CONTRACT DOCUMENTS

FOR

Cable Street Lift Station and Afternoon Beach Lift Station Force Main Cleaning

(DISTRICT PROJECT #C2608)

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Lake Whatcom Water & Sewer District
1220 Lakeway Drive
Bellingham, WA 98229
(360) 734-9224, (360) 738-8250 Fax

Request for Bid

Lake Whatcom Water & Sewer District
1220 Lakeway Drive
Bellingham, WA 98229
(360) 734-9224, (360) 738-8250 Fax

INSTRUCTIONS

Lake Whatcom Water and Sewer District ("District") has estimated the Work to be less than $350,000 and the District has chosen to solicit bids via the District's Small Works Roster in accordance with RCW 39.04.151 to perform the Work as defined in this Request for Bid. To be eligible to bid, the contractor must be listed on the District's Small Works Roster, which is managed by Municipal Research Service Center (MRSC) (https://mrscrosters.org/).

The District intends to contract with an experienced, qualified, Contractor for the Cable Street Lift Station (SPCAB) and Afternoon Beach Lift Station (SPAFT) Force Main Cleaning. The work will generally includes cleaning all accumulated debris and buildup from two existing sewer force mains by "pigging" the entire length of both force mains. The SP0AB force main is 10" ductile iron and approximately 8,830 linear feet. The SPAFT force main is 6" cast iron and approximately

The District intends to execute a Small Works Contract with the Contractor that provides the best bid price for the defined Work. Lake Whatcom Water and Sewer District reserves the right to accept or reject any or all bids and to waive informalities or irregularities.

Estimated project cost: $100,000 - $150,000 not including sales tax.

The Request for Bid includes the Contract Documents as listed on the Table of Contents.

Complete the Bid Proposal form and submit by email (greg.nicoll@lwwsd.org), mail (1220 Lakeway Drive, Bellingham, WA 98229), or to the District Office (using the exterior payment slot if delivered outside of business hours). The deadline for submittal of bids is 2:00 p.m. on October 8, 2026. District will begin evaluation of bids and select a contractor soon after.

A Pre-Bid Meeting will be held on Thursday, October 1, 2026 at 10:00 a.m. The meeting will be held at the District Administration Office at 1220 Lakeway Drive, Bellingham, Washington and will be followed by site visits to each of the project sites.

For questions on the project scope and bid process, contact Greg Nicoll at 360-734-9224 or e-mail greg.nicoll@lwwsd.org.

SPAFT and SPCAB Force Main Cleaning

District Project #C2608

Name of Firm _____

BID PROPOSAL (Bid Submittal Page 1 of 2)

BASE BID

Item	Description	Quantity	Unit	Unit Price	Amount
1	Mobilization and Demobilization	1	LS	$	$
2	Force Main Cleaning – Afternoon Beach Lift Station	1	LS	$	$
3	Force Main Cleaning – Cable Lift Station	1	LS	$	$

TOTAL – BASE BID (do not include Washington State Sales Tax)	$

The Owner reserves the right to accept or reject any or all Bid prices within sixty (60) days of the Bid date.

Receipt of Addenda

Receipt of the following addenda is acknowledged:

Addendum No. ____ Addendum No. ____ Addendum No. ____

Addendum No. ____ Addendum No. ____ Addendum No. ____

Applicable Prevailing Wage Rages

State of Washington prevailing wage rates for this public works project located in Whatcom County may be found at the following website address of the Department of Labor and Industries: https://fortress.wa.gov/lni/wagelookup/prvWagelookup.aspx. Based on the Bid submittal deadline for this project, the applicable effective date for prevailing wages for this project is **October 8, 2026**

Name of Firm _____

Non-Collusion Declaration: By signing below, I hereby declare that I, firm, association or corporation has (have) not, either directly or indirectly, entered into any agreement, participated in any collusion, or otherwise taken any action restraining free competitive bidding for this project.

In addition, by signing below I hereby declare that: Within the three-year period immediately preceding the date of the bid solicitation, I, firm, association or corporation has (have) not have been determined by a final and binding citation and notice of assessment issued by the department of labor and industries or through a civil judgment entered by a court of limited or general jurisdiction to have willfully violated, as defined in RCW49.48.082, any provision of chapter 49.46, 49.48, or 49.52 RCW.

I certify under penalty of perjury under the laws of the State of Washington that the foregoing is true and correct.

Check One: Sole Proprietorship ☐ Partnership ☐ Joint Venture ☐ Corporation ☐

State of Incorporation, or if not a corporation, State where business entity was formed:

_____

If a co-partnership, give firm name under which business is transacted:

_____

Signed by _____, Official Capacity _____

Print Name _____

Date of Execution _____

Place of Execution _____

** If a corporation, proposal must be executed in the corporate name by the president or vice-president (or any other corporate officer accompanied by evidence of authority to sign). If a co-partnership, proposal must be executed by a partner.*

Address _____

City _____ State _____ Zip Code _____

Telephone _____ FAX _____

State of Washington Contractor's License No. _____

Federal Tax ID # _____ e-mail address: _____

Employment Security Department No. _____

PERFORMANCE BOND

KNOW ALL PEOPLE BY THESE PRESENTS, that _____ the CONTRACTOR, hereinafter known as PRINCIPAL, and _____, hereinafter known as SURETY, are held and firmly bound to the Lake Whatcom Water and Sewer District, hereinafter known as OWNER, in the penal sum of _____
_____ dollars (including Washington State Sales Tax) for the payment of which sum well and truly to be made, we do jointly and severally bind ourselves, our heirs, executors, administrators, successors and assigns firmly by these presents.

THE CONDITION OF THIS OBLIGATION IS SUCH, that whereas the PRINCIPAL entered into a Contract with the OWNER dated the _____ day of_____,20____ to construct the Cable Street Lift Station (SPCAB) and Afternoon Beach Lift Station (SPAFT) Force Main Cleaning project, and which Agreement is on file at the OWNER's office and by this reference is made a part hereof.

WHEREAS, said PRINCIPAL is required under the terms of said Agreement to furnish a bond for the faithful **performance** of said Agreement:

NOW, THEREFORE, if the Principal shall well, truly, and faithfully perform its duties, all the undertakings, covenants, terms, conditions, and agreements of said Contract during the original term thereof, and any extensions thereof which may be granted by the OWNER, with or without notice to the Surety and during the one year guaranty period, and if he shall satisfy all claims and demands incurred under such Contract, and shall fully indemnify and save harmless the OWNER from all costs and damages which it may suffer by reason of failure to do so, and shall reimburse and repay the OWNER all outlay and expense which the OWNER may incur in making good any default, then this obligation shall be void; otherwise to remain in full force and effect.

PROVIDED, FURTHER, that the said Surety for value received agrees that no change, extension of time, alteration or addition to the terms of the Contract, the specifications accompanying the Contract, or to the work to be performed under the Contract shall in any way affect its obligation on this BOND, and waives notice of any change, extension of time, alteration or addition to the terms of the Contract, the specifications or the work performed. The Surety agrees that modifications and changes to the terms and conditions of the Contract that increase the total amount to be paid the Principal shall automatically increase the obligation of the Surety on this BOND and notice to Surety is not required and is waived for such increased obligation.

PROVIDED, FURTHER, that no final settlement between the OWNER and the PRINCIPAL shall abridge the right of any beneficiary hereunder, whose claim may be unsatisfied.

IN WITNESS WHEREOF, the duly authorized officers of PRINCIPAL and of SURETY execute this instrument in three counterparts, each one of which shall be deemed an original, this the_____ day of_____, 20____.

_____	_____
PRINCIPAL	SURETY
_____	_____
By	By
_____	_____
Title	Title
_____	_____
Address of PRINCIPAL	Address of SURETY

Note: Date of Bond must not be prior to date of Contract. If PRINCIPAL is a Partnership, all Partners should execute bond. Surety companies executing bonds must appear on the Treasury Department's most current list (Circular 570 as amended) and be authorized to transact business in the State of Washington. A power of attorney must be provided which appoints the SURETY's true and lawful attorney-in-fact to make, execute, seal and deliver this bond.

PAYMENT BOND

KNOW ALL PEOPLE BY THESE PRESENTS, that _____ the CONTRACTOR, hereinafter known as PRINCIPAL, and _____, hereinafter known as SURETY, are held and firmly bound to the Lake Whatcom Water and Sewer District, hereinafter known as OWNER, in the penal sum of _____ _____ dollars (including Washington State Sales Tax) for the payment of which sum well and truly to be made, we do jointly and severally bind ourselves, our heirs, executors, administrators, successors and assigns firmly by these presents.

THE CONDITION OF THIS OBLIGATION IS SUCH, that whereas the PRINCIPAL entered into a Contract with the OWNER dated the _____ day of_____, 20____ to construct Cable Street Lift Station (SPCAB) and Afternoon Beach Lift Station (SPAFT) Force Main Cleaning project, and which Agreement is on file at the OWNER's office and by this reference is made a part hereof.

WHEREAS, said PRINCIPAL is required under the terms of said Agreement to furnish a bond for the faithful payment of all laborers, mechanics, subcontractors, materialmen and all persons who shall supply said Principal or said subcontractors with provisions and supplies for the carrying on of work under said Contract:

NOW, THEREFORE, THE CONDITION OF THIS OBLIGATION IS SUCH, that if the Principal shall well and truly perform and fulfill all the undertakings, covenants, terms, conditions and agreements of said Contract and pay all laborers, mechanics, subcontractors, materialmen and all persons who shall supply said Principal or said subcontractors with provisions and supplies for the carrying on of such work during the original term of said Contract and any extension thereof that may be granted by the Owner, and during the life of any guaranty required under the Contract and shall well and truly perform and fulfill the undertakings, covenants, terms, conditions and agreements of any and all duly authorized modifications of said Contract and pay all laborers, mechanics, subcontractors, materialmen and all persons who supply said Principal or said subcontractors with provisions and supplies for the carrying on of such modifications which may hereafter be made, then this obligation to be void; otherwise to remain in full force and effect.

PROVIDED, FURTHER, that the said Surety for value received agrees that no change, extension of time, alteration or addition to the terms of the Contract, the specifications accompanying the Contract, or to the work to be performed under the Contract shall in any way affect its obligation on this BOND, and waives notice of any change, extension of time, alteration or addition to the terms of the Contract, the specifications or the work performed. The Surety agrees that modifications and changes to the terms and conditions of the Contract that increase the total amount to be paid the Principal shall automatically increase the obligation of the Surety on this BOND and notice to Surety is not required and is waived for such increased obligation.

PROVIDED, FURTHER, this Bond is executed pursuant to RCW Chapter 39.08.

IN WITNESS WHEREOF, the duly authorized officers of PRINCIPAL and of SURETY execute this instrument in three counterparts, each one of which shall be deemed an original, this the_____ day of_____, 20_____.

_____	_____
PRINCIPAL	SURETY
_____	_____
By	By
_____	_____
Title	Title
_____	_____
Address of PRINCIPAL	Address of SURETY

Note: Date of Bond must not be prior to date of Contract. If PRINCIPAL is a Partnership, all Partners should execute bond. Surety companies executing bonds must appear on the Treasury Department's most current list (Circular 570 as amended) and be authorized to transact business in the State of Washington. A power of attorney must be provided which appoints the SURETY's true and lawful attorney-in-fact to make, execute, seal and deliver this bond.

RETAINAGE BOND

KNOW ALL PEOPLE BY THESE PRESENTS, that _____ the CONTRACTOR, hereinafter known as PRINCIPAL, and _____, hereinafter known as SURETY, are held and firmly bound Lake Whatcom Water and Sewer District, hereinafter known as OWNER, and the State of Washington (STATE), and are similarly held and bound unto the beneficiaries of the trust fund created by Chapter 60.28 Revised Code of Washington (RCW), and their heirs, executors, administrators, successors and assigns in the penal sum of

_____

dollars, plus 5% of any increases in the Contract Sum that have occurred or may occur, due to change orders, increases in the quantities or the addition of any new item of work.

WHEREAS, the PRINCIPAL has executed Contract for Cable Street Lift Station (SPCAB) and Afternoon Beach Lift Station (SPAFT) Force Main Cleaning project

WHEREAS, said Contract and Chapter 60.28 RCW require the OWNER to withhold from the PRINCIPAL the sum of five percent (5%) from monies earned by the PRINCIPAL on estimates during the progress of the Work, hereinafter referred to as earned retained funds; and

WHEREAS, the PRINCIPAL/SURETY has requested that the OWNER accept a bond in lieu of earned retained funds as allowed under Chapter 60.28 RCW.

NOW, THEREFORE, this obligation is such that the SURETY, its successors and assigns, are held and bound unto OWNER, STATE and unto all beneficiaries of the trust fund created by RCW 60.28.011(1) in the aforesaid sum. This bond, including any proceeds therefrom, is subject to all claims and liens and in the same manner and priority as set forth for retained percentages in Chapter 60.28 RCW. The condition of this obligation is such that if the PRINCIPAL shall satisfy all payment obligations to persons who may lawfully claim under the trust fund created pursuant to Chapter 60.28 RCW, to the STATE, and to the OWNER, and indemnify and hold the OWNER harmless from any and all loss, costs, and damages that the OWNER may sustain by release of said retainage to PRINCIPAL/SURETY, then this obligation shall be null and void provided the SURETY is notified by OWNER that the requirements of RCW 60.28.021 have been satisfied and the obligation is duly released by OWNER; otherwise it shall remain in full force and effect.

IT IS HEREBY FURTHER DECLARED AND AGREED that this obligation shall be binding upon and inure to the benefit of the PRINCIPAL, the SURETY, the OWNER, STATE and, the beneficiaries of the trust fund created by Chapter 60.28, Revised Code of Washington (RCW) and their respective heirs, executors, administrators, successors and assigns.

The laws of the State of Washington shall be applicable in the determination of the rights and obligations of the parties hereunder. Venue for any dispute or claim hereunder shall be the superior court of Whatcom County.

SIGNED, SEALED AND DATED THIS _____ day of_____, 20____.

_____	_____
PRINCIPAL	SURETY
_____	_____
By	By
_____	_____
Title	Title
_____	_____
Address of PRINCIPAL	Address of SURETY

Note: Date of Bond must not be prior to date of Contract. If PRINCIPAL is Partnership, all Partners should execute bond. Surety companies executing bonds must appear on the Treasury Department's most current list (Circular 570 as amended) and be authorized to transact business in the State of Washington. A power of attorney must be provided which appoints the SURETY's true and lawful attorney-in-fact to make, execute, seal and deliver this bond.

LAKE WHATCOM WATER AND SEWER DISTRICT
SMALL WORKS CONTRACT

THIS AGREEMENT is made on **MONTH & DAY**, **2025**, between LAKE WHATCOM WATER AND SEWER DISTRICT ("DISTRICT"), a Washington special purpose district and **NAME OF CONTRACTOR** ("CONTRACTOR"). The District and the Contractor may be referred to herein individually as "Party" or collectively as "Parties."

In consideration of the terms and conditions contained in this Contract and attached to it, the parties agree as follows:

1. PROJECT

Contractor shall do all work and furnish all tools, materials, and equipment for the District's public works project known as **Cable Street Lift Station (SPCAB) and Afternoon Beach Lift Station (SPAFT) Force Main Cleaning (District Project #C2608)** ("Project") in accordance with and as more fully described in **Section 007100**.

2. WORK

The term Work means the entire, or any portion thereof, construction and services required by the Contract Documents, and includes, but is not limited to, labor, materials, supplies, equipment, services, permits, and the manufacture and fabrication of components, performed, furnished, or provided in accordance with the Contract Documents..

3. PROJECT COST

The District shall pay Contractor not to exceed _____ ($_____.____) plus Washington State sales tax ("Project Cost"), subject to the terms herein. The Project Cost includes the cost of all Work, materials, fees, and expenses required for completion of the Project including without limitation labor, materials, overhead, administrative, and permit and regulatory costs, as stated in the Bid Proposal and attachments hereto, unless otherwise agreed to by the Parties in writing.

4. PAYMENT TERMS

The Project Cost shall be payable in the following manner: Contractor shall submit a detailed monthly pay application for all services provided describing in reasonable and understandable detail the Work completed during the previous month, the progress of the Work, and the requested payment in an amount proportionate to the Work completed. The District shall issue a warrant for payment of approved Work contained in the application within thirty (30) days after approval of the pay application, pursuant to the terms below:

a. In cases of single payment, the District shall make payment only after all appropriate releases are submitted.

b. In cases of multiple payments, the District shall retain monies as required by RCW 60.28 and pay the retainage as provided therein.

5. CHANGE IN THE WORK

Change in the Work, Project Cost, or Contract Time shall be incorporated into the Contract through the execution of Change Orders signed by the Contractor and District.

a. **Change Order Processing**. The District may at any time order additions, deletions, revisions, or other changes in the Work. The Contractor will prepare and submit a Change Order Proposal to the District for consideration that details changes to the Work, Project Cost or Contract Time. If the District approves the Change Order Proposal it shall be attached to a Change Order form signed first by the Contractor, then by the District.

b. **Changed or Unforeseen Conditions**. During the course of Work the Contractor may discover changed or unforeseen conditions not anticipated by either Party. If changed or unforeseen conditions are discovered that might affect the Work, Project Cost, or Contract Time, the Contractor shall immediately inform the District on the day of discovery. If District determines Work must continue, the District will authorize a Field Authorization allowing the Contractor to continue with Work on a time and materials basis not to exceed an estimated amount agreed to onsite by the Contractor and District. The Contractor shall submit detailed labor, equipment, and material cost documentation to the District for review within five (5) business days of the event to the District. If approved by the District, the District will prepare a Change Order form attaching Field Authorization with backup documentation for Change Order Processing. Contractor agrees to 15% overhead and 6% profit charged on Field Authorization labor, equipment, and material costs. Failure to provide Notice and cost documentation under the terms of this Contract constitutes a full and complete waiver of such claim. In no case shall a claim for equitable adjustment be allowed if submitted after the Project has reached final acceptance by the District.

6. COMPLETION DEADLINE/LIQUIDATED DAMAGES

Contractor shall commence Work under this Contract upon receipt of notice to proceed from the District. The Project must be completed no later than ninety (**90**) calendar days after receipt of notice to proceed. If the Project is not completed by

SAMPLE

such date, then, because of the difficulty in computing the actual damages to the District arising from any delay in completing the Project Work, it is agreed by the Parties that Contractor shall pay the District liquidated damages as computed below for each calendar day the Work remains incomplete after expiration of the specified completion date. The Parties agree that such amount represents a reasonable forecast of the actual damages the District will suffer by failure of the Contractor to complete the Work within the agreed upon time. The execution of this Contract constitutes acknowledgement by the Contractor that the Contractor has ascertained and agrees that the District will actually suffer damages as computed by the following formula:

$$LD = (0.15*C)/T$$

Where: LD = liquidated damages per calendar day (rounded to nearest dollar)
C = original Contract Award Amount
T = original Contract Time in calendar days for achieving Substantial Completion

7. WARRANTY

Contractor warrants that all materials and equipment shall be new unless otherwise specified, of good quality, and free from defective workmanship and materials. Contractor further warrants that the Work shall be free from defects in workmanship and material, and shall transfer to the District all written warranties related to the Work performed and equipment installed. The foregoing Contractor's warranty shall remain in effect for one (1) year following final acceptance.

8. PREVAILING WAGES

The Contractor shall pay prevailing wages as required and shall comply with RCW 39.12 and RCW 49.28. Notice of intent to pay prevailing wages and prevailing wage rates for the Project must be posted for the benefit of workers. The Contractor shall submit a statement of intent to pay prevailing wages, approved by the industrial statistician of the Department of Labor and Industries, with its first (or only) pay request. At the completion of the Project, the Contractor and its subcontractors shall also submit Affidavits of Wages Paid to the Department of Labor and Industries for certification. Final payment on the Contract shall be withheld until the District receives certification from the Department of Labor and Industries that prevailing wage requirements have been satisfied.

For public works projects of $5,000 or less, the District may authorize the alternative procedure set forth in RCW 39.12.040(2) in lieu of the procedure described above.

9. PAYROLL RECORDS

In accordance with RCW 39.12.120, each contractor, subcontractor, or employer shall keep accurate payroll records for three (3) years from the date of acceptance of the public works project by the contract awarding agency, showing the employee's full name, address, social security number, trade or occupation, classification, straight and overtime rates, hourly rate of usual benefits, and hours worked each day and week, including any employee authorizations executed pursuant to RCW 49.28.065, and the actual gross wages, itemized deductions, withholdings, and net wages paid, for each laborer, worker, and mechanic employed by the contractor for work performed on a public works project.

A contractor, subcontractor, or employer shall file a copy of its certified payroll records using the Department of Labor and Industries' online system at least once per month. If the Department of Labor and Industries' online system is not used, a contractor, subcontractor, or employer shall file a copy of its certified payroll records directly with the Department of Labor and Industries in a format approved by the Department of Labor and Industries at least once per month.

10. RETAINAGE AND BONDS

Except as otherwise provided herein, Contractor shall provide performance bond and payment bond for the faithful performance and payment of all its obligations under this Contract and in accordance with RCW 39.08.010. The performance bond shall remain in effect to guarantee the repair and replacement of defective equipment, materials, and workmanship and payment of damages sustained by the District on account of such defects, discovered within one (1) year after final acceptance by the District. In lieu of performance and payment bonds for Contracts up to $150,000, Contractor may authorize the District to retain 10%, instead of the maximum 5% as authorized under RCW 60.30.010, of the Contract amount for the period required under RCW 39.08.010.

11. INDEMNIFICATION

Contractor and its subcontractors shall defend, indemnify, and hold harmless the District, its commissioners, officers, managers, employees, engineers, agents, and volunteers from and against any and all demands, claims, losses, injuries, damages, liabilities, suits, judgment, reasonable attorneys' fees and costs, and other expenses of any kind on account of, relating to, or arising out of Contractor's Work under this Contract, except to the extent such injuries or damages are caused by the negligence of the District. For the purposes of this indemnification, Contractor specifically and expressly waives

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any immunity granted under the Washington Industrial Insurance Act, Title 51 RCW. This waiver has been mutually negotiated and agreed to by the parties. If a court of competent jurisdiction determines that this Contract is subject to RCW 4.24.115, Contractor's obligation to defend, indemnify, and hold harmless the District, its officers, employees, agents and volunteers shall be limited to the extent of the District's negligence. The provisions of this paragraph shall survive the expiration or termination of this Contract.

12. INSURANCE

Contractor shall obtain, and keep in force during the term of this Contract, insurance policies as follows:

a. **Commercial General Liability**. Limits no less than $1,000,000.00 combined single limit per occurrence and $2,000,000.00 aggregate for personal injury, bodily injury and property damage. Coverage shall be as broad as Insurance Services Office form number (CG 00 01) covering Commercial General Liability.

b. **Automobile Liability Insurance**. Limits no less than $1,000,000.00 combined single limit per accident for bodily injury and property damage. Coverage shall be as broad as Insurance Services Office form number (CA 00 01) covering Business Auto Coverage, symbol 1 "any auto"; or the combination of symbols 2, 8, and 9.

c. **Workers' Compensation**. Coverage shall be at least as broad as Workers' Compensation coverage, as required by the Industrial Insurance Act of the State of Washington, as well as any similar coverage required for this work by applicable Federal Law.

d. **Employer's Liability or "Washington Stop Gap".** Coverage shall be at least as broad as the protection provided by the Workers Compensation policy Part 2 (Employers Liability) or, in states with monopolistic state funds, the protection provided by the "Stop Gap" endorsement to the general liability policy.

e. The insurance policies shall specifically name the District, its elected or appointed officials, officers, employees, and volunteers as insureds with regard to damages and defense of claims arising from (1) activities performed by or on behalf of the Contractor; or (2) products and completed operations of the Contractor; or (3) premises owned, leased, or used by the Contractor.

f. The insurance policies (1) shall state that coverage shall apply separately to each insured against whom claim is made or suit is brought, except with respect to the limits of the insurer's liability; (2) shall be primary insurance with regard to the District; and (3) shall state that the District will be given at least 45 days' prior written notice of any cancellation, suspension or material change in coverage.

g. Before commencing work and services, Contractor shall provide to the District a Certificate of Insurance evidencing the required insurance accompanied by endorsements as are necessary to comply with the requirements of this section. The District reserves the right to request and receive a certified copy of all required insurance policies.

h. Any payment of deductible or self-insured retention shall be the sole responsibility of Contractor.

13. JOB SAFETY/HOUSEKEEPING

All Work done shall be done in a manner that minimizes interruptions or inconvenience to the public and/or District staff. All Work shall be carried on with due regard for the safety of the public, and Contractor shall maintain strict compliance with the appropriate provisions relating to control of traffic and pedestrians through work areas as set forth in the Manual on Uniform Traffic and Control Devices (current edition) as adopted by the Washington State Department of Transportation. Property and streets adjacent to the Project site shall be kept free and clear at all times from accumulations of mud, dirt, gravel, rock, and other matters. Contractor shall be responsible for daily removal, clean up and disposal of refuse, waste and debris produced by its operation. Refuse shall not be permitted to accumulate to the extent that it interferes with free access to the Project site. Upon completion of Project, Contractor shall perform final cleanup and leave the Project site in a clean and orderly condition acceptable to the District. Should the District determine Contractor is not fulfilling its obligations under this Section, the District reserves the right to take such action as may be necessary, and to charge Contractor with any costs that may be incurred in any remedial action.

14. COMPLIANCE WITH CODES AND REGULATIONS

Contractor is expected to comply with all applicable statutes in performing Project Work, including, but not limited to all state and local laws, regulations, codes and standards that are applicable at the time Contractor performs Work.

15. PERMITS, TAXES, TEMPORARY FUNCTIONS

Contractor shall secure and pay for all permits, fees and licenses necessary for the performance of this Contract. Contractor shall pay any and all federal, state and municipal taxes, including sales taxes, if any, for which Contractor may be liable in carrying out this Contract. Contractor shall be responsible for all temporary functions associated with its Work, including but not limited to, lighting, wiring, protection, hoisting, scaffolding, rigging, flagman, drinking water, sanitation, storage, ventilation and heat.

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16. TERMINATION

If Contractor: (1) fails to provide a sufficient number of properly skilled workers or a sufficient quantity of suitable materials or adequate equipment; (2) fails to diligently prosecute Work according to the Project schedule; (3) causes, by act or omission, stoppage, delay, or interference of the Work; (4) fails to correct or repair any damaged or defective Work or materials; (5) fails to comply with any provisions of this Contract; (6) becomes insolvent or adjudged bankrupt; or (7) fails to make prompt payment to lower tier subcontractors or suppliers, then the District may terminate this Contract upon two (2) business days written notice to the Contractor. If Contractor fails to cure the default within the two (2) day notice period, then Owner may terminate this Contract for default.

17. GENERAL PROVISIONS

a. **Notices**. Any notice or demand desired or required to be given under this Contract shall be in writing and deemed given when personally delivered, sent by facsimile machine, or deposited in the United States Mail (or with an express courier), postage prepaid, sent certified or registered mail, and addressed to the Parties as set forth below or to such other address as either party shall have previously designated by such a notice:

District:	Contractor:
Attn: General Manager Lake Whatcom Water and Sewer District 1220 Lakeway Drive Bellingham, WA 98229	Attn: _____ _____ _____ _____
Phone: (360) 734-9224 Fax: (360) 738-8250	Phone: _____ Fax: _____

b. **Relationship Between Parties**. The Contractor is an independent Contractor with regard to performance of the details of the Work. The Contractor is responsible for its acts or omissions and acts or omissions of its agents, employees, servants, subcontractors, or otherwise during the performance of this Contract. Work in progress is subject to District inspection and review at any time.

c. **Entire Agreement**. This Contract and its attachments contain the entire understanding between the District and Contractor relating to the Project which is the subject of this Contract. This Contract merges all prior discussions, negotiations, letters of understanding or other promises whether oral or in writing. Subsequent modification or amendment of this Contract shall be in writing and signed by the parties to this Contract.

d. **Modification**. No modification of this Contract and no waiver of rights under this Contract shall be valid or binding on the parties unless the same is in writing.

e. **Waiver**. Waiver of any breach or default hereunder shall not constitute a continuing waiver or a waiver of any subsequent breach either of the same or of another provision of this Contract.

f. **Assignment**. Neither Party shall assign, transfer or otherwise dispose of this Contract in whole or in part to any individual, firm or corporation without the prior written consent of the other Party. Subject to the provisions of the preceding sentence, this Contract shall be binding upon and inure to the benefit of the respective successors and assigns of the Parties hereto: This Contract is made only for the benefit of the District and the Contractor and successors in interest and no third party or person shall have any rights hereunder whether by agency or as a third party beneficiary.

g. **Severability**. If any term, covenant or condition of this Contract is held by a court of competent jurisdiction to be invalid, the remainder of this Contract shall remain in effect.

h. **Dispute Resolution**. If any dispute, controversy, or claim arises out of this Contract, the Parties agree to first try to settle the dispute, controversy, or claim in non-binding mediation with the assistance of a recognized professional mediation service. The Parties shall each designate a representative with full settlement authority who will participate in the mediation. The Parties shall bear all expenses associated with the mediation equally, except for attorneys' fees. Any Claim subject to, but not resolved by, mediation shall be subject to a private arbitration which, unless the Parties mutually agree otherwise, shall be held in accordance with its Construction Industry Arbitration Rules in effect on the date of the Agreement; however, irrespective of the size of the dispute, the arbitration proceedings will be conducted by a single arbitrator. A demand for arbitration shall be made in writing, and delivered to the other Party to the Contract. The Party filing a notice of demand for arbitration must assert in the demand all Claims then known to that party on which arbitration is permitted to be demanded.

SAMPLE

i. **Jurisdiction/Law**. This Contract shall be governed by and construed in accordance with the laws of the State of Washington. Any suit to enforce or relating to this Contract, including the enforcement of any arbitration award, shall be brought in Whatcom County Superior Court, Whatcom County, Washington.

j. **Attorneys' Fees**. In the event that any Party commences litigation against the other Party relating to the performance, enforcement or breach of this Contract, the prevailing Party in such action shall be entitled to all costs, including attorneys' fees, expert witness fees and costs and any such fees or costs incurred on appeal.

_____
("CONTRACTOR")

Contractor Registration Number: _____

Unified Business Identifier (UBI #): _____

Employment Security Department Number: _____

State Excise Tax Registration Number: _____

_____
(Signature)

_____
(Printed Name and Title)

Dated: _____

Lake Whatcom Water and Sewer District
("DISTRICT")

_____
Justin Clary, General Manager

Dated: _____

SAMPLE

I. SUMMARY OF WORK

The District intends to contract with an experienced and qualified pipeline cleaning, inspection and pigging contractor for the professional force main cleaning of two District-owned force mains located in the Sudden Valley and Geneva neighborhoods in unincorporated Whatcom County immediately east of Bellingham, Washington. Work includes:

Afternoon Beach Lift Station (SPAFT)

- Remove all debris and buildup and clean the interior of the existing force main between the pig launching station and the discharge manhole.

Cable Street Lift Station (SPCAB)

- Remove all debris and buildup and clean the interior of the force main between the existing pig launching station and the discharge manhole.

II. PROJECT SPECIFICATIONS

1.0 SYSTEM DESCRIPTION

The lift stations and force mains included in this project are summarized in the table below:

Name	SPAFT	SPCAB
Lift Station		
Pump Type	Submersible	Immersible (Hydrostal)
# of Pumps	2	3
Horsepower/pump	45	65
Capacity (gpm)	450	1,065
Total Dynamic Heat (ft H_2O)	136	164
Force Main		
Diameter (inches)	6	10
Material	Cast Iron	Ductile Iron
Length (ft)	1,520	8,830
Other Lift Stations Discharging to FM	None	Euclid Lift Station (SPEUC)

Operating details of the Euclid Lift Station, which discharges to the SPCAB force main, is summarized below.

Name	Euclid (SPEUC)
Pump Type	Submersible
# of Pumps	2
Horsepower/pump	15
Capacity (gpm)	125
Total Dynamic Heat (ft H_2O)	100

2.0 SUBMITTALS

Prior to the start of any work to pig and clean the two force mains, the Contractor shall submit to the District a Pigging and Cleaning Plan for review and approval. The Plan shall include:

1. Proposed approach to cleaning and pigging of the pipes, including proposed cleaning equipment, pig sizes and materials, pressure required to propel the pigs through the system and all other work to remove all debris and buildup from the pipe interior.
2. Pig monitoring plan to track the location and progress of the pig through the force main.
3. Plan for maintain continuous service to District customers throughout force main cleaning.
4. Plan for recovering the pig or any other obstruction from the force in the event that the pig becomes stuck or if the pipe is damaged during cleaning and pigging.
5. Plan for documenting the before and after condition of the pipes to document that all debris and buildup has been removed from the pipe.

3.0 EXECUTION

Contractor shall clean the interior of the SPAFT and SPCAB force mains by launching pigs into the force main as needed to fully remove all buildup and debris from the system. The Contractor will determine the proper size swabs/pigs to be used. The cleaning pigs should be able to pass through reduction of up to 60 to 65 percent of cross-sectional area of nominal pipe. Cleaning pigs should be able to navigate standard piping components such as 90-degree elbows, tees, crosses, wyes, gate valves, and ball valves to meet the cleaning need of the sewer force main.

For each location, the Contractor shall take precautions to prevent scratching or scraping of interior wall surfaces or other damage to pipes that might be inflicted by the improper use of cleaning equipment. The Contractor shall provide a GPS tracker installed in the pig device to be able to locate if the pig gets stuck in the pipe.

If required to complete pigging and cleaning, the Contractor shall provide bypass pumping or temporary sewage storage for the three lift stations (SPCAB, SPAFT and SPEUC) impacted by the project at no additional cost to the District.

4.0 SAFETY

In carrying out its responsibilities, Contractor shall protect the lives and health of employees performing the Work and other persons who may be affected by the Work; prevent damage to materials, supplies, and equipment whether on site or stored off-site; and prevent damage to other property at the site or adjacent thereto. Contractor shall comply with all applicable laws, ordinances, rules, regulations, and orders of any public body having jurisdiction for the safety of persons or property or to protect them from damage, injury, or loss; shall erect and maintain all necessary safeguards for such safety and protection; and shall notify Districts of adjacent property and utilities when prosecution of the Work may affect them. For these purposes, the Contractor shall:

- Follow Washington Industrial Safety and Health Act (WISHA) regional directives and provide a site-specific safety program that will require an accident prevention and hazard analysis plan for the contractor and each subcontractor on the work site. The Contractor shall develop and submit a site-specific safety plan (SSSP) to the District's representative for review prior to the initial pre-construction meeting. District shall have up to 5 working days to review and comment on the SSSP. The District's review of the SSSP shall not alleviate the Contractor's sole responsibility for site safety throughout the project.
- Provide adequate safety devices and measures including, but not limited to, the appropriate safety literature, notice, training, permits, placement and use of barricades, signs, signal lights, ladders, scaffolding, ventilation, air monitoring, necessary personal protective equipment for all employees, staging, runways, hoist, temporary lighting, grounded outlets, wiring, construction processes, and equipment required by Chapter 19.27 RCW, State Building Code (Uniform Building, Electrical, Mechanical, Fire, and Plumbing Codes); Chapter 212-12 WAC, Fire Marshal Standards, Chapter 49.17 RCW, WISHA; Chapter 296-155 WAC, Safety Standards for Construction Work; Chapter 296-65 WAC; WISHA Asbestos Standard; WAC 296-62-071, Respirator Standard; WAC 296-62, General Occupation Health Standards, WAC 296-24, General Safety and Health Standards, WAC 296-24, General Safety and Health Standards, Chapter 49.70 RCW, and Right to Know Act.

5.0 MEASUREMENT AND PAYMENT

The following is a list of bid items for the project. It is the intention that performance of work under these bid items shall result in the complete construction of all work identified

in the plans and specifications. Work and material not specifically listed in the proposal but required according to the plans and specifications and general practice, shall be included in the Contractor's bid price. Payment for all work will be made at the contract unit price or lump sum prices as indicated in the Bid Proposal. The contract price for each item constitutes full compensation for furnishing all equipment, labor, materials, transportation, appurtenances, and incidentals and performing all work necessary to complete the various bid items in accordance with the Contract Documents. Payment for each item shall be considered as full compensation, notwithstanding that minor features may not be mentioned herein.

BID ITEM NO. 1: MOBILIZATION AND DEMOBILIZATION

Measurement. Will be measured lump sum (LS).

Payment. The lump sum price for this bid item shall cover the complete cost of providing all mobilization and demobilization relating to construction of improvements shown on the plans and specified herein. Work includes, but is not limited to mobilization of labor, equipment and materials, necessary permits, temporary erosion and sedimentation control, site security, move all personnel and equipment off site after contract completion and cleanup site prior to final acceptance.

BID ITEM 2: FORCE MAIN CLEANING– AFTERNOON BEACH LIFT STATION

Measurement. Will be measured lump sum (LS).

Payment. Payment shall cover the complete cost of all work to complete all pigging and cleaning required to remove all debris and buildup from the interior of the Afternoon Beach Lift Station (SPAFT) force main. Work shall include but not be limited to all costs for the labor, equipment, and materials required to complete the work.

BID ITEM 3: FORCE MAIN CLEANING AND PIGGING PORT – CABLE STREET LIFT STATION

Measurement. Will be measured lump sum (LS).

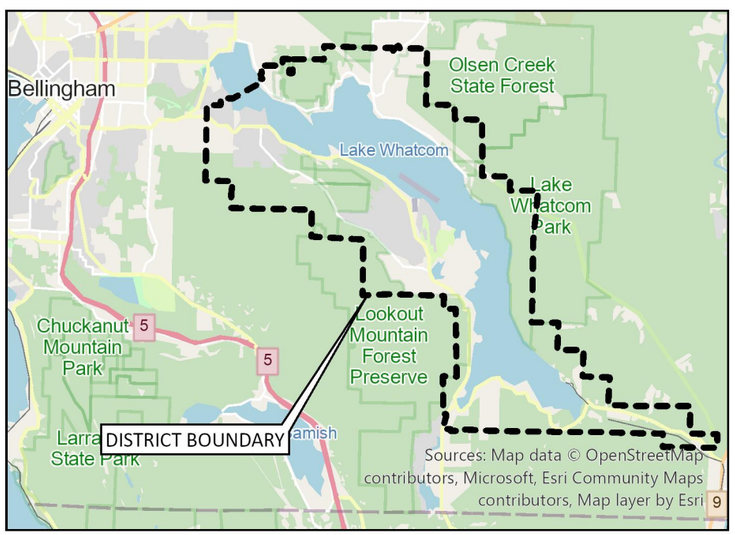
Payment. Payment shall cover the complete cost of all work to complete all pigging and cleaning required to remove all debris and buildup from the interior of the Cable Street Lift Station (SPCAB) force main. Work shall include but not be limited to all costs for the labor, equipment, and materials required to complete the work.

*** END OF PROJECT INFORMATION AND SPECIFICATIONS ***

ATTACHMENT A

DRAWINGS

LOCATION



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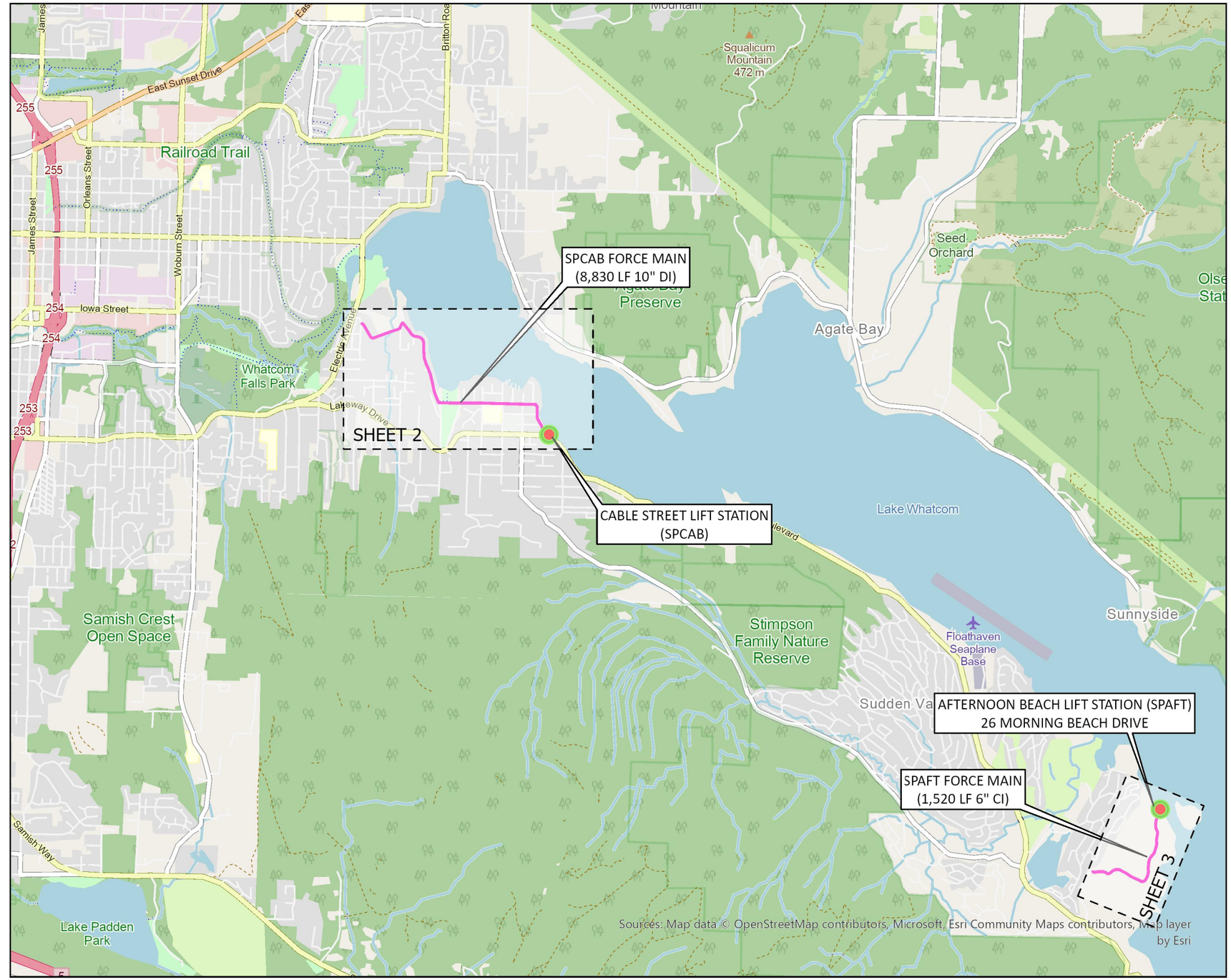

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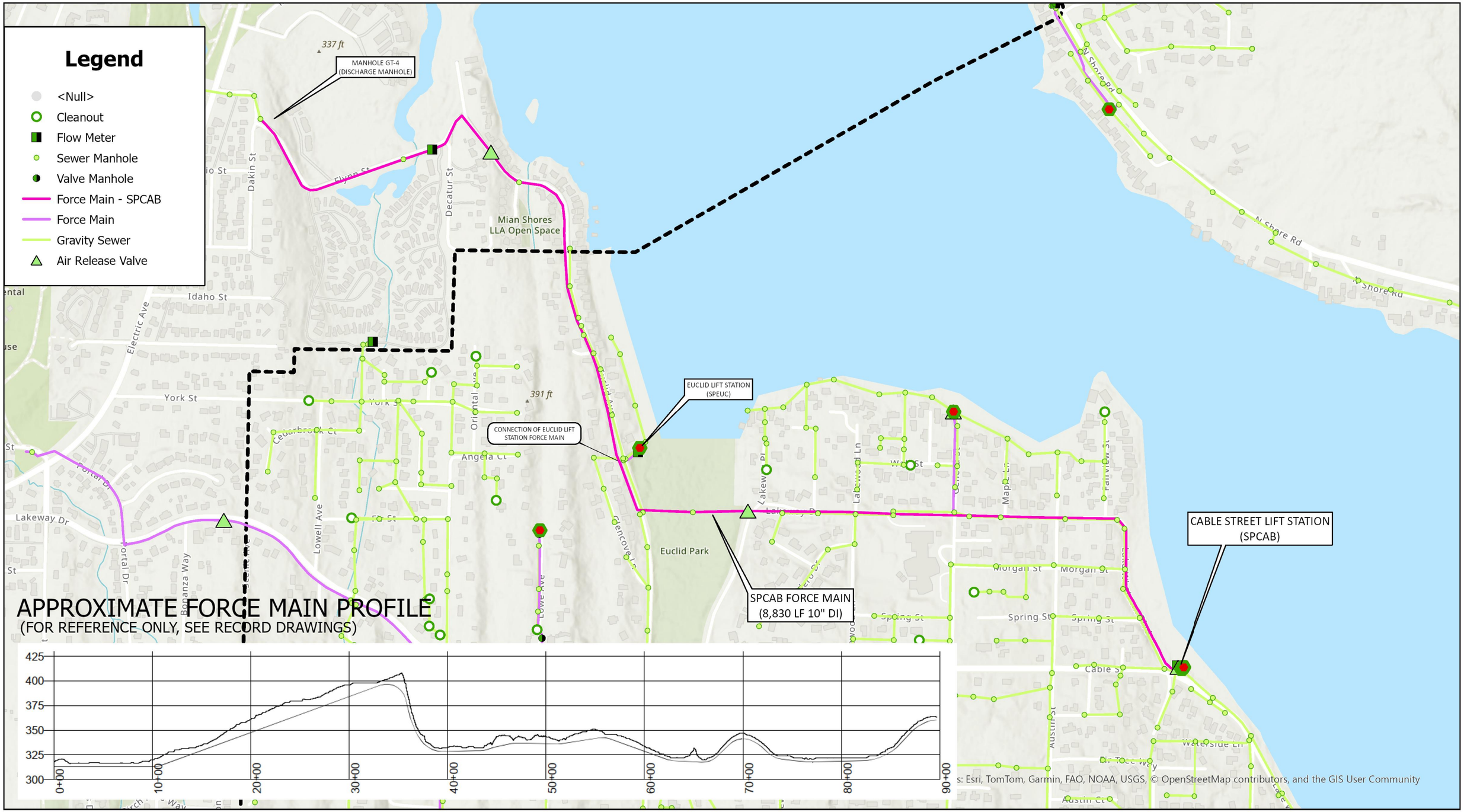
DRAWN BY:	CABLE AND AFTERNOON BEACH FORCE MAIN CLEANING	SHEET NO.:
GAN 8/19/2026	LOCATION PLAN	1
1 of 4		

Lake Whatcom Water & Sewer District | 1220 Lakeway Drive | Bellingham, WA 98229 | (360) 734-9224



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DRAWN BY:
GAN
8/19/2026

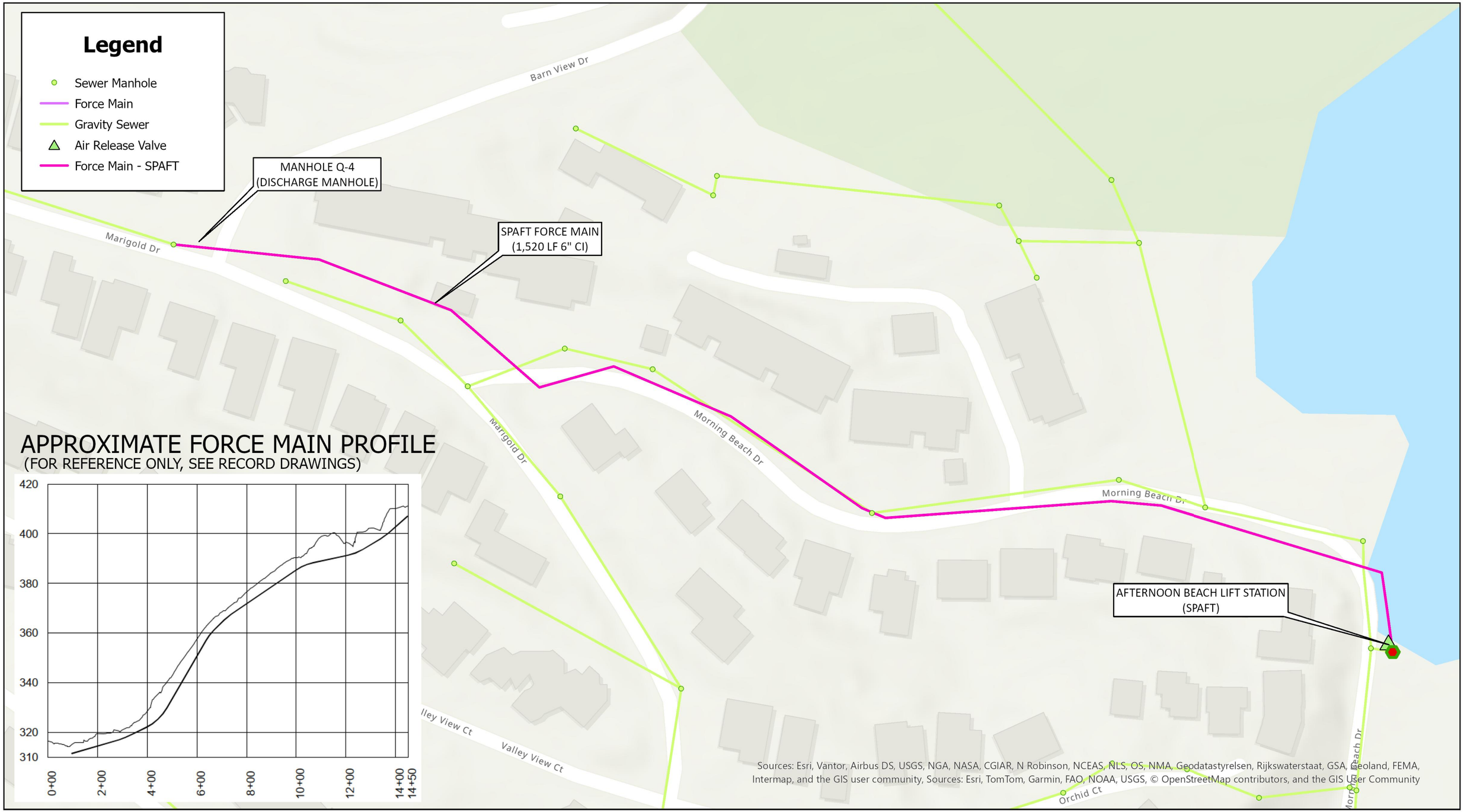
2 of 4

CABLE AND AFTERNOON BEACH FORCE MAIN CLEANING

SPCAB FORCE MAIN ALIGNMENT

SHEET NO.: 2

Lake Whatcom Water & Sewer District | 1220 Lakeway Drive | Bellingham, WA 98229 | (360) 734-9224



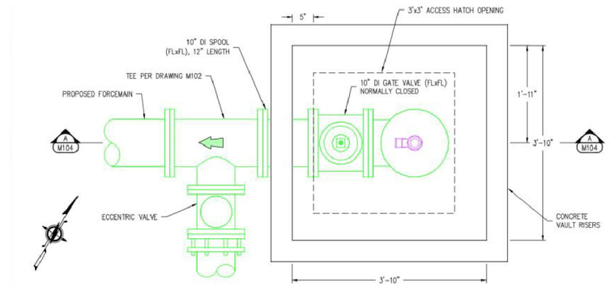
APPROXIMATE FORCE MAIN PROFILE
(FOR REFERENCE ONLY, SEE RECORD DRAWINGS)

N	DRAWN BY: GAN 8/19/2026 3 of 4	CABLE AND AFTERNOON BEACH FORCE MAIN CLEANING SPAFT FORCE MAIN ALIGNMENT	SHEET NO.: 3

Lake Whatcom Water & Sewer District | 1220 Lakeway Drive | Bellingham, WA 98229 | (360) 734-9224

NOTES:

1. SPCAB PIG LAUNCHING STATION DETAILS COPIED FROM DWG NO. M104 INCLUDED IN 2010 SEWER PUMP STATION IMPROVEMENTS RECORD DRAWINGS (SEE APPENDIX B).



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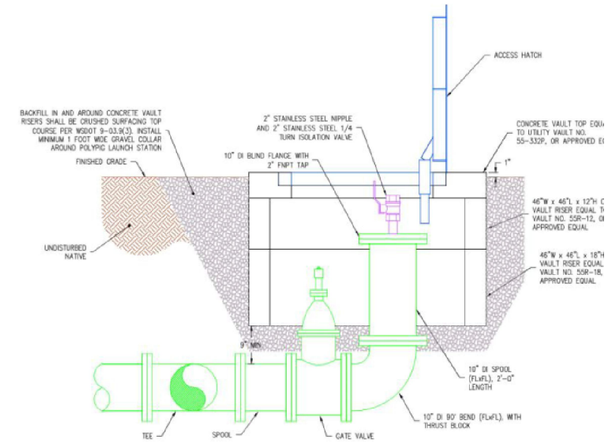


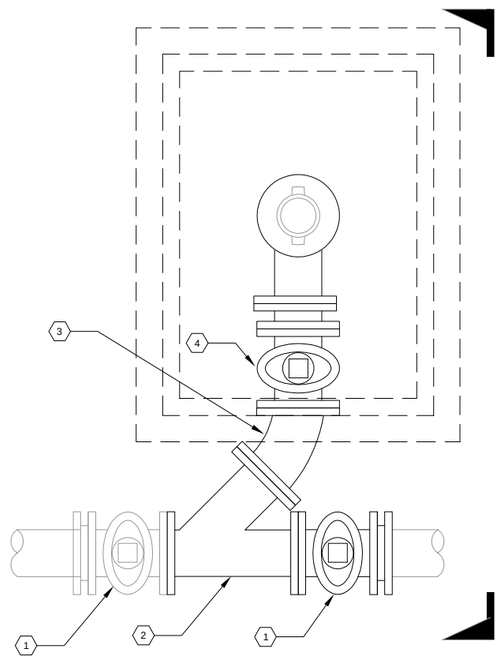
SECTION

SPCAB PIG LAUNCHING STATION

NTS

KEYED NOTES ⟨#⟩

1. GATE VALVE (6"), FLxMJ
2. 6"x6" WYE, FLxFL
3. 45 DEG BEND (6"), FLxFL
4. GATE VALVE (6"), FLxFL
5. CAM LOCK, FEMALE (4") AND STEEL NIPPLE (4")
6. 90 DEG BEND, LONG RADIUS, (6"), FLxFL
7. VALVE VAULT



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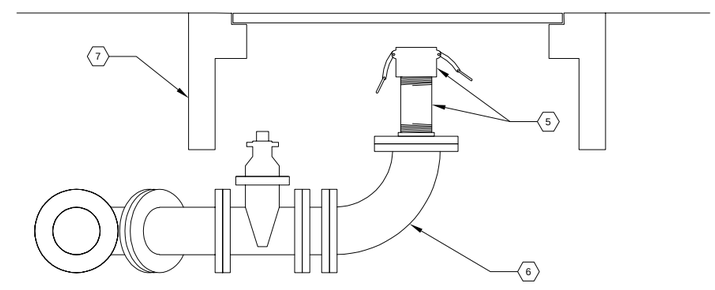


SECTION

SPAFT PIG LAUNCHING STATION

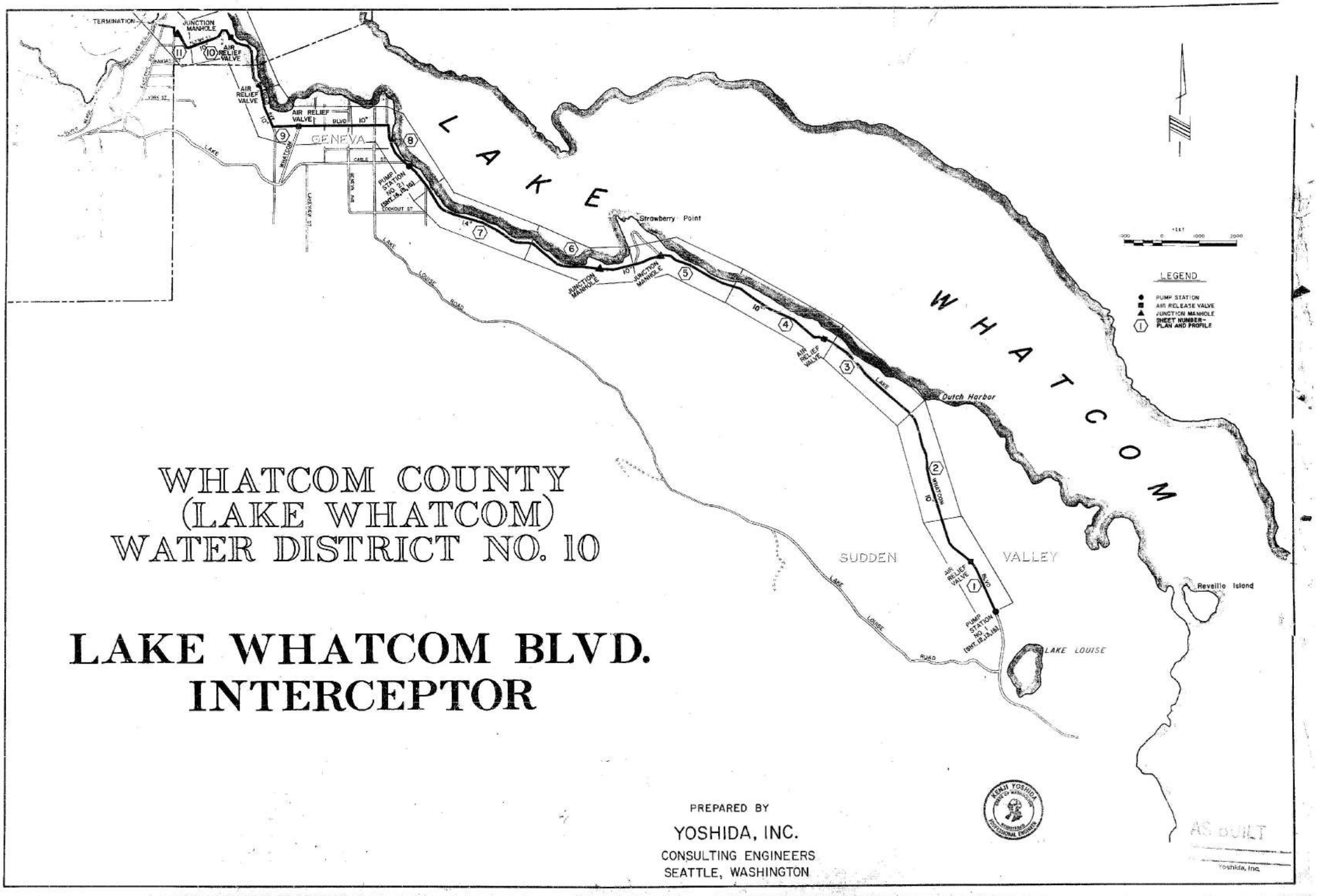
NTS

	DRAWN BY: GAN 08/05/2026	**CABLE AND AFTERNOON BEACH FORCE MAIN CLEANING** PIG LAUNCHING STATIONS	**SHEET #:** 4
DISTRICT PROJECT #: C2608		Lake Whatcom Water and Sewer District | 1220 Lakeway Drive | Bellingham, WA 98229 | (360) 734-9224	

ATTACHMENT B

REFERENCE DOCUMENTS

NOTE: REFERENCE DRAWINGS ARE NOT PLOTTED TO SCALE



WHATCOM COUNTY (LAKE WHATCOM) WATER DISTRICT NO. 10

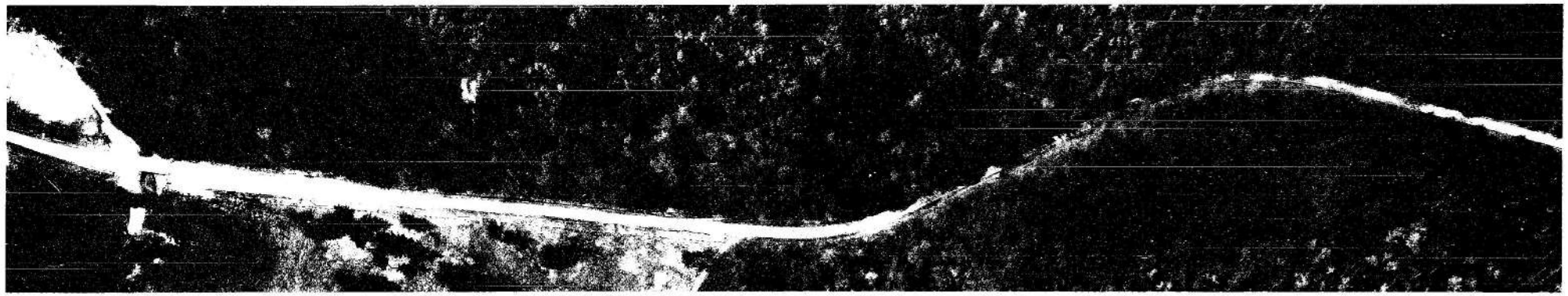
LAKE WHATCOM BLVD. INTERCEPTOR

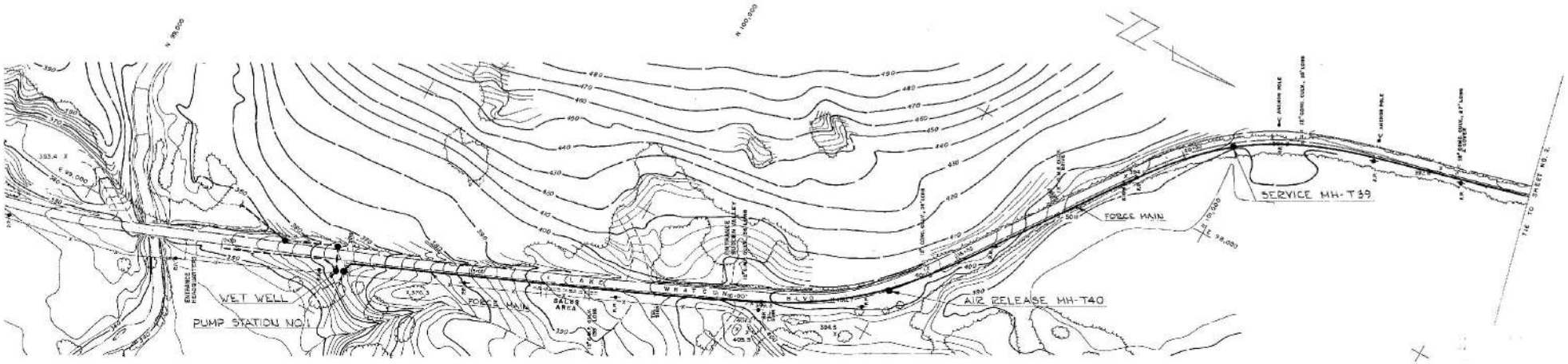
PREPARED BY

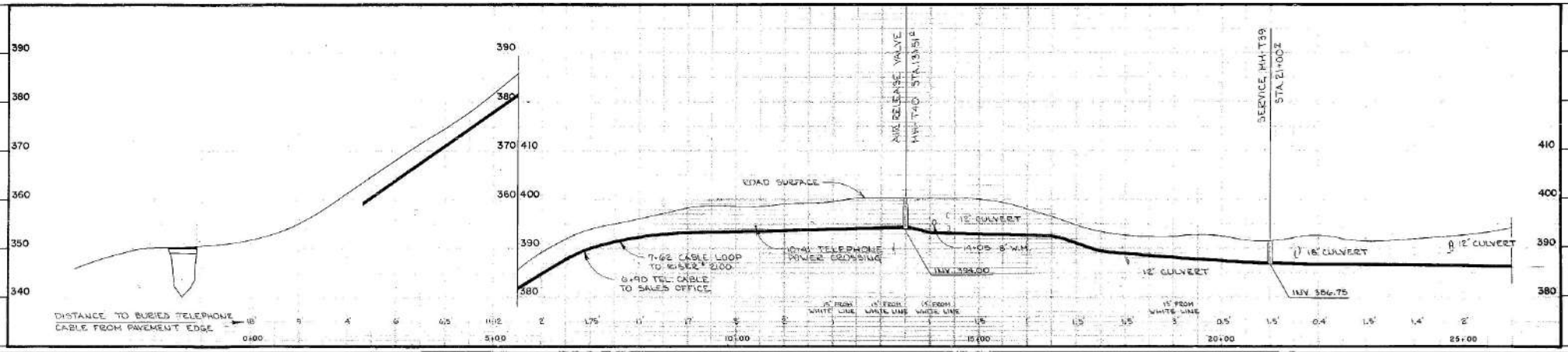
YOSHIDA, INC.

CONSULTING ENGINEERS

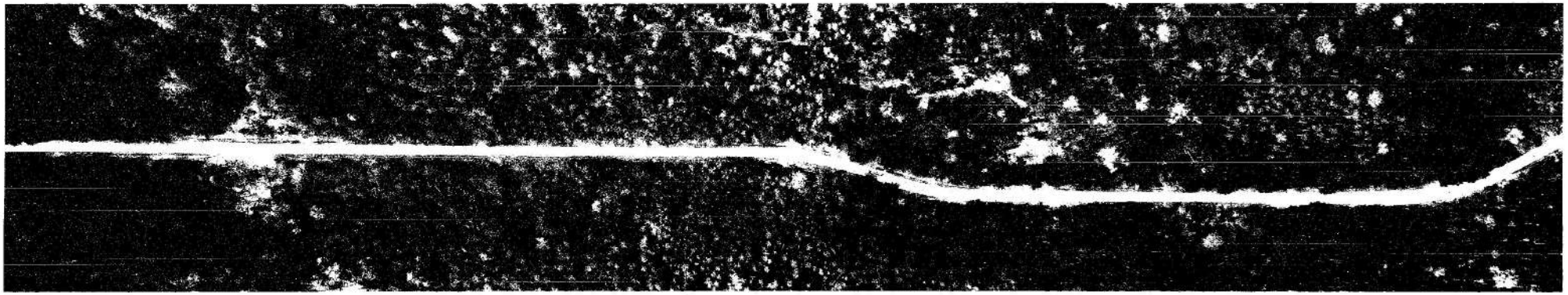
SEATTLE, WASHINGTON

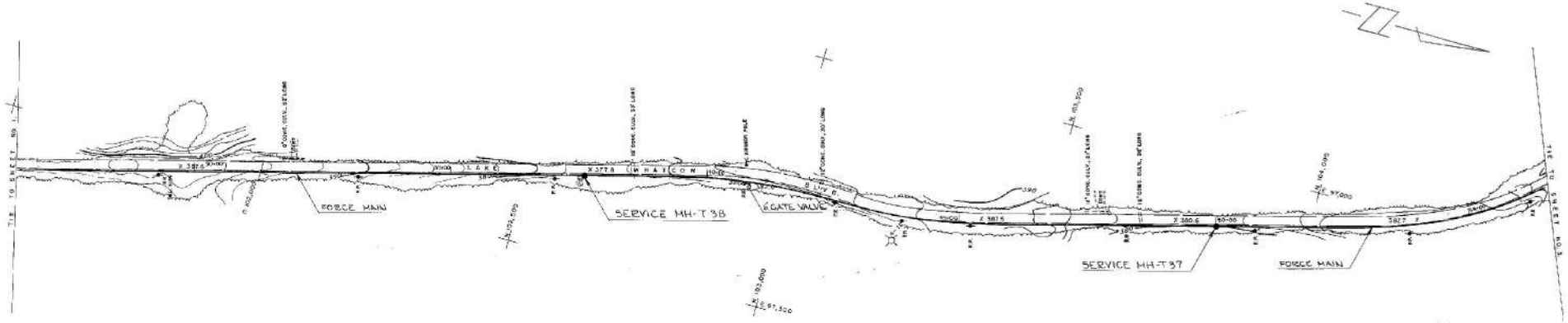


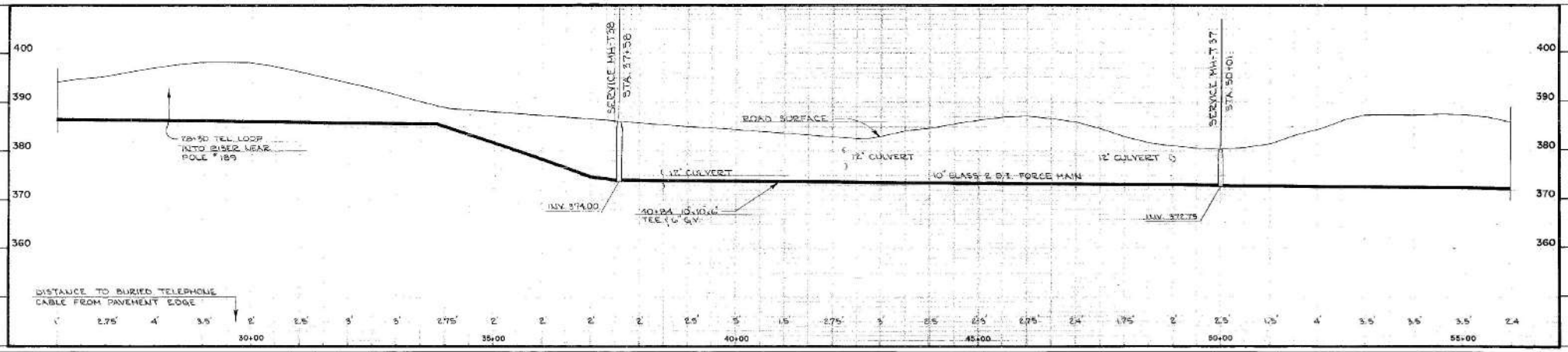




DESIGNED				Yoshida, Inc. Consulting Engineers SEATTLE, WASHINGTON	WHATCOM COUNTY (LAKE WHATCOM) WATER DISTRICT NO. 10 BELLINGHAM, WASHINGTON		LAKE WHATCOM BOULEVARD INTERCEPTOR
DRAWN EER						DATE 7-70	JOB NO. 4500.4
CHECKED	SYMBOL	REVISION	BY	APPROVED	DATE	APPROVED	SHEET NO. 1 OF 16







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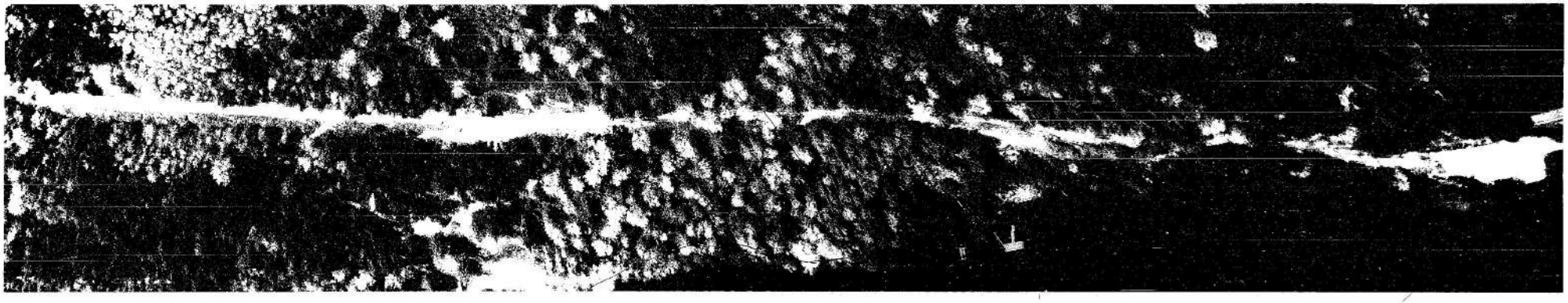

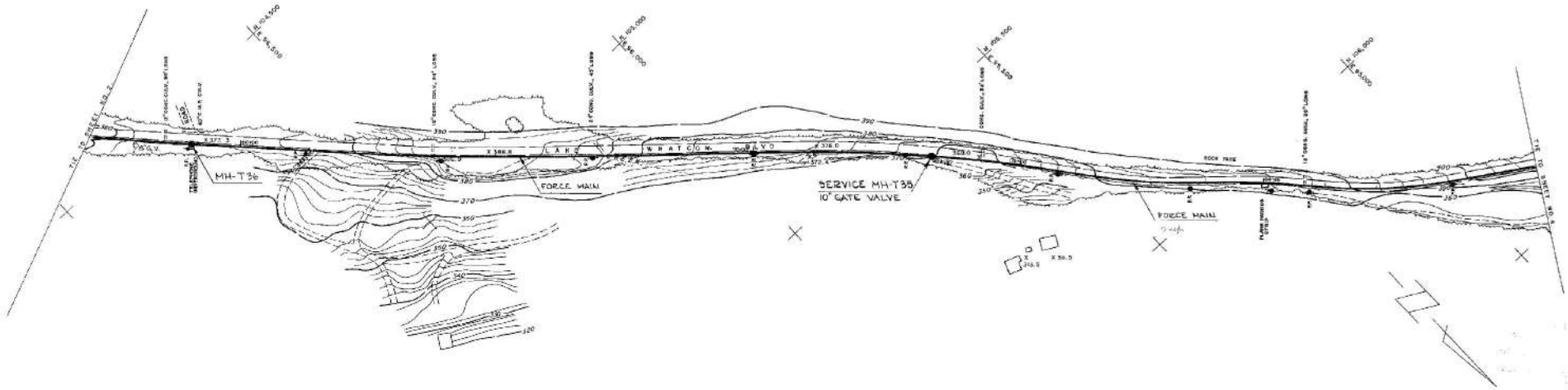

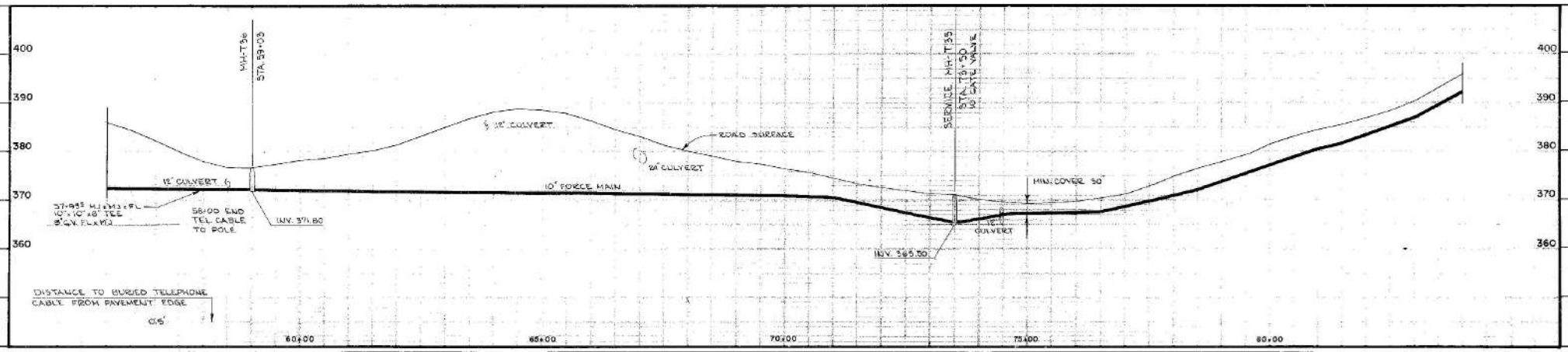

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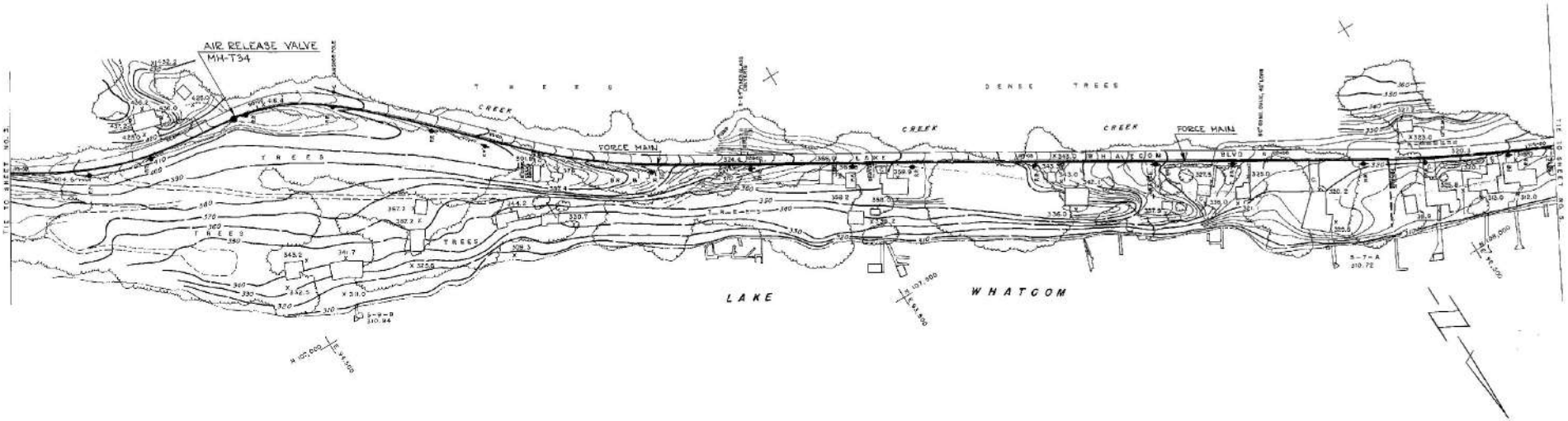

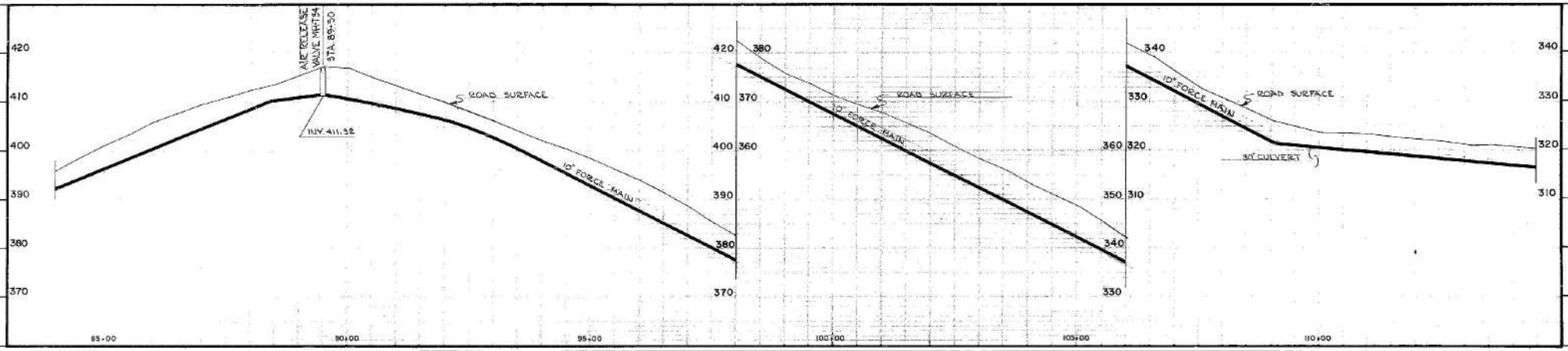

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Yoshida, Inc.
Consulting Engineers
SEATTLE, WASHINGTON

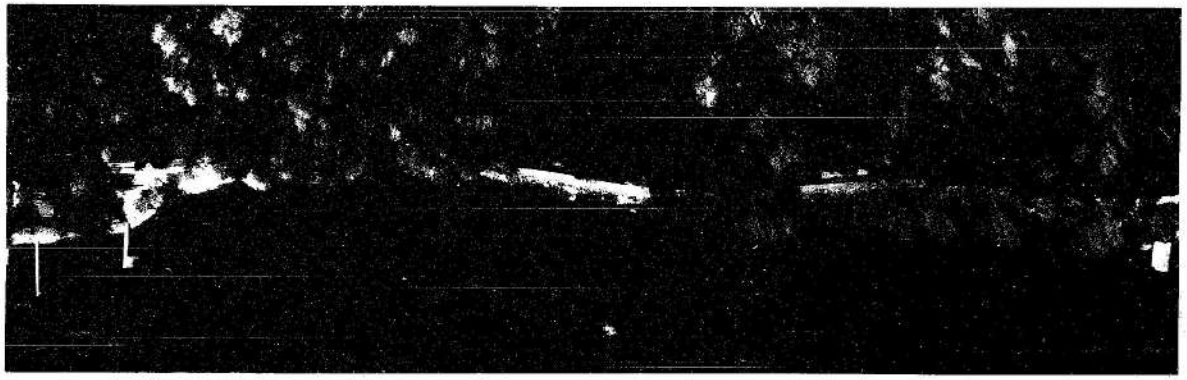
WHATCOM COUNTY (LAKE WHATCOM)
WATER DISTRICT NO. 10
BELLINGHAM, WASHINGTON

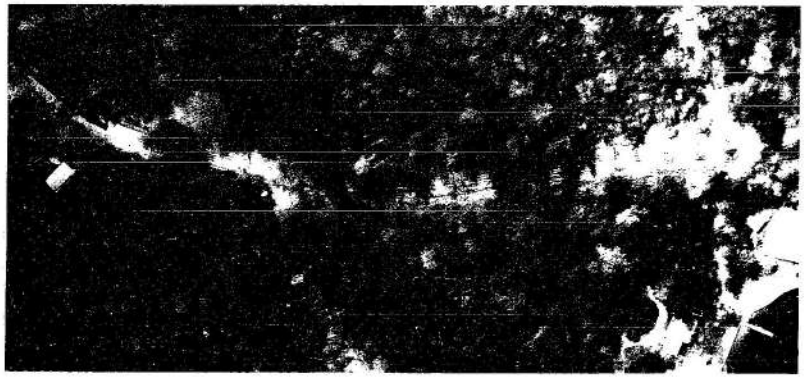
APPROVED

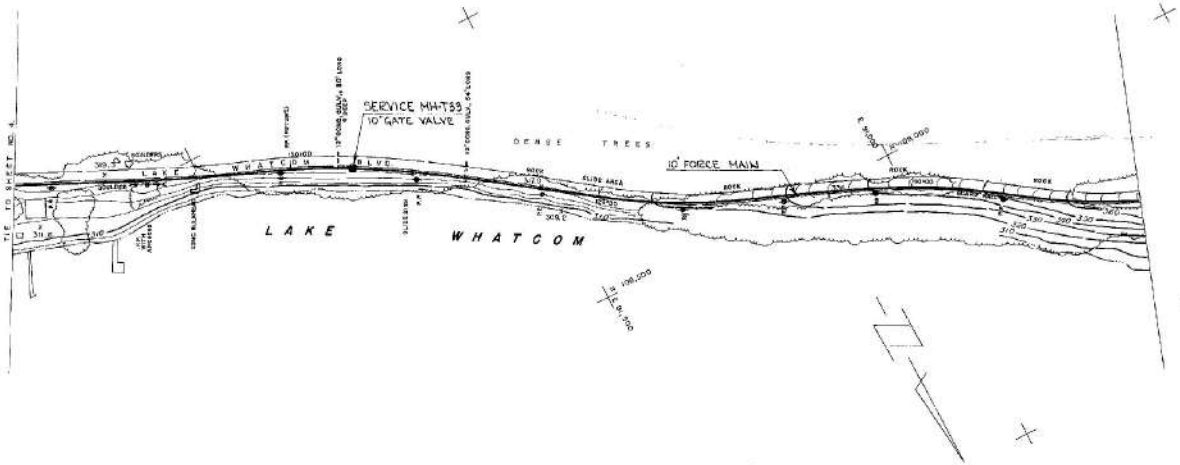
DATE 7-70
SCALE 1" = 10' VERT. 1" = 100' HOR.
F. B. NO.

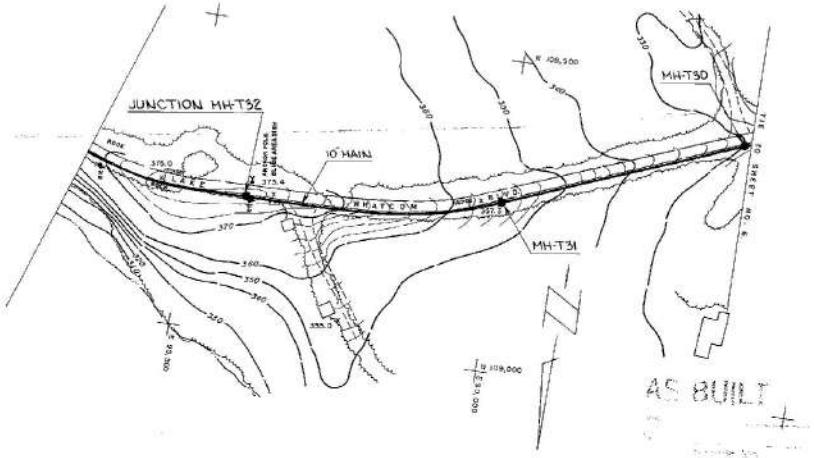
LAKE WHATCOM BOULEVARD
INTERCEPTOR

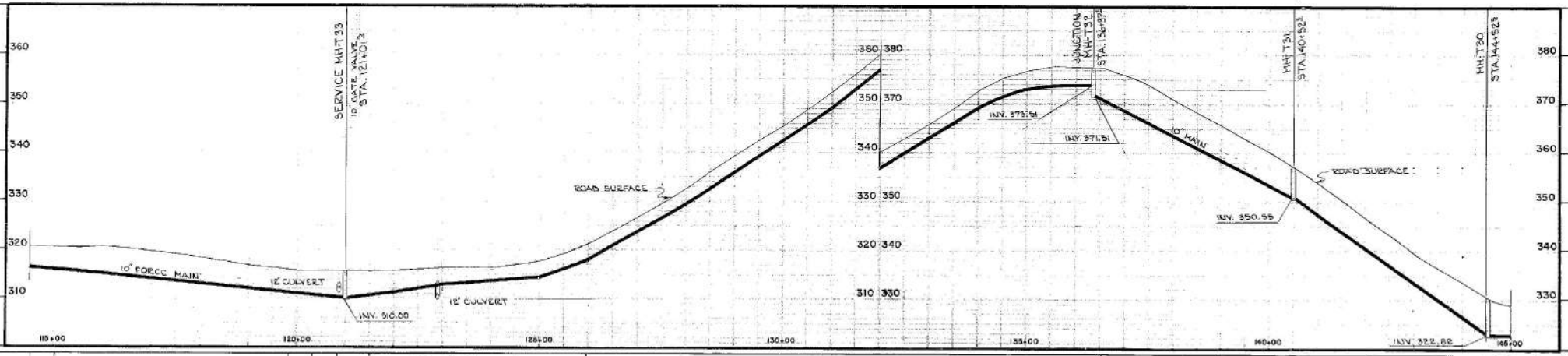
JOB NO. 4500.4
DR. EET NO. 4 OF 16











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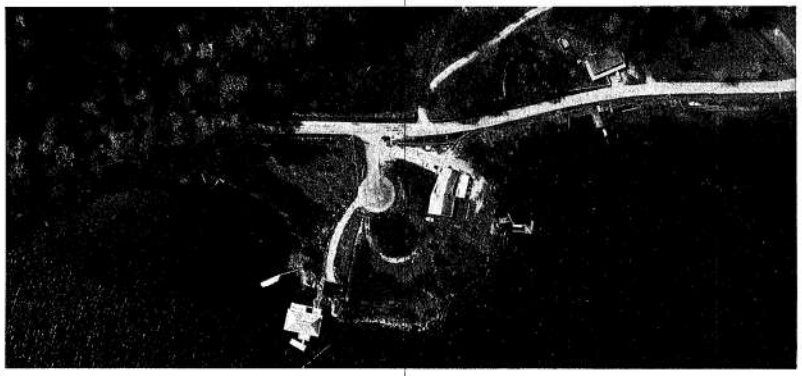

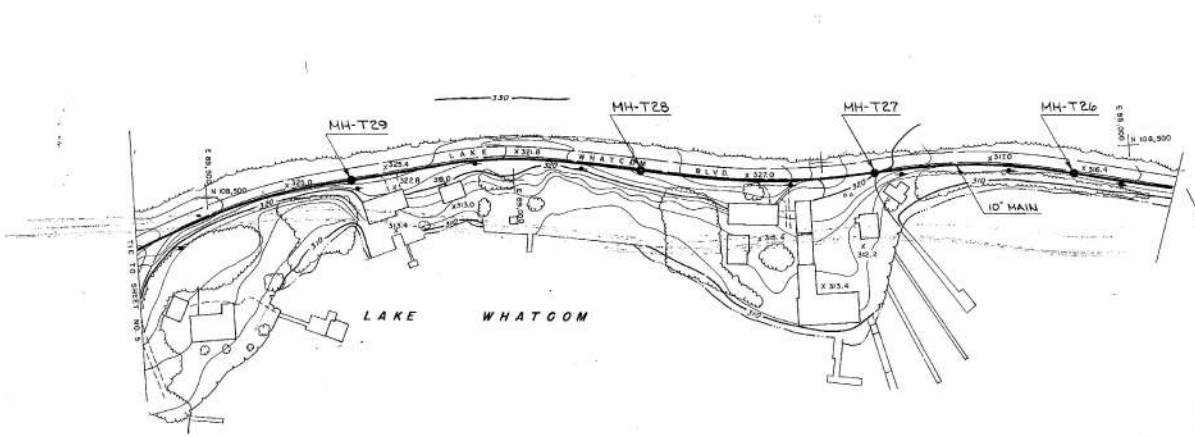

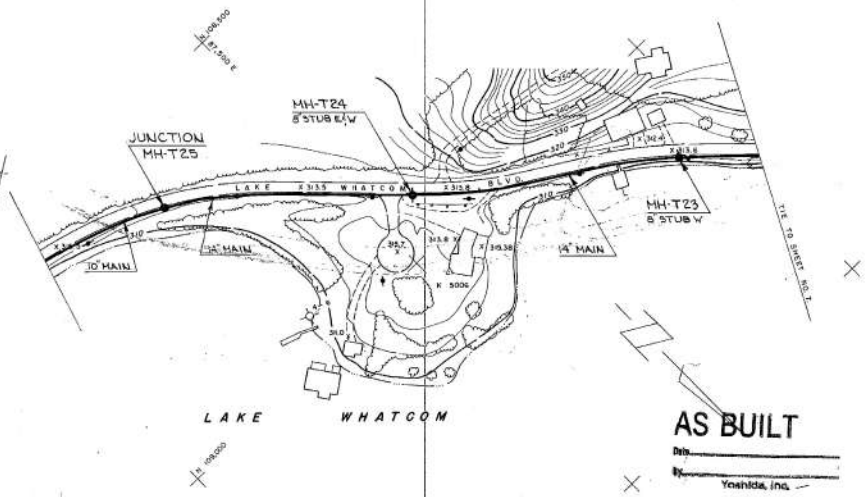

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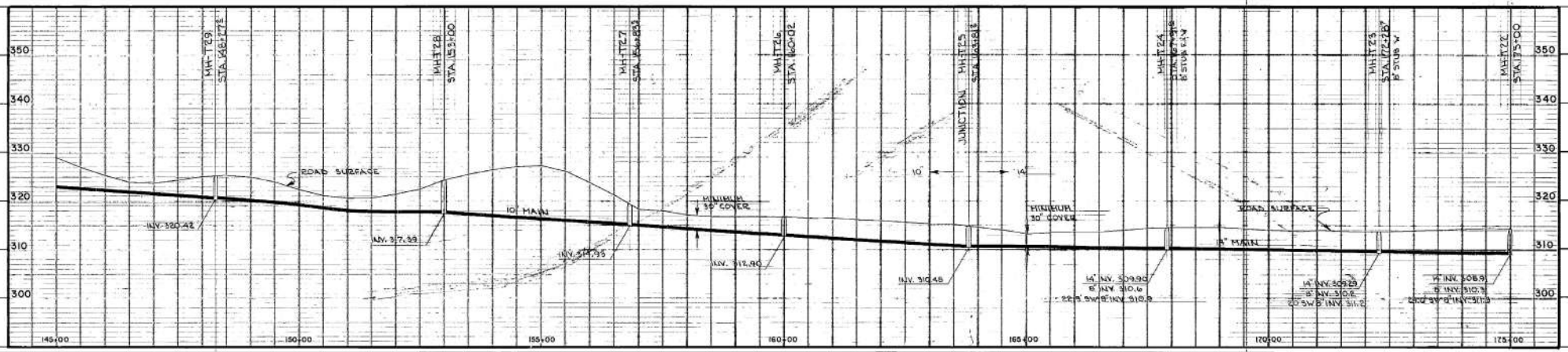
Date

By

Yoshida, Inc.



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LAKE WHATCOM BOULEVARD INTERCEPTOR

JOB NO. 4500.4

SHEET NO. 6 OF 16

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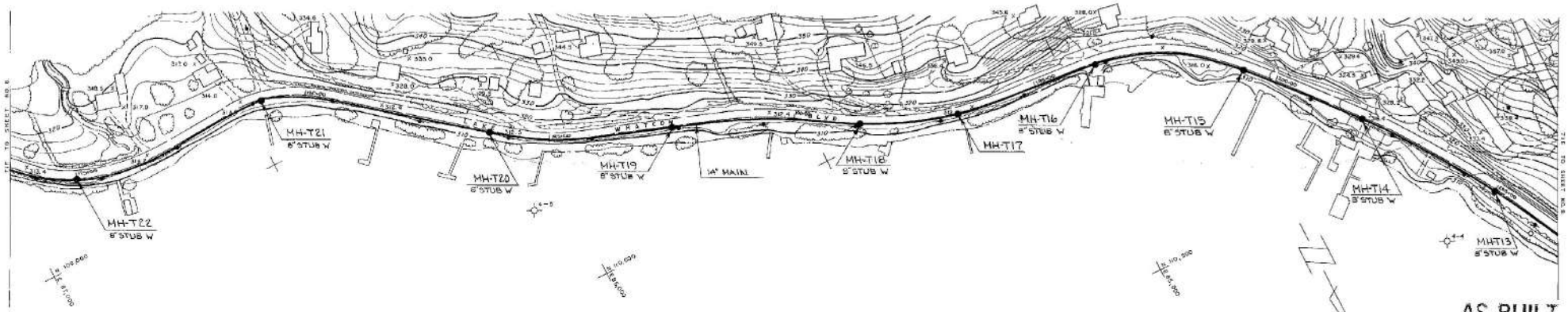

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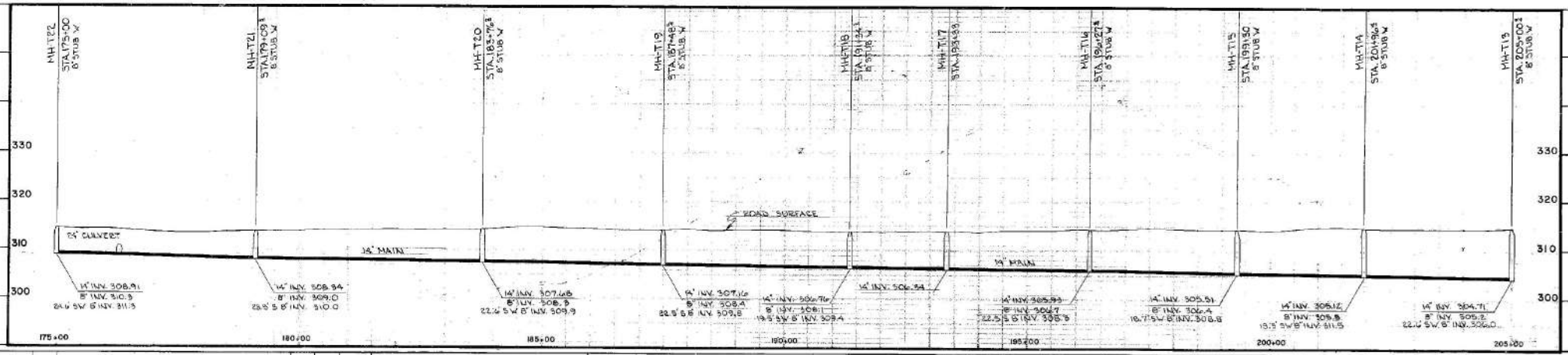
Date _____

By _____

Yoshida, Inc.



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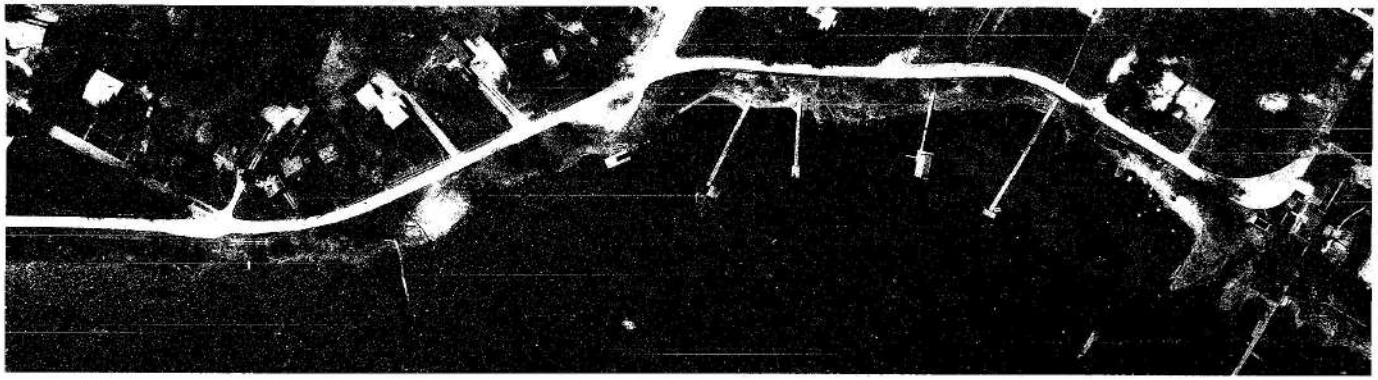
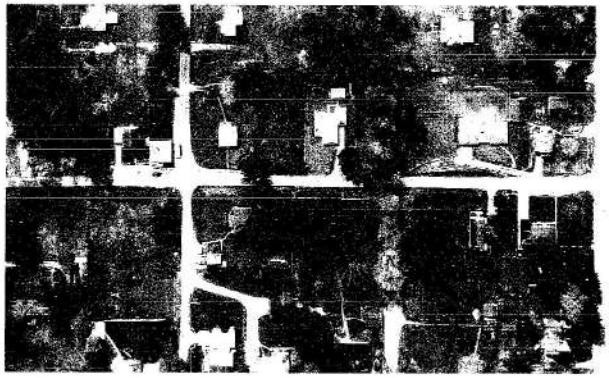
DATE 7-70 SCALE 1" = 10' VERT. 1" = 100' HOR. F.B. NO. ____ APPROVED ____

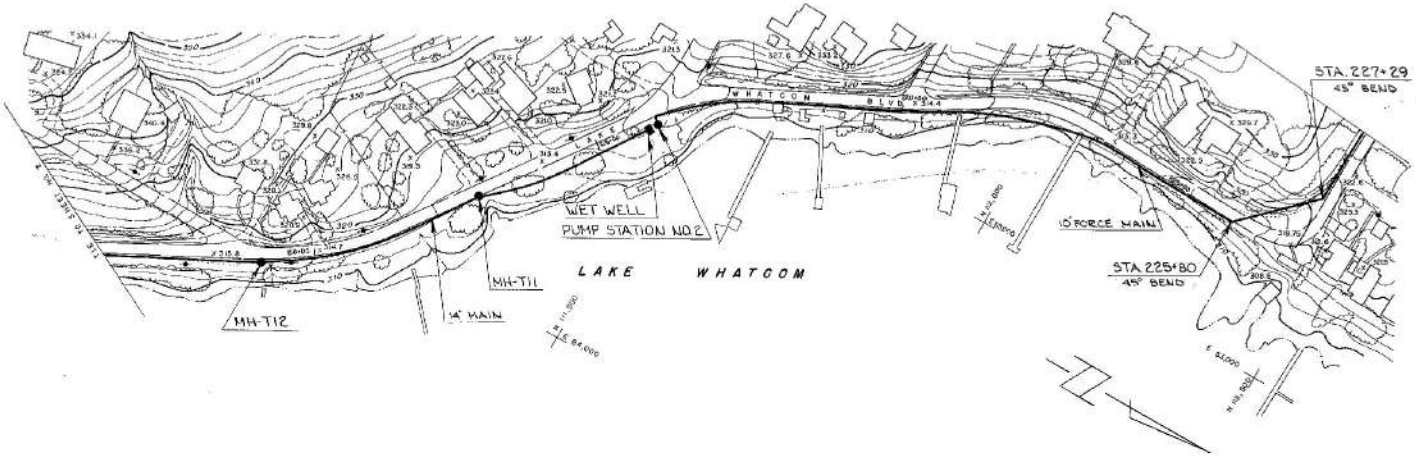
LAKE WHATCOM BOULEVARD INTERCEPTOR

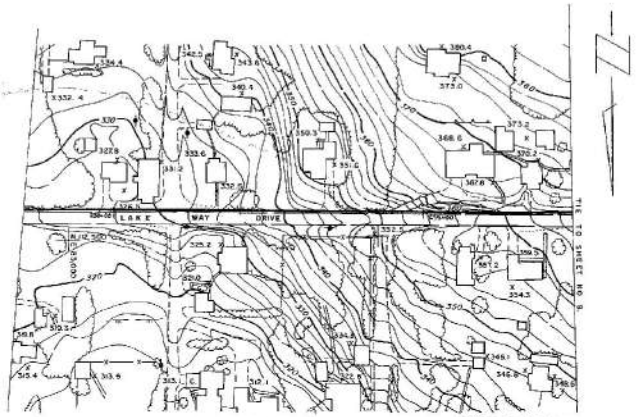
JOB NO. 4500.4

SHEET NO. 7 OF 16









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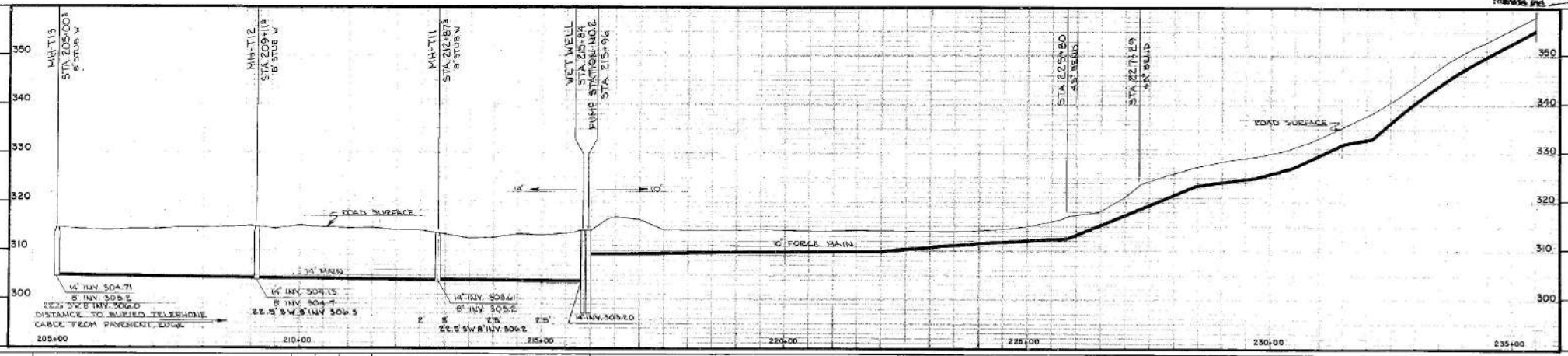
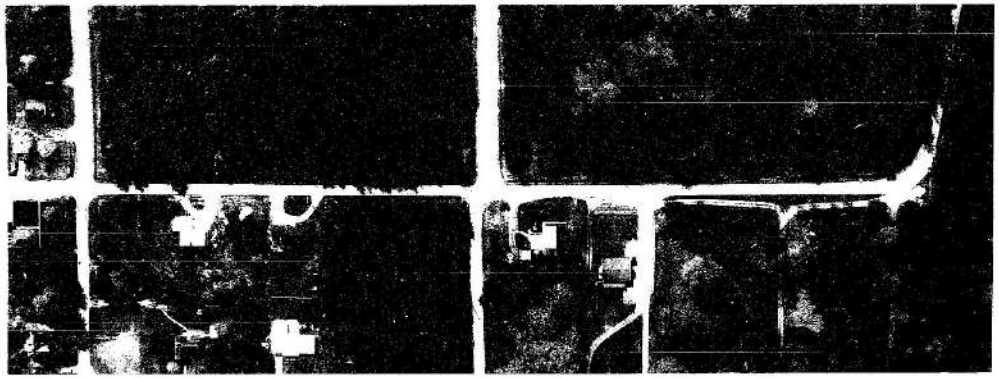
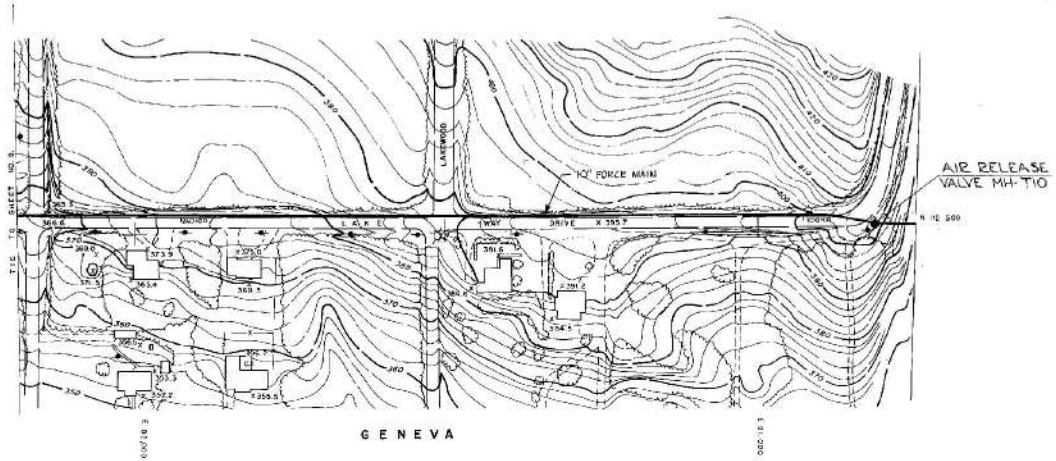
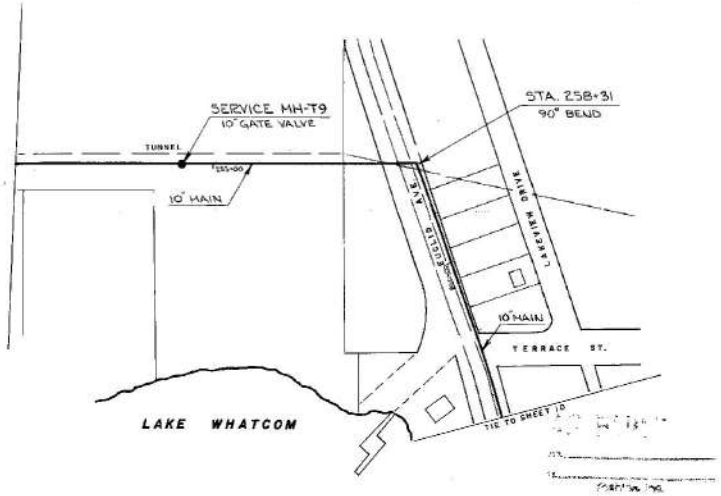
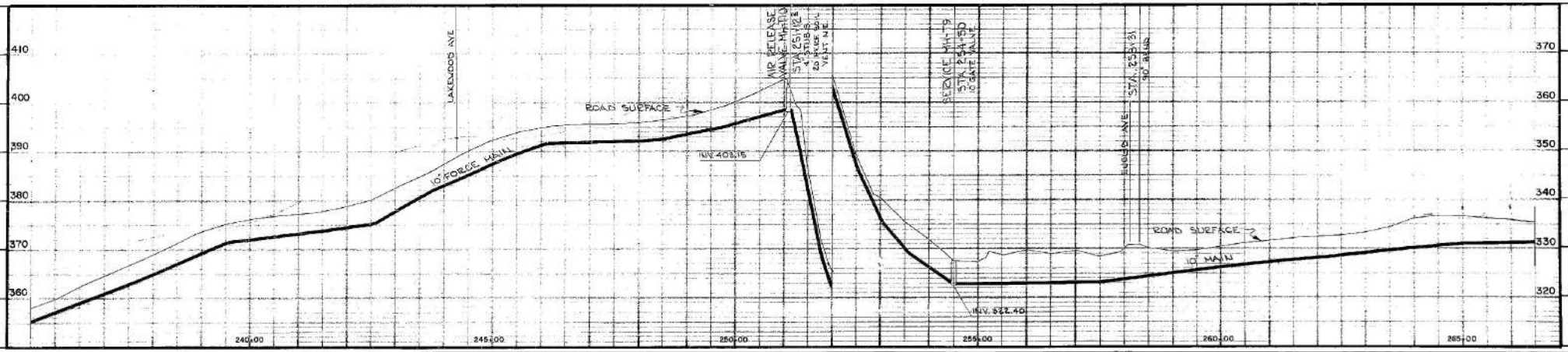


DESIGNED / DRAWN / CHECKED	SYMBOL REVISION BY APPROVED DATE	Yoshida, Inc. Consulting Engineers SEATTLE, WASHINGTON	WHATCOM COUNTY (LAKE WHATCOM) WATER DISTRICT NO. 10 BELLINGHAM, WASHINGTON	APPROVED	DATE 2-70 SCALE 1" = 10' VERT. 1" = 100' HOR.	LAKE WHATCOM BOULEVARD INTERCEPTOR	JOB NO. 4500.4 SHEET NO. 8 OF 16

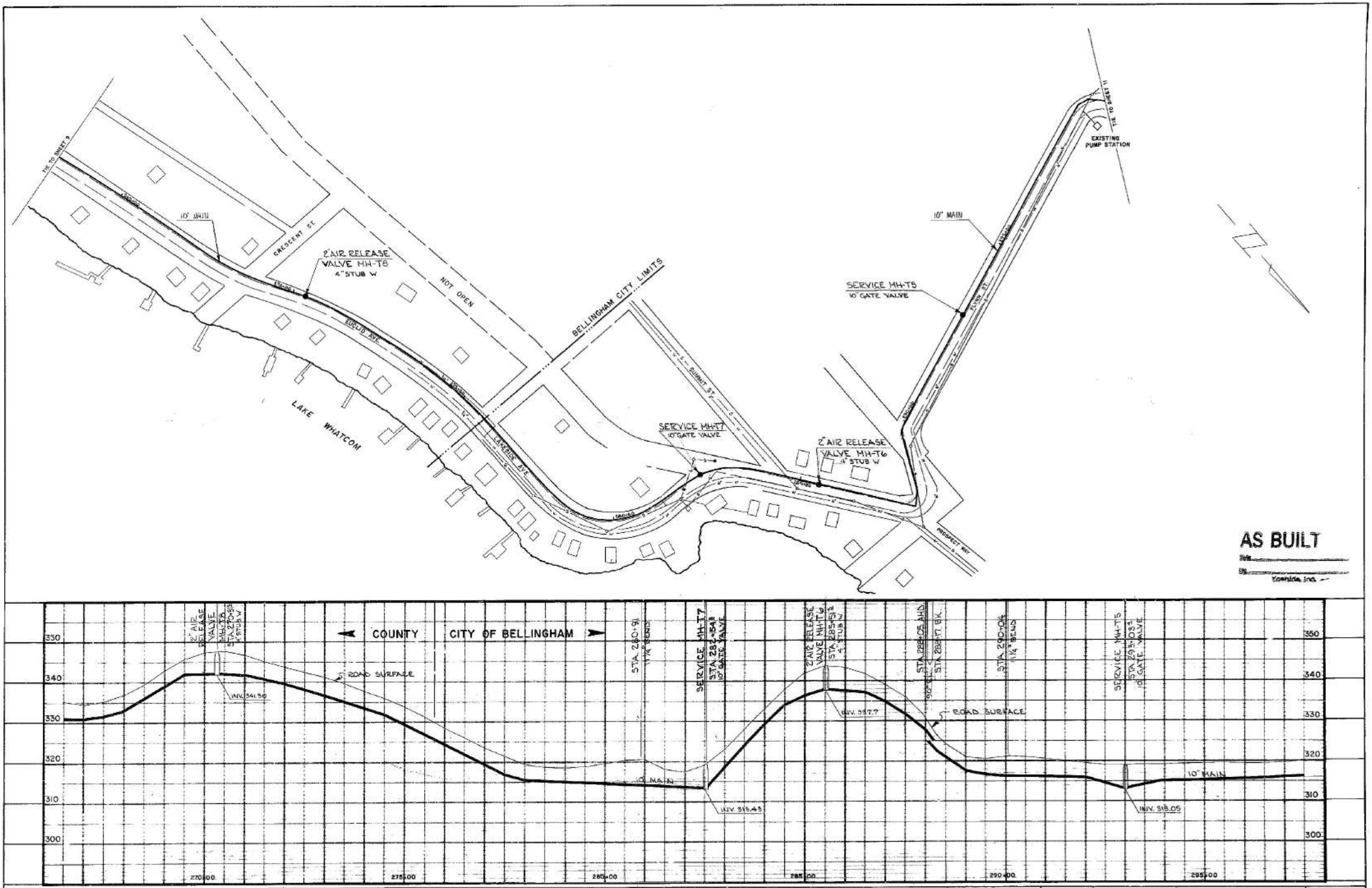




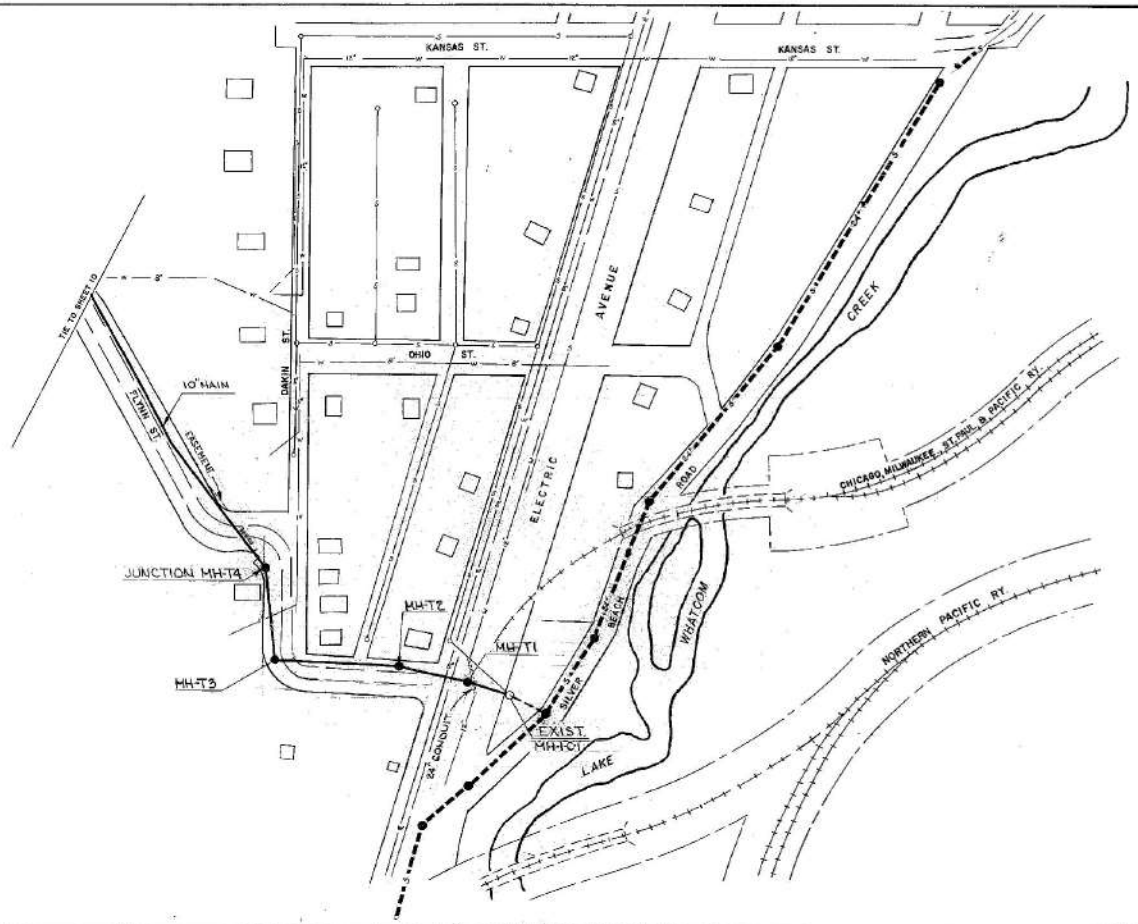




DESIGNED JR DRAWN EER CHECKED	SYMBOL REVISION BY APPROVED DATE	Yoshida, Inc. Consulting Engineers SEATTLE, WASHINGTON	WHATCOM COUNTY (LAKE WHATCOM) WATER DISTRICT NO. 10 BELLINGHAM, WASHINGTON	APPROVED	DATE 7-70 SCALE 1" = 10' VERT 1" = 100' HOR. F.B. NO.	LAKE WHATCOM BOULEVARD INTERCEPTOR	JOB NO. 4500.4 SHEET NO. 9 OF 16



DESIGNED JR DRAWN BER CHECKED	SYMBOL REVISION BY APPROVED DATE	Yoshida, Inc. Consulting Engineers SEATTLE, WASHINGTON	WHATCOM COUNTY (LAKE WHATCOM) WATER DISTRICT NO. 10 BELLINGHAM, WASHINGTON
APPROVED	DATE 7-29 SCALE 1" = 10' VERT. 1" = 100' HOR. F.B. NO.	LAKE WHATCOM BOULEVARD INTERCEPTOR	JOB NO. 4500.4 SHEET NO. 10 OF 16

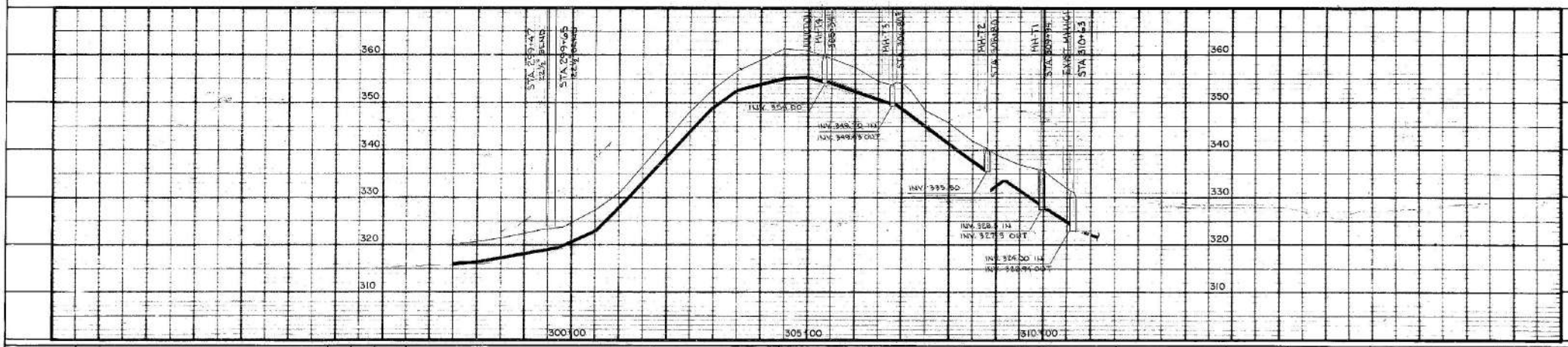


AS BUILT

Date

By

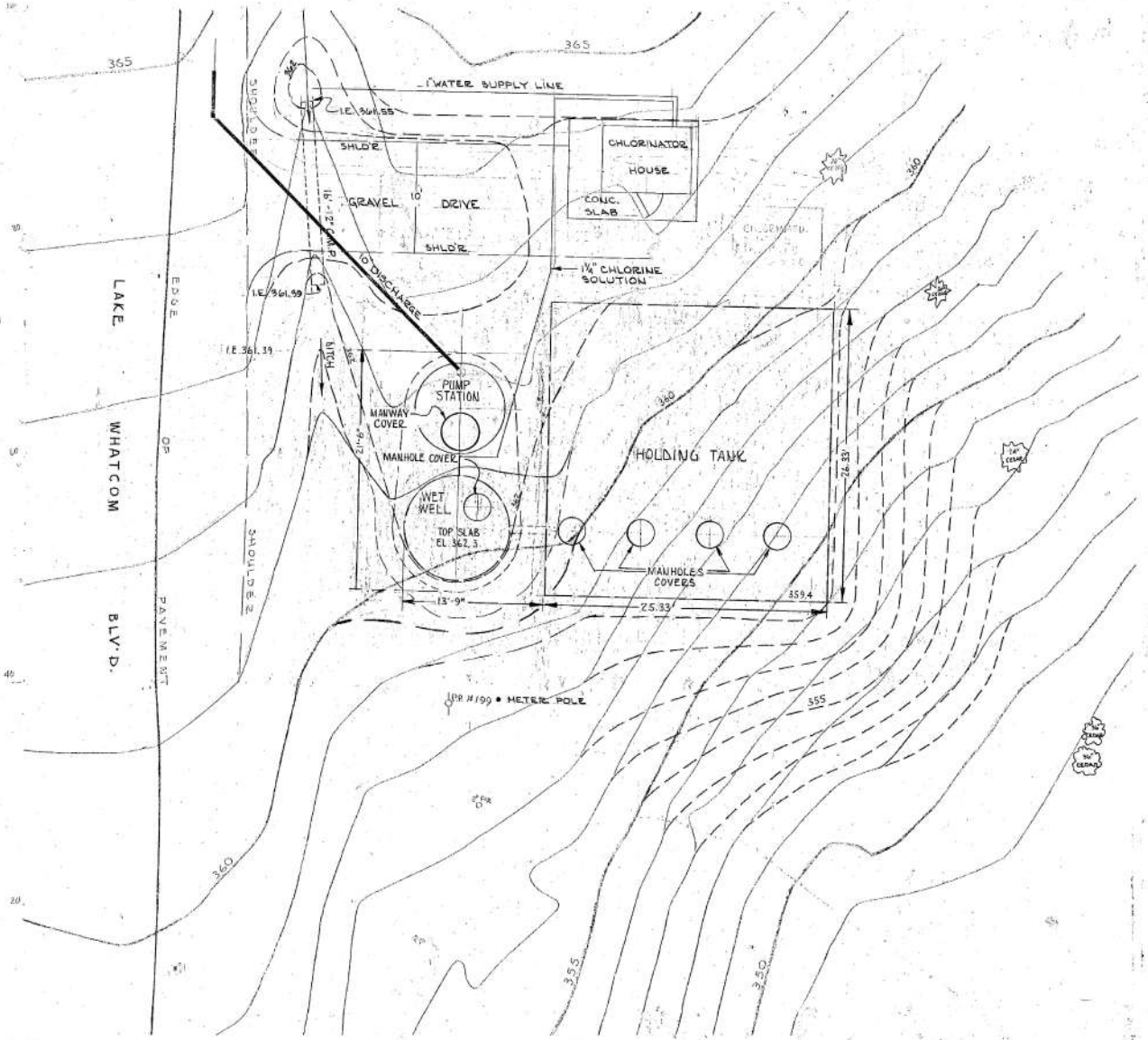
Yoshida, Inc.



DESIGNED JR DRAWN EER CHECKED	SYMBOL REVISION BY APPROVED DATE	YOSHIDA, INC. Consulting Engineers SEATTLE, WASHINGTON	WHATCOM COUNTY (LAKE WHATCOM) WATER DISTRICT NO. 10 BELLINGHAM, WASHINGTON	APPROVED	DATE 2-70 SCALE 1" = 10' VERT. 1" = 100' HOR.	LAKE WHATCOM BOULEVARD INTERCEPTOR	JOB NO. 4500.4 SHEET NO. 16 OF

NOTE ——

MANWAY ENTRANCE COVER FOR PUMP STATION EXTENDS MINIMUM 2 FEET ABOVE GROUND.



LEGEND

NATURAL GROUND CONTOUR LINES ———

GRADING PLAN CONTOUR LINES – – – –

AS BUILT

Date _____

By _____ Yoshida, Inc.

SCALE 1" = 5'

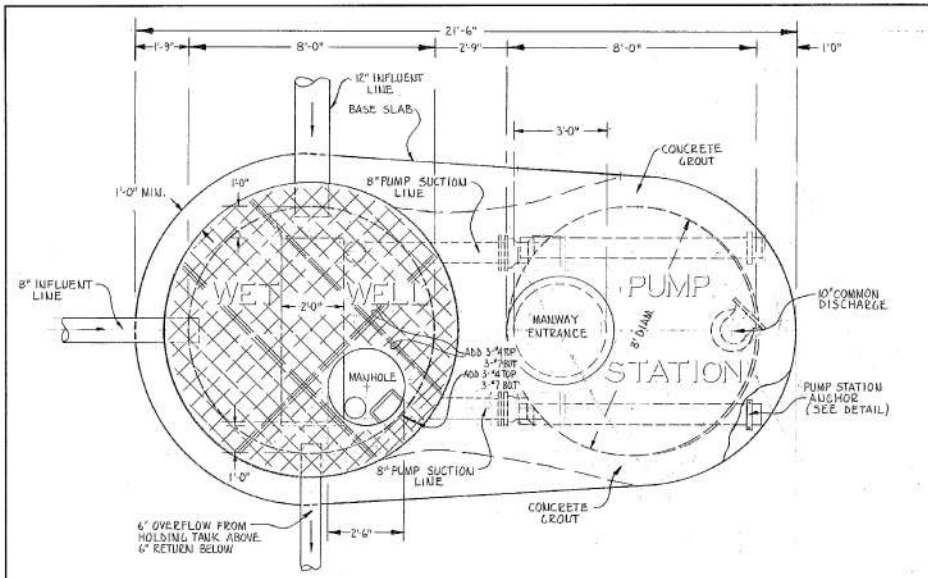
DESIGNED JR DRAWN EER CHECKED	SYMBOL	REVISION	BY	APPROVED	DATE	YOSHIDA, INC. Consulting Engineers SEATTLE, WASHINGTON	WHATCOM COUNTY (LAKE WHATCOM) WATER DISTRICT NO. 10 BELLINGHAM, WASHINGTON

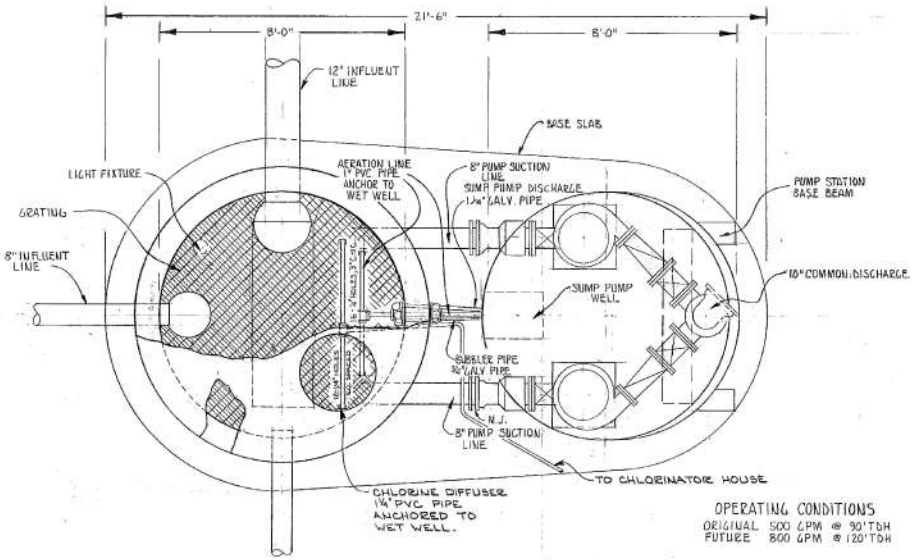
DATE 4-71 SCALE 1" = 10' AT JOB

SITE PLAN
LAKE WHATCOM BLVD.
SUDDEN VALLEY GOLF COURSE
PUMP STATION NO. 1

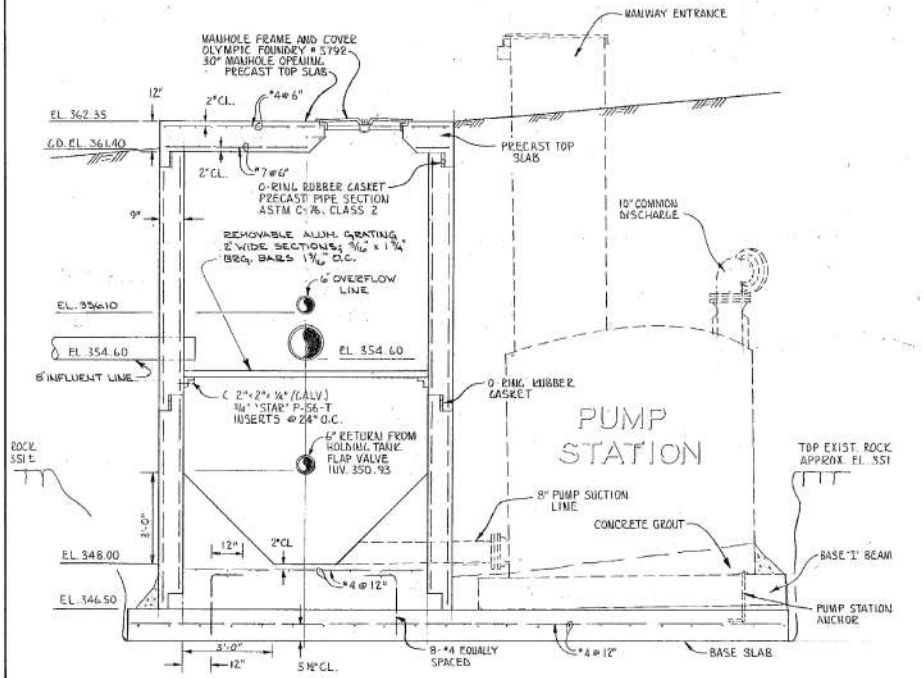
JOB NO. 4500.4
SHEET NO. 12 OF 16

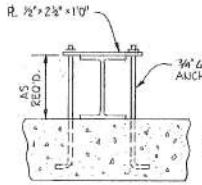
0751



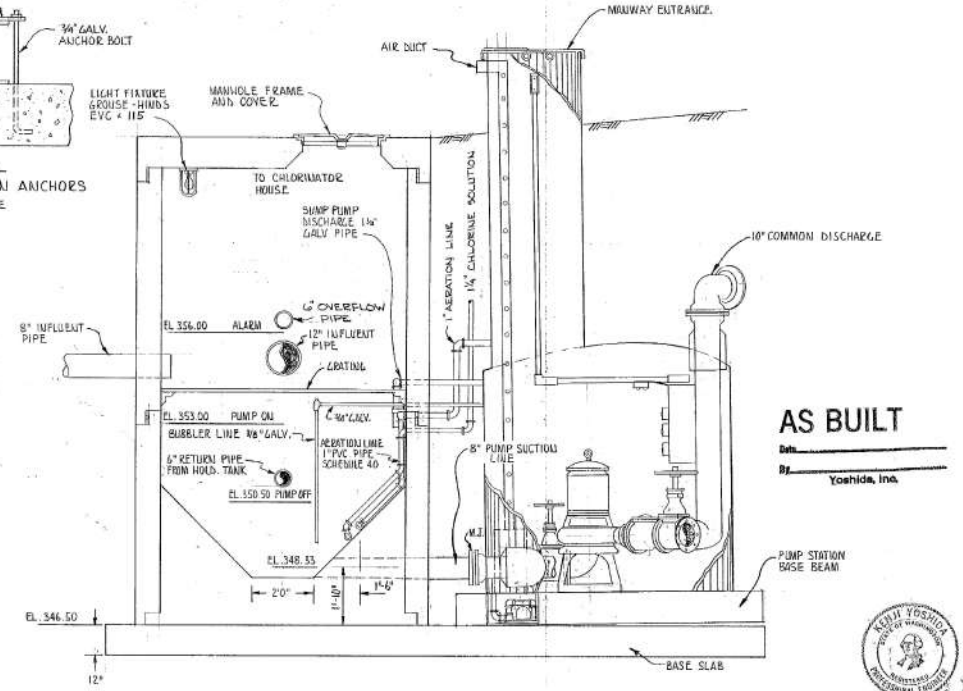


OPERATING CONDITIONS
ORIGINAL 500 GPM @ 90' TDH
FUTURE 800 GPM @ 120' TDH





DETAIL
PUMP STATION ANCHORS
NO SCALE



AS BUILT
Date
By
Yoshida, Inc.

DESIGNED							
DRAWN EER							
CHECKED	SYMBOL	REVISION	BY	APPROVED	DATE		

YOSHIDA, INC.
Consulting Engineers
SEATTLE, WASHINGTON

LAKE WHATCOM BLVD.- SUDDEN VALLEY GOLF COURSE
PUMP STATION NO. 1

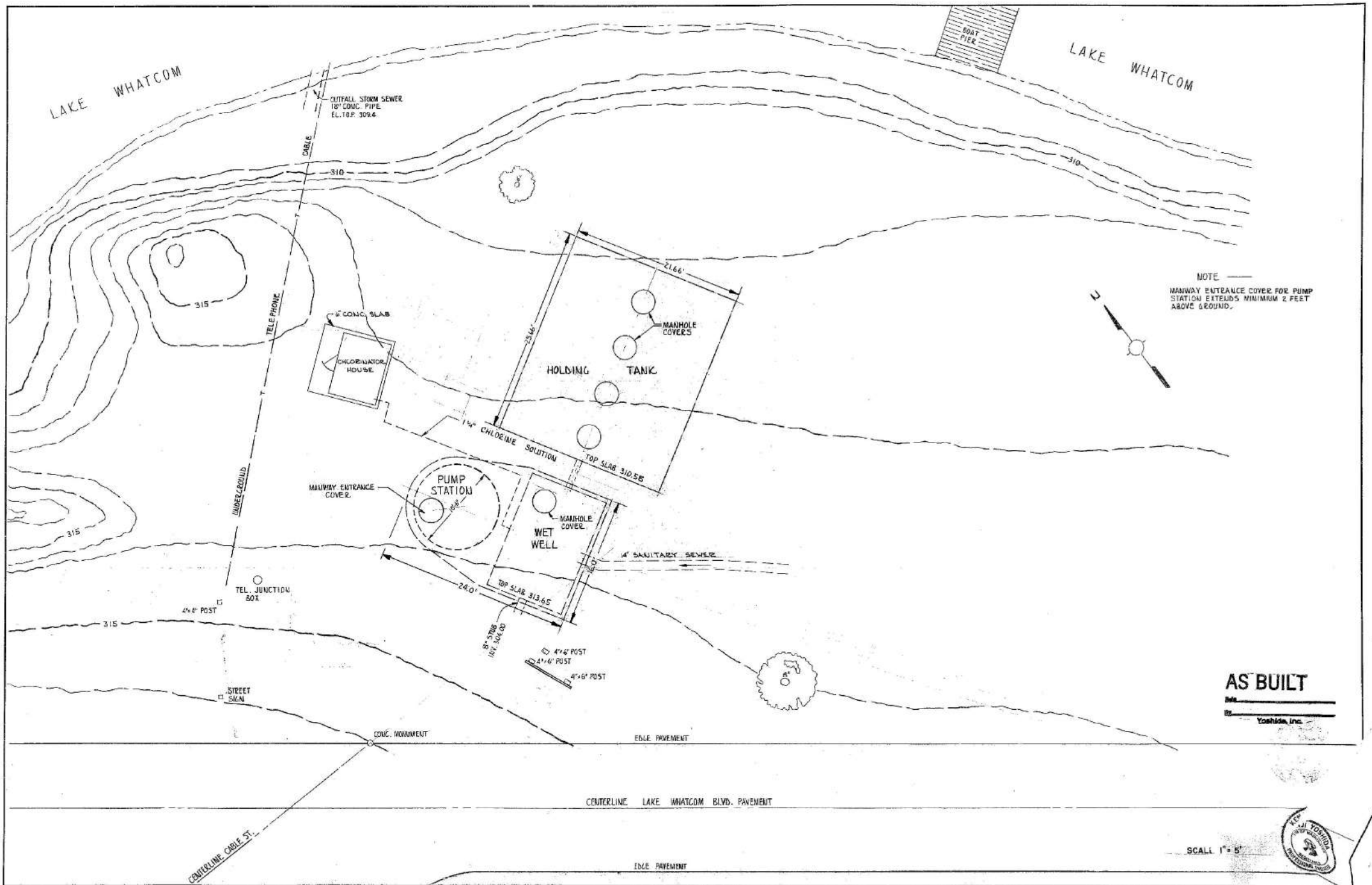
APPROVED

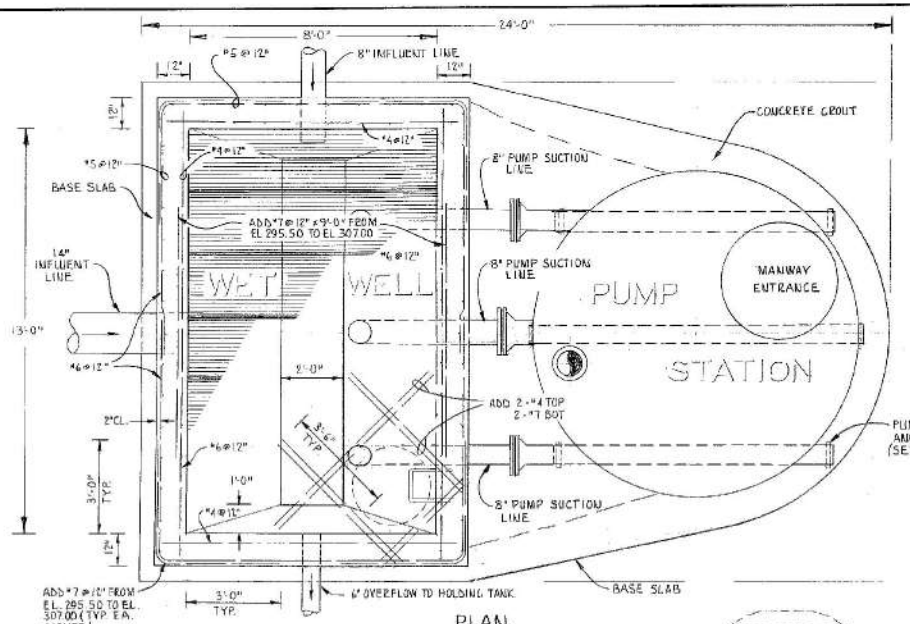
DATE 8-71
SCALE ½"=1'0"
F.B. NO.

LAKE WHATCOM BLVD. INTERCEPTOR
PUMP STATION AND WET WELL DETAIL

JOB NO. 4500.4
SHEET NO. 13 OF 16

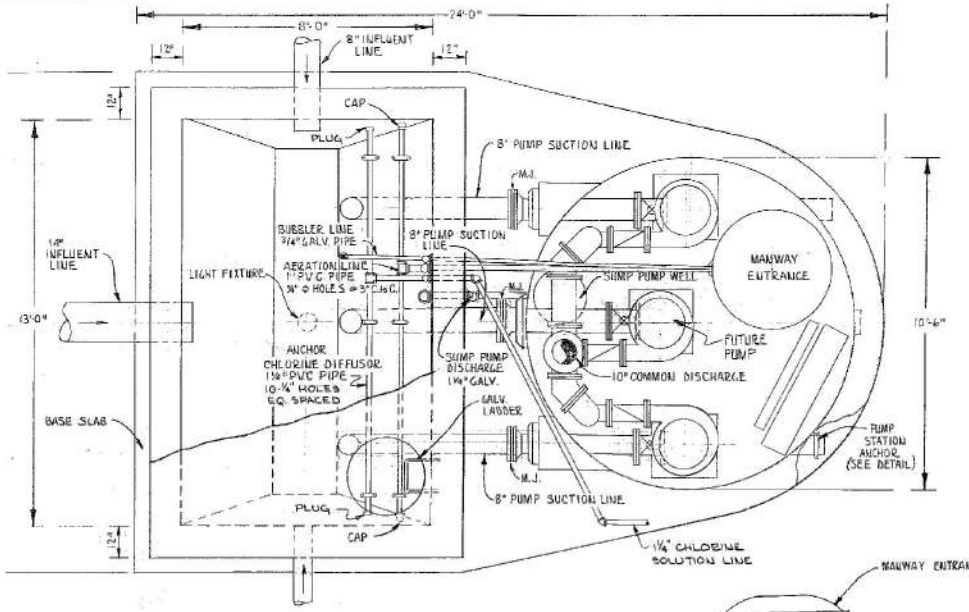
0752

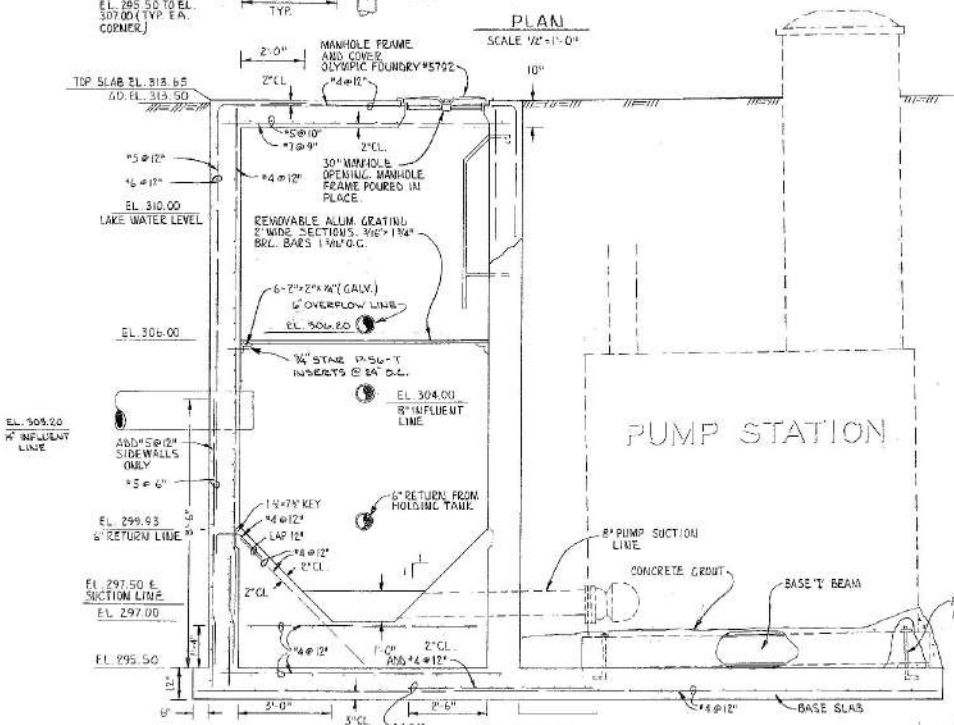

LAKE WHATCOM
LAKE WHATCOM
BOAT PIER
OUTFALL STORM SEWER
18" CONC. PIPE
EL. TOP 309.4
CABLE
TELE PHONE
UNDERGROUND
310
310
315
315
315
6" CONC. SLAB
CHLORINATOR HOUSE
21.66'
25.46'
MANHOLE COVERS
HOLDING TANK
1 1/4" CHLORINE SOLUTION
TOP SLAB 310.58
MANWAY ENTRANCE COVER
PUMP STATION
MANHOLE COVER
WET WELL
14" SANITARY SEWER
24.0'
TOP SLAB 313.65
8" STUB INV. 304.00
TEL. JUNCTION BOX
4"x4" POST
4"x6" POST
4"x6" POST
4"x6" POST
STREET SIGN
CONC. MONUMENT
EDGE PAVEMENT
CENTERLINE LAKE WHATCOM BLVD. PAVEMENT
CENTERLINE CABLE ST.
EDGE PAVEMENT
NOTE —
MANWAY ENTRANCE COVER FOR PUMP STATION EXTENDS MINIMUM 2 FEET ABOVE GROUND.
AS BUILT
Date
By
Yoshida, Inc.
SCALE 1" = 5'
KEN JI YOSHIDA
REGISTERED PROFESSIONAL ENGINEER
DESIGNED BB
DRAWN EER
CHECKED
REVISION
BY
APPROVED
DATE
YOSHIDA, INC.
Consulting Engineers
SEATTLE, WASHINGTON
WHATCOM COUNTY (LAKE WHATCOM)
WATER DISTRICT NO. 10
BELLINGHAM, WASHINGTON
APPROVED
DATE 8-71
SCALE
F. B. NO.
SITE PLAN
CABLE ST. PUMP STATION NO. 2
4500
SHEET
14



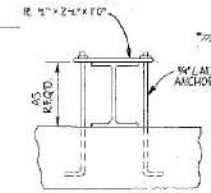
PLAN

SCALE 1/2" = 1'-0"

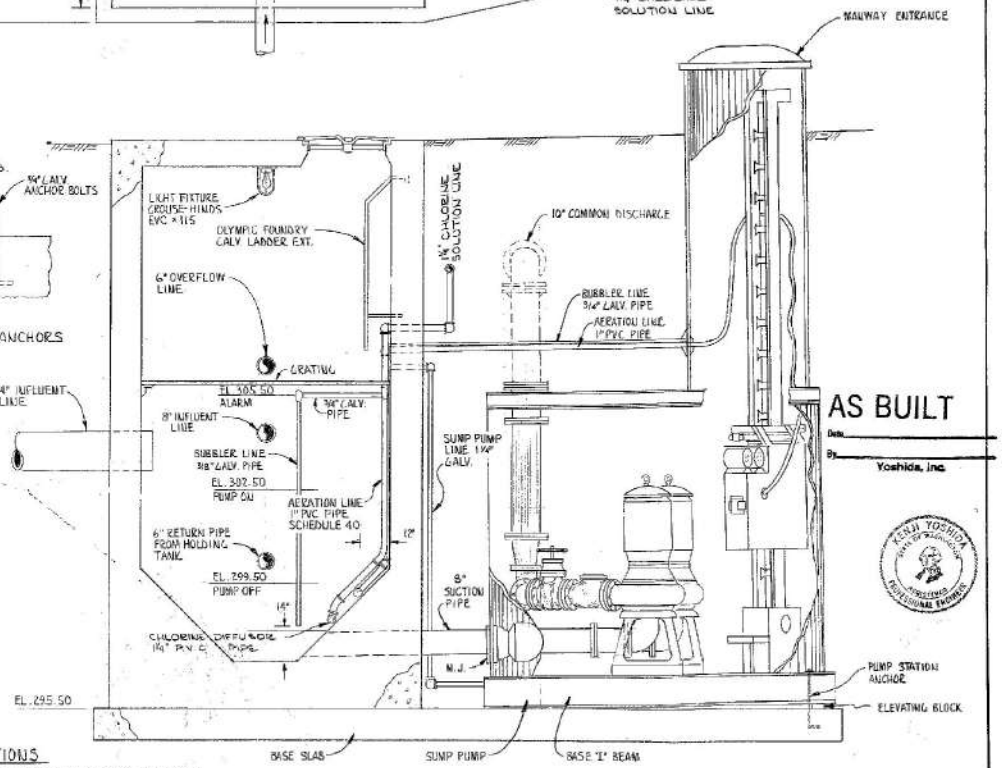




ELEVATION



DETAIL
PUMP STATION ANCHORS
NO SCALE



AS BUILT

Date _____

By _____

Yoshida, Inc.

OPERATING CONDITIONS

PRESENT 600 GPM @ 115' TDH ONE OF TWO PUMPS OPERATING.
FUTURE 1100 GPM @ 139' TDH TWO OF THREE PUMPS OPERATING.

DESIGNED							
DRAWN EER							
CHECKED	SYMBOL	REVISION	BY	APPROVED	DATE		

YOSHIDA, INC.
Consulting Engineers
SEATTLE, WASHINGTON

LAKE WHATCOM BLVD. - CABLE STREET
PUMP STATION NO. 2

APPROVED

DATE 8-71
SCALE 1/2" = 1'-0"
P. B. NO.

LAKE WHATCOM BLVD. INTERCEPTOR
PUMP STATION AND WET WELL DETAIL

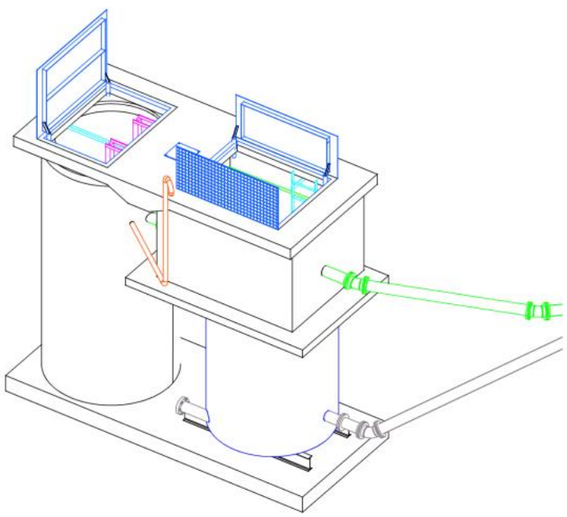
JOB NO. 4500.4
SHEET NO. 15 OF 16

LAKE WHATCOM WATER AND SEWER DISTRICT

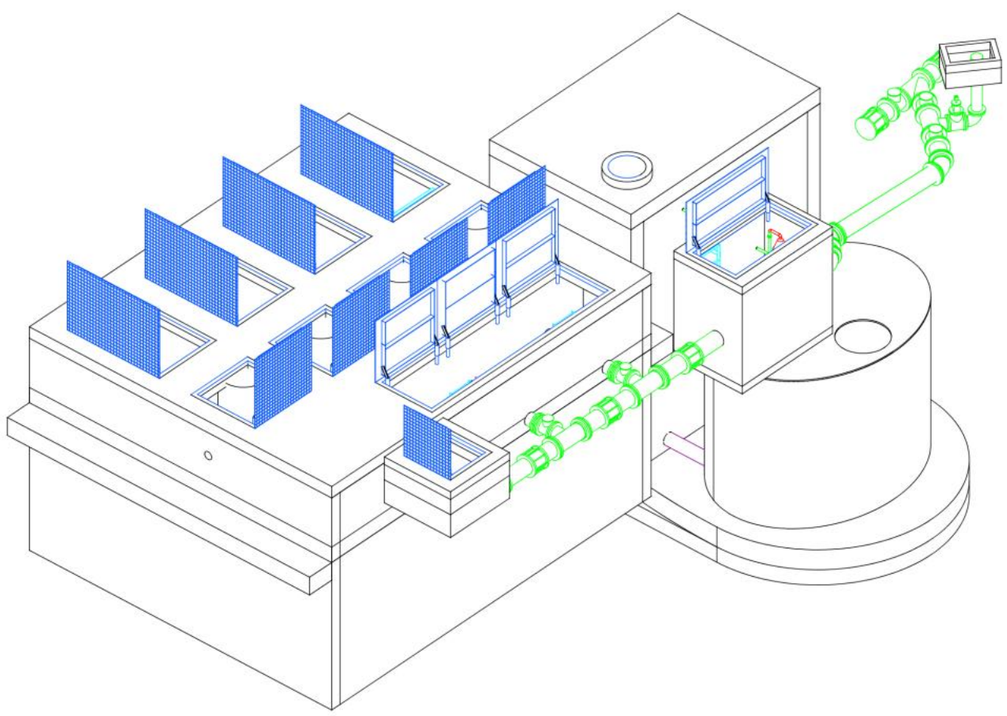
SEWER PUMP STATIONS IMPROVEMENTS (SCHEDULES A-C)

WINTER - SPRING - SUMMER 2010

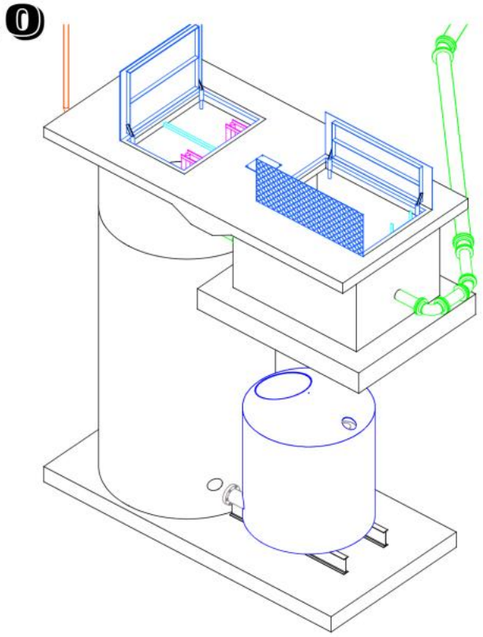
VOLUME II OF II



SCHEDULE C -
AFTERNOON BEACH PUMP STATION IMPROVEMENTS



SCHEDULE A -
CABLE STREET PUMP STATION AND FLYNN STREET GRAVITY SEWER IMPROVEMENTS



SCHEDULE B -
RANCH HOUSE PUMP STATION IMPROVEMENTS

RH2 ENGINEERS PLANNERS SCIENTISTS

REVISED TO CONFORM TO CONSTRUCTION RECORDS
RH2 ENGINEERING INC. 6/24/11 DATE

JON M. CONNER — STATE OF WASHINGTON — 44672 — REGISTERED PROFESSIONAL ENGINEER — SIGNED: 01/28/10

CHRISTOPHER M. ROBERTS — STATE OF WASHINGTON — 45317 — REGISTERED PROFESSIONAL ENGINEER — SIGNED: 01/28/10

RICHARD L. BALLARD — STATE OF WASHINGTON — 32878 — REGISTERED PROFESSIONAL ENGINEER — SIGNED: 01/28/10

EDWIN HALLAM — STATE OF WASHINGTON — 38889 — REGISTERED PROFESSIONAL ENGINEER — SIGNED: 01/28/10

DANIEL W. BUDWEG — STATE OF WASHINGTON — 38341 — REGISTERED PROFESSIONAL ENGINEER — SIGNED: 01/28/10

BRETT E. BEATTIE — STATE OF WASHINGTON — 38752 — REGISTERED PROFESSIONAL ENGINEER — SIGNED: 01/28/10

A:\DATA\LWWSD\A08-0597\CAD\LS-0-COV

NO.	REVISION	BY	REVIEW	DATE
1	REVISED TO CONFORM TO CONSTRUCTION RECORDS	BMS	DWB	6/24/11

REVISION DATE: JUN 27, 2011

CONSTRUCTION NOTES

GENERAL NOTES

CALL 1-800-424-5555 48 HOURS BEFORE CONSTRUCTION FOR UTILITY LOCATIONS.

CONTRACTOR INITIATED CHANGES SHALL BE SUBMITTED IN WRITING TO THE ENGINEER FOR APPROVAL PRIOR TO FABRICATION OR CONSTRUCTION.

THE CONTRACTOR SHALL TAKE ALL NECESSARY PRECAUTIONS TO PROTECT THE PUBLIC AND PREVENT NUISANCES. CONTRACTOR SHALL PROVIDE TEMPORARY BRACING FOR THE STRUCTURE AND STRUCTURAL COMPONENTS UNTIL ALL FINAL CONNECTIONS HAVE BEEN COMPLETED IN ACCORDANCE WITH THE PLANS.

CONSTRUCTION OF IMPROVEMENTS SHALL CONFORM TO THE CURRENT EDITION OF THE LAKE WHATCOM WATER AND SEWER DISTRICT STANDARDS AND THE STANDARD SPECIFICATIONS FOR ROAD, BRIDGE AND MUNICIPAL CONSTRUCTION, 2008 EDITION, AS ISSUED BY THE WASHINGTON STATE DEPARTMENT OF TRANSPORTATION AND THE AMERICAN PUBLIC WORKS ASSOCIATION. THESE DOCUMENTS HEREINAFTER REFERRED TO AS THE STANDARD SPECIFICATIONS.

THE CONTRACTOR IS REQUIRED TO PROVIDE ALL CONSTRUCTION STAKING ON THIS PROJECT INCLUDING THE PREPARATION OF COMPLETE CONSTRUCTION RECORDS. STAKING FOR GRADES AND ALIGNMENT SHALL BE PERFORMED BY AN ENGINEERING OR SURVEYING FIRM LICENSED AND CAPABLE OF PERFORMING SUCH WORK. RIGHT OF WAY AND EASEMENT LIMITS MUST BE CLEARLY IDENTIFIED IN THE FIELD DURING CONSTRUCTION.

PRE CONSTRUCTION CONFERENCE AND 24 HOUR NOTICE WILL BE REQUIRED PRIOR TO COMMENCING CONSTRUCTION.

CONTRACTOR SHALL RESTORE ALL AREAS DISTURBED BY CONSTRUCTION TO CONDITIONS EQUAL OR BETTER TO THOSE FOUND PRIOR TO CONSTRUCTION.

SEE DIVISION 1 OF THE SPECIFICATIONS FOR PERMIT INFORMATION.

THE CONTRACTOR SHALL DETERMINE THE SCOPE, TYPE, SIZE, QUANTITY, METHOD OF INSTALLATION, OPERATION, AND REMOVAL OF THE DEWATERING SYSTEM NECESSARY TO KEEP THE EXCAVATION SITE DEWATERED TO STABILIZE THE SOILS FOR CONSTRUCTION. THE ORDINARY HIGH WATER MARK IS PROVIDED IN THE PLANS BASED ON THE SURVEY. THE WATER LEVEL AT LAKE WHATCOM IS CONTROLLED BY THE CITY OF BELLINGHAM. CONTRACTOR MAY FIND GROUND WATER SEEPAGE IN THE EXCAVATION THAT IS HIGHER THAN THE ORDINARY HIGH WATER MARK.

THE CONTRACTOR SHALL DISCHARGE WATER FROM THE DEWATERING SYSTEM IN ACCORDANCE WITH THE REQUIREMENTS OF STATE AND LOCAL REGULATIONS AND THE REQUIREMENTS OF THESE PLANS AND SPECIFICATIONS. AT NO TIME SHALL SILT LADEN WATER BE DISCHARGED OFF SITE. CONTRACTOR MAY DISCHARGE FILTERED STORM WATER INTO THE SEWER COLLECTION SYSTEM. COORDINATE AND RECEIVE APPROVAL FROM THE DISTRICT PRIOR TO DISCHARGING ANY DEWATERING WATER INTO THE SEWER COLLECTION SYSTEM.

THE CONTRACTOR SHALL CLEANUP ALL AREAS AFFECTED BY THEIR ACTIVITIES TO THE SATISFACTION OF THE OWNER'S REPRESENTATIVE BY THE END OF EACH WORKING DAY OR MORE FREQUENTLY IF REQUIRED BY THE OWNER'S REPRESENTATIVE. THIS INCLUDES REMOVAL OF ALL DUST, MUD, ROCKS, ASPHALT DEBRIS, AND REFUSE FROM STREETS, SIDEWALKS, DRIVEWAYS, AND ANY OTHER AREAS AFFECTED BY THE CONSTRUCTION ACTIVITIES. FAILURE TO CLEANUP TO THE SATISFACTION OF THE OWNER'S REPRESENTATIVE WILL NECESSITATE A SHUTDOWN OF THE PROJECT UNTIL CLEANUP IS PROPERLY PERFORMED. DAILY CLEANUP IS AN INTEGRAL PART OF EROSION AND POLLUTION CONTROL.

CONTRACTOR SHALL RESTORE ALL SURVEY MARKERS/MONUMENTS THAT ARE DISTURBED ON THIS PROJECT. ALL EXISTING SURVEY MARKERS SHALL BE LOCATED AND RE-SET IF DAMAGED BY A PROFESSIONAL LAND SURVEYOR, LICENSED IN THE STATE OF WASHINGTON.

EXISTING UTILITIES INDICATED ON THE DRAWINGS HAVE BEEN DETERMINED FROM THE BEST INFORMATION AVAILABLE TO THE ENGINEER. THE SOURCE OF INFORMATION GENERALLY CONSISTS OF CONSTRUCTION RECORDS, UTILITY LOCATES, AND OTHER DATA OBTAINED VERBALLY FROM OFFICIALS ASSOCIATED WITH THE PARTICULAR UTILITY. OWNER AND ENGINEER DO NOT GUARANTEE NOR ASSUME RESPONSIBILITY FOR THE ACCURACY OF THIS INFORMATION. IT IS UNDERSTOOD THAT OTHER ABOVE GROUND AND UNDERGROUND FACILITIES NOT SHOWN ON THE DRAWINGS MAY BE ENCOUNTERED DURING THE COURSE OF THE WORK. THE CONTRACTOR SHALL USE APPROPRIATE MEANS (INCLUDING POTHOLING) TO VERIFY THE TRUE AND CORRECT LOCATION OF EXISTING UTILITIES TO AVOID DAMAGE OR DISTURBANCE. THE CONTRACTOR SHALL REPAIR ALL DAMAGED UTILITIES IMMEDIATELY.

RESTORE ALL DISTURBED AREAS DURING CONSTRUCTION TO EXISTING OR BETTER CONDITION. ASPHALT PAVEMENT SHALL BE RESTORED TO WHATCOM COUNTY / CITY OF BELLINGHAM STANDARDS.

CONTRACTOR SHALL OBEY ALL SUDDEN VALLEY COMMUNITY ASSOCIATION RULES DURING CONSTRUCTION OF RANCH HOUSE AND AFTERNOON BEACH. NO PARKING OR STAGING IS ALLOWED ON ANY AREAS OTHER THAN THE CONSTRUCTION STAGING AREAS AS SHOWN ON THE PLANS.

CONTRACTOR SHALL COORDINATE WITH DISTRICT FOR MAINTENANCE AND ACCESS TO THE FACILITIES PRIOR TO THE START OF CONSTRUCTION

ALL BURIED ISOLATION VALVES SHALL HAVE VALVE BLOCKS PER THE DISTRICT'S STANDARD DETAILS

SANITARY SEWER NOTES

INSPECTIONS WILL BE PERFORMED BY A REPRESENTATIVE OF THE DISTRICT. IT SHALL BE THE CONTRACTOR'S RESPONSIBILITY TO NOTIFY THE DISTRICT A MINIMUM OF 24 HOURS IN ADVANCE FOR ALL CONSTRUCTION INSPECTIONS.

THE CONTRACTOR SHALL TAKE ALL STEPS NECESSARY TO ENSURE THAT THE EXISTING FACILITIES REMAIN FULLY OPERATIONAL DURING ALL STAGES OF CONSTRUCTION, INCLUDING PROVIDING BYPASS PUMPING, STANDBY STORAGE, EMERGENCY GENERATORS, AND PUMP TRUCKS, AS NECESSARY DURING SERVICE INTERRUPTIONS OR OUTAGES.

WORK HOURS:
RANCH HOUSE AND AFTERNOON BEACH SHALL BE PER SUDDEN VALLEY COMMUNITY ASSOCIATION ALLOWABLE WORK HOURS:
8 AM - 6 PM, MONDAY - SATURDAY
QUIET ON SITE WORK ALLOWED FOR PREPARATION STARTING AT 7:30 AM. NO HEAVY EQUIPMENT UNTIL 8 AM.
OFF HOURS, SUNDAYS, AND DISTRICT HOLIDAYS (MEMORIAL DAY, INDEPENDENCE DAY, AND LABOR DAY) - QUIET WORK ALLOWED - NO OFFSITE NOISE. WORK OUTSIDE NORMAL HOURS SHALL BE APPROVED IN WRITING BY THE SUDDEN VALLEY COMMUNITY ASSOCIATION

CABLE STREET SHALL BE PER WHATCOM COUNTY REQUIREMENTS. CONSTRUCTION ACTIVITY MAY OCCUR BETWEEN 7:00AM TO 8:00PM AND MAY BE MODIFIED AS NECESSARY TO COMPLETE THE CONSTRUCTION WITH WHATCOM COUNTY APPROVAL. HOURS OF WORK MAY BE RESTRICTED DURING CERTAIN HOURS OF THE DAY ON ALL ROADS AND STREETS PER WHATCOM COUNTY CODE 12.28.150 HOURS OF WORK

FLYNN STREET SHALL BE PER CITY OF BELLINGHAM REQUIREMENTS. CONSTRUCTION ACTIVITY MAY OCCUR BETWEEN 7:00AM TO 10:00PM PER CITY OF BELLINGHAM MUNICIPAL CODE 10.24.120 PUBLIC DISTURBANCE NOISE.

CONTRACTOR SHALL PERFORM EXISTING FORCEMAIN / GRAVITY MAIN TIE-INS DURING LOW FLOW HOURS (NIGHT TIME CONSTRUCTION). COORDINATE WITH CORRESPONDING JURISDICTIONS TO REQUEST WORK HOURS EXEMPTION DURING TIE-INS. MINIMUM OF TWO WEEKS NOTICE SHALL BE PROVIDED TO THE CORRESPONDING JURISDICTION PRIOR TO NIGHT TIME WORK.

ROAD WORK, TRENCH RESTORATION:
RANCH HOUSE, AFTERNOON BEACH AND CABLE STREET SITES SHALL BE PER WHATCOM COUNTY REQUIREMENTS
FLYNN STREET GRAVITY SEWER IMPROVEMENTS SHALL BE PER CITY OF BELLINGHAM REQUIREMENTS

VEGETATION RESTORATION:
CABLE STREET SITE SHALL BE PER WHATCOM COUNTY REQUIREMENTS
FLYNN STREET GRAVITY SEWER IMPROVEMENTS SHALL BE PER CITY OF BELLINGHAM REQUIREMENTS
RANCH HOUSE AND AFTERNOON BEACH SITES SHALL BE PER SUDDEN VALLEY COMMUNITY ASSOCIATION AND WHATCOM COUNTY REQUIREMENTS

REVISED TO CONFORM TO CONSTRUCTION RECORDS
RH2 ENGINEERING INC. 6/24/11 DATE

TEMPORARY EROSION AND SEDIMENTATION CONTROL NOTES

1. THE BOUNDARIES OF THE CLEARING LIMITS SHALL BE THE SAME AS THE CONSTRUCTION AND SILT FENCING. DURING THE CONSTRUCTION PERIOD, NO DISTURBANCE BEYOND THE CLEARING LIMITS SHALL BE PERMITTED.
2. THE TESC FACILITIES SHOWN ON THIS PLAN MUST BE CONSTRUCTED PRIOR TO OR IN CONJUNCTION WITH ALL CLEARING AND GRADING SO AS TO ENSURE THAT THE TRANSPORT OF SEDIMENT TO SURFACE WATERS, DRAINAGE SYSTEMS, AND ADJACENT PROPERTIES IS MINIMIZED.
3. THE TESC FACILITIES SHOWN ON THE PLANS ARE THE MINIMUM REQUIREMENTS FOR ANTICIPATED SITE CONDITIONS. DURING THE CONSTRUCTION PERIOD, THESE TESC FACILITIES SHALL BE UPGRADED AS NEEDED FOR UNEXPECTED STORM EVENTS AND MODIFIED TO ACCOUNT FOR CHANGING SITE CONDITIONS (E.G. ADDITIONAL COVER MEASURES, ADDITIONAL SUMP PUMPS, RELOCATION OF DITCHES AND SILT FENCES, PERIMETER PROTECTION ETC.).
4. THE CONTRACTOR SHALL DESIGNATE ONE EMPLOYEE WHO WILL BE THE EROSION AND SPILL CONTROL LEAD (CESCL). THIS PERSON WILL BE RESPONSIBLE FOR ENSURING COMPLIANCE WITH ALL LOCAL, STATE AND FEDERAL EROSION AND SEDIMENT CONTROL AND SPILL CONTROL/PREVENTION REQUIREMENTS. THIS PERSON SHALL PROVIDE A CONTACT PHONE NUMBER THAT HE/SHE CAN BE REACHED AT 24 HOURS A DAY TO RESPOND TO EMERGENCIES, INQUIRIES AND DIRECTIVES REGARDING TESC AND SPILL CONTROL.
5. THE TESC FACILITIES SHALL BE INSPECTED DAILY BY THE CESCL AND MAINTAINED TO ENSURE CONTINUED PROPER FUNCTION. WRITTEN RECORDS SHALL BE KEPT OF WEEKLY REVIEWS OF THE TESC FACILITIES.
6. ANY AREAS OF EXPOSED SOILS, INCLUDING ROADWAY EMBANKMENTS, THAT WILL NOT BE DISTURBED FOR TWO DAYS DURING THE WET SEASON OR SEVEN DAYS DURING THE DRY SEASON SHALL BE IMMEDIATELY STABILIZED WITH THE APPROVED TESC COVER METHODS (E.G., SEEDING, MULCHING, PLASTIC COVERING, ETC.).
7. THE TESC FACILITIES ON INACTIVE SITES SHALL BE INSPECTED AND MAINTAINED A MINIMUM OF ONCE A MONTH OR WITHIN 24 HOURS FOLLOWING A STORM EVENT.
8. THE CONTRACTOR SHALL REMOVE SEDIMENT AND DEBRIS FROM PAVEMENT AREAS AS DIRECTED BY THE INSPECTOR, UTILIZING SHOVELING AND/OR VACUUM STREET SWEEPING.
9. ALL STORM DRAIN INLETS THAT MAY RECEIVE RUNOFF FROM THE PROJECT CONSTRUCTION SHALL BE PROTECTED USING INLET PROTECTION. INLETS SHOULD BE INSPECTED WEEKLY AT A MINIMUM AND DAILY DURING STORM EVENTS. INLET PROTECTION DEVICES SHALL BE CLEANED OR REMOVED AND REPLACED BEFORE SEDIMENT CAN ACCUMULATE TO ONE-HALF THE HEIGHT OR AS SPECIFIED BY THE MANUFACTURER.
10. EXCAVATED MATERIAL SHALL BE PLACED ON THE UPHILL SIDE OF TRENCHES, CONSISTENT WITH SAFETY AND SPACE CONSIDERATIONS AND TO CONTAIN EROSION ON SITE.

CONTACT PERSONNEL

BILL HUNTER, P.E.	LAKE WHATCOM WATER AND SEWER DISTRICT	360-734-9224
RICH MUNSON	LAKE WHATCOM WATER AND SEWER DISTRICT	360-734-9224
RANDY CRAKER	LAKE WHATCOM WATER AND SEWER DISTRICT	360-734-9224
KEN ZANGARI	LAKE WHATCOM WATER AND SEWER DISTRICT	360-734-9224
DAN BURWELL, P.E.	RH2 ENGINEERING	425-951-5342
EDWIN HALIM, P.E.	RH2 ENGINEERING	425-951-5332
LONNIE O'NEAL	CASCADE NATURAL GAS	360-319-1016
REPAIR DEPT.	PUGET SOUND ENERGY	888-225-5773
REPAIR DEPT.	QWEST	800-954-1211
CURTIS METZ	WHATCOM COUNTY BUILDING INSPECTOR	360-676-6907
BRENT BALDWIN	CITY OF BELLINGHAM DEVELOPMENT MANAGER	360-778-7900
DAVE WAREING	SUDDEN VALLEY COMMUNITY ASSOCIATION GENERAL MANAGER	360-734-6430

CALL 48 HOURS BEFORE YOU DIG
ONE CALL 1-800-424-5555

REPORT ALL SPILLS
DEPT. OF ECOLOGY 1-800-258-5990

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5	STRUCTURAL DETAILS I	S002
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7	ELECTRICAL LEGEND	E001
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BRET E. BEAUPRE, STATE OF WASHINGTON, 36762, REGISTERED PROFESSIONAL ENGINEER
SIGNED: 01/28/10

DANIEL W. BURWELL, STATE OF WASHINGTON, 36302, REGISTERED PROFESSIONAL ENGINEER
SIGNED: 01/28/10

LAKE WHATCOM WATER & SEWER DISTRICT

Lake Whatcom Water and Sewer District
2010 Sewer Pump Station Improvements

GENERAL INFORMATION

RH2 ENGINEERS PLANNERS SCIENTISTS
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EAST WENATCHEE 509.886.2900 300 Simon Street, Suite 5
RICHLAND 509.946.5181 114 Columbia Point Drive, Suite C
SILVERDALE 360.876.7960 2021 NW Mhyre Rd, Suite 107
TACOMA 253.272.3059 621 Pacific Avenue Suite 104

SCALE: SHOWN
0 1" 2"
DRAWING IS NOT TO SCALE IF BAR IS NOT 2" LONG

PLOT: 1	DWG NO.
ENGINEER: RJF	G001
REVIEWED: DWB	
DATE: JAN 26, 2010	SHEET NO. 1
CLIENT: LWWSD	
JOB NO.: 409-050	71
FILENAME: LS-D-GEN01	

NO.	REVISION	BY	REVIEW	DATE
1	REVISED TO CONFORM TO CONSTRUCTION RECORDS	BMS	DWB	6/24/11

SITE SURVEY NOTES

DATE OF SURVEY: JUNE 2009
SURVEY COMPLETED BY LARRY STEELE AND ASSOCIATES
DATUM:

CABLE STREET
HORIZONTAL: NAD83/98
PER CONVENTIONAL TRAVERSE TO CITY OF BELLINGHAM GPS CONTROL POINTS #4502 & 4204

VERTICAL: CITY OF BELLINGHAM
DERIVED FROM LAKE WHATCOM WATER LEVEL OF 314.57' (MAY 22, 2009 AT 10:50 A.M.)

PROJECT BENCH MARK IS A MAG NAIL AND SHINER AS MARKED WITH THE DATUM SYMBOL, EL=321.49'

RANCH HOUSE
HORIZONTAL: NAD83/98
PER STATIC GPS TIE TO CITY OF BELLINGHAM PRIMARY CONTROL POINTS "BLOEDEL" (NGS PID DH3749) AND "HAWK" (NGS PID DH3745)

VERTICAL: CITY OF BELLINGHAM
DERIVED FROM LAKE WHATCOM WATER LEVEL OF 314.51' (MAY 13, 2009 AT 10:45 A.M.). ELEVATIONS WERE ESTABLISHED HERE BY GPS TIE TO THE AFTERNOON BEACH SURVEY AREA OF THIS PROJECT.

PROJECT BENCH MARK IS AN 8" SPIKE AS MARKED WITH THE DATUM SYMBOL, EL=347.34'

~~AFTERNOON BEACH~~
~~HORIZONTAL: NAD83/98~~
~~PER STATIC GPS TIE TO CITY OF BELLINGHAM PRIMARY CONTROL POINTS "BLOEDEL" (NGS PID DH3749) AND "HAWK" (NGS PID DH3745)~~

~~VERTICAL: CITY OF BELLINGHAM~~
~~DERIVED FROM LAKE WHATCOM WATER LEVEL OF 314.51' (MAY 13, 2009 AT 10:45 A.M.)~~

~~PROJECT BENCH MARK IS A BRASS PLUG MONUMENT IN CONCRETE SHOW BY THE DATUM SYMBOL, EL=318.78'~~

FLYNN ST
DATE OF SURVEY: NOVEMBER 2009
BASIS OF BEARING:
WASHINGTON STATE NORTH ZONE NAD 83/98 PER CITY OF BELLINGHAM 2005 HORIZONTAL CONTROL NETWORK. MONUMENT NO'S 242 AND 245 AT ELECTRIC AVE. AND CENTERLINE OF FRASER ST. AND OHIO ST.

DATUM:
CITY OF BELLINGHAM
TBM#4 SHEET 2/2, ELECTRIC AVE ES-0241 CONTROL WORKSHEET, FEB. 2004; NE CORNER CONC. LANDING, BOTTOM STAIR, 2107 ELECTRIC AVE. ELEV = 330.05'

LEGEND

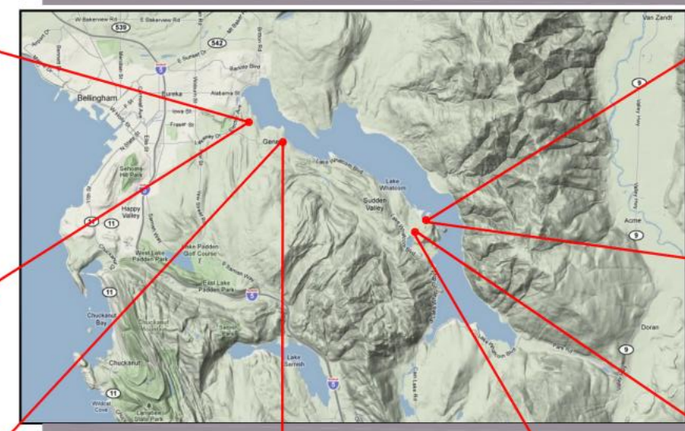
EXISTING IMPROVEMENTS

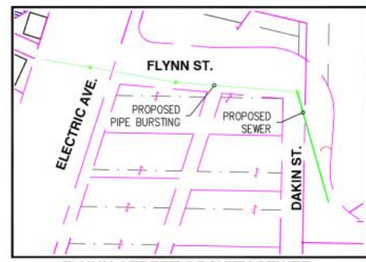
- P — U/G POWER
- OHP — O/H POWER
- G — U/G NATURAL GAS
- TEL — U/G TELEPHONE
- OHT — O/H TELEPHONE
- FENCE
- GUARD RAIL
- SS — SANITARY SEWER
- SIDE SEWER
- ST — STORM SEWER
- SS FM — SANITARY SEWER FORCE MAIN
- W — DOMESTIC WATER
- RIGHT OF WAY C/L
- EASEMENT
- PROPERTY LINE
- MINOR CONTOUR
- MAJOR CONTOUR
- DOMESTIC WATER VALVE
- WATER METER
- FIRE HYDRANT
- STORM CATCH BASIN
- SANITARY SEWER MANHOLE
- MAILBOX
- TELEPHONE RISER
- P — POWER VAULT
- JUNCTION BOX
- PAD MOUNTED TRANSFORMER
- VEGETATION
- ASPHALT CONCRETE PAVEMENT
- STRUCTURE, TO BE REMOVED
- MONUMENT (IN CASE)
- SURFACE MONUMENT
- SIGN
- CONCRETE PAVEMENT OR WALKWAY

PROPOSED IMPROVEMENTS

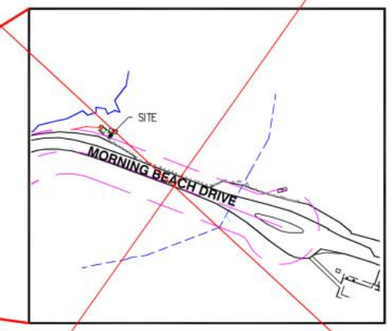
- SILT FENCE
- CONSTRUCTION FENCE
- TEMPORARY SANITARY SEWER
- P — POWER
- TEL — TELEPHONE
- TELM — TELMETRY
- SEWER MAIN
- SUMP DRAIN
- FLOOR DRAIN DRAIN
- SEWER MANHOLE
- SEWER CLEANOUT
- PROPOSED PAVEMENT
- PROPOSED STAGING AREA
- PROPOSED KEYSTONE WALL
- PROPOSED ROCK WALL

PROJECT LOCATION



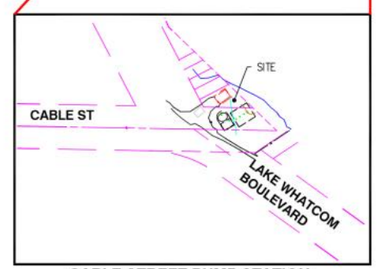


FLYNN STREET GRAVITY SEWER



AFTERNOON BEACH PUMP STATION

NOTE COMPLETED THIS CONTRACT DUE TO WHATCOM COUNTY SHORELINE SUBSTANTIAL DEVELOPMENT AND VARIANCE PERMIT REQUIREMENT



CABLE STREET PUMP STATION

RANCH HOUSE PUMP STATION

REVISED TO CONFORM TO CONSTRUCTION RECORDS
6/24/11
RH2 ENGINEERING INC. DATE

NO.	REVISION	BY	REVIEW	DATE
1	REVISED TO CONFORM TO CONSTRUCTION RECORDS	BMS	DWB	6/24/11

SIGNED: 01/28/10

SIGNED: 01/28/10

Lake Whatcom Water and Sewer District
2010 Sewer Pump Station Improvements

GENERAL INFORMATION II

RH2 ENGINEERS PLANNERS SCIENTISTS
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http://www.rh2.com
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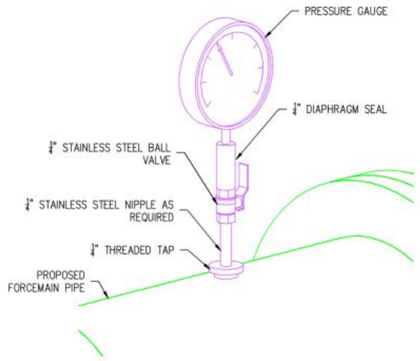
BELLINGHAM 360.676.0636 454 West Horton Road
BOTHELL 425.951.5400 12100 NE 195th Street, Suite 100
EAST WENATCHEE 509.886.2900 300 Simon Street, Suite 5
RICHLAND 509.946.5181 114 Columbia Point Drive, Suite C
SILVERDALE 360.876.7960 2021 NW Myre Rd, Suite 107
TACOMA 253.272.3059 621 Pacific Avenue Suite 104

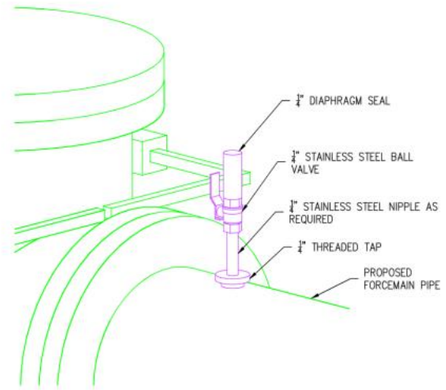
SCALE: SHOWN
0 1" 2"
DRAWING IS NOT TO SCALE IF BAR IS NOT 2" LONG

PLOT: 1
ENGINEER: RJF
REVIEWED: DWB
DATE: JAN 19, 2010
CLIENT: LWWSD
JOB NO.: 409-050
FILENAME: LS-D-GEN02
DWG NO. G002
SHEET NO. 2
71



PRESSURE GAUGE DETAILS

NOT TO SCALE



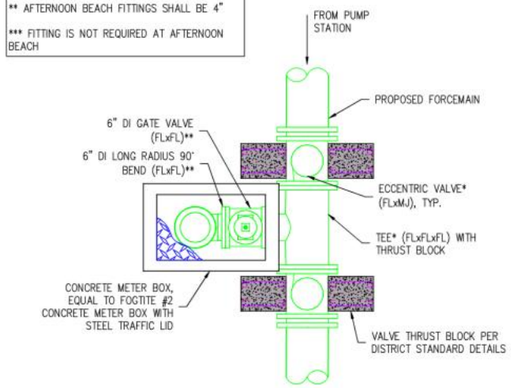
1/4" TAP ASSEMBLY DETAILS

NOT TO SCALE

* TEE AND ECCENTRIC VALVE SIZE SHALL BE EQUAL TO THE SIZE OF THE PROPOSED FORCEMAIN. TEE BRANCH SIZE SHALL BE 4" FOR AFTERNOON BEACH AND 6" FOR CABLE STREET.

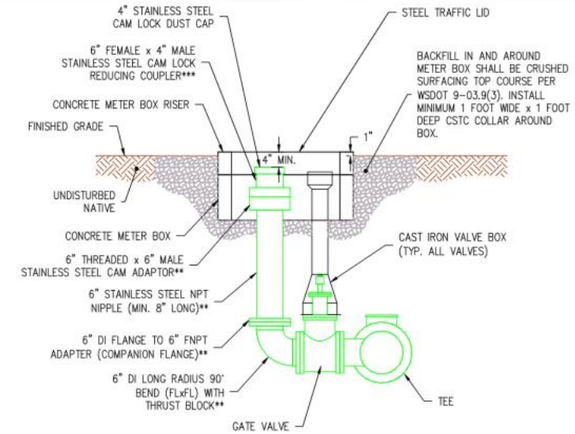
** AFTERNOON BEACH FITTINGS SHALL BE 4"

*** FITTING IS NOT REQUIRED AT AFTERNOON BEACH



BYPASS PUMPING PORT DETAILS

NOT TO SCALE



BYPASS PUMPING PORT ELEVATION

NOT TO SCALE

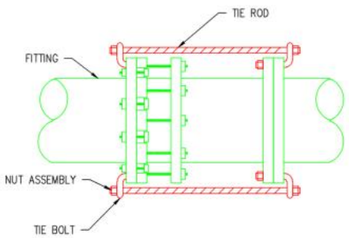
REVISED TO CONFORM TO CONSTRUCTION RECORDS
RH2 ENGINEERING INC. 6/24/11 DATE

NOTE:
CONTRACTOR SHALL PROVIDE ENTRANCE AREA TO FIT WITHIN EACH SITE. CONSTRUCTION ENTRANCE SHALL BE REMOVED FOLLOWING CONSTRUCTION COMPLETION.

SHACKLE ROD SCHEDULE

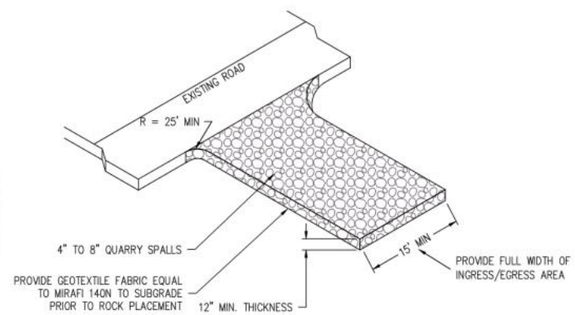
FITTING		SHACKLE NUMBER	ROD SIZE
125LB	4"	2	3/4"
	6"	2	3/4"
	8"	2	3/4"
	10"	4	3/4"
	12"	4	3/4"
250LB	4"	2	3/4"
	6"	2	3/4"
	8"	2	3/4"
	10"	4	3/4"
	12"	6	3/4"

TIE BOLTS SHALL BE INSTALLED PER MANUFACTURER'S WRITTEN RECOMMENDATIONS



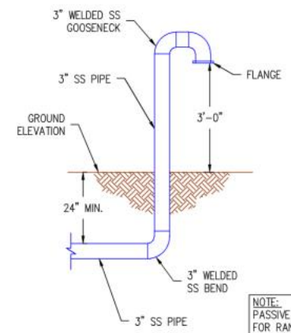
SHACKLE ROD DETAIL

NOT TO SCALE



STABILIZED CONSTRUCTION ENTRANCE

NOT TO SCALE



NOTE:
PASSIVE VENT DETAILS FOR RANCH HOUSE AND AFTERNOON BEACH ONLY

WET WELL PASSIVE VENT DETAILS

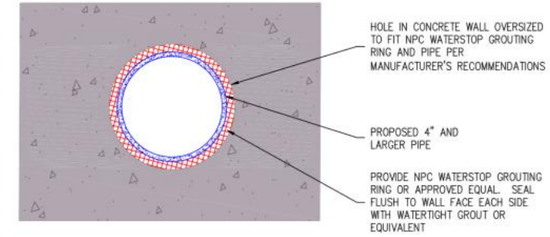
NOT TO SCALE

NOTE:
* PIPE AND CONDUIT PENETRATIONS LESS THAN 4" SHALL BE GROUTED WATER TIGHT AT BOTH SIDES.

* ALL PROPOSED CAST IN PLACE PENETRATIONS SHALL BE SEALED USING THE OMNI SLEEVE SIGMA FLANGE WITH THRUST RESTRAINT.

* PRECAST OR CORED PIPE PENETRATIONS SHALL BE SEALED PER THE DETAILS BELOW.

SEE DWG NO. S002 FOR REBAR AT PIPE PENETRATIONS THROUGH CAST IN PLACE WALLS

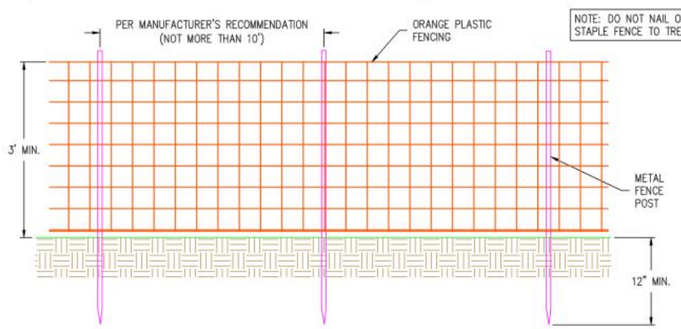


PIPE PENETRATION DETAILS

NOT TO SCALE

NOTE:
3' CONSTRUCTION FENCE IS FOR VEGETATION PROTECTION. CONTRACTOR SHALL BE RESPONSIBLE FOR SITE SECURITY INCLUDING 6' CHAINLINK CONSTRUCTION FENCING AS NECESSARY TO RESTRICT PUBLIC ACCESS AND SECURE EACH SITE.

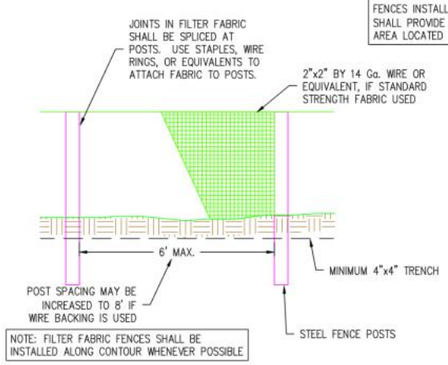
NOTE: DO NOT NAIL OR STAPLE FENCE TO TREES



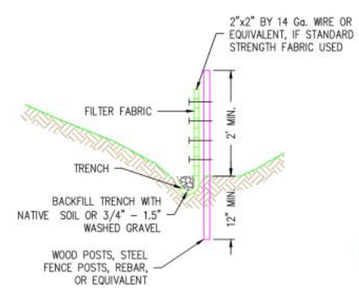
PLASTIC OR METAL FENCE (CONSTRUCTION FENCE)

NOT TO SCALE

DOUBLE SILT FENCE NOTE:
AREAS REQUIRING DOUBLE SILT FENCE SHALL CONSIST OF 2 SILT FENCES INSTALLED WITH 3-4' OF SEPARATION. CONTRACTOR SHALL PROVIDE 3"' MIN. THICKNESS OF UNCOMPACTED STRAW IN AREA LOCATED BETWEEN THE SILT FENCES.

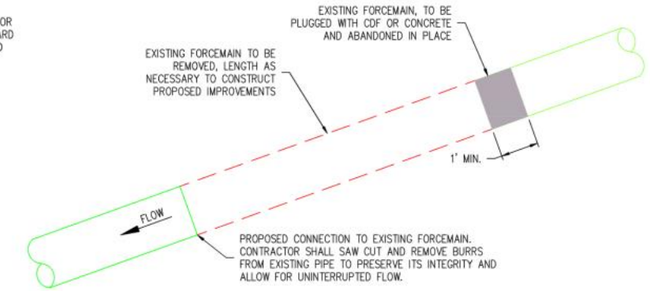


NOTE: FILTER FABRIC FENCES SHALL BE INSTALLED ALONG CONTOUR WHENEVER POSSIBLE



SILT FENCE

NOT TO SCALE



FORCEMAIN ABANDONMENT

NOT TO SCALE

NO.	REVISION	BY	REVIEW	DATE
1	REVISED TO CONFORM TO CONSTRUCTION RECORDS	BMS	DWB	6/24/11

BRET E. BEAUPRE, STATE OF WASHINGTON, 38752, REGISTERED PROFESSIONAL ENGINEER
SIGNED: 01/28/10

EDWIN HAN, STATE OF WASHINGTON, 38889, REGISTERED PROFESSIONAL ENGINEER
SIGNED: 01/28/10

LAKE WHATCOM WATER & SEWER DISTRICT — lake whatcom

Lake Whatcom Water and Sewer District
2010 Sewer Pump Station Improvements

CIVIL AND MECHANICAL DETAILS

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454 West Horton Road

BOTHELL 425.951.5400
12100 NE 195th Street, Suite 100

EAST WENATCHEE 509.886.2800
300 Simon Street, Suite 5

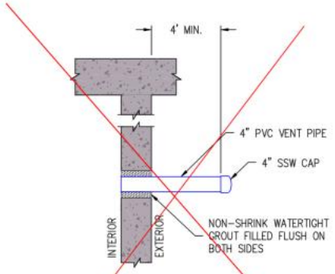
RICHLAND 509.946.5181
114 Columbia Point Drive, Suite C

SILVERDALE 360.876.7960
2021 NW Mhyre Rd, Suite 107

TACOMA 253.272.3059
621 Pacific Avenue Suite 104

SCALE: SHOWN
0 1" 2"
DRAWING IS NOT TO SCALE IF BAR IS NOT 2" LONG

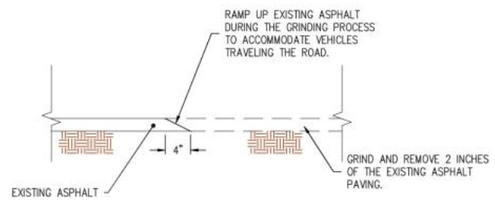
PLOT: 1	DWG NO. M001
ENGINEER: EH	
REVIEWED: DWB	
DATE: JAN 25, 2010	SHEET NO. 3
CLIENT: LWWSD	
JOB NO.: 409-050	71
FILENAME: LS-D-MEC01	



VENT IN MANHOLE FORCEMAIN OUTLET

NOT TO SCALE

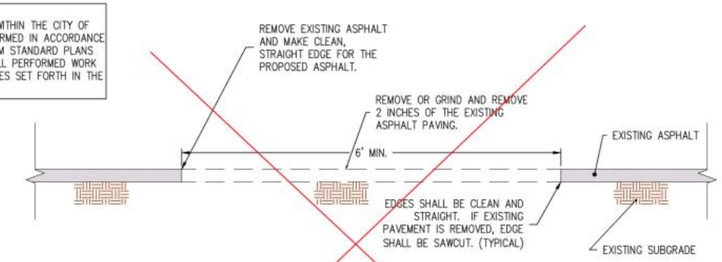
NOT COMPLETED BY CONTRACTOR



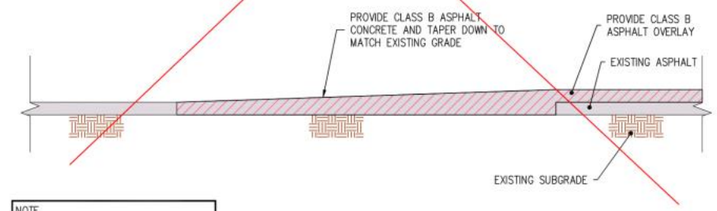
TYPICAL GRINDING EDGES IN WHEEL PATH SECTION

NOT TO SCALE

TRENCH PATCH NOTES:
TRENCH PATCHES REQUIRED WITHIN THE CITY OF BELLINGHAM SHALL BE PERFORMED IN ACCORDANCE WITH THE CITY OF BELLINGHAM STANDARD PLANS PER ENGINEER DIRECTION. ALL PERFORMED WORK SHALL BE PAID BY UNIT PRICES SET FORTH IN THE CONTRACT DOCUMENTS.



INTERSECTION PREPARATION FOR PAVING



NOTE:
SEE DETAIL THIS SHEET FOR GRINDING EDGES IN THE WHEEL PATH OF VEHICLES.

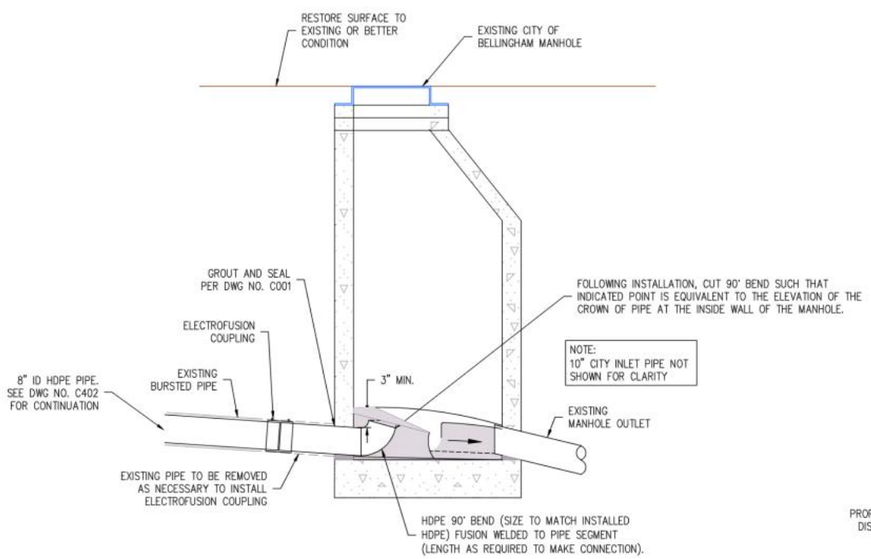
FINAL INTERSECTION PAVING

TYPICAL STREET OVERLAY TERMINATION SECTION

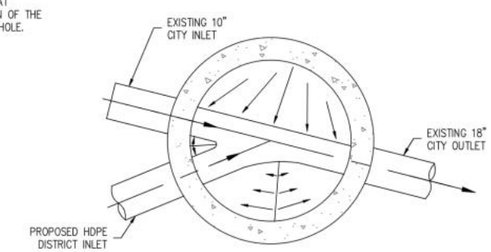
NOT TO SCALE

ASPHALT FEATHERED IN TO ROADWAY AND APPROVED BY CITY INSPECTOR AS INSTALLED IN OCTOBER 2010.

REVISED TO CONFORM TO CONSTRUCTION RECORDS
RH2 ENGINEERING INC. 6/24/11 DATE



SECTION



PLAN

FLYNN STREET
CITY OF BELLINGHAM MANHOLE INLET AND CONNECTION DETAILS

NOT TO SCALE

FLYNN STREET
CITY OF BELLINGHAM MANHOLE INLET CHANNELING DETAILS

NOT TO SCALE

NO.	REVISION	BY	REVIEW	DATE
1	REVISED TO CONFORM TO CONSTRUCTION RECORDS	BMS	DWB	6/24/11

SIGNED: 01/28/10

SIGNED: 01/28/10

Lake Whatcom Water and Sewer District
2010 Sewer Pump Station Improvements

CIVIL DETAILS

RH2 ENGINEERS PLANNERS SCIENTISTS
RH2 ENGINEERING, INC.
http://www.rh2.com
mailbox@rh2.com 1.800.720.8052
BELLINGHAM 360.676.0826 454 West Horton Road
BOTHELL 425.951.5400 12100 NE 195th Street, Suite 100
EAST WENATCHEE 509.886.2800 300 Simon Street, Suite 5
RICHLAND 509.946.5181 114 Columbia Point Drive, Suite C
SILVERDALE 360.876.7960 2021 NW Mhyre Rd, Suite 107
TACOMA 253.272.3059 621 Pacific Avenue Suite 104

SCALE: SHOWN
0 1" 2"
DRAWING IS NOT TO SCALE IF BAR IS NOT 2" LONG

PLOT: 1
ENGINEER: RJF
REVIEWED: DWB
DATE: JAN 25, 2010
CLIENT: LWWSD
JOB NO.: 409-050
FILENAME: FS-D-D01

DWG NO. C001

SHEET NO. 4 / 71

General Structural Notes (300)

BASIS OF DESIGN

GEOTECHNICAL PARAMETERS:

MINIMUM FROST DEPTH	18"
MAXIMUM NET BEARING	3,000 PSF STATIC
AT-REST LATERAL EARTH PRESSURE	70 PCF DRAINED, 101.4 PCF UNDRAINED
SURCHARGE LOADING (WHERE APPLICABLE)	100 PSF
GROUND WATER TABLE	ASSUMED AT SURFACE

OTHER LOADING PARAMETERS:

WIND LOAD:	85 MPH, EXPOSURE B
SNOW LOAD:	25 PSF
EARTHQUAKE LOAD:	ZIP CODE 98226, SOIL PROFILE TYPE D

OTHER DESIGN VALUES USED:

OCCUPANCY CATEGORY:	ESSENTIAL FACILITY
CONCRETE:	4000 PSI WITH 60,000 PSI REINFORCING
TIMBER:	DFL #2 OR BETTER
STEEL:	A36
CMU:	1500 PSI WITH 60,000 PSI REINFORCING

LIVE LOADS:

FLOOR LIVE LOADS:	100 PSF EXCEPT AS NOTED
PLATFORMS AND STAIRS:	50 PSF LIVE LOAD

CRITERIA

ALL MATERIALS, WORKMANSHIP, DESIGN, AND CONSTRUCTION SHALL CONFORM TO THE DRAWINGS, SPECIFICATIONS, AND THE INTERNATIONAL BUILDING CODE (2006 EDITION).

SPECIAL INSPECTIONS, TESTS AND OBSERVATIONS

SPECIAL INSPECTIONS AND TESTS SHALL INCLUDE THE FOLLOWING. REFER TO IBC SECTION 1704 AND 1707 FOR DETAILS.

1. SPECIAL INSPECTIONS BY THE GEOTECHNICAL ENGINEER INCLUDING:
   A. SITE EXCAVATION AND GRADING
   B. PLACEMENT OF STRUCTURAL FILL AND SOIL COMPACTION
   C. VERIFICATION OF SOIL-BEARING CAPACITY
2. CONCRETE PLACEMENT AT CONCRETE CONSTRUCTION: CONTINUOUS, SEE ALSO SECTION 1704.4.
3. REINFORCEMENT AT CONCRETE CONSTRUCTION: PERIODIC, SEE ALSO SECTION 1704.4.
4. MASONRY CONSTRUCTION, INCLUDING PLACEMENT OF MASONRY UNITS, MORTAR REINFORCEMENT AND STRUCTURAL CONNECTIONS: PERIODIC, SEE ALSO SECTION 1704.5.3.
5. GROUT PLACEMENT AT MASONRY CONSTRUCTION: CONTINUOUS, SEE ALSO SECTION 1704.5.3.
6. WOOD-FRAMED LATERAL-FORCE RESISTING SYSTEM: PERIODIC, SEE ALSO SECTION 1707.3.
7. TESTING OF CONCRETE FOR SPECIFIED COMPRESSIVE STRENGTH (FC), AIR CONTENT AND SLUMP. SEE IBC TABLE 1704.4.
8. VERIFICATION OF SPECIFIED COMPRESSIVE STRENGTH (FM) OF MASONRY PRIOR TO CONSTRUCTION AND EVERY 5,000 SQUARE FEET DURING CONSTRUCTION. SEE IBC TABLE 1708.1.4.
9. STRUCTURAL OBSERVATION BY A REGISTERED DESIGN PROFESSIONAL IN ACCORDANCE WITH IBC 1709 SHALL BE PROVIDED.

GENERAL

LINES SHOWN ON DRAWINGS MAY BE ASSOCIATED WITH CAD MODELING AND MAY NOT REPRESENT REQUIRED OR ALLOWED JOINTS. SEE DETAILS FOR CLARIFICATION ON REQUIRED AND ALLOWED JOINTS.

REINFORCED CONCRETE

REINFORCING STEEL SHALL BE DETAILED (INCLUDING HOOKS AND BENDS) IN ACCORDANCE WITH ACI 315-99 AND 318-08. LAP ALL REINFORCEMENTS IN ACCORDANCE WITH THE "REINFORCING SPLICE AND DEVELOPMENT LENGTH SCHEDULE" – SEE THIS SHEET. PROVIDE CORNER BARS AT ALL WALL INTERSECTIONS PER DETAIL 308. LAP ADJACENT MATS OF WELDED WIRE FABRIC A MINIMUM OF 8" AT SIDES AND ENDS.

NO BARS PARTIALLY EMBEDDED IN HARDENED CONCRETE SHALL BE FIELD BENT UNLESS SPECIFICALLY DETAILED OR APPROVED BY THE STRUCTURAL ENGINEER.

A 6" WATERSTOP SHALL BE PLACED AT ALL BELOW GRADE CONCRETE SLAB AND WALL CONSTRUCTION JOINTS AND AS SHOWN TO PROVIDE A WATERTIGHT STRUCTURE.

CONCRETE PROTECTION (COVER) FOR REINFORCING STEEL SHALL BE AS FOLLOWS, UNLESS OTHERWISE NOTED:

FOOTINGS AND OTHER UNFORMED SURFACES CAST AGAINST AND PERMANENTLY EXPOSED TO EARTH . . . . . 3"
FORMED SURFACES EXPOSED TO EARTH (WALLS BELOW GRADE), WATER OR WEATHER (#6 BARS OR LARGER). . 2"

COLUMN TIES OR SPIRALS AND BEAM STIRRUPS. . . . . 2"
SLABS AND WALLS (INTERIOR FACE) . . . . . 2"

ANCHORAGE

CONCRETE ANCHORS USE HILTI HIT-RE 500-SD CONCRETE ANCHORS AS SPECIFIED AND INSTALLED PER DETAIL 302 UNLESS OTHERWISE CALLED OUT ON PLANS.

CONCRETE ANCHORS SHALL BE HILTI HIT-RE 500-SD ADHESIVE ANCHORS AS SPECIFIED. WHERE SIZE IS CALLED OUT ON THE DRAWINGS, PROVIDE MINIMUM EMBEDMENT DEPTHS AS SHOWN ON THE FOLLOWING TABLES. PROVIDE MINIMUM EDGE DISTANCES AND SPACING AS SHOWN ON THE FOLLOWING TABLES UNLESS SPECIFICALLY DETAILED OTHERWISE.

INSTALL CONCRETE ANCHORS IN STRICT ACCORDANCE WITH MANUFACTURER'S INSTRUCTIONS.

NOTIFY OWNER 24 HOURS IN ADVANCE OF INSTALLATION OF ALL ANCHORS.

WHERE SIZE IS NOT CALLED OUT, ANCHOR SHALL BE SELECTED BASED ON DESIGN LOADS. IF THE MINIMUM EDGE DISTANCE AND/OR MINIMUM SPACING CAN NOT BE ACHIEVED, REFER TO PRODUCT INFORMATION FOR REDUCTION IN ALLOWABLE LOADS.

316 STAINLESS STEEL THREADED ROD

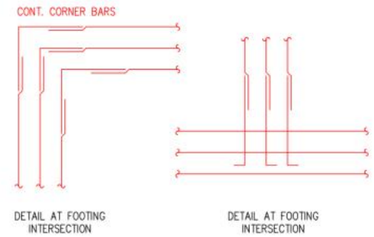
DIAMETER OF ROD (INCHES)	3/8	1/2	5/8	3/4
MINIMUM EMBEDMENT DEPTH (INCHES)	3 1/2	4 1/4	5	6 5/8
MINIMUM CONCRETE THICKNESS (INCHES)	5 1/4	6 1/2	7 1/2	10
MINIMUM EDGE DISTANCE (INCHES)	5 1/4	6 1/2	7 1/2	10
MINIMUM ANCHOR SPACING (INCHES)	7	8 1/2	10	13 1/4
ALLOWABLE TENSION LOAD CAPACITY (POUNDS)	3,105	4,371	5,535	8,274
ALLOWABLE SHEAR LOAD CAPACITY (POUNDS)	2,519	5,440	7,195	10,757

GRADE 60 REBAR

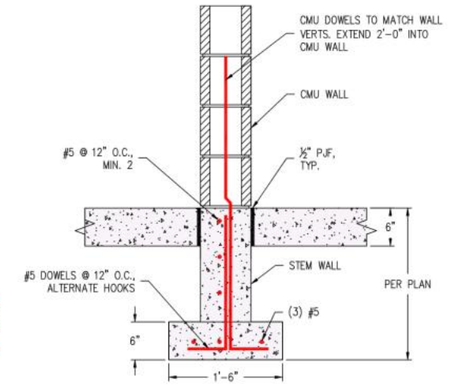
REBAR SIZE	#5	#6	#7	#8
MINIMUM EMBEDMENT DEPTH (INCHES)	5	7	7 1/2	8
MINIMUM CONCRETE THICKNESS (INCHES)	7 1/2	10 1/2	11 1/4	12
MINIMUM EDGE DISTANCE (INCHES)	7 1/2	10 1/2	11 1/4	12
MINIMUM ANCHOR SPACING (INCHES)	10	14	15	16
ALLOWABLE TENSION LOAD CAPACITY (POUNDS)	5,535	8,783	9,968	11,201
ALLOWABLE SHEAR LOAD CAPACITY (POUNDS)	7,195	11,418	12,959	14,562

CONCRETE ANCHOR (302)

REVISED TO CONFORM TO CONSTRUCTION RECORDS
RH2 ENGINEERING INC. 6/24/11 DATE



TYPICAL BAR DETAILING

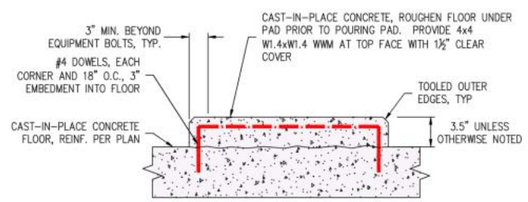


TYPICAL FOOTING

SPREAD FOOTING (305)

1" = 1'-0"

NOTE: SEE MECHANICAL DRAWINGS FOR EQUIPMENT LOCATION AND DIMENSIONS.



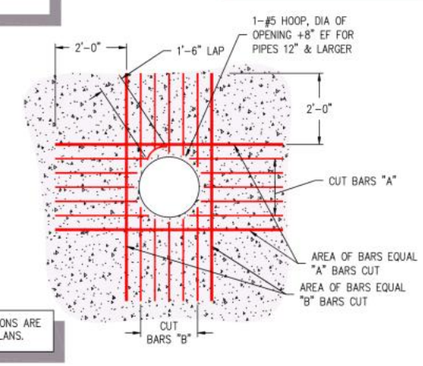
EQUIPMENT PAD (303)

1" = 1'-0"

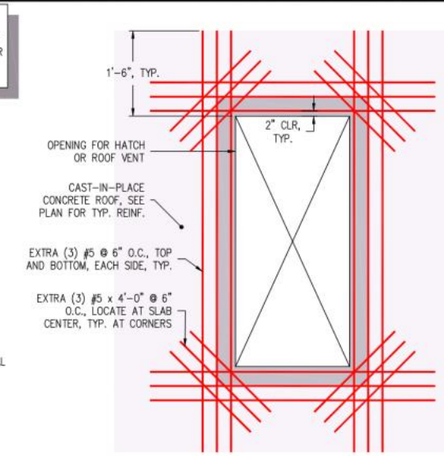
BAR DESIGNATION NOTES:
"A" REFERS TO CROSS-SECTIONAL AREA OF A HORIZONTAL BAR THAT HAS BEEN CUT.

"B" REFERS TO CROSS-SECTIONAL AREA OF A VERTICAL BAR THAT HAS BEEN CUT.

NOTE: THIS DETAIL USED FOR SINGLE PENETRATIONS 4" IN DIAMETER AND LARGER, AND IN EQUIVALENT GROUPS OF SMALLER DIAMETER PENETRATIONS. REFER TO MECHANICAL PLANS FOR SIZE AND LOCATION OF PIPE PENETRATIONS.



NOTE: NOT ALL PENETRATIONS ARE SHOWN ON STRUCTURAL PLANS.



OPENING REINFORCEMENT (306)

NOT TO SCALE

Reinforcement Splice and Development Length Schedule: (301)

(I) MINIMUM STRAIGHT DEVELOPMENT LENGTHS (ℓ_d)✦

BAR SIZE	TENSION BARS TOP BARS	TENSION BARS OTHER BARS
# 3	19"	15"
# 4	25"	19"
# 5	31"	24"
# 6	37"	29"
# 7	54"	42"
# 8	62"	48"
# 9	70"	54"
# 10	79"	61"

(II) MINIMUM LAP SPLICE LENGTHS (ℓ_s)✦

BAR SIZE	TENSION BARS CLASS B TOP BARS	TENSION BARS CLASS B OTHER BARS
# 3	25"	19"
# 4	33"	25"
# 5	41"	31"
# 6	49"	37"
# 7	71"	54"
# 8	81"	62"
# 9	91"	70"
# 10	103"	79"

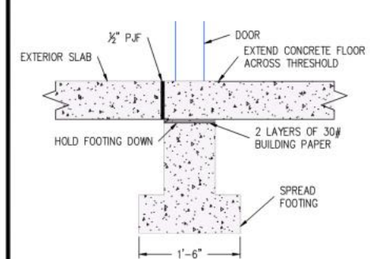
(III) MINIMUM EMBEDMENT LENGTHS (ℓ_{dh}) FOR STANDARD END HOOKS

BAR SIZE	ALL BARS
# 3	6"
# 4	7"
# 5	9"
# 6	10"
# 7	12"
# 8	14"
# 9	15"
# 10	17"

1. SIDE COVER EQUAL TO OR GREATER THAN 2-1/2".
2. END COVER FOR 90° HOOKS MUST BE EQUAL TO OR GREATER THAN 2".

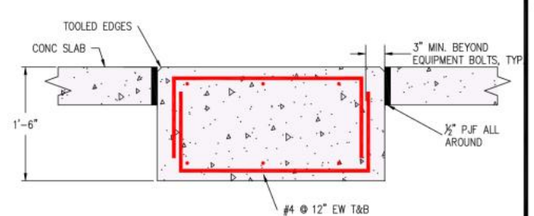
✦"TOP BARS" ARE HORIZONTAL BARS WITH MORE THAN 12" DEPTH OF CONCRETE CAST BELOW THEM.

IF CLEAR CONCRETE COVER IS LESS THAN 2x THE DIAMETER OF THE BAR OR THE CENTER-TO-CENTER SPACING IS LESS THAN (4) BAR DIAMETERS, THEN VALUES SHALL BE INCREASED BY 43%.



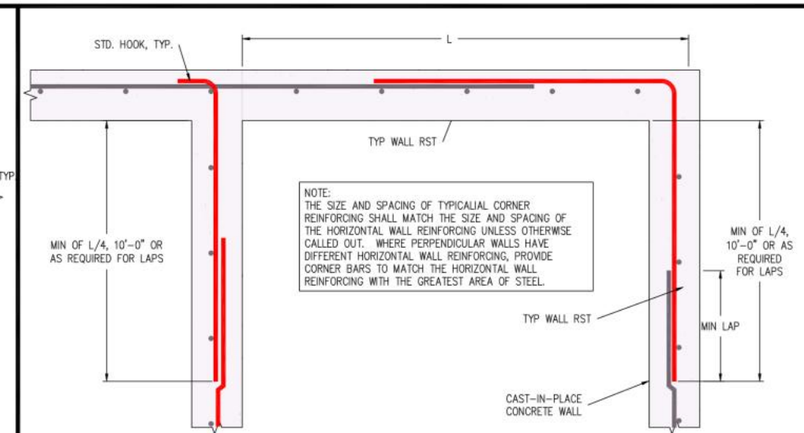
DOOR THRESHOLD (304)

1" = 1'-0"



EMERGENCY GENERATOR EQUIPMENT PAD (307)

1" = 1'-0"



NOTE:
THE SIZE AND SPACING OF TYPICALIAL CORNER REINFORCING SHALL MATCH THE SIZE AND SPACING OF THE HORIZONTAL WALL REINFORCING UNLESS OTHERWISE CALLED OUT. WHERE PERPENDICULAR WALLS HAVE DIFFERENT HORIZONTAL WALL REINFORCING, PROVIDE CORNER BARS TO MATCH THE HORIZONTAL WALL REINFORCING WITH THE GREATEST AREA OF STEEL.

TYPICAL CONCRETE WALL INTERSECTION / CORNER (308)

1" = 1'-0"

NO.	REVISION	BY	REVIEW	DATE
1	REVISED TO CONFORM TO CONSTRUCTION RECORDS	BMS	DWB	6/24/11

BRET E. BEAUPRE, STATE OF WASHINGTON, 36752, REGISTERED PROFESSIONAL ENGINEER
SIGNED: 01/28/10

JON M. CONNER, STATE OF WASHINGTON, 44672, REGISTERED PROFESSIONAL ENGINEER
SIGNED: 01/28/10

LAKE WHATCOM WATER & SEWER DISTRICT

Lake Whatcom Water and Sewer District
2010 Sewer Pump Station Improvements

STRUCTURAL DETAILS I

RH2 ENGINEERS PLANNERS SCIENTISTS

RH2 ENGINEERING, INC.
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mailbox@rh2.com
1.800.720.8052

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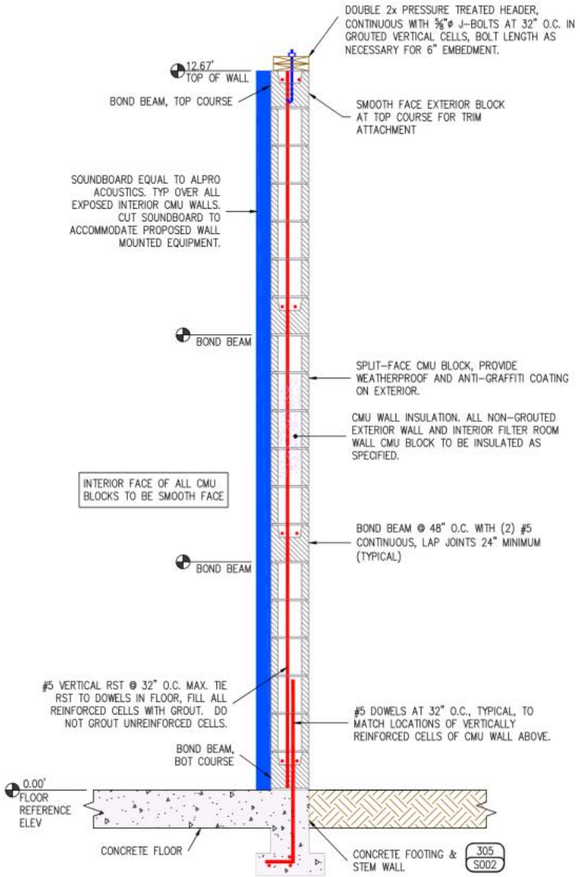
425.951.5400
12100 NE 195th Street, Suite 100

EAST WENATCHEE OFFICE
509.886.2900
300 Simon Street, Suite 5

PORT ORCHARD OFFICE
360.876.7960
600 Kitsap Street, Suite 101

SCALE: SHOWN
0 1" 2"
DRAWING IS NOT TO SCALE IF BAR IS NOT 2" LONG

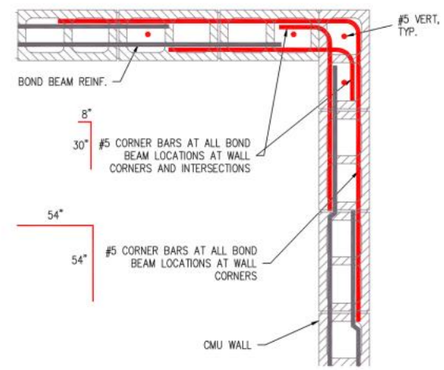
PLOT: 32	DWG NO. S002
ENGINEER: JMC	
REVIEWED: KLK	
DATE: JAN 13, 2010	SHEET NO. 5
CLIENT: LWWSD	
JOB NO.: 409-050	71
FILENAME: LS-D-STR01	



EXTERIOR CMU WALL

NOT TO SCALE

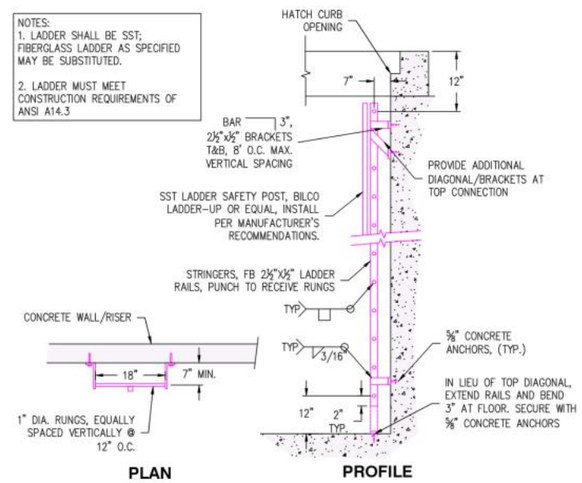
401



CMU WALL CORNER

1" = 1'-0"

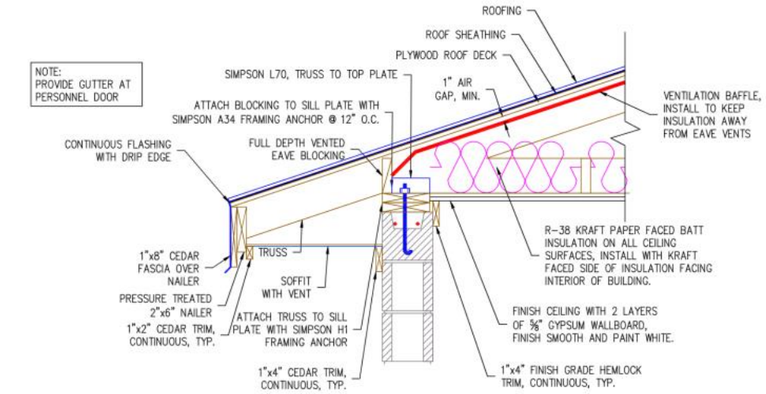
403



TYPICAL LADDER DETAIL

NOT TO SCALE

501

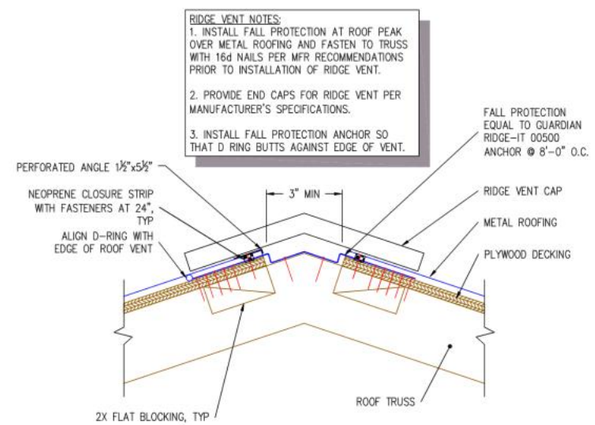


(EXTERIOR WALL)

ROOF-WALL CONNECTION

1"=1'-0"

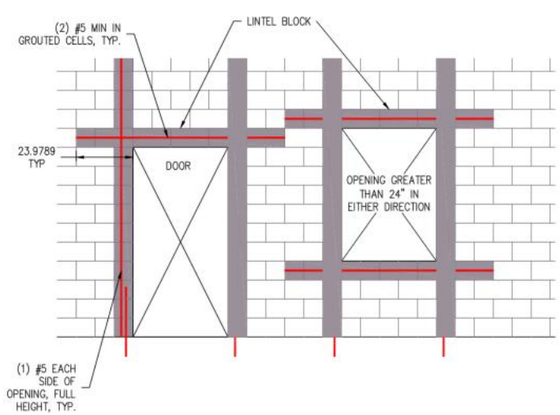
602



RIDGE VENT DETAIL

NOT TO SCALE

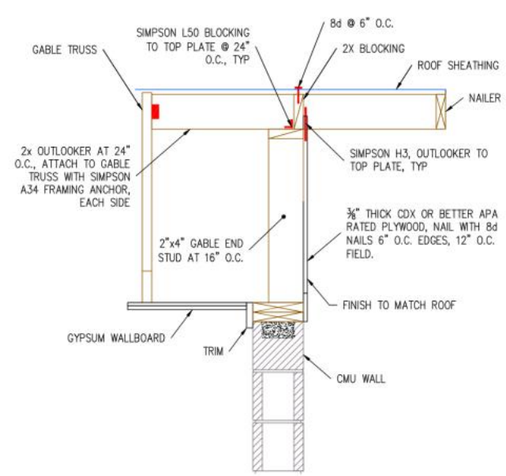
603



TYPICAL CMU OPENING

NOT TO SCALE

402

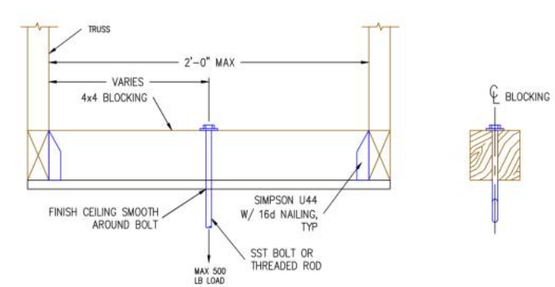


GABLE END SECTION

1"=1'-0"

601

REVISED TO CONFORM TO CONSTRUCTION RECORDS
RH2 ENGINEERING INC. 6/24/11 DATE



TRUSS SUPPORT DETAIL

NOT TO SCALE

604

NO.	REVISION	BY	REVIEW	DATE
1	REVISED TO CONFORM TO CONSTRUCTION RECORDS	BMS	DWB	6/24/11

BRET E. BEAUPRE, STATE OF WASHINGTON, 38782, REGISTERED PROFESSIONAL ENGINEER
SIGNED: 01/28/10

JON M. CONNER, STATE OF WASHINGTON, 44672, REGISTERED PROFESSIONAL ENGINEER
SIGNED: 01/28/10

LAKE WHATCOM WATER & SEWER DISTRICT — lake whatcom

Lake Whatcom Water and Sewer District
2010 Sewer Pump Station Improvements

STRUCTURAL DETAILS II

RH2 ENGINEERS PLANNERS SCIENTISTS
RH2 ENGINEERING, INC.
http://www.rh2.com
mailbox@rh2.com 1.800.720.8052
BELLINGHAM 360.676.0836 454 West Horton Road
BOTHELL 425.951.5400 12100 NE 195th Street, Suite 100
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RICHLAND 509.946.5181 114 Columbia Point Drive, Suite C
SILVERDALE 360.876.7960 2021 NW Mhyre Rd, Suite 107
TACOMA 253.272.3059 621 Pacific Avenue Suite 104

SCALE: SHOWN
0 1" 2"
DRAWING IS NOT TO SCALE IF BAR IS NOT 2" LONG

PLOT: 32	DWG NO. S003
ENGINEER: JMC	
REVIEWED: KLK	
DATE: JAN 19, 2010	SHEET NO. 6
CLIENT: LWWSD	
JOB NO.: 409-050	71
FILENAME: LS-D-STR03	

ONE-LINE DIAGRAM SYMBOLS

- CIRCUIT BREAKER
  - XXX/YY – CB SIZE & NO. OF POLES
  - ET – ELECTRONIC TRIP
  - TM – THERMAL MAGNETIC BREAKER
  - MCP – MOTOR CIRCUIT PROTECTOR
  - SE – SERVICE ENTRANCE
  - GFI – GROUND FAULT INTERRUPTER
- FUSE
- FUSED DISCONNECT SWITCH
- PLUG-IN CONNECTION
- RTM – RUN TIME METER
- OC – MOTOR OPERATION COUNTER
- SSRVS – SOLID STATE REDUCED VOLTAGE STARTER
- VARIABLE FREQUENCY DRIVE
- MOTOR STARTER
- MOTOR STARTER W/ OPERATOR DEVICES
  - A – HAND-OFF-AUTO
  - B – OPERATIONAL COUNTER
  - C – RUN TIME METER
  - D – RUN LIGHT
  - E – FAIL LIGHT
  - F – EMERGENCY STOP
- K – KIRK KEY INTERLOCK
- POWER TRANSFORMER
- CONTROL POWER TRANSFORMER
- TRANSFORMER
- CURRENT TRANSFORMER
- VOLTAGE TRANSFORMER
- CONTACTOR
- CAPACITOR
- ENGINE GENERATOR
- GENERATOR CONNECTION RECEPTACLE
- S/N – SOLID NEUTRAL
- TB – TERMINAL BLOCK
- TRANSIENT VOLTAGE SURGE SUPPRESSER
- TVSS – TRANSIENT VOLTAGE SURGE SUPPRESSER (ALTERNATIVE)

GROUNDING SYSTEM SYMBOLS

- GROUND
- METAL PIPE GROUND
- CONNECTION POINT, EXOTHERMIC WELD. CADWELD OR APPROVED EQUAL.
- GROUND ROD SIZED PER N.E.C. USE EXOTHERMIC WELD CONNECTION AT THE GROUND ROD.
- PIGTAIL, BARE COPPER, LENGTH AS REQUIRED, 8' MINIMUM.
- CONNECTION POINT, MECHANICAL, COMPRESSION TYPE.

ELECTRICAL SITE PLAN SYMBOLS

- UTILITY POLE AND GUY WIRE
- HH – MANHOLE OR HANDHOLE
- P – BURIED POWER VAULT OR MANHOLE
- T – TELEPHONE VAULT OR PEDESTAL
- F – FIBER OPTICS VAULT OR PEDESTAL
- LUMINAIRE
- PAD-MOUNT TRANSFORMER

PANELBOARDS, SWITCHES, AND EQUIPMENT

- SERVICE ENTRANCE, SWITCHGEAR, MOTOR CONTROL CENTER, OR PANELBOARD
- SURFACE MOUNTED PANELBOARD
- FLUSHED MOUNTED PANELBOARD
- NXX – FIELD CONTROL STATION WITH NEMA REQUIREMENTS.
  - N1 – NEMA 1
  - N3R – NEMA 3R
  - N4 – NEMA 4
  - N4SS – NEMA 4 STAINLESS STEEL
  - N4F – NEMA 4 FIBERGLASS
  - N6 – NEMA 6
  - N12 – NEMA 12 GASKETED
- EQUIPMENT MOUNTING STAND
- HEATER, WATTAGE NOTED
- EQUIPMENT CONNECTION
- M – SINGLE PHASE MOTOR. HORSEPOWER AS NOTED
- 100 – THREE PHASE MOTOR. HORSEPOWER AS NOTED
- HP – SINGLE PHASE MOTOR. HORSEPOWER AS NOTED
- ELECTRICAL PLUG
- DISCONNECT SWITCH
- F – FUSED DISCONNECT SWITCH
- COMBINATION MOTOR STARTER AND DISCONNECT SWITCH

RECEPTACLES AND JUNCTION BOX SYMBOLS

- J – CEILING JUNCTION BOX
- J – WALL JUNCTION BOX
- J – FLOOR JUNCTION BOX
- DUPLEX WALL RECEPTACLE , 120V
  - WP = WEATHERPROOF
  - G = GROUNDED
  - IG = ISOLATED GROUND
  - GF = GROUND FAULT INTERRUPTER
- DOUBLE DUPLEX
- SINGLE RECEPTACLE, 120V
- SINGLE RECEPTACLE, 240V
- DUPLEX FLOOR RECEPTACLE, 120V
- SPECIAL PURPOSE WALL RECEPTACLE, RATING AS NOTED
- CLOCK
- TV – TELEVISION
- TELEPHONE
- TELEPHONE/DATA WITH CABLE
- TELEPHONE/DATA WITHOUT CABLE

SWITCH OUTLETS

- S – STANDARD SWITCH, 120VAC, 20 AMP
- S_3 – 3WAY – 3-WAY SWITCH, 120VAC, 20 AMP
- S_{HOA} – HOA – 3-POSITION SWITCH, 120VAC, 20 AMP, LABEL SWITCH POSITION HAND-OFF-MOTION OR PHOTO
- S_{DEE} – SINGLE-POLE
- S_2 – DOUBLE-POLE
- S_3 – THREE WAY
- S_4 – FOUR WAY
- S_D – DIMMER
- S_P – PILOT-LIGHTED
- S_K – KEY-OPERATED
- S_{LV} – LOW VOLTAGE
- S_M – MASTER
- PUSHBUTTON

LIGHTING FIXTURES/DEVICES

- FLUORESCENT FIXTURE
- WALL/CEILING MOUNTED FIXTURE
- EMERGENCY LIGHT WITH SELF CONTAINED BATTERY
- SURFACE OR PENDANT MOUNTED FIXTURE
- RECESSED FIXTURE
- MD – MOTION DETECTOR
- PC – PHOTO CONTROL CELL

FIRE SYSTEM SYMBOLS

- H – HEAT DETECTOR
- S – SMOKE DETECTOR
- D – FIRE ALARM DISPATCH STROBE ALARM
- A – FIRE ALARM AUDIBLE/VISUAL ALARM
- F – FIRE ALARM MANUAL PULL STATION

ADDITIONAL SYMBOLS

- S – SOUND SYSTEM SPEAKER
- V – SOUND SYSTEM VOLUME CONTROL
- B – DOORBELL

VALVE SYMBOLS

- PILOT VALVE SOLENOID
- VALVE
- CHECK VALVE
- CONTROL VALVE

PID FORMAT

XYZ ABC

- SUPERSCRIPT
- INSTRUMENT BUBBLE

X=MEASURED OR INITIATING VARIABLE
Y=READOUT OR FUNCTION
Z=MODIFIER
ABC=LOOP NUMBER

ISA STANDARDS FOR P&ID

	1st LETTER (MEASURED OR INITIATING VARIABLE)	2nd LETTER (READOUT OR FUNCTION)	3rd LETTER (MODIFIER)
A	ANALYSIS	ALARM	
B	BURNER (BATTERY)		
C	COMMUNICATION	CONTROL	(BACK)
D	DENSITY	(DELAY)	CLOSED
E	VOLTAGE		
F	FLOW		FAIL (FLOW)
G	GAS		GREEN BULB
H	HAND	MANUAL	HIGH
	CURRENT (INTRUSION)	INDICATE	
J	POWER (EQUIPMENT)		
K	TIME	CONTROL STATION	
L	LEVEL	LIGHT	LOW
M	MOTION		MIDDLE
N	USERS CHOICE		
O	USERS CHOICE		OPEN
P	PRESSURE	(PUMP)	(PRESSURE)
Q	QUANTITY (EVENT)	TOTALIZE	
R	RADIATION (REQ'D)	RECORD	RED BULB
S	SPEED (SMOKE)	SWITCH	SOLENOID
T	TEMPERATURE	TRANSMITTER	(TRANSMITTER)
U	MULTI VARIABLE	MULTI FUNCTION	
V	VISCOSITY (pH)	VALVE	
W	WEIGHT		
X	UNCLASSIFIED		
Y	USERS CHOICE	RELAY (TRANSDUCER)	
Z	POSITION		

ABBREVIATIONS

- SPDT – SINGLE POLE, DOUBLE THROW
- SPST – SINGLE POLE, SINGLE THROW
- DPST – DOUBLE POLE, SINGLE THROW
- WP – WEATHER-PROOF
- GFI – GROUND FAULT INTERRUPT
- P – POWER
- C – CONTROL
- J – INSTRUMENTATION
- PC – POWER & CONTROL
- CJ – CONTROL & INSTRUMENTATION
- CKT. – CIRCUIT
- C.O. – CONDUIT ONLY
- N.L. – NIGHT LIGHT
- AL. – ALUMINUM
- CU. – COPPER

HOA	HAND-OFF-AUTO SWITCH
ETM	RUN TIME METER
OC	OPERATION COUNTER
MRIL	MOTOR RUN INDICATION LIGHT
SFIL	SEAL FAIL INDICATION LIGHT
SFTR	SEAL FAIL TRIP RESET
OTIL	OVER TEMPERATURE INDICATION LIGHT
MOIL	MOTOR OVERLOAD INDICATION LIGHT
HMI	HUMAN MACHINE INTERFACE

INDICATE TYPE BY LETTER

- V
- AH

INSTRUMENT METER

- A – AMMETER
- AH – AMPERE-HOUR
- PF – POWER FACTOR
- V – VOLTMETER
- VA – VOLT AMMETER
- VAR – VARMETER
- VARH – VARHOUR METER
- W – WATTMETER
- WH – WATTHOUR METER

RACEWAY LEGEND

SITE PLAN LEGEND

- P – PROPOSED POWER
- TEL – PROPOSED TELEPHONE
- TELM – PROPOSED INSTRUMENTATION
- FO – PROPOSED FIBER OPTICS

BUILDING OR FACILITY PLAN LEGEND

- 480 VOLT EXPOSED RACEWAY
- 480 VOLT WIRING CONCEALED, UNDERGROUND, EMBEDDED, OR CONCRETE ENCASED RACEWAY
- 120/208/240 VOLT EXPOSED RACEWAY
- 120/208/240V WIRING CONCEALED, UNDERGROUND, EMBEDDED, OR CONCRETE ENCASED RACEWAY
- CONTROL OR INSTRUMENTATION EXPOSED RACEWAY
- CONTROL OR INSTRUMENTATION, UNDERGROUND, EMBEDDED, OR CONCRETE ENCASED RACEWAY
- HOME RUN TO PANELBOARD OR AS INDICATED
- CONDUIT RUN, BROKEN AND CONTINUED SAME SHEET OR AS NOTED
- FLEXIBLE CONDUIT
- CONDUIT RUN. HATCH MARKS INDICATE NUMBER OF CONDUCTORS
- ½" GRC, 2-#12 – CALLOUT INDICATING CONDUIT SIZE, NUMBER AND SIZE OF WIRE.
- XXX – CALLOUT INDICATING CONDUIT PER SCHEDULE
- CONDUIT BENT UP OR TOWARD
- CONDUIT BENT DOWN OR AWAY
- CAPPED CONDUIT

PROJECT SPECIFIC ONE-LINE DIAGRAM INFORMATION

- EXISTING EQUIPMENT AND CONDUIT
- PROPOSED EQUIPMENT AND CONDUIT
- GROUNDING EQUIPMENT AND CONDUCTORS

ELECTRICAL & SIGNAL PLAN DEVICES

- SV – SOLENOID VALVE COIL
- MV – MOTORIZED VALVE COIL
- M – MOTOR
- FS – FLOOD SWITCH
- LS – LIMIT SWITCH
- PB – PANIC BUTTON
- T – THERMOSTAT SWITCH
- ZS KEY – INTRUSION SWITCH – KEY
- ZS S – INTRUSION SWITCH
- MD – MOTION DETECTOR
- LT – LEVEL TRANSDUCER
- HE – HEATING ELEMENT
- PS – PRESSURE SWITCH
- PE – PRESSURE ELEMENT
- FE – FLOW ELEMENT
- AE – ANALYSIS ELEMENT

LADDER LOGIC SYMBOL LEGEND

INDICATOR LIGHT A – AMBER G – GREEN B – BLUE R – RED C – CLEAR W – WHITE	RELAY (XYZ 123) TR – Timed relay CR – Control relay
LIMIT SWITCH, NORMALLY OPEN	FLOAT SWITCH, NORMALLY OPEN
LIMIT SWITCH, NORMALLY CLOSED	FLOAT SWITCH, NORMALLY CLOSED
TIME DELAY CONTACT, NORMALLY OPEN, TIME TO CLOSE	PUSHBUTTON, NORMALLY CLOSED
TIME DELAY CONTACT, NORMALLY CLOSED, TIME TO OPEN	PUSHBUTTON, NORMALLY OPEN
TIME DELAY CONTACT, NORMALLY OPEN, TIME TO OPEN	THERMO SWITCH, NORMALLY OPEN
TIME DELAY CONTACT, NORMALLY CLOSED, TIME TO CLOSE	THERMO SWITCH, NORMALLY CLOSED
RELAY CONTACT, NC RELAY CONTACT, NO RELAY CONTACT, INSTANTANEOUS CHANGE	FLOWSWITCH, NORMALLY OPEN
PRESSURE SWITCH, NORMALLY OPEN	FLOWSWITCH, NORMALLY CLOSED
PRESSURE SWITCH, NORMALLY CLOSED	2 POLE SWITCH
	3 POLE SWITCH

P&ID BUBBLE IDENTIFICATION CHART

EXISTING	FUNCTION
	INSTRUMENT IDENTIFICATION BUBBLE
	FIELD MOUNTED DEVICE OR INSTRUMENT
	FRONT PANEL MOUNTED INSTRUMENT OR DEVICE (LOCAL PANEL)
	BACK PANEL MOUNTED INSTRUMENT OR DEVICE (LOCAL PANEL)
	FRONT PANEL MOUNTED INSTRUMENT OR DEVICE (LAB ROOM PANEL)
	OPERATOR INTERFACE DISPLAY (LOCAL PANEL)
	OPERATOR INTERFACE DISPLAY (LAB ROOM PANEL)

GENERAL NOTES

1. THIS IS A STANDARD LEGEND. NOT ALL OF THE INFORMATION SHOWN ON THIS PAGE WILL APPEAR IN THIS SET OF PLANS.

2. THESE DRAWINGS, WITH THE EXCEPTION OF THE CONTROL PANEL LAYOUT DRAWINGS, ARE DIAGRAMMATIC ONLY; EXACT LOCATIONS OF ELECTRICAL EQUIPMENT SHALL BE DETERMINED IN THE FIELD BY THE CONTRACTOR. THE INSTALLATION OF ALL EQUIPMENT SHOWN ON THESE DRAWINGS OR DESCRIBED IN THE SPECIFICATIONS SHALL CONFORM TO THE REQUIREMENTS SET FORTH IN THE LATEST EDITIONS OF ALL APPLICABLE CODES AND UTILITY COMPANY STANDARDS. CONTACT THE UTILITY COMPANY REPRESENTATIVES AND VERIFY THEIR REQUIREMENTS.

3. NOTIFY THE ENGINEER IMMEDIATELY IF CONFLICTS IN EQUIPMENT LOCATIONS ARE DISCOVERED OR IF PROBLEMS ARISE DUE TO FIELD CONDITIONS, LACK OF INFORMATION OR ANY OTHER REASON. NO PAYMENT WILL BE MADE FOR CHANGES WHICH HAVE NOT BEEN REVIEWED AND APPROVED BY THE ENGINEER.

RECORD DRAWING
REVISED TO CONFORM
TO CONSTRUCTION RECORDS
6/24/11
RH2 ENGINEERING INC. DATE

NO.	REVISION	BY	REVIEW	DATE
1	REVISED TO CONFORM TO CONSTRUCTION RECORDS	MWB	DWB	6/24/11

BRET E. BEAUPRE – STATE OF WASHINGTON – 36752 – REGISTERED PROFESSIONAL ENGINEER
SIGNED: 01/28/10

CHRISTOPHER M. MORRIS – STATE OF WASHINGTON – 45317 – REGISTERED PROFESSIONAL ENGINEER
SIGNED: 01/28/10

LAKE WHATCOM WATER & SEWER DISTRICT – lake whatcom

Lake Whatcom Water and Sewer District
2010 Sewer Pump Station Improvements

ELECTRICAL LEGEND

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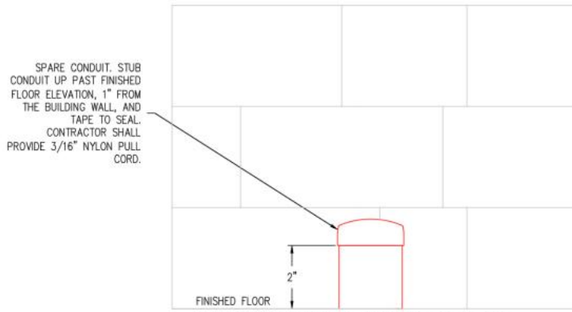
114 Columbia Point Drive, Suite C

SILVERDALE 360.876.7960
2021 NW Mhyre Rd, Suite 107

TACOMA 253.272.2059
621 Pacific Avenue Suite 104

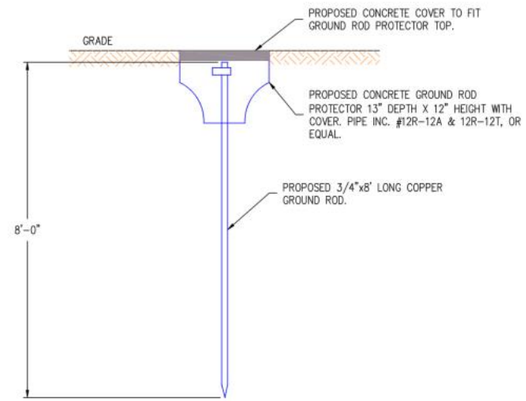
SCALE: SHOWN
0 1" 2"
DRAWING IS NOT TO SCALE IF BAR IS NOT 2" LONG

PLOT: 1	DWG NO. E001
ENGINEER: DY	
REVIEWED: CMR	
DATE: JAN 22, 2010	SHEET NO. 7
CLIENT: LWWSD	JOB NO.: 409-050
FILENAME: LS-D-ELEC01	71



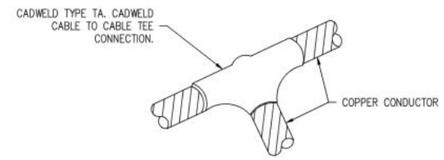
CONDUIT STUB-UP DETAIL

NOT TO SCALE



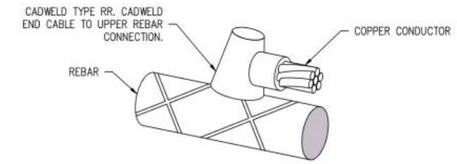
GROUND ROD DETAIL

NO SCALE



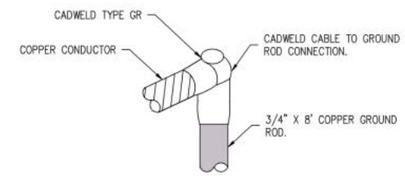
GROUND TEE DETAIL

NOT TO SCALE



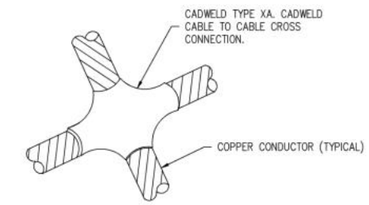
GROUND REBAR DETAIL

NOT TO SCALE



GROUND TEE DETAIL

NOT TO SCALE

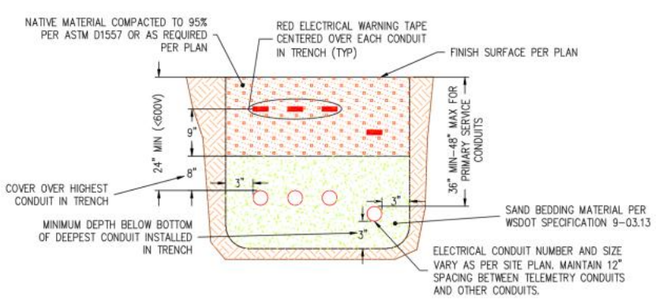


GROUND CROSS DETAIL

NOT TO SCALE

INTRUSION SWITCH DETAIL

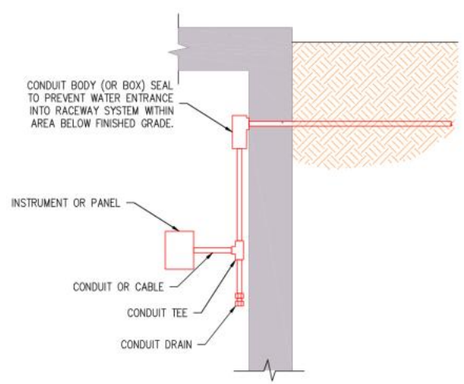
NOT TO SCALE



TYPICAL ELECTRICAL TRENCH DETAIL

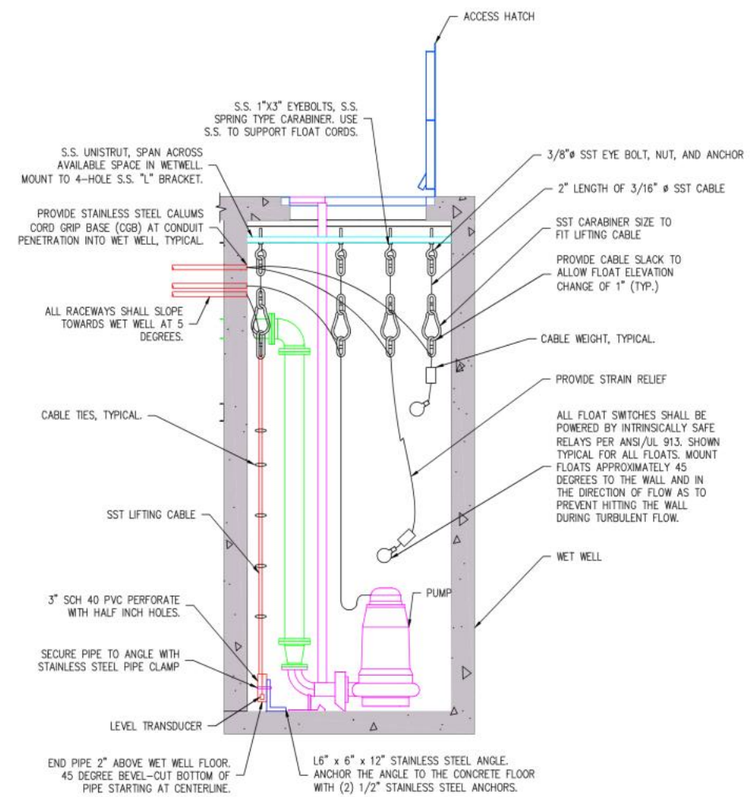
NOT TO SCALE

NOTE: BURY DEPTH OF CONDUIT AND HORIZONTAL SPACING SHALL BE CONFIRMED WITH SERVING UTILITY BEFORE CONSTRUCTION.



CONDUIT SEAL/DRAIN INSTALLATION

NOT TO SCALE



RANCH HOUSE AND AFTERNOON BEACH WET WELL LEVEL TRANSDUCER AND FLOAT SWITCH DETAIL

A E002

NOT TO SCALE

RECORD DRAWING
REVISED TO CONFORM
TO CONSTRUCTION RECORDS
6/24/11
RH2 ENGINEERING INC. DATE

NO.	REVISION	BY	REVIEW	DATE
1	REVISED TO CONFORM TO CONSTRUCTION RECORDS	MWB	DWB	6/24/11

BRET E. BEAUPRE — STATE OF WASHINGTON — 36752 — REGISTERED PROFESSIONAL ENGINEER
SIGNED: 01/28/10

CHRISTOPHER M. ROBERTS — STATE OF WASHINGTON — 45317 — REGISTERED PROFESSIONAL ENGINEER
SIGNED: 01/28/10

LAKE WHATCOM WATER & SEWER DISTRICT — lake whatcom

Lake Whatcom Water and Sewer District
2010 Sewer Pump Station Improvements

ELECTRICAL DETAILS I

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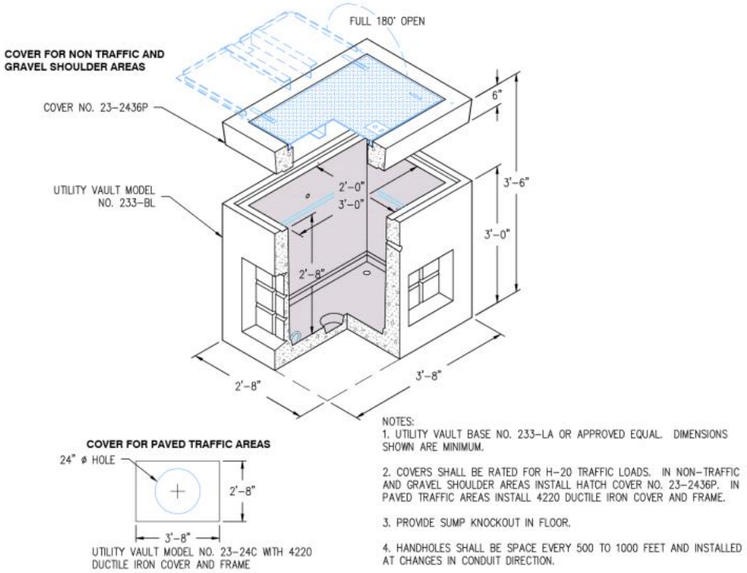
SILVERDALE 360.876.7960
2021 NW Myhre Rd, Suite 107

TACOMA 253.272.2059
621 Pacific Avenue Suite 104

SCALE: SHOWN
0 1" 2"
DRAWING IS NOT TO SCALE IF BAR IS NOT 2" LONG

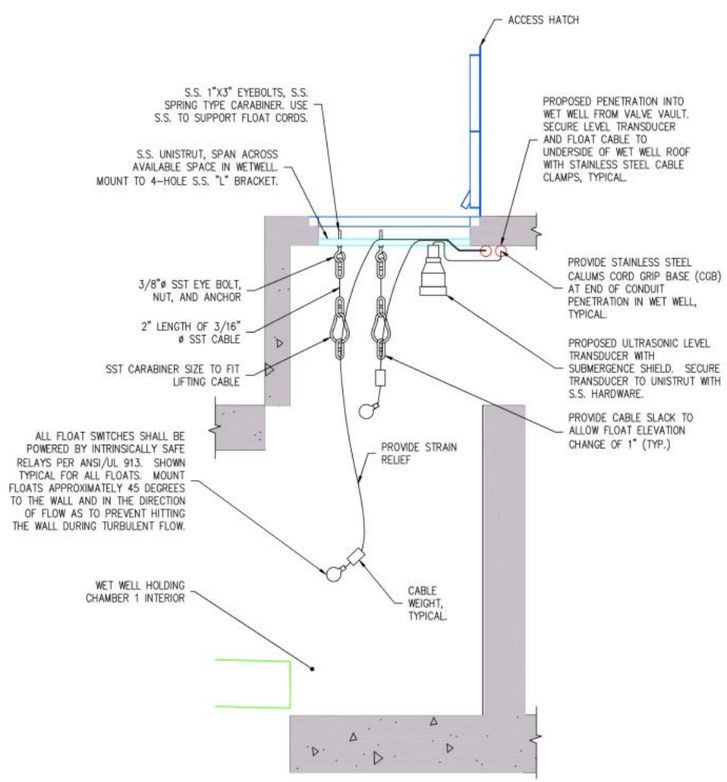
PLOT: 48	DWG NO. E002
ENGINEER: CMR	
REVIEWED: MLM	
DATE: JAN 22, 2010	SHEET NO. 8
CLIENT: LWWSD	
JOB NO.: 409-050	71
FILENAME: LS-D-ELEC02	

RECORD DRAWING
REVISED TO CONFORM
TO CONSTRUCTION RECORDS
RH2 ENGINEERING INC. 6/24/11 DATE

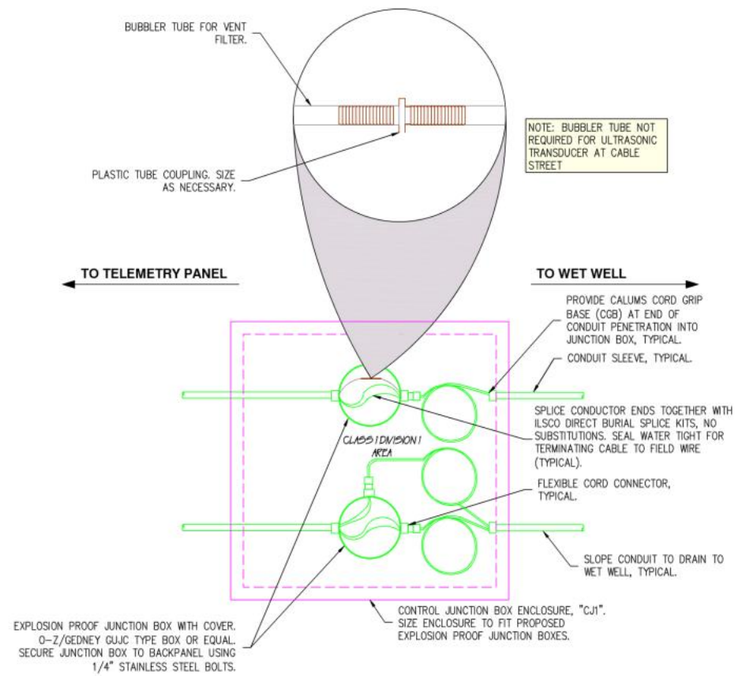


NOTES:
1. UTILITY VAULT BASE NO. 233-LA OR APPROVED EQUAL. DIMENSIONS SHOWN ARE MINIMUM.
2. COVERS SHALL BE RATED FOR H-20 TRAFFIC LOADS. IN NON-TRAFFIC AND GRAVEL SHOULDER AREAS INSTALL HATCH COVER NO. 23-2436P. IN PAVED TRAFFIC AREAS INSTALL 4220 DUCTILE IRON COVER AND FRAME.
3. PROVIDE SUMP KNOCKOUT IN FLOOR.
4. HANDHOLES SHALL BE SPACE EVERY 500 TO 1000 FEET AND INSTALLED AT CHANGES IN CONDUIT DIRECTION.

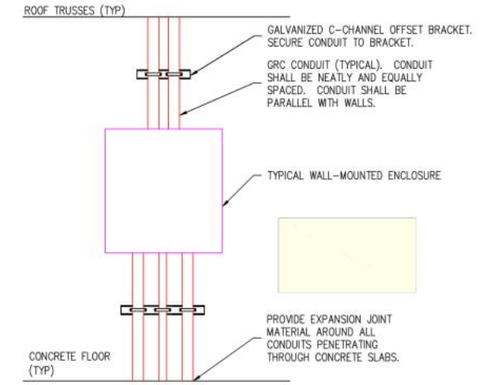
ELECTRICAL HANDHOLE DETAIL
NOT TO SCALE



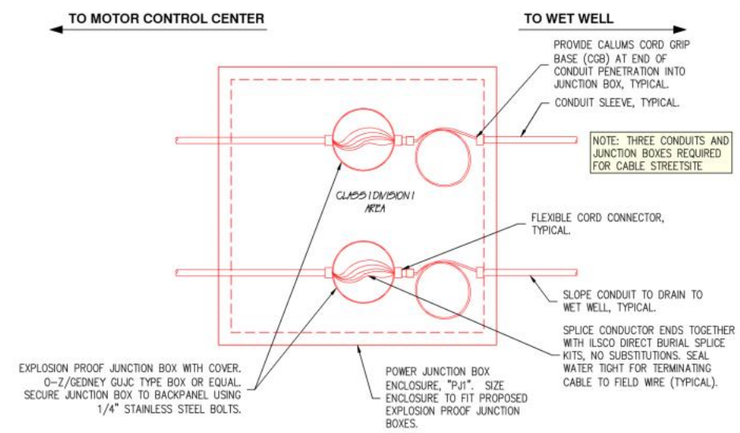
CABLE STREET WET WELL ULTRASONIC LEVEL TRANSDUCER AND FLOAT SWITCH DETAIL
A E003
NOT TO SCALE



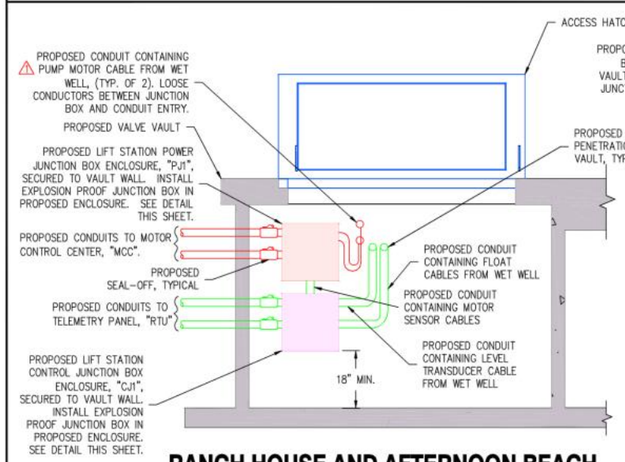
FLOAT/LEVEL TRANSMITTER CABLE EXPLOSION PROOF JUNCTION BOX SPLICE DETAIL
NOT TO SCALE



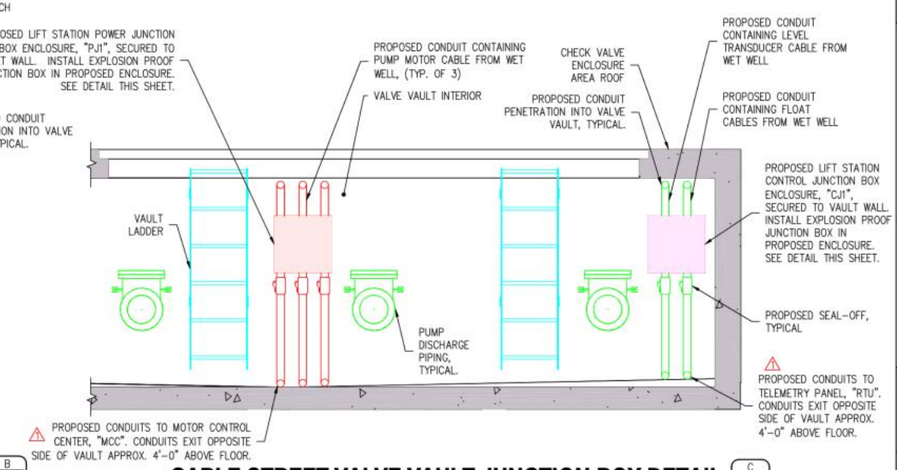
SURFACE MOUNTED CONDUIT DETAIL
NOT TO SCALE



MOTOR CABLE EXPLOSION PROOF JUNCTION BOX SPLICE DETAIL
NOT TO SCALE



RANCH HOUSE AND AFTERNOON BEACH VALVE VAULT JUNCTION BOX DETAIL
B E003
NOT TO SCALE



CABLE STREET VALVE VAULT JUNCTION BOX DETAIL
C E003
NOT TO SCALE

NO.	REVISION	BY	REVIEW	DATE
1	REVISED TO CONFORM TO CONSTRUCTION RECORDS	MWB	DWB	6/24/11

BRET E. BEAUPRE, STATE OF WASHINGTON, 36752, REGISTERED PROFESSIONAL ENGINEER
SIGNED: 01/28/10

CHRISTOPHER M. ROBERTS, STATE OF WASHINGTON, 45317, REGISTERED PROFESSIONAL ENGINEER
SIGNED: 01/28/10

LAKE WHATCOM WATER & SEWER DISTRICT

Lake Whatcom Water and Sewer District
2010 Sewer Pump Station Improvements

ELECTRICAL DETAILS II

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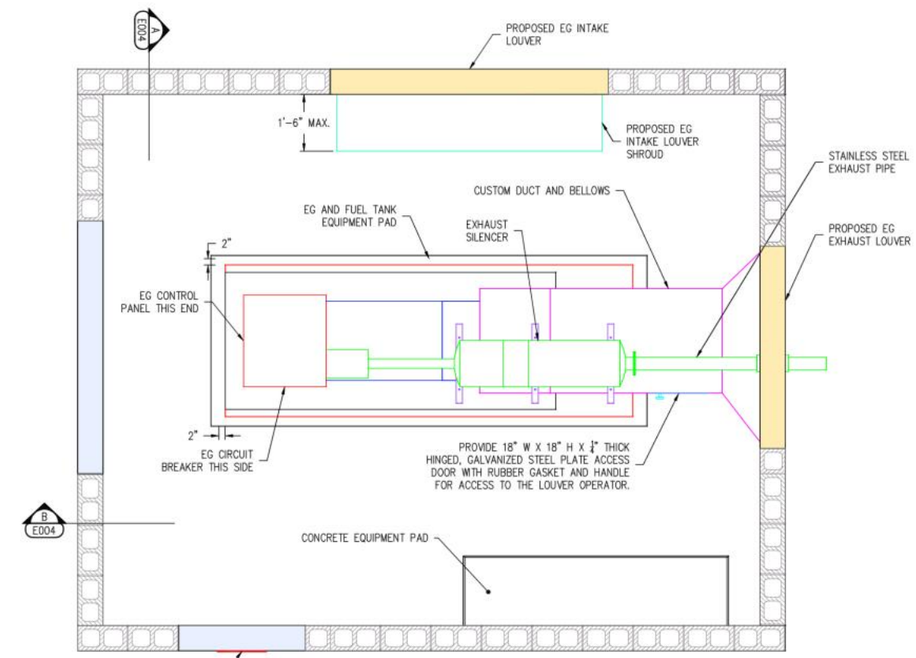
EAST WENATCHEE 509.886.2900 300 Simon Street, Suite 5
RICHLAND 509.946.5181 114 Columbia Point Drive, Suite C
SILVERDALE 360.876.7960 2021 NW Myhre Rd, Suite 107
TACOMA 253.272.2059 621 Pacific Avenue Suite 104

SCALE: SHOWN
0 1" 2"
DRAWING IS NOT TO SCALE IF BAR IS NOT 2" LONG

PLOT: 48	DWG NO. E003
ENGINEER: CMR	
REVIEWED: MLM	
DATE: JAN 22, 2010	SHEET NO. 9
CLIENT: LWWSD	
JOB NO.: 409-050	71
FILENAME: LS-D-ELEC02	

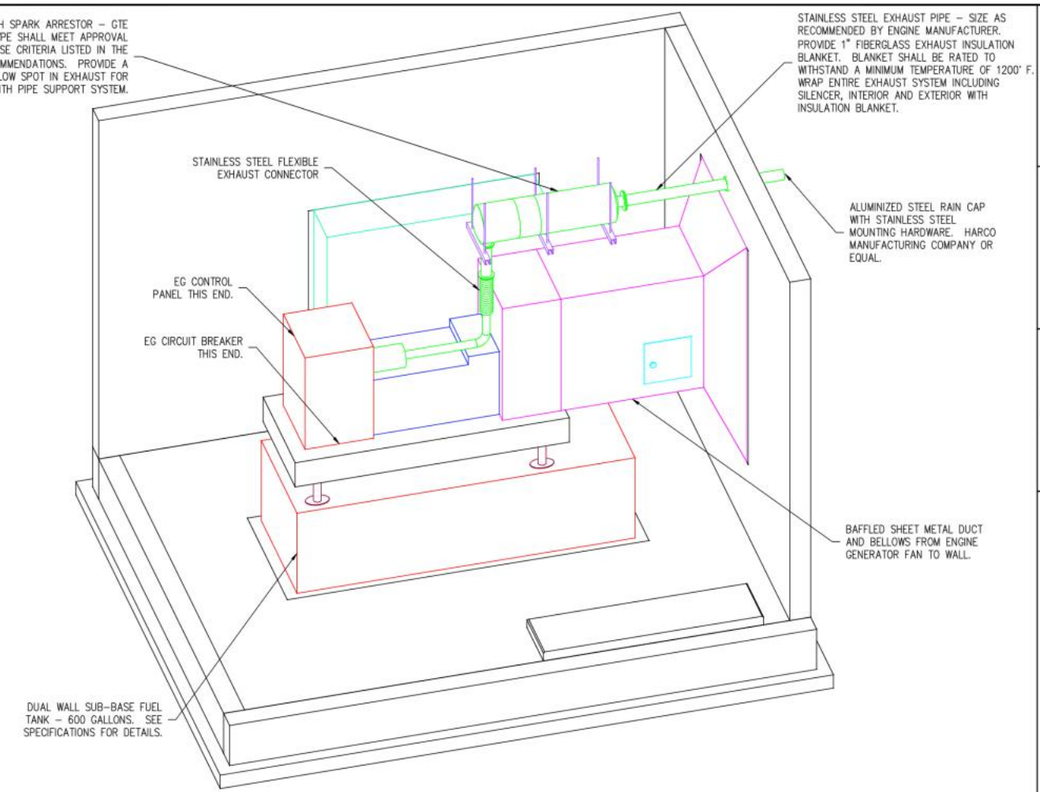


ENGINE GENERATOR - PLAN

1/2" = 1'-0"

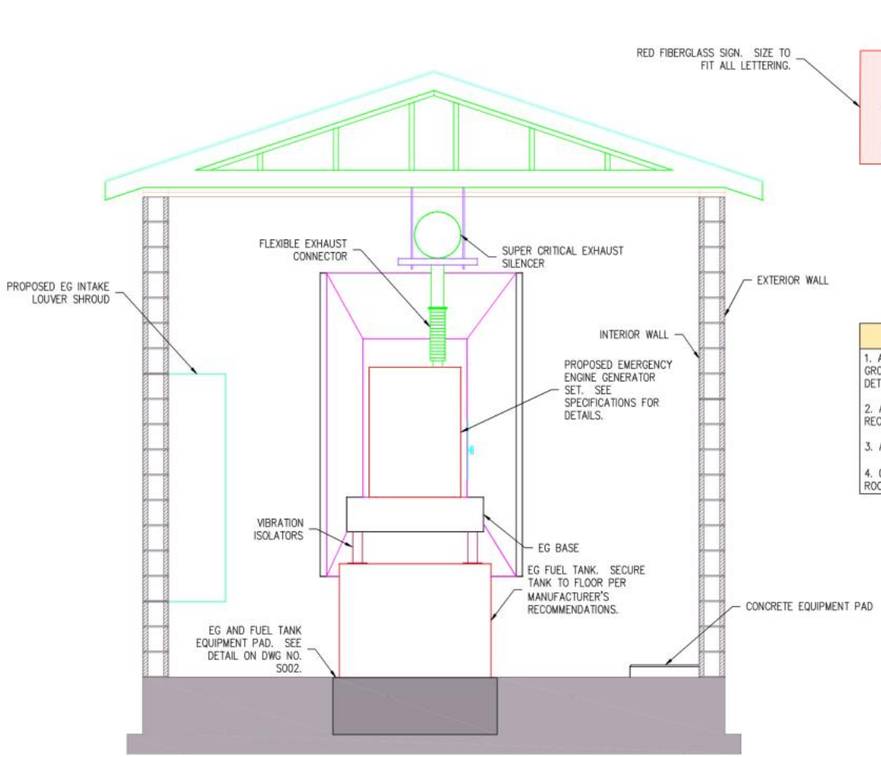
SUPER CRITICAL GRADE EXHAUST SILENCER WITH SPARK ARRESTOR – GTE INDUSTRIES, MODEL NO. 202-6100-2-S. SIZE AND TYPE SHALL MEET APPROVAL OF ENGINE GENERATOR MANUFACTURER AND THE NOISE CRITERIA LISTED IN THE SPECIFICATIONS. MOUNT PER MANUFACTURER'S RECOMMENDATIONS. PROVIDE A STAINLESS STEEL TAP AND BRASS BALL VALVE AT LOW SPOT IN EXHAUST FOR DRAINING CONDENSATION. PROVIDE WITH PIPE SUPPORT SYSTEM.

NOTE:
RANCH HOUSE GENERATOR BUILDING SHOWN FOR REFERENCE. ENGINE GENERATOR DETAILS APPLY TO BOTH CABLE STREET AND RANCH HOUSE



ENGINE GENERATOR - OBLIQUE

1/2" = 1'-0"



ENGINE GENERATOR - SOUTH VIEW

A E004

1/2" = 1'-0"

RED FIBERGLASS SIGN. SIZE TO FIT ALL LETTERING.

BLOCK LETTERING TYPICAL.

CAUTION
AUTOMATIC EQUIPMENT MAY
START AT ANYTIME.
EAR PROTECTION REQUIRED.

3" HIGH WHITE BLOCK LETTERING

2" HIGH WHITE BLOCK LETTERING

CAUTION SIGN DETAIL

NOT TO SCALE

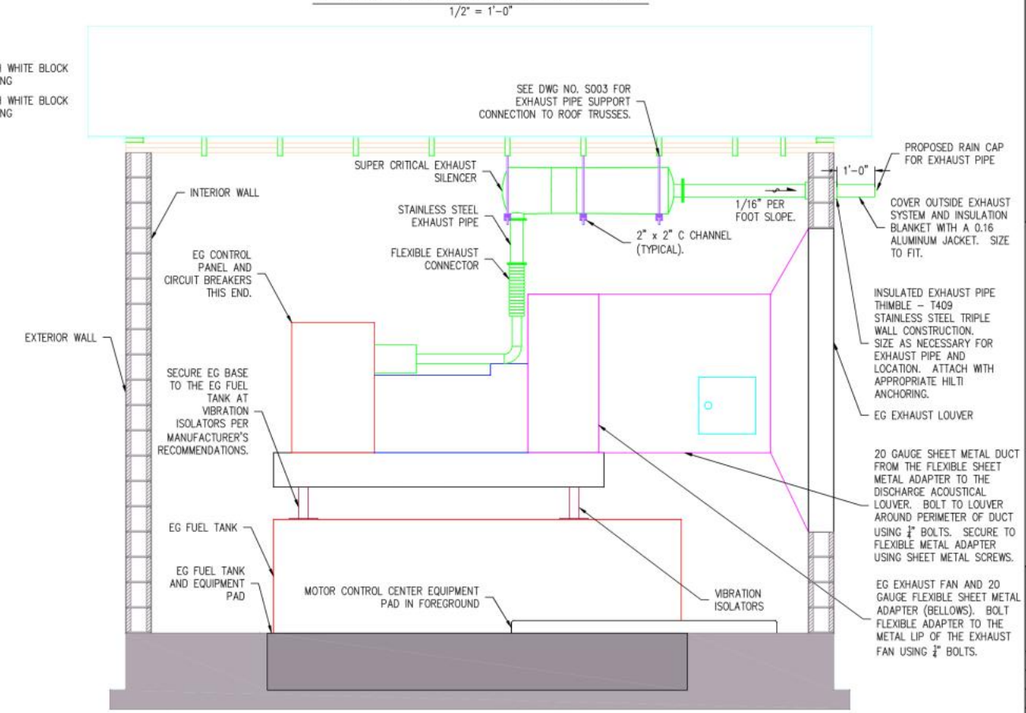
SIGN ATTACHED TO DOOR

EG NOTES

1. ALL PIPE PENETRATIONS SHALL BE GROUTED WITH NON-SHRINK GROUT UNLESS NOTED OTHERWISE. SEE DWG NO. M001 FOR DETAILS.
2. ALL EXHAUST PIPING SHALL BE STAINLESS STEEL. SIZE AS RECOMMENDED BY ENGINE MANUFACTURER.
3. ALL STAINLESS STEEL USED IN EG ROOM SHALL BE TYPE 304.
4. CONTRACTOR SHALL MAINTAIN 9" OF CLEARANCE BETWEEN THE ROOF AND THE ALUMINUM JACKET AROUND THE EG EXHAUST.

REVISED TO CONFORM TO CONSTRUCTION RECORDS

RH2 ENGINEERING INC. 6/24/11 DATE



B E004

ENGINE GENERATOR - EAST VIEW

1/2" = 1'-0"

NO.	REVISION	BY	REVIEW	DATE
1	REVISED TO CONFORM TO CONSTRUCTION RECORDS	MWB	DWB	6/24/11

BRET E. BEAUPRE, STATE OF WASHINGTON, 38752, REGISTERED PROFESSIONAL ENGINEER
SIGNED: 01/28/10

CHRISTOPHER M. ROBERTS, STATE OF WASHINGTON, 45317, REGISTERED PROFESSIONAL ENGINEER
SIGNED: 01/28/10

LAKE WHATCOM WATER & SEWER DISTRICT

Lake Whatcom Water and Sewer District
2010 Sewer Pump Station Improvements

GENERATOR DETAILS

RH2 ENGINEERS PLANNERS SCIENTISTS

RH2 ENGINEERING, INC.
http://www.rh2.com
mailbox@rh2.com 1.800.720.8052

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12100 NE 195th Street, Suite 100

EAST WENATCHEE 509.886.2900
300 Simon Street, Suite 5

RICHLAND 509.946.5181
114 Columbia Point Drive, Suite C

SILVERDALE 360.876.7960
2021 NW Myhre Rd, Suite 107

TACOMA 253.272.2050
621 Pacific Avenue Suite 104

SCALE: SHOWN
0 1" 2"
DRAWING IS NOT TO SCALE IF BAR IS NOT 2" LONG

PLOT: 48	DWG NO. E004
ENGINEER: CMR	
REVIEWED: MLM	
DATE: JAN 22, 2010	SHEET NO. 10
CLIENT: LWWSD	
JOB NO.: 409-050	71
FILENAME: LS-D-ELEC03	

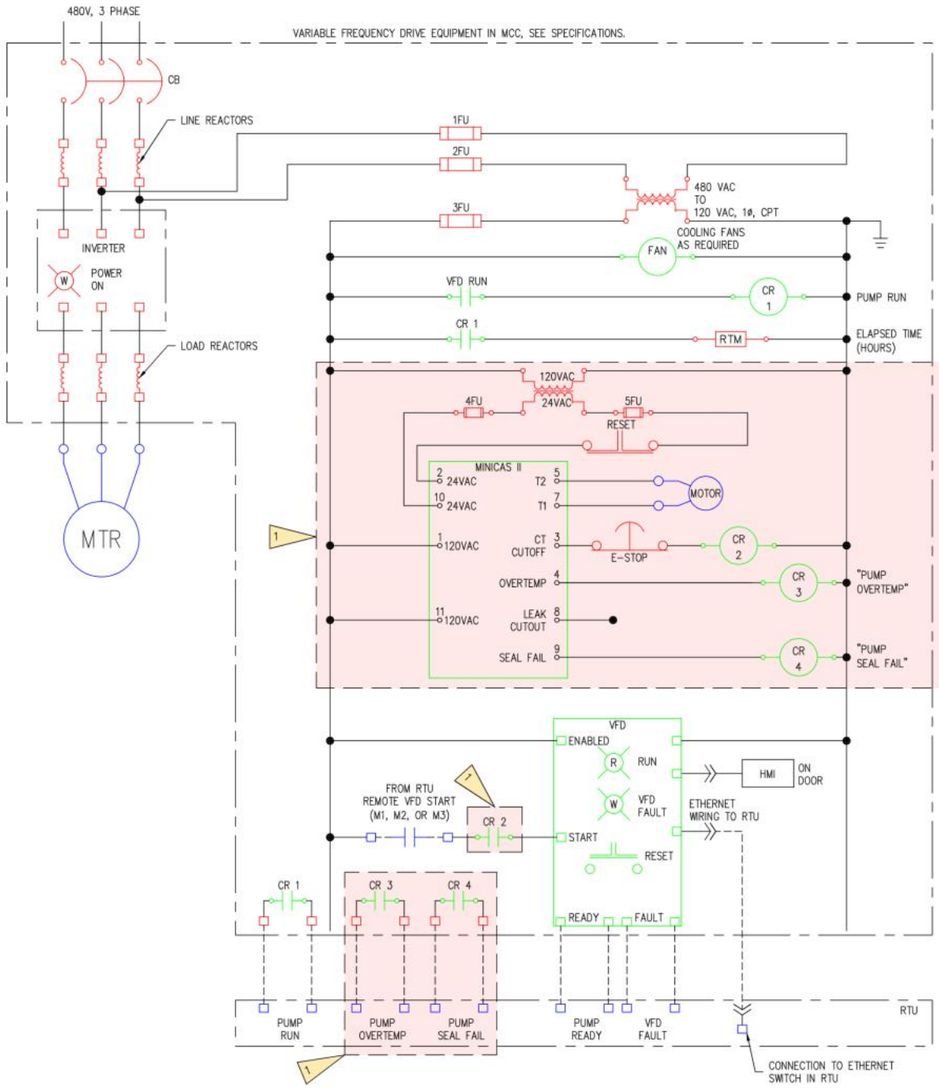

DIAGRAM 1: TYPICAL PUMP CONTROL

NO SCALE

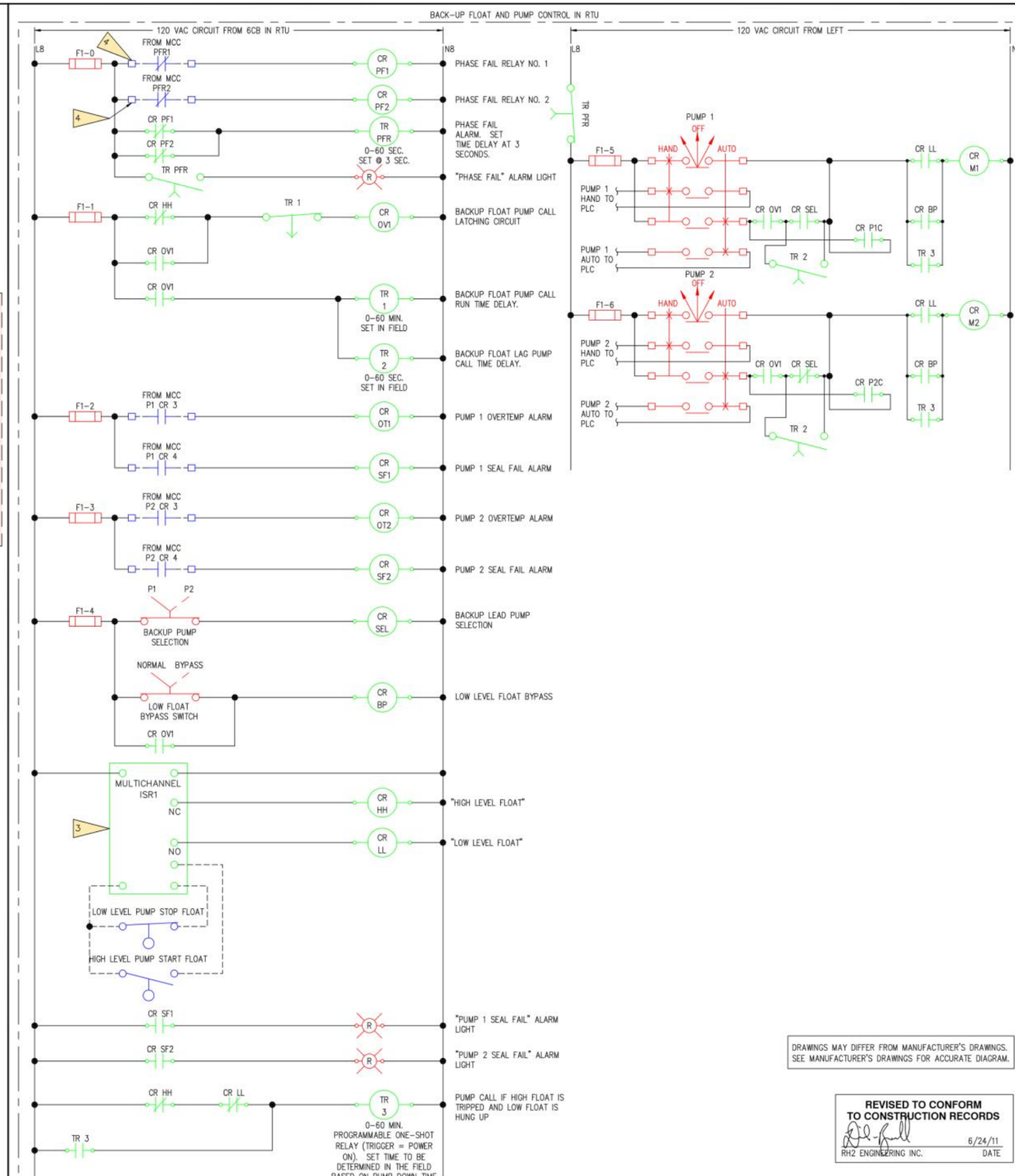

DIAGRAM 2: BACK-UP FLOAT AND PUMP CONTROL IN RTU, AFTERNOON BEACH

NO SCALE

DRAWINGS MAY DIFFER FROM MANUFACTURER'S DRAWINGS. SEE MANUFACTURER'S DRAWINGS FOR ACCURATE DIAGRAM.

REVISED TO CONFORM TO CONSTRUCTION RECORDS
RH2 ENGINEERING INC. 6/24/11 DATE

ELECTRICAL NOTES

1. 1. FLYGT MINICAS EQUIPMENT AND WIRING ONLY REQUIRED FOR AFTERNOON BEACH LIFT STATION PUMPS.
2. 2. PROVIDE SEPARATE FUSES AND CONTROL LOGIC WIRING FOR EACH VFD.
3. 3. MULTICHANNEL INTRINSICALLY SAFE RELAY, DIVERSIFIED ELECTRONICS, MODEL NO. ISL-120-AAE. NO SUBSTITUTIONS.
4. 4. PHASE MONITOR RELAY, DIVERSIFIED ELECTRONICS, MODEL NO. SLA-440-ALE. NO SUBSTITUTIONS.

NO.	REVISION	BY	REVIEW	DATE
1	REVISED TO CONFORM TO CONSTRUCTION RECORDS	MWB	DWB	6/24/11

BRET E. BEAUPRE, STATE OF WASHINGTON, 38752, REGISTERED PROFESSIONAL ENGINEER
SIGNED: 01/28/10

CHRISTOPHER M. ROBERTS, STATE OF WASHINGTON, 45317, REGISTERED PROFESSIONAL ENGINEER
SIGNED: 01/28/10

LAKE WHATCOM WATER & SEWER DISTRICT — lake whatcom

Lake Whatcom Water and Sewer District
2010 Sewer Pump Station Improvements

CONTROL LOGIC DIAGRAMS I

RH2 ENGINEERS PLANNERS SCIENTISTS

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EAST WENATCHEE 509.886.2800 300 Simon Street, Suite 5
RICHLAND 509.946.5181 114 Columbia Point Drive, Suite C
SILVERDALE 360.876.7960 2021 NW Myhre Rd, Suite 107
TACOMA 253.272.3059 621 Pacific Avenue Suite 104

SCALE: SHOWN
0 1" 2"
DRAWING IS NOT TO SCALE IF BAR IS NOT 2" LONG

PLOT: 1	DWG NO. E005
ENGINEER: CMR	
REVIEWED: MLM	
DATE: JAN 25, 2010	SHEET NO. 11
CLIENT: LWWSD	
JOB NO.: 409-050	71
FILENAME: LS-D-ELEC04	

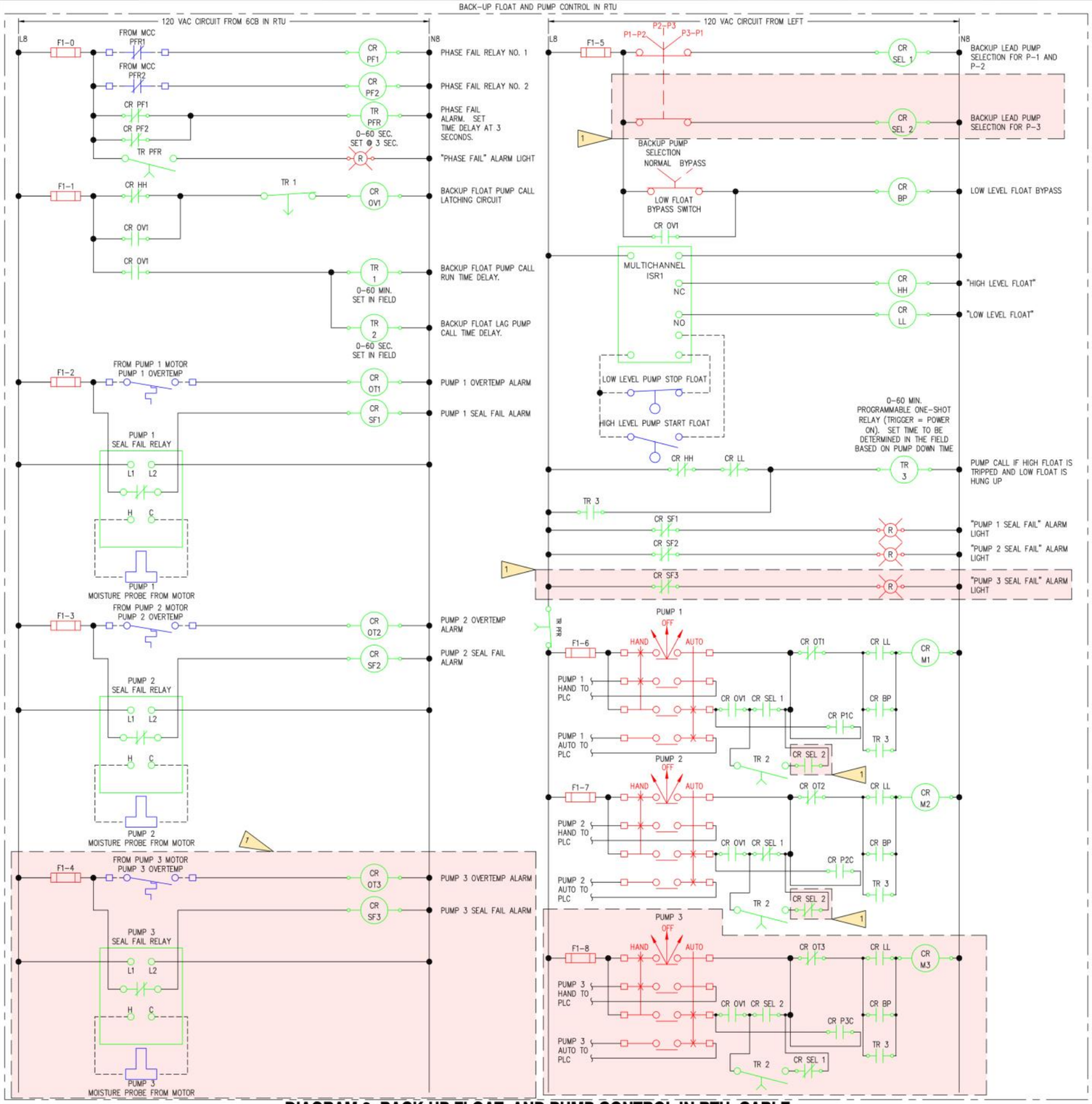

DIAGRAM 3: BACK-UP FLOAT AND PUMP CONTROL IN RTU, CABLE STREET AND RANCH HOUSE

NO SCALE

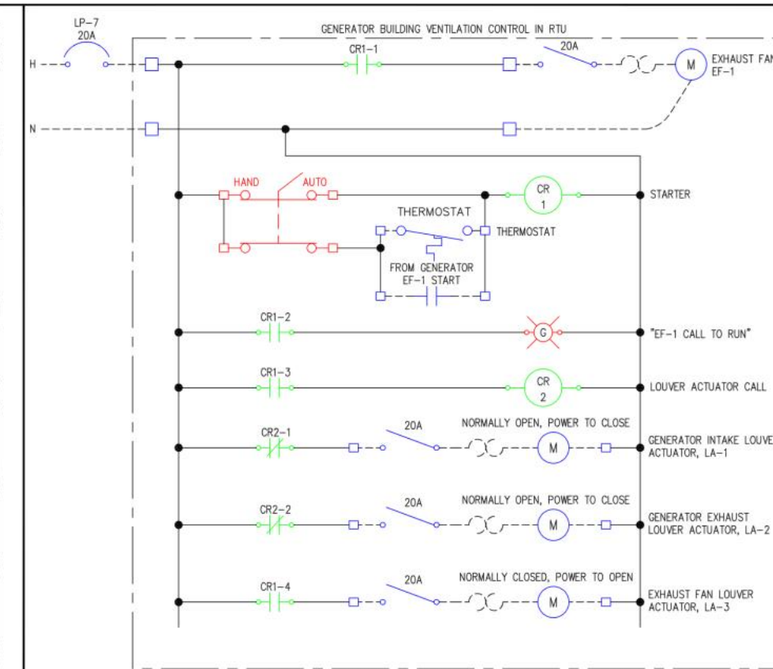

DIAGRAM 4: GENERATOR BUILDING VENTILATION CONTROL

NO SCALE

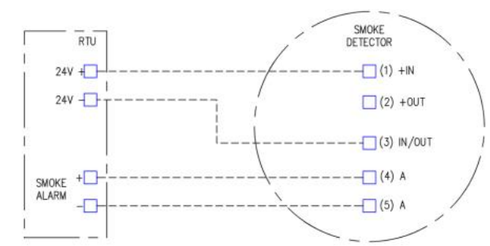

DIAGRAM 5: SMOKE DETECTOR CIRCUIT

NO SCALE

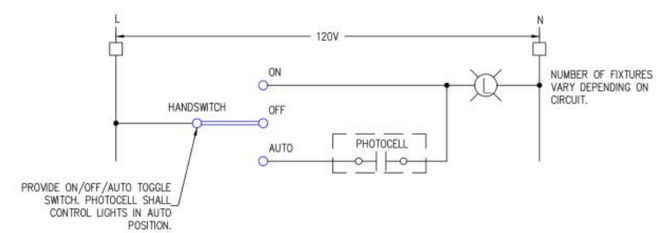

DIAGRAM 6: OUTDOOR LIGHTING CIRCUIT

NO SCALE

ELECTRICAL NOTES

1. PUMP NO. 3 WIRING CONTROL WIRING AND EQUIPMENT ONLY REQUIRED AT CABLE STREET PUMP STATION RTU.

DRAWINGS MAY DIFFER FROM MANUFACTURER'S DRAWINGS. SEE MANUFACTURER'S DRAWINGS FOR ACCURATE DIAGRAM.

REVISED TO CONFORM TO CONSTRUCTION RECORDS
RH2 ENGINEERING INC. 6/24/11 DATE

NO.	REVISION	BY	REVIEW	DATE
1	REVISED TO CONFORM TO CONSTRUCTION RECORDS	MWB	DWB	6/24/11

SIGNED: 01/28/10

SIGNED: 01/28/10

Lake Whatcom Water and Sewer District
2010 Sewer Pump Station Improvements

CONTROL LOGIC DIAGRAMS II

RH2 ENGINEERS PLANNERS SCIENTISTS
RH2 ENGINEERING, INC.
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BOTHELL 425.951.5400 12100 NE 195th Street, Suite 100
EAST WENATCHEE 509.886.2900 300 Simon Street, Suite 5
RICHLAND 509.946.5181 114 Columbia Point Drive, Suite C
SILVERDALE 360.876.7960 2021 NW Myre Rd, Suite 107
TACOMA 253.272.3059 621 Pacific Avenue Suite 104

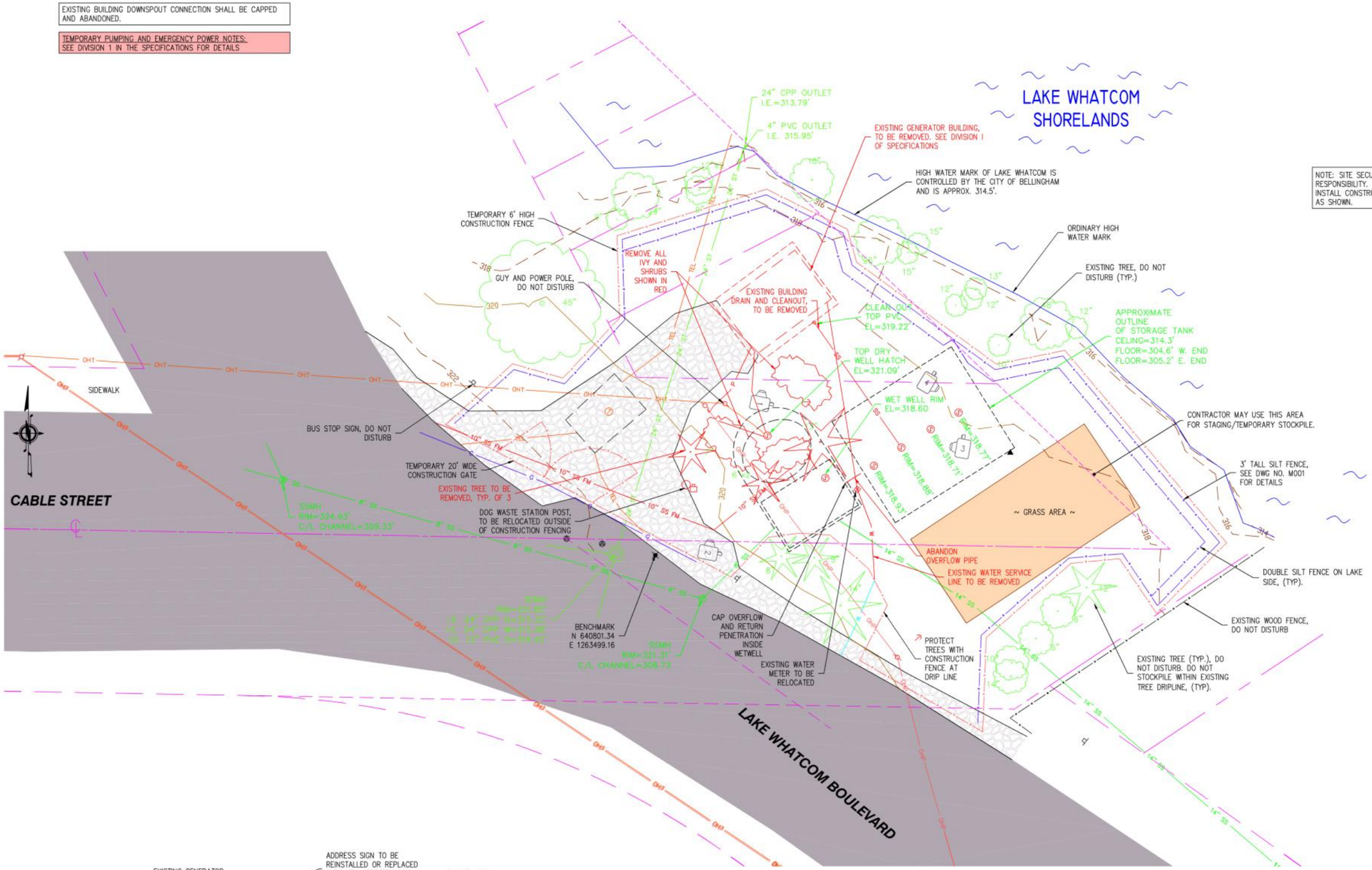
SCALE: SHOWN
0 1" 2"
DRAWING IS NOT TO SCALE IF BAR IS NOT 2" LONG

PLOT: 1	DWG NO. E006
ENGINEER: CMR	
REVIEWED: MLM	
DATE: JAN 25, 2010	SHEET NO. 12
CLIENT: LWWSD	
JOB NO.: 409-050	71
FILENAME: LS-D-ELEC04	

EXISTING BUILDING DOWNSPOUT CONNECTION SHALL BE CAPPED AND ABANDONED.

TEMPORARY PUMPING AND EMERGENCY POWER NOTES:
SEE DIVISION 1 IN THE SPECIFICATIONS FOR DETAILS

NOTE: SITE SECURITY SHALL BE THE CONTRACTOR'S RESPONSIBILITY. CONTRACTOR SHALL PROVIDE AND INSTALL CONSTRUCTION FENCE TO PROTECT VEGETATION AS SHOWN.



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RH2 ENGINEERING INC. 6/24/11 DATE

EXISTING SITE AND TESC PLAN

1" = 10'

1

2

3

4

NO.	REVISION	BY	REVIEW	DATE
1	REVISED TO CONFORM TO CONSTRUCTION RECORDS	BMS	DWB	6/24/11

BRET E. BEAUPRE, STATE OF WASHINGTON, 38752, REGISTERED PROFESSIONAL ENGINEER
SIGNED: 01/28/10

DANIEL W. BURRELL, STATE OF WASHINGTON, 36308, REGISTERED PROFESSIONAL ENGINEER
SIGNED: 01/28/10

LAKE WHATCOM WATER & SEWER DISTRICT

Lake Whatcom Water and Sewer District
2010 Sewer Pump Station Improvements
Cable Street

EXISTING SITE AND TESC PLAN

RH2 ENGINEERS PLANNERS SCIENTISTS

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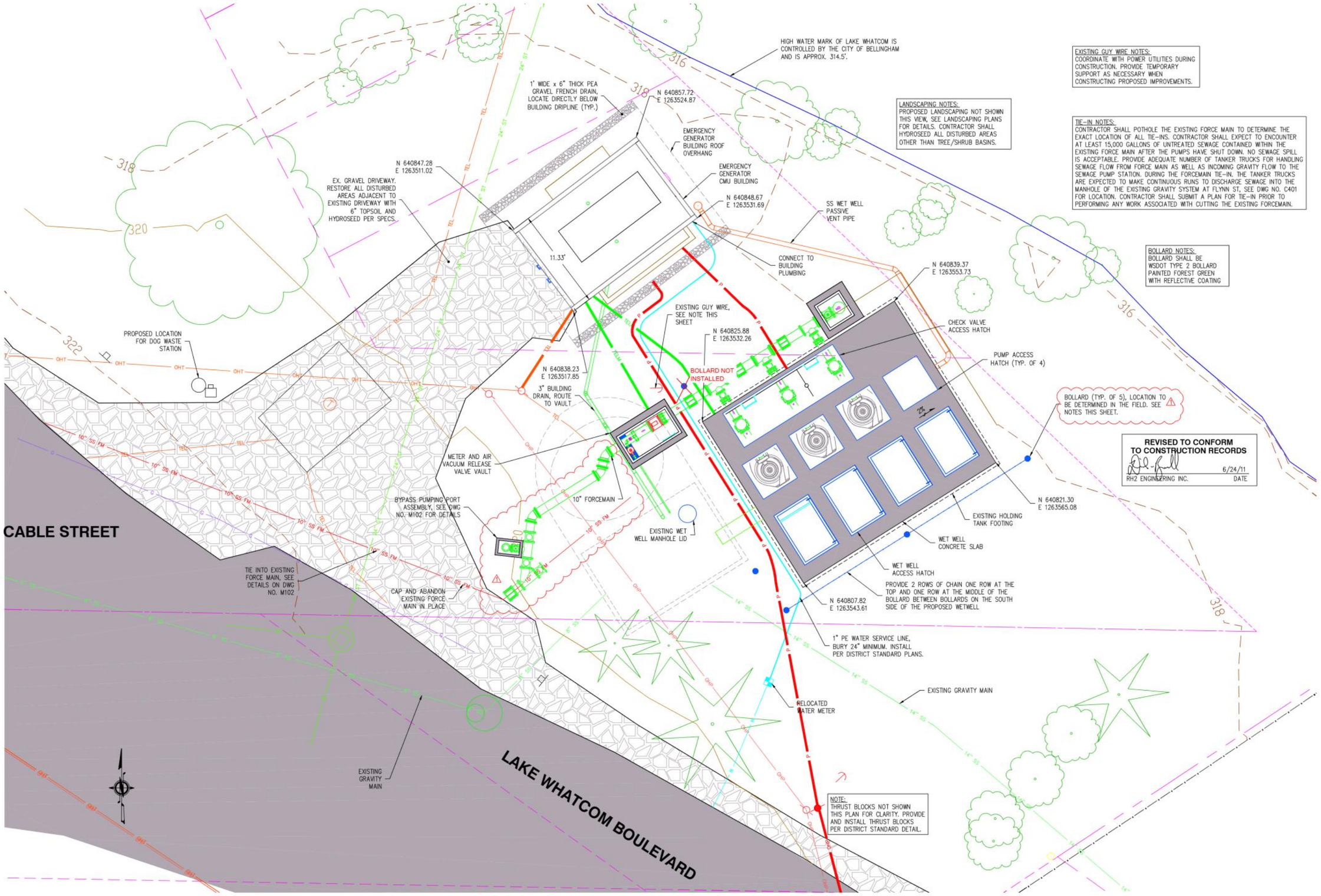
SILVERDALE 360.876.7960 2021 NW Myhre Rd, Suite 107
TACOMA 253.272.3059 621 Pacific Avenue Suite 104

SCALE: SHOWN
0 1" 2"
DRAWING IS NOT TO SCALE IF BAR IS NOT 2" LONG

PLOT: 10
ENGINEER: RJF
REVIEWED: DWB
DATE: JAN 25, 2010
CLIENT: LWWSD
JOB NO.: 409-050
FILENAME: LS-D-CIV01

DWG NO. C101

SHEET NO. 13 / 71



EXISTING GUY WIRE NOTES:
COORDINATE WITH POWER UTILITIES DURING CONSTRUCTION. PROVIDE TEMPORARY SUPPORT AS NECESSARY WHEN CONSTRUCTING PROPOSED IMPROVEMENTS.

LANDSCAPING NOTES:
PROPOSED LANDSCAPING NOT SHOWN THIS VIEW, SEE LANDSCAPING PLANS FOR DETAILS. CONTRACTOR SHALL HYDROSEED ALL DISTURBED AREAS OTHER THAN TREE/SHRUB BASINS.

TIE-IN NOTES:
CONTRACTOR SHALL POTHOLE THE EXISTING FORCE MAIN TO DETERMINE THE EXACT LOCATION OF ALL TIE-INS. CONTRACTOR SHALL EXPECT TO ENCOUNTER AT LEAST 15,000 GALLONS OF UNTREATED SEWAGE CONTAINED WITHIN THE EXISTING FORCE MAIN AFTER THE PUMPS HAVE SHUT DOWN. NO SEWAGE SPILL IS ACCEPTABLE. PROVIDE ADEQUATE NUMBER OF TANKER TRUCKS FOR HANDLING SEWAGE FLOW FROM FORCE MAIN AS WELL AS INCOMING GRAVITY FLOW TO THE SEWAGE PUMP STATION. DURING THE FORCEMAIN TIE-IN. THE TANKER TRUCKS ARE EXPECTED TO MAKE CONTINUOUS RUNS TO DISCHARGE SEWAGE INTO THE MANHOLE OF THE EXISTING GRAVITY SYSTEM AT FLYNN ST, SEE DWG NO. C401 FOR LOCATION. CONTRACTOR SHALL SUBMIT A PLAN FOR TIE-IN PRIOR TO PERFORMING ANY WORK ASSOCIATED WITH CUTTING THE EXISTING FORCEMAIN.

BOLLARD NOTES:
BOLLARD SHALL BE WSDOT TYPE 2 BOLLARD PAINTED FOREST GREEN WITH REFLECTIVE COATING

REVISED TO CONFORM TO CONSTRUCTION RECORDS
RH2 ENGINEERING INC. 6/24/11 DATE

PROPOSED SITE PLAN ⚠
1" = 5'

NO.	REVISION	BY	REVIEW	DATE
⚠	REVISED TO CONFORM TO CONSTRUCTION RECORDS	BMS	DWB	6/24/11

BRET E. BEAUPRE, STATE OF WASHINGTON, 36752, REGISTERED PROFESSIONAL ENGINEER
SIGNED: 01/28/10

DANIEL W. BURNETT, STATE OF WASHINGTON, 38302, REGISTERED PROFESSIONAL ENGINEER
SIGNED: 01/28/10

LAKE WHATCOM WATER & SEWER DISTRICT

Lake Whatcom Water and Sewer District
2010 Sewer Pump Station Improvements
Cable Street

PROPOSED SITE PLAN

RH2 ENGINEERS PLANNERS SCIENTISTS

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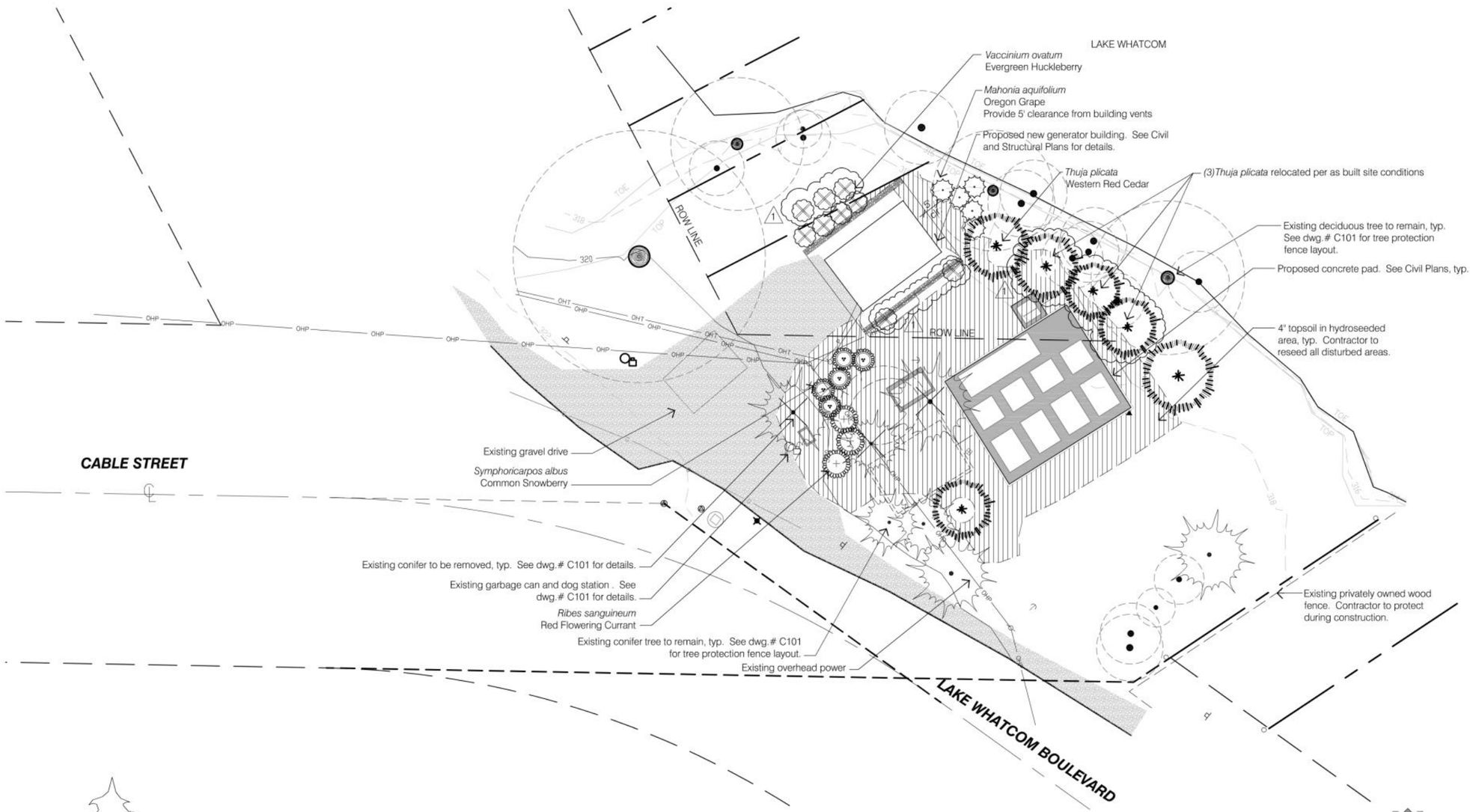
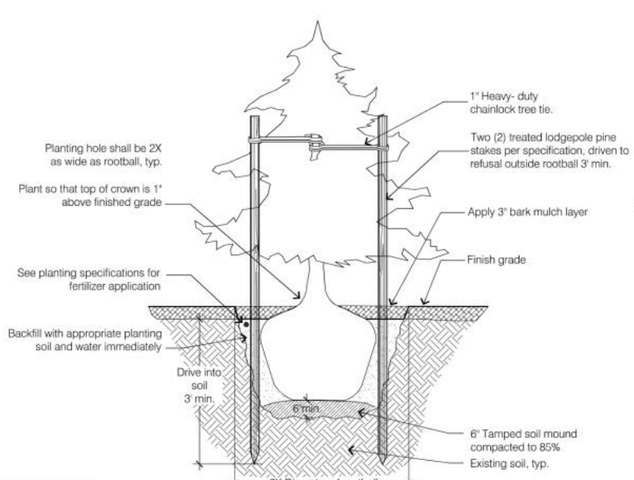
RICHLAND 509.946.5181 114 Columbia Point Drive, Suite C
SILVERDALE 360.876.7960 2021 NW Myhre Rd, Suite 107
TACOMA 253.272.3059 621 Pacific Avenue Suite 104

SCALE: SHOWN
0 1" 2"
DRAWING IS NOT TO SCALE IF BAR IS NOT 2" LONG

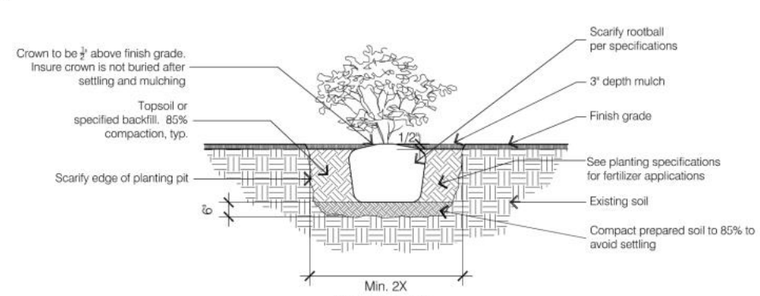
PLOT: 5
ENGINEER: RJF
REVIEWED: DWB
DATE: JUN 28, 2011
CLIENT: LWWSD
JOB NO.: 409-050
FILENAME: CS-D-CIV02

DWG NO. C102
SHEET NO. 14
71





1 TYPICAL CONIFER PLANTING
SCALE: NTS



2 TYPICAL SHRUB PLANTING
SCALE: NTS

REVEGETATION PLANTING SCHEDULE

OF TREES REMOVED: 3 # OF TREES PROPOSED: 6

Trees

Symbol	Quantity	Botanical Name	Common Name	Size	Spacing
	6	Thuja plicata	Western Red Cedar	5' min. ht.	As Shown

Shrubs

Symbol	Quantity	Botanical Name	Common Name	Size	Spacing
	5	Mahonia aquifolium	Oregon Grape	1 gallon	4' O.C.
	3	Ribes sanguineum	Red Flowering Currant	1 gallon	5' O.C.
	5	Symphoricarpos albus	Common Snowberry	1 gallon	4. O.C.
	4	Vaccinium ovatum	Evergreen Huckleberry	1 gallon	3'-4' O.C.
	5	Vaccinium ovatum	Evergreen Huckleberry	24" min. ht planted against building	as shown

NOTES

ALL PLANTING AND SOIL AMENDING BENEATH EXISTING TREE DRIPLINES TO BE COMPLETED BY HAND. CONTRACTOR TO AVOID EQUIPMENT ACCESS TRAFFIC BENEATH EXISTING TREES. PROTECT ALL EXISTING TREES TO REMAIN.
SEE DWG. NO. C101 FOR TREE PROTECTION FENCE DETAILS

REVISED TO CONFORM TO CONSTRUCTION RECORDS
1 6/24/11
RH2 ENGINEERING INC. DATE

STATE OF WASHINGTON REGISTERED LANDSCAPE ARCHITECT
MISTY PHILBIN
CERTIFICATE NO. 722

LAKE WHATCOM WATER & SEWER DISTRICT

Lake Whatcom Water and Sewer District
2010 Sewer Pump Station Improvements
Cable Street

LANDSCAPE PLANTING AS BUILT PLAN

RH2 ENGINEERS PLANNERS SCIENTISTS
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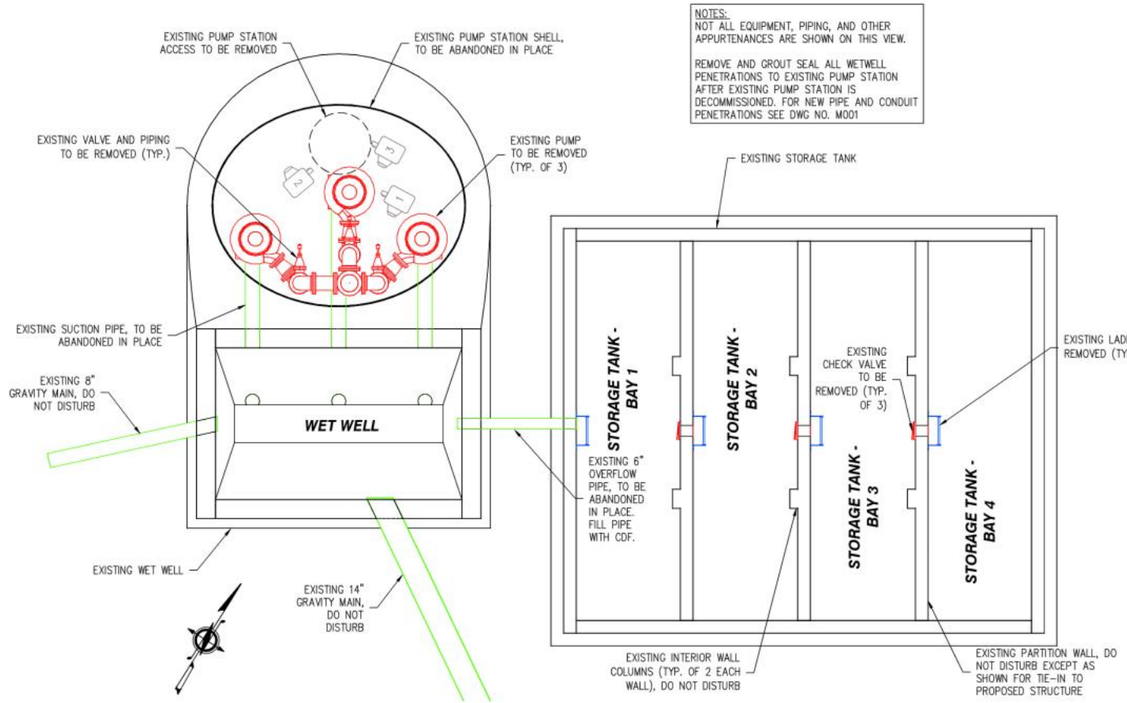
BELLINGHAM 360.676.0840
454 West Horton Road

THE PHILBIN GROUP
LANDSCAPE ARCHITECTURE
1015 Railroad Ave. #101
Bellingham, WA 98225
(p) 360.671.5994

PLOT:	DWG NO. LA 101
DESIGNER: MM	
REVIEWED: MP	
DATE: 4-4-2011	SHEET NO. 15
CLIENT:	
JOB NO.:	71
FILENAME:	

NOTES:
NOT ALL EQUIPMENT, PIPING, AND OTHER APPURTENANCES ARE SHOWN ON THIS VIEW.

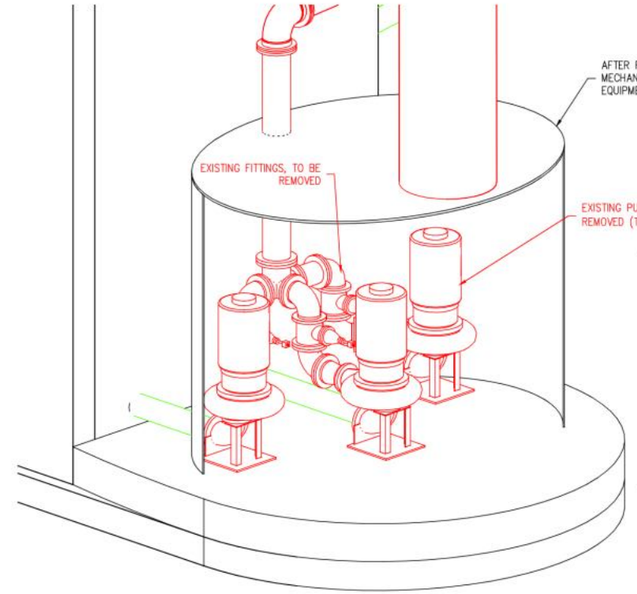
REMOVE AND GROUT SEAL ALL WETWELL PENETRATIONS TO EXISTING PUMP STATION AFTER EXISTING PUMP STATION IS DECOMMISSIONED. FOR NEW PIPE AND CONDUIT PENETRATIONS SEE DWG NO. M001



EXISTING AND DEMOLITION PLAN

¼" = 1'-0"

REVISED TO CONFORM TO CONSTRUCTION RECORDS
RH2 ENGINEERING INC. 6/24/11 DATE

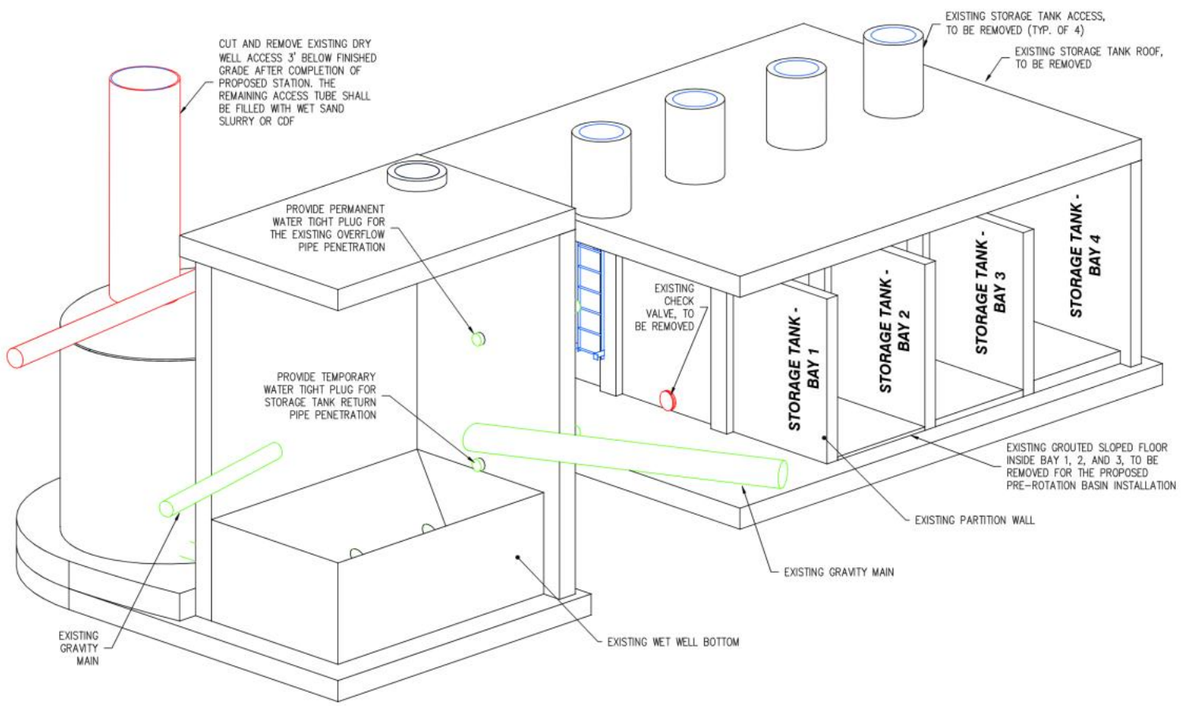


EXISTING PUMP STATION REMOVAL NOTES:
UPON THE COMPLETION, COMMISSIONING, AND APPROVAL BY THE DISTRICT IN WRITING OF THE PROPOSED PUMP STATION, THE EXISTING PUMP STATION SHALL BE ABANDONED. REMOVE ALL PUMPS, PIPES, FITTINGS, ELECTRICAL AND TELEMETRY EQUIPMENT, LADDERS, FANS, AND ALL OTHER APPURTENANCES FROM INSIDE THE PUMP STATION. THE EXISTING PUMP STATION SHELL ACCESS SHALL BE REMOVED AND THE PUMP STATION COMPLETELY FILLED WITH CDF. CONTRACTOR SHALL DELIVER ALL GENERATORS, PUMPS, MOTORS AND VALVES TO THE DISTRICT SHOP FOLLOWING REMOVAL. ALL OTHER COMPONENTS SHALL BE DISPOSED OF PROPERLY.

ELECTRICAL PANELS INCLUDING BUBBLE MOTORS, MOTOR STARTERS AND ELECTRICAL PANELS LEFT IN DRY WELL AND BACKFILLED WITH CDF.

EXISTING PUMP STATION DEMOLITION OBLIQUE

NOT TO SCALE



EXISTING AND DEMOLITION OBLIQUE

NOT TO SCALE

TEMPORARY PUMPING NOTES:
CONTRACTOR SHALL KEEP THE EXISTING PUMP STATION IN OPERATION WHILE CONSTRUCTING THE PROPOSED PUMP STATION. ALL EXISTING ELECTRICAL AND TELEMETRY EQUIPMENT SHALL NOT BE DISTURBED DURING THE CONSTRUCTION OF THE PROPOSED PUMP STATION UNTIL THE PROPOSED PUMP STATION IS FULLY OPERATIONAL AND APPROVED BY THE DISTRICT.

EX. WETWELL REMOVAL NOTES:
REMOVE EX. WETWELL LADDERS, GRATING AND OTHER APPURTENANCES PRIOR TO CONSTRUCTING PROPOSED CHANNEL AND ROCK SUMP.

BUOYANCY CONTROL NOTES:
CONTRACTOR SHALL BE RESPONSIBLE TO CONTROL / PREVENT BUOYANCY OF THE EXISTING PUMP STATION AND THE STORAGE TANK. SUBMIT BUOYANCY CONTROL PLAN TO ENGINEER AND OWNER PRIOR TO ANY WORK BEING DONE TO THE SITE. EXCAVATION SHALL NOT START UNTIL BUOYANCY CONTROL PLAN HAS BEEN APPROVED BY THE ENGINEER / OWNER. THE EXISTING WATER TABLE IS APPROXIMATELY 4 FEET BELOW EXISTING GRADE AND VARIES WITH LAKE LEVEL AND OTHER ENVIRONMENTAL CONDITIONS.

BELOW IS A BUOYANCY CONTROL SCENARIO THAT CAN BE USED DURING CONSTRUCTION:
1. PRESSURE WASH AND DRAIN ALL DEBRIS FROM THE STORAGE TANK CEILING, WALLS AND FLOOR.

2. REMOVE THE EXISTING GROUTED FLOOR, LADDERS, CHECK VALVES AND OTHER APPURTENANCES INSIDE THE STORAGE TANK. ALL THE REMOVED MATERIALS SHALL BE PASSED THROUGH THE EXISTING ACCESS MANHOLES, WITHOUT REMOVING SOIL ABOVE THE EXISTING ROOF.

3. FILL ALL CHAMBERS WITH 5 FEET OF WATER. THE WEIGHT OF THE WATER WILL PROVIDE BALLAST TO RESTRICT BUOYANCY OF THE EXISTING STORAGE TANK. THE CONTRACTOR SHALL NOTIFY AND RECEIVE APPROVAL BY THE DISTRICT PRIOR TO USING DISTRICT POTABLE WATER.

4. THE EXISTING SOIL, MANHOLE ACCESS AND ROOF CAN BE REMOVED AFTER THE CHAMBERS ARE FILLED WITH 5 FEET OF WATER.

5. CONSTRUCT THE WALL EXTENSION FOR THE PROPOSED PUMP STATION.

6. PUMP THE WATER FROM 2 OF THE CHAMBERS AND COMBINE IT WITH THE WATER IN THE 2 OUTSIDE CHAMBERS (10 FEET OF WATER IN 2 OF 4 CHAMBERS).

7. CONSTRUCT THE PRE-ROTATION BASIN AND THE SLOPED FLOOR INSIDE THE DRY CHAMBERS.

8. PUMP THE WATER FROM THE 2 CHAMBERS INTO THE DRY CHAMBERS WITH THE PRE-ROTATION BASIN AND THE SLOPED FLOOR. (APPROXIMATELY 7 FEET OF WATER IN NEWLY CONSTRUCTED CHAMBER.)

9. CONSTRUCT THE BASINS AND THE SLOPED FLOOR FOR THE NEXT 2 DRY CHAMBERS.

10. PUMP THE WATER OUT FROM THE CHAMBERS.

11. CONSTRUCT THE ROOF AND THE VALVE CHAMBER OF THE PROPOSED PUMP STATION.

1

2

3

NO.	REVISION	BY	REVIEW	DATE
1	REVISED TO CONFORM TO CONSTRUCTION RECORDS	BMS	DWB	6/24/11

BRET E. BEAUPRE, STATE OF WASHINGTON, 36752, REGISTERED PROFESSIONAL ENGINEER
SIGNED: 01/28/10

EDWIN HAMAN, STATE OF WASHINGTON, 38889, REGISTERED PROFESSIONAL ENGINEER
SIGNED: 01/28/10

LAKE WHATCOM WATER & SEWER DISTRICT

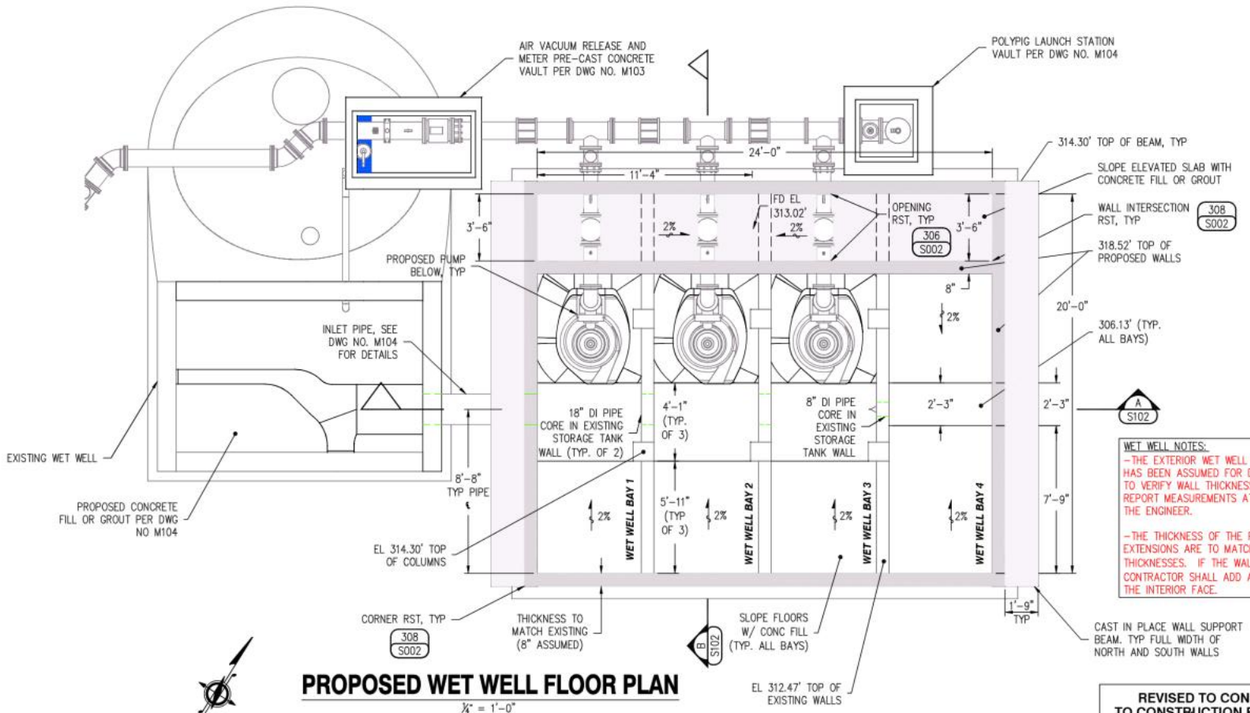
Lake Whatcom Water and Sewer District
2010 Sewer Pump Station Improvements
Cable Street

EXISTING AND DEMOLITION PLAN

RH2 ENGINEERS PLANNERS SCIENTISTS
RH2 ENGINEERING, INC.
http://www.rh2.com
mailbox@rh2.com 1.800.720.8052
BELLINGHAM 360.676.0636 454 West Horton Road
BOTHELL 425.951.5400 12100 NE 195th Street, Suite 100
EAST WENATCHEE 509.886.2900 300 Simon Street, Suite 5
RICHLAND 509.946.5181 114 Columbia Point Drive, Suite C
SILVERDALE 360.876.7960 2021 NW Mhyre Rd, Suite 107
TACOMA 253.272.3059 621 Pacific Avenue Suite 104

SCALE: SHOWN
0 1" 2"
DRAWING IS NOT TO SCALE IF BAR IS NOT 2" LONG

PLOT: 48	DWG NO. M101
ENGINEER: EH	
REVIEWED: DWB	
DATE: JAN 21, 2010	SHEET NO. 16
CLIENT: LWWSD	
JOB NO.: 409-050	71
FILENAME: CS-D-MEC01	



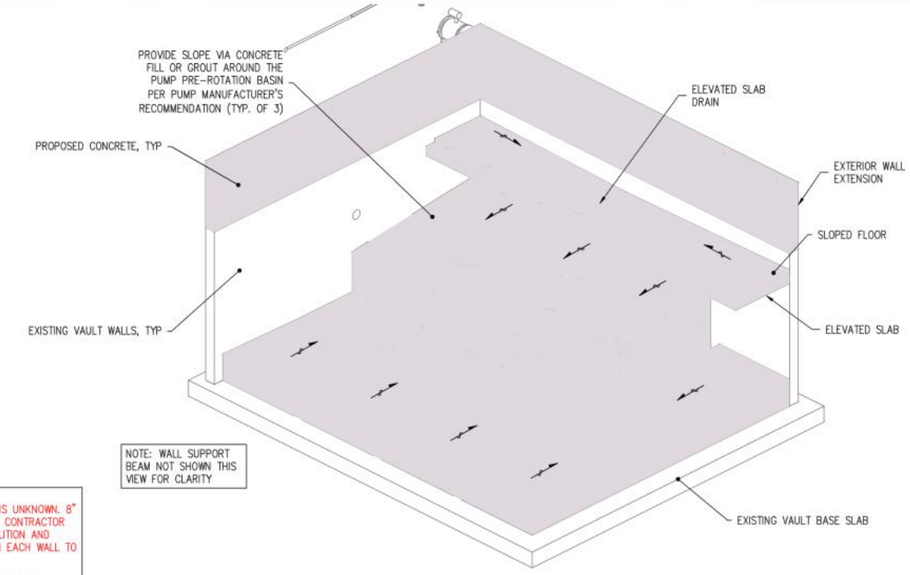
PROPOSED WET WELL FLOOR PLAN

¼" = 1'-0"

WET WELL NOTES:

- THE EXTERIOR WET WELL WALL THICKNESS IS UNKNOWN. 8" HAS BEEN ASSUMED FOR DESIGN PURPOSES. CONTRACTOR TO VERIFY WALL THICKNESSES DURING DEMOLITION AND REPORT MEASUREMENTS AT 2 LOCATIONS ON EACH WALL TO THE ENGINEER.
- THE THICKNESS OF THE PROPOSED EXTERIOR WALL EXTENSIONS ARE TO MATCH THE EXISTING WALL THICKNESSES. IF THE WALL THICKNESS IS 12" OR GREATER, CONTRACTOR SHALL ADD ADDITIONAL #5 @ 12" O.C. EW AT THE INTERIOR FACE.

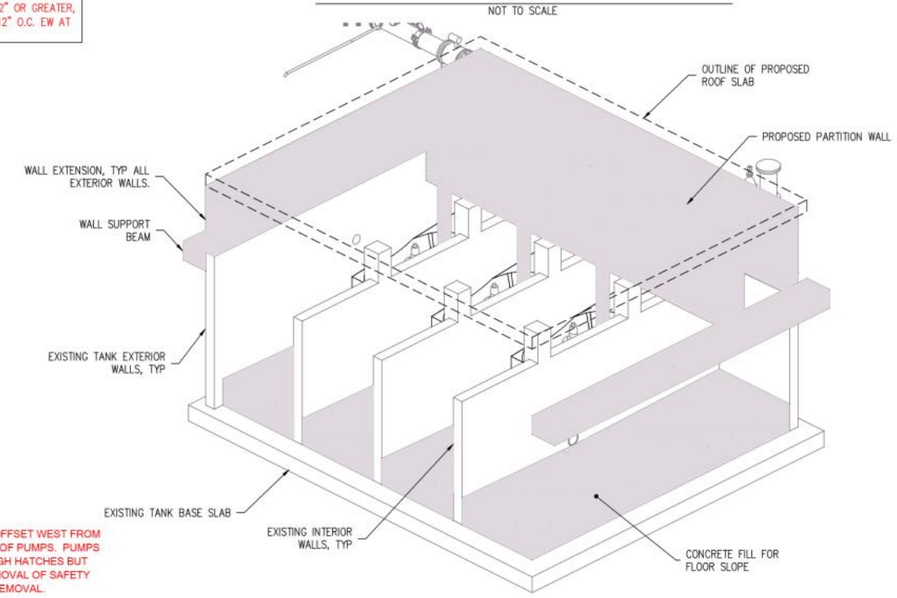
REVISED TO CONFORM TO CONSTRUCTION RECORDS
6/24/11
RH2 ENGINEERING INC. DATE



NOTE: WALL SUPPORT BEAM NOT SHOWN THIS VIEW FOR CLARITY

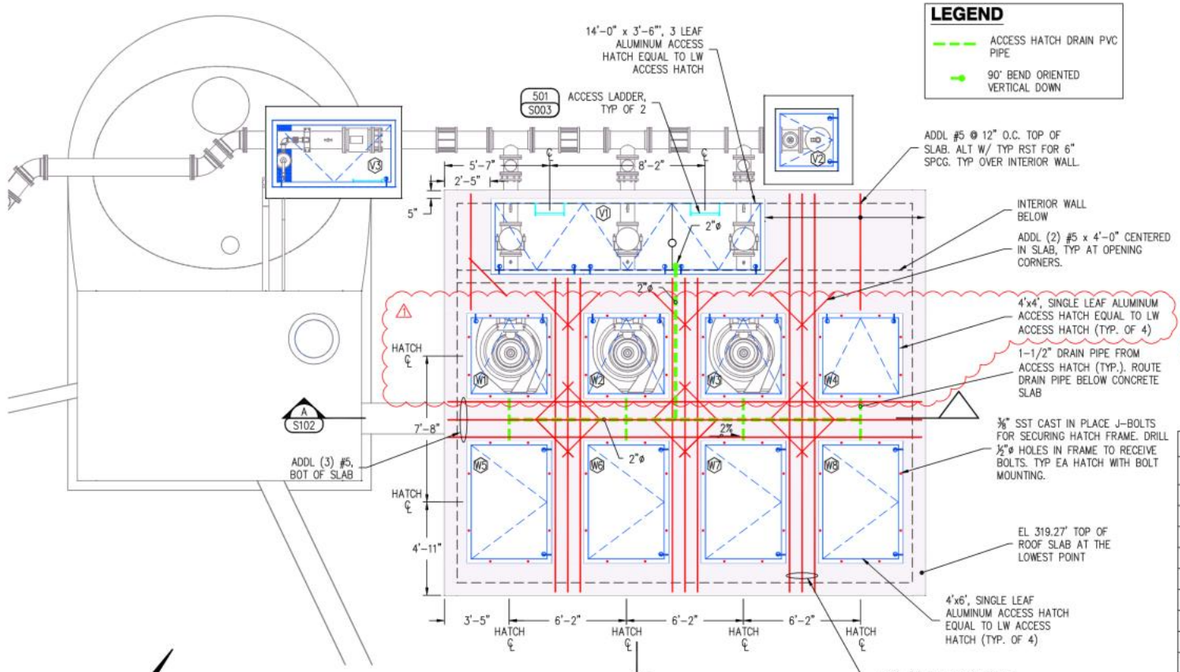
PROPOSED WET WELL FLOOR OBLIQUE

NOT TO SCALE



PROPOSED WET WELL WALL OBLIQUE

NOT TO SCALE



HATCHES 6" OFFSET WEST FROM CENTERLINE OF PUMPS. PUMPS PASS THROUGH HATCHES BUT REQUIRE REMOVAL OF SAFETY GRATE FOR REMOVAL.

PROPOSED WETWELL ROOF PLAN

¼" = 1'-0"

LEGEND

- ACCESS HATCH DRAIN PVC PIPE
- 90° BEND ORIENTED VERTICAL DOWN

ACCESS HATCH SCHEDULE

NO.	CLEAR OPENING	NO. OF LEAVES	RATING	MOUNTING*	GRATING**	GASKET ODOR TIGHT / STANDARD
W1	48"x48"	1	H-10	BOLTS	YES	ODOR TIGHT
W2	48"x48"	1	H-10	BOLTS	YES	ODOR TIGHT
W3	48"x48"	1	H-10	BOLTS	YES	ODOR TIGHT
W4	48"x48"	1	H-10	BOLTS	YES	ODOR TIGHT
W5	48"x72"	1	H-10	BOLTS	YES	ODOR TIGHT
W6	48"x72"	1	H-10	BOLTS	YES	ODOR TIGHT
W7	48"x72"	1	H-10	BOLTS	YES	ODOR TIGHT
W8	48"x72"	1	H-10	BOLTS	YES	ODOR TIGHT
V1	42"x168"	3	H-10	ANCHOR	NO	STANDARD
V2	36"x36"	1	H-20	ANCHOR	NO	STANDARD
V3	36"x60"	1	H-20	ANCHOR	NO	STANDARD

ACCESS HATCH NOTES:

* ACCESS HATCHES OVER WETWELL SHALL BE MOUNTED USING STAINLESS STEEL J-BOLTS AS SHOWN ON THIS PLAN. OTHER ACCESS HATCHES SHALL BE CAST INTO THE CONCRETE USING THE STANDARD ANCHOR STRAPS ATTACHED TO THE HATCH FRAME.

** ACCESS HATCH OVER WETWELL SHALL HAVE REMOVABLE GRATING COVER BELOW ACCESS HATCH LIDS.

ACCESS HATCH DRAIN PIPE NOTES:

ROUTE ACCESS HATCH DRAIN PIPE AS SHOWN ON THE PROPOSED WETWELL ROOF PLAN. DRAIN PIPE SHALL BE SLOPED TOWARDS THE DISCHARGE POINT INSIDE THE CHECK VALVE CHAMBER. TERMINATE ACCESS HATCH DRAIN PIPE, APPROXIMATELY 2" ABOVE THE CHECK VALVE CHAMBER FLOOR.

NO.	REVISION	BY	REVIEW	DATE
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SIGNED: 01/28/10

JON M. CONNER, STATE OF WASHINGTON, 44672, REGISTERED PROFESSIONAL ENGINEER
SIGNED: 01/28/10

LAKE WHATCOM WATER & SEWER DISTRICT

Lake Whatcom Water and Sewer District
2010 Sewer Pump Station Improvements
Cable Street

WET WELL STRUCTURAL PLAN

RH2 ENGINEERS PLANNERS SCIENTISTS

RH2 ENGINEERING, INC.
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114 Columbia Point Drive, Suite C

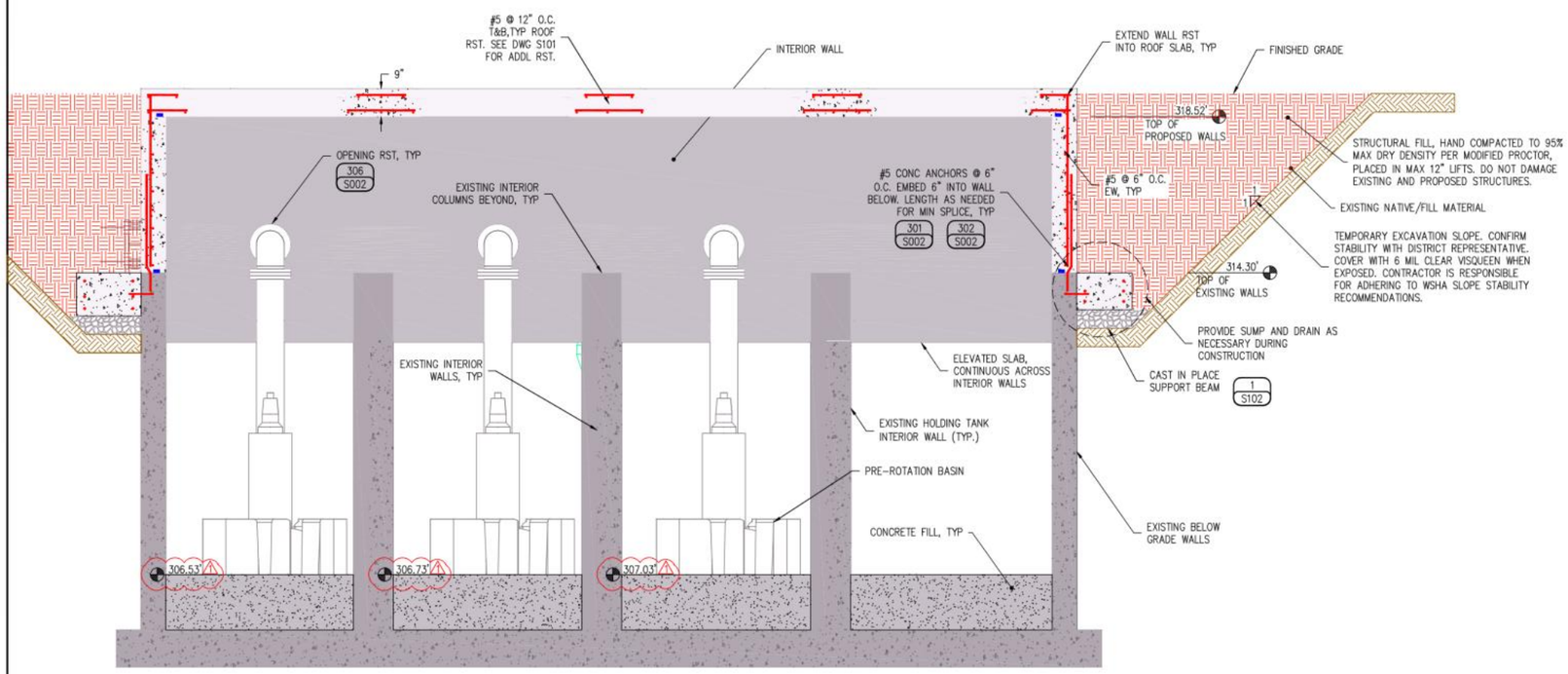
SILVERDALE 360.876.7960
2021 NW Myhre Rd, Suite 107

TACOMA 253.272.2059
621 Pacific Avenue Suite 104

SCALE: SHOWN
0 1" 2"
DRAWING IS NOT TO SCALE IF BAR IS NOT 2" LONG

PLOT: 48	DWG NO. S101
ENGINEER: JMC	
REVIEWED: KLK	
DATE: JUN 28, 2011	SHEET NO. 17
CLIENT: LWWSD	
JOB NO.: 409-050	
FILENAME: CS-D-STR01	

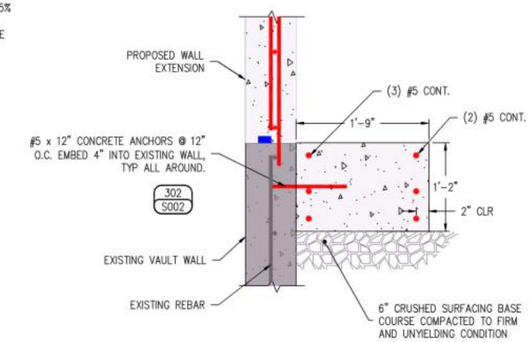
71



SECTION

½" = 1'-0"

A
S101

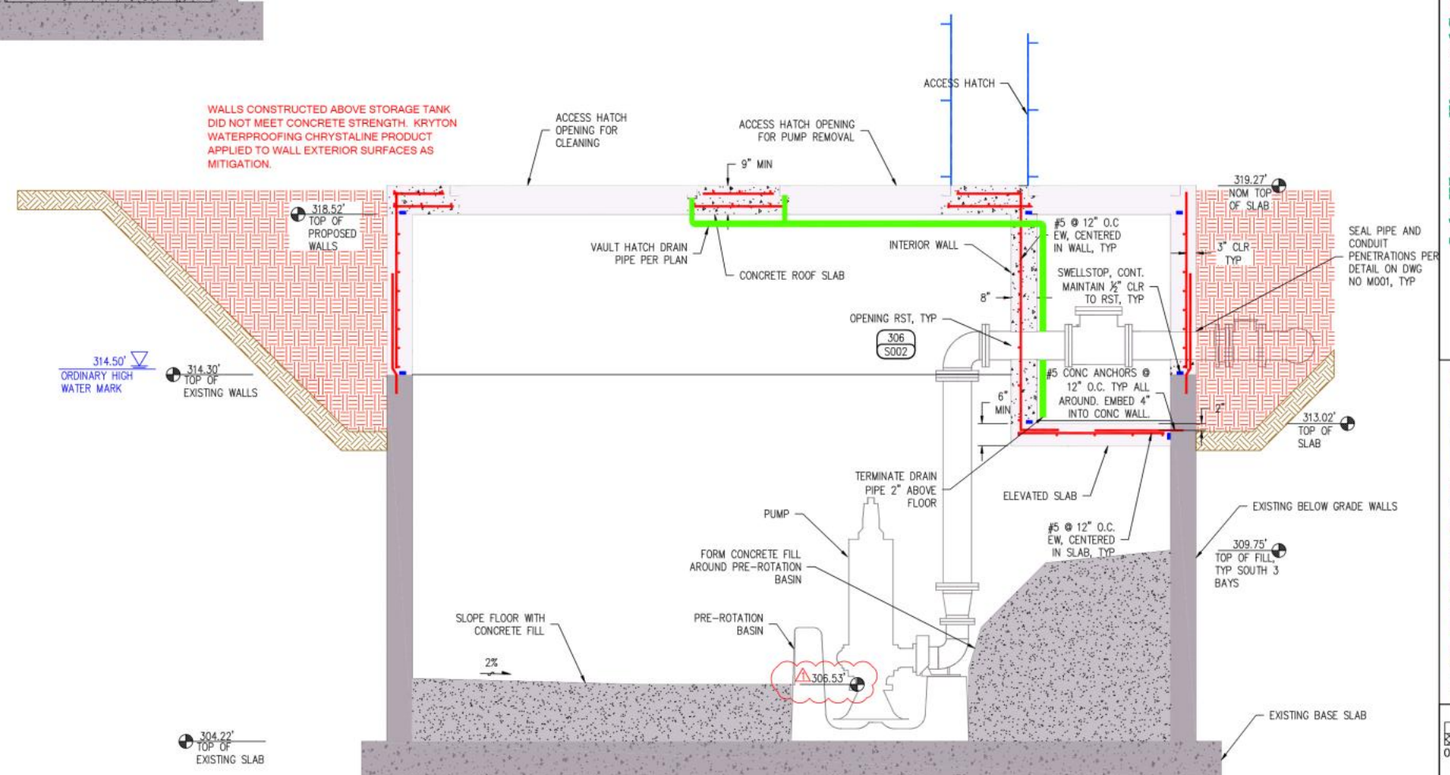


SUPPORT BEAM

1" = 1'-0"

1
S102

WALLS CONSTRUCTED ABOVE STORAGE TANK DID NOT MEET CONCRETE STRENGTH. KRYTON WATERPROOFING CHRYSTALINE PRODUCT APPLIED TO WALL EXTERIOR SURFACES AS MITIGATION.



SECTION

½" = 1'-0"

B
S101

REVISED TO CONFORM TO CONSTRUCTION RECORDS

RH2 ENGINEERING INC. — 6/24/11 DATE

NO.	REVISION	BY	REVIEW	DATE
1	REVISED TO CONFORM TO CONSTRUCTION RECORDS	BMS	DWB	6/24/11

BRET E. BEAUPRE, STATE OF WASHINGTON, 36752, REGISTERED PROFESSIONAL ENGINEER — SIGNED: 01/28/10

JON M. CONNER, STATE OF WASHINGTON, 44672, REGISTERED PROFESSIONAL ENGINEER — SIGNED: 01/28/10

LAKE WHATCOM WATER & SEWER DISTRICT — lake whatcom

Lake Whatcom Water and Sewer District
2010 Sewer Pump Station Improvements
Cable Street

WET WELL STRUCTURAL SECTIONS

RH2 ENGINEERS PLANNERS SCIENTISTS

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SILVERDALE 360.876.7960
2021 NW Mhyre Rd, Suite 107

TACOMA 253.272.3059
621 Pacific Avenue Suite 104

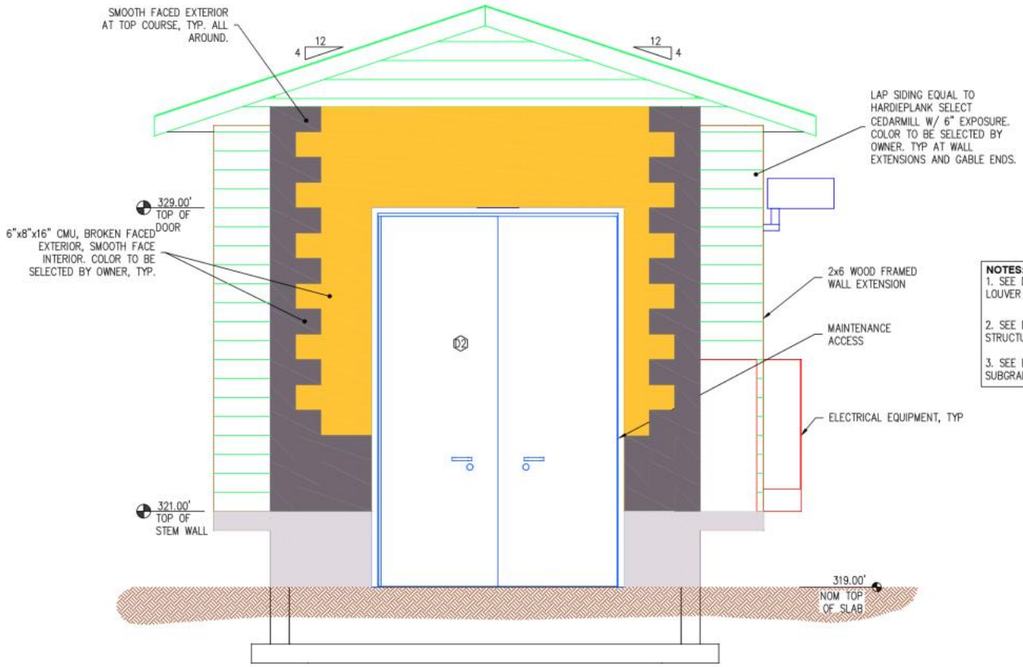
SCALE: SHOWN

0 1" 2"

DRAWING IS NOT TO SCALE IF BAR IS NOT 2" LONG

PLOT: 24	DWG NO. S102
ENGINEER: JMC	
REVIEWED: KLK	
DATE: JAN 25, 2010	SHEET NO. 18
CLIENT: LWWSD	
JOB NO.: 409-050	
FILENAME: CS-D-STR02	

71

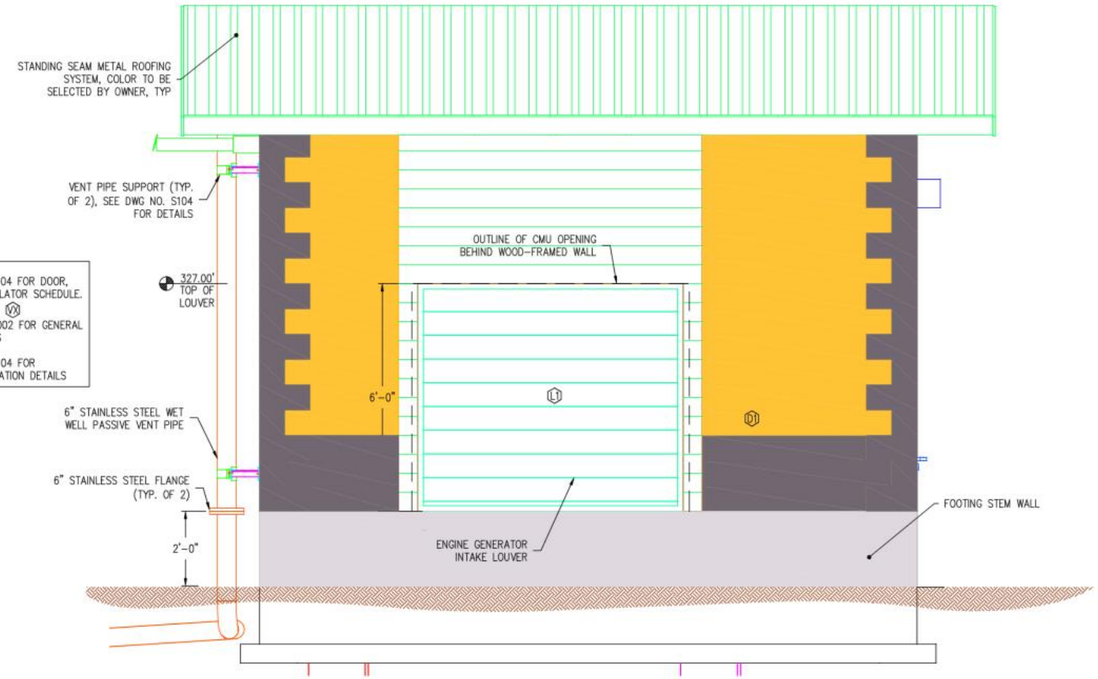


SOUTHWEST ELEVATION

½" = 1'-0"

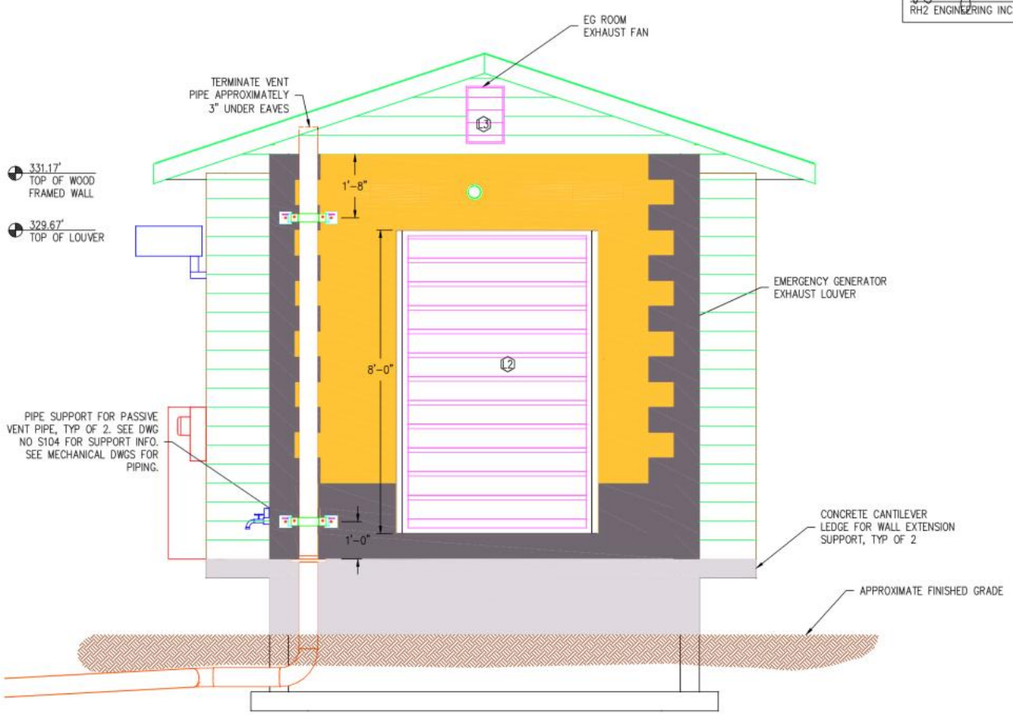
NOTES:
1. SEE DWG NO. S104 FOR DOOR, LOUVER AND VENTILATOR SCHEDULE. D2 L1 V1
2. SEE DWG NO. S002 FOR GENERAL STRUCTURAL NOTES
3. SEE DWG NO. S104 FOR SUBGRADE PREPARATION DETAILS

REVISED TO CONFORM TO CONSTRUCTION RECORDS
RH2 ENGINEERING INC. 6/24/11 DATE



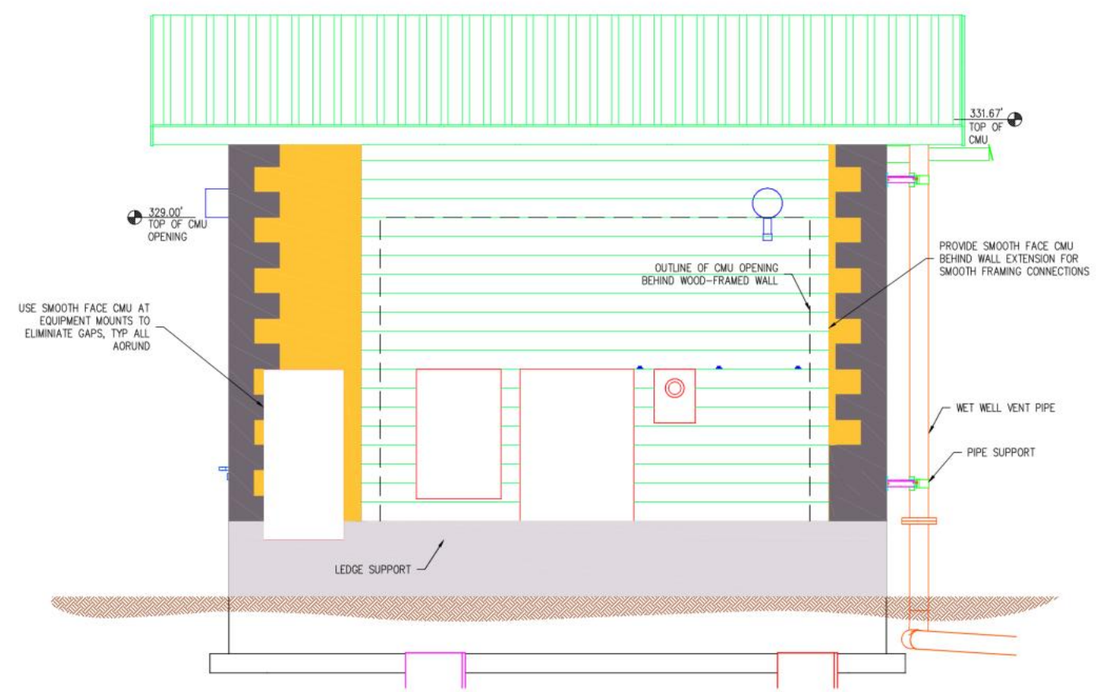
NORTHWEST ELEVATION

½" = 1'-0"



NORTHEAST ELEVATION

½" = 1'-0"



SOUTHEAST ELEVATION

½" = 1'-0"

NO.	REVISION	BY	REVIEW	DATE
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JON M. CONNER, STATE OF WASHINGTON, 44672, REGISTERED PROFESSIONAL ENGINEER
SIGNED: 01/28/10

LAKE WHATCOM WATER & SEWER DISTRICT — lake whatcom

Lake Whatcom Water and Sewer District
2010 Sewer Pump Station Improvements
Cable Street

EMERGENCY GENERATOR BUILDING ELEVATIONS

RH2 ENGINEERS PLANNERS SCIENTISTS

RH2 ENGINEERING, INC.
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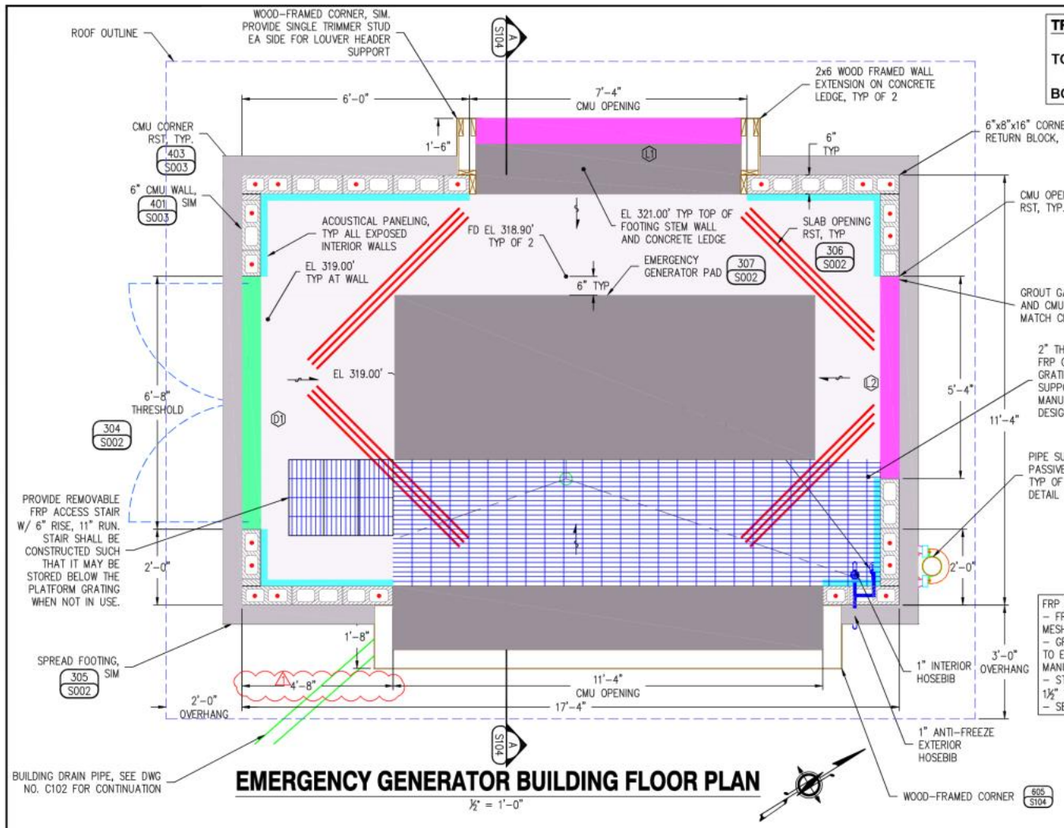
TACOMA 253.272.2059
621 Pacific Avenue Suite 104

SCALE: SHOWN
0 1" 2"
DRAWING IS NOT TO SCALE IF BAR IS NOT 2" LONG

PLOT: 24	DWG NO. A101
ENGINEER: JMC	
REVIEWED: KLK	
DATE: JAN 26, 2010	SHEET NO. 19
CLIENT: LWWSD	
JOB NO.: 409-050	71
FILENAME: CS-D-ARCH01	

TRUSS DESIGN LOADS:

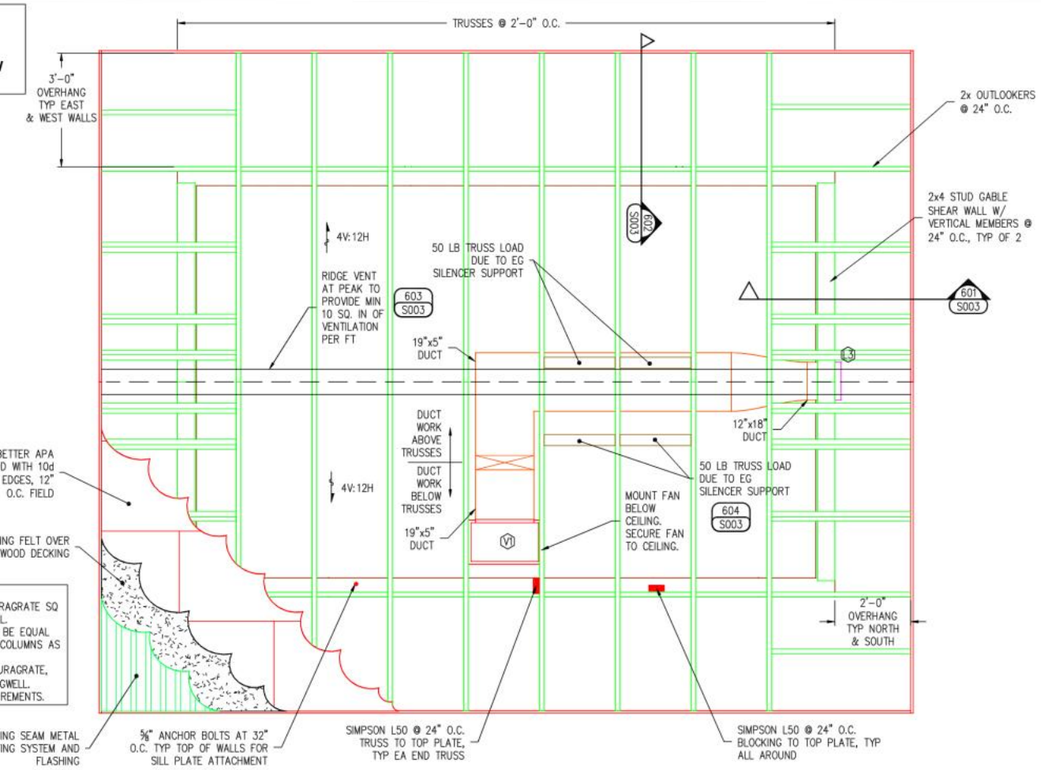
TOP CHORD: 4.5 PSF DL
25 PSF SNOW
BOT CHORD: 10 PSF DL



EMERGENCY GENERATOR BUILDING FLOOR PLAN

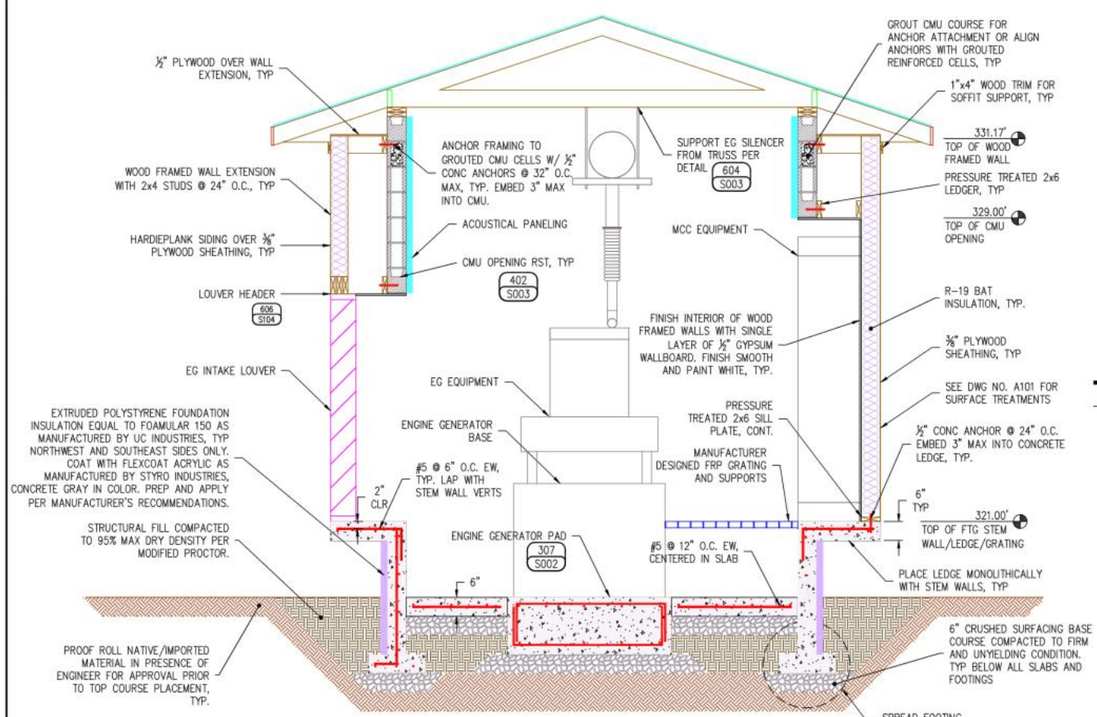
½" = 1'-0"

FRP COMPONENT NOTES:
- FRP GRATING SHALL BE EQUAL TO DURAGRATE SQ MESH AS MANUFACTURED BY STRONGWELL.
- GRATING AND STAIR SUPPORTS SHALL BE EQUAL TO EXTREN 625 BEAMS, CHANNELS AND COLUMNS AS MANUFACTURED BY STRONGWELL.
- STAIR TREADS SHALL BE EQUAL TO DURAGRATE, 1½" THICK AS MANUFACTURED BY STRONGWELL.
- SEE SPECIFICATIONS FOR OTHER REQUIREMENTS.



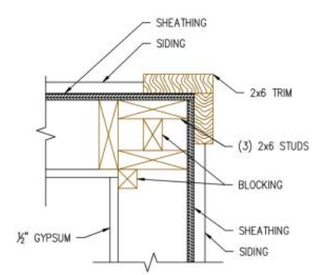
EMERGENCY GENERATOR BUILDING ROOF PLAN

½" = 1'-0"



SECTION

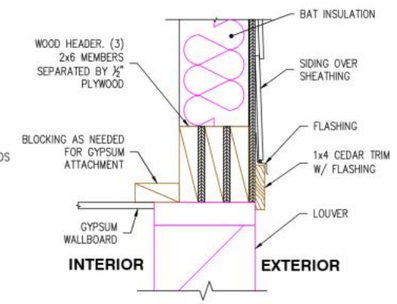
½" = 1'-0"



TYPICAL CORNER DETAIL

605

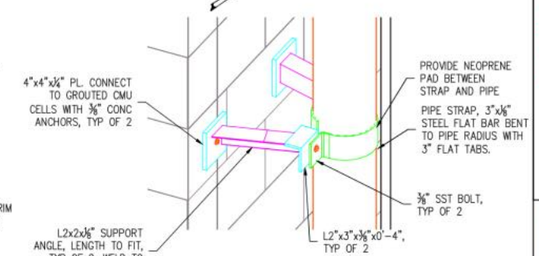
2" = 1'-0"



LOUVER HEAD

606

2" = 1'-0"



PIPE SUPPORT DETAIL

NOT TO SCALE

NOTES:
-ALL COMPONENTS SHALL BE HOT-DIP GALVANIZED AFTER FABRICATION

-PROVIDE 2 PIPE SUPPORTS TOTAL. ONE AT 24" BELOW TOP OF WALL. ONE AT 12" ABOVE BOTTOM FLANGE.

REVISED TO CONFORM TO CONSTRUCTION RECORDS

RH2 ENGINEERING INC. — 6/24/11 DATE

DOOR SCHEDULE

DOOR NO.	DOOR WIDTH	DOOR HEIGHT	DOOR MATERIAL	TYPE	FRAME WIDTH	FRAME HEIGHT	FRAME MATERIAL	DOOR LABEL	HARDWARE	REMARKS
D1	6'-4"	9'-10"	STEEL	DBL	6'-8"	10'-0"	STEEL	N/A	ACEGH	N/A

HARDWARE CODES
A – WEATHER-STRIP (ALL SIDES)
B – AUTOMATIC DOOR SHUT
C – LEVER LATCH W/ LOCK
D – DEADBOLT & FLUSH EXTENSION BOLTS & ASTRAGAL
E – DOOR STOP / HOOK (WALL MOUNT)
F – INTERIOR PANIC BAR OPENER
G – PUSH/PULL HARDWARE
H – COORDINATOR

NOTE:
SEE DIVISION 8 OF THE SPECIFICATIONS FOR MORE INFORMATION ON DOORS AND HARDWARE.

LOUVER & DAMPER SCHEDULE

NO.	FLOW	FLOW RATE (SCFM)	MANUFACTURER	LOUVER	DIMENSIONS	ACCESSORIES	DAMPER
L1	INTAKE	13,500 SCFM	POTTORFF	EAA-645	84" X 72"	BIRD & INSECT SCREEN	MOTORIZED
L2	EXHAUST	13,500 SCFM	POTTORFF	EAA-645	60" X 96"	BIRD & INSECT SCREEN	MOTORIZED
L3	EXHAUST	400 SCFM	POTTORFF	EFD-245	12" X 18"	BIRD & INSECT SCREEN	MOTORIZED

VENTILATOR SCHEDULE

NO.	FLOW	FLOWRATE	SP (IN WC)	BACKDRAFT DAMPER	MANUFACTURER	MODEL
V1	EXHAUST	400 SCFM	0.10	YES	ACME ENGINEERING	VQ400

NO.	REVISION	BY	REVIEW	DATE
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LAKE WHATCOM WATER & SEWER DISTRICT — lake whatcom

Lake Whatcom Water and Sewer District
2010 Sewer Pump Station Improvements
Cable Street

EMERGENCY GENERATOR BUILDING FLOOR AND ROOF PLAN

RH2 ENGINEERS PLANNERS SCIENTISTS

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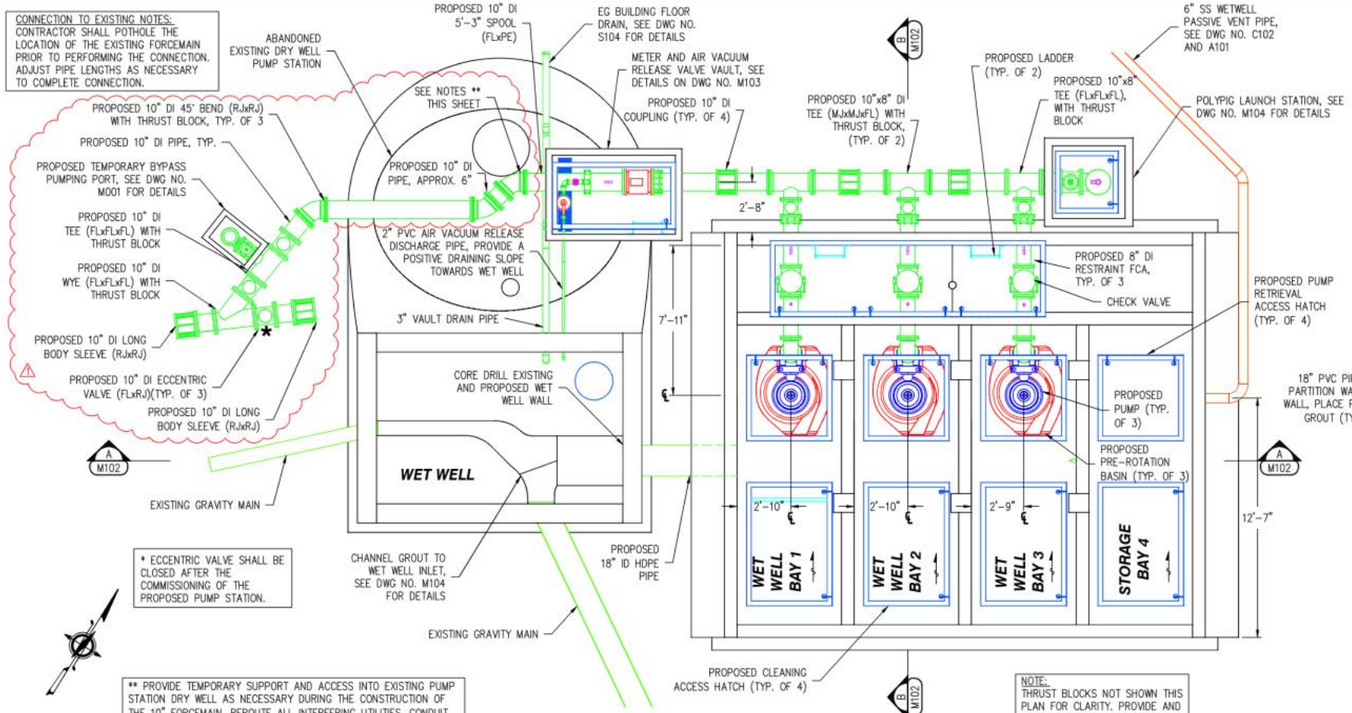
TACOMA 253.272.3059
621 Pacific Avenue Suite 104

SCALE: SHOWN
0 1" 2"
DRAWING IS NOT TO SCALE IF BAR IS NOT 2" LONG

PLOT: 24
ENGINEER: JMC
REVIEWED: KLK
DATE: JAN 21, 2010
CLIENT: LWWSD
JOB NO.: 409-050
FILENAME: CS-D-STR04

DWG NO. S104
SHEET NO. 20

CONNECTION TO EXISTING NOTES:
CONTRACTOR SHALL POTHOLE THE LOCATION OF THE EXISTING FORCEMAIN PRIOR TO PERFORMING THE CONNECTION. ADJUST PIPE LENGTHS AS NECESSARY TO COMPLETE CONNECTION.



* ECCENTRIC VALVE SHALL BE CLOSED AFTER THE COMMISSIONING OF THE PROPOSED PUMP STATION.

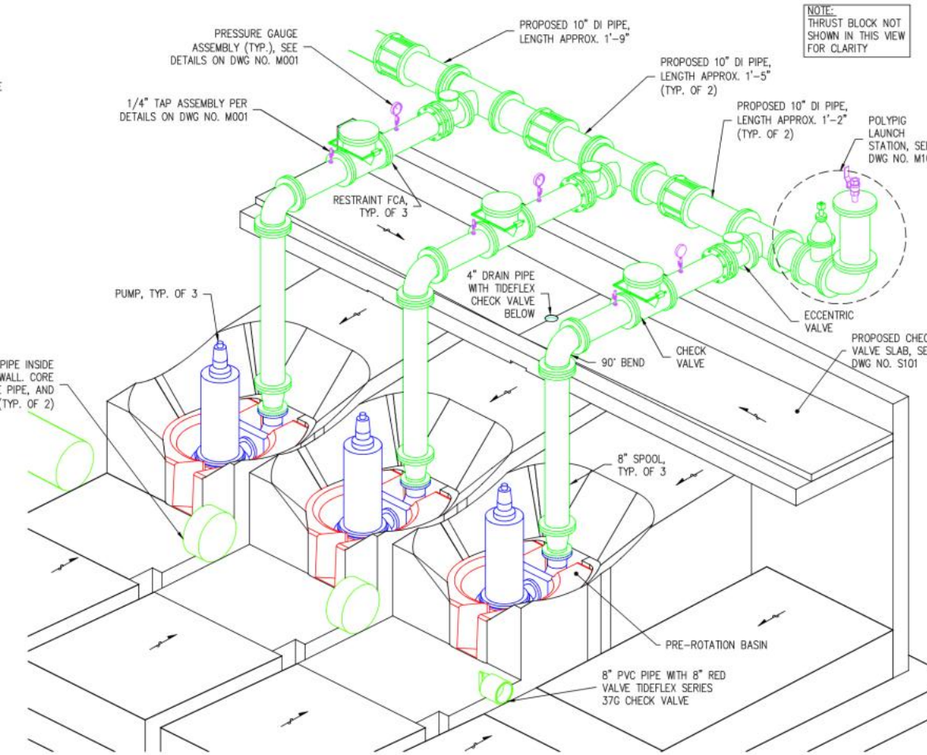
** PROVIDE TEMPORARY SUPPORT AND ACCESS INTO EXISTING PUMP STATION DRY WELL AS NECESSARY DURING THE CONSTRUCTION OF THE 10" FORCEMAIN. REROUTE ALL INTERFERING UTILITIES, CONDUIT AND WIRE AS NECESSARY. SUBMIT TEMPORARY ACCESS AND RELOCATION PLAN TO THE ENGINEER FOR APPROVAL PRIOR TO COMPLETING WORK RELATED. CONTRACTOR MAY ALSO RELOCATE THE PROPOSED FORCEMAIN NORTH OF THE EXISTING DRY WELL ACCESS HATCH. PROVIDE ADDITIONAL PIPE, FITTINGS AND THRUST RESTRAINT AS NECESSARY TO COMPLETE CONSTRUCTION.

PROPOSED MECHANICAL PLAN

¼" = 1'-0"

NOTE:
THRUST BLOCKS NOT SHOWN THIS PLAN FOR CLARITY. PROVIDE AND INSTALL THRUST BLOCKS PER DISTRICT STANDARD DETAILS

NOTE:
SEAL ALL PIPE PENETRATIONS PER DETAIL ON DWG NO. M001

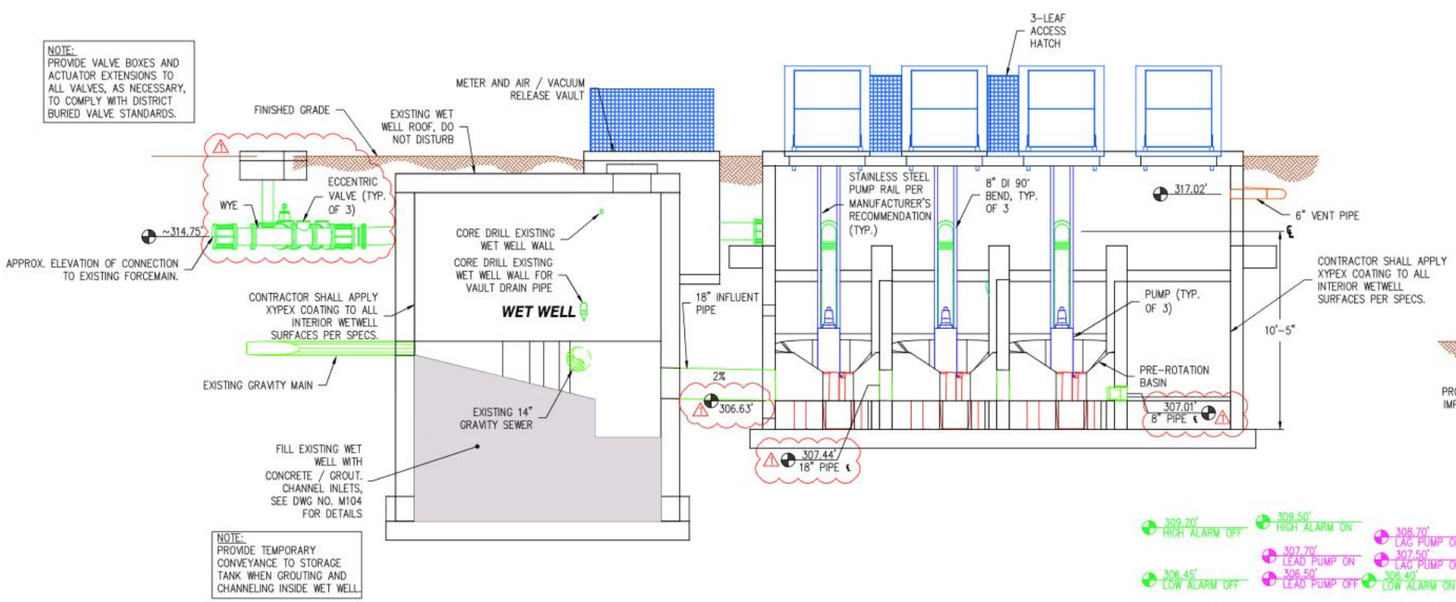


NOTE:
THRUST BLOCK NOT SHOWN IN THIS VIEW FOR CLARITY

PROPOSED MECHANICAL OBLIQUE

NOT TO SCALE

NOTE:
PROVIDE VALVE BOXES AND ACTUATOR EXTENSIONS TO ALL VALVES, AS NECESSARY, TO COMPLY WITH DISTRICT BURIED VALVE STANDARDS.



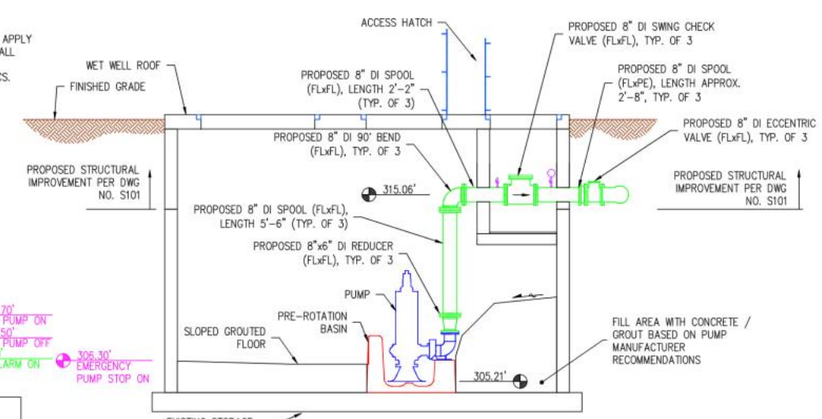
NOTE:
PROVIDE TEMPORARY CONVEYANCE TO STORAGE TANK WHEN GROUTING AND CHANNELING INSIDE WET WELL.

NOTE:
PUMP SET POINTS ARE PRELIMINARY, OWNER / CONTRACTOR WILL ADJUST DURING STARTUP & TESTING FOLLOWING COMPLETION OF PROJECT.

SECTION A M102

¼" = 1'-0"

REVISED TO CONFORM TO CONSTRUCTION RECORDS
RH2 ENGINEERING INC. 6/24/11 DATE



SECTION B M102

¼" = 1'-0"

NO.	REVISION	BY	REVIEW	DATE
1	REVISED TO CONFORM TO CONSTRUCTION RECORDS	BMS	DWB	6/24/11

BRET E. BEAUPRE, STATE OF WASHINGTON, 38752, REGISTERED PROFESSIONAL ENGINEER
SIGNED: 01/28/10

EDWIN HAYES, STATE OF WASHINGTON, 38889, REGISTERED PROFESSIONAL ENGINEER
SIGNED: 01/28/10

LAKE WHATCOM WATER & SEWER DISTRICT

Lake Whatcom Water and Sewer District
2010 Sewer Pump Station Improvements
Cable Street

PROPOSED MECHANICAL PLAN

RH2 ENGINEERS PLANNERS SCIENTISTS

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mailbox@rh2.com 1.800.720.8052
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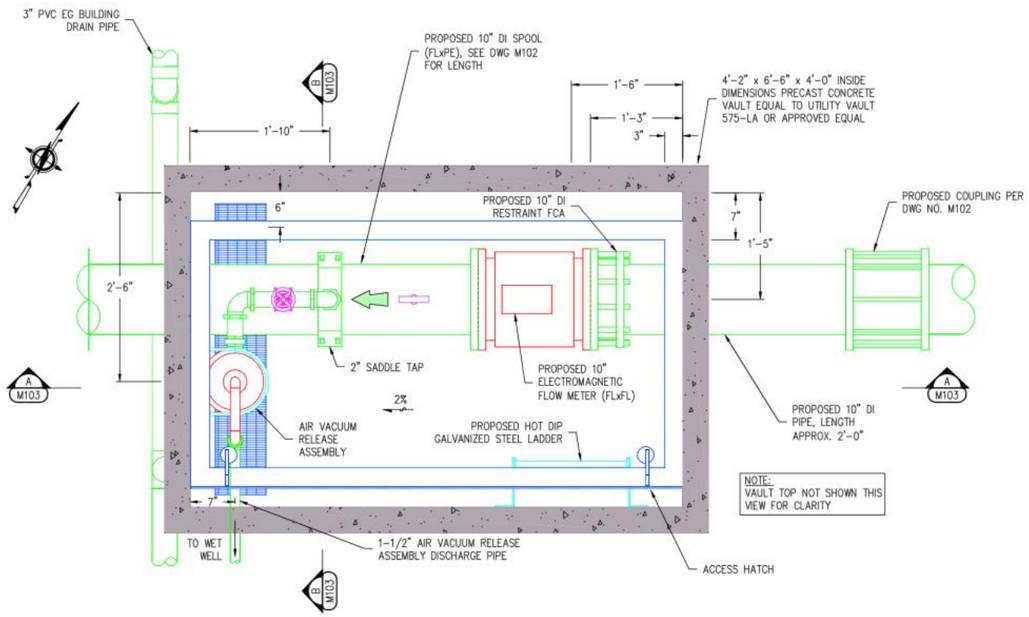
RICHLAND 509.946.5181 114 Columbia Point Drive, Suite C
SILVERDALE 360.876.7960 2021 NW Mhyre Rd, Suite 107
TACOMA 253.272.2059 621 Pacific Avenue Suite 104

SCALE: SHOWN
0 1" 2"
DRAWING IS NOT TO SCALE IF BAR IS NOT 2" LONG

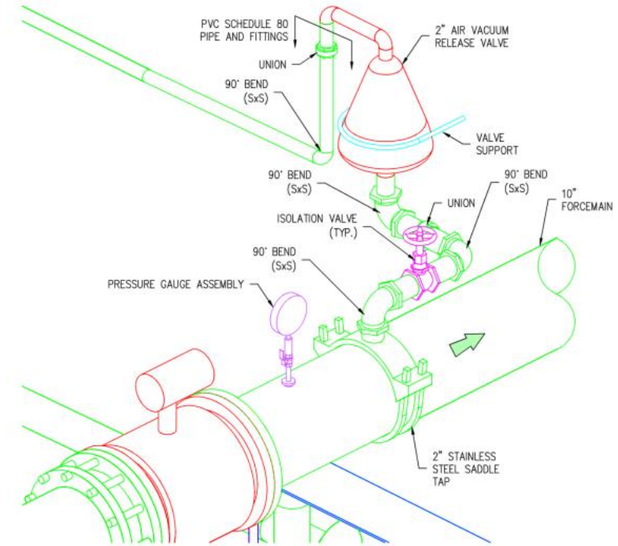
PLOT: 48	DWG NO. M102
ENGINEER: EH	
REVIEWED: DWB	
DATE: JUN 29, 2011	SHEET NO. 21
CLIENT: LWWSD	
JOB NO.: 409-050	71
FILENAME: CS-D-MEC02	



METER AND AIR VACUUM RELEASE VAULT PLAN

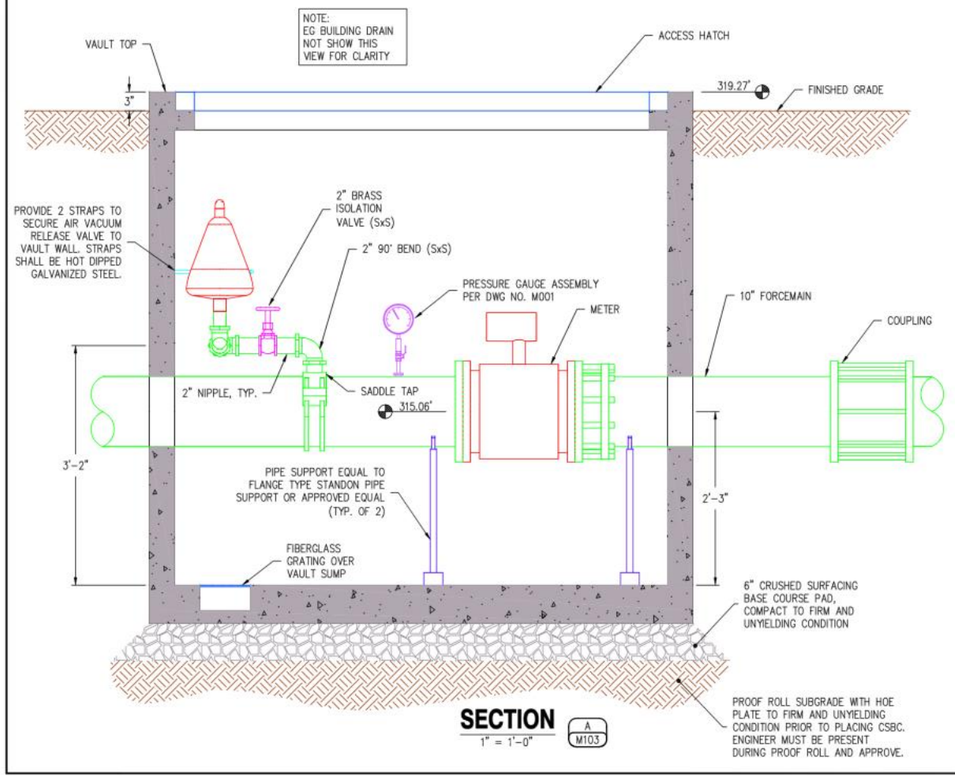
1" = 1'-0"

REVISED TO CONFORM TO CONSTRUCTION RECORDS
RH2 ENGINEERING INC. 6/24/11 DATE



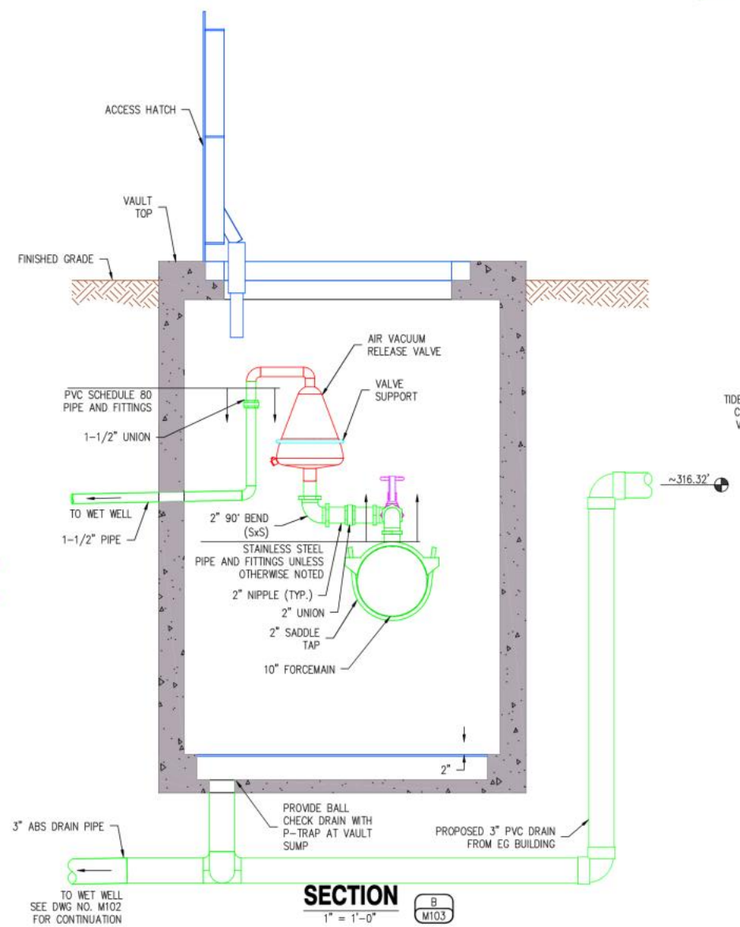
AIR VACUUM RELEASE ASSEMBLY OBLIQUE

NOT TO SCALE



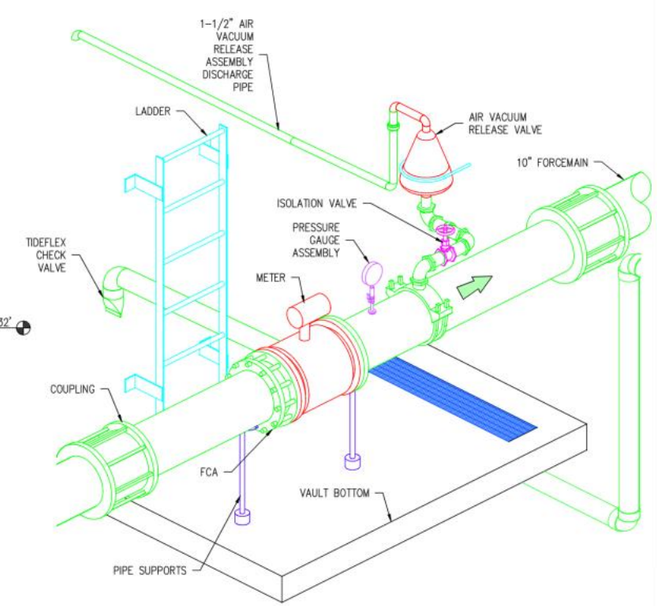
SECTION

1" = 1'-0" A M103



SECTION

1" = 1'-0" B M103



METER AND AIR VACUUM RELEASE VAULT OBLIQUE

NOT TO SCALE

NO.	REVISION	BY	REVIEW	DATE
1	REVISED TO CONFORM TO CONSTRUCTION RECORDS	BMS	DWB	6/24/11

BRET E. BEAUPRE, STATE OF WASHINGTON, 38752, REGISTERED PROFESSIONAL ENGINEER
SIGNED: 01/28/10

EDWIN HAMILTON, STATE OF WASHINGTON, 38889, REGISTERED PROFESSIONAL ENGINEER
SIGNED: 01/28/10

LAKE WHATCOM WATER & SEWER DISTRICT — lake whatcom

Lake Whatcom Water and Sewer District
2010 Sewer Pump Station Improvements
Cable Street

METER AND AIR VACUUM RELEASE VAULT DETAILS

RH2 ENGINEERS PLANNERS SCIENTISTS
RH2 ENGINEERING, INC.
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BELLINGHAM 360.676.0836 454 West Horton Road
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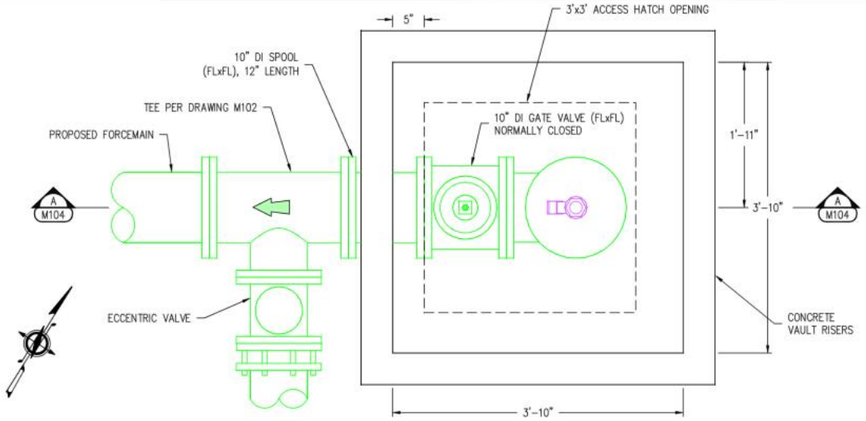
TACOMA 253.272.2059 621 Pacific Avenue Suite 104

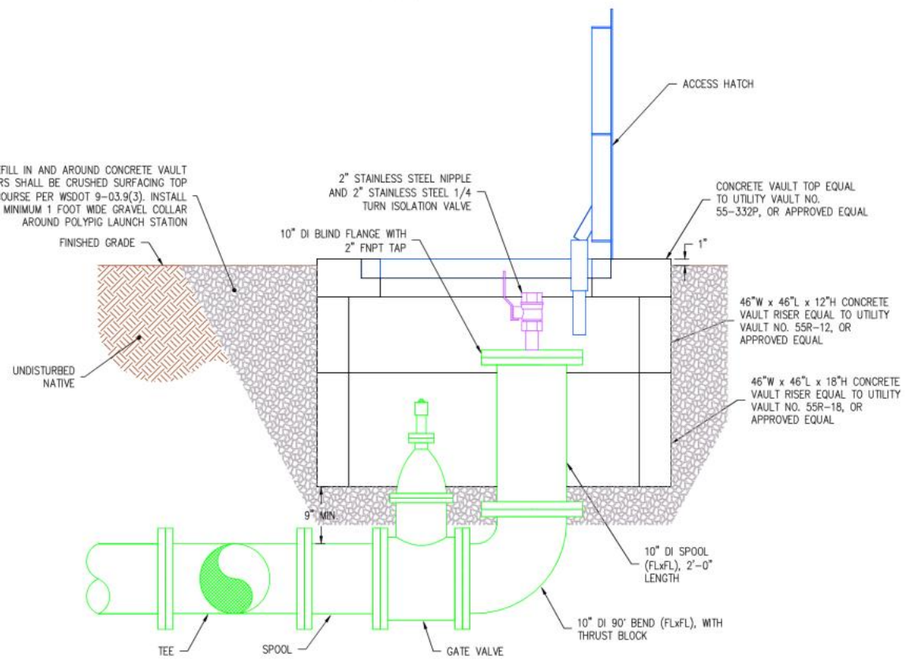
SCALE: SHOWN
0 1" 2"
DRAWING IS NOT TO SCALE IF BAR IS NOT 2" LONG

PLOT: 12	DWG NO. M103
ENGINEER: EH	
REVIEWED: DWB	
DATE: JAN 25, 2010	SHEET NO. 22
CLIENT: LWWSD	
JOB NO.: 409-050	71
FILENAME: CS-D-MEC03	



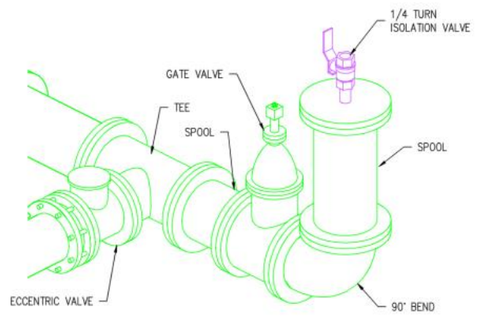
POLYPIG LAUNCH STATION PLAN

1" = 1'-0"



SECTION

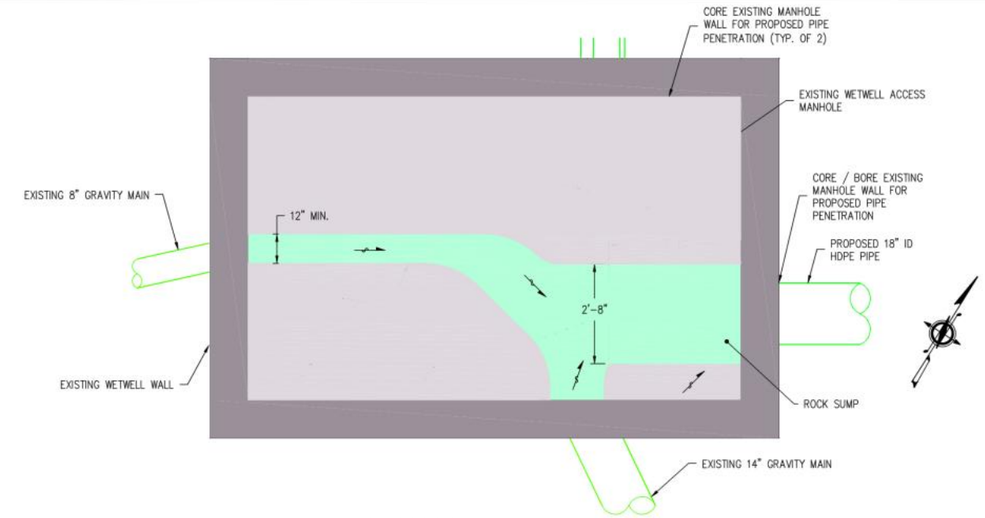
1" = 1'-0" (A / M104)



POLYPIG LAUNCH STATION OBLIQUE

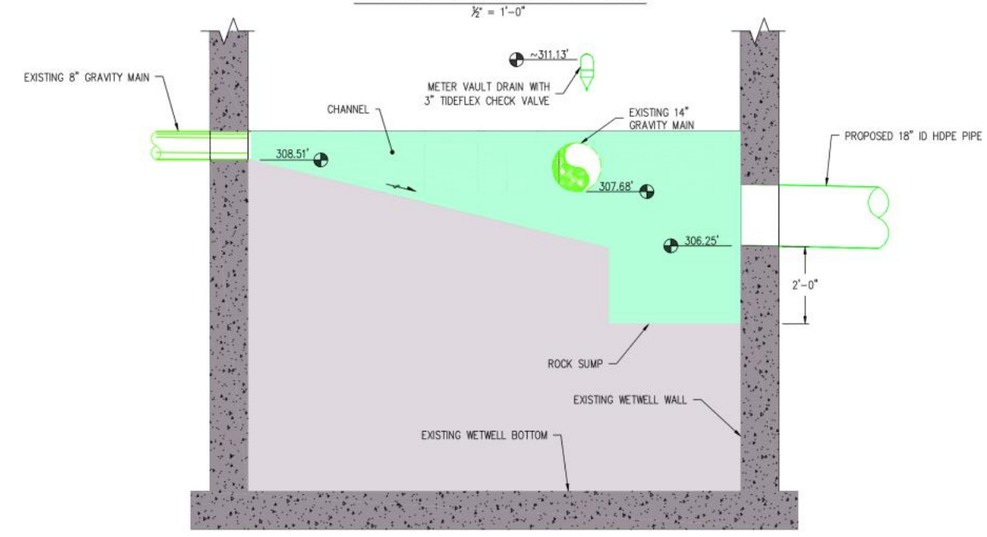
NOT TO SCALE

REVISED TO CONFORM TO CONSTRUCTION RECORDS
RH2 ENGINEERING INC. 6/24/11 DATE



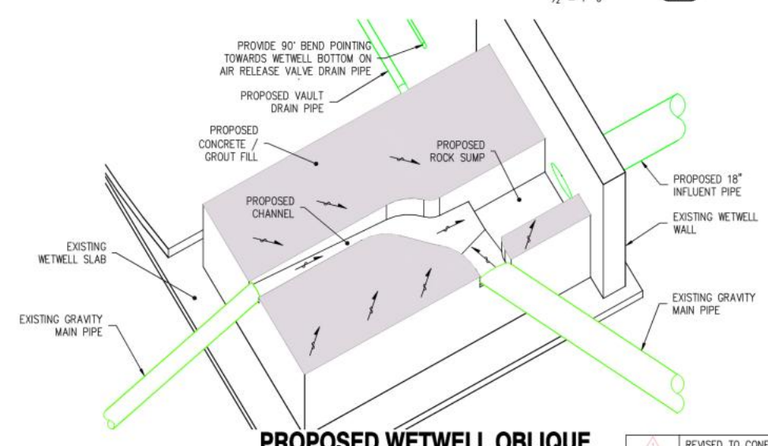
PROPOSED WETWELL PLAN

½" = 1'-0"



SECTION

½" = 1'-0" (B / M104)



PROPOSED WETWELL OBLIQUE

NOT TO SCALE

NO.	REVISION	BY	REVIEW	DATE
1	REVISED TO CONFORM TO CONSTRUCTION RECORDS	BMS	DWB	6/24/11

BRET E. BEAUPRE, STATE OF WASHINGTON, 38750, REGISTERED PROFESSIONAL ENGINEER
SIGNED: 01/28/10

EDWIN HAMILTON, STATE OF WASHINGTON, 38889, REGISTERED PROFESSIONAL ENGINEER
SIGNED: 01/28/10

LAKE WHATCOM WATER & SEWER DISTRICT — lake whatcom

Lake Whatcom Water and Sewer District
2010 Sewer Pump Station Improvements
Cable Street

POLYPIG LAUNCH STATION AND EXISTING WETWELL MODIFICATION DETAILS

RH2 ENGINEERS PLANNERS SCIENTISTS

RH2 ENGINEERING, INC.
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BELLINGHAM 360.676.0636
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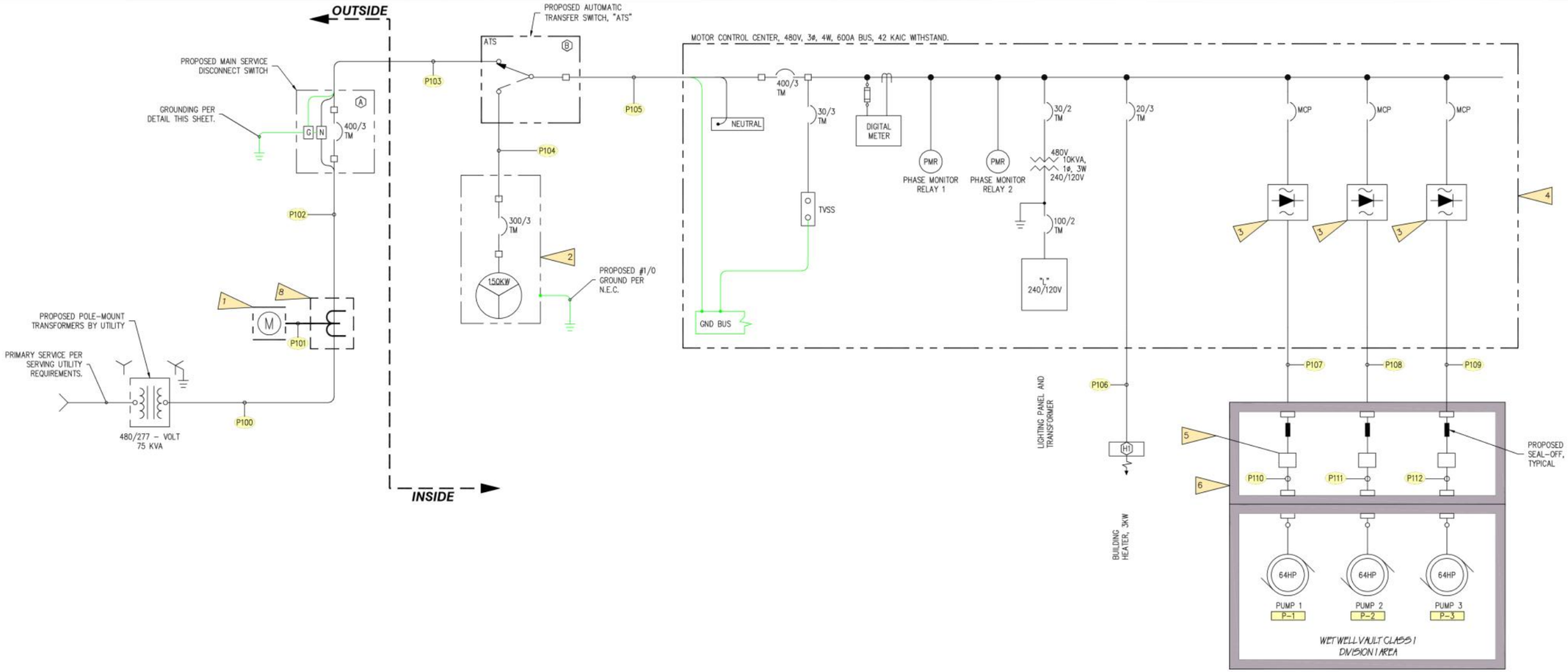
SILVERDALE 360.876.7960
2021 NW Mhyre Rd, Suite 107

TACOMA 253.272.3059
621 Pacific Avenue Suite 104

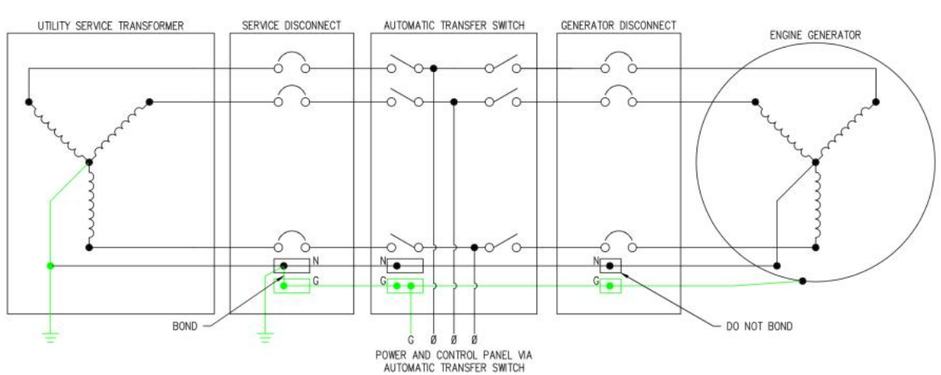
SCALE: SHOWN
0 1" 2"
DRAWING IS NOT TO SCALE IF BAR IS NOT 2" LONG

PLOT: 12	DWG NO. M104
ENGINEER: EH	
REVIEWED: RLB	
DATE: JAN 25, 2010	SHEET NO. 23
CLIENT: LWWSD	
JOB NO.: 409-050	71
FILENAME: CS-D-MEC04	



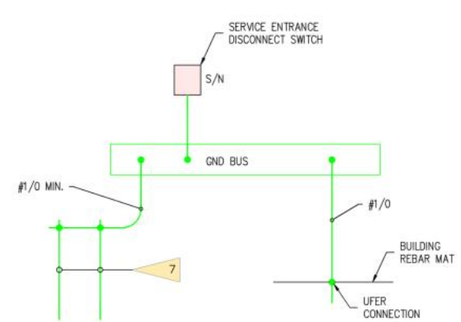
ONE-LINE DIAGRAM

NO SCALE



GENERATOR & TRANSFER SWITCH CONNECTION DIAGRAM

NO SCALE



GROUNDING

NO SCALE

STATION LOAD CALCULATIONS

64 HORSEPOWER MOTOR	71A X 1.50 = 106.5 AMPS
64 HORSEPOWER MOTOR	71A X 1.00 = 71 AMPS
64 HORSEPOWER MOTOR	0A X 1.00 = 0 AMPS
HEATER (3KW)	4.3A X 1.00 = 4.3 AMPS
MISC. STATION LOAD (15KVA)	20.8A X 1.00 = 20.8 AMPS
TOTAL	202.6 AMPS

ELECTRICAL NOTES

1. PROPOSED MAIN REVENUE METERING. METER BASE AND ENCLOSURE BY CONTRACTOR PER SERVING UTILITY REQUIREMENTS. METER BY PUGET SOUND ENERGY.
2. PROPOSED INDOOR STANDBY GENERATOR, 150 KW, 480/277V, 60 Hz, 3ϕ.
3. SEE DIAGRAM 1 ON DWG NO. E005 FOR MOTOR CONTROL LOGIC.
4. PROPOSED NEMA 1A MOTOR CONTROL CENTER.
5. WATERPROOF SPLICE. SEE DETAIL ON DWG NO. E003 (TYPICAL).
6. DRY WELL VAULT. SEE DWG NO. E104 FOR MORE INFORMATION.
7. (2) – 5/8" X 8' COPPER GROUND RODS SPACED APART AS SHOWN ON DWG NO. E103 POWER DISTRIBUTION AND SIGNAL PLAN.
8. PROPOSED NEMA 3R CURRENT TRANSFORMER ENCLOSURE PER SERVING UTILITY REQUIREMENTS.
9. SEE DWG NO. E106 FOR ELECTRICAL EQUIPMENT AND INSTRUMENTATION SCHEDULE.
10. SEE DWG NO. E106 FOR CONDUIT/CONDUCTOR SCHEDULES.
11. SEE DWG NO. E106 FOR HEATER SCHEDULE.

REVISED TO CONFORM TO CONSTRUCTION RECORDS
RH2 ENGINEERING INC. 6/24/11 DATE

NO.	REVISION	BY	REVIEW	DATE
1	REVISED TO CONFORM TO CONSTRUCTION RECORDS	MWB	DWB	6/24/11

BRET E. BEAUPRE, STATE OF WASHINGTON, 38752, REGISTERED PROFESSIONAL ENGINEER
SIGNED: 06/28/10

CHRISTOPHER M. ROBERTS, STATE OF WASHINGTON, 45317, REGISTERED PROFESSIONAL ENGINEER
SIGNED: 01/28/10

LAKE WHATCOM WATER & SEWER DISTRICT

Lake Whatcom Water and Sewer District
2010 Sewer Pump Station Improvements
Cable Street

ONE-LINE DIAGRAM

RH2 ENGINEERS PLANNERS SCIENTISTS
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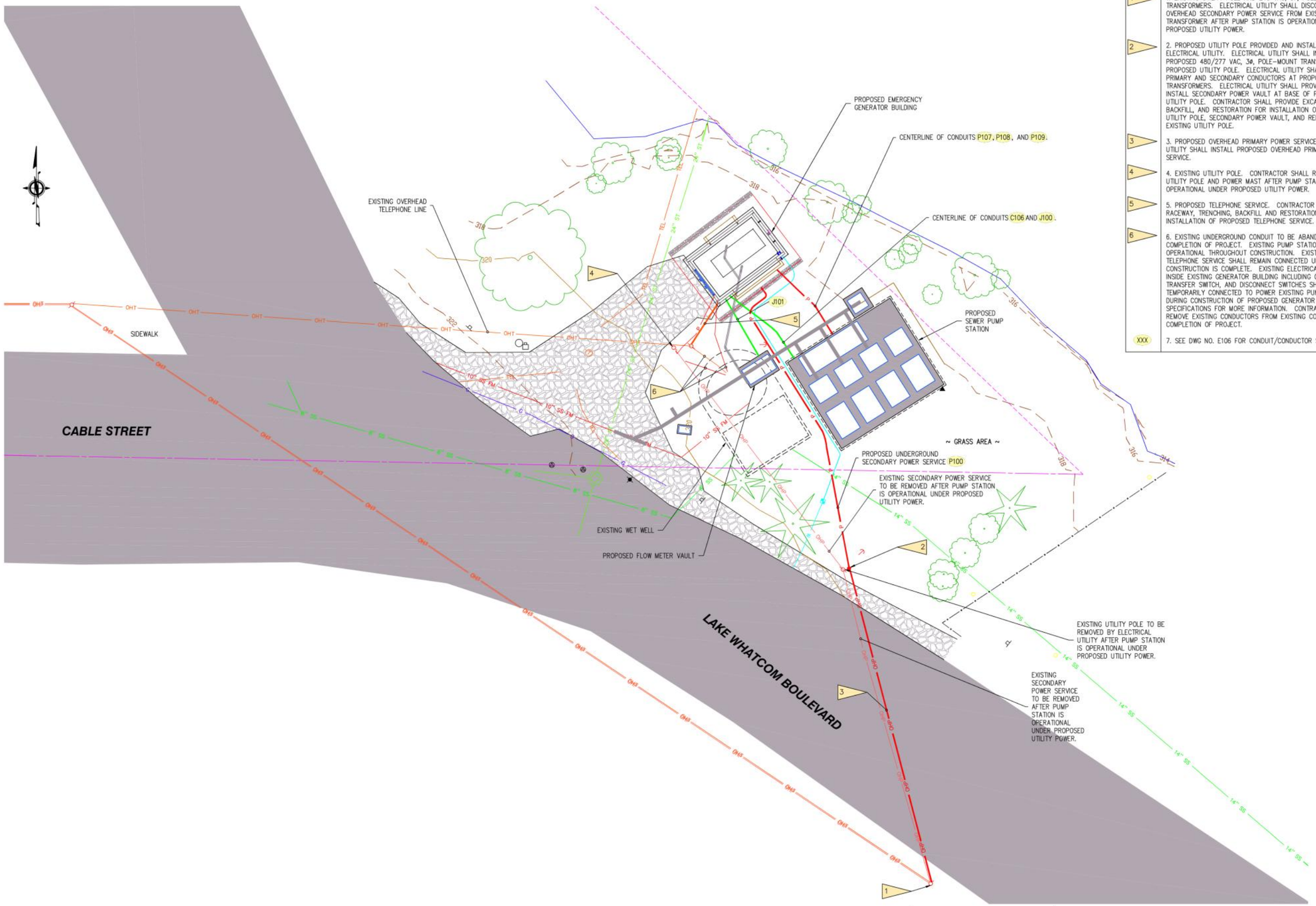
TACOMA 253.272.3059 621 Pacific Avenue Suite 104

SCALE: SHOWN
0 1" 2"
DRAWING IS NOT TO SCALE IF BAR IS NOT 2" LONG

PLOT: 1	DWG NO. E101
ENGINEER: DY	
REVIEWED: CMR	
DATE: JAN 22, 2010	SHEET NO. 24
CLIENT: LWWSD	
JOB NO.: 409-050	71
FILENAME: CS-D-ELEC01	



ELECTRICAL SITE PLAN

1" = 5'

ELECTRICAL NOTES

1. EXISTING UTILITY POLE AND 240 VAC, 3ø, POLE-MOUNT TRANSFORMERS. ELECTRICAL UTILITY SHALL DISCONNECT EXISTING OVERHEAD SECONDARY POWER SERVICE FROM EXISTING TRANSFORMER AFTER PUMP STATION IS OPERATIONAL UNDER PROPOSED UTILITY POWER.

2. PROPOSED UTILITY POLE PROVIDED AND INSTALLED BY ELECTRICAL UTILITY. ELECTRICAL UTILITY SHALL INSTALL PROPOSED 480/277 VAC, 3ø, POLE-MOUNT TRANSFORMERS ON PROPOSED UTILITY POLE. ELECTRICAL UTILITY SHALL TERMINATE PRIMARY AND SECONDARY CONDUCTORS AT PROPOSED TRANSFORMERS. ELECTRICAL UTILITY SHALL PROVIDE AND INSTALL SECONDARY POWER VAULT AT BASE OF PROPOSED UTILITY POLE. CONTRACTOR SHALL PROVIDE EXCAVATION, BACKFILL, AND RESTORATION FOR INSTALLATION OF PROPOSED UTILITY POLE, SECONDARY POWER VAULT, AND REMOVAL OF EXISTING UTILITY POLE.

3. PROPOSED OVERHEAD PRIMARY POWER SERVICE. ELECTRICAL UTILITY SHALL INSTALL PROPOSED OVERHEAD PRIMARY POWER SERVICE.

4. EXISTING UTILITY POLE. CONTRACTOR SHALL REMOVE EXISTING UTILITY POLE AND POWER MAST AFTER PUMP STATION IS OPERATIONAL UNDER PROPOSED UTILITY POWER.

5. PROPOSED TELEPHONE SERVICE. CONTRACTOR SHALL PROVIDE RACEWAY, TRENCHING, BACKFILL AND RESTORATION FOR INSTALLATION OF PROPOSED TELEPHONE SERVICE.

6. EXISTING UNDERGROUND CONDUIT TO BE ABANDONED AFTER COMPLETION OF PROJECT. EXISTING PUMP STATION SHALL REMAIN OPERATIONAL THROUGHOUT CONSTRUCTION. EXISTING POWER AND TELEPHONE SERVICE SHALL REMAIN CONNECTED UNTIL CONSTRUCTION IS COMPLETE. EXISTING ELECTRICAL EQUIPMENT INSIDE EXISTING GENERATOR BUILDING INCLUDING GENERATOR, TRANSFER SWITCH, AND DISCONNECT SWITCHES SHALL BE TEMPORARILY CONNECTED TO POWER EXISTING PUMP STATION DURING CONSTRUCTION OF PROPOSED GENERATOR BUILDING. SEE SPECIFICATIONS FOR MORE INFORMATION. CONTRACTOR SHALL REMOVE EXISTING CONDUCTORS FROM EXISTING CONDUIT AFTER COMPLETION OF PROJECT.

XXX 7. SEE DWG NO. E106 FOR CONDUIT/CONDUCTOR SCHEDULES.

BRET E. BEAUPRE, STATE OF WASHINGTON, 38752, REGISTERED PROFESSIONAL ENGINEER
SIGNED: 01/28/10

CHRISTOPHER M. ROBERTS, STATE OF WASHINGTON, 45317, REGISTERED PROFESSIONAL ENGINEER
SIGNED: 01/28/10

LAKE WHATCOM WATER & SEWER DISTRICT — lake whatcom

Lake Whatcom Water and Sewer District
2010 Sewer Pump Station Improvements
Cable Street

ELECTRICAL SITE PLAN

RH2 ENGINEERS PLANNERS SCIENTISTS

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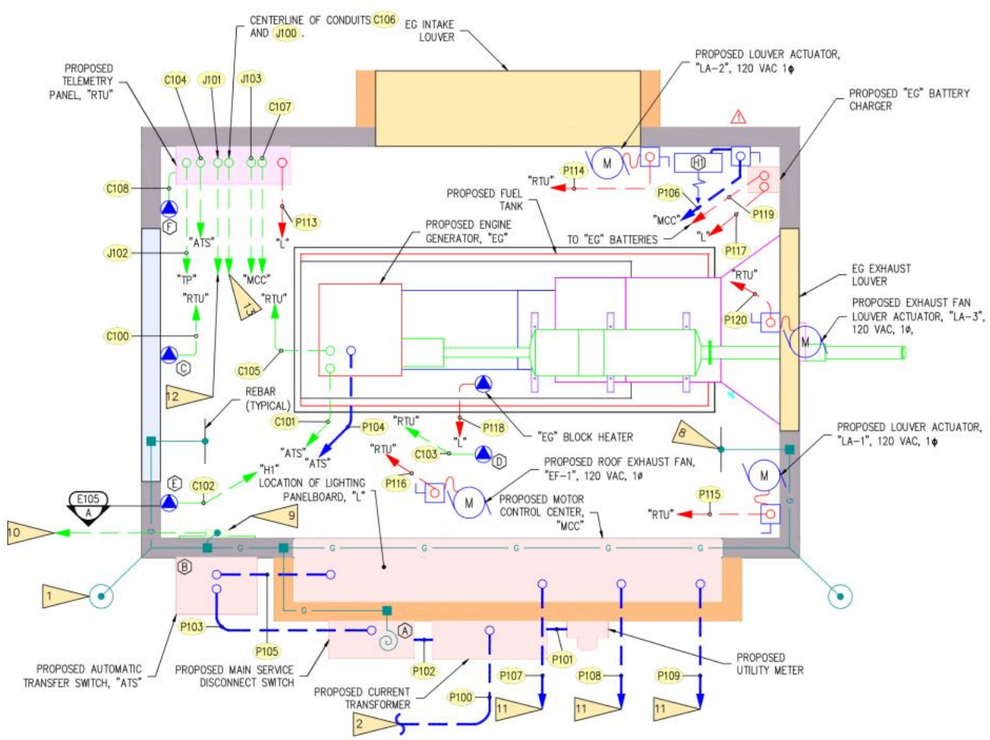
TACOMA 253.272.3059
621 Pacific Avenue Suite 104

SCALE: SHOWN
0 1" 2"
DRAWING IS NOT TO SCALE IF BAR IS NOT 2" LONG

REVISED TO CONFORM TO CONSTRUCTION RECORDS
RH2 ENGINEERING INC. 6/24/11 DATE

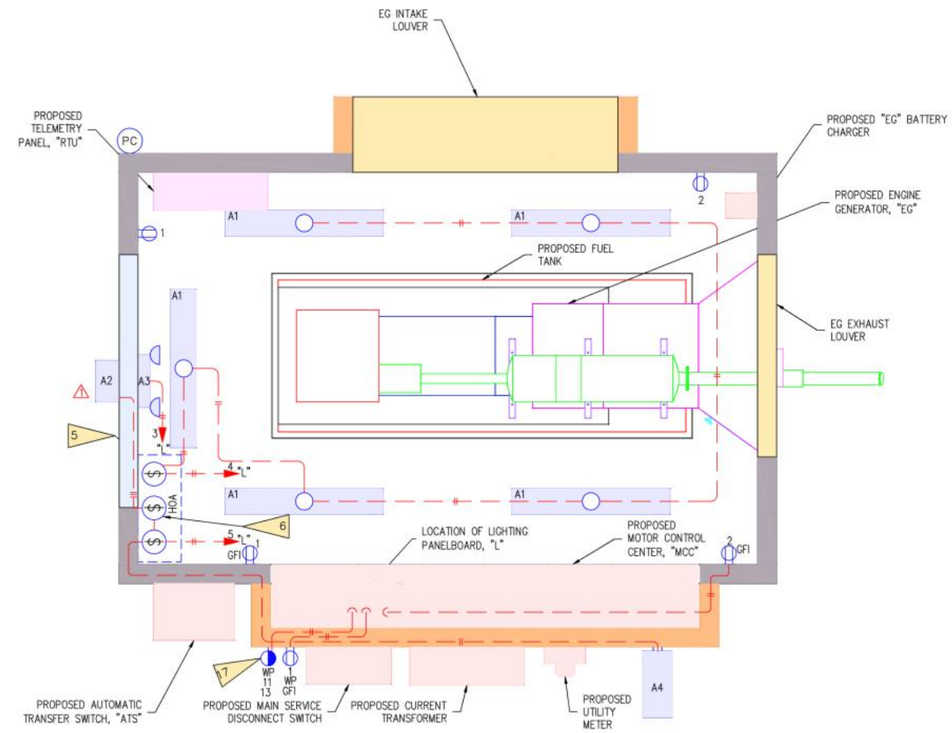
NO.	REVISION	BY	REVIEW	DATE
1	REVISED TO CONFORM TO CONSTRUCTION RECORDS	MWB	DWB	6/24/11

PLOT: 20	DWG NO. E102
ENGINEER: DY	
REVIEWED: CMR	
DATE: JAN 25, 2010	SHEET NO. 25
CLIENT: LWWSD	
JOB NO.: 409-050	71
FILENAME: CS-D-ELEC03	



CABLE STREET - GENERATOR BUILDING POWER DISTRIBUTION AND SIGNAL PLAN

½" = 1'-0"



CABLE STREET - GENERATOR BUILDING LIGHTING AND RECEPTACLE PLAN

½" = 1'-0"

ELECTRICAL NOTES

1. GROUND ROD PER N.E.C. (TYPICAL). USE EXOTHERMIC WELD CONNECTION AT THE GROUND ROD. SEE DWG NO. E002 FOR ADDITIONAL DETAIL. LOCATE GROUND RODS 2' MINIMUM FROM BUILDING FOUNDATION.

2. TO PROPOSED SECONDARY POLE-MOUNT TRANSFORMER MAST. SEE DWG NO. E102 FOR CONDUIT CONTINUATION.

3. PROVIDE AND INSTALL LABELS FOR ALL LIGHT SWITCHES. LABEL SHALL INDICATE THE DEVICE CONTROLLED BY THE SWITCH.

4. LOCATE ALL LIGHT FIXTURES, SWITCHES AND DEVICES IN LOCATION SHOWN ON THE PLANS USING ENGINEERING SCALE. ADJUST LOCATION AS NECESSARY TO AVOID INTERFERENCE WITH OTHER EQUIPMENT.

5. TRIPLE GANG BOX AND SWITCH RECESSED IN WALL.

6. PROPOSED THREE-POSITION H-O-A TOGGLE LIGHT SWITCH. SEE DETAIL ON DWG NO. E006.

A#

7. SEE DWG NO. E106 FOR LIGHTING FIXTURE SCHEDULE.

8. CONNECTION TO REINFORCEMENT GRID (TYPICAL IN 2 LOCATIONS). SEE DWG NO. E002 FOR ADDITIONAL DETAIL.

9. TELEPHONE TERMINATION PANEL, "TP" PER TELEPHONE UTILITY REQUIREMENTS. CONTRACTOR SHALL PROVIDE AND INSTALL 2'H X 2'W X 3/4"D BACK BOARD FOR INSTALLING TELEPHONE TERMINATION PANEL.

10. 2" CONDUIT WITH #6 GROUND WIRE AND PULL STRING TO UTILITY POLE. SEE DWG NO. E102 FOR CONTINUATION.

11. TO PROPOSED JUNCTION BOX LOCATED IN VALVE VAULT. SEE DWG NO. E102 FOR CONDUIT CONTINUATION. SEE DWG NO. E104 FOR PUMP STATION ELECTRICAL PLAN.

12. TO METER VAULT. SEE DWG NO. E102 FOR CONDUIT CONTINUATION. SEE DWG NO. E104 FOR PUMP STATION ELECTRICAL PLAN.

13. TO VALVE VAULT. SEE DWG NO. E102 FOR CONDUIT CONTINUATION. SEE DWG NO. E104 FOR PUMP STATION ELECTRICAL PLAN.

XXX 14. SEE DWG NO. E106 FOR CONDUIT/CONDUCTOR SCHEDULES.

X 15. SEE DWG NO. E106 FOR ELECTRICAL EQUIPMENT AND INSTRUMENTATION SCHEDULE.

H1 16. SEE DWG NO. E106 FOR HEATER SCHEDULE.

17. DEDICATED 240 VAC 40A RECEPTACLE FOR POWERING DISTRICT OWNED PRESSURE WASHER.

REVISED TO CONFORM TO CONSTRUCTION RECORDS

RH2 ENGINEERING INC. 6/24/11 DATE

NO.	REVISION	BY	REVIEW	DATE
1	REVISED TO CONFORM TO CONSTRUCTION RECORDS	MWB	DWB	6/24/11

BRET E. BEAUPRE, STATE OF WASHINGTON, 38752, REGISTERED PROFESSIONAL ENGINEER
SIGNED: 01/28/10

CHRISTOPHER M. ROBERTS, STATE OF WASHINGTON, 45317, REGISTERED PROFESSIONAL ENGINEER
SIGNED: 01/28/10

LAKE WHATCOM WATER & SEWER DISTRICT

Lake Whatcom Water and Sewer District
2010 Sewer Pump Station Improvements
Cable Street

GENERATOR BUILDING ELECTRICAL PLAN

RH2 ENGINEERS PLANNERS SCIENTISTS

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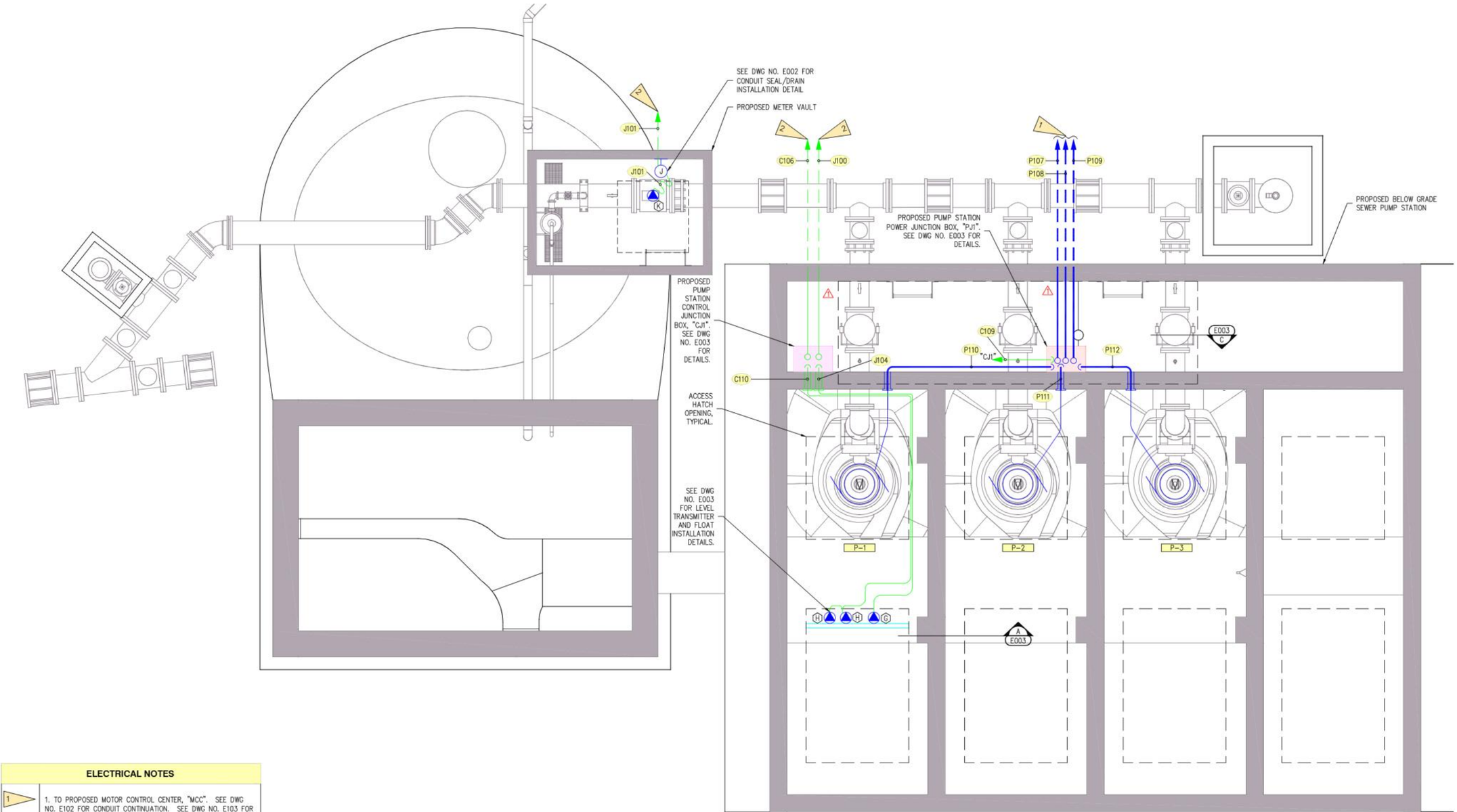
621 Pacific Avenue Suite 104

SCALE: SHOWN
0 1" 2"
DRAWING IS NOT TO SCALE IF BAR IS NOT 2" LONG

PLOT: 48	DWG NO. E103
ENGINEER: CMR	
REVIEWED: MLM	
DATE: JAN 22, 2010	SHEET NO. 26
CLIENT: LWWSD	
JOB NO.: 409-050	71
FILENAME: CS-D-ELEC02	



ELECTRICAL NOTES

1	1. TO PROPOSED MOTOR CONTROL CENTER, "MCC". SEE DWG NO. E102 FOR CONDUIT CONTINUATION. SEE DWG NO. E103 FOR GENERATOR BUILDING ELECTRICAL PLAN.
2	2. TO TELEMETRY PANEL, "RTU". SEE DWG NO. E102 FOR CONDUIT CONTINUATION. SEE DWG NO. E103 FOR GENERATOR BUILDING ELECTRICAL PLAN.
XXX	3. SEE DWG NO. E106 FOR CONDUIT/CONDUCTOR SCHEDULES.
X	4. SEE DWG NO. E106 FOR ELECTRICAL EQUIPMENT AND INSTRUMENTATION SCHEDULE.

CABLE STREET - PUMP STATION POWER DISTRIBUTION AND SIGNAL PLAN

½" = 1'-0"

REVISED TO CONFORM TO CONSTRUCTION RECORDS
RH2 ENGINEERING INC. 6/24/11 DATE

NO.	REVISION	BY	REVIEW	DATE
1	REVISED TO CONFORM TO CONSTRUCTION RECORDS	MWB	DWB	6/24/11

BRET E. BEAUPRE, STATE OF WASHINGTON, 38752, REGISTERED PROFESSIONAL ENGINEER
SIGNED: 01/28/10

CHRISTOPHER M. ROBERTS, STATE OF WASHINGTON, 45317, REGISTERED PROFESSIONAL ENGINEER
SIGNED: 01/28/10

LAKE WHATCOM WATER & SEWER DISTRICT

Lake Whatcom Water and Sewer District
2010 Sewer Pump Station Improvements
Cable Street

PUMP STATION ELECTRICAL PLAN

RH2 ENGINEERS PLANNERS SCIENTISTS

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2021 NW Mhyre Rd, Suite 107

TACOMA 253.272.3059
621 Pacific Avenue Suite 104

SCALE: SHOWN
0 1" 2"
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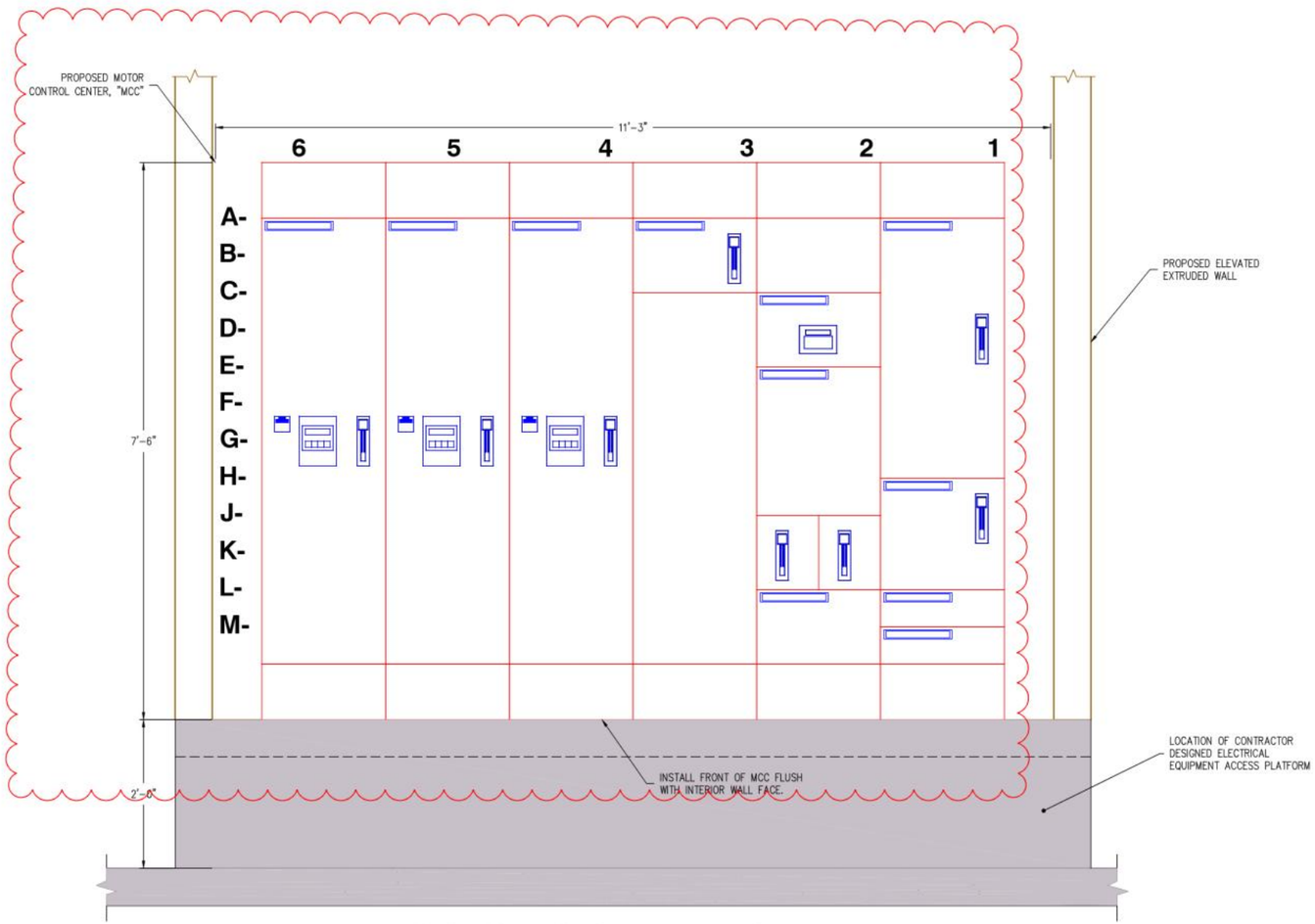
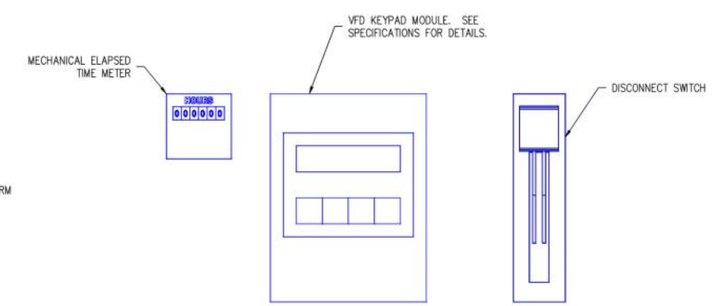
PLOT: 48	DWG NO. E104
ENGINEER: CMR	
REVIEWED: MLM	
DATE: JAN 22, 2010	SHEET NO. 27
CLIENT: LWWSD	
JOB NO.: 409-050	71
FILENAME: CS-D-ELEC02	



MOTOR CONTROL CENTER DETAILS (A / E105)

1" = 1'-0"

MCC CONTROL DEVICES	
MCC SECTION	NAMEPLATE SCHEDULE
1A	MCC MAIN DISCONNECT
1H	SURGE PROTECTIVE DEVICE
1L	PHASE MONITOR RELAY
1M	PHASE MONITOR RELAY
2C	POWER MONITOR
2F	LIGHTING PANELBOARD, "L"
2J	LIGHTING TRANSFORMER DISCONNECT
2L	LIGHTING TRANSFORMER
3A	HEATER DISCONNECT
4A	PUMP NO. 1, P-1 ELAPSED TIME (HOURS)
5A	PUMP NO. 2, P-2 ELAPSED TIME (HOURS)
6A	PUMP NO. 3, P-3 ELAPSED TIME (HOURS)



TYPICAL VFD PANEL DETAIL

NOT TO SCALE

RECORD DRAWING
REVISED TO CONFORM
TO CONSTRUCTION RECORDS
RH2 ENGINEERING INC. 6/24/11 DATE

NO.	REVISION	BY	REVIEW	DATE
1	REVISED TO CONFORM TO CONSTRUCTION RECORDS	MWB	DWB	6/24/11

BRET E. BEAUPRE — STATE OF WASHINGTON — 38752 — REGISTERED PROFESSIONAL ENGINEER — SIGNED: 01/28/10

CHRISTOPHER M. ROBERTS — STATE OF WASHINGTON — 45317 — REGISTERED PROFESSIONAL ENGINEER — SIGNED: 01/28/10

LAKE WHATCOM WATER & SEWER DISTRICT — lake whatcom

Lake Whatcom Water and Sewer District
2010 Sewer Pump Station Improvements
Cable Street

MOTOR CONTROL CENTER DETAILS

RH2 ENGINEERS PLANNERS SCIENTISTS
RH2 ENGINEERING, INC.
http://www.rh2.com
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BELLINGHAM 360.676.0636 454 West Horton Road
BOTHELL 425.951.5400 12100 NE 195th Street, Suite 100
EAST WENATCHEE 509.886.2900 300 Simon Street, Suite 5
RICHLAND 509.946.5181 114 Columbia Point Drive, Suite C
SILVERDALE 360.876.7960 2021 NW Myhre Rd, Suite 107
TACOMA 253.272.2050 621 Pacific Avenue Suite 104

SCALE: SHOWN
0 1" 2"
DRAWING IS NOT TO SCALE IF BAR IS NOT 2" LONG

PLOT: 24	DWG NO. E105
ENGINEER: DY	
REVIEWED: CMR	
DATE: JAN 22, 2010	SHEET NO. 28
CLIENT: LWWSD	
JOB NO.: 409-050	71
FILENAME: CS-D-ELEC06	

ELECTRICAL EQUIPMENT AND INSTRUMENTATION SCHEDULE

ITEM	DESCRIPTION	MANUFACTURER	MODEL NO.
A	MAIN DISCONNECT SWITCH – NEMA 4X STAINLESS STEEL ENCLOSURE, HEAVY DUTY BREAKER, SERVICE ENTRANCE RATED, THERMAL MAGNETIC, 400 AMP, 600 VOLT, 42 KAIC WITHSTAND, CIRCUIT BREAKER SWITCH. MOUNT TOP OF ENCLOSURE 6'–0" FROM FINISHED GRADE.	SIEMENS	HJD6 OR EQUAL
B	AUTOMATIC TRANSFER SWITCH – NEMA 4X STAINLESS STEEL, 400 AMP, 600 VOLT RATED, 3 PHASE, 3 POLE, 42 KAIC WITHSTAND.	SEE SPECIFICATIONS	SEE SPECIFICATIONS
C	INTRUSION ALARM SWITCH – CONTRACTOR SHALL SELECT ACTUATOR LEVER ARM BEST SUITED FOR MOUNTING CONFIGURATION. WIRE SWITCHES IN SERIES.	SQUARE D	HEAVY DUTY TYPE C, CLASS 9007 OR EQUAL
D	PHOTO ELECTRIC SMOKE DETECTOR – 24 VDC, WITH LOCAL AUDIBLE ALARM SIGNAL AND CONTACTS FOR REMOTE ANNUNCIATION THROUGH FOUR WIRE CONNECTION TO TELEMETRY. INSTALL AT HIGHEST POINT. WIRE PER MANUFACTURER'S INSTRUCTIONS. PROVIDE ACCESSORIES AS NECESSARY TO COMPLETE A FUNCTIONAL CIRCUIT.	SYSTEMS SENSOR	4WTAR–B OR EQUAL
E	WALL MOUNTED HEATING THERMOSTAT – 24 V, SPST, RANGE 40° – 99°F, SET AT 60°F, MOUNT 4 FEET ABOVE FINISHED FLOOR.	HONEYWELL	T8000C1002 OR EQUAL
F	WALL MOUNTED COOLING THERMOSTAT – SNAP ACTION, SPDT LINE VOLTAGE AIR SWITCH CONTROLLER, RANGE –30° – 100°F, SET AT 75°F, MOUNT 4 FEET ABOVE FINISHED FLOOR.	HONEYWELL	T631C1103 OR EQUAL
G	ULTRASONIC LEVEL TRANSMITTER – SEE SPECIFICATIONS.		
H	FLOAT SWITCH – SEE SPECIFICATIONS.		
K	FLOW METER – SEE SPECIFICATIONS.		

ITEM	DESCRIPTION	MANUFACTURER	MODEL NO.
H1	GENERATOR BUILDING HEATER WITH UNIVERSAL MOUNTING BRACKET – 3 KW, 480V, THREE PHASE, WITH 24V CONTROL TRANSFORMER AND POWER CONTACTOR FOR THERMOSTAT CONNECTION. MOUNT BOTTOM OF HEATER 7'–0" ABOVE FINISHED FLOOR.	QMARK	MUH–03–41

LIGHTING FIXTURE SCHEDULE

TYPE	DESCRIPTION	MANUFACTURER NAME	MANUFACTURER CATALOG NO.	★ LAMP QTY.	LAMP CATALOG NO.	REMARKS
A1	FLUORESCENT, LIGHT FIXTURE, 120 VAC, 4'–2" LONG, HIGH–IMPACT ACRYLIC LENS, MOLDED FIBERGLASS REINFORCED POLYESTER HOUSING, (2)–32W LAMPS, ENERGY SAVING BALLAST, CEILING MOUNTED, MOUNT TOP OF FIXTURE ON BUILDING CEILING, U.L. LISTED FOR DAMP LOCATIONS.	LITHONIA	DM 2 32 ARDP 120	2	32WT8 32 WATT	
A2	HIGH PRESSURE SODIUM OUTDOOR AREA CUTOFF LIGHT – 100W HIGH PRESSURE SODIUM, 120V BALLAST, 10"H, 11 1/2" W, 8 15/16" D, DIE–CAST ALUMINUM HOUSING, DIE–FORMED ALUMINUM REFLECTOR, POLYCARBONATE LENS WITH IES CUTOFF DISTRIBUTION, PHOTOCELL, WIREGUARD, MOUNT BOTTOM OF FIXTURE 10'–0" ABOVE FINISHED GRADE, U.L. LISTED FOR WET LOCATIONS.	LITHONIA	TWAC 100S 120 PE DBL LPI TWAWG	1	100 WATT HPS	PHOTOCELL CONTROL
A3	DUAL HEAD EMERGENCY LIGHT – (2)–5.4W, AC T5 WEDGE–BASE LAMPS, DUAL–VOLTAGE INPUT 120 VAC, 5 $\frac{3}{8}$"H, 16 $\frac{1}{2}$"W, THERMOPLASTIC HOUSING, INTEGRATED RECHARGEABLE BATTERY MOUNT BOTTOM OF FIXTURE 1'–0" ABOVE DOOR, U.L. LISTED FOR INDOOR DAMP LOCATIONS.	LITHONIA	EU2M6	2	T5 5.4 WATT DC	
A4	OUTDOOR METAL HALIDE FLOODLIGHT – 250W METAL HALIDE, 120 V BALLAST, 20 7/8"L, 9 1/2" DIA, HEAVY DUTY CAST ALUMINUM HOUSING, ALUMINUM REFLECTOR, POWDER COAT GRAY FINISH, MOUNT FIXTURE 10'–0" ABOVE GRADE WITH LIGHT CAST OVER PUMP STATION, U.L. LISTED FOR WET LOCATIONS.	DAY–BRITE	FLP250M12–WFLPGYCUL	1	250 WATT METAL HALIDE	

★ NUMBER OF LAMPS PER FIXTURE

PANEL SCHEDULE L

NO. L — LOCATION: MCC — SERVING: GENERATOR BUILDING

240/120 VOLTS — 3 WIRE — 100 AMP MAIN

CIRCUIT DESCRIPTION	KVA	AMP			AMP	KVA	CIRCUIT DESCRIPTION
GENERATOR BUILDING RECEPTACLE CIRCUIT NO. 1	0.54	20	1	2	20	0.36	GENERATOR BUILDING RECEPTACLE CIRCUIT NO. 2
GENERATOR BUILDING EMERGENCY LIGHTING	0.01	20	3	4	20	0.38	GENERATOR BUILDING INTERIOR LIGHTING
GENERATOR BUILDING EXTERIOR LIGHTING	0.41	20	5	6	20	0.65	TELEMETRY PANEL, "RTU"
GENERATOR BUILDING EXHAUST FAN, "EF–1" VIA "RTU"	0.17	20	7	8	20	1.32	GENERATOR BLOCK HEATER
GENERATOR BATTERY CHARGER	0.34	20	9	10	2P		
⚠ DEDICATED RECEPTACLE FOR PRESSURE WASHER	3.84	40	11	12	20	–	SPARE
	–	2P	13	14	20	–	SPARE
SPACE	–	–	15	16	–	–	SPACE
SPACE	–	–	17	18	–	–	SPACE

CONNECTION LOAD: 8.02 KVA 33.42 AMPS — DEMAND: LIGHTING AND CONTROL LOAD — DEMAND LOAD: 8.02 KVA 33.42 AMPS

POWER CONDUIT AND CONDUCTOR SCHEDULE

CIRCUIT	SOURCE	DESTINATION	TRADE SIZE	(QUANTITY) CONDUCTORS	NOTES
P100	SECONDARY POLE–MOUNT TRANSFORMER MAST	CURRENT TRANSFORMER ENCLOSURE	4"	(3) – #600 MCM, (1) – #600 MCM N	
P101	CURRENT TRANSFORMER ENCLOSURE	UTILITY METER	1 1/4"	(13) – #14	
P102	CURRENT TRANSFORMER ENCLOSURE	MAIN SERVICE DISCONNECT SWITCH	4"	(3) – #600 MCM, (1) – #600 MCM N	
P103	MAIN SERVICE DISCONNECT SWITCH	AUTOMATIC TRANSFER SWITCH, "ATS"	4"	(3) – #600 MCM, (1) – #600 MCM N, (1) – #3 GRD	
P104	AUTOMATIC TRANSFER SWITCH, "ATS"	ENGINE GENERATOR, "EG"	4"	(3) – #600 MCM, (1) – #600 MCM N, (1) – #3 GRD	
P105	AUTOMATIC TRANSFER SWITCH, "ATS"	MOTOR CONTROL CENTER, "MCC"	4"	(3) – #600 MCM, (1) – #600 MCM N, (1) – #3 GRD	
P106	MOTOR CONTROL CENTER, "MCC"	GENERATOR BUILDING HEATER, "H1"	3/4"	(3) – #12, (1) – #12 GRD	
P107	MOTOR CONTROL CENTER, "MCC"	PUMP STATION POWER JUNCTION BOX, "PJ1"	1 1/2"	(3) – #2, (1) – #6 GRD	
P108	MOTOR CONTROL CENTER, "MCC"	PUMP STATION POWER JUNCTION BOX, "PJ1"	1 1/2"	(3) – #2, (1) – #6 GRD	
P109	MOTOR CONTROL CENTER, "MCC"	PUMP STATION POWER JUNCTION BOX, "PJ1"	1 1/2"	(3) – #2, (1) – #6 GRD	
P110	PUMP STATION POWER JUNCTION BOX, "PJ1"	PUMP NO. 1, "P–1"	1 1/2"	MANUFACTURER PUMP MOTOR CABLE	
P111	PUMP STATION POWER JUNCTION BOX, "PJ1"	PUMP NO. 2, "P–2"	1 1/2"	MANUFACTURER PUMP MOTOR CABLE	
P112	PUMP STATION POWER JUNCTION BOX, "PJ1"	PUMP NO. 3, "P–3"	1 1/2"	MANUFACTURER PUMP MOTOR CABLE	
P113	LIGHTING PANELBOARD, "L"	TELEMETRY PANEL, "RTU"	3/4"	(4) – #12, (1) – #12 GRD	EXHAUST FAN AND TELEMETRY PANEL POWER SUPPLY
P114	TELEMETRY PANEL, "RTU"	LOUVER ACTUATOR, "LA–2"	3/4"	(2) – #12, (1) – #12 GRD	
P115	TELEMETRY PANEL, "RTU"	LOUVER ACTUATOR, "LA–1"	3/4"	(2) – #12, (1) – #12 GRD	
P116	TELEMETRY PANEL, "RTU"	EXHAUST FAN, "EF–1"	3/4"	(2) – #12, (1) – #12 GRD	
P117	LIGHTING PANELBOARD, "L"	GENERATOR BATTERY CHARGER	3/4"	(2) – #12, (1) – #12 GRD	
P118	LIGHTING PANELBOARD, "L"	GENERATOR BLOCK HEATER	3/4"	(2) – #12, (1) – #12 GRD	
P119	GENERATOR BATTERY CHARGER	GENERATOR BATTERIES	3/4"	(2) – #12, (1) – #12 GRD	
P120	TELEMETRY PANEL, "RTU"	LOUVER ACTUATOR, "LA–3"	3/4"	(2) – #12, (1) – #12 GRD	

CONTROL CONDUIT AND CONDUCTOR SCHEDULE

CIRCUIT	SOURCE	DESTINATION	TRADE SIZE	(QUANTITY) CONDUCTORS	NOTES
C100	TELEMETRY PANEL, "RTU"	SOUTH ENTRANCE INTRUSION SWITCH	3/4"	(2) – #14, (1) – #14 GRD	
C101	ENGINE GENERATOR, "EG"	AUTOMATIC TRANSFER SWITCH, "ATS"	3/4"	(2) – #14, (1) – #14 GRD	GENERATOR START SIGNAL
C102	HEATING THERMOSTAT	GENERATOR BUILDING HEATER, "H1"	3/4"	(2) – #14, (1) – #14 GRD	
C103	TELEMETRY PANEL, "RTU"	SMOKE DETECTOR	3/4"	(4) – #14, (1) – #14 GRD	
C104	TELEMETRY PANEL, "RTU"	AUTOMATIC TRANSFER SWITCH, "ATS"	3/4"	(6) – #14, (1) – #14 GRD	
C105	TELEMETRY PANEL, "RTU"	ENGINE GENERATOR, "EG"	3/4"	(8) – #14, (1) – #14 GRD	
C106	TELEMETRY PANEL, "RTU"	PUMP STATION CONTROL JUNCTION BOX, "CJ1"	1 1/2"	(8) – #14, (1) – #14 GRD. (3) – MOTOR SENSOR CABLES	
C107	TELEMETRY PANEL, "RTU"	MOTOR CONTROL CENTER, "MCC"	1"	(26) – #14, (1) – #14 GRD	
C108	TELEMETRY PANEL, "RTU"	COOLING THERMOSTAT	3/4"	(2) – #14, (1) – #14 GRD	
C109	PUMP STATION CONTROL JUNCTION BOX, "CJ1"	PUMP STATION POWER JUNCTION BOX, "PJ1"	1"	(3) – MOTOR SENSOR CABLES	
C111	PUMP STATION CONTROL JUNCTION BOX, "CJ1"	PUMP STATION FLOAT SWITCHES	1"	(2) – MANUFACTURER FLOAT CABLES	

INSTRUMENTATION CONDUIT AND CONDUCTOR SCHEDULE

CIRCUIT	SOURCE	DESTINATION	TRADE SIZE	(QUANTITY) CONDUCTORS	NOTES
J100	TELEMETRY PANEL, "RTU"	PUMP STATION CONTROL JUNCTION BOX, "CJ1"	3/4"	(1) – 2–CONDUCTOR SHIELDED CABLE	
J101	TELEMETRY PANEL, "RTU"	FLOW METER	1 1/2"	MANUFACTURER FLOW METER CABLES	
J102	TELEMETRY PANEL, "RTU"	TELEPHONE TERMINATION PANEL, "TP"	3/4"	(1) – 1–PAIR TELEPHONE LINE	
J103	TELEMETRY PANEL, "RTU"	MOTOR CONTROL CENTER, "MCC"	1 1/2"	(4) – CAT 5E ETHERNET CABLES	
J104	PUMP STATION CONTROL JUNCTION BOX, "CJ1"	PUMP STATION LEVEL TRANSMITTER	3/4"	MANUFACTURER LEVEL TRANSMITTER CABLE	

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SIGNED: 01/28/10

CHRISTOPHER M. MONTGOMERY — STATE OF WASHINGTON — 45317 — REGISTERED PROFESSIONAL ENGINEER
SIGNED: 01/28/10

LAKE WHATCOM WATER & SEWER DISTRICT — lake whatcom

Lake Whatcom Water and Sewer District
2010 Sewer Pump Station Improvements
Cable Street

ELECTRICAL SCHEDULES

RH2 ENGINEERS PLANNERS SCIENTISTS

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2021 NW Mhyre Rd, Suite 107

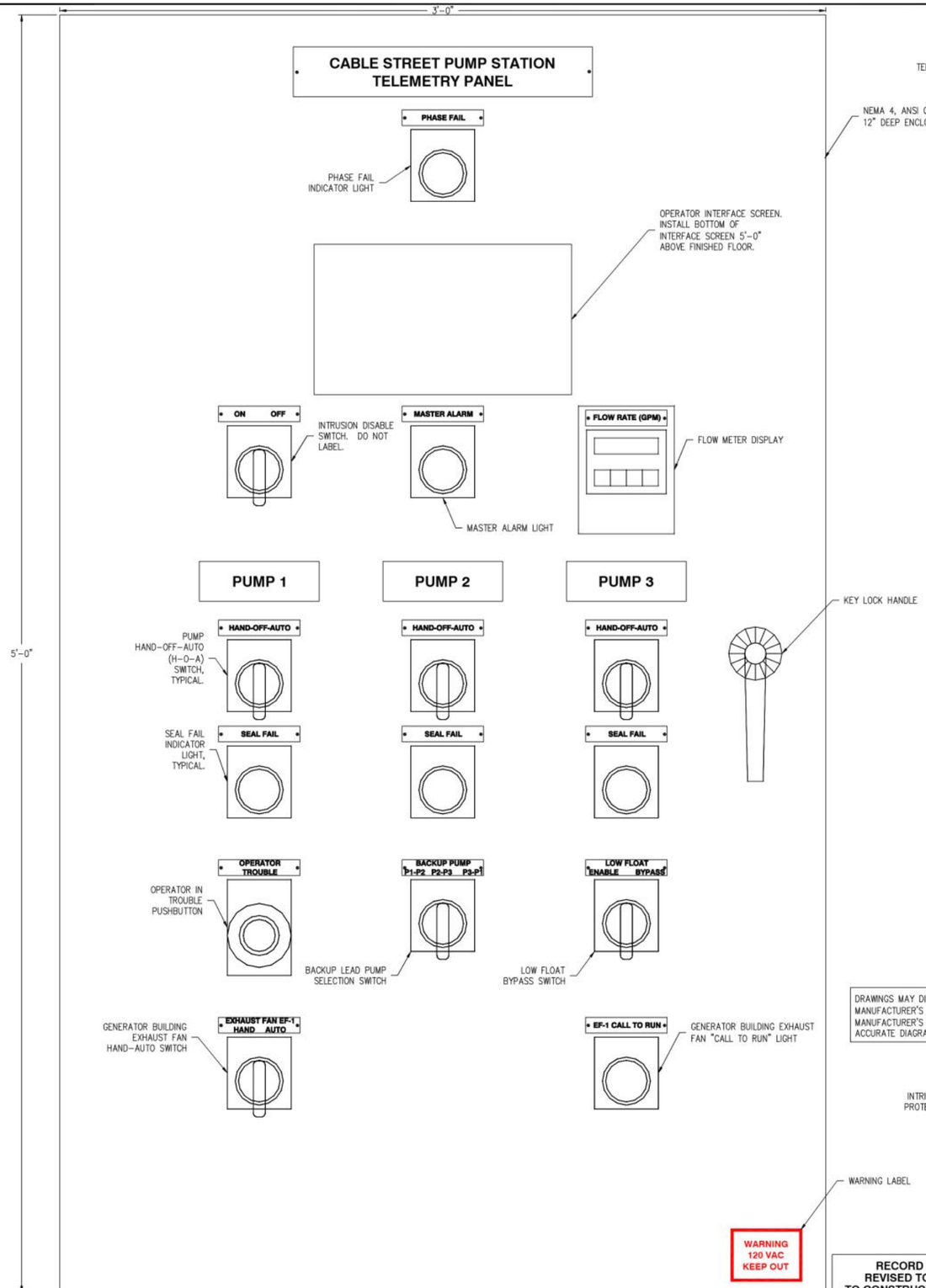
TACOMA 253.272.3059
621 Pacific Avenue Suite 104

SCALE: SHOWN
0 1" 2"
DRAWING IS NOT TO SCALE IF BAR IS NOT 2" LONG

PLOT: 1
ENGINEER: CMR
REVIEWED: MLM
DATE: JAN 22, 2010
CLIENT: LWWSD
JOB NO.: 409–050
FILENAME: CS–D–ELEC04
DWG NO. E106
SHEET NO. 29

REVISED TO CONFORM TO CONSTRUCTION RECORDS
RH2 ENGINEERING INC. — DATE 6/24/11

NO.	REVISION	BY	REVIEW	DATE
1	REVISED TO CONFORM TO CONSTRUCTION RECORDS	MWB	DWB	6/24/11



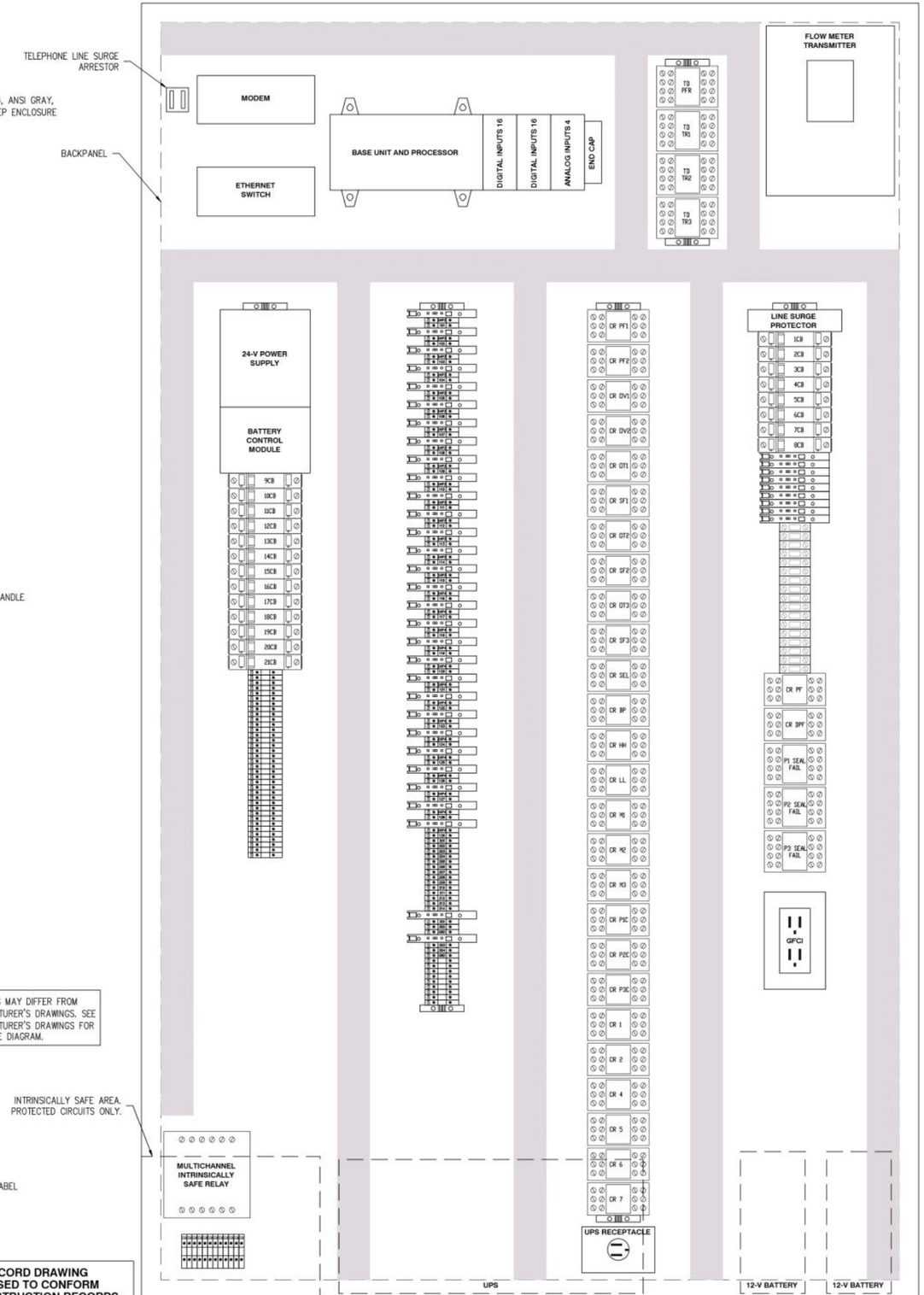
PANEL EXTERIOR LAYOUT

NOT TO SCALE

DRAWINGS MAY DIFFER FROM MANUFACTURER'S DRAWINGS. SEE MANUFACTURER'S DRAWINGS FOR ACCURATE DIAGRAM.

RECORD DRAWING
REVISED TO CONFORM
TO CONSTRUCTION RECORDS

RH2 ENGINEERING INC. — DATE 6/24/11



PANEL INTERIOR LAYOUT

NOT TO SCALE

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CHRISTOPHER M. ROBERTS — STATE OF WASHINGTON — 45317 — REGISTERED PROFESSIONAL ENGINEER — SIGNED: 01/28/10

LAKE WHATCOM WATER & SEWER DISTRICT — lake whatcom

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Cable Street

RTU - PANEL LAYOUT

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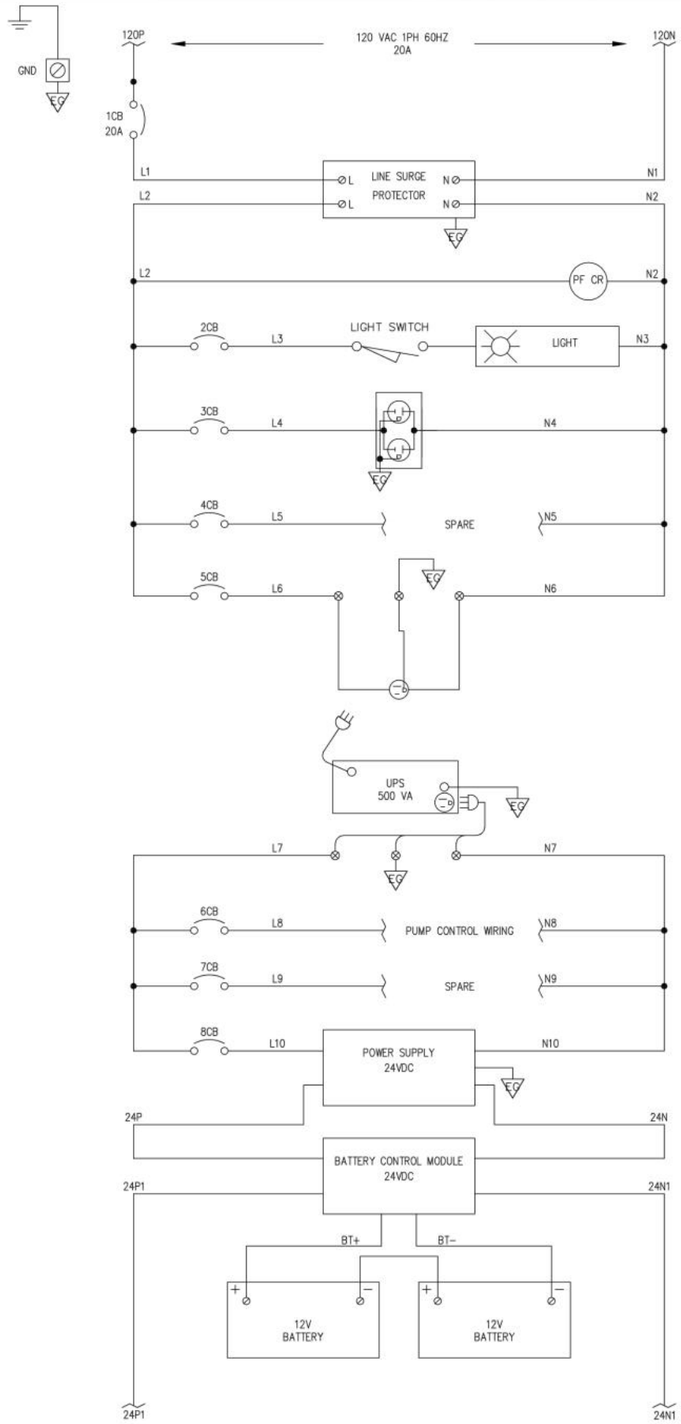
TACOMA 253.272.3059
621 Pacific Avenue Suite 104

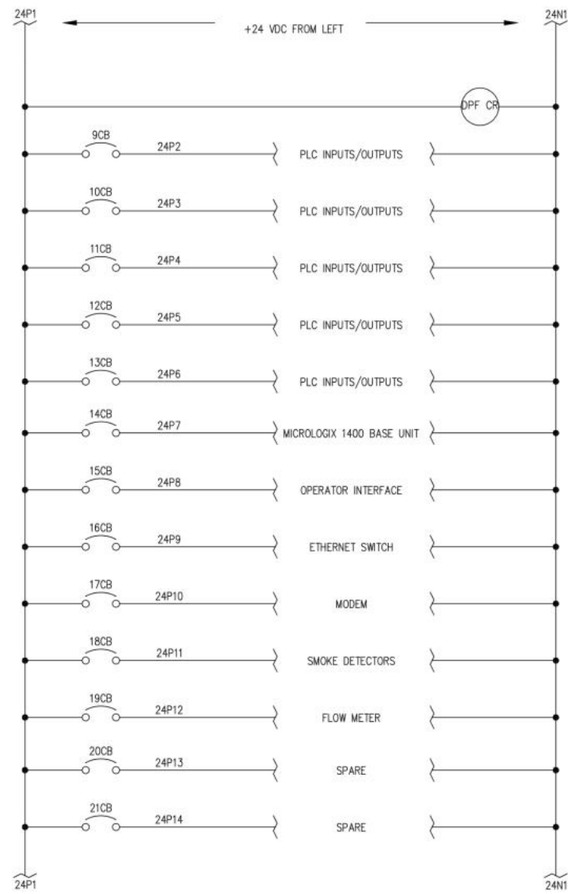
SCALE: SHOWN
0 1" 2"
DRAWING IS NOT TO SCALE IF BAR IS NOT 2" LONG

PLOT: 1
ENGINEER: CMR
REVIEWED: MLM
DATE: JAN 22, 2010
CLIENT: LWWSD
JOB NO.: 409-050
FILENAME: CS-D-ELEC05

DWG NO. E107

SHEET NO. 30 / 71



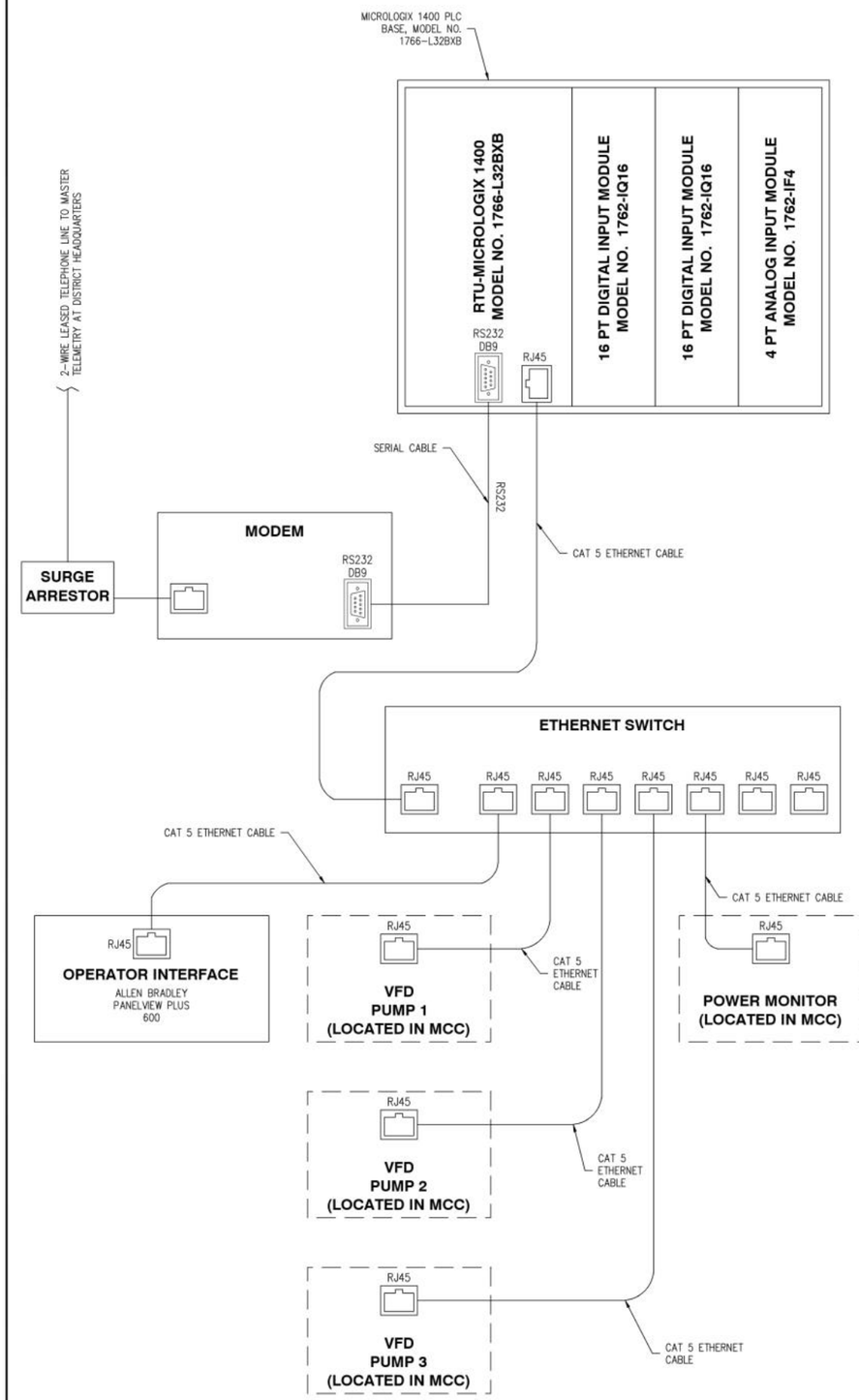


NOTE: SEE DIAGRAM 4 ON DWG NO. E006 FOR EXHAUST FAN, "EF-1", POWER SUPPLY INFORMATION AND WIRING DIAGRAM.

DRAWINGS MAY DIFFER FROM MANUFACTURER'S DRAWINGS. SEE MANUFACTURER'S DRAWINGS FOR ACCURATE DIAGRAM.

POWER LAYOUT

NOT TO SCALE



RECORD DRAWING
REVISED TO CONFORM
TO CONSTRUCTION RECORDS
6/24/11
RH2 ENGINEERING INC. DATE

COMMUNICATIONS LAYOUT

NOT TO SCALE

NO.	REVISION	BY	REVIEW	DATE
1	REVISED TO CONFORM TO CONSTRUCTION RECORDS	MWB	DWB	6/24/11

SIGNED: 01/28/10

SIGNED: 01/28/10

LAKE WHATCOM WATER & SEWER DISTRICT

Lake Whatcom Water and Sewer District
2010 Sewer Pump Station Improvements
Cable Street

RTU - POWER AND COMMUNICATIONS WIRING DIAGRAM

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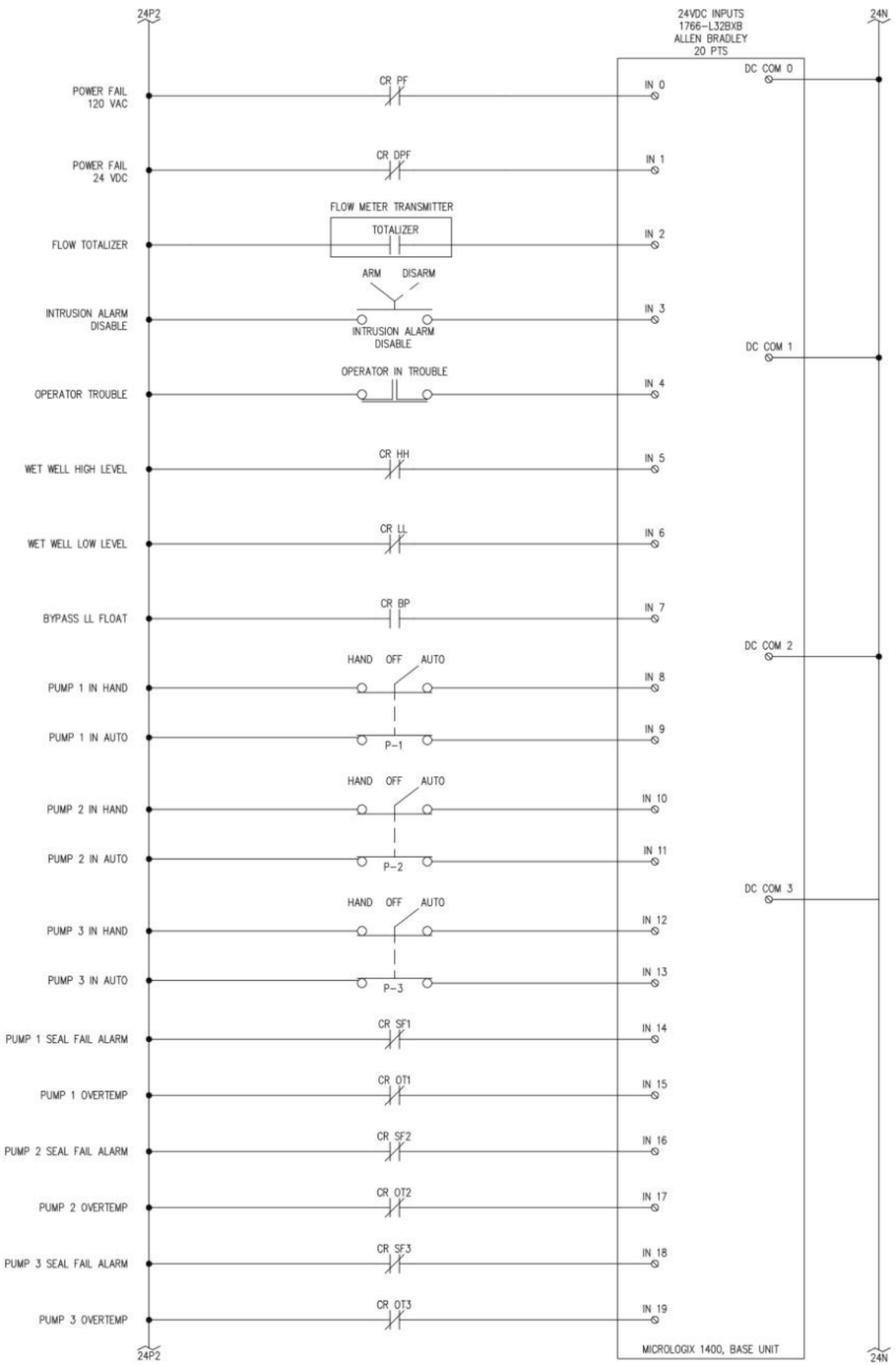
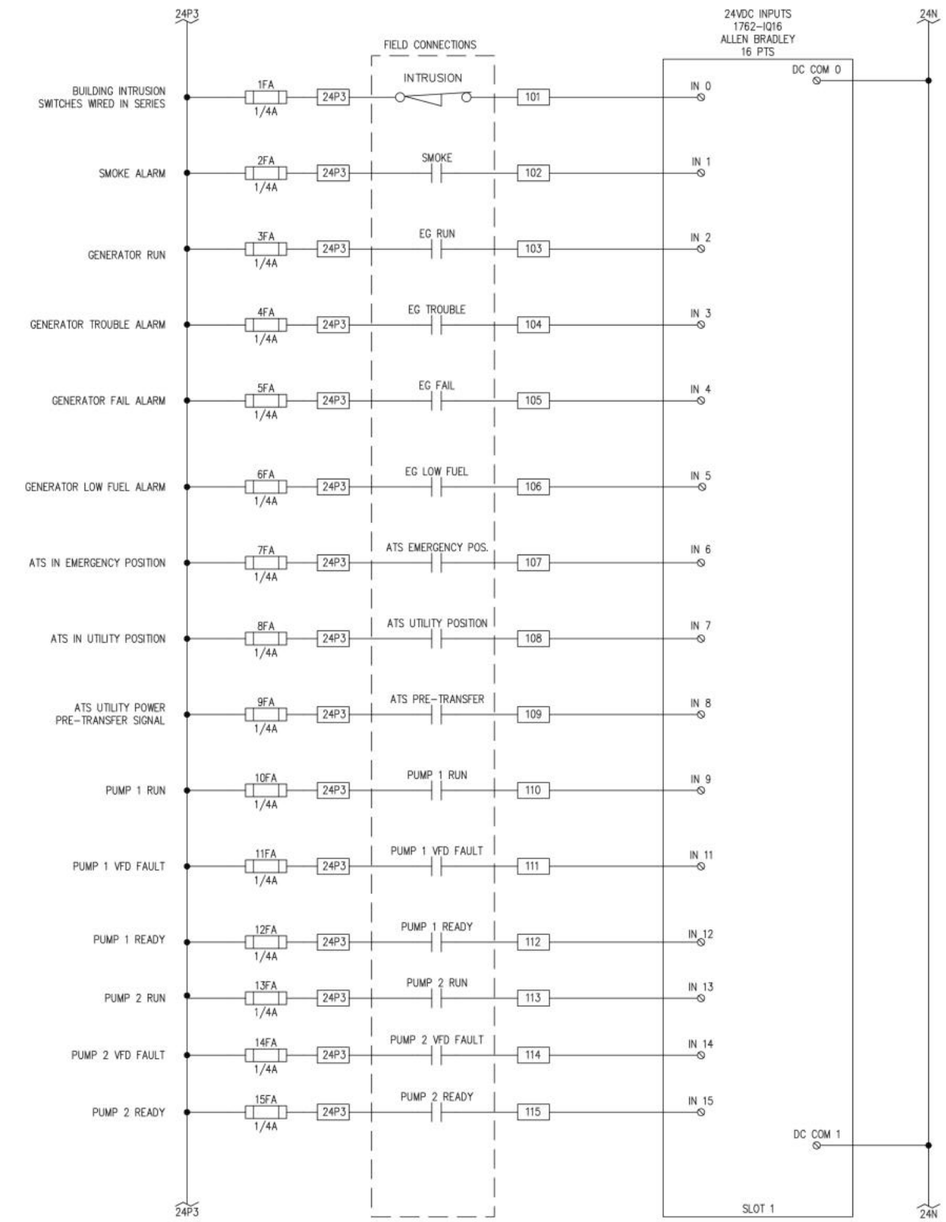
SCALE: SHOWN
0 1" 2"
DRAWING IS NOT TO SCALE
IF BAR IS NOT 2" LONG

PLOT: 1	DWG NO. E108
ENGINEER: CMR	
REVIEWED: MLM	
DATE: JAN 22, 2010	SHEET NO. 31
CLIENT: LWWSD	
JOB NO.: 409-050	71
FILENAME: CS-D-ELEC05	



DIGITAL INPUTS, BASE UNIT

NOT TO SCALE



DIGITAL INPUTS, EXPANSION SLOT 1

NOT TO SCALE

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SIGNED: 01/28/10

CHRISTOPHER M. ROBERTS STATE OF WASHINGTON 45317 REGISTERED PROFESSIONAL ENGINEER
SIGNED: 01/28/10

LAKE WHATCOM WATER & SEWER DISTRICT

Lake Whatcom Water and Sewer District
2010 Sewer Pump Station Improvements
Cable Street

RTU - PLC INPUTS AND OUTPUTS (SHEET 1 OF 3)

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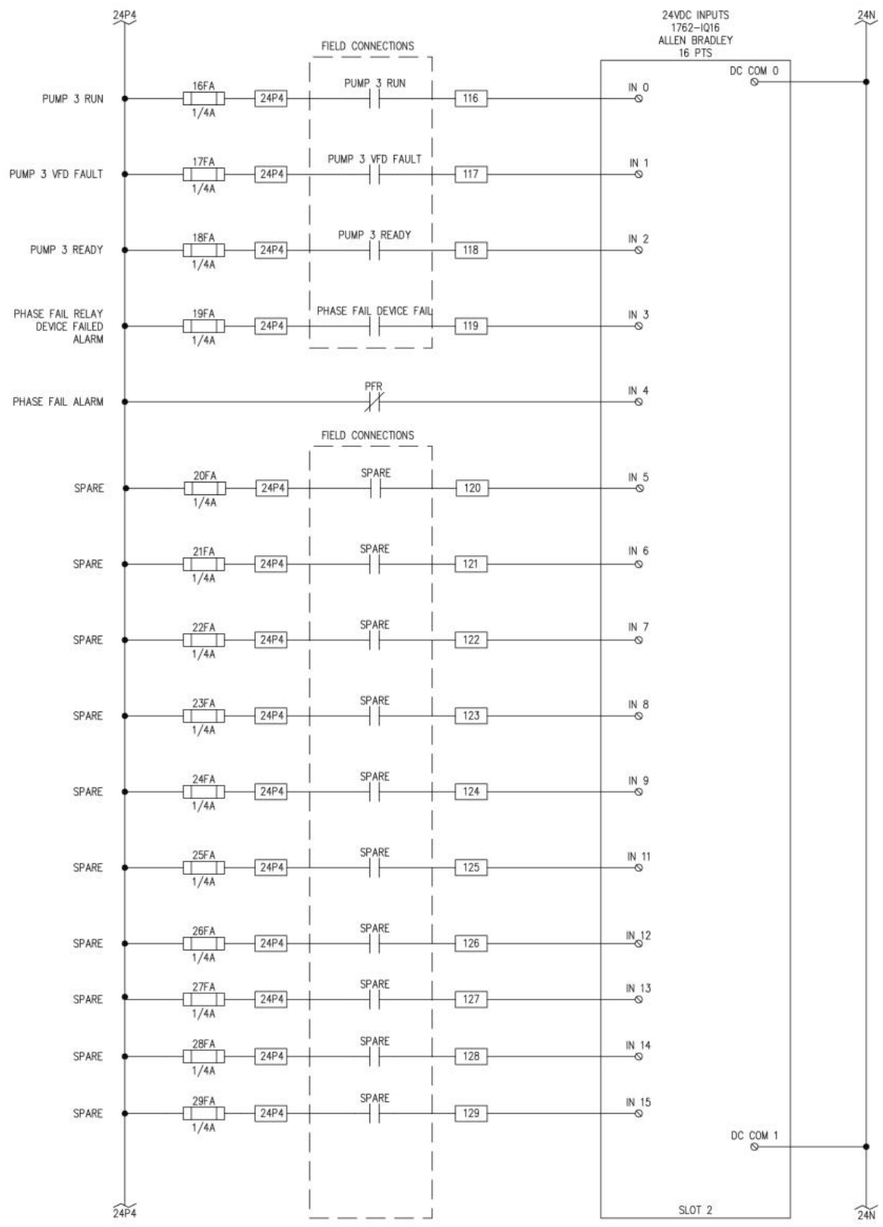
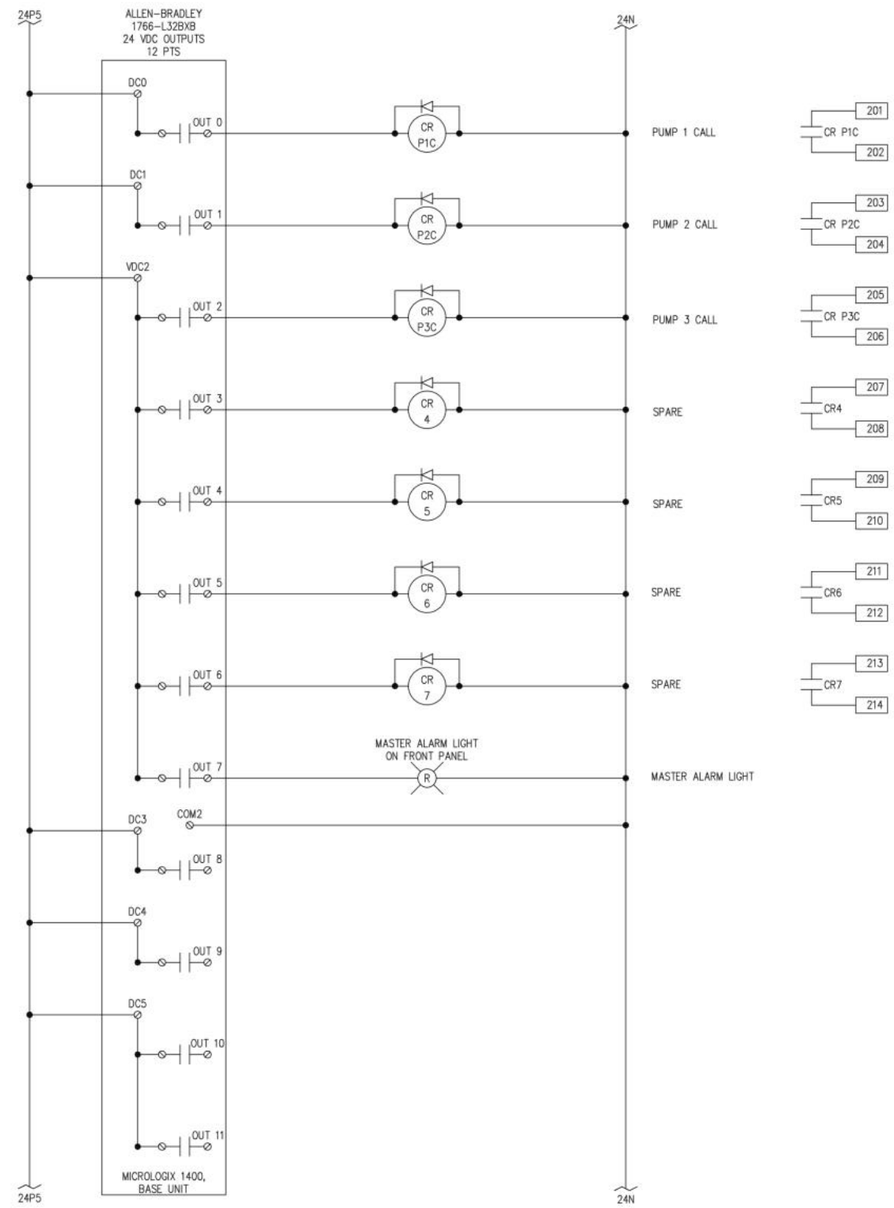
ENGINEER: CMR
REVIEWED: MLM
DATE: JAN 22, 2010
CLIENT: LWWSD
JOB NO.: 409-050
FILENAME: CS-D-ELEC05
DWG NO. E109
SHEET NO. 32
71



DIGITAL INPUTS, EXPANSION SLOT 2

NOT TO SCALE



DIGITAL OUTPUTS, BASE UNIT

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RH2 ENGINEERING INC. DATE

NO.	REVISION	BY	REVIEW	DATE
1	REVISED TO CONFORM TO CONSTRUCTION RECORDS	MWB	DWB	6/24/11

BRET E. BEAUPRE, STATE OF WASHINGTON, 38752, REGISTERED PROFESSIONAL ENGINEER
SIGNED: 01/28/10

CHRISTOPHER M. ROBERTS, STATE OF WASHINGTON, 45317, REGISTERED PROFESSIONAL ENGINEER
SIGNED: 01/28/10

LAKE WHATCOM WATER & SEWER DISTRICT — lake whatcom

Lake Whatcom Water and Sewer District
2010 Sewer Pump Station Improvements
Cable Street

RTU - PLC INPUTS AND OUTPUTS (SHEET 2 OF 3)

RH2 ENGINEERS PLANNERS SCIENTISTS

RH2 ENGINEERING, INC.
http://www.rh2.com
mailbox@rh2.com 1.800.720.8052

BELLINGHAM 360.676.0636
454 West Horton Road

BOTHELL 425.951.5400
12100 NE 195th Street, Suite 100

EAST WENATCHEE 509.886.2900
300 Simon Street, Suite 5

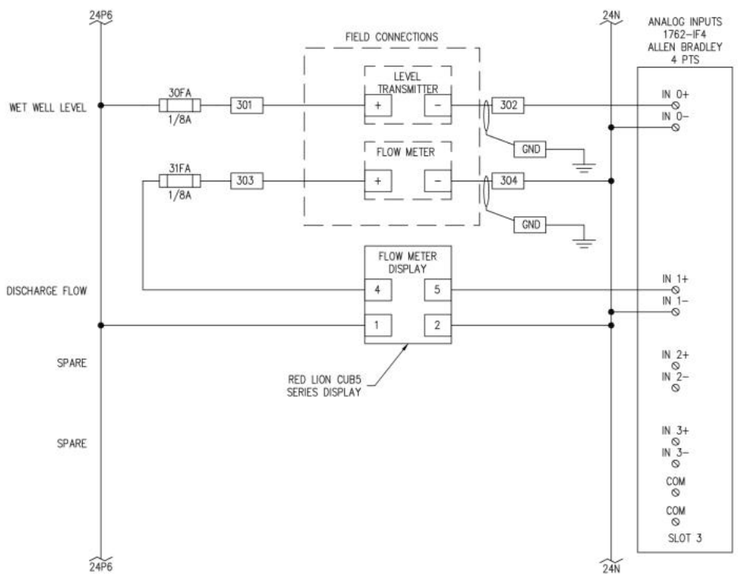
RICHLAND 509.946.5181
114 Columbia Point Drive, Suite C

SILVERDALE 360.876.7960
2021 NW Mhyre Rd, Suite 107

TACOMA 253.272.3059
621 Pacific Avenue Suite 104

SCALE: SHOWN
0 1" 2"
DRAWING IS NOT TO SCALE IF BAR IS NOT 2" LONG

PLOT: 1	DWG NO. E110
ENGINEER: CMR	
REVIEWED: MLM	
DATE: JAN 22, 2010	SHEET NO. 33
CLIENT: LWWSD	
JOB NO.: 409-050	71
FILENAME: CS-D-ELEC05	



ANALOG INPUTS, EXPANSION SLOT 3

NOT TO SCALE

DRAWINGS MAY DIFFER FROM MANUFACTURER'S DRAWINGS.
SEE MANUFACTURER'S DRAWINGS FOR ACCURATE DIAGRAM.

RECORD DRAWING
REVISED TO CONFORM
TO CONSTRUCTION RECORDS

RH2 ENGINEERING INC. — 6/24/11 DATE

NO.	REVISION	BY	REVIEW	DATE
1	REVISED TO CONFORM TO CONSTRUCTION RECORDS	MWB	DWB	6/24/11

BRET E. BEAUPRE — STATE OF WASHINGTON — 38752 — REGISTERED PROFESSIONAL ENGINEER
SIGNED: 01/28/10

CHRISTOPHER M. ROBERTS — STATE OF WASHINGTON — 45317 — REGISTERED PROFESSIONAL ENGINEER
SIGNED: 01/28/10

LAKE WHATCOM WATER & SEWER DISTRICT — lake whatcom

Lake Whatcom Water and Sewer District
2010 Sewer Pump Station Improvements
Cable Street

RTU - PLC INPUTS AND OUTPUTS (SHEET 3 OF 3)

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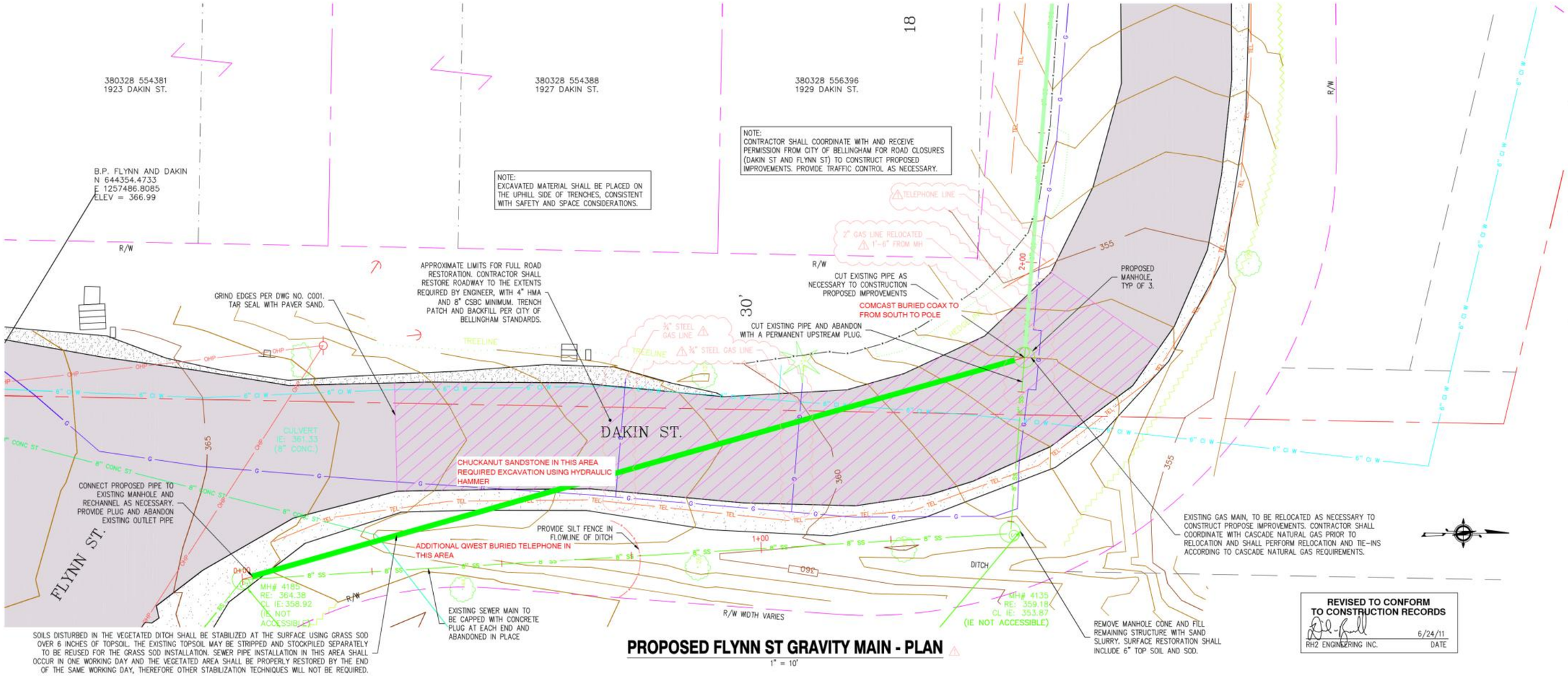
621 Pacific Avenue Suite 104

SCALE: SHOWN
0 1" 2"
DRAWING IS NOT TO SCALE IF BAR IS NOT 2" LONG

PLOT: 1
ENGINEER: CMR
REVIEWED: MLM
DATE: JAN 22, 2010
CLIENT: LWWSD
JOB NO.: 409-050
FILENAME: CS-D-ELEC05

DWG NO. E111

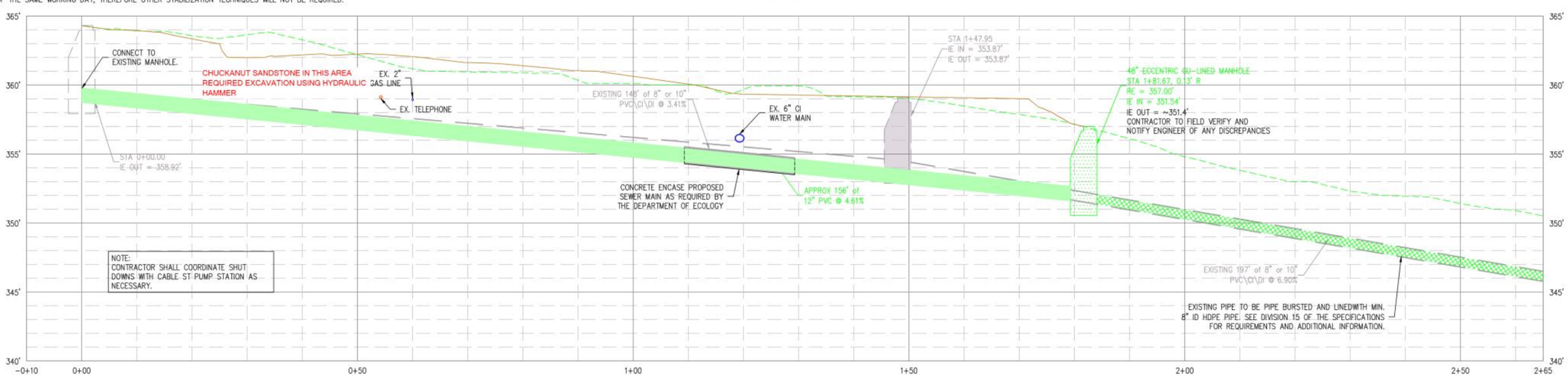
SHEET NO. 34 / 71



REVISED TO CONFORM TO CONSTRUCTION RECORDS
RH2 ENGINEERING INC. 6/24/11 DATE

PROPOSED FLYNN ST GRAVITY MAIN - PLAN

1" = 10'



PROPOSED FLYNN ST GRAVITY MAIN - PROFILE

HORIZ: 1" = 10', VERT: 1" = 4'

NO.	REVISION	BY	REVIEW	DATE
1	REVISED TO CONFORM TO CONSTRUCTION RECORDS	BMS	DWB	6/24/11

SIGNED: 01/28/10

SIGNED: 01/28/10

LAKE WHATCOM WATER & SEWER DISTRICT

Lake Whatcom Water and Sewer District
2010 Sewer Pump Station Improvements
Flynn Street Gravity Main

GRAVITY MAIN PLAN AND PROFILE

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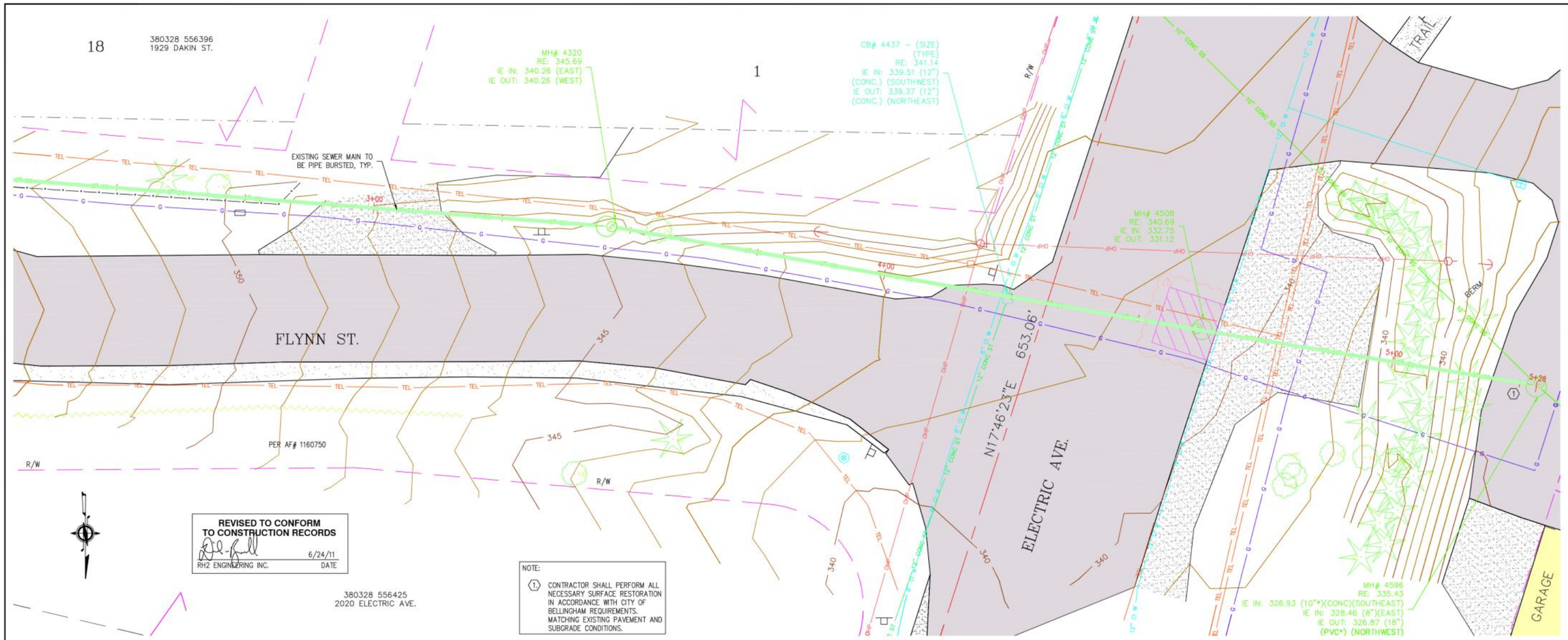
TACOMA 253.272.3089
621 Pacific Avenue Suite 104

SCALE: SHOWN
0 1" 2"
DRAWING IS NOT TO SCALE IF BAR IS NOT 2" LONG

PLOT: 1
ENGINEER: RJF
REVIEWED: DWB
DATE: JAN 25, 2010
CLIENT: LWWSD
JOB NO.: 409-050
FILENAME: FS-D-C01

DWG NO. C401

SHEET NO. 35 / 71

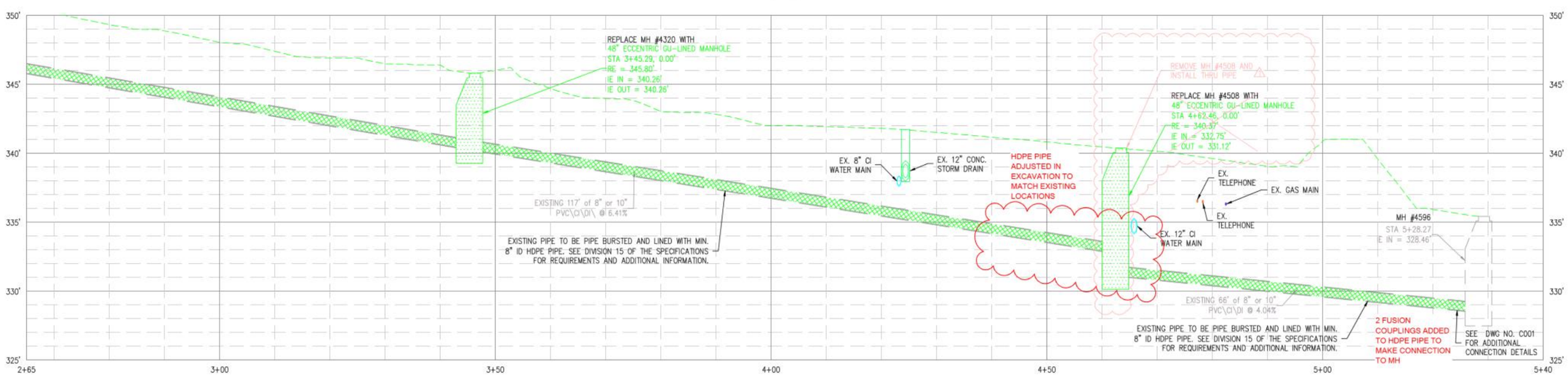


REVISED TO CONFORM TO CONSTRUCTION RECORDS
6/24/11
RH2 ENGINEERING INC. DATE

NOTE:
1. CONTRACTOR SHALL PERFORM ALL NECESSARY SURFACE RESTORATION IN ACCORDANCE WITH CITY OF BELLINGHAM REQUIREMENTS. MATCHING EXISTING PAVEMENT AND SUBGRADE CONDITIONS.

PROPOSED FLYNN ST GRAVITY MAIN - PLAN

1" = 10'



PROPOSED FLYNN ST GRAVITY MAIN - PROFILE

HORIZ: 1" = 10', VERT: 1" = 4'

NO.	REVISION	BY	REVIEW	DATE
1	REVISED TO CONFORM TO CONSTRUCTION RECORDS	BMS	DWB	6/24/11

BRET E. BEAUPRE — STATE OF WASHINGTON — 38752 — REGISTERED PROFESSIONAL ENGINEER
SIGNED: 01/28/10

DANIEL W. BURNELL — STATE OF WASHINGTON — 38309 — REGISTERED PROFESSIONAL ENGINEER
SIGNED: 01/28/10

LAKE WHATCOM WATER & SEWER DISTRICT — lake whatcom

Lake Whatcom Water and Sewer District
2010 Sewer Pump Station Improvements
Flynn Street Gravity Main

GRAVITY MAIN PLAN AND PROFILE

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621 Pacific Avenue Suite 104

SCALE: SHOWN
0 1" 2"
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PLOT: 1	DWG NO. C402
ENGINEER: RJF	
REVIEWED: DWB	
DATE: JAN 25, 2010	SHEET NO. 36
CLIENT: LWWSD	
JOB NO.: 409-050	
FILENAME: FS-D-C01	

71

TEMPORARY PUMPING AND EMERGENCY POWER NOTES:
SEE DIVISION 1 IN THE SPECIFICATIONS FOR DETAILS

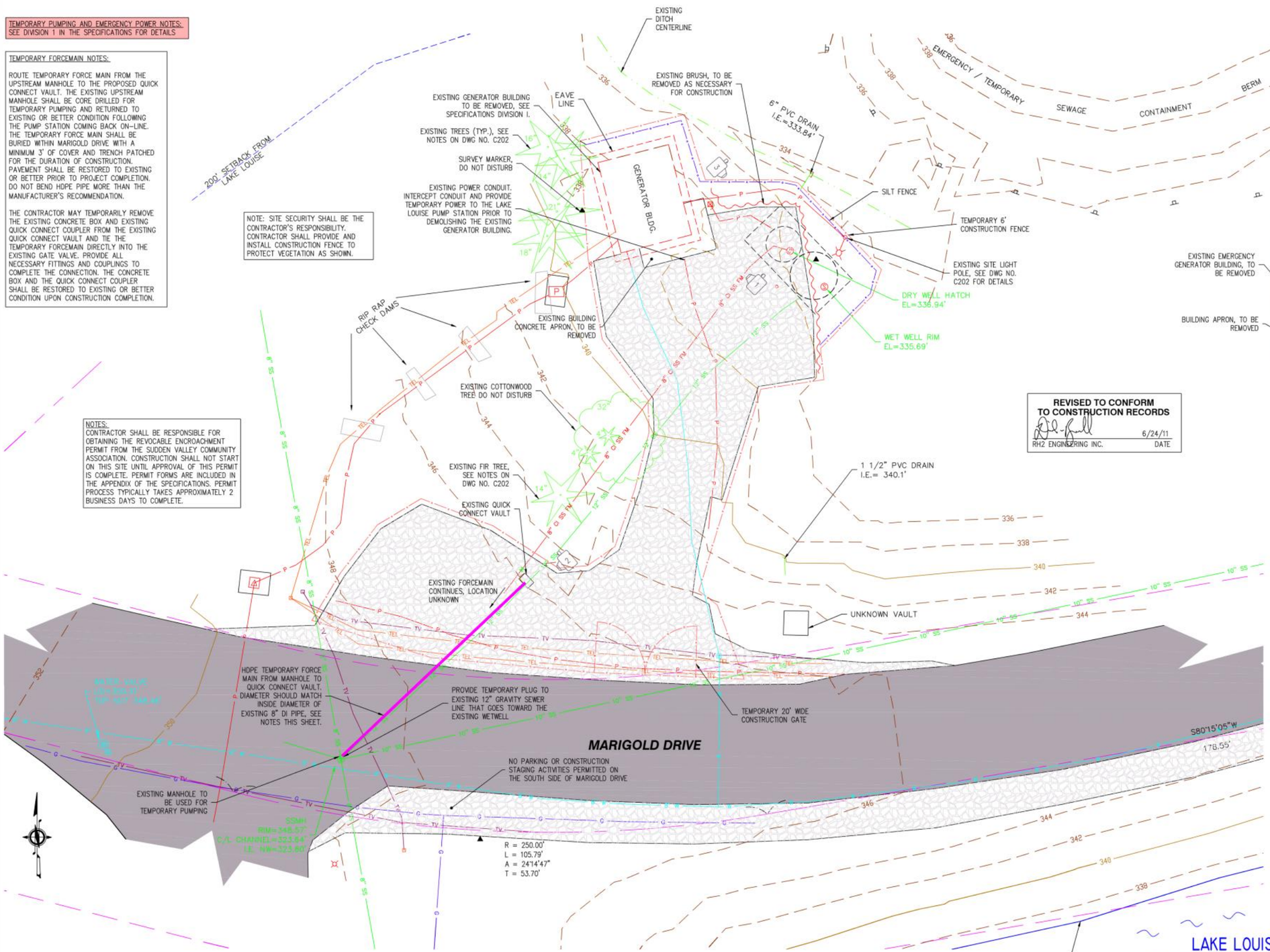
TEMPORARY FORCEMAIN NOTES:

ROUTE TEMPORARY FORCE MAIN FROM THE UPSTREAM MANHOLE TO THE PROPOSED QUICK CONNECT VAULT. THE EXISTING UPSTREAM MANHOLE SHALL BE CORE DRILLED FOR TEMPORARY PUMPING AND RETURNED TO EXISTING OR BETTER CONDITION FOLLOWING THE PUMP STATION COMING BACK ON-LINE. THE TEMPORARY FORCE MAIN SHALL BE BURIED WITHIN MARIGOLD DRIVE WITH A MINIMUM 3' OF COVER AND TRENCH PATCHED FOR THE DURATION OF CONSTRUCTION. PAVEMENT SHALL BE RESTORED TO EXISTING OR BETTER PRIOR TO PROJECT COMPLETION. DO NOT BEND HDPE PIPE MORE THAN THE MANUFACTURER'S RECOMMENDATION.

THE CONTRACTOR MAY TEMPORARILY REMOVE THE EXISTING CONCRETE BOX AND EXISTING QUICK CONNECT COUPLER FROM THE EXISTING QUICK CONNECT VAULT AND TIE THE TEMPORARY FORCEMAIN DIRECTLY INTO THE EXISTING GATE VALVE. PROVIDE ALL NECESSARY FITTINGS AND COUPLINGS TO COMPLETE THE CONNECTION. THE CONCRETE BOX AND THE QUICK CONNECT COUPLER SHALL BE RESTORED TO EXISTING OR BETTER CONDITION UPON CONSTRUCTION COMPLETION.

NOTE: SITE SECURITY SHALL BE THE CONTRACTOR'S RESPONSIBILITY. CONTRACTOR SHALL PROVIDE AND INSTALL CONSTRUCTION FENCE TO PROTECT VEGETATION AS SHOWN.

NOTES:
CONTRACTOR SHALL BE RESPONSIBLE FOR OBTAINING THE REVOCABLE ENCROACHMENT PERMIT FROM THE SUDDEN VALLEY COMMUNITY ASSOCIATION. CONSTRUCTION SHALL NOT START ON THIS SITE UNTIL APPROVAL OF THIS PERMIT IS COMPLETE. PERMIT FORMS ARE INCLUDED IN THE APPENDIX OF THE SPECIFICATIONS. PERMIT PROCESS TYPICALLY TAKES APPROXIMATELY 2 BUSINESS DAYS TO COMPLETE.



REVISED TO CONFORM TO CONSTRUCTION RECORDS
RH2 ENGINEERING INC. 6/24/11 DATE

1

2

3

STAGING NOTES:
CONTRACTOR SHALL COORDINATE WITH SUDDEN VALLEY COMMUNITY ASSOCIATION FOR ADDITIONAL STAGING NEEDS

EXISTING SITE AND TESC PLAN
1" = 10'

NO.	REVISION	BY	REVIEW	DATE
1	REVISED TO CONFORM TO CONSTRUCTION RECORDS	BMS	DWB	6/24/11

BRET E. BEAUPRE, STATE OF WASHINGTON, 38752, REGISTERED PROFESSIONAL ENGINEER
SIGNED: 01/28/10

DANIEL W. BURNETT, STATE OF WASHINGTON, 38304, REGISTERED PROFESSIONAL ENGINEER
SIGNED: 01/28/10

LAKE WHATCOM WATER & SEWER DISTRICT

Lake Whatcom Water and Sewer District
2010 Sewer Pump Station Improvements
Ranch House

EXISTING SITE AND TESC PLAN

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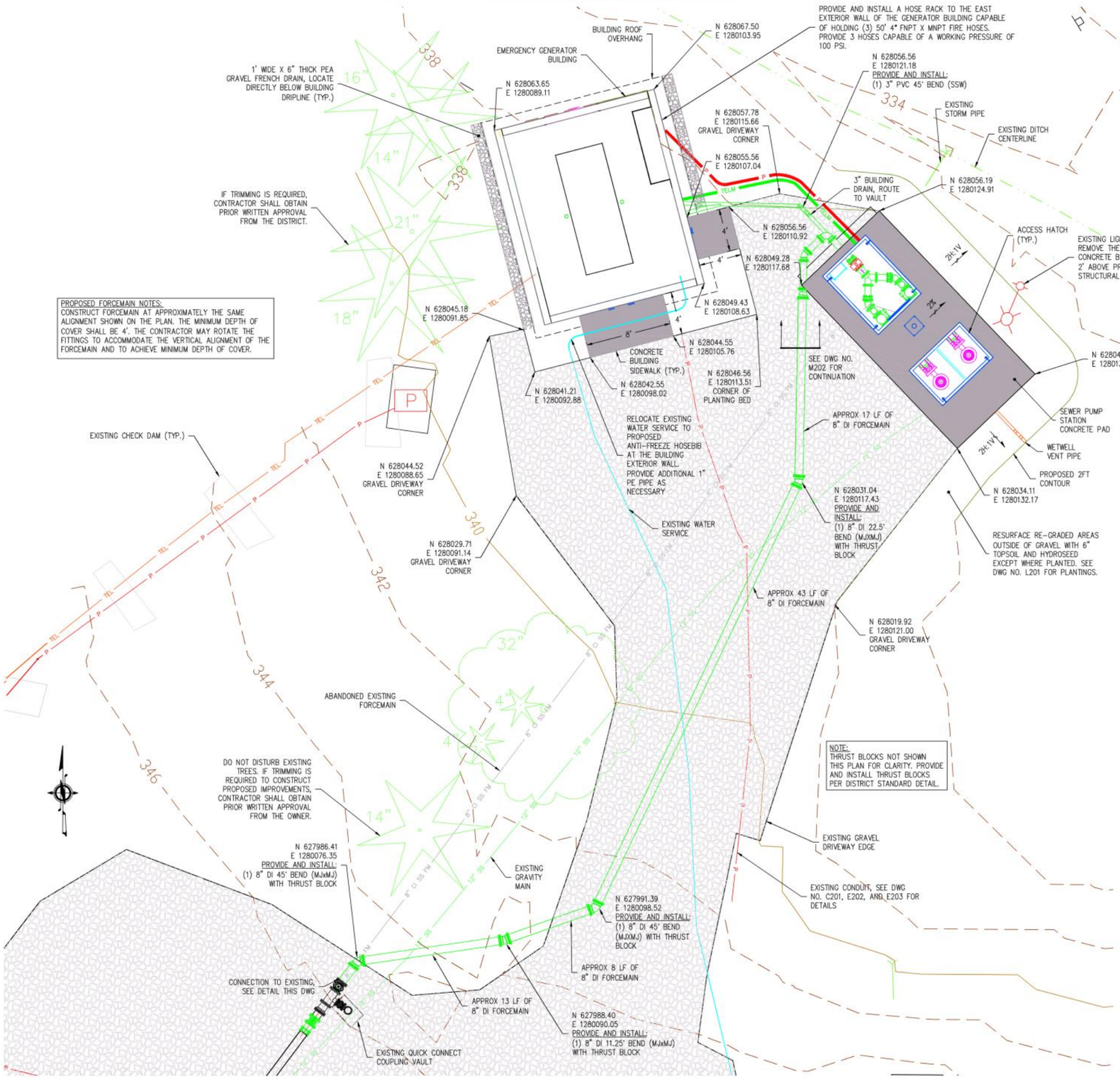
EAST WENATCHEE 509.886.2200 300 Simon Street, Suite 5
RICHLAND 509.946.5181 114 Columbia Point Drive, Suite C
SILVERDALE 360.876.7960 2021 NW Whyre Rd, Suite 107
TACOMA 253.272.3059 621 Pacific Avenue Suite 104

SCALE: SHOWN
0 1" 2"
DRAWING IS NOT TO SCALE IF BAR IS NOT 2" LONG

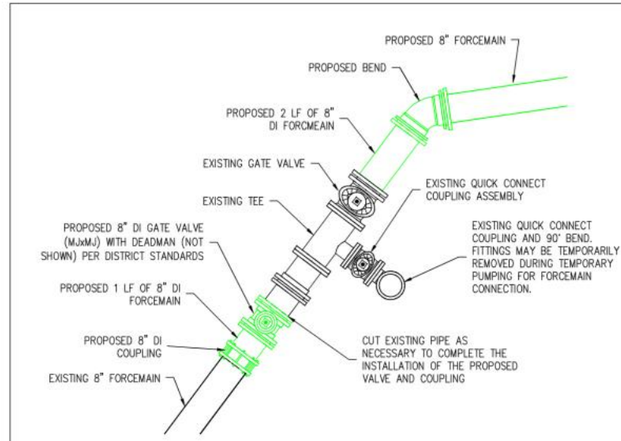
PLOT: 10
ENGINEER: RJF
REVIEWED: DWB
DATE: JUN 27, 2011
CLIENT: LWWSD
JOB NO.: 409-050
FILENAME: LS-D-CIV01
DWG NO. C201
SHEET NO. 37 / 71



PROPOSED SITE PLAN

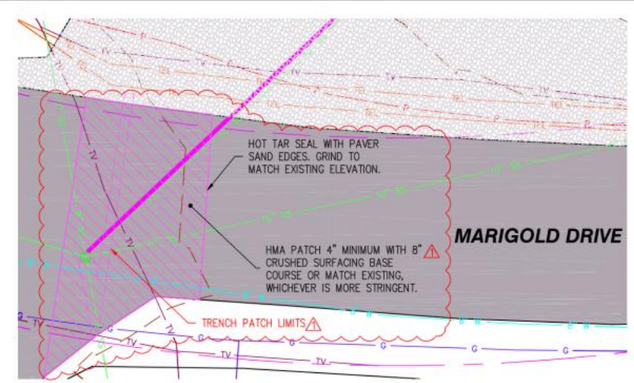
1" = 5'

REVISED TO CONFORM TO CONSTRUCTION RECORDS
RH2 ENGINEERING INC. 6/24/11 DATE



CONNECTION TO EXISTING DETAILS

1" = 2'



TRENCH PATCH DETAILS

1" = 10'

NO.	REVISION	BY	REVIEW	DATE
1	REVISED TO CONFORM TO CONSTRUCTION RECORDS	BMS	DWB	6/24/11

SIGNED: 01/28/10

SIGNED: 01/28/10

Lake Whatcom Water and Sewer District
2010 Sewer Pump Station Improvements
Ranch House

PROPOSED SITE PLAN

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http://www.rh2.com
mailbox@rh2.com 1.800.720.8052
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454 West Horton Road
BOTHELL 425.951.5400
12100 NE 195th Street, Suite 100
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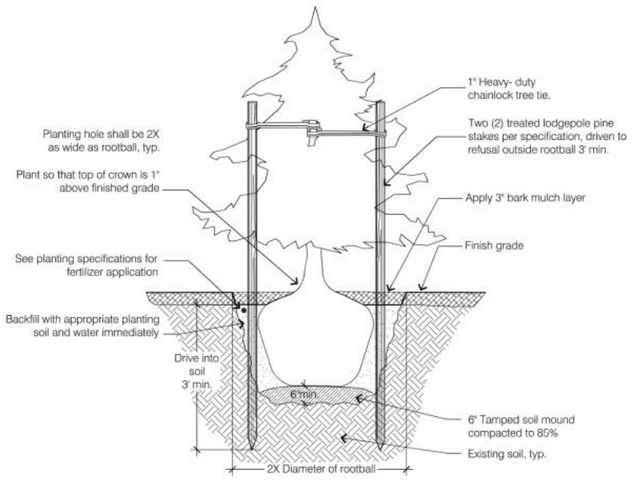
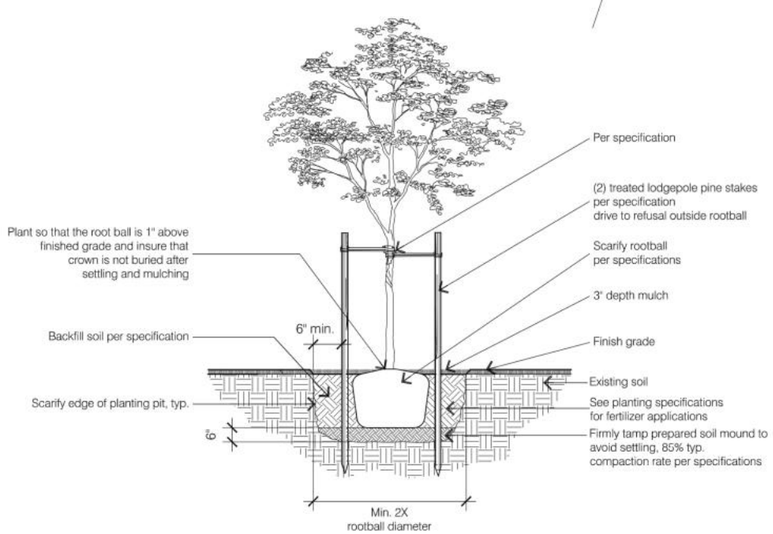
114 Columbia Point Drive, Suite C
SILVERDALE 360.876.7960
2021 NW Whyre Rd, Suite 107
TACOMA 253.272.3050
621 Pacific Avenue Suite 104

SCALE: SHOWN
0 1" 2"
DRAWING IS NOT TO SCALE IF BAR IS NOT 2" LONG

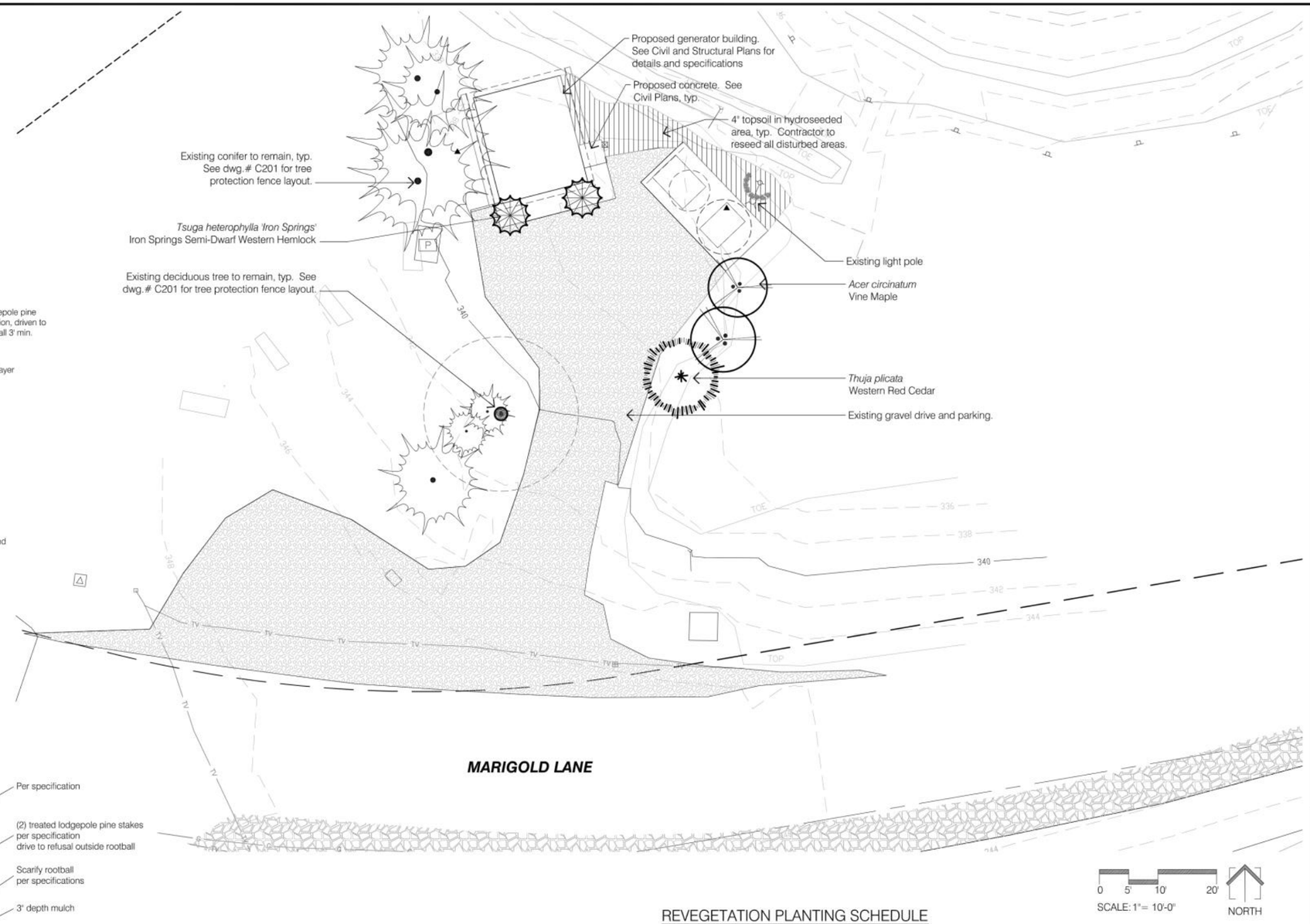
PLOT: 5	DWG NO. C202
ENGINEER: RJF	
REVIEWED: DWB	
DATE: JAN 22, 2010	SHEET NO. 38
CLIENT: LWWSD	
JOB NO.: 409-050	71
FILENAME: RH-D-CIV03	



1 TYPICAL CONIFER PLANTING AND STAKING
SCALE: NTS



2 TYPICAL TREE PLANTING AND STAKING
SCALE: NTS



REVEGETATION PLANTING SCHEDULE

OF TREES REMOVED: 0 # OF TREES PROPOSED: 5

Trees

Symbol	Quantity	Botanical Name	Common Name	Size	Spacing
	2	Acer circinatum	Vine Maple	5' min. ht.	10' - 15' o.c.
	1	Thuja plicata	Western Red Cedar	5' min. ht.	as shown
	2	Tsuga heterophylla 'Iron Springs'	Iron Springs W. Hemlock	5 gal.	as shown

NOTES

ALL PLANTING AND SOIL AMENDING BENEATH EXISTING TREE DRIPLINES TO BE COMPLETED BY HAND. CONTRACTOR TO AVOID EQUIPMENT ACCESS TRAFFIC BENEATH EXISTING TREES. PROTECT ALL EXISTING TREES TO REMAIN. SEE DWG.NO. C201 FOR TREE PROTECTION FENCE DETAILS

REVISED TO CONFORM TO CONSTRUCTION RECORDS
6/24/11
RH2 ENGINEERING INC. DATE

STATE OF WASHINGTON REGISTERED LANDSCAPE ARCHITECT
MISTY PHILBIN
CERTIFICATE NO. 722

LAKE WHATCOM WATER & SEWER DISTRICT

Lake Whatcom Water and Sewer District
2010 Sewer Pump Station Improvements
Ranch House

LANDSCAPE PLANTING PLAN

RH2 ENGINEERS PLANNERS SCIENTISTS
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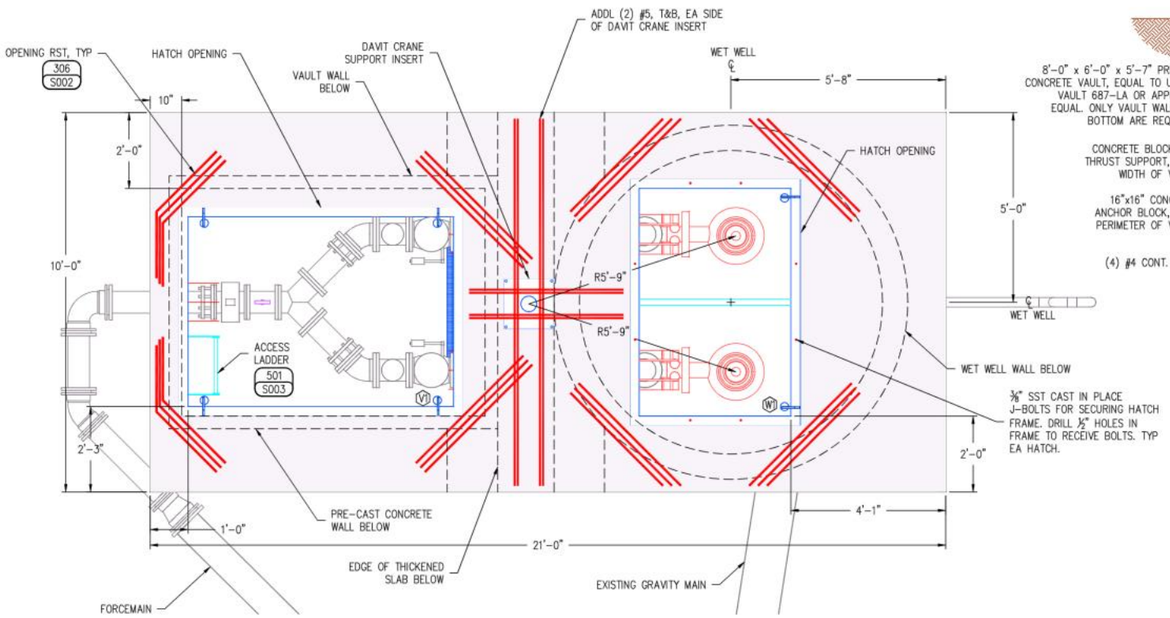
BELLINGHAM 360.676.0846
454 West Horton Road

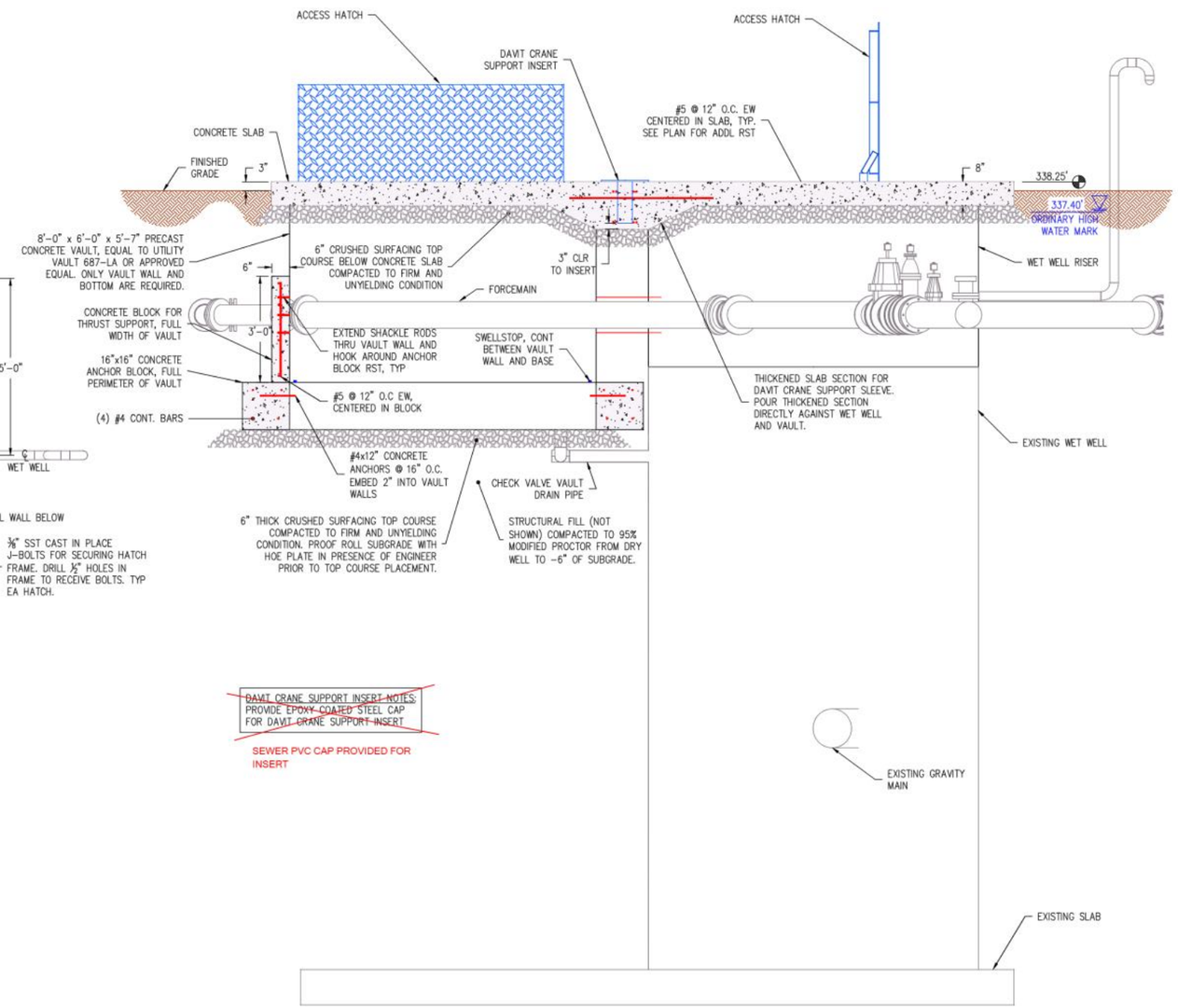
THE PHILBIN GROUP
LANDSCAPE ARCHITECTURE
1015 Railroad Ave. #101
Bellingham, WA 98225
(p) 360.671.5994

PLOT:	DWG NO.
DESIGNER: MM	LA 201
REVIEWED: MP	
DATE: 1-20-10	SHEET NO. 39
CLIENT:	
JOB NO.:	71
FILENAME:	



PROPOSED PUMP STATION STRUCTURAL PLAN

½" = 1'-0"



~~DAVIT CRANE SUPPORT INSERT NOTES:~~
PROVIDE ~~EPOXY COATED~~ STEEL CAP FOR ~~DAVIT CRANE SUPPORT INSERT~~

SEWER PVC CAP PROVIDED FOR INSERT

PUMP STATION STRUCTURAL ELEVATION

½" = 1'-0"

ACCESS HATCH SCHEDULE

NO.	CLEAR OPENING	NO. OF LEAVES	RATING	MOUNTING*	GRATING**	GASKET ODOR TIGHT / STANDARD
W1	48"x72"	1	H-20	BOLTS	YES	ODOR TIGHT
V1	60"x72"	2	H-20	ANCHOR	NO	STANDARD

ACCESS HATCH NOTES:
* ACCESS HATCH OVER WETWELL SHALL BE MOUNTED USING STAINLESS STEEL BOLTS AS SHOWN ON THIS PLAN. OTHER ACCESS HATCH SHALL BE MOUNTED USING THE STANDARD FRAME ANCHORS THAT COME WITH THE HATCH.

** ACCESS HATCH OVER WETWELL SHALL HAVE REMOVABLE GRATING COVER BELOW ACCESS HATCH LIDS.

REVISED TO CONFORM TO CONSTRUCTION RECORDS
6/24/11
RH2 ENGINEERING INC. DATE

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BRET E. BEAUPRE, STATE OF WASHINGTON, 38752, REGISTERED PROFESSIONAL ENGINEER
SIGNED: 01/28/10

JON M. CONNER, STATE OF WASHINGTON, 44672, REGISTERED PROFESSIONAL ENGINEER
SIGNED: 01/28/10

LAKE WHATCOM WATER & SEWER DISTRICT

Lake Whatcom Water and Sewer District
2010 Sewer Pump Station Improvements
Ranch House

WET WELL STRUCTURAL PLAN

RH2 ENGINEERS PLANNERS SCIENTISTS

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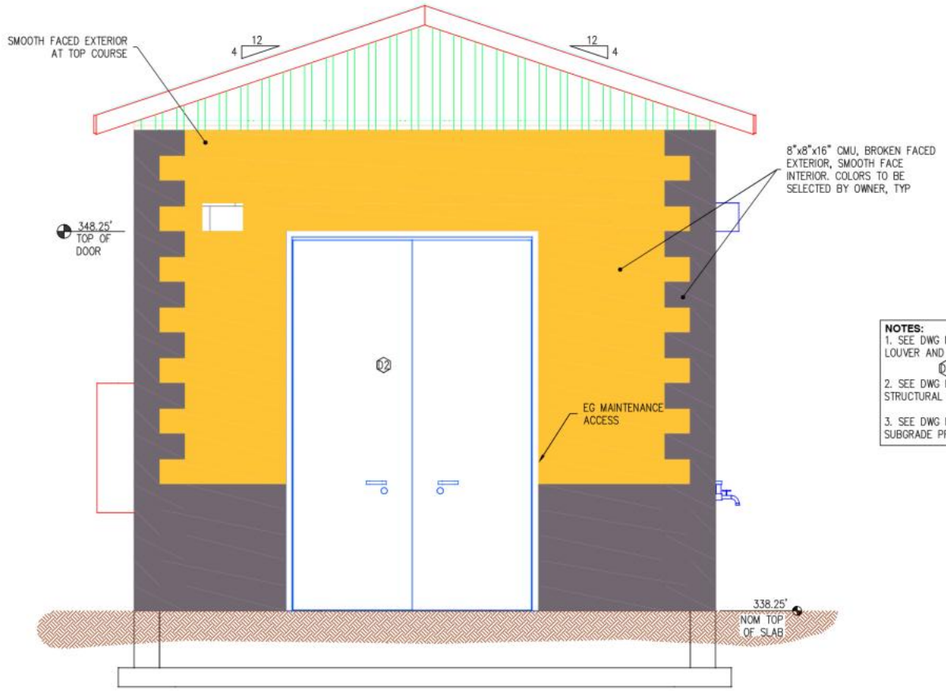
621 Pacific Avenue Suite 104

SCALE: SHOWN
0 1" 2"
DRAWING IS NOT TO SCALE IF BAR IS NOT 2" LONG

PLOT: 24	DWG NO. S201
ENGINEER: JMC	
REVIEWED: KLK	
DATE: JAN 25, 2010	SHEET NO. 40
CLIENT: LWWSD	
JOB NO.: 409-050	71
FILENAME: RH-D-STR01	

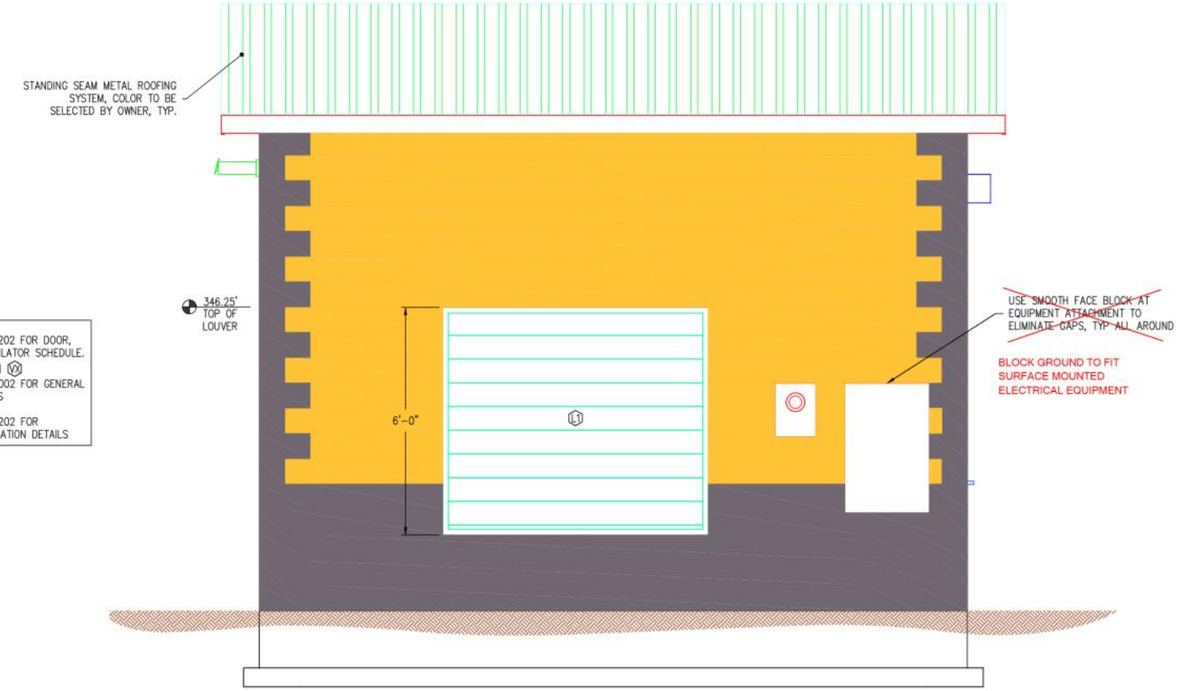


SOUTH ELEVATION

½" = 1'-0"

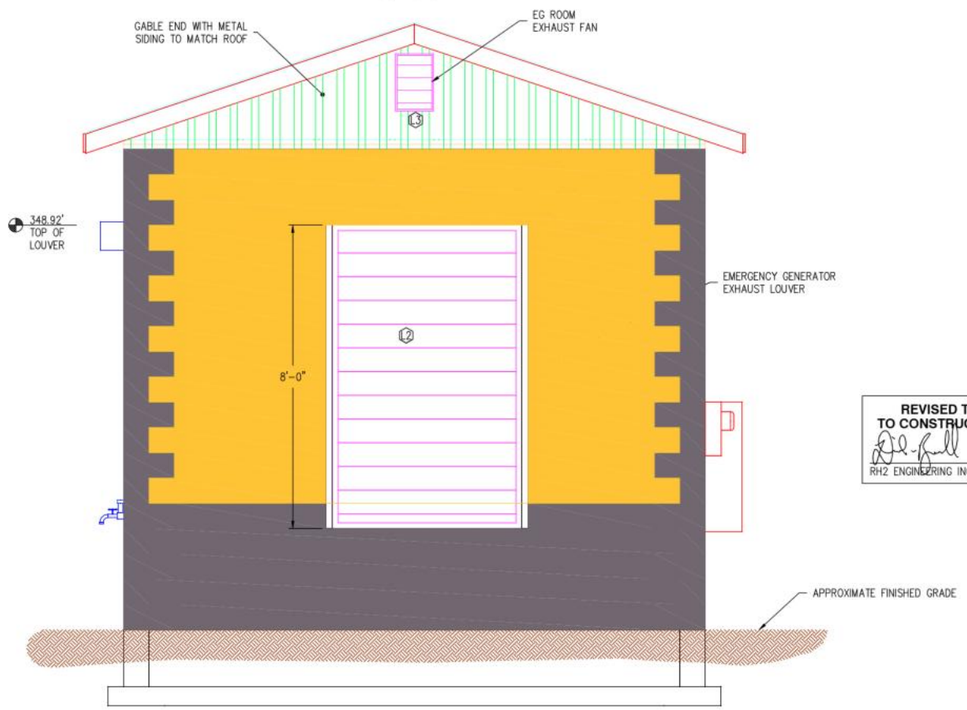
NOTES:

1. SEE DWG NO. S202 FOR DOOR, LOUVER AND VENTILATOR SCHEDULE. D1 L1 V1
2. SEE DWG NO. S002 FOR GENERAL STRUCTURAL NOTES
3. SEE DWG NO. S202 FOR SUBGRADE PREPARATION DETAILS



WEST ELEVATION

½" = 1'-0"

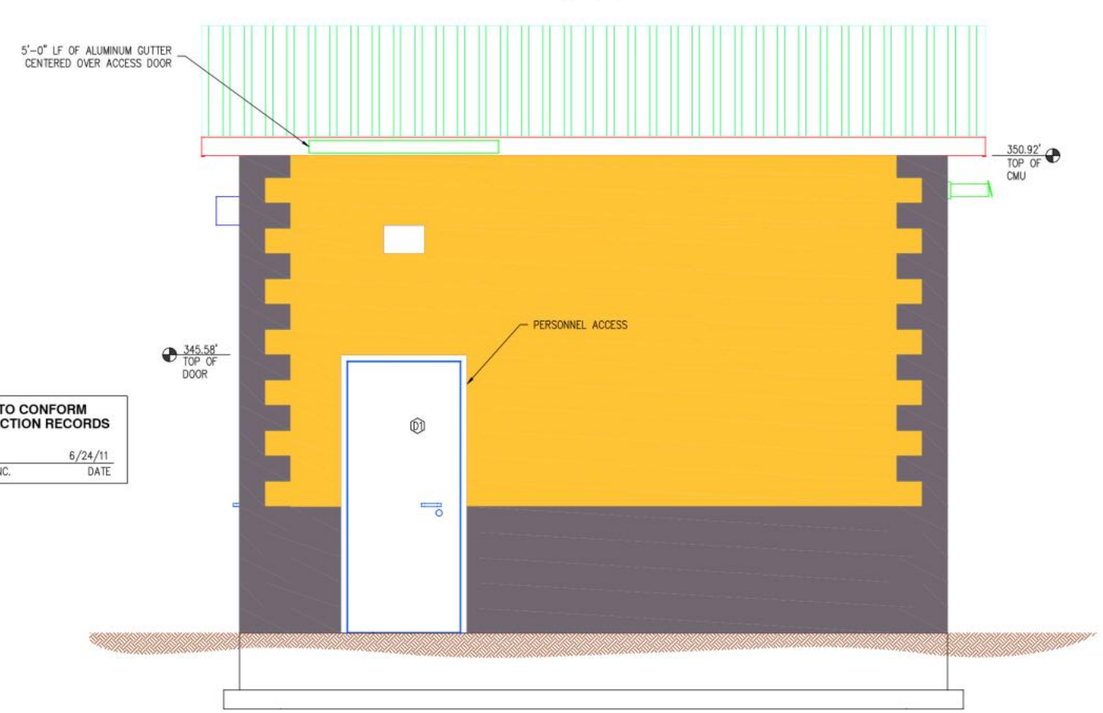


NORTH ELEVATION

½" = 1'-0"

REVISED TO CONFORM TO CONSTRUCTION RECORDS

RH2 ENGINEERING INC. — 6/24/11 DATE



EAST ELEVATION

½" = 1'-0"

NO.	REVISION	BY	REVIEW	DATE
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JON M. CONNER — STATE OF WASHINGTON — 44672 — REGISTERED PROFESSIONAL ENGINEER — SIGNED: 01/28/10

LAKE WHATCOM WATER & SEWER DISTRICT — lake whatcom

Lake Whatcom Water and Sewer District
2010 Sewer Pump Station Improvements
Ranch House

EMERGENCY GENERATOR BUILDING ELEVATIONS

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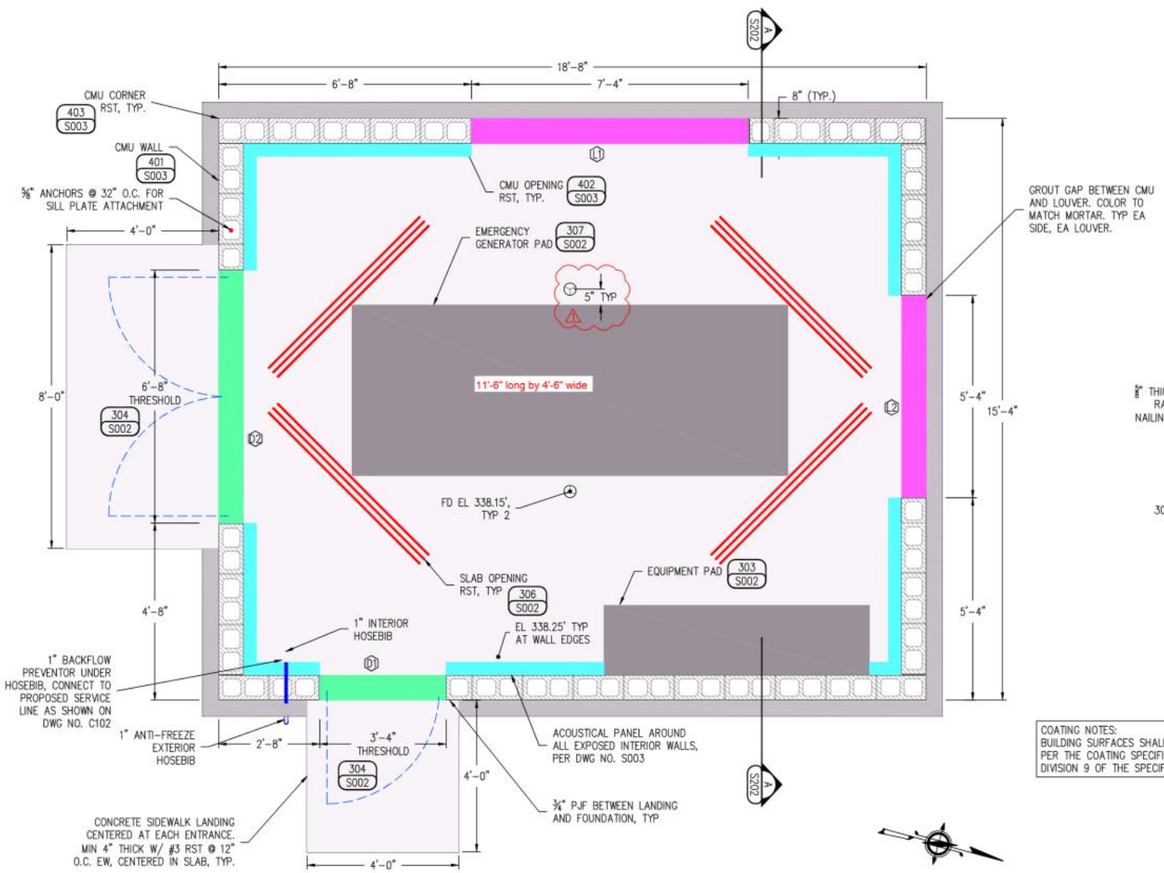
TACOMA 253.272.3059
621 Pacific Avenue Suite 104

SCALE: SHOWN

0 1" 2"

DRAWING IS NOT TO SCALE IF BAR IS NOT 2" LONG

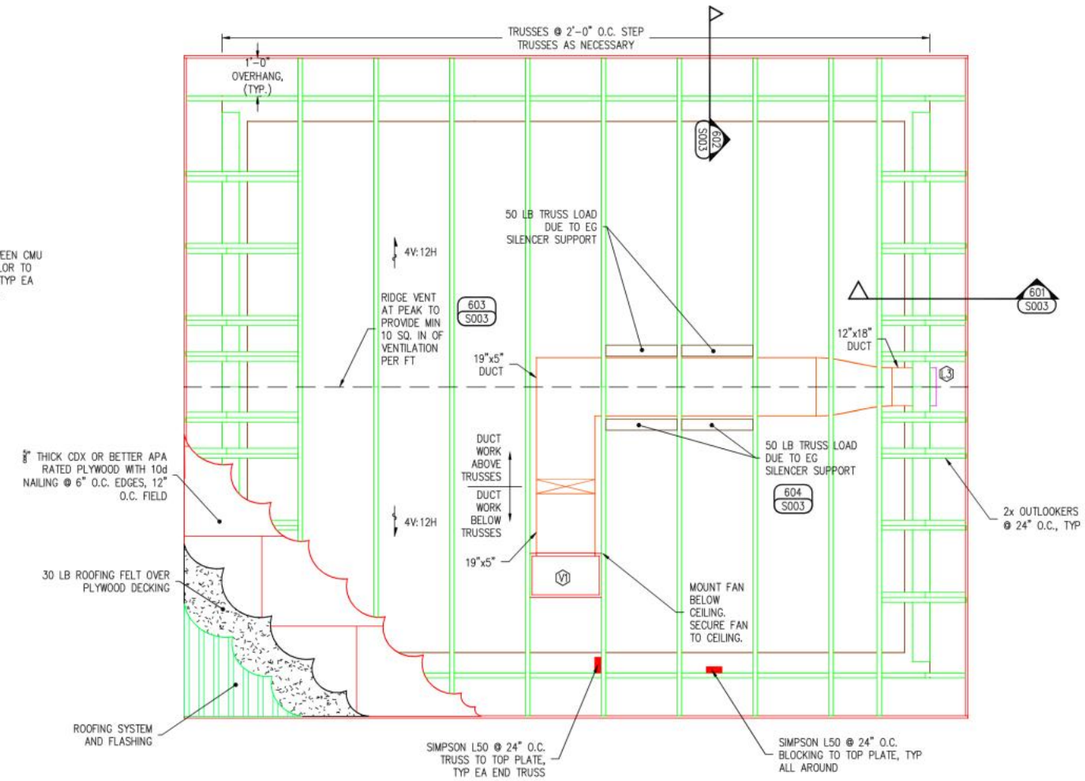
PLOT: 24	DWG NO. A201
ENGINEER: JMC	
REVIEWED: KLK	
DATE: JAN 26, 2010	SHEET NO. 41
CLIENT: LWWSD	
JOB NO.: 409-050	71
FILENAME: RH-D-ARCH01	



EMERGENCY GENERATOR BUILDING FLOOR PLAN

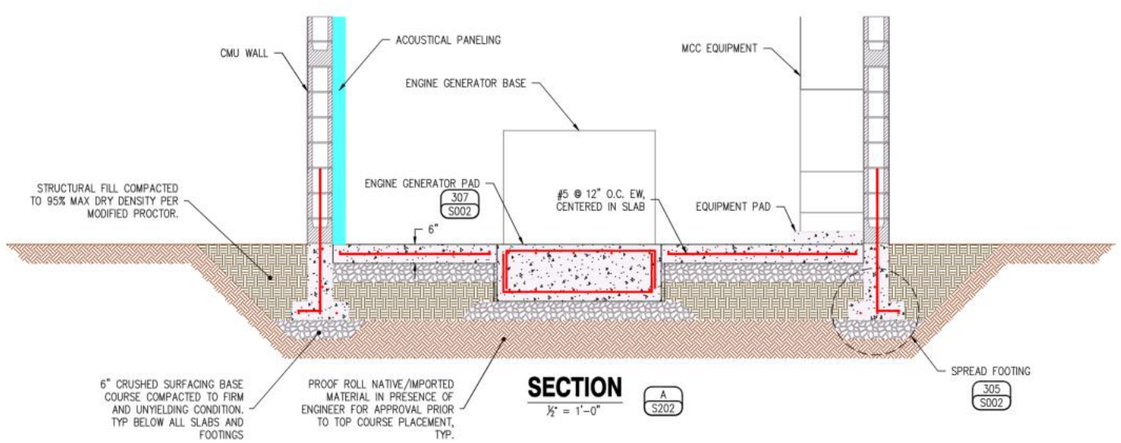
1/2" = 1'-0"

COATING NOTES:
BUILDING SURFACES SHALL BE COATED PER THE COATING SPECIFICATIONS IN DIVISION 9 OF THE SPECIFICATIONS.



EMERGENCY GENERATOR BUILDING ROOF PLAN

1/2" = 1'-0"



SECTION

1/2" = 1'-0"

A S202

DOOR SCHEDULE

DOOR NO.	DOOR WIDTH	DOOR HEIGHT	DOOR MATERIAL	TYPE	FRAME WIDTH	FRAME HEIGHT	FRAME MATERIAL	DOOR LABEL	HARDWARE	REMARKS
D1	3'-0"	7'-2"	STEEL	SGL	3'-4"	7'-4"	STEEL	N/A	ABDEFG	N/A
D1	6'-4"	9'-10"	STEEL	DBL	6'-8"	10'-0"	STEEL	N/A	ACEGH	N/A

HARDWARE CODES
A – WEATHERSTRIP (ALL SIDES)
B – AUTOMATIC DOOR SHUT
C – LEVER LATCH W/ LOCK
D – DEADBOLT & FLUSH EXTENSION BOLTS & ASTRAGAL
E – DOOR STOP / HOOK (WALL MOUNT)
F – INTERIOR PANIC BAR OPENER
G – PUSH/PULL HARDWARE
H – COORDINATOR

LOUVER & DAMPER SCHEDULE

NO.	FLOW	FLOW RATE (SCFM)	MANUFACTURER	LOUVER	DIMENSIONS	ACCESSORIES	DAMPER
L1	INTAKE	13,500 SCFM	POTTORFF	EAA-845	84" X 72"	BIRD & INSECT SCREEN	MOTORIZED
L2	EXHAUST	13,500 SCFM	POTTORFF	EAA-845	60" X 96"	BIRD & INSECT SCREEN	MOTORIZED
L3	EXHAUST	400 SCFM	POTTORFF	EFD-245	12" X 18"	BIRD & INSECT SCREEN	MOTORIZED

NOTE:
SEE DIVISION 8 OF THE SPECIFICATIONS FOR MORE INFORMATION ON DOORS AND HARDWARE.

VENTILATOR SCHEDULE

NO.	FLOW	FLOWRATE	SP (IN WC)	BACKDRAFT DAMPER	MANUFACTURER	MODEL
V1	EXHAUST	400 SCFM	0.10	YES	ACME ENGINEERING	VQ400

REVISED TO CONFORM TO CONSTRUCTION RECORDS
6/24/11
RH2 ENGINEERING INC. DATE

NO.	REVISION	BY	REVIEW	DATE
1	REVISED TO CONFORM TO CONSTRUCTION RECORDS	BMS	DWB	6/24/11

BRET E. BEAUPRE, STATE OF WASHINGTON, 38752, REGISTERED PROFESSIONAL ENGINEER
SIGNED: 01/28/10

JON M. CONNER, STATE OF WASHINGTON, 44672, REGISTERED PROFESSIONAL ENGINEER
SIGNED: 01/28/10

LAKE WHATCOM WATER & SEWER DISTRICT

Lake Whatcom Water and Sewer District
2010 Sewer Pump Station Improvements
Ranch House

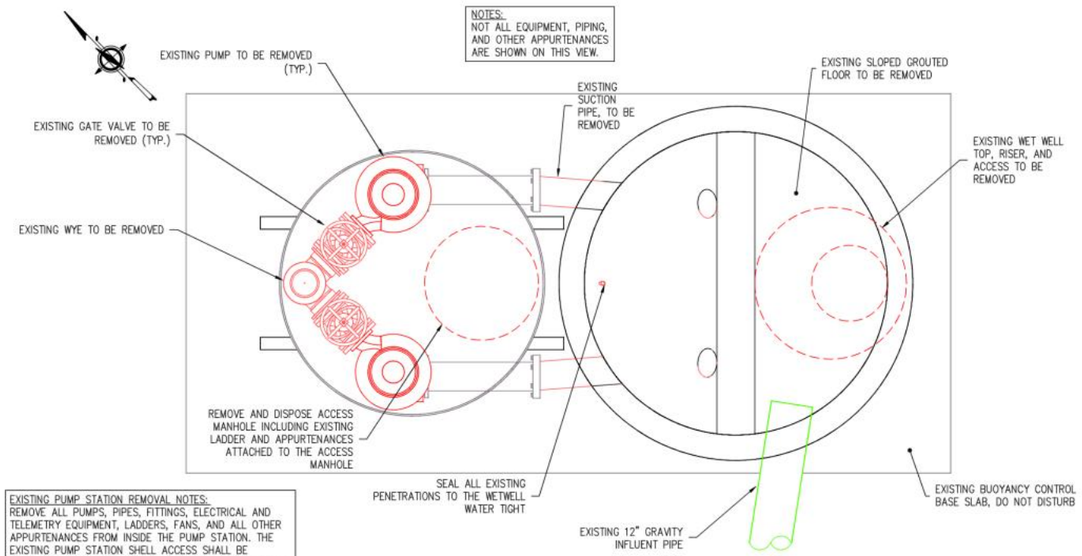
EMERGENCY GENERATOR BUILDING FLOOR AND ROOF PLAN

RH2 ENGINEERS PLANNERS SCIENTISTS
RH2 ENGINEERING, INC.
http://www.rh2.com
mailbox@rh2.com 1.800.720.8052
BELLINGHAM 360.676.0636 454 West Horton Road
BOTHELL 425.951.5400 12100 NE 195th Street, Suite 100
EAST WENATCHEE 509.886.2900 300 Simon Street, Suite 5
RICHLAND 509.946.5181 114 Columbia Point Drive, Suite C
SILVERDALE 360.876.7960 2021 NW Mhyre Rd, Suite 107
TACOMA 253.272.3059 621 Pacific Avenue Suite 104

SCALE: SHOWN
0 1" 2"
DRAWING IS NOT TO SCALE IF BAR IS NOT 2" LONG

PLOT: 24
ENGINEER: JMC
REVIEWED: KLK
DATE: JAN 22, 2010
CLIENT: LWWSD
JOB NO.: 409-050
FILENAME: RH-D-STR02

DWG NO. S202
SHEET NO. 42
71

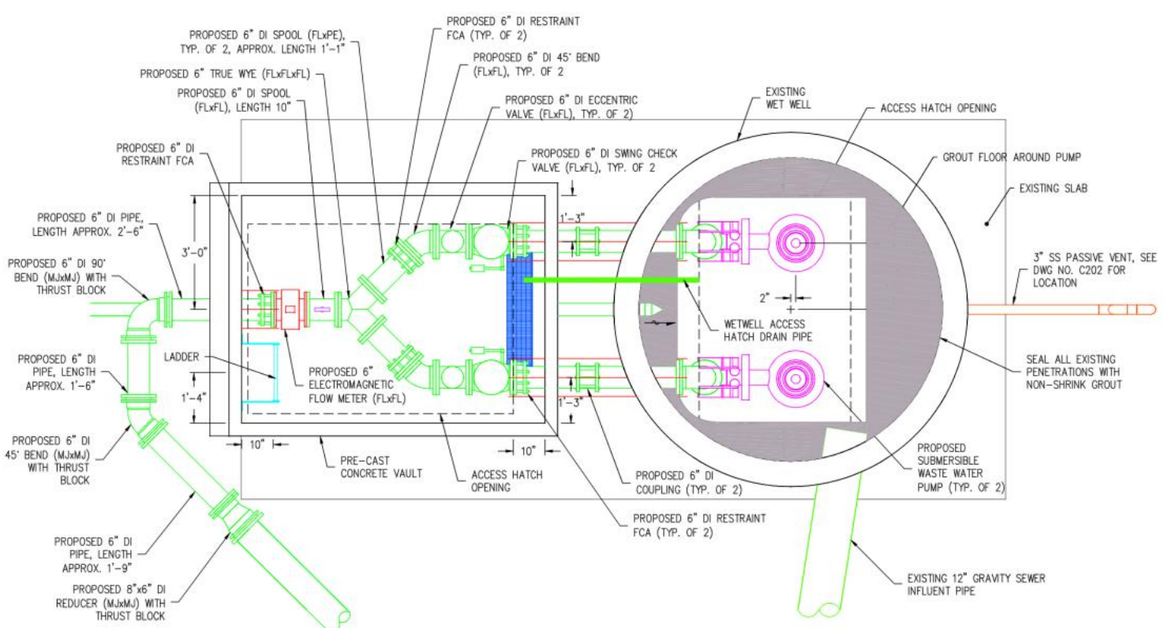


EXISTING PUMP STATION REMOVAL NOTES:
REMOVE ALL PUMPS, PIPES, FITTINGS, ELECTRICAL AND TELEMETRY EQUIPMENT, LADDERS, FANS, AND ALL OTHER APPURTENANCES FROM INSIDE THE PUMP STATION. THE EXISTING PUMP STATION SHELL ACCESS SHALL BE REMOVED AND THE PUMP STATION SHALL BE COMPLETELY FILLED WITH SAND SLURRY OR CDF. CONTRACTOR SHALL DELIVER ALL GENERATORS, PUMPS, MOTORS AND VALVES TO THE DISTRICT SHOP FOLLOWING REMOVAL. ALL OTHER COMPONENTS SHALL BE DISPOSED OF PROPERLY. EXISTING ELECTRICAL PANEL AND MERCURY SWITCH CONTAIN LEAD. SEE SPECIFICATIONS FOR LEAD REMOVAL DETAILS.

EXISTING PUMP STATION AND DEMOLITION PLAN

½" = 1'-0"

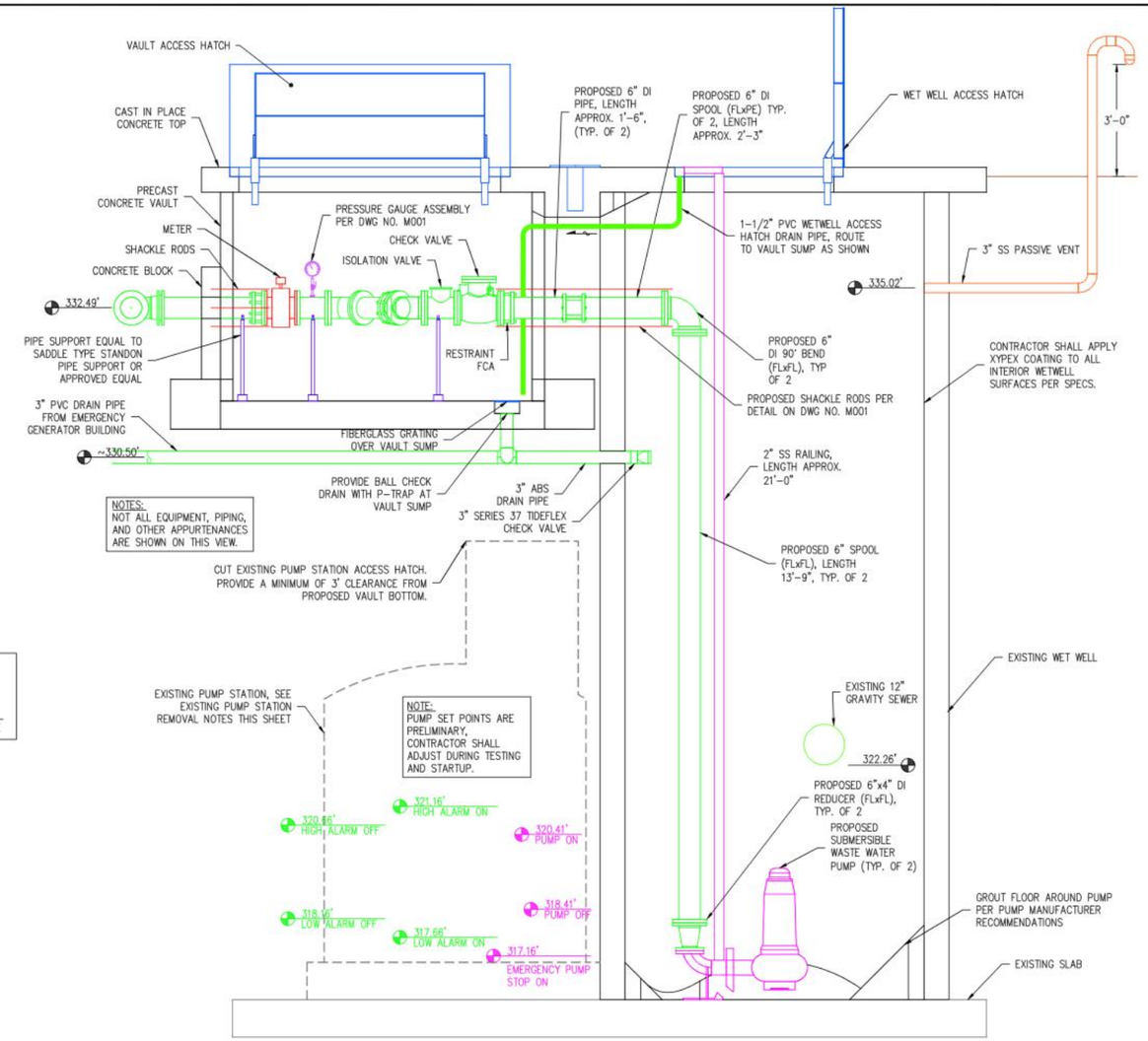
REVISED TO CONFORM TO CONSTRUCTION RECORDS
RH2 ENGINEERING INC. 6/24/11 DATE



NOTE:
THRUST BLOCKS NOT SHOWN THIS PLAN FOR CLARITY. PROVIDE AND INSTALL THRUST BLOCKS PER DISTRICT STANDARD DETAIL

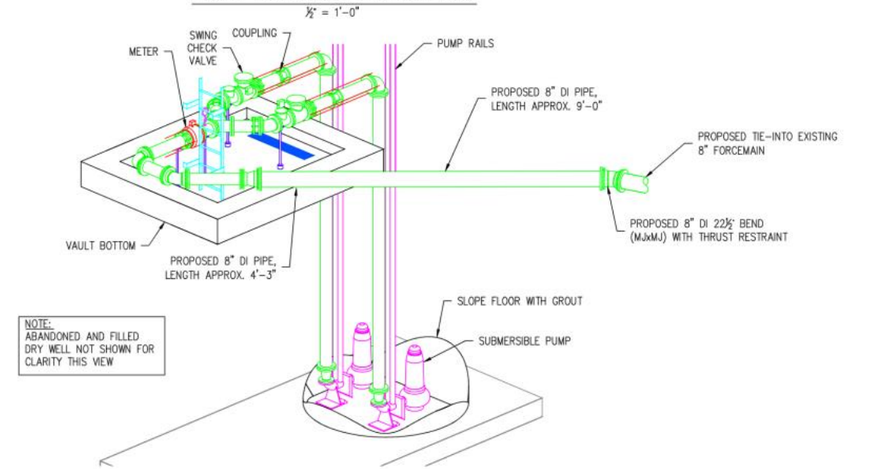
PROPOSED PUMP STATION MECHANICAL PLAN

½" = 1'-0"



PUMP STATION ELEVATION

½" = 1'-0"



NOTE:
ABANDONED AND FILLED DRY WELL NOT SHOWN FOR CLARITY THIS VIEW

PUMP STATION OBLIQUE

NOT TO SCALE

NO.	REVISION	BY	REVIEW	DATE
1	REVISED TO CONFORM TO CONSTRUCTION RECORDS	BMS	DWB	6/24/11

BRET E. BEAUPRE, STATE OF WASHINGTON, 36752, REGISTERED PROFESSIONAL ENGINEER
SIGNED: 01/28/10

EDWIN HAYES, STATE OF WASHINGTON, 38889, REGISTERED PROFESSIONAL ENGINEER
SIGNED: 01/28/10

LAKE WHATCOM WATER & SEWER DISTRICT — lake whatcom

Lake Whatcom Water and Sewer District
2010 Sewer Pump Station Improvements
Ranch House

EXISTING AND PROPOSED MECHANICAL PLAN

RH2 ENGINEERS PLANNERS SCIENTISTS
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BELLINGHAM 360.676.0836 454 West Horton Road
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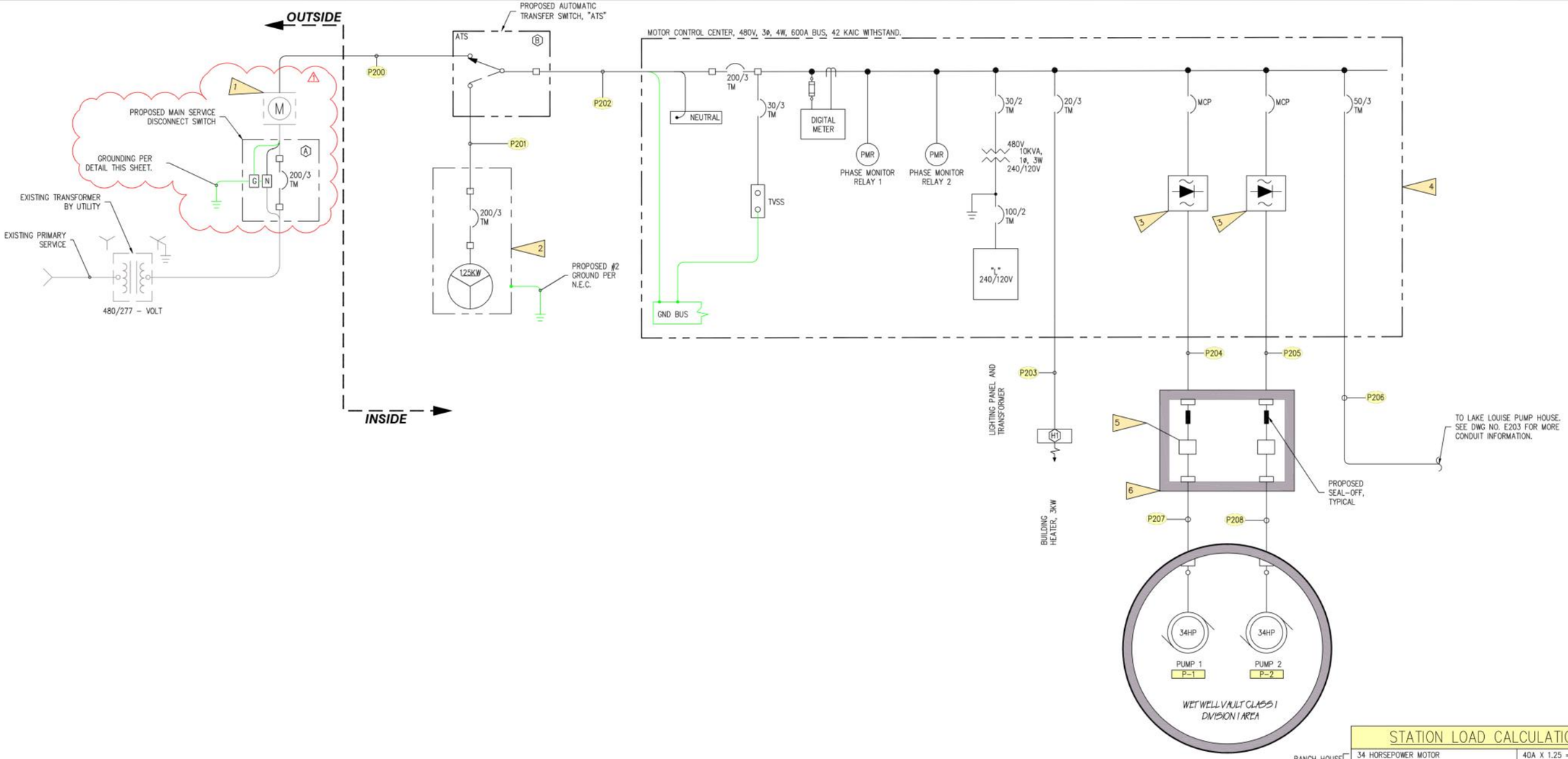
RICHLAND 509.946.5181 114 Columbia Point Drive, Suite C
SILVERDALE 360.876.7960 2021 NW Whyre Rd, Suite 107
TACOMA 253.272.3059 621 Pacific Avenue Suite 104

SCALE: SHOWN
0 1" 2"
DRAWING IS NOT TO SCALE IF BAR IS NOT 2" LONG

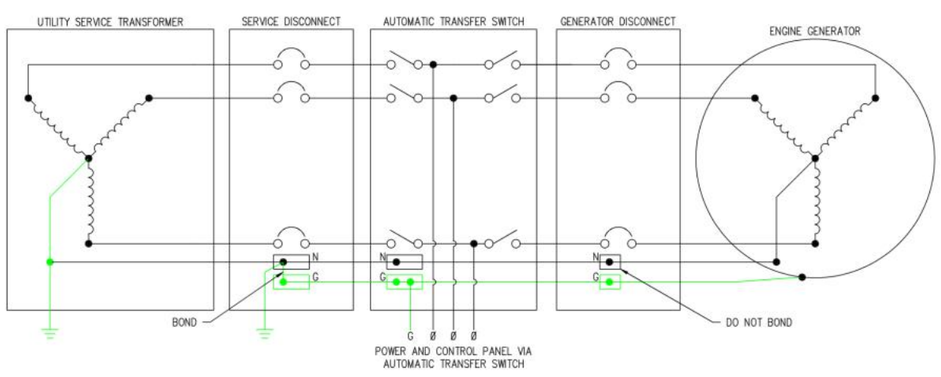
PLOT: 24	DWG NO. M201
ENGINEER: EH	
REVIEWED: DWB	
DATE: JAN 03, 2011	SHEET NO. 43
CLIENT: LWWSD	
JOB NO.: 409-050	
FILENAME: RH-D-MEC01	



ONE-LINE DIAGRAM

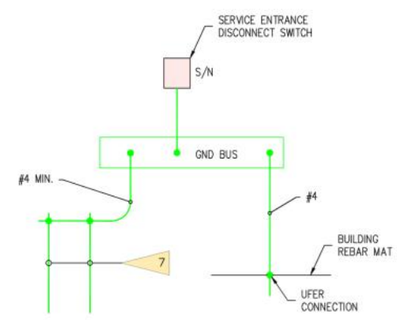
NO SCALE

STATION LOAD CALCULATIONS		
RANCH HOUSE	34 HORSEPOWER MOTOR	40A X 1.25 = 50 AMPS
	34 HORSEPOWER MOTOR	40A X 1.00 =40 AMPS
LAKE LOUISE	7.5 HORSEPOWER MOTOR	11A X 1.00 = 11 AMPS
	7.5 HORSEPOWER MOTOR	11A X 1.00 = 11 AMPS
	HEATER (3KW)	4.25A X 1.00 = 4.25 AMPS
	MISC. STATION LOAD (15KVA)	20.8A X 1.00 = 20.8 AMPS
TOTAL		137.05 AMPS



GENERATOR & TRANSFER SWITCH CONNECTION DIAGRAM

NO SCALE



GROUNDING

NO SCALE

REVISED TO CONFORM TO CONSTRUCTION RECORDS

6/24/11

RH2 ENGINEERING INC. DATE

ELECTRICAL NOTES

1. EXISTING SELF-CONTAINED MAIN REVENUE METERING.
2. PROPOSED INDOOR STANDBY GENERATOR, 125 KW, 480/277V, 60 Hz, 3ø.
3. SEE DIAGRAM 1 ON DWG NO. E005 FOR MOTOR CONTROL LOGIC.
4. PROPOSED NEMA 1A MOTOR CONTROL CENTER.
5. WATERPROOF SPLICE. SEE DETAIL ON DWG NO. E003 (TYPICAL).
6. VALVE VAULT. SEE DWG NO. E204 FOR MORE INFORMATION.
7. (2) – 5/8" X 8' COPPER GROUND RODS SPACED APART AS SHOWN DWG NO. E203 POWER DISTRIBUTION AND SIGNAL PLAN.
8. SEE DWG NO. E206 FOR ELECTRICAL EQUIPMENT AND INSTRUMENTATION SCHEDULE.
9. SEE DWG NO. E206 FOR CONDUIT/CONDUCTOR SCHEDULES.
10. SEE DWG NO. E206 FOR HEATER SCHEDULE.

NO.	REVISION	BY	REVIEW	DATE
2	REVISED TO CONFORM TO CONSTRUCTION RECORDS	MWB	CMR	6/24/11
1	ELECTRICAL SERVICE CONNECTION REVISION	CMR	CMR	8/18/10

BRET E. BEAUPRE, STATE OF WASHINGTON, 38752, REGISTERED PROFESSIONAL ENGINEER
SIGNED: 01/28/10

CHRISTOPHER M. ROBERTS, STATE OF WASHINGTON, 45317, REGISTERED PROFESSIONAL ENGINEER
SIGNED: 01/28/10

LAKE WHATCOM WATER & SEWER DISTRICT

Lake Whatcom Water and Sewer District
2010 Sewer Pump Station Improvements
Ranch House

ONE-LINE DIAGRAM

RH2 ENGINEERS PLANNERS SCIENTISTS

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114 Columbia Point Drive, Suite C

SILVERDALE 360.876.7960
2021 NW Mhyre Rd, Suite 107

TACOMA 253.272.2059
621 Pacific Avenue Suite 104

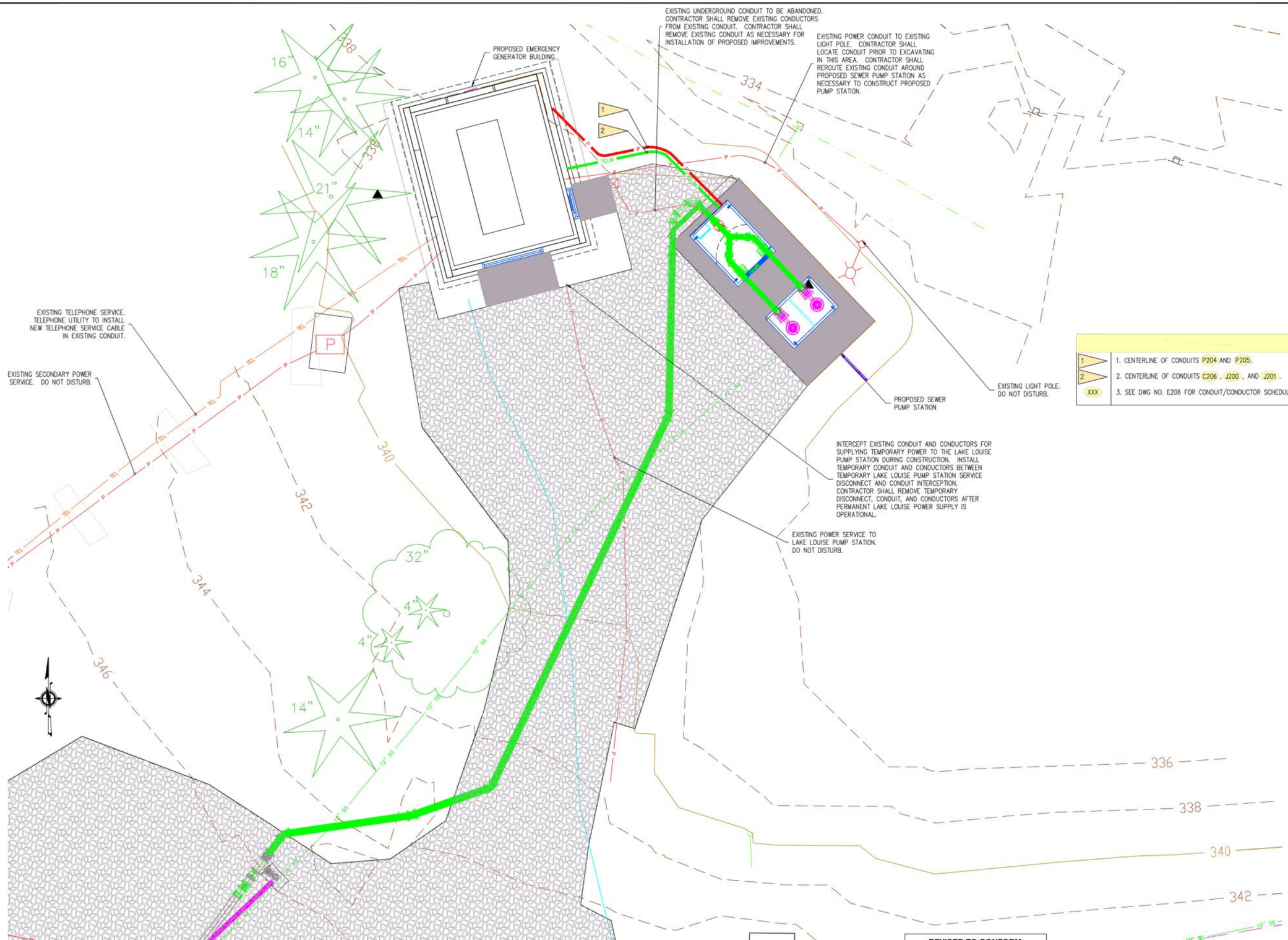
SCALE: SHOWN
0 1" 2"
DRAWING IS NOT TO SCALE IF BAR IS NOT 2" LONG

PLOT: 1
ENGINEER: DY
REVIEWED: CMR
DATE: AUG 18, 2010
CLIENT: LWWSD
JOB NO.: 409-050
FILENAME: RH-D-ELEC01

DWG NO. E201

SHEET NO. 44

71



ELECTRICAL SITE PLAN

1" = 5'

REVISED TO CONFORM TO CONSTRUCTION RECORDS
RH2 ENGINEERING INC. 6/24/11 DATE

NO.	REVISION	BY	REVIEW	DATE
1	REVISED TO CONFORM TO CONSTRUCTION RECORDS	MWB	DWB	6/24/11

BRET E. BEAUPRE, STATE OF WASHINGTON, 38752, REGISTERED PROFESSIONAL ENGINEER
SIGNED: 01/28/10

CHRISTOPHER M. ROBERTS, STATE OF WASHINGTON, 45317, REGISTERED PROFESSIONAL ENGINEER
SIGNED: 01/28/10

LAKE WHATCOM WATER & SEWER DISTRICT

Lake Whatcom Water and Sewer District
2010 Sewer Pump Station Improvements
Ranch House

ELECTRICAL SITE PLAN

RH2 ENGINEERS PLANNERS SCIENTISTS
RH2 ENGINEERING, INC.
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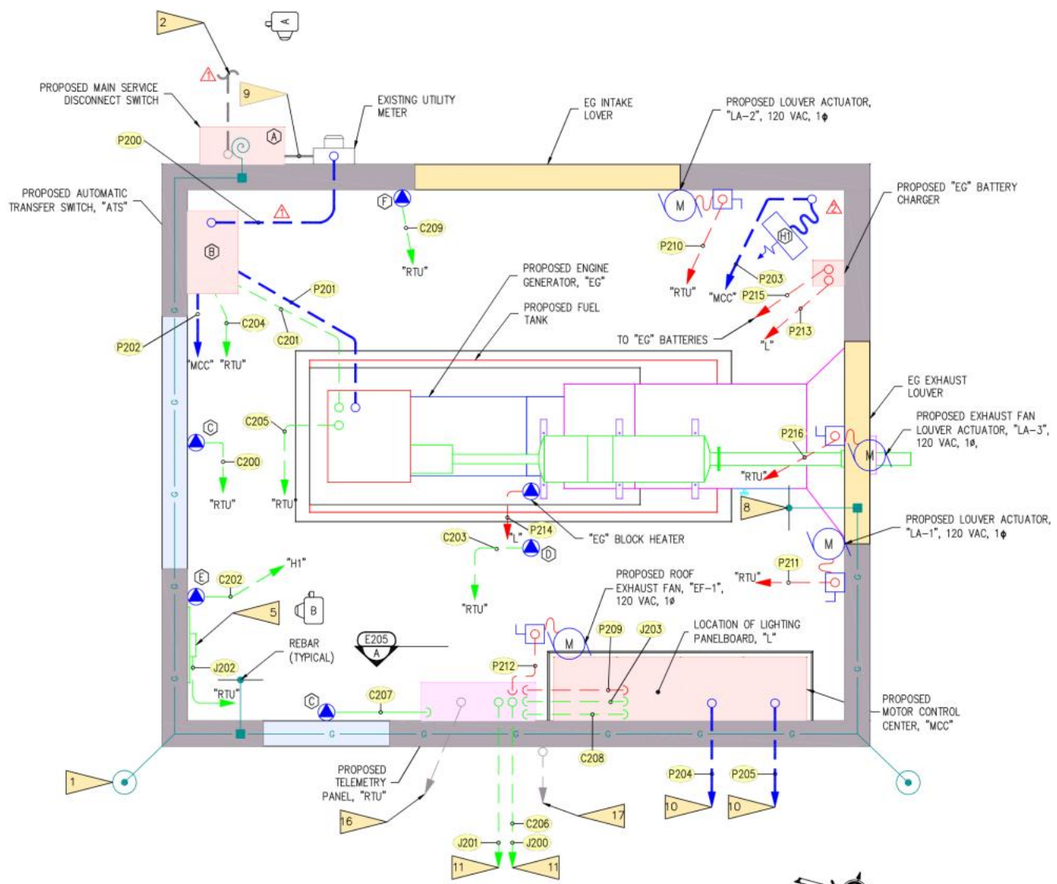
114 Columbia Point Drive, Suite C
SILVERDALE 360.876.7960
2021 NW Myhre Rd, Suite 107
TACOMA 253.272.2059
621 Pacific Avenue Suite 104

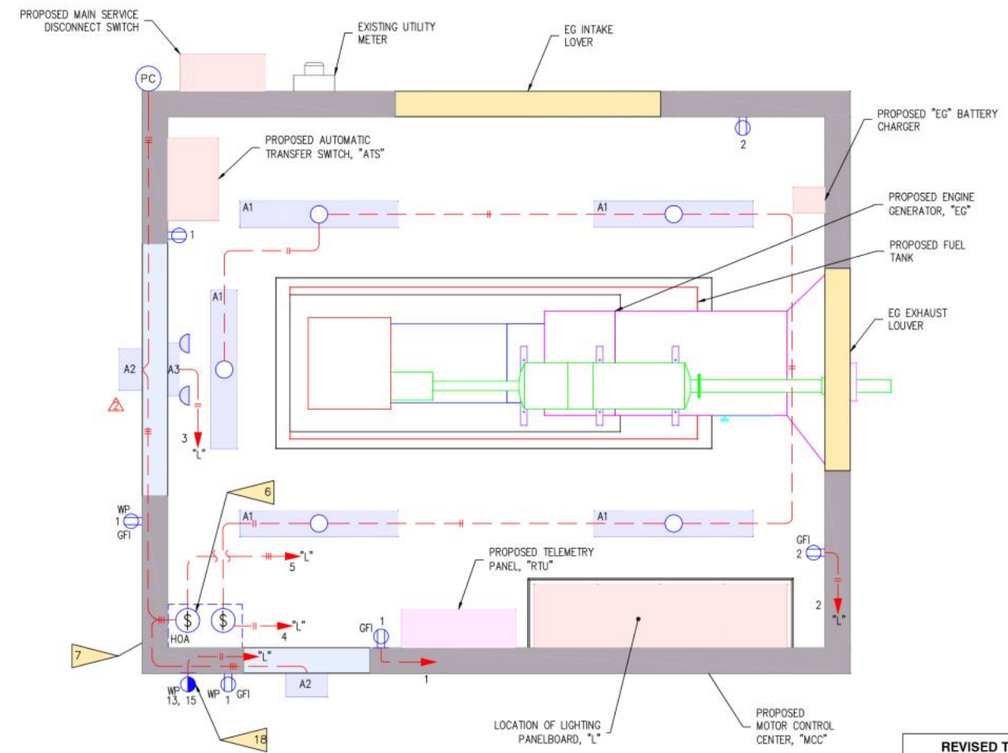
SCALE: SHOWN
0 1" 2"
DRAWING IS NOT TO SCALE IF BAR IS NOT 2" LONG

PLOT: 20	DWG NO. E202
ENGINEER: DY	
REVIEWED: CMR	
DATE: JAN 22, 2010	SHEET NO. 45
CLIENT: LWWSD	
JOB NO.: 409-050	71
FILENAME: RH-D-ELEC03	



RANCH HOUSE - GENERATOR BUILDING POWER DISTRIBUTION AND SIGNAL PLAN

½" = 1'-0"



RANCH HOUSE - GENERATOR BUILDING LIGHTING AND RECEPTACLE PLAN

½" = 1'-0"

REVISED TO CONFORM TO CONSTRUCTION RECORDS
RH2 ENGINEERING INC. 6/24/11 DATE

EXISTING MAIN SERVICE DISCONNECT TO BE REPLACED. CONTRACTOR SHALL INSTALL PROPOSED MAIN SERVICE DISCONNECT ON PROPOSED WALL.

EXISTING UTILITY METER TO REMAIN. CONTRACTOR SHALL PROVIDE SUPPORT SYSTEM FOR EXISTING UTILITY METER AND CONDUIT DURING DEMOLITION OF EXISTING BUILDING AND CONSTRUCTION OF PROPOSED BUILDING.

CONTRACTOR SHALL PROVIDE AND INSTALL TEMPORARY SERVICE DISCONNECT SWITCH FOR POWERING LAKE LOUISE PUMP STATION DURING CONSTRUCTION. CONTRACTOR SHALL PROVIDE SUPPORT SYSTEM FOR INSTALLING MOUNTING TEMPORARY SERVICE DISCONNECT SWITCH.

EXISTING UTILITY METER AND MAIN SERVICE DISCONNECT

NO SCALE

EXISTING TELEPHONE CONDUIT TO REMAIN. DO NOT DISTURB.

EXISTING CONDUIT TO BE REMOVED

EXISTING TELEPHONE TERMINATION PANEL. REMOVE EXISTING PANEL AND INSTALL PROPOSED TELEPHONE TERMINATION PANEL IN SAME LOCATION IN NEW BUILDING.

EXISTING SPARE CONDUIT TO REMAIN. DO NOT DISTURB.

EXISTING TELEPHONE TERMINATION PANEL

NO SCALE

ELECTRICAL NOTES

1. GROUND ROD PER N.E.C. (TYPICAL). USE EXOTHERMIC WELD CONNECTION AT THE GROUND ROD. SEE DWG NO. E002 FOR ADDITIONAL DETAIL. LOCATE GROUND RODS 2' MINIMUM FROM BUILDING FOUNDATION.

2. TO EXISTING TRANSFORMERS BY UTILITY. SEE DWG NO. E202 FOR CONDUIT CONTINUATION.

3. PROVIDE AND INSTALL LABELS FOR ALL LIGHT SWITCHES. LABEL SHALL INDICATE THE DEVICE CONTROLLED BY THE SWITCH.

4. LOCATE ALL LIGHT FIXTURES, SWITCHES AND DEVICES IN LOCATION SHOWN ON THE PLANS USING ENGINEERING SCALE. ADJUST LOCATION AS NECESSARY TO AVOID INTERFERENCE WITH OTHER EQUIPMENT.

5. PROPOSED TELEPHONE TERMINATION PANEL, "TP", PER TELEPHONE UTILITY REQUIREMENTS. CONTRACTOR SHALL PROVIDE AND INSTALL 2'H X 2'W X 3/4"D BACKBOARD FOR INSTALLING TERMINATION PANEL. CONTRACTOR SHALL REMOVE EXISTING TERMINATION PANEL FROM EXISTING WALL AND INSTALL PROPOSED PANEL ON PROPOSED WALL.

6. PROPOSED THREE-POSITION H-O-A TOGGLE LIGHT SWITCH. SEE DETAIL ON DWG NO. E006.

7. DOUBLE GANG BOX AND SWITCH RECESSED IN WALL.

8. CONNECTION TO REINFORCEMENT GRID (TYPICAL IN 2 LOCATIONS). SEE DWG NO. E002 FOR ADDITIONAL DETAIL.

9. EXISTING CONDUIT FROM EXISTING UTILITY METER. CONTRACTOR SHALL RE-ROUTE EXISTING CONDUIT WITH ASSOCIATED CONDUCTORS FROM UTILITY METER INTO THE PROPOSED MAIN SERVICE DISCONNECT SWITCH.

10. TO PROPOSED JUNCTION BOX LOCATED IN VALVE VAULT. SEE DWG NO. E202 FOR CONDUIT CONTINUATION. SEE DWG NO. E204 FOR PUMP STATION ELECTRICAL PLAN.

11. TO VALVE VAULT. SEE DWG NO. E202 FOR CONDUIT CONTINUATION. SEE DWG NO. E204 FOR PUMP STATION ELECTRICAL PLAN.

XXX 12. SEE DWG NO. E206 FOR CONDUIT/CONDUCTOR SCHEDULES.

X 13. SEE DWG NO. E206 FOR ELECTRICAL EQUIPMENT AND INSTRUMENTATION SCHEDULE.

H1 14. SEE DWG NO. E206 FOR HEATER SCHEDULE.

A# 15. SEE DWG NO. E206 FOR LIGHT FIXTURE SCHEDULE.

16. EXISTING CONDUIT TO LAKE LOUISE PUMP STATION. CONTRACTOR SHALL INTERCEPT EXISTING CONDUIT AND INSTALL A JUNCTION BOX. CONTRACTOR SHALL SPLICE EXISTING CONDUCTORS TO PROPOSED CONDUCTORS IN JUNCTION BOX. CONTRACTOR SHALL INSTALL PROPOSED CONDUIT 206 BETWEEN JUNCTION BOX AND MOTOR CONTROL CENTER.

17. EXISTING CONDUIT TO EXISTING OUTDOOR AREA LIGHT. CONTRACTOR SHALL INTERCEPT EXISTING CONDUIT AND INSTALL A JUNCTION BOX. CONTRACTOR SHALL SPLICE EXISTING CONDUCTORS TO PROPOSED CONDUCTORS IN JUNCTION BOX. CONTRACTOR SHALL INSTALL PROPOSED CONDUIT 217 BETWEEN JUNCTION BOX AND LIGHTING PANELBOARD, "L".

18. DEDICATED 240 VAC 40A RECEPTACLE FOR POWERING DISTRICT OWNED PRESSURE WASHER.

NO.	REVISION	BY	REVIEW	DATE
2	REVISED TO CONFORM TO CONSTRUCTION RECORDS	MWB	CMR	6/24/11
1	ELECTRICAL SERVICE CONNECTION REVISION	CMR	CMR	8/18/10

BRET E. BEAUPRE, STATE OF WASHINGTON, 38752, REGISTERED PROFESSIONAL ENGINEER
SIGNED: 01/28/10

CHRISTOPHER M. ROBERTS, STATE OF WASHINGTON, 45317, REGISTERED PROFESSIONAL ENGINEER
SIGNED: 01/28/10

LAKE WHATCOM WATER & SEWER DISTRICT

Lake Whatcom Water and Sewer District
2010 Sewer Pump Station Improvements
Ranch House

GENERATOR BUILDING ELECTRICAL PLAN

RH2 ENGINEERS PLANNERS SCIENTISTS
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http://www.rh2.com
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BELLINGHAM 360.676.0836 454 West Horton Road
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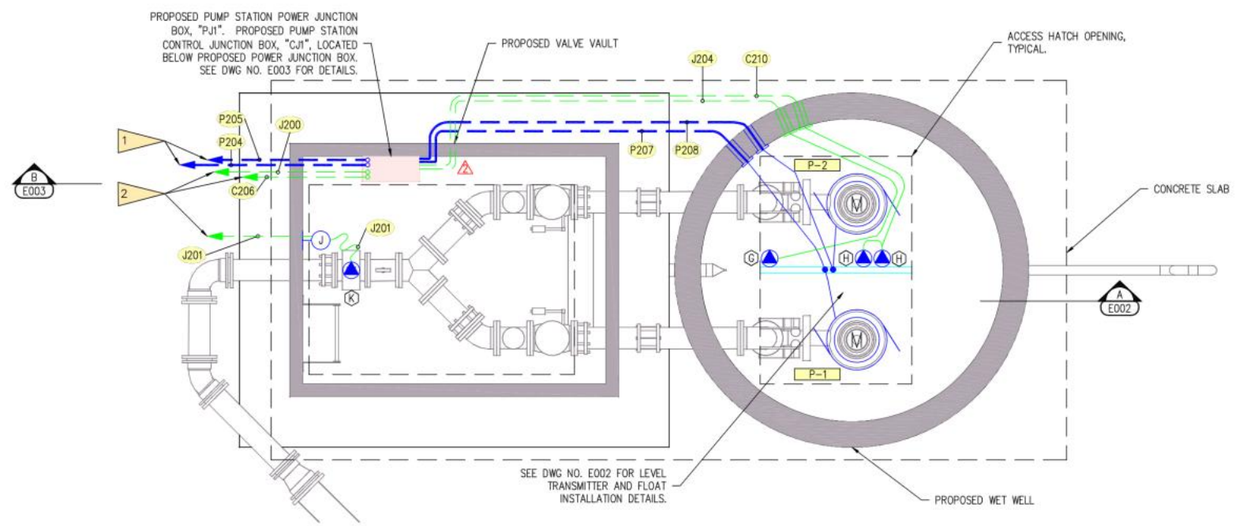
RICHLAND 509.946.5181 114 Columbia Point Drive, Suite C
SILVERDALE 360.876.7960 2021 NW Myre Rd, Suite 107
TACOMA 253.272.3059 621 Pacific Avenue Suite 104

SCALE: SHOWN
0 1" 2"
DRAWING IS NOT TO SCALE IF BAR IS NOT 2" LONG

PLOT: 48	DWG NO. E203
ENGINEER: CMR	
REVIEWED: MLM	
DATE: AUG 18, 2010	SHEET NO. 46
CLIENT: LWWSD	
JOB NO.: 409-050	71
FILENAME: RH-D-ELEC02	

ELECTRICAL NOTES

1	1. TO PROPOSED MOTOR CONTROL CENTER, "MCC". SEE DWG NO. E202 FOR CONDUIT CONTINUATION. SEE DWG NO. E203 FOR GENERATOR BUILDING ELECTRICAL PLAN.
2	2. TO TELEMETRY PANEL, "RTU". SEE DWG NO. E202 FOR CONDUIT CONTINUATION. SEE DWG NO. E203 FOR GENERATOR BUILDING ELECTRICAL PLAN.
XXX	3. SEE DWG NO. E206 FOR CONDUIT/CONDUCTOR SCHEDULES.
X	4. SEE DWG NO. E206 FOR ELECTRICAL EQUIPMENT AND INSTRUMENTATION SCHEDULE.



RANCH HOUSE - PUMP STATION POWER DISTRIBUTION AND SIGNAL PLAN

½" = 1'-0"

REVISED TO CONFORM TO CONSTRUCTION RECORDS
RH2 ENGINEERING INC. 6/24/11 DATE

NO.	REVISION	BY	REVIEW	DATE
2	REVISED TO CONFORM TO CONSTRUCTION RECORDS	MWB	CMR	6/24/11
1	ELECTRICAL SERVICE CONNECTION REVISION	CMR	CMR	8/18/10

BRET E. BEAUPRE, STATE OF WASHINGTON, 38752, REGISTERED PROFESSIONAL ENGINEER
SIGNED: 01/28/10

CHRISTOPHER M. ROBERTS, STATE OF WASHINGTON, 45317, REGISTERED PROFESSIONAL ENGINEER
SIGNED: 01/28/10

LAKE WHATCOM WATER & SEWER DISTRICT

Lake Whatcom Water and Sewer District
2010 Sewer Pump Station Improvements
Ranch House

PUMP STATION ELECTRICAL PLAN

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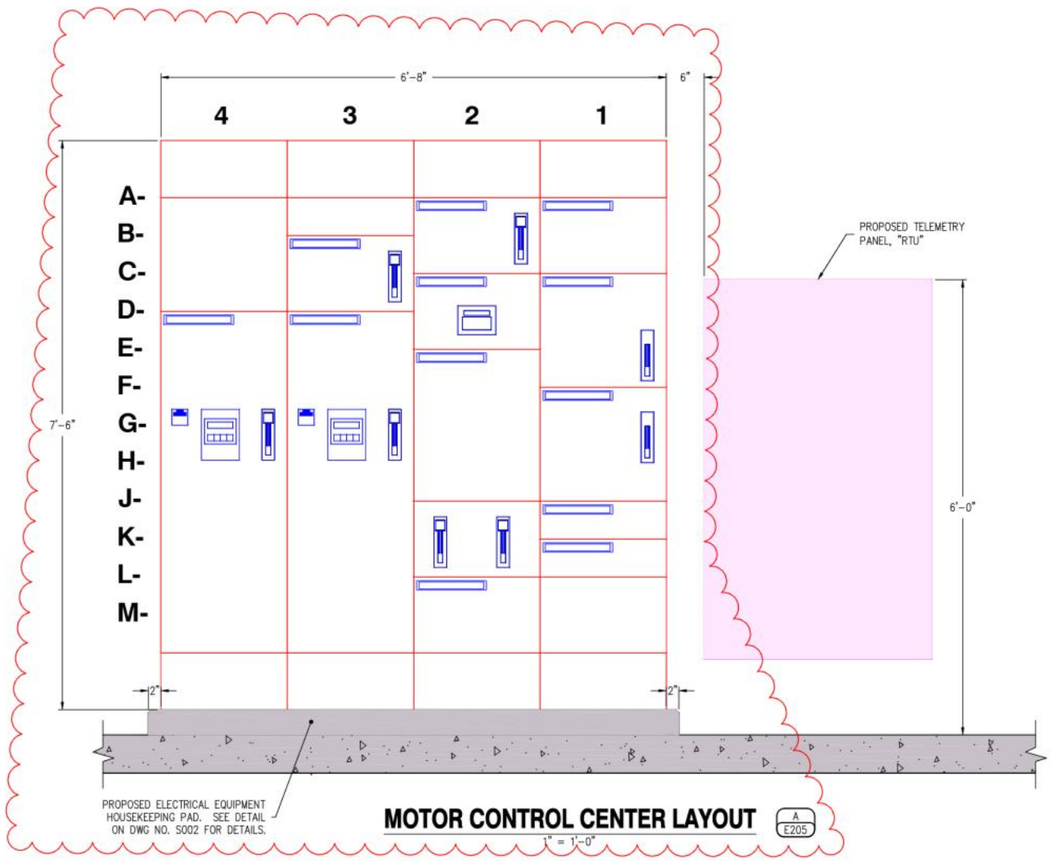
TACOMA 253.272.3059 621 Pacific Avenue Suite 104

SCALE: SHOWN
0 1" 2"
DRAWING IS NOT TO SCALE IF BAR IS NOT 2" LONG

PLOT: 48	DWG NO. E204
ENGINEER: CMR	
REVIEWED: MLM	
DATE: AUG 18, 2010	SHEET NO. 47
CLIENT: LWWSD	
JOB NO.: 409-050	71
FILENAME: RH-D-ELEC02	

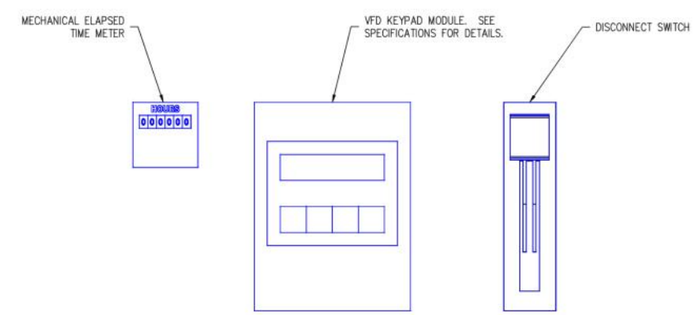


MOTOR CONTROL CENTER LAYOUT

A / E205

1" = 1'-0"

MCC CONTROL DEVICES	
MCC SECTION	NAMEPLATE SCHEDULE
1A	CURRENT TRANSFORMER
1C	MCC MAIN DISCONNECT
1F	SURGE PROTECTIVE DEVICE
1J	PHASE MONITOR RELAY
1K	PHASE MONITOR RELAY
2A	HEATER DISCONNECT
2C	POWER MONITOR
2E	LIGHTING PANELBOARD, "L"
2J	LIGHTING TRANSFORMER DISCONNECT
2L	LIGHTING TRANSFORMER
3B	LAKE LOUISE PUMP HOUSE DISCONNECT
3D	PUMP NO. 1, P-1 ELAPSED TIME (HOURS)
4D	PUMP NO. 2, P-2 ELAPSED TIME (HOURS)



TYPICAL VFD PANEL DETAIL

NOT TO SCALE

REVISED TO CONFORM TO CONSTRUCTION RECORDS
RH2 ENGINEERING INC. 6/24/11 DATE

NO.	REVISION	BY	REVIEW	DATE
1	REVISED TO CONFORM TO CONSTRUCTION RECORDS	MWB	DWB	6/24/11

BRET E. BEAUPRE, STATE OF WASHINGTON, 38752, REGISTERED PROFESSIONAL ENGINEER
SIGNED: 01/28/10

CHRISTOPHER M. ROBERTS, STATE OF WASHINGTON, 45317, REGISTERED PROFESSIONAL ENGINEER
SIGNED: 01/28/10

LAKE WHATCOM WATER & SEWER DISTRICT — lake whatcom

Lake Whatcom Water and Sewer District
2010 Sewer Pump Station Improvements
Ranch House

MOTOR CONTROL CENTER DETAILS

RH2 ENGINEERS PLANNERS SCIENTISTS
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RICHLAND 509.940.5181 114 Columbia Point Drive, Suite C
SILVERDALE 360.876.7960 2021 NW Mhyre Rd, Suite 107
TACOMA 253.272.3059 621 Pacific Avenue Suite 104

SCALE: SHOWN
0 1" 2"
DRAWING IS NOT TO SCALE IF BAR IS NOT 2" LONG

PLOT: 24
ENGINEER: DY
REVIEWED: CMR
DATE: JAN 22, 2010
CLIENT: LWWSD
JOB NO.: 409-050
FILENAME: RH-D-ELEC04

DWG NO. E205
SHEET NO. 48 / 71

ELECTRICAL EQUIPMENT AND INSTRUMENTATION SCHEDULE

ITEM	DESCRIPTION	MANUFACTURER	MODEL NO.
A	MAIN DISCONNECT SWITCH – NEMA 4X STAINLESS STEEL ENCLOSURE, HEAVY DUTY BREAKER, SERVICE ENTRANCE RATED, THERMAL MAGNETIC, 200 AMP, 600 VOLT, 42 KAIC WITHSTAND, CIRCUIT BREAKER SWITCH. MOUNT TOP OF ENCLOSURE 6'–0" FROM FINISHED GRADE.	SIEMENS	HJD6 OR EQUAL
B	AUTOMATIC TRANSFER SWITCH – NEMA 1, 225 AMP, 600 VOLT RATED, 3 PHASE, 3 POLE, 42 KAIC WITHSTAND.	SEE SPECIFICATIONS	SEE SPECIFICATIONS
C	INTRUSION ALARM SWITCH – CONTRACTOR SHALL SELECT ACTUATOR LEVER ARM BEST SUITED FOR MOUNTING CONFIGURATION. WIRE SWITCHES IN SERIES.	SQUARE D	HEAVY DUTY TYPE C, CLASS 9007 OR EQUAL
D	PHOTO ELECTRIC SMOKE DETECTOR – 24 VDC, WITH LOCAL AUDIBLE ALARM SIGNAL AND CONTACTS FOR REMOTE ANNUNCIATION THROUGH FOUR WIRE CONNECTION TO TELEMETRY. INSTALL AT HIGHEST POINT. WIRE PER MANUFACTURER'S INSTRUCTIONS. PROVIDE ACCESSORIES AS NECESSARY TO COMPLETE A FUNCTIONAL CIRCUIT.	SYSTEMS SENSOR	4WTAR–B OR EQUAL
E	WALL MOUNTED HEATING THERMOSTAT – 24 V, SPST, RANGE 40° – 99°F, SET AT 60°F, MOUNT 4 FEET ABOVE FINISHED FLOOR.	HONEYWELL	T8000C1002 OR EQUAL
F	WALL MOUNTED COOLING THERMOSTAT – SNAP ACTION, SPDT LINE VOLTAGE AIR SWITCH CONTROLLER, RANGE –30° – 100°F, SET AT 75°F, MOUNT 4 FEET ABOVE FINISHED FLOOR.	HONEYWELL	T631C1103 OR EQUAL
G	SUBMERSIBLE LEVEL TRANSMITTER – SEE SPECIFICATIONS.		
H	FLOAT SWITCH – SEE SPECIFICATIONS.		
K	FLOW METER – SEE SPECIFICATIONS.		

ITEM	DESCRIPTION	MANUFACTURER	MODEL NO.
H1	GENERATOR BUILDING HEATER WITH UNIVERSAL MOUNTING BRACKET – 3 KW, 480V, THREE PHASE, WITH 24V CONTROL TRANSFORMER AND POWER CONTACTOR FOR THERMOSTAT CONNECTION. MOUNT BOTTOM OF HEATER 7'–0" ABOVE FINISHED FLOOR.	QMARK	MUH–03–41

LIGHTING FIXTURE SCHEDULE

TYPE	DESCRIPTION	MANUFACTURER NAME	MANUFACTURER CATALOG NO.	* LAMP QTY.	LAMP CATALOG NO.	REMARKS
A1	FLUORESCENT, LIGHT FIXTURE, 120 VAC, 4'–2" LONG, HIGH–IMPACT ACRYLIC LENS, MOLDED FIBERGLASS REINFORCED POLYESTER HOUSING, (2)–32W LAMPS, ENERGY SAVING BALLAST, CEILING MOUNTED, MOUNT TOP OF FIXTURE ON BUILDING CEILING, U.L. LISTED FOR DAMP LOCATIONS.	LITHONIA	DM 2 32 ARDP 120	2	32WT8 32 WATT	
A2	HIGH PRESSURE SODIUM OUTDOOR AREA CUTOFF LIGHT – 100W HIGH PRESSURE SODIUM, 120V BALLAST, 10"H, 11 1/2" W, 8 15/16" D, DIE–CAST ALUMINUM HOUSING, DIE–FORMED ALUMINUM REFLECTOR, POLYCARBONATE LENS WITH IES CUTOFF DISTRIBUTION, PHOTOCELL, WIREGUARD, MOUNT BOTTOM OF FIXTURE 10'–0" ABOVE FINISHED GRADE, U.L. LISTED FOR WET LOCATIONS.	LITHONIA	TWAC 100S 120 PE DBL LPI TWAWG	1	100 WATT HPS	PHOTOCELL CONTROL
A3	DUAL HEAD EMERGENCY LIGHT – (2)–5.4W, AC T5 WEDGE–BASE LAMPS, DUAL–VOLTAGE INPUT 120 VAC, 5 $\frac{3}{8}$"H, 16 $\frac{1}{2}$"W, THERMOPLASTIC HOUSING, INTEGRATED RECHARGEABLE BATTERY MOUNT BOTTOM OF FIXTURE 1'–0" ABOVE DOOR, U.L. LISTED FOR INDOOR DAMP LOCATIONS.	LITHONIA	EU2M6	2	T5 5.4 WATT DC	

★ NUMBER OF LAMPS PER FIXTURE

PANEL SCHEDULE L

NO. L — LOCATION: MCC — SERVING: GENERATOR BUILDING — 240/120 VOLTS — 3 WIRE — 100 AMP MAIN

CIRCUIT DESCRIPTION	KVA	AMP			AMP	KVA	CIRCUIT DESCRIPTION
GENERATOR BUILDING RECEPTACLE CIRCUIT NO. 1	0.72	20	1	2	20	0.36	GENERATOR BUILDING RECEPTACLE CIRCUIT NO. 2
GENERATOR BUILDING EMERGENCY LIGHTING	0.01	20	3	4	20	0.38	GENERATOR BUILDING INTERIOR LIGHTING
GENERATOR BUILDING EXTERIOR LIGHTING	0.24	20	5	6	20	0.65	TELEMETRY PANEL, "RTU"
GENERATOR BUILDING EXHAUST FAN, "EF–1" VIA "RTU"	0.17	20	7	8	20	1.32	GENERATOR BLOCK HEATER
GENERATOR BATTERY CHARGER	0.34	20	9	10	2P		
OUTDOOR AREA LIGHT	0.59	20	11	12	20	0.18	RECEPTACLE ON OUTDOOR POLE
2 DEDICATED RECEPTACLE FOR PRESSURE WASHER	3.84	40	13	14	20	–	SPARE
		2P	15	16	20	–	SPARE
SPARE	–	20	17	18	–	–	SPACE

CONNECTION LOAD: 8.80 KVA 36.66 AMPS — DEMAND: LIGHTING AND CONTROL LOAD — DEMAND LOAD: 8.80 KVA 36.66 AMPS

POWER CONDUIT AND CONDUCTOR SCHEDULE

CIRCUIT	SOURCE	DESTINATION	TRADE SIZE	(QUANTITY) CONDUCTORS	NOTES
P200	EXISTING UTILITY METER 1	AUTOMATIC TRANSFER SWITCH, "ATS"	2"	(3) – #3/0, (1) – #3/0 N, (1) – #6 GRD	
P201	AUTOMATIC TRANSFER SWITCH, "ATS"	ENGINE GENERATOR, "EG"	2"	(3) – #3/0, (1) – #3/0 N, (1) – #6 GRD	
P202	AUTOMATIC TRANSFER SWITCH, "ATS"	MOTOR CONTROL CENTER, "MCC"	2"	(3) – #3/0, (1) – #3/0 N, (1) – #6 GRD	
P203	MOTOR CONTROL CENTER, "MCC"	GENERATOR BUILDING HEATER, "H1"	3/4"	(3) – #12, (1) – #12 GRD	
P204	MOTOR CONTROL CENTER, "MCC"	PUMP STATION POWER JUNCTION BOX, "PJ1"	1"	(3) – #6, (1) – #8 GRD	
P205	MOTOR CONTROL CENTER, "MCC"	PUMP STATION POWER JUNCTION BOX, "PJ1"	1"	(3) – #6, (1) – #8 GRD	
P206	LAKE LOUISE PUMP STATION CONDUIT INTERCEPTION	MOTOR CONTROL CENTER, "MCC"	2"	(3) – #2, (1) – #10 GRD	
P207	PUMP STATION POWER JUNCTION BOX, "PJ1"	PUMP NO. 1, "P–1"	1 1/2"	MANUFACTURER PUMP MOTOR CABLE	
P208	PUMP STATION POWER JUNCTION BOX, "PJ1"	PUMP NO. 2, "P–2"	1 1/2"	MANUFACTURER PUMP MOTOR CABLE	
P209	LIGHTING PANELBOARD, "L"	TELEMETRY PANEL, "RTU"	3/4"	(4) – #12, (1) – #12 GRD	EXHAUST FAN AND TELEMETRY PANEL POWER SUPPLY
P210	TELEMETRY PANEL, "RTU"	LOUVER ACTUATOR, "LA–2"	3/4"	(2) – #12, (1) – #12 GRD	
P211	TELEMETRY PANEL, "RTU"	LOUVER ACTUATOR, "LA–1"	3/4"	(2) – #12, (1) – #12 GRD	
P212	TELEMETRY PANEL, "RTU"	EXHAUST FAN, "EF–1"	3/4"	(2) – #12, (1) – #12 GRD	
P213	LIGHTING PANELBOARD, "L"	GENERATOR BATTERY CHARGER	3/4"	(2) – #12, (1) – #12 GRD	
P214	LIGHTING PANELBOARD, "L"	GENERATOR BLOCK HEATER	3/4"	(2) – #12, (1) – #12 GRD	
P215	GENERATOR BATTERY CHARGER	GENERATOR BATTERIES	3/4"	(2) – #12, (1) – #12 GRD	
P216	TELEMETRY PANEL, "RTU"	LOUVER ACTUATOR, "LA–3"	3/4"	(2) – #12, (1) – #12 GRD	
P217	LIGHTING PANELBOARD, "L"	EXISTING OUTDOOR LIGHT CONDUIT INTERCEPTION	3/4"	(4) – #12, (1) – #12 GRD	

CONTROL CONDUIT AND CONDUCTOR SCHEDULE

CIRCUIT	SOURCE	DESTINATION	TRADE SIZE	(QUANTITY) CONDUCTORS	NOTES
C200	TELEMETRY PANEL, "RTU"	SOUTH ENTRANCE INTRUSION SWITCH	3/4"	(2) – #14, (1) – #14 GRD	
C201	ENGINE GENERATOR, "EG"	AUTOMATIC TRANSFER SWITCH, "ATS"	3/4"	(2) – #14, (1) – #14 GRD	GENERATOR START SIGNAL
C202	HEATING THERMOSTAT	GENERATOR BUILDING HEATER, "H1"	3/4"	(2) – #14, (1) – #14 GRD	
C203	TELEMETRY PANEL, "RTU"	SMOKE DETECTOR	3/4"	(4) – #14, (1) – #14 GRD	
C204	TELEMETRY PANEL, "RTU"	AUTOMATIC TRANSFER SWITCH, "ATS"	3/4"	(6) – #14, (1) – #14 GRD	
C205	TELEMETRY PANEL, "RTU"	ENGINE GENERATOR, "EG"	3/4"	(8) – #14, (1) – #14 GRD	
C206	TELEMETRY PANEL, "RTU"	PUMP STATION CONTROL JUNCTION BOX, "CJ1"	1 1/2"	(10) – #14, (1) – #14 GRD. (2) – MOTOR SENSOR CABLES	
C207	TELEMETRY PANEL, "RTU"	EAST ENTRANCE INTRUSION SWITCH	3/4"	(2) – #14, (1) – #14 GRD	
C208	TELEMETRY PANEL, "RTU"	MOTOR CONTROL CENTER, "MCC"	3/4"	(18) – #14, (1) – #14 GRD	
C209	TELEMETRY PANEL, "RTU"	COOLING THERMOSTAT	3/4"	(2) – #14, (1) – #14 GRD	
C210	PUMP STATION CONTROL JUNCTION BOX, "CJ1"	PUMP STATION FLOAT SWITCHES	1"	(2) – MANUFACTURER FLOAT CABLES	
C211	PUMP STATION CONTROL JUNCTION BOX, "CJ1"	PUMP STATION POWER JUNCTION BOX, "PJ1"	1"	(2) – MOTOR SENSOR CABLES	

INSTRUMENTATION CONDUIT AND CONDUCTOR SCHEDULE

CIRCUIT	SOURCE	DESTINATION	TRADE SIZE	(QUANTITY) CONDUCTORS	NOTES
J200	TELEMETRY PANEL, "RTU"	PUMP STATION CONTROL JUNCTION BOX, "CJ1"	3/4"	(1) – 2–CONDUCTOR SHIELDED CABLE	
J201	TELEMETRY PANEL, "RTU"	FLOW METER	1 1/2"	MANUFACTURER FLOW METER CABLES	
J202	TELEMETRY PANEL, "RTU"	TELEPHONE TERMINATION PANEL, "TP"	3/4"	(1) – 1–PAIR TELEPHONE LINE	
J203	TELEMETRY PANEL, "RTU"	MOTOR CONTROL CENTER, "MCC"	1 1/2"	(3) – CAT 5E ETHERNET CABLES	
J204	PUMP STATION CONTROL JUNCTION BOX, "CJ1"	PUMP STATION LEVEL TRANSMITTER	3/4"	MANUFACTURER LEVEL TRANSMITTER CABLE	

REVISED TO CONFORM TO CONSTRUCTION RECORDS
RH2 ENGINEERING INC. — 6/24/11 DATE

NO.	REVISION	BY	REVIEW	DATE
2	REVISED TO CONFORM TO CONSTRUCTION RECORDS	MWB	CMR	6/24/11
1	ELECTRICAL SERVICE CONNECTION REVISION	CMR	CMR	8/18/10

BRET E. BEAUPRE — STATE OF WASHINGTON — 36752 — REGISTERED PROFESSIONAL ENGINEER — SIGNED: 01/28/10

CHRISTOPHER M. ROBERTS — STATE OF WASHINGTON — 45317 — REGISTERED PROFESSIONAL ENGINEER — SIGNED: 01/28/10

LAKE WHATCOM WATER & SEWER DISTRICT — lake whatcom

Lake Whatcom Water and Sewer District
2010 Sewer Pump Station Improvements
Ranch House

ELECTRICAL SCHEDULES

RH2 ENGINEERS PLANNERS SCIENTISTS
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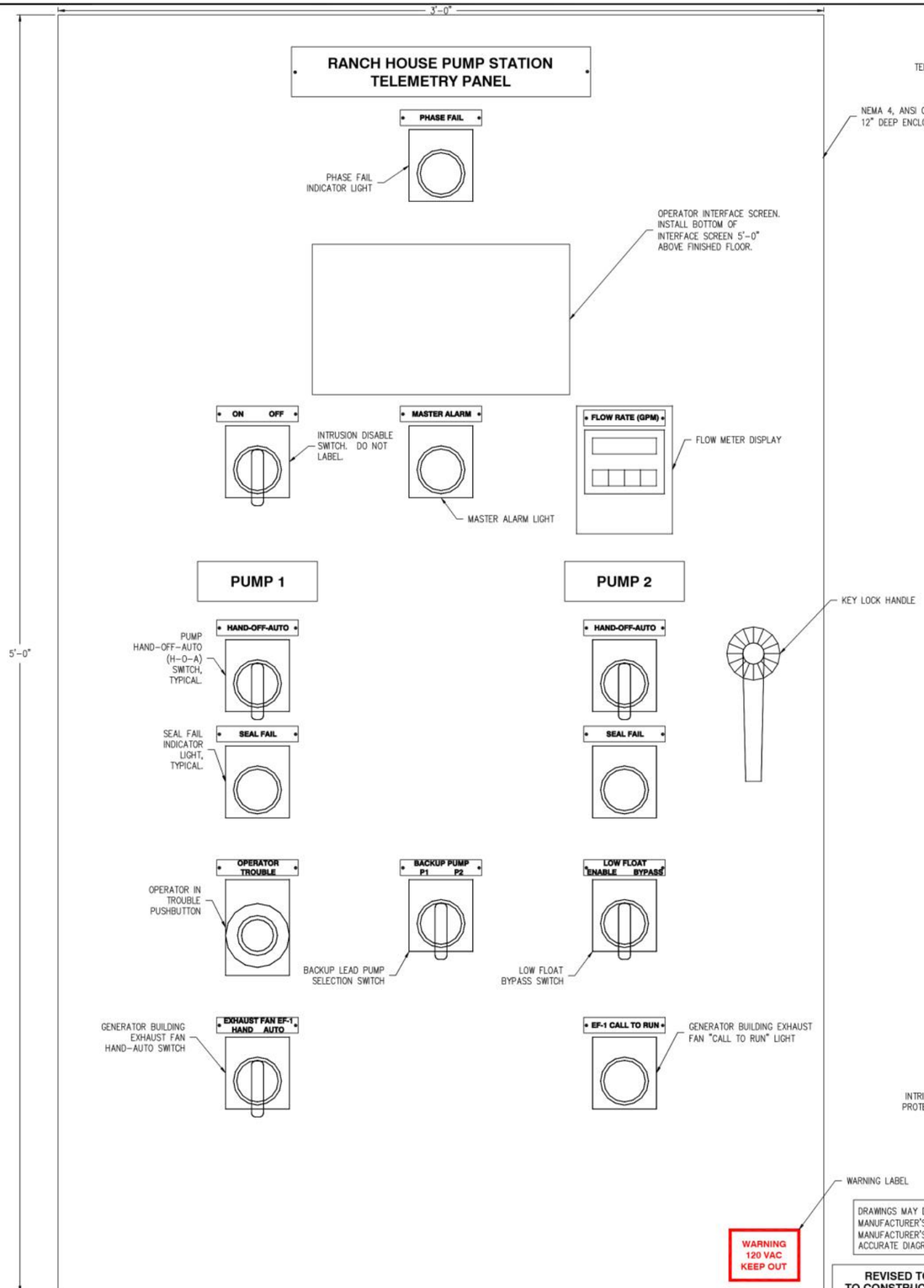
RICHLAND 509.946.5181 — 114 Columbia Point Drive, Suite C
SILVERDALE 360.876.7960 — 2021 NW Mhyre Rd, Suite 107
TACOMA 253.272.3059 — 621 Pacific Avenue Suite 104

SCALE: SHOWN — 0 1" 2" — DRAWING IS NOT TO SCALE IF BAR IS NOT 2" LONG

PLOT: 1 — ENGINEER: CMR — REVIEWED: MLM — DATE: AUG 18, 2010 — CLIENT: LWWSD — JOB NO.: 409–050 — FILENAME: RH–D–ELEC05

DWG NO. E206

SHEET NO. 49 / 71



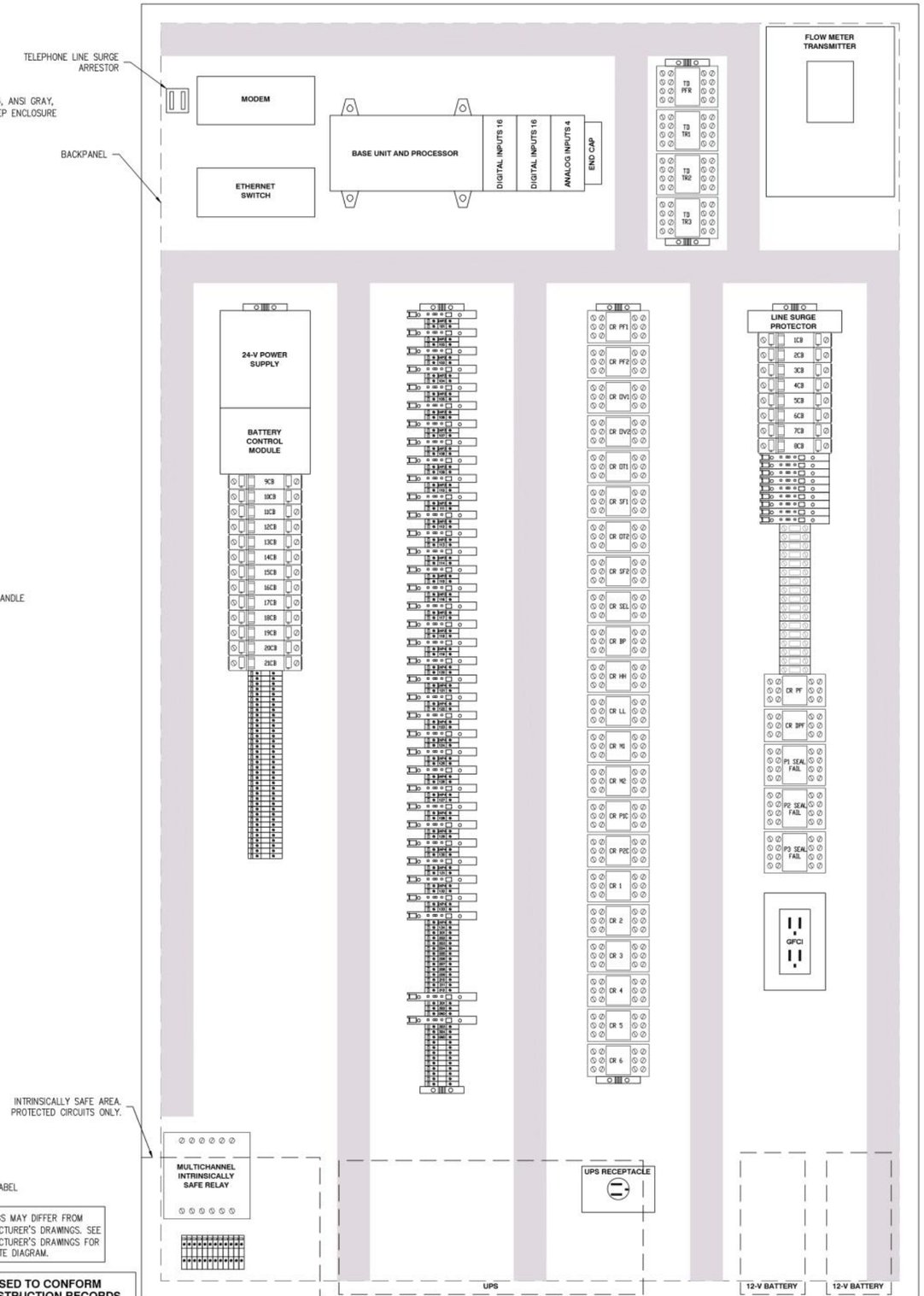
DRAWINGS MAY DIFFER FROM MANUFACTURER'S DRAWINGS. SEE MANUFACTURER'S DRAWINGS FOR ACCURATE DIAGRAM.

REVISED TO CONFORM TO CONSTRUCTION RECORDS

RH2 ENGINEERING INC. 6/24/11 DATE

PANEL EXTERIOR LAYOUT

NOT TO SCALE



PANEL INTERIOR LAYOUT

NOT TO SCALE

NO.	REVISION	BY	REVIEW	DATE
1	REVISED TO CONFORM TO CONSTRUCTION RECORDS	MWB	DWB	6/24/11

FILENAME: RH-D-ELEC06

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CHRISTOPHER M. ROBERTS, STATE OF WASHINGTON, 45317, REGISTERED PROFESSIONAL ENGINEER — SIGNED: 01/28/10

LAKE WHATCOM WATER & SEWER DISTRICT — lake whatcom

Lake Whatcom Water and Sewer District
2010 Sewer Pump Station Improvements
Ranch House

RTU - PANEL LAYOUT

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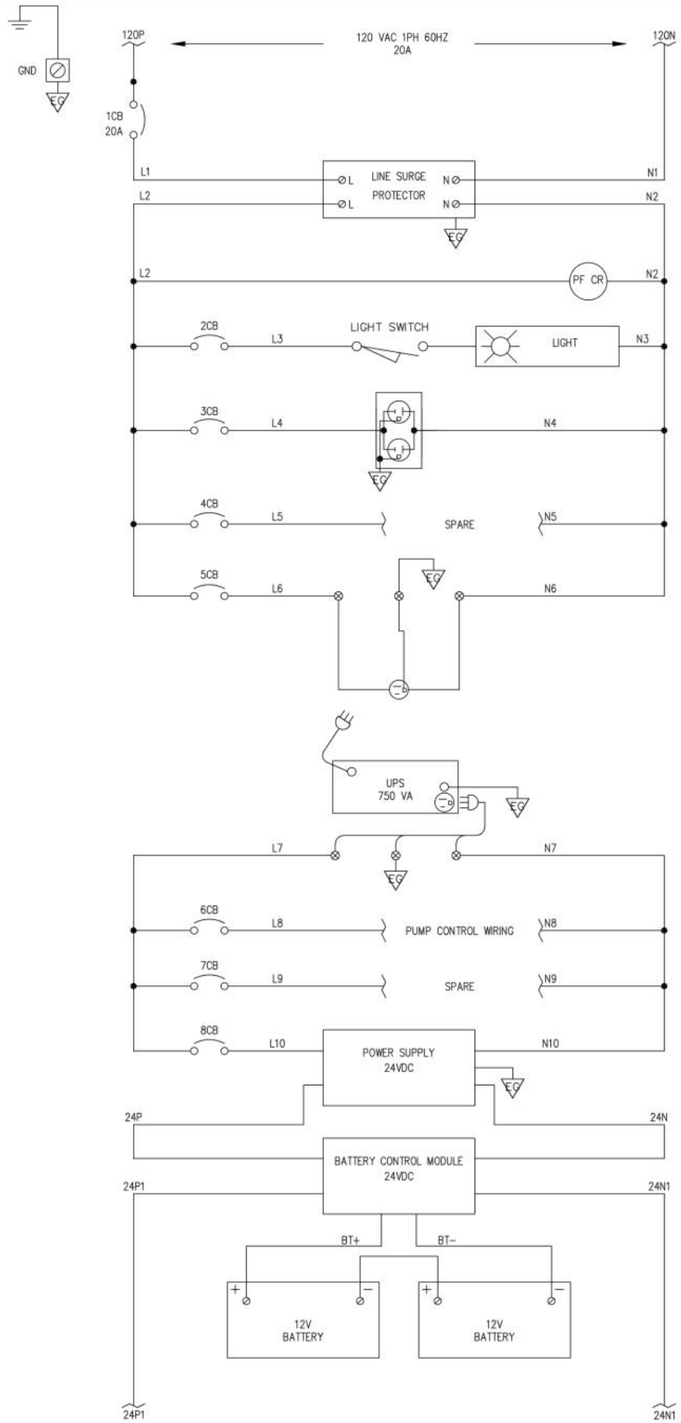
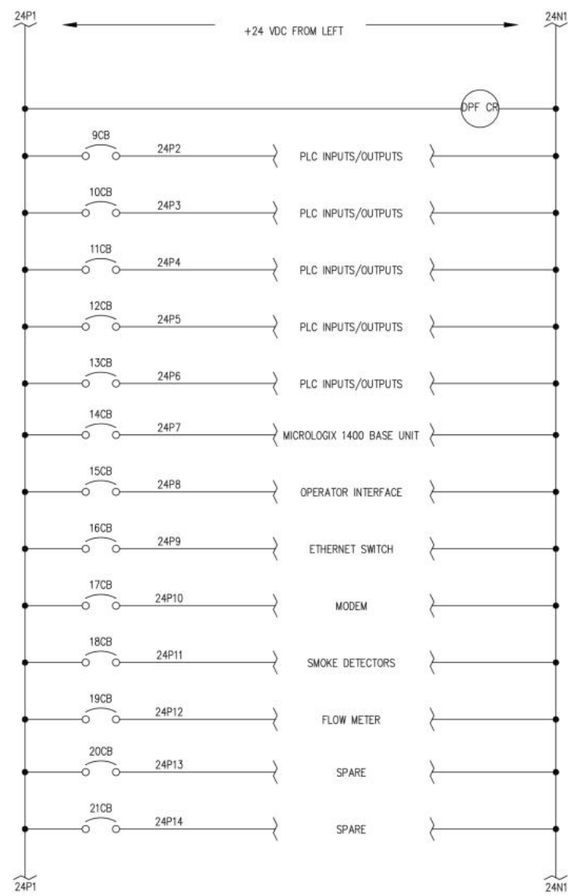
SCALE: SHOWN
0 1" 2"
DRAWING IS NOT TO SCALE IF BAR IS NOT 2" LONG

PLOT: 1	DWG NO. E207
ENGINEER: CMR	
REVIEWED: MLM	
DATE: JAN 22, 2010	SHEET NO. 50
CLIENT: LWWSD	
JOB NO.: 409-050	71

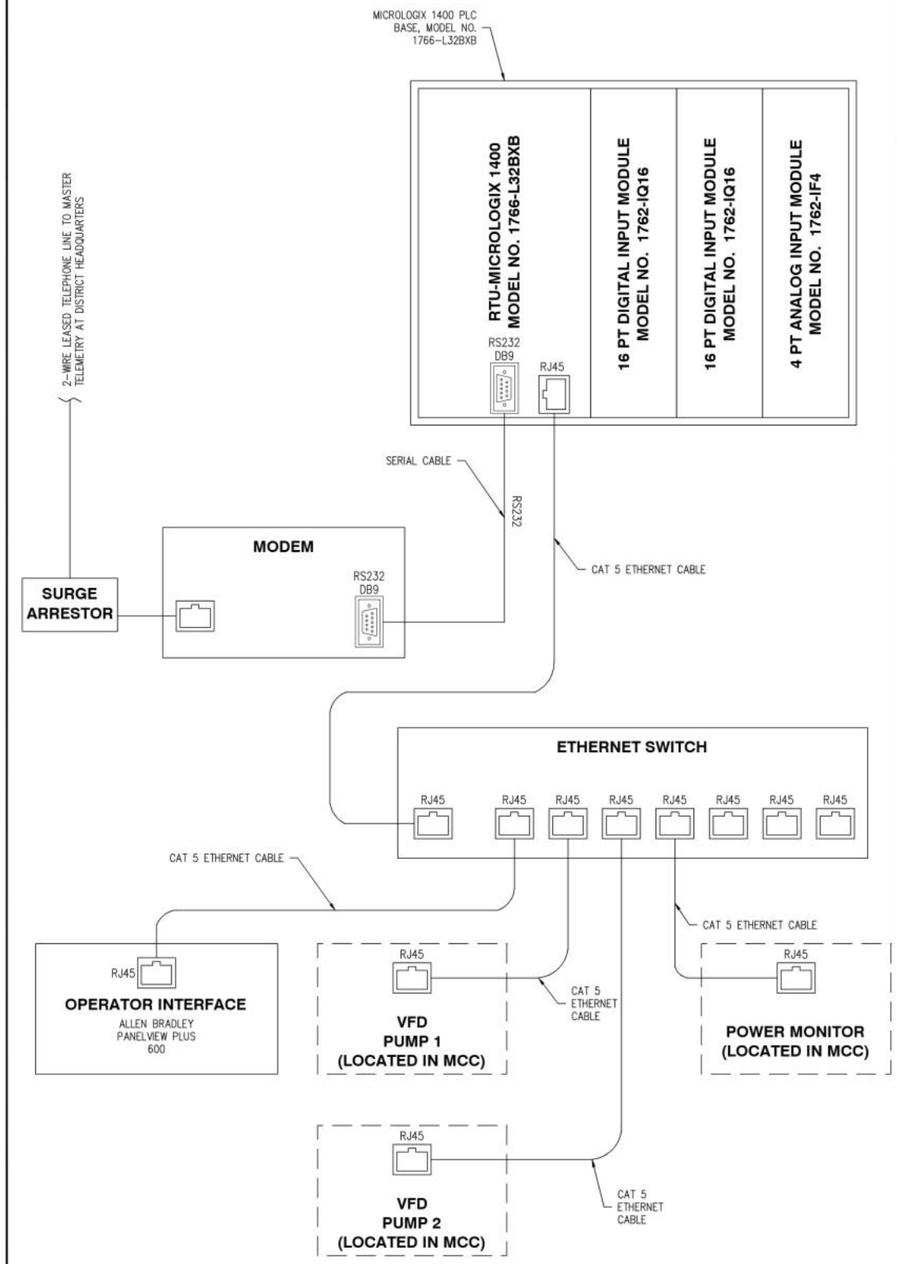




NOTE: SEE DIAGRAM 4 ON DWG NO. E006 FOR EXHAUST FAN, "EF-1", POWER SUPPLY INFORMATION AND WIRING DIAGRAM.

POWER LAYOUT

NOT TO SCALE



COMMUNICATIONS LAYOUT

NOT TO SCALE

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REVISED TO CONFORM TO CONSTRUCTION RECORDS
RH2 ENGINEERING INC. 6/24/11 DATE

NO.	REVISION	BY	REVIEW	DATE
1	REVISED TO CONFORM TO CONSTRUCTION RECORDS	MWB	DWB	6/24/11

BRET E. BEAUPRE, STATE OF WASHINGTON, 38752, REGISTERED PROFESSIONAL ENGINEER
SIGNED: 01/28/10

CHRISTOPHER M. ROBERTS, STATE OF WASHINGTON, 45317, REGISTERED PROFESSIONAL ENGINEER
SIGNED: 01/28/10

LAKE WHATCOM WATER & SEWER DISTRICT

Lake Whatcom Water and Sewer District
2010 Sewer Pump Station Improvements
Ranch House

RTU - POWER AND COMMUNICATIONS WIRING DIAGRAM

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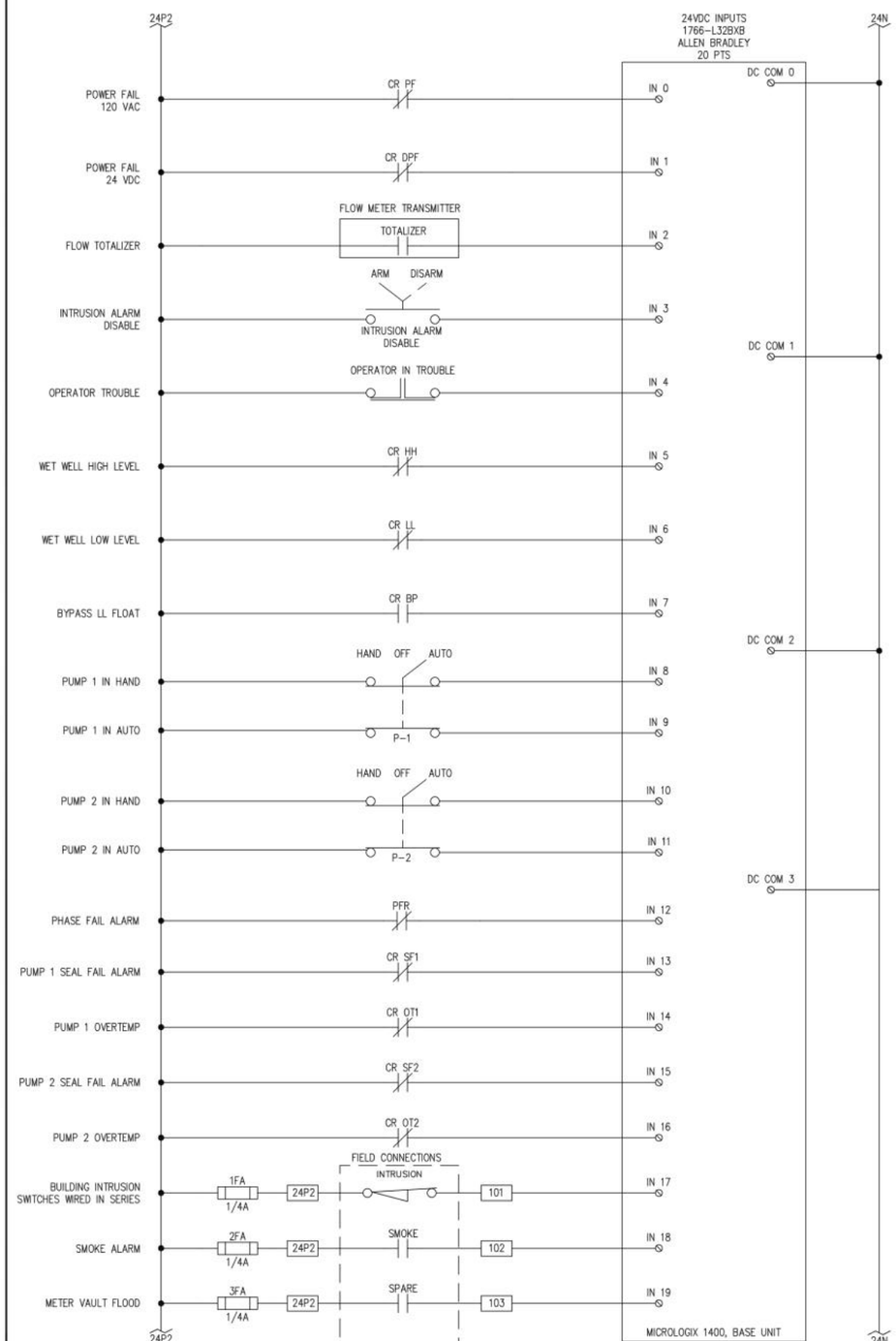
SCALE: SHOWN
0 1" 2"
DRAWING IS NOT TO SCALE IF BAR IS NOT 2" LONG

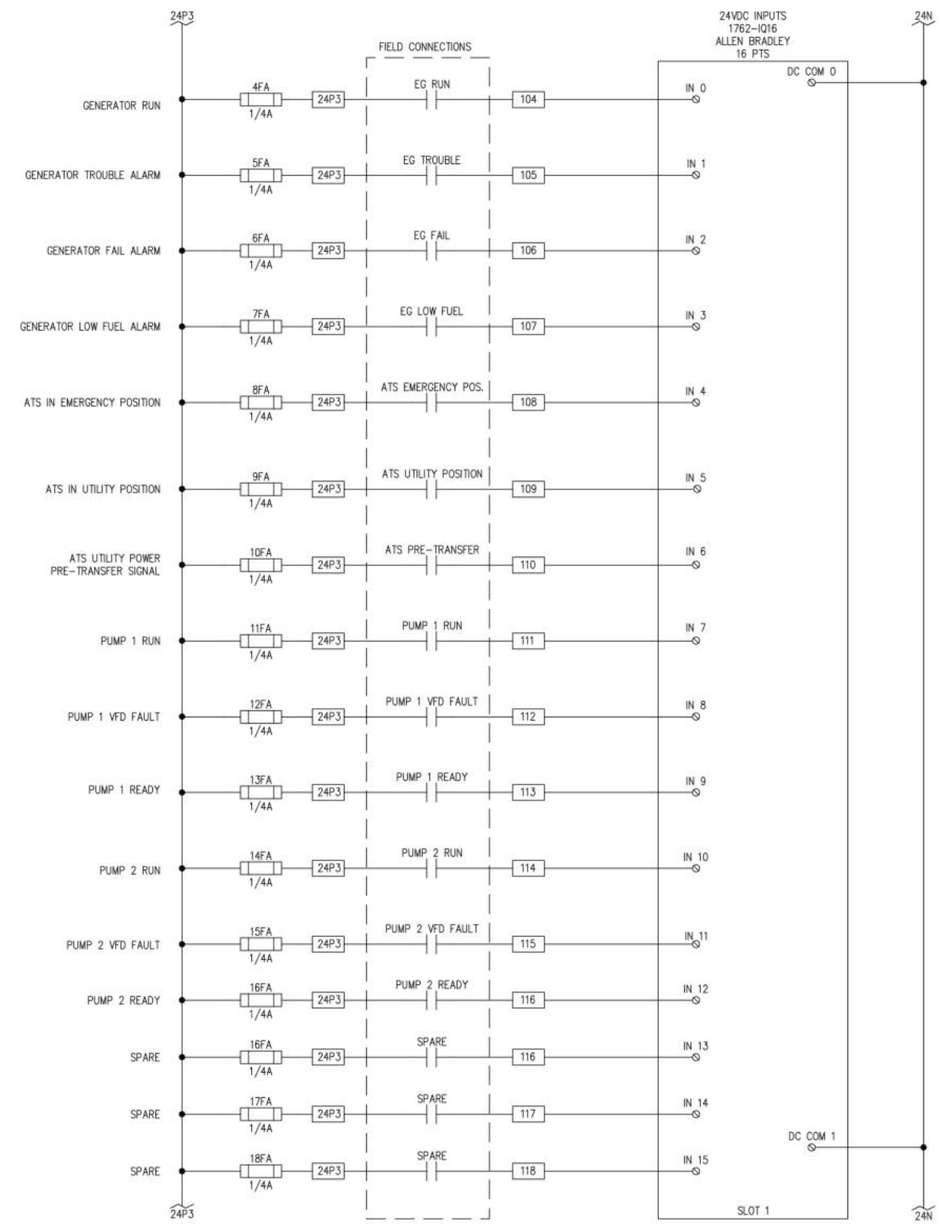
PLOT: 1
ENGINEER: CMR
REVIEWED: MLM
DATE: JAN 22, 2010
CLIENT: LWWSD
JOB NO.: 409-050
FILENAME: RH-D-ELEC06

DWG NO. E208
SHEET NO. 51 / 71



DIGITAL INPUTS, BASE UNIT

NOT TO SCALE



DIGITAL INPUTS, EXPANSION SLOT 1

NOT TO SCALE

DRAWINGS MAY DIFFER FROM MANUFACTURER'S DRAWINGS. SEE MANUFACTURER'S DRAWINGS FOR ACCURATE DIAGRAM.

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BRET E. BEAUPRE, STATE OF WASHINGTON, 36752, REGISTERED PROFESSIONAL ENGINEER
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CHRISTOPHER M. MORRISON, STATE OF WASHINGTON, 45317, REGISTERED PROFESSIONAL ENGINEER
SIGNED: 01/28/10

LAKE WHATCOM WATER & SEWER DISTRICT

Lake Whatcom Water and Sewer District
2010 Sewer Pump Station Improvements
Ranch House

RTU - PLC INPUTS AND OUTPUTS (SHEET 1 OF 3)

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SCALE: SHOWN
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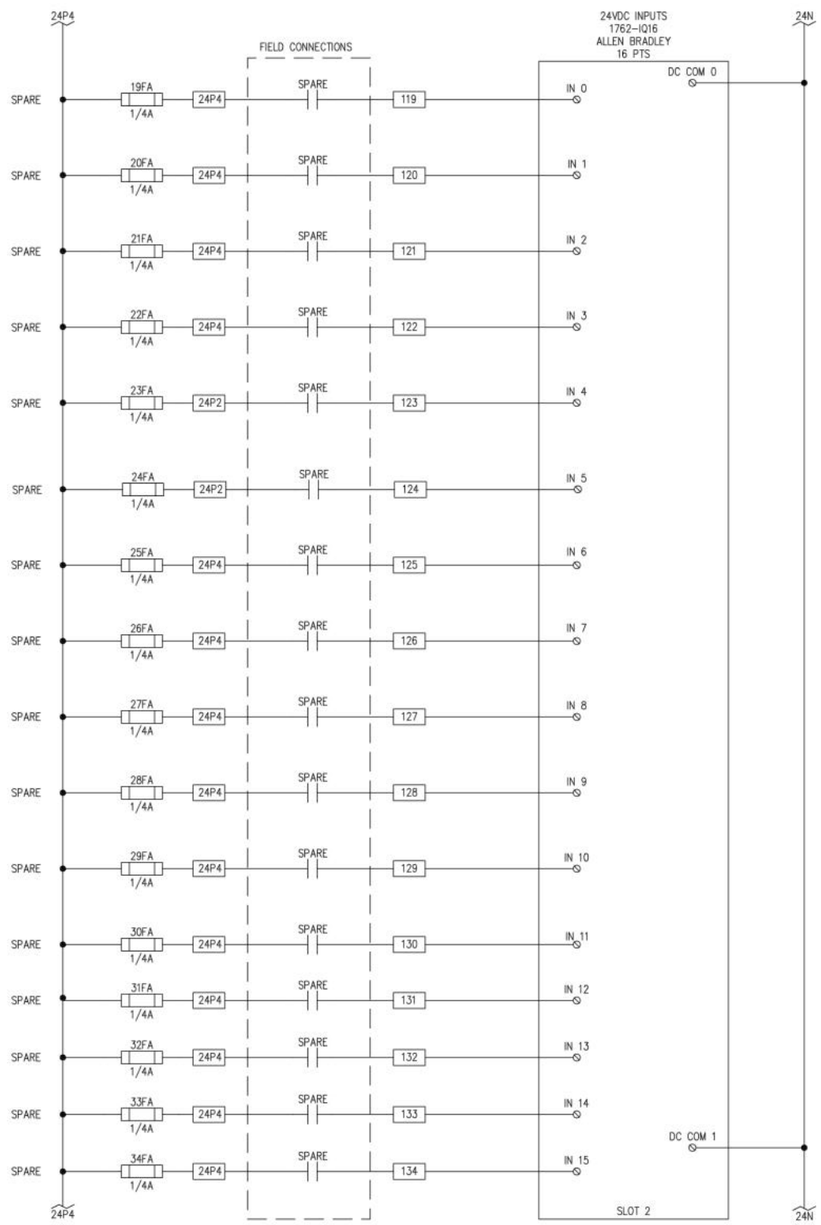
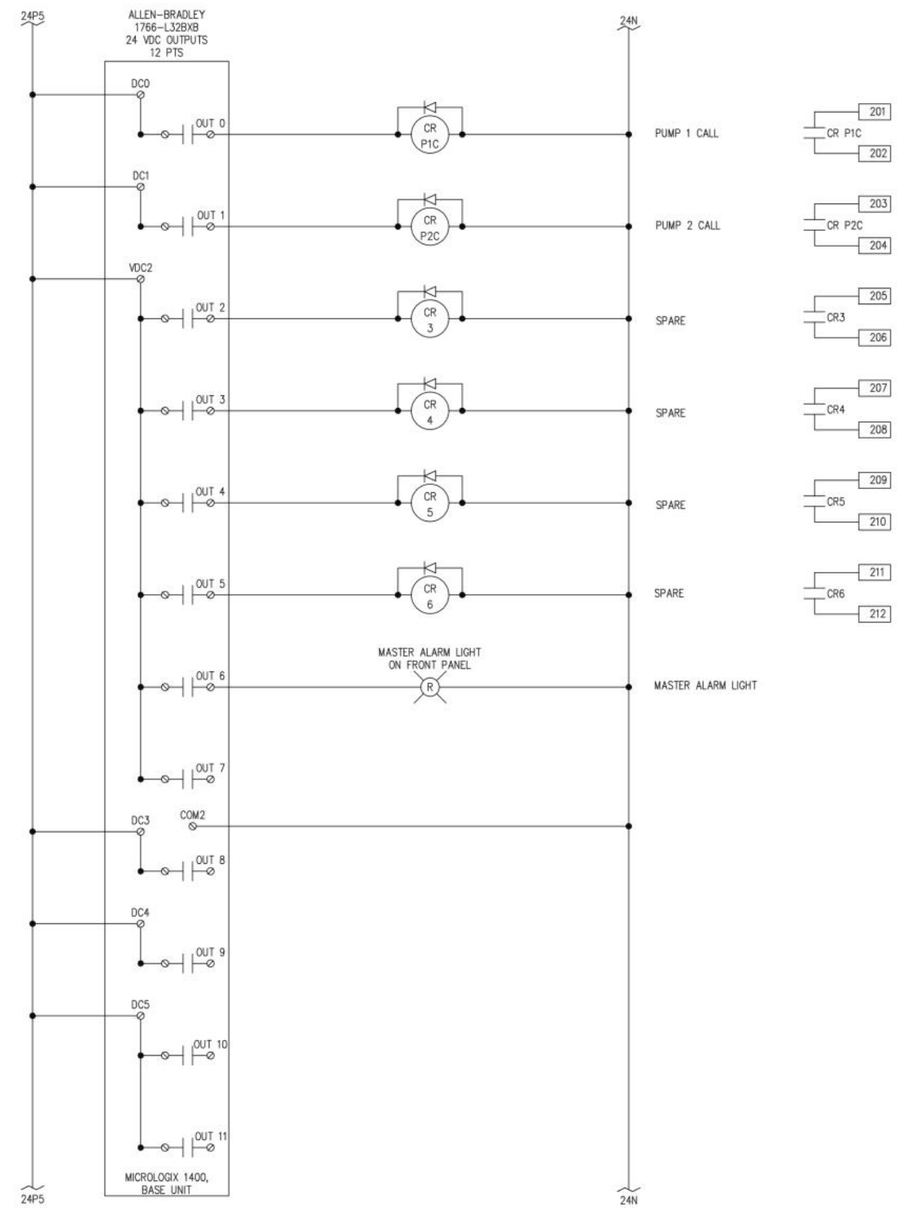
PLOT: 1
ENGINEER: CMR
REVIEWED: MLM
DATE: JAN 22, 2010
CLIENT: LWWSD
JOB NO.: 409-050
FILENAME: RH-D-ELEC06
DWG NO. E209
SHEET NO. 52 / 71



DIGITAL INPUTS, EXPANSION SLOT 2

NOT TO SCALE



DIGITAL OUTPUTS, BASE UNIT

NOT TO SCALE

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SIGNED: 01/28/10

LAKE WHATCOM WATER & SEWER DISTRICT — lake whatcom

Lake Whatcom Water and Sewer District
2010 Sewer Pump Station Improvements
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RTU - PLC INPUTS AND OUTPUTS
(SHEET 2 OF 3)

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http://www.rh2.com
mailbox@rh2.com 1.800.720.8052

BELLINGHAM 360.676.0539
454 West Horton Road

BOTHELL 425.951.5400
12100 NE 195th Street, Suite 100

EAST WENATCHEE 509.886.2900
300 Simon Street, Suite 5

RICHLAND 509.946.5181
114 Columbia Point Drive, Suite C

SILVERDALE 360.876.7960
2021 NW Mhyre Rd, Suite 107

TACOMA 253.272.3059
621 Pacific Avenue Suite 104

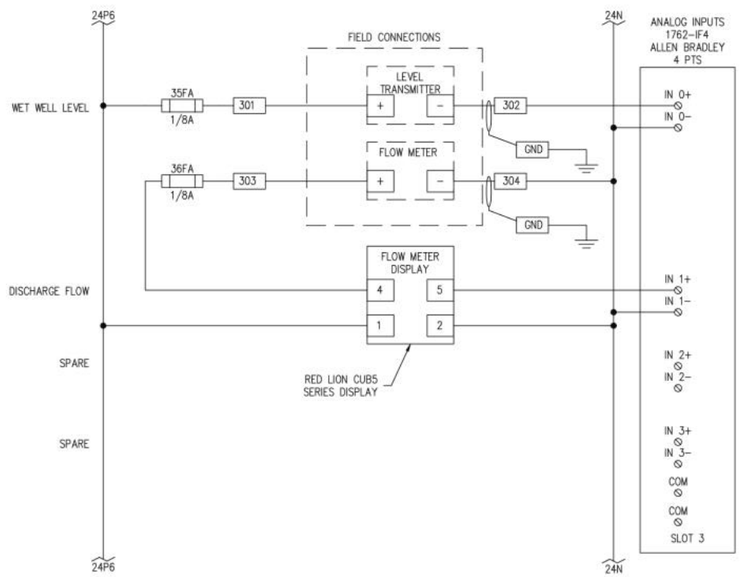
SCALE: SHOWN
0 1" 2"
DRAWING IS NOT TO SCALE
IF BAR IS NOT 2" LONG

PLOT: 1
ENGINEER: CMR
REVIEWED: MLM
DATE: JAN 22, 2010
CLIENT: LWWSD
JOB NO.: 409-050
FILENAME: RH-D-ELEC06

DWG NO. E210

SHEET NO. 53

71



ANALOG INPUTS, EXPANSION SLOT 3

NOT TO SCALE

DRAWINGS MAY DIFFER FROM MANUFACTURER'S DRAWINGS.
SEE MANUFACTURER'S DRAWINGS FOR ACCURATE DIAGRAM.

REVISED TO CONFORM
TO CONSTRUCTION RECORDS
RH2 ENGINEERING INC. 6/24/11 DATE

NO.	REVISION	BY	REVIEW	DATE
1	REVISED TO CONFORM TO CONSTRUCTION RECORDS	MWB	DWB	6/24/11

BRET E. BEAUPRE STATE OF WASHINGTON 38752 REGISTERED PROFESSIONAL ENGINEER
SIGNED: 01/28/10

CHRISTOPHER M. ROBERTS STATE OF WASHINGTON 45317 REGISTERED PROFESSIONAL ENGINEER
SIGNED: 01/28/10

LAKE WHATCOM WATER & SEWER DISTRICT
lake whatcom

Lake Whatcom Water and Sewer District
2010 Sewer Pump Station Improvements
Ranch House

RTU - PLC INPUTS AND OUTPUTS (SHEET 3 OF 3)

RH2 ENGINEERS PLANNERS SCIENTISTS
RH2 ENGINEERING, INC.
http://www.rh2.com
mailbox@rh2.com 1.800.720.8052
BELLINGHAM 360.676.0636 454 West Horton Road
BOTHELL 425.951.5400 12100 NE 195th Street, Suite 100
EAST WENATCHEE 509.886.2900 300 Simon Street, Suite 5
RICHLAND 509.946.5181 114 Columbia Point Drive, Suite C
SILVERDALE 360.876.7960 2021 NW Mhyre Rd, Suite 107
TACOMA 253.272.3059 621 Pacific Avenue Suite 104

SCALE: SHOWN
0 1" 2"
DRAWING IS NOT TO SCALE IF BAR IS NOT 2" LONG

PLOT: 1
ENGINEER: CMR
REVIEWED: MLM
DATE: JAN 22, 2010
CLIENT: LWWSD
JOB NO.: 409-050
FILENAME: RH-D-ELEC06

DWG NO. E211
SHEET NO. 54 / 71

THE SANWICK CORPORATION

SANITARY SEWER

SUDDEN VALLEY

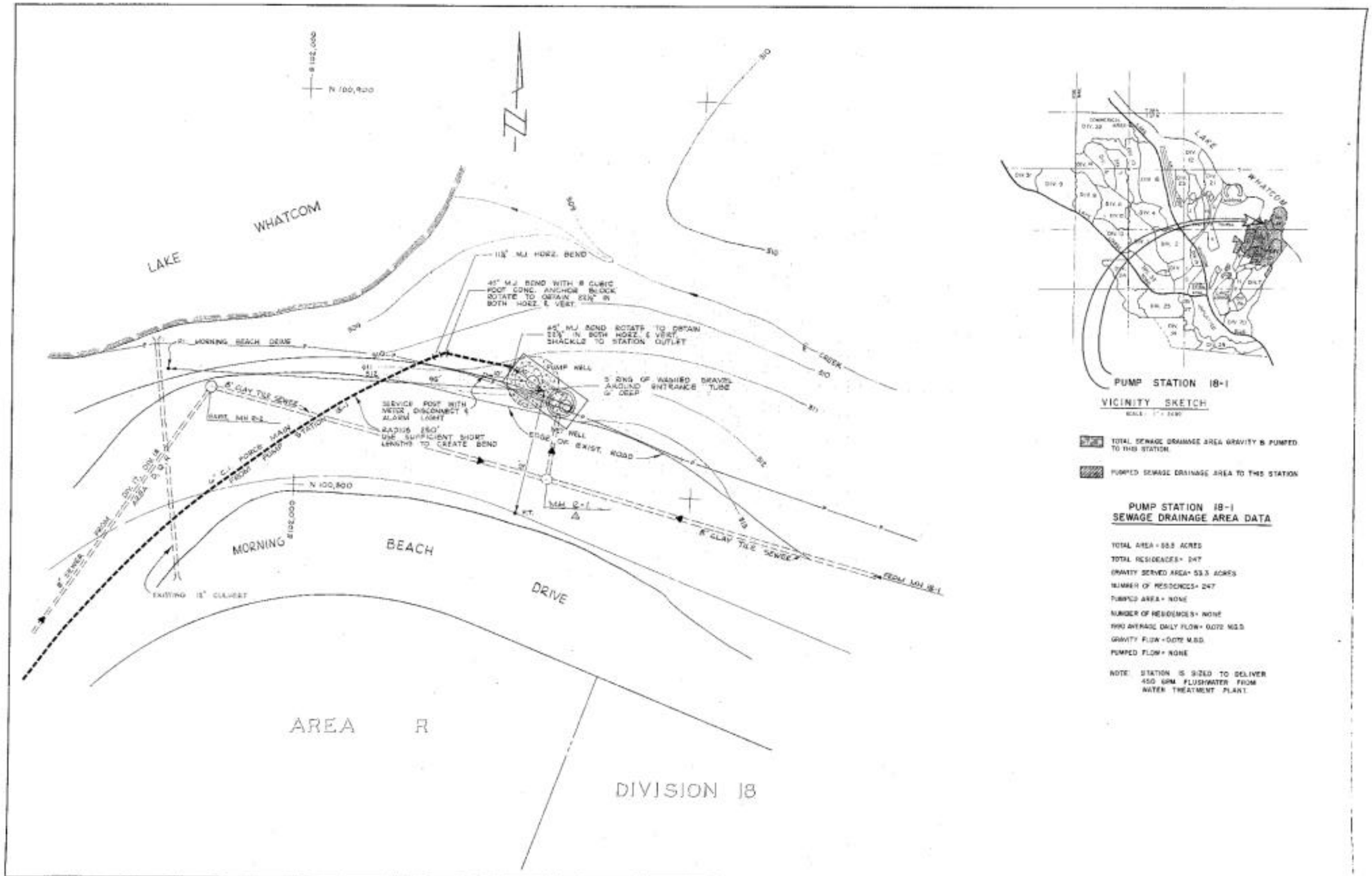
PUMP STATION 18-1
DIVISION 18

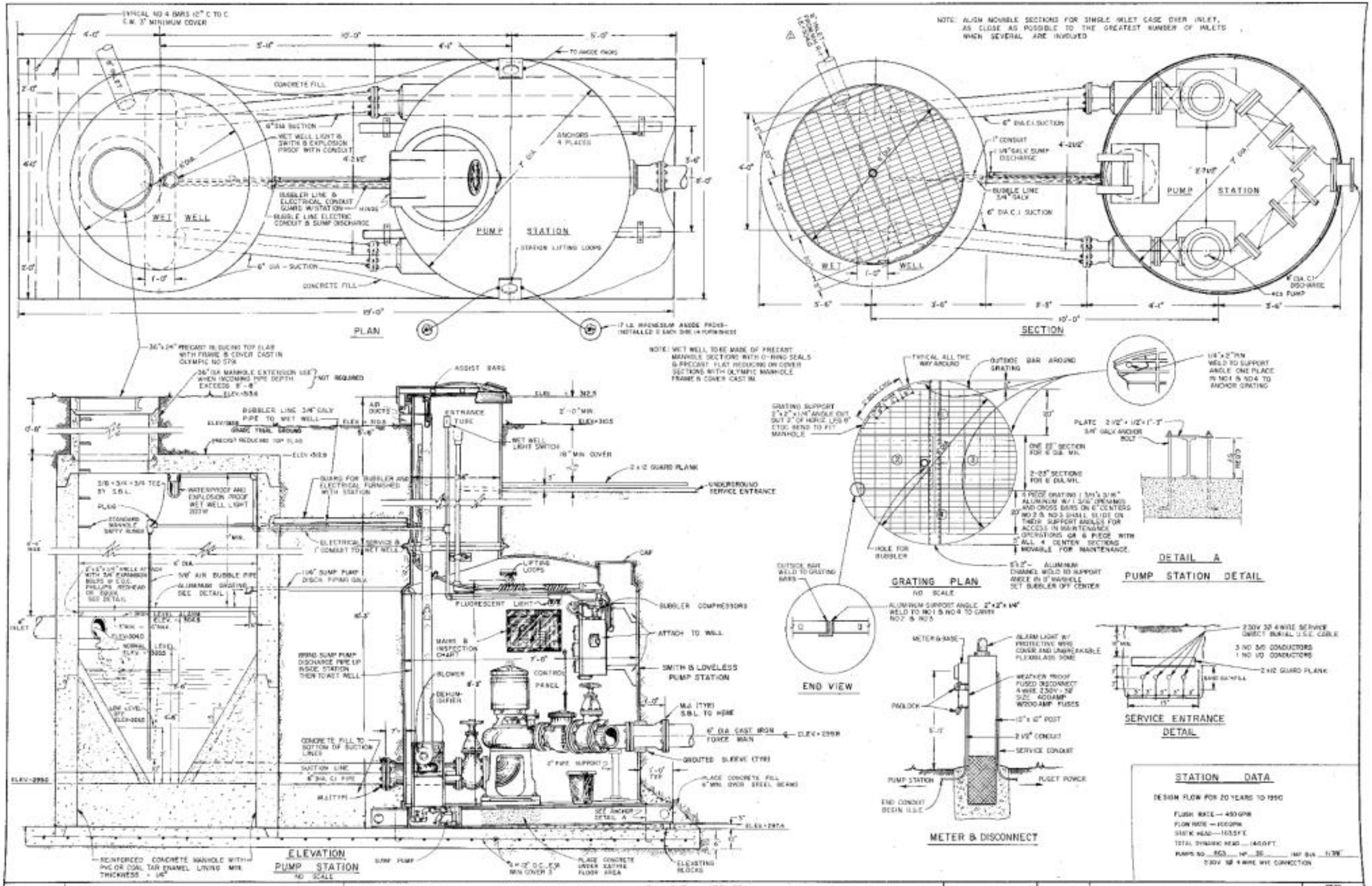
LAKE WHATCOM

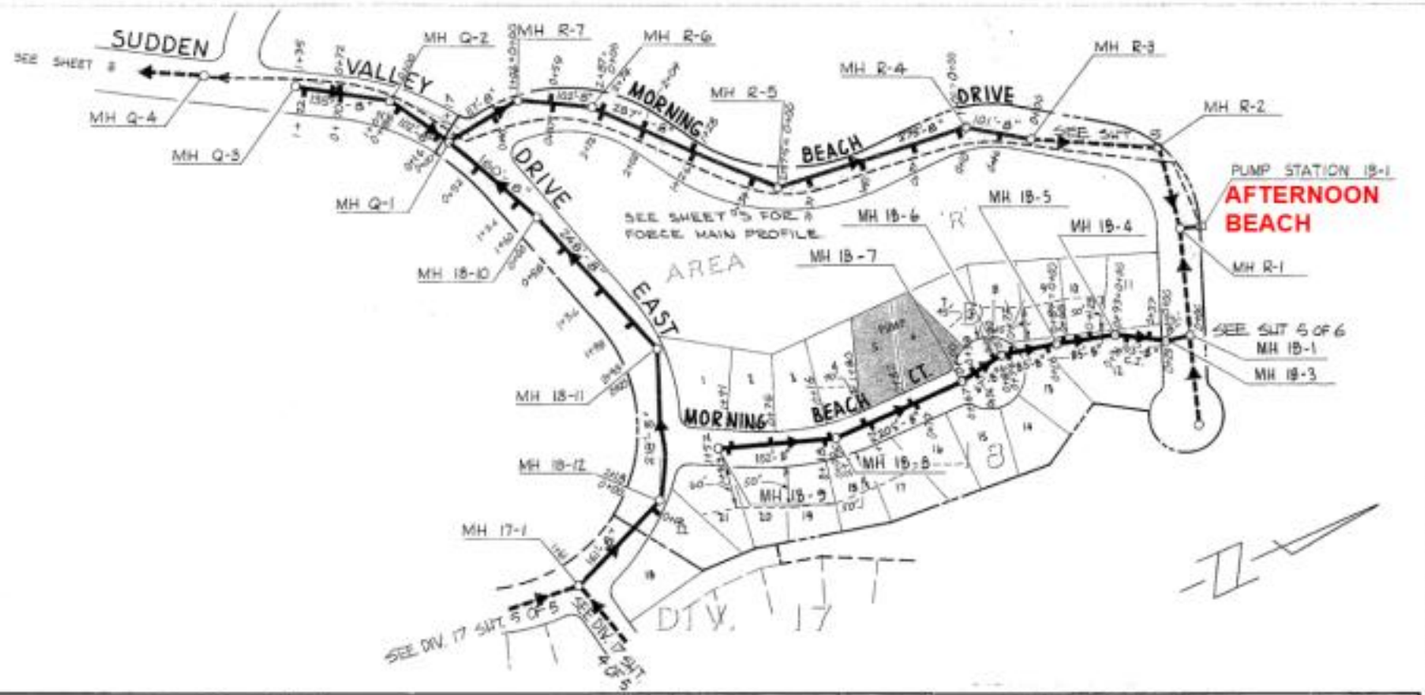
PREPARED BY
HORTON DENNIS & ASSOCIATES
CONSULTING ENGINEERS
SEATTLE, WASHINGTON

LIST OF DRAWINGS:

PUMP STATION 18-1 SITE PLAN 1	SHT 1 OF 2
PUMP STATION DETAILS	SHT 2 OF 2
DIVISION 18 SEWERAGE PLANS	SHT. 5 OF 6


N 100,900
E 102,000
LAKE
WHATCOM
11¼° MJ HORZ. BEND
45° MJ BEND WITH 8 CUBIC FOOT CONC. ANCHOR BLOCK ROTATE TO OBTAIN 22½° IN BOTH HORZ. & VERT.
45° MJ BEND ROTATE TO OBTAIN 22½° IN BOTH HORZ. & VERT. SHACKLE TO STATION OUTLET
PUMP WELL
5' RING OF WASHED GRAVEL AROUND ENTRANCE TUBE 6" DEEP
SERVICE POST WITH METER, DISCONNECT & ALARM LIGHT
RADIUS 250' USE SUFFICIENT SHORT LENGTHS TO CREATE BEND
EDGE OF EXIST. ROAD
MH 2-1
8" CLAY TILE SEWER
FROM MH 101-18-1
N 100,800
E 102,000
MORNING
BEACH
DRIVE
EXISTING 18" CULVERT
AREA R
DIVISION 18
PUMP STATION 18-1
VICINITY SKETCH
TOTAL SEWAGE DRAINAGE AREA GRAVITY & PUMPED TO THIS STATION
PUMPED SEWAGE DRAINAGE AREA TO THIS STATION
PUMP STATION 18-1
SEWAGE DRAINAGE AREA DATA
TOTAL AREA = 55.5 ACRES
TOTAL RESIDENCES = 247
GRAVITY SERVED AREA = 53.3 ACRES
NUMBER OF RESIDENCES = 247
PUMPED AREA = NONE
NUMBER OF RESIDENCES = NONE
1990 AVERAGE DAILY FLOW = 0.072 M.G.D.
GRAVITY FLOW = 0.072 M.G.D.
PUMPED FLOW = NONE
NOTE: STATION IS SIZED TO DELIVER 450 GPM FLUSHWATER FROM WATER TREATMENT PLANT.
CAG
REM
ADDED MH 2-1 TO AVOID POWER
TA
CJA
4-6-78
REVISION
Sudden Valley
THE SANWICK CORPORATION
4-78
1"=100'
SITE PLAN
SEWAGE PUMP STATION 18-1


PLAN
SECTION
ELEVATION
PUMP STATION
NO SCALE
WET WELL
PUMP STATION
GRATING PLAN
NO SCALE
END VIEW
DETAIL A
PUMP STATION DETAIL
METER & DISCONNECT
SERVICE ENTRANCE DETAIL
STATION DATA
DESIGN FLOW FOR 20 YEARS TO 1990
FLUSH RATE — 450 GPM
FLOW RATE — 1000 GPM
STATIC HEAD — 163.5 FT.
TOTAL DYNAMIC HEAD — 140.0 FT.
PUMPS NO. 853 HP 30 RAT DIA 11.38"
230V 3Ø 4 WIRE WYE CONNECTION
NOTE: ALIGN MOVABLE SECTIONS FOR SINGLE INLET CASE OVER INLET, AS CLOSE AS POSSIBLE TO THE GREATEST NUMBER OF INLETS WHEN SEVERAL ARE INVOLVED
NOTE: WET WELL TO BE MADE OF PRECAST MANHOLE SECTIONS WITH O-RING SEALS & PRECAST FLAT REDUCING OR COVER SECTIONS WITH OLYMPIC MANHOLE FRAME & COVER CAST IN.
Sudden Valley
THE SAWWICK CORPORATION
ADDED MH 2-1 TO AVOID POWER
PUMP STA. & WET WELL DETAIL
SEWAGE PUMP STATION 18-1
6019.4

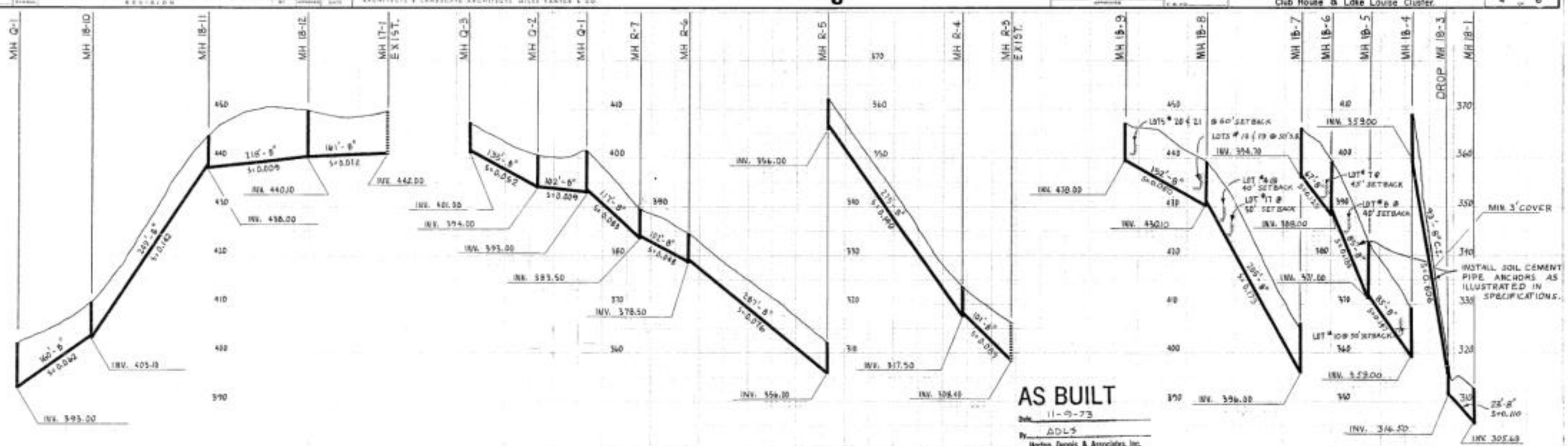


DESIGNED MLP DRAWN SAW CHECKED RIA	REVISION	BY APPROVED DATE	CONSULTING ENGINEERS PLANNING CONSULTANTS GOLF COURSE ARCHITECT GOLF COURSE ENGINEERING SOIL MECHANICS ENGINEERS ARCHITECTS & LANDSCAPE ARCHITECTS	HORTON DENNIS & ASSOCIATES, INC. DAVID JENSEN ASSOCIATES THEODORE M. ROBINSON R. A. HORAN & ASSOCIATES DAMES & MOORE MILES FANNIN & CO.	**Sudden Valley** the undevelopment of the THE SANWICK CORPORATION SUITE 1200 BOYAR BUILDING SEATTLE, WASHINGTON 98101

DATE 9-71
SCALE 1" = 100' HORZ. 1" = 10' VERT.
F.B. P.G.

SANITARY SEWER SYSTEM
DIV. 18; AREAS C, D, E, F, Q, R, T, Morning Beach, Water Treatment Plant, Recreation Complex, Club House & Lake Louise Cluster.

SHEET NO. 4 OF 6

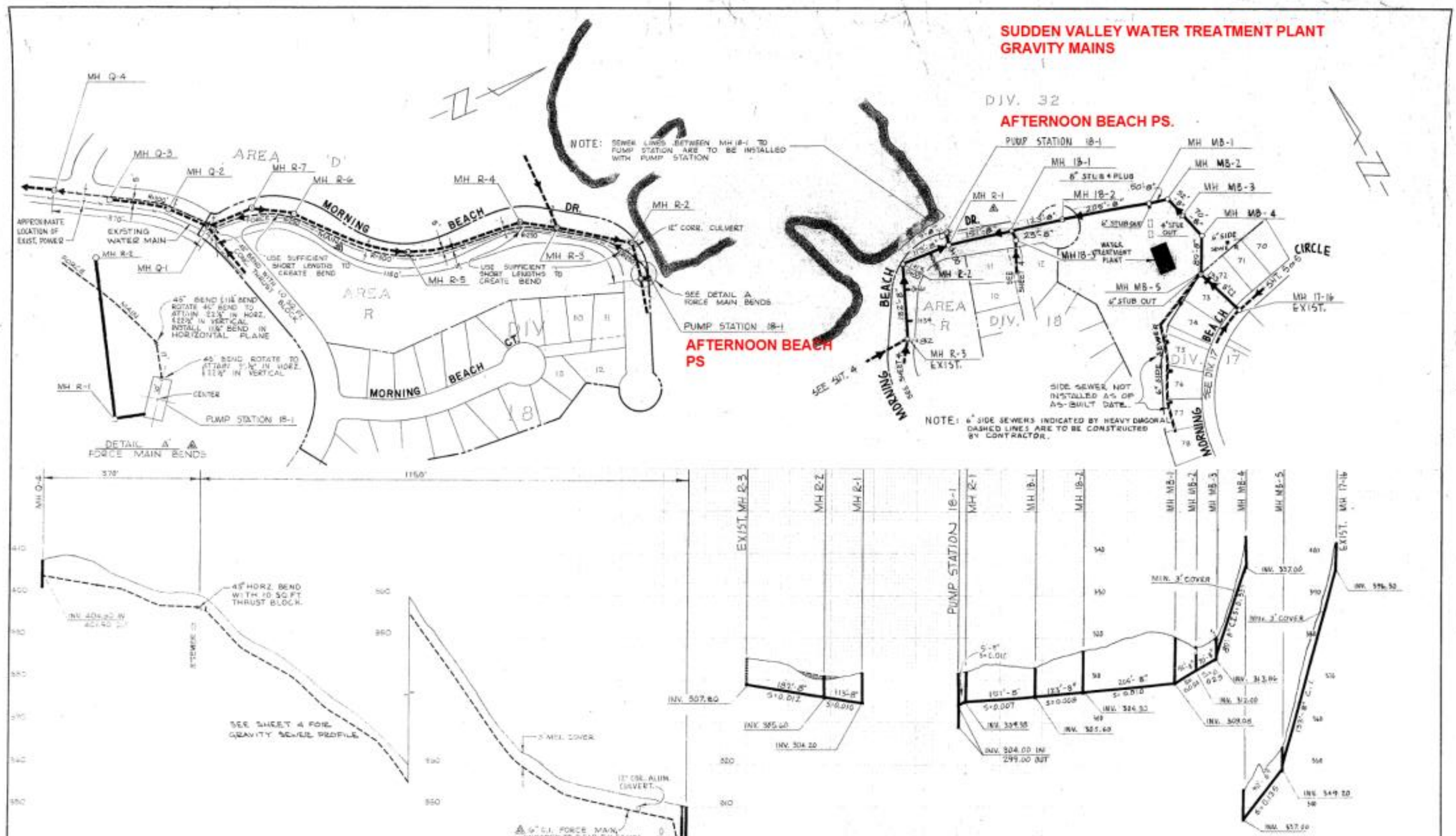


DwgSerial#: 590

SUDDEN VALLEY WATER TREATMENT PLANT
GRAVITY MAINS

AFTERNOON BEACH PS.

AFTERNOON BEACH PS



MLP	ADDED MH R-1 TO AVOID POWER	TA	RIA	6-6-72
SAW	ADDED PUMP STA. 18-1 FORCE MAIN	RIA	RIA	8-27-73
RIA	REVISION	BY	APPROVED	DATE

CONSULTING ENGINEERS: HORTON DENNIS & ASSOCIATES, INC.
PLANNING CONSULTANTS: DAVID JOHNSON ASSOCIATES
GOLF COURSE ARCHITECT: THEODORE K. ROBINSON
GOLF COURSE ENGINEERING: D. A. MORAN & ASSOCIATES
SOIL MECHANICS ENGINEERS: BANDY & MOORE
ARCHITECTS & LANDSCAPE ARCHITECTS: WILKE YAMADA & CO.

Sudden Valley

the undevelopment of the THE SANWICK CORPORATION

9-71

SANITARY SEWER SYSTEM
DIV. 18; AREAS C, D, E, F, Q, R, T, Morning Beach, Water Treatment Plant, Recreation Complex, Club House & Lake Louise Cluster

DwgSerial#: 591

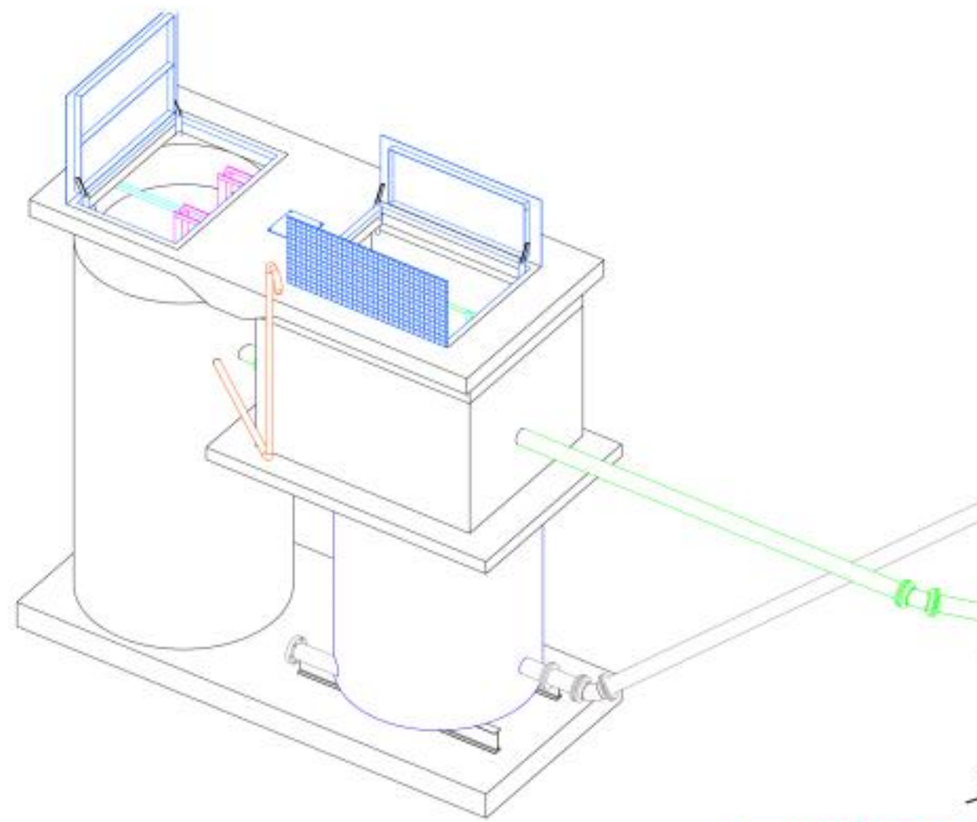
SECTION K

LAKE WHATCOM WATER AND SEWER DISTRICT

AFTERNOON BEACH SEWER PUMP STATION IMPROVEMENTS

WINTER - SPRING - SUMMER 2011

VOLUME II OF II



RH2 ENGINEERS PLANNERS SCIENTISTS

REVISION DATE: FEB 16, 2011

REVISED TO CONFORM TO CONSTRUCTION RECORDS
11/30/11
RH2 ENGINEERING INC. DATE

DwgSerial#: 1472

NO.	REVISION	BY	REVIEW	DATE
2	REVISIONS PER CONSTRUCTION RECORDS	MJV	DWB	11/30/11
1	DISTRICT REVIEW COMMENTS	MMB	DWB	02/16/11

CONSTRUCTION NOTES

GENERAL NOTES

CALL 1-800-424-5555 48 HOURS BEFORE CONSTRUCTION FOR UTILITY LOCATIONS. CONTRACTOR SHALL NOT BEGIN EXCAVATION UNTIL UTILITY NOTIFICATION PERIOD IS COMPLETE. ⚠

CONTRACTOR INITIATED CHANGES SHALL BE SUBMITTED IN WRITING TO THE ENGINEER FOR APPROVAL PRIOR TO FABRICATION OR CONSTRUCTION.

THE CONTRACTOR SHALL TAKE ALL NECESSARY PRECAUTIONS TO PROTECT THE PUBLIC AND PREVENT NUISANCES. CONTRACTOR SHALL PROVIDE TEMPORARY BRACING FOR THE STRUCTURE AND STRUCTURAL COMPONENTS UNTIL ALL FINAL CONNECTIONS HAVE BEEN COMPLETED IN ACCORDANCE WITH THE PLANS.

CONSTRUCTION OF IMPROVEMENTS SHALL CONFORM TO THE CURRENT EDITION OF THE LAKE WHATCOM WATER AND SEWER DISTRICT STANDARDS AND THE STANDARD SPECIFICATIONS FOR ROAD, BRIDGE AND MUNICIPAL CONSTRUCTION, 2008 EDITION, AS ISSUED BY THE WASHINGTON STATE DEPARTMENT OF TRANSPORTATION AND THE AMERICAN PUBLIC WORKS ASSOCIATION. THESE DOCUMENTS HEREINAFTER REFERRED TO AS THE STANDARD SPECIFICATIONS.

THE CONTRACTOR IS REQUIRED TO PROVIDE ALL CONSTRUCTION STAKING ON THIS PROJECT INCLUDING THE PREPARATION OF COMPLETE CONSTRUCTION RECORDS. STAKING FOR GRADES AND ALIGNMENT SHALL BE PERFORMED BY AN ENGINEERING OR SURVEYING FIRM LICENSED AND CAPABLE OF PERFORMING SUCH WORK. RIGHT OF WAY AND EASEMENT LIMITS MUST BE CLEARLY IDENTIFIED IN THE FIELD DURING CONSTRUCTION.

PRE CONSTRUCTION CONFERENCE AND 24 HOUR NOTICE WILL BE REQUIRED PRIOR TO COMMENCING CONSTRUCTION.

CONTRACTOR SHALL RESTORE ALL AREAS DISTURBED BY CONSTRUCTION TO CONDITIONS EQUAL OR BETTER TO THOSE FOUND PRIOR TO CONSTRUCTION.

SEE DIVISION 1 OF THE SPECIFICATIONS FOR PERMIT INFORMATION.

THE CONTRACTOR SHALL DETERMINE THE SCOPE, TYPE, SIZE, QUANTITY, METHOD OF INSTALLATION, OPERATION, AND REMOVAL OF THE DEWATERING SYSTEM NECESSARY TO KEEP THE EXCAVATION SITE DEWATERED TO STABILIZE THE SOILS FOR CONSTRUCTION. THE ORDINARY HIGH WATER MARK IS PROVIDED IN THE PLANS BASED ON THE SURVEY. THE WATER LEVEL AT LAKE WHATCOM IS CONTROLLED BY THE CITY OF BELLINGHAM. CONTRACTOR MAY FIND GROUND WATER SEEPAGE IN THE EXCAVATION THAT IS HIGHER THAN THE ORDINARY HIGH WATER MARK.

THE CONTRACTOR SHALL DISCHARGE WATER FROM THE DEWATERING SYSTEM IN ACCORDANCE WITH THE REQUIREMENTS OF STATE AND LOCAL REGULATIONS AND THE REQUIREMENTS OF THESE PLANS AND SPECIFICATIONS. AT NO TIME SHALL SILT LADEN WATER BE DISCHARGED OFF SITE. CONTRACTOR MAY DISCHARGE FILTERED STORM WATER INTO THE SEWER COLLECTION SYSTEM. COORDINATE AND RECEIVE APPROVAL FROM THE DISTRICT PRIOR TO DISCHARGING ANY DEWATERING WATER INTO THE SEWER COLLECTION SYSTEM.

THE CONTRACTOR SHALL CLEANUP ALL AREAS AFFECTED BY THEIR ACTIVITIES TO THE SATISFACTION OF THE OWNER'S REPRESENTATIVE BY THE END OF EACH WORKING DAY OR MORE FREQUENTLY IF REQUIRED BY THE OWNER'S REPRESENTATIVE. THIS INCLUDES REMOVAL OF ALL DUST, MUD, ROCKS, ASPHALT DEBRIS, AND REFUSE FROM STREETS, SIDEWALKS, DRIVEWAYS, AND ANY OTHER AREAS AFFECTED BY THE CONSTRUCTION ACTIVITIES. FAILURE TO CLEANUP TO THE SATISFACTION OF THE OWNER'S REPRESENTATIVE WILL NECESSITATE A SHUTDOWN OF THE PROJECT UNTIL CLEANUP IS PROPERLY PERFORMED. DAILY CLEANUP IS AN INTEGRAL PART OF EROSION AND POLLUTION CONTROL.

CONTRACTOR SHALL RESTORE ALL SURVEY MARKERS/MONUMENTS THAT ARE DISTURBED ON THIS PROJECT. ALL EXISTING SURVEY MARKERS SHALL BE LOCATED AND RE-SET IF DAMAGED BY A PROFESSIONAL LAND SURVEYOR, LICENSED IN THE STATE OF WASHINGTON.

EXISTING UTILITIES INDICATED ON THE DRAWINGS HAVE BEEN DETERMINED FROM THE BEST INFORMATION AVAILABLE TO THE ENGINEER. THE SOURCE OF INFORMATION GENERALLY CONSISTS OF CONSTRUCTION RECORDS, UTILITY LOCATES, AND OTHER DATA OBTAINED VERBALLY FROM OFFICIALS ASSOCIATED WITH THE PARTICULAR UTILITY. OWNER AND ENGINEER DO NOT GUARANTEE NOR ASSUME RESPONSIBILITY FOR THE ACCURACY OF THIS INFORMATION. IT IS UNDERSTOOD THAT OTHER ABOVE GROUND AND UNDERGROUND FACILITIES NOT SHOWN ON THE DRAWINGS MAY BE ENCOUNTERED DURING THE COURSE OF THE WORK. THE CONTRACTOR SHALL USE APPROPRIATE MEANS (INCLUDING POTHOLING) TO VERIFY THE TRUE AND CORRECT LOCATION OF EXISTING UTILITIES TO AVOID DAMAGE OR DISTURBANCE. THE CONTRACTOR SHALL REPAIR ALL DAMAGED UTILITIES IMMEDIATELY.

RESTORE ALL DISTURBED AREAS DURING CONSTRUCTION TO EXISTING OR BETTER CONDITION. ASPHALT PAVEMENT SHALL BE RESTORED TO SUDDEN VALLEY COMMUNITY ASSOCIATION STANDARDS.

CONTRACTOR SHALL OBEY ALL SUDDEN VALLEY COMMUNITY ASSOCIATION RULES DURING CONSTRUCTION AT AFTERNOON BEACH. NO PARKING OR STAGING IS ALLOWED ON ANY AREAS OTHER THAN THE CONSTRUCTION STAGING AREAS AS SHOWN ON THE PLANS.

CONTRACTOR SHALL COORDINATE WITH DISTRICT FOR MAINTENANCE AND ACCESS TO THE FACILITIES PRIOR TO THE START OF CONSTRUCTION.

ALL BURIED ISOLATION VALVES SHALL HAVE VALVE BLOCKS PER THE DISTRICT'S STANDARD DETAILS.

SANITARY SEWER NOTES

INSPECTIONS WILL BE PERFORMED BY A REPRESENTATIVE OF THE DISTRICT. IT SHALL BE THE CONTRACTOR'S RESPONSIBILITY TO NOTIFY THE DISTRICT A MINIMUM OF 48 HOURS IN ADVANCE FOR ALL CONSTRUCTION INSPECTIONS. ⚠

THE CONTRACTOR SHALL TAKE ALL STEPS NECESSARY TO ENSURE THAT THE EXISTING FACILITIES REMAIN FULLY OPERATIONAL DURING ALL STAGES OF CONSTRUCTION, INCLUDING PROVIDING BYPASS PUMPING, STANDBY STORAGE, EMERGENCY GENERATORS, AND PUMP TRUCKS, AS NECESSARY DURING SERVICE INTERRUPTIONS OR OUTAGES.

WORK HOURS:
SHALL BE PER SUDDEN VALLEY COMMUNITY ASSOCIATION ALLOWABLE WORK HOURS:
8 AM - 8 PM, MONDAY - SATURDAY
QUIET ON SITE WORK ALLOWED FOR PREPARATION STARTING AT 7:30 AM. NO HEAVY EQUIPMENT UNTIL 8 AM.
OFF HOURS, SUNDAYS, AND DISTRICT HOLIDAYS (MEMORIAL DAY, INDEPENDENCE DAY, AND LABOR DAY) - QUIET WORK ALLOWED - NO OFFSITE NOISE. WORK OUTSIDE NORMAL HOURS SHALL BE APPROVED IN WRITING BY THE SUDDEN VALLEY COMMUNITY ASSOCIATION.

CONTRACTOR SHALL PERFORM EXISTING FORCEMAIN / GRAVITY MAIN TIE-INS DURING LOW FLOW HOURS (NIGHT TIME CONSTRUCTION). COORDINATE WITH CORRESPONDING JURISDICTIONS TO REQUEST WORK HOURS EXEMPTION DURING TIE-INS. MINIMUM OF TWO WEEKS NOTICE SHALL BE PROVIDED TO THE CORRESPONDING JURISDICTION PRIOR TO NIGHT TIME WORK.

ROAD WORK, TRENCH RESTORATION:
SHALL BE PER SUDDEN VALLEY COMMUNITY ASSOCIATION REQUIREMENTS

VEGETATION RESTORATION:
SHALL BE PER SUDDEN VALLEY COMMUNITY ASSOCIATION AND WHATCOM COUNTY REQUIREMENTS

TEMPORARY EROSION AND SEDIMENTATION CONTROL NOTES

1. THE BOUNDARIES OF THE CLEARING LIMITS SHALL BE THE SAME AS THE CONSTRUCTION AND SILT FENCING. DURING THE CONSTRUCTION PERIOD, NO DISTURBANCE BEYOND THE CLEARING LIMITS SHALL BE PERMITTED.
2. THE TESC FACILITIES SHOWN ON THIS PLAN MUST BE CONSTRUCTED PRIOR TO OR IN CONJUNCTION WITH ALL CLEARING AND GRADING SO AS TO ENSURE THAT THE TRANSPORT OF SEDIMENT TO SURFACE WATERS, DRAINAGE SYSTEMS, AND ADJACENT PROPERTIES IS MINIMIZED.
3. THE TESC FACILITIES SHOWN ON THE PLANS ARE THE MINIMUM REQUIREMENTS FOR ANTICIPATED SITE CONDITIONS. DURING THE CONSTRUCTION PERIOD, THESE TESC FACILITIES SHALL BE UPGRADED AS NEEDED FOR UNEXPECTED STORM EVENTS AND MODIFIED TO ACCOUNT FOR CHANGING SITE CONDITIONS (E.G. ADDITIONAL COVER MEASURES, ADDITIONAL SUMP PUMPS, RELOCATION OF DITCHES AND SILT FENCES, PERIMETER PROTECTION ETC.).
4. THE CONTRACTOR SHALL DESIGNATE ONE EMPLOYEE WHO WILL BE THE EROSION AND SPILL CONTROL LEAD (CESCL). THIS PERSON WILL BE RESPONSIBLE FOR ENSURING COMPLIANCE WITH ALL LOCAL, STATE AND FEDERAL EROSION AND SEDIMENT CONTROL AND SPILL CONTROL/PREVENTION REQUIREMENTS. THIS PERSON SHALL PROVIDE A CONTACT PHONE NUMBER THAT HE/SHE CAN BE REACHED AT 24 HOURS A DAY TO RESPOND TO EMERGENCIES, INQUIRIES AND DIRECTIVES REGARDING TESC AND SPILL CONTROL.
5. THE TESC FACILITIES SHALL BE INSPECTED DAILY BY THE CESCL AND MAINTAINED TO ENSURE CONTINUED PROPER FUNCTION. WRITTEN RECORDS SHALL BE KEPT OF WEEKLY REVIEWS OF THE TESC FACILITIES.
6. ANY AREAS OF EXPOSED SOILS, INCLUDING ROADWAY EMBANKMENTS, THAT WILL NOT BE DISTURBED FOR TWO DAYS DURING THE WET SEASON OR SEVEN DAYS DURING THE DRY SEASON SHALL BE IMMEDIATELY STABILIZED WITH THE APPROVED TESC COVER METHODS (E.G., SEEDING, MULCHING, PLASTIC COVERING, ETC.).
7. THE TESC FACILITIES ON INACTIVE SITES SHALL BE INSPECTED AND MAINTAINED A MINIMUM OF ONCE A MONTH OR WITHIN 24 HOURS FOLLOWING A STORM EVENT.
8. THE CONTRACTOR SHALL REMOVE SEDIMENT AND DEBRIS FROM PAVEMENT AREAS AS DIRECTED BY THE INSPECTOR, UTILIZING SHOVELING AND/OR VACUUM STREET SWEEPING.
9. ALL STORM DRAIN INLETS THAT MAY RECEIVE RUNOFF FROM THE PROJECT CONSTRUCTION SHALL BE PROTECTED USING INLET PROTECTION. INLETS SHOULD BE INSPECTED WEEKLY AT A MINIMUM AND DAILY DURING STORM EVENTS. INLET PROTECTION DEVICES SHALL BE CLEANED OR REMOVED AND REPLACED BEFORE SEDIMENT CAN ACCUMULATE TO ONE-HALF THE HEIGHT OR AS SPECIFIED BY THE MANUFACTURER.
10. EXCAVATED MATERIAL SHALL BE PLACED ON THE UPHILL SIDE OF TRENCHES, CONSISTENT WITH SAFETY AND SPACE CONSIDERATIONS AND TO CONTAIN EROSION ON SITE.

LEGEND

EXISTING IMPROVEMENTS

U/G POWER
O/H POWER
U/G NATURAL GAS
U/G TELEPHONE
O/H TELEPHONE
FENCE
GUARD RAIL
SANITARY SEWER
SIDE SEWER
STORM SEWER
SANITARY SEWER FORCE MAIN
DOMESTIC WATER
RIGHT OF WAY C/L
EASEMENT
PROPERTY LINE
MINOR CONTOUR
MAJOR CONTOUR
DOMESTIC WATER VALVE
WATER METER
FIRE HYDRANT
STORM CATCH BASIN
SANITARY SEWER MANHOLE
MAILBOX
TELEPHONE RISER
POWER VAULT
JUNCTION BOX
PAD MOUNTED TRANSFORMER
VEGETATION
ASPHALT CONCRETE PAVEMENT
CONCRETE PAVEMENT OR WALKWAY
STRUCTURE, TO BE REMOVED
MONUMENT (IN CASE)
SURFACE MONUMENT
SIGN

PROPOSED IMPROVEMENTS

SILT FENCE
CONSTRUCTION FENCE
TEMPORARY SANITARY SEWER
POWER
TELEPHONE
TELEMETRY
SEWER MAIN
SUMP DRAIN
FLOOR DRAIN DRAIN
SEWER MANHOLE
SEWER CLEANOUT
PROPOSED PAVEMENT
PROPOSED STAGING AREA
PROPOSED KEYSTONE WALL
PROPOSED ROCK WALL

SHEET INDEX

SHEET NO.	DESCRIPTION	DWG NO.
-	COVER	COV
1	GENERAL INFORMATION	G001
2	CIVIL AND MECHANICAL DETAILS	M001
3	STRUCTURAL DETAILS	S002
4	EXISTING SITE AND TESC PLAN	C301
5	PROPOSED SITE PLAN	C302
6	LANDSCAPING PLANTING PLAN	LA 301
7	LANDSCAPING DETAILS	LA 302
8	PROPOSED STRUCTURAL PLAN	S301
9	EXISTING AND PROPOSED MECHANICAL PLAN	M301
10	AIR VACUUM RELEASE VAULT DETAILS	M302
11	ELECTRICAL LEGEND	E301
12	ONE-LINE DIAGRAM	E302
13	ELECTRICAL SITE PLAN	E303
14	PUMP STATION ELECTRICAL PLAN	E304
15	ELECTRICAL EQUIPMENT DETAILS	E305
16	ELECTRICAL EQUIPMENT COVER DETAILS	E306
17	ELECTRICAL DETAILS I	E307
18	ELECTRICAL DETAILS II	E308
19	CONTROL LOGIC DIAGRAMS I	E309
20	ELECTRICAL SCHEDULES	E310
21	RTU - PANEL LAYOUT (SHEET 1 OF 2)	E311
22	RTU - PANEL LAYOUT (SHEET 2 OF 2)	E312
23	RTU - POWER AND COMMUNICATIONS DIAGRAM	E313
24	RTU - PLC INPUTS AND OUTPUTS (SHEET 1 OF 2)	E314
25	RTU - PLC INPUTS AND OUTPUTS (SHEET 2 OF 2)	E315

CONTACT PERSONNEL

BILL HUNTER, P.E.	LAKE WHATCOM WATER AND SEWER DISTRICT	360-734-9224
RICH MUNSON	LAKE WHATCOM WATER AND SEWER DISTRICT	360-734-9224
RANDY CRAKER	LAKE WHATCOM WATER AND SEWER DISTRICT	360-734-9224
KEN ZANGARI	LAKE WHATCOM WATER AND SEWER DISTRICT	360-734-9224
CARL HATHCOCK	LAKE WHATCOM WATER AND SEWER DISTRICT	360-734-9224 ⚠
DAN BURWELL, P.E.	RH2 ENGINEERING	425-951-5342
EDWIN HALM, P.E.	RH2 ENGINEERING	425-951-5332
REPAIR DEPT.	PUGET SOUND ENERGY	888-225-5773
REPAIR DEPT.	QWEST	800-954-1211
DAVE WARENG	SUDDEN VALLEY COMMUNITY ASSOCIATION	360-734-6430
ANTHONY CAVANDER	SUDDEN VALLEY COMMUNITY ASSOCIATION	360-734-6430 ⚠
LONNIE O'NEAL	CASCADE NATURAL GAS	360-319-1016

CALL 48 HOURS BEFORE YOU DIG
ONE CALL 1-800-424-5555

REPORT ALL SPILLS
DEPT. OF ECOLOGY 1-800-258-5990

SITE SURVEY NOTES

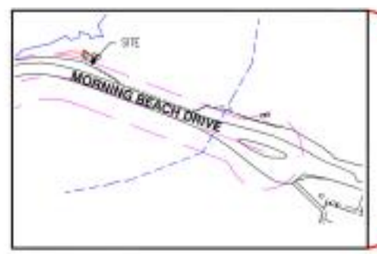
DATE OF SURVEY: JUNE 2009
SURVEY COMPLETED BY LARRY STEELE AND ASSOCIATES
DATUM:

AFTERNOON BEACH
HORIZONTAL: NAD83/98
PER STATIC GPS TIE TO CITY OF BELLINGHAM
PRIMARY CONTROL POINTS "BLODDEL" (NGS PID DH3748)
AND "HAWK" (NGS PID DH3745)

VERTICAL: CITY OF BELLINGHAM
DERIVED FROM LAKE WHATCOM WATER LEVEL
OF 314.51' (MAY 13, 2009 AT 10:45 A.M.)

PROJECT BENCH MARK IS A BRASS PLUG MONUMENT IN CONCRETE SHOW BY THE DATUM SYMBOL, EL=315.78'

PROJECT LOCATION



AFTERNOON BEACH PUMP STATION

REVISED TO CONFORM TO CONSTRUCTION RECORDS
11/29/11
RH2 ENGINEERING INC. DATE

NO.	REVISION	BY	REVIEW	DATE
⚠	DISTRICT REVIEW COMMENTS	WWB	DWB	02/16/11
⚠	REVISIONS PER CONSTRUCTION RECORDS	WJV	DWB	11/29/11

SIGNED: 02/15/11

SIGNED: 02/15/11

LAKE WHATCOM WATER & SEWER DISTRICT

Lake Whatcom Water and Sewer District
2010 Sewer Pump Station Improvements
Afternoon Beach

GENERAL INFORMATION

DwgSerialN 1473

RH2 ENGINEERS PLANNERS CONSULTANTS

RH2 ENGINEERING, INC.
FAX (206) 451-2411
mail@rh2.com 1.800.720.7991

BELLINGHAM 360.676.1824
114 West Magnolia Road

BOTHELL 425.951.5400
22722 29th Drive SE, Suite 210

EAST WENATCHEE 509.886.2400
550 Simon Street, Suite 5

RICHLAND 509.946.9147
1141 Columbia Park Drive, Suite C

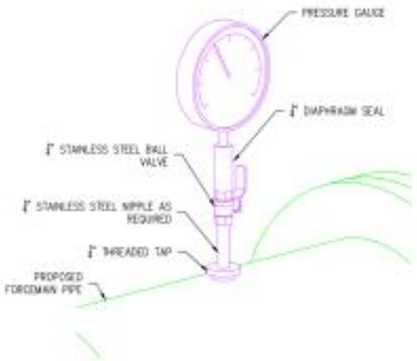
SILVERDALE 360.698.7990
2021 NW Mega Rd, Suite 101

TACOMA 253.475.2994
820 Pacific Avenue Suite 306

SCALE: SHOWN
0 1" 2"
DRAWING IS NOT TO SCALE IF BAR IS NOT 2" LONG

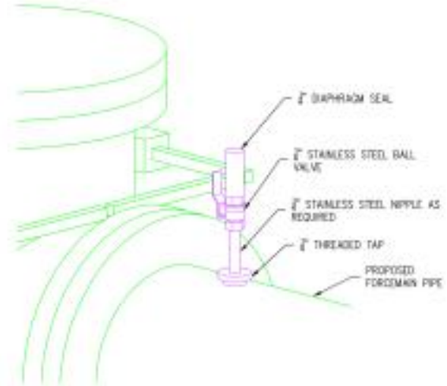
SHT.	1
DWG NO.	G001
DRAWN BY	DJF
REVIEWED	DWB
DATE	FEB 16, 2011
SHEET NO.	1
CLIENT	LWWSD
JOB NO.	409-050
FILENAME	48-D-G001

25



PRESSURE GAUGE DETAILS

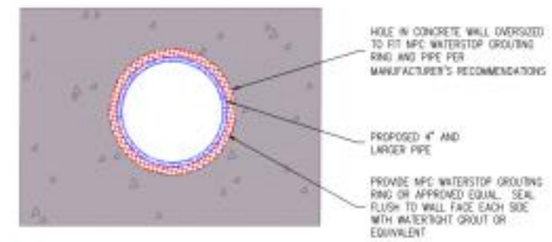
NOT TO SCALE



1/4" TAP ASSEMBLY DETAILS

NOT TO SCALE

NOTE:
* PIPE AND CONDUIT PENETRATIONS LESS THAN 4" SHALL BE GROUTED WATER TIGHT AT BOTH SIDES.
* PRECAST OR CORED PIPE PENETRATIONS SHALL BE SEALED PER THE DETAILS BELOW.



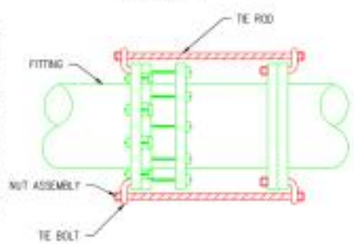
PIPE PENETRATION DETAILS

NOT TO SCALE

SHACKLE ROD SCHEDULE

FITTING		SHACKLE ROD NUMBER	SIZE
125LB	4"	2	3/4"
	6"	2	3/4"
	8"	2	3/4"
	10"	4	3/4"
	12"	4	3/4"
250LB	4"	2	3/4"
	6"	2	3/4"
	8"	2	3/4"
	10"	4	3/4"
	12"	6	3/4"

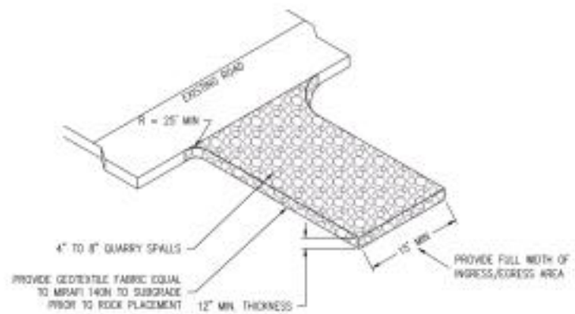
TIE BOLTS SHALL BE INSTALLED PER MANUFACTURER'S WRITTEN RECOMMENDATIONS



SHACKLE ROD DETAIL

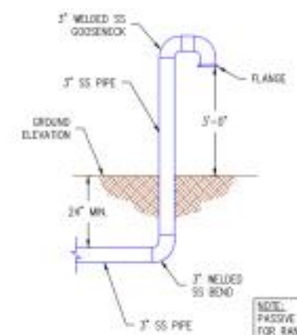
NOT TO SCALE

NOTE:
CONTRACTOR SHALL PROVIDE ENTRANCE AREA TO FIT WITHIN EACH SITE. CONSTRUCTION ENTRANCE SHALL BE REMOVED FOLLOWING CONSTRUCTION COMPLETION.



STABILIZED CONSTRUCTION ENTRANCE

NOT TO SCALE



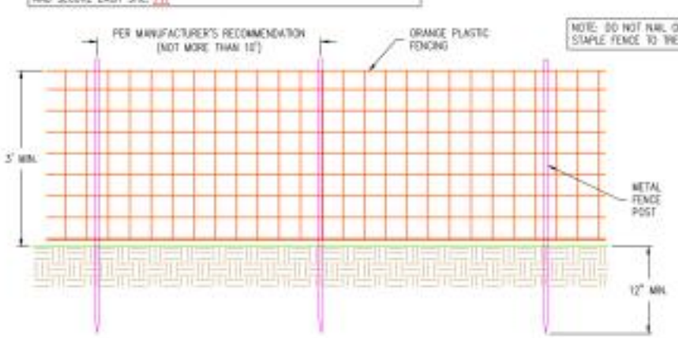
NOTE:
PASSIVE VENT DETAILS FOR RANCH HOUSE AND AFTERNOON BEACH ONLY

WET WELL PASSIVE VENT DETAILS

NOT TO SCALE

NOTE:
3' CONSTRUCTION FENCE IS FOR VEGETATION PROTECTION. CONTRACTOR SHALL BE RESPONSIBLE FOR SITE SECURITY INCLUDING 6' CHAINLINK CONSTRUCTION FENCING WITH LOCK AND KEYS AS NECESSARY TO RESTRICT PUBLIC ACCESS AND SECURE EACH SITE.

NOTE: DO NOT NAIL OR STAPLE FENCE TO TREES

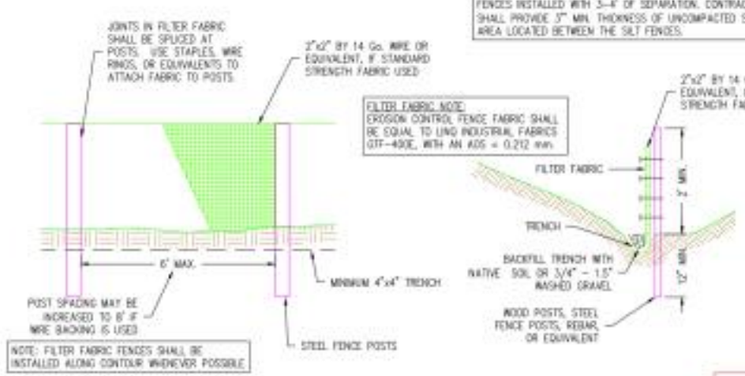


PLASTIC OR METAL FENCE (CONSTRUCTION FENCE)

NOT TO SCALE

DOUBLE SILT FENCE NOTE:
AREAS REQUIRING DOUBLE SILT FENCE SHALL CONSIST OF 2 SILT FENCES INSTALLED WITH 3-4' OF SEPARATION. CONTRACTOR SHALL PROVIDE 3" MIN. THICKNESS OF UNCOMPACTED STRAW IN AREA LOCATED BETWEEN THE SILT FENCES.

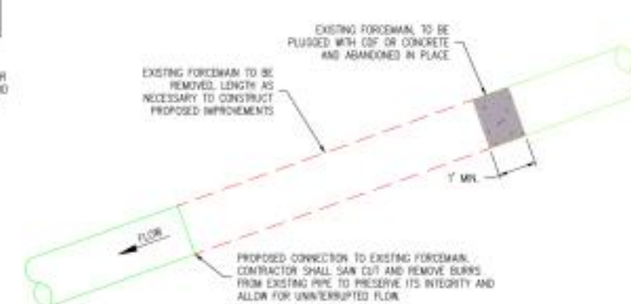
FILTER FABRIC NOTE:
EROSION CONTROL FENCE FABRIC SHALL BE EQUAL TO LINO INDUSTRIAL FABRICS GTF-400E, WITH AN AOS = 0.212 mm.



NOTE: FILTER FABRIC FENCES SHALL BE INSTALLED ALONG CONTOUR WHENEVER POSSIBLE

SILT FENCE

NOT TO SCALE



FORCEMAIN ABANDONMENT

NOT TO SCALE

REVISED TO CONFORM TO CONSTRUCTION RECORDS
RH2 ENGINEERING INC — 11/29/11 DATE

DwgSerialN: 1474

NO.	REVISION	BY	REVIEW	DATE
2	REVISIONS PER CONSTRUCTION RECORDS	MJV	DWB	11/29/11
1	DISTRICT REVIEW COMMENTS	BWB	DWB	02/16/11

SIGNED 02/16/11

SIGNED 02/16/11

LAKE WHATCOM WATER & SEWER DISTRICT

Lake Whatcom Water and Sewer District
2010 Sewer Pump Station Improvements
Afternoon Beach

CIVIL AND MECHANICAL DETAILS

RH2 ENGINEERING, INC.
http://www.rh2.com
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BELLINGHAM 360.676.0539
114 West Holly Road
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22722 29th Drive SE, Suite 210
EAST WENATCHEE 509.886.6000
100 Simon Street, Suite 5
RICHLAND 509.946.9141
114 Columbia Point Drive, Suite C
SILVERDALE 360.979.7990
2421 NW Mapes Rd, Suite 101
TACOMA 253.572.4994
925 Pacific Avenue Suite 104

SCALE: SHOWN
0 1" 2"
DRAWING IS NOT TO SCALE IF BAR IS NOT 2" LONG

PAGE 1 | DWG NO. M001
DRAWN: EH
REVIEW: DWB
DATE: FEB 16, 2011
SHEET NO. 2 / 25
JOB NO. 409-050
FILENAME: AB-D-MECH

General Structural Notes 300

BASIS OF DESIGN

GEOTECHNICAL PARAMETERS:

MINIMUM FROST DEPTH	18"
MAXIMUM NET BEARING	3,000 PSF STATIC
AT-REST LATERAL EARTH PRESSURE	70 PCF DRAINED; 101.4 PCF UNDRAINED
SURCHARGE LOADING (WHERE APPLICABLE)	100 PSF
GROUND WATER TABLE	ASSUMED AT SURFACE

OTHER LOADING PARAMETERS:

WIND LOAD:	85 MPH, EXPOSURE B
SNOW LOAD:	25 PSF
EARTHQUAKE LOAD:	ZIP CODE 98226, SOIL PROFILE TYPE D

OTHER DESIGN VALUES USED:

OCCUPANCY CATEGORY:	ESSENTIAL FACILITY
CONCRETE:	4000 PSI WITH 60,000 PSI REINFORCING
TIMBER:	DF1, #2 OR BETTER
STEEL:	A36
CMU:	1500 PSI WITH 60,000 PSI REINFORCING

LIVE LOADS:

FLOOR LIVE LOADS:	100 PSF EXCEPT AS NOTED
PLATFORMS AND STAIRS:	50 PSF LIVE LOAD

CRITERIA

ALL MATERIALS, WORKMANSHIP, DESIGN, AND CONSTRUCTION SHALL CONFORM TO THE DRAWINGS, SPECIFICATIONS, AND THE INTERNATIONAL BUILDING CODE (2006 EDITION).

SPECIAL INSPECTIONS, TESTS AND OBSERVATIONS

SPECIAL INSPECTIONS AND TESTS SHALL INCLUDE THE FOLLOWING. REFER TO IBC SECTION 1704 AND 1707 FOR DETAILS.

1. SPECIAL INSPECTIONS BY THE GEOTECHNICAL ENGINEER INCLUDING:
   A. SITE EXCAVATION AND GRADING
   B. PLACEMENT OF STRUCTURAL FILL AND SOIL COMPACTION
   C. VERIFICATION OF SOIL-BEARING CAPACITY
2. CONCRETE PLACEMENT AT CONCRETE CONSTRUCTION: CONTINUOUS, SEE ALSO SECTION 1704.4.
3. REINFORCEMENT AT CONCRETE CONSTRUCTION: PERIODIC, SEE ALSO SECTION 1704.4.
4. MASONRY CONSTRUCTION, INCLUDING PLACEMENT OF MASONRY UNITS, MORTAR REINFORCEMENT AND STRUCTURAL CONNECTIONS: PERIODIC, SEE ALSO SECTION 1704.5.3.
5. GROUT PLACEMENT AT MASONRY CONSTRUCTION: CONTINUOUS, SEE ALSO SECTION 1704.5.3.
6. WOOD-FRAMED LATERAL-FORCE RESISTING SYSTEM: PERIODIC, SEE ALSO SECTION 1707.3.
7. TESTING OF CONCRETE FOR SPECIFIED COMPRESSIVE STRENGTH (FC), AIR CONTENT AND SLUMP: SEE IBC TABLE 1704.4.
8. VERIFICATION OF SPECIFIED COMPRESSIVE STRENGTH (FM) OF MASONRY PRIOR TO CONSTRUCTION AND EVERY 5,000 SQUARE FEET DURING CONSTRUCTION: SEE IBC TABLE 1708.1.4.
9. STRUCTURAL OBSERVATION BY A REGISTERED DESIGN PROFESSIONAL IN ACCORDANCE WITH IBC 1709 SHALL BE PROVIDED.

GENERAL

LINES SHOWN ON DRAWINGS MAY BE ASSOCIATED WITH CAD MODELING AND MAY NOT REPRESENT REQUIRED OR ALLOWED JOINTS. SEE DETAILS FOR CLARIFICATION ON REQUIRED AND ALLOWED JOINTS.

REINFORCED CONCRETE

REINFORCING STEEL SHALL BE DETAILED (INCLUDING HOOKS AND BENDS) IN ACCORDANCE WITH ACI 315-99 AND 318-08. LAP ALL REINFORCEMENTS IN ACCORDANCE WITH THE "REINFORCING SPLICE AND DEVELOPMENT LENGTH SCHEDULE" – SEE THIS SHEET. PROVIDE CORNER BARS AT ALL WALL INTERSECTIONS PER DETAIL 308. LAP ADJACENT MATS OF WELDED WIRE FABRIC A MINIMUM OF 8" AT SIDES AND ENDS.

NO BARS PARTIALLY EMBEDDED IN HARDENED CONCRETE SHALL BE FIELD BENT UNLESS SPECIFICALLY DETAILED OR APPROVED BY THE STRUCTURAL ENGINEER.

A 6" WATERSTOP SHALL BE PLACED AT ALL BELOW GRADE CONCRETE SLAB AND WALL CONSTRUCTION JOINTS AND AS SHOWN TO PROVIDE A WATERTIGHT STRUCTURE.

CONCRETE PROTECTION (COVER) FOR REINFORCING STEEL SHALL BE AS FOLLOWS, UNLESS OTHERWISE NOTED:

FOOTINGS AND OTHER UNFORMED SURFACES CAST AGAINST AND PERMANENTLY EXPOSED TO EARTH ..... 3"
FORMED SURFACES EXPOSED TO EARTH (WALLS BELOW GRADE), WATER OR WEATHER (#6 BARS OR LARGER) .. 2"

COLUMN TIES OR SPIRALS AND BEAM STIRRUPS ..... 2"
SLABS AND WALLS (INTERIOR FACE) ..... 2"

ANCHORAGE

CONCRETE ANCHORS USE HILTI HIT-RE 500-SD CONCRETE ANCHORS AS SPECIFIED AND INSTALLED PER DETAIL 302 UNLESS OTHERWISE CALLED OUT ON PLANS.

Reinforcement Splice and Development Length Schedule: 302

(I) MINIMUM STRAIGHT DEVELOPMENT LENGTHS (l_d)+

BAR SIZE	TENSION BARS TOP BARS	TENSION BARS OTHER BARS
# 3	18"	15"
# 4	25"	19"
# 5	31"	24"
# 6	37"	29"
# 7	54"	42"
# 8	62"	48"
# 9	70"	54"
# 10	79"	61"

(II) MINIMUM LAP SPLICE LENGTHS (l_s)+

BAR SIZE	TENSION BARS CLASS B TOP BARS	TENSION BARS CLASS B OTHER BARS
# 3	25"	19"
# 4	33"	25"
# 5	41"	31"
# 6	49"	37"
# 7	71"	54"
# 8	81"	62"
# 9	91"	70"
# 10	103"	79"

(III) MINIMUM EMBEDMENT LENGTHS (l_{dh})

FOR STANDARD END HOOKS

BAR SIZE	ALL BARS
# 3	6"
# 4	7"
# 5	9"
# 6	10"
# 7	12"
# 8	14"
# 9	15"
# 10	17"

1. SIDE COVER EQUAL TO OR GREATER THAN 2-1/2".
2. END COVER FOR 90° HOOKS MUST BE EQUAL TO OR GREATER THAN 2".

"TOP BARS" ARE HORIZONTAL BARS WITH MORE THAN 12" DEPTH OF CONCRETE CAST BELOW THEM.

IF CLEAR CONCRETE COVER IS LESS THAN 2x THE DIAMETER OF THE BAR OR THE CENTER-TO-CENTER SPACING IS LESS THAN (4) BAR DIAMETERS, THEN VALUES SHALL BE INCREASED BY 43%

CONCRETE ANCHORS SHALL BE HILTI HIT-RE 500-SD ADHESIVE ANCHORS AS SPECIFIED. WHERE SIZE IS CALLED OUT ON THE DRAWINGS, PROVIDE MINIMUM EMBEDMENT DEPTHS AS SHOWN ON THE FOLLOWING TABLES. PROVIDE MINIMUM EDGE DISTANCES AND SPACING AS SHOWN ON THE FOLLOWING TABLES UNLESS SPECIFICALLY DETAILED OTHERWISE.

INSTALL CONCRETE ANCHORS IN STRICT ACCORDANCE WITH MANUFACTURER'S INSTRUCTIONS.

NOTIFY OWNER 24 HOURS IN ADVANCE OF INSTALLATION OF ALL ANCHORS.

WHERE SIZE IS NOT CALLED OUT, ANCHOR SHALL BE SELECTED BASED ON DESIGN LOADS. IF THE MINIMUM EDGE DISTANCE AND/OR MINIMUM SPACING CAN NOT BE ACHIEVED, REFER TO PRODUCT INFORMATION FOR REDUCTION IN ALLOWABLE LOADS.

316 STAINLESS STEEL THREADED ROD

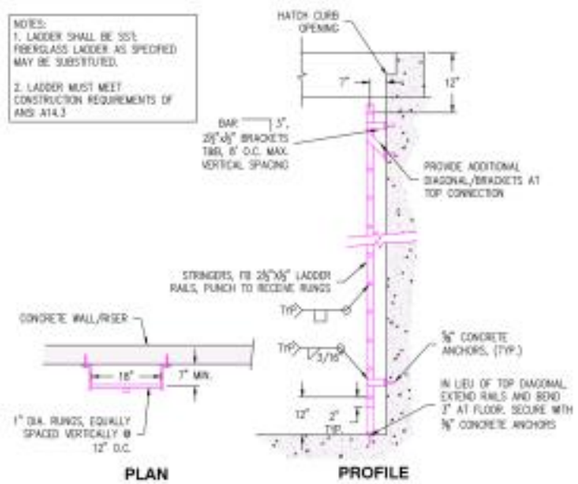
DIAMETER OF ROD (INCHES)	3/8	1/2	5/8	3/4
MINIMUM EMBEDMENT DEPTH (INCHES)	3 1/2	4 1/4	5	6 5/8
MINIMUM CONCRETE THICKNESS (INCHES)	5 1/4	6 1/2	7 1/2	10
MINIMUM EDGE DISTANCE (INCHES)	5 1/4	6 1/2	7 1/2	10
MINIMUM ANCHOR SPACING (INCHES)	7	9 1/2	11	13 1/4
ALLOWABLE TENSION LOAD CAPACITY (POUNDS)	3,103	4,371	5,535	6,274
ALLOWABLE SHEAR LOAD CAPACITY (POUNDS)	2,519	5,440	7,195	10,757

GRADE 60 REBAR

REBAR SIZE	#5	#6	#7	#8
MINIMUM EMBEDMENT DEPTH (INCHES)	5	7	7 1/2	8
MINIMUM CONCRETE THICKNESS (INCHES)	7 1/2	10 1/2	11 1/4	12
MINIMUM EDGE DISTANCE (INCHES)	7 1/2	10 1/2	11 1/4	12
MINIMUM ANCHOR SPACING (INCHES)	10	14	15	16
ALLOWABLE TENSION LOAD CAPACITY (POUNDS)	5,335	8,765	9,966	11,201
ALLOWABLE SHEAR LOAD CAPACITY (POUNDS)	7,195	11,410	12,959	14,562

CONCRETE ANCHOR 302

NOTES:
1. LADDER SHALL BE SS1. FIBERGLASS LADDER AS SPECIFIED MAY BE SUBSTITUTED.
2. LADDER MUST MEET CONSTRUCTION REQUIREMENTS OF ANSI A14.3



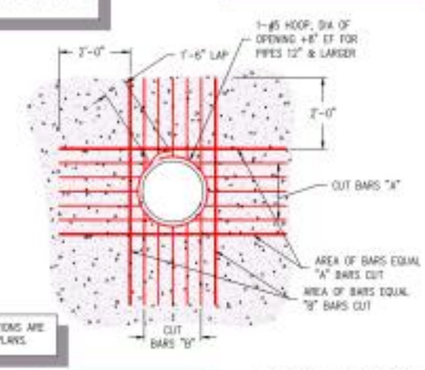
TYPICAL LADDER DETAIL 301

NOT TO SCALE

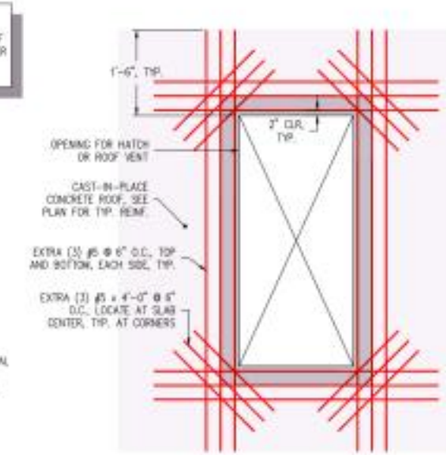
BAR DESIGNATION NOTES:
"A" REFERS TO CROSS-SECTIONAL AREA OF A HORIZONTAL BAR THAT HAS BEEN CUT.

"B" REFERS TO CROSS-SECTIONAL AREA OF A VERTICAL BAR THAT HAS BEEN CUT.

NOTE: THIS DETAIL USED FOR SINGLE PENETRATIONS 4" IN DIAMETER AND LARGER, AND IN EQUIVALENT GROUPS OF SMALLER DIAMETER PENETRATIONS. REFER TO MECHANICAL PLANS FOR SIZE AND LOCATION OF PIPE PENETRATIONS.



NOTE: NOT ALL PENETRATIONS ARE SHOWN ON STRUCTURAL PLANS.



OPENING REINFORCEMENT 306

REVISED TO CONFORM TO CONSTRUCTION RECORDS
RH2 ENGINEERING, INC. 11/29/11 DATE

DwgSerial#: 1475

NO.	REVISION	BY	REVIEW	DATE
2	REVISIONS PER CONSTRUCTION RECORDS	MJV	DWB	11/29/11
1	DISTRICT REVIEW COMMENTS	WMD	DWM	02/16/11

SIGNED: 02/16/11

SIGNED: 02/16/11

LAKE WHATCOM WATER & SEWER DISTRICT

Lake Whatcom Water and Sewer District
2010 Sewer Pump Station Improvements
Afternoon Beach

STRUCTURAL DETAILS

RH2 ENGINEERING, INC.
ENGINEERS
PLANNERS
SCIENTISTS

RH2 ENGINEERING, INC.
BELLINGHAM OFFICE
BOTHELL OFFICE
EAST WENATCHEE OFFICE
PORT ORCHARD OFFICE

SCALE: SHOWN
0 1" 2"
DRAWING IS NOT TO SCALE IF BAR IS NOT 2" LONG

SHT. 32	DWG NO. S002
DRAWN: JMC	
REVIEWED: KLE	
DATE: FEB 16, 2011	SHEET NO. 3
CONTR: LWWSD	OF 25
JOB NO: 409-050	
FILENAME: KB-D-STR11	

TEMPORARY PUMPING AND EMERGENCY POWER NOTES:
SEE DIVISION 1 IN THE SPECIFICATIONS FOR DETAILS

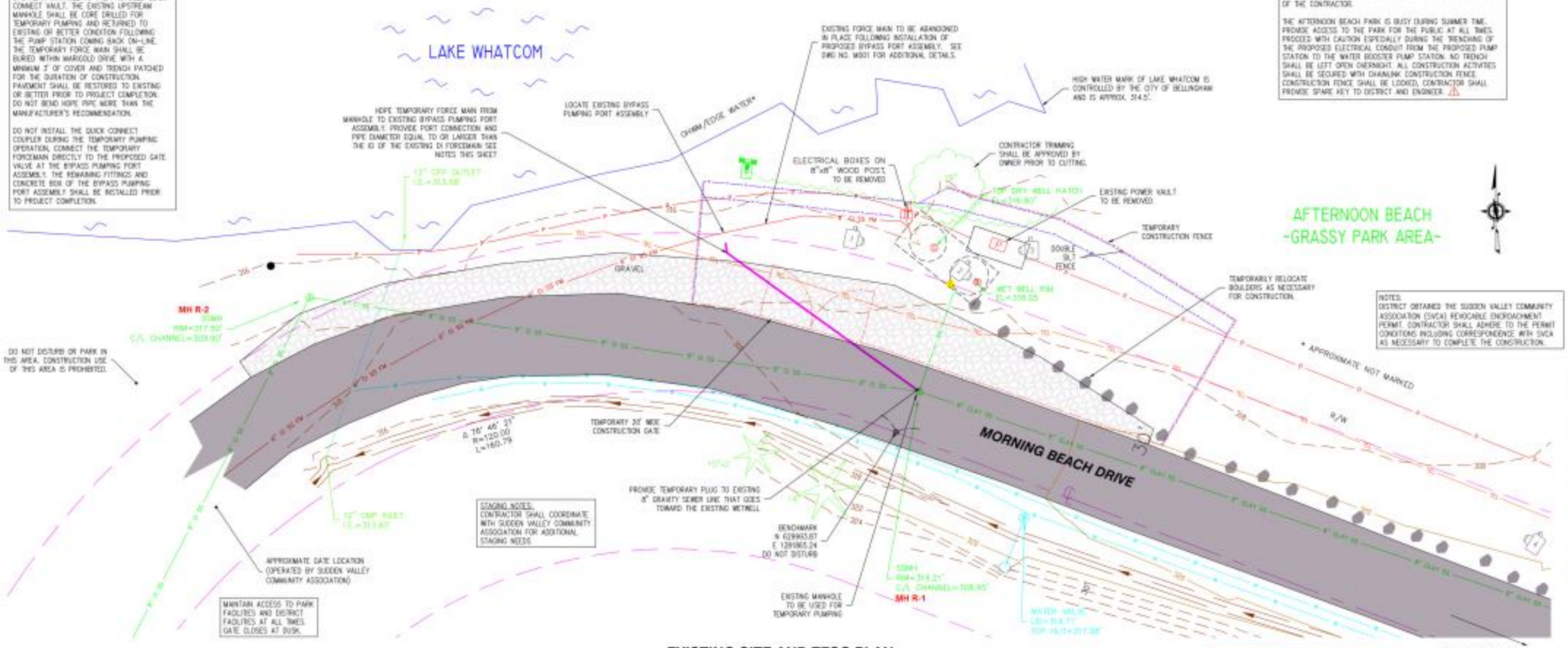
TEMPORARY FORCEMAIN NOTES:

ROUTE TEMPORARY FORCE MAIN FROM THE UPSTREAM MANHOLE TO THE PROPOSED QUICK CONNECT VAULT. THE EXISTING UPSTREAM MANHOLE SHALL BE CORE DRILLED FOR TEMPORARY PUMPING AND RETURNED TO EXISTING OR BETTER CONDITION FOLLOWING THE PUMP STATION COMING BACK ON-LINE. THE TEMPORARY FORCE MAIN SHALL BE BURIED WITHIN MARIGOLD DRIVE WITH A MINIMUM 3' OF COVER AND TRENCH PATCHED FOR THE DURATION OF CONSTRUCTION. PAVEMENT SHALL BE RESTORED TO EXISTING OR BETTER PRIOR TO PROJECT COMPLETION. DO NOT BEND HDPE PIPE MORE THAN THE MANUFACTURER'S RECOMMENDATION.

DO NOT INSTALL THE QUICK CONNECT COUPLER DURING THE TEMPORARY PUMPING OPERATION. CONNECT THE TEMPORARY FORCEMAIN DIRECTLY TO THE PROPOSED GATE VALVE AT THE BYPASS PUMPING PORT ASSEMBLY. THE REMAINING FITTINGS AND CONCRETE BOX OF THE BYPASS PUMPING PORT ASSEMBLY SHALL BE INSTALLED PRIOR TO PROJECT COMPLETION.

STAGING AREA AND SITE SECURITY NOTES:
CONTRACTOR SHALL MINIMIZE THE STAGING AREA AROUND THE CONSTRUCTION OF THE AFTERNOON BEACH PUMP STATION. THE LOCATION OF THE TEMPORARY CONSTRUCTION FENCE SHOWN ON PLANS IS APPROXIMATE. THE CONTRACTOR SHALL COORDINATE AND RECEIVE APPROVAL BY THE OWNER IF ANY ADDITIONAL STAGING AREA IS NEEDED. SITE SECURITY IS THE RESPONSIBILITY OF THE CONTRACTOR.

THE AFTERNOON BEACH PARK IS BUSY DURING SUMMER TIME. PROVIDE ACCESS TO THE PARK FOR THE PUBLIC AT ALL TIMES. PROCEED WITH CAUTION ESPECIALLY DURING THE TRENCHING OF THE PROPOSED ELECTRICAL CONDUIT FROM THE PROPOSED PUMP STATION TO THE WATER BOOSTER PUMP STATION. NO TRENCH SHALL BE LEFT OPEN OVERNIGHT. ALL CONSTRUCTION ACTIVITIES SHALL BE SECURED WITH CHAINLINK CONSTRUCTION FENCE. CONSTRUCTION FENCE SHALL BE LOCKED. CONTRACTOR SHALL PROVIDE SPARE KEY TO DISTRICT AND ENGINEER. ⚠



STAGING NOTES:
CONTRACTOR SHALL COORDINATE WITH SUDDEN VALLEY COMMUNITY ASSOCIATION FOR ADDITIONAL STAGING NEEDS.

NOTES:
DISTRICT OBTAINED THE SUDDEN VALLEY COMMUNITY ASSOCIATION (SVCA) REVOCABLE ENCROACHMENT PERMIT. CONTRACTOR SHALL ADHERE TO THE PERMIT CONDITIONS INCLUDING CORRESPONDENCE WITH SVCA AS NECESSARY TO COMPLETE THE CONSTRUCTION.

EXISTING SITE AND TESC PLAN

1" = 10'

REVISED TO CONFORM TO CONSTRUCTION RECORDS
RH2 ENGINEERING INC. 11/29/11 DATE

1

2

3

4

DwgSerial#: 1476

NO.	REVISION	BY	REVIEW	DATE
⚠	REVISIONS PER CONSTRUCTION RECORDS	MJV	DWB	11/29/11
⚠	DISTRICT REVIEW COMMENTS	MWB	DWB	02/16/11

SIGNED: 02/16/11

SIGNED: 02/16/11

LAKE WHATCOM WATER & SEWER DISTRICT

Lake Whatcom Water and Sewer District
2010 Sewer Pump Station Improvements
Afternoon Beach

EXISTING SITE AND TESC PLAN

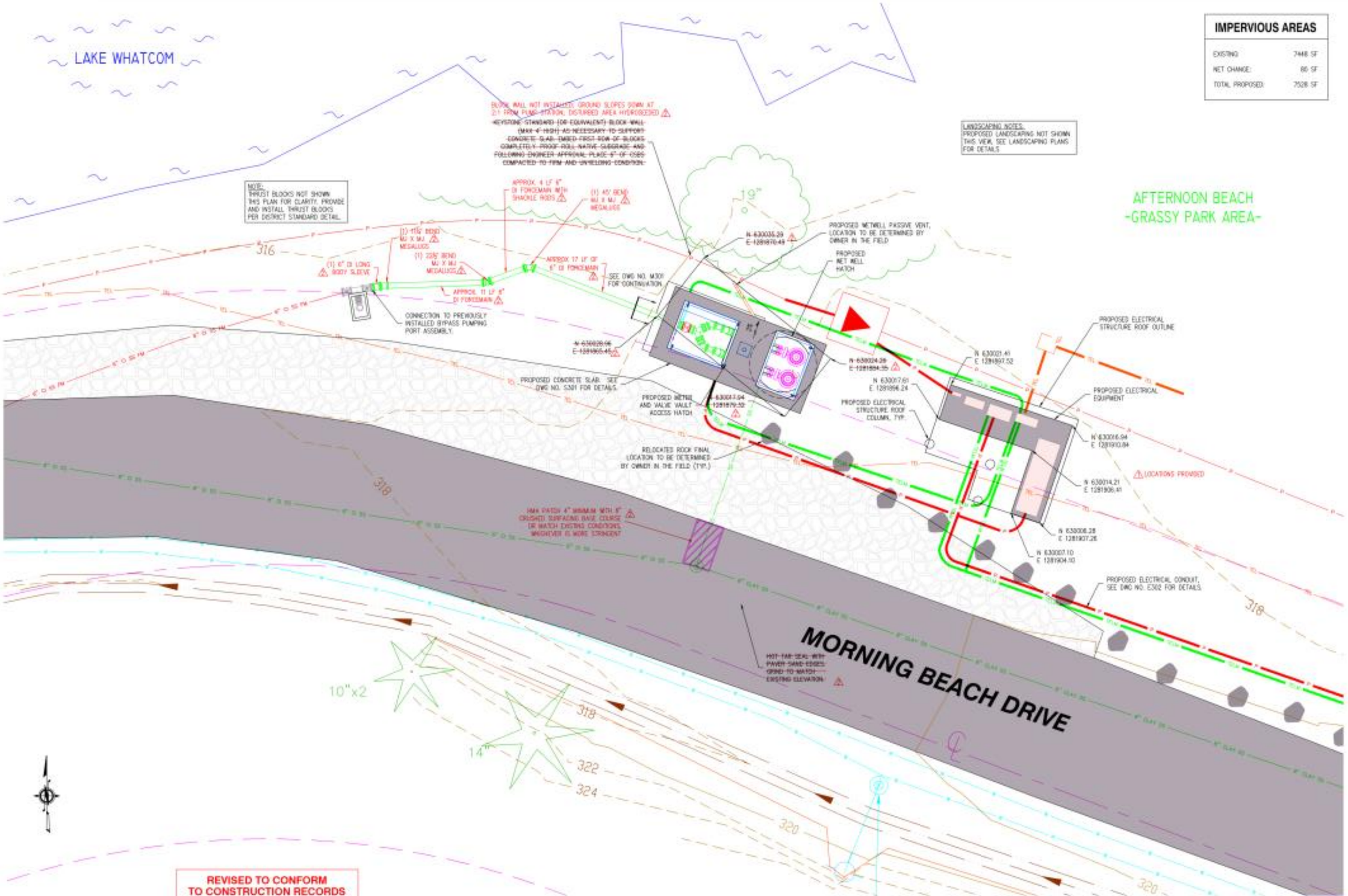
RH2 ENGINEERING INC.
BELLINGHAM
BOTHELL
EAST WENATCHEE
RICHLAND
SILVERDALE
TACOMA

SCALE: SHOWN
0 1" 2"
DRAWING IS NOT TO SCALE IF BAR IS NOT 2" LONG

DWN: TD
DSGN: RJF
REVIEW: DWB
DATE: FEB 16, 2011
CADD: LNWSD
FILENAME: AB-D-C301

DWG NO. C301

SHEET NO. 4 / 25



IMPERVIOUS AREAS	
EXISTING:	7448 SF
NET CHANGE:	80 SF
TOTAL PROPOSED:	7528 SF

REVISED TO CONFORM TO CONSTRUCTION RECORDS
11/29/11
RH2 ENGINEERING INC. DATE

PROPOSED SITE PLAN

1" = 5'

DwgSerialN: 1477

NO	REVISION	BY	REVIEW	DATE
1	REVISIONS PER CONSTRUCTION RECORDS	MJV	DWB	11/29/11
2	DISTRICT REVIEW COMMENTS	MAB	DWB	02/16/11

SIGNED: 01/06/11

SIGNED: 01/06/11

LAKE WHATCOM WATER & SEWER DISTRICT

Lake Whatcom Water and Sewer District
2010 Sewer Pump Station Improvements
Afternoon Beach

PROPOSED SITE PLAN

RH2 ENGINEERING, INC.
http://www.rh2.com
mailbox@rh2.com · 1.800.720.8501

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416 West Horton Road

BOTHELL 425.951.5400
22522 29th Drive SE, Suite 210

EAST WENATCHEE 509.886.2800
300 Tacoma Street, Suite 5

RICHLAND 509.946.9181
710 Columbia Point Drive, Suite C

SILVERDALE 360.979.7800
2821 NW Mayer Rd, Suite 101

TACOMA 253.475.9555
820 Pacific Avenue Suite 404

SCALE: SHOWN
0 1" 2"
DRAWING IS NOT TO SCALE IF BAR IS NOT 2" LONG

DATE: 5	DWG NO: C302
DRAWN: DJF	
REVIEWED: DWB	
DATE: FEB 16, 2011	SHEET NO: 5
CLIENT: LWWSD	
RH2 JOB NO: 409-050	25
FORMAT: A8-D-CADD	

REVEGETATION PLANTING SCHEDULE

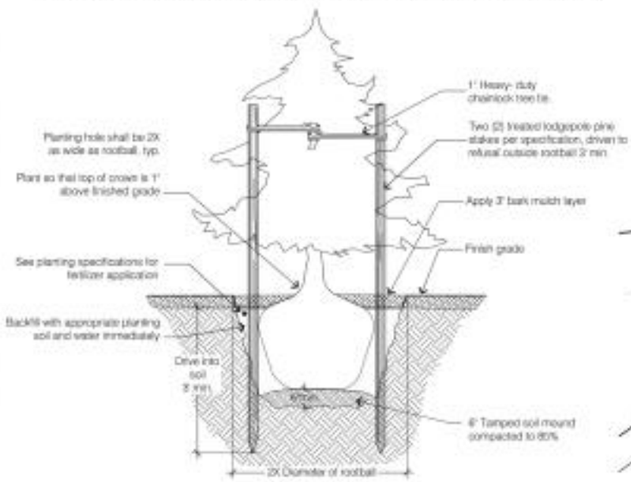
OF TREES REMOVED: 0 # OF TREES PROPOSED: 5

Trees

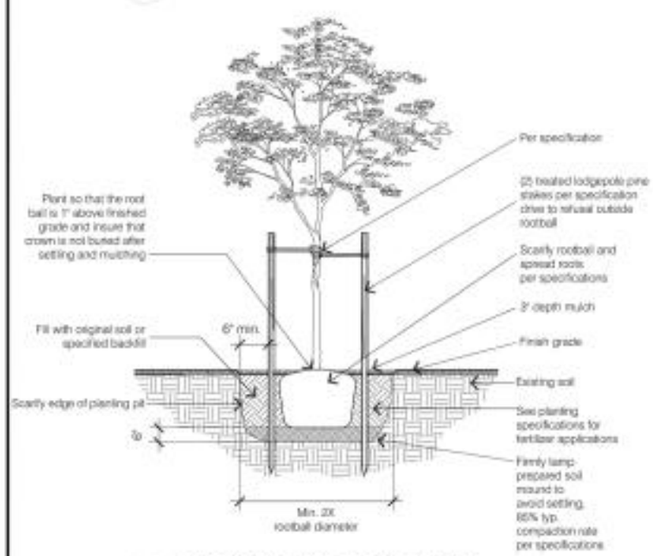
Symbol	Quantity	Botanical Name	Common Name	Size	Spacing
	3	Acer circinatum	Vine Maple	5' min. ht.	10' - 15' o.c.
	2	Thuja plicata	Western Red Cedar	5' min. ht.	As Shown
	12		Granite Boulders	2 Man	As Shown

NOTES

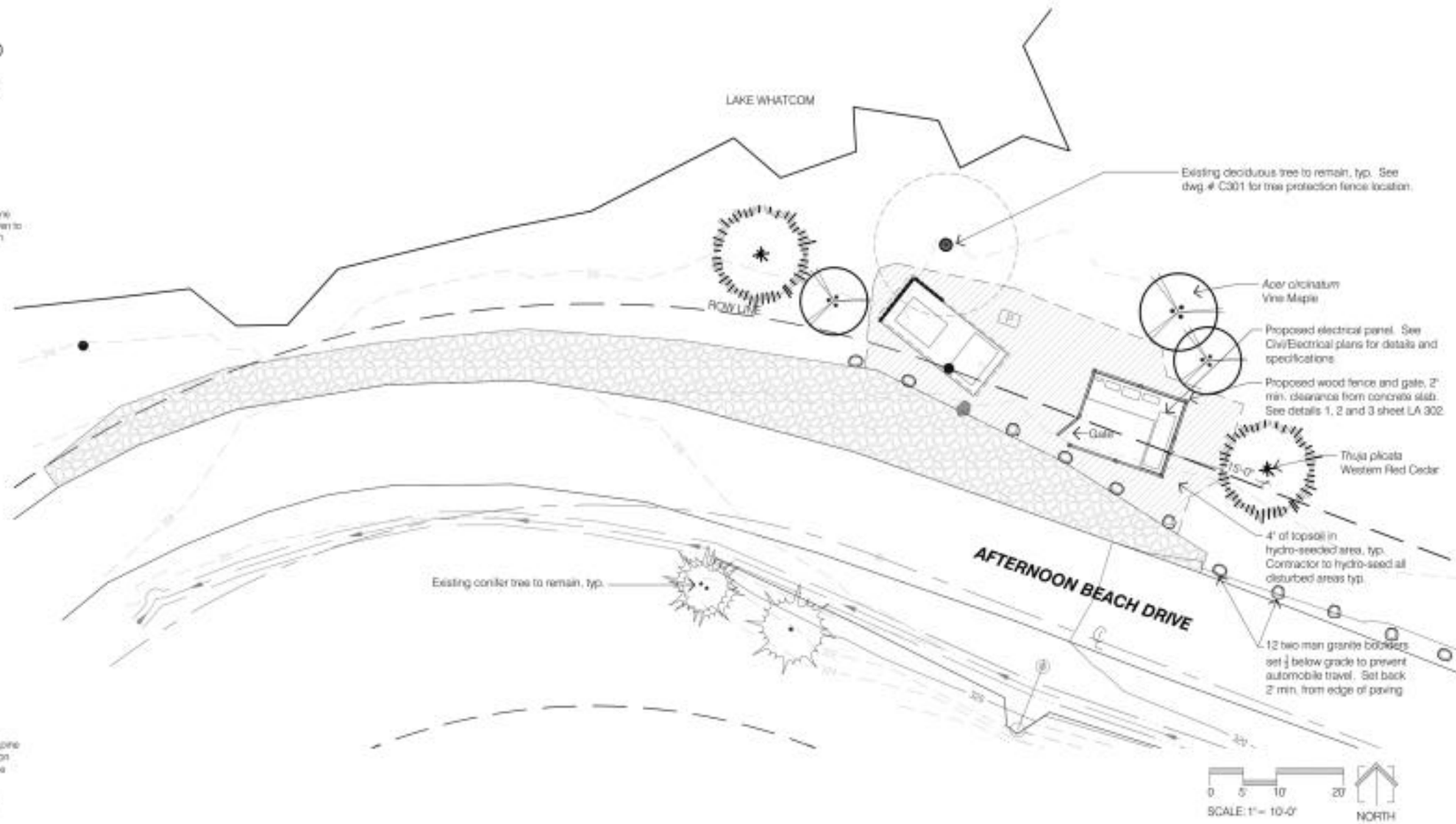
ALL PLANTING AND SOIL AMENDING BENEATH EXISTING TREE DRIPLINES TO BE COMPLETED BY HAND.
CONTRACTOR TO AVOID EQUIPMENT ACCESS TRAFFIC BENEATH EXISTING TREES. PROTECT ALL EXISTING TREES TO REMAIN.
SEE DWG. NO. C301 FOR TREE PROTECTION FENCE DETAILS



1 TYPICAL CONIFER PLANTING
SCALE: NTS



2 TYPICAL TREE PLANTING AND STAKING
SCALE: NTS



STATE OF WASHINGTON REGISTERED LANDSCAPE ARCHITECT
MATT PHILBIN
CERTIFICATE NO. 723

LAKE WHATCOM WATER & SEWER DISTRICT

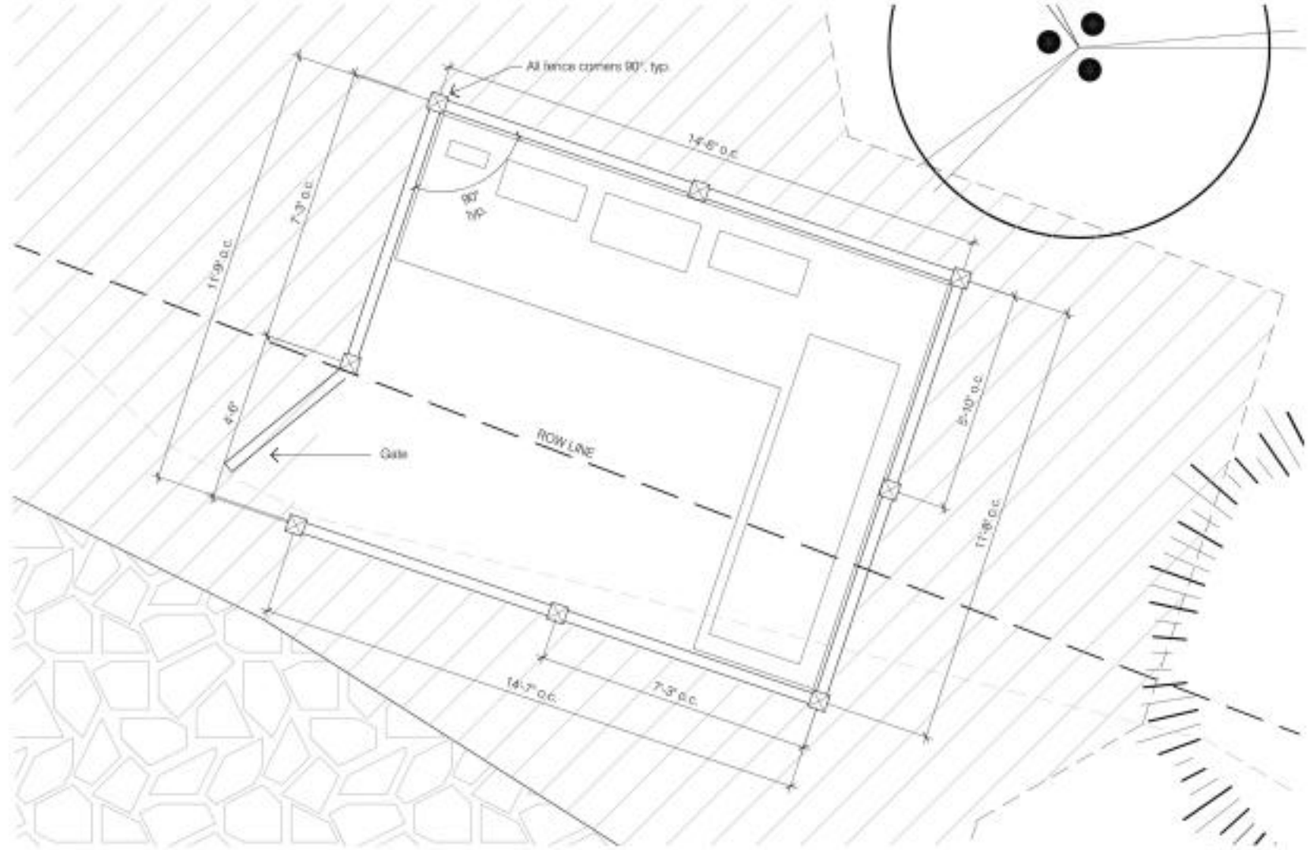
Lake Whatcom Water and Sewer District
2010 Sewer Pump Station Improvements
Afternoon Beach

LANDSCAPE PLANTING PLAN

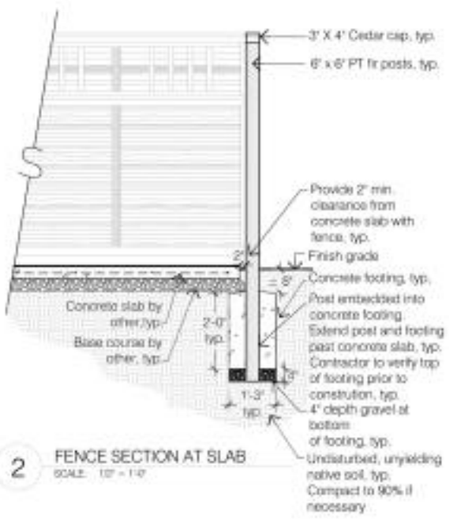
RH2 ENGINEERING, INC.
http://www.rh2.com
mailbox@rh2.com (360) 733-8152
BELLINGHAM
654 West Harbor Road

THE PHILBIN GROUP
LANDSCAPE ARCHITECTURE
1015 Railroad Ave. #101
Bellingham, WA 98225
(360) 671-3884

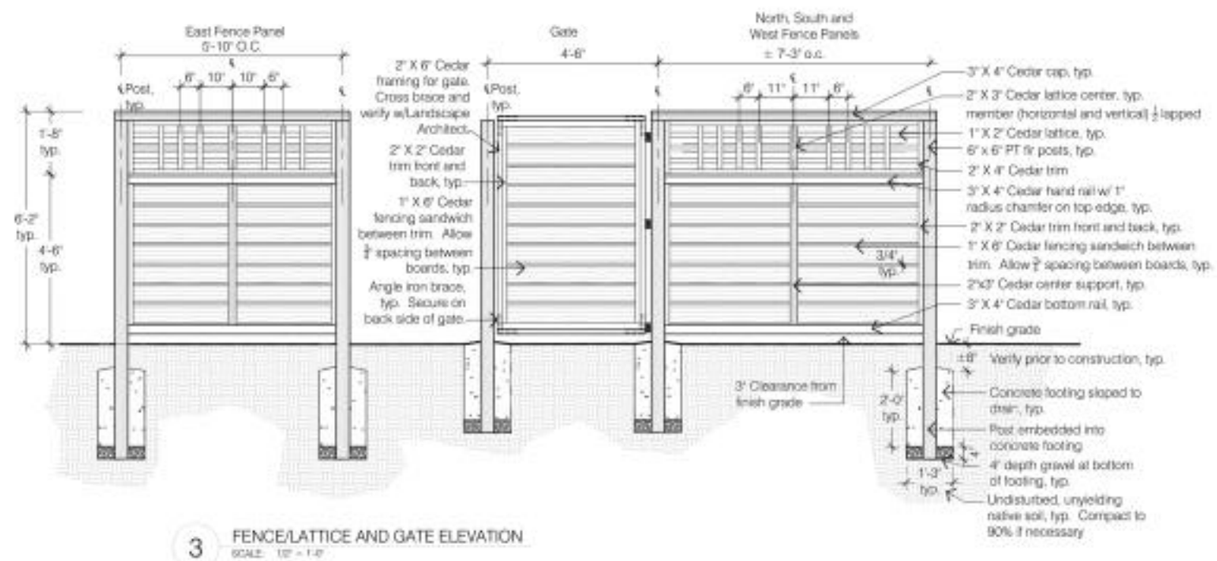
PLAN	DWG. NO.
DESIGNER: MW	LA 301
REVIEWED: MP	
DATE: 2-14-11	SHEET NO. 6
SCALE:	22
DR. NO.	
FILENAME:	



1 FENCE/LATTICE AND GATE LAYOUT PLAN
SCALE: 1/2" = 1'-0"



2 FENCE SECTION AT SLAB
SCALE: 1/2" = 1'-0"



3 FENCE/LATTICE AND GATE ELEVATION
SCALE: 1/2" = 1'-0"

STATE OF WASHINGTON REGISTERED LANDSCAPE ARCHITECT
MATT PHILBIN
CERTIFICATE NO. 723

LAKE WHATCOM WATER & SEWER DISTRICT

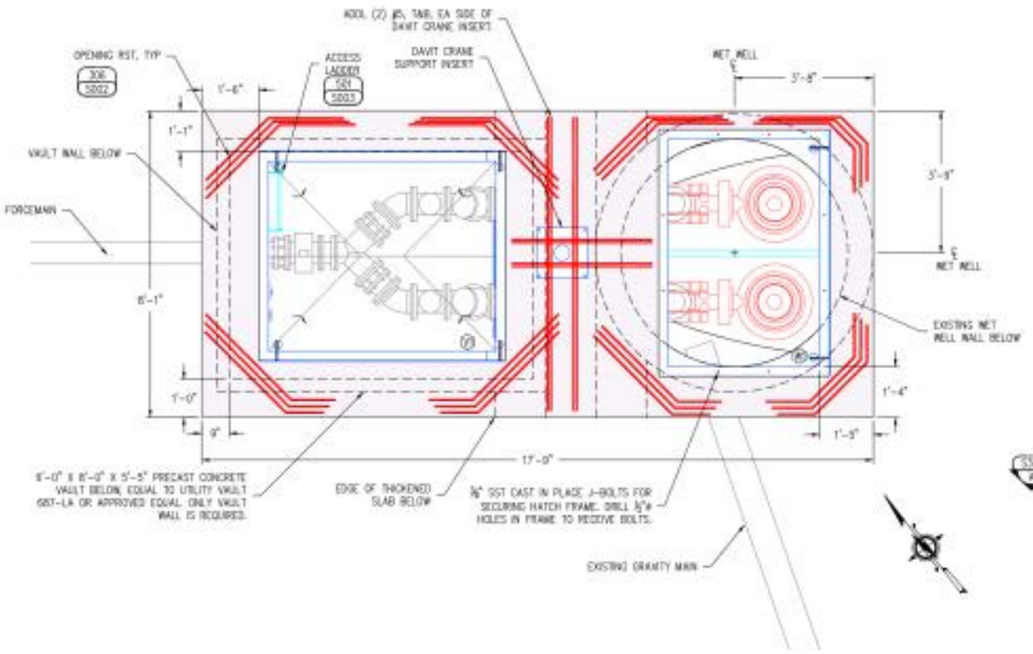
Lake Whatcom Water and Sewer District
2010 Sewer Pump Station Improvements
Afternoon Beach

LANDSCAPE DETAILS

RH2 ENGINEERING, INC.
http://www.rh2.com
mail@rh2.com (.509.720.8052
BELLINGHAM
654 West Harbor Road

THE PHILBIN GROUP
LANDSCAPE ARCHITECTURE
1015 Railroad Ave. #101
Bellingham, WA 98225

PLAN	DWG NO. LA 302
DRAWN: MJ	
REVIEWED: MP	
DATE: 1-14-11	SHEET NO. 7
SCALE:	
JOB NO.	
FILENAME:	



PROPOSED PUMP STATION STRUCTURAL PLAN

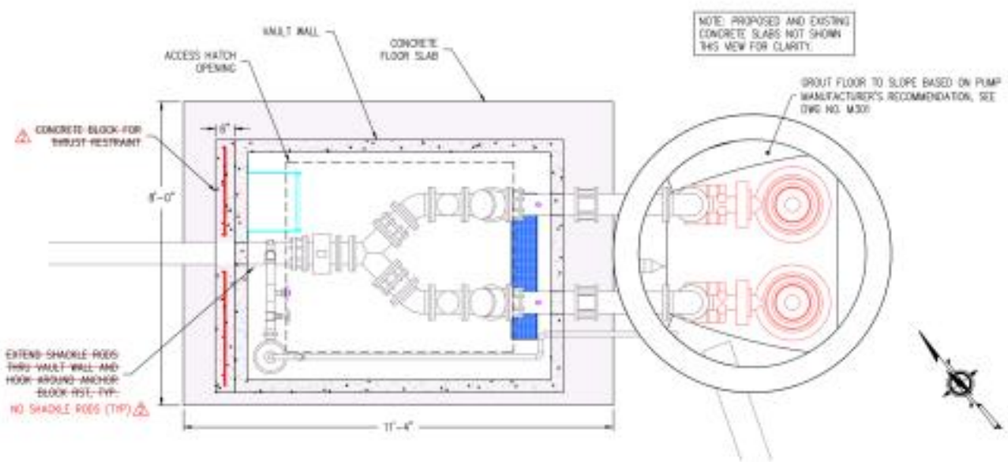
3/8" = 1'-0"

ACCESS HATCH SCHEDULE

NO.	CLEAR OPENING	NO. OF LEAVES	RATING	MOUNTING*	GRATING**	GASKET DOOR TIGHT / STANDARD
(W)	48"x72"	1	H-20	BOLTS	YES	DOOR TIGHT
(V)	60"x72"	2	H-20	ANCHOR	NO	STANDARD

ACCESS HATCH NOTES:
* ACCESS HATCH OVER WETWELL SHALL BE MOUNTED USING STAINLESS STEEL BOLTS AS SHOWN ON THIS PLAN. OTHER ACCESS HATCH SHALL BE MOUNTED USING THE STANDARD FRAME ANCHORS THAT COME WITH THE HATCH.

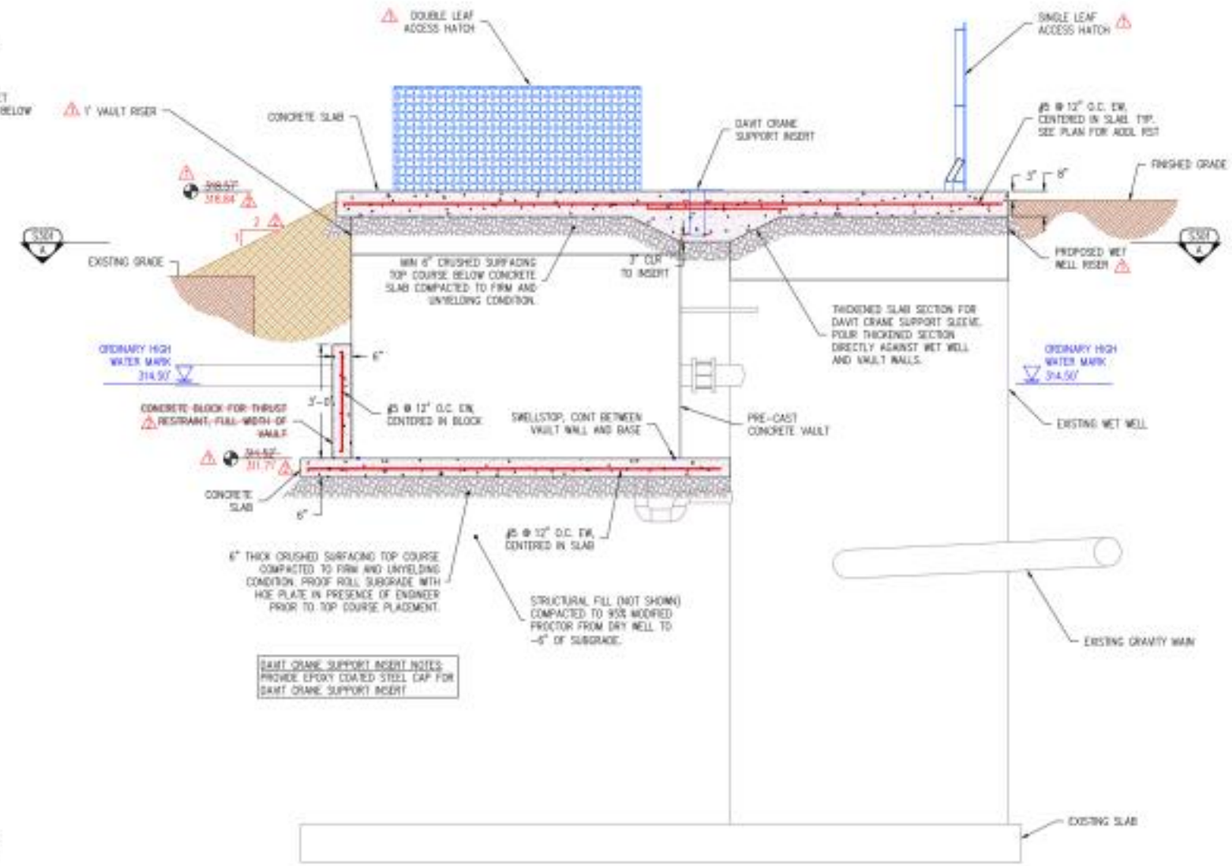
** ACCESS HATCH OVER WETWELL SHALL HAVE REMOVABLE GRATING COVER BELOW ACCESS HATCH LID.



NOTE: PROPOSED AND EXISTING CONCRETE SLABS NOT SHOWN THIS VIEW FOR CLARITY.

PROPOSED VAULT FLOOR PLAN

3/8" = 1'-0"



DAVIT CRANE SUPPORT INSERT NOTES:
PROVIDE EPOXY COATED STEEL CAP FOR DAVIT CRANE SUPPORT INSERT

PUMP STATION STRUCTURAL ELEVATION

3/8" = 1'-0"

REVISED TO CONFORM TO CONSTRUCTION RECORDS
RH2 ENGINEERING INC. 1129/11 DATE

DwgSerialID: 1480

NO.	REVISION	BY	REVIEW	DATE
2	REVISIONS PER CONSTRUCTION RECORDS	MJV	DWB	11/29/11
1	DISTRICT REVIEW COMMENTS	WMD	DWB	02/16/11

SIGNED: 02/16/11

SIGNED: 02/16/11

Lake Whatcom Water and Sewer District
2010 Sewer Pump Station Improvements
Afternoon Beach

PROPOSED STRUCTURAL PLAN

RH2 ENGINEERS PLANNERS CONSULTANTS

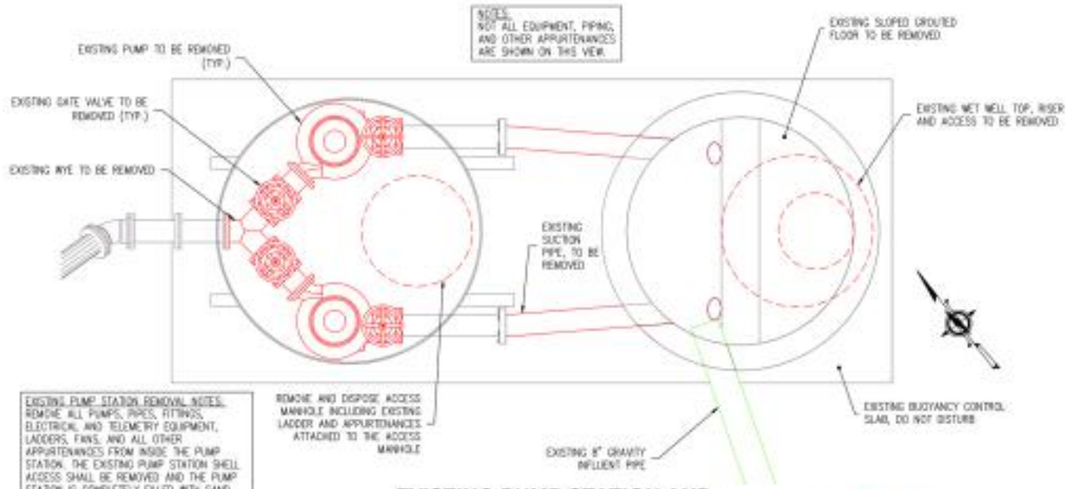
RH2 ENGINEERING, INC.
http://www.rh2.com
mail@rh2.com 1.800.720.7991
BELLINGHAM 360.676.1820
414 West Holly Road
BOTHELL 425.806.1400
22722 29th Drive SE, Suite 210
EAST WENATCHEE 509.886.2400
550 Simon Street, Suite 5
RICHLAND 509.946.9141
1141 Columbia Park Drive, Suite C
SILVERDALE 360.479.7990
2101 NW Mega Rd, Suite 101
TACOMA 253.475.2094
820 Pacific Avenue, Suite 404

SCALE: SHOWN
0 1" 2"
DRAWING IS NOT TO SCALE IF BAR IS NOT 2" LONG

DATE 24
DRAWN JC
REVIEWED KLE
DATE FEB 25, 2011
CLIENT LWWSD
JOB NO. 409-050
FILENAME 48-D-STR01

DWG NO. S301

SHEET NO. 8 / 25

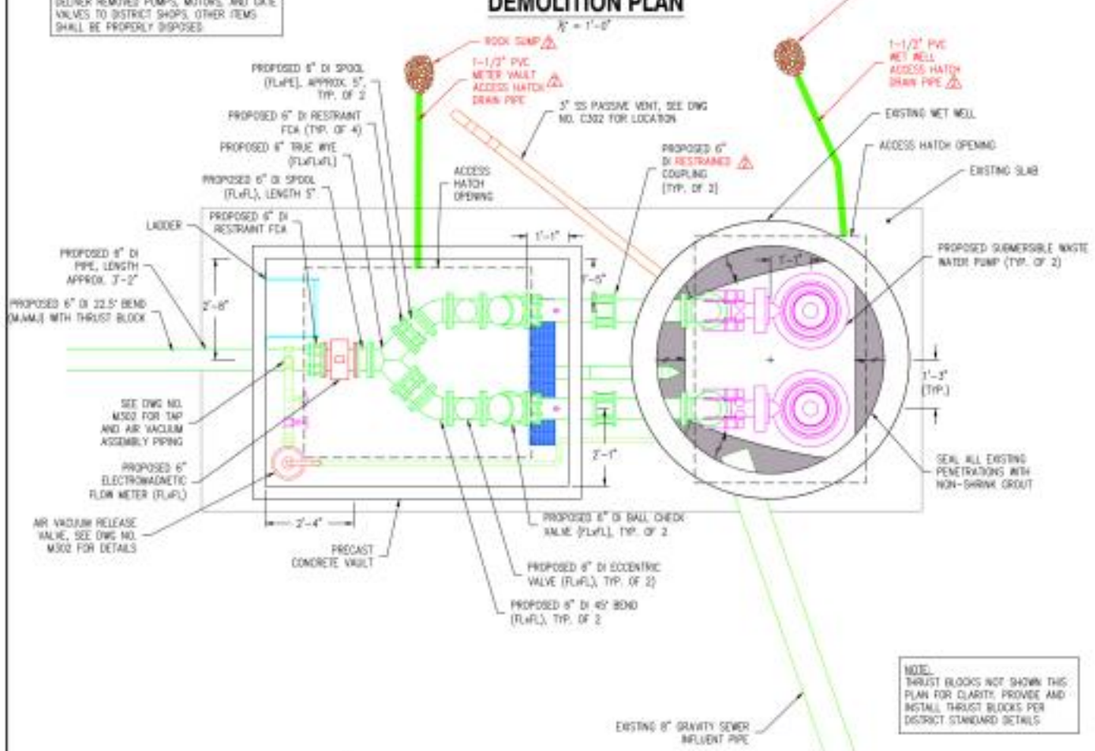


EXISTING PUMP STATION REMOVAL NOTES:
REMOVE ALL PUMPS, PIPES, FITTINGS, ELECTRICAL AND TELEMETRY EQUIPMENT, LADDERS, FANS, AND ALL OTHER APPURTENANCES FROM INSIDE THE PUMP STATION. THE EXISTING PUMP STATION SHELL ACCESS SHALL BE REMOVED AND THE PUMP STATION IS COMPLETELY FILLED WITH SAND SLURRY OR CDF.

DELIVER REMOVED PUMPS, MOTORS, AND GATE VALVES TO DISTRICT SHOPS. OTHER ITEMS SHALL BE PROPERLY DISPOSED.

EXISTING PUMP STATION AND DEMOLITION PLAN

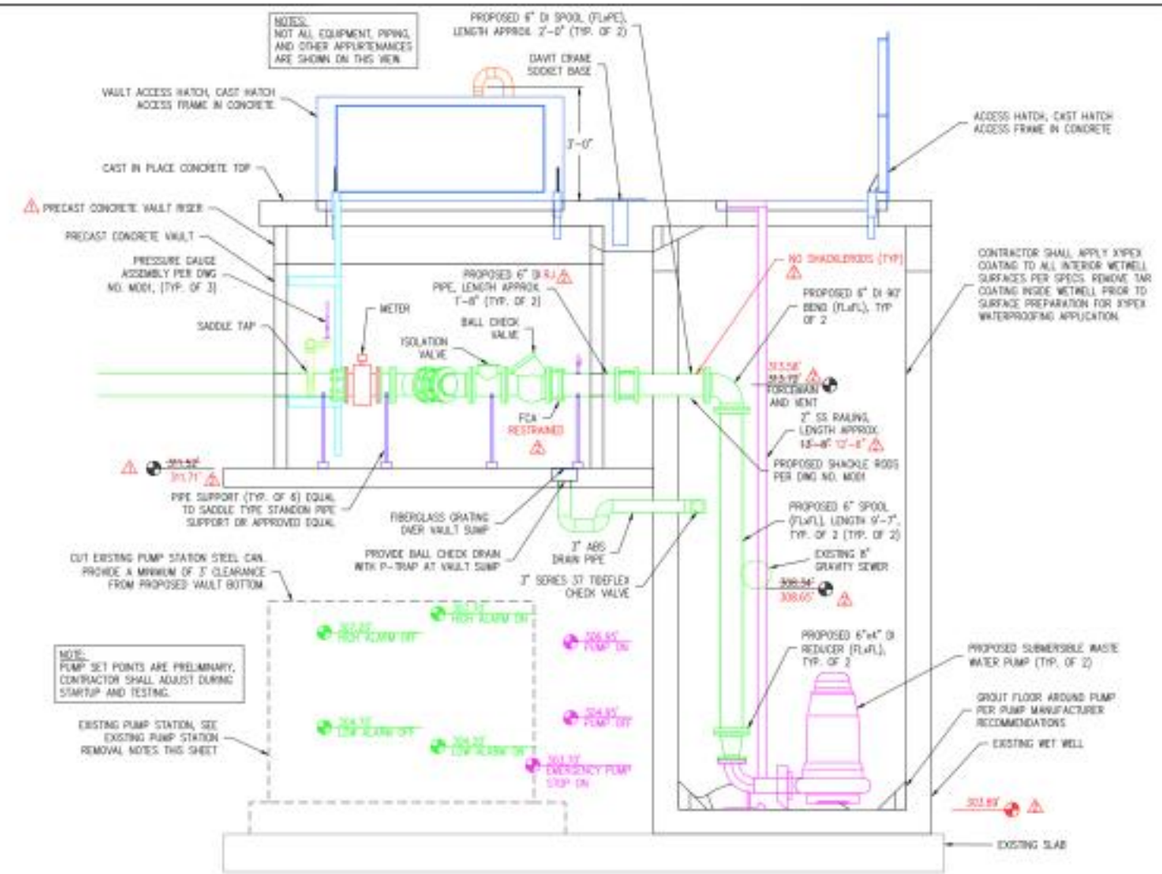
1/8" = 1'-0"



NOTE:
THRUST BLOCKS NOT SHOWN THIS PLAN FOR CLARITY. PROVIDE AND INSTALL THRUST BLOCKS PER DISTRICT STANDARD DETAILS

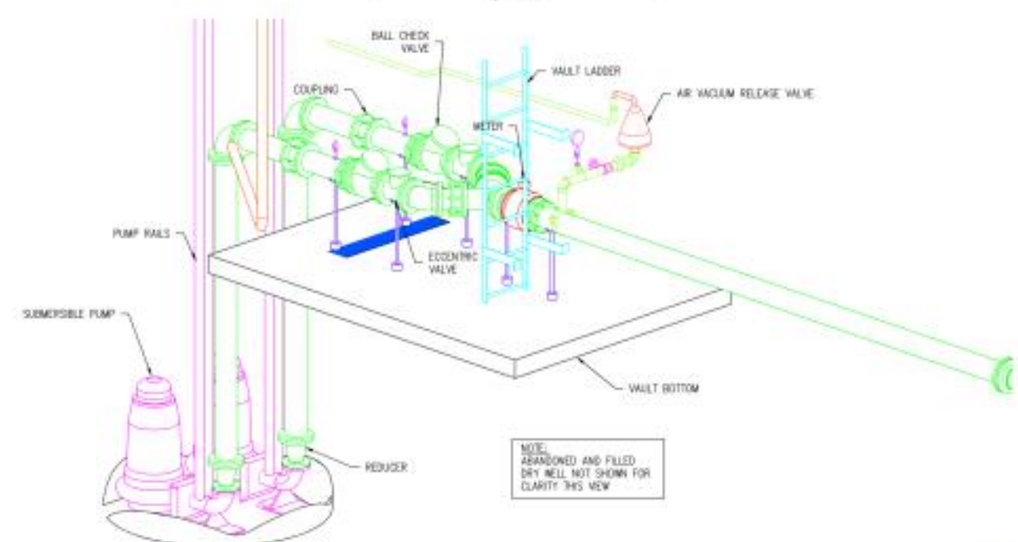
PROPOSED PUMP STATION MECHANICAL PLAN

1/8" = 1'-0"



PUMP STATION ELEVATION

1/8" = 1'-0"



NOTE:
ABANDONED AND FILLED DRY WELL NOT SHOWN FOR CLARITY THIS VIEW

PUMP STATION OBLIQUE

NOT TO SCALE

REVISED TO CONFORM TO CONSTRUCTION RECORDS
12/05/11
RH2 ENGINEERING INC. DATE

DwgSerialN: 1481

NO	REVISION	BY	REVIEW	DATE
2	REVISIONS PER CONSTRUCTION RECORDS	MJV	DWB	12/05/11
1	DISTRICT REVIEW COMMENTS	WMB	DWB	02/16/11

SIGNED: 02/16/11

SIGNED: 02/16/11

LAKE WHATCOM WATER & SEWER DISTRICT

Lake Whatcom Water and Sewer District
2010 Sewer Pump Station Improvements
Afternoon Beach

EXISTING AND PROPOSED MECHANICAL PLAN

RH2 ENGINEERS PLANNERS CONSULTANTS

RH2 ENGINEERING, INC.
http://www.rh2.com
mail@rh2.com · 1.800.720.7991

BELLINGHAM 360.676.0820
806 West Horton Road

BOTHELL 425.951.5400
22722 29th Drive SE, Suite 210

EAST WENATCHEE 509.886.6000
700 Simon Street, Suite 5

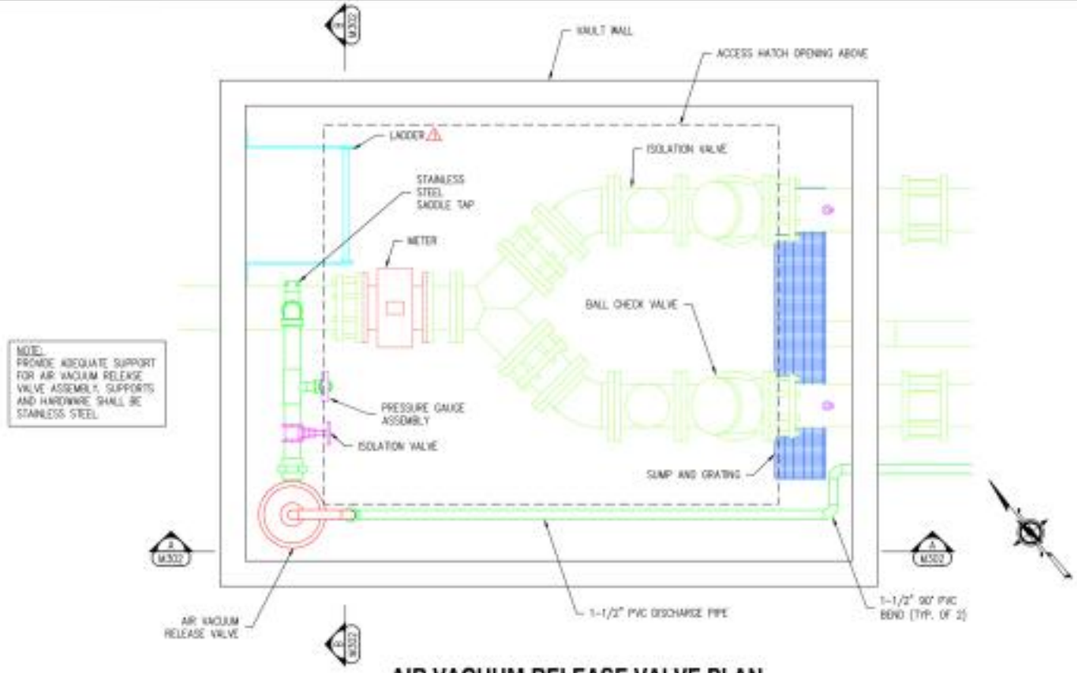
RICHLAND 509.946.9141
710 Columbia Point Drive, Suite C

SILVERDALE 360.979.7990
2021 NW Myhre Rd, Suite 101

TACOMA 253.475.0998
820 Pacific Avenue Suite 104

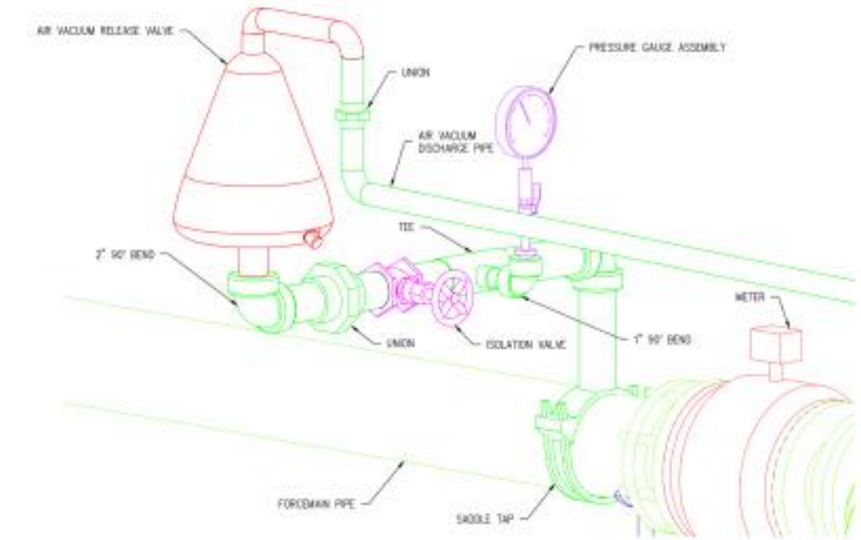
SCALE: SHOWN
0 1" 2"
DRAWING IS NOT TO SCALE IF BAR IS NOT 2" LONG

DATE 24	DWG NO. M301
DRAWN DH	
REVIEWED DWB	
DATE FEB 16, 2011	SHEET NO. 9
CLIENT LWWSD	25
JOB NO. 409-050	
FILENAME AB-D-WBC001	



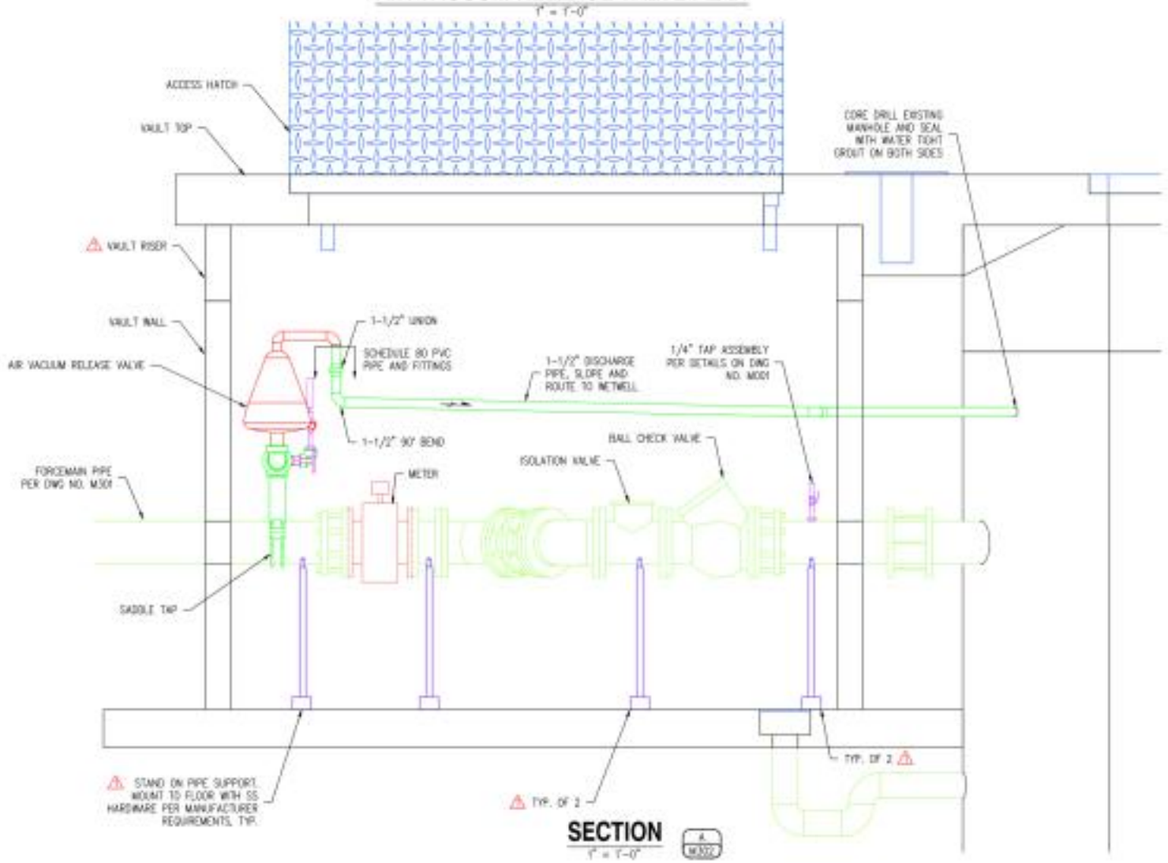
AIR VACUUM RELEASE VALVE PLAN

1" = 1'-0"



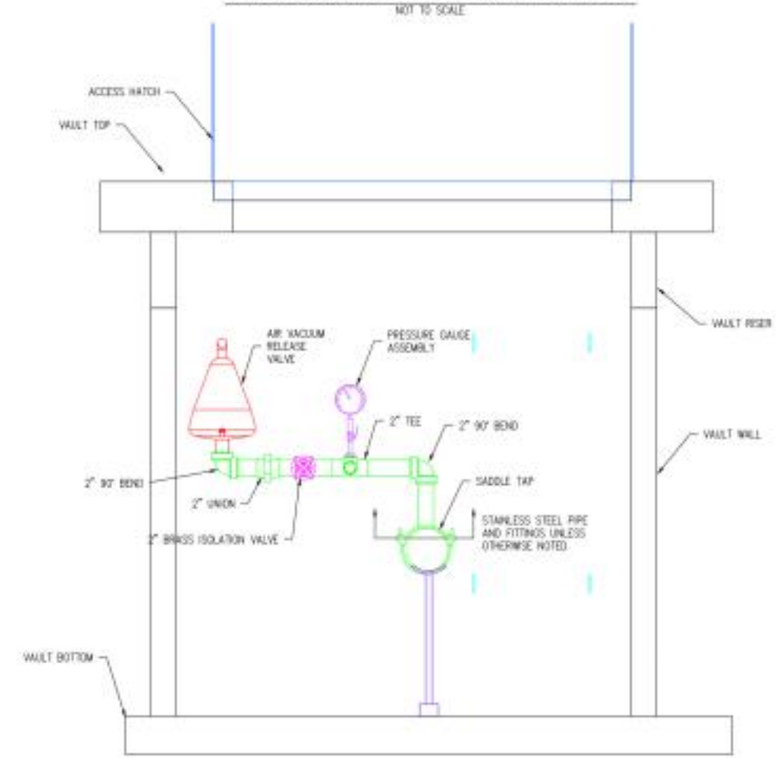
AIR VACUUM RELEASE VALVE OBLIQUE

NOT TO SCALE



SECTION

1" = 1'-0"



SECTION

1" = 1'-0"

REVISED TO CONFORM TO CONSTRUCTION RECORDS
RH2 ENGINEERING INC. 11/29/11 DATE

DwgSerial#: 1482

NO.	REVISION	BY	REVIEW	DATE
2	REVISIONS PER CONSTRUCTION RECORDS	MJV	DWB	12/05/11
1	DISTRICT REVIEW COMMENTS	MWB	DWB	02/16/11

SIGNED: 02/16/11

SIGNED: 02/16/11

LAKE WHATCOM WATER & SEWER DISTRICT

Lake Whatcom Water and Sewer District
2010 Sewer Pump Station Improvements
Afternoon Beach

AIR VACUUM RELEASE VAULT DETAILS

RH2 ENGINEERING, INC.
http://www.rh2.com
mail@rh2.com 1.800.720.7991

BELLINGHAM 360.676.0539
806 West Horton Road

BOTHELL 425.951.5400
22722 29th Drive SE, Suite 210

EAST WENATCHEE 509.886.6900
355 Tacoma Street, Suite 5

RICHLAND 509.946.9147
710 Columbia Point Drive, Suite C

SILVERDALE 360.979.7990
2021 NW Myhre Rd, Suite 107

TACOMA 253.475.6996
820 Pacific Avenue, Suite 408

SCALE SHOWN
0 1" 2"
DRAWING IS NOT TO SCALE IF BAR IS NOT 2" LONG

DATE 12	DWG NO. M302
DRAWN BJF	
REVIEWED DH	
DATE FEB 16, 2011	SHEET NO. 10
CLIENT LWWSD	
JOB NO. 409-050	25
FILENAME KB-D-MD203	

ONE-LINE DIAGRAM SYMBOLS

- CIRCUIT BREAKER
  - XXX/YY – CB SIZE & NO. OF POLES
  - ET – ELECTRONIC TRIP
  - TM – THERMAL MAGNETIC BREAKER
  - MCP – MOTOR CIRCUIT PROTECTOR
  - SE – SERVICE ENTRANCE
  - GF – GROUND FAULT INTERRUPTER
- FUSE
- FUSED DISCONNECT SWITCH
- PLUG-IN CONNECTION
- RTM – RUN TIME METER
- DC – MOTOR OPERATION COUNTER
- SSRVS – SOLID STATE REDUCED VOLTAGE STARTER
- VARIABLE FREQUENCY DRIVE
- MOTOR STARTER
- MOTOR STARTER W/ OPERATOR DEVICES
  - A – HAND-OFF-AUTO
  - B – OPERATIONAL COUNTER
  - C – RUN TIME METER
  - D – RUN LIGHT
  - E – FAIL LIGHT
  - F – EMERGENCY STOP
- K – KIRK KEY INTERLOCK
- POWER TRANSFORMER
- CONTROL POWER TRANSFORMER
- TRANSFORMER
- CURRENT TRANSFORMER
- VOLTAGE TRANSFORMER
- CONTACTOR
- CAPACITOR
- ENGINE GENERATOR
- GENERATOR CONNECTION RECEPTACLE
- SOLID NEUTRAL
- TB – TERMINAL BLOCK
- TVSS – TRANSIENT VOLTAGE SURGE SUPPRESSER
- TVSS – TRANSIENT VOLTAGE SURGE SUPPRESSER (ALTERNATIVE)

GROUNDING SYSTEM SYMBOLS

- GROUND
- METAL PIPE GROUND
- CONNECTION POINT, EXOTHERMIC WELD, CADWELD OR APPROVED EQUAL.
- GROUND ROD SIZED PER N.E.C. USE EXOTHERMIC WELD CONNECTION AT THE GROUND ROD.
- PIGTAIL, BARE COPPER, LENGTH AS REQUIRED, 8' MINIMUM.
- CONNECTION POINT, MECHANICAL, COMPRESSION TYPE.

ELECTRICAL SITE PLAN SYMBOLS

- UTILITY POLE AND GUY WIRE
- HH – MANHOLE OR HANDHOLE
- P – BURIED POWER VAULT OR MANHOLE
- T – TELEPHONE VAULT OR PEDESTAL
- F – FIBER OPTICS VAULT OR PEDESTAL
- LUMINARE
- PAD-MOUNT TRANSFORMER

PANELBOARDS, SWITCHES, AND EQUIPMENT

- SERVICE ENTRANCE, SWITCHGEAR, MOTOR CONTROL CENTER, OR PANELBOARD
- SURFACE MOUNTED PANELBOARD
- FLUSHED MOUNTED PANELBOARD
- XXX – FIELD CONTROL STATION WITH NEMA REQUIREMENTS.
  - N1 – NEMA 1
  - N3R – NEMA 3R
  - N4 – NEMA 4
  - N4SS – NEMA 4 STAINLESS STEEL
  - N4F – NEMA 4 FIBERGLASS
  - N6 – NEMA 6
  - N12 – NEMA 12 GASKETED
- EQUIPMENT MOUNTING STAND
- HEATER, WATTAGE NOTED
- EQUIPMENT CONNECTION
- M – SINGLE PHASE MOTOR, HORSEPOWER AS NOTED
- 100 – THREE PHASE MOTOR, HORSEPOWER AS NOTED
- HP – SINGLE PHASE MOTOR, HORSEPOWER AS NOTED
- ELECTRICAL PLUG
- DISCONNECT SWITCH
- F – FUSED DISCONNECT SWITCH
- COMBINATION MOTOR STARTER AND DISCONNECT SWITCH

RECEPTACLES AND JUNCTION BOX SYMBOLS

- J – CEILING JUNCTION BOX
- J – WALL JUNCTION BOX
- J – FLOOR JUNCTION BOX
- DUPLEX WALL RECEPTACLE , 120V
  - WP = WEATHERPROOF
  - G = GROUNDED
  - IG = ISOLATED GROUND
  - GF = GROUND FAULT INTERRUPTER
- DOUBLE DUPLEX
- SINGLE RECEPTACLE, 120V
- SINGLE RECEPTACLE, 240V
- DUPLEX FLOOR RECEPTACLE, 120V
- SPECIAL PURPOSE WALL RECEPTACLE, RATING AS NOTED
- CLOCK
- TV – TELEVISION
- TELEPHONE
- TELEPHONE/DATA WITH CABLE
- TELEPHONE/DATA WITHOUT CABLE

SWITCH OUTLETS

- S – STANDARD SWITCH, 120VAC, 20 AMP
- S 3WAY – 3-WAY SWITCH, 120VAC, 20 AMP
- S HOA – 3-POSITION SWITCH, 120VAC, 20 AMP, LABEL SWITCH POSITION HAND-OFF-MOTION OR PHOTO
- S DIE – SINGLE-POLE
- S 2 – DOUBLE-POLE
- S 3 – THREE WAY
- S 4 – FOUR WAY
- S D – DIMMER
- S P – PILOT-LIGHTED
- S K – KEY-OPERATED
- S LV – LOW VOLTAGE
- S M – MASTER
- PUSHBUTTON

LIGHTING FIXTURES/DEVICES

- FLUORESCENT FIXTURE
- WALL/CEILING MOUNTED FIXTURE
- EMERGENCY LIGHT WITH SELF CONTAINED BATTERY
- SURFACE OR PENDANT MOUNTED FIXTURE
- RECESSED FIXTURE
- MD – MOTION DETECTOR
- PC – PHOTO CONTROL CELL

FIRE SYSTEM SYMBOLS

- H – HEAT DETECTOR
- S – SMOKE DETECTOR
- D – FIRE ALARM DISPATCH STROBE ALARM
- A – FIRE ALARM AUDIBLE/VISUAL ALARM
- F – FIRE ALARM MANUAL PULL STATION

ADDITIONAL SYMBOLS

- S – SOUND SYSTEM SPEAKER
- V – SOUND SYSTEM VOLUME CONTROL
- B – DOORBELL

VALVE SYMBOLS

- PILOT VALVE SOLENOID
- VALVE
- CHECK VALVE
- CONTROL VALVE

PID FORMAT

- SUPERSCRIPT
  - W = MEASURED OR INITIATING VARIABLE
  - 1 = READOUT OR FUNCTION
  - 2 = MODIFIER
  - ABC = LOOP NUMBER
- XYZ / ABC – INSTRUMENT BUBBLE

ISA STANDARDS FOR P&ID

	1st LETTER (MEASURED OR INITIATING VARIABLE)	3rd LETTER (READOUT OR FUNCTION)	3rd LETTER (MODIFIER)
A	ANALYSIS	ALARM	
B	BURNER (FLAME)		(BACK)
C	COMMUNICATION	CONTROL	CLOSED
D	DENSITY	(DELTA)	
E	VOLTAGE		
F	FLOW		FAIL (FUSE)
G	GAS		GREEN BULB
H	HAND	MANUAL INDICATE	HIGH
	CURRENT (PROCESS)		
J	POWER (EQUIPMENT)		
K	TIME	CONTROL STATION LIGHT	
L	LEVEL		LOW
M	MOTION		MIDDLE
N	USERS CHOICE		
O	USERS CHOICE		OPEN
P	PRESSURE	(PRIMARY)	(PRESSURE)
Q	QUANTITY (EVENT)	TOTALIZE	
R	RADIATION (PROCESS)	RECORD	RED BULB
S	SPEED (SAFETY)	SWITCH	SOLENOID
T	TEMPERATURE	TRANSMITTER	(TRANSMITTER)
U	MULTI VARIABLE	MULTI FUNCTION VALVE	
V	VISCOSITY (DPT)		
W	WEIGHT		
X	UNCLASSIFIED		
Y	USERS CHOICE	RELAY (CONVERTER)	
Z	POSITION		

ABBREVIATIONS

- SPDT – SINGLE POLE, DOUBLE THROW
- SPST – SINGLE POLE, SINGLE THROW
- DPST – DOUBLE POLE, SINGLE THROW
- WP – WEATHER-PROOF
- GFI – GROUND FAULT INTERRUPT
- P – POWER
- C – CONTROL
- J – INSTRUMENTATION
- PC – POWER & CONTROL
- CJ – CONTROL & INSTRUMENTATION
- CKT. – CIRCUIT
- C.D. – CONDUIT DAILY
- N.L. – NIGHT LIGHT
- AL. – ALUMINUM
- CU. – COPPER

- HOA – HAND-OFF-AUTO SWITCH
- RTM – RUN TIME METER
- OC – OPERATION COUNTER
- MRI – MOTOR RUN INDICATION LIGHT
- SFIL – SEAL FAIL INDICATION LIGHT
- SFTR – SEAL FAIL TRIP RESET
- OTIL – OVER TEMPERATURE INDICATION LIGHT
- MOIL – MOTOR OVERLOAD INDICATION LIGHT
- HMI – HUMAN MACHINE INTERFACE

INDICATE TYPE BY LETTER

- V
- AH

INSTRUMENT METER

- A – AMMETER
- AH – AMPERE-HOUR
- PF – POWER FACTOR
- V – VOLTMETER
- VA – VOLT AMMETER
- VAR – VARMETER
- VARH – VARHOUR METER
- W – WATTMETER
- WH – WATTHOUR METER

RACEWAY LEGEND

SITE PLAN LEGEND

- P – PROPOSED POWER
- TEL – PROPOSED TELEPHONE
- TCM – PROPOSED INSTRUMENTATION
- FO – PROPOSED FIBER OPTICS

BUILDING OR FACILITY PLAN LEGEND

- 480 VOLT EXPOSED RACEWAY
- 480 VOLT WIRING CONCEALED, UNDERGROUND, EMBEDDED, OR CONCRETE ENCASED RACEWAY
- 120/208/240 VOLT EXPOSED RACEWAY
- 120/208/240V WIRING CONCEALED, UNDERGROUND, EMBEDDED, OR CONCRETE ENCASED RACEWAY
- CONTROL OR INSTRUMENTATION EXPOSED RACEWAY
- CONTROL OR INSTRUMENTATION, UNDERGROUND, EMBEDDED, OR CONCRETE ENCASED RACEWAY
- HOME RUN TO PANELBOARD OR AS INDICATED
- CONDUIT RUN, BROKEN AND CONTINUED SAME SHEET OR AS NOTED
- FLEXIBLE CONDUIT
- CONDUIT RUN, HATCH MARKS INDICATE NUMBER OF CONDUCTORS
- CALLOUT INDICATING CONDUIT SIZE, NUMBER AND SIZE OF WIRE. 3/4" GRC, 2-#12
- CALLOUT INDICATING CONDUIT PER SCHEDULE
- CONDUIT BENT UP OR TOWARD
- CONDUIT BENT DOWN OR AWAY
- CAPPED CONDUIT

PROJECT SPECIFIC ONE-LINE DIAGRAM INFORMATION

- EXISTING EQUIPMENT AND CONDUIT
- PROPOSED EQUIPMENT AND CONDUIT
- GROUNDING EQUIPMENT AND CONDUCTORS

ELECTRICAL & SIGNAL PLAN DEVICES

- SV – SOLENOID VALVE COIL
- MV – MOTORIZED VALVE COIL
- M – MOTOR
- FS – FLOOD SWITCH
- LS – LIMIT SWITCH
- PB – PANIC BUTTON
- T – THERMOSTAT SWITCH
- ZS KEY – INTRUSION SWITCH – KEY
- ZS – INTRUSION SWITCH
- MD – MOTION DETECTOR
- LT – LEVEL TRANSDUCER
- HE – HEATING ELEMENT
- PS – PRESSURE SWITCH
- PE – PRESSURE ELEMENT
- FE – FLOW ELEMENT
- AE – ANALYSIS ELEMENT

LADDER LOGIC SYMBOL LEGEND

- INDICATOR LIGHT – INDICATOR LIGHT; A – AMBER, G – GREEN, B – BLUE, R – RED, C – CLEAR, W – WHITE
- RELAY – XYZ 125 – RELAY; TR – Timed relay; CR – Control relay
- LIMIT SWITCH – LIMIT SWITCH, NORMALLY OPEN
- FLOAT SWITCH – FLOAT SWITCH, NORMALLY OPEN
- LIMIT SWITCH – LIMIT SWITCH, NORMALLY CLOSED
- FLOAT SWITCH – FLOAT SWITCH, NORMALLY CLOSED
- TIME DELAY CONTACT – TIME DELAY CONTACT, NORMALLY OPEN, TIME TO CLOSE
- PUSHBUTTON – PUSHBUTTON, NORMALLY CLOSED
- TIME DELAY CONTACT – TIME DELAY CONTACT, NORMALLY CLOSED, TIME TO OPEN
- PUSHBUTTON – PUSHBUTTON, NORMALLY OPEN
- TIME DELAY CONTACT – TIME DELAY CONTACT, NORMALLY OPEN, TIME TO OPEN
- THERMOSTAT – THERMO SWITCH, NORMALLY OPEN
- TIME DELAY CONTACT – TIME DELAY CONTACT, NORMALLY CLOSED, TIME TO CLOSE
- THERMOSTAT – THERMO SWITCH, NORMALLY CLOSED
- RELAY CONTACT, NC / RELAY CONTACT, NO – RELAY CONTACT, INSTANTANEOUS CHANGE
- FLOWSWITCH – FLOWSWITCH, NORMALLY OPEN
- PRESSURE SWITCH – PRESSURE SWITCH, NORMALLY OPEN
- FLOWSWITCH – FLOWSWITCH, NORMALLY CLOSED
- PRESSURE SWITCH – PRESSURE SWITCH, NORMALLY CLOSED
- 2 POLE SWITCH
- 3 POLE SWITCH

P&ID BUBBLE IDENTIFICATION CHART

EXISTING	FUNCTION
	INSTRUMENT IDENTIFICATION BUBBLE
	FIELD MOUNTED DEVICE OR INSTRUMENT
	FRONT PANEL MOUNTED INSTRUMENT OR DEVICE (LOCAL PANEL)
	BACK PANEL MOUNTED INSTRUMENT OR DEVICE (LOCAL PANEL)
	FRONT PANEL MOUNTED INSTRUMENT OR DEVICE (LAB ROOM PANEL)
	OPERATOR INTERFACE DISPLAY (LOCAL PANEL)
	OPERATOR INTERFACE DISPLAY (LAB ROOM PANEL)

GENERAL NOTES

1. THIS IS A STANDARD LEGEND. NOT ALL OF THE INFORMATION SHOWN ON THIS PAGE WILL APPEAR IN THIS SET OF PLANS.
2. THESE DRAWINGS, WITH THE EXCEPTION OF THE CONTROL PANEL LAYOUT DRAWINGS, ARE DIAGRAMMATIC ONLY; EXACT LOCATIONS OF ELECTRICAL EQUIPMENT SHALL BE DETERMINED IN THE FIELD BY THE CONTRACTOR. THE INSTALLATION OF ALL EQUIPMENT SHOWN ON THESE DRAWINGS OR DESCRIBED IN THE SPECIFICATIONS SHALL CONFORM TO THE REQUIREMENTS SET FORTH IN THE LATEST EDITIONS OF ALL APPLICABLE CODES AND UTILITY COMPANY STANDARDS. CONTACT THE UTILITY COMPANY REPRESENTATIVES AND VERIFY THEIR REQUIREMENTS.
3. NOTIFY THE ENGINEER IMMEDIATELY IF CONFLICTS IN EQUIPMENT LOCATIONS ARE DISCOVERED OR IF PROBLEMS ARISE DUE TO FIELD CONDITIONS, LACK OF INFORMATION OR ANY OTHER REASON. NO PAYMENT WILL BE MADE FOR CHANGES WHICH HAVE NOT BEEN REVIEWED AND APPROVED BY THE ENGINEER.

REVISED TO CONFORM TO CONSTRUCTION RECORDS
RH2 ENGINEERING INC. 11/29/11 DATE

DwgSerial#: 1483

NO	REVISION	BY	REVIEW	DATE
1	REVISIONS PER CONSTRUCTION RECORDS	MJV	DWB	12/05/11
2	DISTRICT REVIEW COMMENTS	MWB	DWB	02/16/11

SIGNED 02/16/11

SIGNED 02/16/11

LAKE WHATCOM WATER & SEWER DISTRICT

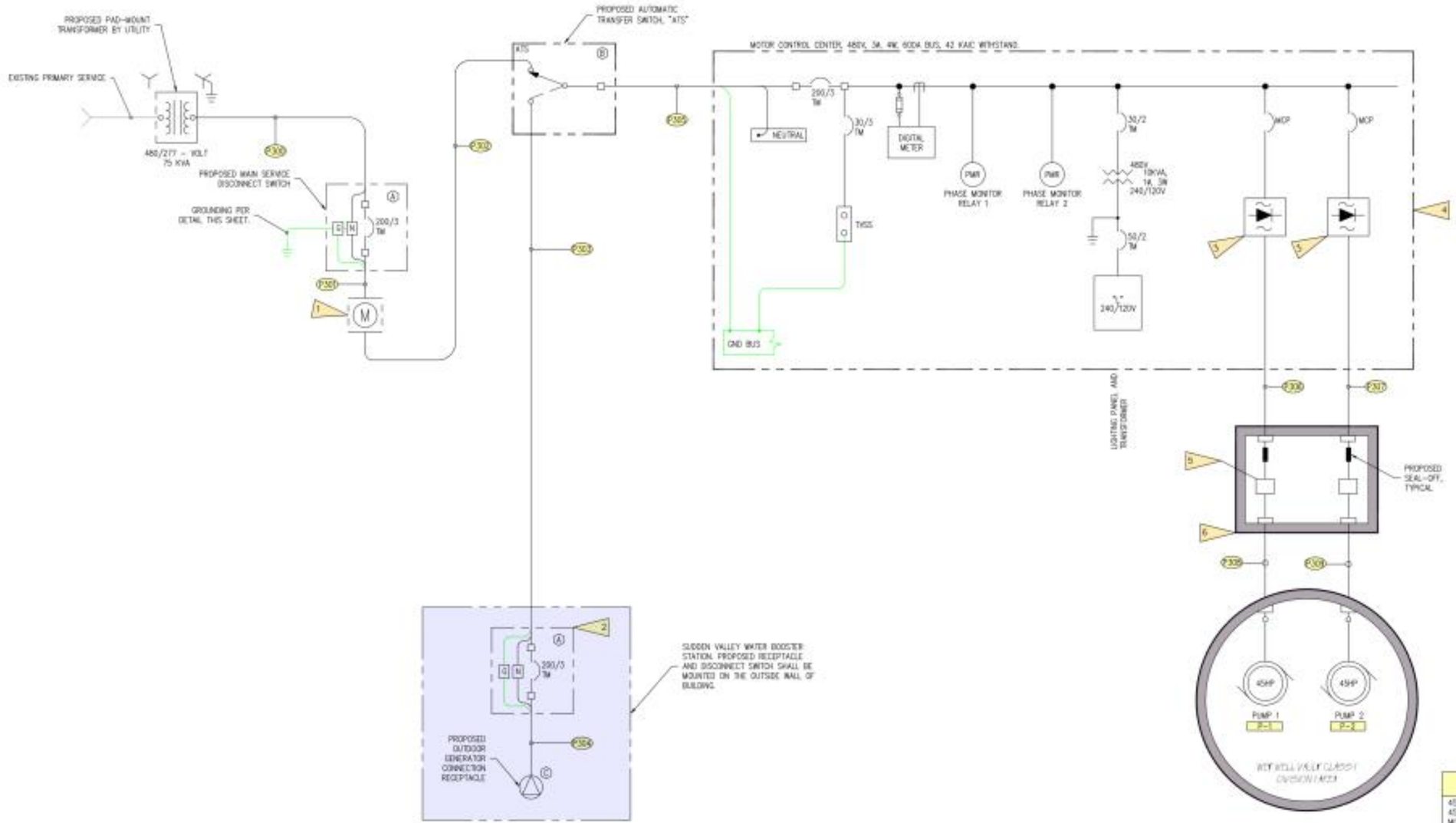
Lake Whatcom Water and Sewer District
2010 Sewer Pump Station Improvements
Afternoon Beach

ELECTRICAL LEGEND

RH2 ENGINEERING, INC.
BELLINGHAM
BOTHELL
EAST WENATCHEE
RICHLAND
SILVERDALE
TACOMA

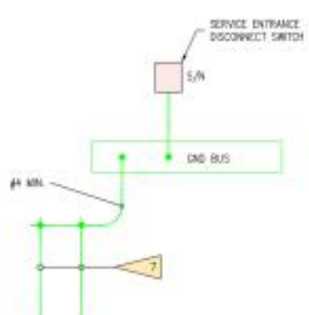
SCALE: SHOWN
0 1" 2"
DRAWING IS NOT TO SCALE IF BAR IS NOT 2" LONG

DWG NO. E301
SHEET NO. 11 OF 25
DATE FEB 16, 2011
JOB NO. 409-050
FILENAME KB-D-ELEC01



ONE-LINE DIAGRAM

NO SCALE



GROUNDING

NO SCALE

STATION LOAD CALCULATIONS

45 HORSEPOWER MOTOR	52.8A X 1.25 = 66 AMPS
45 HORSEPOWER MOTOR	52.8A X 1.00 = 52.8 AMPS
MISC. STATION LOAD (19KVA)	20.8A X 1.00 = 20.8 AMPS
TOTAL	139.6 AMPS

ELECTRICAL NOTES

1. PROPOSED SELF-CONTAINED MAIN REVENUE METERING. METER BASE AND ENCLOSURE BY CONTRACTOR PER SERVING UTILITY REQUIREMENTS. METER BY PUGET SOUND ENERGY.
2. PROPOSED OUTDOOR GENERATOR CONNECTION RECEPTACLE DISCONNECT SWITCH IN A NEMA 4X STAINLESS STEEL ENCLOSURE.
3. SEE DIAGRAM 1 ON DWG NO. E309 FOR MOTOR CONTROL LOGIC.
4. PROPOSED NEMA 3R OUTDOOR MOTOR CONTROL CENTER.
5. WATERPROOF SPLICE. SEE DETAIL ON DWG NO. E308 (TYPICAL).
6. VALVE VAULT. SEE DWG NO. E304 FOR MORE INFORMATION.
7. (2) - 5/8" X 8' COPPER GROUND RODS SPACED APART AS SHOWN ON DWG NO. E304 POWER DISTRIBUTION AND SIGNAL PLAN.
8. SEE DWG NO. E310 FOR ELECTRICAL EQUIPMENT AND INSTRUMENTATION SCHEDULE.
9. SEE DWG NO. E310 FOR CONDUIT/CONDUCTOR SCHEDULES.

REVISED TO CONFORM TO CONSTRUCTION RECORDS
RH2 ENGINEERING INC. 11/29/11 DATE

DwgSerialN: 1484

NO.	REVISION	BY	REVIEW	DATE
2	REVISIONS PER CONSTRUCTION RECORDS	MJV	DWB	12/05/11
1	DISTRICT REVIEW COMMENTS	MMB	DWB	02/16/11

SIGNED 02/16/11

SIGNED 02/16/11

LAKE WHATCOM WATER & SEWER DISTRICT

Lake Whatcom Water and Sewer District
2010 Sewer Pump Station Improvements
Afternoon Beach

ONE-LINE DIAGRAM

RH2 ENGINEERING, INC.
http://www.rh2.com
mailbox@rh2.com 1.800.720.7991
BELLINGHAM 360.676.0539 1014 West Horton Road
BOTHELL 425.951.5400 22722 29th Drive SE, Suite 210
EAST WENATCHEE 509.886.2800 100 Tacoma Street, Suite 5
RICHLAND 509.946.9147 114 Columbia Point Drive, Suite C
SILVERDALE 360.979.7990 2021 NW Myhre Rd, Suite 107
TACOMA 253.475.2996 820 Pacific Avenue, Suite 408

SCALE: SHOWN
0 1" 2"
DRAWING IS NOT TO SCALE IF BAR IS NOT 2" LONG

SHEET 1	DWG NO. E302
DRAWN BY	
REVIEWED DWB	
DATE FEB 16, 2011	SHEET NO. 12
CLIENT LWWSD	OF 25
JOB NO. 409-050	
FILENAME 409-D-ELEC01	

PROPOSED TELEPHONE SERVICE. INTERCEPT EXISTING TELEPHONE SERVICE AT EXISTING TELEPHONE INTERFACE LOCATED ON WOOD POST. WOOD POST TO BE REMOVED. PROVIDE AND INSTALL RACEWAY FOR EXTENDING TELEPHONE SERVICE TO PROPOSED ELECTRICAL EQUIPMENT PEDESTAL. PROVIDE AND INSTALL RACEWAY PER TELEPHONE UTILITY REQUIREMENTS. TELEPHONE UTILITY SHALL INSTALL TELEPHONE WIRE IN PROPOSED RACEWAY AND RELOCATE TELEPHONE EQUIPMENT TO PROPOSED ELECTRICAL EQUIPMENT PEDESTAL. PROVIDE TRENCHING, BACKFILL, AND RESTORATION FOR INSTALLATION OF PROPOSED TELEPHONE SERVICE.

EXISTING ELECTRICAL EQUIPMENT MOUNTED ON 8"X8" WOOD POST TO BE REMOVED. SEE PHOTO "B" THIS SHEET.

PROPOSED PRIMARY POWER EXTENSION. ELECTRICAL UTILITY SHALL EXTEND EXISTING PRIMARY POWER TO PROPOSED PAD-MOUNT TRANSFORMER VAULT AFTER REMOVAL OF EXISTING TRANSFORMER VAULT. ELECTRICAL UTILITY SHALL PROVIDE RACEWAY AND CONDUCTORS. CONTRACTOR SHALL PROVIDE TRENCHING, BACKFILL, AND RESTORATION.

EXISTING TRANSFORMER VAULT TO BE REMOVED BY ELECTRICAL UTILITY. CONTRACTOR SHALL PROVIDE EXCAVATION AND RESTORATION FOR REMOVAL OF TRANSFORMER VAULT.

EXISTING 240 V, 3ϕ TRANSFORMERS LOCATED INSIDE VAULT TO BE REMOVED BY ELECTRICAL UTILITY.

PROPOSED SEWER PUMP STATION

PROPOSED SECONDARY POWER SERVICE

TELEPHONE SERVICE INTERCEPTED IN DIRECTION INDICATED

PROPOSED ELECTRICAL EQUIPMENT PEDESTAL AND COVER. SEE DETAILS ON DWG NO. E305.

EXISTING PRIMARY POWER LINE

EXISTING TELEPHONE LINE

CENTERLINE OF CONDUITS 300 AND 302

MORNING BEACH DRIVE

EXISTING PRIMARY POWER SWITCH

PROPOSED SIGNAL HANDHOLE. SEE DETAIL ON DWG NO. E308.

PROPOSED POWER HANDHOLE. SEE DETAIL ON DWG NO. E308.

CONDUIT CROSSING. SEE NOTES THIS SHEET

WATER BOOSTER STATION AND GENERATOR BUILDING

EXISTING PAD-MOUNT TRANSFORMER FOR EXISTING WATER PUMP STATION. DO NOT DISTURB

PROPOSED LOCATION OF GENERATOR CONNECTION RECEPTACLE AND DISCONNECT SWITCH. CONTRACTOR SHALL MOUNT PROPOSED RECEPTACLE TO EXISTING WALL. SEE PHOTO "A" THIS SHEET.

STUB-UP PROPOSED CONTROL AND INSTRUMENTATION CONDUITS BELOW PROPOSED RECEPTACLE. SEE DETAIL ON DWG NO. E307.

EXISTING SIDEWALK PANELS TO BE REMOVED AND RESTORED AS NECESSARY FOR INSTALLATION OF PROPOSED CONDUITS.

CONDUIT CROSSING NOTES:
CONTRACTOR SHALL COMPLETE CROSSING OF ACCESS ROAD WITHIN ONE WORKING DAY. CONTRACTOR SHALL MINIMIZE DELAY AND ACCESS AS MUCH AS POSSIBLE TO ALLOW ACCESS TO PARK FACILITES AND DISTRICT FACILITIES. TEMPORARY PATCHING SHALL BE IN PLACE OR STEEL PLATES PLACED TO MAINTAIN ACCESS AT ALL TIMES.

ELECTRICAL NOTES

1. PROPOSED PAD-MOUNT TRANSFORMER PROVIDED AND INSTALLED BY ELECTRICAL UTILITY. CONTRACTOR SHALL PROVIDE EXCAVATION AND RESTORATION FOR INSTALLING PROPOSED TRANSFORMER VAULT. ELECTRICAL UTILITY SHALL TERMINATE CONDUCTORS ON PRIMARY AND SECONDARY SIDE OF TRANSFORMER.
2. CENTERLINE OF CONDUITS 300 AND 302.
3. CENTERLINE OF CONDUITS 300, 302, AND 301.
4. SEE DWG NO. E310 FOR CONDUIT/CONDUCTOR SCHEDULES.

ELECTRICAL SITE PLAN

1" = 20'

REVISED TO CONFORM TO CONSTRUCTION RECORDS
RH2 ENGINEERING INC. 12/05/11 DATE

MOUNT PROPOSED DISCONNECT SWITCH AND GENERATOR CONNECTION RECEPTACLE TO EXISTING BUILDING WALL. MOUNT TOP OF RECEPTACLE 5'-0" ABOVE GRADE. MOUNT TOP OF DISCONNECT SWITCH 6'-0" ABOVE GRADE.

WATER PUMP STATION BUILDING EXTERIOR

EXISTING SIDEWALK. CONTRACTOR SHALL REMOVE EXISTING SIDEWALK PANELS AS NECESSARY FOR INSTALLING PROPOSED CONDUITS. CONTRACTOR SHALL RESTORE EXISTING SIDEWALK AFTER INSTALLATION OF PROPOSED CONDUITS.

GENERATOR CONNECTION RECEPTACLE LOCATION

A

NO SCALE

EXISTING WOOD POST TO BE REMOVED.

EXISTING MANUAL TRANSFER SWITCH TO BE REMOVED

EXISTING UTILITY METER TO BE REMOVED

EXISTING FUSED DISCONNECT SWITCH TO BE REMOVED

EXISTING GRYNELL

EXISTING TELEPHONE INTERFACE TO BE REMOVED. EXISTING TELEPHONE SERVICE TO BE REROUTED TO PROPOSED ELECTRICAL EQUIPMENT PEDESTAL

EXISTING TRANSFORMER VAULT TO BE REMOVED AND REPLACE WITH A PAD-MOUNT TRANSFORMER.

EXISTING ELECTRICAL EQUIPMENT

B

NO SCALE

SIGNED: 01/05/11

SIGNED: 01/05/11

LAKE WHATCOM WATER & SEWER DISTRICT

Lake Whatcom Water and Sewer District
2010 Sewer Pump Station Improvements
Afternoon Beach

ELECTRICAL SITE PLAN

RH2 ENGINEERS PLANNERS CONSULTANTS

RH2 ENGINEERING, INC.
1952 C Street NE Loop
mail@rh2.com 1.800.720.3311

BELLINGHAM 360.676.1820
414 West Holly Road

BOTHELL 425.881.9400
22722 29th Drive SE, Suite 210

EAST WENATCHEE 509.886.2400
550 Simon Street, Suite 5

RICHLAND 509.946.9141
1141 Columbia Park Drive, Suite C

SILVERDALE 360.479.7990
2021 NW Mapes Rd, Suite 101

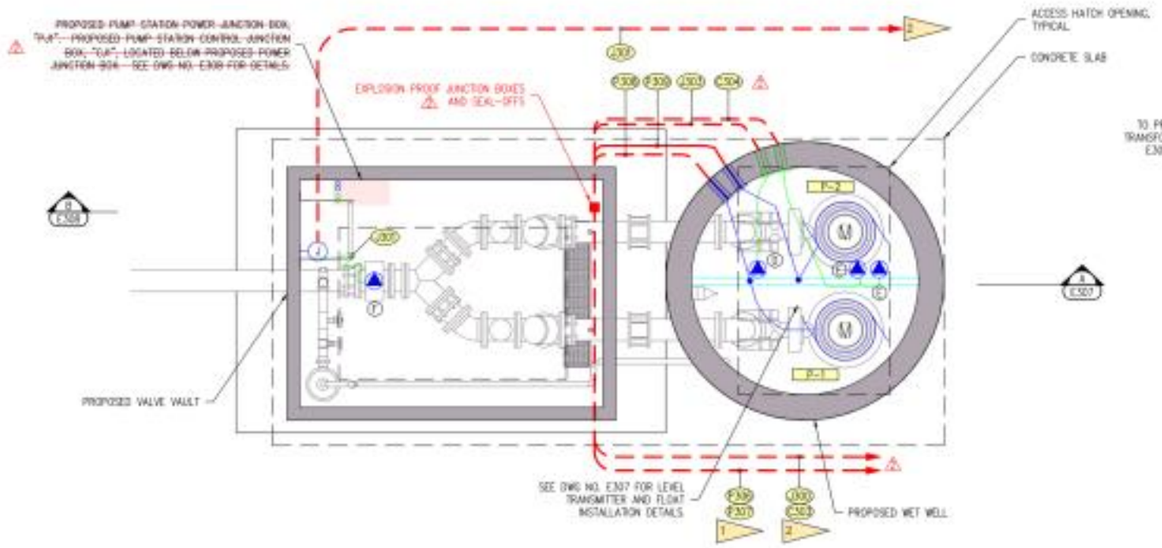
TACOMA 253.475.2094
820 Pacific Avenue, Suite 816

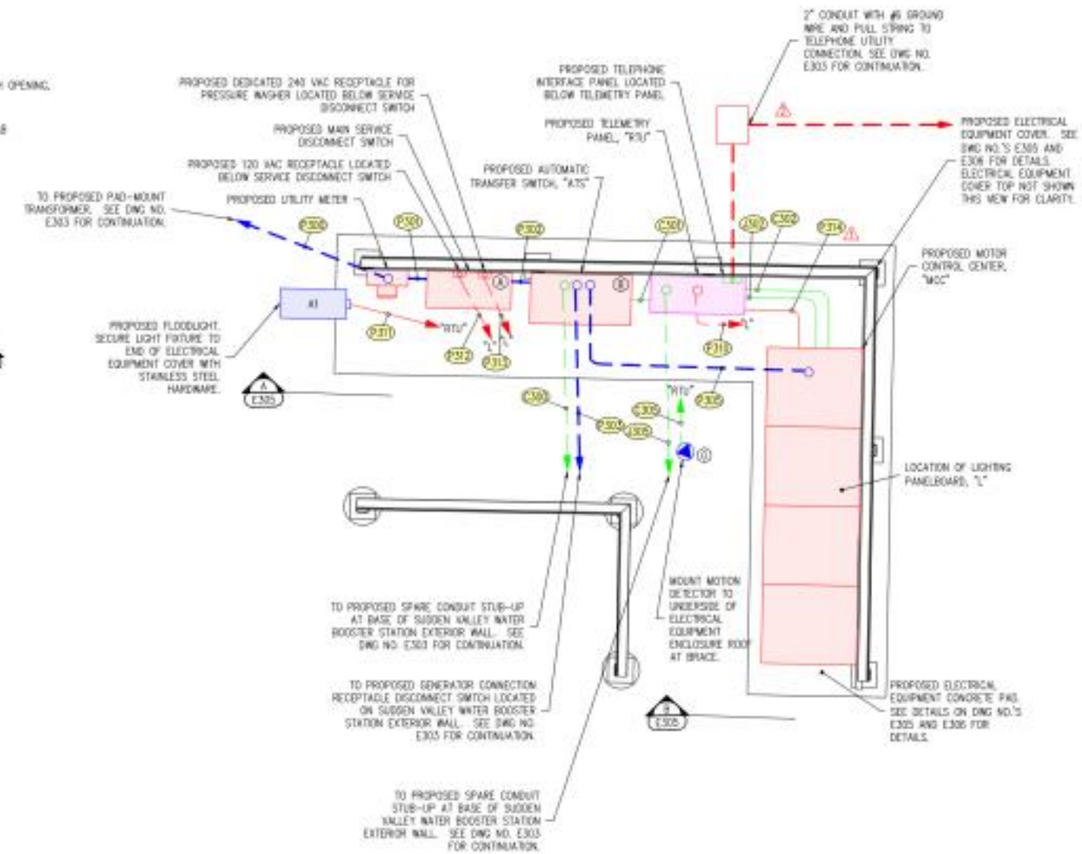
SCALE: SHOWN
0 1" 2"
DRAWING IS NOT TO SCALE IF BAR IS NOT 2" LONG

Job: 20	DWG NO: E303
DRAWN: DTF	
REVIEW: CMR	
DATE: FEB 16, 2011	SHEET NO: 13 / 25
CADD: LINWSD	
JOB NO: 409-050	
FILENAME: 409-D-ELEC02	

DwgSerialN: 1485

NO.	REVISION	BY	REVIEW	DATE
1	REVISIONS PER CONSTRUCTION RECORDS	MJV	DWB	12/05/11
0	DISTRICT REVIEW COMMENTS	MMB	DWB	02/16/11





AFTERNOON BEACH - PUMP STATION POWER DISTRIBUTION AND SIGNAL PLAN

1/4" = 1'-0"

ELECTRICAL NOTES	
1	1. TO PROPOSED MOTOR CONTROL CENTER, "MCC". SEE DWG NO. E303 FOR CONDUIT CONTINUATION.
2	2. TO TELEMETRY PANEL, "RTU". SEE DWG NO. E303 FOR CONDUIT CONTINUATION.
XXX	3. SEE DWG NO. E310 FOR CONDUIT/CONDUCTOR SCHEDULES.
X	4. SEE DWG NO. E310 FOR ELECTRICAL EQUIPMENT AND INSTRUMENTATION SCHEDULE.

REVISED TO CONFORM TO CONSTRUCTION RECORDS
RH2 ENGINEERING INC. 11/29/11 DATE

DwgSerial# 1486

NO	REVISION	BY	REVIEW	DATE
2	REVISIONS PER CONSTRUCTION RECORDS	MJV	DWB	12/05/11
1	DISTRICT REVIEW COMMENTS	MMD	DWB	02/16/11

SIGNED 02/16/11

SIGNED 02/16/11

LAKE WHATCOM WATER & SEWER DISTRICT

Lake Whatcom Water and Sewer District
2010 Sewer Pump Station Improvements
Afternoon Beach

PUMP STATION ELECTRICAL PLAN

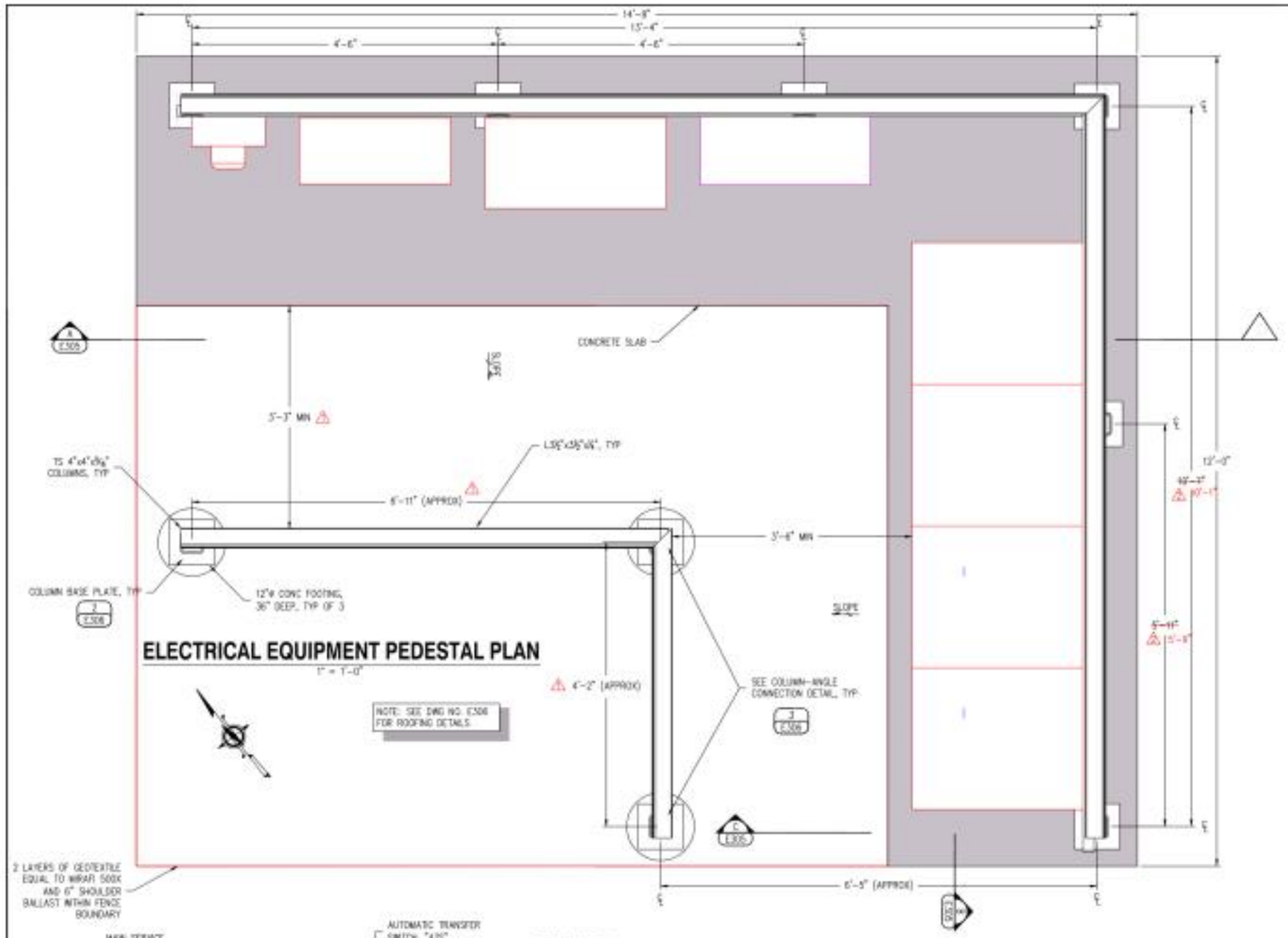
RH2 ENGINEERING, INC.
http://www.rh2.com
mailbox@rh2.com 1.800.720.7991
BELLINGHAM 360.676.0539 1014 West Horton Road
BOTHELL 425.951.5400 22722 29th Drive SE, Suite 210
EAST WENATCHEE 509.886.2800 550 Simon Street, Suite 5
RICHLAND 509.946.9147 114 Columbia Point Drive, Suite C
SILVERDALE 360.979.7990 2021 NW Myhre Rd, Suite 107
TACOMA 253.475.2998 820 Pacific Avenue, Suite 508

SCALE: SHOWN
0 1" 2"
DRAWING IS NOT TO SCALE IF BAR IS NOT 2" LONG

SHEET	48
DRAWN BY	DWB
REVIEWED	MJM
DATE	FEB 16, 2011
CLIENT	LWWSD
JOB NO.	409-050
FILENAME	48-D-ELEC03

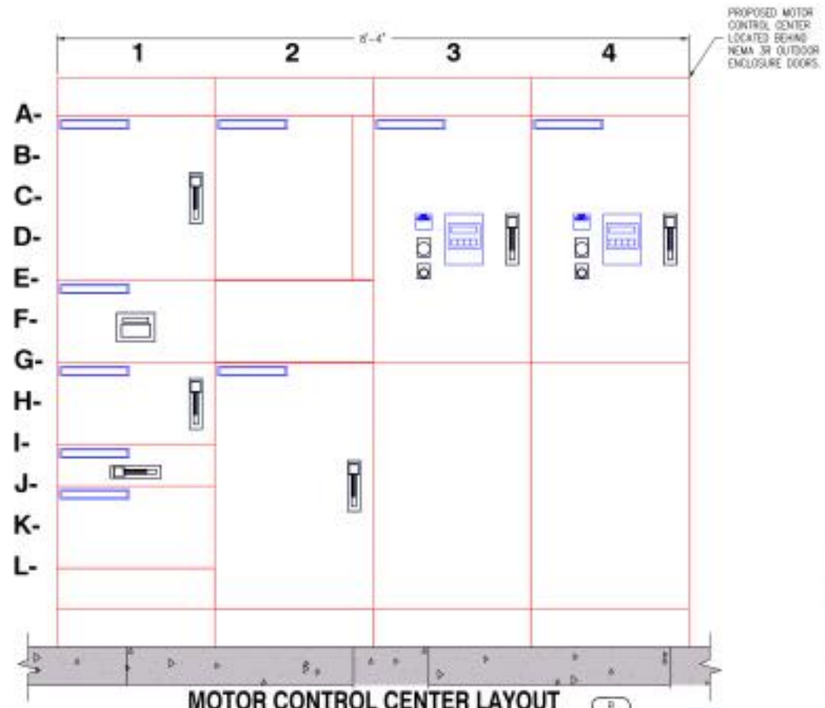
DWG NO. E304

SHEET NO. 14 / 25



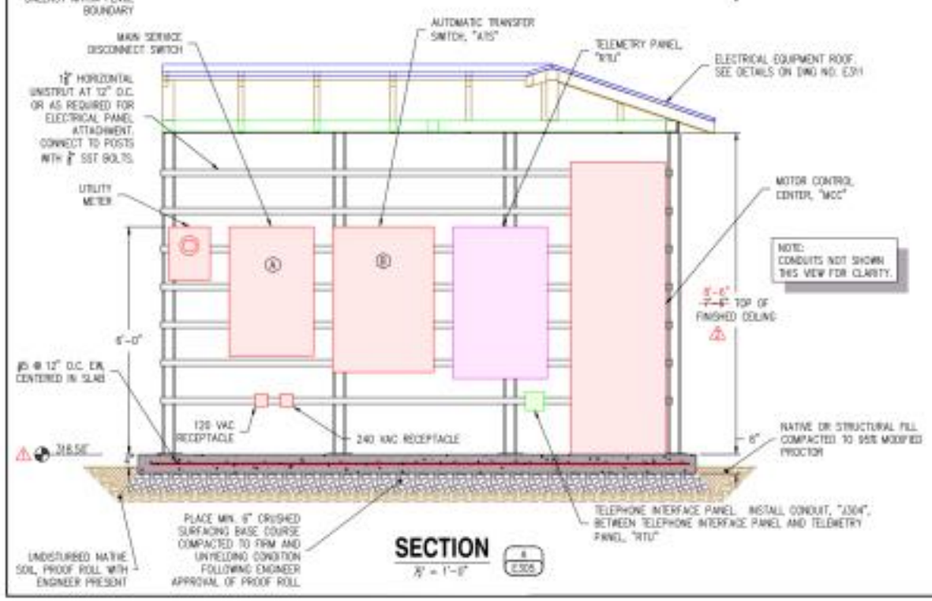
ELECTRICAL EQUIPMENT PEDESTAL PLAN

1" = 1'-0"



MOTOR CONTROL CENTER LAYOUT

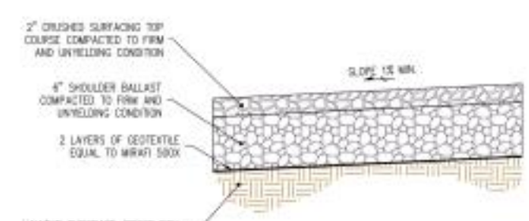
1" = 1'-0"



SECTION

¼" = 1'-0"

MCC CONTROL DEVICES	
MCC SECTION	NAMEPLATE SCHEDULE
1A	MCC MAIN DISCONNECT
1E	POWER MONITOR
1G	SURGE PROTECTIVE DEVICE DISCONNECT
1I	SURGE PROTECTIVE DEVICE
1J	PHASE MONITOR RELAY
2A	LIGHTING PANELBOARD, "L"
2G	LIGHTING TRANSFORMER
3A	PUMP NO. 1, P-1 ELAPSED TIME (HOURS) EMERGENCY STOP OVERTEMP ALARM RESET
4A	PUMP NO. 2, P-2 ELAPSED TIME (HOURS) EMERGENCY STOP OVERTEMP ALARM RESET



WALKING SURFACE SECTION

NTS

REVISED TO CONFORM TO CONSTRUCTION RECORDS
RH2 ENGINEERING INC. 11/29/11 DATE

Dwg/Serial#: 1487

NO	REVISION	BY	REVIEW	DATE
2	REVISIONS PER CONSTRUCTION RECORDS	MJV	DWB	12/06/11
1	DISTRICT REVIEW COMMENTS	MMD	DWB	02/16/11

SIGNED 02/16/11

SIGNED 02/16/11

LAKE WHATCOM WATER & SEWER DISTRICT

Lake Whatcom Water and Sewer District
2010 Sewer Pump Station Improvements
Afternoon Beach

ELECTRICAL EQUIPMENT DETAILS

RH2 ENGINEERS PLANNERS SCIENTISTS

RH2 ENGINEERING, INC.
http://www.rh2.com
mail@rh2.com 1.800.720.7991

BELLINGHAM 360.676.7826
414 West Holly Street

BOTHELL 425.951.1810
22722 29th Drive SE, Suite 210

EAST WENATCHEE 509.886.2400
300 Simon Street, Suite 5

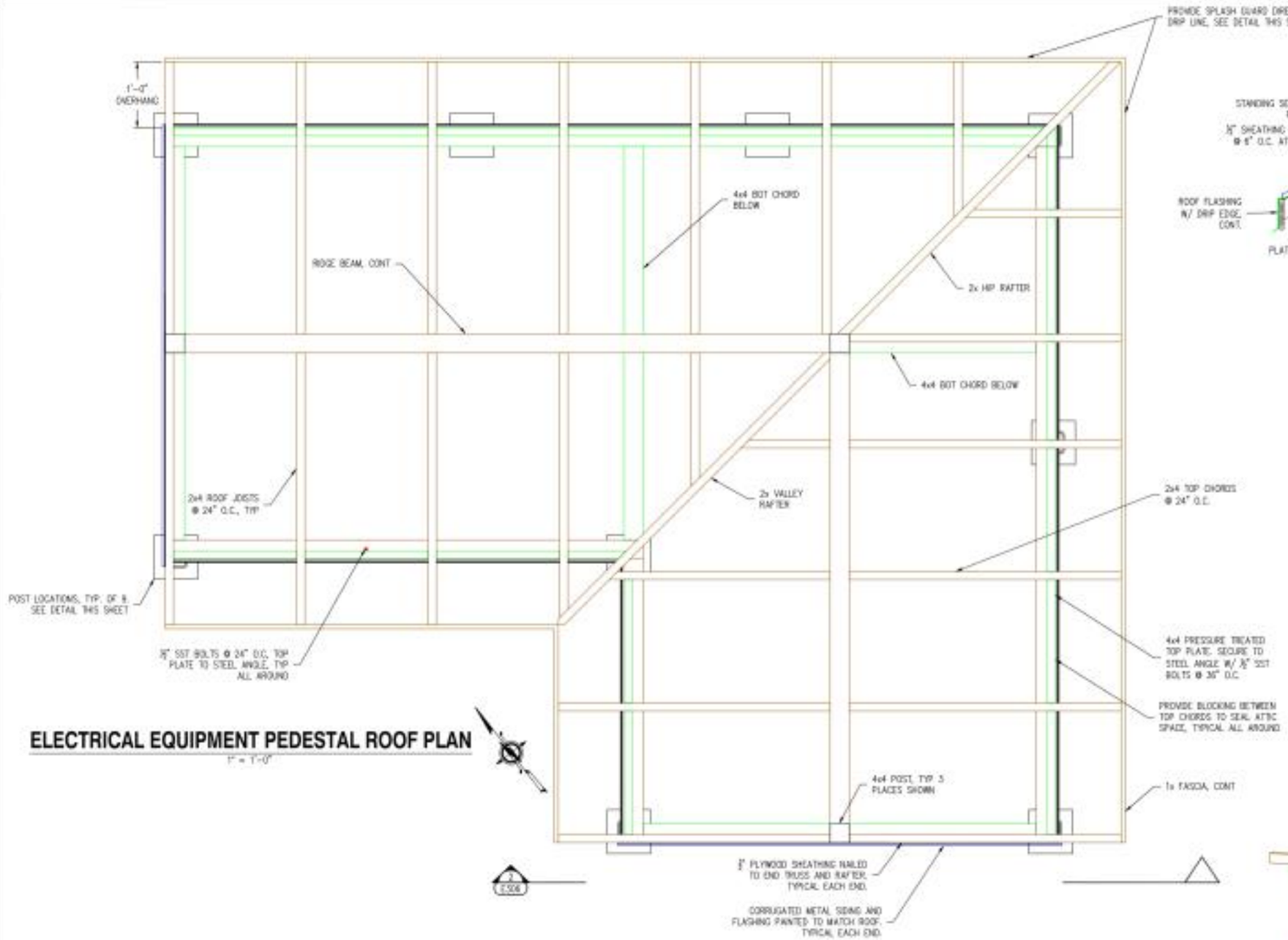
RICHLAND 509.946.9141
114 Columbia Point Drive, Suite C

SILVERDALE 360.979.7880
2421 NW Myers Rd, Suite 107

TACOMA 253.572.4700
925 Pacific Avenue, Suite 404

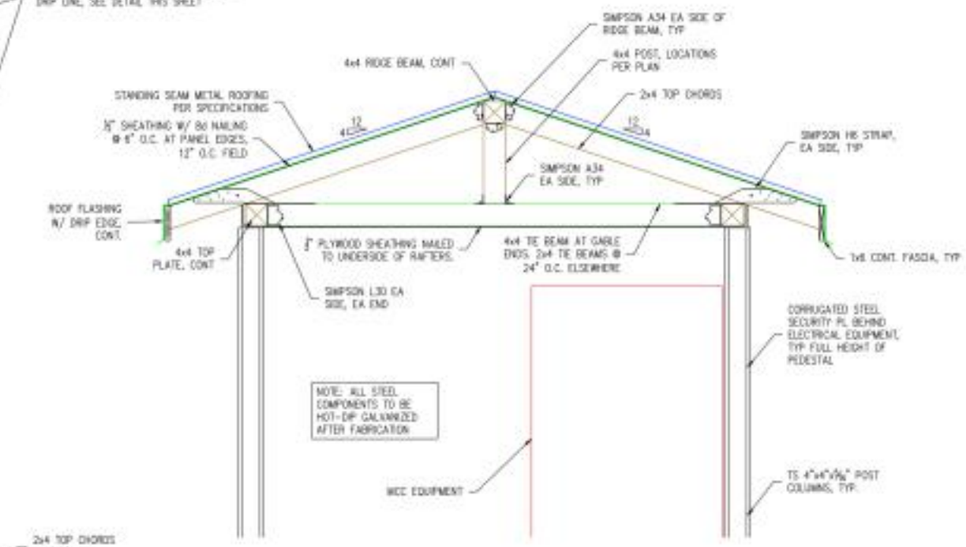
SCALE: SHOWN
0 1" 2"
DRAWING IS NOT TO SCALE IF BAR IS NOT 2" LONG

SHT. 48	DWG NO. E305
DRAWN: DWB	
REVIEW: WLM	
DATE: FEB 25, 2011	SHEET NO. 15
CAD: LNWSD	OF 25
JOB NO: 409-050	
FILENAME: 409-D-ELEC04	



ELECTRICAL EQUIPMENT PEDESTAL ROOF PLAN

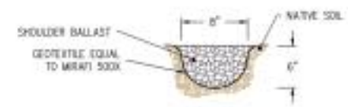
1" = 1'-0"



ELECTRICAL EQUIPMENT PEDESTAL SECTION

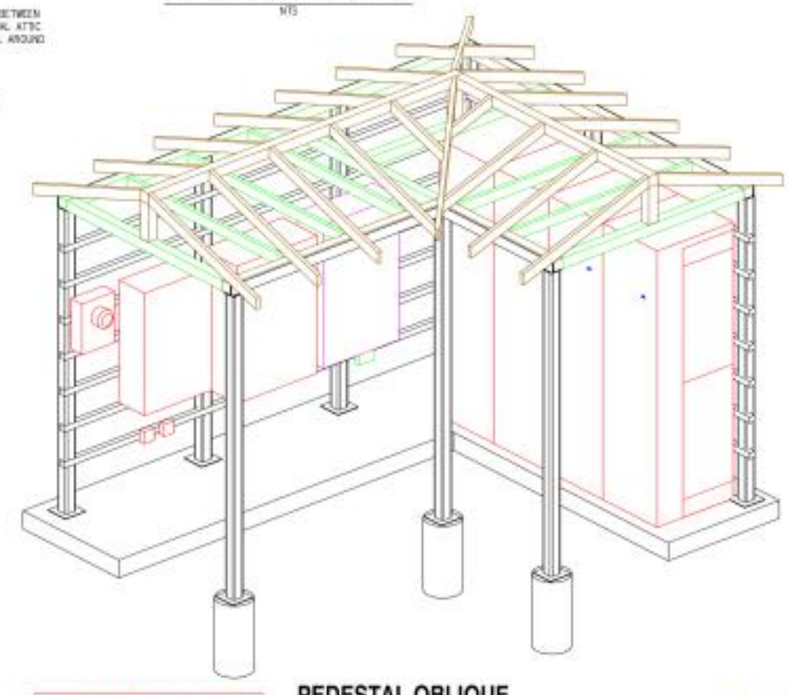
1" = 1'-0"

1 E306



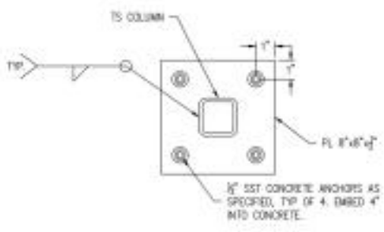
SPLASH GUARD DETAIL

NTS



PEDESTAL OBLIQUE

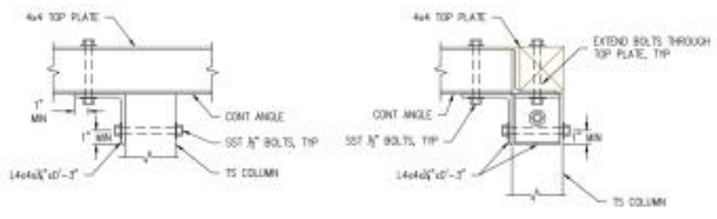
NOT TO SCALE



BASE PLATE DETAIL

NOT TO SCALE

2 E305



COLUMN-ANGLE CONNECTIONS

NOT TO SCALE

3 E305

REVISED TO CONFORM TO CONSTRUCTION RECORDS
RH2 ENGINEERING INC. 12/06/11 DATE

DwgSerialN: 1488

NO	REVISION	BY	REVIEW	DATE
2	REVISIONS PER CONSTRUCTION RECORDS	MJV	DWB	12/06/11
1	DISTRICT REVIEW COMMENTS	MMD	DWB	02/16/11

SIGNED: 02/16/11

SIGNED: 02/16/11

LAKE WHATCOM WATER & SEWER DISTRICT

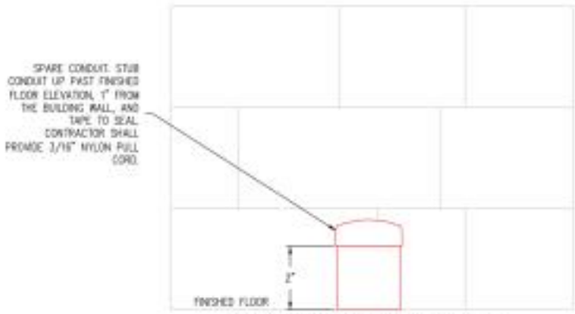
Lake Whatcom Water and Sewer District
2010 Sewer Pump Station Improvements
Afternoon Beach

ELECTRICAL EQUIPMENT COVER DETAILS

RH2 ENGINEERING, INC.
http://www.rh2.com
mailbox@rh2.com 1.800.720.0011
BELLINGHAM 360.676.1820
414 West Holly Road
BOTHELL 425.891.9400
22722 29th Drive SE, Suite 210
EAST WENATCHEE 509.886.2800
550 Simon Street, Suite 5
RICHLAND 509.946.9141
114 Columbia Point Drive, Suite C
SILVERDALE 360.979.7800
2021 NW Myhre Rd, Suite 107
TACOMA 253.572.2994
820 Pacific Avenue Suite 408

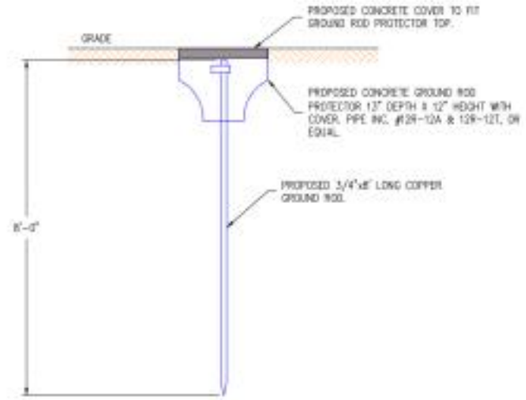
SCALE: SHOWN
0 1" 2"
DRAWING IS NOT TO SCALE IF BAR IS NOT 2" LONG

PAGE 45	DWG NO E306
DRAWN JMC	
REVIEWED KLE	
DATE FEB 25, 2011	SHEET NO 16 / 25
CLIENT LWWSD	
JOB NO 409-050	
FILENAME KB-D-ELEC04	



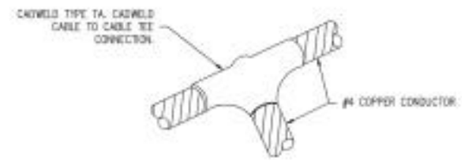
CONDUIT STUB-UP DETAIL

NOT TO SCALE



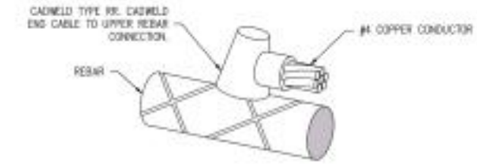
GROUND ROD DETAIL

NO SCALE



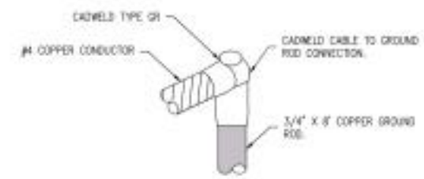
GROUND TEE DETAIL

NOT TO SCALE



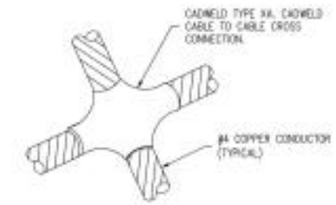
GROUND REBAR DETAIL

NOT TO SCALE



GROUND TEE DETAIL

NOT TO SCALE

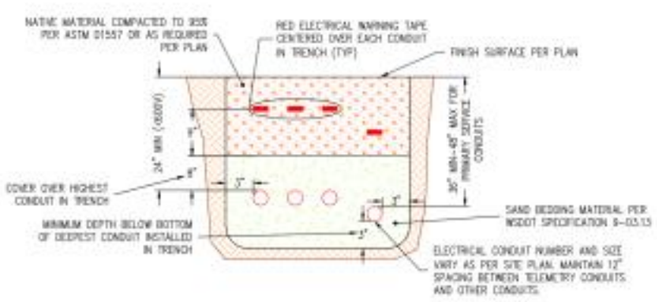


GROUND CROSS DETAIL

NOT TO SCALE

INTRUSION SWITCH DETAIL

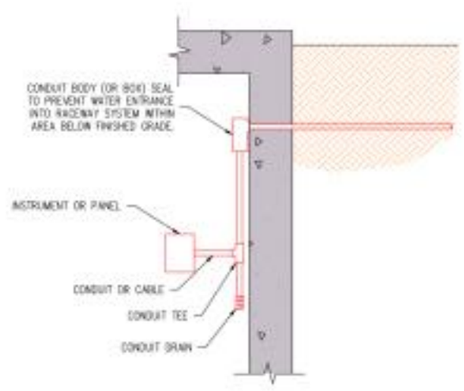
NOT TO SCALE



TYPICAL ELECTRICAL TRENCH DETAIL

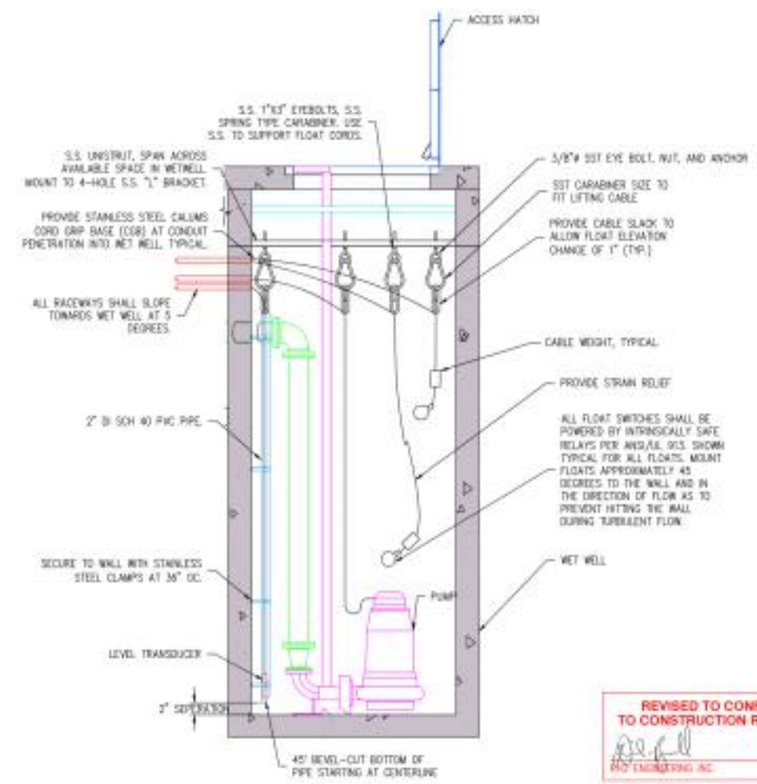
NOT TO SCALE

NOTE: BURY DEPTH OF CONDUIT AND HORIZONTAL SPACING SHALL BE CONFIRMED WITH SERVING UTILITY BEFORE CONSTRUCTION.



CONDUIT SEAL/DRAIN INSTALLATION

NOT TO SCALE



REVISED TO CONFORM TO CONSTRUCTION RECORDS
12/06/11
RH2 ENGINEERING INC. DATE

DwgSerialN: 1489

WET WELL LEVEL TRANSDUCER AND FLOAT SWITCH DETAIL

NOT TO SCALE

NO	REVISION	BY	REVIEW	DATE
1	DISTRICT REVIEW COMMENTS	DWB	DWB	02/16/11
2	REVISIONS PER CONSTRUCTION RECORDS	MJV	DWB	12/06/11

SIGNED 02/16/11

SIGNED 02/16/11

LAKE WHATCOM WATER & SEWER DISTRICT

Lake Whatcom Water and Sewer District
2010 Sewer Pump Station Improvements
Afternoon Beach

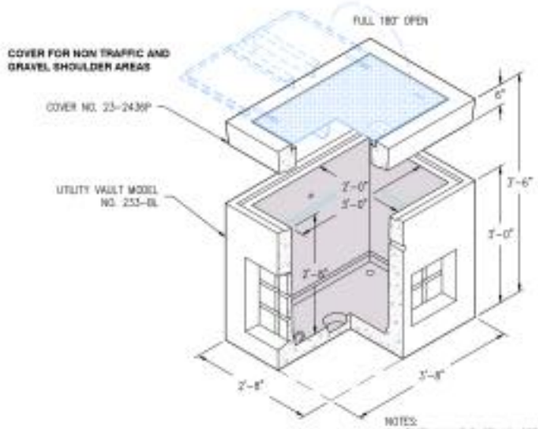
ELECTRICAL DETAILS I

RH2 ENGINEERS PLANNERS CONSULTANTS

RH2 ENGINEERING, INC.
BELLINGHAM
BOTHELL
EAST WENATCHEE
RICHLAND
SILVERDALE
TACOMA

SCALE: SHOWN
0 1 2"
DRAWING IS NOT TO SCALE IF BAR IS NOT 2" LONG

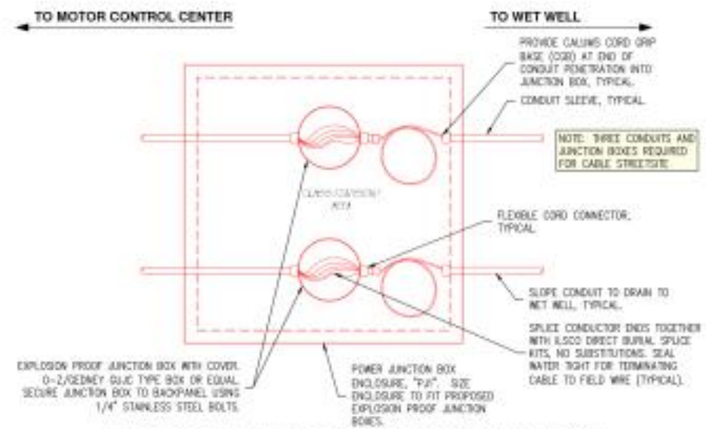
DWG NO	E307
SHEET NO	17
DRAWN CMR	
REVIEW WLM	
DATE FEB 16, 2011	
CLIENT LWWSD	
JOB NO 409-050	
FILENAME 48-D-ELEC12	



NOTES:
1. UTILITY VAULT BASE NO. 233-LA OR APPROVED EQUAL. DIMENSIONS SHOWN ARE MINIMUM.
2. COVERS SHALL BE RATED FOR H-20 TRAFFIC LOADS. IN NON-TRAFFIC AND GRAVEL SHOULDER AREAS INSTALL HATCH COVER NO. 23-2436P. IN PAVED TRAFFIC AREAS INSTALL 4220 DUCTILE IRON COVER AND FRAME.
3. PROVIDE SUMP KNOCKOUT IN FLOOR.
4. HANDHOLES SHALL BE SPACE EVERY 500 TO 1000 FEET AND INSTALLED AT CHANGES IN CONDUIT DIRECTION.

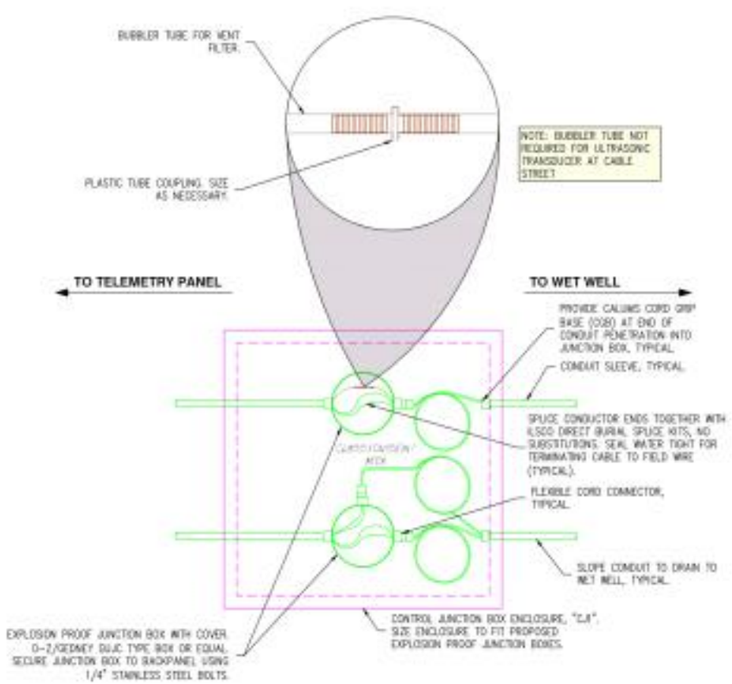
ELECTRICAL HANDHOLE DETAIL

NOT TO SCALE



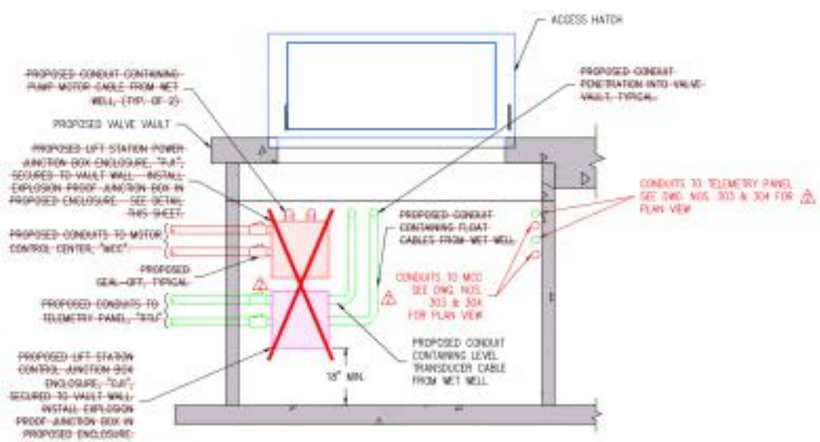
MOTOR CABLE EXPLOSION PROOF JUNCTION BOX SPLICE DETAIL

NOT TO SCALE



FLOAT/LEVEL TRANSMITTER CABLE EXPLOSION PROOF JUNCTION BOX SPLICE DETAIL

NOT TO SCALE



VALVE VAULT JUNCTION BOX DETAIL

NOT TO SCALE

B
E308

DwgSerialN: 1490

REVISED TO CONFORM TO CONSTRUCTION RECORDS
12/06/11
RH2 ENGINEERING INC. DATE

NO	REVISION	BY	REVIEW	DATE
2	REVISIONS PER CONSTRUCTION RECORDS	MJV	DWB	12/06/11
1	DISTRICT REVIEW COMMENTS	MMB	DWB	02/16/11

SIGNED 02/16/11

SIGNED 02/16/11

LAKE WHATCOM WATER & SEWER DISTRICT

Lake Whatcom Water and Sewer District
2010 Sewer Pump Station Improvements
Afternoon Beach

ELECTRICAL DETAILS II

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EAST WENATCHEE 509.886.2400
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RICHLAND 509.946.9141
1141 Columbia Park Drive, Suite C

SILVERDALE 360.698.7990
2021 NW Mapes Rd, Suite 101

TACOMA 253.475.2990
820 Pacific Avenue Suite 310

SCALE: SHOWN
0 1" 2"
DRAWING IS NOT TO SCALE IF BAR IS NOT 2" LONG

DWG NO	E308
SHEET NO	18 / 25

DWN: 49
DSGND: CMR
REVIEW: WLM
DATE: FEB 16, 2011
CLIENT: LWWSD
JOB NO: 409-050
FILENAME: 49-D-ELEC12

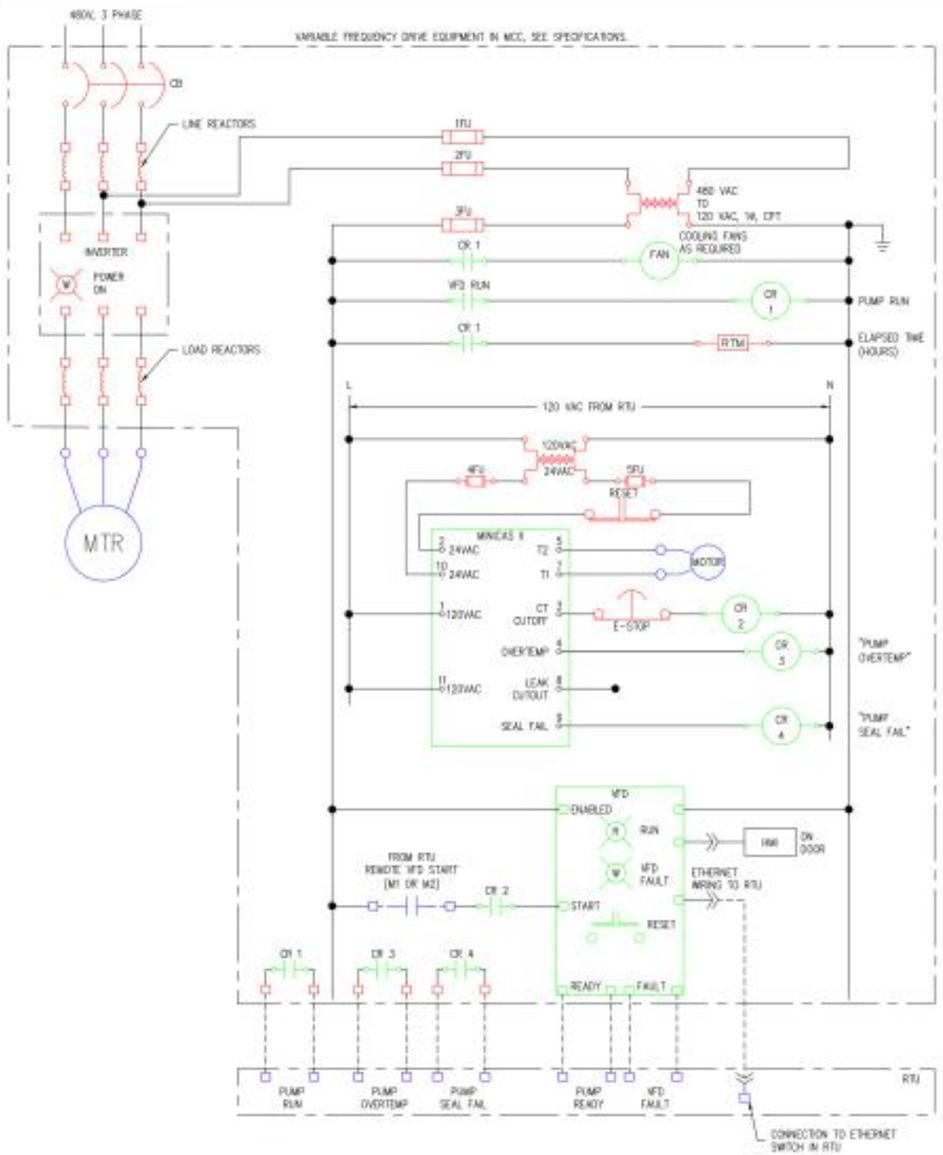

DIAGRAM 1: TYPICAL PUMP CONTROL

NO SCALE

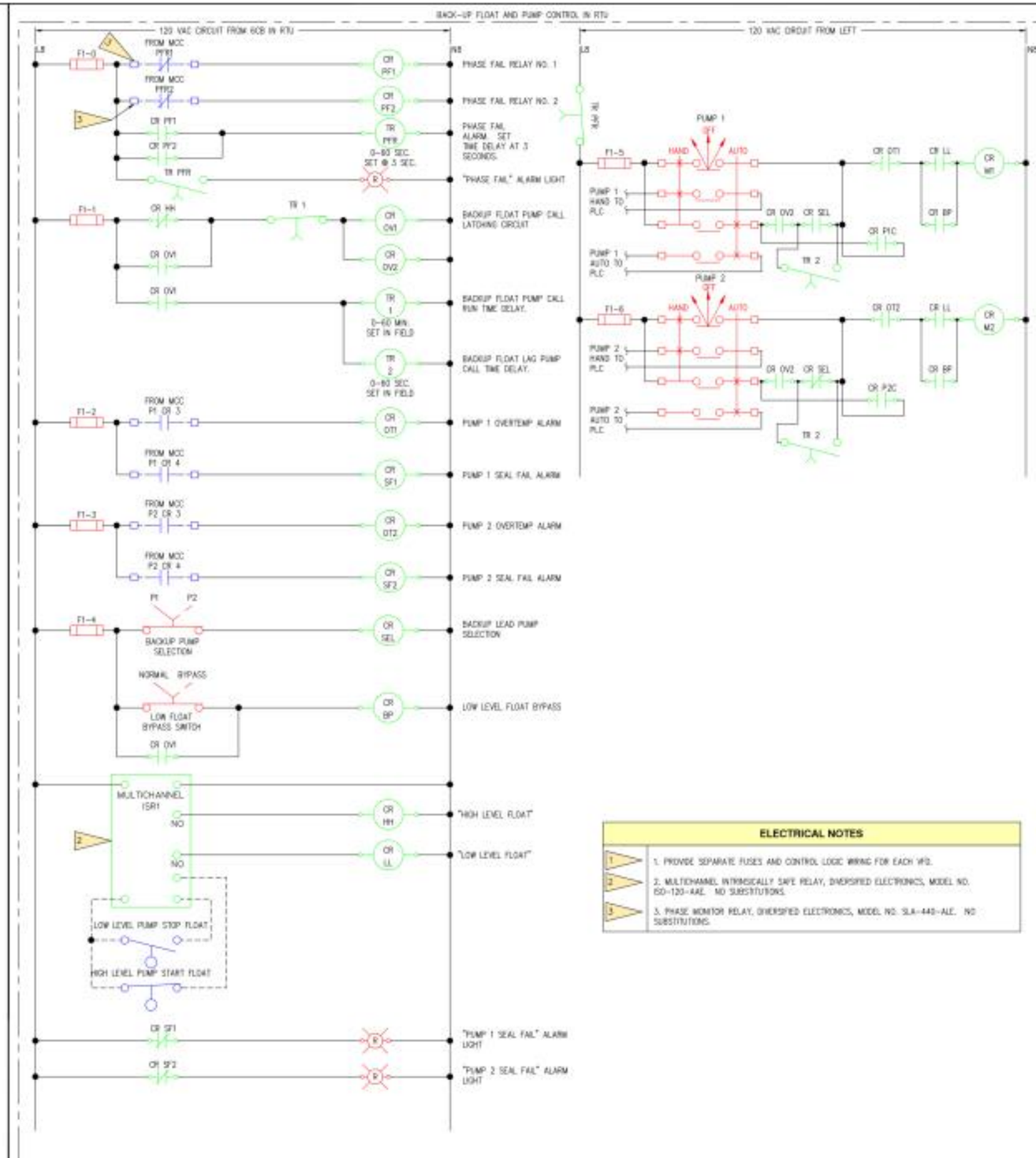

DIAGRAM 2: BACK-UP FLOAT AND PUMP CONTROL IN RTU

NO SCALE

ELECTRICAL NOTES

1. PROVIDE SEPARATE FUSES AND CONTROL LOGIC WIRING FOR EACH VFD.
2. MULTICHANNEL INTRINSICALLY SAFE RELAY, DIVERSIFIED ELECTRONICS, MODEL NO. ISD-120-4AE. NO SUBSTITUTIONS.
3. PHASE MONITOR RELAY, DIVERSIFIED ELECTRONICS, MODEL NO. SLA-440-ALE. NO SUBSTITUTIONS.

REVISED TO CONFORM TO CONSTRUCTION RECORDS
12/06/11
RH2 ENGINEERING INC. DATE

NO	REVISION	BY	REVIEW	DATE
2	REVISIONS PER CONSTRUCTION RECORDS	MJV	DWB	12/06/11
1	DISTRICT REVIEW COMMENTS	MMD	DWB	02/16/11

DwgSerialN: 1491

SIGNED: 02/16/11

SIGNED: 02/16/11

LAKE WHATCOM WATER & SEWER DISTRICT

Lake Whatcom Water and Sewer District
2010 Sewer Pump Station Improvements
Afternoon Beach

CONTROL LOGIC DIAGRAMS I

RH2 ENGINEERING PLANNING CONSULTING

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22722 29th Drive SE, Suite 210
EAST WENATCHEE 509.886.2800
500 Simon Street, Suite 5
RICHLAND 509.946.9141
114 Columbia Point Drive, Suite C
SILVERDALE 360.979.7990
2021 NW Myhre Rd, Suite 102
TACOMA 253.572.9994
820 Pacific Avenue Suite 404

SCALE: SHOWN
0 1" 2"
DRAWING IS NOT TO SCALE IF BAR IS NOT 2" LONG

SHT.	1
DRAWN	DWB
REVIEWED	MJM
DATE	FEB 16, 2011
CLIENT	LWWSD
JOB NO.	409-050
FILENAME	AB-D-ELEC14

DWG NO. E309

SHEET NO. 19 OF 25

ELECTRICAL EQUIPMENT AND INSTRUMENTATION SCHEDULE

ITEM	DESCRIPTION	MANUFACTURER	MODEL NO.
(A)	MAIN DISCONNECT SWITCH – NEMA 4X STAINLESS STEEL ENCLOSURE, HEAVY DUTY BREAKER, SERVICE ENTRANCE RATED, THERMAL MAGNETIC, 200 AMP, 600 VOLT, 42 KAIC WITHSTAND, CIRCUIT BREAKER SWITCH. MOUNT TOP OF ENCLOSURE 6'-0" FROM FINISHED GRADE.	SIEMENS	HUBB OR EQUAL
(B)	AUTOMATIC TRANSFER SWITCH – NEMA 1, 225 AMP, 600 VOLT RATED, 3 PHASE, 3 POLE, 42 KAIC WITHSTAND.	SEE SPECIFICATIONS	SEE SPECIFICATIONS
(C)	GENERATOR CONNECTION RECEPTACLE – 200 AMP, 600 VAC, 4-WIRE, 4-POLE, GROUNDING STYLE 2, REVERSE SERVICE, MOUNT TOP OF ENCLOSURE 5'-0" ABOVE GRADE.	APPLETON	AJK20034-280 –RS OR EQUAL
(D)	SUBMERSIBLE LEVEL TRANSMITTER – SEE SPECIFICATIONS.		
(E)	FLOAT SWITCH – SEE SPECIFICATIONS.		
(F)	FLOW METER – SEE SPECIFICATIONS.		
(G)	INTRUSION ALARM MOTION DETECTOR – OUTDOOR PASSIVE INFRARED MOTION DETECTOR, 12 VDC POWERED, N.C. AND N.O. ALARM OUTPUT. PROVIDE WITH SWIVEL BRACKET ASSEMBLY.	SENTROL	6180 OR EQUAL

LIGHTING FIXTURE SCHEDULE

TYPE	DESCRIPTION	MANUFACTURER NAME	MANUFACTURER CATALOG NO.	★ LAMP QTY.	LAMP CATALOG NO.	REMARKS
A1	OUTDOOR METAL HALIDE FLOOD LIGHT – 250W METAL HALIDE, 120 V BALLAST, 28 7/8"L, 9 1/2" DIA, HEAVY DUTY CAST ALUMINUM HOUSING, ALUMINUM REFLECTOR, POWDER COAT GRAY FINISH, MOUNT FIXTURE 8'-6" ABOVE GRADE WITH LIGHT CAST OVER PUMP STATION, U.L. LISTED FOR WET LOCATIONS.	DAY-BRITE	TLF250M12-WFLPGYCUL	1	250 WATT METAL HALIDE	

★ NUMBER OF LAMPS PER FIXTURE

PANEL SCHEDULE L

NO. L LOCATION: MCC
SERVING: PUMP STATION

240/120 VOLTS 3 WIRE
50 AMP MAIN

CIRCUIT DESCRIPTION	KVA	AMP			AMP	KVA	CIRCUIT DESCRIPTION
TELEMETRY PANEL, "RTU"	0.65	20	1	2	20	0.18	ELECTRICAL EQUIPMENT COVER RECEPTACLE
ELECTRICAL EQUIPMENT COVER LIGHTING	0.29	20	3	4	40	6.84	DEDICATED 240 VAC RECEPTACLE FOR PRESSURE WASHER
SPARE	–	20	5	6	2P		
SPARE	–	20	7	8	20	–	SPARE
SPACE	–	–	9	10	20	–	SPARE
SPACE	–	–	11	12	–	–	SPACE
SPACE	–	–	13	14	–	–	SPACE
SPACE	–	–	15	16	–	–	SPACE
SPACE	–	–	17	18	–	–	SPACE

CONNECTION LOAD:
7.96 KVA 33.17 AMPS

DEMAND: LIGHTING AND CONTROL LOAD

DEMAND LOAD:
7.96 KVA 33.17 AMPS

POWER CONDUIT AND CONDUCTOR SCHEDULE

CIRCUIT	SOURCE	DESTINATION	TRADE SIZE	(QUANTITY) CONDUCTORS	NOTES
P300	UTILITY PAD-MOUNT TRANSFORMER	MAIN SERVICE DISCONNECT SWITCH	2"	(3) – #3/0, (1) – #3/0 N	
P301	MAIN SERVICE DISCONNECT SWITCH	UTILITY METER	2"	(3) – #3/0, (1) – #3/0 N, (1) – #6 GRD	
P302	UTILITY METER	AUTOMATIC TRANSFER SWITCH, "ATS"	2"	(3) – #3/0, (1) – #3/0 N, (1) – #6 GRD	
P303	AUTOMATIC TRANSFER SWITCH, "ATS"	GENERATOR CONNECTION RECEPTACLE DISCONNECT	2 1/2"	(3) – #4/0, (1) – #4/0 N, (1) – #6 GRD	
P304	GENERATOR CONNECTION RECEPTACLE DISCONNECT	GENERATOR CONNECTION RECEPTACLE	2"	(3) – #3/0, (1) – #3/0 N, (1) – #6 GRD	
P305	AUTOMATIC TRANSFER SWITCH, "ATS"	MOTOR CONTROL CENTER, "MCC"	2"	(3) – #3/0, (1) – #3/0 N, (1) – #6 GRD	
P306	MOTOR CONTROL CENTER, "MCC"	PUMP STATION POWER JUNCTION BOX, "PJ1"	1 1/2"	(3) – #4, (1) – #6 GRD, (1) – MOTOR SENSOR CABLE	
P307	MOTOR CONTROL CENTER, "MCC"	PUMP STATION POWER JUNCTION BOX, "PJ1"	1 1/2"	(3) – #4, (1) – #6 GRD, (1) – MOTOR SENSOR CABLE	
P308	PUMP STATION POWER JUNCTION BOX, "PJ1"	PUMP NO. 1, "P-1"	1 1/2"	MANUFACTURER PUMP MOTOR CABLE	
P309	PUMP STATION POWER JUNCTION BOX, "PJ1"	PUMP NO. 2, "P-2"	1 1/2"	MANUFACTURER PUMP MOTOR CABLE	
P310	LIGHTING PANELBOARD, "L"	TELEMETRY PANEL, "RTU"	3/4"	(4) – #12, (1) – #12 GRD	
P311	TELEMETRY PANEL, "RTU"	ELECTRICAL EQUIPMENT COVER LIGHTING	3/4"	(2) – #12, (1) – #12 GRD	
P312	LIGHTING PANELBOARD, "L"	ELECTRICAL EQUIPMENT COVER 120 VAC RECEPTACLE	3/4"	(2) – #12, (1) – #12 GRD	
P313	LIGHTING PANELBOARD, "L"	ELECTRICAL EQUIPMENT COVER 240 VAC RECEPTACLE	3/4"	(3) – #8, (1) – #10 GRD	
P314	MOTOR CONTROL CENTER, "MCC"	TELEMETRY PANEL, "RTU"	3/4"	(2) – #12, (1) – #12 GRD	PUMP 1 AND 2 MINICAS POWER

CONTROL CONDUIT AND CONDUCTOR SCHEDULE

CIRCUIT	SOURCE	DESTINATION	TRADE SIZE	(QUANTITY) CONDUCTORS	NOTES
C300	AUTOMATIC TRANSFER SWITCH, "ATS"	SPARE CONDUIT STUB-UP AT WATER PUMP STATION	1"	(1) – NYLON PULL CORD	SPARE CONDUIT
C301	TELEMETRY PANEL, "RTU"	AUTOMATIC TRANSFER SWITCH, "ATS"	3/4"	(6) – #14, (1) – #14 GRD	
C302	TELEMETRY PANEL, "RTU"	MOTOR CONTROL CENTER, "MCC"	1 1/4"	(32) – #14, (1) – #14 GRD	
C303	TELEMETRY PANEL, "RTU"	PUMP STATION CONTROL JUNCTION BOX, "CJ1"	3/4"	(4) – #14, (1) – #14 GRD	
C304	PUMP STATION CONTROL JUNCTION BOX, "CJ1"	PUMP STATION FLOAT SWITCHES	1"	(2) – MANUFACTURER FLOAT CABLES	
C305	TELEMETRY PANEL, "RTU"	MOTION DETECTOR	3/4"	(4) – #14, (1) – #14 GRD	

INSTRUMENTATION CONDUIT AND CONDUCTOR SCHEDULE

CIRCUIT	SOURCE	DESTINATION	TRADE SIZE	(QUANTITY) CONDUCTORS	NOTES
I300	TELEMETRY PANEL, "RTU"	PUMP STATION CONTROL JUNCTION BOX, "CJ1"	3/4"	(1) – 2-CONDUCTOR SHIELDED CABLE	
I301	TELEMETRY PANEL, "RTU"	FLOW METER	1 1/2"	MANUFACTURER FLOW METER CABLES	
I302	TELEMETRY PANEL, "RTU"	MOTOR CONTROL CENTER, "MCC"	1 1/2"	(3) – CAT 5E ETHERNET CABLES	
I303	PUMP STATION CONTROL JUNCTION BOX, "CJ1"	PUMP STATION LEVEL TRANSMITTER	3/4"	MANUFACTURER LEVEL TRANSMITTER CABLE	
I304	TELEMETRY PANEL, "RTU"	TELEPHONE INTERFACE PANEL, "TIP"	3/4"	(1) – 1-PAIR TELEPHONE LINE	
I305	TELEMETRY PANEL, "RTU"	SPARE CONDUIT STUB-UP AT WATER PUMP STATION	3"	(1) – NYLON PULL CORD	SPARE CONDUIT FOR FUTURE FIBER OPTIC CABLE

DwgSerialN: 1492

REVISED TO CONFORM TO CONSTRUCTION RECORDS
12/06/11
RH2 ENGINEERING INC. DATE

NO.	REVISION	BY	REVIEW	DATE
2	REVISIONS PER CONSTRUCTION RECORDS	MJV	DWB	12/06/11
1	DISTRICT REVIEW COMMENTS	MMD	DWB	02/15/11

SIGNED: 02/15/11

SIGNED: 02/15/11

LAKE WHATCOM WATER & SEWER DISTRICT

Lake Whatcom Water and Sewer District
2010 Sewer Pump Station Improvements
Afternoon Beach

ELECTRICAL SCHEDULES

RH2 ENGINEERING, INC.
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710 Columbia Point Drive, Suite C

SILVERDALE 360.479.7960
2021 NW Myhre Rd, Suite 107

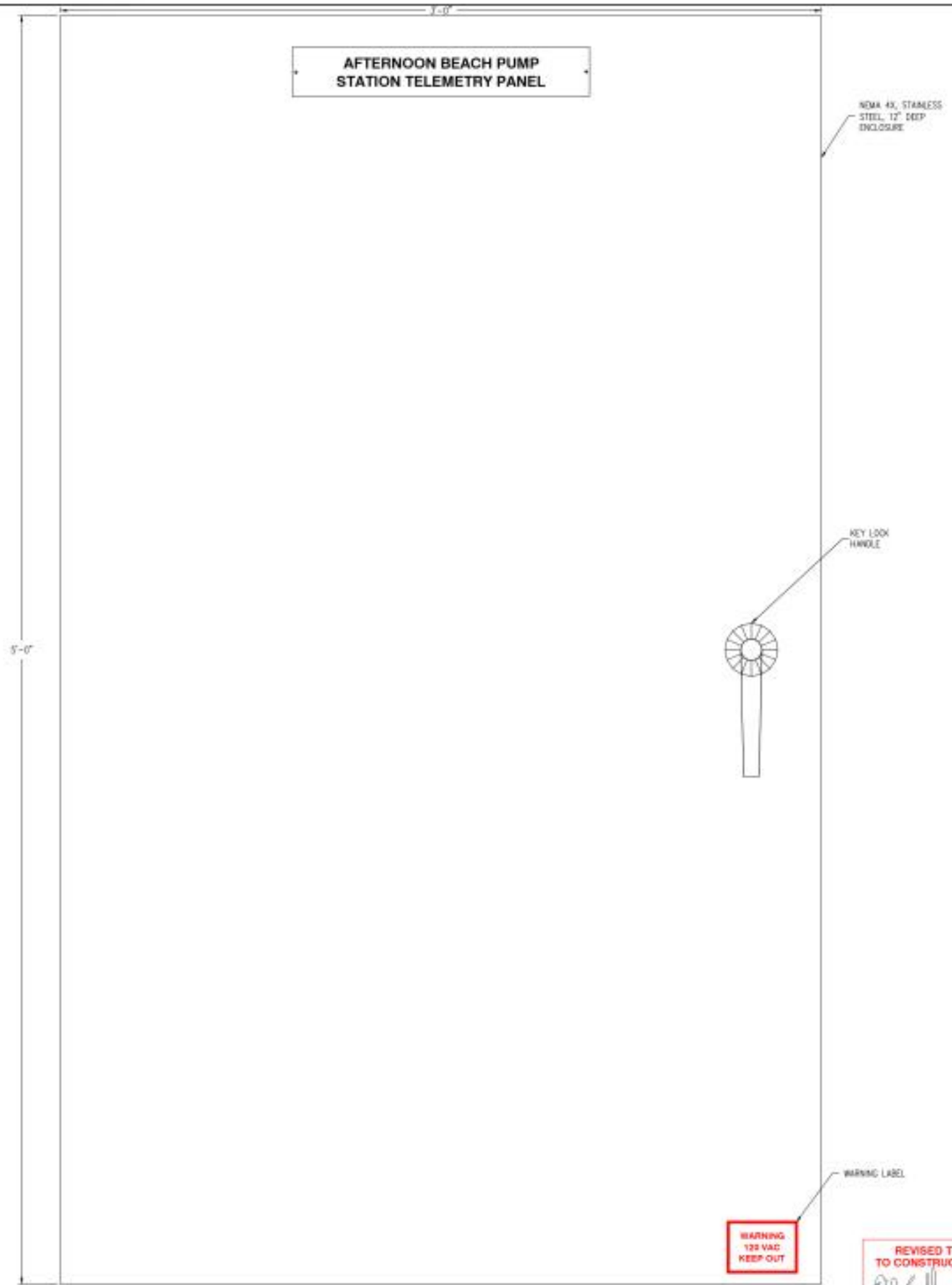
TACOMA 253.475.2994
820 Pacific Avenue, Suite 508

SCALE: SHOWN
0 1" 2"
DRAWING IS NOT TO SCALE IF BAR IS NOT 2" LONG

SHEET	1
DRAWN BY	DWB
REVIEWED	MJM
DATE	FEB 15, 2011
CLIENT	LWWSD
JOB NO.	409-050
FILENAME	KB-D-ELEC05

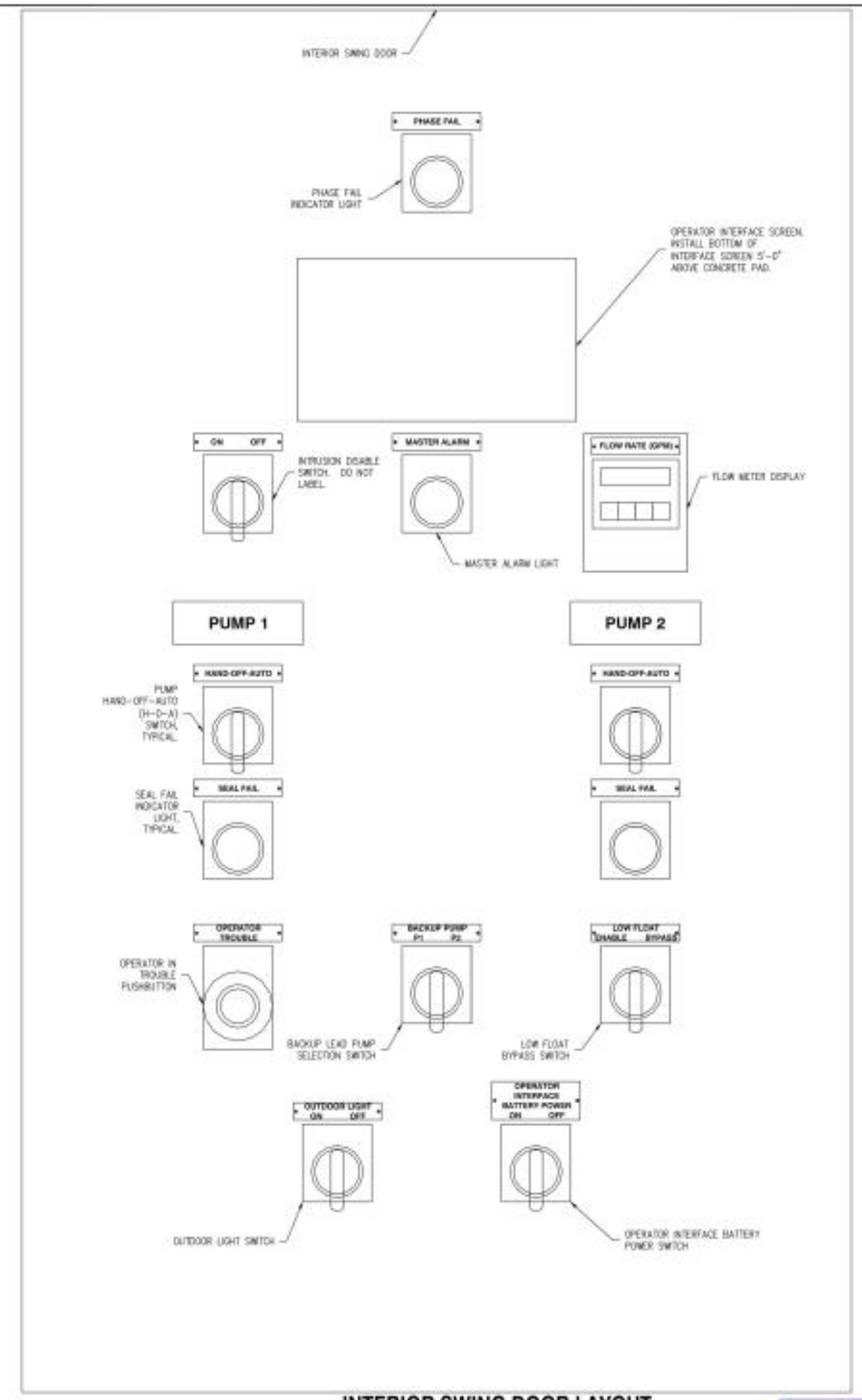
DWG NO. E310

SHEET NO. 20 / 25



PANEL EXTERIOR LAYOUT

NOT TO SCALE



INTERIOR SWING DOOR LAYOUT

NOT TO SCALE

REVISED TO CONFORM TO CONSTRUCTION RECORDS

120611

RH2 ENGINEERING INC. DATE

DwgSerial#: 1493

NO	REVISION	BY	REVIEW	DATE
	REVISIONS PER CONSTRUCTION RECORDS	MJV	DMB	12/06/11
1	DISTRICT REVIEW COMMENTS	MMB	DMB	02/16/11

SIGNED: 02/16/11

SIGNED: 02/16/11

LAKE WHATCOM WATER & SEWER DISTRICT

Lake Whatcom Water and Sewer District
2010 Sewer Pump Station Improvements
Afternoon Beach

RTU - PANEL LAYOUT (SHEET 1 OF 2)

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RICHLAND 509.946.9141
114 Columbia Point Drive, Suite C

SILVERDALE 360.979.7800
2421 NW Myhre Rd, Suite 107

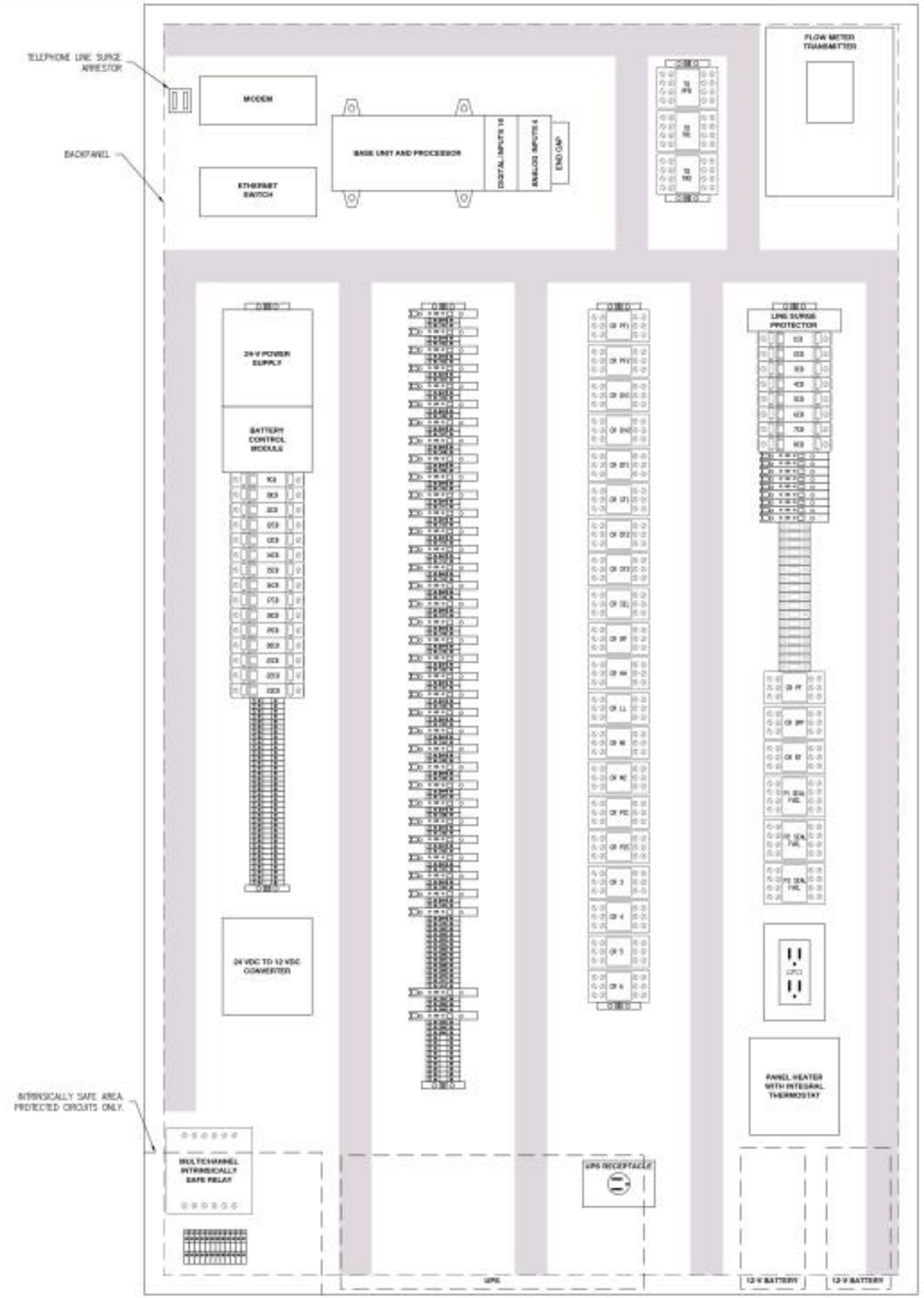
TACOMA 253.475.2996
925 Pacific Avenue Suite 104

SCALE: SHOWN
0 1" 2"
DRAWING IS NOT TO SCALE IF BAR IS NOT 2" LONG

SHT 1
DRAWN DMB
REVIEW MJM
DATE FEB 16, 2011
CLIENT LWWSD
JOB NO 409-050
FILENAME AB-D-ELECDB

DWG NO E311

SHEET NO 21 OF 25



PANEL INTERIOR LAYOUT

NOT TO SCALE

DwgSerialN: 1404

REVISED TO CONFORM TO CONSTRUCTION RECORDS

12/09/11

RH2 ENGINEERING INC. DATE

NO	REVISION	BY	REVIEW	DATE
2	REVISIONS PER CONSTRUCTION RECORDS	MJV	DWB	12/06/11
1	DISTRICT REVIEW COMMENTS	MMD	DWB	02/16/11

SIGNED: 02/16/11

SIGNED: 02/16/11

LAKE WHATCOM WATER & SEWER DISTRICT

Lake Whatcom Water and Sewer District
2010 Sewer Pump Station Improvements
Afternoon Beach

RTU - PANEL LAYOUT (SHEET 2 OF 2)

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550 Simon Street, Suite 5

RICHLAND 509.946.9147
710 Columbia Point Drive, Suite C

SILVERDALE 360.979.7900
2021 NW Myhre Rd, Suite 107

TACOMA 253.572.9789
820 Pacific Avenue, Suite 508

SCALE: SHOWN

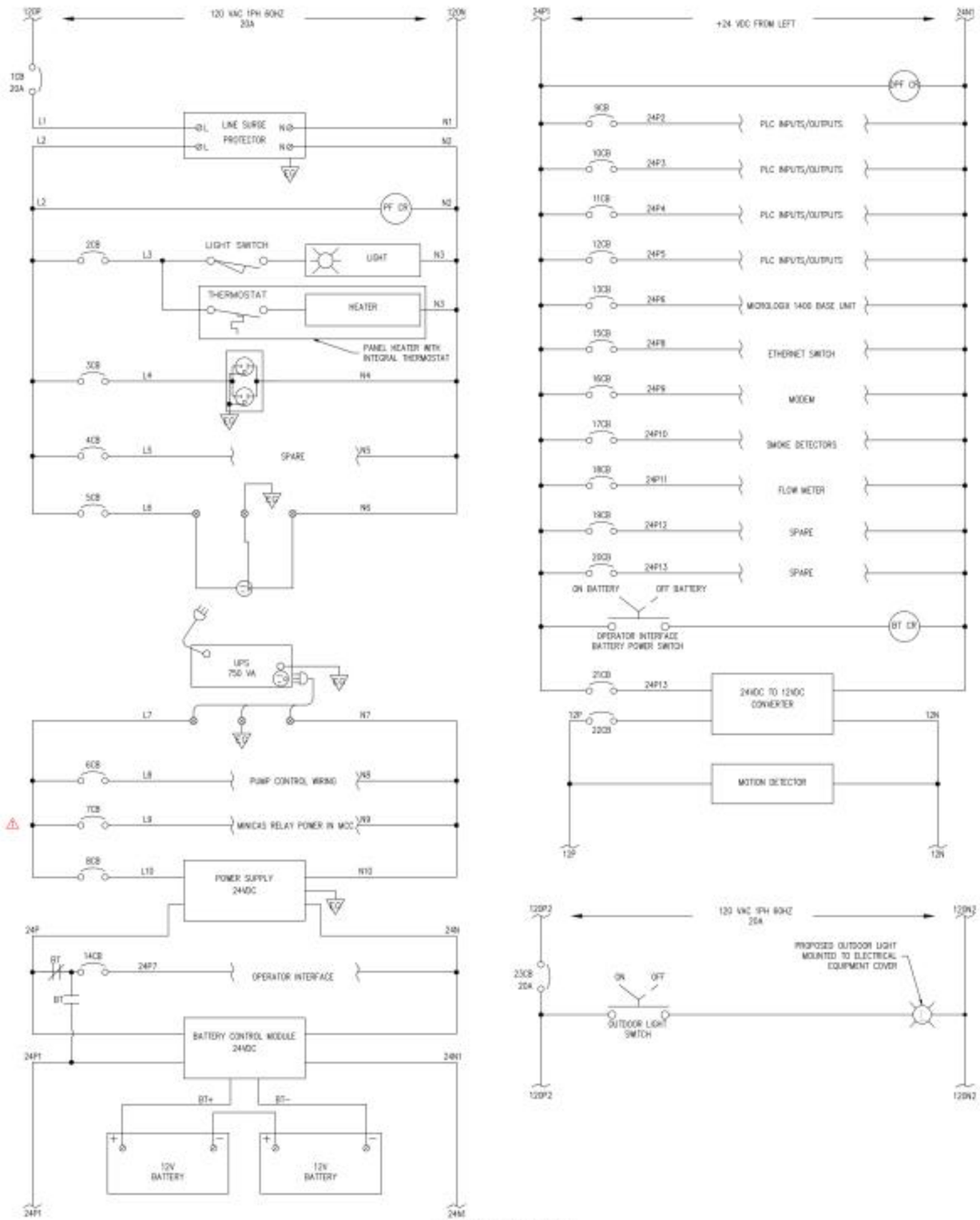
0 1" 2"

DRAWING IS NOT TO SCALE IF BAR IS NOT 2" LONG

SHEET	1
DRAWN BY	DWB
REVIEWED BY	MJM
DATE	FEB 16, 2011
JOB NO.	LWWSD
FILE NO.	409-050
FILENAME	RB-D-ELECDB

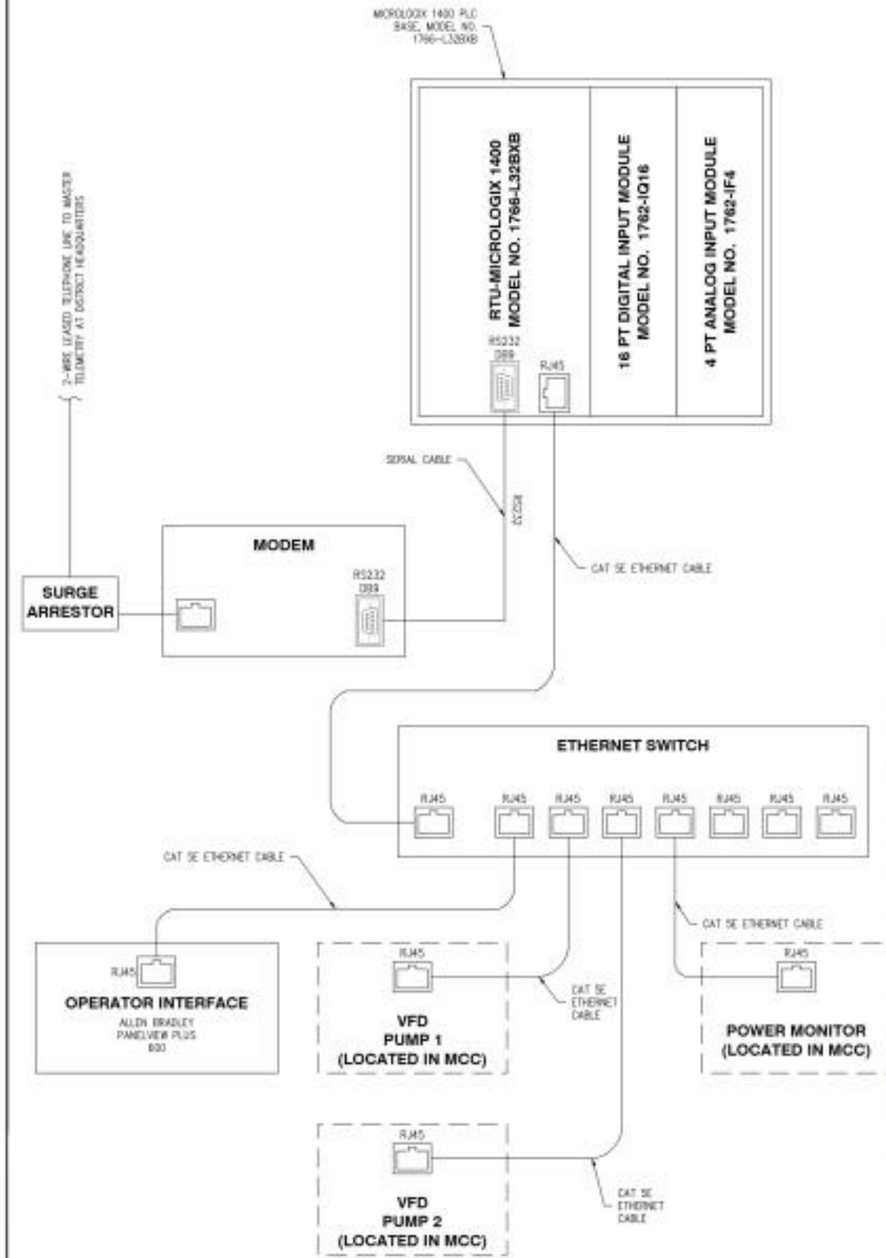
DWG NO. E312

SHEET NO. 22 OF 25



POWER LAYOUT

NOT TO SCALE



COMMUNICATIONS LAYOUT

NOT TO SCALE

REVISED TO CONFORM TO CONSTRUCTION RECORDS
RH2 ENGINEERING, INC. 120611 DATE

DwgSerialN: 1495

NO.	REVISION	BY	REVIEW	DATE
2	REVISIONS PER CONSTRUCTION RECORDS	MJV	DWB	12/06/11
1	DISTRICT REVIEW COMMENTS	MMD	DWB	02/16/11

SIGNED 02/16/11

SIGNED 02/16/11

LAKE WHATCOM WATER & SEWER DISTRICT

Lake Whatcom Water and Sewer District
2010 Sewer Pump Station Improvements
Afternoon Beach

RTU - POWER AND COMMUNICATIONS DIAGRAM

RH2 ENGINEERING, INC.
http://www.rh2.com
mail@rh2.com 1.800.720.7991

BELLINGHAM 360.676.0539
654 West Horton Road

BOTHELL 425.951.5400
22722 29th Drive SE, Suite 210

EAST WENATCHEE 509.886.2800
550 Simon Street, Suite 5

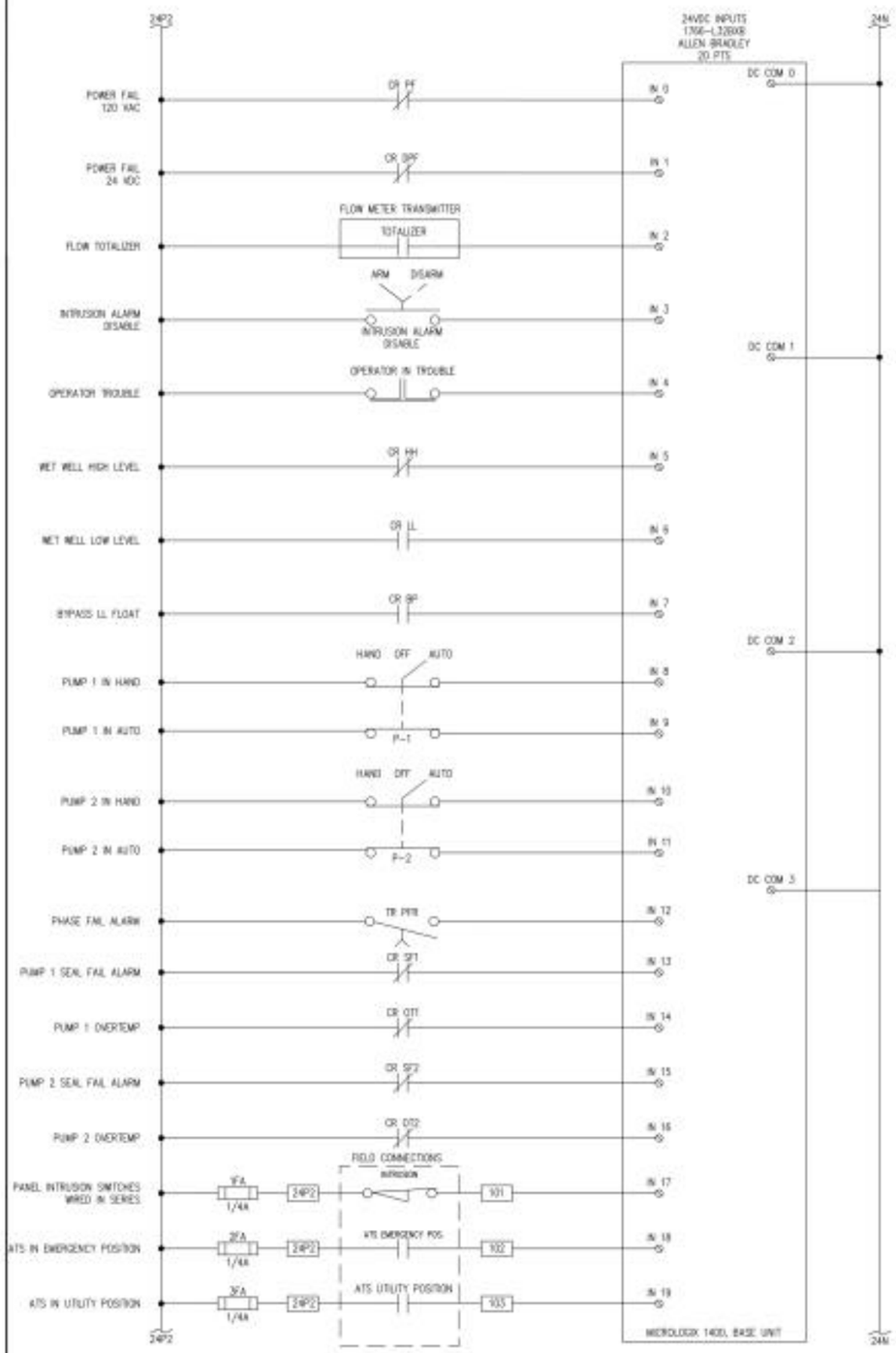
RICHLAND 509.946.9147
114 Columbia Point Drive, Suite C

SILVERDALE 360.979.7990
2021 NW Myhre Rd, Suite 107

TACOMA 253.572.2996
820 Pacific Avenue, Suite 508

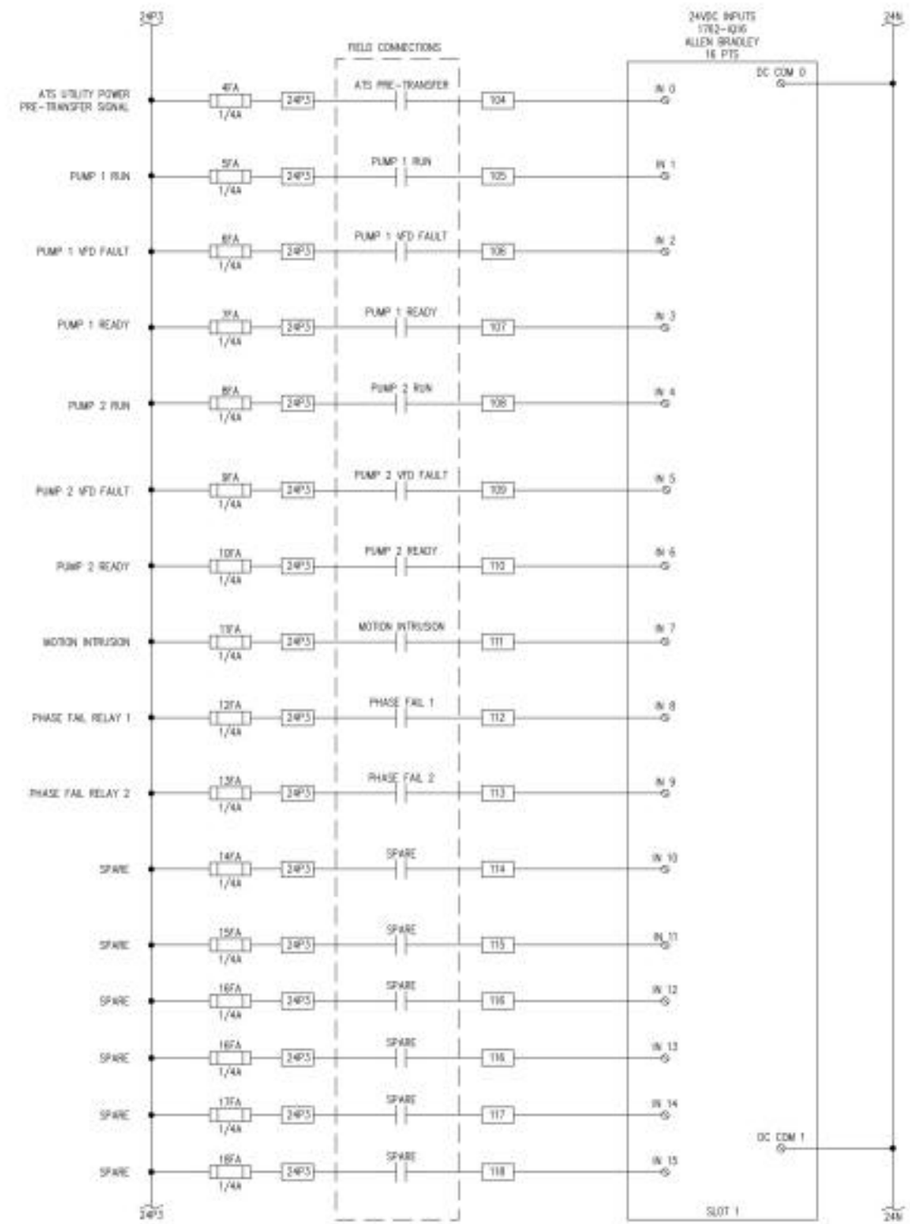
SCALE SHOWN
0 1" 2"
DRAWING IS NOT TO SCALE IF BAR IS NOT 2" LONG

SHEET 1	DWG NO. E313
DRAWN DWB	
REVIEWED MJM	
DATE FEB 16, 2011	SHEET NO. 23
JOB NO. LWWSD	
FILE NO. 409-050	25
FILENAME KB-D-ELECDB	



DIGITAL INPUTS, BASE UNIT

NOT TO SCALE



DIGITAL INPUTS, EXPANSION SLOT 1

NOT TO SCALE

SIGNED: 02/16/11

SIGNED: 02/16/11

LAKE WHATCOM WATER & SEWER DISTRICT

Lake Whatcom Water and Sewer District
2010 Sewer Pump Station Improvements
Afternoon Beach

RTU - PLC INPUTS AND OUTPUTS (SHEET 1 OF 2)

RH2 ENGINEERING, INC.
http://www.rh2.com
mail@rh2.com 1.800.720.8551

BELLINGHAM 360.676.0530
654 West Horton Road

BOTHELL 425.951.5400
22722 29th Drive SE, Suite 210

EAST WHATCHEE 509.886.0400
300 Simon Street, Suite 5

RICHLAND 509.946.9141
710 Columbia Point Drive, Suite C

SILVERDALE 360.979.7880
2521 NW Mines Rd, Suite 107

TACOMA 253.475.2896
820 Pacific Avenue Suite 308

DwgSerial#: 1496

REVISED TO CONFORM TO CONSTRUCTION RECORDS
RH2 ENGINEERING INC. 12/09/11 DATE

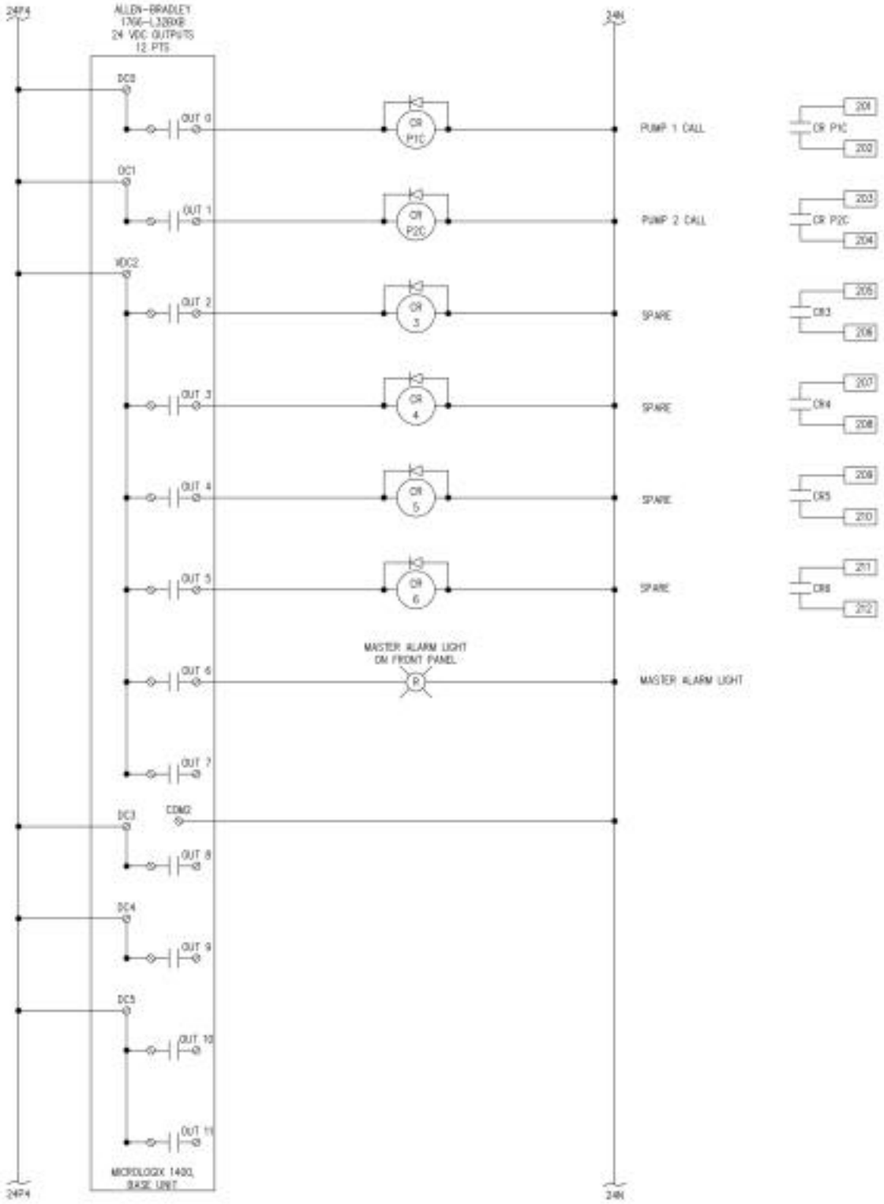
SCALE: SHOWN
0 1" 2"
DRAWING IS NOT TO SCALE IF BAR IS NOT 2" LONG

2	REVISIONS PER CONSTRUCTION RECORDS	MJV	DWB	12/09/11	
1	DISTRICT REVIEW COMMENTS	MMD	DWB	02/16/11	
NO	REVISION	BY	REVIEW	DATE	

SHT. 1
DRAWN: DWB
REVIEW: WLM
DATE: FEB 16, 2011
CLIENT: LWWSD
JOB NO: 409-050
FILENAME: KB-D-ELECDB

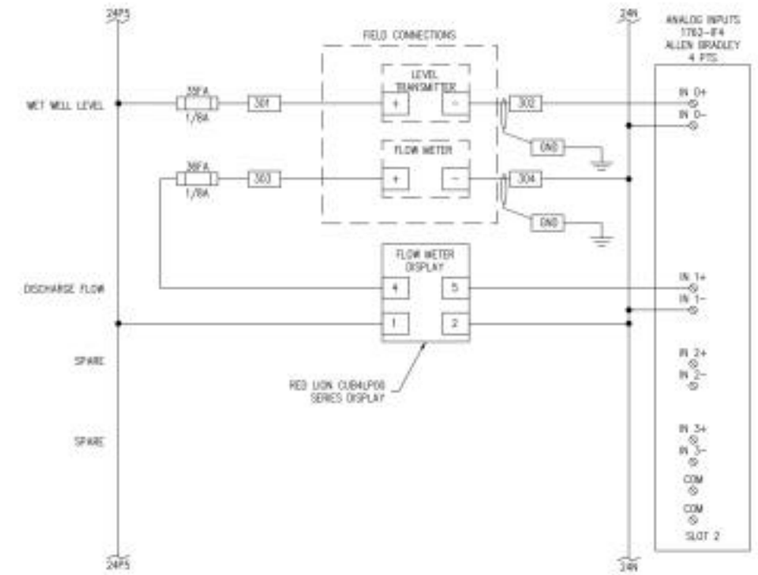
DWG NO: E314

SHEET NO: 24 / 25



DIGITAL OUTPUTS, BASE UNIT

NOT TO SCALE



ANALOG INPUTS, EXPANSION SLOT 2

NOT TO SCALE

SIGNED 02/16/11

SIGNED 02/16/11

LAKE WHATCOM WATER & SEWER DISTRICT

Lake Whatcom Water and Sewer District
2010 Sewer Pump Station Improvements
Afternoon Beach

RTU - PLC INPUTS AND OUTPUTS (SHEET 2 OF 2)

RH2 ENGINEERING, INC.

BELLINGHAM
BOTHELL
EAST WENATCHEE
RICHLAND
SILVERDALE
TACOMA

DwgSerialk: 1497

REVISED TO CONFORM TO CONSTRUCTION RECORDS
12/06/11
RH2 ENGINEERING INC. DATE

SCALE: SHOWN
0 1" 2"
DRAWING IS NOT TO SCALE IF BAR IS NOT 2" LONG

SHT.	1
DRAWN	CMR
REVIEW	WLM
DATE	FEB 16, 2011
CLIENT	LWWSD
RH2 JOB	409-050
FILENAME	AB-D-ELEC08

DWG NO. E315

SHEET NO. 25 / 25

NO.	REVISION	BY	REVIEW	DATE
2	REVISIONS PER CONSTRUCTION RECORDS	MJV	DWB	12/06/11
1	DISTRICT REVIEW COMMENTS	MMD	DWB	02/16/11