CLACKAMAS
WATER ENVIRONMENT SERVICES

GREGORY L. GEIST | DIRECTOR
Water Quality Protection
Surface Water Management
Wastewater Collection & Treatment

April 6, 2023 BCC Agenda Date/Item: _____

Board of County Commissioners
Acting as the governing body of Water Environment Services
Clackamas County

Approval of a Public Improvement Contract with A-Affordable Septic Service, LLC, for Fischer's Forest Park - Large Onsite Sewage System Treatment Process Upgrade. Contract value is $778,108. Funding through Water Environment Services Sanitary Sewer Construction Funds. No County General Funds are involved.

Previous Board Action/Review	Related contract (#7021) presented at Issues on October 4, 2022 and approved on October 6, 2022. Presented at Issues on April 4, 2023.		
Performance Clackamas	1. This project supports the County's Strategic Plan of building a strong infrastructure that delivers services to customers and honors, utilizes, promotes and invests in our natural resources. 2. This project supports the WES Strategic Plan goal to provide properly functioning infrastructure that supports healthy streams and reduces flooding.		
Counsel Review	Yes	**Procurement Review**	Yes
Contact Person	Jeff Stallard	**Contact Phone**	503-742-4694

EXECUTIVE SUMMARY:
Fischer's Forest Park (FFP) is a community of 26 homes located in rural Oregon City. The FFP development was constructed from 1969 to 1971. Water Environment Services (WES) operates the sewer utility, including the collection system (manholes and sewer pipes) and onsite septic system (wastewater treatment), which provides sanitary sewer service to all 26 homes.

Evaluations completed in 2020 found deficiencies throughout the 50 year-old system. Because of the unique design, construction and scheduling challenges posed by the septic portion of the system, work on the facility was separated into two phases, Phase 1 and Phase 2.

Phase 1 included work necessary to address issues in the collection system. This initial phase was bid on July 7, 2022 and construction will be completed in April 2023.

For Filing Use Only

Phase 2 will be completed under this contract.

This project will replace and rehabilitate aging septic system infrastructure, which will ensure long-term operation of the facility, decrease staff overtime by reducing emergency call-outs, and improve staff safety by replacing deteriorating tanks and access hatches.

Work under this contract includes constructing a single, large drainfield to replace the three aging drainfields, increasing the capacity of the filtration system to better comply with DEQ regulations, replacing the antiquated controls systems, replacing tanks and access hatches with condition issues, and addressing other minor issues in the system.

The final piece of work not included in this contract will be the installation of an emergency backup generator.

RECOMMENDATION: Staff recommends that the Board of County Commissioners of Clackamas County, acting as the governing body of Water Environment Services, approve Contract #7644 between Water Environment Services and A-Affordable Septic Service, LLC for the Fischer's Forest Park – Large Onsite Sewage System Treatment Process Upgrade.

Respectfully submitted,

Greg Geist
Director, WES

Attachment: Contract #7644

WATER ENVIRONMENT SERVICES
PUBLIC IMPROVEMENT CONTRACT
Contract #7644

This Public Improvement Contract (the "Contract"), is made by and between Water Environment Services, a political subdivision of the State of Oregon, ("Owner,") and **A-Affordable Septic Service, LLC** (the "Contractor") both collectively the "Parties". This Contract shall become effective on the date this Contract has been signed by all the Parties and shall expire upon completion the completion of all obligations under the terms of this Contract unless terminated earlier by the Parties.

All capitalized terms in this Contract shall have the meanings identified in the Clackamas County General Conditions for Public Improvement Contracts (10/13/2021) ("General Conditions") referenced within the Instructions to Bidders.

Project Name: BID#2022-106 Fischer's Forest Park - Large Onsite Sewage System Treatment Process Upgrade

1. Contract Price, Contract Documents and Work.
The Contractor hereby agrees to perform all Work described in, and reasonably inferred from, the Contract Documents. In consideration of the Contractor performing the Work in accordance with the terms of the Contract, the Owner agrees to pay the Contractor the sum of **Seven Hundred Seventy Eight Thousand One Hundred- Eight Dollars ($778,108.00)** (the "Contract Price"). Payment will be made in accordance with the terms and conditions provided in the Contract Documents. The Contract Price is the amount contemplated by the Base Bid adjusted for Alternates, as indicated in the accepted Bid.

The following documents are incorporated by reference in this Contract and made a part hereof:

- Notice of Contract Opportunity
- Supplemental Instructions to Bidders
- Bid Form
- Clackamas County General Conditions
- Prevailing Wage Rates
- Plans, Specifications and Drawings
- Instructions to Bidders
- Bid Bond
- Performance Bond and Payment Bond
- Supplemental General Conditions
- Payroll and Certified Statement Form
- Addenda 1, 2, 3

2. Representatives.
Contractor has named Rick Jonas as its Authorized Representative to act on its behalf. Owner designates, or shall designate, its Authorized Representative as indicted below (check one):

☒ Unless otherwise specified in the Contract Documents, the Owner designates Nathan Seaver as its Authorized Representative in the administration of this Contract. The above-named individual shall be the initial point of contact for matters related to Contract performance, payment, authorization, and to carry out the responsibilities of the Owner.

☐ Name of Owner's Authorized Representative shall be submitted by Owner in a separate writing.

3. Key Persons.
The Contractor's personnel identified below shall be considered Key Persons and shall not be replaced during the project without the written permission of Owner, which shall not be unreasonably withheld. If the Contractor intends to substitute personnel, a request must be given to Owner at least 30 days prior to the intended time of substitution. When replacements have been approved by Owner, the Contractor shall provide a transition period of at least 10 working days during which the original and replacement personnel shall be working on the project concurrently. Once a replacement for any of these staff members is authorized, further replacement shall not occur without the written permission of Owner. The Contractor's project staff shall consist of the following personnel:

Project Executive: Rick Jonas shall be the Contractor's project executive, and will provide oversight and guidance throughout the project term.

Project Manager: Rick Jonas shall be the Contractor's project manager and will participate in all meetings throughout the project term.

Job Superintendent: Mike Hulett shall be the Contractor's on-site job superintendent throughout the project term.

4. Contract Dates.
The Contractor agrees to complete the Work in accordance with the following key dates:

COMMENCEMENT DATE: Upon Issuance of Notice to Proceed
SUBSTANTIAL COMPLETION DATE: 180 days from when Contract Times commence
FINAL COMPLETION DATE: 210 days from when Contract Times commence

Time is of the essence for this Contract. It is imperative that the Work in this Contract reach Substantial Completion and Final Completion by the above specified dates.

5. Change Order Authorization.
Throughout the performance of the Work under this Agreement, the Owner's Project Manager is hereby granted the authority to verbally authorize change orders in the field for an amount up to $10,000. As soon as possible following the authorization, the Owner's Project Manager shall complete the change order form provided by Clackamas County Procurement ("Procurement"), obtain the signature of Owner's Director or other authorized signatory, and submit the form to Procurement for processing. As soon as the Director signs off on the change order form, the Project Manager may then authorize another change order in the future for up to $10,000 following the same procedure above. Each change order should include the cumulative cost of the entire change and may not be artificially broken up into multiple change orders to fall under the dollar threshold listed above. The authority granted to the Project Manager is limited by the Director's authorization to amend the Agreement under Clackamas County's Local Contract Review Board Rules and is subject to the discretion of the Director, who may suspend or restrict the Project Manager's ability to authorize change orders at any time for any reason.

6. Insurance Certificates.
In accordance with Section G.3.5 of the General Conditions, Contractor shall furnish proof of the required insurance naming Clackamas County and Water Environment Services as additional insureds. Insurance certificates may be returned with the signed Contract or may emailed to Procurement@clackamas.us.

7. Tax Compliance.
The Contractor shall comply with all federal, state and local laws, regulation, executive orders and ordinances applicable to this Contract. Contractor represents and warrants that it has complied, and will continue to comply throughout the duration of this Contract and any extensions, with all tax laws of this state or any political subdivision of this state, including but not limited to ORS 305.620 and ORS chapters 316, 317, and 318. Any violation of this section shall constitute a material breach of this Contract and shall entitle County to terminate this Contract, to pursue and recover any and all damages that arise from the breach and the termination of this Contract, and to pursue any or all of the remedies available under this Contract or applicable law.

8. Confidential Information.
Contractor acknowledges that it and its employees or agents may, in the course of performing their responsibilities under this Contract, be exposed to or acquire information that is confidential to Owner. Any and all information of any form obtained by Contractor or its employees or agents in the performance of this Contract shall be deemed confidential information of Owner ("Confidential Information"). Contractor agrees to hold Confidential Information in strict confidence, using at least the same degree of care that Contractor uses in maintaining the confidentiality of its own confidential information, and not to copy, reproduce, sell, assign, license, market, transfer or otherwise dispose of, give, or disclose Confidential Information to third parties or use Confidential Information for any purpose unless specifically authorized in writing under this Contract.

9. Counterparts.
This Contract may be executed in several counterparts, all of which when taken together shall constitute an agreement binding on all Parties, notwithstanding that all Parties are not signatories to the same counterpart. Each copy of the Contract so executed shall constitute an original.

10. Integration.
All provisions of state law required to be part of this Contract, whether listed in the General or Special Conditions or otherwise, are hereby integrated and adopted herein. Contractor acknowledges the obligations thereunder and that failure to comply with such terms is a material breach of this Contract.

The Contract Documents constitute the entire agreement between the parties. There are no other understandings, agreements or representations, oral or written, not specified herein regarding this Contract. Contractor, by the signature below of its authorized representative, hereby acknowledges that it has read this Contract, understands it, and agrees to be bound by its terms and conditions.

11. Liquidated Damages
The Owner and the Contractor acknowledge and agree that if the Contractor fails to reach Substantial Completion of the entire Work by the Substantial Completion Date identified in Section 4 above, the Owner will suffer damages, which are both extremely difficult and impracticable to ascertain, and on that basis agree to the assessment by Owner of liquidated damages as provided in this Section. These damages may include, but are not limited to, use of the Project, costs associated with Contract administration, and use of temporary facilities. The liquidated damages amount is not a penalty, but a reasonable estimate of the amount of losses the Owner will suffer. The Owner may deduct such liquidated damages as are payable under this Section 11 from money due or to become due to the Contractor, or pursue any other legal remedy to collect such liquidated damages from the Contractor and/or its Surety.

If the Contractor fails to achieve Substantial Completion of the entire Work by the Substantial Completion Date identified in Section 4, the Contractor shall pay the Owner as liquidated damages the amount of $935 for each day occurring after the expiration of the date for Substantial Completion until the Contractor achieves Substantial Completion of the entire Work.

12. Compliance with Applicable Law. Contractor shall comply with all federal, state, county, and local laws, ordinances, and regulations applicable to the Work to be done under this Contract including, but not limited to, compliance with the prohibitions set forth in ORS 652.220, compliance of which is a material element of this Contract and failure to comply is a material breach that entitles County to exercise any rights and remedies available under this Contract including, but not limited to, termination for default.

13. Responsibility for Taxes. Contractor is solely responsible for payment of any federal, state, or local taxes required as a result of the Contract or the Work including, but not limited, to payment of the corporate activity tax imposed under enrolled HB 3427 (2019 Oregon regular legislative session). Contractor may not include its federal, state, or local tax obligations as part of the cost to perform the Work.

In witness whereof, Owner executes this Contract and the Contractor does execute the same as of the day and year first above written.

Contractor DATA:
(Insert Contractor Name & Address)

Contractor CCB # 158246 Expiration Date: 1/9/24
Oregon Business Registry # 157166-99 Entity Type: DLLC State of Formation: Oregon

Payment information will be reported to the IRS under the name and taxpayer ID# provided by the Contractor. Information must be provided prior to contract approval. Information not matching IRS records could subject Contractor to 28 percent backup withholding.

A-Affordable Septic Service, ~~LLC~~

3-8-23

Signature Date

Rick Jonas / President

Name / Title Printed

Water Environment Services

Chair Date

Recording Secretary

APPROVED AS TO FORM

3/13/23

County Counsel Date

CLACKAMAS COUNTY
PUBLIC IMPROVEMENT CONTRACT OPPORTUNITY

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CLACKAMAS COUNTY
NOTICE OF PUBLIC IMPROVEMENT CONTRACT OPPORTUNITY

INVITATION TO BID #2022-106
Fischer's Forest Park - Large Onsite Sewage System Treatment Process Upgrade
December 28, 2022

Clackamas County ("County") on behalf of Water Environment Services through their Board of County Commissioners is accepting sealed bids for the **Fischer's Forest Park - Large Onsite Sewage System Treatment Process Upgrade** Project until **February 1, 2023, 2:00 PM,** Pacific Time, ("Bid Closing") at the following location:

Bidding Documents can be downloaded from the state of Oregon procurement website ("OregonBuys") at the following address: https://oregonbuys.gov/bso/view/login/login.xhtml, Document No.S-C01010-00005288.
Prospective Bidders will need to sign in to download the information and that information will be accumulated for a Plan Holder's List. Prospective Bidders are responsible for obtaining any Addenda from Website listed above.

Submitting Proposals: Bid Locker
Proposals will only be accepted electronically thru a secure online bid submission service, **Bid Locker**.
Email submissions to Clackamas County email addresses will no longer be accepted.

A. Completed proposal documents must arrive electronically via Bid Locker located at https://bidlocker.us/a/clackamascounty/BidLocker.
B. Bid Locker will electronically document the date and time of all submissions. Completed documents must arrive by the deadline indicated in Section 1 or as modified by Addendum. LATE PROPOSALS WILL NOT BE ACCEPTED.
C. Proposers must register and create a profile for their business with Bid Locker in order to submit for this project. It is free to register for Bid Locker.
D. Proposers with further questions concerning Bid Locker may review the Vendor's Guide located at https://www.clackamas.us/how-to-bid-on-county-projects .

Engineers Estimate: $800,000.00

Contact Information
Procurement Process and Technical Questions: Tralee Whitley at TWhitley@clackamas.us

A **Non-Mandatory Pre-Bid Conference** will be conducted on **January 17**, **2023** at 10:00 AM. Bidders shall meet with County representatives at the north end of Merry Meadow Ct, near 17932 S Merry Meadow Ct, Oregon City, Oregon for that purpose. Attendance will be documented through a sign-in sheet prepared by the County representative.

Bids will be opened and publicly read aloud at the above Delivery address after the Bid Closing. Bid results will also be posted to the OregonBuys listing shortly after the opening.

Prevailing Wage
[Prevailing Wage Rates requirements apply to this Project because the maximum compensation for all Owner-contracted Work is more than $50,000. Contractor and all subcontractors shall comply with the provisions of ORS 279C.800 through 279C.870, relative to Prevailing Wage Rates. The Bureau of Labor and Industries (BOLI) wage rates and requirements set forth in the following BOLI booklet (and any

listed amendments to that booklet), which are incorporated herein by reference, apply to the Work authorized under this Agreement:

PREVAILING WAGE RATES for Public Works Contracts in Oregon, July 1, 2022, as amended on October 1, 2022 which can be downloaded at the following web address:
http://www.oregon.gov/boli/WHD/PWR/Pages/pwr_state.aspx
The Work will take place in Clackamas County, Oregon.

Clackamas County encourages bids from Minority, Women, and Emerging Small Businesses.

CLACKAMAS COUNTY
PUBLIC IMPROVEMENT CONTRACT

INSTRUCTIONS TO BIDDERS

Clackamas County Local Contract Review Board Rules ("LCRB Rules") govern this procurement process. LCRB Rules may be found at: http://www.clackamas.us/code/documents/appendixc.pdf. The Instructions to Bidders is applicable to the procurement process for Clackamas County, or any component unit thereof identified on the Notice of Public Improvement Contract Opportunity, herein after referred to as the "Owner."

Article 1. Scope of Work

The work contemplated under this contract with the Owner, includes all labor, materials, transportation, equipment and services necessary for, and reasonably incidental to, the completion of all construction work in connection with the project described in the Project Manual which includes, but is not necessarily limited to, the Notice of Public Improvement Contract Opportunity, Instructions to Bidders, Supplemental Instructions to Bidders, Bid Form, Bid Bond, Public Improvement Contract Form, Performance Bond, Payment Bond, Clackamas County General Conditions for Public Improvement Contracts (10/13/2021), Supplemental General Conditions, and Plans, Specifications and Drawings.

Article 2. Examination of Site and Conditions

Before making a Bid, the Bidder shall examine the site of the work and ascertain all the physical conditions in relation thereto. The Bidder shall also make a careful examination of the Project Manual including the plans, specifications, and drawings and other contract documents, and shall be fully informed as to the quality and quantity of materials and the sources of supply of the materials. Failure to take these steps will not release the successful Bidder from entering into the contract nor excuse the Bidder from performing the work in strict accordance with the terms of the contract at the price established by the Bid.

The Owner will not be responsible for any loss or for any unanticipated costs, which may be suffered by the successful Bidder, as a result of such Bidder's failure to be fully informed in advance with regard to all conditions pertaining to the work and the character of the work required, including site conditions. No statement made by an elected official, officer, agent, or employee of the Owner in relation to the physical or other conditions pertaining to the site of the work will be binding on the Owner, unless covered by the Project Manual or an Addendum.

Article 3. Interpretation of Project Manual and Approval of Materials Equal to Those Provided in the Specifications

If any Bidder contemplating submitting a Bid for the proposed contract is in doubt as to the true meaning of any part of the plans, specifications or forms of contract documents, or detects discrepancies or omissions, such Bidder may submit to the Architect (read "Engineer" throughout in lieu of Architect as appropriate) a written request for an interpretation thereof at least ten (10) calendar days prior to the date set for the Bid Closing.

When a prospective Bidder seeks approval of a particular manufacturer's material, process or item of equal value, utility or merit other than that designated by the Architect in the Project Manual, the Bidder may submit to the Architect a written request for approval of such substitute at least ten (10) calendar days prior to the date set for the Bid Closing. The prospective Bidder submitting the request will be responsible for its prompt delivery.

Requests of approval for a substitution from that specified shall be accompanied by samples, records of performance, certified copies of tests by

impartial and recognized laboratories, and such other information as the Architect may request.

To establish a basis of quality, certain processes, types of machinery and equipment or kinds of materials may be specified in the Project Manual either by description of process or by designating a manufacturer by name and referring to a brand or product designation or by specifying a kind of material. Whenever a process is designated or a manufacturer's name, brand or item designation is given, or whenever a process or material covered by patent is designated or described, it shall be understood that the words "or approved equal" follow such name, designation or description, whether in fact they do so or not.

Any interpretation of the Project Manual or approval of manufacturer's material will be made only by an Addendum duly issued. All Addenda will be posted to the OregonBuys listing and will become a part of the Project Manual. The Owner will not be responsible for any other explanation or interpretation of the Project Manual nor for any other approval of a particular manufacturer's process or item for any Bidder.

When the Architect approves a substitution by Addendum, it is with the understanding that the Contractor guarantees the substituted article or material to be equal or better than the one specified.

Article 4. Security to Be Furnished by Each Bidder

Each Bid must be accompanied by either 1) a cashier's check or a certified check drawn on a bank authorized to do business in the State of Oregon, or 2) a Bid bond described hereinafter, executed in favor of the Owner, for an amount equal to ten percent (10%) of the total amount Bid as a guarantee that, if awarded the contract, the Bidder will execute the contract and provide a performance bond and payment bond as required. The successful Bidder's check or Bid bond will be retained until the Bidder has entered into a contract satisfactory to Owner and furnished a one hundred percent (100%) performance bond and one hundred percent (100%) payment bond. The Owner reserves the right to hold the Bid security as described in Article 10 hereof. Should the successful Bidder fail to execute and deliver the contract as provided for in Article 12 hereof, including a satisfactory performance bond and payment bond within twenty (20) calendar days after the Bid has been accepted by the Owner, then the contract award made to such Bidder may be considered canceled and the Bid security may be forfeited as liquidated damages at the option of the Owner. The date of the acceptance of the Bid and the award of the contract as contemplated by the Project Manual shall mean the date of acceptance specified in the Notice of Intent to Award.

Article 5. Execution of Bid Bond

Should the Bidder elect to utilize a Bid bond as described in Article 4 in order to satisfy the Bid security requirements, such form must be completed in the following manner:

A. Bid bonds must be executed on the County forms, which will be provided to all prospective Bidders by the Owner.

B. The Bid bond shall be executed on behalf of a bonding company licensed to do business in the State of Oregon.

C. In the case of a sole individual, the bond need only be executed as principal by the sole individual. In the case of a partnership, the bond must be executed by at least one of the partners. In the case of a corporation, the bond must be executed by stating the official name of the corporation under which is placed the signature of an officer authorized to sign on behalf of the corporation followed by such person's official capacity, such as president, etc. The corporation seal should then be affixed to the bond.

D. The name of the surety must be stated in the execution over the signature of its duly authorized attorney-in-fact and accompanied by the seal of the surety corporation.

Article 6. Execution of the Bid Form

Each Bid shall be made in accordance with: (i) the sample Bid Form accompanying these instructions; (ii) the appropriate signatures for a sole individual, partnership, corporation or limited liability corporation shall be added as noted in Article 5C above; (iii) numbers pertaining to base Bids shall be stated both in writing and in figures; and (iv) the Bidder's address shall be typed or printed.

The Bid Form relates to Bids on a specific Project Manual. Only the amounts and information asked for on the Bid Form furnished will be considered as the Bid. Each Bidder shall Bid upon the work exactly as specified and provided in the Bid Form. The Bidder shall include in the Bid a sum to cover the cost of all items contemplated by the Contract. The Bidder shall Bid upon all alternates that may be indicated on the Bid Form. When Bidding on an alternate for which there is no charge, the Bidder shall write the words "No Charge" in the space provided on the Bid Form. If one or more alternates are shown on the Bid Form, the Bidder shall indicate whether each is "add" or "deduct."

Article 7. Prohibition of Alterations to Bid

Bids that are incomplete, or contain ambiguities or have differing conditions required by the Bidder, including requested changes or exceptions to the Public Improvement Contract form or other portions of the Project Manual, may be rejected in Owner's sole and absolute discretion.

Article 8. Submission of Bid

Each Bid shall be sealed in an envelope, properly addressed to the Owner, showing on the outside of the envelope the name of the Bidder and the name of the project. Bids will be received at the time and place stated in the Notice of Public Improvement Contract Opportunity.

Article 9. Bid Closing and Opening of Bids

All Bids must be received by the Owner at the place and time set for the Bid Closing. Any Bids received after the scheduled Bid Closing time for receipt of Bids will be rejected.

At the time of opening and reading of Bids, each Bid received will be publicly opened and read aloud, irrespective of any irregularities or informalities in such Bids.

Generally, Bid results will be posted to the OregonBuys Website within a couple hours of the opening.

Article 10. Acceptance or Rejection of Bids by Owner

Unless all Bids are rejected, the Owner will award a contract based on the lowest responsive Bid from a responsible Bidder. If that Bidder does not execute the contract, it will be awarded to the next lowest responsible Bidder or Bidders in succession.

The Owner reserves the right to reject all Bids and to waive minor informalities. The procedures for contract awards shall be in compliance with the provisions of the LCRB Rules in effect at that time.

The Owner reserves the right to hold the Bid and Bid security of the three lowest Bidders for a period of thirty (30) calendar days from and after the time of Bid opening pending award of the contract. Following award of the contract the Bid security of the three lowest Bidders may be held twenty (20) calendar days pending execution of the contract. All other Bids will be rejected and Bid security will be returned.

In determining the lowest Bidder, the Owner reserves the right to take into consideration any or all authorized base Bids as well as alternates or combinations indicated in the Bid Form.

If no Bid has been accepted within thirty (30) calendar days after the opening of the Bids, each of the three lowest Bidders may withdraw the Bid submitted and request the return of the Bid security.

Article 11. Withdrawal of Bid

At any time prior to the Bid Closing, a Bidder may withdraw its Bid. This will not preclude the

submission of another Bid by such Bidder prior to the time set for the Bid Closing.

After the time set for the Bid Closing, no Bidder will be permitted to withdraw its Bid within the time frames specified in Article 10 for award and execution, except as provided for in that Article.

Article 12. Execution of Contract, Performance Bond and Payment Bond

The Owner will provide the successful Bidder with contract forms within seven (7) calendar days after the completion of the award protest period. The Bidder is required to execute the contract forms as provided, including a performance bond and a payment bond from a surety company licensed to do surety business in the State of Oregon, within seven (7) calendar days after receipt of the contract forms. The contract forms shall be delivered to the Owner in the number called for and to the location as instructed by the Owner.

Article 13. Recyclable Products

Contractors will use recyclable products to the maximum extent economically feasible in the performance of the Contract.

Article 14. Clarification or Protest of the Solicitation Document or Specifications

Any request for clarification or protest of the solicitation document or specifications must be submitted in the manner provided for in the applicable section of the LCRB Rules to the Procurement Representative referenced in the Notice of Public Improvement Contract Opportunity.

A protest of the Solicitation Document must be received within seven (7) business days of the issuance of the Bid or within three (3) business days of issuance of an addendum.

Requests for clarification may be submitted no less than five (5) business days prior to the Bid Closing Date.

Article 15. Protest of Intent to Award

Owner will name the apparent successful Bidder in a "Notice of Intent to Award" letter. Identification of the apparent successful Bidder is procedural only and creates no right in the named Bidder to the award of the contract. Competing Bidders will be notified by publication of the Notice of Intent to Award on the OregonBuys Website of the selection of the apparent successful Bidder(s) and Bidders shall be given seven (7) calendar days from the date on the "Notice of Intent to Award" letter to review the file at the Procurement Division office and file a written protest of award, pursuant to C-049-0450. Any award protest must be in writing and must be delivered by hand delivery or mail to the Procurement Division Director at: Procurement Division, 2051 Kaen Road, Oregon City, OR 97045.

Article 16. Disclosure of First-Tier Subcontractors

Within two (2) working hours after the Bid Closing, all Bidders shall submit to the County a disclosure form identifying any first-tier subcontractors (those entities that would be contracting directly with the prime contractor) that will be furnishing labor and materials on the contract, if awarded, whose subcontract value would be equal to or greater than: (a) Five percent (5%) of the total contract price, but at least $15,000; or (b) $350,000, regardless of the percentage of the total contract price.

Disclosures may be submitted with the Bid or may be hand delivered to the Bid Closing address or emailed to procurement@clackamas.us.

CLACKAMAS COUNTY
PUBLIC IMPROVEMENT CONTRACT

SUPPLEMENTAL INSTRUCTIONS TO BIDDERS

Project Name: Fischer's Forest Park - Large Onsite Sewage System Treatment Process Upgrade

The following modify the Clackamas County "Instructions to Bidders" for this Project. Where a portion of the Instructions to Bidders has been modified by these Supplemental Instructions to Bidders, the unaltered portions shall remain in effect.

1. **Non-Mandatory Pre-Bid Conference** will be conducted on **January 17, 2023 at 10:00 AM.** Bidders shall meet with County representatives at the Merry Meadow Ct, near 17932 S Merry Meadow Ct, Oregon City, Oregon for that purpose. Attendance will be documented through a sign-in sheet prepared by the County representative.

2. **Electronic Submissions:** The County is requiring all bids for this project be electronically submitted. Complete Bids (including all attachments) must be received by the closing time and date 2:00 p.m. Pacific Time, February 1, 2023. The Bid must be emailed to the following address: https://bidlocker.us/a/clackamascounty/BidLocker **. The email subject line must read "Bid for #2022-106 Fischer's Forest Park - Large Onsite Sewage System Treatment Process Upgrade."** Upon receiving of the bid, Bid Locker will send bidders an email confirmation acknowledging receipt. Bids delayed or lost by email system filtering or failures may be considered at Clackamas County's sole and absolute discretion.

Bids will be publicly read aloud via the computer application, Zoom. Bidders will be allowed to video conference or listen by phone to the bid results. The projects Zoom meeting can be accessed via the information below:

ZOOM LINKS
Join Zoom Meeting
https://clackamascounty.zoom.us/j/89074250046

Meeting ID: 890 7425 0046
One tap mobile
+13462487799,,89074250046# US (Houston)
+14086380968,,89074250046# US (San Jose)

Dial by your location
+1 346 248 7799 US (Houston)
+1 408 638 0968 US (San Jose)
+1 669 444 9171 US

+1 669 900 6833 US (San Jose)
+1 719 359 4580 US
+1 253 205 0468 US
+1 253 215 8782 US (Tacoma)
+1 689 278 1000 US
+1 301 715 8592 US (Washington DC)
+1 305 224 1968 US
+1 309 205 3325 US
+1 312 626 6799 US (Chicago)
+1 360 209 5623 US
+1 386 347 5053 US
+1 507 473 4847 US
+1 564 217 2000 US
+1 646 876 9923 US (New York)
+1 646 931 3860 US
Meeting ID: 890 7425 0046
Find your local number: https://clackamascounty.zoom.us/u/kdwKSE7DX3

**The Apparent Low bid results will be posted to the projects OregonBuys listing as soon as possible following the bid opening.

3. **Good Faith Effort:** Clackamas County encourages participation in contracts by Historically Underrepresented Businesses. "Historically Underrepresented Businesses" are State of Oregon-certified and self-identified minority, women and emerging small business as well as firms that are certified federally or by another state or entity with substantially similar requirements as the State of Oregon.

   Bidders must perform Good Faith Effort (defined below) and submit **Form 1 and Form 2** for the Bidders Bid to be considered responsive. **Form 1 and Form 2** must be submitted within **two (2) hours** after the Closing Date and Time. Form 1 and Form 2 may be submitted by hand delivery to the location the Bid was due or may email the completed Forms to Procurement@clackamas.us. "Good Faith Effort" is a requirement of a prime contractor to reach out to at least three Historically Underrepresented Business Subcontractors for each division of work that will be subcontracted out and to complete the required forms. If fewer than three Historically Underrepresented Business Subcontractors are reasonably available for a particular division of work, the Bidder must specifically note the reason for there being fewer than three contacts. The outreach should be performed with sufficient time to give the subcontractors at least 5 calendar days to respond to the opportunity. Form 3, which documents the actual amount of subcontractors on the project, must be submitted with the project final pay application. Compliance with the Good Faith Effort and submission of Forms 1, 2 and 3 is a contractual requirement for final payment.

   The sufficiency of the documentation or the performance of Good Faith Effort shall be in the sole and absolute determination of Clackamas County. Only those Bidders that Clackamas County has determined have not sufficiently performed

Good Faith Effort shall have protest rights of the determination for such Bidder. No Bidder shall have protest rights of the sufficiency of any other Bidder completing Good Faith Effort.

CLACKAMAS COUNTY
GOOD FAITH EFFORT
SUBCONTRACTOR AND SELF-PERFORMED WORK LIST
(FORM 1)

Prime Contractor Name: A-Affordable Septic Service, LLC **Total Contract Amount:** $778,108.00

Project Name: BID# 2022-106 Fischer's Forest Park - Large Onsite Sewage System Treatment Process Upgrade

PRIME SELF-PERFORMING: Identify below **ALL** GFE Divisions of Work (DOW) to be self-performed. Good Faith Efforts are otherwise required.	
DOW BIDDER WILL SELF-PERFORM ***(GFE not required)***	
Upgrade Large Onsite Sewage System	
Treatment Process Per Contract,	
Addendums Number #1 #2 #3,	
Bid Schedule and Plans	

PRIME CONTRACTOR SHALL DISCLOSE AND LIST ALL SUBCONTRACTORS, including those Minority-owned, Woman-owned, and Emerging Small Businesses ("M/W/ESB") that you intend to use on the project. Hand delivery to Procurement, 2051 Kaen Road, Oregon City, OR 97045 or email to procurement@clackamas.us within 2 hours of the BID/Quote Closing Date/Time

LIST ALL SUBCONTRACTORS BELOW Use **correct legal name** of Subcontractor (No Assumed Business Names)	**Division of Work** (Painting, electrical, landscaping, etc.) List **ALL** DOW performed by Subcontractors	**DOLLAR AMOUNT OF SUBCONTRACT**	If Certified or self-reporting MBE/WBE/ESB Subcontractor Check box ☑		
			MBE	WBE	ESB
Name Brightside Electric & Lighting Services, Inc. **Address** PO Box 930 **City/St/Zip** Carlton, OR 97111 **Phone#** 503-852-7900 **OCCB#** 153860	Electrical work per plans	$25,000.00	☐	☐	☐
Name **Address** **City/St/Zip** **Phone#** **OCCB#**			☐	☐	☐
Name **Address** **City/St/Zip** **Phone#** **OCCB#**			☐	☐	☐
Name **Address** **City/St/Zip** **Phone#** **OCCB#**			☐	☐	☐

GFE SUBCONTRACTOR AND SELF-PERFORMED WORK LIST (FORM 1) cont'd

Prime Contractor Name: A-Affordable Septic Service, LLC **Total Contract Amount:** $ 778,108.00
Project Name: BID# 2022-106 Fischer's Forest Park - Large Onsite Sewage System Treatment Process Upgrade

LIST ALL SUBCONTRACTORS BELOW Use **correct legal name** of Subcontractor (No Assumed Business Names)	**Division of Work** (Painting, electrical, landscaping, etc.) List **ALL** DOW performed by Subcontractors	**DOLLAR AMOUNT OF SUBCONTRACT**	If Certified or self-reporting MBE/WBE/ESB Subcontractor Check box ✔		
			MBE	WBE	ESB
Name **Address** **City/St/Zip** **Phone#** **OCCB#**			☐	☐	☐
Name **Address** **City/St/Zip** **Phone#** **OCCB#**			☐	☐	☐
Name **Address** **City/St/Zip** **Phone#** **OCCB#**			☐	☐	☐
Name **Address** **City/St/Zip** **Phone#** **OCCB#**			☐	☐	☐
Name **Address** **City/St/Zip** **Phone#** **OCCB#**			☐	☐	☐
Name **Address** **City/St/Zip** **Phone#** **OCCB#**			☐	☐	☐
Name **Address** **City/St/Zip** **Phone#** **OCCB#**			☐	☐	☐

CLACKAMAS COUNTY
GOOD FAITH EFFORT
M/W/ESB CONTACT / BIDS RECEIVED LOG
(FORM 2)

Prime Contractor: A-Affordable Septic Service, LLC
Project: BID# 2022-106 Fischer's Forest Park - Large Onsite Sewage System Treatment Process Upgrade

Prime Contractor must contact or endeavor to contact at least 3 M/W/ESB Subcontractors for each Division of Work. Prime Contractor shall record its contacts with M/W/ESB Subcontractors through use of this log (or equivalent) entering all required information. All columns shall be completed where applicable. Additional forms may be copied if needed.

NAME OF M/W/ESB SUBCONTRACTOR	Divisions of Work (Painting, electrical, landscaping, etc.)	Date Solicitation Letter / Fax Sent	PHONE CONTACT		BID ACTIVITY Check Yes or No			REJECTED BIDS (if bid received & not used)		Notes
			Date of Call	Person Receiving Call	Will Bid	Bid Received	Bid Used	Bid Amount	Reason Not Used (Price, Scope or Other. If Other, explain in Notes>>)	
Inland Electric, inc	Electrical	2/1/2023	2/1/2023	Mark & Todd	☐ Yes ☐ No	☐ Yes ☐ No	☐ Yes ☐ No			Customer is considering it. Waiting to hear back.
La Londe Electric	Electrical	2/1/2023	2/1/2023	Sabrina	☐ Yes ☐ No	☐ Yes ☐ No	☐ Yes ☐ No			She has provided a bid to someone else. They will discuss as a team if they wish to send bid for project with us. Waiting to hea
Affordable Electric	Electrical Work	2/1/2023			☐ Yes ☐ No	☐ Yes ☐ No	☐ Yes ☐ No			No voicemail set up. Sent an email. No response.
					☐ Yes ☐ No	☐ Yes ☐ No	☐ Yes ☐ No			
					☐ Yes ☐ No	☐ Yes ☐ No	☐ Yes ☐ No			
					☐ Yes ☐ No	☐ Yes ☐ No	☐ Yes ☐ No			
					☐ Yes ☐ No	☐ Yes ☐ No	☐ Yes ☐ No			

WATER ENVIRONMENT SERVICES

PUBLIC IMPROVEMENT CONTRACT

BID BOND

Project Name: #2022-106 Fischer's Forest Park - Large Onsite Sewage System Treatment Process Upgrade

We, A-Affordable Septic Service, LLC, as "Principal,"
(Name of Principal)

and Old Republic Surety Company, an Wisconsin Corporation,
(Name of Surety)

authorized to transact Surety business in Oregon, as "Surety," hereby jointly and severally bind ourselves, our respective heirs, executors, administrators, successors and assigns to pay unto Water Environment Services ("Obligee") the sum of ($ 10% of the Amount Bid)

Ten Percent of the Amount Bid---- dollars.

WHEREAS, the condition of the obligation of this bond is that Principal has submitted its proposal or bid to an agency of the Obligee in response to Obligee's procurement document (No.2022-106) for the project identified above which proposal or bid is made a part of this bond by reference, and Principal is required to furnish bid security in an amount equal to ten (10%) percent of the total amount of the bid pursuant to the procurement document.

NOW, THEREFORE, if the Obligee shall accept the bid of the Principal and the Principal shall enter into a Contract with the Obligee in accordance with the terms of such bid, and give such bond or bonds as may be specified in the bidding or Contract Documents with good and sufficient surety for the faithful performance of such Contract and for the prompt payment of labor and material furnished in the prosecution thereof, or in the event of the failure of the Principal to enter such Contract and give such bond or bonds, if the Principal shall pay to the Obligee the difference not to exceed the penalty hereof between the amount specified in said bid and such larger amount for which the Obligee may in good faith contract with another party to perform the Work covered by said bid, then this obligation shall be null and void, otherwise to remain in full force and effect.

IN WITNESS WHEREOF, we have caused this instrument to be executed and sealed by our duly authorized legal representatives this 1st day of February, 2023.

Principal: A-Affordable Septic Service LLC

By: _____
Signature

_____
Official Capacity

Attest: _____
Corporation Secretary

Surety: Old Republic Surety Company

By: Attorney-In-Fact _____

Gail A. Price
Name

One Centerpointe Drive, Suite 190
Address

Lake Oswego, Oregon 97035
City State Zip

503-224-2500
Phone

503-224-9830
Fax

OLD REPUBLIC SURETY COMPANY

POWER OF ATTORNEY

KNOW ALL MEN BY THESE PRESENTS: That OLD REPUBLIC SURETY COMPANY, a Wisconsin stock insurance corporation, does make, constitute and appoint: Gloria Bruning, Vicki Mather, Philip O. Forker, Richard W. Kowalski, Joel Dietzman, Brent Olson, Christopher A. Reburn, J Patrick Dooney, Gail A. Price, Justin Cumnock, Andrew Choruby, Casey J. Geske, Sterling Drew Roddan, Leticia Romano, Chloe T. Lyons of Portland, OR

its true and lawful Attorney(s)-in-Fact, with full power and authority for and on behalf of the company as surety, to execute and deliver and affix the seal of the company thereto (if a seal is required), bonds, undertakings, recognizances or other written obligations in the nature thereof, ***(other than bail bonds, bank depository bonds, mortgage deficiency bonds, mortgage guaranty bonds, guarantees of installment paper and note guaranty bonds, self-insurance workers compensation bonds guaranteeing payment of benefits, or black lung bonds),*** as follows:

ALL WRITTEN INSTRUMENTS

and to bind OLD REPUBLIC SURETY COMPANY thereby, and all of the acts of said Attorneys-in-Fact, pursuant to these presents, are ratified and confirmed. This appointment is made under and by authority of the board of directors at a special meeting held on February 18, 1982.

This Power of Attorney is signed and sealed by facsimile under and by the authority of the following resolutions adopted by the board of directors of the OLD REPUBLIC SURETY COMPANY on February 18,1982.

RESOLVED that, the president, any vice-president or assistant vice president, in conjunction with the secretary or any assistant secretary, may appoint attorneys-in-fact or agents with authority as defined or limited in the instrument evidencing the appointment in each case, for and on behalf of the company to execute and deliver and affix the seal of the company to bonds, undertakings, recognizances, and suretyship obligations of all kinds; and said officers may remove any such attorney-in-fact or agent and revoke any Power of Attorney previously granted to such person.

RESOLVED FURTHER, that any bond, undertaking, recognizance, or suretyship obligation shall be valid and binding upon the Company

(i) when signed by the president, any vice president or assistant vice president, and attested and sealed (if a seal be required) by any secretary or assistant secretary; or

(ii) when signed by the president, any vice president or assistant vice president, secretary or assistant secretary, and countersigned and sealed (if a seal be required) by a duly authorized attorney-in-fact or agent; or

(iii) when duly executed and sealed (if a seal be required) by one or more attorneys-in-fact or agents pursuant to and within the limits of the authority evidenced by the Power of Attorney issued by the company to such person or persons.

RESOLVED FURTHER that the signature of any authorized officer and the seal of the company may be affixed by facsimile to any Power of Attorney or certification thereof authorizing the execution and delivery of any bond, undertaking, recognizance, or other suretyship obligations of the company; and such signature and seal when so used shall have the same force and effect as though manually affixed.

IN WITNESS WHEREOF, OLD REPUBLIC SURETY COMPANY has caused these presents to be signed by its proper officer, and its corporate seal to be affixed this 18th day of October, 2022.

OLD REPUBLIC SURETY COMPANY

Karen J. Haffner
Assistant Secretary

Alan Pavlic
President

STATE OF WISCONSIN, COUNTY OF WAUKESHA - SS

On this 18th day of October, 2022, personally came before me, Alan Pavlic and Karen J Haffner, to me known to be the individuals and officers of the OLD REPUBLIC SURETY COMPANY who executed the above instrument, and they each acknowledged the execution of the same, and being by me duly sworn, did severally depose and say: that they are the said officers of the corporation aforesaid, and that the seal affixed to the above instrument is the seal of the corporation, and that said corporate seal and their signatures as such officers were duly affixed and subscribed to the said instrument by the authority of the board of directors of said corporation.

Kathryn R. Pearson
Notary Public

My Commission Expires: September 28, 2026

(Expiration of notary's commission does not invalidate this instrument)

CERTIFICATE

I, the undersigned, assistant secretary of the OLD REPUBLIC SURETY COMPANY, a Wisconsin corporation, CERTIFY that the foregoing and attached Power of Attorney remains in full force and has not been revoked; and furthermore, that the Resolutions of the board of directors set forth in the Power of Attorney, are now in force.

77 4950

Signed and sealed at the City of Brookfield, WI this 1st day of February, 2023.

Karen J. Haffner
Assistant Secretary

ORSC 22262 (3-06)

Anchor Insurance & Surety Inc

CLACKAMAS COUNTY
PUBLIC IMPROVEMENT CONTRACT

BID FORM

PROJECT: Fischer's Forest Park - Large Onsite Sewage System Treatment Process Upgrade
BID CLOSING: February 1, 2023, 2:00 PM, Pacific Time
BID OPENING: February 1, 2023, 2:05 PM, Pacific Time

FROM: A-Affordable Septic Service, LLC
Bidder's Name (must be full legal name, not ABN/DBA)

TO: Clackamas County
Procurement Division – procurement@clackamas.us

1. Bidder is (*check one of the following and insert information requested*):

____a. An individual; or

____b. A partnership registered under the laws of the State of _____; or

____c. A corporation organized under the laws of the State of _____; or

__x__d. A limited liability corporation organized under the laws of the State of Oregon;

and authorized to do business in the State of Oregon hereby proposes to furnish all material and labor and perform all work hereinafter indicated for the above project in strict accordance with the Contract Documents for the Basic Bid as follows:

Seven hundred seventy-eight thousand, one hundred eight dollars Dollars ($778,108.00)

and the Undersigned agrees to be bound by the following documents:

- Notice of Public Improvement Contract Opportunity
- Instructions to Bidders
- Bid Bond
- Public Improvement Contract Form
- Clackamas County General Conditions
- Prevailing Wage Rates
- Plans, Specifications and Drawings
- Supplemental Instructions to Bidders
- Bid Form
- Performance Bond and Payment Bond
- Supplemental General Conditions
- Payroll and Certified Statement Form

- ADDENDA numbered B1 through B11, inclusive *(fill in blanks)*

14. Contractor's Key Individuals for this project (supply information as applicable):
Project Executive: Rick Jonas, Cell Phone: 503-969-9548,
Project Manager: Rick Jonas, Cell Phone: 503-969-9548,
Job Superintendent: Mike Hulett, Cell Phone: 503-516-4404,
Project Engineer: _____, Cell Phone: _____.

15. The Undersigned certifies that it has not discriminated against minority, women, or emerging small businesses in obtaining any subcontracts for this project.

16. The Undersigned certifies that it has a drug testing program in accordance with ORS 279C.505.

REMINDER: Bidder must submit the below First-Tier Subcontractor Disclosure Form.

By signature below, Contractor agrees to be bound by this Bid.

NAME OF FIRM: A-Affordable Septic Service, LLC

ADDRESS: PO BOX 818 Canby OR 97013

TELEPHONE NO: 503-266-0812

EMAIL: rick@jonasconw.com / cc; angie@jonasconw.com

SIGNATURE 1) _____
Sole Individual

or 2) _____
Partner

or 3) _____
Authorized Officer or Employee of Corporation

***** *END OF BID* *****

Fischer's Forest Park Rehab Project

Bid Schedule - Addendum #1

January 18, 2023

ITEM	DESCRIPTION	UNIT	QUANTITY	UNIT PRICE	SUB TOTAL	ITEM TOTAL
1	**Mobilization**	LS	1	$ 30,000.00		$ 30,000.00
2	**Erosion Control**	LS	1	$ 11,900.00		$ 11,900.00
3	**By-Pass Pumping**	LS	1	$12,500.00		$12,500.00
4	**Decommission Existing East Septic Tank**	LS	1	$ 3,600.00		$ 3,600.00
5	**Effluent Lift Station Retrofit**	LS	1	$ 25,632.00		$25,632.00
6	**Decomission Existing Treatment System**					
	a) Decomission Advantex Pods	LS	1	$ 9,250.00	$ 9,250.00	
	b) Remove Existing Fence	LS	1	$ 4,700.00	$ 4,700.00	
	c) Decomission Electrical Equipment and Controls	LS	1	$ 4,950.00	$ 4,950.00	
	d) Decomission Other Structures and Equipment	LS	1	$ 5,000.00	$ 5,000.00	
	Decomission Existing Treatment Item Total (sum 7a through 7d)					$ 23,900.00
7	**East Septic Tank Installation**					
	a) 8-inch C900 PVC Gravity Sewer Pipe	LF	20	$ 112.00	$ 2,240.00	
	b) 4-inch Schedule 40 PVC Pipe	LF	20	$ 52.00	$ 1,040.00	
	c) 3,000-gallon Pre-Cast Concrete Septic Tank	EA	2	$ 18,090.00	$ 36,180.00	
	d) Install New Manhole	EA	1	$ 15,000.00	$ 15,000.00	
	e) Abandon Existing 8-inch Sewer Pipe	LF	10	$ 570.00	$ 5,700.00	
	f) Abandon Existing Manhole	EA	1	$ 4,800.00	$ 4,800.00	
	East Septic Tank Installation Item Total (Sum 8a through 8d)					$ 64,960.00

8 Recirculating Treatment and Subsurface Drip Distribution System

a) 3,000-gallon Pre-Cast Concrete Recirculation Tank	EA	3	$ 26,950.00	$ 80,850.00	
b) AdvanTex AX100 Textile Filter Units	EA	3	$ 51,662.00	$ 154,986.00	
c) 2-inch Schedule 40 PVC Pressure Effluent Sewer Pipe (Recirculation Tank C to Treatment units)	LF	90	$ 25.00	$ 2,250.00	
d) 4-inch Schedule 40 PVC Pipe	LF	90	$ 30.00	$ 2,700.00	
e) Custom Primary Flow Splitter Basin	LS	1	$ 6,842.00	$ 6,842.00	
f) Ultra-Violet Units	EA	3	$ 13,178.00	$ 39,534.00	
g) Custom Secondary Flow Splitter Basin	LS	1	$ 7,040.00	$ 7,040.00	
h) 3,000-gallon Pre-Cast Dripfield Dosing Tank	EA	1	$ 26,268.00	$ 26,268.00	
i) Concrete pad for Controls Shelter	LS	1	$ 5,000.00	$ 5,000.00	
j) Orenco Durafiber Controls Shelter	LS	1	$ 79,587.60	$ 79,587.60	
k) Custom Telemetry Control and Alarm Panel	LS	1	$ 42,842.40	$ 42,842.40	
l) 1-inch Schedule 40 PVC Pressure Effluent Sewer Piping	EA	30	$ 22.00	$ 660.00	
m) 1.5-inch Schedule 40 PVC Pressure Effluent Sewer and Drip Field Manifold Pipe	LF	1,420	$ 23.00	$ 32,660.00	
n) 2-inch Schedule 40 PVC Pressure Drip Field Flush Main Piping	LF	500	$ 25.00	$ 12,500.00	
o) 52,000 sq. ft. of Netafim Subsurface Drip Distribution System	LS	1	$ 49,594.00	$ 49,594.00	
p) Hydraulic Unit and Disc Filter Headworks	LS	1	$ 17,120.00	$ 17,120.00	
Recirculating Treatment System Item Total (Sum 9a through 9p)					$ 560,434.00

9 **New Water Service**

a) 1-inch Water Service Line and heat tape	LF	100	$ 25.00	$ 2,500.00	
b) 1-inch Reduced Pressure Backflow Preventor & Pressure Reducer and heat tape	LS	1	$ 1,750.00	$ 1,750.00	
c) Frost Free Hydrant	LS	1	$ 1,500.00	$ 1,500.00	
New Water Service Item Total (Sum 10a through 10c)					$ 5,750.00

10 **Miscellaneous Site Improvements**

a) Chainlink Fence	LF	360	$ 57.45	$ 20,682.00	
b) Gravel Access Road Crushed Rock and Geofabric	SF	2,500	$ 7.50	$ 18,750.00	
Miscellaneous Site Improvements Item Total (Sum 11a through 11b)					$ 39,432.00

TOTAL CONSTRUCTION COST (IN $) $ 778,108.00

TOTAL PROJECT CONSTRUCTION COST (WRITTEN): Seven hundred seventy-eight thousand, one hundred eight dollars

ANCHOR INSURANCE & SURETY, INC.

One Centerpointe Dr., Ste 190, Lake Oswego, OR 97035 • 100 E. 13th St., Ste. 111, Vancouver, WA 98660
Mailing Address: PO Box 2808, Portland, OR 97208 • PH: 503-224-2500 • FAX: 503-224-9830

BID BOND ENCLOSED

DATE: **January 27, 2023** **Delivery: United Parcel Service-Ground**

TO: **A-Affordable Septic Service, LLC**

RE: Bid date: February 1, 2023

Job Title: 2022-106 Fischer's Forest Park-Large Onsite Sewage System Treatment Process Upgrade

Obligee: Clackamas County

Enclosed is the Bid Bond you ordered.

Pre-check all signatures, dates, amounts and job descriptions to avoid having a low bid rejection because of a clerical error.

Re-verify that the Bid Bond form attached is the form required by the specification.

Please provide bid results as soon as possible.

Sincerely,

Gail Price
Bond Account Manager

Final Bond Rates:

FIRST $	100,000	$ 25.00	PER $1,000.
NEXT $	400,000	$ 15.00	PER $1,000.
NEXT $	2,000,000	$ 10.00	PER $1,000.
NEXT $	2,500,000	$	PER $1,000.
NEXT $	2,500,000	$	PER $1,000.
OVER$	7,500,000	$	PER $1,000.

Where time for completion is over 24 months or 730 calendar days, add 1% for each extra full month.

Premium is subject to change based on the Final Contract Price, warranty, and maintenance time surcharge.
Premium includes a one-year bonded warranty only.

FIRST-TIER SUBCONTRACTOR DISCLOSURE FORM
PROJECT: BID# 2022-106

BID OPENING: February 1, 2023, 2:00 PM, Pacific Time

Failure to submit this Form by the disclosure deadline will result in a nonresponsive bid.

INSTRUCTIONS:
This First-Tier Subcontractor Disclosure Form ("Form") must be submitted and received at the location specified in the Notice of Public Improvement Contract Opportunity on the advertised Bid Closing, and within two working hours after the advertised Bid Closing Time.

The Form may be mailed, hand-delivered or emailed to: Procurement@clackamas.us. It is the responsibility of Bidders to submit this Form and any additional sheets with the Project name clearly marked on the envelope or the subject line of the email.

Subcontractor lists may be submitted with the bid in the same envelope or email at the Bid Closing date and time. Subcontractor lists **MUST** be submitted within **two (2) hours** of the Bid Closing date and time.

List below the name of each subcontractor that will be furnishing labor, or labor and materials, for which disclosure is required, the category of work that the subcontractor will be performing, and the dollar value of the subcontract. Enter **"NONE"** if the value of the project bid is less than $100,000 or there are no subcontractors that need to be disclosed. ATTACH ADDITIONAL SHEETS IF NECESSARY.

	SUBCONTRACTOR NAME	DOLLAR VALUE	CATEGORY OF WORK
1.	Brightside Electric	$25,000.00	Electrical Work
2.			
3.			
4.			
5.			
6.			

The above listed first-tier subcontractor(s) are providing labor, or labor and material, with a Dollar Value equal to or greater than:

a) 5% of the total Contract Price, but at least $15,000. If the Dollar Value is less than $15,000 do not list the subcontractor above; or
b) $350,000 regardless of the percentage of the total Contract Price.

Firm Name: A-Affordable Septic Service, LLC

Bidder Signature: _____ Phone # 503-266-0812

CLACKAMAS COUNTY
PUBLIC IMPROVEMENT CONTRACT
SUPPLEMENTAL GENERAL CONDITIONS

Project: Fischer's Forest Park – Septic System Rehab Project

The following modifies the October 13, 2021 Clackamas County General Conditions for Public Improvement Contracts ("County General Conditions") for this Contract. Except as modified below, all other terms and conditions of the County General Conditions shall remain in effect.

The terms used in these Supplemental Conditions have the meanings stated in the Clackamas County General Conditions. Additional terms used in these Supplemental Conditions have the meanings stated below, which are applicable to both the singular and plural thereof. The address system used in these Supplemental Conditions is the same as the address system used in the Clackamas County General Conditions, with the prefix "SC" added thereto.

SC A.3.1(a)

Replace A.3.1 (a) through A.3.1 (e) with the following:

a) Permits from outside agencies;

b) Amendments to the Contract Documents and addenda, with those of later date having precedence over those of an earlier date;

c) The Contract including all exhibits;

d) Supplemental General Conditions;

e) Clackamas County General Conditions (11/01/2017);

f) Specifications – Division 01;

g) Specifications Division 02;

h) Construction Drawings (Construction Plans);

i) Bonds

Design Details: Figure dimensions and dimensions that can be computed, on plans shall take precedence over scale dimensions. The Drawings with the higher level of detail take precedence over less detailed Drawings.

SC B.4 PERMITS

The contents of Section B.4 - Permits are hereby deleted in it is entirety and replaced with the following:

> Contractor will be responsible for obtaining all required permits and maintaining compliance with those permits throughout the performance of the Work. Owner will pay the cost of obtaining all permits. The Contractor shall be responsible for any penalties or fines that result from Contractor's noncompliance with the terms of the permits. The Contractor will be responsible for compliance with the terms of all permits throughout the performance of the Work.

SC B.8 SUBCONTRACTS AND ASSIGNMENT

Add the following after B.8.3:

B.8.4 Good Faith Effort

> As a condition of Contractor being awarded a Contract for this Project, Contractor must complete Good Faith Effort outreach and documentation as described in the Supplemental Instructions to Bidders of the Solicitation Document.
>
> The Contractor may not change who is performing each Division of Work identified in Form 1 of the Good Faith Effort without the express written advance approval of Owner. This includes substituting identified subcontractors, self-performance of a Division of Work that was identified to be performed by a subcontractor, or the Contractor subcontracting a Division of Work that was identified to be self-performed by the Contractor.
>
> Contractor shall be required to submit the completed Form 3 with its final pay application as a condition of final payment.

SC D.2 DELAYS

Delete first sentence of D.2.2 and delete entries D.2.2(a) and D.2.2(b).

SC E.5.1.1

Delete everything after the first sentence.

SC F.2 PROTECTION OF WORKERS, PROPERTY AND THE PUBLIC

Add the following after Paragraph F.2.8:

F.2.9 The following notice is applicable to Contractors who perform excavation Work: ATTENTION: Oregon law requires you to follow rules adopted by the Oregon Utility Notification Center. Those rules are set forth in OAR 952-001-0090. You may obtain copies of the rules by calling the center at (877) 668-4001.

F.2.10 Contractor shall be aware that permit-required confined spaces exist in or near the Project Site. Entry to these spaces must be accomplished in compliance with the requirements of OAR 166-150-0190 (29 CFR 1910.146). Examples of permit-required confined spaces include but are not limited to the following:

1. Open tanks beyond the handrails including clarifiers, aeration basins, channels, etc.
2. Manholes.
3. Flow control structures which have the potential to contain sewage.
4. Enclosed tanks including digesters, clarifiers, grit basins, chemical tanks, etc.
5. Wet well and dry wells of pump stations.
6. Headworks channels.
7. Electrical vaults.

The hazards associated with these confined spaces may include but are not limited to:

1. Oxygen deficiency.
2. Combustible vapors including methane.
3. Slip hazards.
4. Fall/retrieval hazard.
5. Engulfment hazard.
6. Lockout required of mechanical and electrical devices.
7. Toxic or hazardous chemicals including hydrogen sulfide and process chemicals.
8. Traffic hazards.
9. Hot work and ignition sources.

10. Potential for rapid changes in working conditions.

11. Painting or coating application activities often pose temporary hazards.

Prior to beginning Work in permit-required confined spaces, Contractor shall provide Owner with a copy of Contractor's permit-required confined space entry plan/program including a copy of the permit forms that will be used by Contractor. Upon request by Contractor, Owner will review with Contractor, Owner's permit-required confined space program and specific procedures Owner would incorporate in spaces entered. Owner will coordinate any of its entries into the same spaces with Contractor. When the permit-required confined space Work is completed, Contractor shall inform Owner, in writing, of any hazards encountered or changes made resulting in different hazards within the space.

SC K.3 COMPLETION NOTICES

Add the following after Paragraph K.3.2:

K.3.3 Contractor shall provide Owner completed Certificate of Compliance (attached) at the time of Final Completion and before final payment will be released.

WATER ENVIRONMENT SERVICES
CERTIFICATE OF COMPLIANCE

TO: Water Environment Services

PROJECT NO: 700220304 / #2023-

PROJECT NAME: FISCHER'S FOREST PARK LARGE ONSITE SEPTIC SYSTEM TREATMENT SYSTEM REHABILITATION

CONTRACT FOR: _____

CONTRACT DATE: _____

I (We) hereby certify that all work on this project has been performed and materials supplied in accordance with the Plans, Specifications, and Contract Documents agreed to by the parties, and that:

A. No less than prevailing rates of wages have been paid to laborers, workmen, and mechanics employed on this work.

B. There have been neither unauthorized substitutions of subcontractors nor have any subcontracts been entered into without the name of the subcontractors having been submitted to the Engineer prior to the start of such subcontractor work.

C. No subcontract was assigned or transferred or performed by any subcontractor other than the original subcontractor, without prior notice having been submitted to the Engineer together with the names of all subcontractors.

D. All claims for material and labor and other services performed in connection with these Specifications have been paid. No further claims will be made and all liens have been satisfied and lifted.

E. All monies due the State Industrial Accident Funds, the State Unemployment Compensation Trust Fund, the State Tax Commission, hospital associations, and/or others have been paid.

CERTIFIED BY:

_____ _____

CONTRACTOR DATE

_____

TITLE

Subscribed and sworn to before me this day of _____, 2018

_____

Notary Public for the State of _____

My Commission Expires_____

END OF SECTION

CLACKAMAS COUNTY GENERAL CONDITIONS FOR PUBLIC IMPROVEMENT CONTRACTS
October 13, 2021

INSTRUCTIONS: The attached **Clackamas County General Conditions for Public Improvement Contracts ("County General Conditions")** apply to all designated Public Improvement contracts. Changes to the County General Conditions (including any additions, deletions or substitutions) should only be made by attaching Public Improvement Supplemental General Conditions. The text of these County General Conditions should not otherwise be altered.

TABLE OF SECTIONS

CLACKAMAS COUNTY GENERAL CONDITIONS FOR PUBLIC IMPROVEMENT CONTRACTS ("County General Conditions")

SECTION A
GENERAL PROVISIONS

A.1 DEFINITION OF TERMS

In the Contract Documents the following terms shall be as defined below:

APPLICABLE LAWS, means all federal, state and local laws, codes, rules, regulations and ordinances, as amended applicable to the Work, to the Contract, or to the parties individually.

APPROVED BY CONTRACTING AGENCY, for purposes of ORS 279C.570(2), means the date a progress payment is approved by the Clackamas County Treasurer's office.

ARCHITECT/ENGINEER, means the Person appointed by the Owner to make drawings and specifications and, to provide contract administration of the Work contemplated by the Contract to the extent provided herein or by supplemental instruction of Owner (under which Owner may delegate responsibilities to the Architect/Engineer), in accordance with ORS Chapter 671 (Architects) or ORS Chapter 672 (Engineers) and administrative rules adopted thereunder.

AVOIDABLE DELAYS, mean any delays other than Unavoidable Delays, and include delays that otherwise would be considered Unavoidable Delays but that: (a) Could have been avoided by the exercise of care, prudence, foresight, and diligence on the part of the Contractor or its Subcontractors; (b) Affect only a portion of the Work and do not necessarily prevent or delay the prosecution of other parts of the Work nor the completion of the whole Work within the Contract Time; (c) Do not impact activities on the accepted critical path schedule; and (d) Are associated with the reasonable interference of other contractors employed by the Owner that do not necessarily prevent the completion of the whole Work within the Contract Time.

BIDDER, means a bidder in connection with Instructions to Bidders or a proposer in connection with a Request for Proposals, or Solicitation Document. May also be referenced as "Offeror," "Quoter" or "Proposer" based on the type of Solicitation Document.

CHANGE ORDER, means a written order which, when fully executed by the Parties to the Contract, constitutes a change to the Contract Documents. Change Orders shall be issued in accordance with the changes provisions in Section D and, if applicable, establish a Contract Price or Contract Time adjustment. A Change Order shall not be effective until executed by both parties.

CLAIM, means a demand by Contractor pursuant to Section D.3 for review of the denial of Contractor's initial request for an adjustment of Contract terms, payment of money, extension of Contract Time or other relief, submitted in accordance with the requirements and within the time limits established for review of Claims in these County General Conditions.

CONTRACT, means the written agreement between the Owner and the Contractor comprised of the Contract Documents which describe the Work to be done and the obligations between the parties.

CONTRACT DOCUMENTS, means the Contract, County General Conditions, Supplemental General Conditions if any, Plans, Specifications, the accepted Offer, Solicitation Document and addenda thereto, Instructions to Offerors, and Supplemental Instructions to Offerors.

CONTRACT PERIOD, as set forth in the Contract Documents, means the total period of time beginning with the full execution of a Contract and, if applicable, the issuance of a Notice to Proceed and concluding upon Final Completion.

CONTRACT PRICE, means the total price reflected in the Contract.

CONTRACT TIME, means any incremental period of time allowed under the Contract to complete any portion of the Work as reflected in the Project schedule.

CONTRACTOR, means the Person awarded the Contract for the Work contemplated.

DAYS, are calendar days, including weekdays, weekends and holidays, unless otherwise specified.

DEFECTIVE WORK, means Work that is not completed in accordance with the Specifications or the requirements of the Contract.

DIRECT COSTS, means, unless otherwise provided in the Contract Documents: the cost of materials, including sales tax and the cost of delivery; cost of labor which shall only include the applicable prevailing wage and fringe benefit (if applicable, and if paid to or on behalf of the employee) rate plus a maximum of a twelve percent (12%) markup on the prevailing wage (but not the fringe benefit) to cover Contractor's labor burden including but not limited to social security, Medicare, unemployment insurance, workers' compensation insurance, sick leave pay; substantiated Project cost increases for specific insurance (including, without limitation, Builder's Risk Insurance and Builder's Risk Installation Floater) or bond premiums; rental cost of equipment, and machinery required for execution of the Work; and the additional costs of field personnel directly attributable to the Work; travel expense reimbursement only if specifically authorized and only to the extent allowable under the County Contractor Travel Reimbursement Policy, hereby incorporated by reference.

FINAL COMPLETION, means the final completion of all requirements under the Contract, including Contract Closeout as described in Section K but excluding Warranty Work as described in Section I.2, and the final payment and release of all retainage, if any.

FORCE MAJEURE, means an act, event or occurrence caused by fire, riot, war, acts of God, terrorism, nature, sovereign, or public enemy, strikes, freight embargoes or any other act, event or occurrence that is beyond the control of the party to the Contract who is asserting Force Majeure.

NOTICE TO PROCEED, means the official written notice from the Owner stating that the Contractor is to proceed with the Work defined in the Contract Documents.

OFFER, means a bid in connection with Instructions to Bidders or a proposal in connection with a Request for Proposals, or Solicitation Document to do the work stated in the Solicitation Document at the price quoted. May also be referenced as "Bid," "Quote," or "Proposal" based on the type of Solicitation Document.

OVERHEAD, means those items which may be included in the Contractor's markup (general and administrative expense and profit) and that shall not be charged as Direct Cost of the Work, including without limitation such Overhead expenses as wages or salary of personnel above the level of foreman (i.e., superintendents and project managers), labor rates and fringe benefits above the applicable prevailing wage and fringe benefit (if applicable, and if paid to or on behalf of the employee), Contractor's labor burden for fringe benefit if paid to the employee, expenses of Contractor's offices and supplies at the Project Site (e.g. job trailer) and at Contractor's principal place of business and including expenses of personnel staffing the Project Site office and Contractor's principal place of business, and Commercial General Liability Insurance and Automobile Liability Insurance.

OWNER, means, Clackamas County or any component unit thereof including Clackamas County Development Agency, Clackamas County Service District No. 1, Surface Water Management Agency of Clackamas County, Tri-City Service District, Water Environment Services, North Clackamas Parks and Recreation District, Clackamas County Extension & 4-H Service District, Library Service District of Clackamas County, Enhanced Law Enforcement District, and Clackamas County Service District No. 5. Owner may elect, by written notice to Contractor, to delegate certain duties to more than one agent, including without limitation, to an Architect/Engineer. However, nothing in these County General Conditions is intended to abrogate the separate design professional responsibilities of Architects under ORS Chapter 671 or of Engineers under ORS Chapter 672.

PERSON, means a natural person or entity doing business as a sole proprietorship, a partnership, a joint venture, a corporation, a limited liability company or partnership, a nonprofit, a trust, or any other entity possessing the legal capacity to contract.

PLANS, means the drawings which show the location, type, dimensions, and details of the Work to be done under the Contract.

PRODUCT DATA, means illustrations, standard schedules, performance charts, instructions, brochures, diagrams and other information furnished by the Contractor to illustrate materials or equipment for some portion of the Work.

PROJECT, means the total undertaking to be accomplished for Owner by architects/engineers, contractors, and other others, including planning, study, design, construction, testing, commissioning, start-up, of which the Work to be performed under the Contract Documents is a part.

PROJECT SITE, means the specific real property on which the Work is to be performed, including designated contiguous staging areas, that is identified in the Plans, Specifications and Drawings.

PUNCH LIST, means the list of Work yet to be completed or deficiencies which need to be corrected in order to achieve Final Completion of the Contract.

RECORD DOCUMENT, means the as-built Plans, Specifications, testing and inspection records, product data, samples, manufacturer and distributor/supplier warranties evidencing transfer of ownership to Owner, operational and maintenance manuals, shop drawings, correspondence, certificate(s) of occupancy, and other documents listed in Subsection B.9.1 of these County General Conditions, recording all Services performed.

SAMPLES, means physical examples which illustrate materials, equipment or workmanship and establish standards by which the Work will be judged.

SHOP DRAWINGS, means drawings, diagrams, schedules and other data specially prepared for the Work by the Contractor or a Subcontractor (including any subsubcontractor), manufacturer, supplier, or distributor to illustrate some portion of the Work.

SOLICITATION DOCUMENT, means an Invitation to Bid, Request for Proposals, Request for Quotes, or other written document issued by Owner that outlines the required Specifications necessary to submit an Offer.

SPECIFICATION, means any description of the physical or functional characteristics of the Work, or of the nature of a supply, service or construction item included in the Solicitation Document. Specifications may include a description of any requirement for inspecting, testing or preparing a supply, service or construction item for delivery and the quantities or qualities of materials to be furnished under the Contract. Specifications generally will state the results or products to be obtained and may, on occasion, describe the method and manner of doing the Work to be performed. Specifications may be incorporated by reference and/or may be attached to the Contract.

SUBCONTRACTOR, means a Person having a direct contract with the Contractor, or another Subcontractor of any tier, to perform one or more items of the Work.

SUBSTANTIAL COMPLETION, means the date when the Owner accepts in writing the construction, alteration or repair constituting the Work or any designated portion thereof as having reached that state of completion when it may be used or occupied for its intended purpose. Substantial Completion of facilities with operating systems occurs only after thirty (30) continuous Days of successful, trouble-free operation of the operating systems as provided in Section K.3.2.

SUBSTITUTIONS, means items that in function, performance, reliability, quality, and general configuration are the same or better than the product(s) specified. Substitutions also means the performance of the Work by a labor force other than what is submitted in the Offer.

SUPPLEMENTAL GENERAL CONDITIONS, means those conditions that remove from, add to, or modify these County General Conditions. Public Improvement Supplemental General Conditions may be included in the Solicitation Document or may be a separate attachment to the Contract.

UNAVOIDABLE DELAYS, mean delays other than Avoidable Delays that are: (a) to the extent caused by any actions of the Owner, or any other employee or agent of the Owner, or by a separate contractor employed by the Owner; (b) to the extent caused by any Project Site conditions which differ materially from the conditions that would normally be expected to exist and inherent to the construction activities defined in the Contract Documents; or (c) to the extent caused by Force Majeure acts, or events or occurrences.

WORK, means the furnishing of all materials, equipment, labor, transportation, services, incidentals, those permits and regulatory approvals not provided by the owner necessary to successfully complete any individual item or the entire Contract and the carrying out of duties and obligations imposed by the Contract Documents for the Project.

A.2 SCOPE OF WORK

The Work contemplated under the Contract includes all labor, materials, transportation, equipment and services for, and incidental to, the completion of all work in connection with the Project described in the Contract Documents. The Contractor shall perform all Work necessary so that the Project can be legally occupied and fully used for the intended use as set forth in the Contract Documents.

A.3 INTERPRETATION OF CONTRACT DOCUMENTS

A.3.1 Unless otherwise specifically defined in the Contract Documents, words which have well-known technical meanings or construction industry meanings are used in the Contract Documents in accordance with such recognized meanings. Contract Documents are intended to be complementary. Whatever is called for in one, is interpreted to be called for in all. However, in the event of conflicts or discrepancies among the Contract Documents, interpretations will be based on the following descending order of precedence:

(a) The Contract and any amendments thereto, including Change Orders, with those of later date having precedence over those of an earlier date;
(b) The Supplemental General Conditions;
(c) County General Conditions;
(d) Plans and Specifications;
(e) The Solicitation Document, and any addenda thereto.

A.3.2 In the case of an inconsistency between Plans and Specifications or within either document not clarified by addendum, the better quality or greater quantity of Work shall be provided in accordance with the Owner's interpretation in writing as determined in Owners sole discretion.

A.3.3 If the Contractor finds discrepancies in, or omissions from the Contract Documents, or if the Contractor is in doubt as to their meaning, the Contractor shall at once notify the Owner. Matters concerning and interpretation of requirements of the Contract Documents will be decided by the Owner in the Owner's sole discretion, who may delegate that duty in some instances to the Architect/Engineer. Responses to Contractor's requests for interpretation of Contract Documents will be made in writing by Owner (or the Architect/Engineer) within any time limits agreed upon or otherwise with reasonable promptness. Contractor shall not proceed without direction in writing from the Owner (or Architect/Engineer).

A.3.4 References to standard specifications, manuals, codes of any technical society, organization or association, to the laws or regulations of any governmental authority, whether such reference be specific or by implication, shall mean the latest standard specification, manual, code, laws or regulations in effect in the jurisdiction where the Project Site is located on the first published date of the Solicitation Document, except as may be otherwise specifically stated.

A.4 EXAMINATION OF PLANS, SPECIFICATIONS, AND PROJECT SITE

A.4.1 It is understood that the Contractor, before submitting an Offer, has made a careful examination of the Contract Documents; has become fully informed as to the quality and quantity of materials and the character of the Work required; and has made a careful examination of the location and conditions of the Work and the sources of supply for materials. The Owner will in no case be responsible for any loss or for any unanticipated costs that may be suffered by the Contractor as a result of the Contractor's failure to acquire full information in advance in regard to all conditions pertaining to the Work. No oral agreement or conversation with any officer, agent, or personnel of the Owner, or with the Architect/Engineer either before or after the execution of the Contract, shall affect or modify any of the terms or obligations herein contained. Contractor shall at all times be responsible for all utility locates regardless of the ownership of such utility infrastructure or service.

A.4.2 Should the Plans or Specifications fail to particularly describe the materials, kind of goods, or details of construction of any aspect of the Work, Contractor shall have the duty to make inquiry of the Owner and Architect/Engineer as to what is required prior to performance of the Work. Absent Specifications to the contrary, the materials or processes that would normally be used to produce first quality finished Work shall be considered a part of the Contract requirements.

A.4.3 Any design errors or omissions noted by the Contractor shall be reported promptly to the Owner, including without limitation, any nonconformity with Applicable Laws.

A.4.4 If the Contractor believes that adjustments to cost or Contract Time are involved because of clarifications or instructions issued by the Owner (or Architect/Engineer) in response to the Contractor's notices or requests for information, the Contractor must submit a written request to the Owner, setting forth the nature and specific extent of the request, including all time and cost impacts against the Contract as soon as possible, but no later than thirty (30) Days after receipt by Contractor of the clarifications or instructions issued. If the Owner denies Contractor's request for additional compensation, additional Contract Time, or other relief that Contractor believes results from the clarifications or instructions, the Contractor may proceed to file a Claim under Section D.3, Claims Review Process. If the Contractor fails to perform the obligations of Sections A.4.1 to A.4.3, the Contractor shall pay such costs and damages to the Owner as would have been avoided if the Contractor had performed such obligations.

A.4.5 If the Contractor believes that adjustments to cost or Contract Time are involved because of an Unavoidable Delay caused by differing Project Site conditions, the Contractor shall notify the Owner immediately of differing Project Site conditions before the area has been disturbed. The Owner will investigate the area and make a determination as to whether or not the conditions differ materially from either the conditions stated in the Contract Documents or those which could reasonably be expected in execution of this particular Contract. If Contractor and the Owner agrees that a differing Project Site condition exists, any adjustment to compensation or Contract Time will be determined based on the process set forth in Section D.2.2 for adjustments to or deletions from Work. If the Owner disagrees that a differing Project Site condition exists and denies Contractor's request for additional compensation or Contract Time, Contractor may proceed to file a Claim under Section D.3, Claims Review Process.

A.5 INDEPENDENT CONTRACTOR STATUS

The service or services to be performed under the Contract are those of an independent contractor as defined in ORS 670.600. Contractor represents and warrants that it is not an officer, employee or agent of the Owner as those terms are used in ORS 30.265.

A.6 RETIREMENT SYSTEM STATUS AND TAXES

Contractor represents and warrants that it is not a contributing member of the Public Employees' Retirement System and will be responsible for any federal or state taxes applicable to payment received under the Contract. Contractor will not be eligible for any benefits from these Contract payments of federal Social Security, employment insurance, workers' compensation or the Public Employees' Retirement System, except as a self-employed individual. Unless the Contractor is subject to backup withholding, Owner will not withhold from such payments any amount(s) to cover Contractor's federal or state tax obligations.

A.7 GOVERNMENT EMPLOYMENT STATUS

A.7.1 If this payment is to be charged against federal funds, Contractor represents and warrants that it is not currently employed by the Federal Government. This does not preclude the Contractor from holding another contract with the Federal Government.

SECTION B
ADMINISTRATION OF THE CONTRACT

B.1 OWNER'S ADMINISTRATION OF THE CONTRACT

B.1.1 The Owner shall administer the Contract as described in the Contract Documents throughout the term of the Contract, including the one-year period for correction of Work. The Owner will act as provided in the Contract Documents, unless modified in writing in accordance with other provisions of the Contract. In performing these tasks, the Owner may rely on the Architect/Engineer or other agents to perform some or all of these tasks.

B.1.2 The Owner may visit the Project Site at intervals appropriate to the stage of the Contractor's operations (1) to become generally familiar with and to keep the Owner informed about the progress and quality of the portion of the Work completed, (2) to endeavor to guard the Owner against defects and deficiencies in the Work, and (3) to determine in general if Work is being performed in a manner indicating that the Work, when fully completed, will be in accordance with the Contract Documents. The Owner will not

make exhaustive or continuous on-Project Site inspections to check the quality or quantity of the Work. Unless otherwise required in a Change Order, the Owner will neither have control over or charge of, nor be responsible for the construction means, methods, techniques, sequences or procedures, or for the safety precautions and programs in connection with the Work.

B.1.3 Except as otherwise provided in the Contract Documents or when direct communications have been specifically authorized, the Owner and Contractor shall communicate with each other within a reasonable time frame about matters arising out of or relating to the Contract. Communications by and with the Architect/Engineer's consultants shall be through the Architect/Engineer. Communications by and with Subcontractors and material suppliers shall be through the Contractor. Communications by and with separate contractors shall be through the Owner.

B.1.4 Based upon the Architect/Engineer's evaluations of the Contractor's Application for Payment, or unless otherwise stipulated by the Owner, the Architect/Engineer will review and certify the amounts due the Contractor and will issue Certificates for Payment in such amounts.

B.2 CONTRACTOR'S MEANS AND METHODS; MITIGATION OF IMPACTS

B.2.1 The Contractor shall supervise and direct the Work, using the Contractor's best skill and attention. The Contractor shall be solely responsible for and have control over construction means, methods, techniques, sequences and procedures and for coordinating all portions of the Work under the Contract, unless the Contract Documents give other specific instructions concerning these matters. If the Contract Documents give specific instructions concerning construction means, methods, techniques, sequences or procedures, the Contractor shall evaluate the Project Site safety thereof and, except as stated below, shall be fully and solely responsible for the Project Site safety of such means, methods, techniques, sequences or procedures.

B.2.2 The Contractor is responsible to protect and maintain the Work during the course of construction and to mitigate any adverse impacts to the Project, including those caused by authorized changes, which may affect cost, schedule, or quality.

B.2.3 The Contractor is responsible for the actions of all its personnel, laborers, suppliers, agents, and Subcontractors on the Project. The Contractor shall enforce strict discipline and good order among Contractor's employees and other persons carrying out the Work. The Contractor shall not permit employment of persons who are unfit or unskilled for the tasks assigned to them.

B.3 MATERIALS AND WORKMANSHIP

B.3.1 The intent of the Contract Documents is to provide for the construction and completion of every detail of the Work described. All Work shall be performed in a professional manner and, unless the means or methods of performing a task are specified elsewhere in the Contract Documents, Contractor shall employ methods that are generally accepted and used by the industry, in accordance with industry standards.

B.3.2 The Contractor is responsible to perform the Work as required by the Contract Documents. Defective Work shall be corrected at the Contractor's sole expense and within a reasonable time frame.

B.3.3 Work done and materials furnished may be subject to inspection and/or observation and testing by the Owner to determine if they conform to the Contract Documents. Inspection of the Work by the Owner does not relieve the Contractor of responsibility for the Work in accordance with the Contract Documents.

B.3.4 Contractor shall furnish adequate facilities, as required, for the Owner to have safe access to the Work including without limitation walkways, railings, ladders, tunnels, and platforms. Producers, suppliers, and fabricators shall also provide proper facilities and access to their facilities.

B.3.5 The Contractor shall furnish Samples of materials for testing by the Owner and include the cost of the Samples in the Contract Price.

B.4 PERMITS

Contractor shall obtain and pay for all necessary permits, licenses and fees, except for those specifically excluded in the Supplemental General Conditions, as required for the project. Contractor shall be responsible for all violations of the law. Contractor shall give all requisite notices to public authorities.

B.5 COMPLIANCE WITH GOVERNMENT REGULATIONS

B.5.1 Contractor shall comply with Applicable Laws, as amended pertaining to the Work and the Contract. Failure to comply with such requirements shall constitute a breach of Contract and shall be grounds for Contract termination. Without limiting the generality of the foregoing, Contractor expressly agrees to comply with the following, as applicable and as may be amended from time to time: (i) Title VI and VII of Civil Rights Act of 1964, as amended; (ii) Section 503 and 504 of the Rehabilitation Act of 1973, as amended; (iii) the Health Insurance Portability and Accountability Act of 1996; (iv) the Americans with Disabilities Act of 1990, as amended; (v) ORS Chapter 659A; as amended; (vi) all regulations and administrative rules established pursuant to any applicable laws; and (vii) all other applicable requirements of federal, state, county or other local government entity statutes, rules and regulations.

B.5.2 Contractor shall comply with all applicable requirements of federal and state civil rights and rehabilitation statutes, rules and regulations, and

(a) Contractor shall not discriminate against Disadvantaged, Minority, Women or Emerging Small Business enterprises, as those terms are defined in ORS 200.005, or a business enterprise that is owned or controlled by or that employs a disabled veteran, as that term is defined in ORS 408.225, in the awarding of subcontracts.

(b) Contractor shall maintain, in current and valid form, all licenses and certificates required by Applicable Laws or the Contract when performing the Work.

B.5.3 Contractor shall certify that it shall not accept a bid from Subcontractors to perform Work unless such Subcontractors are registered with the Construction Contractors Board in accordance with ORS 701.021 at the time they submit their bids to the Contractor.

B.5.4 Contractor shall certify that each landscape contracting business, as defined in ORS 671.520(2), performing Work under the Contract holds a valid landscape construction professional license issued pursuant to ORS 671.560.

B.5.5 The following notice is applicable to Contractors who perform excavation Work. ATTENTION: Oregon law requires you to follow rules adopted by the Oregon Utility Notification Center. Those rules are set forth in OAR 952-001-0010 through OAR 952-001-0090. You may obtain copies of the rules by calling the center at (877) 668-4001.

B.5.6 Failure to comply with any or all of the requirements of B.5.1 through B.5.5 shall be a material breach of Contract and constitute

grounds for Contract termination. Damages or costs resulting from such noncompliance shall be the responsibility of Contractor.

B.5.7 The Contractor shall include in each subcontract those provisions required under ORS 279C.580.

B.5.8 Contractor shall comply with ORS 652.220, compliance of which is a material element of this Contract and failure to comply is a material breach that entitles County to exercise any rights and remedies available under this Contract including, but not limited to, termination for default.

B.6 SUPERINTENDENCE

Contractor shall keep on the Project Site, during the progress of the Work, a competent superintendent and any necessary assistants who shall be satisfactory to the Owner and who shall represent the Contractor on the Project Site. Directions given to the superintendent by the Owner shall be confirmed in writing to the Contractor.

B.7 INSPECTION

B.7.1 Owner shall have access to the Work at all times.

B.7.2 Inspection of the Work will be made by the Owner at its discretion. The Owner will have authority to reject Work that does not conform to the Contract Documents in the Owner's sole discretion. Any Work found to be not in conformance with the Contract Documents, in the discretion of the Owner, shall be removed and replaced at the Contractor's expense.

B.7.3 Contractor shall make or obtain at the appropriate time all tests, inspections and approvals of portions of the Work required by the Contract Documents or by Applicable Laws or orders of public authorities having jurisdiction. Unless otherwise provided, the Contractor shall make arrangements for such tests, inspections and approvals with an independent testing laboratory or entity acceptable to the Owner, or with the appropriate public authority, and shall bear all related costs of tests, inspections and approvals. Tests or inspections conducted pursuant to the Contract Documents shall be made promptly to avoid unreasonable delay in the Work. The Contractor shall give the Owner timely notice of when and where tests and inspections are to be made so that the Owner may be present for such procedures. Required certificates of testing, inspection or approval shall, unless otherwise required by the Contract Documents, be secured by the Contractor and promptly delivered to the Owner.

B.7.4 As required by the Contract Documents, Work done or material used without required inspection or testing and/or without providing timely notice to the Owner may be ordered removed at the Contractor's expense.

B.7.5 If directed to do so by Owner or other permitting authority any time before the Work is accepted, the Contractor shall uncover portions of the completed Work for inspection. After inspection, the Contractor shall restore such portions of Work to the standard required by the Contract. If the Work uncovered is unacceptable or was done without required testing or inspection or sufficient notice to the Owner, the uncovering and restoration shall be done at the Contractor's expense. If the Work uncovered is acceptable and was done with sufficient notice to the Owner, the uncovering and restoration will be paid for pursuant to a Change Order.

B.7.6 If any testing or inspection reveals failure of the portions of the Work to comply with requirements established by the Contract Documents, all costs made necessary by such failure, including those of repeated procedures and compensation for the Owner's and Architect/Engineer's services and expenses, shall be at the Contractor's expense.

B.7.7 In Owner's sole discretion, it may authorize other interested parties to inspect the Work affecting their interests or property. Their right to inspect shall not make them a party to the Contract and shall not interfere with the rights of the parties of the Contract. Instructions or orders of such parties shall be transmitted to the Contractor, through the Owner.

B.8 SUBCONTRACTS AND ASSIGNMENT

B.8.1 Contractor shall require each Subcontractor, to the extent of the Work to be performed by the Subcontractor, to be bound by the terms and conditions of these General Conditions and Supplemental General Conditions, and to assume toward the Contractor all of the obligations and responsibilities which the Contractor assumes toward the Owner thereunder, unless (1) the same are clearly inapplicable to the subcontract at issue because of legal requirements or industry practices, or (2) specific exceptions are requested by Contractor and approved in writing by Owner. Where appropriate, Contractor shall require each Subcontractor to enter into similar agreements with sub-subcontractors at any level.

B.8.2 At Owner's request, Contractor shall submit to Owner prior to their execution either Contractor's form of subcontract, or the subcontract to be executed with any particular Subcontractor. If Owner disapproves such form, Contractor shall not execute the form until the matters disapproved are resolved to Owner's satisfaction. Owner's review, comment upon or approval of any such form shall not relieve Contractor of its obligations under this Agreement or be deemed a waiver of such obligations of Contractor.

B.8.3 Contractor shall not assign, sell, or transfer its rights, or delegate its responsibilities under the Contract, in whole or in part, without the prior written approval of the Owner. No such written approval shall relieve Contractor of any obligations of the Contract, and any transferee shall be considered the agent of the Contractor and bound to perform in accordance with the Contract Documents. Contractor shall remain liable as between the original parties to the Contract as if no assignment had occurred.

B.9 OWNER'S RIGHT TO DO WORK

Owner reserves the right to perform other or additional work at or near the Project Site with other agents than those of the Contractor. If such work takes place within or next to the Project Site, Contractor shall coordinate work with the other contractors or agents, cooperate with all other contractors or forces, carry out the Work in a way that will minimize interference and delay for all agents involved, place and dispose of materials being used so as not to interfere with the operations of another, and join the Work with the work of the others in an acceptable manner and perform it in proper sequence to that of the others. The Owner will resolve any disagreements that may arise between or among Contractor and the other contractors over the method or order of doing all work (including the Work). In case of unavoidable interference, the Owner will establish work priority (including the Work) in the Owner's sole discretion.

B.10 OTHER CONTRACTS

In all cases and at any time, the Owner has the right to execute other contracts related to or unrelated to the Work of the Contract. The Contractor of the Contract shall fully cooperate with any and all other contractors without additional cost to the Owner in the manner described in Section B.13.

B.11 ALLOWANCES

B.11.1 The Contractor shall include in the Contract Price all allowances stated in the Contract Documents. Items covered by allowances

shall be supplied for such amounts and by such persons or entities as the Owner may direct.

B.11.2 Unless otherwise provided in the Contract Documents:

(a) when finally reconciled, allowances shall cover the cost of the Contractor's materials and equipment delivered at the Project Site and all required taxes, less applicable trade discounts;

(b) Contractor's costs for unloading and handling at the Project Site, labor, installation costs, Overhead, profit and other expenses contemplated for stated allowance amounts shall be included in the Contract Price but not in the allowances;

(c) whenever costs are more than or less than allowances, the Contract Price shall be adjusted accordingly by Change Order. The amount of the Change Order shall reflect (i) the difference between actual costs and the allowances under Section B.17.2(a) and (ii) changes in Contractor's costs under Section B.17.2(b);

(d) Unless Owner requests otherwise, Contractor shall provide to Owner a proposed fixed price for any allowance work prior to its performance.

B.12 SUBMITTALS, SHOP DRAWINGS, PRODUCT DATA AND SAMPLES

B.12.1 The Contractor shall prepare and keep current, for the Architect's/Engineer's approval (or for the approval of Owner if approval authority has not been delegated to the Architect/Engineer), a schedule and list of submittals which is coordinated with the Contractor's construction schedule and allows the Architect/Engineer reasonable time to review submittals. Owner reserves the right to finally approve the schedule and list of submittals. Submittals include, without limitation, Shop Drawings, Product Data, and Samples.

B.12.2 Shop Drawings, Product Data, Samples and similar submittals are not Contract Documents. The purpose of their submittal is to demonstrate for those portions of the Work for which submittals are required by the Contract Documents the way by which the Contractor proposes to conform to the information given and the design concept expressed in the Contract Documents. Review of submittals by the Architect/Engineer is not conducted for the purpose of determining the accuracy and completeness of other details such as dimensions and quantities, or for substantiating instructions for installation or performance of equipment or systems, or for approval of safety precautions or, unless otherwise specifically stated by the Architect/Engineer, of any construction means, methods, techniques, sequences or procedures, all of which remain the responsibility of the Contractor as required by the Contract Documents. The Architect/Engineer's review of the Contractor's submittals shall not relieve the Contractor of its obligations under the Contract Documents. The Architect/Engineer's approval of a specific item shall not indicate approval of an assembly of which the item is a component. Informational submittals upon which the Architect/Engineer is not expected to take responsive action may be so identified in the Contract Documents. Submittals which are not required by the Contract Documents may be returned by the Architect/Engineer without action.

B.12.3 The Contractor shall review for compliance with the Contract Documents, approve and submit to the Architect/Engineer Shop Drawings, Product Data, Samples and similar submittals required by the Contract Documents with reasonable promptness and in such sequence as to cause no delay in the Work or in the activities of the Owner or of separate contractors. Submittals which are not marked as reviewed for compliance with the Contract Documents and approved by the Contractor may be returned by the Architect/Engineer without action.

B.12.4 By approving and submitting Shop Drawings, Product Data, Samples and similar submittals, the Contractor represents that the Contractor has determined and verified materials, field measurements and field construction criteria related thereto, or will do so, and has checked and coordinated the information contained within such submittals with the requirements of the Work and of the Contract Documents.

B.12.5 The Contractor shall perform no portion of the Work for which the Contract Documents require submittal and review of Shop Drawings, Product Data, Samples or similar submittals until the respective submittal has been approved by the Architect/Engineer.

B.12.6 The Work shall be in accordance with approved submittals except that the Contractor shall not be relieved of responsibility for deviations from requirements of the Contract Documents by the Architect/Engineer's review or approval of Shop Drawings, Product Data, Samples or similar submittals unless the Contractor has specifically informed the Architect/Engineer in writing of such deviation at the time of submittal and (i) the Architect/Engineer has given written approval to the specific deviation as a minor change in the Work, or (ii) a Change Order has been executed by Owner authorizing the deviation. The Contractor shall not be relieved of responsibility for errors or omissions in Shop Drawings, Product Data, Samples or similar submittals by the Architect/Engineer's review or approval thereof.

B.12.7 In the event that Owner elects not to have the obligations and duties described under this Section B.18 performed by the Architect/Engineer, or in the event no Architect/Engineer is employed by Owner on the Project, all obligations and duties assigned to the Architect/Engineer hereunder shall be performed by the Owner.

B.13 SUBSTITUTIONS

The Contractor may make Substitutions only with the written consent of the Owner, after evaluation by the Owner and only in accordance with a Change Order. Substitutions shall be subject to the requirements of the Solicitation Document. By making requests for Substitutions, the Contractor represents that the Contractor has personally investigated the proposed substitute product; represents that the Contractor will provide the same warranty for the Substitution that the Contractor would for the product originally specified unless approved otherwise; certifies that the cost data presented is complete and includes all related costs under the Contract including redesign costs, and waives all claims for additional costs related to the Substitution which subsequently become apparent; and will coordinate the installation of the accepted Substitution, making such changes as may be required for the Work to be completed in all respects.

B.14 USE OF PLANS AND SPECIFICATIONS

Plans, Specifications and related Contract Documents furnished to Contractor by Owner or Owner's Architect/Engineer shall be used solely for the performance of the Work under the Contract. Contractor and its Subcontractors and suppliers are authorized to use and reproduce applicable portions of such documents appropriate to the execution of the Work, but shall not claim any ownership or other interest in them beyond the scope of the Contract, and no such interest shall attach. Unless otherwise indicated, all common law, statutory and other reserved rights, in addition to copyrights, are retained by Owner.

SECTION C
WAGES AND LABOR

C.1 PREVAILING WAGE RATES ON PUBLIC WORKS

Contractor shall comply fully with the provisions of ORS 279C.800 through 279C.870. Pursuant to ORS 279C.830(1)(d), Contractor shall pay workers at not less than the specified minimum hourly rate of wage, and shall include that requirement in all subcontracts. If the Work is subject to both the state prevailing wage rate law and the federal Davis-Bacon Act, Contractor shall pay the higher of the applicable state or federal prevailing rate of wage. Contractor shall provide written notice to all workers of the number of hours per day and days per week such workers may be required to work.

C.2 PAYROLL CERTIFICATION AND FEE REQUIREMENTS

C.2.1 In accordance with ORS 279C.845, the Contractor and every Subcontractor shall submit written certified statements to the Owner on the form prescribed by the Commissioner of the Bureau of Labor and Industries ("BOLI"), certifying the hourly rate of wage paid each worker which the Contractor or the Subcontractor has employed on the Project and further certifying that no worker employed on the Project has been paid less than the prevailing rate of wage or less than the minimum hourly rate of wage specified in the Contract, which certificate and statement shall be verified by the oath of the Contractor or the Subcontractor that the Contractor or Subcontractor has read the certified statement, that the Contractor or Subcontractor knows the contents of the certified statement, and, that to the Contractor's or Subcontractor's best knowledge and belief, the certified statement is true. The certified statements shall set out accurately and completely the payroll records for the prior week, including the name and address of each worker, the worker's correct classification, rate of pay, daily and weekly number of hours worked, deductions made, and actual wages paid. Certified statements for each week during which the Contractor or Subcontractor has employed a worker on the Project shall be submitted once a month, by the fifth (5^{th}) business day of the following month. The Contractor and Subcontractors shall preserve the certified statements for a period of ten (10) years from the date of completion of the Contract.

C.2.2 Pursuant to ORS 279C.845(7), the Owner shall retain 25 percent of any amount earned by the Contractor on the Project until the Contractor has filed the certified statements required by section C.2.1. The Owner shall pay to the Contractor the amount retained under this subsection within 14 days after the Contractor files the required certified statements, regardless of whether a Subcontractor has failed to file certified statements.

C.2.3 Pursuant to ORS 279C.845(8), the Contractor shall retain 25 percent of any amount earned by a first-tier Subcontractor on this Project until the first-tier Subcontractor has filed with the Owner the certified statements required by C.2.1. Before paying any amount retained under this subsection, the Contractor shall verify that the first-tier Subcontractor has filed the certified statement. Within 14 days after the first-tier Subcontractor files the required certified statement the Contractor shall pay the first-tier Subcontractor any amount retained under this subsection.

C.2.4 In accordance with statutory requirements and administrative rules promulgated by the Commissioner of the Bureau of Labor and Industries, the fee required by ORS 279C.825(1) will be paid by Owner to the Commissioner.

C.3 PROMPT PAYMENT AND CONTRACT CONDITIONS

C.3.1 As a condition to Owner's performance hereunder, the Contractor shall:

C.3.1.1 Make payment promptly, as due, to all persons supplying to Contractor labor or materials for the prosecution of the Work provided for in the Contract.

C.3.1.2 Pay all contributions or amounts due the State Industrial Accident Fund or successor program from such Contractor or Subcontractor incurred in the performance of the Contract.

C.3.1.3 Not permit any lien or claim to be filed or prosecuted against the Owner on account of any labor or material furnished. Contractor will not assign any claims that Contractor has against Owner, or assign any sums due by Owner, to Subcontractors, suppliers, or manufacturers, and will not make any agreement or act in any way to give Subcontractors a claim or standing to make a claim against the Owner.

C.3.1.4 Pay to the Department of Revenue all sums withheld from employees pursuant to ORS 316.167.

C.3.2 If Contractor fails, neglects or refuses to make prompt payment of any claim for labor or services furnished to the Contractor of a Subcontractor by any person in connection with the Project as such claim becomes due, the proper officer(s) representing the Owner may pay the claim and charge the amount of the payment against funds due or to become due Contractor under the Contract. Payment of claims in this manner shall not relieve the Contractor or the Contractor's surety from obligation with respect to any unpaid claims.

C.3.3 Contractor shall include in each subcontract for property or services entered into by the Contractor and a first-tier subcontractor, including a material supplier, for the purpose of performing a construction contract, a payment clause that obligates the Contractor to pay the first-tier Subcontractor for satisfactory performance under its subcontract within ten (10) Days out of such amounts as are paid to the Contractor by the Owner under such contract.

C.3.4 If the Contractor or a first-tier subcontractor fails, neglects or refuses to pay a person that provides labor or materials in connection with the Contract within 30 days after receiving payment from the contracting agency or a contractor, the Contractor or first-tier subcontractor owes the person the amount due plus interest charges that begin at the end of the 10-day period within which payment is due under ORS 279C.580 (4) and that end upon final payment, unless payment is subject to a good faith dispute as defined in ORS 279C.580. The rate of interest on the amount due is nine percent per annum. The amount of interest may not be waived.

C.3.5 If the Contractor or a subcontractor fails, neglects or refuses to make payment to a person furnishing labor or materials in connection with the Contract, the person may file a complaint with the Construction Contractors Board, unless payment is subject to a good faith dispute as defined in ORS 279C.580.

C.3.6 All employers, including Contractor, that employ subject workers who work under the Contract in the State of Oregon shall comply with ORS 656.017 and provide the required Workers' Compensation coverage, unless such employers are exempt under ORS 656.126. Contractor shall ensure that each of its Subcontractors complies with these requirements.

C.3.7 In accordance with ORS 279C.570, for all subcontracts that exceed $500,000 that the Contractor withholds retainage, the Contractor shall place amounts deducted as retainage into an interest-bearing escrow account. Interest on the retainage amount accrues from the

date the payment request is approved until the date the retainage is paid to the Subcontractor to which it is due.

C.4 PAYMENT FOR MEDICAL CARE

As a condition to Owner's performance hereunder, Contractor shall promptly, as due, make payment to any person, co-partnership, association or corporation furnishing medical, surgical, and hospital care or other needed care and attention, incident to sickness or injury, to the employees of the Contractor, of all sums of which the Contractor agrees to pay for the services and all moneys and sums that the Contractor collected or deducted from the wages of employees under any law, contract or agreement for the purpose of providing or paying for the services.

C.5 HOURS OF LABOR

As a condition to Owner's performance hereunder, no person shall be employed to perform Work under the Contract for more than ten (10) hours in any one day or forty (40) hours in any one week, except in cases of necessity, emergency or where public policy absolutely requires it. In such instances, Contractor shall pay the employee at least time and a half pay:

(a) For all overtime in excess of eight (8) hours a day or forty (40) hours in any one week when the work week is five consecutive Days, Monday through Friday; or

(b) For all overtime in excess of ten (10) hours a day or forty (40) hours in any one week when the work week is four consecutive Days, Monday through Friday; and

(c) For all Work performed on Saturday and on any legal holiday specified in ORS 279C.540.

This Section C.5 will not apply to Contractor's Work under the Contract to the extent Contractor is currently a party to a collective bargaining agreement with any labor organization.

This Section C.5 shall not excuse Contractor from completion of the Work within the time required under the Contract.

SECTION D
CHANGES IN THE WORK

D.1 CHANGES IN WORK

D.1.1 The terms of the Contract shall not be waived, altered, modified, supplemented or amended in any manner whatsoever, without prior written agreement and then only after any necessary approvals have been obtained. A Change Order is required to modify the Contract, which shall not be effective until its execution by the parties to the Contract and all approvals required by public contracting laws have been obtained.

D.1.2 It is mutually agreed that changes in Plans, quantities, or details of construction may be necessary or desirable during the course of construction. Within the general scope of the Contract, the Owner may at any time, without notice to the sureties and without impairing the Contract, require changes it deems necessary or desirable within the scope of this Project and consistent with this Section D.1. All changes to the Work shall be documented and Change Orders shall be executed under the conditions of the Contract Documents. Such changes may include, but are not limited to:

(a) Modification of specifications and design.
(b) Increases or decreases in quantities.
(c) Increases or decreases to the amount of Work.
(d) Addition or elimination of any Work item.
(e) Change in the duration of the Project.
(f) Acceleration or delay in performance of Work.
(g) Deductive changes.

Deductive changes are those that reduce the scope of the Work, and shall be made by mutual agreement whenever feasible. In cases of suspension or partial termination under Section J, Owner reserves the right to unilaterally impose a deductive change and to self-perform such Work, for which the provisions of Section B.13 (Owner's Right to Do Work) shall then apply. Adjustments in compensation shall be made under Section D.1.3, in which costs for deductive changes shall be based upon a Direct Costs adjustment together with the related percentage markup specified for profit, Overhead and other indirect costs, unless otherwise agreed to by Owner.

D.1.3 The Owner and Contractor agree that adjustments to or deletions from the Work shall be administered and compensated according to the following:

(a) Unit Pricing: Unit pricing may be utilized at the Owner's option when unit prices or solicitation alternates were provided that established the cost for adjustments to Work, and a binding obligation exists under the Contract on the parties covering the terms and conditions of the adjustment to Work.

(b) Fixed Fee: If the Owner elects not to utilize unit pricing, or in the event that unit pricing is not available or appropriate, fixed pricing may be used for adjustments to or deletions from the Work. In fixed pricing, the basis of payments or total price shall be agreed upon in writing between the parties to the Contract, and shall be established before the Work is done whenever feasible. Notwithstanding the foregoing, the mark-ups set forth in Section D.1.3(c) shall be utilized in establishing fixed pricing, and such mark-ups shall not be exceeded. Cost and price data relating to adjustments to or deletions from the Work shall be supplied by Contractor to Owner upon request, but Owner shall be under no obligation to make such requests.

(c) Time and Material: In the event that unit pricing and fixed pricing are not utilized, then adjustments to or deletions from the Work shall be performed on a cost reimbursement basis for Direct Costs. Such Work shall be compensated on the basis of the actual, reasonable and allowable cost of labor, equipment, and material furnished on the Work performed. The Contractor or Subcontractor who performs the Work shall be allowed to add up to ten percent (10%) markup to the Direct Costs as full compensation for profit, Overhead and other indirect costs for Work performed with the Contractor's or Subcontractor's own agents

Each ascending tier Subcontractor or the Contractor that did not perform the Work, will be allowed to add up to five percent (5%) supplemental markup on the Direct Costs of the Work (but not the above allowable markups) covered by a Change Order. No additional markup shall be permitted for any third tier or greater descending Subcontractor.

Example: $20,000 of Direct Costs Work performed by a 2nd Tier Subcontractor

	Markup	Allowed Total Fee Plus Markup
General Contractor	5%	$1,000.00
1st Tier Sub Contractor	5%	$1,000.00
2nd Tier Sub Contractor	10%	$22,000.00

(d) Payments made to the Contractor shall be complete compensation for Overhead, profit, and all costs that were incurred by the Contractor or by other agents furnished by the Contractor, including Subcontractors, for adjustments to or deletions from the Work pursuant to a Change Order. Owner may establish a maximum cost for additional Work under this Section D.1.3, which shall not be exceeded for reimbursement without additional written

authorization from Owner in the form of a Change Order. Contractor shall not be required to complete such additional Work without additional authorization.

D.1.4 Any necessary adjustment of Contract Time that may be required as a result of adjustments to or deletions from the Work must be agreed upon by the parties before the start of the revised Work unless Owner authorizes Contractor to start the revised Work before agreement on Contract Time adjustment.

Contractor shall submit any request for additional compensation (and additional Contract Time if Contractor was authorized to start Work before an adjustment of Contract Time was approved) as soon as possible but no later than thirty (30) Days after receipt of Owner's request for additional Work . If Contractor's request for additional compensation or adjustment of Contract Time is not made within the thirty (30) Day time limit, Contractor's requests pertaining to that additional Work shall be barred. The thirty (30) Day time limit for making requests shall not be extended for any reason, including without limitation Contractor's claimed inability to determine the amount of additional compensation or adjustment of Contract Time, unless an extension is granted in writing by Owner. If the Owner denies Contractor's request for additional compensation or adjustment of Contract Time, Contractor may proceed to file a Claim under Section D.3, Claims Review Process. No other reimbursement, compensation, or payment will be made, except as provided in Section D.1.5 for impact claims.

D.1.5 If any adjustment to Work under Section D.1.3 causes an increase or decrease in the Contractor's cost of, or the Contract Time required for the performance of any other part of the Work under the Contract, Contractor shall submit a written request to the Owner, setting forth the nature and specific extent of the request, including all time and cost impacts against the Contract as soon as possible, but no later than thirty (30) Days after receipt of Owner's request for adjustments to or deletions from the Work by Contractor.

The thirty (30) Day time limit applies to claims of Subcontractors, suppliers, or manufacturers who may be affected by Owner's request for adjustments to or deletions from the Work and who request additional compensation or an extension of Contract Time to perform; Contractor has responsibility for contacting its Subcontractors, suppliers, or manufacturers within the thirty (30) Day time limit, and including their requests with Contractor's requests. If the request involves Work to be completed by Subcontractors, or materials to be furnished by suppliers or manufacturers, such requests shall be submitted to the Contractor in writing with full analysis and justification for the adjustments to compensation and Contract Time requested. The Contractor shall analyze and evaluate the merits of the requests submitted by Subcontractors, suppliers, and manufacturers to Contractor prior to including those requests and Contractor's analysis and evaluation of those requests with Contractor's requests for adjustments to compensation or Contract Time that Contractor submits to the Owner. Failure of Subcontractors, suppliers, manufacturers or others to submit their requests to Contractor for inclusion with Contractor's requests submitted to Owner within the time period and by the means described in this section shall constitute a waiver of these Subcontractor claims. The Owner will not consider direct requests or claims from Subcontractors, suppliers, manufacturers or others not a party to the Contract. The consideration of such requests and claims under this section does not give any Person, not a party to the Contract the right to bring a claim against Owner, whether in this claims process, in litigation, or in any dispute resolution process.

If the Owner denies the Contractor's request for adjustment to compensation or Contract Time, the Contractor may proceed to file a Claim under Section D.3, Claims Review Process.

D.1.6 No request or Claim by the Contractor for additional costs or an adjustment of Contract Time shall be allowed if made after receipt of final payment application under the Contract. Final payment application must be made by Contractor within the time required under Section E.6.4.

D.1.7 It is understood that changes in the Work are inherent in construction of this type. The number of changes, the scope of those changes, and the effect they have on the progress of the original Work cannot be defined at this time. The Contractor agrees that it will work in good faith with Owner to undertake changes, when agreed upon by execution of a Change Order. Each change will be evaluated for extension of Contract Time and increase or decrease in compensation based on its own merit.

D.2 DELAYS

D.2.1 Contractor shall not be entitled to additional compensation or additional Contract Time for Avoidable Delays.

D.2.2 In the event of Unavoidable Delays, Contractor may be entitled to the following:

(a) Contractor may be entitled to additional compensation or additional Contract Time, or both, for Unavoidable Delays described in Section D.2.1.2 (a) and (b).

(b) Contractor may be entitled to additional Contract Time for Unavoidable Delays described in Section D.2.1.2(c) and (d).

In the event of any requests for additional compensation or additional Contract Time, or both, as applicable, arising under this Section D.2.2 for Unavoidable Delays, other than requests for additional compensation or additional Contract Time for differing Project Site conditions for which a review process is established under Section A.4.5, Contractor shall submit a written notification of the delay to the Owner within two (2) Days of the occurrence of the cause of the delay. This written notification shall state the cause of the potential delay, the Project components impacted by the delay, and the anticipated additional Contract Time extension or the additional compensation, or both, as applicable, resulting from the delay. Within seven (7) Days after the cause of the delay has been mitigated, or in no case more than thirty (30) Days after the initial written notification, the Contractor shall submit to the Owner, a complete and detailed request for additional compensation or additional Contract Time, or both, as applicable, resulting from the delay. If the Owner denies Contractor's request for additional compensation or adjustment of Contract Time, the Contractor may proceed to file a Claim under Section D.3, Claims Review Process.

If Contractor does not timely submit the notices required under this Section D.2, Contractor's Claim shall be barred.

D.3 CLAIMS REVIEW PROCESS

D.3.1 All Contractor Claims shall be referred to the Owner for review. Contractor's Claims, including Claims for adjustments to compensation or Contract Time, shall be submitted in writing by Contractor to the Owner within five (5) Days after a denial of Contractor's initial request for an adjustment of Contract terms, payment of money, extension of Contract Time or other relief, provided that such initial request has been submitted in accordance with the requirements and within the time limits established in these County General Conditions. Within thirty (30) Days after the initial Claim, Owner shall receive from Contractor a complete and detailed description of the Claim (the "Detailed Notice") that includes all information required by Section D.3.2. Unless the Claim is made in accordance with these time requirements, it shall be barred.

D.3.2 The Detailed Notice of the Claim shall be submitted in writing by Contractor and shall include all information, records and documentation necessary for the Owner to properly and completely evaluate the claim, including, but not limited to a detailed, factual statement of the basis of the Claim, pertinent dates, Contract provisions which support or allow the Claim, reference to or copies of any documents which support the Claim, the dollar value of the Claim, and the Contract Time adjustment requested for the Claim. If the Claim involves Work to be completed by Subcontractors, the Contractor will analyze and evaluate the merits of the Subcontractor claim prior to forwarding it and that analysis and evaluation to the Owner. The Owner will not consider direct claims from Subcontractors, suppliers, manufacturers, or others not a party to the Contract. Contractor agrees that it will make no agreement, covenant, or assignment, nor will it commit any other act that will permit or assist any Subcontractor, supplier, manufacturer, or other to directly or indirectly make a claim against Owner.

D.3.3 The Owner, through the Architect/Engineer (or other employee or agent assigned by the Owner) will review all Claims and take one or more of the following preliminary actions within ten (10) Days of receipt of the Detailed Notice of a Claim: (1) request additional supporting information from the Contractor; (2) inform the Contractor and Owner in writing of the time required for adequate review and response; (3) reject the Claim in whole or in part and identify the reasons for rejection; (4) recommend approval of all or part of the Claim; (5) arrange a meeting with the Contractor for formal review of the Claim; or (6) propose an alternate resolution.

D.3.4 Once the Engineer or Project Manager determines the Owner is in receipt of a properly submitted claim, the Engineer or Project Manager may arrange a meeting, as agreed by the parties, with the Contractor in order to present the claim for formal review and discussion. A person authorized by the Contractor to execute Change Orders on behalf of the Contractor must be present and attend all claim meetings.

D.3.5 The Owner's decision, through the Architect/Engineer (or other employee or agent assigned by the Owner), shall be final and binding on the Contractor unless appealed by written notice to the Owner within fifteen (15) Days of receipt of the decision. The Contractor must present written documentation supporting the Claim within fifteen (15) Days of the notice of appeal. After receiving the appeal documentation, the Owner, through the appropriate department director, shall review the materials and render a decision within thirty (30) Days after receiving the appeal documents.

D.3.6 If, at any step in the claim decision or review process, the Contractor fails to promptly submit requested information or documentation that the Owner deems necessary to analyze the claim, the Contractor is deemed to have waived its right to further review, and the Claim will not be considered properly filed and preserved.

D.3.7 Both parties agree to exercise their best efforts in good faith to resolve all disputes within sixty (60) Days of the issuance of the appeal in Section D. 3.4 above. If the parties are unable to resolve their issues through mediation or otherwise, either party may seek redress through all available remedies in equity or in law.

D.3.8 Unless otherwise directed by Owner, Contractor shall proceed with the Work while any Claim, or mediation or litigation arising from a Claim, is pending. Regardless of the review period or the final decision of the Owner, the Contractor shall continue to diligently pursue the Work as identified in the Contract Documents. In no case is the Contractor justified or allowed to cease or delay Work, in whole or in part, without a written stop work order from the Owner.

SECTION E
PAYMENTS

E.1 SCHEDULE OF VALUES

The Contractor shall submit, by or before the pre-construction conference (as described in Section H.1.3), a schedule of values ("Schedule of Values") for the Contract Work. This schedule shall provide a breakdown of values for the Contract Work and will be the basis for progress payments. The breakdown shall demonstrate reasonable, identifiable, and measurable components of the Work. Unless objected to by the Owner, this schedule shall be used as the basis for reviewing Contractor's applications for payment. If objected to by Owner, Contractor shall revise the schedule of values and resubmit the same for approval of Owner.

E.2 APPLICATIONS FOR PAYMENT

E.2.1 Owner shall make progress payments on the Contract monthly as Work progresses, in accordance with the requirements of this Section E.2 and ORS 279C.570. Applications for payment shall be based upon estimates of Work completed and the Schedule of Values. As a condition precedent to Owner's obligation to pay, all applications for payment shall be approved by the Owner. A progress payment shall not be considered acceptance or approval of any Work or waiver of any defects therein. Owner shall pay to Contractor interest in accordance with ORS 279C.570 for overdue invoices, not including retainage, due the Contractor. Overdue invoices will be those that have not been paid within the earlier of:

(a) Thirty (30) days after receipt of the invoice; or

(b) Fifteen (15) days after the payment is approved by the County.

Notwithstanding the foregoing, in instances when an application for payment is filled out incorrectly, or when there is any defect or impropriety in any submitted application or when there is a good faith dispute, Owner shall so notify the Contractor within fifteen (15) Days stating the reason or reasons the application for payment is defective or improper or the reasons for the dispute. A defective or improper application for payment, if corrected by the Contractor within seven (7) Days of being notified by the Owner, shall not cause a payment to be made later than specified in this section unless interest is also paid. Payment of interest will be postponed when payment on the principal is delayed because of disagreement between the Owner and the Contractor.

Owner reserves the right, instead of requiring the Contractor to correct or resubmit a defective or improper application for payment, to reject the defective or improper portion of the application for payment and pay the remainder of the application for such amounts which are correct and proper.

Owner, upon written notice to the Contractor, may elect to make payments to the Contractor only by means of Electronic Funds Transfers ("EFT") through Automated Clearing House ("ACH") payments. If Owner makes this election, the Contractor shall arrange for receipt of the EFT/ACH payments.

E.2.2 Contractor shall submit to the Owner an application for each payment and, if required, receipts or other vouchers showing payments for materials and labor including payments to Subcontractors. Contractor shall include in its application for payment a schedule of the percentages of the various parts of the Work completed, based on the Schedule of Values which shall aggregate to the payment application total, and shall include, on the face of each copy thereof, a certificate in substantially the following form:

"I, the undersigned, hereby certify that the above bill is true and correct, and the payment therefore, has not been received.

Signed: _____
Dated: _____"

E.2.3 Generally, applications for payment will be accepted only for materials that have been installed. Under special conditions, applications for payment for stored materials will be accepted at Owner's sole discretion. Such a payment, if made, will be subject to the following conditions:

(a) The request for stored material shall be submitted at least thirty (30) Days in advance of the application for payment on which it appears. Applications for payment shall be entertained for major equipment, components or expenditures only.

(b) The Contractor shall submit applications for payment showing the quantity and cost of the material stored.

(c) The material shall be stored in a bonded warehouse and Owner shall be granted the right to access the material for the purpose of removal or inspection at any time during the Contract Period.

(d) The Contractor shall name the Owner as co-insured on the insurance policy covering the full value of the property while in the care and custody of the Contractor until it is installed. A certificate noting this coverage shall be issued to the Owner.

(e) Payments shall be made for materials and equipment only. The submitted amount in the application for payment shall be reduced by the cost of transportation from the storage site to the Project Site and for the cost of an inspector to verify delivery and condition of the goods at the storage site. The cost of storage and inspection shall be borne solely by the Contractor.

(f) Within sixty (60) Days of the application for payment, the Contractor shall submit evidence of payment covering the material and/or equipment stored and of payment for the storage site.

(g) Payment for stored materials and/or equipment shall in no way indicate acceptance of the materials and/or equipment or waive any rights under the Contract for the rejection of the Work or materials and/or equipment not in conformance with the Contract Documents.

(h) All required documentation shall be submitted with the respective application for payment.

E.2.4 The Owner reserves the right to withhold all or part of a payment, or may nullify in whole or part any payment previously made, to such extent as may be necessary in the Owner's opinion to protect the Owner from loss because of:

(a) Work that is defective and not remedied, or that has been demonstrated or identified as failing to conform with Applicable Laws or the Contract Documents;

(b) third party claims filed or evidence reasonably indicating that such claims will likely be filed unless security acceptable to the Owner is provided by the Contractor;

(c) failure of the Contractor to make payments properly to Subcontractors or for labor, materials or equipment (in which case Owner may issue checks made payable jointly to Contractor and such unpaid persons under this provision, or directly to Subcontractors and suppliers at any level under Section C.3.2);

(d) reasonable evidence that the Work cannot be completed for the unpaid balance of the Contract Price;

(e) damage to the Work, Owner or Owner's agent;

(f) reasonable evidence that the Work will not be completed within the Contract Time required by the Contract, and that the unpaid balance would not be adequate to cover actual or liquidated damages for the anticipated delay;

(g) failure to carry out the Work in accordance with the Contract Documents; or

(h) assessment of liquidated damages, when withholding is made for offset purposes.

E.2.5 Subject to the provisions of the Contract Documents, the amount of each progress payment shall be computed as follows:

(a) Take that portion of the Contract Price properly allocable to completed Work as determined by multiplying the percentage completion of each portion of the Work by the share of the total Contract Price allocated to that portion of the Work in the Schedule of Values, less retainage as provided in Section E.5. Pending final determination of cost to the Owner of changes in the Work, no amounts for changes in the Work can be included in applications for payment until the Contract Price has been adjusted by a Change Order;

(b) Add that portion of the Contract Price properly allocable to materials and equipment delivered and suitably stored at the Project Site for subsequent incorporation in the completed construction (or, if approved in advance by the Owner pursuant to Section E.2.3, suitably stored off the Project Site at a location agreed upon in writing), less retainage as provided in Section E.5;

(c) Subtract the aggregate of previous payments made by the Owner; and

(d) Subtract any amounts for which the Owner has withheld or nullified payment as provided in the Contract Documents.

E.2.6 Contractor's applications for payment shall not include requests for payment for portions of the Work for which the Contractor does not intend to pay to a Subcontractor or material supplier.

E.2.7 The Contractor warrants to Owner that title to all Work covered by an application for payment will pass to the Owner no later than the time of payment. The Contractor further warrants that upon submittal of an application for payment all Work for which payments are received from the Owner shall be free and clear of liens, claims, security interests or encumbrances in favor of the Contractor, Subcontractors, material suppliers, or other persons or entities making a claim by reason of having provided financing, labor, materials and equipment relating to the Work.

E.2.8 If Contractor disputes any determination by Owner with regard to any application for payment, Contractor nevertheless shall continue to expeditiously perform the Work. No payment made hereunder shall be or be construed to be final acceptance or approval of that portion of the Work to which such partial payment relates or shall relieve Contractor of any of its obligations hereunder.

E.3 PAYROLL CERTIFICATION REQUIREMENT

Owner's receipt of payroll certification pursuant to Section C.2 of the Contract shall be a condition precedent to Owner's obligation to pay any progress payments or final payment otherwise due.

E.4 DUAL PAYMENT SOURCES

Contractor shall not be compensated for Work performed under the Contract from any state agency other than the agency that is a party to the Contract.

E.5 RETAINAGE

E.5.1 Retainage shall be withheld and released in accordance with the requirements set forth in Local Contract Review Board Rules or the applicable County standard.

E.5.1.1 Owner may reserve as retainage from any progress payment an amount not to exceed five percent of the payment. As Work progresses, Owner may reduce the amount of retainage on or may eliminate retainage on any remaining monthly Contract payments after fifty (50) percent of the Work under the Contract is completed if, in the Owner's discretion, such Work is progressing satisfactorily. Elimination or reduction of retainage shall be allowed only upon written application by the Contractor, which application shall include written approval of Contractor's surety; except that when the Work is ninety-seven and a half percent (97.5%) completed in Owner's estimation, the Owner may, at its discretion and without application by the Contractor, reduce the retained amount to hundred (100) percent of the value of the Work remaining to be done. Upon receipt of written application by the Contractor, Owner shall respond in writing within a reasonable time.

E.5.1.2 If retainage is withheld, unless the Contractor requests and the Owner accepts a form of retainage described in options (a) or (b) below, the Owner (except as otherwise provided below for a contract of $500,000 or less), will deposit the retainage in an interest-bearing escrow account as required by ORS 279C.570(2). The Contractor shall execute such documentation and instructions respecting the interest-bearing escrow account as the Owner may require to protect its interests, including but not limited to a provision that no funds may be paid from the account to anyone without the Owner's advance written authorization. For a Contract over $500,000, if the Contractor requests that the Owner deposit the retainage in an interest-bearing account under ORS 279C.560(5), the Owner will use an interest-bearing escrow account as stated above. For a Contract of $500,000 or less, if the Contractor requests that the Owner deposit the retainage in an interest-bearing account under ORS 279C.560(5), the Owner will use an interest-bearing account (in a bank, savings bank, trust company or savings association) as provided under ORS 279C.450(5).

In accordance with the provisions of ORS 279C.560, Local Contract Review Board Rules, or the applicable County standard, unless the Owner finds in writing that accepting bonds, securities or other instruments described in option (a) below or a security bond described in option (b) below poses an extraordinary risk that is not typically associated with the bond, security or instrument, the Owner will approve the Contractor's written request:

a. to be paid amounts which would otherwise have been retained from progress payments where Contractor has deposited acceptable bonds, securities or other instruments of equal value with Owner or in a custodial account or other mutually-agreed account satisfactory to Owner, with an approved bank or trust company to be held in lieu of the cash retainage for the benefit of Owner. Interest or earnings on the bonds, securities or other instruments shall accrue to the Contractor. The Contractor shall execute and provide such documentation and instructions respecting the bonds, securities and other instruments as the Owner may require to protect its interests. To be permissible, the bonds, securities and other instruments must be of a character approved by Owner; or

b. that the Contractor be allowed, with the approval of the Owner, Owner allow Contractor to deposit a surety bond for the benefit of Owner, in a form acceptable to Owner, in lieu of all or a portion of funds retained, or to be retained. Such bond and any proceeds therefrom shall be made subject to all claims and liens in the manner and priority as set forth for retainage under ORS 279C.550 to ORS 279C.625.

When the Owner has accepted the Contractor's election of option (a) or (b), Owner may recover from Contractor any additional costs incurred through such election by reducing Contractor's final payment. Where the Owner has agreed to Contractor's request for option (b), Contractor shall accept like bonds from Subcontractors and suppliers on the Project from which Contractor has required retainages.

E. 5.1.3 The retainage held by Owner shall be included in and paid to the Contractor as part of the final payment of the Contract Price. The Owner shall pay to Contractor interest at the rate of two thirds of one percent per month on the final payment due Contractor, interest to commence forty-five (45) Days after the date which Owner receives Contractor's final approved application for payment and Work under the Contract has been completed and accepted and to run until the date when final payment is tendered to Contractor. The Contractor shall notify Owner in writing when the Contractor considers the Work complete and deliver to Owner its final application for payment and Owner shall, within fifteen (15) Days after receiving the written notice and the application for payment, either accept the Work or notify the Contractor of Work yet to be performed on the Contract. If Owner does not within the time allowed notify the Contractor of Work yet to be performed to fulfill contractual obligations, the interest provided by this subsection shall commence to run forty-five (45) Days after the end of the fifteen (15) Day period.

E.5.1.4 Owner will reduce the amount of the retainage if the Contractor notifies the Owner that the Contractor has deposited in an escrow account with a bank or trust company, in a manner authorized by the Owner, bonds and securities of equal value of a kind approved by the Owner and such bonds and securities have in fact been deposited.

E.5.1.5 Contractor agrees that if Contractor elects to reserve a retainage from any progress payment due to any Subcontractor or supplier, such retainage shall not exceed five percent of the payment, and such retainage withheld from Subcontractors and suppliers shall be subject to the same terms and conditions stated in Subsection E.5 as apply to Owner's retainage from any progress payment due to Contractor.

E.5.1.6 The Contractor shall comply with all applicable legal requirements for withholding and releasing retainage and for prompt payments, including but not limited to those in ORS Chapters 279C and 701, and 49 CFR 26.29.

E.6 FINAL PAYMENT

E.6.1 Upon completion of all the Work under the Contract, the Contractor shall notify the Owner, in writing, that Contractor has completed Contractor's obligations under the Contract and shall prepare its application requesting final payment. The amount of final payment will be the difference between the total amount due the Contractor pursuant to the Contract Documents and the sum of all payments previously made. Upon receipt of such notice and application for payment, the Owner will inspect the Work, and, if acceptable, submit to Contractor a recommendation as to acceptance of the completed Work and the final estimate of the amount due the Contractor. If the Work is not acceptable, Owner will notify Contractor within fifteen (15) Days of Contractor's request for final payment. Upon approval of this final application for payment by the Owner and compliance by the Contractor with

provisions in Section K, and Contractor's satisfaction of other provisions of the Contract Documents as may be applicable, the Owner shall pay to the Contractor all monies due under the provisions of these Contract Documents.

E.6.2 Neither final payment nor any remaining retained percentage shall become due until the Contractor submits to the Owner (1) a certificate evidencing that insurance required by the Contract Documents to remain in force after final payment is currently in effect and will not be canceled or allowed to expire until at least thirty (30) Days' prior written notice has been given to the Owner, (2) a written statement that the Contractor knows of no substantial reason that the insurance will not be renewable to cover the period required by the Contract Documents, (3) consent of surety, if any, to final payment and (4), if required by the Owner, other data establishing payment or satisfaction of obligations, such as receipts, releases and waivers of liens, claims, security interests or encumbrances arising out of the Contract, to the extent and in such form as may be designated by the Owner. If a Subcontractor refuses to furnish a release or waiver required by the Owner, the Contractor may furnish a bond satisfactory to the Owner to indemnify the Owner against such lien. If such lien remains unsatisfied after payments are made, the Contractor shall refund to the Owner all money that the Owner may be compelled to pay in discharging such lien.

E.6.3 Acceptance of final payment by the Contractor, a Subcontractor or material supplier shall constitute a waiver of claims by that payee except those previously made in writing and identified by that payee as unsettled at the time of final application for payment.

E.6.4 Contractor agrees to submit its final payment application within ninety (90) Days after Substantial Completion, unless written extension is granted by Owner. Contractor shall not delay final payment application for any reason, including without limitation nonpayment of Subcontractors, suppliers, manufacturers or others not a party to the Contract, or lack of resolution of a dispute with Owner or any other person of matters arising out of or relating to the Contract. If Contractor fails to submit its final payment application within ninety (90) Days after Substantial Completion, and Contractor has not obtained written extension by Owner, all requests or Claims for additional costs or an extension of Contract Time shall be barred.

SECTION F
PROJECT SITE CONDITIONS

F.1 USE OF PREMISES

Contractor shall confine equipment, storage of materials and operation of Work to the limits indicated by Contract Documents, Applicable Laws, permits or directions of the Owner. Contractor shall follow the Owner's instructions regarding use of premises, if any.

F.2 PROTECTION OF WORKERS, PROPERTY AND THE PUBLIC

F.2.1 Contractor shall maintain continuous and adequate protection of all of the Work from damage and shall protect the Owner, workers and property from injury or loss arising in connection with the Contract. Contractor shall remedy acceptably to the Owner any damage, injury, or loss, except such as may be directly due to errors in the Contract Documents or caused by authorized representatives or personnel of the Owner. Contractor shall adequately protect adjacent property as provided by law and the Contract Documents.

F.2.2 Contractor shall take all necessary precautions for the safety of all personnel on the Project Site or otherwise engaged in the undertaking of the Work and shall comply with the Contract Documents, best practices and all applicable provisions of federal, state and municipal safety laws and building codes to prevent accidents or injury to persons on, about or adjacent to the premises where the Work is being performed. Contractor shall erect and properly maintain at all times, as required by the conditions and progress of the Work, all necessary safeguards for protection of workers and the public against any hazards created by construction. Contractor shall designate a responsible employee or associate on the Project Site, whose duty shall be the prevention of accidents. The name and position of the person designated shall be reported to the Owner. The Owner has no responsibility for Project Site safety. Project Site safety shall be the responsibility of the Contractor.

F.2.3 Contractor shall not enter upon private property without first obtaining permission from the property owner or its duly authorized representative. Contractor shall be responsible for the preservation of all public and private property along and adjacent to the Work contemplated under the Contract and shall use every precaution necessary to prevent damage thereto. In the event the Contractor damages any property, the Contractor shall at once notify the property owner and make, or arrange to make, full restitution. Contractor shall, immediately and in writing, report to the Owner, all pertinent facts relating to such property damage and the ultimate disposition of the claim for damage.

F.2.4 Contractor shall be responsible for protection of adjacent work areas including impacts brought about by activities, equipment, labor, utilities, vehicles and materials on the Project Site.

F.2.5 Contractor shall at all times direct its activities in such a manner as to minimize adverse effects on the environment. Handling of all materials shall be conducted so no release will occur that may pollute or become hazardous.

F.2.6 In an emergency affecting the safety of life or limb or of the Work or of adjoining property, the Contractor, without special instruction or authorization from the Owner, shall act reasonably to prevent threatened loss or injury, and shall so act, without appeal, if instructed by the Owner. Any compensation claimed by the Contractor on account of emergency work shall be determined in accordance with section D.

F.2.7 Contractor shall comply with all Owner safety rules and regulations, if applicable. Prior to commencement of any Work, Contractor and Subcontractors shall be required to complete an Owner Contractor Safety Orientation and submit all Owner required safety plans.

F.2.8 Contractor shall demonstrate that an employee drug testing program is in place.

F.3 CUTTING AND PATCHING

F.3.1 If applicable, Contractor shall be responsible for coordinating all cutting, fitting, or patching of the Work to make its several parts come together properly and fit to receive or be received by work of other contractors or Subcontractors shown upon, or reasonably implied by, the Contract Documents.

F.3.2 If applicable, Contractor shall be responsible for restoring all cut, fitted, or patched surfaces to an original condition; provided, however, that if a different condition is specified in the Contract Documents, then Contractor shall be responsible for restoring such surfaces to the condition specified in the Contract Documents.

F.4 CLEANING UP

From time to time as may be prudent or ordered by the Owner and, in any event, immediately after completion of the Work, the Contractor shall, at its own expense, clean up and remove all refuse and unused materials of any kind resulting from the Work. If Contractor fails to do so within twenty-four (24) hours after notification by the Owner the work may be

done by others and the cost charged to the Contractor and deducted from payment due the Contractor.

F.5 ENVIRONMENTAL CONTAMINATION

F.5.1. Contractor shall be held responsible for and shall indemnify, defend (with counsel of Owner's choice), and hold harmless Owner from and against any costs, expenses, damages, claims, and causes of action, or any of them, resulting from all spills, releases, discharges, leaks and disposal of environmental pollution, including storage, transportation, and handling during the performance of the Work or Contractor's obligations under the Contract which occur as a result of, or are contributed by, the negligence or actions of Contractor or its personnel, agents, or Subcontractors or any failure to perform in accordance with the Contract Documents (except to the extent otherwise void under ORS 30.140). Nothing in this section F.5.1 shall limit Contractor's responsibility for obtaining insurance coverages required under Section G.3 of the Contract, and Contractor shall take no action that would void or impair such coverages.

F.5.1.1 Contractor agrees to promptly dispose of such spills, releases, discharge or leaks to the satisfaction of Owner and regulatory agencies having jurisdiction in a manner that complies with Applicable Laws. Cleanup shall be at no cost to the Owner and shall be performed by properly qualified and, if applicable, licensed personnel.

F.5.1.2 Unless otherwise approved in the Solicitation Document, Contractor shall obtain the Owner's written consent prior to bringing onto the Project Site any (i) environmental pollutants or (ii) hazardous substances or materials, as the same or reasonably similar terms are used in any Applicable Laws. In any event, Contractor shall provide prior written notice to Owner when hazardous materials are brought on to the Project Site. The Contractor, at all times, shall:

(a) properly handle, use and dispose of all environmental pollutants and hazardous substances or materials on the Project Site, in accordance with all Applicable Laws;

(b) be responsible for any and all spills, releases, discharges, or leaks of (or from) environmental pollutants or hazardous substances or materials which Contractor has brought onto the Project Site; and

(c) promptly clean up and remediate, without cost to the Owner, such spills, releases, discharges, or leaks to the Owner's satisfaction and in compliance with all Applicable Laws.

F.5.2 Contractor shall report all reportable quantity releases, as such releases are defined in Applicable Laws. Upon discovery, regardless of quantity, Contractor must verbally report all releases to the Owner in a prompt manner. A written follow-up report shall be submitted to Owner within 48 hours of the telephonic report. Such written report shall contain, as a minimum:

(a) Description of items released (identity, quantity, manifest numbers, and any and all other documentation required by law).

(b) Whether amount of items released is EPA/DEQ reportable, and, if so, when reported.

(c) Exact time and location of release, including a description of the area involved.

(d) Containment procedures initiated.

(e) Summary of communications about the release between Contractor and State, local or federal officials other than Owner. Any communication to the press will be done by Owner and Contractor will defer to Owner.

(f) Description of cleanup procedures employed or to be employed at the Project Site, including disposal location of spill residue.

(g) Personal injuries, if any, resulting from, or aggravated by, the release.

F.6 ENVIRONMENTAL CLEAN-UP

F.6.1 Unless disposition of environmental pollution is specifically a part of the Contract, or was caused by the Contractor (reference F.5 Environmental Contamination), Contractor shall immediately notify Owner of any hazardous substance(s) which Contractor discovers or encounters during performance of the Work required by the Contract. "Hazardous substance(s)" means any hazardous, toxic and radioactive materials and those substances defined as "hazardous substances," "hazardous materials," "hazardous wastes," "toxic substances," or other similar designations in any federal, state, or local law, regulation, or ordinance, including without limitation asbestos, polychlorinated biphenyl ("PCB"), or petroleum, and any substances, materials or wastes regulated by 40 CFR, Part 261 and defined as hazardous in 40 CFR S 261.3. In addition to notifying Owner of any hazardous substance(s) discovered or encountered, Contractor shall immediately cease working in any particular area of the Project where a hazardous substance(s) has been discovered or encountered if continued work in such area would present a risk or danger to the health or wellbeing of Contractor's or any Subcontractor's work force, property or the environment.

F.6.2 Upon being notified by Contractor of the presence of hazardous substance(s) on the Project Site, not brought on to the Project Site by Contactor, Owner shall arrange for the proper disposition of such hazardous substance(s).

F.7 DEMOLITION

F.7.1 For demolition tasks, if any, the Contractor shall salvage or recycle construction and demolition debris, if feasible and cost-effective.

SECTION G
INDEMNITY, BONDING, AND INSURANCE

G.1 RESPONSIBILITY FOR DAMAGES / INDEMNITY

G.1.1 Contractor shall be responsible for all damage to property, injury to persons, and loss, expense, inconvenience, and delay that may be caused by, or result from, the carrying out of the Work to be done under the Contract, or from any act, omission or neglect of the Contractor, its Subcontractors, employees, guests, visitors, invitees and agents.

G.1.2 To the fullest extent permitted by law, Contractor shall indemnify, defend (with counsel approved by Owner) and hold harmless the Owner and its elected officials, officers, directors, agents, and employees (collectively "Indemnitees") from and against all liabilities, damages, losses, claims, expenses, demands and actions of any nature whatsoever which arise out of, result from or are related to: (a) any damage, injury, loss, expense, inconvenience or delay described in this Section G.1; (b) any accident or occurrence which happens or is alleged to have happened in or about the Project Site or any place where the Work is being performed, or in the vicinity of either, at any time prior to the time the Work is fully completed in all respects; (c) any failure of the Contractor to

observe or perform any duty or obligation under the Contract Documents which is to be observed or performed by the Contractor, or any breach of any agreement, representation or warranty of the Contractor contained in the Contract Documents or in any subcontract; (d) the negligent acts or omissions of the Contractor, a Subcontractor or anyone directly or indirectly employed by them or any one of them or anyone for whose acts they may be liable, regardless of whether or not such claim, damage, loss or expense is caused in part by a party indemnified hereunder (except to the extent otherwise void under ORS 30.140); and (e) any lien filed upon the Project or bond claim in connection with the Work. Such obligation shall not be construed to negate, abridge, or reduce other rights or obligations of indemnity which would otherwise exist as to a party or person described in this Section G.1.2.

G.1.3 In claims against any person or entity indemnified under Section G.1.2 by an employee of the Contractor, a Subcontractor, anyone directly or indirectly employed by them or anyone for whose acts they may be liable, the indemnification obligation under Section G.1.2 shall not be limited on amount or type of damages, compensation or benefits payable by or for the Contractor or a Subcontractor under workers' compensation acts, disability benefit acts or other employee benefit acts.

G.2 PERFORMANCE AND PAYMENT SECURITY; PUBLIC WORKS BOND

G.2.1 When the Contract Price is $50,000 or more, the Contractor shall furnish and maintain in effect at all times during the Contract Period a performance bond in a sum equal to the Contract Price and a separate payment bond also in a sum equal to the Contract Price. Contractor shall furnish such bonds even if the Contract Price is less than the above thresholds if otherwise required by the Contract Documents.

G.2.2 Bond forms furnished by the Owner and notarized by Contractor's surety company authorized to do business in Oregon are the only acceptable forms of performance and payment security, unless otherwise specified in the Contract Documents.

G.2.3 Before execution of the Contract, the Contractor shall file with the Construction Contractors Board, and maintain in full force and effect, the separate public works bond required by Oregon Revised Statutes, Chapter 279C.830 and 279C.836, unless otherwise exempt under those provisions. The Contractor shall also include in every subcontract a provision requiring the Subcontractor to have a public works bond filed with the Construction Contractors Board before starting Work, unless otherwise exempt, and shall verify that the Subcontractor has filed a public works bond before permitting any Subcontractor to start Work.

G.3 INSURANCE

G.3.1 Primary Coverage: Insurance carried by Contractor under the Contract shall be the primary coverage. The coverages indicated are minimums unless otherwise specified in the Contract Documents.

G.3.2 Workers' Compensation: All employers, including Contractor, that employ subject workers who work under the Contract in the State of Oregon shall comply with ORS 656.017 and provide the required Workers' Compensation coverage, unless such employers are exempt under ORS 656.126. This shall include Employer's Liability Insurance with coverage limits of not less than the minimum amount required by statute for each accident. Contractors who perform the Work without the assistance or labor of any employee need not obtain such coverage if the Contractor certifies so in writing. Contractor shall ensure that each of its Subcontractors complies with these requirements. The Contractor shall require proof of such Workers' Compensation coverage by receiving and keeping on file a certificate of insurance from each Subcontractor or anyone else directly employed by either the Contractor or its Subcontractors.

G.3.3 Builder's Risk Insurance:

G.3.3.1 Builder's Risk: During the term of the Contract, for new construction the Contractor shall obtain and keep in effect Builder's Risk insurance on an all risk forms, including earthquake and flood, for an amount equal to the full amount of the Contract, plus any changes in values due to modifications, Change Orders and loss of materials added. Such Builder's Risk shall include, in addition to earthquake and flood, theft, vandalism, mischief, collapse, transit, debris removal, and architect's fees "soft costs" associated with delay of Project due to insured peril. Any deductible shall not exceed $50,000 for each loss, except the earthquake and flood deductible which shall not exceed 2 percent of each loss or $50,000, whichever is greater. The deductible shall be paid by Contractor. The policy will include as loss payees Owner, the Contractor and its Subcontractors as their interests may appear.

G.3.3.2 Builder's Risk Installation Floater: For Work other than new construction, Contractor shall obtain and keep in effect during the term of the Contract, a Builder's Risk Installation Floater for coverage of the Contractor's labor, materials and equipment to be used for completion of the Work performed under the Contract. The minimum amount of coverage to be carried shall be equal to the full amount of the Contract. The policy will include as loss payees Owner, the Contractor and its Subcontractors as their interests may appear. Owner may waive this requirement at its sole and absolute discretion.

G.3.3.3 Such insurance shall be maintained until Owner has occupied the facility.

G.3.3.4 A loss insured under the Builder's Risk insurance shall be adjusted by the Owner and made payable to the Owner as loss payee. The Contractor shall pay Subcontractors their just shares of insurance proceeds received by the Contractor, and by appropriate agreements, written where legally required for validity, shall require Subcontractors to make payments to their Sub-subcontractors in similar manner. The Owner shall have power to adjust and settle a loss with insurers.

G.3.4 General Liability Insurance:

G.3.4.1 Commercial General Liability: Upon execution of a Contract, Contractor shall obtain, and keep in effect at Contractor's expense for the term of the Contract, Commercial General Liability Insurance ("CGL") covering bodily injury and property damage in the amount of not less than $1,000,000 per claim and $2,000,000 per occurrence in a form satisfactory to Owner. This insurance shall include personal injury liability, products and completed operations, and contractual liability coverage for the indemnities provided under the Contract (to the extent contractual liability coverage for the indemnity is available in the marketplace), and shall be issued on an occurrence basis written on ISO Form GC 00 01 (12 04 or later) or an equivalent form approved in advance by Owner. The CGL shall provide separation of insured language. The policy or policies obtained by Contractor for purposes of fulfilling the requirements of this section shall be primary insurance with respect to the Owner. Any insurance or self-insurance maintained by the County shall be excess and shall not contribute to it.

G.3.4.2 Automobile Liability: Contractor shall obtain, at Contractor's expense, and keep in effect during the term of the Contract, Automobile Liability Insurance covering owned, and/or hired vehicles, as applicable. The coverage may be written in combination with the Commercial General Liability Insurance. Contractor shall provide proof of insurance of not less than $1,000,000 per claim and $2,000,000 per occurrence. Contractor

and its Subcontractors shall be responsible for ensuring that all non-owned vehicles maintain adequate Automobile Liability insurance while on Project Site.

G.3.4.3 Owner may adjust the insurance amounts required in Section G.3.4.1 and G.3.4.2 based upon institution specific risk assessments through the issuance of Supplemental General Conditions and a Contract.

G.3.4.4 To the extent that the Contract Documents require the Contractor to provide professional design services, design-build, or certifications related to systems, materials, or equipment, the Contractor shall (1) purchase and maintain professional liability/errors-and-omissions insurance with limits of not less than $1,000,000 for each claim and $2,000,000 general annual aggregate and (2) cause those Subcontractors (of any tier) who are providing professional design services including any design-build services to procure and maintain professional liability/errors-and-omissions insurance with limits of not less than $1,000,000 for each claim and $2,000,000 general annual aggregate. This policy shall be for the protection of the Owner, its elected officials, officers, agents and employees against liability for damages because of personal injury, bodily injury, death, or damage to property, including loss of use thereof, and damages because of negligent acts, errors and omissions in any way related to the Contract. The Owner, at its option, may require a complete copy of the above policy.

G.3.4.5 "Tail" Coverage: If any of the required liability insurance is arranged on a "claims made" basis, "tail" coverage will be required at the completion of the Contract for a duration of 36 months or the maximum time period available in the marketplace if less than 36 months. Contractor shall furnish certification of "tail" coverage as described or continuous "claims made" liability coverage for 36 months following Final Completion. Continuous "claims made" coverage will be acceptable in lieu of "tail" coverage, provided its retroactive date is on or before the effective date of the Contract. Owner's receipt of the policy endorsement evidencing such coverage shall be a condition precedent to Owner's obligation to make final payment and to Owner's final acceptance of Work or services and related warranty (if any).

G.3.4.6 Umbrella Liability (if required by Owner through issuance of Supplemental General Conditions): Contractor shall obtain, at Contractor's expense, and keep in effect during the term of the Contract, Umbrella liability Insurance over and above the general liability, automobile liability and workers' compensation coverage if required by Owner in specified limits at time of requirement.

G.3.4.7 Pollution Liability may be required by Owner through issuance of Supplemental General Conditions.

G.3.5 Additional Insured: The general liability insurance coverage, automobile liability, umbrella, and pollution liability if required, shall include the Owner as additional insureds but only with respect to the Contractor's activities to be performed under the Contract. The additional-insured endorsement for CGL insurance must be written on ISO Form CG 20 10 (10 01) and CG 20 37 (10 01), or their equivalent, but shall not use either of the following forms: CG 20 10 (10 93) or CG 20 10 (03 94). Proof of insurance must include a copy of the endorsement showing "Clackamas County, its elected officials, agents, officers, and employees" as scheduled insureds.

If Contractor cannot obtain an insurer to name the Owner as additional insureds, Contractor shall obtain at Contractor's expense, and keep in effect during the term of the Contract, Owners and Contractors Protective Liability Insurance, naming the Owner as additional insureds with not less than a $2,000,000 limit per occurrence. This policy must be kept in effect for 36 months following Final Completion. As evidence of coverage, Contractor shall furnish the actual policy to Owner prior to execution of the Contract.

G.3.6 Notice of Cancellation or Change: If the Contractor receives a non-renewal or cancellation notice from an insurance carrier affording coverage required herein, or receives notice that coverage no longer complies with the insurance requirements herein, Contractor agrees to notify Owner by fax within five (5) business days with a copy of the non-renewal or cancellation notice, or written specifics as to which coverage is no longer in compliance. When notified by Owner, the Contractor agrees to stop Work pursuant to the Contract at Contractor's expense, unless all required insurance remain in effect. Any failure to comply with the reporting provisions of this insurance, except for the potential exhaustion of aggregate limits, shall not affect the coverages provided to the Owner and its institutions, divisions, officers, and employees.

Owner shall have the right, but not the obligation, of prohibiting Contractor from entering the Project Site until a new certificate(s) of insurance is provided to Owner evidencing the replacement coverage. The Contractor agrees that Owner reserves the right to withhold payment to Contractor until evidence of reinstated or replacement coverage is provided to Owner.

G.3.7 Certificate(s) of Insurance/Insurance Carrier Qualification: As evidence of the insurance coverage required by the Contract, the Contractor shall furnish certificate(s) of insurance to the Owner prior to execution of the Contract. The certificate(s) will specify all of the parties who are additional insureds or loss payees for the Contract. A renewal certificate shall be sent to Owner at least 10 days prior to coverage expiration. Insurance coverage required under the Contract shall be obtained from insurance companies or entities acceptable to the Owner and that are eligible to provide such insurance under Oregon law. Eligible insurers include admitted insurers that have been issued a certificate of authority from the Oregon Department of Consumer and Business Services authorizing them to conduct an insurance business and issue policies of insurance in the state of Oregon, and certain non-admitted surplus lines insurers that satisfy the requirements of applicable Oregon law and which are subject to approval by the Owner. The Contractor shall be financially responsible for all deductibles, self-insured retentions and/or self-insurance included hereunder. Any deductible, self-insured retention and/or self-insurance in excess of $50,000 shall be subject to approval by the Owner in writing and shall be a condition precedent to the effectiveness of any Contract.

SECTION H
SCHEDULE OF WORK

H.1 CONTRACT PERIOD

H.1.1 Time is of the essence. The Contractor shall at all times carry on the Work diligently, without delay and punctually fulfill all requirements herein.

H.1.2 Notice to Proceed. Unless otherwise directed in the Contract Documents, Contractor shall commence Work on the Project Site within fifteen (15) Days of the Notice to Proceed. Notwithstanding the Notice to Proceed, Contractor shall not be authorized to proceed with the Work until all initial Contract requirements, including the Contract, performance bond and payment bond, and certificates of insurance, have been fully executed and submitted in a form acceptable to Owner.

H.1.3 Unless otherwise not required in the Construction Documents, Contractor shall participate in a pre-construction conference with the Owner's representative and designated design team. The

purpose of this pre-construction conference is to review the Contractor's proposed Schedule of Values and to review any other Project logistics to be coordinated between the parties.

H.1.4 Unless specifically extended by a Change Order, all Work shall be complete by the date contained in the Contract Documents. The Owner shall have the right to accelerate the completion date of the Work, which may require the use of overtime. Such accelerated Work schedule shall be an acceleration in performance of Work under Section D.1.2(f) and shall be subject to the provisions of Section D.1.

H.1.5 The Owner shall not waive any rights under the Contract by permitting the Contractor to continue or complete in whole or in part the Work after the date described in Section H.1.2 above.

H.2 SCHEDULE

H.2.1 Contractor shall provide, by or before the pre-construction conference, the initial as-planned schedule for review and acceptance by the Owner. The submitted schedule must illustrate Work by Project components, labor trades, and long lead items broken down by building and/or floor where applicable. If Owner shall so elect, Contractor shall provide the schedule in CPM format showing the graphical network of planned activities, including i) a reasonably detailed list of all activities required to complete the Work; ii) the time and duration that each activity will take to completion; and iii) the dependencies between the activities. Schedules lacking adequate detail, or unreasonably detailed, will be rejected. The schedule shall include the following: Notice to Proceed or the date the Work commences, if no Notice to Proceed is issued by Owner, Substantial Completion, and Final Completion. Schedules shall be updated monthly, unless otherwise required by the Contract Documents, and submitted with the monthly application for payment. Acceptance of the Schedule by the Owner does not constitute agreement by the Owner as to the Contractor's sequencing, means, methods, or durations. Any positive difference between the Contractor's scheduled completion and the Contract completion date is float owned by the Owner. Owner reserves the right to negotiate the float if it is deemed to be in Owner's best interest to do so. In no case shall the Contractor make a claim for delays if the Work is completed within the Contract Time but after Contractor's scheduled completion.

H.2.2 All Work shall be completed during normal weekdays (Monday through Friday) between the hours of 7:00 a.m. and 5:00 p.m. unless otherwise specified in the Contract Documents. Unless otherwise specified in the Contract Documents, no Work shall be performed during the following holidays:

- New Year's Day
- Martin Luther King Day
- Memorial Day
- Independence Day
- Labor Day
- Veterans Day
- Thanksgiving Day
- Christmas Day
- President's Day

When a holiday falls on a Sunday, the following Monday shall be recognized as a legal holiday. When a holiday falls on Saturday, the preceding Friday shall be recognized as a legal holiday.

H.3 PARTIAL OCCUPANCY OR USE

The Owner may occupy or use any completed or partially completed portion of the Work at any stage, provided such occupancy or use is consented to by public authorities having jurisdiction over the Work. Such partial occupancy or use may commence whether or not the portion is substantially complete, provided the Owner and Contractor have reasonably accepted in writing the responsibilities assigned to each of them. Approval by the Contractor to partial occupancy or use shall not be unreasonably withheld. Immediately prior to such partial occupancy or use, the Owner and Contractor shall jointly inspect the area to be occupied or portion of the Work to be used in order to determine and record the condition of the Work. Partial occupancy or use of a portion or portions of the Work shall not constitute acceptance of Work not complying with the requirements of the Contract Documents.

SECTION I
CORRECTION OF WORK

I.1 CORRECTION OF WORK BEFORE FINAL PAYMENT

The Contractor warrants to the Owner that materials and equipment furnished under the Contract will be of good quality and new unless otherwise required or permitted by the Contract Documents, that the Work will be free from defects, and that the Work will conform to the requirements of the Contract Documents. Work failing to conform to these requirements shall be deemed defective. Contractor shall promptly remove from the premises and replace all defective materials and equipment as determined by the Owner, whether incorporated in the Work or not. Removal and replacement shall be without loss or expense to the Owner, and Contractor shall bear the cost of repairing all Work destroyed or damaged by such removal or replacement. Contractor shall be allowed a period of no longer than thirty (30) Days after Substantial Completion for completion of defective (Punch List) work. At the end of the thirty-day period, or earlier if requested by the Contractor, Owner shall arrange for inspection of the Work by the Architect/Engineer. Should the work not be complete, and all corrections made, the costs for all subsequent reinspections shall be borne by the Contractor. If Contractor fails to complete the Punch List work within the thirty (30) Day period, Owner may perform such work and Contractor shall reimburse Owner all costs of the same within ten (10) Days after demand without affecting Contractor's obligations.

I.2 WARRANTY WORK

I.2.1 Neither the final certificate of payment nor any provision of the Contract Documents shall relieve the Contractor from responsibility for Defective Work and, unless a longer period is specified, Contractor shall correct all defects that appear in the Work within a period of one year from the date of issuance of the written notice of Substantial Completion by the Owner except for latent defects which will be remedied by the Contractor at any time they become apparent. The Owner shall give Contractor notice of defects with reasonable promptness. Contractor shall perform such warranty work within a reasonable time after Owner's demand and at Contractors sole expense. If Contractor fails to complete the warranty work within such period as Owner determines reasonable, or at any time in the event of warranty work consisting of emergency repairs, Owner may perform such work and Contractor shall reimburse Owner all costs of the same within ten (10) Days after demand, without affecting Contractor's obligations. The Contractor shall perform the warranty Work by correcting defects within twenty-four (24) hours of notification by Owner, unless otherwise specified in the Contract Documents. Should the Contractor fail to respond within the specified response time, the Owner may, at its option, complete the necessary repairs using another contractor or its agents. If Owner completes the repairs using Owner's agent, Contractor shall pay Owner at the rate of one and one-half (1½) times the standard hourly rate of Owner's agent, plus related overhead and any direct non-salary costs. If Owner completes the repairs using another contractor, Contractor shall pay Owner the amount of Owner's direct costs billed by the other contractor for the work, plus the direct salary costs and related overhead and direct non-salary expenses of Owner's agents who

are required to monitor that contractor's work. Work performed by Owner using Owner's own agents or those of another contractor shall not affect the Contractor's contractual duties under these provisions, including warranty provisions.

I.2.2 Nothing in this Section I.2 provision shall negate guarantees or warranties for periods longer than one year including without limitation, such guarantees or warranties required by other sections of the Contract Documents for specific installations, materials, processes, equipment or fixtures.

I.2.3 In addition to Contractor's warranty, manufacturer's warranties shall pass to the Owner and shall not take effect until such portion of the Work covered by the applicable warranty has been accepted in writing by the Owner.

I.2.4 The one-year period for correction of Work shall be extended with respect to portions of Work performed after Substantial Completion by the period of time between Substantial Completion and the actual performance of the Work, and shall be extended by corrective Work performed by the Contractor pursuant to this Section, as to the Work corrected. The Contractor shall remove from the Project Site portions of the Work which are not in accordance with the requirements of the Contract Documents and are neither corrected by the Contractor nor accepted by the Owner.

I.2.5 Nothing contained in this Section I.2 shall be construed to establish a period of limitation with respect to other obligations which the Contractor might have under the Contract Documents. Establishment of the period for correction of Work as described in this Section I.2 relates only to the specific obligation of the Contractor to correct the Work, and has no relationship to the time within which the obligation to comply with the Contract Documents may be sought to be enforced, nor to the time within which proceedings may be commenced to establish the Contractor's liability with respect to the Contractor's obligations other than specifically to correct the Work.

I.2.6 If the Owner prefers to accept Work which is not in accordance with the requirements of the Contract Documents, the Owner may do so instead of requiring its removal and correction, in which case the Contract Price will be reduced as appropriate and equitable as determined by Owner. Such adjustment shall be effected whether or not final payment has been made.

SECTION J
SUSPENSION AND/OR TERMINATION OF THE WORK

J.1 OWNER'S RIGHT TO SUSPEND THE WORK

J.1.1 The Owner has the authority to suspend portions or all of the Work due to the following causes:

(a) Failure of the Contractor to correct unsafe conditions;

(b) Failure of the Contractor to carry out any provision of the Contract;

(c) Failure of the Contractor to carry out orders;

(d) Conditions, in the opinion of the Owner, which are unsuitable for performing the Work;

(e) Time required to investigate differing Project Site conditions; or

(f) Any reason considered to be in the public interest.

J.1.2 The Owner shall notify Contractor and the Contractor's Surety in writing of the effective date and time of the suspension, and Owner shall notify Contractor and Contractor's surety in writing to resume Work.

J.2 CONTRACTOR'S RESPONSIBILITIES

J.2.1 During the period of the suspension, Contractor is responsible to continue maintenance at the Project just as if the Work were in progress. This includes, but is not limited to, protection of completed Work, maintenance of access, protection of stored materials, temporary facilities, and clean-up.

J.2.2 When the Work is recommenced after the suspension, the Contractor shall replace or renew any Work damaged during the suspension, remove any materials or facilities used as part of temporary maintenance, and complete the Work in every respect as though its prosecution had been continuous and without suspension.

J.3 COMPENSATION FOR SUSPENSION

Depending on the reason for suspension of the Work, the Contractor or the Owner may be due compensation by the other party. If the suspension was required due to acts or omissions of Contractor, the Owner may assess the Contractor actual costs of the suspension in terms of administration, remedial work by the Owner's agents or another contractor to correct the problem associated with the suspension, rent of temporary facilities, and other actual costs related to the suspension, and any liquidated damages arising from the delay. If the suspension was caused by acts or omissions of the Owner, the Contractor may be due compensation which shall be defined using Section D, Changes in Work. If the suspension was required through no fault of the Contractor or the Owner, neither party shall owe the other for the impact.

J.4 OWNER'S RIGHT TO TERMINATE CONTRACT

J.4.1 The Owner may, without prejudice to any other right or remedy, and after giving Contractor seven (7) Days' written notice and an opportunity to cure, terminate the Contract in whole or in part under the following conditions:

(a) If Contractor should, voluntarily or involuntarily, seek protection under the United States Bankruptcy Code and Contractor as debtor-in-possession or the Trustee for the estate fails to assume the Contract within a reasonable time;

(b) If Contractor should make a general assignment for the benefit of Contractor's creditors;

(c) If a receiver should be appointed on account of Contractor's insolvency;

(d) If Contractor should repeatedly refuse or fail to supply an adequate number of skilled workers or proper materials to carry on the Work as required by the Contract Documents, or otherwise fail to perform the Work in a timely manner;

(e) If Contractor should repeatedly fail to make prompt payment to Subcontractors or for material or labor, or should disregard laws, ordinances or the instructions of the Owner;

(f) If Contractor is otherwise in breach of any part of the Contract; or

(g) If Contractor is in violation of Applicable Laws, either in the conduct of its business or in its performance of the Work.

J.4.2 At any time that any of the above occurs, Owner may exercise all rights and remedies available to Owner at law or in equity, and, in addition, Owner may take possession of the premises and of all materials and appliances and finish the Work by whatever method it may deem expedient. In such case, the Contractor shall not be entitled to receive further payment until the Work is completed. If

the Owner's cost of finishing the Work exceeds the unpaid balance of the Contract Price, Contractor shall pay the difference to the Owner.

J.5 TERMINATION FOR CONVENIENCE, NON-APPROPRIATION OF FUNDS, OR FORCE MAJEURE

J.5.1 Owner may terminate the Contract in whole or in part whenever Owner determines: (a) that termination of the Contract is in the best interest of Owner or the public; (b) that the Owner failed to receive funding, appropriations, allocations or other expenditure authority as contemplated by Owner's budget and Owner determines, in its sole determination, and its assessment and ranking of the policy objectives explicit or implicit in Owner's budget, Owner may determine it is necessary to and may terminate the Contract.; or (c) in the event of Force Majeure.

J.5.2 The Owner shall provide the Contractor with seven (7) Days prior written notice of a termination for Owner's or for public convenience. After such notice, the Contractor shall provide the Owner with immediate and peaceful possession of the premises and materials located on and off the premises for which the Contractor received progress payment under Section E. Compensation for Work terminated by the Owner under this provision will be according to Section E. In no circumstance shall Contractor be entitled to lost profits for Work not performed due to termination. If the Contract is terminated for public convenience, neither the Contractor not its Surety shall be relieved of liability for damages or losses suffered by the Owner as a result of defective, unacceptable or unauthorized Work completed or performed.

J.6 ACTION UPON TERMINATION

J.6.1 Upon receiving a notice of termination, and except as directed otherwise by the Owner, Contractor shall immediately cease placing further subcontracts or orders for materials, services, or facilities. In addition, Contractor shall terminate all subcontracts or orders to the extent they relate to the Work terminated and, with the prior written approval of the Owner, settle all outstanding liabilities and termination settlement proposals arising from the termination of subcontracts and orders.

J.6.2 As directed by the Owner, Contractor shall, upon termination, transfer title and deliver to the Owner all Record Documents, information, and other property that, if the Contract had been completed, would have been required to be furnished to the Owner.

J.6.3 Upon Owner's notice of termination pursuant to either Section J.4 or J.5, if Owner shall so elect, Contractor shall assign to the Owner such subcontracts and orders as Owner shall specify. In the event Owner elects to take assignment of any such subcontract or order, Contractor shall take such action and shall execute such documents as Owner shall reasonably require for the effectiveness of such assignment and Contractor shall ensure that no contractual arrangement between it and its subcontractors or suppliers of any tier or sub-tier shall prevent such assignment.

SECTION K
CONTRACT CLOSE OUT

K.1 RECORD DOCUMENTS

As a condition of final payment (refer also to section E.6), Contractor shall comply with the following: Contractor shall provide Record Documents for the entire Project to Owner. Record Documents shall depict the Project as constructed and shall reflect each and every change, modification, and deletion made during the construction. Record Documents are part of the Work and shall be provided prior to the Owner's issuance of final payment. Record Documents include all modifications to the Contract Documents unless otherwise directed.

K.2 OPERATION AND MAINTENANCE MANUALS

As part of the Work, Contractor shall submit two completed operation and maintenance manuals ("O & M Manuals") for review by the Owner prior to submission of any pay request for more than 75% of the Work. Owner's receipt of the O & M Manuals shall be a condition precedent to any payment thereafter due. The O & M Manuals shall contain a complete set of all submittals, all product data as required by the specifications, training information, telephone list and contact information for all consultants, manufacturers, installer and suppliers, manufacturer's printed data, record and shop drawings, schematic diagrams of systems, appropriate equipment indices, warranties and bonds. The Owner shall review and return one O & M Manual for any modifications or adjustments required. Prior to submission of its final pay request, Contractor shall deliver two (2) complete and approved sets of O & M Manuals in paper form and one (1) complete and approved set in electronic form to the Owner and Owner's receipt of the O & M Manuals shall be a condition precedent to Owner's obligation to make final payment.

K.3 COMPLETION NOTICES

K.3.1 Contractor shall provide Owner written notice of both Substantial and Final Completion. The certificate of Substantial Completion shall state the date of Substantial Completion, the responsibilities of the Owner and Contractor for security, maintenance, heat, utilities, damage to the Work and insurance, and the time within which the Contractor shall finish all items on the Punch List accompanying the Certificate. Both completion notices must be signed and notarized by the Contractor and signed by the Architect/Engineer (if applicable) and Owner to be valid. The Owner shall provide the final signature on the notices. The notices shall take effect on the date they are signed by the Owner.

K.3.2 Substantial Completion of a facility with operating systems (e.g., mechanical, electrical, HVAC) shall be that degree of completion that has provided a minimum of thirty (30) continuous Days of successful, trouble-free operation, which period shall begin after all performance and acceptance testing has been successfully demonstrated to the Owner. All equipment contained in the Work, plus all other components necessary to enable the Owner to operate the facility in the manner that was intended, shall be complete on the Substantial Completion date. The Contractor may request that a Punch List be prepared by the Owner with submission of the request for the Substantial Completion notice.

K.4 TRAINING

As part of the Work, and prior to submission of the final application for payment, the Contractor shall schedule with the Owner training sessions for all equipment and systems as required by the Contract Documents. Contractor shall schedule training sessions at least two weeks in advance of the date of training to allow Owner to provide its personnel with adequate notice. If assignments arise because of termination under Section J.4, then such assignments shall not relieve Contractor of liability hereunder. The O & M Manual shall be used as a basis for training. In addition to any off-Project Site training required by the Contract Documents, training shall include a formal session conducted at the Project Site after the equipment and/or system is completely installed and operational in its normal operating environment.

K.5 EXTRA MATERIALS

As part of the Work, Contractor shall provide spare parts, extra maintenance materials, and other materials or products in the quantities specified in the Contract Documents prior to final payment. Delivery point for extra materials shall be designated by the Owner.

K.6 ENVIRONMENTAL CLEAN-UP

As part of the Final Completion notice, or as a separate written notice submitted with or before the notice of Final Completion, the Contractor shall notify the Owner that all environmental and pollution clean-up, remediation and closure have been completed in accordance with all Applicable Laws and pursuant to the authority of all agencies having jurisdiction, and Contractor shall provide Owner with any and all documentation related to the same, including but not limited to directives, orders, letters, certificates and permits related to or arising from such environmental pollution. The notice shall reaffirm the indemnification given under Section F.5.1 above. Contractor's completion of its obligations under this Section K.6 and Owner's receipt of documents evidencing such completion shall be a condition precedent to Owner's obligation to make final payment.

K.7 CERTIFICATE OF OCCUPANCY

Owner's receipt of an unconditioned certificate of occupancy from the appropriate state and/or local building officials shall be a condition precedent to Owner's obligation to make final payment, except to the extent failure to obtain an unconditional certificate of occupancy is due to the fault or neglect of Owner.

K.8 OTHER CONTRACTOR RESPONSIBILITIES

The Contractor shall be responsible for returning to the Owner all property of Owner issued to Contractor during construction such as keys, security passes, Project Site admittance badges, and all other pertinent items. Upon notice from Owner, Contractor shall be responsible for notifying the appropriate utility companies to transfer utility charges from the Contractor to the Owner. The utility transfer date shall not be before Substantial Completion and may not be until Final Completion, if the Owner does not take beneficial use of the facility and the Contractor's agents continue with the Work.

The Owner's property is drug free and weapons free areas and the use of tobacco products is only allowed in designated areas. Contractor shall be required to ensure that its employees, Subcontractors and agents shall comply with these requirements.

SECTION L
GENERAL PROVISIONS

L.1 NO THIRD PARTY BENEFICIARIES

Owner and Contractor are the only parties to the Contract and are the only parties entitled to enforce its terms. Nothing in the Contract gives, is intended to give, or shall be construed to give or provide any benefit or right, whether directly, indirectly, or otherwise, to third persons unless such third persons are individually identified by name herein and expressly described as intended beneficiaries of the terms of the Contract.

L.2 SEVERABILITY

If any provision of the Contract is declared by a court to be unenforceable, illegal, or in conflict with any law, the validity of the remaining terms and provisions shall not be affected and the rights and obligations of the parties shall be construed and enforced as if the Contract did not contain the particular provision held to be invalid.

L.3 ACCESS TO RECORDS

L.3.1 Contractor shall keep, at all times on the Project Site, one record copy of the complete Contract Documents, including the Plans, Specifications, addenda, and Change Orders (if any) in good order and marked currently to record field changes and selections made during construction, and one record copy of Shop Drawings, Product Data, Samples and similar submittals, and shall at all times give the Owner access thereto.

L.3.2 Contractor shall retain and the Owner and its duly authorized representatives shall have access, for a period not less than ten (10) years, to all Record Documents, financial and accounting records, and other books, documents, papers and records of Contractor which are pertinent to the Contract, including records pertaining to Overhead and indirect costs, for the purpose of making audit, examination, excerpts and transcripts. If for any reason, any part of the Work or the Contract shall be subject to litigation, Contractor shall retain all such records until all litigation is resolved and Contractor shall continue to provide Owner and/or its agents with full access to such records until such time as all litigation is complete and all periods for appeal have expired and full and final satisfaction of any judgment, order or decree is recorded and Owner receives a record copy of documentation from Contractor.

L.4 WAIVER

Failure of the Owner to enforce any provision of the Contract shall not constitute a waiver or relinquishment by the Owner of the right to such performance in the future nor of the right to enforce any other provision of the Contract.

L.5 SUCCESSORS IN INTEREST

The provisions of the Contract shall be binding upon and shall accrue to the benefit of the parties to the Contract and their respective permitted successors and assigns.

L.6 GOVERNING LAW

The Contract shall be governed by and construed in accordance with the laws of the State of Oregon without giving effect to the conflict of law provisions thereof.

L.7 APPLICABLE LAW

Contractor hereto agrees to comply in all ways with applicable local, state and federal ordinances, statutes, laws and regulations.

L.8 NON-EXCLUSIVE RIGHTS AND REMEDIES

Except as otherwise expressly provided herein, the rights and remedies expressly afforded under the provisions of the Contract shall not be deemed exclusive, and shall be in addition to and cumulative with any and all rights and remedies otherwise available at law or in equity. The exercise by either Party of any one or more of such remedies shall not preclude the exercise by it, at the same or different times, of any other remedies for the same default or breach, or for any other default or breach, by the other Party.

L.9 INTERPRETATION

The titles of the sections of the Contract are inserted for convenience of reference only and shall be disregarded in construing or interpreting any of its provisions.

L.10 DEBT LIMITATION

The Contract is expressly subject to the debt limitation of Oregon counties set forth in Article XI, Section 10, of the Oregon Constitution, and is contingent upon funds being appropriated therefore. Any provisions herein which would conflict with law are deemed inoperative to that extent.

L.11 LITIGATION

Any Claim between Owner and Contractor that arises from or relates to the Contract and that is not resolved through the Claims Review Process in Section D.3 shall be brought and conducted solely and exclusively within the Circuit Court of Clackamas County for the State of Oregon; provided, however, if a Claim must be brought in a federal forum, then it shall be brought and conducted solely and exclusively within the United States District Court for the District of Oregon. In no event shall this section be construed as a waiver by the County of any form of defense or

immunity, whether sovereign immunity, governmental immunity, immunity based on the Eleventh Amendment to the Constitution of the United States or otherwise, from any claim or from the jurisdiction of any court. CONTRACTOR, BY EXECUTION OF THE CONTRACT, HEREBY CONSENTS TO THE IN PERSONAM JURISDICTION OF THE COURTS REFERENCED IN THIS SECTION.

L. 12 SURVIVAL

All warranty, indemnification, and record retention provisions of the Contract, and all of Contractor's other obligations under the Contract that are not fully performed by the time of Final Completion or termination, and all other rights and obligations which by their context are intended to survive, shall survive Final Completion or any termination of the Contract.

L.13 ACCESS TO RECORDS

L.13.1. Contractor shall keep, at all times on the Work site, one record copy of the complete Contract Documents, including the Plans, Specifications, Construction Change Directives and addenda, in good order and marked currently to record field changes and selections made during construction, and one copy of Shop Drawings, Project Data, Samples and similar submittals, and shall at all times give the Owner access thereto.

L.13.2 Contractor shall retain and the Owner and its duly authorized representatives shall have access, for a period not less than ten (10) years, to all Record Documents, financial and accounting records, and other books, documents, papers and records of Contractor which are pertinent to the Contract, including records pertaining to Overhead and indirect costs, for the purpose of making audit, examination, excerpts and transcripts. If for any reason, any part of the Work or this Contract shall be subject to litigation, Contractor shall retain all such records until all litigation is resolved and Contractor shall continue to provide Owner and/or its agents with full access to such records until such time as all litigation is complete and all periods for appeal have expired and full and final satisfaction of any judgment, order or decree is recorded and Owner receives a record copy of documentation from Contractor.

L.14 WAIVER

Failure of the Owner to enforce any provision of this Contract shall not constitute a waiver or relinquishment by the Owner of the right to such performance in the future nor of the right to enforce any other provision of this Contract.

L. 15 NO ATTORNEY FEES.

In the event any arbitration, action or proceeding, including any bankruptcy proceeding, is instituted to enforce any term of this Contract, each party shall be responsible for its own attorneys' fees and expenses.

WATER ENVIRONMENT SERVICES
PUBLIC IMPROVEMENT CONTRACT

PAYMENT BOND

Bond No.: YCN7443159
Solicitation: #2022-106
Project Name: Fischer's Forest Park - Large Onsite Sewage System Treatment Process Upgrade

Old Republic Surety Company (Surety #1)	Bond Amount No. 1:	$ 778,108.00
_____(Surety #2)*	Bond Amount No. 2:*	$ _____
* *If using multiple sureties*	Total Penal Sum of Bond:	$ 778,108.00

We, A-Affordable Septic Service, LLC, as Principal, and the above identified Surety(ies), authorized to transact surety business in Oregon, as Surety, hereby jointly and severally bind ourselves, our respective heirs, executors, administrators, successors and assigns firmly by these presents to pay unto Water Environment Services ("District"), the sum of (Total Penal Sum of Bond) Seven Hundred Seventy-Eight Thousand One Hundred Eight and no/100ths Dollars (Provided, that we the Sureties bind ourselves in such sum "jointly and severally" as well as "severally" only for the purpose of allowing a joint action or actions against any or all of us, and for all other purposes each Surety binds itself, jointly and severally with the Principal, for the payment of such sum only as is set forth opposite the name of such Surety); and

WHEREAS, the Principal has entered into a contract with the District, along with the plans, specifications, terms and conditions of which are contained in above-referenced Project Contract Documents; and

WHEREAS, the terms and conditions of the contract, together with applicable plans, standard specifications, special provisions, schedule of performance, and schedule of contract prices, are made a part of this Payment Bond by reference, whether or not attached to the contract (all hereafter called "Contract"); and

WHEREAS, the Principal has agreed to perform the Contract in accordance with the terms, conditions, requirements, plans and specifications, and schedule of contract prices which are set forth in the Contract and any attachments, and all authorized modifications of the Contract which increase the amount of the work, or the cost of the Contract, or constitute authorized extensions of time for performance of the Contract, notice of any such modifications hereby being waived by the Surety:

NOW, THEREFORE, THE CONDITION OF THIS BOND IS SUCH that if the Principal shall faithfully and truly observe and comply with the terms, conditions and provisions of the Contract, in all respects, and shall well and truly and fully do and perform all matters and things by it undertaken to be performed under said Contract and any duly authorized modifications that are made, upon the terms set forth therein, and within the time prescribed therein, or as extended therein as provided in the Contract, with or without notice to the Sureties, and shall defend, indemnify, and save harmless the District and Clackamas County and their elected officials, officers, employees and agents, against any claim for direct or indirect damages of every kind and description that shall be suffered or claimed to be suffered in connection with or arising out of the performance of the Contract by the Contractor or its subcontractors, and shall promptly pay all persons supplying labor, materials or both to the Principal or its subcontractors for prosecution of the work provided in the Contract; and shall promptly pay all contributions due the State Industrial Accident Fund and the State Unemployment Compensation Fund from the Principal or its subcontractors in connection with the performance of the Contract; and shall pay over to the Oregon Department of Revenue all sums required to be deducted and retained from the wages of employees of the Principal and its subcontractors pursuant to ORS 316.167, and shall permit no lien nor claim to be filed or prosecuted against the District on account of any labor or materials furnished; and shall do all things required of

the Principal by the laws of this State, then this obligation shall be void; otherwise, it shall remain in full force and effect for so long as any term of the Contract remains in effect.
Nonpayment of the bond premium will not invalidate this bond nor shall the District be obligated for the payment of any premiums.

This bond is given and received under authority of Oregon Revised Statutes Chapter 279C and the Clackamas County Local Contractor Review Board Rules, the provisions of which hereby are incorporated into this bond and made a part hereof.

IN WITNESS WHEREOF, WE HAVE CAUSED THIS INSTRUMENT TO BE EXECUTED AND SEALED BY OUR DULY AUTHORIZED LEGAL REPRESENTATIVES:

Dated this 8th day of March, 2023.

PRINCIPAL: A-Affordable Septic Service LLC

By: _____
Signature

_____
Official Capacity

Attest: _____
Corporation Secretary

SURETY: Old Republic Surety Company
[Add signatures for each if using multiple bonds]

BY ATTORNEY-IN-FACT:
[Power-of-Attorney must accompany each bond]

Gail A. Price
Name

_____
Signature

One Centerpointe Drive, Suite 190
Address

Lake Oswego, Oregon 97035
City State Zip

503-224-2500 503-224-9830
Phone Fax

CLACKAMAS WATER ENVIRONMENT SERVICES

WATER ENVIRONMENT SERVICES
PUBLIC IMPROVEMENT CONTRACT

PERFORMANCE BOND

Bond No.: YCN7443159
Solicitation: #2022-106
Project Name: Fischer's Forest Park - Large Onsite Sewage System Treatment Process Upgrade

Old Republic Surety Company (Surety #1)	Bond Amount No. 1:	$778,108.00
_____(Surety #2)*	Bond Amount No. 2:*	$_____
* *If using multiple sureties*	Total Penal Sum of Bond:	$ 778,108.00

We, A-Affordable Septic Service, LLC as Principal, and the above identified Surety(ies), authorized to transact surety business in Oregon, as Surety, hereby jointly and severally bind ourselves, our respective heirs, executors, administrators, successors and assigns firmly by these presents to pay unto Water Environment Services ("District"), the sum of (Total Penal Sum of Bond)($778,108.00) $ Seven Hundred Seventy-Eight Thousand One Hundred Eight and no/100ths Dollars (Provided, that we the Sureties bind ourselves in such sum "jointly and severally" as well as "severally" only for the purpose of allowing a joint action or actions against any or all of us, and for all other purposes each Surety binds itself, jointly and severally with the Principal, for the payment of such sum only as is set forth opposite the name of such Surety); and

WHEREAS, the Principal has entered into a contract with the District, along with the plans, specifications, terms and conditions of which are contained in the above-referenced Project Contract Documents; and

WHEREAS, the terms and conditions of the contract, together with applicable plans, standard specifications, special provisions, schedule of performance, and schedule of contract prices, are made a part of this Performance Bond by reference, whether or not attached to the contract (all hereafter called "Contract"); and

WHEREAS, the Principal has agreed to perform the Contract in accordance with the terms, conditions, requirements, plans and specifications, and all authorized modifications of the Contract which increase the amount of the work, the amount of the Contract, or constitute an authorized extension of the time for performance, notice of any such modifications hereby being waived by the Surety:

NOW, THEREFORE, THE CONDITION OF THIS BOND IS SUCH that if the Principal herein shall faithfully and truly observe and comply with the terms, conditions and provisions of the Contract, in all respects, and shall well and truly and fully do and perform all matters and things undertaken by Contractor to be performed under the Contract, upon the terms set forth therein, and within the time prescribed therein, or as extended as provided in the Contract, with or without notice to the Sureties, and shall defend, indemnify, and save harmless the District and Clackamas County and their elected officials, officers, employees and agents, against any direct or indirect damages or claim of every kind and description that shall be suffered or claimed to be suffered in connection with or arising out of the performance of the Contract by the Principal or its subcontractors, and shall in all respects perform said contract according to law, then this obligation is to be void; otherwise, it shall remain in full force and effect for so long as any term of the Contract remains in effect.

Nonpayment of the bond premium will not invalidate this bond nor shall the District, be obligated for the payment of any premiums.

This bond is given and received under authority of Oregon Revised Statutes Chapter 279C and the Clackamas County Local Contractor Review Board Rules, the provisions of which hereby are incorporated into this bond and made a part hereof.

IN WITNESS WHEREOF, WE HAVE CAUSED THIS INSTRUMENT TO BE EXECUTED AND SEALED BY OUR DULY AUTHORIZED LEGAL REPRESENTATIVES.

Dated this 8th day of March, 2023.

PRINCIPAL: A-Affordable Septic Service, LLC

By: _____
Signature

_____
Official Capacity

Attest: _____
Corporation Secretary

SURETY: Old Republic Surety Company
[Add signatures for each if using multiple bonds]

BY ATTORNEY-IN-FACT:
[Power-of-Attorney must accompany each bond]

Gail A. Price
Name

_____
Signature

One Centerpointe Drive, Suite 190
Address

Lake Oswego, OR 97035
City State Zip

503-224-2500 503-224-9830
Phone Fax

CLACKAMAS COUNTY
PUBLIC IMPROVEMENT CONTRACT
PROJECT INFORMATION, PLANS, SPECIFICATIONS AND DRAWINGS

PROJECT: Fischer's Forest Park - Large Onsite Sewage System Treatment Process Upgrade

Background

The Fisher's Forest Park ("FFP") Large Onsite Sewage System (LOSS) is located along Fischer's Mill Road, roughly one mile east of the intersection with Redland Road. The FFP LOSS was constructed circa 1970 and serves a community of 26 homes. The facility is aging and several of the systems, including two of the active drain fields, require replacement or renovations. The majority of the collection system will have been replaced by the time work begins on this project. This project will address condition issues with the septic tanks, drain fields, filter units and other parts of the treatment system.

Project Scope:

This project will rehabilitate the treatment portion of the existing system. This work includes but not limited to:

- Decommissioning the existing treatment system and appurtenances
- Installation of one (1) new manhole
- Construction of two (2) 3,000 gallon, pre-cast septic tanks
- Reconfiguring the existing recirculation tank
- Construction of three (3) 3,000 gallon, pre-cast recirculation tanks
- Installation of three (3) AdvanTex AX-100 units
- Construct two (2) custom flow split structures
- Construct approximately 52,000 square feet of subsurface drip distribution system
- Installation of a controls shelter
- Install custom control and alarm panel
- Installation of pumps, pipes, and other necessary appurtenances
- Construct a new 1" fresh water service line
- Sanitary sewer bypassing

Engineers Estimate: $800,000.00

Key Dates:

All Basic Bid Work may begin as soon as the Notice to Proceed ("NTP") is issued
Substantial Completion: 180 days from when Contract Times commence
Final Completion: 210 days from when Contract Times commence

Time is of the essence for this Project. Note the Liquidated Damages requirements as described in the Supplemental General Conditions.

The Scope further includes the following Plans, Specifications and Drawings:

- Revised Plans and Specifications Large Onsite Sewage System Upgrade- October 2022 (18 pages)
- Fischer's Forest Park Large Onsite Sewage System Drawing Set- (27 pages) G1-G5, H1, T1-T9, F1-F2, D1-D4, C1, M1-M5, S1-S3
- Fisher's Forest Park Large Onsite Sewage System Specifications (84 pages)

VALLEY
A valmont COMPANY

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Albany, OR 97321
P: +1 541.926.7737
valleyirrigation.com/se

October 5, 2022

Nathan Seaver
Clackamas County Water Environment Services
150 Beavercreek Rd
Oregon City, OR 97045

SUBJECT: Fischer's Forest Park – Large Onsite Sewage System Upgrade
Revised Plans and Specifications

Dear Nathan:

Enclosed are the Revised Plans and Specifications for the sewage treatment system improvements to serve Fischer's Forest Park, east of Oregon City (Clackamas County), Oregon (T3S, R3E, Section 6AA, Tax Lot 2700). We are sending this information to the Oregon Department of Environmental Quality for plan review and approval, as well as to suppliers of specified equipment. Please review this package at your earliest convenience.

If you have any questions or comments, please contact me at our Albany field office at (541) 812-6639.

Sincerely,
VALLEY SCIENCE AND ENGINEERING

Christopher S. Cotton, EIT
Project Engineer

BTR:CSC/mjb:jbk;mjb

Enc: Plans and Specifications (2)
c: Ms. Jessica Joye, REHS – DEQ/Salem (2)
Mr. Spencer Waite –Waite Concrete Products (1) Phone: (503) 266-2670
Mr. Robert Miller – Orenco Systems, Inc. (electronic only) Phone: (541) 459-4449, ext. 284

VALLEY

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Revised Plans and Specifications
Large Onsite Sewage System Upgrade

Fischer's Forest Park

Clackamas County Water Environment Services
Clackamas County, Oregon
October 2022

Valley Science and Engineering
3511 Pacific Blvd
Albany, OR 97321
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valleyirrigation.com/se

Revised Plans and Specifications
Large Onsite Sewage System Upgrade
Fischer's Forest Park
Clackamas County Water Environment Services
Clackamas County, Oregon
T3S, R3E, Section 6AA, Tax Lot 2700

Prepared For:	Nathan Seaver Clackamas County Water Environment Services 150 Beaver Creek Rd Oregon City, Oregon 97045
Prepared By:	Valley Science and Engineering 3511 Pacific Blvd SW Albany, Oregon 97321 (541) 926-7737
Author(s):	Christopher S. Cotton, EIT, Project Engineer
Reviewed By:	Greg Thurman, PE, Principal Engineer Brian T. Rabe, CPSS, WWS, Managing Soil Scientist
Report Date:	October 5, 2022
Project Number:	2020230021
Submitted By:	

CPSS
Certified Professional
Soil Scientist
BRIAN T. RABE
15239 Exp. 31DEC22
Registered Wastewater Specialist
No. EH-W-448430 Exp. 30SEP22

Brian T. Rabe, CPSS, WWS, Managing Soil Scientist

CONTENTS

1.0 INTRODUCTION

This plans and specifications package describes the proposed new Large Onsite Sewage System (LOSS) components for Fischer's Forest Park, east of Oregon City (Clackamas County), Oregon (T3S, R3E, Section 6AA, Tax Lot 2700)(Site). This package, along with any changes required by the Oregon Department of Environmental Quality (DEQ) in their plan approval letter will constitute the approved plans and specifications for construction of the system.

2.0 PROJECT ROLES

- Clackamas County Water Environment Services (WES) (Owner) – Primary point of contact for coordinating access, private utilities (known and discovered), disposition of excess soils, and other matters that affect the operation of the facility.
- Installation Contractor (Contractor) – Responsible for installing the components outlined in the plans and specifications and coordinating inspections with the Designer, as outlined in subsequent sections of this document. The Contractor shall be a DEQ-licensed septic system installer.
- DEQ (Regulator) – Responsible for reviewing and approving the plans, and addressing regulatory questions.
- Valley Science and Engineering (Valley) (Designer/Inspector) – Primary point of contact for questions related to the work outlined in this package. Responsible for inspections, system start-up, and certification, as outlined in subsequent sections of this document.

3.0 BACKGROUND

The Site consists of 26 homes along 3 cul-de-sacs and a county road (Deininger road). Each home has a 3- or 4-inch sanitary sewer lateral that connects to one of four 8-inch sewer mains that convey sewage by gravity north to one of three 5,400-gallon concrete septic tanks. It is understood that the original construction of the system occurred in the 1970's and consisted of 3 separate drainfields following each of the septic tanks. Improvements constructed in 1983 abandoned the western original drainfield and commingled effluent from the 3 septic tanks into a new concrete recirculation tank. Advanced treatment was provided via a recirculating gravel filter per the 1983 plans and a flow regulating weir distributed flows between a return line to the recirculation tank and a drainfield lift station equipped with external gate valves to distribute flows between the 2 remaining drainfields (central and eastern) and a new capping fill drainfield (west of the central drainfield).

In 2006, additional improvements were made to abandon the sand filter in place and replace it with recirculating textile filters (2 AdvanTex® AX-100s) as well as replace the flow regulating weir with a flow splitter basin to manage filtrate flows from the treatment units. Improvements were also made at the recirculation tank to upgrade the pumps and install a new control panel with telemetry controls and a time dosing program to deliver effluent to the AX-100 units.

The projected peak daily sewage flow is 10,400 gallons per day as written in the existing WPCF permit. The proposed improvements described in this plans and specifications package are the replacement, enhancement, and change in location of the treatment system, new control panel and

recirculation tank assembly, along with the installation of a new ultra-violet (UV) disinfection unit assembly, dosing tank, subsurface drip distribution system, and control building structure. Replacement of the existing east septic tank located north of Fir Cone Court will also occur as part of this project.

The east septic tank replacement will consist of two 3,000-gallon, pre-cast concrete septic tanks in series that will serve the lots on Fir Cone Court. Effluent from the east septic tank assembly will flow to the existing recirculation tank and commingle with septic tank effluent from the West and Central septic tanks. The existing recirculation tank will have a new pump vault, pumps, and floats reconfigured to function as an effluent lift station. In-line pressure filters will be equipped on each of the 2 pressure effluent sewer pipes from the effluent lift station prior to combining into a common pipe to convey screened effluent to the new recirculation tank assembly. The heart of the new LOSS will be located north and east of the existing recirculation tank, north of Merry Meadow Court, and will include an assembly of three 3,000-gallon, pre-cast concrete tanks plumbed to function with a common liquid level. The third tank in the recirculation assembly will contain 3 pumps (one per treatment pod) and level-sensing control floats. The effluent will be pumped on a carefully established time schedule to 3 AdvanTex (AX100) pods for fixed film biological treatment and nitrification. A flow splitter basin will manage the returning flows with the ability to make adjustments based on system performance. Initially, 80% of the recirculation flow will be directed to the recirculation tank assembly with 20% of the returning flows directed to a UV disinfection assembly and dripfield dosing tank. A duplex pump assembly will deliver effluent to a subsurface drip distribution system. The dripfield is proposed to consist of approximately 52,000 square feet (sqft) divided into 8 cells and will be located over top the former drainfield (abandoned in 1983) in the northwest portion of tax lot 2700.

A gravel driveway will be constructed per WES specifications to provide access for maintenance activities. A 1" fresh water connection will be provided via an extension from the Clackamas River Water (CRW) distribution main at the north end of Fir Cone Court. A connection permit issued by CRW will be required as will the installation of an enclosed CRW flow meter and backflow prevention/pressure reduction valve meeting CRW and WES specifications. The purpose of this connection is to provide fresh water for maintenance and cleaning activities at the controls shelter.

3.1 Sewage Treatment System Components

A detailed summary of the proposed components is as follows:

East Septic Tank Replacement

- Approximately 20 linear feet (LF) of 8-inch gravity sewer piping, laid with a minimum grade of 1/8-inch of fall per foot of run between the outlet of the new sewer manhole and the inlet to the new primary septic tank.
- Two (2) 3,000-gallon pre-cast concrete primary septic tanks with fiberglass risers, fiberglass lids, and related piping and appurtenances.
- Approximately 20 LF of 4-inch gravity effluent sewer piping, laid with a minimum grade of 4 inches of fall per 100 foot of run (0.33%) between the septic tank assembly and existing gravity effluent sewer piping.
- One (1) 48-inch flat top manhole (details and specifications provided by WES)

Effluent Lift Station Retrofit

- Duplex pumps, float assembly, custom flow inducer tower, pressure filters and related piping and appurtenances to replace existing components in the recirculation tank (reconfigured as an effluent lift station).

Recirculating Treatment System

- Three (3) 3,000-gallon pre-cast concrete recirculation tanks (with common liquid level) with fiberglass risers, fiberglass lids, a custom triplex flow inducer tower, 3 high head effluent pumps, splice boxes, control and alarm floats, and related piping and appurtenances.
- Three (3) AdvanTex (AX100) recirculating textile filter treatment units with associated underdrain piping, pressure distribution piping, textile treatment media, ventilation piping, and related appurtenances. All AdvanTex units will have alternate ventilation penetrations installed at a higher elevation than the underdrain with an independent piping system to prevent effluent or condensation from being drawn toward the ventilation fan.
- Approximately 90 LF of 2-inch Schedule 40 polyvinyl chloride (PVC) pressure effluent sewer (Recirculation Tank C to the treatment units).
- Approximately 85 LF of 4-inch Schedule 40 PVC gravity effluent sewer (treatment units to flow splitter basin.
- One (1) custom primary flow splitter basin, and related piping and appurtenances, to manage the filtrate return from the textile filter units.
- One (1) custom secondary flow splitter basin, and related piping and appurtenances, to manage flow through the UV units.
- Three (3) Ultra Violet (UV) Orenco Disinfection units as shown in the plans.
- One (1) 3,000-gallon pre-cast concrete UV/dripfield dosing tank, with fiberglass risers, fiberglass lids, a custom duplex flow inducer tower, a pair of high head effluent pumps, splice boxes, control and alarm floats, and related piping and appurtenances.
- One (1) Orenco Durafiber controls shelter with an interior light, exterior light, single man door, intake and vent fan, and heater.
- One (1) custom telemetry control and alarm panel, with touch screen interface, and related appurtenances.
- Approximately 30 LF of 1-inch Schedule 40 PVC pressure effluent sewer piping (Effluent Lift Station to Recirculation Tank A).
- Approximately 1,420 LF of 1.5-inch pressure effluent sewer (supply main) and drip manifold piping.
- Approximately 500 LF of 2-inch Schedule 40 PVC pressure drip field flush main piping.

- Netafim® subsurface drip distribution system (52,000 sqft). The drip system will be divided into 8 zones. Each zone will be dosed a proportionate volume of disinfected and finely-screened effluent through independent solenoid zone valves.
- 1-inch freshwater backflow prevention and pressure reduction valve (Apollo Valves Model RP4A or approved equal) in a field sized underground enclosure equipped with heat tape for frost protection, located south of the controls shelter as indicated in the approved plans.
- Frost free, self-draining post hydrant with a bronze head stock and cap, 1-inch female national pipe thread (FNPT) vertical inlet and ¾-inch garden hose thread (GHT) outlet, (Kupferle Foundry Company Model Number TF100-P or approved equal).
- 100-foot commercial-grade hose.

4.0 PROJECT SCHEDULE

Construction is anticipated to occur in the spring or summer of 2023 when weather and soil conditions allow.

5.0 CONSTRUCTION SPECIFICATIONS

Unless specifically described differently in the approved plans and specifications, all materials, standards, and workmanship pertaining to the collection, treatment, and disposal system shall comply with the requirements of the DEQ as outlined in the current version of the Onsite Wastewater Treatment System Rules.[1, 2] All materials, standards, and workmanship pertaining to the collection system (building sewers) shall comply with the requirements of the current version of the Uniform Plumbing Code and applicable Oregon amendments. All materials, standards, and workmanship pertaining to the electrical components shall comply with the current version of the National Electrical Code and appropriate local amendments.

5.1 General Specifications

Each area of the Site disturbed by the Contractor shall be restored to its original condition, or as specified elsewhere in the approved plans and specifications package. This shall include removal of all scraps, containers, debris, excess aggregate and extraneous material incidental to the project. The Site shall be maintained in a safe and sanitary manner, consistent with the standards of the State of Oregon and the industry. All disturbed soil surfaces shall be protected from erosion with a 2-inch blanket of 3/4-inch minus crushed rock and/or re-seeded with a locally adapted mixture of annual and perennial grasses. It is anticipated that any excess soil from tank excavations will be able to be managed on site at Owner's direction.

Close attention to grades and relative elevations is critical to make sure there is adequate fall where gravity flow is required.

[1] Onsite Wastewater Treatment Systems, 340 OAR 340.71 (2021)
[2] Construction Standards, 340 OAR 340.73 (2021)

The term "compacted" is used in several places in the plans and specifications package. The intent of this term is to control settling in or near the affected area after system components are in place. Any measurable settling and, by said settling, any damage caused that occurs within one year after construction is completed, shall be immediately corrected by the Contractor at no cost to the Owner.

The specific equipment, spacing, amounts, and components outlined in these specifications have all been sized and designed to address Site conditions, comply with DEQ standards, and to fulfill the requirements of Owner's WPCF permit. Should any substitutions be made, the Contractor is required to submit all engineering and documentation necessary to prove substitutions will function and fit into the design as provided. Additionally, the Contractor shall bear responsibility for the installation, coordination and operation of the system as well as any engineering and redesign costs, which may result from such substitution.

5.2 Tank Decommissioning (Abandonment)

Materials

- **Under Non-Traffic Surfaces** – 3/4-inch minus crushed rock, water settled sand, or other suitable fill material.

Workmanship

Each tank identified for abandonment, or otherwise uncovered during the course of work, shall be abandoned in accordance with OAR 340-071.[1] This shall include pumping the contents of the tank after all sources of sewage have been disconnected. Pumping of the tank shall be done by a DEQ-licensed septic tank pumper. The top of the tank shall be crushed, and the void space filled with non-compressible material to prevent settling. Each material used for tank decommissioning shall have a design sheet/submittal with information pertaining to the technical specifications for review and approval by WES.

5.3 Piping and Plumbing

Materials

The following materials, or considered equivalent, are approved, for the purposes of this project:

- **Effluent Sewer Pipe and Fittings -** Either type PSM PVC, ASTM D-3034; or Schedule 40 PVC or ABS DWV, as specified on the plans.
- **Pressure Pipe and Fittings -** Either Schedule 40, or Class 200 PVC 1120 (ASTM D-2241), or High Density Polyethylene (HDPE) SDR 11, as specified on the plans.

Workmanship

All building sewers, effluent sewers, and force mains shall be placed on a uniformly graded, stable base of either: sand or compacted sand as specified in the approved plans. Each pipe shall be uniformly supported along its entire length to control settling and stresses during or following backfill. Unless authorized by the Designer, thrust blocks shall be installed anywhere a force main makes a bend greater than 45 degrees. Pipe markings shall be oriented at twelve o'clock to allow ready inspection after installation, prior to backfill. All gravity effluent sewers, pressure effluent sewers, and manifold piping to each distribution box or drop box shall be marked with tracer wire for future reference.

Gravity effluent sewers shall be laid at a uniform grade no less than 4 inches per 100 feet unless specifically called out on the drawings. A minimum of 12 inches of cover shall be provided over horizontal piping after backfill (settled) in areas not subject to vehicular traffic.

All gravity and pressure effluent piping shall be watertight. New gravity effluent sewer piping shall be tested with a minimum of 15 feet of water pressure. The test will be considered acceptable if no measurable loss occurs in a 15-minute period (defined as 0.16 gallons per hour, per inch diameter, per 100 feet). Pressure effluent piping (force mains) may be tested with air or water. A hydrostatic pressure of 70 pounds per square inch (psi) shall be maintained for ten minutes (no measurable loss). All testing shall be conducted by the Contractor and verified by the Inspector.

Where gravity effluent sewers or pressure effluent sewers cross a water line, the orientation shall be perpendicular to the water line. All piping materials (water and sewer) shall be solvent welded Schedule 40 (watertight) or heat-fused HDPE. A 20-foot length of pipe for each (water and sewer) shall be centered at the crossing point to maximize the distance between joints. The sewer line shall be located below the water line unless specifically approved by the Designer. In all cases, all piping within 10 feet of the crossing point shall be bedded in compacted sand for uniform support. The piping shall be installed and bedded to prevent direct contact (minimum 2-inch vertical separation).
The Contractor shall ensure that any additional construction standards set forth by Clackamas River Water service district are met pertaining to extension of main to supply water for maintenance and cleaning activities.

Special connectors, adapters, primers, glues, or solvents may be required where the material, size, or construction of the pipe changes within the system. Drawings of any approved "as built" changes or conditions noting pertinent dimensions, pipe types, distances, and grades shall be provided to the Inspector by the Contractor. Each individual piece of equipment or material referenced above shall have a design sheet/submittal with information on operation and maintenance of the referenced piece of equipment.

5.4 Tanks

Materials

All pre-cast concrete tanks shall be constructed to the manufacturer's standard specifications with the custom modifications shown in the plans. If the custom modifications conflict with the manufacturer's standard specifications, the Designer must be notified immediately in writing. Since the tanks (as specified) are an integral part of the design, any substitutions made require the Contractor to submit all engineering and documentation necessary to prove substitutions will function and fit into the design as provided. Additionally, the Contractor shall bear responsibility for the installation, coordination and operation of the system as well as any engineering and redesign costs, which may result from such substitution.

Workmanship

The Site shall be adequately prepared by the Contractor for placement of the tanks by the tank manufacturer. All tanks shall be set on a level, stable base to minimize the potential for differential settling. Any water encountered within the excavation shall be pumped away from the area to a location that will not impact other construction activities (e.g., the dripfield) or water quality. The

excavation shall be sufficiently dewatered to enable placement of the tank bedding material to the grades specified as well as to enable the placement of the tank(s) themselves. The excavation shall be prepared to provide a **minimum** clearance of 6 inches on all 4 sides of the tank to facilitate visual inspection for leaks and installation of an exterior bentonite seal. All sealing, grouting, and coating shall be completed prior to backfilling.
After placement and sealing, all tanks shall be tested in the field for water tightness. Where pipe penetrations are located below the seam, pre-testing for obvious leaks is advised. Construct a form with 1-inch × 6-inch lumber to provide for placement of bentonite along the seam around the outside of the tank. It is recommended that bentonite be placed around each pipe penetration to provide secondary protection against leakage. The remaining tank sidewall shall be backfilled prior to completing the water tightness test. One-piece tanks shall be backfilled to 6 inches below the exterior tank top to allow construction of forms for a bentonite seal.

All risers shall be appropriately oriented, consistent with logical positioning of plumbing and electrical penetrations, and attached to the tank top in a secure and watertight manner. The inlet(s) and outlet(s) shall be plugged and the tank filled with water. Pre-soaking concrete tanks for 24 hours is advised. The water level shall be 2 inches deep in the riser (above the exterior tank top) at the beginning of the water tightness test. **CAUTION: Filling of the tank(s) shall be monitored closely to assure that no more than 2 inches of water is allowed to accumulate above the tank top.** Pressure beyond this specification may compromise tank integrity and may require tank replacement at no cost to the Owner. No more than one gallon shall exfiltrate in a 24-hour period.

Field repairs may be attempted once for observed sources of minor leakage. If the tank cannot be made watertight, then it shall be replaced at no expense to the Owner. Upon passing the water tightness test, backfilling shall be completed as described in the approved plans. Final grading of the finished surface shall assure that water does not accumulate around the risers or manhole covers. Each tank located adjacent to roadways or parking areas shall be protected from vehicular traffic by an adequate barrier (either locally available boulders or steel bollards filled with concrete and painted bright yellow). Tanks located in areas subject to traffic must be traffic-rated, as specified in the drawings, and fitted with appropriately sized cast iron frames and manhole covers. Cast iron frames must be fully supported on a concrete grade ring that does not come in contact with the tank or riser (floats on the compacted backfill). Excess soil from the excavations shall be managed on site at a location designated by the Owner. If space is not available on site, then excess soil must be removed and placed at an acceptable location off site. Drawings of any approved "as built" changes noting pertinent dimensions, reference points, and elevations shall be provided to the Inspector by the Contractor. Each individual piece of equipment or material referenced above shall have a design sheet/submittal with information on operation and maintenance of the referenced piece of equipment or material.

5.5 Pressure Filter

Materials

The pressure filters shall be manufactured to the functional specifications shown in the plans. If the manufacturer cannot meet the specifications shown, the Designer shall be notified in writing. Since the pressure filter assembly (as specified) is an integral part of the design, any substitutions made require the Contractor to submit all engineering and documentation necessary to prove substitutions will function and fit into the design as provided. Additionally, the Contractor shall bear responsibility for

the installation, coordination and operation of the system as well as any engineering and redesign costs, which may result from such substitution.

Workmanship

The pressure filter shall be installed in accordance with the approved plans and the manufacturer's instructions. Placement, assembly and installation shall be conducted to facilitate easy operation, maintenance, repair, removal and replacement. Drawings of any approved "as built" changes shall be provided to the Inspector by the Contractor. Each individual piece of equipment in the materials section above shall have a design sheet/submittal with information on operation and maintenance of the referenced piece of equipment.

5.6 AdvanTex (AX100) Secondary Treatment Units

Materials

The AdvanTex textile filter is a pre-engineered package that requires careful installation by authorized contractors in accordance with the manufacturer's instruction. Since the AdvanTex textile filter is an integral part of this design, any substitutions made require the Contractor to submit all engineering and documentation necessary to prove substitutions will function and fit into the design as provided. Additionally, the Contractor shall bear responsibility for the installation, coordination and operation of the system as well as any engineering and redesign costs, which may result from such substitution.

Workmanship

The AdvanTex textile filters shall be installed in accordance with the manufacturer's instructions. Excess soil from the tank excavations will be used to backfill around the AdvanTex units for both support and insulation. Each individual piece of equipment in the materials section above shall have a design sheet/submittal with information on operation and maintenance of the referenced piece of equipment.

5.7 Flow Splitter Basin

Materials

The flow splitter basin is a device used to divide flows at atmospheric pressure proportionally to multiple destinations. In this case, the flow returning from the secondary treatment system (AdvanTex units) will be divided with 1, 2, 3, or 4 parts flowing to the recirculation tank. One part will typically flow to the drainfield dosing tank so long as the recirculation process is operating in any of the various modes except the lowest.

A low-pressure gate valve at the inlet of the flow splitter basin enables temporary cessation of flow in order to service the unit (clean or adjust orifices, remove solids, etc.). The flow splitter basin shall be manufactured to the functional specifications shown in the plans. If the manufacturer cannot meet the specifications shown, the Designer shall be notified in writing. Since the flow splitter basin (as specified) are an integral part of the design, any substitutions made require the Contractor to submit all engineering and documentation necessary to prove substitutions will function and fit into the design as provided. Additionally, the Contractor shall bear responsibility for the installation, coordination and operation of the system as well as any engineering and redesign costs, which may result from such substitution.

Workmanship

The flow splitter basin shall be installed on a level, stable base in accordance with the approved plans. Placement, assembly, and installation shall be conducted to facilitate easy operation, maintenance, repair, removal and replacement. Drawings of any approved "as built" changes shall be provided to the Designer by the Contractor. Each individual piece of equipment in the materials section above shall have a design sheet/submittal with information on operation and maintenance of the referenced piece of equipment.

5.8 Pumps, Controls, and Alarms

Materials

High head effluent pumps will be installed in the effluent lift station, recirculation tank assembly and dripfield dosing tank. The control and primary alarm panel shall be manufactured to the functional specifications shown in the plans. If the manufacturer changes the specifications, the Designer must be notified in writing. Since this is a custom control panel (as specified) and is an integral part of the design, any substitutions made require the Contractor to submit all engineering and documentation necessary to prove substitutions will function and fit into the design as provided. Additionally, the Contractor shall bear responsibility for the installation, coordination and operation of the system as well as any engineering and redesign costs, which may result from such substitution.

The Contractor shall verify the custom panel quote number with the Designer prior to submitting an order with the Manufacturer.

Workmanship

The power supply to the new control panel will need to be a minimum 60A, 240V, single-phase circuit (L1, L2, N, G) for the pumps. The incoming circuit will be landed in a power distribution block and distributed internally with individual circuit breakers for each pump and to 120V circuits for the panel (controls and alarms), a panel heater, and the ventilation fan assembly. The pump and control systems and related appurtenances shall be installed in accordance with the manufacturer's instructions, the approved plans, and all appropriate electrical codes. Placement, assembly, and installation shall facilitate easy operation, maintenance, repair, removal and replacement. All components shall be clearly marked and labeled in a permanent and professional manner, consistent with the design, to facilitate identification, monitoring, and troubleshooting. Each individual piece of equipment in the materials section above shall have a design sheet/submittal with information on operation and maintenance of the referenced piece of equipment. The Contractor shall retain a licensed electrician where necessary and will be responsible for obtaining the necessary electrical permits and inspections. Copies of all permits, inspection reports, panel diagrams, and drawings of any approved "as built" changes shall be provided to the Inspector by the Contractor.

5.9 Ultra-Violet (UV) Disinfection Assembly

Materials

The UV assembly shall be manufactured to the specifications shown in the plans. If the manufacturer cannot meet the specifications shown, the Designer shall be notified in writing. Since the UV assembly is an integral part of the design, any substitutions made requires the Contractor to submit all

engineering and documentation necessary to prove substitutions will function and fit into the design as provided. Additionally, the Contractor shall bear responsibility for the installation, coordination and operation of the system as well as any engineering and redesign costs, which may result from such substitution.

Workmanship

The UV assembly shall be installed in accordance with the approved plans and the manufacturer's instructions. Placement, assembly, and installation shall be conducted to facilitate easy operation, maintenance, repair, removal and replacement. Drawings of any approved "as built" changes shall be provided to the Designer by the Contractor. Each individual piece of equipment in the materials section above shall have a design sheet/submittal with information on operation and maintenance of the referenced piece of equipment.

5.10 Treatment System Controls Shelter

Materials

The shelter for the treatment system controls shall be supplied by Orenco Composites and shall be manufactured to the following specifications:

Size: 8 × 17 × 10 feet

Options:

- CLEAR Roof Vent
- Two (2) 24 × 36 inch Double-Pane Window (Left Side)
- 10 × 4 foot Loft Section (Right Side)
- External Alarm Light

Workmanship

The shelter shall be installed by the manufacturer on a level concrete slab (designed per Orenco Composites Guidance submittal) over top of a prepared based of 3/4-inch minus crushed rock (minimum 6 inches thick) extending a minimum of 2 feet in all directions beyond the footprint of the shelter. A geotextile filter fabric shall be placed between the native ground and prepared base. The shelter is delivered primed and ready to paint as a standard feature. The Contactor shall coordinate with the Owner for exterior color selection (primary and trim) and shall paint the exterior with a minimum of two coats of a high quality exterior latex paint (satin finish). Each individual piece of equipment listed in the materials section above shall have a design sheet/submittal with information on operation and maintenance of the referenced piece of equipment.

5.11 Subsurface Drip Distribution System

These Specifications are for a complete and operational wastewater drip irrigation system. System shall include pressure filters, drip lines, flow meter, sampling tap, control valves for zones, and air relief valves. The system shall be “ACT 200 C Drip Dispersal System” by JNM Technologies, Inc. The system has been designed for the following parameters:

Daily Flow	10,400 gallons per day (gpd) (design)

Soils Loading Rate	0.20 gpd/sqft
Drip Dispersal Area	52,000 sqft

Materials

- **Disc Filters** – Disc Filters shall be the ACT- Disc Filter, 200 C series by JNM Technologies, Inc. The filter elements shall consist of grooved rings, mounted on a spine, forming a cylindrical filter body. The rings are to be kept together by a spring seated at the bottom of the filter cover. The body materials shall be polyamide, the rings shall be polypropylene, and the spring shall be stainless steel. The nominal filtration capacity of the filter shall be 100 microns.
- **Dripper Tubing** – The dripper tubing shall be Netafim Bioline pressure compensating dripperline for wastewater (Model No. 08WRAM.6-24V). The tubing shall be nominal 0.61 gallons per hour (+/- 5% flow rate from 7 to 60 psi). The tubing shall function as a turbulent flow emitter between 0 and 7 psi, ensuring that the nominal design flow is not exceeded at system start-up. Tubing end connections and splice connections shall be manufactured specifically for the tubing and for connection to standard schedule 40 NPT adapters. The drip tubing manufacturer shall provide a head loss chart for various drip tubing lateral lengths to provide for a minimum scouring velocity (2 ft/sec) at the distal end of the drip tubing lateral.
- **Drip Tubing Flex Tee Connector** – A flexible connector shall be provided between the Bioline tubing and the distribution and return headers. It shall be made up of a 1/2-inch Spin-Loc connector #565 SSP glued to a 24-inch length of 1/2-inch flexible vinyl tube that is glued into a 1.5-inch x 1.5-inch x 1/2-inch tee.
- **Automatic Control Valves** – The automatic control valves shall be 2.0-inch diameter solenoid activated diaphragm valves by Dorot. The body and cover shall be reinforced nylon, polyamide. The metal parts shall be stainless steel, the diaphragm shall be nylon-fabric reinforced natural rubber. The seals shall be Buna-N. These valves shall operate electrically using hydraulic pressure to open and to close via a command signal to a 24 VAC solenoid mounted on the valve.
- **Master Valve** – The automatic master control valves shall be 2.0-inch diameter solenoid activated diaphragm valve by Dorot. The body and cover shall be reinforced nylon, polyamide. The metal parts shall be stainless steel, the diaphragm shall be nylon-fabric reinforced natural rubber. This valve shall operate electrically using hydraulic pressure to open and to close via a command signal to a 24 VAC solenoid mounted on the valve.
- **Non-Dripper Line Pressure Piping** – All non-dripper line pressure piping shall be PVC schedule 40 pressure rated. Rigid piping shall be standard ASTM 1120 for use with solvent welded Schedule 40 fittings. Flex piping shall be schedule 40 PVC flex pipe for use with pressure fittings.
- **General Valves** – All ball valves shall be Schedule 40. Gate and globe valves shall be of the true-union PVC type with stem adapters for surface operation.
- **Flow Meter** – Flow meter shall be an ARAD turbine or wheel type 1.5-inch meter with total enclosure and an electrical output register. The meter shall be bronze with externally threaded ends with bronze threaded union end connectors. The meter shall provide contact closure corresponding to defined volume increments. Maximum switch current 500mA and maximum switching voltage 32 volts (AC or DC) for output register.

- **Sampling Tap** – A sampling tap shall be installed downstream of the disc filters to facilitate collection of representative samples of the final effluent being dispersed into the soil to satisfy compliance monitoring requirements.
- **Check Valves** – Check valves shall be 1.5-inch, Tru-Union type spring loaded check valves with a minimum spring pressure of 2 psi. Check valves shall be constructed with clear PVC materials and shall be those manufactured by Flo-Control or approved equal.
- **Air Release Valves** – Air release valves shall be 1.5-inch diameter Guardian air release and vacuum valves by Netafim. Body shall be made of fiberglass reinforced UV Protected nylon. Maximum working pressure 150 psi.
- **Wire Splices** – Field wire splices shall be installed in suitable wire splice pull boxes with waterproof connections for access to splice connections. The boxes shall have structural capacity for in ground installation and light vehicle yard care traffic.
- **Zone Resting Option** – The system controller shall allow for a zone to be rested or taken out of service. The controller shall have the capability to bypass a zone that has been taken out of service and dose the next available zone.
- **Pipe Bedding** – In-ground piping shall be installed according to local codes. Piping shall be installed on sand or compacted sand as specified in the approved plans. Freestanding piping shall be Schedule 40 PVC and assembled with restrained joints. Thrust blocks shall be installed in accordance to the specification provided in ASAE S261.6.
- **Hydraulic Unit** – Drip hydraulic unit by JNM Technologies, Inc. must be mounted either on an aluminum or galvanized skid, directly to the floor of the Control Building, or within the enclosure provided by the Manufacturer. Access to the unit must be such that all components are easily reached for maintenance. Automated-flush disc filter headworks (by JNM Technologies, Model No. ACT-C200-S). Since the headworks is an integral part of the design, any substitutions made require the Contractor to submit all engineering and documentation necessary to prove substitutions will function and fit into the design as provided. Additionally, the Contractor shall bear responsibility for the installation, coordination and operation of the system as well as any engineering and redesign costs, which may result from such substitution.

Workmanship

The submersible pump delivers unfiltered effluent to each filter. The filter backflushing schedule is triggered by time. One filter valve closes, thus blocking the flow of unfiltered effluent to that filter. After a short delay, the other flushing valves open, thereby backflushing the unused filter. The accumulated impurities discharge back into the pretreatment unit. The closing and opening procedure of the filter and back flush valves causes a change of flow within the unit to provide filtered water from one filter to backflush the other filter. The backflush procedure lasts approximately 20 seconds then the backflushing valve closes. Only after the first filter has completed its backflushing cycle, will the second filter begin its cycle of backflushing in the same manner as the first. Effluent will then be pumped through clean disc filters, then through the **flow meter** and finally through the outlet manifold to the dripfield supply line.

The Manufacturer shall provide a set of plans for the wastewater drip irrigation system and design calculations for review prior to installation. Each individual piece of equipment listed in the materials

section above shall have a design sheet/submittal with information on operation and maintenance of the referenced piece of equipment.

The Manufacturer shall provide a written certification for a one (1) year warranty on the complete drip irrigation system dated and signed by the representing officer of the Manufacturer. The warranty shall cover all parts of the drip irrigation system, including, but not limited to, the valves, filters, flow meter, etc. and shall guarantee the repair or replacement of a failing product, system, installation or a component thereof, at no cost to the Owner, when said failure is caused by a defect in the product or the Manufacturer's instruction for use, or both.

All equipment herein specified for this drip irrigation wastewater disposal system shall be provided by a sole supplier. The Manufacturer shall have at least 5 years' experience in this field and have completed projects of similar scale in this region of the U.S.

The Manufacturer shall provide 2 physical copies and one digital copy of a suitable manual that shall include instructions for the system's design, installation, operation and maintenance. This document shall be specific to the project – generic manuals will not be accepted. Each piece of equipment shall be listed specifically to include the exact model number, any other models listed to be crossed out.

The design, placement, location, installation, and operation of the drip irrigation system shall comply with the standards and provisions of the State of Oregon, including all horizontal and vertical setbacks, and with the minimum requirements of the drip tube manufacturer. The Contractor shall be a licensed Contractor of drip irrigation systems. Tubing shall be installed to a minimum depth of 6 inches and average depth of 9 inches.
The area designated for installation of the subsurface drip distribution system shall be mowed in preparation for installation. The dripperline shall be installed as close to level as practical. The soil surface may need to be lightly rolled to settle the loosened soil over each dripperline.

All open ends of the dripperline, connectors, fittings, manifolds, and other piping shall be covered during handling and initial placement in order to minimize the amount of debris that gets inside the distribution system. Each element of the system shall be flushed with clean water prior to connecting the downstream element (e.g., flush the force main prior to connecting to the zone manifolds, flush the zone manifolds and their associated dripperlines prior to connecting to the flush manifolds and flushing return main line). The air release valves should be removed prior to flushing to prevent clogging or damage to the valves. As with all other piping, all main and manifold piping shall be marked with tracer wire to assist with future location. All air release/vacuum relief valves, zone valves, and check valve assemblies shall be enclosed in an appropriately sized valve box with serviceable access to finish grade.

Placement, assembly, and installation shall be conducted to facilitate easy operation, maintenance, repair, removal, and replacement, as appropriate. The completed system shall be undergo a full operational test with clean water to assure proper operation of filters, controls, and valves. Drawings of any approved "as built" changes shall be provided to the Designer by the Contractor.

6.0 INSPECTIONS

6.1 Pre-Construction Conference

The pre-construction conference provides an opportunity for all parties involved to discuss the proposed activities (on-site). The location and routing of the various components will be reviewed and discussed at this time. Construction should be scheduled to begin as soon as possible following these activities.

Attendance by representatives of the following entities is **required:**

- WES (Owner)
- Installation Contractor (Contractor)
- Valley (Designer/Inspector)

Attendance by the following entities is **recommended**:

- DEQ (Regulator)

6.2 Construction Inspections

The following table provides a summary of inspections. The Regulator and Designer are responsible for certifying that the system is installed in accordance with the approved plans and specifications. The Contractor shall maintain close contact with the Regulator and Designer to provide adequate notice (minimum 24 hours) for timely scheduling of inspections. Consolidation of inspections should occur to the fullest extent practicable.

INSPECTION SCHEDULE TABLE

Inspection	Inspector	
	Designer	DEQ
1. Treatment Unit – Placement and Water Tightness Testing	M	O
2. Tanks – Placement and Water Tightness Testing	M	O
3. Gravity and Pressure Effluent Sewer – Placement and Water Tightness Testing	M	O
4. Pumps, Controls, and Flow Management Equipment – Placement, Grades, Piping, Plumbing, and Pre-Cover	M	O
5. Subsurface Drip Distribution System – Piping, Plumbing and Pre-Cover	M	O
6. Final Inspection/System Start-up	M	O

NOTE:
Abbreviations: M = Mandatory, O = Optional

FISCHER'S FOREST PARK
LARGE ONSITE SEWAGE SYSTEM
CLACKAMAS COUNTY, OREGON

STATE MAP

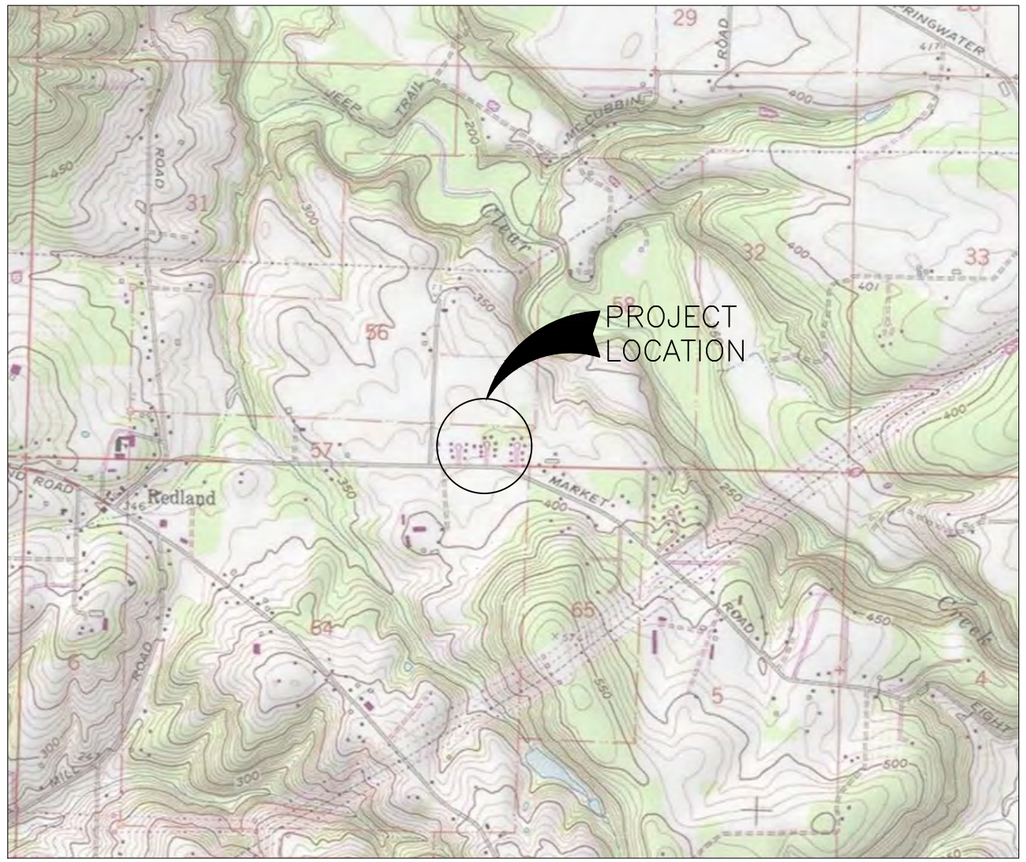
CALL BEFORE YOU DIG 800-332-2344

LOCATES (48 HOURS NOTICE REQUIRED PRIOR TO EXCAVATION)

THE CONTRACTOR MUST COMPLY WITH THE REGULATIONS OF O.R.S. 757.541 TO 757.571 IN LOCATION AND PROTECTION OF UNDERGROUND UTILITIES. OREGON LAW REQUIRES YOU TO FOLLOW RULES ADOPTED BY THE OREGON UTILITY NOTIFICATION CENTER. THOSE RULES ARE SET FORTH IN OAR 952-001-0010 THROUGH OAR 952-001-0090. YOU MAY OBTAIN COPIES OF THE RULES BY CALLING THE CENTER.

COLOR CODES:

RED	–	ELECTRICAL POWER LINES, CABLES, OR CONDUIT, AND LIGHTING CABLES
YELLOW	–	GAS, OIL, STEAM, PETROLEUM, OR OTHER HAZARDOUS LIQUID OR GASEOUS MATERIALS.
ORANGE	–	COMMUNICATIONS, CABLE TV, ALARM OR SIGNAL LINES, CABLES OR CONDUITS.
BLUE	–	WATER, IRRIGATION, AND SLURRY LINES.
GREEN	–	SEWERS, DRAINAGE FACILITIES OR OTHER DRAIN LINES.
WHITE	–	PRE-MARKING OF THE OUTER LIMITS OF THE PROPOSED EXCAVATION OR MARKING THE CENTERLINE AND WIDTH OF PROPOSED LINEAL INSTALLATIONS OF BURIED FACILITIES.
PINK	–	TEMPORARY SURVEY MARKINGS
PURPLE	–	SLURRY AND RECLAIMED



PROJECT COORDINATES: LAT: 45°20'47"N
LONG: 122°28'28"W

LOCATION MAP
SCALE: 1"=2000'

FIGURE INDEX:

CPSS
Certified Professional Soil Scientist
BRIANT. RABE
15239 Exp. 12/31/21
Registered Wastewater Specialist
No. EH-W-448430 Exp. 9/30/21

FISCHER'S FOREST PARK LOSS
CLACKAMAS COUNTY

REV #	DESCRIPTION	BY	DATE

DES. BY 1BTR
DRG. BY 6NSG
CHK. BY 1GLT
DATE 8/18/2022
JOB No. 2020230021

VALLEY SCIENCE AND ENGINEERING

VICINITY MAP AND SHEET INDEX

LARGE ONSITE SEWAGE SYSTEM DESIGN

SHEET
G1

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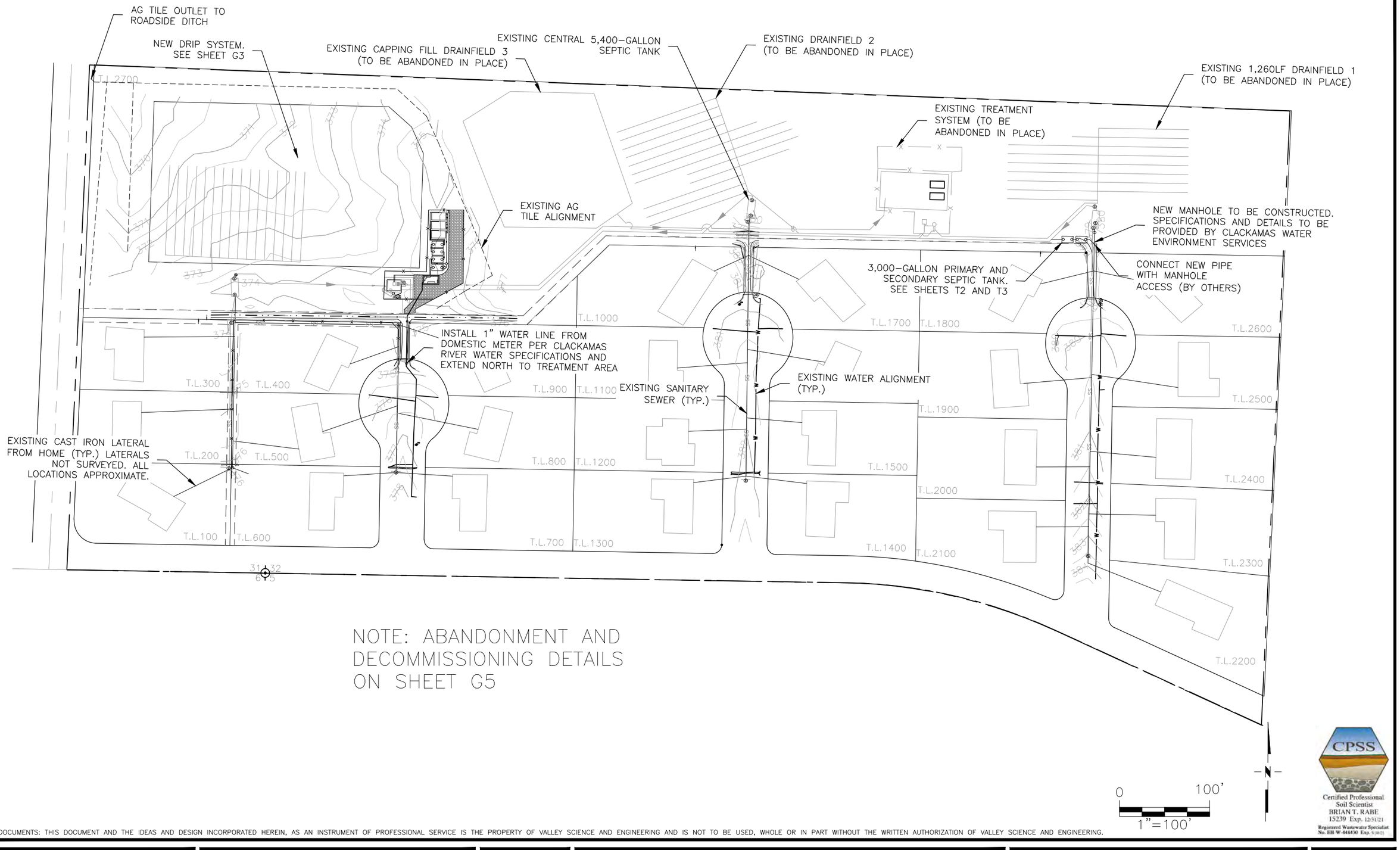

NOTE: ABANDONMENT AND DECOMMISSIONING DETAILS ON SHEET G5

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FISCHER'S FOREST PARK LOSS
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VALLEY SCIENCE AND ENGINEERING

GENERAL SITE PLAN

LARGE ONSITE SEWAGE SYSTEM DESIGN

SHEET
G2

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T.L.2700

ZONE 8
(13 LATERALS)

ZONE 6
(9 LATERALS)

ZONE 5
(10 LATERALS)

ZONE 4
(11 LATERALS)

ZONE 7
(13 LATERALS)

ZONE 3
(11 LATERALS)

ZONE 2
(9 LATERALS)

ZONE 1
(10 LATERALS)

NEW 52,000 SQ. FT.
SUBSURFACE DRIP DISTRIBUTION
SYSTEM. SEE SHEETS D1–D4

EXISTING AG TILE
ALIGNMENT. LOCATE
AND PROTECT IN PLACE

NEW TREATMENT SYSTEM.
SEE SHEET G4

REPLACE EXISTING FENCE
WITH NEW CHAIN LINK
FENCE. SEE SHEET M2

EXISTING
AG TILE
ALIGNMENT

EXISTING WEST
5,400–GALLON SEPTIC TANK

ALL COLLECTION SYSTEM
COMPONENTS (MANHOLES,
SEWER MAINS) ARE
BEING REPLACED

EXISTING FENCE TO BE
REPLACED. SEE SHEET M2

EXISTING 6,500–GALLON
RECIRCULATION TANK TO
BE RECONFIGURED AS
LIFT TANK. SEE SHEET T4

CHAIN LINK ACCESS
GATE. SEE SHEET M2

VALVE BOX WITH PRESSURE REDUCING AND BACK FLOW
PREVENTION VALVE (APOLLO RP4A OR APPROVED EQUAL). HEAT
TAPE FOR FROST PROTECTION REQUIRED. CONSTRUCTION MUST
CONFORM TO CLACKAMAS RIVER WATER SPECIFICATIONS.

20'

40'

LEGEND:

- SUPPLY MAIN
- FLUSH MAIN
- AIR RELEASE (SUPPLY MANIFOLDS)
- BALL VALVE AND CHECK VALVE ASSEMBLY WITH AIR RELEASE VALVE

0 30'
1"=30'

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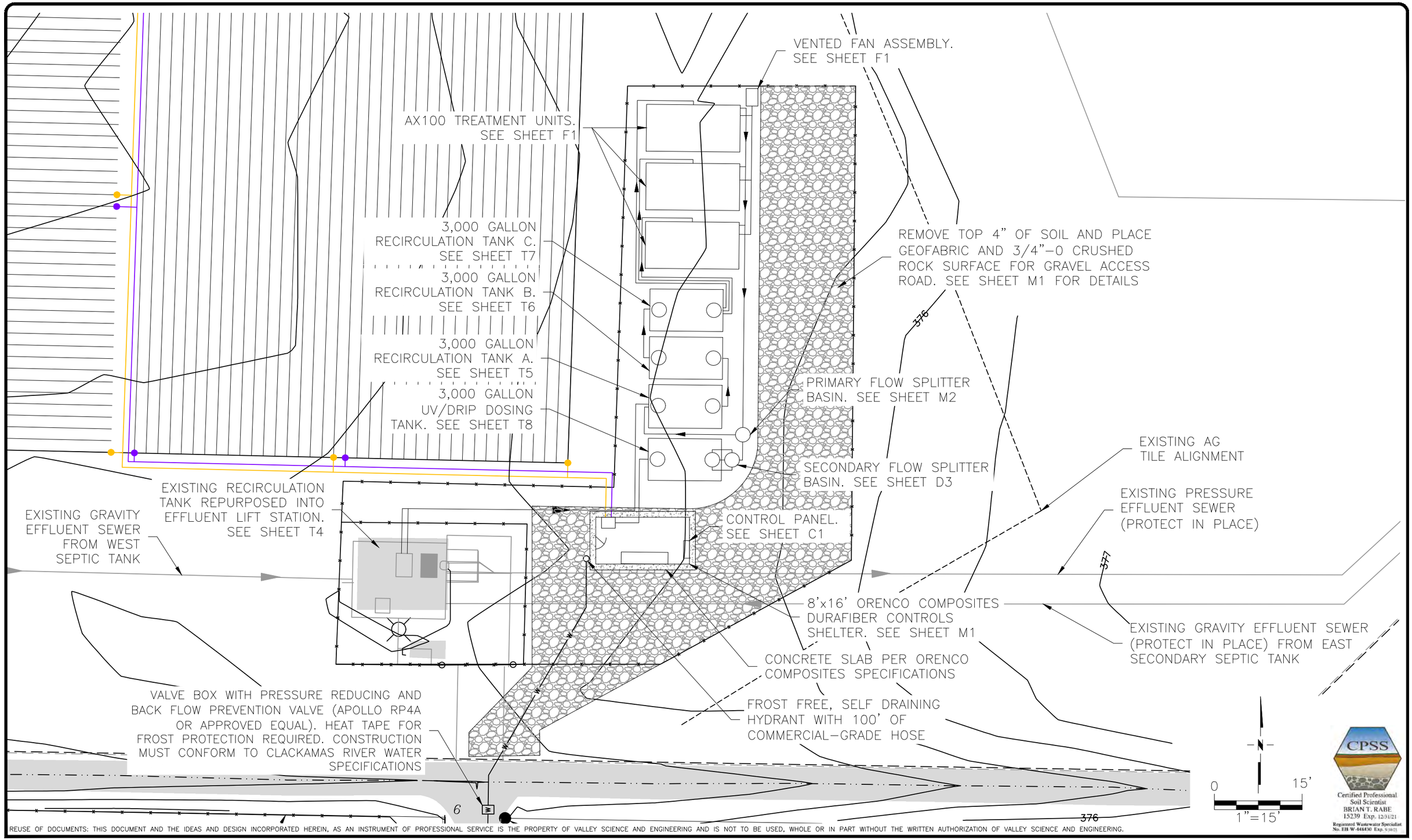
VALLEY SCIENCE AND ENGINEERING

DRIP SYSTEM SITE PLAN

LARGE ONSITE SEWAGE SYSTEM DESIGN

SHEET
G3



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FISCHER'S FOREST PARK LOSS
CLACKAMAS COUNTY

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VALLEY SCIENCE AND ENGINEERING

TANK LAYOUT DETAIL

LARGE ONSITE SEWAGE SYSTEM DESIGN

SHEET
G4

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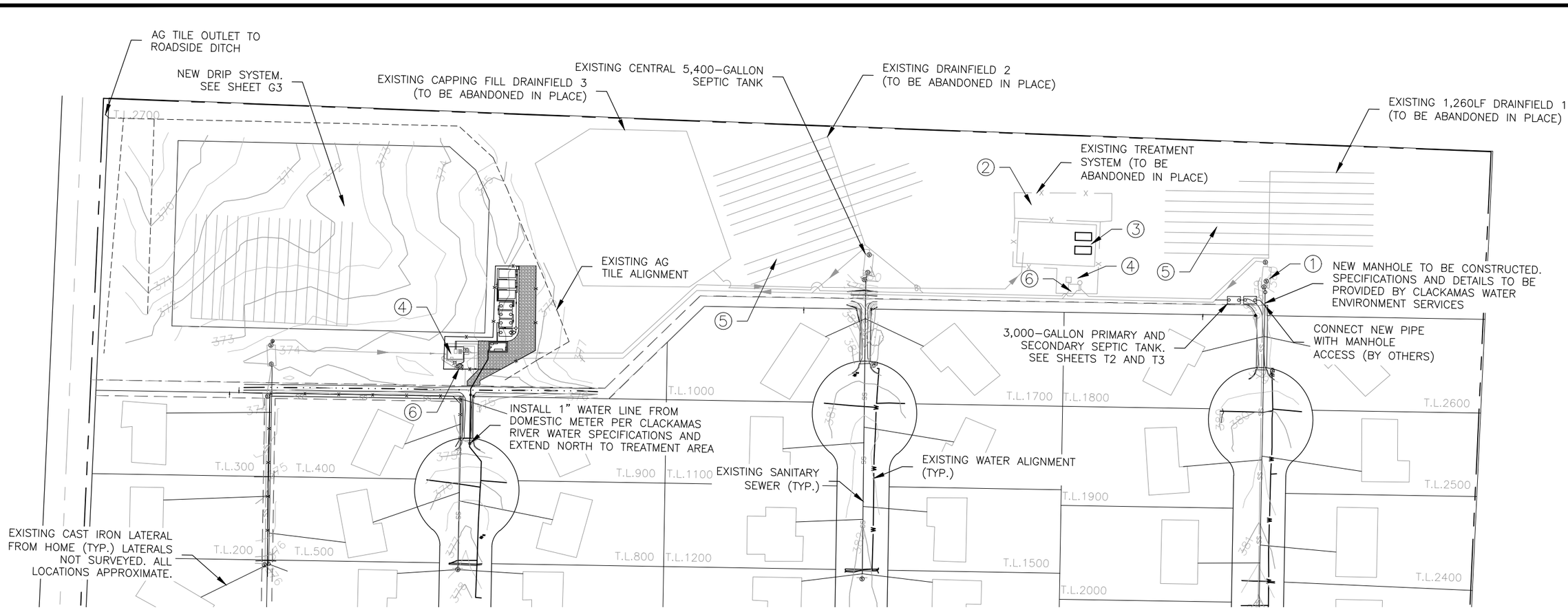

ABANDONMENT NOTES:

1. EXISTING EAST SEPTIC TANK – DECOMMISSION ACCORDING TO OAR 340-071-0185(2)(a)(b). TANKS MUST BE PUMPED BY A LICENSED SEWAGE DISPOSAL SERVICE TO REMOVE ALL SEPTAGE. UPON PUMPING, TANKS MUST BE FILLED WITH REJECT SAND, BAR RUN GRAVEL, OR OTHER MATERIAL APPROVED BY THE DEPARTMENT (DEQ) OR TANK MUST BE REMOVED AND PROPERLY DISPOSED OF. PROVIDE PROPER DOCUMENTATION FOR ABANDONMENT ACCORDING TO STATE AND LOCAL REGULATIONS.
2. EXISTING GRAVEL FILTER – ABANDONED IN PLACE (2006).
3. EXISTING AX100 TEXTILE FILTRATION UNITS, PIPING, AND BASINS – REMOVE AND PROPERLY DISPOSE OF UNITS, CUT AND CAP PIPING TO AND FROM UNITS, BACKFILL WITH 3/4 MINUS, REJECT SAND, OR BAR RUN GRAVEL.
4. TREATMENT AREA AND LIFT STATION PUMPS AND FLOATS ASSEMBLIES – REMOVE AND PROPERLY DISPOSE OF PUMPS, VAULT(S) AND FLOATS. CUT AND CAP PIPING TO AND FROM TREATMENT AREA FLOW SPLITTER BASIN AND PUMP BASIN UPON PROJECT COMPLETION. TREATMENT AREA FLOW SPLITTER BASIN AND PUMP BASIN MUST BE PUMPED BY A LICENSED SEWAGE DISPOSAL SERVICE TO REMOVE ALL SEPTAGE. UPON PUMPING, BASIN MUST BE FILLED WITH REJECT SAND, BAR RUN GRAVEL, OR OTHER MATERIAL APPROVED BY DEQ OR BASIN MUST BE REMOVED AND PROPERLY DISPOSED OF.
5. EXISTING DRAINFIELDS – ABANDON IN PLACE.
6. TREATMENT AREA AND LIFT STATION CONTROL PANELS AND ELECTRICAL EQUIPMENT – ALL CONTROL PANELS AND ASSOCIATED STRUCTURES TO BE REMOVED AND DISPOSED OF IN A DEQ APPROVED LANDFILL. EXISTING CONDUIT TO BE CUT AND CAPPED. BACKFILL OF ANY ASSOCIATED EXCAVATIONS TO OCCUR WITH REJECT SAND, BAR RUN GRAVEL, OR OTHER MATERIAL APPROVED BY DEQ.

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No. EH W-448450 Exp. 9/30/21

FISCHER'S FOREST PARK LOSS
CLACKAMAS COUNTY

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VALLEY SCIENCE AND ENGINEERING

DECOMMISSIONING AND ABANDONMENT NOTES

LARGE ONSITE SEWAGE SYSTEM DESIGN

SHEET G5

Relative Elevations (in feet)

Label	Relative Elevation	Description
Temporary Benchmark (TBM)		
TBM-1	373.94	TBM-1 West Septic Tank (Top of Cast Iron Outlet Manhole)
TBM-2	379.41	East Septic Tank (Top of Cast Iron Manhole)

East Primary Septic Tank Replacement (3,000 gallon Waite Concrete Products)		
A1	378.73	Finish Grade (1" Below Top of Lid)
A2	377.48	Exterior Top of Tank
A3	376.15	Inlet Invert (8")
A4	375.98	Outlet Invert (4")
A5	370.28	Interior Bottom of Tank
A6	369.90	Exterior Bottom of Tank (Top of Prepared Base)

East Secondary Septic Tank (3,000 gallon Waite Concrete Products)		
B1	378.48	Finish Grade (1" Below Top of Lid)
B2	376.82	Exterior Top of Tank
B3	375.73	Inlet Invert (4")
B4	375.57	Outlet Invert (4")
B5	369.86	Interior Bottom of Tank
B6	369.48	Exterior Bottom of Tank (Top of Prepared Base)

Lift Tank (Existing Recirculation Tank)		
C1	375.80	Exterior Top of Tank EMS, 2006 Record Drawings
C2	370.00	West Inlet Invert (1 @ 4") - EMS, 2006 Record Drawings
C3	368.78	East Inlet Invert (1 @ 4") - EMS, 2006 Record Drawings
C4	366.88	High Level Alarm/Lag Pump ON
C5	366.38	Lead Pump ON
C6	366.13	Pump(s) OFF
C7	365.88	Redundant "OFF"/Low Level Alarm
C8	365.13	Flow Inducer Hole Heights
C9	363.13	Interior Bottom of Tank - EMS, 2006 Record Drawings

Recirculation Tank A (3,000 gallon Waite Concrete Products)		
D1	375.00	Finish Grade (1" Below Top of Lid)
D2	373.08	Exterior Top of Tank
D3	372.00	Inlet Invert
D4	367.79	MinLL
D5	367.13	Pass Through Piping
D6	366.13	Interior Bottom of Tank
D7	365.75	Exterior Bottom of Tank (Top of Prepared Base)

Recirculation Tank B (3,000 gallon Waite Concrete Products)		
E1	375.00	Finish Grade (1" Below Top of Lid)
E2	373.08	Exterior Top of Tank
E3	367.79	MinLL
E4	367.13	Pass Through Piping
E5	366.13	Interior Bottom of Tank
E6	365.75	Exterior Bottom of Tank (Top of Prepared Base)

Recirculation Tank C (3,000 gallon Waite Concrete Products)		
F1	375.00	Finish Grade (1" Below Top of Lid)
F2	373.08	Exterior Top of Tank
F3	371.54	High Level Timer and Alarm
F4	370.29	Override Timer
F5	369.04	Normal Timer (Low when Down)
F6	368.63	Redundant "OFF"/Low Level Alarm
F7	368.13	Flow Inducer Hole Heights
F8	367.13	Pass Through Piping (Between Tanks)
F9	366.13	Interior Bottom of Tank
F10	365.75	Exterior Bottom of Tank (Top of Prepared Base)

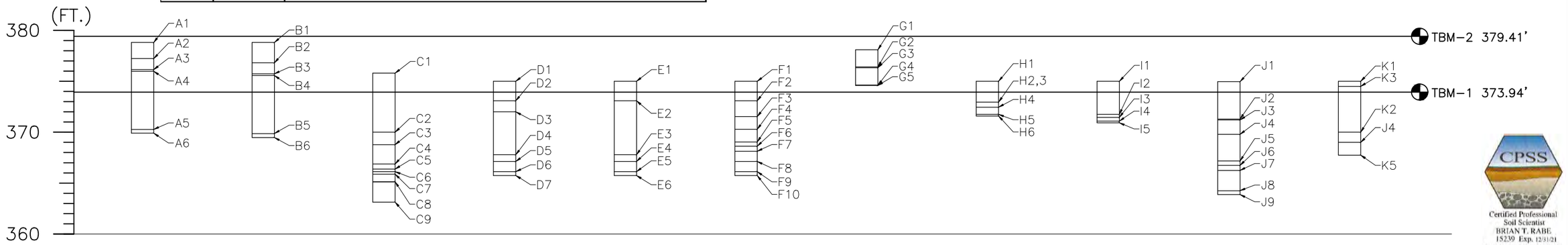
New AdvanTex Unit (AX100)		
G1	378.09	Top of Lid
G2	376.42	Top of Distribution Laterals (Orifice Discharge)
G3	376.34	Finish Grade (21" Below Top of Lid)
G5	374.63	Underdrain (Outlet Invert)
G6	374.59	Exterior Bottom of Container (Top of Prepared Base)

Primary Flow Splitter Basin		
H1	375.00	Finish Grade (1" Below Top of Riser Lid)
H2	372.96	Inlet Invert (4")
H3	372.96	Vent/Overflow
H4	372.46	Orifices (Standpipes)
H5	371.75	Outlet Invert (2@4")
H6	371.59	Exterior Bottom of Basin (Top of Prepared Base)

Secondary Flow Splitter Basin		
I1	375.00	Finish Grade (1" Below Top of Riser Lid)
I2	371.75	Inlet Invert (4")
I3	371.46	Orifices (Standpipes)
I4	371.09	Outlet Invert (3@4")
I5	370.92	Exterior Bottom of Basin (Top of Prepared Base)

Dripfield Dosing Tank (3,000 gallon Waite Concrete Products)		
J1	374.96	Finish Grade (1" Below Top of Lid)
J2	371.29	Inlet Invert (4")
J4	371.21	Exterior Top of Tank
J3	369.79	High Level Alarm
J5	367.17	Timer ON
J6	366.75	Redundant "OFF"/Low Level Alarm
J7	366.25	Flow Inducer Hole Heights
J8	364.25	Interior Bottom of Tank
J9	363.88	Exterior Bottom of Tank (Top of Prepared Base)

Drip System Components		
K1	375.00	Maximum Finish Grade Over Drip Field
K2	370.00	Minimum Finish Grade Over Drip Field
K3	374.50	Maximum Elevation of Dripperline
K4	369.00	Minimum Elevation of Dripperline
K5	367.75	Invert of Flushing Return Mainline



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Registered Wastewater Specialist
No. ER-W-448430 Exp. 9/30/21

FISCHER'S FOREST PARK LOSS
CLACKAMAS COUNTY

REV #	DESCRIPTION	BY	DATE

DES. BY 1BTR
DRG. BY 6NSG
CHK. BY 1GLT
DATE 8/18/2022
JOB No. 2020230021

VALLEY SCIENCE AND ENGINEERING

HYDRAULIC PROFILE

LARGE ONSITE SEWAGE SYSTEM DESIGN

SHEET
H1

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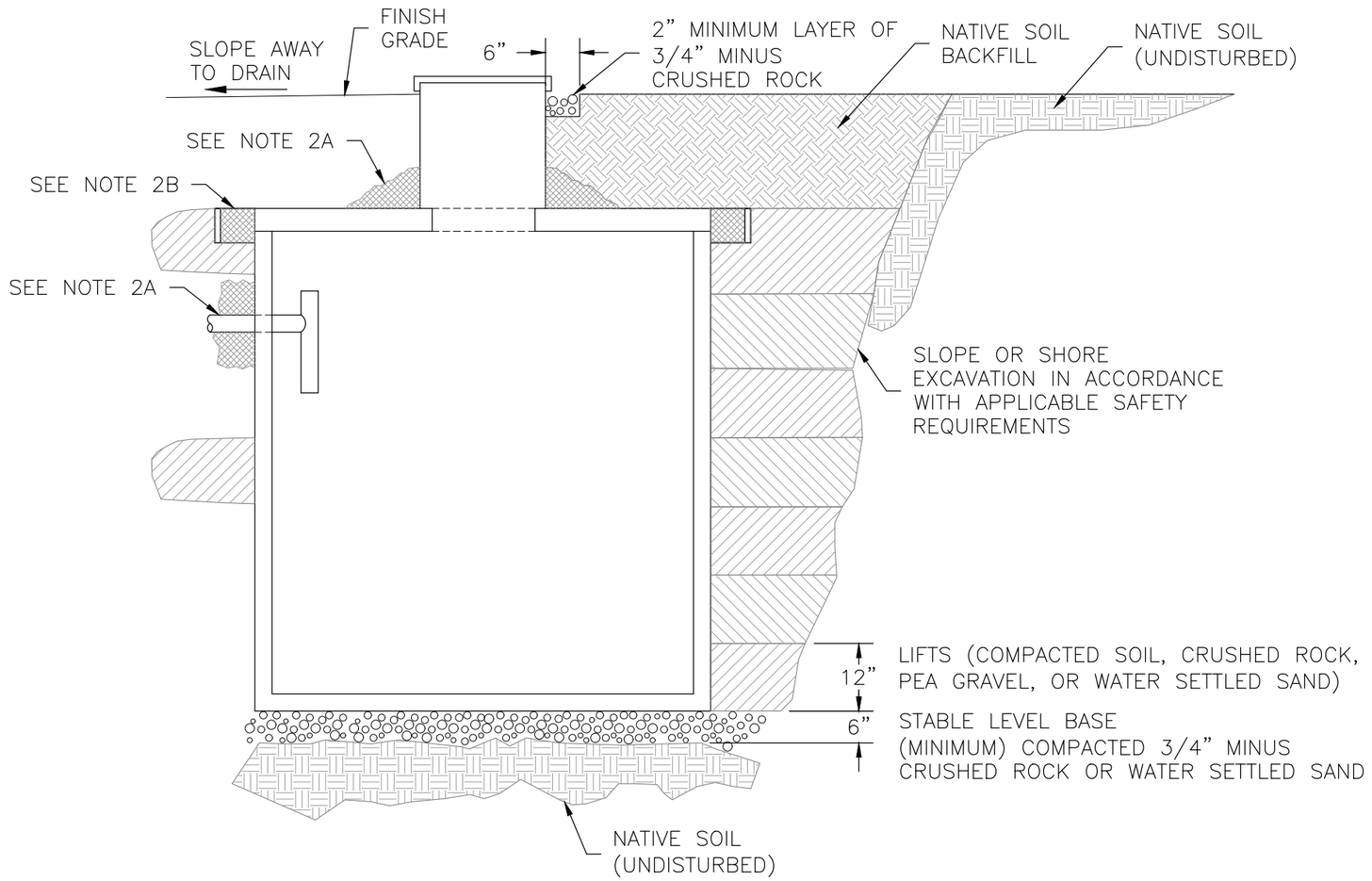


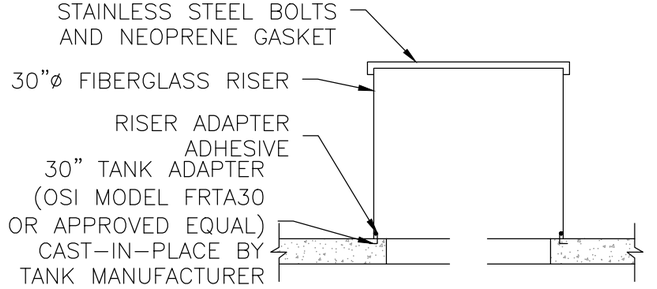
1 – TANK END VIEW
NOT TO SCALE

NOTES: (1) AREAS WHERE PIPING AND CONDUIT SPAN THE TANK EXCAVATION SHALL BE BACKFILLED WITH WATER SETTLED SAND TO PREVENT SETTLING.

(2) SEALING AND WATER TIGHTNESS TESTING: NO MORE THAN ONE GALLON OF WATER LOSS IN 24 HOURS SHALL BE TOLERATED. FIELD REPAIRS MAY BE ATTEMPTED ONCE. IF THE TANK FAILS THE WATER TIGHTNESS TEST A SECOND TIME IT SHALL BE REPLACED AT NO EXPENSE TO THE OWNER.

(A) ALL PIPE PENETRATIONS AND RISER SEAMS SHALL BE VISUALLY TESTED WITH WATER. ANY OBVIOUS LEAKAGE SHALL RESULT IN RE–GROUTING. ALL PIPE PENETRATIONS AND RISER SEAMS SHALL BE SURROUNDED WITH A MINIMUM OF SIX INCHES OF BENTONITE PRIOR TO BACKFILLING.

(B) ONE–PIECE OR TOP SEAM TANKS: BACKFILL TO 6 INCHES BELOW THE EXTERIOR TANK TOP. FILL THE TANK WITH WATER TO 2 INCHES INTO THE RISERS (NO MORE). PRE–SOAK FOR 24 HOURS AND REFILL, IF NECESSARY. PLACE BENTONITE PRIOR TO FINAL BACKFILL.



2 – 30"ø RISER DETAIL
0 2 FEET
SCALE

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BRIAN T. RABE
15239 Exp. 12/31/21
Registered Wastewater Specialist
No. EH-W-448430 Exp. 9/30/21

FISCHER'S FOREST PARK LOSS
CLACKAMAS COUNTY

REV #	DESCRIPTION	BY	DATE

DES. BY 1BTR
DRG. BY 6NSG
CHK. BY 1GLT
DATE 8/18/2022
JOB No. 2020230021

VALLEY SCIENCE AND ENGINEERING

EXCAVATION AND BACKFILL DETAIL

LARGE ONSITE SEWAGE SYSTEM DESIGN

SHEET T1

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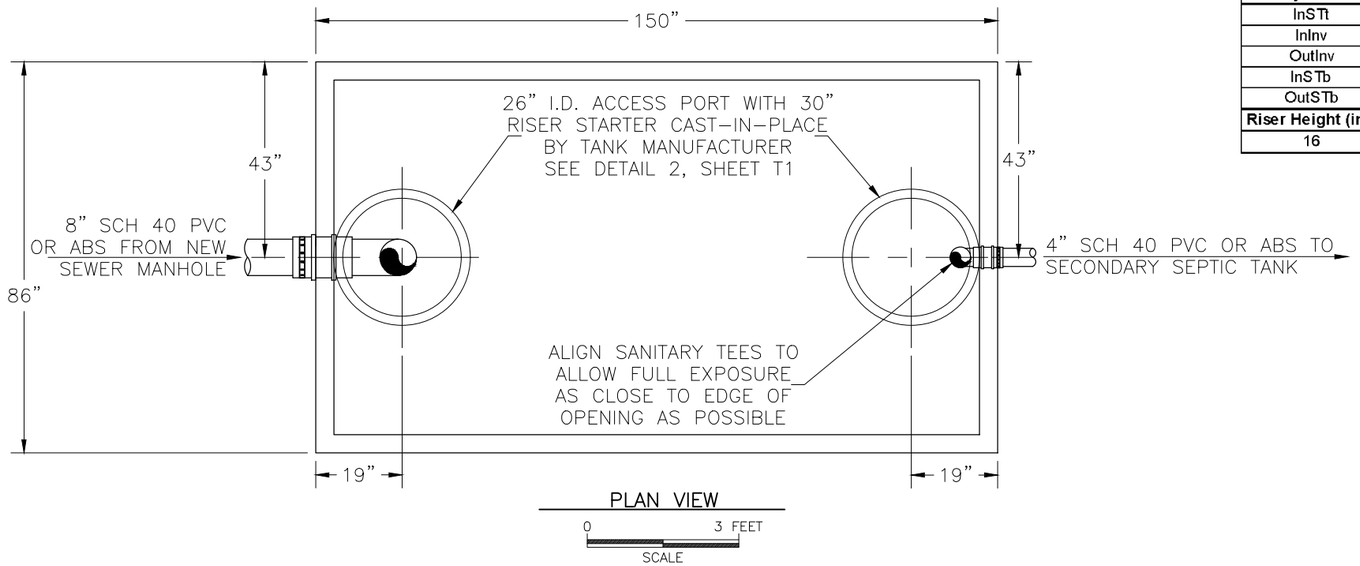
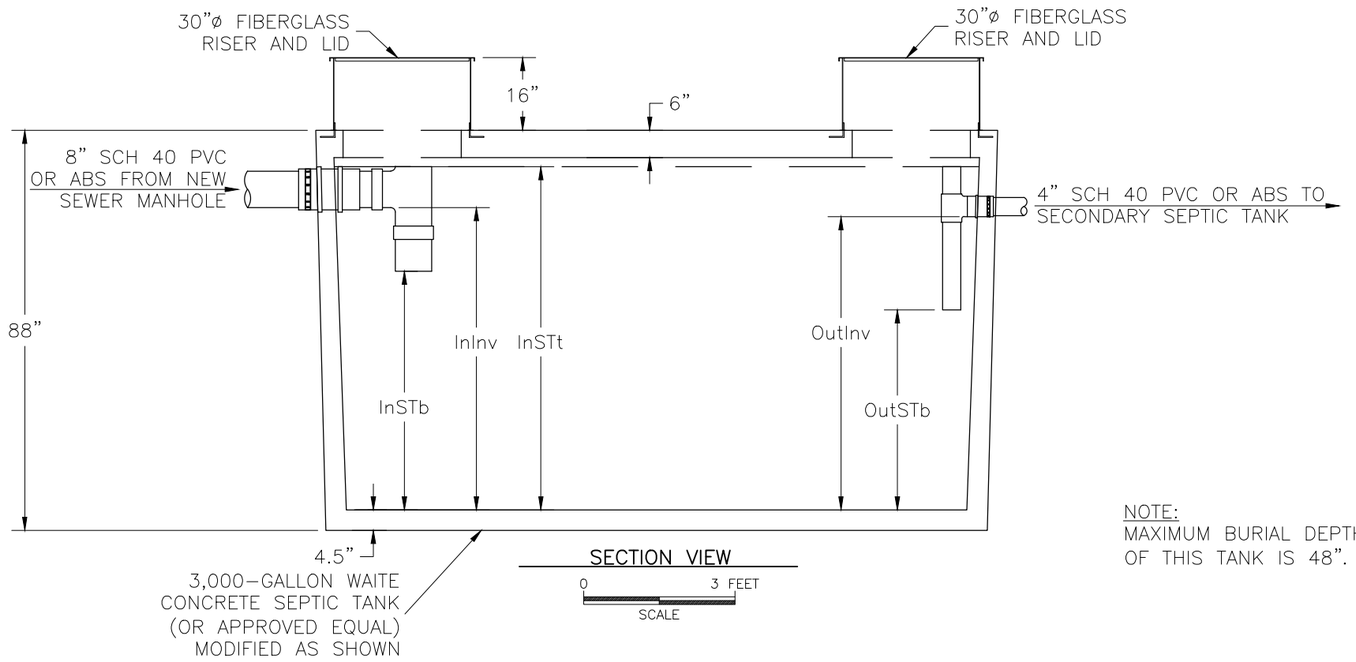


PLAN VIEW

0 3 FEET

SCALE



SECTION VIEW

0 3 FEET

SCALE

NOTE:
MAXIMUM BURIAL DEPTH OF THIS TANK IS 48".

Labels and General Information			
Symbol	**Name**	**Distance From Tank Floor (in.)**	**Distance From Exterior Tank Top (in.)**
InSTt	Inlet and Outlet Sanitary Tees (Top of Pipe)	75.5	8
InInv	Inlet Invert	66.5	17
OutInv	Outlet Invert/Operating Liquid Level	64.5	19
InSTb	Inlet Sanitary Tee (Bottom of Pipe)	52.5	31
OutSTb	Outlet Sanitary Tee (Bottom of Pipe)	44	39.5
Riser Height (in.)	**Inlet Pipe Size (in.)**	**Outlet Pipe Size (in.)**	**Tank Location**
16	8	4	East Primary Septic Tank - North End of Fir Cone Ct

Orenco Equipment (Or Approved Equal)		
East Primary Septic Tank Replacement		
Quantity	**Item ***	**Description/Comments**
2	RF30016	Fiberglass Access Risers, 30" Diameter (Inlet & Outlet)
2	FLD30G	Fiberglass Lid, 30" with Gasket and 4 Bolt Pattern
4	MA320	2-Part Epoxy for Securing Riser to Tank Adapter
2	ADH200	Caulking for Final Seal Between Riser and Tank Adapter

* Item numbers are provided as a courtesy. Since specific numbers and supplementary codes can change, supplier is to compare this information to the drawings and independently verify. Call designer if there are any inconsistencies or questions.

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Registered Wastewater Specialist
No. III W-448490 Exp. 9/30/21

FISCHER'S FOREST PARK LOSS
CLACKAMAS COUNTY

REV #	DESCRIPTION	BY	DATE

DES. BY 1BTR
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VALLEY SCIENCE AND ENGINEERING

EAST PRIMARY SEPTIC TANK

LARGE ONSITE SEWAGE SYSTEM DESIGN

SHEET
T2

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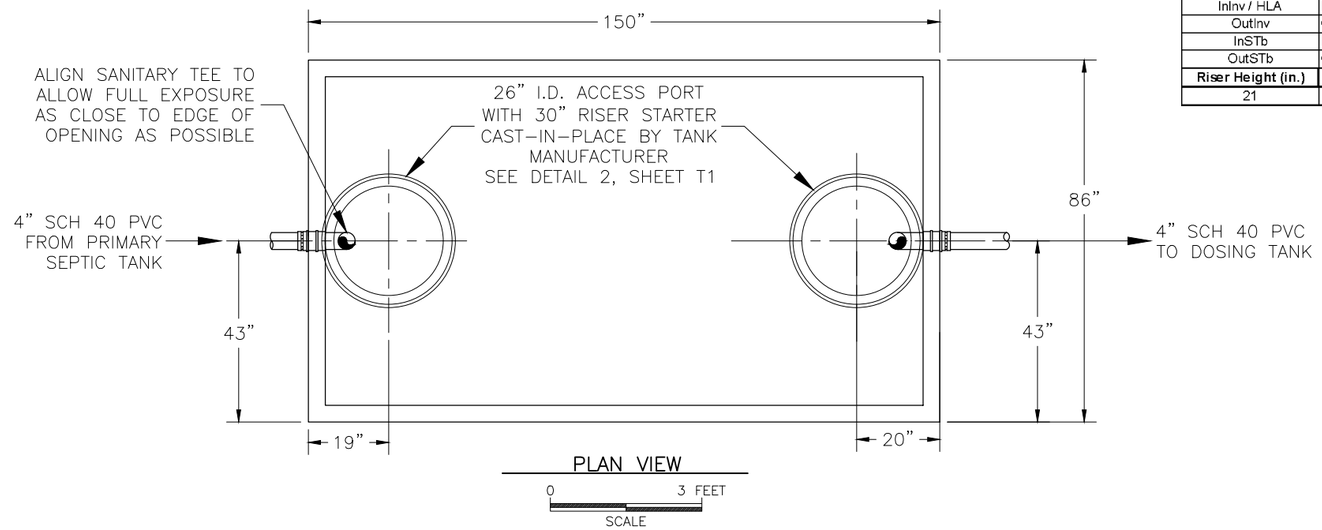
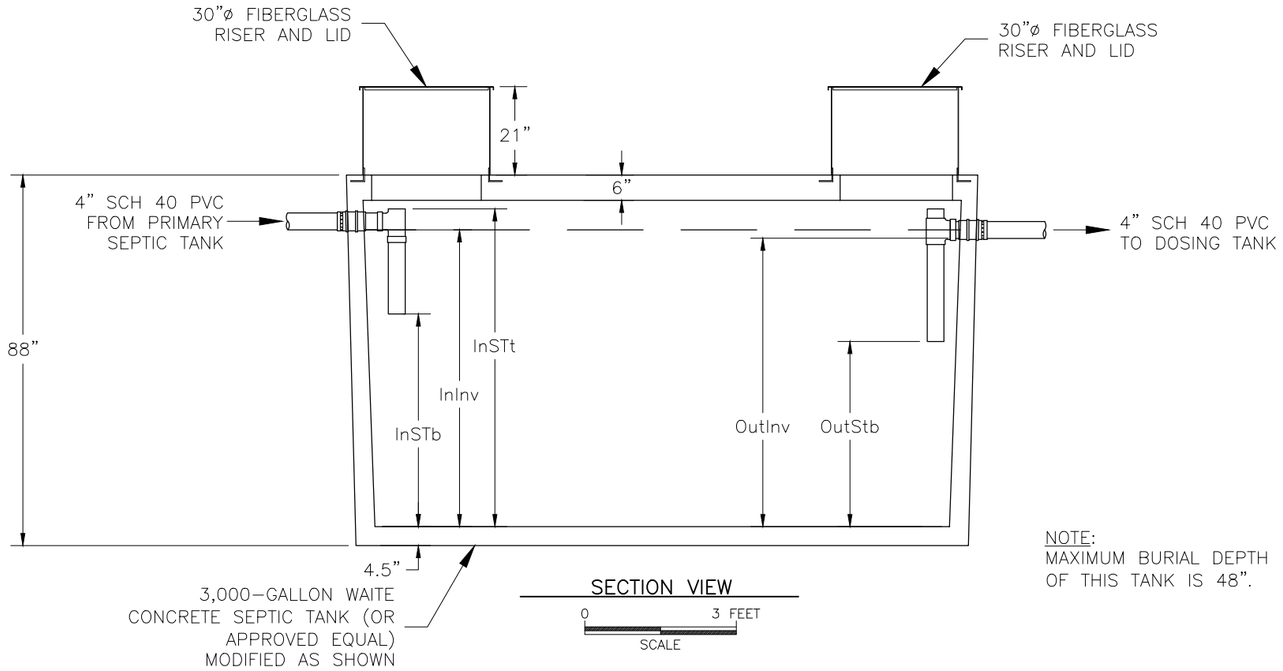


PLAN VIEW

0 3 FEET

SCALE



SECTION VIEW

0 3 FEET

SCALE

NOTE:
MAXIMUM BURIAL DEPTH OF THIS TANK IS 48".

Labels and General Information			
Symbol	**Name**	**Distance From Tank Floor (in.)**	**Distance From Exterior Tank Top (in.)**
InSTt	Inlet and Outlet Sanitary Tees (Top of Pipe)	75.5	8
InInv / HLA	Inlet Invert / High Level Alarm	70.5	13
OutInv	Outlet Invert/Operating Liquid Level	68.5	15
InSTb	Inlet Sanitary Tee (Bottom of Pipe)	50.5	33
OutSTb	Outlet Sanitary Tee (Bottom of Pipe)	44	39.5
Riser Height (in.)	**Inlet Pipe Size (in.)**	**Outlet Pipe Size (in.)**	**Tank Location**
21	4	4	New Tank Farm West of Parking Lot, South of SST C

Orenco Equipment (Or Approved Equal)		
Filtration Septic Tank		
Quantity	**Item ***	**Description/Comments**
2	RF3021	Fiberglass Access Riser, 30" Diameter (Inlet)
2	FLD30G	Fiberglass Lid, 30" with Gasket and 4 Bolt Pattern
4	MA320	2-Part Epoxy for Securing Riser to Tank Adapter
2	ADH200	Caulking for Final Seal Between Riser and Tank Adapter

* Item numbers are provided as a courtesy. Since specific numbers and supplementary codes can change, supplier is to compare this information to the drawings and independently verify. Call the designer if there are any inconsistencies or questions.

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FISCHER'S FOREST PARK LOSS
CLACKAMAS COUNTY

REV #	DESCRIPTION	BY	DATE

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VALLEY SCIENCE AND ENGINEERING

EAST SECONDARY SEPTIC TANK

LARGE ONSITE SEWAGE SYSTEM DESIGN

SHEET
T3

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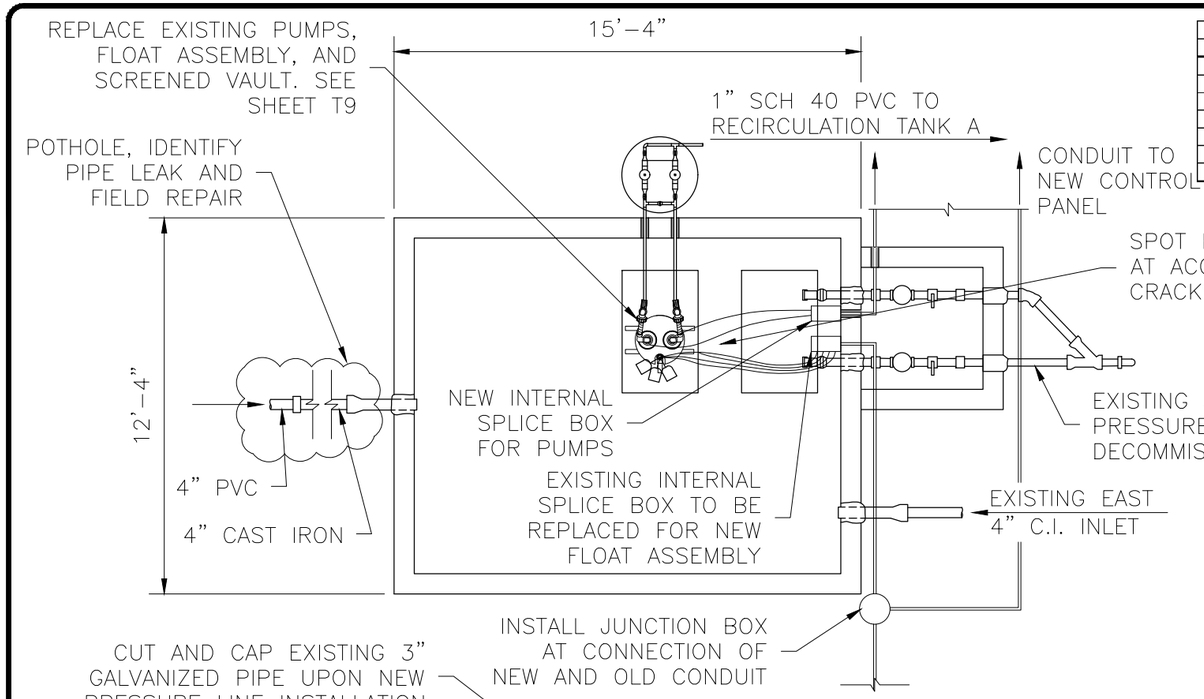
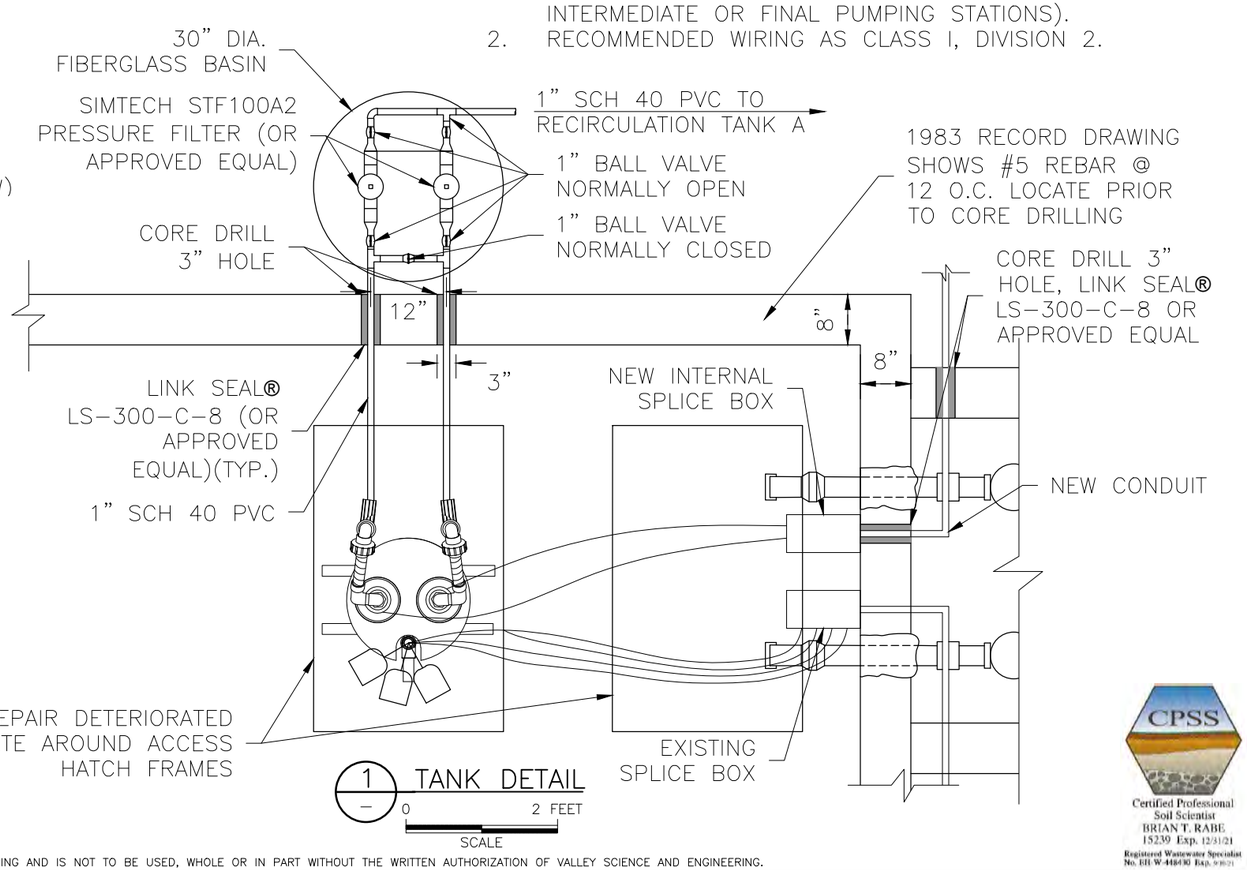


Labels and General Information			
Symbol	Name	Distance From Tank Floor (in.)	Distance From Exterior Tank Top (in.)
WInInv	West Inlet Invert	82.44	73.56
EInInv	East Inlet Invert	67.8	88.2
LAG/HLA	Lag Pump enable and High Level Alarm	65	91
ON	Lead Pump ON	50	106
OFF	Pump(s) OFF	35	121
RO/LLA	Redundant OFF/Low Level Alarm	30	126
FITInH	Flow Inducer Tower Inlet Holes	24	132

Orenco Equipment (Or Approved Equal)		
Effluent Lift Tank		
Quantity	Item *	Description/Comments
1	SB-2	Internal Splice Box with 2 Cord Grips (Pumps)
1	SB-4	Internal Splice Box with 4 Cord Grips (Controls/Alarms)
1	MF4P-20	Float Assembly with 4 Floats and 20-foot Cords
2	HV-100BCFC	Hose and Valve Assembly, 1", with Ball Valve, Check Valve, and Flow Control Disk
1	FITD-D90	Custom Duplex Flow Inducer Tower without Pump Support Plate
2	PF 10 0512-20	OSI Effluent Pump, 0.50 Hp, 230V, 60 Hz, with 20-foot Power Cords

* Item numbers are provided as a courtesy. Since specific numbers and supplementary codes can change, supplier is to compare this information to the drawings and independently verify. Call the designer if there are any inconsistencies or questions.

NOTES:
1. CLASSIFICATION FOR ELECTRICAL EQUIPMENT: UNCLASSIFIED (NFPA 820, TABLE 3, NO. 19 – INTERMEDIATE OR FINAL PUMPING STATIONS).
2. RECOMMENDED WIRING AS CLASS I, DIVISION 2.



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No. III-W-448490 Exp. 9/30/21

FISCHER'S FOREST PARK LOSS
CLACKAMAS COUNTY

REV #	DESCRIPTION	BY	DATE

DES. BY 1BTR
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VALLEY SCIENCE AND ENGINEERING

DOSING TANK CONVERSION (EXISTING RECIRCULATION TANK)

LARGE ONSITE SEWAGE SYSTEM DESIGN

SHEET T4

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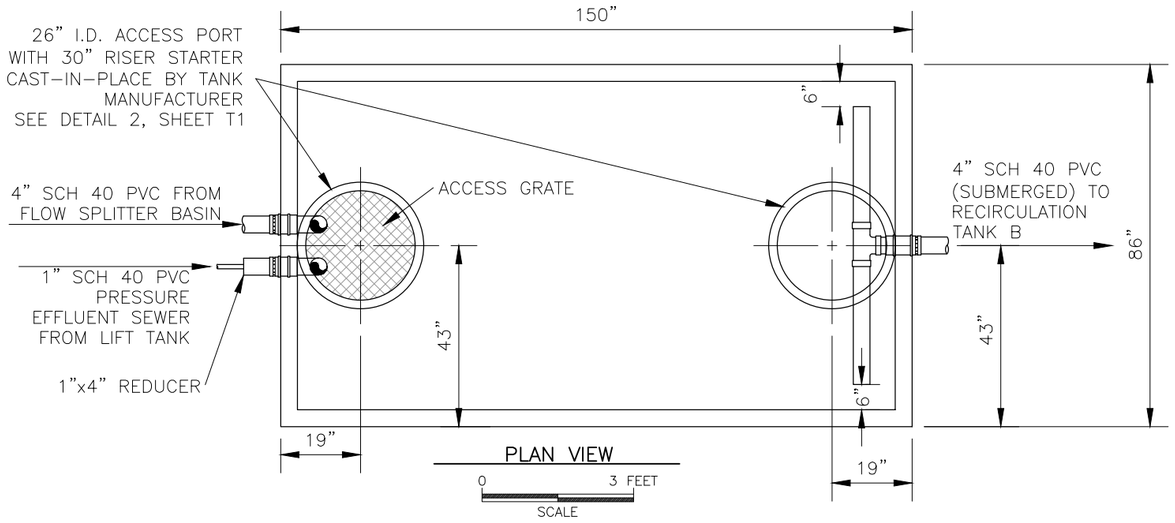
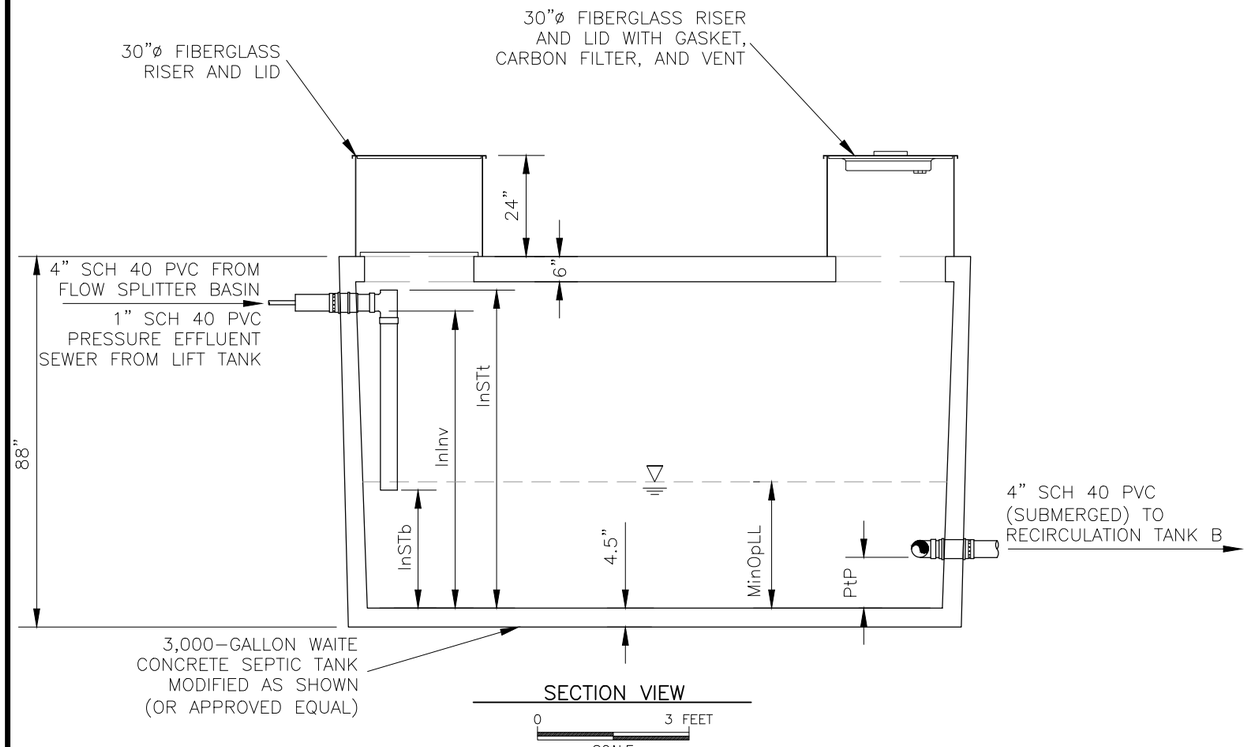


Labels and General Information			
Symbol	**Name**	**Distance From Tank Floor (in.)**	**Distance From Exterior Tank Top (in.)**
InSTt	Inlet Sanitary Tees (Top of Pipe)	75.5	8
InInv	Inlet Invert	70.5	13
MinOpLL	Minimum Operation Liquid Level	30	53.5
InSTb	Inlerr Sanitary Tee (Bottom of Pipe)	28	55.5
PtP	Pass Through Piping (Between Tanks)	12	71.5
Riser Height (in.)	**Inlet Pipe Size (in.)**	**Outlet Pipe Size (in.)**	**Tank Location**
24	2 @ 4	4	Tank Farm (North of Merry Meadow Ct)

Orenco Equipment (Or Approved Equal)		
Recirculation Tank A		
Quantity	**Item ***	**Description/Comments**
2	RF3024	Fiberglass Access Riser, 30" Diameter (Inlet)
1	FLD30G	Fiberglass Lid, 30" with Gasket and 4 Bolt Pattern
1	FLD30GVCF	Fiberglass Lid, 30" with Gasket, Vent, Carbon Filter and 4-Bolt Pattern (Outlet)
1	RG30	30" Diameter Access Grate (Inlet)
4	MA320	2-Part Epoxy for Securing Riser to Tank Adapter
2	ADH200	Caulking for Final Seal Between Riser and Tank Adapter

* Item numbers are provided as a courtesy. Since specific numbers and supplementary codes can change, supplier is to compare this information to the drawings and independently verify. Call the designer if there are any inconsistencies or questions.



NOTE:
MAXIMUM BURIAL DEPTH OF THIS TANK IS 48"

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FISCHER'S FOREST PARK LOSS
CLACKAMAS COUNTY

REV #	DESCRIPTION	BY	DATE

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VALLEY SCIENCE AND ENGINEERING

RECIRCULATION TANK A

LARGE ONSITE SEWAGE SYSTEM DESIGN

SHEET
T5

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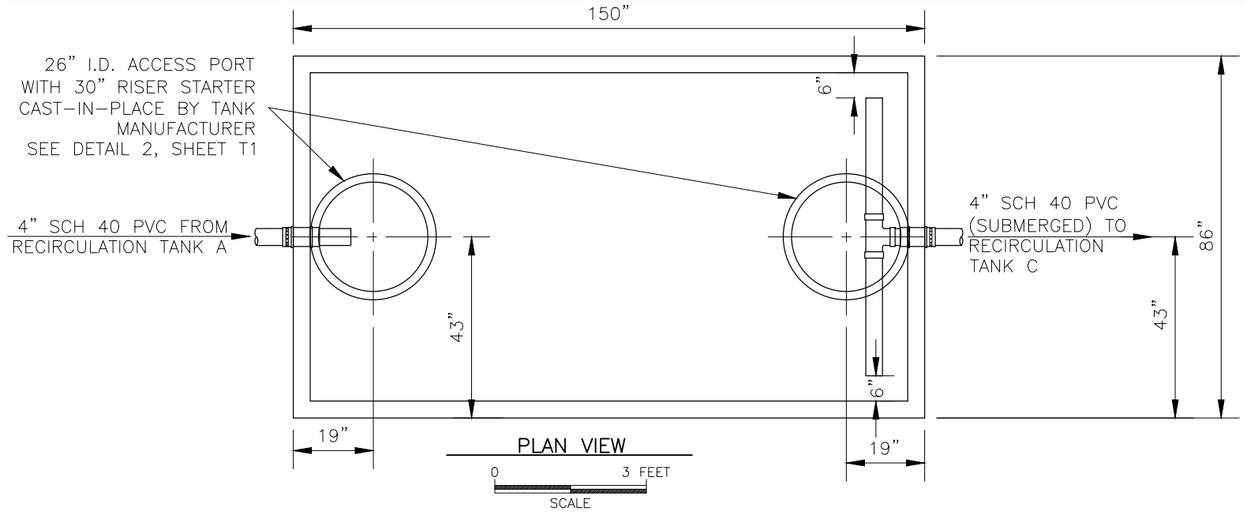
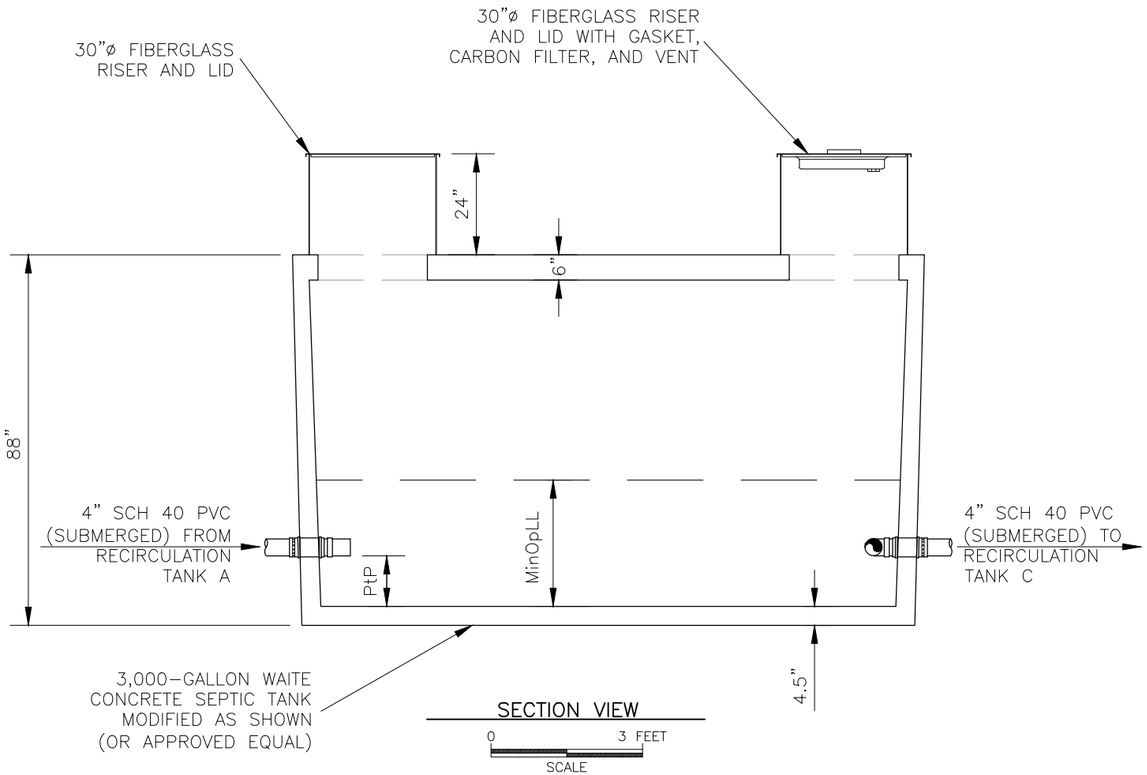


Labels and General Information			
Symbol	**Name**	**Distance From Tank Floor (in.)**	**Distance From Exterior Tank Top (in.)**
MinOpLL	Minimum Operation Liquid Level	30	53.5
PtP	Pass Through Piping (Between Tanks)	12	71.5
Riser Height (in.)	**Inlet Pipe Size (in.)**	**Outlet Pipe Size (in.)**	**Tank Location**
24	4	4	Tank Farm (North of Merry Meadow Ct)

Orenco Equipment (Or Approved Equal)		
Recirculation Tank B		
Quantity	**Item ***	**Description/Comments**
2	RF3024	Fiberglass Access Riser, 30" Diameter (Inlet)
1	FLD30G	Fiberglass Lid, 30" with Gasket and 4 Bolt Pattern (Inlet)
1	FLD30GVCF	Fiberglass Lid, 30" with Gasket, Vent, Carbon Filter and 4-Bolt Pattern (Outlet)
4	MA320	2-Part Epoxy for Securing Riser to Tank Adapter
2	ADH200	Caulking for Final Seal Between Riser and Tank Adapter

* Item numbers are provided as a courtesy. Since specific numbers and supplementary codes can change, supplier is to compare this information to the drawings and independently verify. Call the designer if there are any inconsistencies or questions.



NOTE:
MAXIMUM BURIAL DEPTH OF THIS TANK IS 48"

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Registered Wastewater Specialist
No. EH-W-448430 Exp. 9/30/21

FISCHER'S FOREST PARK LOSS
CLACKAMAS COUNTY

REV #	DESCRIPTION	BY	DATE

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VALLEY SCIENCE AND ENGINEERING

RECIRCULATION TANK B

LARGE ONSITE SEWAGE SYSTEM DESIGN

SHEET
T6

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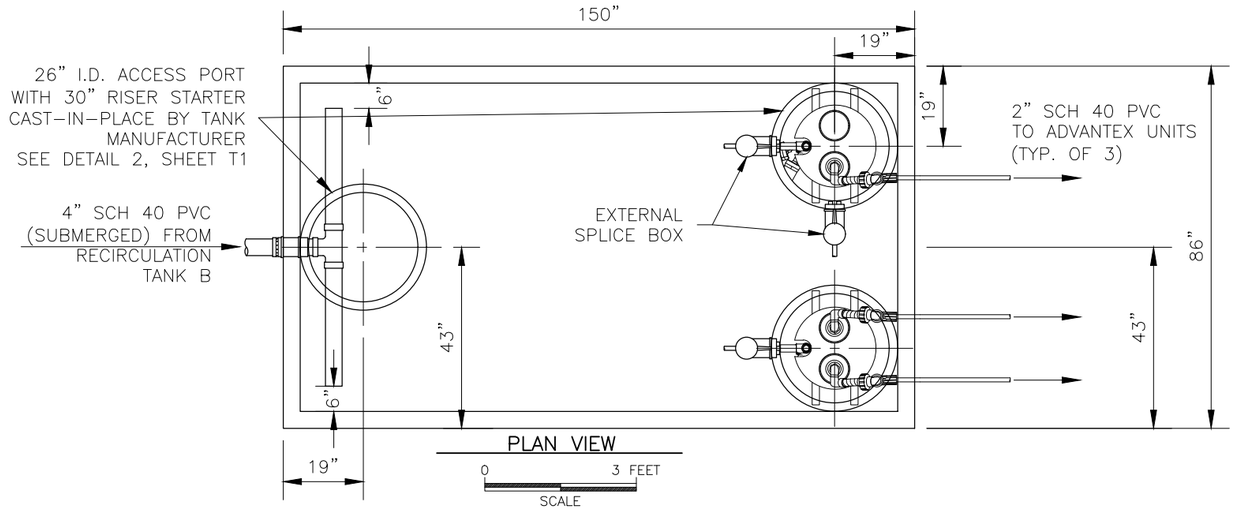

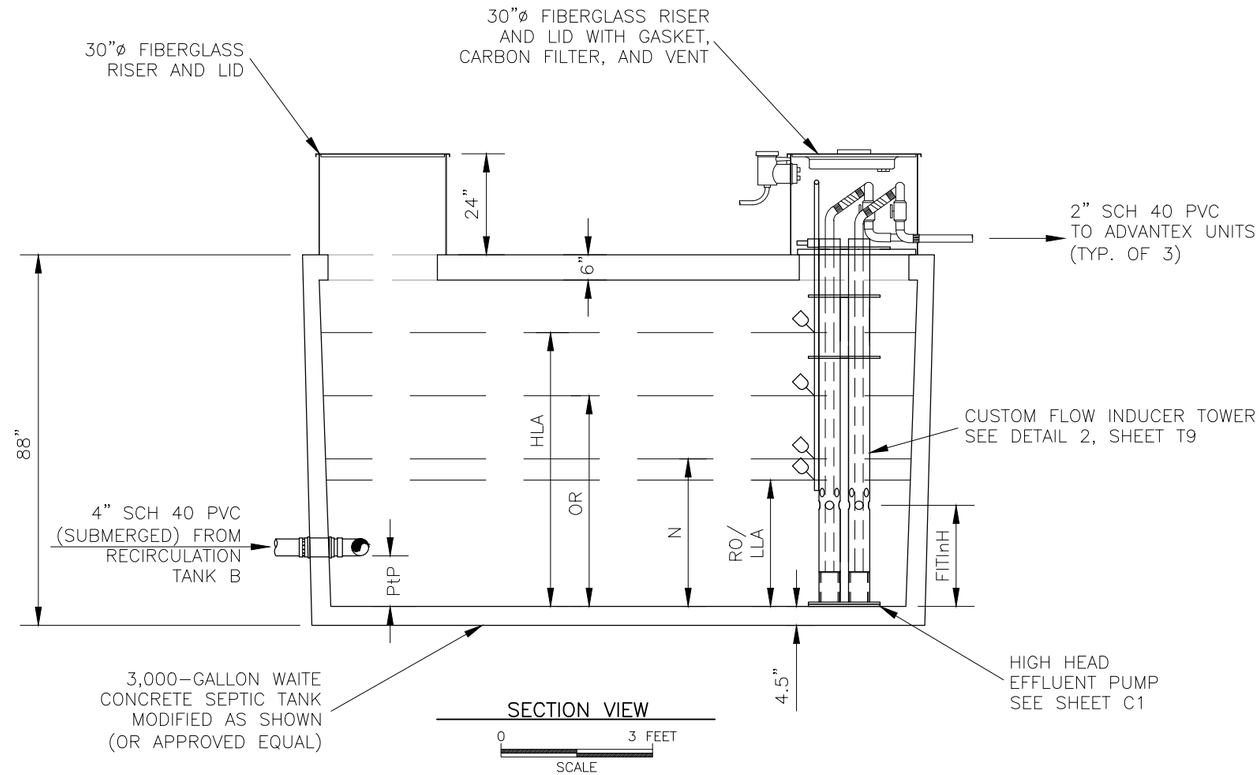

Labels and General Information			
Symbol	**Name**	**Distance From Tank Floor (in.)**	**Distance From Exterior Tank Top (in.)**
HLA	High Level Timer and Alarm	65	18.5
OR	Override Timer	50	33.5
N	Normal Timer (Low Timer when Down)	35	48.5
RO/LLA	Redundant OFF/Low Level Alarm	30	53.5
FITInH	Flow Inducer Tower Inlet Holes	24	59.5
PtP	Pass Through Piping (Between Tanks)	12	71.5
Riser Height (in.)	**Inlet Pipe Size (in.)**	**Outlet Pipe Size (in.)**	**Tank Location**
24	4	–	Tank Farm (North of Merry Meadow Ct)

Orenco Equipment (Or Approved Equal)		
Recirculation Tank C		
Quantity	**Item ***	**Description/Comments**
1	RF3024	Fiberglass Access Riser, 30" Diameter (Inlet)
1	RF3024+SX+20+20	Fiberglass Access Riser, 30" Diameter with 1@SX and 2@G200 (Outlet - 2 Pumps)
1	RF3024+SX+SX+20	Fiberglass Access Riser, 30" Diameter with 2@SX and 1@G200 (Outlet - 1 Pump + Controls/Alarms)
2	FLD30G	Fiberglass Lid, 30" with Gasket and 4 Bolt Pattern (Inlet + 1 Outlet)
1	FLD30GVCF	Fiberglass Lid, 30" with Gasket, Vent, Carbon Filter and 4-Bolt Pattern (1 Outlet)
1	SBEX-2	External Splice Box with 2 Cord Grips (Pumps)
1	SBEX-1	External Splice Box with 1 Cord Grips (Pumps)
1	SBEX-4	External Splice Box with 4 Cord Grips (Controls and Alarms)
1	MF4P-20	Float Assembly with 4 Floats and 20-foot Cords
3	HV-200BC	Hose and Valve Assembly, 2", with Ball Valve and Check Valve
2	FITD-D90	Custom Duplex Flow Inducer Tower without Pump Support Plate
3	PF 50 0712	OSI Effluent Pump, 0.75 Hp, 230V, 60 Hz, with 10-foot Power Cords
4	MA320	2-Part Epoxy for Securing Riser to Tank Adapter
2	ADH200	Caulking for Final Seal Between Riser and Tank Adapter

* Item numbers are provided as a courtesy. Since specific numbers and supplementary codes can change, supplier is to compare this information to the drawings and independently verify. Call the designer if there are any inconsistencies or questions.

NOTES:
1. CLASSIFICATION FOR ELECTRICAL EQUIPMENT: UNCLASSIFIED (NFPA 820, TABLE 3, NO. 19 – INTERMEDIATE OR FINAL PUMPING STATIONS).
2. RECOMMENDED WIRING AS CLASS I, DIVISION 2.
3. MAXIMUM BURIAL DEPTH OF THIS TANK IS 48".

Certified Professional Soil Scientist
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Registered Wastewater Specialist
No. ER-W-448430 Exp. 9/30/21

FISCHER'S FOREST PARK LOSS
CLACKAMAS COUNTY

REV #	DESCRIPTION	BY	DATE

DES. BY 1BTR
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VALLEY SCIENCE AND ENGINEERING

RECIRCULATION TANK C

LARGE ONSITE SEWAGE SYSTEM DESIGN

SHEET T7

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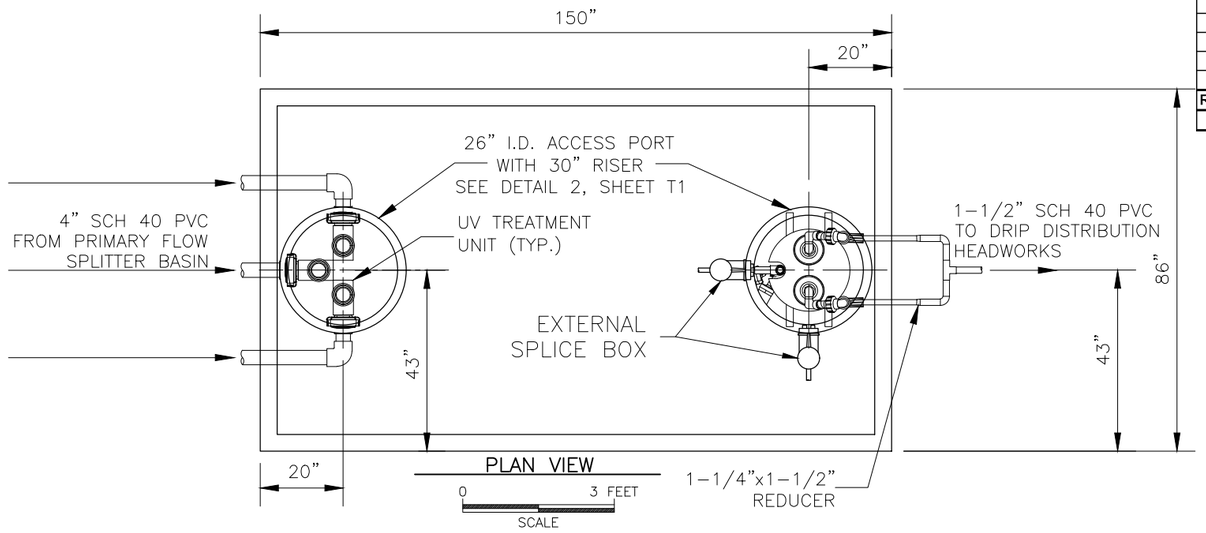

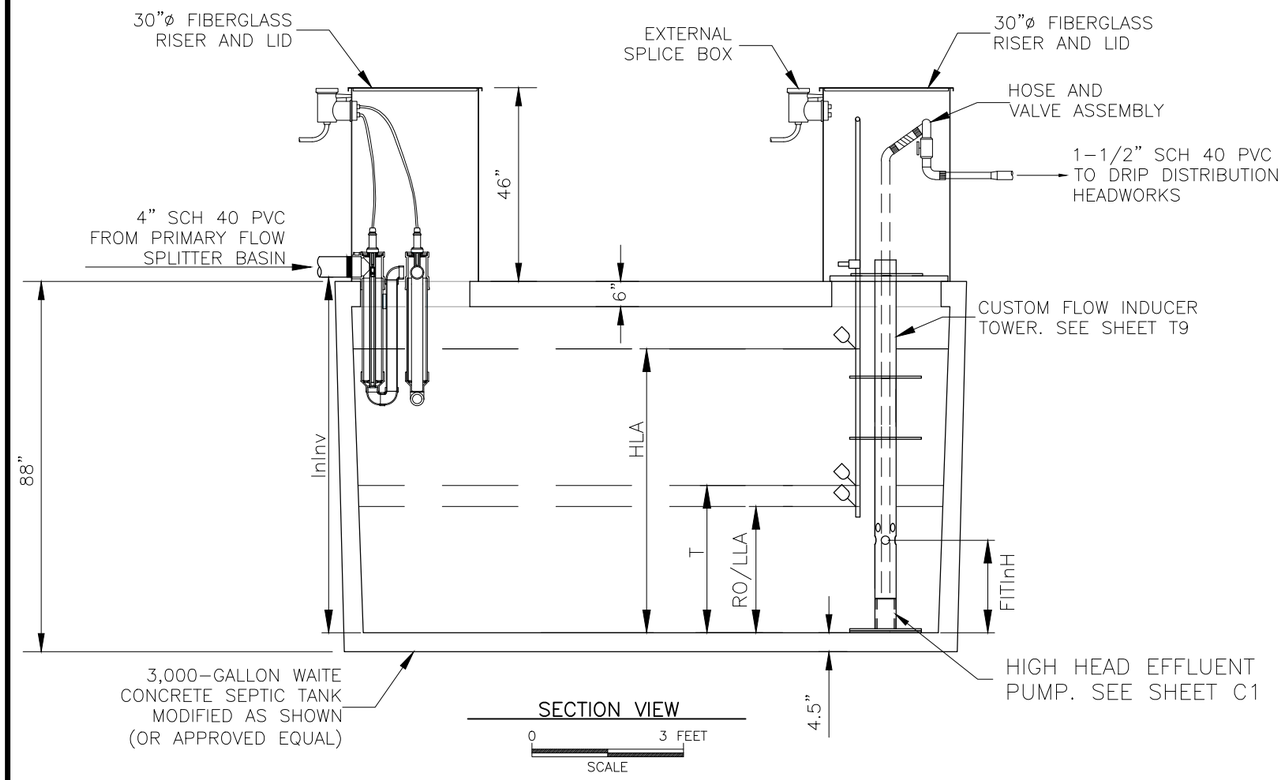

Labels and General Information			
Symbol	**Name**	**Distance From Tank Floor (in.)**	**Distance From Exterior Tank Top (in.)**
InInv	Inlet Invert	84.5	-1
HLA	High Level Alarm	67.5	16
T	Timer ON	47.5	36
RO/LLA	Redundant OFF/Low Level Alarm	42.5	41
FITDInH	Flow Inducer Tower Inlet Holes	36.5	47
Riser Height (in.)	**Inlet Pipe Size (in.)**	**Outlet Pipe Size (in.)**	**Tank Location**
46	–	–	Tank Farm (North of Merry Meadow Ct)

Orenco Equipment		
Dripfield Dosing Tank		
Quantity	**Item ***	**Description/Comments**
1	RF3046-SX-40-40+40	Fiberglass Access Riser, 30" Diameter (Inlet) with SX and 3@G40
1	RF3046+SX+SX+12+12	Fiberglass Access Riser, 30" Diameter with 2@SX and 2@G"2 (Outlet - 2 Pumps + Controls/Alarms)
2	FLD30G	Fiberglass Lid, 30" with Gasket and 4 Bolt Pattern
1	SBEX2	External Splice Box with 2 Cord Grips (1 for each Pump)
2	SBEX3	External Splice Box with 3 Cord Grips (UV AX Units - Inlet) and (Controls and Alarms - Outlet)
3	UVAX	Ultra Violet Disinfection Unit (Inlet)
1	MF3P	Float Assembly with 3 Floats
2	HV-152C	Hose and Valve Assembly, 1.25", with Ball Valve and Check Valve
1	FITD-D90	Custom Duplex Flow Inducer Tower without Pump Support Plate
2	PF2005*2	OSI Effluent Pump, 0.5 Hp, 230V, Single Phase, 60Hz, with 10-foot Power Cords
4	MA320	2-Part Epoxy for Securing Riser to Tank Adapter
2	ADH200	Caulking for Final Seal Between Riser and Tank Adapter

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NOTES:
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2. RECOMMENDED WIRING AS CLASS I, DIVISION 2.
3. MAXIMUM BURIAL DEPTH OF THIS TANK IS 48".

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No. EH-W-44840 Exp. 9/30/21

FISCHER'S FOREST PARK LOSS
CLACKAMAS COUNTY

REV #	DESCRIPTION	BY	DATE

DES. BY 1BTR
DRG. BY 6NSG
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VALLEY SCIENCE AND ENGINEERING

UV/DRIPFIELD DOSING TANK

LARGE ONSITE SEWAGE SYSTEM DESIGN

SHEET
T8

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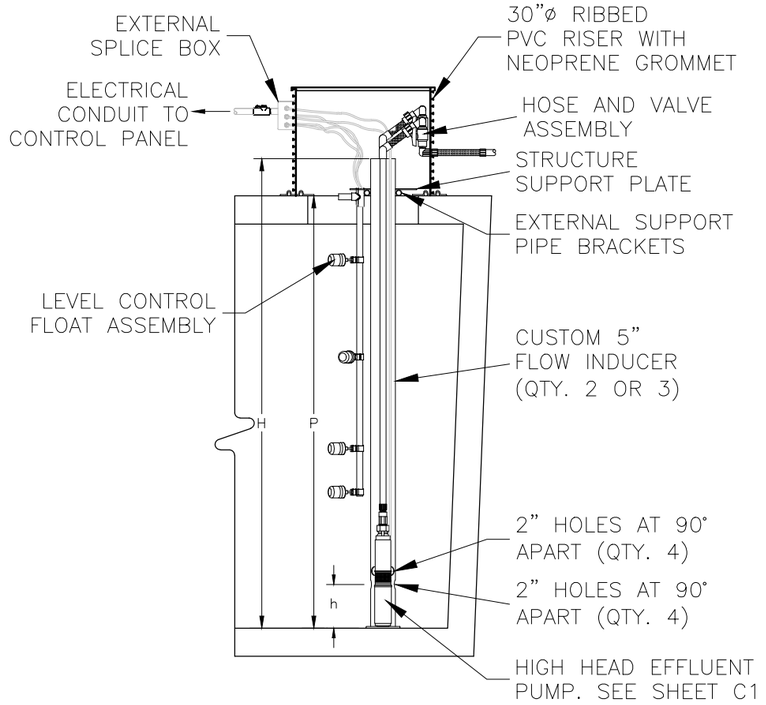

1 — FLOW INDUCER TOWER DETAIL

0 3 FEET

SCALE

Tank Type	Lift Tank	Recirculation Tank C	Dripfield Dosing Tank
Flow Inducer Tower Model Number	**FITD-D90**	**FITD-D90**	**FITD-D90**
Quantity	1	2	1
Flow Inducer Tube Diameter (in.)	5	5	5
Structural Plate Diameter (in.)	15	15	15
Support Pipe Length (in.)	24	24	24
H = Tower Height (in.)	90	90	90
P = Support Pipe Height (in.)	86	86	86
h = Inlet Hole Height (in.)	24	24	24
Inlet hole diameter (in.)	2	2	2
Inlet holes per tube	8	8	8
5-inch Flow Inducer Towers	2	2	2

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FISCHER'S FOREST PARK LOSS
CLACKAMAS COUNTY

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JOB No. 2020230021

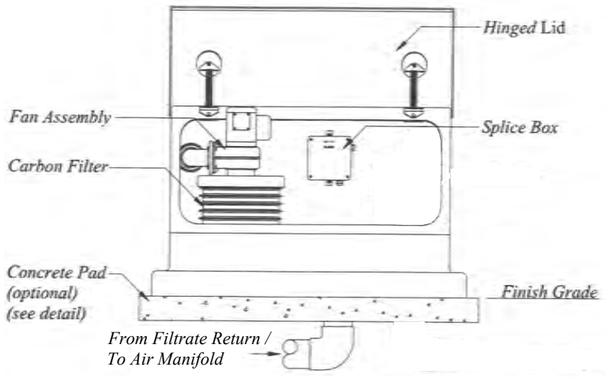
VALLEY SCIENCE AND ENGINEERING

TANK DETAILS

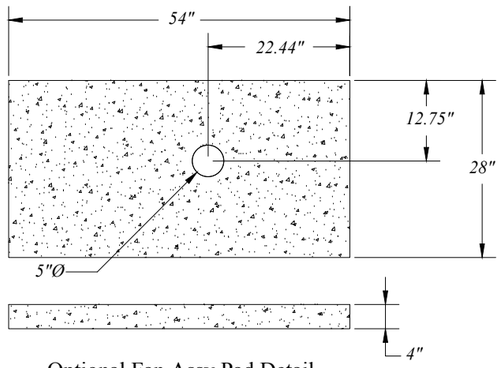
LARGE ONSITE SEWAGE SYSTEM DESIGN

SHEET T9

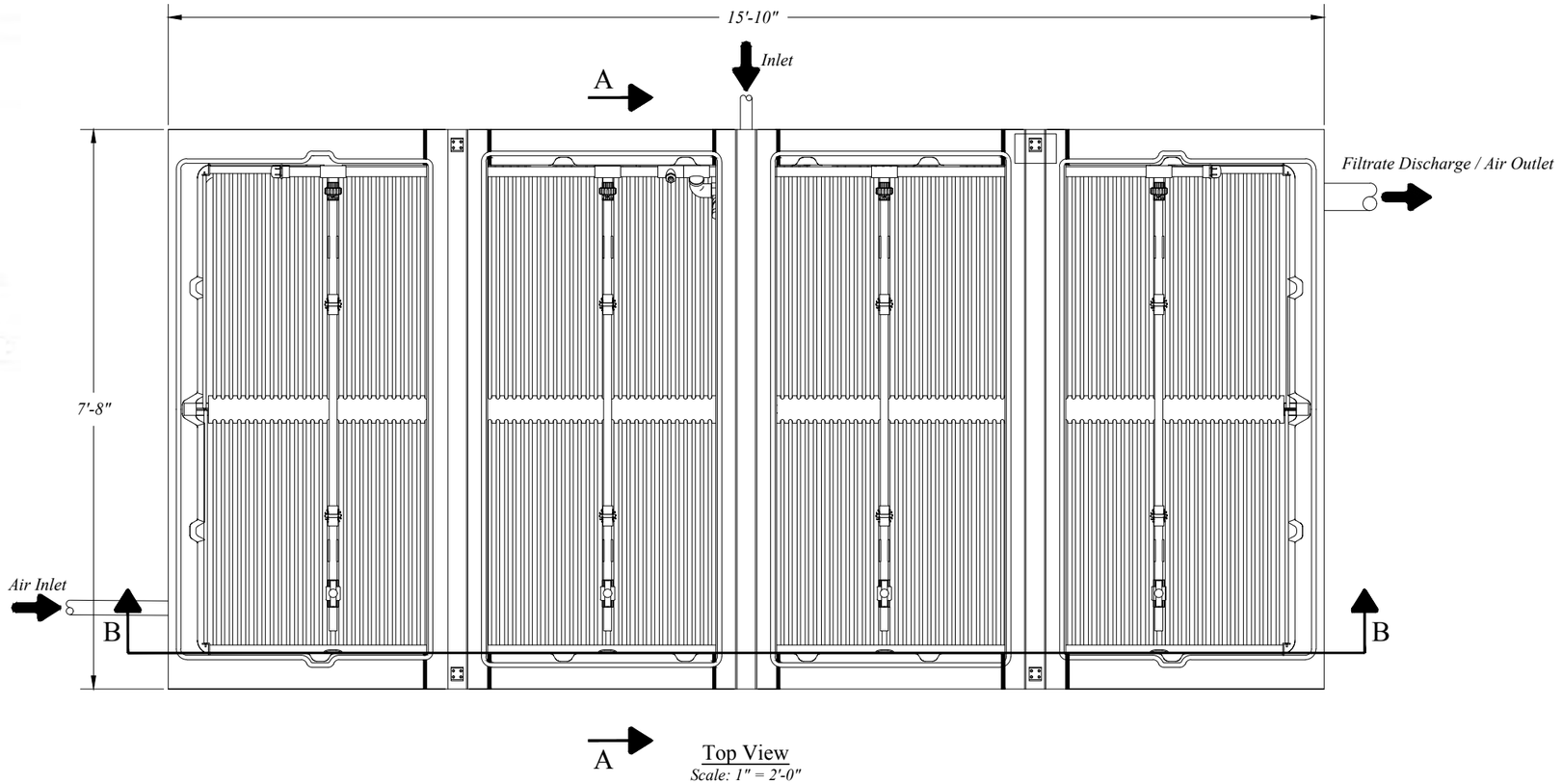
C:\Users\NG711452\Desktop\Working Drafting Guiot\2020230021 Clackamas County\DWG\LOSS\2020230021 LOSS T9.dwg 5/20/2022 DR702784



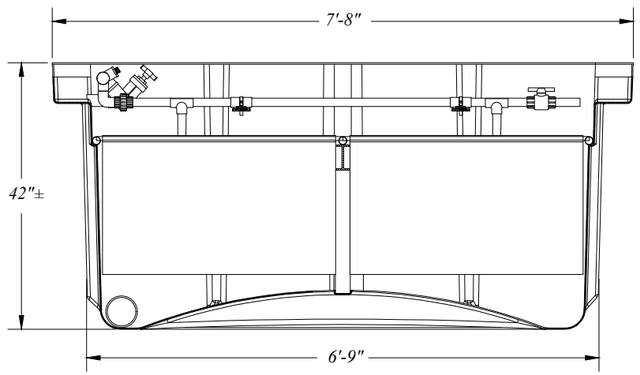
Above Ground Fan Assembly
Scale: 1" = 2'-0"



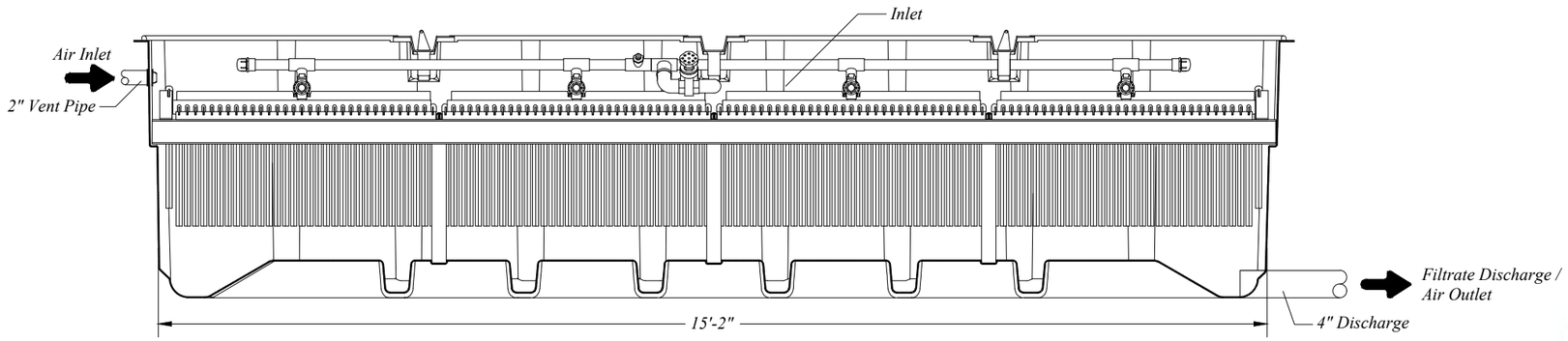
Optional Fan Assy Pad Detail
Scale: 1" = 2'-0"



Top View
Scale: 1" = 2'-0"



Section A-A
Scale: 1" = 2'-0"



Section B-B
Scale: 1" = 2'-0"

Certified Professional
Soil Scientist
BRIAN T. RABE
15239 Exp. 12/31/21
Registered Wastewater Specialist
No. EH W-448480 Exp. 9/30/21

FISCHER'S FOREST PARK LOSS
CLACKAMAS COUNTY

REV #	DESCRIPTION	BY	DATE

DES. BY 1BTR
DRG. BY 6NSG
CHK. BY 1GLT
DATE 8/18/2022
JOB No. 2020230021

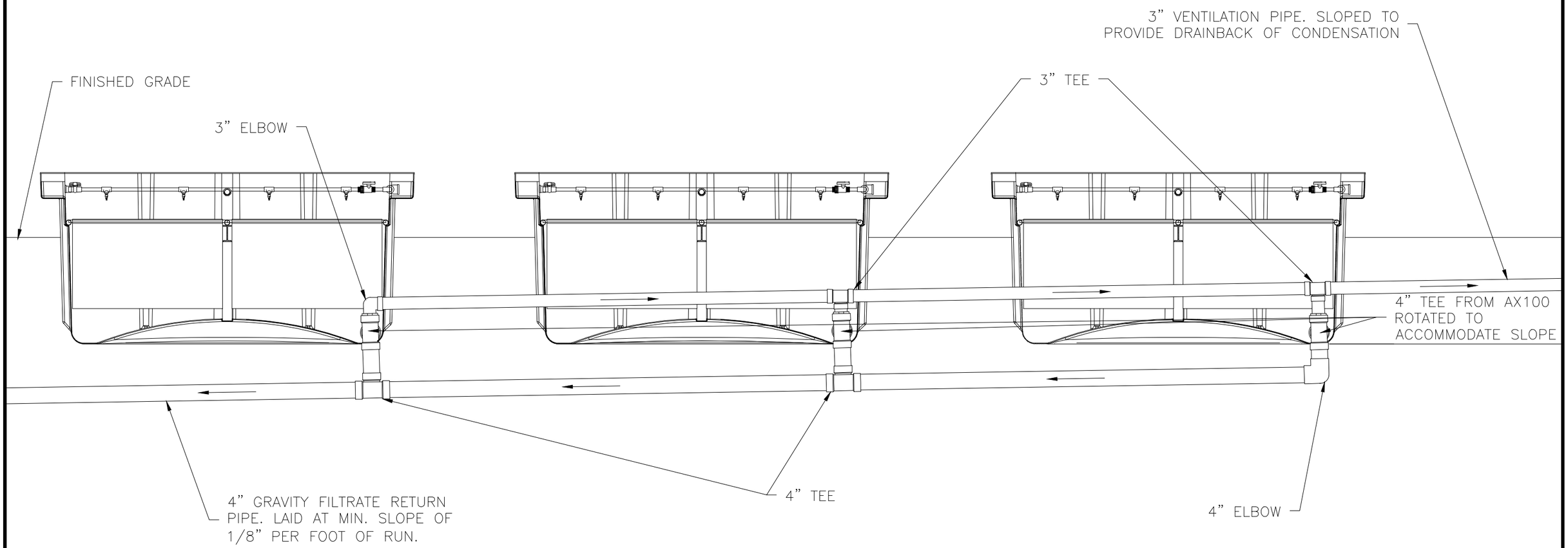
VALLEY SCIENCE AND ENGINEERING

ADVANTEX FILTER DETAILS

LARGE ONSITE SEWAGE SYSTEM DESIGN

SHEET
F1

C:\Users\NG711452\Desktop\Working Drafting Guiot\2020230021 Clackamas County\DWG\LOSS\2020230021 LOSS F1.dwg 5/20/2022 DR702784



0 2'

1"=2'

Certified Professional Soil Scientist
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CLACKAMAS COUNTY

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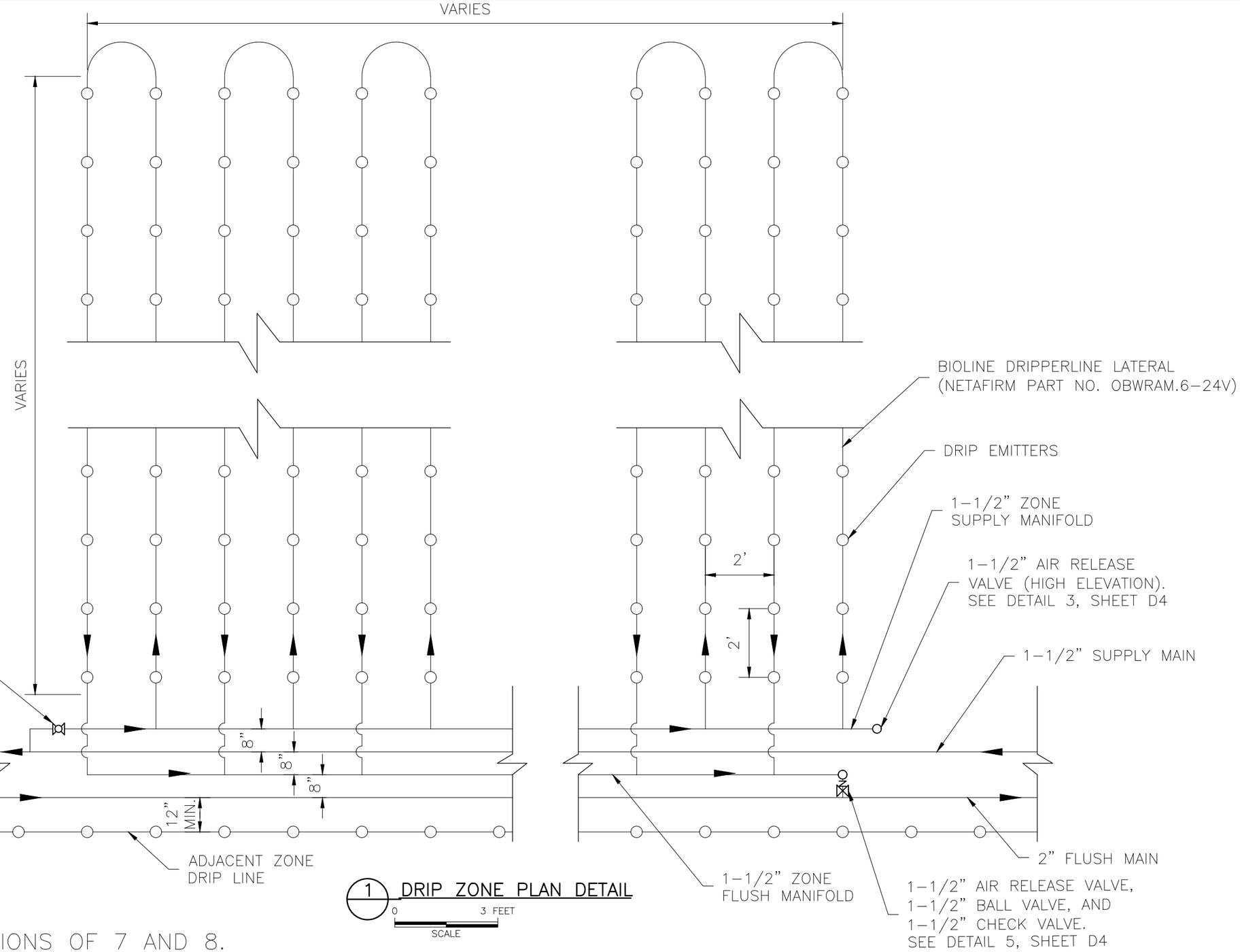
VALLEY SCIENCE AND ENGINEERING

ADVANTEX OUTLET DETAILS

LARGE ONSITE SEWAGE SYSTEM DESIGN

SHEET
F2

C:\Users\NG711452\Desktop\Working Drafting Guist\2020230021 Clackamas County\DWG\LOSS\2020230021 LOSS F2.dwg 5/20/2022 DR702784



1 DRIP ZONE PLAN DETAIL

0 3 FEET

SCALE

ZONES 1-4 AND PORTIONS OF 7 AND 8.

CPSS
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No. EH-W-448430 Exp. 9/30/21

FISCHER'S FOREST PARK LOSS
CLACKAMAS COUNTY

REV #	DESCRIPTION	BY	DATE

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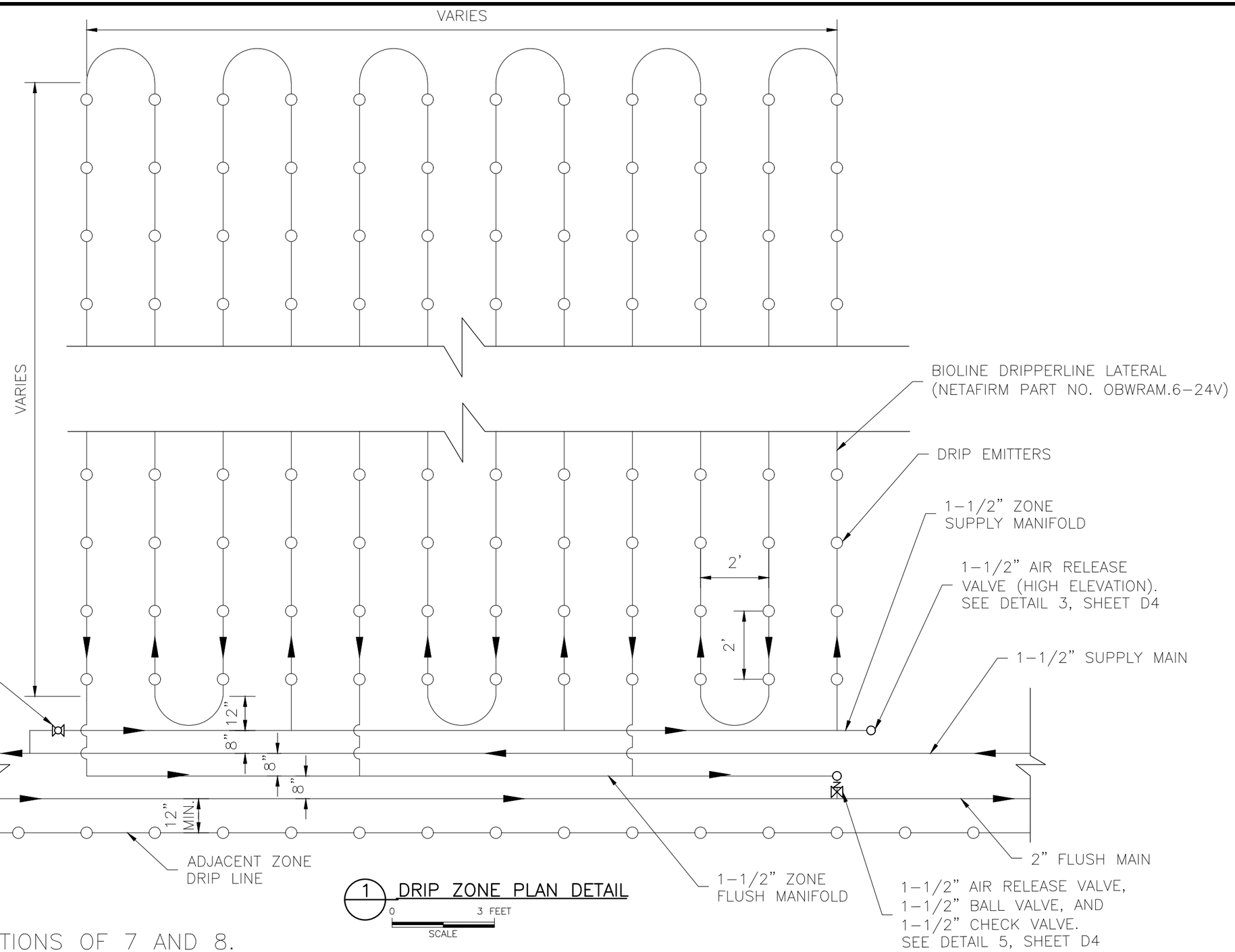
VALLEY SCIENCE AND ENGINEERING

DRIP ZONE PLAN A

LARGE ONSITE SEWAGE SYSTEM DESIGN

SHEET D1

C:\Users\NG711452\Desktop\Working Drafting Guidi\2020230021 Clackamas County\DWG\LOSS\2020230021 LOSS D1.dwg 5/20/2022 DR702784



1 DRIP ZONE PLAN DETAIL

0 3 FEET

SCALE

ZONES 5, 6, AND PORTIONS OF 7 AND 8.

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Certified Professional
Soil Scientist
BRIAN T. RABE
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Registered Wastewater Specialist
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FISCHER'S FOREST PARK LOSS
CLACKAMAS COUNTY

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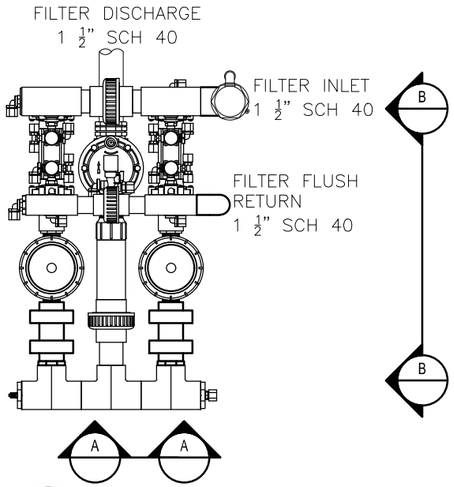
VALLEY SCIENCE AND ENGINEERING

DRIP ZONE PLAN B

LARGE ONSITE SEWAGE SYSTEM DESIGN

SHEET
D2

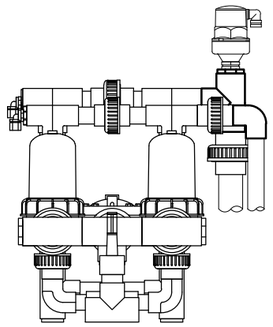
C:\Users\NG711452\Desktop\Working Drafting Guidi\2020230021 Clackamas County\DWG\LOSS\2020230021 LOSS D2.dwg 5/20/2022 DR702784



1 — HEADWORKS PLAN VIEW

0 1 FEET

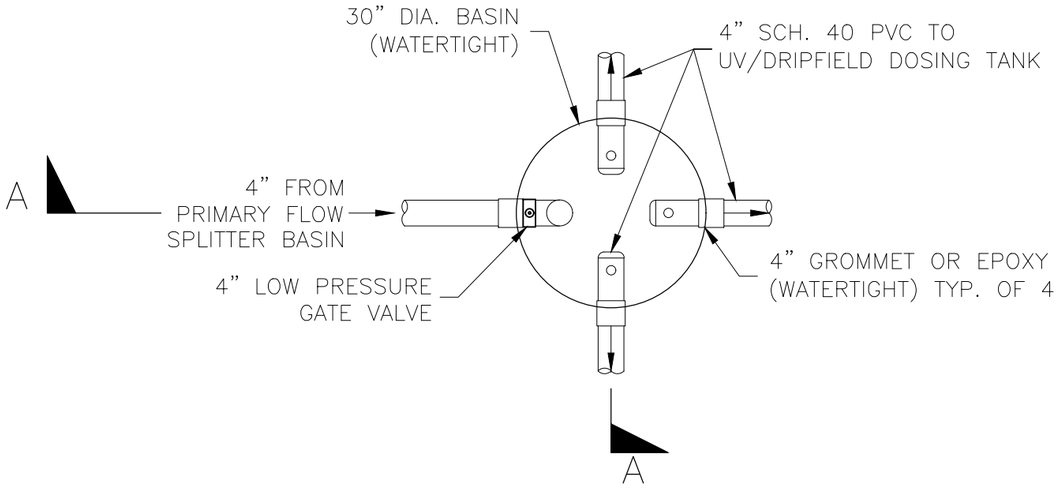
SCALE



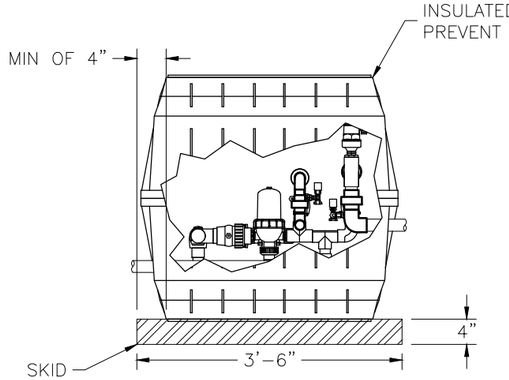
A — SECTION

0 1 FEET

SCALE



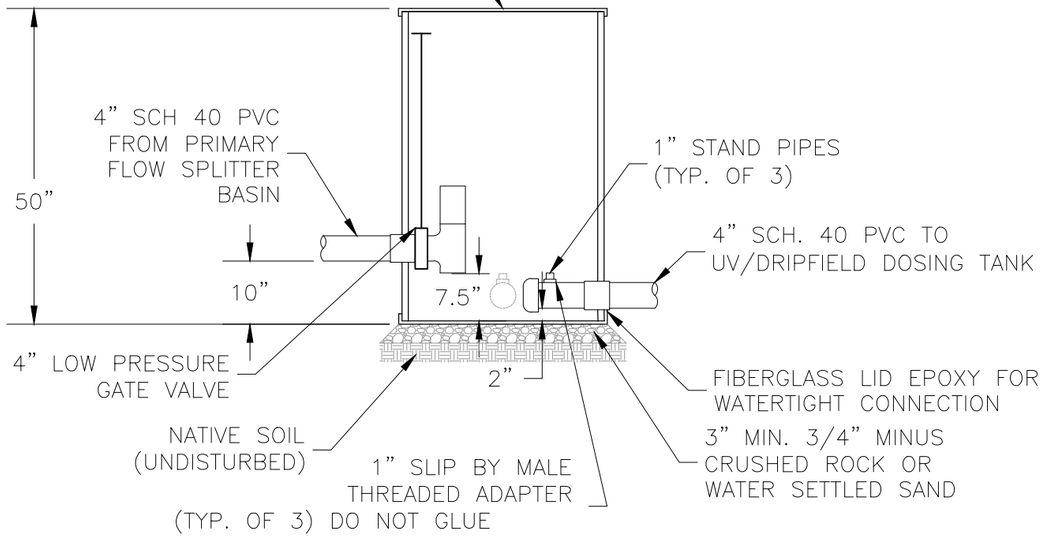
PLAN VIEW



B — SECTION

0 2 FEET

SCALE



SECTION VIEW

2 — SECONDARY FLOW SPLITTER BASIN

0 3 FEET

SCALE

NOTE:
HEADWORKS DRAWINGS PROVIDED BY JNM TECHNOLOGIES FOR REFERENCE PURPOSES. ADDITIONAL DETAILS TO FOLLOW WITH INSTALLATION INSTRUCTIONS. (MODEL NO. ACT-C200)

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FISCHER'S FOREST PARK LOSS
CLACKAMAS COUNTY

REV #	DESCRIPTION	BY	DATE

DES. BY 1BTR
DRG. BY 6NSG
CHK. BY 1GLT
DATE 8/18/2022
JOB No. 2020230021

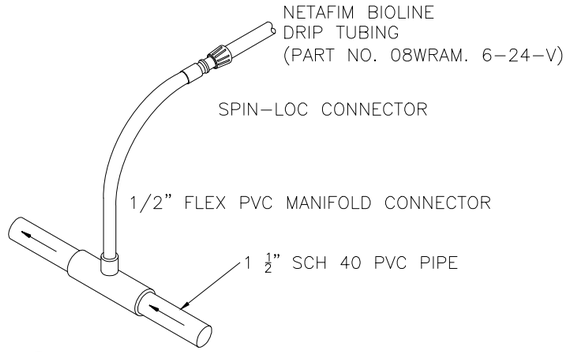
VALLEY SCIENCE AND ENGINEERING

DRIP SYSTEM HEADWORKS DETAILS

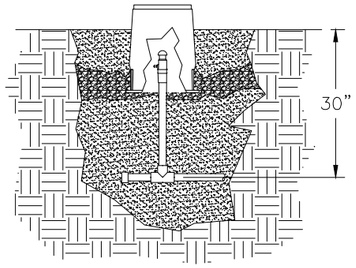
LARGE ONSITE SEWAGE SYSTEM DESIGN

SHEET
D3

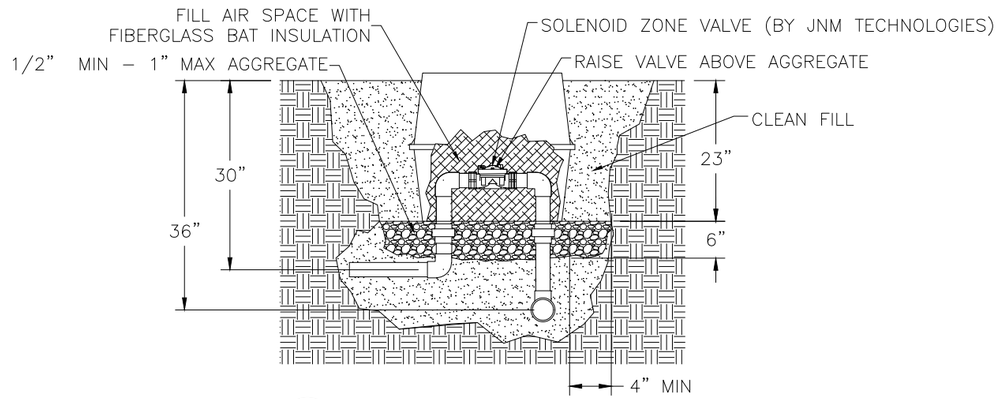
C:\Users\dr702784\OneDrive - Valmont Industries\Desktop\Working Drafting DJR\2020230021 Clackamas County\DWG\LOSS\2020230021 LOSS D3.dwg 10/5/2022 NG711452



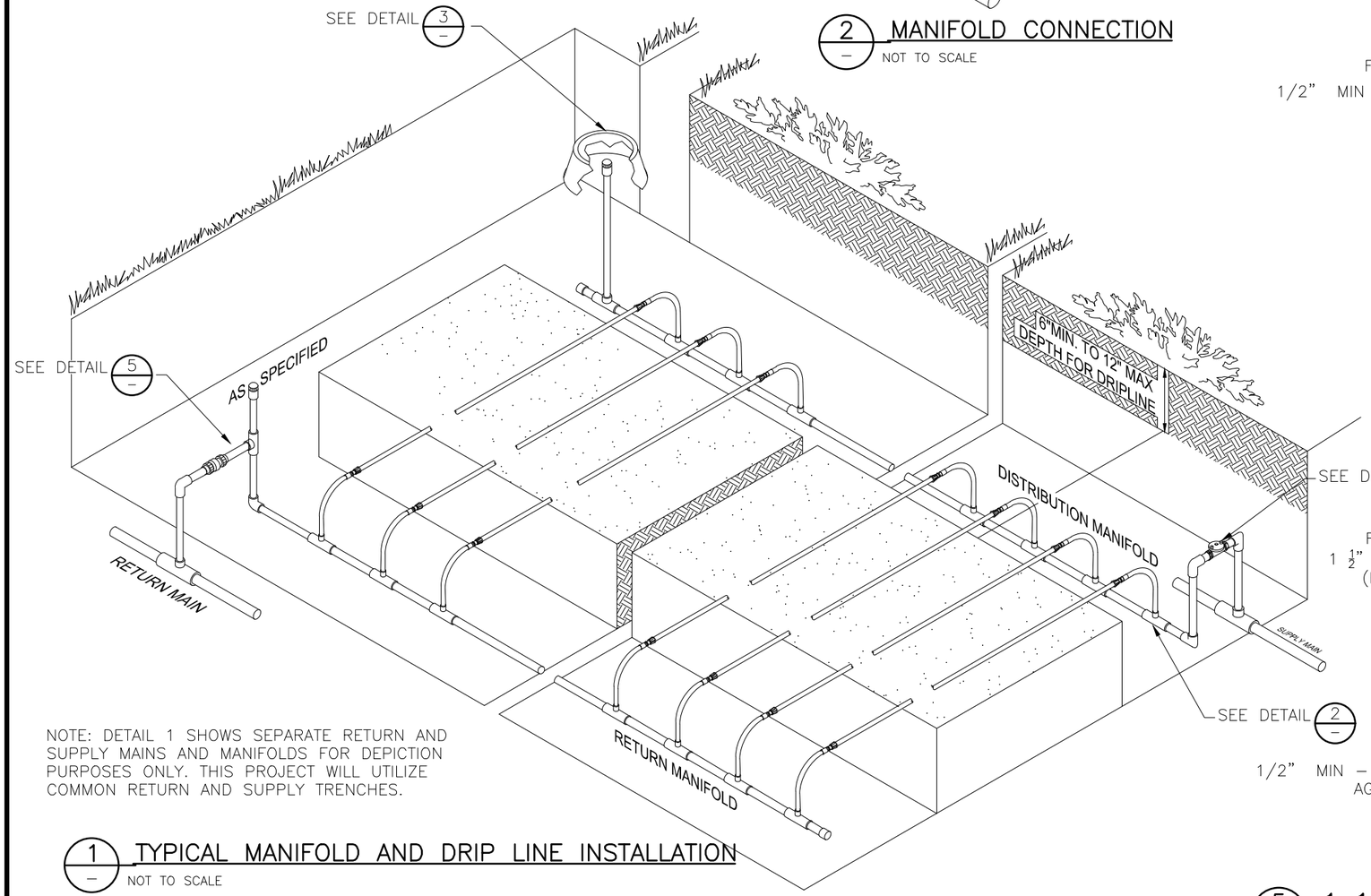
2 MANIFOLD CONNECTION
NOT TO SCALE



3 1" GUARDIAN AIR RELEASE VALVE WITH SCHRADER VALVE FOR DISTRIBUTION LINE
NOT TO SCALE

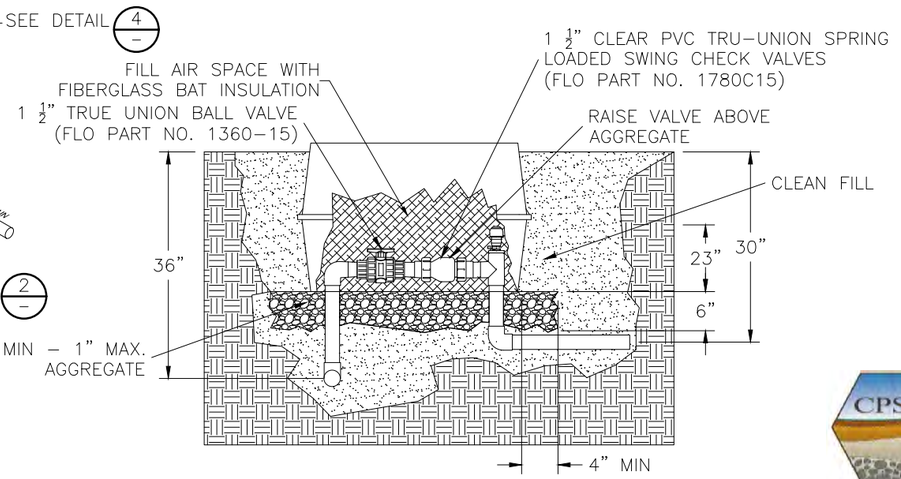


4 ZONE CONTROL VALVE
NOT TO SCALE



NOTE: DETAIL 1 SHOWS SEPARATE RETURN AND SUPPLY MAINS AND MANIFOLDS FOR DEPICTION PURPOSES ONLY. THIS PROJECT WILL UTILIZE COMMON RETURN AND SUPPLY TRENCHES.

1 TYPICAL MANIFOLD AND DRIP LINE INSTALLATION
NOT TO SCALE



5 1 1/2" BALL AND CHECK VALVE FOR RETURN LINE
NOT TO SCALE

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FISCHER'S FOREST PARK LOSS
CLACKAMAS COUNTY

REV #	DESCRIPTION	BY	DATE

DES. BY 1BTR
DRG. BY 6NSG
CHK. BY 1GLT
DATE 8/18/2022
JOB No. 2020230021

VALLEY SCIENCE AND ENGINEERING

DRIP SYSTEM FIELD DETAILS

LARGE ONSITE SEWAGE SYSTEM DESIGN

SHEET
D4

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Recirculation Pumps

Timer Settings (Minutes)	5:1 Rate 4:1 Split
ON	0.50
OFF	2.45
ON	1.70
OFF	3.32
ON	1.70
OFF	0.81
ON	1.70
OFF	1.65

Low Timer Function - Alternating Cycles at Reduced ON Time
Minimum of 1 Cycle (Complete Each Cycle - ON Time - Regardless of Float Position)
Timer Settings: 30 seconds (0.50 minutes) ON (40 gpm - 20 gallons per dose)

Normal Timer Function - Alternating Cycles
Minimum of 1 Cycle (Complete Each Cycle - ON Time - Regardless of Float Position)
Timer Settings: 1 minute 42 seconds ON (40 gpm - 68 gallons per dose)

Override Timer Function - Alternating Cycles at Increased Frequency
Minimum of 2 Cycles (Complete Each Cycle - ON Time - Regardless of Float Position)
Timer Settings: 1 minute 42 seconds ON (40 gpm - 136 gallons per dose)

High Level Timer Function - Alternating Cycles at Increased Frequency (Two Pumps)
Minimum of 3 Cycles (Complete Each Cycle - ON Time - Regardless of Float Position)
Timer Settings: 1 minute 42 seconds ON (40 gpm - 56 gallons per dose)

Dripfield Pumps

Drip Timer Function - Alternating Cycles (1 Pump to Dose, 2 Pumps to Flush - Dripfield Dosing Tank)
Complete Each Cycle, Regardless of Float Position
Timer Settings: 12 minutes ON (192 gallons per dose)
0 minutes, 15 seconds OFF

Minimum Power Requirements at Panel
230 Single Phase - 115 Single Phase VAC, 60 Hertz
2 @ 20 AMP (1 for each Lift Pump, 230 VAC)
3 @ 20 AMP (1 for each Recirculation Pump, 230 VAC)
2 @ 20 AMP (1 for each Dripfield Pump, 230 VAC)
1 @ 15 AMP (115 VAC for Ventiliation Fan)
1 @ 10 AMP (115 VAC for Panel Heater)
1 @ 10 AMP (115 VAC for Panel)

60 AMP Service (L1, L2, N, G), 230 VAC Single Phase, (Minimum) from Power Source for Pumps
10 AMP Service (L1, N, G), 115 VAC Single Phase from Power Source for Heater, Fan, and Controls

CONTROLS QUOTE NUMBER TO BE VERIFIED WITH DESIGNER PRIOR TO SUBMITTING ORDER WITH MANUFACTURER
REFERENCE: ORENCO QUOTE NUMBER 081721SK4.3

Lift Pumps (Total of 2)
PF 100512
6.3 running amps at 230 VAC
Five Floats High Level Alarm
Lag Pump ON
Lead Pump ON
Pumps OFF
Redundant Off/Low Level Alarm

Recirculation Pumps (Total of 3)
PF 500712
8.5 running amps at 230 VAC
Four Floats High Level Alarm and Timer
Override Timer
Normal Timer ON/OFF
Redundant Off/Low Level Alarm

Dripfield Pumps (Total of 2)
PF 200512
6.4 running amps at 230 VAC
Three Floats High Level Alarm
Normal Timer ON
Redundant Off/Low Level Alarm

AdvanTex Blower

MASTER CONTROL PANEL DATA - CUSTOM TCOM

REQUIRED OPTIONS

QUANTITY	DESCRIPTION
7	ELAPSED TIME METERS: 115 VAC, 7-DIGIT, NONRESETTABLE
7	COUNTERS: 115 VAC, 6-DIGIT, NONRESETTABLE HORIZONTAL BASE MOUNT
7	PUMP RUN LIGHTS (GREEN WITH LABEL - 1 FOR EACH PUMP)
2	FAN AND UV FAIL LIGHT (BLUE WITH LABEL)
9	CURRENT SENSOR (1 FOR EACH PUMP, UV, AND FAN)
1	ALARM LIGHT - LIFT PUMPS HIGH LEVEL ALARM (RED WITH LABEL)
1	ALARM LIGHT - LIFT PUMPS LOW LEVEL ALARM (RED WITH LABEL)
1	ALARM LIGHT - RECIRCULATION PUMPS HIGH LEVEL TIMER AND ALARM (RED WITH LABEL)
1	INDICATOR LIGHT - RECIRCULATION PUMPS OVERRIDE TIMER (AMBER WITH LABEL - NO AUDIBLE)
1	INDICATOR LIGHT - RECIRCULATION PUMPS NORMAL TIMER (BLUE WITH LABEL - NO AUDIBLE)
1	INDICATOR LIGHT - RECIRCULATION PUMPS LOW TIMER (GREEN WITH LABEL - NO AUDIBLE)
1	ALARM LIGHT - RECIRCULATION PUMPS LOW LEVEL ALARM (RED WITH LABEL)
8	INDICATOR LIGHT - DRIP FIELD ZONE (GREEN WITH LABEL)
1	INDICATOR LIGHT - FILTER FLUSH (AMBER WITH LABEL)
1	INDICATOR LIGHT - FIELD FLUSH (AMBER WITH LABEL)
1	ALARM LIGHT - DRIP TANK HIGH LEVEL ALARM (RED WITH LABEL)
1	ALARM LIGHT - DRIP TANK LOW LEVEL ALARM (RED WITH LABEL)
1	GENERAL ALARM DRY CONTACT (REMOTE ALARM RELAY)
1	PANEL HEATER (400 WATT) WITH ADJUSTABLE THERMOSTAT
1	SURGE ARRESTOR
1	TOUCH SCREEN INTERFACE
1	INDUSTRIAL 4G ROUTER
1	OMNI DIRECTIONAL LTE/4G CELL ANTENNA KIT

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FISCHER'S FOREST PARK LOSS
CLACKAMAS COUNTY

REV #	DESCRIPTION	BY	DATE

DES. BY 1BTR
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DATE 8/18/2022
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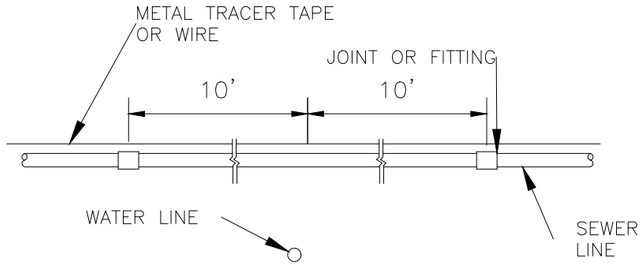
VALLEY SCIENCE AND ENGINEERING

CONTROL PANEL DETAILS

LARGE ONSITE SEWAGE SYSTEM DESIGN

SHEET
C1

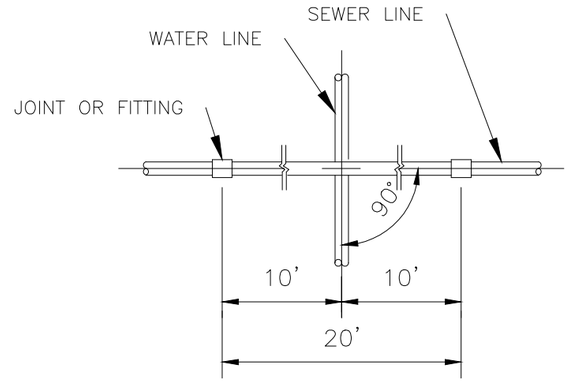
C:\Users\NG711452\Desktop\Working Drafting Guisti\2020230021 Clackamas County\DWG\LOSS\2020230021 LOSS C1.dwg 8/18/2022 NG711452



NOTE: IF THE SEPARATION DISTANCE BETWEEN THE PIPES CANNOT BE ACHIEVED, A SECTION OF THE WATER LINE SHALL BE REPLACED WITH A 20' LENGTH OF SCH 40 PVC, CENTERED ON THE INTERSECTION AS SHOWN. THE PIPES SHALL BE BEDDED SO THAT THEY DO NOT TOUCH AT THE INTERSECTION.

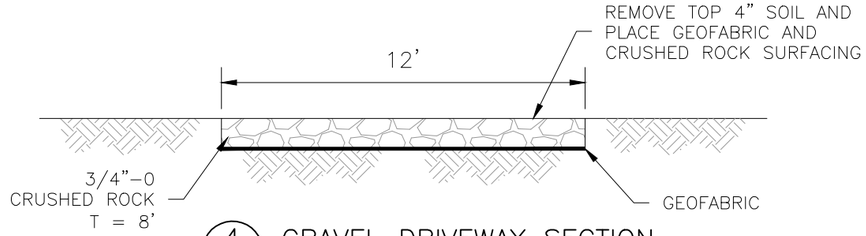
1 – EFFLUENT SEWER / WATER LINE CROSSING – SECTION

0 2 FEET
SCALE



2 – EFFLUENT SEWER / WATER LINE CROSSING – PLAN

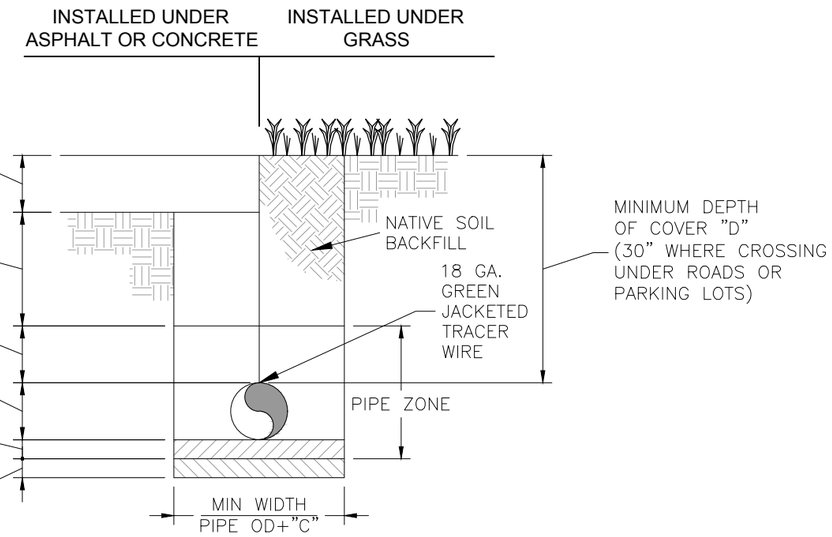
0 2 FEET
SCALE



4 – GRAVEL DRIVEWAY SECTION

NOT TO SCALE

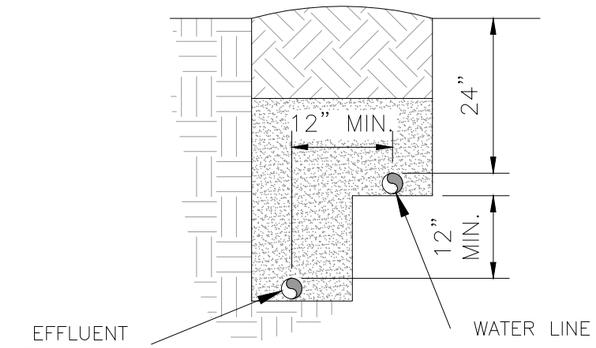
1. CHOOSE GEOTEXTILE PER TABLE 4 IN OREGON STATE SPECIFICATION FOR CONSTRUCTION SECTION 02320 AND INSTALLED ACCORDING TO 00350. GEOTEXTILE CAN BE WOVEN OR NON–WOVEN.
2. CRUSHED ROCK SHOULD BE COMPACTED TO 95% OF THE MAXIMUM DRY DENSITY PER AASHTO T99.



UTILITY TYPE	A	B	C	D
GRAVITY SEWER	2"	4"	12"	18"
PRESSURE SEWER	2"	6"	12"	24"

3 – TRANSPORT PIPING – SECTION (FORCE MAIN, BUILDING SEWER, AND EFFLUENT SEWER, TYP) DETAIL

0 2 FEET
SCALE



5 – PARALLEL / COMMON TRENCH DETAIL

0 2 FEET
SCALE

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FISCHER'S FOREST PARK LOSS
CLACKAMAS COUNTY

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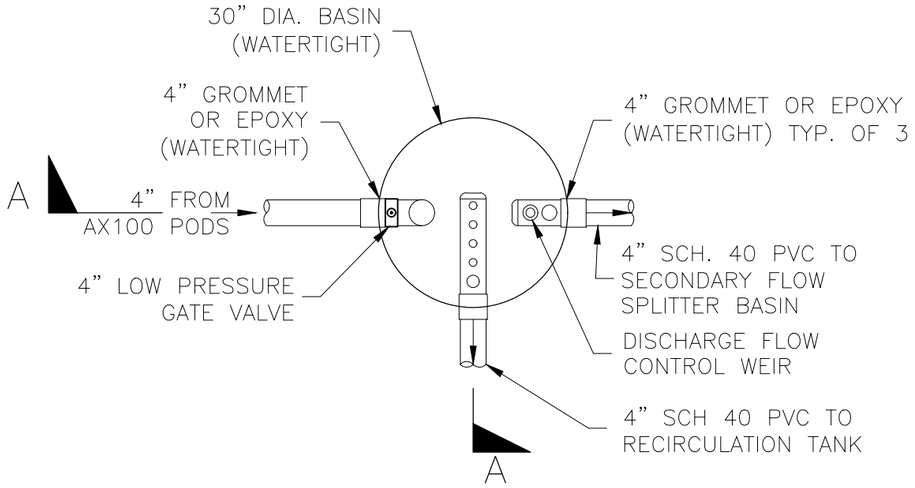
VALLEY SCIENCE AND ENGINEERING

MISCELLANEOUS DETAILS

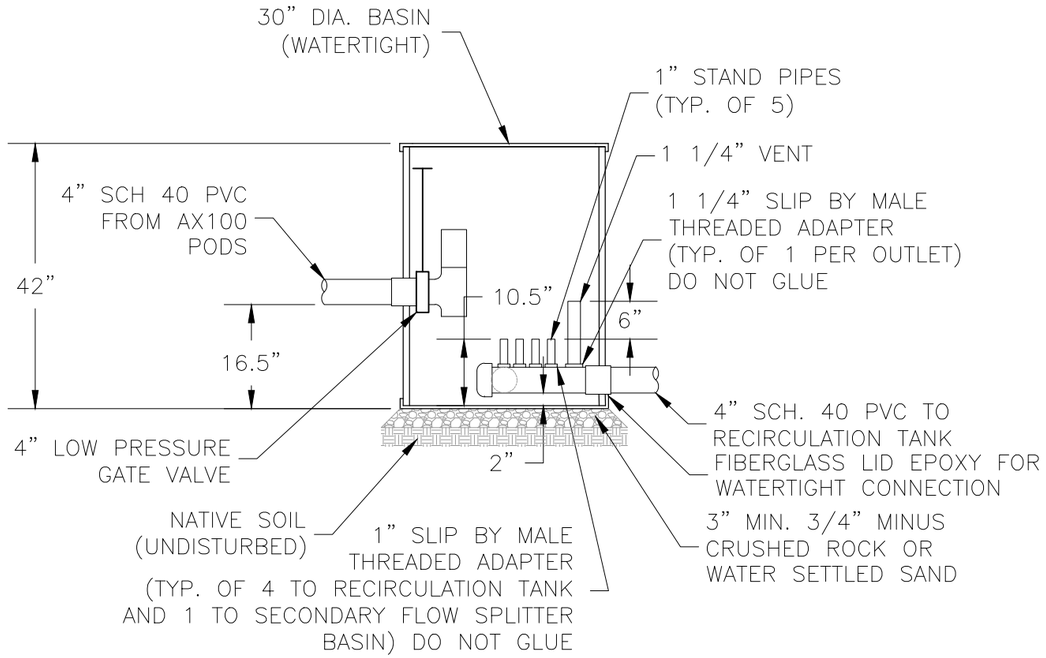
LARGE ONSITE SEWAGE SYSTEM DESIGN

SHEET
M1

C:\Users\NG711452\Desktop\Working Drafting Guiot\2020230021 Clackamas County\DWG\LOSS\2020230021 LOSS M1.dwg 5/20/2022 NG711452



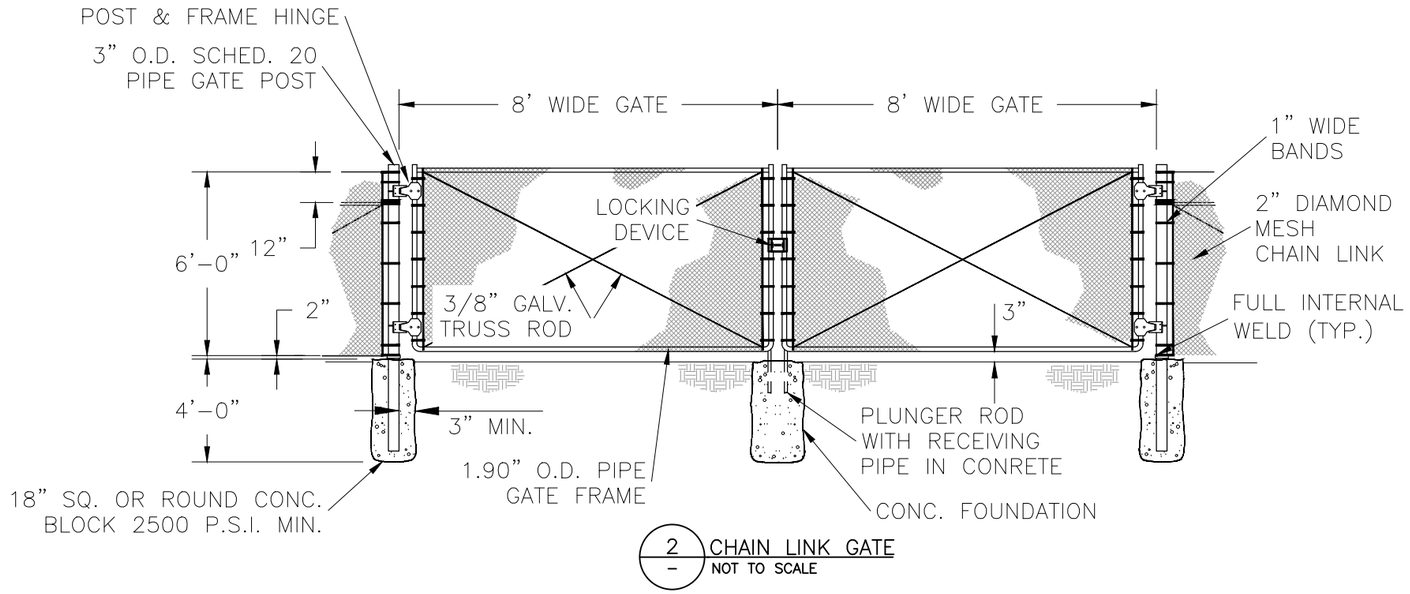
PLAN VIEW



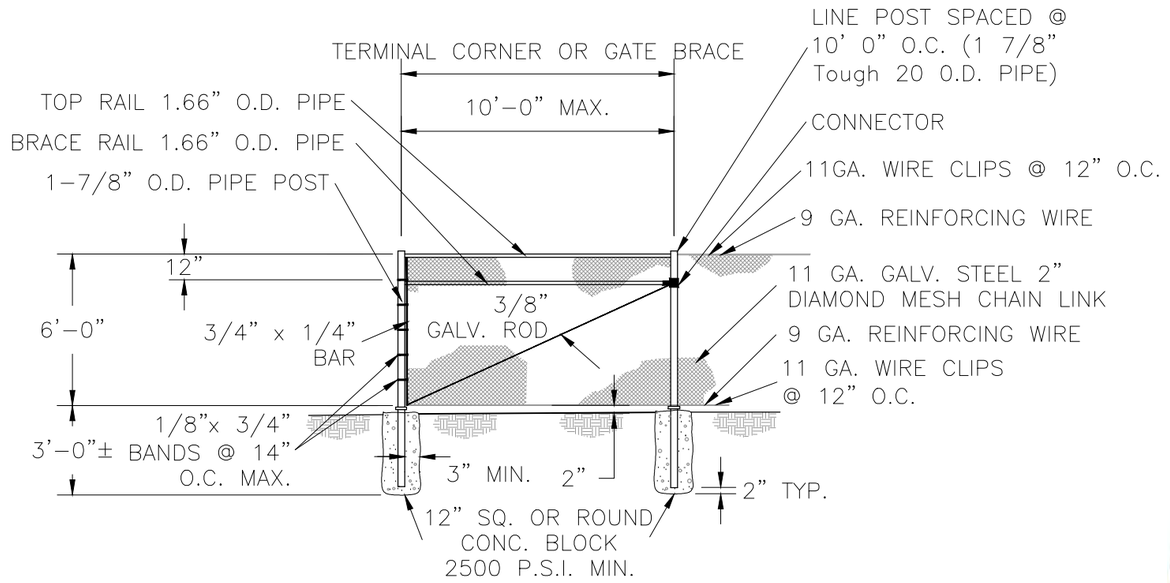
SECTION VIEW

1 – PRIMARY FLOW SPLITTER BASIN

0 3 FEET
SCALE



2 – CHAIN LINK GATE
NOT TO SCALE



3 – CHAIN LINK FENCE
NOT TO SCALE

Certified Professional
Soil Scientist
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FISCHER'S FOREST PARK LOSS
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VALLEY SCIENCE AND ENGINEERING

MISCELLANEOUS DETAILS

LARGE ONSITE SEWAGE SYSTEM DESIGN

SHEET
M2

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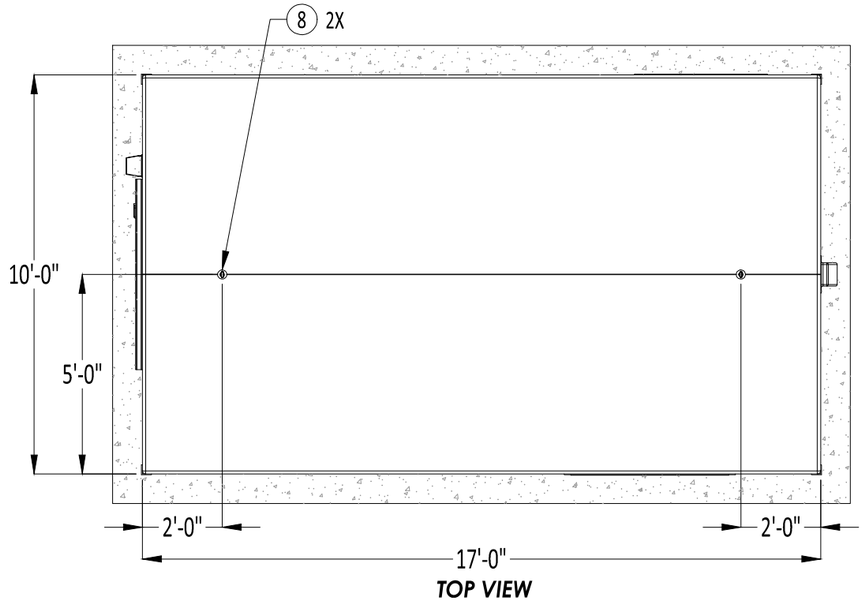
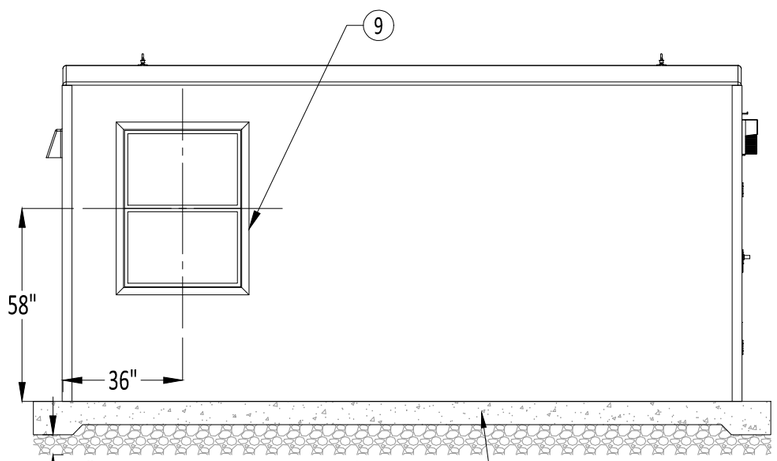
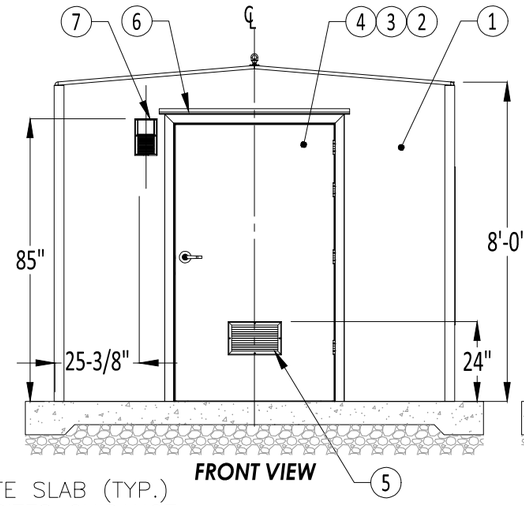
ITEM NO.	DESCRIPTION	QTY.
1	DURAFIBER BUILDING WITH BRONZE TONE CORNER TRIM, 10'W X 8'H X 17'L X 3-3/8" WALL CONSTRUCTIONS, EXTERIOR COLOR TORQUE TAN, INTERIOR COLOR WHITE	1
2	HYDRAULIC DOOR CLOSER, SLIMLINE, WITH HOLD OPEN	1
3	ENTRANCE DOOR LEVER, GRADE 1, CYLINDRICAL LOCKSET	1
4	FIBERGLASS 4' DOOR, RIGHT HAND REVERSE	1
5	ALUMINUM DOOR LOUVER, 16"W X 10"H DAYTON 5NKL0	1
6	FIBERGLASS RAIN DIVERTER, 4'-0" COLOR TORQUE TAN	1
7	EXTERNAL LIGHT, LITHONIA TWS LED 1 50K 120 PE	1
8	LIFTING EYE, 1/2" GALVANIZED	2
9	WINDOW, 36" X 48", WHITE VINYL WINDOW W/ MESH SCREEN	1



TOP VIEW

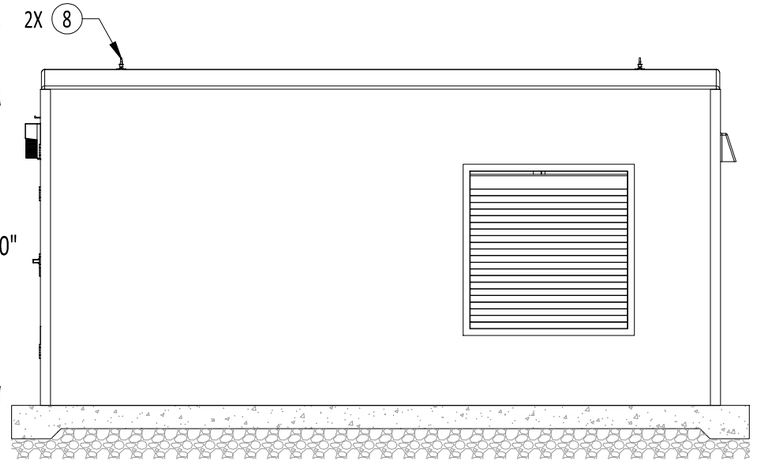


SIDE VIEW



FRONT VIEW

REINFORCED CONCRETE SLAB (TYP.)
PER ORENCO COMPOSITES GUIDANCE
DOCUMENT AT TIME OF SUBMITTAL



SIDE VIEW

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UNLESS SPECIFIED: DIMS. ARE INCHES
TOLERANCES: FRACTION: ± 1/16" ANGULAR: ± .5° DECIMAL: ± .02 CRITICAL: ± .005

DATE: 12/16/2021 | DATE APRVD: | DATE APRVD:

DRAWN BY: QARAMBURO | APRVD BY: | APRVD BY:

NAME: DFS100817-3-EW-4RHR

DESCRIPTION: BUILDING, 10'W X 8'L X 17'L X 3-3/8" WALL

REVISION: | SHEET(S): 2 OF 4

Orenco COMPOSITES

CPSS
Certified Professional Soil Scientist
BRIAN T. RABE
15239 Exp. 12/31/21
Registered Wastewater Specialist
No. EH-W-448430 Exp. 9/30/21

(SOURCE: ©ORENCO SYSTEMS®, INC.)

FISCHER'S FOREST PARK LOSS
CLACKAMAS COUNTY

REV #	DESCRIPTION	BY	DATE

DES. BY 1BTR
DRG. BY 6NSG
CHK. BY 1GLT
DATE 8/18/2022
JOB No. 2020230021

VALLEY SCIENCE AND ENGINEERING

CONTROLS SHELTER – EXTERIOR

LARGE ONSITE SEWAGE SYSTEM DESIGN

SHEET
S1

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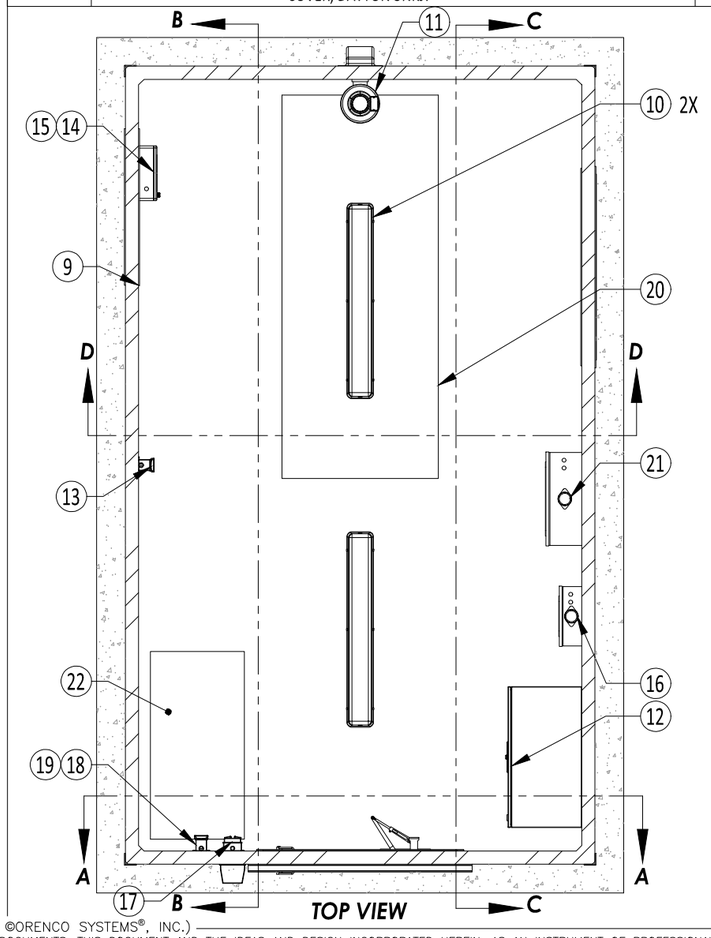
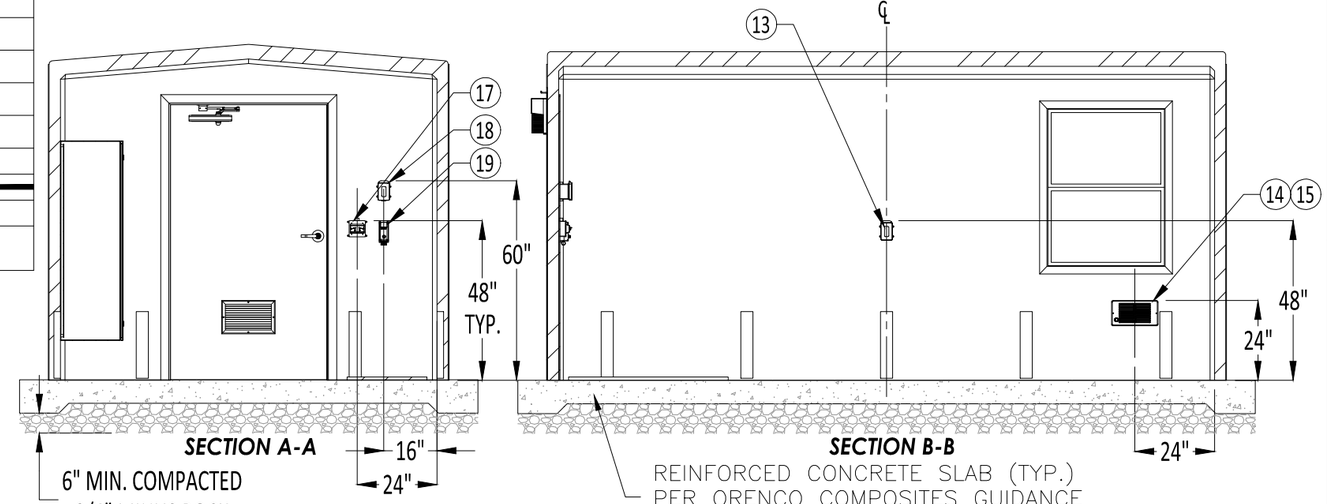
ITEM NO.	DESCRIPTION	QTY.
10	INTERIOR LIGHT, LED, 4'-0", VAPOR TIGHT FIXTURE	2
11	EXHAUST FAN WITH RAIN COVER, FANTECH FR100	1
12	CONTROL PANEL, 36" WIDTH X 30" HEIGHT X 12" DEPTH	1
13	GFCI, DUPLEX 125V 15 AMP RECEPTACLE	1
14	SURFACE MOUNT HEATER, KING 1215SL	1
15	THERMOSTAT; KING ELECTRIC SLT-1	1
16	LOAD CENTER, 24 CIRCUIT, 125A, MAIN BREAKER	1
17	WATER PROOF LIGHT SWITCH, 2 GANG, INTERIOR/EXTERIOR LIGHTS	1
18	EXHAUST FAN TIMER, 24 HOUR WITH MANUAL OVERRIDE	1
19	THERMOSTAT, DAYTON FOR FIBERGLASS SHELTERS	1
20	98"L x 40"W x 65"H DIESEL GENERATOR	1
~~21~~	~~AUTO TRANSFER SWITCH, 24"L x 24"H x 9"D~~	~~1~~
22	HEADWORKS SKID, 4' X 2'	1
23	INTAKE LOUVERS, 48"W X 48"H, IN-WALL, W/ FRP COVER, RAIN COVER, DAYTON 5NKJ7	1

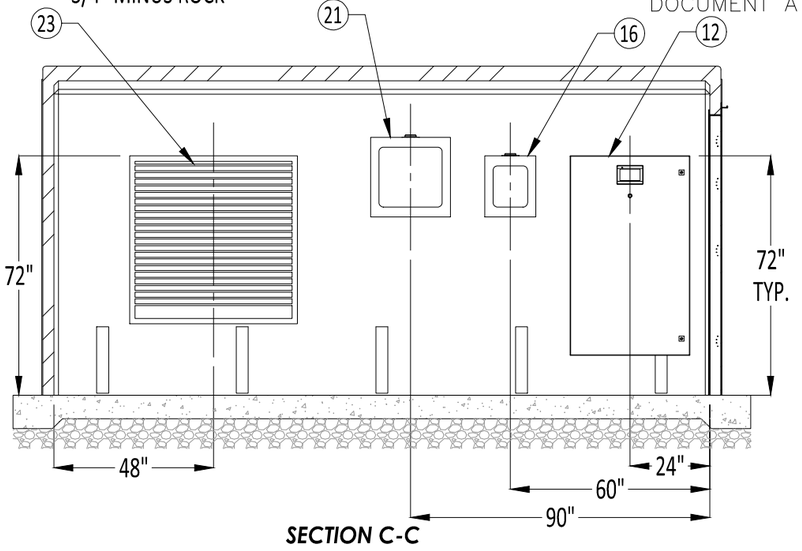


TOP VIEW

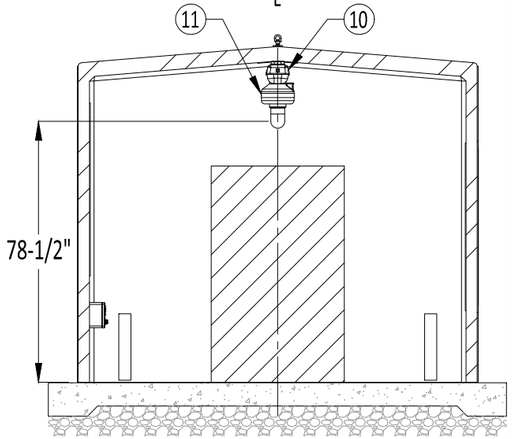


SECTION A-A

SECTION B-B



SECTION C-C



SECTION D-D

CUSTOMER APPROVAL: _____ DATE: _____

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REVISION: | SHEET(S): 3 OF 4 | SION: 2

CONFIDENTIAL

Orenco COMPOSITES

CPSS
Certified Professional Soil Scientist
BRIAN T. RABE
15239 Exp. 12/31/21
Registered Wastewater Specialist
No. EH-W-448430 Exp. 9/30/21

(SOURCE: ©ORENCO SYSTEMS®, INC.)

FISCHER'S FOREST PARK LOSS
CLACKAMAS COUNTY

REV #	DESCRIPTION	BY	DATE

DES. BY 1BTR
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VALLEY SCIENCE AND ENGINEERING

CONTROLS SHELTER – INTERIOR

LARGE ONSITE SEWAGE SYSTEM DESIGN

SHEET
S2

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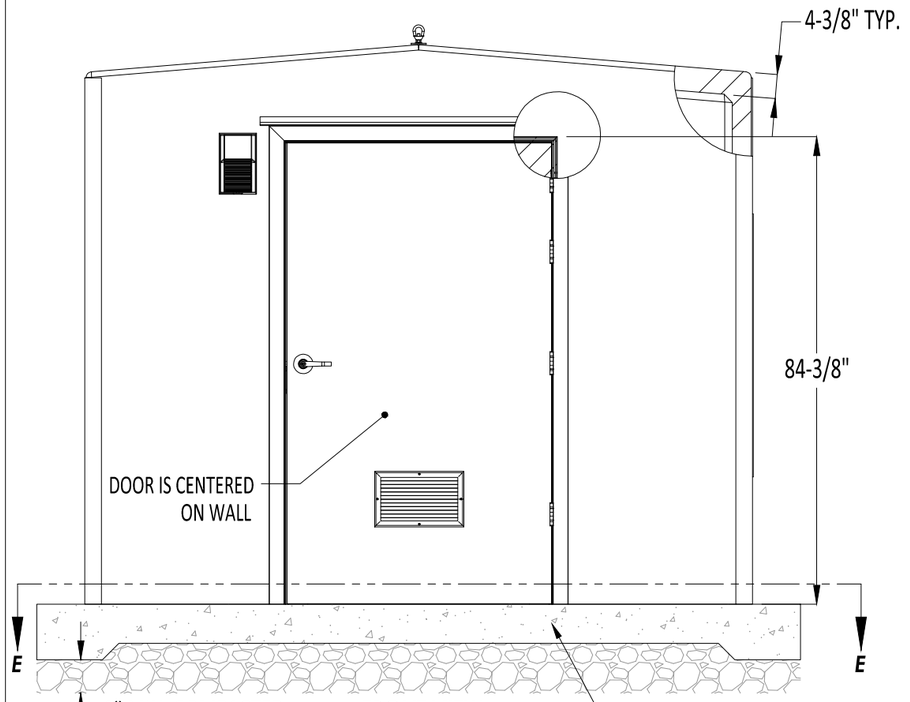
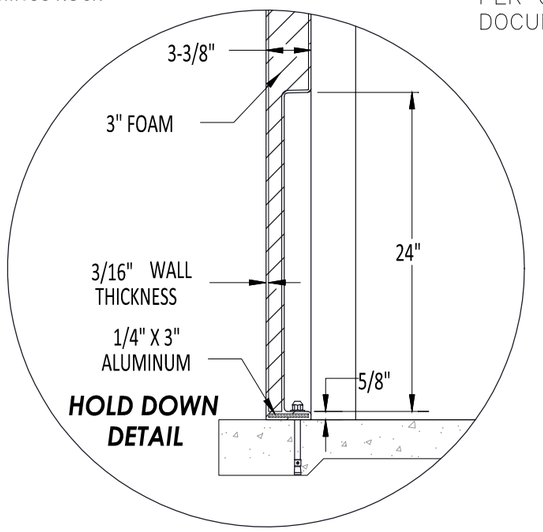
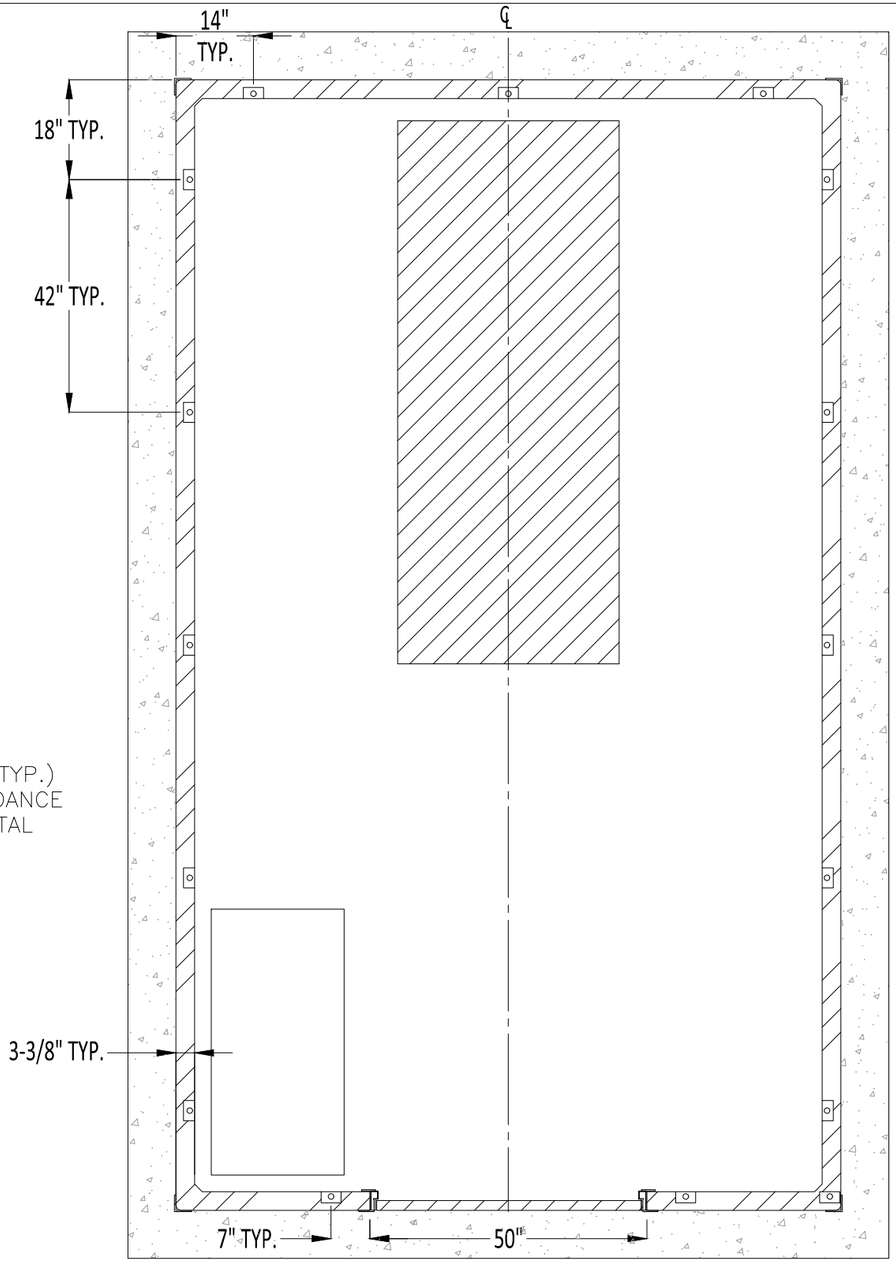
NOTE: HOLD DOWN LOCATIONS HAVE A ± 1" TOLERANCE



FRONT VIEW



HOLD DOWN DETAIL



SECTION E-E

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DESCRIPTION:	BUILDING, 10'W X 8'L X 17'L X 3-3/8" WALL	APRVD BY:	DATE APRVD:
REVISION: 2	SHEET(S): 4 OF 4	APRVD BY:	DATE APRVD:

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Orenco COMPOSITES

CPSS
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BRIAN T. RABE
15239 Exp. 12/31/21
Registered Wastewater Specialist
No. EH W-448450 Exp. 9/30/21

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FISCHER'S FOREST PARK LOSS
CLACKAMAS COUNTY

REV #	DESCRIPTION	BY	DATE

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JOB No. 2020230021

VALLEY SCIENCE AND ENGINEERING

CONTROLS SHELTER – BUILDING HOLD DOWNS

LARGE ONSITE SEWAGE SYSTEM DESIGN

SHEET
S3

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FISCHER'S FOREST PARK LARGE ONSITE SEWAGE SYSTEM

CERTIFICATE OF ENGINEER

Water Environment Services Jessica D. Rinner  Expires 12/31/2022	I certify the Specifications Sections listed below are applicable to the design for the subject project and were prepared by me or under my supervision. 01025, 01040, 01060, 01300, 01310, 01560, 02530

WATER ENVIRONMENT SERVICES SPECIFICATIONS

SECTION 00010

TABLE OF CONTENTS

GENERAL SPECIFICATIONS AND SEWER WORK

LARGE ONSITE SEWAGE SYSTEM

Appendixes

SECTION 01025

MEASUREMENT AND PAYMENT

PART 1 GENERAL

1.01 DESCRIPTION

A. Measurement is described under each proposal item in Paragraph 01025-1.02.

B. Payment for the various items on the Proposal, as further specified herein, shall be based on measurements of completed work in accordance with United States Standard Measures and shall include all compensation to be received by the Contractor for furnishing all tools, equipment, supplies, and manufactured articles, and for all labor, operations, and incidentals appurtenant to the items of work being described, as necessary to complete the various items of the work all in accordance with the requirements of the Contract Documents, including all appurtenances thereto and including all costs of compliance with the regulations of public agencies having jurisdiction, including safety and health requirements of the Occupational Safety and Health Act of the U.S. Department of Labor (OSHA) and Oregon State Department of Labor and Industries, also for loss or damage arising from the nature of the work, or from the action of the elements, or from any unforeseen difficulties which may be encountered during the prosecution of the Work until the final acceptance by the Owner. No separate payment will be made for any item that is not specifically set forth in the Proposal Schedule, and all costs therefor shall be included in the prices named in the Proposal Schedule for the various appurtenant items of work.

C. Quantities listed in the Proposal do not govern final payment. Payments to the Contractor will be made only for actual quantities of Contract items performed in accordance with terms of the Contract and for items of work actually performed under Change Orders.

D. Indirect costs, such as supervision and overheads, profit, the general conditions specified in the Contract, all shall be allocated to each proposal item as applicable for work defined in the proposal item. No separate payment will be made to the Contractor for these items.

1.02 PROPOSAL ITEM MEASUREMENT AND PAYMENT

A. Item 1 - Mobilization: Payment for Mobilization will be made on a lump sum basis. The amount to be allowed for Mobilization in the partial payment to be made under the Contract will be as follows:

a. When 5% of the total original contract amount is earned from other proposal items, not including advances on materials, 50% of the amount bid for Mobilization, or 2.5% of the original contract amount, whichever is the least, less normal retainage, will be paid.

b. When 10% of the total original contract amount is earned from other proposal items, not including advances on materials, 100% of the amount bid for mobilization, or 5% of the original contract amount, whichever is the least, less normal retainage, will be paid.

c. Upon completion of all work on the project, payment of any amount bid for Mobilization in excess of 5% of the total original contract amount will be paid.

d. The above schedule of progress payments for Mobilization shall not limit or preclude progress payments otherwise provided by the Contract.

e. Mobilization paid under paragraph 1-4 shall not exceed 5% of the total original contract amount for bid items 1 through 10. Amounts greater than 5% shall be reimbursed with the Final Pay Request at the end of construction.

B. Item 2 - Erosion Control: All erosion control measures including materials, equipment and labor unless identified as part of other individual bid items shall be measured and paid on a lump sum basis as shown in the Proposal.

C. Item 3 - By-pass Pumping: Measurement and payment for sanitary sewer bypass pumping shall be made on a lump sum basis. The lump sum price shall include all costs for materials, equipment and labor to provide the appropriately sized flow diversion and piping during all elements of construction.

D. Item 4 - Decommissioning of existing east septic tank: Measurement and payment for decommissioning the east septic tank shall be made on a lump sum basis. The lump sum price shall include all costs for materials, equipment and labor to abandon the east septic tank and related pipe. This will include, but is not limited to, pumping and disposing sewage, filling tank with approved material, and filling abandoned 8" pipe with CLSM. Sheet G5

E. Item 5 - Effluent Lift Station Retrofit: Measurement and payment for retrofitting the existing lift station recirculation tank shall be made on a lump sum basis. The lump sum price shall include all costs for materials, equipment and labor to convert the existing tank into an effluent lift station. This will include, but is not limited to, decommissioning and proper disposal of old pipes, pumps, floats and appurtenances; core drilling holes; duplex pumps, float assembly, custom flow inducer tower, pressure filters and related piping; and repairing pipe leak from western influent pipe.

F. Item 6 - Decommission Existing Treatment System: Item 6a-6d should be inclusive of all costs associated with decommissioning the existing treatment system as shown on Drawing Sheet G3 and G5.

a. Decommission Advantex Pods: Measurement and payment for decommissioning the Advantex AX100 Pods will be billed on a lump sum basis. The lump sum price shall include all costs for materials, equipment and labor to remove and properly dispose of the filtration units. This includes, but is not limited to, removing Advantex pod, properly disposing of pods, and backfilling voids.

b. Remove Existing Fence: Measurement and payment for decommissioning the chain link fences will be billed on a lump sum basis. The lump sum price shall include all costs for materials, equipment and labor to remove and dispose of the fences. This will include but is not limited to, removal of chain link fencing, fence posts and footings, crossbars, and gate posts, and backfill any voids for the fence around the existing treatment area and recirculation tank area.

c. Decommission Electrical Equipment and Controls: Measurement and payment for removing control panels and electrical equipment will be billed on a lump sum basis. The lump sum price shall include all costs for materials, equipment and labor

to remove and dispose of all electrical equipment. This includes, but is not limited to, removal and disposal of the controls cabinet near the existing recirculation tank; removal and disposal of the electrical cabinet at the treatment area; removing all old wiring; cutting and capping of all abandoned conduit.

d. Decommission other structures and equipment: Measurement and payment for removing all other equipment and structures related to treatment at the site of the AX100 pods will be billed on a lump sum basis. The lump sum price shall include all costs for materials, equipment and labor to remove and dispose of all equipment and structures. This includes, but is not limited to, removal and disposal of pumps, floats, and wiring; removal of pump sequencing unit; pumping and disposal of sewage; cutting, capping and abandoning all piping; and filling all basins and voids.

G. Multiple Sections - Gravity Sewer Pipe: Measurement for gravity sewer pipe, will be computed for pipe size and material based on the following limits for length of trench:

a. Length: Length of all sewer pipe will be measured horizontally along center of pipe from center-to-center through fittings, to manholes, or to the end of pipe, whichever is applicable.

b. 8-inch D-3034 and 4-inch Schedule 40 PVC Gravity Sewer Pipe: Payment per linear foot of pipe and trench excavation shall be full compensation for all materials, equipment and labor to construct the sewer pipe in place; the pipe bedding required by the Plans and Specifications; all material used to complete the backfill of the pipe zone in accordance with the Specifications; and all work necessary to furnish, place, and compact the bedding, pipe zone backfill materials, and crushed rock for imported backfill to pavement base or to the ground surface as required. The price proposal shall also include: construction staking to establish lines and grades; dewatering, sheeting, shoring and bracing; backfilling trench with native or imported materials; disposal of excess excavation; the excavation necessary to widen the trench for installation of manholes, tanks, and appurtenances; the supporting and protection of existing utility crossings; the preparation of subgrade; and all other work necessary to install the pipe in place including testing and plugs. No payment will be made for any section of pipe not yet passing all trench backfill, air and mandrel testing requirements

H. Item 7 - East Septic Tank Installation: Item 7a-7d should be inclusive of all costs associated with constructing a new septic tank system and manhole.

a. 8-inch D-3034 PVC Pipe: See Paragraph 1.02.G

b. 4-inch Schedule 40 PVC Pipe: See Paragraph 1.02.G

c. 3,000-gallon Pre-Cast Concrete Septic Tank: Measurement and payment for precast septic tanks will be made on a unit price basis as shown in the Proposal for all depths. The per each price shall include all costs for materials, equipment and labor to install new septic tanks and appurtenances. Payment per each tank shall include, but is not limited to, common excavation; base material; imported backfill; dewatering; fiberglass riser and cover; constructing and testing the tank complete in place. Payment for external piping will be paid under separate bid items.

d. Manholes: Measurement and payment for sanitary sewer manholes 48" diameter will be made on a unit price basis as shown in the Proposal for all depths. Payment per each 48" manhole (standard or flat-top) shall include full compensation for: materials, equipment and labor including common excavation; base rock; imported backfill; dewatering; manhole frame and cover; manhole grade rings; testing and constructing the manhole complete in place. No separate payment will be made for flat-top manholes

I. Multiple Sections - Pressure Pipe: Measurement for pressure sewer effluent pipe, will be computed for pipe size and material based on the following limits for length of trench:

a. Length: Length of all pressure sewer pipe will be measured horizontally along center of pipe from center-to-center through fittings, to tank, structure, or to the end of pipe, whichever is applicable.

b. 1-inch, 1.5-inch, and 2-inch Schedule 40 PVC Pressure Pipe: Payment per linear foot of pressure pipe and trench excavation shall be full compensation for all materials, equipment and labor to construct the pressure pipe in place, which includes but is not limited to, the pipe bedding required by the Plans and Specifications; all material used to complete the backfill of the pipe zone in accordance with the Specifications; and all work necessary to furnish, place, and compact the bedding, pipe zone backfill materials, and crushed rock for imported backfill to pavement base or to the ground surface as required. The price proposal shall also include: construction staking to establish lines and grades; dewatering, sawcutting, sheeting, shoring and bracing; backfilling trench with native or imported materials; disposal of excess excavation; the excavation necessary to widen the trench for installation of manholes, tanks, and appurtenances; the supporting and protection of existing utility crossings; the plugging or removing of abandoned conduit and structures; the preparation of subgrade; and all other work necessary to install the pipe in place including testing and plugs. No payment will be made for any section of pipe not yet passing all trench backfill, and testing requirements

J. Item 8 - Recirculating Treatment and Subsurface Drip Distribution System: Items 8a-8o should be inclusive of all costs associated with constructing a new recirculating treatment system and subsurface drip distribution system as outlined in the Drawings and Specifications.

a. 3,000-gallon Pre-Cast Concrete Recirculation Tanks: Measurement and payment for recirculation tanks will be made on a unit price basis as shown in the Proposal for all depths. The per each price shall include all costs for materials, equipment and labor to install new septic tanks and appurtenances. Payment per each tank shall include, but is not limited to, common excavation; base material; imported backfill; dewatering; internal piping; construction and installation of custom flow inducer towers; external splice boxes and related wiring; fiberglass riser and cover; constructing and testing the tank complete in place. Payment for external piping will be paid under separate bid items.

b. AdvanTex AX100 Textile Filter Units: Measurement and payment for AX100 units will be made on a unit price basis as shown in the Proposal for all depths. The per each price shall include all costs for materials, equipment and labor to install new AX100 units and appurtenances. Payment per each unit shall include, but is

not limited to, common excavation; base material; backfill; dewatering; vented fan assembly, wiring, and related appurtenances; and fittings. Payment for external piping will be paid under separate bid items.

c. 2-inch Schedule 40 PVC Pressure Effluent Sewer Pipe: See Paragraph 1.02.I

d. 4-inch Schedule 40 PVC Pipe: See Paragraph 1.02.G

e. Custom Primary Flow Splitter Basin: Measurement and payment for flow splitter basin will be made on a lump sum basis for all depths. The lump sum price shall include all costs for materials, equipment and labor to install a new basin and appurtenances. Payment shall include, but is not limited to, common excavation; base material; imported backfill; dewatering; internal piping; basin and cover; constructing and testing the tank complete in place. Payment for external piping will be paid under separate bid items.

f. Orenco Ultra-Violet Units: Measurement and payment for UV units will be made on a unit price basis as shown in the Proposal for all depths. The per each price shall include the cost of each unit and all proprietary equipment. Payment per each unit shall include the cost of items purchased directly from Orenco. Payment for installation and ancillary equipment and appurtenances will be paid for under the precast dripfield dosing tank item.

g. Custom Secondary Flow Splitter Basin: Measurement and payment for ultraviolet light system will be made on a lump sum basis. The lump sum price shall include all costs for materials, equipment and labor to install a new custom secondary flow splitter basin and appurtenances. Payment shall include, but is not limited to, common excavation; base material; imported backfill; dewatering; basin and cover;. Payment for external piping will be paid under separate bid

h. 3,000-gallon Pre-Cast Dripfield Dosing Tank: Measurement and payment for precast dosing tank will be made on a lump sum basis as shown in the Proposal for all depths. The per each price shall include all costs for materials, equipment and labor to install new tanks and appurtenances. Payment per each tank shall include, but is not limited to, common excavation; base material; imported backfill; dewatering; internal piping; construction and installation of custom flow inducer towers; external splice boxes and related wiring; fiberglass riser and cover; installation of the UV units; wiring and piping integral to the systems construction; and testing the tank complete in place. Payment for external piping will be paid under separate bid items.

i. Concrete pad for Treatment System Controls Shelter: Measurement and payment for constructing the concrete slab will be billed on a lump sum basis. The lump sum price shall include all costs for materials, equipment and labor to construct the concrete slab. Payment shall include, but is not limited to, common excavation; base material; framing; testing and other incidental work required to complete construction.

j. Orenco Durafiber Treatement System Controls Shelter: Measurement and payment for the controls shelter will be made on a lump sum basis. The lump sum price shall include all costs for materials, equipment and labor to install the shelter and related equipment not listed elsewhere. Payment shall include, but is not limited

to, installation of the shelter; wiring and installation of heater, load center, lights and other equipment; and loft section.

k. Custom Telemetry Control and Alarm Panel: Measurement and payment for the control panel shall be made on a lump sum basis. The lump sum price shall include all costs for materials, equipment and labor to install, test, and integrate the control panel into a working system.

l. 1-inch Schedule 40 PVC Pressure Effluent Sewer Pipe: See Paragraph 1.02.I

m. 1.5-inch Schedule 40 PVC Pressure Effluent Sewer and Drop Field Manifold Pipe: See Paragraph 1.02.I

n. 2-inch Schedule 40 PVC Pressure Drip Field Flush Main Pipe: See Paragraph 1.02.I

o. 52,000 sq. ft. of Netafim Subsurface Drip Distribution System: Measurement and payment for installation of drip distribution system will be made on a unit price basis as shown in the Proposal. Payment per square foot of distribution system and trench excavation shall be full compensation for all materials, equipment and labor to construct the system in place, which includes but is not limited to, disc filters; dripper tubing; all flex tee connectors and valves; flow meter; sampling tap; wire splices; and hydraulic unit. The price proposal shall also include: construction staking to establish lines and grades; disposal of excess excavation; the excavation necessary to widen the trench for installation valves and appurtenances; and all other work necessary to install the system including testing. No payment will be made for any section of the system not yet passing testing requirements. Payment for non-dripper line pressure piping will be paid under separate bid item.

p. Hydraulic Unit and Disc Filter Headworks: Measurement and payment for AX100 units will be made on a lump sum basis. The shall include all costs for materials, equipment and labor to install new drip hydraulic unit and, and appurtenances. Payment per each unit shall include, but is not limited to, mounting skid or enclosure; drip hydraulic unit; automatic-flush disc filter headworks; flow meter; sampling port; wiring, piping, and related appurtenances; Payment for external piping will be paid under separate bid items

K. Item 9 – New Water Service: Items 9a-9c should be inclusive of all costs associated with constructing a new water service line as outlined in the Drawings and Specifications.

a. 1-inch Water Service Line and Heat Tape: Measurement for water service line will be computed for pipe size and material based on the following limits for length of installation:

1. Length: Length of all pressure sewer pipe will be measured horizontally along center of pipe from center-to-center through fittings, from water meter to hydrant or other termination points.

2. Payment per linear foot of water line and trench excavation shall be full compensation for all materials, equipment and labor to construct the pressure pipe in place, which includes but is not limited to, the pipe bedding; heat tape and associated wiring; all material used to complete the backfill

of the pipe zone; and all work necessary to furnish, place, and compact the bedding, pipe zone backfill materials, and crushed rock for imported backfill to pavement base or to the ground surface as required. The price proposal shall also include: backfilling trench with native or imported materials; disposal of excess excavation; the excavation necessary to widen the trench for installation of appurtenances; the supporting and protection of existing utility crossings; the preparation of subgrade; and all other work necessary to install the pipe in place including testing. No payment will be made for any section of pipe not yet passing all trench testing requirements

b. 1-inch Reduced Pressure Backflow Preventer & Pressure Reducer: Measurement and payment for installation reduced pressure backflow preventer and pressure reducer will be made on a lump sum basis. The lump sum price shall include all costs for materials, equipment and labor to install a reduced pressure backflow preventer and pressure reducing device. This includes, but is not limited to, common excavation; valve box; site restoration; heat tape; constructing and testing in place. Payment for water line will be paid under a separate bid item.

c. Frost Free Hydrant: Measurement and payment for hydrant will be made on a lump sum basis for all depths. The lump sum price shall include all costs for materials, equipment and labor to install the hydrant. Payment shall include but is not limited to full compensation for: materials; equipment and labor including common excavation; base rock or imported backfill; and disposal of excess excavation.

L. Item 10 – Miscellaneous Site Improvements: Items 10a-10b should be inclusive of all costs associated with constructing the items listed as outlined in the Drawings and Specifications.

a. Chain-link Fence: Measurement and payment for installation of fencing system will be made on a unit price basis as shown in the Proposal. Payment per linear foot of fence shall be full compensation for all materials, equipment and labor to construct the fence. This includes, but is not limited to, common excavation; disposal of excess excavation; concrete bases; chain link fence, wire, metal post, and braces for gates and fence sections; and privacy slats.

b. Gravel Access Road: Measurement and payment for installation of crushed rock surface shall be made on a unit price basis as shown in the Proposal. Payment per square foot of finished area shall be full compensation for all materials, equipment and labor to construct the surface. This includes, but is not limited to, clearing and grubbing; common excavation; disposal of excess excavation; subsurface preparation; installation of geofabric; and placement and compaction of crushed rock surface.

END OF SECTION

SECTION 01040

COORDINATION AND PROJECT REQUIREMENTS

PART 1 GENERAL

1.01 PROJECT COORDINATION

A. Coordinate scheduling, submittals and work of various Sections of the Specifications and subcontractors to assure efficient and orderly sequence of interdependent construction.

1.02 UNDERGROUND UTILITIES, CONDUITS, OR PROCESS PIPING

A. Obtain best available current information on location, identification and marking of existing utilities, piping and conduits and other underground facilities before beginning any excavation. Contact Oregon Utility Notification center at 503-246-6699 for information at least 48 hours in advance of beginning work. Give Engineer 48 hours notice before beginning work.

B. The location of existing utilities and underground facilities known to the Engineer are shown in their approximate location based on information available at the time of preparing the Drawings. The actual location, size type and number of utilities and underground facilities may differ from that shown and utilities or underground facilities may be present that are not shown.

C. Use extreme care when excavating or working in areas that may contain existing utilities, process piping, conduits or other underground facilities. Use careful potholing, hand digging and probing to determine the exact location of underground installation. Some locations contain multiple pipes or conduits. Prior to performing any subsurface work, investigate, determine and prepare a plan to turn off or disconnect each utility believed to be within 100 feet of the subsurface work in the event of an accidental breach of a utility conduit.

D. Where connections to existing utilities or other underground facilities is required or where new piping or conduits may cross or interfere with existing utilities or underground facilities carefully excavate and uncover existing installations to a point 1 foot below the pipe or conduit to determine the actual elevation and alignment. Call the Engineer's attention to differing existing conditions that may require a clarification or change.

1.03 PRECONSTRUCTION MEETINGS

A. Prior to beginning the Work, the Contractor and its key personnel and Subcontractors including the Contractor's Superintendent and Project Manager shall attend a meeting with the Owner and the Engineer to discuss the following:

1. Name, Authority, and Responsibilities of Parties Involved

2. Project Procedures:

    a. Progress meetings

    b. Correspondence

c. Notification

d. Submittal of Shop Drawings

e. Requests for Information

f. Response to Requests for Information

g. Work Directive Change

h. Contractor Reporting requirements

i. Change Orders

3. Temporary Schedule and Contractor's Construction Schedule

4. Temporary Facilities and Control

5. Testing During Construction

6. Contractors Coordination

7. Maintenance of Record Drawings

8. Punch Lists and Project Closeout Procedures

9. Final Deliverables including Record Drawings

1.04 PROGRESS MEETINGS

A. Contractor's Superintendent and Project Manager shall attend weekly meetings, held on site to discuss plans for the following week and to evaluate project progress. Items to be discussed shall include a review of critical items/action list, review work progress, review of submittal status, delivery dates, coordination problems, and any items of concern.

B. Agenda:
1. Review critical items/action list.
2. Review work progress. Compare actual progress with planned progress shown on Contractors Construction Schedule. Discuss Corrective action required and proposed methods to correct deficiencies.
3. Review status of Submittals; review delivery dates and date of need for critical items.
4. Review coordination problems.
5. Discuss Contractor Quality Control.
6. Discuss open items on Engineers "Items of Concern List."
7. Discuss impact of proposed changes on progress Schedule.
8. Other business.

1.05 MATERIALS

A. General:

1. Verify that products delivered meet requirements of Contract Documents and the requirements of Favorably Reviewed submittals.

B. Transportation and Handling:

1. Transport and handle products in accordance with manufacturer's instructions.

2. Promptly inspect shipments to assure that products comply with requirements, quantities are correct, and products are undamaged.

3. Provide equipment and personnel to handle products by methods to prevent soiling, disfigurement, or damage.

C. Storage and Protection:

1. Store and protect products in accordance with manufacturer's instructions. Seals and labels shall be intact and legible.

2. Provide offsite storage and protection including insurance coverage when site does not permit onsite storage or protection.

3. Store loose granular materials on solid flat surfaces in a well-drained area. Prevent mixing with foreign matter.

1.06 SAFETY

A. In accordance with generally accepted construction practice, applicable law and the General Conditions, the Contractor shall be solely and exclusively responsible for:

1. Construction means and methods.

2. Safety of employees engaged in the work while on and off the site.

3. Safety of the Owner, the Engineer, the Design Engineer, and others who may visit or be affected by the work.

4. Safety of the work itself including material and equipment to be incorporated therein.

5. Safety of other property at the site or adjacent thereto.

6. Safety programs, equipment and protective devices required to assure the safety of persons and property for whom/which the Contractor is responsible.

B. The duties of the Engineer in conducting review of the Contractor's performance is not intended to include review of the adequacy of the Contractor's work methods, equipment, bracing, scaffolding or safety measures in, on, or near the construction site.

C. The Contractor is hereby informed that work on this project could be hazardous. The Contractor shall carefully instruct all personnel working in potentially hazardous work areas as to potential dangers and shall provide such necessary safety equipment and

instructions as required to prevent injury to personnel and damage to property, and to comply with all applicable laws and regulations including State OSHA, Federal OSHA, and other regulations referenced in these Contract Documents.

D. The Contractor shall, at all times, maintain the job in a condition that is safe for the Owner, the Engineer and their Consultants to make site visits and to conduct construction reviews. If the Owner or the Engineer cannot allow personnel to visit the job because it is not safe, the Contractor is not providing required safe access to the Work as required by General Conditions.

E. The Contractor shall prepare a Safety Plan meeting the requirements of applicable regulations. As a minimum, the Contractors Safety Plan shall set forth definite procedures for informing workers about safety, for instructing workers in safe practices, for assuring that workers are using appropriate safety equipment and safe work practices and for reporting accidents.

F. The Contractor shall submit a completed Site Specific Safety Plan Certification Form (Appendix A).

1.07 CONTRACTOR'S QUALITY CONTROL

A. The Contractor shall be fully responsible for inspecting the work of its suppliers and Subcontractors to assure that the work when completed will comply with the standards for materials and workmanship required by the Contract Documents.

B. Inspections, periodic observations and testing performed by the Owner or the Engineer are for the Owner's benefit and information only and shall not be construed as partial or incremental acceptance of the work and shall not be deemed to establish any duty on the part of the Owner or the Engineer to the Contractor, its subcontractors or suppliers.

C. The Contractor shall:

1. Monitor quality control over suppliers, manufacturer, products, services, site conditions, and workmanship, to produce work of specified quality.

2. Comply fully with manufacturer's installation instructions, including performing each step in sequence as recommended by the manufacturer.

3. Submit a Request for Information to Engineer before proceeding with work when manufacturers' instructions or reference standards conflict with Contract Documents.

4. Comply with specified standards as a minimum quality for the work except when more stringent tolerances, codes, or specified requirements indicate higher standards or more precise workmanship.

5. Perform work by persons specializing in the specific trade and class of work required and qualified to produce workmanship of specified quality.

D. The Contractor shall provide assistance required by the Engineer to adequately inspect the Work including ladders, scaffolding, shoring, lighting, ventilation and other aids to facilitate access and provide a safe working environment.

1.08 TESTING LABORATORY SERVICES AND CERTIFIED LABORATORY REPORTS

A. Provide certified testing service in accordance with specific requirements contained in each technical specification section. Submit Certified Laboratory Reports required by technical specification sections as soon as they are available.

B. District retains authority to identify location where required onsite testing is to take place. Any failing tests will require two additional tests to have passing results, after corrective actions have taken place and at retesting locations as identified by District, at no additional cost to the Owner.

END OF SECTION

SECTION 01060

PERMITS AND EASEMENTS

PART 1 GENERAL

1.01 PERMITS

A. Contractor will be responsible for obtaining all required permits and maintaining compliance with those permits throughout the performance of the Work. Owner will pay the cost of obtaining all permits. The Contractor shall be responsible for any penalties or fines that result from Contractor's noncompliance with the terms of the permits. The Contractor will be responsible for compliance with the terms of all permits throughout the performance of the Work.

1.02 RESTORATION OF PROPERTY/MISCELLANEOUS

A. Comply with property restriction and restoration requirements contained in all permits. It is expected that additional items requiring protection and/or replacement will be encountered as a general construction practice and the Contractor shall assume responsibility thereof at no additional cost.

END OF SECTION

SECTION 01300

SUBMITTALS PROCEDURE

PART 1 GENERAL

1.01 DESCRIPTION

A. This Section specifies procedures for Contractor submittals. Where required by the Specifications, submit descriptive information that will enable the Engineer to assess whether the Contractor's proposed materials, equipment or methods of work are in general conformance to the design concept and in compliance with the Drawings and Specifications. The information to be submitted shall consist of drawings, specifications, descriptive data, certificates, samples, test results and such other information, all as specifically required in the Specifications.

PART 2 PRODUCTS

2.01 CONTRACTOR RESPONSIBILITIES

A. Contractor shall be responsible for the accuracy and completeness of the information contained in each submittal and shall ensure that the material, equipment or method of work shall be as described in the submittal. Verify that the material and equipment described in each submittal conforms to the requirements of the Specifications and Drawings prior to transmittal to the Engineer. Ensure that there is no conflict with other submittals and notify the Engineer in each case where such submittal may affect the work of another contractor or Owner.

B. If the Contractor's review determines that the information shows deviations from the Specifications or Drawings, submit items that will conform or request consideration of a substitution.

PART 3 EXECUTION

3.01 TRANSMITTAL PROCEDURE

A. General:

1. Submittals regarding material and equipment shall be accompanied by Submittal/Transmittal Form. A separate form shall be used for each specific item, class of material, equipment, and items specified in separate, discrete sections for which the submittal is required. Submittals for various items shall be made with a single form when the items taken together constitute a manufacturer's package or are so functionally related that expediency indicates checking or review of the group or package as a whole.

2. A unique number, sequentially assigned, shall be noted on the transmittal form accompanying each item submitted. Original submittal numbers shall have the following format: "XXX"; where "XXX" is the sequential number assigned by the Contractor. Resubmittals shall have the following format: "XXX-Y"; where "XXX" is the originally assigned submittal number and "Y" is a sequential letter assigned for resubmittals, i.e., A, B or C being the 1st, 2nd and 3rd resubmittals,

respectively. Submittal 25B, for example, is the second resubmittal of Submittal 25.

B. Deviation from Contract: Submit a request for substitution for deviations from the Specifications or Drawings. Include the reason for the deviation and cost differential for the deviation. Deviations from the Contract shall be authorized by Owner's written approval only.

C. Submittal Completeness: Submittals which do not have all the information required to be submitted are not acceptable and will be returned without review.

D. Submit to the Engineer the following items for review:

1. Construction Schedule

2. List of employees to be contacted in an emergency with their home phone numbers and cell numbers (available 24 hrs/day)

3. List of subcontractors that will work on the project

4. Site Specific Safety Plan Certification

5. Sanitary Sewer Bypass Plan

6. Copy of confined space entry plan.

7. Final Utility Permits

8. Shoring Plan

9. Imported granular materials: supplier and location of pit, gradation

10. Manholes, manhole steps, and connections to pipe

11. Castings

12. PVC pipe and PVC fittings: Manufacturer and certificates of compliance

13. AdvanTex AX100 recirculating textile filter treatment units and appurtenances

14. Ultra Violet system

15. Treatment System Control Shelter

16. Telemetry control and alarm panel

17. Subsurface drip system and appurtenances, including pressure filter system

18. Pumps

The Engineer reserves the right to ask for additional SUBMITTALS that are not included on the above list. Review by the Engineer shall not relieve the Contractor from responsibility for error of omission. Obtain the Engineer's approval prior to beginning any fabrication or other work. No deviation from the reviewed drawings shall be allowed without written approval from the Owner or Engineer.

3.02 REVIEW PROCEDURE

A. For each required submittal, submit electronic copies of all the submitted information.

B. Unless otherwise specified, within 28 days after receipt of the submittal/resubmittal, the Engineer will review and return it to the Contractor. The returned material will consist of one (1) marked-up copy of the submittal. The returned submittal will indicate one of the following actions:

1. If the review indicates that the material, equipment or work method is in general conformance with the Contract Drawings/Specifications, the submittal copies shall be marked "Approved." In this event, the Contractor may begin to incorporate the material/equipment/work method covered in the submittal.

2. If the review indicates that the submittal is insufficient or that limited corrections are required, the submittal copies may be marked "Approved as Noted." The Contractor may begin to implement the work method or incorporate materials/comments covered in the submittal in accordance with the corrections/comments noted.

3. If the review reveals the submittal is insufficient or contains incorrect data and the comments require revision and resubmittal, the submittal copies shall be marked "Not Approved, Resubmit." In this case, the Contractor shall not then undertake work covered by this submittal until the submittal has been revised, resubmitted and returned to the Contractor with a marking of "Approved" or "Approved as Noted."

4. If the review indicates that the submittal is incomplete or that additional information is required, the submittal copies may be marked "Submit Specified Item". In this case the Contractor shall not undertake work covered by this item until the submittal has been revised resubmitted and returned to the Contractor with a marking of "Approved" or "Approved as Noted."

5. If the review reveals the material, equipment, or work does not require submittal, then the submitted copies shall be marked "Review Not Required Per Contract Documents." In this event, the Contractors may begin to incorporate the material/equipment/work covered by the submittal and no further action is required.

3.03 EFFECT OF REVIEW OF CONTRACTOR'S SUBMITTALS

A. Review of drawings, methods of work or information regarding materials or equipment the Contractor proposes to provide shall not relieve the Contractor of his responsibility for errors therein, nor shall it be regarded as an assumption of risks or liability by the Engineer on behalf of Owner, or by any officer or employee of Owner. The Contractor shall have no claim under the Contract on account of the failure, or partial failure, of the method of work, material or equipment so reviewed. A mark of "Approved" or "Approved as Noted"

shall mean the Owner has no objection to the Contractor, upon the Contractor's own responsibility, using the plan or method of work proposed, or providing the materials or equipment proposed.

END OF SECTION

SECTION 01310

CONSTRUCTION SCHEDULE

PART 1 GENERAL

1.01 DESCRIPTION

A. This Section specifies requirements and procedures for the Contractor in preparing a construction schedule. The purpose of the schedule shall be to ensure adequate planning of the work by the Contractor, to establish the standard against which satisfactory completion of the project shall be judged, to assist the Engineer in monitoring progress, and to assess a change proposal's impact on the construction schedule.

1.02 SUBMITTALS

A. Before starting work, the Contractor shall submit to the Engineer an overall contract construction schedule showing the proposed order of work and indicate the time required for completion of the major items and sub-items of work. The schedule shall also show the critical path to accomplish all of the work. The format for the schedule shall be as a minimum a Gantt Chart format showing start and completion dates for the various work activities.

PART 2 PRODUCTS

2.01 CONSTRUCTION SCHEDULES

A. Gantt Chart, Bar Chart, or equivalent as approved by the Engineer.

PART 3 EXECUTION

3.01 SUBMISSION AND APPROVAL

A. The schedule shall be realistic and definitive as to the amount of work which is to be accomplished within the time indicated and shall be updated monthly to reflect actual work progress. The schedule shall breakdown the project into activities corresponding to the plan sheets and will include major tasks to complete all phases of work. It will be used as an indication of the sequence of the major construction operations and as a check on the progress of the work and may, at the sole discretion of the Engineer, be employed by the Engineer in determining delays and time extensions.

B. If the Contractor wishes to make changes in the construction schedule, then to the maximum extent possible provide two (2) weeks notice to the Engineer, or secure the approval of the Engineer prior to performing such changes. Such schedule changes shall be strictly in accordance with the other requirements of this specification, and shall show the interrelationship between the original schedule and the proposed changes to the schedule.

C. The Engineer's review of the original schedule shall not constitute a warranty or representation by the Owner that the Contractor can perform the work according to such schedule.

D. Submission of a full updated schedule may not be required with each monthly progress payment invoice, if the two week look ahead schedule has been kept up to date to the satisfaction of the Engineer.

END OF SECTION

SECTION 01560

ENVIRONMENTAL CONTROLS

PART 1 GENERAL

1.01 DESCRIPTION

A. This section specifies environmental mitigation and temporary environmental controls required to be maintained during construction. Nothing in this section shall relieve any person from the obligation to comply with the regulations or permits of any federal, state, or local authority.

1.02 SUBMITTALS

A. Procedures: See Section 01300

B. Erosion Control Plan: Develop and maintain for the duration of the contract an Erosion Control Plan that will effectively incorporate and implement environmental protection precautions. The Contractor's Erosion Control Plan shall include methods and interim facilities to be constructed and/or used concurrently during construction to control erosion in such a manner as to ensure that sediment and sediment laden water does not enter any drainage system, roadways, or violate applicable water quality standards. Visible or measurable erosion which enters, or is likely to enter, a public storm and surface water system, wetland or stream is prohibited. The plan shall include the name of the Contractor's employee authorized to supervise and enforce compliance with the Erosion Control Plan and telephone number(s) to contact that person at any time.

C. The Erosion Control Plan shall be submitted and approved in accordance with Section 01300 prior to initiating clearing activities.

D. In the event a regulatory agency or jurisdiction determines the Erosion Control Plan to be inadequate to protect environment:

1. The Contractor shall stop immediately the affected work in progress until adequate environmental protection measures are implemented.

2. The Contractor shall modify the Erosion Control Plan to meet the requirements of said regulatory agencies, jurisdictions and provide the Engineer with the revisions to the Plan within five (5) calendar days of the notice of deficiency. Plan resubmittal will be in accordance with Section 01300.

PART 2 PRODUCTS

2.01 EROSION CONTROL

A. Temporary Sediment Fences

1. Synthetic filter fabric shall contain ultraviolet ray inhibitors and stabilizers.

2. Filter fabric fence shall have manufactured stitched loops for 2”x2” post installation. Stitched loops shall be installed on he up-hill side of the sloped area, with posts spaced a maximum of 6 feet apart.

3. Where practical the filter fabric shall be purchased in a continuous roll to the length required to avoid the use of joints.

4. The physical integrity of all materials shall be sufficient to meet the requirements of their intended use and withstand normal wear and tear.

B. Straw Bale Sediment Barrier/Bio-Filter Bags: Standard 40 to 60-pound rectangular bales of cereal grain or seed straw. Wooden stakes (2”x2”x 3 feet) shall be used for straw bales and bio-filter bags.

C. Catch Basin Inserts: Woven polyproplene filter sack.

D. Plastic Sheeting: Polyethylene and have a minimum thickness of 6 mil.

E. Straw Mulch: Maintain a sufficient cover of straw mulch over bare ground to reduce sediment runoff until permanent restoration has begun.

PART 3 EXECUTION

3.01 SITE MAINTENANCE

Dust shall be minimized by the Contractor to the extent practicable, utilizing all measures necessary, including, but not limited to:

A. Sprinkling any exposed dust producing areas with water used by trucks or motorized mechanical equipment.

B. Use of covered haul equipment.

3.02 STREET CLEANING

A. Prevent dirt, mud, and dust from escaping trucks departing the work site, by covering dusty loads and cleaning truck tires before leaving the construction site.

B. All streets in the construction area used by Contractor’s trucks or any other equipment hauling material to and from the area, whether within the Contract limits or adjacent thereto, shall be kept clean by the Contractor and shall be serviced by the Contractor’s use of water distribution trucks to control dust on a daily basis. Engineer will require multiple sprinkling operations if the dust becomes excessive during the day. All cleaning and sprinkling shall be at the Contractor’s expense. Violations of these requirements are sufficient grounds for the Engineer to order the streets in question to be cleaned by others. The expense of the street cleaning will be charged against the Contractor and cost withheld from Contractor's payments.

3.03 NOISE CONTROL

A. Comply with all local controls and noise level rules, regulations and ordinances.

B. Each internal combustion engine, used on the job or related to the job, shall be equipped with a muffler of a type recommended by the manufacturer. No internal combustion engine shall be operated on the project without said muffler.

C. Noise levels for all equipment shall not exceed 85 dBA. Equipment that cannot meet these levels shall be quieted by use of improved exhaust mufflers, noise attenuation barriers or other means.

D. If special circumstances or emergency conditions require work beyond the hours as specified, the Contractor shall:

1. Notify the Engineer and Owner 72 hours in advance of any proposed extended work hours for preauthorization. The Contractor's written request shall specify the work to be performed and the circumstances that warrant the request. The request shall include any additional measures to mitigate noise generated by this construction activity if deemed necessary by the Engineer.

2. If an emergency situation occurs that warrants immediate extended hours, the Contractor shall notify the Engineer immediately upon determining the need for this work.

3.04 TREE AND PLANT PROTECTION

A. The Contractor shall minimize vegetation removal during his construction operations.

B. Work areas shall be carefully located and marked to reduce potential damage. Trees shall not be used as anchors for stabilizing working equipment. Work performed adjacent to trees shall include protecting each tree with a high visibility perimeter barrier fence, located at the dripline of the tree. The barrier fence shall be an orange snow fence or approved equal. The Contractor shall not remove any trees beyond 7.50 feet each side of trench centerline without written approval from Engineer.

C. Where existing vegetation areas have been removed or disturbed by the Contractor's operations, the site shall be regraded and restored by the Contractor as soon as practicable.

D. If trees are damaged or destroyed by the Contractor's operations without prior authorization by the Engineer, the Contractor shall replace the tree in species, size and grade to the satisfaction of the Engineer at no cost to the Owner. The Contractor shall maintain the replacement tree for a period of two years to assure a satisfactory replacement. Replacement trees that are dead or dying, as determined by the Engineer, at the end of the first year establishment period shall be replaced by the Contractor to the satisfaction of the Engineer and at no cost to the Owner. Should it not be practical to replace the tree, the Contractor shall pay damages in accordance with the size of the original tree that was damaged as measured 4 feet above the ground surface. Damages will include $500 for each tree 6" in diameter or less, $1,000 for each tree greater than 6" and less than 12", $1,500 for each tree from 12" to 24"and $2,500 for any tree 24" or greater in diameter. In the event the Contractor does not perform this replacement work in a timely manner as

determined by the Engineer, the Owner reserves the right to have the work performed by others. The damages for trees deemed not practical to replace and/or the expense of trees Owner had to replace due to Contractor not replacing them in a timely manner, will be charged against the Contractor and the costs withheld from Contractor's payments.

3.05 DEWATERING AND WATER CONTROL

A. No direct water from construction activities shall be diverted to the sanitary sewer.

B. Maintain excavations free from water while construction is in progress. Keep trenches and other areas free from water as required to permit continuous progress of, or to prevent damage to the work or the work of others.

3.06 WATER QUALITY PROTECTION AND STORMWATER CONTROL

A. All construction activities shall comply with all conditions contained in applicable Federal, State, and Local permits.

B. Contractor shall avoid disturbing any existing streams and wetlands. Contractor shall provide an Erosion Control Plan.

3.07 FISH AND WILDLIFE HABITAT

A. The requirements of local, state, and federal agencies charged with wildlife and fish protection shall be adhered to by the entire construction work force.

3.08 EROSION CONTROL

A. Execute the approved Erosion Control Plan.

B. The Contractor shall not drag, drop, track, or otherwise place or deposit, or permit to be deposited, mud, dirt, rock or other such debris into any part of the public storm or surface water system, or any part of a private storm, sanitary sewer or surface water system. Any such deposit of material shall be immediately removed by the Contractor at the Contractor's expense. No material shall be washed or flushed into any part of the sanitary sewer system.

C. The Contractor shall not drag, drop, track, or otherwise place or deposit, or permit to be deposited, mud, dirt, rock or other such debris into any part of the public storm or surface water system, or any part of a private storm or surface water system. Any such deposit of material shall be immediately removed by the Contractor at the Contractor's expense. No material shall be washed or flushed into any part of the storm or surface water system.

D. Temporary Sediment Fences:

1. Filter fabric fence shall have a minimum vertical burial of 6 inches. All excavated material from filter fence installation shall be firmly re-deposited along the entire trenched area on the uphill side of the fence.

2. The filter fabric shall be installed to follow the contours where feasible. The fence posts shall be spaced a maximum of 6 feet apart and driven securely into the ground a minimum of 18 inches.

3. Sediment fences shall be inspected by the Contractor immediately after each rainfall and at least daily during prolonged rainfall. Any required repairs, relocations or additions shall be made immediately.

4. At no time shall more than one foot of sediment be allowed to accumulate behind a sediment fence. Sediment should be removed or regraded into slopes, and the sediment fences repaired and reestablished as needed.

5. Install filter fence along the length of any temporary construction easements where movement of sediment off-site would be possible as determined by the Engineer during prolonged rainfall. Engineer to have final decision on whether or not the filter fence is required for each site-specific installation

C. Straw Bale Sediment Barrier/Bio-Filter Bags: This method may be used to divert runoff around active work areas or into sediment filtration/sedimentation areas.

1. Bio-filter bags can be used in drainage ditches and/or swales.

2. Straw bales and bio-filter bags shall be secured with stakes driven through them and into the ground to a minimum depth of 12 inches. Straw bales shall be keyed into the existing ground 2 to 4 inches.

3. At no time shall more than one foot of sediment be allowed to accumulate behind a straw bale sediment barrier and/or bio-filter bag system. Sediment should be removed or regraded into slopes, or new lines of barriers installed uphill of sediment laden barriers.

D. Plastic Sheeting:

1. Spoils piles and exposed earth slopes shall be covered in wet weather or if wet weather is anticipated. Plastic sheeting shall be installed and maintained tightly in place by using sandbags or tires on ropes with a maximum 10 feet grid spacing in all directions. All seams shall be taped or weighted down full length and there shall be at least 12-inch overlap of all seams. For seams parallel to the slope contour, the uphill sheet shall overlap the downhill sheet. No runoff shall be allowed to run under the plastic covering.

2. Drainage from areas covered by plastic sheeting shall be controlled such that no discharge occurs directly onto uncontrolled, disturbed areas of the construction site.

G. The Contractor shall maintain the facilities and techniques contained in the approved Erosion Control Plan so as to continue to be effective during the construction or other permitted activity. If the facilities and techniques approved in an Erosion Control Plan are not effective or sufficient as determined by the Engineer, the Contractor shall revise the plan immediately upon notification by the Engineer. Upon approval of the revised plan by the Owner, the Contractor shall immediately implement the additional facilities and

techniques. In cases where erosion is occurring, the Engineer may require the Contractor to install interim control measures prior to submittal of the revised Erosion Control Plan.

H. The Contractor shall ensure that all necessary pollution control equipment, supplies, or materials are available to implement the Plan.

3.09 FINES

A. Contractor shall be responsible for all fines incurred from non-compliance with regulations of governing authorities.

END OF SECTION

SECTION 02530

SANITARY SEWER PIPE AND MANHOLES

PART 1 GENERAL

1.01 DESCRIPTION

The work covered by this section consists of furnishing and installing eight-inch (8") sanitary sewer pipe, and appurtenances. In order to accomplish the work, temporary bypass pumping of sanitary sewer may be necessary. Four-inch (4") and smaller pipes are covered in valley specifications section 5.3.

1.02 REFERENCES

A. ASTM A48, *Gray Iron Castings.*

B. ASTM A304, *Steel Bars, Alloy, Subject to End-Quench Hardenability Requirements.*

C. ASTM A615, *Deformed and Plain Billet-Steel Bars for Concrete Reinforcement.*

D. ASTM C478, *Precast Reinforced Concrete Manhole Sections*.

E. ASTM C924, *Practice for Testing Pipe Sewer Lines by Low-Pressure Air Test Method.*

F. ASTM C1244, *Test Method for Concrete Sewer Manholes by the Negative Air Pressure (Vacuum) Test.*

G. ASTM D3034, *Type PSM Poly(Vinyl Chloride) (PVC) Sewer Pipe and Fittings.*

H. ASTM D2241, *Poly(Vinyl Chloride)(PVC) Pressure-Rated Pipe (SDR Series).*

I. ASTM D3212, *Joints for Drain and Sewer Plastic Pipes Using Flexible Elastomeric Seals*.

1.03 SUBMITTALS

A. Provide sufficient data for the Engineer to properly evaluate the proposed pipe, manholes and appurtenances.

B. Product data submittals shall include, at a minimum, test reports. Provide test reports upon request, certifying that the pipe has been tested in accordance with and exceeds minimum requirements.

C. Precast manhole submittals shall include shop drawings from supplier

D. Bypass pumping procedures

VALLEY

A valmont COMPANY

Revised Plans and Specifications
Large Onsite Sewage System Upgrade

Fischer's Forest Park

Clackamas County Water Environment Services
Clackamas County, Oregon
October 2022

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Revised Plans and Specifications
Large Onsite Sewage System Upgrade
Fischer's Forest Park
Clackamas County Water Environment Services
Clackamas County, Oregon
T3S, R3E, Section 6AA, Tax Lot 2700

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Report Date:	October 5, 2022
Project Number:	2020230021
Submitted By:	

Brian T. Rabe, CPSS, WWS, Managing Soil Scientist

CONTENTS

1.0 INTRODUCTION

This plans and specifications package describes the proposed new Large Onsite Sewage System (LOSS) components for Fischer's Forest Park, east of Oregon City (Clackamas County), Oregon (T3S, R3E, Section 6AA, Tax Lot 2700)(Site). This package, along with any changes required by the Oregon Department of Environmental Quality (DEQ) in their plan approval letter will constitute the approved plans and specifications for construction of the system.

2.0 PROJECT ROLES

- Clackamas County Water Environment Services (WES) (Owner) – Primary point of contact for coordinating access, private utilities (known and discovered), disposition of excess soils, and other matters that affect the operation of the facility.
- Installation Contractor (Contractor) – Responsible for installing the components outlined in the plans and specifications and coordinating inspections with the Designer, as outlined in subsequent sections of this document. The Contractor shall be a DEQ-licensed septic system installer.
- DEQ (Regulator) – Responsible for reviewing and approving the plans, and addressing regulatory questions.
- Valley Science and Engineering (Valley) (Designer/Inspector) – Primary point of contact for questions related to the work outlined in this package. Responsible for inspections, system start-up, and certification, as outlined in subsequent sections of this document.

3.0 BACKGROUND

The Site consists of 26 homes along 3 cul-de-sacs and a county road (Deininger road). Each home has a 3- or 4-inch sanitary sewer lateral that connects to one of four 8-inch sewer mains that convey sewage by gravity north to one of three 5,400-gallon concrete septic tanks. It is understood that the original construction of the system occurred in the 1970's and consisted of 3 separate drainfields following each of the septic tanks. Improvements constructed in 1983 abandoned the western original drainfield and commingled effluent from the 3 septic tanks into a new concrete recirculation tank. Advanced treatment was provided via a recirculating gravel filter per the 1983 plans and a flow regulating weir distributed flows between a return line to the recirculation tank and a drainfield lift station equipped with external gate valves to distribute flows between the 2 remaining drainfields (central and eastern) and a new capping fill drainfield (west of the central drainfield).

In 2006, additional improvements were made to abandon the sand filter in place and replace it with recirculating textile filters (2 AdvanTex® AX-100s) as well as replace the flow regulating weir with a flow splitter basin to manage filtrate flows from the treatment units. Improvements were also made at the recirculation tank to upgrade the pumps and install a new control panel with telemetry controls and a time dosing program to deliver effluent to the AX-100 units.

The projected peak daily sewage flow is 10,400 gallons per day as written in the existing WPCF permit. The proposed improvements described in this plans and specifications package are the replacement, enhancement, and change in location of the treatment system, new control panel and

recirculation tank assembly, along with the installation of a new ultra-violet (UV) disinfection unit assembly, dosing tank, subsurface drip distribution system, and control building structure. Replacement of the existing east septic tank located north of Fir Cone Court will also occur as part of this project.

The east septic tank replacement will consist of two 3,000-gallon, pre-cast concrete septic tanks in series that will serve the lots on Fir Cone Court. Effluent from the east septic tank assembly will flow to the existing recirculation tank and commingle with septic tank effluent from the West and Central septic tanks. The existing recirculation tank will have a new pump vault, pumps, and floats reconfigured to function as an effluent lift station. In-line pressure filters will be equipped on each of the 2 pressure effluent sewer pipes from the effluent lift station prior to combining into a common pipe to convey screened effluent to the new recirculation tank assembly. The heart of the new LOSS will be located north and east of the existing recirculation tank, north of Merry Meadow Court, and will include an assembly of three 3,000-gallon, pre-cast concrete tanks plumbed to function with a common liquid level. The third tank in the recirculation assembly will contain 3 pumps (one per treatment pod) and level-sensing control floats. The effluent will be pumped on a carefully established time schedule to 3 AdvanTex (AX100) pods for fixed film biological treatment and nitrification. A flow splitter basin will manage the returning flows with the ability to make adjustments based on system performance. Initially, 80% of the recirculation flow will be directed to the recirculation tank assembly with 20% of the returning flows directed to a UV disinfection assembly and dripfield dosing tank. A duplex pump assembly will deliver effluent to a subsurface drip distribution system. The dripfield is proposed to consist of approximately 52,000 square feet (sqft) divided into 8 cells and will be located over top the former drainfield (abandoned in 1983) in the northwest portion of tax lot 2700.

A gravel driveway will be constructed per WES specifications to provide access for maintenance activities. A 1" fresh water connection will be provided via an extension from the Clackamas River Water (CRW) distribution main at the north end of Fir Cone Court. A connection permit issued by CRW will be required as will the installation of an enclosed CRW flow meter and backflow prevention/pressure reduction valve meeting CRW and WES specifications. The purpose of this connection is to provide fresh water for maintenance and cleaning activities at the controls shelter.

3.1 Sewage Treatment System Components

A detailed summary of the proposed components is as follows:

East Septic Tank Replacement

- Approximately 20 linear feet (LF) of 8-inch gravity sewer piping, laid with a minimum grade of 1/8-inch of fall per foot of run between the outlet of the new sewer manhole and the inlet to the new primary septic tank.
- Two (2) 3,000-gallon pre-cast concrete primary septic tanks with fiberglass risers, fiberglass lids, and related piping and appurtenances.
- Approximately 20 LF of 4-inch gravity effluent sewer piping, laid with a minimum grade of 4 inches of fall per 100 foot of run (0.33%) between the septic tank assembly and existing gravity effluent sewer piping.
- One (1) 48-inch flat top manhole (details and specifications provided by WES)

Effluent Lift Station Retrofit

- Duplex pumps, float assembly, custom flow inducer tower, pressure filters and related piping and appurtenances to replace existing components in the recirculation tank (reconfigured as an effluent lift station).

Recirculating Treatment System

- Three (3) 3,000-gallon pre-cast concrete recirculation tanks (with common liquid level) with fiberglass risers, fiberglass lids, a custom triplex flow inducer tower, 3 high head effluent pumps, splice boxes, control and alarm floats, and related piping and appurtenances.
- Three (3) AdvanTex (AX100) recirculating textile filter treatment units with associated underdrain piping, pressure distribution piping, textile treatment media, ventilation piping, and related appurtenances. All AdvanTex units will have alternate ventilation penetrations installed at a higher elevation than the underdrain with an independent piping system to prevent effluent or condensation from being drawn toward the ventilation fan.
- Approximately 90 LF of 2-inch Schedule 40 polyvinyl chloride (PVC) pressure effluent sewer (Recirculation Tank C to the treatment units).
- Approximately 85 LF of 4-inch Schedule 40 PVC gravity effluent sewer (treatment units to flow splitter basin.
- One (1) custom primary flow splitter basin, and related piping and appurtenances, to manage the filtrate return from the textile filter units.
- One (1) custom secondary flow splitter basin, and related piping and appurtenances, to manage flow through the UV units.
- Three (3) Ultra Violet (UV) Orenco Disinfection units as shown in the plans.
- One (1) 3,000-gallon pre-cast concrete UV/dripfield dosing tank, with fiberglass risers, fiberglass lids, a custom duplex flow inducer tower, a pair of high head effluent pumps, splice boxes, control and alarm floats, and related piping and appurtenances.
- One (1) Orenco Durafiber controls shelter with an interior light, exterior light, single man door, intake and vent fan, and heater.
- One (1) custom telemetry control and alarm panel, with touch screen interface, and related appurtenances.
- Approximately 30 LF of 1-inch Schedule 40 PVC pressure effluent sewer piping (Effluent Lift Station to Recirculation Tank A).
- Approximately 1,420 LF of 1.5-inch pressure effluent sewer (supply main) and drip manifold piping.
- Approximately 500 LF of 2-inch Schedule 40 PVC pressure drip field flush main piping.

- Netafim® subsurface drip distribution system (52,000 sqft). The drip system will be divided into 8 zones. Each zone will be dosed a proportionate volume of disinfected and finely-screened effluent through independent solenoid zone valves.
- 1-inch freshwater backflow prevention and pressure reduction valve (Apollo Valves Model RP4A or approved equal) in a field sized underground enclosure equipped with heat tape for frost protection, located south of the controls shelter as indicated in the approved plans.
- Frost free, self-draining post hydrant with a bronze head stock and cap, 1-inch female national pipe thread (FNPT) vertical inlet and ¾-inch garden hose thread (GHT) outlet, (Kupferle Foundry Company Model Number TF100-P or approved equal).
- 100-foot commercial-grade hose.

4.0 PROJECT SCHEDULE

Construction is anticipated to occur in the spring or summer of 2023 when weather and soil conditions allow.

5.0 CONSTRUCTION SPECIFICATIONS

Unless specifically described differently in the approved plans and specifications, all materials, standards, and workmanship pertaining to the collection, treatment, and disposal system shall comply with the requirements of the DEQ as outlined in the current version of the Onsite Wastewater Treatment System Rules.[1, 2] All materials, standards, and workmanship pertaining to the collection system (building sewers) shall comply with the requirements of the current version of the Uniform Plumbing Code and applicable Oregon amendments. All materials, standards, and workmanship pertaining to the electrical components shall comply with the current version of the National Electrical Code and appropriate local amendments.

5.1 General Specifications

Each area of the Site disturbed by the Contractor shall be restored to its original condition, or as specified elsewhere in the approved plans and specifications package. This shall include removal of all scraps, containers, debris, excess aggregate and extraneous material incidental to the project. The Site shall be maintained in a safe and sanitary manner, consistent with the standards of the State of Oregon and the industry. All disturbed soil surfaces shall be protected from erosion with a 2-inch blanket of 3/4-inch minus crushed rock and/or re-seeded with a locally adapted mixture of annual and perennial grasses. It is anticipated that any excess soil from tank excavations will be able to be managed on site at Owner's direction.

Close attention to grades and relative elevations is critical to make sure there is adequate fall where gravity flow is required.

[1] Onsite Wastewater Treatment Systems, 340 OAR 340.71 (2021)
[2] Construction Standards, 340 OAR 340.73 (2021)

The term "compacted" is used in several places in the plans and specifications package. The intent of this term is to control settling in or near the affected area after system components are in place. Any measurable settling and, by said settling, any damage caused that occurs within one year after construction is completed, shall be immediately corrected by the Contractor at no cost to the Owner.

The specific equipment, spacing, amounts, and components outlined in these specifications have all been sized and designed to address Site conditions, comply with DEQ standards, and to fulfill the requirements of Owner's WPCF permit. Should any substitutions be made, the Contractor is required to submit all engineering and documentation necessary to prove substitutions will function and fit into the design as provided. Additionally, the Contractor shall bear responsibility for the installation, coordination and operation of the system as well as any engineering and redesign costs, which may result from such substitution.

5.2 Tank Decommissioning (Abandonment)

Materials

- **Under Non-Traffic Surfaces** – 3/4-inch minus crushed rock, water settled sand, or other suitable fill material.

Workmanship

Each tank identified for abandonment, or otherwise uncovered during the course of work, shall be abandoned in accordance with OAR 340-071.[1] This shall include pumping the contents of the tank after all sources of sewage have been disconnected. Pumping of the tank shall be done by a DEQ-licensed septic tank pumper. The top of the tank shall be crushed, and the void space filled with non-compressible material to prevent settling. Each material used for tank decommissioning shall have a design sheet/submittal with information pertaining to the technical specifications for review and approval by WES.

5.3 Piping and Plumbing

Materials

The following materials, or considered equivalent, are approved, for the purposes of this project:

- **Effluent Sewer Pipe and Fittings -** Either type PSM PVC, ASTM D-3034; or Schedule 40 PVC or ABS DWV, as specified on the plans.
- **Pressure Pipe and Fittings -** Either Schedule 40, or Class 200 PVC 1120 (ASTM D-2241), or High Density Polyethylene (HDPE) SDR 11, as specified on the plans.

Workmanship

All building sewers, effluent sewers, and force mains shall be placed on a uniformly graded, stable base of either: sand or compacted sand as specified in the approved plans. Each pipe shall be uniformly supported along its entire length to control settling and stresses during or following backfill. Unless authorized by the Designer, thrust blocks shall be installed anywhere a force main makes a bend greater than 45 degrees. Pipe markings shall be oriented at twelve o'clock to allow ready inspection after installation, prior to backfill. All gravity effluent sewers, pressure effluent sewers, and manifold piping to each distribution box or drop box shall be marked with tracer wire for future reference.

Gravity effluent sewers shall be laid at a uniform grade no less than 4 inches per 100 feet unless specifically called out on the drawings. A minimum of 12 inches of cover shall be provided over horizontal piping after backfill (settled) in areas not subject to vehicular traffic.

All gravity and pressure effluent piping shall be watertight. New gravity effluent sewer piping shall be tested with a minimum of 15 feet of water pressure. The test will be considered acceptable if no measurable loss occurs in a 15-minute period (defined as 0.16 gallons per hour, per inch diameter, per 100 feet). Pressure effluent piping (force mains) may be tested with air or water. A hydrostatic pressure of 70 pounds per square inch (psi) shall be maintained for ten minutes (no measurable loss). All testing shall be conducted by the Contractor and verified by the Inspector.

Where gravity effluent sewers or pressure effluent sewers cross a water line, the orientation shall be perpendicular to the water line. All piping materials (water and sewer) shall be solvent welded Schedule 40 (watertight) or heat-fused HDPE. A 20-foot length of pipe for each (water and sewer) shall be centered at the crossing point to maximize the distance between joints. The sewer line shall be located below the water line unless specifically approved by the Designer. In all cases, all piping within 10 feet of the crossing point shall be bedded in compacted sand for uniform support. The piping shall be installed and bedded to prevent direct contact (minimum 2-inch vertical separation).
The Contractor shall ensure that any additional construction standards set forth by Clackamas River Water service district are met pertaining to extension of main to supply water for maintenance and cleaning activities.

Special connectors, adapters, primers, glues, or solvents may be required where the material, size, or construction of the pipe changes within the system. Drawings of any approved "as built" changes or conditions noting pertinent dimensions, pipe types, distances, and grades shall be provided to the Inspector by the Contractor. Each individual piece of equipment or material referenced above shall have a design sheet/submittal with information on operation and maintenance of the referenced piece of equipment.

5.4 Tanks

Materials

All pre-cast concrete tanks shall be constructed to the manufacturer's standard specifications with the custom modifications shown in the plans. If the custom modifications conflict with the manufacturer's standard specifications, the Designer must be notified immediately in writing. Since the tanks (as specified) are an integral part of the design, any substitutions made require the Contractor to submit all engineering and documentation necessary to prove substitutions will function and fit into the design as provided. Additionally, the Contractor shall bear responsibility for the installation, coordination and operation of the system as well as any engineering and redesign costs, which may result from such substitution.

Workmanship

The Site shall be adequately prepared by the Contractor for placement of the tanks by the tank manufacturer. All tanks shall be set on a level, stable base to minimize the potential for differential settling. Any water encountered within the excavation shall be pumped away from the area to a location that will not impact other construction activities (e.g., the dripfield) or water quality. The

excavation shall be sufficiently dewatered to enable placement of the tank bedding material to the grades specified as well as to enable the placement of the tank(s) themselves. The excavation shall be prepared to provide a **minimum** clearance of 6 inches on all 4 sides of the tank to facilitate visual inspection for leaks and installation of an exterior bentonite seal. All sealing, grouting, and coating shall be completed prior to backfilling.
After placement and sealing, all tanks shall be tested in the field for water tightness. Where pipe penetrations are located below the seam, pre-testing for obvious leaks is advised. Construct a form with 1-inch × 6-inch lumber to provide for placement of bentonite along the seam around the outside of the tank. It is recommended that bentonite be placed around each pipe penetration to provide secondary protection against leakage. The remaining tank sidewall shall be backfilled prior to completing the water tightness test. One-piece tanks shall be backfilled to 6 inches below the exterior tank top to allow construction of forms for a bentonite seal.

All risers shall be appropriately oriented, consistent with logical positioning of plumbing and electrical penetrations, and attached to the tank top in a secure and watertight manner. The inlet(s) and outlet(s) shall be plugged and the tank filled with water. Pre-soaking concrete tanks for 24 hours is advised. The water level shall be 2 inches deep in the riser (above the exterior tank top) at the beginning of the water tightness test. **CAUTION: Filling of the tank(s) shall be monitored closely to assure that no more than 2 inches of water is allowed to accumulate above the tank top.** Pressure beyond this specification may compromise tank integrity and may require tank replacement at no cost to the Owner. No more than one gallon shall exfiltrate in a 24-hour period.

Field repairs may be attempted once for observed sources of minor leakage. If the tank cannot be made watertight, then it shall be replaced at no expense to the Owner. Upon passing the water tightness test, backfilling shall be completed as described in the approved plans. Final grading of the finished surface shall assure that water does not accumulate around the risers or manhole covers. Each tank located adjacent to roadways or parking areas shall be protected from vehicular traffic by an adequate barrier (either locally available boulders or steel bollards filled with concrete and painted bright yellow). Tanks located in areas subject to traffic must be traffic-rated, as specified in the drawings, and fitted with appropriately sized cast iron frames and manhole covers. Cast iron frames must be fully supported on a concrete grade ring that does not come in contact with the tank or riser (floats on the compacted backfill). Excess soil from the excavations shall be managed on site at a location designated by the Owner. If space is not available on site, then excess soil must be removed and placed at an acceptable location off site. Drawings of any approved "as built" changes noting pertinent dimensions, reference points, and elevations shall be provided to the Inspector by the Contractor. Each individual piece of equipment or material referenced above shall have a design sheet/submittal with information on operation and maintenance of the referenced piece of equipment or material.

5.5 Pressure Filter

Materials

The pressure filters shall be manufactured to the functional specifications shown in the plans. If the manufacturer cannot meet the specifications shown, the Designer shall be notified in writing. Since the pressure filter assembly (as specified) is an integral part of the design, any substitutions made require the Contractor to submit all engineering and documentation necessary to prove substitutions will function and fit into the design as provided. Additionally, the Contractor shall bear responsibility for

the installation, coordination and operation of the system as well as any engineering and redesign costs, which may result from such substitution.

Workmanship

The pressure filter shall be installed in accordance with the approved plans and the manufacturer's instructions. Placement, assembly and installation shall be conducted to facilitate easy operation, maintenance, repair, removal and replacement. Drawings of any approved "as built" changes shall be provided to the Inspector by the Contractor. Each individual piece of equipment in the materials section above shall have a design sheet/submittal with information on operation and maintenance of the referenced piece of equipment.

5.6 AdvanTex (AX100) Secondary Treatment Units

Materials

The AdvanTex textile filter is a pre-engineered package that requires careful installation by authorized contractors in accordance with the manufacturer's instruction. Since the AdvanTex textile filter is an integral part of this design, any substitutions made require the Contractor to submit all engineering and documentation necessary to prove substitutions will function and fit into the design as provided. Additionally, the Contractor shall bear responsibility for the installation, coordination and operation of the system as well as any engineering and redesign costs, which may result from such substitution.

Workmanship

The AdvanTex textile filters shall be installed in accordance with the manufacturer's instructions. Excess soil from the tank excavations will be used to backfill around the AdvanTex units for both support and insulation. Each individual piece of equipment in the materials section above shall have a design sheet/submittal with information on operation and maintenance of the referenced piece of equipment.

5.7 Flow Splitter Basin

Materials

The flow splitter basin is a device used to divide flows at atmospheric pressure proportionally to multiple destinations. In this case, the flow returning from the secondary treatment system (AdvanTex units) will be divided with 1, 2, 3, or 4 parts flowing to the recirculation tank. One part will typically flow to the drainfield dosing tank so long as the recirculation process is operating in any of the various modes except the lowest.

A low-pressure gate valve at the inlet of the flow splitter basin enables temporary cessation of flow in order to service the unit (clean or adjust orifices, remove solids, etc.). The flow splitter basin shall be manufactured to the functional specifications shown in the plans. If the manufacturer cannot meet the specifications shown, the Designer shall be notified in writing. Since the flow splitter basin (as specified) are an integral part of the design, any substitutions made require the Contractor to submit all engineering and documentation necessary to prove substitutions will function and fit into the design as provided. Additionally, the Contractor shall bear responsibility for the installation, coordination and operation of the system as well as any engineering and redesign costs, which may result from such substitution.

Workmanship

The flow splitter basin shall be installed on a level, stable base in accordance with the approved plans. Placement, assembly, and installation shall be conducted to facilitate easy operation, maintenance, repair, removal and replacement. Drawings of any approved "as built" changes shall be provided to the Designer by the Contractor. Each individual piece of equipment in the materials section above shall have a design sheet/submittal with information on operation and maintenance of the referenced piece of equipment.

5.8 Pumps, Controls, and Alarms

Materials

High head effluent pumps will be installed in the effluent lift station, recirculation tank assembly and dripfield dosing tank. The control and primary alarm panel shall be manufactured to the functional specifications shown in the plans. If the manufacturer changes the specifications, the Designer must be notified in writing. Since this is a custom control panel (as specified) and is an integral part of the design, any substitutions made require the Contractor to submit all engineering and documentation necessary to prove substitutions will function and fit into the design as provided. Additionally, the Contractor shall bear responsibility for the installation, coordination and operation of the system as well as any engineering and redesign costs, which may result from such substitution.

The Contractor shall verify the custom panel quote number with the Designer prior to submitting an order with the Manufacturer.

Workmanship

The power supply to the new control panel will need to be a minimum 60A, 240V, single-phase circuit (L1, L2, N, G) for the pumps. The incoming circuit will be landed in a power distribution block and distributed internally with individual circuit breakers for each pump and to 120V circuits for the panel (controls and alarms), a panel heater, and the ventilation fan assembly. The pump and control systems and related appurtenances shall be installed in accordance with the manufacturer's instructions, the approved plans, and all appropriate electrical codes. Placement, assembly, and installation shall facilitate easy operation, maintenance, repair, removal and replacement. All components shall be clearly marked and labeled in a permanent and professional manner, consistent with the design, to facilitate identification, monitoring, and troubleshooting. Each individual piece of equipment in the materials section above shall have a design sheet/submittal with information on operation and maintenance of the referenced piece of equipment. The Contractor shall retain a licensed electrician where necessary and will be responsible for obtaining the necessary electrical permits and inspections. Copies of all permits, inspection reports, panel diagrams, and drawings of any approved "as built" changes shall be provided to the Inspector by the Contractor.

5.9 Ultra-Violet (UV) Disinfection Assembly

Materials

The UV assembly shall be manufactured to the specifications shown in the plans. If the manufacturer cannot meet the specifications shown, the Designer shall be notified in writing. Since the UV assembly is an integral part of the design, any substitutions made requires the Contractor to submit all

engineering and documentation necessary to prove substitutions will function and fit into the design as provided. Additionally, the Contractor shall bear responsibility for the installation, coordination and operation of the system as well as any engineering and redesign costs, which may result from such substitution.

Workmanship

The UV assembly shall be installed in accordance with the approved plans and the manufacturer's instructions. Placement, assembly, and installation shall be conducted to facilitate easy operation, maintenance, repair, removal and replacement. Drawings of any approved "as built" changes shall be provided to the Designer by the Contractor. Each individual piece of equipment in the materials section above shall have a design sheet/submittal with information on operation and maintenance of the referenced piece of equipment.

5.10 Treatment System Controls Shelter

Materials

The shelter for the treatment system controls shall be supplied by Orenco Composites and shall be manufactured to the following specifications:

Size: 8 × 17 × 10 feet

Options:

- CLEAR Roof Vent
- Two (2) 24 × 36 inch Double-Pane Window (Left Side)
- 10 × 4 foot Loft Section (Right Side)
- External Alarm Light

Workmanship

The shelter shall be installed by the manufacturer on a level concrete slab (designed per Orenco Composites Guidance submittal) over top of a prepared based of 3/4-inch minus crushed rock (minimum 6 inches thick) extending a minimum of 2 feet in all directions beyond the footprint of the shelter. A geotextile filter fabric shall be placed between the native ground and prepared base. The shelter is delivered primed and ready to paint as a standard feature. The Contactor shall coordinate with the Owner for exterior color selection (primary and trim) and shall paint the exterior with a minimum of two coats of a high quality exterior latex paint (satin finish). Each individual piece of equipment listed in the materials section above shall have a design sheet/submittal with information on operation and maintenance of the referenced piece of equipment.

5.11 Subsurface Drip Distribution System

These Specifications are for a complete and operational wastewater drip irrigation system. System shall include pressure filters, drip lines, flow meter, sampling tap, control valves for zones, and air relief valves. The system shall be “ACT 200 C Drip Dispersal System” by JNM Technologies, Inc. The system has been designed for the following parameters:

Daily Flow	10,400 gallons per day (gpd) (design)

Soils Loading Rate	0.20 gpd/sqft
Drip Dispersal Area	52,000 sqft

Materials

- **Disc Filters** – Disc Filters shall be the ACT- Disc Filter, 200 C series by JNM Technologies, Inc. The filter elements shall consist of grooved rings, mounted on a spine, forming a cylindrical filter body. The rings are to be kept together by a spring seated at the bottom of the filter cover. The body materials shall be polyamide, the rings shall be polypropylene, and the spring shall be stainless steel. The nominal filtration capacity of the filter shall be 100 microns.
- **Dripper Tubing** – The dripper tubing shall be Netafim Bioline pressure compensating dripperline for wastewater (Model No. 08WRAM.6-24V). The tubing shall be nominal 0.61 gallons per hour (+/- 5% flow rate from 7 to 60 psi). The tubing shall function as a turbulent flow emitter between 0 and 7 psi, ensuring that the nominal design flow is not exceeded at system start-up. Tubing end connections and splice connections shall be manufactured specifically for the tubing and for connection to standard schedule 40 NPT adapters. The drip tubing manufacturer shall provide a head loss chart for various drip tubing lateral lengths to provide for a minimum scouring velocity (2 ft/sec) at the distal end of the drip tubing lateral.
- **Drip Tubing Flex Tee Connector** – A flexible connector shall be provided between the Bioline tubing and the distribution and return headers. It shall be made up of a 1/2-inch Spin-Loc connector #565 SSP glued to a 24-inch length of 1/2-inch flexible vinyl tube that is glued into a 1.5-inch x 1.5-inch x 1/2-inch tee.
- **Automatic Control Valves** – The automatic control valves shall be 2.0-inch diameter solenoid activated diaphragm valves by Dorot. The body and cover shall be reinforced nylon, polyamide. The metal parts shall be stainless steel, the diaphragm shall be nylon-fabric reinforced natural rubber. The seals shall be Buna-N. These valves shall operate electrically using hydraulic pressure to open and to close via a command signal to a 24 VAC solenoid mounted on the valve.
- **Master Valve** – The automatic master control valves shall be 2.0-inch diameter solenoid activated diaphragm valve by Dorot. The body and cover shall be reinforced nylon, polyamide. The metal parts shall be stainless steel, the diaphragm shall be nylon-fabric reinforced natural rubber. This valve shall operate electrically using hydraulic pressure to open and to close via a command signal to a 24 VAC solenoid mounted on the valve.
- **Non-Dripper Line Pressure Piping** – All non-dripper line pressure piping shall be PVC schedule 40 pressure rated. Rigid piping shall be standard ASTM 1120 for use with solvent welded Schedule 40 fittings. Flex piping shall be schedule 40 PVC flex pipe for use with pressure fittings.
- **General Valves** – All ball valves shall be Schedule 40. Gate and globe valves shall be of the true-union PVC type with stem adapters for surface operation.
- **Flow Meter** – Flow meter shall be an ARAD turbine or wheel type 1.5-inch meter with total enclosure and an electrical output register. The meter shall be bronze with externally threaded ends with bronze threaded union end connectors. The meter shall provide contact closure corresponding to defined volume increments. Maximum switch current 500mA and maximum switching voltage 32 volts (AC or DC) for output register.

- **Sampling Tap** – A sampling tap shall be installed downstream of the disc filters to facilitate collection of representative samples of the final effluent being dispersed into the soil to satisfy compliance monitoring requirements.
- **Check Valves** – Check valves shall be 1.5-inch, Tru-Union type spring loaded check valves with a minimum spring pressure of 2 psi. Check valves shall be constructed with clear PVC materials and shall be those manufactured by Flo-Control or approved equal.
- **Air Release Valves** – Air release valves shall be 1.5-inch diameter Guardian air release and vacuum valves by Netafim. Body shall be made of fiberglass reinforced UV Protected nylon. Maximum working pressure 150 psi.
- **Wire Splices** – Field wire splices shall be installed in suitable wire splice pull boxes with waterproof connections for access to splice connections. The boxes shall have structural capacity for in ground installation and light vehicle yard care traffic.
- **Zone Resting Option** – The system controller shall allow for a zone to be rested or taken out of service. The controller shall have the capability to bypass a zone that has been taken out of service and dose the next available zone.
- **Pipe Bedding** – In-ground piping shall be installed according to local codes. Piping shall be installed on sand or compacted sand as specified in the approved plans. Freestanding piping shall be Schedule 40 PVC and assembled with restrained joints. Thrust blocks shall be installed in accordance to the specification provided in ASAE S261.6.
- **Hydraulic Unit** – Drip hydraulic unit by JNM Technologies, Inc. must be mounted either on an aluminum or galvanized skid, directly to the floor of the Control Building, or within the enclosure provided by the Manufacturer. Access to the unit must be such that all components are easily reached for maintenance. Automated-flush disc filter headworks (by JNM Technologies, Model No. ACT-C200-S). Since the headworks is an integral part of the design, any substitutions made require the Contractor to submit all engineering and documentation necessary to prove substitutions will function and fit into the design as provided. Additionally, the Contractor shall bear responsibility for the installation, coordination and operation of the system as well as any engineering and redesign costs, which may result from such substitution.

Workmanship

The submersible pump delivers unfiltered effluent to each filter. The filter backflushing schedule is triggered by time. One filter valve closes, thus blocking the flow of unfiltered effluent to that filter. After a short delay, the other flushing valves open, thereby backflushing the unused filter. The accumulated impurities discharge back into the pretreatment unit. The closing and opening procedure of the filter and back flush valves causes a change of flow within the unit to provide filtered water from one filter to backflush the other filter. The backflush procedure lasts approximately 20 seconds then the backflushing valve closes. Only after the first filter has completed its backflushing cycle, will the second filter begin its cycle of backflushing in the same manner as the first. Effluent will then be pumped through clean disc filters, then through the **flow meter** and finally through the outlet manifold to the dripfield supply line.

The Manufacturer shall provide a set of plans for the wastewater drip irrigation system and design calculations for review prior to installation. Each individual piece of equipment listed in the materials

section above shall have a design sheet/submittal with information on operation and maintenance of the referenced piece of equipment.

The Manufacturer shall provide a written certification for a one (1) year warranty on the complete drip irrigation system dated and signed by the representing officer of the Manufacturer. The warranty shall cover all parts of the drip irrigation system, including, but not limited to, the valves, filters, flow meter, etc. and shall guarantee the repair or replacement of a failing product, system, installation or a component thereof, at no cost to the Owner, when said failure is caused by a defect in the product or the Manufacturer's instruction for use, or both.

All equipment herein specified for this drip irrigation wastewater disposal system shall be provided by a sole supplier. The Manufacturer shall have at least 5 years' experience in this field and have completed projects of similar scale in this region of the U.S.

The Manufacturer shall provide 2 physical copies and one digital copy of a suitable manual that shall include instructions for the system's design, installation, operation and maintenance. This document shall be specific to the project – generic manuals will not be accepted. Each piece of equipment shall be listed specifically to include the exact model number, any other models listed to be crossed out.

The design, placement, location, installation, and operation of the drip irrigation system shall comply with the standards and provisions of the State of Oregon, including all horizontal and vertical setbacks, and with the minimum requirements of the drip tube manufacturer. The Contractor shall be a licensed Contractor of drip irrigation systems. Tubing shall be installed to a minimum depth of 6 inches and average depth of 9 inches.
The area designated for installation of the subsurface drip distribution system shall be mowed in preparation for installation. The dripperline shall be installed as close to level as practical. The soil surface may need to be lightly rolled to settle the loosened soil over each dripperline.

All open ends of the dripperline, connectors, fittings, manifolds, and other piping shall be covered during handling and initial placement in order to minimize the amount of debris that gets inside the distribution system. Each element of the system shall be flushed with clean water prior to connecting the downstream element (e.g., flush the force main prior to connecting to the zone manifolds, flush the zone manifolds and their associated dripperlines prior to connecting to the flush manifolds and flushing return main line). The air release valves should be removed prior to flushing to prevent clogging or damage to the valves. As with all other piping, all main and manifold piping shall be marked with tracer wire to assist with future location. All air release/vacuum relief valves, zone valves, and check valve assemblies shall be enclosed in an appropriately sized valve box with serviceable access to finish grade.

Placement, assembly, and installation shall be conducted to facilitate easy operation, maintenance, repair, removal, and replacement, as appropriate. The completed system shall be undergo a full operational test with clean water to assure proper operation of filters, controls, and valves. Drawings of any approved "as built" changes shall be provided to the Designer by the Contractor.

6.0 INSPECTIONS

6.1 Pre-Construction Conference

The pre-construction conference provides an opportunity for all parties involved to discuss the proposed activities (on-site). The location and routing of the various components will be reviewed and discussed at this time. Construction should be scheduled to begin as soon as possible following these activities.

Attendance by representatives of the following entities is **required:**

- WES (Owner)
- Installation Contractor (Contractor)
- Valley (Designer/Inspector)

Attendance by the following entities is **recommended**:

- DEQ (Regulator)

6.2 Construction Inspections

The following table provides a summary of inspections. The Regulator and Designer are responsible for certifying that the system is installed in accordance with the approved plans and specifications. The Contractor shall maintain close contact with the Regulator and Designer to provide adequate notice (minimum 24 hours) for timely scheduling of inspections. Consolidation of inspections should occur to the fullest extent practicable.

INSPECTION SCHEDULE TABLE

Inspection	Inspector	
	Designer	DEQ
1. Treatment Unit – Placement and Water Tightness Testing	M	O
2. Tanks – Placement and Water Tightness Testing	M	O
3. Gravity and Pressure Effluent Sewer – Placement and Water Tightness Testing	M	O
4. Pumps, Controls, and Flow Management Equipment – Placement, Grades, Piping, Plumbing, and Pre-Cover	M	O
5. Subsurface Drip Distribution System – Piping, Plumbing and Pre-Cover	M	O
6. Final Inspection/System Start-up	M	O

NOTE:
Abbreviations: M = Mandatory, O = Optional

APPENDIX A

SITE SPECIFIC SAFETY PLAN

SITE SPECIFIC SAFETY PLAN CERTIFICATION

Contractor performs all operations in strict accordance with all applicable standards set by Oregon Occupational Safety and Health Division (OR-OSHA), including, but not limited to Oregon Administrative Rules (OAR) 437, Chapter 2, Sections 141 – 147 (29 CFR Part 1910, 29 CFR Part 1926).

Contractor creates and maintains a Site-Specific Safety Plan, which is require on-site through the entirety of the project. The Contractor's Safety Manager is trained and knowledgeable in all safety requirements and shall be responsible for the compliance with all applicable safety requirements. All job personnel are knowledgeable of and comply with the Site Specific Safety Plan requirements.

The Site-Specific Safety Plan includes the following basic elements:

- Policy or goals statement
- List of responsible persons, including 24 hour contact information
- Hazzard identification and assessment (Job Hazard Analysis)
- Hazzard controls and safe practices
- Emergency and accident response
- Confined Space Entry Plan, including the Rescue Plan
- Emergency Spill Response Plan
- Pollution Control Plan
- Employee training and communication
- Recordkeeping

Contractor acknowledges that they are solely and completely responsible for the safety of the construction site, including, but not limited to, the safety of all persons and property present at the site at any time until final completion and acceptance by District.

I, _____ (the undersigned Contractor), affirm that I comply with the above information.

_____
Name of Firm

_____
Signature

_____
Printed Name

_____
Title

APPENDIX B

MANHOLE/PIPELINE TESTING FORMS

WATER ENVIRONMENT SERVICES
A DEPARTMENT OF CLACKAMAS COUNTY

LOW PRESSURE AIR/MANDREL TEST

Project: NCRA – Phase III Improvements______ Date: ____________________________

Contractor: ______________________________ Project #: __________________________

Testing Company: _________________________ Inspector: __________________________

Tested Section: Air Test: Passed Failed Mandrel Test: Passed Failed

Diameter (in)	Length (ft)	$T=d^2L/42$	T=Minutes
T = 56 d if A < 625 ft^2	Totals		

1. Average Ground Water Height Above Pipe =________feet
2. Psi/ft of Ground Water x 0.433 psi/ft
3. Average Ground Water Pressure =________psi
4. Test Pressure + 4.00 psi
5. Beginning Test Pressure =________psi
6. Timed Pressure Drop -________psi
7. Ending Test Pressure =________psi
8. TIME REQUIRED BY SPEC =________Min

Tested Section: Air Test: Passed Failed Mandrel Test: Passed Failed

Diameter (in)	Length (ft)	$T=d^2L/42$	T=Minutes
T = 56 d if A < 625 ft^2	Totals		

1. Average Ground Water Height Above Pipe =________feet
2. Psi/ft of Ground Water x 0.433 psi/ft
3. Average Ground Water Pressure =________psi
4. Test Pressure + 4.00 psi
5. Beginning Test Pressure =________psi
6. Timed Pressure Drop -________psi
7. Ending Test Pressure =________psi
8. TIME REQUIRED BY SPEC =________Min

Tested Section: Air Test: Passed Failed Mandrel Test: Passed Failed

Diameter (in)	Length (ft)	$T=d^2L/42$	T=Minutes
T = 56 d if A < 625 ft^2	Totals		

1. Average Ground Water Height Above Pipe =________feet
2. Psi/ft of Ground Water x 0.433 psi/ft
3. Average Ground Water Pressure =________psi
4. Test Pressure + 4.00 psi
5. Beginning Test Pressure =________psi
6. Timed Pressure Drop -________psi
7. Ending Test Pressure =________psi
8. TIME REQUIRED BY SPEC =________Min

Inspector's Signature: ____

Procedure for Air Testing of Sewer Pipe & Appurtenances

1. The Contractor may desire to make an air test prior to backfilling for his own purposes. However, the acceptance air test shall be made after backfilling and compaction has been completed to finish grade.
2. The Contractor shall furnish all facilities and personnel for conducting the test under the observation of the Engineer. The equipment and personnel shall be subject to the approval of the Engineer. The pressure gauge used shall have minimum divisions of 0.10 psi and have an accuracy of 0.0625 psi (one ounce per square inch). All air used shall pass through a single control panel.
3. The first section of pipe not less than 300 feet in length installed by each crew shall be tested in order to qualify the crew and/or material. Successful installation of this section shall be a prerequisite to further pipe installation by said crew.
4. All tees, and/or ends of side sewer stubs shall be plugged and banded, or acceptable alternate and securely fastened to withstand the internal test pressures. The Contractor shall clean the line before proceeding with the air test. All debris shall be removed at the first manhole where its presence is noted. In the event cemented or wedged debris or a damaged pipe shall prevent cleaning, the contractor shall remove the obstruction.
5. Safety Provisions. The plugs must be firmly secured and care should be exercised in their removal. The total force on a 12" plug at 4.0 psi is over 450 pounds. Care must be exercised in not loading the sewer line with the full pressure of the compressor. Keep all personnel out of manholes until the pressure has been released. If water leaks into the line after the plugs are installed and floods the air inlet and the needle on the air pressure gage indicates zero, then possibly the water column has balanced the air pressure in this instance and care is necessary in releasing the pressure. If testing below ground water level, inject the air at the upper plug and/or turn the inlet up as with a water test apparatus.
6. The pipe or sections of pipe to be tested may be wetted before the air test is started. Immediately following the pipe cleaning and wetting, the pipe shall be tested with low pressure air. Air shall be slowly supplied to the plugged pipe installation until the internal air pressure reaches 4.0 pounds per square inch greater than the average back pressure of any ground water that may submerge the pipe.
7. At least two minutes shall be allowed for temperature stabilization before proceeding further. After the two minute temperature stabilization period, disconnect the air supply.
8. The pipeline shall be considered acceptable, when tested for the calculated period of time at an average pressure of 4.0 pounds per square inch greater than the average back pressure of any ground water that may submerge the pipe; if: (1) the total rate of air loss from any section tested in its entirety between manhole and cleanout structures does not exceed 1.0 cubic feet per minute, or (2) the section under test does not lose air at a rate greater than 0.0015 cubic feet per minute per square foot of internal pipe surface.
9. If the Pipe installation fails to meet these requirements, the Contractor shall determine at his own expense the source or sources of leakage, and he shall repair or replace all defective materials and correct all faulty workmanship. The type of repairs proposed by the Contractor must be approved by the Engineer before the repair work is begun. The completed pipe installation shall meet the requirements of the air test before being considered acceptable.

Mandrel Testing Procedures

1. In addition to hydrostatic or air testing, sanitary sewers constructed of PVC sewer pipe shall be deflection tested not less than 30 days after the trench backfill and compaction has been completed. The test shall be conducted by pulling an approved solid pointed mandrel through the completed pipeline. The diameter of the mandrel shall be 95 percent of the inside diameter of the pipe. The mandrel shall be a rigid, nonadjustable, odd-numbered-leg (9 legs minimum) mandrel having an effective length of not less than its nominal diameter.
2. Testing shall be conducted on a manhole to manhole basis and shall be done after the line has been completely cleaned and flushed. Any portion of the sewer which fails to pass the test shall be excavated, repaired or realigned, and retested with both air and deflection tests.

Sample Calculations for Time in Minutes of Air Testing Procedure for 1 psi drop

If A is > 625

$T = d^2L/42$

d - Inches	L - Feet	d^2L	T - Seconds	T- Minutes
4	200	3200	76	1.27
8	502	32128	765	12.75
		35328	841	14.02

$A = \pi Ld/12$

πd - Inches	L-feet	A = Ft^2	
4	200	209	
8	502	1051	
		1260	is > 625

If A is < 625 then use formula (T= 56d)

T = 56d

d - Inches	T - Seconds	T- Minutes
12 (8 + 4)	672	11.20
8	448	7.47

$A = \pi Ld/12$

πd - Inches	L-feet	A = Ft^2	
4	20	21	
8	150	314	
		335	is < 625

WATER ENVIRONMENT SERVICES
A DEPARTMENT OF CLACKAMAS COUNTY

MANHOLE VACUUM TEST

PROJECT: _____ DATE: _____

CONTRACTOR: _____ PROJ #: _____

TESTING COMPANY: _____ INSPECTOR: _____

DATE	MH#	MH DIAM.	MH DEPTH	TIME REQD	VACUUM START	VACUUM END	PASS / FAIL	COMMENTS

NOTE: All manhole vacuum tests will be conducted in accordance with CCSD#1 Standard Sewer Specifications, Section 2-C-3-c-8. The manhole shall be set to finish grade and all paving (if applicable) completed.

Inspector's Signature: _____

Procedures on back

Procedure for manhole vacuum test

1. All lift holes shall be plugged with an approved non-shrink grout.
2. All pipes entering the manhole shall be plugged, taking care to securely brace the pipes and plugs from being drawn into the manhole. The manhole shall be set to finish grade and all paving (if applicable) completed.
3. The test head shall be placed at the inside of the top of the frame and the seal inflated in accordance with the manufacturers' recommendations.
4. A vacuum of 10 inches of mercury shall be drawn, the valve on the vacuum line of the test head closed, and the vacuum pump shut off. With the valves closed, the time shall be measured for the vacuum to drop to 9 inches.
5. The manhole shall pass if the time for the vacuum reading to drop from 10 inches of mercury to 9 inches meets or exceeds the values indicated below.

Depth of Manhole (feet)	Allowable Time (seconds)		
	48 - inch	60 – inch	72 - inch
8	20	26	33
10	25	33	41
12	30	39	49
14	35	46	57
16	40	52	67
18	45	59	73
20	50	65	81
22	55	72	89
24	59	78	97
26	64	85	105
28	69	91	113
30	74	98	121

6. If the manhole fails the initial test, necessary repairs shall be made with a non-shrink grout after the vacuum has been released. Retesting shall proceed until a satisfactory test is obtained.

APPENDIX C

CONSTRUCTION DRAWINGS

FISCHER'S FOREST PARK
LARGE ONSITE SEWAGE SYSTEM
CLACKAMAS COUNTY, OREGON

STATE MAP

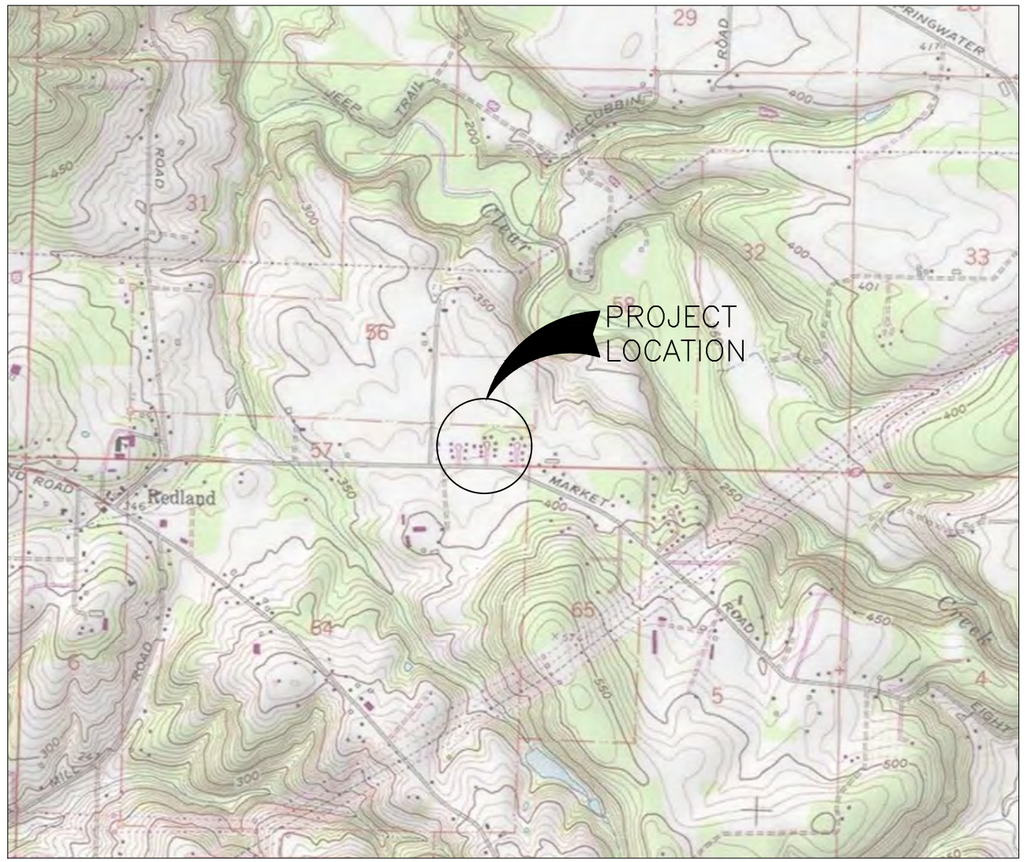
CALL BEFORE YOU DIG 800-332-2344

LOCATES (48 HOURS NOTICE REQUIRED PRIOR TO EXCAVATION)

THE CONTRACTOR MUST COMPLY WITH THE REGULATIONS OF O.R.S. 757.541 TO 757.571 IN LOCATION AND PROTECTION OF UNDERGROUND UTILITIES. OREGON LAW REQUIRES YOU TO FOLLOW RULES ADOPTED BY THE OREGON UTILITY NOTIFICATION CENTER. THOSE RULES ARE SET FORTH IN OAR 952-001-0010 THROUGH OAR 952-001-0090. YOU MAY OBTAIN COPIES OF THE RULES BY CALLING THE CENTER.

COLOR CODES:

RED	–	ELECTRICAL POWER LINES, CABLES, OR CONDUIT, AND LIGHTING CABLES
YELLOW	–	GAS, OIL, STEAM, PETROLEUM, OR OTHER HAZARDOUS LIQUID OR GASEOUS MATERIALS.
ORANGE	–	COMMUNICATIONS, CABLE TV, ALARM OR SIGNAL LINES, CABLES OR CONDUITS.
BLUE	–	WATER, IRRIGATION, AND SLURRY LINES.
GREEN	–	SEWERS, DRAINAGE FACILITIES OR OTHER DRAIN LINES.
WHITE	–	PRE-MARKING OF THE OUTER LIMITS OF THE PROPOSED EXCAVATION OR MARKING THE CENTERLINE AND WIDTH OF PROPOSED LINEAL INSTALLATIONS OF BURIED FACILITIES.
PINK	–	TEMPORARY SURVEY MARKINGS
PURPLE	–	SLURRY AND RECLAIMED



PROJECT COORDINATES: LAT: 45°20'47"N
LONG: 122°28'28"W

LOCATION MAP
SCALE: 1"=2000'

FIGURE INDEX:

CPSS
Certified Professional Soil Scientist
BRIANT. RABE
15239 Exp. 12/31/21
Registered Wastewater Specialist
No. EH-W-448430 Exp. 9/30/21

FISCHER'S FOREST PARK LOSS
CLACKAMAS COUNTY

REV #	DESCRIPTION	BY	DATE

DES. BY 1BTR
DRG. BY 6NSG
CHK. BY 1GLT
DATE 8/18/2022
JOB No. 2020230021

VALLEY SCIENCE AND ENGINEERING

VICINITY MAP AND SHEET INDEX

LARGE ONSITE SEWAGE SYSTEM DESIGN

SHEET
G1

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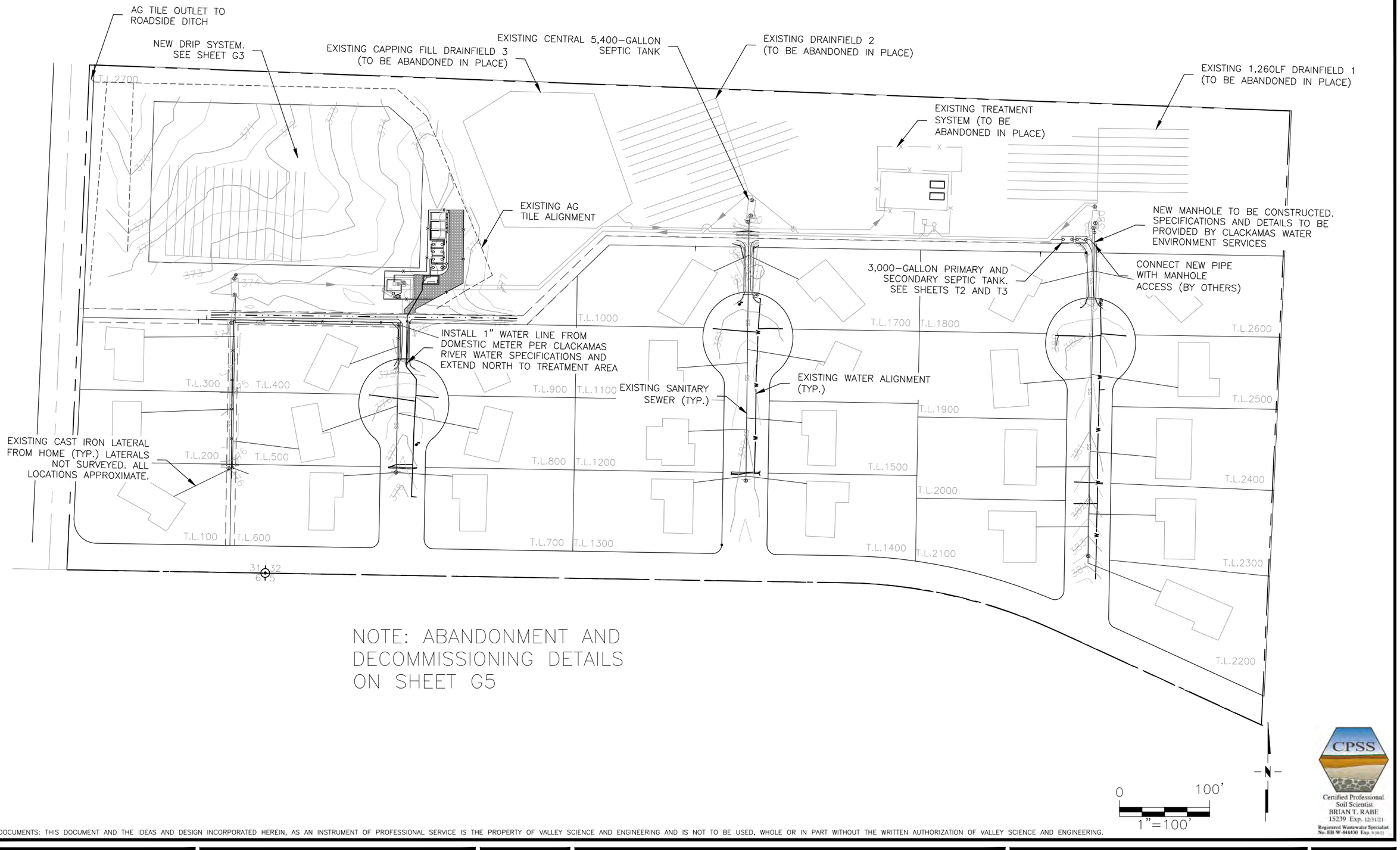

NOTE: ABANDONMENT AND DECOMMISSIONING DETAILS ON SHEET G5

Certified Professional Soil Scientist
BRIAN T. RABE
15239 Exp. 12/31/21
Registered Wastewater Specialist
No. EH W-448450 Exp. 9/30/21

FISCHER'S FOREST PARK LOSS
CLACKAMAS COUNTY

REV #	DESCRIPTION	BY	DATE

DES. BY 1BTR
DRG. BY 6NSG
CHK. BY 1GLT
DATE 8/18/2022
JOB No. 2020230021

VALLEY SCIENCE AND ENGINEERING

GENERAL SITE PLAN

LARGE ONSITE SEWAGE SYSTEM DESIGN

SHEET
G2

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T.L.2700

ZONE 8
(13 LATERALS)

ZONE 6
(9 LATERALS)

ZONE 5
(10 LATERALS)

ZONE 4
(11 LATERALS)

ZONE 7
(13 LATERALS)

ZONE 3
(11 LATERALS)

ZONE 2
(9 LATERALS)

ZONE 1
(10 LATERALS)

NEW 52,000 SQ. FT.
SUBSURFACE DRIP DISTRIBUTION
SYSTEM. SEE SHEETS D1–D4

EXISTING AG TILE
ALIGNMENT. LOCATE
AND PROTECT IN PLACE

NEW TREATMENT SYSTEM.
SEE SHEET G4

REPLACE EXISTING FENCE
WITH NEW CHAIN LINK
FENCE. SEE SHEET M2

EXISTING
AG TILE
ALIGNMENT

EXISTING WEST
5,400–GALLON SEPTIC TANK

ALL COLLECTION SYSTEM
COMPONENTS (MANHOLES,
SEWER MAINS) ARE
BEING REPLACED

EXISTING FENCE TO BE
REPLACED. SEE SHEET M2

EXISTING 6,500–GALLON
RECIRCULATION TANK TO
BE RECONFIGURED AS
LIFT TANK. SEE SHEET T4

CHAIN LINK ACCESS
GATE. SEE SHEET M2

VALVE BOX WITH PRESSURE REDUCING AND BACK FLOW
PREVENTION VALVE (APOLLO RP4A OR APPROVED EQUAL). HEAT
TAPE FOR FROST PROTECTION REQUIRED. CONSTRUCTION MUST
CONFORM TO CLACKAMAS RIVER WATER SPECIFICATIONS.

20'

40'

LEGEND:

- SUPPLY MAIN
- FLUSH MAIN
- AIR RELEASE (SUPPLY MANIFOLDS)
- BALL VALVE AND CHECK VALVE ASSEMBLY WITH AIR RELEASE VALVE

0 30'
1"=30'

CPSS
Certified Professional
Soil Scientist
BRIAN T. RABE
15239 Exp. 12/31/21
Registered Wastewater Specialist
No. EH W-448450 Exp. 9/30/21

FISCHER'S FOREST PARK LOSS
CLACKAMAS COUNTY

REV #	DESCRIPTION	BY	DATE

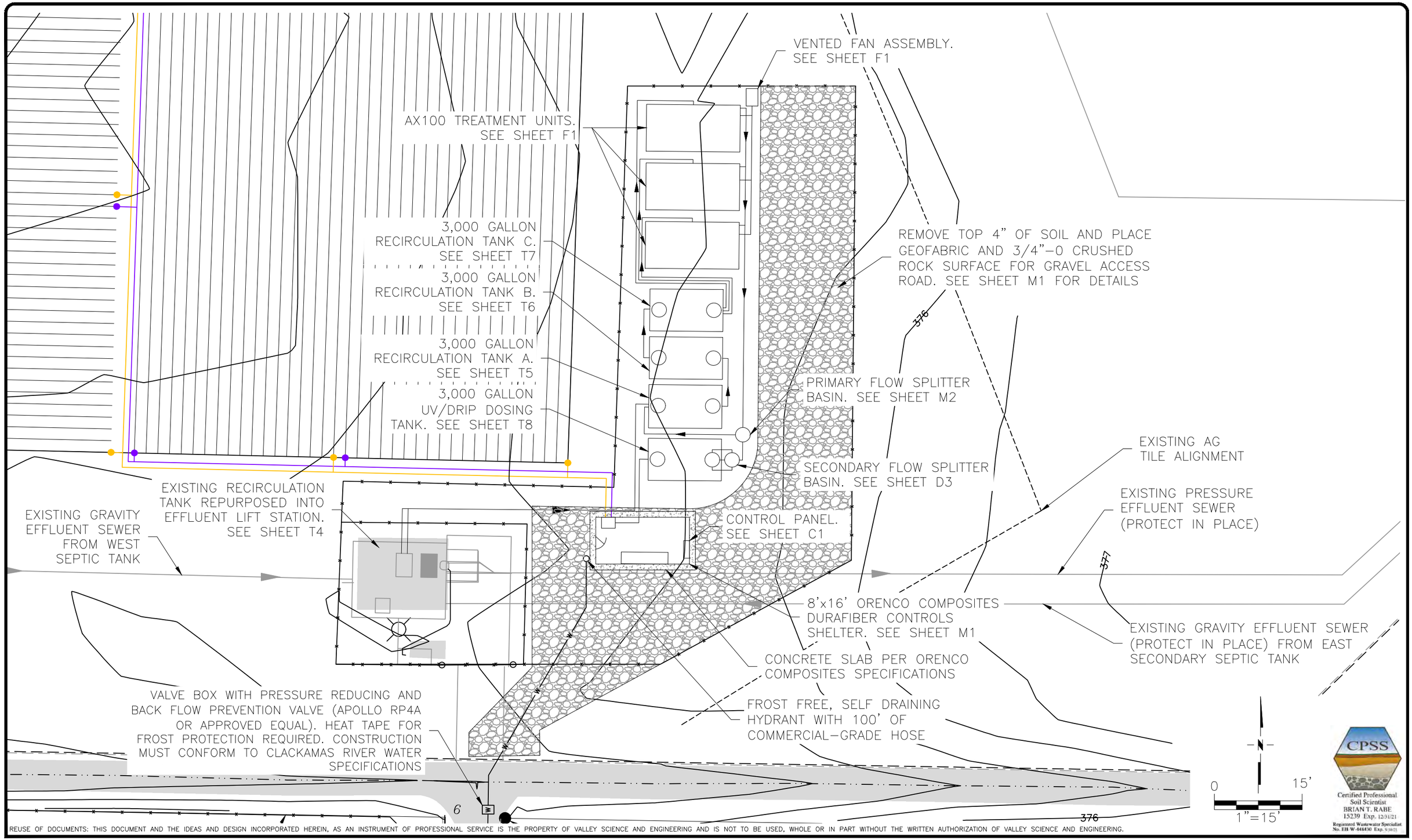
DES. BY 1BTR
DRG. BY 6NSG
CHK. BY 1GLT
DATE 8/18/2022
JOB No. 2020230021

VALLEY SCIENCE AND ENGINEERING

DRIP SYSTEM SITE PLAN

LARGE ONSITE SEWAGE SYSTEM DESIGN

SHEET
G3



Certified Professional Soil Scientist
BRIANT. RABE
15239 Exp. 12/31/21
Registered Wastewater Specialist
No. EH-W-448430 Exp. 6/30/23

FISCHER'S FOREST PARK LOSS
CLACKAMAS COUNTY

REV #	DESCRIPTION	BY	DATE

DES. BY 1BTR
DRG. BY 6NSG
CHK. BY 1GLT
DATE 8/18/2022
JOB No. 2020230021

VALLEY SCIENCE AND ENGINEERING

TANK LAYOUT DETAIL

LARGE ONSITE SEWAGE SYSTEM DESIGN

SHEET
G4

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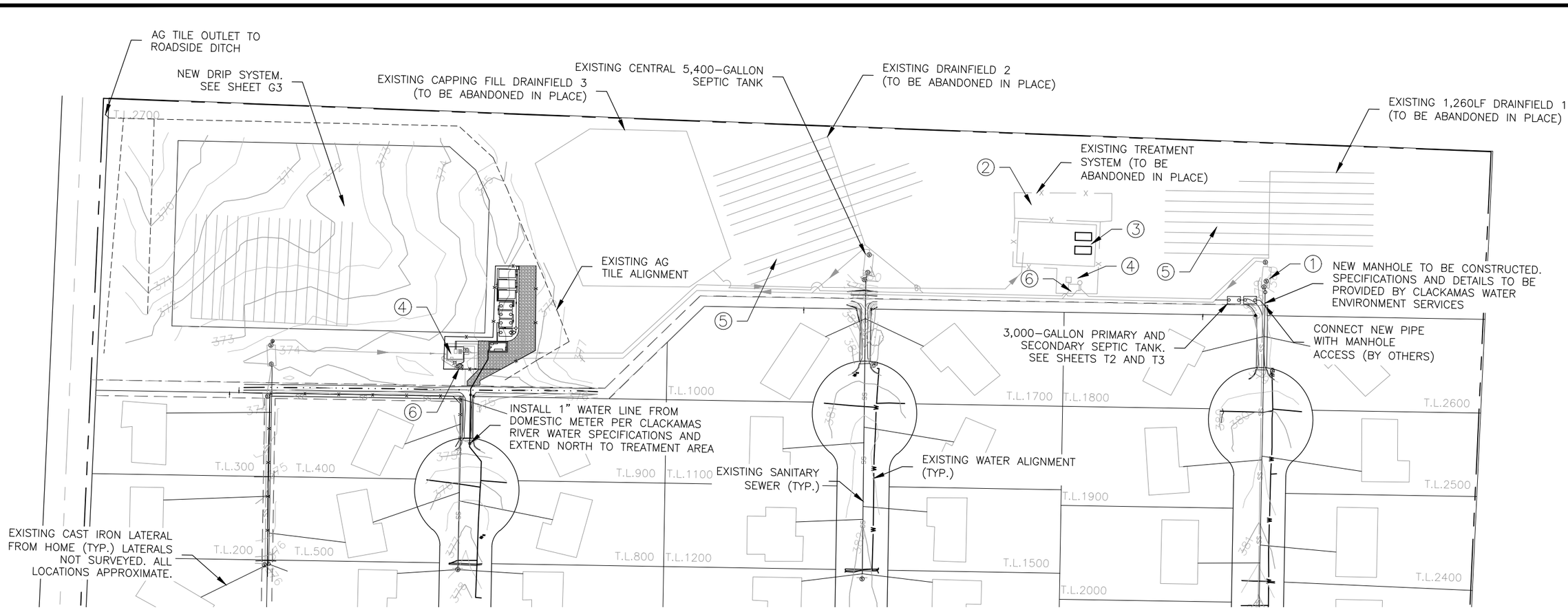

ABANDONMENT NOTES:

1. EXISTING EAST SEPTIC TANK – DECOMMISSION ACCORDING TO OAR 340-071-0185(2)(a)(b). TANKS MUST BE PUMPED BY A LICENSED SEWAGE DISPOSAL SERVICE TO REMOVE ALL SEPTAGE. UPON PUMPING, TANKS MUST BE FILLED WITH REJECT SAND, BAR RUN GRAVEL, OR OTHER MATERIAL APPROVED BY THE DEPARTMENT (DEQ) OR TANK MUST BE REMOVED AND PROPERLY DISPOSED OF. PROVIDE PROPER DOCUMENTATION FOR ABANDONMENT ACCORDING TO STATE AND LOCAL REGULATIONS.
2. EXISTING GRAVEL FILTER – ABANDONED IN PLACE (2006).
3. EXISTING AX100 TEXTILE FILTRATION UNITS, PIPING, AND BASINS – REMOVE AND PROPERLY DISPOSE OF UNITS, CUT AND CAP PIPING TO AND FROM UNITS, BACKFILL WITH 3/4 MINUS, REJECT SAND, OR BAR RUN GRAVEL.
4. TREATMENT AREA AND LIFT STATION PUMPS AND FLOATS ASSEMBLIES – REMOVE AND PROPERLY DISPOSE OF PUMPS, VAULT(S) AND FLOATS. CUT AND CAP PIPING TO AND FROM TREATMENT AREA FLOW SPLITTER BASIN AND PUMP BASIN UPON PROJECT COMPLETION. TREATMENT AREA FLOW SPLITTER BASIN AND PUMP BASIN MUST BE PUMPED BY A LICENSED SEWAGE DISPOSAL SERVICE TO REMOVE ALL SEPTAGE. UPON PUMPING, BASIN MUST BE FILLED WITH REJECT SAND, BAR RUN GRAVEL, OR OTHER MATERIAL APPROVED BY DEQ OR BASIN MUST BE REMOVED AND PROPERLY DISPOSED OF.
5. EXISTING DRAINFIELDS – ABANDON IN PLACE.
6. TREATMENT AREA AND LIFT STATION CONTROL PANELS AND ELECTRICAL EQUIPMENT – ALL CONTROL PANELS AND ASSOCIATED STRUCTURES TO BE REMOVED AND DISPOSED OF IN A DEQ APPROVED LANDFILL. EXISTING CONDUIT TO BE CUT AND CAPPED. BACKFILL OF ANY ASSOCIATED EXCAVATIONS TO OCCUR WITH REJECT SAND, BAR RUN GRAVEL, OR OTHER MATERIAL APPROVED BY DEQ.

CPSS
Certified Professional Soil Scientist
BRIAN T. RABE
15239 Exp. 12/31/21
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FISCHER'S FOREST PARK LOSS
CLACKAMAS COUNTY

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VALLEY SCIENCE AND ENGINEERING

DECOMMISSIONING AND ABANDONMENT NOTES

LARGE ONSITE SEWAGE SYSTEM DESIGN

SHEET G5

Relative Elevations (in feet)

Label	Relative Elevation	Description
Temporary Benchmark (TBM)		
TBM-1	373.94	TBM-1 West Septic Tank (Top of Cast Iron Outlet Manhole)
TBM-2	379.41	East Septic Tank (Top of Cast Iron Manhole)

East Primary Septic Tank Replacement (3,000 gallon Waite Concrete Products)		
A1	378.73	Finish Grade (1" Below Top of Lid)
A2	377.48	Exterior Top of Tank
A3	376.15	Inlet Invert (8")
A4	375.98	Outlet Invert (4")
A5	370.28	Interior Bottom of Tank
A6	369.90	Exterior Bottom of Tank (Top of Prepared Base)

East Secondary Septic Tank (3,000 gallon Waite Concrete Products)		
B1	378.48	Finish Grade (1" Below Top of Lid)
B2	376.82	Exterior Top of Tank
B3	375.73	Inlet Invert (4")
B4	375.57	Outlet Invert (4")
B5	369.86	Interior Bottom of Tank
B6	369.48	Exterior Bottom of Tank (Top of Prepared Base)

Lift Tank (Existing Recirculation Tank)		
C1	375.80	Exterior Top of Tank EMS, 2006 Record Drawings
C2	370.00	West Inlet Invert (1 @ 4") - EMS, 2006 Record Drawings
C3	368.78	East Inlet Invert (1 @ 4") - EMS, 2006 Record Drawings
C4	366.88	High Level Alarm/Lag Pump ON
C5	366.38	Lead Pump ON
C6	366.13	Pump(s) OFF
C7	365.88	Redundant "OFF"/Low Level Alarm
C8	365.13	Flow Inducer Hole Heights
C9	363.13	Interior Bottom of Tank - EMS, 2006 Record Drawings

Recirculation Tank A (3,000 gallon Waite Concrete Products)		
D1	375.00	Finish Grade (1" Below Top of Lid)
D2	373.08	Exterior Top of Tank
D3	372.00	Inlet Invert
D4	367.79	MinLL
D5	367.13	Pass Through Piping
D6	366.13	Interior Bottom of Tank
D7	365.75	Exterior Bottom of Tank (Top of Prepared Base)

Recirculation Tank B (3,000 gallon Waite Concrete Products)		
E1	375.00	Finish Grade (1" Below Top of Lid)
E2	373.08	Exterior Top of Tank
E3	367.79	MinLL
E4	367.13	Pass Through Piping
E5	366.13	Interior Bottom of Tank
E6	365.75	Exterior Bottom of Tank (Top of Prepared Base)

Recirculation Tank C (3,000 gallon Waite Concrete Products)		
F1	375.00	Finish Grade (1" Below Top of Lid)
F2	373.08	Exterior Top of Tank
F3	371.54	High Level Timer and Alarm
F4	370.29	Override Timer
F5	369.04	Normal Timer (Low when Down)
F6	368.63	Redundant "OFF"/Low Level Alarm
F7	368.13	Flow Inducer Hole Heights
F8	367.13	Pass Through Piping (Between Tanks)
F9	366.13	Interior Bottom of Tank
F10	365.75	Exterior Bottom of Tank (Top of Prepared Base)

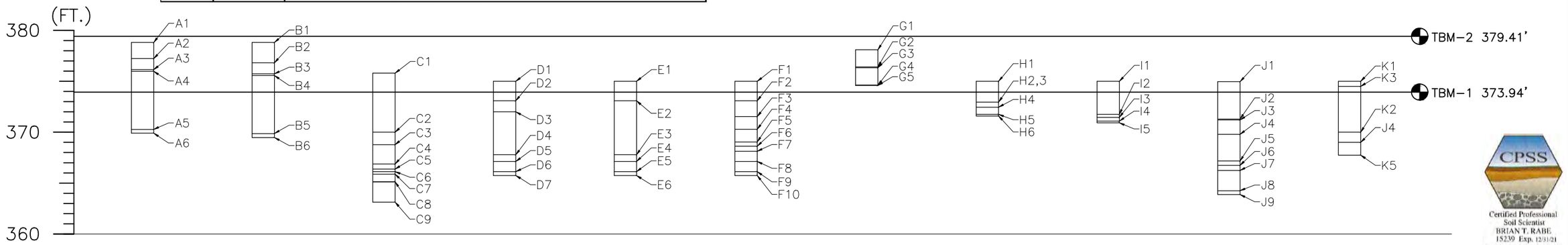
New AdvanTex Unit (AX100)		
G1	378.09	Top of Lid
G2	376.42	Top of Distribution Laterals (Orifice Discharge)
G3	376.34	Finish Grade (21" Below Top of Lid)
G5	374.63	Underdrain (Outlet Invert)
G6	374.59	Exterior Bottom of Container (Top of Prepared Base)

Primary Flow Splitter Basin		
H1	375.00	Finish Grade (1" Below Top of Riser Lid)
H2	372.96	Inlet Invert (4")
H3	372.96	Vent/Overflow
H4	372.46	Orifices (Standpipes)
H5	371.75	Outlet Invert (2@4")
H6	371.59	Exterior Bottom of Basin (Top of Prepared Base)

Secondary Flow Splitter Basin		
I1	375.00	Finish Grade (1" Below Top of Riser Lid)
I2	371.75	Inlet Invert (4")
I3	371.46	Orifices (Standpipes)
I4	371.09	Outlet Invert (3@4")
I5	370.92	Exterior Bottom of Basin (Top of Prepared Base)

Dripfield Dosing Tank (3,000 gallon Waite Concrete Products)		
J1	374.96	Finish Grade (1" Below Top of Lid)
J2	371.29	Inlet Invert (4")
J4	371.21	Exterior Top of Tank
J3	369.79	High Level Alarm
J5	367.17	Timer ON
J6	366.75	Redundant "OFF"/Low Level Alarm
J7	366.25	Flow Inducer Hole Heights
J8	364.25	Interior Bottom of Tank
J9	363.88	Exterior Bottom of Tank (Top of Prepared Base)

Drip System Components		
K1	375.00	Maximum Finish Grade Over Drip Field
K2	370.00	Minimum Finish Grade Over Drip Field
K3	374.50	Maximum Elevation of Dripperline
K4	369.00	Minimum Elevation of Dripperline
K5	367.75	Invert of Flushing Return Mainline



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No. ER-W-448430 Exp. 9/30/21

FISCHER'S FOREST PARK LOSS
CLACKAMAS COUNTY

REV #	DESCRIPTION	BY	DATE

DES. BY 1BTR
DRG. BY 6NSG
CHK. BY 1GLT
DATE 8/18/2022
JOB No. 2020230021

VALLEY SCIENCE AND ENGINEERING

HYDRAULIC PROFILE

LARGE ONSITE SEWAGE SYSTEM DESIGN

SHEET
H1

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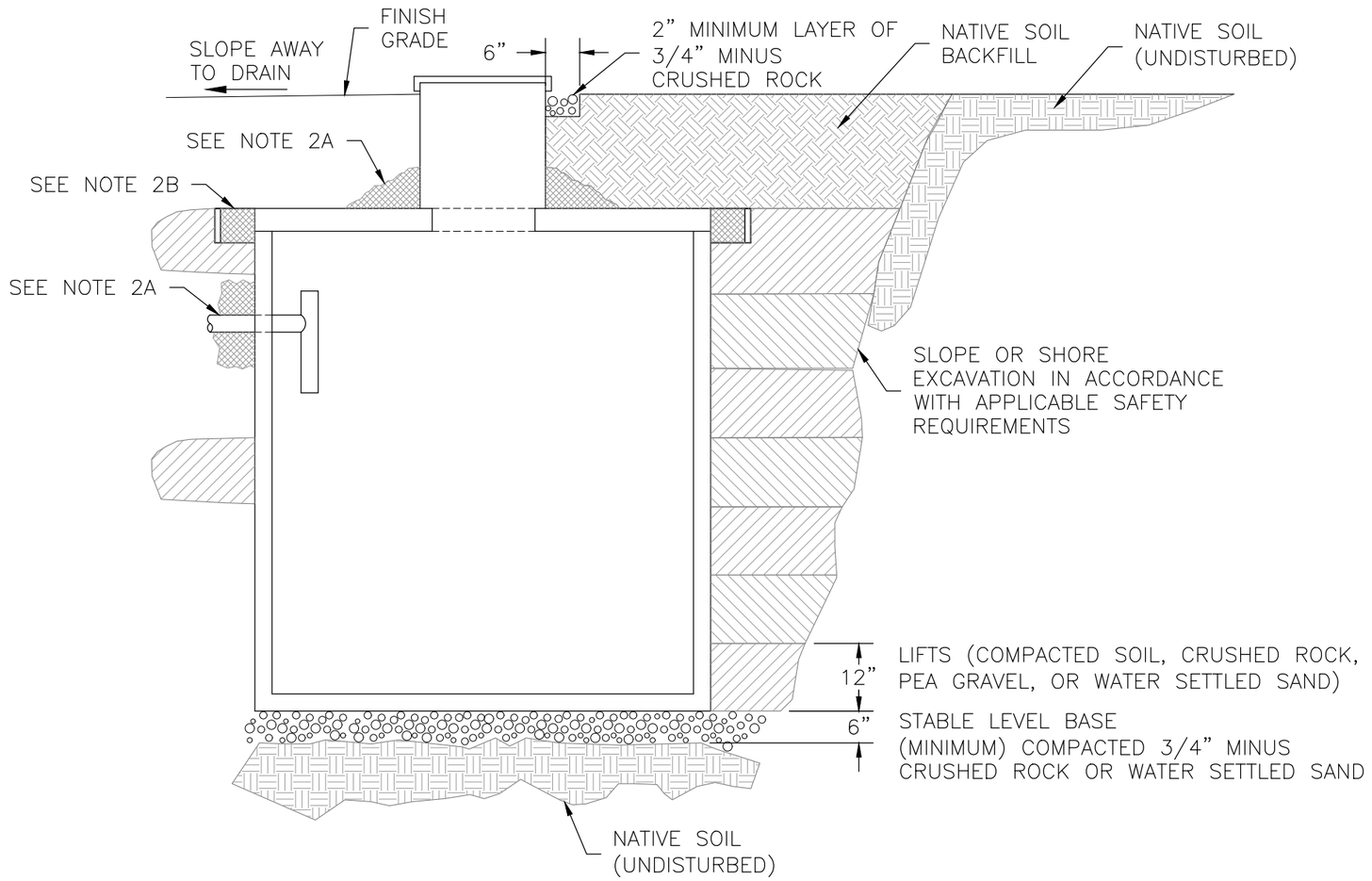


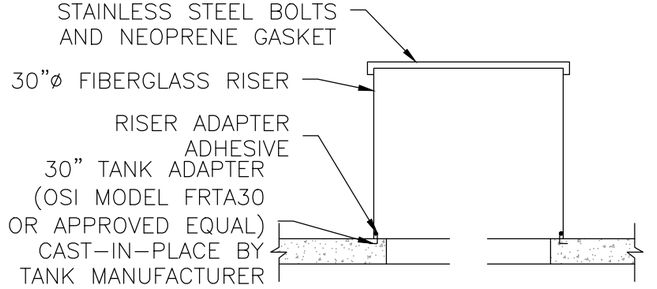
1 – TANK END VIEW
NOT TO SCALE

NOTES: (1) AREAS WHERE PIPING AND CONDUIT SPAN THE TANK EXCAVATION SHALL BE BACKFILLED WITH WATER SETTLED SAND TO PREVENT SETTLING.

(2) SEALING AND WATER TIGHTNESS TESTING: NO MORE THAN ONE GALLON OF WATER LOSS IN 24 HOURS SHALL BE TOLERATED. FIELD REPAIRS MAY BE ATTEMPTED ONCE. IF THE TANK FAILS THE WATER TIGHTNESS TEST A SECOND TIME IT SHALL BE REPLACED AT NO EXPENSE TO THE OWNER.

(A) ALL PIPE PENETRATIONS AND RISER SEAMS SHALL BE VISUALLY TESTED WITH WATER. ANY OBVIOUS LEAKAGE SHALL RESULT IN RE–GROUTING. ALL PIPE PENETRATIONS AND RISER SEAMS SHALL BE SURROUNDED WITH A MINIMUM OF SIX INCHES OF BENTONITE PRIOR TO BACKFILLING.

(B) ONE–PIECE OR TOP SEAM TANKS: BACKFILL TO 6 INCHES BELOW THE EXTERIOR TANK TOP. FILL THE TANK WITH WATER TO 2 INCHES INTO THE RISERS (NO MORE). PRE–SOAK FOR 24 HOURS AND REFILL, IF NECESSARY. PLACE BENTONITE PRIOR TO FINAL BACKFILL.



2 – 30"ø RISER DETAIL
0 2 FEET
SCALE

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No. EH-W-448430 Exp. 9/30/21

FISCHER'S FOREST PARK LOSS
CLACKAMAS COUNTY

REV #	DESCRIPTION	BY	DATE

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VALLEY SCIENCE AND ENGINEERING

EXCAVATION AND BACKFILL DETAIL

LARGE ONSITE SEWAGE SYSTEM DESIGN

SHEET T1

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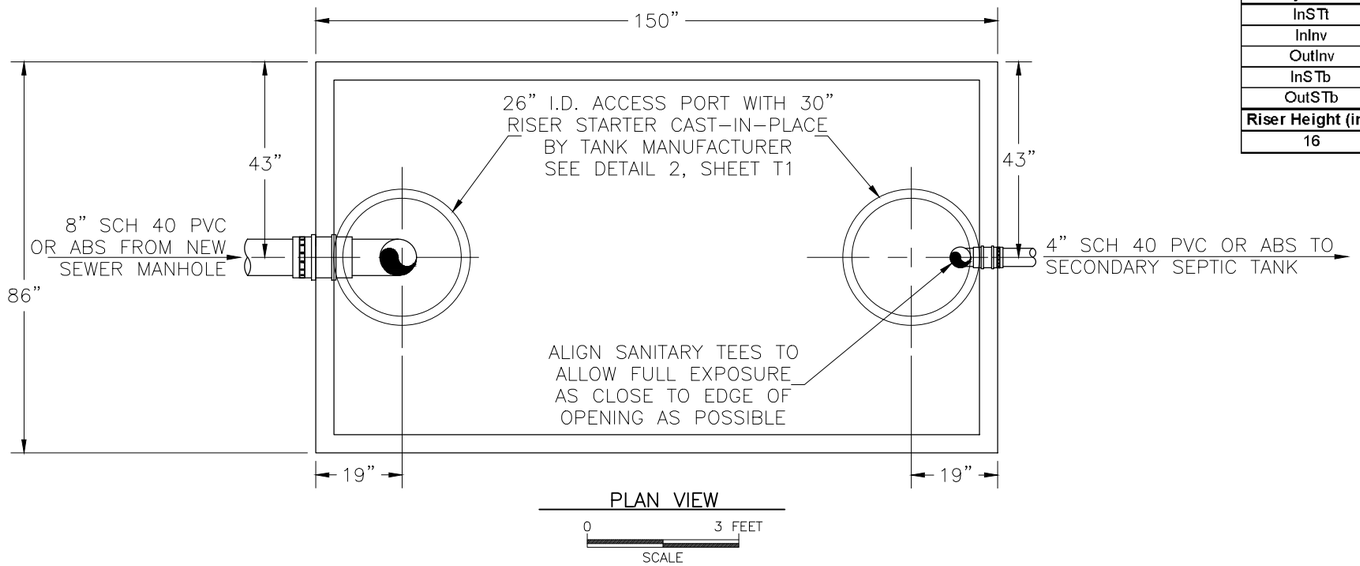
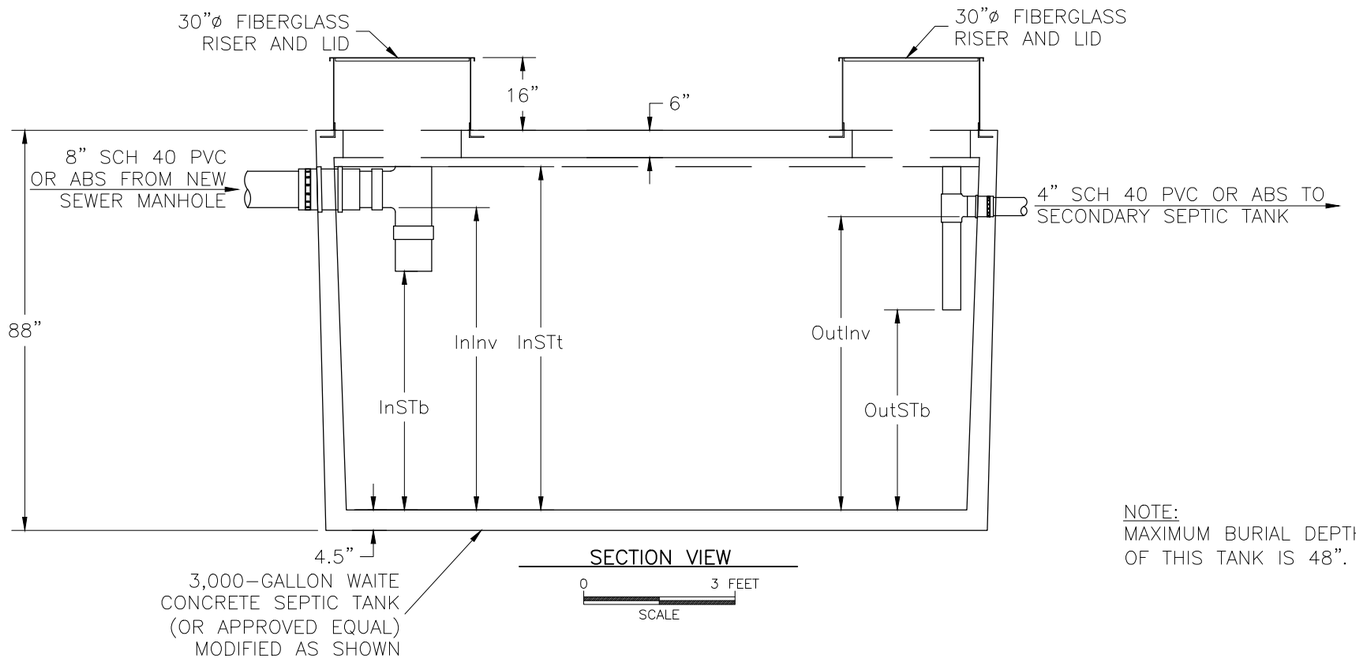


PLAN VIEW

0 3 FEET

SCALE



SECTION VIEW

0 3 FEET

SCALE

NOTE:
MAXIMUM BURIAL DEPTH OF THIS TANK IS 48".

Labels and General Information			
Symbol	**Name**	**Distance From Tank Floor (in.)**	**Distance From Exterior Tank Top (in.)**
InSTt	Inlet and Outlet Sanitary Tees (Top of Pipe)	75.5	8
InInv	Inlet Invert	66.5	17
OutInv	Outlet Invert/Operating Liquid Level	64.5	19
InSTb	Inlet Sanitary Tee (Bottom of Pipe)	52.5	31
OutSTb	Outlet Sanitary Tee (Bottom of Pipe)	44	39.5
Riser Height (in.)	**Inlet Pipe Size (in.)**	**Outlet Pipe Size (in.)**	**Tank Location**
16	8	4	East Primary Septic Tank - North End of Fir Cone Ct

Orenco Equipment (Or Approved Equal)		
East Primary Septic Tank Replacement		
Quantity	**Item ***	**Description/Comments**
2	RF30016	Fiberglass Access Risers, 30" Diameter (Inlet & Outlet)
2	FLD30G	Fiberglass Lid, 30" with Gasket and 4 Bolt Pattern
4	MA320	2-Part Epoxy for Securing Riser to Tank Adapter
2	ADH200	Caulking for Final Seal Between Riser and Tank Adapter

* Item numbers are provided as a courtesy. Since specific numbers and supplementary codes can change, supplier is to compare this information to the drawings and independently verify. Call designer if there are any inconsistencies or questions.

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FISCHER'S FOREST PARK LOSS
CLACKAMAS COUNTY

REV #	DESCRIPTION	BY	DATE

DES. BY 1BTR
DRG. BY 6NSG
CHK. BY 1GLT
DATE 8/18/2022
JOB No. 2020230021

VALLEY SCIENCE AND ENGINEERING

EAST PRIMARY SEPTIC TANK

LARGE ONSITE SEWAGE SYSTEM DESIGN

SHEET
T2

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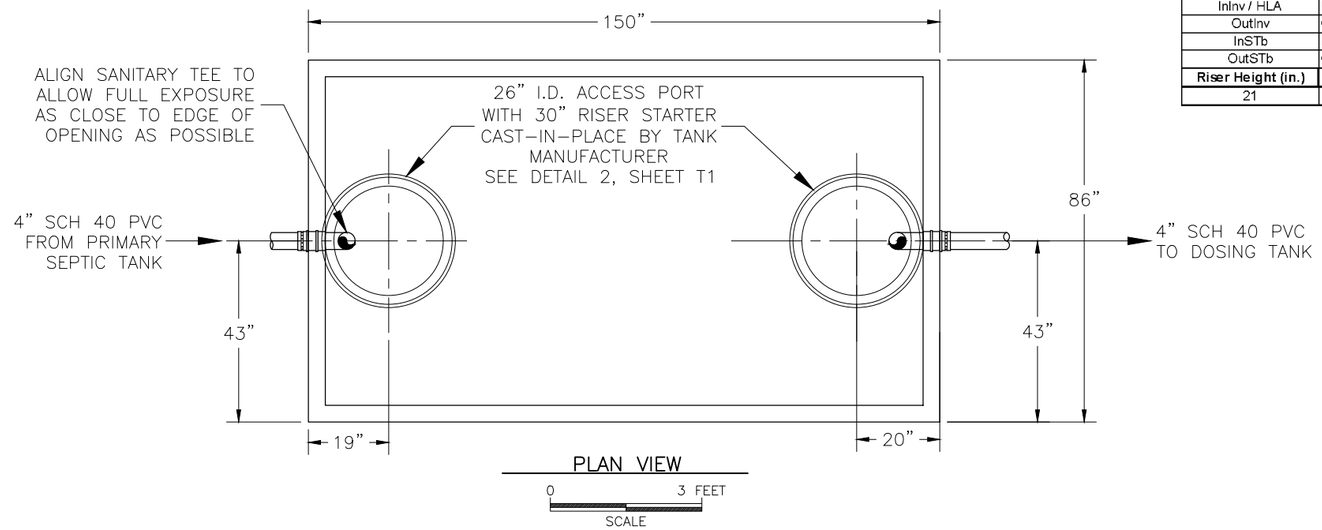
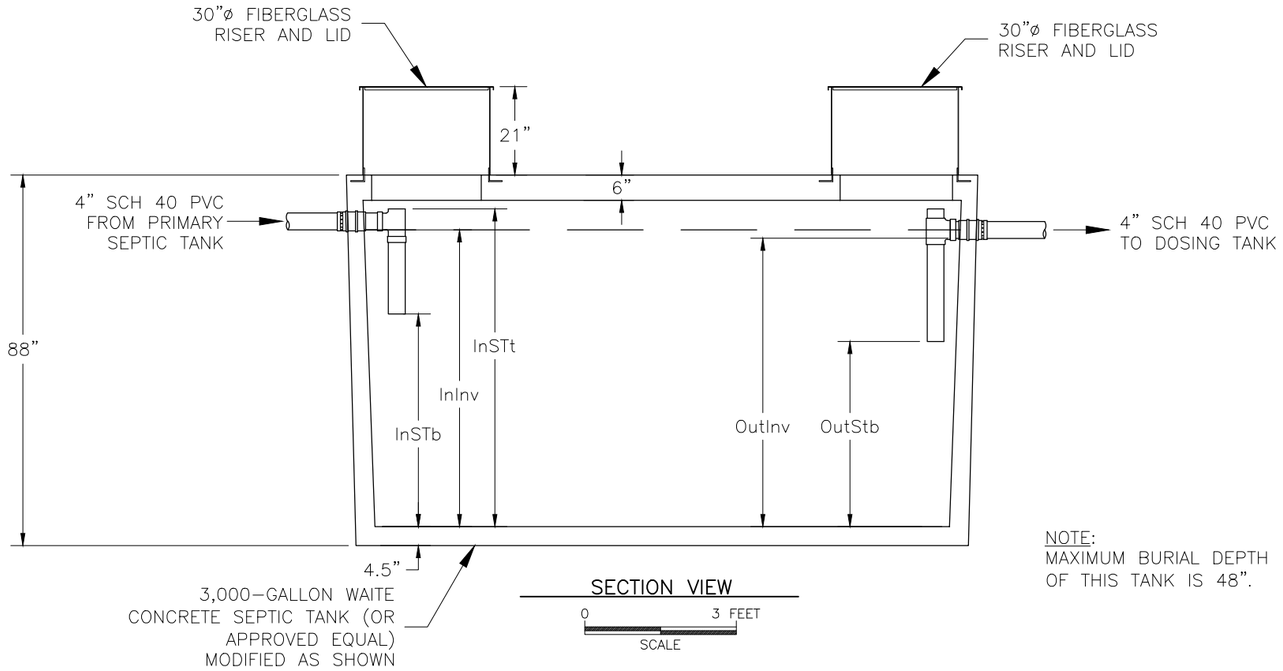


PLAN VIEW

0 3 FEET

SCALE



SECTION VIEW

0 3 FEET

SCALE

NOTE:
MAXIMUM BURIAL DEPTH OF THIS TANK IS 48".

Labels and General Information			
Symbol	**Name**	**Distance From Tank Floor (in.)**	**Distance From Exterior Tank Top (in.)**
InSTt	Inlet and Outlet Sanitary Tees (Top of Pipe)	75.5	8
InInv / HLA	Inlet Invert / High Level Alarm	70.5	13
OutInv	Outlet Invert/Operating Liquid Level	68.5	15
InSTb	Inlet Sanitary Tee (Bottom of Pipe)	50.5	33
OutSTb	Outlet Sanitary Tee (Bottom of Pipe)	44	39.5
Riser Height (in.)	**Inlet Pipe Size (in.)**	**Outlet Pipe Size (in.)**	**Tank Location**
21	4	4	New Tank Farm West of Parking Lot, South of SST C

Orenco Equipment (Or Approved Equal)		
Filtration Septic Tank		
Quantity	**Item ***	**Description/Comments**
2	RF3021	Fiberglass Access Riser, 30" Diameter (Inlet)
2	FLD30G	Fiberglass Lid, 30" with Gasket and 4 Bolt Pattern
4	MA320	2-Part Epoxy for Securing Riser to Tank Adapter
2	ADH200	Caulking for Final Seal Between Riser and Tank Adapter

* Item numbers are provided as a courtesy. Since specific numbers and supplementary codes can change, supplier is to compare this information to the drawings and independently verify. Call the designer if there are any inconsistencies or questions.

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FISCHER'S FOREST PARK LOSS
CLACKAMAS COUNTY

REV #	DESCRIPTION	BY	DATE

DES. BY 1BTR
DRG. BY 6NSG
CHK. BY 1GLT
DATE 8/18/2022
JOB No. 2020230021

VALLEY SCIENCE AND ENGINEERING

EAST SECONDARY SEPTIC TANK

LARGE ONSITE SEWAGE SYSTEM DESIGN

SHEET
T3

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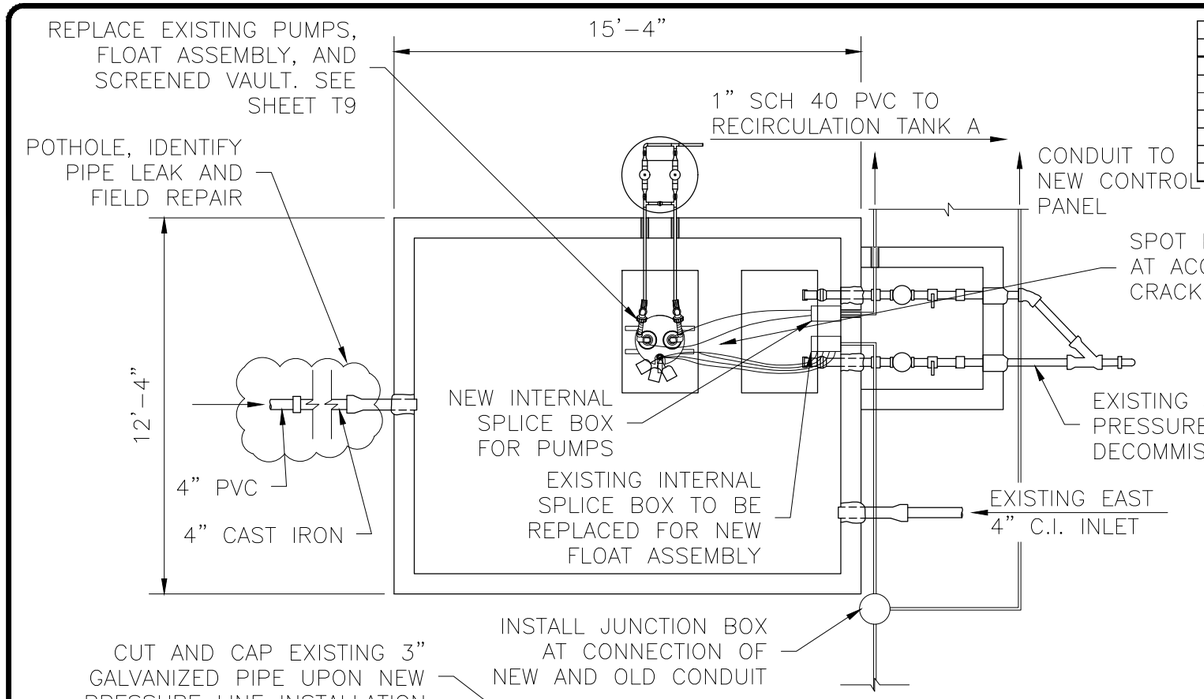
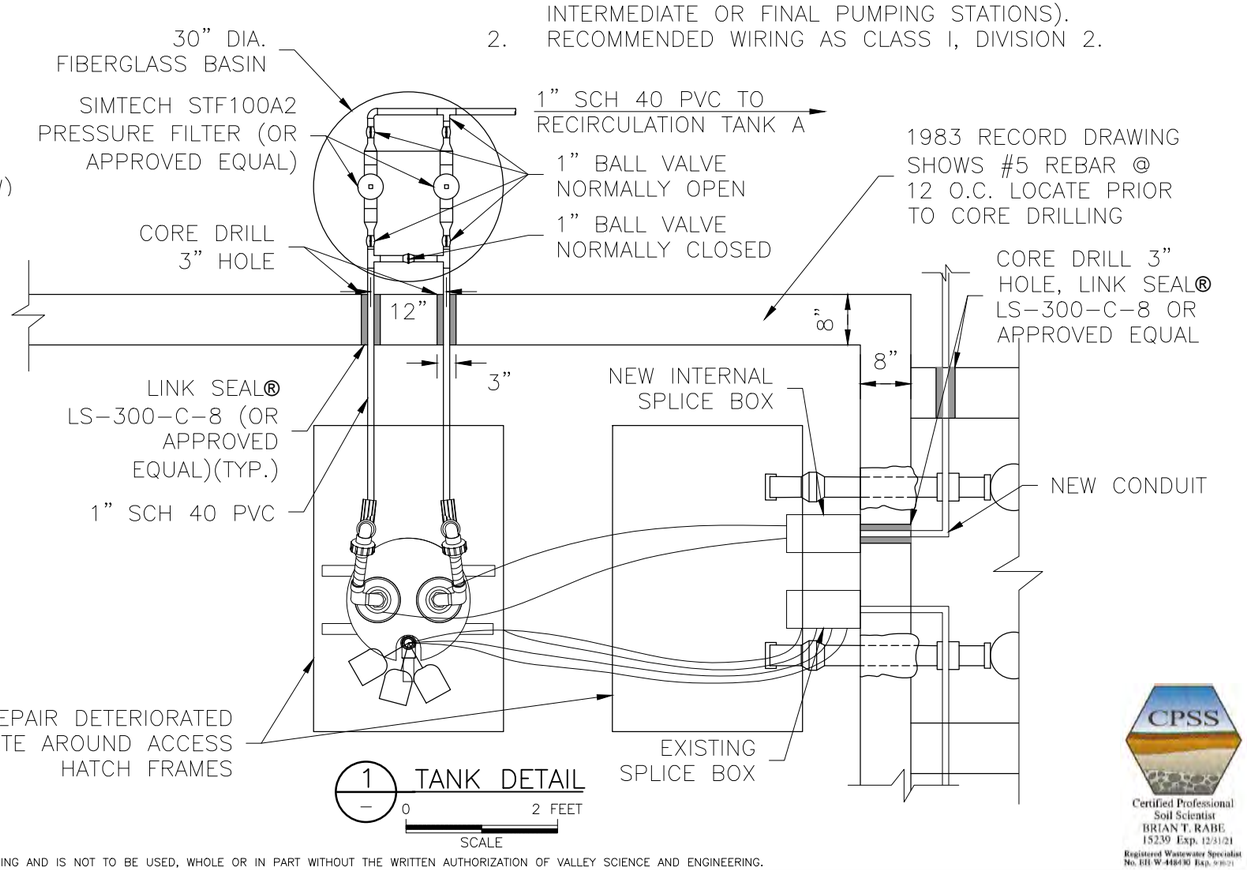


Labels and General Information			
Symbol	Name	Distance From Tank Floor (in.)	Distance From Exterior Tank Top (in.)
WInInv	West Inlet Invert	82.44	73.56
EInInv	East Inlet Invert	67.8	88.2
LAG/HLA	Lag Pump enable and High Level Alarm	65	91
ON	Lead Pump ON	50	106
OFF	Pump(s) OFF	35	121
RO/LLA	Redundant OFF/Low Level Alarm	30	126
FITInH	Flow Inducer Tower Inlet Holes	24	132

Orenco Equipment (Or Approved Equal)		
Effluent Lift Tank		
Quantity	Item *	Description/Comments
1	SB-2	Internal Splice Box with 2 Cord Grips (Pumps)
1	SB-4	Internal Splice Box with 4 Cord Grips (Controls/Alarms)
1	MF4P-20	Float Assembly with 4 Floats and 20-foot Cords
2	HV-100BCFC	Hose and Valve Assembly, 1", with Ball Valve, Check Valve, and Flow Control Disk
1	FITD-D90	Custom Duplex Flow Inducer Tower without Pump Support Plate
2	PF 10 0512-20	OSI Effluent Pump, 0.50 Hp, 230V, 60 Hz, with 20-foot Power Cords

* Item numbers are provided as a courtesy. Since specific numbers and supplementary codes can change, supplier is to compare this information to the drawings and independently verify. Call the designer if there are any inconsistencies or questions.

NOTES:
1. CLASSIFICATION FOR ELECTRICAL EQUIPMENT: UNCLASSIFIED (NFPA 820, TABLE 3, NO. 19 – INTERMEDIATE OR FINAL PUMPING STATIONS).
2. RECOMMENDED WIRING AS CLASS I, DIVISION 2.



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No. III-W-448490 Exp. 9/30/21

FISCHER'S FOREST PARK LOSS
CLACKAMAS COUNTY

REV #	DESCRIPTION	BY	DATE

DES. BY 1BTR
DRG. BY 6NSG
CHK. BY 1GLT
DATE 8/18/2022
JOB No. 2020230021

VALLEY SCIENCE AND ENGINEERING

DOSING TANK CONVERSION (EXISTING RECIRCULATION TANK)

LARGE ONSITE SEWAGE SYSTEM DESIGN

SHEET T4

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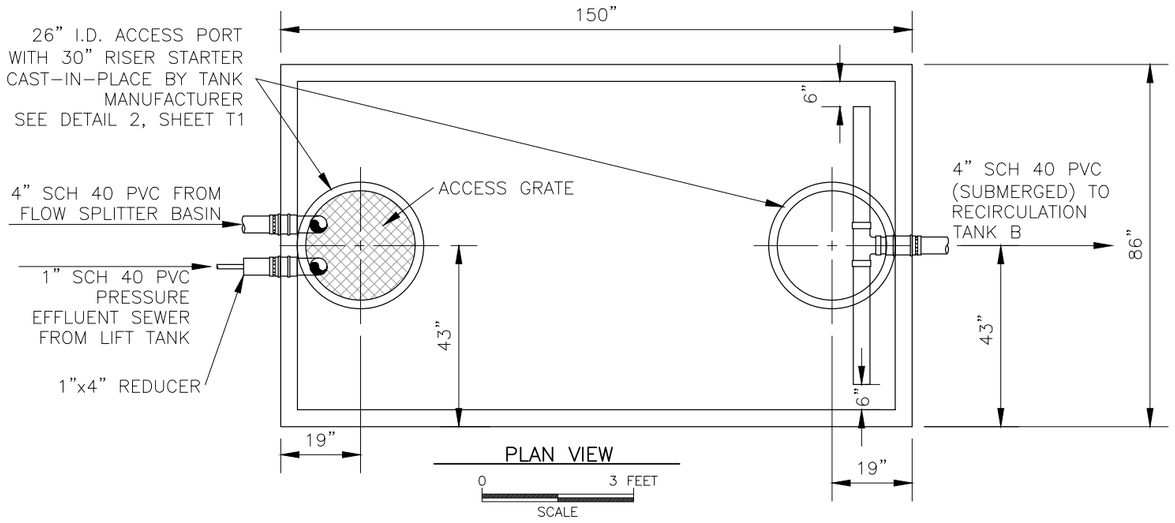
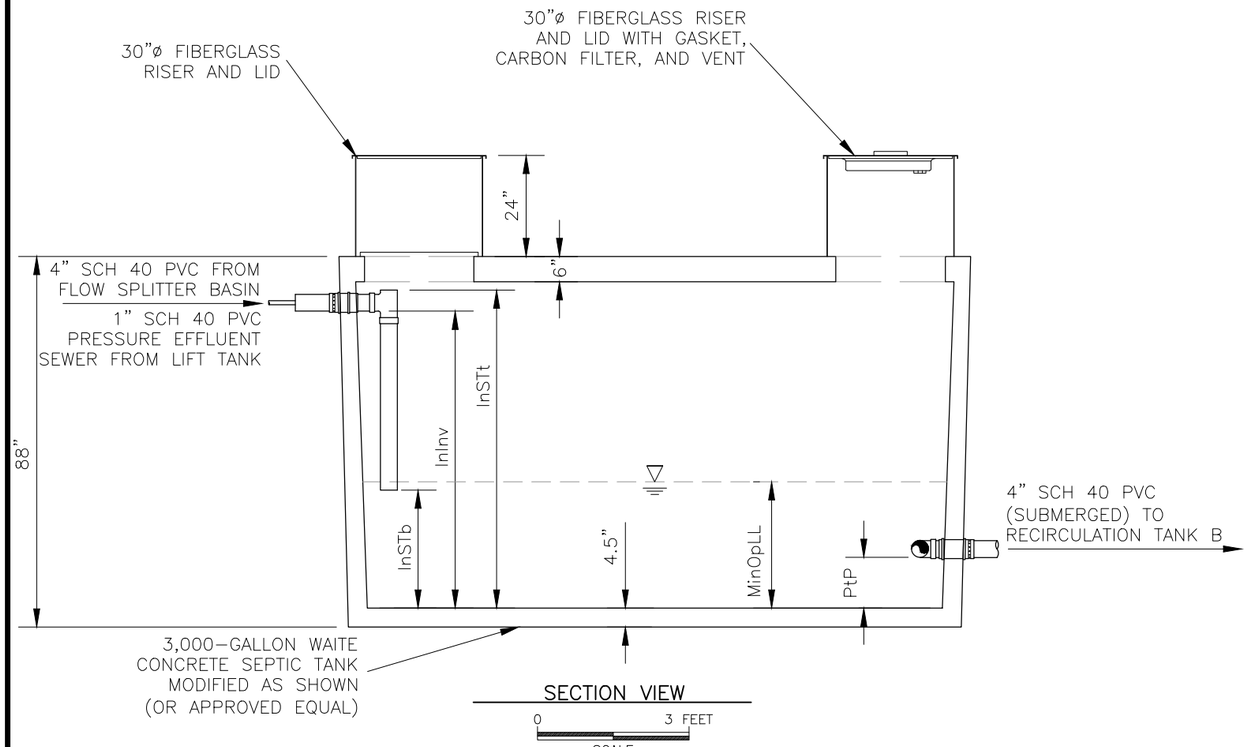


Labels and General Information			
Symbol	**Name**	**Distance From Tank Floor (in.)**	**Distance From Exterior Tank Top (in.)**
InSTt	Inlet Sanitary Tees (Top of Pipe)	75.5	8
InInv	Inlet Invert	70.5	13
MinOpLL	Minimum Operation Liquid Level	30	53.5
InSTb	Inlerr Sanitary Tee (Bottom of Pipe)	28	55.5
PtP	Pass Through Piping (Between Tanks)	12	71.5
Riser Height (in.)	**Inlet Pipe Size (in.)**	**Outlet Pipe Size (in.)**	**Tank Location**
24	2 @ 4	4	Tank Farm (North of Merry Meadow Ct)

Orenco Equipment (Or Approved Equal)		
Recirculation Tank A		
Quantity	**Item ***	**Description/Comments**
2	RF3024	Fiberglass Access Riser, 30" Diameter (Inlet)
1	FLD30G	Fiberglass Lid, 30" with Gasket and 4 Bolt Pattern
1	FLD30GVCF	Fiberglass Lid, 30" with Gasket, Vent, Carbon Filter and 4-Bolt Pattern (Outlet)
1	RG30	30" Diameter Access Grate (Inlet)
4	MA320	2-Part Epoxy for Securing Riser to Tank Adapter
2	ADH200	Caulking for Final Seal Between Riser and Tank Adapter

* Item numbers are provided as a courtesy. Since specific numbers and supplementary codes can change, supplier is to compare this information to the drawings and independently verify. Call the designer if there are any inconsistencies or questions.



NOTE:
MAXIMUM BURIAL DEPTH OF THIS TANK IS 48"

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FISCHER'S FOREST PARK LOSS
CLACKAMAS COUNTY

REV #	DESCRIPTION	BY	DATE

DES. BY 1BTR
DRG. BY 6NSG
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JOB No. 2020230021

VALLEY SCIENCE AND ENGINEERING

RECIRCULATION TANK A

LARGE ONSITE SEWAGE SYSTEM DESIGN

SHEET
T5

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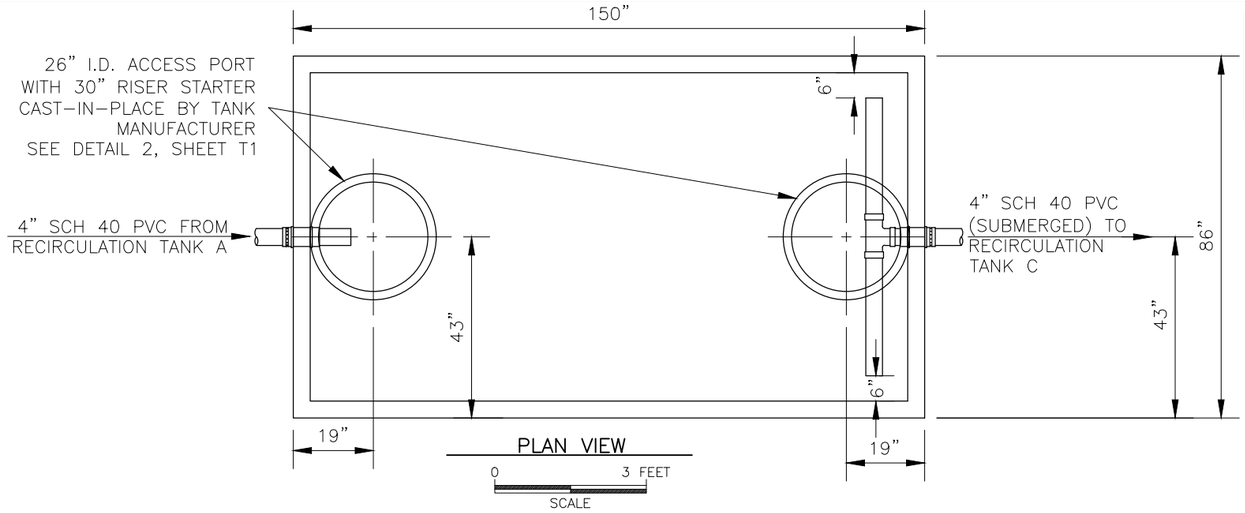
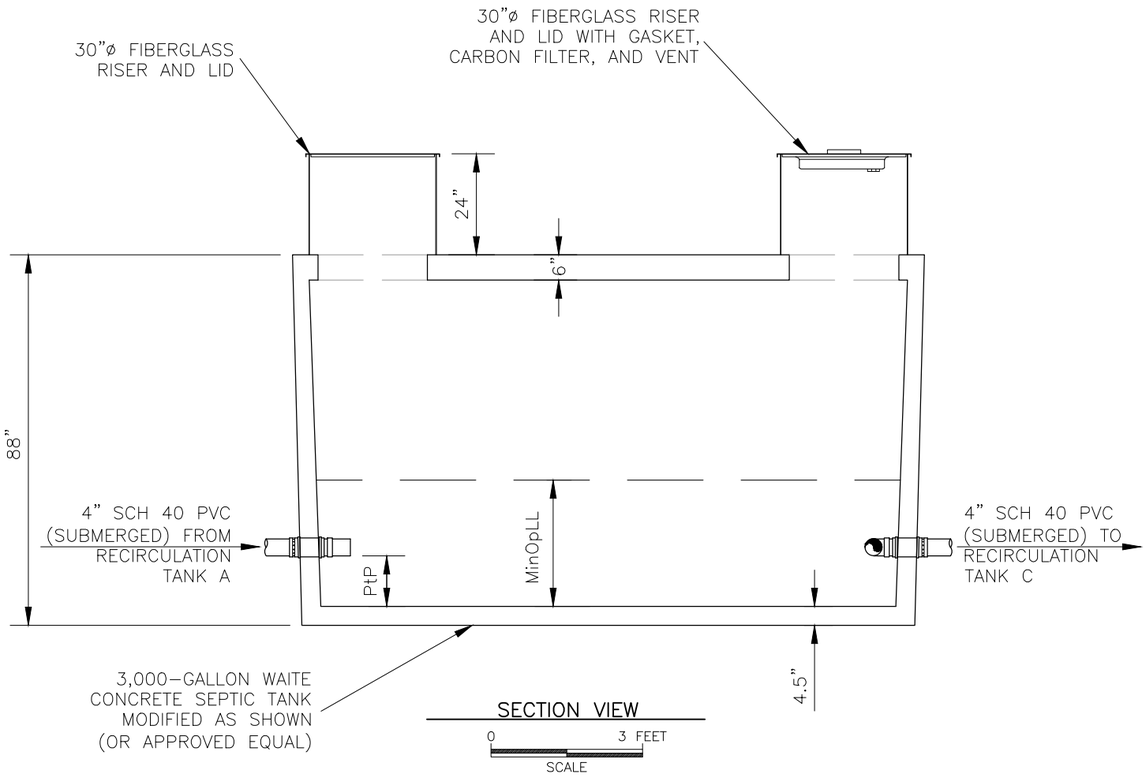


Labels and General Information			
Symbol	**Name**	**Distance From Tank Floor (in.)**	**Distance From Exterior Tank Top (in.)**
MinOpLL	Minimum Operation Liquid Level	30	53.5
PtP	Pass Through Piping (Between Tanks)	12	71.5
Riser Height (in.)	**Inlet Pipe Size (in.)**	**Outlet Pipe Size (in.)**	**Tank Location**
24	4	4	Tank Farm (North of Merry Meadow Ct)

Orenco Equipment (Or Approved Equal)		
Recirculation Tank B		
Quantity	**Item ***	**Description/Comments**
2	RF3024	Fiberglass Access Riser, 30" Diameter (Inlet)
1	FLD30G	Fiberglass Lid, 30" with Gasket and 4 Bolt Pattern (Inlet)
1	FLD30GVCF	Fiberglass Lid, 30" with Gasket, Vent, Carbon Filter and 4-Bolt Pattern (Outlet)
4	MA320	2-Part Epoxy for Securing Riser to Tank Adapter
2	ADH200	Caulking for Final Seal Between Riser and Tank Adapter

* Item numbers are provided as a courtesy. Since specific numbers and supplementary codes can change, supplier is to compare this information to the drawings and independently verify. Call the designer if there are any inconsistencies or questions.



NOTE:
MAXIMUM BURIAL DEPTH OF THIS TANK IS 48"

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FISCHER'S FOREST PARK LOSS
CLACKAMAS COUNTY

REV #	DESCRIPTION	BY	DATE

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VALLEY SCIENCE AND ENGINEERING

RECIRCULATION TANK B

LARGE ONSITE SEWAGE SYSTEM DESIGN

SHEET
T6

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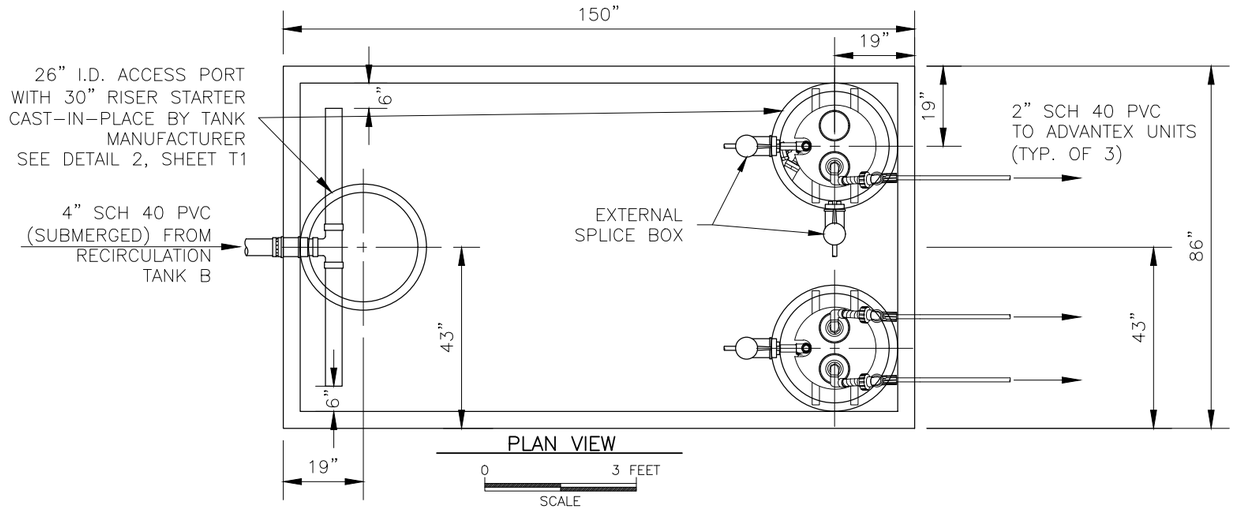

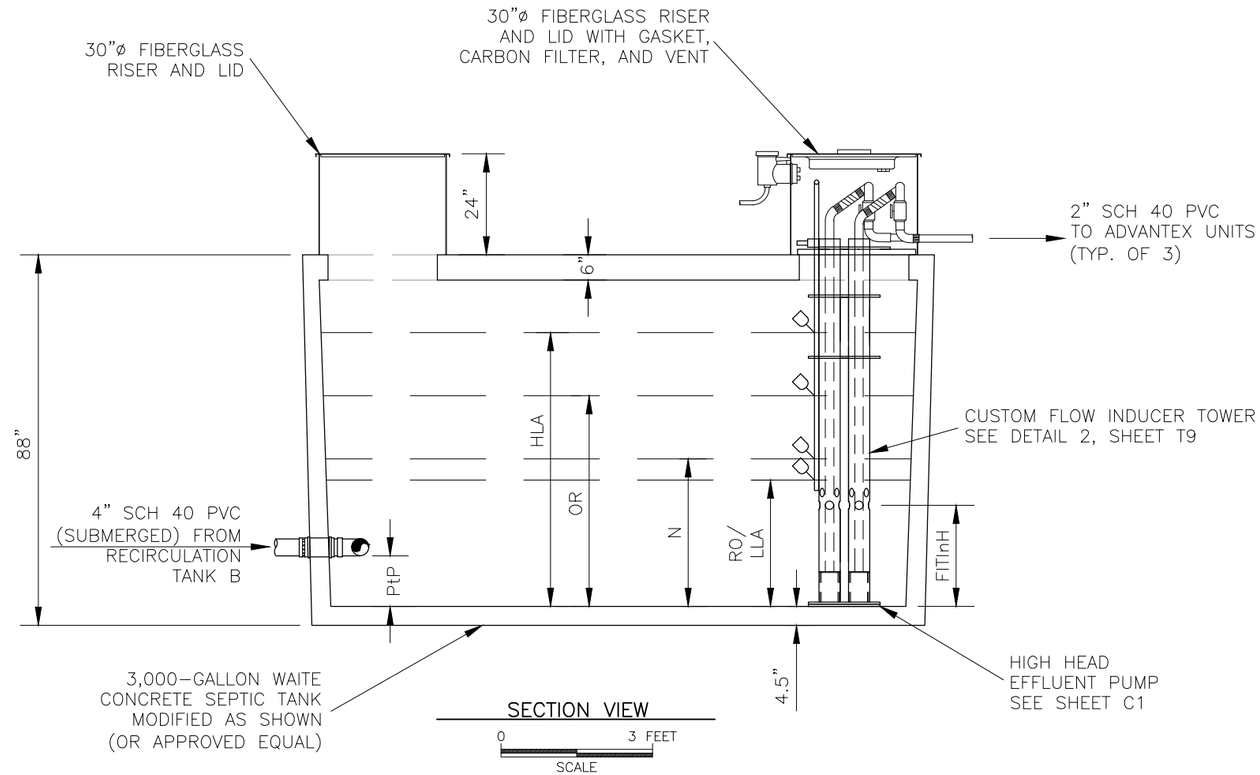

Labels and General Information			
Symbol	**Name**	**Distance From Tank Floor (in.)**	**Distance From Exterior Tank Top (in.)**
HLA	High Level Timer and Alarm	65	18.5
OR	Override Timer	50	33.5
N	Normal Timer (Low Timer when Down)	35	48.5
RO/LLA	Redundant OFF/Low Level Alarm	30	53.5
FITInH	Flow Inducer Tower Inlet Holes	24	59.5
PtP	Pass Through Piping (Between Tanks)	12	71.5
Riser Height (in.)	**Inlet Pipe Size (in.)**	**Outlet Pipe Size (in.)**	**Tank Location**
24	4	–	Tank Farm (North of Merry Meadow Ct)

Orenco Equipment (Or Approved Equal)		
Recirculation Tank C		
Quantity	**Item ***	**Description/Comments**
1	RF3024	Fiberglass Access Riser, 30" Diameter (Inlet)
1	RF3024+SX+20+20	Fiberglass Access Riser, 30" Diameter with 1@SX and 2@G200 (Outlet - 2 Pumps)
1	RF3024+SX+SX+20	Fiberglass Access Riser, 30" Diameter with 2@SX and 1@G200 (Outlet - 1 Pump + Controls/Alarms)
2	FLD30G	Fiberglass Lid, 30" with Gasket and 4 Bolt Pattern (Inlet + 1 Outlet)
1	FLD30GVCF	Fiberglass Lid, 30" with Gasket, Vent, Carbon Filter and 4-Bolt Pattern (1 Outlet)
1	SBEX-2	External Splice Box with 2 Cord Grips (Pumps)
1	SBEX-1	External Splice Box with 1 Cord Grips (Pumps)
1	SBEX-4	External Splice Box with 4 Cord Grips (Controls and Alarms)
1	MF4P-20	Float Assembly with 4 Floats and 20-foot Cords
3	HV-200BC	Hose and Valve Assembly, 2", with Ball Valve and Check Valve
2	FITD-D90	Custom Duplex Flow Inducer Tower without Pump Support Plate
3	PF 50 0712	OSI Effluent Pump, 0.75 Hp, 230V, 60 Hz, with 10-foot Power Cords
4	MA320	2-Part Epoxy for Securing Riser to Tank Adapter
2	ADH200	Caulking for Final Seal Between Riser and Tank Adapter

* Item numbers are provided as a courtesy. Since specific numbers and supplementary codes can change, supplier is to compare this information to the drawings and independently verify. Call the designer if there are any inconsistencies or questions.

NOTES:
1. CLASSIFICATION FOR ELECTRICAL EQUIPMENT: UNCLASSIFIED (NFPA 820, TABLE 3, NO. 19 – INTERMEDIATE OR FINAL PUMPING STATIONS).
2. RECOMMENDED WIRING AS CLASS I, DIVISION 2.
3. MAXIMUM BURIAL DEPTH OF THIS TANK IS 48".

Certified Professional Soil Scientist
BRIAN T. RABE
15239 Exp. 12/31/21
Registered Wastewater Specialist
No. ER-W-448430 Exp. 9/30/21

FISCHER'S FOREST PARK LOSS
CLACKAMAS COUNTY

REV #	DESCRIPTION	BY	DATE

DES. BY 1BTR
DRG. BY 6NSG
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VALLEY SCIENCE AND ENGINEERING

RECIRCULATION TANK C

LARGE ONSITE SEWAGE SYSTEM DESIGN

SHEET T7

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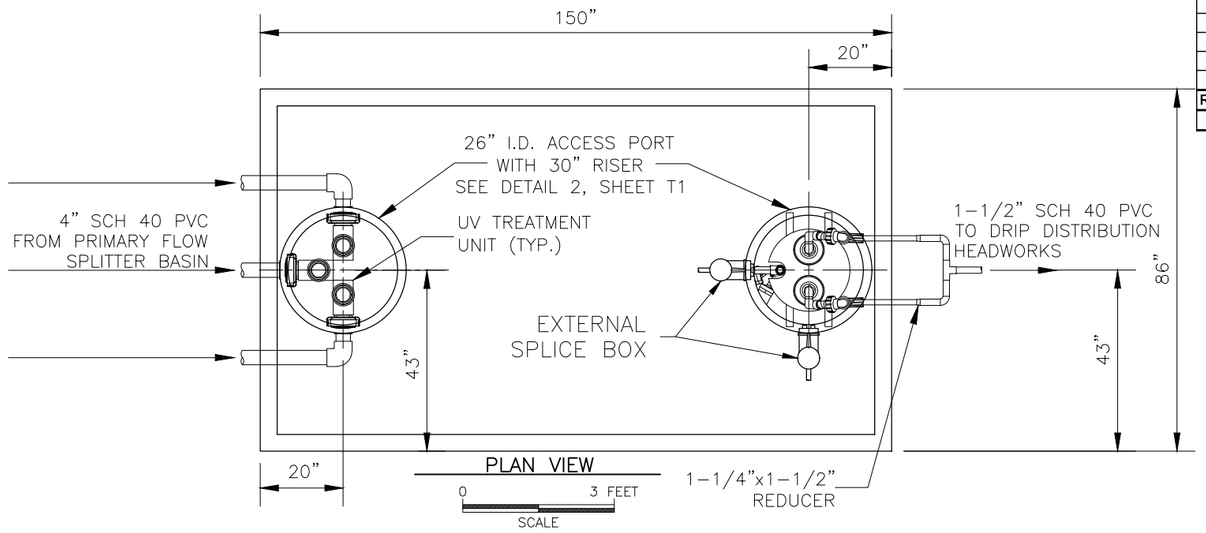

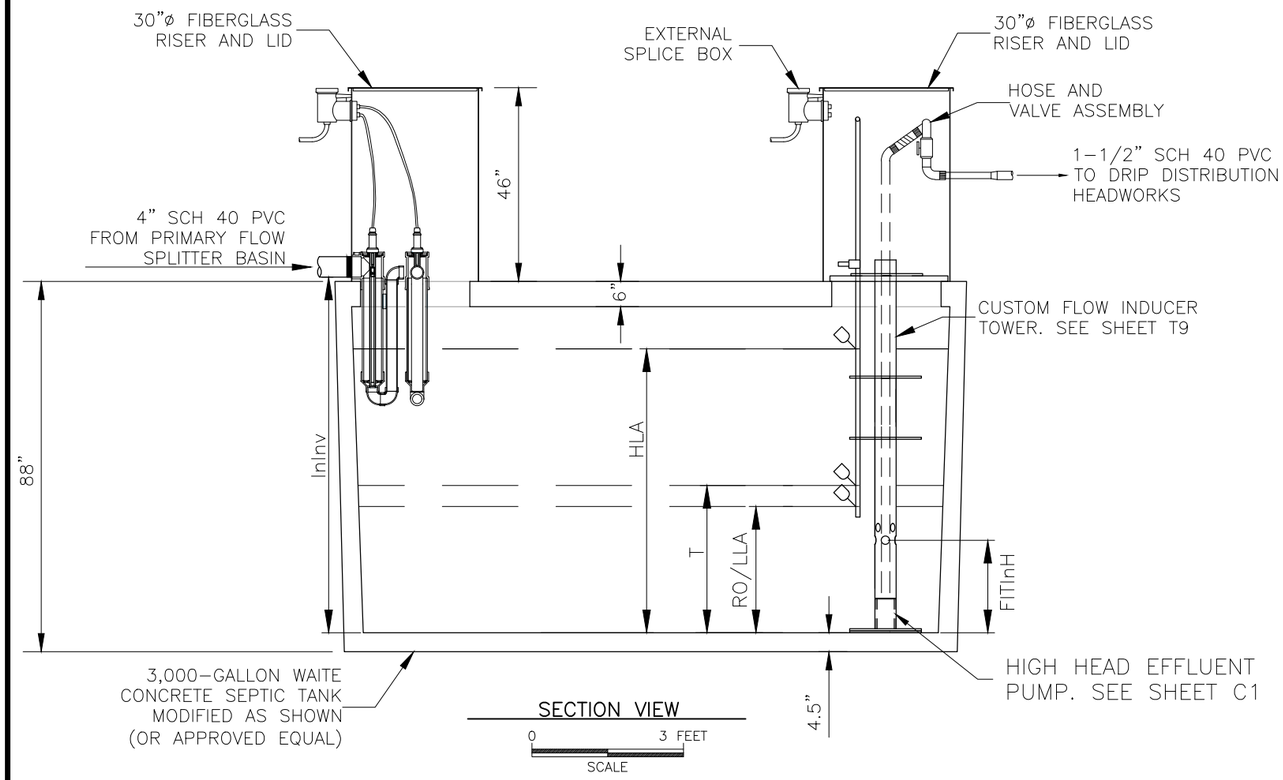

Labels and General Information			
Symbol	**Name**	**Distance From Tank Floor (in.)**	**Distance From Exterior Tank Top (in.)**
InInv	Inlet Invert	84.5	-1
HLA	High Level Alarm	67.5	16
T	Timer ON	47.5	36
RO/LLA	Redundant OFF/Low Level Alarm	42.5	41
FITDInH	Flow Inducer Tower Inlet Holes	36.5	47
Riser Height (in.)	**Inlet Pipe Size (in.)**	**Outlet Pipe Size (in.)**	**Tank Location**
46	–	–	Tank Farm (North of Merry Meadow Ct)

Orenco Equipment		
Dripfield Dosing Tank		
Quantity	**Item ***	**Description/Comments**
1	RF3046-SX-40-40+40	Fiberglass Access Riser, 30" Diameter (Inlet) with SX and 3@G40
1	RF3046+SX+SX+12+12	Fiberglass Access Riser, 30" Diameter with 2@SX and 2@G"2 (Outlet - 2 Pumps + Controls/Alarms)
2	FLD30G	Fiberglass Lid, 30" with Gasket and 4 Bolt Pattern
1	SBEX2	External Splice Box with 2 Cord Grips (1 for each Pump)
2	SBEX3	External Splice Box with 3 Cord Grips (UV AX Units - Inlet) and (Controls and Alarms - Outlet)
3	UVAX	Ultra Violet Disinfection Unit (Inlet)
1	MF3P	Float Assembly with 3 Floats
2	HV-152C	Hose and Valve Assembly, 1.25", with Ball Valve and Check Valve
1	FITD-D90	Custom Duplex Flow Inducer Tower without Pump Support Plate
2	PF2005*2	OSI Effluent Pump, 0.5 Hp, 230V, Single Phase, 60Hz, with 10-foot Power Cords
4	MA320	2-Part Epoxy for Securing Riser to Tank Adapter
2	ADH200	Caulking for Final Seal Between Riser and Tank Adapter

* Item numbers are provided as a courtesy. Since specific numbers and supplementary codes can change, supplier is to compare this information to the drawings and independently verify. Call designer if there are any inconsistencies or questions.

NOTES:
1. CLASSIFICATION FOR ELECTRICAL EQUIPMENT: UNCLASSIFIED (NFPA 820, TABLE 3, NO. 19 – INTERMEDIATE OR FINAL PUMPING STATIONS).
2. RECOMMENDED WIRING AS CLASS I, DIVISION 2.
3. MAXIMUM BURIAL DEPTH OF THIS TANK IS 48".

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FISCHER'S FOREST PARK LOSS
CLACKAMAS COUNTY

REV #	DESCRIPTION	BY	DATE

DES. BY 1BTR
DRG. BY 6NSG
CHK. BY 1GLT
DATE 8/18/2022
JOB No. 2020230021

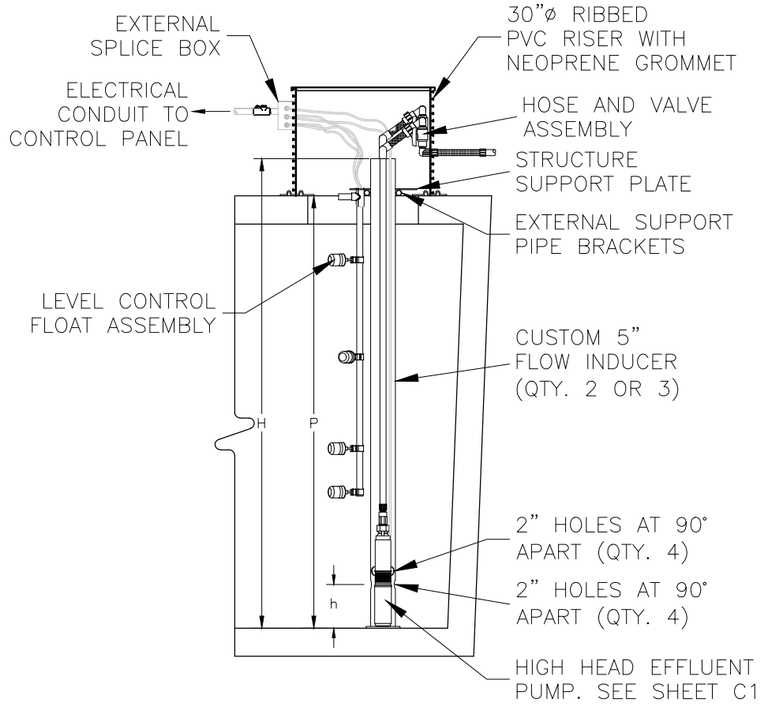
VALLEY SCIENCE AND ENGINEERING

UV/DRIPFIELD DOSING TANK

LARGE ONSITE SEWAGE SYSTEM DESIGN

SHEET
T8

C:\Users\NG711452\Desktop\Working Drafting Guist\2020230021 Clackamas County\DWG\LOSS\2020230021 LOSS T8.dwg 10/5/2022 NG711452



1 — FLOW INDUCER TOWER DETAIL

0 3 FEET

SCALE

Tank Type	Lift Tank	Recirculation Tank C	Dripfield Dosing Tank
Flow Inducer Tower Model Number	**FITD-D90**	**FITD-D90**	**FITD-D90**
Quantity	1	2	1
Flow Inducer Tube Diameter (in.)	5	5	5
Structural Plate Diameter (in.)	15	15	15
Support Pipe Length (in.)	24	24	24
H = Tower Height (in.)	90	90	90
P = Support Pipe Height (in.)	86	86	86
h = Inlet Hole Height (in.)	24	24	24
Inlet hole diameter (in.)	2	2	2
Inlet holes per tube	8	8	8
5-inch Flow Inducer Towers	2	2	2

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CLACKAMAS COUNTY

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TANK DETAILS

LARGE ONSITE SEWAGE SYSTEM DESIGN

SHEET T9

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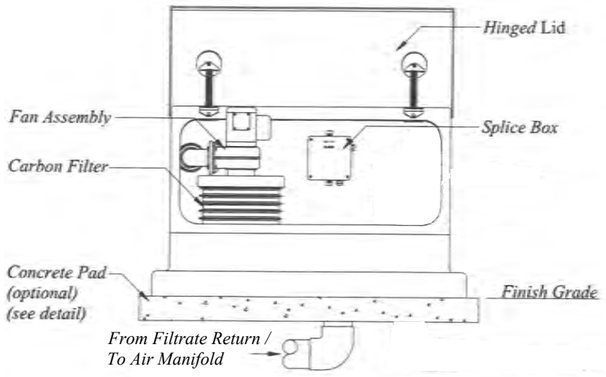
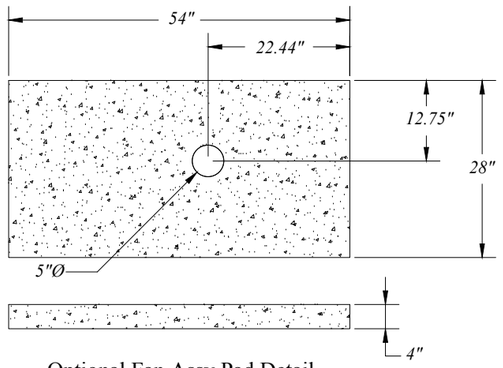
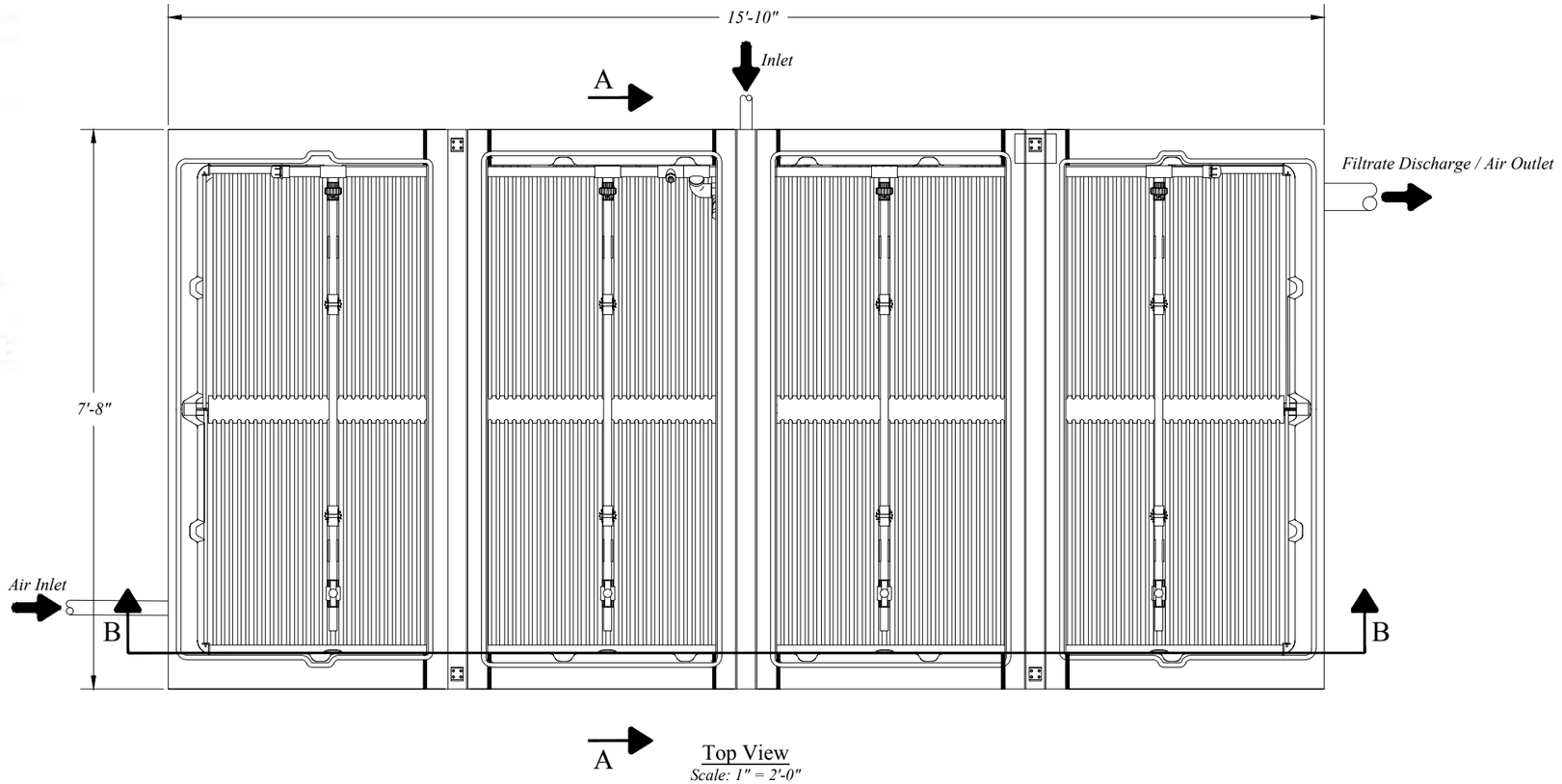


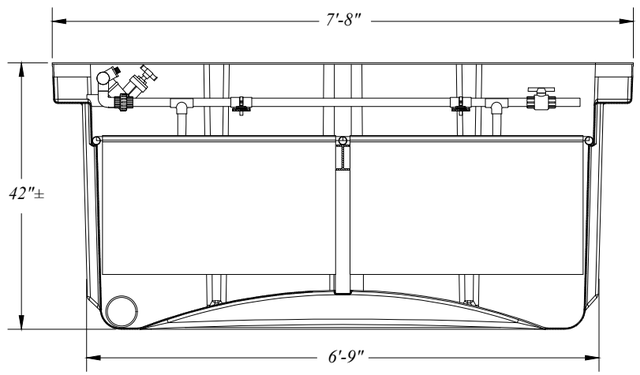
Above Ground Fan Assembly
Scale: 1" = 2'-0"



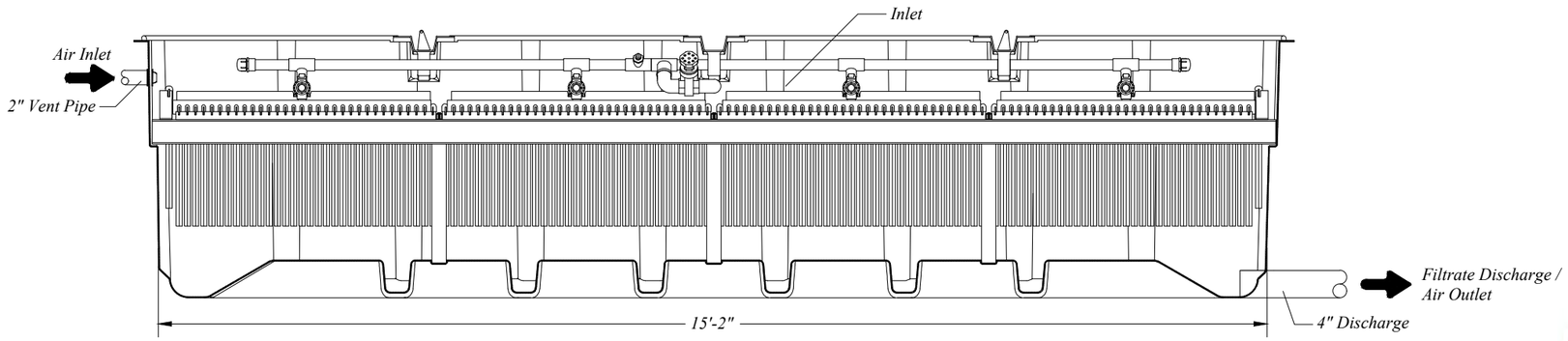
Optional Fan Assy Pad Detail
Scale: 1" = 2'-0"



Top View
Scale: 1" = 2'-0"



Section A-A
Scale: 1" = 2'-0"



Section B-B
Scale: 1" = 2'-0"

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CLACKAMAS COUNTY

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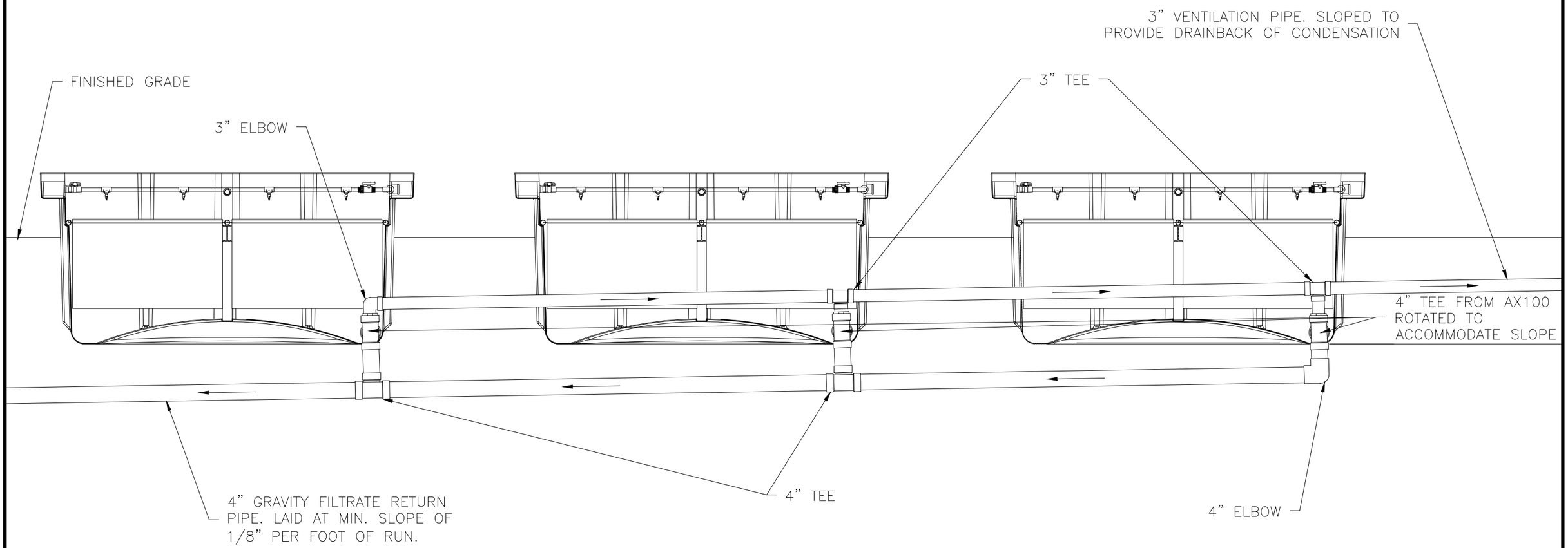
ADVANTEX FILTER DETAILS

LARGE ONSITE SEWAGE SYSTEM DESIGN

SHEET
F1

C:\Users\NG711452\Desktop\Working Drafting Guiot\2020230021 Clackamas County\DWG\LOSS\2020230021 LOSS F1.dwg 5/20/2022 DR702784



0 2'

1"=2'

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FISCHER'S FOREST PARK LOSS
CLACKAMAS COUNTY

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VALLEY SCIENCE AND ENGINEERING

ADVANTEX OUTLET DETAILS

LARGE ONSITE SEWAGE SYSTEM DESIGN

SHEET
F2

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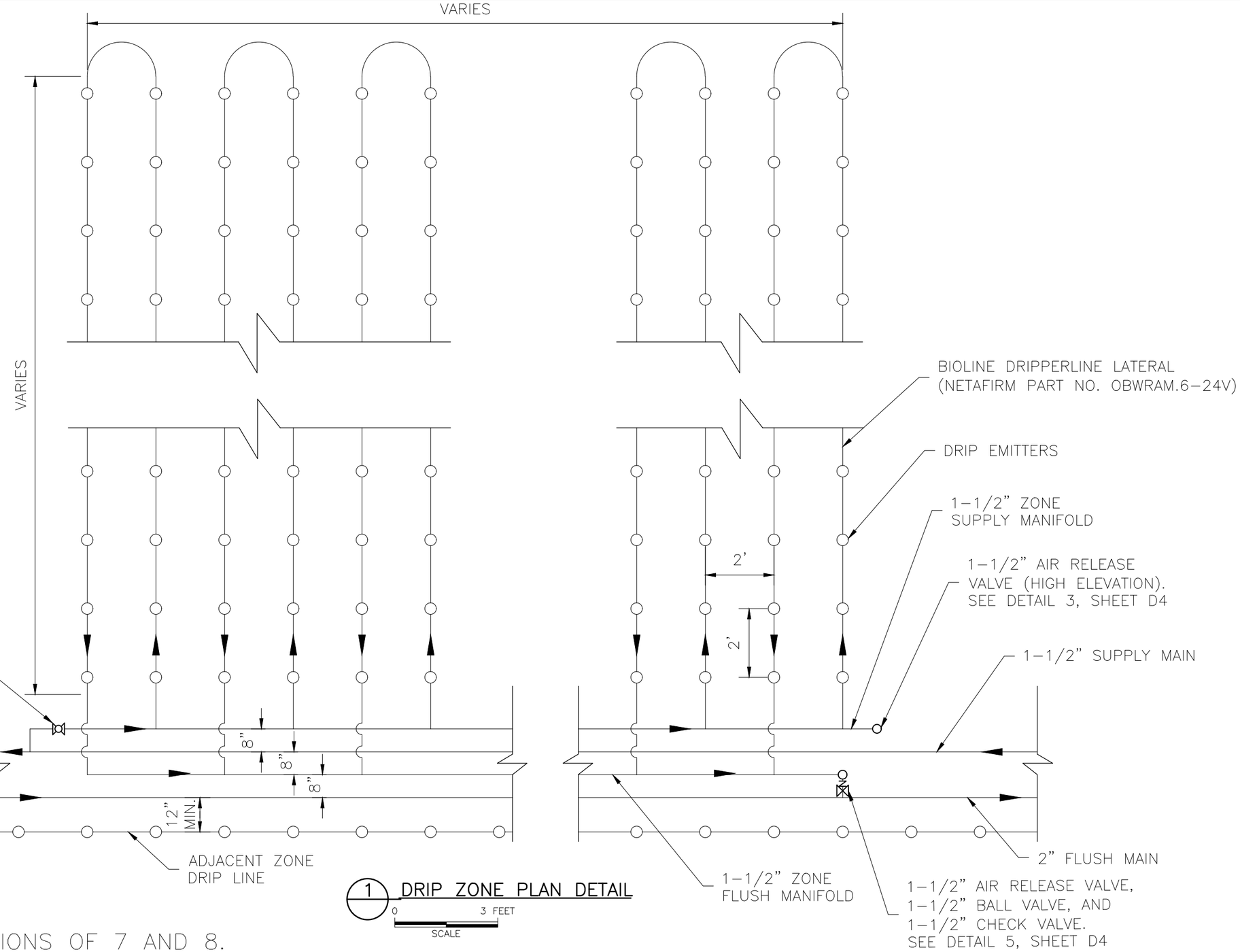

1 DRIP ZONE PLAN DETAIL

0 3 FEET

SCALE

ZONES 1-4 AND PORTIONS OF 7 AND 8.

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DRIP ZONE PLAN A

LARGE ONSITE SEWAGE SYSTEM DESIGN

SHEET D1

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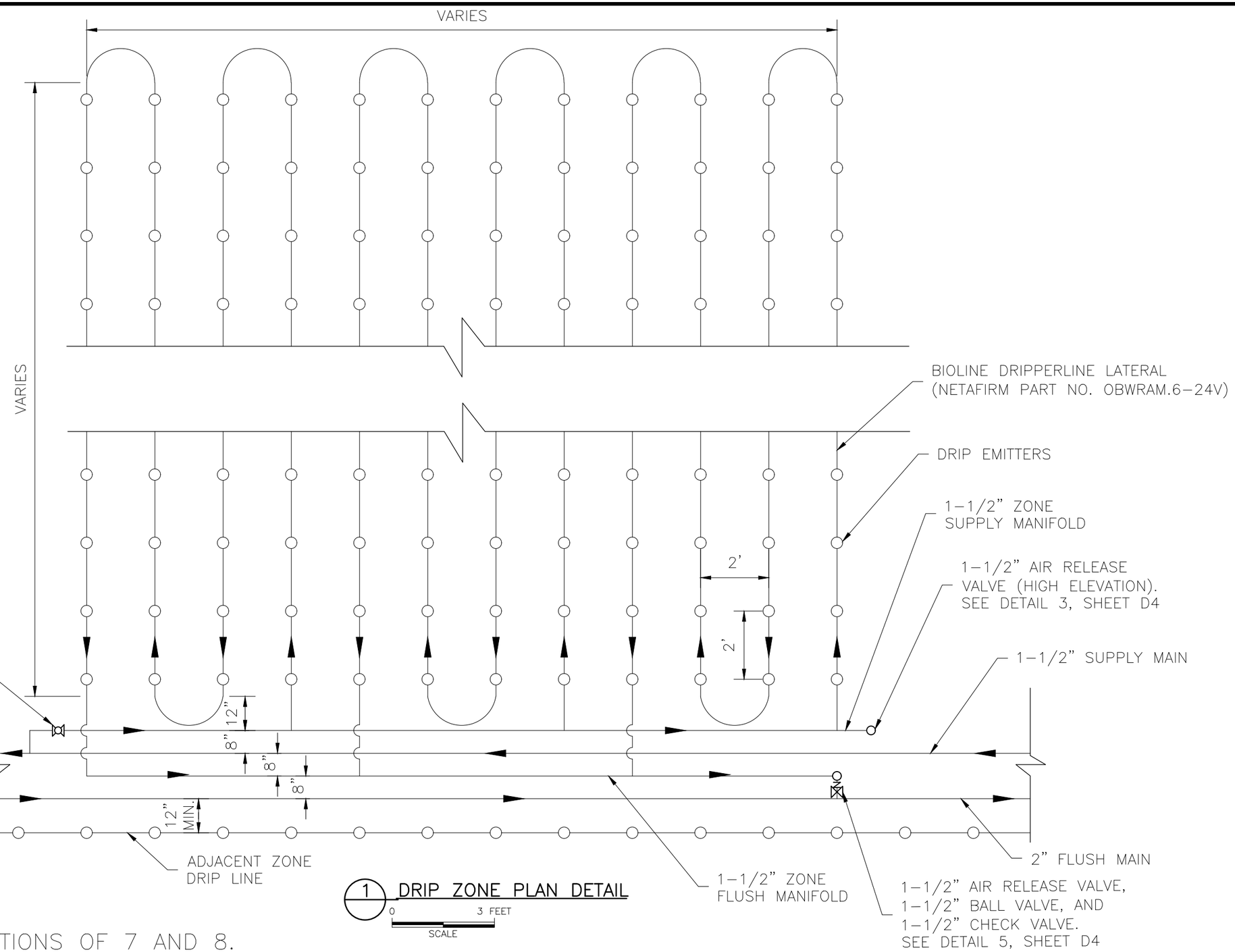

1 DRIP ZONE PLAN DETAIL

0 3 FEET

SCALE

ZONES 5, 6, AND PORTIONS OF 7 AND 8.

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DRIP ZONE PLAN B

LARGE ONSITE SEWAGE SYSTEM DESIGN

SHEET
D2

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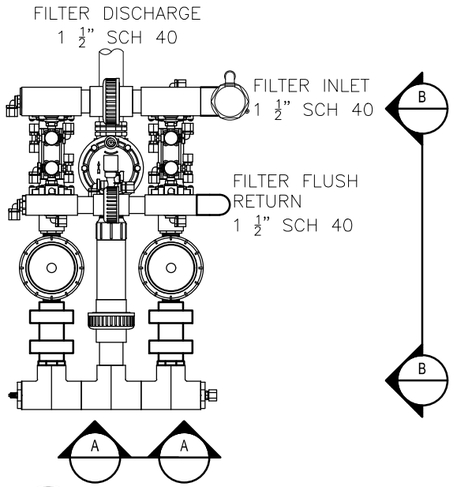
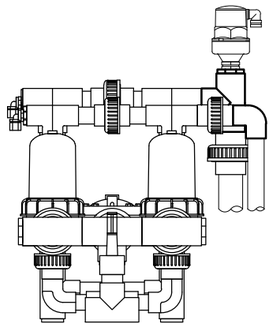


1 — HEADWORKS PLAN VIEW

0 1 FEET

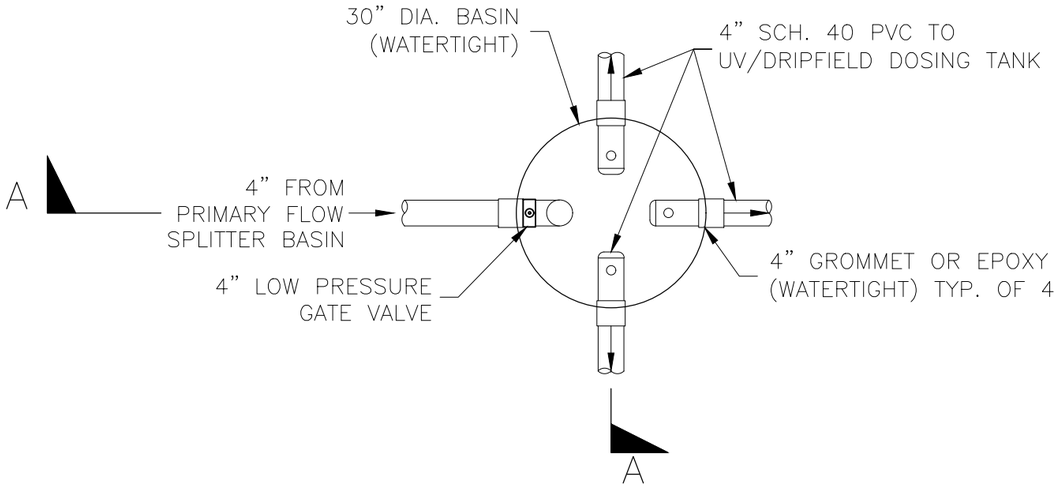
SCALE



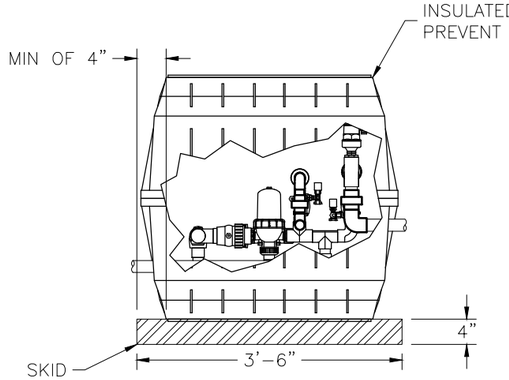
A — SECTION

0 1 FEET

SCALE



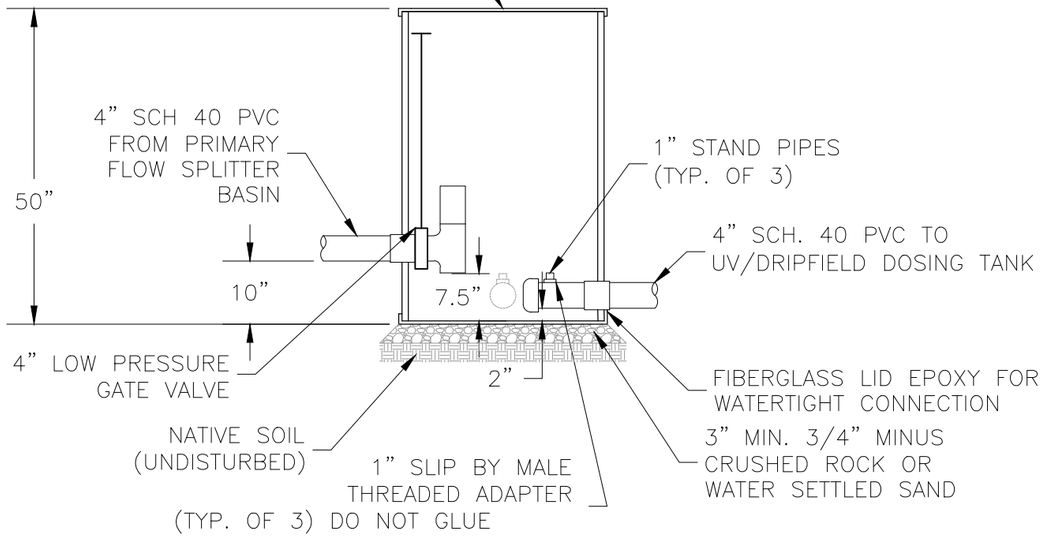
PLAN VIEW



B — SECTION

0 2 FEET

SCALE



SECTION VIEW

2 — SECONDARY FLOW SPLITTER BASIN

0 3 FEET

SCALE

NOTE:
HEADWORKS DRAWINGS PROVIDED BY JNM TECHNOLOGIES FOR REFERENCE PURPOSES. ADDITIONAL DETAILS TO FOLLOW WITH INSTALLATION INSTRUCTIONS. (MODEL NO. ACT-C200)

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CLACKAMAS COUNTY

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VALLEY SCIENCE AND ENGINEERING

DRIP SYSTEM HEADWORKS DETAILS

LARGE ONSITE SEWAGE SYSTEM DESIGN

SHEET
D3

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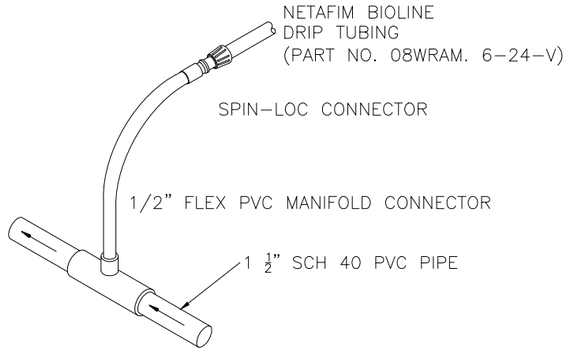
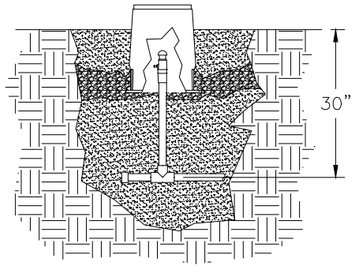
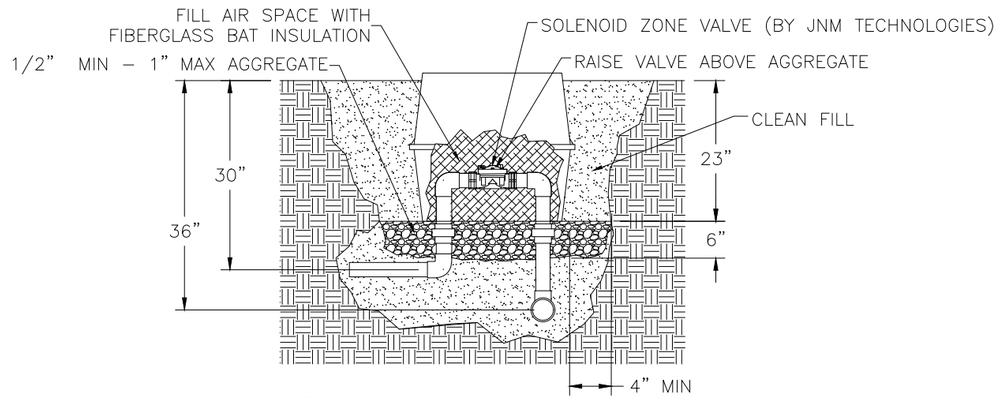


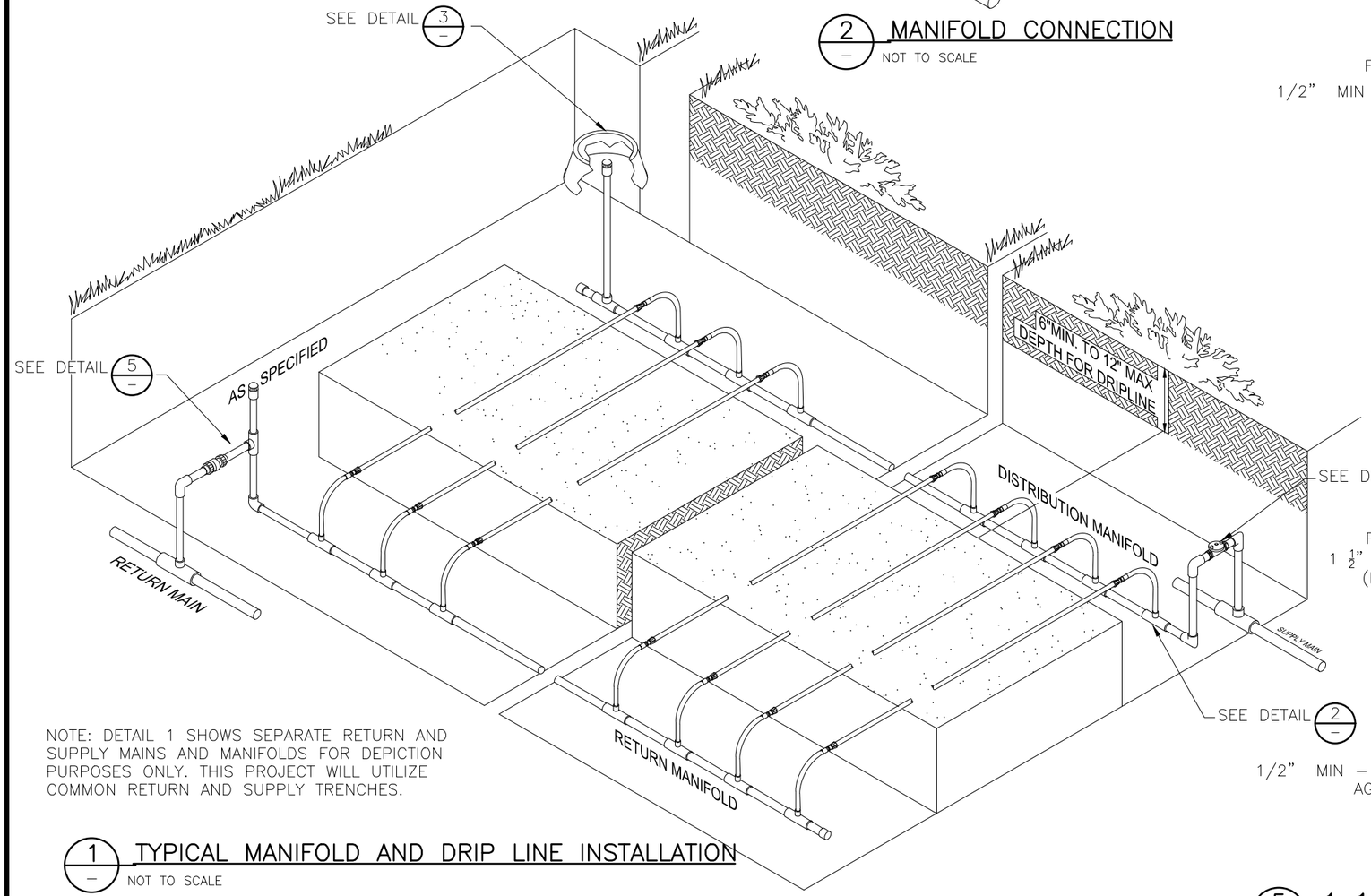
2 MANIFOLD CONNECTION
NOT TO SCALE



3 1" GUARDIAN AIR RELEASE VALVE WITH SCHRADER VALVE FOR DISTRIBUTION LINE
NOT TO SCALE

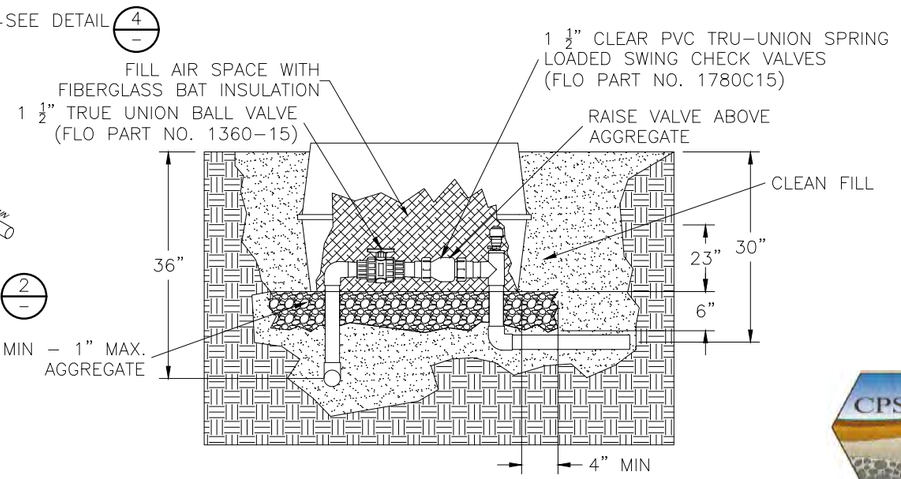


4 ZONE CONTROL VALVE
NOT TO SCALE



NOTE: DETAIL 1 SHOWS SEPARATE RETURN AND SUPPLY MAINS AND MANIFOLDS FOR DEPICTION PURPOSES ONLY. THIS PROJECT WILL UTILIZE COMMON RETURN AND SUPPLY TRENCHES.

1 TYPICAL MANIFOLD AND DRIP LINE INSTALLATION
NOT TO SCALE



5 1 1/2" BALL AND CHECK VALVE FOR RETURN LINE
NOT TO SCALE

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FISCHER'S FOREST PARK LOSS
CLACKAMAS COUNTY

REV #	DESCRIPTION	BY	DATE

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VALLEY SCIENCE AND ENGINEERING

DRIP SYSTEM FIELD DETAILS

LARGE ONSITE SEWAGE SYSTEM DESIGN

SHEET
D4

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Recirculation Pumps

Timer Settings (Minutes)	5:1 Rate 4:1 Split
ON	0.50
OFF	2.45
ON	1.70
OFF	3.32
ON	1.70
OFF	0.81
ON	1.70
OFF	1.65

Low Timer Function - Alternating Cycles at Reduced ON Time
Minimum of 1 Cycle (Complete Each Cycle - ON Time - Regardless of Float Position)
Timer Settings: 30 seconds (0.50 minutes) ON (40 gpm - 20 gallons per dose)

Normal Timer Function - Alternating Cycles
Minimum of 1 Cycle (Complete Each Cycle - ON Time - Regardless of Float Position)
Timer Settings: 1 minute 42 seconds ON (40 gpm - 68 gallons per dose)

Override Timer Function - Alternating Cycles at Increased Frequency
Minimum of 2 Cycles (Complete Each Cycle - ON Time - Regardless of Float Position)
Timer Settings: 1 minute 42 seconds ON (40 gpm - 136 gallons per dose)

High Level Timer Function - Alternating Cycles at Increased Frequency (Two Pumps)
Minimum of 3 Cycles (Complete Each Cycle - ON Time - Regardless of Float Position)
Timer Settings: 1 minute 42 seconds ON (40 gpm - 56 gallons per dose)

Dripfield Pumps

Drip Timer Function - Alternating Cycles (1 Pump to Dose, 2 Pumps to Flush - Dripfield Dosing Tank)
Complete Each Cycle, Regardless of Float Position
Timer Settings: 12 minutes ON (192 gallons per dose)
0 minutes, 15 seconds OFF

Minimum Power Requirements at Panel
230 Single Phase - 115 Single Phase VAC, 60 Hertz
2 @ 20 AMP (1 for each Lift Pump, 230 VAC)
3 @ 20 AMP (1 for each Recirculation Pump, 230 VAC)
2 @ 20 AMP (1 for each Dripfield Pump, 230 VAC)
1 @ 15 AMP (115 VAC for Ventiliation Fan)
1 @ 10 AMP (115 VAC for Panel Heater)
1 @ 10 AMP (115 VAC for Panel)

60 AMP Service (L1, L2, N, G), 230 VAC Single Phase, (Minimum) from Power Source for Pumps
10 AMP Service (L1, N, G), 115 VAC Single Phase from Power Source for Heater, Fan, and Controls

CONTROLS QUOTE NUMBER TO BE VERIFIED WITH DESIGNER PRIOR TO SUBMITTING ORDER WITH MANUFACTURER
REFERENCE: ORENCO QUOTE NUMBER 081721SK4.3

Lift Pumps (Total of 2)
PF 100512
6.3 running amps at 230 VAC
Five Floats High Level Alarm
Lag Pump ON
Lead Pump ON
Pumps OFF
Redundant Off/Low Level Alarm

Recirculation Pumps (Total of 3)
PF 500712
8.5 running amps at 230 VAC
Four Floats High Level Alarm and Timer
Override Timer
Normal Timer ON/OFF
Redundant Off/Low Level Alarm

Dripfield Pumps (Total of 2)
PF 200512
6.4 running amps at 230 VAC
Three Floats High Level Alarm
Normal Timer ON
Redundant Off/Low Level Alarm

AdvanTex Blower

MASTER CONTROL PANEL DATA - CUSTOM TCOM

REQUIRED OPTIONS

QUANTITY	DESCRIPTION
7	ELAPSED TIME METERS: 115 VAC, 7-DIGIT, NONRESETTABLE
7	COUNTERS: 115 VAC, 6-DIGIT, NONRESETTABLE HORIZONTAL BASE MOUNT
7	PUMP RUN LIGHTS (GREEN WITH LABEL - 1 FOR EACH PUMP)
2	FAN AND UV FAIL LIGHT (BLUE WITH LABEL)
9	CURRENT SENSOR (1 FOR EACH PUMP, UV, AND FAN)
1	ALARM LIGHT - LIFT PUMPS HIGH LEVEL ALARM (RED WITH LABEL)
1	ALARM LIGHT - LIFT PUMPS LOW LEVEL ALARM (RED WITH LABEL)
1	ALARM LIGHT - RECIRCULATION PUMPS HIGH LEVEL TIMER AND ALARM (RED WITH LABEL)
1	INDICATOR LIGHT - RECIRCULATION PUMPS OVERRIDE TIMER (AMBER WITH LABEL - NO AUDIBLE)
1	INDICATOR LIGHT - RECIRCULATION PUMPS NORMAL TIMER (BLUE WITH LABEL - NO AUDIBLE)
1	INDICATOR LIGHT - RECIRCULATION PUMPS LOW TIMER (GREEN WITH LABEL - NO AUDIBLE)
1	ALARM LIGHT - RECIRCULATION PUMPS LOW LEVEL ALARM (RED WITH LABEL)
8	INDICATOR LIGHT - DRIP FIELD ZONE (GREEN WITH LABEL)
1	INDICATOR LIGHT - FILTER FLUSH (AMBER WITH LABEL)
1	INDICATOR LIGHT - FIELD FLUSH (AMBER WITH LABEL)
1	ALARM LIGHT - DRIP TANK HIGH LEVEL ALARM (RED WITH LABEL)
1	ALARM LIGHT - DRIP TANK LOW LEVEL ALARM (RED WITH LABEL)
1	GENERAL ALARM DRY CONTACT (REMOTE ALARM RELAY)
1	PANEL HEATER (400 WATT) WITH ADJUSTABLE THERMOSTAT
1	SURGE ARRESTOR
1	TOUCH SCREEN INTERFACE
1	INDUSTRIAL 4G ROUTER
1	OMNI DIRECTIONAL LTE/4G CELL ANTENNA KIT

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VALLEY SCIENCE AND ENGINEERING

CONTROL PANEL DETAILS

LARGE ONSITE SEWAGE SYSTEM DESIGN

SHEET
C1

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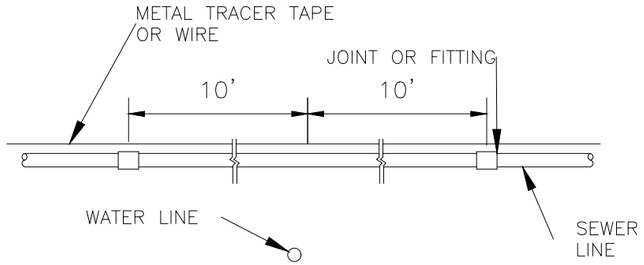
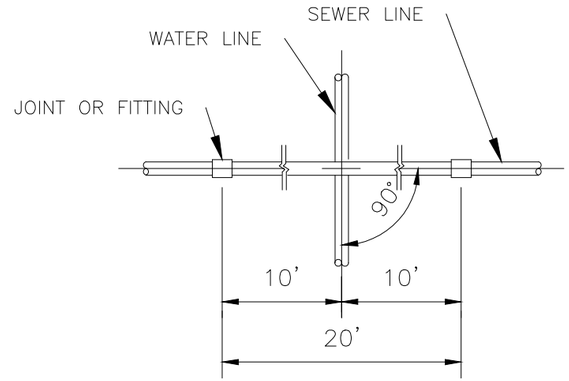


NOTE: IF THE SEPARATION DISTANCE BETWEEN THE PIPES CANNOT BE ACHIEVED, A SECTION OF THE WATER LINE SHALL BE REPLACED WITH A 20' LENGTH OF SCH 40 PVC, CENTERED ON THE INTERSECTION AS SHOWN. THE PIPES SHALL BE BEDDED SO THAT THEY DO NOT TOUCH AT THE INTERSECTION.

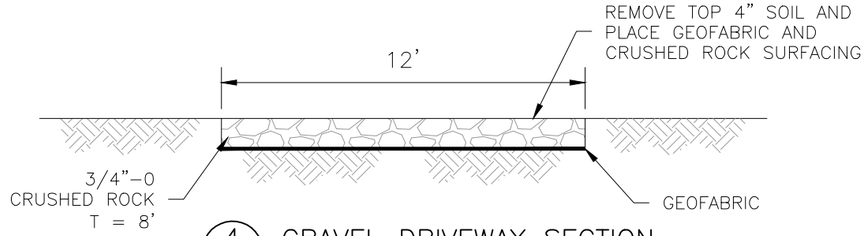
1 – EFFLUENT SEWER / WATER LINE CROSSING – SECTION

0 2 FEET
SCALE



2 – EFFLUENT SEWER / WATER LINE CROSSING – PLAN

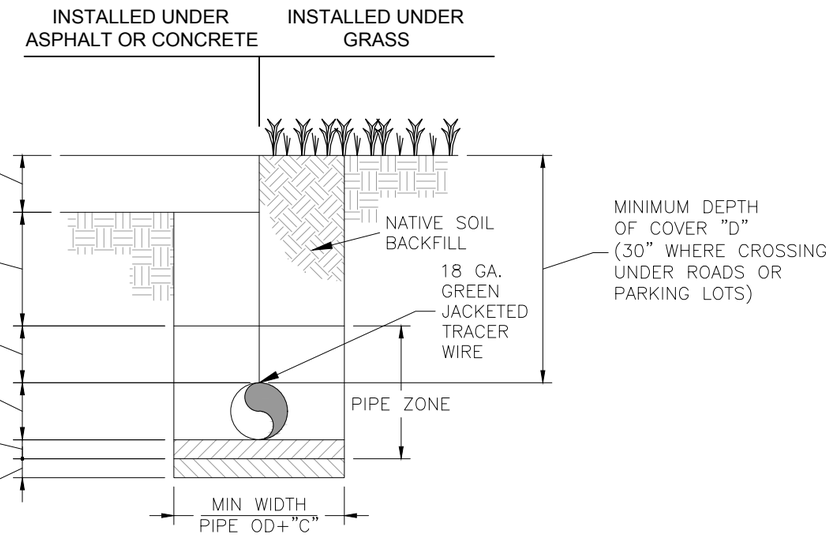
0 2 FEET
SCALE



4 – GRAVEL DRIVEWAY SECTION

NOT TO SCALE

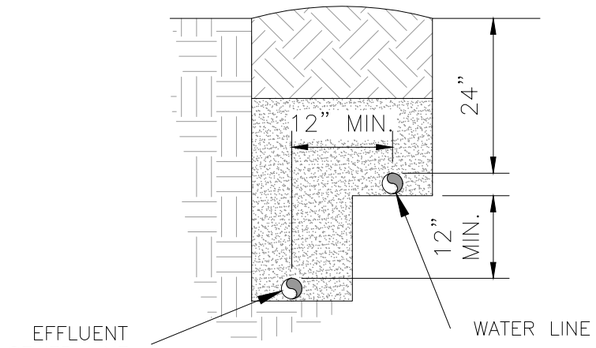
1. CHOOSE GEOTEXTILE PER TABLE 4 IN OREGON STATE SPECIFICATION FOR CONSTRUCTION SECTION 02320 AND INSTALLED ACCORDING TO 00350. GEOTEXTILE CAN BE WOVEN OR NON–WOVEN.
2. CRUSHED ROCK SHOULD BE COMPACTED TO 95% OF THE MAXIMUM DRY DENSITY PER AASHTO T99.



UTILITY TYPE	A	B	C	D
GRAVITY SEWER	2"	4"	12"	18"
PRESSURE SEWER	2"	6"	12"	24"

3 – TRANSPORT PIPING – SECTION (FORCE MAIN, BUILDING SEWER, AND EFFLUENT SEWER, TYP) DETAIL

0 2 FEET
SCALE



5 – PARALLEL / COMMON TRENCH DETAIL

0 2 FEET
SCALE

Certified Professional Soil Scientist
BRIAN T. RABE
15239 Exp. 12/31/21
Registered Wastewater Specialist
No. EH W-44840 Exp. 9/30/21

FISCHER'S FOREST PARK LOSS
CLACKAMAS COUNTY

REV #	DESCRIPTION	BY	DATE

DES. BY 1BTR
DRG. BY 6NSG
CHK. BY 1GLT
DATE 8/18/2022
JOB No. 2020230021

VALLEY SCIENCE AND ENGINEERING

MISCELLANEOUS DETAILS

LARGE ONSITE SEWAGE SYSTEM DESIGN

SHEET
M1

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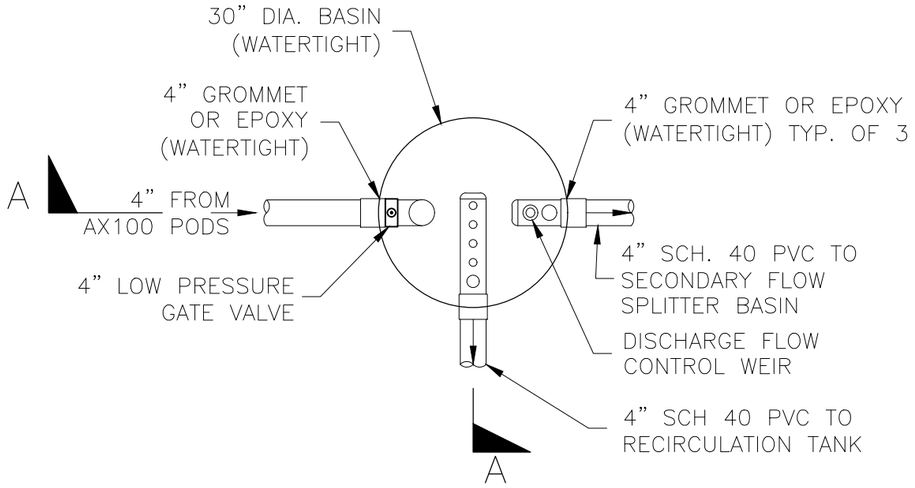
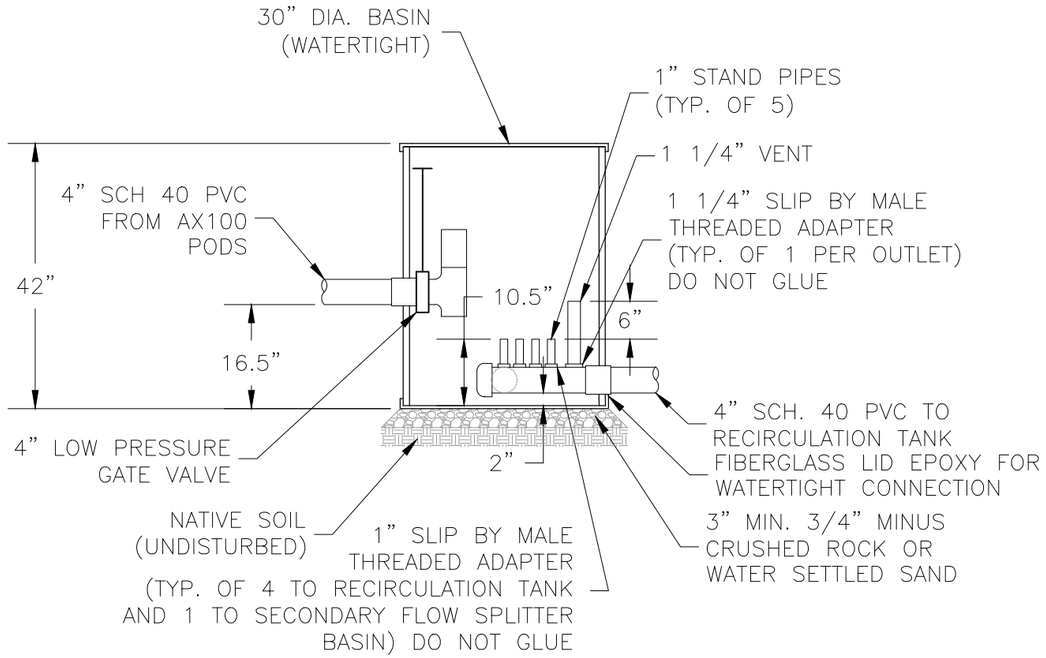


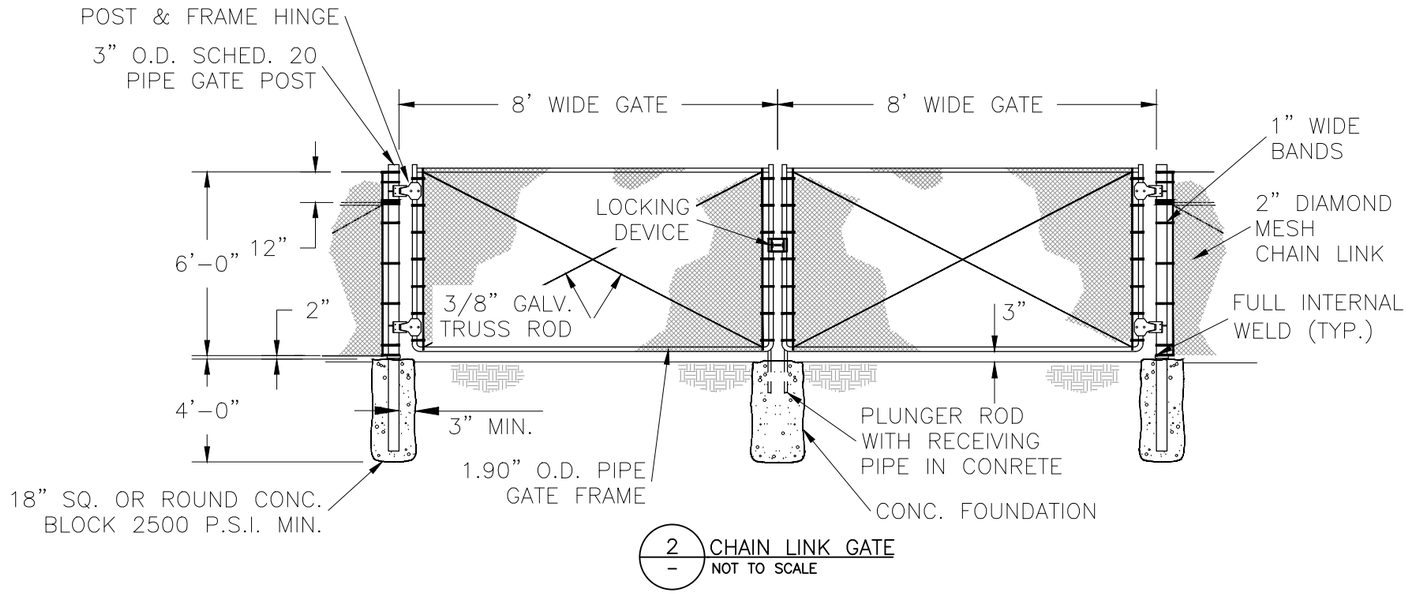
PLAN VIEW



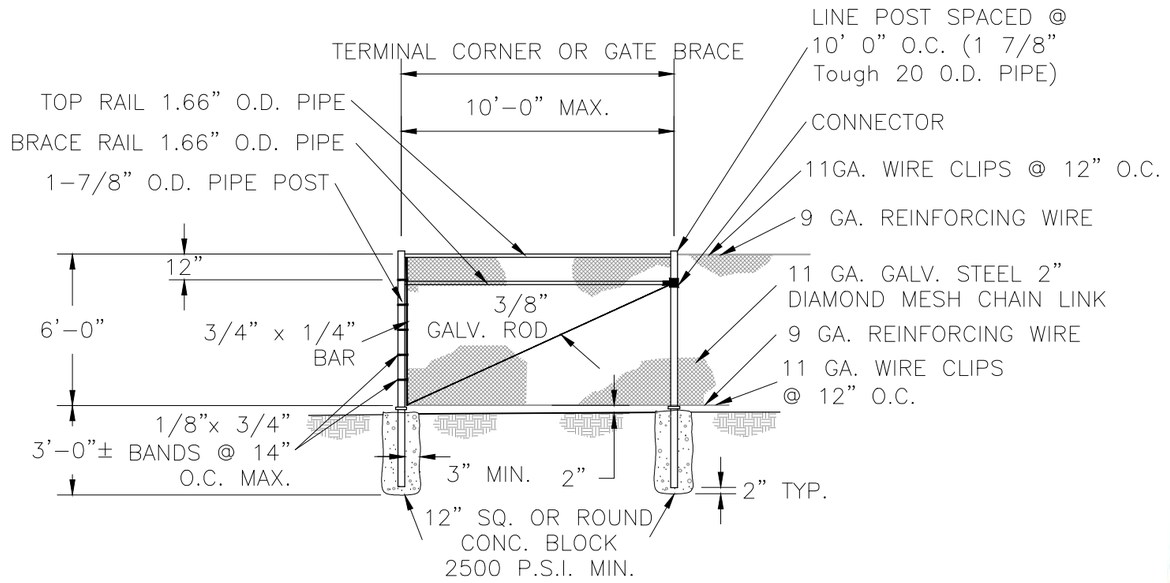
SECTION VIEW

1 – PRIMARY FLOW SPLITTER BASIN

0 3 FEET
SCALE



2 – CHAIN LINK GATE
NOT TO SCALE



3 – CHAIN LINK FENCE
NOT TO SCALE

Certified Professional
Soil Scientist
BRIAN T. RABE
15239 Exp. 12/31/21
Registered Wastewater Specialist
No. EH-W-448430 Exp. 9/30/21

FISCHER'S FOREST PARK LOSS
CLACKAMAS COUNTY

REV #	DESCRIPTION	BY	DATE

DES. BY 1BTR
DRG. BY 6NSG
CHK. BY 1GLT
DATE 8/18/2022
JOB No. 2020230021

VALLEY SCIENCE AND ENGINEERING

MISCELLANEOUS DETAILS

LARGE ONSITE SEWAGE SYSTEM DESIGN

SHEET
M2

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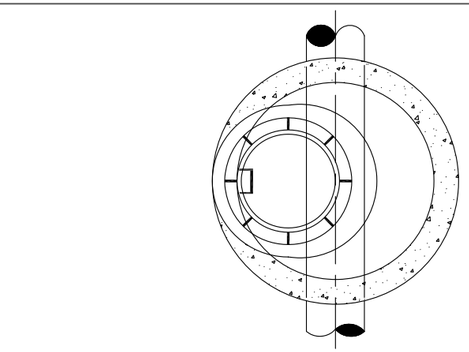
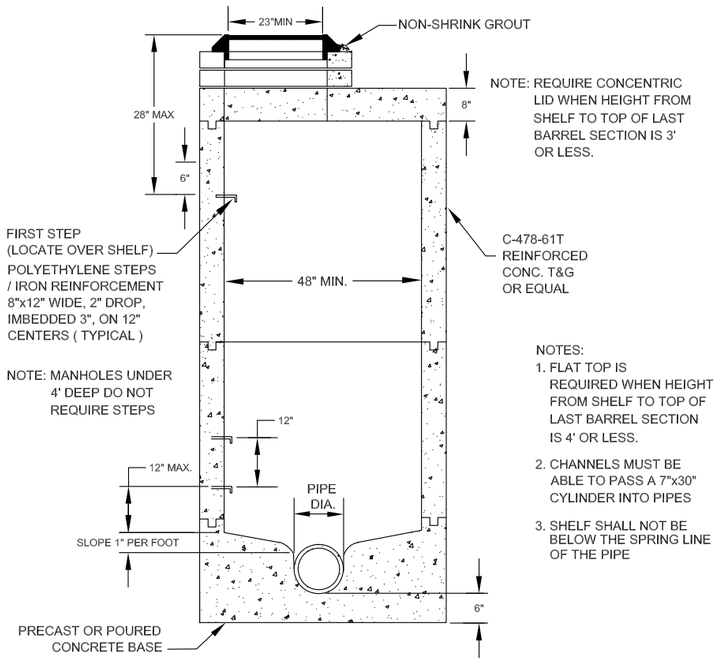


NOTE: MANHOLE LID TO BE 6" ABOVE FINISH GRADE IN EASMENTS BARREL SECTION IS 3'



NOTE: REQUIRE CONCENTRIC LID WHEN HEIGHT FROM SHELF TO TOP OF LAST BARREL SECTION IS 3' OR LESS.

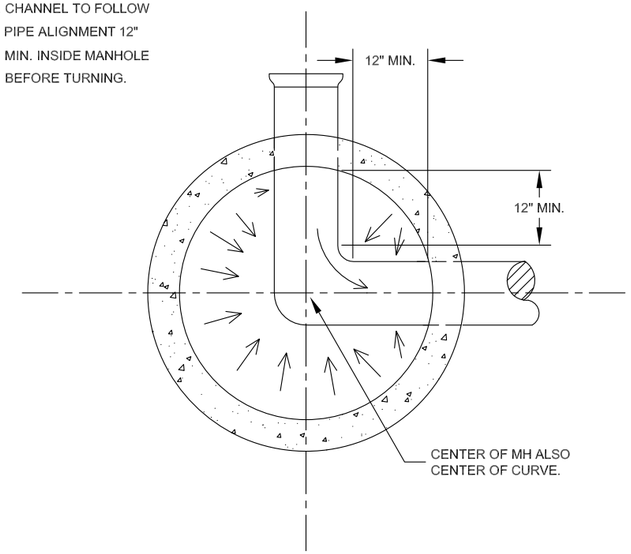
C-478-61T
REINFORCED
CONC. T&G
OR EQUAL

NOTES:
1. FLAT TOP IS REQUIRED WHEN HEIGHT FROM SHELF TO TOP OF LAST BARREL SECTION IS 4' OR LESS.
2. CHANNELS MUST BE ABLE TO PASS A 7"x30" CYLINDER INTO PIPES
3. SHELF SHALL NOT BE BELOW THE SPRING LINE OF THE PIPE

MANHOLE-FLAT TOP

	CLACKAMAS COUNTY 150 BEAVERCREEK ROAD OREGON CITY, OR 97045	*APPROVAL DATE:* 2013 *SCALE:* N.T.S. MANHOLE-FLAT TOP	*STANDARD DRAWING* SAN-005

NOTES:
1. CHANNELS MUST BE ABLE TO PASS A 7" X 30" CYLINDER INTO PIPES.
2. CHANNEL TO FOLLOW PIPE ALIGNMENT 12" MIN. INSIDE MANHOLE BEFORE TURNING.



CHANNEL-90 DEGREE MANHOLE

	CLACKAMAS COUNTY 150 BEAVERCREEK ROAD OREGON CITY, OR 97045	*APPROVAL DATE:* 2013 *SCALE:* N.T.S. CHANNEL-90 DEGREE	*STANDARD DRAWING* SAN-013

FISCHER'S FOREST PARK
CLACKAMAS COUNTY

NO.	DATE	BY	REVISIONS

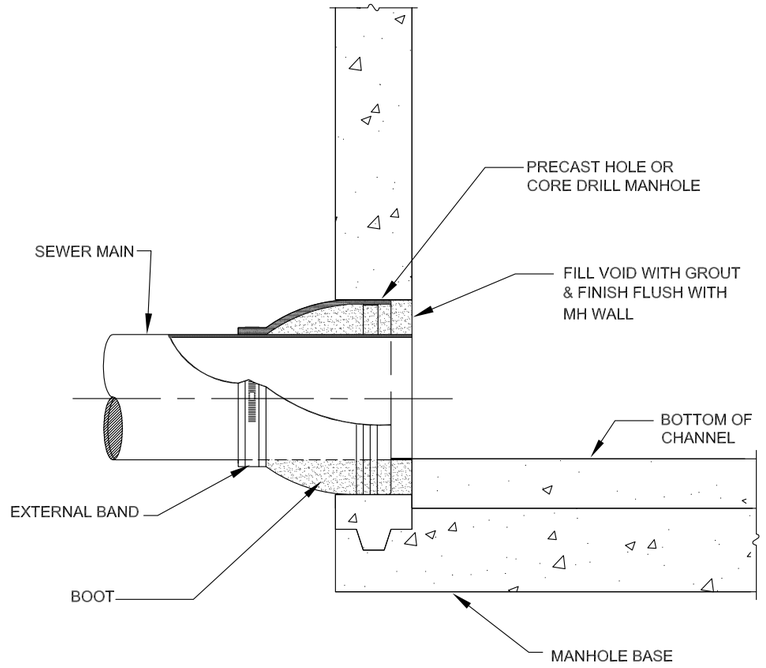
DESIGNED BY:	DRAWN BY:
CHECKED BY:	
DATE: OCTOBER 2022	
PROJECT -NO: P632278/700220304	

WATER ENVIRONMENT SERVICES
Water Quality Protection · Surface Water Management
Wastewater Collection and Treatment

LARGE ONSITE SEWAGE SYSTEM DESIGN

MANHOLE DETAILS

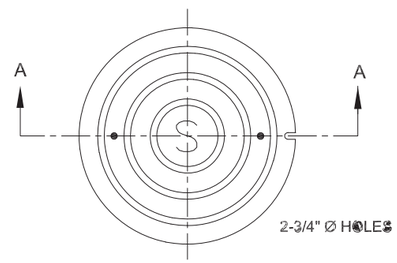
DRAWING NO.
M3

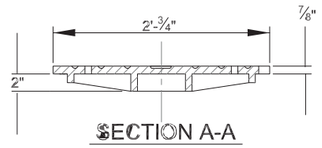


MANHOLE-CONNECTION FLEXIBLE
(KOR-N-SEAL OR EQUAL)

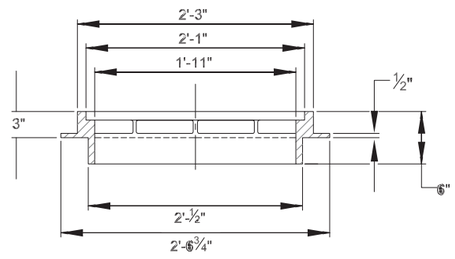
	CLACKAMAS COUNTY 150 BEAVERCREEK ROAD OREGON CITY, OR 97045	*APPROVAL DATE:* 2013 *SCALE:* N.T.S. MANHOLE-CONNECTION FLEXIBLE	*STANDARD DRAWING* SAN-008

SUBURBAN





SECTION A-A



FRAME & COVER SUBURBAN

NOTES

1. SUBURBAN FRAME & COVER CAN BE USED IN EASEMENTS AND SUBDIVISION STREETS EXCEPT COLLECTOR, ARTERIAL, AND INDUSTRIAL STREETS, OR AS NOTED ON CONSTRUCTION PLANS.
2. SANITARY COVER WILL HAVE 2 -3/4" Ø HOLES.

	CLACKAMAS COUNTY 150 BEAVERCREEK ROAD OREGON CITY, OR 97045	*APPROVAL DATE:* 2013 *SCALE:* N.T.S. FRAME & COVER SUBURBAN	*STANDARD DRAWING* SAN-010

FISCHER'S FOREST PARK
CLACKAMAS COUNTY

NO.	DATE	BY	REVISIONS

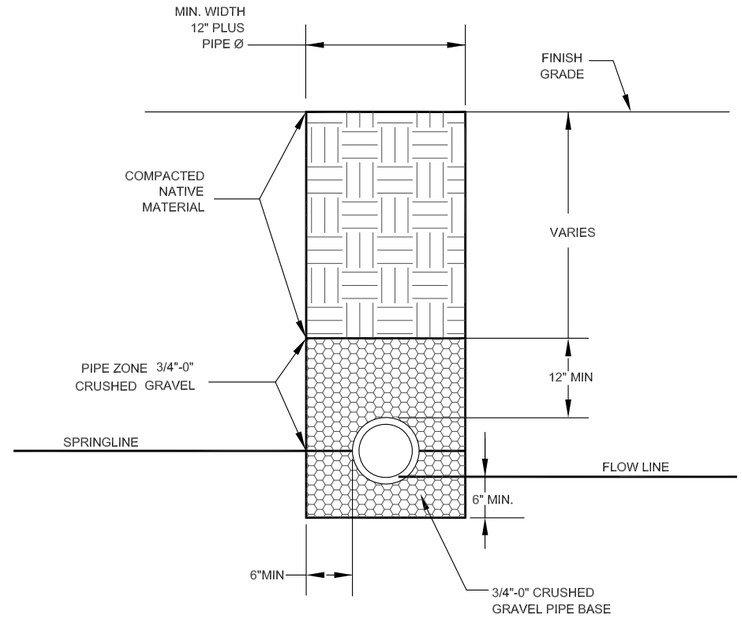
DESIGNED BY: | DRAWN BY:
CHECKED BY:
DATE: OCTOBER 2022
PROJECT NO: P632278/700220304

WATER ENVIRONMENT SERVICES
Water Quality Protection · Surface Water Management
Wastewater Collection and Treatment

LARGE ONSITE SEWAGE SYSTEM DESIGN

MANHOLE DETAILS

DRAWING NO.
M4



BACKFILL-CLASS "A"

8–INCH PVC C900 PIPE TRENCH

	CLACKAMAS COUNTY 150 BEAVERCREEK ROAD OREGON CITY, OR 97045	*APPROVAL DATE:* 2013 *SCALE:* N.T.S. BACKFILL-CLASS "A"	*STANDARD DRAWING* SAN-001

FISCHER'S FOREST PARK
CLACKAMAS COUNTY

NO.	DATE	BY	REVISIONS

DESIGNED BY:	DRAWN BY:
CHECKED BY:	
DATE: OCTOBER 2022	
PROJECT NO: P632278/700220304	

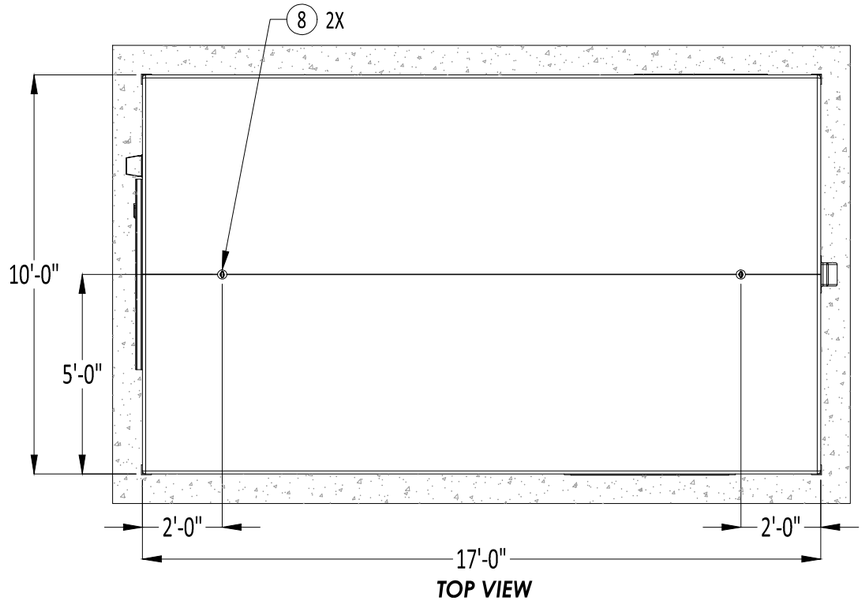
WATER ENVIRONMENT SERVICES
Water Quality Protection · Surface Water Management
Wastewater Collection and Treatment

LARGE ONSITE SEWAGE SYSTEM DESIGN

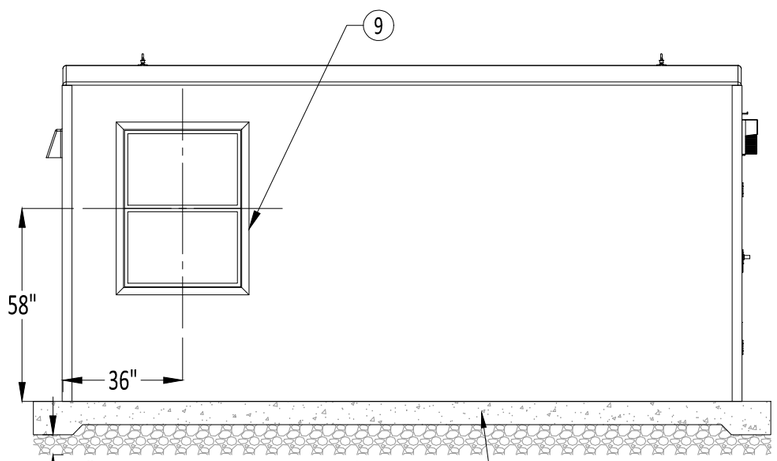
8–INCH PVC C900 PIPE DETAILS

DRAWING NO.
M5

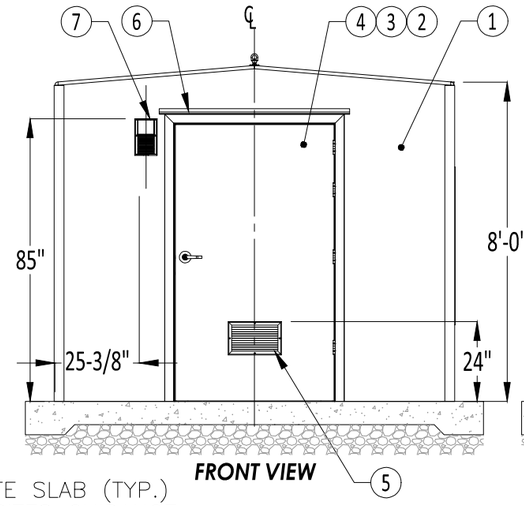
ITEM NO.	DESCRIPTION	QTY.
1	DURAFIBER BUILDING WITH BRONZE TONE CORNER TRIM, 10'W X 8'H X 17'L X 3-3/8" WALL CONSTRUCTIONS, EXTERIOR COLOR TORQUE TAN, INTERIOR COLOR WHITE	1
2	HYDRAULIC DOOR CLOSER, SLIMLINE, WITH HOLD OPEN	1
3	ENTRANCE DOOR LEVER, GRADE 1, CYLINDRICAL LOCKSET	1
4	FIBERGLASS 4' DOOR, RIGHT HAND REVERSE	1
5	ALUMINUM DOOR LOUVER, 16"W X 10"H DAYTON 5NKL0	1
6	FIBERGLASS RAIN DIVERTER, 4'-0" COLOR TORQUE TAN	1
7	EXTERNAL LIGHT, LITHONIA TWS LED 1 50K 120 PE	1
8	LIFTING EYE, 1/2" GALVANIZED	2
9	WINDOW, 36" X 48", WHITE VINYL WINDOW W/ MESH SCREEN	1



TOP VIEW

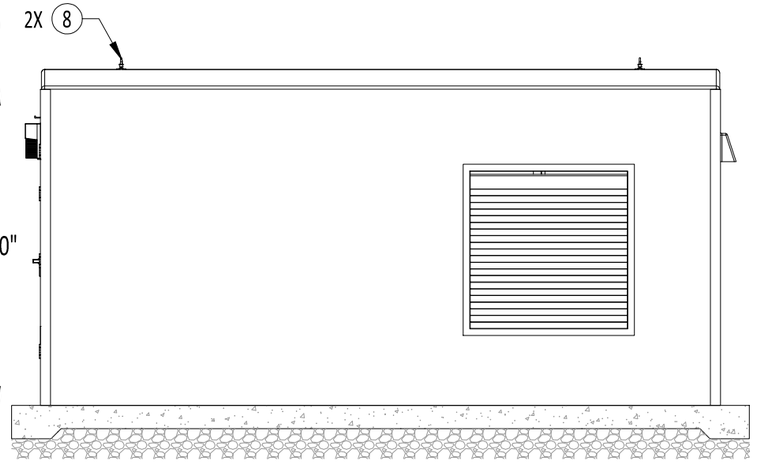


SIDE VIEW



FRONT VIEW

REINFORCED CONCRETE SLAB (TYP.)
PER ORENCO COMPOSITES GUIDANCE
DOCUMENT AT TIME OF SUBMITTAL



SIDE VIEW

CUSTOMER APPROVAL:_____DATE:_____

BY THIS SIGNATURE, CUSTOMER INDICATES THAT IT HAS REVIEWED THIS SUBMITTAL DRAWING AND FOUND THAT IT MEETS ALL OF THE DESIGNER'S FUNCTIONAL REQUIREMENTS AND/OR SPECIFICATIONS. CUSTOMER HEREBY AUTHORIZES ORENCO TO MANUFACTURE THE CUSTOM PRODUCT IN ACCORDANCE WITH THIS SUBMITTAL DRAWING.

UNLESS SPECIFIED: DIMS. ARE INCHES
TOLERANCES: FRACTION: ± 1/16" ANGULAR: ± .5° DECIMAL: ± .02 CRITICAL: ± .005

DATE: 12/16/2021 | DATE APRVD: | DATE APRVD:

DRAWN BY: QARAMBURO | APRVD BY: | APRVD BY:

NAME: DFS100817-3-EW-4RHR

DESCRIPTION: BUILDING, 10'W X 8'L X 17'L X 3-3/8" WALL

REVISION: | SHEET(S): 2 OF 4

Orenco COMPOSITES

CPSS
Certified Professional Soil Scientist
BRIAN T. RABE
15239 Exp. 12/31/21
Registered Wastewater Specialist
No. EH-W-448430 Exp. 9/30/21

(SOURCE: ©ORENCO SYSTEMS®, INC.)

FISCHER'S FOREST PARK LOSS
CLACKAMAS COUNTY

REV #	DESCRIPTION	BY	DATE

DES. BY 1BTR
DRG. BY 6NSG
CHK. BY 1GLT
DATE 8/18/2022
JOB No. 2020230021

VALLEY SCIENCE AND ENGINEERING

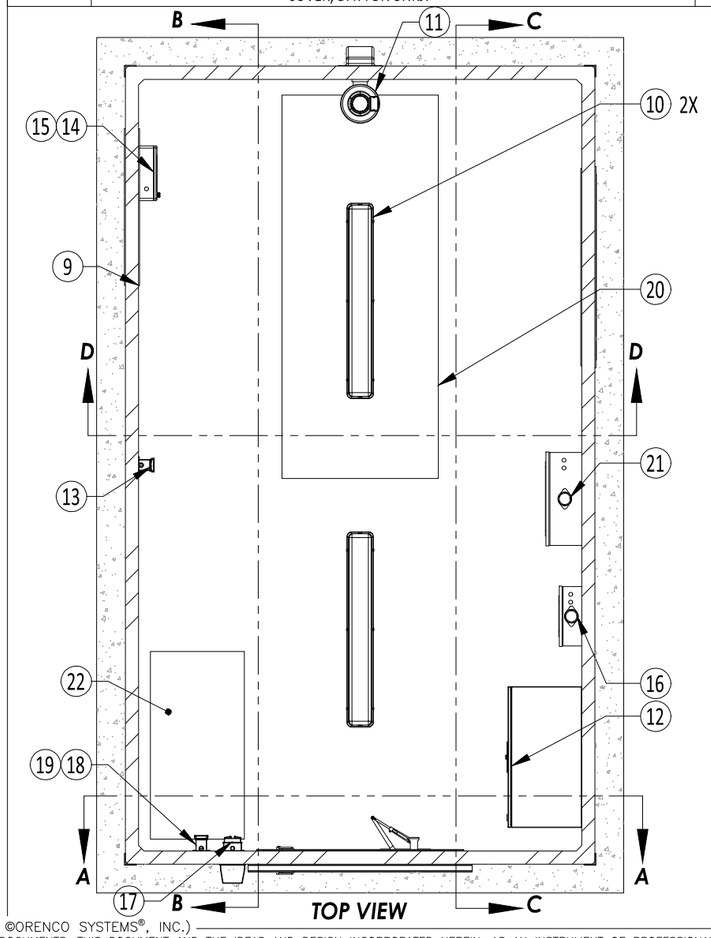
CONTROLS SHELTER – EXTERIOR

LARGE ONSITE SEWAGE SYSTEM DESIGN

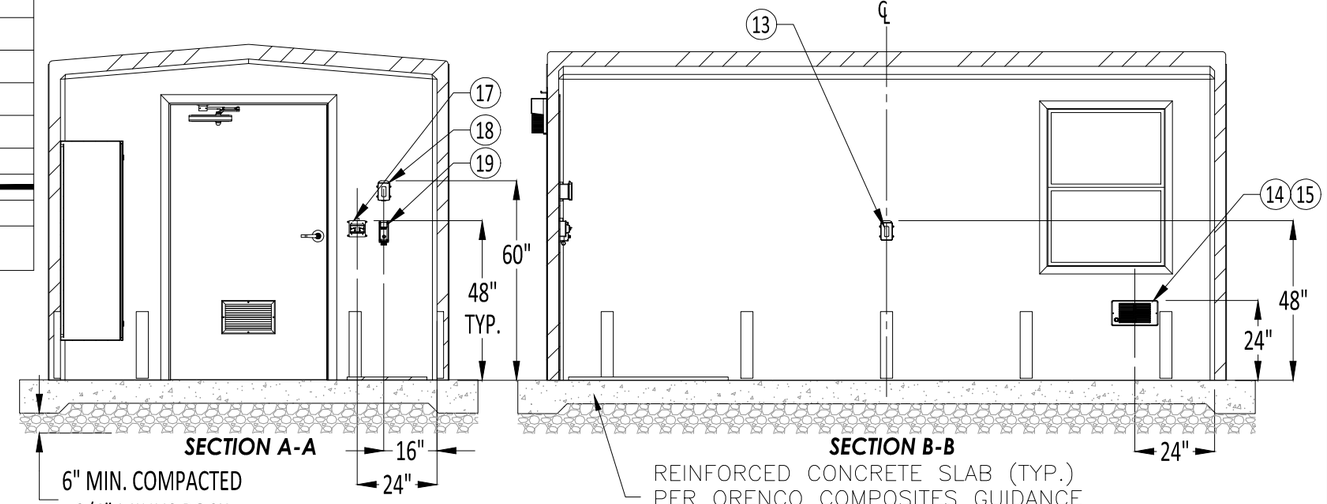
SHEET
S1

C:\Users\NG711452\Desktop\Working Drafting Guist\2020230021 Clackamas County\DWG\LOSS\2020230021 LOSS S1.dwg 9/29/2022 NG711452

ITEM NO.	DESCRIPTION	QTY.
10	INTERIOR LIGHT, LED, 4'-0", VAPOR TIGHT FIXTURE	2
11	EXHAUST FAN WITH RAIN COVER, FANTECH FR100	1
12	CONTROL PANEL, 36" WIDTH X 30" HEIGHT X 12" DEPTH	1
13	GFCI, DUPLEX 125V 15 AMP RECEPTACLE	1
14	SURFACE MOUNT HEATER, KING 1215SL	1
15	THERMOSTAT; KING ELECTRIC SLT-1	1
16	LOAD CENTER, 24 CIRCUIT, 125A, MAIN BREAKER	1
17	WATER PROOF LIGHT SWITCH, 2 GANG, INTERIOR/EXTERIOR LIGHTS	1
18	EXHAUST FAN TIMER, 24 HOUR WITH MANUAL OVERRIDE	1
19	THERMOSTAT, DAYTON FOR FIBERGLASS SHELTERS	1
20	98"L x 40"W x 65"H DIESEL GENERATOR	1
~~21~~	~~AUTO TRANSFER SWITCH, 24"L x 24"H x 9"D~~	~~1~~
22	HEADWORKS SKID, 4' X 2'	1
23	INTAKE LOUVERS, 48"W X 48"H, IN-WALL, W/ FRP COVER, RAIN COVER, DAYTON 5NKJ7	1

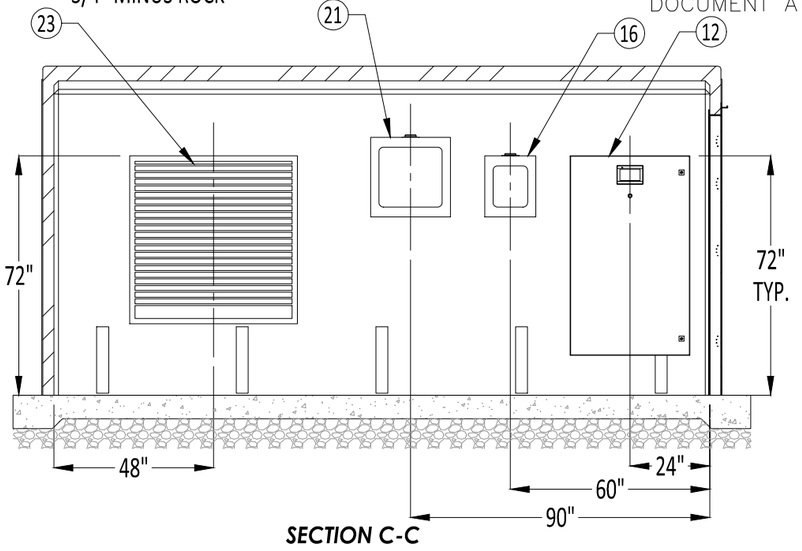


TOP VIEW

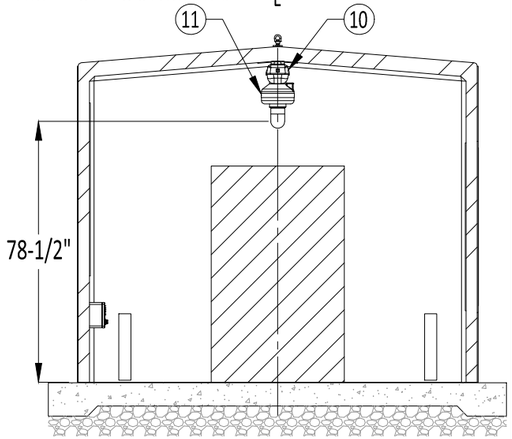


SECTION A-A

SECTION B-B



SECTION C-C



SECTION D-D

CUSTOMER APPROVAL: _____ DATE: _____

BY THIS SIGNATURE, CUSTOMER INDICATES THAT IT HAS REVIEWED THIS SUBMITTAL DRAWING AND FOUND THAT IT MEETS ALL OF THE DESIGNER'S FUNCTIONAL REQUIREMENTS AND/OR SPECIFICATIONS. CUSTOMER HEREBY AUTHORIZES ORENCO TO MANUFACTURE THE CUSTOM PRODUCT IN ACCORDANCE WITH THIS SUBMITTAL DRAWING.

UNLESS SPECIFIED: DIMS. ARE INCHES
TOLERANCES: FRACTION: ± 1/16" ANGULAR: ± .5° DECIMAL: ± .02 CRITICAL: ± .005

DATE: 12/16/2021 | DATE APRVD: | DATE APRVD:

DRAWN BY: QARAMBURO | APRVD BY: | APRVD BY:

NAME: DFS100817-3-EW-4RHR

DESCRIPTION: BUILDING, 10'W X 8'L X 17'L X 3-3/8" WALL

REVISION: | SHEET(S): 3 OF 4 | SION: 2

CONFIDENTIAL

Orenco COMPOSITES

CPSS
Certified Professional Soil Scientist
BRIAN T. RABE
15239 Exp. 12/31/21
Registered Wastewater Specialist
No. EH-W-448430 Exp. 9/30/21

(SOURCE: ©ORENCO SYSTEMS®, INC.)

FISCHER'S FOREST PARK LOSS
CLACKAMAS COUNTY

REV #	DESCRIPTION	BY	DATE

DES. BY 1BTR
DRG. BY 6NSG
CHK. BY 1GLT
DATE 8/18/2022
JOB No. 2020230021

VALLEY SCIENCE AND ENGINEERING

CONTROLS SHELTER – INTERIOR

LARGE ONSITE SEWAGE SYSTEM DESIGN

SHEET
S2

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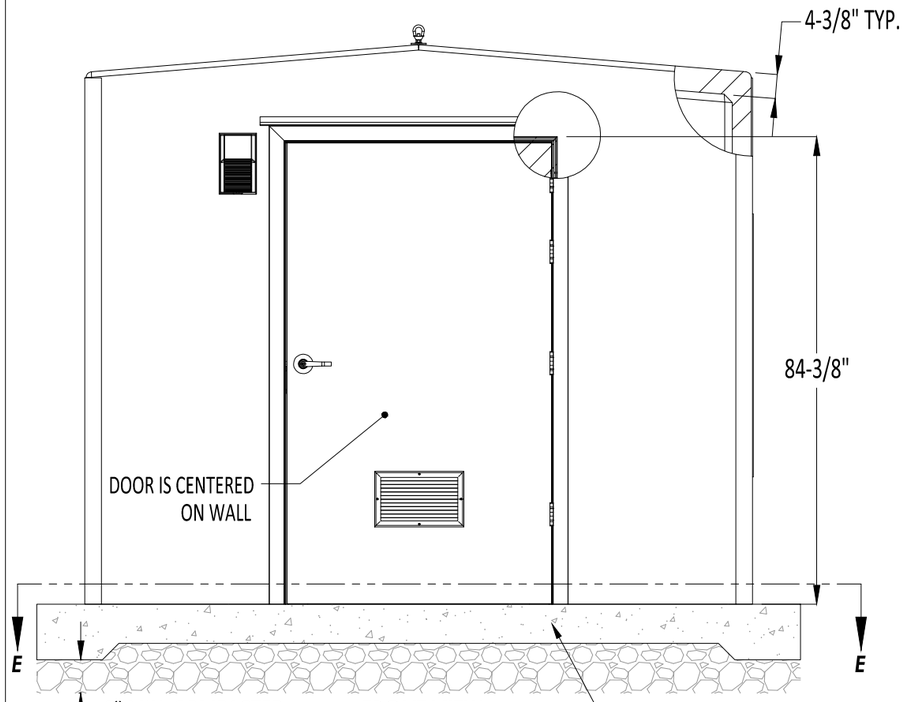
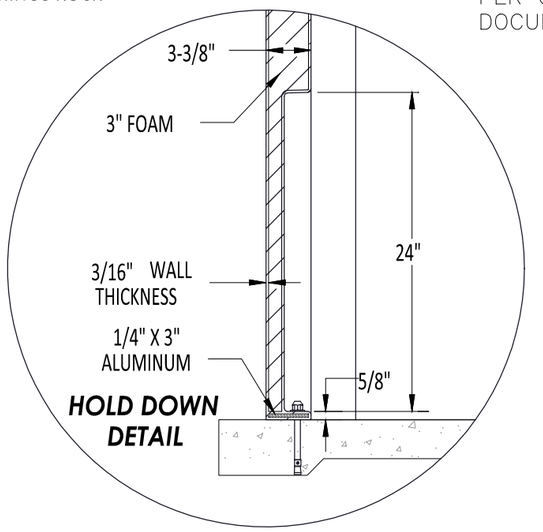
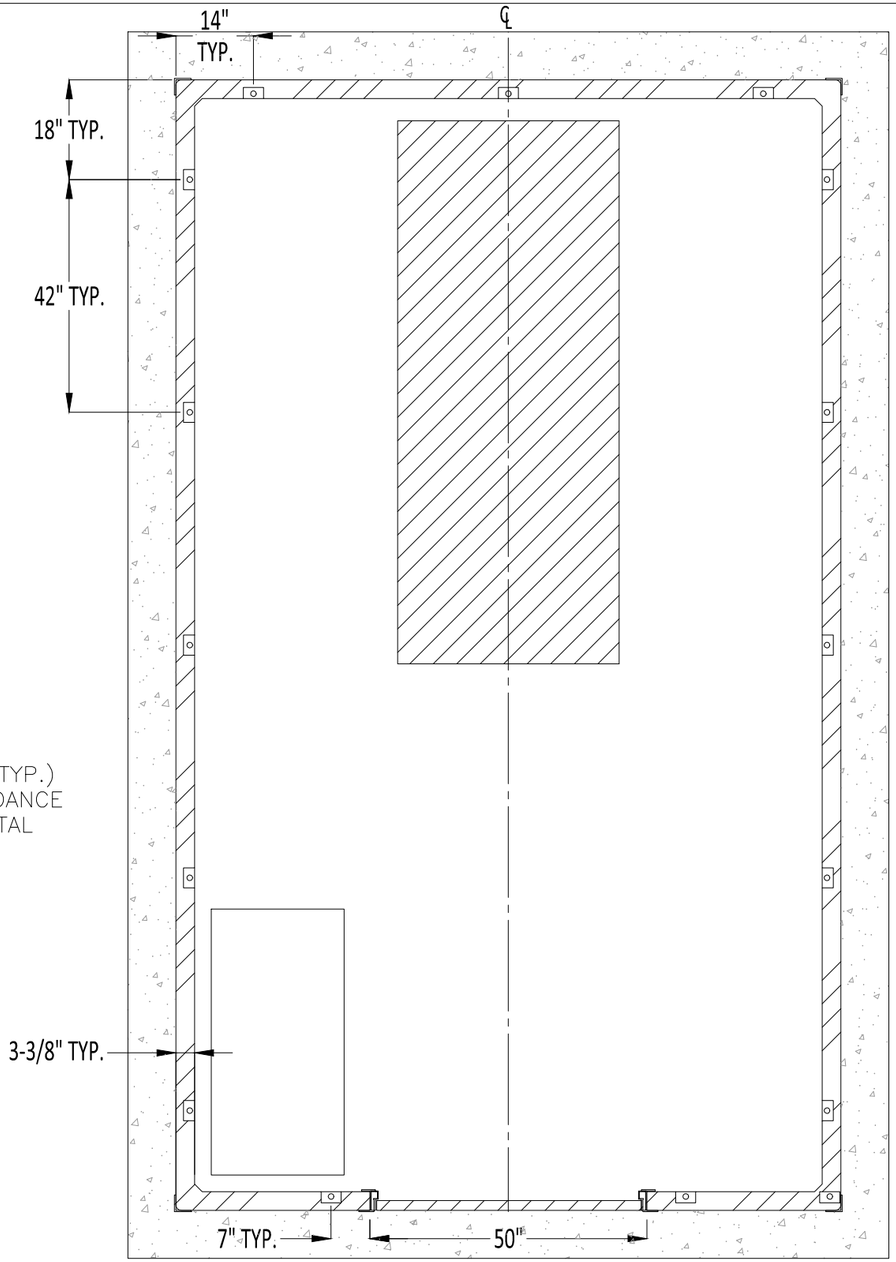
NOTE: HOLD DOWN LOCATIONS HAVE A ± 1" TOLERANCE



FRONT VIEW



HOLD DOWN DETAIL



SECTION E-E

CUSTOMER APPROVAL:_____DATE:_____

BY THIS SIGNATURE, CUSTOMER INDICATES THAT IT HAS REVIEWED THIS SUBMITTAL DRAWING AND FOUND THAT IT MEETS ALL OF THE DESIGNER'S FUNCTIONAL REQUIREMENTS AND/OR SPECIFICATIONS. CUSTOMER HEREBY AUTHORIZES ORENCO TO MANUFACTURE THE CUSTOM PRODUCT IN ACCORDANCE WITH THIS SUBMITTAL DRAWING.

NAME:	DFS100817-3-EW-4RHR	DRAWN BY: QARAMBURO	DATE: 12/16/2021
DESCRIPTION:	BUILDING, 10'W X 8'L X 17'L X 3-3/8" WALL	APRVD BY:	DATE APRVD:
REVISION: 2	SHEET(S): 4 OF 4	APRVD BY:	DATE APRVD:

UNLESS SPECIFIED: DIMS. ARE INCHES
TOLERANCES: FRACTION: ± 1/16" ANGULAR: ± .5° DECIMAL: ± .02 CRITICAL: ± .005

Orenco COMPOSITES

CPSS
Certified Professional Soil Scientist
BRIAN T. RABE
15239 Exp. 12/31/21
Registered Wastewater Specialist
No. EH W-448450 Exp. 9/30/21

(SOURCE: ©ORENCO SYSTEMS®, INC.)

FISCHER'S FOREST PARK LOSS
CLACKAMAS COUNTY

REV #	DESCRIPTION	BY	DATE

DES. BY 1BTR
DRG. BY 6NSG
CHK. BY 1GLT
DATE 8/18/2022
JOB No. 2020230021

VALLEY SCIENCE AND ENGINEERING

CONTROLS SHELTER – BUILDING HOLD DOWNS

LARGE ONSITE SEWAGE SYSTEM DESIGN

SHEET
S3

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INVITATION TO BID #2022-106
FISCHER'S FOREST PARK:
LARGE ONSITE SEWAGE SYSTEM TREATMENT PROCESS UPGRADE
ADDENDUM NUMBER 1
January 19, 2023

On December 28, 2022, Clackamas County ("County") published Invitation to Bid #2022-106 ("BID"). The County has found that it is in its interest to amend the BID through the issuance of this Addendum #1. Except as expressly amended below, all other terms and conditions of the original BID and subsequent Addenda shall remain unchanged.

A. CONTRACT DOCUMENTS

1. Bid Schedule

a. Item 7

1) Under item a), replace D-3034 with C900.

2) Add item "e) Abandon Existing 8-inch Sewer Pipe". This item is missing in the original bid tab.

3) Add item "f) Abandon Existing Manhole". This item is missing in the original bid tab.

B. PROJECT SPECIFICATIONS

1. Section 00010 – Table of Contents

a. General Specification and Sewer Work

1) Add "Section 02221 Trenching, Backfilling, and Compaction". This section is being added as part of Addendum #1.

2. Section 01010 – Summary of Work

a. Add Section 01010 in its entirety. This section is missing from the initial BID package.

3. Section 01025 – Measurement and Payment

a. Replace all references to 8-inch D-3034 PVC with 8-inch C900 PVC

b. Add to section 1.02.H: “e) Abandon Existing Pipe: Measurement and payment for abandoning pipe, regardless of size shall be on a linear foot basis. This shall include all materials, equipment and labor to install the CSLM inside the pipe as specified.”

c. Add to section 1.02.H: “f) Abandon Existing Manhole: Measurement and payment for abandoning manholes for all depths shall be on a unit price basis and include all materials equipment and labor to per-form the work as specified.”

4. Section 02221 – Trenching, Backfilling, and Compaction

a. Add Section 02221 in its entirety. This section is missing from the initial BID package.

5. Section 02530 Sanitary Sewer Pipe and Manholes

a. Replace Section 02530 in its entirety. In the original BID, the contents of section 02530 are incomplete. Replace the entire section with Section 02530 issued as part of Addendum #1.

C. CONSTRUCTION DRAWINGS

1. Remove all construction drawings in the original package and replace them with those from Addendum #1. The original bid includes some duplicate drawings. Additionally, Addendum #1 include changes to some drawings. To avoid confusion, all drawings from the original bid shall be replaced by those included as part of Addendum #1.

a. The pages being replaced include all Valley Science and Engineering drawings dated 8/18/2022 and Water Environment Services drawings dated October 2022.

b. The new construction drawings include Valley Science and Engineering drawings dated 1/04/2023 and Water Environment Services drawings dated December 2022.

2. Changes to the drawings include:

a. Sheet G1. Added a figure index for WES provided details.

b. Sheet G5. Includes additional information related to decommissioning and abandonment of the existing facility.

c. Sheet T2. Updated pipe material of 8-inch

d. Sheet T4. Removes he point repair to the west inlet pipe. This repair will be completed as part of a separate project.

e. Sheet D3. The updated sheet contains minor clarification not to glue pipe after adapter.

f. Sheet M2. Contains changes to the fence mesh and fence pipe specifications. Sheet now calls for PVC coated fence mesh and pipes as well as adds privacy slats to the fence.

g. Sheet S2. Removed callout 21 from top and section views. Generator to be installed as part of a separate project.

All Bidders shall acknowledge receipt and acceptance of this Addendum No. 1 in the Bid Form or by submitting the Addendum with the bid package. Bid Forms submitted without acknowledgment or without this Addendum will be considered in nonconformance.

Appended hereto and part of Addendum No. 1:
Bid Schedule
PROJECT SPECIFICATIONS: Section 00010
PROJECT SPECIFICATIONS: Section 01010
PROJECT SPECIFICATIONS: Section 01025
PROJECT SPECIFICATIONS: Section 02221
PROJECT SPECIFICATIONS: Section 02530
APPENDIX C: Construction Drawings

End of Addendum #1

Fischer's Forest Park Rehab Project

Bid Schedule - Addendum #1

January 18, 2023

ITEM	DESCRIPTION	UNIT	QUANTITY	UNIT PRICE	SUB TOTAL	ITEM TOTAL
1	**Mobilization**	LS	1			
2	**Erosion Control**	LS	1			
3	**By-Pass Pumping**	LS	1			
4	**Decommission Existing East Septic Tank**	LS	1			
5	**Effluent Lift Station Retrofit**	LS	1			
6	**Decomission Existing Treatment System**					
	a) Decomission Advantex Pods	LS	1			
	b) Remove Existing Fence	LS	1			
	c) Decomission Electrical Equipment and Controls	LS	1			
	d) Decomission Other Structures and Equipment	LS	1			
	Decomission Existing Treatment Item Total (sum 7a through 7d)					
7	**East Septic Tank Installation**					
	a) 8-inch C900 PVC Gravity Sewer Pipe	LF	20			
	b) 4-inch Schedule 40 PVC Pipe	LF	20			
	c) 3,000-gallon Pre-Cast Concrete Septic Tank	EA	2			
	d) Install New Manhole	EA	1			
	e) Abandon Existing 8-inch Sewer Pipe	LF	10			
	f) Abandon Existing Manhole	EA	1			
	East Septic Tank Installation Item Total (Sum 8a through 8d)					

8 Recirculating Treatment and Subsurface Drip Distribution System

a) 3,000-gallon Pre-Cast Concrete Recirculation Tank	EA	3			
b) AdvanTex AX100 Textile Filter Units	EA	3			
c) 2-inch Schedule 40 PVC Pressure Effluent Sewer Pipe (Recirculation Tank C to Treatment units)	LF	90			
d) 4-inch Schedule 40 PVC Pipe	LF	90			
e) Custom Primary Flow Splitter Basin	LS	1			
f) Ultra-Violet Units	EA	3			
g) Custom Secondary Flow Splitter Basin	LS	1			
h) 3,000-gallon Pre-Cast Dripfield Dosing Tank	EA	1			
i) Concrete pad for Controls Shelter	LS	1			
j) Orenco Durafiber Controls Shelter	LS	1			
k) Custom Telemetry Control and Alarm Panel	LS	1			
l) 1-inch Schedule 40 PVC Pressure Effluent Sewer Piping	EA	30			
m) 1.5-inch Schedule 40 PVC Pressure Effluent Sewer and Drip Field Manifold Pipe	LF	1,420			
n) 2-inch Schedule 40 PVC Pressure Drip Field Flush Main Piping	LF	500			
o) 52,000 sq. ft. of Netafim Subsurface Drip Distribution System	LS	1			
p) Hydraulic Unit and Disc Filter Headworks	LS	1			
Recirculating Treatment System Item Total (Sum 9a through 9p)					

9 New Water Service

a) 1-inch Water Service Line and heat tape	LF	100			
b) 1-inch Reduced Pressure Backflow Preventor & Pressure Reducer and heat tape	LS	1			
c) Frost Free Hydrant	LS	1			
New Water Service Item Total (Sum 10a through 10c)					

10 Miscellaneous Site Improvements

a) Chainlink Fence	LF	360			
b) Gravel Access Road Crushed Rock and Geofabric	SF	2,500			
Miscellaneous Site Improvements Item Total (Sum 11a through 11b)					

TOTAL CONSTRUCTION COST (IN $) _____

TOTAL PROJECT CONSTRUCTION COST (WRITTEN): _____

WATER ENVIRONMENT SERVICES SPECIFICATIONS

SECTION 00010

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GENERAL SPECIFICATIONS AND SEWER WORK

LARGE ONSITE SEWAGE SYSTEM

Appendixes

SECTION 01010

SUMMARY OF WORK

PART 1 GENERAL

1.01 SUMMARY

A. This contract consists of installation of approximately 4,400 lf of 8" Cured in Place Pipe (CIPP), as well as, lateral reconnection, lateral sealing, 3 point repairs, 5 manhole replacements, 1 new manhole installation, and manhole rehab with epoxy coating and injection grouting.

B. The accomplishment of all of the above work, if awarded, shall meet the scheduled sequence, milestones, limitations and the final completion dates specified.

C. All Work is to be substantially completed within 120 days of Notice to Proceed and ready for final payment 30 days thereafter.

D. The estimated construction cost for Work scope is $700,000

1.02 PERMITS

Contractor shall obtain and pay for all construction permits and licenses. District will assist Contractor, when necessary, in obtaining such permits and licenses. Contractor shall pay all governmental charges and inspection fees necessary; for the prosecution of the Work which are applicable at the time of opening of Bids.

1.03 SITE VISITS

There will be no mandatory pre-bid site visit, but Bidders and sub-bidders are required to become familiar with and satisfy themselves as to the general, local and site conditions that may affect the cost, performance and furnishing of the Work.

1.04 WORK OF THIS CONTRACT

A. The work generally consists of furnishing and installing the following:

1. Install approximately 52,000 square feet of Nerafim subsurface distribution system
2. Retrofitting an existing septic system lift station tank
3. Install approximately 20 feet of 8" gravity sewer pipe
4. Install approximately 130 feet of buried 4-inch sewer effluent pipe.
5. Install one (1) new manhole
6. Install six (6) 3,000-gallon precast tanks and appurtenances
7. Install two (2) custom flow split basins
8. Install three (3) AdvanTex AX100 filtration units

9. Install approximately 2050 feet of buried, small diameter (1-inch, 1.5-inch, or 2-inch), pressurized PVC pipe

10. Install an Orenco Durafiber shelter including a concrete pad; a dripfield Disc Filter and hydraulic unit; custom telemetry control and alarm panel; heater & lighting

11. Install a new water service and yard hydrant

12. Construct a new chain link fence

13. Construct a new crushed rock access path.

14. All other ancillary work necessary to complete the sanitary sewer and comply with all easement and permit conditions.

B. Contractor Duties

1. Provide and pay for labor, materials, tools, equipment, superintendence, temporary facilities and services necessary for proper execution and completion of Work.

2. All required permits, governmental fees and licenses.

3. Comply with ordinances and regulation of public authorities having jurisdiction, including, but not limited to following:

a. Clackamas County
b. State of Oregon Department of Environmental Quality

1.0 EXISTING UTILITIES

A. In general, the locations of existing major utilities, whether aboveground or underground, are indicated on the Drawings. This information has been obtained from utility maps and field surveys. Owner does not guarantee the accuracy or completeness of this information, and it is to be understood that other aboveground or underground facilities not shown on the Drawings may be encountered during the course of the work. In any case, most minor lines such as individual services for water, gas and sprinkler irrigation lines are not indicated.

B. Existing utilities, whether shown on the Drawings or not, shall be maintained, relocated, rerouted, removed and restored as may be necessary by the Contractor in a manner satisfactory to owners and operators of the utilities and to Owner in accordance with the provisions and to the satisfaction of the affected utility or local agency.

1.06 SPECIFICATION LANGUAGE

Portions of the Specifications are written in imperative and streamlined form. This imperative language is directed to the Contractor, unless specifically noted otherwise. The words “shall be” shall be included by inference where a colon (:) is used within sentences or phrases. Example: Aggregate: ASTM C33.

Where the Bidding Documents define methods, materials, or equipment by specifying a trade name, manufacturer and model or catalog number, the intent is not to limit competition but to establish a standard of quality, features, workmanship, reliability, serviceability, compatibility, performance, etc. Unless the specification description expressly states that no substitutions or "equals" will be allowed, the words "or equal" shall be deemed inserted in each such instance.

END OF SECTION

SECTION 01025

MEASUREMENT AND PAYMENT

PART 1 GENERAL

1.01 DESCRIPTION

A. Measurement is described under each proposal item in Paragraph 01025-1.02.

B. Payment for the various items on the Proposal, as further specified herein, shall be based on measurements of completed work in accordance with United States Standard Measures and shall include all compensation to be received by the Contractor for furnishing all tools, equipment, supplies, and manufactured articles, and for all labor, operations, and incidentals appurtenant to the items of work being described, as necessary to complete the various items of the work all in accordance with the requirements of the Contract Documents, including all appurtenances thereto and including all costs of compliance with the regulations of public agencies having jurisdiction, including safety and health requirements of the Occupational Safety and Health Act of the U.S. Department of Labor (OSHA) and Oregon State Department of Labor and Industries, also for loss or damage arising from the nature of the work, or from the action of the elements, or from any unforeseen difficulties which may be encountered during the prosecution of the Work until the final acceptance by the Owner. No separate payment will be made for any item that is not specifically set forth in the Proposal Schedule, and all costs therefor shall be included in the prices named in the Proposal Schedule for the various appurtenant items of work.

C. Quantities listed in the Proposal do not govern final payment. Payments to the Contractor will be made only for actual quantities of Contract items performed in accordance with terms of the Contract and for items of work actually performed under Change Orders.

D. Indirect costs, such as supervision and overheads, profit, the general conditions specified in the Contract, all shall be allocated to each proposal item as applicable for work defined in the proposal item. No separate payment will be made to the Contractor for these items.

1.02 PROPOSAL ITEM MEASUREMENT AND PAYMENT

A. Item 1 - Mobilization: Payment for Mobilization will be made on a lump sum basis. The amount to be allowed for Mobilization in the partial payment to be made under the Contract will be as follows:

a. When 5% of the total original contract amount is earned from other proposal items, not including advances on materials, 50% of the amount bid for Mobilization, or 2.5% of the original contract amount, whichever is the least, less normal retainage, will be paid.

b. When 10% of the total original contract amount is earned from other proposal items, not including advances on materials, 100% of the amount bid for mobilization, or 5% of the original contract amount, whichever is the least, less normal retainage, will be paid.

c. Upon completion of all work on the project, payment of any amount bid for Mobilization in excess of 5% of the total original contract amount will be paid.

d. The above schedule of progress payments for Mobilization shall not limit or preclude progress payments otherwise provided by the Contract.

e. Mobilization paid under paragraph 1-4 shall not exceed 5% of the total original contract amount for bid items 1 through 10. Amounts greater than 5% shall be reimbursed with the Final Pay Request at the end of construction.

B. Item 2 - Erosion Control: All erosion control measures including materials, equipment and labor unless identified as part of other individual bid items shall be measured and paid on a lump sum basis as shown in the Proposal.

C. Item 3 - By-pass Pumping: Measurement and payment for sanitary sewer bypass pumping shall be made on a lump sum basis. The lump sum price shall include all costs for materials, equipment and labor to provide the appropriately sized flow diversion and piping during all elements of construction.

D. Item 4 - Decommissioning of existing east septic tank: Measurement and payment for decommissioning the east septic tank shall be made on a lump sum basis. The lump sum price shall include all costs for materials, equipment and labor to abandon the east septic tank and related pipe. This will include, but is not limited to, pumping and disposing sewage, filling tank with approved material, and filling abandoned 8" pipe with CLSM.

E. Item 5 - Effluent Lift Station Retrofit: Measurement and payment for retrofitting the existing lift station recirculation tank shall be made on a lump sum basis. The lump sum price shall include all costs for materials, equipment and labor to convert the existing tank into an effluent lift station. This will include, but is not limited to, decommissioning and proper disposal of old pipes, pumps, floats and appurtenances; core drilling holes; duplex pumps, float assembly, custom flow inducer tower, pressure filters and related piping; and repairing pipe leak from western influent pipe.

F. Item 6 - Decommission Existing Treatment System: Item 6a-6d should be inclusive of all costs associated with decommissioning the existing treatment system as shown on Drawing Sheet G3 and G5.

a. Decommission Advantex Pods: Measurement and payment for decommissioning the Advantex AX100 Pods will be billed on a lump sum basis. The lump sum price shall include all costs for materials, equipment and labor to remove and properly dispose of the filtration units. This includes, but is not limited to, removing Advantex pod, properly disposing of pods, and backfilling voids.

b. Remove Existing Fence: Measurement and payment for decommissioning the chain link fences will be billed on a lump sum basis. The lump sum price shall include all costs for materials, equipment and labor to remove and dispose of the fences. This will include but is not limited to, removal of chain link fencing, fence posts and footings, crossbars, and gate posts, and backfill any voids for the fence around the existing treatment area and recirculation tank area.

c. Decommission Electrical Equipment and Controls: Measurement and payment for removing control panels and electrical equipment will be billed on a lump sum basis. The lump sum price shall include all costs for materials, equipment and labor to remove and dispose of all electrical equipment. This includes, but is not limited

to, removal and disposal of the controls cabinet near the existing recirculation tank; removal and disposal of the electrical cabinet at the treatment area; removing all old wiring; cutting and capping of all abandoned conduit.

d. Decommission other structures and equipment: Measurement and payment for removing all other equipment and structures related to treatment at the site of the AX100 pods will be billed on a lump sum basis. The lump sum price shall include all costs for materials, equipment and labor to remove and dispose of all equipment and structures. This includes, but is not limited to, removal and disposal of pumps, floats, and wiring; removal of pump sequencing unit; pumping and disposal of sewage; cutting, capping and abandoning all piping; and filling all basins and voids.

G. Multiple Sections - Gravity Sewer Pipe: Measurement for gravity sewer pipe, will be computed for pipe size and material based on the following limits for length of trench:

a. Length: Length of all sewer pipe will be measured horizontally along center of pipe from center-to-center through fittings, to manholes, or to the end of pipe, whichever is applicable.

b. 8-inch C900 and 4-inch Schedule 40 PVC Gravity Sewer Pipe: Payment per linear foot of pipe and trench excavation shall be full compensation for all materials, equipment and labor to construct the sewer pipe in place; the pipe bedding required by the Plans and Specifications; all material used to complete the backfill of the pipe zone in accordance with the Specifications; and all work necessary to furnish, place, and compact the bedding, pipe zone backfill materials, and crushed rock for imported backfill to pavement base or to the ground surface as required. The price proposal shall also include: construction staking to establish lines and grades; dewatering, sheeting, shoring and bracing; backfilling trench with native or imported materials; disposal of excess excavation; the excavation necessary to widen the trench for installation of manholes, tanks, and appurtenances; the supporting and protection of existing utility crossings; the preparation of subgrade; and all other work necessary to install the pipe in place including testing and plugs. No payment will be made for any section of pipe not yet passing all trench backfill, air and mandrel testing requirements

H. Item 7 - East Septic Tank Installation: Item 7a-7d should be inclusive of all costs associated with constructing a new septic tank system and manhole.

a. 8-inch C900 PVC Pipe: See Paragraph 1.02.G

b. 4-inch Schedule 40 PVC Pipe: See Paragraph 1.02.G

c. 3,000-gallon Pre-Cast Concrete Septic Tank: Measurement and payment for precast septic tanks will be made on a unit price basis as shown in the Proposal for all depths. The per each price shall include all costs for materials, equipment and labor to install new septic tanks and appurtenances. Payment per each tank shall include, but is not limited to, common excavation; base material; imported backfill; dewatering; fiberglass riser and cover; constructing and testing the tank complete in place. Payment for external piping will be paid under separate bid items.

d. Manholes: Measurement and payment for sanitary sewer manholes 48" diameter will be made on a unit price basis as shown in the Proposal for all depths. Payment per each 48" manhole (standard or flat-top) shall include full compensation for: materials, equipment and labor including common excavation; base rock; imported backfill; dewatering; manhole frame and cover; manhole grade rings; testing and constructing the manhole complete in place. No separate payment will be made for flat-top manholes

e. Abandon Existing Pipe: Measurement and payment for abandoning pipe, regardless of size shall be on a linear foot basis. This shall include all materials, equipment and labor to install the CSLM inside the pipe as specified.

f. Abandon Existing Manhole: Measurement and payment for abandoning manholes for all depths shall be on a unit price basis and include all materials equipment and labor to per-form the work as specified

I. Multiple Sections - Pressure Pipe: Measurement for pressure sewer effluent pipe, will be computed for pipe size and material based on the following limits for length of trench:

a. Length: Length of all pressure sewer pipe will be measured horizontally along center of pipe from center-to-center through fittings, to tank, structure, or to the end of pipe, whichever is applicable.

b. 1-inch, 1.5-inch, and 2-inch Schedule 40 PVC Pressure Pipe: Payment per linear foot of pressure pipe and trench excavation shall be full compensation for all materials, equipment and labor to construct the pressure pipe in place, which includes but is not limited to, the pipe bedding required by the Plans and Specifications; all material used to complete the backfill of the pipe zone in accordance with the Specifications; and all work necessary to furnish, place, and compact the bedding, pipe zone backfill materials, and crushed rock for imported backfill to pavement base or to the ground surface as required. The price proposal shall also include: construction staking to establish lines and grades; dewatering, sawcutting, sheeting, shoring and bracing; backfilling trench with native or imported materials; disposal of excess excavation; the excavation necessary to widen the trench for installation of manholes, tanks, and appurtenances; the supporting and protection of existing utility crossings; the plugging or removing of abandoned conduit and structures; the preparation of subgrade; and all other work necessary to install the pipe in place including testing and plugs. No payment will be made for any section of pipe not yet passing all trench backfill, and testing requirements

J. Item 8 - Recirculating Treatment and Subsurface Drip Distribution System: Items 8a-8o should be inclusive of all costs associated with constructing a new recirculating treatment system and subsurface drip distribution system as outlined in the Drawings and Specifications.

a. 3,000-gallon Pre-Cast Concrete Recirculation Tanks: Measurement and payment for recirculation tanks will be made on a unit price basis as shown in the Proposal for all depths. The per each price shall include all costs for materials, equipment

and labor to install new septic tanks and appurtenances. Payment per each tank shall include, but is not limited to, common excavation; base material; imported backfill; dewatering; internal piping; construction and installation of custom flow inducer towers; external splice boxes and related wiring; fiberglass riser and cover; constructing and testing the tank complete in place. Payment for external piping will be paid under separate bid items.

b. AdvanTex AX100 Textile Filter Units: Measurement and payment for AX100 units will be made on a unit price basis as shown in the Proposal for all depths. The per each price shall include all costs for materials, equipment and labor to install new AX100 units and appurtenances. Payment per each unit shall include, but is not limited to, common excavation; base material; backfill; dewatering; vented fan assembly, wiring, and related appurtenances; and fittings. Payment for external piping will be paid under separate bid items.

c. 2-inch Schedule 40 PVC Pressure Effluent Sewer Pipe: See Paragraph 1.02.I

d. 4-inch Schedule 40 PVC Pipe: See Paragraph 1.02.G

e. Custom Primary Flow Splitter Basin: Measurement and payment for flow splitter basin will be made on a lump sum basis for all depths. The lump sum price shall include all costs for materials, equipment and labor to install a new basin and appurtenances. Payment shall include, but is not limited to, common excavation; base material; imported backfill; dewatering; internal piping; basin and cover; constructing and testing the tank complete in place. Payment for external piping will be paid under separate bid items.

f. Orenco Ultra-Violet Units: Measurement and payment for UV units will be made on a unit price basis as shown in the Proposal for all depths. The per each price shall include the cost of each unit and all proprietary equipment. Payment per each unit shall include the cost of items purchased directly from Orenco. Payment for installation and ancillary equipment and appurtenances will be paid for under the precast dripfield dosing tank item.

g. Custom Secondary Flow Splitter Basin: Measurement and payment for ultraviolet light system will be made on a lump sum basis. The lump sum price shall include all costs for materials, equipment and labor to install a new custom secondary flow splitter basin and appurtenances. Payment shall include, but is not limited to, common excavation; base material; imported backfill; dewatering; basin and cover;. Payment for external piping will be paid under separate bid

h. 3,000-gallon Pre-Cast Dripfield Dosing Tank: Measurement and payment for precast dosing tank will be made on a lump sum basis as shown in the Proposal for all depths. The per each price shall include all costs for materials, equipment and labor to install new tanks and appurtenances. Payment per each tank shall include, but is not limited to, common excavation; base material; imported backfill; dewatering; internal piping; construction and installation of custom flow inducer towers; external splice boxes and related wiring; fiberglass riser and cover; installation of the UV units; wiring and piping integral to the systems construction; and testing the tank complete in place. Payment for external piping will be paid under separate bid items.

i. Concrete pad for Treatment System Controls Shelter: Measurement and payment for constructing the concrete slab will be billed on a lump sum basis. The lump sum price shall include all costs for materials, equipment and labor to construct the concrete slab. Payment shall include, but is not limited to, common excavation; base material; framing; testing and other incidental work required to complete construction.

j. Orenco Durafiber Treatement System Controls Shelter: Measurement and payment for the controls shelter will be made on a lump sum basis. The lump sum price shall include all costs for materials, equipment and labor to install the shelter and related equipment not listed elsewhere. Payment shall include, but is not limited to, installation of the shelter; wiring and installation of heater, load center, lights and other equipment; and loft section.

k. Custom Telemetry Control and Alarm Panel: Measurement and payment for the control panel shall be made on a lump sum basis. The lump sum price shall include all costs for materials, equipment and labor to install, test, and integrate the control panel into a working system.

l. 1-inch Schedule 40 PVC Pressure Effluent Sewer Pipe: See Paragraph 1.02.I

m. 1.5-inch Schedule 40 PVC Pressure Effluent Sewer and Drop Field Manifold Pipe: See Paragraph 1.02.I

n. 2-inch Schedule 40 PVC Pressure Drip Field Flush Main Pipe: See Paragraph 1.02.I

o. 52,000 sq. ft. of Netafim Subsurface Drip Distribution System: Measurement and payment for installation of drip distribution system will be made on a unit price basis as shown in the Proposal. Payment per square foot of distribution system and trench excavation shall be full compensation for all materials, equipment and labor to construct the system in place, which includes but is not limited to, disc filters; dripper tubing; all flex tee connectors and valves; flow meter; sampling tap; wire splices; and hydraulic unit. The price proposal shall also include: construction staking to establish lines and grades; disposal of excess excavation; the excavation necessary to widen the trench for installation valves and appurtenances; and all other work necessary to install the system including testing. No payment will be made for any section of the system not yet passing testing requirements. Payment for non-dripper line pressure piping will be paid under separate bid item.

p. Hydraulic Unit and Disc Filter Headworks: Measurement and payment for AX100 units will be made on a lump sum basis. The shall include all costs for materials, equipment and labor to install new drip hydraulic unit and, and appurtenances. Payment per each unit shall include, but is not limited to, mounting skid or enclosure; drip hydraulic unit; automatic-flush disc filter headworks; flow meter; sampling port; wiring, piping, and related appurtenances; Payment for external piping will be paid under separate bid items

K. Item 9 – New Water Service: Items 9a-9c should be inclusive of all costs associated with constructing a new water service line as outlined in the Drawings and Specifications.

a. 1-inch Water Service Line and Heat Tape: Measurement for water service line will be computed for pipe size and material based on the following limits for length of installation:

1. Length: Length of all pressure sewer pipe will be measured horizontally along center of pipe from center-to-center through fittings, from water meter to hydrant or other termination points.

2. Payment per linear foot of water line and trench excavation shall be full compensation for all materials, equipment and labor to construct the pressure pipe in place, which includes but is not limited to, the pipe bedding; heat tape and associated wiring; all material used to complete the backfill of the pipe zone; and all work necessary to furnish, place, and compact the bedding, pipe zone backfill materials, and crushed rock for imported backfill to pavement base or to the ground surface as required. The price proposal shall also include: backfilling trench with native or imported materials; disposal of excess excavation; the excavation necessary to widen the trench for installation of appurtenances; the supporting and protection of existing utility crossings; the preparation of subgrade; and all other work necessary to install the pipe in place including testing. No payment will be made for any section of pipe not yet passing all trench testing requirements

b. 1-inch Reduced Pressure Backflow Preventer & Pressure Reducer: Measurement and payment for installation reduced pressure backflow preventer and pressure reducer will be made on a lump sum basis. The lump sum price shall include all costs for materials, equipment and labor to install a reduced pressure backflow preventer and pressure reducing device. This includes, but is not limited to, common excavation; valve box; site restoration; heat tape; constructing and testing in place. Payment for water line will be paid under a separate bid item.

c. Frost Free Hydrant: Measurement and payment for hydrant will be made on a lump sum basis for all depths. The lump sum price shall include all costs for materials, equipment and labor to install the hydrant. Payment shall include but is not limited to full compensation for: materials; equipment and labor including common excavation; base rock or imported backfill; and disposal of excess excavation.

L. Item 10 – Miscellaneous Site Improvements: Items 10a-10b should be inclusive of all costs associated with constructing the items listed as outlined in the Drawings and Specifications.

a. Chain-link Fence: Measurement and payment for installation of fencing system will be made on a unit price basis as shown in the Proposal. Payment per linear foot of fence shall be full compensation for all materials, equipment and labor to construct the fence. This includes, but is not limited to, common excavation; disposal of excess excavation; concrete bases; chain link fence, wire, metal post, and braces for gates and fence sections; and privacy slats.

b. Gravel Access Road: Measurement and payment for installation of crushed rock surface shall be made on a unit price basis as shown in the Proposal. Payment per square foot of finished area shall be full compensation for all materials, equipment and labor to construct the surface. This includes, but is not limited to, clearing and

grubbing; common excavation; disposal of excess excavation; subsurface preparation; installation of geofabric; and placement and compaction of crushed rock surface.

END OF SECTION

SECTION 02221

TRENCHING, BACKFILLING, AND COMPACTING

PART 1 GENERAL

1.01 SUMMARY

This Section specifies requirements for trenching, backfilling, and compacting of trenches for 48-inch manhole, 8-inch sanitary sewer pipe along with abandonment of existing 8-inch sanitary sewer pipe and 48-inch manhole.

1.02 RELATED SECTIONS

A list of sections of the project specifications that are most closely related to this section is provided for the convenience of the Contractor.

A. Section 02530, *Sanitary Sewer Pipe and Manholes*

1.03 REFERENCES

A. AASHTO T-99

B. Oregon Department of Transportation (ODOT), *Standard Specifications for Highway Construction*

PART 2 PRODUCTS

2.01 BEDDING AND BACKFILL MATERIALS

A. Gravel for Trench Foundation Material: 2 ½ inch minus clean pit-run gravel, crushed rock or gravel, having reasonably even gradation from coarse to fine or open graded. Maximum percent passing the ¼ inch screen shall be 20% by weight.

B. Crushed Gravel Pipe Base and Pipe Zone: 3/4 inch minus crushed gravel, having reasonably even gradation from coarse to fine, in accordance with the Oregon State Highway Commission Standard Specifications for Highway Construction specification for Aggregate and Aggregate Base, Section 02630.10.

C. Select Material for Trench Backfill and Aggregate Base: 3/4-inch minus crushed gravel or rock, reasonably even graded from coarse to fine, in accordance with the Oregon State Highway Commission Standard Specification for Highway Construction for Aggregate and Aggregate base, Section 02630.10.

D. Portland Cement Concrete: PCC shall be composed of cement, pozzolans, fine aggregate, water and admixtures with a 28-day compressive strength of 3,300 psi.

E. Controlled Low Strength Material (CLSM): CLSM shall be composed of cement, pozzolans, fine aggregate, water and admixtures. CLSM shall have a low cement content, be non-segregating, self-consolidating, free-flowing and excavatable material which will result in a hardened, dense, non-settling fill and a compressive strength at 28 days of 100 to 200 psi.

PART 3 EXECUTION

3.01 TRENCHING

A. Clearing the Right-of-Way or Private Property:

1. Existing trees or tree limbs whether on public or private property, are not to be removed without permission from the Engineer or as designated on the plans.

2. The Contractor shall exercise all due care in protecting property along the route of the improvement. This protection shall include, but not be limited to, trees, yard, fences, drainage lines, mail boxes, driveways, shrubs and lawns. If any of the above have been disturbed without Engineer approval, they shall be restored to as near their original condition as possible.

B. Obstructions: This item refers to obstructions which may be removed and do not require replacement. Obstructions to the construction of the trench such as but not limited to stumps, abandoned waterlines, manholes, logs, rubbish, and debris of all types, shall be removed by the Contractor at his own expense without additional compensation from the Owner.

C. Trench Width: Trench width at the ground surface shall kept to a minimum necessary to install the pipe in a safe manner. In all cases, trenches must be of sufficient width to allow for shoring and permit proper joining of pipe and compaction of the backfill material along sides of the pipe. Minimum trench width, in the pipe zone, must provide a clear working space 6 inches on each side of the barrel for sewer pipe. If there is a maximum width shown and said width is exceeded by Contractor without written authorization, Contractor will be required, at no expense to Owner, to provide pipe of a higher strength designation, a higher class of bedding, or both, as approved. In all cases, confine trench operations to dedicated right-of-way for public thoroughfares or within areas for which construction easements have been obtained, unless special arrangements have been made with the affected property owners.

D. Grade: The bottom of the trench shall be carried to the lines and grades shown on the plans or as established by the Engineer, with proper allowance for pipe thickness and gravel bedding. Correct any part of the trench excavated below grade with material of the type specified in paragraph 2.01 for the full width of the trench; thoroughly compacted in layers not to exceed 6 inches to the established grade.

E. Shoring, Sheeting, and Grading of Trenches: Whenever necessary to prevent caving during excavation in gravel, sandy soil, or other unstable material, adequately sheet and brace the trench. Where sheeting and bracing are used, increase trench widths accordingly. Ensure trench sheeting remains in place until the pipe has been placed and backfill of the pipe zone is completed. All sheeting, shoring and bracing of trenches shall conform to the requirements of Section 02160.

F. Location of Excavated Materials: During trench excavation, locate the excavated material so it will not completely obstruct the drainage path and, unless otherwise approved by the Engineer. Locate all excavated materials to minimize erosion and sediment.

G. Removal of Water: Provide and maintain ample means and devices with which to promptly remove and dispose of all water when trench is being prepared for pipe laying, during laying of pipe, and until backfill has been completed. Dispose of water in accordance with state and local regulations.

H. Foundation Material: When, in the opinion of the Engineer, the material in the bottom of the trench is unsuitable for supporting the pipe, excavate below the flow line as directed by the Engineer, place 12-ounce non-woven geotextile fabric at bottom and backfill to the required grade with gravel of the type specified in paragraph 2.01.

I. Trench Backfill at Pipe Zone for PVC Pipe: For all classes of backfill, the pipe zone is defined as extending from the bottom of bedding in the trench (6 inches below invert) to a point 12 inches above the outside of the pipe, and for the full width of the trench. Backfill the entire pipe zone with 3/4 inch minus crushed gravel placed and hand-leveled in 6 inch layers. Special effort to properly bed pipe by slicing backfill in pipe haunches up to springline shall be provided.

J. Bypass Pumping: Provide bypass pumping of all sanitary sewer necessary for installation of new pipe including both main line and services. Refer to Section 02530.

3.02 BACKFILLING AND COMPACTION

A. Trench Backfill Above Pipe Zone: Use the following types of backfill on the project in the areas shown on the plans.

1. Class A Backfill: Backfill the entire trench above the pipe zone with native excavated material and compact in accordance with the specifications. Contractor shall stockpile top 12-inches of material excavated from trench separate from remaining material and place on top of the finished trench.

3.03 EXCESS EXCAVATED MATERIAL

Haul and dispose of all excess excavated material. The Contractor shall make arrangements for the disposal of the excavated material and shall bear all costs and retain any profit incidental to such disposal. The Contractor shall comply with all provisions of any agency having jurisdiction.

3.04 GENERAL COMPACTION REQUIREMENTS

A. Backfill shall be maintained at proper moisture content so that the material is within 5%± of optimum moisture.

B. Native backfill used for Class A shall be compacted to at least 90% of maximum density above the pipe zone and to within three feet of the ground surface. The top three feet shall be compacted to 92% of maximum density.

3.05 MECHANICAL COMPACTION REQUIREMENT

A. The method of compaction shall be at the Contractor's option, unless otherwise noted.

B. Unless otherwise noted, the Contractor shall be responsible to provide the proper size and type of compaction equipment and select the proper method of utilizing said equipment to attain the required compaction density without damage to pipe, adjacent utilities and properties.

3.06 ABANDONMENT OF EXISTING PIPE AND MANHOLES

A. Drain abandoned pipes and fill entire length with CLSM. Properly dispose of any sewage within pipes being filled. Spillage of liquid shall be prohibited.

B. Remove the manhole in its entirety. Backfill with sand, bar run gravel, or other material approved by the Engineer, and place topsoil in the upper 12-inches to existing ground surface.

END OF SECTION

SECTION 02530

SANITARY SEWER PIPE AND MANHOLES

PART 1 GENERAL

1.01 DESCRIPTION

The work covered by this section consists of furnishing and installing eight-inch (8") sanitary sewer pipe, and appurtenances. In order to accomplish the work, temporary bypass pumping of sanitary sewer may be necessary. Four-inch (4") and smaller pipes are covered in Valley Science and Engineering specifications section 5.3.

1.02 REFERENCES

A. ASTM A48, *Gray Iron Castings.*

B. ASTM A304, *Steel Bars, Alloy, Subject to End-Quench Hardenability Requirements.*

C. ASTM A615, *Deformed and Plain Billet-Steel Bars for Concrete Reinforcement.*

D. ASTM C478, *Precast Reinforced Concrete Manhole Sections*.

E. ASTM C924, *Practice for Testing Pipe Sewer Lines by Low-Pressure Air Test Method.*

F. ASTM C1244, *Test Method for Concrete Sewer Manholes by the Negative Air Pressure (Vacuum) Test.*

G. ASTM D2241, *Poly(Vinyl Chloride)(PVC) Pressure-Rated Pipe (SDR Series).*

H. ASTM D2837, *Long Term Strength (L.T.H.S.) @ 74.4 degree F, 1600 PSI.*

I. ASTM D3212, *Joints for Drain and Sewer Plastic Pipes Using Flexible Elastomeric Seals.*

1.03 SUBMITTALS

A. Provide sufficient data for the Engineer to properly evaluate the proposed pipe, manholes and appurtenances.

B. Product data submittals shall include, at a minimum, test reports. Provide test reports upon request, certifying that the pipe has been tested in accordance with and exceeds minimum requirements.

C. Precast manhole submittals shall include shop drawings from supplier

D. Bypass pumping procedures

PART 2 PRODUCTS

2.01 MATERIALS

A. Polyvinylchloride (PVC) Gravity Sanitary Sewer (8-inch diameter): Of the size and type indicated on the plans, conforming to appropriate specifications detailed below.

1. PVC Sanitary Sewer/Storm Pipe: Conform to AWWA C 900, Class 150.

2. Pipe fittings shall be PVC shall meet requirements for DR18 and AWWA C-900. Fittings shall be a one-piece injection molded or fabricated from a PVC compound meeting ASTM D1784. Joints shall conform to ASTM D3139 with gaskets confirming to ASTM F47

3. Joint Type: Elastomeric gasket, conforming to the requirements of ASTM D3212.

4. Rubber Gaskets: Conform to ASTM D1869.

B. Manholes and Appurtenances:

1. Concrete: Concrete used in the construction of the manhole base and other structures specified shall be so proportioned and mixed as to meet a minimum 3,000 psi compression test after 28 days. There shall be a minimum of five sacks of cement per cubic yard of concrete.

2. Precast Manhole Sections:

a. Minimum 48 inches in diameter, reinforced concrete pipe, Class 2, conforming to ASTM C478, with added requirement that the reinforcement be circular and not elliptical. Cones shall be eccentric with wall thickness and reinforcement similar to that of manhole pipe sections. The tops and bottoms of the cones shall be parallel.

b. Flat-top manhole sections shall be used in lieu of eccentric cones where the depth from finish grade to invert is 5’-0” or less

c. Preformed gaskets may be used in lieu of mortar type joints and shall be RAM-NEK, manufactured by K.T. Snyder Company, Inc., Houston, Texas; Kent-Seal by Hamilton Kent, Kent, Ohio; or as approved.

d. 48” manholes will be installed full diameter, capped with a flat top lid

3. Precast Concrete Bases:

a. Precast base sections or manhole bases shall be approved by the Owner prior to installation. All precast bases shall conform to ASTM C478.

b. Construct bases per standard details and as noted on the plans.

c. Provide flexible connectors that are designed to produce a positive watertight connection for pipes entering a precast manhole. The connector

shall be manufactured by A-lok or an owner approved equal and shall meet the requirements of ASTM C-923..

4. Nonshrink Grout. Sika 212, Euco N-S, Five Star, or USA approved equal nonmetallic cementitious commercial grout exhibiting zero shrinkage. Grout shall not be amended with cement or sand and shall not be reconditioned with water after initial mixing. Nonshrink grout shall be placed or packed only with the use of an approved commercial concrete bonding agent. Unused grout shall be discarded after 20 minutes and shall not be used.

5. Mortar. Mortar shall conform to the requirements of AST C387. Or be proportioned one part Portland cement to two parts clean, well-graded sand, which will pass a 1/8-inch screen. Admixtures may be used not exceeding the following percentages by weight of cement: hydrated lime, 10 percent; diatomaceous earth or other inert materials, five percent. Mortar mixed for longer than 30 minutes shall not be used.

6. Manhole Extensions and Rings. Install rings and covers on top of manholes to positively prevent all infiltration of surface or groundwater into manholes. Rings shall be set in a bed of nonshrink grout with the nonshrink grout carried over the flange or the ring and shall be set so that tops of covers are flush with the surface of adjoining pavement, or 6-inches above natural ground, unless otherwise directed by the Owner. Extensions shall be limited to a maximum height of 27 inches from the center point of the first step to the top of the casting..

6. Manhole Frames and Covers: Of size and shape detailed on the plans or approved equal; ensure castings are tough, close-grained, gray iron, free from blowholes, shrinkage, and cold shuts, and they conform to ASTM A48, Class 30; ensure they are sound, smooth, clean, and free from blisters and defects. Plane and grind all castings where necessary to ensure perfectly flat and true surfaces. Covers shall be true and shall seat within the ring at all points. Manhole covers shall have two holes. Watertight/locking covers shall be solid with no holes.

7. Manhole Steps:

    a. Steel reinforced polypropylene plastic, Lane International Corp. No. P-13850, or approved equal, in conformance with ASTM C478; aligned vertically. Ensure steps within a manhole are of the same design, type, and size. Mixing of unmatched steps within the same manhole is not permitted.

    b. Prior to delivery to the jobsite, manufacturer is to drive steps into preformed holes in precast concrete manhole cones and sections in conformance with the following: ASTM A615 Grade 60, 1/2" deformed steel rod and ASTM 2146-78 Type II, Polypropylene.

    c. Place steps where there are no incoming or outgoing lines. Loose steps shall be cause for rejection of that manhole cone or section.

PART 3 EXECUTION

3.01 PREPARATION OF TRENCH

A. Crushed Gravel Pipe Base: Place in trench to a minimum depth of six inches below the flow line of the pipe. Place and level the base to approximate flow line grade in advance of laying pipe. Immediately following the placement of each pipe, place the crushed gravel pipe base to the invert of the ductile iron pipe or spring line of the flexible pipe. It is important that the gravel is "sliced" with a shovel on both sides of and for the full length of the pipe, to insure gravel is uniformly supporting the pipe haunches.

B. Bell Holes: At the location of each joint, bell holes of ample dimensions shall be dug in the bottom of the trench and at the sides where necessary to permit the joint to be properly fitted; to permit easy inspection of the entire joint; and to provide uniform bearing for the barrel of the pipe for its entire length.

C. Removal of Water: Provide and maintain ample means and devices to remove and dispose of all water entering the trench excavation during the process of laying pipe. Ensure water and debris does not enter the Owner's sewer system or new pipe. At no time will groundwater be allowed to enter the live downstream sewer system.

3.02 PREPARATION OF SEWER PIPE

A. Carefully inspect pipes and fittings before being laid; no cracked, broken, or defective pipe or fittings shall be used in the work. Clean the ends of the pipe to remove dirt or other foreign material.

B. Exercise extreme care to ensure the inside surfaces of the bell are smooth and free from any projections which would interfere with the assembly or watertightness of the joint.

3.03 LAYING AND JOINTING PIPE AND FITTINGS

A. Line and Grade:

Lay sewer pipe in full lengths as manufactured; lay on a constant grade and in straight alignment from manhole to manhole or cleanout. Do not install pipe with bows or bellies. The Contractor shall establish line and grade for pipe by the use of accurate pipe lasers to maintain the line and grade. The Contractor shall check line and grade as necessary to insure accuracy of installation.. In the event that the limits prescribed in this section are not met, the work shall be immediately stopped, the Engineer notified, and the cause remedied before proceeding further with the work. Variance from the established line and grade shall not be greater than 1/32-inch per inch of pipe diameter and shall not exceed 1/2-inch for line and 1/4-inch for grade, providing that such variation does not result in a level or reverse-sloping invert. Main Sanitary Sewer Installation:

B. Open Cut Trenching:

1. The installation of gravity sewer pipe shall commence at the lowest point along the sewer and shall proceed so that the spigot end of the section being laid is placed into the bell end of the pipe already laid. Take every precaution to prevent foreign materials from entering the pipe while it is being placed in the trench. During laying operations, no debris, tools, clothing or other materials shall be

placed in the pipe.

2. Install sewer pipe in accordance with the manufacturer's recommended installation procedures. Take special care to prevent movement of the pipe after installation when laid within a moveable trench shield.

C. Manhole Connections:

Connect PVC pipe to concrete manholes by means of an approved Kor-n-Seal gasket or other approved coupling. The use of Portland Cement grout for connecting PVC Pipe to manholes will not be permitted. Manholes shall be cored to insure a watertight connection using the approved coupling.

3.04 MANHOLE INSTALLATION:

A. Precast Manhole Concrete Base:

Construct so the first section of the precast manhole has a uniform bearing throughout the full circumference of the manhole wall. Deposit sufficient mortar on the concrete base to provide a watertight seal between the base and the manhole wall.

B. Placing Precast Manhole Sections:

Construct the walls true to line and grade. Manhole sections shall use preformed captive rubber gaskets on all joints. Manhole shelf shall be integrally poured against the wall and over the pipe stub. Use of grout for shelf and channel is prohibited. Construct shelf in such a manner that when capacity of the pipe is reached, no portion of the shelf surface is used as part of the cross sectional flow channel required for free flow through the manhole.

C. Manhole Inverts:

Ensure manhole invert channels provide a smooth flow-through characteristic. No sharp edges or rough sections that will tend to obstruct the flow of sewerage will be permitted. In the event a full section of pipe is laid through the manhole, pour the concrete up to spring line (one-half the diameter of the pipe), then break or cut out the top half of the pipe and mortar smooth all rough edges. Trowel smooth all cement mortar used in the construction of the inverts. The Contractor may, at his option, use precast bases with pre-poured and formed invert channels. Use of grout for channel is prohibited

D. Manhole and Cleanout Rings and Covers:

Set rings so the tops of the covers will match final finished surface. Manholes located within unimproved areas shall be placed 6 inches above the finished ground surface or as directed by the Engineer.

3.05 BYPASS PUMPING

A. The Contractor shall notify the Owner 24 hours prior to commencing the bypass pumping operation if necessary to install the new main line pipe. The Contractor shall provide bypass pumping for acceptable completion of the pipe installation. Bypass pumping shall consist of furnishing, installing, and maintaining all power, primary and standby pumps, appurtenances, and bypass piping required to maintain existing flows and services. The Contractor shall submit a plan for bypass pumping diversion in accordance with Section 01300 of this specification. The bypass pumping shall include an emergency response plan to be followed in the event of a failure of the bypass pumping system.

B. Bypass pumping shall be done in such a manner as to not damage private or public property, or create a nuisance or public menace. The pumped sanitary sewer shall be in an enclosed hose or pipe that exhibits no visible leaks during transfer of sewage and shall be redirected into the downstream manhole. Pipe exhibiting any leakage may not be repaired through use of duct tape or other temporary sealant method. Replace with a new section or sections of pipe.

3.06 TESTING OF GRAVITY SEWER PIPE AND APPURTENANCES

A. General:

1. Test all new gravity sewer lines by “low pressure air testing”.

2. Air Tests For Gravity Sewers: Ensure all gravity sewers and appurtenances successfully pass the air test prior to acceptance and are free of visible leakage or infiltration.

3. The Contractor may desire to make an air test prior to backfilling for his own purposes; however, the acceptance air test shall be made after backfilling and compaction has been completed to final grade.

4. Furnish all facilities and personnel for conducting the test under the observation of the Engineer. The equipment and personnel shall be subject to the approval of the Engineer. Notify Engineer 24-hours in advance of testing to provide time to witness all test.

5. Acceptance testing shall be conducted on all new manholes.

B. Testing Procedures:

1. The Contractor shall provide all equipment and personnel for the Time-Pressure Drop Method for all air testing. The method, equipment and personnel shall be subject to the approval of the Engineer. The Engineer may, at any time, require a calibration check of the instrument used. The pressure gauge used shall have minimum divisions of 0.10 psi and have an accuracy of 0.0625 psi (one ounce per square inch).

2. Immediately following the pipe cleaning, test the pipe with low pressure air. Plug all sewer outlets with suitable test plugs. Slowly supply air to the plugged pipe installation until the internal air pressure reaches 4.0 pounds per square inch greater than the average back pressure of any ground water that may submerge the pipe. The test pressure shall be increased 0.433 pounds per square inch for each foot of average water depth over the sewer. This pressure will be in addition to the initial

4.0 pounds per square inch previously identified. Allow at least two minutes for temperature stabilization, adding only the amount of air required to maintain pressure before proceeding further. After the temperature stabilization period, disconnect the air supply. Determine and record the time in seconds that is required for the internal air pressure measured by the gage to drop from 3.5 pounds per square inch to 2.5 pounds per square inch greater than the average back pressure of any ground water that may submerge the pipe.

3. Safety Precautions: All plugs used to close the sewer for the air test must be capable of resisting the internal pressures and must be securely braced, if necessary. All air testing equipment must be placed above ground and no one shall be permitted to enter a manhole or trench where a plugged line is under pressure. All pressure must be released before the plugs are removed. The testing equipment used must include a pressure relief device designed to relieve pressure in the line under test at 10 psi or less and must allow continuous monitoring of the test pressures in order to avoid excessive pressure. The Contractor shall use care to avoid the flooding of the air inlet by infiltrated ground water. The Contractor shall inject the air at the upper plug if possible. Only qualified personnel shall be permitted to conduct the test.

C. Acceptance of Test:

1. The pipeline shall be considered acceptable when tested as described herein before if the section under test does not lose air at a rate greater than 0.0015 cfm per square foot of internal sewer surface. For test sections containing over 625 square feet of surface area, the time measured by this method for 1.00 pounds per square inch pressure drop shall be calculated according to the following formula:

$$T = d^2L/42$$

T = test duration, seconds
D = pipe diameter, inches
L = section length, feet
42 = conversion factor

For test sections containing less than 625 square feet of internal surface area, the time measured by this method for 1.00 pounds per square inch pressure drop shall be calculated according to the following formula:

$$T = 56d$$

The internal surface area of pipeline sections may be calculated using the formula:

$$A = \pi Ld/12$$

The surface areas of lateral lines of differing lengths and diameters may be accommodated in Equations 1 and 2 above by using the sums $d_1 2L_1 + \ldots d_n 2L_n$ and $d_1 + \ldots + d_n$ in place of d^2L and d, respectively.

2. If the pipe installation fails to meet these requirements, the Contractor shall determine, at his own expense, the source or sources of leakage, and shall repair or replace all defective materials and correct all faulty workmanship. The type of

repairs proposed by the Contractor must be approved by the Engineer before the repair work is begun. The completed pipe installation shall meet the requirements of the air test before being considered acceptable.

D. Manhole Vacuum Test (Adapted from ASTM C1244-93):

1. Summary of Practice: Plug all lift holes and pipes entering the manhole. A vacuum will be drawn and the vacuum drop over a specified period of time is used to determine the acceptability of the manhole.

2. Significance and Use: This is not a routine test. The values recorded are applicable only to the manhole being tested and at the time of testing.

3. Preparation of the Manhole:

   a. Plug all lift holes with an approved non-shrink grout.

   b. Plug all pipes entering the manhole, taking care to securely brace the pipes and plugs from being drawn into the manhole. The manhole shall be set to finish grade and all paving (if applicable) completed.

4. Procedure:

   a. Place the test head at the inside of the top of the frame and the seal inflated in accordance with the manufacturer's recommendations.

   b. Draw a vacuum of 10 inches of mercury, with the valve on the vacuum line of the test head closed, and the vacuum pump shut off. With the valves closed, measure the time for the vacuum to drop to 9 inches.

   c. The manhole shall pass if the time for the vacuum reading to drop from 10 inches of mercury to 9 inches meets or exceeds the values indicated below.

   d. Utilizing the formulas that follow, the comparable times for a successful vacuum test for different size manholes are:

DEPTH (ft) (Length of Manhole)	TIME (sec) (Dia.)		
	48"	60"	72"
8	20	26	33
10	25	33	41
12	30	39	49
14	35	46	57
16	40	52	67
18	45	59	73

   e. If the manhole fails the initial test, make necessary repairs with a nonshrink grout after the vacuum has been released. Proceed with retesting until a satisfactory test is obtained.

   f. Use or failure of this vacuum test shall not preclude acceptance by appropriate water infiltration or exfiltration testing, or other means.

E. Subsequent Failure: Infiltration of groundwater, in any amount, following a successful hydrostatic vacuum or air test as specified, shall be considered as evidence that the original test was in error or that subsequent failure of the pipeline, manhole or cleanout assembly has occurred. The Contractor will be required to correct such failures should they occur.

3.07 ACCEPTANCE

A. Thoroughly clean all pipelines after acceptance of all joint testing and after backfilling and restoration of surfaces.

B. Base acceptance of the pipeline on a final inspection of the entire line conducted jointly by the Contractor and the Engineer. This will also include results from Owner's operations staff which will lamp each individual section between manholes.

C. Any infiltration evidence in manholes or pipe shall be properly repaired, even if unit passed testing.

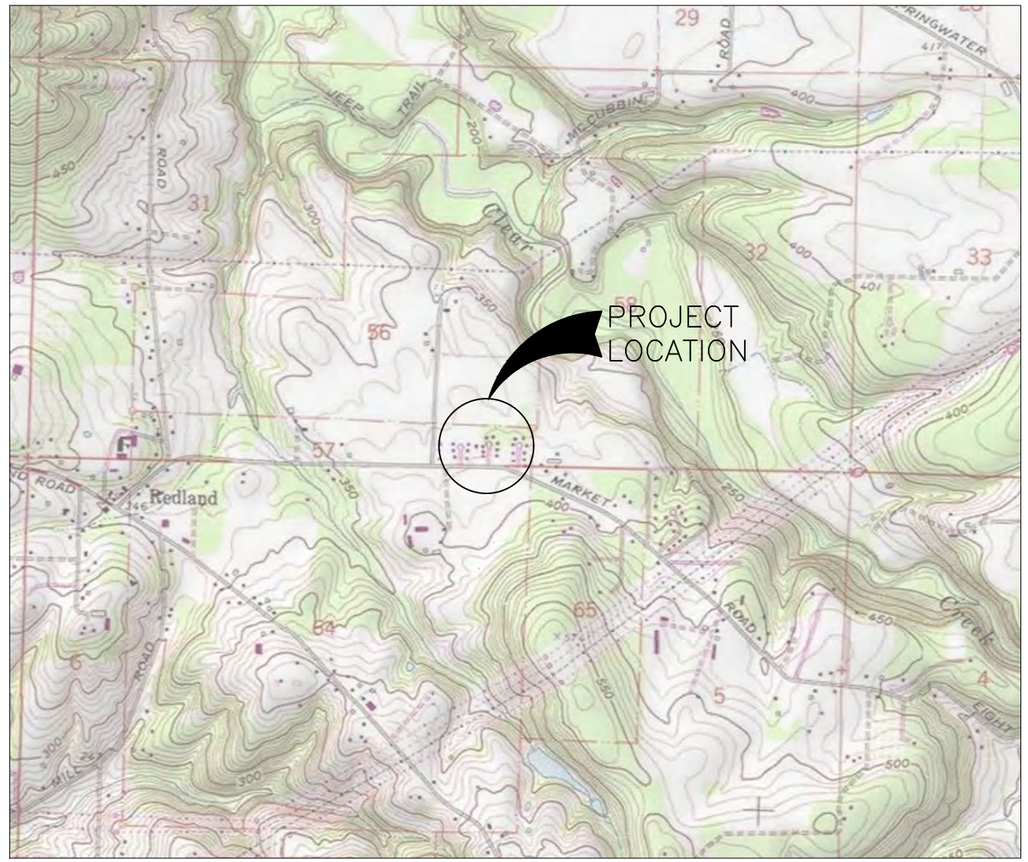
END OF SECTION

APPENDIX C

CONSTRUCTION DRAWINGS

FISCHER'S FOREST PARK
LARGE ONSITE SEWAGE SYSTEM
CLACKAMAS COUNTY, OREGON

STATE MAP



PROJECT COORDINATES: LAT: 45°20'47"N
LONG: 122°28'28"W

LOCATION MAP
SCALE: 1"=2000'

FIGURE INDEX:

LOCATES (48 HOURS NOTICE REQUIRED PRIOR TO EXCAVATION)

THE CONTRACTOR MUST COMPLY WITH THE REGULATIONS OF O.R.S. 757.541 TO 757.571 IN LOCATION AND PROTECTION OF UNDERGROUND UTILITIES. OREGON LAW REQUIRES YOU TO FOLLOW RULES ADOPTED BY THE OREGON UTILITY NOTIFICATION CENTER. THOSE RULES ARE SET FORTH IN OAR 952-001-0010 THROUGH OAR 952-001-0090. YOU MAY OBTAIN COPIES OF THE RULES BY CALLING THE CENTER.

COLOR CODES:

RED	–	ELECTRICAL POWER LINES, CABLES, OR CONDUIT, AND LIGHTING CABLES
YELLOW	–	GAS, OIL, STEAM, PETROLEUM, OR OTHER HAZARDOUS LIQUID OR GASEOUS MATERIALS.
ORANGE	–	COMMUNICATIONS, CABLE TV, ALARM OR SIGNAL LINES, CABLES OR CONDUITS.
BLUE	–	WATER, IRRIGATION, AND SLURRY LINES.
GREEN	–	SEWERS, DRAINAGE FACILITIES OR OTHER DRAIN LINES.
WHITE	–	PRE-MARKING OF THE OUTER LIMITS OF THE PROPOSED EXCAVATION OR MARKING THE CENTERLINE AND WIDTH OF PROPOSED LINEAL INSTALLATIONS OF BURIED FACILITIES.
PINK	–	TEMPORARY SURVEY MARKINGS
PURPLE	–	SLURRY AND RECLAIMED

FIGURE INDEX (WES):

Certified Professional Soil Scientist
BRIANT. RABE
15239 Exp. 12/31/21
Registered Wastewater Specialist
No. EH-W-448430 Exp. 9/30/21

FISCHER'S FOREST PARK LOSS
CLACKAMAS COUNTY

REV #	DESCRIPTION	BY	DATE

DES. BY 1BTR
DRG. BY 6NSG
CHK. BY 1GLT
DATE 1/4/2023
JOB No. 2020230021

VALLEY SCIENCE AND ENGINEERING

VICINITY MAP AND SHEET INDEX

LARGE ONSITE SEWAGE SYSTEM DESIGN

SHEET
G1

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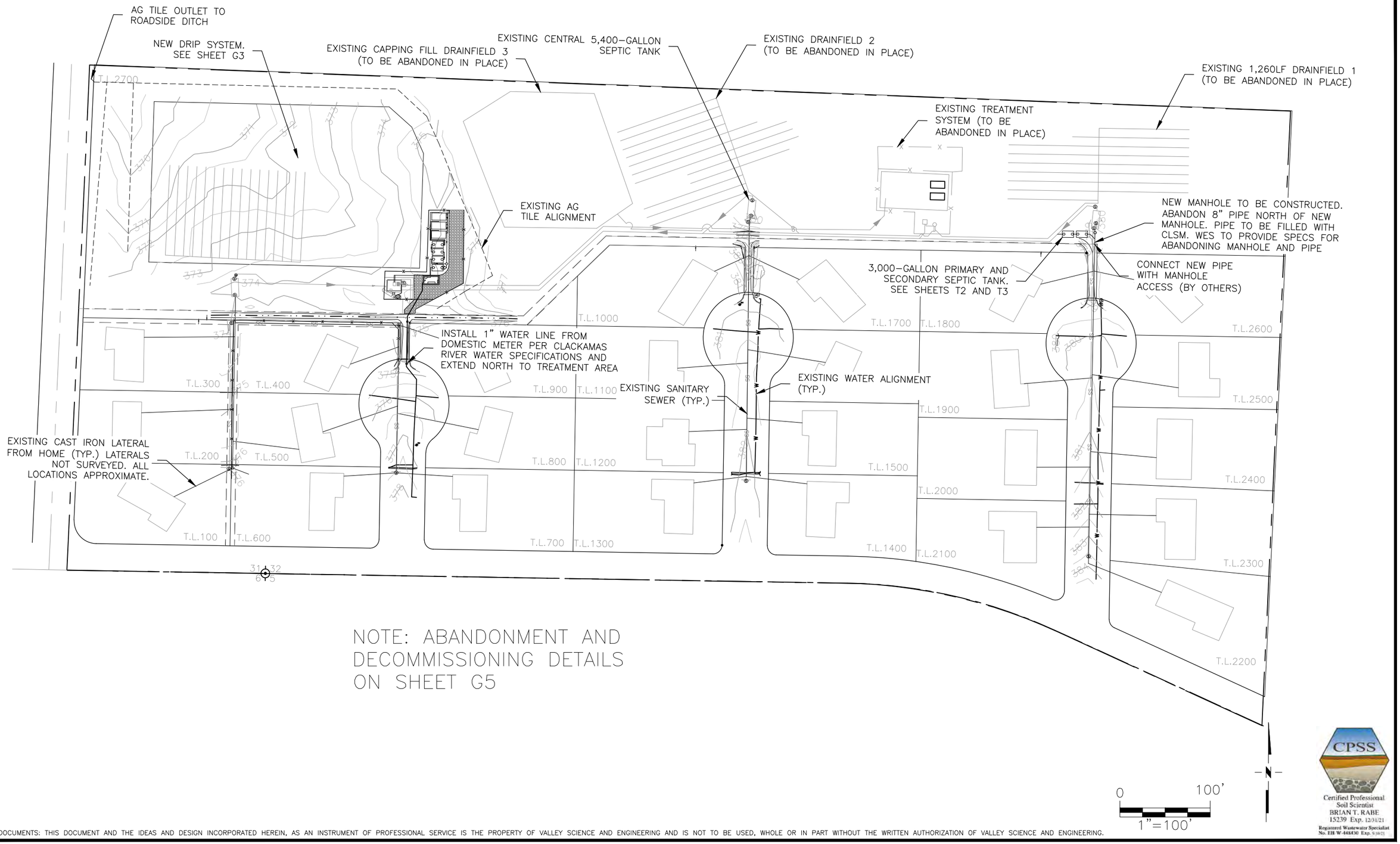

NOTE: ABANDONMENT AND DECOMMISSIONING DETAILS ON SHEET G5

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Registered Wastewater Specialist
No. EH W-448450 Exp. 9/30/21

FISCHER'S FOREST PARK LOSS
CLACKAMAS COUNTY

REV #	DESCRIPTION	BY	DATE

DES. BY 1BTR
DRG. BY 6NSG
CHK. BY 1GLT
DATE 1/4/2023
JOB No. 2020230021

VALLEY SCIENCE AND ENGINEERING

GENERAL SITE PLAN

LARGE ONSITE SEWAGE SYSTEM DESIGN

SHEET G2

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T.L.2700

ZONE 8
(13 LATERALS)

ZONE 6
(9 LATERALS)

ZONE 5
(10 LATERALS)

ZONE 4
(11 LATERALS)

ZONE 7
(13 LATERALS)

ZONE 3
(11 LATERALS)

ZONE 2
(9 LATERALS)

ZONE 1
(10 LATERALS)

NEW 52,000 SQ. FT.
SUBSURFACE DRIP DISTRIBUTION
SYSTEM. SEE SHEETS D1–D4

EXISTING AG TILE
ALIGNMENT. LOCATE
AND PROTECT IN PLACE

NEW TREATMENT SYSTEM.
SEE SHEET G4

REPLACE EXISTING FENCE
WITH NEW CHAIN LINK
FENCE. SEE SHEET M2

EXISTING
AG TILE
ALIGNMENT

EXISTING WEST
5,400–GALLON SEPTIC TANK

ALL COLLECTION SYSTEM
COMPONENTS (MANHOLES,
SEWER MAINS) ARE
BEING REPLACED

EXISTING FENCE TO BE
REPLACED. SEE SHEET M2

EXISTING 6,500–GALLON
RECIRCULATION TANK TO
BE RECONFIGURED AS
LIFT TANK. SEE SHEET T4

CHAIN LINK ACCESS
GATE. SEE SHEET M2

VALVE BOX WITH PRESSURE REDUCING AND BACK FLOW
PREVENTION VALVE (APOLLO RP4A OR APPROVED EQUAL). HEAT
TAPE FOR FROST PROTECTION REQUIRED. CONSTRUCTION MUST
CONFORM TO CLACKAMAS RIVER WATER SPECIFICATIONS.

20'

40'

LEGEND:

- SUPPLY MAIN
- FLUSH MAIN
- AIR RELEASE (SUPPLY MANIFOLDS)
- BALL VALVE AND CHECK VALVE ASSEMBLY WITH AIR RELEASE VALVE

0 30'
1"=30'

CPSS
Certified Professional
Soil Scientist
BRIAN T. RABE
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Registered Wastewater Specialist
No. EH W-448450 Exp. 9/30/21

FISCHER'S FOREST PARK LOSS
CLACKAMAS COUNTY

REV #	DESCRIPTION	BY	DATE

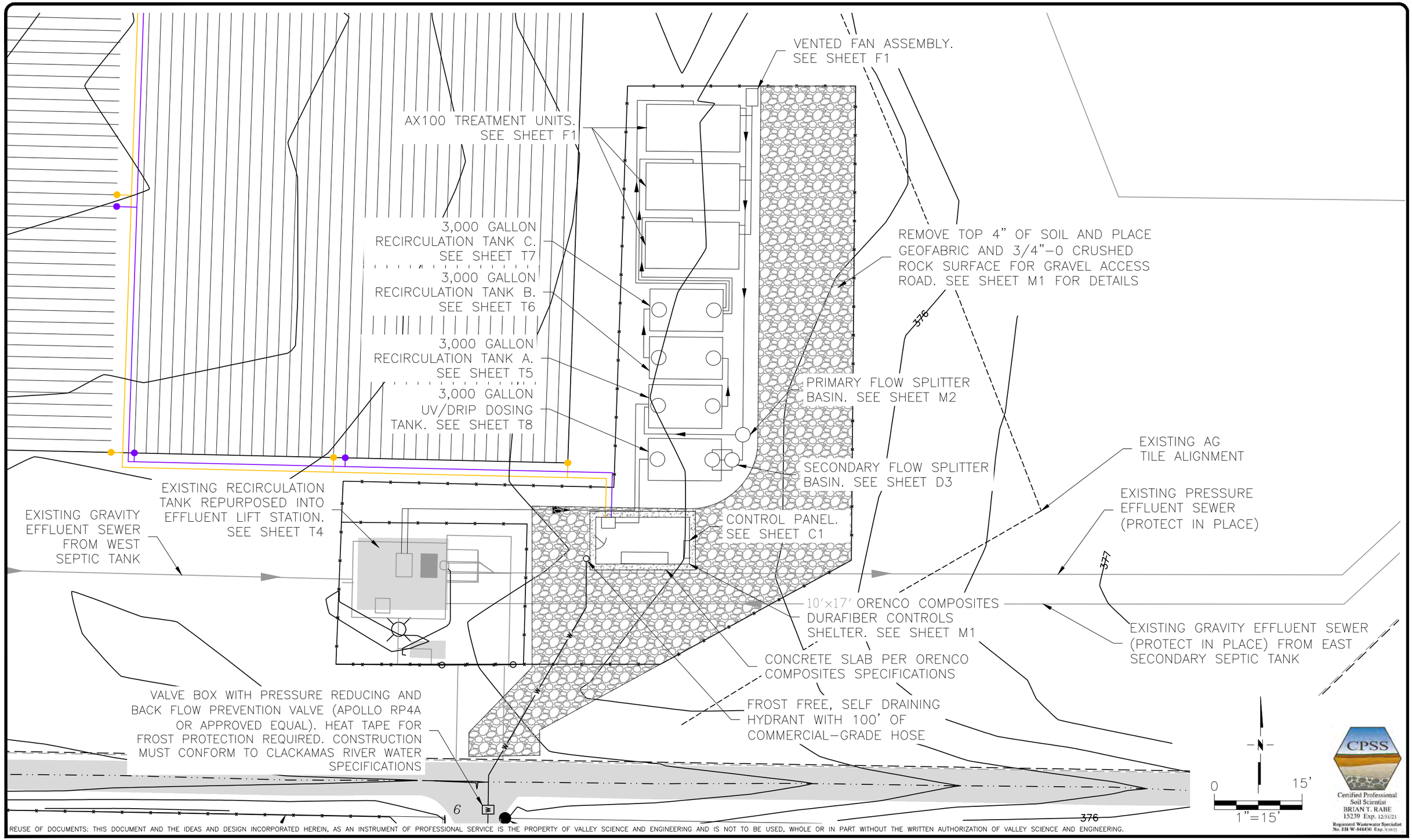
DES. BY 1BTR
DRG. BY 6NSG
CHK. BY 1GLT
DATE 1/4/2023
JOB No. 2020230021

VALLEY SCIENCE AND ENGINEERING

DRIP SYSTEM SITE PLAN

LARGE ONSITE SEWAGE SYSTEM DESIGN

SHEET
G3



CPSS
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Registered Wastewater Specialist
No. EH-W-448430 Exp. 6/30/21

FISCHER'S FOREST PARK LOSS
CLACKAMAS COUNTY

REV #	DESCRIPTION	BY	DATE

DES. BY 1BTR
DRG. BY 6NSG
CHK. BY 1GLT
DATE 1/4/2023
JOB No. 2020230021

VALLEY SCIENCE AND ENGINEERING

TANK LAYOUT DETAIL

LARGE ONSITE SEWAGE SYSTEM DESIGN

SHEET
G4

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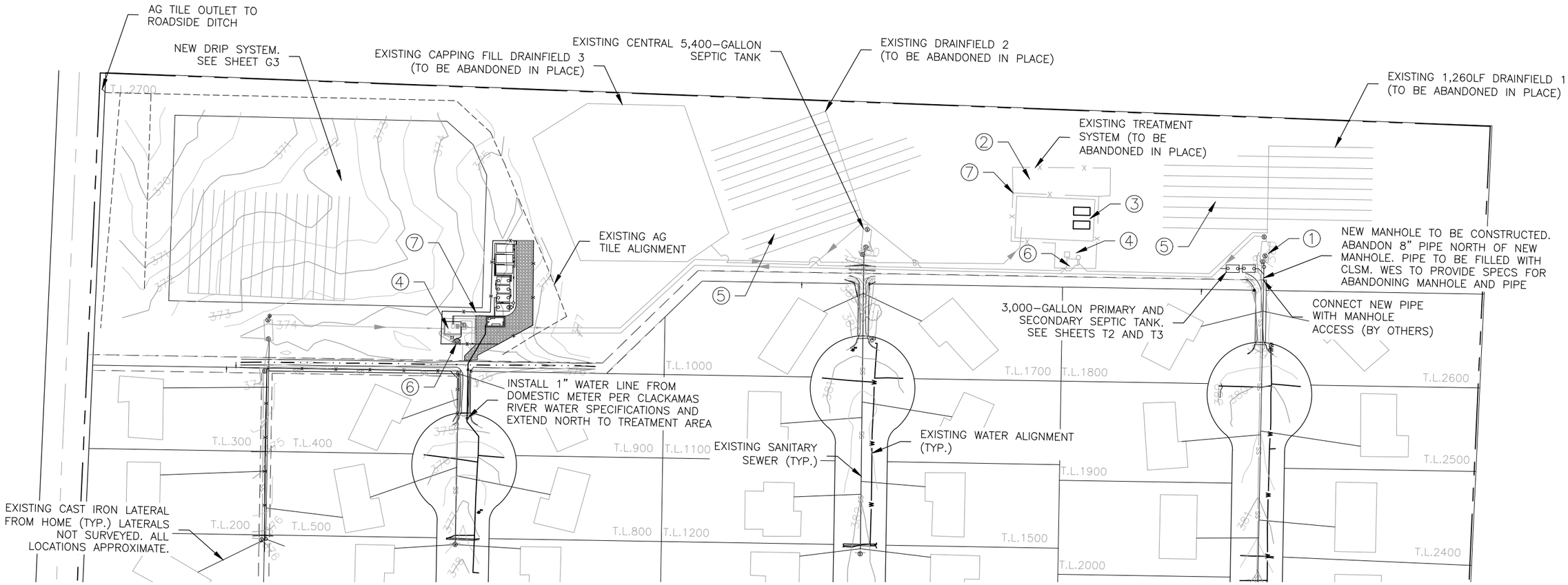

ABANDONMENT NOTES:

1. EXISTING EAST SEPTIC TANK – DECOMMISSION ACCORDING TO OAR 340-071-0185(2)(a)(b). TANKS MUST BE PUMPED BY A LICENSED SEWAGE DISPOSAL SERVICE TO REMOVE ALL SEPTAGE. UPON PUMPING, TANKS MUST BE FILLED WITH REJECT SAND, BAR RUN GRAVEL, OR OTHER MATERIAL APPROVED BY THE DEPARTMENT (DEQ) OR TANK MUST BE REMOVED AND PROPERLY DISPOSED OF. PROVIDE PROPER DOCUMENTATION FOR ABANDONMENT ACCORDING TO STATE AND LOCAL REGULATIONS.
2. EXISTING GRAVEL FILTER – ABANDONED IN PLACE (2006).
3. EXISTING AX100 TEXTILE FILTRATION UNITS, PIPING, AND BASINS – REMOVE AND PROPERLY DISPOSE OF UNITS, CUT AND CAP PIPING TO AND FROM UNITS, BACKFILL WITH 3/4 MINUS, REJECT SAND, OR BAR RUN GRAVEL.
4. TREATMENT AREA AND LIFT STATION PUMPS AND FLOATS ASSEMBLIES – REMOVE AND PROPERLY DISPOSE OF PUMPS, VAULT(S) AND FLOATS. CUT AND CAP PIPING BELOW EXISTING GRADE TO AND FROM TREATMENT AREA FLOW SPLITTER BASIN AND PUMP BASIN UPON PROJECT COMPLETION. TREATMENT AREA FLOW SPLITTER BASIN AND PUMP BASIN MUST BE PUMPED BY A LICENSED SEWAGE DISPOSAL SERVICE TO REMOVE ALL SEPTAGE. UPON PUMPING, BASIN MUST BE FILLED WITH REJECT SAND, BAR RUN GRAVEL, OR OTHER MATERIAL APPROVED BY DEQ OR BASIN MUST BE REMOVED AND PROPERLY DISPOSED OF.
5. EXISTING DRAINFIELDS – ABANDON IN PLACE.
6. TREATMENT AREA AND LIFT STATION CONTROL PANELS AND ELECTRICAL EQUIPMENT – ALL CONTROL PANELS AND ASSOCIATED STRUCTURES TO BE REMOVED AND DISPOSED OF IN A DEQ APPROVED LANDFILL. EXISTING CONDUIT TO BE CUT AND CAPPED. BACKFILL OF ANY ASSOCIATED EXCAVATIONS TO OCCUR WITH REJECT SAND, BAR RUN GRAVEL, OR OTHER MATERIAL APPROVED BY DEQ.
7. CONTRACTOR TO REMOVE EXISTING FENCE AND BACKFILL POST HOLES.

0 100'
1"=100'

N

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No. EH W-448450 Exp. 9/30/21

FISCHER'S FOREST PARK LOSS
CLACKAMAS COUNTY

REV #	DESCRIPTION	BY	DATE

DES. BY 1BTR
DRG. BY 6NSG
CHK. BY 1GLT
DATE 1/4/2023
JOB No. 2020230021

VALLEY SCIENCE AND ENGINEERING

DECOMMISSIONING AND ABANDONMENT NOTES

LARGE ONSITE SEWAGE SYSTEM DESIGN

SHEET G5

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Relative Elevations (in feet)

Label	Relative Elevation	Description
Temporary Benchmark (TBM)		
TBM-1	373.94	TBM-1 West Septic Tank (Top of Cast Iron Outlet Manhole)
TBM-2	379.41	East Septic Tank (Top of Cast Iron Manhole)

East Primary Septic Tank Replacement (3,000 gallon Waite Concrete Products)		
A1	378.73	Finish Grade (1" Below Top of Lid)
A2	377.48	Exterior Top of Tank
A3	376.15	Inlet Invert (8")
A4	375.98	Outlet Invert (4")
A5	370.28	Interior Bottom of Tank
A6	369.90	Exterior Bottom of Tank (Top of Prepared Base)

East Secondary Septic Tank (3,000 gallon Waite Concrete Products)		
B1	378.48	Finish Grade (1" Below Top of Lid)
B2	376.82	Exterior Top of Tank
B3	375.73	Inlet Invert (4")
B4	375.57	Outlet Invert (4")
B5	369.86	Interior Bottom of Tank
B6	369.48	Exterior Bottom of Tank (Top of Prepared Base)

Lift Tank (Existing Recirculation Tank)		
C1	375.80	Exterior Top of Tank EMS, 2006 Record Drawings
C2	370.00	West Inlet Invert (1 @ 4") - EMS, 2006 Record Drawings
C3	368.78	East Inlet Invert (1 @ 4") - EMS, 2006 Record Drawings
C4	366.88	High Level Alarm/Lag Pump ON
C5	366.38	Lead Pump ON
C6	366.13	Pump(s) OFF
C7	365.88	Redundant "OFF"/Low Level Alarm
C8	365.13	Flow Inducer Hole Heights
C9	363.13	Interior Bottom of Tank - EMS, 2006 Record Drawings

Recirculation Tank A (3,000 gallon Waite Concrete Products)		
D1	375.00	Finish Grade (1" Below Top of Lid)
D2	373.08	Exterior Top of Tank
D3	372.00	Inlet Invert
D4	367.79	MinLL
D5	367.13	Pass Through Piping
D6	366.13	Interior Bottom of Tank
D7	365.75	Exterior Bottom of Tank (Top of Prepared Base)

Recirculation Tank B (3,000 gallon Waite Concrete Products)		
E1	375.00	Finish Grade (1" Below Top of Lid)
E2	373.08	Exterior Top of Tank
E3	367.79	MinLL
E4	367.13	Pass Through Piping
E5	366.13	Interior Bottom of Tank
E6	365.75	Exterior Bottom of Tank (Top of Prepared Base)

Recirculation Tank C (3,000 gallon Waite Concrete Products)		
F1	375.00	Finish Grade (1" Below Top of Lid)
F2	373.08	Exterior Top of Tank
F3	371.54	High Level Timer and Alarm
F4	370.29	Override Timer
F5	369.04	Normal Timer (Low when Down)
F6	368.63	Redundant "OFF"/Low Level Alarm
F7	368.13	Flow Inducer Hole Heights
F8	367.13	Pass Through Piping (Between Tanks)
F9	366.13	Interior Bottom of Tank
F10	365.75	Exterior Bottom of Tank (Top of Prepared Base)

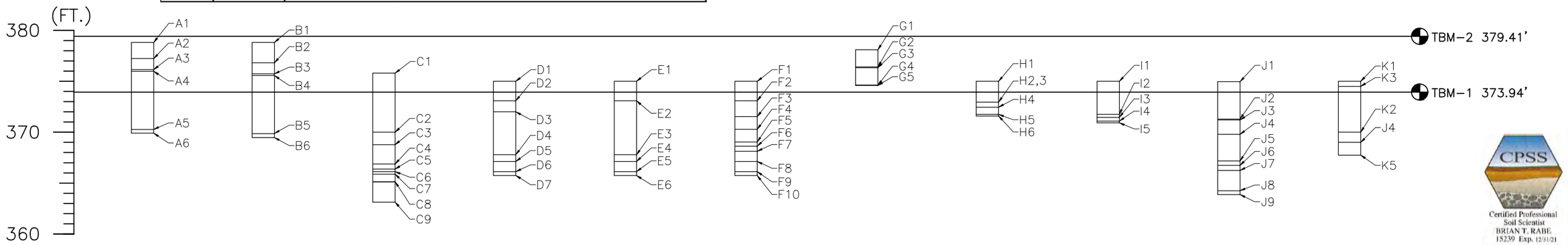
New AdvanTex Unit (AX100)		
G1	378.09	Top of Lid
G2	376.42	Top of Distribution Laterals (Orifice Discharge)
G3	376.34	Finish Grade (21" Below Top of Lid)
G5	374.63	Underdrain (Outlet Invert)
G6	374.59	Exterior Bottom of Container (Top of Prepared Base)

Primary Flow Splitter Basin		
H1	375.00	Finish Grade (1" Below Top of Riser Lid)
H2	372.96	Inlet Invert (4")
H3	372.96	Vent/Overflow
H4	372.46	Orifices (Standpipes)
H5	371.75	Outlet Invert (2@4")
H6	371.59	Exterior Bottom of Basin (Top of Prepared Base)

Secondary Flow Splitter Basin		
I1	375.00	Finish Grade (1" Below Top of Riser Lid)
I2	371.75	Inlet Invert (4")
I3	371.46	Orifices (Standpipes)
I4	371.09	Outlet Invert (3@4")
I5	370.92	Exterior Bottom of Basin (Top of Prepared Base)

Dripfield Dosing Tank (3,000 gallon Waite Concrete Products)		
J1	374.96	Finish Grade (1" Below Top of Lid)
J2	371.29	Inlet Invert (4")
J4	371.21	Exterior Top of Tank
J3	369.79	High Level Alarm
J5	367.17	Timer ON
J6	366.75	Redundant "OFF"/Low Level Alarm
J7	366.25	Flow Inducer Hole Heights
J8	364.25	Interior Bottom of Tank
J9	363.88	Exterior Bottom of Tank (Top of Prepared Base)

Drip System Components		
K1	375.00	Maximum Finish Grade Over Drip Field
K2	370.00	Minimum Finish Grade Over Drip Field
K3	374.50	Maximum Elevation of Dripperline
K4	369.00	Minimum Elevation of Dripperline
K5	367.75	Invert of Flushing Return Mainline



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FISCHER'S FOREST PARK LOSS
CLACKAMAS COUNTY

REV #	DESCRIPTION	BY	DATE

DES. BY 1BTR
DRG. BY 6NSG
CHK. BY 1GLT
DATE 1/4/2023
JOB No. 2020230021

VALLEY SCIENCE AND ENGINEERING

HYDRAULIC PROFILE

LARGE ONSITE SEWAGE SYSTEM DESIGN

SHEET
H1

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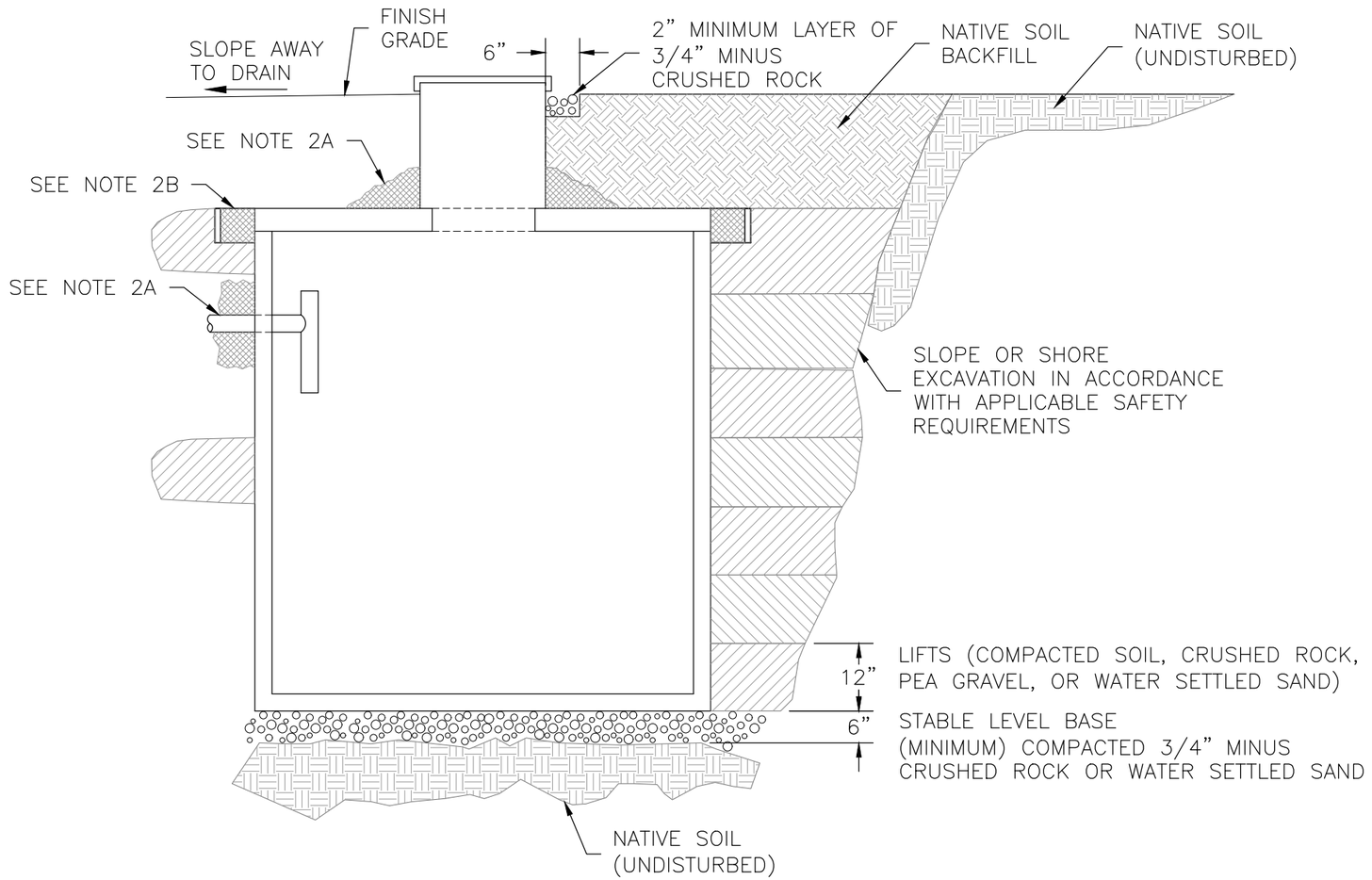


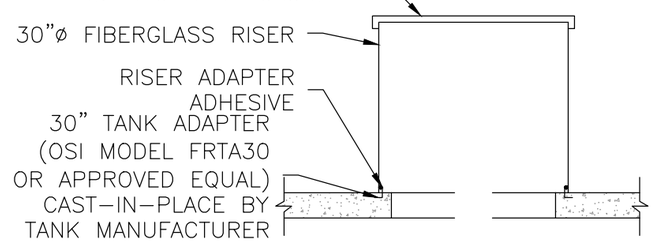
1 – TANK END VIEW
NOT TO SCALE

NOTES: (1) AREAS WHERE PIPING AND CONDUIT SPAN THE TANK EXCAVATION SHALL BE BACKFILLED WITH WATER SETTLED SAND TO PREVENT SETTLING.

(2) SEALING AND WATER TIGHTNESS TESTING: NO MORE THAN ONE GALLON OF WATER LOSS IN 24 HOURS SHALL BE TOLERATED. FIELD REPAIRS MAY BE ATTEMPTED ONCE. IF THE TANK FAILS THE WATER TIGHTNESS TEST A SECOND TIME IT SHALL BE REPLACED AT NO EXPENSE TO THE OWNER.

(A) ALL PIPE PENETRATIONS AND RISER SEAMS SHALL BE VISUALLY TESTED WITH WATER. ANY OBVIOUS LEAKAGE SHALL RESULT IN RE–GROUTING. ALL PIPE PENETRATIONS AND RISER SEAMS SHALL BE SURROUNDED WITH A MINIMUM OF SIX INCHES OF BENTONITE PRIOR TO BACKFILLING.

(B) ONE–PIECE OR TOP SEAM TANKS: BACKFILL TO 6 INCHES BELOW THE EXTERIOR TANK TOP. FILL THE TANK WITH WATER TO 2 INCHES INTO THE RISERS (NO MORE). PRE–SOAK FOR 24 HOURS AND REFILL, IF NECESSARY. PLACE BENTONITE PRIOR TO FINAL BACKFILL.



2 – 30"ø RISER DETAIL
0 2 FEET
SCALE

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FISCHER'S FOREST PARK LOSS
CLACKAMAS COUNTY

REV #	DESCRIPTION	BY	DATE

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VALLEY SCIENCE AND ENGINEERING

EXCAVATION AND BACKFILL DETAIL

LARGE ONSITE SEWAGE SYSTEM DESIGN

SHEET T1

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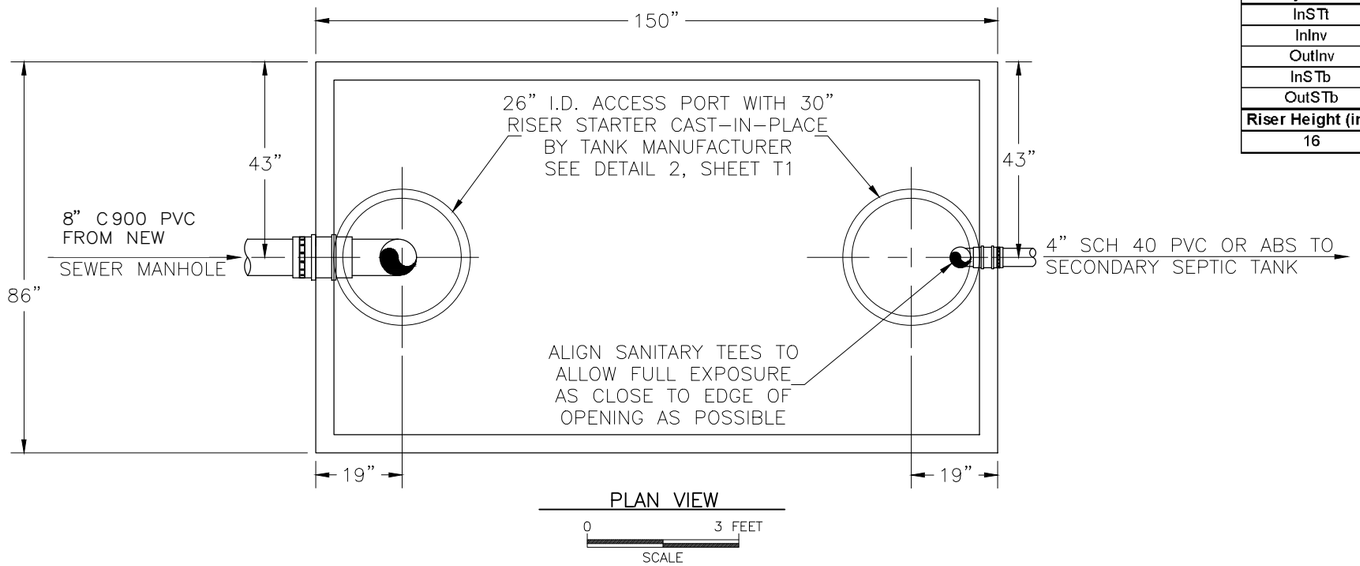

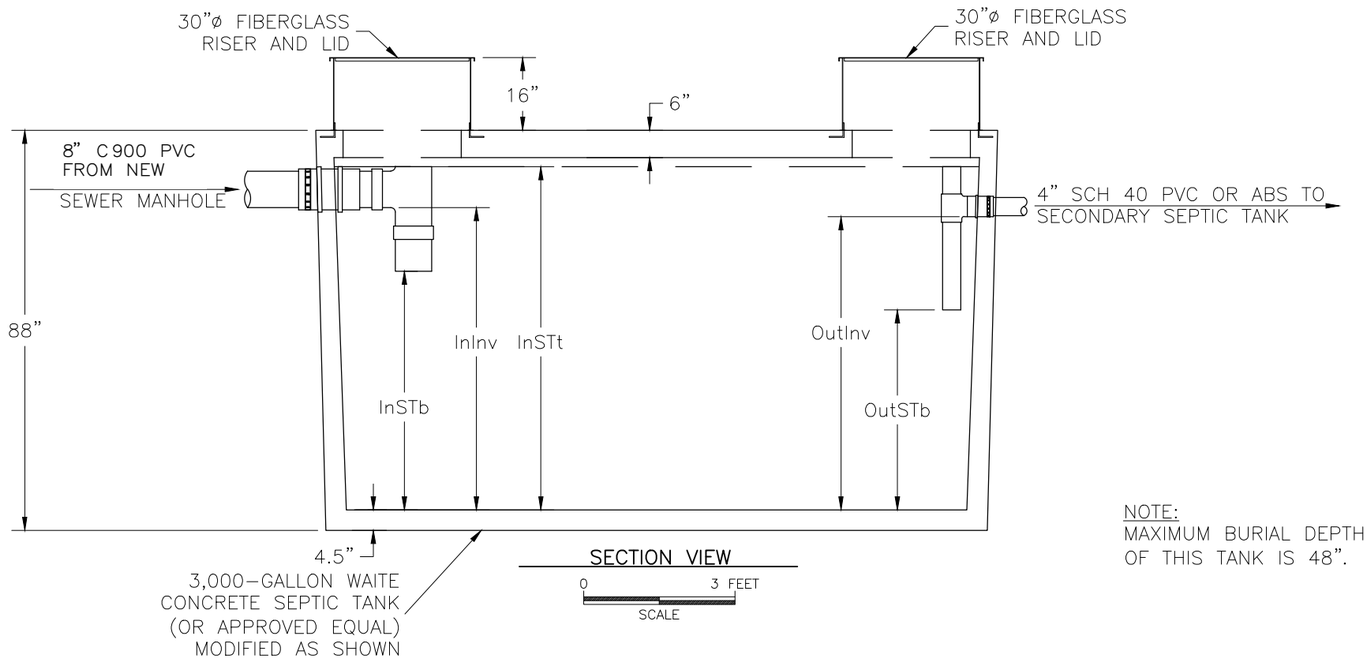

NOTE:
MAXIMUM BURIAL DEPTH OF THIS TANK IS 48".

Labels and General Information

Symbol	Name	Distance From Tank Floor (in.)	Distance From Exterior Tank Top (in.)
InSTt	Inlet and Outlet Sanitary Tees (Top of Pipe)	75.5	8
InInv	Inlet Invert	66.5	17
OutInv	Outlet Invert/Operating Liquid Level	64.5	19
InSTb	Inlet Sanitary Tee (Bottom of Pipe)	52.5	31
OutSTb	Outlet Sanitary Tee (Bottom of Pipe)	44	39.5
Riser Height (in.)	**Inlet Pipe Size (in.)**	**Outlet Pipe Size (in.)**	**Tank Location**
16	8	4	East Primary Septic Tank - North End of Fir Cone Ct

Orenco Equipment (Or Approved Equal)
East Primary Septic Tank Replacement

Quantity	Item *	Description/Comments
2	RF30016	Fiberglass Access Risers, 30" Diameter (Inlet & Outlet)
2	FLD30G	Fiberglass Lid, 30" with Gasket and 4 Bolt Pattern
4	MA320	2-Part Epoxy for Securing Riser to Tank Adapter
2	ADH200	Caulking for Final Seal Between Riser and Tank Adapter

* Item numbers are provided as a courtesy. Since specific numbers and supplementary codes can change, supplier is to compare this information to the drawings and independently verify. Call designer if there are any inconsistencies or questions.

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FISCHER'S FOREST PARK LOSS
CLACKAMAS COUNTY

REV #	DESCRIPTION	BY	DATE

DES. BY 1BTR
DRG. BY 6NSG
CHK. BY 1GLT
DATE 1/4/2023
JOB No. 2020230021

VALLEY SCIENCE AND ENGINEERING

EAST PRIMARY SEPTIC TANK

LARGE ONSITE SEWAGE SYSTEM DESIGN

SHEET
T2

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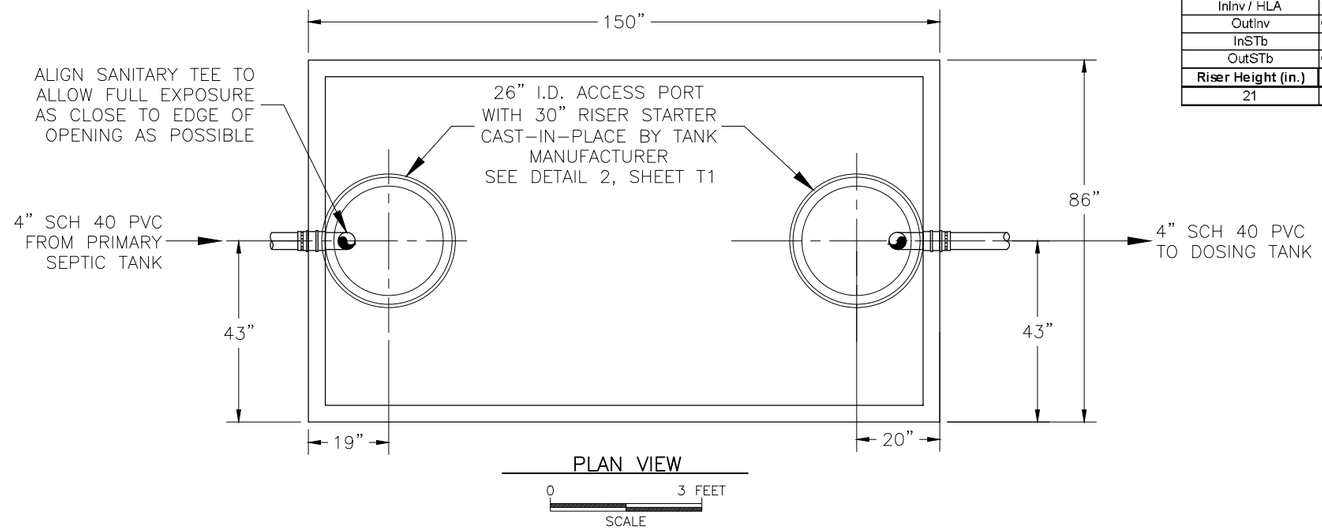
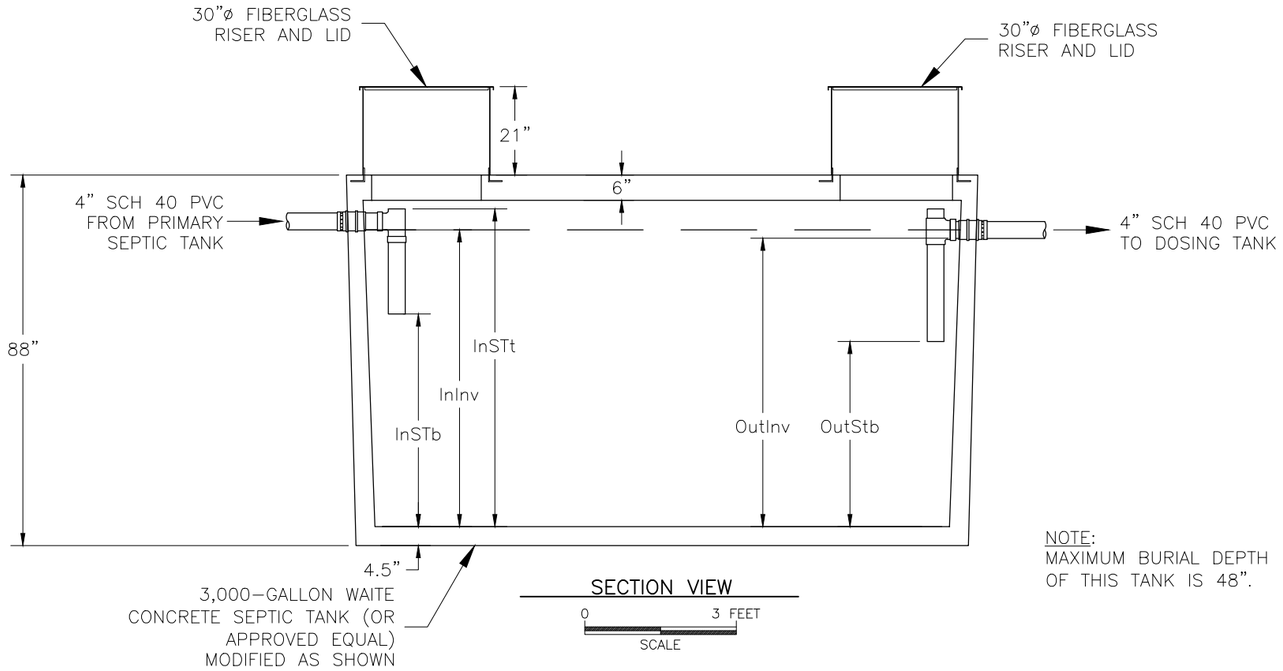


PLAN VIEW

0 3 FEET

SCALE



SECTION VIEW

0 3 FEET

SCALE

NOTE:
MAXIMUM BURIAL DEPTH OF THIS TANK IS 48".

Labels and General Information			
Symbol	**Name**	**Distance From Tank Floor (in.)**	**Distance From Exterior Tank Top (in.)**
InSTt	Inlet and Outlet Sanitary Tees (Top of Pipe)	75.5	8
InInv / HLA	Inlet Invert / High Level Alarm	70.5	13
OutInv	Outlet Invert/Operating Liquid Level	68.5	15
InSTb	Inlet Sanitary Tee (Bottom of Pipe)	50.5	33
OutSTb	Outlet Sanitary Tee (Bottom of Pipe)	44	39.5
Riser Height (in.)	**Inlet Pipe Size (in.)**	**Outlet Pipe Size (in.)**	**Tank Location**
21	4	4	New Tank Farm West of Parking Lot, South of SST C

Orenco Equipment (Or Approved Equal)		
Filtration Septic Tank		
Quantity	**Item ***	**Description/Comments**
2	RF3021	Fiberglass Access Riser, 30" Diameter (Inlet)
2	FLD30G	Fiberglass Lid, 30" with Gasket and 4 Bolt Pattern
4	MA320	2-Part Epoxy for Securing Riser to Tank Adapter
2	ADH200	Caulking for Final Seal Between Riser and Tank Adapter

* Item numbers are provided as a courtesy. Since specific numbers and supplementary codes can change, supplier is to compare this information to the drawings and independently verify. Call the designer if there are any inconsistencies or questions.

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FISCHER'S FOREST PARK LOSS
CLACKAMAS COUNTY

REV #	DESCRIPTION	BY	DATE

DES. BY 1BTR
DRG. BY 6NSG
CHK. BY 1GLT
DATE 1/4/2023
JOB No. 2020230021

VALLEY SCIENCE AND ENGINEERING

EAST SECONDARY SEPTIC TANK

LARGE ONSITE SEWAGE SYSTEM DESIGN

SHEET
T3

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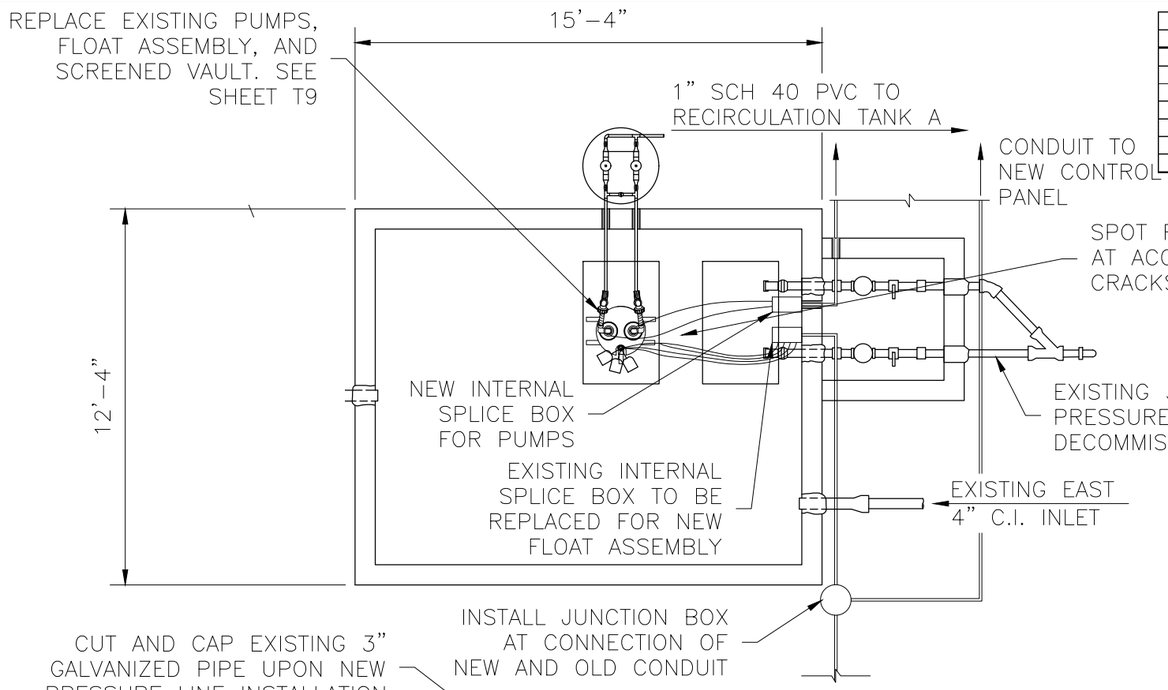
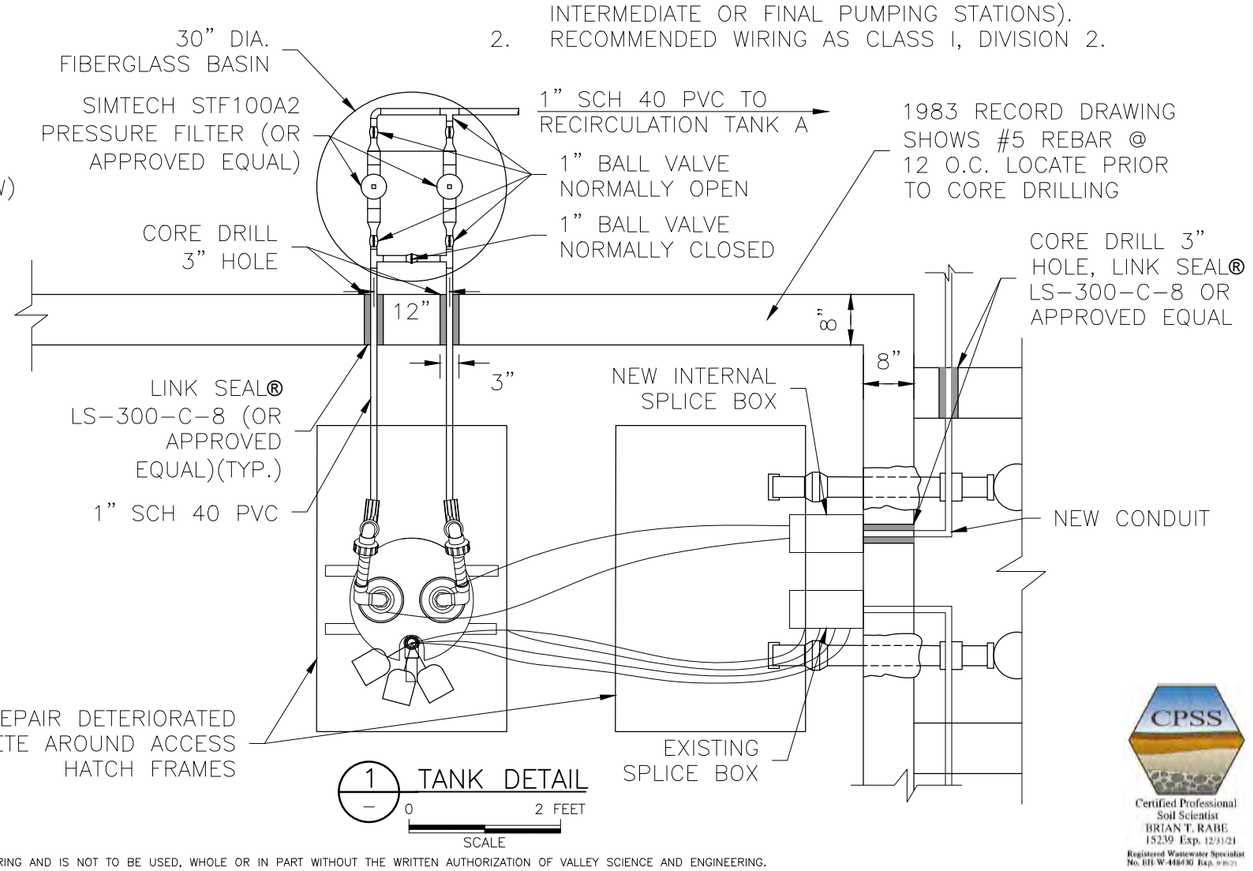


Labels and General Information			
Symbol	Name	Distance From Tank Floor (in.)	Distance From Exterior Tank Top (in.)
WInInv	West Inlet Invert	82.44	73.56
EInInv	East Inlet Invert	67.8	88.2
LAG/HLA	Lag Pump enable and High Level Alarm	65	91
ON	Lead Pump ON	50	106
OFF	Pump(s) OFF	35	121
RO/LLA	Redundant OFF/Low Level Alarm	30	126
FITInH	Flow Inducer Tower Inlet Holes	24	132

Orenco Equipment (Or Approved Equal)		
Effluent Lift Tank		
Quantity	Item *	Description/Comments
1	SB-2	Internal Splice Box with 2 Cord Grips (Pumps)
1	SB-4	Internal Splice Box with 4 Cord Grips (Controls/Alarms)
1	MF4P-20	Float Assembly with 4 Floats and 20-foot Cords
2	HV-100BCFC	Hose and Valve Assembly, 1", with Ball Valve, Check Valve, and Flow Control Disk
1	FITD-D90	Custom Duplex Flow Inducer Tower without Pump Support Plate
2	PF 10 0512-20	OSI Effluent Pump, 0.50 Hp, 230V, 60 Hz, with 20-foot Power Cords

* Item numbers are provided as a courtesy. Since specific numbers and supplementary codes can change, supplier is to compare this information to the drawings and independently verify. Call the designer if there are any inconsistencies or questions.

NOTES:
1. CLASSIFICATION FOR ELECTRICAL EQUIPMENT: UNCLASSIFIED (NFPA 820, TABLE 3, NO. 19 – INTERMEDIATE OR FINAL PUMPING STATIONS).
2. RECOMMENDED WIRING AS CLASS I, DIVISION 2.



Certified Professional Soil Scientist
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FISCHER'S FOREST PARK LOSS
CLACKAMAS COUNTY

REV #	DESCRIPTION	BY	DATE

DES. BY 1BTR
DRG. BY 6NSG
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VALLEY SCIENCE AND ENGINEERING

DOSING TANK CONVERSION (EXISTING RECIRCULATION TANK)

LARGE ONSITE SEWAGE SYSTEM DESIGN

SHEET T4

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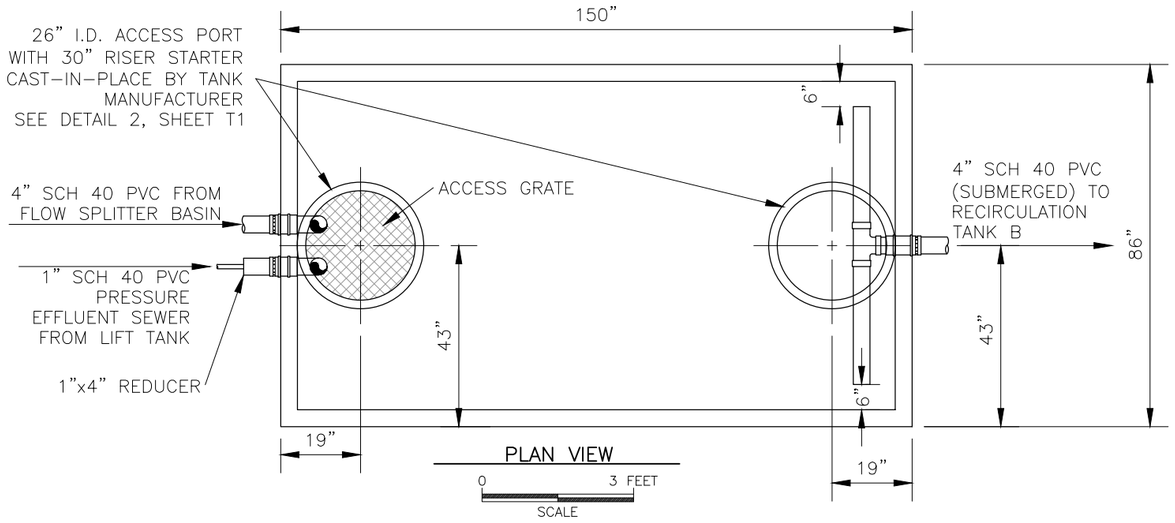

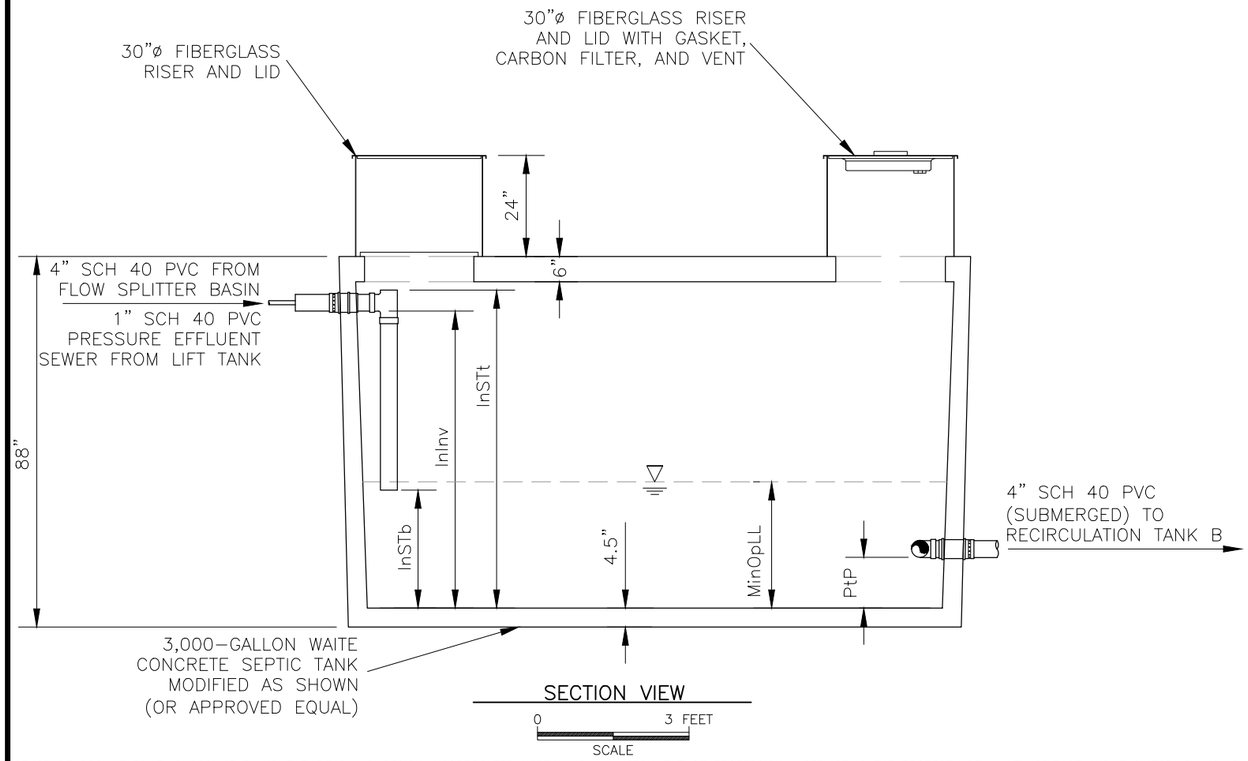

Labels and General Information			
Symbol	**Name**	**Distance From Tank Floor (in.)**	**Distance From Exterior Tank Top (in.)**
InSTt	Inlet Sanitary Tees (Top of Pipe)	75.5	8
InInv	Inlet Invert	70.5	13
MinOpLL	Minimum Operation Liquid Level	30	53.5
InSTb	Inlerr Sanitary Tee (Bottom of Pipe)	28	55.5
PtP	Pass Through Piping (Between Tanks)	12	71.5
Riser Height (in.)	**Inlet Pipe Size (in.)**	**Outlet Pipe Size (in.)**	**Tank Location**
24	2 @ 4	4	Tank Farm (North of Merry Meadow Ct)

Orenco Equipment (Or Approved Equal)		
Recirculation Tank A		
Quantity	**Item ***	**Description/Comments**
2	RF3024	Fiberglass Access Riser, 30" Diameter (Inlet)
1	FLD30G	Fiberglass Lid, 30" with Gasket and 4 Bolt Pattern
1	FLD30GVCF	Fiberglass Lid, 30" with Gasket, Vent, Carbon Filter and 4-Bolt Pattern (Outlet)
1	RG30	30" Diameter Access Grate (Inlet)
4	MA320	2-Part Epoxy for Securing Riser to Tank Adapter
2	ADH200	Caulking for Final Seal Between Riser and Tank Adapter

* Item numbers are provided as a courtesy. Since specific numbers and supplementary codes can change, supplier is to compare this information to the drawings and independently verify. Call the designer if there are any inconsistencies or questions.

NOTE:
MAXIMUM BURIAL DEPTH OF THIS TANK IS 48"

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FISCHER'S FOREST PARK LOSS
CLACKAMAS COUNTY

REV #	DESCRIPTION	BY	DATE

DES. BY 1BTR
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VALLEY SCIENCE AND ENGINEERING

RECIRCULATION TANK A

LARGE ONSITE SEWAGE SYSTEM DESIGN

SHEET
T5

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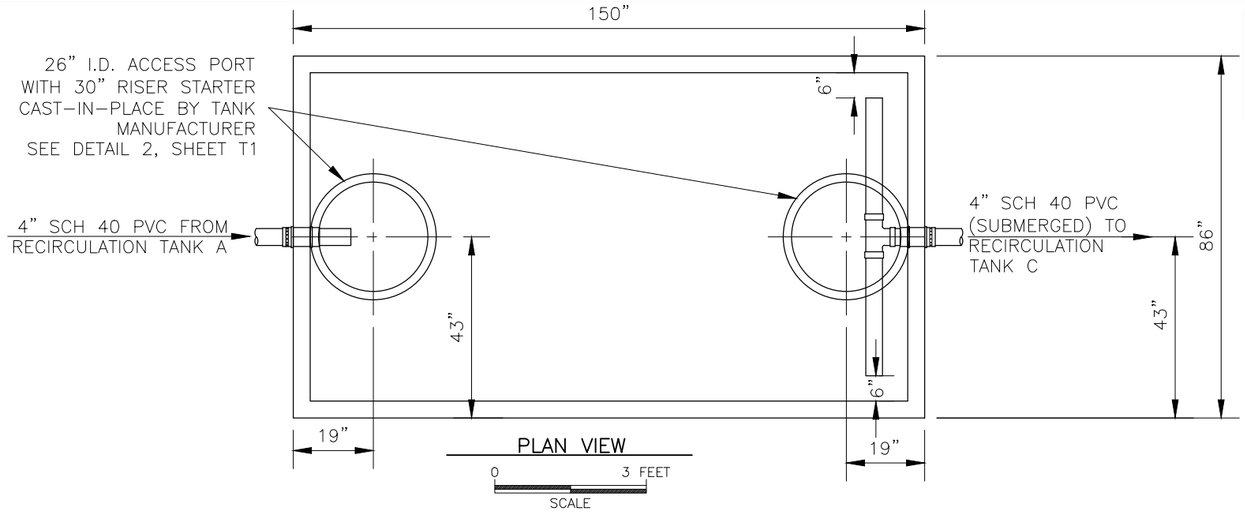
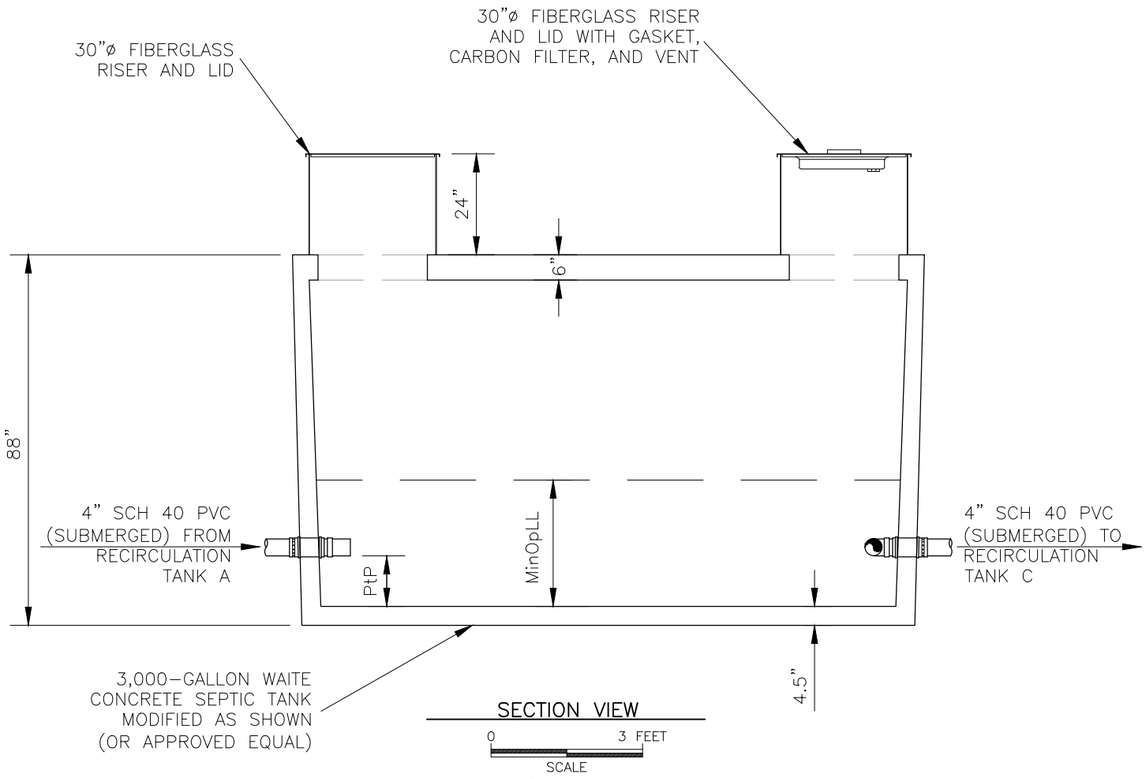


Labels and General Information			
Symbol	**Name**	**Distance From Tank Floor (in.)**	**Distance From Exterior Tank Top (in.)**
MinOpLL	Minimum Operation Liquid Level	30	53.5
PtP	Pass Through Piping (Between Tanks)	12	71.5
Riser Height (in.)	**Inlet Pipe Size (in.)**	**Outlet Pipe Size (in.)**	**Tank Location**
24	4	4	Tank Farm (North of Merry Meadow Ct)

Orenco Equipment (Or Approved Equal)		
Recirculation Tank B		
Quantity	**Item ***	**Description/Comments**
2	RF3024	Fiberglass Access Riser, 30" Diameter (Inlet)
1	FLD30G	Fiberglass Lid, 30" with Gasket and 4 Bolt Pattern (Inlet)
1	FLD30GVCF	Fiberglass Lid, 30" with Gasket, Vent, Carbon Filter and 4-Bolt Pattern (Outlet)
4	MA320	2-Part Epoxy for Securing Riser to Tank Adapter
2	ADH200	Caulking for Final Seal Between Riser and Tank Adapter

* Item numbers are provided as a courtesy. Since specific numbers and supplementary codes can change, supplier is to compare this information to the drawings and independently verify. Call the designer if there are any inconsistencies or questions.



NOTE:
MAXIMUM BURIAL DEPTH OF THIS TANK IS 48"

Certified Professional Soil Scientist
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15239 Exp. 12/31/21
Registered Wastewater Specialist
No. EH-W-44830 Exp. 9/30/21

FISCHER'S FOREST PARK LOSS
CLACKAMAS COUNTY

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VALLEY SCIENCE AND ENGINEERING

RECIRCULATION TANK B

LARGE ONSITE SEWAGE SYSTEM DESIGN

SHEET
T6

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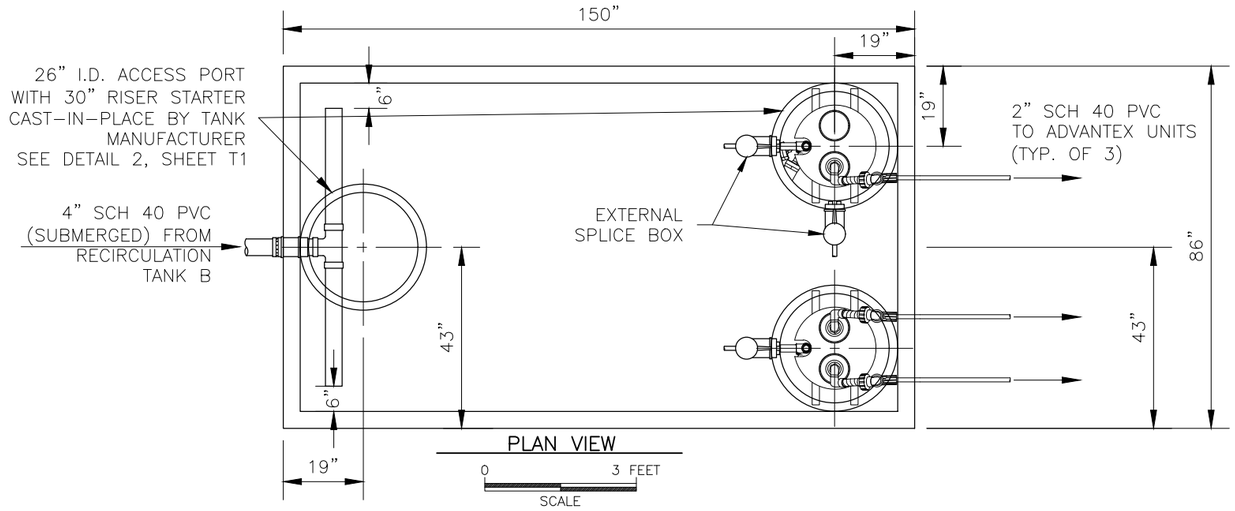

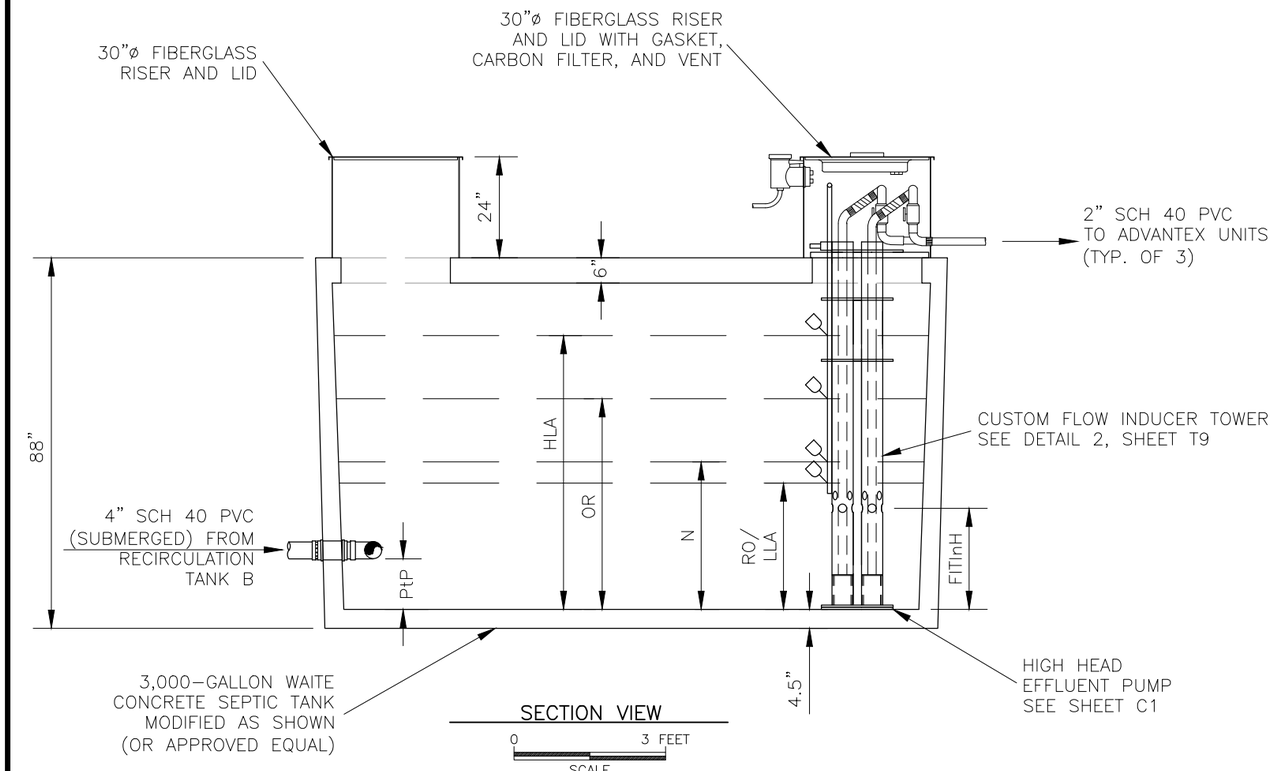

Labels and General Information			
Symbol	**Name**	**Distance From Tank Floor (in.)**	**Distance From Exterior Tank Top (in.)**
HLA	High Level Timer and Alarm	65	18.5
OR	Override Timer	50	33.5
N	Normal Timer (Low Timer when Down)	35	48.5
RO/LLA	Redundant OFF/Low Level Alarm	30	53.5
FITInH	Flow Inducer Tower Inlet Holes	24	59.5
PtP	Pass Through Piping (Between Tanks)	12	71.5
Riser Height (in.)	**Inlet Pipe Size (in.)**	**Outlet Pipe Size (in.)**	**Tank Location**
24	4	–	Tank Farm (North of Merry Meadow Ct)

Orenco Equipment (Or Approved Equal)		
Recirculation Tank C		
Quantity	**Item ***	**Description/Comments**
1	RF3024	Fiberglass Access Riser, 30" Diameter (Inlet)
1	RF3024+SX+20+20	Fiberglass Access Riser, 30" Diameter with 1@SX and 2@G200 (Outlet - 2 Pumps)
1	RF3024+SX+SX+20	Fiberglass Access Riser, 30" Diameter with 2@SX and 1@G200 (Outlet - 1 Pump + Controls/Alarms)
2	FLD30G	Fiberglass Lid, 30" with Gasket and 4 Bolt Pattern (Inlet + 1 Outlet)
1	FLD30GVCF	Fiberglass Lid, 30" with Gasket, Vent, Carbon Filter and 4-Bolt Pattern (1 Outlet)
1	SBEX-2	External Splice Box with 2 Cord Grips (Pumps)
1	SBEX-1	External Splice Box with 1 Cord Grips (Pumps)
1	SBEX-4	External Splice Box with 4 Cord Grips (Controls and Alarms)
1	MF4P-20	Float Assembly with 4 Floats and 20-foot Cords
3	HV-200BC	Hose and Valve Assembly, 2", with Ball Valve and Check Valve
2	FITD-D90	Custom Duplex Flow Inducer Tower without Pump Support Plate
3	PF 50 0712	OSI Effluent Pump, 0.75 Hp, 230V, 60 Hz, with 10-foot Power Cords
4	MA320	2-Part Epoxy for Securing Riser to Tank Adapter
2	ADH200	Caulking for Final Seal Between Riser and Tank Adapter

* Item numbers are provided as a courtesy. Since specific numbers and supplementary codes can change, supplier is to compare this information to the drawings and independently verify. Call the designer if there are any inconsistencies or questions.

NOTES:
1. CLASSIFICATION FOR ELECTRICAL EQUIPMENT: UNCLASSIFIED (NFPA 820, TABLE 3, NO. 19 – INTERMEDIATE OR FINAL PUMPING STATIONS).
2. RECOMMENDED WIRING AS CLASS I, DIVISION 2.
3. MAXIMUM BURIAL DEPTH OF THIS TANK IS 48".

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FISCHER'S FOREST PARK LOSS
CLACKAMAS COUNTY

REV #	DESCRIPTION	BY	DATE

DES. BY 1BTR
DRG. BY 6NSG
CHK. BY 1GLT
DATE 1/4/2023
JOB No. 2020230021

VALLEY SCIENCE AND ENGINEERING

RECIRCULATION TANK C

LARGE ONSITE SEWAGE SYSTEM DESIGN

SHEET T7

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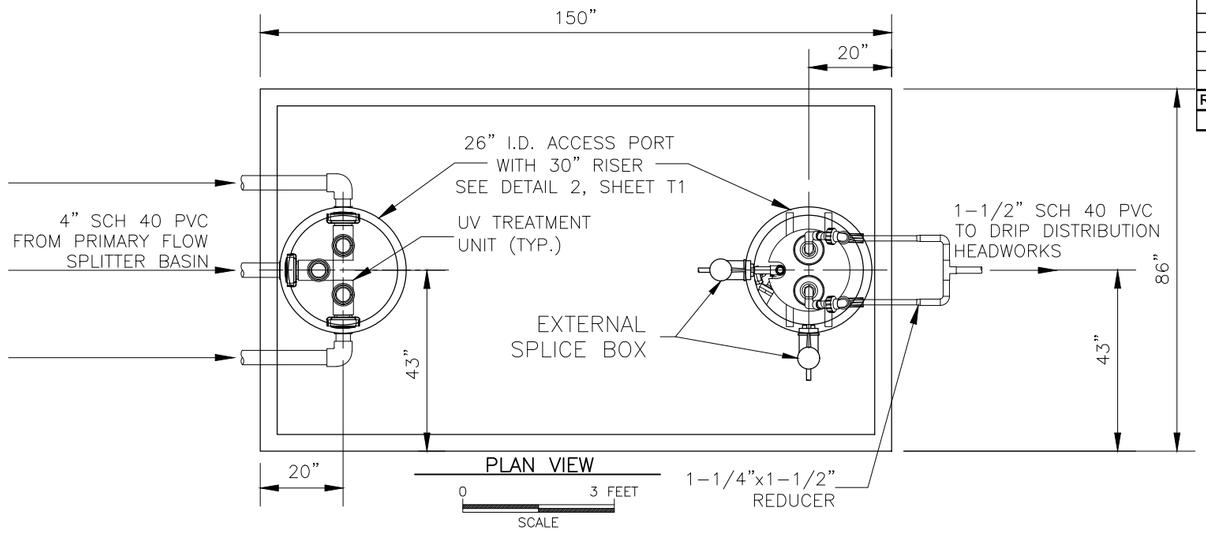

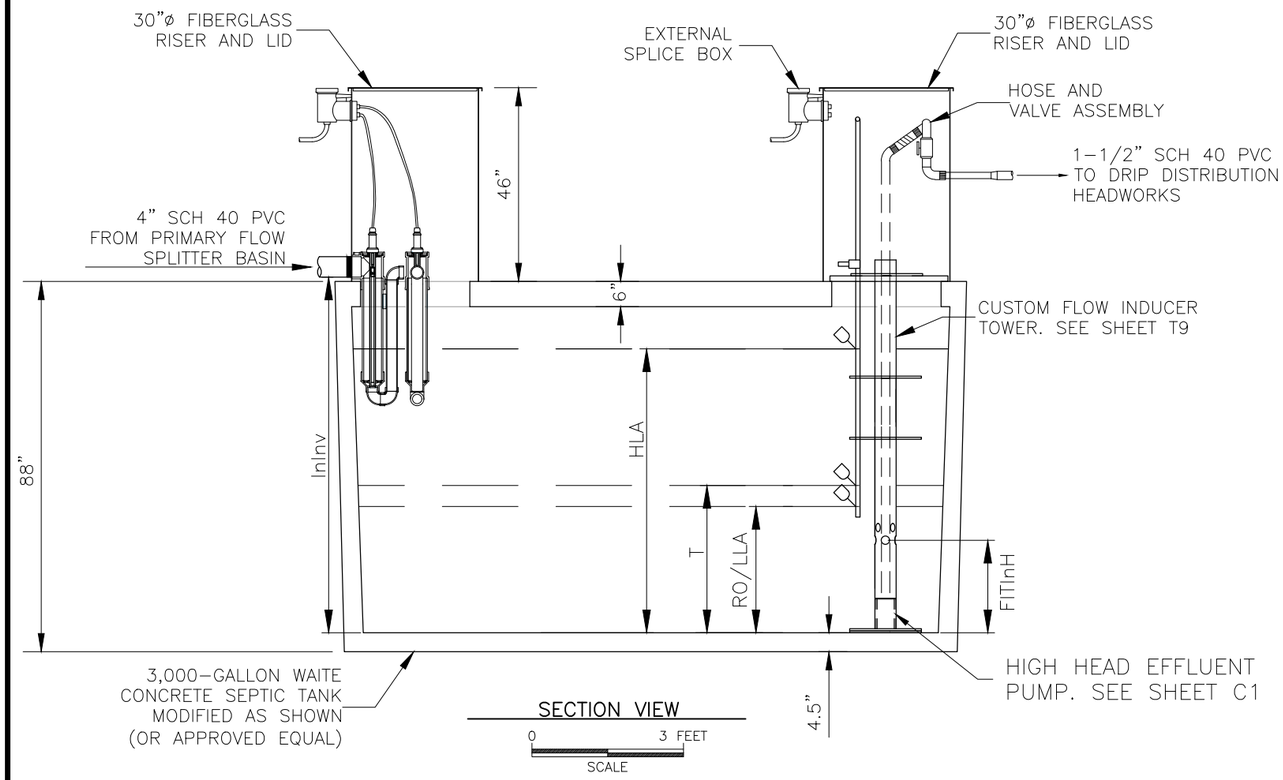

Labels and General Information			
Symbol	**Name**	**Distance From Tank Floor (in.)**	**Distance From Exterior Tank Top (in.)**
InInv	Inlet Invert	84.5	-1
HLA	High Level Alarm	67.5	16
T	Timer ON	47.5	36
RO/LLA	Redundant OFF/Low Level Alarm	42.5	41
FITDInH	Flow Inducer Tower Inlet Holes	36.5	47
Riser Height (in.)	**Inlet Pipe Size (in.)**	**Outlet Pipe Size (in.)**	**Tank Location**
46	–	–	Tank Farm (North of Merry Meadow Ct)

Orenco Equipment		
Dripfield Dosing Tank		
Quantity	**Item ***	**Description/Comments**
1	RF3046-SX-40-40+40	Fiberglass Access Riser, 30" Diameter (Inlet) with SX and 3@G40 (Outlet - 2 Pumps + Controls/Alarms)
1	RF3046+SX+SX+12+12	Fiberglass Access Riser, 30" Diameter with 2@SX and 2@G*2 (Outlet - 2 Pumps + Controls/Alarms)
2	FLD30G	Fiberglass Lid, 30" with Gasket and 4 Bolt Pattern
1	SBEX2	External Splice Box with 2 Cord Grips (1 for each Pump)
2	SBEX3	External Splice Box with 3 Cord Grips (UV AX Units - Inlet) and (Controls and Alarms - Outlet)
3	UVAX	Ultra Violet Disinfection Unit (Inlet)
1	MF3P	Float Assembly with 3 Floats
2	HV-152C	Hose and Valve Assembly, 1.25", with Ball Valve and Check Valve
1	FITD-D90	Custom Duplex Flow Inducer Tower without Pump Support Plate
2	PF2005*2	OSI Effluent Pump, 0.5 Hp, 230V, Single Phase, 60Hz, with 10-foot Power Cords
4	MA320	2-Part Epoxy for Securing Riser to Tank Adapter
2	ADH200	Caulking for Final Seal Between Riser and Tank Adapter

* Item numbers are provided as a courtesy. Since specific numbers and supplementary codes can change, supplier is to compare this information to the drawings and independently verify. Call designer if there are any inconsistencies or questions.

NOTES:
1. CLASSIFICATION FOR ELECTRICAL EQUIPMENT: UNCLASSIFIED (NFPA 820, TABLE 3, NO. 19 – INTERMEDIATE OR FINAL PUMPING STATIONS).
2. RECOMMENDED WIRING AS CLASS I, DIVISION 2.
3. MAXIMUM BURIAL DEPTH OF THIS TANK IS 48".

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FISCHER'S FOREST PARK LOSS
CLACKAMAS COUNTY

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VALLEY SCIENCE AND ENGINEERING

UV/DRIPFIELD DOSING TANK

LARGE ONSITE SEWAGE SYSTEM DESIGN

SHEET
T8

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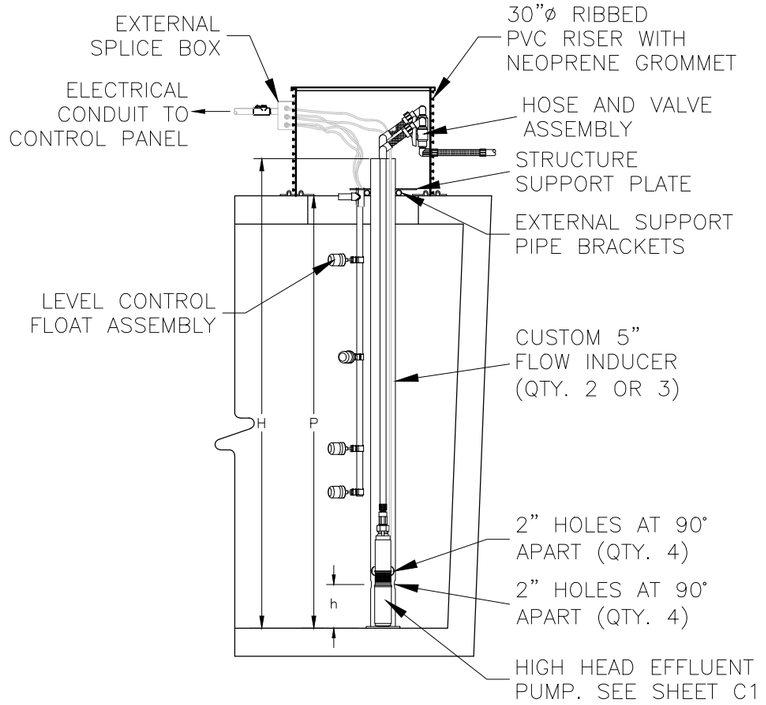

1 — FLOW INDUCER TOWER DETAIL

0 3 FEET

SCALE

Tank Type	Lift Tank	Recirculation Tank C	Dripfield Dosing Tank
Flow Inducer Tower Model Number	**FITD-D90**	**FITD-D90**	**FITD-D90**
Quantity	1	2	1
Flow Inducer Tube Diameter (in.)	5	5	5
Structural Plate Diameter (in.)	15	15	15
Support Pipe Length (in.)	24	24	24
H = Tower Height (in.)	90	90	90
P = Support Pipe Height (in.)	86	86	86
h = Inlet Hole Height (in.)	24	24	24
Inlet hole diameter (in.)	2	2	2
Inlet holes per tube	8	8	8
5-inch Flow Inducer Towers	2	2	2

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FISCHER'S FOREST PARK LOSS
CLACKAMAS COUNTY

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VALLEY SCIENCE AND ENGINEERING

TANK DETAILS

LARGE ONSITE SEWAGE SYSTEM DESIGN

SHEET
T9

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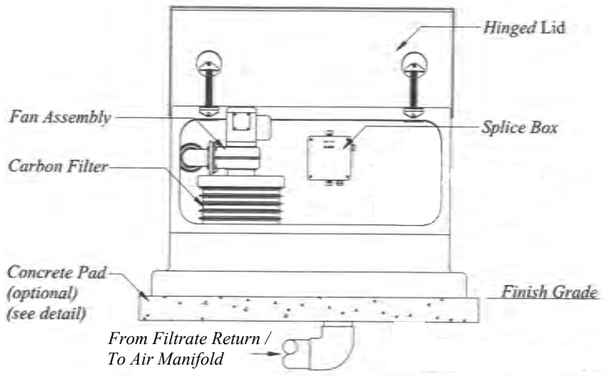
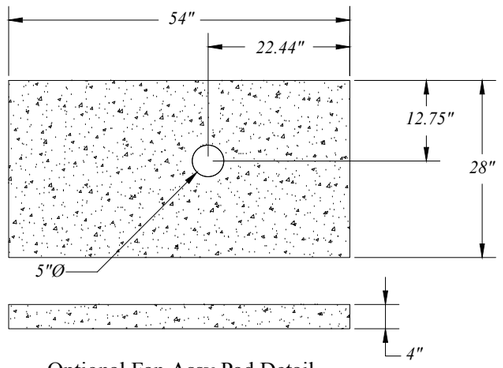
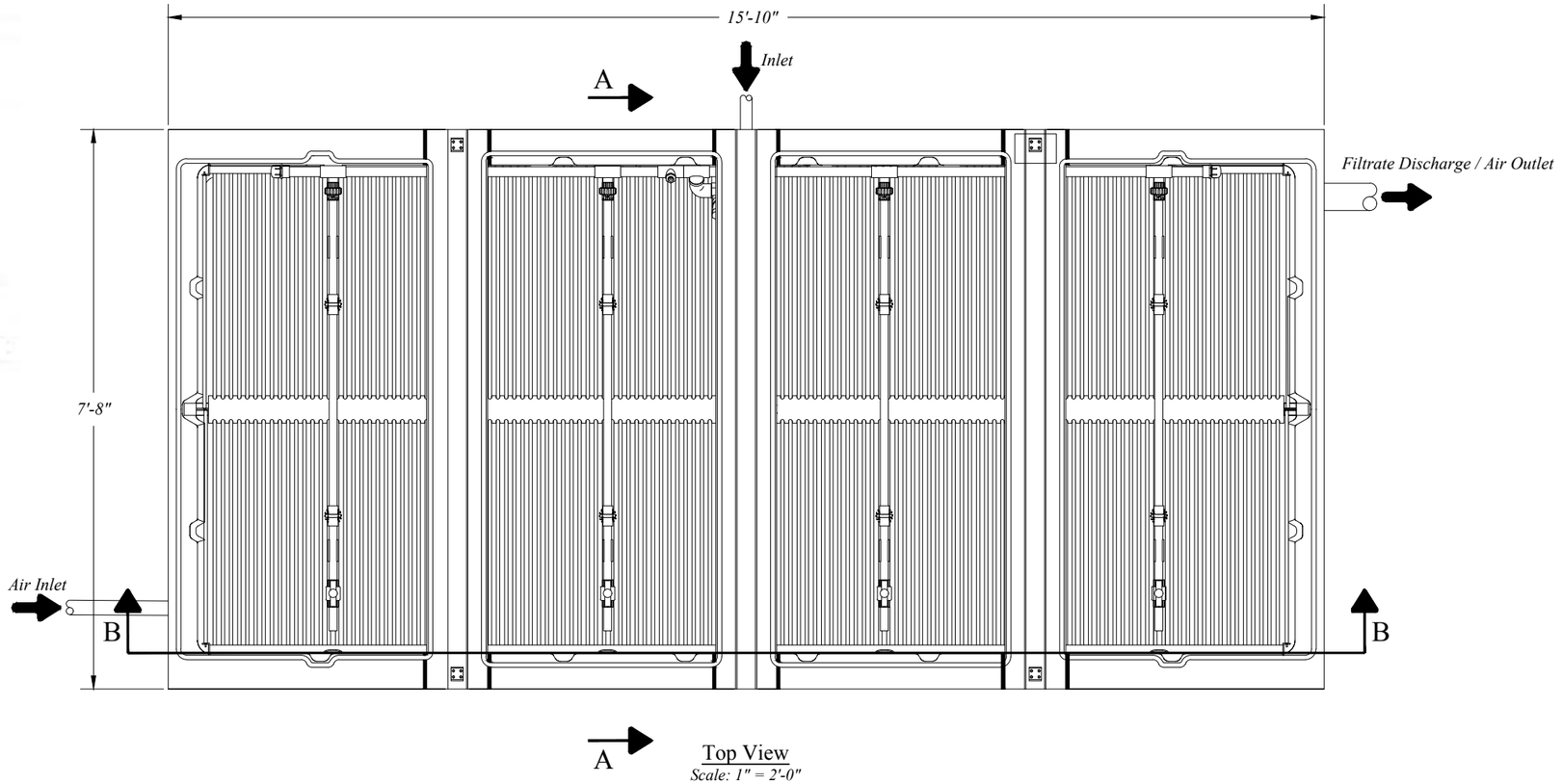


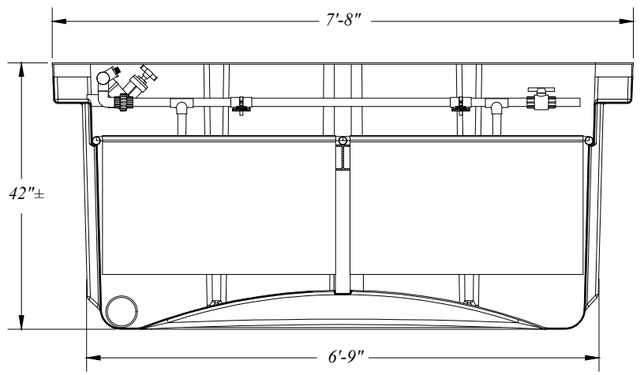
Above Ground Fan Assembly
Scale: 1" = 2'-0"



Optional Fan Assy Pad Detail
Scale: 1" = 2'-0"



Top View
Scale: 1" = 2'-0"



Section A-A
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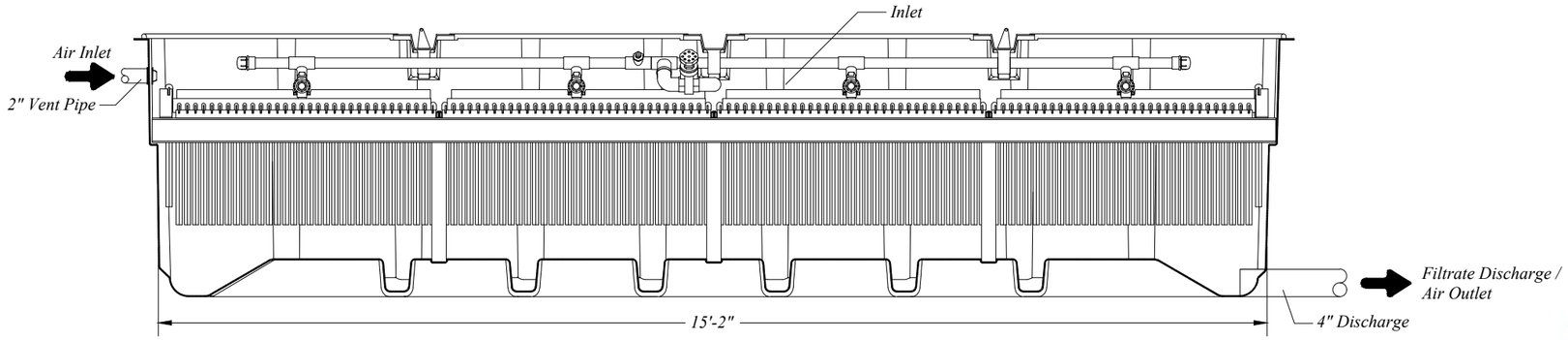

Section B-B
Scale: 1" = 2'-0"

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FISCHER'S FOREST PARK LOSS
CLACKAMAS COUNTY

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VALLEY SCIENCE AND ENGINEERING

ADVANTEX FILTER DETAILS

LARGE ONSITE SEWAGE SYSTEM DESIGN

SHEET
F1

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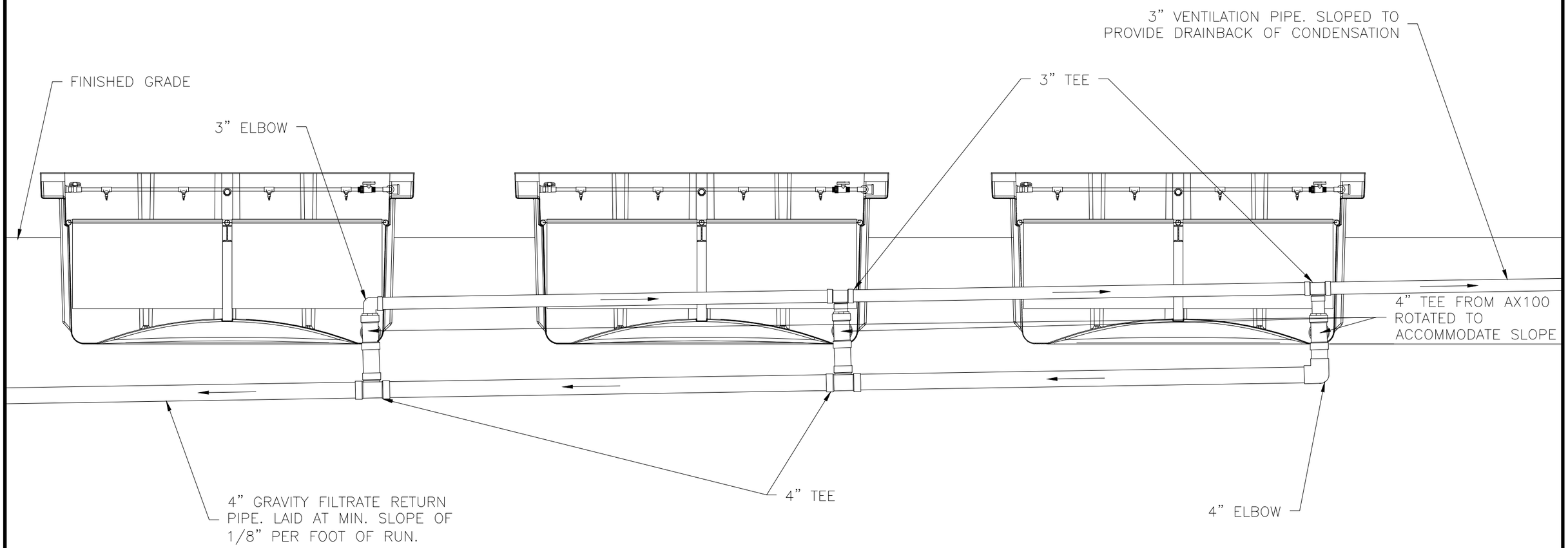

0 2'

1"=2'

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FISCHER'S FOREST PARK LOSS
CLACKAMAS COUNTY

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VALLEY SCIENCE AND ENGINEERING

ADVANTEX OUTLET DETAILS

LARGE ONSITE SEWAGE SYSTEM DESIGN

SHEET
F2

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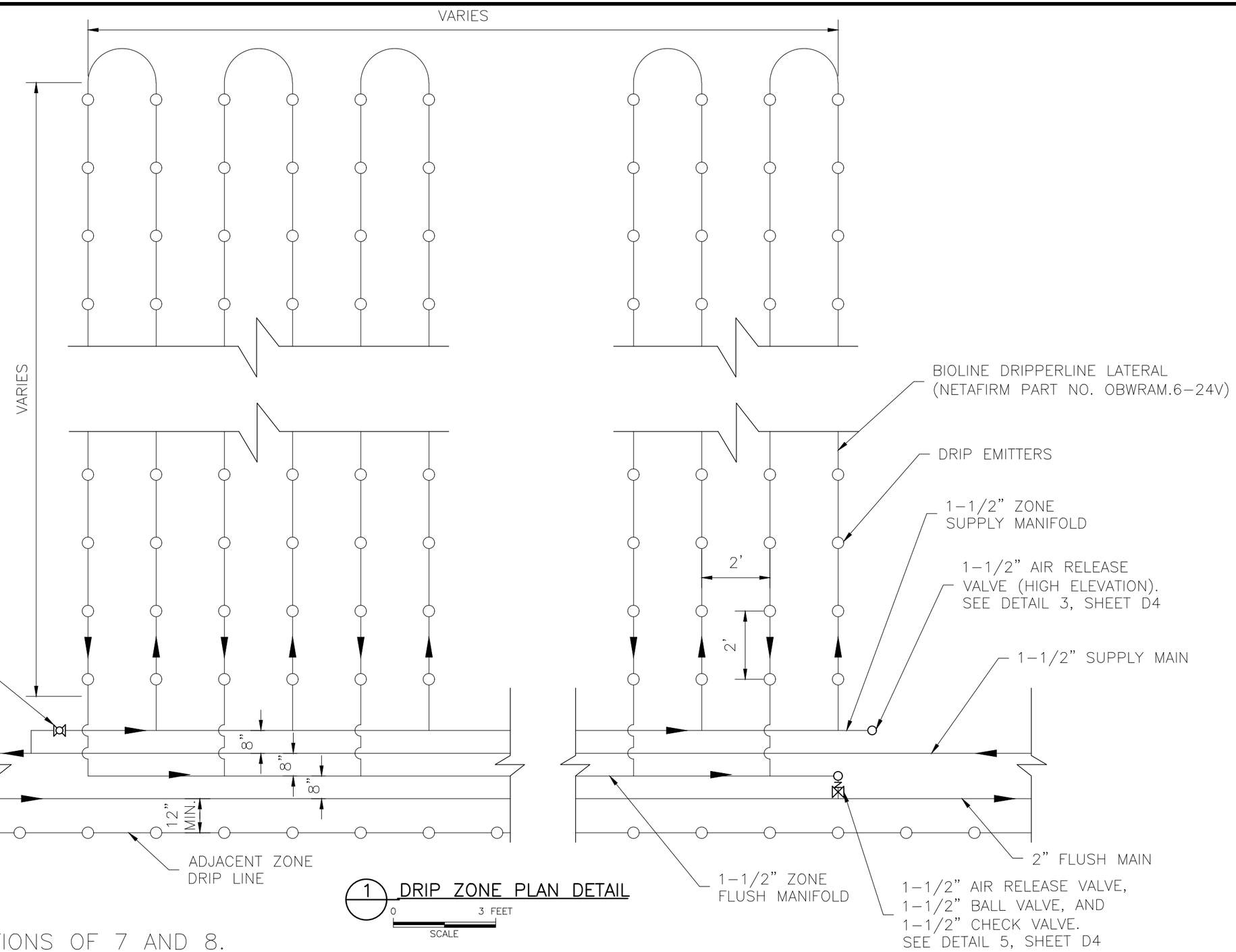

1 DRIP ZONE PLAN DETAIL

0 3 FEET

SCALE

ZONES 1-4 AND PORTIONS OF 7 AND 8.

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FISCHER'S FOREST PARK LOSS
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VALLEY SCIENCE AND ENGINEERING

DRIP ZONE PLAN A

LARGE ONSITE SEWAGE SYSTEM DESIGN

SHEET D1

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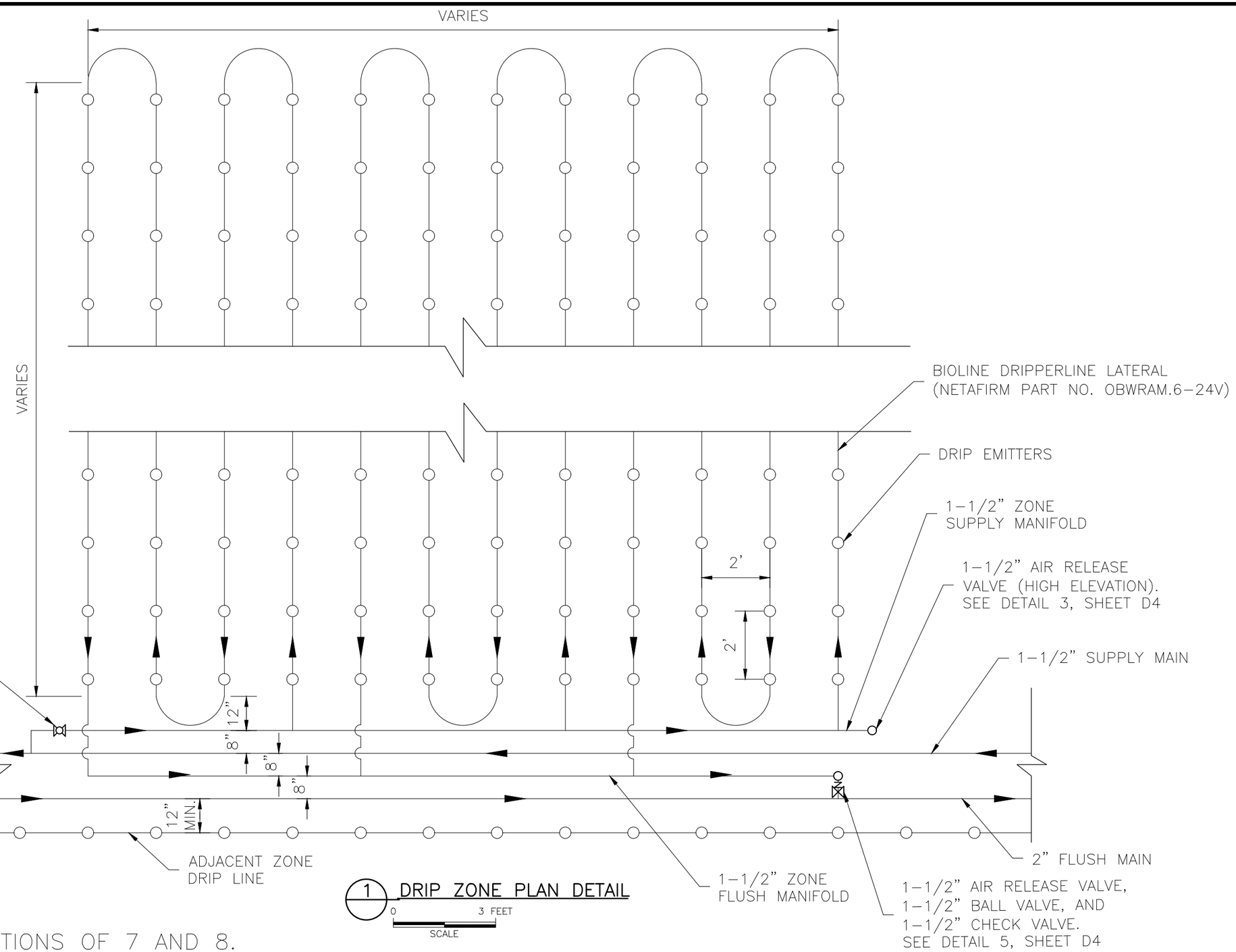

1 DRIP ZONE PLAN DETAIL

0 3 FEET

SCALE

ZONES 5, 6, AND PORTIONS OF 7 AND 8.

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DRIP ZONE PLAN B

LARGE ONSITE SEWAGE SYSTEM DESIGN

SHEET D2

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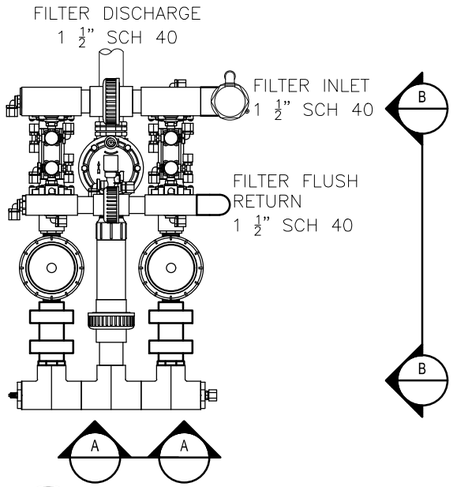
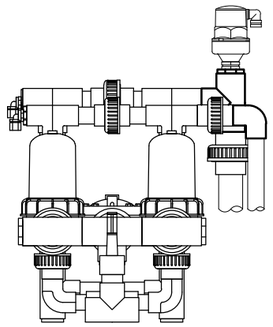


1 HEADWORKS PLAN VIEW

0 1 FEET

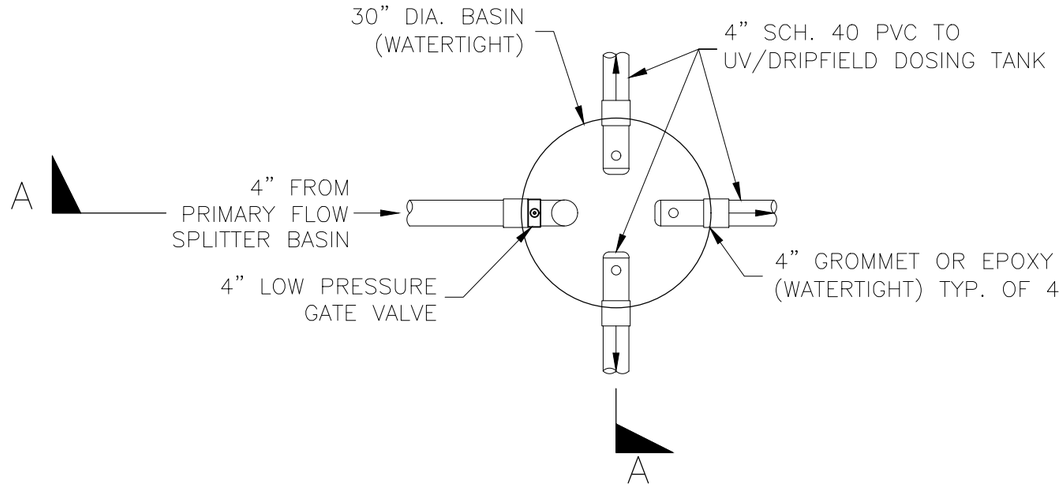
SCALE



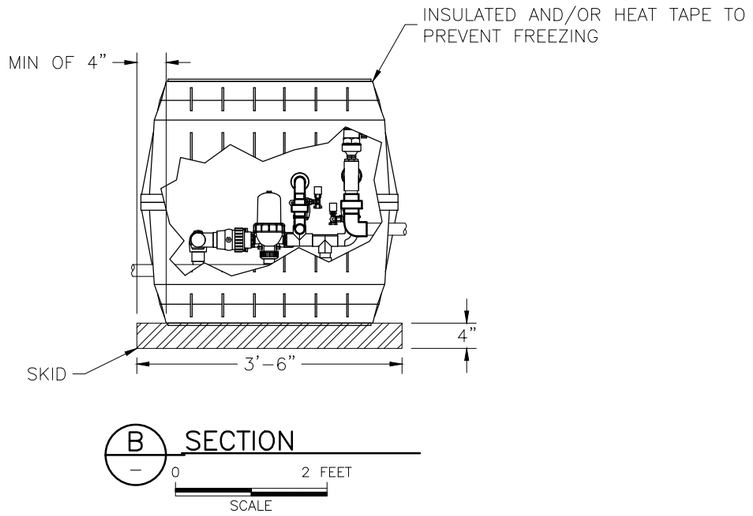
A SECTION

0 1 FEET

SCALE



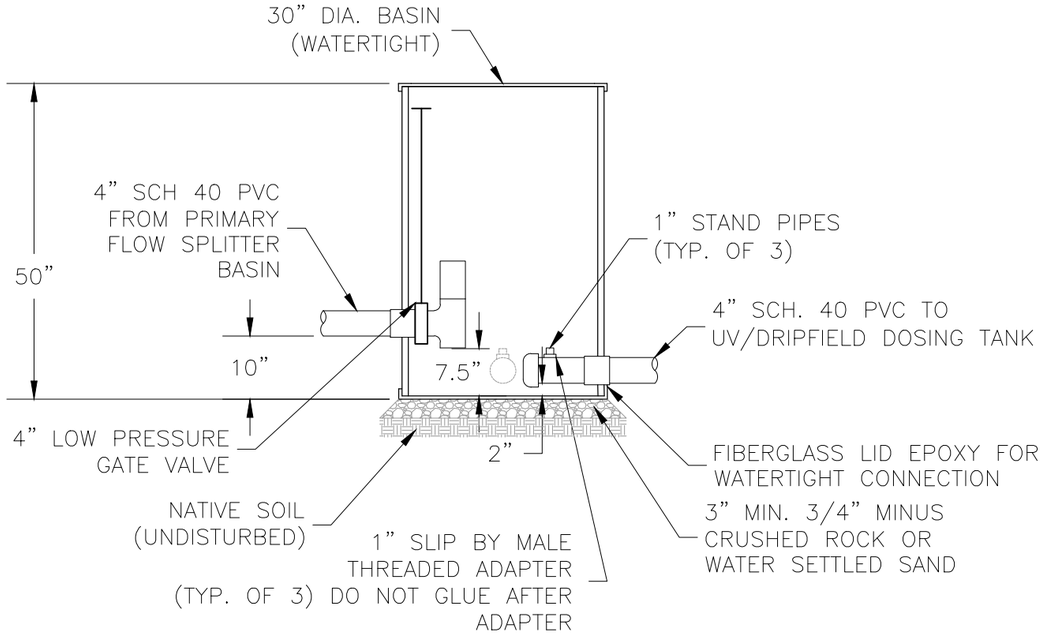
PLAN VIEW



B SECTION

0 2 FEET

SCALE



SECTION VIEW

2 SECONDARY FLOW SPLITTER BASIN

0 3 FEET

SCALE

NOTE:
HEADWORKS DRAWINGS PROVIDED BY JNM TECHNOLOGIES FOR REFERENCE PURPOSES. ADDITIONAL DETAILS TO FOLLOW WITH INSTALLATION INSTRUCTIONS. (MODEL NO. ACT-C200)

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FISCHER'S FOREST PARK LOSS
CLACKAMAS COUNTY

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VALLEY SCIENCE AND ENGINEERING

DRIP SYSTEM HEADWORKS DETAILS

LARGE ONSITE SEWAGE SYSTEM DESIGN

SHEET
D3

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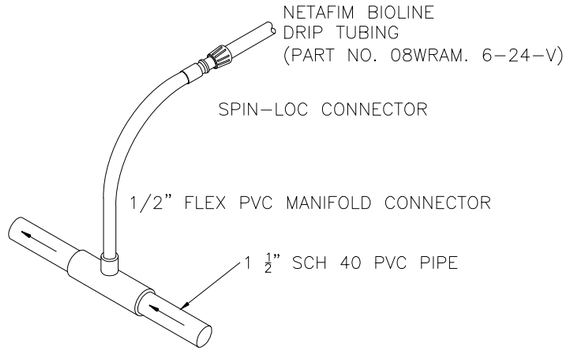
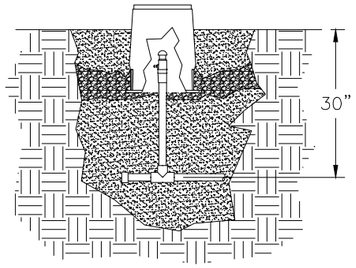
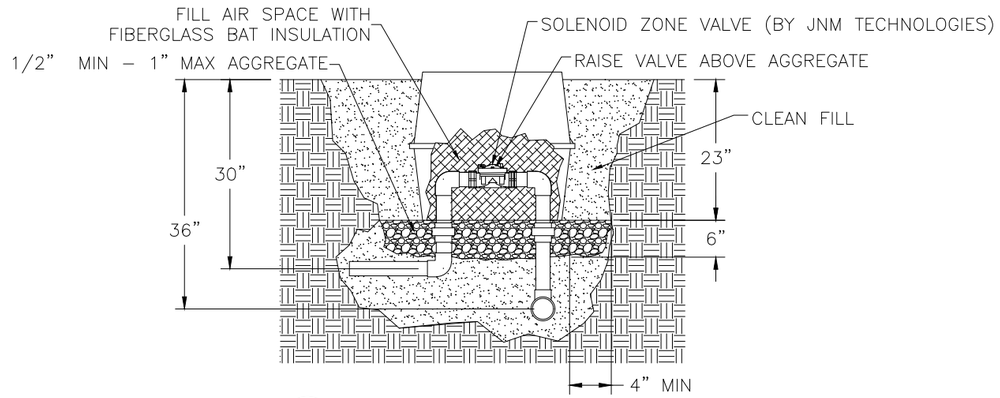


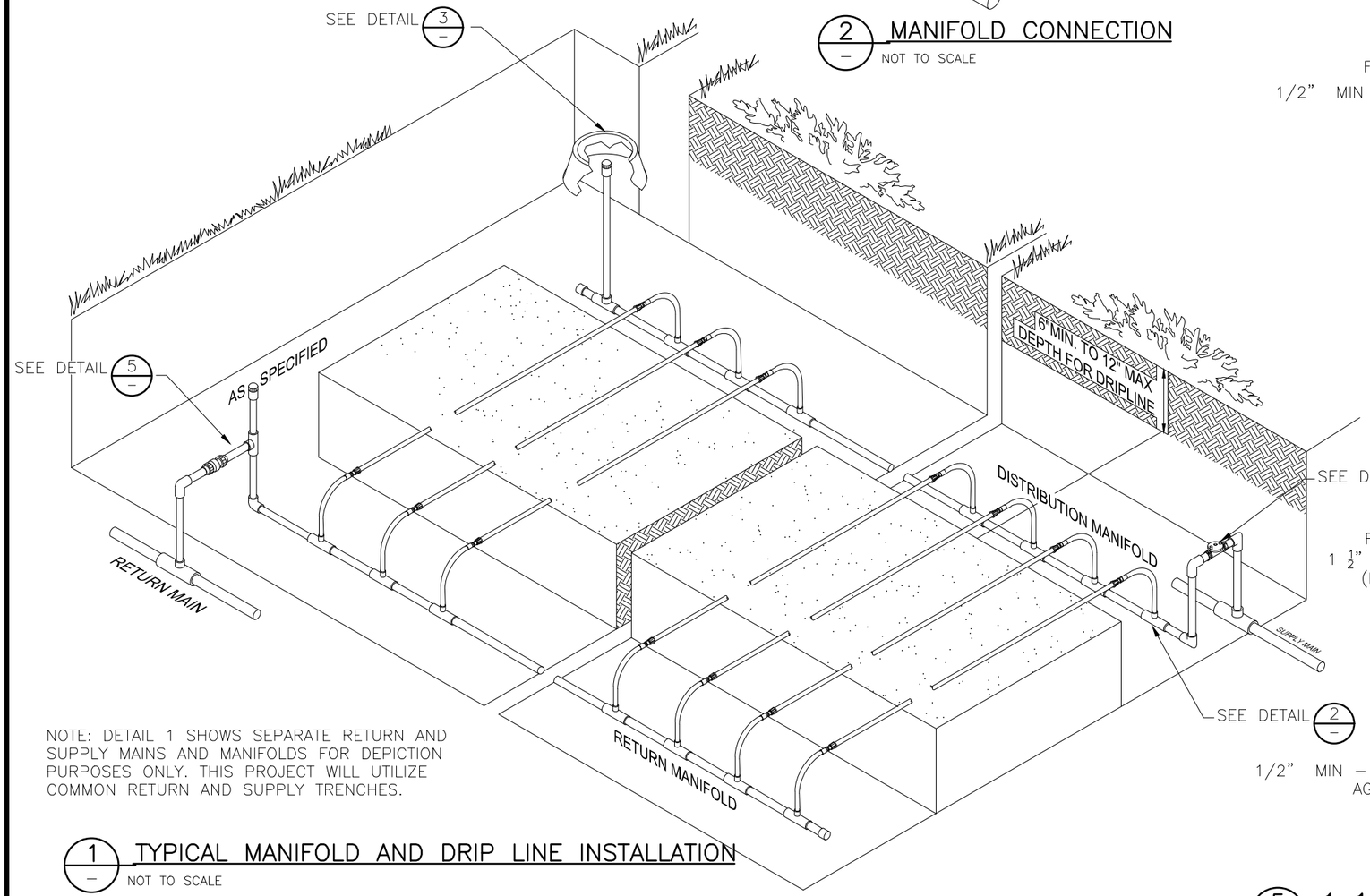
2 MANIFOLD CONNECTION
NOT TO SCALE



3 1" GUARDIAN AIR RELEASE VALVE WITH SCHRADER VALVE FOR DISTRIBUTION LINE
NOT TO SCALE

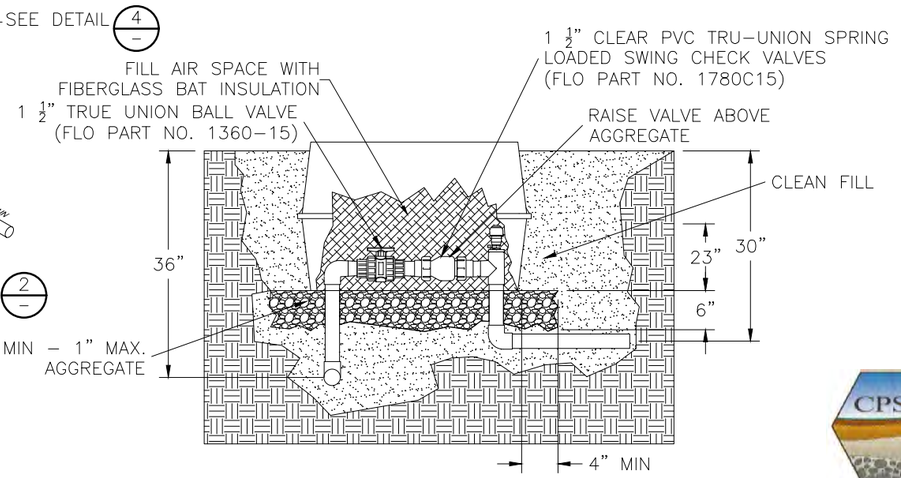


4 ZONE CONTROL VALVE
NOT TO SCALE



NOTE: DETAIL 1 SHOWS SEPARATE RETURN AND SUPPLY MAINS AND MANIFOLDS FOR DEPICTION PURPOSES ONLY. THIS PROJECT WILL UTILIZE COMMON RETURN AND SUPPLY TRENCHES.

1 TYPICAL MANIFOLD AND DRIP LINE INSTALLATION
NOT TO SCALE



5 1 1/2" BALL AND CHECK VALVE FOR RETURN LINE
NOT TO SCALE

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FISCHER'S FOREST PARK LOSS
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VALLEY SCIENCE AND ENGINEERING

DRIP SYSTEM FIELD DETAILS

LARGE ONSITE SEWAGE SYSTEM DESIGN

SHEET
D4

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Recirculation Pumps

Low Timer Function - Alternating Cycles at Reduced ON Time
Minimum of 1 Cycle (Complete Each Cycle - ON Time - Regardless of Float Position)
Timer Settings: 30 seconds (0.50 minutes) ON (40 gpm - 20 gallons per dose)

Normal Timer Function - Alternating Cycles
Minimum of 1 Cycle (Complete Each Cycle - ON Time - Regardless of Float Position)
Timer Settings: 1 minute 42 seconds ON (40 gpm - 68 gallons per dose)

Override Timer Function - Alternating Cycles at Increased Frequency
Minimum of 2 Cycles (Complete Each Cycle - ON Time - Regardless of Float Position)
Timer Settings: 1 minute 42 seconds ON (40 gpm - 136 gallons per dose)

High Level Timer Function - Alternating Cycles at Increased Frequency (Two Pumps)
Minimum of 3 Cycles (Complete Each Cycle - ON Time - Regardless of Float Position)
Timer Settings: 1 minute 42 seconds ON (40 gpm - 56 gallons per dose)

Timer Settings (Minutes)	5:1 Rate 4:1 Split
ON	0.50
OFF	2.45
ON	1.70
OFF	3.32
ON	1.70
OFF	0.81
ON	1.70
OFF	1.65

Dripfield Pumps

Drip Timer Function - Alternating Cycles (1 Pump to Dose, 2 Pumps to Flush - Dripfield Dosing Tank)
Complete Each Cycle, Regardless of Float Position
Timer Settings: 12 minutes ON (192 gallons per dose)
0 minutes, 15 seconds OFF

Minimum Power Requirements at Panel
230 Single Phase - 115 Single Phase VAC, 60 Hertz
2 @ 20 AMP (1 for each Lift Pump, 230 VAC)
3 @ 20 AMP (1 for each Recirculation Pump, 230 VAC)
2 @ 20 AMP (1 for each Dripfield Pump, 230 VAC)
1 @ 15 AMP (115 VAC for Ventiliation Fan)
1 @ 10 AMP (115 VAC for Panel Heater)
1 @ 10 AMP (115 VAC for Panel)

60 AMP Service (L1, L2, N, G), 230 VAC Single Phase, (Minimum) from Power Source for Pumps
10 AMP Service (L1, N, G), 115 VAC Single Phase from Power Source for Heater, Fan, and Controls

CONTROLS QUOTE NUMBER TO BE VERIFIED WITH DESIGNER PRIOR TO SUBMITTING ORDER WITH MANUFACTURER
REFERENCE: ORENCO QUOTE NUMBER 081721SK4.3

Lift Pumps (Total of 2)
PF 100512
6.3 running amps at 230 VAC
Five Floats High Level Alarm
Lag Pump ON
Lead Pump ON
Pumps OFF
Redundant Off/Low Level Alarm

Recirculation Pumps (Total of 3)
PF 500712
8.5 running amps at 230 VAC
Four Floats High Level Alarm and Timer
Override Timer
Normal Timer ON/OFF
Redundant Off/Low Level Alarm

Dripfield Pumps (Total of 2)
PF 200512
6.4 running amps at 230 VAC
Three Floats High Level Alarm
Normal Timer ON
Redundant Off/Low Level Alarm

AdvanTex Blower

MASTER CONTROL PANEL DATA - CUSTOM TCOM

REQUIRED OPTIONS

QUANTITY	DESCRIPTION
7	ELAPSED TIME METERS: 115 VAC, 7-DIGIT, NONRESETTABLE
7	COUNTERS: 115 VAC, 6-DIGIT, NONRESETTABLE HORIZONTAL BASE MOUNT
7	PUMP RUN LIGHTS (GREEN WITH LABEL - 1 FOR EACH PUMP)
2	FAN AND UV FAIL LIGHT (BLUE WITH LABEL)
9	CURRENT SENSOR (1 FOR EACH PUMP, UV, AND FAN)
1	ALARM LIGHT - LIFT PUMPS HIGH LEVEL ALARM (RED WITH LABEL)
1	ALARM LIGHT - LIFT PUMPS LOW LEVEL ALARM (RED WITH LABEL)
1	ALARM LIGHT - RECIRCULATION PUMPS HIGH LEVEL TIMER AND ALARM (RED WITH LABEL)
1	INDICATOR LIGHT - RECIRCULATION PUMPS OVERRIDE TIMER (AMBER WITH LABEL - NO AUDIBLE)
1	INDICATOR LIGHT - RECIRCULATION PUMPS NORMAL TIMER (BLUE WITH LABEL - NO AUDIBLE)
1	INDICATOR LIGHT - RECIRCULATION PUMPS LOW TIMER (GREEN WITH LABEL - NO AUDIBLE)
1	ALARM LIGHT - RECIRCULATION PUMPS LOW LEVEL ALARM (RED WITH LABEL)
8	INDICATOR LIGHT - DRIP FIELD ZONE (GREEN WITH LABEL)
1	INDICATOR LIGHT - FILTER FLUSH (AMBER WITH LABEL)
1	INDICATOR LIGHT - FIELD FLUSH (AMBER WITH LABEL)
1	ALARM LIGHT - DRIP TANK HIGH LEVEL ALARM (RED WITH LABEL)
1	ALARM LIGHT - DRIP TANK LOW LEVEL ALARM (RED WITH LABEL)
1	GENERAL ALARM DRY CONTACT (REMOTE ALARM RELAY)
1	PANEL HEATER (400 WATT) WITH ADJUSTABLE THERMOSTAT
1	SURGE ARRESTOR
1	TOUCH SCREEN INTERFACE
1	INDUSTRIAL 4G ROUTER
1	OMNI DIRECTIONAL LTE/4G CELL ANTENNA KIT

CPSS
Certified Professional Soil Scientist
BRIAN T. RABE
15239 Exp. 12/31/21
Registered Wastewater Specialist
No. EH-W-448430 Exp. 6/30/21

FISCHER'S FOREST PARK LOSS
CLACKAMAS COUNTY

REV #	DESCRIPTION	BY	DATE

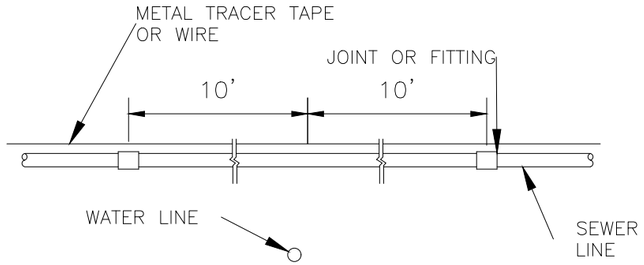
DES. BY 1BTR
DRG. BY 6NSG
CHK. BY 1GLT
DATE 1/4/2023
JOB No. 2020230021

VALLEY SCIENCE AND ENGINEERING

CONTROL PANEL DETAILS

LARGE ONSITE SEWAGE SYSTEM DESIGN

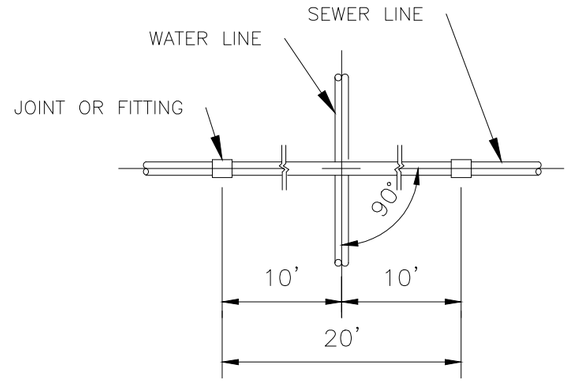
SHEET
C1



NOTE: IF THE SEPARATION DISTANCE BETWEEN THE PIPES CANNOT BE ACHIEVED, A SECTION OF THE WATER LINE SHALL BE REPLACED WITH A 20' LENGTH OF SCH 40 PVC, CENTERED ON THE INTERSECTION AS SHOWN. THE PIPES SHALL BE BEDDED SO THAT THEY DO NOT TOUCH AT THE INTERSECTION.

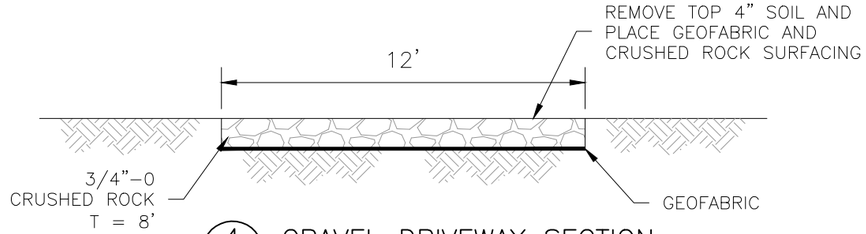
1 – EFFLUENT SEWER / WATER LINE CROSSING – SECTION

0 2 FEET
SCALE



2 – EFFLUENT SEWER / WATER LINE CROSSING – PLAN

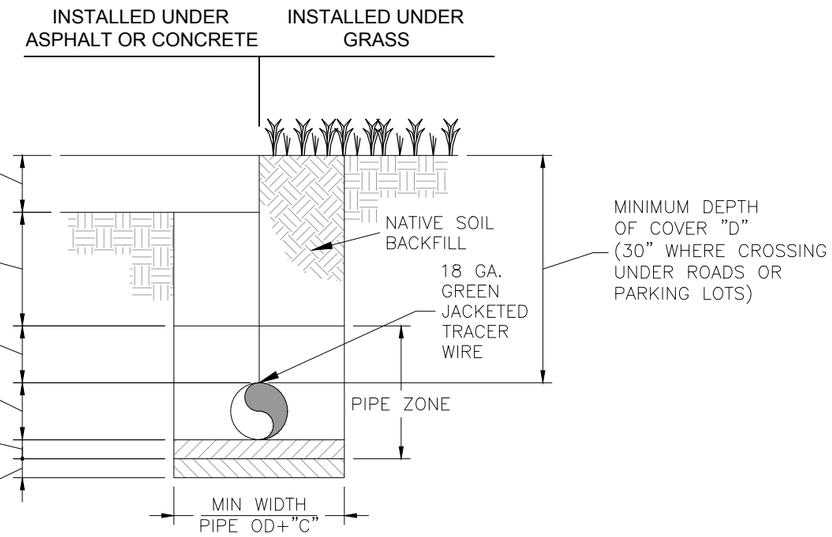
0 2 FEET
SCALE



4 – GRAVEL DRIVEWAY SECTION

NOT TO SCALE

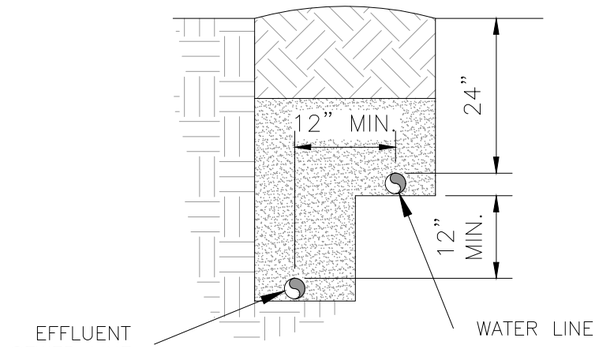
1. CHOOSE GEOTEXTILE PER TABLE 4 IN OREGON STATE SPECIFICATION FOR CONSTRUCTION SECTION 02320 AND INSTALLED ACCORDING TO 00350. GEOTEXTILE CAN BE WOVEN OR NON–WOVEN.
2. CRUSHED ROCK SHOULD BE COMPACTED TO 95% OF THE MAXIMUM DRY DENSITY PER AASHTO T99.



UTILITY TYPE	A	B	C	D
GRAVITY SEWER	2"	4"	12"	18"
PRESSURE SEWER	2"	6"	12"	24"

3 – TRANSPORT PIPING – SECTION (FORCE MAIN, BUILDING SEWER, AND EFFLUENT SEWER, TYP) DETAIL

0 2 FEET
SCALE



5 – PARALLEL / COMMON TRENCH DETAIL

0 2 FEET
SCALE

Certified Professional Soil Scientist
BRIAN T. RABE
15239 Exp. 12/31/21
Registered Wastewater Specialist
No. EH W-44840 Exp. 9/30/21

FISCHER'S FOREST PARK LOSS
CLACKAMAS COUNTY

REV #	DESCRIPTION	BY	DATE

DES. BY 1BTR
DRG. BY 6NSG
CHK. BY 1GLT
DATE 1/4/2023
JOB No. 2020230021

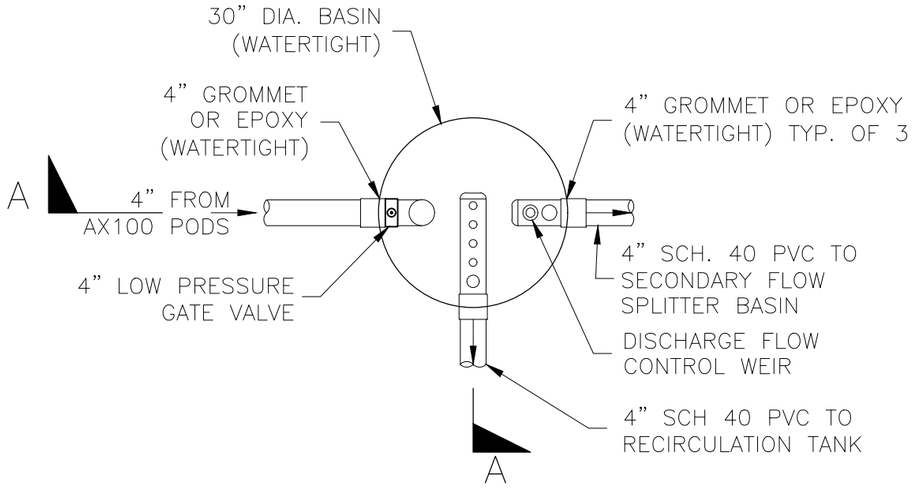
VALLEY SCIENCE AND ENGINEERING

MISCELLANEOUS DETAILS

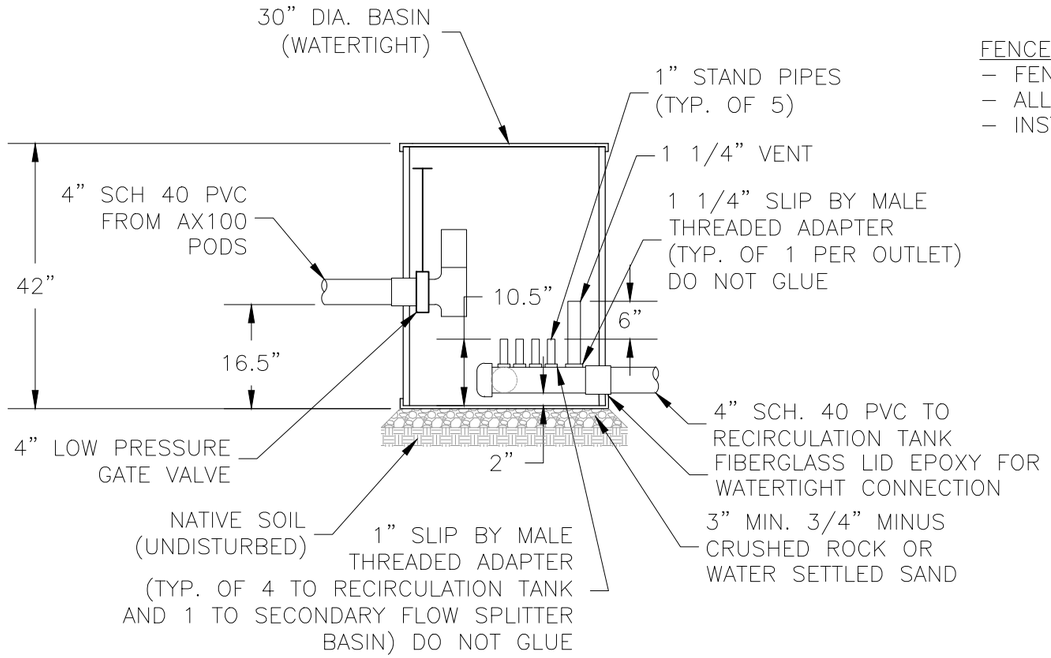
LARGE ONSITE SEWAGE SYSTEM DESIGN

SHEET
M1

C:\Users\NG711452\Desktop\Working Drafting Guiot\2020230021 Clackamas County\DWG\LOSS\2020230021 LOSS M1.dwg 8/19/2022 NG711452



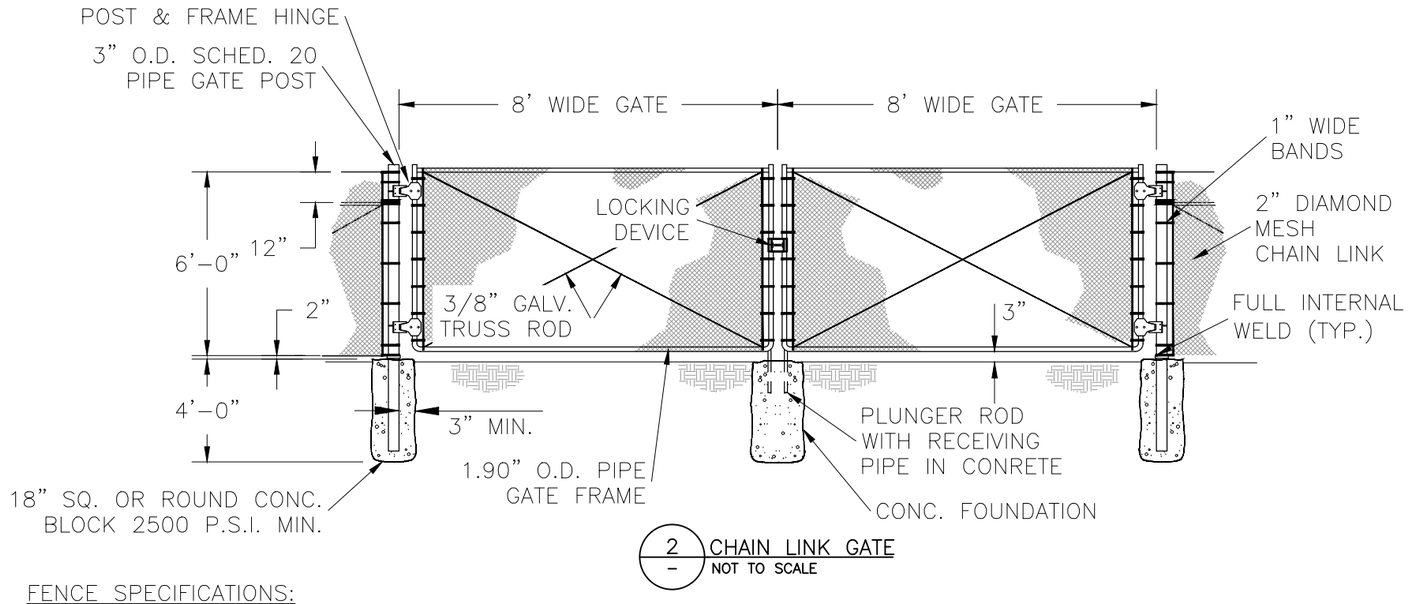
PLAN VIEW



SECTION VIEW

1 — PRIMARY FLOW SPLITTER BASIN

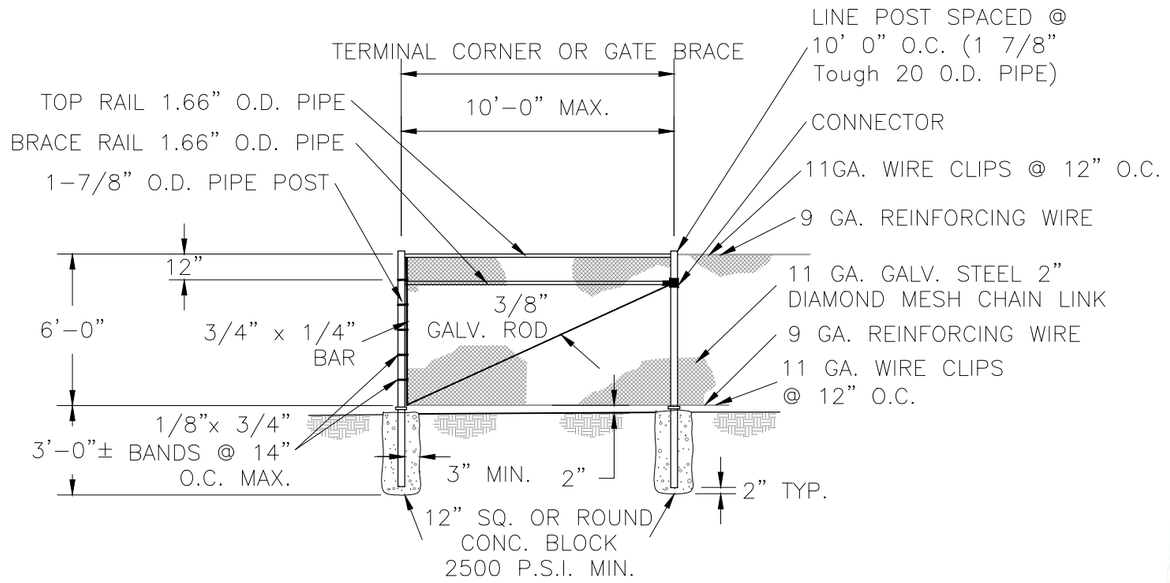
0 3 FEET
SCALE



2 — CHAIN LINK GATE
NOT TO SCALE

FENCE SPECIFICATIONS:

- FENCE MESH TO BE GREEN PVC COATED MEETING ASTM F 668 CLASS 2A OR 2B.
- ALL POSTS, PIPES, AND FITTINGS TO BE GREEN HEAVY MIL PVC COATED TO MATCH FENCE MESH.
- INSTALL GREEN FENCE SLATS ALONG ALL PORTIONS OF MESH CHAIN LINK.



3 — CHAIN LINK FENCE
NOT TO SCALE

FISCHER'S FOREST PARK LOSS
CLACKAMAS COUNTY

REV #	DESCRIPTION	BY	DATE

DES. BY 1BTR
DRG. BY 6NSG
CHK. BY 1GLT
DATE 1/4/2023
JOB No. 2020230021

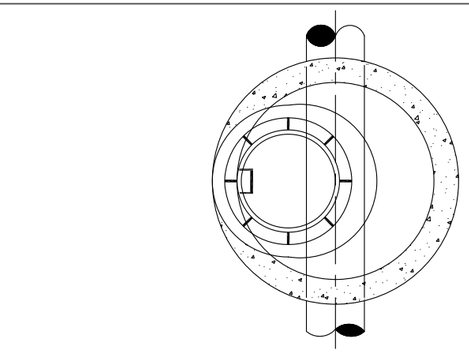
VALLEY SCIENCE AND ENGINEERING

MISCELLANEOUS DETAILS

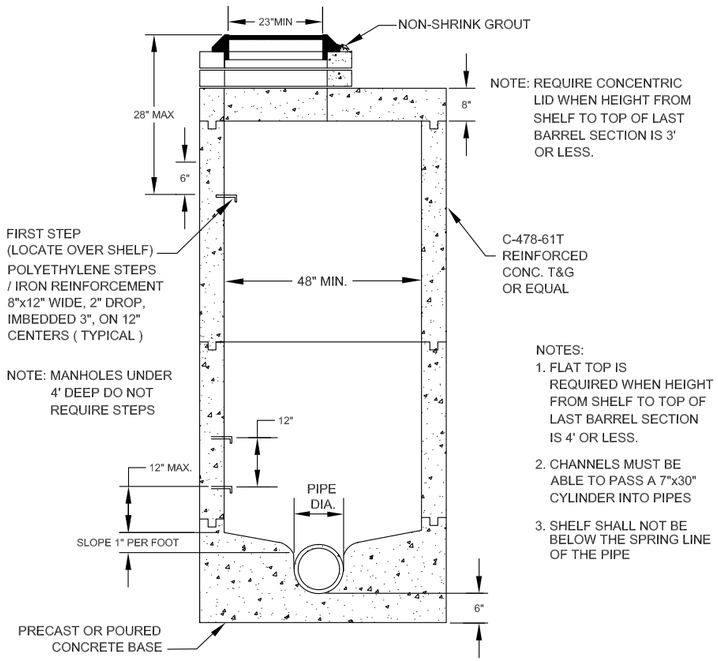
LARGE ONSITE SEWAGE SYSTEM DESIGN

SHEET
M2

C:\Users\NG711452\Desktop\Working Drafting Guiot\2020230021 Clackamas County\DWG\LOSS\2020230021 LOSS M2.dwg 1/4/2023 NG711452



NOTE: MANHOLE LID TO BE 6" ABOVE FINISH GRADE IN EASMENTS BARREL SECTION IS 3'



NOTE: REQUIRE CONCENTRIC LID WHEN HEIGHT FROM SHELF TO TOP OF LAST BARREL SECTION IS 3' OR LESS.

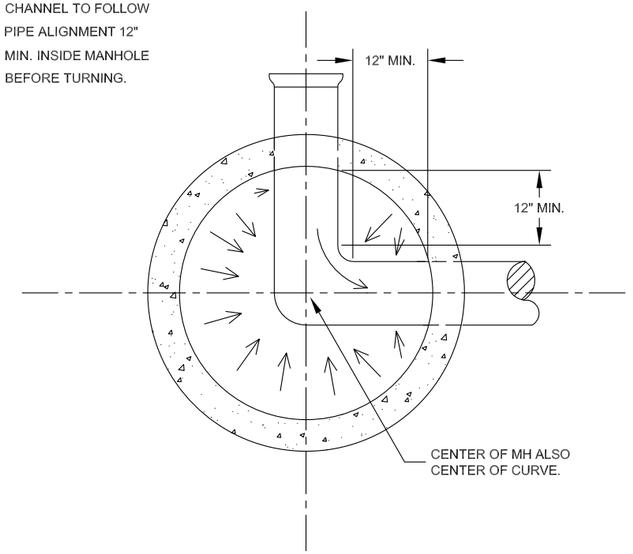
C-478-61T
REINFORCED
CONC. T&G
OR EQUAL

NOTES:
1. FLAT TOP IS REQUIRED WHEN HEIGHT FROM SHELF TO TOP OF LAST BARREL SECTION IS 4' OR LESS.
2. CHANNELS MUST BE ABLE TO PASS A 7"x30" CYLINDER INTO PIPES
3. SHELF SHALL NOT BE BELOW THE SPRING LINE OF THE PIPE

MANHOLE-FLAT TOP

	CLACKAMAS COUNTY 150 BEAVERCREEK ROAD OREGON CITY, OR 97045	*APPROVAL DATE:* 2013 *SCALE:* N.T.S. MANHOLE-FLAT TOP	*STANDARD DRAWING* SAN-005

NOTES:
1. CHANNELS MUST BE ABLE TO PASS A 7" X 30" CYLINDER INTO PIPES.
2. CHANNEL TO FOLLOW PIPE ALIGNMENT 12" MIN. INSIDE MANHOLE BEFORE TURNING.



CHANNEL-90 DEGREE MANHOLE

	CLACKAMAS COUNTY 150 BEAVERCREEK ROAD OREGON CITY, OR 97045	*APPROVAL DATE:* 2013 *SCALE:* N.T.S. CHANNEL-90 DEGREE	*STANDARD DRAWING* SAN-013

FISCHER'S FOREST PARK
CLACKAMAS COUNTY

NO.	DATE	BY	REVISIONS

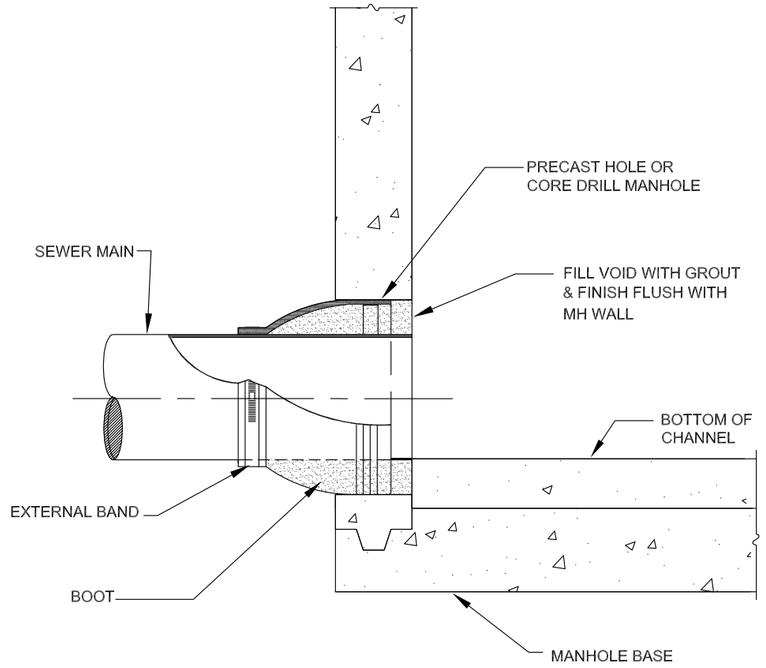
DESIGNED BY: DRAWN BY:
CHECKED BY:
DATE: DECEMBER 2022
PROJECT -NO: P632278/700220304

WATER ENVIRONMENT SERVICES
Water Quality Protection · Surface Water Management
Wastewater Collection and Treatment

LARGE ONSITE SEWAGE SYSTEM DESIGN

MANHOLE DETAILS

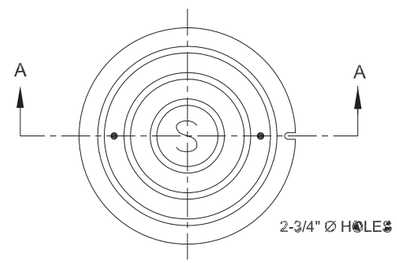
DRAWING NO.
M3

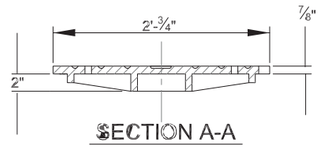


MANHOLE-CONNECTION FLEXIBLE
(KOR-N-SEAL OR EQUAL)

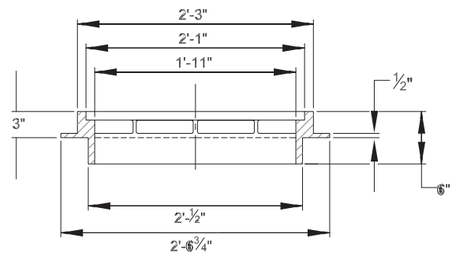
	CLACKAMAS COUNTY 150 BEAVERCREEK ROAD OREGON CITY, OR 97045	*APPROVAL DATE:* 2013 *SCALE:* N.T.S. MANHOLE-CONNECTION FLEXIBLE	*STANDARD DRAWING* SAN-008

SUBURBAN





SECTION A-A



FRAME & COVER SUBURBAN

NOTES

1. SUBURBAN FRAME & COVER CAN BE USED IN EASEMENTS AND SUBDIVISION STREETS EXCEPT COLLECTOR, ARTERIAL, AND INDUSTRIAL STREETS, OR AS NOTED ON CONSTRUCTION PLANS.
2. SANITARY COVER WILL HAVE 2 -3/4" Ø HOLES.

	CLACKAMAS COUNTY 150 BEAVERCREEK ROAD OREGON CITY, OR 97045	*APPROVAL DATE:* 2013 *SCALE:* N.T.S. FRAME & COVER SUBURBAN	*STANDARD DRAWING* SAN-010

FISCHER'S FOREST PARK
CLACKAMAS COUNTY

NO.	DATE	BY	REVISIONS

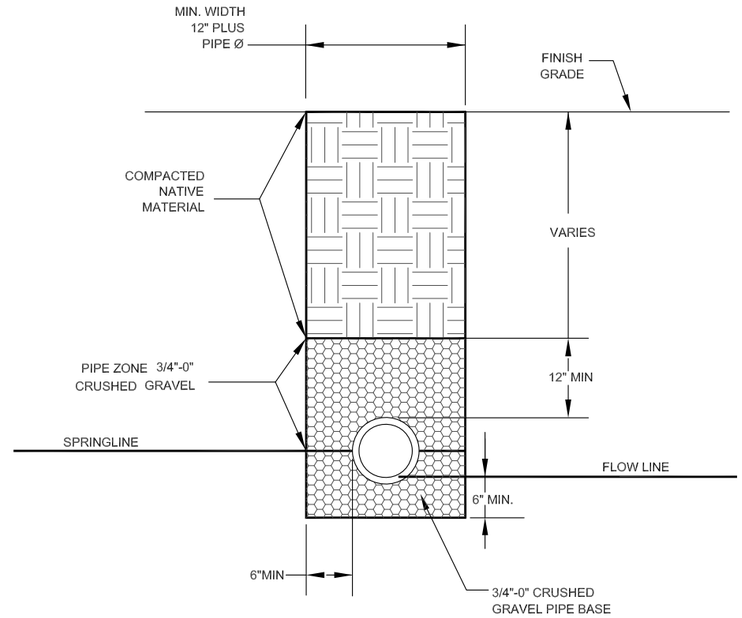
DESIGNED BY: | DRAWN BY:
CHECKED BY:
DATE: DECEMBER 2022
PROJECT NO: P632278/700220304

WATER ENVIRONMENT SERVICES
Water Quality Protection · Surface Water Management
Wastewater Collection and Treatment

LARGE ONSITE SEWAGE SYSTEM DESIGN

MANHOLE DETAILS

DRAWING NO.
M4



BACKFILL-CLASS "A"

8–INCH PVC C900 PIPE TRENCH

	CLACKAMAS COUNTY 150 BEAVERCREEK ROAD OREGON CITY, OR 97045	*APPROVAL DATE:* 2013 *SCALE:* N.T.S. BACKFILL-CLASS "A"	*STANDARD DRAWING* SAN-001

FISCHER'S FOREST PARK
CLACKAMAS COUNTY

NO.	DATE	BY	REVISIONS

DESIGNED BY:	DRAWN BY:
CHECKED BY:	
DATE: DECEMBER 2022	
PROJECT NO: P632278/700220304	

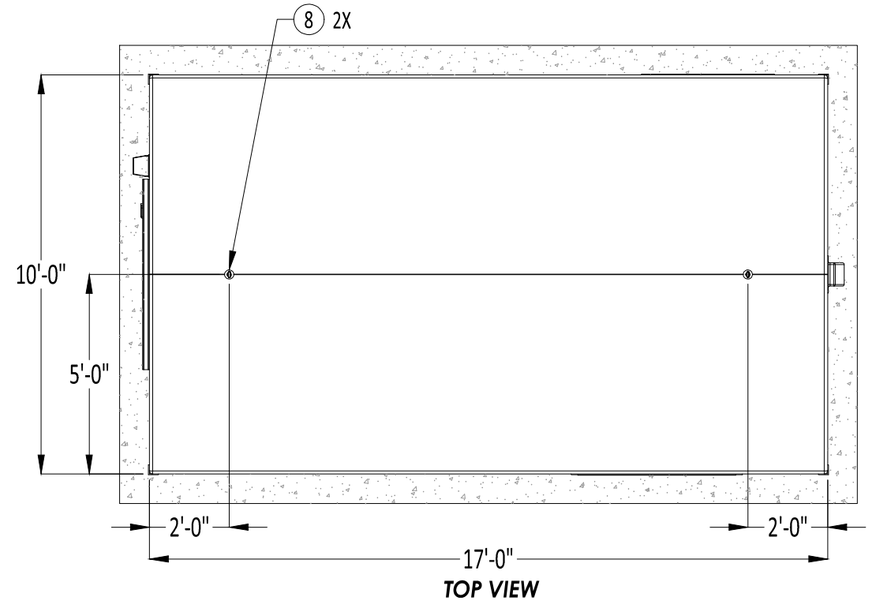
WATER ENVIRONMENT SERVICES
Water Quality Protection · Surface Water Management
Wastewater Collection and Treatment

LARGE ONSITE SEWAGE SYSTEM DESIGN

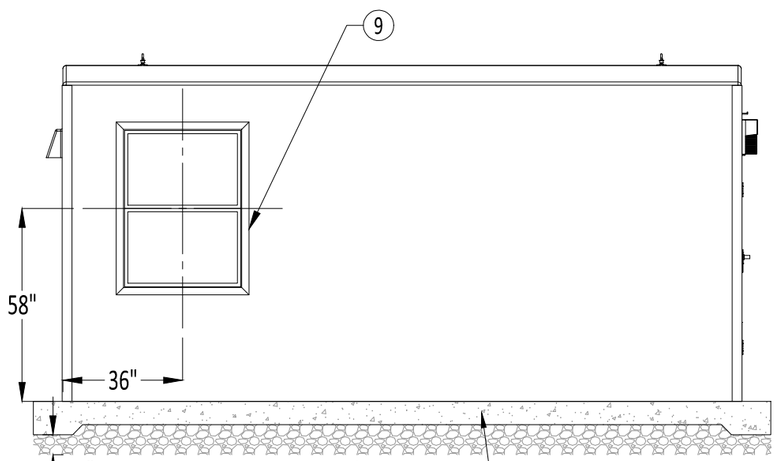
8–INCH PVC C900 PIPE DETAILS

DRAWING NO.
M5

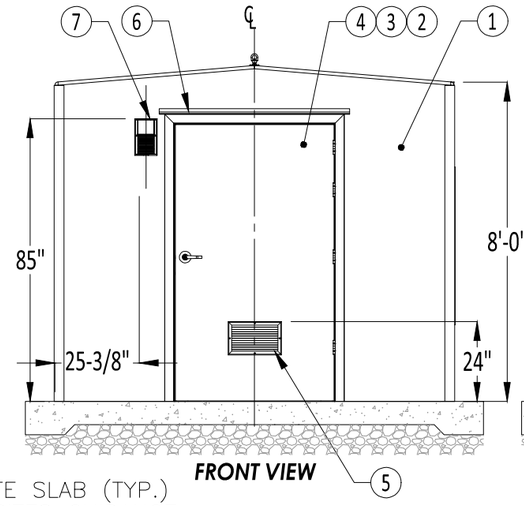
ITEM NO.	DESCRIPTION	QTY.
1	DURAFIBER BUILDING WITH BRONZE TONE CORNER TRIM, 10'W X 8'H X 17'L X 3-3/8" WALL CONSTRUCTIONS, EXTERIOR COLOR TORQUE TAN, INTERIOR COLOR WHITE	1
2	HYDRAULIC DOOR CLOSER, SLIMLINE, WITH HOLD OPEN	1
3	ENTRANCE DOOR LEVER, GRADE 1, CYLINDRICAL LOCKSET	1
4	FIBERGLASS 4' DOOR, RIGHT HAND REVERSE	1
5	ALUMINUM DOOR LOUVER, 16"W X 10"H DAYTON 5NKL0	1
6	FIBERGLASS RAIN DIVERTER, 4'-0" COLOR TORQUE TAN	1
7	EXTERNAL LIGHT, LITHONIA TWS LED 1 50K 120 PE	1
8	LIFTING EYE, 1/2" GALVANIZED	2
9	WINDOW, 36" X 48", WHITE VINYL WINDOW W/ MESH SCREEN	1



TOP VIEW

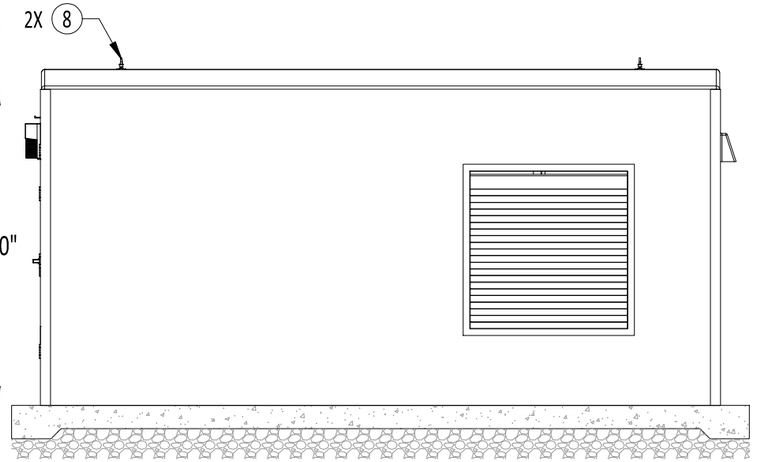


SIDE VIEW



FRONT VIEW

REINFORCED CONCRETE SLAB (TYP.) PER ORENCO COMPOSITES GUIDANCE DOCUMENT AT TIME OF SUBMITTAL



SIDE VIEW

CUSTOMER APPROVAL:_____ DATE:_____

BY THIS SIGNATURE, CUSTOMER INDICATES THAT IT HAS REVIEWED THIS SUBMITTAL DRAWING AND FOUND THAT IT MEETS ALL OF THE DESIGNER'S FUNCTIONAL REQUIREMENTS AND/OR SPECIFICATIONS. CUSTOMER HEREBY AUTHORIZES ORENCO TO MANUFACTURE THE CUSTOM PRODUCT IN ACCORDANCE WITH THIS SUBMITTAL DRAWING.

UNLESS SPECIFIED: DIMS. ARE INCHES
TOLERANCES: FRACTION: ± 1/16" ANGULAR: ± .5° DECIMAL: ± .02 CRITICAL: ± .005

DATE: 12/16/2021 | DATE APRVD: | DATE APRVD:

DRAWN BY: QARAMBURO | APRVD BY: | APRVD BY:

NAME: DFS100817-3-EW-4RHR

DESCRIPTION: BUILDING, 10'W X 8'L X 17'L X 3-3/8" WALL

REVISION: | SHEET(S): 2 OF 4

Orenco COMPOSITES

CPSS
Certified Professional Soil Scientist
BRIAN T. RABE
15239 Exp. 12/31/21
Registered Wastewater Specialist
No. EH-W-448430 Exp. 9/30/21

(SOURCE: ©ORENCO SYSTEMS®, INC.)

FISCHER'S FOREST PARK LOSS
CLACKAMAS COUNTY

REV #	DESCRIPTION	BY	DATE

DES. BY 1BTR
DRG. BY 6NSG
CHK. BY 1GLT
DATE 1/4/2023
JOB No. 2020230021

VALLEY SCIENCE AND ENGINEERING

CONTROLS SHELTER – EXTERIOR

LARGE ONSITE SEWAGE SYSTEM DESIGN

SHEET
S1

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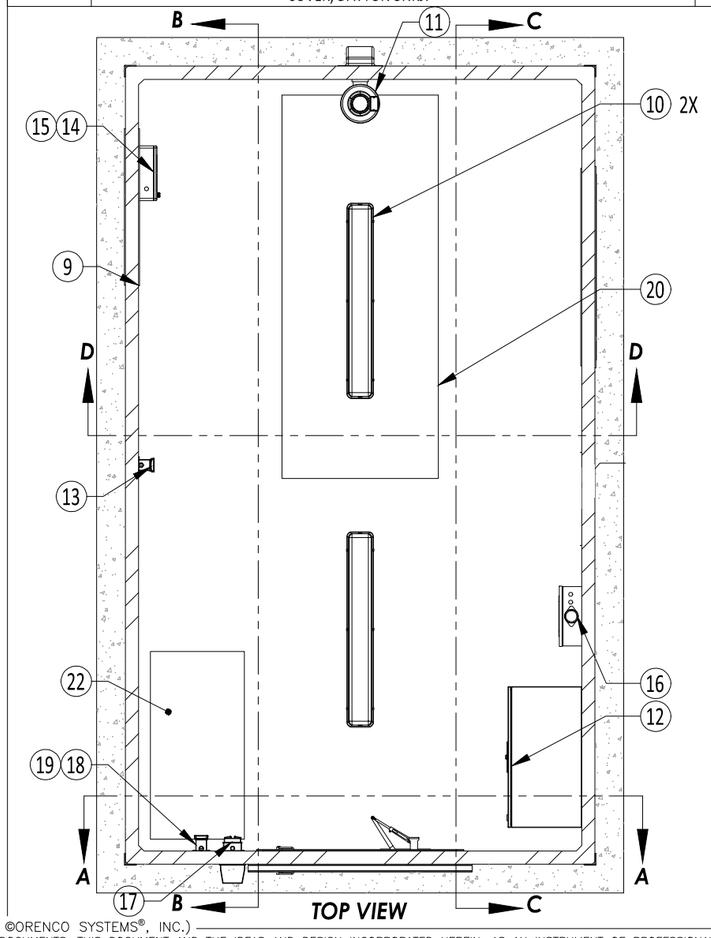
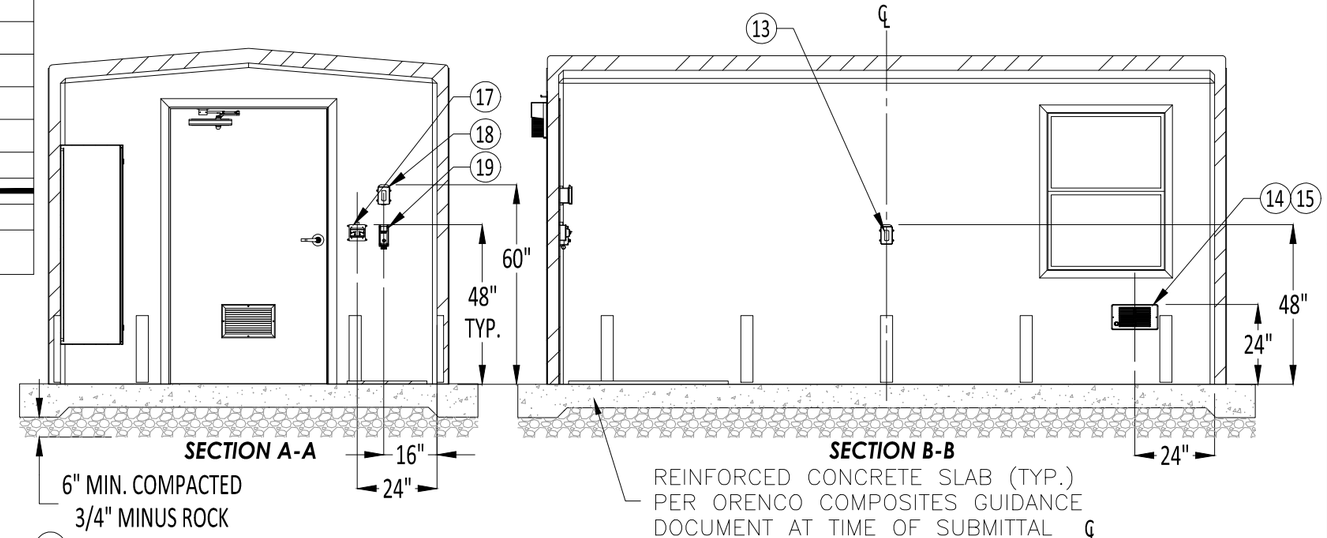
ITEM NO.	DESCRIPTION	QTY.
10	INTERIOR LIGHT, LED, 4'-0", VAPOR TIGHT FIXTURE	2
11	EXHAUST FAN WITH RAIN COVER, FANTECH FR100	1
12	CONTROL PANEL, 36" WIDTH X 30" HEIGHT X 12" DEPTH	1
13	GFCI, DUPLEX 125V 15 AMP RECEPTACLE	1
14	SURFACE MOUNT HEATER, KING 1215SL	1
15	THERMOSTAT; KING ELECTRIC SLT-1	1
16	LOAD CENTER, 24 CIRCUIT, 125A, MAIN BREAKER	1
17	WATER PROOF LIGHT SWITCH, 2 GANG, INTERIOR/EXTERIOR LIGHTS	1
18	EXHAUST FAN TIMER, 24 HOUR WITH MANUAL OVERRIDE	1
19	THERMOSTAT, DAYTON FOR FIBERGLASS SHELTERS	1
20	98"L x 40"W x 65"H DIESEL GENERATOR	1
~~21~~	~~AUTO TRANSFER SWITCH, 24"L x 24"H x 9"D~~	~~1~~
22	HEADWORKS SKID, 4' X 2'	1
23	INTAKE LOUVERS, 48"W X 48"H, IN-WALL, W/ FRP COVER, RAIN COVER, DAYTON 5NKJ7	1

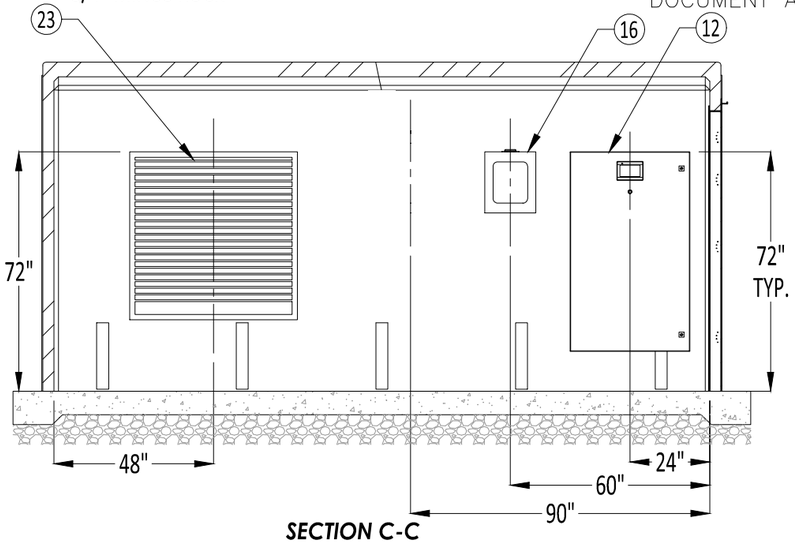


TOP VIEW

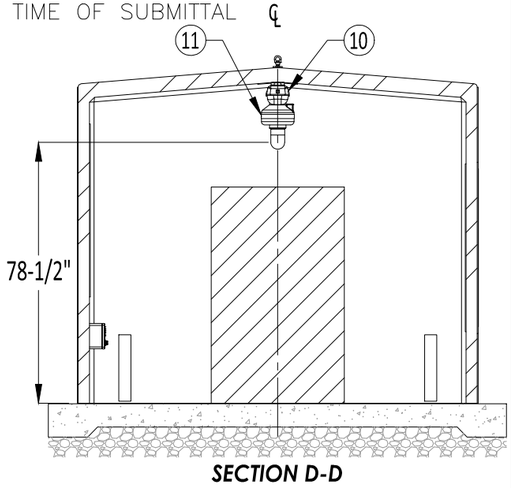


SECTION A-A

SECTION B-B



SECTION C-C



SECTION D-D

CUSTOMER APPROVAL: _____ DATE: _____

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(SOURCE: ©ORENCO SYSTEMS®, INC.)

UNLESS SPECIFIED: DIMS. ARE INCHES
TOLERANCES: FRACTION: ± 1/16" ANGULAR: ± .5° DECIMAL: ± .02 CRITICAL: ± .005

DATE: 12/16/2021 | DATE APRVD: | DATE APRVD:

DRAWN BY: QARAMBURO | APRVD BY: | APRVD BY:

NAME: DFS100817-3-EW-4RHR

DESCRIPTION: BUILDING, 10'W X 8'L X 17'L X 3-3/8" WALL

REVISION: | SHEET(S): 3 OF 4 | SHEET NO.: 2

ORENCO COMPOSITES

CPSS
Certified Professional Soil Scientist
BRIAN T. RABE
15239 Exp. 12/31/21
Registered Wastewater Specialist
No. EH-W-448430 Exp. 9/30/21

FISCHER'S FOREST PARK LOSS
CLACKAMAS COUNTY

REV #	DESCRIPTION	BY	DATE

DES. BY 1BTR
DRG. BY 6NSG
CHK. BY 1GLT
DATE 1/4/2023
JOB No. 2020230021

VALLEY SCIENCE AND ENGINEERING

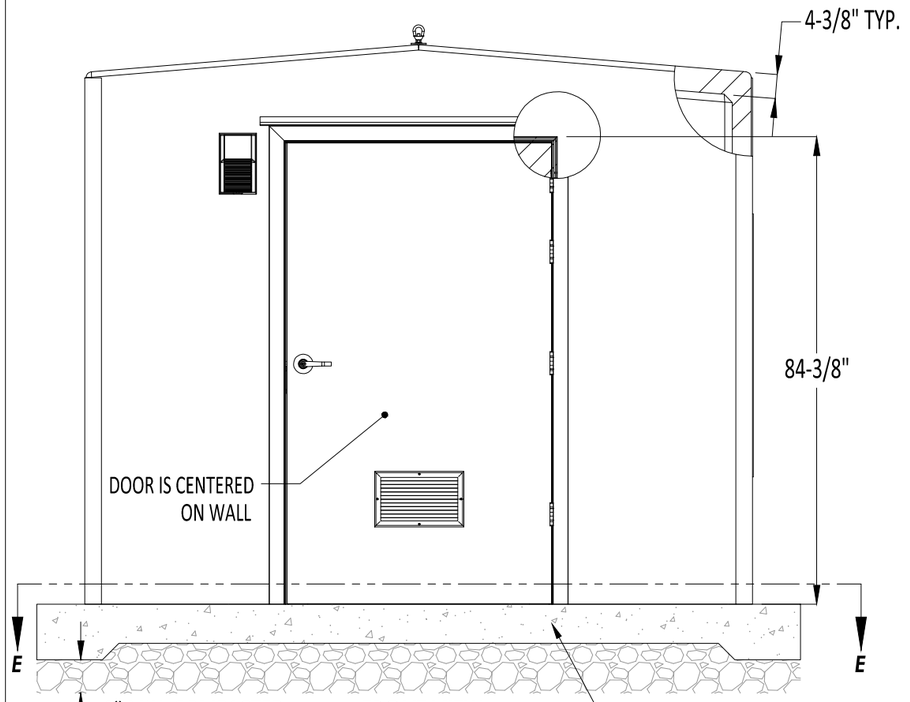
CONTROLS SHELTER – INTERIOR

LARGE ONSITE SEWAGE SYSTEM DESIGN

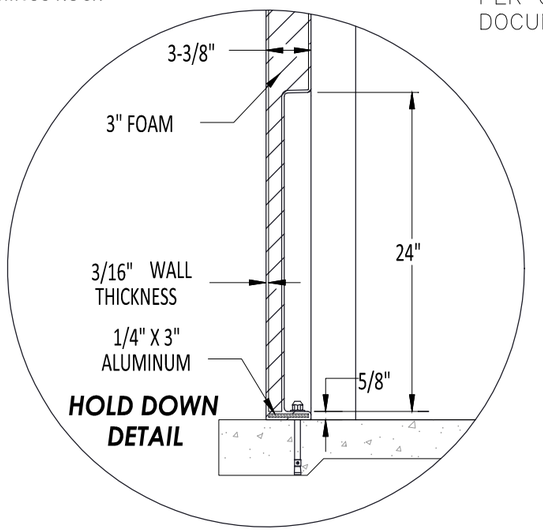
SHEET
S2

C:\Users\NG711452\Desktop\Working Drafting Guiati\2020230021 Clackamas County\DWG\LOSS\2020230021 LOSS S2.dwg 9/29/2022 NG711452

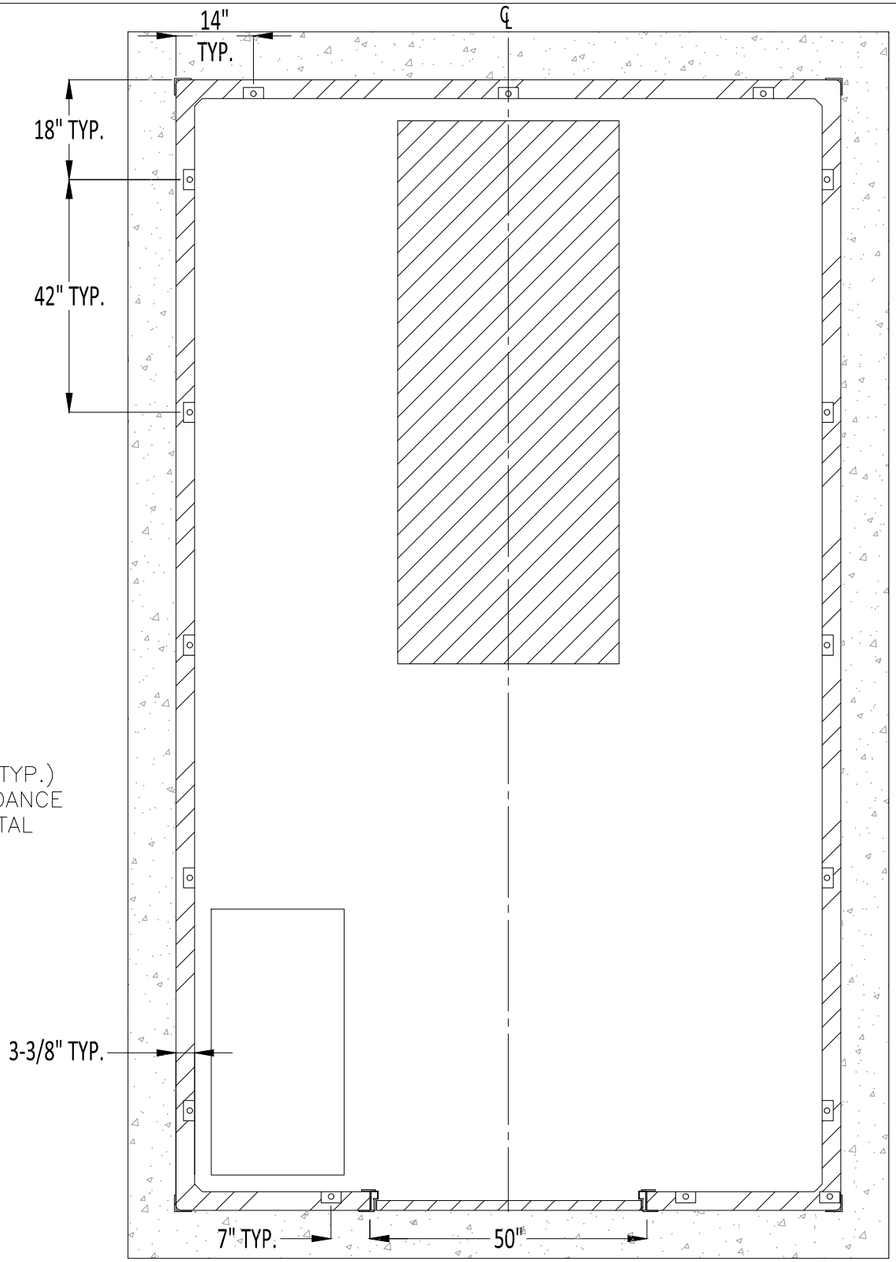
NOTE: HOLD DOWN LOCATIONS HAVE A ± 1" TOLERANCE



FRONT VIEW



HOLD DOWN DETAIL



SECTION E-E

CUSTOMER APPROVAL:_____DATE:_____

BY THIS SIGNATURE, CUSTOMER INDICATES THAT IT HAS REVIEWED THIS SUBMITTAL DRAWING AND FOUND THAT IT MEETS ALL OF THE DESIGNER'S FUNCTIONAL REQUIREMENTS AND/OR SPECIFICATIONS. CUSTOMER HEREBY AUTHORIZES ORENCO TO MANUFACTURE THE CUSTOM PRODUCT IN ACCORDANCE WITH THIS SUBMITTAL DRAWING.

NAME:	DFS100817-3-EW-4RHR
DESCRIPTION:	BUILDING, 10'W X 8'L X 17'L X 3-3/8" WALL
REVISION:	2
SHEET(S):	4 OF 4
DRAWN BY:	QARAMBURO
APRVD BY:	
APRVD BY:	
DATE:	12/16/2021
DATE APRVD:	
DATE APRVD:	

UNLESS SPECIFIED: DIMS. ARE INCHES
TOLERANCES: FRACTION: ± 1/16" ANGULAR: ± .5° DECIMAL: ± .02 CRITICAL: ± .005

Orenco COMPOSITES

CPSS
Certified Professional Soil Scientist
BRIAN T. RABE
15239 Exp. 12/31/21
Registered Wastewater Specialist
No. EH W-448450 Exp. 9/30/21

(SOURCE: ©ORENCO SYSTEMS®, INC.)

FISCHER'S FOREST PARK LOSS
CLACKAMAS COUNTY

REV #	DESCRIPTION	BY	DATE

DES. BY 1BTR
DRG. BY 6NSG
CHK. BY 1GLT
DATE 1/4/2023
JOB No. 2020230021

VALLEY SCIENCE AND ENGINEERING

CONTROLS SHELTER – BUILDING HOLD DOWNS

LARGE ONSITE SEWAGE SYSTEM DESIGN

SHEET
S3

C:\Users\NG711452\Desktop\Working Drafting Galati\2020230021 Clackamas County\DWG\LOSS\2020230021 LOSS S3.dwg 9/29/2022 NG711452

INVITATION TO BID #2022-106
FISCHER'S FOREST PARK:
LARGE ONSITE SEWAGE SYSTEM TREATMENT PROCESS UPGRADE
ADDENDUM NUMBER 2
January 30, 2023

On December 28, 2022, Clackamas County ("County") published Invitation to Bid #2022-106 ("BID"). The County has found that it is in its interest to amend the BID through the issuance of this Addendum #2. Except as expressly amended below, all other terms and conditions of the original BID and subsequent Addenda shall remain unchanged.

A. PROJECT SPECIFICATIONS

1. Revised Plans and Specifications: Large Onsite Sewage System Upgrade by Valley Science and Engineering

a. Section 5.11: Workmanship

1) Add the following paragraph to the section:

Drip tubing is to be installed into the native soil using a drip tube laying machine that is compatible with the tubing specified in the bid package documents. No importation of cover material is anticipated. Protecting and maintaining the integrity of the native soil is critical to the proposed treatment design and no substitutions or deviations will be allowed, including surface scarification or tilling as that will compromise the soil structure intended to receive treated effluent. If installation is delayed until drier summer months, hardened soils may make installation in one pass difficult due to tube laying shank refusal/increased resistance. For this scenario, previous installation in substantially similar soils have successfully installed drip tubing by making a first pass of a tractor mounted tube laying machine without tubing and shanks set to 75% of target burial depth. A second pass with tubing is then made and the resistance is adequately reduced from the first pass.

INVITATION TO BID #2022-106
FISCHER'S FOREST PARK:
LARGE ONSITE SEWAGE SYSTEM TREATMENT PROCESS UPGRADE
ADDENDUM NUMBER 3
January 31, 2023

On December 28, 2022, Clackamas County ("County") published Invitation to Bid #2022-106 ("BID"). The County has found that it is in its interest to amend the BID through the issuance of this Addendum #3. Except as expressly amended below, all other terms and conditions of the original BID and subsequent Addenda shall remain unchanged.

A. SECTION 01010 – SUMMARY OF WORK

1. Part 1 General

a. Section 1.01: Summary

1) Replace part A with the following:

This contract consists of installation of approximately 52,000 square feet of Netafim subsurface distribution system, one (1) manhole, six (6) 3,000-gallon precast tanks, three (3) AdvanTex AX100 filtration units, one (1) Orenco Durafiber shelter, two (2) custom flow split structures, along with reconfiguring an existing recirculation tank and additional work and materials necessary to rehabilitate the septic tanks, treatment process and drain field system for a 26-home communal septic system.

2) Replace part C with the following:

All Work is to be substantially completed within 150 days of Notice to Proceed and ready for final payment 30 days thereafter.

3) Replace part D with the following:

The estimated construction cost for Work scope is $800,000.

b. Section 1.02: Permits

1) Replace the entirety of the section with the following:

Contractor will be responsible for obtaining all required permits and maintaining compliance with those permits throughout the performance of the Work. Owner will pay the cost of obtaining all permits. The Contractor shall be responsible for any penalties or fines that result from Contractor's noncompliance with the terms of the permits. The Contractor will be responsible for compliance with the terms of all permits throughout the performance of the Work.

c. Section 1.04: Work of This Contract

1) Replace B.2 with the following:

2. All required permits and licenses.

APPENDIX A

SITE SPECIFIC SAFETY PLAN

SITE SPECIFIC SAFETY PLAN CERTIFICATION

Contractor performs all operations in strict accordance with all applicable standards set by Oregon Occupational Safety and Health Division (OR-OSHA), including, but not limited to Oregon Administrative Rules (OAR) 437, Chapter 2, Sections 141 – 147 (29 CFR Part 1910, 29 CFR Part 1926).

Contractor creates and maintains a Site-Specific Safety Plan, which is require on-site through the entirety of the project. The Contractor's Safety Manager is trained and knowledgeable in all safety requirements and shall be responsible for the compliance with all applicable safety requirements. All job personnel are knowledgeable of and comply with the Site Specific Safety Plan requirements.

The Site-Specific Safety Plan includes the following basic elements:

- Policy or goals statement
- List of responsible persons, including 24 hour contact information
- Hazzard identification and assessment (Job Hazard Analysis)
- Hazzard controls and safe practices
- Emergency and accident response
- Confined Space Entry Plan, including the Rescue Plan
- Emergency Spill Response Plan
- Pollution Control Plan
- Employee training and communication
- Recordkeeping

Contractor acknowledges that they are solely and completely responsible for the safety of the construction site, including, but not limited to, the safety of all persons and property present at the site at any time until final completion and acceptance by District.

I, Rick Jonas (the undersigned Contractor), affirm that I comply with the above information.

A-Affordable Septic Service, LLC
Name of Firm


Signature

Rick Jonas
Printed Name

President
Title