGISTERED 13462 STATE OF WEST VIRGINIA PROFESSIONAL ENGINEER

7/22/2020

DANIEL E. FERRELL, P.E. #13462 DATE

NO.	BY	DATE	DESCRIPTION
1	AS	12/17/20	ADDENDUM #1

SCALE: AS NOTED
DRAWN: P. LANTZ DATE: 01/19
CHECKED: DATE:
APPROVED: DATE:
SURVEY DATE:
SURVEY BY:
FIELD BOOK No.:

THRASHER
600 WHITE OAKS BLVD. P.O. BOX 940
BRIDGEPORT WV 26330
www.thrasherenq.com
PHONE (304) 624-4108 FAX (304) 624-7831

PHASE No.
CONTRACT No. 1
PROJECT No. 1010–20–1493

TOWN OF CAPON BRIDGE
PROPOSED WASTEWATER
TREATMENT PLANT EXPANSION
HAMPSHIRE COUNTY, WEST VIRGINIA
MAIN INDEX SHEET

SHEET No. i

LAYOUT TAB:
CAD FILE: R:\2020\020-1493-GENERAL SERVICES-CAPON BRIDGE-\Drawing\Proposed Sewer\C1-001-INDEX.dwg
PLOT DATE/TIME: 12/17/2020 2:13 PM
USER: andrew sayre

SECTION 013300 - SUBMITTAL PROCEDURES

PART 1 - GENERAL

1.1 SUMMARY

A. Section includes requirements for the submittal schedule and administrative and procedural requirements for submitting Shop Drawings, Product Data, Samples, and other submittals.

1.2 DEFINITIONS

A. Action Submittals: Written and graphic information and physical Samples that require Engineer's responsive action.

B. Informational Submittals: Written and graphic information and physical Samples that do not require Engineer's responsive action. Submittals may be rejected for not complying with requirements.

1.3 SUBMITTALS

A. Schedule of Submittals: Submit a Schedule of Submittals, arranged in chronological order by required dates established by the construction schedule. Include time required for review, ordering, manufacturing, fabrication and delivery when establishing dates. Include additional time required for making corrections or revisions to submittals noted by Engineer and additional time for handling and reviewing submittals required by those corrections.

1.4 SUBMITTAL ADMINISTRATIVE REQUIREMENTS

A. Engineer's Digital Data Files: Electronic copies of digital data files (PDF) of the Contract Drawings will be provided by Engineer for Contractor's use in preparing submittals.

1. Engineer will furnish Contractor one (1) set of digital data drawing files of the Contract Drawings for use in preparing Shop Drawings.

    a. Engineer makes no representations as to the accuracy or completeness of digital data drawing files as they relate to the Contract Drawings.
    b. Contractor shall execute a data licensing agreement in a form acceptable to Owner and Engineer.
    c. Digital data drawing files (PDF) will be provided to the Contractor if required in writing and a waiver provided by the Engineer has been signed by the Contractor.

B. Coordination: Coordinate preparation and processing of submittals with performance of construction activities.

1. Coordinate each submittal with fabrication, purchasing, testing, delivery, other submittals, and related activities that require sequential activity.
2. Coordinate transmittal of different types of submittals for related parts of the Work so processing will not be delayed because of need to review submittals concurrently for coordination.
3. Engineer reserves the right to withhold action on a submittal requiring coordination with other submittals until related submittals are received.

C. Processing Time: Allow time for submittal review, including time for resubmittals, as follows. Time for review shall commence on Engineer's receipt of submittal. No extension of the Contract Time will be authorized because of failure to transmit submittals enough in advance of the Work to permit processing, including resubmittals.

1. Initial Review: Allow twenty (20) days for initial review of each submittal. Allow additional time if coordination with subsequent submittals is required. Engineer will advise Contractor when a submittal being processed must be delayed for coordination.
2. Intermediate Review: If intermediate submittal is necessary, process it in same manner as initial submittal.
3. Resubmittal Review: Allow twenty (20) days for review of each resubmittal.

D. Paper Submittals: Place a permanent label or title block on each submittal item for identification.

1. Indicate name of firm or entity that prepared each submittal on label or title block.
2. Provide a space approximately 6 inches by 8 inches on label or beside title block to record Contractor's review and approval markings and action taken by Engineer.
3. Include the following information for processing and recording action taken:

    a. Project name.
    b. Date.
    c. Name of Engineer.
    d. Name of Contractor.
    e. Name of Subcontractor.
    f. Name of Supplier.
    g. Name of manufacturer.
    h. Submittal number or other unique identifier, including revision identifier.

        1) Submittal number shall use Specification Section number followed by a decimal point and then a sequential number (e.g., 061000.01). Resubmittals shall include an alphabetic suffix after another decimal point (e.g., 061000.01.A).

    i. Number and title of appropriate Specification Section.
    j. Drawing number and detail references, as appropriate.
    k. Location(s) where product is to be installed, as appropriate.
    l. Other necessary identification.

4. Additional Paper Copies: Unless additional copies are required for final submittal, and unless Engineer observes noncompliance with provisions in the Contract Documents, initial submittal may serve as final submittal.

a. Submit six (6) copies of each submittal to Engineer.

5. Electronic Copy: One (1) electronic copy (either via flash drive or email) of all submitted information shall be transmitted with submittals for review and comment. The electronic file shall include a copy of all submitted data.

6. Transmittal for Paper Submittals: Assemble each submittal individually and appropriately for transmittal and handling. Transmit each submittal using a transmittal form. Engineer will return without review submittals received from sources other than Contractor.

   a. Transmittal Form for Paper Submittals: Use sample form provided at the end of this Specification section or provide locations on Contractor's form for the following information:

      1) Project name.
      2) Date.
      3) Destination (To:).
      4) Source (From:).
      5) Name and address of Engineer.
      6) Name of Contractor.
      7) Name of firm or entity that prepared submittal.
      8) Names of Subcontractor, manufacturer, and Supplier.
      9) Category and type of submittal.
      10) Submittal purpose and description.
      11) Specification Section number and title.
      12) Specification paragraph number or drawing designation and generic name for each of multiple items.
      13) Drawing number and detail references, as appropriate.
      14) Indication of full or partial submittal.
      15) Transmittal number, numbered consecutively.
      16) Submittal and transmittal distribution record.
      17) Remarks.
      18) Signature of transmitter.

E. Options: Identify options requiring selection by Engineer.

F. Deviations: Identify deviations from the Contract Documents on submittals.

G. Resubmittals: Make resubmittals in same form and number of copies as initial submittal.

1. Note date and content of previous submittal.
2. Note date and content of revision in label or title block and clearly indicate extent of revision.
3. Resubmit submittals until they are marked with approval notation from Engineer's action stamp.

H. Distribution: Furnish copies of final submittals to manufacturers, Subcontractors, Suppliers, fabricators, installers, authorities having jurisdiction, and others as necessary for performance of construction activities. Show distribution on transmittal forms.

I. Use for Construction: Retain complete copies of submittals on Project Site. Use only final action submittals that are marked with the No Exceptions Taken.

PART 2 - PRODUCTS

2.1 SUBMITTAL PROCEDURES

A. General Submittal Procedure Requirements

1. Action Submittals: Submit six (6) paper copies of each submittal unless otherwise indicated. Engineer will return three (3) copies.
2. Informational Submittals: Submit two (2) paper copies of each submittal unless otherwise indicated. Engineer will not return copies.
3. Submit one (1) copy of all submittals via flash drive or email as PDF electronic files.
4. Certificates and Certifications Submittals: Provide a statement that includes signature of entity responsible for preparing certification. Certificates and certifications shall be signed by an officer or other individual authorized to sign documents on behalf of that entity.

    a. Provide a digital signature with digital certificate on electronically-submitted certificates and certifications where indicated.
    b. Provide a notarized statement on original paper copy certificates and certifications where indicated.

B. Product Data: Collect information into a single submittal for each element of construction and type of product or equipment.

1. If information must be specially prepared for submittal because standard published data are not suitable for use, submit as Shop Drawings, not as Product Data.
2. Mark each copy of each submittal to show which products and options are applicable.
3. Include the following information, as applicable:

    a. Manufacturer’s catalog cuts.
    b. Manufacturer’s product Specifications.
    c. Standard color charts.
    d. Statement of compliance with specified referenced standards.
    e. Testing by recognized testing agency.
    f. Application of testing agency labels and seals.
    g. Notation of coordination requirements.
    h. Availability and delivery time information.

C. Shop Drawings: Prepare Project-specific information, drawn accurately to scale. Do not base Shop Drawings on reproductions of the Contract Documents or standard printed data.

1. Preparation: Fully illustrate requirements in the Contract Documents. Include the following information, as applicable:

    a. Identification of products.
    b. Schedules.

c. Compliance with specified standards.
d. Notation of coordination requirements.
e. Notation of dimensions established by field measurement.
f. Relationship and attachment to adjoining construction clearly indicated.
g. Seal and signature of professional Engineer if specified.

2. Sheet Size: Except for templates, patterns, and similar full-size drawings, submit Shop Drawings on sheets at least 8-½ inches by 11 inches, but no larger than 30 inches by 42 inches.
3. Submit Shop Drawings in the following format:

a. Three (3) hard copies and one (1) PDF electronic file.

D. Test and Inspection Reports and Schedule of Tests and Inspections Submittals: Comply with requirements specified in Section 014000 - Quality Requirements.

E. Qualification Data: Prepare written information that demonstrates capabilities and experience of firm or person. Include lists of completed projects with project names and addresses, contact information of Engineers and owners, and other information specified.

F. Material Certificates: Submit written statements on manufacturer's letterhead certifying that material complies with requirements in the Contract Documents.

G. Material Test Reports: Submit reports written by a qualified testing agency, on testing agency's standard form, indicating and interpreting test results of material for compliance with requirements in the Contract Documents.

H. Field Test Reports: Submit written reports indicating and interpreting results of field tests performed either during installation of product or after product is installed in its final location, for compliance with requirements in the Contract Documents.

PART 3 - EXECUTION

3.1 CONTRACTOR'S REVIEW

A. Action and Informational Submittals: Review each submittal and check for coordination with other Work of the Contract and for compliance with the Contract Documents. Note corrections and field dimensions. Mark with approval stamp before submitting to Engineer.

B. Contractor's Approval Stamp: Stamp each submittal with a uniform, approval stamp. Include Project name and location, submittal number, Specification Section title and number, name of reviewer, date of Contractor's approval, and statement certifying that submittal has been reviewed, checked, and approved for compliance with the Contract Documents.

3.2 ENGINEER'S ACTION

A. General: Engineer will not review submittals that do not bear Contractor's approval stamp and will return them without action.

B. Owner Submittal Review: The Engineer will provide one (1) copy of each submittal to the Owner for their review and comments. Upon receiving comments, the Engineer will proceed with Item C.

C. Action Submittals: Engineer will review each submittal, make marks to indicate corrections or revisions required, and return it. Engineer will stamp each submittal with an action stamp and will mark stamp appropriately to indicate action.

D. Informational Submittals: Engineer will review each submittal and will not return it, or will return it if it does not comply with requirements. Engineer will forward each submittal to appropriate party.

E. Incomplete submittals are unacceptable, will be considered nonresponsive, and will be returned for resubmittal without review.

F. Submittals not required by the Contract Documents may not be reviewed and may be discarded.

Submittal Transmittal Form attached

END OF SECTION 013300

SUBMITTAL TRANSMITTAL

Submittal Description: _____ Submittal No: _____

Spec Section or Drawing Number: _____

OWNER:	Routing	Sent	Received
	Contractor/CM		
PROJECT:	CM/Engineer		
	Engineer/CM		
CONTRACTOR:	CM/Contractor		

We are sending you ☐ Attached ☐ Under separate cover via _____
☐ Submittals for review and comment ☐ Product data for information only

Remarks: _____

Item	Copies	Date	Section No.	Description	Review action[a]	Reviewer initials	Review comments attached

[a]Note: NET = No exceptions taken; MCN = Make corrections noted; R&R = Revise and resubmit; R = Rejected Attach additional sheets if necessary.

Contractor

Certify either A or B:

☐ A. We have verified that the material or equipment contained in this submittal meets all the requirements, including coordination with all related Work, specified (no exceptions).

☐ B. We have verified that the material or equipment contained in this submittal meets all the requirements specified except for the attached deviations.

No.	Deviation

Certified by: _____
Contractor's Signature

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SECTION 015000 - TEMPORARY FACILITIES AND CONTROLS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract Documents, including General and Supplementary Conditions and all related Specification Sections, apply to this Section.

1.2 SUMMARY

A. Section includes requirements for temporary utilities, support facilities, and security and protection facilities.

B. Related Requirements

1. Section 011000 - Summary.
2. Section 015700 - Traffic Control.

1.3 USE CHARGES

A. General: Installation and removal of and use charges for temporary facilities shall be included in the Contract Sum unless otherwise indicated. Allow other entities to use temporary services and facilities without cost, including, but not limited to: Owner's Employees, Engineer, testing agencies, and authorities having jurisdiction.

B. Electric Power Service: Electric power from Owner's existing system is not available for use. Contractor shall coordinate with the electric company to provide connections and extensions of services as required for construction operations. Contractor shall include use charges within the Bid Price for the project. No additional payment will be provided for electric power.

C. Telephone and Internet Service: Contractor shall coordinate with the telephone or cable companies to provide connection for services required during construction activities. No additional payment will be provided for telephone and internet.

1.4 INFORMATIONAL SUBMITTALS

A. Site Plan: Show temporary facilities, utility hookups, staging areas, and parking areas for construction personnel.

B. Agreement: Submit proof of Agreement between Contractor and land owner of any rented or leased property for temporary facilities which includes statement to hold the Owner and Engineer harmless.

1.5 QUALITY ASSURANCE

A. Electric Service: Comply with AEP, NECA, NEMA, and UL standards and Regulations for temporary electric service. Install service to comply with NFPA 70.

B. Tests and Inspections: Arrange for authorities having jurisdiction to test and inspect each temporary utility before use. Obtain required certifications and permits.

PART 2 - PRODUCTS

2.1 MATERIALS

A. Chain-Link Fencing: Minimum 2-inch, 0.148-inch-thick, galvanized-steel, chain-link fabric fencing; minimum 6 feet high with galvanized-steel pipe posts; minimum 2-⅜-inch-OD line posts and 2-⅞-inch-OD corner and pull posts, with 1-⅝-inch-OD top rails.

B. Portable Chain-Link Fencing: Minimum 2-inch, 0.148-inch-thick, galvanized-steel, chain-link fabric fencing; minimum 6 feet high with galvanized-steel pipe posts; minimum 2-⅜-inch-OD line posts and 2-⅞-inch-OD corner and pull posts, with 1-⅝-inch-OD top and bottom rails. Provide concrete OR galvanized-steel bases for supporting posts.

2.2 TEMPORARY FACILITIES

A. Storage and Fabrication Sheds: Provide sheds sized, furnished, and equipped to accommodate materials and equipment for construction operations.

2.3 EQUIPMENT

A. Fire Extinguishers: Portable, UL rated; with class and extinguishing agent as required by locations and classes of fire exposures.

PART 3 - EXECUTION

3.1 INSTALLATION, GENERAL

A. Locate facilities where they will serve Project adequately and result in minimum interference with performance of the Work. Relocate and modify facilities as required by progress of the Work.

1. Locate facilities to limit Site disturbance as specified in Section 011000 - Summary.

B. Provide each facility ready for use when needed to avoid delay. Do not remove until facilities are no longer needed or are replaced by authorized use of completed permanent facilities.

3.2 TEMPORARY UTILITY INSTALLATION

A. General: Install temporary service or connect to existing service.

1. Arrange with utility company, Owner, and existing users for time when service can be interrupted, if necessary, to make connections for temporary services.

B. Sewers and Drainage: Provide temporary utilities to remove effluent lawfully.

C. Water Service: Install water service and distribution piping in sizes and pressures adequate for construction.

D. Sanitary Facilities: Provide temporary toilets, wash facilities, and drinking water for use of construction personnel. Comply with requirements of authorities having jurisdiction for type, number, location, operation, and maintenance of fixtures and facilities.

E. Heating and Cooling: Provide temporary heating and cooling required by construction activities for curing or drying of completed installations or for protecting installed construction from adverse effects of low temperatures or high humidity. Select equipment that will not have a harmful effect on completed installations or elements being installed.

F. Ventilation and Humidity Control: Provide temporary ventilation required by construction activities for curing or drying of completed installations or for protecting installed construction from adverse effects of high humidity. Select equipment that will not have a harmful effect on completed installations or elements being installed. Coordinate ventilation requirements to produce ambient condition required and minimize energy consumption.

G. Electric Power Service: Provide electric power service and distribution system of sufficient size, capacity, and power characteristics required for construction operations.

1. Install electric power service overhead or underground unless otherwise indicated.

H. Lighting: Provide temporary lighting with local switching that provides adequate illumination for construction operations, observations, inspections, and traffic conditions.

1. Install and operate temporary lighting that fulfills security and protection requirements without operating entire system.

3.3 SUPPORT FACILITIES INSTALLATION

A. General: Comply with the following:

1. Provide construction for shops and sheds located within construction area or within 30 feet of building lines that is noncombustible according to ASTM E 136. Comply with NFPA 241.
2. Maintain support facilities until Engineer issues a Certificate of Substantial Completion. Remove after Substantial Completion. Personnel remaining after Substantial Completion will be permitted to use temporary facilities, under conditions acceptable to Owner.

B. Temporary Roads and Paved Areas: Construct and maintain temporary roads and paved areas adequate for construction operations. Locate temporary roads and paved areas as indicated on Drawings.

1. Provide dust-control treatment that is nonpolluting and nontracking. Reapply treatment as required to minimize dust.

C. Temporary Use of Permanent Roads and Paved Areas: Locate temporary roads and paved areas in same location as permanent roads and paved areas. Construct and maintain temporary roads and paved areas adequate for construction operations. Extend temporary roads and paved areas, within construction limits indicated, as necessary for construction operations.

1. Coordinate elevations of temporary roads and paved areas with permanent roads and paved areas.
2. Prepare subgrade and install subbase and base for temporary roads and paved areas.
3. Delay installation of final course of permanent hot-mix asphalt pavement until immediately before Substantial Completion. Repair hot-mix asphalt base-course pavement before installation of final course according to Section 321216 - Asphalt Paving.

D. Traffic Controls: Comply with requirements of authorities having jurisdiction.

1. Protect existing Site improvements to remain including curbs, pavement, and utilities.
2. Maintain access for fire-fighting equipment and access to fire hydrants.

E. Parking: Provide temporary parking areas for construction personnel.

F. Dewatering Facilities and Drains: Comply with requirements of authorities having jurisdiction. Maintain Project Site, excavations, and construction free of water.

1. Dispose of rainwater in a lawful manner that will not result in flooding Project or adjoining properties or endanger permanent Work or temporary facilities.
2. Remove snow and ice as required to minimize accumulations.

G. Project Signs: Provide Project signs as indicated. Unauthorized signs are not permitted.

1. Identification Signs: Provide Project identification signs to be located/installed as directed by the Engineer.
2. Temporary Signs: Provide other signs as indicated and as required to inform public and individuals seeking entrance to Project.

    a. Provide temporary, directional signs for construction personnel and visitors.

3. Maintain and touchup signs so they are legible at all times.

H. Waste Disposal Facilities: Provide waste-collection containers in sizes adequate to handle waste from construction operations. Comply with requirements of authorities having jurisdiction.

3.4 SECURITY AND PROTECTION FACILITIES INSTALLATION

A. Protection of Existing Facilities: Protect existing vegetation, equipment, structures, utilities, and other improvements at Project Site and on adjacent properties, except those indicated to be removed or altered. Repair damage to existing facilities.

B. Environmental Protection: Provide protection, operate temporary facilities, and conduct construction as required to comply with environmental Regulations and that minimize possible air, waterway, and subsoil contamination or pollution or other undesirable effects.

C. Temporary Erosion and Sedimentation Control: Provide measures to prevent soil erosion and discharge of soil-bearing water runoff and airborne dust to undisturbed areas and to adjacent properties and walkways, according to erosion-control and sedimentation-control Drawings and the requirements of 2003 EPA Construction General Permit or authorities having jurisdiction, whichever is more stringent.

D. Stormwater Control: Comply with requirements of authorities having jurisdiction. Provide barriers in and around excavations and subgrade construction to prevent flooding by runoff of stormwater from heavy rains.

E. Tree and Plant Protection: Install temporary fencing located as indicated or outside the drip line of trees to protect vegetation from damage from construction operations. Protect tree root systems from damage, flooding, and erosion. It is the responsibility of the Contractor to cut down and grind the stump 18-inch below grade of any tree which dies within the temporary easement until Contractor's warranty period expires.

F. Pest Control: Engage pest-control service to recommend practices to minimize attraction and harboring of rodents, roaches, and other pests and to perform extermination and control procedures at regular intervals so Project will be free of pests and their residues at Substantial Completion. Perform control operations lawfully, using environmentally safe materials.

G. Site Fence: Before construction operations begin, furnish and install Site enclosure fence in a manner that will prevent people and animals from easily entering Site except by entrance gates.

1. Extent of Fence: As indicated on Drawings.
2. Maintain security by limiting number of keys and restricting distribution to authorized personnel. Furnish one (1) set of keys to Owner.

H. Security Enclosure and Lockup: Install temporary enclosure around partially completed areas of construction. Provide lockable entrances to prevent unauthorized entrance, vandalism, theft, and similar violations of security. Lock entrances at end of each Work day.

I. Barricades, Warning Signs, and Lights: Comply with requirements of authorities having jurisdiction for erecting structurally adequate barricades, including warning signs and lighting.

J. Temporary Egress: Maintain temporary egress from existing occupied facilities as indicated and as required by authorities having jurisdiction.

END OF SECTION 015000

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