ADDENDUM #3
TO THE
SPECIFICATIONS AND CONTRACT DOCUMENTS

FOR

Camas TO4 Ultraviolet Disinfection Replacement
City Project No. SWR25004

May 16, 2025

IMPORTANT: *This addendum must be signed and submitted with bid proposal.*

TO ALL PLANHOLDERS:

The following changes, additions, deletions and/or clarifications are made a part of the contract documents and bid specifications for the construction of the *Camas TO4 Ultraviolet Disinfection Replacement*, City of Camas Project No. SWR25004 as fully and completely as if the same were set forth therein:

PART 1 - GENERAL

1.01 SCOPE

A. This addendum forms a part of the Bidding and Contract Documents and modifies the Project Manual as described below.

B. The Bid Opening date is revised. Bids are now due at 11:00am on May 29, 2025. The location of the Bid Opening remains unchanged.

C. Contract forms *C-200 Instructions to Bidders, C-410 Bid Form,* and *C-520 Agreement* are removed in their entirety and replaced with revised versions contained in this Addendum. A summary of the changes is provided below.

D. This Addendum consists of 71 pages. Attachments are as follows:

- Revised Specification Section 00 21 13 – Instructions to Bidders, EJCDC Form C-200
- Revised Specification Section 00 41 13 – Bid Form, EJCDC Form C-410
- Revised Specification Section 00 52 13 – Agreement, EJCDC Form C-520
- New Specification Section 08 36 13 – Overhead Door – Sectional Aluminum
- Revised Specification Section 40 05 59 – Fabricated Stainless Steel Slide Gates.
- Revised Specification Section 46 21 10 – Septage Cylindrical Bar Screen
- Revised Specification Section 46 23 63 – Grit Classifier and Hydrocyclone System.

- Revised Specification Section 46 43 23 – Plow Scraper Circular Primary Clarifier Equipment.
- Revised Drawing 003X-301 - PRIMARY CLARIFIER Section DEMOLITION.
- Revised Drawing 003D-101 - Primary Clarifier No. 2 Plan.
- Revised Drawing 003D-301 – Primary Clarifier No. 2 Section.
- Revised Drawing 008D-302 - UV Disinfection Process Sections.

1.02 ACKNOWLEDGEMENT

A. All bidders are required to base their bid upon the information furnished in this Addendum and acknowledge receipt of this Addendum by signing and dating in the space provided in the Bid Form.

PART 2 - PROJECT MANUAL

2.01 **DIVISION 00 – PROCUREMENT AND CONTRACTING REQUIREMENTS**

A. Section 00 21 13 – Instructions to Bidders, EJCDC C-200
   1. Article 3.01.A-3.01.E – Qualifications of Bidders
      i. Summary of Change: Items A to E are changed.
   2. Article 5.03.A.1 – Other Site Related Documents
      i. Summary of Change: Item 1 is changed. No documents provided.

B. Section 00 41 13 – Bid Form, EJCDC C-410
   1. Article 2.01 – Attachments to this Bid
      i. Summary of Change: items changed to reflect exact wording on City documents. Check boxes added for each item.
   2. Article 3.01.A.1 – Lump Sum Bids
      i. Summary of Change: Bid table changed to add fixed price for Blower Equipment. Note added for equipment contract assignment.

C. Section 00 51 13 – Agreement, EJCDC C-520
   1. Article 4.05.A.1 – Liquidated Damages
      i. Summary of Change: the amount per day for liquidated damages is revised to $1,600 per day.
   2. Article 4.05.A.2 – Liquidated Damages
      i. Summary of Change: the amount per day for liquidated damages is revised to $1,600 per day.
   3. Article 6.05.A – Interest
      i. Summary of Change: this section is removed and replaced in its entirety.

2.02 **DIVISION 08 – OPENINGS**

A. Section 08 36 13 – Overhead Door – Sectional Aluminum
   1. Summary of Change: This specification Section was added to the

project manual as part of this addendum.

2.03 **DIVISION 40 – PROCESS INTERCONNECTIONS**

A. Section 40 05 59 - Fabricated Stainless Steel Slide Gates
   1. Summary of Change: Gate schedule in this specification was updated to include the UV channel gate dimensions.

2.04 **DIVISION 46 – WATER AND WASTEWATER EQUIPMENT**

A. Section 46 21 10 – Septage Cylindrical Bar Screen
   1. Article 2.7.E.5 – Control System
      i. Summary of Change: Updated the section to include Allen Bradley Micrologix 1400 PLC, or equal.

B. Section 46 23 63 - Grit Classifier and Hydrocyclone System
   1. Article 2.1 – Acceptable Manufacturers
      i. Summary of Change: Upsdated list of acceptable manufacturers to include Lakeside Equipment Co under the Grit Washing/Dewatering units and Hydrocyclone Units.

C. Section 46 43 23 - Plow Scraper Circular Primary Clarifier Equipment
   1. Article 1.1.A. – Summary Section
      i. Summary of Change: Updated and clarified the scope of equipment to include two primary clarifier mechanisms.
   2. Article 2.2.A.2 – Primary Clarifier Requirements
      i. Question: 2.2.A.2 states that Side water Depth is 10 feet but the drawings show a SWD of 13.13 feet. Please confirm the correct SWD.Answer: The 10 foot side water depth is the effective side water depth. The water surface elevations at peak hour flow and max month flow should be referenced from the hydraulic profile.
      ii. Summary of change: Updated the language to clarify the side water depth elevation is the effective side water depth.
   3. Article 2.3.C – Materials
      i. Summary of Change: Added cycloidal drive material.
   4. Article 2.4.F – Drive Mechanism
      i. Summary of Change: Drive mechanism updated to allow cycloidal reduction, precision bearing drive.
   5. Article 2.4.F.9.i – Turntable base
      i. Summary of Change: This paragraph has been removed from the specification.
   6. Article 2.5.B. – Shear Pins
      i. Summary of Change: Added option to use second cut off switch.
   7. Article 2.4.D.4 – EDI (Influent Feedwell):
      i. Summary of Change: Updated EDI type requirements to allow an impinged flow, dual gate EDI.

PART 3 - PROJECT DRAWINGS

3.01 DRAWING 002D-101 – SEPTAGE RECEIVING STATION PROCESS PLAN, SECTIONS AND DETAILS

A. Question: Does Owner or Contractor provide screenings dumpsters called out at Septage Receiving Station? If Contractor, will you provide specifications?

Answer: The screenings dumpster is to be supplied by the contractor. No specifications will be provided. Dimensions, details and notes are provided in sheet 002D-101.

3.02 DRAWING 003X-301 – PRIMARY CLARIFIER SECTION DEMOLITION

A. Summary of change: Updated drawing to show a photo detail of the demolition extents of the existing spray bar and NPW piping. Removed the water surface elevation. Water surface elevations should be reference using the hydraulic profile in the drawings.

3.03 DRAWING 003D-101 – PRIMARY CLARIFER NO. 2 PLAN

A. Summary of change: Updated drawing to show sprayers and spray control needed at the new clarifiers. These will be controlled by a manual valve, similar to the existing spray system.

3.04 DRAWING 003D-301 – PRIMARY CLARIFIER NO. 2 SECTION

A. Summary of change: Updated drawing to show sprayers and spray control needed at the new clarifiers. These will be controlled by a manual valve, similar to the existing spray system.

3.05 DRAWING 008D-302 – UV DISINFECTION PROCESS SECTIONS

A. Summary of change: Updated drawing to show correct railing detail sheet reference.

3.06 DRAWING 011Y-603 AND 011D-302 – CENTRIFUGE P&ID AND SECTION

A. Question: P&ID 011Y-602 and plan drawing 011D-302 show what appears to be a new and un-numbered 4” plug valve on the WAS line downstream of centrifuge 2 sludge valve 11 PV 24. Please confirm if this valve is Contractor supplied, or part of the Owner supplied dewatering centrifuge package.

1. Answer: The P&ID on sheet 011Y-602 shows the extents of the vendor package supplied by the Owner; this only includes limited piping connections to the centrifuge. Any valves shown on the P&ID and sheet 011D-302 are to be supplied by the Contractor, including the un-numbered

manual 4” plug valve identified.

3.07 DRAWING 000C-102 – CIVIL ENLARGED SITE PLAN

A. Question: Will you provide dimensions and details for generator pad?

2. Answer: Dimensions for the generator pad are to be determined by the contractor. Generator concrete pad approximate dimensions and location are provided in sheet 000C-102

END ADDENDUM NO. 3

Receipt of this addendum is hereby acknowledged:

_____

Authorized Signature

INSTRUCTIONS TO BIDDERS

FOR CONSTRUCTION CONTRACT

TABLE OF CONTENTS

ARTICLE 1—DEFINED TERMS

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

A. *Issuing Office*—The office from which the Bidding Documents are to be issued, and which registers plan holders.

ARTICLE 2—BIDDING DOCUMENTS

2.01 Bidder shall obtain a complete set of Bidding Requirements and proposed Contract Documents (together, the Bidding Documents). See the Agreement for a list of the Contract Documents. It is Bidder's responsibility to determine that it is using a complete set of documents in the preparation of a Bid. Bidder assumes sole responsibility for errors or misinterpretations resulting from the use of incomplete documents, by Bidder itself or by its prospective Subcontractors and Suppliers.

2.02 Bidding Documents are made available for the sole purpose of obtaining Bids for completion of the Project and permission to download or distribution of the Bidding Documents does not confer a license or grant permission or authorization for any other use, nor does it grant or confer ownership or any property interest in the Bidding Documents and other documents distributed for the Project. Authorization to download documents, or other distribution, includes the right for Bidding Documents holders to print documents solely for their use, and the use of their prospective Subcontractors and Suppliers, provided the Bidding Documents holder pays all costs associated with printing or reproduction. Paper or other types of printed documents may not be re-sold under any circumstances.

2.03 Owner has established a Bidding Documents Website as indicated in the Advertisement or invitation to bid. Owner recommends that Bidder register as a Bidding Documents holder with the Issuing Office at such website, and obtain a complete set of the Bidding Documents from such website. Bidders may rely that sets of Bidding Documents obtained from the Bidding Documents Website are complete, unless an omission is blatant. Registered Bidding Documents holders will receive Addenda issued by Owner or Issuing Office.

2.04 Bidder may register as a Bidding Documents holder and obtain complete sets of Bidding Documents, in the format stated in the Advertisement or invitation to bid, from the Issuing Office. Bidders may rely that sets of Bidding Documents obtained from the Issuing Office are complete, unless an omission is blatant. Registered Bidding Documents holders will receive Addenda issued by Owner or Issuing Office.

2.05 Plan rooms (including construction information subscription services, and electronic and virtual plan rooms) may distribute the Bidding Documents, or make them available for examination. Those prospective bidders that obtain an electronic (digital) copy of the Bidding Documents from a plan room are encouraged to register as Bidding Documents holders from the Bidding Documents Website or Issuing Office. Owner is not responsible for omissions in Bidding

Documents or other documents obtained from plan rooms or other such sources (such as other prospective bidders), or for a Bidder's failure to obtain Addenda from a plan room.

2.06 *Electronic Documents*

A. When the Bidding Requirements indicate that electronic (digital) copies of the Bidding Documents are available, such documents will be made available to prospective Bidders as Electronic Documents in the manner specified.

1. Bidding Documents will be provided in Adobe PDF (Portable Document Format) (.pdf) that is readable by Adobe Acrobat Reader Version [insert version number] or later. It is the intent of the Engineer and Owner that such Electronic Documents are to be exactly representative of the paper copies of the documents. However, because the Owner and Engineer cannot totally control the transmission and receipt of Electronic Documents nor any bidder's or the Contractor's means of reproduction of such documents, the Owner and Engineer cannot and do not guarantee that Electronic Documents and reproductions prepared from those versions are identical in every manner to the paper copies.

B. Unless otherwise stated in the Bidding Documents, the Bidder may use and rely upon complete sets of Electronic Documents of the Bidding Documents, described in Paragraph 2.06.A above. However, Bidder assumes all risks associated with differences arising from transmission/receipt of Electronic Documents versions of Bidding Documents and reproductions prepared from those versions and, further, assumes all risks, costs, and responsibility associated with use of the Electronic Documents versions to derive information that is not explicitly contained in paper versions of the documents, and for Bidder's reliance upon such derived information.

C. After the Contract is awarded, the Owner will provide or direct the Engineer to provide for the use of the Contractor certain documents that were developed by Engineer as part of the Project design process, as Electronic Documents in native file formats as originally prepared by Engineer.

1. Electronic Documents that are available in native file format include:

a. AutoDesk BIM 350 file format, *.rvt.

2. Release of such documents will be solely for the convenience of the Contractor and subject to additional requirements, if any, for such release as indicated in Specifications Section 01 31 26 – Electronic Communication Protocols. No such document is a Contract Document.

3. Unless the Contract Documents explicitly identify that such information will be available to the Successful Bidder (Contractor), nothing herein will create an obligation on the part of the Owner or Engineer to provide or create such information, and the Contractor is not entitled to rely on the availability of such information in the preparation of its Bid or pricing of the Work. In all cases, the Contractor shall take appropriate measures to verify that electronic/digital information provided in Electronic Documents is appropriate and adequate for Contractor's specific purposes.

4. In no case will Contractor be entitled to additional compensation or time for completion due to any differences between the actual Contract Documents and any related document in native file format.

ARTICLE 3—QUALIFICATIONS OF BIDDERS

3.01 Bidder is to submit the following information with its Bid to demonstrate Bidder's qualifications to perform the Work:

A. Mandatory Bidder Responsibility Criteria Information.

B. Verification of Subcontractor Responsibility Criteria.

C. Acknowledgement of Contractor Lawful Hiring Compliance Enrollment.

D. Local Agency Subcontractor List.

E. Other required information as listed in Article 2, 00 41 13 – Bid Form, EJCDC C-410.

3.02 A Bidder's failure to submit required qualification information within the times indicated may disqualify Bidder from receiving an award of the Contract.

3.03 No requirement in this Article 3 to submit information will prejudice the right of Owner to seek additional pertinent information regarding Bidder's qualifications.

ARTICLE 4—PRE-BID CONFERENCE

4.01 A non-mandatory pre-bid conference will be held at the time and location indicated in the Advertisement or invitation to bid. Representatives of Owner and Engineer will be present to discuss the Project. Bidders are encouraged to attend and participate in the conference; however, attendance at this conference is not required to submit a Bid.

4.02 Information presented at the pre-bid conference does not alter the Bidding Documents. Owner or Issuing Office will issue Addenda to make any changes to the Bidding Documents that result from discussions at the pre-bid conference. Information presented, and statements made at the pre-bid conference will not be binding or legally effective unless incorporated in an Addendum.

ARTICLE 5—SITE AND OTHER AREAS; EXISTING SITE CONDITIONS; EXAMINATION OF SITE; OWNER'S SAFETY PROGRAM; OTHER WORK AT THE SITE

5.01 *Site and Other Areas*

A. The Site is identified in the Bidding Documents, including in Specifications Section 01 11 00 – Summary of Work. By definition, the Site includes rights-of-way, easements, and other lands furnished by Owner for the use of the Contractor. Any additional lands required for temporary construction facilities, construction equipment, or storage of materials and equipment, and any access needed for such additional lands, are to be obtained and paid for by Contractor.

5.02 *Existing Site Conditions*

A. *Subsurface and Physical Conditions; Hazardous Environmental Conditions*

1. The Supplementary Conditions identify the following regarding existing conditions at or adjacent to the Site:

a. Those reports of explorations and tests of subsurface conditions at or adjacent to the Site that contain Technical Data.

b. Those drawings known to Owner of existing physical conditions at or adjacent to the Site, including those drawings depicting existing surface or subsurface structures at or adjacent to the Site (except Underground Facilities), that contain Technical Data.

c. Reports and drawings known to Owner relating to Hazardous Environmental Conditions that have been identified at or adjacent to the Site.

d. Technical Data contained in such reports and drawings.

2. Owner will make copies of reports and drawings referenced above available to any prospective Bidder on request. These reports and drawings are not part of the Contract Documents, but the Technical Data contained therein upon whose accuracy Bidder is entitled to rely, as provided in the General Conditions, has been identified and established in the Supplementary Conditions. Bidder is responsible for any interpretation or conclusion Bidder draws from any Technical Data or any other data, interpretations, opinions, or information contained in such reports or shown or indicated in such drawings.

3. If the Supplementary Conditions do not identify Technical Data, the default definition of Technical Data set forth in Article 1 of the General Conditions will apply.

B. *Underground Facilities:* Underground Facilities are shown or indicated on the Drawings, pursuant to Paragraph 5.05 of the General Conditions, and not in the drawings referred to in Paragraph 5.02.A of these Instructions to Bidders. Information and data regarding the presence or location of Underground Facilities are not intended to be categorized, identified, or defined as Technical Data.

5.03 *Other Site-Related Documents*

A. In addition to the documents regarding existing Site conditions referred to in Paragraph 5.02.A of these Instructions to Bidders, the following other documents relating to conditions at or adjacent to the Site are known to Owner and made available to Bidders for reference:

1. No documents are listed.

Owner will make copies of these other Site-related documents available to any Bidder on request.

B. Owner has not verified the contents of these other Site-related documents, and Bidder may not rely on the accuracy of any data or information in such documents. Bidder is responsible for any interpretation or conclusion Bidder draws from the other Site-related documents.

C. The other Site-related documents are not part of the Contract Documents.

D. Bidders are encouraged to review the other Site-related documents, but Bidders will not be held accountable for any data or information in such documents. The requirement to review and take responsibility for documentary Site information is limited to information in (1) the Contract Documents and (2) the Technical Data.

E. No other Site-related documents are available.

5.04 *Site Visit and Testing by Bidders*

A. Bidder is required to visit the Site and conduct a thorough visual examination of the Site and adjacent areas. During the visit the Bidder must not disturb any ongoing operations at the Site.

B. A Site visit is scheduled following the pre-bid conference. Maps, directions, or GPS coordinates to the Site, when the Site is remote from the pre-bid conference location, will be available at the pre-bid conference.

C. Not used.

D. Bidders visiting the Site are required to: (1) arrange their own transportation to the Site; and (2) each Bidder visiting the Site is responsible for providing and using its own personal protective equipment appropriate for the Site and conditions, and in accordance with posted requirements, if any. At minimum, each visitor to the Site should have eye and hearing protection (other than ordinary eyewear), and a high-visibility reflective safety vest. Comply with Paragraph 5.05 of these Instructions to Bidders.

E. All access to the Site, other than during a regularly scheduled Site visit, must be coordinated through the following Owner or Engineer contact for visiting the Site:

Rob Charles, PE
Utilities Manager
P 360-817-7003
E rcharles@cityofcamas.us

Bidder must conduct the required Site visit during normal working hours, Mondays through Fridays.

F. Bidder is not required to conduct any subsurface testing, or exhaustive investigations of Site conditions.

G. On request, and to the extent Owner has control over the Site, and schedule permitting, the Owner will provide Bidder general access to the Site to conduct such additional examinations, investigations, explorations, tests, and studies as Bidder deems necessary for preparing and submitting a successful Bid. Owner will not have any obligation to grant such access if doing so is not practical because of existing operations, security or safety concerns, or restraints on Owner's authority regarding the Site. Bidder is responsible for establishing access needed to reach specific selected test sites.

H. Bidder must comply with Laws and Regulations regarding excavation and location of utilities, obtain necessary permits, and comply with all terms and conditions established by Owner or by property owners or other entities controlling the Site with respect to schedule, access, existing operations, security, liability insurance, and applicable safety programs.

I. Bidder must fill all holes and clean up and restore the Site to its former condition upon completion of such explorations, investigations, tests, and studies.

5.05 *Owner's Safety Program*

A. Site visits and work at the Site may be governed by an Owner safety program. If an Owner safety program exists, it will be indicated in the Supplementary Conditions. Where the Bidding Documents indicate an Owner's safety program, visitors to the Site during the bidding phase and at other times shall comply with Owner's safety programs.

5.06 *Other Work at the Site*

A. Reference is made to Specifications Section 01 11 00 – Summary of Work, for the identification of the general nature of other work of which Owner is aware (if any) that is to be performed at the Site by Owner or others (such as utilities and other prime contractors) and relates to the Work contemplated by these Bidding Documents. If Owner is party to a written contract for such other work, then on request, Owner will provide to each Bidder access to examine such contracts (other than portions thereof related to price and other potentially confidential matters), if any.

ARTICLE 6—BIDDER'S REPRESENTATIONS AND CERTIFICATIONS

6.01 *Express Representations and Certifications in Bid Form, Agreement*

A. The Bid Form that each Bidder will complete and submit contains express representations regarding the Bidder's examination of Project documentation, Site visit, and preparation of the Bid, and certifications regarding lack of collusion or fraud in connection with the Bid. Bidder should review these representations and certifications, and assure that Bidder can make the representations and certifications in good faith, before executing and submitting its Bid.

B. If Bidder is awarded the Contract, Successful Bidder (as Contractor) will make similar express representations and certifications when it signs the Agreement.

ARTICLE 7—INTERPRETATIONS AND ADDENDA

7.01 Owner on its own initiative may issue Addenda to clarify, correct, supplement, or change the Bidding Documents.

7.02 Bidder shall submit all questions about the meaning or intent of the Bidding Documents to Engineer in writing. Contact information and submittal procedures for such questions are as follows:

A. Andrew Staples, PE
HDR Engineering, Inc.
1299 W Riverstone Dr., Ste 200
Coeur d' Alene, 83814
P 509-216-8144
E andrew.staples@hdrinc.com

7.03 Interpretations or clarifications considered necessary by Engineer in response to such questions will be issued by Addenda delivered to all Bidding Documents holders registered with the Issuing Office. Questions received less than seven days prior to the date for opening of Bids may not be answered.

7.04 Only responses set forth in an Addendum will be binding. Oral and other interpretations or clarifications will be without legal effect. Responses to questions are not part of the Contract Documents unless set forth in an Addendum that expressly modifies or supplements the Bidding Documents.

7.05 Addenda that engineer judges to have a material or significant effect on Bidders' preparation of pricing and other requirement element of the Bid will be transmitted via Addendum for Bidders'

receipt not less than three days prior to the scheduled date for receipt of the Bids. Clarifications or modifications that Engineer deems will not have a material or substantial effect on the preparation of Bids may be transmitted for Bidders' receipt later, for receipt prior t the deadline for receipt of Bids.

ARTICLE 8—BID SECURITY

8.01 *Required Form and Amount of Bid Security*

A. A Bid must be accompanied by bid security made payable to Owner in an amount of five percent of Bidder's maximum Bid price (determined by adding the base bid and all alternates) and in the form of a bid bond issued by a surety meeting the requirements of Paragraph 6.01 of the General Conditions.

B. Such bid bond will be issued in the form included in the Bidding Documents.

8.02 *Bid Security of Successful Bidder*

A. The Bid security of the apparent Successful Bidder will be retained until Owner awards the Contract to such Bidder, and such Bidder has signed the Contract, furnished the required Contract security, and met the other conditions of the Notice of Award, whereupon the Successful Bidder's bid security will be released.

B. If the Successful Bidder fails to sign and deliver the Contract and furnish the required Contract security within the number of days, indicated in Paragraph 20.01 of these Instructions to Bidders, after the Notice of Award, Owner may consider Bidder to be in default, annul the Notice of Award, and the bid security of that Bidder will be forfeited.

C. Upon Successful Bidder's default:

1. When the bid security is a penal sum bid bond, the entire penal sum amount of the bid bond will be forfeit and due Owner.

2. When the bid security is a damages form of bid bond, to the extent of Owner's damages will be forfeit and due Owner.

3. If a type of bid security other than a bid bond is allowed and is furnished, the amount that will be forfeit and due Owner will be the same as for the form of bid bond included in the Bidding Documents. Owner will so notify the defaulting Bidder in writing of the annulment and the amount of the forfeiture, with documentation of the amount forfeited.

D. Such forfeiture will be Owner's exclusive remedy if Bidder defaults.

8.03 *Bid Security of Bidders other than the Successful Bidder*

A. The bid security of other Bidders that Owner believes to have a reasonable chance of receiving the award may be retained by Owner until the earlier of seven days after the Effective Date of the Contract or [75] days after the Bid opening, whereupon bid security furnished by such Bidders will be released.

B. Bid security of other Bidders that Owner believes do not have a reasonable chance of receiving the award will be released within seven days after the bid opening.

C. Release of Bid Security: Owner may release any Bidder's bid security by returning such bid security to the associated Bidder. When bid security is in the form of a bid bond, Owner may

dispose of or destroy the bid bond and so advice the associated Bidder in writing that the bid bond has been released.

ARTICLE 9—CONTRACT TIMES

9.01 The number of days within which, or the dates by which, the Work is to be (a) substantially completed and (b) ready for final payment, and (c) Milestones (if any), are to be achieved are set forth in the Agreement.

9.02 Provisions for liquidated and special damages, if any, for failure to timely attain a Milestone, Substantial Completion, or completion of the Work in readiness for final payment, are set forth in the Agreement.

ARTICLE 10—SUBSTITUTE AND "OR EQUAL" ITEMS

10.01 The Contract for the Work, as awarded, will be on the basis of materials, equipment, and procedures specified or described in the Bidding Documents without consideration during the bidding and Contract award process of possible substitute or "or-equal" items or procedures. In cases in which the Contract allows the Contractor to request that Engineer authorize the use of a substitute or "or-equal" item of material or equipment or procedure, application for such acceptance may not be made to and will not be considered by Engineer until after the Effective Date of the Contract.

10.02 All prices that Bidder sets forth in its Bid will be based on the presumption that the Contractor will furnish the materials and equipment specified or described in the Bidding Documents, and will perform the Work in accordance with procedures indicated in the Bidding Documents, as supplemented by Addenda, if any. Assumptions regarding the possibility of post-bid approvals of "or-equal" or substitution requests are made at Bidder's sole risk.

ARTICLE 11—SUBCONTRACTORS, SUPPLIERS, AND OTHERS

11.01 A Bidder must be prepared to retain specific Subcontractors and Suppliers for the performance of the Work if required to do so in the Specifications or elsewhere in the Bidding Documents. If a prospective Bidder objects to retaining any such Subcontractor or Supplier and the concern is not relieved by an Addendum, then the prospective Bidder should not submit a Bid.

11.02 The apparent Successful Bidder, and any other Bidder so requested by Owner or Engineer, must submit to Owner (with a copy to Engineer) a list of the Subcontractors and Suppliers proposed for the following portions of the Work within one hour after the published Bid submittal time:

A. Electrical

B. Plumbing

C. HVAC

11.03 Withing **forty-eight hours** after the published Bid submittal time, the names of the subcontractors with whom the Bidder, if awarded the Contract, will subcontract for performance of the Work of **structural streel installation and rebar installation**.

ARTICLE 12—PREPARATION OF BID

12.01 The Bid Form is included with the Bidding Documents.

A. All blanks on the Bid Form must be completed in ink and the Bid Form signed in ink. Erasures or alterations must be initialed in ink by the person signing the Bid Form. A Bid price must be indicated for each section, Bid item, alternate, adjustment unit price item, and unit price item listed therein.

B. If the Bid Form expressly indicates that submitting pricing on a specific alternate item is optional, and Bidder elects to not furnish pricing for such optional alternate item, then Bidder may enter the words "No Bid" or "Not Applicable."

12.02 If Bidder has obtained the Bidding Documents as Electronic Documents, then Bidder shall prepare its Bid on a paper copy of the Bid Form printed from the Electronic Documents version of the Bidding Documents. The printed copy of the Bid Form must be clearly legible, printed on 8.5-inch by 11-inch paper and as closely identical in appearance to the Electronic Document version of the Bid Form as may be practical. The Owner reserves the right to accept Bid Forms which nominally vary in appearance from the original paper version of the Bid Form, providing that all required information and submittals are included with the Bid.

12.03 A Bid by a corporation must be signed in the corporate name by a corporate officer (whose title must appear under the signature), accompanied by evidence of authority to sign. The corporate address and state of incorporation must be shown.

12.04 A Bid by a partnership must be executed in the partnership name and signed by a partner (whose title must appear under the signature), accompanied by evidence of authority to sign. The official address of the partnership must be shown.

12.05 A Bid by a limited liability company must be signed in the name of the firm by a member or other authorized person and accompanied by evidence of authority to sign. The state of formation of the firm and the official address of the firm must be shown.

12.06 A Bid by an individual must show the Bidder's name and official address.

12.07 A Bid by a joint venture must be signed by an authorized representative of each joint venturer in the manner indicated on the Bid Form. The joint venture must have been formally established prior to submittal of a Bid, and the official address of the joint venture must be shown.

12.08 All names must be printed in ink below the signatures.

12.09 The Bid must contain an acknowledgment of receipt of all Addenda, the numbers of which must be filled in on the Bid Form.

12.10 Postal and e-mail addresses and telephone number for communications regarding the Bid must be indicated on the Bid Form.

12.11 The Bid must contain evidence of Bidder's authority to do business in the state where the Project is located, or Bidder must certify in writing that it will obtain such authority within the time for acceptance of Bids and attach such certification to the Bid.

12.12 If Bidder is required to be licensed to submit a Bid or perform the Work in the state where the Project is located, the Bid must contain evidence of Bidder's licensure, or Bidder must certify in writing that it will obtain such licensure within the time for acceptance of Bids and attach such certification to the Bid. Bidder's state contractor license number, if any, must also be shown on the Bid Form.

ARTICLE 13—BASIS OF BID

13.01 *Lump Sum*

A. Bidders must submit a Bid on a lump sum basis as set forth in the Bid Form.

ARTICLE 14—SUBMITTAL OF BID

14.01 The Bidding Documents include one separate, unbound copy of the Bid Form, and, where required, the Bid Bond Form and other supplements to the Bid Form. The unbound copy of the Bid Form and supplements (if any) is to be completed and submitted with the Bid security and the other documents required with the Bid by Article 2 of the Bid Form.

14.02 A Bid must be received no later than the date and time prescribed and at the place indicated in the Advertisement or invitation to bid and must be enclosed in a plainly marked package with the Project title, and, if applicable, the designated portion of the Project for which the Bid is submitted, and the name and address of Bidder, and must be accompanied by the Bid security and other required documents. If a Bid is sent by mail or other delivery method, the sealed envelope containing the Bid must be enclosed in a separate package plainly marked on the outside with the notation "BID ENCLOSED." A mailed Bid must be addressed to the location designated in the Advertisement or invitation to bid.

14.03 Bids received after the date and time prescribed for the opening of Bids, or not submitted at the correct location or in the designated manner, will not be accepted and will be returned to the Bidder unopened. Owner accepts no responsibility for delays in returning Bids submitted or delivered to the incorrect location.

ARTICLE 15—MODIFICATION AND WITHDRAWAL OF BID

15.01 An unopened Bid may be withdrawn by an appropriate document duly signed in the same manner that a Bid must be signed and delivered to the place where Bids are to be submitted, prior to the date and time established in the Bidding Documents for the receipt of Bids. Upon receipt of such notice, the unopened Bid will be returned to the Bidder.

15.02 If a Bidder wishes to modify its Bid prior to Bid opening, Bidder must withdraw its initial Bid in the manner specified in Paragraph 15.01 of this Article and submit a new Bid prior to the date and time for established in the Bidding Documents the receipt of Bids.

15.03 If, within 24 hours after Bids are opened, any Bidder files a duly signed, written notice with Owner and promptly thereafter demonstrates to the reasonable satisfaction of Owner that there was a

material and substantial mistake in the preparation of its Bid, the Bidder may withdraw its Bid, and the bid security will be returned.

ARTICLE 16—OPENING OF BIDS

16.01 Bids will be opened at the time and place indicated in the Advertisement or invitation to bid and, unless obviously non-responsive, will be read aloud publicly. An abstract of the amounts of the base Bids and major alternates, if any, will be made available to Bidders after the opening of Bids.

ARTICLE 17—BIDS TO REMAIN SUBJECT TO ACCEPTANCE

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

ARTICLE 18—EVALUATION OF BIDS AND AWARD OF CONTRACT

18.01 The City of Camas expressly reserves the right to reject any or all Bids and to waive minor irregularities or informalities and to Award the Project to the lowest responsible bidder as it best serves the interests of the City. The City of Camas also reserves the right to delete any or all portions of individual bid items.

18.02 Owner will reject the Bid of any Bidder that Owner finds, after reasonable inquiry and evaluation, to not be responsible. Owner may reject the Bid of any Bidder that fails to demonstrate appropriate qualifications, experience, and resources for the Work, in accordance with Article 3 of these Instructions to Bidders.

18.03 If Bidder purports to add terms or conditions to its Bid, takes exception to any provision of the Bidding Documents, or attempts to alter the contents of the Contract Documents for purposes of the Bid, whether in the Bid itself or in a separate communication to Owner or Engineer, then Owner will reject the Bid as nonresponsive.

18.04 *Basis for Award of Contract*

A. If Owner awards the contract for the Work, such award will be to the responsible Bidder submitting the lowest-priced, responsive Bid that has not otherwise been disqualified.

18.05 *Evaluation of Bids*

A. In evaluating Bids, Owner will consider whether the Bids comply with the prescribed requirements, and such alternates, unit prices, and other data, as may be requested in the Bid Form or elsewhere in the Bidding Documents, or prior to the Notice of Award.

18.06 In evaluating whether a Bidder is responsible, Owner will consider the qualifications, experience, and resources of the Bidder and may consider the qualifications, experience, and resources of

Subcontractors and Suppliers proposed for those portions of the Work for which the identity of Subcontractors and Suppliers must be submitted as provided in the Bidding Documents.

18.07 Owner, with or without Engineer's assistance, may conduct such investigations as Owner deems necessary to establish the responsibility, qualifications, and financial ability of Bidders and any proposed Subcontractors or Suppliers.

ARTICLE 19—BONDS AND INSURANCE

19.01 Paragraph 2.01 and Article 6 of the General Conditions, as may be modified by the Supplementary Conditions, set forth Owner's requirements as to performance and payment bonds, other required bonds (if any), and insurance. When the Successful Bidder delivers the signed Agreement to Owner (or Owner's representative), it must be accompanied by required bonds and insurance documentation.

19.02 Article 8 ("Bid Security") of these Instructions to Bidders addresses any requirements for providing bid bonds as part of the bidding process.

ARTICLE 20—SIGNING OF AGREEMENT

20.01 When Owner issues a Notice of Award to the Successful Bidder, it will be accompanied by the unsigned counterparts of the Agreement, along with the other Contract Documents as identified in the Agreement. Within 15 days thereafter, Successful Bidder must execute and deliver the required number of counterparts of the Agreement and required bonds and insurance documentation (as required by the Contract Documents) to Owner. Within 15 days thereafter, Owner will deliver one fully signed counterpart of the Agreement to Successful Bidder, together with printed and electronic copies of the Contract Documents as stated in Paragraph 2.02 of the General Conditions.

ARTICLE 21—SALES AND USE TAXES

21.01 Owner is not exempt from Washington state sales and use taxes on materials and equipment to be incorporated in the Work. Said taxes must be included in the Bid Form in the line shown. Refer to Paragraph SC-7.10 of the Supplementary Conditions for additional information.

ARTICLE 22—CONTRACTS TO BE ASSIGNED

22.01 *Trojan UV System*

22.02 *Sulzer High Speed Turbo Blowers*

BID FORM

FOR CONSTRUCTION CONTRACT

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

ARTICLE 1—OWNER AND BIDDER

1.01 This Bid is submitted to: The City of Camas
616 NE 4th Ave
Camas, WA 98607

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

ARTICLE 2—ATTACHMENTS TO THIS BID

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

A. ☐ Required Bid security

B. ☐ Mandatory Bidder Responsibility Criteria Information

C. ☐ Verification of Subcontractor Responsibility Criteria

D. ☐ Acknowledgement of Contractor Lawful Hiring Compliance Enrollment

E. ☐ Local Agency Subcontractor List

F. ☐ Non-Collusion Declaration

G. ☐ Contractor Certification Wage Law Compliance – Responsibility Criteria, Washington State Public Works Contracts

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

3.01 *Lump Sum Bids*

A. Bidder will complete the Work in accordance with the Contract Documents for the following lump sum (stipulated) price:

1. Lump Sum Price (Single Lump Sum)

(1) Lump Sum Bid Price	$
(2) Trench Safety Systems (RCW 39.04.180)	$

(3) Trojan UV Equipment	$ 649,286.00
(4) Blower Equipment	$ 472,000.00
(5) Washington State Sales Tax = 8.6% x [(1) + (2) + (3) + (4)]	$
Total Bid = (1)+(2)+(3)+(4)+(5)	$

ARTICLE 4—TIME OF COMPLETION

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

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

ARTICLE 5—BIDDER'S ACKNOWLEDGEMENTS: ACCEPTANCE PERIOD, INSTRUCTIONS, AND RECEIPT OF ADDENDA

5.01 *Bid Acceptance Period*

A. This Bid will remain subject to acceptance for 60 days after the Bid opening, or for such longer period of time that Bidder may agree to in writing upon request of Owner.

5.02 *Instructions to Bidders*

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

5.03 *Receipt of Addenda*

A. Bidder hereby acknowledges receipt of the following Addenda:

Addendum Number	Addendum Date

ARTICLE 6—BIDDER'S REPRESENTATIONS AND CERTIFICATIONS

6.01 *Bidder's Representations*

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

1. Bidder has examined and carefully studied the Bidding Documents, including Addenda.
2. Bidder has visited the Site, conducted a thorough visual examination of the Site and adjacent areas, and become familiar with the general, local, and Site conditions that may affect cost, progress, and performance of the Work.
3. Bidder is familiar with all Laws and Regulations that may affect cost, progress, and performance of the Work.

4. Bidder has carefully studied the reports of explorations and tests of subsurface conditions at or adjacent to the Site and the drawings of physical conditions relating to existing surface or subsurface structures at the Site that have been identified in the Supplementary Conditions, with respect to the Technical Data in such reports and drawings.

5. Bidder has carefully studied the reports and drawings relating to Hazardous Environmental Conditions, if any, at or adjacent to the Site that have been identified in the Supplementary Conditions, with respect to Technical Data in such reports and drawings.

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

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

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

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

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

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

6.02 *Bidder's Certifications*

A. The Bidder certifies the following:

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

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

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

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

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

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

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

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

BIDDER hereby submits this Bid as set forth above:

Bidder:

_____

(typed or printed name of organization)

By: _____

(individual's signature)

Name: _____

(typed or printed)

Title: _____

(typed or printed)

Date: _____

(typed or printed)

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

Attest: _____

(individual's signature)

Name: _____

(typed or printed)

Title: _____

(typed or printed)

Date: _____

(typed or printed)

Bidder's Address for giving notices:

_____

_____

Bidder's Contact Person:

Name: _____

(typed or printed)

Title: _____

(typed or printed)

Phone: _____

Email: _____

Address:

_____

_____

_____

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

AGREEMENT

BETWEEN OWNER AND CONTRACTOR
FOR CONSTRUCTION CONTRACT (STIPULATED PRICE)

This Agreement is by and between City of Camas, Washington ("Owner") and _____ ("Contractor").

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

Owner and Contractor hereby agree as follows:

ARTICLE 1—WORK

1.01 Contractor shall complete all Work as specified or indicated in the Contract Documents. The Work is generally described as follows: The Work includes, but is not limited to, installation of a new Owner-furnished centrifuge, Owner-furnished blowers, septage screening equipment, grit handling equipment, UV equipment, backup generator, and HVAC improvements.

ARTICLE 2—THE PROJECT

2.01 The Project, of which the Work under the Contract Documents is a part, is generally described as follows: **Camas TO4 Ultraviolet Disinfection Replacement**

ARTICLE 3—ENGINEER

3.01 The Owner has retained HDR Engineering, Inc., 1050 SW 6th Ave, #1800; Portland, OR 97204 ("Engineer") to act as Owner's representative, assume all duties and responsibilities of Engineer, and have the rights and authority assigned to Engineer in the Contract.

3.02 The part of the Project that pertains to the Work has been designed by Engineer.

ARTICLE 4—CONTRACT TIMES

4.01 *Time is of the Essence*

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

4.02 Not used.

4.03 *Contract Times: Days*

A. The Work will be substantially complete within 680 calendar days after the date when the Contract Times commence to run as provided in Paragraph 4.01 of the General Conditions, and completed and ready for final payment in accordance with Paragraph 15.06 of the General Conditions within 710 calendar days after the date when the Contract Times commence to run.

4.04 Not used.

4.05 *Liquidated Damages*

A. Contractor and Owner recognize that time is of the essence as stated in Paragraph 4.01 above and that Owner will suffer financial and other losses if the Work is not completed and Milestones not achieved within the Contract Times, as duly modified. The parties also recognize the delays, expense, and difficulties involved in proving, in a legal or arbitration proceeding, the actual loss suffered by Owner if the Work is not completed on time. Accordingly, instead of requiring any such proof, Owner and Contractor agree that as liquidated damages for delay (but not as a penalty):

1. *Substantial Completion:* Contractor shall pay Owner $1,600 for each day that expires after the time (as duly adjusted pursuant to the Contract) specified above for Substantial Completion, until the Work is substantially complete.

2. *Completion of Remaining Work:* After Substantial Completion, if Contractor shall neglect, refuse, or fail to complete the remaining Work within the Contract Times (as duly adjusted pursuant to the Contract) for completion and readiness for final payment, Contractor shall pay Owner $1,600 for each day that expires after such time until the Work is completed and ready for final payment.

3. Not used.

4. Liquidated damages for failing to timely attain Milestones, Substantial Completion, and final completion are not additive, and will not be imposed concurrently.

B. If Owner recovers liquidated damages for a delay in completion by Contractor, then such liquidated damages are Owner's sole and exclusive remedy for such delay, and Owner is precluded from recovering any other damages, whether actual, direct, excess, or consequential, for such delay, except for special damages (if any) specified in this Agreement.

C. Not used.

4.06 *Special Damages*

A. Contractor shall reimburse Owner (1) for fines and penalties (if any) imposed on Owner as a direct result of Contractor's failure to attain Substantial Completion according to the Contract Times, (2) for fines and penalties (if any) imposed on Owner by an authority having jurisdiction for actions or inaction of Contractor arising from Contractor's performance of the Work (regardless of whether such event was connected with any delay in compliance with the Contract Times), and (3) for the actual costs reasonably incurred by Owner for engineering, construction observation, inspection, and administrative services needed after the time specified in Paragraph 4.02 for Substantial Completion (as duly adjusted pursuant to the Contract), until the Work is substantially complete.

B. After Contractor achieves Substantial Completion, if Contractor shall neglect, refuse, or fail to complete the remaining Work within the Contract Times, Contractor shall reimburse Owner for the actual costs reasonably incurred by Owner for engineering, construction observation, inspection, and administrative services needed after the time specified in Paragraph 4.02 for Work to be completed and ready for final payment (as duly adjusted pursuant to the Contract), until the Work is completed and ready for final payment.

C. The special damages imposed in this paragraph are supplemental to any liquidated damages for delayed completion established in this Agreement.

4.07 Owner reserves the right to withhold from payments due Contractor under the Contract amounts for liquidated damages (if any), special damages (if any), and performance damages (if any) in accordance with the Contract.

ARTICLE 5—CONTRACT PRICE

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

A. Total of Lump Sum Amount $_____.

ARTICLE 6—PAYMENT PROCEDURES

6.01 *Submittal and Processing of Payments*

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

6.02 *Progress Payments; Retainage*

A. Owner shall make progress payments on the basis of Contractor's Applications for Payment on or about the 25th day of each month during performance of the Work as provided in Paragraph 6.02.A.1 below, provided that such Applications for Payment have been submitted in a timely manner and otherwise meet the requirements of the Contract. All such payments will be measured by the Schedule of Values established as provided in the General Conditions (and in the case of Unit Price Work based on the number of units completed) or, in the event there is no Schedule of Values, as provided elsewhere in the Contract.

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

a. 95 percent of the value of the Work completed (with the balance being retainage).

B. Upon Substantial Completion, Owner shall pay an amount sufficient to increase total payments to Contractor to 95 percent of the Work completed, less such amounts set off by Owner pursuant to Paragraph 15.01.E of the General Conditions, and less 100 percent of Engineer's estimate of the value of Work to be completed or corrected as shown on the punch list of items to be completed or corrected prior to final payment. The Contractor at any time may request the retainage be reduced to 100 percent of the value of uncompleted Work per RCW 60.28.011(3).

6.03 *Final Payment*

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

B. Retainage shall not be released until release has been granted by Washington Department of Labor and Industries, Washington Employment Security Department, and Washington Department of Revenue.

6.04 *Consent of Surety*

A. Owner will not make final payment, or return or release retainage at Substantial Completion or any other time, unless Contractor submits written consent of the surety to such payment, return, or release.

6.05 *Interest*

A. All amounts not paid when due will bear interest at the rate of 1 percent per month, but at least one dollar per month, on amounts due on written contracts for public works, personal services, goods and services, equipment, and travel, whenever the public body fails to make timely payment (RCW 39.76.011).

ARTICLE 7—CONTRACT DOCUMENTS

7.01 *Contents*

A. The Contract Documents consist of all of the following:

1. This Agreement.
2. Bonds:
    a. Performance bond (together with power of attorney).
    b. Payment bond (together with power of attorney).
3. General Conditions.
4. Supplementary Conditions.
5. Wage Determination Schedule.
6. Statutory and Funding-Financing Entity Requirements.
7. Specifications as listed in the table of contents of the project manual (copy of list attached).
8. Drawings (not attached but incorporated by reference) consisting of 121 sheets with each sheet bearing the following general title: Camas TO4 Ultraviolet Disinfection Replacement.
9. Drawings listed on the attached sheet index.
10. Addenda (numbers ___ to ___, inclusive).
11. Exhibits to this Agreement (enumerated as follows):
    a. _A, B, C, D_
12. Declaration of Option for Investment of Retained Percentage
13. The following which may be delivered or issued on or after the Effective Date of the Contract and are not attached hereto:
    a. Notice to Proceed.

b. Work Change Directives.

c. Change Orders.

d. Field Orders.

e. Warranty Bond, if any.

14. Title IV Non-Discrimination Assurances.

15. Affidavit of Compliance with Public Work Contractor Lawful Hiring Compliance (E-Verify).

16. Apprentice Utilization.

B. The Contract Documents listed in Paragraph 7.01.A are attached to this Agreement (except as expressly noted otherwise above).

C. There are no Contract Documents other than those listed above in this Article 7.

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

ARTICLE 8—REPRESENTATIONS, CERTIFICATIONS, AND STIPULATIONS

8.01 *Contractor's Representations*

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

1. Contractor has examined and carefully studied the Contract Documents, including Addenda.

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

3. Contractor is familiar with all Laws and Regulations that may affect cost, progress, and performance of the Work.

4. Contractor has carefully studied the reports of explorations and tests of subsurface conditions at or adjacent to the Site and the drawings of physical conditions relating to existing surface or subsurface structures at the Site that have been identified in the Supplementary Conditions, with respect to the Technical Data in such reports and drawings.

5. Contractor has carefully studied the reports and drawings relating to Hazardous Environmental Conditions, if any, at or adjacent to the Site that have been identified in the Supplementary Conditions, with respect to Technical Data in such reports and drawings.

6. Contractor has considered the information known to Contractor itself; information commonly known to contractors doing business in the locality of the Site; information and observations obtained from visits to the Site; the Contract Documents; and the Technical Data identified in the Supplementary Conditions or by definition, with respect to the effect of such information, observations, and Technical Data on (a) the cost, progress, and performance of the Work; (b) the means, methods, techniques, sequences, and

procedures of construction to be employed by Contractor; and (c) Contractor's safety precautions and programs.

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

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

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

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

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

12. The Contractor for himself/herself, and for his/her heirs, executors, administrators, successors, assigns, does hereby agree to the full performance of all the covenants herein contained upon the part of the Contractor.

8.02 *Contractor's Certifications*

A. Contractor certifies that it has not engaged in corrupt, fraudulent, collusive, or coercive practices in competing for or in executing the Contract. For the purposes of this Paragraph 8.02:

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

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

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

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

8.03 *Standard General Conditions*

A. Owner stipulates that if the General Conditions that are made a part of this Contract are EJCDC® C-700, Standard General Conditions for the Construction Contract (2018), published

by the Engineers Joint Contract Documents Committee, and if Owner is the party that has furnished said General Conditions, then Owner has plainly shown all modifications to the standard wording of such published document to the Contractor, through a process such as highlighting or "track changes" (redline/strikeout), or in the Supplementary Conditions.

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

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

	Contractor:
_____	_____
(typed or printed name of organization)	*(typed or printed name of organization)*
By: _____	By: _____
(individual's signature)	*(individual's signature)*
Date: _____	Date: _____
(date signed)	*(date signed)*
Name: _____	Name: _____
(typed or printed)	*(typed or printed)*
Title: _____	Title: _____
(typed or printed)	*(typed or printed)*
	*(If **[Type of Entity]** is a corporation, a partnership, or a joint venture, attach evidence of authority to sign.)*
Attest: _____	Attest: _____
(individual's signature)	*(individual's signature)*
Title: _____	Title: _____
(typed or printed)	*(typed or printed)*
Address for giving notices:	Address for giving notices:
_____	_____
_____	_____
_____	_____
Designated Representative:	Designated Representative:
Name: _____	Name: _____
(typed or printed)	*(typed or printed)*
Title: _____	Title: _____
(typed or printed)	*(typed or printed)*
Address:	Address:
_____	_____
_____	_____
_____	_____
Phone: _____	Phone: _____
Email: _____	Email: _____
*(If **[Type of Entity]** is a corporation, attach evidence of authority to sign. If **[Type of Entity]** is a public body, attach evidence of authority to sign and resolution or other documents authorizing execution of this Agreement.)*	License No.: _____ *(where applicable)*
	State: _____

SECTION 08 36 13
OVERHEAD DOOR - SECTIONAL ALUMINUM

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes:

1. Sectional aluminum overhead doors.
    a. Insulated.
2. Heavy duty galvanized steel track.

B. Related Specification Sections include but are not necessarily limited to:

1. Section 01 61 03 - Common Work Results for Equipment.

1.2 QUALITY ASSURANCE

A. Referenced Standards:

1. ASTM International (ASTM):
    a. A653/A653M, Standard Specification for Steel Sheet, Zinc-Coated (Galvanized) or Zinc-Iron Alloy-Coated (Galvannealed) by the Hot-Dip Process.
    b. B209, Standard Specification for Aluminum and Aluminum-Alloy Sheet and Plate.
2. National Electrical Manufacturers Association (NEMA):
    a. 250, Enclosures for Electrical Equipment (1000 Volts Maximum).

B. Qualifications:

1. Installer shall be licensed or approved in writing by door manufacturer.

1.3 DEFINITIONS

A. Installer or Applicator:

1. Installer or applicator is the person actually installing or applying the product in the field at the Project site.
2. Installer and applicator are synonymous.

1.4 SUBMITTALS

A. Shop Drawings:

1. Product technical data including:
    a. Acknowledgement that products submitted meet requirements of standards referenced.
    b. Manufacturer's installation instructions.
2. Schedule of doors using same reference number for openings as indicated on Drawings.
3. Warranty.
4. Certification of installer qualifications.
5. Motor operator and accessories technical data including wiring and control diagrams for motor operators and control stations.

B. Contract Closeout Information:

1. Operation and Maintenance Data:
    a. See Specification Section 01 78 23 for requirements for the mechanics, administration, and the content of Operation and Maintenance Manual submittals.

C. Informational Submittals:

PART 2 - PRODUCTS

2.1 MANUFACTURERS

A. Subject to compliance with the Contract Documents, the following manufacturers are acceptable:

1. Insulated Sectional aluminum overhead doors:
    a. Fimbel Architectural Door Specialties.

2.2 MATERIALS

A. Door Panel Facing: Aluminum.

B. Insulation:

1. VPS foam plastic.
2. CFC free.

C. Weatherstripping: Neoprene, vinyl, or PVC.

D. Track: Galvanized steel.

E. Fasteners: Aluminum or stainless steel.

2.3 ACCESSORIES

2.4 FABRICATION

A. Doors - General:

1. Weatherstripped on top, bottom, and sides.
2. Finish: Manufacturer's standard.

B. Track:

1. Steel, ASTM A653/A653M, galvanized G90.
2. Manufacturer's heavy duty 2 inches or 3 inches as required for door opening size.

C. Hardware:

1. Steel, ASTM A653/A653M, galvanized G90 coating or aluminum ASTM B209.
2. All hardware is to be rated for heavy duty service.

D. Door Sections:

1. Minimum 2 inches thick.
2. Minimum 24 GA aluminum panel faces inside and out ASTM B209.
3. Thermal break at intersections of insulated doors.
4. Reinforced for track assembly.
5. Insulated, minimum R value 12.5.
6. Finish: Factory primed ready for field painting.
7. Door system: Fimbel Architectural Door Specialties "IS0-DOOR Insulated Aluminum".

E. Weatherstripping:

1. Bottom: Neoprene or EPDM compressible loop.
2. Top and sides: Continuous adjustable neoprene or EPDM strip.

F. Counterbalancing System:

1. Helical torsion 20,000 cycle springs having a 25% safety factor, fixed to embedded anchors, mounted on a single steel torsion rod.
2. Cable drums to have graduated spiral groove for adjustment and galvanized lift cables with minimum 7:1 safety factor.

G. Trim Pieces: Material and finish to match adjacent construction.

H. Wind Load Resistance: 25 PSF minimum.

I. Operation:

1. Chain operated.

J. Locking:

1. Slide locks.

2.5 MAINTENANCE MATERIALS

A. Provide 2 oz of touch-up paint for each color door on Project.

PART 3 - EXECUTION

3.1 INSTALLATION

A. Install products in accordance with manufacturer's instructions.

B. Installation shall be done by manufacturer's authorized installer.

C. Provide all required trim, weatherstripping, closures, plates, angles, and bracing for a complete weathertight vibration free installation.

3.2 ADJUSTMENT

A. Prior to occupancy, adjust door for smooth operation.

END OF SECTION

SECTION 40 05 59

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes:
   1. Fabricated Stainless Steel Slide Gates.

B. Related Specification Sections include but are not necessarily limited to:
   1. Section 01 61 03 - Equipment - Basic Requirements.
   2. Section 10 14 00 - Identification Devices.

1.2 QUALITY ASSURANCE

A. Referenced Standards:
   1. American Water Works Association (AWWA):
      a. C542, Electric Motor Actuators for Valves and Slide Gates.
      b. C561, Fabricated Stainless Steel Slide Gates.
   2. National Electrical Manufacturers Association (NEMA):
      a. 250, Enclosures for Electrical Equipment (1000 Volts Maximum).
   3. National Fire Protection Association (NFPA):
      a. 70, National Electric Code (NEC).

1.3 SUBMITTALS

A. Shop Drawings:
   1. See Specification Section 01 61 03.
   2. Product technical data including:
      a. Acknowledgment that products submitted meet the requirements of standards referenced.
      b. Calculations that demonstrate compliance with the deflections, stress and factor of safety specified.
      c. Certified drawings and material specifications for all components.
      d. Test records.
         1) Performance Test
         2) Leakage Test

B. Operation and Maintenance Manuals:
   a. The mechanics and administration of the submittal process.
   b. The content of Operation and Maintenance Manuals.

C. Affidavit of Compliance: See AWWA C561.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

A. Subject to compliance with the Contract Documents, the following manufacturers are acceptable:
   1. RW Gate Company
   2. Whipps
   3. Aquanox / Fontaine
   4. Hydro-Gate (Mueller)
   5. Golden Harvest
   6. Rodney-Hunt – Jash
   7. MPI McWane

2.2 EQUIPMENT – SLIDE GATES

A. General: Provide gates, stems, lifts and other appurtenances of size, type, material and construction shown on the Contract Drawings and as specified herein.

B. Comply with requirements of Specification Section 01 61 03.

C. Gates: Meet all requirements of AWWA C561 as modified per this Specification Section.

D. Materials:
   1. Materials subject to dezincification or dealuminization prohibited.
   2. "L" grades for all welded components.
   3. Thimble, frame, guides, slide, yoke and stem guides:
      a. Stainless steel, Type 304 and Type 304L.
      b. Or, Stainless steel, Type 316 and Type 316L.
   4. Gear housing:
      a. Cast iron, steel or ductile iron.
   5. Actuator pedestal:
      a. Same as gate material
   6. Rising stem thrust nuts:
      a. Same as gate material.
   7. Stem couplings:
      a. Same as gate material
   8. Stem guide bushings:
      a. Cast or extruded UV stabilized UHMW-PE.
      b. Or same as gate material as selected by Ultraviolet manufactuer.
   9. Stems:
      a. Same as gate material
   10. Seals:
      a. UV stabilized UHMW-PE.
   11. Anchor bolts and fasteners: Stainless steel, Type 316.
   12. Flush-bottom sill retainer: Stainless steel, same as gate material.
   13. Wedges and Pressure Pads, if required:
      a. This is a continuously modulating gate.
      b. UV stabilized UHMW-PE if required.
      c. Stainless steel, Type 316.

E. Fabrication: One-piece frames.
   1. One-piece frame:
      a. Self-contained.
   2. Flush bottom seals: Easily replaceable without disassembly of the gate.
   3. Side and top seals of gate: Replaceable without removing gate or without dewatering.

2.3 GATE OPERATORS AND LIFTS

A. General: Provide lifts in accordance with AWWA C541 and C542, or as modified in this Specification Section.

B. Rising Stem: Provide clear butyrate plastic stem cover with Mylar open-close indicator.

C. Electric Operators: See Specification Section 40 05 57.

2.4 FABRICATION

A. Specified in AWWA C561.

B. Welded Stainless Steel: Passivated after fabrication.

PART 3 - EXECUTION

3.1 INSTALLATION

A. Install products in accordance with manufacturer's instructions.

B. For identification and tagging, and for warning or caution signs, comply with Specification Section 10 14 00.

3.2 FIELD QUALITY CONTROL

A. Employ and pay for services of equipment manufacturer's field service representative(s) to:
   1. Inspect equipment covered by this Specification Section.
   2. Supervise adjustments and installation checks.
   3. Conduct initial start-up of equipment, perform operational checks, and supervise acceptance testing.
   4. Provide, through Ultraviolet Equipment Manufacturer, a written statement that manufacturer's equipment has been installed properly, started up and is ready for operation by Owner's personnel.
   5. Instruct Owner's personnel on operation and maintenance of furnished equipment.
   6. Field Leakage Test for Stainless Steel Slide Gates: Test gate under design seating head and adjust to maximum leakage specified.

3.3 GATE SCHEDULE:

A. The following table is a schedule of the fabricated slide gates.

GATE EQUIPMENT ID#	SIZE WxH (IN)	DESIGN HEAD, (FT) [a] SEATING	UNSEATING	OPENING DIRECTION [b]	TYPE OF CLOSURE [c]	TYPE OF LIFT MECHANISM [d]	RISING OR NON-RISING STEM [e]	THIMBLE REQUIRED [f]
08 WG 01	36 x 66	0	3	DnOp	W	Elec	R	No

Abbreviations:
a Design Head: Measured from surface of water to centerline of gate, in feet.
b Opening Direction: Dn Op = Downward Opening; Up Op = Upward Opening.
c Type of Closure: W = Weir Service; FB = Flush Bottom (Embedded); FM = Face Mounted.
d Type of Lift Mechanism: Ped = Pedestal; Elec = Electric; Hdwl = Handwheel; Hyd = Hydraulic, CH = Crank Handle, SQN = Square Nut.
e Rising or Nonrising Stem: R = Rising; NR = Nonrising.
f Thimble Required: Wall Thimble is required = YES; Wall Thimble is not required = No.

3.4 GATE ACTUATOR SCHEDULE:

A. The following table is a schedule of the Gate Actuators.

GATE EQUIPMENT ID#	TYPE OF SERVICE [g] NUMBER OF STARTS/HR	OPERATING CYCLE[h] OC OR MOD	NEMA CL[i]	SUPPLY VOLTAGE[j]	CONTROLS[k]	PROCESS CONTROL SIGNAL[l]	FEED BACK[m]
08 WG 01	Class 4	MOD	Std	480	IN	Analog	FB

Abbreviations:
g Type of Service: Number of Starts/Hour: Class 1 = 60 starts per hour; Class 2 = 100 starts per hour; Class 3 = 600 starts per hour; Class 4 = 1200 starts per HR.
h Operating Cycle: OC = Open/Close; MOD = Modulating.
i NEMA CL = NEMA Classification (NEMA 4 is standard default).
j Supply Voltage: Typical voltage is 460 VAC, 3 PH, 60 Hz.
k Controls: IN = Integral Controls; R = Remotely Mounted Controls.

l Process Control Signal: Analog = 4-20ma; C = Contract Closure. See control diagrams and/or P&ID drawings for voltage and source. For digital serial communication, indicate digital communications protocol (Device Net, Profibus, Modbus, etc.).

m Feed Back: FB = Feed back signals required. See control diagrams and/or P&ID drawings for number of feed back signals and auxiliary devices.

END OF SECTION

SECTION 46 21 10
SEPTAGE CYLINDRICAL BAR SCREEN

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes:
   1. Furnishing and installing:
      a. Cylindrical bar screen for removal of septage, floating, particulate, or fibrous material.

B. Related Sections include but are not necessarily limited to:
   1. Section 01 11 00 – Summary of Work.
   2. Section 01 31 26 – Electronic Communication Protocols.
   3. Section 01 33 00 – Submittal Procedures.
   4. Section 01 61 03 – Equipment - Basic Requirements.
   5. Section 01 75 00 – Checkout and Start-Up Procedures.
   6. Section 01 78 23 – Operation and Maintenance Data.
   7. Section 01 78 43 – Spare Parts and Extra Materials.
   8. Section 01 79 23 – Instruction of Operation and Maintenance Personnel.
   9. Section 01 81 33 – Cyber Security Requirements.
   10. Section 03 15 19 – Anchorage to Concrete.
   11. Section 40 05 00 – Pipe and Pipe Fittings – Basic Requirements.
   12. Section 40 61 96 – Process Control Descriptions.

1.2 QUALITY ASSURANCE

A. Responsibilities and Qualifications:
   1. All equipment provided under this Specification Section shall be obtained from a single manufacturer who, with the Contractor, shall assume full responsibility for designing, furnishing and installing a complete and operational influent screening system.
      a. The manufacturer shall be the source of information on all equipment furnished regardless of the manufacturing source of that equipment.

B. Referenced Standards:
   1. Septage system equipment and motor controllers shall, as applicable, meet the requirements of the following industry standards listed in this section:
      a. America Institute of Steel Construction (AISC).
      b. American Society for Testing and Materials (ASTM).
      c. American Welding Society Code (AWS).
      d. National Electrical Manufacturer's Association (NEMA):
         1) MG 1, Motors and Generators.
      e. Steel Structures Painting Council (SSPC).

1.3 SUBMITTALS

A. Shop Drawings:
   1. Product technical data including:
      a. Acknowledgement that products submitted meet requirements of standards referenced.
      b. Manufacturer's installation instructions.
      c. Manufacturer's catalog information, descriptive literature, specifications, and identification of materials for construction.
      d. Materials of construction of all components.
   2. Detailed Structural, Mechanical, and Electrical Drawings showing equipment fabrications and interface with other items including:
      a. Dimensions, size, and locations of connections to other work.

b. Details of attachment and support in channel.
c. Scaled floor plan and sections showing dimensions, weights, structural supports, embedments, clearances, and screen discharge interface.

3. Hydraulic calculations and flow curves for the proposed screen verifying that the screen is capable of processing the peak flow.
4. Gear output torque.
5. Complete motor nameplate data, as defined by NEMA, motor manufacturer, and motor modifications.
6. Functional description of internal and external instrumentation and controls including list of parameters monitored, controlled, or alarmed.
   a. See Section 40 61 96 – Process Control Descriptions for additional details.
7. Control panel elevation drawings showing fabrication and placement of operator interface devices and associated elements.
   a. Panel layout drawings shall contain a complete Bill of Material (BOM) showing the manufacturer, quantity and complete part number of each component.
   b. Panel layout drawings shall show dimensions, clearly marked conduit entry areas and panel installation details.
   c. Control panel cooling calculations (heat load calculations) justifying if additional cooling is required within the panel.
8. Power and control wiring diagrams, including terminals and numbers.
9. Short Circuit Current Rating (SCCR) nameplate marking per NFPA 70. Include any required calculations per Section 01 61 03 – Equipment - Basic Requirements.
10. Shop painting systems, including manufacturer's descriptive technical catalog literature and specifications.
11. External utility requirements for air, water, power, drain, etc., for each component.
12. Recommended spare parts list.
13. Training course outlines.
14. Certifications:
    a. Manufacturer's Certificate of Compliance of factory-applied coating system.
    b. Manufacturer's Certificate of Proper Installation.
15. Test reports:
    a. Written factory test report of inspection.
    b. Field functional test reports.

B. Operation and Maintenance Manuals:
   a. See Section 01 78 23 – Operation and Maintenance Data for the content of operation and maintenance manuals.
   b. See Section 01 33 00 – Submittal Procedures for the mechanics and administration of the submittal process.

C. Informational Submittals:
   1. Submit to Engineer the Schedule of Values in the form and quantity required in Section 01 33 00 - Submittals, and in accordance with Section 01 31 26 - Electronic Communication Protocols.
   2. Provide structural design calculations by a Professional structural engineer to support the structural design of the screen and anchors to withstand the worst-case load on the screen at maximum upstream water level in the channel with no water in the downstream channel.
   3. Special shipping, storage and protection, and handling instructions.

D. Refer to Section 01 81 33 – Cyber Security Requirements for required cyber security related submittals.

E. Shop drawing submittals shall be provided in accordance with Section 01 33 00 – Submittals.

1.4 ENVIRONMENTAL CONDITIONS

A. The screens will be installed outdoors in the Septage Receiving Station as shown on the drawings.

B. This equipment will screen septage sewage that contains heavy amounts of rags, plastics, fecal material and other forms of debris.

C. Equipment and materials installed at the project site are subject to significant corrosion due to salinity and presence of hydrogen sulfide in wastewater:
   1. Use corrosion resistant materials for equipment provided in this section.

D. Equipment Environment Application Rating: Class 1 Division 1 Groups C & D.

1.5 SEQUENCING AND SCHEDULING

A. Coordinate work with work sequence specified in Section 01 11 00 – Summary of Work.

1.6 WARRANTY

A. The manufacturer will warrant against any defects in material or workmanship to the screen and framework. This warranty will commence upon delivery of the products and will expire after one year from substantial completion of the installation of the product.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

A. Subject to compliance with the Contract Documents, the following manufacturers are acceptable:
   1. Lakeside Equipment Corporation.

2.2 SYSTEM DESCRIPTION

A. Each septage treatment unit shall consist of the following components and equipment:
   1. 3-plane cylindrical bar screen basket.
   2. Rotating rake, cleaning comb, concentric screw conveyor, dewatering screw, and screenings press with drive unit.
   3. Spray wash system.
   4. Pivoting support structure.
   5. Weather protection system.
   6. Liquid level sensing system.
   7. Electrical control system.

2.3 DESIGN SUMMARY

A. General:
   1. Number of screens: 1.
   2. Average Flow per Screen: 300 gpm.
   3. Maximum Septage Capacity per Screen: 400 gpm.
   4. Flow through velocity: 3.3 ft/sec.
   5. Maximum Upstream Liquid Level: 13.75 inches.
   6. Maximum Clean Water Headloss: 8 inches.
   7. Bar Spacing: ¼ inches.
   8. Nominal Screening Basket Diameter: 31 inches.
   9. Maximum Allowable Cleaning Cycle Time: 5 seconds.
   10. Screening Channel Width: 33 inches.
   11. Nominal Screw Conveyor Diameter: 10 inches.
   12. Minimum Screen Invert to Discharge Height: 89 inches.
   13. Speed Reducer Minimum Service Factor: 1.56.
   14. Speed Reducer Minimum Torque Rating: 15,700 in.-lb.
   15. Speed Reducer Minimum Thrust Rating: 5,800 lbf.
   16. Drive Motor Size: 2 hp.
   17. Electrical Power Characteristics: 460/3/60 VAC-Phase-Hertz.

18. Motor and Solenoid Valve Electrical Classification: Class I, Div. 2 hazardous.
19. Maximum Spray Wash System Flow Rate: 20 gal/min.
20. Minimum Spray Wash System Pressure: 60, psig.
21. Lower Wash System Number of Nozzles: 7.
22. Liquid Level Sensing System Type: Ultrasonic.
23. Heat Tracing per Section 40 41 13.

B. Unless otherwise specified, construct all components from AISI 316 stainless steel shapes (rods, angles, and channels), pipes, and sheets. Design all parts to handle the forces that may be exerted on them during fabrication, shipping, erection, and proper operation according to the O&M manual.

2.4 PERFORMANCE

A. The 3-plane cylindrical bar screen shall automatically screen wastewater flow. Screenings shall be washed, transported, compressed and dewatered by a single mechanism.

B. The 3-plane cylindrical bar screen shall be designed to handle the maximum hydraulic capacity with the maximum upstream liquid level noted in section 2.3. This maximum upstream liquid depth includes the maximum allowable clean water headloss noted in section 2.3 while operating at a 35-degree angle of inclination.

C. The nominal bar spacing noted in section 2.3 shall be the clear opening between the fixed bar elements only.

D. The average bar screen flow through velocity shall not exceed 3.3 ft/sec (1.0 m/sec) under any flow condition up to the maximum hydraulic capacity. The screen design shall minimize solids deposition in the channel.

E. The 3-plane cylindrical bar screen shall be a rotary raked, cylindrical bar screen with an integral screw conveyor and press. The 3-plane cylindrical bar screen shall use a single drive for screening, conveying, dewatering and compressing screening material.

F. The operation of the rake cleaning mechanism shall be automatically initiated at a preset high liquid level. The rake shall remove solids from the screening's basket and deposit them into the concentric screw conveyor trough after passing through a cleaning comb, where reverse movement of the rake shall provide positive cleaning of the rake mechanism. The screenings shall be transported up the screw conveyor and through a compaction/dewatering chamber.

G. The entire screen basket shall be completely cleaned in no more than the maximum allowable time noted in section 2.3.

H. The control system shall be designed so that the cleaning characteristics of the screen and spray wash systems can be changed via the programmable controller.

2.5 ODOR CONTROL

A. To minimize odors and nuisance insect populations, the 3-plane cylindrical bar screen transport system and compaction/dewatering system shall be completely enclosed.

B. The screenings spray wash system shall be completely enclosed to prevent spray, aerosols, and leakage from coming in contact with the operating floor.

2.6 3-PLANE CYLINDRICAL BAR SCREEN

A. Screen:
   1. All submerged components and all components in contact with the screened solids shall be of Type 316 stainless steel construction.
   2. The screen basket shall be of a cylindrical shape that shall be open at the top. The screen bars shall be perpendicular to the centerline of the screen. The basket ring support bars shall have adequately machined slots so that the rake teeth can penetrate the basket ring bars to ensure proper cleaning of the full basket depth.

3. The screen basket shall use graduated depth bars to provide three (3) distinct screening planes (bar heights) on the screen interior to provide superior solids capture and removal from the flow.
4. Each ring of the 3-plane cylindrical basket shall be fabricated from sections cut from flat 3/16-inch minimum thick stainless steel plate to minimize warping of the rings. Each basket ring section shall be provided with an integral strengthening gusset at each attachment point to the support bars for added basket strength. The stainless steel support bars shall be machined with slots to provide the proper bar spacing. Each basket ring shall be inserted into the machined slot of the basket support bars and then welded to the support bars to provide a superior strength basket design. To ensure basket strength, the minimum ring heights for the 3-plane cylindrical basket shall be as follows:
   a. 3/4 inch
   b. 1 inch
   c. 1-1/2 inch
5. The main screen basket upper support ring shall be a minimum of 5/8-inch thick. The main screen basket lower support ring shall be 7/8-inch minimum thickness.
6. The basket diameter shall be matched with a sufficient number of bar spacings to ensure the maximum hydraulic capacity flow rate is achieved and to provide less than the maximum head loss noted in section 2.3.
7. A hinged protective guard fabricated of 12-gauge minimum thick stainless steel or FRP shall be provided to cover the open top of the screen basket. Hinges and mounting hardware shall be Type 316 stainless steel.
8. Side seal plates shall be provided to enclose the circular screen and the rectangular concrete channel. Side seal plates shall be two-piece fabricated of 10-gauge minimum Type 316 stainless steel and shall be of sufficient height to prevent bypassing of flow around the screen at the maximum hydraulic capacity flow rate noted in section 2.3.
9. The screen shall be provided with a pivoting support stand allowing for easy removal of the screen basket from the channel for maintenance purposes. To ensure operator safety during servicing of the screen, supports and support stand shall be fabricated from 1/4 inch minimum Type 316 stainless-steel shapes and plates.
10. A set of Type 316 stainless-steel lower screen basket support brackets fabricated of 1/4-inch sections shall be provided to support the basket in the channel. Support brackets shall allow vertical adjustment of the screen basket so that it does not rest on the channel floor.

B. Screen Rotating Rake and Cleaning Comb:
1. The rotating rake assembly shall penetrate the depth of the bar screen to ensure positive solids removal. Rake shall be water-jet cut stainless steel for superior life. Rake tooth root design shall match the 3-plane design of the basket rings to ensure proper cleaning of the screen bars.
2. The rake shall reverse at least once during the cleaning cycle to pass through the topmost position where it shall be cleaned by a water-jet cut stainless steel hinged cleaning comb installed at the top of the screen basket. The cleaning comb shall be designed to match the rake profile to ensure cleaning of the spaces to the root of each tooth in the 3-plane rake design. Cleaning comb shall be supported at both ends and shall pivot and return to the standby position without the use of counterweights.
3. The rotating rake arm assembly and the screw conveyor shall be fixed to the same shaft and driven by a common drive.
4. A stainless steel backed nylon brush shall be attached to the rake arm and positioned to make contact with the screening trough to sweep material caught on the edges of the trough.

C. Screen Conveyor and Screenings Dewatering Press:
1. The screenings screw conveyor transport tube nominal diameter shall be as noted in section 2.3 with a minimum Schedule 10S pipe wall thickness. A minimum of three (3) anti-rotation bars with 1/4-inch minimum thickness shall be welded to the inside of the transport tube along the longitudinal axis from the compaction zone to the beginning of the screenings

collection trough. The screenings screw conveyor shall not depend on support from the anti-rotation bars during normal operation.

2. A basket support plate flange shall be a minimum of 5/8-inch and shall be welded to the lower end of the screenings transport tube complete with strengthening gussets to attach the screen basket and to provide for attachment of the screenings collection hopper. A 5/8-inch minimum thick drive support flange shall be welded to the upper end of the screenings transport tube for attachment of the drive assembly. After all welding of components to the screenings transport tube have been completed the fabrication shall be placed in a lathe to machine the face of the upper drive flange, to machine the face of the lower basket support plate flange for mating the basket and to machine the lower bearing housing in accordance with paragraph 3.3.C. A 1/2-inch thick minimum drive assembly adaptor stainless steel flange shall be provided to bolt to the upper drive support flange.
3. The dewatering screw shall be designed to transport and dewater the screened material. Screw flights shall be stainless steel with a minimum thickness of 3/16-inch with increased 3/8-inch thick minimum thickness in the screenings collection trough and in the compaction/dewatering zone. Where the transport screw passes through the discharge section a screenings cutter shall be provided to cut off the compacted material plug to drop into the receiving receptacle. Flight pitch distance shall be a maximum in the screenings collection hopper and shall be reduced along the length of the screenings transport tube to a minimum pitch distance in the compaction zone.
4. The upper and lower screenings conveyor torque tube shall be fitted with a solid stainless steel stub shaft. The shafts and screenings screw conveyor torque tube shall be accurately machined in accordance with section 2.3 to allow a shrink-fit and welded design for the upper drive end stub shaft and lower tail bearing stub shaft. Bolting the stub shafts to the screening transport screw conveyor torque tube will not be acceptable for this project.
5. The lower end of the screenings conveyor shall be supported by a sealed, self-lubricated lower polymeric composite sleeve bearing with stainless steel wear sleeve. Metallic-based lower bearings will not be acceptable for this project. The lower bearing shall not take any thrust load from the screw conveyor. A minimum of two UHMW retainer seal plates shall be provided to prevent material intrusion into the bearing seals. The stainless steel bearing housing shall be field replaceable and shall be machined in accordance with section 2.3 to mate with the screenings collection trough by a bolted flanged connection.
6. Rake arm attachment hub outer diameter shall match the outer diameter of the stationary bearing housing to minimize material wrapping around the shaft. The rake arm attachment hub shall be split to provide compression fit along with locking bolts and keyway.
7. Drainage holes shall be provided along the entire length of the screenings collection trough invert to allow for gravity drainage of wash water without flushing screenings out of the trough. Drainage hole diameter shall be equal to or smaller than the bar spacing noted in section 2.3. The width of the drainage section shall be based upon a minimum 65-degree arc. The drainage section perforated plate material shall be fabricated from 11 gauge minimum thick stainless steel and shall have a minimum 50% open area for free water drainage.
8. A compaction zone shall be an integral part of the screenings screw conveyor and transport tube design. The compaction zone shall be designed to form a screenings plug of material and to return water released from the screened material back to the tank through circular holes that are machined into the screenings transport tube. Compaction zone shall be fabricated from 12 gauge minimum thick stainless steel welded to the screenings transport tube to provide a watertight collection chamber. Compaction zone housings that are non-metallic and which require seals to prevent leakage around the screenings transport tube will not be acceptable for this project. The compaction zone housing shall be furnished with an outer hinged and sealed access cover held in place with stainless steel latches. An interior dewatering section panel inside the dewatering chamber shall be provided. The interior dewatering section panel shall be held in place via heavy-duty stainless steel band clamps to allow direct access to the screw conveyor should the compaction zone ever become plugged. Designs that require removal of the drive assembly, discharge head or screw conveyor to gain access to the compaction zone will not be acceptable for this project.

9. Water that is released from the screenings shall be returned via a reinforced rubber hose attached to the dewatering section. Drain design shall allow for removal and cleaning of the drain hose should it ever become plugged without removing the drive, discharge head, or screw conveyor.
10. The screen shall be designed with a minimum discharge height as noted in section 2.3 as measured from the channel invert.

D. Drive Assembly:
1. The rake mechanism and transport screw shall be driven by a direct-connected, cycloidal-helical, hollow-shaft, high-thrust, in-line speed reducer. The cyclo element of the speed reducer shall be designed to take a 500 percent shock load without damage. The speed reducer manufacturer shall be a member of AGMA. The speed reducer shall have a minimum service factor as noted in section 2.3 with a minimum torque rating as noted in section 2.3 and a minimum thrust rating as noted in section 2.3 at the design operating output speed of the reducer.
2. The speed reducer shall be bolted to the drive adaptor flange at upper end of the screenings transport tube.
3. The speed reducer shall be driven by a field-replaceable NEMA C-flanged, 1,800 rev/min, ball bearing, continuous-duty, totally-enclosed, fan-cooled motor with leads to a large conduit box. The reducer shall utilize a taper grip bushing to connect to the drive shaft of the screw conveyor. The use of keys and keyways will not be an acceptable connection method for this project.
4. Motor size shall be as noted in section 2.3 shall be rated for electrical power characteristics as noted in section 2.3 and shall be rated for an electrical environment as noted in section 2.3.
5. Chain-drives, belt drives, hydraulic drives, or a separate upper bearing for the transport screw will not be acceptable for this project.
6. A proximity sensor for locating the rake position shall be mounted to the outer drive housing with a fabricated stainless steel bracket.

E. Spray Wash Systems:
1. Three (3) wash systems shall be provided. Each wash system shall be furnished with a control solenoid valve, stainless steel piping and fittings, flexible reinforced PVC hose and nozzles. Piping, fittings, and valves shall be 3/4-inch diameter minimum, brass body suitable for 120 VAC, 60 Hz operation with an electrical rating as noted in section 2.3. Solenoid valves shall be normally closed and rated for up to 150 psig. Solenoid valves shall be slow close type to minimize water hammer.
2. An inlet water filter shall be provided for the incoming plant water supply.. The three (3) wash systems shall include:
    a. Lower wash system shall span the full length of the screenings basket to wash screenings as they enter the screw conveyor collection trough. Lower spray wash bars without replaceable spray nozzles will not be acceptable.
    b. Screenings wash system shall be located in the upper section of the transport tube no more than 17 inches from the beginning of the compaction zone to break up and return organic materials to the flow stream and to ensure maximum screenings washing. The screenings wash system and screenings screw conveyor shall be designed to prevent washing screenings down the center of the screw conveyor.
    c. Dewatering chamber flush water system shall periodically clean the compaction and dewatering zone via a stainless steel wash nozzle located in the compaction/dewatering chamber.
    d. Refer to section 2.3 for specific wash water design quantities and design criteria.
3. Solenoid valves shall be factory installed to a piping manifold to ensure even pressure distribution to each spray wash system. The solenoid valve wiring shall be factory installed to a common junction box on the spray wash manifold for wire nut connection to external power. Conduit and fittings shall be factory installed between the solenoid valves and

junction boxes. Junction box, conduit and fittings shall be rated for a hazardous electrical environment (Class I, Div. 2) as shown in the Drawings.

4. An inlet water filter shall be provided that is suitable for a 3/4-inch NPT connection and a maximum flow rate as noted in section 2.3 and suitable for a maximum pressure of 125 psig. Water filter shall be a stacked filter element design with washable 80-mesh (200 micron) polyethylene or polypropylene disc elements, polypropylene head and bowl and Buna N gaskets. Y-type strainers will not be acceptable for this project.

2.7 CONTROL SYSTEM

A. All controls necessary for the fully automatic operation of the screen shall be provided in accordance with NEMA standards.

B. A position sensor and target shall be externally-mounted on the drive unit for ease of operator access and shall provide a "home" location for the 3-plane cylindrical bar screen operation during the cleaning cycle. Position sensors with internally-mounted targets inside the screenings screw conveyor will not be acceptable for this project.

C. The electrical control system shall provide for automatic control of the screen via a high liquid level using a liquid level control system in connection with an adjustable time clock. The screen shall operate at a high liquid level and or a pre-determined time sequence to provide a variable time between cleaning operations.

D. The ultrasonic level sensing system shall consist of a level controller with transducer that is suitable for an environment as noted in paragraph 1.03.C.16. Ultrasonic level transducer shall be provided with a mounting bracket for installation to channel.

E. A local-mounted panel suitable for wall mounting shall contain the following items:
   1. Tag number: 02 LCP 21.
   2. Enclosed motor controllers and motor protector panel.
   3. Stainless steel enclosure with NEMA 4X rating:
      a. Continuous seam welded.
      b. Single front door with continuous hinge and neoprene gasket.
      c. Mechanism designed for securing enclosure with padlock.
      d. Mounted on support frame, pedestal mounting.
   4. Incoming power: 480 VAC, 3-phase.
      a. Main circuit breaker disconnect with external circuit breaker operating handle.
      b. Handle shall include locking tabs that prevent the door from being opened with the breaker in the ON position.
      c. UL 1449 listed surge protection device.
   5. Process controller complete with LCD display providing field settable/adjustable/access to process parameters and for providing specific indications of each type of fault that may occur. Controller ram shall be backed up with non-volatile memory which will load automatically if ram is corrupted. Allen Bradley Micrologix 1400 PLC, or equal.
   6. Variable frequency drive (VFD) with line reactor
   7. Control power transformer fused primary and secondary with 120VAC transient voltage surge suppressor (TVSS).
   8. Pilot devices:
      a. Heavy-duty type.
      b. Oiltight, NEMA 4X rating.
      c. Mounting hole: 30.5mm.
      d. Knob type operators.
      e. Push-to-test pilot lights, lens color as indicated.
      f. Legend plate.
   9. Full voltage LED pilot lights for the following:
      a. Control power on (White)
      b. Screen run (Green)
      c. Multifunctional overload shutdown/screen fault (Red)

d. Screen upstream high water level alarm (Amber)
10. E-stop push button (Red)
11. Re-set push button (Black)
12. Hand-Off-Auto selector switches for the following:
    a. Screen drive
    b. Common wash system solenoid valves
13. Forward-Off-Reverse selector switch (spring return to center) for screen drive
14. Non-resettable elapsed time meter for the screen drive
15. Remote dry contact outputs for the following:
    a. Screen running
    b. Screen general fault
    c. Screen upstream high water level alarm (for future use)
16. Combination alarm horn and flashing alarm light with SILENCE-RESET pushbutton.
17. Enclosure space heater for condensation protection.
18. Weather protection system heat tracing ground fault equipment protection circuit interrupter (GFEPCI).
19. Plant water heat tracing ground fault equipment protection circuit interrupter (GFEPCI).
20. White phenolic nameplates with black lettering.
    a. Line 1 Inscription: 02 LCP 21
    b. Line 2 Inscription: SEPTAGE RECEIVING SCREEN
21. 600 VAC terminal block.
22. U.L. panel label per the application.

2.8 COLD WEATHER PROTECTION

A. The septage cylindrical bar screen equipment shall include a heat tracing system for outdoor weather protection that shall completely enclose the screenings transport tube, compaction and dewatering zone, screenings discharge chute and spray wash manifold.

B. The cold weather protection system shall include heat tracing, adjustable thermostat, and insulated cover.

C. The heat tracing system shall be suitable for operation down to a minimum temperature of -25 DegC (-13 DegF) and shall be powered from the main control panel.

D. Weather protection system insulated cover shall be molded fiberglass reinforced polyester laminate. Fabricated metallic covers that are bolted or riveted together will not be acceptable for this project.

E. The molded fiberglass reinforced polyester laminate, shall have the exterior surface gel coated for ultraviolet radiation protection. Fiberglass shall have a glass content of not less than 30%, a tensile strength of not less than 22,000 psi, a flexural strength of not less than 25,000 psi and Barcol hardness of not less than 40. Finished fiberglass must withstand a temperature of 200 DegF without blistering, pinholes, warping or other defects. Gel coat shall be provided with impregnated pigment for exterior light gray color. The weather protection package cover shall be designed to support a wind load of 30 lb per square foot.

F. The weather protection package fiberglass cover sections shall be split into two sections when mounted axially along the transport tube. Weather protection system fiberglass cover sections shall extend from the drive assembly mounting flange down to the top of screen channel. Each split fiberglass cover section shall be connected via fiberglass flanges and stainless steel hardware. Each fiberglass cover section shall be designed so that the insulation is completely encapsulated within the fiberglass to prevent water intrusion and damage. Designs utilizing loose fiberglass or foam insulation that are not encapsulated in FRP will not be acceptable for this project.

G. Where the wash water supply and electrical wiring conduit penetrates the fiberglass cover bulkhead adapters shall be provided.

H. All fasteners to assemble the fiberglass cover components shall be stainless steel.

I. A fabricated composite weather enclosure shall be provided for the water strainer specified in paragraph 2.7.E.4. Enclosure shall be provided with a removable cover.

J. The plant water supply system piping to the screen and the water strainer described in paragraph 2.7.E.4. shall be provided with heat tracing and insulation by the Contractor. The Manufacturer's control panel shall be provided with sufficient low voltage power to handle up to an additional 250 Watts from the Contractor supplied plant water heat tracing system.

2.9 ANCHOR BOLTS

A. Equipment manufacturer shall furnish all anchor bolts of ample size and strength required to securely anchor each item of equipment. Anchor bolts, hex nuts, and washers shall be provided in accordance with Section 03 15 19 – Anchorage to Concrete.

B. Anchor bolts shall be set by the Contractor. Equipment shall be placed on the foundations, leveled, shimmed, and bolted down.

2.10 SPARE PARTS

1. See Section 01 78 43 – Spare Parts and Extra Materials.

B. The following spare parts shall be provided:
   1. One (1) complete solenoid valve assembly
   2. One (1) solenoid valve re-build kit
   3. One (1) screen lower bearing element with stainless steel wear sleeve and seals
   4. Three (3) spare fuse sets of each size and type

C. Spare parts shall be individually boxed with the project name and part number clearly identified on each individual box. All spare parts shall be shipped in a separate crate and clearly labeled. Spare parts shall be stored indoors by the Contractor in a temperature-controlled environment.

2.11 SHOP SURFACE PREPARATION AND PAINTING

A. Electric motors, speed reducers, and other self-contained or enclosed components shall have manufacturer's standard enamel finish.

B. All external non-wetted stainless steel shall be cleaned to a uniform finish by glass bead blasting and chemically treating with Citrisurf 2210 or 2050. No hazardous wastes shall be produced during fabrication because Citrisurf is a citric acid-based product that is non-toxic. The cylindrical bar screen manufacturer shall clearly identify the passivation procedure methodology and shall certify that no hazardous wastes were produced.

2.12 SOURCE QUALITY CONTROL

A. All structural stainless-steel components shall be fabricated in the United States and shall conform to the requirements of "Specifications for the Design, Fabrication and Erection of Structural Steel for Buildings" published by the American Institute of Steel Construction.

B. All parts and assemblies shall be fabricated from sheets and plates of AISI Type 304 stainless steel conforming to ASTM A666, unless noted otherwise. All rolled or extruded shapes shall be fabricated to conform to ASTM A276. All tubular products and fittings shall be fabricated to conform to ASTM A312, A351 and A403.

C. All welding in the factory shall use shielded arc, inert gas, MIG or TIG method. Add filler wire to all welds to provide for a cross section equal to or greater than the parent metal does. All butt welds shall be full penetration type to the interior surface. Provide gas shielding to interior and exterior of the joint.

D. Welding of the screen components shall be in accordance with the latest edition of the American Welding Society (AWS) standards. Field welding of stainless steel will not be permitted.

E. Bolts, nuts and washers shall be AISI 304 stainless steel furnished in accordance with ASTM A193.

F. All surfaces that are specified to be machined shall be designed and fabricated to provide a runout of not more than 0.005 inches and concentricity to within 0.005 inches.

G. Design and fabrication of structural steel members shall be in accordance with AISC and AWS Standards. The manufacturer shall comply with the American Welding Society (AWS) and the American Institute of Steel Construction (AISC) most current listed standards and qualifications in 2004 D1.1, the criteria per the requirements of Section 6 - Inspection - Structural Welding Code. Evidence of such AWS and AISC compliance shall be submitted with shop drawing submittals as follows:
   1. AWS Certified Welding Inspector shall conform to all standards, current or previous as listed in section 6.1.4 AWS QC1, Standard and Guide for Qualification and Certification of Welding Inspectors.
   2. AWS Non Destructive Testing Inspector (Level I, II, III) for Magnetic Particle and Ultra-Sonic testing shall conform to all standards, current or previous as listed in and in conformance with The American Society for Non-Destructive Testing (ASNT-TC-1A).

PART 3 - EXECUTION

3.1 SHOP TESTING

A. Prior to shipment of the equipment the screen shall be operated for a minimum of four (4) hours at the fabrication location with the specific drive motor that will be furnished for the project at the actual operating angle of the screen for the project.

B. During the shop test the following parameters shall be recorded:
   1. Motor serial number
   2. Amperage draw at start-up, after two hours and after four hours during forward operation
   3. Amperage draw during reverse operation

C. A certified shop test report shall be submitted to the Engineer.

3.2 FIELD PREPARATION AND PAINTING

A. Finish field preparation and painting shall be performed as specified in Section 40 05 00 – Pipe and Pipe Fittings – Basic Requirements.

B. The Contractor shall touch-up all shipping damage to the paint and stainless steel as soon as the equipment arrives on the job site.

C. The Contractor shall supply paint for field touch-up and field painting.

D. The Contractor shall finish paint electrical motors, speed reducers, and other self-contained or enclosed components with oil-resistance enamel.

E. Prior to assembly all stainless-steel bolts and nut threads shall be coated with a non-seizing compound by the Contractor.

3.3 INSTALLATION

A. The manufacturer shall include one (1) trip and two (2) days to the project site for equipment start-up assistance and operating training.

B. After the Contractor has installed the 3-plane cylindrical bar screen and the equipment is capable of being operated, the equipment manufacturer qualified representative shall perform start-up inspection of the equipment and make final adjustments for proper operation for the Contractor.

3.4 FIELD TESTING

A. Reference Section 01 75 00 – Checkout and Start-Up Procedures for all field testing, checkout, and start-up procedures.

B. Prior to final acceptance of each screen and demonstration period, three (3) tests shall be conducted according to the EPA Paint Filter Test as described in method 9095B of EPA Publication SW-846.
   1. Should the system fail to produce screenings capable of passing the "EPA Paint Filter Test", the manufacturer shall at its own expense make all necessary modifications to the equipment until such tests can be passed.

3.5 OPERATOR TRAINING

A. See Section 01 79 23 – Instruction of Operation and Maintenance Personnel.

B. Provide operator training for Owner’s personnel after system is operational and field testing is complete. Training will take place while manufacturer's representative is at the job site for inspection.

END SECTION

SECTION 46 23 63

GRIT CLASSIFIER AND HYDROCYCLONE SYSTEM

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes:
   1. Two grit classifier and hydrocyclone units.

B. Related Sections include but are not necessarily limited to:
   1. Division 01 - General Requirements.
   2. Section 01 25 13 – Substitution Procedures After Execution of Contract
   3. Section 01 61 03 - Equipment: Basic Requirements.
   4. Division 26 - Electrical.
   5. Division 40 - Process Interconnections.

1.2 SYSTEM DESCRIPTION

A. Source material: Primary sludge with solids content ranging from 0.5 to 2% total solids.

B. The Contractor shall be responsible for providing fully functioning grit classifier/hydrocyclone units, which include but are not limited to:
   1. Connections to existing piping.
   2. Connection to existing motor controls.

C. Demonstrate ability to classify and dewater grit removed by grit classifier system. Required characteristics are as follows:
   1. Ability to classify (wash) grit from lighter organic material to meet specified organic solids content.
   2. Ability to handle continuous flow while meeting specified grit removal efficiency.
   3. Ability to capture and dewater grit from primary sludge slurry.

D. Each grit classifier discharges dewatered solids to a dumpster through grit discharge chute extensions as indicated on the Drawings.

1.3 BASIC REQUIREMENTS

A. Procured equipment shall be in kind replacement of the two existing grit classifier/cyclone units.

B. Equipment shall be suitable for installation in a Class I, Division 2 hazardous area.

C. Parts of mechanism shall be amply proportioned for stresses that might occur during, fabrication, erection, or operation:
   1. Duplicate parts shall be interchangeable.

D. Equipment geometry as indicated on the Drawings. Note that there are variations in the location of the following between the two units:
   1. Connection flange for inlet piping.
   2. Connection flanges for outlet piping and organic discharges.
   3. Connection flanges for foul air piping.
   4. Inspection cover.

E. Equipment shall be made up of parts that are designed to act as a unit. When component parts are assembled into final unit, parts shall fit and operate satisfactorily.

F. Inspection cover: Sufficiently sized for removal of internal elements from inside each unit and to allow personnel viewing into washing tank.

G. Self-standing on legs that are designed and furnished by equipment manufacturer:

H. Seismic design criteria: As specified in Specification Section 01 81 10.

1.4 SUBMITTALS

A. Submit product data and other items specified herein in accordance with Specification Section 01 33 00.

B. Shop drawings: Include the following:
   1. Certified shop and erection drawings showing construction dimensions, anchor bolt locations, and field connections.
   2. Erection, installation, and adjusting instructions.
   3. Detailed field testing procedures.
   4. Design and fabrication details for grit discharge chute extensions.
   5. Submit detailed testing plans and proposed testing documentation after review of the Quality Assurance submittal showing conformance with requirements herein and Specification Section 40 61 21. Obtain approved submittal a minimum of 30 working days prior to testing.

C. Manufacturer's performance guarantee.

D. Manufacturer's installation instructions.

E. Design Data:
   1. Include structural anchorage calculations and details prepared by a Professional Engineer registered in the state where the Project is located.

F. Test Reports.

G. Certificates.

H. Manufacturer's field reports, including performance test results and analysis.

I. Operation and maintenance manual as specified in Specification Section 01 78 23.

J. Warranties.

1.5 QUALITY ASSURANCE

A. Single source responsibility: All equipment, instruments, and other products specified in this Section shall be furnished by one supplier.

B. Manufacturer's qualifications:
   1. Minimum 3 years' experience in production of equipment substantially similar to the specified equipment.
   2. Have successful installations at 10 or more separate facilities with minimum 5 installations in successful operation for minimum 2 years in municipal wastewater treatment and 3 installations with minimum capacity of 200-GPM continuous flow.

C. Fulfillment of the specified experience requirements shall be a condition of acceptance.

D. Manufacturer's shop welds, welding procedures, and welders: Qualified and certified in accordance with the requirements of ANSI/AWS D1.6.

1.6 DELIVERY, STORAGE, AND HANDLING

A. As specified in Specification Section 01 66 00.

1.7 ENVIRONMENTAL CONDITIONS

A. Equipment and materials installed at the project site are subject to significant corrosion due to hydrogen sulfide. Use of corrosion resistant materials for equipment provided under this specification section is a requirement.

1.8 WARRANTY

A. The manufacturer will warrant against any defects in material or workmanship for the equipment included under this specification section. This warranty will commence upon delivery of the

products and will expire two (2) years from substantial completion of the installation of the product.

PART 2 - PRODUCTS

2.1 ACCEPTABLE MANUFACTURERS

A. Grit Washing/Dewatering Units:
   1. Manufacturer:
      a. Trillium WEMCO.
      b. Lakeside Equipment Co.
      c. Or approved equal.

B. Hydrocyclone Units:
   1. Manufacturer:
      a. Trillium WEMCO.
      b. Lakeside Equipment Co.
      c. Or approved equal.

2.2 PERFORMANCE REQUIREMENTS

A. General:
   1. Compatible for permanent installation and long-term operation with the existing system and in accordance with design intent.
   2. Equipment Numbers:
      a. Grit Classifier No. 1 – 11 GC 01.
      b. Grit Classifier No. 2 – 11 GC 02.
      c. Hydrocyclone No. 1 – 11 HC 01.
      d. Hydrocyclone No. 2 – 11 HC 02.

B. Design Requirements
   1. Grit Cyclone:
      a. Equipment tag numbers: 11 HC 01; 11 HC 02.
      b. Design Criteria
         1) Diameter: 10 INCHES.
         2) Capacity at design flow and 5.0 PSI MIN headloss: 220 GPM.
         3) Cyclone underflow: 5-15 GPM MIN.
   2. Grit Classifier:
      a. Equipment tag numbers: 11 GC 01; 11 GC 02.
      b. Design Criteria
         1) Screw diameter: 12 INCHES minimum.
         2) Motor size: 0.5 HP MIN.
         3) Flow Capacity: 15 GPM.

C. Capture:
   1. Grit cyclone:
      a. Remove minimum 95 PCT of the 106-micron and larger grit having a specific gravity of 2.65 or greater from pumped grit slurry stream at a flow rate of 220 GPM and cyclone inclination angle as shown on the Drawings.
   2. Grit washer:
      a. Remove minimum 95 PCT of 106-micron and larger grit in size at a flow rate of up to 220 GPM.
      b. Remove minimum 65 percent of 106-micron grit in size at a flow rate of up to 220 GPM.

2.3 MATERIALS

A. Unless otherwise specified, construct all components from AISI 316 stainless steel shapes (rods, angles, and channels), pipes, and sheets. Design all parts to handle the forces that may be exerted

on them during fabrication, shipping, erection, and proper operation referenced in the O&M manual.

B. The grit washer and cyclone shall be designed for passively resisting corrosion from free and combined chlorine residuals, chlorides, hydrogen sulfide, condensation containing sulfuric acid residual, and sulfates. The materials of construction shall meet or exceed the following:

Component	Material
Separation and washer tank	Type 304 Stainless steel, No. 1 finish for sheets and "Hot-rolled or Cold-rolled, and Annealed or Heat Treated, and Blast Cleaned or Pickled" finish for plates
Support bars, angles, and shapes	Type 304 Stainless steel
Support tubes and process tubes	ASTM A312/A312M, Grade TP304
Dewatering screw	Abrasion resistant, alloy carbon steel
Bolts, washers, nuts	ASTM A320/A320M, Class 1

C. The equipment, after fabrication, shall undergo a pickling and passivation process to ensure maximum resistance to corrosion. Submerge all stainless steel components and structures in a chemical bath of nitric acid and hydrofluoric acid to remove any residues that may be present on the material as a result of forming, manufacture, or handling. After removal from the pickling bath, wash the equipment with a high-pressure wash of cold water to remove any remaining surface debris and promote the formation of an oxidized passive layer that is critical to the long life of the stainless steel:
   1. Submergence insures complete coverage. Spray on chemical treatments and glass bead blasting are specifically not acceptable due to their inability to provide complete and uniform corrosion protection.

2.4 GRIT CLASSIFIER/HYDROCYCLONE UNITS

A. Hydrocyclone:
   1. One hydrocyclone shall be provided with each grit classifier unit. Each hydrocyclone shall be fabricated from stainless steel fittings and housings.
   2. The vortex finder shall be made of nickel-hardened steel material.
   3. The apex or underflow shall be provided with quick release toggle clamps.
   4. Provide inlet adapter with 1-1/4 IN connection to attach a pressure gauge, 0 - 30 PSI dial, with diaphragm seal. See specification 40 62 00.
   5. Hydrocyclone influent, overflow, and underflow piping shall each be provided with a sampling port suitable for connection to a flexible hose fitted with 1-1/4 IN female NPT end.
   6. Inlet and overflow connections shall use grooved couplings, see Specification Section 40 05 00. The inlet connection shall be 4-IN, the inlet area shall be 7.8-IN^2, the apex (just above the underflow discharge) shall be 2.00 IN, and the overflow shall be 6-IN.
   7. The pressure drop across each hydrocyclone shall be a minimum of 5 PSI at the design flow rate of 220 GPM.
   8. Completely line each cyclone section with an individual, independently replaceable neoprene or natural rubber liner.
   9. Vortex finder: Ni-hard with a minimum hardness of 500 Brinell.
   10. Provide a hinge and quick disconnect clamp between the apex assembly and lower cone section to allow easy access for cleaning without disconnecting any piping.
   11. Contractor to reconnect water supply line and install new solenoid valves to the new grit classifier units as indicated in the Contract Documents.

B. Grit Classifier:

1. Each grit classifier shall be able to handle the discharge from two separate primary sludge pumps .
2. Effective stratification of particles, depending on their specific density, but not depending on their particle size and weight, shall be achieved within the conical portion of the grit washer tank.

C. Motors:
1. Maximum Motor Speed: 1,800 RPM.
2. Torque: Must be sufficient to start and operate grit washer without exceeding nameplate ratings for current and power.
3. Nominal power screw drive motor: 0.5 HP MIN.

D. Discharge Chute:
1. A 316 stainless steel chute shall be attached to each washer unit to enable discharge to the dumpster. The discharge chute shall be supported independently and shall have a flexible extension above the dumpster.

E. Anchor Bolts: Comply with Specification 03 15 19.

F. Solenoid Valves: See specification 40 05 52.

2.5 SUPPORT STRUCTURE

A. The existing Grit Classifier/Hydrocyclone unit support structure, platform around the Grit Washing/Dewatering unit and supports for the hydrocyclones shall be reusedby the Contractor. The Grit Washing/Dewatering unit manufacturer shall coordinate with the Contractor.

2.6 FINISHES

A. Pickle and passivize all stainless steel components in the factory as described in this Section.

B. Do not paint stainless steel components.

C. Surface preparation, factory prime, field prime, and finish coats of non stainless steel components as specified in Specification Section 09 96 00.

2.7 SPARE PARTS

A. Spare Parts: provide the following spare parts:
1. Cyclone spare parts:
a. Two apex liners.
b. Two vortex finders.
c. Two sets of replaceable liners.
d. Two sets of gaskets.
2. Grit washer spare parts:
a. One complete set of bearings for motors.

B. Spare parts shall be packaged with labels indicating the contents of each package, and shall be delivered to City Representative as directed.

C. Include a price list and name, address, and telephone number of local supplier.

D. Special Tools:
1. Any special tools required to assemble, disassemble, repair, and/or maintain any items of mechanical equipment shall be furnished with the equipment:
a. Special tools shall include any type of tool that has been specifically made for use on an item of equipment for assembly, disassembly, repair, and maintenance.
b. When special tools are provided, they shall be marked or tagged and a list of such tools shall be included with the maintenance and operation instructions describing the use of each marked tool.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Coordinate and verify actual dimensions required to construct discharge chute extensions. Verify all dimensions and elevations.

3.2 INSTALLATION

A. See Section 01 61 03 for Equipment – Basic Requirements.

B. The equipment and material shall be shipped complete except where partial disassembly is required by transportation regulations of for protection of components.

C. Install equipment in strict accordance with the contract documents and requirements of the Manufacturer's written instructions and shop drawings.

D. Contractor shall verify all necessary dimensions as required for successful installation and to facilitate operation and maintenance.

3.3 FIELD QUALITY CONTROL

A. In accordance with Section 01 61 03 for Equipment – Basic Requirements Testing and startup:
   1. Performance Testing to be performed during Commissioning Phase as part of Installation Testing specified in Specification Section 01 75 00:
      a. Conduct performance tests to substantiate conformance with the specified performance requirements. Submit detailed testing procedures for the Engineer's review and approval.
      b. The manufacturer shall bear all costs associated with performance testing.
      c. Conduct tests in presence of the Engineer and Owner. The tests shall be conducted by an independent testing laboratory or firm approved by the Engineer, their services paid for by the manufacturer.
      d. In the event that the equipment does not meet the performance testing requirements, the manufacturer shall make all necessary changes and retest at no additional cost to the Owner.
      e. If the second test does not successfully demonstrate compliance with the specified performance requirements, the manufacturer shall take additional, steps to rectify the situation until the specified performance is achieved.
   2. Upon completion of installation and successful performance testing, the Manufacturer shall provide certificate of installation and functional compliance.

B. Require manufacturer's representative to perform the following services as described below and as specified in Specification Section 01 75 00. The specified durations are the minimum required time on the job site. Additional services and/or longer durations shall be provided as needed at no cost to the Owner to meet the required quality of work. Work to be done in a minimum of 3 trips:
   1. Installation inspection: 2 workdays.
   2. Start-up/performance testing assistance: 1 trip; 2 workdays:
      a. Prior to start-up, the equipment shall be inspected for proper alignment, operation, and satisfactory performance.
      b. Provide additional start-up/testing assistance as required.
   3. Training: As defined in Specification Section 01 75 00 and this Section:
      a. Maintenance: 4 hours per session, 2 sessions total.
      b. Operation: 2 hours per session, 2 sessions.
   4. Final acceptance checkout: 2 workdays.
   5. Process operational period:
      a. As required by Owner or Contractor.

3.4 SYSTEM START-UP

A. In accordance with Section 01 75 00.

3.5 SOURCE QUALITY CONTROL

A. FAT Functional Test
   1. Provide a FAT for the PLC control panel per the requirements of Specification Section 40 61 21 with the test and subsequent retests witnessed by the Owner's Representative and Owner.
      a. Provide written notice to the engineer 30 working days before commencement of the FAT activity and include:
         1) Schedule for the FAT.
         2) Location of the FAT.
         3) Testing equipment used.
         4) Detailed test procedure with forms for the recording of test results.
         5) Sign-off spaces for the individuals performing and witnessing the tests.
      b. Network and interwire equipment and panels as applicable. Operate and check out equipment prior to the FAT. Submit certification indicating that the panels are ready for the FAT.
      c. The electrical control panel shall be inspected prior to shipping for conformance to the following:
         1) NEMA rating according to Section 2.7 and bear the UL508 label.
         2) PLC program and panel mounted HMI shall be tested for proper communication and functionality.
         3) PLC digital and analog inputs shall be electrically tested to ensure input recognition in the proper area of the PLC program.
         4) All wiring between panel components and terminal strips shall be checked for proper labeling and connection.
         5) Compliance with Division 26 and Division 40.

END OF SECTION

SECTION 46 43 23
PLOW SCRAPER CIRCULAR PRIMARY CLARIFIER EQUIPMENT

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes:
   1. Furnishing and installing:
      a. Two circular primary clarifiers mechanisms.

B. Related Sections include but are not necessarily limited to:
   1. Section 01 61 03 - Equipment - Basic Requirements.

1.2 REFERENCES

A. Referenced Standards:
   1. Aluminum Association (AA):
      a. ASD 1, Aluminum Standards and Data.
   2. American Bearing Manufacturers Association (ABMA):
      a. 9, Load Ratings and Fatigue Life for Ball Bearings.
   3. American Gear Manufacturers Association (AGMA):
      a. 2001-D, Fundamental Rating Factors and Calculation Methods for Involute Spur and Helical Gear Teeth.
      b. 6034-B, Practice for Enclosed Cylindrical Wormgear Speed Reducers and Gearmotors.
   4. American Iron and Steel Institute (AISI).
   5. ASTM International (ASTM):
      a. A36, Standard Specification for Carbon Structural Steel.
      b. A48, Standard Specification for Gray Iron Castings.
      c. A53, Standard Specification for Pipe, Steel, Black and Hot-Dipped, Zinc-Coated, Welded and Seamless.
      d. A276, Standard Specification for Stainless Steel Bars and Shapes.
      e. A536, Standard Specification for Ductile Iron Castings.
      f. E18, Standard Test Methods for Rockwell Hardness and Rockwell Superficial Hardness of Metallic Materials.
   6. American Welding Society (AWS):
      a. D1.1, Structural Welding Code - Steel.
   7. American Water Works Association/American National Standards Institute (AWWA/ANSI):
      a. C110/A21.10, Ductile-Iron and Gray-Iron Fittings.
   8. NACE International (NACE).
   9. National Electrical Manufacturers Association (NEMA):
      a. MG 1, Motors and Generators.
   10. Occupational Safety and Health Administration (OSHA).
   11. Society of Automotive Engineers (SAE):
      a. AMS 6440M, Steel, Bars, Forgings, and Tubing 1.45Cr (0.98 1.10C) (SAE 52100) For Bearing Applications.

1.3 QUALITY ASSURANCE

A. Qualifications:
   1. Comply with AWS D1.1 procedures and practices.
   2. Manufacturer experience:
      a. Minimum five similar clarifier mechanism installations with diameters greater than or equal to 90% of the diameter of this specified clarifier.
      b. Supplied similar equipment for the past 10 years.
      c. The mechanism shall be a standard production product of the manufacturer.

3. NACE inspector shall be a certified Level 3 inspector and have a minimum of five years experience performing inspections indicated.
    a. NACE inspector shall also be a certified coatings inspector and shall have a minimum of five years experience performing coating inspections.

B. Independent Design Evaluation of Drive:
1. Clarifier manufacturer to submit the following information for the proposed drive unit to an independent AGMA member engineer for design evaluation:
    a. Complete drive assembly fabrication drawings.
    b. Drive component drawings and/or brochures for all drive components.
    c. Manufacturer and model of all drive components.
    d. Gear and pinion interval specifications, including all heat-treating procedures.
    e. AGMA calculations for drive components.
    f. Additional information needed to completely evaluate proposed drive assembly.

C. Provide single source coordination responsibility through the manufacturer for the complete sludge collection system.

1.4 SUBMITTALS

A. Action Submittals: Submit the following:
1. Shop Drawings:
    a. Product technical data including
        1) Acknowledgement that products submitted meet requirements of standards referenced.
        2) Manufacturer, model, and type.
        3) Complete erection, installation, operation and maintenance information provided by the manufacturer.
        4) Complete construction details, materials of construction, drawings of mechanisms, gears, gear reducers, bridge, electrical wiring diagrams, control wiring diagrams, and other pertinent information.
        5) Catalog cutsheets for purchased subcomponents.
        6) Submit evidence of compliance with Article 2.7 requirements, including:
            a) Reference standards.
            b) Independent evaluation of drive.
            c) Structural design requirements.
        7) Main drive speeds.
        8) Size, make, and type of electric motors and drive systems.
        9) AGMA rated alarm, stall, and ultimate torque capabilities.
        10) Details of any revision necessary to adapt the piping, structural, electrical and instrumentation design to the equipment proposed.
        11) Manufacturer, model and certification of compliance to ABMA 9 bearing life.
        12) NACE inspector qualifications.
        13) Certification report from AGMA engineer confirming that equipment design meets referenced AGMA standards.
        14) Statement signed by a registered professional Civil or Structural Engineer that all members have been designed to support the loadings as specified.

B. Informational Submittals: Submit the following:
1. For-information-only calculations as follows:
    a. Center column and bridge support calculations.
    b. Complete sludge transport calculations substantiating the plow blade design, rake tip speed, and floor slope.
    c. Complete process calculations substantiating the size of the center column and ports, and the energy dissipating inlet (EDI) and outlet ports, and the flocculating center well.
2. Calculations and details must bear the stamp of a professional engineer.
3. Manufacturer's certification regarding installation and start-up.
4. Submit copy of field torque test results to Engineer.

5. Submit copy of report verifying completion of start-up and related field services.
    a. NACE certification of surface preparation and paint application at factory.
6. Source Quality Control Submittals: Results of required source quality control activities. If none are specified, submit results of manufacturer's typical factory tests and inspections.
7. Field Quality Control Submittals: Submit results of required field quality control activities.
8. Supplier Reports: Submit written report of each visit to the Site by Supplier.

C. Closeout Submittals: Submit the following:
1. Operation and Maintenance Data:
    a. Comply with Section 01 78 23 - Operation and Maintenance Data, for requirements for the mechanics, administration, and the content of Operation and Maintenance Manual submittals.
2. As-built drawings (general arrangement and general arrangement details).
3. Erection drawings.
4. Complete bill of materials for the equipment, including the weights of all structural steel components.
5. Installation and maintenance instructions for the specific equipment including:
    a. Erection sequence.
    b. Maintenance and trouble-shooting check points.
    c. Complete lubrication procedures with recommended grades of lubricants.
6. Cut sheets for all equipment items purchased from sub-vendors.
7. Clarifier manufacturer's recommended spare parts in compliance with Section 01 78 43 – Spare Parts and Extra Materials, specifically denoting:
    a. Wear items.
    b. Long-delivery items.
    c. All items convenient for stock as optional replacement items.

1.5 DELIVERY, STORAGE, AND HANDLING

A. Factory Assembly:
1. Assemble each mechanism in factory to ensure proper fit of parts.
2. Mark parts with erection marks.
3. Disassemble mechanism into largest sections allowed by carrier regulations for shipment.

1.6 PROJECT CONDITIONS

A. Clarifiers: Equipment suitable for installation in raw sewage.

B. Wastewater Temperature: 65 to 95 DEGF.

C. Average Ambient Temperature: 35 to 83 DEGF.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

A. Subject to compliance with the Contract Documents, the following manufacturers are acceptable:
1. Evoqua.
2. Ovivo.
3. WesTech.

2.2 PERFORMANCE AND DESIGN CRITERIA

A. Primary Clarifier Requirements:
1. Tank dimensions: 60 feet DIA.
2. Effective sidewater depth: 10 feet.
3. Side wall depth: 15 feet 5 inches.
4. Inboard launder.
5. Center column inside diameter: 24 inches.

6. AGMA 20 year continuous rated running torque applied at output of drive unit: 16000 feet-LBS minimum.
7. Stall or motor cut-out torque: 15300 feet-LBS.
8. AGMA yield torque applied at output of drive unit: 37000 feet-LBS minimum.
9. EDI (Influent Feedwell):
    a. Diameter: 5.5 feet DIA by 2.83 feet high.
    b. Depth below water surface: 2 feet 4 inches.
    c. Number of outlets: 4 minimum.
    d. Feedwell Diameter: 12 feet 5 inches.
    e. Feedwell Depth: 4 feet 6 inches.
10. Scum blade:
    a. Length: Shall span the full length between the feedwell and scum box.
    b. Height: 5 inches.
    c. Supports: A-frame bolted to the truss arm at maximum of 15 feet spacing.
    d. Connections: 302 stainless steel.
    e. Coating: Hot dipped galvanized.
11. Scum Box Width: 4 feet.
12. Average influent flow: 5.3 MGD.
13. Maximum influent flow: 6.1 MGD.
14. Peak hour influent flow: 13.44 MGD.
15. Minimum turntable ball race diameter: 35 inches.
16. Minimum internal spur gear pitch diameter: 29.6 inches.
17. Minimum drive motor horsepower: 0.5 HP.
18. Maximum drive motor speed: 1800 RPM.
19. Drive output speed: 0.04 RPM (7.5 FPM tip speed).
20. Drive pinion: Single.
21. Minimum spur gear face width: 3 inches.
22. Equipment shall be suitable for installation in a Class I, Division 2 hazardous area.

B. Structural Design:
1. Maximum ratio of unbraced length to least radius of gyration (slenderness ratio):
    a. Compression members: 120. Slenderness ratio not to exceed 120 for any axis parallel to bending action.
    b. Tension members: 240 (for angle about Z-Z axis). Slenderness ratio not to exceed 240 for any axis parallel to bending action.
2. Maximum unit stress: 1.333 times AISI allowable stresses at all structural members when subject to twice the drive motor running torque. Unit stresses not to exceed 130% of AISI allowable stresses when subjected to cutout torque and/or field test torque, whichever is higher.

2.3 MATERIALS

A. Access Bridge: Steel, ASTM A36, Grade B.

B. Center Column: Steel, ASTM A36.

C. Cycloidal Drive, ring gear and bearing: High carbon chromium bearing steel.

D. Plate: Steel, ASTM A36.

E. Structural Shapes: Steel, ASTM A36.

F. Tube: Steel, ASTM A36.

G. Main Spur Gear:
1. Ductile iron: ASTM A536, 80-55-06 or 80-60-03.
2. Cast iron: ASTM A48, Class 60 or 50A.

H. Main Bearings: SAE AMS 6440M, Rockwell C64, ASTM E18.

I. Worm, Worm Shaft:

1. Ductile iron: ASTM A536, 80-55-06.

J. Pinion and Pinion Shaft:
   1. Ductile iron: ASTM A536, 80-55-06.

K. Gear Housing:
   1. Gray iron, ASTM A48.
   2. Forged alloy hardened steel, ASTM A36.

L. Shear Pins: 2017-T4, AA ASD 1, aluminum screw machine stock.

M. Shear Pin Holes: Hardened steel, Rockwell "C" 62-64, ASTM E18.

N. Turntable Base:
   1. Gray iron, ASTM A48.
   2. Forged alloy hardened steel, ASTM A36.

O. Liner Strips: Steel, Rockwell "C" 38-42, ASTM E18.

P. Plow Squeegees: Brass or 316 stainless steel.

Q. Drive Dust Shield: Steel, ASTM A36.

R. Drive Seal: Felt or neoprene.

S. Lip Seals: Neoprene.

T. Submerged Fastening Hardware including Anchor Bolts: ASTM A276, 316 stainless steel.

U. Pipe: Ductile iron, Grade 60-42-10, Class 53 or steel, ASTM A53.

V. Pipe Flanges: AWWA/ANSI C110/A21.10 with neoprene gaskets.

W. Scum Skimmer Wiper: Neoprene.

X. Skimming Equipment.
   1. Skimmer blade: 16 GA 316 stainless steel or FRP.

2.4 FABRICATION

A. See Section 01 61 03.

B. General:
   1. Welds on submerged or partially-submerged components shall be continuous.
   2. Dull sharp corners of cut or sheared edges by at least two passes of a power grinder.
   3. All structural shapes and flat plate connections shall be continuously seal welded.
   4. All welds shall be ground smooth prior to coating.

C. Center Pier:
   1. Cylindrical steel, 24 inches DIA minimum by minimum 1/4 inches wall thickness.
   2. Flanged base for anchor bolting to concrete base of clarifier.
      a. Water-tight connection seal.
      b. Minimum of eight anchor bolts of at least 1 inch diameter.
   3. Provide flanged top and stiffeners for supporting the sludge collection mechanism, the drive mechanism, drive-mounting plate, access platform, and the access bridge.
   4. Provide a drive mechanism mounting plate set plumb with the centerline of the center pier.
   5. Provide center pier which serves as an influent pipe and has a minimum of 4 equally-spaced ports at the upper end to direct the flow into the EDI at a velocity less than 1 FPS.
   6. Provide easily accessible and removable plate near the bottom of the center pier for draining center pier.
      a. Opening shall be large enough to insert a submersible pump to dewater the clarifier influent pipe.
      b. Removable plate shall provide a clear square opening not less than 18 inches by 18 inches.

c. The opening shall be reinforced as needed to support the imposed loads on the center pier.

D. EDI (Influent Feedwell):
1. Fabricate from 3/16 inches minimum steel plates with welded connections.
2. Design EDI to control and evenly distribute influent water into the tank and prevent undesirable currents.
3. Support EDI well from drive cage.
4. Provide dual gate diffuser gates:
   a. Gates shall diffuse liquid in an impinged flow direction.
   b. Gates shall specifically preclude any vertical currents.
   c. Ports shall have bottom plates to avoid vertical velocity flow.
   d. Bottom plate shall be welded to EDI and gates.
5. Reinforcing rim angles, angle stiffeners and supporting brackets shall be structural steel members of minimum thickness 1/4 inches.
6. EDI shall project 6 inches above water surface.
7. Provide full bottom and seals at center column and center cage.
8. Design EDI to prevent accumulation of sludge on bottom.
9. Maximum headloss: 3 inches at peak flow.

E. Center Drive Cage:
1. Provide an all-welded steel box truss construction: 4 feet by 4 feet minimum.
2. Drive cage shall transmit and/or carry all torques (including stall torque) without over stressing members.
   a. Do not transmit any torque to the access bridge.
3. Design drive cage to encompass center column.
   a. Design cage to withstand 200% of design torque.
4. Design adjustable connection between drive unit and drive cage to provide for proper alignment and allowance for structural tolerance.

F. Drive Mechanism:
1. Provide drive mechanism, completely factory assembled, consisting of a primary gear reduction unit, an intermediate reduction unit, plus a final reduction unit consisting of a pinion and internal gear enclosed in a turntable base.
2. Enclose all gearing in a cast iron ASTM A48, Class 40B housing.
   a. Exposed gearing is not acceptable.
3. Provide all bearings of anti-friction type and running in oil.
4. Provide totally enclosed motor of ample power for starting and continuously operating the mechanism without overloading.
   a. The motor shall conform to NEMA standards and be name plated for operation on 230/460 V, 3 PH, 60 Hz current.
   b. Motor shall be a minimum of 0.5 HP.
   c. Motor shall comply with NEMA MG 1, Design B, and shall be totally enclosed with Class B insulation designed for continuous duty outdoor service.
   d. Enclosure rating: Totally Enclosed Fan-Cooled (TEFC).
5. Speed reducing unit:
   a. Primary reduction unit:
      1) Chain and Sprocket Type:
         a) Provide a primary reduction unit which drives the intermediate reduction unit through a chain and sprocket arrangement.
         b) Furnish drive chain of #80L self-lubricated roller chain and OSHA approved removable chain guard of molded polyethylene.
         c) Provide an adjustable steel base mounted on the intermediate reduction unit for chain tension adjustments.
   b. Intermediate reduction unit:
      1) Worm Gear Speed Reducer Type:

a) Provide an intermediate reduction unit consisting of a cast iron housed worm gear speed reducer, with grease and oil lubricated, anti-friction type bearings and service factor of 2.0.
b) Mount the unit on a machined face on the top of the final reduction unit and properly aligned to maintain accurate centers for the final reduction gearing.
c) Worm assembly: Worm and shaft of heat treated alloy and integral construction and the worm gear of cast manganese bronze or aluminum bronze.

c. Fabricate drive components in accordance with AGMA 2001-D and AGMA 6034-B for 24 HRS continuous duty and 20 year design life based on rated AGMA torque.
d. Design bearings for an L_{10} bearing life of 200,000 hours.
e. Final reduction unit:
1) Provide internal gear drive by a heat-treated pinion from the slow speed shaft of the primary gear reducer.
a) Construct the main pinion of heat treated alloy steel, machined after heat treatment.
b) Support pinion at both top and bottom by a taper roller bearing assembly.
c) Use one-piece pinion shaft construction without an intermediate coupling.
f. Provide ductile iron internal gear of AGMA quality seven minimum.
g. Provide internal gear design to support center cage, collector and all other rotating components.
h. Cycloidal Reduction Type (Alternate):
1) Provide a cycloidal reduction unit.
2) Refer to section 2.3 C for materials.
3) Minimum reducer efficiency shall be 90% per reduction stage.

6. Turntable base:
a. Provide turntable base with annular raceway to contain balls on which the internal gear rotates.
b. Bearings:
1) Ball bearings:
a) Furnish ball race without guide shoes and steady bearings.
b) Furnish ball bearings of alloy steel, bearing vertically and horizontally on four removable liner strips pressed into annular raceways in turntable base and internal gear.
c) Liner strips shall be minimum 3/8 inches thickness.
d) Alternate: Furnish ball bearings of high carbon chrome alloy steel as part of a precision gear/bearing set.
c. Protect internal gear, pinion and ball race by a seal and dust shield.
d. Internal gear, pinion and ball race is to run in oil bath.
e. Furnish turntable base bolted to the center column and designed to support the internal gear with rotating mechanism, access platform, and one end of the access bridge.
f. Provide a pipe attached to bottom of turntable base for condensate removal.
g. Furnish plugged or capped oil piping which terminates within the center of the base.
1) Provide oil level sight glass and oil drain.

h. Underwater bearings carrying any part of the load are not acceptable.

G. Access Walkways:
1. Minimum 8 feet by 8 feet.
a. 3 feet minimum clearance around drive unit assembly for maintenance and service, and access from walkway.
2. Fabricate for uniform live load of 100 pounds per SQFT.
3. Construct of 1-1/4 inches deep serrated aluminum grating attached to minimum 1/4 inches structural steel frame, with any necessary stiffeners and supports.
4. Include lift-out sections where required for routine maintenance of equipment.

5. Provide walkway, access platform and handrail in full compliance of federal, state, and local safety standards.

H. Walkways:
   1. Provide beam-type access bridge setting on operating platform to support walkway.
      a. Provide 3 feet wide walkways constructed from 1-1/4 inches deep serrated aluminum grating.
   2. Provide at locations and orientations shown on Drawings.
   3. Walkway fabrication:
      a. Fabricate walkways with a uniform live load of 150 pounds per LF with a maximum deflection of 1/360 of the span.
      b. Walkway shall be braced against lateral movement using wind load of 50 pounds/SQFT.
   4. Provide handrail and toe plate on each side of walkway and around access platform.
      a. Fabricate handrail of triple rail, 1-1/2 inches diameter Schedule 40 aluminum, 42 inches in height.
      b. Fabricate toe plate of 3/16 inches thick by 4 inches high aluminum.
   5. Walkway shall extend to center of clarifier.
   6. Support steel beams on steel or ultra-high molecular weight (UHMW) slide plates at the tank wall.
   7. Provide aluminum mounting plate for controls and necessary mounting brackets to support electrical conduit.
   8. Provide 10 feet high extension of handrail posts for mounting lights.
      a. One at access platform.
      b. One at end of walkway (both ends if bridge extends across entire clarifier).
      c. Size posts to support specified light fixtures.

I. Anchorage:
   1. Provide ASTM A276 316 stainless steel anchor bolts complete with nuts and washers for equipment installation.
   2. Bolts shall be 1 inch diameter minimum.

J. Fasteners:
   1. All fasteners shall be Type 316 stainless steel.
   2. Bolts shall be 1/2 inches diameter minimum.

K. Shop or Factory Finishing:
   1. Surface preparation and shop painting is required for all ferrous metals, equipment and accessories and shall be as specified under Section 09 91 00.
   2. Apply a heavy application of a rust-resistant coating to gears, bearing surfaces, and other unpainted surfaces.
      a. Maintain coating during storage and until the equipment is placed into operation.
   3. All aluminum in contact with dissimilar materials shall be coated with Koppers Hi-guard, two coats, 2.0-3.0 dry mils per coat.

2.5 CONTROLS

A. Overload Monitoring and Protection System:
   1. Furnish an electrical-mechanical overload control system for each clarifier drive mechanism, including:
      a. Factory calibrated torque switches rated 5 amps at 120 VAC minimum.
      b. Field adjustable over the full torque range of the unit.
      c. Alarm switch set at 100% of AGMA rated drive torque capacity in case of an impending overload.
      d. Second alarm switch set at 120% of AGMA rated drive torque capacity to shut down drive motor.
      e. Amperage and current sensing devices shall not be acceptable for the overload sensing system.

2. Mechanism loading indicator:
    a. Separate device, suitable for outdoor mounting.
    b. Mechanism loading indicated on a 0-130% graduated scale at all times during operation.
    c. Oriented so that torque may be read from access bridge side.

B. Shear Pins:
1. Shear pin device: Set for 125% of AGMA rated torque.
2. Provide straight, non-tapered shear pins with bushings.

2.6 SOURCE QUALITY CONTROL

A. Provide evidence of compliance with PART 1 requirements for the following:
1. Referenced standards.
2. Independent design evaluation of drive.

B. Provide evidence of compliance with PART 2 requirements, signed by a Registered Professional Civil or Structural Engineer, for the following:
1. Structural members and connections are designed so that unit stresses do not exceed 130 PCT of AISI allowable stresses.
2. Compression and tension member slenderness ratios do not exceed 120 and 240 respectively.

2.7 MAINTENANCE MATERIALS

A. Comply with the maintenance requirements in Section 01 78 43 – Spare Parts and Extra Materials.

B. For each drive furnished, provide:
1. One set of all bearings and bearing seal rings for drive unit.
2. Two sets of all gaskets.
3. Two sets of spur gear felt seals and replaceable bearing races.
4. Additional sprockets and chain links for tip speeds of 15 and 25 fpm.
5. Two sets neoprene lip seals.
6. One spare sight glass or oil gage.
7. Two sets scum box seals for pipe trough connection.
8. One set of all bearings for skimmer system.

PART 3 - EXECUTION

3.1 INSTALLATION

A. Install clarifier equipment according to manufacturer's written recommendations.
1. Manufacturer's service technician shall observe and direct equipment installation.
2. Manufacturer's representative shall certify that mechanism has been installed in accordance with manufacturer's recommendations.

3.2 FIELD QUALITY CONTROL

A. See Section 01 61 03 - Equipment - Basic Requirements.

B. Employ and pay for services of equipment manufacturer's field service representative(s) to:
1. Inspect equipment covered by these Specifications.
2. Supervise adjustments and installation checks.
3. Provide test equipment, tools, and instruments necessary to accomplish equipment testing.
4. Conduct initial startup of equipment, perform operational checks, and supervise acceptance testing.
5. Provide through Contractor a written statement that manufacturer's equipment has been installed properly, started up and is ready for operation by Owner's personnel.
6. Provide the following:
    a. For equipment inspections: As needed, but no less than 8 hours for each clarifier.

b. For equipment startup and testing: 8 hours minimum for each clarifier.

C. Torque Test:
1. Load test the entire collector mechanism by anchoring collector arms individually, one at a time.
   a. In successive tests, demonstrate the sludge collection mechanism's (including drive unit, cage, gears and structures) capability to withstand not less than 130% of the specified rated running torque.
2. Field torque test the clarifier mechanism under the supervision of the equipment manufacturer's representative before the mechanisms are approved and placed into operation.
3. The torque test shall consist of securing the rake arms by cables to anchor bolts installed by the contractor in the tank floor at locations recommended by the manufacturer and the Engineer.
   a. Apply a torque load to the scraper arm by means of a rachet lever and cylinder connected to the cable assembly.
4. Measure the magnitude of the applied load by calculating the torque from the distance of the line of action of each cable to the center line of the mechanism.
   a. Readings shall be taken at 100% and 120% of the AGMA rated torque.
   b. The test load shall be applied and noted on the torque overload device.
5. The manufacturer's service representative shall certify that the alarm and motor cut-out torque of the drives as calibrated in the manufacturer's shop are in proper operation to shut down the units as specified.

D. Operation Test:
1. Fill clarifier with water to its operating level and operate mechanism continuously at its maximum speed for a period of not less than 48 hours.
   a. At no time during the operating tests shall the equipment exceed the rated torque or exhibit indications of binding or uneven operation.
   b. Record torque values as registered on the drive mechanism torque indicator and motor amperage (all three phases) at 3 hour intervals.
2. After successful completion of the fully submerged operating test, operate the mechanism at full speed with no more than 1.5 feet of water at the sidewall in the tank for a period of not less than 6 hours.
   a. Record data as described above.
3. If the mechanism exceeds rated torque or the mechanism exhibits indications of binding or improper adjustment, then:
   a. Immediately halt the tests and remedy the problem.
   b. Repeat the tests after completion of necessary repairs or adjustments.
   c. Failure to successfully complete the test in three attempts is sufficient cause for rejection.
   d. Failure to complete the testing program as outlined in the preceding paragraphs is sufficient cause for the Owner to require that the equipment be removed from the Project.

E. Mechanism Speed Setting:
1. After completion of the specified field tests, fit the drive mechanism with a sprocket set which shall provide the rake arms with a tip speed of 7.5 FPM (single speed).

3.3 CLOSEOUT ACTIVITIES

A. Training
1. Provide training of Owner's personnel as specified in Section 01 79 23 – Instruction of Operations and Maintenance Personnel.
2. Instruct Owner's personnel as specified in Section 01 79 23 at jobsite on operation and maintenance of furnished equipment.

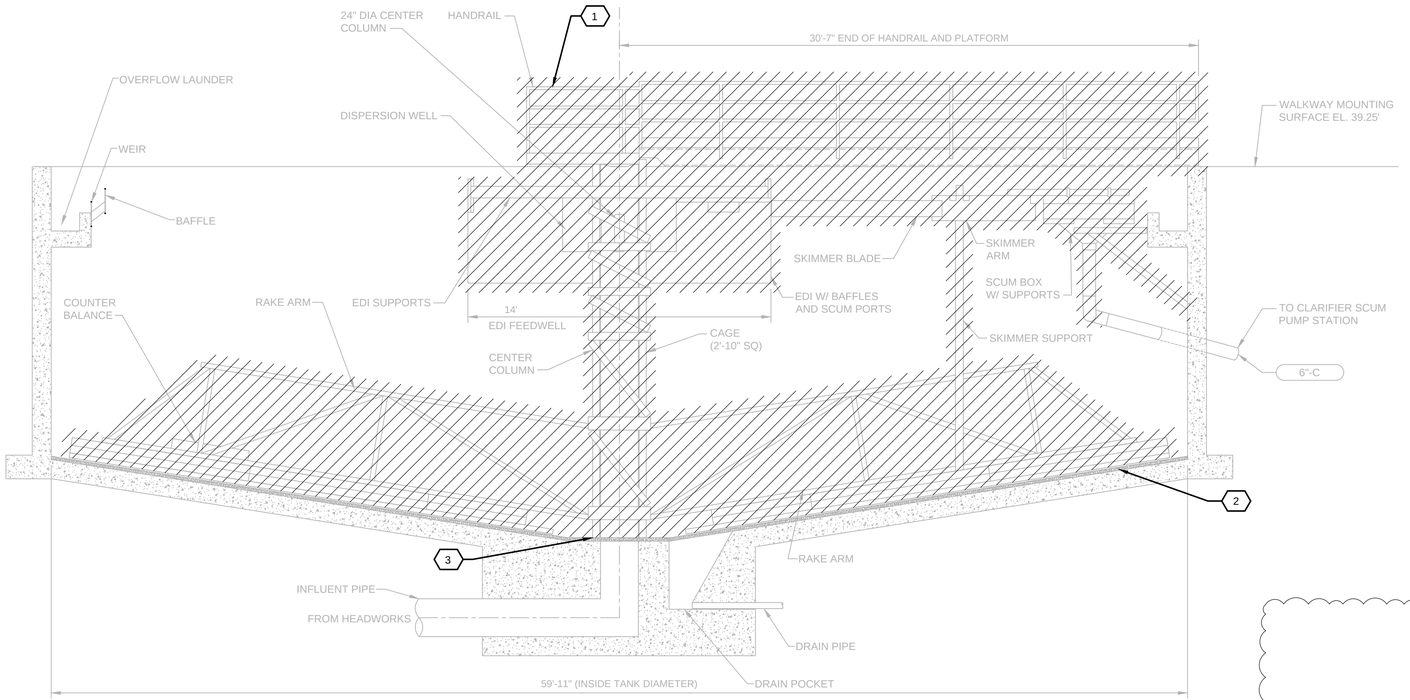
END OF SECTION

GENERAL NOTES:

1. EXISTING PRIMARY CLARIFIER NO. 1 IS SHOWN. PRIMARY CLARIFIER NO. 2 IS SIMILAR.
2. REFER TO SPECIFICATION SECTION 01 14 16 FOR CONSTRUCTION SEQUENCING AND STAGING.

KEY NOTES: (X)

1. DEMOLISH ALL CLARIFIER EQUIPMENT AND RAILING AS SHOWN. CONCRETE STRUCTURE TO REMAIN.
2. 2" GROUT TO REMAIN.
3. CONTRACTOR TO USE CAUTION NEAR EXISTING ANCHOR BOLTS AT CENTRAL SUPPORT COLUMN. ANCHOR BOLTS MUST BE PROTECTED FOR RE-USE.



CLARIFIER NO. 1 SECTION VIEW

1/4" = 1'-0"

CLARIFIER MECHANISM DEMOLITION DETAIL

N.T.S.

DEMOLISH SPRAY BAR, VALVE AND NPW PIPING UP TO 90-DEG BEND CONNECTION

A

CLARIFIER SPRAY BAR DETAIL

N.T.S.

ISSUE	DATE	DESCRIPTION
A	05/2025	ADDENDUM NO. 3
	03/2025	BID SUBMITTAL

PROJECT MANAGER	A. STAPLES
DESIGN MANAGER	P. REYES
CIVIL	D. BRANDS
STRUCTURAL	A. FORTNER
PROCESS	P. REYES
MECHANICAL	K. SUTTON
ELECTRICAL	D. BEST
INSTRUMENTATION	D. BEST
PROJECT NUMBER	10371791

ANDREW DONN STAPLES — STATE OF WASHINGTON — 44738 — REGISTERED PROFESSIONAL ENGINEER

CITY OF CAMAS WASHINGTON

CITY OF CAMAS WWTP UV DISINFECTION IMPROVEMENTS

DEMOLITION

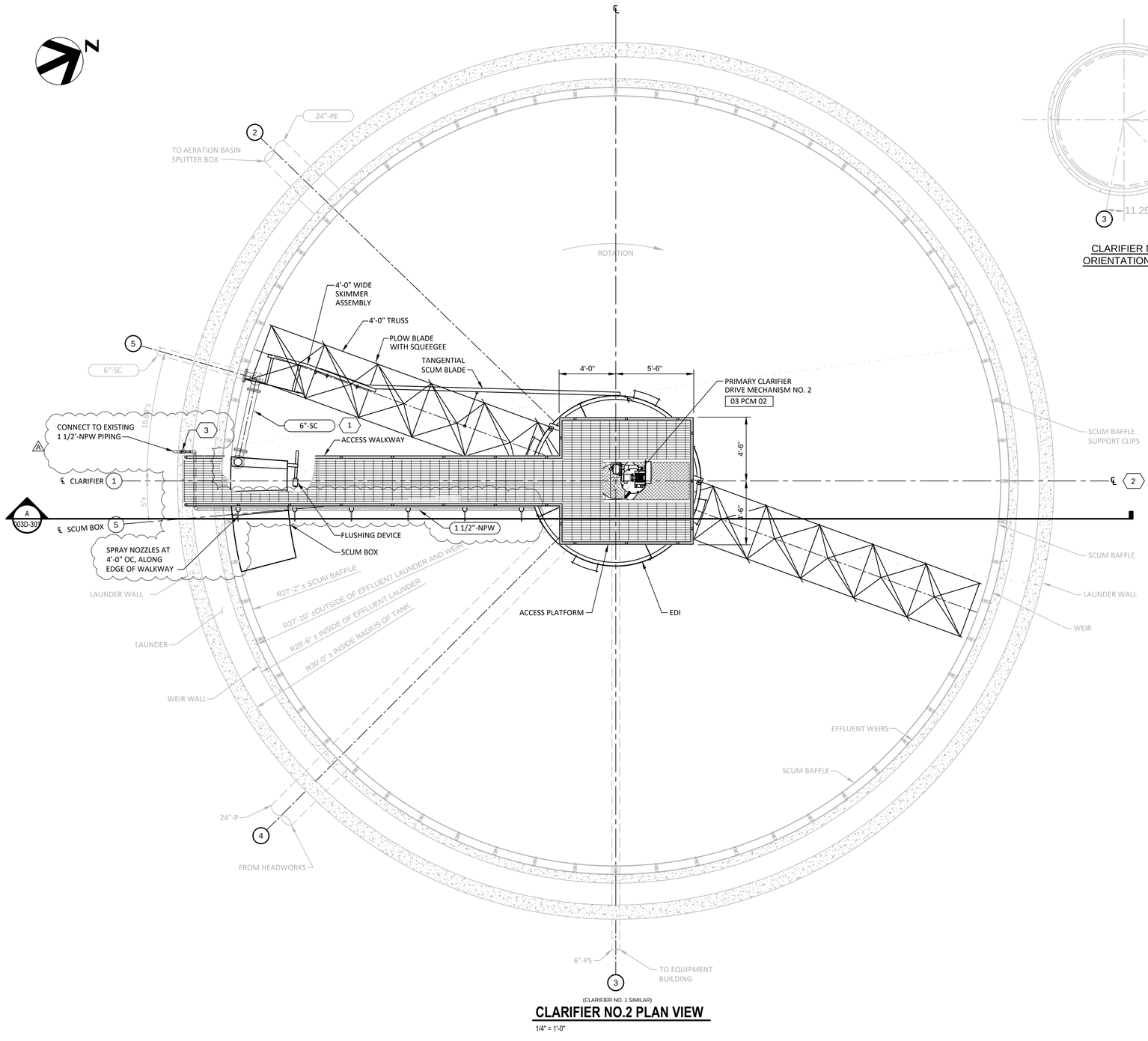
PRIMARY CLARIFIER SECTION DEMOLITION

0 1" 2"

FILENAME 003X-301.dwg

SCALE AS NOTED

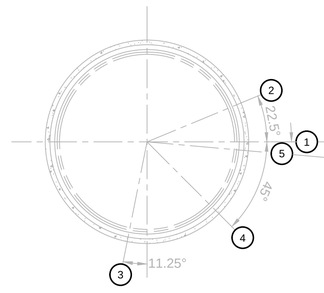
SHEET **003X-301**



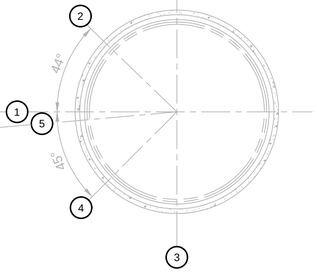
(CLARIFIER NO. 1 SIMILAR)

CLARIFIER NO.2 PLAN VIEW

1/4" = 1'-0"



CLARIFIER NO. 1
ORIENTATION PLAN



CLARIFIER NO. 2
ORIENTATION PLAN

ORIENTATION PLAN LEGEND (#)

1. ℄ ACCESS WALKWAY
2. ℄ EFFLUENT DROP & 24"-PE PIPE
3. ℄ 6"-PS WITHDRAWAL PIPE
4. ℄ 24"-P INFLUENT PIPE
5. ℄ SCUM BOX & 6-SC PIPE

GENERAL NOTES:

1. EXISTING PRIMARY CLARIFIER NO. 2 IS SHOWN. PRIMARY CLARIFIER NO. 1 SIMILAR.
2. CLARIFIER EQUIPMENT SUPPLIER SHALL MATCH CENTER COLUMN FOUNDATION TOP OF CONCRETE ELEVATION. CONTRACTOR TO FIELD VERIFY FLOOR SLOPE, ELEVATION AND DIMENSIONS AT EACH CLARIFIER.

KEY NOTES: (X)

1. CONNECT NEW 6"-SC PIPE FROM SCUM TROUGH TO EXISTING 6" SC PIPE, FIELD ROUTE AND SUPPORT AS REQUIRED.
2. PROPOSED BRIDGE SHALL MATCH EXISTING BRIDGE CENTERLINE AT EA. CLARIFIER.
3. (A) PROVIDE INSULATION AT PIPING CONNECTION AND NEW VALVE.

ISSUE	DATE	DESCRIPTION
A	05/2025	ADDENDUM NO. 3
	03/2025	BID SUBMITTAL

PROJECT MANAGER	A. STAPLES
DESIGN MANAGER	P. REYES
CIVIL	D. BRANDS
STRUCTURAL	A. FORTNER
PROCESS	P. REYES
MECHANICAL	K. SUTTON
ELECTRICAL	D. BEST
INSTRUMENTATION	D. BEST
PROJECT NUMBER	10371791

ANDREW D. OWEN STEPHENS — STATE OF WASHINGTON — 44836 — REGISTERED PROFESSIONAL ENGINEER

CITY OF CAMAS WASHINGTON

CITY OF CAMAS WWTP
UV DISINFECTION IMPROVEMENTS

PRIMARY CLARIFIER NO. 2 PLAN

0 1" 2"

FILENAME 003D-101.dwg
SCALE AS NOTED

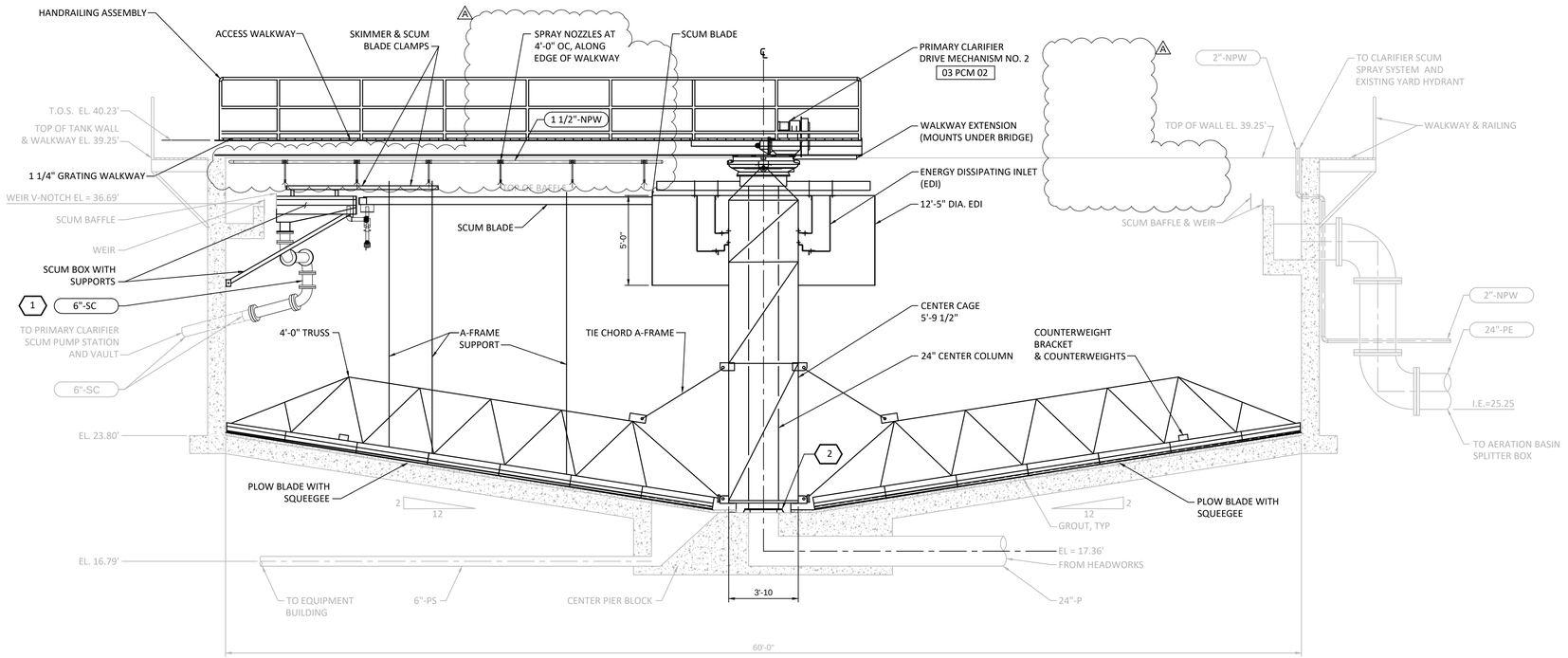
SHEET
003D-101

GENERAL NOTES:

1. EXISTING PRIMARY CLARIFIER NO. 2 SIMILAR
2. REFER TO SPECIFICATION SECTION 01 14 16 FOR CONSTRUCTION SEQUENCING AND STAGING.
3. CLARIFIER EQUIPMENT SUPPLIER SHALL MATCH CENTER COLUMN FOUNDATION TOP OF CONCRETE ELEVATION.
4. CONTRACTOR TO FIELD VERIFY FLOOR SLOPE, ELEVATION AND DIMENSIONS AT EACH CLARIFIER.

KEY NOTES: (X)

1. CONNECT NEW 6"-SC PIPE FROM SCUM TROUGH TO EXISTING 6" SC PIPE, FIELD ROUTE AND SUPPORT AS REQUIRED.
2. CLARIFIER EQUIPMENT SHALL MATCH CENTER PIER FOUNDATION TOP OF CONCRETE ELEVATION. CONTRACTOR TO FIELD VERIFY FLOOR SLOPE ELEVATIONS, PIPE INVERT ELEVATIONS, AND DIMENSIONS AT EACH CLARIFIER.



(CLARIFIER NO. 1 SIMILAR)

A / 003D-10 **SECTION**

1/4"=1'-0"

ISSUE	DATE	DESCRIPTION
A	05/2025	ADDENDUM NO. 3
	03/2025	BID SUBMITTAL

PROJECT MANAGER	A. STAPLES
DESIGN MANAGER	P. REYES
CIVIL	D. BRANDS
STRUCTURAL	A. FORTNER
PROCESS	P. REYES
MECHANICAL	K. SUTTON
ELECTRICAL	D. BEST
INSTRUMENTATION	D. BEST
PROJECT NUMBER	10371791

ANDREW DONN STAPLES — STATE OF WASHINGTON — 44738 — REGISTERED PROFESSIONAL ENGINEER

CITY OF CAMAS WASHINGTON

CITY OF CAMAS WWTP UV DISINFECTION IMPROVEMENTS

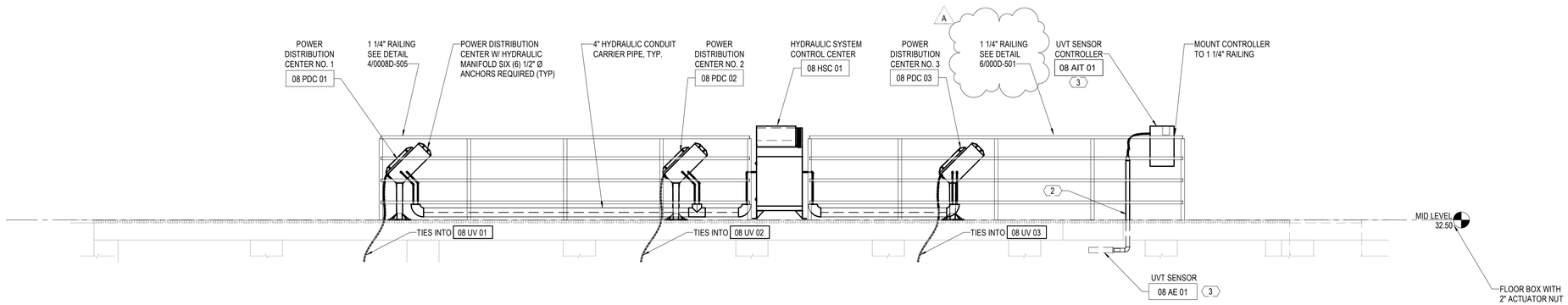
PRIMARY CLARIFIER NO. 2 SECTION AND DETAILS

0 1" 2"

FILENAME 003D-301.dwg

SCALE AS NOTED

SHEET **003D-301**



A SECTION
008D-101 3/8" = 1'-0"

KEY NOTES: (#)

1. REUSE EXISTING CONDUITS AND SUPPORT RACK FOR NEW SENSORS AND PROBES.
2. 2" SIGNAL CABLE CONDUIT, ROUTE CONDUIT FROM TRANSMITTER TO ASSOCIATED SENSOR. STRAP CONDUIT TO FLOOR. REFER TO DETAIL 3/000D-505
3. INSTALL UVT SENSOR PER MANUFACTURER'S RECOMMENDATIONS UPSTREAM OF THE UV SYSTEM. PROVIDE SUPPORT RACK FOR MOUNTING OF TRANSMITTER. SEE DETAIL X SHEET 000D-XXX
4. INSTALL POWER DISTRIBUTION CENTERS AND LAMP MODULES FOR EACH UV BANK PER MANUFACTURER'S RECOMMENDATIONS.

ISSUE	DATE	DESCRIPTION
A	05/2025	ADDENDUM NO. 3
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CITY OF CAMAS WASHINGTON

CITY OF CAMAS WWTP UV DISINFECTION IMPROVEMENTS

UV DISINFECTION PROCESS SECTIONS

0 1" 2"

FILENAME

SCALE 3/8" = 1'-0"

SHEET 008D-302