CAESARS LANE WASTEWATER TREATMENT FACILITY
MBR SYSTEM PRE-SELECTION

FOR

TOWN OF NEW WINDSOR
ORANGE COUNTY, NEW YORK

PREPARED FOR:
Town of New Windsor
555 Union Avenue
New Windsor, NY 12553

PREPARED BY:
MHE Engineering, D.P.C.
33 Airport Center Dr. Suite 202
New Windsor, NY 12553

NOTE: ANY UNAUTHORIZED ALTERATION OR ADDITION TO THIS DOCUMENT IS A VIOLATION OF SECTION 7209(2) OF THE NEW YORK STATE EDUCATION LAW.

DATE: 13 May 2022
JOB #: 18-732

NEW YORK OFFICE
33 Airport Center Drive, Suite 202, New Windsor, NY 12553
845-567-3100 | F: 845-567-3232 | mheny@mhepc.com

PENNSYLVANIA OFFICE
111 Wheatfield Drive, Suite 1, Milford, PA 18337
570-296-2765 | F: 570-296-2767 | mhepa@mhepc.com

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ADVERTISEMENT FOR BIDS

Town of New Windsor
Orange County, New York
Caesar's Lane WWTP MBR System Pre-Selection

General Notice

The **Town of New Windsor** (Owner) is requesting Bids for the supply of the following equipment:

Caesars Lane WWTP MBR System Pre-Selection

Bids for the Project will be received at the **Town of New Windsor Town Hall** located at **555 Union Avenue, New Windsor, NY 12553** until **19 July 2022** at **2:00 PM** local time. At that time the Bids received will be **publicly** opened and read.

The Project includes the following Work:

A. The Work includes furnishing materials and equipment, supply, start-up, commissioning, performance testing, and operator training of the proposed membrane bioreactor (MBR) system.

B. One contract will be awarded for this Work by the Town. The awarded contract will be assumed by a General Contractor as part of the Caesars Lane WWTP Plant Expansion Project which will be bid at a later date.

C. Installation of membrane system equipment will be by a General Contractor as part of the Caesars Lane WWTP Plant Expansion Project.

Obtaining the Bidding Documents

Bidding Documents will be provided electronically, becoming available 13 May 2022 via a shared file link by submitting an email to the Town's Engineer/Issuing Office MHE Engineering, D.P.C., **dsorvillo@mhepc.com or jzajac@mhepc.com.** Prospective Bidders are required to register as a plan holder, by requesting these documents in electronic format through the issuing office. Those who obtain documents through other sources for the purposes of viewing are not considered plan holders and will be ineligible to bid.

The Issuing Office for the Bidding Documents is:

MHE Engineering, D.P.C.
33 Airport Center Drive, Suite 202
New Windsor, NY 12553
Attn: Jamison Zajac
845-567-3100

Instructions to Bidders.

For all further requirements regarding bid submittal, qualifications, procedures, and contract award, refer to the Instructions to Bidders that are included in the Bidding Documents.

Each bid shall be accompanied by an acceptable form of Bid Guarantee in an amount equal to at least five (5) percent of the amount of the Bid payable to the Town of New Windsor as a guarantee that if the Bid is accepted, the Bidder will, within fifteen (15) days after the award of the Contract, execute the Contract and file acceptable Performance and Labor and Material Payment Bonds and Certificate(s) of Insurance.

OWNERS RIGHTS RESERVED: The Town of New Windsor, hereinafter called the Owner, reserves the right to reject any or all Bids and to waive any informality or technicality in any Bid in the interest of the Owner.

STATEMENT OF NON-COLLUSION: Bidders on Contracts are required to execute a non-collusive bidding affidavit pursuant to Section 103d of the General Municipal Law of the State of New York.

IRAN DIVESTMENT ACT: By submission of this bid, each bidder and each person signing on behalf of any bidder certifies, and in the case of a joint bid, each party thereto certifies as to its own organization, under penalty of perjury, that to the best of its knowledge and belief, each bidder is not on the list created pursuant to paragraph (b) of subdivision 3 of section 165-a of the State Finance Law.

Attention of bidders is particularly called to the requirement as to conditions of employment to be observed and the minimum wage rates to be paid under the Contract (Section 3, Segregated Facilities, Section 109) and Executive Order 11246.

Bidders are also required to comply with the provisions of Section 291-299 of the Executive Law of the State of New York.

No bidder may withdraw their bid within forty-five (45) days after the actual date of the opening thereof.

Subject to the provisions of Article 28, Part III of the New York State Tax Law and the provisions of the Contract Documents, the Owner is exempt from payment of sales and compensating use taxes of the State of New York, and cities and counties, on all materials supplied to the Owner pursuant to this contract.

The Town of New Windsor hereby notifies all bidders that it will affirmatively ensure that in regard to any contract entered into pursuant to this advertisement, minority business enterprises will be afforded full opportunity to submit bids in response to this invitation and will not be discriminated against on the ground of race, gender, color or national origin in consideration of an award.

American Iron and Steel

Section 746 of Title VII of the Consolidated Appropriations Act of 2017 (Division A - Agriculture, Rural Development, Food and Drug Administration, and Related Agencies Appropriations Act, 2017) and subsequent statutes mandating domestic preference applies an American Iron and Steel requirement to this project. All iron and steel products used in this project must be produced in the United States. The term "iron and steel products" means the following products made primarily of iron or steel: lined or unlined pipes and fittings, manhole covers and other municipal castings, hydrants, tanks, flanges, pipe clamps and restraints, valves, structural steel, reinforced precast concrete, and Construction Materials.

The following waivers apply to this Contract:
***De Minimis*,**
Minor Components,
Pig iron and direct reduced iron

This Advertisement is issued by:

Owner: **Town of New Windsor Town Clerk**
By: Kelly Allegra
Title: **Town Clerk**
Date: 13 May 2022

INSTRUCTIONS TO BIDDERS FOR PROCUREMENT CONTRACT

ARTICLE 1—DEFINED TERMS

1.01 Terms used in these Instructions to Bidders will have the meanings indicated in the General Conditions and Supplementary Conditions. Additional terms used in these Instructions to Bidders have the meanings indicated below.

A. *Issuing Office*—The office from which the Procurement Bidding Documents are to be issued.

ARTICLE 2—PROCUREMENT BIDDING DOCUMENTS

2.01 Bidder may obtain complete sets of the Procurement Bidding Documents, in the number and for the deposit sum, if any, stated in the advertisement or invitation to bid, from the Issuing Office. The deposit will be refunded to each document holder of record who returns a complete set of Procurement Bidding Documents in good condition within 30 days after opening of Bids. Bidders must obtain a complete set of the Procurement Contract Documents as listed in the Procurement Agreement.

2.02 Bidder must use a complete set of the Procurement Bidding Documents in preparing the Bid; neither Buyer nor Engineer assumes any responsibility for errors or misinterpretations resulting from the use of incomplete sets of Procurement Bidding Documents.

2.03 Buyer and Engineer make copies of Procurement Bidding Documents available on the above terms only for obtaining Bids for furnishing Goods and Special Services, and do not authorize or confer a license for any other use.

ARTICLE 3—QUALIFICATIONS OF BIDDERS

3.01 Buyer may at any time conduct such investigations as Buyer deems necessary to establish the responsibility, qualifications, and financial ability of Bidder, and after the opening of Bids may require a Bidder to submit documentation of its qualifications, including but not limited to financial data and documentation of previous experience providing goods and services comparable to the specified Goods and Special Services.

3.02 Bidder is to carefully review those portions of the Bid Form requiring Bidder's representations and certifications.

3.03 Bidder shall submit a qualifications statement with the Bid, including financial data and documentation of previous experience providing comparable goods and services, to demonstrate Bidder's qualifications to furnish the specified Goods and Special Services.

ARTICLE 4—SITE VISIT; PRE-BID CONFERENCE

4.01 Buyer recommends that Bidder visit the Point of Destination and the site where the Goods are to be installed and Special Services will be provided, taking into account observable local and site conditions that may affect the delivery, cost, progress, and furnishing of the Goods and Special

Services. Arrangements for such a visit may be made through Engineer. Point of destination is designated as: 145 Caesars Lane, New Windsor, NY 12553.

4.02 A pre-bid conference will not be held for this procurement.

ARTICLE 5—INTERPRETATIONS AND ADDENDA

5.01 All questions about the meaning or intent of the Procurement Bidding Documents are to be submitted to Engineer in writing **via email to jzajac@mhepc.com & dsorvillo@mhepc.com.**

5.02 Interpretations or clarifications considered necessary by Engineer in response to such written questions will be issued by Addenda digitally to all parties recorded as having received the Procurement Bidding Documents. Questions received less than 10 days prior to the date for opening of Bids will not be answered. Only answers in the Addenda will be binding. Oral statements, interpretations, and clarifications may not be relied upon in the preparation of a Bid, and will not be binding or legally effective.

5.03 Addenda may be issued to clarify, correct, or change the Procurement Bidding Documents as deemed advisable by Buyer or Engineer.

ARTICLE 6—BID SECURITY

6.01 A Bid must be accompanied by Bid security made payable to Buyer in an amount of **five (5)** percent of Bidder's maximum Bid price (determined by adding the base bid and all alternates) and in the form of a Bid bond issued by a surety meeting the requirements of Paragraph 5.01 of the General Conditions. Such Bid bond will be issued in the form included in the Procurement Bidding Documents.

6.02 The Bid security of the apparent Successful Bidder will be retained until Buyer (Project Owner) awards the Procurement Contract to such Bidder, and such Bidder has executed the Procurement Contract, furnished the required contract security, and met the other conditions of the Notice of Award, whereupon the Bid security will be released. If the Successful Bidder fails to execute and deliver the Procurement Contract and furnish the required contract security within 15 days after the Notice of Award, Buyer (Project Owner) may consider Bidder to be in default and annul the Notice of Award, and the Bid security of that Bidder will be forfeited, in whole in the case of a penal sum bid bond, and to the extent of Buyer's damages in the case of a damages-form bond. Such forfeiture will be Buyer's exclusive remedy if Bidder defaults.

6.03 The Bid security of other Bidders that Buyer believes to have a reasonable chance of receiving the award may be retained by Buyer until the earlier of 7 days after the Effective Date of the

Procurement Contract or 61 days after the Bid opening, whereupon Bid security furnished by such Bidders will be released.

6.04 Bid security of other Bidders that Buyer believes do not have a reasonable chance of receiving the award will be released within 7 days after the Bid opening.

ARTICLE 7—PROCUREMENT CONTRACT TIMES

7.01 See applicable provisions in the Procurement Agreement.

ARTICLE 8—LIQUIDATED DAMAGES

8.01 Any provisions for liquidated damages, such as those for Seller's failure to attain a specified Milestone such as the delivery of the Goods, are set forth in the Procurement Agreement.

ARTICLE 9—CONFIDENTIALITY OF BID INFORMATION

9.01 Confidential information is information in the Bid, or in documents submitted by Bidder with the Bid or submitted subsequent to the opening of Bids in support of the Bid, that Bidder clearly and prominently labels in writing to be a trade secret, proprietary, or confidential. Bids will be opened and accompanying documents, if any, will be maintained in a manner that endeavors to avoid disclosing confidential information to third parties, to the extent allowed by Laws and Regulations.

9.02 Bidder shall clearly and prominently mark confidential information with the word "CONFIDENTIAL" on each page or sheet or on the cover of bound documents. Place "CONFIDENTIAL" stamps or watermarks so that they do not obscure any of the required information on the document, either in the original or in a way that would obscure any of the required information in a photocopy of the document.

9.03 If Buyer is requested to disclose confidential information, becomes legally compelled to disclose confidential information, or is required by a regulatory body, governing agency, or controlling authority to disclose confidential information, or make any other disclosure that is prohibited or otherwise constrained by these Procurement Bidding Requirements, Buyer will provide Bidder with prompt notice so Bidder may seek a protective order or other appropriate remedy. Bidder will be solely responsible for submitting to the regulatory body, governing agency, or controlling authority any arguments, briefs, memoranda, motions, authorities, or other information in opposition to disclosure.

9.04 Buyer's obligations with respect to confidential information are nullified by the following exceptions:

A. Confidential information becomes a part of the public domain through publication or otherwise, through no fault of the Buyer;

B. Buyer can demonstrate through suitable documentation that the confidential information was already in the Buyer's possession, and not previously marked as confidential, or was otherwise publicly available prior to the date of Bid submittal;

C. The confidential information is subsequently and independently disclosed to the Buyer by a third party who has a lawful right to disclose such information;

D. Buyer concludes in good faith that the information is not confidential, or that disclosure is required or justified; or

E. Buyer is required to disclose the confidential information by court order or by applicable Laws and Regulations.

9.05 Notwithstanding any other provision of the Procurement Bidding Documents, it is stipulated and agreed that by accepting a Bid, Buyer has not and does not waive its legal immunity (if any) from suit or liability.

ARTICLE 10—"OR-EQUAL" ITEMS

10.01 The Procurement Contract, if awarded, will be based on material and equipment specified in the Procurement Bidding Documents without consideration of possible "or-equal" items. Whenever it is specified or described in the Procurement Bidding Documents that an "or-equal" item of material or equipment may be furnished or used by Seller if acceptable to Engineer, application for such acceptance will not be considered by Engineer until after the Effective Date of the Procurement Contact. The procedure for submittal of any such application by Seller and consideration by Engineer is set forth in the General Conditions and may be supplemented in the Procurement Specifications.

10.02 Deleted.

ARTICLE 11—PREPARATION OF BID

11.01 The Bid Form is included with the Procurement Bidding Documents. Additional copies of Procurement Bidding Documents may be obtained from the Issuing Office.

11.02 All blanks on the Bid Form must be completed and the Bid Form must be signed by an individual authorized to act on behalf of the Bidder. Alterations must be initialed by an individual authorized to act on behalf of the Bidder. A Bid price must be indicated for each item in the Bid Form. In the case of optional alternates, the words "No Bid" may be entered.

11.03 Bidder must acknowledge all Addenda by filling in the number and date of each Addendum in the Bid Form and sign where indicated to verify that the Addenda were received. A Bid that does not acknowledge receipt of all Addenda may be considered non-responsive.

11.04 Bidder shall:

A. Sign the Bid Form as indicated in the Bid Form.

B. Include evidence of authority to sign.

C. Provide information on the individual to be contacted for any communications regarding the Bid.

D. Provide evidence of the Bidder's authority and qualification to do business in the locality of the Project, to the extent required, or indicate the ability to obtain such authority and qualification prior to award of the Procurement Contract.

11.05 The responsibilities of each Bidder submitting a Bid are described in the Bidder's representations and certifications set forth in Article 6 of the Bid Form.

ARTICLE 12—BASIS OF BID; COMPARISON OF BIDS

12.01 TYPE OF BID

A. Membrane system equipment shall be an evaluated bid considering, but not limited to capital cost of membrane system equipment and design support services, and 10-year life cycle analysis. Life cycle analysis is based on Bid Worksheets , which outline annual and construction cost of process tanks, cleaning chemical consumption, power costs of pumps and blower operations, annual service contract including remote monitoring and support, and membrane replacement. MBR System Capital Cost Table Bid Worksheets are identified in the Bid Form.

ARTICLE 13—SUBMITTAL OF BID

13.01 Bidder shall refer to the **advertisement** for specific identification of the date, time, and place where Bids are to be submitted.

13.02 Bidder must submit one separate unbound copy of the completed Bid Form, and, if required, the Bid Security and the other documents required to be submitted under the terms of Article 4 of the Bid Form.

13.03 A Bid must be submitted no later than the date and time prescribed and at the place indicated in the advertisement or invitation to bid. Submit the Bid in an envelope plainly marked with the Project title (and, if applicable, the designated portion of the Project for which the Bid is submitted) and the name and address of Bidder. Enclose the Bid security and other documents required to be submitted with the Bid as listed in the Bid Form. If a Bid is sent by mail or other delivery system, the sealed envelope containing the Bid shall be enclosed in a separate package plainly marked on the outside with the notation "BID ENCLOSED."

ARTICLE 14—MODIFICATION OR WITHDRAWAL OF BID

14.01 A Bid may be modified or withdrawn by a document duly signed in the same manner that a Bid must be signed and delivered to the place where Bids are to be submitted prior to the date and time for the opening of Bids.

14.02 If, within 24 hours after Bids are opened, any Bidder files a duly signed written notice with Buyer and promptly thereafter demonstrates to the reasonable satisfaction of Buyer that there was a material and substantial mistake in the preparation of its Bid, that Bidder may withdraw its Bid, and the Bid security will be returned.

ARTICLE 15—OPENING OF BIDS

15.01 Bids will be publicly opened at the time and place indicated in the advertisement or invitation to bid and read aloud, unless obviously non-responsive. An abstract of the amounts of the Base Bids

and Alternate Bids, if any, will be made available to Bidders after Bids have been opened and reviewed by the Buyer.

15.02 Deleted.

ARTICLE 16—BIDS TO REMAIN SUBJECT TO ACCEPTANCE

16.01 All Bids will remain subject to acceptance for the period stated in the Bid Form, but Buyer may, in its sole discretion, release any Bid and return the Bid security prior to the end of this period.

ARTICLE 17—EVALUATION OF BIDS AND AWARD OF PROCUREMENT CONTRACT

17.01 Buyer reserves the right to reject any and all Bids, including without limitation, nonconforming, nonresponsive, unbalanced, or conditional Bids. Buyer also reserves the right to waive all informalities not involving price, time, or changes in the Goods and Special Services.

17.02 Buyer will reject the Bid of any Bidder that Buyer finds, after reasonable inquiry and evaluation, to not be responsible.

17.03 In evaluating Bids, Buyer will consider whether the Bids comply with the prescribed requirements, and such alternates, unit prices, and other data as may be requested in the Bid Form or may be requested from Bidders prior to a Notice of Award.

17.04 Buyer reserves the right to reject any and all bids that do not meet the experience requirements.

17.05 If Buyer awards the Procurement Contract, such award will be to the lowest responsive and responsible proposal as determined by the Buyer to be in its best interest.

ARTICLE 18—BONDS AND INSURANCE

18.01 Article 5 of the General Conditions and Article 5 of the Supplementary Conditions set forth Buyer's requirements as to performance and payment bonds and insurance. When the Successful Bidder delivers the signed Procurement Agreement to Buyer, it must be accompanied by such bonds and acceptable evidence of insurance.

ARTICLE 19—SIGNING OF PROCUREMENT AGREEMENT

19.01 When Buyer issues a Notice of Award to the Successful Bidder, it will be accompanied by the unsigned counterparts of the Procurement Agreement along with the other Procurement Contract Documents identified in the Procurement Agreement. Within 15 days thereafter, Successful Bidder must execute and deliver the required number of counterparts of the Procurement Agreement and any bonds and insurance documentation required to be delivered by the Procurement Contract Documents to Buyer. Within 10 days thereafter, Buyer will deliver one fully executed counterpart of the Procurement Agreement to Successful Bidder, together

with printed and electronic copies of the Procurement Contract Documents as stated in Paragraph 2.02 of the General Conditions.

ARTICLE 20—SALES AND USE TAXES

20.01 Buyer is exempt from **New York** State sales and use taxes on materials and equipment to be incorporated in the Project (Exemption No. **14-6002338**). Exempt taxes must not be included in the Bid. Refer to P-800, Paragraph SC-7.05 for additional information.

ARTICLE 21—PROCUREMENT CONTRACT TO BE ASSIGNED

21.01 Bidder's attention is directed to the provisions of Article 5 of the Procurement Agreement which provide for the assignment of the Procurement Contract to a construction contractor designated by the Buyer to construct the **Caesars Lane WWTP Expansion Project.** Successful Bidder (Seller) will be required to perform the Procurement Contract after it has been assigned to the construction contractor (Contractor Assignee) in accordance with the provisions in the Procurement Contract. Timing of the assignment is addressed in the Procurement Agreement. Forms documenting the assignment of the Procurement Contract and for the agreement of the Seller's surety to such assignment are included as attachments to the Procurement Agreement.

ARTICLE AA—PROCUREMENT CONTRACT TO BE ASSIGNED

DELETED.

ARTICLE BB—BIDDER'S ACKNOWLEDGMENTS

DELETED.

ARTICLE CC—MISCELLANEOUS

DELETED.

BID FORM FOR PROCUREMENT CONTRACT

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BID FORM FOR PROCUREMENT CONTRACT

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

ARTICLE 1—BUYER AND BIDDER

1.01 This Bid for Caesars Lane WWTP MBR System Pre-Selection is submitted to:

Town of New Windsor

555 Union Avenue

New Windsor, NY 12553

1.02 The undersigned Bidder proposes and agrees, if this Bid is accepted, to enter into a Procurement Contract with Buyer in the form included in the Procurement Bidding Documents, and to furnish the Goods and Special Services as specified or indicated in the Procurement Bidding Documents, for the prices and within the times indicated in this Bid, and in accordance with the other terms and conditions of the Procurement Bidding Documents.

ARTICLE 2—BASIS OF BID

2.01 *Base Bid Price*

A. Bidder shall complete the attached Bid Tables and Worksheets that contain the required formulas and submit with their bid. Bids received without a completed Worksheets shall be deemed unresponsive. Bids received with Worksheets completed incorrectly (i.e., provided formulas not used, miscalculated, or doesn't match submittal information) shall be deemed unresponsive.

B. Bidder acknowledges that the MBR System Capital Cost line item below represents the actual price for the equipment to be paid by the Buyer and will reflect the amount to be used in the Agreement.

C. Bidder acknowledges that any discrepancy between the attached Worksheets and the Bid Summary Table below shall be resolved by using the lower cost/value when comparing bid costs.

D. Bidder acknowledges that the formulas and definitions provided in the attached Worksheets were developed to provide a fair estimate of the 10-year cost value to the Buyer, as a result of selecting the Bidder's equipment.

E. Bidder acknowledges that the other line items in the table below are considered in addition to the MBR System Capital Costs for purposes of bid comparison; providing the highest probability of determining the most cost-effective bid for the buyer over the next 10 years for this project.

F. Bidder hereby agrees to perform all Work as described in the Specifications and as shown on the Drawings of these Contract Documents, complete for the following Total Bid Cost price indicated in the following Bid Summary Table:

BID SUMMARY TABLE

Item No.	Description	Extended Total Price
1.	Capital MBR System Costs (See Table in Section 2.01.G)	$
2.	Annual Service Cost (Table A-12, Line A) x 7.4	$
3.	Annualized Maintenance Cost (Table B)	$
4.	Construction Costs (Table C-4, Line C.12)	$
5.	Present Worth O&M (Line 3 x 7.4)	$
	TOTAL BID COST (Sum of all rows)	**$**

TOTAL BID COST _____

(in words)

G. The MBR System Capital Cost Schedule summarizes the corresponding Unit Price and Extended Total Price for each Cost Item. Bidder acknowledges that the Extended Total Price shall be full compensation for all Base Bid Work complete, as described for each scheduled Bid Item.

MBR SYSTEM CAPITAL COST SCHEDULE

Item No.	Description	Unit	Estimated Quantity	Unit Price	Extended Total Price
1.	Bonds and Insurance	LS	1	$	$
2.	Submittals	LS	1	$	$
3.	Membrane Units and MBR Integral Interconnecting	LS	1	$	$
4.	Pumps, Mixers, Blowers, Diffusers, Valves etc.	LS	1	$	$
5.	Chemical Cleaning Systems	LS	1	$	$
6.	Instrumentation and Controls	LS	1	$	$
7.	Start-up, Commissioning and Training	LS	1	$	$
8.	Miscellaneous	LS	1	$	$
				TOTAL MBR SYSTEM CAPITAL COST	**$**

TOTAL MBR SYSTEM CAPITAL COST _____

(in words)

H. Estimated annual operation and maintenance costs are based on the Average Daily Flow and wastewater characteristics listed in the Section 455000 Membrane Filtration System. Costs should be stated for continuous steady state operation at ADF. Assumed diurnal curve modeling will not be accepted.

I. Bidder shall attach all tables and worksheets as part of evaluated bid submittal package.

J. Bidder shall attach Bid Submittals required in Section 455000 Membrane Filtration System.

2.02 *Major Equipment and Systems Suppliers*

A. In connection with major items of equipment to be furnished and installed in this Project, Bidder expressly agrees to the following provisions:

1. That the Total Base Bid Price stated above includes the furnishing of major equipment, products, and systems furnished by the Supplier which Bidder has selected from those suppliers listed in table "Schedule of Proposed Major Equipment and Systems Suppliers" completed as part of this Bid Form; and Bidder has circled the name of the selected Supplier in the "Schedule of Proposed Equipment Suppliers" form in this Section.

B. The "Schedule of Proposed Major Equipment and Systems Suppliers" in this Bid Form shall be binding in terms of the selected equipment, products, systems, and suppliers to be provided by the Bidder under the Total Base Bid Price.

2.03 Substitutions for Major Equipment and Systems

A. Substitutions offered by Bidder shall be governed by the requirements of the General Conditions; and Product Requirements of these Specifications. Bidder expressly agrees to the following provisions:

1. Where proposed substitutions for major equipment and system items listed in the "Schedule of Proposed Major Equipment and Systems Suppliers" form are to be considered, they must be designated by Bidder in the spaces provided on the Schedule Form.

2. Contract Price will be determined on the basis of the lowest Total Base Bid Price or adjusted Total Base Bid Price. Substitutions for Major Equipment and Systems proposed by Bidder and deemed by Buyer to be acceptable shall be considered only after Contract Award.

The remainder of this page was left blank intentionally.

2.04 *Schedule of Proposed Major Equipment and Systems Suppliers*

SCHEDULE OF PROPOSED MAJOR EQUIPMENT AND SYSTEM SUPPLIERS

A	B	C	D	E	F	G
Item	Spec. Section No.	Description	Prequalified "Major Equipment Manufacturers"	Identify "Supplier or Manufacturer" Included in Bidder's Base Bid Price by circling one of the following(1)	Proposed Seller Substitution (optional)(2)	Lump Sum Price Adjustment Add/(Deduct)
a.	455000	Submersible Pumps	a. Flygt b. ABS/Sulzer c. Wilo d. KSB	a. Flygt b. ABS/Sulzer c. Wilo d. KSB	_____	$_____
b.	455000	End suction centrifugal pump	a. Flowserve b. ABS/Sulzer c. Pentair/Fairbanks d. KSB	a. Flowserve b. ABS/Sulzer c. Pentair/Fairbanks d. KSB	_____	$_____
c.	455000	Rotary Lobe Pumps	a. Vogelsang b. Boerger	a. Vogelsang b. Boerger	_____	$_____
d.	455000	Rotary Lobe Blowers	a. Gardner Denver b. Kaeser c. Aerzen	a. Gardner Denver b. Kaeser c. Aerzen	_____	$_____
e.	455000	Submersible Mixers	a. Flygt b. ABS/Sulzer c. Wilo d. KSB	a. Flygt b. ABS/Sulzer c. Wilo d. KSB	_____	$_____
f.	455000	Membrane Diffusers	a. EDI b. Sanitaire c. SSI	a. EDI b. Sanitaire c. SSI	_____	$_____

Notes:

(1) Instructions for listing supplier or manufacturer included in Bidder's Base Bid Price under Column E:

a. Circle name of one supplier or manufacturer for each item listed under Column A to be included in the Bidder's Base Bid Price.

b. Proposal shall be considered irregular and subject to rejection if Bidder:

1) Fails to list (by circling) an approved Supplier or Manufacturer listed under Column E;

ARTICLE 3—TIME OF COMPLETION

3.01 Bidder agrees that the furnishing of Goods and Special Services will conform to the schedule of Procurement Contract Times set forth in Article 2 of the Procurement Agreement.

3.02 Bidder accepts the provisions of the Procurement Agreement as to liquidated damages.

ARTICLE 4—ATTACHMENTS TO THIS BID

4.01 The following documents are attached to and made a condition of this Bid:

A. Required Bid security in the form prescribed in the Instructions to Bidders.

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

C. Evaluated bid submittal in accordance with Specification 455000.

D. Required Bidder Qualification Statement with supporting data.

ARTICLE 5—BIDDER'S ACKNOWLEDGMENTS

5.01 Bidder accepts all terms and conditions of the Instructions to Bidders. This Bid will remain subject to acceptance for 45 days after the Bid opening, or for such longer period that Bidder may agree to in writing upon request of Buyer.

5.02 Bidder has examined and carefully studied the Procurement Bidding Documents, the related data identified in the Procurement Bidding Documents, and the following Addenda, receipt of which is hereby acknowledged:

Addendum No.	Addendum Date

ARTICLE 6—BIDDER'S REPRESENTATIONS AND CERTIFICATIONS

6.01 *Bidder's Representations*

A. In submitting this Bid, Bidder represents that:

1. Bidder has examined and carefully studied the Procurement Contract Documents.

2. If required by the Instructions to Bidders to visit the Point of Destination and the site where the Goods are to be installed or Special Services will be provided, or if, in Bidder's judgment, any observable local or site conditions may affect the delivery, cost, progress, or furnishing of the Goods and Special Services, then Bidder has visited the Point of Destination and site where the Goods are to be installed or Special Services will be provided (as applicable) and become familiar with and is satisfied as to the observable local and site conditions that may affect delivery, cost, progress, and furnishing of the Goods and Special Services.

3. Bidder is familiar with and is satisfied as to all Laws and Regulations that may affect the cost, progress, and performance of Seller's obligations under the Procurement Contract.

4. Bidder has carefully studied, considered, and correlated the information known to Bidder with respect to the effect of such information on the cost, progress, and performance of Seller's obligations under the Procurement Contract.

5. Bidder has given Engineer written notice of all conflicts, errors, ambiguities, or discrepancies that Bidder has discovered in the Procurement Contract Documents, and the written resolution (if any) thereof by Engineer is acceptable to Bidder.

6. The Procurement Contract Documents are generally sufficient to indicate and convey understanding of all terms and conditions for performance of Seller's obligations under the Procurement Contract.

7. The submission of a Bid will constitute an incontrovertible representation by Bidder that Bidder has complied with every requirement of the Bidding Requirements, that without exception the Bid (including all Bid prices) is premised upon furnishing the Goods and Special Services as required by the Procurement Contract Documents.

6.02 *Bidder's Certifications*

A. Bidder certifies that:

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

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

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

4. Bidder has not engaged in corrupt, fraudulent, collusive, or coercive practices in competing for the Procurement Contract. For the purposes of this Paragraph 6.02.A.4:

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

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

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

d. "coercive practice" means harming or threatening to harm, directly or indirectly, persons or their property to influence their participation in the bidding process.

This Bid is offered by:

Bidder:

_____

(typed or printed name of organization)

By: _____

(individual's signature)

Date: _____

(date signed)

Name: _____

(typed or printed)

Title: _____

(typed or printed)

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

Attest: _____

(individual's signature)

Title: _____

(typed or printed)

Address for giving notices:

_____

_____

_____

Designated Representative:

Name: _____

(typed or printed)

Title: _____

(typed or printed)

Address:

_____

_____

_____

Phone: _____

Email: _____

License No.: _____

Classification: _____

Limitation: _____

BID WORKSHEETS

Bid Analysis
Overview

MBR System proposals shall be evaluated based upon the base bid schedule, present work cost and as noted below:

The evaluation shall consider both financial and non-financial criteria. In addition to the quantitative evaluation of the MBR System Cost and Total Present Worth, the evaluator(s) shall allow careful consideration for non-quantitative evaluation parameters of System Flexibility, Warranty, and Reliability and Technical Support Capabilities. If the Town of New Windsor awards the procurement contract, such award will be to the responsible bidder submitting the bid that best suits the Town's needs.

The following general notes for the basis for the quantitative analyses:

A. Costs and operational requirements are to be based on the Scopes of Supply, process treatment requirements, and hydraulic design requirements as stated in this Specification. If the bidder requires additional information, such as water chemistry, bidder shall request such information a minimum of 30 days prior to bid opening.

B. Membrane replacement shall be set equal to the Warranty Period.

C. Please note that information regarding the Membrane Service Conditions and expected maintenance requirements shall be set equal to the minimum replacement frequency as stated in related O&M materials. For example, if the replacement frequency in the O&M manual that suggests wear items such as seals, retaining rubbers or diffusers shall be replaced every 3-7 years, the System Supplier shall assume a replacement of every 3 years in the Proposal.

D. Annualized operations and maintenance costs are based on Average Daily Flow conditions.

E. Calculation of the present worth of annual costs shall use a Present Worth Factor of 7.4, equal to 10 years at a 6% discount rate.

F. The average electrical Energy costs are assumed to be $0.20/kWh.

G. The calculation of present worth is based on a 10-year plant life cycle for operating and maintenance.

Table A-1: Permeate Pumps Power Consumption

Line ID	Parameter	Unit	Value
A	Total Number of Pumps Provided	#	
B	Total Number of Duty Pumps	#	
C	Design Capacity of Pumps	gpm @ TDH	
D	Operating Capacity at ADF (total for all operating pumps)	gpm	
E	Average Operating Transmembrane Pressure (average value of the minimum and maximum values provided by the Supplier.)	ft	
F	Static Discharge Head	ft	-2
G	Suction Piping HL	ft	
H	Total Head (E+F+G, ignore discharge piping HL)	ft	
I	Hours of Operation (at ADF)	hr/day	
J	Pump Efficiency	%	
K	Motor Efficiency	%	
L	VFD Efficiency	%	95
M	Operating Horsepower (all operating pumps) $= \frac{D(Q, gpm) * H\ (TDH, ft)}{3960 * (\frac{J}{100} * \frac{K}{100} * \frac{L}{100})}$	HP	
N	Total Power Consumption $= M\ (hp) * 0.746$	kW	
M	Annual Power Consumption $= N * I * 365\ days/yr$	kWhr/yr	

Table A-2: Blower Power Consumption (complete for each type provided in all basins)

Line ID	Parameter	Unit	Value
A	Total Number of Blowers Provided	#	
B	Total Number of Duty Blowers	#	
C	Design Capacity of Blowers, each	SCFM @ psig	
D	Operating Capacity	SCFM	
E	Min Intake Air Temperature	^{o}F	15
F	Site Relative Humidity	%	85
G	Site Elevation	ft	25
H	Water Level	psig	
I	Discharge Pipe Losses	psig	
J	Operating Discharge Pressure	psig	
K	Hours of Operation (at ADF)	hr/day	
L	Blower Efficiency at Operating Point	%	
M	Motor Efficiency	%	
N	VFD Efficiency	%	
O	Operating Horsepower (all operating blowers)	HP	
P	Total Power Consumption $= M\ (hp) * 0.746$	kW	
Q	Annual Power Consumption $= N * I * 365\ days/yr$	kWhr/yr	

Table A-3: RAS Pumps Power Consumption

Line ID	Parameter	Unit	Value
A	Total Number of Pumps Provided	#	
B	Total Number of Duty Pumps	#	
C	Design Capacity of Pumps	gpm @ TDH	
D	Operating Capacity at ADF (total for all operating pumps)	gpm	
E	Static Head	ft	
F	Piping Losses	ft	4
G	Not used		
H	Total Head (F+G)	ft	
I	Hours of Operation (at ADF)	hr/day	
J	Pump Efficiency	%	
K	Motor Efficiency	%	
L	VFD Efficiency	%	95
M	Operating Horsepower (all operating pumps) $= \frac{D(Q, gpm) * H\ (TDH, ft)}{3960 * (\frac{J}{100} * \frac{K}{100} * \frac{L}{100})}$	HP	
N	Total Power Consumption $= M\ (hp) * 0.746$	kW	
O	Annual Power Consumption $= N * I * 365\ days/yr$	kWhr/yr	

Table A-4: Feed Forward Pumps Power Consumption

Line ID	Parameter	Unit	Value
A	Total Number of Pumps Provided	#	
B	Total Number of Duty Pumps	#	
C	Design Capacity of Pumps	gpm @ TDH	
D	Operating Capacity at ADF (total for all operating pumps)	gpm	
E	Static Head	ft	
F	Piping	ft	4
G	Not used		
H	Total Head (E+F)	ft	
I	Hours of Operation (at ADF)	hr/day	
J	Pump Efficiency	%	
K	Motor Efficiency	%	
L	VFD Efficiency	%	95
M	Operating Horsepower (all operating pumps) $= \frac{D(Q,gpm) * H\ (TDH,ft)}{3960 * (\frac{J}{100} * \frac{K}{100} * \frac{L}{100})}$	HP	
N	Total Power Consumption $= M\ (hp) * 0.746$	kW	
M	Annual Power Consumption $= N * I * 365\ days/yr$	kWhr/yr	

Table A-5: Sodium Hypochlorite Cleaning Consumption

Line ID	Description of Cleaning Event	Frequency (#/yr)	Volume (gal/each)	Total Volume (gal/yr)
A	Sodium Hypochlorite Maintenance Clean			
B	Sodium Hypochlorite Other Clean (_____)			
C	Sodium Hypochlorite Other Clean (_____)			
D	Total Usage (12.5% solution)	N/A	N/A	
E	Annual Cost @ $1.80/gallon			

Table A-6: Citric Acid Cleaning Consumption

Line ID	Description of Cleaning Event	Frequency (#/yr)	Volume (gal/each)	Total Volume (gal/yr)
A	Citric Acid Maintenance Clean			
B	Citric Acid Other (_____)			
C	Citric Acid Other (_____)			
D	Total Usage (50% solution)	N/A	N/A	
E	Annual Cost @ $1.90/gallon			

Table A-7: Chemical #3 Consumption

Line ID	Description of Cleaning Event	Frequency (#/yr)	Volume (gal/each)	Total Volume (gal/yr)
	Name of Chemical 3_____			
	CAS# Chemical 3_____			
A	Chemical 3 Use (_____)			
B	Chemical 3 Other Use (_____)			
C	Chemical 3 Other Use (_____)			
D	Total Usage	N/A	N/A	
E	Annual Cost @ _$_____/gallon (provide quote)			

A-8: Membrane Basin

Line ID	Parameter	Unit	Value
A	Number of Membrane Reactors	ea	
B	Membrane Reactor sidewall area (each)	SF	
C	Total Membrane Reactor sidewall area (A*B)	SF	

Table A-9: Membrane Replacement

Line ID	Parameter	Unit	Value
Supplier shall guarantee that Membrane Unit replacement cost adjusted from the Bid Date to the replacement purchase order date based on the US Department of Labor, Bureau of Labor and Statistics, Producer Price Index commodity data based on Metals and Metal Products WPU10 (60%) and Plastic Products WPU072 (40%) up to a period equal to the warranty period.			
A	Total Quantity of Membrane Units (Trains 1 and 2)	ea	
B	Guaranteed Replacement Membrane Unit Cost	$	
C	Membrane Replacement Interval (Supplier to specify based on 5 reference installations)	years	
D	List 5 reference installations and years in service until first membrane replacement		
D1	Reference1:	yrs in service	
D2	Reference2:	yrs in service	
D3	Reference3:	yrs in service	
D4	Reference4:	yrs in service	
D5	Reference5:	yrs in service	
E	Membrane Replacement Cost (A*B/C)	$/yr	

Table A-10: Membrane Specifications

Line ID	Parameter	Units	Value
A	Material (e.g., PVDF, silica carbide, etc.)	-	
B	Type (hollow fiber, flat sheet, flat plate, ceramic)	-	
C	Nominal pore size	microns	
D	Membrane unit wetted feed-side surface area	SF	
E	Number of Membrane Units per MBR Train or Bioreactor Tank	#	
F	Minimum operating TMP during warranty period	psi	
G	Maximum operating TMP during warranty period	psi	
H	Net Flux at ADF at design temperature*	gfd	
I	Net Flux at ADF (with one membrane unit out of service, at design temperature)	gfd	
J	Net Flux at MMDF at design temperature	gfd	
K	Net Flux at MMDF (with one membrane unit out of service, at design temperature)	gfd	
L	Net Flux at PHF at design temperature	gfd	
M	Net Flux at PHF (with one membrane unit out of service, at design temperature)	gfd	
N	*List 5 reference installations and installation's design net flux at ADF and temperature. Refer to Section 455000, Para 2.1.B.6.e		
N-1a	Reference1 Name: _ _, design temperature _°C	gfd	
N-1b	Reference1: adjusted to Caesar's Lane design temperature 10 °C	gfd	
N-2a	Reference2 Name: _ _, design temperature _°C	gfd	
N-2b	Reference2: adjusted to Caesar's Lane design temperature 10 °C	gfd	
N-3a	Reference3 Name: _ _, design temperature _°C	gfd	
N-3b	Reference3: adjusted to Caesar's Lane design temperature 10 °C	gfd	
N-4a	Reference4 Name: _ _, design temperature _°C	gfd	
N-4b	Reference4, adjusted to Caesar's Lane design temperature 10 °C	gfd	
N-5a	Reference5 Name: _ _, design temperature _°C	gfd	
N-5b	Reference5, adjusted to Caesar's Lane design temperature 10 °C	gfd	

Table A-11: Membrane Specifications (cont'd)

Line ID	Parameter	Units	Value
O	Membrane Tank - width	ft	
P	Membrane Tank - length	ft	
Q	Minimum recommended operating water level	ft	
R	Maximum recommended operating water level	ft	
S	MBR MLSS	mg/L	
T	RAS Rate (at ADF)	MGD	
U	RAS Rate (at MMDF)	MGD	
V	WAS Rate (at ADF)	MGD	
W	Air scour flow rate per MBR tank at ADF	SCFM	
X	Air scour flow rate per MBR tank at MMDF	SCFM	
Y	Sodium hypochlorite: minimum maintenance cleaning interval	days	
Z	Sodium hypochlorite: minimum recovery cleaning interval	days	
AA	Citric acid: minimum maintenance cleaning interval	days	
AB	Citric acid: minimum recovery cleaning interval	days	
AC	Tank liner or coating required?	yes/no	
	If yes, describe.		
AD	Tank isolated any time during cleaning?	yes/no	
AE	Tank drained any time as part of cleaning?	yes/no	

Table A-12: Annual Service Contract

Line ID	Parameter	Unit	Value
Supplier shall guarantee that Annual Service Contract Cost shall not increase at a rate greater than the Consumer Price Index (CPI) +1% per year for the warranty period specified.			
A	Guaranteed annual cost of remote monitoring and membrane performance, quarterly performance reports, and 24/7 continuous telephone support.	$/yr	
B	Years	year	Warranty Period
C	Acknowledge above guarantee	Yes/no	

Table A-13: Power Consumption Guarantee

Line ID	Parameter	Unit	Value
Supplier shall guarantee that Annual Power Usage associated with supplied MBR System will not exceed the supplier-determined limit listed in Row J below for the duration of the warranty period. Rows A-I are provided as summary information, but do not necessarily have to match the Guaranteed Annual Power listed in Row J.			
A	Permeate Pump Power (Table A-1, Row M)	kwhr/yr	
B	Blower Power (Table A-2, Row Q)	kwhr/yr	
C	RAS Pump Power (Table A-3, Row N)	kwhr/yr	
D	Feed Forward Pump Power (Table A-4, Row M)	kwhr/yr	
E	Miscellaneous Power (mixers, control panels, etc.)	kwhr/yr	
F	Additional Power Consumption (supplier-specified safety factor)	kwhr/yr	
G	Total Annual Power (Row A + B + C + D+ E + F)	kwhr/yr	
H	ADF (5 MGD x 365 days/yr = 1825 MG/yr)	MG/yr	1825
I	Annual Power Consumption per MG (Row G / Row H)	kwhr/MG	
J	Guaranteed Annual Power (kwhr per MG for annual average flow range 5.0 to 8.0 MGD)	kwhr/MG	

Table B – Annual Operations and Maintenance

Line ID	Parameter	Factor	Value
B.1	Annual Power Cost (Table A-13.G)	X $0.20	$
B.2	Annual Chemical Cost (Table A-5, A-6, A-7)		$
B.3	Membrane Replacement Cost (Table A-9.E)		$
Total Annual Operations and Maintenance Cost			

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Tank and Building Cost Calculations

Bidders Notes

A. PROCESS BASIN COSTS

The construction costs of equalization and biological basins are based on the total liquid volume required for the proposed MBR System's hydraulic balancing and biological processes. For the purposes of comparison, a unit cost of $4 per gallon of liquid volume will be used, which includes excavation, backfill, and installed concrete costs.

Process basin square footage shall take the following into account:

1. Minimum Anoxic HRT is 1 hour.

2. For design purposes it is assumed that MBR MLSS inventory shall contribute to biological process requirements. Membrane Tank volume shall not be considered when determining SRT requirements unless otherwise requested by the MBR System Supplier

B. MBR BASIN COSTS

The construction costs of MBR basins are based on the total liquid volume required for the proposed MBR System's membrane units. For the purposes of comparison, a unit cost of $4 per gallon of liquid volume will be used, which includes excavation, backfill, and installed concrete costs.

C. MEMBRANE TREATMENT BUILDING COSTS

The construction cost for the new, 1-story membrane treatment building is based on the required footprint, in square feet, for the proposed system pumps, blowers, bulk chemical storage and feed systems, and instrumentation, MCC, and control panels. The total footprint shall include adequate space for equipment access and maintenance. The MBR System Supplier shall provide a breakdown of the space needed, listing area requirements by subsystem. For purposes of comparison, a unit cost of $500 per square foot will be used for building construction.

The evaluators reserve the right to compare each MBR System Supplier's recommended building footprint and may adjust the proposed value or request additional information if it does not appear reasonable.

Space allowance shall take the following into account:

1. A minimum of 3ft clearance around mechanical equipment & electrical

2. Permeate Collection System

3. Supplemental Aeration System

4. Membrane Zone Aeration System

5. Internal Recycle System

6. Integration and Controls System

7. Chemical Dosing System

a. Including storage and containment for a minimum of 1-mo. supply.

b. Incompatible chemicals (as defined by the International Fire Code) must be stored in separate, dedicated containment. Include all necessary containment areas to meet code

c. Chemical containment sized for 150% of the container/tank volume with a 1 foot wall height

8. Adequate height for lifting any equipment for maintenance activities

Table C-1: Construction Costs – Aerobic Volumes

Item	Parameter	Value	Unit	Notes
C.1	Aerobic Volumes		gal	Provide layout with dimensions.
C.2	Aerobic HRT		Hr	
C.3	Aerobic Construction Cost		$	C.1 x $4.00/gal

Table C-2: Construction Costs – Anoxic Volumes

Item	Parameter	Value	Unit	Notes
C.4	Anoxic Volumes		gal	Provide layout with dimensions.
C.5	Anoxic HRT		Hr	Min. 1.0 hr HRT
C.6	Anoxic Construction Cost		$	C.4 x $4.00/gal

Table C-3: Construction Costs – Membrane Basin

Item	Parameter	Value	Unit	Notes
C.7	Total Membrane Basin Volume		gal	Total basin volume, not displaced volume. Provide layout with dimensions
C.8	MBR Basin HRT		hr	
C.9	Membrane Zone Tank Cost		$	C.7 x $4.00/gal

Table C-4: Construction Costs – Treatment Building

Item	Parameter	Value	Unit	Notes
C.10	Treatment Building Plan Area		ft2	Provide layout with dimensions.
C.11	Building Cost		$	= C.10 x $500/ft2

Table C-5 Construction Costs – Tank

Item	Parameter	Value	Unit	Notes
C.12	Tank Cost		$	= C.3 + C.6 + C.9

Table C-6 – TOTAL CONSTRUCTION COSTS

Item	Parameter	Value	Unit	Notes
C.13	Total Construction Costs		$	= C.11 + C.12

Experience and Qualifications

The intent of this section is to establish the qualifications of the Supplier to provide adequate support before, during and after commissioning at the System level. To establish stability, each bidder shall provide an organization chart for each of the last five years including the names of the MBR (or Membrane) Manager, General Manager and President of the company and parent company if applicable. The bidder shall also provide the resumes of applicable lead operations staff.

The prospective Supplier shall submit the following information:

A. Identify the year that the MBR Equipment Manufacturer first began manufacturing MBR equipment for the treatment of municipal wastewater

B. Furnish a list of North American MBR Equipment installations for the treatment of municipal wastewater. The list shall be organized into three sections, including installations of less than 1 MGD, installations ranging in capacity from 1 to 5 MGD, and installations of 5 MGD or greater. The following information shall be provided with each listing:

   1. Owner and Location

   2. Peak Hydraulic Rated Capacity in MGD

   3. Annual Average Rated Capacity in MGD

   4. Biological Nitrogen Removal (yes or no)

   5. Type of WAS Thickening Equipment, if any

   6. Type of Dewatering Equipment, if any

   7. Identify System by Model or Type

   8. First Year of Operation (or identify as under construction)

   9. Reference Contact Name, Title, and Phone Number

   10. Installation Contractor Contact Name, Title, and Phone Number

C. Complete the MBR questionnaire, below, for a minimum of three operating plants in North America of larger than 1 MGD average capacity and with at least 12 consecutive months of operation. If the manufacturer has fewer than three MBR installations of this capacity or larger in North America, installations outside North America may be included.

D. Furnish a list of worldwide MBR Equipment installations, 1.0 MGD or greater, for the treatment of municipal wastewater separate from the North American installations. The list shall be organized in two sections: installations ranging from 1 to 5 MGD in capacity and installations of 5 MGD and greater. Provide the same information as requested for North American installations with each listing.

E. The supplier shall have at least three (3) operational installations in New York State, or if not, at least three (3) operational installations within states participating in Ten States Standards.

F. Identify which of the North American utilize the manufacturer's same model/type anticipated for the Caesars Lane WWTP.

Reference Operating Plants – Facility Information	
Item	**Parameter**
Facility Name:	
Location (Address, City, State):	
Contact Person:	
Telephone:	
Email:	

Reference Operating Plants – Flow Information		
Condition	**Design**	**Actual (Average over Last Year)**
Average Annual Daily Flow (MGD)		
Maximum Month Average Daily Flow (MGD)		
Peak Hourly Flow (MGD)		

Reference Project Personnel			
Condition	**Years with Company**	**Assigned to this Project (Yes/No)**	**Name**
Project Manager			
Piping Designer			
Integrator (Programmer)			
Startup Technician			
Warranty Support			

Reference Operating Plants – Influent Conditions		
Parameter	**Design**	**Actual (Average over Last Year)**
BOD5 (mg/l)		
TSS (mg/l)		
NH3-N (mg/l)		
COD (mg/l)		
TKN (mg/l)		
Minimum Temperature (deg C)		
Oils and Grease (FOG) (mg/l)		

Reference Operating Plants – Effluent Conditions		
Parameter	**Design**	**Actual (Average over Last Year)**
BOD5 (mg/l)		
NH3-N (mg/l)		
Total Nitrogen (mg/l as N)		
Turbidity Before Disinfection (NTU)		

Reference Operating Plants – MBR Conditions		
Parameter	**Design**	**Actual (Average over Last Year)**
MLSS (mg/l)		
SRT (days)		
AAF Flux (gfd)		
MMF Flux (gfd)		
PDF Flux (gfd)		

Reference Operating Plants – Other Process Conditions	
Condition	**Facility Information**
Is denitrification required at this facility (y/n)	
If yes, what is the total anoxic volume at this facility? (US gal)	
What is the total volume of the aeration zones at this facility? (US gal)	
Does the total volume of the aeration zones include the MBR zone volume? (y/n)	
If no, what is the total MBR zone volume? (US gal)	

Reference Operating Plants – Cleaning Conditions			
	Removed for Cleaning	**Clean In Place**	**Both**
Standard Membrane Cleaning Procedure(s) (select one and fill in clean information)			

Reference Operating Plants – Removed for Clean Information						
Process	**Is Process Used?**		**Number of Workers Required for Process**	**How often is Process Performed (Times per Year)**	**Average Time per Cassette (hours)**	**Percent Solution (by weight)**
	Yes	**No**				
Manual Cleaning						
Hose Down						
Manual Debris Removal						
Manual Scrubbing						
Separate Chemical Solution Soak						
Sodium Hypochlorite						
Citric Acid						
Other?						
Other?						
Other Types of Cleaning						
List						

Reference Operating Plants – Clean In Place Information						
Process	Is Process Used? Yes	Is Process Used? No	Number of Workers Required for Process	How often is Process Performed (Times per Year)	Average Time per Cassette (hours)	Percent Solution (by weight)
In-Situ Chemical Solution Soak in Tank						
Sodium Hypochlorite						
Citric Acid						
Sodium Hydroxide						
Membrane Relax						
Other?						
Tank Drain, Chemical Solution Soak in Tank						
Sodium Hypochlorite						
Citric Acid						
Sodium Hydroxide						
Backpulse						
Extended Chlorine Backpulse						
Other Types of Cleaning						
List						

BID BOND (DAMAGES FORM)

Bidder Name: Address *(principal place of business)*:	**Surety** Name: Address *(principal place of business)*:
Owner Name: **Town of New Windsor** Address *(principal place of business)*: **555 Union Avenue** **New Windsor, NY 12553**	**Bid** Project *(name and location)*: **Caesars Lane WWTP MBR System Pre-Selection** Bid Due Date: **19 July 2022**
Bond Bond Amount: Date of Bond:	

Surety and Bidder, intending to be legally bound hereby, subject to the terms set forth in this Bid Bond, do each cause this Bid Bond to be duly executed by an authorized officer, agent, or representative.

Bidder	Surety
_____ *(Full formal name of Bidder)*	_____ *(Full formal name of Surety) (corporate seal)*
By: _____ *(Signature)*	By: _____ *(Signature) (Attach Power of Attorney)*
Name: _____ *(Printed or typed)*	Name: _____ *(Printed or typed)*
Title: _____	Title: _____
Attest: _____ *(Signature)*	Attest: _____ *(Signature)*
Name: _____ *(Printed or typed)*	Name: _____ *(Printed or typed)*
Title: _____	Title: _____

Notes: (1) Note: Addresses are to be used for giving any required notice. (2) Provide execution by any additional parties, such as joint venturers, if necessary.

1. Bidder and Surety, jointly and severally, bind themselves, their heirs, executors, administrators, successors, and assigns to pay to Owner upon default of Bidder any difference between the total amount of Bidder's Bid and the total amount of the Bid of the next lowest, responsible Bidder that submitted a responsive Bid, as determined by Owner, for the work required by the Contract Documents, provided that:

    1.1. If there is no such next Bidder, and Owner does not abandon the Project, then Bidder and Surety shall pay to Owner the bond amount set forth on the face of this Bond, and

    1.2. In no event will Bidder's and Surety's obligation hereunder exceed the bond amount set forth on the face of this Bond.

    1.3. Recovery under the terms of this Bond will be Owner's sole and exclusive remedy upon default of Bidder.

2. Default of Bidder occurs upon the failure of Bidder to deliver within the time required by the Bidding Documents (or any extension thereof agreed to in writing by Owner) the executed Agreement required by the Bidding Documents and any performance and payment bonds required by the Bidding Documents.

3. This obligation will be null and void if:

    3.1. Owner accepts Bidder's Bid and Bidder delivers within the time required by the Bidding Documents (or any extension thereof agreed to in writing by Owner) the executed Agreement required by the Bidding Documents and any performance and payment bonds required by the Bidding Documents, or

    3.2. All Bids are rejected by Owner, or

    3.3. Owner fails to issue a Notice of Award to Bidder within the time specified in the Bidding Documents (or any extension thereof agreed to in writing by Bidder and, if applicable, consented to by Surety when required by Paragraph 5 hereof).

4. Payment under this Bond will be due and payable upon default of Bidder and within 30 calendar days after receipt by Bidder and Surety of written notice of default from Owner, which notice will be given with reasonable promptness, identifying this Bond and the Project and including a statement of the amount due.

5. Surety waives notice of any and all defenses based on or arising out of any time extension to issue Notice of Award agreed to in writing by Owner and Bidder, provided that the total time for issuing Notice of Award including extensions will not in the aggregate exceed 120 days from Bid due date without Surety's written consent.

6. No suit or action will be commenced under this Bond prior to 30 calendar days after the notice of default required in Paragraph 4 above is received by Bidder and Surety, and in no case later than one year after the Bid due date.

7. Any suit or action under this Bond must be commenced only in a court of competent jurisdiction located in the state in which the Project is located.

8. Notices required hereunder must be in writing and sent to Bidder and Surety at their respective addresses shown on the face of this Bond. Such notices may be sent by personal delivery, commercial courier, or by United States Postal Service registered or certified mail, return receipt requested, postage pre-paid, and will be deemed to be effective upon receipt by the party concerned.

9. Surety shall cause to be attached to this Bond a current and effective Power of Attorney evidencing the authority of the officer, agent, or representative who executed this Bond on behalf of Surety to execute, seal, and deliver such Bond and bind the Surety thereby.

10. This Bond is intended to conform to all applicable statutory requirements. Any applicable requirement of any applicable statute that has been omitted from this Bond will be deemed to be included herein as if set forth at length. If any provision of this Bond conflicts with any applicable statute, then the provision of said statute governs and the remainder of this Bond that is not in conflict therewith continues in full force and effect.

11. The term "Bid" as used herein includes a Bid, offer, or proposal as applicable.

AGREEMENT BETWEEN BUYER AND SELLER FOR PROCUREMENT CONTRACT

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AGREEMENT BETWEEN BUYER AND SELLER FOR PROCUREMENT CONTRACT

This Procurement Agreement is by and between the **Town of New Windsor** ("Buyer") and **_____**("Seller").

Terms used in this Procurement Agreement have the meanings stated in the General Conditions of the Procurement Contract and the Supplementary Conditions of the Procurement Contract.

Buyer and Seller hereby agree as follows:

ARTICLE 1—PROCUREMENT CONTRACT

1.01 *Goods and Special Services*

A. Seller shall furnish the Goods and Special Services as specified or indicated in the Procurement Contract Documents. The Goods and Special Services are generally described as follows:

The Work includes furnishing labor, materials, and equipment for the fabrication, supply, start-up, commissioning, performance testing, and operator training of the proposed membrane bioreactor (MBR) system including but not limited to the following equipment and control system components:

1. Membrane equipment
2. Permeate pumps
3. Feed forward or RAS pumps
4. WAS pumps
5. Membrane Air Scour Blowers
6. Fine Bubble Diffusers
7. Tank Mixers
8. Chemical feed equipment for membrane cleaning
9. Membrane system process instrumentation, controls, and integration
10. System start-up, commissioning, performance testing, and training
11. Critical Spare Parts and Tools
12. Operation and Maintenance Manuals and Materials

1.02 *The Project*

A. The Project, of which the Goods and Special Services are a part, is generally described as follows: **Caesars Lane WWTP MBR System Pre-Selection**

1.03 *Engineer*

A. Buyer has retained **MHE Engineering, D.P.C.** ("Engineer"), to prepare Procurement Contract Documents and act as Buyer's representative. Engineer assumes all duties and

responsibilities and has the rights and authority assigned to Engineer in the Procurement Contract Documents in connection with Seller's furnishing of Goods and Special Services.

1.04 *Point of Destination*

A. The Point of Destination is designated as: **145 Caesars Lane, New Windsor, NY 12553.**

ARTICLE 2—PROCUREMENT CONTRACT TIMES

2.01 *Time of the Essence*

A. All time limits for Milestones, including the submittal of Shop Drawings and Samples, the delivery of Goods, and the furnishing of Special Services as stated in the Procurement Contract Documents, are of the essence of the Procurement Contract.

2.02 *Schedule of Procurement Contract Times*

A. Refer to Section 3.2 in Membrane Filtration System Technical Specification 455000.

2.03 *Shop Drawings and Samples*

A. *Submittal of Shop Drawings and Samples*: Seller shall submit all Shop Drawings and Samples required by the Procurement Contract Documents to Engineer for its review and approval.

B. *Engineer's Review*: It is the intent of the parties that Engineer will conduct its review of Shop Drawings and Samples and issue its approval, or a denial accompanied by substantive comments regarding information needed to gain approval, within **15** days after Seller's submittal of such Shop Drawings and Samples, or within such longer period that is needed because of the quantity and quality of such submittals. Resubmittals will be limited whenever possible.

2.04 *Liquidated Damages*

A. Buyer and Seller recognize that time is of the essence as stated in Paragraph 2.01, and that Buyer will suffer financial and other losses if the Goods are not delivered to the Point of Destination and ready for receipt of delivery by Buyer within the time specified in Paragraph 2.02, plus any extensions thereof allowed in accordance with this Procurement Contract. The parties also recognize that the timely performance of services by others involved in the Project is materially dependent upon Seller's specific compliance with the delivery requirements of Paragraph 2.02. Liquidated damages in the sum of Two Hundred dollars ($200.00) per day plus engineering charges, will be assessed as provided in the Contract Documents.

B. In view of the difficulty in accurately ascertaining the loss in which the Owner will suffer by reason of such delay in the completion of work, said per diem sum is hereby fixed and agreed to by the Selleras the liquidated damages, upon the execution of the Agreement.

C. Separate and in addition to the per day liquidated damages, shall be added, engineering costs, inspection fees and administrative costs for that time after the expiration of the time of completion incurred by the Owner, and any penalties which may be assessed against the Owner by other agencies as a result of the delay to complete the work. Such costs shall be at the set rate for services paid by the Owner for the firm providing the services.

ARTICLE 3—PROCUREMENT CONTRACT PRICE

3.01 *Procurement Contract Price and Total Price*

A. The Procurement Contract Price is comprised of the Lump Sum and Unit Price amounts set forth in the following paragraphs.

B. Buyer shall pay Seller a Lump Sum of $**[amount]** for furnishing the Goods and Special Services (other than any Unit Price Goods and Special Services) in accordance with the Procurement Contract Documents. Such Lump Sum amount accounts for the following Buyer-accepted alternates: **[identify accepted alternates, if any]**

C. Buyer's Contingency Allowance is stipulated as $**[amount]**. If no amount is stated, the Buyer's Contingency Allowance is zero. Buyer's use of such allowance, including resulting compensation of Buyer, is governed by Paragraph 11.06 of the General Conditions.

D. The Total Price is **$[amount]** Such Total Price is comprised of the Lump Sum amount (taking into account any accepted alternates), Unit Price Goods and Special Services amount (if any) (subject to final adjustment), and Buyer's Contingency Allowance (if any) (subject to final adjustment).

3.02 *Procurement Contract Price and Total Price—Based on Attached Bid*

A. For furnishing the Goods and Special Services in accordance with the Procurement Contract Documents, Buyer shall pay Seller the prices stated in Seller's Bid, attached hereto as an exhibit, subject to final adjustments for Unit Price Goods and Special Services and Buyer's Contingency Allowance, if any, and subject to the following Buyer-accepted alternates: **[identify accepted alternates, if any]**.

3.03 Price Escalation

The buyer is currently considering the inclusion of a price escalation clause. If one is incorporated it will be provided via an addendum.

ARTICLE 4—PAYMENT PROCEDURES

4.01 *Submittal and Processing of Applications for Payment*

A. Seller shall submit Applications for Payment in accordance with Article 13 of the General Conditions and the following paragraphs. Engineer and Buyer will process such Applications for Payment in accordance with said Article 13.

4.02 *Progress Payments; Final Payment*

A. Seller may submit an Application for Payment requesting the stated percentage of Procurement Contract Price upon attainment of each of the following Payment Line Items:

Payment Line Item (Lump Sum)	Percentage of Lump Sum
1. **Receipt of Approval of Engineering Design and Shop Drawings**	**5**
2. **Notice to Commence Fabrication**	**5**
3. **Delivery of Goods to Point of Destination in accordance with the Procurement Contract Documents**	**70**

4. **Completion of Special Services in accordance with Procurement Contract Documents**	**15**
5. Final Payment: **Correction of non-conformities, provision of final Operations and Maintenance manuals, submittal of warranties and other final documentation required by the Procurement Contract Documents**	**5**
Total Procurement Contract Price (Lump Sum)	100

B. For Unit Price Goods and Special Services, if any, or for payments owed to Seller as a result of authorizations by Buyer under the Buyer's Contingency Allowance (if any), Seller shall submit a separate Application for Payment, no more frequently than monthly, that states (1) the actual quantities of such Unit Price Goods and Special Services that have been furnished, and the applicable unit prices; and (2) the services or items performed or furnished under the Buyer's Contingency Allowance, and the amounts owed. If practical, and at Seller's option, Seller may apply for such unit price and Buyer's Contingency Allowance payments in a separate section of an Application for Payment submitted under Paragraph 4.02.A for lump sum items.

C. Buyer shall pay Seller the amount owed under an Application for Payment within 30 days after Engineer's presentation to Buyer of the Application for Payment and Engineer's recommendation.

ARTICLE 5—ASSIGNMENT OF PROCUREMENT CONTRACT

5.01 *Assignment of Contract*

A. Buyer has the right to assign this Procurement Contract for furnishing Goods and Special Services, but only to a person or entity with sufficient apparent ability to satisfy all of Buyer's obligations under this Procurement Contract, and Seller hereby consents to such assignment. Forms documenting the assignment of the Procurement Contract, and consent of Seller's surety to the assignment, have been executed by Buyer, Seller, and Seller's surety, and are attached as exhibits to this Procurement Agreement. If so, assigned the following provisions apply:

1. The Procurement Contract is initially executed in the name of the entity identified herein as Buyer, and will be assigned by such Buyer (as assignor) to a construction contractor (Contractor/Assignee) designated by such Buyer. The assignment will occur on the effective date of the construction contract between such Buyer (Project Owner) and the Contractor/Assignee, which is expected to occur on or about **June 2024.** Commencing on the date of acceptance of assignment by the Contractor/Assignee, all references in the Procurement Contract to "Buyer" shall mean the designated Contractor/Assignee.

2. The assignment of this Procurement Contract relieves the assignor from all further obligations and liabilities under this Procurement Contract. After assignment, Seller shall become a subcontractor or supplier to the Contractor/Assignee and, except as noted herein, all rights, duties, and obligations of Buyer under the Procurement Contract become the rights, duties, and obligations of the Contractor/Assignee.

3. After assignment:

1. The Procurement Drawings and Procurement Specifications, and any modifying Addenda will become "Contract Documents" under the construction contract.
2. If the Procurement Drawings or Procurement Specifications, as "Contract Documents" under the construction contract, are duly modified under such construction contract, then Seller and Contractor/Assignee shall enter into a corresponding Change Order under the applicable provisions of this Procurement Contract.
3. The Procurement Drawings and Procurement Specifications may not be modified by Seller or Contractor/Assignee, singly or in tandem, except as such Procurement Drawings or Procurement Specifications, as "Contract Documents" under the construction contract, have been duly modified under such construction contract.
4. All performance warranties, guarantees, and indemnifications required by the Procurement Contract will continue to run for the benefit of assignor (Project Owner) and, in addition, for the benefit of the Contractor/Assignee. However, if assignor (Project Owner) and Contractor/Assignee make the same warranty or guarantee claim, then Seller shall only be liable once for such claim. Other than its remedies under such warranties, guarantees, and indemnifications, assignor will not retain direct rights under this Procurement Contract, but will have rights and remedies as a party to the construction contract, whose scope of work will encompass the Procurement Drawings, Procurement Specifications, and modifying Addenda; provided, however, that any limitations on Seller's liability in this Procurement Contract will continue to bind the original Buyer (assignor) after assignment.
5. The Contractor/Assignee shall have all the rights of the Buyer under the Performance Bond and Payment Bond.
6. Seller shall submit all Applications for Payment directly to Contractor/Assignee.
    1) Contractor/Assignee shall review each Application for Payment promptly, determine the amount that Contractor/Assignee approves for payment, and then include the amount approved in the next application for payment submitted to Project Owner (or Engineer) under the construction contract.
    2) Contractor/Assignee shall pay Seller within **30** days of receipt of payment from the Project Owner under the construction contract.
    3) After assignment Engineer will review, approve, or deny the content of Applications for Payment under the Procurement Contract only to the extent that Contractor/Assignee, as construction contractor, has incorporated such content into payment applications that Engineer reviews under the construction contract.
7. The Contractor/Assignee shall have all the rights of the Buyer under any pending Claim by Buyer.
8. All Claims and supporting documentation will be submitted directly by the claimant party (either Buyer **[Contractor/Assignee]** or Seller), to the other party, without submittal to Engineer.

1) The other party will render a response in writing within 30 days of receipt of the last submittal of claimant.

2) If the other party does not render a written response to a Claim within 30 days after receipt of the last submittal of the claimant, the other party shall be deemed to have approved the Claim in its entirety.

3) The other party's written response to a Claim, or the approval of the Claim in its entirety as a function of failure to respond within 30 days, will be final and binding upon Buyer and Seller 30 days after it is issued, unless within such 30 days of issuance either Buyer or Seller appeals the result by initiating the mediation of the Claim in accordance with the dispute resolution procedures set forth in Paragraph 12.02 of the General Conditions.

4) Any Claim by Seller that Contractor/Assignee may choose to submit, present, or forward to Project Owner must be submitted to Buyer within sufficient time for Contractor/Assignee to preserve its rights under the construction contract, notwithstanding any procedures or time limits in this Procurement Contract.

9. Seller's recovery of additional cost, time, or both cost and time for any Claim attributable to the Project Owner will be limited to the proportionate recovery by Contractor/Assignee against Project Owner for such Claim. Seller will cooperate and assist Contractor/Assignee in pursuing any Claim by Contractor/Assignee against Project Owner on behalf of Seller, including the timely preparation and delivery of supporting documentation.

10. If the pursuit of any claim by Contractor/Assignee against Project Owner on Seller's behalf requires the expenditure by Contractor/Assignee of legal or consulting fees, or results in litigation, arbitration, or any dispute resolution procedures, Seller agrees to pay for a proportionate share of attorneys' fees, consultant fees, and litigation, arbitration, and other resolution costs incurred by Contractor/Assignee in pursuing the claim on behalf of Seller, based upon the amount claimed by Seller as compared to the total value of the claim pursued by the Contractor/Assignee.

11. All rights, duties, and obligations of Engineer to Contractor/Assignee and Seller under this Procurement Contract will cease.

12. Subject to the foregoing provisions, all references in the Procurement Contract to submitting items to Engineer, or to Engineer having tasks or obligations, will be read after such an assignment as requiring submittal to Contractor/Assignee, or as Contractor/Assignee having such tasks or obligations (which Contractor/Assignee may delegate when appropriate).

13. If the Procurement Contract includes a Buyer's Contingency Allowance, upon assignment such allowance will be automatically reduced to the amount previously authorized by Buyer (Project Owner), and cease to be operational.

B. No other assignment by a party hereto of any rights under or interests in the Procurement Contract will be binding on another party hereto without the written consent of the party sought to be bound. Specifically, but without limitation, Procurement Contract payments or other money that may become due, and Procurement Contract payments or other money that are due, may not be assigned without such consent (except to the extent that the effect

of this restriction may be limited by Laws and Regulations). Unless specifically stated to the contrary in any written consent to such an assignment, such an assignment will not release or discharge the assignor from any duty or responsibility under the Procurement Contract Documents.

ARTICLE 6—PROCUREMENT CONTRACT DOCUMENTS

6.01 *List of Procurement Contract Documents*

A. The Procurement Contract Documents consist of the following:

1. This Procurement Agreement.
2. General Conditions of the Procurement Contract.
3. Supplementary Conditions of the Procurement Contract.
4. Procurement Specifications as listed in the Procurement Specifications table of contents
5. Procurement Drawings (not attached but incorporated by reference)
6. Addenda Numbers

7. Bonds:
    1. Performance bond (together with power of attorney).
    2. Payment bond (together with power of attorney).
8. Exhibits to this Procurement Agreement (enumerated as follows):
    1. Exhibit A, Assignment of Contract, Consent to Assignment, and Acceptance of Assignment.
    2. Exhibit B, Surety's Consent to Assignment.
    3. Documentation submitted by Seller **[identify]**; and
    4. **[Other Exhibits]**.
9. The following which may be delivered or issued on or after the Effective Date of the Procurement Contract and are not attached hereto:
    1. Change Orders;
    2. Change Directives; and
    3. Field Orders.

B. The documents listed in Paragraph 6.01.A are attached to this Procurement Agreement (except as expressly noted otherwise above).

C. There are no Procurement Contract Documents other than those listed above.

D. The Procurement Contract Documents may only be amended or supplemented as provided in Paragraph 11.01 of the Procurement General Conditions.

ARTICLE 7—SELLER'S REPRESENTATIONS AND CERTIFICATIONS

7.01 *Seller's Representations*

A. In order to induce Buyer to enter into this Procurement Agreement, Seller makes the following representations:

1. Seller has examined and carefully studied the Procurement Contract Documents.

2. If required by the Instructions to Bidders to visit the Point of Destination and the site where the Goods are to be installed or Special Services will be provided, or if, in Seller's judgment, any observable local or site conditions may affect the delivery, cost, progress, or furnishing of the Goods and Special Services, then Seller has visited the Point of Destination and site where the Goods are to be installed or Special Services will be provided (as applicable) and become familiar with and is satisfied as to the observable local and site conditions that may affect delivery, cost, progress, and furnishing of the Goods and Special Services.

3. Seller is familiar with and is satisfied as to all Laws and Regulations that may affect the cost, progress, and performance of Seller's obligations under the Procurement Contract.

4. Seller has carefully studied, considered, and correlated the information known to Seller with respect to the effect of such information on the cost, progress, and performance of Seller's obligations under the Procurement Contract.

5. Seller has given Engineer written notice of all conflicts, errors, ambiguities, or discrepancies that Seller has discovered in the Procurement Contract Documents, and the written resolution (if any) thereof by Engineer is acceptable to Seller.

6. The Procurement Contract Documents are generally sufficient to indicate and convey understanding of all terms and conditions for performance of Seller's obligations under the Procurement Contract.

7. Seller's entry into this Procurement Contract constitutes an incontrovertible representation by Seller that without exception all prices in the Procurement Agreement are premised upon furnishing the Goods and Special Services as required by the Procurement Contract Documents.

7.02 *Seller's Certifications*

A. Seller certifies that it has not engaged in corrupt, fraudulent, collusive, or coercive practices in competing for or in executing the Procurement Contract. For the purposes of this Paragraph 7.02:

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 Procurement Contract execution;

2. "fraudulent practice" means an intentional misrepresentation of facts made (a) to influence the bidding process or the execution of the Procurement Contract to the detriment of Buyer, (b) to establish bid or contract prices at artificial non-competitive levels, or (c) to deprive Buyer 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 Buyer, 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 Procurement Contract.

ARTICLE 8—CONFIDENTIALITY

8.01 *Confidential Information*

A. Confidential information is information in documents submitted by Seller that Seller clearly and prominently labels in writing to be a trade secret, proprietary, or confidential. Such documents, if any, will be maintained in a manner that endeavors to avoid disclosing confidential information to third parties, to the extent allowed by Laws and Regulations.

B. Seller shall clearly and prominently mark confidential information with the word "CONFIDENTIAL" on each page or sheet or on the cover of bound documents. Place "CONFIDENTIAL" stamps or watermarks so that they do not obscure any of the required information on the document, either in the original or in a way that would obscure any of the required information in a photocopy of the document.

8.02 *Disclosure of Confidential Information*

A. If Buyer is requested to disclose confidential information, or becomes legally compelled (by oral questions, interrogatories, requests for information or documents, subpoena, civil or criminal investigative demand, public information requests, or other requests under Laws and Regulations) to disclose confidential information, or is required by a regulatory body, governing agency, or controlling authority to disclose confidential information, or make any other disclosure that is prohibited or otherwise constrained by the Procurement Contract, Buyer will provide Seller with prompt notice so Seller may seek an appropriate protective order or other remedy. Seller will be solely responsible for submitting to the regulatory body, governing agency, or controlling authority any arguments, briefs, memoranda, motions, authorities, or other information in opposition to disclosure.

B. Buyer's obligations with respect to confidential information are nullified by the following exceptions:

1. Confidential information becomes a part of the public domain through publication or otherwise, through no fault of the Buyer;

2. Buyer can demonstrate through suitable documentation that the confidential information was already in the Buyer's possession, and not previously marked as confidential, or was otherwise publicly available prior to the Effective Date of the Procurement Contract;

3. The confidential information is subsequently and independently disclosed to the Buyer by a third party who has a lawful right to disclose such information;

4. Buyer has a good faith belief that disclosure is required or justified; or

5. Buyer is required to disclose the confidential information by court order or by applicable Laws and Regulations.

8.03 *Waiver of Immunity*

A. Notwithstanding any other provision of the Procurement Contract, it is stipulated and agreed that by accepting confidential information, Buyer has not and does not waive its legal immunity (if any) from suit or liability.

ARTICLE 9—MUTUAL WAIVER

Deleted.

IN WITNESS WHEREOF, Buyer and Seller have signed this Procurement Agreement. Counterparts have been delivered to Buyer and Seller.

The Effective Date of the Procurement Contract is **_____.**

Buyer	Seller
_____	_____
(typed or printed name of organization)	*(typed or printed name of organization)*
By: _____	By: _____
(individual's signature)	*(individual's signature)*
Date: _____	Date: _____
(date signed)	*(date signed)*
Name: _____	Name: _____
(typed or printed)	*(typed or printed)*
Title: _____	Title: _____
(typed or printed)	*(typed or printed)*
	(If Seller is a corporation, a partnership, or a joint venture, attach evidence of authority to sign.)
Attest: _____	Attest: _____
(individual's signature)	*(individual's signature)*
Title: _____	Title: _____
(typed or printed)	*(typed or printed)*
Address for giving notices:	Address for giving notices:
_____	_____
_____	_____
_____	_____
Designated Representative:	Designated Representative:
Name: _____	Name: _____
(typed or printed)	*(typed or printed)*
Title: _____	Title: _____
(typed or printed)	*(typed or printed)*
Address:	Address:
_____	_____
_____	_____
_____	_____
Phone: _____	Phone: _____
Email: _____	Email: _____
(If Buyer is a corporation, attach evidence of authority to sign. If Buyer is a public body, attach evidence of authority to sign and resolution or other documents authorizing execution of this Agreement.)	

EXHIBIT A—ASSIGNMENT OF PROCUREMENT CONTRACT, CONSENT TO ASSIGNMENT, AND ACCEPTANCE OF ASSIGNMENT

This assignment will be effective on the effective date of the construction contract between Buyer (as "Owner") and Contractor/Assignee (as "Contractor").

The Procurement Contract between **[insert name of original Buyer]** ("Buyer") and **[insert name of Seller]** ("Seller") for furnishing Goods and Special Services entitled **[insert name/designation of Procurement Contract]** (Procurement Contract) is hereby assigned, transferred, and set over to Contractor/Assignee, as assignee, by Buyer, as assignor. Upon assignment the Contractor/Assignee shall have the duties, rights, and obligations of Buyer under the terms of the Procurement Contract, and will be responsible to Owner under the construction contract for the performance of obligations by Seller, which will become a Subcontractor or Supplier to Contractor/Assignee. Buyer, Seller, and Contractor/Assignee hereby acknowledge and agree to be bound by the terms and conditions of assignment set forth in Article 5 of the Agreement Between Buyer and Seller for Procurement Contract.

Assignment Made by Buyer

_____
(typed or printed name of organization)

By: _____ Date: _____
(individual's signature) *(date signed)*

Name: _____ Title: _____
(typed or printed) *(typed or printed)*

If Buyer is a corporation, attach evidence of authority to sign. If Buyer is a public body, attach evidence of authority to sign and resolution or other documents authorizing execution of Buyer-Seller Agreement.

Assignment Acknowledged and Accepted by Seller

_____
(typed or printed name of organization)

By: _____ Date: _____
(individual's signature) *(date signed)*

Name: _____ Title: _____
(typed or printed) *(typed or printed)*

If Seller is a corporation, attach evidence of authority to sign.

Assignment Accepted by Contractor/Assignee

_____
(typed or printed name of organization)

By: _____ Date: _____
(individual's signature) *(date signed)*

Name: _____ Title: _____
(typed or printed) *(typed or printed)*

If Contractor/Assignee is a corporation, attach evidence of authority to sign.

EXHIBIT B—SURETY'S CONSENT TO ASSIGNMENT

Surety hereby acknowledges, agrees, and consents that the Procurement Contract for furnishing Goods and Special Services entitled **[Name of Procurement Contract]** by and between **[Name of Buyer]** ("Buyer") and **[Name of Seller]** ("Seller") may be assigned, transferred, and set over to **[Name of Contractor/Assignee]** ("Contractor/Assignee"), in accordance with Article 5 and Exhibit A of the Agreement between Buyer and Seller for Procurement Contract.

Surety further agrees that, upon assignment of the Procurement Contract, the Contractor/Assignee shall have all the rights of the Buyer under the Procurement Performance Bond and Procurement Payment Bond.

Agreement to Assignment Acknowledged and Accepted by Surety

_____
(typed or printed name of organization)

By: _____ Date: _____
(individual's signature) *(date signed)*

Name: _____ Title: _____
(typed or printed) *(typed or printed)*

Attach Power of Attorney.

PERFORMANCE BOND FOR PROCUREMENT CONTRACT

Seller Name: Address *(principal place of business)*: **[Address of Seller's principal place of business]**	**Surety** Name: **[Full formal name of Surety]** Address *(principal place of business)*: **[Address of Surety's principal place of business]**
Buyer Name: **Town of New Windsor** Mailing address *(principal place of business)*: **555 Union Avenue** **New Windsor, NY 1553**	**Procurement Contract** Description *(name and location)*: **[Buyer's project/contract name, and location of the Point of Destination]** Procurement Contract Price: **[Amount, from Proc. Contract]** Effective Date of Procurement Contract: **[Date, from Proc. Contract]**

Bond

Bond Amount: **[Amount]**

Date of Bond: **[Date]**

(Date of Bond cannot be earlier than Effective Date of Procurement Contract)

Modifications to this Bond form:

☐ None ☐ See Paragraph 15

Surety and Seller, intending to be legally bound hereby, subject to the terms set forth in this Performance Bond, do each cause this Performance Bond to be duly executed by an authorized officer, agent, or representative.

Seller as Principal	Surety
_____ *(Full formal name of Seller)*	_____ *(Full formal name of Surety) (corporate seal)*
By: _____ *(Signature)*	By: _____ *(Signature)(Attach Power of Attorney)*
Name: _____ *(Printed or typed)*	Name: _____ *(Printed or typed)*
Title: _____	Title: _____
Attest: _____ *(Signature)*	Attest: _____ *(Signature)*
Name: _____ *(Printed or typed)*	Name: _____ *(Printed or typed)*
Title: _____	Title: _____

Notes: (1) Provide supplemental execution by any additional parties, such as joint venturers. (2) Any singular reference to Seller, Surety, Buyer, or other party is considered plural where applicable.

1. The Seller and Surety, jointly and severally, bind themselves, their heirs, executors, administrators, successors, and assigns to the Buyer for the performance of the Procurement Contract, which is incorporated herein by reference.

2. If the Seller performs the Procurement Contract, the Surety and the Seller shall have no obligation under this Bond, except when applicable to participate in a conference as provided in Paragraph 3.

3. If there is no Buyer Default under the Procurement Contract, the Surety's obligation under this Bond will arise after:

    3.1. The Buyer first provides notice to the Seller and the Surety that the Buyer is considering declaring a Seller Default. Such notice may indicate whether the Buyer is requesting a conference among the Buyer, Seller, and Surety to discuss the Seller's performance. If the Buyer does not request a conference, the Surety may, within five (5) business days after receipt of the Buyer's notice, request such a conference. If the Surety timely requests a conference, the Buyer shall attend. Unless the Buyer agrees otherwise, any conference requested under this Paragraph 3.1 will be held within ten (10) business days of the Surety's receipt of the Buyer's notice. If the Buyer, the Seller, and the Surety agree, the Seller shall be allowed a reasonable time to perform the Procurement Contract, but such an agreement does not waive the Buyer's right, if any, subsequently to declare a Seller Default;

    3.2. The Buyer declares a Seller Default, terminates the Procurement Contract, and notifies the Surety; and

    3.3. The Buyer has agreed to pay the Balance of the Procurement Contract Price in accordance with the terms of the Procurement Contract to the Surety or to a seller selected to perform the Procurement Contract.

4. Failure on the part of the Buyer to comply with the notice requirement in Paragraph 3.1 does not constitute a failure to comply with a condition precedent to the Surety's obligations, or release the Surety from its obligations, except to the extent the Surety demonstrates actual prejudice.

5. When the Buyer has satisfied the conditions of Paragraph 3, the Surety shall promptly and at the Surety's expense take one of the following actions:

    5.1. Arrange for the Seller, with the consent of the Buyer, to perform and complete the Procurement Contract;

    5.2. Undertake to perform and complete the Procurement Contract itself, through its agents or independent contractors;

    5.3. Obtain bids or negotiated proposals from qualified sellers acceptable to the Buyer for a contract for performance and completion of the Procurement Contract, arrange for a contract to be prepared for execution by the Buyer and a seller selected with the Buyer's concurrence, to be secured with performance and payment bonds executed by a qualified surety equivalent to the bonds issued on the Procurement Contract, and pay to the Buyer the amount of damages as described in Paragraph 7 in excess of the Balance of the Procurement Contract Price incurred by the Buyer as a result of the Seller Default; or

    5.4. Waive its right to perform and complete, arrange for completion, or obtain a new seller, and with reasonable promptness under the circumstances:

        5.4.1. After investigation, determine the amount for which Surety may be liable to the Buyer and, as soon as practicable after the amount is determined, make payment to the Buyer; or

5.4.2. Deny liability in whole or in part and notify the Buyer, citing the reasons for denial.

6. If the Surety does not proceed as provided in Paragraph 5 with reasonable promptness, the Surety shall be deemed to be in default on this Bond seven (7) days after receipt of an additional written notice from the Buyer to the Surety demanding that the Surety perform its obligations under this Bond, and the Buyer shall be entitled to enforce any remedy available to the Buyer. If the Surety proceeds as provided in Paragraph 5.4, and the Buyer refuses the payment, or the Surety has denied liability, in whole or in part, without further notice, the Buyer shall be entitled to enforce any remedy available to the Buyer.

7. If the Surety elects to act under Paragraph 5.1, 5.2, or 5.3, then the responsibilities of the Surety to the Buyer will not be greater than those of the Seller under the Procurement Contract, and the responsibilities of the Buyer to the Surety will not be greater than those of the Buyer under the Procurement Contract. Subject to the commitment by the Buyer to pay the Balance of the Procurement Contract Price, the Surety is obligated, without duplication for:

   7.1. the responsibilities of the Seller for correction of defective or non-conforming Goods and Special Services, and completion of the Procurement Contract;

   7.2. additional legal, design professional, and delay costs resulting from the Seller's Default, and resulting from the actions or failure to act of the Surety under Paragraph 5; and

   7.3. liquidated damages, or if no liquidated damages are specified in the Procurement Contract, actual damages caused by delayed performance or non-performance of the Seller.

8. If the Surety elects to act under Paragraph 5.1, 5.3, or 5.4, the Surety's liability is limited to the amount of this Bond.

9. The Surety shall not be liable to the Buyer or others for obligations of the Seller that are unrelated to the Procurement Contract, and the Balance of the Procurement Contract Price will not be reduced or set off on account of any such unrelated obligations. No right of action will accrue on this Bond to any person or entity other than the Buyer or its heirs, executors, administrators, successors, and assigns.

10. The Surety hereby waives notice of any change, including changes of time, to the Procurement Contract or to related subcontracts, purchase orders, and other obligations.

11. Any proceeding, legal or equitable, under this Bond must be instituted in any court of competent jurisdiction where the Point of Destination is located and must be instituted within two years after a declaration of Seller Default, or within two years after the Seller ceased working, or within two years after the Surety refuses or fails to perform its obligations under this Bond, whichever occurs first. If the provisions of this Paragraph are void or prohibited by law, the minimum periods of limitations available to sureties as a defense in the jurisdiction of the suit will be applicable.

12. Notice to the Surety, the Buyer, or the Seller must be mailed or delivered to the address shown on the page on which their signature appears.

13. When this Bond has been furnished to comply with a statutory or other legal requirement in the location of the Point of Destination, any provision in this Bond conflicting with said statutory or legal requirement will be deemed deleted herefrom and provisions conforming to such statutory or other legal requirement will be deemed incorporated herein. When so furnished, the intent is that this Bond will be construed as a statutory bond and not as a common law bond.

14. Definitions

   14.1. *Balance of the Procurement Contract Price*—The total amount payable by the Buyer to the Seller under the Procurement Contract after all proper adjustments have been made including

allowance for the Seller for any amounts received or to be received by the Buyer in settlement of insurance or other claims for damages to which the Seller is entitled, reduced by all valid and proper payments made to or on behalf of the Seller under the Procurement Contract.

14.2. *Buyer Default*—Failure of the Buyer, which has not been remedied or waived, to pay the Seller as required under the Procurement Contract or to perform and complete or comply with the other material terms of the Procurement Contract.

14.3. *Goods and Special Services*—The full scope of materials, equipment, other items, and services to be furnished by Seller, as defined in the Procurement Contract.

14.4. *Point of Destination*—The location where delivery of the Goods shall be made, as stated in the Procurement Contract.

14.5. *Procurement Contract*—The contractual agreement between the Buyer and Seller identified on the cover page, including all Procurement Contract Documents and changes made to the Procurement Contract.

14.6. *Seller Default*—Failure of the Seller, which has not been remedied or waived, to perform or otherwise to comply with a material term of the Procurement Contract.

14.7. *Procurement Contract Documents*—All the documents that comprise the contractual agreement between the Buyer and Seller.

15. Modifications to this Bond are as follows: **[Describe modification or enter "None"]**

PAYMENT BOND FOR PROCUREMENT CONTRACT

Seller Name: **[Full formal name of Seller]** Address *(principal place of business)*: **[Address of Seller's principal place of business]**	**Surety** Name: **[Full formal name of Surety]** Address *(principal place of business)*: **[Address of Surety's principal place of business]**
Buyer Name: **Town of New Windsor** Mailing address *(principal place of business)*: **555 Union Avenue** **New Windsor, NY 12553**	**Procurement Contract** Description *(name and location)*: **[Buyer's project/contract name, and location of the Point of Destination]** Procurement Contract Price: **[Amount, from Proc. Contract]** Effective Date of Procurement Contract: **[Date, from Proc. Contract]**

Bond

Bond Amount: **[Amount]**

Date of Bond: **[Date]**

(Date of Bond cannot be earlier than Effective Date of Procurement Contract)

Modifications to this Bond form:

☐ None ☐ See Paragraph 17

Surety and Seller, intending to be legally bound hereby, subject to the terms set forth in this Payment Bond, do each cause this Payment Bond to be duly executed by an authorized officer, agent, or representative.

Seller as Principal	Surety
_____ *(Full formal name of Seller)*	_____ *(Full formal name of Surety) (corporate seal)*
By: _____ *(Signature)*	By: _____ *(Signature)(Attach Power of Attorney)*
Name: _____ *(Printed or typed)*	Name: _____ *(Printed or typed)*
Title: _____	Title: _____
Attest: _____ *(Signature)*	Attest: _____ *(Signature)*
Name: _____ *(Printed or typed)*	Name: _____ *(Printed or typed)*
Title: _____	Title: _____

Notes: (1) Provide supplemental execution by any additional parties, such as joint venturers. (2) Any singular reference to Seller, Surety, Buyer, or other party is considered plural where applicable.

1. The Seller and Surety, jointly and severally, bind themselves, their heirs, executors, administrators, successors, and assigns to the Buyer to pay for labor, materials, and equipment furnished for use in the performance of the Procurement Contract, which is incorporated herein by reference, subject to the following terms.

2. If the Seller promptly makes payment of all sums due to Claimants, and defends, indemnifies, and holds harmless the Buyer from claims, demands, liens, or suits by any person or entity seeking payment for labor, materials, or equipment furnished for use in the performance of the Procurement Contract, then the Surety and the Seller shall have no obligation under this Bond.

3. If there is no Buyer Default under the Procurement Contract, the Surety's obligation to the Buyer under this Bond will arise after the Buyer has promptly notified the Seller and the Surety (at the address described in Paragraph 13) of claims, demands, liens, or suits against the Buyer or the Buyer's property by any person or entity seeking payment for labor, materials, or equipment furnished for use in the performance of the Procurement Contract, and tendered defense of such claims, demands, liens, or suits to the Seller and the Surety.

4. When the Buyer has satisfied the conditions in Paragraph 3, the Surety shall promptly and at the Surety's expense defend, indemnify, and hold harmless the Buyer against a duly tendered claim, demand, lien, or suit.

5. The Surety's obligations to a Claimant under this Bond will arise after the following:

    5.1. Claimants who do not have a direct contract with the Seller

        5.1.1. have furnished a written notice of non-payment to the Seller, stating with substantial accuracy the amount claimed and the name of the party to whom the materials were, or equipment was, furnished or supplied or for whom the labor was done or performed, within ninety (90) days after having last performed labor or last furnished materials or equipment included in the Claim; and

        5.1.2. have sent a Claim to the Surety (at the address described in Paragraph 13).

    5.2. Claimants who are employed by or have a direct contract with the Seller have sent a Claim to the Surety (at the address described in Paragraph 13).

6. If a notice of non-payment required by Paragraph 5.1.1 is given by the Buyer to the Seller, that is sufficient to satisfy a Claimant's obligation to furnish a written notice of non-payment under Paragraph 5.1.1.

7. When a Claimant has satisfied the conditions of Paragraph 5.1 or 5.2, whichever is applicable, the Surety shall promptly and at the Surety's expense take the following actions:

    7.1. Send an answer to the Claimant, with a copy to the Buyer, within sixty (60) days after receipt of the Claim, stating the amounts that are undisputed and the basis for challenging any amounts that are disputed; and

    7.2. Pay or arrange for payment of any undisputed amounts.

    7.3. The Surety's failure to discharge its obligations under Paragraph 7.1 or 7.2 will not be deemed to constitute a waiver of defenses the Surety or Seller may have or acquire as to a Claim, except as to undisputed amounts for which the Surety and Claimant have reached agreement. If, however, the Surety fails to discharge its obligations under Paragraph 7.1 or 7.2, the Surety shall indemnify the Claimant for the reasonable attorney's fees the Claimant incurs thereafter to recover any sums found to be due and owing to the Claimant.

8. The Surety's total obligation will not exceed the amount of this Bond, plus the amount of reasonable attorney's fees provided under Paragraph 7.3, and the amount of this Bond will be credited for any payments made in good faith by the Surety.

9. Amounts owed by the Buyer to the Seller under the Procurement Contract will be used for the performance of the Procurement Contract and to satisfy claims, if any, under any procurement performance bond. By the Seller furnishing and the Buyer accepting this Bond, they agree that all funds earned by the Seller in the performance of the Procurement Contract are dedicated to satisfying obligations of the Seller and Surety under this Bond, subject to the Buyer's priority to use the funds for the completion of the Goods and Special Services.

10. The Surety shall not be liable to the Buyer, Claimants, or others for obligations of the Seller that are unrelated to the Procurement Contract. The Buyer shall not be liable for the payment of any costs or expenses of any Claimant under this Bond, and shall have under this Bond no obligation to make payments to or give notice on behalf of Claimants, or otherwise have any obligations to Claimants under this Bond.

11. The Surety hereby waives notice of any change, including changes of time, to the Procurement Contract or to related subcontracts, purchase orders, and other obligations.

12. No suit or action will be commenced by a Claimant under this Bond other than in a court of competent jurisdiction in the state in which the Point of Destination is located or after the expiration of one year from the date (1) on which the Claimant sent a Claim to the Surety pursuant to Paragraph 5.1.2 or 5.2, or (2) on which the last labor or service was performed by anyone or the last materials or equipment were furnished by anyone under the Procurement Contract, whichever of (1) or (2) first occurs. If the provisions of this paragraph are void or prohibited by law, the minimum period of limitation available to sureties as a defense in the jurisdiction of the suit will be applicable.

13. Notice and Claims to the Surety, the Buyer, or the Seller must be mailed or delivered to the address shown on the page on which their signature appears. Actual receipt of notice or Claims, however accomplished, will be sufficient compliance as of the date received.

14. When this Bond has been furnished to comply with a statutory or other legal requirement where the Point of Destination is located, any provision in this Bond conflicting with said statutory or legal requirement will be deemed deleted herefrom and provisions conforming to such statutory or other legal requirement will be deemed incorporated herein. When so furnished, the intent is that this Bond will be construed as a statutory bond and not as a common law bond.

15. Upon requests by any person or entity appearing to be a potential beneficiary of this Bond, the Seller and Buyer shall promptly furnish a copy of this Bond or shall permit a copy to be made.

16. Definitions

    16.1. *Buyer Default*—Failure of the Buyer, which has not been remedied or waived, to pay the Seller as required under the Procurement Contract or to perform and complete or comply with the other material terms of the Procurement Contract.

    16.2. *Claim*—A written statement by the Claimant including at a minimum:

        16.2.1. The name of the Claimant;

        16.2.2. The name of the person for whom the labor was done, or materials or equipment furnished;

        16.2.3. A copy of the agreement or purchase order pursuant to which labor, materials, or equipment was furnished for use in the performance of the Procurement Contract;

16.2.4. A brief description of the labor, materials, or equipment furnished;

16.2.5. The date on which the Claimant last performed labor or last furnished materials or equipment for use in the performance of the Procurement Contract;

16.2.6. The total amount earned by the Claimant for labor, materials, or equipment furnished as of the date of the Claim;

16.2.7. The total amount of previous payments received by the Claimant; and

16.2.8. The total amount due and unpaid to the Claimant for labor, materials, or equipment furnished as of the date of the Claim.

16.3. *Claimant*—An individual or entity having a direct contract with the Seller or with a subcontractor of the Seller to furnish labor, materials, or equipment for use in the performance of the Procurement Contract. The term Claimant also includes any individual or entity that has rightfully asserted a claim under an applicable mechanic's lien or similar statute against the real property upon which the Point of Destination is located or where the Goods and Special Services are to be installed or furnished. The intent of this Bond is to include without limitation in the terms of "labor, materials, or equipment" that part of the water, gas, power, light, heat, oil, gasoline, telephone service, or rental equipment used in the Procurement Contract, architectural and engineering services required for performance of the work of the Seller and the Seller's subcontractors, and all other items for which a mechanic's lien may be asserted in the jurisdiction where the labor, materials, or equipment were furnished.

16.4. *Goods and Special Services*—The full scope of materials, equipment, other items, and services to be furnished by Seller, as defined in the Procurement Contract.

16.5. *Point of Destination*—The location where delivery of the Goods shall be made, as stated in the Procurement Contract.

16.6. *Procurement Contract*—The contractual agreement between the Buyer and Seller identified on the cover page, including all Procurement Contract Documents and all changes made to the Procurement Contract.

16.7. *Procurement Contract Documents*—All the documents that comprise the contractual agreement between the Buyer and Seller.

17. Modifications to this Bond are as follows: **[Describe modification or enter "None"]**

STANDARD GENERAL CONDITIONS OF THE PROCUREMENT CONTRACT

TABLE OF CONTENTS

ARTICLE 1—DEFINITIONS AND TERMINOLOGY

1.01 *Defined Terms*

A. Whenever used in the Procurement Bidding Requirements or Procurement Contract Documents and printed with initial capital letters, the terms listed below will have the meanings indicated, which are applicable to the singular or plural thereof. In addition to terms specifically defined, terms with initial capital letters in the Procurement Contract Documents include references to identified articles and paragraphs, and the titles of other documents or forms.

1. *Addenda*—Written or graphic instruments issued prior to the opening of Bids which clarify, correct, or change the Bidding Requirements or the proposed Procurement Contract Documents.

2. *Application for Payment*—The document prepared by Seller, in a form acceptable to Buyer, to request progress or final payments, and which is to be accompanied by such supporting documentation as is required by the Procurement Contract Documents.

3. *Bid*—An offer or proposal of a prospective Seller submitted on the prescribed form setting forth the prices for the Goods and Special Services to be provided.

4. *Bidder*—An individual or entity that, as a prospective Seller, submits a Bid to Buyer.

5. *Buyer*—The individual or entity purchasing the Goods and Special Services.

6. *Change Directive*—A written directive from Buyer to Seller issued on or after the Effective Date of the Procurement Contract, ordering an addition, deletion, or revision in the Goods and Special Services.

7. *Change Order*—A document which is signed by Seller and Buyer and authorizes an addition, deletion, or revision to the Procurement Contract Documents or an adjustment in the Procurement Contract Price or the Procurement Contract Times, issued on or after the Effective Date of the Procurement Contract. Change Orders may be the result of mutual agreement by Buyer and Seller, or of resolution of a Claim.

8. *Claim*—A demand or assertion by Buyer or Seller seeking an adjustment of Procurement Contract Price or Procurement Contract Times, or both, or other relief with respect to the terms of the Procurement Contract. A demand for money or services by a third party is not a Claim.

9. *Contractor/Assignee*—A construction contractor with which Project Owner enters into a construction contract, and to which Project Owner, as initial Buyer, assigns this Procurement Contract.

10. *Effective Date of the Procurement Contract*—The date indicated in the Procurement Agreement on which the Procurement Contract becomes effective.

11. *Electronic Document*—Any Project-related correspondence, attachments to correspondence, data, documents, drawings, information, or graphics, including but not limited to Shop Drawings and other Submittals, that are in an electronic or digital format.

12. *Electronic Means*—Electronic mail (e-mail), upload/download from a secure Project website, or other communications methods that allow: the transmission or communication of Electronic Documents; the documentation of transmissions, including sending and receipt; printing of the transmitted Electronic Document by the recipient; the storage and archiving of the Electronic Document by sender and recipient; and the use by recipient of the Electronic Document for purposes permitted by this Procurement Contract. Electronic Means does not include the use of text messaging, or of Facebook, Twitter, Instagram, or similar social media services for transmission of Electronic Documents.

13. *Engineer*—The individual or entity designated as such in the Procurement Agreement.

14. *Field Order*—A written order issued by Engineer which requires minor changes in the Goods or Special Services, but which does not involve a change in the Procurement Contract Price or Procurement Contract Times.

15. *Goods*—The tangible and movable personal property that is described in the Procurement Contract Documents, regardless of whether the property is to be later attached to realty.

16. *Goods and Special Services*—The full scope of materials, equipment, other items, and services to be furnished by Seller, including Goods, as defined herein, and Special Services, if any, as defined herein. This term refers to both the Goods and the Special Services, or to either the Goods or the Special Services, and to any portion of the Goods or the Special Services, as the context requires.

17. *Laws and Regulations; Laws or Regulations*—Any and all applicable laws, statutes, rules, regulations, ordinances, codes, and binding decrees, resolutions, and orders of any and all governmental bodies, agencies, authorities, and courts having jurisdiction.

18. *Milestone*—A principal event specified in the Procurement Contract that Seller must attain by the date or within the number of days indicated, including but not limited to the delivery of the Goods and the furnishing of Special Services.

19. *Notice of Award*—The written notice, by Buyer to a Bidder, of Buyer's acceptance of the Bid.

20. *Point of Destination*—The specific address of the location where delivery of the Goods will be made, as stated in the Procurement Agreement.

21. *Procurement Agreement*—The written instrument, executed by Buyer and Seller, that sets forth the Procurement Contract Price and Procurement Contract Times, identifies the parties and the Engineer, and designates the specific items that are Procurement Contract Documents.

22. *Procurement Bidding Documents*—The Procurement Bidding Requirements and the proposed Procurement Contract Documents (including all Addenda).

23. *Procurement Bidding Requirements*—The advertisement or invitation to bid, Instructions to Bidders, Bid security of acceptable form, if any, and Bid Form with any supplements.

24. *Procurement Contract*—The entire and integrated written agreement between Buyer and Seller concerning the Goods and Special Services.

25. *Procurement Contract Documents*—Those items so designated in the Procurement Agreement, and which together comprise the Procurement Contract. Shop Drawings and other Seller submittals are not Procurement Contract Documents, even if accepted, reviewed, or approved by Engineer or Buyer.

26. *Procurement Contract Price*—The money that Buyer has agreed to pay Seller for furnishing the Goods and Special Services in accordance with the Procurement Contract Documents.

27. *Procurement Contract Times*—The times stated in the Procurement Agreement by which the Goods must be delivered, Special Services must be furnished, and other Milestones must be attained.

28. *Procurement Drawings*—That part of the Procurement Contract Documents prepared or approved by Engineer which graphically shows the scope, extent, and character of the Goods and Special Services to be furnished by Seller. Shop Drawings and other Seller submittals are not Procurement Drawings as so defined.

29. *Procurement Specifications*—That part of the Procurement Contract Documents consisting of written requirements for materials, equipment, systems, standards and workmanship as applied to the furnishing of the Goods and Special Services, and certain administrative requirements and procedural matters applicable thereto.

30. *Project*—The total undertaking to be accomplished for Project Owner by engineers, contractors, and others, including planning, study, design, construction, testing, commissioning, and start-up, and of which the Goods and Special Services are a part.

31. *Project Owner*—The entity that has retained (or will retain) engineers, contractors, and others for the planning, study, design, construction, testing, commissioning, and start-up of facilities and improvements. As of the Effective Date of the Procurement Contract, the Project Owner is the Buyer.

32. *Samples*—Physical examples of materials, equipment, or workmanship that are representative of some portion of the Goods and Special Services and which establish the standards by which such portion of the Goods and Special Services will be judged.

33. *Schedule of Submittals*—A schedule, prepared and maintained by Seller, of required Submittals and the time requirements for Engineer's review of the Submittals.

34. *Seller*—The individual or entity furnishing the Goods and Special Services.

35. *Shop Drawings*—All drawings, diagrams, illustrations, schedules, and other data or information which are specifically prepared or assembled by or for Seller and submitted by Seller to illustrate some portion of the Goods and Special Services. Shop Drawings, whether approved or not, are not Procurement Drawings and are not Procurement Contract Documents.

36. *Special Services*—Services to be performed by Seller (or its agents or subcontractors) in association with the Goods to be furnished by Seller, as required by the Procurement Contract Documents.

37. *Submittal*—A written or graphic document, prepared by or for Seller, which the Procurement Contract Documents require Seller to submit to Engineer, or that is indicated as a Submittal in the Schedule of Submittals accepted by Engineer. Submittals

may include Shop Drawings and Samples; schedules; product data; sustainable design information; information on special procedures; testing plans; results of tests and evaluations, source quality-control testing and inspections, and field or site quality-control testing and inspections; warranties and certifications; suppliers' instructions and reports; records of delivery of spare parts and tools; operations and maintenance data; record documents; and other such documents required by the Procurement Contract Documents. Submittals, whether or not approved or accepted by Engineer, are not Procurement Contract Documents. Change proposals, Change Orders, Claims, notices, Applications for Payment, and requests for interpretation or clarification are not Submittals.

38. *Successful Bidder*—The Bidder whose Bid the Buyer accepts, and to which Buyer makes an award of the Procurement Contract.

39. *Supplementary Conditions*—The part of the Procurement Contract that amends or supplements these General Conditions.

40. *Unit Price Goods and Special Services*—Goods and Special Services to be paid for on the basis of unit prices (if any).

1.02 *Terminology*

A. The words and terms discussed in Paragraphs 1.02.B and 1.02.C are not defined, but have the indicated meanings when used in the Bidding Requirements or Procurement Contract Documents.

B. *Intent of Certain Terms or Adjectives*

1. The Procurement Contract Documents include the terms "as allowed," "as approved," "as ordered," "as directed" or terms of like effect or import to authorize an exercise of professional judgment by Engineer. In addition, the adjectives "reasonable," "suitable," "acceptable," "proper," "satisfactory," or adjectives of like effect or import are used to describe an action or determination of Engineer as to the Goods and Special Services. It is intended that such exercise of professional judgment, action, or determination will be commercially reasonable and will be solely to evaluate, in general, the Goods and Special Services for compliance with the requirements of and information in the Procurement Contract Documents and conformance with the design concept of the completed Project as a functioning whole, as shown or indicated in the Procurement Contract Documents (unless there is a specific statement indicating otherwise). The use of any such term or adjective will not be effective to assign to Engineer any duty or authority to supervise or direct the furnishing of Goods or Special Services or any duty or authority to undertake responsibility contrary to any other provision of the Procurement Contract Documents.

2. The word "non-conforming" when modifying the words "Goods and Special Services," "Goods," or "Special Services," refers to Goods and Special Services that are unsatisfactory, faulty, or deficient in that they:

a. do not conform to or comply with the requirements of the Procurement Contract Documents;

b. do not meet the requirements of any applicable inspection, reference standard, test, or approval referred to in the Procurement Contract Documents; or

c. in the case of Special Services, have not been completed.

3. The word “receipt” when referring to the Goods, means the physical taking and possession by the Buyer under the conditions specified in Paragraph 9.02.B.2.

4. The word “day” means a calendar day of 24 hours measured from midnight to the next midnight.

5. The word "furnish," when used in connection with the Goods and Special Services means to supply and deliver said Goods to the Point of Destination (or some other specified location) and to perform said Special Services fully, all in accordance with the Procurement Contract Documents.

C. *Procurement Contract Price or Procurement Contract Times*: References to a change in “Procurement Contract Price or Procurement Contract Times” or “Procurement Contract Times or Procurement Contract Price” or similar, indicate that such change applies to (1) Procurement Contract Price, (2) Procurement Contract Times, or (3) both Procurement Contract Price and Procurement Contract Times, as warranted, even if the term “or both” is not expressed.

D. Unless stated otherwise in the Procurement Contract Documents, words or phrases that have a well-known technical or construction industry or trade meaning are used in the Procurement Contract Documents in accordance with such recognized meaning.

ARTICLE 2—PRELIMINARY MATTERS

2.01 *Delivery of Bonds and Evidence of Insurance*

A. When Seller delivers the executed counterparts of the Procurement Agreement to Buyer, the Seller also shall deliver to Buyer the performance bond and payment bond (if the Procurement Contract requires Seller to furnish such bonds).

B. *Evidence of Seller’s Insurance*: When Seller delivers the signed counterparts of the Procurement Agreement to Buyer, the Seller also shall deliver to Buyer, with copies to each additional insured (as identified in the Procurement Contract), the certificates, endorsements, and other evidence of insurance required to be provided by Seller in accordance with Article 5. Evidence of insurance to be obtained at a later date, such as insurance relating to transit or storage of the Goods, will be provided to Buyer at the time of such insurance is obtained.

C. *Evidence of Buyer’s Insurance*: After receipt of the signed counterparts of the Procurement Agreement and all required bonds and insurance documentation, Buyer shall promptly deliver to Seller, with copies to each additional insured (as identified in the Procurement Contract), certificates and other evidence of insurance (if any) required to be provided by Buyer.

2.02 *Copies of Documents*

A. Buyer shall furnish to Seller four printed copies of the Procurement Contract (including one fully executed counterpart of the Procurement Agreement), and one copy in electronic portable document format (PDF). Additional printed copies will be furnished upon request at the cost of reproduction.

2.03 *Electronic Transmittals*

A. Except as otherwise stated elsewhere in the Procurement Contract, the Buyer, Seller, and Engineer may send, and shall accept, Electronic Documents transmitted by Electronic Means.

B. If the Procurement Contract does not establish protocols for Electronic Means, then Buyer, Seller, and Engineer shall jointly develop such protocols.

C. Subject to any governing protocols for Electronic Means, when transmitting Electronic Documents by Electronic Means, the transmitting party makes no representations as to long-term compatibility, usability, or readability of the Electronic Documents resulting from the recipient's use of software application packages, operating systems, or computer hardware differing from those used in the drafting or transmittal of the Electronic Documents.

2.04 *Preliminary Schedules*

A. Within 15 days after the Effective Date of the Procurement Contract, Seller shall submit to Buyer and Engineer for timely review:

1. a progress schedule of activities, consistent with the Procurement Contract Times, including at a minimum, Shop Drawing and Sample submittals, tests, and deliveries as required by the Procurement Contract Documents.

a. The progress schedule will be acceptable to Buyer and Engineer if it provides an orderly progression of the Submittals, tests, and deliveries to completion within the specified Milestones of the Procurement Contract Times.

b. Such acceptance will not impose on Buyer or Engineer responsibility for the progress schedule, for sequencing, scheduling, or progress of Seller's performance of its obligations under the Procurement Contract, nor interfere with or relieve Seller from Seller's full responsibility therefor.

c. Such acceptance will not be deemed as an acknowledgment of the reasonableness and attainability of the schedule.

2. a preliminary schedule of Submittals.

B. No progress payment will be made to Seller until an acceptable progress schedule and acceptable schedule of Submittals are submitted to Buyer and Engineer (and other conditions applicable to progress payments are met).

2.05 *Preliminary Conference*

A. Within 20 days after the Procurement Contract Times start to run, a conference attended by Seller, Buyer, Engineer and others as appropriate will be held to establish a working understanding among the parties as to the Goods and Special Services and to discuss the schedules referred to in Paragraph 2.04.A, procedures for handling Shop Drawings and other Submittals, processing Applications for Payment, and maintaining required records.

2.06 *Safety*

A. Buyer and Seller shall comply with all applicable Laws and Regulations relating to the safety of persons or property, and to the protection of persons or property from damage, injury, or loss.

B. When Seller's personnel, or the personnel of any subcontractor to Seller, are present at the Point of Destination or any work area or site controlled by Buyer, the Seller shall be responsible for the compliance by such personnel with any applicable requirements of Buyer's safety programs that are made known to Seller.

C. If Buyer or its representatives visit the Seller's manufacturing or storage facilities, for testing, inspection, or other purposes, Seller shall inform Buyer in advance of any safety preparations, standards, or programs with which Buyer and its representatives must comply.

ARTICLE 3—PROCUREMENT CONTRACT DOCUMENTS

3.01 *Intent*

A. The Procurement Contract Documents are complementary; what is called for by one is as binding as if called for by all.

B. Any labor, documentation, services, materials, or equipment that may reasonably be inferred from the Procurement Contract Documents or from prevailing custom or trade usage as being required to produce or furnish the indicated Goods and Special Services will be provided, whether or not specifically called for, at no additional cost to Buyer.

C. Unless otherwise stated in the Procurement Contract Documents, if there is a discrepancy between the electronic or digital versions of the Procurement Contract Documents (including any printed copies derived from such electronic or digital versions) and the printed record version, the printed record version will govern.

D. The Procurement Contract supersedes prior negotiations, representations, and agreements, whether written or oral.

E. Engineer will issue clarifications and interpretations of the Procurement Contract Documents, as provided in Paragraph 3.04.

F. Any provision or part of the Procurement Contract Documents held to be void or unenforceable under any Law or Regulation will be deemed stricken, and all remaining provisions will continue to be valid and binding upon Buyer and Seller.

3.02 *Reference Standards*

A. Reference to standards, specifications, manuals, or codes of any technical society, organization, or association, or to Laws and Regulations, whether such reference be specific or by implication, means the standard, specification, manual, code, or Laws and Regulations in effect at the time of opening of Bids (or on the Effective Date of the Procurement Agreement if there were no Bids), except as may be otherwise specifically stated in the Procurement Contract Documents.

B. No provision of any such standard specification, manual, reference standard, or code, and no instruction of a supplier, will be effective to change the duties or responsibilities of Buyer, Seller, or Engineer from those set forth in the part of the Procurement Contract Documents prepared by or for Engineer. No such provision or instruction will be effective to assign to Buyer or Engineer any duty or authority to supervise or direct the performance of Seller's obligations, or any duty or authority to undertake responsibility inconsistent with the provisions of the part of the Procurement Contract Documents prepared by or for Engineer.

C. Compliance with Laws and Permits. All permits and licenses which are required to construct, install and/or operate Buyer's facility or equipment, to use the Equipment, or to manage and dispose of any wastes and residues resulting from Buyer's use of the Equipment, shall be obtained and maintained by Buyer at Buyer's sole expense. Buyer is responsible for compliance with all laws and regulations applicable to the storage, use, handling, installation, maintenance, removal, registration and labeling of all Equipment after delivery of the Equipment, as well as for the proper management and disposal of all wastes and residues.

3.03 *Reporting and Resolving Discrepancies*

A. *Reporting Discrepancies*

1. *Seller's Review of Procurement Contract Documents*: If, before or during the performance of Seller's obligations, Seller discovers any conflict, error, ambiguity, or discrepancy within the Procurement Contract Documents, or between the Procurement Contract Documents and (a) any applicable Law or Regulation, (b) actual field conditions, (c) any standard specification, manual, reference standard, or code, or (d) any instruction of any supplier to Seller, then Seller shall promptly report it to Engineer (or if the Procurement Contract is assigned, then directly to Contractor/Assignee) in writing. Seller shall not proceed with the Goods and Special Services affected thereby until the conflict, error, ambiguity, or discrepancy is resolved, by a clarification or interpretation by Engineer (or if the Procurement Contract is assigned, then by Contractor/Assignee) or by an amendment or supplement to the Procurement Contract Documents issued pursuant to Article 11.

2. Seller shall not be liable to Buyer or Engineer for failure to report any conflict, error, ambiguity, or discrepancy in the Procurement Contract Documents unless Seller had actual knowledge thereof.

B. *Resolving Discrepancies*: Except as may be otherwise specifically stated in the Procurement Contract Documents, the provisions of the Procurement Contract Documents will take precedence in resolving any conflict, error, ambiguity, or discrepancy between the provisions of the Procurement Contract Documents and:

1. the provisions of any standard, specification, manual, code, or instruction (whether or not specifically incorporated by reference in the Procurement Contract Documents); or

2. the provisions of any Laws or Regulations applicable to the furnishing of the Goods and Special Services (unless such an interpretation of the provisions of the Procurement Contract Documents would result in violation of such Law or Regulation).

3.04 *Requirements of the Procurement Drawings and Procurement Specifications*

A. During the performance of Seller's obligations and until final payment, Seller and Buyer shall submit to the Engineer all matters in question concerning the requirements of the Procurement Drawings and Procurement Specifications (sometimes referred to as requests for information or interpretation—RFIs), or relating to the acceptability of the Goods and Special Services, as soon as possible after such matters arise. Engineer will be the initial interpreter of the requirements of the Procurement Drawings and Procurement Specifications, and judge of the acceptability of the Goods and Special Services thereunder.

1. After assignment (if any) Seller shall submit such matters directly to Contractor/Assignee for response or administration, and the Procurement Contract provisions in Paragraphs 3.04.B and C will not apply.

B. Engineer will issue with reasonable promptness a written clarification, interpretation, or decision on the issue submitted, and if necessary, initiate an amendment or supplement to the Procurement Drawings or Procurement Specifications. Engineer's written clarification, interpretation, or decision will be consistent with the overall intent of the Procurement Contract Documents, and will be final and binding on Seller and Buyer. If either Buyer or Seller believes that a written clarification or interpretation justifies an adjustment in the Procurement Contract Price or Procurement Contract Times, either may make a Claim for such adjustment as provided in Article 12.

C. If a submitted matter in question concerns terms and conditions of the Procurement Contract Documents that do not involve (1) the performance or acceptability of the Goods and Services, (2) the design (as set forth in the Procurement Drawings, Procurement Specifications, or otherwise), or (3) other engineering or technical matters, then Engineer will promptly give written notice to Buyer and Seller that Engineer is unable to provide a decision or interpretation.

3.05 *Reuse of Documents*

A. Seller and its subcontractors and suppliers shall not:

1. have or acquire any title to or ownership rights in any of the Procurement Drawings, Procurement Specifications, or other documents (or copies of any thereof) prepared by or bearing the seal of Engineer or its consultants, including electronic media editions, or reuse any such Procurement Drawings, Procurement Specifications, other documents, or copies thereof, on extensions of the Project or any other project, without written consent of Buyer and Engineer and specific written verification or adaptation by Engineer; or

2. have or acquire any title or ownership rights in any other Procurement Contract Documents, reuse any such Procurement Contract Documents for any purpose without Buyer's express written consent, or violate any copyrights pertaining to such Procurement Contract Documents.

B. The prohibitions of this Paragraph 3.05 will survive final payment, or termination of the Procurement Contract. Nothing herein precludes Seller from retaining copies of the Procurement Contract Documents for record purposes.

ARTICLE 4—COMMENCEMENT AND SCHEDULE

4.01 *Commencement of Procurement Contract Times*

A. The Procurement Contract Times will commence to run on the Effective Date of the Procurement Contract.

4.02 *Continuing Performance*

A. Seller shall adhere to the progress schedule established in accordance with Paragraph 2.04.A., as duly adjusted, and the Goods will be delivered and the Special Services furnished within the Procurement Contract Times.

B. Seller shall carry on furnishing of the Goods and Special Services and adhere to the progress schedule during all disputes or disagreements with Buyer. No furnishing of Goods and Special Services will be delayed or postponed pending resolution of any disputes or disagreements, except as expressly permitted herein, or as Buyer and Seller may otherwise agree in writing.

4.03 *Adjustments to Progress Schedule*

A. The progress schedule established in accordance with Paragraph 2.04 may be adjusted from time to time as provided below.

1. Seller shall submit to Buyer for acceptance (to the extent indicated in Paragraph 2.04) proposed adjustments in the progress schedule that will not result in changing the Procurement Contract Times. Such adjustments will comply with any applicable provisions of the Procurement Specifications.

2. Proposed adjustments in the progress schedule that will change the Procurement Contract Times must be submitted in accordance with the requirements of Article 11. Adjustments in Procurement Contract Times may only be made by a Change Order.

4.04 *Delays*

A. If Buyer, Engineer, or anyone for whom Buyer is responsible, delays, disrupts, or interferes with Seller's performance or progress, then Seller shall be entitled to an equitable adjustment in Procurement Contract Price or Procurement Contract Times.

B. Seller shall not be entitled to an adjustment in Procurement Contract Price or Procurement Contract Times for delay, disruption, or interference caused by or within the control of Seller or anyone for whom Seller is responsible.

C. If Seller's performance or progress is delayed, disrupted, or interfered with by unanticipated causes not the fault of and beyond the control of Buyer, Seller, and those for which they are responsible, then Seller shall be entitled to an equitable adjustment in Procurement Contract Times. Such an adjustment will be Seller's sole and exclusive remedy for the delays, disruption, and interference described in this paragraph. Causes of delay, disruption, or interference that may give rise to an adjustment in Procurement Contract Times under this paragraph include but are not limited to the following:

1. severe and unavoidable natural catastrophes such as fires, floods, epidemics, and earthquakes;

2. abnormal weather conditions;

3. inspection delays by governmental authorities, and custom delays;

4. international shipping delays;

5. acts or failures to act of third-party entities; and

6. acts of war or terrorism.

D. *Adjustments of Procurement Contract Times or Procurement Contract Price—General Provisions*: Seller's entitlement to an adjustment of Procurement Contract Times or Procurement Contract Price is limited as follows:

1. Seller's entitlement to an adjustment of the Procurement Contract Times is conditioned on the delay, disruption, or interference adversely affecting an activity on the critical

path to completion of Seller's obligations, as of the time of the delay, disruption, or interference.

2. Seller shall not be entitled to an adjustment in Procurement Contract Price for any delay, disruption, or interference if such delay is concurrent with a delay, disruption, or interference caused by or within the control of Seller. Such a concurrent delay by Seller does not preclude an adjustment of Procurement Contract Times to which Seller is otherwise entitled.

3. Adjustments of Procurement Contract Times or Procurement Contract Price are subject to the provisions of Articles 11 and 12.

E. Each Seller request seeking a delay-related increase in Procurement Contract Times or Procurement Contract Price must be supplemented by supporting data that sets forth in detail the following: (1) the circumstances that form the basis for the requested adjustment; (2) the date upon which each cause of delay, disruption, or interference began to affect Seller's progress; (3) the date upon which each cause of delay, disruption, or interference ceased to affect Seller's progress; (4) the number of days' increase in Procurement Contract Times claimed as a consequence of each such cause of delay, disruption, or interference; and (5) the impact on Procurement Contract Price. Seller shall also furnish such additional supporting documentation as Buyer or Engineer may require including, where appropriate, a revised progress schedule indicating all the activities affected by the delay, disruption, or interference, and an explanation of the effect of the delay, disruption, or interference on the critical path to completion.

ARTICLE 5—BONDS AND INSURANCE

5.01 *Performance, Payment, and Other Bonds*

A. Seller shall furnish a performance bond and a payment bond, each in an amount at least equal to the Procurement Contract Price, as security for the faithful performance and payment of Seller's obligations under the Procurement Contract. These bonds must remain in effect until one year after the date when final payment becomes due or until completion of the correction period specified in Paragraph 9.04, whichever is later, except as provided otherwise by Laws or Regulations, the terms of a prescribed bond form, the Supplementary Conditions, or other provisions of the Procurement Contract.

B. Seller shall also furnish such other bonds (if any) as are required by the Supplementary Conditions or other provisions of the Procurement Contract.

C. All bonds must be in the form included in the Bidding Documents or otherwise specified by Buyer prior to execution of the Procurement Contract, except as provided otherwise by Laws or Regulations, and must be issued and signed by a surety named in "Companies Holding Certificates of Authority as Acceptable Sureties on Federal Bonds and as Acceptable Reinsuring Companies" as published in Department Circular 570 (as amended and supplemented) by the Bureau of the Fiscal Service, U.S. Department of the Treasury. A bond signed by an agent or attorney-in-fact must be accompanied by a certified copy of that individual's authority to bind the surety. The evidence of authority must show that it is effective on the date the agent or attorney-in-fact signed the accompanying bond.

D. Seller shall obtain the required bonds from surety companies that are duly licensed or authorized, in the state or jurisdiction in which the Project is located, to issue bonds in the required amounts.

E. If the surety on a bond furnished by Seller is declared bankrupt or becomes insolvent, or the surety ceases to meet the requirements above, then Seller shall promptly notify Buyer and Engineer and shall, within 20 days after the event giving rise to such notification, provide another bond and surety, both of which shall comply with the bond and surety requirements of this Procurement Contract.

F. If Seller has failed to obtain a required bond, Buyer may exercise Buyer's termination rights under Article 14.

G. Upon request to Buyer from any subcontractor, supplier, or other person or entity claiming to have furnished labor, services, materials, or equipment used in the performance of Seller's obligations, Buyer shall provide a copy of the payment bond to such person or entity.

H. Upon request to Seller from any subcontractor, supplier, or other person or entity claiming to have furnished labor, services, materials, or equipment used in the performance of Seller's obligations, Seller shall provide a copy of the payment bond to such person or entity.

5.02 *Insurance*

A. Seller shall provide insurance of the types and coverages and in the amounts stipulated in the Supplementary Conditions.

B. Failure of Buyer to demand certificates of insurance or other evidence of Seller's full compliance with these insurance requirements or failure of Buyer to identify a deficiency in compliance from the evidence provided will not be construed as a waiver of Seller's obligation to maintain such insurance.

C. Upon assignment of this Procurement Contract, Seller shall name the Contractor/Assignee as an additional insured and comply with the written request of Contractor/Assignee to provide evidence of insurance.

D. Buyer does not represent that insurance coverage and limits established in this Procurement Contract necessarily will be adequate to protect Seller.

E. The insurance and insurance limits required herein will not be deemed as a limitation on Seller's liability under the indemnities and other rights granted to Buyer in the Procurement Contract.

5.03 *Surety or Insurance Companies*

A. All bonds and insurance required by the Procurement Contract Documents to be purchased and maintained by Buyer or Seller shall be obtained from surety or insurance companies that are duly licensed or authorized in the jurisdiction in which the Project is located to issue bonds or insurance policies for the limits and coverages so required. Such surety and insurance companies must also meet such additional requirements and qualifications as may be provided in the Supplementary Conditions.

ARTICLE 6—LICENSES AND FEES

6.01 *Intellectual Property and License Fees*

A. Except to the extent stated elsewhere in the Procurement Contract Documents, Seller is not transferring any patent rights, copyrights, or other intellectual property rights for the Goods delivered.

B. To the extent Seller is manufacturing to Buyer's design, Buyer retains all patent rights, copyrights, and other intellectual property rights in such design.

C. If an invention, design, process, product, or device is specified in the Procurement Contract Documents for incorporation in the Goods or for the performance of Special Services, and if, to the actual knowledge of Buyer or Engineer, its use is subject to patent rights, copyrights, or other intellectual property rights calling for the payment of a license fee or royalty to others, then the existence of such rights and payment obligations will be disclosed to Seller in the Procurement Contract Documents.

D. Seller shall pay all license fees and royalties and assume all costs incident to the use or the furnishing of the Goods, unless specified otherwise by the Procurement Contract Documents.

6.02 *Seller's Infringement*

A. Subject to Paragraph 6.01, to the fullest extent permitted by Laws and Regulations, Seller shall indemnify and hold harmless Buyer, Engineer, and their officers, directors, members, partners, employees, agents, consultants, contractors, and subcontractors, from and against all claims, costs, losses, damages, and judgments (including but not limited to all reasonable fees and charges of engineers, architects, attorneys and other professionals and all court or arbitration or other dispute resolution costs) arising out of or relating to any infringement or alleged infringement of any patent, copyright, or other intellectual property right by any of the Goods as delivered or Special Services as performed.

B. Buyer will promptly notify Seller in writing of any claim, suit, or threat of suit by a third party for any infringement or alleged infringement of any patent, copyright, or other intellectual property right with respect to the Goods as delivered or Special Services as performed.

C. Seller shall promptly defend or settle the claim or suit. Seller shall have control over such claim or suit, bear all expenses, and satisfy any adverse judgment.

1. If Seller fails to defend such suit or claim after written notice by Buyer, Seller will be bound, in any subsequent suit or claim against Seller by Buyer, by any factual determination in the prior suit or claim.

2. If Buyer fails to provide Seller the opportunity to defend such suit or claim, Buyer shall be barred from any remedy against Seller for such suit or claim.

D. If a determination is made that Seller has infringed upon the intellectual property rights of another, Seller may, at Seller's own expense, obtain the necessary licenses for Buyer's benefit, or replace the Goods and provide related design and construction, consistent with the requirements of the Procurement Contract Documents, to avoid the infringement.

6.03 *Buyer's Infringement*

A. Subject to Paragraph 6.01, and to the fullest extent permitted by Laws and Regulations, Buyer shall be responsible to Seller for any infringement or alleged infringement of any patent, copyright, or other intellectual property right caused by Seller's compliance with the Procurement Drawings or Procurement Specifications, and will reimburse Seller for any license fee or royalties paid by Seller to others if such payment resulted from any invention, design, process, product, or device specified to be furnished or performed in the Procurement Drawings or Procurement Specifications, but not identified as being subject to payment of such license fee or royalty.

B. Seller will promptly notify Buyer in writing of any claim, suit, or threat of suit by a third party for intellectual property infringement arising from Seller's compliance with the Procurement Drawings or Procurement Specifications.

C. Buyer shall defend or settle the claim or suit. Buyer shall have control over such claim or suit, bear all expenses, and satisfy any adverse judgment.

1. If Buyer fails to defend such suit or claim after written notice by Seller, Buyer will be bound, in any subsequent suit or claim against Buyer by Seller, by any factual determination in the prior suit or claim.

2. If Seller fails to provide Buyer the opportunity to defend such suit or claim, Seller shall be barred from any remedy against Buyer for such suit or claim.

ARTICLE 7—SELLER'S RESPONSIBILITIES

7.01 *Performance of Obligations*

A. Seller shall be solely responsible for the means, methods, techniques, sequences, and procedures necessary to perform its obligations in accordance with the Procurement Contract Documents.

B. Seller shall supervise, inspect, and direct the furnishing of the Goods and Special Services competently and efficiently, devoting such attention thereto and applying such skills and expertise as may be necessary to perform its obligations in accordance with the Procurement Contract Documents.

C. Seller shall coordinate the provision of Special Services to avoid or limit interference or disruption of other activities at the location where the Special Services are to occur, including but not limited to ongoing facility operations and construction activities.

7.02 *Labor, Materials and Equipment*

A. Seller shall provide competent, qualified and trained personnel in all aspects of its performance of the Procurement Contract.

B. All Goods, and all equipment and material incorporated into the Goods, must be as specified, and unless specified otherwise in the Procurement Contract Documents, must be:

1. new, and of good quality;

2. protected, assembled, connected, cleaned, and conditioned in accordance with the original manufacturer's instructions; and

3. shop-assembled to the greatest extent practicable.

7.03 *Laws and Regulations*

A. Seller shall give all notices required by and shall comply with all Laws and Regulations applicable to the performance of its obligations in accordance with the Procurement Contract Documents. Except where otherwise expressly required by such Laws and Regulations, neither Buyer nor Engineer shall be responsible for monitoring Seller's compliance with any Laws or Regulations.

B. If Seller furnishes Goods and Special Services knowing or having reason to know that such furnishing is contrary to Laws or Regulations, Seller shall bear all claims, costs, losses, and damages (including but not limited to all fees and charges of engineers, architects, attorneys, and other professionals and all court or arbitration or other dispute resolution costs) arising out of or relating to such performance. It will not be Seller's responsibility to make certain that the Procurement Specifications and Procurement Drawings are in accordance with Laws and Regulations, but this provision will not relieve Seller of Seller's obligations under Paragraph 3.03.

C. Changes in Laws or Regulations not known at the time of opening of Bids (or, on the Effective Date of the Procurement Contract if there were no Bids) that have a direct effect on the cost or time of Seller's performance will be the subject of an adjustment in Procurement Contract Price or Procurement Contract Times. If Buyer and Seller are unable to agree on entitlement to or on the amount or extent, if any, of any such adjustment, a Claim may be made therefor as provided in Article 12.

7.04 *"Or Equals"*

A. Whenever an item of material or equipment to be incorporated into the Goods is specified or described in the Procurement Contract Documents by using the names of one or more proprietary items or specific suppliers or manufacturers, the specification or description is intended to establish the type, function, appearance, and quality required. Unless the specification or description contains or is followed by words reading that no like, equivalent, or "or equal" item is permitted, other items of material or equipment or material or equipment of other suppliers or manufacturers may be submitted to Buyer for Engineer's review.

1. If in Engineer's sole discretion, such an item of material or equipment proposed by Seller is functionally equal to that named and sufficiently similar so that no change in related work will be required, it may be considered by Engineer as an "or equal" item.

2. For the purposes of this paragraph, a proposed item of material or equipment may be considered functionally equal to an item so named only if in the exercise of reasonable judgment, Engineer determines that: 1) it is at least equal in quality, durability, appearance, strength, and design characteristics; 2) it will reliably perform at least equally well the function imposed by the design concept of the completed Project as a functioning whole; 3) it has an acceptable record of performance and availability of responsive service; and (4) Seller certifies that if approved: a) there will be no increase in any cost, including capital, installation or operating costs, to Buyer; and b) the proposed item will conform substantially to the detailed requirements of the item named in the Procurement Contract Documents.

B. *Engineer's Evaluation*: Engineer will be allowed a reasonable time within which to evaluate each proposal or Submittal made pursuant to Paragraph 7.04.A. Engineer will be the sole judge of whether to accept or reject such a proposal or Submittal. No "or equal" will be ordered, manufactured or utilized until Engineer's review is complete, which will be evidenced by an approved Shop Drawing. Engineer will advise Buyer and Seller in writing of any negative determination. Notwithstanding Engineer's approval of an "or-equal" item, Seller shall remain obligated to comply with the requirements of the Procurement Contract Documents.

C. *Special Guarantee*: Buyer may require Seller to furnish at Seller's expense a special performance guarantee or other surety with respect to any such proposed "or-equal."

D. *Data*: Seller shall provide all data in support of any such proposed "or equal" at Seller's expense.

7.05 *Taxes*

A. Seller shall pay all taxes and duties arising out of the sale of the Goods and the performance of Special Services. All taxes and duties are included in the Procurement Contract Price, except as noted in the Supplementary Conditions.

7.06 *Submittals*

A. *Shop Drawing and Sample Requirements*

1. Before submitting a Shop Drawing or Sample, Seller shall:

a. review and coordinate the Shop Drawing or Sample with other Shop Drawings and Samples and with the requirements of the Procurement Contract Documents;

b. determine and verify:

1) all field measurements, quantities, dimensions, specified performance and design criteria, installation requirements, materials, catalog numbers, and similar information with respect to the Submittal; and

2) the suitability of all materials and equipment offered with respect to the indicated application, fabrication, shipping, handling, storage, assembly, and installation pertaining to the performance of Seller's obligations.

c. confirm that the Submittal is complete with respect to all related data included in the Submittal.

2. Each Shop Drawing or Sample must bear a stamp or specific written certification that Seller has satisfied its obligations under the Procurement Contract Documents with respect to Seller's review of that Submittal, and that Seller approves the Submittal.

3. With each Shop Drawing or Sample, Seller shall give Engineer specific written notice of any variations that the Submittal may have from the requirements of the Procurement Contract Documents. This notice will be set forth in a written communication separate from the Submittal; and, in addition, in the case of a Shop Drawing by a specific notation made on the Shop Drawing itself.

B. *Submittal Procedures for Shop Drawings and Samples*: Seller shall label and submit Shop Drawings and Samples to Engineer for review and approval in accordance with the accepted Schedule of Submittals.

1. *Shop Drawings*

    a. Seller shall submit the number of copies required in the Procurement Specifications.

    b. Data shown on the Shop Drawings must be complete with respect to quantities, dimensions, specified performance and design criteria, materials, and similar data to show Engineer the services, materials, and equipment Seller proposes to provide, and to enable Engineer to review the information for the limited purposes required by Paragraph 7.06.C.

2. *Samples*

    a. Seller shall submit the number of Samples required in the Procurement Specifications.

    b. Seller shall clearly identify each Sample as to material, supplier, pertinent data such as catalog numbers, the use for which intended and other data as Engineer may require to enable Engineer to review the Submittal for the limited purposes required by Paragraph 7.06.C.

3. Where a Shop Drawing or Sample is required by the Procurement Contract Documents or the Schedule of Submittals, any related work performed by Seller prior to Engineer's review and approval of the pertinent Submittal will be at the sole expense and responsibility of Seller.

C. *Engineer's Review of Shop Drawings and Samples*

1. Engineer will provide timely review of Shop Drawings and Samples in accordance with the accepted Schedule of Submittals. Engineer's review and approval will be only to determine if the items covered by the Submittals will, after installation or incorporation in the Goods, comply with the requirements of the Procurement Contract Documents, and be compatible with the design concept of the completed Project as a functioning whole as indicated by the Procurement Contract Documents.

2. Engineer's review and approval will not extend to means, methods, techniques, sequences, or procedures of construction, manufacturing, fabrication, installation, or shipping, or to safety precautions or programs incident thereto.

3. Engineer's review and approval of a separate item as such will not indicate approval of the assembly in which the item functions.

4. Engineer's review and approval of a Shop Drawing or Sample will not relieve Seller from responsibility for any variation from the requirements of the Procurement Contract Documents unless Seller has complied with the requirements of Paragraph 7.06.A.3 and Engineer has given written approval of each such variation by specific written notation thereof incorporated in or accompanying the Shop Drawing or Sample. Engineer will document any such approved variation from the requirements of the Procurement Contract Documents in a Field Order or other appropriate Procurement Contract modification.

5. Engineer's review and approval of a Shop Drawing or Sample will not relieve Seller from responsibility for complying with the requirements of Paragraphs 7.06.A and B.

6. Engineer's review and approval of a Shop Drawing or Sample, or of a variation from the requirements of the Procurement Contract Documents, will not, under any circumstances, change the Procurement Contract Times or Procurement Contract Price, unless such changes are included in a Change Order.

7. Neither Engineer's receipt, review, acceptance or approval of a Shop Drawing or Sample will result in such item becoming a Procurement Contract Document.

8. Seller shall furnish Goods that comply with the requirements and commitments set forth in approved Shop Drawings and Samples, subject to the provisions of Paragraph 7.06.C.4.

D. *Resubmittal Procedures for Shop Drawings and Samples*

1. Seller shall make corrections required by Engineer and shall return the required number of corrected copies of Shop Drawings and submit, as required, new Samples for review and approval. Seller shall direct specific attention in writing to revisions other than the corrections called for by Engineer on previous Submittals.

2. Seller shall furnish required Shop Drawing and Sample Submittals with sufficient information and accuracy to obtain required approval of an item with no more than two resubmittals. Engineer will record Engineer's time for reviewing a third or subsequent resubmittal of a Shop Drawing or Sample, and Seller shall be responsible for Engineer's charges to Buyer for such time. Buyer may impose a set-off against payments due Seller to secure reimbursement for such charges.

3. If Seller requests a change of a previously approved Shop Drawing or Sample, Seller shall be responsible for Engineer's charges to Buyer for its review time, and Buyer may impose a set-off against payments due Seller to secure reimbursement for such charges, unless the need for such change is beyond the control of Seller.

E. *Submittals Other than Shop Drawings and Samples*

1. The following provisions apply to all Submittals other than Shop Drawings and Samples:

   a. Seller shall submit all such Submittals to the Engineer in accordance with the schedule of Submittals and pursuant to the applicable terms of the Procurement Contract Documents.

   b. Engineer will provide timely review of all such Submittals in accordance with the schedule of Submittals and return such Submittals with a notation of either Accepted or Not Accepted. Any such Submittal that is not returned within the time established in the schedule of Submittals will be deemed accepted.

   c. Engineer's review will be only to determine if the Submittal is acceptable under the requirements of the Procurement Contract Documents as to general form and content of the Submittal.

   d. If any such Submittal is not accepted, Seller shall confer with Engineer regarding the reason for the non-acceptance, and resubmit an acceptable document.

2. Procedures for the submittal and acceptance of the Progress Schedule, the Schedule of Submittals, and the Schedule of Values are set forth in Paragraphs 2.04 and 2.05.

7.07 *Indemnification*

A. To the fullest extent permitted by Laws and Regulations, Seller shall indemnify and hold harmless Buyer, Engineer, Project Owner, and any assignee of Buyer, including Contractor/Assignee, and their officers, directors, members, partners, employees, agents, consultants, contractors, and subcontractors, from and against all claims, costs, losses, and damages (including but not limited to all fees and charges of engineers, architects, attorneys, and other professionals and all court or arbitration or other dispute resolution costs) arising out of or relating to the performance of Seller's obligations under the Procurement Contract, provided that any such claim, cost, loss, or damage is attributable to bodily injury, sickness, disease, or death, or to injury to or destruction of tangible property (other than the Goods themselves), including the loss of use resulting therefrom, but only to the extent caused by any negligent act or omission of Seller, or any individual or entity directly or indirectly employed by Seller or anyone for whose acts Seller may be liable.

B. In any and all claims against Buyer, Engineer, Project Owner, or any assignee of Buyer, including Contractor/Assignee, or their officers, directors, members, partners, employees, agents, consultants, contractors, or subcontractors, by any employee (or the survivor or personal representative of such employee) of Seller, any subcontractor, any supplier, or any individual or entity directly or indirectly employed by any of them to furnish any of the Goods and Special Services, or anyone for whose acts any of them may be liable, the indemnification obligation under Paragraph 7.07.A will not be limited in any way by any limitation on the amount or type of damages, compensation, or benefits payable by or for Seller or any such subcontractor, supplier, or other individual or entity under workers' compensation acts, disability benefit acts, or other employee benefit acts.

7.08 *Concerning Subcontractors and Suppliers*

A. Seller may retain subcontractors and suppliers for the performance of parts of the furnishing of the Goods and Special Services. The Seller's retention of a subcontractor or supplier will not relieve Seller's obligation to Buyer to perform and complete the furnishing the Goods and Special Services in accordance with the Procurement Contract Documents.

ARTICLE 8—SHIPPING AND DELIVERY

8.01 *Shipping*

A. Seller shall select the carrier and bear all costs of packaging, transportation, insurance, special handling, and all other costs associated with shipment and delivery.

8.02 *Delivery*

A. Seller shall deliver the Goods free on board (FOB) to the Point of Destination, freight prepaid, in accordance with the Procurement Contract Times set forth in the Procurement Agreement, or other date agreed to by Buyer and Seller.

B. At least 10 days before shipment, Seller shall provide written notice to Buyer of the manner of shipment and the anticipated delivery date. The notice must also include any instructions concerning special equipment or services required at the Point of Destination to unload and care for the Goods. Seller shall also require the carrier to give Buyer at least 24 hours' notice by telephone prior to the anticipated time of delivery.

C. Buyer will be responsible and bear all costs for unloading the Goods from carrier.

D. Buyer will assure that adequate facilities are available to receive delivery of the Goods at the time established for delivery, or on another date agreed to by Buyer and Seller.

E. No partial deliveries will be allowed, unless permitted or required by the Procurement Contract Documents or agreed to in writing by Buyer.

F. Provisions governing inspection on delivery are set forth in Paragraph 9.02.

8.03 *Risk of Loss*

A. Risk of loss and insurable interests transfer from Seller to Buyer upon Buyer's receipt of the Goods.

B. Notwithstanding the provisions of Paragraph 8.03.A, if Buyer rejects the Goods as non-conforming, the risk of loss on such Goods will remain with Seller until Seller corrects the non-conformity or Buyer accepts the Goods. If rejected Goods remain at the Point of Destination pending modification and acceptance, then Seller shall be responsible for arranging adequate protection and maintenance of the Goods at Seller's expense.

ARTICLE 9—BUYER'S RIGHTS

9.01 *Seller's Warranties and Guarantees*

A. Seller warrants and guarantees to Buyer that the title to the Goods conveyed will be proper, its transfer rightful, and free from any security interest, lien, or other encumbrance. Seller shall defend, indemnify, and hold Buyer harmless against any liens, claims, or demands contesting or affecting title of the Goods conveyed.

B. Seller warrants and guarantees to Buyer that all Goods and Special Services will conform with the Procurement Contract Documents, and with the standards established by any Samples approved by Engineer. Engineer shall be entitled to rely on Seller's warranty and guarantee. If the Procurement Contract Documents do not otherwise specify the characteristics or the quality of the Goods, the Goods must comply with the requirements of Paragraph 7.02.B.

C. Seller's warranty and guarantee hereunder excludes defects or damage caused by:

1. abuse, improper modification, improper maintenance, or improper operation by persons other than Seller;

2. excessive corrosion or chemical attack, unless corrosive or chemically-damaging conditions were disclosed by Buyer in the Procurement Contract Documents and the Procurement Contract Documents required the Goods to withstand such conditions;

3. use in a manner contrary to Seller's written instructions for installation, operation, and maintenance; or

4. normal wear and tear under normal usage.

D. Seller's obligation to furnish the Goods and Special Services in accordance with the Procurement Contract Documents will be absolute. None of the following will constitute an acceptance of Goods and Special Services that are non-conforming, or a release of Seller's obligation to furnish the Goods and Special Services in accordance with the Procurement Contract Documents:

1. observations by Buyer, Engineer, or Project Owner;

2. recommendation by Engineer or payment by Buyer of any progress or final payment;

3. use of the Goods by Buyer or Project Owner;

4. any acceptance by Buyer, Engineer, or Project Owner, or any failure to do so;

5. the end of the correction period established in Paragraph 9.04;

6. the issuance of a notice of acceptance;

7. any inspection, test or approval by others; or

8. any correction of non-conforming Goods and Special Services by Buyer or Project Owner.

E. Buyer shall promptly notify Seller of any breach of Seller's warranties or guarantees.

9.02 *Inspections and Testing*

A. *General Provisions*

1. The Procurement Contract Documents specify required inspections and tests. Buyer shall have the right to perform, or cause to be performed, reasonable inspections and require reasonable tests of the Goods at Seller's facility, and at the Point of Destination. Seller shall allow Buyer a reasonable time to perform such inspections or tests.

2. Seller shall reimburse Buyer for all expenses, except for travel, lodging, and subsistence expenses of Buyer's and Engineer's representatives, for inspections and tests specified in the Procurement Contract Documents. If as the result of any such specified testing the Goods are determined to be non-conforming, then Seller shall also bear the travel, lodging, and subsistence expenses of Buyer's and Engineer's representatives, and all expenses of re-inspection or retesting.

3. Buyer shall bear all expenses of inspections and tests that are not specified in the Procurement Contract Documents (other than any re-inspection or retesting resulting from a determination of non-conformity, as set forth in Paragraph 9.03); provided, however, that if as the result of any such non-specified inspections or testing the Goods are determined to be non-conforming, then Seller shall bear all expenses of such inspections and testing, and of any necessary re-inspection and retesting.

4. Seller shall provide Buyer timely written notice of the readiness of the Goods for all inspections, tests, or approvals which the Procurement Contract Documents specify are to be observed by Buyer prior to shipment.

5. Buyer will give Seller timely notice of all specified tests, inspections, and approvals of the Goods which are to be conducted at the Point of Destination, and a representative of Seller will attend such tests, inspections, and approvals.

6. If, on the basis of inspections or testing, the Goods appear to be conforming, Buyer will give Seller prompt notice thereof. If on the basis of inspections or testing, the Goods appear to be non-conforming, Buyer will give Seller prompt notice thereof and will advise Seller of the remedy Buyer elects under the provisions of Paragraph 9.03.

7. Neither payments made by Buyer to Seller prior to any tests or inspections, nor any tests or inspections, will constitute acceptance of non-conforming Goods, or prejudice Buyer's rights under the Procurement Contract.

B. *Visual Inspection on Delivery*

1. Buyer will visually inspect the Goods upon delivery solely for purposes of identifying the Goods, general verification of quantities, and observation of apparent condition. Such visual inspection will not be construed as final or as receipt of any Goods and Special Services that, as a result of subsequent inspections and tests, are determined to be non-conforming.

2. If, on the basis of the visual inspection specified in Paragraph 9.02.B.1, the Goods appear to comply with the requirements of the Procurement Contract Documents as to quantities and condition, then within 10 days of delivery Buyer shall issue to Seller Buyer's acknowledgment of the receipt of Goods.

C. *Final Inspection*

1. After all of the Goods have been incorporated into the Project, tested in accordance with such testing requirements as are specified, and are functioning as required, and Seller has performed and completed all Special Services, Buyer will make a final inspection.

2. If, on the basis of the final inspection, Buyer determines that the Goods and Special Services are conforming, Buyer's notice thereof will constitute Buyer's acceptance of the Goods and Special Services, subject to any limitations stated in the notice.

3. If, on the basis of the final inspection, the Goods and Special Services are non-conforming, Buyer will identify the non-conformity in writing.

9.03 *Non-Conforming Goods and Special Services*

A. If, on the basis of inspections and testing prior to delivery, the Goods and Special Services are found to be non-conforming, or if at any time after Buyer has acknowledged receipt of delivery and before the expiration of the correction period described in Paragraph 9.04, Buyer determines that the Goods and Special Services are non-conforming, then Seller shall promptly, without cost to Buyer and in response to written instructions from Buyer, either correct such non-conforming Goods and Special Services, or, if Goods are rejected by Buyer, remove and replace the non-conforming Goods with conforming Goods, including all work required for reinstallation.

B. *Buyer's Rejection of Non-Conforming Goods*

1. If Buyer elects to reject the Goods in whole or in part, Buyer's notice to Seller will describe in sufficient detail the non-conforming aspect of the Goods. If Goods have been delivered to Buyer, Seller shall promptly, and within the Procurement Contract Times, remove and replace the rejected Goods.

2. Seller shall bear all costs, losses and damages attributable to the removal, replacement, reinspection, and retesting of the non-conforming Goods.

3. Upon rejection of the Goods, Buyer retains a security interest in the Goods to the extent of any payments made and expenses incurred in their testing and inspection.

C. *Buyer's Rejection of Non-Conforming Special Services*

1. If at any time Buyer elects to reject the Special Services in whole or in part, Buyer's notice to Seller will describe in sufficient detail the non-conforming aspect of the Special Services.

2. Seller shall promptly provide conforming Special Services acceptable to Buyer.

3. If Seller fails to provide conforming Special Services, Buyer may remove the Special Services from the scope of the Procurement Contract, and equitably reduce the Procurement Contract Price.

D. *Remedying Non-Conforming Goods*: If Buyer elects to permit the Seller to modify the Goods to correct the non-conformance, then Seller shall promptly provide a schedule for such modifications and shall make the Goods conforming within a reasonable time.

E. *Buyer's Acceptance of Non-Conforming Goods*: Instead of requiring correction or removal and replacement of non-conforming Goods discovered either before or after final payment, Buyer may accept the non-conforming Goods. Seller shall bear all reasonable costs, losses, and damages attributable to Buyer's evaluation of and determination to accept such non-conforming Goods.

F. *Seller Obligations*: Seller shall pay all claims, costs, losses, and damages, including but not limited to all fees and charges for re-inspection, retesting and for any engineers, architects, attorneys and other professionals, and all court or arbitration or other dispute resolution costs arising out of or relating to the non-conforming Goods and Special Services. Seller's obligations will include the costs of the correction or removal and replacement of the non-conforming Goods and the replacement of property of Buyer and others destroyed by the correction or removal and replacement of the non-conforming Goods, and obtaining conforming Special Services from others.

G. *Buyer's Rejection of Conforming Goods*: If Buyer asserts that Goods and Special Services are non-conforming and such Goods and Special Services are determined to be conforming, or if Buyer rejects as non-conforming Goods and Special Services that are later determined to be conforming, then Seller shall be entitled to reimbursement from Buyer of costs incurred by Seller in inspecting, testing, correcting, removing, or replacing the conforming Goods and Special Services, including but not limited to fees and charges of engineers, architects, attorneys and other professionals, and all court or arbitration or other dispute resolution costs associated with the incorrect assertion of non-conformance or rejection of conforming Goods and Special Services.

9.04 *Correction Period*

A. Seller's responsibility for correcting all non-conformities in the Goods and Special Services will extend for a period of one year after the acceptance of the Goods and Special Services in accordance with Paragraph 9.02.C.2.

B. Where non-conforming Goods and Services (and damage to other work resulting therefrom) have been corrected or removed and replaced under this paragraph, the correction period hereunder with respect to such Goods and Services will be extended for an additional period of one year after such correction or removal and replacement has been satisfactorily completed.

C. Seller's obligations under this paragraph are in addition to all other obligations and warranties. The provisions of this paragraph may not be construed as a substitute for, or a waiver of, the provisions of any applicable statute of limitation or repose.

ARTICLE 10—ENGINEER'S STATUS

10.01 *Engineer's Role Defined*

A. Engineer will be Buyer's representative until assignment (if any) of the Procurement Contract.

B. The duties and responsibilities and the limitations of authority of Engineer prior to assignment, if any, of the Procurement Contract, are set forth in the Procurement Contract Documents.

C. Engineer's responsibilities, if any, after an assignment (if any) of the Procurement Contract, are set forth in the Procurement Agreement.

10.02 *Duties and Responsibilities; Authority; Limitations*

A. As set forth in Article 3, Engineer will be the initial interpreter of the Procurement Contract Documents and judge of the acceptability of the Goods and Special Services, and will issue clarifications, interpretations, and decisions regarding such issues.

B. Acting on behalf of Buyer under the provisions of Article 9, Engineer has the authority to disapprove or reject Goods and Special Services that Engineer believes to be non-conforming. Engineer also has the authority to require special inspection or testing of the Goods or Special Services as provided in Paragraph 9.02, whether or not the Goods are fabricated or installed, or the Special Services are completed.

C. Engineer may authorize minor deviations or variations in the Procurement Contract Documents by: 1) written approval of specific variations set forth in Shop Drawings when Seller has duly noted such variations as required in Paragraph 7.06.A.3, or 2) a Field Order.

D. As set forth in Article 12, Engineer will review Claims, and render decisions on Claims.

E. In rendering any interpretations, clarifications, reviews, decisions, disapprovals, acceptances, rejections, authorizations, and judgments, Engineer will not show partiality to Buyer or Seller. Engineer will not be liable to Buyer, Seller, or others in connection with any interpretations, clarifications, reviews, decisions, disapprovals, acceptances, rejections, authorizations, or judgments conducted or rendered by Engineer in good faith.

F. Engineer will not supervise, direct, control, or have authority over or be responsible for the means, methods, techniques, sequences, or procedures used by Seller to perform its obligations under this Procurement Contract, or the safety precautions and programs incident thereto, or for any failure of Seller to comply with Laws and Regulations applicable to the performance of its obligations. Engineer will not be responsible for Seller's failure to furnish the Goods and Special Services in accordance with the Procurement Contract Documents.

ARTICLE 11—CHANGES

11.01 *Amending and Supplementing the Procurement Contract*

A. The Procurement Contract may be amended or supplemented by a Change Order, a Change Directive, or a Field Order.

B. If an amendment or supplement to the Procurement Contract includes a change in the Procurement Contract Price or the Procurement Contract Times, such amendment or supplement must be set forth in a Change Order.

C. All changes to the Procurement Contract that involve (1) the conformance or acceptability of the Goods and Special Services, (2) the design (as set forth in the Procurement Drawings, Procurement Specifications, or otherwise), or (3) other engineering or technical matters, must be supported by Engineer's recommendation. Buyer and Seller may amend other terms and conditions of the Procurement Contract without the recommendation of the Engineer.

11.02 *Change Orders*

A. Buyer and Seller shall execute appropriate Change Orders covering:

1. Changes in Procurement Contract Price or Procurement Contract Times which are agreed to by the parties, including any undisputed sum or amount of time for Goods and Special Services furnished in accordance with a Change Directive;

2. Changes in Procurement Contract Price resulting from a Buyer set-off, unless Seller has duly contested such set-off;

3. Changes in the Goods and Special Services which are: (a) ordered by Buyer pursuant to Paragraph 11.05, (b) required because of Buyer's acceptance of non-conforming Goods and Services under Paragraph 9.03 or (c) agreed to by the parties, subject to the need for Engineer's recommendation if the change in the Goods and Special Services involves the design (as set forth in the Procurement Drawings, Procurement Specifications, or otherwise) or other engineering or technical matters; and

4. Changes that embody the substance of any final and binding results under: Paragraph 11.03.B, resolving the impact of a Change Directive; Article 12, Claims; and similar provisions.

B. If Buyer or Seller refuses to execute a Change Order that is required to be executed under the terms of Paragraph 11.02.A, it will be deemed to be of full force and effect, as if fully executed.

11.03 *Change Directives*

A. A Change Directive will not change the Procurement Contract Price or the Procurement Contract Times but is evidence that the parties expect that the modification ordered or documented by a Change Directive will be incorporated in a subsequently issued Change Order, following negotiations by the parties as to the Change Directive's effect, if any, on the Procurement Contract Price and Procurement Contract Times; or, if negotiations are unsuccessful, by a determination under the terms of the Procurement Contract Documents governing adjustments, expressly including Paragraph 11.08 regarding change of Procurement Contract Price.

B. If Buyer has issued a Change Directive and Buyer or Seller believes that an adjustment in Procurement Contract Times or Procurement Contract Price is necessary, then such party shall submit a Claim seeking such an adjustment no later than 30 days after the completion of the Goods and Services set out in the Change Directive.

11.04 *Field Orders*

A. Engineer may authorize minor changes in the Goods and Services if the changes do not involve an adjustment in the Procurement Contract Price or the Procurement Contract Times and are compatible with the design concept as indicated by the Procurement Contract Documents. Such changes will be accomplished by a Field Order and will be binding on Buyer and also on Seller, which shall perform the Goods and Special Services involved promptly.

B. If Seller believes that a Field Order justifies an adjustment in the Procurement Contract Price or Procurement Contract Times, then before proceeding with the Goods and Special Services at issue, Seller shall submit a Claim as provided herein.

11.05 *Buyer-Authorized Changes in the Goods and Special Services*

A. Without invalidating the Procurement Contract and without notice to any surety, Buyer may, at any time or from time to time, order additions, deletions, or revisions in the Goods and Special Services. Changes involving the design (as set forth in the Procurement Drawings, Procurement Specifications, or otherwise) or other engineering or technical matters will be supported by Engineer's recommendation.

B. Such changes in the Goods and Special Services may be accomplished by a Change Order, if Buyer and Seller have agreed as to the effect, if any, of the changes on Procurement Contract Times or Procurement Contract Price; or by a Change Directive. Upon receipt of any such document, Seller shall promptly proceed with the Goods and Special Services involved; or, in the case of a deletion in the Goods and Special Services, promptly cease activities with respect to such deletion. Added or revised Goods and Special Services must be performed under the applicable conditions of the Procurement Contract Documents.

11.06 *Buyer's Contingency Allowance*

A. The Buyer's Contingency Allowance, if any such is set forth in the Procurement Agreement, is for the sole use of Buyer to cover unanticipated costs.

B. If Buyer exercises its unilateral right to use all or a portion of the Buyer's Contingency Allowance, Buyer will issue a written directive that documents the costs to which the allowance is applied, Seller's entitlement to compensation, and the consequent reduction in such allowance.

C. Prior to final payment, the Total Price, as set forth in the Procurement Agreement, will be duly adjusted to account for any unused portion of the Buyer's Contingency Allowance.

D. The Procurement Agreement, Article 5, addresses the impact on Buyer's Contingency Allowance of an assignment of the Procurement Contract.

11.07 *Unauthorized Changes in the Goods and Special Services*

A. Seller shall not be entitled to an increase in the Procurement Contract Price or an extension of the Procurement Contract Times with respect to any work performed that is not required by the Procurement Contract Documents, as amended, modified, or supplemented.

11.08 *Change of Procurement Contract Price*

A. The Procurement Contract Price may only be changed by a Change Order. Any Claim for an adjustment of Procurement Contract Price must comply with the provisions of Article 12.

B. An adjustment in the Procurement Contract Price will be determined as follows:

1. For changes in Unit Price Goods and Special Services, by application of the unit prices to the quantities of the items involved;

2. To the extent the cost of the change is not covered by unit prices, then by a mutually agreed lump sum; or

3. To the extent the cost of the change is not covered by unit prices and the parties do not reach mutual agreement to a lump sum, then on the basis of documented costs plus a Seller's fee for overhead and profit of 15%.

11.09 *Change of Procurement Contract Times*

A. The Procurement Contract Times may only be changed by a Change Order. Any Claim for an adjustment in the Procurement Contract Times must comply with the provisions of Article 12.

11.10 *Notification to Surety*

A. If the provisions of any bond require notice to be given to a surety of any change affecting the general scope of the Goods and Special Services or the provisions of the Procurement Contract (including, but not limited to, Procurement Contract Price or Procurement Contract Times), the giving of any such notice will be Seller's responsibility. The amount of each applicable bond will be adjusted to reflect the effect of any such change.

ARTICLE 12—CLAIMS, DISPUTES, AND DISPUTE RESOLUTION

12.01 *Claims*

A. The parties agree to endeavor to avoid or resolve Claims through direct, good faith discussions and negotiations whenever practicable. Such discussions and negotiations should at the outset address whether the parties mutually agree to suspend the Claims process, including the time periods established in this Paragraph 12.01; if so, a written record of such mutual agreement should be made and jointly executed.

B. Claimant shall deliver to Engineer and the other party to the Procurement Contract written notice of each Claim within 15 days after the occurrence of the event giving rise to the Claim.

C. Claimant shall deliver written supporting data to Engineer and the other party within 45 days after such occurrence unless Engineer allows an additional period of time.

D. Engineer will review each such Claim and render a decision in writing within 30 days after receipt of the last submittal of the claimant or the last submittal of the opposing party, if any.

E. If Engineer does not render a formal written decision on a Claim within the time stated in Paragraph 12.01.D., Engineer shall be deemed to have issued a decision denying the Claim in its entirety 31 days after receipt of the last submittal of the claimant or the last submittal of the opposing party, if any.

F. The rendering of a decision by Engineer pursuant to this Paragraph 12.01 with respect to any such Claim, dispute, or other matter (except any which have been waived by the making or acceptance of final payment) will be a condition precedent to any exercise by Buyer or Seller of such rights or remedies as either may otherwise have under the Procurement Contract Documents or by Laws or Regulations in respect of any such Claim, dispute, or other matter. If the exercise of such rights or remedies will imminently be time-barred, a party may take actions necessary to preserve such rights and remedies notwithstanding the lack of the condition precedent referred to in this paragraph.

G. If a submitted matter in question concerns terms and conditions of the Procurement Contract Documents that do not involve (1) the performance or acceptability of Goods and Special Services under the Procurement Contract Documents, (2) the design (as set forth in the Procurement Drawings, Procurement Specifications, Addenda, or otherwise), or (3) other engineering or technical matters, then Engineer will promptly give written notice to Buyer and Seller that Engineer is unable to provide a decision or interpretation. If Buyer and Seller are unable to agree on resolution of such a matter in question, either party may pursue resolution as provided in Paragraph 12.02.

H. Engineer's written decision on such Claim or a decision denying the Claim in its entirety that is deemed to have been issued pursuant to Paragraph 12.01, will be final and binding upon Buyer and Seller 30 days after it is issued unless within 30 days of issuance Buyer or Seller appeals Engineer's decision by initiating the mediation of such Claim in accordance with the dispute resolution procedures set forth in Paragraph 12.02.

I. If Article 12 has been amended to delete the mediation requirement, then Buyer or Seller may appeal Engineer's decision within 30 days of issuance by following the alternative dispute resolution process set forth in Article 12, as amended; or if no such alternative dispute resolution process has been set forth, Buyer or Seller may appeal Engineer's decision by 1) delivering to the other party within 30 days of the date of such decision a written notice of intent to submit the Claim to a court of competent jurisdiction, and 2) within 60 days after the date of such decision instituting a formal proceeding in a court of competent jurisdiction.

J. No Claim for an adjustment in Procurement Contract Price or Procurement Contract Times will be valid if not submitted in accordance with Article 12.

K. The effect on Claims of an assignment of the Procurement Contract by Buyer to a Contractor/Assignee is addressed in the Procurement Agreement, Article 5.

12.02 *Dispute Resolution Method*

A. Either Buyer or Seller may initiate the mediation of (1) any Claim decided in writing by Engineer under Paragraph 12.01 before such decision becomes final and binding, or (2) any other dispute between the parties, including but not limited to any dispute arising after final inspection of the Goods and Services. The mediation will be governed by the Construction Industry Mediation Rules of the American Arbitration Association in effect as of the Effective Date of the Procurement Contract. The request for mediation must be submitted in writing to the American Arbitration Association and the other party to the Procurement Contract. Timely submission of the request will stay Engineer's decision from becoming final and binding.

B. Mediation is a condition precedent to seeking final dispute resolution under Paragraph 12.01.C. Buyer and Seller shall participate in the mediation process in good faith.

The process must be concluded within 60 days of filing of the request. The date of termination of the mediation will be determined by application of the mediation rules referenced above.

C. If the mediation process does not result in resolution of the dispute, then Engineer's written Claim decision under Paragraph 12.01.D or a Claim denial pursuant to Paragraph 12.01.E becomes final and binding, or if applicable such other dispute is deemed resolved in favor of respondent, unless, within 30 days after termination of the mediation, Buyer or Seller:

1. elects in writing to invoke any final dispute resolution process provided for in the Supplementary Conditions, or

2. agrees with the other party to submit the Claim or dispute to another final dispute resolution process, or

3. if no final dispute resolution process has been provided for in the Supplementary Conditions, delivers to the other party written notice of the intent to submit the Claim or dispute to a court of competent jurisdiction, and within 60 days of the termination of the mediation institutes such formal proceeding.

ARTICLE 13—PAYMENT

13.01 *Applications for Progress Payments*

A. Seller shall submit to Buyer for Engineer's review Applications for Payment filled out and signed by Seller and accompanied by such supporting documentation as is required by the Procurement Contract Documents and also as Buyer or Engineer may reasonably require.

B. The timing and amounts of progress payments will be as stipulated in the Procurement Agreement.

C. Any Application for Payment that is based in whole or in part on the delivery of Goods must be accompanied by a bill of sale, invoice, or other documentation reasonably satisfactory to Buyer warranting that Buyer has rightfully received good title to the Goods from Seller and that, upon payment, the Goods will be free and clear of all liens. Such documentation will include releases and waivers from all parties with viable lien rights.

D. Buyer shall notify Seller promptly of any deficiency in the required documentation.

13.02 *Review of Applications for Progress Payments*

A. *Review of Applications*

1. Engineer will, within 10 days after receipt of each Application for Payment, including each resubmittal, either indicate in writing a recommendation of payment and present the Application to Buyer, or return the Application to Seller indicating in writing Engineer's reasons for refusing to recommend payment.

2. Engineer's recommendation of any payment requested in an Application for Payment will constitute a representation by Engineer to Buyer, based on Engineer's observations of Seller's progress, as an experienced and qualified design professional, and on Engineer's review of the Application for Payment and the accompanying data and schedules, that to the best of Engineer's knowledge, information and belief:

a. the Goods and Special Services or other obligations of Seller have progressed to the point indicated;

b. the quality of the Goods and Special Services or other obligations of Seller are generally in accordance with the Procurement Contract Documents; and

c. the conditions precedent to Seller being entitled to such payment appear to have been fulfilled in so far as it is Engineer's responsibility to observe the Seller's progress.

3. By recommending any such payment Engineer will not thereby be deemed to have represented that:

a. inspections made to check the quality or the quantity of the Goods and Special Services or other obligations of Seller have been exhaustive, extended to every aspect of the Goods and Special Services or other obligations of Seller in progress, or involved detailed inspections of the Goods and Special Services or other obligations of Seller beyond the responsibilities specifically assigned to Engineer in the Procurement Contract; or

b. there may not be other matters or issues between the parties that might entitle Seller to be paid additionally by Buyer, or entitle Buyer to withhold payment to Seller.

4. Neither Engineer's review of Seller's progress for the purposes of recommending payments nor Engineer's recommendation of any payment, including final payment, will impose responsibility on Engineer:

a. to supervise, direct, or control the Seller's performance or furnishing of Goods and Special Services or other obligations of Seller; or

b. for the means, methods, techniques, sequences, or procedures of construction, manufacturing, fabrication, installation, or shipping, or the safety precautions and programs incident thereto; or

c. for Seller's failure to comply with Laws and Regulations applicable to Seller's performance under the Procurement Contract; or

d. to make any examination to ascertain how or for what purposes Seller has used the money paid for the Procurement Contract Price; or

e. to determine that title to any of the Goods or component parts have passed to Buyer free and clear of any Liens.

5. Engineer may refuse to recommend the whole or any part of any payment if, in Engineer's opinion, it would be incorrect to make the representations to Buyer stated in Paragraph 13.02.A.2.

6. Engineer will recommend reductions in payment (set-offs) necessary in Engineer's opinion to protect Buyer from loss because:

a. the Goods and Services are non-conforming, requiring correction or replacement;

b. the Procurement Contract Price has been reduced by Change Orders;

c. Buyer has been required to correct non-conforming Goods and Special Services in accordance with Paragraph 9.03.C, or has accepted non-conforming Goods and Special Services pursuant to Paragraph 9.03.E; or

d. Engineer has actual knowledge of the occurrence of any of the events that would constitute a default by Seller and therefore justify termination for cause under the Procurement Contract Documents.

13.03 *Basis and Amount of Progress Payments*

A. The basis and amounts of the progress payments will be as provided in the Procurement Agreement, subject to the provisions of this Article 13 regarding reductions in payment.

13.04 *Suspension of or Reduction in Payment*

A. Buyer may temporarily cease making progress payments, or reduce the amount of a progress payment, even though recommended for payment by Engineer, under the following circumstances:

1. Buyer has reasonable grounds to conclude that Seller will not furnish the Goods or the Special Services in accordance with the Procurement Contract Documents, and

2. Buyer has requested in writing assurances from Seller that the Goods and Special Services will be delivered or furnished in accordance with the Procurement Contract Documents, and Seller has failed to provide adequate assurances within ten days of Buyer's written request.

3. In addition to any reductions in payment (set-offs) recommended by Engineer, Buyer is entitled to impose a set-off against payment based on any of the following:

a. claims have been made against Buyer based on Seller's conduct in the performance or furnishing of the Goods and Special Services, or has incurred costs, losses, or damages resulting from Seller's conduct in the performance or furnishing of the Goods and Special Services, including but not limited to claims, costs, losses, or damages from workplace injuries, adjacent property damage, non-compliance with Laws and Regulations, and patent infringement;

b. Seller has failed to take reasonable and customary measures to avoid damage, delay, disruption, and interference with other work at or adjacent to the Point of Destination or the worksite;

c. Seller has failed to provide and maintain required bonds or insurance;

d. Buyer has incurred extra charges or engineering costs related to Submittal reviews, evaluations of proposed substitutes, tests and inspections, or return visits to manufacturing or assembly facilities;

e. the Goods and Special Services are non-conforming, requiring correction or replacement;

f. Buyer has been required to correct non-conforming Goods and Special Services, in accordance with Paragraph 9.03.C, or has accepted non-conforming Goods and Special Services pursuant to Paragraph 9.03.E;

g. the Procurement Contract Price has been reduced by Change Orders;

h. an event that would constitute a default by Seller and therefore justify a termination for cause has occurred;

i. liquidated or other damages have accrued as a result of Seller's failure to achieve Milestones, Substantial Completion, or final completion of the Goods and Special Services; or

j. liens have been filed in connection with the Procurement Contract, except where Seller has delivered a specific bond satisfactory to Buyer to secure the satisfaction and discharge of such liens.

B. If Buyer refuses to make payment of the full amount recommended by Engineer, Buyer will provide Seller and Engineer immediate written notice stating the reason for such action and promptly pay Seller any amount remaining after deduction of the amount withheld. Buyer shall promptly pay Seller the amount withheld when Seller corrects the reason for such action to Buyer's satisfaction.

13.05 *Final Payment*

A. After Seller has corrected all non-conformities to the reasonable satisfaction of Buyer and Engineer and furnished all Special Services, Seller may submit its final Application for Payment following the procedures for progress payments.

B. The final Application for Payment will be accompanied by all documentation called for in the Procurement Contract Documents (including but not limited to all final operations and maintenance manuals, and any special warranties), a list of all unsettled Claims, and the written consent of surety to the making of final payment.

C. If, on the basis of final inspection and the review of the final Application for Payment and accompanying documentation, Engineer is reasonably satisfied that Seller has furnished the Goods and Special Services in accordance with the Procurement Contract Documents, and that Seller has fulfilled all other obligations under the Procurement Contract Documents, then Engineer will, within 10 days after receipt of the final Application for Payment, indicate in writing Engineer's recommendation of final payment subject to the provisions of Paragraph 13.02, and present the final Application for Payment to Buyer. Such recommendation will account for any set-offs against payment that are necessary in Engineer's opinion to protect Buyer from loss for the reasons stated in Paragraph 13.02.

D. If Engineer does not recommend final payment, Engineer will return the final Application for Payment to Seller, indicating the reasons for refusing to recommend final payment, in which case Seller shall make the necessary corrections and resubmit the final Application for Payment.

E. In support of its recommendation of final payment Engineer will also give written notice to Buyer and Seller that the Goods and Special Services are acceptable, subject to stated limitations in the notice and to the provisions of Paragraph 13.06.

F. If the final Application for Payment and accompanying documentation are appropriate as to form and substance, Buyer shall, within 30 days after receipt thereof, pay Seller the amount recommended by Engineer, less any sum Buyer is entitled to set off against Engineer's recommendation, pursuant to the provisions of Paragraph 13.04.

G. Buyer will not make final payment, or return or release included retainage (if any) at any time, unless Seller submits written consent of the surety to such payment, return, or release.

13.06 *Waiver of Claims*

A. By making final payment, Buyer waives its claim or right to liquidated damages or other damages for late completion by Seller, except as set forth in an outstanding Claim, appeal, set-off, or express reservation of rights by Buyer. Buyer reserves all other claims or rights after final payment.

B. The acceptance of final payment by Seller will constitute a waiver by Seller of all claims and rights against Buyer other than those pending matters that have been duly submitted or appealed under the provisions of Article 12.

ARTICLE 14—CANCELLATION, SUSPENSION, AND TERMINATION

14.01 *Cancellation*

A. Buyer has the right to cancel the Procurement Contract, without cause, at any time prior to delivery of the Goods by written notice. Cancellation pursuant to the terms of this paragraph will not constitute a breach of contract by Buyer. Upon cancellation:

1. Buyer shall pay Seller for the direct costs incurred in producing any Goods that Seller has specially manufactured for the Project, plus a fair and reasonable amount for overhead and profit.

2. For Goods that are not specially manufactured for the Project, Seller shall be entitled to a restocking charge of 10 percent of the unpaid Procurement Contract Price of such Goods.

14.02 *Suspension of Performance by Buyer*

A. Buyer has the right to suspend performance of the Procurement Contract for up to 90 days, without cause, by written notice. Upon suspension under this paragraph, Seller shall be entitled to an increase in the Procurement Contract Times and Procurement Contract Price caused by the suspension, provided that performance would not have been suspended or delayed for causes attributable to Seller.

14.03 *Suspension of Performance by Seller*

A. Seller may suspend the furnishing of the Goods and Special Services only under the following circumstance:

1. Seller has reasonable grounds to conclude that Buyer will not perform its future payment obligations under the Procurement Contract; and

2. Seller has requested in writing assurances from Buyer that future payments will be made in accordance with the Procurement Contract, and Buyer has failed to provide such assurances within ten days of Seller's written request.

14.04 *Breach and Termination*

A. *Buyer's Breach*

1. Seller shall have the right to terminate the Procurement Contract for cause by declaring a breach if Buyer fails to comply with any material provision of the Procurement Contract. Upon termination, Seller shall be entitled to all remedies provided by Laws and Regulations.

2. If Seller believes Buyer is in breach of its obligations under the Procurement Contract, Seller shall provide Buyer with reasonably prompt written notice setting forth in sufficient detail the reasons for declaring that it believes a breach has occurred. Buyer shall have 7 days from receipt of the written notice declaring the breach (or such longer period of time as Seller may grant in writing) within which to cure or to proceed diligently to cure such alleged breach.

B. *Seller's Breach*

1. Buyer may terminate Seller's right to perform the Procurement Contract for cause by declaring a breach should Seller fail to comply with any material provision of the Procurement Contract Documents. Upon termination, Buyer shall be entitled to all remedies provided by Laws and Regulations.

2. In the event Buyer believes Seller is in breach of its obligations under the Procurement Contract, Buyer shall provide Seller with reasonably prompt written notice setting forth in sufficient detail the reasons for declaring that it believes a breach has occurred. Seller shall have 7 days from receipt of the written notice declaring the breach (or such longer period of time as Buyer may grant in writing) within which to cure or to proceed diligently to cure such alleged breach.

3. If and to the extent that Seller has provided a performance bond under the provisions of Paragraph 5.01, the notice and cure procedures of that bond, if any, will supersede the notice and cure procedures of Paragraph 14.04.B.2.

ARTICLE 15—MISCELLANEOUS

15.01 *Giving Notice*

A. Whenever any provision of the Procurement Contract requires the giving of written notice to Buyer, Seller, or Engineer, it will be deemed to have been validly given if delivered:

1. in person, by a commercial courier service or otherwise, to the recipient's place of business;

2. by registered or certified mail, postage prepaid, to the recipient's place of business; or

3. by e-mail to the recipient, with the words "Formal Notice" or similar in the e-mail's subject line.

15.02 *Controlling Law*

A. This Procurement Contract is to be governed by the law of the state in which the Goods are to be installed.

B. In the case of any conflict between the express terms of this Procurement Contract and the Uniform Commercial Code, as adopted in the state whose law governs, it is the intent of the parties that the express terms of this Procurement Contract will apply.

15.03 *Computation of Time*

A. When any period of time is referred to in the Procurement Contract by number of days, it will be computed to exclude the first and include the last day of such period. If the last day of any such period falls on a Saturday or Sunday or on a day made a legal holiday by the law of the applicable jurisdiction, such day will be omitted from the computation.

15.04 *Cumulative Remedies*

A. The duties and obligations imposed by these General Conditions and the rights and remedies available hereunder to the parties hereto are in addition to, and are not to be construed in any way as a limitation of, any rights and remedies available to any or all of them which are otherwise imposed or available by Laws or Regulations, by special warranty or guarantee, or by other provisions of the Procurement Contract, and the provisions of this paragraph will be as effective as if repeated specifically in the Procurement Contract in connection with each particular duty, obligation, right, and remedy to which they apply.

15.05 *Survival of Obligations*

A. All representations, indemnifications, warranties, and guarantees made in, required by, or given in accordance with the Procurement Contract, as well as all continuing obligations indicated in the Procurement Contract, will survive final payment, completion, and acceptance of the Goods and Special Services or termination or completion of the Procurement Contract or of the services of Seller.

15.06 *Entire Agreement*

A. Buyer and Seller agree that this Procurement Contract is the complete and final agreement between them, and supersedes all prior negotiations, representations, or agreements, either written or oral. This Procurement Contract may not be altered, modified, or amended except in writing signed by an authorized representative of both parties.

15.07 *No Waiver*

A. A party's non-enforcement of any provision will not constitute a waiver of that provision, nor will it affect the enforceability of that provision or of the remainder of this Procurement Contract.

15.08 *Headings*

A. Article and paragraph headings are inserted for convenience only and do not constitute parts of these General Conditions.

15.09 *Successors and Assigns*

A. Buyer and Seller each binds itself, its partners, successors, assigns, and legal representatives to the other party hereto, its partners, successors, assigns, and legal representatives in respect to all covenants, agreements, and obligations contained in the Procurement Contract.

SUPPLEMENTARY CONDITIONS OF THE PROCUREMENT CONTRACT

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SUPPLEMENTARY CONDITIONS OF THE PROCUREMENT CONTRACT

These Supplementary Conditions amend or supplement EJCDC® P-700, Standard General Conditions of the Procurement Contract (2019). The General Conditions remain in full force and effect except as amended.

The terms used in these Supplementary Conditions have the meanings stated in the General Conditions. Additional terms used in these Supplementary Conditions have the meanings stated below, which are applicable to both the singular and plural thereof.

The address system used in these Supplementary Conditions is the same as the address system used in the General Conditions, with the prefix "SC" added—for example, “Paragraph SC-4.05.”

ARTICLE 1—DEFINITIONS AND TERMINOLOGY

No suggested Supplementary Conditions in this Article.

ARTICLE 2—PRELIMINARY MATTERS

2.01 *Copies of Documents*

SC-2.02 Amend the first sentence of Paragraph 2.02.A. to read as follows:

Buyer shall furnish to Seller **two (2)** printed copies of the Procurement Contract Documents (including one fully signed counterpart of the Procurement Agreement), and **one (1) copy** in electronic portable document format (PDF).

ARTICLE 3—PROCUREMENT CONTRACT DOCUMENTS

No suggested Supplementary Conditions in this Article.

ARTICLE 4—COMMENCEMENT AND PROGRESS OF WORK

No suggested Supplementary Conditions in this Article.

ARTICLE 5—BONDS AND INSURANCE

5.01 *Performance, Payment, and Other Bonds*

SC-5.01 Add the following paragraphs immediately after Paragraph 5.01.A:

1. *Required Performance Bond Form*: The performance bond that Seller furnishes will be in the form of EJCDC® P-610, Performance Bond (2010 or 2019 edition).
2. *Required Payment Bond Form*: The payment bond that Contractor furnishes will be in the form of EJCDC® P-615, Payment Bond (2010 or 2019 edition).

5.02 *Insurance*

SC-5.02 Add the following new paragraphs immediately after Paragraph 5.02.E:

F. Seller shall purchase and maintain such liability and other insurance as is appropriate for the furnishing of Goods and Special Services and as will provide protection from claims set forth

below which may arise out of or result from Seller's furnishing of the Goods or Special Services and Seller's other obligations under the Procurement Contract Documents, whether the furnishing of Goods and Special Services or other obligations are to be performed by Seller, any subcontractor or supplier, or by anyone directly or indirectly employed by any of them to furnish the Goods and Special Services, or by anyone for whose acts any of them may be liable:

1. claims under workers' compensation, disability benefits, and other similar employee benefit acts;
2. claims for damages because of bodily injury, occupational sickness or disease, or death of Seller's employees;
3. claims for damages because of bodily injury, sickness or disease, or death of any person other than Seller's employees;
4. claims for damages insured by reasonably available personal injury liability coverage which are sustained: (a) by any person as a result of an offense directly or indirectly related to the employment of such person by Seller, or (b) by any other person for any other reason;
5. claims for damages, other than to the Goods, because of injury to or destruction of tangible property wherever located, including loss of use resulting therefrom; and
6. claims for damages because of bodily injury or death of any person or property damage arising out of the ownership, maintenance or use of any motor vehicle.

G. The policies of insurance so required by this Paragraph 5.02 to be purchased and maintained must:

1. with respect to insurance required by Paragraphs SC-5.02.F.3 through SC-5.02.F.6 inclusive, include as additional insureds (subject to any customary exclusion in respect of professional liability) Buyer, Engineer, their consultants, and all of whom must be listed as additional insureds, and include coverage for the respective officers, directors, partners, employees, agents, and other consultants and subcontractors of each and any of all such additional insureds, and the insurance afforded to these additional insureds must provide primary coverage for all claims covered thereby;
2. include at least the specific coverages and be written for not less than the limits of liability provided below or required by Laws or Regulations, whichever is greater;
3. include completed operations insurance;
4. include contractual liability insurance covering Seller's indemnity obligations under Paragraph 7.07;
5. contain a provision or endorsement that the coverage afforded will not be canceled, or renewal refused, until at least 10 days prior written notice has been given to the purchasing policyholder. Within three days of receipt of any such written notice, the purchasing policyholder will provide a copy of the notice to the other party, each other insured, and Engineer;
6. remain in effect at least until final payment and at all times thereafter when Seller may be correcting, removing, or replacing non-conforming Goods in accordance with Paragraph 9.03 and 9.04; and

7. with respect to completed operations insurance, and any insurance coverage written on a claims-made basis, remain in effect for at least two years after final payment (and Seller shall furnish Buyer and each other additional insured identified in these Supplementary Conditions, to whom a certificate of insurance has been issued, evidence satisfactory to Buyer and any such additional insured of continuation of such insurance at final payment and one year thereafter).

H. The limits of liability for the insurance required by Paragraph SC-5.02.F must provide coverage for not less than the following amounts or greater where required by Laws and Regulations:

1. Workers' Compensation, and related coverages under Paragraphs SC-5.02.F.1 and F.2:

   a. The Seller shall procure and maintain, at their own expense, during the contract period, in accordance with the provisions of the laws of the state in which the work is performed, Workmen's Compensation Insurance, including occupational disease provisions, for all of his employees at the site of the project and in case any work is sublet, the Seller shall require such subcontractor similarly to provide Workmen's Compensation Insurance, including occupational disease provisions for all of the latter's employees unless such employees are covered by the protection afforded by the Seller. In case any class of employees engaged in hazardous work under this contract at the site of the project is not protected under Workmen's Compensation statute, the Seller shall provide, and shall cause each subcontractor to provide, adequate and suitable insurance for the protection of his employees not otherwise protected.

2. Seller's General Liability and Property Damage Insurance, including vehicle coverage issued to the Contractor and protecting him from all claims for personal injury, including death, and all claims for destruction of or damage to property, arising out of or in connection with any operations under the Contract Documents, whether such operations be by himself or by any subcontractor under him, or anyone directly or indirectly employed by the Contractor or by a subcontractor under him. The insurance shall be written with a limit of liability of not less than $2,000,000 for all damages arising out of bodily injury, including death, at any time resulting there from, sustained by any one person in any one accident; and a limit of liability of not less than $2,000,000 aggregate for any such damages sustained by two or more persons in any one accident. Insurance shall be written with a limit of liability of not less than $2,000,000 for all property damage sustained by any one person in any one accident; and a limit of liability of not less than $2,000,000 aggregate for any such damage sustained by two or more persons in any one accident.

3. Professional Liability (if the Special Services include professional services):

Seller's Professional Liability	**Policy limits of not less than**
Each Claim	$2,000,000
Annual Aggregate	$2,000,000

I. Seller shall deliver to Buyer, with copies to each additional insured identified in these Supplementary Conditions, certificates of insurance (and other evidence of insurance requested by Buyer or any other additional insured) which Seller is required to purchase and maintain.

ARTICLE 6—LICENSES AND FEES

6.01 Intellectual Property and License Fees

SC 6.01 Replace paragraph 6.01 in its entirety with the following:

A. Unless specifically stated elsewhere in the Contract Documents, Seller is not transferring any intellectual property rights, patent rights, or licenses for the Goods delivered. However, in the event the Seller is manufacturing to Buyer's design, Buyer retains all intellectual property rights in such design excluding Seller's proprietary intellectual property and any improvements to Seller's proprietary intellectual property which shall be and remain the sole and exclusive property of Seller.

B. Seller shall pay all license fees and royalties and assume all costs incident to the use or the furnishing of the Goods, unless specified otherwise by the Contract Documents. Seller grants to Buyer a non-exclusive, non-terminable, royalty free license to use the intellectual property embedded in Equipment delivered to and paid for by the Buyer, as well as any drawings, design or data delivered to and paid for by the Buyer, for the purposes of owning, financing, using, operating and maintaining the relevant Equipment at the Project site. Such license may only be assigned to a future owner of the Equipment or to an operations and maintenance subcontractor. Such license does not extend to the re-creation of the Equipment or the manufacture of spares or consumables by Buyer or third parties.

C. Any software Seller owns and provides pursuant to this Contract shall remain Seller's property. Seller provides to Buyer a limited, non-exclusive and terminable royalty free project-specific license to such software for the term of this Contract. Buyer agrees not to copy, sub-license, translate, transfer, reverse engineer, or decode the software. Unless otherwise expressly agreed by Seller, this license shall terminate and the software shall be returned to Seller upon termination of this Contract, or the material breach of the terms in this section.

D. Both parties agree to keep confidential the other party's proprietary non-public information, if any, which may be acquired in connection with this Contract. Buyer will not, without Seller's advance written consent, subject Equipment to testing, analysis, or any type of reverse engineering. Seller retains all intellectual property rights including copyright which it has in all drawings and data or other deliverables supplied or developed under this Contract. Buyer acknowledges that Seller is in the business of selling the Equipment subject to this Contract and agrees that it will not file patent applications on the Equipment, or processes and methods of using the Equipment, without Seller's express written permission. Buyer further agrees that in any event any such patents will not be asserted against Seller or its other Buyers based upon purchase and use of such Equipment.

ARTICLE 7—SELLER'S RESPONSIBILITIES

7.03 *Laws and Regulations*

7.04 *"Or Equals"*

7.05 *Taxes*

SC-7.05 Add a new paragraph immediately after Paragraph 7.05.A:

B. Buyer is exempt from payment of sales and compensating use taxes of the State of **New York** and of cities and counties thereof on all materials and equipment to be incorporated into the Project facilities.

1. Buyer will furnish the required certificates of tax exemption to Seller with respect to materials and equipment to be incorporated into the Project facilities.

2. Buyer's exemption does not apply to construction tools, machinery, equipment, or other property purchased by or leased by Seller, or to supplies or materials not incorporated into the Project facilities.

3. The Procurement Contract Price does not include the cost of sales or compensating use taxes to the extent such are exempted by this paragraph.

ARTICLE 8—SHIPPING AND DELIVERY

No suggested Supplementary Conditions in this Article.

ARTICLE 9—BUYER'S RIGHTS

9.01

SC 9.01 Add the following paragraph after 9.01.C.4:

A. Improper handling, storage, installation, or commissioning of the Equipment by Buyer or third parties, repairs or alterations made by Buyer without Seller's written consent, or influent water which does not comply with agreed parameters.

9.02 *Limitation of Seller's Liability*

SC-9.05 Add the following new paragraph after Paragraph 9.04:

9.05 *Limitation of Seller's Liability*

A. Buyer and Seller agree that the total liability of Seller to Buyer for claims, costs, losses, and damages arising from this Procurement Contract will be limited to the amount established in the Procurement Agreement as the Procurement Contract Price.

B. Upon assignment the terms of this Paragraph 9.05 will be binding upon both the assignor and assignee with respect to Seller's liability, The terms of this limitation do not apply to or limit any claim by Buyer against Seller based on any of the following: (a) contribution or indemnification with respect to third-party claims, losses, and damages; (b) costs, losses, or damages attributable to personal or bodily injury, sickness, disease, or death, or to injury to or destruction of the tangible property of others, (c) intentional or reckless wrongful conduct, or (d) rights conferred by any bond provided by Seller under this Contract.

9.06 Buyer's Responsibilities

SC 9.06 Add the following new paragraph after Paragraph 9.05:

A. Unless otherwise stipulated in the Contract, the unloading, handling, storage and installation of the Equipment shall be the responsibility of the Buyer. Seller will not control the actual operation of either Buyer's systems or the Equipment at the Site. Buyer shall also:

1. provide Seller with complete and accurate data concerning all relevant conditions at the Site, including but not limited to any existing Buyer facility, equipment or processes, influent water or other substances to be treated or measured with the Equipment;

2. operate and maintain its facility and all related systems in good operating condition and within the agreed parameters or, if no parameters have been agreed, within generally accepted industry practice;

3. operate and maintain the Equipment in accordance with Seller's operations and maintenance manuals or where such manuals are silent, in accordance with generally accepted industry practice.

If Buyer's fails to fulfill the foregoing obligations, Seller shall be relieved of any obligations with respect to warranties or any other commitments under the Contract, and Seller shall have no liability for any loss, damage or injury which Buyer may sustain as a result.

ARTICLE 10—ENGINEER'S STATUS

No suggested Supplementary Conditions in this Article.

ARTICLE 11—CHANGES

No suggested Supplementary Conditions in this Article.

ARTICLE 12—CLAIMS, DISPUTES, AND DISPUTE RESOLUTION

No suggested Supplementary Conditions for this Article.

ARTICLE 13—PAYMENT

No suggested Supplementary Conditions in this Article.

ARTICLE 14—CANCELLATION, SUSPENSION, AND TERMINATION

No suggested Supplementary Conditions in this Article.

ARTICLE 15—MISCELLANEOUS

TECHNICAL SPECIFICATIONS

SECTION 013300 – SUBMITTAL PROCEDURES

PART 1 – GENERAL

1.1 SUMMARY

A. This Section includes administrative and procedural requirements for submitting Design Submittals, Shop Drawings, Product Data, Samples, and other miscellaneous submittals.

1.2 DEFINITIONS

A. Action Submittals: Written and graphic information that requires Engineer's responsive action.

B. Informational Submittals: Written information that does not require Engineer's approval. Submittals may be rejected for not complying with requirements.

C. File Transfer Protocol (FTP): Communications protocol that enables transfer of files to and from another computer over a network and that serves as the basis for standard Internet protocols. An FTP site is a portion of a network located outside of network firewalls within which internal and external users are able to access files.

D. Portable Document Format (PDF): An open standard file format licensed by Adobe Systems used for representing documents in a device-independent and display resolution-independent fixed-layout document format.

1.3 SUBMITTAL ADMINISTRATIVE REQUIREMENTS:

A. Engineer's Digital Data Files: Electronic digital data files of the Contract Documents will be provided by Engineer upon request for Supplier's use in preparing submittals.

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. Submit all submittal items required for each Specification Section concurrently unless partial submittals for portions of the Work are indicated on approved submittal schedule.
   3. Submit action submittals and informational submittals required by the same Specification Section as separate packages under separate transmittals.
   4. 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.
      a. 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 15 days for initial review of each submittal. Allow additional time if coordination with subsequent submittals is required. Engineer will advise Supplier 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 15 days for review of each resubmittal.

D. Electronic Submittals: Identify and incorporate information in each electronic submittal file as follows:
1. Assemble complete submittal package into a single indexed file incorporating submittal requirements of a single Specification Section and transmittal form with links enabling navigation to each item.
2. Name file with submittal number or other unique identifier, including revision identifier.
a. File name shall use project identifier and Specification Section number followed by a decimal point and then a sequential number (e.g., LNHS-061000.01). Resubmittals shall include an alphabetic suffix after another decimal point (e.g., LNHS-061000.01.A).
3. Provide means for insertion to permanently record Supplier's review and approval markings and action taken by Engineer.
4. Transmittal Form for Electronic Submittals: Use electronic form acceptable to Owner**,** containing the following information:
a. Project name.
b. Date.
c. Name and address of Engineer.
d. Name of Supplier.
e. Name of firm or entity that prepared submittal.
f. Category and type of submittal.
g. Submittal purpose and description.
h. Specification Section number and title.
i. Specification paragraph number or drawing designation and generic name for each of multiple items.
j. Drawing number and detail references, as appropriate.
k. Location(s) where product is to be installed, as appropriate.
l. Related physical samples submitted directly.
m. Indication of full or partial submittal.
n. Transmittal number.
o. Submittal and transmittal distribution record.
p. Other necessary identification.
q. Remarks.
5. Metadata: Include the following information as keywords in the electronic submittal file metadata:
a. Project name.
b. Number and title of appropriate Specification Section.
c. Supplier name.
d. Product name.

E. Options: Identify options requiring selection by Engineer.

F. Submittals for Utilizing Web-Based Project Management Software: Prepare submittals as PDF files, or other format indicated by Project management software.

G. Deviations and Additional Information: On an attached separate sheet, prepared on Supplier's letterhead, record relevant information, requests for data, revisions other than those requested by Engineer on previous submittals, and deviations from requirements in the Contract Documents,

including minor variations and limitations. Include same identification information as related submittal.

H. 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.

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

PART 2 – PRODUCTS

2.1 SUBMITTAL PROCEDURES

A. General Submittal Procedure Requirements: Prepare and submit submittals required by individual Specification Sections. Types of submittals are indicated in individual Specification Sections.
   1. Post electronic submittals as PDF electronic files directly to Engineer's FTP site specifically established for Project.
      a. Engineer will return annotated file. Annotate and retain one copy of file as an electronic Project record document file.
   2. Submit electronic submittals via email as PDF electronic files.
      a. Engineer will return annotated file. Annotate and retain one copy of file as an electronic Project record document file.
   3. Action Submittals: Submit electronic submittals.
   4. Informational Submittals: Submit 2 paper copies of each submittal unless otherwise indicated. Engineer will not return copies.
   5. 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.

4. For equipment, include the following in addition to the above, as applicable:
   a. Wiring diagrams showing factory-installed wiring.
   b. Printed performance curves.
   c. Operational range diagrams.
   d. Clearances required to other construction, if not indicated on accompanying Shop Drawings.
5. Submit Product Data before or concurrent with Samples.
6. Submit Product Data in the following format:
   a. PDF electronic file.

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 8-1/2 by 11 inches (215 by 280 mm), but no larger than 22 by 34 inches (750 by 1067 mm).
3. Submit Shop Drawings in the following format:
   a. PDF electronic file.
4. BIM File Incorporation: Develop and incorporate Shop Drawing files into Building Information Model established for Project.
   a. Prepare Shop Drawings in the following format: Same digital data software program, version, and operating system as the original Drawings.

D. Samples: Submit Samples for review of kind, color, pattern, and texture for a check of these characteristics with other elements and for a comparison of these characteristics between submittal and actual component as delivered and installed.

1. Transmit Samples that contain multiple, related components such as accessories together in one submittal package.
2. Identification: Attach label on unexposed side of Samples that includes the following:
   a. Generic description of Sample.
   b. Product name and name of manufacturer.
   c. Sample source.
   d. Number and title of applicable Specification Section.
   e. Specification paragraph number and generic name of each item.
3. For projects where electronic submittals are required, provide corresponding electronic submittal of Sample transmittal, digital image file illustrating Sample characteristics, and identification information for record.

a. Samples that may be incorporated into the Work are indicated in individual Specification Sections. Such Samples must be in an undamaged condition at time of use.
b. Samples not incorporated into the Work, or otherwise designated as Owner's property, are the property of Supplier.

4. Samples for Initial Selection: Submit manufacturer's color charts consisting of units or sections of units showing the full range of colors, textures, and patterns available.
   a. Number of Samples: Submit 1 full set of available choices where color, pattern, texture, or similar characteristics are required to be selected from manufacturer's product line. Engineer will return submittal with options selected.

E. Product Schedule: As required in individual Specification Sections, prepare a written summary indicating types of products required for the Work and their intended location. Include the following information in tabular form:
1. Type of product. Include unique identifier for each product indicated in the Contract Documents or assigned by Supplier if none is indicated.
2. Manufacturer and product name, and model number if applicable.
3. Number and name of room or space.
4. Location within room or space.
5. Submit product schedule in the following format:
   a. PDF electronic file.

F. Test and Inspection Reports and Schedule of Tests and Inspections Submittals: Comply with requirements specified in Division 01 Section "Quality Requirements."

G. Maintenance Data: Comply with requirements specified in Division 01 Section "Operation and Maintenance Data."

H. 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.

I. Welding Certificates: Prepare written certification that welding procedures and personnel comply with requirements in the Contract Documents. Submit record of Welding Procedure Specification and Procedure Qualification Record on AWS forms. Include names of firms and personnel certified.

J. Installer Certificates: Submit written statements on manufacturer's letterhead certifying that Installer complies with requirements in the Contract Documents and, where required, is authorized by manufacturer for this specific Project.

K. Manufacturer Certificates: Submit written statements on manufacturer's letterhead certifying that manufacturer complies with requirements in the Contract Documents. Include evidence of manufacturing experience where required.

L. Product Certificates: Submit written statements on manufacturer's letterhead certifying that product complies with requirements in the Contract Documents.

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

N. 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.

O. Product Test Reports: Submit written reports indicating that current product produced by manufacturer complies with requirements in the Contract Documents. Base reports on evaluation of tests performed by manufacturer and witnessed by a qualified testing agency, or on comprehensive tests performed by a qualified testing agency.

P. Research Reports: Submit written evidence, from a model code organization acceptable to authorities having jurisdiction, that product complies with building code in effect for Project. Include the following information:

1. Name of evaluation organization.
2. Date of evaluation.
3. Time period when report is in effect.
4. Product and manufacturers' names.
5. Description of product.
6. Test procedures and results.
7. Limitations of use.

Q. Preconstruction Test Reports: Submit reports written by a qualified testing agency, on testing agency's standard form, indicating and interpreting results of tests performed before installation of product, for compliance with performance requirements in the Contract Documents.

R. Compatibility Test Reports: Submit reports written by a qualified testing agency, on testing agency's standard form, indicating and interpreting results of compatibility tests performed before installation of product. Include written recommendations for primers and substrate preparation needed for adhesion.

S. 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.

T. Design Data: Prepare and submit written and graphic information, including, but not limited to, performance and design criteria, list of applicable codes and regulations, and calculations. Include list of assumptions and other performance and design criteria and a summary of loads. Include load diagrams if applicable. Provide name and version of software, if any, used for calculations. Include page numbers.

2.2 DELEGATED-DESIGN SERVICES

A. Performance and Design Criteria: Where professional design services or certifications by a design professional are specifically required of Supplier by the Contract Documents, provide products and systems complying with specific performance and design criteria indicated.

1. If criteria indicated are not sufficient to perform services or certification required, submit a written request for additional information to Engineer.

B. Delegated-Design Services Certification: In addition to Shop Drawings, Product Data, and other required submittals, submit digitally signed PDF electronic file of certificate, signed and sealed by the responsible design professional, for each product and system specifically assigned to Supplier to be designed or certified by a design professional.

1. Indicate that products and systems comply with performance and design criteria in the Contract Documents. Include list of codes, loads, and other factors used in performing these services.

C. BIM File Incorporation: Engineer delegated-design drawing and data files into Building Information Model established for Project.

1. Prepare delegated-design drawings in the following format: Revit.

PART 3 – EXECUTION

3.1 SUPPLIER'S REVIEW

A. Review each submittal and check for compliance with the Contract Documents. Note corrections and field dimensions. Mark with approval stamp before submitting to Engineer.

B. 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 Supplier'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 Supplier's approval stamp and will return them without action.

B. Action Submittals: Engineer will review each submittal, make marks to indicate corrections or modifications required, and return it. Engineer will stamp each submittal with an action stamp and will mark stamp appropriately to indicate action taken, as follows:

1. Final Unrestricted Release: Where submittals are marked "No Exceptions Taken," that part of the Work covered by the submittal may proceed provided it complies with requirements of the Contract Documents; final acceptance will depend upon that compliance.
2. Final-But-Restricted Release: When submittals are marked "Make Corrections Noted," that part of the Work covered by the submittal may proceed provided it complies with notations or corrections on the submittal and requirements of the Contract Documents; final acceptance will depend on that compliance.
3. Returned for Resubmittal: When submittal is marked "Revise and Resubmit," "Rejected," or "Submit Specified Item," do not proceed with that part of the Work covered by the submittal, including purchasing, fabrication, delivery, or other activity. Revise or prepare a new submittal in accordance with the notations; resubmit without delay. Repeat if necessary to obtain a different action mark.
    a. Do not permit submittals marked "Revise and Resubmit," "Rejected," or "Submit Specified Item" to be used at the Project site, or elsewhere where Work is in progress.
4. Other Action: Where a submittal is primarily for information or record purposes, special processing or other activity, the submittal will be returned, marked "Action Not Required."

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

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

END OF SECTION

SECTION 014000 – QUALITY REQUIREMENTS

PART 1 – GENERAL

1.1 SUMMARY

A. This Section includes administrative and procedural requirements for quality assurance and quality control.

B. Testing and inspecting services are required to verify compliance with requirements specified or indicated. These services do not relieve Seller of responsibility for compliance with the Contract Document requirements.

1. Specific quality-control requirements for individual construction activities are specified in the Sections that specify those activities. Requirements in those Sections may also cover production of standard products.
2. Specified tests, inspections, and related actions do not limit Seller's quality-control procedures that facilitate compliance with the Contract Document requirements.
3. Requirements for Seller to provide quality-control services required by Engineer, Owner, or authorities having jurisdiction are not limited by provisions of this Section.

1.2 DEFINITIONS

A. Quality-Assurance Services: Activities, actions, and procedures performed before and during execution of the Work to guard against defects and deficiencies and ensure that proposed construction complies with requirements.

B. Quality-Control Services: Tests, inspections, procedures, and related actions during and after execution of the Work to evaluate that completed construction complies with requirements. Services do not include contract enforcement activities performed by Engineer.

C. Testing Agency: An entity engaged to perform specific tests, inspections, or both. Testing laboratory shall mean the same as testing agency.

1.3 DELEGATED DESIGN

A. Performance and Design Criteria: Where professional design services or certifications by a design professional are specifically required of Supplier by the Contract Documents, provide products and systems complying with specific performance and design criteria indicated.

1. If criteria indicated are not sufficient to perform services or certification required, submit a written request for additional information to Engineer.

1.4 SUBMITTALS

A. Qualification Data: For testing agencies specified in "Quality Assurance" Article to demonstrate their capabilities and experience. Include proof of qualifications in the form of a recent report on the inspection of the testing agency by a recognized authority.

B. Delegated-Design Submittal: In addition to Shop Drawings, Product Data, and other required submittals, submit a statement, signed and sealed by the responsible design professional, for each product and system specifically assigned to Supplier to be designed or certified by a design professional, indicating that the products and systems are in compliance with performance and design criteria indicated. Include list of codes, loads, and other factors used in performing these services.

C. Schedule of Tests and Inspections: Prepare in tabular form and include the following:
   1. Specification Section number and title.
   2. Description of test and inspection.
   3. Identification of applicable standards.
   4. Identification of test and inspection methods.
   5. Number of tests and inspections required.
   6. Time schedule or time span for tests and inspections.
   7. Entity responsible for performing tests and inspections.
   8. Requirements for obtaining samples.
   9. Unique characteristics of each quality-control service.

D. Reports: Prepare and submit certified written reports that include the following:
   1. Date of issue.
   2. Project title and number.
   3. Name, address, and telephone number of testing agency.
   4. Dates and locations of samples and tests or inspections.
   5. Names of individuals making tests and inspections.
   6. Description of the Work and test and inspection method.
   7. Identification of product and Specification Section.
   8. Complete test or inspection data.
   9. Test and inspection results and an interpretation of test results.
   10. Ambient conditions at time of sample taking and testing and inspecting.
   11. Comments or professional opinion on whether tested or inspected Work complies with the Contract Document requirements.
   12. Name and signature of laboratory inspector.
   13. Recommendations on retesting and reinspecting.

E. Permits, Licenses, and Certificates: For Owner's records, submit copies of permits, licenses, certifications, inspection reports, releases, jurisdictional settlements, notices, receipts for fee payments, judgments, correspondence, records, and similar documents, established for compliance with standards and regulations bearing on performance of the Work.

1.5 QUALITY ASSURANCE

A. Fabricator Qualifications: A firm experienced in producing products similar to those indicated for this Project and with a record of successful in-service performance, as well as sufficient production capacity to produce required units.

B. Factory-Authorized Service Representative Qualifications: An authorized representative of manufacturer who is trained and approved by manufacturer to inspect installation of manufacturer's products that are similar in material, design, and extent to those indicated for this Project.

C. Manufacturer Qualifications: A firm experienced in manufacturing products or systems similar to those indicated for this Project and with a record of successful in-service performance.

D. Professional Engineer Qualifications: A professional engineer who is legally qualified to practice in jurisdiction where Project is located and who is experienced in providing engineering services of the kind indicated. Engineering services are defined as those performed for installations of the system, assembly, or products that are similar to those indicated for this Project in material, design, and extent.

E. Specialists: Certain sections of the Specifications require that specific construction activities shall be performed by entities who are recognized experts in those operations. Specialists shall satisfy qualification requirements indicated and shall be engaged for the activities indicated.
   1. Requirement for specialists shall not supersede building codes and similar regulations governing the Work, nor interfere with local trade-union jurisdictional settlements and similar conventions.

F. Testing Agency Qualifications: An agency with the experience and capability to conduct testing and inspecting indicated, as documented by ASTM E548, and that specializes in types of tests and inspections to be performed. Each testing agency shall be authorized by the authorities having jurisdiction in the state in which the project is located.

G. Preconstruction Testing: Testing agency shall perform preconstruction testing for compliance with specified requirements for performance and test methods.
   1. Testing Agency Responsibilities: Submit a certified written report of each test, inspection, and similar quality-assurance service to Engineer with copy to Seller. Interpret tests and inspections and state in each report whether tested and inspected work complies with or deviates from the Contract Documents.

1.6 QUALITY CONTROL

A. Owner Responsibilities: Where quality-control services are indicated as Owner's responsibility, Owner will engage a qualified testing agency to perform these services.
   1. Owner will furnish Supplier with names, addresses, and telephone numbers of testing agencies engaged and a description of the types of testing and inspecting they are engaged to perform.
   2. Payment for these services shall be included in Bid Form.
   3. Costs for retesting and reinspecting construction that replaces or is necessitated by work that failed to comply with the Contract Documents will be charged to Supplier**,** and the Contract Sum will be adjusted by Change Order.

B. Supplier Responsibilities: Unless otherwise indicated, provide quality-control services specified and required by authorities having jurisdiction.
   1. Where services are indicated as Supplier's responsibility, engage a qualified testing agency to perform these quality-control services.
   2. Notify testing agencies at least 24 hours in advance of time when Work that requires testing or inspecting will be performed.
   3. Where quality-control services are indicated as Supplier's responsibility, submit a certified written report, in duplicate, of each quality-control service.
   4. Testing and inspecting requested by Supplier and not required by the Contract Documents are Supplier's responsibility.
   5. Submit additional copies of each written report directly to authorities having jurisdiction, when they so direct.

C. Special Tests and Inspections: Owner will engage a testing agency to conduct special tests and inspections required by authorities having jurisdiction as the responsibility of Owner.
   1. Testing agency will notify Engineer and Seller promptly of irregularities and deficiencies observed in the Work during performance of its services.
   2. Testing agency will submit a certified written report of each test, inspection, and similar quality-control service to Engineer with copy to Seller and to authorities having jurisdiction.
   3. Testing agency will submit a final report of special tests and inspections at Substantial Completion, which includes a list of unresolved deficiencies.

4. Testing agency will interpret tests and inspections and state in each report whether tested and inspected work complies with or deviates from the Contract Documents.
5. Testing agency will retest and reinspect corrected work.

D. Supplier's Field Services: Where indicated, engage a factory-authorized service representative to inspect field-assembled components and equipment installation, including service connections. Report results in writing.

E. Retesting/Reinspecting: Regardless of whether original tests or inspections were Supplier's responsibility, provide quality-control services, including retesting and reinspecting, for construction that revised or replaced Work that failed to comply with requirements established by the Contract Documents.

F. Testing Agency Responsibilities: Cooperate with Engineer and Supplier in performance of duties. Provide qualified personnel to perform required tests and inspections.
1. Notify Engineer and Supplier promptly of irregularities or deficiencies observed in the Work during performance of its services.
2. Interpret tests and inspections and state in each report whether tested and inspected work complies with or deviates from requirements.
3. Submit a certified written report, in duplicate, of each test, inspection, and similar quality-control service through Supplier.
4. Do not release, revoke, alter, or increase requirements of the Contract Documents or approve or accept any portion of the Work.
5. Do not perform any duties of Supplier.

G. Associated Services: Cooperate with agencies performing required tests, inspections, and similar quality-control services and provide reasonable auxiliary services as requested. Notify agency sufficiently in advance of operations to permit assignment of personnel. Provide the following:
1. Access to the Work.
2. Incidental labor and facilities necessary to facilitate tests and inspections.
3. Adequate quantities of representative samples of materials that require testing and inspecting. Assist agency in obtaining samples.
4. Facilities for storage and field-curing of test samples.
5. Delivery of samples to testing agencies.
6. Preliminary design mix proposed for use for material mixes that require control by testing agency.
7. Security and protection for samples and for testing and inspecting equipment at Project site.

H. Coordination: Coordinate sequence of activities to accommodate required quality-assurance and quality-control services with a minimum of delay and to avoid necessity of removing and replacing construction to accommodate testing and inspecting.
1. Schedule times for tests, inspections, obtaining samples, and similar activities.

I. Schedule of Tests and Inspections: Prepare a schedule of tests, inspections, and similar quality-control services required by the Contract Documents. Submit schedule within [30] days of date established for commencement of the Work (i.e., Notice to Proceed).
1. Distribution: Distribute schedule to Owner, Engineer, testing agencies, and each party involved in performance of portions of the Work where tests and inspections are required.

PART 2 – PRODUCTS (Not Used)

PART 3 – EXECUTION (Not used)

END OF SECTION

SECTION 016000 – PRODUCT REQUIREMENTS

PART 1 – GENERAL

1.1 SUMMARY

A. This Section includes the following administrative and procedural requirements: selection of products for use in Project; product delivery, storage, and handling; manufacturers' standard warranties on products; special warranties; product substitutions; and comparable products.

1.2 DEFINITIONS

A. Products: Items purchased for incorporating into the Work, whether purchased for Project or taken from previously purchased stock. The term "product" includes the terms "material," "equipment," "system," and terms of similar intent.
   1. Named Products: Items identified by manufacturer's product name, including make or model number or other designation, shown or listed in manufacturer's published product literature that is current as of date of the Contract Documents.
   2. New Products: Items that have not previously been incorporated into another project or facility. Products salvaged or recycled from other projects are not considered new products.
   3. Comparable Product: Product that is demonstrated and approved through submittal process, or where indicated as a product substitution, to have the indicated qualities related to type, function, dimension, in-service performance, physical properties, appearance, and other characteristics that equal or exceed those of specified product.

B. Substitutions: Changes in products, materials, equipment, and methods of construction from those required by the Contract Documents and proposed by Supplier.

C. Basis-of-Design Product Specification: Where a specific manufacturer's product is named or accompanied by the words "basis of design," including make or model number or other designation, to establish the significant qualities related to type, function, dimension, in-service performance, physical properties, appearance, and other characteristics for purposes of evaluating comparable products of other named manufacturers.

D. Supplier's Warranty: Preprinted written warranty published by individual manufacturer for a particular product and specifically endorsed by manufacturer to Owner.

E. Special Warranty: Written warranty required by or incorporated into the Contract Documents, either to extend time limit provided by Supplier's warranty or to provide more rights for Owner.

1.3 SUBMITTALS

A. Product List: Submit a list, in tabular from, showing specified products. Include generic names of products required. Include manufacturer's name and proprietary product names for each product.
   1. Coordinate product list with the Submittals Schedule.
   2. Form: Tabulate information for each product under the following column headings:
      a. Specification Section number and title.
      b. Generic name used in the Contract Documents.
      c. Proprietary name, model number, and similar designations.
      d. Manufacturer's name and address.
      e. Supplier's name and address.

f. Installer's name and address.
g. Projected delivery date or time span of delivery period.
h. Identification of items that require early submittal approval for scheduled delivery date.

B. Basis-of-Design Product Specification Submittal: Comply with requirements in Division 1 Section "Submittal Procedures." Show compliance with requirements.

C. Warranty and Bond Submittals: Submit written warranties to the Engineer prior to the date certified for Substantial Completion. If the Engineer's Certificate of Substantial Completion designates a commencement date for warranties other than the date of Substantial Completion for the Work, or a designated portion of the Work, submit written warranties upon request of the Engineer.

1.4 QUALITY ASSURANCE

A. Compatibility of Options: If Seller is given option of selecting between two or more products for use on Project, product selected shall be compatible with products previously selected, even if previously selected products were also options.

B. Source Limitations: To the fullest extent possible, provide products of the same kind, from a single source.
1. When specified products are available only from sources that do not or cannot produce a quantity adequate to complete project requirements in a timely manner, consult with the Engineer for a determination of the most important product qualities before proceeding. Qualities may include attributes relating to visual appearance, strength, durability, or compatibility. When a determination has been made, select products from sources that produce products that possess these qualities, to the fullest extent possible.

1.5 PRODUCT DELIVERY, STORAGE, AND HANDLING

A. Deliver, store, and handle products using means and methods that will prevent damage, deterioration, and loss, including theft. Comply with manufacturer's written instructions.
1. Schedule delivery to minimize long-term storage at Project site and to prevent overcrowding of construction spaces.
2. Coordinate delivery with installation time to ensure minimum holding time for items that are flammable, hazardous, easily damaged, or sensitive to deterioration, theft, and other losses.
3. Deliver products to Project site in an undamaged condition in manufacturer's original sealed container or other packaging system, complete with labels and instructions for handling, storing, unpacking, protecting, and installing.
4. Inspect products on delivery to ensure compliance with the Contract Documents and to ensure that products are undamaged and properly protected.
5. Store products to allow for inspection and measurement of quantity or counting of units.
6. Store materials in a manner that will not endanger Project structure.
7. Store products that are subject to damage by the elements, under cover in a weathertight enclosure above ground, with ventilation adequate to prevent condensation.
8. Comply with product manufacturer's written instructions for temperature, humidity, ventilation, and weather-protection requirements for storage.
9. Protect stored products from damage.

1.6 PRODUCT WARRANTIES

A. Warranties specified in other Sections shall be in addition to, and run concurrent with, other warranties required by the Contract Documents. Manufacturer's disclaimers and limitations on product warranties do not relieve Seller of obligations under requirements of the Contract Documents.

B. Special Warranties: Prepare a written document that contains appropriate terms and identification, ready for execution. Submit a draft for approval before final execution.
   1. Manufacturer's Standard Form: Modified to include Project-specific information and properly executed.

C. Warranty Requirements: Related Damages and Losses: When correcting warranted Work that has failed, remove and replace other Work that has been damaged as a result of such failure or that must be removed and replaced to provide access for correction of warranted Work.
   1. Reinstatement of Warranty: When Work covered by a warranty has failed and been corrected by replacement or rebuilding, reinstate the warranty by written endorsement. The reinstated warranty shall be equal to the original warranty with an equitable adjustment for depreciation.
   2. Replacement Cost: Upon determination that Work covered by a warranty has failed, replace or rebuild the Work to an acceptable condition complying with requirements of Contract Documents. The Seller is responsible for the cost of replacing or rebuilding defective Work regardless of whether the Owner has benefited from use of the Work through a portion of its anticipated useful service life.
   3. Owner's Recourse: Written warranties made to the Owner are in addition to implied warranties, and shall not limit the duties, obligations, rights and remedies otherwise available under the law, nor shall warranty periods be interpreted as limitations on time in which the Owner can enforce such other duties, obligations, rights, or remedies.
      a. Rejection of Warranties: The Owner reserves the right to reject warranties and to limit selections to products with warranties not in conflict with requirements of the Contract Documents.
   4. The Owner reserves the right to refuse to accept Work for the Project where a special warranty, certification, or similar commitment is required on such Work or part of the Work, until evidence is presented that entities required to countersign such commitments are willing to do so.

PART 2 – PRODUCTS

2.1 PRODUCT OPTIONS

A. General Product Requirements: Provide products that comply with the Contract Documents, that are undamaged, and unless otherwise indicated, that are new at time of installation.
   1. Provide products complete with accessories, trim, finish, fasteners, and other items needed for a complete installation and indicated use and effect.
   2. Standard Products: If available, and unless custom products or nonstandard options are specified, provide standard products of types that have been produced and used successfully in similar situations on other projects.
   3. Owner reserves the right to limit selection to products with warranties not in conflict with requirements of the Contract Documents.
   4. Where products are accompanied by the term "as selected," Engineer will make selection.
   5. Where products are accompanied by the term "match sample," sample to be matched is Engineer's.

6. Descriptive, performance, and reference standard requirements in the Specifications establish "salient characteristics" of products.
7. Or Equal: Where products are specified by name and accompanied by the term "or equal" or "or approved equal" or "or approved," comply with provisions in "Comparable Products" Article to obtain approval for use of an unnamed product.

B. Product Selection Procedures: Procedures for product selection include the following:
1. Product: Where Specification paragraphs or subparagraphs titled "Product" name a single product and manufacturer, provide the product named.
   a. Substitutions may be considered unless otherwise indicated.
2. Manufacturer/Source: Where Specification paragraphs or subparagraphs titled "Manufacturer" or "Source" name single manufacturers or sources, provide a product by the manufacturer or from the source named that complies with requirements.
   a. Substitutions may be considered, unless otherwise indicated.
3. Products: Where Specification paragraphs or subparagraphs titled "Products" introduce a list of names of both products and manufacturers, provide one of the products listed that complies with requirements.
   a. Substitutions may be considered, unless otherwise indicated.
4. Manufacturers: Where Specification paragraphs or subparagraphs titled "Manufacturers" introduce a list of manufacturers' names, provide a product by one of the manufacturers listed that complies with requirements.
   a. Substitutions may be considered, unless otherwise indicated
5. Available Products: Where Specification paragraphs or subparagraphs titled "Available Products" introduce a list of names of both products and manufacturers, provide one of the products listed or another product that complies with requirements. Comply with provisions in "Comparable Products" Article to obtain approval for use of an unnamed product.
6. Available Manufacturers: Where Specification paragraphs or subparagraphs titled "Available Manufacturers" introduce a list of manufacturers' names, provide a product by one of the manufacturers listed or another manufacturer that complies with requirements. Comply with provisions in "Comparable Products" Article to obtain approval for use of an unnamed product.
7. Product Options: Where Specification paragraphs titled "Product Options" indicate that size, profiles, and dimensional requirements on Drawings are based on a specific product or system, provide either the specific product or system indicated or a comparable product or system by another manufacturer. Comply with provisions in "Product Substitutions" Article.
8. Basis-of-Design Products: Where Specification paragraphs or subparagraphs titled "Basis-of-Design Product[**s**]" are included and also introduce or refer to a list of manufacturers' names, provide either the specified product or a comparable product by one of the other named manufacturers. Drawings and Specifications indicate sizes, profiles, dimensions, and other characteristics that are based on the product named. Comply with provisions in "Comparable Products" Article to obtain approval for use of an unnamed product.
   a. Substitutions will not be considered.

2.2 PRODUCT SUBSTITUTIONS

A. Timing: Engineer will consider requests for substitution if received within 7 days after the Notice to Proceed. Requests received after that time may be considered or rejected at discretion of Engineer.

B. Conditions: Engineer will consider Seller's request for substitution when the following conditions are satisfied. If the following conditions are not satisfied, Engineer will return requests without action, except to record noncompliance with these requirements:

1. Requested substitution offers Owner a substantial advantage in cost, time, energy conservation, or other considerations, after deducting additional responsibilities Owner must assume. Owner's additional responsibilities may include compensation to Engineer for redesign and evaluation services, increased cost of other construction by Owner, and similar considerations.
2. Requested substitution does not require extensive revisions to the Contract Documents.
3. Requested substitution is consistent with the Contract Documents and will produce indicated results.
4. Substitution request is fully documented and properly submitted.
5. Requested substitution will not adversely affect Construction Schedule.
6. Requested substitution has received necessary approvals of authorities having jurisdiction.
7. Requested substitution is compatible with other portions of the Work.
8. Requested substitution has been coordinated with other portions of the Work.
9. Requested substitution provides specified warranty.
10. The specified product or method of construction cannot be provided in a manner that is compatible with other materials, and where the Seller certifies that the substitution will overcome the incompatibility.
11. The specified product or method of construction cannot be coordinated with other materials, and where the Seller certifies that the proposed substitution can be coordinated.
12. The specified product or method of construction cannot provide a warranty required by the Contract Documents and where the Seller certifies that the proposed substitution provide the required warranty.

2.3 COMPARABLE PRODUCTS

A. Where products or manufacturers are specified by name, submit the following, in addition to other required submittals, to obtain approval of an unnamed product:

1. Evidence that the proposed product does not require extensive revisions to the Contract Documents that it is consistent with the Contract Documents and will produce the indicated results, and that it is compatible with other portions of the Work.
2. Detailed comparison of significant qualities of proposed product with those named in the Specifications. Significant qualities include attributes such as performance, weight, size, durability, visual effect, and specific features and requirements indicated.
3. Evidence that proposed product provides specified warranty.
4. List of similar installations for completed projects with project names and addresses and names and addresses of Engineers and owners, if requested.
5. Samples, if requested.

PART 3 – EXECUTION (Not Used)

END OF SECTION

SECTION 017516 – SYSTEM START-UP

PART 1 – GENERAL

1.1 SUMMARY

A. Section Includes:
1. Procedures and actions, required of the Supplier, which are necessary to achieve and demonstrate Substantial Completion.
2. Requirements for Substantial Completion Submittals.

1.2 QUALITY ASSURANCE

A. Qualifications:
1. Operations and maintenance specialist for liaison:
a. Licensed in any state at a level equivalent to a Class 4A operator's license issued by the State of New York.
b. Alternate to licensed operator:
1) Registered Professional Engineer in New York with Master of Sciences degree in sanitary or environmental engineering.

1.3 DEFINITIONS

A. Project Classified System (PCS): A defined part of the Project, consisting of an arrangement of items, such as equipment, structures, components, piping, wiring, materials, or incidentals, so related or connected to form an identifiable, unified, functional, operational, safe, and independent system.

B. Pre-Demonstration Period: The period of time, of unspecified duration after initial construction and installation activities during which Construction Contractor, with assistance from Supplier's representatives, performs in the following sequence:
1. Finishing type construction work to ensure the Project or each PCS has reached a state of Substantial Completion.
2. Equipment start-up.
3. Personnel training.

C. Demonstration Period: A period of time, of specified duration, following the Pre-Demonstration Period, during which the Construction Contractor and Supplier initiates process flow through the Membrane System and starts up and operates the System, without exceeding specified downtime limitations, to prove the functional integrity of the mechanical and electrical equipment and components and the control interfaces of the respective equipment and components comprising the System as evidence of Substantial Completion.

D. Substantial Completion: See Division 0, General Conditions.

1.4 SUBMITTALS

A. Submit in the chronological order listed below prior to the completion of the Pre-Demonstration Period.
1. Master operation and maintenance training schedule:
a. Submit 30 days (minimum) prior to first training session for Owner's personnel.

b. Schedule to include:
    1) Target date and time for Owner witnessing of each system initial start-up.
    2) Target date and time for Operation and Maintenance training for each system, both field and classroom.
    3) Target date for initiation of Demonstration Period.
c. Submit for review and approval by Owner.
d. Include holidays observed by Owner.
e. Attend a schedule planning and coordination meeting 90 calendar days prior to first anticipated training session.
    1) Provide a status report and schedule-to-complete for requirements prerequisite to manufacturer's training.
    2) Identify initial target dates for individual manufacturer's training sessions.
f. Owner reserves the right to insist on a minimum days' notice of rescheduled training session not conducted on master schedule target date for any reason.
g. Schedule to be resubmitted until approved.

2. Substantial Completion Submittal:
    a. Approved Operation and Maintenance manuals received by Engineer minimum 14 days prior to scheduled training.
    b. Written request for Owner to witness each system pre-demonstration start up. Request to be received by Owner minimum one week before scheduled training of Owner's personnel on that system.
    c. Equipment installation and pre-demonstration start up certifications.
    d. Letter verifying completion of all pre-demonstration start up activities including receipt of all specified items from manufacturers or suppliers as final item prior to initiation of Demonstration Period.

1.5 SEQUENCING AND SCHEDULING

A. Project Classified Systems (PSCs) established as follows:
    1. PCS #1: Membrane Filtration System as described in Section 455000 Membrane Filtration System and all incidentals necessary for complete system.

1.6 COST OF START-UP

A. Supplier to assist with System Start-Up, and include all costs associated with such assistance in their bid price.

PART 2 – PRODUCTS – NOT APPLICABLE

PART 3 – EXECUTION

3.1 GENERAL

A. Facility Start up Divided into Two Periods:
   1. Pre-Demonstration Period including:
      a. Completion of construction work to bring Project to a state of Substantial Completion, including resolution of punch list items crucial to process and safe operations.
      b. Start-Up of Equipment.
      c. Training of Personnel.
      d. Completion of the filing of all required submittals.
      e. Filing of Construction Contractor's Notice of Substantial Completion and Request for Inspection.
   2. Demonstration Period including:
      a. Demonstration of functional integrity of facility or PCS.

3.2 PRE-DEMONSTRATION PERIOD

A. Completion of Construction Work:
   1. Construction Contractor to complete the work to bring the System to a state substantial completion.

B. Equipment Start up:
   1. Requirements for individual items of equipment are included in Divisions 2 through 48 of these Specifications.
   2. Prepare the equipment so it will operate properly and safely and be ready to demonstrate functional integrity during the Demonstration Period.
   3. Perform equipment start-up to extent possible without introducing product flow.
   4. Test tanks, pumping and similar equipment requiring a fluid, using chlorinated treated plant-effluent water.
   5. Dispose of water used for equipment start-up.
   6. Procedures include but are not necessarily limited to the following:
      a. Test or check and correct deficiencies of:
         1) Power, control, and monitoring circuits for continuity prior to connection to power source.
         2) Voltage of all circuits.
         3) Phase sequence.
         4) Cleanliness of connecting piping systems.
         5) Alignment of connected machinery.
         6) Vacuum and pressure of all closed systems.
         7) Lubrication.
         8) Valve orientation and position status for manual operating mode.
         9) Tankage for integrity using clean water.
         10) Pumping equipment using clean water.
         11) Instrumentation and control signal generation, transmission, reception, and response.
         12) Tagging and identification systems.
         13) All equipment: Proper connections, alignment, calibration, and adjustment.
      b. Calibrate all safety equipment.

c. Manually rotate or move moving parts to assure freedom of movement.
d. "Bump" start electric motors to verify proper rotation.
e. Perform other tests, checks, and activities required to make the equipment ready for Demonstration Period.
f. Documentation:
1) Prepare a log showing each equipment item subject to this paragraph and listing what is to be accomplished during Equipment Start up. Provide a place for the Supplier to record date and person accomplishing required work. Submit completed document before requesting inspection for Substantial Completion certification.

7. Obtain certifications, without restrictions or qualifications, and deliver to Engineer:
a. Manufacturer's equipment installation check letters.
b. Instrumentation Supplier's Instrumentation Installation and Calibration Certificate.

C. Personnel Training:
1. See individual equipment specification sections.
2. Conduct all personnel training after completion of Equipment Start up for the equipment for which training is being conducted.
a. Personnel training on individual equipment or systems will not be considered completed unless:
1) All pretraining deliverables are received and approved before commencement of training on the individual equipment or system.
2) No system malfunctions occur during training.
3) All provisions of field and classroom training specifications are met.
b. Training not in compliance with the above will be performed again in its entirety by the manufacturer at no additional cost to Owner.
3. Field and classroom training requirements:
a. Hold classroom training on site.
b. Notify each manufacturer specified for on-site training that the Owner reserves the right to video record any or all training sessions. Organize each training session in a format compatible with video recording.
c. Training instructor: Factory trained and familiar with giving both classroom and "hands-on" instructions.
d. Training instructors: Be at classes on time. Session beginning and ending times to be coordinated with the Owner and indicated on the master schedule. Normal time lengths for class periods can vary, but brief rest breaks should be scheduled and taken.
e. Organize training sessions into maintenance verses operation topics and identify on schedule.
f. Plan for minimum class attendance of 6 people at each session and provide sufficient classroom materials, samples, and handouts for those in attendance.
g. Instructors to have a typed agenda and well prepared instructional material. The use of visual aids, e.g., films, pictures, and slides is recommended for use during the classroom training programs. Deliver agendas to the Engineer a minimum of 7 days prior to the classroom training. Provide equipment required for presentation of films, slides, and other visual aids.
h. In the on-site training sessions, cover the information required in the Operation and Maintenance manuals submitted according to Section 013300 “Submittal Procedures” and the following areas as applicable to PCSs.
1) Operation of equipment and Process Adjustments.

2) Operational safety.
3) Capabilities.
4) Optimizing equipment performance.
5) Emergency situation response.
6) Troubleshooting of equipment.
7) Takedown procedures (disassembly and assembly).
8) Maintenance and repair of equipment.
9) Lubrication of equipment.
10) Preventive maintenance procedures.
11) Adjustments to equipment.
12) Inventory of spare parts.

i. At a minimum, address above paragraphs 1 through 6 in the operation session and paragraphs 7 through 12 in the maintenance sessions.

j. Maintain a log of classroom training provided including: Instructors, topics, dates, time, and attendance.

D. Complete the filing of all required submittals:
1. Shop drawings.
2. Operation and Maintenance Manuals.
3. Training material.

3.3 DEMONSTRATION PERIOD

A. General:
1. Demonstrate the functional integrity of the mechanical, electrical, and control interfaces of the respective equipment and components comprising the System as evidence of Substantial Completion.
2. Duration of Demonstration Period: 120 consecutive hours.
3. If, during the Demonstration Period, the aggregate amount of time used for repair, alteration, or unscheduled adjustments to any equipment or systems that renders the affected equipment or system inoperative exceed 10 percent of the Demonstration Period, the demonstration of functional integrity will be deemed to have failed. In the event of failure, a new Demonstration Period will recommence after correction of the cause of failure. The new Demonstration Period shall have the same requirements and duration as the Demonstration Period previously conducted.
4. Conduct the demonstration of functional integrity under full operational conditions.
5. Owner will provide operational personnel to provide process decisions affecting plant performance. Owner's assistance will be available only for process decisions. Supplier will perform all other functions including but not limited to equipment operation and maintenance until successful completion of the Demonstration Period.
6. Owner reserves the right to simulate operational variables, peak flow events, equipment failures, routine maintenance scenarios, etc., to verify the functional integrity of automatic and manual backup systems and alternate operating modes.
7. Demonstration by PCS:
a. Supplier may demonstrate by PCS, either individually or a combination of two or more PCS.

8. Time of beginning and ending any Demonstration Period shall be agreed upon by Construction Contractor, Supplier, Owner, and Engineer in advance of initiating Demonstration Period.
9. Throughout the Demonstration Period, provide knowledgeable personnel to answer Owner's questions, provide final field instruction on select systems and to respond to any system problems or failures which may occur.
10. Provide all labor, supervision, utilities, chemicals, maintenance, equipment, vehicles, or any other item necessary to operate and demonstrate all systems being demonstrated.

END OF SECTION

SECTION 017823 – OPERATION AND MAINTENANCE DATA

PART 1 – GENERAL

1.1 SUMMARY

A. This Section includes administrative and procedural requirements for preparing operation and maintenance manuals, including the following:
   1. Operation and maintenance documentation directory.
   2. Emergency manuals.
   3. Operation manuals for systems, subsystems, and equipment.
   4. Maintenance manuals for the care and maintenance of systems and equipment.

1.2 DEFINITIONS

A. System: An organized collection of parts, equipment, or subsystems united by regular interaction.

B. Subsystem: A portion of a system with characteristics similar to a system.

1.3 SUBMITTALS

A. Initial Submittal: Submit electronic PDF draft copies of each manual at least 15 days before requesting inspection for Substantial Completion. Include a complete operation and maintenance directory. Engineer will mark whether general scope and content of manual are acceptable.

B. Final Submittal: Submit electronic PDF of each manual in final form at least 15 days before final inspection. Engineer will return copy with electronic comments within 15 days after final inspection.
   1. Correct or modify each manual to comply with Engineer's comments. Submit three (3) hard copies and one (1) searchable PDF of each corrected manual within 15 days of receipt of Engineer's comments.

1.4 COORDINATION

A. Where operation and maintenance documentation include information on installations by more than one factory-authorized service representative, assemble and coordinate information furnished by representatives and prepare manuals.

PART 2 – PRODUCTS

2.1 OPERATION AND MAINTENANCE DOCUMENTATION DIRECTORY

A. Organization: Include a section in the directory for each of the following:
   1. List of documents.
   2. List of systems.
   3. List of equipment.
   4. Table of contents.

B. List of Systems and Subsystems: List systems alphabetically. Include references to operation and maintenance manuals that contain information about each system.

C. List of Equipment: List equipment for each system, organized alphabetically by system. For pieces of equipment not part of system, list alphabetically in separate list.

D. Tables of Contents: Include a table of contents for each emergency, operation, and maintenance manual.

E. Identification: In the documentation directory and in each operation and maintenance manual, identify each system, subsystem, and piece of equipment with the same designation used in the Contract Documents.

2.2 MANUALS, GENERAL

A. Organization: Unless otherwise indicated, organize each manual into a separate section for each system and subsystem, and a separate section for each piece of equipment not part of a system. Each manual shall contain the following materials, in the order listed:
   1. Title page.
   2. Table of contents.
   3. Manual contents.

B. Title Page: Enclose title page in transparent plastic sleeve. Include the following information:
   1. Subject matter included in manual.
   2. Name and address of Project.
   3. Name and address of Owner.
   4. Date of submittal.
   5. Name, address, and telephone number of Seller.
   6. Name and address of Engineer.
   7. Cross-reference to related systems in other operation and maintenance manuals.

C. Table of Contents: List each product included in manual, identified by product name, indexed to the content of the volume, and cross-referenced to Specification Section number in Project Manual.
   1. If operation or maintenance documentation requires more than one volume to accommodate data, include comprehensive table of contents for all volumes in each volume of the set.

D. Manual Contents: Organize into sets of manageable size. Arrange contents alphabetically by system, subsystem, and equipment. If possible, assemble instructions for subsystems, equipment, and components of one system into a single binder.
   1. Binders: Heavy-duty, 3-ring, vinyl-covered, loose-leaf binders, in thickness necessary to accommodate contents, sized to hold 8-1/2-by-11-inch (115-by-280-mm) paper; with clear plastic sleeve on spine to hold label describing contents and with pockets inside covers to hold folded oversize sheets.
      a. If two or more binders are necessary to accommodate data of a system, organize data in each binder into groupings by subsystem and related components. Cross-reference other binders if necessary to provide essential information for proper operation or maintenance of equipment or system.
      b. Identify each binder on front and spine, with printed title "OPERATION AND MAINTENANCE MANUAL," Project title or name, and subject matter of contents. Indicate volume number for multiple-volume sets.
   2. Dividers: Heavy-paper dividers with plastic-covered tabs for each section. Mark each tab to indicate contents. Include typed list of products and major components of equipment included

in the section on each divider, cross-referenced to Specification Section number and title of Project Manual.

3. Protective Plastic Sleeves: Transparent plastic sleeves designed to enclose diagnostic software diskettes for computerized electronic equipment.
4. Supplementary Text: Prepared on 8-1/2-by-11-inch (115-by-280-mm), 20-lb/sq. ft. (75-g/sq. m) white bond paper.
5. Drawings: Attach reinforced, punched binder tabs on drawings and bind with text.
    a. If oversize drawings are necessary, fold drawings to same size as text pages and use as foldouts.
    b. If drawings are too large to be used as foldouts, fold and place drawings in labeled envelopes and bind envelopes in rear of manual. At appropriate locations in manual, insert typewritten pages indicating drawing titles, descriptions of contents, and drawing locations.

2.3 EMERGENCY MANUALS

A. Content: Organize manual into a separate section for each of the following:
1. Type of emergency.
2. Emergency instructions.
3. Emergency procedures.

B. Type of Emergency: Where applicable for each type of emergency indicated below, include instructions and procedures for each system, subsystem, piece of equipment, and component:
1. Power failure.
2. System, subsystem, or equipment failure.
3. Fire.
4. Flood.

C. Emergency Instructions: Describe and explain warnings, trouble indications, error messages, and similar codes and signals. Include responsibilities of Owner's operating personnel for notification of Installer, supplier, and manufacturer to maintain warranties.

D. Emergency Procedures: Include the following, as applicable:
1. Instructions on stopping.
2. Shutdown instructions for each type of emergency.
3. Operating instructions for conditions outside normal operating limits.
4. Required sequences for electric or electronic systems.
5. Special operating instructions and procedures.

2.4 OPERATION MANUALS

A. Content: In addition to requirements in this Section, include operation data required in individual Specification Sections and the following information:
1. System, subsystem, and equipment descriptions.
2. Performance and design criteria.
3. Operating standards and troubleshooting.
4. Operating procedures.
5. Operating logs.
6. Wiring diagrams.
7. Control diagrams.
8. Piped system diagrams.
9. Precautions against improper use.

10. License requirements including inspection and renewal dates.

B. Descriptions: Include the following:
   1. Product name and model number.
   2. Manufacturer's name.
   3. Equipment identification with serial number of each component.
   4. Equipment function.
   5. Operating characteristics.
   6. Limiting conditions.
   7. Performance curves.
   8. Engineering data and tests.
   9. Complete nomenclature and number of replacement parts.

C. Operating Procedures: Include the following, as applicable:
   1. Startup procedures.
   2. Equipment or system break-in procedures.
   3. Routine and normal operating instructions.
   4. Regulation and control procedures.
   5. Instructions on stopping.
   6. Normal shutdown instructions.
   7. Seasonal and weekend operating instructions.
   8. Required sequences for electric or electronic systems.
   9. Special operating instructions and procedures.

D. Systems and Equipment Controls: Describe the sequence of operation, diagram controls as installed, and screen shots of HMI with descriptions of operation.

E. Piped Systems: Diagram piping as installed and identify color-coding where required for identification.

2.5 PRODUCT MAINTENANCE MANUAL

A. Content: Organize manual into a separate section for each product, material, and finish. Include source information, product information, maintenance procedures, repair materials and sources, and warranties and bonds, as described below.

B. Source Information: List each product included in manual, identified by product name and arranged to match manual's table of contents. For each product, list name, address, and telephone number of Installer or supplier and maintenance service agent, and cross-reference Specification Section number and title in Project Manual.

C. Product Information: Include the following, as applicable:
   1. Product name and model number.
   2. Manufacturer's name.
   3. Color, pattern, and texture.
   4. Material and chemical composition.
   5. Reordering information for specially manufactured products.

D. Maintenance Procedures: Include manufacturer's written recommendations and the following:
   1. Inspection procedures.

2. Types of cleaning agents to be used and methods of cleaning.
3. List of cleaning agents and methods of cleaning detrimental to product.
4. Schedule for routine cleaning and maintenance.
5. Repair instructions.

E. Repair Materials and Sources: Include lists of materials and local sources of materials and related services.

F. Warranties and Bonds: Include copies of warranties and bonds and lists of circumstances and conditions that would affect validity of warranties or bonds.
1. Include procedures to follow and required notifications for warranty claims.

2.6 SYSTEMS AND EQUIPMENT MAINTENANCE MANUAL

A. Content: For each system, subsystem, and piece of equipment not part of a system, include source information, manufacturers' maintenance documentation, maintenance procedures, maintenance and service schedules, spare parts list and source information, maintenance service contracts, and warranty and bond information, as described below.

B. Source Information: List each system, subsystem, and piece of equipment included in the manual, identified by product name and arranged to match manual's table of contents. For each product, list name, address, and telephone number of Installer or supplier and maintenance service agent, and cross-reference Specification Section number and title in Project Manual.

C. Manufacturers' Maintenance Documentation: Manufacturers' maintenance documentation including the following information for each component part or piece of equipment:
1. Standard printed maintenance instructions and bulletins.
2. Drawings, diagrams, and instructions required for maintenance, including disassembly and component removal, replacement, and assembly.
3. Identification and nomenclature of parts and components.
4. List of items recommended to be stocked as spare parts.

D. Maintenance Procedures: Include the following information and items that detail essential maintenance procedures:
1. Test and inspection instructions.
2. Troubleshooting guide.
3. Precautions against improper maintenance.
4. Disassembly; component removal, repair, and replacement; and reassembly instructions.
5. Aligning, adjusting, and checking instructions.
6. Demonstration and training videotape, if available.

E. Maintenance and Service Schedules: Include service and lubrication requirements, list of required lubricants for equipment, and separate schedules for preventive and routine maintenance and service with standard time allotment.
1. Scheduled Maintenance and Service: Tabulate actions for daily, weekly, monthly, quarterly, semiannual, and annual frequencies.
2. Maintenance and Service Record: Include manufacturers' forms for recording maintenance.

F. Spare Parts List and Source Information: Include lists of replacement and repair parts, with parts identified and cross-referenced to manufacturers' maintenance documentation and local sources of maintenance materials and related services.

G. Maintenance Service Contracts: Include copies of maintenance agreements with name and telephone number of service agent.

H. Warranties and Bonds: Include copies of warranties and bonds and lists of circumstances and conditions that would affect validity of warranties or bonds.
   1. Include procedures to follow and required notifications for warranty claims.

PART 3 – EXECUTION

3.1 MANUAL PREPARATION

A. Operation and Maintenance Documentation Directory: Prepare a separate manual that provides an organized reference to emergency, operation, and maintenance manuals.

B. Emergency Manual: Assemble a complete set of emergency information indicating procedures for use by emergency personnel and by Owner's operating personnel for types of emergencies indicated.

C. Product Maintenance Manual: Assemble a complete set of maintenance data indicating care and maintenance of each product, material, and finish incorporated into the Work.

D. Operation and Maintenance Manuals: Assemble a complete set of operation and maintenance data indicating operation and maintenance of each system, subsystem, and piece of equipment not part of a system.
   1. Engage a factory-authorized service representative to assemble and prepare information for each system, subsystem, and piece of equipment not part of a system.
   2. Prepare a separate manual for each system and subsystem, in the form of an instructional manual for use by Owner's operating personnel.

E. Manufacturers' Data: Where manuals contain manufacturers' standard printed data, include only sheets pertinent to product or component installed. Mark each sheet to identify each product or component incorporated into the Work. If data include more than one item in a tabular format, identify each item using appropriate references from the Contract Documents. Identify data applicable to the Work and delete references to information not applicable.
   1. Prepare supplementary text if manufacturers' standard printed data are not available and where the information is necessary for proper operation and maintenance of equipment or systems.

F. Drawings: Prepare drawings supplementing manufacturers' printed data to illustrate the relationship of component parts of equipment and systems and to illustrate control sequence and flow diagrams. Coordinate these drawings with information contained in Record Drawings to ensure correct illustration of completed installation.
   1. Do not use original Project Record Documents as part of operation and maintenance manuals.
   2. Comply with requirements of newly prepared Record Drawings in Division 1 Section "Project Record Documents."

G. Comply with Specification 455000 Membrane Filtration System, Table 3-1 Project Schedule for submitting operation and maintenance documentation.

END OF SECTION

SECTION 017900 – DEMONSTRATION AND TRAINING

PART 1 – GENERAL

1.1 SUMMARY

A. This Section includes administrative and procedural requirements for instructing Owner's personnel, including the following:
   1. Demonstration of operation of systems, subsystems, and equipment.
   2. Training in operation and maintenance of systems, subsystems, and equipment.

1.2 SUBMITTALS

A. Instruction Program: Submit five copies of outline of instructional program for demonstration and training, including a schedule of proposed dates, times, length of instruction time, and instructors' names for each training module. Include learning objective and outline for each training module.
   1. At completion of training, submit 2 complete training manual**s** for Owner's use.

B. Qualification Data: For firms and persons specified in "Quality Assurance" Article to demonstrate their capabilities and experience. Include lists of completed projects with project names and addresses, names and addresses of ENGINEERs and owners, and other information specified.

C. Attendance Record: For each training module, submit list of participants and length of instruction time.

D. Evaluations: For each participant and for each training module, submit results and documentation of performance-based test.

1.3 QUALITY ASSURANCE

A. Facilitator Qualifications: A firm or individual experienced in training or educating maintenance personnel in a training program similar in content and extent to that indicated for this Project, and whose work has resulted in training or education with a record of successful learning performance.

B. Instructor Qualifications: A factory-authorized service representative, complying with requirements in Division 1 Section "Quality Requirements," experienced in operation and maintenance procedures and training.

1.4 COORDINATION

A. Coordinate instruction schedule with Owner's operations. Adjust schedule as required to minimize disrupting Owner's operations.

B. Coordinate instructors, including providing notification of dates, times, length of instruction time, and course content.

C. Coordinate content of training modules with content of approved emergency, operation, and maintenance manuals. Do not submit instruction program until operation and maintenance data has been reviewed and approved by Engineer.

PART 2 – PRODUCTS

2.1 INSTRUCTION PROGRAM

A. Program Structure: Develop an instruction program that includes individual training modules for each system and equipment not part of a system, as required by individual Specification Sections, and as follows:
   1. All systems, equipment, and process included in Section 455000 Membrane Filtration System.
   2. Laboratory equipment

B. Training Modules: Develop a learning objective and teaching outline for each module. Include a description of specific skills and knowledge that participant is expected to master. For each module, include instruction for the following:
   1. Basis of System Design, Operational Requirements, and Criteria: Include the following:
      a. System, subsystem, and equipment descriptions.
      b. Performance and design criteria.
      c. Operating standards.
      d. Regulatory requirements.
      e. Equipment function.
      f. Operating characteristics.
      g. Limiting conditions.
      h. Performance curves.
   2. Documentation: Review the following items in detail:
      a. Emergency manuals.
      b. Operations manuals.
      c. Maintenance manuals.
      d. Project Record Documents.
      e. Identification systems.
      f. Warranties and bonds.
      g. Maintenance service agreements and similar continuing commitments.
   3. Emergencies: Include the following, as applicable:
      a. Instructions on meaning of warnings, trouble indications, and error messages.
      b. Instructions on stopping.
      c. Shutdown instructions for each type of emergency.
      d. Operating instructions for conditions outside of normal operating limits.
      e. Sequences for electric or electronic systems.
      f. Special operating instructions and procedures.
   4. Operations: Include the following, as applicable:
      a. Startup procedures.
      b. Equipment or system break-in procedures.
      c. Routine and normal operating instructions.
      d. Regulation and control procedures.
      e. Control sequences.
      f. Safety procedures.
      g. Instructions on stopping.
      h. Normal shutdown instructions.
      i. Operating procedures for emergencies.

j. Operating procedures for system, subsystem, or equipment failure.
k. Seasonal and weekend operating instructions.
l. Required sequences for electric or electronic systems.
m. Special operating instructions and procedures.

5. Adjustments: Include the following:
   a. Alignments.
   b. Checking adjustments.
   c. Noise and vibration adjustments.
   d. Economy and efficiency adjustments.
6. Troubleshooting: Include the following:
   a. Diagnostic instructions.
   b. Test and inspection procedures.
7. Maintenance: Include the following:
   a. Inspection procedures.
   b. Types of cleaning agents to be used and methods of cleaning.
   c. List of cleaning agents and methods of cleaning detrimental to product.
   d. Procedures for routine cleaning
   e. Procedures for preventive maintenance.
   f. Procedures for routine maintenance.
   g. Instruction on use of special tools.
8. Repairs: Include the following:
   a. Diagnosis instructions.
   b. Repair instructions.
   c. Disassembly; component removal, repair, and replacement; and reassembly instructions.
   d. Instructions for identifying parts and components.
   e. Review of spare parts needed for operation and maintenance.

PART 3 – EXECUTION

3.1 PREPARATION

A. Assemble educational materials necessary for instruction, including documentation and training module. Assemble training modules into a combined training manual.

B. Set up instructional equipment at instruction location.

3.2 INSTRUCTION

A. Facilitator: Engage a qualified facilitator to prepare instruction program and training modules, to coordinate instructors, and to coordinate between Construction Contractor and Owner for number of participants, instruction times, and location.

B. Engage qualified instructors to instruct Owner's personnel to adjust, operate, and maintain systems, subsystems, and equipment not part of a system.

C. Scheduling: Provide instruction at mutually agreed on times. For equipment that requires seasonal operation, provide similar instruction at start of each season.

1. Schedule training with Owner through Construction Contractor with at least 7 days' advance notice.

D. Evaluation: At conclusion of each training module, assess and document each participant's mastery of module by use of demonstration performance-based test.

E. Cleanup: Collect used and leftover educational materials and remove from Project Site. Remove instructional equipment. Restore systems and equipment to condition existing before initial training use.

END OF SECTION

SECTION 019113 – GENERAL COMMISSIONING REQUIREMENTS

PART 1 – GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and other Division 01 Specification Sections, apply to this Section.

1.2 SUPPLIER SUMMARY

A. Section includes general requirements that apply to implementation of commissioning without regard to specific systems, assemblies, or components.

1.3 SUPPLIER DEFINITIONS

A. BoD: Basis of Design. A document that records concepts, calculations, decisions, and product selections used to meet the OPR and to satisfy applicable regulatory requirements, standards, and guidelines. The document includes both narrative descriptions and lists of individual items that support the design process.

B. Commissioning Plan: A document that outlines the organization, schedule, allocation of resources, and documentation requirements of the commissioning process.

C. CxA: Commissioning Authority (Supplier).

D. OPR: Owner's Project Requirements. A document that details the functional requirements of a project and the expectations of how it will be used and operated. These include Project goals, measurable performance criteria, cost considerations, benchmarks, success criteria, and supporting information.

E. Systems, Subsystems, Equipment, and Components: Where these terms are used together or separately, they shall mean "as-built" systems, subsystems, equipment, and components.

1.4 COMMISSIONING TEAM

A. Members Appointed by Supplier(s): Individuals, each having the authority to act on behalf of the entity he or she represents, explicitly organized to implement the commissioning process through coordinated action. The commissioning team shall consist of, but not be limited to, representatives of the Supplier, including specialists deemed appropriate by the Supplier.

B. Members Appointed by Owner:
   1. Supplier: The designated person, company, or entity that plans, schedules, and coordinates the commissioning team to implement the commissioning process. Representatives of the facility user and operation and maintenance personnel.
   2. engineering design professionals.

1.5 OWNER'S RESPONSIBILITIES

A. Provide the OPR documentation to the Supplier and Construction Contractor for information and use.

B. Assign operation and maintenance personnel and schedule them to participate in commissioning team activities.

1.6 SUPPLIER'S RESPONSIBILITIES

A. Supplier shall assign representatives with expertise and authority to act on its behalf and shall schedule them to participate in and perform commissioning process activities including, but not limited to, the following:
   1. Evaluate performance deficiencies identified in test reports and, in collaboration with entity responsible for system and equipment installation, recommend corrective action.
   2. Cooperate with the Engineer for resolution of issues recorded in the Issues Log.
   3. Attend commissioning team meetings held on an as needed basis.
   4. Integrate and coordinate commissioning process activities with construction schedule.
   5. Review and accept construction checklists provided by the Supplier.
   6. Complete paper construction checklists as Work is completed and provide to the Engineer on a daily basis.
   7. Review and accept commissioning process test procedures provided by the Supplier.
   8. Complete commissioning process test procedures.

1.7 SUPPLIER'S RESPONSIBILITIES

A. Organize and lead the commissioning team.

B. Provide commissioning plan.

C. Convene commissioning team meetings.

D. Provide Project-specific construction checklists and commissioning process test procedures.

E. Verify the execution of commissioning process activities using random sampling. The sampling rate may vary from 1 to 100 percent. Verification will include, but is not limited to, equipment submittals, construction checklists, training, operating and maintenance data, tests, and test reports to verify compliance with the OPR. When a random sample does not meet the requirement, the Supplier will report the failure in the Issues Log.

F. Prepare and maintain the Issues Log.

G. Prepare and maintain completed construction checklist log.

H. Witness systems, assemblies, equipment, and component startup.

I. Compile test data, inspection reports, and certificates; include them in the systems manual and commissioning process report.

PART 2 – PRODUCTS (NOT USED)

PART 3 – EXECUTION (NOT USED)

END OF SECTION

SECTION 455000 – MEMBRANE FILTRATION SYSTEM

PART 1 – GENERAL

1.1 SUMMARY

A. Scope:
1. The Supplier shall provide labor, materials, equipment, incidentals design documentation installation instructions and commissioning services as shown, specified and required to furnish the membrane bioreactor equipment complete, for installation by the Contractor.

B. Membrane filtration system includes membrane bioreactor equipment and services, including:
1. Membrane units, including membranes, cassettes, cassette mounting brackets and/or support beams, and piping associated with the membrane unit.
2. Complete Basis of Design documentation; P&IDS, Process Calculations including interconnecting piping and layout.
3. Headers, piping and fittings, associated with each membrane unit or cassette including permeate collection and air distribution headers within the interior limits of the membrane tank. Each membrane unit shall include cassette air and permeate isolation valves and integral air scour distribution aerators. .
4. MBR permeate pumps, recirculation system, sludge wasting, and backwashing system, as applicable.
5. RAS or Feed Forward pumping units and equipment
6. WAS Pumps (if applicable)
7. Air scour blowers for membrane aeration, cleaning and mixing.
8. Compressed air systems including compressors and dryers for instrument air and pneumatic valve operations.
9. VFDs for equipment furnished.
10. Process blowers for aeration tanks
11. Fine bubble diffuser systems for mixing and biological treatment in aerobic biological reactors.
12. Submersible mixers designed for complete-mix in anoxic biological reactors.
13. Chemical systems for Clean-In-Place (CIP) or other membrane cleaning requirements.
14. Process chemical dosing systems for biological operation excluding bulk storage. Process chemical systems are to include NaOH.
15. Membrane system and bioreactor process instrumentation and control including MBR HMI programming and alarms.
16. System start-up, commissioning, performance testing, and training operation and maintenance manuals.
17. Compliance with American Iron and Steel (AIS) requirements.

C. Supplier shall provide equipment in accordance with specifications herein and the following Sections:
1. Section 013300: Submittal Procedure
2. Section 014000: Quality Requirements
3. Section 016000: Product Requirements
4. Section 017516: System Startup
5. Section 017823: Operation and Maintenance Data
6. Section 017900: Demonstration and Training
7. Section 019113: General Commissioning Requirements

D. Excluded equipment: Equipment and services for the following are specifically excluded. Engineer will coordinate with Supplier during design phase to ensure the overall facility design,

procurement drawings and specification meets Supplier's requirements and will result in successful implementation of the Supplier's membrane system.

1. Screening and grit removal
2. Disinfection
3. Bulk chemical storage
4. MCC's
5. Plant SCADA
6. All interconnecting piping and pipe supports between manufacturer supplied equipment unless specified otherwise.

1.2 SUPPLIERS AND MANUFACTURERS

A. The Supplier shall take full responsibility of membrane system and bioreactor equipment design, equipment manufacture, integration and supply, process control, startup, commissioning, performance testing, training and warranty support and shall be fully responsible for all elements of this specification, including membrane warranty requirements.

B. Membrane System Suppliers shall be as follows:
   1. SUEZ WTS - Polyvinylidene Fluoride (PVDF) Hollow Fiber Membrane System
   2. Kubota Chlorinated Polyethylene Flat Sheet Membrane System
   3. Or Approved Equal

1.3 REFERENCE STANDARDS

A. Comply with the latest edition of the following standards, as applicable:
   1. American Water Works Association (AWWA), ANSI/AWWA B130-18, Membrane Bioreactor Systems
   2. US Environmental Protection Agency. 2005. Membrane Filtration Guidance Manual. EPA 815-R-06-009. Washington, DC. Office of Water.
   3. American National Standards Institute, (ANSI)/National Sanitation Foundation, (NSF):
   4. American Society for Testing and Materials (ASTM):
      a. ASTM D 6161, Standard Terminology Used for Microfiltration, Ultrafiltration, Nanofiltration and Reverse Osmosis Membrane Processes.
      b. ASTM A312, Pipe Specifications.
      c. ASTM A240, Stainless Steel Material Specifications.
   5. American Welding Society (AWS):
      a. AWS B2.1, Specification for Resistance Welding for Aerospace Applications.
      b. AWS D1.3, Structural Welding Code Sheet Steel.
      c. AWS D1.6, Structural Welding Code Stainless Steel.
      d. AWS D9.1, Sheet Metal Welding Code.
      e. AWS D17.2, Specification for Resistance Welding – Spot Welding by Machine.
      f. AWS G2.1, Guide for the Joining of Wrought Nickel-based Alloys.
   6. American National Standard Institute (ANSI).
   7. ISO 9000 Certification – Quality Management.
   8. NFPA 820
   9. Ten State Standards
   10. NEIWPCC TR-16
   11. WEF MOP 36

1.4 DEFINITIONS

A. Contractor is defined as the entity responsible for construction and installation of the MBR system, including but not limited to site preparation, process and membrane tank construction, and mechanical and electrical installation.

B. MBR Process:
   1. Bioreactor Train: A secondary treatment train consisting of anoxic and aerobic zones. Each treatment train operates in parallel with other trains, processing a portion of the total plant flow.
   2. Membrane Train: A membrane basin comprising modules and cassettes for liquid-solid separation and connected to a dedicated permeate pump. Each membrane train operates in parallel with other membrane trains and processes a portion of the mixed liquor from the bioreactor trains.
   3. Dry Weather Flow (DWF): Daily flow occurring during dry weather conditions.
   4. Average Daily Flow (ADF): The average flow rate occurring over a 24-hour period based on annual flow rate data'
   5. Maximum Monthly Average Flow (MMAF): The average flow rate occurring over a 24-hour period during the 30-day period with the highest flow based on annual flow rate data.
   6. Maximum Day Flow (MDF): The maximum flow rate averaged over a 24-hour period occurring within annual flow rate data.

C. Peak Hourly flow (PHF): The maximum flow rate sustained over a 2-hour period based on annual flow rate data.

D. Backwash: Synonymous with backpulse and backflushing. Backwashing is any instance where membrane filtered water is charged to the membranes in the reverse direction of permeate flow. A Backwash is performed in-situ and in mixed liquor or activated sludge.

E. Maintenance Clean: Maintenance cleaning is an instance where chemical solution is charged to the membranes in the reverse direction of permeate flow either continuously or in series of pulses combined with soak times. Maintenance cleaning durations are typically less than 0.5hr. Maintenance cleaning is performed in-situ and in mixed liquor or activated sludge.

F. Flux: Permeate flow rate per unit membrane surface area, also filtration rate through a given area of membrane, measured as gallons per square foot of membrane area per day (gallons per day per square foot, gfd)
   1. Instantaneous flux: The flux at any given time, calculated by dividing the measured permeate flow rate by the working membrane area.
   2. Maximum instantaneous flux: The maximum flux at any time or temperature during operation.
   3. Net flux: The average flux over a given period including non-production periods of no flow. Net flux is calculated by dividing actual production capacity over a specified time interval by the working membrane area.

G. In-situ: in the membrane tank and submerged in mixed liquor.

H. Maintenance Clean (MC): Synonymous with chemically enhanced backwash. A Maintenance Cleaning is performed in-situ and in mixed liquor or activated sludge. The procedure is conducted by charging cleaning chemicals to membranes in the reverse direction of permeate flow with a soak time lasting less than 0.5hr.

I. Membrane Element: An element (synonymous with module) is the smallest membrane subunit, which is comprised of either a plate, sheet, or hollow fiber module. The elements are combined to make a membrane cassette.

J. Membrane Cassette: A cassette is comprised of multiple membrane elements or modules that are combined and assembled with an air scour assembly in a single support structure that is connected to a common permeate manifold and capable of being withdrawn from the bioreactor tank for cleaning, inspection, or other purposes.

K. Membrane Unit: A membrane unit is synonymous with cassette.

L. MLSS: Mixed Liquor Suspended Solids, reported as mg/L.

M. Permeability or specific flux: Net flux divided by the transmembrane pressure (gfd/psi).

N. Permeate: Wastewater filtered through the membrane.

O. Recovery Clean: Synonymous with intensive cleaning and CIP. A Recovery Cleaning is performed in-situ with chemicals. A Recovery Clean is any single MBR basin clean that lasts for more than 6.0 hours. The procedure is conducted by charging cleaning chemicals to membranes in either direction with variable soak times.

P. Relaxation: A temporary suspension of membrane filtration with continued air scouring for the purpose of maintaining treatment capacity or reducing cleaning requirements.

Q. Retentate: Water and other materials retained in the MBR tank by the membrane.

R. Seed: Active biomass, described in terms of volatile fraction and TSS concentrations, that is required to charge the MBR

S. Transmembrane pressure (TMP): The pressure drop across a membrane during operation, normalized for the static water head relative to the pressure sensor, measured in units of pounds per square inch, psi.

1.5 QUALITY ASSURANCE

A. Membrane System Supplier Qualifications:

1. Membrane System Supplier shall maintain a quality control program in the design, supply, installation, and servicing of Membrane Systems in accordance with ISO 9001:2015. Provide letter or certificate describing quality control program.
2. Aggregate bonding capability: Supplier shall demonstrate $10 million bonding capability. Provide bonding capacity letter from Supplier's bonding agent.
3. The Supplier shall have a minimum 15-year history of furnishing system design; design and construction administration assistance; equipment manufacture, integration and supply; process controls; project management; startup and commissioning; and warranty support with at least ten (10) full scope MBR wastewater installations in the United States with an ADF capacity larger than 1 MGD. The supplier shall have at least three (3) operational installations in New York State, or if not, at least three (3) operational installations within states participating in Ten States Standards. Provide installation list with facility name, location, startup date, and capacity.
4. The Supplier shall submit a reference list for five (5) installations in operation, treating municipal wastewater in the United States with an ADF capacity larger than or equal to 5 MGD. In order for the installation to qualify, the membrane system procurement contract must have included, at a minimum, membranes, membrane equipment, membrane cleaning equipment, MBR HMI programming, startup, commissioning, training, and warranty.
    a. Valid references for fulfilling this requirement must use a membrane product that is reasonably identical to the product being offered where performance and operations can be reasonably compared to this project. For clarity, reasonably identical shall mean having the same membrane chemistry, pore size, porosity, rejection characteristics, and potting material, but shall allow for minor manufacturing, material and dimensional differences associated with product development and optimization.
    b. Reference information shall include Owner contact information including email, phone number, and address; facility name and location; start-up date; design hydraulic capacity including average and maximum day flowrates; current average and maximum day flowrates applied to the membranes; membrane model number, membrane surface area, design net flux rate; and warranty terms and duration. Note, this information will be used to verify design Flux Rates as provided in Evaluated Bid tables.
5. The Supplier shall have North America based employees qualified in MBR design, field services, operator training, and system support. Contracted services do not qualify. Provide organization chart with personnel names, title, years of experience with MBR systems, and current role or position. Supplier shall have process control and systems integration services within the organization that includes design and programming, of control panels.

6. Supplier shall provide a list of field service technicians and locations that could be used for routine support of the system.

1.6 SUBMITTALS

A. Evaluated Bid Submittals: All items under this heading shall be submitted as part of the Evaluated Bid Proposal.

1. Manufacturer Information:
   a. Manufacturer's Quality Control Program letter or certificate, including ISO 9001 certification per Paragraph 1.5A.2
   b. Manufacturer's Qualified Installation List with Fabrication Facility per Paragraph 1.5A.3.
2. Supplier Qualifications:
   a. Supplier Quality Control Program letter or certificate, including ISO 9001 certification per Paragraph 1.5A.1
   b. Bonding letter per Paragraph 1.5A.2.
   c. Supplier installation list per Paragraph 1.5A.3. & 1.5A.4
   d. Suppler Reference List per Paragraph 1.5A.4.
   e. Supplier organization chart per Paragraph 1.5A.5.
   f. Service technical and location list per Paragraph 1.5A.6.
   g. Compliance Statement per Paragraph 1.7D.
   h. Acknowledgement of American Iron and Steel requirements[BG(1].
3. Design Submittals:
   a. Scope of supply including equipment, design capacity (flow and pressure), and horsepower indicating if equipment will be supplied with ancillary components such as with a VFD, enclosure, filter, silencer, lifting mechanism, etc.
   b. Membrane element, module, cassette, and unit drawings, detailing dimensions, materials, weights, locations of lifting lugs/points, and anchor bolt locations. Information shall also include piping, tubing, valves, and fittings on the membrane unit, including permeate and air-scour piping and connections clearly indicating factory installed and field installed materials.
   c. MBR basin mechanical layout showing number of membrane units and all other components comprising the MBR basin system with reactor dimensions and volume. Layout shall also show proposed air and permeate piping distribution, in-basin instrumentation and valves, and all other components comprising MBR basin systems. Drawings shall detail information in plan and elevation/section views.
   d. Process flow diagram: showing reactor configuration, pumps and flowrates; mixers; blowers and capacity; process and membrane air, recycle, RAS, WAS, and interconnecting piping.
   e. Preliminary Process and Instrumentation Diagram: showing reactor configuration, piping with flow direction and connections, process equipment, and instrumentation and control devices. Diagram shall clearly indicate or delineate Supplier and Contractor scope of supply.
   f. Examples of MBR HMI screen layouts and content for membranes and ancillary facilities including air scour, cleaning, permeation, and backwashing operations.
   g. Biowin model or equivalent modeling software:
      1) Native Biowin model files showing performance at all design conditions, including between each process.
      2) Process flow diagram
      3) Design summary report
      4) biological kinetic rates, oxygen transfer kinetic rates, average MLSS at average and maximum day flow, sludge production volume with all inputs and assumptions

clearly stated.

h. Design calculations report including:
   1) membrane surface area, membrane bioreactor tank size,
   2) flow, flux, and transmembrane pressure (TMP) per unit and number of units at design conditions including ADF, PHF, MDF, and MMAF, MLSS, and water temperature.
   3) Membrane scour air flow and pressure requirements for normal operation, backwashing, and cleaning.
   4) Description of the system design flexibility and ability to consistently meet permit and redundancy requirements over range of design influent flow and load conditions.

i. Membrane cleaning: description of cleaning processes with protocol, chemical cleaning equipment and chemical storage requirements, bulk chemical list, flow and chemical concentration (if diluted), and chemical use estimates for cleaning-related systems including, but not limited to membrane backwash, membrane relaxation, clean in place.

   Protocols shall clearly outline duration, frequency and annual chemical use estimates, tank status (drain prior to chemical addition, chemical addition with tank mixed liquor in place, etc.), neutralization requirements (if applicable), spent chemical disposal location or method for maintenance clean, recovery cleans, and any other routine or periodic membrane cleaning. Protocol shall describe the procedure for taking membrane tank off-line and on-line. Proprietary chemicals are not allowed.

j. Supplier shall define the fine screening requirements for their membrane system including maximum screen aperture and opening type. A maximum screen aperture of 2 mm with punched hole or woven wire mesh shall be incorporated into the facility by the General Contractor. The Supplier shall clearly indicate if a smaller opening size or aperture type is required.

k. Schedule: Supplier shall provide schedule of shop drawings and equipment lead times.

4. Description of Training Services
5. Description of Technical Support Services including but not limited to 24/7 phone support, web-based support, operator forums, remote dial-in Supplier assistance, and availability of optional service and support.
6. Bidding Documents, including but not limited to Bid Form and Evaluated Bid Tables.
7. Maintenance Documents, including but not limited to:
   a. Replacement procedures for replacing or repairing the smallest membrane component that can be replaced for maintenance or failure independently of the entire unit.
   b. Cassette removal and reinstallation procedures.
   c. Cassette levelling and adjustment procedures, if applicable.

B. Design and Shop Drawing Submittals: Following the evaluated bid and selection of the successful Supplier, Selected Supplier shall submit the following:
   1. Design Submittals:
      a. Updated Design Calculations: Provide any updated or revised design submittals as outlined in Paragraph 1.6A.3 based upon final layout and general management plan supplied by the engineer.
      b. Supplier shall perform analysis of biological process design using EnviroSim Biowin wastewater modeling software or approved alternative sofrware and support Engineer in verification.
      c. For all scope of supply equipment:
         1) Cut sheets, including materials of construction, dimensions, size, material of construction, installation details, power supply voltage, wiring, and location
         2) Pump performance curves with minimum, maximum, and design duty flow and TDH; efficiency data, motor horsepower and voltage. If VFD, provide turndown

curves.

3) Aeration blower performance curves with minimum, maximum, and design air flow and discharge pressure, efficiency data, motor horsepower and voltage. Turndown curves. If VFD, provide turndown curves.
4) Mixer velocity distribution profiles or CMD modeling.
5) Chemical cleaning systems
6) Valves: Provide valve schedule with information on valve type, diameter, materials of construction, end type, operator, and pressure rating.

d. Power supply, wiring and control diagrams. Complete wiring and control diagrams that show the point of connection for the power supply and control system.
e. Instrumentation schedule: Device listing, tag number, manufacturer, model number, measured parameter, and ranges for instruments and devices, accessories for installation and accompanying mounting details, etc.
f. Process control narratives (functional control description) and electronic files associated with programming logic, screen layouts of the control and data screens, and a list of all information exchanged with plant control system.
g. Electronic drawings for all process equipment, including process tanks, membrane units, permeate pumps, and other major equipment listed in the Scope of Supply.
h. Control panels:
    1) Drawings with interior and exterior layouts, components, panel dimensions, and panel materials of construction and NEMA rating.
    2) Control panel component manufacturer's literature, clearly denoting model numbers of all PLC components, relays, terminal blocks, power supplies, buttons, switches, fuse blocks, etc.
    3) Control panel wiring schematics
i. Description of the control system and PLC's distribution control systems or other control platform software and integration of the MBR system in the overall plant control system. MBR system controls include but not limited to bioreactor equipment, membranes, permeate pumps, blowers, chemical feed systems, backwash pumps, and process monitoring.
j. Permitting support, if requested, including design information, updated plans, procedures, and testing.
k. Any specialized installation instructions which need to be included in General Contractor Installation Contract Bid Documents.

2. Description of Supplier's remote monitoring application including security protection.
3. Shop Drawings:
    1) Submit detail drawings showing installation and assembly details including piping connection details, setting drawings, cast-in-place items, templates, location of lifting lugs/points, and details of anchorage.
    2) The supplying equipment manufacturer shall note any dimensional deviations from the construction plans. Differences shall be duly noted for approval by the Engineer.
    3) Complete installation procedures of sufficient detail to facilitate direct field construction and erection by the Contractor.
    4) System Startup and Functional Testing Procedures: Detailed start-up procedures, forms, and checklists.,
    5) Commissioning and performance testing schedule and procedures: Membrane cleaning, flux and transmembrane pressure validation test procedures, inlet water quality verification requirements, effluent water quality verification requirements, test reports requirements, panel FAT.
    6) Product Data: Catalog data consisting of specifications, illustrations and a parts schedule that identifies the materials to be used for the various system components

and accessories. Submit list of materials of construction.

7) Training submittals: Submit electronic copies of all training materials prior to system startup, testing, and demonstration.

8) Qualifications Statements:

a) Submit welding certifications, as per the above requirements.

C. Closeout Submittals, including the following:

1. Operation and Maintenance Data per Section 017823 and as follows:

a. Submit complete installation, operation, and maintenance manuals including general arrangement drawings, complete bill of materials, safety data sheets, test reports, maintenance data and schedules, description of operation and spare parts information. Manuals shall describe the system components, system and component specifications, standard operating procedures, limitations (including conditions to be avoided or that could damage the equipment), and operation and maintenance procedures. Data tables shall be included to show typical operating set points and conditions. Manuals shall also include programming logic, control and data screens, and list of information exchanged with plant control system.

2. Record Drawings: After start-up of the system, supplier shall provide "as built" plans and drawings, control and wiring schematics for Supplier scope of supply.

1.7 WARRANTY

A. Membrane warranties shall cover the following items:

1. Repair or replacement of any failed membranes or modules. Failure is defined as any of the following:

a. Inability to meet production capacity requirements as specified herein.

b. Inability to meet TSS and turbidity requirements as specified herein.

c. Frequent fouling replacement of membranes.

2. The MBR System Supplier shall provide field service supervision for inspection and dismantling, and reinstallation of the equipment.

B. Membrane Warranty:

1. The Supplier's warranty shall be applicable for a period of ten (10) years from substantial completion.

a. If membrane replacement is necessary, the first 60 months shall be a full replacement, with the remaining 60 months pro-rated.

2. The membrane system Supplier shall provide field service supervision, labor and tool activities of all warranty related repairs during the first 60 months and the Owner will pay for any of the warranty-related labor and tool activities during the remaining 60 months.

3. The Owner will be responsible for providing a nearby laydown area for the storage of equipment or membrane modules removed or delivered during any warranty related activities as well as any utilities required to perform the warranty work.

4. The Owner shall not be required to monitor, report, record instrument data for the purpose of maintaining warranty coverage outside of providing a reliable, high-speed internet connection to the MBR system controls and maintaining manual records of influent and effluent quality, MBR basin MLSS, membrane cleaning activities and chemical use data. In the event where internet connection is lost, Supplier shall notify Owner and request local SCADA download for missing data.

C. Equipment and Controls Warranty: The Supplier's warranty shall extend for a period of two (2) years from the date of substantial completion for all other (i.e., non-membrane) equipment and process systems provided by the Supplier.

D. Compliance Statement: The Supplier shall submit a Compliance Statement confirming the type of membrane proposed and that the proposed MBR system meets performance and operating criteria as outlined in Contract Documents. Compliance Statement shall list deviations to the specifications. Compliance Statement shall acknowledge Warranty and Performance Bond requirements. Compliance Statement shall state specific exclusions to failure conditions covered by Membrane Warranty.

1.8 SPARE PARTS AND SPECIAL TOOLS

A. Provide the following in addition to any other process-critical recommended spare parts:

SPARE PART	QUANTITY
Membrane lifting tool (Overhead monorail or crane will be provided by Buyer)	As Needed
One repair kit for sealing off or replacement of damaged membrane element.	As Needed
One set of special tools required for normal operation and maintenance of the MBR Units.	1 Set
Pressure Gauge	2 of each range
Level Probe & Transmission	1 of each type
ORP/DO/PH/Turbidity/Temp Probes	1 of each type
Chemical Feed Pumps	-
Pump Seals	1 for each pump/each type
Blower Belts	3 sets
Blower Inlet Filters	3 sets
Valves and Actuators	1 of each size
Diffusers	2% of total

PART 2 – PRODUCTS

2.1 SYSTEM PERFORMANCE CRITERIA

A. Performance Criteria: The equipment shall be designed and installed to meet or exceed the following effluent water quality limits at the PHF Maximum Monthly Daily Flow and water quality characteristics in Paragraph 2.1B:

1. Effluent Water Quality:
   a. BOD : ≤ 5.0 mg/L, monthly average
   b. TSS : ≤ 5.0 mg/L, monthly average
   c. Turbidity : ≤ 1.0 NTU,
   d. Ammonia (Oct 1ST – May 31ST) : < 1.8 mg-N/L
   e. Ammonia (Jun 1st – Sep 30th) : <1.2 mg-N/L
   f. Phenuls :5ugll

B. Design Criteria: The membrane and bioreactor system equipment shall be designed to perform satisfactorily and as specified when operated under the following conditions:

1. Bioreactor:
   a. Provide bioreactor equipment specified herein for three parallel treatment trains, each capable of operating completely independent of the other. Influent, effluent, interconnecting and drain valves will be sized and provided by Others.
   b. Hydraulic capacity of each parallel train shall be designed for Peak Hourly Flow[BG(2)] with all treatment trains in service.
   c. Bioreactor volume and SRT shall be selected as follows:
      1) Minimum aerobic SRT (excluding membrane tanks): 13 days
   d. Biological treatment capacity of MBR system, including process tank volume, aeration, and membranes, shall be designed for Maximum Month Daily Flow at Design Influent Average Water Quality loading, with all treatment trains in service.

2. Influent Flow Rates:

a.	Minimum Flow	:3.0 [BG(3)]MGD
b.	Average Daily Flow (ADF)	:5.0 MGD
c.	Maximum Monthly Average Daily Flow (MMAF)	:8.0 MGD
d.	Maximum Day Flow (MDF)	:11.0 MGD
e.	Peak Hourly Flow (UPHF)	:16.5 MGD

3. Design Influent Average Water Quality to the MBR post-clarification assuming clarification removed of 60% TSS and 30% BOD:

a.	Temperature (minimum design temperature)	: 10 degrees C
b.	pH	: 6 to 9 S.U.
c.	BOD	: 98 mg/L
d.	TSS	: 74 mg/L
e.	Ammonia	: 18 mg/L
f.	Total Kjeldahl Nitrogen (TKN)	: 27 mg/L
g.	Total Phosphorus (TP)	: 6.0 mg/L
h.	Alkalinity (as calcium carbonate)	: 225 mg/L
i.	Phenuls	:11 ugll

4. Process Configuration:
   a. Reactor configuration is required to provide biological removal of BOD and ammonia nitrogen based on:
      1) MLE, consisting of Anoxic and Aeration, zones. The membrane tank volume shall not be included in determination of the Aeration zone sizing for nitrification.
      2) Maximum MLSS: 8,000 mg/L under data demonstrating installations operating successfully at higher concentration is provided.
   b. Bioreactor dimensions:
      1) Bioreactor basins shall be sized to accommodate site constraints as shown on the project site plans.
      2) Total depth shall include a minimum freeboard of 36-inches.
   c. Treatment trains shall be capable of independent operation.
   d. Channels and piping between reactors and within a reactor (recycle, bypass/overflow) shall be sized for the Peak Hour Flow with consideration given to maintaining self-cleansing

velocities to keep solids in suspension at minimum flows.

e. Reactor inlet, effluent and drain valves will be provided by the General Contractor. The supplier shall provide recommended signing and location.

5. Process characteristics
   a. Site elevation (approximate) : 140 feet
   b. Ambient air temperature : 15 to 100 degrees Fahrenheit
   c. Hydraulic Retention Time (HRT) at MMAF:
      1) Anoxic Tanks : ≥ 1 hour
   d. MLSS (see 2.1.B.4.b.2)
      1) Anoxic Zone MLSS : ≤ 8,000 mg/L
      2) Aeration Zone MLSS : ≤ 8,000 mg/L
      3) MBR Zone MLSS :10,000 to 12,000 mg/L
   e. Recycle rate from membrane tanks: :3-5 times influent flow at MMF
   f. Aeration:
      1) Oxygen requirement: At least 1.25 pounds oxygen per pound of influent BOD and 4.6 pounds oxygen per pound of influent TKN at MMAF.
      2) Dissolved oxygen levels in the Aerobic Zone shall be ≥2.0 mg/L at MMAF and ≥1.0 mg/L at MDF.

6. Membrane System Configuration:
   a. Four (4) to six (6) parallel membrane trains shall be provided.
   b. The membrane system must be sized to hydraulically treat 100% of MDF with one train out of service for ≤ 24-hours with one complete membrane train out of service for any reason.
   c. Membrane tank inlet valves will be provided by the General Contractor.
   d. Provide a level transmitter and two-level switches for each membrane train.
   e. Provide tank drain valves and telescoping valves (if applicable) for RAS if a feed forward design if proposed.
7. Membrane Characteristics:
   a. Membrane shall be chemically resistant to high (>1,000 mg/L) chlorine concentrations and any other chemicals used in cleaning procedures and be able to tolerate a pH range of 1 to 10.
   b. Membrane shall be non-biodegradable.
   c. Membrane shall be made from the following materials:
      1) Hollow fiber or flat sheet membrane
         a) Polyvinylidene fluoride (PVDF)
         b) Chorinated polyethylene
   d. Nominal pore size: 0.1 to 0.4 µm
   e. Maximum Design Net Flux Rates
      1) ADF: 12.5 gfd
      2) MMF: 14.0 gfd
      3) MDF: 19.6 gfd
      4) PHF: 22.2 gfd
   f. Transmembrane Pressure:
      1) TMP range shall be between 0.1 psi and 8.0 psi.
8. Membrane cleaning: Membrane cleaning shall include:
   a. Air scour as recommended by the manufacturer to prevent localized dewatering and

solids accumulation.

b. Manufacturer recommended cleaning protocol to maintain specified flux requirements while maintaining maximum membrane life. Cleaning protocols may include in-situ back-flushing, membrane relaxation, and/or chemical cleaning; however, all cleaning protocols must be fully automated. Chemicals used in cleaning at recommended concentrations shall not impact biological treatment and must be accounted for in membrane life.

9. Area classification shall be as follows:
   a. Per NFPA 820, open to atmosphere biological reactors preceded by primary sedimentation) are unclassified.
   b. Permeate pump room is unclassified.

C. Process Instrumentation and Control:
1. The Supplier shall provide all instruments that they require to operate and control the biological and membrane systems in their scope of supply regardless if the instrument is identified in the specification. All instruments shall be monitored and trended on the Supplier's operator interface/HMI.
2. Control systems: Automatic systems shall be provided to control all Supplier provided equipment. Status and performance data shall be communicated to Suppliers PLC and HMI control panel. Local indication of instantaneous and cumulative (if applicable) shall be provided for all process instrumentation including but not limited to flow meters, dissolved oxygen, pH, and pressure transmitters.
3. Bioreactors:
   a. Control of inlet and outlet slide gates if automated. Slide gates to be provided by General Contractor.
4. Anoxic basins:
   a. Level, ORP, PH probes and transmitters (if feed forward pumping employed)
5. Aeration basins:
   a. DO probe and transmitters
   b. pH probe and transmitters (transmitter may be common with DO probe)
   c. Level switch high
6. RAS Pumps
   a. Discharge and suction side pressure gauges, each pump
   b. Flow meter
7. Feed Forward Pumps:
   a. Discharge pressure gauge, each pump
   b. Flow meter (one per bioreactor train)
8. Permeate Pumps:
   a. Discharge and suction side pressure transmitter and gauges, each pump
   b. High pressure switch – pump shutoff in each direction, each pump
   c. Flow meter
   d. Turbidity probe and transmitters (Inline or Sidestream)
   e. Temperature probe and transmitter (Common permeate header)
9. WAS Pumps:
   a. Suction and discharge pressure gauges, each pump
   b. Flow meter
   c. High pressure switch – pump shutoff, each pump
10. Backpulse Tank (if applicable):

a. Level transmitter

11. Membrane CIP:
    a. Bulk chemical storage will by provided by the General Contractor
    b. Skid or wall panel mounted chemical metering pumps (duty and standby units, each chemical)
    c. Flow meter (each chemical) for centrifugal chemical pumps. Flow meters are not required for PD style chemical metering pumps.
    d. Level probe and transmitter (each day tank)
12. Process Chemicals:
    a. Bulk chemical storage will be provided by the General Contractor
    b. Skid or wall panel mounted chemical metering pumps (duty and standby units, each chemical)
    c. Provide with each metering pumps: pressure control valves, backpressure valves, pulsation dampeners, pressure gauges, calibration column, suction and discharge isolation valves, and drain valves.
    d. Provide isolation valve, manual flow control valve and backpressure valve at each chemical dosing location.
    e. Level probe and transmitter (each day tank)
13. At a minimum, provide the following membrane and permeate data measurements at 15 min intervals, local display, and recording up to 30-day duration:
    a. Permeate turbidity shall be monitored in each train
    b. Membrane process control:
        1) Analog values for:
            a) Dissolved oxygen in Aeration tank
            b) Permeate pressure during filtration
            c) Permeate pressure during backwash, cleaning, and/or relaxation
            d) Permeate flow during filtration
            e) Permeate turbidity
            f) Permeate temperature
            g) pH in Aeration tank
            h) Mixed liquor feed or RAS return flow
            i) MBR tank level
            j) Waste activated sludge flow
        2) Digital counts:
            a) Permeate quantity during filtration
            b) WAS volume
        3) Calculated results for:
            a) Transmembrane pressure (TMP)
            b) Permeate flux rate (gfd)

2.2 MATERIALS

A. All fabricated items inside the membrane reactor shall be constructed from 316L stainless steel materials unless noted otherwise.

B. All fasteners inside the membrane reactor shall be constructed from 316L stainless steel materials. Fasteners for anchoring cassette wall brackets to the basin walls will be provided by the General Contractor.

C. The equipment manufacturer shall supply all materials necessary for properly installing the

membrane reactor system unless noted otherwise.

2.3 MEMBRANE UNITS

A. Membrane units shall be installed in individual membrane trains connected to dedicated permeate pumps and separated from the bioreactor tanks by a common influent distribution channel.

B. Supplier shall provide in-basin interconnecting membrane air and permeate headers, drop pipes and isolation valves to a flanged connection of the permeate and aeration headers located at discharge end of the collection headers. Each membrane unit shall have an isolation valve on the permeate and aeration pipes such that a single unit can be removed from service while keeping the others in operation.

C. With the exception of concrete wall anchors, Suppler shall provide all fasteners, nuts, bolts, screws, cables, washers and other appurtenances associated with membrane units and in-basin piping and appurtenances.

D. All pipe supports shall be provided by the General Contractor.

E. Supplier shall provide the tank mounting frames and hardware for membrane units. Hot retrieval mounting shall have the ability to readily remove one complete membrane unit, with a single pick without draining the membrane bioreactor and without taking other membrane units within the same tank off-line. **Double pick cassette removal will not be accepted.**

2.4 CHEMICAL SYSTEMS FOR MEMBRANE CLEANING

A. The Cleaning Systems shall include backwash, maintenance clean, and recovery clean systems as required by the Supplier's specific systems.

B. Cleaning Systems shall be inclusive of all chemical feed day tanks, panel mounted or skid mounted chemical feed pumps (duty and standby), valves, instrumentation, controls, and all other ancillary equipment necessary for a complete cleaning operation. Chemical bulk storage tanks and chemical loading and transfer facilities and equipment will be provided by the General Contractor.

C. Supplier shall define chemical volumes and estimated building space to be allotted for all Cleaning systems, including space for:
   1. Day tanks (30-hour supply)
   2. Cleaning system equipment
   3. Neutralization of spent chemicals (if applicable)

D. The system shall be designed to clean the membranes in-place without requiring their removal from the membrane tanks.

E. The cleaning systems shall be sized to clean one Membrane train at a time and allow the other Membrane trains to remain in production. The remaining trains online must hydraulically treat 100% of MDF at all times during the cleaning event.

F. All components of the cleaning systems shall be compatible with cleaning solutions recommended by the Supplier for its system.

G. Potable water (if required) shall be provided by the Owner for dilution water.

H. All equipment shall be provided with shutoff valves for isolation or bypass, to allow continued

operation of other equipment.

I. Centrifugal Chemical Pumps for membrane cleaning shall be as specified below:

quantity	determined by Supplier; at least two (1 duty and 1 standby) per system
capacity range	sized by Supplier;
manufacturer	Finish Thompson or approved equal
assembly and accessories	Skid mounted including suction and discharge pressure gauges, electromagnetic flow meter, suction and discharge isolation valves, discharge control valves (as required) and drain valves.

J. Metering pumps for membrane cleaning shall be as specified below:

quantity	determined by Supplier; at least two (1 duty and 1 standby) per system
capacity range	sized by Supplier;
manufacturer	Prominent, LMI or approved equal
assembly and accessories	Panel or skid mounted including pressure control valves, backpressure valves, pulsation dampeners, pressure gauges, calibration column, suction and discharge isolation valves, and drain valves.

2.5 PERMEATE, BACKWASH SYSTEM

A. Provide permeate pumps as specified below:

quantity	determined by Supplier; minimum four, maximum six units
capacity range	sized by Supplier, as specified

pump manufacturer	Boerger, Vogelsang or approved equal
pump type	rotary lobe positive displacement (if centrifugal pumps are used, refer to Section 2.7 WAS pump requirements)
flanges	drilled to ANSI B16.1 Class 150 raised face
configuration	reversible (Bi-directional)
casing	cast or ductile iron
lobes	NBR
shaft & sleeve	non-product wetted, materials manufacturer standard
lubrication	flooded oil bath / quench lubricated; no seal flush required
bearings	manufacturer standard
seal type	single acting, oil quenched mechanical seal. Material: SIC/SIC (silicon carbide)
seal lubrication	Light weight oil
base plate	carbon steel, hot dipped galvanized
coupling	KTR flexible coupling
motor	TEFC, premium efficiency; NEMA design B; Class F insulation; Class F temperature rise; maximum Speed: 1800 rpm; service factor: 1.15 suitable for constant torque inverter duty (6-60 Hz; minimum turndown)

instruments	Magnetic flow meter, turbidity meter, membrane unit TMP transducer for each train
accessories	VFD , check valves, shutoff valves, inlet and discharge pressure gauges and pressure switches, and priming air ejector for each pump

B. The pumps shall convey permeate from membranes to the disinfection system in accordance with the design flows previously specified. The permeate pumps shall provide the capability of pumping a portion of the treated permeate back through the membranes in reverse direction of the normal flow path to reduce fouling of the membranes. Pumps shall be sized to handle peak instantaneous flow specified, as well as rates associated with backwashing, maintenance and recovery cleaning.

C. Permeate subsystem (pumps, instruments, accessories) shall be dedicated to each train.

2.6 FEED FORWARD (IF APPLICABLE)

A. Provide feed forward pumps as specified below:

quantity	determined by Supplier; minimum six (two per bioreactor train)
capacity range	sized by Supplier, as specified
pump manufacturer	Sulzer, Flygt, Wilo, KSB or approved equal
pump type	submersible non-clog sewage pump
drive	direct drive, no coupling
flanges	drilled to ANSI class 125 flange fitting

casing	cast iron
impeller	cast iron
shaft	1.4021 (ASTM 420) stainless steel
shaft seal	double seal system consisting of tandem double silicon carbide mechanical seal (up to 30hp); triple seal system consisting of tandem double silicon carbide mechanical seal and one lip seal (30hp above)
seal lubrication	oil lubricated
leakage protection	moisture sensor in oil chamber for bearing and motor protection
motor	submersible; squirrel cage; 3 phase induction shell type B design; maximum 3,600 rpm; stator insulation to Class H; three (3) thermal switches – one per phase wired in series
cable entry	cylindrical elastomer grommet with junction chamber on AFP/XFP (above 15hp)
mounting	submersible guide rail (2” or 3”)
accessories	VFD, cooling jacket, full monitoring system; lifting hoist and davit

B. Provide duty/standby feed forward pumps per bioreactor basin.

C. Provide check valves, shutoff valves to isolate or bypass one pump, while the other pump(s) remain in operation.

D. Provide magnetic flowmeter for feed forward flow per bioreactor basin.

E. If feed forward pumps are provided, RAS pumping may be eliminated. In such cases, return activated sludge may be gravity returned from the common RAS channel to the secondary influent distribution channel. Supplier shall provide necessary controls and instrumentation to automatically maintain feed forward flowrates over the range of 5 times influent max month flowrates.

2.7 RAS PUMPS

A. Provide RAS pumps as specified below:

quantity	determined by Supplier; minimum four (duty per train)
capacity range	sized by Supplier
pump manufacturer	Flowserve, Sulzer, Pentair Fairbanks, KSB or approved equal
pump type	end-suction centrifugal horizontal
flanges	drilled to ANSI B16.5 Class 150 Flange
casing / stuffing box cover	cast iron ASTM A48 CL35B (53/F0067)
impeller	ductile iron / 316 SS or duplex SS
shaft/sleeve	duplex steel (EN1.4460/AISI 329/SS2324)
lubrication	flooded oil
seal	cartridge single, open seal chamber, sleeve installation, SiC/SiC
seal lubrication	water - internal flush (no waste seal water generated)
base plate	Carbon steel
coupling	Rex-omega elastomeric / flexible or equal
motor	TEFC; foot mounted, 1,800 rpm maximum speed; variable speed
accessories	VFD

B. Provide check valves, shutoff valves to isolate or bypass one pump, while the other pump(s) remain in operation.

2.2 WAS PUMPS (IF APPLICABLE)

A. Provide WAS pumps as specified below:

quantity	determined by Supplier; minimum two (duty and standby)
capacity range	sized by Supplier
pump manufacturer	Flowserve, Sulzer, Pentair Fairbanks, KSB or approved equal
pump type	end-suction centrifugal horizontal
flanges	drilled to ANSI B16.5 Class 150 Flange
casing / stuffing box cover	cast iron – ASTM A48 CL35B (53/F0067)

impeller	ductile iron / 316 SS or duplex SS
shaft/sleeve	duplex steel (EN1.4460/AISI 329/SS2324)
lubrication	flooded oil
seal	cartridge single, open seal chamber, sleeve installation, SiC/SiC
seal lubrication	water - internal flush (no waste seal water generated)
base plate	carbon steel
coupling	Rex-omega elastomeric / flexible or equal
motor	TEFC; foot mounted, 1,800 rpm maximum speed; variable speed
accessories	VFD

B. Provide check valves, shutoff valves to isolate or bypass one pump, while the other pump(s) remain in operation.

C. In lieu of WAS pumps, Supplier shall supply a magnetic flowmeter, control valve and isolation valve for a sidestream WAS line to the sludge holding tank sized based on continuous wasting and to maintain MLSS in the bioreactors at <8,000 mg/L at all times.

2.3 MIXERS

A. Provide mixers as specified below:

quantity	determined by Supplier; minimum of one per anoxic reactor
capacity range	sized by Supplier; at least 5.0 hp, each
manufacturer	Sulzer, Flygt, Wilo, KSB or approved equal
type	submersible, retractable
impeller type	axial flow 2 or 3 self-cleaning backward curved blades
wetted parts	316 stainless steel
drive	direct drive, with gear box on large mixers
shaft seal type	Lower – silicon carbide/silicon carbide, nitrile, 316 SS Upper - silicon carbide/silicon carbide, nitrile, 316 SS
seal lubrication	oil lubricated
leakage protection	Moisture detection probe in oil chamber, motor and cable connection chamber
solid deflection ring	Nitrile (Buna-N)
mounting	submersible guide rail
motor	submersible; squirrel cage; 3 phase induction shell NEMA type B design; maximum 1,800 rpm; stator insulation to class F; 3 (three) thermal switches – one per phase wired in series
cable entry	compressible rubber grommet and o-ring
accessories	full SS construction; flow ring (316 SS); lifting hoist and davit

B. Mixing equipment shall be of the number, size, and location to provide adequate mixing at the proposed length, width, and depth throughout the intended mixing phase. This determination shall be

based on Supplier test data on tanks of similar geometry or CFD modeling.

C. Mixing system shall be:
   1. Effective to provide a complete basin mix with unobstructed mixing pattern.

2.4 BLOWERS

A. Provide blowers as specified below:

quantity	determined by Supplier; minimum three process aeration (2 duty, 1 standby), 3 membrane air scour (2 duty, 1 standby)
capacity range	Sized and located by Supplier
blower type	positive displacement rotary lobe, oil free
manufacturer	Aerzen, Kaeser Gardner Denver or approved equal
connections	plain pipe; silicone or rubber sleeve and clamps used to connect to discharge piping
casing & head plates	cast iron EN-GJL-200 (~ ASTM A48 class 30)
shaft	C45N (~ AISI 1043) to 2500 cfm and EN-G75-500-7 (~ ASTM 65-45-12) above 2500 cfm
rotors	ductile iron or forge steel C45N (~ AISI 1043) to 2500 cfm and EN-G75-500-7 (~ ASTM 65-45-12) above 2500cfm
drive	v-belt drive, automatic tension
guard	plate OSHA-rated V-belt drive guard
motor	TEFC, premium efficiency, NEMA frame, foot-mounted for belt-driven applications; 1800 or 3600 rpm, inverter duty rated
turndown	minimum 4 to 1
noise level	69 to 72 dBa with acoustic enclosure at 3 ft free-field conditions
accessories	air intake filter-inlet silencer, filter indication gauge, discharges silencer/base frame/hinged motor plate/anti-vibration mounts, discharge pressure gauge, discharge connection housing, spring-loaded discharge pressure relief valve, flapper-style integrated discharge check valve, discharge flexible sleeve and clamps for connection to process piping, auto-tensioned v-belt drive, v-belt safety guard, drive motor.
additional accessories	Indoor/outdoor sound enclosure built to meet MVSS 302 flammability standards. mechanical cooling fan (indoor or outdoor installation), High discharge temperature switch, mechanical unloading valve). Recommended spares (filter, V-belts, oil)

B. If one blower serves multiple bioreactor or membrane trains, there shall be sufficient turn down to service just one train, while the other train(s) is out of service for extended periods.

2.5 DIFFUSERS

A. Provide bioreactor diffusers as specified below:

quantity	determined by Supplier
capacity range	sized by Supplier
type	fine-bubble diffusers

manufacturer	EDI, Sanitaire, SSI, Ovivo or approved equal
membrane	disk or tube or panel
max design air flow rate per diffuser at max AOR	not to exceed 80% of diffuser's rated continuous operation capacity
droplegs & supports	316L stainless steel (AIS certification required on air headers, drop legs, and supports, but not on diffusers)
process connection	ANSI Flange 24" above tank wall
piping, connecting sleeve, tee and elbow	PVC (SDR 33.5 Sch 40, 80), CPVC, SS 304L, 316L
diffuser grid pipe supports and hardware	Included
check valve	n/a (the membrane is the check valve)
header pipe / mounting bracket	PVC
spare space	allowance for 10% blanked connections to install diffusers in the future, as necessary

2.6 VALVES AND ACTUATORS

A. Isolation valves on mixed liquor lines shall be plug or knife gate style as specified.

B. Wastewater check valves:

quantity	specified by Supplier with bid
type	wafer style double door / Swing style
manufacturer	Centreline 800 Series, RitePRO, or approved equal
style	wafer suitable for installation between ANSI # 150 flanges
body	cast iron
disc	316 stainless steel
shaft	316 stainless steel
seat	BUNA-N / EPDM

C. Butterfly valves:

quantity	specified by Supplier with bid
type	butterfly valve, resilient seated
manufacturer	Asahi, Keystone, Bray or approved equal
style	Lug pattern
operator	Asahi, Keystone, Bray
body	cast iron, epoxy coated
disc	nylon coated ductile iron

shaft	stainless steel
seat	EPDM

D. Wastewater plug valves:

quantity	specified by Supplier with bid
type	rectangular full port plug
manufacturer	DeZurik, Henry Pratt or approved equal
style	flanged ends, ANSI B16.1, Class 125
body	cast iron ASTM A126, Class B
plug	non-lubricated, eccentric type design with resilient plug facing
seat	raised seat with 1/8” welded nickel overlay
packing	Multiple V-ring type
operators	manual hand or chain wheel or electric modulating

E. Knife gate valves:

quantity	specified by Supplier with bid
manufacturer	Orbinox, trueline or equal
style	Lugged, AR series
body	GG25 (cast iron)
gate	304 stainless steel
shaft	carbon steel
seat	EPDM
manual operators	ll sizes handwheel operated

F. Ball valves:

quantity	specified by Supplier with bid
type	ball
applications	chemical feed lines
manufacturer	George Fischer, Asahi or approved equal
style	Tru-union
body, plug, shaft	PVC
seals	EPDM or viton (chemical dependent)
manual operators	manual lever
actuator	George Fischer, Asahi or approved equal

G. Solenoid valves:

quantity	specified by Supplier with bid
type	solenoid valve
service	air / water
manufacturer	Burkert, Asco or approved equal
style	FNPT, normally closed
body	316 stainless steel / brass
seal	EPDM
power	120VAC or 24VDC
power connection	0.5” NPT conduit, type H electrical

H. Pneumatic Valve Operators – General Service:

quantity	specified by Supplier with bid
manufacturer	Bray series 92 (series 94 for <24”), rotork or equal
operating pressure	550 kPa (80 psig)
body material	extruded aluminum alloy, anodized
travel stop	±5° at 0° and 90° positions
end caps	die cast aluminum alloy
pistons	die cast aluminum alloy
output shaft	carbon steel (zinc plated)
shaft bearings	Acetal
fasteners	stainless steel
‘o’-rings	Buna-N
air solenoid	NAMUR direct mount, 110VAC or 24VDC, NEMA 4, 4X
additional features	open and closing speed control
position control	electro-pneumatic bray 6A digital positioner; 4-20mA Input; NEMA4X enclosure (note: position control is only needed and therefore supplied on control valve applications).

I. Pneumatic Valve Operators – Knifegate Valve Service:

quantity	specified by Supplier with bid
manufacturer	Tyco, CMO or equal
operating pressure	550 kPa (80 psig)
tie rods for cover coupling	zinc coated steel
cylinder covers	cast iron, 2”-12” aluminum, 14” – 30” cast iron
piston connection	self-locking nut to assure fixation with nitrile o-ring
body	drawn aluminum jacket

upper piston seal	solid cast gum moulded on steel
piston	solid stainless steel
piston guide	RCH 1000 for low friction
'o' rings	Buna-N (nitrile)
air solenoid	4-way, NEMA 4
positional control	electro-pneumatic with 4-20 mA input (note: a positioner is only required on control valve applications)

2.7 PROCESS INSTRUMENTS

A. Electromagnetic Flowmeters:

quantity	specified by Supplier with bid
manufacturer	E&H or approved equal
series	Promag W400
process connections	ANSI #150 flanged
housing	Aluminum NEMA 4X
flowtube	304 stainless steel
liner	PTFE, polyurethane
accuracy	+/- 0.5%
operator interface	Local

output	4-20 mA DC, scaled pulse output
power / connection	85-260 VAC 60 Hz / 0.5" NPT
accessories	316 stainless mounting hardware, grounding rings/straps, spool piece for bypassing, calibrator suitable to calibrate all flow tubes

B. Rotameter:

quantity	specified by Supplier with bid
manufacturer	USGI Chemical, ABB or approved equal
series	Varea Meter
end fittings	Type 316 stainless
construction	Stainless steel frame, Borosilicate glass tube, stainless steel float
turndown	10:1
accuracy	2% of maximum flow
accessories	Check and needle valves, polycarbonate shield

C. Hydrostatic Level Transmitters:

quantity	specified by Supplier with bid
manufacturer	E&H or approved equal

application	top entry or side entry
series	FMB or FMX
process connections	1-1/2” to 3” 150 # flange (316 stainless steel)
mounting	1-1/2”, 2”, and 3” 150 # Flange (316 stainless steel) & 1-1/2” NPT connections available.
output signal	4-20 mA

voltage	10 to 30 VDC
diaphragm	ceramic
housing	aluminum NEMA 4X
integral LCD	yes

D. Pressure Transmitters:

quantity	specified by Supplier with bid
manufacturer	E&H or approved equal
model	Cerabar S PMC-71
mounting	0.5” NPT
output signal	4-20 mA
voltage	11.0 to 30 VDC
diaphragm	ceramic
housing	aluminum NEMA 4X
integral LCD	yes

E. Temperature Transmitters:

quantity	specified by Supplier with bid
manufacturer	E&H or approved equal
type	head mounted temperature, TH13
model	TR 11 RTD assembly
mounting	0.75” NPT process connection
power supply	24 V DC
output signal	4-20 mA
voltage	– 125 to 1200 mV
housing	transmitter installed in aluminum enclosure mounted directly on sensor
ambient temperature range	– 40 to 85 deg C

F. Turbidimeters:

quantity	specified by Supplier with bid
manufacturer	Hach or approved equal
model	TU5300 SC with SC200 controller
range	0-700 NTU
inlet	0.25” FNPT
outlet	0.25” FNPT
output signal	4-20 mA

power supply	120V/1ph/60 Hz
accessories	sensor, analyzer unit, interconnecting cable, alarm relays for indication of alarm conditions and one (1) Formazin Calibration Kit

G. Dissolved Oxygen Sensors/Analyzers:

quantity	specified by Supplier with bid
manufacturer	E&H, Hach or approved equal
model	LDO, with SC200 controller
range	0-20 mg/L
resolution	0.01 mg/L
output signal	2 x 4-20 mA
power supply	120V/1ph/60 Hz
display	LCD supplied on Signal Convertor
accessories	air blast cleaning assembly, sensor & float mounting assembly, signal converter.

H. pH Transmitters:

quantity	specified by Supplier with bid
manufacturer	E&H, Hach or approved equal
model	pHD-SC, with SC200 controller
range	0-14 pH
accuracy	+/- .05 pH
output signal	2 x 4-20 mA
power	120 VAC / 60 Hz / 1 phase
display	LCD
enclosure	NEMA 4X
Electrode	yiton body, glass filled flat electrode

I. Pressure Gauges:

quantity	specified by Supplier with bid
manufacturer	Ashcroft, Wika, McDaniel or approved equal
type	Liquid filled, with 316SS wetted parts
range	specified by Supplier
accessories	Isolation ball valve

J. Level Float Switch:

quantity	specified by Supplier with bid
manufacturer	Conery or approved equal
model	2900 series
type	enclosed, narrow angle, mechanical float switch
switch	single-pole, double throw (SPDT) type
float	ABS or polypropylene material, leak proof, shock proof, and impact resistant
electrical rating	10 amps at 120VAC

K. Pressure Switches:

quantity	specified by Supplier with bid
manufacturer	United Electric, Ashcroft or approved equal
type	Electronic, Digital Display, Programmable Dead band, Self-Diagnostic
material	316SS wetted parts and bellows
range	specified by Supplier
output signal	2 x 4-20 mA
power supply	24 V DC

L. Flow Switches:

quantity	specified by Supplier with bid
manufacturer	McDonnell and Miller, E&H or approved equal
type	swinging vane or piston type, variable orifice type; dual switches, each SPDT, minimum rating 5 A at 120 VAC
material	Type 316 stainless steel internal moving parts
range	Field adjustable switch setting
accuracy	switch accuracy and deadband shall be 5% of full range

2.8 PIPING

A. General:
1. MBR System air scour piping shall be schedule 10 Type 304 stainless steel.
2. Permeate piping shall be schedule 10 Type 316L.
3. Piping shall have welded, and/or ANSI Class 150 flanged connections.
4. Transitions from MBR Supplier piping to Contractor's piping shall use ANSI 150 pound flanges unless otherwise noted or coordinated with the Contractor.

B. PVC Schedule 80:
1. Piping conforming to ASTM D1785
2. Fittings conforming to ASTM D2467
3. Flanges: Schedule 80 solid socket flange

C. CPVC Schedule 80:
1. Piping conforming to ASTM F441
2. Fittings injection molded type
3. Flanges: Schedule 80 solid socket flange

D. Stainless Steel Piping:
1. Rolled pipe conforming to ASTM A778 for pipe >12". ASTM A312 for <12", ANSI B36.19
2. Cast fittings conforming to ASTM A778, ANSI B36.19 and ANSI B16.9
3. Fabricated pipe from sheet conforming to ASTM A240
4. Fabricated fittings from sheet conforming to ASTM A240
5. Fitting dimensions conform to ANSI B16.9
6. Flanges: weld neck or slip-on, Class 150

2.9 PROCESS CONTROL SYSTEM

A. General:
1. The MBR System controls shall be housed in a control panel. The control panel shall house the MBR system PLC, Operator Interface Terminal (OIT), software package, datalinks among control panels and Ethernet Network link with the Main Plant Control System. The control panel PLC shall be sized to handle all I/O from membrane equipment supplier, with 10% spare I/O available for other WWTP equipment.
2. The membrane equipment supplier shall be responsible for all programming for the MBR System PLC and OIT to control the operation of the Membrane Equipment System. The OIT shall contain graphical representations of all equipment and instrumentation and indication and trending of all process values.
3. The control panel design and IO distribution shall be as such that that a maximum of one train goes offline when one PLC IO rack is removed or taken out of service.
4. Contractor shall be responsible for installing wiring from field devices to the control paenl including the Ethernet links that may be required between the control panels.
5. Supplier shall reasonably demonstrate the basis for programming in the context of proven, standardized logic including applicable sub-routines, addressing strategy and nomenclature.
6. Source code shall be primarily programmed in ladder logic and made available to the Owner.
7. Human Machine Interface (HMI) or Graphical User Interface (GUI) screens shall be configured to accurately represent the process and process flow.

8. Representative HMI screenshots shall be provided that accurately represent the navigation and functionality of the proposed system.

B. MBR Control Panel:

1. Cabinet:
   a. Cabinets and panels with dimension 36 inches or greater shall be provided with removable lifting lugs. All doors shall be fitted with common keyed locks.
   b. Main control panel shall be located in the main electrical room and shall be painted carbon steel NEMA/UL Type 12 construction.
   c. All control panels located in the Process Area shall be minimum NEMA/UL Type 4 construction painted carbon steel.
   d. Cabinets and panels shall be provided with drawing pockets for panel drawings. One copy of the appropriate panel as-built drawings shall be furnished and left in the pocket of each panel.
   e. Cabinets and panels shall be prefabricated cabinets and panels by Hoffman, Rittal, Saginaw, or approved equal.
2. Programmable Logic Controller (PLC):
   a. Control and data acquisition associated with the MBR equipment shall be performed by a PLC.
   b. Each PLC shall be equipped with its own regulated power supply module energized from a standard, commercial 120 VAC 60 Hz, single phase source provided by the Uninterruptible Power Supply. Any power transformation, rectification, regulation, or other conditioning necessary shall be provided as part of the unit's power supply package. The module shall have sufficient capability to handle the power requirements for all the PLC components and I/O points, including the required, installed spare I/O capacity.
   c. The PLC shall be Allen-Bradley ControlLogix 1756-L7 Logix 5673. A minimum of 8 MB of user memory shall be installed. The memory supplied shall be sufficient to provide 20% unused capacity when the entire PLC program, as provided, is loaded and running. Provide industrial SD Card to maintain memory integrity of the PLC program following short-term power failures. PLC shall be capable of executing ladder logic, function blocks, structured text, and sequential flow chart logic.
   d. All I/O modules shall be provided with screw-type terminal blocks with barriers between adjacent terminals for connection of field inputs. Terminals shall be suitable for accepting up to and including No. 14 AWG wire. All terminals shall be provided with unique identification. All I/O modules shall be Allen-Bradley 1794 Series.
   e. The PLC shall communicate with the MBR SCADA system over an Ethernet network.
   f. I/O count shall be as required to implement the functional requirements of the system, with specified spare.
3. Network Switches and Modems:
   a. The MBR system control panel shall be provided with an industrial grade managed Ethernet Switch.
      1) Combined unit: Allen-Bradley Stratix 5700.
4. Operator Interface Terminal (OIT):
   a. The OIT shall be Allen Bradley PanelView graphic terminals with 9-inch or larger screens. The OIT shall display alarm messages, and provide fault and troubleshooting information.
5. Miscellaneous Requirements:

a. Provide ten percent (rounded up) spare fuses (minimum of 10) of each type and rating supplied.

PART 3 – EXECUTION

3.1 DESIGN ASSISTANCE

A. Design review: Supplier shall provide draft and final design submittals and review ancillary specifications provided by Engineer.

B. Electronic Files: Supplier shall provide electronic files for all process equipment in the Supplier's Scope of Supply.

C. BioWin Modeling: Supplier shall provide BioWin or equivalent modeling files for Engineer review and verification.

3.2 PROJECT SCHEDULE

A. Supplier shall provide equipment and services in accordance with Table 3-1. In addition to the time necessary to complete the requirements established within this specification and Contract Documents, Table also specifies the location and on-site days that shall be allowed for on-site visits in support of the services.

Table 3-1: Project Schedule

Deliverable	Due Date	On-Site Days	Location
Design Submittals Schedule Update (1.6B.1.a)	To be completed within 15 Days after Notice to Proceed.	N/A	N/A
Design Kick-off Meeting	To be completed within 20 Days after Notice to Proceed.	N/A	Teams
Bi-Weekly Status Conference Calls	For duration of design scope	N/A	Teams

Deliverable	Due Date	On-Site Days	Location
Submittal of 50% Design and Shop Submittals	12 weeks after Notice to Proceed	N/A	N/A
Submittal of 100% Design Documents	16 weeks after Notice to Proceed	N/A	N/A
Fabrication and Delivery	Per Contractor's schedule, construction contract anticipated to bid in March 2024 with Notice to Proceed in June 2024.	N/A	N/A
Mechanical Inspection	Per Contractor's schedule	5	New Windsor, NY
Start-Up, Testing and Commissioning	To be scheduled upon successful completion of Mechanical Inspection	45	New Windsor, NY
Demonstration/Performance Test	To be scheduled after successful start-up and testing.	10	New Windsor, NY
Operations and Maintenance Manuals	A minimum of 14 Days prior to start of Training		
Training	Training to be provided at the conclusion of the System Startup	5	New Windsor, NY
Minimum Total Days		65	
Minimum # Trips		7	

B. Supplier shall perform material inspection to verify completed shipment of material at unload, in accordance with its requirements.

C. Time spent remedying equipment deficiencies/problems shall not count toward the listed durations and trips.

3.3 CONTROL SYSTEM FACTORY ACCEPTANCE TEST

A. The Supplier shall coordinate and conduct a factory acceptance test (FAT) of the MBR control system during which:
   1. The PLC control logic and HMI operability shall be demonstrated by systematically forcing I/O to verify all controls functions and HMI screen representations defined in the system control narrative.
   2. The MBR control panel shall be inspected for completeness, and workmanship.

B. The Supplier shall provide a minimum of 2 weeks notice to the Owner and Engineer prior to the FAT. The Owner and Engineer may, at their option and expense, choose to attend and witness the FAT.

C. Whether or not the Owner and/or Engineer attend the FAT, the Supplier shall provide written documentation and certification of the completed FAT.

3.4 MECHANICAL AND INSTALLATION INSPECTION, AND START-UP

A. Inspection and start-up services shall be provided by a factory-trained representative of the Supplier who is a direct, full time employee of the Supplier.

B. The field service representative shall submit to the Engineer a written report stating that the MBR systems, including but not limited to MBR operation and cleaning operation(s), have been checked and are suitable for operation.

C. The start-up and demonstration testing protocol to be executed by the Supplier shall be submitted for approval to the Engineer.

D. Supplier shall furnish material, instrumentation, testing equipment, and personnel for conducting inspection, start-up, training, and commissioning services. All analytical testing will be provided by the Owner.

E. Supplier shall provide at least 7 trips for on-site mechanical inspection, start-up, demonstration, and training services as specified.

F. The representative shall be present on site for the following items:
   1. The first visit shall be for instruction and observation of the installation of equipment. At the start of the installation process, the Supplier shall inspect the tanks and MBR components to be installed in it to verify that the tank has been properly cleaned and prepared and the components are prepared for installation. The field service representative shall instruct the Contractor's personnel in what to observe and document. The field service representative shall also train the personnel performing the installation of the MBR system in the proper procedures for installation.
   2. The second visit shall be for checking and approving installation, prior to flow, or start-up, or demonstration.
   3. Visits 3-5 shall include the startup, testing, and demonstration of the MBR system including MBR trains, bioreactor equipment and ancillary systems. Training shall be conducted during this visit. Due to the length of this phase duration, and/or the need to utilize multiple team members, a minimum of three visits should be assumed for this phase.
   4. The sixth visit shall include commencement of Performance Testing. The supplier shall be onsite for the initial ten days of the performance test. If the system is operating satisfactorily, the supplier may leave site and provide remote monitoring of system performance for the duration of the performance test.
   5. One additional visit for support of the Engineer and Contractor as required shall be assumed by the system supplier.

G. All costs including travel, lodging, meals, and incidentals shall be considered as included in the Bid price.

3.5 PERFORMANCE TESTING

A. A 30-day performance test shall be conducted to confirm compliance of the biological and membrane equipment with the capacity and effluent quality parameters specified.

B. Commencement of performance testing shall begin within 14 days of completion of start-up, testing and commissioning of the facility, or 6 months after membrane delivery whichever occurs sooner.

C. Performance testing shall be provided by a factory-trained representative of the Supplier who is a direct, full time employee of the Supplier. Supplier shall be on-site for the initial 10 days of the testing and provide remote monitoring for the duration of the testing unless otherwise agreed in writing by Engineer and Owner.

D. Supplier shall be responsible for supporting the Engineer and Contractor during the test and shall

coordinate as necessary with the Engineer, Contractor and plant staff.

E. Testing shall begin after the MBR system is operational, the biological process is fully stabilized and the mixed liquor characteristics into the membrane tanks are within requirements.

F. The performance test shall be considered complete upon 30 consecutive days of operation without a significant failure due to the membrane system, and demonstration that the membrane system meets all performance requirements given herein.

G. A significant failure of the membrane system is one that:
   1. Decreases capacity below 75% for more than 24 hours
   2. Requires operator intervention to restart or re-establish normal operation of the control system

H. Failure to pass the Performance Test shall require a re-test of the system. The failure to pass the Performance Test shall require the Supplier to submit a written explanation for the failure and proposed remedy for evaluation by the Engineer prior to re-testing, subject to acceptance by the Engineer. If after a re-test, a repeat failure occurs and is determined to be due to non-performance by the Supplier or their equipment, remedy by the Supplier shall be up to and including installation of alternative or additional membranes or membrane equipment at no cost to the Owner.

3.6 TRAINING

A. Supplier shall provide training in the maintenance and operation of all systems included in the Supplier's control system and ancillary equipment as necessary to operate the biological (activated sludge) and membrane filtration processes to achieve treatment goals.

B. Supplier shall submit to Engineer written training materials at least 1 months prior to commissioning. Training shall be completed by Supplier prior to the completion of commissioning. All training shall be conducted at the Owner's office location (New Windsor, NY) or at the plant location (New Windsor, NY) by a factory-certified representative and full-time employee of the Supplier.

C. Training shall include classroom sessions on:
   1. Total nitrogen removal treatment process and configuration
   2. MBR operations, theory and important factors impacting flux and operation
   3. Membrane cleaning,
   4. MBR System troubleshooting, and maintenance.

D. Training shall also include hands-on training:
   1. Automatic and manual operation of process control panels and instrumentation such that operators can fully operate the biological and MBR system in manual or automatic mode, including but not limited to blowers, RAS pumps, feed pumps, permeate pumps, and cleaning systems.
   2. Navigation of all control panel and HMI screens and menus
   3. Changing process set-points
   4. All membrane cleaning operations (Backwash, Extended Maintenance Clean, Recovery Clean)
   5. Alarm conditions and power failure
   6. Troubleshooting

3.7 POST-CONSTRUCTION SUPPORT SERVICES

A. Supplier shall provide a digital database and monitoring system that contains operations and maintenance manuals, equipment information, and the ability to monitor the plant remotely by the

operators and the Supplier. The Owner shall only need to maintain internet access for the monitoring system to function with remote viewing access.

1. Supplier shall provide 24/7 technical phone support for the duration of the ten year warranty period.
2. Supplier shall provide remote monitoring of the membrane performance and annual performance reports highlighting concerns or suggestions for improvement for the first two years of the warranty period.
3. During the first year of the warranty period, Supplier shall provide (post-commissioning and as part of ongoing support services) a total of two service visits (two days on site each visit) by a field service representative at Owner's request.
4. Annual service visits for the remaining four years of the full (non-prorated) membrane warranty period, each visit lasting a minimum of two days (16 hours) onsite.

END OF SECTION

NOTE: TOPOGRAPHIC INFORMATION SHOWN WITHIN THESE LIMITS WERE FROM AN AERIAL FLIGHT BY COL-EAST FROM C.T.M. PROJECT NO. 14.4271 PROJECT NEW WINDSOR, NY 1"=20' WITH 2' CONTOURS CEI #28477 PREPARED FOR THE MOODNA WELLS PROJECT FOR MCGOEY, HAUSER AND EDSALL CONSULTING ENGINEERS, D.P.C.

BEDROCK DEPTH AT THIS LOCATION APPROXIMATELY 20' BELOW EXISTING GRADE BASED ON COMPLETED SOIL BORING

APPROXIMATE LIMITS ANTICIPATED FOR MBR TANKS/BUILDING CONSTRUCTION

BEDROCK DEPTH AT THESE LOCATIONS APPROXIMATELY 21' BELOW EXISTING GRADE BASED ON COMPLETED SOIL BORINGS

EXISTING SECONDARY SETTLING TANK #2 (T.B.R.)

EXISTING TRICKLING FILTER #2 (T.B.R.)

EXISTING TRICKLING FILTER #2 (T.B.R.)

EXISTING TRICKLING FILTER #1 (T.B.R.)

EXISTING SECONDARY SETTLING TANK #1 (T.B.R.)

LANDS NOW OR FORMERLY OF
TOWN OF NEW WINDSOR
BOOK 1619 PAGE 1146
TAX MAP ID 37-1-38
Deed: Call is to the centerline of Ceasers Lane.

EXISTING PRIMARY SETTLING TANK #2

EXISTING PRIMARY SETTLING TANK #3

PROPOSED PRIMARY SETTLING TANK #4

EXISTING PRIMARY SETTLING TANK #1

EX. GRIT SYSTEM

PROPOSED MECHANICAL BARSCREEN

EXISTING BARSCREEN

EXISTING GRAVITY SLUDGE THICKENER

EXISTING GRAVITY SLUDGE THICKENER

PROPOSED CONTROL BUILDING

TOPOGRAPHIC INFORMATION SHOWN WITHIN THESE LIMITS WERE FROM AN AERIAL FLIGHT BY COL-EAST FROM C.T.M. PROJECT NO. 14.4271 PROJECT NEW WINDSOR, NY 1"=20' WITH 2' CONTOURS CEI #28477 PREPARED FOR THE MOODNA WELLS PROJECT FOR MCGOEY, HAUSER AND EDSALL CONSULTING ENGINEERS, D.P.C.

LANDS NOW OR FORMERLY OF
TOWN OF NEW WINDSOR
BOOK 1619 PAGE 1146
TAX MAP ID 37-1-38
Deed: Call is to the centerline of Ceasers Lane.

EXISTING DISINFECTION TANK

EXISTING CHEMICAL FEED BLDG.

EXISTING CONTROL BLDG. (TO BE CONVERTED TO SLUDGE DEWATERING)

MOODNA CREEK

LIMITED FIELD LOCATIONS IN THIS AREA TO GENERATE ACCURATE BATHYMETRIC DATA

LANDS NOW OR FORMERLY OF
TOWN OF NEW WINDSOR
BOOK 2022 PAGE 921
TAX MAP ID 37-1-35.2
Deed: Call is to the centerline of Caesers Lane.

LANDS NOW OR FORMERLY OF
R & G TERMINAL PARTNERS, LLC
BOOK 14066 PAGE 780
TAX MAP ID 37-1-35.1
Deed: Call is to the centerline of Caesers Lane.

ARROW SIGN

ARROW SIGN

CAESARS LANE

GRAPHIC SCALE
30 0 15 30 60 120
1 inch = 30 feet

MHE ENGINEERING
33 Airport Center Drive, Suite 202
New Windsor, NY 12553
(845) 567-3100
111 Wheatfield Drive, Suite 1
Milford, PA 18337
(570) 296-2765

SCHEMATIC DESIGN

Dig Safely. New York Call811 before you dig

CAESARS LANE WWTP EXPANSION PHASE

FOR TOWN OF NEW WINDSOR
555 UNION AVE.
NEW WINDSOR, NY 12553

OVERALL CONCEPT PLAN

REVISIONS

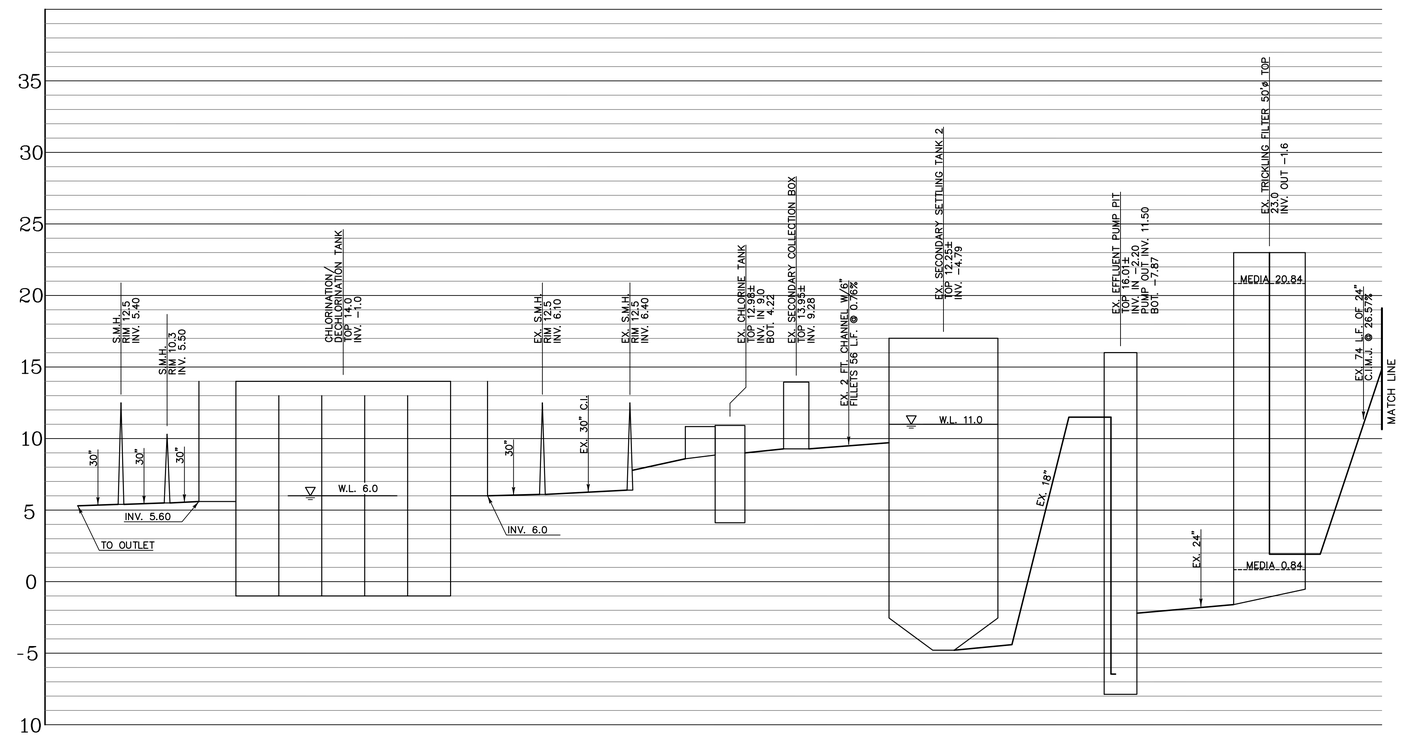
NO.	DESCRIPTION	DATE

ISSUED DATE:	13 MAY, 2022
DESIGN BY:	MJS
DRAWN BY:	HPBJr
CHECKED BY:	MJS
REVIEWED BY:	MJS, JZ

SHEET NO.

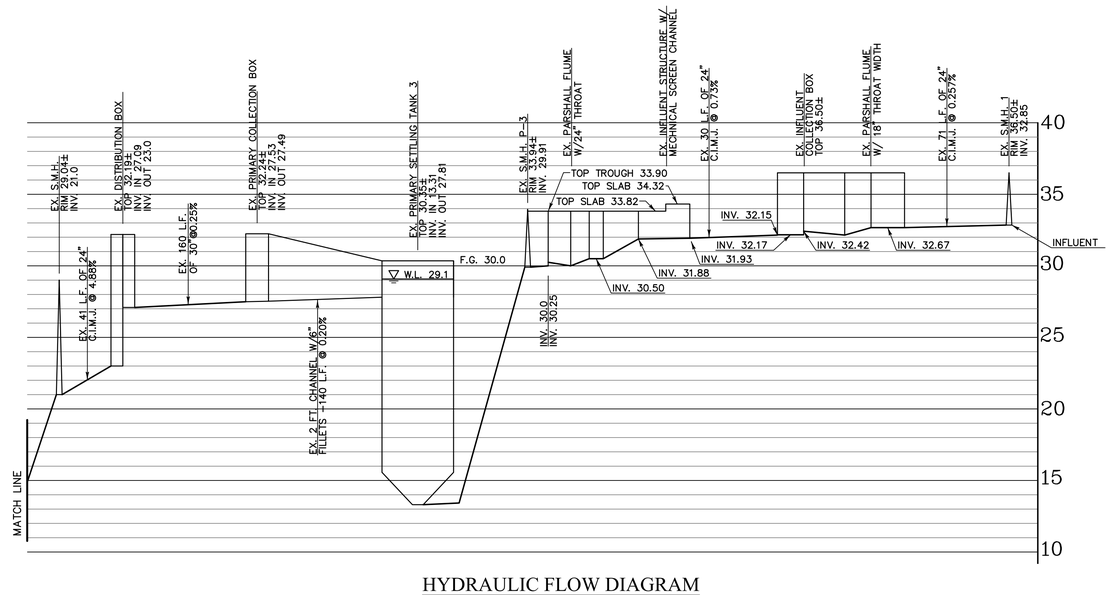
SK-1

PROJECT # 18-732 PHASE #



HYDRAULIC FLOW DIAGRAM

SCALES: HORIZ. NONE, VERT. 1"=5'



HYDRAULIC FLOW DIAGRAM

SCALES: HORIZ. NONE, VERT. 1"=5'

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33 Airport Center Drive, Suite 202
New Windsor, NY 12553
(845) 567-3100

111 Wheatfield Drive, Suite 1
Milford, PA 18337
(570) 296-2765

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CAESARS LANE WWTP
EXPANSION PHASE

FOR TOWN OF NEW WINDSOR
555 UNION AVE.
NEW WINDSOR, NY 12553

EXISTING
HYDRAULIC GRADE

REVISIONS

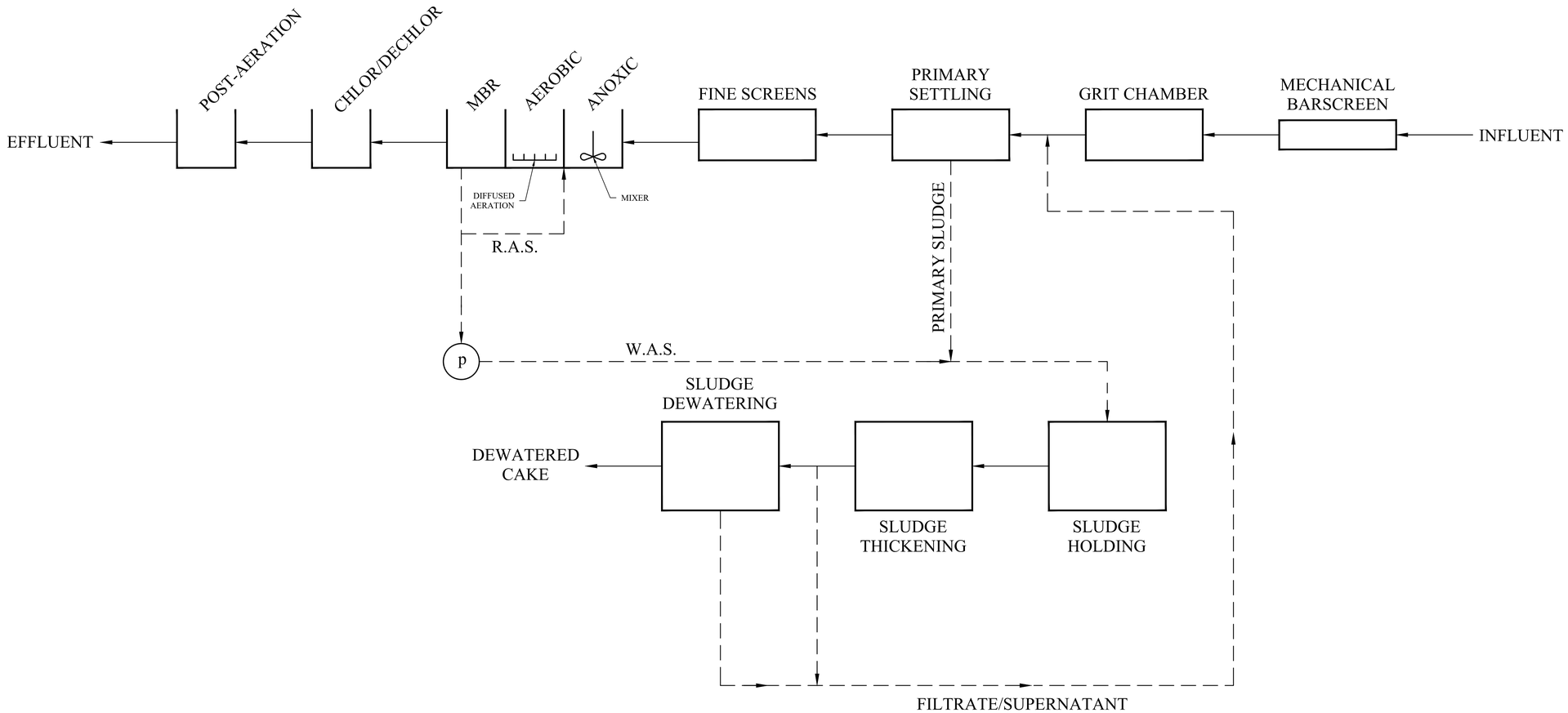
NO.	DESCRIPTION	DATE

ISSUED DATE:	13 MAY, 2022
DESIGN BY:	MJS
DRAWN BY:	HPBJr/TJA
CHECKED BY:	MJS
REVIEWED BY:	MJS, JZ

SHEET NO.

HG-1

PROJECT # 18-732 PHASE # 1-2



PROPOSED PROCESS SCHEMATIC
SCALE: NONE

ENGINEERING
33 Airport Center Drive, Suite 202
New Windsor, NY 12553
(845) 567-3100
111 Wheatfield Drive, Suite 1
Milford, PA 18337
(570) 296-2765

SCHEMATIC DESIGN

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CAESARS LANE WWTP EXPANSION PHASE

FOR TOWN OF NEW WINDSOR
555 UNION AVE.
NEW WINDSOR, NY 12553

PROPOSED PROCESS SCHEMATIC

REVISIONS

NO.	DESCRIPTION	DATE

ISSUED DATE:	13 MAY, 2022
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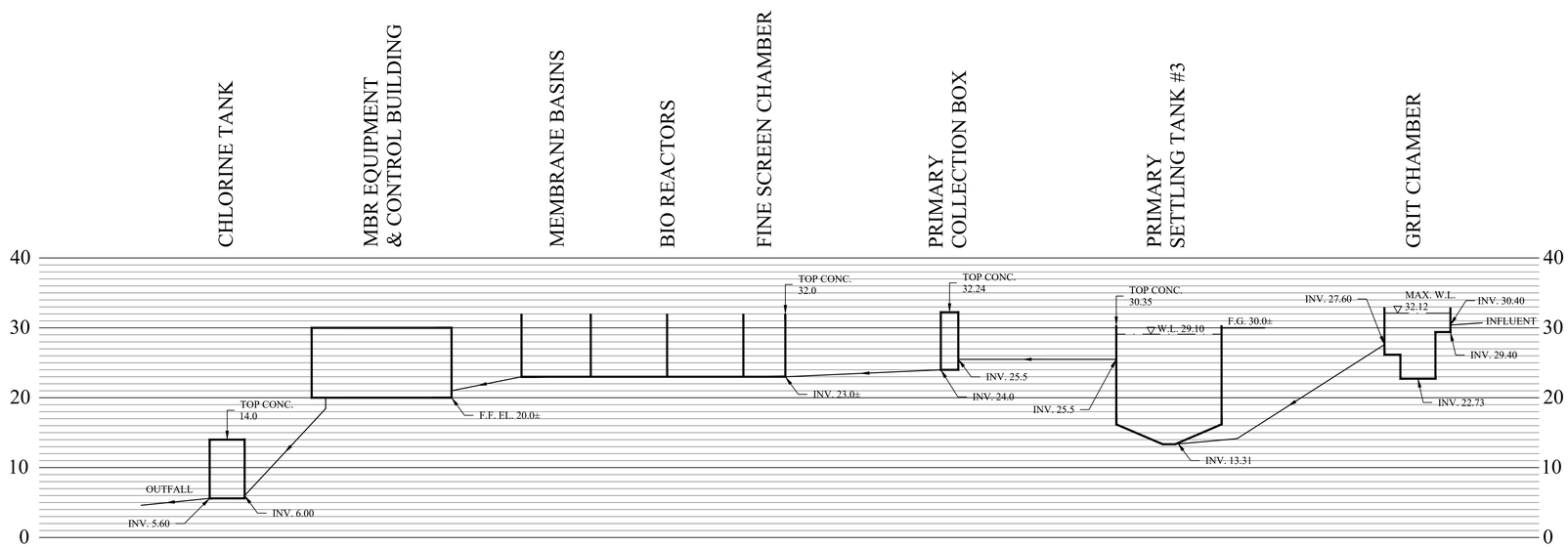
CHECKED BY:	MJS
REVIEWED BY:	MJS, JZ

SHEET NO.

PRO-1

PROJECT # 18-732 PHASE # 1-2



HYDRAULIC PROFILE

SCALES: HORIZ. NONE, VERT. 1"=10'

NOTE: PRIMARY COLLECTION BOX AND CHLORINATION TANK ARE EXISTING. ELEVATION BETWEEN THOSE STRUCTURES ARE AVAILABLE FOR MBR SYSTEM INSTALLATION.

MHE ENGINEERING

33 Airport Center Drive, Suite 202
New Windsor, NY 12553
(845) 567-3100

111 Wheatfield Drive, Suite 1
Milford, PA 18337
(570) 296-2765

SCHEMATIC DESIGN

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NEW WINDSOR, NY 12553

HYDRAULIC PROFILE

REVISIONS

NO.	DESCRIPTION	DATE

ISSUED DATE:	13 MAY, 2022
DESIGN BY:	MJS
DRAWN BY:	HPBJr/TJA
CHECKED BY:	MJS
REVIEWED BY:	MJS, JZ

SHEET NO.

HP-101

PROJECT # 18-732 PHASE # 1-2