THE CITY OF DAYTONA BEACH
OFFICE OF THE PURCHASING AGENT

Post Office Box 2451
Daytona Beach, Florida 32115-2451

Phone (386) 671-8080
Fax (386) 671-8085

ADDENDUM NO. 3

DATE: February 10, 2020

PROJECT: ITB 20253
BETHUNE POINT WRF-PHASE I PROCESS UPGRADES

OPENING DATE: ~~February 17, 2020~~ February 27, 2020

This addendum is hereby incorporated into the Bid Documents for the project referenced above. The following items are clarifications, corrections, additions, deletions and/or revisions to and shall take precedence over the original documents. Additions are indicated by underlining, deletions are indicated by ~~strikethrough.~~

1. The due date for this solicitation has been extended from ~~February 17, 2020~~ to February 27, 2020.

2. Answers to Bidders' written questions:

   Q1: Are there any items in the clarifier tanks the GC needs to provide, such as brackets, troughs, weirs, baffles, piping, valves, anchor bolts, & fasteners?

   A1: ***Bidders are directed to Attachments 1, 2 and 3 included at the end of this addendum:***
   - ***Attachment 1 – Ovivo proposal for purchased clarifiers. Bidder's attention is directed to Page 3, Section titled "Items Not Included".***
   - ***Attachment 2 – Ovivo provided General Construction drawings.***
   - ***Attachment 3 – Approved shop drawing submittal.***

   If the bidder feels further clarification is needed, bidder is encouraged to contact Ovivos sales representative TSC Jacobs.

   Q2: Does the GC need to provide any painting & coatings for the clarifier equipment or at the concrete tanks?

   A2: ***Ovivo equipment will be supplied with Prime and Finish coats of Tnemec Series 66 (Black). The installation contractor will supply touch up paint for the***

paint areas that are damaged from handling, installation, field welding, etc. Concrete tank coating is not anticipated and therefore not included in the bid.

Q3: With the City purchasing the clarifier equipment directly, is the City's budget for this bid $550,000?

A3: ***The City's current budget is $1.3M. The City purchased the Ovivo clarifier equipment for a total of $700,000…leaving a remaining budget of $600,000. The City is attempting to secure an additional $200,000 for this project, but as of the issuing of the addendum no additional funds have been added to the project.***

Q4: Who is responsible to drain and clean the Aeration and Clarifier tanks?

A4: ***The City will drain and clean the tanks. The contractor will need to coordinate the schedule for draining the tanks with the City, as each tank will take multiple days in order to not overwhelm the in-plant pump station. City crews will hose down the tanks with reclaimed water.***

Q5: Will the clarifier tanks drain thru the existing piping in order to do the installation?

A5: ***Clarifier #2 will drain thru the existing piping. The drain valve on Clarifier #1 is broken and a plug was observed in the drain line from Clarifier #4. The City has 6" Thompson pumps that will be used to drain the clarifiers.***

Q6: Will the existing aeration basins drain thru the existing piping in order to do the installation?

A6: ***Drain valve on Aeration Tank No. 2 is functional and will be operated by City personnel to drain AT-No. 2. Drain valves on Aeration Tank No. 3 are not functional. However, City crews will utilize 6" Thompson pumps to pump down Pass 1 and Pass 3.***

Q7: Is a building or electrical permit required? If so, are the fees waived?

A7: ***A building or electrical permit is not anticipated. If it is determined that a permit is required, the City will pay for any associated fees.***

Q8: Is the only electrical work required at the clarifiers to disconnect the existing equipment & reconnect the new panel & equipment after installation? There are no new disconnects, conduit, wiring, SCADA or light poles required?

A8: ***The only electrical work is to disconnect the existing equipment and reconnect the new equipment after installation.***

Q9: Can the three clarifiers be drained & existing equipment demolished at the same time?

A9: ***Clarifiers No. 1, 2, and 4 are currently inoperable and offline. From that standpoint, the clarifiers can be drained and rehabbed in any combination the contractor deems appropriate. Please note that there are ground water dewatering requirements associated with each clarifier (see Attachment No. 4 for discussion) so the contractor will need to take that into consideration when determining what order/how many clarifiers to drain at any one time.***

Q10: Is the GC responsible to dispose of all the existing clarifier equipment & metals with nothing remaining onsite for the City to keep?

A10: ***The GC will be responsible for removal and disposal of existing components. The City will evaluate components within the clarifiers once they are visible to determine if they will be retained or not, but at this point the City only anticipates keeping the existing clarifier drive units.***

Q11: Do the clarifiers have a wash/spray system & is any new piping, connections or taps required for that?

A11: ***The clarifiers do not have a wash/spray system. Please refer to Attachments No. 1, 2 and 3 for installation drawings for the clarifiers.***

Q12: Is it possible to schedule a 2nd site visit to Bethune Point WRF if needed?

A12: ***Refer to Addendum No. 2***

Q13: Is any bypass pumping or sludge removal required by the GC?

A13: ***Bypass pumping or sludge removal is not anticipated by the GC.***

Q14: The contractor is required to clean sludge and grit will the city add estimated quantities of grit and sludge removal as a line item?

A14: ***The City will flush the aeration tanks and clarifiers with reclaimed water to clean any solids out, therefore a line item will not be added to the bid form.***

Q15: Will the city be releasing any electrical drawings for the connections/ low voltage work that will need complete?

A15: ***Refer to Attachment No. 3 for the approved shop drawings that include electrical connections/low voltage work.***

Q16: Do the tanks have anti-floatation?

A16: ***Please refer to Attachment No. 4 for an in-depth discussion on this matter.***

Q17: Per Specifications 11226-11, 2.12, A and B the Clarifiers are provided with a factory primer system. Please provide final coating specifications and requirements.

A17: ***Refer to A2.***

Q18: Is removal and replacement of the grout in clarifiers to be included in the Contractors base bid? Since, this work is based on "it may or may not be required" can the item be an alternate price?

A18: ***The need for this work won't be verified until after bid alternates will have to be accepted or not. If it is discovered that removal/replacement of grout is needed, it will be added via change order at that time.***

Q19: Is the startups for the clarifiers provided and paid for by the owner with the direct purchase of clarifier equipment?

A19: ***Startup is included in the equipment purchase. Please refer to Attachment No. 1.***

Q20: Section 11378 - Fine Bubble Membrane Disc Aeration System
Paragraph 1.03-System Description, Part C-Design the aeration system for the following.
a. We recommend revising the Air Rate per diffuser in both tanks from 1.6 to 2.2 scfm per diffuser. The requested maximum air rate is not obtainable given the current loading and tank area. The maximum recommended density (AT/AD) of fine bubble aeration grids is typically 4.0. This density allows some room for installation and accessing/servicing of the diffusers in the future. With the given loadings and applying this density, the resulting air flow rates is 2.2 scfm per diffuser. There is not enough room to install enough diffusers to get down to 1.6 scfm per diffuser.

A20: ***Section 11378 has been revised. AOR listed in 1.03 C has been revised to SOR. Upon further investigation, Pass 1 of Aeration Tank No. 3 was determined to be an extension of the aeration tank. As such, the SOR is a total of 50,000 lb O2/day to Aeration Tank No. 2 and Pass 1 of Aeration Tank No. 3. See Attachment No. 7 for updated specification and Attachment No. 6 for updated drawings.***

Q21: Section 11378 - Fine Bubble Membrane Disc Aeration System
2.03 - Equipment Components, Part B: Air Distribution Headers and Diffuser Holders. Items Nos 12 and 14:
a. We recommend deleting both of these requirements.

Both items 12 and 14 mention an ultrasonic staking process in addition to the solvent welding for attaching the diffuser holders to the piping system. Sanitaire has been solvent welding PVC diffuser holders to header piping without staking for over 35 years. The quality of our product has been proven in literally thousands of installations as we have over 20 million diffusers installed to date. Additionally, this process is unique to a single manufacturer. Not deleting these items will result in effectively a sole source specification.

A21: ***The specification has been updated to allow interference fit or solvent welding with staking. Refer to Attachment No. 5 for updates to the specification.***

Q22: 2.03 - Equipment Components, Part C: Pipe Supports. No 4, a and c

a. We recommend allowance of supports with a single anchor bolt. Also, we recommend adding an item g that states:

"g. The support structure shall be removable less the anchor bolt to allow servicing of the system in the future."

The current wording allows the use of threaded rods epoxied directly into the tank floor. If in the future, workers need to get into the tank for servicing or repairs, the rods in this non removable design become a safety hazard for plant personnel and/or contractor.

A22: ***Refer to Attachment No. 5 for updates to the specification.***

Q23: The paint system given in the specifications only pertains to the manufacturer blasting and priming the mechanisms. Would the city please issue a specification for the field finish system?

A23: ***Refer to A2.***

3. In addition to the above questions and answers, the City has provided the following as a summary of changes not explicitly addressed above:

A. The City has approved shop drawings for the fabrication of the clarifier mechanisms. However, fabrication of the center column and cage can't begin until dimensions are verified. The dimensions require the tank to be empty to verify, and draining the tank is contingent upon lowering the groundwater. Therefore, the City is requesting that, upon NTP, the successful Contractor mobilize to the site within 4 weeks for groundwater dewatering such that the tanks can be drained and measurements sent to Ovivo. Obtaining the measurements within the first 4 weeks is not anticipated to affect the overall delivery time of 16 weeks of the clarifier equipment. AS previously noted, the schedule will be adjusted if City furnished equipment is delayed. However, it should be noted that additional time may not be granted if the Contractor is slow to provide the initial dewatering necessary to obtain measurements.

B. *Replacement of diffusers in Pass No. 1 of AT-No. 3 has been included in this addendum. It is noted that City forces plan to demolish the existing diffusers in AT-No. 3 (both Pass 1 and reaeration zone of Pass 3). For this reason the demolition cost has been taken out of the base bid. However, the City has included an additive alternate for the demolition of diffusers in AT-No. 3 as an option.*

1. *Drain valves on 2 clarifiers are non-functional as noted above. While the groundwater is dewatered for clarifier mechanism demo/install, the City would like to explore the possibility of replacing the broken valves. For this reason an additive alternate has been added to the bid form. The valve shall be a Mueller 8" Resilient Wedge Gave Valve – Fl. X Fl., or approved equal.*
2. *Removal of the steel plate from the effluent box from AT-No. 2 has been deleted from this contract. Based on investigation conducted by City personnel, the City plans to remove the plate. The City plans to do this work toward the end of the project to prevent any process water from entering AT-No. 3 while diffusers are being removed/installed.*
3. *The City has included multiple attachments to this Addendum to provide further information/clarification to the Bidders. For quick reference, the attachments are as follows:*
    a. *Attachment #1 – Ovivo Proposal: Initial proposal that Ovivo provided to the City that was used to procure the equipment.*
    b. *Attachment #2 – General Arrangement Drawings: Provided by Ovivo to aid the Bidders in the details of installation.*
    c. *Attachment #3 – Approved Shop Drawings: The approved shop drawings, with comments, provided by the City to Ovivo to begin the fabrication process.*
    d. *Attachment #4 – Buoyancy Discussion: Provides details of the City's investigation regarding potential flotation of the clarifiers. Also provides criteria for dewatering plan and implementation.*
    e. *Attachment #5 – Geotechnical Report: The City recently had a geotech report conducted for another project on-site. This report has been included for information only as it applies to dewatering activities.*
    f. *Attachment #6 – Updated Design Drawings: Updates were made to several sheets to capture changes made as part of this addendum. Updated sheets include Sheets 14, 15, 16, 17, 18.*
    g. *Attachment #7 – Updated Specifications: Updates were made to several specifications to capture changes made as part of this addendum. Updated specifications include: Bid Form; Summary of Work; Measurement and Payment; Fine Bubble Aeration System.*

4. Basis of Award: Recommendation of award will be to the lowest responsive and responsible bidder who includes the base bid and as many additive alternates as can be awarded within the budget, or are in the best interests of the City. See A3 for budget amount.

5. Bid Item schedule has been revised and is attached in this addendum. Bidders will use this bid form or the one provided at http://www.codb.us/841/Purchasing in

spreadsheet form under Addendum 3 in order to be found responsive. Bidders using the bid item schedule found in the original document will be found non-responsive.

6. All other terms and conditions remain the same.

The Bidder shall acknowledge receipt of this addendum on the Bid Proposal Form.

The City of Daytona Beach

Kirk Zimmerman, CPPB
Buyer

Posted at http://www.codb.us/841/Purchasing

Attachment #1

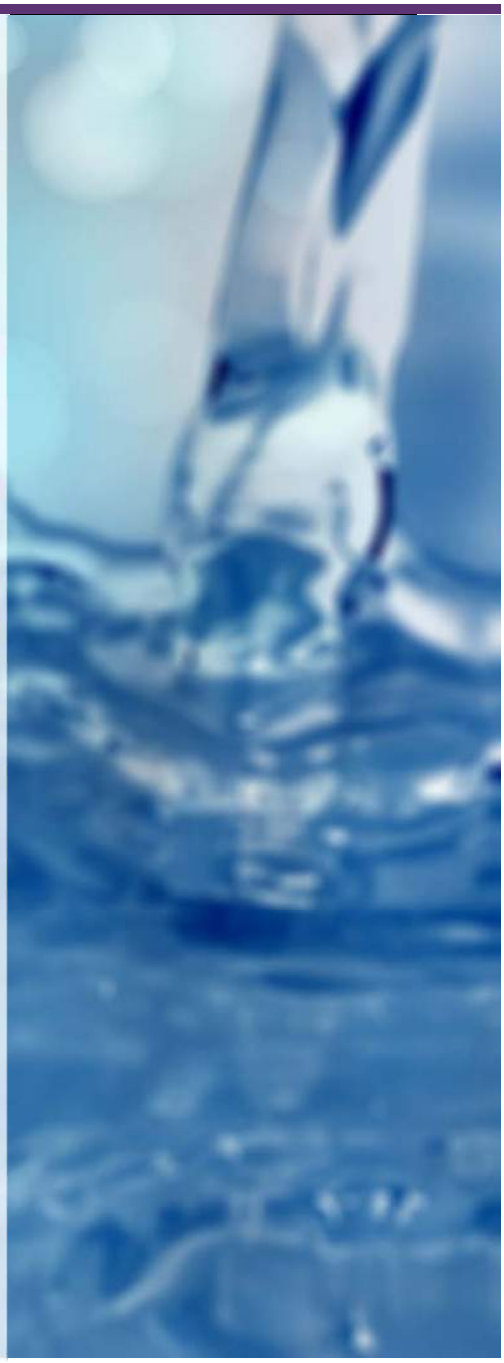
Ovivo Proposal

OVIVO Worldwide Experts in Water Treatment

PROPOSAL

Q061119B-S

4 OCTOBER 2019



BETHUNE POINT WASTEWATER TREATMENT PLANT
1 SHADY PLACE
DAYTONA BEACH, FLORIDA 32114

(THREE) 80 FT. DIAMETER "C4-CMD-FTS" TYPE CLARIFIERS REPLACEMENTS

AREA REPRESENTATIVE

TSC Jacobs - North
Joe Sacco
(904) 524-9576
joetscjn@gmail.com

Revision B, 9/26/2019, Updated

PREPARED BY

Bill Stewart
Phone (801) 931-3265
Fax (801) 931-3080
bill.stewart@ovivowater.com

Ovivo USA, LLC
4246 Riverboat Road – Suite 300
Salt Lake City, Utah 84123-2583

PROJECT SUMMARY:

Ovivo USA, LLC (formerly EIMCO Water Technologies – EWT) is pleased to offer the following proposal to provide three (3) new 80 ft. diameter Clarifier mechanisms (final clarifiers no: 1, 2 & 4). Original machines were installed in 1992 under serial numbers 24467-01 and 24467-02

ITEMS INCLUDED:

- Complete C40HT drive assembly, with gear motor and drive torque control. Drive unit is completely factory assembled, calibrated and tested.
- Complete motor drive package, including 1 hp gearmotor, sprockets, chain and guard.
- Drive torque control with micro switches and actuating pin.
- Electrical Control Panel, NEMA 4X, 304 stainless steel enclosure with alarm horn and beacon, local disconnect, local/off/auto selector switch, start, stop/reset and alarm silence push buttons, torque shut down, torque alarm, overload shut down and running lights.
    - Electrical connection is not provided by Ovivo.
- Premium Ovivo Drive paint scheme:
    - Prime and intermediate coats with Tnemec Series 66HS epoxy, 4-6 mils dft, each coat.
    - Top coat, Tnemec Series 73-26BL (Clear Sky) Endura Shield urethane, 3-5 mils dft.
        - Top coat is highly resistant to abrasion, wet conditions, corrosive fumes, chemical contact & weathering.
- Cage, 4 ft square box truss design, carbon.
- Influent column, 30” diameter x 1/4” plate, flanged with influent ports, carbon steel.
- Rake arms, two full radius square box truss design including spiral rake blades (3/16” thick), carbon steel with stainless steel squeegees. Blades taper from 8” at tank wall to 24” at tank center.
- CMD device, to convert existing center RAS pipe, carbon steel. See sludge collection detail – following sheet.
- Rotating sludge collection drum, 5’-10” diameter, carbon steel.
- Feedwell, 24’ diameter x 7’ deep x 3/16” plate with supports, carbon steel.
- Two (2) scum skimmers arms, carbon steel with neoprene wipers.
- Full radius scum collection trough, carbon steel. Supplied with scum discharge nozzle, flush valve and supports.
- Effluent weir plates, FRP, 9 inch deep x 1/4 inch thick with 2 1/2 inch deep 90 degree V-notches spaced at 6 in intervals. The weir sections shall be fastened to either concrete launder wall (at one tank) or FRP launder (at two tanks).
- Scum baffle plates, FRP, 12 inch deep x 1/4 inch thick includes FRP supports fastened to either concrete launder wall (at one tank) or FRP launder (at two tanks).
- Launder system, FRP, 30 inch wide x 21 inch (nom) depth x 1/4 inch thick including drop out launder and supports fastened to tank wall (at two tanks).

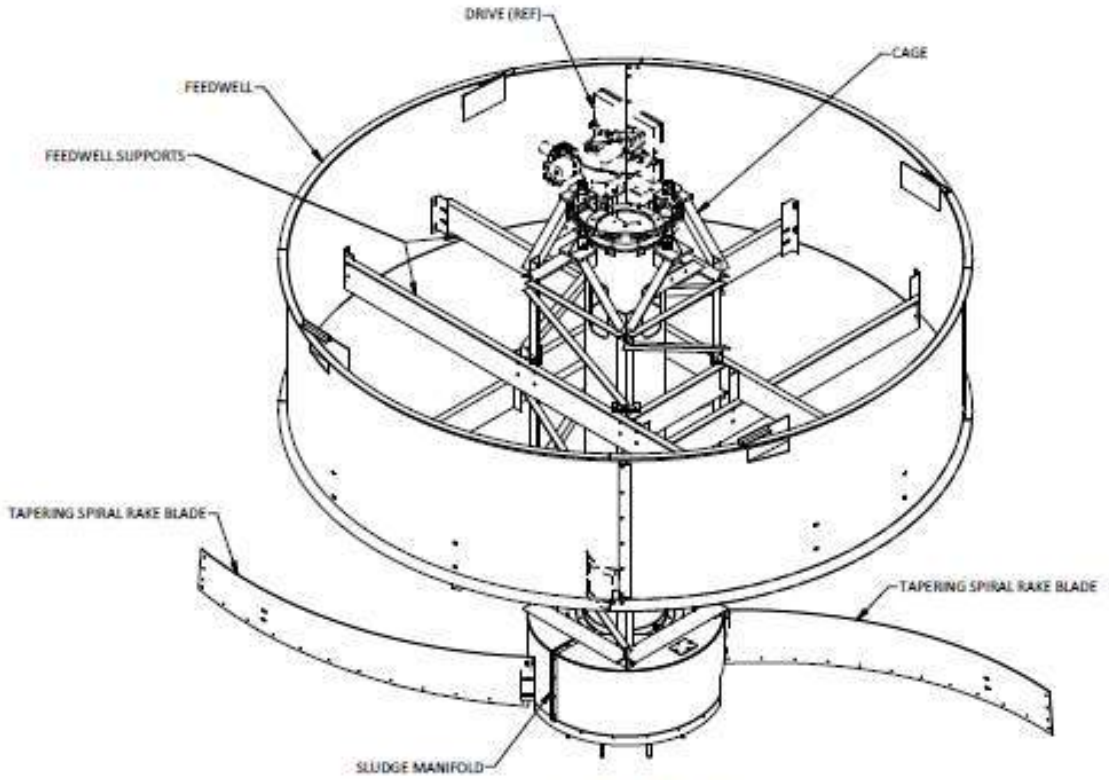
- Carbon steel clarifier components to be shop painted.
    - Surface Preparation to be SSPC SP-10
    - Prime and Final coated with Tnemec Series 66 (Black)
- Assembly and anchor fasteners – 304 Stainless Steel.
- Operation and maintenance manuals (2) hard copy & (1) PDF.
- One (1) year warranty.
- Engineering, complete arrangement and assembly drawings will be included with O & M manual.
- FOB destination. freight prepaid and allowed
- Field service;
    - Includes the service of a qualified service engineer for the following:
        - 1 trips / 2 days each trip - includes start up and testing for each machine.

Items NOT Included

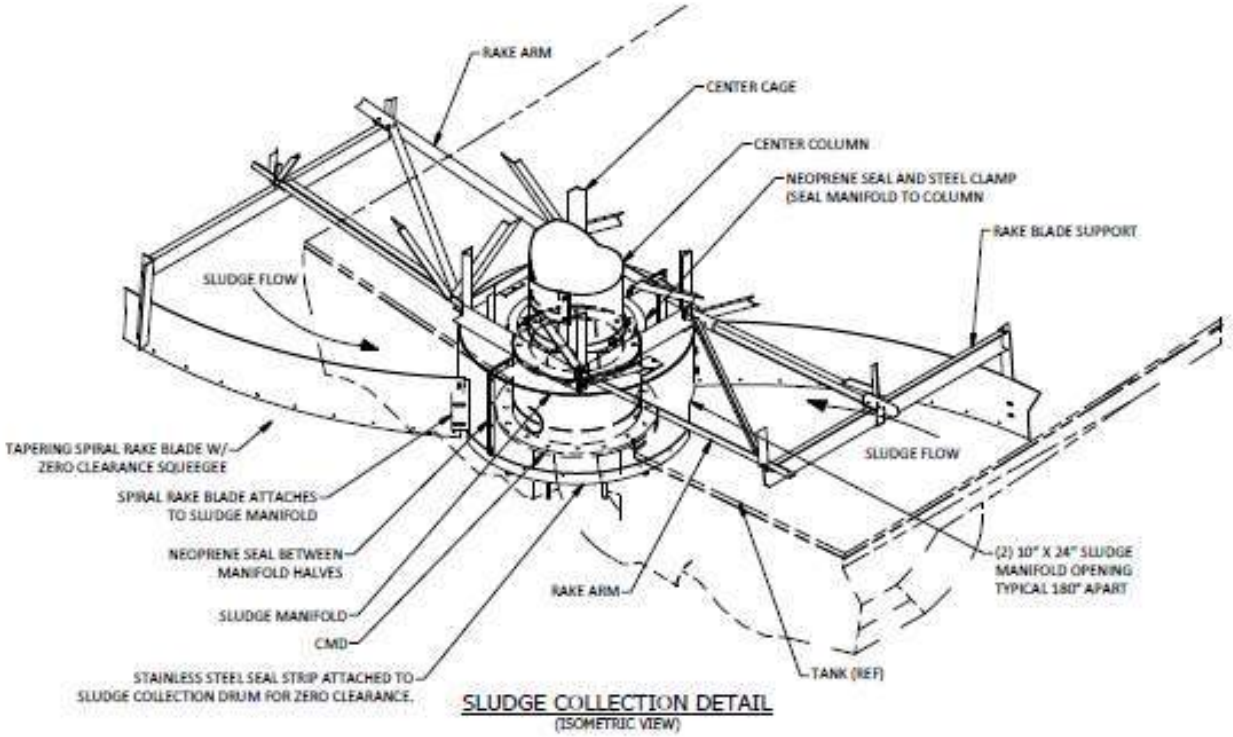
- Demolition and/or erection services.
- Any field measurements required for provision of this equipment.
- Field welding.
- Field painting.
- Electrical disconnect/installation or alteration of existing electrical supply.
- Vfd controller, etc.
- Density current baffles.
- Existing walkway assembly to be reused, removed during mechanism installation.
- Stairways, access walkways, handrail around tank.
- Spray systems
- Any items not expressly identified in this proposal.

Total Pricing (Components and Installation Services)

Lead time is estimated at 4 weeks for submittal drawings after receipt of purchase order.
Lead time is estimated at 14 to 16 weeks for equipment manufacture as described above.



ISOMETRIC VIEW
(RAKE ARMS AND SKIMMING SYSTEM HIDDEN FOR CLARITY)



SLUDGE COLLECTION DETAIL
(ISOMETRIC VIEW)

DELIVERY

Ovivo intends to ship all Products as indicated above after receipt of approved purchase order and approved submittal drawings from Purchaser. However, the date of shipment of the Products represent Ovivo's best estimate, but is not guaranteed, and Ovivo shall not be liable for any damages due to late delivery. The Products shall be delivered to the delivery point or points in accordance with the delivery terms stated in this proposal. If such delivery is prevented or postponed by reason of Force Majeure, as defined in Ovivo's standard terms and conditions of sale, Ovivo shall be entitled at its option to tender delivery to Purchaser at the point or points of manufacture, and in default of Purchaser's acceptance of delivery, to cause the Products to be stored at such a point or points of manufacture at Purchaser's expense. Such tender, if accepted, or such storage, shall constitute delivery for all purposes of this proposal. If shipment is postponed at request of Purchaser, or due to delay in receipt of shipping instructions, payment of the purchase price shall be due on notice from Ovivo that the Products are ready for shipment. Handling, moving, storage, insurance and other charges thereafter incurred by Ovivo with respect to the Products shall be for the account of Purchaser and shall be paid by Purchaser when invoiced.

PRICING TERMS

All prices quoted are in US Dollars. Prices are good for 60 days. After expiration of the pricing effective period, prices will be subject to review and adjustment. Prices quoted are FOB point of delivery, with freight included to an accessible point nearest the jobsite. Federal, state or local sales, use or other taxes are not included in the sales price.

PAYMENT TERMS

Payment terms are: One hundred percent (100%) payment due within sixty (60) days after Purchaser's receipt of invoice. Invoice will be submitted after all materials have been received at the job site or they have been successfully installed by an Ovivo contractor and the field service check-out and start-up procedure is finalized. Credit is subject to acceptance by the Ovivo Credit Department.

Purchaser shall remit payment for proper invoices received from Ovivo in accordance with the payment terms stated above even if the Purchaser has not been paid by the Purchaser's customer (the "Owner"), if Purchaser is not the end-user of the Products. Payments are due within sixty (60) days after Purchaser's receipt of invoice. Overdue and unpaid invoices are subject to a service charge of 2% per month until paid.
If Purchaser requests or causes cancellation, suspension or delay of Ovivo's work, Purchaser shall accept transfer of title and pay Ovivo all appropriate charges incurred up

to date of such event plus Ovivo's overhead and reasonable profit. Additionally, all charges related to and risks incidental to storage, disposition and/or resumption of work shall be borne solely by Purchaser. Full payment for all work shall be due and payable sixty (60) days from the date work is placed into storage.

TAXES

Federal, State or local sales, use or other taxes are not included in the sales price. Such taxes, if applicable, shall be for Purchaser's account.

BACKCHARGES

In no event shall Purchaser/Owner do or cause to be done any work, purchase any services or material or incur any expense for the account of Ovivo, nor shall Ovivo be responsible for such work or expenses, until after Purchaser/Owner has provided Ovivo's PROJECT MANAGER full details (including estimate of material cost and amount and rate of labor required) of the work, services, material or expenses, and Ovivo has approved the same in writing. Ovivo will not accept Products returned by Purchaser/Owner unless Ovivo has previously accepted the return in writing and provided Purchaser/Owner with shipping instructions.

PURCHASE ORDER SUBMISSION

In an effort to ensure all purchase orders are processed timely and efficiently, please submit all purchase order documentation to the following department and address (can be provided electronically):

Attn: Order Entry Administrator
Ovivo USA, LLC
4246 Riverboat Road - Suite 300,
Salt Lake City, Utah 84123-2583
Fax #: 801-931-3080
Tel. #: 801-931-3265
bill.stewart@ovivowater.com

GENERAL ITEMS NOT INCLUDED

Unless specifically and expressly included above, prices quoted by Ovivo do not include unloading, hauling, erection, installation, piping, valves, fittings, stairways, ladders, walkways, grating, wall spools, concrete, grout, sealant, dissimilar metal protection, oakum, mastic, field painting, oil or grease, electrical controls, wiring, mounting hardware, welding, weld rod, shims, leveling plates, protection against corrosion due to unprotected storage, special engineering, or overall plant or system operating instructions or any other products or services.

Performance and payment security, including but not limited to bonds, letters of credit, or bank guarantees, are not included, but can be provided if purchased for an additional cost.

WARRANTY AND CONDITIONS

Ovivo standard Terms and Conditions of Sale is attached and made an essential part of this proposal. These terms and conditions are an integral part of Ovivo's offer of Products and related services and replace and supersede any terms and conditions or warranty included in Purchaser or Owner requests for quotation or specifications and cannot be changed without written approval from an authorized representative of Ovivo.

Ovivo USA – Terms & Condition of Sale

1. ACCEPTANCE. The proposal of **Ovivo USA, LLC** ("SELLER"), as well as these terms and conditions of sale (collectively the "Agreement"), constitutes SELLER's contractual offer of goods and associated services, and PURCHASER's acceptance of this offer is expressly limited to the terms of the Agreement. The scope and terms and conditions of this Agreement represent the entire offer by SELLER and supersede all prior solicitations, discussions, agreements, understandings and representations between the parties. Any scope or terms and conditions included in PURCHASER's acceptance/purchase order that are in addition to or different from this Agreement are hereby rejected.

2. DELIVERY. Any statements relating to the date of shipment of the Products (as defined below) represent SELLER'S best estimate, but is not guaranteed, and SELLER shall not be liable for any damages due to late delivery. The Products shall be delivered to the delivery point or points in accordance with the delivery terms stated in SELLER's proposal. If such delivery is prevented or postponed by reason of Force Majeure (as defined below), SELLER shall be entitled at its option to tender delivery to PURCHASER at the point or points of manufacture, and in default of PURCHASER's acceptance of delivery to cause the Products to be stored at such a point or points of manufacture at PURCHASER'S expense. Such tender, if accepted, or such storage, shall constitute delivery for all purposes of this agreement. If shipment is postponed at request of PURCHASER, or due to delay in receipt of shipping instructions, payment of the purchase price shall be due on notice from SELLER that the Products are ready for shipment. Handling, moving, storage, insurance and other charges thereafter incurred by SELLER with respect to the Products shall be for the account of PURCHASER and shall be paid by PURCHASER when invoiced.

3. TITLE AND RISK OF LOSS. SELLER shall retain the fullest right, title, and interest in the Products to the extent permitted by applicable law, including a security interest in the Products, until the full purchase price has been paid to SELLER. The giving and accepting of drafts, notes and/or trade acceptances to evidence the payments due shall not constitute or be construed as payment so as to pass SELLER's interests until said drafts, notes and/or trade acceptances are paid in full. Risk of loss shall pass to PURCHASER at the delivery point.

4. PAYMENT TERMS. SELLER reserves the right to ship the Products and be paid for such on a pro rata basis, as shipped. If payments are not made by the due date, interest at a rate of two percent (2%) per month, calculated daily, shall apply from the due date for payment. PURCHASER is liable to pay SELLER'S legal fees and all other expenses in respect of enforcing or attempting to enforce any of SELLER'S rights relating to a breach or threatened breach of the payment terms by PURCHASER.

5. TAXES. Unless otherwise specifically provided in SELLER's quotation/proposal; PURCHASER shall pay and/or reimburse SELLER, in addition to the price, for all sales, use and other taxes, excises and charges which SELLER may pay or be required to pay to any government directly or indirectly in connection with the production, sale, transportation, and/or use by SELLER or PURCHASER, of any of the Products or services dealt with herein (whether the same may be regarded as personal or real property). PURCHASER agrees to pay all property and other taxes which may be levied, assessed or charged against or upon any of the Products on or after the date of actual shipment, or placing into storage for PURCHASER'S account.

6. MECHANICAL WARRANTY. Solely for the benefit of PURCHASER, SELLER warrants that new equipment and parts manufactured by it and provided to PURCHASER (collectively, "Products") shall be free from defects in material and workmanship. The warranty period shall be twelve (12) months from startup of the equipment not to exceed eighteen (18) months from shipment. If any of SELLER'S Products fail to comply with the foregoing warranty, SELLER shall repair or replace free of charge to PURCHASER, EX WORKS SELLER'S FACTORIES or other location that SELLER designates, any Product or parts thereof returned to SELLER, which examination shall show to have failed under normal use and service operation by PURCHASER within the Warranty Period; provided, that if it would be impracticable for the Product or part thereof to be returned to SELLER, SELLER will send a representative to PURCHASER's job site to inspect the Product. If it is determined after inspection that SELLER is liable under this warranty to repair or replace the Product or part thereof, SELLER shall bear the transportation costs of (a) returning the Product to SELLER for inspection or sending its representative to the job site and (b) returning the repaired or replaced Products to PURCHASER; however, if it is determined after inspection that SELLER is not liable under this warranty, PURCHASER shall pay those costs. For SELLER to be liable with respect to this warranty, PURCHASER must make its claims to SELLER with respect to this warranty in writing no later than thirty (30) days after the date PURCHASER discovers the basis for its warranty claim and in no event more than thirty (30) days after the expiration of the Warranty Period. In addition to any other limitation or disclaimer with respect to this warranty, SELLER shall have no liability with respect to any of the following: (i) failure of the Products, or damages to them, due to PURCHASER's negligence or willful misconduct, abuse or improper storage, installation, application or maintenance (as specified in any manuals or written instructions that SELLER provides to the PURCHASER); (ii) any Products that have been altered or repaired in any way without SELLER'S prior written authorization; (iii) The costs of dismantling and reinstallation of the Products; (iv) any Products damaged while in transit or otherwise by accident; (v) decomposition of Products by chemical action, erosion or corrosion or wear to Products or due to conditions of temperature, moisture and dirt; or (vi) claims with respect to parts that are consumable and normally replaced during maintenance such as filter media, filter drainage belts and the like, except where such parts are not performing to SELLER'S estimate of normal service life, in which case, SELLER shall only be liable for the pro rata cost of replacement of those parts based on SELLER'S estimate of what the remaining service life of those parts should have been; provided, that failure of those parts did not result from any of the matters listed in clauses (i) through (v) above. With regard to third-party parts, equipment, accessories or components not of SELLER's design, SELLER'S liability shall be limited solely to the assignment of available third-party warranties. **THE PARTIES AGREE THAT ALL OTHER WARRANTIES, EXPRESS OR IMPLIED, INCLUDING WARRANTIES OF FITNESS FOR A PARTICULAR PURPOSE AND MERCHANTABILITY, WHETHER WRITTEN, ORAL OR STATUTORY, ARE EXCLUDED TO THE FULLEST EXTENT PERMISSIBLE BY LAW.** All warranties and obligations of SELLER shall terminate if PURCHASER fails to perform its obligations under this Agreement including but not limited to any failure to pay any charges due to SELLER. SELLER'S quoted price for the Products is based upon this warranty. Any increase in warranty obligation may be subject to an increase in price.

7. CONFIDENTIAL INFORMATION. All nonpublic information and data furnished to PURCHASER hereunder, including but not limited to price, size, type and design of the Products is the sole property of SELLER and submitted for PURCHASER'S own confidential use solely in connection with this Agreement and is not to be made known or available to any third party without SELLER'S prior written consent.

8. PAINTING. The Products shall be painted in accordance with SELLER'S standard practice, and purchased items such as motors, controls, speed reducers, pumps, etc., will be painted in accordance with manufacturers' standard practices, unless otherwise agreed in writing.

9. DRAWINGS AND TECHNICAL DOCUMENTATION. When PURCHASER requests approval of drawings before commencement of manufacture, shipment may be delayed if approved drawings are not returned to SELLER within fourteen (14) days of receipt by PURCHASER of such drawings for approval. SELLER will furnish only general arrangement, general assembly, and if required, wiring diagrams, erection drawings, installation and operation-maintenance manuals for SELLER'S equipment (in English language). SELLER will supply six (6) complete sets of drawings and operating instructions. Additional sets will be paid for by PURCHASER. Electronic files, if requested from SELLER, will be provided in *pdf, jpg or tif* format only.

10. SET OFF. This Agreement shall be completely independent of all other contracts between the parties and all payments due to SELLER hereunder shall be paid when due and shall not be setoff or applied against any money due or claimed to be due from SELLER to PURCHASER on account of any other transaction or claim.

11. SOFTWARE. PURCHASER shall have a nonexclusive and nontransferable license to use any information processing program supplied by SELLER with the Products. PURCHASER acknowledges that such programs and the information contained therein is Confidential Information and agrees: a) not to copy or duplicate the program except for archival or security purposes; b) not to use the program on any computer other than the computer with which it is supplied; and c) to limit access to the program to those of its employees who are necessary to permit authorized use of the program. PURCHASER agrees to execute and be bound by the terms of any software license applicable to the Products supplied.

12. PATENT INDEMNITY. SELLER will defend at its own expense any suit instituted against PURCHASER based upon claims that SELLER's Product hereunder in and of itself constitutes an infringement of any valid apparatus claims of any United States patent issued and existing as of the date of this Agreement, if notified promptly in writing and given all information, assistance, and sole authority to defend and settle the same, and SELLER shall indemnify the PURCHASER against such claims of infringement. Furthermore, in case the use of the Products is enjoined in such suit or in case SELLER otherwise deems it advisable, SELLER shall, at its own expense and discretion, (a) procure for the PURCHASER the right to continue using the Products, (b) replace the same with non-infringing Products, (c) modify the Product so it becomes non-infringing, or (d) remove the Products and refund the purchase price less freight charges and depreciation. SELLER shall not be liable for, and PURCHASER shall indemnify SELLER for, any claim of infringement related to (a) the use of the Products for any purpose other than that for which it was furnished by SELLER, (b) compliance with equipment designs not furnished by SELLER or (c) use of the Products in combination with any other equipment. The foregoing states the sole liability of SELLER for patent infringement with respect to the Products.

13. GENERAL INDEMNITY. Subject to the rights, obligations and limitations of liabilities of the parties set forth in this Agreement, PURCHASER shall protect and indemnify SELLER, its ultimate parent, its ultimate parent's subsidiaries and each of their respective officers, directors, employees and agents, from and against all claims, demands and causes of action asserted by any entity to the extent of PURCHASER's negligence or willful misconduct in connection with this Agreement.

14. DEFAULT, TERMINATION. In the event that PURCHASER becomes insolvent, commits an act of bankruptcy or defaults in the performance of any term or condition of this Agreement, the entire unpaid portion of the purchase price shall, without notice or demand, become immediately due and payable. SELLER at its option, without notice or demand, shall be entitled to sue for said balance and for reasonable legal fees, plus out-of-pocket expenses and interest; and/or to enter any place where the Products are located and to take immediate possession of and remove the Products, with or without legal process; and/or retain all payments made as compensation for the use of the Products: and/or resell the Products, without notice or demand, for and on behalf of the PURCHASER, and to apply the net proceeds from such sale (after deduction from the sale price of all expenses of such sale and all expenses of retaking possession, repairs necessary to put the Products in saleable condition, storage charges, taxes, liens, collection and legal fees and all other expenses in connection therewith) to the balance then due to SELLER for the Products and to receive from the PURCHASER the deficiency between such net proceeds of sale and such balance. PURCHASER hereby waives all trespass, damage and claims resulting from any such entry, repossession, removal, retention, repair, alteration and sale. The remedies provided in this paragraph are in addition to and not limitations of any other rights of SELLER.

15. CANCELLATION. PURCHASER may terminate this Agreement for convenience upon giving SELLER thirty (30) days prior written notice of such fact and paying SELLER for all costs and expenses (including overhead) incurred by it in performing its work and closing out the same plus a reasonable profit thereon. All such costs and expenses shall be paid to SELLER within ten (10) days of the termination of the Agreement, or be subject to an additional late payment penalty of five percent (5%) of the total amount of costs and expenses owed.

16. REMEDIES. The rights and remedies of the PURCHASER in connection with the goods and services provided by SELLER hereunder are exclusive and limited to the rights and remedies expressly stated in this Agreement.

17. INSPECTION. PURCHASER is entitled to make reasonable inspection of Products at SELLER's facility. SELLER reserves the right to determine the reasonableness of the request and to select an appropriate time for such inspection. All costs of inspections not expressly included as an itemized part of the quoted price of the Products in this Agreement shall be paid by PURCHASER.

18. WAIVER. Any failure by SELLER to enforce PURCHASER's strict performance of any provision of this Agreement will not constitute a waiver of its right to subsequently enforce such provision or any other provision of this Agreement.

19. COMPLIANCE WITH LAWS. If applicable laws, ordinances, regulations or conditions require anything different from, or in addition to, that called for by this Agreement, SELLER will satisfy such requirements at PURCHASER'S written request and expense.

20. FORCE MAJEURE. If SELLER is rendered unable, wholly or in material part, by reason of Force Majeure to carry out any of its obligations hereunder, then on SELLER's notice in writing to PURCHASER within a reasonable time after the occurrence of the cause relied upon, such obligations shall be suspended. "Force Majeure" shall include, but not be limited to, acts of God, laws and regulations, strikes, civil disobedience or unrest, lightning, fire, flood, washout, storm, communication lines failure, delays of the PURCHASER or PURCHASER's subcontractors, breakage or accident to equipment or machinery, wars, police actions, terrorism, embargos, and any other causes that are not reasonably within the control of the SELLER. If the delay is the result of PURCHASER's action or inaction, then in addition to an adjustment in time, SELLER shall be entitled to reimbursement of costs incurred to maintain its schedule.

21. INDEPENDENT CONTRACTOR. It is expressly understood that SELLER is an independent contractor, and that neither SELLER nor its principals, partners, parents, subsidiaries, affiliates, employees or subcontractors are servants, agents, partners, joint ventures or employees of PURCHASER in any way whatsoever.

22. SEVERABILITY. Should any portion of this Agreement, be held to be invalid or unenforceable under applicable law then the validity of the remaining portions thereof shall not be affected by such invalidity or unenforceability and shall remain in full force and effect. Furthermore, any invalid or unenforceable provision shall be modified accordingly within the confines of applicable law, giving maximum permissible effect to the parties' intentions expressed herein.

23. CHOICE OF LAW, CHOICE OF VENUE. This Agreement shall be governed and construed in accordance with the laws of the State of Utah, without regard to its rules regarding conflicts or choice of law. The parties submit to the jurisdiction and venue of the state and federal courts located in Salt Lake City, Utah.

24. ASSIGNMENT. PURCHASER shall not assign or transfer this Agreement without the prior written consent of the SELLER. Any attempt to make such an assignment or transfer shall be null and void.
SELLER shall have the authority to assign, or otherwise transfer, its rights and obligations in connection with this Agreement, in whole or in part, upon prior written notice to PURCHASER.

25. LIMITATION ON LIABILITY. TO THE EXTENT PERMISSIBLE BY LAW, SELLER SHALL HAVE NO FURTHER LIABILITY IN CONNECTION WITH THIS AGREEMENT IN EXCESS OF THE COST OF CORRECTING ANY DEFECTS, OR IN THE ABSENCE OF ANY DEFECT, IN EXCESS OF THE VALUE OF THE PRODUCTS SOLD HEREUNDER. NOTWITHSTANDING ANY LIABILITIES OR RESPONSIBILITIES ASSUMED BY SELLER HEREUNDER, SELLER SHALL IN NO EVENT BE RESPONSIBLE TO PURCHASER OR ANY THIRD PARTY, WHETHER ARISING UNDER CONTRACT, TORT (INCLUDING NEGLIGENCE), STRICT LIABILITY, OR OTHERWISE, FOR LOSS OF ANTICIPATED PROFITS, LOSS BY REASON OF PLANT SHUTDOWN, NON-OPERATION OR INCREASED EXPENSE OF OPERATION, SERVICE INTERRUPTIONS, COST OF PURCHASED OR REPLACEMENT POWER, COST OF MONEY, LOSS OF USE OF CAPITAL OR REVENUE OR ANY OTHER INDIRECT, INCIDENTAL, SPECIAL, PUNITIVE, EXEMPLARY, OR CONSEQUENTIAL LOSS OR DAMAGE, WHETHER ARISING FROM DEFECTS, DELAY, OR FROM ANY OTHER CAUSE WHATSOEVER.

REVISION DATE – APRIL 2016

Attachment #2

General Arrangement Drawings

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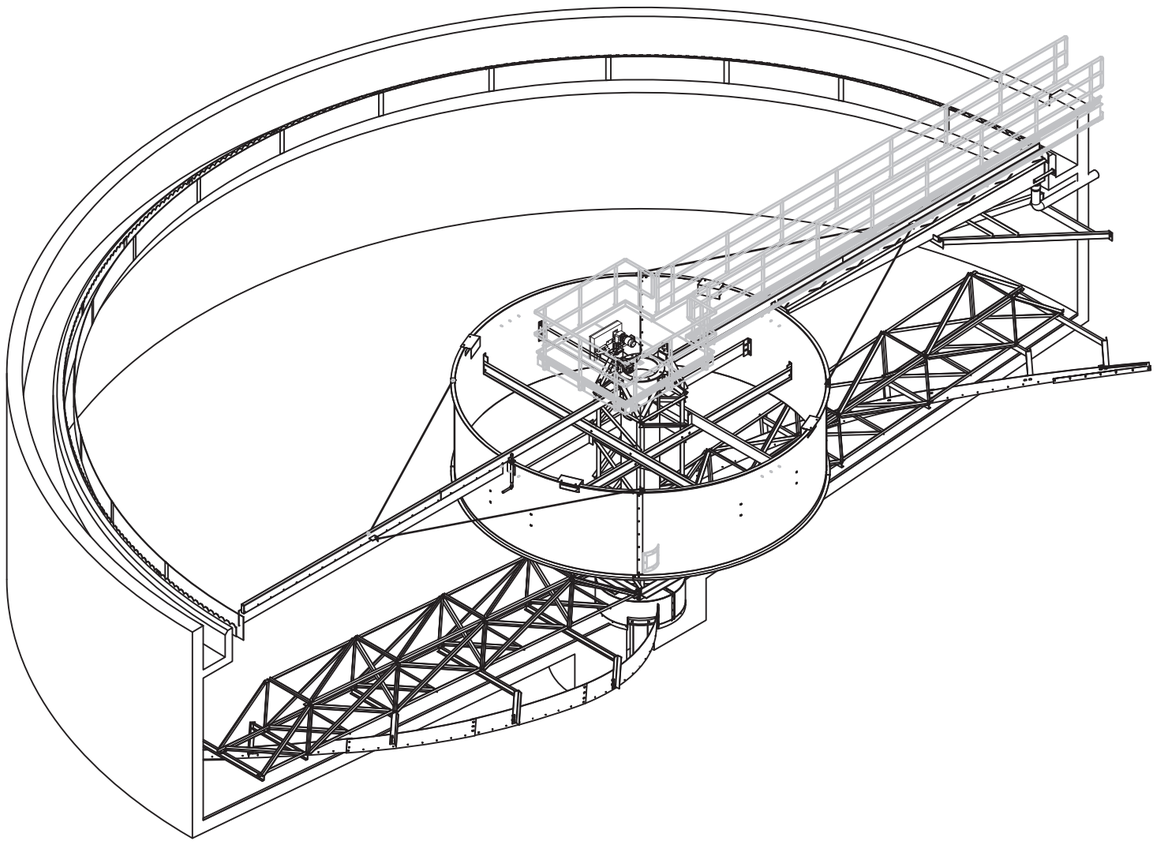
BETHUNE POINT WWTP
DAYTONA BEACH, FL

FOR REFERENCE ONLY



GENERAL NOTES:

1. OVIVO TO SUPPLY (3) MECHANISMS AS SHOWN AND NOTED.

2. ASTERISK (*) DENOTES VARIANCE FROM CONTRACT DOCUMENTS AND SHOULD BE PARTICULARLY NOTED.

3. THE FOLLOWING DEFINES THE RESPONSIBILITY OF OVIVO WITH REGARD TO THE INFORMATION AND DIMENSIONS SHOWN ON THIS DRAWING.
   - A. DIMENSIONS, LOADS, AND OTHER INFORMATION ARE PROVIDED TO ACCOMMODATE THE EQUIPMENT TO THE STRUCTURE AS SHOWN.
   - B. THE CUSTOMER IS TO PROVIDE REINFORCING STEEL AND DESIGN FOR CONCRETE STRUCTURES AND IS TO DETERMINE SIZES TO SUIT LOCAL CONDITIONS.
   - C. THIS DRAWING IS NOT TO BE USED FOR CONSTRUCTION OR INSTALLATION PURPOSES UNLESS IT BEARS THE APPROVAL OF THE OWNER, THE ENGINEER OR THEIR AUTHORIZED REPRESENTATIVE.
   - D. THE MECHANISM SHOWN IS DESIGNED FOR DIRECTION OF ROTATION AS INDICATED. OVIVO DOES NOT ASSUME RESPONSIBILITY FOR DAMAGE IF OPERATED IN THE OPPOSITE DIRECTION.
   - E. CHARGES FOR MODIFICATIONS, ADDITIONS OR CORRECTIONS TO THE EQUIPMENT WILL NOT BE ACCEPTED BY OVIVO UNLESS PRIOR APPROVAL IS OBTAINED IN WRITING FROM AN AUTHORIZED OVIVO REPRESENTATIVE.

4. OVIVO DOES NOT FURNISH ELECTRICAL WIRING, CONDUIT OR ELECTRICAL EQUIPMENT; PIPING, VALVES OR FITTINGS; LUBRICATING OIL OR GREASE; FIELD PAINTING; FIELD WELDING OR ERECTION, (EXCEPT AS SPECIFICALLY NOTED). SEE SCOPE OF SUPPLY FOR A COMPLETE LIST OF ITEMS NOT PROVIDED.

5. SHOP PRIMER PAINT IS INTENDED TO SERVE ONLY AS A PROTECTIVE OR SEALING COAT. AS SUCH IT AFFORDS THE METAL ONLY MINIMAL PROTECTION AGAINST THE ELEMENTS, OVIVO CANNOT BE RESPONSIBLE FOR DETERIORATION OF SHOP-PRIMED EQUIPMENT DURING JOB STORAGE OR OTHER EXPOSURE TO THE ELEMENTS PRIOR TO APPLICATION OF FINISH COAT(S).

6. SURFACE PREPARATION TO CONSIST OF:
   DRIVE UNIT: SSPC-SP-6 (COMMERCIAL BLAST)
   SUBMERGED STEEL: SSPC-SP-10 (NEAR-WHITE BLAST)
   NON SUBMERGED STEEL: NA

7. SHOP COATINGS TO CONSIST OF:
   DRIVE UNIT - SHOP PRIMER (1 COAT): TNEMEC TNEME-FASCURE SERIES 161HS OR HI-BUILD EPOXYLINE SERIES 66HS, COLOR: 00WH 'TNEMEC WHITE' @ 4.0-6.0 MILS DFT MIN.

   SHOP 2ND COAT (1 COAT): TNEMEC TNEME-FASCURE SERIES 161HS OR HI-BUILD EPOXYLINE SERIES 66HS, COLOR: 34GR 'DEEP SPACE' @ 4.0-6.0 MILS DFT MIN.

   SHOP TOP COAT (1 COAT): TNEMEC ENDURA-SHIELD SERIES 73, COLOR: 26BL 'CLEAR SKY' @ 3.0-5.0 MILS DFT MIN.

   MOTORS & REDUCERS - MANUFACTURER'S STANDARD ENAMEL

   SUBMERGED STEEL - SHOP PRIMER (1 COAT) TNEMEC HI-BUILD EPOXYLINE SERIES 66HS, COLOR: BLACK

   SHOP TOP COAT (1 COAT) TNEMEC HI-BUILD EPOXYLINE SERIES 66HS, COLOR: BLACK

   NON SUBMERGED STEEL - NA

8. ALL STRUCTURAL SHAPES AND PLATES TO BE ASTM A36 AND SHALL HAVE A NOMINAL MINIMUM STEEL THICKNESS OF 1/4" (UNLESS OTHERWISE NOTED).

9. ALL WELDING SHALL BE PERFORMED IN ACCORDANCE WITH THE LATEST EDITION OF A.W.S. WELDING PROCEDURES WITH QUALIFICATION RECORDS PER THE FOLLOWING:
   A.W.S. D1.1 - STEEL STRUCTURAL WELDING CODE
   A.W.S. D1.2 - ALUMINUM STRUCTURAL WELDING CODE
   A.W.S. D1.6 - STAINLESS STEEL STRUCTURAL WELDING CODE

10. ISOLATION MUST BE PROVIDED FOR ALL ALUMINUM TO STEEL CONTACT SURFACES. (ISOLATION NOT BY OVIVO)

11. FOR MECHANISM ORIENTATION, REFER TO CONTRACT DRAWINGS.

12. FASTENERS SHALL BE AS FOLLOWS, EXCEPT WHERE NOTED
    ANCHOR BOLTS: 304 SS
    ASSEMBLY BOLTS: 304 SS
    (ANTI-SEIZE SHOULD BE USED FOR ALL STAINLESS STEEL FASTENERS. ANTI-SEIZE NOT PROVIDED BY OVIVO)

13. FOR ADDITIONAL DETAILS, REFER TO DRAWINGS:
    RSW1107-102 DRIVE CONTROL SWITCHES
    RSW1107-103 TORQUE TEST
    115207 DRIVE GENERAL ARRANGEMENT

14. THE EXISTING PLATFORMS AND WALKWAYS ARE TO BE REUSED INCLUDING GRATING AND HANDRAIL.

15. SPARE PARTS TO BE BOXED AND SHIPPED WITH EQUIPMENT. QUANTITIES LISTED REFLECT SPARE PARTS REQUIRED ENTIRE ORDER:

    NONE

CUSTOMER TO VERIFY ALL DIMENSIONS AND ELEVATIONS

THIS DRAWING IS CERTIFIED FOR:	
CUSTOMER:	CITY OF DAYTONA BEACH
CUSTOMER ORDER NO.:	0000017079
OVIVO ORDER NUMBER:	RSW0001107-01
PROJECT:	BETHUNE POINT WWTP
PROJECT LOCATION:	DAYTONA BEACH, FL
CONSULTING ENGINEER:	NA
BY: CODY FARNSWORTH	DATE: 1/7/2020

REVISION DESCRIPTION	EN/ECO	BY	CHECK'D	DATE	REV
INITIAL RELEASE					A

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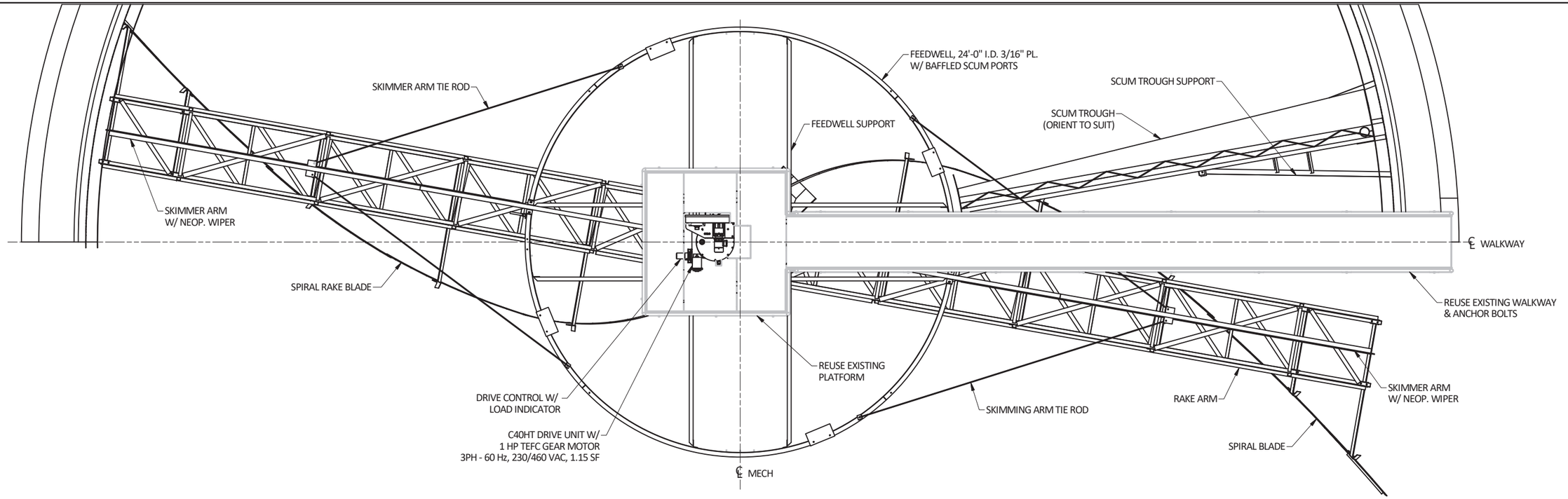
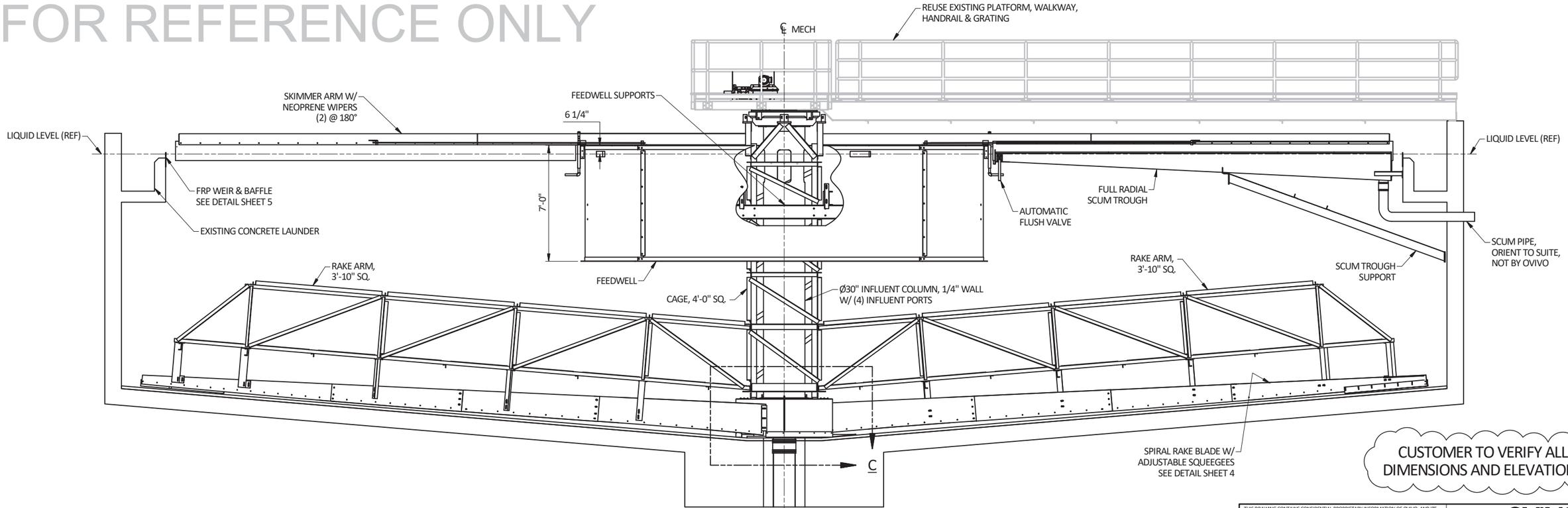
GENERAL ARRANGEMENT
80'-0" DIA. TYPE C4D-CMD CLARIFIER W/ C40HT DRIVE

REF. FROM	N/A	DO NOT SCALE PRINTS		
DATE (mm/dd/yyyy)	1/7/2020	WORKMANSHIP STANDARD ES0001 APPLIES		
DRAWN	CRF	ORIGINAL S.O.	DWG. NO.	RSW1107-101
CHECK'D		RSW0001107-01	SHEET	1 OF 7
			REV	A



PLAN VIEW
CLARIFIER 4



ILLUSTRATIVE ELEVATION
CLARIFIER 4

CUSTOMER TO VERIFY ALL
DIMENSIONS AND ELEVATIONS

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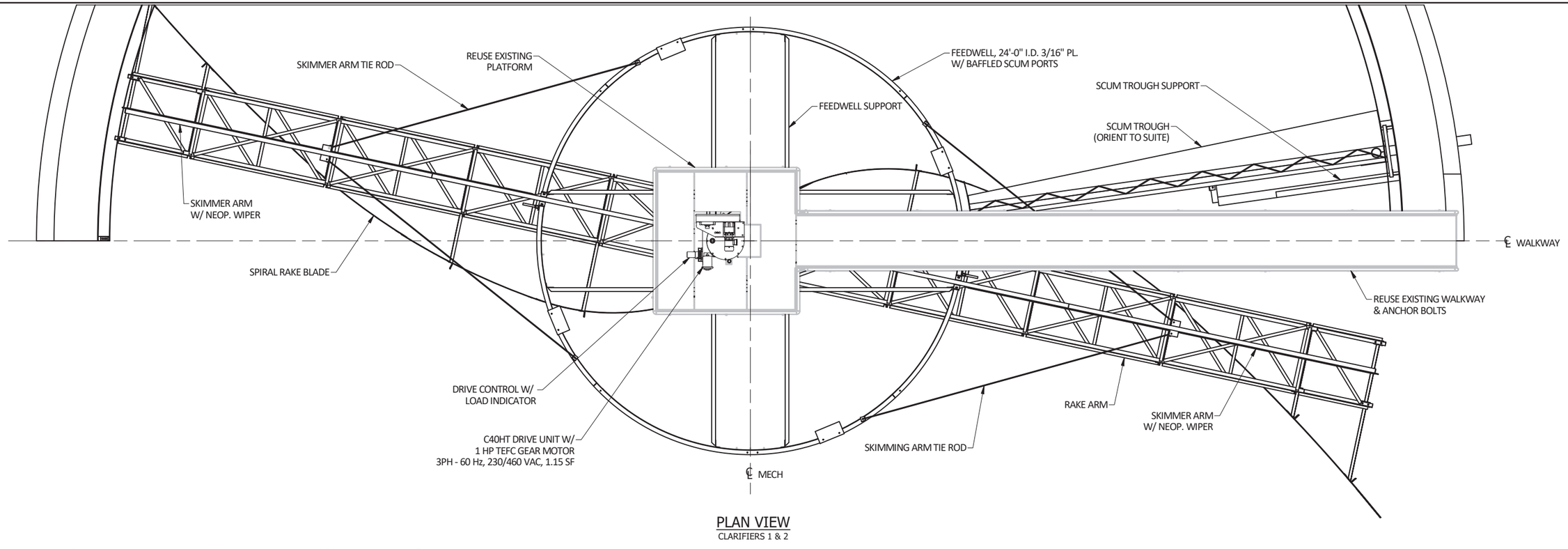
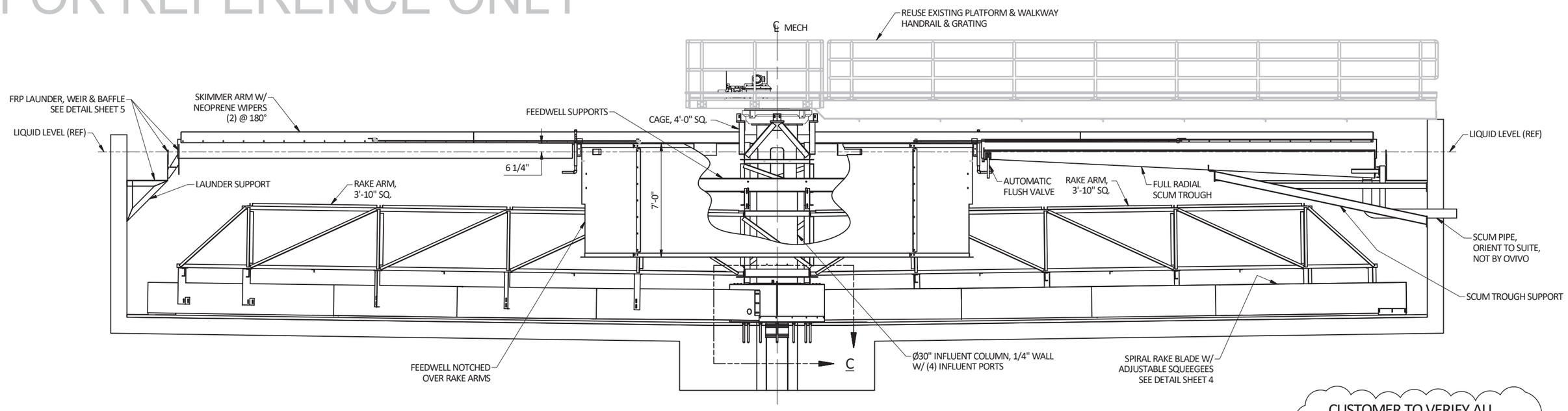
D	DO NOT SCALE PRINTS	DWG. NO.	RSW1107-101	SHEET 2 OF 7	REV A

WORKMANSHIP STANDARD ES0001 APPLIES



PLAN VIEW
CLARIFIERS 1 & 2



ILLUSTRATIVE ELEVATION
CLARIFIERS 1 & 2

CUSTOMER TO VERIFY ALL DIMENSIONS AND ELEVATIONS

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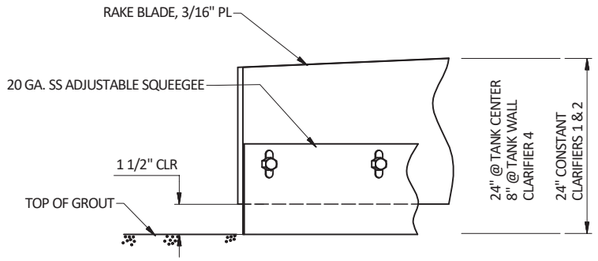
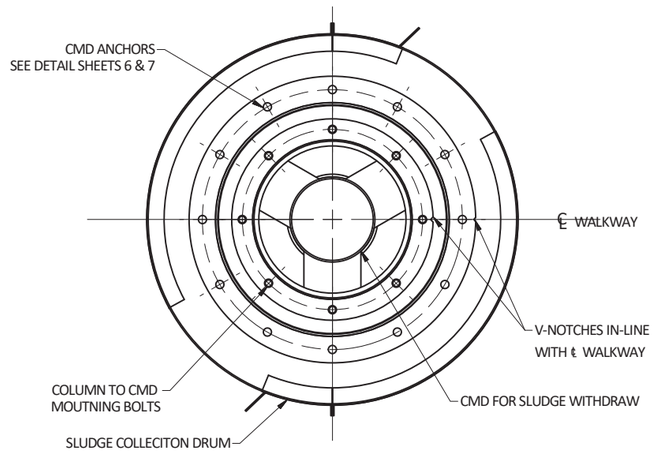
D	DO NOT SCALE PRINTS	DWG. NO.	RSW1107-101	SHEET 3 OF 7	REV A

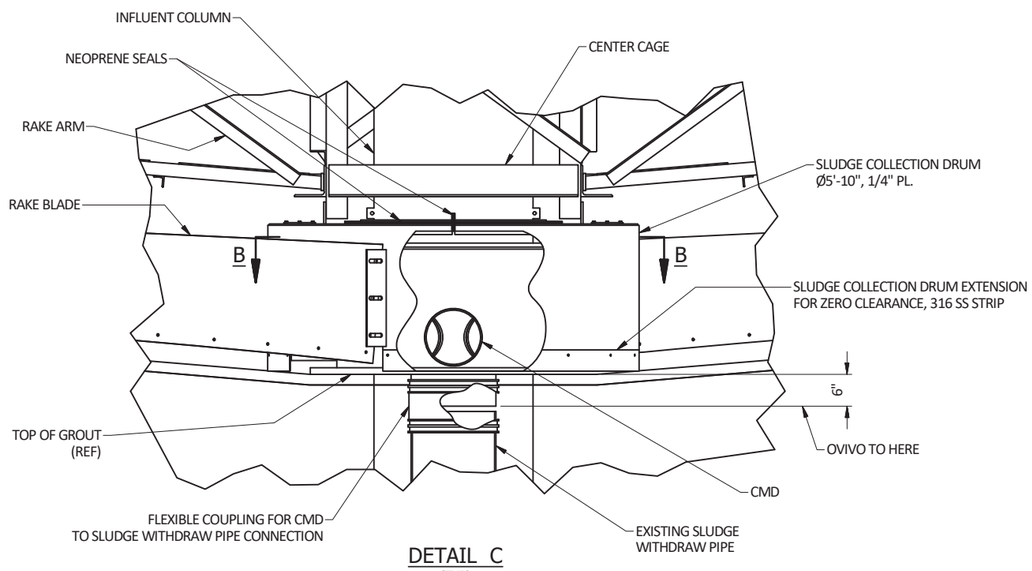
WORKMANSHIP STANDARD ES0001 APPLIES



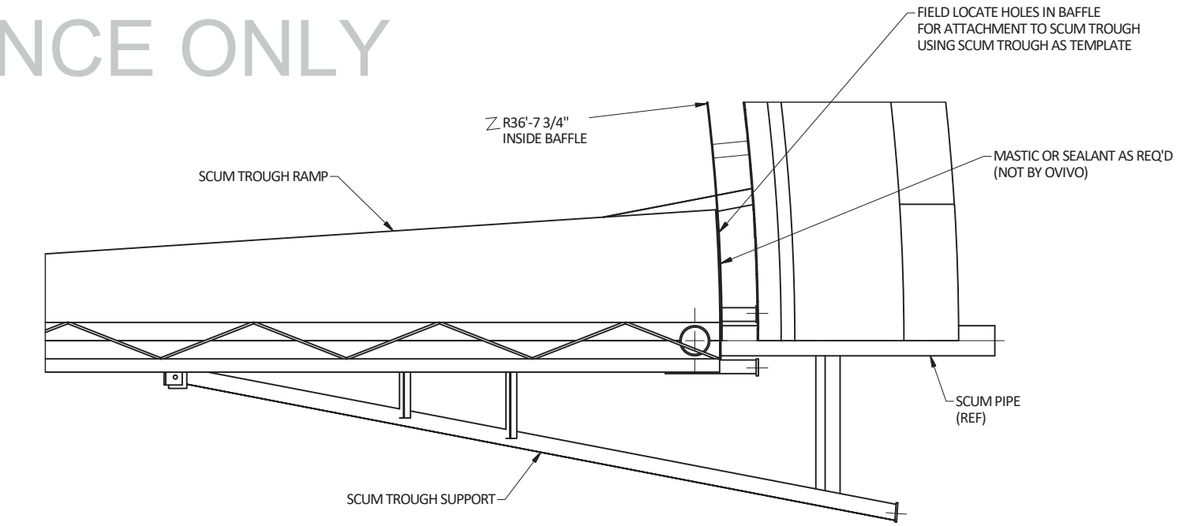
SPIRAL RAKE BLADE DETAIL



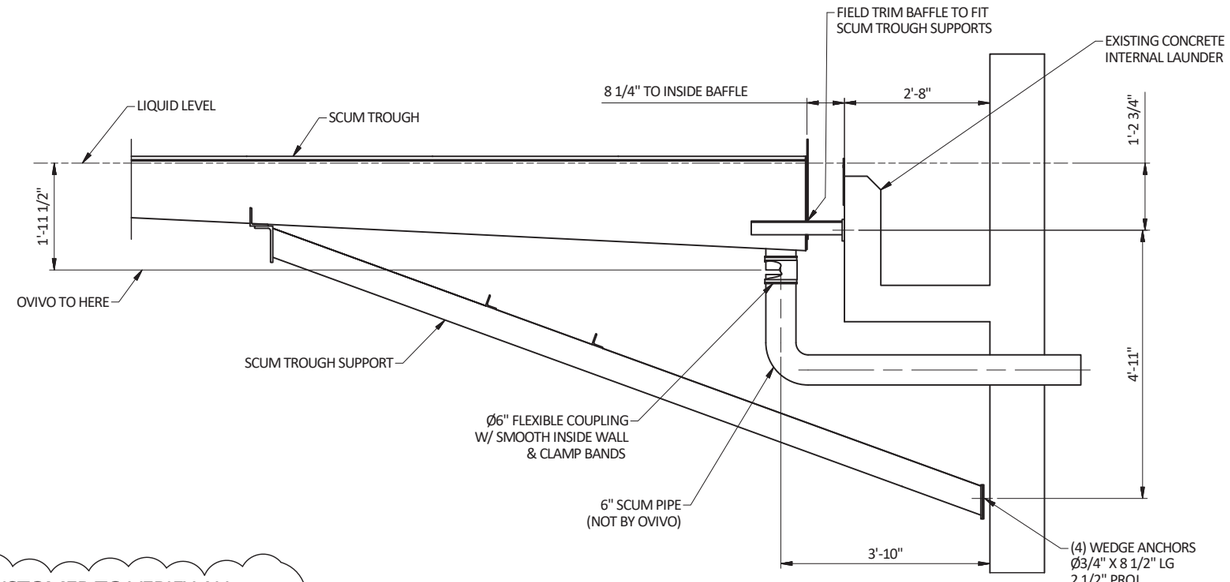
SECTION B-B
(TYP)



DETAIL C
(TYP)



PLAN VIEW
CLARIFIER 4 SCUM TROUGH DETAIL



ELEVATION VIEW
CLARIFIER 4 SCUM TROUGH DETAIL

CUSTOMER TO VERIFY ALL
DIMENSIONS AND ELEVATIONS

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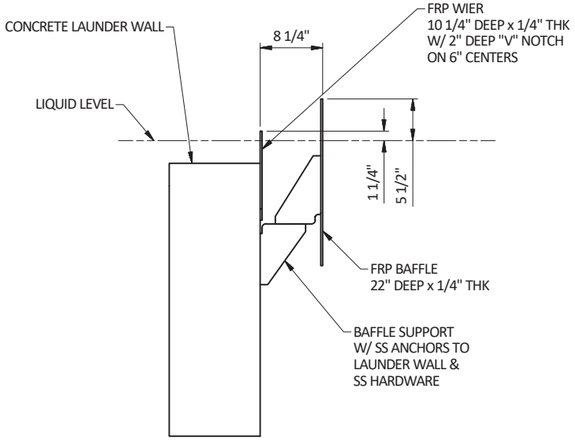
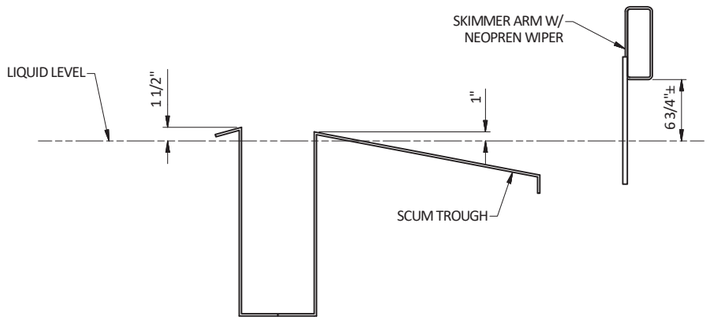
D	DO NOT SCALE PRINTS	DWG. NO.	RSW1107-101	SHEET 4 OF 7	REV A

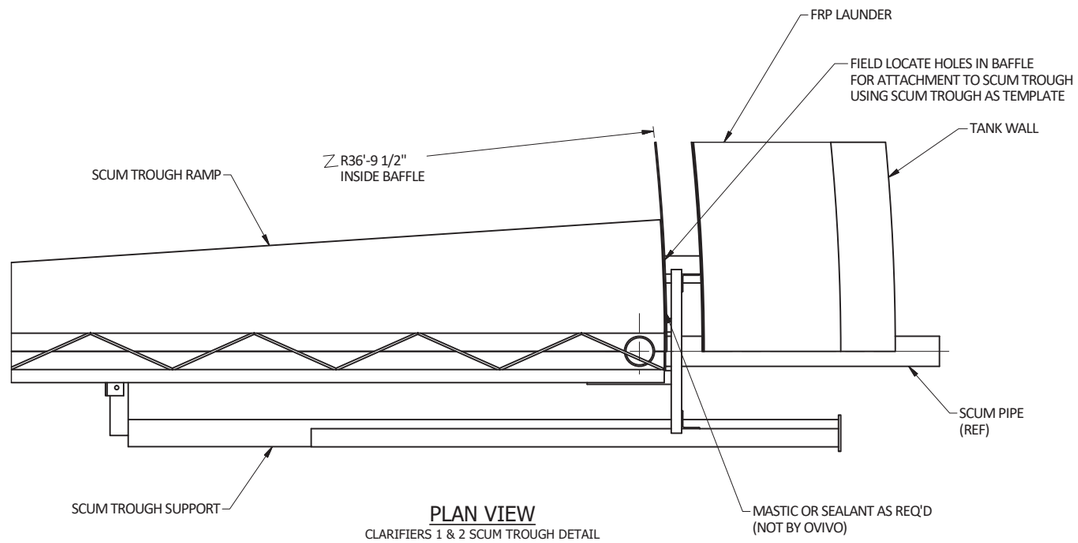
WORKMANSHIP STANDARD ES0001 APPLIES



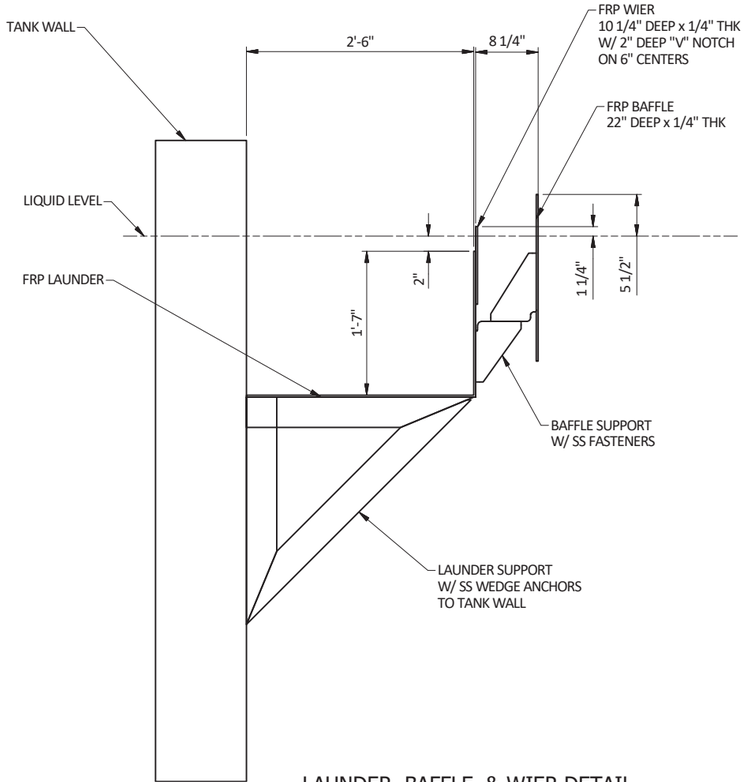
BAFFLE & WEIR DETAIL
CLARIFIER 4



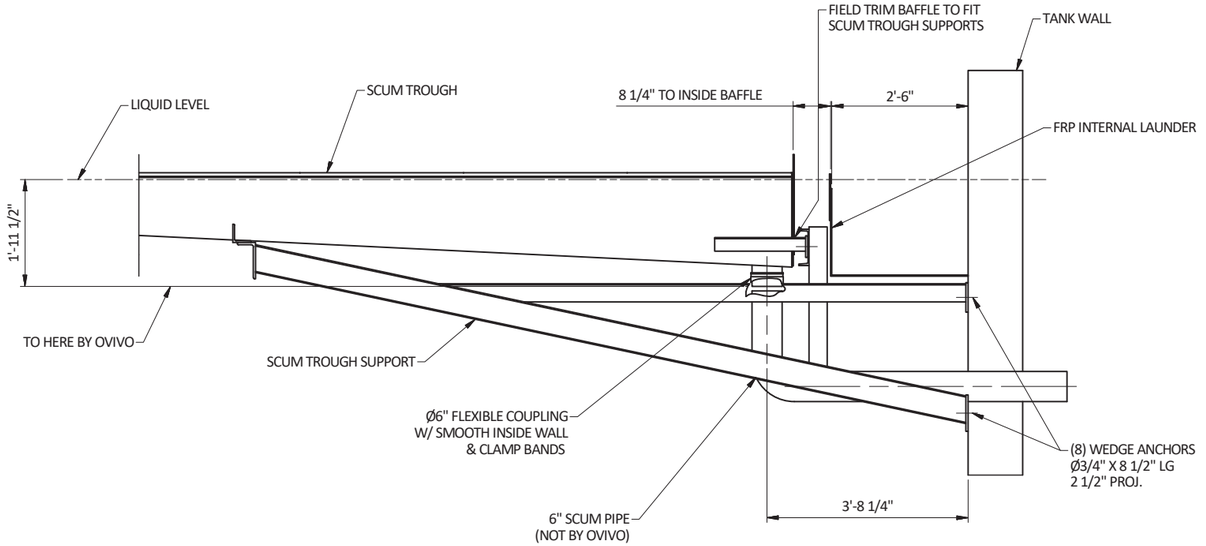
SKIMMER ARM & TROUGH DETAIL
(TYP)



PLAN VIEW
CLARIFIERS 1 & 2 SCUM TROUGH DETAIL



LAUNDER, BAFFLE, & WIER DETAIL
CLARIFIERS 1 & 2



ELEVATION VIEW
CLARIFIERS 1 & 2 SCUM TROUGH DETAIL

CUSTOMER TO VERIFY ALL
DIMENSIONS AND ELEVATIONS

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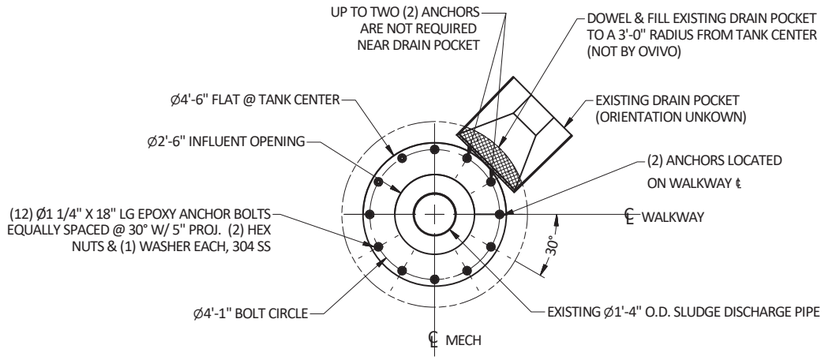
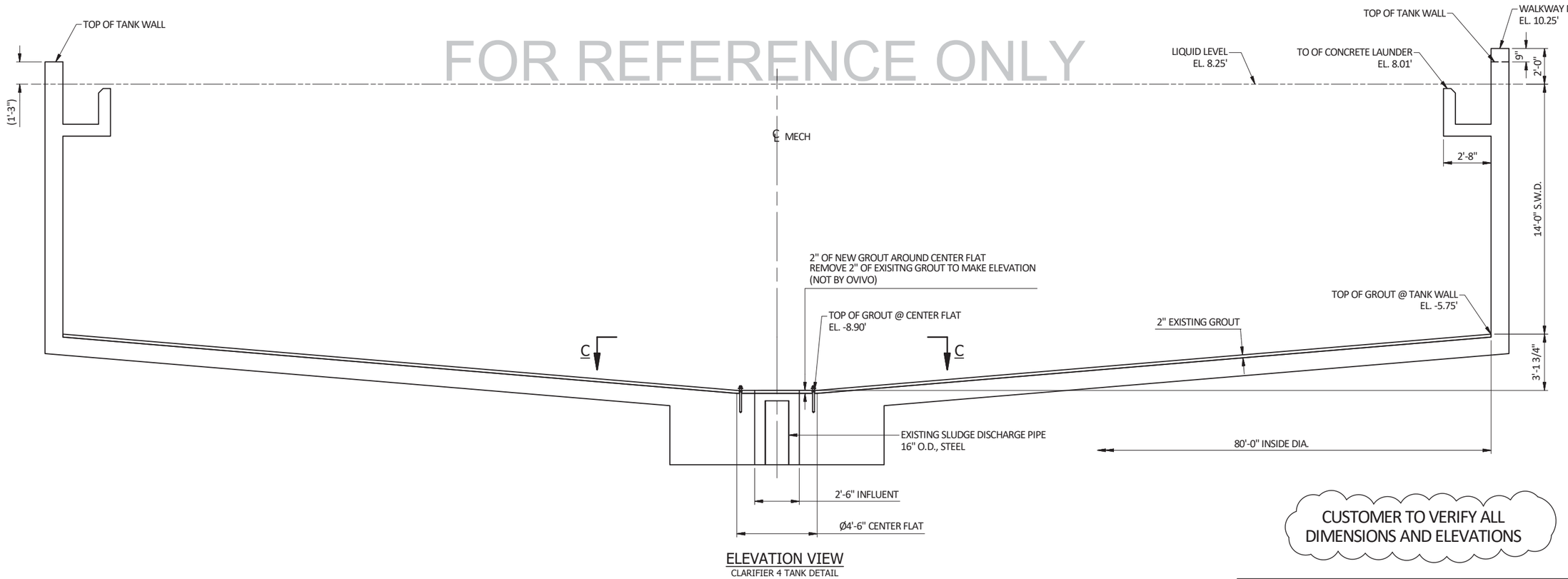
D	DO NOT SCALE PRINTS	DWG. NO.	RSW1107-101	SHEET 5 OF 7	REV A

WORKMANSHIP STANDARD ES0001 APPLIES



SECTION C-C
CLARIFIER 4 TANK BOTTOM DETAIL



ELEVATION VIEW
CLARIFIER 4 TANK DETAIL

CUSTOMER TO VERIFY ALL
DIMENSIONS AND ELEVATIONS

DO NOT SCALE PRINTS

WORKMANSHIP STANDARD ES0001 APPLIES

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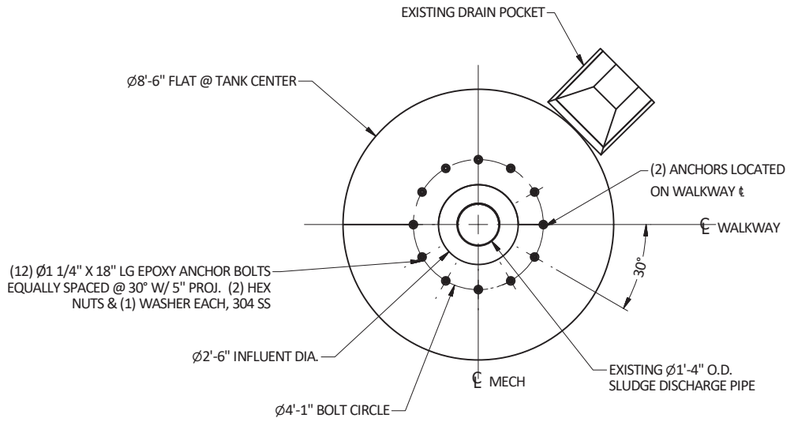
DWG. NO. RSW1107-101

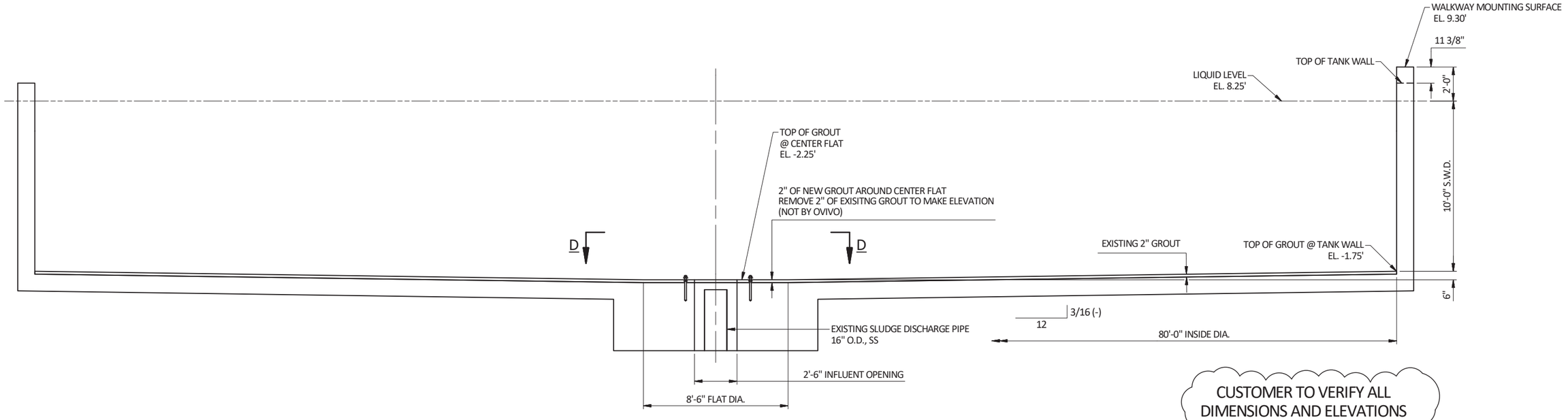
SHEET 6 OF 7

REV A



SECTION D-D

CLARIFIERS 1 & 2 TANK BOTTOM DETAIL



ELEVATION VIEW

CLARIFIERS 1 & 2 TANK DETAIL

CUSTOMER TO VERIFY ALL DIMENSIONS AND ELEVATIONS

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D	DO NOT SCALE PRINTS	DWG. NO.	RSW1107-101	SHEET 7 OF 7	REV A

WORKMANSHIP STANDARD ES0001 APPLIES

Attachment #3

Approved Shop Drawings

City of Daytona Beach
UTILITIES DEPARTMENT
125 Basin Street, Suite 100
Daytona Beach, Florida 32114
(386) 671 8800

January 30, 2020

OvivoWater
Attn: Mr. Ryan Ward

Re: SHOP DRAWING REVIEW RESPONSE:
Bethune Point WRF Process Upgrades Phase I – 80' Diameter Clarifier Mechanisms & C40HT Drives

Mr. Ward,

The attached shop drawing submittal (Order No.: 0000017079; Sales No.: RSW0001107-01; Rev.: A) has been "Approved as Noted" and is being returned to be released for production. Please note the following:

- Critical dimensions with regards to depth of the mechanism are currently unable to be verified due to the tanks being full and buoyancy concerns within Clarifiers No. 1, 2 and 4. A provision is being added into the bid documents (via Addendum No. 3 which is forthcoming) to direct the successful Contractor to obtain these measurement within 4 weeks of being issued Notice to Proceed. To that end, the City requests that Ovivo begin production of all components except those for which these measurements are necessary. From previous conversations it is our understanding that those components are limited to the center support column and the cage.
- The City requests that Ovivo please commit to fabricating the center column and cage (and any other items tied to the needed measurements) as soon as is feasibly possible upon receiving the measurements so as to keep the project on schedule.

Please let me know if you have any questions or need to discuss any items further.

Sincerely,

Eric Smith, PE
City Project Manager
Engineer II

Ovivo USA, LLC
4246 S. Riverboat Rd., Suite 300
Salt Lake City, Utah
84123
USA

Telephone: 801.931.3000
Facsimile: 801.931.3080

www.ovivowater.com

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January 17, 2020 | **Submittal Rev.: A**

SUBMITTAL INFORMATION PREPARED FOR:

City of Daytona Beach
PO Box 2451
Daytona Beach, FL 32115-2451

Approved as Noted:
1/30/2020

Project Name:
Bethune Point WWTP

Project Location:
Daytona Beach, FL

Equipment Type:
3 - 80' Clarifier Mechanisms & C40HT Drives

Specification Section:
N/A

Consulting Engineer:
N/A

Customer Order No.: 0000017079

OVIVO Sales Order No.: RSW0001107-01

Ovivo USA, LLC
4246 S. Riverboat Rd., Suite 300
Salt Lake City, Utah
84123
USA

Telephone: 801.931.3000
Facsimile: 801.931.3080

www.ovivowater.com

Your Purchase Order No: 0000017079

January 17, 2020

City of Daytona Beach
PO Box 2451
Daytona Beach, FL 32115-2451

ATTN: Eric Smith - smitheric@codb.us

Enclosed are documents pertaining to your order. A description of the documents and their submittal codes are shown on the attached "Submittal Information and Conditions" sheet.

Please note the "Required Return Date" highlighted.

After you review the documents submitted "For Approval" or "Revised for Approval," please make your approval comments, sign one copy of each document, and return them as specified below.

Electronic Copies:	**Ryan.Ward@ovivowater.com**
Hard Copies:	**Ovivo USA, LLC** **4246 S. Riverboat Rd., Suite 300** **Salt Lake City, UT 84123** **ATTN: Ryan Ward**

Documents being submitted as "Revised for Final," "Final Certified," or "For Information Only" need not be returned and are submitted for your records and distribution.

Sincerely,
Ovivo USA, LLC
Ryan Ward

Project Manager

CC: TSC-Jacobs - North

Ovivo USA, LLC
4246 S. Riverboat Rd., Suite 300
Salt Lake City, Utah
84123
USA

Telephone: 801.931.3000
Facsimile: 801.931.3080

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SUBMITTAL INFORMATION AND CONDITIONS

Submittal Date:	17-Jan-2020	Rev.:	A

Indicates Revision

		# Copies
Submittal In Response To:	Customer Order	Print: N/A
Required Return Date:	21-Feb-2020	Email: 1
Customer P.O. Number:	0000017079	CD's: N/A
OVIVO Sales Order Number:	RSW0001107-01	Other: N/A

SUBMITTAL CODE KEY

XXX	1. For Approval
	2. Revised for Approval
	3. Revised for Final Record
	4. Final Certified
XXX	5. For Information Only

ENTER

DOCUMENT NO.	DESCRIPTION	CURRENT REV. LEVEL	SUBMIT CODE
(2) Pages	Cover Letter	A	5
(1) Page	Drive Information Sheet	A	1
770423	Clarifier Control Panel	A	1
RSW1107-101	General Arrangement 80' C4D- CMD Clarifier	A	1
RSW1107-102	Drive Control Switch Settings	A	1

Indicates revision from previous submittal | **Engineering Change Order #:** ECO-S-000000

REMARKS AND EXPLANATION

Ovivo USA, LLC
4246 S. Riverboat Rd., Suite 300
Salt Lake City, Utah
84123
USA

Telephone: 801.931.3000
Facsimile: 801.931.3080

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TABLE OF CONTENTS

TAB

Ovivo USA, LLC
4246 S. Riverboat Rd., Suite 300
Salt Lake City, Utah
84123
USA

Telephone: 801.931.3000
Facsimile: 801.931.3080

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SUBMITTAL DATA SHEET

PROJECT NAME_____ Bethune Point WWTP

LOCATION _____ Daytona Beach, FL

CUSTOMER _____ City of Daytona Beach

CUSTOMER P.O. NUMBER _____ 0000017079

OVIVO S.O. NUMBER _____ RSW0001107-01

EQUIPMENT DESCRIPTION _____ 3 - 80' Clarifier Mechanisms & C40HT Drives

SPECIFICATION SECTION _____ N/A

CONSULTING ENGINEER _____ N/A

ITEM DESCRIPTION UNDER THIS COVER:

COVER LETTER..... (2) Pages

Ovivo USA, LLC
4246 S. Riverboat Rd., Suite 300
Salt Lake City, Utah
84123
USA

Telephone: 801.931.3000
Facsimile: 801.931.3080

www.ovivowater.com

January 17, 2020

City of Daytona Beach
PO Box 2451
Daytona Beach, FL 32115-2451

ATTN: Eric Smith - smitheric@codb.us

Project Name: Bethune Point WWTP
Customer Order No.: 0000017079
Ovivo Sales Order No.: RSW0001107-01
Equipment Description: 3 - 80' Clarifier Mechanisms & C40HT Drives

Dear Eric,

We thank you for your order and look forward to a mutually beneficial project. Enclosed with this cover letter is the initial submittal for review and subsequent approval of the (3) 80' clarifier machanisms equipment. The following schedule is anticipated for the project:

- G.A. Drawings: Submitted for Approval 1/17/2020
- **Customer Return of Approvals** **2/21/2020**
- O & M Manuals: Sent to Customer 5/13/2020 *
- Anticipated Equipment Ship Date 6/12/2020 *

* These dates are based upon receiving stamped Approved / Approved as Noted drawings by 2/21/2020. Any delay in receiving approved drawings by this date will require a change in the Equipment Ship Date, per Ovivo's Proposal to ship 16 weeks after receipt of approvals, and each affected date will be rescheduled as necessary at the time approved drawings are received.

Subsequent to this cover letter is Ovivo's scope of supply for the above referenced equipment, followed by specification deviations and/or clarifications regarding the submittal package. Dimensions and elevations shown on the submittal drawings have been taken from the contract drawings prepared by the Consulting Engineer. All elevations and dimensions are to be field verified by the Customer. Dimensions and elevations that are clouded or marked with an asterisk (*) are in question, are of particular concern, or deviate from the contract drawings and should be particularly noted. Any obstructions that could potentially interfere with the intended operation of the equipment or dimensional discrepancies found are to be reported to Ovivo in a

Ovivo USA, LLC
4246 S. Riverboat Rd., Suite 300
Salt Lake City, Utah
84123
USA

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timely manner so that they may be incorporated into the final design of the custom equipment being provided. Unless indicated otherwise on the return approval drawings, the dimensions and elevations as currently shown will be considered by Ovivo to be correct. Any changes to drawings subsequent to receipt of the approved submittal package will cause Ovivo to incur substantial costs for engineering and material changes. A change order compensating Ovivo for these increased costs will be required. For this reason, I strongly recommend that care be taken to verify all dimensions and elevations during the submittal process.

The submittal package provided herein is complete and accurate to the best of my knowledge. All products submitted meet requirements of the standards referenced. I hope to resolve any concerns or questions in a timely manner so as to expedite the approval process and move the equipment into detailing and fabricating. If Ovivo can do anything to help accelerate the approval process, please let me know.

If you have any questions or concerns regarding this correspondence please contact me at (801) 931-3052, or via email, Ryan.Ward@ovivowater.com, at your convenience.

Sincerely,
Ovivo USA, LLC

Ryan Ward

Ryan Ward
Sedimentation Project Manager

Cc: J Sacco, TSC-Jacobs - North
Bill Stewart, Ovivo USA

Ovivo USA, LLC
4246 S. Riverboat Rd., Suite 300
Salt Lake City, Utah
84123
USA

Telephone: 801.931.3000
Facsimile: 801.931.3080

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SUBMITTAL DATA SHEET

PROJECT NAME_____ **Bethune Point WWTP**

LOCATION _____ **Daytona Beach, FL**

CUSTOMER _____ **City of Daytona Beach**

CUSTOMER P.O. NUMBER _____ **0000017079**

OVIVO S.O. NUMBER _____ **RSW0001107-01**

EQUIPMENT DESCRIPTION _____ **3 - 80' Clarifier Mechanisms & C40HT Drives**

SPECIFICATION SECTION _____ **N/A**

CONSULTING ENGINEER _____ **N/A**

ITEM DESCRIPTION UNDER THIS COVER:

DRIVE INFORMATION SHEET..... (1) Page

C40HT Drive Information

RSW1107-01

Torque Rating(s) (ft-lbs)	**70,000**
Rotation (viewed from above)	**Clockwise**
Ratios:	
Worm to Worm Gear	**54:1**
Main Pinion to Main Gear	**6.923:1**
Overall Ratio	**373.84:1**
General Arrangement Drawing	**115207**

Drive Specification

Main Gear Data:		**Main Bearing Data:**	
Main Gear Ratio:	6.923	Bearing Type:	Replaceable Strip Liner
Gear Pitch Diameter(in):	40	Bearing Pitch Diameter(in):	45.25
Gear Face Depth:	6	Ball Diameter(in):	1.5
Number of Teeth:	90	Number of Bearing Balls:	94
Tooth Diametral Pitch:	2.25	Raceway Hardness:	43-46 Rc
Gear Material:	Ductile Iron	Raceway Material:	AISI E4140 Vacuum Degassed, and Carbon Deoxidized
ASTM specification:	ASTM-A536		
Grade or Class:	100-70-03		
Heat Treatment:	As Cast		
Worm and Worm Gear Data:		**Main Pinion Data:**	
Worm Gear Ratio	54	Pinion Pitch Diameter(in):	5.778
Gear Pitch Diameter(in):	21.486	Number of Pinions:	1
Worm Pitch Diameter(in):	3.5	Number of Teeth:	13
Number of Starts:	1	Tooth Diametral Pitch:	2.25
Number of Gear Teeth	54	Pinion Material:	Alloy Steel
Gear Face Depth	2.75	AISI Specification:	4150
Circular Pitch:	1.25		
Lead Angle (deg)	6.483		
Pressure Angle (deg)	14.5		
Gear Material:	Cast Alloy Bronze		
Worm Material:	AISI 4140/42H		
Main Gear Drive Housing Data:		**Worm Gear Housing Data:**	
Material:	Cast Iron	Material:	Cast Iron
Specification:	ASTM A48 (Class 40A)	Specification:	ASTM A48 (Class 40A)

Drive Features:

- Rigid cast base with deep oil reservoir.
- Large main gear face
- Worm gear intermediate reducer.
- Fully supported one-piece pinion.
- Replaceable strip liner main bearing with large diameter chrome alloy balls.
- Full oil bath lubrication for main gear and bearing set.
- Oil drains away from bearing seats.
- No lip seals below oil level.
- Machined shoulder to preserve pinion/main gear alignment.
- Weatherproof enclosed torque control.

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SUBMITTAL DATA SHEET

PROJECT NAME_____ Bethune Point WWTP

LOCATION _____ Daytona Beach, FL

CUSTOMER _____ City of Daytona Beach

CUSTOMER P.O. NUMBER _____ 0000017079

OVIVO S.O. NUMBER _____ RSW0001107-01

EQUIPMENT DESCRIPTION _____ 3 - 80' Clarifier Mechanisms & C40HT Drives

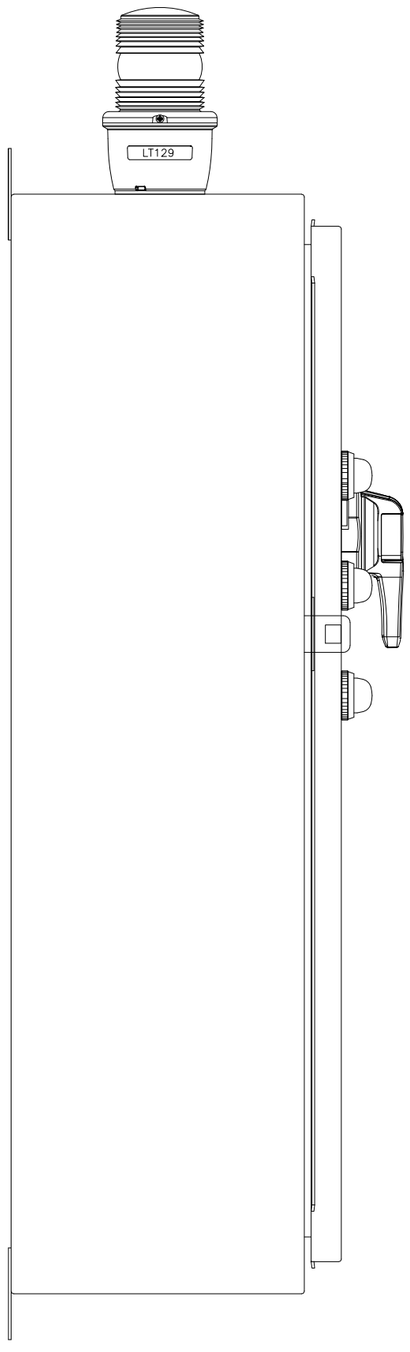
SPECIFICATION SECTION _____ N/A

CONSULTING ENGINEER _____ N/A

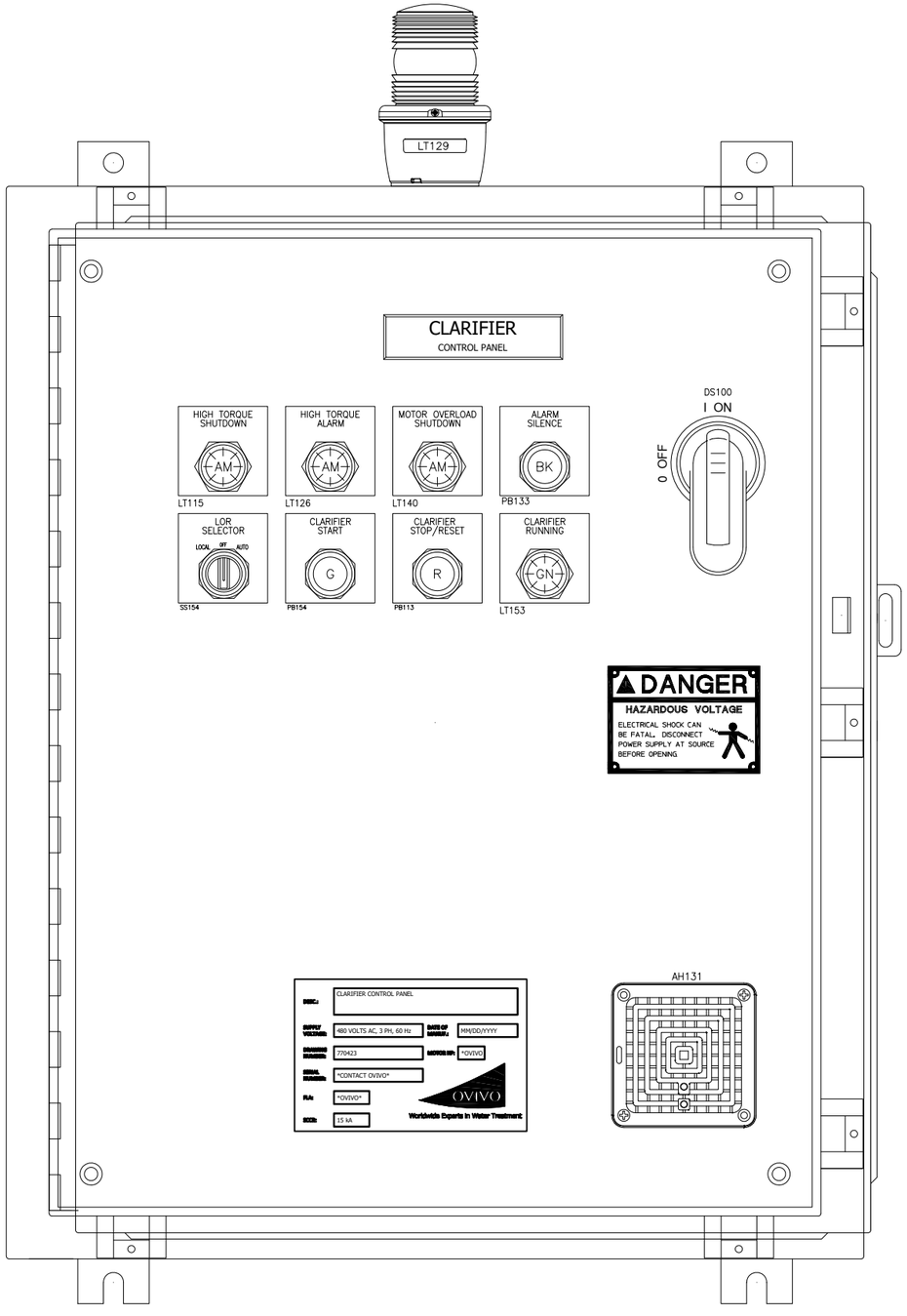
ITEM DESCRIPTION UNDER THIS COVER:

DRAWINGS..... (3) Drawing(s)

ELECTRICAL DRAWING INDEX	
DWG #	SHEET DESRIPTION
770423 SHT1	TITLE SHEET AND CONSTRUCTION NOTES
770423 SHT2	SUB-PANEL LAYOUT AND BILL OF MATERIALS
770423 SHT3	POWER AND CONTROL SCHEMATICS



SIDE VIEW



FRONT VIEW

PANEL ENCLOSURE LAYOUT
NEMA 4X ENCLOSURE

CONTROL PANEL SPECIFICATIONS

1. **COMPONENTS SPECIFIC**

1.1 ENCLOSURE TO BE NEMA 4X CONSTRUCTION.

1.2 ATTACH NAMEPLATES WITH MANUFACTURER'S RECOMMENDED ADHESIVE TO MAINTAIN NEMA STANDARD OF ENCLOSURE

1.3 CONTROL PANEL SHALL BE LABELED WITH SERIALIZED UL LABEL

1.4 PANEL WILL BE LABELED WITH IDENTIFICATION PLATE AS NOTED ON ENCLOSURE DRAWING.

1.5 ALL RELAY CONTACTS ARE RATED AT 10 AMPS UNLESS OTHERWISE NOTED.

1.6 COMPONENT IMAGES MAY NOT ACCURATELY REPRESENT THE ACTUAL DEVICE IN SOME INSTANCES. DIMENSIONS OF DEVICES, HOWEVER, WILL BE ACCURATE FOR PURPOSES OF LAYOUT AND SPACING.

1.7 SUBSTITUTIONS FOR COMPONENTS MAY BE PERMITTED UPON APPROVAL BY OVIVO ENGINEERS.

2. **WIRE SIZING & TYPE**

WIRE SIZING SHALL BE NO LESS THAN AS FOLLOWS (UNLESS OTHERWISE NOTED):
480 3 PHASE - 14 AWG TYPE: MTW
120 1 PHASE - 16 AWG TYPE: MTW

3. **WIRE COLOR**

WIRE COLOR SHALL BE AS FOLLOWS:
POWER (480 VOLTS)
GREEN - GROUND
BLACK - ALL PHASES

CONTROL (120 VAC)
RED - LOAD WIRES FOR ALL LOCAL CONTROL CIRCUITS
WHITE - NEUTRAL FOR ALL LOCAL CONTROL CIRCUITS
YELLOW - FOREIGN POWER IN PANEL

4. **CONNECTIONS**

4.1 ALL CONNECTIONS SHALL BE POINT TO POINT WITHOUT SPLICES. EXCEPTIONS APPLY TO SOLENOIDS AND MOTORS AND FACTORY WIRED COMPONENTS.
4.2 ALL CONDUCTORS MUST BE MARKED WITH MACHINE PRINTED TAGS AT EACH TERMINATION. MARKERS SHALL BE OF HEAT SHRINK TYPE.

5. **DOCUMENTATION**

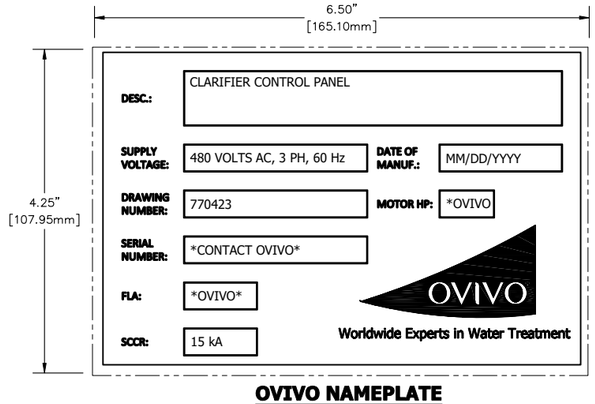
5.1 FABRICATOR SHALL PROVIDE ONE COPY OF ALL DOCUMENTS SUPPLIED WITH THE COMPONENTS SUPPLIED BY THE FABRICATOR. THIS INFORMATION INCLUDES BUT IS NOT LIMITED TO MANUFACTURERS SPECIFICATIONS, INSTALLATION MANUALS AND OPERATION MANUALS.

5.2 ANY OVIVO APPROVED CHANGES OR MARK-UPS TO THE SCHEMATICS, PANEL LAYOUTS AND ANY OTHER PERTAINING DOCUMENTS SHALL BE MAINTAINED AND DELIVERED TO OVIVO AT ACCEPTANCE OF THE PANEL.

6. **TESTING**

6.1 OVIVO ENGINEERS OR OVIVO APPROVED FABRICATOR, WILL PERFORM A POINT TO POINT CONTINUITY TEST ON THE PANEL.

6.2 WHEN APPLICABLE, THE FABRICATOR WILL ALSO PROVIDE POWER TO THE 120VAC CIRCUITS FOR VERIFICATION AND TESTING. FABRICATOR SHALL ALLOW A MINIMUM OF 2 HOUR OF ACCESS TO THE CONTROL PANEL BY AN OVIVO ENGINEER FOR THIS AND PREVIOUSLY STATED TEST. 3 PHASE POWER CIRCUITS WILL NOT BE POWERED ON FOR TESTING.



OVIVO NAMEPLATE
ENGRAVE AS SHOWN

D

THIRD ANGLE PROJECTION

REF. FROM:	-----	DO NOT SCALE PRINTS
DATE (mm/dd/yyyy)	09/09/19	WORKMANSHIP STANDARD ES0001 APPLIES
DRAWN	CL	ORIGINAL S.O.
CHECK'D	SG	----

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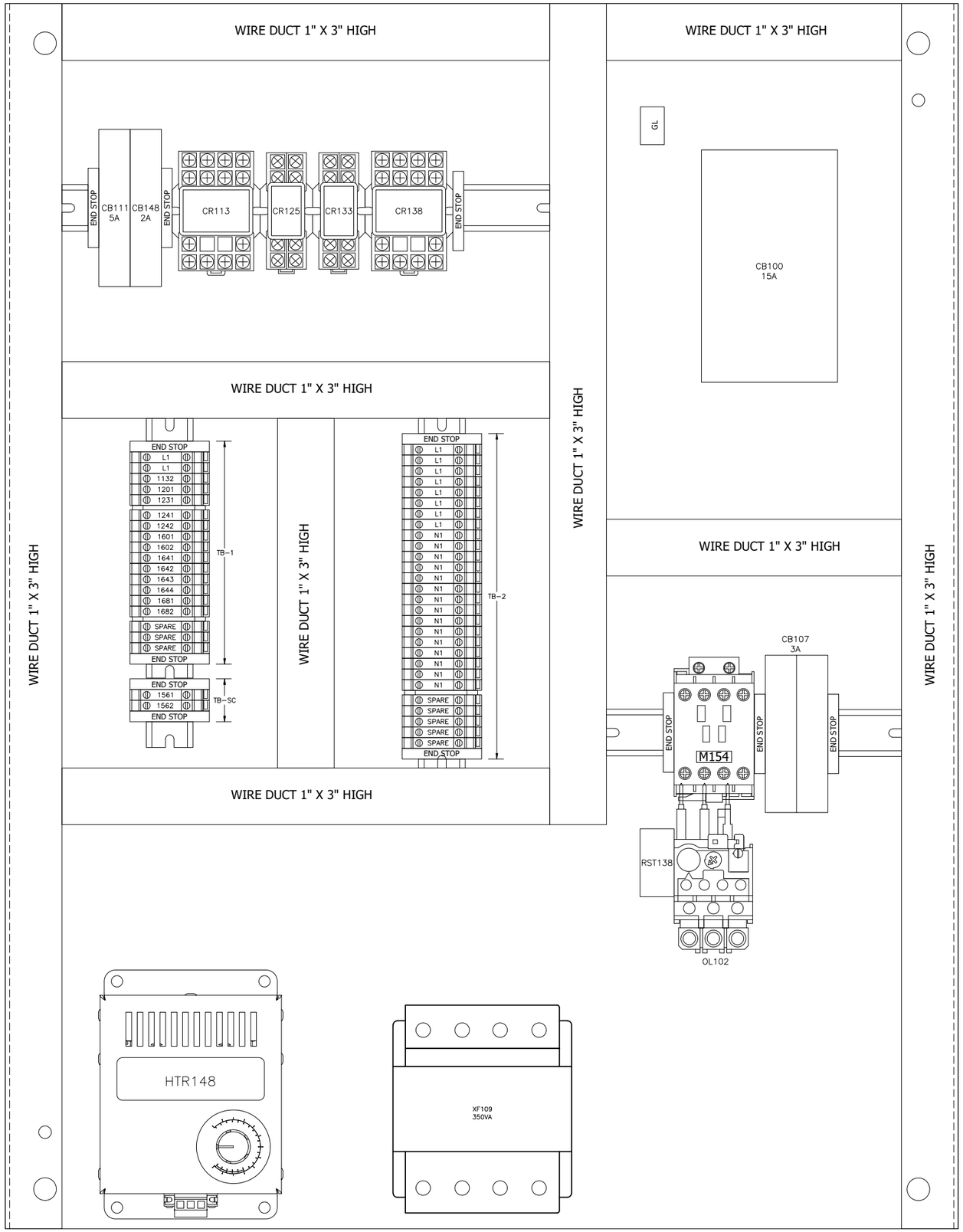
CLARIFIER CONTROL PANEL

REVISION	EN/ECO	BY	CHECK'D	DATE
INITIAL RELEASE	015325	CL	CR	1/16/20

DWG. NO. 770423 | SHEET 1 OF 3 | REV A



SUB-PANEL LAYOUT

ITEM	QTY	CATALOG	DESC	MFG	TAGS
1	1	A30H2408SSLP	WALL-MOUNT ENCLOSURE, WITH CLAMPS, 30" X 24" X 8", 304 SS, NEMA 4X.	HOFFMAN	ENC
2	1	A30P24	ENCLOSURE, BACK PANEL, 30" X 24"	HOFFMAN	ENC
3	1	XT1HU3015AFF000XXX WITH KXTBRHEBFP	MOLDED CASE CIRCUIT BREAKER, THREE POLE, THERMAL MAGNETIC, 15 AMPS, 25KA SCCR. WITH BASE EXTENDED HANDLE	ABB	CB100
4	1	OHB65L10B OXP10X500	CIRCUIT BREAKER MECHANISM WITH SHAFT 19.6 INCHES	ABB	CB100
5	1	100C09D10 100FC22	CONTACTOR, 120 VAC OPERATED, 9AMPS WITH AUXILIARY CONTACT BLOCK, 2N.O + 2N.C. CONTACT	ALLEN BRADLEY	M154 & OL102
6	1	193-EECB	SOLID STATE OVERLOAD RELAY	ALLEN BRADLEY	OL102
7	1	193-ERR	OVERLOAD RESET RELAY FOR THERMAL OVERLOAD	ALLEN BRADLEY	RST138
8	1	SU202M-K3	S200UP MINIATURE MOLDED CASE CIRCUIT BREAKER, PRO M COMPACT, 3 AMP, 2-POLE	ABB	CB107
9	1	SP350ACP	CONTROL TRANSFORMER 480V TO 120VAC, 350 VA	HAMMOND	XF109
10	2	SPFG1	FINGER GUARD FOR TRANSFORMER WIRING	HAMMOND	XF109
11	1	SU201M-K5	S200UP MINIATURE MOLDED CASE CIRCUIT BREAKER, PRO M COMPACT, 5 AMP, 1-POLE	ABB	CB111
12	1	SU201M-K2	S200UP MINIATURE MOLDED CASE CIRCUIT BREAKER, PRO M COMPACT, 2 AMP, 1-POLE	ABB	CB148
13	2	RH2B-ULC-120	RELAY, DPDT, WITH INDICATOR AND CHECK BUTTON	IDEC	CR125, CR133
14	2	SH2B-05C	SOCKET, RELAY, FINGERSAFE TERMINALS	IDEC	CR125, CR133
15	2	RH4B-ULC-120	RELAY, 4PDT, WITH INDICATOR AND CHECK BUTTON	IDEC	CR113, CR138
16	2	SH4B-05C	SOCKET, RELAY, FINGERSAFE TERMINALS	IDEC	CR113, CR138
17	3	APD1126DNUA	AMBER PILOT LIGHT - STANDARD, ROUND OILTIGHT, NEMA 4/4X	IDEC	LT115, LT126, LT140
18	3	APD1126DNUG	GREEN PILOT LIGHT - STANDARD, ROUND OILTIGHT, NEMA 4/4X	IDEC	LT153
19	1	ASD322NU	TWND SERIES, 3-POSITION MAINTAINED SELECTOR SWITCH, KNOB TYPE, WITH 2 NO + 2 NC CONTACT BLOCKS	IDEC	SS154
20	1	ABD111NUB	PUSH BUTTON - MOMENTARY, NEMA 4/4X, BLACK, WITH 1 N.O. + 1 N.C. CONTACTS	IDEC	PB133
21	1	ABD111NUG	PUSH BUTTON - MOMENTARY, NEMA 4/4X, GREEN, WITH 1 N.O. + 1 N.C. CONTACTS	IDEC	PB154
22	1	ABD111NUR	PUSH BUTTON - MOMENTARY, NEMA 4/4X, RED, WITH 1 N.O. + 1 N.C. CONTACTS	IDEC	PB113
23	8	GRAVOPLY ULTRA	GENERIC OPERATOR TAG - ENGRAVE AS SHOWN	GRAVOGRAPH	AS SHOWN
24	1	350-120-30 WITH K8435666A	VIBRATONE HORN FOR ALARM, 120 VAC WITH PANEL MOUNTING GASKET KIT FOR NEMA 4X APPLICATION	FEDERAL SIGNAL	AH144
25	1	LP3S-120-R	STROBE LIGHT, SURFACE MOUNT, RED, 120 VAC, NEMA 4X	FEDERAL SIGNAL	LT129
26	1	DAH1001A	ENCLOSURE ANTI-CONDENSATION HEATER, WITH THERMOSTAT, 100 WATT, 120 VAC	HOFFMAN	HTR148
27	48	0115 116.07	TERMINAL BLOCK - M 4/6	ENTRELEC	TB-1
28	3	0118 368.16	END SECTION - FEM6	ENTRELEC	TB-1
29	12	103-002-26	END STOP	ENTRELEC	AS SHOWN
30	A/R	QD100X300HW	WIRE DUCT 1" X 3" HIGH	ABB	AS SHOWN
31	1	49046A	NAME PLATE - "DANGER"	OVIVO	AS SHOWN
32	1	679002	NAME PLATE (ETCH AS SHOWN)	OVIVO	AS SHOWN
33	1	592273	ENLCOUSRE EQUIPMENT TAG ID	OVIVO	AS SHOWN
34	1	199-DR1	DIN-RAIL	ABB	AS SHOWN
35	1	KA2U	GROUND LUG	BURNDY	GL

SUB-PANEL LAYOUT AND BILL OF MATERIALS

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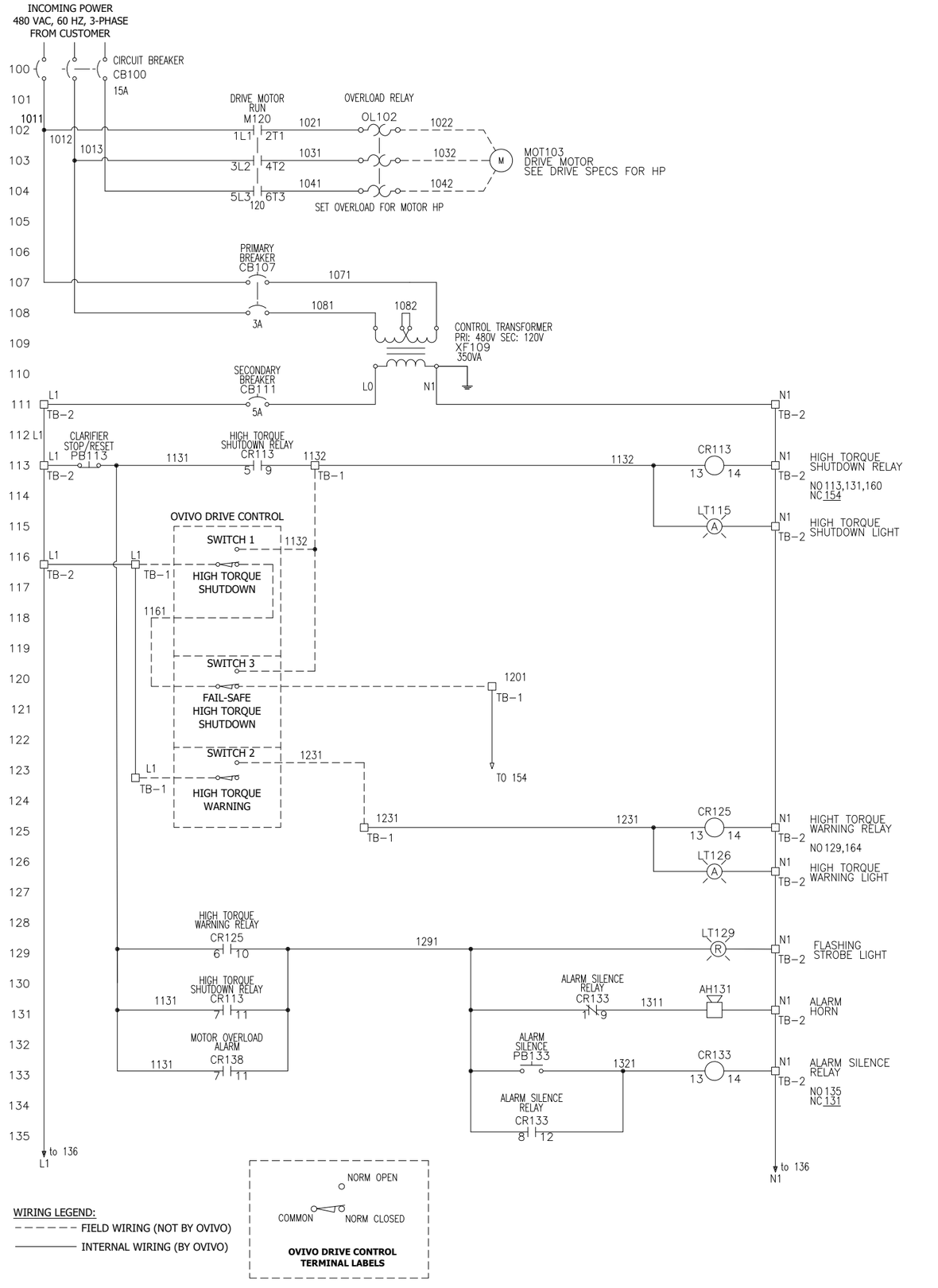
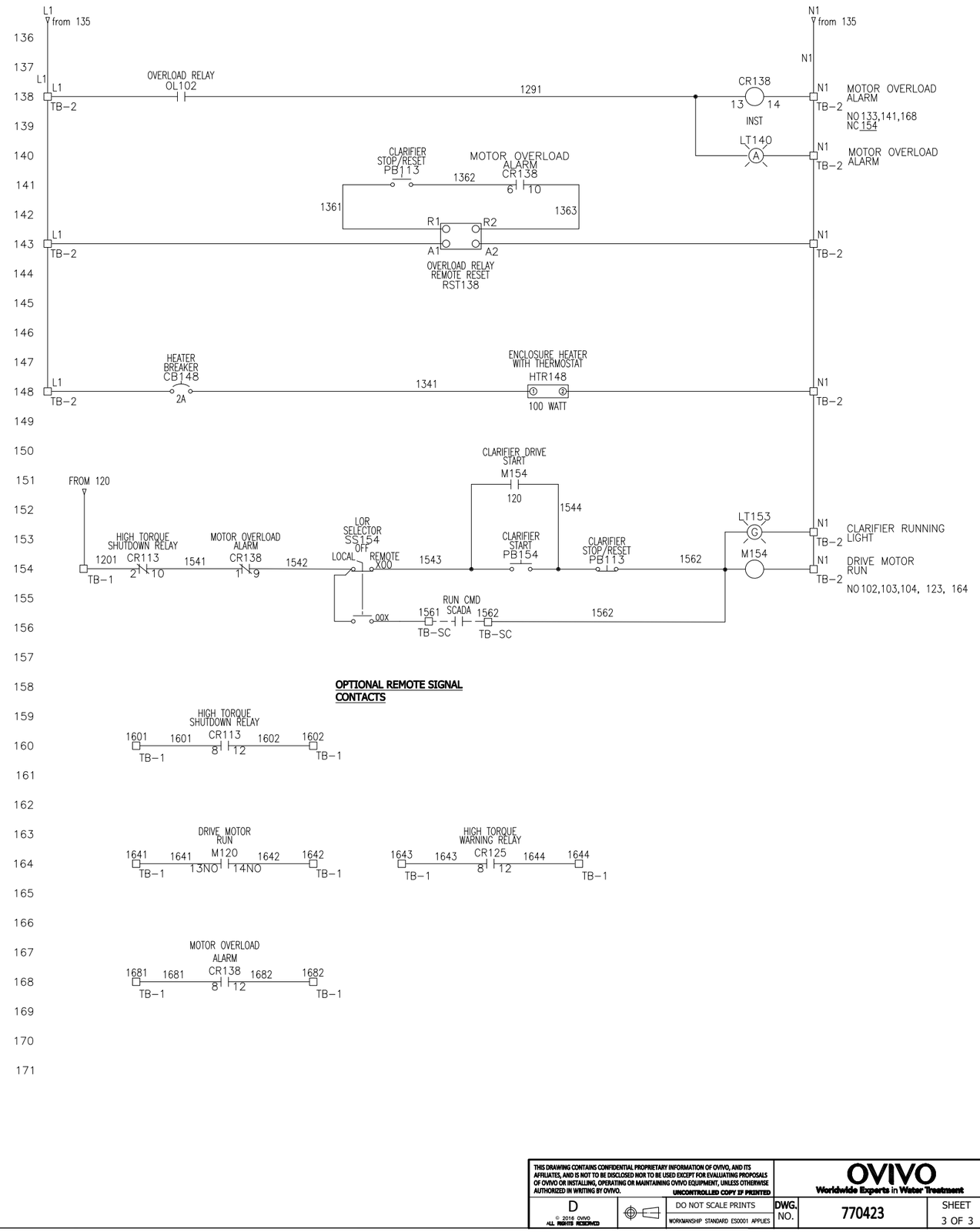
D	DO NOT SCALE PRINTS	DWG. NO.	770423	SHEET 2 OF 3	REV A

WORKMANSHIP STANDARD ES0001 APPLIES





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D	DO NOT SCALE PRINTS	DWG. NO.	770423	SHEET 3 OF 3	REV A
	WORKMANSHIP STANDARD ES0001 APPLIES				

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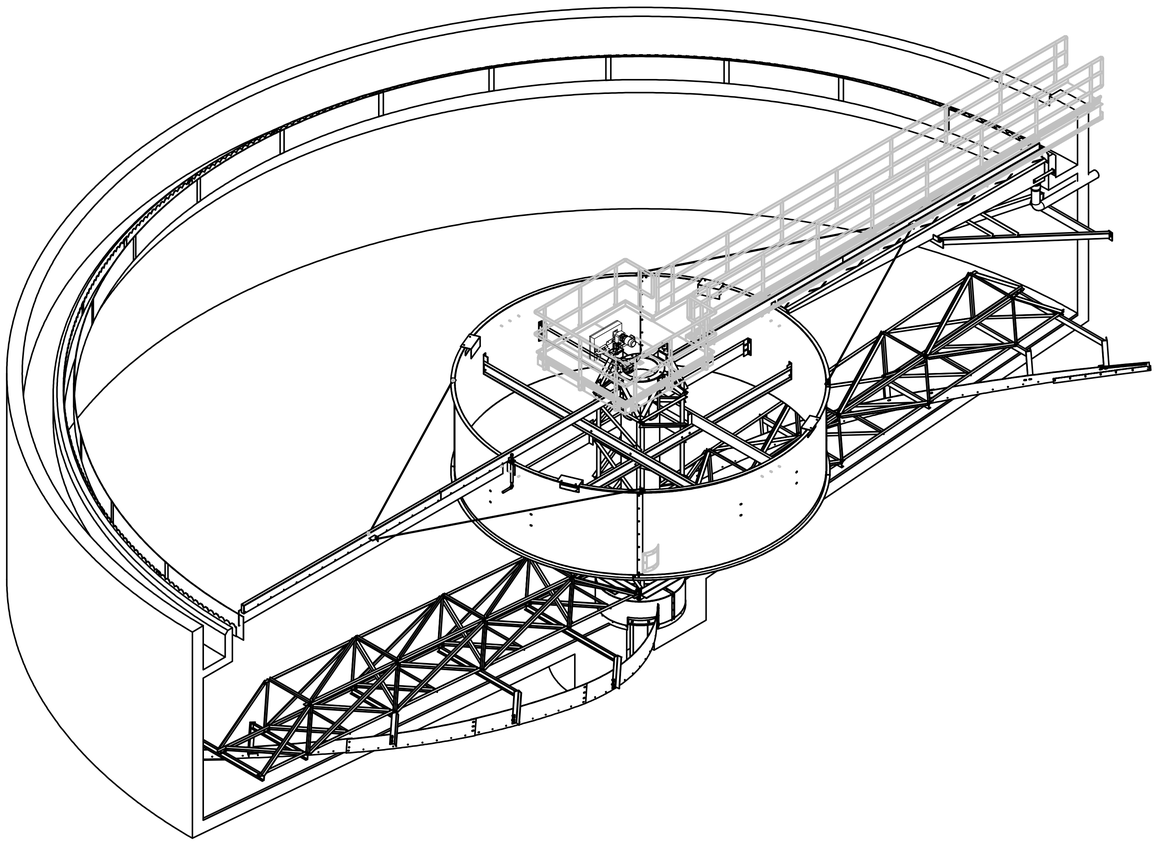
BETHUNE POINT WWTP
DAYTONA BEACH, FL



GENERAL NOTES:

1. OVIVO TO SUPPLY (3) MECHANISMS AS SHOWN AND NOTED.

2. ASTERISK (*) DENOTES VARIANCE FROM CONTRACT DOCUMENTS AND SHOULD BE PARTICULARLY NOTED.

3. THE FOLLOWING DEFINES THE RESPONSIBILITY OF OVIVO WITH REGARD TO THE INFORMATION AND DIMENSIONS SHOWN ON THIS DRAWING.
   - A. DIMENSIONS, LOADS, AND OTHER INFORMATION ARE PROVIDED TO ACCOMMODATE THE EQUIPMENT TO THE STRUCTURE AS SHOWN.
   - B. THE CUSTOMER IS TO PROVIDE REINFORCING STEEL AND DESIGN FOR CONCRETE STRUCTURES AND IS TO DETERMINE SIZES TO SUIT LOCAL CONDITIONS.
   - C. THIS DRAWING IS NOT TO BE USED FOR CONSTRUCTION OR INSTALLATION PURPOSES UNLESS IT BEARS THE APPROVAL OF THE OWNER, THE ENGINEER OR THEIR AUTHORIZED REPRESENTATIVE.
   - D. THE MECHANISM SHOWN IS DESIGNED FOR DIRECTION OF ROTATION AS INDICATED. OVIVO DOES NOT ASSUME RESPONSIBILITY FOR DAMAGE IF OPERATED IN THE OPPOSITE DIRECTION.
   - E. CHARGES FOR MODIFICATIONS, ADDITIONS OR CORRECTIONS TO THE EQUIPMENT WILL NOT BE ACCEPTED BY OVIVO UNLESS PRIOR APPROVAL IS OBTAINED IN WRITING FROM AN AUTHORIZED OVIVO REPRESENTATIVE.

4. OVIVO DOES NOT FURNISH ELECTRICAL WIRING, CONDUIT OR ELECTRICAL EQUIPMENT; PIPING, VALVES OR FITTINGS; LUBRICATING OIL OR GREASE; FIELD PAINTING; FIELD WELDING OR ERECTION, (EXCEPT AS SPECIFICALLY NOTED). SEE SCOPE OF SUPPLY FOR A COMPLETE LIST OF ITEMS NOT PROVIDED.

5. SHOP PRIMER PAINT IS INTENDED TO SERVE ONLY AS A PROTECTIVE OR SEALING COAT. AS SUCH IT AFFORDS THE METAL ONLY MINIMAL PROTECTION AGAINST THE ELEMENTS, OVIVO CANNOT BE RESPONSIBLE FOR DETERIORATION OF SHOP-PRIMED EQUIPMENT DURING JOB STORAGE OR OTHER EXPOSURE TO THE ELEMENTS PRIOR TO APPLICATION OF FINISH COAT(S).

6. SURFACE PREPARATION TO CONSIST OF:
   DRIVE UNIT: SSPC-SP-6 (COMMERCIAL BLAST)
   SUBMERGED STEEL: SSPC-SP-10 (NEAR-WHITE BLAST)
   NON SUBMERGED STEEL: NA

7. SHOP COATINGS TO CONSIST OF:
   DRIVE UNIT - SHOP PRIMER (1 COAT): TNEMEC TNEME-FASCURE SERIES 161HS OR HI-BUILD EPOXYLINE SERIES 66HS, COLOR: 00WH 'TNEMEC WHITE' @ 4.0-6.0 MILS DFT MIN.

   SHOP 2ND COAT (1 COAT): TNEMEC TNEME-FASCURE SERIES 161HS OR HI-BUILD EPOXYLINE SERIES 66HS, COLOR: 34GR 'DEEP SPACE' @ 4.0-6.0 MILS DFT MIN.

   SHOP TOP COAT (1 COAT): TNEMEC ENDURA-SHIELD SERIES 73, COLOR: 26BL 'CLEAR SKY' @ 3.0-5.0 MILS DFT MIN.

   MOTORS & REDUCERS - MANUFACTURER'S STANDARD ENAMEL

   SUBMERGED STEEL - SHOP PRIMER (1 COAT) TNEMEC HI-BUILD EPOXYLINE SERIES 66HS, COLOR: BLACK 4.0 MIL DFT MIN

   SHOP TOP COAT (1 COAT) TNEMEC HI-BUILD EPOXYLINE SERIES 66HS, COLOR: BLACK 4.0 MIL DFT MIN

   NON SUBMERGED STEEL - NA

8. ALL STRUCTURAL SHAPES AND PLATES TO BE ASTM A36 AND SHALL HAVE A NOMINAL MINIMUM STEEL THICKNESS OF 1/4" (UNLESS OTHERWISE NOTED).

9. ALL WELDING SHALL BE PERFORMED IN ACCORDANCE WITH THE LATEST EDITION OF A.W.S. WELDING PROCEDURES WITH QUALIFICATION RECORDS PER THE FOLLOWING:
   A.W.S. D1.1 - STEEL STRUCTURAL WELDING CODE
   A.W.S. D1.2 - ALUMINUM STRUCTURAL WELDING CODE
   A.W.S. D1.6 - STAINLESS STEEL STRUCTURAL WELDING CODE

10. ISOLATION MUST BE PROVIDED FOR ALL ALUMINUM TO STEEL CONTACT SURFACES. (ISOLATION NOT BY OVIVO)

11. FOR MECHANISM ORIENTATION, REFER TO CONTRACT DRAWINGS.

12. FASTENERS SHALL BE AS FOLLOWS, EXCEPT WHERE NOTED
    ANCHOR BOLTS: 304 SS
    ASSEMBLY BOLTS: 304 SS
    (ANTI-SEIZE SHOULD BE USED FOR ALL STAINLESS STEEL FASTENERS. ANTI-SEIZE NOT PROVIDED BY OVIVO)

13. FOR ADDITIONAL DETAILS, REFER TO DRAWINGS:
    RSW1107-102 DRIVE CONTROL SWITCHES
    RSW1107-103 TORQUE TEST
    115207 DRIVE GENERAL ARRANGEMENT
    1133795 SCUM TROUGH FLUSHING GENERAL ARRANGEMENT

14. THE EXISTING PLATFORMS AND WALKWAYS ARE TO BE REUSED INCLUDING GRATING AND HANDRAIL.

15. SPARE PARTS TO BE BOXED AND SHIPPED WITH EQUIPMENT. QUANTITIES LISTED REFLECT SPARE PARTS REQUIRED ENTIRE ORDER:

    NONE

CUSTOMER TO VERIFY ALL DIMENSIONS AND ELEVATIONS

THIS DRAWING IS CERTIFIED FOR:	
CUSTOMER:	CITY OF DAYTONA BEACH
CUSTOMER ORDER NO.:	0000017079
OVIVO ORDER NUMBER:	RSW0001107-01
PROJECT:	BETHUNE POINT WWTP
PROJECT LOCATION:	DAYTONA BEACH, FL
CONSULTING ENGINEER:	NA
BY: CODY FARNSWORTH	DATE: 1/7/2020

D

THIRD ANGLE PROJECTION

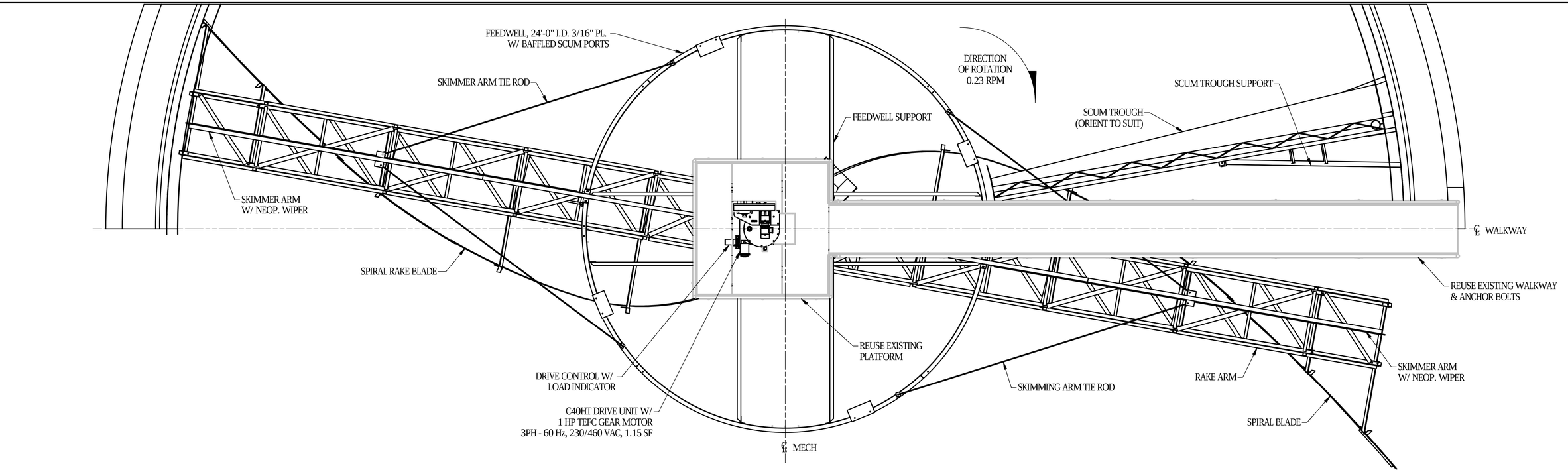
REF. FROM	N/A	DO NOT SCALE PRINTS
DATE(mm/dd/yyyy)	1/7/2020	WORKMANSHIP STANDARD ES0001 APPLIES

OVIVO
Worldwide Experts in Water Treatment

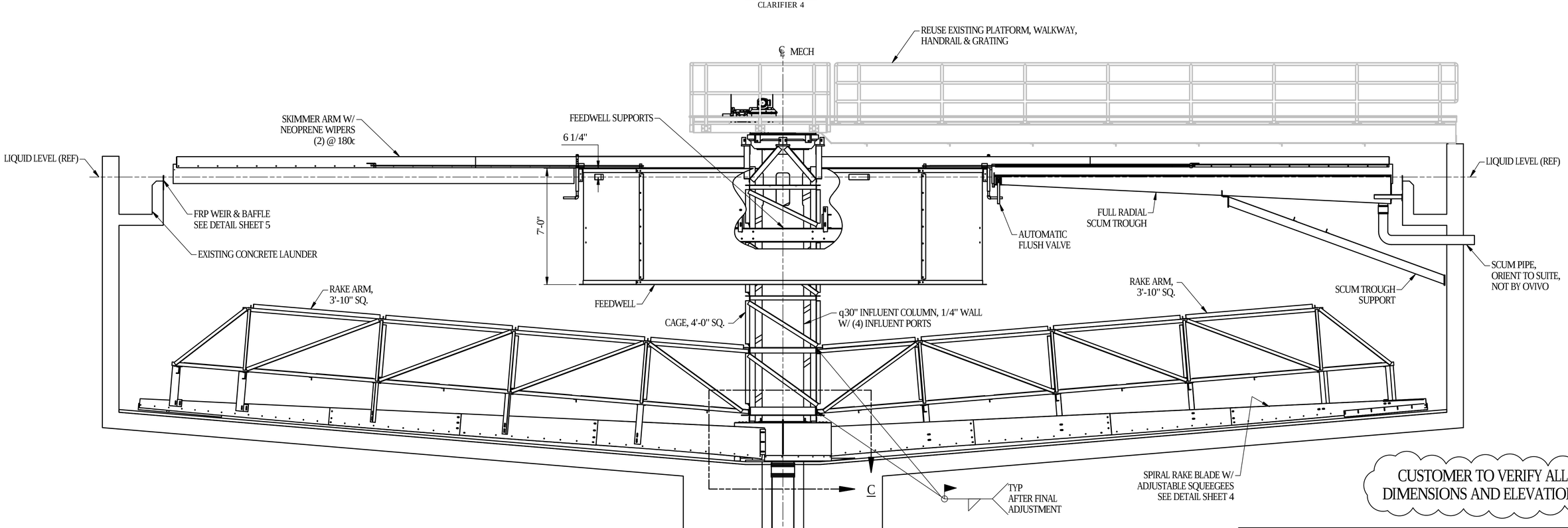
GENERAL ARRANGEMENT
80'-0" DIA. TYPE C4D-CMD CLARIFIER
W/ C40HT DRIVE

REVISION DESCRIPTION	EN/ECO	BY	CHECK'D	DATE	REV
INITIAL RELEASE					A

DRAWN	CRF	ORIGINAL S.O.	DWG. NO.	RSW1107-101	SHEET 1 OF 7	REV A
CHECK'D	JMW	RSW0001107-01				



PLAN VIEW
CLARIFIER 4



ILLUSTRATIVE ELEVATION
CLARIFIER 4

CUSTOMER TO VERIFY ALL
DIMENSIONS AND ELEVATIONS

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D

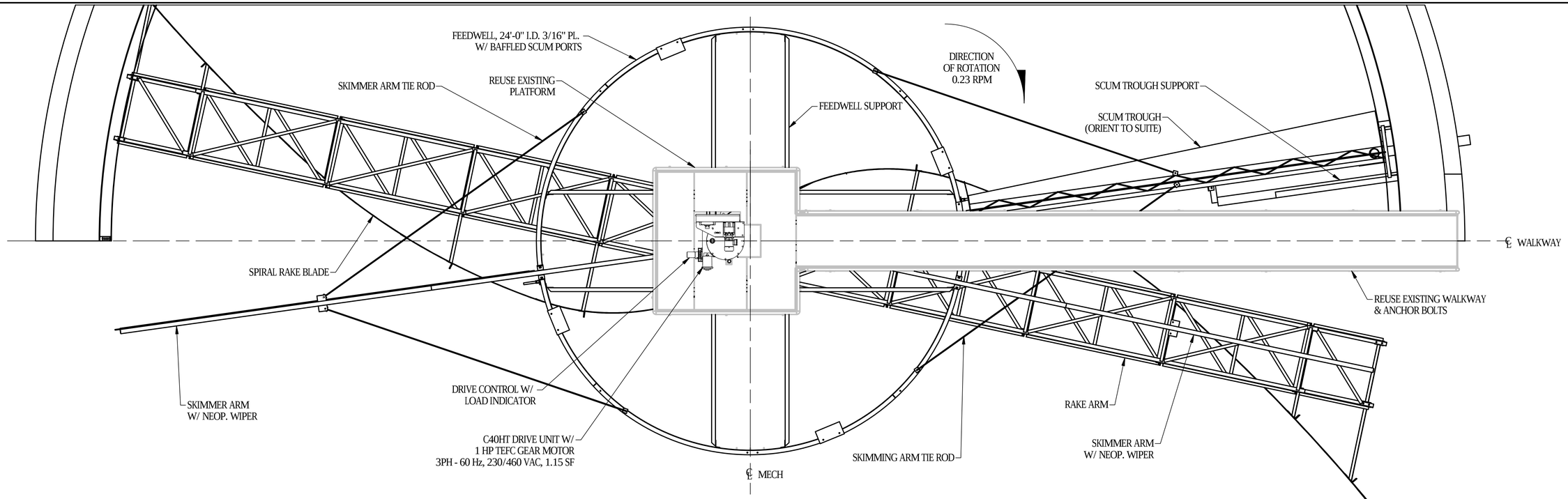
DO NOT SCALE PRINTS

WORKMANSHIP STANDARD ES0001 APPLIES

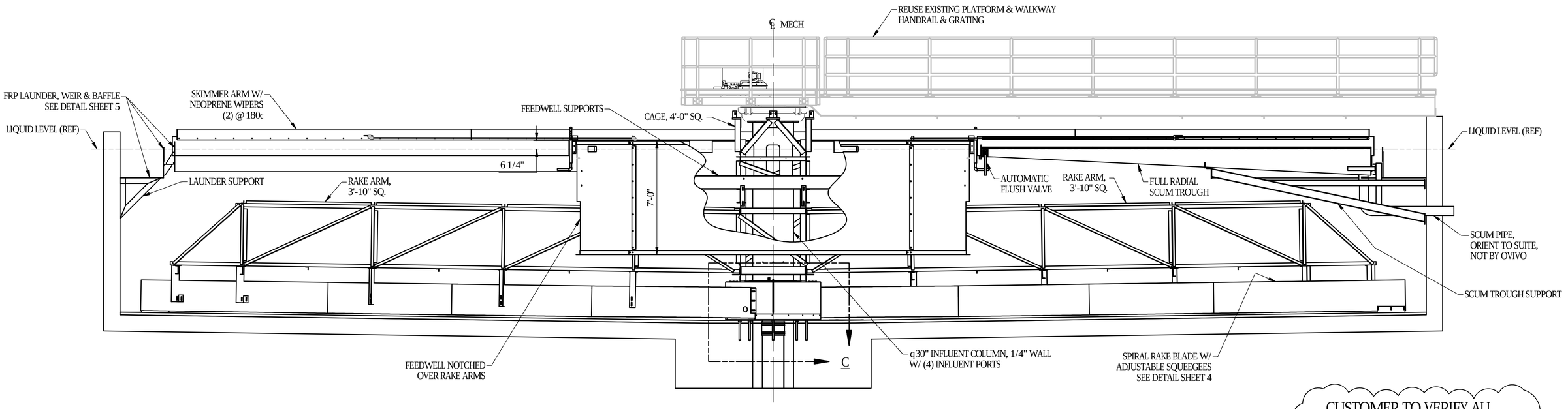
DWG. NO. RSW1107-101

SHEET 2 OF 7

REV A



PLAN VIEW
CLARIFIERS 1 & 2



ILLUSTRATIVE ELEVATION
CLARIFIERS 1 & 2

CUSTOMER TO VERIFY ALL
DIMENSIONS AND ELEVATIONS

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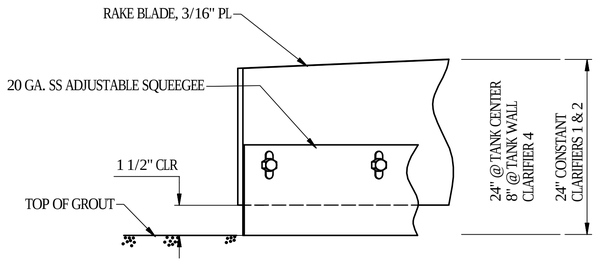
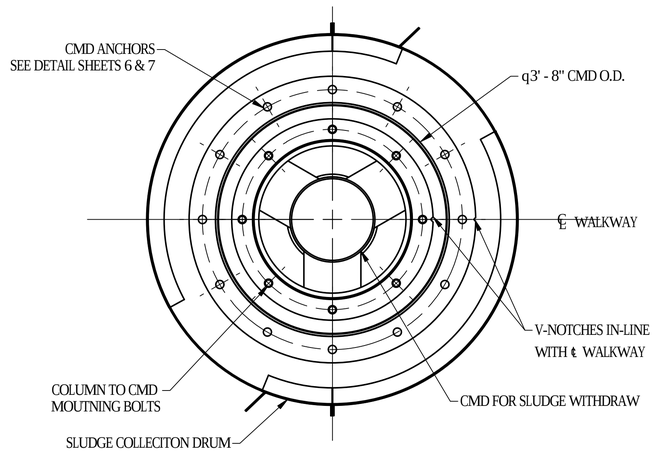
Worldwide Experts in Water Treatment

D	DO NOT SCALE PRINTS	DWG. NO.	RSW1107-101	SHEET 3 OF 7	REV A

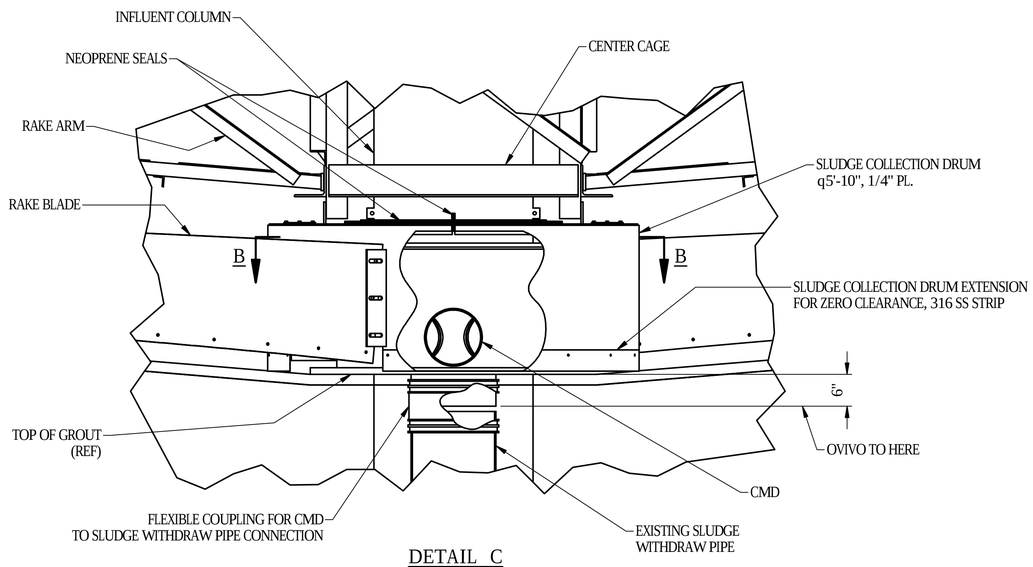
WORKMANSHIP STANDARD ES0001 APPLIES



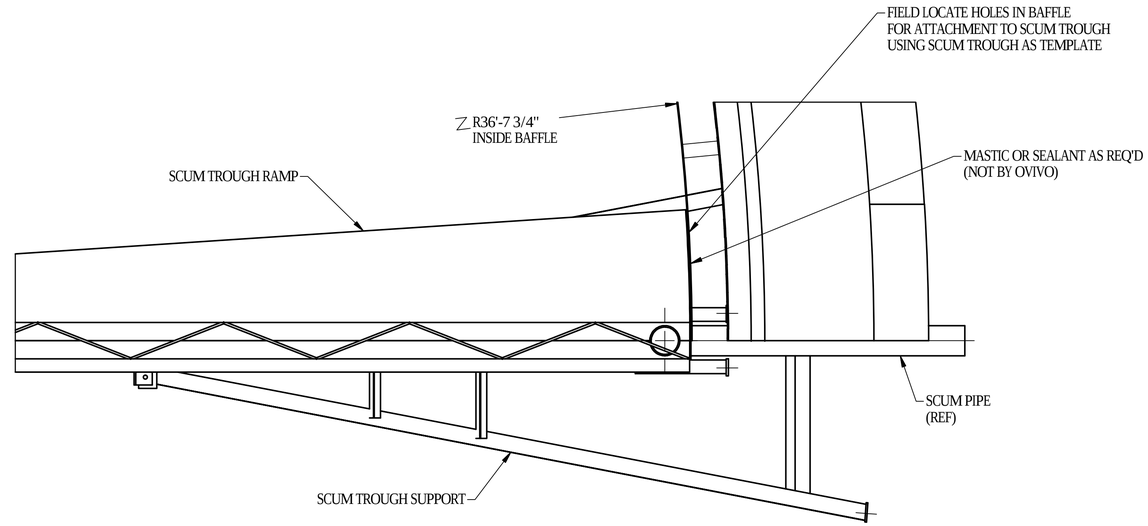
SPIRAL RAKE BLADE DETAIL



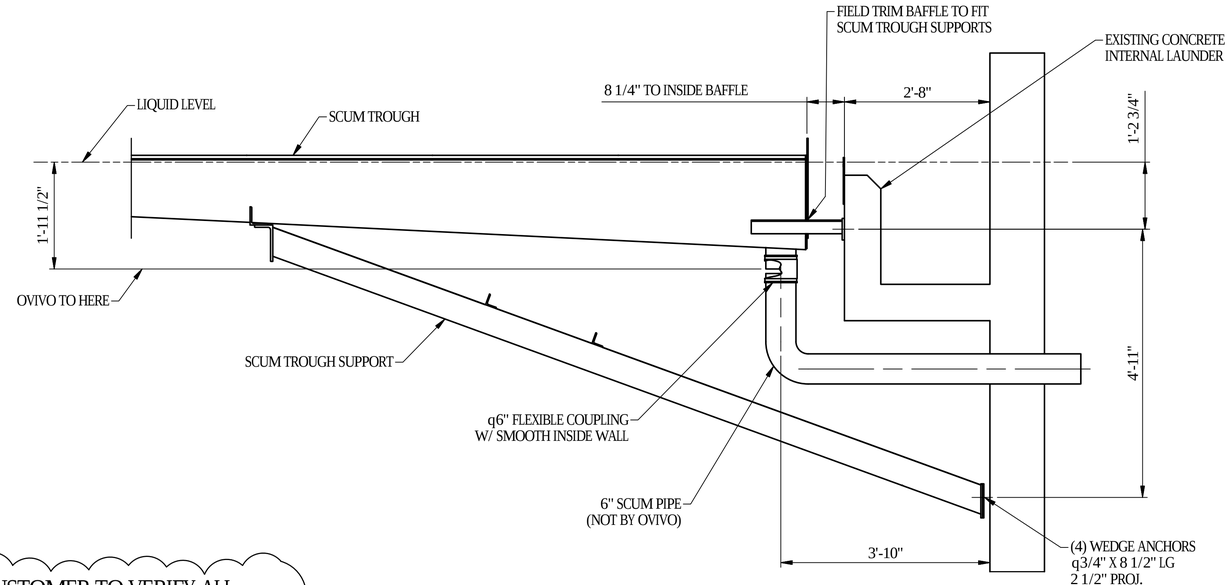
SECTION B-B
(TYP)



DETAIL C
(TYP)



PLAN VIEW
CLARIFIER 4 SCUM TROUGH DETAIL



ELEVATION VIEW
CLARIFIER 4 SCUM TROUGH DETAIL

CUSTOMER TO VERIFY ALL
DIMENSIONS AND ELEVATIONS

OVIVO
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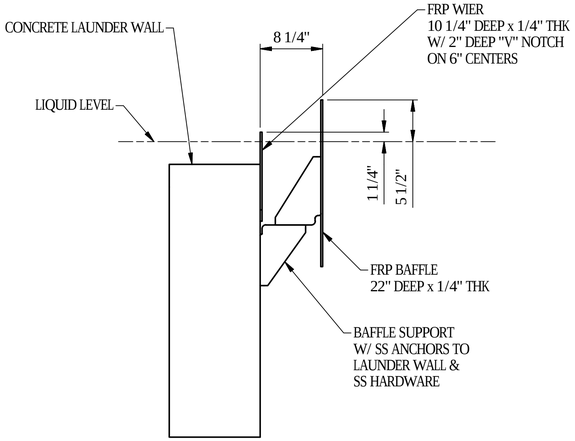
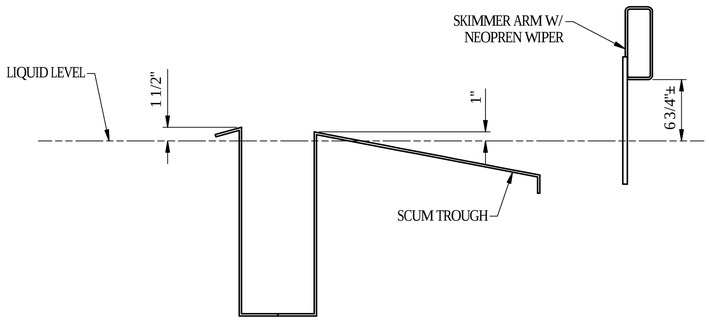
D	DO NOT SCALE PRINTS	DWG. NO.	RSW1107-101	SHEET 4 OF 7	REV A

WORKMANSHIP STANDARD ES0001 APPLIES



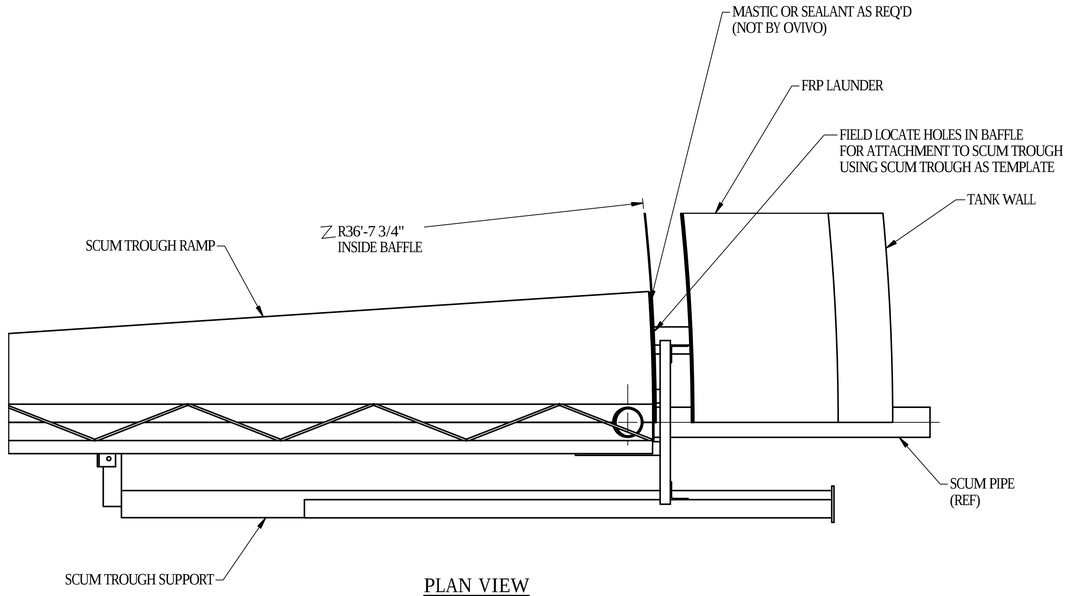
BAFFLE & WEIR DETAIL

CLARIFIER 4



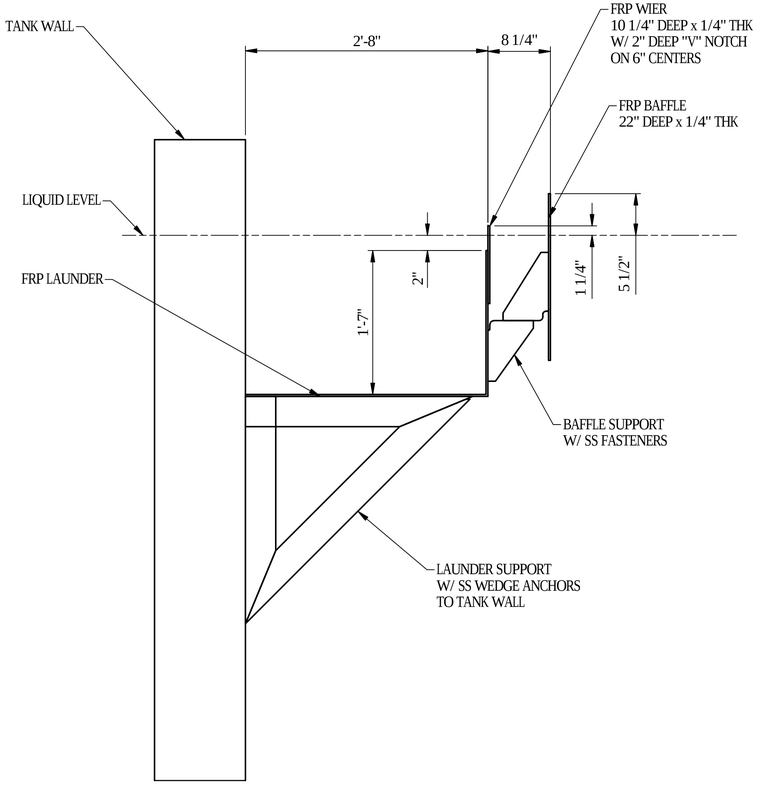
SKIMMER ARM & TROUGH DETAIL

(TYP)



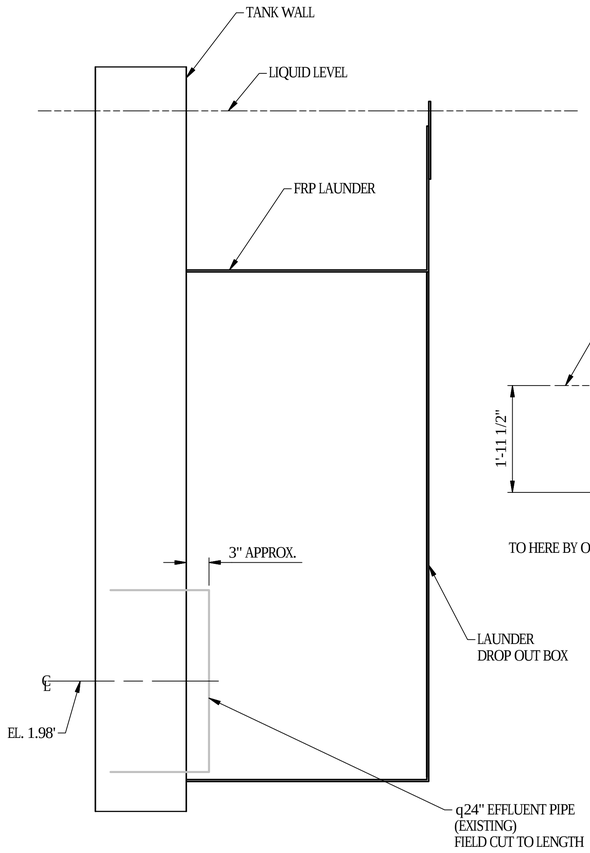
PLAN VIEW

CLARIFIERS 1 & 2 SCUM TROUGH DETAIL



LAUNDER, BAFFLE, & WIER DETAIL

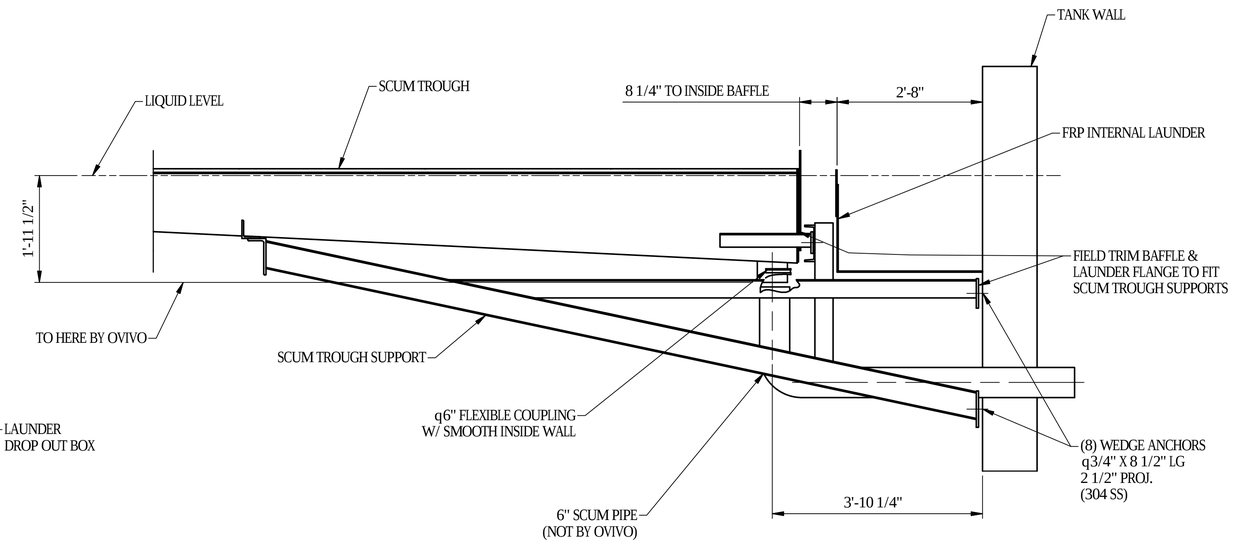
CLARIFIERS 1 & 2



LAUNDER DROP OUT BOX

CLARIFIERS 1 & 2

CUSTOMER TO VERIFY ALL
DIMENSIONS AND ELEVATIONS



ELEVATION VIEW

CLARIFIERS 1 & 2 SCUM TROUGH DETAIL

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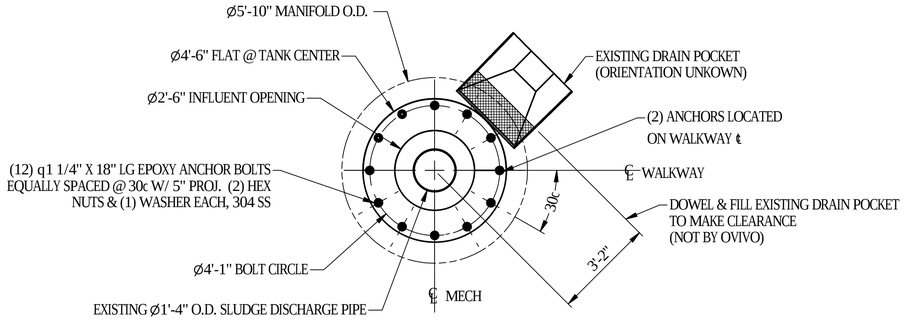
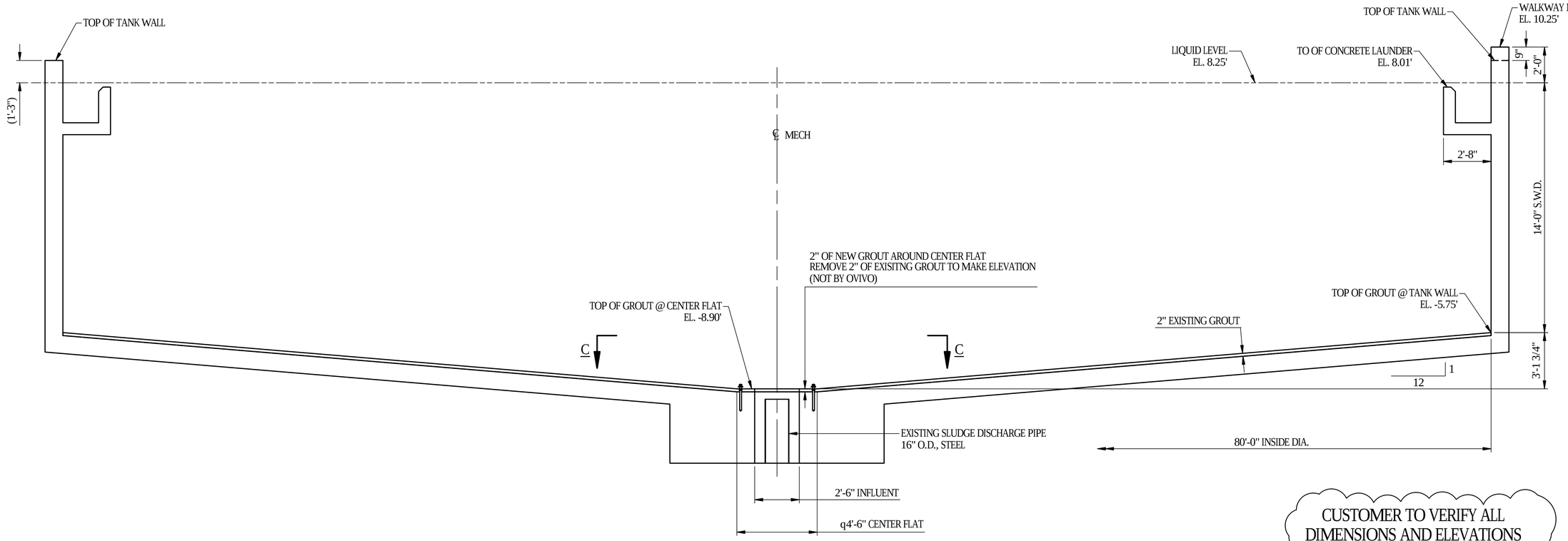
D	DO NOT SCALE PRINTS	DWG. NO.	RSW1107-101	SHEET 5 OF 7	REV A

WORKMANSHIP STANDARD ES0001 APPLIES



SECTION C-C

CLARIFIER 4 TANK BOTTOM DETAIL



ELEVATION VIEW

CLARIFIER 4 TANK DETAIL

CUSTOMER TO VERIFY ALL
DIMENSIONS AND ELEVATIONS

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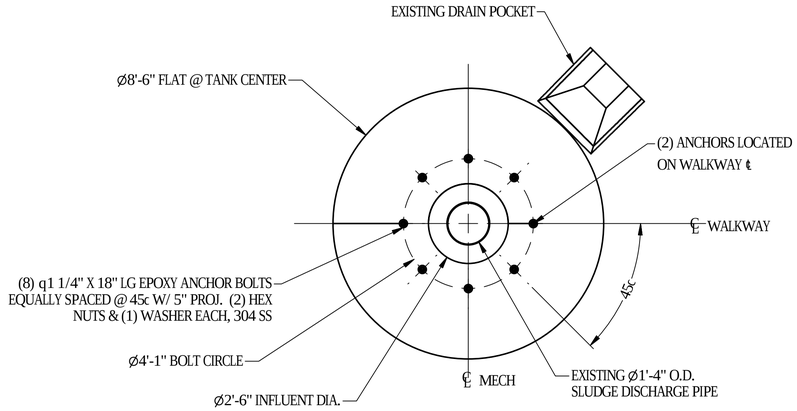
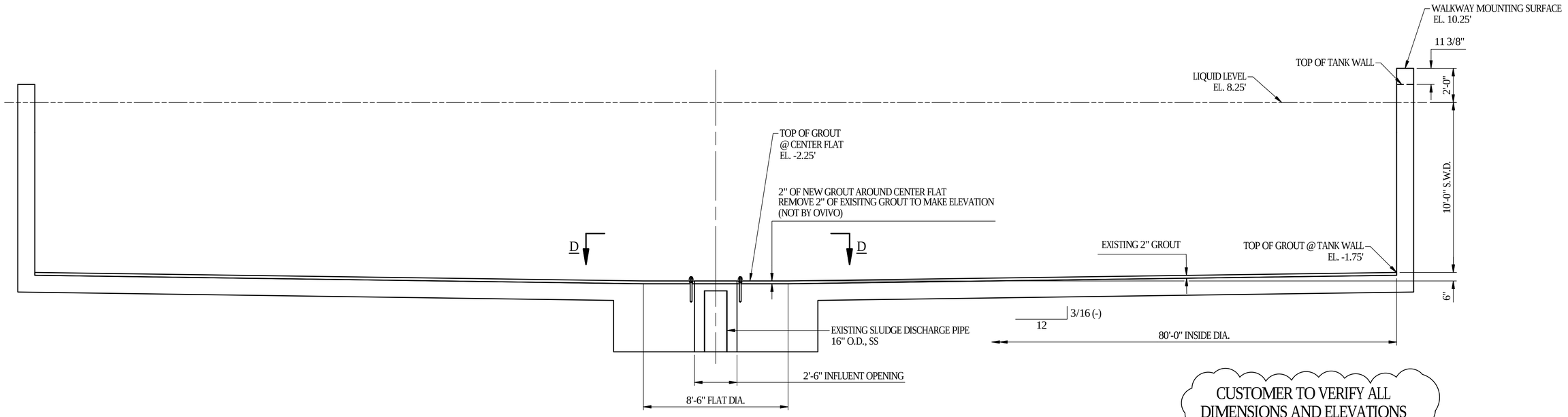
D	DO NOT SCALE PRINTS	DWG. NO.	RSW1107-101	SHEET 6 OF 7	REV A

WORKMANSHIP STANDARD ES0001 APPLIES



SECTION D-D

CLARIFIERS 1 & 2 TANK BOTTOM DETAIL



ELEVATION VIEW

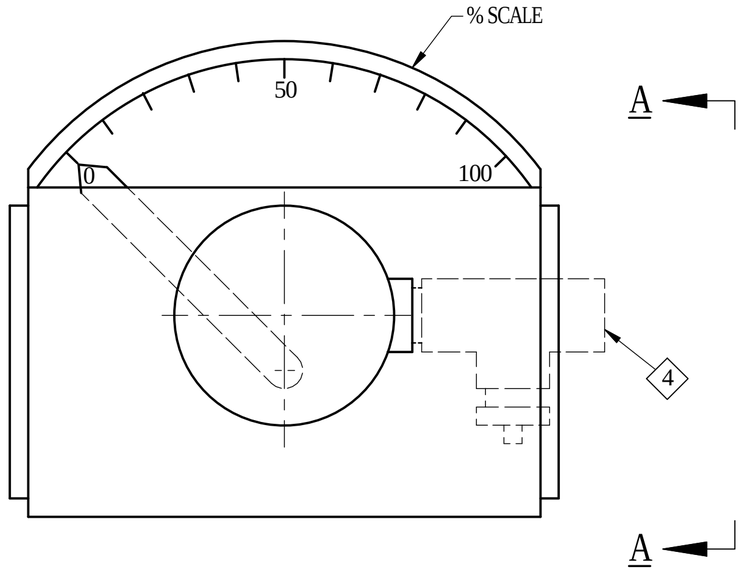
CLARIFIERS 1 & 2 TANK DETAIL

CUSTOMER TO VERIFY ALL DIMENSIONS AND ELEVATIONS

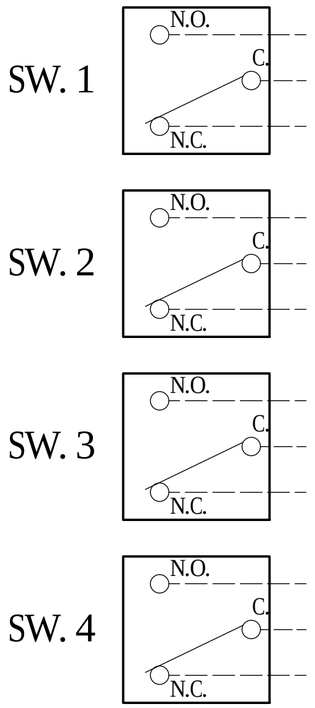
OVIVO
Worldwide Experts in Water Treatment

D	DO NOT SCALE PRINTS	DWG. NO.	RSW1107-101	SHEET 7 OF 7	REV A

WORKMANSHIP STANDARD ES0001 APPLIES



RIGHT HAND DRIVE CONTROL
CONFIGURATION
(LEFT HAND OPPOSITE)



MOTOR CUT-OUT @ 85% (59,500 FT-LB TORQUE)
(186% OF CONTINUOUS RUNNING TORQUE)

ALARM ACTUATION @ 40% (28,000 FT-LB TORQUE)
(88% OF CONTINUOUS RUNNING TORQUE)

FAIL SAFE MOTOR CUT-OUT @ 100% (70,000 FT-LB TORQUE)
(219% OF CONTINUOUS RUNNING TORQUE)

SPARE (NOT USED)

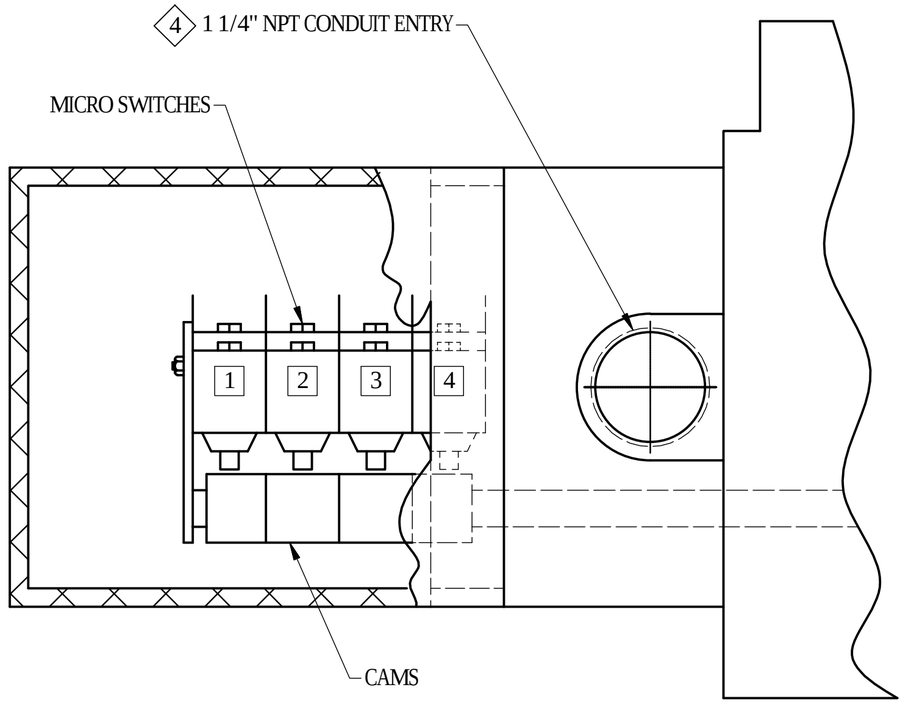
NOTES: (UNLESS OTHERWISE SPECIFIED)

1. CUT-OUT SWITCH (LIMIT SWITCH #1) ACTUATES ON INCREASING LOAD DE-ENERGIZING RAKE DRIVE UNIT MOTOR STARTER. THIS SWITCH MUST BE UTILIZED TO PROTECT DRIVE MECHANISM. IT IS FACTORY SET AND SHOULD NOT BE CHANGED WITHOUT PRIOR AUTHORIZATION BY OVIVO

2. ALARM SWITCH (SWITCH #2) ACTUATES ON INCREASING LOAD INDICATING IMPENDING OVERLOAD.

3. ENCLOSURE IS WEATHERPROOF STAINLESS STEEL WITH REMOVABLE GASKETED COVER. DESIGNED TO MEET NEMA 4X REQUIREMENTS.

4. APPROPRIATE FITTING AND DRAIN MUST BE USED, PER N.E.C. TO ELIMINATE WATER CONDENSATION. (NOT BY OVIVO)



VIEW A-A
(ENLARGED)

NOTE: 100% TORQUE IS BASED ON 70,000 FT-LB

CONTINUOUS RUNNING TORQUE = 32,000 FT-LBS

C

THIRD ANGLE PROJECTION

OVIVO
Worldwide Experts in Water Treatment

DRIVE CONTROL SWITCH SETTINGS

REF. FROM	-	DO NOT SCALE PRINTS
DATE (mm/dd/yyyy)	1/15/2020	WORKMANSHIP STANDARD ES0001 APPLIES
DRAWN	CRF	ORIGINAL S.O.
CHECK'D	JMW	RSW0001107-01

DWG. NO. RSW1107-102 | SHEET 1 OF 1 | REV A

REVISION DESCRIPTION	EN/ECO	BY	CHECK'D	DATE	REV
INITIAL RELEASE					A

Attachment #4

Buoyancy Discussion

Clarifier Buoyancy Discussion

The City did a thorough investigation of previous design/as-built drawings to determine the presence of anti-flotation mechanisms within Clarifiers No. 1, 2, and 4. The City found the following:

- Clarifier No. 1 – The clarifier was installed in 1965/1966. The tank was initially bid to include 4" relief valves throughout the cone, however based on the as-built drawing (included herein), it appears that the tank was installed without the relief valves. The as-built drawings further indicate that the tank is subject to buoyant forces and therefore required the installing contractor to dewater to an elevation below -1.58' (datum unknown).
- Clarifier No. 2 – The clarifier was installed in the late 1960's and appears to be a replica of Clarifier No. 1. As such, no relief valves appear to have been installed, nor any other means of anti-flotation. The as-built drawings (included herein) further indicate that the tank is subject to buoyant forces and therefore required the installing contractor to dewater to an elevation below -1.58' (datum unknown).
- Clarifier No. 4 – The clarifier was installed in the early to mid-1990's. The drawings (included herein) show that the clarifier was installed with an underdrain system. The City located the underdrain manhole and visually verified it to be full of water. However the City did not do any investigation to confirm if the underdrain system is functional or not.

Based on these findings, the Bidders are directed as follows:

- Clarifier No. 1 – A bid item has been added to the bid form for groundwater dewatering of Clarifier No. 1. ***The Contractor will be required to maintain the groundwater at or below the elevation of the footer as shown on the drawings for the entire time the tank is empty***.
- Clarifier No. 2 – A bid item has been added to the bid form for groundwater dewatering of Clarifier No. 2. ***The Contractor will be required to maintain the groundwater at or below the elevation of the footer as shown on the drawings for the entire time the tank is empty.***
- Clarifier No. 4 – A bid item has been added to the bid form for the installation of groundwater piezometers at Clarifier No. 4. ***The Contractor will be required to verify the underdrain system is functional and able to maintain a groundwater elevation at the elevation of the underdrain system as shown for the entire time the tank is empty.***

Please note the following criteria with regards to dewatering:

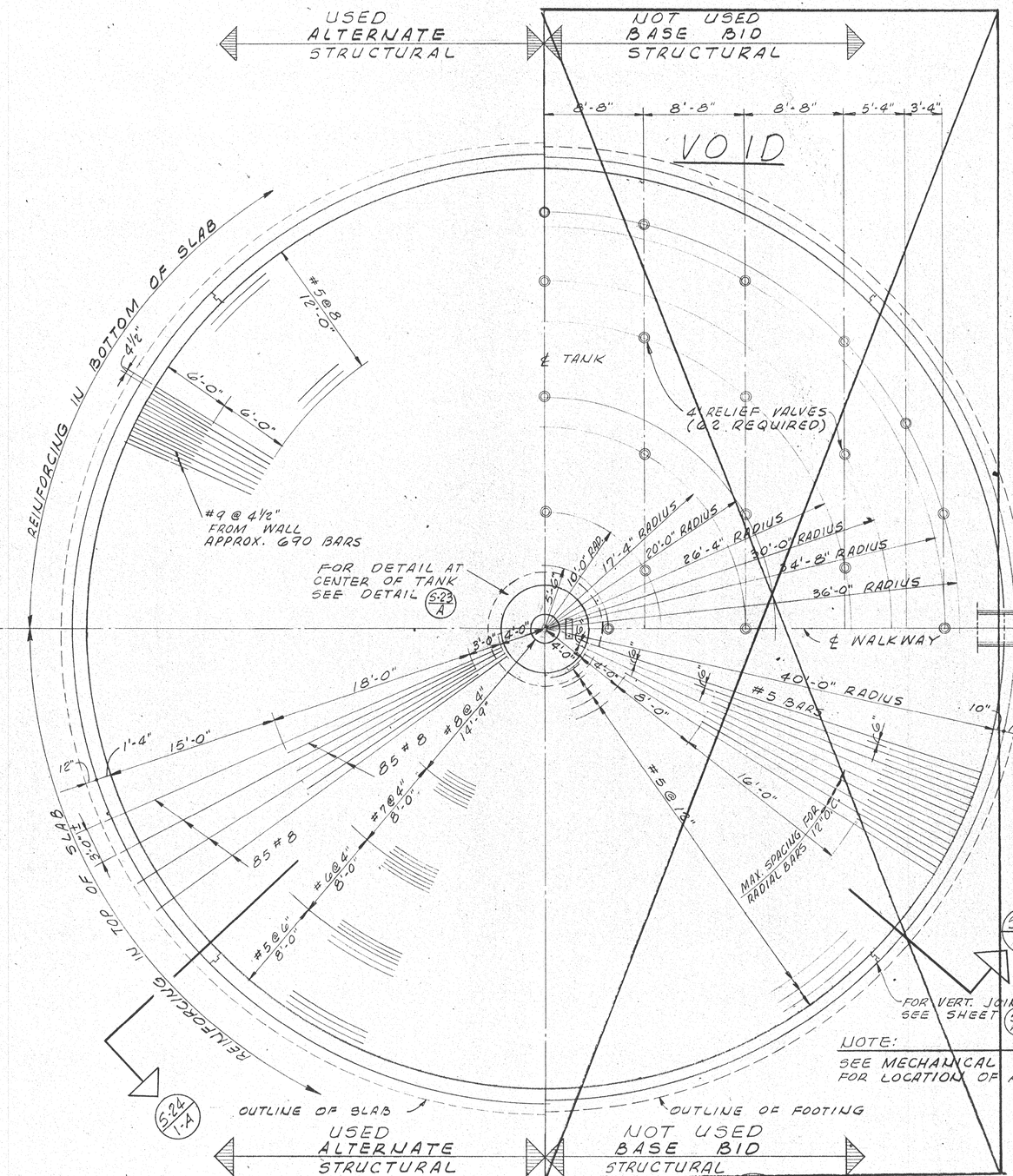
A. Contractor must submit dewatering plan to the City for review and acceptance prior to beginning work. Plan shall be prepared by a qualified Civil Engineer licensed in the State of Florida and shall have a minimum of 5 years of experience designing similar systems.
    1. Design requirements of the dewatering plan shall include:
        i. Evaluation of anticipated subsurface conditions.
        ii. Required well spacing.

iii. Diameter of wells.
iv. Depth to screen, screen height, and mesh size.
v. Backfill and filter pack.
vi. Pump size.
vii. Drawdown duration.
viii. Drawdown and steady state flow rates.
ix. Plans for de-silting of groundwater before discharge.
x. Expected settlements.

2. Include water drawdown curves in dewatering calculations.
3. Maintain operation of dewatering system until clarifier is filled with water. Please note that a failure of the dewatering system could result in flotation of the tank/cracking of the tank base slab. For this reason***, the dewatering system needs to be operational for the entire duration that the tank is empty***. Contractor must provide a means of redundancy/provisions to maintain continuous operation.
4. Provide standby power to ensure continuous dewatering in case of power failure, if applicable.

B. Groundwater shall be dewatered to a level at or below the footer unless the dewatering design engineer can show a shallower elevation will not result in buoyant forces on the tank. Contractor and dewatering designer shall field verify and determine required groundwater drawdown levels. A recent geotech report conducted on-site has been added to this addendum for information only.
C. Discharge water to stormwater after proper de-silting of the groundwater. Coordinate with the Plant Superintendent and City's Project Manager as necessary.
D. Submittals:
    1. Dewatering Plan
        i. Dewatering design analysis
        ii. Required permits
        iii. Arrangement, location, and depths of dewatering system components.
        iv. Type and size of filters.
        v. Identify proposed alignment, support, and protection for discharge pipe. Identify location of discharge and provide details for that location.
        vi. Means of redundancy/provisions to maintain continuous dewatering.
        vii. Means of verifying groundwater is dewatered to depth as determined by dewatering design engineer.
    2. Qualifications
        i. Dewatering contractor.
        ii. Dewatering design engineer.

Clarifier No. 1 Drawings

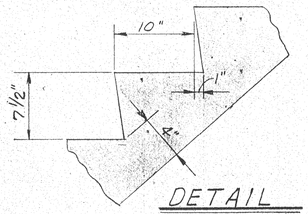


PLAN

SCALE: 3/16" = 1'-0"

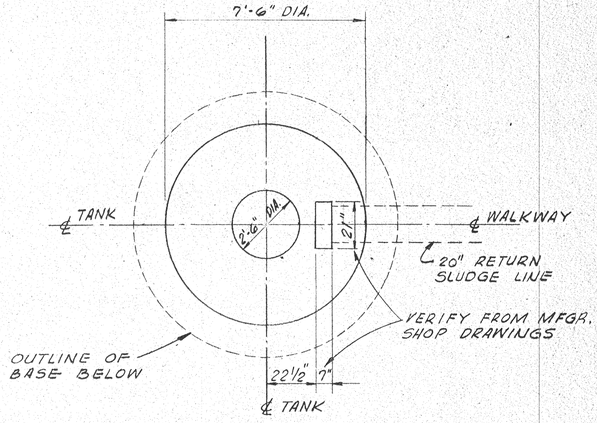
NOTE:

SEE MECHANICAL DWGS. FOR LOCATION OF ALL PIPING.



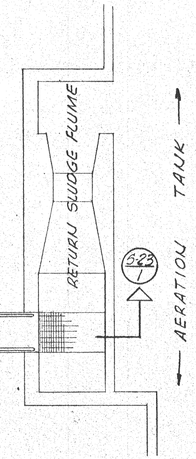
DETAIL 5-23 C

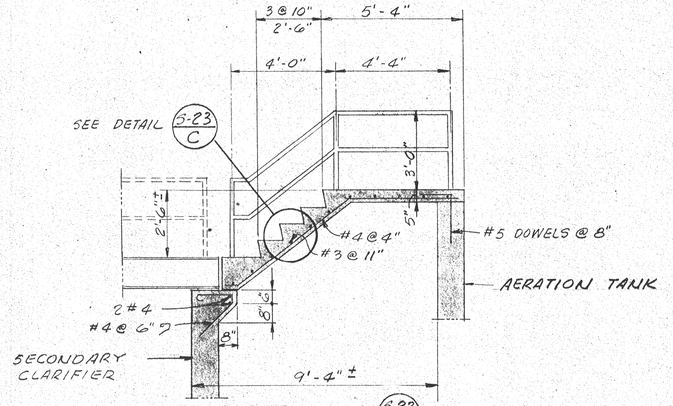
SCALE: 1½" = 1'-0"



PLAN AT CENTER - DETAIL 5-23 A

SCALE: 3/8" = 1'-0"





SECTION 5-23 1

SCALE: 3/8" = 1'-0"

NOTE:

SECONDARY CLARIFIER IS SUBJECT TO HYDROSTATIC FLOTATION. GROUND WATER TABLE MUST BE MAINTAINED BELOW ELEVATION - 1.58 UNTIL WALLS ARE COMPLETED AND BACKFILL TO FINISH GRADE IS IN PLACE.

NO	DATE	DESCIPTION	BY	CHKD
1	2-1-66	AS-BUILT DRAWING	G.P.	

REVISIONS

DEPARTMENT OF WATER AND SEWERS
CITY OF DAYTONA BEACH, FLORIDA

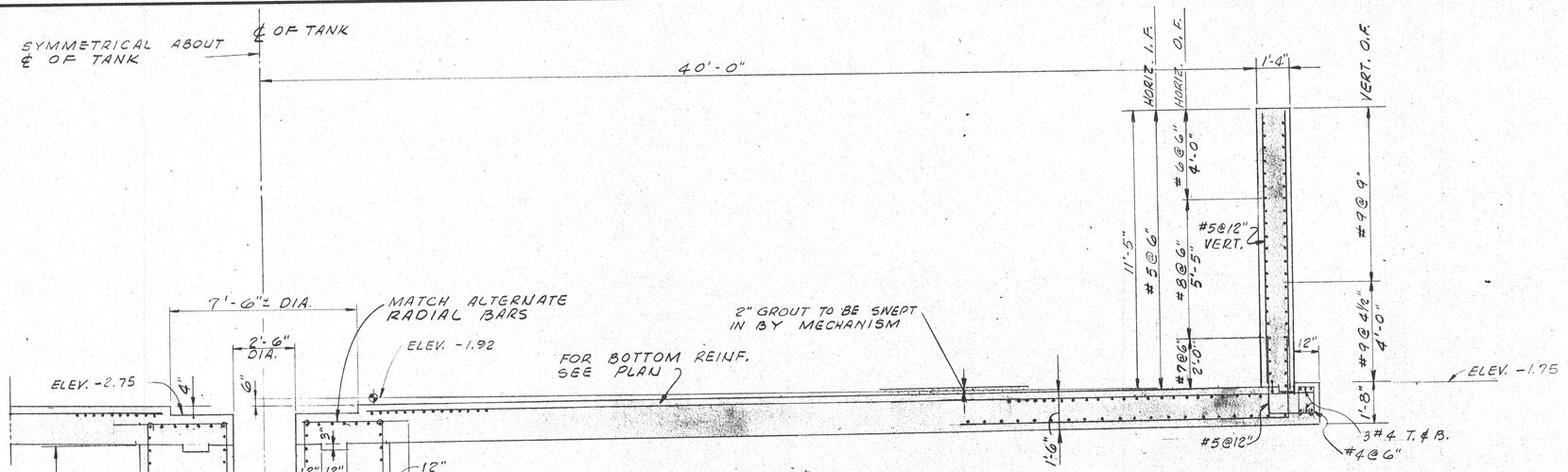
SEWAGE TREATMENT FACILITIES
SECONDARY CLARIFIER
PLAN & SECTIONS

RUSSELL & AXON, INC. CONSULTING ENGINEERS AND FLOOD & DAWKINS CONSULTING ENGINEERS
DAYTONA BEACH, FLA. JACKSONVILLE, FLA.

DESIGNED BY H.O.	FILE NO. 6208-5	SEAL
DRAWN BY POPE	SHEET NO. 92 OF 113 SHEETS	S/23
CHECKED BY H.O.		
DATE AUG 1963	SCALE AS SHOWN	

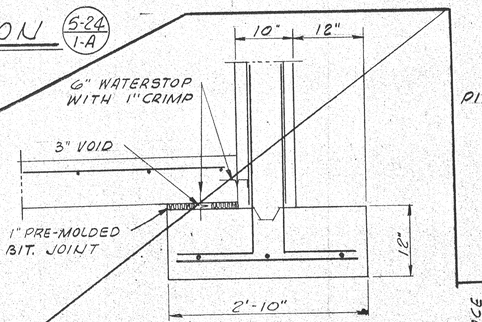
APPROVED FOR RUSSELL & AXON, INC. — REG. PROF. ENGR. NO. 3746 — DATE 8/5/63

APPROVED FOR FLOOD & DAWKINS — REG. PROF. ENGR. NO. 5204 — DATE 8/6/63



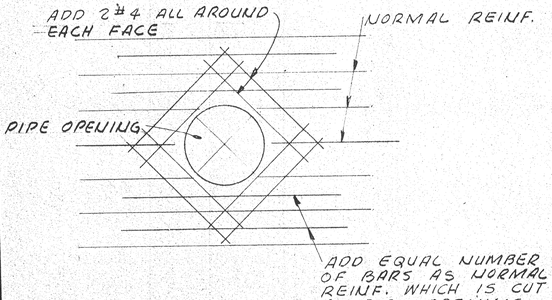
ALTERNATE SECTION (5-24 1-A)

SCALE: 3/8" = 1'-0"



DETAIL (5-24 B)

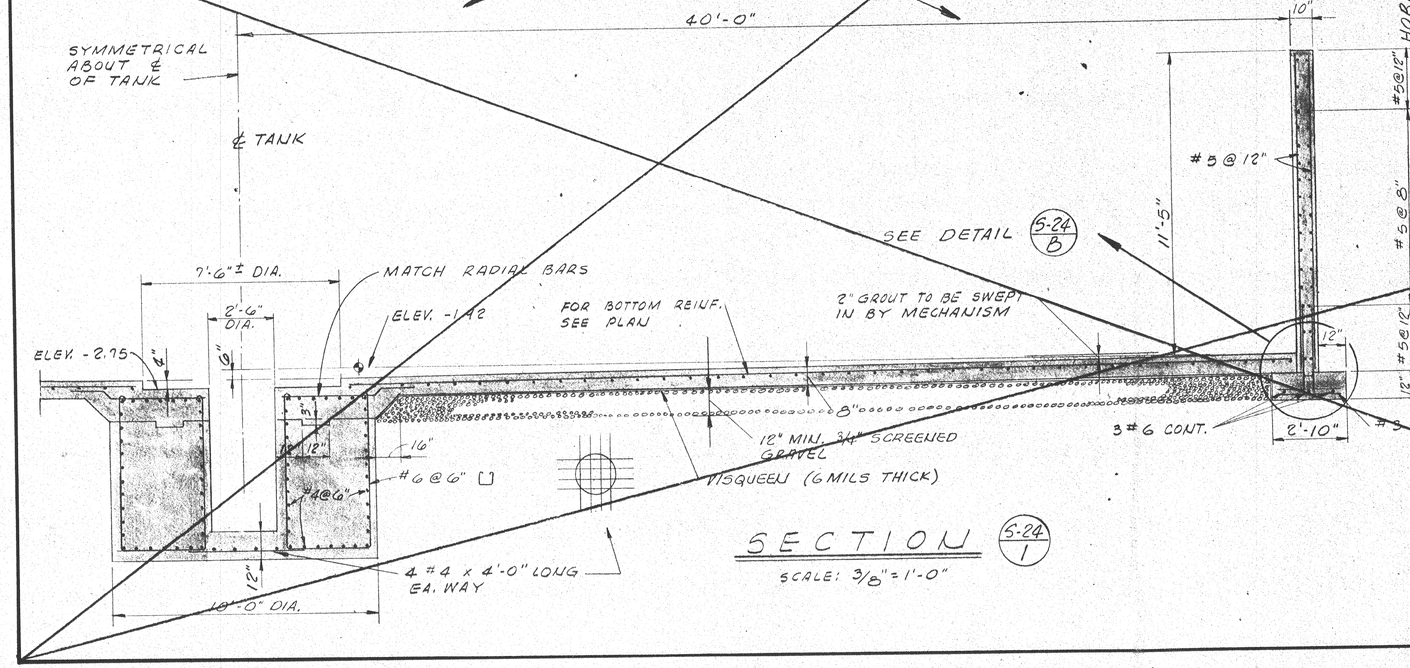
SCALE: 1" = 1'-0"



DETAIL (5-24 A)

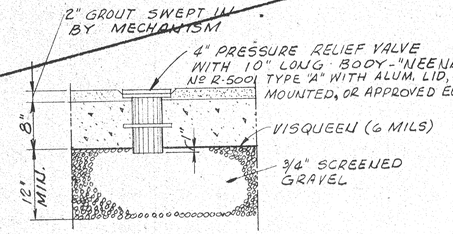
NO SCALE

VOID



SECTION (5-24 1)

SCALE: 3/8" = 1'-0"



RELIEF VALVE SETTING DETAIL (5-24 C)

SCALE: 1" = 1'-0"

NO	DATE	DESCRIPTION	BY	CHKD
1	2-1-66	AS-BUILT DRAWING	G.P.	

REVISIONS

DEPARTMENT OF WATER AND SEWERS
CITY OF DAYTONA BEACH, FLORIDA

SEWAGE TREATMENT FACILITIES
SECONDARY CLARIFIER
SECTIONS & DETAILS

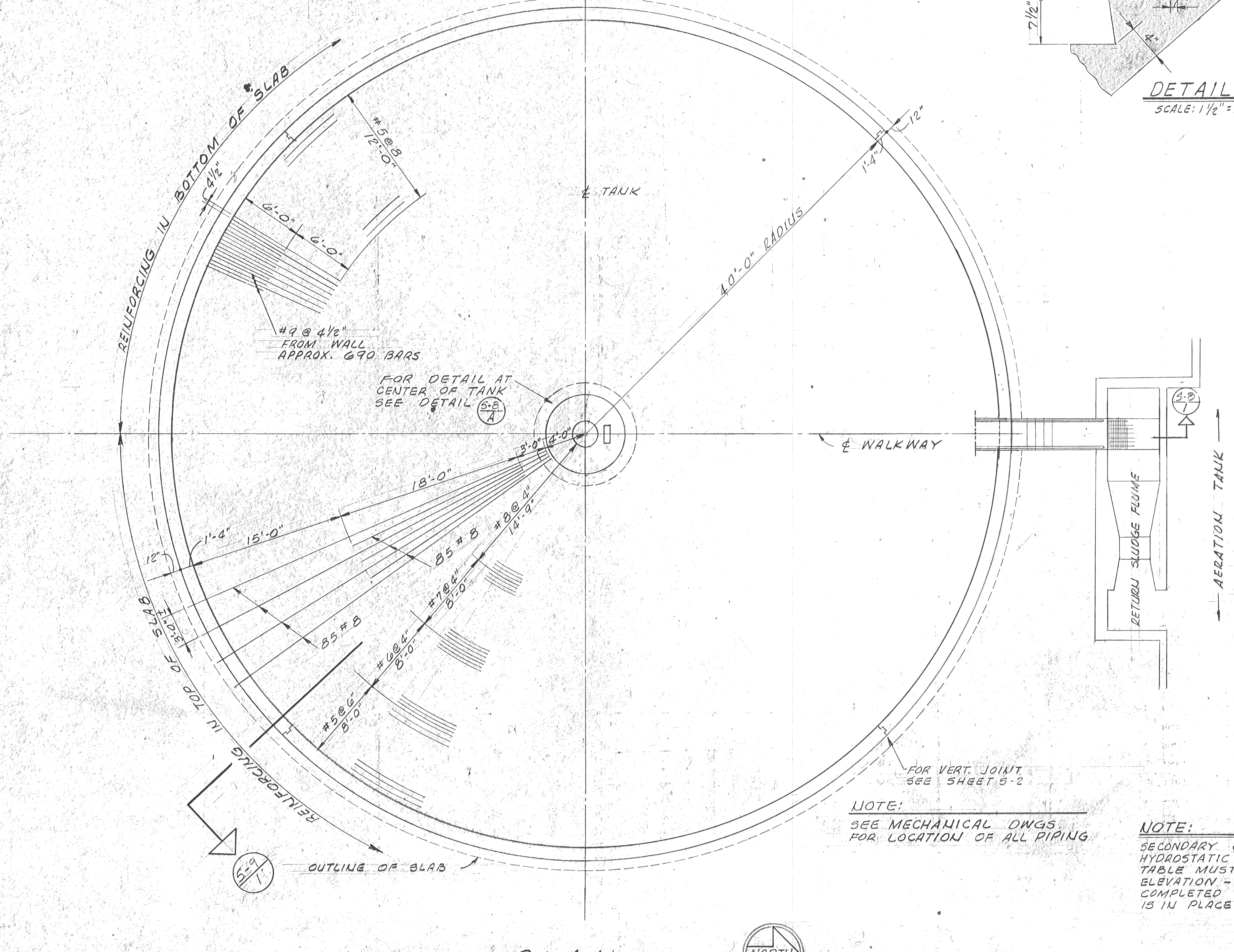
RUSSELL & AXON·INC. CONSULTING ENGINEERS DAYTONA BEACH, FLA.
AND
FLOOD & DAWKINS CONSULTING ENGINEERS JACKSONVILLE, FLA.

DESIGNED BY H.O.	FILE NO. 6208-5	SEAL
DRAWN BY POPE	SHEET NO. 93 OF 113 SHEETS	S/24
CHECKED BY H.O.		
DATE AUG 1963	SCALE AS SHOWN	

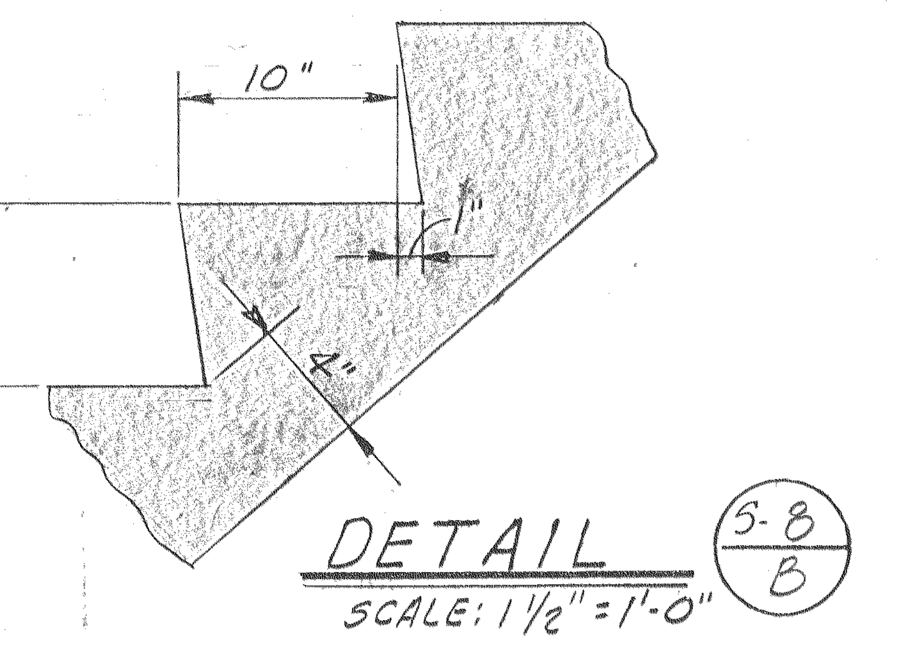
APPROVED FOR RUSSELL & AXON·INC.
REG. PROF. ENGR. NO. 3744 — DATE 8/5/63

APPROVED FOR FLOOD & DAWKINS
REG. PROF. ENGR. NO. 5204 — DATE 8/5/63

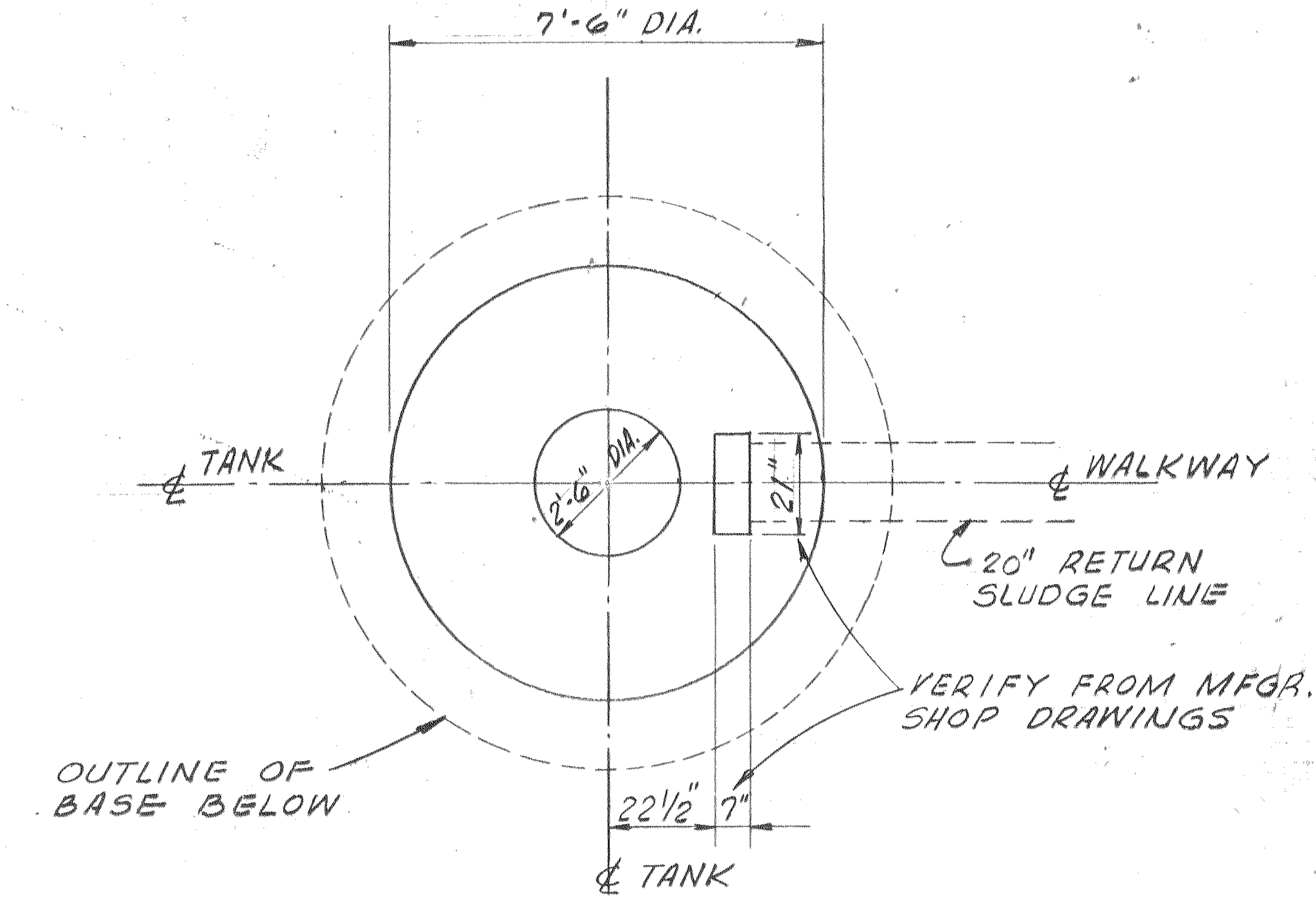
Clarifier No. 2 Drawings



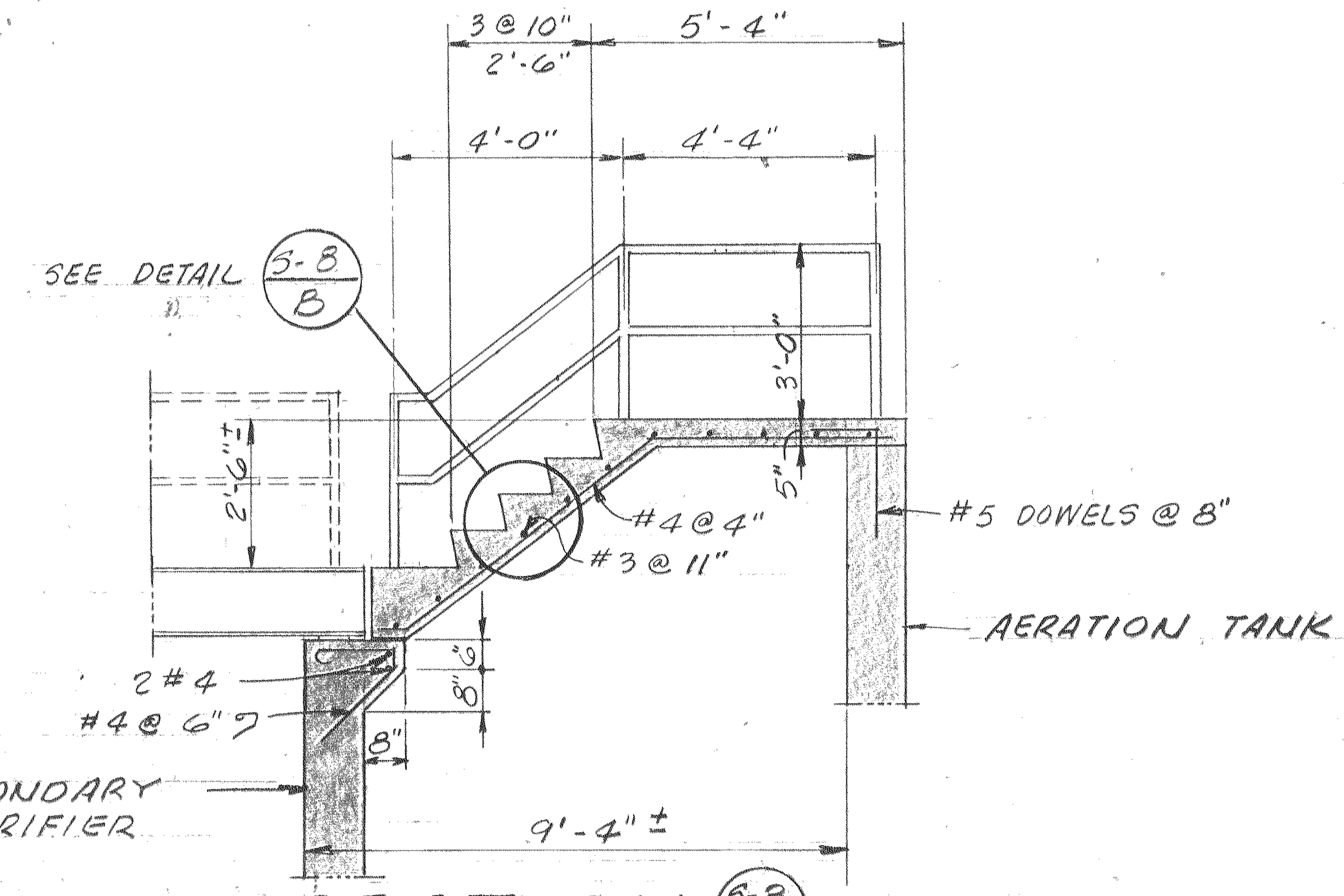
PLAN
SCALE: 3/16" = 1'-0"



DETAIL 5-8/B
SCALE: 1 1/2" = 1'-0"



PLAN AT CENTER - DETAIL 5-8/A
SCALE: 3/8" = 1'-0"



SECTION 5-8/1
SCALE: 3/8" = 1'-0"

NOTE:
SEE MECHANICAL DWGS FOR LOCATION OF ALL PIPING.

NOTE:
SECONDARY CLARIFIER IS SUBJECT TO HYDROSTATIC FLOTATION. GROUND WATER TABLE MUST BE MAINTAINED BELOW ELEVATION -1.58 UNTIL WALLS ARE COMPLETED AND BACKFILL TO FINISH GRADE IS IN PLACE.

APPROVED BY
FLORIDA STATE BOARD OF HEALTH
DAVID B. LEE
DIRECTOR BUREAU OF SANITARY ENGINEERING
AUG 15 1966

NO.	DATE	DESCRIPTION	BY	CKD.

REVISIONS

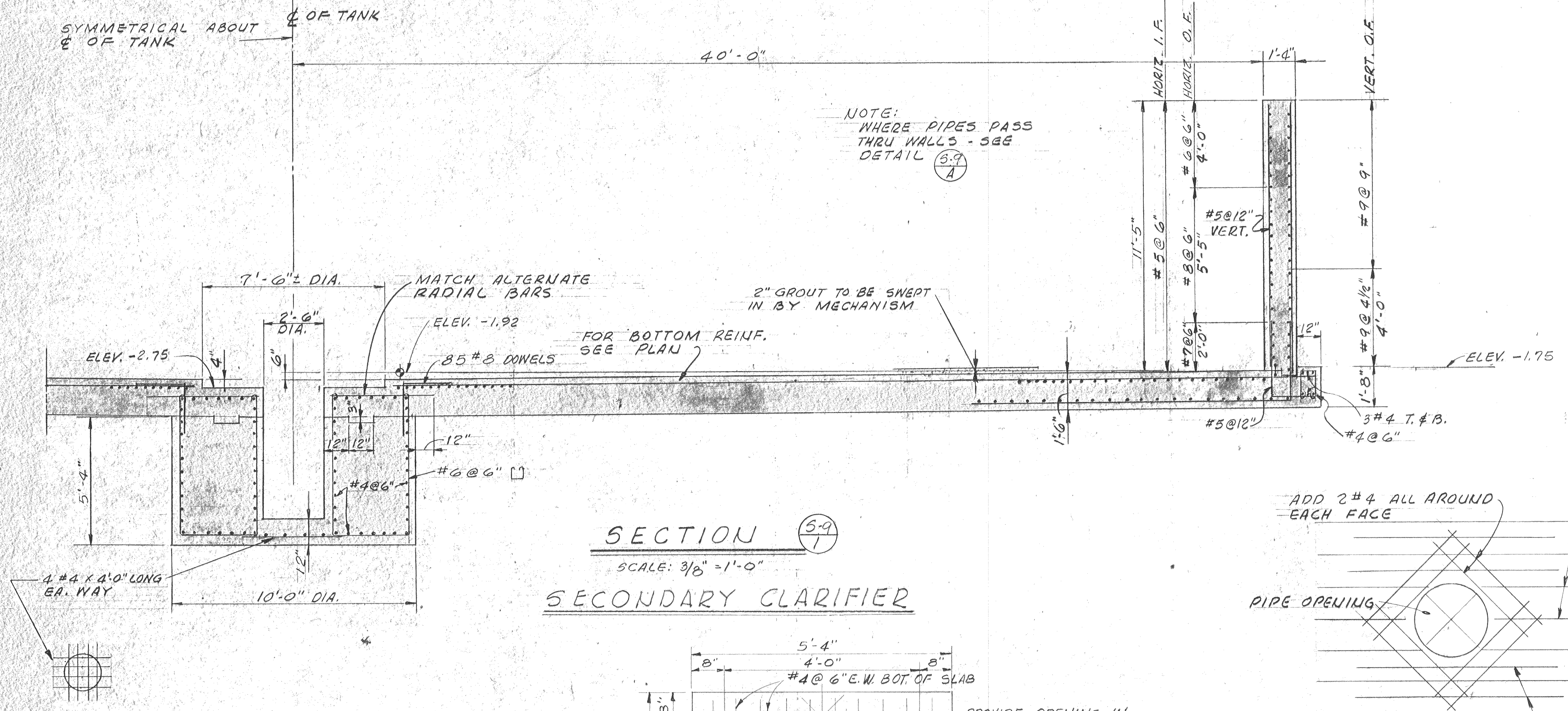
RUSSELL & AXON
Consulting Engineers, Incorporated
DAYTONA BEACH, FLA. — ST. LOUIS, MO.

SEWAGE TREATMENT FACILITIES
SECONDARY CLARIFIER – PLAN
DAYTONA BEACH, FLORIDA

DESIGNED BY: J.W.C.	FILE NO. 6661-8-13	SEAL
DRAWN BY: RSC	SHEET NO. 13	
CHECKED BY: CEB	OF 51 SHEETS	
DATE: JULY 1966	SCALE: AS SHOWN	S-8

SEAL: CHARLES E. BARTLETT, CERTIFICATE No. 11085, STATE OF FLORIDA, REGISTERED ENGINEER

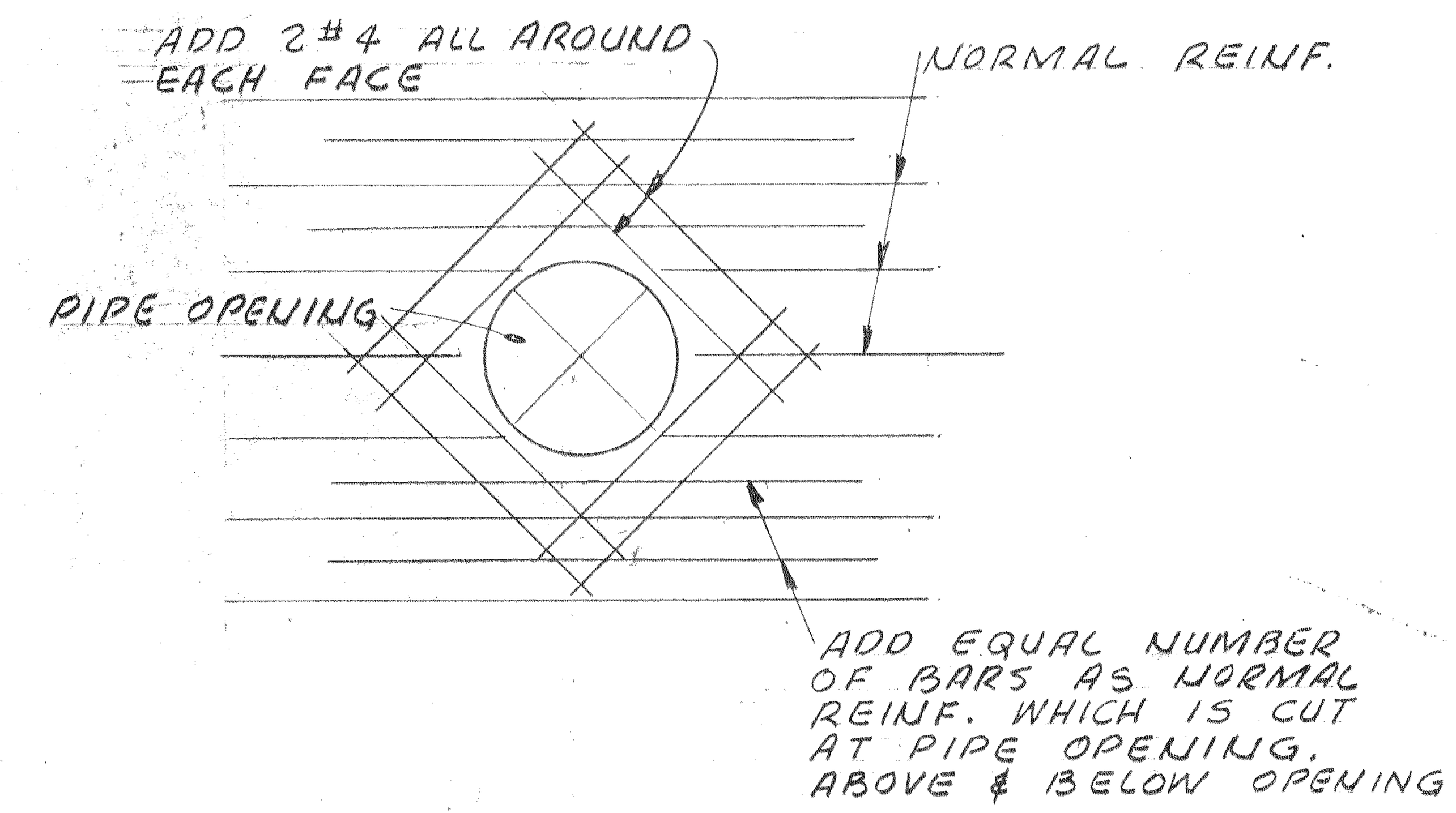
5067



SECTION 5-9/1

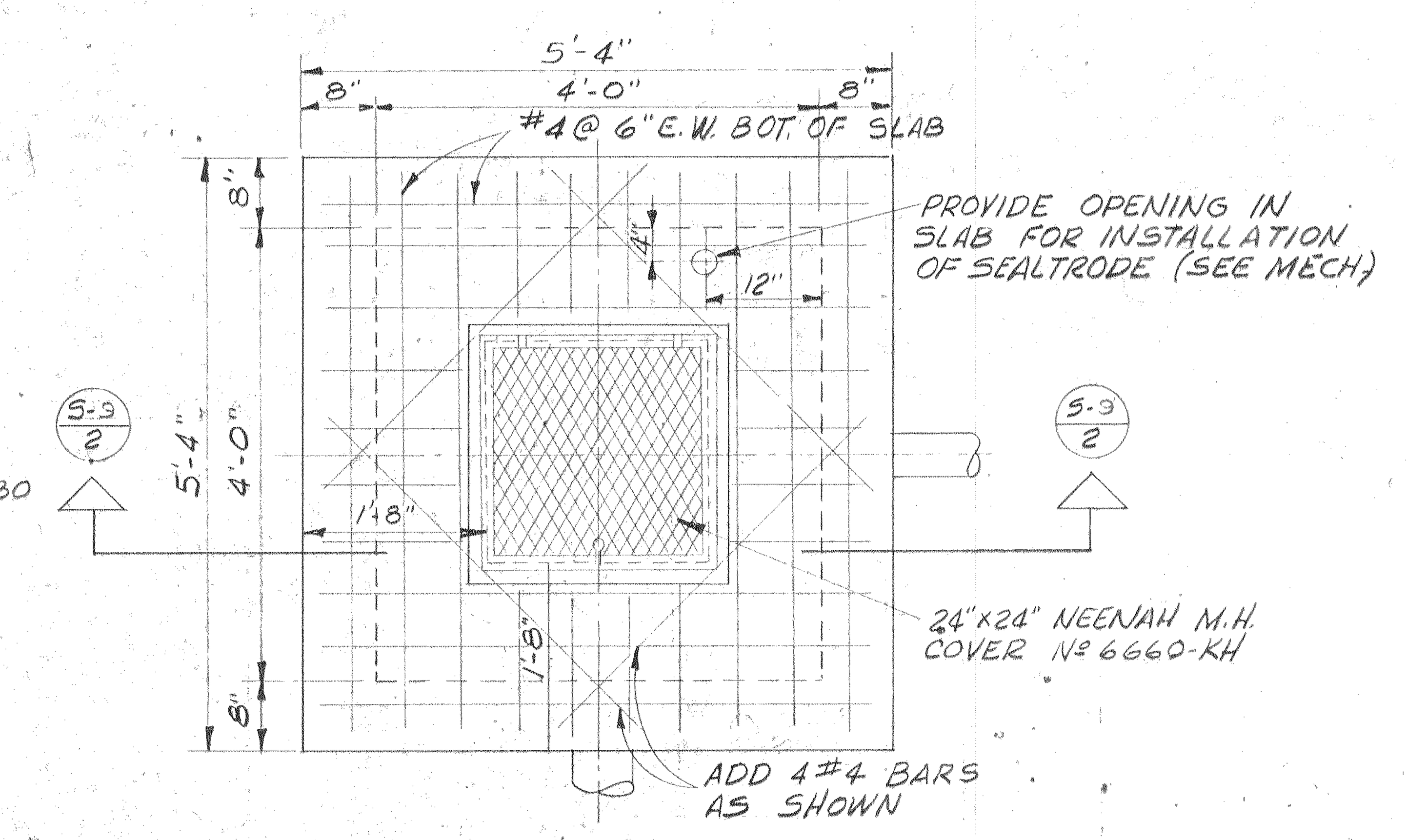
SCALE: 3/8" = 1'-0"

SECONDARY CLARIFIER

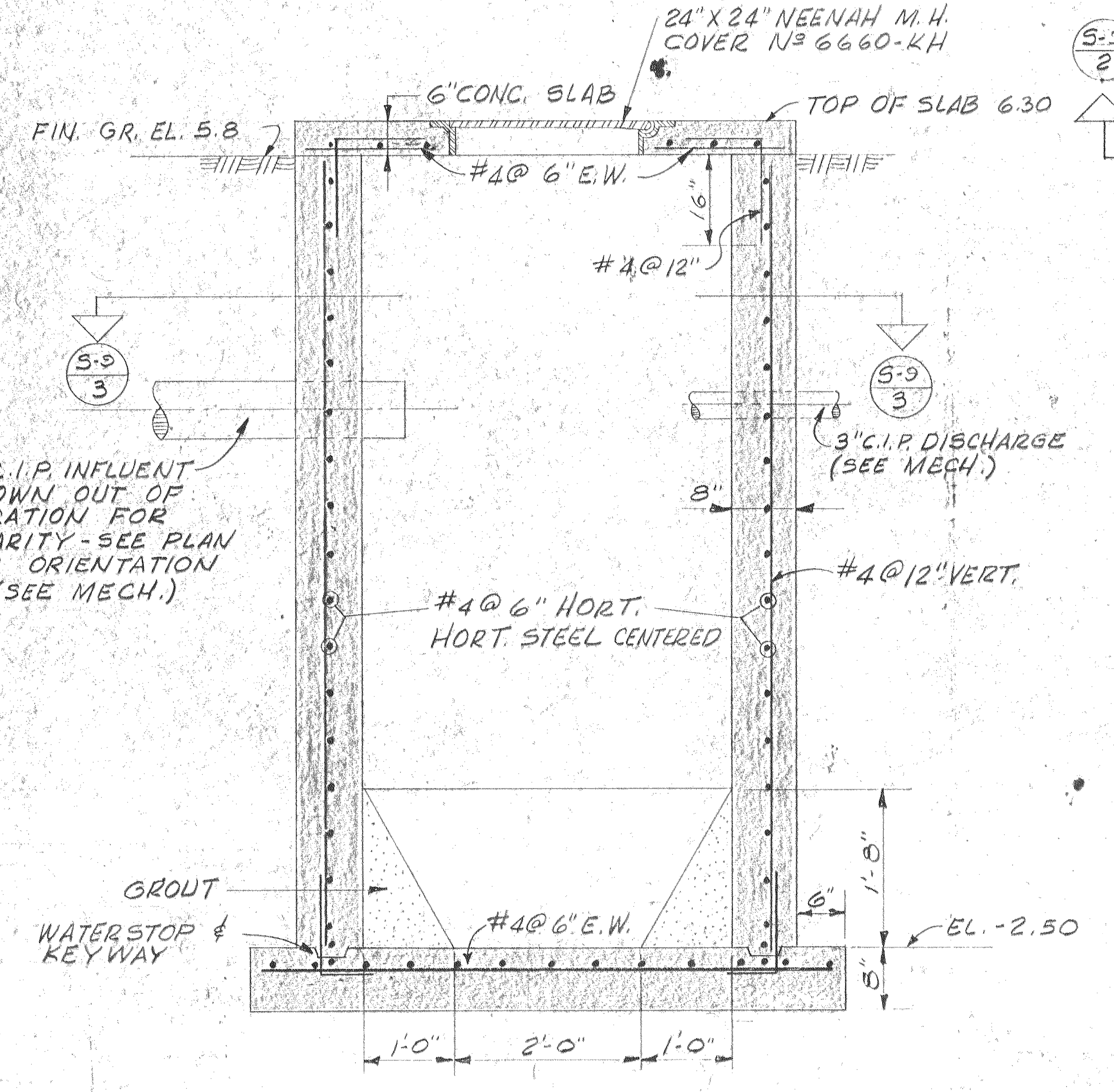


DETAIL 5-9/A

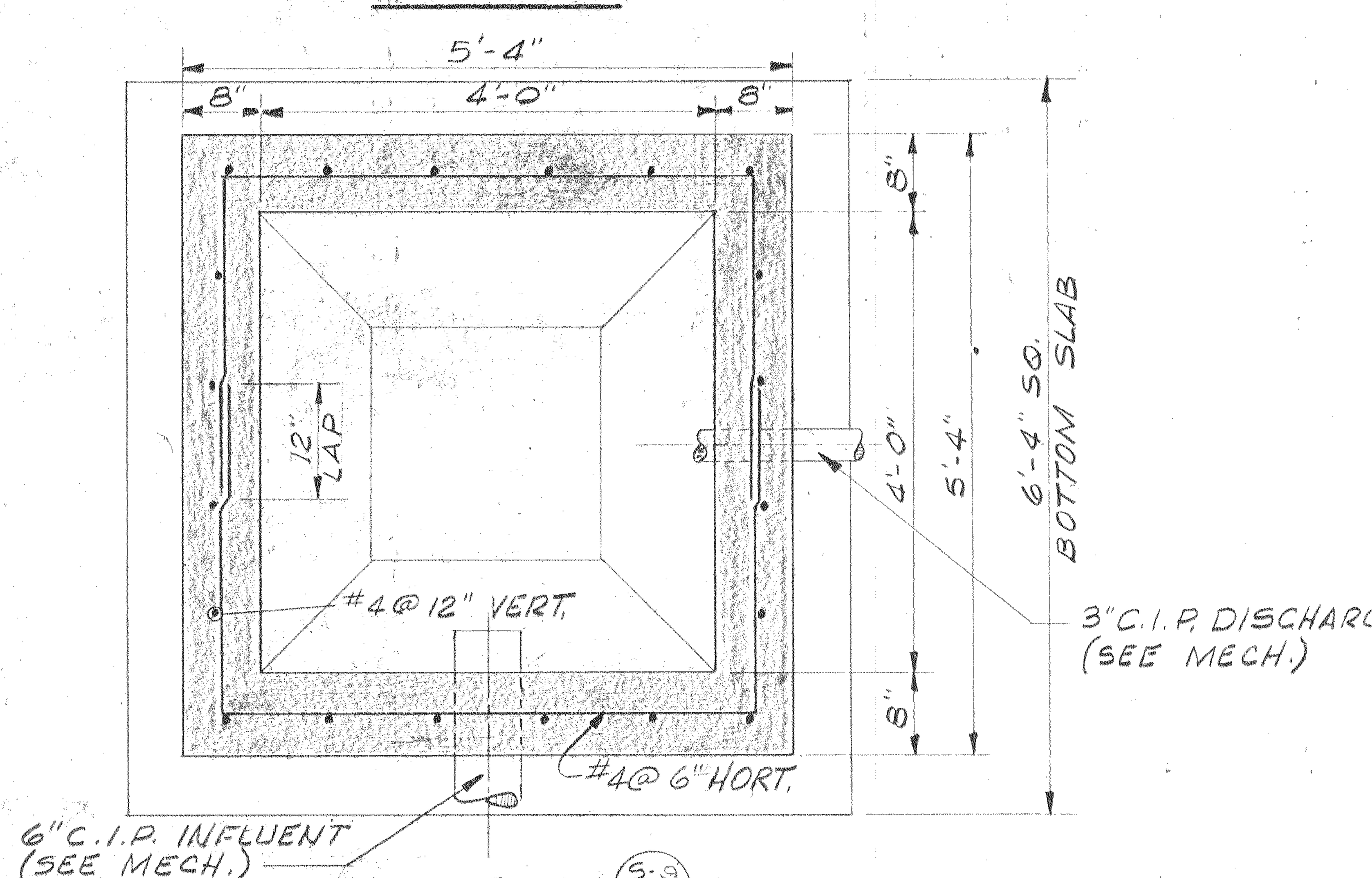
NO SCALE



PLAN



SECTION 5-9/2



SECTION 5-9/3

"PRIMARY SKIMMING" PUMP PIT

SCALE: 3/4" = 1'-0"

APPROVED BY FLORIDA STATE BOARD OF HEALTH
DAVID B. LEE
DIRECTOR BUREAU OF SANITARY ENGINEERING
Serial No. 8646
Date AUG 15 1966
For the Director
NOTE: THIS APPROVAL IS NOT INTENDED ...

NO.	DATE	DESCRIPTION	BY	CKD.

REVISIONS

RUSSELL & AXON
Consulting Engineers, Incorporated
DAYTONA BEACH, FLA. — ST. LOUIS, MO.

SEWAGE TREATMENT FACILITIES

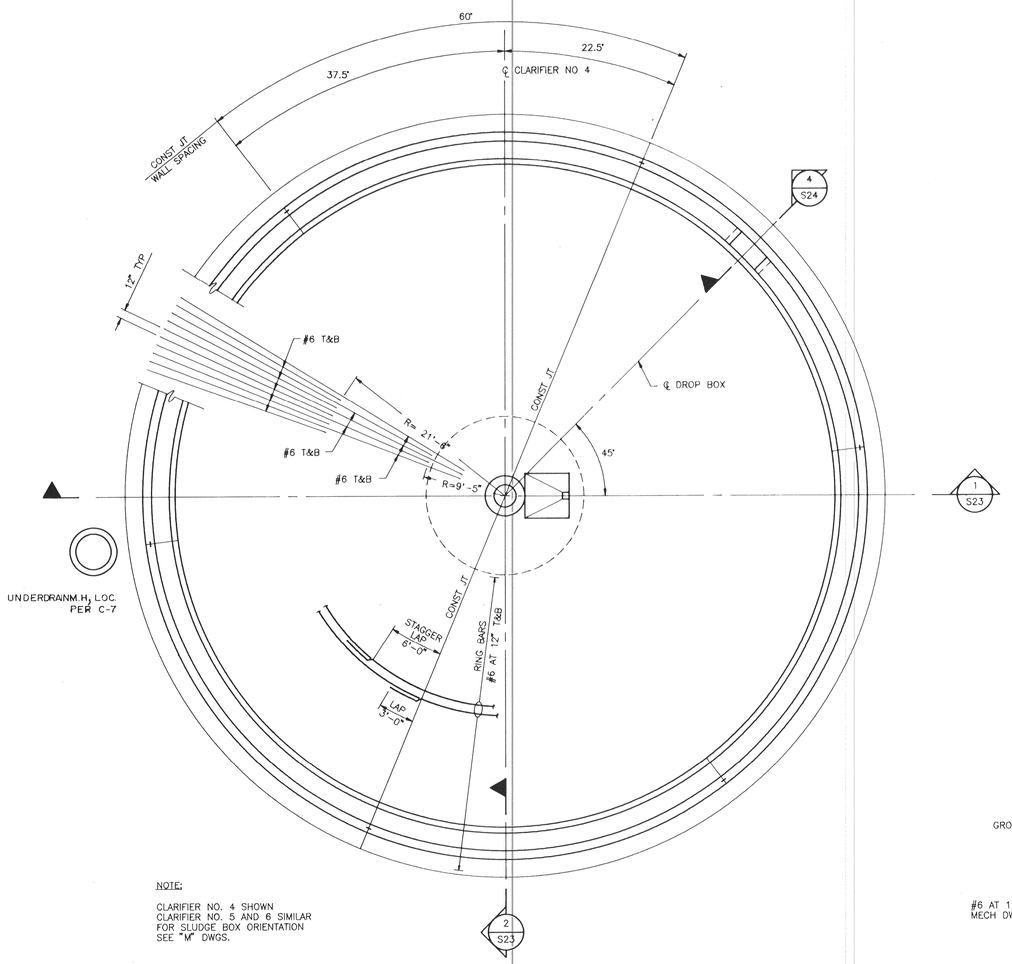
SECONDARY CLARIFIER-SECTION & DETAIL

DAYTONA BEACH, FLORIDA

DESIGNED BY J.W.C.	FILE NO. 6661-8-14	SEAL
DRAWN BY RJC	SHEET NO. 14	CHARLES ... No. 11085 STATE OF FLORIDA REGISTERED ENGINEER
CHECKED BY CEB	OF 51 SHEETS	
DATE JULY 1966	SCALE: AS SHOWN	S-9

5067

Clarifier No. 4 Drawings

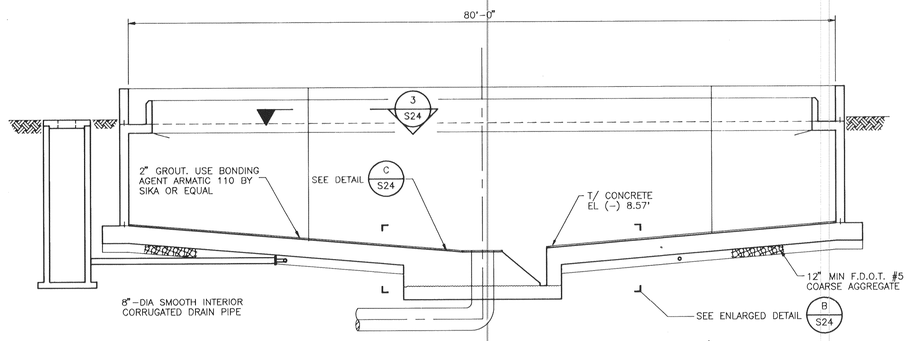


NOTE:

CLARIFIER NO. 4 SHOWN
CLARIFIER NO. 5 AND 6 SIMILAR
FOR SLUDGE BOX ORIENTATION
SEE "M" DWGS.

2
S23

PLAN
1/8"=1'-0"

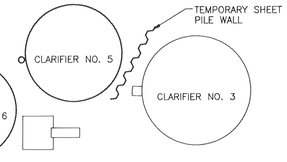


SECTION
1/8"=1'-0"
1
S23

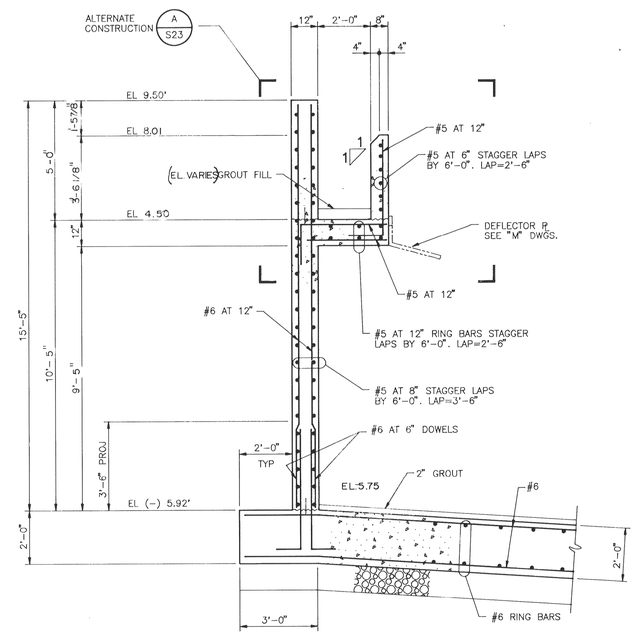
(ALTERNATE CONSTRUCTION)*

DETAIL
3/8"=1'-0"
A
S23

* THIS DETAIL USED



KEY PLAN



SECTION
3/8"=1'-0"
2
S23

NOTE:

STANDARD DETAILS SHOWN ON SD1, SD2, AND SD3
APPLY TO ALL SIMILAR SITUATIONS ON THE PROJECT,
EXCEPT WHERE A DIFFERENT DETAIL IS SHOWN.

RECORD DRAWING

THESE RECORD DRAWINGS HAVE BEEN PREPARED BASED
ON INFORMATION PROVIDED BY OTHERS. THE ENGINEER HAS NOT VERIFIED
THE ACCURACY OF THIS INFORMATION AND SHALL NOT BE RESPONSIBLE FOR
ANY ERRORS OR OMISSIONS WHICH MAY BE INCORPORATED HERE IN AS A RESULT.

CAMP DRESSER & McKEE INC. Date _____

STI structural technologies Inc.
CONSULTING ENGINEERS
Wekiva Business Center
Suite 120, 1428 East Semoran Blvd., Apopka, Florida 32703
(407) 889-9660

DRAWN BY : TAV
CHECKED BY : KM
APPROVED BY : BE
DATE : JULY 1991
JOB NO: 91-143

REV. NO.	DATE	DRWN	CHKD	REMARKS
	10/91	TMM	MC	CONFORMED DWG
	2/94	DJP	KC	RECORD DRAWINGS

DESIGNED BY:
DRAWN BY:
CHECKED BY:
APPROVED BY:
DATE:

CDM

CAMP DRESSER & McKEE INC.
environmental engineers, scientists
planners & management consultants

UPGRADING AND MODIFICATIONS TO THE
BETHUNE POINT WASTEWATER TREATMENT PLANT

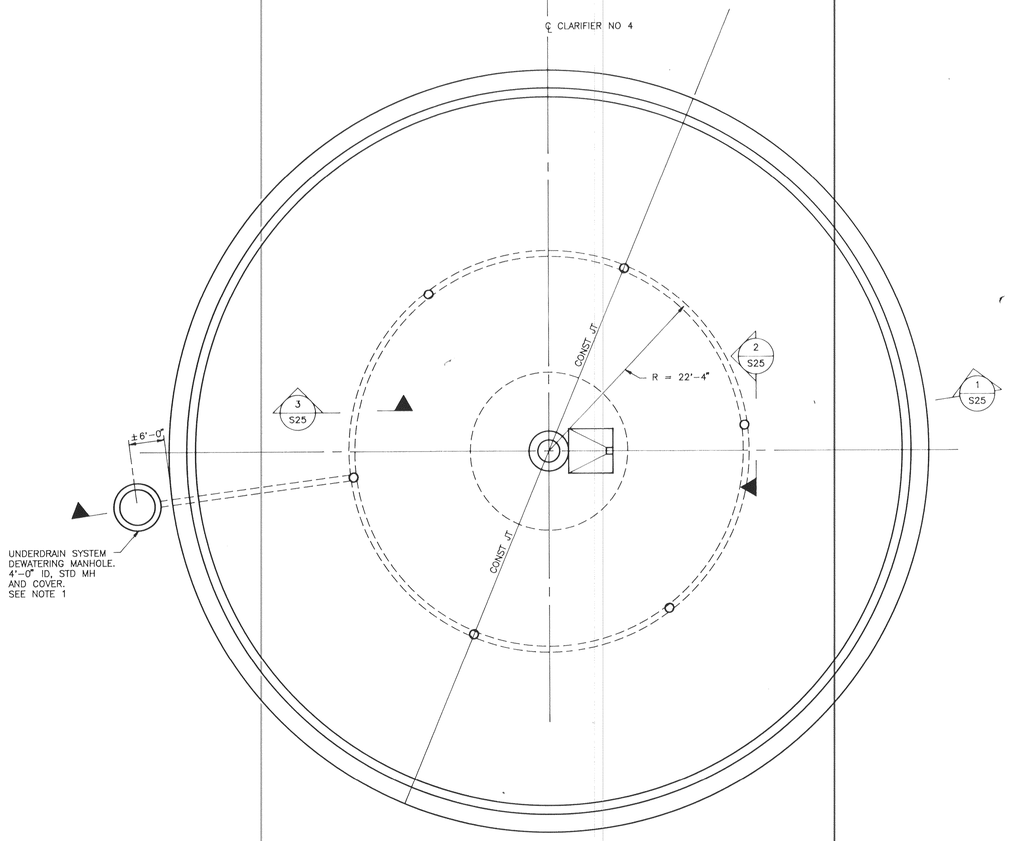
CLARIFIER PLAN AND SECTIONS

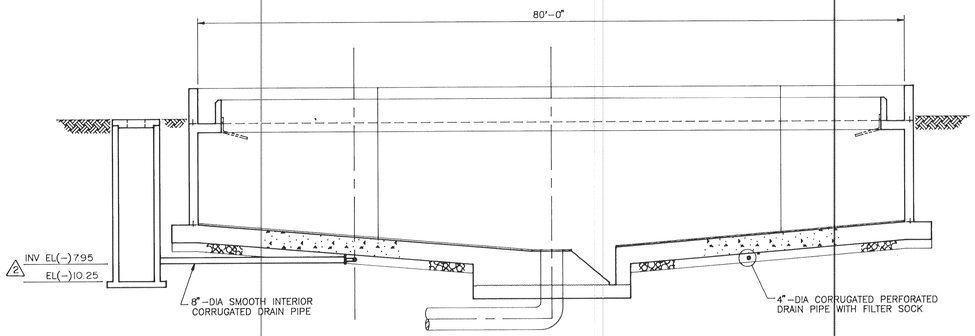
CITY OF DAYTONA BEACH, FLORIDA

PROJECT NO.
6132-12FD

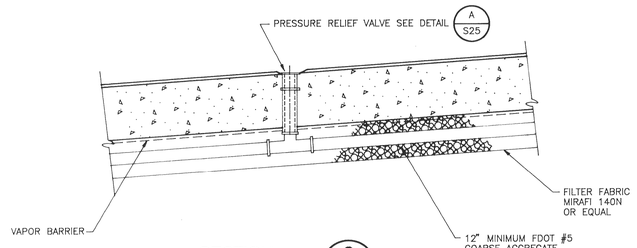
SHEET NO.
S23

5063

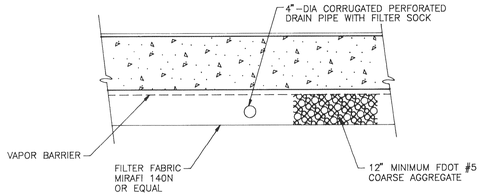




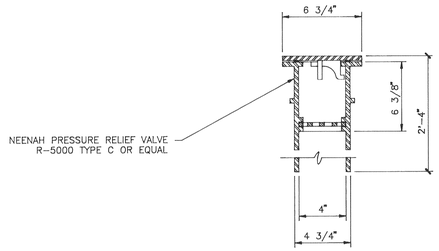
SECTION 1
1/8"=1'-0"
S25



SECTION 2
1/2"=1'-0"
S25
(TYPICAL 4 PLACES)



SECTION 3
1/2"=1'-0"
S25



DETAIL A
NTS
S25

NOTES:

1. PROVIDE METAL PLAQUE ATTACHED TO TANK AT MANHOLE AND OPPOSITE SIDE OF TANK STATING: "UNDERDRAIN MANHOLE SHALL BE CONTINUOUSLY PUMPED WHILE TANK IS BEING EMPTIED AND AS LONG AS TANK REMAINS EMPTY."

NOTE:

STANDARD DETAILS SHOWN ON SD1, SD2, AND SD3 APPLY TO ALL SIMILAR SITUATIONS ON THE PROJECT, EXCEPT WHERE A DIFFERENT DETAIL IS SHOWN.

RECORD DRAWING

THESE RECORD DRAWINGS HAVE BEEN PREPARED BASED ON INFORMATION PROVIDED BY OTHERS. THE ENGINEER HAS NOT VERIFIED THE ACCURACY OF THIS INFORMATION AND SHALL NOT BE RESPONSIBLE FOR ANY ERRORS OR OMISSIONS WHICH MAY BE INCORPORATED HERE IN AS A RESULT.

CAMP DRESSER & McKEE INC. Date _____

structural technologies Inc.
CONSULTING ENGINEERS
Wekiva Business Center
Suite 120, 1426 East Semoran Blvd., Apopka, Florida 32703
(407) 889-9660

DRAWN BY : TAV
CHECKED BY : KM
APPROVED BY : BE
DATE : JULY 1991
JOB NO: 91-143

REV. NO.	DATE	DRWN	CHKD	REMARKS
1	9/91	TMM	JE	ADDENDUM NO.2
	10/91	TMM	JE	CONFORMED DWG
	2/94	DSP	JE	RECORD DRAWINGS

DESIGNED BY: _____
DRAWN BY: _____
CHECKED BY: _____
APPROVED BY: _____
DATE: _____

CAMP DRESSER & McKEE INC.

CDM
environmental engineers, scientists
planners, & management consultants

UPGRADING AND MODIFICATIONS TO THE
BETHUNE POINT WASTEWATER TREATMENT PLANT
CITY OF DAYTONA BEACH, FLORIDA

CLARIFIER
UNDERDRAIN PLAN, SECTIONS AND DETAILS

PROJECT NO.
6132-12FD

SHEET NO.
S25

5063

Attachment #5

Geotechnical Report

Subsurface Soil Exploration and
Geotechnical Engineering Evaluation
Proposed Generators
Bethune Point Wastewater Treatment Plant
Daytona Beach, Volusia County, Florida

Ardaman & Associates, Inc.

CORPORATE HEADQUARTERS

8008 S. Orange Avenue, Orlando, FL 32809 - Phone: (407) 855-3860 Fax: (407) 859-8121

Branch Office Locations

Florida: Bartow, Cocoa, Fort Myers, Miami, Orlando, Port St. Lucie, Sarasota, Tallahassee, Tampa, West Palm Beach
Louisiana: Baton Rouge, Monroe, New Orleans, Shreveport

Ardaman & Associates, Inc.

Geotechnical, Environmental and
Materials Consultants

August 30, 2019
File No. 19-6412

Tetra Tech, Inc.
201 E. Pine Street, Suite 1000
Orlando, Florida 32801

Attention: Ms. Jennifer Ribotti, P.E.

Subject: Subsurface Soil Exploration and
Geotechnical Engineering Evaluation
Proposed Generators
Bethune Point Wastewater Treatment Plant
Daytona Beach, Volusia County, Florida

Dear Ms. Ribotti:

As requested and authorized, we have completed a shallow subsurface soil exploration for the subject project. The purposes of performing this exploration were to evaluate the general subsurface conditions within the proposed generator pad area and to provide recommendations for site preparation and foundation support. In addition, we have estimated the normal seasonal high groundwater level at the boring locations. This report documents our findings and presents our engineering recommendations.

SITE LOCATION AND SITE DESCRIPTION

The site for the proposed generators is located at the Bethune Point Wastewater Treatment Plant at 1 Shady Place in Daytona Beach, Volusia County, Florida (Section 40, Township 15 South, Range 32 East). The general site location is shown superimposed on the Daytona Beach, Florida U.S.G.S. quadrangle map presented on Figure 1.

The site for the proposed generators currently consists of a relatively flat grassy area adjacent to electrical buildings and paved parking/drive areas.

PROPOSED CONSTRUCTION AND GRADING

It is our understanding that the proposed development includes two generators each supported by pad foundations measuring approximately 31 by 9 feet in “footprint” plan dimensions. Further, we understand that each generator has a total weight of approximately 74 kips. Based on the grading plan provided by Tetra Tech on August 23, 2019, up to 1½ feet of fill is required to raise the generator pad areas to final elevation(s). If actual structure loads or fill heighs exceed those provided, then the recommendations in this report may not be valid.

REVIEW OF SOIL SURVEY MAPS

Based on the 1980 Soil Survey for Volusia County, Florida, as prepared by the U.S. Department of Agriculture Soil Conservation Service, the site is located in an area mapped as the "Turnbull Variant sand" soil series. The "Turnbull Variant sand" consists of mixed sandy and shelly material dredged from the Intracoastal Waterway and placed in narrow strips along the waterway. The underlying material is organic layers and layers of clayey and sandy estuarine deposits. Areas are mostly in tidal marshes associated with the Intracoastal Waterway. The water table for the "Turnbull Variant sand" is typically at a depth of about 40 inches, or at the base of the overburden.

FIELD EXPLORATION PROGRAM

SPT Borings

The field exploration program included performing 2 Standard Penetration Test (SPT) borings. The SPT borings were advanced to a depth of 20 feet below the ground surface using the methodology outlined in ASTM D-1586. A summary of this field procedure is included in the Appendix. Split-spoon soil samples recovered during performance of the borings were visually classified in the field and representative portions of the samples were transported to our laboratory in sealed sample jars.

The groundwater level at each of the boring locations was measured during drilling. The borings were backfilled with soil cuttings upon completion.

Test Locations

The approximate locations of the borings are schematically illustrated on a site plan shown on Figure 2. These locations were determined in the field by Global Positioning System (GPS) utilizing hand-held GPS equipment and coordinates obtained from Google Earth V7.3. Boring locations should be considered accurate only to the degree implied by the method of locating used.

LABORATORY PROGRAM

Representative soil samples obtained during our field sampling operation were packaged and transferred to our laboratory for further visual examination and classification. The soil samples were visually classified in general accordance with the Unified Soil Classification System (ASTM D-2488). The resulting soil descriptions are shown on the soil boring profiles presented on Figure 2.

In addition, we conducted 1 natural moisture content test (ASTM D2216), 1 percent fines analysis (ASTM D1140), and 1 Atterberg limits test (ASTM D4318) on selected soil samples obtained from the borings. The results of these tests are presented adjacent to the sample depth on the boring profiles on Figure 2.

GENERAL SUBSURFACE CONDITIONS

General Soil Profile

The results of the field exploration and laboratory programs are graphically summarized on the soil boring profiles presented on Figure 2. The stratification of the boring profiles represents our interpretation of the field boring logs and the results of laboratory examinations of the recovered samples. The stratification lines represent the approximate boundary between soil types. The actual transitions may be more gradual than implied.

The results of the borings indicate the following general soil profile:

Depth Below Ground Surface (feet)		Description
From	To	
0	10	Very loose to loose fine sand (SP), with varying quantities of silt and shell or very soft to soft clay (CH)
10	20	Loose to dense fine sand (SP) with varying amounts of shell fragments

The above soil profile is outlined in general terms only. Please refer to Figure 2 for soil profile details.

Groundwater Level

The groundwater level was measured in the boreholes during drilling. As shown on Figure 2, groundwater was encountered at depths of 2.8 and 3.0 feet below the existing ground surface on the date indicated. Fluctuation in groundwater levels should be anticipated throughout the year primarily due to seasonal variations in rainfall and other factors that may vary from the time the borings were conducted.

NORMAL SEASONAL HIGH GROUNDWATER LEVEL

The normal seasonal high groundwater level each year is the level in the August-September period at the end of the rainy season during a year of normal (average) rainfall. The water table elevations associated with a higher than normal rainfall and in the extreme case, flood, would be higher to much higher than the normal seasonal high groundwater level. The normal high water levels would more approximate the normal seasonal high groundwater levels.

The seasonal high groundwater level is affected by a number of factors. The drainage characteristics of the soils, the land surface elevation, relief points such as drainage ditches, lakes, rivers, swamp areas, etc., and distance to relief points are some of the more important factors influencing the seasonal high groundwater level.

Based on our interpretation of the site conditions using our boring logs, we estimate the normal seasonal high groundwater level at the boring locations to be approximately ½ foot above the groundwater levels measured at the time of our field exploration. Groundwater may perch temporarily at higher levels on top of the clayey fine sand and clay soil during periods of heavy and/or prolonged rainfall.

ENGINEERING EVALUATION AND RECOMMENDATIONS

General

The results of our exploration indicate that very soft clay (Stratum No. 4 on Figure 2) is present at the proposed generator locations to a depth on the order of 10 feet below the existing ground surface. The very soft clay is susceptible to greater than typical settlement under the weight of the proposed generator loads and will be extremely difficult to moisture condition and compact. For these reasons we recommend that the soft clay be overexcavated to its entirety; then replaced with select structural fill consisting of uniformly graded clean sand to fine sand with silt, free of organics and other deleterious materials, with less than 12% passing the No. 200 sieve.

We note that in lieu of removal of the deleterious clay, pile support, surcharging or other specialty foundation alternatives could be considered. The generator slabs could be supported on pile foundations that transfer the loads to suitable foundation soils beneath the shallow clay. Surcharging to pre-induce settlement beneath the proposed generator slabs could be performed to reduce the total settlement of the structures to an acceptable limit. We would be glad to discuss these options in more detail, if requested.

Assuming that clay removal and mat foundation support will be used for the proposed generators, the following are our recommendations for overall site preparation and foundation support which we feel are best suited for the proposed facility and existing soil conditions. The recommendations are made as a guide for the design engineer, parts of which should be incorporated into the project's specifications.

Removal of Clay

The clay as encountered in the borings to a depth of 10 feet (Stratum 4 as shown on the boring profiles) should be removed to its entirety below the existing ground surface in the proposed generator pad areas.

The excavated clay must not be used as fill material and should be disposed of as directed by the owner. Clay removal and backfilling operations should be monitored continuously by a representative of Ardaman & Associates to verify that all unsuitable material is removed and that backfill soils are suitable and well compacted.

We anticipate that the sandy and clayey soils can be excavated with standard earth moving equipment (e.g. backhoes). The soils at the bottom of the excavation should be disturbed as little

as possible by the excavation process. Excavation slopes and/or bracing are the responsibility of the contractor. However, at a minimum, all excavations should be sloped and/or braced to meet the requirements of the Occupational Health and Safety Administration (OSHA) latest Standards.

The excavation will extend below the groundwater table; therefore, the control of the groundwater will be required. Clay removal should be conducted “in-the-dry”. The use of well points, sheet piles, etc. may be required to help control groundwater during excavation and backfilling. Regardless of the dewatering method used, we recommend that the groundwater table be maintained at least 24 inches below earthwork and compaction surfaces.

We note that where excavated soil is observed to consist of clean fine sand to fine sand with silt free of organics or other deleterious materials (with less than 12% passing the No. 200 sieve), the soil may be stockpiled separately to the deleterious clay and replaced into the excavation in accordance with the Compaction of Fill Soils section of this report.

Stripping and Grubbing

The “footprints” of the proposed generator slabs, plus a minimum margin of five feet, should be stripped of all surface vegetation, stumps, debris, organic topsoil or other deleterious materials, as encountered.

After stripping, the site should be grubbed or root-raked such that roots with a diameter greater than ½ inch, stumps, or small roots in a dense state, are completely removed. The actual depth(s) of stripping and grubbing must be determined by visual observation and judgment during the earthwork operation.

All existing foundations, slabs, asphalt, and any other underground structures should be removed from the proposed construction area. If pipes or any collapsible or leak prone utilities are not removed or completely filled (with grout or concrete), they might serve as conduits for subsurface erosion resulting in excessive settlements. Over-excavated areas resulting from the removal of underground structures and unsuitable materials should be backfilled in accordance with the fill soils section of this report. This excavation must not undermine the existing foundations. Provide shoring, bracing, and/or underpinning of existing foundations as necessary to protect from failure.

Suitable Fill Material and Compaction of Fill Soils

All fill materials should be free of organic materials, such as roots and vegetation. We recommend using fill with less than 12 percent by dry weight of material passing the U.S. Standard No. 200 sieve size. The fine sand and fine sand with silt (Strata No. 1 and 2 without roots, as shown on Figure 2) are suitable for use as fill materials and, with proper moisture control, should densify using conventional compaction methods. Soils removed from below the water table will need time to dry and to moisture condition prior to compacting.

All structural fill should be placed in level lifts not to exceed 12 inches in uncompacted thickness. Each lift should be compacted to at least 95 percent of the modified Proctor (ASTM D-1557) maximum dry density value. The filling and compaction operations should continue in lifts until the desired elevation(s) is achieved. If hand-held compaction equipment is used, the lift thickness should be reduced to no more than 6 inches.

Foundation Support by Mat Foundation and Foundation Compaction Criteria

After the mass earthwork discussed in the previous report sections is complete, excavate the foundations to the proposed bottom of slab elevation and, thereafter, verify the in-place compaction for a depth of 2 feet below the slab bottoms. If necessary, compact the soils at the bottom of the excavations to at least 95 percent of the modified Proctor maximum dry density (ASTM D-1557) for a depth of 2 feet below the foundation bottoms. Based on the existing soil conditions and, assuming the above outlined compaction criteria is implemented, a soil bearing pressure of up to 1,500 pounds per square foot (psf) may be used in the foundation design. This bearing pressure should result in total settlement of less than 1 inch and differential settlement of less than ¾ inches.

We recommend embedding the bottom of the mat foundations at least 8 inches below adjacent grade.

For the design of the slabs, a modulus of subgrade reaction of 100 pounds per cubic inch (pci) may be used for the soils encountered in the borings and prepared as recommended herein. We note that this modulus of subgrade reaction is based on empirical correlation to the results expected from an 18-inch plate load test.

In addition, precautions should be taken during the slab construction to reduce moisture entry from the underlying subgrade soils. Moisture entry can be reduced by installing a membrane between the subgrade soils and equipment slab. Care should be exercised with placing the reinforcing steel (or mesh) and slab concrete such that the membrane is not punctured. We note that the membrane alone does not prevent moisture from occurring beneath or on top of the slab.

Dewatering

Based on the groundwater conditions encountered, the control of the groundwater will be required to achieve the necessary stripping and clay removal and subsequent construction, backfilling, and compaction requirements presented in the preceding sections. The actual method(s) of dewatering should be determined by the contractor. However, regardless of the method(s) used, we suggest drawing down the water table sufficiently, say 2 to 3 feet, below the bottom of any excavation or compaction surface to preclude “pumping” and/or compaction-related problems with the foundation soils.

QUALITY ASSURANCE

We recommend establishing a comprehensive quality assurance program to verify that all site preparation and foundation construction is conducted in accordance with the appropriate plans and specifications. Materials testing and inspection services should be provided by Ardaman & Associates.

As a minimum, an on-site engineering technician should monitor all stripping and grubbing and overexcavation of clay to verify that deleterious materials have been completely removed. In-situ density tests should be conducted during filling activities and below the foundation to verify that the required densities have been achieved. In-situ density values should be compared to laboratory Proctor moisture-density results for each of the different natural and fill soils encountered.

Also, we recommend inspecting and testing the construction materials for the foundation and other structural components.

CLOSURE

The analyses and recommendations submitted herein are based on the data obtained from the soil borings presented on Figure 2 and the assumed loading conditions. This report does not reflect any variations which may occur adjacent to or between the borings. The nature and extent of the variations between the borings may not become evident until during construction. If variations then appear evident, it will be necessary to re-evaluate the recommendations presented in this report after performing on-site observations during the construction period and noting the characteristics of the variations.

In the event any changes occur in the design, nature, or location of the proposed facility, we should review the applicability of conclusions and recommendations in this report. We recommend a general review of final design and specifications by our office to verify that earthwork and foundation recommendations are properly interpreted and implemented in the design specifications. Ardaman and Associates should attend the pre-bid and preconstruction meetings to verify that the bidders/contractor understand the recommendations contained in this report.

This study is based on a relatively shallow exploration and is not intended to be an evaluation for sinkhole potential. This study does not include an evaluation of the environmental (ecological or hazardous/toxic material related) condition of the site and subsurface.

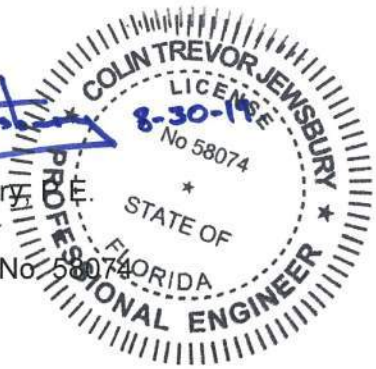
This report has been prepared for the exclusive use of Tetra Tech, Inc. in accordance with generally accepted geotechnical engineering practices for the purpose of the proposed generator pads located at the Bethune Point Wastewater Treatment Plant in Daytona Beach, Florida. No other warranty, expressed or implied, is made.

We are pleased to be of assistance to you on this phase of the project. When we may be of further service to you or should you have any questions, please contact us.

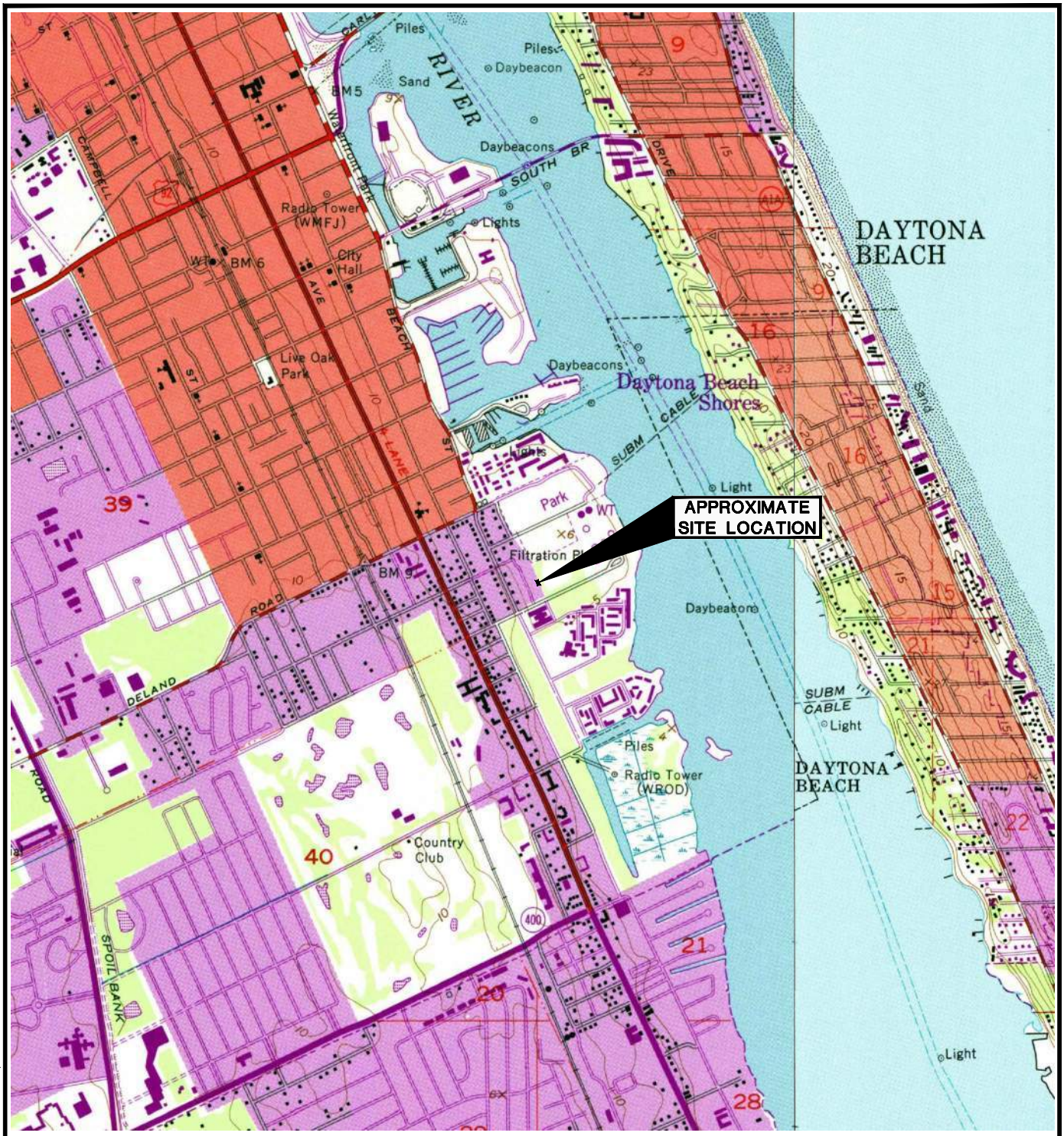
Very truly yours,
ARDAMAN & ASSOCIATES, INC.
Certificate of Authorization No. 5950

Eric C. Balog, E.I.
Assistant Project Engineer

Colin T. Jewsbury, P.E.
Senior Engineer
Florida License No. 58074



ECB/CTJ/gb/jj
19-6412 TT Bethune Point WWTP Daytona (Geo 2019)



SECTION 40
TOWNSHIP 15 SOUTH
RANGE 32 EAST

OBTAINED FROM U.S.G.S. QUAD MAP: DAYTONA BEACH, FLORIDA 1952
(PHOTOREVISED 1993)

N

0 1000 2000
SCALE: (FEET)

QUADRANGLE LOCATION

SITE LOCATION MAP

Ardaman & Associates, Inc.
Geotechnical, Environmental and Materials Consultants

SUBSURFACE SOIL EXPLORATION
PROPOSED GENERATORS
BETHUNE POINT
WASTEWATER TREATMENT PLANT
DAYTONA BEACH, VOLUSIA COUNTY, FLORIDA

DRAWN BY: CD	CHECKED BY:	DATE: 08/21/19
FILE NO. 19-6412	APPROVED BY:	FIGURE: 1

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LEGEND

SOIL DESCRIPTIONS

1. FINE SAND (SP)
2. FINE SAND WITH SILT (SP-SM)
3. CLAYEY FINE SAND (SC)
4. CLAY (CH)
5. ORGANIC TOPSOIL

COLORS

A. LIGHT BROWN TO BROWN
B. LIGHT GRAY TO GRAY
C. DARK GRAY

TH	STANDARD PENETRATION TEST (SPT) BORING LOCATION
N	STANDARD PENETRATION RESISTANCE IN BLOWS PER FOOT
NM	NATURAL MOISTURE CONTENT IN PERCENT (ASTM D-2216)
-200	PERCENT PASSING NO. 200 SIEVE SIZE (PERCENT FINES)(ASTM D-1140)
LL	LIQUID LIMIT (ASTM D-4318)
PL	PLASTIC LIMIT (ASTM D-4318)
PI	PLASTICITY INDEX (ASTM D-4318)
⇦	PARTIAL LOSS OF DRILLING FLUID CIRCULATION
▼	GROUNDWATER LEVEL MEASURED ON DATE DRILLED
WOH	SAMPLER ADVANCED BY STATIC WEIGHT OF HAMMER AND RODS ONLY
SP,SP-SM SM,SC,CH	UNIFIED SOIL CLASSIFICATION SYSTEM (ASTM D-2487)

NOTES:
1. UPON COMPLETION OF EACH SPT BORING, THE BOREHOLE WAS BACKFILLED WITH SOIL CUTTINGS.
2. ALL SPT BORINGS WERE PERFORMED USING AN AUTOMATIC HAMMER TO THE BORING TERMINATION DEPTH. AUTOMATIC HAMMER N-VALUES MAY BE CONVERTED TO EQUIVALENT SAFETY HAMMER N-VALUES BY MULTIPLYING BY 1.24.
3. THE AERIAL PHOTOGRAPH FOR THE BORING LOCATION PLAN IS A SITE PLAN PROVIDED BY TETRA TECH, INC. ON AUGUST 5, 2019.

ENGINEERING CLASSIFICATION

I COHESIONLESS SOILS

DESCRIPTION	BLOW COUNT "N"
VERY LOOSE	<4
LOOSE	4 TO 10
MEDIUM DENSE	10 TO 30
DENSE	30 TO 50
VERY DENSE	>50

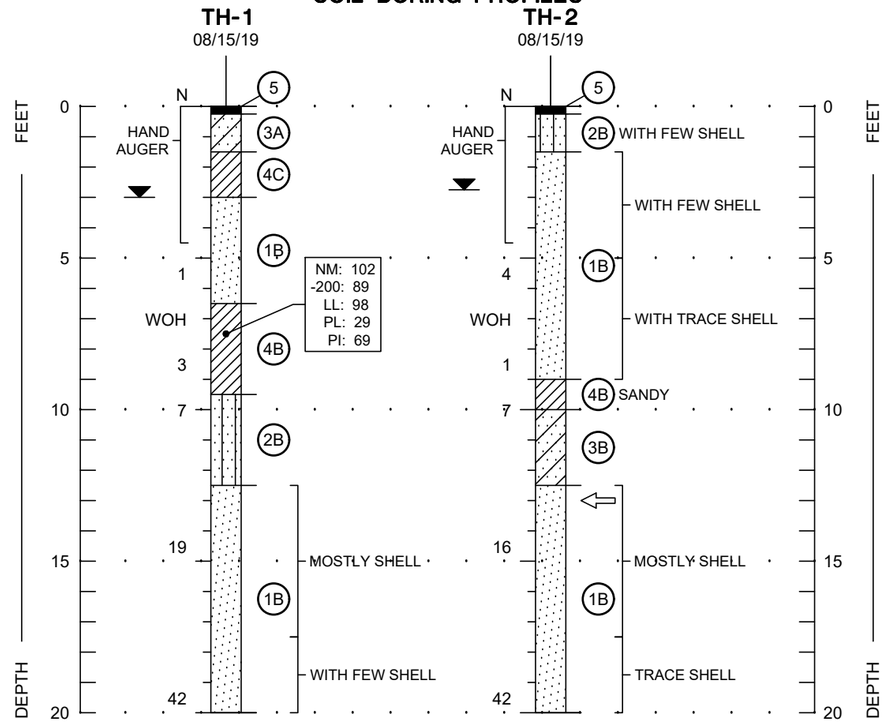
II COHESIVE SOILS

DESCRIPTION	UNCONFINED COMPRESSIVE STRENGTH, QU, TSF	BLOW COUNT "N"
VERY SOFT	<1/4	<2
SOFT	1/4 TO 1/2	2 TO 4
MEDIUM STIFF	1/2 TO 1	4 TO 8
STIFF	1 TO 2	8 TO 15
VERY STIFF	2 TO 4	15 TO 30
HARD	>4	>30

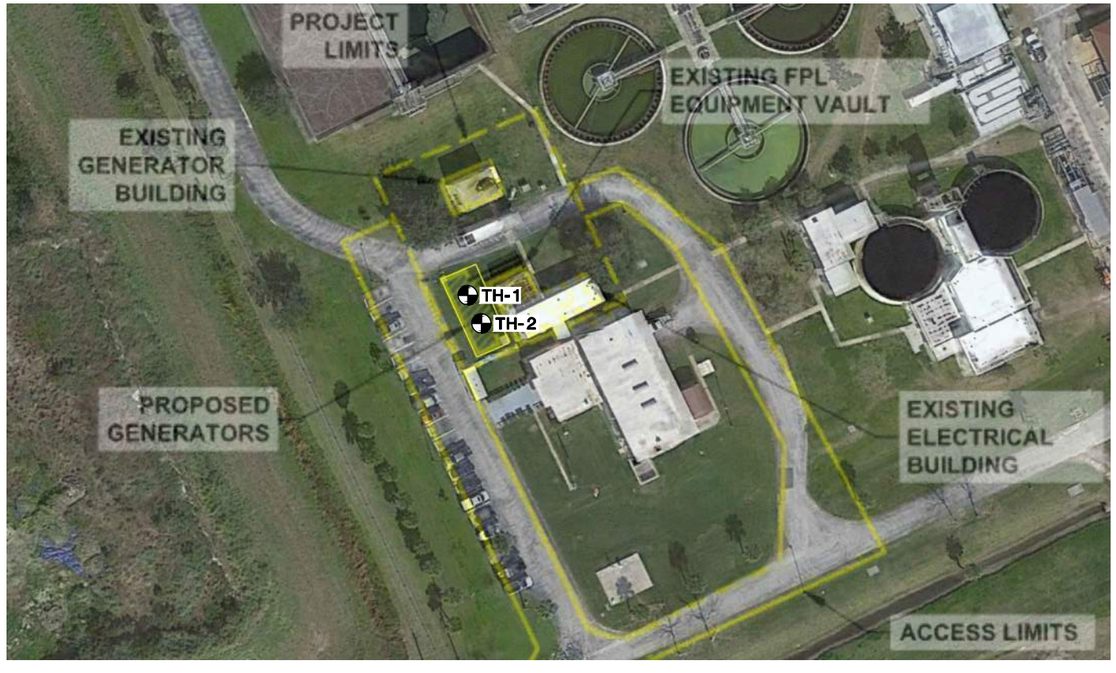
WHILE THE BORINGS ARE REPRESENTATIVE OF SUBSURFACE CONDITIONS AT THEIR RESPECTIVE LOCATIONS AND FOR THEIR RESPECTIVE VERTICAL REACHES, LOCAL VARIATIONS CHARACTERISTIC OF THE SUBSURFACE MATERIALS OF THE REGION ARE ANTICIPATED AND MAY BE ENCOUNTERED. THE BORING LOGS AND RELATED INFORMATION ARE BASED ON THE DRILLER'S LOGS AND VISUAL EXAMINATION OF SELECTED SAMPLES IN THE LABORATORY. THE DELINEATION BETWEEN SOIL TYPES SHOWN ON THE LOGS IS APPROXIMATE AND THE DESCRIPTION REPRESENTS OUR INTERPRETATION OF SUBSURFACE CONDITIONS AT THE DESIGNATED BORING LOCATIONS ON THE PARTICULAR DATE DRILLED.

GROUNDWATER ELEVATIONS SHOWN ON THE BORING LOGS REPRESENT GROUNDWATER SURFACES ENCOUNTERED ON THE DATES SHOWN. FLUCTUATIONS IN WATER TABLE LEVELS SHOULD BE ANTICIPATED THROUGHOUT THE YEAR.

SOIL BORING PROFILES



BORING LOCATION PLAN



Ardaman & Associates, Inc.
Geotechnical, Environmental and Materials Consultants

SUBSURFACE SOIL EXPLORATION
PROPOSED GENERATORS
BETHUNE POINT
WASTEWATER TREATMENT PLANT
DAYTONA BEACH, VOLUSIA COUNTY, FLORIDA

DRAWN BY: CD	CHECKED BY:	DATE: 08/21/19
FILE NO. 19-6412	APPROVED BY:	FIGURE: 2

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APPENDIX

Standard Penetration Test Procedure

STANDARD PENETRATION TEST

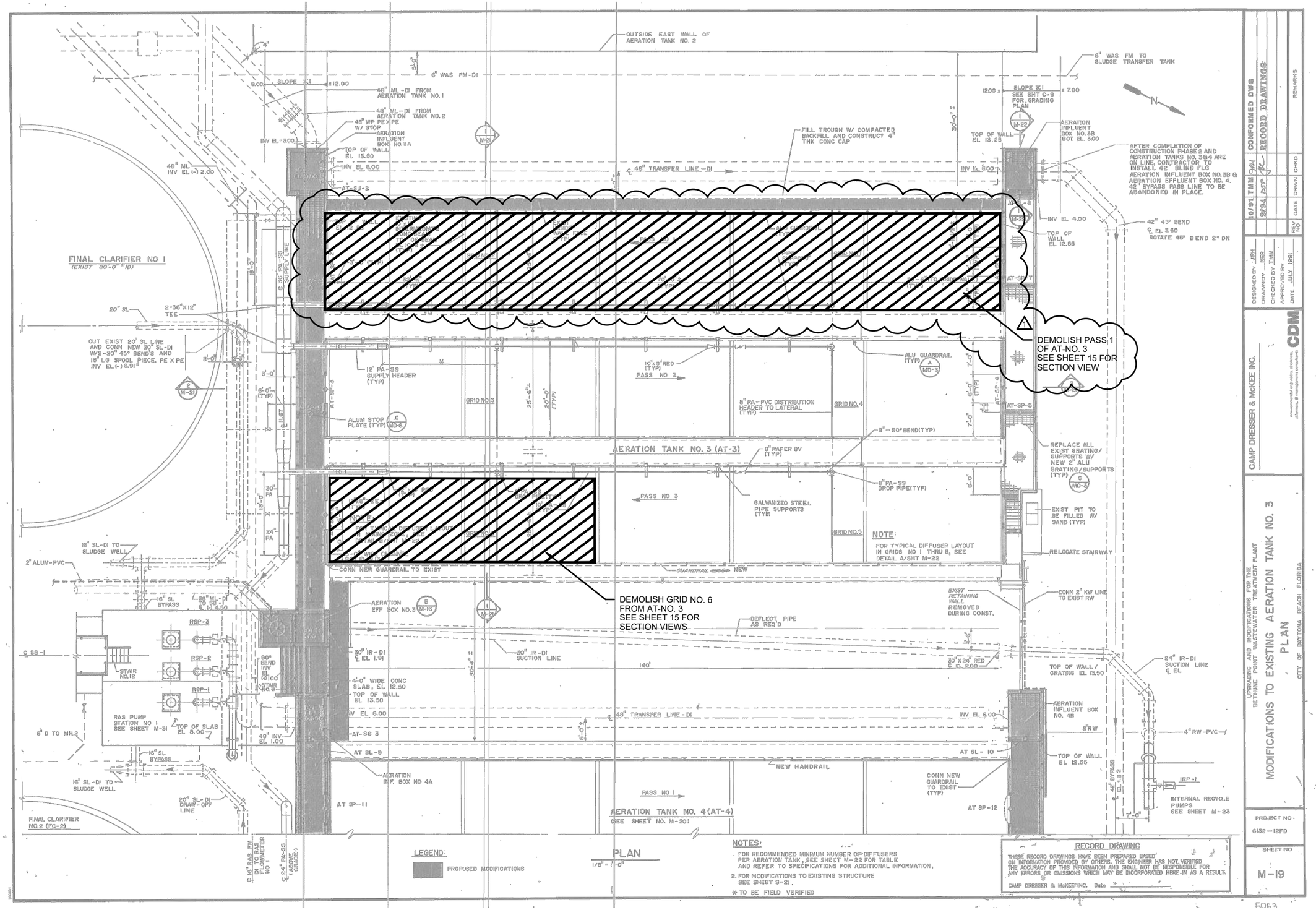
The standard penetration test is a widely accepted test method of *in situ* testing of foundation soils (ASTM D 1586). A 2-foot long, 2-inch O.D. split-barrel sampler attached to the end of a string of drilling rods is driven 18 inches into the ground by successive blows of a 140-pound hammer freely dropping 30 inches. The number of blows needed for each 6 inches of penetration is recorded. The sum of the blows required for penetration of the second and third 6-inch increments of penetration constitutes the test result or N-value. After the test, the sampler is extracted from the ground and opened to allow visual examination and classification of the retained soil sample. The N-value has been empirically correlated with various soil properties allowing a conservative estimate of the behavior of soils under load.

The tests are usually performed at 5-foot intervals. The test holes are advanced to the test elevations by rotary drilling with a cutting bit, using circulating fluid to remove the cuttings and hold the fine grains in suspension. The circulating fluid, which is a bentonitic drilling mud, is also used to keep the hole open below the water table by maintaining an excess hydrostatic pressure inside the hole. In some soil deposits, particularly highly pervious ones, NX-size flush-coupled casing must be driven to just above the testing depth to keep the hole open and/or prevent the loss of circulating fluid.

Representative split-spoon samples from the soils are brought to our laboratory in air-tight jars for further evaluation and testing, if necessary. Samples not used in testing are stored for 30 days prior to being discarded.

Attachment #6

Updated Design Drawings



.	.	.	Contract No.: NA	Project No.: NA	ERIC A SMITH, PE LIC. NO. 82892	THE CITY OF DAYTONA BEACH UTILITIES DEPARTMENT 125 BASIN ST., STE. 130 • DAYTONA BEACH • FLORIDA 32114 PHONE: (386) 671-8800 FAX: (386) 671-8805	BETHUNE POINT WRF PHASE I PROCESS UPGRADES AERATION TANK NO. 3 EXISTING LAYOUT AND DEMOLITION PLAN PROJECT NO. 6872	SHEET 14 of 18 SHEETS
.	.	.	Survey Date: NA	Plot Date: 08/2019				
.	.	.	Drawn By: KLH	Scale:(HOR.) NTS				
.	.	.	Checked By: E SMITH	(Vert.) NTS				
.	.	.	File Name: Clarifier No 4 As-Built.dwg	Design Date: 08/2019				
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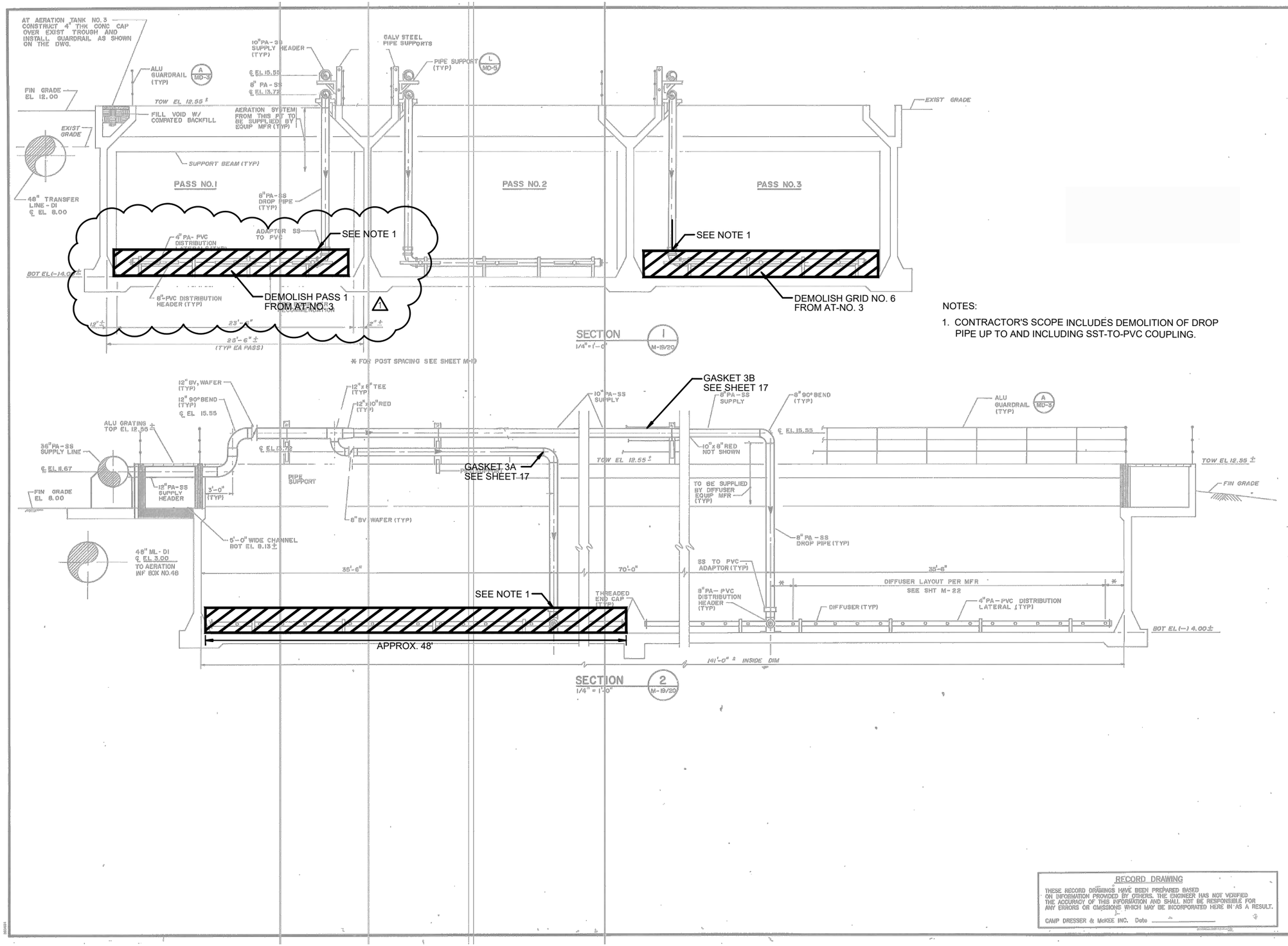
Name	Revision:	Date:	Xref Name: NA	Checked By: E SMITH				



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.	.	.	Survey Date: NA	Plot Date: 08/2019				
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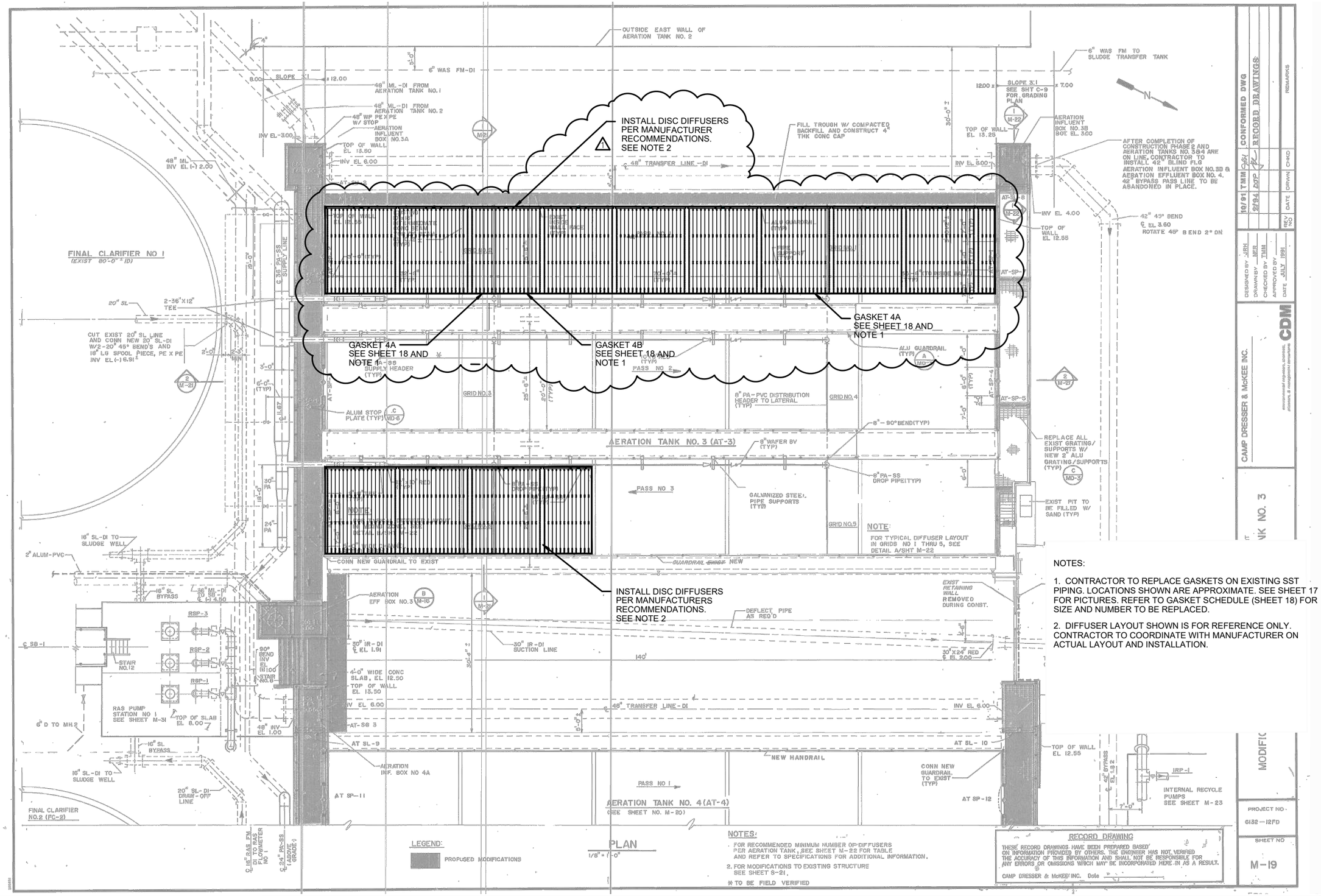

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.	.	.	Survey Date: NA	Plot Date: 08/2019	
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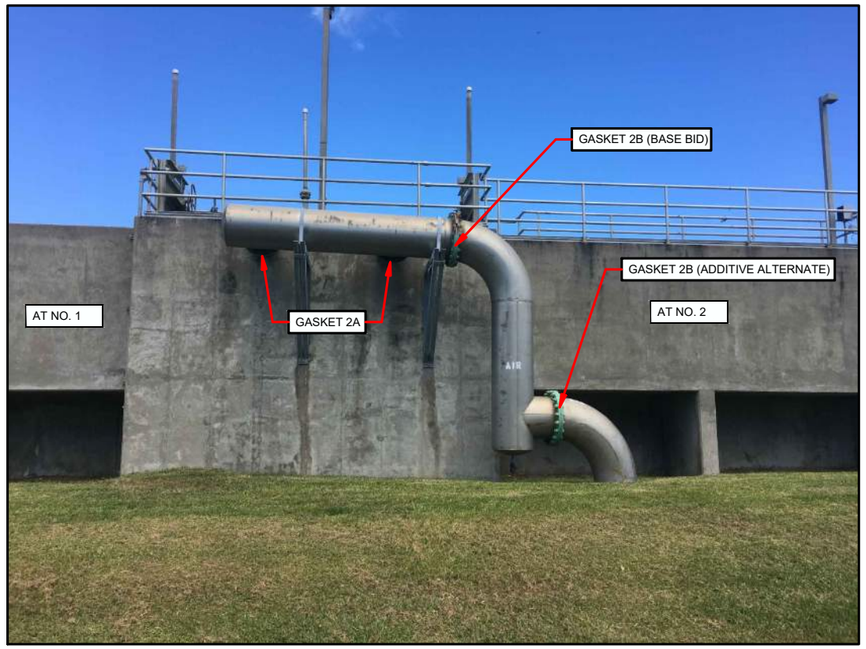
.	.	.	File Name: Clarifier No 4 As-Built.dwg	Design Date: 08/2019	
KLH	ADDENDUM NO. 1	2/1/20	Rotation ∠: 0d	Drawn By: KLH	
Name	Revision:	Date:	Xref Name: NA	Checked By: E SMITH	

ERIC A SMITH, PE
LIC. NO. 82892

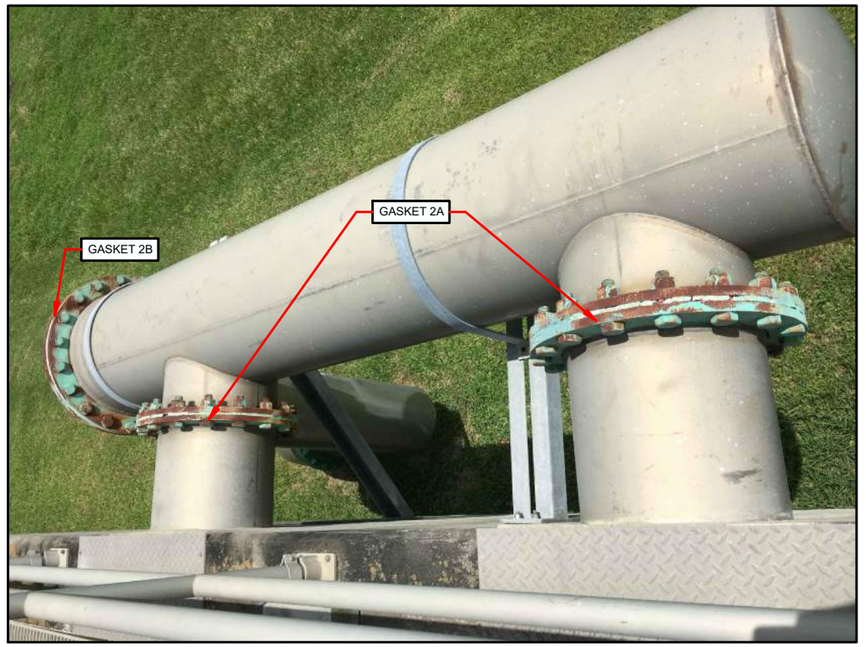
THE CITY OF DAYTONA BEACH
UTILITIES DEPARTMENT
125 BASIN ST., STE. 130 • DAYTONA BEACH • FLORIDA 32114
PHONE: (386) 671-8800 FAX: (386) 671-8805

BETHUNE POINT WRF
PHASE I PROCESS UPGRADES
AERATION TANK NO. 3
PROPOSED MODIFICATIONS
PROJECT NO. 6872

SHEET 16 of 18 SHEETS



GASKETS 2A AND 2B ⚠1



GASKETS 2A AND 2B

NOTES:

1. PROCESS AIR WILL NEED TO BE SHUT DOWN FOR GASKET REPLACEMENT. PROCESS AIR MAY NOT BE SHUT DOWN FOR MORE THAN 3 HOURS AT A TIME AND MAY NOT BE SHUT DOWN ON CONSECUTIVE DAYS. CONTRACTOR IS TO SUBMIT SCHEDULE OF PROPOSED SHUT DOWNS TO CITY 7 DAYS IN ADVANCE FOR CITY APPROVAL.

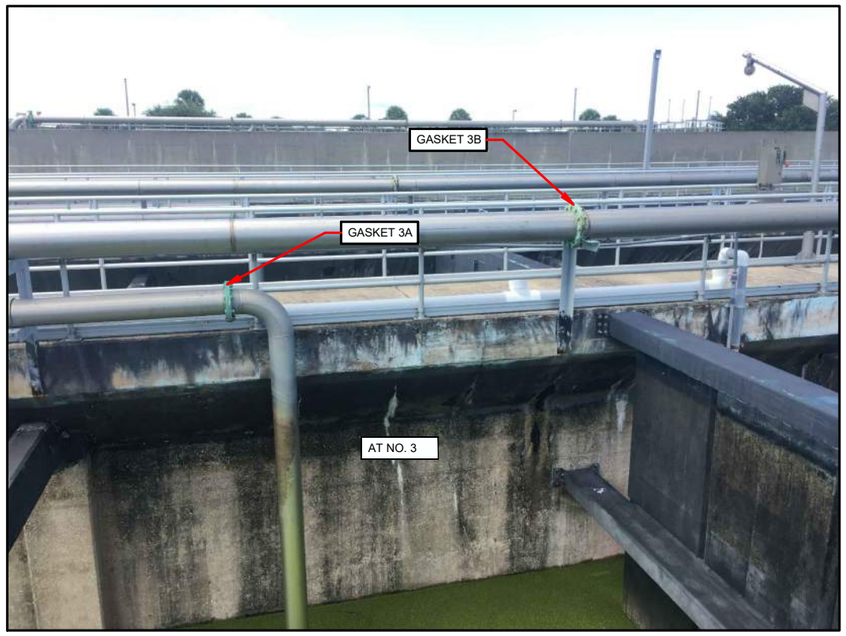
2. CONTRACTOR MAY CHOOSE TO PROVIDE SUPPLEMENTAL AIR TO AT-NO. 1 AND AT-NO. 4 IN ORDER TO ALLOW FOR A SHUT DOWN OF GREATER THAN 3 HOURS. SUPPLEMENTAL AIR PLAN SHALL BE SUBMITTED TO THE CITY FOR APPROVAL.

3. EXISTING SST PIPING APPEARS TO BE CONNECTED WITH STUB-END PIPING AND LAP JOINT FLANGES. CONTRACTOR TO FIELD VERIFY AND PLAN GASKET REPLACEMENT ACCORDINGLY.

4. CONTRACTOR SHALL FIELD VERIFY GASKET THICKNESS AND BOLT HOLE PATTERN PRIOR TO SUBMITTING TO OWNER AND ORDERING.

5. EXISTING GASKETS UTILIZE FILLER MATERIAL AROUND CIRCUMFERENCE OF THE GASKET TO PROTECT GASKET FROM EXPOSURE. CONTRACTOR SHALL SUBMIT FILLER MATERIAL TO OWNER FOR APPROVAL. AFTER NEW GASKET IS INSTALLED, CONTRACTOR SHALL PLACE APPROVED FILLER MATERIAL AROUND GASKET.

GASKETS 1A AND 1B



GASKETS 3A AND 3B

.	.	.	Contract No.: NA	Project No.: NA	ERIC A SMITH, PE LIC. NO. 82892	THE CITY OF DAYTONA BEACH UTILITIES DEPARTMENT 125 BASIN ST., STE. 130 • DAYTONA BEACH • FLORIDA 32114 PHONE: (386) 671-8800 FAX: (386) 671-8805	BETHUNE POINT WRF PHASE I PROCESS UPGRADES AERATION TANKS NO. 2 & 3 GASKET LOCATIONS	SHEET 17 of 18 SHEETS
.	.	.	Survey Date: NA	Plot Date: 08/2019				
.	.	.	Drawn By: KLH	Scale:(HOR.) NTS				
.	.	.	Checked By: E SMITH	(Vert.) NTS				
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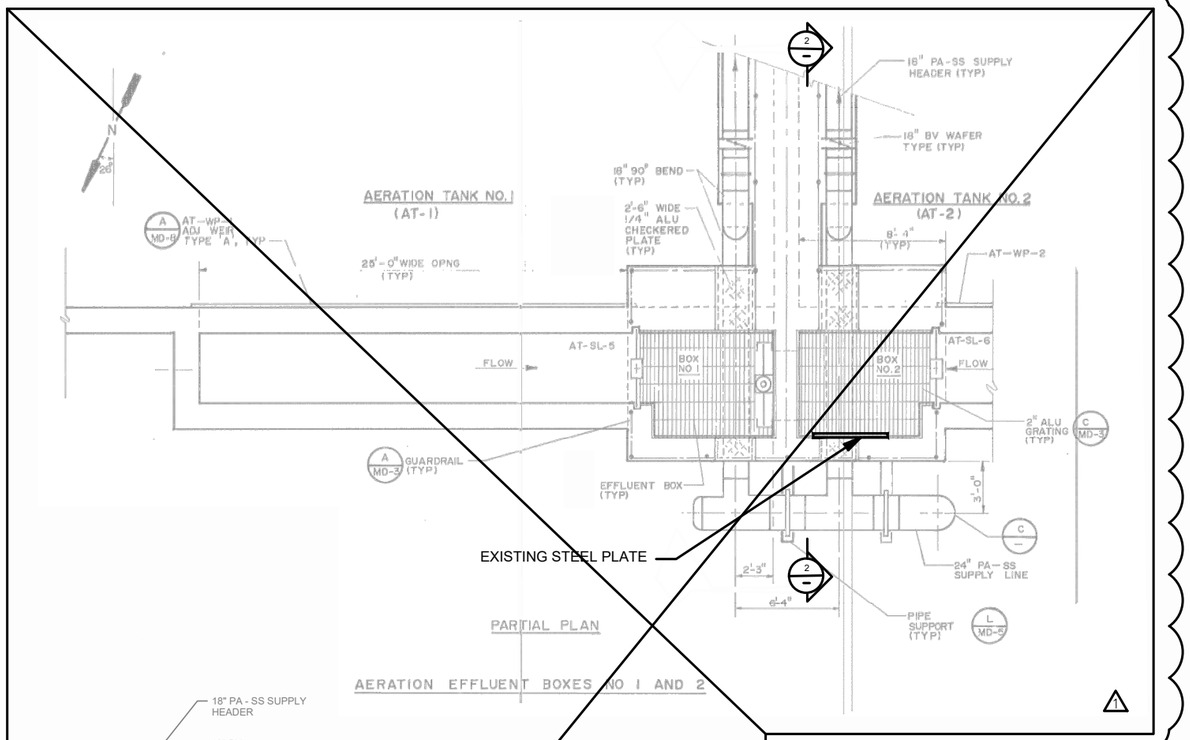

Gasket Schedule (Base Bid)			
Gasket No.	Size [4]	Material	QTY.[4]
1B	18 inch	SEE NOTE 2	3
2B	24 inch		1

Gasket Schedule (Additive Alternate)			
Gasket No.	Size [4]	Material	QTY.[4]
1A	10 inch	SEE NOTE 2	3
2A	18 inch		2
2B	24 inch		1
3A	8 inch		1
3B	10 inch		1
4A	8 inch		2
4B	10 inch		1

SEE SHEET 17 AND 18 FOR PICTURES OF GASKETS

GASKETS SHALL MEET THE FOLLOWING REQUIREMENTS:

1. SUITABLE FOR PRESSURES EQUAL TO OR LESS THAN 150 POUNDS PER SQUARE INCH GAUGE, WITH LOW FLANGE BOLT LOADINGS, TEMPERATURES EQUAL TO OR LESS THAN 300 DEGREES FAHRENHEIT, AND COMPRESSED AIR SERVICE.
2. MATERIAL: EPDM ELASTOMER, 1/8 INCH THICK, 60 SHORE HARDNESS, SMOOTH SURFACE.
3. MANUFACTURERS:
   GARLOCK, STYLE 8314
   JOHN CRANE
   OWNER APPROVED EQUAL
4. CONTRACTOR TO FIELD VERIFY SIZE AND QUANTITIES PRIOR TO ORDERING GASKETS.

GASKETS 4A

GASKETS 4A & 4B

KLH	ADDENDUM NO. 1	2/1/20	Contract No.: NA	Project No.: NA
			Survey Date: NA	Plot Date: 08/2019
			Drawn By: KLH	Scale:(HOR.) NTS
			Checked By: E SMITH	(Vert.) NTS
			File Name: Clarifier No 4 As-Built.dwg	Design Date: 08/2019
			Rotation 0d	Drawn By: KLH
Name	Revision:	Date:	Xref Name: NA	Checked By: E SMITH

ERIC A SMITH, PE
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UTILITIES DEPARTMENT
125 BASIN ST., STE. 130 • DAYTONA BEACH • FLORIDA 32114
PHONE: (386) 671-8800 FAX: (386) 671-8805

BETHUNE POINT WRF
PHASE I PROCESS UPGRADES
AERATION SYSTEM DETAILS

SHEET 18 of 18 SHEETS

Attachment #7

Updated Specifications

SECTION 01010-SUMMARY OF WORK

PART 1 - GENERAL

1.01 PROJECT WORK SCOPE:

A. The Work consists of providing all necessary labor, material, equipment, supervision, and permitting necessary to upgrade the diffused air delivery system in Aeration Tank No. 2 (AT-No. 2) and Aeration Tank No. 3 (AT-No. 3) and replace the clarifier mechanism within Clarifiers No. 1, 2, and 4 as depicted in the bid documents at the Bethune Point Water Reclamation Facility located at 1 Shady Place Ln., Daytona Beach, FL, 32115.

B. Specific items included in the Work include, but are not limited to, the following:

1. Mobilization and Demobilization
2. AT-No. 2 Upgrades
    i. Remove and dispose existing diffused air delivery system. Extent of demolition shall include all air piping/diffuser assembly downstream of the SST-to-PVC transition, including transition coupling.
    ii. Install new disc diffused air delivery system per manufacturer recommendations.
    iii. Replace gaskets and filler material at air header flanges at locations called for on drawings.
    iv. Provision of temporary air as necessary.
3. AT-No. 3 Upgrades
    i. Remove and dispose existing diffused air delivery system from Pass 1 and Pass 3 (reaeration zone) of AT-No. 3. Extent of demolition shall include all air piping/diffuser assembly downstream of the SST-to-PVC transition, including transition coupling.
    ii. Install new disc diffused air delivery system per manufacturer recommendations.
    iii. Replace gaskets and filler material at air header flanges at locations called for on drawings.
    iv. Provision of temporary air as necessary.
4. Clarifiers No. 1, 2 and 4 Upgrades
    i. Remove and dispose existing clarifier mechanisms within clarifiers. Extent of demolition shall include all internal components associated with the clarifier with the exception of the walkway. Note: concrete launder in Clarifier No. 4 to remain.
    ~~i.~~ii. Dewater groundwater as necessary to prevent flotation/damage to clarifier tanks from buoyant forces.
    ~~ii.~~iii. Remove/replace grout from bottom of clarifiers as necessary.
    ~~iii.~~iv. Install new spiral blade clarifier mechanisms and components per manufacturer recommendations.
    ~~iv.~~v. Electrical and Instrumentation work.
5. Equipment training, startup, testing, placement into service

C. Except as specifically noted otherwise, provide and pay for:
    1. Insurance and bonds;
    2. Labor, materials, and equipment;
    3. Tools, equipment, and machinery required for construction;
    4. Utilities required for construction;
    5. Temporary facilities as necessary;
    6. Erosion and dust control measures;
    7. Equipment training, testing, and startup services;
    8. Other facilities and services necessary for proper execution and completion of the Work.

D. OWNER will provide and pay for reclaimed water used for flushing, testing, and start-up activities.

E. Comply with codes, ordinances, regulations, orders, and other legal requirements of public authorities having bearing on the performance of the Work.

PART 2 - MATERIALS AND EQUIPMENT

2.01 OWNER FURNISHED EQUIPMENT:

A. The OWNER has purchased the clarifier equipment from Ovivo USA, LLC. OWNER will furnish CONTRACTOR with materials upon arrival. CONTRACTOR shall coordinate with the OWNER on the list of equipment purchased.

B. CONTRACTOR's responsibility for OWNER Furnished equipment:
    1. Receiving and unloading equipment/products at site.
    2. Promptly inspecting products jointly with the OWNER and recording shortages, and damaged or defective items.
    3. Handling products at site, including uncrating and storage.
    4. Protecting products from damage.
    5. Installing, including assembly, connections, adjustments, tests, and finish products in accordance with Contract Documents.
    6. Arrange for manufacturer's warranties, bonds, service and inspection.
    7. Providing operating oils, lubricants, and incidental materials required for complete installation.
    8. Repairing or replacing items damaged after receipt until date of Substantial Completion.

2.02 OWNER DIRECT PURCHASE EQUIPMENT:

A. The OWNER may direct purchase certain major equipment packages. CONTRACTOR should coordinate with OWNER on list of equipment the OWNER may elect to direct purchase.

B. CONTRACTOR's responsibility for OWNER Direct Purchase equipment:

1. Deliver supplier's bill of materials to OWNER on behalf of OWNER.
2. Submit claims for transportation damage on behalf of OWNER.
3. Arrange for replacement of damaged, defective, or missing items on behalf of OWNER.
4. Arrange for manufacturer's warranties, bonds, service and inspection.
5. Designating delivery date for each OWNER Direct Purchase item.
6. Reviewing shop drawings, O&M manuals, product data, and samples.
7. Transmit all such submittals to OWNER for review and approval.
8. Submitting notification of discrepancies or anticipated problems.
9. Receiving and unloading equipment/products at site.
10. Promptly inspecting products jointly with the OWNER and recording shortages, and damaged or defective items.
11. Handling products at site, including uncrating and storage.
12. Protecting products from damage.
13. Installing, including assembly, connections, adjustments, tests, and finish products in accordance with Contract Documents.
14. Providing operating oils, lubricants, and incidental materials required for complete installation.
15. Repairing or replacing items damaged after receipt until date of Substantial Completion.

2.03 SALVAGED MATERIALS:

A. In the absence of special provisions to the Contract, salvaged materials, equipment or supplies that occur are the property of the OWNER and shall be cleaned and stored as directed by the OWNER.

PART 3 - EXECUTION

3.01 WASTEWATER FACILITY OPERATION:

A. It is noted that the Work is to take place at an active treatment plant. As such, construction activities can not interfere with daily treatment operations. Any disruptions to the treatment process shall be discussed with the OWNER, a minimum of 14 days in advanced. At time of discussion, CONTRACTOR shall present to the OWNER a detailed plan of the facility disruption/outage, including but not limited to:

1. Length of disruption/outage.
2. Temporary measures taken to ensure treatment process continues to meet permit during outage.
3. Drawings/narrative as needed.
4. Detail on reversing disruption/outage.

Upon review, the OWNER has the sole authority to accept/reject the disruption/outage.

END OF SECTION

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SECTION 01025 - MEASUREMENT AND PAYMENT

PART 1 - GENERAL

1.01 DESCRIPTION

A. This Section includes specification for the measurement and payment of the various elements of the Work; with provisions applicable to lump sum prices, unit prices, and allowances, if applicable.

B. In the case of conflict between this Section and the measurement methods specified in the individual technical Sections, the measurement methods in the technical specifications shall govern.

C. The CONTRACTOR shall receive no payment for any portion of the work until it is installed. The only exception to this is payment for stored materials on site if the Contract provides for the payment of stored materials. Partial payment may be requested for items partially installed.

D. The items listed in Article 5, refer to and are the same pay items listed in the Bid Proposal. They constitute all of the pay items for the completion of the Work. The Contract Price shall be deemed to fully compensate the CONTRACTOR for all direct and indirect costs of performing the work. All materials, labor, equipment, testing, overhead, profit, and incidentals required to perform the work identified on the drawings and in the specifications to the satisfaction of the OWNER shall be included in the bid items below. If the CONTRACTOR is unsure where a particular item of work shall be included, he/she shall contact the OWNER for clarification.

1.02 RELATED PROVISIONS SPECIFIED ELSEWHERE

A. Payments to CONTRACTOR: Refer to General Conditions and Contract Agreement.

B. Changes in Contract Price: General Conditions.

1.03 LUMP SUM ITEMS

A. Lump Sum measurement will be for the entire item, unit of work, structure, or combination thereof, as specified and as indicated in the Bid Form. Measurement and payment for all bid items indicated as Lump Sums shall include the cost of all labor, materials and equipment necessary to furnish, install, clean, test, and place each bid item into operation; including permitting, general conditions, overhead and profit.

B. Progress payments will be based on the Schedule of Values prepared by the CONTRACTOR and approved by the OWNER before acceptance of the first Application for Payment.

C. In order for the CONTRACTOR to request progress payments against Lump Sum items, CONTRACTOR shall provide a disaggregation or breakdown in sufficient measureable detail that is acceptable to the OWNER.

D. Measurement:

1. Measurement shall be based on the estimated percent complete of each item of Schedule of Values, as determined by the OWNER.

E. Payment:

1. Payment will be made at the lump sum price proportional to the completion percentages approved by the OWNER.

1.04 UNIT PRICE ITEMS

A. Quantity and measurement estimates stated in the Bid Form are estimates for bidding purposes only. Actual payments shall be based on actual quantities installed, in-place, as measured and/or verified by the OWNER.

B. Unless otherwise provided in the General Conditions, the bid unit prices shall be in effect throughout the contract duration, regardless of variances between the estimated quantities and the actual installed quantities.

C. The CONTRACTOR shall make no claim, nor receive any compensation, for anticipated profits, loss of profit, damages, or any extra payment due to any difference between the amounts of work actually completed, or materials or equipment furnished, and the estimated quantities.

D. Unless otherwise approved by the OWNER, any unit quantities exceeded may not be invoiced until the estimated quantity is increased by contract change order.

E. CONTRACTOR shall assist OWNER by providing necessary equipment, workers, and survey personnel as required to measure quantities.

F. Measurement:

1. Measurement for progress payment shall be made by, or approved by, the OWNER based on the estimated effective quantity installed. The effective quantity installed represents the actual units or quantities installed, adjusted for incomplete elements or components.
2. Unless otherwise provided for in the Bid Form unit price items are all-inclusive of all related work, direct and indirect, to provide a complete and functional item. For example, underground pipe installation would include trenching, shoring, dewatering, bedding, installation, backfill, testing, flushing, disinfection, and commissioning; including all labor, materials and equipment necessary to furnish, install, clean, test, and place into operation; including permitting, general conditions, overhead and profit.

3. The final measurement shall be based on actual quantities, jointly measured by CONTRACTOR and OWNER, complete, fully, tested and placed into service.

G. Payment:

1. Progress payments shall be in accordance with the contract documents based on estimated effective quantities installed, paid at the bid unit price.
2. The final payment shall be based on actual quantities, fully installed, tested and placed into service, paid at the bid unit price.
3. Payments to CONTRACTOR: Refer to General Conditions and Contract Agreement.
4. Changes in Contract Price: General Conditions.

PART 2 - MATERIALS AND EQUIPMENT
(Not Applicable)

PART 3 - EXECUTION

3.01 CONTRACT - BASE BID

A. Item No. 1 – Mobilization/Demobilization

1. Measurement
   i. Measurement of the work of Item No. 1 shall be on a lump sum basis.

2. Payment
   ~~i.~~ii. Payment to the CONTRACTOR of the total price of bid for Item No. 1 in the Bid Form will be made and shall fully compensate the CONTRACTOR for the mobilization of all equipment, materials, and manpower at the beginning of the project and demobilization upon project completion. The price shall be calculated as a maximum of 5-percent of the total of Items 2 – ~~10~~9.

B. Item No. 2 – Diffused Air Delivery System: Aeration Tank No. 2

1. Measurement
   i. Measurement of the work of Item No. 2 shall be on a lump sum basis.

2. Payment
   ~~i.~~ii. Payment for the Diffused Air Delivery System for Aeration Tank No. 2 and appurtenances shall be made at the Contract lump sum price, complete and in place, as specified and shown on the Contract Drawings. This payment shall constitute full compensation for all labor, materials, equipment, testing, training, and incidentals associated with construction of new Diffused Air Delivery System for Aeration Tank No. 2 and any associated appurtenances not specifically identified in other bid items. The work generally includes, but is not limited to: demolition of the existing diffuser system in Aeration Tank No. 2

beginning at, and including, the SST-to-PVC adapter on the existing drop leg along with all connected dispersion legs, diffusers, supports, and appurtenances within Aeration Tank No. 2; proper transport and disposal of all debris; furnish and install new SST coupling; furnish and install new diffused air delivery system per manufacturer recommendations; supplemental/temporary air, as necessary, to accomplish diffuser installation; dewatering; minor concrete repair, as required~~; removal of steel plate in Effluent Box No. 2; bypass pumping, as necessary~~. Progress payments will be made according to the General Conditions.

C. Item No. 3 – Diffused Air Delivery System: Aeration Tank No. 3

1. Measurement
   i. Measurement of the work of Item No. 3 shall be on a lump sum basis.

2. Payment
   ii. Payment for the Diffused Air Delivery System for Aeration Tank No. 3 (Pass 1 and reaeration zone of Pass 3) and appurtenances shall be made at the Contract lump sum price, complete and in place, as specified and shown on the Contract Drawings. This payment shall constitute full compensation for all labor, materials, equipment, testing, training, and incidentals associated with construction of new Diffused Air Delivery System for Aeration Tank No. 3 (Pass 1 and reaeration zone of Pass 3) and any associated appurtenances not specifically identified in other bid items. The work generally includes, but is not limited to: ~~demolition of the existing diffuser system in Aeration Tank No. 3 (Pass 3) beginning at, and including, the SST-to-PVC adapter on the existing drop leg along with all connected dispersion legs, diffusers, supports, and appurtenances within Aeration Tank No. 3 (Pass 3); proper transport and disposal of all debris;~~ furnish and install new SST coupling; furnish and install new diffused air delivery system per manufacturer recommendations; supplemental/temporary air, as necessary, to accomplish diffuser installation; dewatering; minor concrete repair, as required. Progress payments will be made according to the General Conditions.

D. Item No. 4 – Clarifiers No. 1, 2 & 4 Upgrades

1. Measurement
   i. Measurement of the work of Item No. 4 shall be on a lump sum basis.

2. Payment
   ii. Payment for the Clarifier No. 1, 2 & 4 Upgrades and appurtenances shall be made at the Contract lump sum price, complete and in place, as specified and shown on the Contract Drawings. This payment shall constitute full compensation for all labor, materials, equipment, testing,

training, and incidentals associated with construction of new upgrades to Clarifiers No. 1, 2 & 4 and any associated appurtenances not specifically identified in other bid items. The work generally includes, but is not limited to: demolition of the existing clarifier mechanisms and appurtenances as shown on the Contract Drawings; proper transport and disposal of all debris; installation of *Owner Furnished* clarifier mechanisms per manufacturer recommendations; minor concrete repair, as necessary, electrical and instrumentation. Progress payments will be made according to the General Conditions.

E. Item No. 5 – Dewatering Clarifier No. 1

1. Measurement

i. Measurement of the work of Item No. 5 shall be on a lump sum basis.

2. Payment

ii. Payment for the Dewatering of Clarifier No. 1 shall be made at the Contract lump sum price, complete and in place, as specified and shown on the Contract Drawings. This payment shall constitute full compensation for all labor, materials, equipment, testing, training, and incidentals associated with groundwater dewatering of the area around Clarifier No. 1 and any associated appurtenances not specifically identified in other bid items, as necessary to prevent buoyant forces. The work generally includes, but is not limited to: field investigation; creation and submission of dewatering plan; dewatering system including all appurtenances needed to drawdown the groundwater elevation (i.e. pumps, fuel, well points, etc.); means of providing continuous dewatering while tank is drained; de-silting; acceptable discharge of groundwater. Progress payments will be made according to the General Conditions.

F. Item No. 6 – Dewatering Clarifier No. 2

1. Measurement

i. Measurement of the work of Item No. 6 shall be on a lump sum basis.

2. Payment

ii. Payment for the Dewatering of Clarifier No. 2 shall be made at the Contract lump sum price, complete and in place, as specified and shown on the Contract Drawings. This payment shall constitute full compensation for all labor, materials, equipment, testing, training, and incidentals associated with groundwater dewatering of the area around Clarifier No. 2 and any associated appurtenances not specifically identified in other bid items, as necessary to prevent buoyant forces. The work generally includes, but is not limited to: field investigation; creation and submission of dewatering plan; dewatering system including all appurtenances needed to drawdown the groundwater elevation (i.e. pumps, fuel, well points, etc.); means of providing

continuous dewatering while tank is drained; de-silting; acceptable discharge of groundwater. Progress payments will be made according to the General Conditions.

G. Item No. 7 – Dewatering Clarifier No. 4

1. Measurement

i. Measurement of the work of Item No. 7 shall be on a lump sum basis.

2. Payment

ii. Payment for the Dewatering of Clarifier No. 4 shall be made at the Contract lump sum price, complete and in place, as specified and shown on the Contract Drawings. This payment shall constitute full compensation for all labor, materials, equipment, testing, training, and incidentals associated with groundwater dewatering of the area around Clarifier No. 4 and any associated appurtenances not specifically identified in other bid items, as necessary to prevent buoyant forces. The work generally includes, but is not limited to: field investigation; creation and submission of dewatering plan; dewatering system including all appurtenances needed to drawdown the groundwater elevation (i.e. pumps, fuel, well points, etc.); means of providing continuous dewatering while tank is drained; de-silting; acceptable discharge of groundwater. Progress payments will be made according to the General Conditions.

H. Item No. 8 – Gasket 1B Replacement

1. Measurement

i. Measurement of the work of Item No. 8 shall be on a per unit basis.

2. Payment

ii. Payment for Gasket 1B Replacement and appurtenances shall be made at the Contract unit price, complete and in place, as specified and shown on the Contract Drawings. This payment shall constitute full compensation for all labor, materials, equipment, testing, training, and incidentals associated with replacement of the gasket(s) and any associated appurtenances not specifically identified in other bid items. The work generally includes, but is not limited to: supplemental/temporary air, as necessary, to accomplish gasket replacement; removal and disposal of old gasket; replacement of gasket and fill material; support and protection of air piping during replacement; replacement of flange bolts/nuts as determined necessary. Progress payments will be made according to the General Conditions.

I. Item No. 9 – Gasket 2B Replacement

1. Measurement
   i. Measurement of the work of Item No. 9 shall be on a per unit basis.

2. Payment
   ii. Payment for Gasket 2B Replacement and appurtenances shall be made at the Contract unit price, complete and in place, as specified and shown on the Contract Drawings. This payment shall constitute full compensation for all labor, materials, equipment, testing, training, and incidentals associated with replacement of the gasket(s) and any associated appurtenances not specifically identified in other bid items. The work generally includes, but is not limited to: supplemental/temporary air, as necessary, to accomplish gasket replacement; removal and disposal of old gasket; replacement of gasket and fill material; support and protection of air piping during replacement; replacement of flange bolts/nuts as determined necessary. Progress payments will be made according to the General Conditions.

3.0 CONTRACT – ADDITIVE ALTERNATES

~~E.~~A. Item No. 410 – Gasket 1A Replacement

1. Measurement
   i. Measurement of the work of Item No. 410 shall be on a per unit basis.

2. Payment
   ~~i.~~ii. Payment for Gasket 1A Replacement and appurtenances shall be made at the Contract unit price, complete and in place, as specified and shown on the Contract Drawings. This payment shall constitute full compensation for all labor, materials, equipment, testing, training, and incidentals associated with replacement of the gasket(s) and any associated appurtenances not specifically identified in other bid items. The work generally includes, but is not limited to: supplemental/temporary air, as necessary, to accomplish gasket replacement; removal and disposal of old gasket; replacement of gasket and fill material; support and protection of air piping during replacement; replacement of flange bolts/nuts as determined necessary. Progress payments will be made according to the General Conditions.

~~F. Item No. 5 Gasket 1B Replacement~~

~~1. Measurement~~
   ~~i. Measurement of the work of Item No. 5 shall be on a per unit basis.~~

~~2. Payment~~
   ~~i. Payment for Gasket 1B Replacement and appurtenances shall be made at the Contract unit price, complete and in place, as specified and~~

~~shown on the Contract Drawings. This payment shall constitute full compensation for all labor, materials, equipment, testing, training, and incidentals associated with replacement of the gasket(s) and any associated appurtenances not specifically identified in other bid items. The work generally includes, but is not limited to: supplemental/temporary air, as necessary, to accomplish gasket replacement; removal and disposal of old gasket; replacement of gasket and fill material; support and protection of air piping during replacement; replacement of flange bolts/nuts as determined necessary. Progress payments will be made according to the General Conditions.~~

~~G.~~B. Item No. ~~6~~11 – Gasket 2A Replacement

1. Measurement
   i. Measurement of the work of Item No. ~~6~~11 shall be on a per unit basis.

2. Payment
   ii. Payment for Gasket 2A Replacement and appurtenances shall be made at the Contract unit price, complete and in place, as specified and shown on the Contract Drawings. This payment shall constitute full compensation for all labor, materials, equipment, testing, training, and incidentals associated with replacement of the gasket(s) and any associated appurtenances not specifically identified in other bid items. The work generally includes, but is not limited to: supplemental/temporary air, as necessary, to accomplish gasket replacement; removal and disposal of old gasket; replacement of gasket and fill material; support and protection of air piping during replacement; replacement of flange bolts/nuts as determined necessary. Progress payments will be made according to the General Conditions.

C. Item No. 12 – Gasket 2B Replacement

1. Measurement
   i. Measurement of the work of Item No. 12 shall be on a per unit basis.

2. Payment
   ii. Payment for Gasket 2B Replacement and appurtenances shall be made at the Contract unit price, complete and in place, as specified and shown on the Contract Drawings. This payment shall constitute full compensation for all labor, materials, equipment, testing, training, and incidentals associated with replacement of the gasket(s) and any associated appurtenances not specifically identified in other bid items. The work generally includes, but is not limited to: supplemental/temporary air, as necessary, to accomplish gasket replacement; removal and disposal of old gasket; replacement of gasket and fill material; support and protection of air piping during replacement; replacement of flange bolts/nuts as determined necessary. Progress payments will be made according to the General Conditions.

~~i.~~

~~H. Item No. 7 – Gasket 2B Replacement~~

~~1. Measurement~~

~~i. Measurement of the work of Item No. 7 shall be on a per unit basis.~~

~~2. Payment~~

~~i. Payment for Gasket 2B Replacement and appurtenances shall be made at the Contract unit price, complete and in place, as specified and shown on the Contract Drawings. This payment shall constitute full compensation for all labor, materials, equipment, testing, training, and incidentals associated with replacement of the gasket(s) and any associated appurtenances not specifically identified in other bid items. The work generally includes, but is not limited to: supplemental/temporary air, as necessary, to accomplish gasket replacement; removal and disposal of old gasket; replacement of gasket and fill material; support and protection of air piping during replacement; replacement of flange bolts/nuts as determined necessary. Progress payments will be made according to the General Conditions.~~

~~I.~~D. Item No. ~~8~~13 – Gasket 3A Replacement

1. Measurement
   i. Measurement of the work of Item No. ~~8~~13 shall be on a per unit basis.

2. Payment
   ii. Payment for Gasket 3A Replacement and appurtenances shall be made at the Contract unit price, complete and in place, as specified and shown on the Contract Drawings. This payment shall constitute full compensation for all labor, materials, equipment, testing, training, and incidentals associated with replacement of the gasket(s) and any associated appurtenances not specifically identified in other bid items. The work generally includes, but is not limited to: supplemental/temporary air, as necessary, to accomplish gasket replacement; removal and disposal of old gasket; replacement of gasket and fill material; support and protection of air piping during replacement; replacement of flange bolts/nuts as determined necessary. Progress payments will be made according to the General Conditions.

~~i.~~

~~J.~~E. Item No. ~~9~~14 – Gasket 3B Replacement

1. Measurement
   i. Measurement of the work of Item No. ~~9~~14 shall be on a per unit basis.

2. Payment
   ii. Payment for Gasket 3B Replacement and appurtenances shall be made at the Contract unit price, complete and in place, as specified and shown on the Contract Drawings. This payment shall constitute full compensation for all labor, materials, equipment, testing, training, and incidentals associated with replacement of the gasket(s) and any associated appurtenances not specifically identified in other bid items. The work generally includes, but is not limited to: supplemental/temporary air, as necessary, to accomplish gasket replacement; removal and disposal of old gasket; replacement of gasket and fill material; support and protection of air piping during replacement; replacement of flange bolts/nuts as determined necessary. Progress payments will be made according to the General Conditions.

F. Item No. 15 – Gasket 4A Replacement

1. Measurement
   i. Measurement of the work of Item No. 15 shall be on a per unit basis.

2. Payment
   ii. Payment for Gasket 4A Replacement and appurtenances shall be made at the Contract unit price, complete and in place, as specified and shown on the Contract Drawings. This payment shall constitute full compensation for all labor, materials, equipment, testing, training, and incidentals associated with replacement of the gasket(s) and any associated appurtenances not specifically identified in other bid items. The work generally includes, but is not limited to: supplemental/temporary air, as necessary, to accomplish gasket replacement; removal and disposal of old gasket; replacement of gasket and fill material; support and protection of air piping during replacement; replacement of flange bolts/nuts as determined necessary. Progress payments will be made according to the General Conditions.

G. Item No. 16 – Gasket 4B Replacement

1. Measurement
   i. Measurement of the work of Item No. 16 shall be on a per unit basis.

2. Payment
   ii. Payment for Gasket 4B Replacement and appurtenances shall be made at the Contract unit price, complete and in place, as specified and shown on the Contract Drawings. This payment shall constitute full compensation for all labor, materials, equipment, testing, training, and incidentals associated with replacement of the gasket(s) and any associated

appurtenances not specifically identified in other bid items. The work generally includes, but is not limited to: supplemental/temporary air, as necessary, to accomplish gasket replacement; removal and disposal of old gasket; replacement of gasket and fill material; support and protection of air piping during replacement; replacement of flange bolts/nuts as determined necessary. Progress payments will be made according to the General Conditions.

H. Item No. 17 – Drain Valve Replacement Clarifiers No. 1 and 4

1. Measurement

i. Measurement of the work of Item No. 17 shall be on a per unit basis.

2. Payment

ii. Payment for Drain Valve Replacement and appurtenances for Clarifiers No. 1 and 4 shall be made at the Contract unit price, complete and in place, as specified and shown on the Contract Drawings. This payment shall constitute full compensation for all labor, materials, equipment, testing, training, and incidentals associated with replacement of the drain valves and any associated appurtenances not specifically identified in other bid items. The work generally includes, but is not limited to: dewatering; excavation and shoring; removal and disposal of the existing 8" drain valve; installation of a new 8" drain valve along with extension nut; backfill and compaction; surface restoration; valve pad and box. Progress payments will be made according to the General Conditions.

~~i.~~

I. Item No. 18 – Aeration Tank No. 3 – Diffuser Demolition

1. Measurement

i. Measurement of the work of Item No. 18 shall be on a lump sum basis.

2. Payment

ii. Payment for the demolition of the diffusers within Aeration Tank No. 3 (Pass 1 and reaeration zone of Pass 3) and appurtenances shall be made at the Contract lump sum price as specified and shown on the Contract Drawings. This payment shall constitute full compensation for all labor, materials, equipment, and incidentals associated with demolition of the diffusers within Aeration Tank No. 3 (Pass 1 and reaeration zone of Pass 3) and any associated appurtenances not specifically identified in other bid items. The work generally includes, but is not limited to: demolition of the existing diffuser system in Aeration Tank No. 3 (Pass 1 and reaeration zone of Pass 3) beginning at, and including, the SST-to-PVC adapter on the existing drop leg along with all connected dispersion legs, diffusers, supports, and appurtenances within Aeration Tank No. 3 (Pass 1 and reaeration zone of Pass 3); proper transport and disposal of all debris. Progress payments will be made according to the General

Conditions.

~~K. Item No. 10 – Clarifiers No. 1, 2 & 4 Upgrades~~

~~1. Measurement~~

~~i. Measurement of the work of Item No. 10 shall be on a lump sum basis.~~

~~2. Payment~~

~~i. Payment for the Clarifier No. 1, 2 & 4 Upgrades and appurtenances shall be made at the Contract lump sum price, complete and in place, as specified and shown on the Contract Drawings. This payment shall constitute full compensation for all labor, materials, equipment, testing, training, and incidentals associated with construction of new upgrades to Clarifiers No. 1, 2 & 4 and any associated appurtenances not specifically identified in other bid items. The work generally includes, but is not limited to: demolition of the existing clarifier mechanisms and appurtenances as shown on the Contract Drawings; proper transport and disposal of all debris; installation of *Owner Furnished* clarifier mechanisms per manufacturer recommendations; dewatering, minor concrete repair, as necessary, electrical and instrumentation. Progress payments will be made according to the General Conditions.~~

END OF SECTION

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SECTION 11378- FINE BUBBLE MEMBRANE DISC AERATION SYSTEM

PART 1 – GENERAL

1.01 – SCOPE OF WORK

A. Contractor shall furnish all materials, equipment, and services required for the fine bubble aeration system as shown on the contract drawings and contained herein. Fine bubble aeration system shall constitute: diffusers, distribution headers, droplegs, anchor bolts, supports, expansion joints, and all necessary hardware required to furnish a complete installation as shown on the contract drawings.

1.02 – SUBMITTALS

B. Pre-Submittal Requirements

1. Whenever an item or material or equipment is specified or described in the contract documents, the specification or description is intended to establish the type, function, appearance and quality required.
2. All equipment suppliers wishing to submit a bid shall, 10 days prior to the Bid Date, provide a letter signed by an authorized representative of the company certifying:
    a. "The undersigned hereby attests that he/she has examined all applicable contract drawings and specifications, and certifies that the equipment that he/she proposes to furnish and deliver meets the requirements of Specification 11378, is suitable for installation as presented in the contract drawings and specifications, and will provide satisfactory performance at the design criteria specified."
    b. Any deviations to the Plans or Specifications shall be accompanied by detailed written justification.

C. Submittal Requirements

1. Certified dimensional drawings of the aeration system, including plan, elevation, and appropriate cross-section views.
2. Certified drawings showing details of the diffusers, diffuser holders, piping, pipe supports, pipe joints and condensate evacuation system.
3. Certified anchor bolt layout drawings.
4. Materials and manufacturing specifications.
5. Oxygen transfer and system headloss calculations.
6. Certified oxygen transfer efficiency curves stamped by a registered Professional Engineer.
7. Installation, operation and maintenance instructions.
8. List of any exceptions taken to the plans and specifications including written justification.

1.03 – SYSTEM DESCRIPTION

A. Aeration system design requirements:

1. Designed to operate under environmental conditions of the plant, including the following.
   a. Intermittently submerged and exposed to the coastal atmosphere.
   b. Wastewater temperatures ranging from 68 degrees Fahrenheit to 90 degrees Fahrenheit.
   c. Ambient air temperatures from 40 degrees Fahrenheit to 100 degrees Fahrenheit.
   d. Submerged in domestic sewage with constituents of typical municipal wastewater.

B. Performance Requirements

1. Design the aeration system for installation in the following tanks.

Tank Dimensions	Aeration Tank 2	Aeration Tank 3 – Pass 1	Aeration Tank 3 – Pass 3
Length	160'-0"	141'-0"	48'-0"
Width	65'-0"	25'-6"	25'-6"
Water Depth	17'-6"	14'-5"	14'-5"

C. Design the aeration system for the following.

	Aeration Tank 2 & Aeration Tank 3 Pass 1	Aeration Tank 3 – Pass 3
Actual Oxygen Requirements	50,000 lbs O_2/day	5,000 lbs O_2/day
DO Concentration (Max day)	1.0 mg/L	1.0 mg/L
Minimum Water Temp	19 degC	19 degC
O_2 transfer rate in process water relative to clean water (α-value)	0.5	0.5
Air Rate per diffuser	1.6	1.6
Diffuser Submergence (ft.)	16'-6"	13'-5"

The minimum diffuser quantity per tank shall be determined by the manufacturer based on the parameters in the table above.

D. Design the aeration system with a diffuser centerline spacing not to exceed 4 feet from any adjacent diffuser, wall or obstruction to maximize the oxygen transfer efficiency and minimize solids deposition.

PART 2 – PRODUCT

2.01 – ACCEPTABLE MANUFACTURERS

A. Acceptable fine bubble disc diffuser manufacturers are:
   1. Aquarius Technologies, Inc.
   2. SSI Aeration Inc.

3. Sanitaire Division of Xylem Water Solutions USA Inc.

2.02 - MATERIALS, MANUFACTURING & FINISHING

A. Stainless Steel

1. Fabricate all welded parts and assemblies from sheets, plates, or bars of 304L stainless steel with a 2D finish conforming to ASTM A240, A554, A774 and A778.
2. Fabricate all non-welded parts and assemblies from sheets, plates, or bars of 304 stainless steel conforming to ASTM A240, or ASTM A276.
3. Furnish all nuts, bolts, washers, and anchors bolts from 18-8 series stainless steel.
4. Weld in the factory with ER 316L filler wire using MIG, TIG or plasma-arc inert gas welding processes. Provide a cross section equal to or greater than the parent metal.
5. Clean all welded stainless steel surfaces and welds after fabrication to remove weld splatter and finish clean all interior and exterior welds by full immersion pickling and rinse with water to remove all carbon deposits and contaminants to regenerate a uniform corrosion resistant chromium oxide film per ASTM A380 Section 6.2.11, Table A2.1 Annex A2 and Section 8.3.

B. PVC

1. Fabricate 4 inch diameter manifolds and air distribution headers of SDR 33.5 PVC conforming to ASTM D1784 and D3034.
2. Fabricate manifolds 6 inch diameter and larger of Schedule 40 PVC conforming to ASTM D1784, D1785 and D2466.
3. Fabricate diffuser holders, retainer rings and subplates of PVC material conforming to ASTM D1784.
4. PVC components shall contain a minimum 1.5 percent titanium dioxide to minimize ultraviolet light degradation.

2.03 – EQUIPMENT COMPONENTS

A. Manifolds – Provide a PVC manifold for connection to the air distribution headers.

1. Fabricate manifolds in sections up to 25 feet in length.
2. Connections between separate manifold sections and between the manifold and air distribution headers shall be threaded union or flanged joints to prevent rotation and blow apart. All joints shall be factory solvent welded.
3. Design manifolds to withstand a 130° F mean wall temperature.

B. Air Distribution Headers and Diffuser Holders

1. Fabricate air distribution headers in sections up to 24 feet in length.
2. Connections between air distribution header sections shall be threaded union or flanged joints to prevent blow apart and rotation. All joints shall be factory solvent welded.

3. Design air distribution headers to withstand a 130° F mean wall temperature.
4. Design threaded union joints with spigot and socket ends joined with a threaded ring and sealed with an O-ring gasket.
5. Threaded unions will provide an uninterrupted 360° rotation to provide for leveling adjacent distributors. Unions with ~~spline locks or~~ ratchets will not be acceptable.
6. To~~To~~ prevent damage to the joint, the union will provide the anti-rotation feature through the O-ring, spigot and socket. Not applicable is utilizing spline.
7. Threads on union joints shall be a minimum of 0.013 square inches to provide adequate strength of the socket and retainer ring.
8. Flange joints shall be Van Stone style follower flanges with 150lb drilling and stainless steel hardware.
9. Diffuser holders shall incorporate diffuser holder and membrane support plate as a single unit. Multiple piece assemblies will not be acceptable.
10. Diffuser holders shall be factory attached to the pipe to ensure maximum structural integrity and strength of the connection. ~~bonded to the crown of the distributor with one continuous contact area of 13 square inches minimum to ensure structural integrity and strength.~~
11. ~~Diffuser holders~~ Diffuser holders may be~~must be factory~~ solvent welded or attached with an interference fit~~to the pipe to maximize adhesion~~.
12. If solvent welding:

    ~~12.~~ ~~D~~Diffuser holder must be ultrasonically staked to the pipe to maximize a positive air seal.

    a.
    ~~13. T~~The diffuser holders shall be attached to the distributor piping following application of primer along the crown of the pipe, mechanically scrubbed and allowing sufficient activation time. Solvent shall be applied to the pod to insure full coverage without voids at the pod to pipe interface.

    b.
    ~~14.~~c. The holder shall be applied to the pipe immediately followed by an ultra-sonic weld to create a hermetic seal and securely hold the holder in place while the solvent sets and cures.

~~15.~~13. Diffuser holders shall be attached to the pipe with no more than +/- 1 degree angular variation from top dead center, and no greater than +/- 1/8" lateral spacing variation to insure diffuser uniformity within the grid piping.

~~16.~~14. Air distribution headers and diffuser holders shall be able to resist a dead load of 200 lbs applied vertically to the outer edge of the diffuser holder.

~~17.~~15. Provide end caps at the end of each air distribution header. End caps shall be removable for ease of cleaning

C. Pipe Supports – Provide each section of manifold and air distribution header with a minimum of two supports.

1. Design all supports to allow for thermal expansion and contraction forces over a temperature range of 125° F and to minimize stress build up in the piping system.
2. Design supports to be adjustable without removing the manifold or air distribution header from the support.
3. Manifold Support – 6-inch diameter and larger
    a. Dual anchor supports shall be utilized.
    b. Support spacing shall be limited to a maximum of 8 feet.
    c. Design supports to include guide straps, support structure and two anchor bolts.
    d. Guide straps shall be fabricated from minimum 2 inch wide, 12 gauge stainless steel to eliminate point load on manifold and minimize binding.
    e. Design support to allow +/- 2 inches of vertical adjustment for leveling of manifold within ¼ inch of a common plane.
    f. Attach supports to tank floor with stainless steel anchor bolts.

~~4.~~ Air Distributor and Manifold Supports – 4-inch diameter

~~a.~~4. ~~Dual anchor supports shall be utilized.~~

~~b.~~a. Support spacing shall be limited to a maximum of 7.5 feet.

~~c.~~b. Design supports to include guide straps, support structure, locating plate and a single anchor bolt.

~~d.~~c. To prevent improper installation, the locating plate shall be able to be installed in either of two directions relative to the support.

~~e.~~d. Guide straps shall be fabricated from minimum 1 1/2-inch wide, 18 gauge stainless steel and have contoured bearing surfaces with chamfered edges to minimize binding and resistance to movement of air distributor under full buoyant uplift load.

~~f.~~e. Design guide straps with 1/8 inch clearance around distributor so strap is self-limiting and cannot be over tightened.

~~g.~~f. Design support to allow +/- 1 1/2 inches of vertical adjustment for leveling air distribution headers within ¼ inch of a common plane.

g. Attach supports to tank floor with stainless steel anchor bolts designed for installation in 4,000 psi concrete.

h. Air Distributor and manifold system, including supports and anchor bolts, shall be fully removable to allow for a flat surface, free of protrusions, for ease of maintenance and cleaning.

D. Diffuser Assemblies – Furnish diffuser assemblies including diffuser, holder, retaining ring and air flow control orifice.

1. Membrane Diffuser
    a. Incorporate an integral check valve into the membrane diffuser.
    b. Design and test diffusers at point of manufacture for a dynamic wet pressure (DWP) of 12 inches +/- 20% water column @ 1.0 SCFM/diffuser and 2 inches submergence.
    c. Visual Uniformity – Observe diffusers for uniform air distribution across the active surface of the diffuser at 1.0 SCFM/diffuser and 2

inches submergence. Active surface is defined as the perforated horizontal projected area of the diffuser.

d. Quality Control – Test diffuser using primary sampling criteria outlined in Military Standard 105E.

e. Manufacture the circular membrane diffuser with an integral O-ring of EPDM synthetic rubber compound with precision die formed slits.

f. Add carbon black to the material for resistance to ultraviolet light.

g. Design diffuser as one piece injection molded part with a minimum thickness of 0.080 inches for 9 inch diameter unit.

h. Limit the maximum tensile strength of the diffuser to 10 psi when operating at 2.4 SCFM/sq. ft. of material.

i. EPDM membranes shall conform to the following physical properties:

Membrane Material:	EPDM
Tensile Stress:	1200 PSI Min.
Durometer:	58 +/- 5 Shore A
Elong - % Ret 70 Hrs:	75% Max
Elong - % Min At Break:	350% Min

2. Diffuser Holders

a. Design holder with air flow control orifice, integral diffuser support plate and removable retainer ring. Holder to provide support for the diffuser and seal the diffuser in the holder to prevent air leakage around the O-ring.

b. Design retainer ring threads with minimum cross section of 1/8 inch to allow for one complete turn to engage threads.

E. Anchor Bolts

1. Design a mechanical or adhesive anchor bolt system for embedment in 4,000 psi concrete with a pullout safety factor of 10.

F. Condensate Evacuation System - Provide a condensate evacuation system to substantially drain the submerged aeration piping system for each aeration grid.

PART 3 – EXECUTION

3.01 – INSTALLATION AND TRAINING SERVICES

A. Manufacturer shall provide 1 service trip to include the following:

a. Inspection services to be provided for 2 days to verify the proper installation of the aeration system.

b. Training services to be provided for 1 day to instruct owner's personnel on aeration system operation and maintenance.

3.02 – EQUIPMENT WARRANTY

A. The manufacturer shall provide a 5-year extended warranty on all parts and materials. The extended warranty shall provide for replacement of all components which physically fail during the first 5 years of operation.

3.03 – SPARE PARTS

A. Spare parts: Furnish 30 spare diffusers.

B. All spare parts should be labeled on the outside of the container what equipment the parts belong.

END OF SECTION

BID SCHEDULE FOR ITB 20253

BETHUNE POINT WATER RECLAMATION FACILITY PHASE I PROCESS UPGRADES

Ref. No.	Description	Unit of Measure (UOM)	Estimated Quanty (Est Qty)	Unit Price	Extended Price
1	Mobilization/Demobilization	LS	1		$ -
2	Diffused Air System - Aeration Tank No. 2	LS	1		$ -
3	Diffused Air System - Aeration Tank No. 3	LS	1		$ -
4	Clarifiers No. 1, 2 & 4 Upgrades	LS	1		$ -
5	Dewatering Clarifier No. 1	LS	1		$ -
6	Dewatering Clarifier No. 2	LS	1		$ -
7	Dewatering Clarifier No. 4	LS	1		$ -
8	Gasket 1B Replacement	EA	3		$ -
9	Gasket 2B Replacement	EA	1		$ -
	BASE BID				$ -
	ADDITIVE ALTERNATES *(this amount will be added to the base bid)*				
10	Gasket 1A Replacement	EA	3		$ -
11	Gasket 2A Replacement	EA	2		$ -
12	Gasket 2B Replacement	EA	1		$ -
13	Gasket 3A Replacement	EA	1		$ -
14	Gasket 3B Replacement	EA	1		$ -
15	Gasket 4A Replacement	EA	2		$ -
16	Gasket 4B Replacement	EA	1		$ -
17	Drain Valve Replacement Clarifiers No. 1 and 4	EA	2		$ -
18	Aeration Tank No. 3 – Diffuser Demolition	LS	1		$ -
	TOTAL OF ALL ADDITIVE ALTERNATES				$ -
	TOTAL BASE BID + ALL ALTERNATES				$ -
	LS=Lump sum, EA=Each				

This Form may be substituted for the bid item schedule found in Addendum #3. By entering unit prices the totals will automatically be calculated.

Submitted By:

CONTACT NAME (SIGNATURE):	
CONTACT NAME PRINTED:	
VENDOR NAME:	
ADDRESS:	
CITY / STATE/ ZIP:	
PHONE:	
EMAIL:	