



Department of Management Services
Purchasing Division
241 West South Street
Kalamazoo, MI 49007-4796
Phone: 269.337.8020
Fax: 269.337.8500
www.kalamazoocity.org
cokpurchasing@kalamazoocity.org

INVITATION FOR BID (IFB)

The City of Kalamazoo, Michigan is soliciting sealed bids for:

Procurement Name: **Contract 75 A.1-Tertiary Process Equipment: Microstrainer Disc Filtration**
Bid Reference#: **89000-001.0**

IFB ISSUE DATE: July 7, 2020

BID DUE/OPENING DATE: August 4, 2020 @ 3:00 p.m. Local Time
Facsimile Bids Will Not Be Accepted.

MAILING ADDRESS & INSTRUCTIONS

Mail to:
Purchasing Division
241 W. South Street
Kalamazoo, MI 49007

Questions about this IFB should be directed to:
Department Contact: **Ryan Stoughton, PE,**
Assistant City Engineer
stoughtonr@kalamazoocity.org

Include on the Envelope the Project Name and Bid Reference Number. All Envelopes Must Be Sealed.

You are invited to submit a bid for this project. Specifications, terms, conditions and instructions for submitting bids are contained herein. This Invitation for Bid with all pages, documents and attachments contained herein, or subsequently added to and made a part hereof, submitted as a fully and properly executed bid shall constitute the contract between the City and the successful bidder when approved and accepted on behalf of the City by an authorized official or agent of the City. Please review the bid document as soon as possible and note the **DEADLINE FOR QUESTIONS** in the Instructions to Bidders.

All bidders shall complete and return the Bid and Award page(s) and submit all information requested herein in order for a bid to be responsive. The bid document shall be returned in its entirety, in a properly identified and sealed envelope to the Purchasing Division at the above address. **BIDS MUST BE RECEIVED BEFORE THE DUE DATE - LATE BIDS WILL NOT BE CONSIDERED.** The City reserves the right to postpone the bid opening for its own convenience.

TABLE OF CONTENTS

<u>SECTION</u>		<u>PAGE #</u>	<u>APPENDICES</u>
	Statement of No Bid		
I	Instructions to Bidders	1	Appendix A
II	Bid & Award Pages	2 – 10	Evaluation Criteria
III	General Provisions	11 – 13	Specifications
IV	Terms & Conditions	14 – 17	Drawings/Plans

STATEMENT OF NO BID

NOTE: If you DO NOT intend to bid on this commodity or service, please complete and return this form immediately. Your response will assist us in evaluating all responses for this important project and to improve our bid solicitation process.

The Purchasing Division of the City of Kalamazoo wishes to keep its bidders list file up-to-date. If, for any reason you cannot supply the commodity/service noted in this bid solicitation, this form must be completed and returned to remain on the particular bid list for future projects of this type.

If you do not respond to this inquiry within the time set for the bid opening date and time noted, we will assume that you can no longer supply this commodity/service, and your name will be removed from this bid list.

- _____ Specifications too "tight", i.e. geared toward one brand or manufacturer only (explain below).
- _____ Specifications are unclear (explain below).
- _____ We are unable to meet specifications.
- _____ Insufficient time to respond to the Invitation for Bid.
- _____ Our schedule would not permit us to perform.
- _____ We are unable to meet bond requirements.
- _____ We are unable to meet insurance requirements.
- _____ We do not offer this product or service.
- _____ Remove us from your bidders list for this commodity or service.
- _____ Other (specify below).

REMARKS: _____

SIGNED: _____ NAME: _____
(Type or Print)

TITLE: _____ DATE: _____

FIRM NAME: _____
(if any)

ADDRESS: _____
(Street address) (City) (State) (Zip)

PHONE: _____ FAX: _____

EMAIL: _____

**SECTION I
INSTRUCTIONS TO BIDDERS**

1. **EXAMINATION OF BID DOCUMENT**-Before submitting a bid, bidders shall carefully examine the specifications and shall fully inform themselves as to all existing conditions and limitations. The bidder shall indicate in the bid the sum to cover the cost of all items included on the bid form.
2. **PREPARATION OF BID**-The bid shall be legibly prepared in ink or typed. If a unit price or extension already entered by the bidder on the Bid and Award form is to be altered, it shall be crossed out and the new unit price or extension entered above or below and initialed by the bidder with ink. The bid shall be legally signed and the complete address of the bidder given thereon.

All bids shall be tightly sealed in an envelope plainly marked SEALED BID and identified by project name, bid opening date and time. Bids opened by mistake, due to improper identification, will be so documented and resealed. The Purchasing Division will maintain and guarantee confidentiality of the contents until the specified opening date and time. Bids submitted by Fax machine will not be accepted.

3. **EXPLANATION TO BIDDERS**-Any binding explanation desired by a bidder regarding the meaning or interpretation of the Invitation for Bid (IFB) and attachments must be requested in writing, **at least 5 business days before the bid opening** so a reply may reach all prospective bidders the submission of bids. Any information given to a prospective bidder concerning the IFB will be furnished to all prospective bidders as an amendment or addendum to the IFB if such information would be prejudicial to uninformed bidders. Receipt of amendments or addenda by a bidder must be acknowledged in the bid by attachment, or by letter or fax received before the time set for opening of bids. Oral explanation or instructions given prior to the opening will not be binding.
4. **CASH DISCOUNTS**-Discount offered for payment of less than thirty (30) days will not be considered in evaluating bids for award. Offered discounts of less than thirty (30) days will be taken if payment is made within the discount period, even though not considered in evaluation of the bid.
5. **WITHDRAWAL OF BIDS**-Bids may be withdrawn in person by a bidder or authorized representative, provided their identity is made known and a receipt is signed for the bid, but only if the withdrawal is made prior to the exact time set for receipt of bid. No bid may be withdrawn for at least ninety (90) days after bid opening.
6. **ALTERNATE BIDS**-Bidders are cautioned that any alternate bid, unless specifically requested or any changes, insertions or omissions to the terms and conditions, specifications or any other requirement of this IFB may be considered non-responsive, and at the option of the City, result in rejection of the alternate bid.
7. **LATE BIDS**-Any bid received at the office designated herein after the exact time specified for receipt will not be considered. (Note: The City reserves the right to consider bids that have been determined by the City to be received late due to mishandling by the City after receipt of the bid and no award has been made.)
8. **UNIT PRICES**-If there is a discrepancy between unit prices and their extension, unit prices shall prevail.

SECTION II
BID AND AWARD

The undersigned having become thoroughly familiar with and understanding all of the bid/contract documents incorporated herein, agrees to furnish the Equipment as specified, FOB delivered to the location specified herein and in compliance with all requirements within the time specified at the unit prices as stated below:

WW Tert. Rotating Disc Microfiltration Unit-

Table with 6 columns: Item, Qty, Unit, Description, Unit Price, Total. It lists two items: Microstrainer Disc Filter and Automatic Cleaning Skids, followed by a GRAND TOTAL row.

Guaranteed delivery within 48 calendar weeks after receipt of order release/notice to proceed.

Order release for delivery lead time required is 14 calendar days prior to requested delivery date.

Bidder/Contractor has examined and carefully studied the bidding documents and attachments, and acknowledges receipt of the following addenda:

Addendum No: _____

Dated: _____

Bidder shall provide all of the information as requested herein with their bid. Failure to do so and/or failure to provide post-bid requested information may be cause for rejecting the bid as non-responsive.

By my signature below, I certify that the firm bidding on this contract, when making hiring decisions, does not use a past criminal conviction as a bar to or preclude a person with a criminal conviction from being considered for employment with the bidding firm unless otherwise precluded by federal or state law. I further certify that I have read and agree to be bound by the provisions of the City's Non-Discrimination Clause found in Appendix A and as updated by City Ordinance 1856.

Signed: _____ Name: _____

Title: _____

REFERENCE QUESTIONNAIRE

Please answer the following questions completely.

1. Firm name: _____

2. Established: Year _____ Number of Employees: _____

3. Type of organization:
 - a. Individual: _____
 - b. Partnership: _____
 - c. Corporation: _____
 - d. Other: _____

4. Former firm name(s) if any, and year(s) in business:

5. Include at least 3 references of contracts for similar work performed over the last five (5) years. Include: owner, contact person and phone number and description of work performed.
 - 5.1 Company Name: _____
Address: _____
Phone: _____
Contact: _____
Type of work or contract: _____

 - 5.2 Company Name: _____
Address: _____
Phone: _____
Contact: _____
Type of work or contract: _____

 - 5.3 Company Name: _____
Address: _____
Phone: _____
Contact: _____
Type of work or contract: _____

I hereby certify that all of the information provided is true and answered to the best of my ability.

Signed: _____ Name: _____
(type or print)

Title: _____ Date: _____

**CITY OF KALAMAZOO
LOCAL PREFERENCE POLICY AND CERTIFICATION**

The lowest responsive Kalamazoo County bidder whose bid is not low but falls within 2% of the lowest responsive bid is afforded the opportunity to become the successful bidder if it agrees to reduce its bid to match the lowest responsive bid. The City of Kalamazoo is the sole determiner whether a bidder is responsible, qualifies as a Kalamazoo County bidder, and if its bid is responsive to the City’s specifications, terms and conditions.

If the lowest Kalamazoo County bidder chooses not to match the lowest bid, the next lowest responsive Kalamazoo County bidder whose bid falls within 2% of the lowest bid, is given the opportunity to match the lowest responsive bid.

To qualify as a Kalamazoo County bidder, the bidder must meet both the following criteria:

1. Have a physical presence in Kalamazoo County by maintaining a permanent office, factory or other facility in Kalamazoo County with employees working in Kalamazoo County.
2. Have paid real or personal property taxes related to said business to the City of Kalamazoo, County of Kalamazoo or other municipal corporation within Kalamazoo County in the previous tax year, except that a non-profit entity need not meet this requirement.

This local preference policy applies only to purchases for materials, supplies, capital outlay, and services for maintenance, repair or operation of City facilities that are over \$25,000. If more than 50% of the contract is sub-contracted to firms located outside of Kalamazoo County that bid does not qualify for the local preference policy outlined above. The local preference policy will not apply if prohibited by law. The Purchasing Manager has the authority to finally determine if the bidder qualifies as a Kalamazoo County bidder as set forth herein. The Purchasing Manager may take into account the permanency of the business in Kalamazoo, and whether the business appears to be claiming to be a Kalamazoo County business solely or primarily to qualify as a Kalamazoo County business under this Resolution, and any other material factors.

CERTIFICATION

If you qualify as a Kalamazoo County bidder and wish to be considered for the local preference provisions as provided above please certify that fact by providing the information requested below and attesting to its accuracy.

Firm Name: _____

Street Address of Business: _____

City, State, and Zip Code: _____

Number of employees working in Kalamazoo County: _____

Name the city or township to which business real and/or personal property taxes are paid or provide non-profit status: _____

The above information is accurate:

Signature: _____

Date: _____

Title: _____

CITY OF KALAMAZOO EX-OFFENDER POLICY CHECKLIST

As part of the City’s commitment to reducing unacceptable poverty, encouraging rehabilitation, reducing recidivism and strengthening families in Kalamazoo, the City has updated its Purchasing Policy to ensure that firms with whom the City does business share in this commitment by utilizing hiring practices that do not unfairly deny people with arrest and conviction records gainful employment. *(Important: This requirement also extends to any subcontractors the bidder intends to use to fulfill the contract for goods or services being sought from the City.)*

Part I: Proof that the bidder does not inquire about an individual’s past arrest or criminal history on the bidders employment application form

- Attach a copy of the current application for employment being used by the bidder

Part II: Certification that the bidder does not use an individual’s past arrest or criminal history to unlawfully discriminate against them by checking *one or more* of the following:

- That pursuant to federal or state law bidder is precluded from hiring persons with certain criminal records from holding particular positions or engaging in certain occupations by providing a cite to the applicable statute or regulation; if checking this box, provide a citation to the applicable statute or rule upon which the bidder is relying:_____
- That bidder conducts criminal history background checks only as necessary, and only after making a conditional offer of employment; that any withdrawal of an offer of employment to an individual because of a past criminal history is job-related and consistent with business necessity after the individual has been provided an individualized assessment opportunity to review and challenge or supplement the history of past criminal conduct being relied upon by the bidder;
- That the use by bidder of criminal history background checks complies with the U.S. Equal Employment Opportunity Commission’s Enforcement Guidance on the Consideration of Arrest and Conviction Records in Employment Decisions and that the bidder has not had a determination rendered against it in past 7 years that it discriminated against a person through the use of an individual’s arrest or criminal history

I CERTIFY THAT THE ABOVE STATEMENTS ARE TRUE.

Date

Signature

Printed Name

Position

I hereby state that all of the information I have provided is true, accurate and complete. I hereby state that I have the authority to submit this bid which will become a binding contract if accepted by the City of Kalamazoo. I hereby state that I have not communicated with nor otherwise colluded with any other bidder, nor have I made any agreement with nor offered/accepted anything of value to/from an official or employee of the City of Kalamazoo that would tend to destroy or hinder free competition.

The firm's identification information provided will be used by the City for purchase orders, payment and other contractual purposes. If the contractual relationship is with, or the payment made to, another firm please provide a complete explanation on your letterhead and attach to your bid. Please provide for accounts payable purposes:

Tax Identification Number (Federal ID): _____

Remittance Address: _____

I hereby state that I have read, understand and agree to be bound by all terms and conditions of this bid document.

SIGNED: _____ NAME: _____
(Type or Print)

TITLE: _____ DATE: _____

FIRM NAME: _____
(if any)

ADDRESS: _____
(Street address) (City) (State) (Zip)

PHONE: _____ FAX: _____

EMAIL ADDRESS: _____

FOR CITY USE ONLY - DO NOT WRITE BELOW

COVID-19 ADDENDUM
March 16, 2020

TO: ALL Prospective Bidders
PROJECT: ALL Upcoming Projects

The purpose of this addendum is to clarify and/or modify the sealed bid delivery and bid opening process for all upcoming projects. All work affected is subject to all applicable terms and conditions of the Bidding and Contract Documents.

1. UPDATE TO SEALED BID DELIVERY AND BID OPENING POLICY

Effective immediately and continuing until further notice, due to the COVID-19 virus the City of Kalamazoo may no longer be accepting sealed bids in-person or conducting public bid openings.

Bidders can submit sealed bids in one of the following ways:

- Mail your bid, to be received before the bid due date and time indicated in the bid document, to the City of Kalamazoo at the following address:

City of Kalamazoo
Purchasing Division
241 West South Street
Kalamazoo, MI 49007

- Deliver your bid to the Treasurer’s Office Payment Drop Box located in the northwest corner of City Hall before the bid due date and time indicated in the bid document. Pictures of the drop box location have been provided in **Photo Attachment**.

Bidders are strongly encouraged to deliver their sealed bid to the Treasurer’s Office Payment Drop Box. However, if hand delivery of your bid to the drop box is not an option, please be sure to allow enough time for possible mail delays when mailing sealed bids to the City. Any bid received after the exact date and time specified for receipt will not be considered. (Note: The City reserves the right to consider bids that have been determined by the City to be received late due to mishandling by the City after receipt of the bid and no award has been made.)

All bids shall be tightly sealed in an envelope plainly marked SEALED BID and identified by project name, bid opening date and time. Bids opened by mistake, due to improper identification, will be so documented and resealed. The Purchasing Division will maintain and guarantee confidentiality of the contents until the specified opening date and time. Bids submitted by fax machine or email will not be accepted.

COVID-19 ADDENDUM

Page 2

The Purchasing Division will post bid tabulations to the City of Kalamazoo website within 24 hours after the bid opening date and time at: <https://www.kalamazoo.org/bidopportunities>.

Questions regarding this sealed bid delivery and bid opening policy change related to the COVID-19 virus should be directed to the City of Kalamazoo at (269) 337-8020.

Sincerely,



Michelle Emig
Purchasing Division Manager



COVID-19 Addendum

PHOTO ATTACHMENT

CITY OF KALAMAZOO TREASURER'S OFFICE PAYMENT DROP BOX PICTURES

CITY OF KALAMAZOO TREASURER’S OFFICE PAYMENT DROP BOX

Deliver your bid to the Treasurer’s Office Payment Drop Box located in the northwest corner of City Hall before the bid due date and time indicated in the bid document.



1. Open drop box located at City Hall.



2. Insert SEALED BID here.



SECTION III
GENERAL PROVISIONS

1. INTENT

It is the intent of bid document to procure equipment for the City of Kalamazoo's Water Reclamation Plant's Tertiary Treatment Process, as described within this bid document and the specifications provided in **Attachment A & B**, that will be most suitable for its type of operation and operating conditions, taking into account the criteria listed herein and other factors which reasonably may be considered. This bid is for the purchase of equipment; no installation is required. Installation shall be by a Contractor under a future contract.

2. GENERAL SPECIFICATIONS

All equipment shall be as specified herein. No substitutes will be accepted. **All information requested in Appendix B & C must also be submitted with bid.**

3. WARRANTY/MAINTENANCE

Successful bidder shall provide a manufacturer's warranty covering parts as specified herein.

4. COMPLIANCE WITH REGULATORY REQUIREMENTS

All equipment and/or components whether furnished as a complete unit, an individual item or an individual item within a complete unit, shall conform to all applicable regulatory requirements.

5. LITERATURE

Contractor must supply with their bid the latest printed specifications and advertising literature on the equipment they propose to furnish.

6. QUANTITIES

The estimated total quantities are not intended as a guarantee of maximum or minimum to be purchased under this contract; actual purchases may be more or less. The City reserves the right to add an item(s) that is not described on the item listings and is available from the contract vendor. The item(s) may be included on the contract, only if prior approval has been granted by the Purchasing Division.

7. AWARD

This purchase will be awarded to the responsive, responsible bidder whose bid will be most advantageous to the City, price and other factors considered. The City reserves the right to accept or reject any or all bids and waive informalities and minor irregularities for bids received. Notification of award will be in writing by the Purchasing Division.

In determining the responsive, responsible bidder the City shall consider, including but not limited to; quality, equipment manufacturer's regional stability and longevity, availability of parts and service, conformance to the specifications, treatment flexibility, ability to perform in the application and process, performance confidence, and 20 year life cycle cost, as well as the capacity, character, integrity, and reputation of the bidder, and any past experience with product(s) offered or the bidder.

8. PRICES

All unit prices shall remain firm for that period of time as set forth and agreed to by the bidder herein.

9. F.O.B.

All goods are to be shipped prepaid, F.O.B. delivered and installed. The total price quoted by the Bidder must be the total cost delivered to the location(s) stated. Bidder must not qualify the bid by stating a F.O.B. location other than such stated location(s). Shipments sent C.O.D. without City of Kalamazoo's written consent will not be accepted and will at Contractor's risk and expense, be returned to Contractor. Unauthorized shipments are subject to rejection and return at Contractor's expense.

10. SHIPMENTS, DELIVERY AND NOTICES

By submission of a Bid, Bidders shall agree to the delivery schedule state herein.

Orders must be shipped directly to ordering agency at address specified. Shipments must be made in accordance with the item(s) as described and priced on this bid. Also, orders must be shipped F.O.B. to Public Services Department – Harrison St. Facility, 1415 N. Harrison, Kalamazoo, MI 49007 - **ATTN: Ryan Stoughton**

All deliveries shall be made Monday through Friday between the hours of 8:00 a.m. and 5:00 p.m. All items requiring unloading equipment outside of a pallet jack shall be coordinated with the City prior to shipping.

Seller will notify Buyer if Seller is not able to fulfill the complete Purchase Order by the requested date in the stated quantities. Buyer will then determine whether the changes are acceptable or if the Purchase Order will be cancelled and issued to a different supplier.

11. MANUALS

Vendor shall provide manuals as specified herein.

12. INVOICING

All original invoice(s) and copy of signed receipt of delivery will be sent to the Financial Services Division, 241 W. South Street, Kalamazoo, MI 49007 or via email at apinvoice@kalamazoo.org. Faxed copy of invoice(s) will not be accepted, unless it is to replace an original invoice that was lost in the mail. The Financial Services Division processes payments after receipt of an original invoice from the Contractor and approval by the department.

12.1 The City of Kalamazoo policy is to pay invoice(s) within 30 days from the receipt of the original invoice, if the services or supplies are satisfactory and the proper paper work and procedures have been followed. In order to guarantee payment to the vendor on a timely basis, the vendor needs to receive a purchase order number before supplying the City of Kalamazoo with goods or services. All original, and copies of original invoice(s), will clearly state which purchase order they are being billed against.

- 12.2 Invoices shall be completely itemized showing all transactions.
- 12.3 All original, and copies of original invoice(s), will have either a department/division name or contract name and employee number. On delivery, all supplies and/or services must be signed for by a City of Kalamazoo employee before payment can be made.
- 12.4 The City of Kalamazoo is a government municipality and therefore is tax exempt from all sales tax. Our tax exempt number is 38-6004627.
- 12.5 The vendor is responsible for supplying the Financial Services Division with a copy of their W-9.

13. QUESTIONS

Questions relative to the terms and conditions and bidding procedures may be addressed to Craig Hull, Buyer, at (269) 337-8444. Questions regarding specifications may be addressed to the Project Manager, Ryan Stoughton, Assistant City Engineer at (269) 337-8736. This does not relieve the requirements of Page 1, Item 3.

SECTION IV
TERMS & CONDITIONS

1. AWARD OF CONTRACT

A. This contract will be awarded to that responsible bidder whose bid, conforming to this solicitation, will be most advantageous to the City, price and other factors considered. The City reserves the right to accept or reject any or all bids and waive informalities and minor irregularities in bids received. Other factors include, as an example but not limited to, delivery time, conformance to specifications, incidental costs such as demurrage and deposits, etc.

Notification of award will be in writing by the Purchasing Manager. Upon notification, the Contractor shall submit to the Purchasing Division all required insurance certificates (if required) and such other documentation as may be requested or required hereunder. Upon their receipt and subsequent approval by the City, the Purchasing Manager will forward to the Contractor a written **NOTICE TO PROCEED**. Work shall **NOT** be started until such **NOTICE TO PROCEED** is received by the Contractor.

B. Unilateral changes in bid prices by the bidder shall not be allowed. However, the City, at its sole option, reserves the right to negotiate with bidders in the event of, but not limited to:

- 1) No bids received;
- 2) A single bid being received; or
- 3) Prices bid are over budget and/or unreasonable.

2. COMPLETE CONTRACT

This bid document together with its addenda, amendments, attachments and modifications, when executed, becomes the complete contract between the parties hereto, and no verbal or oral promises or representations made in conjunction with the negotiation of this contract shall be binding on either party.

3. SUBCONTRACTORS - NON ASSIGNMENT

Bidders shall state in writing any and all sub-contractors to be associated with this bid, including the type of work to be performed. The Vendor shall cooperate with the City of Kalamazoo in meeting its commitments and goals with regard to maximum utilization of minority and women-owned business enterprises.

The Vendor hereby agrees and understands that the contract resulting from this solicitation shall not be transferred, assigned or sublet without prior written consent of the City of Kalamazoo.

4. TAXES

The City of Kalamazoo is exempt from all federal excise tax and state sales and use taxes. However, depending upon the situation, the vendor or contractor may not be exempt from said taxes and the City of Kalamazoo is making no representation as to any such exemption.

5. PAYMENTS

Unless otherwise specified by the City in this contract, the Contractor will be paid in not more than thirty (30) days after receipt of a properly executed invoice, the sum stipulated herein for supplies delivered and accepted, or service rendered and accepted. Payments are processed by the Budget & Accounting Division after receipt of an original invoice from the Contractor.

6. CHANGES AND/OR CONTRACT MODIFICATIONS

The City reserves the right to increase or decrease quantities, service or requirements, or make any changes necessary at any time during the term of this contract, or any negotiated extension thereof. Price adjustments due to any of the foregoing changes shall be negotiated and mutually agreed upon by the Vendor and the City.

Changes of any nature after contract award which reflect an increase or decrease in requirements or costs shall not be permitted without prior approval by the Purchasing Agent. City Commission approval may also be required. **SUCH CHANGES, IF PERFORMED IN ADVANCE OF PURCHASING AGENT APPROVAL, MAY BE SUBJECT TO DENIAL AND NON-PAYMENT.**

7. LAWS, ORDINANCES AND REGULATIONS

The Vendor shall keep himself/herself fully informed of all local, state and federal laws, ordinances and regulations in any manner affecting those engaged or employed in the work and the equipment used. Vendor and/or employees shall, at all times, serve and comply with such laws, ordinances and regulations.

Any permits, licenses, certificates or fees required for the performance of the work shall be obtained and paid for by the Vendor.

This contract shall be governed by the laws of the State of Michigan.

8. RIGHT TO AUDIT

The City or its designee shall be entitled to audit all of the Vendor's records, and shall be allowed to interview any of the Vendor's employees, throughout the term of this contract and for a period of three years after final payment or longer if required by law to the extent necessary to adequately permit evaluation and verification of:

- A. Vendor compliance with contract requirements,
- B. Compliance with provisions for pricing change orders, invoices or claims submitted by the Vendor or any of his payees.

9. HOLD HARMLESS

If the acts or omissions of the Contractor/Vendor or its employees, agents or officers, cause injury to person or property, the Contractor/Vendor shall defend, indemnify and save harmless the City of Kalamazoo, its agents, officials, and employees against all claims, judgments, losses, damages, demands, and payments of any kind to persons or property to the extent occasioned from any claim or demand arising therefrom.

10. DEFAULT

The City may at any time, by written notice to the Vendor, terminate this contract and the Vendor's right to proceed with the work, for just cause, which shall include, but is not limited to the following:

- A. Failure to provide insurance and bonds (when called for), in the exact amounts and within the time specified or any extension thereof.
- B. Failure to make delivery of the supplies, or to perform the services within the time specified herein, or any extension thereof.
- C. The unauthorized substitution of articles for those bid and specified.
- D. Failure to make progress if such failure endangers performance of the contract in accordance with its terms.
- E. Failure to perform in compliance with any provision of the contract.
- F. **Standard of Performance** - Vendor guarantees the performance of the commodities, goods or services rendered herein in accordance with the accepted standards of the industry or industries concerned herein, except that if this specification calls for higher standards, then such higher standards shall be provided.

Upon notice by the City of Vendor's failure to comply with such standards or to otherwise be in default of this contract in any manner following the Notice to Proceed, Vendor shall immediately remedy said defective performance in a manner acceptable to the City. Should Vendor fail to immediately correct said defective performance, said failure shall be considered a breach of this contract and grounds for termination of the same by the City.

In the event of any breach of this contract by Vendor, Vendor shall pay any cost to the City caused by said breach including but not limited to the replacement cost of such goods or services with another Vendor.

The City reserves the right to withhold any or all payments until any defects in performance have been satisfactorily corrected.

In the event the Vendor is in breach of this contract in any manner, and such breach has not been satisfactorily corrected, the City may bar the Vendor from being awarded any future City contracts.

- G. All remedies available to the City herein are cumulative and the election of one remedy by the City shall not be a waiver of any other remedy available to the City either listed in this contract or available by operation of law.

11. INDEPENDENT CONTRACTOR

At all times, the Vendor, any of his/her employees, or his/her sub-contractors and their subsequent employees shall be considered independent contractors and not as City employees. The Vendor shall exercise all supervisory control and general control over all workers' duties, payment of wages to Vendor's employees and the right to hire, fire and discipline their employees and workers. As an independent contractor, payment under this contract shall not be subject to any withholding for tax, social security or other purposes, nor shall the Vendor or his/her employees be entitled to sick leave, pension benefit, vacation, medical benefits, life insurance or workers' unemployment compensation or the like.

12. TERMINATION OF CONTRACT

The City may, at any time and without cause, suspend the work of this contract for a period of not more than ninety days after providing notice in writing to the Contractor. The Contractor shall be allowed an adjustment in the contract price or an extension of the contract times, or both, directly attributable to the suspension if Contractor makes an approved claim.

The City may, without prejudice to any other right or remedy of the City, and with or without cause, terminate the contract by giving seven days written notice to the Contractor. In such case the Contractor shall be paid, without duplication, for the following items:

- A. Completed and acceptable work executed in accordance with the contract documents prior to the effective date of termination, including fair and reasonable sums for overhead and profit on such work;
- B. Expenses sustained prior to the effective date of termination in performing services and furnishing labor, materials or equipment as required by the contract documents in connection with uncompleted work, plus fair and reasonable sums for overhead and profit on such expenses;
- C. All documented claims, costs, losses and damages incurred in settlement of terminated contracts with Subcontractors, Suppliers and others; and
- D. Reasonable expenses directly attributable to termination.

The Contractor shall not be paid on account of loss of anticipated profits or revenue or other economic loss arising out of or resulting from such termination.

APPENDIX A
NON-DISCRIMINATION CLAUSE FOR ALL CITY OF KALAMAZOO CONTRACTS

The Contractor agrees to comply with the Federal Civil Rights Act of 1964 as amended; the Federal Civil Rights Act of 1991 as amended; the Americans With Disabilities Act of 1990 as amended; the Elliott-Larson Civil Rights Act, Act. No. 453, Public Act of 1976 as amended; the Michigan Handicappers Civil Rights Act, Act No. 220, Public Act of 1976 as amended, City Ordinance 1856 and all other applicable Federal and State laws. The Contractor agrees as follows:

1. The Contractor will not discriminate against any employee or applicant for employment because of race, color, religion, national origin, sex, age, height, weight, marital status, physical or mental disability, family status, sexual orientation or gender identity that is unrelated to the individual's ability to perform the duties of the particular job or position. Such action shall include, but not be limited to the following: employment, upgrading, demotion or transfer, recruitment advertising, layoff or termination; rates of pay or other forms of compensations; and selection for training, including apprenticeship.
2. The Contractor will, in all solicitations or advertisements for employees placed by or on behalf of the Contractor, state that all qualified applicants will receive consideration for employment without regard to race, color, religion, national origin, sex, age, height, weight, marital status, physical or mental disability family status, sexual orientation or gender identity that is unrelated to the individuals ability to perform the duties of the particular job or position.
3. If requested by the City, the Contractor shall furnish information regarding practices, policies and programs and employment statistics for the Contractor and subcontractors. The Contractor and subcontractors shall permit access to all books, records and accounts regarding employment practices by agents and representatives of the City duly charged with investigative duties to assure compliance with this clause.
4. Breach of the covenants herein may be regarded as a material breach of the contract or purchasing agreement as provided in the Elliott-Larsen Civil Rights Act and City Ordinance 1856.
5. The Contractor will include or incorporate by reference the provisions of the foregoing paragraphs 1 through 4 in every subcontract or purchase order unless exempted by the rules, regulations or orders of the Michigan Civil Rights Commission* and will provide in every subcontract or purchase order that said provision will be binding upon each subcontractor or seller.
6. The Contractor will not preclude a person with a criminal conviction from being considered for employment unless otherwise precluded by federal or state law. (for contracts over \$25,000)

The Elliott-Larson Civil Rights Act, Sec. 202 of Act. No. 453 of 1976 reads in part as follows:

Sec. 202. (1) An employer shall not:

- (a) Fail or refuse to hire, or recruit, or discharge or otherwise discriminate against an individual with respect to employment, compensation, or a term condition or privilege of employment because of religion, race, color, national origin, age, sex, height, weight or marital status.
- (b) Limit, segregate or classify an employee or applicant for employment in a way which deprives or tends to deprive the employee or applicant of an employment opportunity or otherwise adversely affects the status of an employee or applicant because of religion, race, color, national origin, age, sex, height, weight or marital status.
- (c) Segregate, classify or otherwise discriminate against a person on the basis of sex with respect to a term, condition or privilege of employment, including a benefit plan or system.

* Except for contracts entered into with parties employing less than three employees.



APPENDIX B & C

EVALUATION CRITERIA

CONTRACT 75 A.1-TERTIARY PROCESS EQUIPMENT: MICROTRAINER DISC FILTRATION

Bid Reference #: 89000-001.0

APPENDIX B

INFORMATION REQUIRED FOR PROCUREMENT EVALUATION ANALYSIS

An evaluation of procurement parameters shall be carried out by the City using the data entered in the following Table.

Regional Stability and Longevity			
	Region	Number of Installations	Average age of Installations, yrs
Similar unit installations operational within performance specifications	Tri State		
	Great Lakes States (10 States)		
	U.S.		
	North America		

Parts Availability			
	Location of nearest warehouse for Equipment parts		miles

Service Availability			
	Location of nearest Factory Certified Service Technicians		miles

Treatment Flexibility			
	Peak Hydraulic Capacity per unit, with all capable discs installed, at hydraulic loading rate of 5 gpm / submerged square foot of filtration media area		mgd
	Submerged square feet of filtration media area per unit with all capable discs installed		sq ft

Ability to Perform			
	Headloss at Peak Specified Hydraulic Flow Rate		Feet
Title 22 approval	On units bid		Yes / No
	On manufacturer's other units		Yes / No
	No units		Yes / No

Performance Confidence			
	Solids Performance Guarantee Offered		Yes / No
	Phosphorous Performance Guarantee Offered		Yes / No
	4 week pre-procurement pilot included		Yes / No

APPENDIX C

INFORMATION REQUIRED FOR 20 YEAR LIFE CYCLE COST

Calculation of a 20 year life cycle cost shall be carried out by the City.

The City shall use the data entered in Tables 1, 2, and 3 and the data from the electronic spreadsheet "Backwash volume.xlsx" to calculate the life cycle cost.

Bidder shall complete all relevant entries in Tables 1, 2, and 3. If there are items listed that are not relevant in the Tables, these shall be struck out; if there are items that have not been included, these shall be added to the table as new entries by the Manufacturer and completed.

Bidder shall complete and return the spreadsheet in an electronic format with their submittal.

Table 1 – Process Parameters (marked with an asterisk in Section 3.01 C).

Item	Value	Unit
Instantaneous Backwash Flowrate		gpm
Headloss: effluent weir to bypass weir at 9.50 MGD		feet
Hydraulic Loading at average flow		gpm/sq ft
Maximum Hydraulic Loading at peak flow, one unit offline		gpm/sq ft

Table 2 - Operation and Maintenance Data

Item	Requirement	Maintenance interval	Number of Personnel	Minutes per Disc Filter
<i>Maintenance</i>				
Drum bearing	Grease			
Drum bearing	Replace			
Drum drive	Oil			
Drum drive	Gearbox oil			
Drum seal	Replace lip seal			
Backwash pump bearings	Grease			
Backwash pump bearings	Replace			
Backwash pump	Replace shaft sleeve			
ACS pump bearings	Grease			
ACS pump bearings	Replace			
Backwash nozzles	Remove and replace			
Filter drum drive chain	Replace			
Filter fabric	Replace panels			per panel
<u>Other Items</u>				

Item	Requirement	Maintenance interval	Number of Personnel	Minutes per Disc Filter
<i>Inspection</i>				
Walk by	Inspect			
Backwash nozzles	Inspect			
Disc & Drum seals	Drain tank & inspect			
Drive chain	Check tension & inspect			
Level measurement	Recalibrate			
<u>Other Items</u>				
Normal operation				
<i>Equipment</i>	<i>Power</i>	<i>Cycle time (min)</i>	<i>Cycle frequency</i>	
Drum motor				
Backwash pump motor				
<u>Other Items</u>				
Chemical Cleaning				
<i>Equipment</i>	<i>Power</i>	<i>Run time per cleaning (min)</i>		
Backwash pump motor				
Drum motor				
ACS pump motor				
<i>Chemicals</i>				
Acid strength		%		

Concentrated acid volume per clean		gal		
Dilution		:1		
Water volume per clean		gal		
Number of cleanings per year				
<i>Backwash</i>				
Number per hour per Disc Filter				
Duration of each backwash		sec		
Backwash flowrate		gpm		

Table 3 – Operational Strategy Data

Influent Flow Rate	Influent TSS Loading	Influent TSS Loading	No. Online Units @ <5 gpm per sf of submerged filtration media	Backwash Volume
<i>MGD</i>	<i>mg/L</i>	<i>lb/day</i>	<i>Units</i>	<i>gall/day</i>
29.00	9.0	1,978		
78.00	29.0	13,881		
94.80	18.0	14,231		
53.00 (3 hr)	200.0 (3 hr)	11,050 (3 hr)		



ATTACHMENT A

TECHNICAL SPECIFICATIONS

CONTRACT 75 A.1-TERTIARY PROCESS EQUIPMENT: MICROTRAINER DISC FILTRATION

Bid Reference #: 89000-001.0

TECHNICAL SPECIFICATIONS

PART 1 GENERAL REQUIREMENTS

1.01 DEFINITIONS

- A. Bidder: The entity whom submits a formal offer with the intent to enter into a Contract with the City to provide the Item(s) listed in the Bid per the Bid Documents.
- B. Equipment: Each line item and its appurtenances as identified in Section II Bid and Award for a particular purpose as specified herein to provide complete operable units.
- C. Equipment Manufacture: The entity responsible for the production of the Item(s) listed in the Bid and Contract Documents.
- D. Industrial Control Panel: An assembly of a systematic and standard arrangement of two (2) or more electrical components or circuits, including but not limited to, disconnect switches, motor starters, VFD's, fuses, breakers, relays, power supplies, transformers, programmable logic controller, I/O blocks, termination blocks, pushbuttons, selector switches, timers, switches, pilot lights, power outlets, and associated wiring housed within an industrial enclosure.
- E. Vendor: The entity in which has entered into a Contract with the City to provide the Item(s) listed in the Contract per the executed Contract Documents.

1.02 INFORMATION

- A. Background information
 - 1. The City of Kalamazoo (City) is implementing replacement of their existing rapid sand filter tertiary process technology at the Kalamazoo Water Reclamation Plant (Plant; KWRP). The new process technology will be rotating Microstrainer Disc Filters (Filters) including an Automatic Cleaning System (ACS) to produce a complete system (system).
 - 2. The Equipment will be installed by an Installing Contractor under a future contract.
 - 3. The City intends to set forth design and operational criteria, qualifications, and material requirements for the Equipment and appurtenances such that final design, including but not limited to, layouts, alignments, and integrations, may be completed for construction bidding.
 - 4. It is the intent of the City to evaluate, award the bid, and procure the Equipment based on the criteria listed herein which provides the Best Value for the design application. The City intends to procure the Equipment through this Invitation for Bid.
 - 5. The Equipment shall be capable of meeting the criteria specified herein.
 - 6. The successful Bidder shall provide the Equipment specified and indicated with their Bid.
- B. Invitation For Bid (IFB) Submittal Requirements

1. Each Bidder shall provide three (3) hard-copies and one (1) electronic copy on a flash drive of the following information:
 - a. Submittals as detailed herein. Shop drawings are not required at this time, however, dimensional drawings that are accurate and will not change are required to determine the dimensions and equipment mounting details. Specific details and dimensions for how the equipment will be accessed for maintenance after installation shall be included.
 - b. Completed information in Appendix B and Appendix C.
 - c. A detailed list of any/all deviations from the IFB. If Bidder does not provide a list of any/all deviations, strict adherence to the specifications herein will be expected.
 2. Electronic copy of completed spreadsheet "Backwash volume calculation appendix.xlsx"
 3. The bid cost shall include, but not limited to, the equipment, industrial control cabinet(s), power supply cabinet(s), spares, startup and training, O&M Manuals and submittals as specified in the herein.
 4. The City intends to bid the installation of the Equipment by Quarter 2 2021. The City intends to award this bid in Quarter 3 2020. The bid cost shall be good for a period of one (1) year from the date of bid opening.
- C. Submittals
1. The Bidder / Vendor shall be responsible for the coordination of submittals and design verifications as required for the various parts of the scope of supply as specified and indicated herein.
 2. All submittals to the Owner, unless otherwise specified, shall be made only by the Bidder / Vendor.
 3. All submittals shall reference the Bidder's / Vendor's name, the Equipment Manufacturer's name, the Bid / Contract Number and Title, Owner's Name, the Purchase Order number and date of submission. Submittal shall also indicate whether the information is for the Owner's review and approval, for record.
 4. Information required to be submitted with the IFB:
 - a. Descriptive literature, bulletins, or other data covering Equipment or system.
 - b. Verification of ISO 9001 certification
 - c. Documents which identify the Equipment Manufacture meets the requirements of specification section 2.01 B 1.
 - d. Manufacturer Certification/Affidavit.
 - e. Ancillary Equipment certification.
 - f. General arrangement drawings

- g. Dimensional drawings of Equipment which will not change. Drawings shall include, but not limited to, overall item(s) dimensions, installation mounting location(s), and external plumbing, piping, and electrical connection size, type, and location.
 - h. Maintenance access details
 - i. Evidence of capability to provide the Equipment as will be required to be provided to meet the final design's equipment layouts and alignments.
 - j. A list of at least ten (10) successful installation sites in the United States utilizing equipment of like type in similar applications.
 - k. A list of at five (5) installations of the same type presently in service in the United States, including telephone numbers and individuals to contact.
 - l. Manufacturer's local sales representative, address, telephone number
5. Final Submittal Package (Shop Drawings):
- a. Complete list of components and appurtenances included with each Equipment item, complete with Equipment Manufacturer's serial number and model number
 - b. Parts list with assembly drawings
 - c. Assembly, installation, alignment, adjustment, and checking instructions
 - d. Special tools and equipment required for operation and maintenance
 - e. Manufacturer's job number and Purchase Order number
 - f. Materials of construction
 - g. Sectional assembly
 - h. Utility requirements
 - i. Recommended spare parts list, with part and catalog number
 - j. Lubrication recommendations and instructions
 - k. Schematic wiring diagrams
 - l. Schematic piping diagrams
 - m. Functional design specification and description of associated instrumentation and controls equipment.
 - n. Drive dimensions and data
 - o. Operating instructions
 - p. Maintenance instructions including trouble-shooting guidelines, lubrication, and preventive maintenance instructions with task schedule
 - q. All installation instructions that were provided to Installing Contractor for use to install equipment

- r. 3D model of all equipment.
 - s. Additional shop drawings and documentation requested by Owner, and/or Owner's designee, to confirm the Equipment to be supplied conforms to the specifications herein.
6. Information for the Record:
- a. Release to Manufacture certification. Certification shall, at a minimum, include production schedule and production facility.
 - b. Shipping Documents. Documents shall, at a minimum, include shipping schedule, shipping route including Port of Entry if applicable, necessary unloading requirements, and certificate of Equipment shop run test and industrial control panel Factory Acceptance Test.
 - c. Operating and Maintenance Manuals:
 - 1) Vendor shall provide three (3) hard-copies and one (1) electronic Portable Document Format (PDF) copy on a flash drive.
 - 2) All manuals shall be tailored to the project by high-lighting appropriate information and deleting or crossing out non-applicable information or providing a data sheet with all necessary information to correctly identify the applicable Sections of the manuals for the actual equipment furnished
 - 3) Printed manuals shall be printed on 8-1/2 by 11-inch size with standard three-hole punching submitted in three-ring binders. Index tabs shall be furnished for all manuals containing data for three or more items of equipment. All manuals shall have a title label on the cover stating the specification item number, item name, Equipment Manufacturer's job number and purchase order number, date of Equipment startup, and installation contractor. A table of contents shall be included in all manuals
 - 4) Printed drawings shall be reduced to 11 by 17 inch. Where reduction is not possible, larger drawings shall be folded separately and placed in envelopes which are bound into the manual
 - 5) Electronic manual shall be formatted for 8-1/2 by 11-inch paper size. Bookmarks shall be formatted for navigation to each section defined within the table of contents. All manuals shall have a title cover page stating the specification item number, item name, manufacturer's job number and purchase order number, date of equipment startup, and installation contractor.
 - 6) Electronic drawings shall be inserted into the manual where appropriate and be formatted for plotting to scale at the sheet defined scale.
 - d. Industrial Control Panel UL Listing certification.

- e. Equipment and component Program and Programming Software

1.03 TECHNICAL TERMS

A. Payment

1. Bidder stipulates as part of their Bid, acceptance of the payment terms as designated herein
2. Payment terms are defined as the following payment milestones:
 - a. Final Submittal Package Transmittal to Owner – Vendor shall submit to Owner for review and approval. Data shown on the Shop Drawings will be complete with respect to quantities, dimensions, materials, and similar data to show Owner the equipment, components and material of construction the Vendor proposes to provide. Owner, and/or Owner’s designee, will review Shop Drawings and will be noted as ‘Approved’, ‘Approved - Make Corrections Noted’, ‘Resubmit – Make Corrections Noted’, or ‘Rejected’.
 - b. Approved Final Submittal Package Transmittal to Vendor – Owner will transmit the Reviewed Shop Drawings to Vendor.
 - c. Release to Manufacturer - Vendor shall release Approved Shop Drawings to Equipment Manufacturer to begin production of Equipment. Certification shall be submitted to and accepted by Owner prior to payment.
 - d. Delivery to Site - Equipment shall be delivered on site, to the location specified by the Owner, and shall be in accordance with the approved Shop Drawings, including but not limited to, correct quantities, dimensions, and materials. Items shall be factory crated and wrapped with a UV stable weather barrier such that it is protected for outdoor storage at the delivery site for a minimum of 12 months. Crate shall allow for forklift lifting of crate without requiring breaching of UV stable weather barrier. Shipping documents shall be submitted to and accepted by Owner prior to payment.
 - e. Startup and Training - Equipment Manufacturer’s representative shall be on site to begin startup of Equipment and to train Owner on operation and maintenance of Equipment in accordance with the contract documents. Directly following startup and training, Equipment shall run in accordance to specified performance and design criteria. Vendor agrees said milestone date is dependent upon the Installation Contractor’s schedule, which is outside the direct control of the Vendor, the Owner, and the Owner’s representatives.
 - f. Final Acceptance by Owner - Equipment shall operate in accordance to the specified performance, the design criteria, and the Approved Final Submittal Package for a minimum of 30 days. Acceptance shall be complete when the following are on site and approved, including but not limited to, Equipment, Operation and Maintenance manuals, spare parts, programs and software.

3. Payments will be made in an amount equal to the percentage indicated below and less such amounts as Owner may withhold, including but not limited to liquidated damages, in accordance with the Contract.
 - a. 5 percent of Contract price to be paid to the Vendor at payment milestone Final Submittal Package Transmittal to Owner.
 - b. 10 percent of Contract price to be paid to the Vendor at payment milestone Approved Final Submittal Package Transmittal to Bidder.
 - c. 10 percent of Contract price to be paid to the Vendor at payment milestone Release to Manufacturer.
 - d. 60 percent of Contract price to be paid to the Vendor at payment milestone Delivery to Site.
 - e. 10 percent of Contract price to be paid to the Vendor at payment milestone Startup and Training.
 - f. 5 percent of Contract price to be paid to the Vendor at payment milestone Final Acceptance by Owner.
 4. Retainage
 - a. Regular retainage of 10% will be withheld from all payments to the supplier for milestone payments Final Submittal Package Transmittal, Approved Final Submittal Package Transmittal to Vendor, and Release to Manufacture. If the character and progress of the Work have been satisfactory to the Owner, then, as long as the character and progress of the Work remains satisfactory to the Owner, retainage shall drop to 5% for the payment milestone Delivery to Site. If the character and progress of the Contract has been satisfactory to the Owner, then, as long as the character and progress of the Contract remains satisfactory to the Owner, retainage shall drop to 0% for the payment milestone Startup and Training.
- B. Schedule
1. Vendor stipulates in Bid, acceptance of the schedule terms as designated herein.
 2. Schedule terms are defined equivalently to payment milestones.
 3. All time limits for Milestones, and completion and readiness for milestone payment as stated in the Contract Documents are designated herein
 - a. Final Submittal Package Transmittal to Owner shall be completed within 6 weeks after the Notification to Proceed has been authorized by the Owner
 - b. Approved Final Submittal Package Transmittal to Vendor shall be dependent upon the completeness and correctness of the Final Submittal Package transmitted to Owner by the Vendor for conformity to the Contract Documents. Owner will strive to limit delays in review time which are within the Owner's, or Owner's designee, direct control.

- Anticipated completion within 12 weeks after the Notification to Proceed has been authorized by the Owner
- c. Release to the Manufacturer shall be completed within 24 weeks after the Notification to Proceed has been authorized by the Owner
 - d. Delivery to Site shall be completed within 48 weeks after the Notification to Proceed has been authorized by the Owner
 - e. Startup and Training shall be dependent upon the construction progress schedule of the Installation Contractor and schedule coordination Equipment Manufacturer's representative. Owner will strive to limit delays in schedule which are within the Owner's, or Owner's designee's, direct control. Anticipated completion within 72 weeks after the Notification to Proceed has been authorized by the Owner
 - f. Final Acceptance by Owner shall be dependent upon the construction progress schedule of the Installation Contractor. Owner will strive to limit delays in schedule which are within the Owner's, or Owner's designee's, direct control. Anticipated completion within 81 weeks after the Notification to Proceed has been authorized by the Owner

PART 2 TECHNICAL REQUIREMENTS

2.01 GENERAL

- A. Scope
 - 1. This Section includes furnishing rotating Microstrainer Disc Filter units (Filters) and associated controls as shown and described within the contract documents, including but not limited to, the Drawings and the Technical Specifications.
 - 2. The Filters specified in this section shall be Hydrotech Performance Filter manufactured by Veolia Water Technologies, Inc. dba Kruger, SuperDisc manufactured by WesTech Engineering, Inc or Owner pre-bid opening approved equal.
 - 3. All Work performed and Equipment provided shall be in accordance with all approved trade practices, governing agencies and organizations, and Equipment Manufacturers' recommendations.
- B. Quality Assurance
 - 1. Experience of Equipment Manufacturers:
 - a. The Equipment shall be by an Equipment Manufacturer whom shall have at least ten (10) years' experience in the United States or twenty (20) years' experience worldwide in the design, production, assembly and field service of Equipment of similar type, size and capacity in municipal wastewater applications.
 - b. The Equipment Manufacturer must have manufacturing or warehouse facilities located in the United States including parts inventory, and personnel based in the United States and employed by the Equipment Manufacturer to provide direct technical and field support.

- c. The disc filtration technology shall be accepted filtration technology for compliance with the State of California Water Recycling Criteria (Title 22).
 2. Manufacturer Certification/Affidavit:
 - a. Manufacturer shall provide affidavit certifying that
 - 1) Manufacturer has examined the Contract Documents, including but not limited to the Drawings and specifications.
 - 2) Understand the installation and parameters specified herein and shown on the Drawings.
 - 3) The equipment specified is suitable for this application.
 - 4) Notified Owner of any modifications required to the system or the equipment in this application.
 3. The Equipment Manufacturer shall warrant the use of this system and its equipment shall not infringe on any U.S. or foreign patent
 4. The Equipment Manufacturer shall verify and accept that the installation of the supplied Equipment meets the Equipment Manufacturer's requirements such that the supplied Equipment will perform as required by these Contract Documents.
 5. The Vendor is responsible for coordination and control integration between the Equipment supplied by separate Equipment Manufacturers herein.
- C. Warranty
 1. The Equipment shall be warranted to meet or exceed the design criteria detailed and specified herein.
 2. A written Equipment Manufacturer's warranty shall be provided for the Equipment specified in this section. Such warranty shall cover all defects or failures of materials or workmanship which occur as the result of normal operation and service.
 3. The period of warranty shall be for a minimum period of two (2) years and shall commence upon acceptance of the Performance Test by the Owner. Under terms of this warranty, Equipment Manufacturer shall repair or replace parts or refund the purchase price to the Owner for repairs or replacements which do not meet the criteria within the Contract Documents. The provisions of this warranty shall not be construed as relieving or reducing the obligations of the Installing Contractor outlined in the General Conditions of these Specifications.
 4. Owner shall have the option to purchase additional manufacturer warranty options and service package plans, for a cost. Vendor shall provide, upon request, the warranty and service plan information and their respective cost. Warranty options should include, but not be limited to
 - a. Prorated warranties, terms and conditions, and length of time

- b. A full replacement (non-prorated) warranty, terms and conditions, for time frames up to 5 years
- c. Service package plans

2.02 COMMON EQUIPMENT REQUIREMENTS

A. General Requirements

1. All Equipment components shall be amply proportioned for all stresses that may occur during manufacturing, transportation, erection, operation, and maintenance.
2. All Equipment shall be fully assembled and factory run tested prior to shipping to confirm fit and function. A certificate of the shop run test shall be supplied with the shipping documents.
3. All stainless steel bolt and nut threads shall be coated with a non-seizing compound.
4. All Equipment shall be shipped to the site fully assembled, if possible, and dependent upon the height of the Filter, some ancillary components may be removed in order to prevent damage during shipment.
5. All fabricated metal shall be minimum grade AISI 316 stainless steel unless otherwise stated in this specification. All welding shall conform to the latest standards of the American Welding Society.
6. Purchased components such as gear reducers, pumps, motors, valves, and actuators shall be provided with standard recommended Equipment Manufacturer's coatings, unless otherwise specified within this section.
7. Each Equipment Manufacturer shall furnish and coordinate all Equipment components including, but not limited to, the industrial control panel(s), the filter disc panels, motors, gear reducers and control and electrical panels as a complete integrated package to insure proper coordination, compatibility, and operation of the Equipment.
8. Equipment Manufacturers shall certify their Equipment meets the requirements of the allied Equipment included in this Contract.
9. Flange connections shall be provided with ASME/ANSI bolt pattern AISI 304 stainless steel stub ends and AISI 304 stainless steel lap joint flanges. Flange connections shall be used to connect Equipment to process piping in the field.
10. All grease points shall be externally accessible via a single stainless steel grease zerk header, stainless steel grease zerks, and stainless steel grease tubing and fitting connections to grease points for routine lubrication.

B. General Electric Motor Requirements

1. AC motor(s) shall conform to the latest applicable NEMA, IEEE, and ANSI standards.
2. Motor installation shall not exceed 88 dB(A) weighted maximum level at 3 feet from the motor throughout the entire speed range and load range.

3. Motor bearings shall be antifriction type, grease lubricated with a minimum L-10 rating of 17,500 hours for belted duty and 100,000 hours for direct coupled duty.
4. Thrust bearings in vertical motors shall be adequate for the loading encountered.
5. Motor conduit boxes shall be sized with capacity to meet the requirements of the National Electrical Code. Motors shall be furnished in an “F1” terminal housing assembly (facing connection box, motor shaft extension is to the right) unless otherwise shown on Drawings or specified.
6. Each motor shall be continuous duty rated NEMA Design B with normal starting torque, unless otherwise required by the Equipment Manufacturer for the connected load.
7. Output torque and speed characteristics of each motor shall be suitable to operate the connected load over the full range of operating speeds and load conditions without exceeding the nameplate current rating or temperature rise on a continuous duty basis.
8. Insulation shall be Class F or Class H.
9. All motors shall be in use with a Variable Frequency Drive (VFD), unless otherwise noted. VFD shall be used in place of the function of a motor starter. VFD’s shall be ABB ACS 550 series, or Owner pre-approved equal.
10. Motors for use with a Variable Frequency Drive (VFD) shall be TENV, TEFC, or submersible, water cooled. Cooling system shall be capable of sufficiently cooling the motor at the lowest motor frequency setpoint in which the motor’s load is capable of operating at.
 - a. Design to meet or exceed the efficiency class IE3.
 - b. Motor shall be “Inverter Duty Rated”, and so stamped on the nameplate.
 - c. Motor shall have an insulation system that meets or exceeds the requirements of NEMA MG-1, Part 31.40.4.2, and is rated at 1600 volts peak to ensure that the motor is rated for operation with non-sinusoidal waveforms at 1.0 service factor.
 - d. Bearings in motors greater than NEMA Frame size of 300 and controlled by variable frequency drives must be guaranteed against premature bearing failure caused by discharge current. All such motors shall be provided with a shaft grounding device.
11. AC motor shall have internal thermal protection in the form of thermistors, Positive Temperature Coefficient sensors, guaranteed by the motor Supplier to signal the motor is overheating from a rapid overload, slow overload, and locked-rotor conditions.
 - a. Thermal protection devices shall be imbedded within the motor windings used in series with the stop circuit on the VFD. The signal shall

also connect to the Equipment's PLC for monitoring, reporting, and trending.

12. Overload protection and indication shall be provided by a true power monitor electrical overload device that senses the motor power factor.
13. Motor(s) and Pump(s) shall be installed at the factory and provided integral to Equipment.
14. Non-galvanized ferrous surface shall be painted.
15. Shop painting of ferrous surfaces shall be as follows:
 - a. Surfaces shall be thoroughly cleaned of dirt, grease, oil, rust, scale, or other foreign substances. All metal surfaces shall, as a minimum, be abrasive blasted in accordance with SSPC-SP6, Commercial Blast Cleaning.
 - b. Surfaces shall receive a shop coat of a polyamide primer and a polyamide finish coating.

C. General Electrical, Instrumentation, and Control (E&I) Requirements

1. General:

a. Definitions:

1) Human Machine Interface (HMI):

Human Machine Interface (HMI) shall refer to the fascia of an Industrial Control Panel and shall include all lights, selector switches, pushbuttons, displays, and the Operator Interface Terminal (OIT).

2) Operator Interface Terminal (OIT):

Operator interface terminal (OIT) shall refer to the display which shall enable Plant personnel to monitor the status of and operate the equipment.

- b. Work shall comply with the latest edition of the National Electric Code (NEC) as prepared by the National Fire Protection Association (NFPA), and the National Electric Safety Code (NESC).
- c. Equipment, materials and installation shall comply with applicable requirements of National Electrical Manufacturers Association (NEMA), Institute of Electrical and Electronic Engineers (IEEE), Underwriters Laboratories, Inc. (UL), and the American National Standards Institute (ANSI).
- d. Industrial Control Panel enclosures shall meet the following criteria: NEMA 4X enclosure, 304 Stainless Steel, seams continuously welded and ground smooth, seamless foam-in-place gasket for watertight dust-tight seal, door opens 180°, quarter turn latches opened or closed using a screwdriver. The enclosures shall be Hoffman, Wiegman or equal.

- e. All industrial control panels and components shall be UL listed and labeled and factory tested prior to shipping to confirm function of the panels. When a UL regulation is in conflict with another regulatory standard, UL regulation shall prevail so long as said UL regulation does not cause harm to human life or safety, to the industrial control panel, the Equipment or the Equipment components.
- f. All Industrial Control Panels shall be externally data labeled with, including but not limited to, the Short Circuit Current Rating, Full Load Amps, Available Fault Current and all governing requirements.
- g. All stranded wire shall be terminated with the use of a ferrule.
- h. Components shall be mounted to the back panel with screws, washers and lock washers via drilled and tapped holes. Self-tapping screw mounting will not be accepted.
- i. All components, devices, wires and terminal block sections shall be clearly labeled.
 - 1) Labeling shall read left to right or bottom to top
 - 2) Wire labeling shall be heat shrink tubing
 - 3) Wire labeling shall, at a minimum, identify:
 - Termination Type; Signal (AI, AO, DI, DO), Power identifying amp, voltage, and type (2AMP_24V_DC; 5AMP_120V_1P; 10AMP_480V_3P), etc.
 - Wire ID from drawings
 - Component, device, instrument, or terminal block section ID of termination at opposite end
- j. All instrumentation and control devices and circuits shall be 24V DC.
- k. All industrial control panel lighting shall be LED.
- l. Process parameter communication shall be via Ethernet. Including, but not limited to, the VFD, OIT, and PLC shall be connected to and communicate via an ethernet switch.
- m. Including but not limited to, interlocks, start, stop, and e-stops shall be direct hard wired.
- n. Start circuit shall be wired as a momentary start circuit.
- o. Current protection devices shall be provided to individually protect and isolate, including but not limited to, each component, device, and instrument within the panel. Breakers shall be primary method of current protection for devices and components, fuses shall be primary method of current protection for instrumentation and control circuits.
- p. An externally readable hour meter and means of logging shall be provided for each motor circuit.

- q. Programmable Logic controller and Operator Interface Terminal:
 - 1) Equipment shall be managed by automated control systems, designed around Allen Bradley Logix 5000 family of controller with ethernet connectivity capability.
 - 2) Equipment HMI OIT shall be designed around Allen Bradley PanelView 5000 family of operator terminal. OIT shall be Allen Bradley PanelView 5510 catalog number 2715P-T12WD.
 - r. OIT shall provide any and all operational and maintenance parameters for the Equipment, including but not limited to, setpoints, present values, statuses, preventative maintenance reminders, etc.
 - s. Industrial control panels shall not be assembled to the Equipment. Field mounting, panel IO wiring and terminating, and wiring and terminating between panels will be provided by others.
2. Power Supply:
- a. Building power shall be 480V 3-phase AC.
 - b. Equipment shall have separate Industrial Control Panels for each power type and voltage.
 - c. The Main Power Panel incoming power shall be 480V 3-phase AC and shall house all circuits and components which are connected to 480V AC loads. The Main Power Panel shall step down the voltage from 480V AC to 120V AC using a transformer as necessary. 120V AC circuit shall be fed from upstream of the main disconnect within the panel.
 - d. The Intermediate Power Panel incoming power shall be 120V AC 1-phase and house all circuits and components which are connected to 120V AC loads. The Intermediate Power Panel shall convert 120V AC to 24V DC by means of a power supply.
 - e. The Control Panel incoming power shall be 24V DC and house all circuits and components which are connected to 24V DC loads.
 - f. Equipment rated for specific voltages shall be located in the associated Industrial Control Panel.
 - g. Terminal blocks for field wiring shall be DIN rail mounted individually numbered and rated for 600 Volts 30 Amps minimum. Motor wiring terminal blocks shall be rated for 600 Volts 65 Amps minimum.
 - h. Wiring between MCC and 480V AC Power Panel and between subsequent industrial control panels shall be the responsibility of the Installing Contractor.
 - i. Terminal blocks shall be provided for wiring connection between panels and panels and field devices.
3. Equipment Main Power Panel:

- a. Panels containing 480 volt power wiring contained within shall have a defeatable disconnect switch mounted on the panel front exterior to prevent opening the panel while the switch is in the ON position. The main disconnect switch shall be enclosed in the 480 V Power Panel, with an external mounted handle or switch mechanism. The main disconnect shall be a breaker disconnect connected to a NEMA 4X operating handle.
 - b. The 480V AC power panel shall contain, including but not limited to, main circuit breaker/disconnect, 120V AC transformer, branch circuit breakers, and VFDs.
 - c. A circuit breaker shall be located in the Main Power Panel to protect the influent gate valve motor.
4. Equipment Intermediate Power Panel:
- a. The 120V AC Intermediate Power Panel shall house, including but not limited to, the 24V DC power supply, laptop PC power and ethernet port, 120V AC components, and relays requiring 120V AC power.
 - b. Laptop power outlet with ethernet port shall be Hubbell PR4X205EB.
5. Equipment Control Panel:
- a. Fault and overload indication and description of the various type of Equipment circuit, equipment, and component faults shall be provided on the HMI for said Equipment. Any fault and overload reset shall be resettable from outside the Industrial Control Panel.
 - b. A modular 100mm 5 tier control signal tower stack light shall be provided to indicate an overview status of the Equipment. Lights shall provide indication of the following statuses; order of stack will be determined during submittal package review:
 - 1) Power On - Clear
 - 2) Online – Green
 - 3) Backwash – Blue (Filter Only) (ACS Spare)
 - 4) E-Stop – Red
 - 5) Common Fault - Amber
 - c. Control Panel shall consist of, but not limited to, control power distribution, a programmable logic controller (PLC), HMI, OIT, network switch, VFD control panel, and terminal blocks for, but not limited to, analog inputs, analog outputs, digital inputs, and digital outputs.
 - d. VFD control panel shall be accessible on the front of the panel as part of the HMI. VFD control panel shall be protected by a clear protective cover capable of being opened for control panel access without entry into the panel.

- e. HMI external selector switches shall be NEMA 4X, 30mm, non-illuminated and equipped with contact blocks.

2.03 SYSTEM PROCESS DESCRIPTION

A. General

1. Overview

- a. Filter shall be suitable for filtering wastewater after secondary treatment and clarification. Filter shall be designed to operate on a continuous basis, independent of the operation of other installed Filters, and shall be designed to operate while receiving varying flows.
 - b. Filter shall utilize an “inside-out” flow pattern in which influent flows by gravity into the filter media discs from the center drum. Solids are separated from the water by partially submerged filter media. Filtration systems with fully submerged media utilizing an “outside-in” flow pattern will not be acceptable.
 - c. In order to minimize electrical and operation costs, filtration systems that employ a “dynamic tangential filtration” design will not be accepted.
2. Filter shall consist of a central drum onto which the discs with the filtration media are assembled. The rotating assembly of the Filter shall be supported on the front and rear by support wheels or bearings. Each Filter shall include, but not limited to, center drum, discs with filtration media, support frame with cover, backwash spray assembly with pump, backwash trough, drive mechanism, chemical cleaning spray assembly, cover over the entire Filter, effluent level control, control and power system and components as specified to provide a complete functioning Filter to perform as specified herein.
3. To assure unity of responsibility, all Equipment industrial control panels and components shall be coordinated by a single Equipment Manufacturer.

B. Filter General Design Information:

Filter Criteria	Value or Description
<i>Filter Unit:</i>	
Overall length*	24 feet – 8 inches
Overall width*	9 feet – 0 inches
Overall height*	12 feet – 6 inches
Filter Disc Diameter*	2.4 m
Number of installed Filter Units*	10
Backwash Water Pressure*	109 psi
Material	304 stainless steel

*denotes the value used to develop the process design drawings included in this IFB.

Filter Media Discs:

Nominal Filter Media Pore Size	10 µm
Filter Cloth Material	Polyester
Number of Filter Discs per unit**	34 (___)
To meet basis of design (To occupy each location on drum)	
Submerged area of media (all discs installed)*	1,460 (___) sq ft per filter
To meet basis of design (To occupy each location on drum)	

Filter Drive Unit:

Drive Motor (1 per unit)	460 V, 3 phase
--------------------------	----------------

Backwash Cleaning System:

Number of Backwash Nozzles (per Disc)**	14
To meet basis of design	
Backwash Pump Motor (1 per unit)	460 V, 3 phase
Instantaneous Backwash Flowrate **	340 (___) gpm
Discs to meet basis of design (discs to occupy each location on drum)	
Backwash spray header oscillation motor, if necessary	460V, 3 phase AC

C. Automated Cleaning System (ACS) General Design Information

Automated Cleaning System (ACS)	Value or Description
Number of skids	2
Type	Skid-mounted, hard-piped.
ACS chemical pump motor	460 V, 3 phase.
Chemical Solution 1	As required by Filter Manufacturer to adequately clean hardness scale buildup from filter media.
Chemical Solution 2	As required by Filter Manufacturer to adequately clean biological growth from filter media.
Chemical Solution 3	As required by Filter Manufacture to adequately clean FOG buildup from filter media.
Chemical Pump Flow	As required by Filter Manufacturer to adequately clean filter media.
Chemical Pump Pressure	As required by Filter

Manufacturer to adequately clean filter media.

D. Basis of Design:

Hydraulics Criteria	Value or Description
Headloss, @ Peak Flow effluent channel to influent channel, maximum**	1.18 feet at 10.5 MGD

**denotes the value for this parameter is required to be entered in Appendix B.

Influent Parameter	Unit	Value or Description
Source	N/A	Secondary Clarified Effluent following Activated Sludge
Peak Flow, rate	MGD	10.5
Annual Average Flow, rate	MGD	6.0
Maximum Influent TSS, @ Peak Flow	mg/L	200 for three (3) hrs
Average Influent TSS	mg/L	18, 24-hour composite
Hydraulic Loading, max, submerged media	gpm/sq ft	5.0 (at peak hour flow)
Effluent Parameter	Unit	Value
Average Effluent TSS	mg/L	≤3, 24-hour composite

E. Filter

1. Filter Inlet Chamber:
 - a. Flow into the Filter shall enter through a flange connection such that the invert of the stub is aligned with the bottom of the inlet chamber and pass into the Center Drum.
 - b. Inlet chamber shall be designed such that the bottom of the inlet chamber aligns at the bottom of the Filter unit.
2. Filter Center Drum:
 - a. The center drum shall be a watertight, one piece, structural welded, AISI 304 stainless steel fabrication, open at one end to allow the influent to enter, and shall have openings to the Filter discs for water distribution and particle guidance to the filtration media. The center drum shall have grease lubricated roller wheels and bearings.
3. Filter Disc Assembly:
 - a. The Filter shall be composed of modular and removable discs. Each disc shall consist of disc segments that can be easily mounted or dismounted as required from outside the Filter. Filter disc segment frames shall be injection molded ABS plastic or compression molded fiberglass reinforced plastic. The segments of one disc will connect together, and

- the completed disc assembly will be secured to the center drum with stainless steel hardware.
- b. Filter media shall be mounted on the sides of the disc segments, either directly to the disc segments or via filtration media panels.
 - 1) Filtration media panels shall consist of plastic frames with the filtration media attached to the frames. Each filtration media panel shall be equipped with a watertight seal between the filtration media panel and disc segment. The replacement of filtration media panels shall be possible from outside the filter tank.
 - c. Nominal media pore size shall not exceed that stated herein. Filtration systems utilizing media pore size greater than stated herein shall not be accepted.
 - d. Systems with pleated media, corrugated media, pile cloth media, or metal media will not be acceptable.
4. Support Frame with Enclosed Tank and Cover:
- a. The support frame and tank shall be structural welded 304 stainless steel. The support frame and tank assembly shall include 304 stainless steel supports for, including but not limited to, backwash pump, drive gear box, and center shaft bearing house. Tank thickness shall be a minimum of 3 mm. Carbon steel construction shall not be acceptable.
 - b. Anchor bolts shall be provided by the Installing Contractor.
 - c. Anchor points shall be welded to the Filter by the Equipment Manufacturer for a permanent secure installation by Installation Contractor. Anchor points shall be 304 stainless steel.
 - d. The Filter shall be furnished with a lockable glassfiber reinforced plastic cover to prevent algal growth and reduce the presence of filter flies. The cover shall be automated to allow it to be opened and closed without the need for manual lifting. The cover must be designed to be hinged from a single side of the unit in order to allow personnel to access the disc segments, filtration media panels and spray nozzles. Hinge side of Filter shall be determined during final submittal package review.
 - e. Motor actuator(s) shall open and lift the cover. The actuators shall be stainless steel IP69K classification. The actuators must include mechanical overload protection via integrated slip clutch. A hand crank shall allow for manual operation of the cover. Manual operation shall only be performed while the power supply is disconnected.
5. All chambers shall be equipped with a drain flange connection such that the invert of the stub is aligned with the bottom the chamber. Chamber drains shall drain the full depth of the chamber.
6. Backwash Cleaning System:

- a. The Filter unit shall be equipped with a single oscillating backwash cleaning system with moving spray nozzle headers for efficient cleaning of the filtration media and for reduction of the consumption of backwash water. All panels and media shall receive backwash spray. Systems with separate solids removal and backwash discharge systems shall not be acceptable.
- b. The backwash cleaning system shall be comprised of 316 stainless steel backwash spray headers installed between the discs. Each spray header shall be connected to a multi-nozzle holder. The spray headers and multi-nozzle holder assembly shall oscillate in an upward and downward motion during center drum rotation. Each multi-nozzle holder shall have flat pattern spray nozzles for each disc side. The replacement of spray nozzles shall be possible from outside the filter tank. A swivel joint shall allow the spray header manifold to rotate out for nozzle access without disassembly of the manifold or headers. Motor actuators shall rotate the spray header manifold out of and into the Filter for maintenance. The actuators shall be stainless steel IP69K classification.
- c. Filter shall have one externally mounted centrifugal pump for the backwash system capable of providing the pressure and volume required to adequately backwash the media with complete drum buildout of discs. The backwash pump shall be of the vertical multi-stage design with an integral motor mounted directly to the top of the pump.
- d. Filtered water shall be discharged from the pump to the backwash header piping constructed of stainless steel. An easily accessible stainless steel housing with internal wire weave filtration cartridge shall be installed in the piping downstream of the backwash pump in order to protect the spray nozzles from being plugged with small particles. Filter cartridge mesh size shall be no greater than 200 micron.
- e. A manual stainless steel shut off ball valve shall be installed in the piping downstream of the strainer housing. A stainless steel piped bypass assembly with ball valve shall be connected to the backwash piping upstream and downstream of the shut-off valve. The purpose of the shut-off valve and the piped bypass assembly is to throttle the flow and pressure when performing nozzle inspection.
- f. A pressure sensor and gauge shall be installed in the backwash header piping downstream of the pump, strainer, shut off and piped bypass assembly in order to monitor the nozzle pressure and, in conjunction with backwash flowmeter, serve as the backwash pump dry run protection. When the pressure is below an input setpoint, the PLC shall prevent the pump from running.
- g. A Flowmeter shall be provided by the Equipment Manufacturer. The flowmeter shall be used for monitoring the capacity of the backwash pump and, in conjunction with backwash pressure sensor, serve as

backwash pump run dry protection. Location of the flowmeter shall provide easy access for routine calibration and maintenance. Flowmeter location shall conform to flowmeter's manufacturer's recommendations.

- h. The Filter shall be equipped with a backwash-collecting trough for removing solids. The trough shall be constructed of AISI 316 stainless steel. The trough length shall be equivalent to the length of the center drum. The trough shall be elevated to prevent contact with the influent stream. The backwash waste stream shall leave the trough by gravity via the backwash outlet flange connection.
- i. Piping from the trough to the outlet flange connection shall be stainless steel connected with stainless steel union(s).
- j. All backwash stainless steel piping, fittings, and valves shall be AISI 316 stainless steel.

7. Instrumentation:

- a. The Filter shall be equipped with a radar level transducer for effluent water level measurement. The radar transducer signal shall be converted to a flowrate over the effluent weir of the Filter. Radar transducer shall be Vega VegaPULS WL61. The use of pressure sensors or ultrasonic level transmitters for flow measurement will not be accepted.
- b. The Filter unit shall be supplied with an influent chamber backwash and high-water level sensors located on top of the tank. The level sensors shall be a height adjustable with control wire connected at the top. Level sensor shall be mounted to a threaded non-metallic sensor mounting pipe which is height adjusted into and out of the inlet chamber via a welded nut on the tank and a held in place via a non-metallic jam nut on the mounting pipe.
- c. The instrumentation, including but not limited to, the transducer, level sensor, flow meter, and pressure sensor shall be installed on the unit at the factory and shall be wired to a terminal block inside the instrumentation junction box located on the Filter unit. The common junction box shall be sized appropriately for the number of terminations and provide adequate conduct connections such that signal interference does not occur between instrumentation devices. The Installing Contractor shall provide all wiring, conduit, and terminations between the junction box and the control panel for the Filter.

8. Central Drum Drive Mechanism:

- a. The drive assembly shall consist of a gearmotor, polyamide drive sprockets, and fiber reinforced plastic (FRP) drive chain, or of a gearmotor, synchronous drive belt and 304 stainless steel sprocket. The chain link and barrel material shall be FRP. The chain pin material shall be AISI S32205 stainless steel.

- b. The gear motor shall be SEW Eurodrive shaft mounted helical worm gear electric motor.
 - 9. Flow Bypass/Diversion:
 - a. A means for flow bypass/diversion shall be provided by others for the purpose of preventing high inlet water elevations in the Filter unit.
 - 10. Chemical Spray Header:
 - a. Filter shall be equipped with a duplex stainless steel header pipe for the purpose of allowing supplemental chemical cleaning of the discs. The header pipe shall have either nozzles or a multi-nozzle header that directs a spray pattern to allow for application of chemical onto all filtration media.
 - b. The header pipe shall be attached to the inside of the filter frame. Pipe header shall have a flange connection.
 - 11. Electrical:
 - a. VFD located in the Main Power Panel will manage the start/stop of the Drum Drive motor. The VFD will be sized appropriately to match the requirements of the Drum Drive motor.
 - b. VFD located in the Main Power Panel will manage the start/stop of the Backwash Pump motor. The VFD will be sized appropriately to match the requirements of the Backwash Pump motor.
 - c. If required by Equipment Manufacture, a VFD located in the Main Power Panel will manage the start/stop of the backwash spray header oscillation motor. The VFD will be sized appropriately to match the requirements of the backwash spray header oscillation motor.
- F. Automated Cleaning System (ACS):
 - 1. Automatic cleaning systems (ACS) shall apply a chemical spray to the Filter's filtration media in order to remove either organic or inorganic foulants, including but not limited to hardness scale, biological, and FOG buildup, from the filtration media. The ACS shall be integrated into the design of the Filter system including all appurtenances as required for automated operation of the ACS skid(s).
 - 2. Each ACS shall consist of a polypropylene skid with the following components factory mounted on the skid:
 - a. 2-inch flanged connection suction line.
 - b. Magnetic drive pump with electric motor.
 - c. PVDF relief valve with pressure gauge and pressure relief pipe flange connection.
 - d. Two (2) pressure switches (low and high).
 - e. Fusion heat welded polypropylene true union ball and ball check valves with Viton seals and gaskets.

- (i) In Local using Local-Off-Process Master switch on Filter HMI:
 - Manual mode: Backwash started and stopped using the Initiate Backwash pushbutton on the HMI or by the individual Backwash Pump, Filter Drum, and spray header oscillation (if required) pushbuttons on the HMI.
 - PLC mode: Filter backwashes on level in the Filter inlet chamber as determined by influent chamber level sensor.
 - (ii) In Process Master using Local-Off-Process Master selector switch on Filter HMI, choice of mode of operation shall be selectable from the following at the Process Master Industrial Control Panel HMI, supplied and programmed by others:
 - Level in the common Filter inlet channel: backwashing of multiple online Filters is sequential
 - Level in each Filter, determined by influent chamber level sensor: backwash Filter when it calls to backwash.
 - Level in each Filter, determined by influent chamber level sensor: backwash all Disc Filters when any one filter calls to backwash.
 - 6) Filter cover can be raised and lowered from the HMI.
 - 7) The spray bar header can be extracted and retracted from the HMI.
 - 8) An E-Stop pushbutton shall stop all electrical motors, including but not limited to, Influent Gate Actuator, Drum Drive, Backwash Pump, Cover Actuator(s), Spray Bar Header Actuators, Spray Bar Oscillation Motor (if equipped) and ACS. An E-Stop reset shall reset all connected electrical motors which were E-Stopped, including but not limited to, the Influent Gate Actuator and ACS (only if Filter is undergoing a chemical cleaning).
 - 9) Initiation of Filter Chemical Clean sequence Start, Stop, and Skid selection.
2. Chemical Cleaning System
- a. Control Overview
 - 1) A Local-Off-Filter selector switch at the ACS HMI shall allow operation from either the ACS (Local) or at each Filter.
 - (i) In Local, control shall be from the ACS HMI.

- (ii) In Local control mode, ACS shall only control the ACS skid components and valve actuators such that chemical may be supplied to the selected Filter. Filter in which a chemical cleaning is to undergo will have a chemical clean sequence initiated from the Filter HMI. Filter chemical clean sequence will initiate upon start of ACS.
 - (iii) In Filter, chemical cleaning sequence shall be controlled from the Filter HMI.
 - 2) Only one (1) Filter shall be able to be cleaned at a time from an ACS skid.
 - 3) Once a chemical cleaning sequence has initiated, cleaning operations for all other filters from ACS skid shall be disabled.
- b. Filter Control Panel:
 - 1) With the selector switch on the ACS HMI is in Filter, selection of the skid and starting and stopping of the cleaning sequence shall be possible from the Filter HMI. Visual indication of the initiation of cleaning chemical delivery and indication of which Filter is selected to receive chemical shall be provided.
 - 2) Common ACS fault indication shall provided on the Filter HMI.
- c. ACS Control Panel:
 - 1) When the ACS selector switch is in Local, the start chemical dosing shall be initiated to deliver chemical to the selected Filter. Visual indication of the initiation of cleaning chemical delivery and indication of which Filter is selected to receive chemical shall be provided.
 - 2) ACS HMI shall display ACS faults and overloads
- d. Typical operation of the ACS will be with the ACS HMI switches being in the Filter position and control of chemical cleaning sequence being from individual Filter HMIs.
- e. Operational sequence of the chemical cleaning sequence is as follows:
 - 1) ASC HMI in Local:
 - Pilot lighted 'Start' pushbutton for each Filter
 - Common 'Stop' pushbutton to stop Chemical Cleaning cycle part way through. Stop shall return all valve actuators back to normal state. A Stop alarm visual indicator shall indicate a chemical cleaning sequence did not complete.
 - To start cleaning cycle from the ACS HMI, ACS PLC communication from Filter PLC will include, but not limited to:

- Filter offline
 - Filter equipment available
 - Operational sequence:
 - Chemical clean is selected at Filter HMI.
 - Push 'Start' at ACS HMI for Filter to receive chemical.
 - Valves change to required position.
 - Chemical Cleaning pump starts.
 - Filter begins chemical clean operation sequence.
 - Chemical is delivered to Filter for programmed length of time.
 - Chemical Cleaning pump stops.
 - Valves change to required position for pipeline flushing.
 - Pipeline is flushed for a programmed length of time.
 - Valves return to normal state.
 - Filter ends chemical cleaning sequence.
- 2) ACS HMI in Filter:
- ACS 1 or 2 pushbutton becomes active if corresponding ACS HMI is in Filter mode and is selected at Filter HMI
 - Pushbutton to start Chemical Cleaning cycle becomes active.
 - Pushbutton to stop Chemical Cleaning cycle part way through becomes active, visual alarm will activate.
 - To start cleaning cycle from the Disc Filter PLC, communication from ACS PLC will include, but not limited to:
 - ACS Local/Filter switch position
 - ACS equipment on Disc Filter available
 - Operational sequence:
 - Select 'Filter' at ACS HMI for which control is to be available at the Filter HMI.
 - Select ACS Skid Number at Filter HMI.
 - Push 'Start' at Disc Filter HMI.
 - Valves change to required positions.

- Chemical Cleaning pump starts.
- Filter begins chemical clean operation sequence.
- Chemical is delivered to Filter for programmed length of time.
- Chemical Cleaning pump stops.
- Valves change to required position for pipeline flushing.
- Pipeline is flushed for a programmed length of time.
- Valves return to normal state.
- Filter ends chemical cleaning sequence.

H. Process Master Control Integration

1. Process Master Control Panel, provided by other, shall be provided the ability to act as a local treatment process SCADA terminal.
2. Filter shall be capable of, including but not limited to, the following operations as performed from the Process Master control panel:
 - a. Put Filter online or offline
 - b. View Filter statuses:
 - 1) Power on / off
 - 2) Control selector switch position
 - 3) Online
 - 4) Backwashing
 - 5) Chemical Cleaning
 - 6) Preventative Maintenance Required
 - 7) Common Fault
 - 8) E-Stop
 - c. Trending
 - d. View Filter operational setpoints and present values
 - e. Update operational setpoints
3. ACS shall be capable of, including but not limited to, the following operations as performed from the Process Master control panel and Filter control panel:
 - a. Start / Stop Chemical Cleaning sequence shall only be capable at the Filter control panel.
 - b. View ACS Statuses:
 - 1) Power on / off
 - 2) Control selector switch position

- 3) Online
 - 4) Valve position(s)
 - 5) Preventative Maintenance Required
 - 6) Common Fault
 - 7) E-Stop
 - c. View ACS operational setpoints and values.
 - d. Update operational setpoints shall only be allowed at the Filter control panel.
- I. Spare Parts
1. The following minimum spare parts shall be provided for the Filters –
 - a. 1 complete Filter set Backwash Spray Nozzles
 - b. 1 complete Filter set Chemical Cleaning Spray Nozzles
 - c. Filter Media Panels with cassettes to replace 10% of a single Filter's discs.
 2. Equipment Manufacturer shall recommend any additional spare parts deemed necessary based on experience with the Filter in similar applications.
 3. Equipment proprietary mechanical, electrical, instrumentation and control parts inventory shall be based in the United States. Parts inventory shall be readily available for procurement for the duration of the Manufacturer's operational design life of Equipment Item.
 4. Equipment Item non-proprietary mechanical, electrical, instrumentation and control parts inventory shall be based in the United States. Parts inventory shall be readily available for procurement by the City. Parts with a known, at time of final submittal package transmittal to owner, obsolescence within ten (10) years will not be accepted.

PART 3 EXECUTION

3.01 GENERAL ERECTION

1. An Installing Contractor, secured under a future bid, shall install the Equipment per the Equipment Manufacturer's directions and the drawings. The Installing Contractor will provide all supports and anchoring required to install the Equipment. Instructions shall be provided by the Equipment Manufacturers that specifically outline installation of the Equipment. Lifting instructions shall be provided to assist the Installing Contractor. Required grout and leveling shims shall be provided by the Installing Contractor.
2. The Vendor shall be responsible for and coordinate the repair or replacement of any / all shipping damage to the Equipment as soon as the equipment arrives on site.
3. The Vendor, or its designee, shall be responsible for and coordinate the unloading, delivery inspection, and delivery acceptance. Delivery shall be made

to the Kalamazoo Water Reclamation Plant, 1415 North Harrison Street, Kalamazoo, MI 49007. On site storage of Equipment Items shall be coordinated at time of delivery between the City and the Bidder, or its designee.

4. Prior to required assembly of Equipment components not shipped assembled, all stainless steel bolts and nut threads shall be coated with a non-seizing compound by the Installing Contractor.

3.02 INSPECTION, START-UP AND TRAINING

1. The Vendor shall provide, and included in the cost, the services of a representative(s) based in the United States and employed or contracted by the Equipment Manufacturer whom is factory certified to perform said required scope. Expenses borne by the representative(s) shall be included.
2. Installation Inspection:
 - a. Maximum five (5) ten (10) hour, fifty (50) hours in total, performed Monday – Friday, spanned over a maximum of 2 trips, travel time not included. Any additional travel and/or time shall be the responsibility of the Installation Contractor.
 - b. Equipment Item’s Manufacturer’s installation specifications and recommendations will be included in the Contract between the Owner and Installation Contractor.
 - c. Bidder, or its designated representative, shall sign off on the Certificate of Installation Acceptance at time of installation completion.
3. Start-up:
 1. Minimum of four (4) ten (10) hour, forty (40) hours in total, performed Monday – Friday, spanned over a maximum of 2 trips, travel time not included. Any additional travel shall travel and/or time shall be the responsibility of the equipment Supplier.
4. Kalamazoo Water Reclamation Plant Staff Operation & Maintenance Training:
 1. Minimum of six (6) eight (8) hour sessions, forty-eight (48) hours in total, performed Tuesday – Thursday, spanned over a maximum of 2 trips, travel time not included. Video recordings shall be provided, digitally submitted as information for the record. Video recordings shall be relevant to and customized for the operation and maintenance of the specific installation.
 2. If Equipment Manufacturer elects to conduct operation training trip(s) separate from maintenance training trip(s), the Manufacturer shall cover the additional cost in trips.
 - a. Owner expected O&M training per trip
 - 1) Tuesday – Operations Training
 - 2) Wednesday – Operations Training
 - 3) Thursday – Maintenance Training
 3. Any unused trips and / or hours shall be afforded for the Owner to use

at its discretion.

4. A trip shall be classified as any non-consecutive on-site day.

3.03 OPERATION AND MAINTENANCE MANUALS

1. Operation and maintenance manuals shall be submitted as information for the record.
2. Operation and maintenance manuals shall be submitted as electronic documents prior to the printing of the record copy.
 - a. Vendor shall provide one electronic copy of the manuals for preliminary review.
 - b. The final accepted manuals shall be provided as one electronic copy of the manual and one printed copy as specified below.
3. Electronic manuals shall be in current Portable Document Format (PDF) file type. Manuals and drawings shall be uploaded for local viewing on the Filter OIT.

PART 4 SPECIAL PROVISIONS

4.01 3D CAD MODEL

1. Following approval of shop drawings, Vendor shall furnish a 3D model of the Equipment as approved. The model shall be issued to the Owner no later than 10 days following shop drawing approval transmittal.
2. The model shall be provided in Autodesk Revit BIM format at a scale dictated by the Owner.

4.02 HOISTING EQUIPMENT

1. Vendor shall provide all below-the-hook rigging and lifting equipment required by the City to safely remove and install a drained and completely assembled Filter unit from the building, including, but not limited to, slings, blocks and lifting beam. Below-the-hook rigging and lifting equipment shall be designed such that the only lifting forces applied to the Filter pick points are vertical forces. Lifting beam shall be designed such that required headroom is minimized. Lifting beam shall have a pick point on all perimeter sides for picking the lifting beam for vertical placement into a designed storage location.

4.03 SOFTWARE

1. An unlocked copy of all operating programs including, but not limited to PLC, HMI, VFD and instrument specific programs, shall be turned over to the Owner at the time of equipment start-up and training.
2. Program shall include all modifications made during design, startup and commissioning.
3. A licensed copy of the current version of programming software necessary to access and make edits to a component's program shall be provided to the Owner at the time of equipment start-up and training.

- a. PLC programming software shall be Allen Bradley Studio 5000 Logix Designer.
 - b. OIT programming software shall be Allen Bradley Studio 5000 View Designer.
4. Programming Software shall be licensed to the Owner for a minimum of two (2) years after Final Completion. Licensing shall include any and all software updates within licensed period at no additional cost to the Owner.

END OF SECTION

CERTIFICATE OF INSTALLATION ACCEPTANCE

The undersigned Bidder representative of the Tertiary Process Equipment: Microstrainer Disc Filtration Contract hereby certifies that the listed Equipment is successfully installed per the Equipment Manufacturer's specifications and recommendations on the date indicated below and as required by the Contract between the Bidder.

Equipment Name: _____

Project Name: _____

Equipment Manufacturer: _____

Date of Installation Completion: _____

Signed: _____ Date: _____

Printed or Typed Name: _____ Title: _____

APPENDIX D

PROCESS PERFORMANCE GUARANTEE

PROCESS PERFORMANCE GUARANTEE

1.01 BACKGROUND

- A. The Kalamazoo Water Reclamation Plant intends to abandon the existing Rapid Sand Tertiary Filtration Process. The Process Performance Guarantee shall provide the Owner an acceptable level of risk mitigation that the proposed microstrainer disc filtration process will perform equally to or better than the existing process under the various treatment conditions the Kalamazoo Water Reclamation Plant operates within.
- B. The burden of proof the Equipment Item(s) perform to the specifications shall be that of the Vendor. The Owner will coordinate with the Vendor to provide influent which meets the specifications.

1.02 BASIS OF DESIGN

- A. Owner hereby agrees to the Basis of Design as specified herein, confirms its accuracy and completeness, and agrees that it shall serve as the basis for the Process Performance Guarantee.
- B. The influent must be strictly in compliance with the requirements identified in this specification.
- C. The influent to the system must contain particles of sufficient size and strength to allow retention on the specified 10 µm media surface in order for the performance criteria to be met. In the event that particles are not of sufficient size and strength to allow the effluent parameters to be met, then adjustments must be made by the Owner to the process upstream of the system in order to provide sufficient particle size and strength for proper filterability. The burden of proof of particles of insufficient size and strength shall be that of the Vendor.
- D. In the event that any of the influent characteristics fall outside the criteria specified herein during the Performance Test, the Performance Testing shall be delayed until influent characteristics return to the limits specified within the Basis of design, unless the effluent requirements are being met. If the testing period is delayed, it shall restart from the point at which testing was interrupted once the influent characteristics fall within the Basis of Design limits. It shall not be necessary for the test sequence to restart from the beginning.
- E. Should the influent characteristics fall outside the range specified, the Vendor and the Owner can make mutually agreeable performance requirement adjustments, at any time during the testing period, to compensate for the influent characteristics.
- F. If influent conditions do not fall within the Basis of Design limits within twelve (12) months from Startup Acceptance, the Process Performance Guarantee shall be deemed to have been met and Vendor shall have no further obligation or liability hereunder.
- G. The Owner will be responsible for providing influent within the limits in accordance with the Basis of Design. If during the Performance Test any 24 hour influent composite limits are greater than that listed, the Vendor reserves the right to use or exclude that result for the purpose of evaluation of the Process Performance Guarantee. Should more than 50% of the influent parameters exceed the Basis of

Design limits, the Owner has the right, at their expense, to conduct additional testing.

- I. The wastewater is not known to contain any substance or element whose presence or concentration may result in gases or vapors that pose a risk to system performance or human health; nor that is corrosive, erosive, or abrasive.

1.03 PROCESS PERFORMANCE GUARANTEE REQUIREMENTS

- A. The Process Performance Guarantee is predicated on receipt of influent in compliance with the limits within the Basis of Design, and in compliance with all other conditions and requirements within this specification.
- B. The Process Performance Guarantee shall be conclusively demonstrated through the successful completion of the Performance Test, as described herein.
- C. The effluent quality shall meet the requirements identified herein.

1.04 PERFORMANCE TEST

- A. Timing of Performance Test
 - 1. Start of the Performance Test
 - a. Vendor shall provide the Owner written notice with the date when Vendor believes the Equipment is ready for the Performance Test to start in accordance with the requirements described herein.
 - b. Vendor determination with regard to system readiness shall take into account factors that include, but are not limited to, the following:
 - 1) All Equipment is in service and operating satisfactorily.
 - 2) The Basis of Design conditions are being. Peak influent loading conditions will likely be simulated based on current influent conditions and number of online Filters.
 - 3) The Filter appears to be acclimated to the water that it is specified to treat.
 - 4) The Filter unit operations appear to be functioning at acceptable operating conditions.
 - 5) The Filter shall not require additional influent pre-treatment, pre-conditioning, or chemical conditioning unless as instructed at time of bid submission.
 - c. The Performance Test shall start the within sixty (60) days after the date of Startup Acceptance.
 - 2. Duration of the Performance Test
 - a. In the event the Performance Test is interrupted due to equipment failure, only the remaining unfinished test period will be tested following modifications/repairs to the Filters and re-establishment of Startup.
 - b. In the event the Performance Test is interrupted due to loss of influent flow or power failure, only the remaining unfinished test

period will be tested immediately following restoration of flow or power.

c. The Performance Test shall consist of one 30 day Performance Test.

3. Performance Test Period Window

a. Should Filter influent conditions meeting the Basis of Design not be available within twelve (12) months of Startup Acceptance, or the Owner is otherwise unable to complete the Performance Test within the twelve (12) month period after Startup Acceptance, Vendor's total liability with regard to the Process Performance Guarantee shall be discharged and the Certificate of Performance Test Acceptance will be executed by the Parties.

B. Sampling and Analytical Parameters

1. The Equipment Manufacturer shall take and analyze samples for the purposes of determining system compliance with the Process Performance Guarantee. Equipment Manufacturer shall bear all costs for sampling and analysis. The following are the minimum required parameters to be monitored for sampling and analysis:

Parameter	Unit
Influent Flow	MGD
TSS, Influent, 24-hour Composite	mg/L
TSS, Effluent, 24-hour Composite	mg/L

C. Sampling, Laboratory and Analytical Standards

1. The most recent edition of the publication "Standard Methods for Examination of Water and Wastewater" shall be used as the primary laboratory and analytical procedure source, unless otherwise agreed to by Equipment Manufacturer. All other analyses, data reduction or tests not specified in that publication or otherwise specified shall be by the Vendor using procedures agreed between the Vendor and Owner.
2. Each flow paced 24-hour composite sample shall be analyzed for measurement and recording of Filter effluent Total Suspended Solids (TSS). Analysis shall be completed by an approved Laboratory.
3. Continuous measurement and recording of Filter effluent Total Suspended Solids (TSS) using instrumentation calibrated in accordance with instrumentation manufacturer's recommendations.
 - a. Continuous measurement shall provide data of effluent TSS spikes not represented in a 24-hour composite sample analysis.
4. The responsibility for performance sampling and analysis shall be that of the Vendor. The Owner will perform analysis on samples obtained from the

process as required for NPDES Permit compliance and/or operational strategy compliance.

- a. Samplers installed as part of the installation project will be designed such that they meet the requirements of the Owner's NPDES Permit, i.e. 24hr flow paced composite sampling held at a temperature meeting NPDES sampling requirements.
5. Continuous reading instrumentation installed as part of the installation Contract, will be calibrated, at a minimum, per instrument manufacturer's recommended calibration period if sooner. Calibration reports shall be available if requested by Vendor.
- D. Responsibilities During the Performance Test
1. System Operations:
 - a. Owner will be responsible for providing the influent conditions as specified in Basis of Design.
 - b. Owner will be responsible for furnishing all personnel, influent, materials, utilities, services, chemicals, and all incidentals required for the operation of the complete facility.
 - c. Owner will be responsible for operating the Treatment Process in accordance with each Equipment Manufacturer's O&M instructions, manuals and instructions, or each Equipment Manufacturer's reasonable revisions of the same.
 - d. Owner shall have all Filters available for service during the Performance Test and ability operate them as a process to treat the Plant's diurnal flow and solids loading.
 - e. If required by Vendor, Owner will restore the system to the specified operating conditions before testing begins.
 - f. Should the Owner operate the system outside of the specified operating conditions, the Process Performance Guarantee shall be deemed to have been met, and Bidder shall have no further obligation or liability hereunder.
 - g. Should the Owner already have operated the system outside of the specified operating conditions, and such operation damaged equipment, the Process Performance Guarantee shall be deemed to have been met, and Equipment Manufacturer shall have no further obligation or liability hereunder.
 - h. Vendor shall provide the Owner O&M instructions and manuals to advise the Owner, and reasonable revisions of the same.
 - i. Vendor shall have the right, but not the obligation, to:
 - 1) Inspect the system prior to testing to ensure the system meets Equipment Manufacturer's specified requirements for operation.
 - 2) Provide technical personnel on-site to provide technical input and to observe the Performance Test.

1. Performance shall be based on a comparison of the Basis of Design and the Process Performance Guarantee Requirements. Measured values of the system performance shall be based upon the measurements taken during the Performance Test:
 - a. Flow-weighted 24-hour composite samples shall be collected and continuous monitoring shall be conducted for each day of the Performance Test. Each composite sample shall be divided into a minimum of three aliquots and containerized as separate samples for analysis in accordance with "Standard Methods for the Examination of Water and Wastewater", latest edition
2. If the Performance Test Report confirms that the Process Performance Guarantee has been met, the Performance Test shall have been deemed successful and Vendor's total liability under the Process Performance Guarantee shall be discharged and the Owner shall have no further recourse against Vendor or any claims for recovery with respect to the Process Performance Guarantee.
3. Vendor shall then execute and submit the Performance Test Report and the Certificate of Performance Test Acceptance.
4. Owner will execute the Certificate of Performance Test Acceptance as specified elsewhere herein.
5. If Owner does not return the executed Certificate of Performance Test Acceptance within fourteen (14) calendar days, the Certificate shall be deemed to have been issued with the effective date being the date the Performance Test was completed.

F. Remedies in Event of Performance Test Failure

1. If, during the Performance Test, the sample analysis shows that the Process Performance Guarantee is not being met, the Performance Test, by mutual consent of the Owner and Vendor, can be deemed a failure:
 - a. Vendor shall have the right to have the system operated at such conditions as it may deem necessary or advisable for purposes of determining the nature or cause of the failure of the system to meet such guarantee, provided such operating conditions are in accordance with good engineering practices, Equipment Manufacture's recommendations, Owner's regulatory obligations, safety rules, operational restraints, and similar requirements.
 - 1) Vendor shall have the right to decide if the performance test shall continue or be restarted.
 - 2) If at any time during the performance testing period the process does not meet the performance standards, only the out-of-compliance testing period will be repeated.
 - b. If the performance testing is interrupted by factors out of Vendor's control and/or scope of supply, only the uncompleted portion of that testing period shall be required to be completed for compliance with the testing period requirements.

- c. Vendor shall have the right to make, at its own expense, such adjustments as it deems necessary or advisable in order to meet such guarantee and/or to make, at its own expense, such alterations or modifications to the equipment as it deems necessary or advisable. It is understood and agreed that any physical and / or mechanical alteration or modification necessary to cause the system to meet the Process Performance Guarantee shall be approved by Equipment Manufacture as performed by Equipment Manufacturer, an Equipment Manufacturer-authorized subcontractor, or the Owner as agreed upon by Equipment Manufacturer and Owner. Corrective work shall be allowed to commence as soon as practical.
- d. Vendor shall have the right to conduct two (2) additional Performance Tests to meet the Process Performance Guarantee at Vendor's expense.
- e. In the event that the system fails to meet the Process Performance Guarantee, Vendor's sole obligation and Owner's sole remedy shall be to replace or modify the system as Equipment Manufacturer deems appropriate to enable the system to meet such Guarantee, subject to the following:
 - 1) Vendor shall not be accountable for failure to meet the Process Performance Guarantee during this necessary modification period.
 - 2) The Owner will allow for sufficient time for the expedited order and delivery of any necessary components to complete modifications to the equipment.
- f. Notwithstanding anything else to the contrary, Vendor's total liability shall not exceed 150% the Contract price of the equipment. These limitations apply whether the liability is based on contract, tort, strict liability or any other theory.
- g. There are no guarantees established, express, implied or statutory, except those set forth herein.

G. Mechanisms that Discharge the Process Performance Guarantee

- 1. Upon any of the following, Vendor's total liability for the Process Performance Guarantee shall be discharged:
 - a. Successful completion of a Performance Test, as demonstrated by the Performance Test results.
 - b. Owner's Vendor unapproved operation of the system at any time (prior to or during the Performance Test) outside of the operating conditions as specified herein in a manner that does damage to the system's equipment.
 - c. Influent Conditions meeting the Basis of Design are not available within twelve (12) months of Startup Acceptance, or the Owner is otherwise unable to complete the Performance Test within the twelve (12) month period after Startup Acceptance.

- d. Any other conditions outside of Vendor's control, including but not limited to the following:
- 1) Noncompliance with the Basis of Design as specified herein.
 - 2) Engineering design (other than that by or aided by the Vendor and/or Equipment Manufacturer).
 - 3) Materials and equipment (other than those specified or supplied by Vendor and/or Equipment Manufacturer).
 - 4) Workmanship and services (other than those provided and/or accepted by Vendor and/or Equipment Manufacturer).
 - 5) Defective materials or mechanical conditions, or deficient performance of equipment or auxiliary parts (other than those supplied by Vendor and/or Equipment Manufacturer).
 - 6) Defective conditions or performance of any materials, equipment (other than equipment supplied by Vendor and/or Equipment Manufacturer) or work supplied by or contracted for by anyone other than Vendor or Equipment Manufacturer.
 - 7) Failure of the Professional Services Consultant to design nor Installing Contractor to furnish adequate utilities, such as, but not limited to, electricity, air, water, etc. as set forth in the O&M Manual and /or O&M training supplied by Equipment Manufacturer, or Equipment Manufacturer's reasonable revisions of the same.
 - 8) Failure of the Owner to provide adequate personnel.
 - 9) Mechanical failure of any of the equipment or component parts thereof due to ordinary wear and tear as expected and stated in the 20-year life cycle cost analysis.
 - 10) Failure of the Owner to perform any of the responsibilities and obligations specified herein.
 - 11) Any other cause outside of a cause attributable to Vendor, including Force Majeure.

E. Certificate of Performance Test Acceptance

1. A Certificate of Performance Test Acceptance shall be executed by both parties upon discharge of the Process Performance Guarantee:
 - a. Upon successful completion of the Performance Test, Vendor shall execute and submit the Performance Test Report and Certificate of Performance Test Acceptance to the Owner. Owner will execute the Certificate of Performance Test Acceptance effective as of the date the Performance Test was completed, and return the Certificate to Equipment Manufacturer within fourteen (14) calendar days of its receipt from Vendor. If Owner fails to execute the Certificate of Performance Test Acceptance within the fourteen (14) calendar days,

the Certificate shall be deemed to have been issued with the effective date being the date the Performance Test was completed.

- b. Should influent conditions meeting the Basis of Design not be available within twelve (12) months of Startup Acceptance, or the Owner is otherwise unable to complete the Performance Test within the twelve (12) month period after Startup Acceptance, the Certificate shall be deemed to have been issued with the effective date being the date the Owner notifies Vendor that the Owner is unable to complete the Performance Test within the specified period, or the date twelve (12) months after Startup Acceptance, whichever comes first.
- c. Should the Performance Test and/or Process Performance Guarantee be discharged for any of the other reasons as specified herein, the Certificate shall be deemed to have been issued with the effective date being the date that Vendor determines the Process Performance Guarantee is discharged.

END OF SECTION

CERTIFICATE OF PERFORMANCE TEST ACCEPTANCE

The undersigned representative of the Vendor hereby certifies successful completion of the Performance Test on the date indicated below and as required by the Contract between the Vendor and Owner for the named Project.

Equipment: _____

Project Name: _____

Vendor: _____

Date of Performance Test Completion: _____

Signed: _____ Date: _____

Printed or Typed Name: _____ Title: _____

ACCEPTANCE:

Owner hereby agrees that the aforementioned equipment has successfully completed the Performance Test as specified in the Contract and the Process Performance Guarantee is discharged as of the completion date shown.

Owner:

Signed: _____ Date: _____

Printed or Typed Name: _____ Title: _____



ATTACHMENT B

DRAWINGS/PLANS

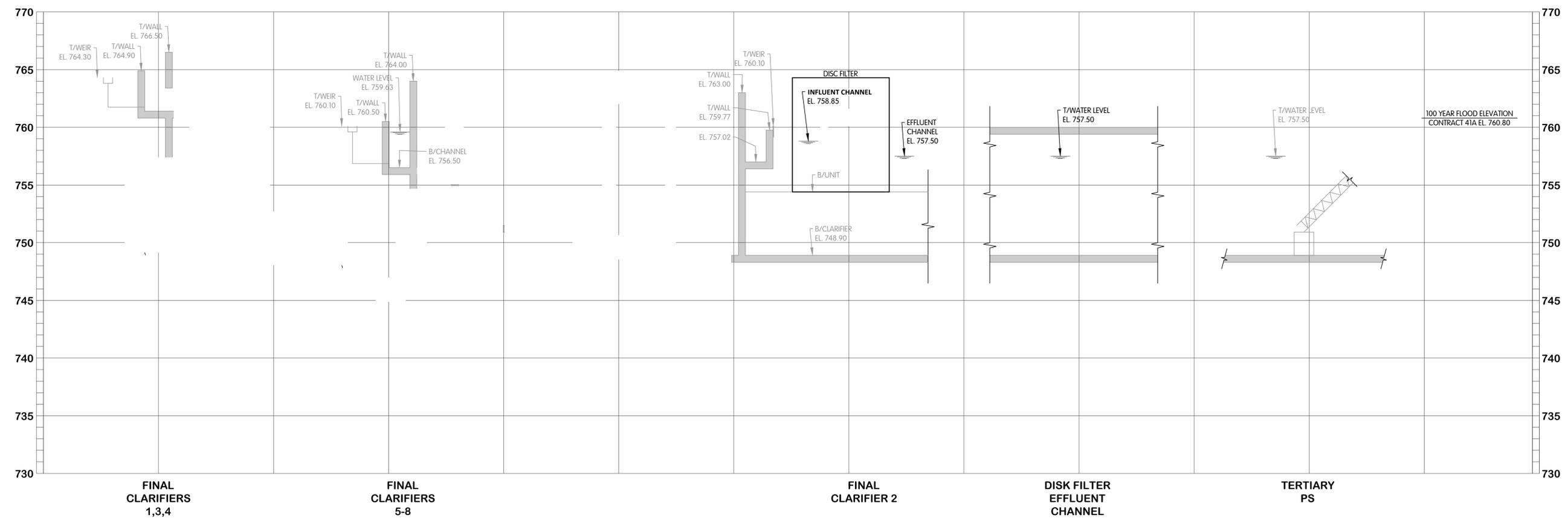
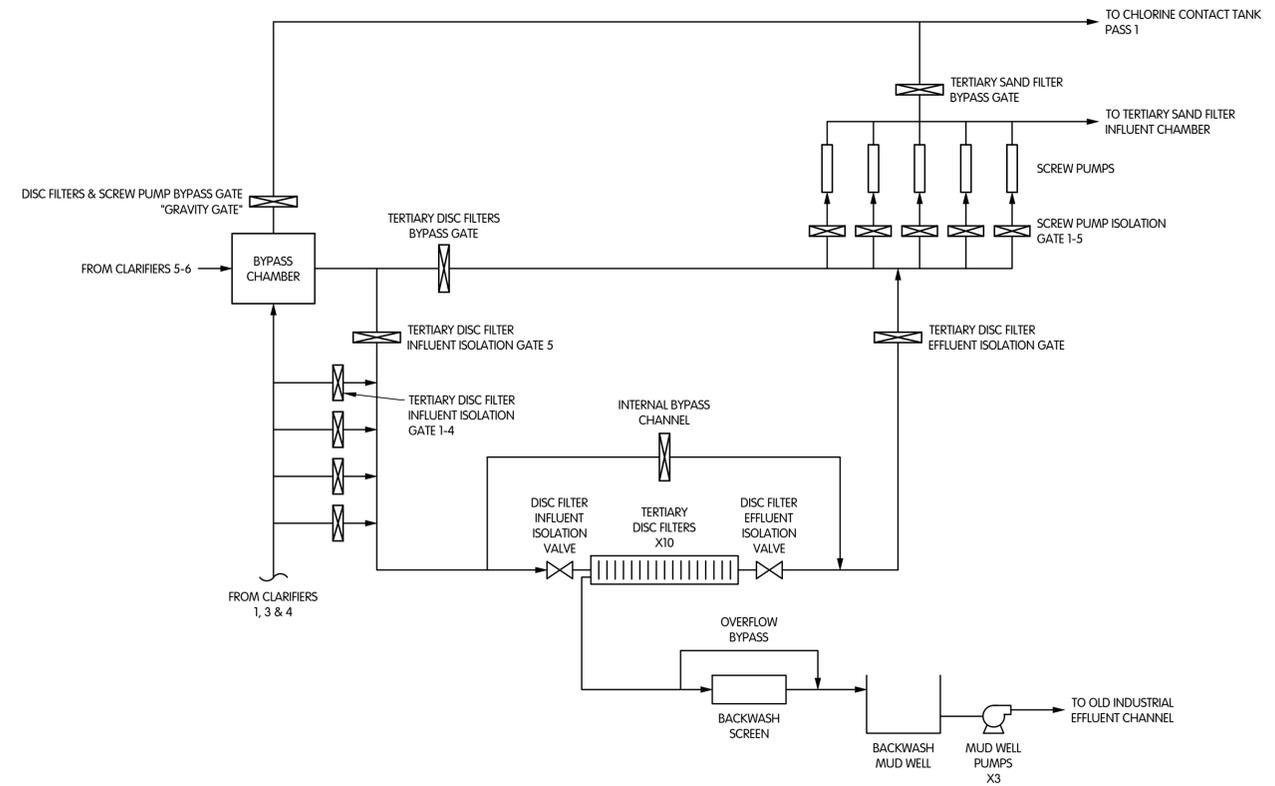
**CONTRACT 75 A.1-TERTIARY PROCESS
EQUIPMENT: MICROTRAINER DISC
FILTRATION**

Bid Reference #: 89000-001.0

TOL-7593001_IFB-F-H1-HYDRAULIC PROFILE
 5/20/2020 8:50 AM - RWORLEY
 SCALE: 1" = 10'-0" HORIZ.
 SCALE: 1" = 10'-0" VERT.



TERTIARY DISC FILTER INFORMATION FOR BID
 PROCESS FLOW DIAGRAM AND HYDRAULIC PROFILE
 TERTIARY TREATMENT PROCESS UPGRADE - KALAMAZOO, MICHIGAN
 CONTRACT 75



REVISIONS AFTER ISSUED FOR BID

NO. DATE

1

2

3

4

5

6

7

8

9

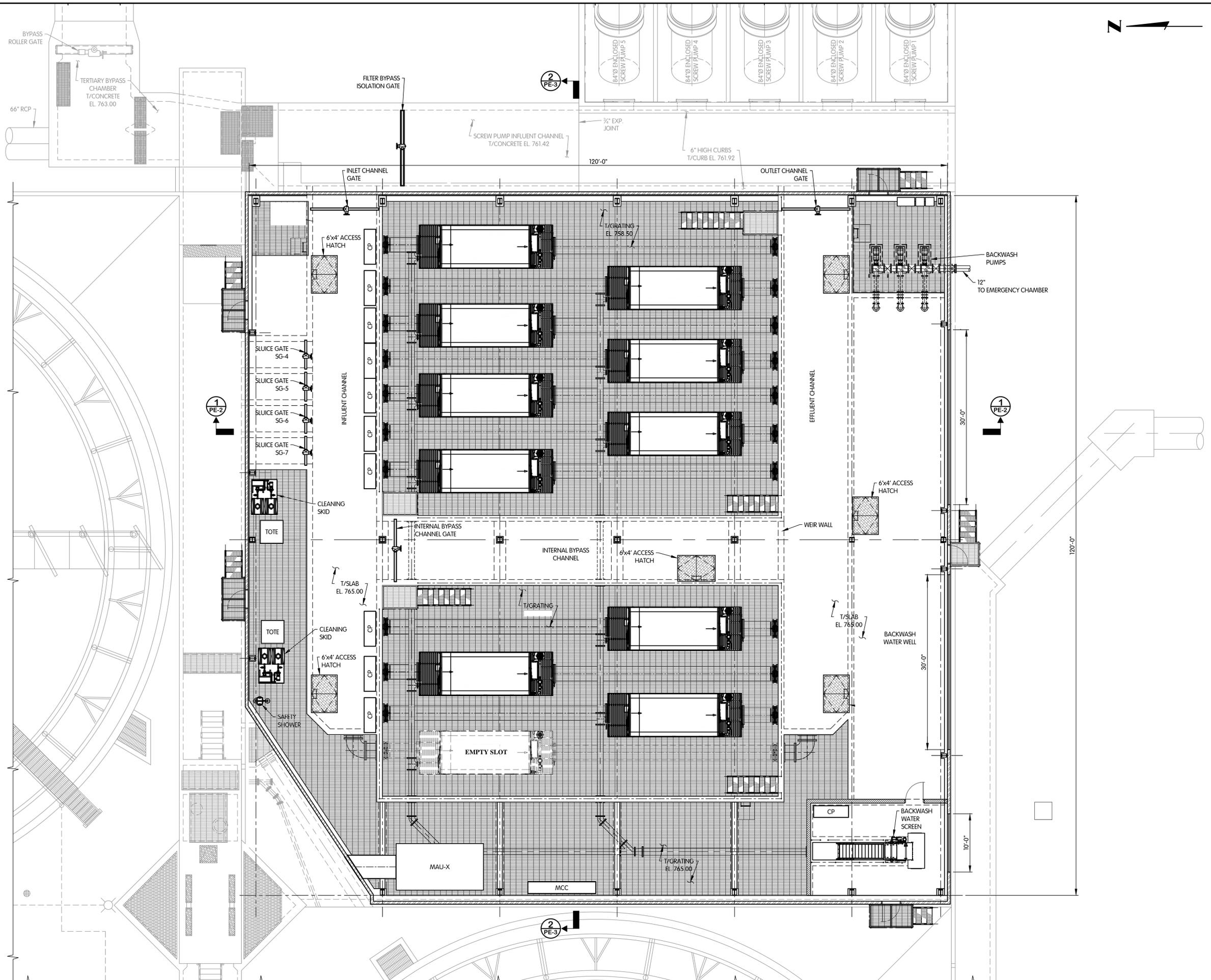
10

Jones & Henry
 Engineers, Ltd.

Fluid thinking®
 www.JHeng.com

JOB NO.	017-7593.001	
SCALE	NONE	
THIS LINE SCALES IF WHEN PLOTTED TO NOTED SCALE		
DESIGNED	DRAWN	CHECKED
PEF	PEF	PEF
STATUS: PRELIMINARY		
DATE: NOVEMBER 2019		
SHEET NO.		
IFB-F-H1		
1 OF 8		

TOL-7593001_IFB-F-PE1-PIPING & EQUIPMENT TOP PLAN
 5/20/2020 7:58 AM - RWORLEY
 5/20/2020 3:35 PM
 5/20/2020 3:35 PM



TERTIARY DISC FILTER INFORMATION FOR BID
 FINAL SETTLING TANK 2
 PIPING AND EQUIPMENT
 TOP PLAN

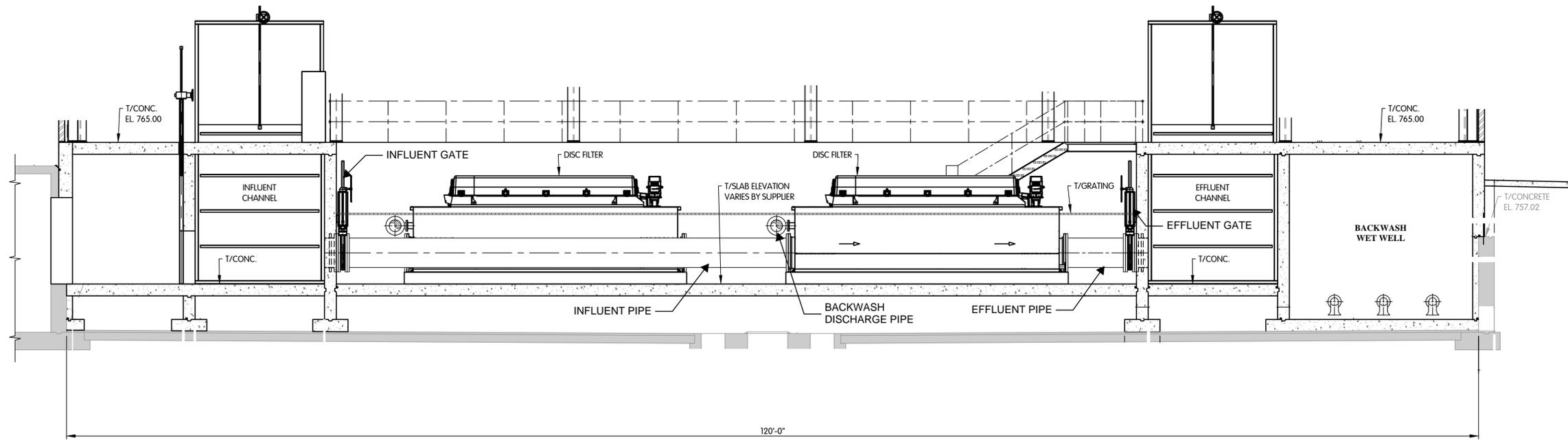
TERTIARY TREATMENT PROCESS UPGRADE - KALAMAZOO, MICHIGAN
 CONTRACT 75

Jones & Henry
 Engineers, Ltd.

Fluid thinking®
 www.JHeng.com

JOB NO.	017-7593.001
SCALE	1/8"=1'-0"
THIS LINE SCALES IF WHEN PLOTTED TO NOTED SCALE	
DESIGNED	PEF
DRAWN	PEF
CHECKED	PEF
STATUS	PRELIMINARY
DATE	NOVEMBER 2019
SHEET NO.	IFB-F-PE1
	2 OF 8

TOL-7593001_IFB-F-PE2-SECTION
 5/20/2020 8:05 AM - RWORLEY
 20'x20' 3/16" SCALES
 11/19/2019



SECTION 1
 PE-1
 3/16"=1'-0"



TERTIARY DISC FILTER INFORMATION FOR BID
 FINAL SETTLING TANK 2
 PIPING AND EQUIPMENT
 SECTION

TERTIARY TREATMENT PROCESS UPGRADE - KALAMAZOO, MICHIGAN
 CONTRACT 75

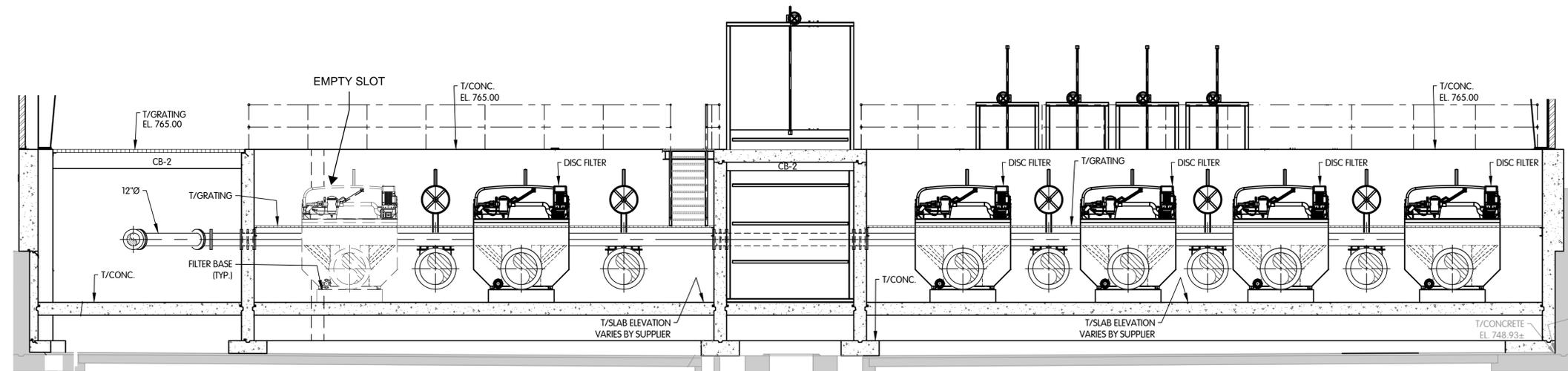
REVISIONS AFTER ISSUED FOR BID
 NO. DATE

Jones & Henry
 Engineers, Ltd.

 Fluid thinking®
 www.JHeng.com

JOB NO.	017-7593.001	
SCALE	3/16"=1'-0"	
THIS LINE SCALES IF WHEN PLOTTED TO NOTED SCALE		
DESIGNED	DRAWN	CHECKED
PEF	RGW	PEF
STATUS	PRELIMINARY	
DATE	NOVEMBER 2019	
SHEET NO.	IFB-F-PE2	
	3 OF 8	

TOL-7593001_IFB-F-PE3-SECTION
 5/20/2020 9:35 AM - RWORLEY
 3/16"=1'-0" FILES
 11/23/2019/11/23/2019



SECTION 2
 PE-1
 3/16"=1'-0"



TERTIARY DISC FILTER INFORMATION FOR BID
 FINAL SETTLING TANK 2
 PIPING AND EQUIPMENT
 SECTION

TERTIARY TREATMENT PROCESS UPGRADE - KALAMAZOO, MICHIGAN
 CONTRACT 75

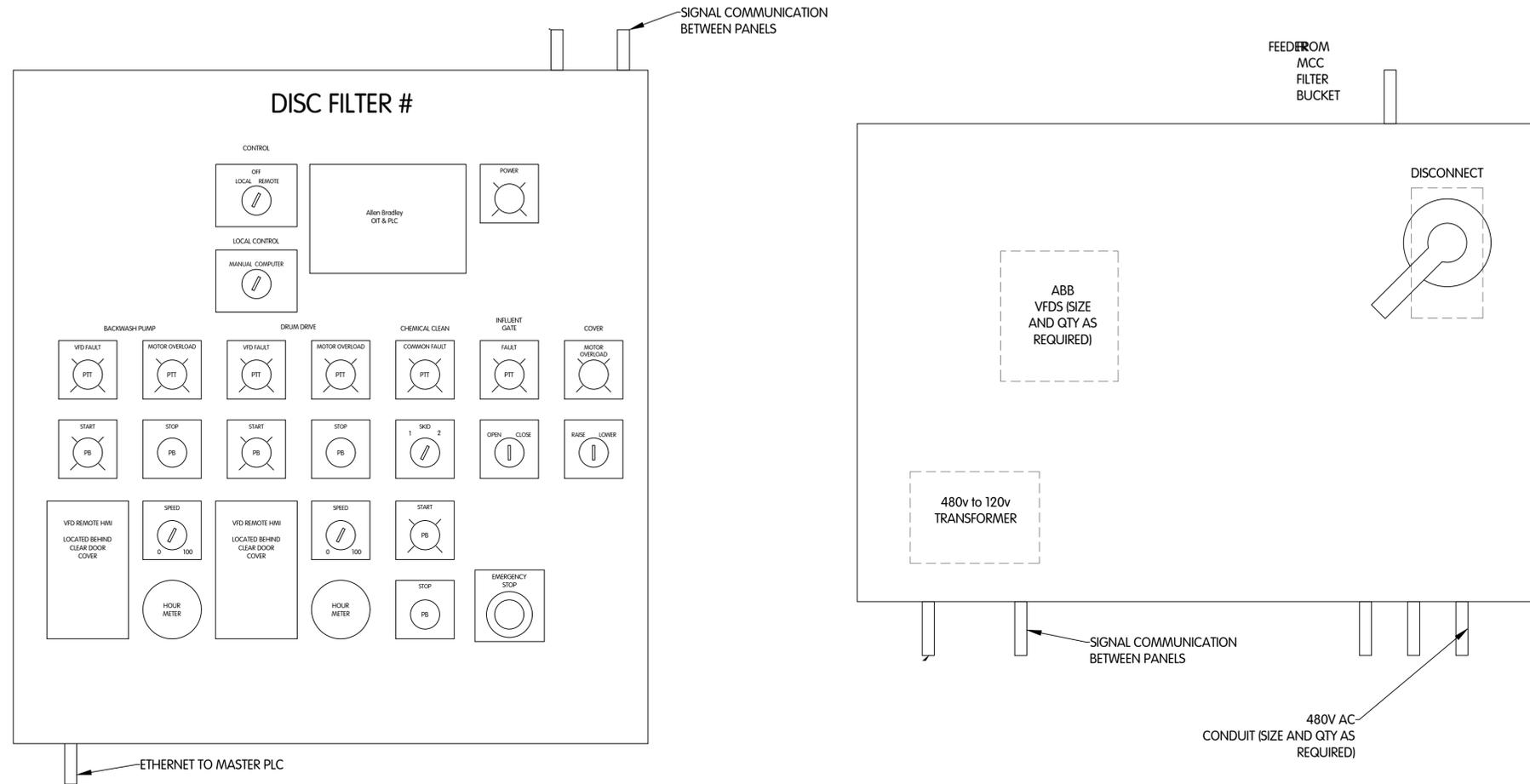
REVISIONS AFTER ISSUED FOR BID
 NO. DATE BY

Jones & Henry
 Engineers, Ltd.

 Fluid thinking.[®]
 www.JHeng.com

JOB NO.	017-7593.001	
SCALE	3/16"=1'-0"	
THIS LINE SCALES IF WHEN PLOTTED TO NOTED SCALE		
DESIGNED	DRAWN	CHECKED
PEF	RGW	PEF
STATUS:	PRELIMINARY	
DATE:	NOVEMBER 2019	
SHEET NO.	IFB-F-PE3	
	4 OF 8	

TOL-7593001_IFB-F-E-DISC FILTER HMI AND POWER PANEL LAYOUTS
 5/20/2020 7:45 AM - RWORLEY
 2017-05-20 10:53 P
 3646660337 FILES
 11/15/2020



THESE DRAWINGS ARE PRELIMINARY AND INTENDED TO PROVIDE DESIGN AND LAYOUT INTENT TO THE BIDDER. FINAL DESIGN AND LAYOUT WILL DEPEND UPON EQUIPMENT MANUFACTURER'S NEEDS AND FINAL PROCESS INTEGRATION DESIGN. FINAL DESIGN AND LAYOUT WILL BE DETERMINED DURING SUBMITTAL REVIEW.



TERTIARY DISC FILTER INFORMATION FOR BID
 TERTIARY BUILDING
 ELECTRICAL
 DISC FILTER HMI AND POWER PANEL LAYOUTS
 TERTIARY TREATMENT PROCESS UPGRADE - KALAMAZOO, MICHIGAN
 CONTRACT 75

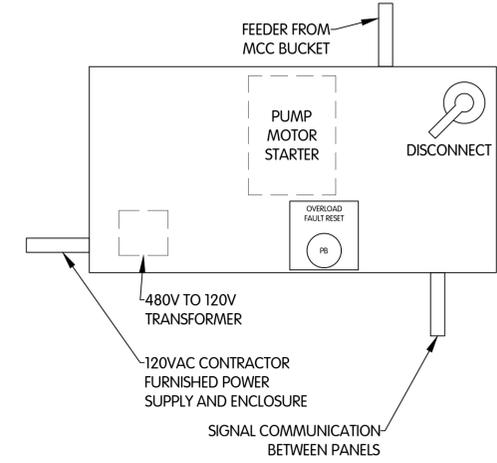
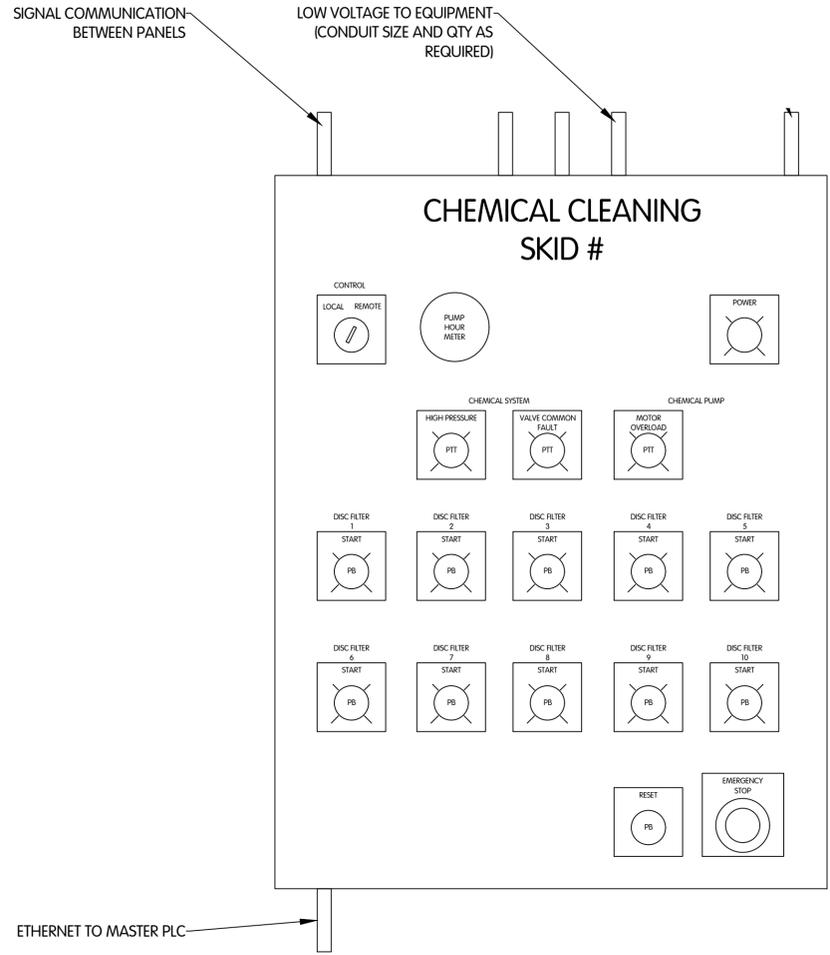
REVISIONS AFTER ISSUED FOR BID
 NO. DATE BY

Jones & Henry
 Engineers, Ltd.

 Fluid thinking.[®]
 www.JHeng.com

JOB NO.	017-7593.001
SCALE	NONE
DESIGNED	PEF
DRAWN	RGW
CHECKED	PEF
STATUS	PRELIMINARY
DATE	NOVEMBER 2019
SHEET NO.	IFB-F-E1
	5 OF 8

TOL-7593001_IFB-F-E2-CHEMICAL CLEANING SKID I/HI & POWER PANEL LAYOUTS
 5/20/2020 7:45 AM - RWORLEY
 3/26/2020 3:17 PM
 SKID AND POWER PANEL FILES
 Y3320001



NOTES:
 1) WIRING BETWEEN MCC & CONTROL PANEL ENCLOSURE SHALL BE BY THE CONSTRUCTION CONTRACTOR. TERMINAL BLOCKS SHALL BE PROVIDED WITHIN CONTROL ENCLOSURE BY EQUIPMENT MANUFACTURER.

THESE DRAWINGS ARE PRELIMINARY AND INTENDED TO PROVIDE DESIGN AND LAYOUT INTENT TO THE BIDDER. FINAL DESIGN AND LAYOUT WILL DEPEND UPON EQUIPMENT MANUFACTURER'S NEEDS AND FINAL PROCESS INTEGRATION DESIGN. FINAL DESIGN AND LAYOUT WILL BE DETERMINED DURING SUBMITTAL REVIEW.



TERTIARY DISC FILTER INFORMATION FOR BID
 TERTIARY BUILDING
 ELECTRICAL
 CHEMICAL CLEANING SUID & POWER PANEL LAYOUTS
 TERTIARY TREATMENT PROCESS UPGRADE - KALAMAZOO, MICHIGAN
 CONTRACT 75

NO. 1
 2
 3
 4
 5
 6
 7
 8
 9
 10
 11
 12
 13
 14
 15
 16
 17
 18
 19
 20
 21
 22
 23
 24
 25
 26
 27
 28
 29
 30
 31
 32
 33
 34
 35
 36
 37
 38
 39
 40
 41
 42
 43
 44
 45
 46
 47
 48
 49
 50
 51
 52
 53
 54
 55
 56
 57
 58
 59
 60
 61
 62
 63
 64
 65
 66
 67
 68
 69
 70
 71
 72
 73
 74
 75
 76
 77
 78
 79
 80
 81
 82
 83
 84
 85
 86
 87
 88
 89
 90
 91
 92
 93
 94
 95
 96
 97
 98
 99
 100
 REVISIONS AFTER ISSUED FOR BID

Jones & Henry
 Engineers, Ltd.

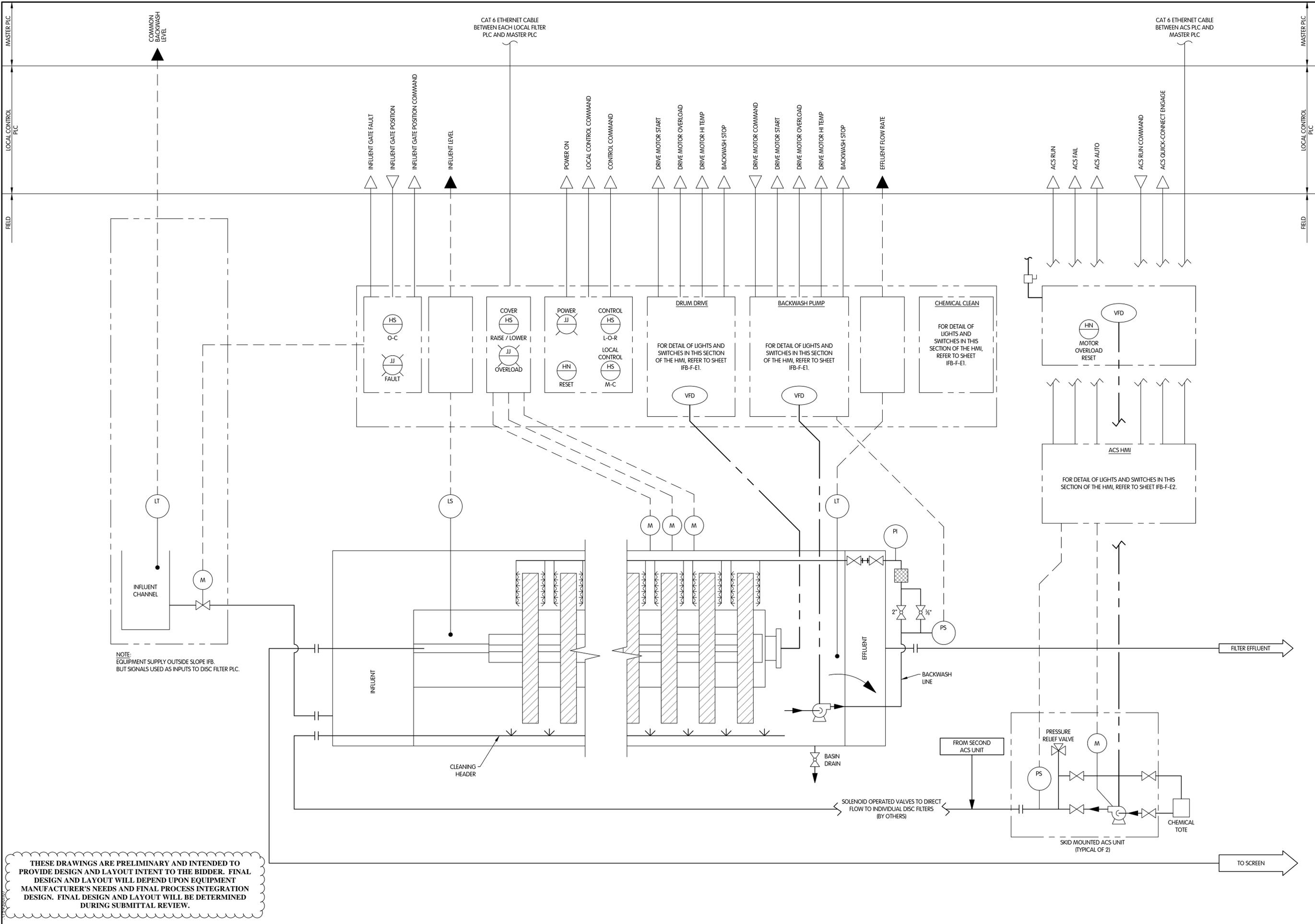
 Fluid thinking®
 www.JHeng.com

JOB NO. 017-7593.001
 SCALE NONE
 THIS LINE SCALES IF WHEN PLOTTED TO NOTED SCALE

DESIGNED	DRAWN	CHECKED
PEF	RGW	PEF

 STATUS: PRELIMINARY
 DATE: NOVEMBER 2019
 SHEET NO.
 IFB-F-E2
 6 OF 8

TOL-7593001_IFB-F-01-DISC FILTERS P&ID
 5/26/2020 3:35 PM - RWORLEY
 20200526 3:37 PM
 20200526 3:37 PM



NOTE:
 EQUIPMENT SUPPLY OUTSIDE SLOPE IFB.
 BUT SIGNALS USED AS INPUTS TO DISC FILTER PLC.

THESE DRAWINGS ARE PRELIMINARY AND INTENDED TO PROVIDE DESIGN AND LAYOUT INTENT TO THE BIDDER. FINAL DESIGN AND LAYOUT WILL DEPEND UPON EQUIPMENT MANUFACTURER'S NEEDS AND FINAL PROCESS INTEGRATION DESIGN. FINAL DESIGN AND LAYOUT WILL BE DETERMINED DURING SUBMITTAL REVIEW.



TERTIARY DISC FILTER INFORMATION FOR BID
DISC FILTER
P&ID

TERTIARY TREATMENT PROCESS UPGRADE - KALAMAZOO, MICHIGAN
 CONTRACT 75



Jones & Henry
 Engineers, Ltd.

Fluid thinking®
 www.JHeng.com

JOB NO.	017-7593.001
SCALE	NONE
THIS LINE SCALES IF WHEN PLOTTED TO NOTED SCALE	
DESIGNED	PEF
DRAWN	RGW
CHECKED	PEF
STATUS	PRELIMINARY
DATE	NOVEMBER 2019
SHEET NO.	IFB-F-101
	7 OF 8

