Set No. _____

Specifications, Proposal,
and Contract Documents for:

SCADA Replacement

CIP No. WAC3000000
Job No. 32-25-PW

City of Kirkland
Department of Public Works
123 Fifth Avenue
Kirkland, Washington 98033

CITY OF KIRKLAND
DEPARTMENT OF PUBLIC WORKS

SCADA Replacement
CIP NO. WAC3000000
JOB NO. 32-25-PW

Approved for Construction:

Rob English, PE
Capital Division Manager

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City of Kirkland

INVITATION TO BID

INVITATION TO BID

Notice is hereby given that the City of Kirkland will receive sealed bids in the office of the Purchasing Agent, City Hall, 123 Fifth Avenue, Kirkland, Washington, at 2:00 P.M., local time on March 19, 2026, for the project hereinafter referred to as:

SCADA Replacement
CIP NO. WAC3000000
PROJECT JOB NO. 32-25-PW

At said time all bids will be opened and publicly read aloud. Each bid shall be accompanied by a bid proposal deposit in the form of a cashier's check or a bond issued on a form acceptable to your surety made payable to the City of Kirkland for a sum of not less than five percent (5%) of the total bid amount. No bid shall be considered unless accompanied by such bid proposal deposit. Incomplete proposals and proposals received after the time stated above will not be considered. Faxed or emailed responses are not acceptable.

The work to be performed under these specifications consists of furnishing all labor, tools, materials, and equipment necessary for construction of the **SCADA Replacement.** Specific work includes, but is not limited to replacing Supervisory Control and Data Acquisition (SCADA) systems that monitor and operate the City's water and wastewater stations and overall systems. The estimated cost for this project is in the range of $1,350,000.00 to $1,550,000.00 based on the base bid Schedule.

The City will not sell bid packages. Plans, specifications, and addenda may be viewed and obtained online at *www.bxwa.com*. Click on: "Posted Projects"; "Public Works", "City of Kirkland". The Bidders List is maintained by the Builder's Exchange of Washington, Inc. Information for registering for the Bidders List can be found at www.bxwa.com/membership.html or by phoning (425) 258-1303, or in person at Builder's Exchange of Washington located at 2607 Wetmore Ave, Everett, WA.

The City of Kirkland in accordance with Title VI of the Civil Rights Act of 1964, (78 Stat. 252, 42 USC 2000d to 2000d-4) and the Regulations, hereby notifies all bidders that it will affirmatively ensure that in any contract entered into pursuant to this advertisement, disadvantaged business enterprises will be afforded full and fair opportunity to submit bids in response to this invitation and will not be discriminated against on the grounds of race, color, or national origin in consideration for an award.

Questions regarding this project shall be submitted in writing to Ben Mahony via email only at BMahony@kirklandwa.gov. Questions via phone will not be accepted. Bidders shall submit questions no later than 12:00 A.M. on March 12, 2026.

The City reserves the right to reject any and all bids, and to waive any irregularities or informalities in the bidding, and to make the award to the lowest, responsive, responsible bidder as best serves the interests of the City.

No bids may be withdrawn within sixty (60) days after the actual date of the bid opening.

An optional pre-bid conference will be held on March 12, 2026 at 9:00 A.M. at the City of Kirkland Public Works Maintenance Center, located at the following address: 915 8th St, Kirkland WA 98033. Attendees can plan to meet in the front entrance of the Maintenance Center. This conference will include a walk-through of the existing SCADA systems sites, located across the City.

Published: Daily Journal of Commerce – March 5, 2026: March 12, 2026.

GENERAL INFORMATION, PROPOSAL, & CONTRACT

City of Kirkland

CITY OF KIRKLAND

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CITY OF KIRKLAND
INFORMATION FOR BIDDERS

Bidders must bid on all items contained in the proposal.

The omission or deletion of any bid item will be considered non-responsive and shall be cause for rejection of the bid.

Submit your proposal on the Bid Proposal and other forms which are enclosed, or make a copy of the required forms and submit these documents.

The following forms must be executed in full *with* submittal of the bid:

1. BIDDER RESPONSIBILITY CRITERIA CHECKLIST
2. SUBCONTRACTOR RESPONSIBILITY CRITERIA CHECKLIST
3. PROPOSAL

   The lump sum or unit prices must be shown in the spaces provided on the bid schedule.

   Show total bid price in both words and figures on the Proposal.

   The Proposal form must be completed in full, signed and dated.

4. BID BOND

   A surety issued bid bond must be executed by the bidder and its surety company. The amount of the bid bond shall be not less than five percent (5%) of the total amount bid and may be shown in dollars or on a percentage basis. (A cashier's check payable to the City of Kirkland and issued for an amount not less than 5% of the total bid may be submitted in lieu of a bid bond.)

5. NONCOLLUSION AFFIDAVIT - Notarized
6. STATEMENT OF BIDDER'S QUALIFICATIONS

   This form must be filled in and signed. The owner reserves the right to check all statements and to judge the adequacy of the bidder's qualifications.

7. SUBCONTRACTOR IDENTIFICATION LIST

   This form must be completed in compliance with RCW 39.30.060 if the estimate exceeds $1,000,000.

The following forms are to be executed *after* the contract is awarded:

1. CONTRACT

   This agreement is to be executed by the successful bidder.

2. PERFORMANCE AND PAYMENT BOND

   To be executed by the successful bidder and its surety company.

3. CONTRACTOR'S DECLARATION OF OPTION FOR MANAGEMENT OF STATUTORY RETAINED PERCENTAGE; RETAINED PERCENTAGE ESCROW AGREEMENT

   To be executed by the successful bidder based on bidder's selection of option.

4. CERTIFICATES OF INSURANCE

   To be executed by the successful bidder and by an acceptable insurance company. The City of Kirkland must be named as an additional insured.

5. STATEMENT(S) OF INTENT TO PAY PREVAILING WAGES

   Affidavit certifying all employees of Contractor and Subcontractor shall be paid no less than the Prevailing Wage Rate(s) as determined by the Industrial Statistician of the Washington State Department of Labor and Industries.

SPECIAL NOTE: Prior to commencing work, the contractor and all subcontractors must have applied and paid for a City of Kirkland business license

CITY OF KIRKLAND
BIDDER RESPONSIBILITY CRITERIA CHECKLIST

It is the intent of City to award a contract to the low responsible bidder. Before award, the bidder must meet the following bidder responsibility criteria and supplemental bidder responsibility criteria to be considered a responsible bidder. The bidder may be required by the City to submit documentation demonstrating compliance with the criteria. The bidder must:

☐ 1. Have a current certificate of registration as a contractor in compliance with chapter 18.27 RCW, which must have been in effect at the time of bid submittal;

☐ 2. Have a current Washington Unified Business Identifier (UBI) number;

☐ 3. Have:

a. Industrial Insurance (workers' compensation) coverage for the bidder's employees working in Washington, as required in Title 51 RCW;
b. A Washington Employment Security Department number, as required in Title 50 RCW;
c. A Washington Department of Revenue state excise tax registration number, as required in Title 82 RCW;

☐ 4. Not be disqualified from bidding on any public works contract under RCW 39.06.010 or 39.12.065(3). **Meet responsibility criteria in RCW 39.04.350**

☐ 5. Until December 31, 2017, not have violated more than one time the off-site, prefabricated, non-standard, project specific items reporting requirements of RCW 39.04.370.

☐ 6. For public works projects subject to the apprenticeship utilization requirements of RCW 39.04.320, not have been found out of compliance by the Washington state apprenticeship and training council for working apprentices out of ratio, without appropriate supervision, or outside their approved work processes as outlined in their standards of apprenticeship under chapter 49.04 RCW for the one-year period immediately preceding the first date of advertising for the project.

SUPPLEMENTAL BIDDER RESPONSIBILITY CRITERIA CHECKLIST

The bidder must:

☐ 1. Have not delivered a project to the Contracting Agency within the three-year period immediately preceding the date of the bid submittal which was late, over budget, or did not meet specifications;

☐ 2. Have successfully completed projects of a similar size and scope as required by the contract documents for this project;

☐ 3. Not owe delinquent taxes to the Washington State Department of Revenue without a payment plan approved by the Department of Revenue;

☐ 4. Within the five-year period immediately preceding the date of the bid submittal, not have a record of excessive claims filed against its retainage or payment bonds for public works projects that demonstrate a lack of effective management by the bidder of making timely and appropriate payments to its subcontractors, suppliers, and workers;

☐ 5. Within the five-year period immediately preceding the date of the bid submittal, not have had any public works contract terminated for cause or terminated for default by a government agency;

☐ 6. Within the five-year period immediately preceding the date of the bid submittal, not have lawsuits with judgments entered against the bidder that demonstrate a pattern of failing to meet the terms of contracts;

☐ 7. Within the five-year period immediately preceding the date of the bid submittal, not have a record of prevailing wage complaints filed against it that demonstrates a pattern of failing to pay workers prevailing wages;

☐ 8. Not currently be debarred or suspended by the federal government;

☐ 9. Use a standard subcontract form that includes the subcontractor responsibility language required by RCW 39.06.020, and have an established procedure which it utilizes to validate the responsibility of each of its subcontractors;

☐ 10. Within the five-year period immediately preceding the date of the bid submittal, have not, and/or its owners have not, been convicted of a crime involving bidding on a public works contract;

☐ 11. Demonstrate a record of successful and timely resolution of Change Orders including compliance with public contract Change Order resolution procedures.

☐ 12. The system integrator must have at least five (5) years experience in the manufacturing of similar equipment. The system integrator must have a panel fabrication shop with UL-508A and UL-698A listing capability.

CITY OF KIRKLAND
SUBCONTRACTOR RESPONSIBILITY CRITERIA CHECKLIST

☐ A. The Contractor shall include the language of this section in each of its first tier subcontracts, and shall require each of its subcontractors to include the same language of this section in each of their subcontracts, adjusting only as necessary the terms used for the contracting parties. Upon request of the Owner, the Contractor shall promptly provide documentation to the Owner demonstrating that the subcontractor meets the subcontractor responsibility criteria below. The requirements of this section apply to all subcontractors regardless of tier.

☐ B. At the time of subcontract execution, the Contractor shall verify that each of its first tier subcontractors meets the following bidder responsibility criteria:

☐ 1. Have a current certificate of registration in compliance with chapter 18.27 RCW, which must have been in effect at the time of subcontract bid submittal;

☐ 2. Have a current Washington Unified Business Identifier (UBI) number;

☐ 3. Have:

a) Industrial Insurance (workers' compensation) coverage for the subcontractor's employees working in Washington, as required in Title 51 RC
b) A Washington Employment Security Department number, as required in Title 50 RCW;
c) A Washington Department of Revenue state excise tax registration number, as required in Title 82 RCW;
d) An electrical contractor license, if required by Chapter 19.28 RCW;
e) An elevator contractor license, if required by Chapter 70.87 RCW.

☐ 4. Not be disqualified from bidding on any public works contract under RCW 39.06.010 or 39.12.065 (3). **Meet responsibility criteria in RCW 39.04.350**

☐ 5. Until December 31, 2017, not have violated more than one time the off-site, prefabricated, non-standard, project specific items reporting requirements of RCW 39.04.370.

☐ 6. For public works projects subject to the apprenticeship utilization requirements of RCW 39.04.320, not have been found out of compliance by the Washington state apprenticeship and training council for working apprentices out of ratio, without appropriate supervision, or outside their approved work processes as outlined in their standards of apprenticeship under chapter 49.04 RCW for the one-year period immediately preceding the first date of advertising for the project.

CITY OF KIRKLAND
BID PROPOSAL

SCADA Replacement
CIP NO. WAC3000000
JOB NO. 32-25-PW

To: Director of Finance
City of Kirkland
123 Fifth Avenue
Kirkland, Washington 98033

The undersigned, hereinafter called the Bidder, declares that the only persons or parties interested in this proposal are those named herein; that this proposal is in all respects fair and without fraud; that it is made without collusion with any official or employee of the City of Kirkland, hereinafter called the Owner; and that the proposal is made without any connection or collusion with any person making another proposal on this contract.

The Bidder further declares that it has carefully examined the contract documents for the construction of the project; that it has personally inspected the site; that it has satisfied itself as to the quantities involved, including materials and equipment and conditions of work involved, including the fact that the description of the quantities of work materials, as included herein, is brief and is intended only to indicate the general nature of the work and to identify the said quantities with the detailed requirements of the contract documents; and that this proposal is made according to the provisions and under the terms of the contract documents, which documents are hereby made a part of this proposal.

The Bidder further agrees that it has exercised its own judgment regarding the interpretation of subsurface information and has utilized all data which it believes pertinent from the engineer-architect, owner, and other sources in arriving at its conclusions.

The Bidder agrees to hold its bid proposal open for 60 days after the actual date of bid opening and to accept the provisions of the Instructions to Bidders regarding disposition of bid bond.

The Bidder agrees that if this proposal is accepted, it will, within twenty (20) calendar days after notification of acceptance, execute the contract with the Owner in the form of contract included in the contract documents, and will, at the time of execution of the contract, deliver to the Owner the Performance and Payment Bond and all Certificates of Insurance required therein, and will, to the extent of its proposals, furnish all machinery, tools, apparatus, and other means of construction and do the work in the manner, in the time, and according to the methods as specified in the contract documents and required by the engineer or other project manager designated thereunder.

The Bidder further agrees, if awarded the contract, to begin work within ten (10) calendar days after the date of the execution of the contract and to complete the construction within the time specified in Section 1-08.5 of the Special Provisions.

In the event the Bidder is awarded the contract and shall fail to complete the work within the time limit or extended time limit agreed upon as more particularly set forth in the contract documents, liquidated damages shall be paid to the Owner per the specifications contained in the contract documents.

The Bidder further proposes to accept as full payment for the work proposed herein, the amounts computed under the provisions of the contract documents and based upon the lump sum and unit price amounts entered by the Bidder for the various bid items included in the Bid Schedule. The Bidder further agrees the lump sum and unit prices entered for the various bid items included in the Bid Schedule include all use taxes, overhead, profit, bond premiums, insurance premiums and all other miscellaneous and incidental expenses as well as all costs of materials, labor, tools and equipment required to perform and complete the work.

Within the three-year period immediately preceding the date of the bid solicitation for this Project, Bidder has not 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 RCW 49.48.082, any provision of chapter 49.46, 49.48, or 49.52 RCW.

The undersigned bids and agrees to complete all construction of the **SCADA Replacement; JOB NO. 32-25-PW** for the following:

Total Computed Price *(in figures)*: $ _____

Washington State Sales Tax 10.4% *(in figures)*: $ _____
Per WAC 458-20-170

Total Bid *(in figures)*: $ _____

Total Bid *(in words)*: _____

_____

Receipt of Addenda No(s). _____ is hereby acknowledged.

I certify (or declare) under penalty of perjury under the laws of the State of Washington that the foregoing is true and correct:

_____ CONTRACTOR (Firm Name)	_____ Location or Place Executed: (City, State)
_____ By	_____ Name and title of person signing
_____ (Indicate whether Contractor is Partnership, Corporation, or Sole Proprietorship)	_____ Date
_____ Washington State Contractor's Registration Number	_____ Contractor's Industrial Insurance Account Number
_____ Employment Security Identification Number	_____ Uniform Business Identification (UBI) Number

Contractor's Address:

	Telephone Number
	Fax Number
	EMAIL

** Bid proposal to be submitted in a **sealed envelope** marked "**Bid Enclosed**" for **SCADA Replacement; JOB NO. 32-25-PW.**

CITY OF KIRKLAND
BID SCHEDULE

SCADA Replacement
CIP NO. WAC3000000
JOB NO. 32-25-PW

Note: Unit prices for all items, all extensions, and the total amount of the bid must be shown. All entries must be typed or entered in ink.

Item No.	Item Description	Spec Ref.	Est. Qty.	Unit	Unit Price	Amount
1	Minor Change	1-04	1	FA	$25,000	$25,000
2	Record Drawings (min. bid $5,000)	1-05	1	LS		
3	Schedule (Type A)	1-08	1	LS		
4	Mobilization	1-09	1	LS		
5	SCADA System	8-27	1	LS		
6	MTU Modifications	8-26	1	LS		
7	Site #1 – North Reservoir – SCADA Replacement Upgrades	8-26 8-27	1	LS		
8	Site #2 – South Reservoir – SCADA Replacement Upgrades	8-26 8-27	1	LS		
9	Site #3 – P1 – SCADA Replacement Upgrades	8-26 8-27	1	LS		
10	Site #4 – S1 – SCADA Replacement Upgrades	8-26 8-27	1	LS		
11	Site #5 – S2 – SCADA Replacement Upgrades	8-26 8-27	1	LS		
12	Site #6 – K1 – SCADA Replacement Upgrades	8-26 8-27	1	LS		
13	Site #7 – S3 – SCADA Replacement Upgrades	8-26 8-27	1	LS		
14	Site #8 – K2 – SCADA Replacement Upgrades	8-26 8-27	1	LS		
15	Site #9 – K4 – SCADA Replacement Upgrades	8-26 8-27	1	LS		
16	Site #10 – Rose Point LS – SCADA Replacement Upgrades	8-26 8-27	1	LS		
17	Site #11 – Waverly Park LS – SCADA Replacement Upgrades	8-26 8-27	1	LS		
18	Site #12 – Lake Shore Plaza LS – SCADA Replacement Upgrades	8-26 8-27	1	LS		
19	Site #13 – Yarrow Bay LS – SCADA Replacement Upgrades	8-26 8-27	1	LS		
20	Site #14 – South Bay LS – SCADA Replacement Upgrades	8-26 8-27	1	LS		
21	Spare Parts – SCADA Replacement Upgrades	8-26 8-27	1	LS		

SUBTOTAL COMPUTED PRICE: $_____

WA SALES TAX 10.4% Per WAC458-20-170: $_____

TOTAL BID PRICE: **$**_____

BID DEPOSIT

Herewith find deposit in the form of a cashier's check or certified check in the amount of $_____which amount is not less than five percent (5%) of the total bid.

SIGN HERE_____

BID BOND

KNOW ALL PERSONS BY THESE PRESENTS:

That we, _____, as Principal, and _____, as Surety, are held and firmly bound unto the City of Kirkland, as Obligee, in the penal sum of _____ _____ dollars, for the payment of which the Principal and the Surety bind themselves, their heirs, executors, administrators, successors and assigns, jointly and severally, by these presents.

The condition of this obligation is such that if the Obligee shall make any award to the Principal for

_____ _____
Project Name Job Number

according to the terms of the proposal or bid made by the Principal therefor, and the Principal shall duly make and enter into a contract with the Obligee in accordance with the terms of said proposal or bid and award and shall give bond for faithful performance thereof, with Surety or Sureties approved by the Obligee; or if the Principal shall, in case of failure to do so, pay and forfeit to the Obligee the penal amount of the deposit specified in the call for bids, then this obligation shall be null and void; otherwise it shall be and remain in full force and effect and the Surety shall forthwith pay and forfeit to the Obligee, as penalty and liquidated damages, the amount of this bond.

SIGNED, SEALED AND DATED THIS _____ DAY OF _____, 20_____.

PRINCIPAL: SURETY:

Note: If a Bid Bond is provided, it must be accompanied by a power of attorney which appoints the Surety's true and lawful attorney-in-fact to make, execute, seal and deliver this Bid Bond.

CITY OF KIRKLAND
NONCOLLUSION AFFIDAVIT
SCADA Replacement
CIP NO. WAC3000000
JOB NO. 32-25-PW

STATE OF WASHINGTON)
) SS
COUNTY OF KING)

The undersigned, being duly sworn, on oath deposes and says that the Bidder herein named presently has no interest and shall not acquire any interest, direct or indirect, which would conflict in any manner or degree with the performance of its services hereunder. The undersigned further states on oath that in the performance of this contract, no person having any conflicting interest shall be employed, and that any interest on the part of the Bidder or its employees will be disclosed forthwith to the City of Kirkland. The undersign further states on oath that the Bidder has not, either directly or indirectly, entered into any agreement, participated in any collusion, or otherwise taken any action in restraint of free competitive bidding in connection with the project for which this proposal is submitted.

_____ _____
Bidder Name Authorized Signature

_____
Type Name

_____
Title

Sworn to before me, this _____ day of _____, 20__.

_____
Notary Public in and for the State of Washington
Residing at _____
My Commission Expires _____

NOTICE TO ALL BIDDERS

To report bid rigging activities call: 1-800-424-9071

The U.S. Department of Transportation (USDOT) operates the above toll-free "hotline" Monday through Friday, 8:00 a.m. to 5:00 p.m., ET. Anyone with knowledge of possible bid rigging, bidder collusion, or other fraudulent activities should use the "hotline" to report such activities.

The "hotline" is part of USDOT's continuing effort to identify and investigate highway construction contract fraud and abuse and is operated under the direction of the USDOT Inspector General. All information will be treated confidentially and caller anonymity will be respected.

CITY OF KIRKLAND
STATEMENT OF BIDDER'S QUALIFICATIONS

Contractor Name: _____ Contact: _____

Business Address: _____

Business phone: _____ Fax: _____

Number of years the Contractor has been engaged in the construction business under the present firm name: _____

Describe the general character of work performed by your company: _____

_____

List five projects of a similar nature which Contractor has completed within the last 10 years. Include contract amount and contact information for references:

Project Name	Amount	Owner/Agency	Contact	Phone	Year Completed

List major equipment anticipated to be used on this project; indicate whether Contractor-owned or to be leased from others: _____

_____

_____

_____

Bank reference(s): _____

Washington State Contractor Registration No.: _____

Uniform Business Identification No.: _____

I certify that other contracts now in progress or hereafter obtained will not interfere with timely performance of the City of Kirkland project should I become the successful bidder.

Authorized Signature: _____

Print Name: _____ Title: _____

CITY OF KIRKLAND
SUBCONTRACTOR IDENTIFICATION FOR CONTRACTS ESTIMATED TO BE IN EXCESS OF ONE MILLION DOLLARS ($1,000,000.00)

RCW 39.30.060 requires the following:

> "(1) Every invitation to bid on a prime contract that is expected to cost $1,000,000 or more for the construction, alteration, or repair of any public building or public work of … a … municipality as defined under RCW 39.04.010 … shall require each prime contract bidder to submit:
>
> (a) At the published bid submittal time, the names of the subcontractors and proof of license with whom the bidder, if awarded the contract, will subcontract for performance of the work of: HVAC (heating, ventilation, and air conditioning); plumbing as described in chapter 18.106 RCW; and electrical as described in chapter 19.28 RCW, or to name itself for the work, if it is licensed to perform the work for which it has named itself. …; and
>
> (b) Within forty-eight hours after the published bid submittal time, the names of the subcontractors with whom the bidder, if awarded the contract, will subcontract for performance of the work of structural steel installation and rebar installation.
>
> (2) The prime contract bidder shall not list more than one subcontractor for each category of work identified, unless subcontractors vary with bid alternates, in which case the prime contract bidder must indicate which subcontractor will be used for which alternate. Failure of the prime contract bidder to submit as part of the bid the names of such subcontractors or to name itself to perform such work or the naming of two or more subcontractors to perform the same work shall render the prime contract bidder's bid non-responsive and, therefore, void."

Each bidder shall submit a list of:

1. HVAC, plumbing, electrical, structural steel installation, and rebar installation subcontractors; and

2. The specific items of work those subcontractors will perform on the contract; and

3. The specific items of work that will be performed by the bidder on the contract relating to work described in RCW 39.30.060.

CITY OF KIRKLAND
SUBCONTRACTOR IDENTIFICATION LIST

*REQUIRED IF ESTIMATE AMOUNT EXCEEDS $1,000,000 (*Reference RCW 39.30.060 RCW*)

Proposed Subcontractors and items of work to be performed:

Subcontractor Name: _____

Subcontractor License #: _____

Item Numbers: _____

_____

_____

_____

Subcontractor Name: _____

Subcontractor License #: _____

Item Numbers: _____

_____

_____

_____

Subcontractor Name: _____

Subcontractor License #: _____

Item Numbers: _____

_____

_____

_____

Subcontractor Name: _____

Subcontractor License #: _____

Item Numbers: _____

_____

_____

_____

Subcontractor Name: _____

Subcontractor License #: _____

Item Numbers: _____

_____

_____

_____

- make additional pages if necessary -

Work to be performed by Prime Contractor:

Item Numbers: _____

_____

_____

CITY OF KIRKLAND
BIDDER'S CHECKLIST

1. Have you reviewed the Bidder Responsibility and Subcontractor Responsibility Criteria?
2. Have you enclosed a bid bond or certified check with your bid? (Must be at least 5% of the total amount bid)
3. Have you entered a bid amount for all items and all schedules?
4. Do the written amounts of the proposal agree with the amounts shown in the figures?
5. Have you acknowledged receipt of addenda?
6. Has the proposal been properly completed and signed?
7. Have you completed the Statement of Bidder's Qualifications?
8. Have you completed the City of Kirkland Non-collusion Affidavit?
9. Have you completed the Subcontractor Identification List? (This is to be completed if the estimate amount exceeds $1,000,000.)
10. Bid proposal to be submitted in a sealed envelope marked "Bid Enclosed" for: **SCADA Replacement, Job no. 32-25-PW, CIP No.: WAC3000000.**

GENERAL SPECIAL PROVISIONS (GSP'S)

City of Kirkland

CITY OF KIRKLAND

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City of Kirkland

GSP DIVISION 1

City of Kirkland

SPECIAL PROVISIONS

Supplement to

2025

WSDOT Standard Specifications





City of Kirkland – SCADA Replacement
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City of Kirkland Special Provisions

INTRODUCTION

The work on this project shall be accomplished in accordance with the Standard Specifications for Road, Bridge and Municipal Construction, **2025** edition, as issued by the Washington State Department of Transportation (WSDOT) and the American Public Works Association (APWA), Washington State Chapter (hereafter "Standard Specifications"). The Standard Specifications, as modified or supplemented by these Special Provisions, all of which are made a part of the Contract Documents, shall govern all of the Work.

These Special Provisions supersede any conflicting provisions of the Standard Specifications.

The accompanying Plans and these Specifications and any Addenda thereto, show and describe the location and type of work to be performed under the **SCADA Replacement, Job. No. 32-25-PW** contract documents.

These Special Provisions are made up of both General Special Provisions (GSPs) from various sources, which may have project-specific fill-ins; and project-specific Special Provisions. Each Provision supplements, modifies, or replaces the comparable Standard Specification, or is a new Provision. The deletion, amendment, alteration, or addition to any subsection or portion of the Standard Specifications is meant to pertain only to that particular portion of the section, and in no way should it be interpreted that the balance of the section does not apply.

The titles of headings of the Sections and subsections herein are intended for convenience or reference and shall not be considered as having any bearing on their interpretation.

Several types of Special Provisions are included in this contract and are differentiated as follows:

General Special Provisions (GSPs) are similar to Standard Specifications in that they typically apply to many public works projects. These can include:

- **Local Agency/APWA Approved GSPs** are modifications to the Standard Specifications prepared by the APWA Division 1 subcommittee, which is comprised of representatives of local agencies throughout the State of Washington. These GSPs are generally used throughout the state. APWA GSPs replace what was formerly referred to as "Division 1-99 APWA Supplement" in previous editions of the Standard Specifications for Road, Bridge and Municipal Construction. Denoted as: **(*date APWA GSP)***

- **City of Kirkland GSPs** are modifications to the Standard Specifications prepared by the City of Kirkland Public Works Department, and commonly applicable to City of Kirkland projects. Denoted as: ***(date COK GSP)***

Project-Specific Special Provisions normally appear only in the contract for which they were developed. Denoted as: ***(******)***

Also incorporated into the Contract Documents by reference are:

- *Manual on Uniform Traffic Control Devices for Streets and Highways*, currently adopted edition, with Washington State modifications, if any
- *Standard Plans for Road, Bridge and Municipal Construction*, WSDOT Manual M21-01, current edition
- City of Kirkland Public Works Department Pre-Approved Plans and Policies, current year edition.
- National Electric Code (NEC), current year edition.

Contractor shall obtain copies of these publications, at Contractor's own expense.

DIVISION 1 - GENERAL REQUIREMENTS

DESCRIPTION OF WORK

This contract provides for the replacement of Supervisory Control and Data Acquisition (SCADA) systems that monitor and operate the City's water and wastewater stations and overall systems and all other related Work, all in accordance with the Contract Plans, these Contract Special Provisions, and the Standard Specifications.

1-01 DEFINITIONS AND TERMS

1-01.3 Definitions

(January 19, 2022 APWA GSP)

Delete the heading **Completion Dates** and the three paragraphs that follow it, and replace them with the following:

Dates

Bid Opening Date
The date on which the Contracting Agency publicly opens and reads the Bids.

Award Date
The date of the formal decision of the Contracting Agency to accept the lowest responsible and responsive Bidder for the Work.

Contract Execution Date
The date the Contracting Agency officially binds the Agency to the Contract.

Notice to Proceed Date
The date stated in the Notice to Proceed on which the Contract time begins.

Substantial Completion Date
The day the Engineer determines the Contracting Agency has full and unrestricted use and benefit of the facilities, both from the operational and safety standpoint, any remaining traffic disruptions will be rare and brief, and only minor incidental work, replacement of temporary substitute facilities, plant establishment periods, or correction or repair remains for the Physical Completion of the total Contract.

Physical Completion Date
The day all of the Work is physically completed on the project. All documentation required by the Contract and required by law does not necessarily need to be furnished by the Contractor by this date.

Completion Date
The day all the Work specified in the Contract is completed and all the obligations of the Contractor under the contract are fulfilled by the Contractor. All documentation required by the Contract and required by law must be furnished by the Contractor before establishment of this date.

Final Acceptance Date
The date on which the Contracting Agency accepts the Work as complete.

Supplement this Section with the following:

All references in the Standard Specifications or WSDOT General Special Provisions to the terms "Department of Transportation", "Washington State Transportation Commission", "Commission", "Secretary of Transportation", "Secretary", "Headquarters", and "State Treasurer" shall be revised to read "Contracting Agency".

All references to the terms “State” or “state” shall be revised to read “Contracting Agency” unless the reference is to an administrative agency of the State of Washington, a State statute or regulation, or the context reasonably indicates otherwise.

All references to “State Materials Laboratory” shall be revised to read “Contracting Agency designated location”.

All references to “final contract voucher certification” shall be interpreted to mean the Contracting Agency form(s) by which final payment is authorized, and final completion and acceptance granted.

Additive
A supplemental unit of work or group of bid items, identified separately in the Bid Proposal, which may, at the discretion of the Contracting Agency, be awarded in addition to the base bid.

Alternate
One of two or more units of work or groups of bid items, identified separately in the Bid Proposal, from which the Contracting Agency may make a choice between different methods or material of construction for performing the same work.

Business Day
A business day is any day from Monday through Friday except holidays as listed in Section 1-08.5.

Contract Bond
The definition in the Standard Specifications for “Contract Bond” applies to whatever bond form(s) are required by the Contract Documents, which may be a combination of a Payment Bond and a Performance Bond.

Contract Documents
See definition for “Contract”.

Contract Time
The period of time established by the terms and conditions of the Contract within which the Work must be physically completed.

Notice of Award
The written notice from the Contracting Agency to the successful Bidder signifying the Contracting Agency’s acceptance of the Bid Proposal.

Notice to Proceed
The written notice from the Contracting Agency or Engineer to the Contractor authorizing and directing the Contractor to proceed with the Work and establishing the date on which the Contract time begins.

Traffic
Both vehicular and non-vehicular traffic, such as pedestrians, bicyclists, wheelchairs, and equestrian traffic.

1-02 BID PROCEDURES AND CONDITIONS

(January 24, 2011 APWA GSP)

1-02.1 Prequalification of Bidders

Delete this Section and replace it with the following:

1-02.1 Qualifications of Bidder

(January 1, 2026 COK GSP)

Before award of a public works contract, a Bidder must meet at least the minimum qualifications of RCW 39.04.350(1) and, if subject to apprentice utilization requirements under RCW 39.04.320, the requirements of RCW 39.04.350(3) to be considered a responsible Bidder and qualified to be awarded a public works project.

1-02.1(1) Supplemental Qualifications Criteria

(July 31, 2017 APWA GSP; requires pre-approval on FHWA funded projects, through WSDOT/Local Programs)

Add the following new section:

In addition, the Contracting Agency has established Contracting Agency-specific and/or project-specific supplemental criteria, in accordance with RCW 39.04.350(3), for determining Bidder responsibility, including the basis for evaluation and the deadline for appealing a determination that a Bidder is not responsible. These criteria are contained in Section 1-02.14 Option D of these Special Provisions.

(January 1, 2026 COK GSP)

Bidders shall complete and sign the Statement of Bidder's Qualification contained in the Proposal. Said form must be submitted with the Bid Proposal.

After bids are opened, the Contracting Agency may request that a Bidder or all Bidders provide supplemental information concerning responsibility in accordance with RCW 39.04.350(3). Such supplemental information shall be provided to the Contracting Agency in writing within two (2) business days of the request. If the Bidder fails to supply this supplemental information within the time and manner specified, the Contracting Agency may base its determination of responsibility on any available information related to the supplemental criteria or may find the Bidder not responsible.

If Contracting Agency determines that a Bidder is not responsible, Contracting Agency will provide, in writing, the reasons for such determination at which point the contractor will be deemed disqualified in accordance with WSDOT Standard Specification 1-02.14(10) and the proposal will be rejected. The Bidder may appeal the determination within two (2) business days after receipt of the determination by presenting additional information to the Contracting Agency. The Contracting Agency will consider the additional information before issuing its final decision. If the Contracting Agency's final decision affirms that the Bidder is not responsible, the Contracting Agency will not execute a contract with any other bidder until two (2) business days after the Bidder determined to be not responsible has received the Contracting Agency's final determination. The failure or omission of a Bidder to receive or examine any form, instrument, addendum or other document shall in no way relieve any Bidder from obligations with respect to the bid or to the contract.

Any Bidder may, no later than five (5) business days before the bid submittal deadline, request that the Contracting Agency modify the supplemental criteria. Such request must be in writing, describe the nature of the concern(s), and propose specific modifications to the criteria that will make the criteria more relevant and/or less restrictive of competition. The Contracting Agency will evaluate the information submitted by the Bidder and respond before the bid submittal deadline. If the evaluation results in a change of the criteria, the Contracting Agency will issue an Addendum to the Bid Documents identifying the new criteria.

1-02.2 Plans and Specifications

(June 27, 2011 APWA GSP)

Delete this section and replace it with the following:

Information as to where Bid Documents can be obtained or reviewed can be found in the Call for Bids (~~Advertisement~~ **Invitation** for Bids) for the work.

After award of the contract, plans and specifications will be issued to the Contractor at no cost as detailed below:

To Prime Contractor	No. of Sets	Basis of Distribution
Reduced plans (11" x 17")	**1**	Furnished automatically upon award.
Contract Special Provisions	**1**	Furnished automatically upon award.
Large plans (e.g., 22" x 34")	**1**	Furnished only upon request.

Additional plans and Contract Provisions may be obtained by the Contractor from the source stated in the Call for Bids, at the Contractor's own expense.

1-02.4(1) General

(December 30, 2022 APWA GSP Option B)

The first sentence of the ninth paragraph, beginning with "Prospective Bidder desiring…", is revised to read:

Prospective Bidders desiring an explanation or interpretation of the Bid Documents shall request the explanation or interpretation in writing by close of business five (5) business days preceding the bid opening to allow a written reply to reach all prospective Bidders before the submission of their Bids.

1-02.5 Proposal Forms

(November 25, 2024 APWA GSP)

Delete this section and replace it with the following:

The Proposal Form will identify the project and its location and describe the work. It will also list estimated quantities, units of measurement, the items of work, and the materials to be furnished at the unit bid prices. The bidder shall complete spaces on the proposal form that call for, but are not limited to, unit prices; extensions; summations; the total bid amount; signatures; date; and, where applicable, retail sales taxes and acknowledgment of addenda; the bidder's name, address, telephone number, and signature; the bidder's DBE commitment, if applicable; a State of Washington Contractor's Registration Number; and a Business License Number, if applicable. Bids shall be in legible figures (not words) written in ink or typed and expressed in U.S. dollars. The required certifications are included as part of the Proposal Form.

The Contracting Agency reserves the right to arrange the proposal forms with alternates and additives, if such be to the advantage of the Contracting Agency. The bidder shall bid on all alternates and additives set forth in the Proposal Form unless otherwise specified.

1-02.6 Preparation of Proposal

(April 22, 2025 APWA GSP, Option B)

The first sentence of the second paragraph is revised to read as follows:

All prices shall be in legible figures (not words) written in ink or typed, and expressed in U.S. dollars.

Supplement the second paragraph with the following:

4. If a minimum bid amount has been established for any item, the unit or lump sum price must equal or exceed the minimum amount stated.

Delete the last two paragraphs, and replace them with the following:

The Bidder shall submit with their Bid a completed Contractor Certification Wage Law Compliance form, provided by the Contracting Agency. Failure to return this certification as part of the Bid Proposal package will make this Bid Nonresponsive and ineligible for Award. A Contractor Certification of Wage Law Compliance form is included in the Proposal Forms.

The Bidder shall make no stipulation on the Bid Form, nor qualify the bid in any manner.

A bid by a corporation shall be executed in the corporate name, by the president or a vice president (or other corporate officer accompanied by evidence of authority to sign).

A bid by a partnership shall be executed in the partnership name and signed by a partner.

A bid by a joint venture shall be executed in the joint venture name and signed by a member of the joint venture.

1-02.7 Bid Deposit

(March 8, 2013 APWA GSP)

Supplement this section with the following:

Bid bonds shall contain the following:

1. Contracting Agency-assigned number for the project;
2. Name of the project;
3. The Contracting Agency named as obligee;
4. The amount of the bid bond stated either as a dollar figure or as a percentage which represents five percent of the maximum bid amount that could be awarded;
5. Signature of the bidder's officer empowered to sign official statements. The signature of the person authorized to submit the bid should agree with the signature on the bond, and the title of the person must accompany the said signature;
6. The signature of the surety's officer empowered to sign the bond and the power of attorney.

If so stated in the Contract Provisions, bidder must use the bond form included in the Contract Provisions.

If so stated in the Contract Provisions, cash will not be accepted for a bid deposit.

1-02.8 Noncollusion Declaration and Lobbying Certification

(January 1, 2016 COK GSP)

The following new paragraph is inserted at the end of Section 1-02.8:

Conflict of Interest

The bidder affirms that it presently has no interest and shall not acquire any interest, direct or indirect, which would conflict in any manner or degree with the performance of its services hereunder. The Contractor further covenants that in the performance of this contract, no person having any conflicting interest shall be employed. Any interest on the part of the Contractor or its employees must be disclosed forthwith to the City of Kirkland. If this contract is within the scope of a Federal Housing and Community Development Block Grant program, the Contractor further covenants that no person who presently exercises any functions or responsibilities in connection with the block grant program has any personal financial interest, direct or indirect, in this contract.

1-02.9 Delivery of Proposal

(November 21, 2025 APWA GSP, Option A)

Delete this section and replace it with the following:

GENERAL

Each Proposal shall be submitted in a sealed envelope, with the Project Name and Project Number as stated in the Call for Bids clearly marked on the outside of the envelope, or as otherwise required in the Bid Documents, to ensure proper handling and delivery.

Proposals that are received as required will be publicly opened and read as specified in Section 1-02.12. The Contracting Agency will not open or consider any Bid Proposal that is received after the time specified in the Call for Bids for receipt of Bid Proposals or received in a location other than that specified in the Call for Bids. The Contracting Agency will not open or consider any "Supplemental Information" that is received after the time specified, or received in a location other than that specified in the Call for Bids.

If an emergency or unanticipated event interrupts normal work processes of the Contracting Agency so that Proposals cannot be received at the office designated for receipt of bids as specified in Section 1-02.12 the time specified for receipt of the Proposal will be deemed to be extended to the same time of day specified in the solicitation on the first work day on which the normal work processes of the Contracting Agency resume.

Supplemental bid information submitted after the Proposal submittal but within 48 hours of the time and date the Proposal is due, shall be submitted in a sealed envelope labeled the same as for the Proposal, with "Supplemental Information" added.

All other information required to be submitted with the Bid Proposal must be submitted with the Bid Proposal itself, at the time stated in the Call for Bids.

1-02.10 Withdrawing, Revising, or Supplementing Proposal

(July 23, 2015 APWA GSP)

Delete this section, and replace it with the following:

After submitting a physical Bid Proposal to the Contracting Agency, the Bidder may withdraw, revise, or supplement it if:

1. The Bidder submits a written request signed by an authorized person and physically delivers it to the place designated for receipt of Bid Proposals, and

2. The Contracting Agency receives the request before the time set for receipt of Bid Proposals, and

3. The revised or supplemented Bid Proposal (if any) is received by the Contracting Agency before the time set for receipt of Bid Proposals.

If the Bidder's request to withdraw, revise, or supplement its Bid Proposal is received before the time set for receipt of Bid Proposals, the Contracting Agency will return the unopened Proposal package to the Bidder. The Bidder must then submit the revised or supplemented package in

its entirety. If the Bidder does not submit a revised or supplemented package, then its bid shall be considered withdrawn.

Late revised or supplemented Bid Proposals or late withdrawal requests will be date recorded by the Contracting Agency and returned unopened. Mailed, emailed, or faxed requests to withdraw, revise, or supplement a Bid Proposal are not acceptable.

1-02.13 Irregular Proposals

(November 21, 2025 APWA GSP)

Delete this section and replace it with the following:

1. A Proposal will be considered irregular and will be rejected if:
    a. The Bidder is not prequalified when so required;
    b. The Bidder adds provisions reserving the right to reject or accept the Award, or enter into the Contract;
    c. A price per unit cannot be determined from the Bid Proposal;
    d. The Proposal form is not properly executed;
    e. The Bidder fails to submit or properly complete a subcontractor list as required in Section 1-02.6;
    f. The Bidder fails to submit the Bidder Questionnaire, if applicable, as required by Section 1-02.6, or if the documentation that is submitted fails to meet the requirements of the Special Provisions; or
    g. The Bid Proposal does not constitute a definite and unqualified offer to meet the material terms of the Bid invitation.
    h. The Bidder fails to submit the Statement of Bidder's Qualification, as required by Section 1-02.1(1).

2. A Proposal may be considered irregular and may be rejected if:
    a. The Proposal does not include a unit price for every Bid item;
    b. Any of the unit prices are excessively unbalanced (either above or below the amount of a reasonable Bid) to the potential detriment of the Contracting Agency;
    c. The authorized Proposal Form furnished by the Contracting Agency is not used or is altered;
    d. The completed Proposal form contains unauthorized additions, deletions, alternate Bids, or conditions;
    e. Receipt of Addenda is not acknowledged;
    f. A member of a joint venture or partnership and the joint venture or partnership submit Proposals for the same project (in such an instance, both Bids may be rejected); or
    g. If Proposal form entries are not made in ink.

1-02.14 Disqualification of Bidders

(January 1, 2026 COK GSP, Option D; requires pre-approval FHWA-funded projects, through WSDOT/Local Programs)

Delete this section and replace it with the following:

A Bidder will be deemed not responsible if the Bidder does not meet the mandatory bidder responsibility criteria in RCW 39.04.350(1), as amended; or does not meet supplemental criteria in this Section.

Supplemental Bidder Responsibility Criteria:

As permitted under RCW 39.04.350(3), the Contracting Agency requires bidders to meet the following supplemental bidder responsibility criteria to be considered a responsible bidder. The Bidder shall complete and sign a checklist on a form to be provided by the Contracting Agency to confirm compliance with the supplement criteria, and may be required by the Contracting Agency to submit documentation demonstrating compliance with the supplemental criteria. The Bidder must:

□ A. Have not delivered a project to the Contracting Agency within the three-year period immediately preceding the date of the bid submittal which was late, over budget, or did not meet specifications, and the Contracting Agency does not find in writing that the Bidder has shown how the Bidder would improve its performance to be likely to meet project specifications. This criteria also applies to the owner of the Bidder;

□ B. Have successfully completed projects of a similar size and scope as required by the contract documents for this project. In evaluating whether the projects were "successfully completed," the Contracting Agency may check owner references for the previous projects and may evaluate the owner's assessment of the Bidder's performance, including but not limited to the following areas:

- Quality of project and quality control;
- Management of safety and safety record;
- Timeliness of performance;
- Use of skilled personnel;
- Management of subcontractors;
- Availability of and use of appropriate equipment;
- Compliance with contract documents;
- Management of schedule, submittals process, change orders, and close-out;
- Apprenticeship utilization;
- Diverse or certified business outreach and inclusion;

□ C. Not owe delinquent taxes to the Washington State Department of Revenue without a payment plan approved by the Department of Revenue;

□ D. Within the five-year period immediately preceding the date of the bid submittal, not have a record of excessive claims filed against its retainage or payment bonds for public works projects that demonstrate a lack of effective management by the Bidder of making timely and appropriate payments to its subcontractors, suppliers, and workers, unless there are extenuating circumstances, and such circumstances are deemed acceptable to the Contracting Agency;

□ E. Within the five-year period immediately preceding the date of the bid submittal, not have had any public works contract terminated for cause or terminated for default by a

government agency, unless there are extenuating circumstances, and such circumstances are deemed acceptable to the Contracting Agency;

□ F. Within the five-year period immediately preceding the date of the bid submittal, not have lawsuits with judgments entered against the Bidder that demonstrate a pattern of failing to meet the terms of contracts, unless there are extenuating circumstances, and such circumstances are deemed acceptable to the Contracting Agency;

□ G. Within the five-year period immediately preceding the date of the bid submittal, not have a record of prevailing wage complaints filed against it that demonstrates a pattern of failing to pay workers prevailing wages, unless there are extenuating circumstances, and such circumstances are deemed acceptable to the Contracting Agency;

□ H. Not currently be debarred or suspended by the Federal government;

□ I. Use a standard subcontract form that includes the subcontractor responsibility language required by RCW 39.06.020, and have an established procedure which it utilizes to validate the responsibility of each of its subcontractors. The Bidder's subcontract form shall also include a requirement that each of its subcontractors shall have and document a similar procedure to determine whether the sub-tier subcontractors with whom it contracts are also "responsible" subcontractors as defined by RCW 39.06.020;

□ J. Within the five-year period immediately preceding the date of the bid submittal, the Bidder and/or its owners have not been convicted of a crime involving bidding on a public works contract.

□ K. Demonstrate a record of successful and timely resolution of Change Orders including compliance with public contract Change Order resolution procedures (*e.g.*, timely notice of event giving rise to the Change Order, timely submission of a statement of the cost and/or impact of the Change Order unless the Bidder is able to show extenuating circumstances that explain Bidder's failure to timely provide such information to the satisfaction of Contracting Agency).

The Contracting Agency reserves the right to request further documentation as needed from the low Bidder and documentation from other Bidders as well to assess Bidder responsibility and compliance with all Bidder responsibility criteria. The Contracting Agency also reserves the right to obtain information from third-parties and independent sources of information concerning a Bidder's compliance with the mandatory and supplemental criteria, and to use that information in its evaluation. The Contracting Agency may consider mitigating factors in determining whether the Bidder complies with the requirements of the Supplemental Criteria.

The basis for evaluation of Bidder compliance with the Mandatory and Supplemental Criteria shall include any documents or facts obtained by Contracting Agency (whether from the Bidder or third parties) including but not limited to: (i) financial, historical, or operational data from the Bidder; (ii) information obtained directly by the Contracting Agency from others for whom the Bidder has worked, or other public agencies or private enterprises; and (iii) any additional information obtained by the Contracting Agency which is believed to be relevant to the matter.

Request to Change Supplemental Criteria:

Bidders with concerns about the relevancy or restrictiveness of the Supplemental Bidder Responsibility Criteria required in the Bid Documents may request that the Contracting Agency modify the criteria. Such requests must be in writing, describe the nature of the concerns, and propose specific modifications to the criteria that will make the criteria more relevant and/or less restrictive of competition. Bidders must submit such requests to the Contracting Agency no later

than five business days prior to the bid submittal deadline and address the request to the Project Engineer. The Contracting Agency will evaluate the information submitted by the Bidder and respond before the bid submittal deadline. If the evaluation results in a change of the criteria, the Contracting Agency will issue an addendum to the Bid Documents identifying the new criteria.

Decision and Appeal:

If the Contracting Agency determines the Bidder does not meet the supplemental bidder responsibility criteria and is therefore not a responsible bidder, the Contracting Agency shall notify the Bidder in writing with the reasons for its determination. If the Bidder disagrees with this determination, it may appeal the determination within two business days of receipt of the Contracting Agency's determination by presenting additional information to the Contracting Agency. The Contracting Agency will consider the additional information before issuing its final determination. If the final determination affirms that the bidder is not responsible, the Contracting Agency will not execute a contract with any other bidder until at least two business days after the Bidder determined to be not responsible has received the final determination.

1-02.15 Pre Award Information

(April 22, 2024 COK GSP)

This section is supplemented with the following:

7. Obtain, and furnish a copy of, a business license to do business in the city or county where the work is located.

1-03 AWARD AND EXECUTION OF CONTRACT

1-03.1 Consideration of Bids

(December 30, 2022 APWA GSP)

Revise the first paragraph to read:

After opening and reading proposals, the Contracting Agency will check them for correctness of extensions of the prices per unit and the total price. If a discrepancy exists between the price per unit and the extended amount of any bid item, the price per unit will control. If a minimum bid amount has been established for any item and the bidder's unit or lump sum price is less than the minimum specified amount, the Contracting Agency will unilaterally revise the unit or lump sum price, to the minimum specified amount and recalculate the extension. The total of extensions, corrected where necessary, including sales taxes where applicable and such additives and/or alternates as selected by the Contracting Agency, will be used by the Contracting Agency for award purposes and to fix the Awarded Contract Price amount and the amount of the contract bond.

1-03.3 Execution of Contract

(July 8, 2024 APWA GSP Option A)

Revise this section to read:

Within 3 calendar days of Award date (not including Saturdays, Sundays and Holidays), the successful Bidder shall provide the information necessary to execute the Contract to the Contracting Agency. The Bidder shall send the contact information, including the full name, email address, and phone number, for the authorized signer and bonding agent to the Contracting Agency.

Copies of the Contract Provisions, including the unsigned Form of Contract, will be available for signature by the successful bidder on the first business day following award. The number of copies to be executed by the Contractor will be determined by the Contracting Agency.

Within ten (10) calendar days after the award date, the successful bidder shall return the signed Contracting Agency-prepared contract, an insurance certification as required by Section 1-07.18, a satisfactory bond as required by law and Section 1-03.4, the Transfer of Coverage form for the Construction Stormwater General Permit with sections I, III, and VIII completed when provided. Before execution of the contract by the Contracting Agency, the successful bidder shall provide any pre-award information the Contracting Agency may require under Section 1-02.15.

Until the Contracting Agency executes a contract, no proposal shall bind the Contracting Agency nor shall any work begin within the project limits or within Contracting Agency-furnished sites. The Contractor shall bear all risks for any work begun outside such areas and for any materials ordered before the contract is executed by the Contracting Agency.

If the bidder experiences circumstances beyond their control that prevents return of the contract documents within the calendar days after the award date stated above, the Contracting Agency may grant up to a maximum of seven (7) additional calendar days for return of the documents, provided the Contracting Agency deems the circumstances warrant it.

1-03.4 Contract Bond

(January 1, 2016 COK GSP)

Revise the first paragraph to read:

The successful bidder shall provide executed payment and performance bond(s) for the full contract amount. Separate payment and performance bonds are required and each shall be for the full contract amount. The bond(s) shall:

1. Be on Contracting Agency-furnished form(s);
2. Be signed by an approved surety (or sureties) that:
   a. Is registered with the Washington State Insurance Commissioner, and
   b. Appears on the current Authorized Insurance List in the State of Washington published by the Office of the Insurance Commissioner, and
   c. Have an A.M. best rating of A:VII or better.

3. Guarantee that the Contractor will perform and comply with all obligations, duties, and conditions under the Contract, including but not limited to the duty and obligation to indemnify, defend, and protect the Contracting Agency against all losses and claims related directly or indirectly from any failure:
   a. Of the Contractor (or any of the employees, subcontractors, or lower tier subcontractors of the Contractor) to faithfully perform and comply with all contract obligations, conditions, and duties, or
   b. Of the Contractor (or the subcontractors or lower tier subcontractors of the Contractor) to pay all laborers, mechanics, subcontractors, lower tier subcontractors, material person, or any other person who provides supplies or provisions for carrying out the work;
4. Be conditioned upon the payment of taxes, increases, and penalties incurred on the project under titles 50, 51, and 82 RCW; and
5. Be accompanied by a power of attorney for the Surety's officer empowered to sign the bond; and
6. Be signed by an officer of the Contractor empowered to sign official statements (sole proprietor or partner). If the Contractor is a corporation, the bond(s) must be signed by the president or vice president, unless accompanied by written proof of the authority of the individual signing the bond(s) to bind the corporation (i.e., corporate resolution, power of attorney, or a letter to such effect signed by the president or vice president).

(May 17, 2018 APWA GSP)

Add new Section 1-03.4(1).

1-03.7 Judicial Review

(December 30, 2022 APWA GSP)

Revise this section to read:

All decisions made by the Contracting Agency regarding the Award and execution of the Contract or Bid rejection shall be conclusive subject to the scope of judicial review permitted under Washington Law. Such review, if any, shall be timely filed in the Superior Court of the county where the Contracting Agency headquarters is located, provided that where an action is asserted against a county, RCW 36.01.050 shall control venue and jurisdiction.

***(April 25, 2019 COK GSP; may not be used on FHWA-funded projects*; note optional/conditional nature of use for other City projects)**

Add new Section 1-03.8.

1-03.8 Escrow Bid Document Preservation

Scope and Purpose

The purpose of this specification is to preserve the Contractor's Bid documents for use by the Contracting Agency in any litigation between the Contracting Agency and Contractor arising out of this Contract.

The Contractor shall submit a legible copy of all documentation used to prepare the Bid for this Contract to a banking institution designated by the Contracting Agency. Such documentation

shall be placed in escrow with the banking institution and preserved by that institution as specified in the following sections of this specification.

Definition: Bid Documentation
The term "Bid documentation" as used in this specification means any writings, working papers, computer printouts, charts, and any other data compilations which contain or reflect all information, data, and calculations used by the Contractor to determine the Bid in bidding for this project. The term "Bid documentation" includes but is not limited to Contractor equipment rates, Contractor overhead rates, labor rates, efficiency or productivity factors, arithmetic extensions, and quotations from Subcontractors and materialmen to the extent that such rates and quotations were used by the Contractor in formulating and determining the amount of the Bid. The term "Bid documentation" also includes any manuals which are standard to the industry used by the Contractor in determining the Bid for this project. Such manuals may be included in the Bid documentation by reference. The term does not include Bid documents provided by the Contracting Agency for use by the Contractor in bidding on this project.

Submittal of Bid Documentation
The Contractor shall submit the Bid documentation, as defined in this section, to the banking institution. The Bid documentation shall be submitted to the banking institution within seven calendar days after the Contract for this project has been executed by the Contracting Agency. The Bid documentation shall be submitted in a sealed container. The container shall be clearly marked "Bid Documentation" and shall also show on the face of the container the Contractor's name, the date of submittal, the project title, and the Contract number.

Affidavit
The sealed container shall contain, in addition to the Bid documentation, an affidavit signed under oath by an individual authorized by the Contractor to execute bidding Proposals. The affidavit shall list each Bid document with sufficient specificity so a comparison can be made between the list and the Bid documentation to ensure that all of the Bid documentation listed in the affidavit has been enclosed in the sealed container. The affidavit shall show that the affiant has personally examined the Bid documentation and that the affidavit lists all of the documents used by the Contractor to determine the Bid for this project and that all such Bid documentation has been enclosed in the sealed container.

Verification
The banking institution upon receipt of the sealed container shall place the container in a safety deposit box, vault, or other secure place, and immediately notify the Contracting Agency in writing that the container has been received. Upon receipt of such notice, the Contracting Agency will promptly notify the Contractor in writing that the Contracting Agency will open the sealed container to verify that the affidavit has been enclosed and to compare the Bid documents listed in the affidavit with the Bid documents enclosed in the container to ensure that all of the Bid documentation has been submitted and that the copies are legible. The notification will advise the Contractor of the date and time the container will be opened and the name of the Contracting Agency employee who will verify the contents of the container.

The employee verifying the contents of the escrow container will not be involved or connected with the review, evaluation, or resolution of any claim by the Contractor made to the Contracting Agency in connection with the Contract for which the verification was made. The Contractor may have representatives present at the opening.

Supplementation
Documents listed in the affidavit but not enclosed in the sealed container through error or oversight shall be submitted in a sealed container within five calendar days after the opening of the original container. Also, any Bid documentation that is illegible shall be replaced with legible copies and furnished within five calendar days after the opening of the original container. The face of the container shall show the same information as the original container except the container shall be marked "Supplemental Bid Documentation". The same procedure used in verifying the contents of the original container shall be used in verifying the contents of the supplemental submittal.

Duration and Use
The Bid documentation and affidavit shall remain in escrow during the life of the Contract and will be returned to the Contractor by the banking institution, provided that the Contractor has signed the final Contract voucher certification and has not reserved any claims on the final Contract voucher certification against the Contracting Agency arising out of the Contract. In the event that claims against the Contracting Agency are reserved on the final Contract voucher certification, the Bid documentation and affidavit shall remain in escrow.

If the claims are not resolved and litigation ensues, the Contracting Agency may serve a request upon the Contractor to authorize the banking institution, in writing, to release the Bid documentation and affidavit in escrow to the Contracting Agency. The Contractor shall respond to the request within 20 days after service of the request. If the Contractor objects or does not respond to the request within 20 days after service of the request, the Contracting Agency may file a motion under the Civil Rules requesting the court to enter an order directing the banking institution to deliver the Bid documentation and affidavit in escrow to the Contracting Agency.

The Contractor shall respond to the request within the time required by the then applicable Civil Court Rules for the Superior Court of the Contracting Agency of Washington. If the Contractor objects or does not respond to the request within the time required by the then applicable Civil Rules, the Contracting Agency may file a motion pursuant to such rules requesting the court to enter an order directing the banking institution to deliver the Bid documentation and affidavit in escrow to the Contracting Agency.

The banking institution shall release the Bid documentation and affidavit as follows:

1. To the Contracting Agency upon receipt of a letter from the Contractor authorizing the release;
2. To the Contracting Agency upon receipt of a certified copy of a court order directing the release of the documents;
3. To the court for an in camera examination pursuant to a certified copy of a court order;
4. The Bid documentation and affidavit shall be returned to the Contractor if litigation is not commenced within the time period prescribed by law.

The Contractor agrees that the sealed container placed in escrow and any supplemental sealed container placed in escrow contain all of the Bid documentation used to determine the Bid and that no other Bid documentation shall be utilized by the Contractor in litigation over claims brought by the Contractor arising out of this Contract unless otherwise ordered by the court.

Remedies for Refusal or Failure to Provide Bid Documentation
Failure or refusal to provide Bid documentation shall be deemed a material breach of this Contract. The Contracting Agency may at its option refuse to make payment for progress

estimates under Section 1-09.9 until the Contractor has submitted the Bid documentation required by this specification. The Contracting Agency may at its option terminate the Contract for default under Section 1-08.10. These remedies are not exclusive and the Contracting Agency may take such other action as is available to it under the law.

Confidentiality of Bid Documentation
The Bid documentation and affidavit in escrow are and will remain the property of the Contractor. The Contracting Agency has no interest in or right to the Bid documentation and affidavit other than to verify the contents and legibility of the Bid documentation unless litigation ensues between the Contracting Agency and Contractor over claims brought by the Contractor arising out of this Contract. In the event of such litigation, the Bid documentation and affidavit may become the property of the Contracting Agency for use in the litigation as may be appropriate subject to the provisions of any court order limiting or restricting the use or dissemination of the Bid documentation and affidavit as provided in the preceding section entitled Duration and Use.

Cost and Escrow Instructions
The cost of the escrow will be borne by the Contracting Agency. The Contracting Agency will provide escrow instructions to the banking institution consistent with this specification.

1-04 SCOPE OF THE WORK

(January 1, 2016 COK GSP)

1-04.1 Intent of the Contract

Section 1-04.1 is supplemented with the following:

> All materials, tools, labor, and guarantees thereof of required to complete the work shall be furnished and supplied in accordance with the Plans, these Special Provisions, the Standard Specifications, and City of Kirkland Pre-Approved (Standard) Plans and Policies. The Contractor shall include all costs of doing this work within the contract bid item prices.

1-04.2 Coordination of Contract Documents, Plans, Special Provisions, Specifications, and Addenda

(December 30, 2022 APWA GSP)

Revise the second paragraph to read:

> Any inconsistency in the parts of the contract shall be resolved by following this order of precedence (e.g., 1 presiding over 2, 2 over 3, 3 over 4, and so forth):
> 1. Addenda,
> 2. Proposal Form,
> 3. Special Provisions,
> 4. Contract Plans,
> 5. Standard Specifications,
> 6. Contracting Agency's Standard Plans or Details (if any), and
> 7. WSDOT Standard Plans for Road, Bridge, and Municipal Construction.

1-04.4(1) Minor Changes

(May 30, 2019 APWA GSP)

Delete the first paragraph and replace it with the following:

Payments or credits for changes amounting to $25,000.00 or less may be made under the Bid item “Minor Change”. At the discretion of the Contracting Agency, this procedure for Minor Changes may be used in lieu of the more formal procedure as outlined in Section 1-04.4, Changes. All “Minor Change” work will be within the scope of the Contract Work and will not change Contract Time.

1-04.6 Variation in Estimated Quantities

(December 30, 2022 APWA GSP, Option B)

Revise the first paragraph to read:

Payment to the Contractor will be made only for the actual quantities of Work performed and accepted in conformance with the Contract. When the accepted quantity of Work performed under a unit item varies from the original Proposal quantity, payment will be at the unit Contract price for all Work unless the total accepted quantity of the Contract item, adjusted to exclude added or deleted amounts included in change orders accepted by both parties, increases or decreases by more than 25 percent from the original Proposal quantity, and if the total extended bid price for that item at time of award is equal to or greater than 10 percent of the total contract price at time of award. In that case, payment for contract work may be adjusted as described herein:

1-04.8 Progress Estimates and Payments

(October 26, 2025 COK GSP)

This section is supplemented with the following:

> Progress estimates shall be signed by the Contractor and Contracting Agency Representative to be considered approved and properly completed in accordance with RCW 39.76.011. Progress payments shall be for work completed in the previous month. Estimating ahead will not be allowed. The Contracting Agency will normally submit draft progress estimates for the Contractor’s review and approval within 14 calendar days from the end of the previous month. Should the Contractor fail to sign a progress estimate within 7 calendar days after receipt from the Contracting Agency, the Contracting Agency shall unilaterally process a progress payment based on the amount shown on the draft progress estimate.

1-04.11 Final Cleanup

(January 1, 2016 COK GSP)

Section 1-04.11 is deleted in its entirety and replaced with the following:

The Contractor shall perform final cleanup as provided in this Section. The Engineer will not establish the Physical Completion Date until this is done. All public and private property the Contractor occupied to do the Work, including but not limited to the Street Right of Way, material sites, borrow and waste sites, and construction staging area shall be left neat and presentable. Immediately after completion of the Work, the Contractor shall cleanup and remove all refuse and unused materials of any kind resulting from the Work. Failure to do the final cleanup may result in the final cleanup being done by the Owner and the cost thereof charged to the Contractor and deducted from the Contractor's final progress estimate.

The Contractor shall:

1. Remove all rubbish, surplus materials, discarded materials, falsework, piling, camp buildings, temporary structures, equipment, and debris;
2. Remove from the Project, all unneeded, oversized rock left from grading, surfacing, or paving unless the Contract specifies otherwise or the Engineer approves otherwise;
3. On all concrete and asphalt pavement work, flush the pavement clean and remove the wash water and debris;
4. Sweep and flush structure decks and remove wash water and debris;
5. Clean out from all open culverts and drains, inlets, catch basins, manholes and water main valve chambers, within the limits of the Project Site, all dirt and debris of any kind that is the result of the Contractor's operations;
6. Level and fine grade all excavated material not used for backfill where the Contract requires;
7. Fine grade all slopes;
8. Upon completion of grading and cleanup operations at any privately-owned site for which a written agreement between the Contractor and property owner is required, the Contractor shall obtain and furnish to the Engineer a written release from all damages, duly executed by the property owner, stating that the restoration of the property has been satisfactorily accomplished.;

All costs associated with cleanup shall be incidental to the Work and shall be included in the various Bid items in the Bid, and shall be at no additional cost to the Owner.

(January 27, 2021 COK GSP)

Add new Section 1-04.12.

1-04.12 Water, Electrical Power, Telecommunications, and Sanitary Sewer Requirements

Except where specifically indicated otherwise in the Contract Documents, the Contractor shall make all necessary arrangements and bear all costs as incidental to the Contract for permits, temporary hook-ups, usage fees, and decommissioning of temporary services for all water, electrical power, telecommunications, and/or sanitary sewer services necessary for performance of the Work.

1-05 CONTROL OF WORK

(January 27, 2021 COK GSP)

1-05.1 Authority of the Engineer

Section 1-05.1 is supplemented with the following:

When directed by the Engineer for purposes such as (but not limited to) maintaining unrestricted public access and use outside the Work area, maintaining an appropriate construction site appearance, and/or allowing full access to the Work by the Engineer or other City personnel, the Contractor shall cleanup and remove debris, refuse, and discarded materials of any kind resulting from the Work to meet those purposes. These activities shall be incidental to the bid items associated with the Work that generated the debris, refuse, and discarded materials. Failure to do so may result in cleanup done by the Owner and the cost thereof charged to the Contractor by either deducting from the next Progress Payment to the Contractor or direct billing from the City

1-05.4 Conformity with and Deviations from Plans and Stakes

(January 1, 2020 COK GSP)

Section 1-05.4 is supplemented with the following:

Unless otherwise identified on Plans or in the Special Provisions, Unit Bid prices shall cover all costs for all surveying labor, equipment, materials, and supervision required to perform the Work. This shall include any resurveying, checking, correction of errors, replacement of missing or damaged stakes, and coordination efforts.

(January 1, 2016 COK GSP)

Add new Section 1-05.4(1).

1-05.4(1) Roadway and Utility Surveys

The Contractor shall be responsible for setting, maintaining, and resetting all alignment stakes, slope stakes, and grades necessary for the construction of the improvements under this contract. Except for the survey control data furnished by the Owner, calculations, surveying, and measuring required for setting and maintaining the necessary lines and grades shall be the Contractor's responsibility.

The Owner may spot-check the Contractor's surveying. These spot-checks will not change the requirements for normal checking by the Contractor.

To facilitate the establishment of lines and elevations, the Owner will provide the Contractor with primary survey control information consisting of descriptions of two primary control points used for the horizontal and vertical control. Primary control points will be described and shown on the right-of-way Plans. The Contractor shall check all control points for horizontal and vertical locations prior to use and report any discrepancy to the Engineer. Errors resulting from using control points which have not been verified, shall be the Contractors responsibility.

At a minimum the Contractor shall provide following survey staking shall be required:

1. Construction centerline or an offset to construction centerline shall be staked at all angle points and 100-foot intervals on tangents.
2. Offset stakes of JUT Centerline at all angle points and at 50-foot intervals on tangents
   a. Cut/fill shall reference the elevations of the lowest conduit.
   b. Offset shall reference the location of the center of trench and list the width of the trench section.
3. Offset stakes of all structure control/location points shown on the undergrounding Plans.
   a. Each vault, handhold, and junction box shall have a sets of off-set points provided each location point shown in the location tables Cut/Fill shall reference elevations of the finish grade of the top lid of the structure.
   b. Each pole riser and stub up, shall have at least one set of off-set hubs provided with cut/fills to finish ground elevations.
   c. Finish grade elevations of all structures shall be determined by the Contractor based on the typical sections and details provide on the Contract Drawings.
4. Offset stakes at face or walls.
5. Offset staking of all drainage structures and drainage pipes at 50-foot intervals.
6. Location of all right-of-way and easements adjacent to the work area as shown on the right-of-way Plans.
7. Offset of all permanent concrete sidewalks, curb ramps, and driveways.

Each stake shall have the following information: Hub elevation, offset distance to items being staked, cut/fill to proposed elevations, design elevation of items being staked.

The above information shall also be shown on a written Cut Sheet and provided to the City inspector 48-hours prior to installation of the items being staked.

The Contractor shall establish all secondary survey controls, both horizontal and vertical, as necessary to assure proper placement of all project elements based on the primary control points provided by the Engineer. Survey work shall be within the following tolerances:

Stationing	+.01 foot
Alignment	+.01 foot (between successive points)
Superstructure Elevations	+.01 foot (from plan elevations)
Substructure Elevations	+.05 foot (from plan elevations)
Sidewalk and Curb Ramp Elevations	+.01 foot (from plan elevations)

During the progress of the work, the Contractor shall make available to the Engineer all field books including survey information, footing elevations, cross sections and quantities.

The Contractor shall be fully responsible for the close coordination of field locations and measurements with appropriate dimensions of structural members being fabricated.

1-05.4(3) Monuments

The Contractor shall work to preserve the existing monumentation as provided in RCW 58.09.130 and WAC 332-120. The Contractor shall notify the Engineer immediately if it becomes apparent that a survey marker will be disturbed due to construction. The Contractor shall allow ample time for the Engineer to acquire adequate information so that the monument may be replaced in its original position and so that a reference monument can be set. The Engineer will notify the Contractor if or when the monument will be reset to its original position. All costs associated with the replacement of monuments damaged or destroyed prior to being referenced shall be deducted from monies due to the Contractor.

1-05.7 Removal of Defective and Unauthorized Work

(October 1, 2005 APWA GSP)
Supplement this section with the following:

If the Contractor fails to remedy defective or unauthorized work within the time specified in a written notice from the Engineer, or fails to perform any part of the work required by the Contract Documents, the Engineer may correct and remedy such work as may be identified in the written notice, with Contracting Agency forces or by such other means as the Contracting Agency may deem necessary.

If the Contractor fails to comply with a written order to remedy what the Engineer determines to be an emergency situation, the Engineer may have the defective and unauthorized work corrected immediately, have the rejected work removed and replaced, or have work the Contractor refuses to perform completed by using Contracting Agency or other forces. An emergency situation is any situation when, in the opinion of the Engineer, a delay in its remedy could be potentially unsafe, or might cause serious risk of loss or damage to the public.

Direct or indirect costs incurred by the Contracting Agency attributable to correcting and remedying defective or unauthorized work, or work the Contractor failed or refused to perform, shall be paid by the Contractor. Payment will be deducted by the Engineer from monies due, or to become due, the Contractor. Such direct and indirect costs shall include in particular, but without limitation, compensation for additional professional services required, and costs for repair and replacement of work of others destroyed or damaged by correction, removal, or replacement of the Contractor's unauthorized work.

No adjustment in contract time or compensation will be allowed because of the delay in the performance of the work attributable to the exercise of the Contracting Agency's rights provided by this Section.

The rights exercised under the provisions of this section shall not diminish the Contracting Agency's right to pursue any other avenue for additional remedy or damages with respect to the Contractor's failure to perform the work as required.

1-05.9 Equipment

(January 1, 2016 COK GSP)

The following new paragraph is inserted between the second and third paragraphs:

Use of equipment with metal tracks will not be permitted on concrete or asphalt surfaces unless otherwise authorized by the Engineer.

1-05.10 Guarantees

(January 1, 2016 COK GSP)

Section 1-05.10 is supplemented as follows:

Guarantees and maintenance bonds shall be in accordance with City of Kirkland, State of Washington, Public Works Performance and Payment Bond forms and requirements. The performance bond shall be in the full amount of contract. The Contractor guarantees all items of material, equipment, and workmanship against mechanical, structural, or other defects for which the Contractor is responsible that may develop or become evident within a period of one year from and after acceptance of the work by the Owner. This guarantee shall be understood to require prompt remedy of defects upon written notification to the Contractor. If the Owner determines the defect requires immediate repair, the Owner may, without further notice to the Contractor, make the necessary corrections, the cost of which shall be borne by the Contractor. To support the above guarantee, the Contractor's performance bond shall remain in full force and effect for one year following the acceptance of the project by the Owner.

1-05.11 Final Inspection

(October 1, 2005 APWA GSP)

Delete this section and replace it with the following:

1-05.11 Final Inspections and Operational Testing

1-05.11(1) Substantial Completion Date

When the Contractor considers the work to be substantially complete, the Contractor shall so notify the Engineer and request the Engineer establish the Substantial Completion Date. The Contractor's request shall list the specific items of work that remain to be completed in order to reach physical completion. The Engineer will schedule an inspection of the work with the Contractor to determine the status of completion. The Engineer may also establish the Substantial Completion Date unilaterally.

If, after this inspection, the Engineer concurs with the Contractor that the work is substantially complete and ready for its intended use, the Engineer, by written notice to the Contractor, will set the Substantial Completion Date. If, after this inspection the Engineer does not consider the work substantially complete and ready for its intended use, the Engineer will, by written notice, so notify the Contractor giving the reasons therefor.

Upon receipt of written notice concurring in or denying substantial completion, whichever is applicable, the Contractor shall pursue vigorously, diligently and without unauthorized interruption, the work necessary to reach Substantial and Physical Completion. The Contractor shall provide the Engineer with a revised schedule indicating when the Contractor expects to reach substantial and physical completion of the work.

The above process shall be repeated until the Engineer establishes the Substantial Completion Date and the Contractor considers the work physically complete and ready for final inspection.

1-05.11(2) Final Inspection and Physical Completion Date

When the Contractor considers the work physically complete and ready for final inspection, the Contractor by written notice, shall request the Engineer to schedule a final inspection. The Engineer will set a date for final inspection. The Engineer and the Contractor will then make a final inspection and the Engineer will notify the Contractor in writing of all particulars in which the final inspection reveals the work incomplete or unacceptable. The Contractor shall immediately take such corrective measures as are necessary to remedy the listed deficiencies. Corrective work shall be pursued vigorously, diligently, and without interruption until physical completion of the listed deficiencies. This process will continue until the Engineer is satisfied the listed deficiencies have been corrected.

If action to correct the listed deficiencies is not initiated within 7 days after receipt of the written notice listing the deficiencies, the Engineer may, upon written notice to the Contractor, take whatever steps are necessary to correct those deficiencies pursuant to Section 1-05.7.

The Contractor will not be allowed an extension of contract time because of a delay in the performance of the work attributable to the exercise of the Engineer's right hereunder.

Upon correction of all deficiencies, the Engineer will notify the Contractor and the Contracting Agency, in writing, of the date upon which the work was considered physically complete. That date shall constitute the Physical Completion Date of the Contract, but shall not imply acceptance of the work or that all the obligations of the Contractor under the contract have been fulfilled.

(*****)

1-05.11(3) Operational Testing

It is the intent of the Contracting Agency to have at the Physical Completion Date a complete and operable system. Therefore when the work involves the installation of machinery or other mechanical equipment; street lighting, electrical distribution or signal systems; irrigation systems; buildings; or other similar work it may be desirable for the Engineer to have the Contractor operate and test the work for a period of time after final inspection but prior to the physical completion date. Whenever items of work are listed in the Contract

Provisions for operational testing they shall be fully tested under operating conditions for 30 calendar days to ensure their acceptability prior to the Physical Completion Date. During and following the test period, the Contractor shall correct any items of workmanship, materials, or equipment which prove faulty, or that are not in first class operating condition. Equipment, electrical controls, meters, or other devices and equipment to be tested during this period shall be tested under the observation of the Engineer, so that the Engineer may determine their suitability for the purpose for which they were installed. The Physical Completion Date cannot be established until testing and corrections have been completed to the satisfaction of the Engineer.

The costs for power, gas, labor, material, supplies, and everything else needed to successfully complete operational testing, shall be included in the unit contract prices related to the system being tested, unless specifically set forth otherwise in the proposal.

Operational and test periods, when required by the Engineer, shall not affect a manufacturer's guaranties or warranties furnished under the terms of the contract.

1-05.12 Final Acceptance

(March 8, 2013 APWA GSP)

Add new Section 1-05.12(1).

1-05.12(1) One-Year Guarantee Period

The Contractor shall return to the project and repair or replace all defects in workmanship and material discovered within one year after Final Acceptance of the Work. The Contractor shall start work to remedy any such defects within 7 calendar days of receiving Contracting Agency's written notice of a defect, and shall complete such work within the time stated in the Contracting Agency's notice. In case of an emergency, where damage may result from delay or where loss of services may result, such corrections may be made by the Contracting Agency's own forces or another contractor, in which case the cost of corrections shall be paid by the Contractor. In the event the Contractor does not accomplish corrections within the time specified, the work will be otherwise accomplished and the cost of same shall be paid by the Contractor.

When corrections of defects are made, the Contractor shall then be responsible for correcting all defects in workmanship and materials in the corrected work for one year after acceptance of the corrections by Contracting Agency.

This guarantee is supplemental to and does not limit or affect the requirements that the Contractor's work comply with the requirements of the Contract or any other legal rights or remedies of the Contracting Agency.

1-05.13 Superintendents, Labor and Equipment of Contractor

(August 14, 2013 APWA GSP); (January 1, 2026 COK GSP)

Replace the third paragraph of this section with the following:

Competent supervisors experienced in the task being performed shall continuously oversee the Contract Work. Within ten (10) days after being awarded the Contract, the

Contractor shall provide to the Contracting Agency the names and qualifications of any superintendents and project managers for the Work. Within five (5) business days following receipt of the information, the Contracting Agency may notify the Contractor that the Contracting Agency (1) has reasonable objection to the proposed superintendent(s) and/or project manager(s), or (2) requires additional time for review. The Contractor shall not employ a proposed superintendent or project manager to whom the Contracting Agency has made reasonable and timely objection. The Contractor shall not change the superintendent(s) or project manager(s) without the Contracting Agency's consent, which shall not unreasonably be withheld or delayed. At the Engineer's written request, the Contractor shall immediately remove and replace incompetent, careless, or negligent employees.

Delete the sixth and seventh paragraphs of this section.

1-05.15 Method of Serving Notices

(January 4, 2024 APWA GSP)

Revise the second paragraph to read:

All correspondence from the Contractor shall be served and directed to the Engineer. All correspondence from the Contractor constituting any notification, notice of protest, notice of dispute, or other correspondence constituting notification required to be furnished under the Contract, must be written in paper format, hand delivered or sent via certified mail delivery service with return receipt requested to the Engineer's office. Electronic copies such as e-mails or electronically delivered copies of correspondence will not constitute such notice and will not comply with the requirements of the Contract.

(October 1, 2005 APWA GSP)
Add the following new section:

1-05.16 Water and Power

The Contractor shall make necessary arrangements, and shall bear the costs for power and water necessary for the performance of the work, unless the contract includes power and water as a pay item.

(March 8, 2013 APWA GSP)

Add new Section 1-05.18.

1-05.18 Record Drawings

The Contractor shall maintain one set of full size plans for Record Drawings, updated with clear and accurate red-lined field revisions on a daily basis, and within 2 business days after receipt of information that a change in Work has occurred. The Contractor shall not conceal any work until the required information is recorded.

This Record Drawing set shall be used for this purpose alone, shall be kept separate from other Plan sheets, and shall be clearly marked as Record Drawings. These Record Drawings shall be kept on site at the Contractor's field office, and shall be available for review by the Contracting Agency at all times. The Contractor shall bring the Record Drawings to each progress meeting for review.

The preparation and upkeep of the Record Drawings is to be the assigned responsibility of a single, experienced, and qualified individual. The quality of the Record Drawings, in terms of accuracy, clarity, and completeness, is to be adequate to allow the Contracting Agency to modify the computer-aided drafting (CAD) Contract Drawings to produce a complete set of Record Drawings for the Contracting Agency without further investigative effort by the Contracting Agency.

The Record Drawing markups shall document all changes in the Work, both concealed and visible. Items that must be shown on the markups include but are not limited to:

- Actual dimensions, arrangement, and materials used when different than shown in the Plans.
- Changes made by Change Order or Field Order.
- Changes made by the Contractor.
- Accurate locations of storm sewer, sanitary sewer, water mains and other water appurtenances, structures, conduits, light standards, vaults, width of roadways, sidewalks, landscaping areas, building footprints, channelization and pavement markings, etc. Include pipe invert elevations, top of castings (manholes, inlets, etc.).

If the Contract calls for the Contracting Agency to do all surveying and staking, the Contracting Agency will provide the elevations at the tolerances the Contracting Agency requires for the Record Drawings.

When the Contract calls for the Contractor to do the surveying/staking, the applicable tolerance limits include, but are not limited to the following:

	Vertical	Horizontal
As-built sanitary & storm invert and grate elevations	± 0.01 foot	± 0.01 foot
As-built monumentation	± 0.001 foot	± 0.001 foot
As-built waterlines, inverts, valves, hydrants	± 0.10 foot	± 0.10 foot
As-built ponds/swales/water features	± 0.10 foot	± 0.10 foot
As-built buildings (fin. Floor elev.)	± 0.01 foot	± 0.10 foot
As-built gas lines, power, TV, Tel, Com	± 0.10 foot	± 0.10 foot
As-built signs, signals, etc.	N/A	± 0.10 foot

Making Entries on the Record Drawings:

- Use erasable colored pencil (not ink) for all markings on the Record Drawings, conforming to the following color code:
- Additions - Red
- Deletions - Green
- Comments - Blue
- Dimensions - Graphite
- Provide the applicable reference for all entries, such as the change order number, the request for information (RFI) number, or the approved shop drawing number.

- Date all entries.
- Clearly identify all items in the entry with notes similar to those in the Contract Drawings (such as pipe symbols, centerline elevations, materials, pipe joint abbreviations, etc.).

The Contractor shall certify on the Record Drawings that said drawings are an accurate depiction of built conditions, and in conformance with the requirements detailed above. The Contractor shall submit final Record Drawings to the Contracting Agency. Contracting Agency acceptance of the Record Drawings is one of the requirements for achieving Physical Completion.

Payment will be made for the following bid item:

Record Drawings (Minimum Bid $5,000.00)	Lump Sum

Payment for this item will be made on a prorated monthly basis for work completed in accordance with this section up to 75% of the lump sum bid. The final 25% of the lump sum item will be paid upon submittal and approval of the completed Record Drawings set prepared in conformance with these Special Provisions.

A minimum bid amount has been entered in the Bid Proposal for this item. The Contractor must bid at least that amount.

(November 19, 2019 COK GSP; may not be used on FHWA-funded projects; note optional/conditional nature of use for other City projects)

Add new Section 1-05.19.

1-05.19 Daily Construction Report

The Contractor and Subcontractors shall maintain daily, a Daily Construction Report of the Work. The Diary must be kept and maintained by Contractor's designated project superintendent(s). Entries must be made on a daily basis and must accurately represent all of the project activities on each day. Contractor shall provide signed copies of diary sheets from the previous week to Engineer at each Weekly Coordination Meeting.

Every single diary sheet/page must have:

• Project name & number;

• Consecutive numbering of pages, and

• Typed or printed name, signature, and date of the person making the entry.

At a minimum the diary shall, for each day, have a separate entry detailing each of the following:

1. Day and date.
2. Weather conditions, including changes throughout the day.

3. Complete description of work accomplished during the day, with adequate references to the Plans and Contract Provisions so the reader can easily and accurately identify said work on the Plans. Identify location/description of photographs or videos taken that day.
4. Each and every changed condition, dispute or potential dispute, incident, accident, or occurrence of any nature whatsoever which might affect Contractor, Contracting Agency, or any third party in any manner. This shall be provided on a separate page for other information.
5. List all materials received and stored on- or off-site by Contractor that day for future installation, including the manner of storage and protection of the same.
6. List materials installed that day.
7. List all Subcontractors working on-site that day.
8. List the number of Contractor's employees working during each day, by category of employment.
9. List Contractor's equipment on the site that day; showing which were in use, and which idle.
10. Notations to explain inspections, testing, stake-out, and all other services furnished by Contracting Agency or other party during the day.
11. Verify the daily (including non-work days) inspection and maintenance of traffic control devices and condition of the traveled roadway surfaces.
12. Any other information that serves to give an accurate and complete record of the nature, quantity, and quality of Contractor's progress on each day.
13. Add; Officials and visitors onsite
14. Change Orders
15. Occurrence of testing, staking or special inspections

It is expressly agreed between Contractor and Contracting Agency that the Daily Diary maintained by Contractor shall be the "Contractor's Book of Original Entry" for the documentation of any potential claims or disputes that might arise during this Contract. Failure of Contractor to maintain this Diary in the manner described above will constitute a waiver of any such claims or disputes by Contractor.

Preparation of the Daily Diary by the Contractor shall be incidental to the unit prices for applicable bid items. No separate payment shall be made for preparation and maintaining the Daily Diary.

Engineer or the Engineer’s representative on the job site will also complete a Daily Construction Report.

1-06 CONTROL OF MATERIAL

(January 1, 2016 COK GSP)

1-06.1 Approval of Materials Prior to Use

Section 1-06.1 is supplemented as follows:

Approval of a Material Source shall not mean acceptance of the Material. The Material shall meet the requirements of the Contract.

1-06.1(2) Request for Approval of Materials (RAM)

(February 17, 2022 COK GSP)

Revise the first paragraph to read:

The RAM shall be used for all submittals unless directed otherwise by the Engineer. The RAM shall be prepared by the Contractor in accordance with the instructions on Form 350-071 and submitted to the Engineer for approval before the material is incorporated into the Work.

1-06.2(2)B Financial Incentive

(January 4, 2024 AWPA GSP)

Replace the first sentence of this Section with the following:

The maximum Composite Pay Factor shall be 1.00.

1-06.6 Recycled Materials

(January 4, 2016 APWA GSP)

Delete this section, including its subsections, and replace it with the following:

The Contractor shall make their best effort to utilize recycled materials in the construction of the project. Approval of such material use shall be as detailed elsewhere in the Standard Specifications.

Prior to Physical Completion the Contractor shall report the quantity of recycled materials that were utilized in the construction of the project for each of the items listed in Table 9-03.21(1)E in Section 9-03.21. The report shall include hot mix asphalt, recycled concrete aggregate, recycled glass, steel furnace slag and other recycled materials (e.g. utilization of on-site material and aggregates from concrete returned to the supplier). The Contractor's report shall be provided on DOT form 350-075 Recycled Materials Reporting.

1-07 LEGAL RELATIONS AND RESPONSIBILITIES TO THE PUBLIC

(January 1, 2021 COK GSP)

1-07.1 Laws to Be Observed

Section 1-07.1 is supplemented with the following:

The Contractor shall at all times eliminate noise to the maximum practicable extent. Air compressing plants shall be equipped with silencers, and the exhaust of all gasoline motors or other power equipment shall be provided with mufflers. Special care shall be used to avoid noise or other nuisances, and the Contractor shall strictly observe all federal, state, and local regulations concerning noise.

The Contractor shall make an effort to reduce carbon emissions by turning off engines on construction equipment not in active use, and on trucks that are idling while waiting to load or unload material for five minutes or more.

Compliance with Laws

The Contractor shall comply with the requirements of all other City ordinances, state statutes, laws, and regulations, whether or not stated herein, which are specifically applicable to the public improvements and work to be performed.

The Contractor shall be subject to City of Kirkland Code enforcement, as required by Kirkland Municipal Code (KMC) Chapter 1.12. The Contractor shall fully comply with and satisfy all fines and costs assessed by code enforcement(s) prior to the Completion Date, unless otherwise authorized by the City of Kirkland in writing.

(October 1, 2005 APWA GSP)

Supplement this section with the following:

In cases of conflict between different safety regulations, the more stringent regulation shall apply.

The Washington State Department of Labor and Industries shall be the sole and paramount administrative agency responsible for the administration of the provisions of the Washington Industrial Safety and Health Act of 1973 (WISHA).

The Contractor shall maintain at the project site office, or other well known place at the project site, all articles necessary for providing first aid to the injured. The Contractor shall establish, publish, and make known to all employees, procedures for ensuring immediate removal to a hospital, or doctor's care, persons, including employees, who may have been injured on the project site. Employees should not be permitted to work on the project site before the Contractor has established and made known procedures for removal of injured persons to a hospital or a doctor's care.

The Contractor shall have sole responsibility for the safety, efficiency, and adequacy of the Contractor's plant, appliances, and methods, and for any damage or injury resulting from their failure, or improper maintenance, use, or operation. The Contractor shall be solely and completely responsible for the conditions of the project site, including safety for all persons and property in the performance of the work. This requirement shall apply

continuously, and not be limited to normal working hours. The required or implied duty of the Engineer to conduct construction review of the Contractor's performance does not, and shall not, be intended to include review and adequacy of the Contractor's safety measures in, on, or near the project site.

(January 1, 2016 COK GSP)

Supplement this section with the following:

Contractor's Safety Responsibilities

These construction documents and the joint and several phases of construction hereby contemplated are to be governed at all times by applicable provisions of the federal law(s), including but not limited to the latest amendments of the following:

Williams-Steiger Occupational Safety and Health Act of 1980, Public Law 91-596.

Part 1910 - Occupational Safety and Health Standards, Chapter XVII of Title 29, Code of Federal Regulations.

This project, the Contractor and its subcontractors, shall, at all times, be governed by Chapter XIII of Title 29, Code of Federal Regulations, Part 1518 - Safety and Health Regulations for Construction (35 CFR 75), as amended to date.

To implement the program, and to provide safe and healthful working conditions for all persons, the construction superintendent or his/her designated safety officer shall conduct general project safety meetings at the site at least once each month during the course of construction.

The Contractor and all subcontractors shall immediately report all accidents, injuries, and health hazards to the Owner, in writing. This shall not obviate any mandatory reporting under the provisions of the Occupational Safety and Health Act of 1970. This program shall become a part of the contract documents and the contract between the Owner and the Contractor, and all subcontractors, as though fully written therein.

Where the location of the work is in proximity to overhead wires and power lines, the Contractor shall coordinate all work with the utility and shall provide for such measures as may be necessary for the protection of the workers.

1-07.2 State Taxes

(June 27, 2011 APWA GSP)

Delete this section, including its sub-sections, in its entirety and replace it with the following:

1-07.2 State Sales Tax

The Washington State Department of Revenue has issued special rules on the State sales tax. Sections 1-07.2(1) through 1-07.2(3) are meant to clarify those rules. The Contractor should contact the Washington State Department of Revenue for answers to questions in this area. The Contracting Agency will not adjust its payment if the Contractor bases a bid on a misunderstood tax liability.

The Contractor shall include all Contractor-paid taxes in the unit bid prices or other contract amounts. In some cases, however, state retail sales tax will not be included. Section 1-07.2(2) describes this exception.

The Contracting Agency will pay the retained percentage (or release the Contract Bond if a FHWA-funded Project) only if the Contractor has obtained from the Washington State Department of Revenue a certificate showing that all contract-related taxes have been paid (RCW 60.28.051). The Contracting Agency may deduct from its payments to the Contractor any amount the Contractor may owe the Washington State Department of Revenue, whether the amount owed relates to this contract or not. Any amount so deducted will be paid into the proper State fund.

1-07.2(1) State Sales Tax — Rule 171

WAC 458-20-171, and its related rules, apply to building, repairing, or improving streets, roads, etc., which are owned by a municipal corporation, or political subdivision of the state, or by the United States, and which are used primarily for foot or vehicular traffic. This includes storm or combined sewer systems within and included as a part of the street or road drainage system and power lines when such are part of the roadway lighting system. For work performed in such cases, the Contractor shall include Washington State Retail Sales Taxes in the various unit bid item prices, or other contract amounts, including those that the Contractor pays on the purchase of the materials, equipment, or supplies used or consumed in doing the work.

1-07.2(2) State Sales Tax — Rule 170

WAC 458-20-170, and its related rules, apply to the constructing and repairing of new or existing buildings, or other structures, upon real property. This includes, but is not limited to, the construction of streets, roads, highways, etc., owned by the state of Washington; water mains and their appurtenances; sanitary sewers and sewage disposal systems unless such sewers and disposal systems are within, and a part of, a street or road drainage system; telephone, telegraph, electrical power distribution lines, or other conduits or lines in or above streets or roads, unless such power lines become a part of a street or road lighting system; and installing or attaching of any article of tangible personal property in or to real property, whether or not such personal property becomes a part of the realty by virtue of installation.

For work performed in such cases, the Contractor shall collect from the Contracting Agency, retail sales tax on the full contract price. The Contracting Agency will automatically add this sales tax to each payment to the Contractor. For this reason, the Contractor shall not include the retail sales tax in the unit bid item prices, or in any other contract amount subject to Rule 170, with the following exception.

Exception: The Contracting Agency will not add in sales tax for a payment the Contractor or a subcontractor makes on the purchase or rental of tools, machinery, equipment, or consumable supplies not integrated into the project. Such sales taxes shall be included in the unit bid item prices or in any other contract amount.

1-07.2(3) Services

The Contractor shall not collect retail sales tax from the Contracting Agency on any contract wholly for professional or other services (as defined in Washington State Department of Revenue Rules 138 and 244).

1-07.5(2) State Department of Fish and Wildlife

(January 1, 2021 COK GSP)

Supplement this section with the following:

New Zealand mud snails are an aquatic invasive species of concern for the Puget Sound region, as they have already invaded waterways near the City of Kirkland. Contractors working in-water (e.g. natural stream, small ponds and lakes, wetlands, etc.), including all construction equipment and vehicles used in-water, shall follow the Level 1 decontamination protocols and implement all Special Protocols for personnel and equipment as described in the "Invasive Species Management Protocols" published by the Washington State Department of Fish and Wildlife (WDFW) (Draft Version 3, February 2016). This document can be found on the WDFW website.

For Work that will be performed in-water in the City of Kirkland, all Contractor vehicles and/or heavy equipment previously used for in-water work outside the City of Kirkland shall be cleaned by the Contractor as indicated for "Boats and other Large Aquatic Conveyances Transported Overland", as described in the "Invasive Species Management Protocols" published by the Washington State Department of Fish and Wildlife (WDFW) (Draft Version 3, February 2016).

The Contractor is only required to follow Level 2 Decontamination Protocols in the Work area when indicated in the Contract documents.

All labor and materials required for completing decontamination and cleaning protocols shall be incidental to the Contract bid items, unless otherwise indicated in the Contract Documents.

1-07.5(3) State Department of Ecology

(January 1, 2021 COK GSP)

Supplement this section with the following:

Contractor shall comply with all requirements of the Construction Stormwater General Permit (CSWGP), if this permit has been issued for this Work. Additionally, Contractor shall comply with all applicable requirement of Kirkland Municipal Code KMC 15.52, as this local code has been adopted to meet Washington State Department of Ecology requirements for city stormwater management.

CSWGP coverage is typically only issued by the State Department of Ecology in the event the disturbed area for the Work is greater than one (1) acre. In the event CSWGP coverage has been issued for this Work, Contractor shall coordinate the Transfer of the permit from the Contracting Agency to the Contractor prior to any ground disturbance commencing in the Work area.

Unless identified otherwise in the Contract Documents, compliance with all requirements of this Section, the CSWGP, and the Kirkland Municipal Code KMC 15.52 shall be incidental to Contract pay items.

Revise the paragraph 6 to read:

6. When a violation of the Construction Stormwater General Permit (CSWGP) and/or Kirkland Municipal Code KMC 15.52 occurs, Contractor shall immediately notify the City of Kirkland Spill Hotline (425) 587-3900. Contractor shall also report to the Engineer and other agencies as identified in the Contractor's Spill Prevention, Control, and Countermeasures (SPCC) Plan (prepared in accordance with Section 1-07.15(1).

Revise the paragraph 8 to read:

8. If directed by the Contracting Agency and instead of or in partial conjunction with a Notice of Completion, transfer the CSWGP coverage to the Contracting Agency when Physical Completion has been given and the Engineer has determined that the project site is not destabilized from erosion.

1-07.5(6) U.S. Fish and Wildlife Service and National Marine Fisheries Service

(January 1, 2021 COK GSP)

Delete this section and replace it with the following:

The Contractor shall provide all required fish exclusion and handling services required by the Work, unless otherwise indicated in the Contract Documents. If the Contractor discovers any fish stranded by the project, they shall immediately transfer and release the fish alive into a flowing stream or open water outside the Work area.

1-07.6 Permits and Licenses

(January 1, 2021 COK GSP)

Replace item 6 of the second paragraph of this section with the following:

6. The permit costs the Contracting Agency nothing. This shall include, but not be limited to, application and initial review fees, costs associated with fulfillment of all permit requirements, additional operational fees assessed during the life of the permit.

Supplement second paragraph of this section with the following:

7. When a violation of the Construction Stormwater General Permit (CSWGP) and/or Kirkland Municipal Code KMC 15.52 occurs, Contractor shall immediately notify the City of Kirkland Spill Hotline (425) 587-3900. Contractor shall also report to the Engineer and other agencies as identified in the Contractor's Spill Prevention, Control, and Countermeasures (SPCC) Plan (prepared in accordance with Section 1-07.15(1)).

1-07.6(1) Permits for Sanitary Sewer Discharge for Construction Dewatering

(January 1, 2021 COK GSP)

Add new Section 1-07.6(1)

The Contracting Agency has not obtained a King County Authorization for Construction Dewatering or local sanitary sewer operating permits for this Work. Contractor proposals for this method of construction stormwater disposal will be supported by the Contracting Agency

only if, as determined by the Engineer, the proposal meets all the requirements indicated in Section 1-07.6 and this Section.

Contractors proposing to use sanitary sewer methods for construction dewatering and discharge are directed to the King County web page for “Construction Dewatering” for applications and information on the application process.

In addition to the requirements of Section 1-07.6, Contractor shall provide to the Engineer the written permission obtained by the Contractor from the local sanitary sewer operating agency for use of the sanitary sewer for construction dewatering discharge in advance of the Contractor applying for either general or individual King County Authorization for Construction Dewatering.

Unless otherwise indicated in the Contract Documents or by the Engineer in writing, no claims for equitable adjustment of Contract Time will be approved in order to obtain King County Authorizations and/or local sanitary sewer operating permits.

1-07.6(2) Permits for Off-site Staging and Storage Areas

(January 1, 2021 COK GSP)

Add new Section 1-07.6(2)

The Contracting Agency has not obtained any City of Kirkland Temporary Use Permits for temporary use(s) of off-site areas or properties in the City of Kirkland for the purposes of staging, materials storage, and/or any other Contractor-desired temporary uses during the Work. A City of Kirkland Temporary Use Permit must be obtained by the Contractor for temporary use for the Work of any off-site areas or properties not located in a City of Kirkland right-of-way (ROW). This requirement is in addition to any permissions and/or agreements reached between the Contractor and the property owner(s) as required in Section 1-07.24.

“Off-site” will be taken to mean any area not designated as part of the Work in the Plans or other Contract Documents.

A City of Kirkland Temporary Use Permit is not required for additional use of areas located in a City of Kirkland right-of-way (ROW) and not indicated in the Plans or other Contract Documents. However, the Contractor shall not occupy additional City of Kirkland ROW not shown as part of the Work without advance written approval by the Engineer. Contractor shall photograph and/or video document the existing conditions of ROW used. Any damage or degradation of the existing conditions in these areas shall be repaired and/or replaced by the Contractor at no additional cost to the City of Kirkland.

Contractor shall apply for a City of Kirkland Temporary Use Permit from the City of Kirkland Planning and Building Department through http://mybuildingpermit.com . Contractor shall also notify the Engineer when the Temporary Use Permit application has been submitted.

Unless otherwise indicated in the Contract Documents or by the Engineer in writing, no claims for equitable adjustment of Contract Time will be allowed requesting additional time required for the Contractor to obtain a City of Kirkland Temporary Use Permit for temporary use of any off-site area or property not designated as part of the Work area in the Plans.

1-07.9(1) Wages
(January 13, 2025 COK GSP)

Supplement this section with the following:

The Federal wage rates incorporated in this contract have been established by the Secretary of Labor under United States Department of Labor General Decision No. WA20250001. These rates are applicable to roadway/highway construction.

The State rates incorporated in this contract are applicable to all construction activities associated with this contract.

1-07.9(5)A Required Documents

(July 8, 2024 APWA GSP)

This section is revised to read as follows:

> All Statements of Intent to Pay Prevailing Wages, Affidavits of Wages Paid and Certified Payrolls, including a signed Statement of Compliance for Federal-aid projects, shall be submitted to the Engineer and to the State L&I online Prevailing Wage Intent & Affidavit (PWIA) system. When apprenticeship is a requirement of the contract, include in PWIA all apprentices.

1-07.11(2) Contractual Requirements

(November 25, 2024 APWA GSP)
Delete item 11 of the first paragraph of Section 1-07.11(2).

1-07.14 Responsibility for Damage

(January 1, 2016 COK GSP)

Section 1-07.14 is supplemented with the following:

> The Contractor further agrees that it is waiving immunity under Industrial Insurance Law Title 51 RCW for any claims brought against the City by its employees. In the event Contractor fails, after receipt of timely notice from the City, to appear, defend, or pay as required by the first paragraph of this section, then in that event and in that event only, the City may in its sole discretion, deduct from the progress payments to the Contractor and pay any amount sufficient to pay any claim, of which the City may have knowledge and regardless of the informalities of notice of such claim, arising out of the performance of this contract, provided the City has theretofore given notice of receipt of such claim to the Contractor and the Contractor has failed to act thereon.

1-07.15 Temporary Water Pollution/Erosion Control

(January 10, 2019 COK GSP)

1-07.15(1) Spill Prevention, Control, and Countermeasures Plan

Add the following paragraph under the second paragraph of this section:

In the event the Contractor uses an SPCC Plan template that either follows the WSDOT SPCC Plan Template or contains the same or similar content and/or format, the following changes shall be required:

1. Replace all references to "WSDOT" as either the Contracting Agency or project owner with "City of Kirkland", except where indicated in this Section.
2. Add into all Spill Reporting and related section(s): "The City of Kirkland Spill Response Hotline at (425) 587-3900 shall be the first point of contact in the event of a spill. Notification to the City of Kirkland Spill Response Hotline shall precede the spill notifications to federal and state agencies."
3. Delete all references to the "WSDOT Environmental Compliance Assurance Procedure" (ECAP) in the SPCC.

Supplement the following referenced SPCC Plan Element Requirements in this Section as follows:

For SPCC Plan Element Requirement Number 2, add the following: "The City of Kirkland Spill Response Hotline at (425) 587-3900 shall be the first point of contact in the event of a spill."

For SPCC Plan Element Requirement Number 8, add the following: "As part of Contractor spill response procedure, the Contractor shall contact the City of Kirkland Spill Response Hotline at (425) 587-3900 to report the spill regardless of whether or not the Contractor has fully contained, controlled, and/or cleaned up the spill."

1-07.16 Protection and Restoration of Property

(January 1, 2016 COK GSP)

1-07.16(3) Fences, Mailboxes, Incidentals

Section 1-07.16(3) is supplemented with the following:

U.S. Postal Service Collection Boxes, Mail Receptacles, and other Structures: U.S. Postal Service collection box and other Structures requiring temporary relocation to accommodate construction, the Contractor shall contact the Kirkland Postmaster at least 5 Working Days in advance for coordination. Only the U.S. Post Office will move Postal Service-owned property.

1-07.17 Utilities and Similar Facilities

(January 1, 2020 COK GSP)

Section 1-07.17 is supplemented with the following:

Locations and dimensions shown in the Plans for existing facilities are in accordance with available information obtained without uncovering, measuring, or other verification.

The Contractor is alerted to the existence of Chapter 19.122 RCW, a law relating to underground utilities. Any cost to the Contractor incurred as a result of this law shall be at the Contractor's expense.

No excavation shall begin until all known facilities in the vicinity of the excavation area have been located and marked.

The Contractor shall give advance notice to all utility companies involved where work is to take place and in all other respects comply with the provisions of Chapter 19.122 RCW. Notice shall include, but not be limited to, the following utility companies:

4. Water, sewer, storm, streets – minimum two working days in advance
5. Power (Electric and Natural Gas) – minimum 48 hours in advance
6. Telephone – minimum 30 days in advance
7. Natural Gas – minimum 48 hours in advance
8. Cable Television – minimum 48 hours in advance
9. Transit – minimum 21 days in advance

The following is a list of some utilities serving the Kirkland area. This is not intended or represented to be a complete list and is provided for the Contractor's convenience.

Utility	Agency/Company	Address	Contact	Phone
Water/Sewer	City of Kirkland	123 Fifth Avenue Kirkland, WA 98033	Cody Gray	(425) 587-3900
Storm Drainage	City of Kirkland	123 Fifth Avenue Kirkland, WA 98033	Jason Osborn	(425) 587-3900
Water / Sewer (North area of Kirkland)	Northshore Utility District	6380 NE 185th St Kenmore, WA 98028	Jamie Lamb Kelly Nesbitt	(425) 471-1483 (425) 521-3750
Street	City of Kirkland	123 Fifth Avenue Kirkland, WA 98033	Ryan Fowler	(425) 587-3900
Natural Gas	Puget Sound Energy	P.O. Box 97034 EST-11W Bellevue, WA 98009-9734	Kiara Skye	(425) 213-9205
Electric	Puget Sound Energy	35131 SE Center St	Kiara Skye	(425) 213-9205

		Snoqualmie, WA 98065		
Telephone/ FIOS	Ziply Fiber	P.O. Box 1127 Everett, WA 98206	Cheryl Schneider	(425) 949-0230
FIOS	Astrobound/Wave Broadband		Richard Hays	(360) 631-4134
FIOS	CenturyLink/Lumen	22817 SE Issaquah-Fall City Rd, WA, 98027	Kayvan Fassnacht	(425) 213-9378
FIOS	Zayo	22651 83rd Ave. S. Kent, WA 98032	Rusty Perdieu	(706) 889-6967
Cable Television	Comcast	1525 - 75th St SW, Suite 200 Everett, WA 98203	Chris Combs	(425) 273-7832
Network	Verizon/MCI	11311 NE 120th St Kirkland, WA 98034	Kenny Terhune Scott Christenson	(425) 301-8658 (425) 471-1079
School District Transportation	Lake Washington School District	15212 NE 95th St Redmond, WA 98052	Laura DeGooyer	(425) 936-1133
Transit	King County METRO	MS SVQ-TR-0100 1270 6th Ave S Seattle, WA 98134	Mark LaFalce	(206) 477-1140 (206)477-9868
Water (Northeast area of Kirkland)	Woodinville Water District	17238 NE Woodinville Duvall Road, Woodinville, WA 98072	Christian Hoffman	(425) 487-4142
Olympic Pipeline	BP		Kenneth Metcalf Joseph Stone	(425) 981-2575 (425) 981-2506
Water (along 132nd Ave NE)	Seattle Public Utilities		Mike Freeman	(206) 684-8117

Note that most utility companies may be contacted for locations through the “One Call” system, 1-800-424-5555. In the event of a gas emergency, call 911 and then the PSE hotline at 1-888-225-5773 (1-888-CALL-PSE).

The Contractor shall coordinate the work with these utilities and shall notify the Engineer in advance of any conflicts affecting the work schedule. The utility companies shall witness or perform all shutdowns, connections or disconnections.

Wherever in the course of the construction operation it becomes necessary to cause an outage of utilities, it shall be the Contractor's responsibility to notify the affected users not less than twenty-four (24) hours in advance of the creation of such outage. The Contractor shall make reasonable effort to minimize the duration of outages.

The Contractor shall be responsible for any breakage of utilities or services resulting from its operations and shall hold the City and its agents harmless from any claims resulting from disruption of, or damage to, same.

Other Notifications

Service Area Turn Off: All service area turn off notices must be distributed to affected parties two working days in advance of any scheduled shut off. City to provide door hangers and affected service area map. The contractor shall fill in all required information prior to hanging door hanger.

Entry onto Private Property: Each property owner shall be given two working days advance Written Notice prior to entry by the Contractor.

Loop Detection Systems: Where an excavation is to take place through a signal loop detector system, the Contractor shall provide at least five (5) Working Days advance notice to the City Signal Shop at (425) 587-3920 to coordinate temporary signal wire disconnect and installation of temporary signal detection equipment.

Survey Monuments: When proposed pavement removal is close to existing survey monumentation, or proposed pavement removal includes existing survey monumentation, the Contractor shall provide a minimum 4 Working Days advance notice to the Engineer to allow survey crews to tie the monument out and reset the monument after pavement installation.

1-07.17(2) Utility Construction, Removal or Relocation by Others

(January 1, 2016 COK GSP)

Section 1-07.17(2) is supplemented with the following:

Under no circumstances will discrepancies in location or incompleteness in description of existing utilities or improvements, whether they are visible from the surface, buried, or otherwise obscured, be considered as a basis for additional compensation to the Contractor.

1-07.18 Public Liability and Property Damage Insurance

Delete this section in its entirety, and replace it with the following:

1-07.18 Insurance
(January 4, 2024 APWA GSP)

1-07.18(1) General Requirements

A. The Contractor shall procure and maintain the insurance described in all subsections of section 1-07.18 of these Special Provisions, from insurers with a current A. M. Best rating of not less than A-: VII and licensed to do business in the State of Washington. The Contracting

Agency reserves the right to approve or reject the insurance provided, based on the insurer's financial condition.

B. The Contractor shall keep this insurance in force without interruption from the commencement of the Contractor's Work through the term of the Contract and for thirty (30) days after the Physical Completion date, unless otherwise indicated below.

C. If any insurance policy is written on a claims-made form, its retroactive date, and that of all subsequent renewals, shall be no later than the effective date of this Contract. The policy shall state that coverage is claims made and state the retroactive date. Claims-made form coverage shall be maintained by the Contractor for a minimum of 36 months following the Completion Date or earlier termination of this Contract, and the Contractor shall annually provide the Contracting Agency with proof of renewal. If renewal of the claims made form of coverage becomes unavailable, or economically prohibitive, the Contractor shall purchase an extended reporting period ("tail") or execute another form of guarantee acceptable to the Contracting Agency to assure financial responsibility for liability for services performed.

D. The Contractor's Automobile Liability, Commercial General Liability and Excess or Umbrella Liability insurance policies shall be primary and non-contributory insurance as respects the Contracting Agency's insurance, self-insurance, or self-insured pool coverage. Any insurance, self-insurance, or self-insured pool coverage maintained by the Contracting Agency shall be excess of the Contractor's insurance and shall not contribute with it.

E. The Contractor shall provide the Contracting Agency and all additional insureds with written notice of any policy cancellation, within two business days of their receipt of such notice.

F. The Contractor shall not begin work under the Contract until the required insurance has been obtained and approved by the Contracting Agency

G. Failure on the part of the Contractor to maintain the insurance as required shall constitute a material breach of contract, upon which the Contracting Agency may, after giving five business days' notice to the Contractor to correct the breach, immediately terminate the Contract or, at its discretion, procure or renew such insurance and pay any and all premiums in connection therewith, with any sums so expended to be repaid to the Contracting Agency on demand, or at the sole discretion of the Contracting Agency, offset against funds due the Contractor from the Contracting Agency.

H. All costs for insurance shall be incidental to and included in the unit or lump sum prices of the Contract and no additional payment will be made.

I. Under no circumstances shall a wrap up policy be obtained, for either initiating or maintaining coverage, to satisfy insurance requirements for any policy required under this Section. A **"**wrap up policy**"** is defined as an insurance agreement or arrangement under which all the parties working on a specified or designated project are insured under one policy for liability arising out of that specified or designated project**.**

1-07.18(2) Additional Insured

All insurance policies, with the exception of Workers Compensation, and of Professional Liability and Builder's Risk (if required by this Contract) shall name the following listed entities as additional insured(s) using the forms or endorsements required herein:

- the Contracting Agency and its officers, elected officials, employees, agents, and volunteers

The above-listed entities shall be additional insured(s) for the full available limits of liability maintained by the Contractor, irrespective of whether such limits maintained by the Contractor are greater than those required by this Contract, and irrespective of whether the Certificate of Insurance provided by the Contractor pursuant to 1-07.18(4) describes limits lower than those maintained by the Contractor.

For Commercial General Liability insurance coverage, the required additional insured endorsements shall be at least as broad as ISO forms CG 20 10 10 01 for ongoing operations and CG 20 37 10 01 for completed operations.

1-07.18(3) Subcontractors

The Contractor shall cause each subcontractor of every tier to provide insurance coverage that complies with all applicable requirements of the Contractor-provided insurance as set forth herein, except the Contractor shall have sole responsibility for determining the limits of coverage required to be obtained by subcontractors.

The Contractor shall ensure that all subcontractors of every tier add all entities listed in 1-07.18(2) as additional insureds, and provide proof of such on the policies as required by that section as detailed in 1-07.18(2) using an endorsement as least as broad as ISO CG 20 10 10 01 for ongoing operations and CG 20 37 10 01 for completed operations.

Upon request by the Contracting Agency, the Contractor shall forward to the Contracting Agency evidence of insurance and copies of the additional insured endorsements of each subcontractor of every tier as required in 1-07.18(4) Verification of Coverage.

1-07.18(4) Verification of Coverage

The Contractor shall deliver to the Contracting Agency a Certificate(s) of Insurance and endorsements for each policy of insurance meeting the requirements set forth herein when the Contractor delivers the signed Contract for the work. Failure of Contracting Agency to demand such verification of coverage with these insurance requirements or failure of Contracting Agency to identify a deficiency from the insurance documentation provided shall not be construed as a waiver of Contractor's obligation to maintain such insurance.

Verification of coverage shall include:

1. An ACORD certificate or a form determined by the Contracting Agency to be equivalent.
2. Copies of all endorsements naming Contracting Agency and all other entities listed in 1-07.18(2) as additional insured(s), showing the policy number. The Contractor may submit a copy of any blanket additional insured clause from its policies instead of a separate endorsement.
3. Any other amendatory endorsements to show the coverage required herein.

4. A notation of coverage enhancements on the Certificate of Insurance shall not satisfy these requirements – actual endorsements must be submitted.

Upon request by the Contracting Agency, the Contractor shall forward to the Contracting Agency a full and certified copy of the insurance policy(s). If Builders Risk insurance is required on this Project, a full and certified copy of that policy is required when the Contractor delivers the signed Contract for the work.

1-07.18(5) Coverages and Limits

The insurance shall provide the minimum coverages and limits set forth below. Contractor's maintenance of insurance, its scope of coverage, and limits as required herein shall not be construed to limit the liability of the Contractor to the coverage provided by such insurance, or otherwise limit the Contracting Agency's recourse to any remedy available at law or in equity.

All deductibles and self-insured retentions must be disclosed and are subject to approval by the Contracting Agency. The cost of any claim payments falling within the deductible or self-insured retention shall be the responsibility of the Contractor. In the event an additional insured incurs a liability subject to any policy's deductibles or self-insured retention, said deductibles or self-insured retention shall be the responsibility of the Contractor.

1-07.18(5)A Commercial General Liability

Commercial General Liability insurance shall be written on coverage forms at least as broad as ISO occurrence form CG 00 01, including but not limited to liability arising from premises, operations, stop gap liability, independent contractors, products-completed operations, personal and advertising injury, and liability assumed under an insured contract. There shall be no exclusion for liability arising from explosion, collapse or underground property damage.

The Commercial General Liability insurance shall be endorsed to provide a per project general aggregate limit, using ISO form CG 25 03 05 09 or an equivalent endorsement.

Contractor shall maintain Commercial General Liability Insurance arising out of the Contractor's completed operations for at least three years following Substantial Completion of the Work.

Such policy must provide the following minimum limits:

$2,000,000 Each Occurrence
$3,000,000 General Aggregate
$3,000,000 Products & Completed Operations Aggregate
$2,000,000 Personal & Advertising Injury each offence
$2,000,000 Stop Gap / Employers' Liability each accident

1-07.18(5)B Automobile Liability

Automobile Liability shall cover owned, non-owned, hired, and leased vehicles; and shall be written on a coverage form at least as broad as ISO form CA 00 01. If the work involves the transport of pollutants, the automobile liability policy shall include MCS 90 and CA 99 48 endorsements.

Such policy must provide the following minimum limit:

$1,000,000 Combined single limit each accident

1-07.18(5)C Workers' Compensation

The Contractor shall comply with Workers' Compensation coverage as required by the Industrial Insurance laws of the State of Washington.

1-07.18(5)K Professional Liability

The Contractor and/or its subcontractor(s) and/or its design consultant providing construction management, value engineering, or any other design-related non-construction professional services shall provide evidence of Professional Liability insurance covering professional errors and omissions.

Such policy shall provide the following minimum limits:

$1,000,000 per claim and annual aggregate

If the scope of such design-related professional services includes work related to pollution conditions, the Professional Liability insurance shall include coverage for Environmental Professional Liability.

If insurance is on a claims-made form, its retroactive date, and that of all subsequent renewals, shall be no later than the effective date of this Contract.

1-07.23 Public Convenience and Safety

(January 1, 2016 COK GSP)
Section 1-07.23 is supplemented with the following:

No road or street shall be closed to the public except as permitted in these plans and specifications or with the approval of the Engineer and proper governmental authority. Fire hydrants on or adjacent to the work shall be kept accessible to fire fighting equipment at all times. Provision shall be made by the Contractor to ensure the proper functioning of all gutters, sewer inlets, drainage ditches and culverts, irrigation ditches and natural water courses, and storm sewer facilities throughout the project. Temporary interruption of service will be allowed only with the permission of the Engineer.

The Kirkland Police Department and Kirkland Fire Department shall be notified at least four (4) hours in advance of any actions by the Contractor that may affect the functions of either the Police Department or Fire Department.

The Contractor shall conduct its work and take preventative measures so that dust or other particulate matter in the project area shall not become objectionable to the adjacent property owners or general public. Should the Owner determine the Contractor is not fulfilling its obligation in this regard; the Owner reserves the right to take such action as may be necessary to remedy the objectionable condition and to charge the Contractor with any cost that may be incurred in such remedial action. All work shall be carried on with due regard for the safety of the public. No driveway, whether public, commercial, or private, may be

closed without prior approval of the Owner, project supervisor, or Engineer unless written authority has been given by the affected property owner. The Contractor shall be responsible for notifying the affected property owners 24 hours in advance of scheduled interruptions to access.

(January 1, 2016 COK GSP; may not be used on FHWA-funded projects; note optional/conditional nature of use for other City projects))

Pedestrian Control and Protection

When the work area encroaches upon a sidewalk, walkway or crosswalk area, special consideration must be given to pedestrian safety. Maximum effort must be made to separate pedestrians from the work area. Protective barricades, fencing, and bridges, together with warning and guidance devices and signs, shall be utilized so that the passageway for pedestrians is safe and well defined. Whenever pedestrian walkways are provided across excavations, they shall be provided with suitable handrails. Footbridges shall be safe, strong, free of bounce and sway, have a slip resistant coating, and be free of cracks, holes, and irregularities that could cause tripping. Ramps shall be provided at the entrance and exit of all raised footbridges, again to prevent tripping. Adequate illumination and reflectorization shall be provided during hours of darkness. All walkways shall be maintained with at least 4 feet clear width.

Where walks are closed by construction, an alternate walkway shall be provided, preferably within the planting strip.

Where it is necessary to divert pedestrians into the roadway, barricading or channeling devices shall be provided to separate the pedestrian walkway from the adjacent vehicular traffic lane. At no time shall pedestrians be diverted into a portion of a street used concurrently by moving vehicular traffic.

At locations where adjacent alternate walkways cannot be provided, appropriate signs shall be posted at the limits of construction and in advance of the closure at the nearest crosswalk or intersection to divert pedestrians across the street.

Physical barricades shall be installed to prevent visually impaired people from inadvertently entering a closed area. Pedestrian walkways shall be wheelchair accessible at all times. Pedestrian access shall be maintained to all properties adjacent to the construction site.

1-07.23(1) Construction under Traffic

(May 2, 2017 APWA GSP)

Revise the third sentence of the second paragraph to read:

Accessibility to existing or temporary pedestrian push buttons shall not be impaired; if approved by the Contracting Agency activating pedestrian recall timing or other accommodation may be allowed during construction.

1-07.24 Rights of Way

(July 23, 2015 APWA GSP)

Delete this section and replace it with the following:

Street Right of Way lines, limits of easements, and limits of construction permits are indicated in the Plans. The Contractor's construction activities shall be confined within these limits unless arrangements for use of private property are made as described below.

Generally, the Contracting Agency will have obtained, prior to bid opening, all rights of way and easements, both permanent and temporary, necessary for carrying out the work. Exceptions to this are noted in the Bid Documents or will be brought to the Contractor's attention by a duly issued Addendum.

Whenever any of the work is accomplished on or through property other than public Right of Way, the Contractor shall meet and fulfill all covenants and stipulations of any easement agreement obtained by the Contracting Agency from the owner of the private property. Copies of the easement agreements may be included in the Contract Provisions or made available to the Contractor as soon as practical after they have been obtained by the Engineer.

Whenever easements or rights of entry have not been acquired prior to advertising, these areas are so noted in the Plans. The Contractor shall not proceed with any portion of the work in areas where right of way, easements or rights of entry have not been acquired until the Engineer certifies to the Contractor that the right of way or easement is available or that the right of entry has been received. If the Contractor is delayed due to acts of omission on the part of the Contracting Agency in obtaining easements, rights of entry or right of way, the Contractor will be entitled to an extension of time. The Contractor agrees that such delay shall not be a breach of contract.

Each property owner shall be given 48 hours' notice prior to entry by the Contractor. This includes entry onto easements and private property where private improvements must be adjusted.

The Contractor shall be responsible for providing, without expense or liability to the Contracting Agency, any additional land and access thereto that the Contractor may desire for temporary construction facilities, storage of materials, or other Contractor needs. However, before using any private property, whether adjoining the work or not, the Contractor shall file with the Engineer a written permission of the private property owner, and, upon vacating the premises, a written release from the property owner of each property disturbed or otherwise interfered with by reasons of construction pursued under this contract. The statement shall be signed by the private property owner, or proper authority acting for the owner of the private property affected, stating that permission has been granted to use the property and all necessary permits have been obtained or, in the case of a release, that the restoration of the property has been satisfactorily accomplished. The statement shall include the parcel number, address, and date of signature. Written releases must be filed with the Engineer before the Completion Date will be established.

(January 1, 2021 COK GSP)

In addition to all agreements and releases between the Contractor and private property owner(s) described in this Section and as required in Section 1-07.6(1), the Contractor shall apply for a City of Kirkland Temporary Use Permit from the City of Kirkland Planning and Building Department for any temporary uses of real property (including both private property and City-owned real property) for temporary construction facilities, storage of materials, or other Contractor needs.

The Contractor shall file with the Engineer signed property release forms (in the format as detailed below) for all properties disturbed or damaged by the Contractor's operations.

PROPERTY RELEASE

_____
_____
_____
(Contractor's name and address)

DATE: _____

I, _____ owner of _____, hereby release _____, *(Contractor's name)* from any property damage or personal injury resulting from construction on or adjacent to my property located at _____ during construction of the _____. My signature below is my acknowledgment and acceptance that my property, as identified above, was returned to a satisfactory condition.

Signed: _____
Name: _____
Address: _____
_____
Phone: _____

1-08 PROSECUTION AND PROGRESS

Add the following new section:

(May 25, 2006 APWA GSP)

1-08.0 Preliminary Matters

Add the following new section:

1-08.0(1) Preconstruction Conference

(October 21, 2025 APWA GSP)

Prior to the Contractor beginning the work, a preconstruction conference will be held between the Contractor, the Engineer and such other interested parties as may be invited. The purpose of the preconstruction conference will be:

1. To review the initial progress schedule;
2. To establish a working understanding among the various parties associated or affected by the work;
3. To establish and review procedures for progress payment, notifications, approvals, submittals, etc.;
4. To review Training or Apprenticeship Plans, when applicable.
5. To discuss FSBE Goals when applicable.
5. To establish normal working hours for the work;
6. To review safety standards and traffic control; and
7. To discuss such other related items as may be pertinent to the work.

The Contractor shall prepare and submit at the preconstruction conference the following:

1. A breakdown of all lump sum items;
2. A preliminary schedule of working drawing submittals; and
3. A list of material sources for approval if applicable.

(January 1, 2021 COK GSP; may not be used on FHWA-funded projects)

Add new Section 1-08.0(2).

1-08.0(2) Hours of Work

Except in the case of emergency, unless otherwise indicated in the Contract Documents, or unless otherwise approved by the Contracting Agency in advance, the allowable working hours for this Contract Work shall be any consecutive 8-hour period between 7:00 a.m. and 6:00 p.m. of a working day. A maximum 1-hour lunch break is allowable between 7:00 a.m. and 6:00 p.m. and does not count for purposes of the 8-hour working period. The Contract assumes a 5-day work week, exclusive of weekends and holidays observed by the City of Kirkland and identified in Section 1-08.5 of the Standard Specifications.

The normal straight time 8-hour working period for the contract shall be established at the preconstruction conference or prior to the Contractor commencing the Work.

Except in the event of an emergency, unless otherwise indicated in the Contract Documents, or unless otherwise approved in advance by the Contracting Agency (including the Contractor obtaining approval for all applicable City of Kirkland permits as required by the City of Kirkland Zoning Code), no Work shall be allowed between the hours of 6:00 p.m. and 7:00 a.m., during weekends (except driveway construction), or during holidays observed by the City of Kirkland and identified in Section 1-08.5 of the Standard Specifications.

The Contracting Agency may consider specific and limited requests by the Contractor to allow Work during one or more periods in which Work is not allowed by this Section, but approval of these requests is solely at the discretion of the Contracting Agency as a benefit to the general public. Contractor shall submit a request in writing to the Engineer, including a full and accurate explanation of the type(s) of work to be performed, the period or periods of time outside normal Work hours, and the explanation(s) for why this work cannot be performed during the allowable Work hours.

The Engineer will consider requests and determine conditions and limitations as the Engineer deems necessary, in conformance with the conditions of support for local permitting described in Section 1-07.6 of the Standard Specifications and these Special Provisions. These conditions and limitations are additional to any conditions or limitations that may be required by Contracting Agency permits and/or variances. These conditions may include, but are not limited to:

1. Require the Engineer or such assistants as the Engineer may deem necessary to be present during the Work, including (but not limited to):

    a. Survey crews

    b. Personnel from the Contracting Agency's material testing laboratory

c. Inspectors

d. City operations and maintenance staff

e. Police, fire, or other public safety officials

f. Any other Contracting Agency employees who, in the opinion of the Engineer, are a necessary presence for the Work outside of the allowable working hours;

2. Require the Contractor to reimburse the Contracting Agency for all additional costs and expenses in excess of straight-time costs incurred for Contracting Agency employees and expenses during such times;

3. Measure Work performed on nights, weekend days, and holidays as working days with regards to the Contract Time; and/or,

4. Consider multiple work shifts (such as a sequential 8-hour day period followed by an 8-hour night period) as multiple working days with respect to Contract Time, even if those multiple shifts occur in a single 24-hour period.

If the Engineer approves the Contractor's written request and all conditions and/or restrictions the Engineer applies to that approval are acceptable by the Contractor, the Contractor shall be responsible for obtaining work hours and noise variances as required by Section 1-07.6. The Contractor shall apply to the City of Kirkland Planning and Building Department using http://mybuildingpermit.com. The Engineer can provide supporting documentation, as deemed appropriate by the Engineer, to the Contractor for submission with this application.

Unless otherwise indicated in the Contract Documents or indicated by the Engineer in writing, no claims for equitable adjustments of Contract will be allowed for review and approval time frames for the Contractor to obtain approval for requests to Work outside the approved working hours in this Section. No claims for equitable adjustments of the Contract will be allowed for requirements, including limitations, in approvals to work outside of the allowed working hours in this Section.

Approved Work outside the allowable working hours in this Section is subject to additional noise control requirements. Approval to continue work during these hours may be revoked at any time the Contractor exceeds the Contracting Agency's noise control regulations or complaints are received from the public or adjoining property owners regarding the noise from the Contractor's operations. The Contractor shall have no claim for damages or delays should such permission be revoked for these reasons.

Arterial Streets

No work will be performed on arterial streets during the peak traffic hours of 7:00 a.m. – 9:00 a.m. and 3:00 p.m. – 6:00 p.m., except emergency work to restore services, unless a City-approved traffic control plan allows work during the peak hours. The following streets are classified as arterials:

STREET	*FROM*	*TO*
Central Way/NE 85th St	Market St	132nd Ave NE
Juanita Dr NE /NE Juanita Dr	NE 143rd St (City Limits)	98th Ave NE
Juanita Woodinville Way	100th Ave NE	NE 145th St (City Limits)
Lake St/Lake Washington Blvd/Northup Wy	Central Way	Northup Way (City Limits)
Kirkland Ave/Kirkland Way	Lake St	NE 85th St
Lakeview Dr /NE 68th St/NE 70th St	Lake Washington Blvd	132nd Ave NE
Market St/98th Ave NE/100th Ave NE	Central Way	NE 145th St (City Limits)
NE 116th St	98th Ave NE	Slater Ave NE
NE 120th St/132nd Ave NE	Slater Ave NE	NE 60th St (City Limits)
NE 124th St	100th Ave NE	East City Limits
NE 128th St	116th Ave NE/116th Way NE	120th Ave NE
Simonds Rd NE	92nd Ave NE (City Limits)	100th Ave NE
Slater Ave NE	NE 116th St	NE 124th St
Totem Lake Blvd	NE 132nd St	124th Ave NE
3rd Street/State Street	Central Way	NE 68th Street/Lakeview Dr.
6th St/6th St S/108th Ave NE	Central Way/NE 85th St	South City Limits
90th Ave NE/NE 131st Way/NE 132nd St	NE 134th St	132nd Ave NE
120th Ave NE/116th Ave NE/116th Way NE	NE 112th St	NE 132nd St
124th Ave NE	NE 85th St	NE 124th St
124th Ave NE	NE 132nd St	NE 145th Pl (City Limits)

1-08.1 Subcontracting

(January 1, 2016 COK GSP)

Section 1-08.1 is supplemented with the following:

A Subcontractor or an Agent to the Subcontractor will not be permitted to perform any work under the contract until the following documents have been completed and submitted to the Engineer:

1. Request to Sublet Work (form 421-012).
2. Statement of Intent to Pay Prevailing Wages (Form 700-029-000).

The Contractor's records pertaining to the requirements of this Special Provision shall be open to inspection or audit by representatives of the Department during the life of the contract and for a period of not less than three years after the date of acceptance of the contract. The Contractor shall retain these records for that period. The Contractor shall also guarantee that these records of all Subcontractors and Agents shall be open to similar inspection or audit for the same period.

1-08.1(7)A Payment Reporting
(November 25, 2024 APWA GSP)
Delete this section and replace it with the following:

1-08.1(7)A VACANT

1-08.1(8)B Clauses Required in Subcontracts of All Tiers

(November 25, 2024 APWA GSP)
Delete item 8 of the second paragraph of Section 1-08.1(8)B.

1-08.1(9) Submittal of Executed Subcontracts

(April 22, 2025 APWA GSP, Option B)

Section 1-08.1(9) content and title are deleted and replaced with the following:

Vacant

1-08.3 Progress Schedule

(January 1, 2016 COK GSP)

The order of work will be at the Contractor's option, in keeping with good construction practice and the terms of the contract. All work shall be carried out in accordance with the requirements of the City of Kirkland in compliance with the plans and specifications. However, the Contractor shall so schedule the work within the time constraints noted in the various contract documents, including any permits. The Contractor is cautioned to review said documents and permits and schedule the work appropriately as no additional compensation will be made to the Contractor due to the time constraints imposed by such documents.

1-08.3(2)A Type A Progress Schedule

(December 30, 2022 APWA GSP)

Revise this section to read:

The Contractor shall submit two (2) copies of a Type A Progress Schedule no later than at the preconstruction conference, or some other mutually agreed upon submittal time. The schedule may be a critical path method (CPM) schedule, bar chart, or other standard schedule format. Regardless of which format used, the schedule shall identify the critical path. The Engineer will evaluate the Type A Progress Schedule and approve or return the schedule for corrections within 15 calendar days of receiving the submittal.

1-08.4 Prosecution of Work

(July 23, 2015 APWA GSP)

Delete this section in its entirety, and replace it with the following:

1-08.4 Notice to Proceed and Prosecution of Work

Notice to Proceed will be given after the contract has been executed and the contract bond and evidence of insurance have been approved and filed by the Contracting Agency. The Contractor shall not commence with the work until the Notice to Proceed has been given by the Engineer. The Contractor shall commence construction activities on the project site within ten days of the Notice to Proceed Date, unless otherwise approved in writing. The Contractor shall diligently pursue the work to the physical completion date within the time specified in the contract. Voluntary shutdown or slowing of operations by the Contractor shall not relieve the Contractor of the responsibility to complete the work within the time(s) specified in the contract.

When shown in the Plans, the first order of work shall be the installation of high visibility fencing to delineate all areas for protection or restoration, as described in the Contract. Installation of high visibility fencing adjacent to the roadway shall occur after the placement of all necessary signs and traffic control devices in accordance with 1-10.1(2). Upon construction of the fencing, the Contractor shall request the Engineer to inspect the fence. No other work shall be performed on the site until the Contracting Agency has accepted the installation of high visibility fencing, as described in the Contract.

1-08.5 Time for Completion

(November 25, 2024 APWA GSP, Option A)

Revise the third and fourth paragraphs to read:

Contract time shall begin on the first working day following the Notice to Proceed Date.

Each working day shall be charged to the contract as it occurs, until the contract work is physically complete. If substantial completion has been granted and all the authorized working days have been used, charging of working days will cease. Each week the Engineer will provide the Contractor a statement that shows the number of working days: (1) charged to the contract the week before; (2) specified for the physical completion of the contract; and (3) remaining for the physical completion of the contract. The statement will also show the nonworking days and all partial or whole days the Engineer declares as unworkable The statement will be identified as a Written Determination by the Engineer. If the Contractor does not agree with the Written Determination of working days, the Contractor shall pursue the protest procedures in accordance with Section 1-04.5. By failing to follow the procedures of Section 1-04.5, the Contractor shall be deemed as having accepted the statement as correct. If the Contractor is approved to work 10 hours a day and 4 days a week (a 4-10 schedule) and the fifth day of the week in which a 4-10 shift is worked would ordinarily be charged as a working day then the fifth day of that week will be charged as a working day whether or not the Contractor works on that day.

Revise the sixth paragraph to read:

The Engineer will give the Contractor written notice of the completion date of the contract after all the Contractor's obligations under the contract have been performed by the Contractor. The following events must occur before the Completion Date can be established:

1. The physical work on the project must be complete; and
2. The Contractor must furnish all documentation required by the contract and required by law, to allow the Contracting Agency to process final acceptance of the contract. The following documents must be received by the Project Engineer prior to establishing a completion date:
   a. Certified Payrolls (per Section 1-07.9(5)).
   b. Material Acceptance Certification Documents
   c. Monthly Reports in DMCS of the amounts paid including the final payment confirmation to all firms required by Section 1-08.1(7)A if applicable
   d. Final Contract Voucher Certification
   e. Copies of the approved "Affidavit of Prevailing Wages Paid" for the Contractor and all Subcontractors
   f. A copy of the Notice of Termination sent to the Washington State Department of Ecology (Ecology); the elapse of 30 calendar days from the date of receipt of the Notice of Termination by Ecology; and no rejection of the Notice of Termination by Ecology. This requirement will not apply if the Construction Stormwater General Permit is transferred back to the Contracting Agency in accordance with Section 8-01.3(16).
   g. Property owner releases per Section 1-07.24

(January 1, 2016 COK GSP)

Section 1-08.5 is supplemented with the following:

This project shall be substantially completed in its entirety within **120** working days.

1-08.6 Suspension of Work

(July 24, 2025 COK GSP)

Supplement this section with the following:

Contract time may be suspended for procurement of critical materials (Procurement Suspension). In order to receive a Procurement Suspension, the Contractor shall within 21 calendar days after execution by the Contracting Agency, place purchase orders for all materials deemed critical by the Contracting Agency for physical completion of the contract. The Contractor shall provide copies of purchase orders for the critical materials. Such purchase orders shall disclose the purchase order date and estimated delivery dates for such critical material.

The Contractor shall show procurement of the materials listed below as activities in the Progress Schedule. If the approved Progress Schedule indicates that the materials procurement are critical activities, and if the Contractor has provided documentation that purchase orders are placed for the critical materials within the prescribed 21 calendar days,

then contract time will be suspended upon physical completion of all critical work except that work dependent upon the below listed critical materials:

(*****)

- Items listed in the SCADA Replacement Bill of Materials (BOM's).

Charging of contract time will resume upon delivery of the critical materials to the Contractor or 14 calendar days after the estimated deliver date shown on the purchase orders.

1-08.9 Liquidated Damages

(January 1, 2016 COK GSP)

The third paragraph of Section 1-08.9 is revised to read as follows:

Accordingly, the Contractor agrees:

1. To pay (according to the following formula) liquidated damages for each working day beyond the number of working days established for Physical Completion, and

2. To authorize the Engineer to deduct these liquidated damages from any money due or coming to the Contractor.

LIQUIDATED DAMAGES FORMULA

For C > $50,000 → LD = 0.15 × C ÷ T, and
For C ≤ $50,000 → LD = 0.30 × C ÷ T.

Where:
LD = liquidated damages per working day (rounded to the nearest dollar)
C = original Contract amount
T = original time for Physical Completion

1-09 MEASUREMENT AND PAYMENT

1-09.2 Weighing Equipment

1-09.2(5) Measurement

(December 30, 2022 APWA GSP)
Revise the first paragraph to read:

Scale Verification Checks – At the Engineer's discretion, the Engineer may perform verification checks on the accuracy of each batch, hopper, or platform scale used in weighing contract items of Work.

1-09.6 Force Account

(December 30, 2022 APWA GSP)

Supplement this section with the following:

The Contracting Agency has estimated and included in the Proposal, dollar amounts for all items to be paid per force account, only to provide a common proposal for Bidders. All such dollar amounts are to become a part of Contractor's total bid. However, the Contracting Agency does not warrant expressly or by implication, that the actual amount of work will correspond with those estimates. Payment will be made on the basis of the amount of work actually authorized by the Engineer.

1-09.7 Mobilization

(December 30, 2022 APWA GSP)

Delete this Section and replace it with the following:

Mobilization consists of preconstruction expenses and the costs of preparatory Work and operations performed by the Contractor typically occurring before 10 percent of the total original amount of an individual Bid Schedule is earned from other Contract items on that Bid Schedule. Items which are not to be included in the item of Mobilization include but are not limited to:

1. Portions of the Work covered by the specific Contract item or incidental Work which is to be included in a Contract item or items.
2. Profit, interest on borrowed money, overhead, or management costs.
3. Costs incurred for mobilizing equipment for force account Work.

Based on the lump sum Contract price for “Mobilization”, partial payments will be made as follows:

1. When 5 percent of the total original Bid Schedule amount is earned from other Contract items on that original Bid Schedule, excluding amounts paid for materials on hand, 50 percent of the Bid Item for mobilization on that original Bid Schedule, 5 percent of the total of that original Bid Schedule, or 5 percent of the total original Contract amount, whichever is the least, will be paid.
2. When 10 percent of the total original Bid Schedule amount is earned from other Contract items on that original Bid Schedule, excluding amounts paid for materials on hand, 100 percent of the Bid Item for mobilization on that original Bid Schedule, 10 percent of the total of that original Bid Schedule, or 10 percent of the total original Contract amount, whichever is the least, will be paid.
3. When the Substantial Completion Date has been established for the project, payment of any remaining amount Bid for mobilization will be paid.

Nothing herein shall be construed to limit or preclude partial payments otherwise provided by the Contract.

1-09.9 Payments

(July 8, 2024 APWA GSP, Option A)

Supplement this section with the following:

Lump sum item breakdowns are not required when the bid price for the lump sum item is less than $20,000.

1-09.9 Payments

(July 8, 2024 COK GSP)

Section 1-09.9 is revised to read:

The basis of payment will be the actual quantities of Work performed according to the Contract and as specified for payment.

The Contractor shall submit a breakdown of the cost of lump sum bid items at the Preconstruction Conference, to enable the Project Engineer to determine the Work performed on a monthly basis. A breakdown is not required for lump sum items that include a basis for incremental payments as part of the respective Specification. Absent a lump sum breakdown, the Project Engineer will make a determination based on information available. The Project Engineer's determination of the cost of work shall be final.

Progress payments for completed work and material on hand will be based upon progress estimates prepared by the Engineer. A progress estimate cutoff date will be established at the preconstruction conference.

The initial progress estimate will be made not later than 30 days after the Contractor commences the work, and successive progress estimates will be made every month thereafter until the Completion Date. Progress estimates made during progress of the work are tentative, and made only for the purpose of determining progress payments. The progress estimates are subject to change at any time prior to the calculation of the final payment.

The value of the progress estimate will be the sum of the following:

1. Unit Price Items in the Bid Form — the approximate quantity of acceptable units of work completed multiplied by the unit price.
2. Lump Sum Items in the Bid Form — based on the approved Contractor's lump sum breakdown for that item, or absent such a breakdown, based on the Engineer's determination.
3. Materials on Hand — 100 percent of invoiced cost of material delivered to Job site or other storage area approved by the Engineer.
4. Change Orders — entitlement for approved extra cost or completed extra work as determined by the Engineer.

Progress payments will be made in accordance with the progress estimate less:

1. Retainage per Section 1-09.9(1), on non FHWA-funded projects;
2. The amount of progress payments previously made; and
3. Funds withheld by the Contracting Agency for disbursement in accordance with the Contract Documents.

Progress payments for work performed shall not be evidence of acceptable performance or an admission by the Contracting Agency that any work has been satisfactorily completed. The determination of payments under the contract will be final in accordance with Section 1-05.1.

Failure to perform obligations under the Contract by the Contractor may be decreed by the Contracting Agency to be adequate reason for withholding any payments until compliance is achieved.

Upon completion of all Work and after final inspection (Section 1-05.11), the amount due the Contractor under the Contract will be paid based upon the final estimate made by the Engineer and presentation of a Final Contract Voucher Certification to be signed by the Contractor. The Contractor's signature on such voucher shall be deemed a release of all claims of the Contractor unless a Certified Claim is filed in accordance with the requirements of Section 1-09.11 and is expressly excepted from the Contractor's certification on the Final Contract Voucher Certification. The date the Contracting Agency signs the Final Contract Voucher Certification constitutes the final acceptance date (Section 1-05.12).

If the Contractor fails, refuses, or is unable to sign and return the Final Contract Voucher Certification or any other documentation required for completion and final acceptance of the Contract, the Contracting Agency reserves the right to establish a Completion Date (for the purpose of meeting the requirements of RCW 60.28) and unilaterally accept the Contract. Unilateral final acceptance will occur only after the Contractor has been provided the opportunity, by written request from the Engineer, to voluntarily submit such documents. If voluntary compliance is not achieved, formal notification of the impending establishment of a Completion Date and unilateral final acceptance will be provided by email with delivery confirmation from the Contracting Agency to the Contractor, which will provide 30 calendar days for the Contractor to submit the necessary documents. The 30 calendar day period will begin on the date the email with delivery confirmation is received by the Contractor. The date the Contracting Agency unilaterally signs the Final Contract Voucher Certification shall constitute the Completion Date and the final acceptance date (Section 1-05.12). The reservation by the Contracting Agency to unilaterally accept the Contract will apply to Contracts that are Physically Completed in accordance with Section 1-08.5, or for Contracts that are terminated in accordance with Section 1-08.10. Unilateral final acceptance of the Contract by the Contracting Agency does not in any way relieve the Contractor of their responsibility to comply with all Federal, State, tribal, or local laws, ordinances, and regulations that affect the Work under the Contract.

Payment to the Contractor of partial estimates, final estimates, and retained percentages shall be subject to controlling laws.

Unless otherwise agreed to by both parties, the work period shall coincide with the calendar month. A check will be mailed or made available to the Contractor no later than thirty (30) days following the last day of the work period.

1-09.11(3) Time Limitation and Jurisdiction

(December 30, 2022 APWA GSP)
Revise this section to read*:*

For the convenience of the parties to the Contract it is mutually agreed by the parties that all claims or causes of action which the Contractor has against the Contracting Agency arising from the Contract shall be brought within 180 calendar days from the date of final acceptance (Section 1-05.12) of the Contract by the Contracting Agency; and it is further agreed that all such claims or causes of action shall be brought only in the Superior Court of the county where the Contracting Agency headquarters is located, provided that where an action is asserted

against a county, RCW 36.01.050 shall control venue and jurisdiction. The parties understand and agree that the Contractor's failure to bring suit within the time period provided, shall be a complete bar to all such claims or causes of action. It is further mutually agreed by the parties that when claims or causes of action which the Contractor asserts against the Contracting Agency arising from the Contract are filed with the Contracting Agency or initiated in court, the Contractor shall permit the Contracting Agency to have timely access to all records deemed necessary by the Contracting Agency to assist in evaluating the claims or action.

1-09.13(1) General

(April 26, 2023 COK GSP)
Revise this section to read:

Prior to seeking claims resolution through arbitration or litigation, the Contractor shall proceed in accordance with Sections 1-04.5 and 1-09.11. The provisions of Sections 1-04.5 and 1-09.11 must be complied with in full as a condition precedent to the Contractor's right to seek claim resolution through binding arbitration or litigation.

Any claims or causes of action which the Contractor has against the Contracting Agency arising from the Contract shall be resolved, as prescribed herein, through binding arbitration or litigation.

The Contractor and the Contracting Agency mutually agree that those claims or causes of action which total $1,000,000 or less, which are not resolved by mediation, shall be resolved through litigation unless the parties mutually agree in writing to resolve the claim through binding arbitration.

The Contractor and the Contracting Agency mutually agree that those claims or causes of action in excess of $1,000,000, which are not resolved by mediation, shall be resolved through litigation unless the parties mutually agree in writing to resolve the claim through binding arbitration.

1-09.13 Claims Resolution

(October 1, 2005 APWA GSP)Option A

1-09.13(3) Claims $250,000 or Less

Delete this Section and replace it with the following:

The Contractor and the Contracting Agency mutually agree that those claims that total $250,000 or less, submitted in accordance with Section 1-09.11 and not resolved by nonbinding ADR processes, shall be resolved through litigation unless the parties mutually agree in writing to resolve the claim through binding arbitration.

1-09.13(3)A Administration of Arbitration

(January 19, 2022 APWA GSP)
Revise the third paragraph to read:

The Contracting Agency and the Contractor mutually agree to be bound by the decision of the arbitrator, and judgment upon the award rendered by the arbitrator may be entered in the Superior

Court of the county in which the Contracting Agency's headquarters is located, provided that where claims subject to arbitration are asserted against a county, RCW 36.01.050 shall control venue and jurisdiction of the Superior Court. The decision of the arbitrator and the specific basis for the decision shall be in writing. The arbitrator shall use the Contract as a basis for decisions.

1-09.13(4) Venue for Litigation

(December 30, 2022 APWA GSP)
Revise this section to read:

Litigation shall be brought in the Superior Court of the county in which the Contracting Agency's headquarters is located, provided that where claims are asserted against a county, RCW 36.01.050 shall control venue and jurisdiction of the Superior Court. It is mutually agreed by the parties that when litigation occurs, the Contractor shall permit the Contracting Agency to have timely access to all records deemed necessary by the Contracting Agency to assist in evaluating the claims or action.

END OF DIVISION 1

GSP DIVISION 8

City of Kirkland

DIVISION 8 – MISCELLANEOUS CONSTRUCTION

(*****)

8-02 ROADSIDE RESTORATION

8-02.3 Construction Requirements

Section 8-02.3 is supplemented with the following:

Property Restoration

Property restoration shall consist of soil amending, tree, shrub, and groundcover planting, bark or woodchip mulch, and other work necessary to restore all disturbed areas to original condition or better. Property restoration shall include removal of the existing lawn, soil preparation and amendment, furnishing and installation of all plantings per the plant schedule, fertilizer and wood bark mulch, per the plans.

(*****)

8-02.4 Measurement

Delete this section.

(*****)

8-02.5 Payment

Property restoration shall be incidental to the following bid items:

- Site #1 – North Reservoir – SCADA Replacement Upgrades
- Site #2 – South Reservoir – SCADA Replacement Upgrades
- Site #3 – P1 – SCADA Replacement Upgrades
- Site #4 – S1 – SCADA Replacement Upgrades
- Site #5 – S2 – SCADA Replacement Upgrades
- Site #6 – K1 – SCADA Replacement Upgrades
- Site #7 – S3 – SCADA Replacement Upgrades
- Site #8 – K2 – SCADA Replacement Upgrades
- Site #9 – K4 – SCADA Replacement Upgrades
- Site #10 – Rose Point LS – SCADA Replacement Upgrades
- Site #11 – Waverly Park LS – SCADA Replacement Upgrades
- Site #12 – Lake Shore Plaza LS – SCADA Replacement Upgrades
- Site #13 – Yarrow Bay LS – SCADA Replacement Upgrades
- Site #14 – South Bay LS – SCADA Replacement Upgrades

(*****)

8-26 VACANT

Delete Section 8-26 and substitute the following.

8-26 ELECTRICAL

8-26.1 Description

To complete upgrades of the sites, the Contractor shall furnish all labor, materials and equipment as indicated herein and on the Contract Plans, tested, and ready for operation. This includes but is not limited to the procurement, installation, wiring, connection, calibration, adjustment, testing and operation of all electrical devices, components, accessories, and equipment which are not shown or specified but which is nonetheless required to make the systems shown and specified properly function.

Provide electrical equipment that fits in the areas shown on the drawings. All equipment shall be readily accessible for maintenance, shall have electrical clearances in accordance with NEC.

The Contractor shall ensure that sewage pumping continues during construction either by preserving existing pumping operations until new is completed or providing temporary power for pump around scenarios or other workable alternatives. The status and alarm monitoring systems shall remain operational or be temporarily rearranged to provide continuous monitoring. The Contractor shall ensure that sewage pumping continues during construction either by preserving existing pumping operations until new is completed or providing temporary power for pump around scenarios or other workable alternatives.

Test electrical equipment prior to installation so that defective equipment is not installed.

Provide start-up, follow-up, and training of the Owner's personnel for electrical systems.

Make all corrective measures required during start-up.

Provide field services of qualified technicians to supervise and check out the installation of the equipment, to supervise and check out interconnecting wiring, to conduct start-up of operation of the equipment, and to correct any problems that occur during start-up.

8-26.1(4) Power and Controls

This work consists of furnishing, installing, and testing of electrical power and control equipment for the sites including control panels, antennas, appurtenances, and other work as shown on the plans.

8-26.1(6) Startup and Testing

Work consists of startup and testing, including electrical power, control, communication, and instrumentation tests.

8-26.2 Materials

Electrical Equipment	9-38	Special Provisions

8-26.2(1) Submittals

Submit catalog data showing material information and conformance with Division 9 of these provisions. The intended use of each item shall be indicated.

8-26.2(2) Manufacturers Requirements

1. Electrical components, devices, and accessories shall be as specified in Sections 8-27, 9-29, and 9-38 in addition to manufacturer requirements.

8-26.2(3) Operation and Maintenance Data

The Contractor shall collect and collate detailed operation and maintenance manuals for all equipment supplied and provide two print versions and an electronic version (PDF file) to the Owner. The manuals shall include, but not be limited to the following, as applicable for each item:

- Preventative maintenance procedures
- Trouble-shooting
- Calibration
- Testing
- Replacement of components
- Automatic mode operation
- Manual mode operation
- System schematics
- As-built wiring diagrams
- Catalog data/parts list for all equipment and control devices
- Listing of recommended spare parts
- Listing of recommended maintenance tools and equipment

(*****)

8-26.6 Site Specific Permissible Work Window

The Contractor shall perform installation activities only within the permissible work windows identified in the tables shown below. The Contractor shall submit a detailed installation schedule demonstrating compliance with the specified work windows for review and approval.

Water Pump Stations Site and Address:	Allowed Work Window:
1. North Reservoir – 10655 132nd Ave NE, Kirkland, WA 98033	Nov 1st – May 1st, 48hr downtime max
2. South Reservoir – 13013 NE 65th St, Kirkland, WA 98033	Nov 1st – May 1st, 48hr downtime max
3. P1 – 12230 NE 116th St, Kirkland, WA 98034	Year round, 2-week downtime max
4. S1 – NE 69th and 140th Ave NE	Nov 1st – May 1st, 48hr downtime max
5. S2 – 13205 NE 85th St, Kirkland WA 98033	Nov 1st – May 1st, 48hr downtime max, Must follow South Res/650 pump station restrictions
6. S3 – 11615 132nd Ave, Kirkland WA 98034	Nov 1st – May 1st, 48hr downtime max
7. K1 – NE 60th and 114th Ave, Kirkland WA 98033	Year round, 2-week downtime max
8. K2 – 11513 NE 87th St, Kirkland, WA 98033	Year round, 2-week downtime max
9. K4 – 11520 120th Ave NE, Kirkland, WA 98033	Year round, 2-week downtime max

Sanitary Sewer Lift Stations Site and Address:	Allowed Work Window:
1. Rose Point LS – 1803 10th Pl W, Kirkland, WA 98033	Year round - Schedule outages for near- and long-term weather forecast. As approved by Operations.
2. Waverly LS – 633 Waverly Way, Kirkland, WA 98033	Year round - Schedule outages for near- and long-term weather forecast. As approved by Operations.
3. Lake Plaza LS – 9 Lakeshore Plaza, Kirkland, WA 98033	Year round - Schedule outages for near- and long-term weather forecast. As approved by Operations.
4. Yarrow Bay LS – 3711 101st Way NE, Kirkland, WA 98033	Year round - Schedule outages for near- and long-term weather forecast. As approved by Operations.
5. South Bay LS – 3901 97th Ave NE, Kirkland, WA 98033	Year round - Schedule outages for near- and long-term weather forecast. As approved by Operations.

(*****)

8-27 VACANT

Delete Section 8-27 and substitute the following:

8-27 ELECTRICAL COMPONENTS, DEVICES, AND ACCESSORIES

8-27.1 Description

(*****)

8-27.1 General

The Contractor shall be responsible for the complete detailed design, supply, installation, and testing of the interconnection system between the control panel and the antenna/ fiber cable connection point at each site. The design shall ensure signal integrity, environmental protection, and compliance with all applicable codes.

The Contractor shall provide a comprehensive detailed design package for the conduit, raceways, and cabling. This design must include, but is not limited to:

- **Route Verification:** Field verification of the proposed pathway to determine the most direct and obstruction-free route to minimize cable length and RF signal loss.
- **Conduit Sizing:** Calculation of conduit fill ratios in accordance with [NEC / IEC] standards, ensuring a minimum of [40%] spare capacity for future expansion.
- **Cable Selection:** Comply with specification 9-38.
- **Interference Mitigation:** Comply with specification 9-38.

Submittals

Prior to the procurement of materials or commencement of installation, the Contractor shall submit a detailed design package for review and approval by the Engineer. This package shall include:

1. **Routing Layout Drawings:** Provides the layout of the conduit and cable routing between the control panel and the antenna/ fiber cable connection point.
2. **Cable Schedule:** A schedule listing all cables, including:
    - Cable Tag/ID
    - Cable Type & Manufacturer
    - Calculated Length
    - Attenuation/Loss Calculations (for RF cables)
3. **Mounting Details:** Fabrication details for any custom brackets or stanchions required to support the conduit or antenna mast.
4. **Bill of Materials (BOM):** A complete list of all proposed conduits, fittings, cables, connectors, and grounding hardware.

8-27.1(1) Standards and Codes

Permits, licenses, approvals, and other arrangements for work shall be obtained and paid for by the Contractor and included in the bid price.

Electrical work shall be executed in strict accordance with the latest edition of the National Electrical Code and all local ordinances and regulations.

All electrical equipment, materials, construction methods, tests and definitions shall be in strict conformity with the established standards of the following in their latest adopted revision:

- Underwriters' Laboratories, Inc. (UL)
- National Electrical Manufacturers Association (NEMA)
- Canadian Standards Association (CSA)
- Electrical Testing Laboratories (ETL)
- Factory Mutual (F.M.)

All materials and equipment specified herein shall be approved by the Underwriter's Laboratories or other Washington State approved testing agencies, for the purpose for which they are used and shall bear the testing agencies' label.

All materials shall be new, free from defects, of current manufacture and of quality specified or shown. Each type of material shall be of the same manufacture throughout the work.

8-27.1(2) Contract Documents

The electrical layouts are generally diagrammatic. The location of equipment is approximate unless dimensioned. Exact locations and routing of conduits shall be governed by structural conditions and physical interferences and by locations of electrical terminations on equipment. Minor adjustments and deviations from the apparent locations shown on the drawings shall be provided without extra costs.

8-27.1(3) Reference Documents

The Contractor shall refer to the drawings, project data and shop drawings of other trades for additional details that affect the proper installation of the work. Diagrams and symbols showing electrical connections are diagrammatic only, and so do not necessarily show the exact physical arrangement of the equipment.

8-27.1(4) Site Familiarization

The Contractor shall refer to the drawings, project data and shop drawings of other trades for additional details that affect the proper installation of the work. Diagrams and symbols showing electrical connections are diagrammatic only, and so do not necessarily show the exact physical arrangement of the equipment.

8-27.1(5) Project Record Drawings

A set of drawings shall be maintained at the job site showing any deviations in the electrical systems from the original design. Minor changes in branch circuit wiring may be omitted. A set of electrical drawings, marked in red to indicate the routing of concealed conduit runs and any deviations from the original design, shall be submitted to the Engineer for review at the completion of the project prior to final acceptance.

8-27.1(6) Guarantee

The Contractor shall guarantee his work and all components thereof, for a period of one year from date of acceptance of the installation. The contractor shall remedy any defects in workmanship and repair or replace any faulty equipment that shall appear within the guarantee period without additional cost to the Owner.

8-27.1(7) Cleanup

The premises must be kept free of accumulated materials, rubbish and debris at all times. Surplus material, tools and equipment must not be stored at the job site. At the completion of the job, all equipment and fixtures shall be left clean and in proper condition for their intended use.

Lamps and fluorescent tubes shall be cleaned and defective units replaced at the time of final acceptance.

8-27.1(8) Demolition

The Contractor shall include in his bid all costs for removal of existing electrical equipment. The contractor shall double check with the Owner to see if they desire any of these items. Those requested by the Owner shall be delivered as directed by the Owner. Any items not requested by the Owner shall be disposed of by the contractor. All additional charges, including landfill charges for all equipment and devices shown to be removed on the electrical drawings shall be included in the bid price. The areas where equipment has been removed shall be cleaned and restored and repainted as required to leave a clean and usable space.

8-27.1(9) Test Reports

Testing for installed conductors and ground electrodes is required as specified in appropriate sections. Test reports shall be submitted to the Engineer prior to final acceptance.

8-27.1(10) Temporary Light and Power

The Contractor shall provide adequate services for temporary light and power. The Contractor shall verify the need in terms of capacity and characteristics (rating, single or three-phase) as required for the construction and include the cost of furnishing both the installation and the power usage in the bid. Temporary services shall be provided until the Owner accepts the project or the permanent services are provided.

8-27.1(11) Facility Operation Responsibilities

Pumping must be continued throughout the construction period. Off-site alarm and status annunciation using telemetry equipment shall remain operational at all times during construction. The Contractor shall be responsible for planning, coordination, scheduling, and the provision of temporary equipment and materials as required to provide continuous sewage pumping operation while accomplishing the new construction as shown on the contract drawings. Existing telemetry and alarm equipment may be relocated, reconnected, and temporarily reused for off-site alarm and status monitoring during construction. Power and communication outages are to be avoided where at all possible. Minimum power and communications outages required for disconnection and reconnection of cables will be allowed but must be coordinated with the Owner.

8-27.2 Raceways

8-27.2(1) Description of Work

This section covers the furnishing and installation of all raceways, fittings and boxes used in the construction of these facilities. All wiring shall be in a raceway system.

Ground Conductor: All power distribution raceways shall contain a minimum of one continuous copper equipment grounding conductor sized in accordance with the N.E.C.

8-27.2(2) Standards and Codes

All materials and equipment specified herein shall be approved by the Underwriter's Laboratories or other Washington State approved testing agencies, for the purpose for which they are used and shall bear the testing agencies' label.

All materials and equipment specified herein shall conform to all applicable NEMA, ANSI and IEEE standards.

All materials and equipment specified herein, and their installation methods shall conform to the latest enforced version of the National Electric Code (N.E.C.), Underwriters Laboratories and all other required codes and ordinances.

8-27.2.(3) Submittals

Submit catalog data showing material information and conformance with Division 9 of these provisions. The intended use of each item shall be indicated.

8-27.2(4) Area Classifications

The following classification of areas shall be used as a reference in determining application of material covered by this Section:

- Hazardous areas, Class I, Division 1: Wetwell and areas 3 feet from the wetwell access hatch to a height of 18 inches, and 3 feet from wetwell vents.
- Hazardous areas, Class I, Division 2: 5 feet from wetwell vents.
- Corrosive Areas: Outdoor areas above and below grade.
- General Purpose Areas: All other areas not described above.

8-27.2(5) Raceway Installation

8-27.2(5)A Conduit

Exposed conduit shall be installed with runs parallel or perpendicular to walls, structural members or intersections of vertical planes and ceiling. No conduit shall approach closer than 6 inches to any object operating above the rated temperature of the insulation of the wiring in the conduit. Frequency of conduit supports shall be per N.E.C.

Conduit supported directly from the building structure shall be spaced out at least 1-5/8 inch using framing channel. Framing channel shall meet the requirements of Section 9-42.1(7) of these provisions.

Where three or more conduits are suspended from ceiling or overhang, they shall be supported by racks of threaded rod and framing channel.

Welding, brazing or otherwise heating of the conduit is not allowed. Plumber's perforated strap hanger iron shall not be used for any purpose.

Where required for ease of pulling and as necessary to meet codes, install junction, pull boxes or handholes even though not shown on the drawings.

Conduit shall terminate in junction boxes, outlet boxes or panels with proper fittings. Conduit entering free-standing panels shall terminate in clear wiring space. Where such conduits are located on drawings with dimensions or elevations, adjust as necessary for conduits to enter clear wiring space and shall be terminated with a grounding bushing.

All conduit entering sheet-steel NEMA 1 boxes or cabinets shall be secured by locknuts on both the interior and exterior and an insulating bushing installed over the conduit end. All conduit entering NEMA 12 or JIC boxes shall be terminated with a raintight hub. All surface-mounted cast boxes shall have threaded hubs. All joints shall be made with standard couplings or specified unions. Running threads shall not be used in lieu of conduit nipples, nor shall excessive threads be used on any conduit. Conduit terminated in NEMA 4 shall be terminated with raintight hubs. Conduits terminated in cast boxes shall have five full threads of contact. The ends of all conduit shall be cut square, reamed and threaded with straight threads. Conduit joints shall be made up with T&B Kopr-Shield which shall be applied to the male threads only.

Exposed threads or metal surfaces of RMC conduit routed in corrosive areas are to be coated in the field following installation with either bich-mastic or brush applied Rob Roy coating. Spray-on coating is not allowed.

Conduit installed in concrete slabs or walls shall be placed in the middle third where possible. Slabs laid on the earth shall be thickened by trenching, if the conduit cannot be placed within the slab thickness shown. Conduits under floating slabs shall be separately encased from the slab and care shall be taken to avoid tying non-floating beams to the floating slab through the encasement. Conduits rising through floating slabs shall be brought through sleeves in the slab which shall be sealed with non-hardening mastic after installation. Where the conduit is subject to movement (embedded in a floating slab), any extension to fixed walls or equipment shall be made through a suitable expansion fitting or flexible jacketed conduit.

Clearances equal to the conduit trade diameter but not less than 1-1/2 inches shall be maintained between conduits encased in slabs. Clearances of less than 1-1/2 inches at conduit crossings and terminating locations may be allowed by the Engineer at his discretion. No conduit shall be installed in beams or footings.

Flexible conduit shall not be used as a general purpose raceway but shall be provided in locations requiring flexibility. Flexible conduit shall be used for all motor connections. Where flexibility is required for electrical raceways on equipment, flexible conduit shall be used in accordance with JIC standards, these specifications, and the local inspection agency. The maximum length of flexible conduit shall be 72 inches.

Spare conduits shall contain one 3/16-inch diameter nylon pull rope.

Exercise necessary precautions to prevent the lodging of dirt, concrete or trash in the conduit, fittings, and boxes during the course of installation.

After the conduit has been installed, the conduit shall be tested for obstructions or flattening by pulling a mandrel of appropriate size through the conduit. If an obstruction is found that section is to be replaced. Cleaning conduits shall be performed by drawing a brush with stiff bristles and a swab through each duct and conduit to make certain no foreign materials are left in the conduit. Cleaning and mandrelling operations may be performed simultaneously.

Where conduit enters the facility below grade, the conduit shall be sealed with duct seal.

When rigid steel and PVC coated rigid steel conduit is threaded in the field, the threads shall be re-galvanized by the Galv-a-weld process or by Gal-van-ize as manufactured by Lawson Products, Inc.

8-27.2(5)B Outlet Boxes

Outlet boxes shall be located to provide ample clearance between fixtures, pipes, beams, and ducts. The location of all outlets shown are approximate. The exact location shall be verified on the job to avoid conflict with other work. Boxes shall be accurately placed and independently and securely supported. Wooden plugs inserted in masonry or concrete shall not be used as a base to secure boxes. Boxes shall be secured by galvanized brackets, expansion bolts, toggle bolts, or machine or wood screws depending on the type of construction.

8-27.2(5)C Handholes

Conduits entering handholes shall have grounding bushings installed and the conduit ends shall be sealed with Permagum sealing compound. Where conduits enter through sides of handholes, the penetration shall be made watertight.

8-27.2(5)D Trenching and Backfill

The contractor shall provide trenching and backfill for all Puget Sound Energy Conduit and transformer installation. All such trenching and backfill shall be done in accordance with PSE requirements.

All other trenching and backfill shall be done as follows: The contractor shall excavate trenches to a minimum depth of 28 inches below finished grade. Minimum depth under roadways shall be 36 inches. After trench excavation, the bottom of the trench shall be trimmed by hand to prepare a smooth, even bed.

After the conduit has been installed the trench shall be backfilled 12 inches deep, loose measurement with 5/8 inch minus crushed gravel. This layer is to be compacted to 95% maximum density using a small vibration of mechanical compactor.

Following initial compaction, a yellow warning tape shall be placed in the trench. The warning tape shall be of a non-biodegradable material and shall have the words “caution buried electrical conductors below”, or equivalent. A separate foil type warning tape is to be installed directly above PVC conduits which have been installed as spares, for future location of the conduit.

The trench shall be completely backfilled and tamped and compacted to at least the density of adjacent undisturbed soil. Compacted backfill shall be tamped level with adjacent surfaces. Any excess excavated material shall be removed and disposed of in accordance with instructions issued by the engineer.

8-27.3 Wire and Cable

8-27.3(1) Description of Work

This section covers furnishing and installation of all wiring used in the construction of the project. All wiring shall be in raceways.

8-27.3(2) Standards and Codes

All materials and equipment specified herein shall be approved by the Underwriter's Laboratories or other Washington State approved testing agencies, for the purpose for which they are used and shall bear the testing agencies' label.

All materials and equipment specified herein shall conform to all applicable NEMA, ANSI and IEEE standards.

All materials and equipment specified herein, and their installation methods shall conform to the latest enforced version of the National Electric Code (NEC).

8-27.3(3) Submittals

Submit catalog data showing material information and conformance with Division 9 of these specifications. The intended use of each item shall be indicated**.**

8-27.3(4) Installation

8-27.3(4)A General

Keep all conductors within the allowable tension limits during installation. Lubricants for wire pulling, if used, shall be approved for the insulation and raceway material. Observe cable Manufacturer's and industry standard cable bending radius recommendations.

Incoming cables in panels and motor control centers, No.6 AWG and smaller, shall be bundled and laced at intervals not greater than six inches and neatly spread into trees and connected to their respective terminals.

Sufficient slack shall be allowed in cables for alterations in terminal connections. Lacing shall be done with plastic cable ties using a tensioning tool designed for that purpose.

Cables crossing hinges shall be made up into groups not exceeding 12 and shall be so arranged that they will be protected from chafing when the hinged member is moved.

8-27.3(5)B Wire and Cable Termination

Power conductors No. 8 AWG and larger may be terminated directly in box-type lugs without terminals. Insulated terminals of the spade or ring-tongue type shall be used on all stranded control and power conductors No. 12 AWG and smaller. Insulated terminals shall be used also on all stranded instrumentation wiring. Special instrumentation cables shall be terminated in accordance with the recommendations of the Manufacturer of the equipment and subject to review by the Engineer.

Terminals and connectors shall be installed with the compression tool recommended by the terminal manufacturer. Solid wire shall not be lugged but shall be terminated with a full ring eye of the wire under the binding-head screw or saddle of the terminal block. Electrical spring connectors may be used only on lighting circuits.

No splices shall be used in power, control and signal wiring. The wiring shall be continuous from point-to-point. Extending existing cables will not be allowed.

8-27.3(5)C Control Wire Labeling

Power conductors No. 8 AWG and larger may be terminated directly in box-type lugs without terminals. Insulated terminals of the spade or ring-tongue type shall be used on all stranded control and power conductors No. 12 AWG and smaller. Insulated terminals shall be used also on all stranded instrumentation wiring. Special instrumentation cables shall be terminated in accordance with the recommendations of the Manufacturer of the equipment and subject to review by the Engineer.

Terminals and connectors shall be installed with the compression tool recommended by the terminal manufacturer. Solid wire shall not be lugged but shall be terminated with a full ring eye of the wire under the binding-head screw or saddle of the terminal block. Electrical spring connectors may be used only on lighting circuits.

No splices shall be used in power, control and signal wiring. The wiring shall be continuous from point-to-point. Extending existing cables will not be allowed.

8-27.3(5)D General Tests

The Contractor shall provide all material, equipment, labor and technical supervision to perform tests and inspections as specified herein. It is the intent of these tests to assure that all electrical equipment as supplied and installed by the Contractor is operational within the industry and Manufacturer's tolerances and is installed in accordance with design documents.

Tests shall be done in accordance with the methods and procedures indicated in ANSI/NETA MTS - 2015

If the test results indicate that corrective measures are required, the Contractor shall undertake all such corrective measures. No additional compensation will be paid for corrective measures.

While performing tests specified herein, the Contractor shall complete the conductor test report attached at the end of this section.

Test reports must be submitted to the Engineer prior to final acceptance by the Owner.

A. Conductor tests: Following the completion of installation, test conductors as follows:

1. Visually inspect exposed sections of all conductors for physical damage. Verify that cable is supplied and connected in accordance with specifications and one-line diagram.

2. Perform continuity test on all conductors to ensure proper cable connection.

3. Perform voltage and insulation resistance tests on service entrance conductors.

B. Ground electrode test: Following completion of the grounding electrode system, measure ground resistance at each ground rod using the three rod method.

C. Test Values

Test values shall be in accordance with the referenced ANSI/NETA MTS – 2015 Standards.

8-27.3(5)C FIELD CONTROL CONDUCTOR LABEL SCHEDULE Page of		
PROJECT: Trend Lift Station	**OWNER: City of Kirkland**	
CONTRACTOR CO. NAME: **LABELED BY:**		**DATE:**
LABEL TEXT	**FROM: (SOURCE)**	**TO:**
NOTES/REMARKS:		

8-27.3(5)D	CONDUCTOR TEST REPORT	Page 1 of 1
PROJECT: TREND LIFT STATION	OWNER: CITY OF KIRKLAND	
CONTRACTOR CO. NAME: TESTED BY:	PHONE NO.: TEST DATE:	

Cond. Label (1)	Vis (2)	Con (3)	Operating Load Voltage						Insulation Resistance – OHMS					
			VAB	VCB	VCA	VAN	VBN	VCN	A-B	B-C	C-A	A-G	B-G	C-G

(1) Refer to conduit and cable schedule and one-line diagram for description of feeder identified by label shown on this report.	(2) Visual Inspection - Check when completed.	(3) Continuity Test - Check when completed.

8-27.4 Wiring Devices

8-27.4(1) General

This section covers furnishing and installing all receptacles, switches and other wiring devices indicated on the drawings.

8-27.4(2) Standards and Codes

All materials and equipment specified herein shall be approved by the Underwriter's Laboratories or other Washington State approved testing agencies, for the purpose for which they are used and shall bear the testing agencies' label.

All materials and equipment specified herein shall conform to all applicable NEMA, ANSI and IEEE standards.

All materials and equipment specified herein and their installation methods shall conform to the latest enforced version of the National Electric Code (NEC).

8-27.4(3) Submittals

Submit catalog data showing material information and conformance with specifications. The intended use of each item shall be indicated.

8-27.4(4) Position of outlets

Install symmetrically and plumb all receptacles, switches and outlets

8-27.4(5) Mounting Heights

Wall mounted outlet devices shall generally be 24 inches above the floor, 18 inches in architecturally treated areas. Switches shall be 48 inches above the floor.

8-27.5 SCADA System

8-27.5(1) Summary of Work

The work shall include, but not be limited to the following:

A. Provide a complete SCADA system for the water and sewer system in accordance with the City of Kirkland SCADA standards in the SCADA Strategic Plan. The system will provide centralized monitoring, control, alarming, reporting, and historical data collection functions.

B. Supply all required software licenses necessary for a fully functioning SCADA system adhering to the project specifications and the City of Kirkland SCADA Standards in the SCADA Strategic Plan. All software licenses shall be licensed to the City of Kirkland.

C. Software installation, configuration, and programming including all network equipment and cellular router configuration. Coordination of SCADA

system virtual servers and network configuration with City of Kirkland IT department.

D. Supply two (2) SCADA/Engineering workstations. Virtualized SCADA servers will be supplied by the City of Kirkland.

8-27.5(2) Software Licenses

The System Integrator shall provide the following software licenses:

Qty	Part Number	Description	Manufacturer
1	Ignition Platform	Ignition Platform: Unlimited Tags, Unlimited Designer Clients, Modbus Driver, UDP and TCP Driver, Allen-Bradley Driver Suite, Included OPC UA Server Module	Inductive Automation
1	Ignition Solution Suites: Alarm Management	Ensure timely and effective responses to critical events with advanced alarm notifications	Inductive Automation
1	Ignition Solution Suites: Application Building	Build powerful mobile-responsive industrial applications like SCADA, HMI, Reporting	Inductive Automation
1	Ignition Solution Suites: Industrial Historian	Optimize time-series data management with powerful, high-performance historians	Inductive Automation
1	Redundancy	Redundancy for all Ignition Suites and Modules	Inductive Automation
1	TotalCare	Phone support during business hours, email and web support, plus unlimited upgrades to purchased ignition modules	Inductive Automation
2	OFSUASCZZSPAZZ	EcoStruxure OPC UA Server Expert, Server License, Single	Schneider Electric
1	CEXSPUCZSSPAZZ	Control Expert S, Single E-LIC	Schneider Electric
3	Microsoft SQL Server 2025 User CAL (x5)	5 Pack of user licenses providing access to Windows Server services on multiple devices	Microsoft
3	Microsoft Server 2025 User CAL (x5)	Microsoft Server 2025 User CAL 5 Pack	Microsoft
1	Microsoft Server 2025 Standard	Microsoft Server 2025 Standard 16-core, 2 OSE	Microsoft

8-27.5(3) SCADA System Hardware

The System Integrator shall provide the following SCADA System Hardware:

Qty	Part Number	Description	Manufacturer
2	Precision 3460	Dell Precision 3460 Workstation. Latest Generation Intel i9 or equal processor, Windows 11 Pro, 32 GB DDR5 RAM, Dedicated GPU with minimum 4 GB memory, two 1 TB PCIe NVMe SSDs in RAID 1, additional 1gb NIC, Wireless Keyboard and Mouse, Microsoft Office Home and Business	Dell (or Equal)
2	P2725H	Dell Professional Series 27" Monitor, 1920x1080 Resolution	Dell (or Equal)
1	C8200L-1N-4T	Cisco Catalyst 8200L with 1-NIM slot and 4x1G WAN ports	Cisco
1	CON-L1NCD-C8200TL1	CX LEVEL 1 8X7NCD Cisco Catalyst 8200L with 1-NIM slot - 1 year support	Cisco
1	HT-503	Grandstream HT503 1-FXS/1-FXO Port Analog	Grandstream
1	RV55	Sierra Wireless AirLink RV55 Rugged LTE-A Pro Router with Wi-Fi	Sierra Wireless
1	UPS	True Online UPS, 2000VA minimum, 120VAC Output	Liebert (or Equal)

A. Provide all required accessories and cables required for a complete functioning SCADA system including network patch cables, connection cables, power cables, and power strips.

B. All SCADA equipment listed above shall be backed up by UPS power. Provide minimum 15 minutes of runtime on UPS backup power for all equipment. Submit UPS runtime calculations for approval.

8-27.5(4) Submittals and Workshops

The System Programmer as defined in Division 9 shall host the following meetings and workshops:

A. Programming Kickoff – At least 1 hour
   i. Introductions to All Key Personnel
   ii. Review Preliminary Schedule
   iii. Review List of Deliverables

B. SCADA Workshop 1 – At least 4 hours
   i. Discuss Standards for this project for SCADA and OIT:
      1. Tag Naming, Colors,
      2. Graphics and Faceplates for typical equipment and controls Including Analog Instruments, Discrete Instruments, Motors, Valves, PLC Diagnostics, Pipes

3. Navigation schemes and hierarchy
4. Application Security
5. Alarms, Alarm History, Priorities, Controls
6. Historical Values

ii. Network IP Scheme

C. SCADA Workshop 2 – at least 4 hours
   i. Review of Updates to Standards based on submittal comments
   ii. Overview and Dashboard displays
   iii. Review simulated PLC with OIT and SCADA Displays, Control Narratives, for the first 10-25% of sites.
   iv. Reporting: Annual, Monthly, Daily Reports. Alarm Reports, and Ad-hoc Reports.

D. Cybersecurity Meeting 1 – At least 4 Hours
   i. Review Asset Inventory Submittal.
   ii. Review hardening and/or cybersecurity best practice documentation from SCADA, PLC, OIT, and Network equipment manufacturers. Discuss and document all controls to be implemented and not to be implemented.
   iii. Discuss domain membership, SCADA user security groups, group policies, remote access, etc. with City IT.
   iv. Review proposed network diagram and network flow diagram.

E. SCADA Demonstration – at least 1 hour Per Site, can have multiple in one longer meeting
   i. Simulated PLC with Complete SCADA and OIT Displays
   ii. Review entire control narrative, each control loop, interlock, and failure scenario

F. Cybersecurity Meeting 2 – At least 2 hours
   i. Review Cybersecurity test / verification forms and procedures with City IT.
   ii. Review Final Network and Flow Diagram.

The System Programmer shall develop, and the Contractor shall submit to the Engineer, for review and approval, the following project data:

A. Schedule of materials and software licenses listing all equipment and components to be provided. Technical data sheets for all components.

B. Draft, Submittal, and Record Updated SCADA Standards. Including sections on: Tagnaming, Color Usage, Navigation, Security, Standard Symbols (Analog, Discrete, Motors, Valves, Controllers, PLC Diagnostics, Setpoints, Faceplates, etc), Alarms, Alarm History Alarm Priorities, History, and Trends.

C. Preliminary, Draft, Submittal, and Record OIT Screenshots including descriptions of each display, setpoints, and controls with simulated values.

D. Preliminary, Draft, Submittal, and Record SCADA Screenshots including descriptions of each display, setpoints, and controls with simulated

values.

E. Preliminary, Draft, Submittal, and Record Detailed Control Narratives including descriptions of each Calculation, Control Loop, Interlock, and Failure Mode in the system.

F. Preliminary, Final, and Record Reports including Daily, Monthly, Annual pre-configured reports, Alarm Summary reports including the number of occurrences of each alarm in an adjustable time period, and at least three Ad-hoc reports for pulling tag and summary data.

G. Cybersecurity Asset Inventory including Tag Name / Equipment Tag Unique Identifier, Device Type (PLC, OIT, Switch, Cell Modem, etc.), manufacturer, model, Firmware Details, Physical Location (site and panel), and IP address(es).

H. SCADA Network Block Diagram with network segmentation like VLANs clearly depicted.

I. Network Flow Diagram with Logical network flows (ACLs, Firewalls Rules, connections between devices and what ports are used) displayed.

J. SCADA factory acceptance test forms including

    i. An IO test for each point coming to or from the control system, the point's verification in the PLC, OIT, and SCADA including visibility, control, alarms, and history.
    ii. A functional test including simulating each control loop, setpoint, interlock, and failure mode.
    iii. A network test, including verifying all flows and deny rules defined on the Network Flow Diagram,
    iv. A cybersecurity checklist including verifying all firmware and cybersecurity controls have been implemented from cybersecurity meeting.

K. SCADA System Preliminary Training submittal shall include several 5-to-10-minute mp4 narrated screenshare videos describing all common controls, symbols, security, navigation, site specific controls, setpoints, interlocks, and failure modes for each site and control loop, trends, alarms, and any other information required for basic operation of the system.

L. SCADA System Training shall be provided in person prior to the first site cutover.

M. Site SCADA and OIT Training shall be provided after functional testing is complete at each site.

N. SCADA Site Acceptance Test forms including

    i. An IO test for each point coming to or from the control system, the point's verification in the PLC, OIT, and SCADA including

visibility, control, alarms, and history.

ii. A functional test including tuning of each control loop, setpoint, interlock, and failure mode, and recording all initial values.

iii. Performance acceptance test forms shall include a record of all issues that occurred during the test and witnessed resolution to each issue. If any issues remain unresolved at the end of the performance test period, the performance test period shall repeat.

8-27.5(6) MTU Modifications

The existing MTU handles communication to all existing RTUs through a frame relay network. The MTU is required to remain in place until all remote RTUs are converted to the new SCADA system. As remote RTUs are converted site by site to the new SCADA system, modify the MTU programming for each site to disable communications with the RTU and disable all alarms for each site on the existing SCADA system.

After completion of all site conversions to the new SCADA system, remove the existing MTU PLC system and connect the existing local pressure transmitter analog input to a new Advantech I/O module as shown in the plan drawings. Connect the Advantech I/O module to the network switch and integrate the pressure signal into the new SCADA system.

8-27.5(10) Description of Operation

The SCADA System shall be programmed by the System Programmer as defined in Division 9 to duplicate the functionality of the existing SCADA system and to adhere to the City of Kirkland SCADA standards in the SCADA Strategic Plan.

SCADA shall be Ignition Perspective and the system shall include the following features:

- Redundant Gateways
- Store and Forward between Gateways and Historian
- Use https for gateway communication
- Configure at least all of the following features from the existing system in the new system
    - Alarms, Alarm History, and Alarm Notification
    - Values and Indications
    - Logged Values shall be stored in the Historian
    - Overview Display
    - Water Overview
    - Wastewater Overview
    - One Process Display per site
    - System Status / diagnostic display(s)
    - Pre-Configured Trends
    - User Configurable and Save-able trends

- Workstations that run 24/7, boot on ac power, automatically login and launch application in kiosk mode.
- Security authentication shall utilize Activate Directory.
- System shall have unlimited clients.

8-27.6 Control Panels

8-27.6(1) Description of Work

The work includes the equipment, devices, and components for sensing, indicating, controlling, and displaying the status and operation of the pumps and other equipment as shown on the Contract Plans and transmitting all status and alarm conditions to the City of Kirkland's central SCADA monitoring location.

8-27.6(2) System Description

The work shall include, but not be limited to the following:

A. Provide a custom control panels as shown on the Contract Plans consisting of circuit breakers, PLCs, relays, communication equipment, and miscellaneous equipment as indicated on the drawings and as required to provide a complete and operable pump control system. The control components shall be supplied and installed as an integrated system which includes all accessories necessary for operation.

B. The Systems Integrator of the control system shall assemble the system to provide the control functions and sequences indicated by the drawings and specifications.

C. The CP shall include cellular data transmission equipment to transmit all status and alarm conditions to the City of Kirkland monitoring location.

8-27.6(3) Responsibility of Contractor and System Integrator.

The control panels shall be provided by a single System Integrator approved by the City of Kirkland. The System Integrator shall be fully and completely responsible for the design and assembly of the systems as specified herein and shall be enjoined by the Contractor as a Subcontractor. The assignment of specific responsibilities herein to the System Integrator shall not, in any way and under any conditions, diminish or usurp the Contractor's full and complete responsibility for all work performed and all materials installed under the contract. The contract between the Contractor and the System Integrator shall specifically require that the System Integrator conform to and meet all requirements specified herein.

8-27.6(4) Standards and Codes

All equipment and materials shall conform to the latest revised editions of applicable standards published by the following organizations:

- American National Standards Institute (ANSI).
- Institute of Electrical Manufacturers Association (NEMA).
- National Electrical Manufacturers Association (NEMA).
- Underwriters' Laboratories (U/L).
- Instrument Society of America (ISA).
- National Fire Protection Association (NFPA 20).
- National Electrical Code (NFPA 70)

All electrical equipment and materials, and the design, construction, installation, and application thereof shall comply with all applicable provisions of the National Electrical Code (NEC), the Occupational Safety and Health Act (OSHA), and any applicable Federal, State, and local ordinances, rules and regulations.

All materials and equipment specified herein shall be approved by the Underwriter's

Laboratories or other Washington State approved testing agencies, for the purpose for which they are used and shall bear the testing agencies' label.

The custom control panels shall bear a UL label for the completed assembled control system panel.

8-27.6(5) Shop Drawings

The System Integrator and assembler of the custom panels shall develop all shop drawings required for design, fabrication, assembly, and installation of the system. Shop drawings shall include the manufacturer's drawings of all components and assembly and installation of the system.

Installation details shall include the size, number, type and location of all interconnecting wiring between the custom panels and all other cabinets, enclosures, sensors and equipment which must be connected to or with the custom panels. Shop drawings shall be submitted to the Contractor for review and approval. After approval by the Contractor, copies of all shop drawings shall be provided to the Engineer for review.

8-27.6(6) Submittals

The System Integrator shall develop, and the Contractor shall submit to the Engineer, for review and approval, the following project data:

A. Schedule of materials listing all equipment and components to be provided.

B. Technical data sheets for all components.

C. General arrangement and dimensional drawings of the control panels with all panel front- and internal-mounted equipment indicators, switches and devices indicated.

D. Interconnecting wiring diagrams complete with terminal numbers and showing all panel and field-mounted equipment and components.

8-27.6(7) Warranty

In accordance with the requirements of the applicable section of this specification, the Contractor shall guarantee the custom panels systems to be free of defects in design, materials and workmanship for a period of one (1) year following the date of acceptance, by formal action of the Owner.

As part of the guarantee, the Contractor and the System Integrator shall indemnify and hold harmless the Owner, the Consultant and their officers, agents, and employees against and from all claims and liability arising from all damage and injury due to defects in the system.

The Contractor shall cause the System Integrator and assembler of the custom panels to

make any and all repairs, replacements, modifications, and adjustments within thirty-six (36) hours of notification. Should the manufacturer fail to begin the work within 12 hours or fail to complete the work within 36 hours, the owner may proceed to undertake or complete the work. In such event, the Contractor and his surety shall be liable for all costs incurred by the Owner.

During the warranty period, the System Programmer shall

- Monitor all CISA notifications for installed products. If a notification is announced regarding any of the installed products, the System Programmer shall immediately notify the City and implement fixes and workarounds as needed.
- Install all Critical and Security related Windows Updates at least quarterly. Resolve any issues as a result of the updates.
- Before the end of the warranty period, update to the latest stable version of ignition.

8-27.6(8) Factory Testing

Operation of the complete panels shall be tested in the shop by the System Integrator using the System Integrator's standard test procedure. The Factory Testing shall be witnessed by the Engineer.

8-27.6(9) Operation and Maintenance Data

The System Integrator of the custom panels shall prepare and assemble detailed operation and maintenance manuals in accordance with the requirements of the applicable sections of this specification. The manuals shall include, but not limited to the following:

- Preventative maintenance procedures
- Trouble-shooting
- Calibration
- Testing
- Replacement of components
- Automatic mode operation
- Manual mode operation
- System schematics
- As-built wiring diagrams
- Catalog data and complete parts list for all equipment and control devices
- Listing of recommended spare parts
- Listing of recommended maintenance tools and equipment

8-27.6(10) Description of Operation

The PLC and OIT shall be programmed by the System Programmer as defined in Division 9 to duplicate the functionality of the existing PLC control systems and to adhere to the City of Kirkland SCADA standards in the SCADA Strategic Plan.

8-27.6(11) Installation

The custom control panels shall be installed by the Contractor or, at the option of the Contractor, by the Systems Integrator of the panels in accordance with the installation drawings and instructions prepared by the Systems Integrator. Installation shall be performed by workers who are skilled and experienced in the installation of electrical instrumentation and control systems.

Installation shall include all elements and components of the panels and all interconnecting wiring between all equipment, components, and sensors. All wiring between cabinets, sensors and equipment shall be labeled at both ends for ease of servicing.

All terminations shall be made with solderless pressure connectors. All wiring shall be in accordance with the requirements of Section 8-27.3

8-27.6(12) Inspection and Verification of Installation

After completion of the installation of the custom panels, the Systems Integrator of the custom panels shall inspect the installation and verify that all components and wiring are correctly installed. If not installed correctly, the Systems Integrator shall determine the exact scope and nature of work required to correct deficiencies and errors in the work and shall supervise the performance of such work.

8-27.6(13) Calibration and Start-up

All components of the panels shall be calibrated by the Systems Integrator after completion of installation. Each component shall be adjusted to be within the required range and for the specific application. Components that cannot be properly calibrated or that are found to exceed the specified range or accuracy shall be removed and replaced.

After completion of construction, the panels shall be placed into operation by the Systems Integrator and the Systems Programmer. Start-up shall be performed by representatives of the Systems Integrator who are skilled and experienced in the start-up of electrical instrumentation and control systems.

The Systems Integrator of the custom panels shall be solely and completely responsible for all maintenance of the system from time of start-up to the date of acceptance by formal action of the Owner, of all work under the contract. The Systems Integrator shall correct all deficiencies and defects and make any and all repairs, replacements, modifications and adjustments as malfunctions or failures occur. The Systems Integrator shall perform all such work required or considered to be required by the Owner to cause and maintain proper operation of the system and to properly maintain the systems.

The Contractor and the Systems Integrator of the custom panels shall anticipate that the Owner may delay acceptance of all work under the contract if, in the judgment of the Owner, malfunctions or failures in operation of the panels occur after start-up. Both the Contractor and the Systems Integrator shall not be entitled to an extension of time or to any claim for damages because of hindrances, delays or complications caused by or resulting from delay by the Owner in accepting the work because of malfunctions or

failures in operation of the panels.

8-27.6(14) Operation and Maintenance Training

The Systems Integrator of the custom panels shall conduct specifically organized training sessions in operation and maintenance of the panels for personnel employed by the Owner. The training sessions shall be conducted to educate and train the personnel in maintenance and operation of all components of the panels. Training shall include, but not be limited to, the following:

- Preventative maintenance procedures
- Troubleshooting
- Calibration
- Testing
- Replacement of components
- Automatic mode operation
- Manual mode operation

One (1) training session of at least two (2) hours in duration, shall be conducted (after start-up of the systems). The training shall include instruction and operation of the custom panels and all associated electrical equipment and devices. The Systems Integrator shall prepare and assemble specific instruction materials for the training session and shall supply such materials to the Owner at least four (4) weeks prior to the time of the training.

8-27.7 Measurement

The unit Contract price per lump sum for All Other Work shall be full compensation for all labor, equipment, material, tools, and incidentals necessary to provide a fully functioning upgrade duplex wastewater lift station, including structures and structure modifications, site improvements and restoration, piping, valves and fittings, concrete and asphalt pavement surfacing, mechanical appurtenances, water supply, service and appurtenances, electrical power and control panels and enclosure, and all other appurtenances, piping and equipment or work not included in other bid items listed on the Proposal Form. The lump sum bid price shall include, but is not limited to, the following:

- Acquisition of electrical permit(s) and payment of fees.
- Furnish, install, test and startup all electrical power supply and distribution equipment, control panels, instrumentation, conduit, conductors, supports, hardware, and all appurtenances.
- Completion, including provision of all materials and equipment necessary, of testing all power and control systems.
- All trenching and CSTC associated with the conduit installation.
- The removal, replacement, and disposal of existing concrete sidewalk.
- Property restoration is necessary if damage occurs during the contractor’s work.

8-27.8 Payment

Payment will be made for the following bid item:

All Other Work, per lump sum.

- SCADA System
- MTU Modifications
- Site #1 – North Reservoir – SCADA Replacement Upgrades
- Site #2 – South Reservoir – SCADA Replacement Upgrades
- Site #3 – P1 – SCADA Replacement Upgrades
- Site #4 – S1 – SCADA Replacement Upgrades
- Site #5 – S2 – SCADA Replacement Upgrades
- Site #6 – K1 – SCADA Replacement Upgrades
- Site #7 – S3 – SCADA Replacement Upgrades
- Site #8 – K2 – SCADA Replacement Upgrades
- Site #9 – K4 – SCADA Replacement Upgrades
- Site #10 – Rose Point LS – SCADA Replacement Upgrades
- Site #11 – Waverly Park LS – SCADA Replacement Upgrades
- Site #12 – Lake Shore Plaza LS – SCADA Replacement Upgrades
- Site #13 – Yarrow Bay LS – SCADA Replacement Upgrades
- Site #14 – South Bay LS – SCADA Replacement Upgrades
- Spare Parts – SCADA Replacement Upgrades

END OF DIVISION 8

GSP DIVISION 9

City of Kirkland

DIVISION 9 – MATERIALS

SECTION 9-29 ILLUMINATION, SIGNAL, ELECTRICAL

(November 13, 2018 COK GSP)
9-29.2 Junction Boxes, Cable Vaults, and Pull Boxes

9-29.2(1) Standard Duty and Heavy Duty Junction Boxes

Section 9-29.2(1) is supplemented with the following:

Junction boxes with metal lids located in pedestrian walkway or sidewalk areas shall have non-slip lids provided and installed. Retrofit or replacement lids shall be non-slip.

9-29.2 (1) A2 Non – Concrete Junction Boxes

Non-concrete junction boxes shall not be accepted in the City of Kirkland.

(*******)
ADD NEW SECTION 9-38

9-38 ELECTRICAL MATERIALS

9-38.1 Raceways

Contractor to furnish and install all raceways.

9-38.1(1) Rigid Metal Conduit

All conduits shall be Rigid Metal Conduit, galvanized rigid steel conduit (GRC) unless otherwise noted. Rigid metal conduit (RMC) shall be steel, hot dipped galvanized. Terminations shall be by means of threaded hubs or double locknuts and insulating grounding type bushings.

9-38.1(2) PVC Coated Rigid Metal Conduit

Conduits in the wet well shall be PVC coated galvanized rigid steel. On PVC coated RMC conduit a PVC coating shall be bonded to the galvanized outer surface of rigid steel conduit. The bond between the PVC coating and the conduit surface shall be greater than the tensile strength of the plastic. The thickness of the PVC coating shall be a minimum of 40 mil nominal. A Urethane chemically cured coating shall be applied to the interior of all PVC coated conduit and fittings. Conduit and fittings shall be Robroy Plasti-Bond Red or engineer approved equal.

Loose couplings for PVC coated GRC conduit shall be furnished with each length of conduit. A PVC coating shall be bonded to the outer surface of the coupling and a PVC sleeve equal to the outside diameter or two inches, whichever is smaller. The wall thickness of the coating on the coupling and the sleeve shall be a minimum of 55 mil.

9-38.1(3) Liquid Tight Flexible Metal Conduit

All connections to vibrating equipment or motors shall be made with liquid tight flexible metallic conduit or power cords furnished with the equipment. Flexible conduit shall be interlocking single strip, hot dipped galvanized and shall have a polyvinyl chloride jacket extruded over the outside to form a flexible watertight raceway.

9-38.1(4) Non-Metallic Conduit

Underground secondary power service shall be schedule 80 PVC. Where conduit changes from underground to above ground, elbow shall be PVC Coated Rigid Metal Conduit.

9-38.1(5) Fittings and Boxes

Unions shall be of the type designated as UNF and UNY and shall be suitable for use in moist atmospheres. Unions 1/2” to 1” shall be steel or malleable iron with zinc electroplate finish. Unions 1 1/4” to 3” shall be malleable iron with zinc electroplate finish.

Hubs for connection of conduit to boxes shall be of zinc. Hubs for use in corrosive areas shall be PVC coated zinc. The hubs shall provide a liquid tight connection to the box and an insulating bushing for the wiring. Hubs shall be Thomas and Betts - bullet type.

Connectors for liquid tight conduit shall be electroplated zinc malleable iron. An O-ring gasket and an approved grounding insert shall be part of the unit. Forty-five degree and 90 degree fittings shall be used where applicable. Liquid-tight connectors shall be by O.Z. Gedney.

Expansion fittings in exposed runs shall be of the weatherproof type and shall be provided with an external bonding jumper. The expansion fittings shall allow for 4 inches longitudinal movement and shall be designed so that when completely assembled, the end of each conduit entering the fitting is bushed. Fittings shall be O.Z. Gedney, Type EX.

Expansion fittings in embedded runs shall be of the watertight type and shall be provided with an internal bonding jumper. The expansion material shall be neoprene and shall allow for 3/4 inch movement in any direction. Fittings shall be O.Z. Gedney, Type DX.

Junction boxes; device boxes; fixture support boxes; and oblong, round, and rectangular conduit fittings (condulets) for use on galvanized rigid steel raceways shall be zinc electroplated cast ferrous alloy. Integrally cast threaded hubs or bosses shall be provided for all conduit entrances and shall provide for full five thread contact on tightening. Drilling and threading shall be done before finishing. The cover plate shall be of similar cast ferrous alloy material and finish. A full body neoprene gasket shall be provided with the cover. Stainless steel screws shall be provided for all covers. Outlet and device boxes shall be ganged where two or more devices are to be installed side-by-side. Device covers shall be provided with neoprene gaskets. Covers shall be of cast ferrous alloy finished as described for the box unless the particular device requires a cover that is not manufactured in this material.

Fittings and boxes in hazardous areas shall be rated for Class I, Division 1. Conduit fittings shall be rigid steel. Seal fittings for hazardous areas shall be Crouse Hinds "EYS".

Fittings and boxes in hazardous areas shall be rated for Class I, Division 1. Conduit fittings shall be rigid steel. Seal fittings for hazardous areas shall be Crouse Hinds "EYS".

Where NEMA 12 boxes are called out, they shall be of heavy gauge sheet steel, or, if they are device boxes, they shall be cast metal. All NEMA 12 boxes shall be UL labeled, provided with a five-mil thick, light gray thermo-epoxy finish, and designed so that moisture will drain away from the gasketed cover joint. Covers for sheet steel boxes shall have turned edges, ground smooth to form a tight seal against the gasket when the cover is closed.

9-38.1(6) Bushings

General: Bushings shall be steel or malleable iron threaded type electroplated with zinc or hot dip galvanized. Bushings shall have a molded-phenolic or nylon insulating collar.

Grounding Bushings: Grounding-type bushings shall have a projecting portion drilled for the size grounding cable used and shall be provided with a clamp or set screw for securing the cable. In addition, a set screw shall be provided to securely lock the bushing to the conduit. Grounding bushings shall be Gedney Type IBC-LS, Type BL, or T&B No. 3870 through 3880.

Bushed Openings: Bushings for protection of cables passing through metal boxes or troughs shall be all phenolic type and shall be OZ Type ABB.

Cord Grip Bushings: Cord grip bushings shall be steel or malleable iron type electrogalvanized or hot dip galvanized. Cord grip bushings shall have a neoprene color coded bushing sized appropriately for the cord. Tightening one nut shall create a water tight seal. Cord grip bushings shall be as manufactured by Cooper Crouse-Hinds or equal.

9-38.1(7) Conduit and Cable Supports

Conduit clamps shall be of the one-hole type of hot-dip galvanized malleable iron. Clamp backs and nesting backs shall be of similar material and finish. Clamps shall be as manufactured by O.Z. Gedney Electric Company

Ceiling hangers for single conduit shall be of the adjustable wrought steel ring type. Hanger rods shall be 1/2-inch, all-thread rod. Hangers and rods shall be electro-galvanized after fabrication. Hangers shall be as manufactured by Grinnel Company.

Racks shall be constructed from framing channel. Channels and hanger rods shall be steel, hot dip galvanized, 1.5 ounces per square foot after fabrication. Field cuts shall be re-galvanized by the Galv-A-Weld process or by Gal-Van-Ize as manufactured by Lawson Products, Inc. Hardware shall be electro-galvanized. Channels attached directly to building surfaces shall be 14 gauge minimum thickness, 1 5/8 inches deep. Channel section shall be sufficient to limit deflection to 1/360 of span.

Framing channels on all exterior areas and in corrosive areas shall be fiberglass. All hardware shall be stainless steel. Hanger rods may be steel hot-dipped galvanized, 1.8 electrolysis. Channel section shall be sufficient to limit deflection to 1/360 of span.

9-38.2 Conductors

Conductors shall be copper. Conductors AWG No. 12 and smaller may be solid or stranded depending upon the application. Conductors AWG No. 10 and larger shall be stranded. Insulation shall be THWN, THHW, XHHW, or THW. Use of THW insulation shall require that the Contractor calculate conduit fill for all conduits shown in the conduit schedule. Conductors used for power circuits shall not be smaller than No.12. Control conductors shall be No. 14, unless otherwise specified in this section or on conduit and cable schedule.

9-38.2(1) Connectors

Utilize Ideal Industries' "Wing Nut" or 3M Company's "Scotchlock" preinsulated connectors for splices and taps in conductors No.10 AWG and smaller. For No. 8 AWG and larger conductors, utilize T&B compression connectors. Compress using recommended die and tools.

9-38.2(2) Splice Insulation

Splice insulation shall be equal to the conductor utilized.

9-38.2(3) Moisture Sealed Splices

Provide moisture sealed, direct bury splice kits for all splices made in handholes unless made in explosion proof J boxes. Kits are to be 3M Company Model No. DBR-6.

9-38.2(4) Shielded Signal Cable

Signal conductor cable shall be AWG #18 individually twisted, shielded pairs, Houston Wire & Cable Company # C09001804 or equal. Conductors shall be tinned copper with color coded 90 degrees PVC insulation and individual conductor jacket of nylon. Shielding shall be aluminum polyester 100 percent shield coverage with copper drain wire. The cable shall have an overall PVC jacket. The insulation system shall be rated for 600 volts.

9-38.3 Switches and Receptacles

Standard wall switches shall be single- or double-pole, standard or three-way, as shown on the drawings and shall be AC quiet type rated 20 amp, 125/277 volt with screw terminals. Wiring devices shall be ivory colored. Approved manufacturers are:

	Switch	Receptacle
Arrow Hart	1991 Series	5252 Series
Bryant	4901	5252
General Electric	5951	4060
Hubbel	1221	5252
P&S	20AC1	5252

9-38.3(1) Plates

Scope: Provide a plate for each wiring device, for each signal or communication outlet.

1. Device plates for switches and receptacles in outdoor areas shall have weatherproof plates with a hinged cover and shall be Sierra Electric WP series or equal.

2. Plates on exposed wiring shall be of metal, of the same manufacture as the conduit fittings and specifically suited for the device and fitting used.

3. Provide blank, bushed, or special outlet plates for all signal communication system outlets.

9-38.5 Custom Control Panels.

9-38.5(1) System Integrator & System Programmer

The Custom Control Panels shall be manufactured by the System Integrator. The System Integrator shall be required to respond verbally to the call out within 30 minutes and will be required to be on site in an emergency within 60 minutes. The System Integrator must have at least five (5) years experience in the manufacture of similar equipment. The System Integrator must have a panel fabrication shop with UL-508A and UL-698A listing capability.

The system shall be programmed by the City's System Programmer for SCADA, PLC, and the telemetry systems programming. The contractor shall include the costs for the System programming in the bid price including all associated subcontract management and related costs. The contractor shall reach out to the project engineer for the contact of the City's System Programmer.

9-38.5(2) Design and Assembly

The System Integrator of the custom panels shall be solely and completely responsible for the design and assembly of the entire panels. The panels shall be designed to provide the capabilities and functions indicated and implied by the plans and these specifications and to provide trouble-free operation with minimum maintenance. Backpanel assemblies must be listed UL-508A Open Type.

All equipment and materials utilized in the panels shall be consistent with the SCADA Replacement project plans, or approved equal. Similar items in the panels shall be the products of the same manufacturer. All equipment shall be of industrial grade and of standard construction, shall be capable of reliable, trouble-free service, and shall be specifically intended for operation and control of pumps and associated equipment. All equipment shall be of modular design to facilitate interchangeability of parts and to assure ease of servicing.

The custom panels shall be completely assembled in the shop by the System Integrator. All components and equipment shall be pre-wired to the maximum extent possible.

All interconnecting wires installed by the manufacturer shall be numbered at each end using custom pre-printed heat-shrink sleeve markers. Markers shall be T&B SHRINK-KON HVM or approved equal. Terminations shall be made using solderless pressure connectors at all terminations. All conductors shall be stranded wire with thermoplastic insulation and shall be cabled in groups and supported so as to prevent breaking and to present an orderly arrangement and neat appearance. All outgoing wiring shall be terminated on a marked terminal strip capable of connection of at least No.12 wire and all terminal connections shall be numbered consecutively throughout the system.

Control and signal conductors shall be bundled separately from alternating current circuits. All wiring shall be neatly tied in position with nylon cable ties

All wiring and tubing crossing hinges shall be installed in a manner to prevent chafing. Bundles of similar conductors shall be clamped securely to the door and to the panel, and the bundles shall run parallel to the hinge for at least 12 inches. Spiral nylon cable wrap shall be provided in the hinge section of the bundle to fully protect the conductors or tubing against chafing.

Submit control panel design drawings, bill-of-materials, equipment datasheets, and UPS loading calculations for review and approval.

9-38.5(3) Interconnecting Wiring

The System Integrator of the custom panels shall determine all requirements for field-installed interconnecting wiring between the panels and all other cabinets, enclosures, sensors, and equipment. The System Integrator shall determine the location, number, size, and type of wires.

The schematic wiring diagrams shown on the plans shall be considered diagrammatic to convey intent of control methodology. The System Integrator shall determine all specific requirements and shall confirm or modify the wiring shown on the Contract Plans to conform to such requirements.

9-38.5(4) Testing

The System Integrator shall submit proposed factory acceptance test (FAT) and site acceptance test (SAT) procedures with test forms and checklists.

The System Integrator will provide witnessed Factory Acceptance testing (FAT) for all control panel backpanel assemblies. Allow up to 3 days of witnessed factory testing with the System Programmer and City inspector.

Coordinate SAT testing with the City and System Programmer. Allow up to 4 hours of testing with the System Programmer immediately following installation of new backpanel assemblies.

9-38.5(5) Enclosures

The existing enclosures for the custom panels will remain in place with new backpanel assemblies fabricated as indicated on the Contract Plans. Backpanel dimensions shall be sized as required to accommodate the components indicated on the drawings and specified herein and to fit within the existing enclosures. Dimensional requirements shall be determined during the bidding period and all costs associated shall be included in the bid price. No additional costs shall be incurred by the Owner. All dimensional changes shall be submitted to the Engineer for review prior to manufacture.

9-38.5(6) Circuit Breakers

Circuit breakers for providing branch circuit protection shall be as recommended by the solid state motor starter manufacturer as a combination starter unit. They shall be sized in compliance with the NEC.

9-38.5(7) Uninterruptible Power Supplies (UPS)

UPS systems shall be Phoenix Contact Trio series 24VDC, 10-Amp or approved equal. Supply external batteries as required to maintain RTU operation for a minimum of 60 minutes. Provide UPS runtime calculation submittals for each control panel.

9-38.5(8) Programmable Logic Controller

The Programmable Logic Controller shall be Schneider Electric M340 series or approved equal.

9-38.5(9) Network and Communications

The communications equipment shall be Peplink MAX BR1 cellular router and Cisco IE-3100 series managed ethernet switch to maintain compatibility with existing communications systems.

Cellular antennas shall be installed in locations shown on the Contract Plans. Coaxial cable lengths indicated are approximate. Provide coaxial cable lengths as required for the cable routing from the RTU control panel to the antenna locations.

9-38.5(10) Operator Interface Terminal

The Operator Interface Terminal (OIT) shall be Maple Systems Smart HMI series, 9.7” display or later version to match existing OIT systems used in the City’s stations.

9-38.5(11) Control Relays

Control relays shall be selected by the System Integrator and shall be appropriate for the application.

9-38.5(12) Intrinsically Safe Barrier Relays

Intrinsically safe barrier relays for protection of level float switches shall be Turck IM series or approved equal.

END OF DIVISION 9

PREVAILING WAGE RATES

Prevailing wage rates can be found at:
www.lni.wa.gov/tradeslicensing/prevwage/wagerates

Use 2026 rates
(published date - use bid date)

King County

A copy of the applicable wage rates is available for viewing in our office:

City Hall Annex
310 1st Street
Kirkland, WA 98033

The City of Kirkland will mail a hard copy of the applicable wage rates upon request.
Send your request to the Project Engineer, Ben Mahony via email: bmahony@kirklandwa.gov, and/ or email Katherine Weil via email: kweil@kirklandwa.gov.

City of Kirkland

APPENDIX A:
PROPOSED BILL OF MATERIALS (BOM'S)

City of Kirkland

PartID	Qty	Specification	Manufacturer Part Number	Description	Manufacturer
				NORTH RESERVOIR	
117G	1	No Equal	CP3630	Concept Enclosure Backpan, Painted Mild Steel, 34.20" x 28.20"	Hoffman
143B	1	Or Approved Equal	111019-00	Temperature Control Switch, N.O. Contact for fan control or high temperature alarm, Adjustable Set Point Range 32-140 deg.F, 15-amp rated contact at 120VAC	Stego
200B	ASRQ	Or Approved Equal	3044102	Terminal Block, UT4, Gray, 26-10 AWG, 600V, 32A	Phoenix Contact
202A	ASRQ	Or Approved Equal	3047028	Terminal Block End Barrier, UT2.5/10 Terminals	Phoenix Contact
203A	ASRQ	Or Approved Equal	0800886	Terminal Block End Clamp, 9.5mm Wide	Phoenix Contact
210A	ASRQ	Or Approved Equal	1492-WFB424	Fuse Terminal Block, 5x20mm Fuse, Black, Red LED Indicator, 30-12 AWG, 15A @ 10-57VAC/VDC	Allen-Bradley
221A	ASRQ	Or Approved Equal	S500-250-R	Fuse, 0.25 A, Glass Body, 5x20mm, Fast Acting, 250VAC/60VDC	Bussmann
221B	ASRQ	Or Approved Equal	S500-500-R	Fuse, 0.5 A, Glass Body, 5x20mm, Fast Acting, 250VAC/60VDC	Bussmann
221D	ASRQ	Or Approved Equal	S500-2-R	Fuse, 2 A, Glass Body, 5x20mm, Fast Acting, 250VAC/60VDC	Bussmann
241C	ASRQ	Or Approved Equal	1489-M1C050	Miniature Circuit Breaker, 1-Pole, 5A, Din Rail Mount, 277VAC/48VDC Max, Trip Curve C, 10kA, UL 489 Listed	Allen-Bradley
241E	ASRQ	Or Approved Equal	1489-M1C100	Miniature Circuit Breaker, 1-Pole, 10A, Din Rail Mount, 277VAC/48VDC Max, Trip Curve C, 10kA, UL 489 Listed	Allen-Bradley
241H	ASRQ	Or Approved Equal	1489-M1C200	Miniature Circuit Breaker, 1-Pole, 20A, Din Rail Mount, 277VAC/48VDC Max, Trip Curve C, 10kA, UL 489 Listed	Allen-Bradley
241K	ASRQ	Or Approved Equal	1489-M1C300	Miniature Circuit Breaker, 1-Pole, 30A, Din Rail Mount, 277VAC/48VDC Max, Trip Curve C, 10kA, UL 489 Listed	Allen-Bradley
245A	1	Or Approved Equal	2907918	Surge Arrester, Pluggable Type, 150VAC/DC, 26A (20A for UL Applications)	Phoenix Contact
260A	1	Or Approved Equal	UGB2/0-414-6	Ground Bus Bar, Tin Plated Copper, 5" x 5/8", 14 - 4 AWG, 6-port	Panduit
290A	1	Or Approved Equal	2907161	UPS with integrated power supply, USB (Modbus/RTU), DIN rail mounting, Push-in connection, input: 1-phase, output: 24 V DC / 10 A	Phoenix Contact
290B	1	Or Approved Equal	1348516	Energy storage, VRLA-AGM, 24 V DC, 20 Ah, automatic detection and communication with QUINT UPS-IQ	Phoenix Contact
307B	ASRQ	Or Approved Equal	700-HK32Z24-4	Slim Line Control Relay, DPDT, 8A Contacts, 24 VDC Coil, Pilot Light	Allen-Bradley
307C	ASRQ	Or Approved Equal	700-HK32A1-4	Slim Line Control Relay, DPDT, 8A Contacts, 120 VAC Coil, Pilot Light	Allen-Bradley
307D	ASRQ	Or Approved Equal	700-HN122	Slim Line Control Relay Base, Mini 8-Blade Base Socket, Screw Terminals	Allen-Bradley
320A	1	Or Approved Equal	0804155	Receptacle, 15A/125VAC, DIN rail mounting, simplex	Phoenix Contact
322A	1	Or Approved Equal	5600462	Receptacle, GFCI, 15A/125VAC, DIN rail mounting, duplex	Phoenix Contact
430A	1	No Equal	IE-3100-8T2C-E	Cisco Catalyst IE3100 Rugged Series - Switch - 8 x 10/100/1000 + 2 x combo Gigabit - DIN rail mountable - PACL, VACL	Cisco
430B	1	No Equal	SD-IE-1GB	Cisco - Flash memory card - 1 GB - SD	Cisco
455A	1	No Equal	cMT3092Xv2	Smart HMI, 9.7", Resolution 1024 x 768, Dark Grey Bezel, 1.6 GHz CPU, 4 GB Flash Memory, 1 GB DRAM, UL Listed, Ethernet, 24VDC	Maple Systems
470A	1	No Equal	MAX-BR1-MINI-LTE-US-T-M-PRM	Peplink MAX BR1 Mini Core LTE - US - No WiFi - No GPS - AC Adapter & 2x SMA Cellular Anetenna Connectors	Peplink
470B	1	No Equal		DC Power Cable ES/GX/MP/RV/LX/IBR	Peplink
470C	1	No Equal	ACW-DIN-BR1-MINI	DIN Rail mount kit	Peplink
471A	2	Or Approved Equal	POLTSX-NFF	Cell Surge Arrestor 0.698-2.7GHz DC Block Coax Protect, N-Female/N-Female connector	PolyPhaser
471B	ASRQ	Or Approved Equal	TIMLMR-400-DB	Watertight LMR400 Cable Black PE Jacket	Times Microwave
471C	ASRQ	Or Approved Equal	R/FCOMP-NM-400	Conn, N-Male Compression Style for Plenum LMR400 Cable	RF Industries
471D	2	Or Approved Equal	ANXTRA6927M3PB-001	3G/4G Multi-Band Phantom Antenna for 698-960/1700-2700 MHz. Black. 3.3" Radome. N Female.	Laird
471E	2	Or Approved Equal	CUSTOM BRACKET	Stainless Steel Custom Bracket - 14"x 02"	Custom
610D	1	No Equal	BMXP342020	Modicon M340 PLC Processor, 1 Modbus Serial Port, 1 Ethernet Port, Max 1024 Discrete & 256 Analog IO	Schneider Electric
611B	1	No Equal	BMXXBP0600	Modicon X80 I/O Platform X-Bus Rack, 6 Slots	Schneider Electric
612A	1	No Equal	BMXCPS2010	Modicon X80 I/O Platform Power Supply, 17W Output, 24 VDC	Schneider Electric
614B	1	No Equal	BMXDDI1602	Modicon X80 Discrete Input Card, 16 Points, 24 VDC	Schneider Electric
615E	1	No Equal	BMXDRA1605	Modicon X80 Relay Output Card, 16 Points, 24 VDC / 24-240 VAC, 2A Max	Schneider Electric
616C	1	No Equal	BMXAMI0810	Modicon X80 Analog Input Module, 8 Points, Voltage/Current, Isolated	Schneider Electric
619C	2	No Equal	BMXFTB2010	Modicon X80 Removable Terminal Block, 20-Way, Screw Terminals	Schneider Electric
619E	1	No Equal	BMXFTB2800	Modicon X80 Removable Terminal Block, 28-Way, Screw Terminals	Schneider Electric

PartID	Qty	Specification	Manufacturer Part Number	Description	Manufacturer
				SOUTH RESERVOIR	
118L	1	No Equal	A36P36	Enclosure Backpan, Painted Mild Steel, 33.00" x 33.00"	Hoffman
200B	ASRQ	Or Approved Equal	3044102	Terminal Block, UT4, Gray, 26-10 AWG, 600V, 32A	Phoenix Contact
201B	ASRQ	Or Approved Equal	3044128	Terminal Block, Grounded, UT4-PE, Yellow-Green, 26-10 AWG	Phoenix Contact
202A	ASRQ	Or Approved Equal	3047028	Terminal Block End Barrier, UT2.5/10 Terminals	Phoenix Contact
203A	ASRQ	Or Approved Equal	0800886	Terminal Block End Clamp, 9.5mm Wide	Phoenix Contact
210A	ASRQ	Or Approved Equal	1492-WFB424	Fuse Terminal Block, 5x20mm Fuse, Black, Red LED Indicator, 30-12 AWG, 15A @ 10-57VAC/VDC	Allen-Bradley
221A	ASRQ	Or Approved Equal	S500-250-R	Fuse, 0.25 A, Glass Body, 5x20mm, Fast Acting, 250VAC/60VDC	Bussmann
221B	ASRQ	Or Approved Equal	S500-500-R	Fuse, 0.5 A, Glass Body, 5x20mm, Fast Acting, 250VAC/60VDC	Bussmann
221D	ASRQ	Or Approved Equal	S500-2-R	Fuse, 2 A, Glass Body, 5x20mm, Fast Acting, 250VAC/60VDC	Bussmann
241C	ASRQ	Or Approved Equal	1489-M1C050	Miniature Circuit Breaker, 1-Pole, 5A, Din Rail Mount, 277VAC/48VDC Max, Trip Curve C, 10kA, UL 489 Listed	Allen-Bradley
241E	ASRQ	Or Approved Equal	1489-M1C100	Miniature Circuit Breaker, 1-Pole, 10A, Din Rail Mount, 277VAC/48VDC Max, Trip Curve C, 10kA, UL 489 Listed	Allen-Bradley
241H	ASRQ	Or Approved Equal	1489-M1C200	Miniature Circuit Breaker, 1-Pole, 20A, Din Rail Mount, 277VAC/48VDC Max, Trip Curve C, 10kA, UL 489 Listed	Allen-Bradley
241K	ASRQ	Or Approved Equal	1489-M1C300	Miniature Circuit Breaker, 1-Pole, 30A, Din Rail Mount, 277VAC/48VDC Max, Trip Curve C, 10kA, UL 489 Listed	Allen-Bradley
245A	1	Or Approved Equal	2907918	Surge Arrester, Pluggable Type, 150VAC/DC, 26A (20A for UL Applications)	Phoenix Contact
290A	1	Or Approved Equal	2907161	UPS with integrated power supply, USB (Modbus/RTU), DIN rail mounting, Push-in connection, input: 1-phase, output: 24 V DC / 10 A	Phoenix Contact
290B	1	Or Approved Equal	1348516	Energy storage, VRLA-AGM, 24 V DC, 20 Ah, automatic detection and communication with QUINT UPS-IQ	Phoenix Contact
290C	1	Or Approved Equal	1134645	Battery Mounting Case	Phoenix Contact
307B	ASRQ	Or Approved Equal	700-HK32Z24-4	Slim Line Control Relay, DPDT, 8A Contacts, 24 VDC Coil, Pilot Light	Allen-Bradley
307C	ASRQ	Or Approved Equal	700-HK32A1-4	Slim Line Control Relay, DPDT, 8A Contacts, 120 VAC Coil, Pilot Light	Allen-Bradley
307D	ASRQ	Or Approved Equal	700-HN122	Slim Line Control Relay Base, Mini 8-Blade Base Socket, Screw Terminals	Allen-Bradley
322A	1	Or Approved Equal	5600462	Receptacle, GFCI, 15A/125VAC, DIN rail mounting, duplex	Phoenix Contact
356B	6	Or Approved Equal	800H-JR2B	Selector Switch, 3-Position, Maintained, 30mm, NEMA-4X, 2 NO/2 NC Contact	Allen-Bradley
430A	1	No Equal	IE-3100-8T2C-E	Cisco Catalyst IE3100 Rugged Series - Switch - 8 x 10/100/1000 + 2 x combo Gigabit - DIN rail mountable - PACL, VACL	Cisco
430B	1	No Equal	SD-IE-1GB	Cisco - Flash memory card - 1 GB - SD	Cisco
455A	1	No Equal	cMT3092Xv2	Smart HMI, 9.7", Resolution 1024 x 768, Dark Grey Bezel, 1.6 GHz CPU, 4 GB Flash Memory, 1 GB DRAM, UL Listed, Ethernet, 24VDC	Maple Systems
470A	1	No Equal	MAX-BR1-MINI-LTE-US-T-M-PRM	Peplink MAX BR1 Mini Core LTE - US - No WiFi - No GPS - AC Adapter & 2x SMA Cellular Anetenna Connectors	Peplink
470B	1	No Equal		DC Power Cable ES/GX/MP/RV/LX/IBR	Peplink
470C	1	No Equal	ACW-DIN-BR1-MINI	DIN Rail mount kit	Peplink
471A	2	Or Approved Equal	POLTSX-NFF	Cell Surge Arrestor 0.698-2.7GHz DC Block Coax Protect, N-Female/N-Female connector	PolyPhaser
471B	ASRQ	Or Approved Equal	TIMLMR-400-DB	Watertight LMR400 Cable Black PE Jacket	Times Microwave
471C	ASRQ	Or Approved Equal	R/FCOMP-NM-400	Conn, N-Male Compression Style for Plenum LMR400 Cable	RF Industries
471D	2	Or Approved Equal	ANXTRA6927M3PB-001	3G/4G Multi-Band Phantom Antenna for 698-960/1700-2700 MHz. Black. 3.3" Radome. N Female.	Laird
471E	2	Or Approved Equal	CUSTOM BRACKET	Stainless Steel Custom Bracket - 14"x 02"	Custom
610D	1	No Equal	BMXP342020	Modicon M340 PLC Processor, 1 Modbus Serial Port, 1 Ethernet Port, Max 1024 Discrete & 256 Analog IO	Schneider Electric
611D	1	No Equal	BMXXBP1200	Modicon X80 I/O Platform X-Bus Rack, 12 Slots	Schneider Electric
612B	1	No Equal	BMXCPS3020	Modicon X80 I/O PlatformPower Supply, 32W Output, 24-48 VDC	Schneider Electric
614B	4	No Equal	BMXDDI1602	Modicon X80 Discrete Input Card, 16 Points, 24 VDC	Schneider Electric
615E	1	No Equal	BMXDRA1605	Modicon X80 Relay Output Card, 16 Points, 24 VDC / 24-240 VAC, 2A Max	Schneider Electric
616C	2	No Equal	BMXAMI0810	Modicon X80 Analog Input Module, 8 Points, Voltage/Current, Isolated	Schneider Electric
617C	1	No Equal	BMXAMO0802	Modicon X80 Analog Output Module, 8 Points, Voltage/Current, Non-Isolated	Schneider Electric
619C	5	No Equal	BMXFTB2010	Modicon X80 Removable Terminal Block, 20-Way, Screw Terminals	Schneider Electric
619E	3	No Equal	BMXFTB2800	Modicon X80 Removable Terminal Block, 28-Way, Screw Terminals	Schneider Electric

PartID	Qty	Specification	Manufacturer Part Number	Description	Manufacturer
				PRESSURE STATION P1	
430A	1	No Equal	IE-3100-8T2C-E	Cisco Catalyst IE3100 Rugged Series - Switch - 8 x 10/100/1000 + 2 x combo Gigabit - DIN rail mountable - PACL, VACL	Cisco
430B	1	No Equal	SD-IE-1GB	Cisco - Flash memory card - 1 GB - SD	Cisco
455A	1	No Equal	cMT3092Xv2	Smart HMI, 9.7", Resolution 1024 x 768, Dark Grey Bezel, 1.6 GHz CPU, 4 GB Flash Memory, 1 GB DRAM, UL Listed, Ethernet, 24VDC	Maple Systems
470A	1	No Equal	MAX-BR1-MINI-LTE-US-T-M-PRM	Peplink MAX BR1 Mini Core LTE - US - No WiFi - No GPS - AC Adapter & 2x SMA Cellular Anetenna Connectors	Peplink
470B	1	No Equal		DC Power Cable ES/GX/MP/RV/LX/IBR	Peplink
470C	1	No Equal	ACW-DIN-BR1-MINI	DIN Rail mount kit	Peplink
471A	2	Or Approved Equal	POLTSX-NFF	Cell Surge Arrestor 0.698-2.7GHz DC Block Coax Protect, N-Female/N-Female connector	PolyPhaser
471B	ASRQ	Or Approved Equal	TIMLMR-400-DB	Watertight LMR400 Cable Black PE Jacket	Times Microwave
471C	ASRQ	Or Approved Equal	R/FCOMP-NM-400	Conn, N-Male Compression Style for Plenum LMR400 Cable	RF Industries
471D	2	Or Approved Equal	ANXTRA6927M3PB-001	3G/4G Multi-Band Phantom Antenna for 698-960/1700-2700 MHz. Black. 3.3" Radome. N Female.	Laird
471E	2	Or Approved Equal	CUSTOM BRACKET	Stainless Steel Custom Bracket - 14"x 02"	Custom

PartID	Qty	Specification	Manufacturer Part Number	Description	Manufacturer
				SUPPLY STATION - S1 - RTU	
117G	1	No Equal	CP3630	Concept Enclosure Backpan, Painted Mild Steel, 34.20" x 28.20"	Hoffman
143B	1	Or Approved Equal	111019-00	Temperature Control Switch, N.O. Contact for fan control or high temperature alarm, Adjustable Set Point Range 32-140 deg.F, 15-amp rated contact at 120VAC	Stego
200B	ASRQ	Or Approved Equal	3044102	Terminal Block, UT4, Gray, 26-10 AWG, 600V, 32A	Phoenix Contact
202A	ASRQ	Or Approved Equal	3047028	Terminal Block End Barrier, UT2.5/10 Terminals	Phoenix Contact
203A	ASRQ	Or Approved Equal	0800886	Terminal Block End Clamp, 9.5mm Wide	Phoenix Contact
210A	ASRQ	Or Approved Equal	1492-WFB424	Fuse Terminal Block, 5x20mm Fuse, Black, Red LED Indicator, 30-12 AWG, 15A @ 10-57VAC/VDC	Allen-Bradley
221A	ASRQ	Or Approved Equal	S500-250-R	Fuse, 0.25 A, Glass Body, 5x20mm, Fast Acting, 250VAC/60VDC	Bussmann
221B	ASRQ	Or Approved Equal	S500-500-R	Fuse, 0.5 A, Glass Body, 5x20mm, Fast Acting, 250VAC/60VDC	Bussmann
221D	ASRQ	Or Approved Equal	S500-2-R	Fuse, 2 A, Glass Body, 5x20mm, Fast Acting, 250VAC/60VDC	Bussmann
241C	ASRQ	Or Approved Equal	1489-M1C050	Miniature Circuit Breaker, 1-Pole, 5A, Din Rail Mount, 277VAC/48VDC Max, Trip Curve C, 10kA, UL 489 Listed	Allen-Bradley
241E	ASRQ	Or Approved Equal	1489-M1C100	Miniature Circuit Breaker, 1-Pole, 10A, Din Rail Mount, 277VAC/48VDC Max, Trip Curve C, 10kA, UL 489 Listed	Allen-Bradley
241H	ASRQ	Or Approved Equal	1489-M1C200	Miniature Circuit Breaker, 1-Pole, 20A, Din Rail Mount, 277VAC/48VDC Max, Trip Curve C, 10kA, UL 489 Listed	Allen-Bradley
241K	ASRQ	Or Approved Equal	1489-M1C300	Miniature Circuit Breaker, 1-Pole, 30A, Din Rail Mount, 277VAC/48VDC Max, Trip Curve C, 10kA, UL 489 Listed	Allen-Bradley
245A	1	Or Approved Equal	2907918	Surge Arrester, Pluggable Type, 150VAC/DC, 26A (20A for UL Applications)	Phoenix Contact
260A	1	Or Approved Equal	UGB2/0-414-6	Ground Bus Bar, Tin Plated Copper, 5" x 5/8", 14 - 4 AWG, 6-port	Panduit
290A	1	Or Approved Equal	2907161	UPS with integrated power supply, USB (Modbus/RTU), DIN rail mounting, Push-in connection, input: 1-phase, output: 24 V DC / 10 A	Phoenix Contact
290B	1	Or Approved Equal	1348516	Energy storage, VRLA-AGM, 24 V DC, 20 Ah, automatic detection and communication with QUINT UPS-IQ	Phoenix Contact
307B	ASRQ	Or Approved Equal	700-HK32Z24-4	Slim Line Control Relay, DPDT, 8A Contacts, 24 VDC Coil, Pilot Light	Allen-Bradley
307C	ASRQ	Or Approved Equal	700-HK32A1-4	Slim Line Control Relay, DPDT, 8A Contacts, 120 VAC Coil, Pilot Light	Allen-Bradley
307D	ASRQ	Or Approved Equal	700-HN122	Slim Line Control Relay Base, Mini 8-Blade Base Socket, Screw Terminals	Allen-Bradley
320A	1	Or Approved Equal	0804155	Receptacle, 15A/125VAC, DIN rail mounting, simplex	Phoenix Contact
322A	1	Or Approved Equal	5600462	Receptacle, GFCI, 15A/125VAC, DIN rail mounting, duplex	Phoenix Contact
430A	1	No Equal	IE-3100-8T2C-E	Cisco Catalyst IE3100 Rugged Series - Switch - 8 x 10/100/1000 + 2 x combo Gigabit - DIN rail mountable - PACL, VACL	Cisco
430B	1	No Equal	SD-IE-1GB	Cisco - Flash memory card - 1 GB - SD	Cisco
455A	1	No Equal	cMT3092Xv2	Smart HMI, 9.7", Resolution 1024 x 768, Dark Grey Bezel, 1.6 GHz CPU, 4 GB Flash Memory, 1 GB DRAM, UL Listed, Ethernet, 24VDC	Maple Systems
470A	1	No Equal	MAX-BR1-MINI-LTE-US-T-M-PRM	Peplink MAX BR1 Mini Core LTE - US - No WiFi - No GPS - AC Adapter & 2x SMA Cellular Anetenna Connectors	Peplink
470B	1	No Equal		DC Power Cable ES/GX/MP/RV/LX/IBR	Peplink
470C	1	No Equal	ACW-DIN-BR1-MINI	DIN Rail mount kit	Peplink
471A	2	Or Approved Equal	POLTSX-NFF	Cell Surge Arrestor 0.698-2.7GHz DC Block Coax Protect, N-Female/N-Female connector	PolyPhaser
471B	ASRQ	Or Approved Equal	TIMLMR-400-DB	Watertight LMR400 Cable Black PE Jacket	Times Microwave
471C	ASRQ	Or Approved Equal	R/FCOMP-NM-400	Conn, N-Male Compression Style for Plenum LMR400 Cable	RF Industries
471D	2	Or Approved Equal	ANXTRA6927M3PB-001	3G/4G Multi-Band Phantom Antenna for 698-960/1700-2700 MHz. Black. 3.3" Radome. N Female.	Laird
471E	2	Or Approved Equal	CUSTOM BRACKET	Stainless Steel Custom Bracket - 14"x 02"	Custom
610D	1	No Equal	BMXP342020	Modicon M340 PLC Processor, 1 Modbus Serial Port, 1 Ethernet Port, Max 1024 Discrete & 256 Analog IO	Schneider Electric
611B	1	No Equal	BMXXBP0600	Modicon X80 I/O Platform X-Bus Rack, 6 Slots	Schneider Electric
612A	1	No Equal	BMXCPS2010	Modicon X80 I/O Platform Power Supply, 17W Output, 24 VDC	Schneider Electric
614B	1	No Equal	BMXDDI1602	Modicon X80 Discrete Input Card, 16 Points, 24 VDC	Schneider Electric
615E	1	No Equal	BMXDRA1605	Modicon X80 Relay Output Card, 16 Points, 24 VDC / 24-240 VAC, 2A Max	Schneider Electric
616C	1	No Equal	BMXAMI0810	Modicon X80 Analog Input Module, 8 Points, Voltage/Current, Isolated	Schneider Electric
619C	1	No Equal	BMXFTB2010	Modicon X80 Removable Terminal Block, 20-Way, Screw Terminals	Schneider Electric
619E	2	No Equal	BMXFTB2800	Modicon X80 Removable Terminal Block, 28-Way, Screw Terminals	Schneider Electric

PartID	Qty	Specification	Manufacturer Part Number	Description	Manufacturer
				SUPPLY STATION S2	
117G	1	No Equal	CP3630	Concept Enclosure Backpan, Painted Mild Steel, 34.20" x 28.20"	Hoffman
143B	1	Or Approved Equal	111019-00	Temperature Control Switch, N.O. Contact for fan control or high temperature alarm, Adjustable Set Point Range 32-140 deg.F, 15-amp rated contact at 120VAC	Stego
200B	ASRQ	Or Approved Equal	3044102	Terminal Block, UT4, Gray, 26-10 AWG, 600V, 32A	Phoenix Contact
200E	ASRQ	Or Approved Equal	3046139	Knife-disconnect terminal block, nom. voltage: 500 V, nominal current: 20 A, connection method: Screw connection, Rated cross section: 4 mm2, cross section: 0.14 mm2 - 6 mm2, mounting: NS 35/7,5, NS 35/15, color: gray	Phoenix Contact
202A	ASRQ	Or Approved Equal	3047028	Terminal Block End Barrier, UT2.5/10 Terminals	Phoenix Contact
203A	ASRQ	Or Approved Equal	0800886	Terminal Block End Clamp, 9.5mm Wide	Phoenix Contact
210A	ASRQ	Or Approved Equal	1492-WFB424	Fuse Terminal Block, 5x20mm Fuse, Black, Red LED Indicator, 30-12 AWG, 15A @ 10-57VAC/VDC	Allen-Bradley
221A	ASRQ	Or Approved Equal	S500-250-R	Fuse, 0.25 A, Glass Body, 5x20mm, Fast Acting, 250VAC/60VDC	Bussmann
221B	ASRQ	Or Approved Equal	S500-500-R	Fuse, 0.5 A, Glass Body, 5x20mm, Fast Acting, 250VAC/60VDC	Bussmann
221D	ASRQ	Or Approved Equal	S500-2-R	Fuse, 2 A, Glass Body, 5x20mm, Fast Acting, 250VAC/60VDC	Bussmann
241C	ASRQ	Or Approved Equal	1489-M1C050	Miniature Circuit Breaker, 1-Pole, 5A, Din Rail Mount, 277VAC/48VDC Max, Trip Curve C, 10kA, UL 489 Listed	Allen-Bradley
241E	ASRQ	Or Approved Equal	1489-M1C100	Miniature Circuit Breaker, 1-Pole, 10A, Din Rail Mount, 277VAC/48VDC Max, Trip Curve C, 10kA, UL 489 Listed	Allen-Bradley
241H	ASRQ	Or Approved Equal	1489-M1C200	Miniature Circuit Breaker, 1-Pole, 20A, Din Rail Mount, 277VAC/48VDC Max, Trip Curve C, 10kA, UL 489 Listed	Allen-Bradley
245A	1	Or Approved Equal	2907918	Surge Arrester, Pluggable Type, 150VAC/DC, 26A (20A for UL Applications)	Phoenix Contact
260A	1	Or Approved Equal	UGB2/0-414-6	Ground Bus Bar, Tin Plated Copper, 5" x 5/8", 14 - 4 AWG, 6-port	Panduit
290A	1	Or Approved Equal	2907161	UPS with integrated power supply, USB (Modbus/RTU), DIN rail mounting, Push-in connection, input: 1-phase, output: 24 V DC / 10 A	Phoenix Contact
290B	1	Or Approved Equal	1348516	Energy storage, VRLA-AGM, 24 V DC, 20 Ah, automatic detection and communication with QUINT UPS-IQ	Phoenix Contact
307B	ASRQ	Or Approved Equal	700-HK32Z24-4	Slim Line Control Relay, DPDT, 8A Contacts, 24 VDC Coil, Pilot Light	Allen-Bradley
307C	ASRQ	Or Approved Equal	700-HK32A1-4	Slim Line Control Relay, DPDT, 8A Contacts, 120 VAC Coil, Pilot Light	Allen-Bradley
307D	ASRQ	Or Approved Equal	700-HN122	Slim Line Control Relay Base, Mini 8-Blade Base Socket, Screw Terminals	Allen-Bradley
320A	1	Or Approved Equal	0804155	Receptacle, 15A/125VAC, DIN rail mounting, simplex	Phoenix Contact
322A	1	Or Approved Equal	5600462	Receptacle, GFCI, 15A/125VAC, DIN rail mounting, duplex	Phoenix Contact
430A	1	No Equal	IE-3100-8T2C-E	Cisco Catalyst IE3100 Rugged Series - Switch - 8 x 10/100/1000 + 2 x combo Gigabit - DIN rail mountable - PACL, VACL	Cisco
430B	1	No Equal	SD-IE-1GB	Cisco - Flash memory card - 1 GB - SD	Cisco
455A	1	No Equal	cMT3092Xv2	Smart HMI, 9.7", Resolution 1024 x 768, Dark Grey Bezel, 1.6 GHz CPU, 4 GB Flash Memory, 1 GB DRAM, UL Listed, Ethernet, 24VDC	Maple Systems
470A	1	No Equal	MAX-BR1-MINI-LTE-US-T-M-PRM	Peplink MAX BR1 Mini Core LTE - US - No WiFi - No GPS - AC Adapter & 2x SMA Cellular Anetenna Connectors	Peplink
470B	1	No Equal		DC Power Cable ES/GX/MP/RV/LX/IBR	Peplink
470C	1	No Equal	ACW-DIN-BR1-MINI	DIN Rail mount kit	Peplink
471A	2	Or Approved Equal	POLTSX-NFF	Cell Surge Arrestor 0.698-2.7GHz DC Block Coax Protect, N-Female/N-Female connector	PolyPhaser
471B	ASRQ	Or Approved Equal	TIMLMR-400-DB	Watertight LMR400 Cable Black PE Jacket	Times Microwave
471C	ASRQ	Or Approved Equal	R/FCOMP-NM-400	Conn, N-Male Compression Style for Plenum LMR400 Cable	RF Industries
471D	2	Or Approved Equal	ANXTRA6927M3PB-001	3G/4G Multi-Band Phantom Antenna for 698-960/1700-2700 MHz. Black. 3.3" Radome. N Female.	Laird
471E	2	Or Approved Equal	CUSTOM BRACKET	Stainless Steel Custom Bracket - 14"x 02"	Custom
610D	1	No Equal	BMXP342020	Modicon M340 PLC Processor, 1 Modbus Serial Port, 1 Ethernet Port, Max 1024 Discrete & 256 Analog IO	Schneider Electric
611B	1	No Equal	BMXXBP0600	Modicon X80 I/O Platform X-Bus Rack, 6 Slots	Schneider Electric
612A	1	No Equal	BMXCPS2010	Modicon X80 I/O Platform Power Supply, 17W Output, 24 VDC	Schneider Electric
614B	2	No Equal	BMXDDI1602	Modicon X80 Discrete Input Card, 16 Points, 24 VDC	Schneider Electric
615E	1	No Equal	BMXDRA1605	Modicon X80 Relay Output Card, 16 Points, 24 VDC / 24-240 VAC, 2A Max	Schneider Electric
616C	1	No Equal	BMXAMI0810	Modicon X80 Analog Input Module, 8 Points, Voltage/Current, Isolated	Schneider Electric
619C	3	No Equal	BMXFTB2010	Modicon X80 Removable Terminal Block, 20-Way, Screw Terminals	Schneider Electric
619E	1	No Equal	BMXFTB2800	Modicon X80 Removable Terminal Block, 28-Way, Screw Terminals	Schneider Electric

PartID	Qty	Specification	Manufacturer Part Number	Description	Manufacturer
				PRESSURE STATION K1	
430A	1	No Equal	IE-3100-8T2C-E	Cisco Catalyst IE3100 Rugged Series - Switch - 8 x 10/100/1000 + 2 x combo Gigabit - DIN rail mountable - PACL, VACL	Cisco
430B	1	No Equal	SD-IE-1GB	Cisco - Flash memory card - 1 GB - SD	Cisco
455A	1	No Equal	cMT3092Xv2	Smart HMI, 9.7", Resolution 1024 x 768, Dark Grey Bezel, 1.6 GHz CPU, 4 GB Flash Memory, 1 GB DRAM, UL Listed, Ethernet, 24VDC	Maple Systems
470A	1	No Equal	MAX-BR1-MINI-LTE-US-T-M-PRM	Peplink MAX BR1 Mini Core LTE - US - No WiFi - No GPS - AC Adapter & 2x SMA Cellular Anetenna Connectors	Peplink
470B	1	No Equal		DC Power Cable ES/GX/MP/RV/LX/IBR	Peplink
470C	1	No Equal	ACW-DIN-BR1-MINI	DIN Rail mount kit	Peplink
471A	2	Or Approved Equal	POLTSX-NFF	Cell Surge Arrestor 0.698-2.7GHz DC Block Coax Protect, N-Female/N-Female connector	PolyPhaser
471B	ASRQ	Or Approved Equal	TIMLMR-400-DB	Watertight LMR400 Cable Black PE Jacket	Times Microwave
471C	ASRQ	Or Approved Equal	R/FCOMP-NM-400	Conn, N-Male Compression Style for Plenum LMR400 Cable	RF Industries
471D	2	Or Approved Equal	ANXTRA6927M3PB-001	3G/4G Multi-Band Phantom Antenna for 698-960/1700-2700 MHz. Black. 3.3" Radome. N Female.	Laird
471E	2	Or Approved Equal	CUSTOM BRACKET	Stainless Steel Custom Bracket - 14"x 02"	Custom

PartID	Qty	Specification	Manufacturer Part Number	Description	Manufacturer
				SUPPLY STATION 3	
118K	1	No Equal	A36P30	Enclosure Backpan, Painted Mild Steel, 33.00" x 27.00"	Hoffman
143B	1	Or Approved Equal	111019-00	Temperature Control Switch, N.O. Contact for fan control or high temperature alarm, Adjustable Set Point Range 32-140 deg.F, 15-amp rated contact at 120VAC	Stego
150B	1	Or Approved Equal	DAH2001A	Enclosure Heater, 200 W, 120 VAC/1.7 A, Forced Air with Thermostat	Hoffman
200B	ASRQ	Or Approved Equal	3044102	Terminal Block, UT4, Gray, 26-10 AWG, 600V, 32A	Phoenix Contact
200E	ASRQ	Or Approved Equal	3046139	Knife-disconnect terminal block, nom. voltage: 500 V, nominal current: 20 A, connection method: Screw connection, Rated cross section: 4 mm2, cross section: 0.14 mm2 - 6 mm2, mounting: NS 35/7,5, NS 35/15, color: gray	Phoenix Contact
202A	ASRQ	Or Approved Equal	3047028	Terminal Block End Barrier, UT2.5/10 Terminals	Phoenix Contact
203A	ASRQ	Or Approved Equal	0800886	Terminal Block End Clamp, 9.5mm Wide	Phoenix Contact
210A	ASRQ	Or Approved Equal	1492-WFB424	Fuse Terminal Block, 5x20mm Fuse, Black, Red LED Indicator, 30-12 AWG, 15A @ 10-57VAC/VDC	Allen-Bradley
221A	ASRQ	Or Approved Equal	S500-250-R	Fuse, 0.25 A, Glass Body, 5x20mm, Fast Acting, 250VAC/60VDC	Bussmann
221B	ASRQ	Or Approved Equal	S500-500-R	Fuse, 0.5 A, Glass Body, 5x20mm, Fast Acting, 250VAC/60VDC	Bussmann
221D	ASRQ	Or Approved Equal	S500-2-R	Fuse, 2 A, Glass Body, 5x20mm, Fast Acting, 250VAC/60VDC	Bussmann
241C	ASRQ	Or Approved Equal	1489-M1C050	Miniature Circuit Breaker, 1-Pole, 5A, Din Rail Mount, 277VAC/48VDC Max, Trip Curve C, 10kA, UL 489 Listed	Allen-Bradley
241E	ASRQ	Or Approved Equal	1489-M1C100	Miniature Circuit Breaker, 1-Pole, 10A, Din Rail Mount, 277VAC/48VDC Max, Trip Curve C, 10kA, UL 489 Listed	Allen-Bradley
241G	ASRQ	Or Approved Equal	1489-M1C150	Miniature Circuit Breaker, 1-Pole, 15A, Din Rail Mount, 277VAC/48VDC Max, Trip Curve C, 10kA, UL 489 Listed	Allen-Bradley
241H	ASRQ	Or Approved Equal	1489-M1C200	Miniature Circuit Breaker, 1-Pole, 20A, Din Rail Mount, 277VAC/48VDC Max, Trip Curve C, 10kA, UL 489 Listed	Allen-Bradley
241K	ASRQ	Or Approved Equal	1489-M1C300	Miniature Circuit Breaker, 1-Pole, 30A, Din Rail Mount, 277VAC/48VDC Max, Trip Curve C, 10kA, UL 489 Listed	Allen-Bradley
245A	1	Or Approved Equal	2907918	Surge Arrester, Pluggable Type, 150VAC/DC, 26A (20A for UL Applications)	Phoenix Contact
260A	1	Or Approved Equal	UGB2/0-414-6	Ground Bus Bar, Tin Plated Copper, 5" x 5/8", 14 - 4 AWG, 6-port	Panduit
290A	1	Or Approved Equal	2907161	UPS with integrated power supply, USB (Modbus/RTU), DIN rail mounting, Push-in connection, input: 1-phase, output: 24 V DC / 10 A	Phoenix Contact
290B	1	Or Approved Equal	1348516	Energy storage, VRLA-AGM, 24 V DC, 20 Ah, automatic detection and communication with QUINT UPS-IQ	Phoenix Contact
307B	ASRQ	Or Approved Equal	700-HK32Z24-4	Slim Line Control Relay, DPDT, 8A Contacts, 24 VDC Coil, Pilot Light	Allen-Bradley
307C	ASRQ	Or Approved Equal	700-HK32A1-4	Slim Line Control Relay, DPDT, 8A Contacts, 120 VAC Coil, Pilot Light	Allen-Bradley
307D	ASRQ	Or Approved Equal	700-HN122	Slim Line Control Relay Base, Mini 8-Blade Base Socket, Screw Terminals	Allen-Bradley
320A	1	Or Approved Equal	0804155	Receptacle, 15A/125VAC, DIN rail mounting, simplex	Phoenix Contact
322B	1	Or Approved Equal	1263628	Receptacle, GFCI, 15A/125VAC, DIN rail mounting, duplex, Slim Frame	Phoenix Contact
430A	1	No Equal	IE-3100-8T2C-E	Cisco Catalyst IE3100 Rugged Series - Switch - 8 x 10/100/1000 + 2 x combo Gigabit - DIN rail mountable - PACL, VACL	Cisco
430B	1	No Equal	SD-IE-1GB	Cisco - Flash memory card - 1 GB - SD	Cisco
455A	1	No Equal	cMT3092Xv2	Smart HMI, 9.7", Resolution 1024 x 768, Dark Grey Bezel, 1.6 GHz CPU, 4 GB Flash Memory, 1 GB DRAM, UL Listed, Ethernet, 24VDC	Maple Systems
470A	1	No Equal	MAX-BR1-MINI-LTE-US-T-M-PRM	Peplink MAX BR1 Mini Core LTE - US - No WiFi - No GPS - AC Adapter & 2x SMA Cellular Anetenna Connectors	Peplink
470B	1	No Equal		DC Power Cable ES/GX/MP/RV/LX/IBR	Peplink
470C	1	No Equal	ACW-DIN-BR1-MINI	DIN Rail mount kit	Peplink
471A	2	Or Approved Equal	POLTSX-NFF	Cell Surge Arrestor 0.698-2.7GHz DC Block Coax Protect, N-Female/N-Female connector	PolyPhaser
471B	ASRQ	Or Approved Equal	TIMLMR-400-DB	Watertight LMR400 Cable Black PE Jacket	Times Microwave
471C	ASRQ	Or Approved Equal	R/FCOMP-NM-400	Conn, N-Male Compression Style for Plenum LMR400 Cable	RF Industries
471D	2	Or Approved Equal	ANXTRA6927M3PB-001	3G/4G Multi-Band Phantom Antenna for 698-960/1700-2700 MHz. Black. 3.3" Radome. N Female.	Laird
471E	2	Or Approved Equal	CUSTOM BRACKET	Stainless Steel Custom Bracket - 14"x 02"	Custom

PartID	Qty	Specification	Manufacturer Part Number	Description	Manufacturer
610D	1	No Equal	BMXP342020	Modicon M340 PLC Processor, 1 Modbus Serial Port, 1 Ethernet Port, Max 1024 Discrete & 256 Analog IO	Schneider Electric
611A	1	No Equal	BMXXBP0400	Modicon X80 I/O Platform X-Bus Rack, 4 Slots	Schneider Electric
612A	1	No Equal	BMXCPS2010	Modicon X80 I/O Platform Power Supply, 17W Output, 24 VDC	Schneider Electric
614B	1	No Equal	BMXDDI1602	Modicon X80 Discrete Input Card, 16 Points, 24 VDC	Schneider Electric
615D	1	No Equal	BMXDRA0815	Modicon X80 Relay Output Card, 8 Points, 24 VDC / 24-240 VAC, 2A Max	Schneider Electric
616C	1	No Equal	BMXAMI0810	Modicon X80 Analog Input Module, 8 Points, Voltage/Current, Isolated	Schneider Electric
619C	2	No Equal	BMXFTB2010	Modicon X80 Removable Terminal Block, 20-Way, Screw Terminals	Schneider Electric
619E	1	No Equal	BMXFTB2800	Modicon X80 Removable Terminal Block, 28-Way, Screw Terminals	Schneider Electric

PartID	Qty	Specification	Manufacturer Part Number	Description	Manufacturer
K2 (FORMALY PRS) - ANTENNA EQUIPMENT					
471A	2		POLTSX-NFF	Cell Surge Arrestor 0.698-2.7GHz DC Block Coax Protect, N-Female/N-Female connector	PolyPhaser
471B	ASRQ		TIMLMR-400-DB	Watertight LMR400 Cable Black PE Jacket	Times Microwave
471C	ASRQ		R/FCOMP-NM-400	Conn, N-Male Compression Style for Plenum LMR400 Cable	RF Industries
471D	2		ANXTRA6927M3PB-001	3G/4G Multi-Band Phantom Antenna for 698-960/1700-2700 MHz. Black. 3.3" Radome. N Female.	Laird
471E	2		CUSTOM BRACKET	Stainless Steel Custom Bracket - 14"x 02"	Custom

PartID	Qty	Specification	Manufacturer Part Number	Description	Manufacturer
				PRESSURE STATION K4	
430A	1	No Equal	IE-3100-8T2C-E	Cisco Catalyst IE3100 Rugged Series - Switch - 8 x 10/100/1000 + 2 x combo Gigabit - DIN rail mountable - PACL, VACL	Cisco
430B	1	No Equal	SD-IE-1GB	Cisco - Flash memory card - 1 GB - SD	Cisco
455A	1	No Equal	cMT3092Xv2	Smart HMI, 9.7", Resolution 1024 x 768, Dark Grey Bezel, 1.6 GHz CPU, 4 GB Flash Memory, 1 GB DRAM, UL Listed, Ethernet, 24VDC	Maple Systems
470A	1	No Equal	MAX-BR1-MINI-LTE-US-T-M-PRM	Peplink MAX BR1 Mini Core LTE - US - No WiFi - No GPS - AC Adapter & 2x SMA Cellular Anetenna Connectors	Peplink
470B	1	No Equal		DC Power Cable ES/GX/MP/RV/LX/IBR	Peplink
470C	1	No Equal	ACW-DIN-BR1-MINI	DIN Rail mount kit	Peplink
471A	2	Or Approved Equal	POLTSX-NFF	Cell Surge Arrestor 0.698-2.7GHz DC Block Coax Protect, N-Female/N-Female connector	PolyPhaser
471B	ASRQ	Or Approved Equal	TIMLMR-400-DB	Watertight LMR400 Cable Black PE Jacket	Times Microwave
471C	ASRQ	Or Approved Equal	R/FCOMP-NM-400	Conn, N-Male Compression Style for Plenum LMR400 Cable	RF Industries
471D	2	Or Approved Equal	ANXTRA6927M3PB-001	3G/4G Multi-Band Phantom Antenna for 698-960/1700-2700 MHz. Black. 3.3" Radome. N Female.	Laird
471E	2	Or Approved Equal	CUSTOM BRACKET	Stainless Steel Custom Bracket - 14"x 02"	Custom

PartID	Qty	Specification	Manufacturer Part Number	Description	Manufacturer
ROSE POINT LIFT STATION					
430A	1	No Equal	IE-3100-8T2C-E	Cisco Catalyst IE3100 Rugged Series - Switch - 8 x 10/100/1000 + 2 x combo Gigabit - DIN rail mountable - PACL, VACL	Cisco
430B	1	No Equal	SD-IE-1GB	Cisco - Flash memory card - 1 GB - SD	Cisco
455A	1	No Equal	cMT3092Xv2	Smart HMI, 9.7", Resolution 1024 x 768, Dark Grey Bezel, 1.6 GHz CPU, 4 GB Flash Memory, 1 GB DRAM, UL Listed, Ethernet, 24VDC	Maple Systems
470A	1	No Equal	MAX-BR1-MINI-LTE-US-T-M-PRM	Peplink MAX BR1 Mini Core LTE - US - No WiFi - No GPS - AC Adapter & 2x SMA Cellular Anetenna Connectors	Peplink
470B	1	No Equal		DC Power Cable ES/GX/MP/RV/LX/IBR	Peplink
470C	1	No Equal	ACW-DIN-BR1-MINI	DIN Rail mount kit	Peplink
471A	2	Or Approved Equal	POLTSX-NFF	Cell Surge Arrestor 0.698-2.7GHz DC Block Coax Protect, N-Female/N-Female connector	PolyPhaser
471B	ASRQ	Or Approved Equal	TIMLMR-400-DB	Watertight LMR400 Cable Black PE Jacket	Times Microwave
471C	ASRQ	Or Approved Equal	R/FCOMP-NM-400	Conn, N-Male Compression Style for Plenum LMR400 Cable	RF Industries
471D	2	Or Approved Equal	ANXTRA6927M3PB-001	3G/4G Multi-Band Phantom Antenna for 698-960/1700-2700 MHz. Black. 3.3" Radome. N Female.	Laird
471E	2	Or Approved Equal	CUSTOM BRACKET	Stainless Steel Custom Bracket - 14"x 02"	Custom

PartID	Qty	Specification	Manufacturer Part Number	Description	Manufacturer
				WAVERLY PARK	
117F	1	No Equal	CP3624	Concept Enclosure Backpan, Painted Mild Steel, 34.20" x 22.20"	Hoffman
140A	1	Or Approved Equal	ALFSWD	Enclosure Switch, Door Activated	Hoffman
143B	1	Or Approved Equal	111019-00	Temperature Control Switch, N.O. Contact for fan control or high temperature alarm, Adjustable Set Point Range 32-140 deg.F, 15-amp rated contact at 120VAC	Stego
150A	1	Or Approved Equal	DAH1001A	Enclosure Heater, 100 W, 120 VAC/0.9 A, Forced Air with Thermostat	Hoffman
200B	ASRQ	Or Approved Equal	3044102	Terminal Block, UT4, Gray, 26-10 AWG, 600V, 32A	Phoenix Contact
200E	ASRQ	Or Approved Equal	3046139	Knife-disconnect terminal block, nom. voltage: 500 V, nominal current: 20 A, connection method: Screw connection, Rated cross section: 4 mm2, cross section: 0.14 mm2 - 6 mm2, mounting: NS 35/7,5, NS 35/15, color: gray	Phoenix Contact
201B	ASRQ	Or Approved Equal	3044128	Terminal Block, Grounded, UT4-PE, Yellow-Green, 26-10 AWG	Phoenix Contact
202A	ASRQ	Or Approved Equal	3047028	Terminal Block End Barrier, UT2.5/10 Terminals	Phoenix Contact
203A	ASRQ	Or Approved Equal	0800886	Terminal Block End Clamp, 9.5mm Wide	Phoenix Contact
210A	ASRQ	Or Approved Equal	1492-WFB424	Fuse Terminal Block, 5x20mm Fuse, Black, Red LED Indicator, 30-12 AWG, 15A @ 10-57VAC/VDC	Allen-Bradley
221A	ASRQ	Or Approved Equal	S500-250-R	Fuse, 0.25 A, Glass Body, 5x20mm, Fast Acting, 250VAC/60VDC	Bussmann
221B	ASRQ	Or Approved Equal	S500-500-R	Fuse, 0.5 A, Glass Body, 5x20mm, Fast Acting, 250VAC/60VDC	Bussmann
221D	ASRQ	Or Approved Equal	S500-2-R	Fuse, 2 A, Glass Body, 5x20mm, Fast Acting, 250VAC/60VDC	Bussmann
221G	ASRQ	Or Approved Equal	S500-5-R	Fuse, 5 A, Glass Body, 5x20mm, Fast Acting, 250VAC/60VDC	Bussmann
241C	ASRQ	Or Approved Equal	1489-M1C050	Miniature Circuit Breaker, 1-Pole, 5A, Din Rail Mount, 277VAC/48VDC Max, Trip Curve C, 10kA, UL 489 Listed	Allen-Bradley
241E	ASRQ	Or Approved Equal	1489-M1C100	Miniature Circuit Breaker, 1-Pole, 10A, Din Rail Mount, 277VAC/48VDC Max, Trip Curve C, 10kA, UL 489 Listed	Allen-Bradley
241H	ASRQ	Or Approved Equal	1489-M1C200	Miniature Circuit Breaker, 1-Pole, 20A, Din Rail Mount, 277VAC/48VDC Max, Trip Curve C, 10kA, UL 489 Listed	Allen-Bradley
241K	ASRQ	Or Approved Equal	1489-M1C300	Miniature Circuit Breaker, 1-Pole, 30A, Din Rail Mount, 277VAC/48VDC Max, Trip Curve C, 10kA, UL 489 Listed	Allen-Bradley
245A	1	Or Approved Equal	2907918	Surge Arrester, Pluggable Type, 150VAC/DC, 26A (20A for UL Applications)	Phoenix Contact
290A	1	Or Approved Equal	2907161	UPS with integrated power supply, USB (Modbus/RTU), DIN rail mounting, Push-in connection, input: 1-phase, output: 24 V DC / 10 A	Phoenix Contact
290B	1	Or Approved Equal	1348516	Energy storage, VRLA-AGM, 24 V DC, 20 Ah, automatic detection and communication with QUINT UPS-IQ	Phoenix Contact
307B	ASRQ	Or Approved Equal	700-HK32Z24-4	Slim Line Control Relay, DPDT, 8A Contacts, 24 VDC Coil, Pilot Light	Allen-Bradley
307C	ASRQ	Or Approved Equal	700-HK32A1-4	Slim Line Control Relay, DPDT, 8A Contacts, 120 VAC Coil, Pilot Light	Allen-Bradley
307D	ASRQ	Or Approved Equal	700-HN122	Slim Line Control Relay Base, Mini 8-Blade Base Socket, Screw Terminals	Allen-Bradley
320A	1	Or Approved Equal	0804155	Receptacle, 15A/125VAC, DIN rail mounting, simplex	Phoenix Contact
322A	1	Or Approved Equal	5600462	Receptacle, GFCI, 15A/125VAC, DIN rail mounting, duplex	Phoenix Contact
430A	1	No Equal	IE-3100-8T2C-E	Cisco Catalyst IE3100 Rugged Series - Switch - 8 x 10/100/1000 + 2 x combo Gigabit - DIN rail mountable - PACL, VACL	Cisco
430B	1	No Equal	SD-IE-1GB	Cisco - Flash memory card - 1 GB - SD	Cisco
455A	1	No Equal	cMT3092Xv2	Smart HMI, 9.7", Resolution 1024 x 768, Dark Grey Bezel, 1.6 GHz CPU, 4 GB Flash Memory, 1 GB DRAM, UL Listed, Ethernet, 24VDC	Maple Systems
470A	1	No Equal	MAX-BR1-MINI-LTE-US-T-M-PRM	Peplink MAX BR1 Mini Core LTE - US - No WiFi - No GPS - AC Adapter & 2x SMA Cellular Anetenna Connectors	Peplink
470B	1	No Equal		DC Power Cable ES/GX/MP/RV/LX/IBR	Peplink
470C	1	No Equal	ACW-DIN-BR1-MINI	DIN Rail mount kit	Peplink
471A	2	Or Approved Equal	POLTSX-NFF	Cell Surge Arrestor 0.698-2.7GHz DC Block Coax Protect, N-Female/N-Female connector	PolyPhaser
471B	ASRQ	Or Approved Equal	TIMLMR-400-DB	Watertight LMR400 Cable Black PE Jacket	Times Microwave
471C	ASRQ	Or Approved Equal	R/FCOMP-NM-400	Conn, N-Male Compression Style for Plenum LMR400 Cable	RF Industries
471D	2	Or Approved Equal	ANXTRA6927M3PB-001	3G/4G Multi-Band Phantom Antenna for 698-960/1700-2700 MHz. Black. 3.3" Radome. N Female.	Laird
471E	1	Or Approved Equal	CUSTOM BRACKET	Stainless Steel Custom Bracket - 14"x 02"	Custom
471F	2	Or Approved Equal	CXTA24K-3	3 Ft CNT240 Cable Assembly N-Male to SMA Male	Talley

PartID	Qty	Specification	Manufacturer Part Number	Description	Manufacturer
610D	1	No Equal	BMXP342020	Modicon M340 PLC Processor, 1 Modbus Serial Port, 1 Ethernet Port, Max 1024 Discrete & 256 Analog IO	Schneider Electric
611B	1	No Equal	BMXXBP0600	Modicon X80 I/O Platform X-Bus Rack, 6 Slots	Schneider Electric
612A	1	No Equal	BMXCPS2010	Modicon X80 I/O Platform Power Supply, 17W Output, 24 VDC	Schneider Electric
614B	2	No Equal	BMXDDI1602	Modicon X80 Discrete Input Card, 16 Points, 24 VDC	Schneider Electric
615E	1	No Equal	BMXDRA1605	Modicon X80 Relay Output Card, 16 Points, 24 VDC / 24-240 VAC, 2A Max	Schneider Electric
616C	1	No Equal	BMXAMI0810	Modicon X80 Analog Input Module, 8 Points, Voltage/Current, Isolated	Schneider Electric
619C	3	No Equal	BMXFTB2010	Modicon X80 Removable Terminal Block, 20-Way, Screw Terminals	Schneider Electric
619E	1	No Equal	BMXFTB2800	Modicon X80 Removable Terminal Block, 28-Way, Screw Terminals	Schneider Electric

PartID	Qty	Specification	Manufacturer Part Number	Description	Manufacturer
				LAKE PLAZA STATION LIFT STATION	
139G	CUSTOM	Or Approved Equal	SCE-90SMP30	Subpanel, Side Mount, 78"H x 30"W x 0.88"D	Saginaw
140A	1	Or Approved Equal	ALFSWD	Enclosure Switch, Door Activated	Hoffman
142A	1	Or Approved Equal	0595682	LED Lighting Package, Under Cabinet Style, 10-Watt LED, Hard-wired 120 VAC, 24.00" x 1.61" x 2.13"	Utilitech
200B	ASRQ	Or Approved Equal	3044102	Terminal Block, UT4, Gray, 26-10 AWG, 600V, 32A	Phoenix Contact
200E	ASRQ	Or Approved Equal	3046139	Knife-disconnect terminal block, nom. voltage: 500 V, nominal current: 20 A, connection method: Screw connection, Rated cross section: 4 mm2, cross section: 0.14 mm2 - 6 mm2, mounting: NS 35/7,5, NS 35/15, color: gray	Phoenix Contact
201B	ASRQ	Or Approved Equal	3044128	Terminal Block, Grounded, UT4-PE, Yellow-Green, 26-10 AWG	Phoenix Contact
202A	ASRQ	Or Approved Equal	3047028	Terminal Block End Barrier, UT2.5/10 Terminals	Phoenix Contact
203A	ASRQ	Or Approved Equal	0800886	Terminal Block End Clamp, 9.5mm Wide	Phoenix Contact
210A	ASRQ	Or Approved Equal	1492-WFB424	Fuse Terminal Block, 5x20mm Fuse, Black, Red LED Indicator, 30-12 AWG, 15A @ 10-57VAC/VDC	Allen-Bradley
221A	ASRQ	Or Approved Equal	S500-250-R	Fuse, 0.25 A, Glass Body, 5x20mm, Fast Acting, 250VAC/60VDC	Bussmann
221B	ASRQ	Or Approved Equal	S500-500-R	Fuse, 0.5 A, Glass Body, 5x20mm, Fast Acting, 250VAC/60VDC	Bussmann
221D	ASRQ	Or Approved Equal	S500-2-R	Fuse, 2 A, Glass Body, 5x20mm, Fast Acting, 250VAC/60VDC	Bussmann
221G	ASRQ	Or Approved Equal	S500-5-R	Fuse, 5 A, Glass Body, 5x20mm, Fast Acting, 250VAC/60VDC	Bussmann
241C	ASRQ	Or Approved Equal	1489-M1C050	Miniature Circuit Breaker, 1-Pole, 5A, Din Rail Mount, 277VAC/48VDC Max, Trip Curve C, 10kA, UL 489 Listed	Allen-Bradley
241E	ASRQ	Or Approved Equal	1489-M1C100	Miniature Circuit Breaker, 1-Pole, 10A, Din Rail Mount, 277VAC/48VDC Max, Trip Curve C, 10kA, UL 489 Listed	Allen-Bradley
241H	ASRQ	Or Approved Equal	1489-M1C200	Miniature Circuit Breaker, 1-Pole, 20A, Din Rail Mount, 277VAC/48VDC Max, Trip Curve C, 10kA, UL 489 Listed	Allen-Bradley
241K	ASRQ	Or Approved Equal	1489-M1C300	Miniature Circuit Breaker, 1-Pole, 30A, Din Rail Mount, 277VAC/48VDC Max, Trip Curve C, 10kA, UL 489 Listed	Allen-Bradley
245A	1	Or Approved Equal	2907918	Surge Arrester, Pluggable Type, 150VAC/DC, 26A (20A for UL Applications)	Phoenix Contact
290A	1	Or Approved Equal	2907161	UPS with integrated power supply, USB (Modbus/RTU), DIN rail mounting, Push-in connection, input: 1-phase, output: 24 V DC / 10 A	Phoenix Contact
290B	1	Or Approved Equal	1348516	Energy storage, VRLA-AGM, 24 V DC, 20 Ah, automatic detection and communication with QUINT UPS-IQ	Phoenix Contact
290C	1	Or Approved Equal	1134645	Battery Mounting Case	Phoenix Contact
307B	ASRQ	Or Approved Equal	700-HK32Z24-4	Slim Line Control Relay, DPDT, 8A Contacts, 24 VDC Coil, Pilot Light	Allen-Bradley
307C	ASRQ	Or Approved Equal	700-HK32A1-4	Slim Line Control Relay, DPDT, 8A Contacts, 120 VAC Coil, Pilot Light	Allen-Bradley
307D	ASRQ	Or Approved Equal	700-HN122	Slim Line Control Relay Base, Mini 8-Blade Base Socket, Screw Terminals	Allen-Bradley
308E	ASRQ	Or Approved Equal	700-HC24Z24-4	Ice Cube Control Relay, 4PDT, 7A Contact, 24 VDC, Pilot Light	Allen-Bradley
308F	ASRQ	Or Approved Equal	700-HC24A1-4	Ice Cube Control Relay, 4PDT, 7A Contact, 120 VAC, Pilot Light	Allen-Bradley
308G	ASRQ	Or Approved Equal	700-HN104	Ice Cube Control Relay Base, Mini 14-Blade Base Socket, Screw Terminals	Allen-Bradley
308H	ASRQ	Or Approved Equal	700-HB32A1-3-4	Ice Cube Control Relay, DPDT, 15A Contact, 120 VAC, Pilot Light & Manual Override	Allen-Bradley
308J	ASRQ	Or Approved Equal	700-HN153	Ice Cube Control Relay Base, 11-Blade Base Socket, Screw Terminals	Allen-Bradley
309D	ASRQ	Or Approved Equal	700-HN101	Relay Base, 11-Pin Tube Base Socket, Screw Terminals	Allen-Bradley
312D	ASRQ	Or Approved Equal	700-HR52TU24	Timing Relay, General Purpose Dial Timing Model, 2 Timed Contacts w/ No Voltage Inputs, Multi-Mode (6 Functions), 0.05 seconds to 300 hours, DPDT Timed, 24...48 VAC / 12...48 VDC	Allen-Bradley
312E	ASRQ	Or Approved Equal	700-HR52TA17	Timing Relay, General Purpose Dial Timing Model, 2 Timed Contacts w/ No Voltage Inputs, Multi-Mode (6 Functions), 0.05 seconds to 300 hours, DPDT Timed, 100…240 VAC / 100…125 VDC	Allen-Bradley
322A	1	Or Approved Equal	5600462	Receptacle, GFCI, 15A/125VAC, DIN rail mounting, duplex	Phoenix Contact
356A	1	Or Approved Equal	800H-HR2A	Selector Switch, 2-Position, Maintained, 30mm, NEMA-4X, 1 NO/1 NC Contact	Allen-Bradley
356B	3	Or Approved Equal	800H-JR2B	Selector Switch, 3-Position, Maintained, 30mm, NEMA-4X, 2 NO/2 NC Contact	Allen-Bradley
357B	4	Or Approved Equal	800H-AR2A	Push Button, Black, Flush Head, 30mm, NEMA-4X, 1 NO/1 NC Contact	Allen-Bradley
364B	3	Or Approved Equal	800H-QRBH2G	Pilot Light, Push-to-Test, LED, 12-130VAC/VDC, Green, 30mm, NEMA-4X	Allen-Bradley
364C	6	Or Approved Equal	800H-QRBH2R	Pilot Light, Push-to-Test, LED, 12-130VAC/VDC, Red, 30mm, NEMA-4X	Allen-Bradley

PartID	Qty	Specification	Manufacturer Part Number	Description	Manufacturer
430A	1	No Equal	IE-3100-8T2C-E	Cisco Catalyst IE3100 Rugged Series - Switch - 8 x 10/100/1000 + 2 x combo Gigabit - DIN rail mountable - PACL, VACL	Cisco
430B	1	No Equal	SD-IE-1GB	Cisco - Flash memory card - 1 GB - SD	Cisco
455A	1	No Equal	cMT3092Xv2	Smart HMI, 9.7", Resolution 1024 x 768, Dark Grey Bezel, 1.6 GHz CPU, 4 GB Flash Memory, 1 GB DRAM, UL Listed, Ethernet, 24VDC	Maple Systems
470A	1	No Equal	MAX-BR1-MINI-LTE-US-T-M-PRM	Peplink MAX BR1 Mini Core LTE - US - No WiFi - No GPS - AC Adapter & 2x SMA Cellular Anetenna Connectors	Peplink
470B	1	No Equal		DC Power Cable ES/GX/MP/RV/LX/IBR	Peplink
470C	1	No Equal	ACW-DIN-BR1-MINI	DIN Rail mount kit	Peplink
471A	2	Or Approved Equal	POLTSX-NFF	Cell Surge Arrestor 0.698-2.7GHz DC Block Coax Protect, N-Female/N-Female connector	PolyPhaser
471B	ASRQ	Or Approved Equal	TIMLMR-400-DB	Watertight LMR400 Cable Black PE Jacket	Times Microwave
471C	ASRQ	Or Approved Equal	R/FCOMP-NM-400	Conn, N-Male Compression Style for Plenum LMR400 Cable	RF Industries
471D	2	Or Approved Equal	ANXTRA6927M3PB-001	3G/4G Multi-Band Phantom Antenna for 698-960/1700-2700 MHz. Black. 3.3" Radome. N Female.	Laird
471E	2	Or Approved Equal	CUSTOM BRACKET	Stainless Steel Custom Bracket - 14"x 02"	Custom
471F	2	Or Approved Equal	CXTA24K-3	3 Ft CNT240 Cable Assembly N-Male to SMA Male	Talley
610D	1	No Equal	BMXP342020	Modicon M340 PLC Processor, 1 Modbus Serial Port, 1 Ethernet Port, Max 1024 Discrete & 256 Analog IO	Schneider Electric
611D	1	No Equal	BMXXBP1200	Modicon X80 I/O Platform X-Bus Rack, 12 Slots	Schneider Electric
612B	1	No Equal	BMXCPS3020	Modicon X80 I/O PlatformPower Supply, 32W Output, 24-48 VDC	Schneider Electric
614B	5	No Equal	BMXDDI1602	Modicon X80 Discrete Input Card, 16 Points, 24 VDC	Schneider Electric
615E	1	No Equal	BMXDRA1605	Modicon X80 Relay Output Card, 16 Points, 24 VDC / 24-240 VAC, 2A Max	Schneider Electric
616C	2	No Equal	BMXAMI0810	Modicon X80 Analog Input Module, 8 Points, Voltage/Current, Isolated	Schneider Electric
617B	1	No Equal	BMXAMO0410	Modicon X80 Analog Output Module, 4 Points, Voltage/Current, Isolated	Schneider Electric
619C	7	No Equal	BMXFTB2010	Modicon X80 Removable Terminal Block, 20-Way, Screw Terminals	Schneider Electric
619E	2	No Equal	BMXFTB2800	Modicon X80 Removable Terminal Block, 28-Way, Screw Terminals	Schneider Electric

PartID	Qty	Specification	Manufacturer Part Number	Description	Manufacturer
			YARROW BAY		
117N	1	No Equal	CP3030	Concept Enclosure Backpan, Painted Mild Steel, 28.20" x 28.20"	Hoffman
143B	1	Or Approved Equal	111019-00	Temperature Control Switch, N.O. Contact for fan control or high temperature alarm, Adjustable Set Point Range 32-140 deg.F, 15-amp rated contact at 120VAC	Stego
150A	1	Or Approved Equal	DAH1001A	Enclosure Heater, 100 W, 120 VAC/0.9 A, Forced Air with Thermostat	Hoffman
200B	50	Or Approved Equal	3044102	Terminal Block, UT4, Gray, 26-10 AWG, 600V, 32A	Phoenix Contact
201B	10	Or Approved Equal	3044128	Terminal Block, Grounded, UT4-PE, Yellow-Green, 26-10 AWG	Phoenix Contact
202A	10	Or Approved Equal	3047028	Terminal Block End Barrier, UT2.5/10 Terminals	Phoenix Contact
203A	20	Or Approved Equal	0800886	Terminal Block End Clamp, 9.5mm Wide	Phoenix Contact
210A	25	Or Approved Equal	1492-WFB424	Fuse Terminal Block, 5x20mm Fuse, Black, Red LED Indicator, 30-12 AWG, 15A @ 10-57VAC/VDC	Allen-Bradley
221A	8	Or Approved Equal	S500-250-R	Fuse, 0.25 A, Glass Body, 5x20mm, Fast Acting, 250VAC/60VDC	Bussmann
221B	11	Or Approved Equal	S500-500-R	Fuse, 0.5 A, Glass Body, 5x20mm, Fast Acting, 250VAC/60VDC	Bussmann
221D	5	Or Approved Equal	S500-2-R	Fuse, 2 A, Glass Body, 5x20mm, Fast Acting, 250VAC/60VDC	Bussmann
221G	1	Or Approved Equal	S500-5-R	Fuse, 5 A, Glass Body, 5x20mm, Fast Acting, 250VAC/60VDC	Bussmann
241C	1	Or Approved Equal	1489-M1C050	Miniature Circuit Breaker, 1-Pole, 5A, Din Rail Mount, 277VAC/48VDC Max, Trip Curve C, 10kA, UL 489 Listed	Allen-Bradley
241E	1	Or Approved Equal	1489-M1C100	Miniature Circuit Breaker, 1-Pole, 10A, Din Rail Mount, 277VAC/48VDC Max, Trip Curve C, 10kA, UL 489 Listed	Allen-Bradley
241H	1	Or Approved Equal	1489-M1C200	Miniature Circuit Breaker, 1-Pole, 20A, Din Rail Mount, 277VAC/48VDC Max, Trip Curve C, 10kA, UL 489 Listed	Allen-Bradley
241K	1	Or Approved Equal	1489-M1C300	Miniature Circuit Breaker, 1-Pole, 30A, Din Rail Mount, 277VAC/48VDC Max, Trip Curve C, 10kA, UL 489 Listed	Allen-Bradley
245A	1	Or Approved Equal	2907918	Surge Arrester, Pluggable Type, 150VAC/DC, 26A (20A for UL Applications)	Phoenix Contact
290A	1	Or Approved Equal	2907161	UPS with integrated power supply, USB (Modbus/RTU), DIN rail mounting, Push-in connection, input: 1-phase, output: 24 V DC / 10 A	Phoenix Contact
290B	1	Or Approved Equal	1348516	Energy storage, VRLA-AGM, 24 V DC, 20 Ah, automatic detection and communication with QUINT UPS-IQ	Phoenix Contact
307B	8	Or Approved Equal	700-HK32Z24-4	Slim Line Control Relay, DPDT, 8A Contacts, 24 VDC Coil, Pilot Light	Allen-Bradley
307C	1	Or Approved Equal	700-HK32A1-4	Slim Line Control Relay, DPDT, 8A Contacts, 120 VAC Coil, Pilot Light	Allen-Bradley
307D	9	Or Approved Equal	700-HN122	Slim Line Control Relay Base, Mini 8-Blade Base Socket, Screw Terminals	Allen-Bradley
320A	1	Or Approved Equal	0804155	Receptacle, 15A/125VAC, DIN rail mounting, simplex	Phoenix Contact
322B	1	Or Approved Equal	1263628	Receptacle, GFCI, 15A/125VAC, DIN rail mounting, duplex, Slim Frame	Phoenix Contact
430A	1	No Equal	IE-3100-8T2C-E	Cisco Catalyst IE3100 Rugged Series - Switch - 8 x 10/100/1000 + 2 x combo Gigabit - DIN rail mountable - PACL, VACL	Cisco
430B	1	No Equal	SD-IE-1GB	Cisco - Flash memory card - 1 GB - SD	Cisco
455A	1	No Equal	cMT3092Xv2	Smart HMI, 9.7", Resolution 1024 x 768, Dark Grey Bezel, 1.6 GHz CPU, 4 GB Flash Memory, 1 GB DRAM, UL Listed, Ethernet, 24VDC	Maple Systems
470A	1	No Equal	MAX-BR1-MINI-LTE-US-T-M-PRM	Peplink MAX BR1 Mini Core LTE - US - No WiFi - No GPS - AC Adapter & 2x SMA Cellular Anetenna Connectors	Peplink
470B	1	No Equal		DC Power Cable ES/GX/MP/RV/LX/IBR	Peplink
470C	1	No Equal	ACW-DIN-BR1-MINI	DIN Rail mount kit	Peplink
471A	2	Or Approved Equal	POLTSX-NFF	Cell Surge Arrestor 0.698-2.7GHz DC Block Coax Protect, N-Female/N-Female connector	PolyPhaser
471B	50	Or Approved Equal	TIMLMR-400-DB	Watertight LMR400 Cable Black PE Jacket	Times Microwave
471C	4	Or Approved Equal	R/FCOMP-NM-400	Conn, N-Male Compression Style for Plenum LMR400 Cable	RF Industries
471D	2	Or Approved Equal	ANXTRA6927M3PB-001	3G/4G Multi-Band Phantom Antenna for 698-960/1700-2700 MHz. Black. 3.3" Radome. N Female.	Laird
471E	1	Or Approved Equal	CUSTOM BRACKET	Stainless Steel Custom Bracket - 14"x 02"	Custom
471F	2	Or Approved Equal	CXTA24K-3	3 Ft CNT240 Cable Assembly N-Male to SMA Male	Talley

PartID	Qty	Specification	Manufacturer Part Number	Description	Manufacturer
610D	1	No Equal	BMXP342020	Modicon M340 PLC Processor, 1 Modbus Serial Port, 1 Ethernet Port, Max 1024 Discrete & 256 Analog IO	Schneider Electric
611B	1	No Equal	BMXXBP0600	Modicon X80 I/O Platform X-Bus Rack, 6 Slots	Schneider Electric
612A	1	No Equal	BMXCPS2010	Modicon X80 I/O Platform Power Supply, 17W Output, 24 VDC	Schneider Electric
614B	2	No Equal	BMXDDI1602	Modicon X80 Discrete Input Card, 16 Points, 24 VDC	Schneider Electric
615D	1	No Equal	BMXDRA0815	Modicon X80 Relay Output Card, 8 Points, 24 VDC / 24-240 VAC, 2A Max	Schneider Electric
616C	1	No Equal	BMXAMI0810	Modicon X80 Analog Input Module, 8 Points, Voltage/Current, Isolated	Schneider Electric
619C	3	No Equal	BMXFTB2010	Modicon X80 Removable Terminal Block, 20-Way, Screw Terminals	Schneider Electric
619E	1	No Equal	BMXFTB2800	Modicon X80 Removable Terminal Block, 28-Way, Screw Terminals	Schneider Electric

PartID	Qty	Specification	Manufacturer Part Number	Description	Manufacturer
YARROW BAY INTRINSICALLY SAFE CONTROL PANEL					
110A	1	Or Approved Equal	HJ1008HWLG	NEMA 4X fiberglass enclosure with quick release latches, 10"H x 8"W x 4.6"D	Hoffman
110B	1	Or Approved Equal	A10P8	Back Panel for enclosure	Hoffman
202A	8	Or Approved Equal	3047028	Terminal Block End Barrier, UT2.5/10 Terminals	Phoenix Contact
203A	6	Or Approved Equal	0800886	Terminal Block End Clamp, 9.5mm Wide	Phoenix Contact
380A	1	Or Approved Equal	IM33-11Ex-Hi/24VDC	Intrinsically Safe Analog Barrier, 1-Channel, 4-20mA input (2-wire, 3-wire, or 4-wire), 4-20mA output, HART compatible, 24VDC supply voltage	Turck
381B	1	Or Approved Equal	IM1-22Ex-R	Intrinsically Safe Relay Barrier, contact input, 2-Channel, 2 x SPST 2-amp rated output (configurable N.O. or N.C.), Supply Voltage 20-250VAC/20-125VDC	Turck

PartID	Qty	Specification	Manufacturer Part Number	Description	Manufacturer
				SOUTH BAY LIFT STATION	
117N	1	No Equal	CP3030	Concept Enclosure Backpan, Painted Mild Steel, 28.20" x 28.20"	Hoffman
143B	1	Or Approved Equal	111019-00	Temperature Control Switch, N.O. Contact for fan control or high temperature alarm, Adjustable Set Point Range 32-140 deg.F, 15-amp rated contact at 120VAC	Stego
150A	1	Or Approved Equal	DAH1001A	Enclosure Heater, 100 W, 120 VAC/0.9 A, Forced Air with Thermostat	Hoffman
200B	50	Or Approved Equal	3044102	Terminal Block, UT4, Gray, 26-10 AWG, 600V, 32A	Phoenix Contact
200E	1	Or Approved Equal	3046139	Knife-disconnect terminal block, nom. voltage: 500 V, nominal current: 20 A, connection method: Screw connection, Rated cross section: 4 mm2, cross section: 0.14 mm2 - 6 mm2, mounting: NS 35/7,5, NS 35/15, color: gray	Phoenix Contact
201B	10	Or Approved Equal	3044128	Terminal Block, Grounded, UT4-PE, Yellow-Green, 26-10 AWG	Phoenix Contact
202A	10	Or Approved Equal	3047028	Terminal Block End Barrier, UT2.5/10 Terminals	Phoenix Contact
203A	20	Or Approved Equal	0800886	Terminal Block End Clamp, 9.5mm Wide	Phoenix Contact
210A	25	Or Approved Equal	1492-WFB424	Fuse Terminal Block, 5x20mm Fuse, Black, Red LED Indicator, 30-12 AWG, 15A @ 10-57VAC/VDC	Allen-Bradley
221A	8	Or Approved Equal	S500-250-R	Fuse, 0.25 A, Glass Body, 5x20mm, Fast Acting, 250VAC/60VDC	Bussmann
221B	11	Or Approved Equal	S500-500-R	Fuse, 0.5 A, Glass Body, 5x20mm, Fast Acting, 250VAC/60VDC	Bussmann
221D	5	Or Approved Equal	S500-2-R	Fuse, 2 A, Glass Body, 5x20mm, Fast Acting, 250VAC/60VDC	Bussmann
221G	1	Or Approved Equal	S500-5-R	Fuse, 5 A, Glass Body, 5x20mm, Fast Acting, 250VAC/60VDC	Bussmann
241C	1	Or Approved Equal	1489-M1C050	Miniature Circuit Breaker, 1-Pole, 5A, Din Rail Mount, 277VAC/48VDC Max, Trip Curve C, 10kA, UL 489 Listed	Allen-Bradley
241E	1	Or Approved Equal	1489-M1C100	Miniature Circuit Breaker, 1-Pole, 10A, Din Rail Mount, 277VAC/48VDC Max, Trip Curve C, 10kA, UL 489 Listed	Allen-Bradley
241H	1	Or Approved Equal	1489-M1C200	Miniature Circuit Breaker, 1-Pole, 20A, Din Rail Mount, 277VAC/48VDC Max, Trip Curve C, 10kA, UL 489 Listed	Allen-Bradley
241K	1	Or Approved Equal	1489-M1C300	Miniature Circuit Breaker, 1-Pole, 30A, Din Rail Mount, 277VAC/48VDC Max, Trip Curve C, 10kA, UL 489 Listed	Allen-Bradley
245A	1	Or Approved Equal	2907918	Surge Arrester, Pluggable Type, 150VAC/DC, 26A (20A for UL Applications)	Phoenix Contact
290A	1	Or Approved Equal	2907161	UPS with integrated power supply, USB (Modbus/RTU), DIN rail mounting, Push-in connection, input: 1-phase, output: 24 V DC / 10 A	Phoenix Contact
290B	1	Or Approved Equal	1348516	Energy storage, VRLA-AGM, 24 V DC, 20 Ah, automatic detection and communication with QUINT UPS-IQ	Phoenix Contact
307B	8	Or Approved Equal	700-HK32Z24-4	Slim Line Control Relay, DPDT, 8A Contacts, 24 VDC Coil, Pilot Light	Allen-Bradley
307C	1	Or Approved Equal	700-HK32A1-4	Slim Line Control Relay, DPDT, 8A Contacts, 120 VAC Coil, Pilot Light	Allen-Bradley
307D	9	Or Approved Equal	700-HN122	Slim Line Control Relay Base, Mini 8-Blade Base Socket, Screw Terminals	Allen-Bradley
320A	1	Or Approved Equal	0804155	Receptacle, 15A/125VAC, DIN rail mounting, simplex	Phoenix Contact
322A	1	Or Approved Equal	5600462	Receptacle, GFCI, 15A/125VAC, DIN rail mounting, duplex	Phoenix Contact
430A	1	EXISTING	IE-3100-8T2C-E	Cisco Catalyst IE3100 Rugged Series - Switch - 8 x 10/100/1000 + 2 x combo Gigabit - DIN rail mountable - PACL, VACL	Cisco
430B	1	EXISTING	SD-IE-1GB	Cisco - Flash memory card - 1 GB - SD	Cisco
455A	1	EXISTING	cMT3092Xv2	Smart HMI, 9.7", Resolution 1024 x 768, Dark Grey Bezel, 1.6 GHz CPU, 4 GB Flash Memory, 1 GB DRAM, UL Listed, Ethernet, 24VDC	Maple Systems
470A	1	EXISTING	MAX-BR1-MINI-LTE-US-T-M-PRM	Peplink MAX BR1 Mini Core LTE - US - No WiFi - No GPS - AC Adapter & 2x SMA Cellular Anetenna Connectors	Peplink
470B	1	EXISTING		DC Power Cable ES/GX/MP/RV/LX/IBR	Peplink
470C	1	EXISTING	ACW-DIN-BR1-MINI	DIN Rail mount kit	Peplink
471A	2	EXISTING	POLTSX-NFF	Cell Surge Arrestor 0.698-2.7GHz DC Block Coax Protect, N-Female/N-Female connector	PolyPhaser
471B	50	EXISTING	TIMLMR-400-DB	Watertight LMR400 Cable Black PE Jacket	Times Microwave
471C	4	EXISTING	R/FCOMP-NM-400	Conn, N-Male Compression Style for Plenum LMR400 Cable	RF Industries
471D	2	EXISTING	ANXTRA6927M3PB-001	3G/4G Multi-Band Phantom Antenna for 698-960/1700-2700 MHz. Black. 3.3" Radome. N Female.	Laird
471E	1	EXISTING	CUSTOM BRACKET	Stainless Steel Custom Bracket - 14"x 02"	Custom
471F	2	EXISTING	CXTA24K-3	3 Ft CNT240 Cable Assembly N-Male to SMA Male	Talley

PartID	Qty	Specification	Manufacturer Part Number	Description	Manufacturer
610D	1	No Equal	BMXP342020	Modicon M340 PLC Processor, 1 Modbus Serial Port, 1 Ethernet Port, Max 1024 Discrete & 256 Analog IO	Schneider Electric
611B	1	No Equal	BMXXBP0600	Modicon X80 I/O Platform X-Bus Rack, 6 Slots	Schneider Electric
612A	1	No Equal	BMXCPS2010	Modicon X80 I/O Platform Power Supply, 17W Output, 24 VDC	Schneider Electric
614B	2	No Equal	BMXDDI1602	Modicon X80 Discrete Input Card, 16 Points, 24 VDC	Schneider Electric
615D	1	No Equal	BMXDRA0815	Modicon X80 Relay Output Card, 8 Points, 24 VDC / 24-240 VAC, 2A Max	Schneider Electric
616C	1	No Equal	BMXAMI0810	Modicon X80 Analog Input Module, 8 Points, Voltage/Current, Isolated	Schneider Electric
619C	3	No Equal	BMXFTB2010	Modicon X80 Removable Terminal Block, 20-Way, Screw Terminals	Schneider Electric
619E	1	No Equal	BMXFTB2800	Modicon X80 Removable Terminal Block, 28-Way, Screw Terminals	Schneider Electric

PartID	Qty	Specification	Manufacturer Part Number	Description	Manufacturer
MTU					
900A	1	No Equal	#ADAM-6017-D	Remote I/O Module, 8 analog inputs, 2 digital outputs Modbus TCP, 10-30 VDC Power Input	Advantech

PartID	Qty	Specification	Manufacturer Part Number	Description	Manufacturer
				SPARE PARTS	
221A	10	Or Approved Equal	S500-250-R	Fuse, 0.25 A, Glass Body, 5x20mm, Fast Acting, 250VAC/60VDC	Bussmann
221B	10	Or Approved Equal	S500-500-R	Fuse, 0.5 A, Glass Body, 5x20mm, Fast Acting, 250VAC/60VDC	Bussmann
221D	10	Or Approved Equal	S500-2-R	Fuse, 2 A, Glass Body, 5x20mm, Fast Acting, 250VAC/60VDC	Bussmann
221G	10	Or Approved Equal	S500-5-R	Fuse, 5 A, Glass Body, 5x20mm, Fast Acting, 250VAC/60VDC	Bussmann
307B	10	Or Approved Equal	700-HK32Z24-4	Slim Line Control Relay, DPDT, 8A Contacts, 24 VDC Coil, Pilot Light	Allen-Bradley
307C	10	Or Approved Equal	700-HK32A1-4	Slim Line Control Relay, DPDT, 8A Contacts, 120 VAC Coil, Pilot Light	Allen-Bradley
308E	10	Or Approved Equal	700-HC24Z24-4	Ice Cube Control Relay, 4PDT, 7A Contact, 24 VDC, Pilot Light	Allen-Bradley
308F	10	Or Approved Equal	700-HC24A1-4	Ice Cube Control Relay, 4PDT, 7A Contact, 120 VAC, Pilot Light	Allen-Bradley
308H	10	Or Approved Equal	700-HB32A1-3-4	Ice Cube Control Relay, DPDT, 15A Contact, 120 VAC, Pilot Light & Manual Override	Allen-Bradley
312D	1	Or Approved Equal	700-HR52TU24	Timing Relay, General Purpose Dial Timing Model, 2 Timed Contacts w/ No Voltage Inputs, Multi-Mode (6 Functions), 0.05 seconds to 300 hours, DPDT Timed, 24...48 VAC / 12...48 VDC	Allen-Bradley
312E	1	Or Approved Equal	700-HR52TA17	Timing Relay, General Purpose Dial Timing Model, 2 Timed Contacts w/ No Voltage Inputs, Multi-Mode (6 Functions), 0.05 seconds to 300 hours, DPDT Timed, 100…240 VAC / 100…125 VDC	Allen-Bradley
430A	1	No Equal	IE-3100-8T2C-E	Cisco Catalyst IE3100 Rugged Series - Switch - 8 x 10/100/1000 + 2 x combo Gigabit - DIN rail mountable - PACL, VACL	Cisco
470A	1	No Equal	MAX-BR1-MINI-LTE-US-T-M-PRM	Peplink MAX BR1 Mini Core LTE - US - No WiFi - No GPS - AC Adapter & 2x SMA Cellular Anetenna Connectors	Peplink
610D	1	No Equal	BMXP342020	Modicon M340 PLC Processor, 1 Modbus Serial Port, 1 Ethernet Port, Max 1024 Discrete & 256 Analog IO	Schneider Electric
612A	1	No Equal	BMXCPS2010	Modicon X80 I/O Platform Power Supply, 17W Output, 24 VDC	Schneider Electric
614B	1	No Equal	BMXDDI1602	Modicon X80 Discrete Input Card, 16 Points, 24 VDC	Schneider Electric
615E	1	No Equal	BMXDRA1605	Modicon X80 Relay Output Card, 16 Points, 24 VDC / 24-240 VAC, 2A Max	Schneider Electric
616C	1	No Equal	BMXAMI0810	Modicon X80 Analog Input Module, 8 Points, Voltage/Current, Isolated	Schneider Electric

APPENDIX B:
PROPOSED I/O LIST

City of Kirkland

I-O LIST

		PANEL NAME:	NORTH RESERVOIR RTU														
		PANEL NUMBER:	NR														
TAG Prefix	Loop Desc. 1	Loop Desc. 2	LOOP #	PLC/HMI Tag	DESCRIPTION 1	DESCRIPTION 2	DESCRIPTION 3	FUNCTION	TYPE	Rack	Slot	Point	Units	Min	Max	P&ID Dwg	NOTES
			-		Spare				DI	1	1	0					Moved from original IO list - 4/4/25 KD
			-		Spare				DI	1	1	1					Moved from original IO list - 4/4/25 KD
			-		TANK VALVE			CLOSED	DI	1	1	2					
			-		PUMP CONTROL	VALVE		CLOSED	DI	1	1	3					Moved from original IO list - 4/4/25 KD
			-		WELL PUMP			RUNNING	DI	1	1	4					Moved from original IO list - 4/4/25 KD
			-		REMOTE HOA			IN AUTO	DI	1	1	5					Moved from original IO list - 4/4/25 KD
			-		SMOKE			DETECTION	DI	1	1	6					
			-		INTRUSION			ALARM	DI	1	1	7					
			-		Spare				DI	1	1	8					Moved from original IO list - 4/4/25 KD
			-		FLOOD SWITCH			ALARM	DI	1	1	9					Moved from original IO list - 4/4/25 KD
			-		PANIC			ALARM	DI	1	1	10					Moved from original IO list - 4/4/25 KD
			-		Spare				DI	1	1	11					
			-		120VAC Control Power			Fail	DI	1	1	12					Moved from original IO list - 4/4/25 KD
			-		24VDC Control Power			Fail	DI	1	1	13					Moved from original IO list - 4/4/25 KD
			-		DC UPS			On Battery	DI	1	1	14					Moved from original IO list - 4/4/25 KD
			-		DC UPS			Alarm	DI	1	1	15					Moved from original IO list - 4/4/25 KD
			-		PUMP			CALL	DO	1	2	0					
			-		Spare				DO	1	2	1					
			-		Spare				DO	1	2	2					
			-		545 ZONE HYDRAULIC	CONTROL VALVE NO.1	SOLENOID	OPEN CALL	DO	1	2	3					
			-		545 ZONE HYDRAULIC	CONTROL VALVE NO.1	SOLENOID	CLOSE CALL	DO	1	2	4					
			-		545 ZONE HYDRAULIC	CONTROL VALVE NO.1	SOLENOID PRESSURE REDUCING	CALL	DO	1	2	5					
			-		545 ZONE HYDRAULIC	CONTROL VALVE NO.2	SOLENOID	OPEN CALL	DO	1	2	6					
			-		545 ZONE HYDRAULIC	CONTROL VALVE NO.1	SOLENOID PRESSURE REDUCING	CALL	DO	1	2	5					
			-		545 ZONE HYDRAULIC	CONTROL VALVE NO.2	SOLENOID	OPEN CALL	DO	1	2	6					
			-		545 ZONE HYDRAULIC	CONTROL VALVE NO.2	SOLENOID	CLOSE CALL	DO	1	2	7					
			-		Spare				DO	1	2	8					
			-		Spare				DO	1	2	9					
			-		Spare				DO	1	2	10					
			-		Spare				DO	1	2	11					
			-		Spare				DO	1	2	12					
			-		Spare				DO	1	2	13					
			-		Spare				DO	1	2	14					
			-		Spare				DO	1	2	15					
			-		545 ZONE	TRANSMITTER		PRESSURE	AI	1	3	0	PSI	0	400		
			-		NORTH RESERVOIR			LEVEL	AI	1	3	1	PSI	0	XX		
			-		545 ZONE			FLOW	AI	1	3	2	GPM	0	XX		
			-		Spare				AI	1	3	3					
			-		Spare				AI	1	3	4					
			-		Spare				AI	1	3	5					
			-		Spare				AI	1	3	6					
			-		Spare				AI	1	3	7					

I-O LIST

		PANEL NAME:		SOUTH RESERVOIR													
		PANEL NUMBER:		CP1													
TAG PREFIX	LOOP DESC. 1	LOOP DESC. 2	LOOP #	PLC/HMI TAG	DESCRIPTION 1	DESCRIPTION 2	DESCRIPTION 3	FUNCTION	TYPE	Rack	Slot	Point	Units	Min	Max	P&ID Dwg	NOTES
			-		SPARE				DI	1	1	0					
			-		SPARE				DI	1	1	1					
			-		SPARE				DI	1	1	2					
			-		VFD-01			IN HAND	DI	1	1	3					
			-		VFD-01			IN AUTO	DI	1	1	4					
			-		VFD-01			RUNNING	DI	1	1	5					
			-		VFD-01			FAULT	DI	1	1	6					
			-		FLOW SWITCH	500		ALARM	DI	1	1	7					
			-		SPARE				DI	1	1	8					
			-		VFD-02			IN HAND	DI	1	1	9					
			-		VFD-02			IN AUTO	DI	1	1	10					
			-		VFD-02			RUNNING	DI	1	1	11					
			-		VFD-02			FAULT	DI	1	1	12					
			-		FLOW SWITCH	600		ALARM	DI	1	1	13					
			-		SPARE				DI	1	1	14					
			-		SPARE				DI	1	1	15					
			-		SPARE				DI	1	2	0					
			-		SPARE				DI	1	2	1					
			-		VFD-03			IN HAND	DI	1	2	2					
			-		VFD-03			IN AUTO	DI	1	2	3					
			-		VFD-03			RUNNING	DI	1	2	4					
			-		VFD-03			FAULT	DI	1	2	5					
			-		FLOW SWITCH	200		ALARM	DI	1	2	6					
			-		SPARE				DI	1	2	7					
			-		SPARE				DI	1	2	8					
			-		VFD-04			IN HAND	DI	1	2	9					
			-		VFD-04			IN AUTO	DI	1	2	10					
			-		VFD-04			RUNNING	DI	1	2	11					
			-		VFD-04			FAULT	DI	1	2	12					
			-		FLOW SWITCH	800		ALARM	DI	1	2	13					
			-		SPARE				DI	1	2	14					
			-		SPARE				DI	1	2	15					
			-		VFD-05			IN HAND	DI	1	3	0					
			-		VFD-05			IN AUTO	DI	1	3	1					
			-		VFD-05			RUNNING	DI	1	3	2					
			-		VFD-05			FAULT	DI	1	3	3					
			-		TEMPERATURE SWITCH	300		ALARM	DI	1	3	4					
			-		SPARE				DI	1	3	5					
			-		SPARE				DI	1	3	6					
			-		SPARE				DI	1	3	7					
			-		VFD-06			IN HAND	DI	1	3	8					
			-		VFD-06			IN AUTO	DI	1	3	9					
			-		VFD-06			RUNNING	DI	1	3	10					
			-		VFD-06			FAULT	DI	1	3	11					
			-		TEMPERATURE SWITCH	400		ALARM	DI	1	3	12					
			-		SPARE				DI	1	3	13					
			-		GENERATOR			RUNNING	DI	1	3	14					
			-		GENERATOR			FAIL	DI	1	3	15					
			-		GENERATOR ROOM	SMOKE		ALARM	DI	1	4	0					

I-O LIST

TAG PREFIX	LOOP DESC. 1	LOOP DESC. 2	LOOP #	PLC/HMI TAG	DESCRIPTION 1	DESCRIPTION 2	DESCRIPTION 3	FUNCTION	TYPE	Rack	Slot	Point	Units	Min	Max	P&ID Dwg	NOTES
			-		PUMP ROOM	SMOKE		ALARM	DI	1	4	1					
			-		STORAGE ROOM	SMOKE		ALARM	DI	1	4	2					
			-		SPARE				DI	1	4	3					
			-		SPARE				DI	1	4	4					
			-		STORAGE ROOM			INTRUSION	DI	1	4	5					
			-		NORTH PUMP ROOM			INTRUSION	DI	1	4	6					
			-		SOUTH PUMP ROOM			INTRUSION	DI	1	4	7					
			-		GENERATOR ROOM			INTRUSION	DI	1	4	8					
			-		VAULT			FLOOD	DI	1	4	9					
			-		SPARE				DI	1	4	10					
			-		HIGH			FLOOD	DI	1	4	11					
			-		120VAC Control Power			Fail	DI	1	4	12					
			-		24VDC Control Power			Fail	DI	1	4	13					
			-		DC UPS			On Battery	DI	1	4	14					
			-		DC UPS			Alarm	DI	1	4	15					
			-		PUMP 1			CALL TO RUN	DO	1	5	0					
			-		PUMP 1	PLC STATUS		FAULT	DO	1	5	1					
			-		PUMP 2			CALL TO RUN	DO	1	5	2					
			-		SPARE				DO	1	5	3					
			-		PUMP 3			CALL TO RUN	DO	1	5	4					
			-		SPARE				DO	1	5	5					
			-		PUMP 4			CALL TO RUN	DO	1	5	6					
			-		SPARE				DO	1	5	7					
			-		PUMP 5			CALL TO RUN	DO	1	5	8					
			-		VFD05	FAULTS		CLEAR	DO	1	5	9					
			-		PUMP 6			CALL TO RUN	DO	1	5	10					
			-		VFD06	FAULTS		CLEAR	DO	1	5	11					
			-		SPARE				DO	1	5	12					
			-		SPARE				DO	1	5	13					
			-		SPARE				DO	1	5	14					
			-		SPARE				DO	1	5	15					
			-		PUMP NO. 1			SPEED FEEDBACK	AI	1	6	0	%	0	100		
			-		PUMP NO. 2			SPEED FEEDBACK	AI	1	6	1	%	0	100		
			-		PUMP NO. 3			SPEED FEEDBACK	AI	1	6	2	%	0	100		
			-		PUMP NO. 4			SPEED FEEDBACK	AI	1	6	3	%	0	100		
			-		PUMP NO. 5			SPEED FEEDBACK	AI	1	6	4	%	0	100		
			-		PUMP NO. 6			SPEED FEEDBACK	AI	1	6	5	%	0	100		
			-		PUMP 1	DISCHARGE		PRESSURE	AI	1	6	6					
			-		ANALOG POWER			AVAILABLE	AI	1	6	7					
			-		545 ZONE	20" MAIN		FLOW	AI	1	7	0	GPM	0	6000		
			-		545 ZONE	16" MAIN		FLOW	AI	1	7	1	GPM	0	4000		
			-		650 ZONE			FLOW	AI	1	7	2	GPM	0	6000		
			-		RESERVOIR			PRESSURE	AI	1	7	3	PSI	0	100		
			-		PUMP 2	DISCHARGE		PRESSURE	AI	1	7	4					
			-		650 ZONE			PRESSURE	AI	1	7	5	PSI	0	150		
			-		650 ZONE	(BACKUP METER)		PRESSURE	AI	1	7	6	PSI	0	150		
			-		545 ZONE	12" MAIN		FLOW	AI	1	7	7	GPM	0	6000		
			-		PUMP 1			SPEED COMMAND	AO	1	8	0	%	0	100		
			-		PUMP 2			SPEED COMMAND	AO	1	8	1	%	0	100		
			-		PUMP 3			SPEED COMMAND	AO	1	8	2	%	0	100		
			-		PUMP 4			SPEED COMMAND	AO	1	8	3	%	0	100		

I-O LIST

TAG PREFIX	LOOP DESC. 1	LOOP DESC. 2	LOOP #	PLC/HMI TAG	DESCRIPTION 1	DESCRIPTION 2	DESCRIPTION 3	FUNCTION	TYPE	Rack	Slot	Point	Units	Min	Max	P&ID Dwg	NOTES
			-		PUMP 5			SPEED COMMAND	AO	1	8	4	%	0	100		
			-		PUMP 6			SPEED COMMAND	AO	1	8	5	%	0	100		
			-		SPARE				AO	1	8	6					
			-		SPARE				AO	1	8	7					

I-O LIST

		PANEL NAME:	P1 CONTROL PANEL														
		PANEL NUMBER:	P1														
TAG Prefix	Loop Desc. 1	Loop Desc. 2	LOOP #	PLC/HMI Tag	DESCRIPTION 1	DESCRIPTION 2	DESCRIPTION 3	FUNCTION	TYPE	Rack	Slot	Point	Units	Min	Max	P&ID Dwg	NOTES
			-		FLOOD			ALARM	DI	1	1	0					
			-		ENCLOSURE	INTRUSION		ALARM	DI	1	1	1					
			-		VAULT	INTRUSION		ALARM	DI	1	1	2					
			-		120VAC POWER			FAIL	DI	1	1	3					
			-		24VDC POWER			FAIL	DI	1	1	4					
			-		Spare				DI	1	1	5					
			-		PHONE PANEL	INTRUSION		ALARM	DI	1	1	6					
			-		Spare				DI	1	1	7					
			-		Spare				DI	1	1	8					
			-		Spare				DI	1	1	9					
			-		Spare				DI	1	1	10					
			-		Spare				DI	1	1	11					
			-		Spare				DI	1	1	12					
			-		Spare				DI	1	1	13					
			-		Spare				DI	1	1	14					
			-		Spare				DI	1	1	15					
			-		PIT-P1	SYSTEM		PRESSURE	AI	1	2	0	PSI	0	150		
			-		Spare				AI	1	2	1					
			-		Spare				AI	1	2	2					
			-		Spare				AI	1	2	3					

I-O LIST

		PANEL NAME:	SUPPLY STATION 1 RTU															
		PANEL NUMBER:	S1															
TAG Prefix	Loop Desc. 1	Loop Desc. 2	LOOP #	PLC/HMI Tag	DESCRIPTION 1	DESCRIPTION 2	DESCRIPTION 3	FUNCTION	TYPE	Rack	Slot	Point	Units	Min	Max	P&ID Dwg	NOTES
			-		Spare				DI	1	1	0					Moved from original IO list - 4/4/25 KD
			-		Spare				DI	1	1	1					Moved from original IO list - 4/4/25 KD
			-		CONTROL VALVE			CLOSED	DI	1	1	2					
			-		Spare				DI	1	1	3					Moved from original IO list - 4/4/25 KD
			-		Spare				DI	1	1	4					
			-		Spare				DI	1	1	5					
			-		Spare				DI	1	1	6					
			-		INTRUSION			ALARM	DI	1	1	7					
			-		Spare				DI	1	1	8					
			-		DRY WELL	FLOOD SWITCH		ALARM	DI	1	1	9					Moved from original IO list - 4/4/25 KD
			-		PANIC			ALARM	DI	1	1	10					Moved from original IO list - 4/4/25 KD
			-		Spare				DI	1	1	11					
			-		120VAC Control Power			Fail	DI	1	1	12					Moved from original IO list - 4/4/25 KD
			-		24VDC Control Power			Fail	DI	1	1	13					Moved from original IO list - 4/4/25 KD
			-		DC UPS			On Battery	DI	1	1	14					Moved from original IO list - 4/4/25 KD
			-		DC UPS			Alarm	DI	1	1	15					Moved from original IO list - 4/4/25 KD
			-		Spare				DO	1	2	0					
			-		Spare				DO	1	2	1					
			-		Spare				DO	1	2	2					
			-		545 ZONE HYDRAULIC	CONTROL VALVE No.1	SOLENOID	OPEN COMMAND	DO	1	2	3					
			-		545 ZONE HYDRAULIC	CONTROL VALVE No.1	SOLENOID	CLOSE COMMAND	DO	1	2	4					
			-		545 ZONE HYDRAULIC	CONTROL VALVE No.1	SOLENOID PRESSURE REDUCING	CALL COMMAND	DO	1	2	5					
			-		Spare				DO	1	2	6					
			-		545 ZONE HYDRAULIC	CONTROL VALVE No.1	SOLENOID PRESSURE REDUCING	CALL COMMAND	DO	1	2	5					
			-		Spare				DO	1	2	6					
			-		Spare				DO	1	2	7					
			-		Spare				DO	1	2	8					
			-		Spare				DO	1	2	9					
			-		Spare				DO	1	2	10					
			-		Spare				DO	1	2	11					
			-		Spare				DO	1	2	12					
			-		Spare				DO	1	2	13					
			-		Spare				DO	1	2	14					
			-		Spare				DO	1	2	15					
			-		SEATTLE	PRESSURE TRANSMITTER	(EXISTING)	PRESSURE	AI	1	3	0	PSI	0	200		
			-		545 ZONE	PRESSURE TRANSMITTER	(EXISTING)	PRESSURE	AI	1	3	1	PSI	0	150		
			-		SEATTLE	WATER FLOWMETER	(EXISTING)	FLOW	AI	1	3	2	GPM	0	6000		
			-		Spare				AI	1	3	3					
			-		Spare				AI	1	3	4					
			-		Spare				AI	1	3	5					
			-		Spare				AI	1	3	6					
			-		Spare				AI	1	3	7					

I-O LIST

		PANEL NAME:	SUPPLY STATION 2															
		PANEL NUMBER:	S2															
TAG Prefix	Loop Desc. 1	Loop Desc. 2	LOOP #	PLC/HMI Tag	DESCRIPTION 1	DESCRIPTION 2	DESCRIPTION 3	FUNCTION	TYPE	Rack	Slot	Point	Units	Min	Max	P&ID Dwg	NOTES
			-		PUMP No. 1			IN HAND	DI	1	1	0					Moved from original IO list - 4/4/25 KD
			-		PUMP No. 1			IN AUTO	DI	1	1	1					Moved from original IO list - 4/4/25 KD
			-		PUMP No. 1			RUNNING	DI	1	1	2					Moved from original IO list - 4/4/25 KD
			-		Spare				DI	1	1	3					
			-		Spare				DI	1	1	4					
			-		Spare				DI	1	1	5					
			-		Spare				DI	1	1	6					
			-		INTRUSION			ALARM	DI	1	1	7					Moved from original IO list - 4/4/25 KD
			-		DRY WELL	FLOOD SWITCH		ALARM	DI	1	1	8					Moved from original IO list - 4/4/25 KD
			-		Spare				DI	1	1	9					
			-		Spare				DI	1	1	10					
			-		Spare				DI	1	1	11					
			-		SMOKE			ALARM	DI	1	1	12					Moved from original IO list - 4/4/25 KD
			-		ROOM FAN THERMOSTAT			ALARM	DI	1	1	13					Moved from original IO list - 4/4/25 KD
			-		PANIC			ALARM	DI	1	1	14					
			-		Spare				DI	1	1	15					
			-		PUMP No. 2			IN HAND	DI	1	2	0					Moved from original IO list - 4/4/25 KD
			-		PUMP No. 2			IN AUTO	DI	1	2	1					Moved from original IO list - 4/4/25 KD
			-		PUMP No. 2			RUNNING	DI	1	2	2					Moved from original IO list - 4/4/25 KD
			-		Spare				DI	1	2	3					
			-		Spare				DI	1	2	4					
			-		Spare				DI	1	2	5					
			-		Spare				DI	1	2	6					
			-		Spare				DI	1	2	7					
			-		10" VALVE			FULLY CLOSED	DI	1	2	8					Moved from original IO list - 4/4/25 KD
			-		12" VALVE			FULLY CLOSED	DI	1	2	9					
			-		Spare				DI	1	2	10					
			-		Spare				DI	1	2	11					
			-		120VAC CONTROL POWER			FAIL	DI	1	2	12					Moved from original IO list - 4/4/25 KD
			-		24VDC CONTROL POWER			FAIL	DI	1	2	13					Moved from original IO list - 4/4/25 KD
			-		DC UPS			ON BATTERY	DI	1	2	14					Moved from original IO list - 4/4/25 KD
			-		DC UPS			ALARM	DI	1	2	15					Moved from original IO list - 4/4/25 KD
			-		PUMP No. 1			RUN COMMAND	DO	1	3	0					
			-		PUMP No. 2			RUN COMMAND	DO	1	3	1					
			-		VENTILATION FAN			RUN COMMAND	DO	1	3	2					
			-		545 ZONE HYDRAULIC	CONTROL VALVE No.1	SOLENOID	OPEN COMMAND	DO	1	3	3					
			-		545 ZONE HYDRAULIC	CONTROL VALVE No.1	SOLENOID	CLOSE COMMAND	DO	1	3	4					
			-		545 ZONE HYDRAULIC	CONTROL VALVE No.1	SOLENOID PRESSURE REDUCING	CALL COMMAND	DO	1	3	5					
			-		545 ZONE HYDRAULIC	CONTROL VALVE No.2	SOLENOID	OPEN COMMAND	DO	1	3	6					
			-		545 ZONE HYDRAULIC	CONTROL VALVE No.2	SOLENOID	CLOSE COMMAND	DO	1	3	7					
			-		545 ZONE HYDRAULIC	CONTROL VALVE No.2	SOLENOID PRESSURE REDUCING	CALL COMMAND	DO	1	3	8					
			-		PUMP No. 1			LOCKOUT	DO	1	3	9					
			-		PUMP No. 2			LOCKOUT	DO	1	3	10					
			-		Spare				DO	1	3	11					
			-		Spare				DO	1	3	12					
			-		Spare				DO	1	3	13					
			-		Spare				DO	1	3	14					
			-		Spare				DO	1	3	15					
			-		SEATTLE	PRESSURE TRANSMITTER	(EXISTING)	PRESSURE	AI	1	4	0	PSI	0	400		

I-O LIST

TAG Prefix	Loop Desc. 1	Loop Desc. 2	LOOP #	PLC/HMI Tag	DESCRIPTION 1	DESCRIPTION 2	DESCRIPTION 3	FUNCTION	TYPE	Rack	Slot	Point	Units	Min	Max	P&ID Dwg	NOTES
			-		545 ZONE	PRESSURE TRANSMITTER	(EXISTING)	PRESSURE	AI	1	4	1	PSI	0	100		
			-		SEATTLE	FLOW TRANSMITTER	(EXISTING)	FLOW	AI	1	4	2	GPM	0	10000		
			-		650 ZONE	FLOW TRANSMITTER	(FUTURE)	FLOW	AI	1	4	3	GPM	0	X		
			-		650 ZONE	PRESSURE TRANSMITTER	(FUTURE)	PRESSURE	AI	1	4	4	PSI	0	X		
			-		545 ZONE	PRESSURE TRANSMITTER		PRESSURE	AI	1	4	5	PSI	0	100		
			-		Spare				AI	1	4	6					
			-		Spare				AI	1	4	7					

I-O LIST

		PANEL NAME:	**K1 CONTROL PANEL**														
		PANEL NUMBER:	**K1**														
TAG Prefix	**Loop Desc. 1**	**Loop Desc. 2**	**LOOP #**	**PLC/HMI Tag**	**DESCRIPTION 1**	**DESCRIPTION 2**	**DESCRIPTION 3**	**FUNCTION**	**TYPE**	**Rack**	**Slot**	**Point**	**Units**	**Min**	**Max**	**P&ID Dwg**	**NOTES**
			-		FLOOD			ALARM	DI	1	1	0					
			-		ENCLOSURE	INTRUSION		ALARM	DI	1	1	1					
			-		Spare				DI	1	1	2					
			-		120VAC POWER			FAIL	DI	1	1	3					
			-		24VDC POWER			FAIL	DI	1	1	4					
			-		Spare				DI	1	1	5					
			-		Spare				DI	1	1	6					
			-		Spare				DI	1	1	7					
			-		Spare				DI	1	1	8					
			-		Spare				DI	1	1	9					
			-		Spare				DI	1	1	10					
			-		Spare				DI	1	1	11					
			-		Spare				DI	1	1	12					
			-		Spare				DI	1	1	13					
			-		Spare				DI	1	1	14					
			-		Spare				DI	1	1	15					
			-		FIT-K1	SYSTEM		FLOW	AI	1	2	0	%	0	5500	GPM	
			-		Spare				AI	1	2	1					
			-		Spare				AI	1	2	2					
			-		Spare				AI	1	2	3					

I-O LIST

		PANEL NAME:	SUPPLY STATION 3															
		PANEL NUMBER:	S3															
TAG Prefix	Loop Desc. 1	Loop Desc. 2	LOOP #	PLC/HMI Tag	DESCRIPTION 1	DESCRIPTION 2	DESCRIPTION 3	FUNCTION	TYPE	Rack	Slot	Point	Units	Min	Max	P&ID Dwg	NOTES
			-		545 ZONE	FLOW METER		TOTALIZER	DI	1	1	0					
			-		545 ZONE	VALVE		CLOSED	DI	1	1	1					
			-		Spare				DI	1	1	2					
			-		Spare				DI	1	1	3					
			-		Spare				DI	1	1	4					
			-		Spare				DI	1	1	5					
			-		Spare				DI	1	1	6					
			-		INTRUSION			ALARM	DI	1	1	7					
			-		DRY WELL	FLOOD SWITCH		ALARM	DI	1	1	8					
			-		PANIC			ALARM	DI	1	1	9					
			-		Spare				DI	1	1	10					
			-		Spare				DI	1	1	11					
			-		120VAC CONTROL POWER			FAIL	DI	1	1	12					
			-		24VDC CONTROL POWER			FAIL	DI	1	1	13					
			-		DC UPS			ON BATTERY	DI	1	1	14					
			-		DC UPS			ALARM	DI	1	1	15					
			-		545 ZONE HYDRAULIC	CONTROL VALVE No.1	SOLENOID	OPEN COMMAND	DO	1	2	0					
			-		545 ZONE HYDRAULIC	CONTROL VALVE No.1	SOLENOID	CLOSE COMMAND	DO	1	2	1					
			-		545 ZONE HYDRAULIC	CONTROL VALVE No.1	SOLENOID PRESSURE REDUCING	CALL COMMAND	DO	1	2	2					
			-		Spare				DO	1	2	3					
			-		Spare				DO	1	2	4					
			-		Spare				DO	1	2	5					
			-		Spare				DO	1	2	6					
			-		Spare				DO	1	2	7					
			-		SEATTLE	PRESSURE TRANSMITTER	(EXISTING)	PRESSURE	AI	1	3	0	PSI	0	400		
			-		545 ZONE	PRESSURE TRANSMITTER	(EXISTING)	PRESSURE	AI	1	3	1	PSI	0	XXX		
			-		SEATTLE	WATER FLOWMETER	(EXISTING)	FLOW	AI	1	3	2	GPM	0	XXX		
			-		Spare				AI	1	3	3					
			-		Spare				AI	1	3	4					
			-		Spare				AI	1	3	5					
			-		Spare				AI	1	3	6					
			-		Spare				AI	1	3	7					

I-O LIST

		PANEL NAME:	K4 CONTROL PANEL														
		PANEL NUMBER:	K4														
TAG Prefix	Loop Desc. 1	Loop Desc. 2	LOOP #	PLC/HMI Tag	DESCRIPTION 1	DESCRIPTION 2	DESCRIPTION 3	FUNCTION	TYPE	Rack	Slot	Point	Units	Min	Max	P&ID Dwg	NOTES
			-		FLOOD			ALARM	DI	1	1	0					
			-		ENCLOSURE	INTRUSION		ALARM	DI	1	1	1					
			-		VAULT	INTRUSION		ALARM	DI	1	1	2					
			-		120VAC POWER			FAIL	DI	1	1	3					
			-		24VDC POWER			FAIL	DI	1	1	4					
			-		Spare				DI	1	1	5					
			-		Spare				DI	1	1	6					
			-		Spare				DI	1	1	7					
			-		Spare				DI	1	1	8					
			-		Spare				DI	1	1	9					
			-		Spare				DI	1	1	10					
			-		Spare				DI	1	1	11					
			-		Spare				DI	1	1	12					
			-		Spare				DI	1	1	13					
			-		Spare				DI	1	1	14					
			-		Spare				DI	1	1	15					
			-		FIT-K4	SYSTEM		FLOW	AI	1	2	0	GPM	0	5500		
			-		PIT-K4	SYSTEM		PRESSURE	AI	1	2	1	PSI	0	150		
			-		Spare				AI	1	2	2					
			-		Spare				AI	1	2	3					

I-O LIST

		PANEL NAME:	ROSE POINT CONTROL PANEL														
		PANEL NUMBER:	TCP														
TAG Prefix	Loop Desc. 1	Loop Desc. 2	LOOP #	PLC/HMI Tag	DESCRIPTION 1	DESCRIPTION 2	DESCRIPTION 3	FUNCTION	TYPE	Rack	Slot	Point	Units	Min	Max	P&ID Dwg	NOTES
			-		WETWELL			LEVEL	AI	1	1	0	ft-H2O	0	20		
			-		DISCHARGE			PRESSURE	AI	1	1	1	PSI	0	100		
			-		FLOWMETER			FLOW	AI	1	1	2	GPM	0	XXX		
			-		WATER			PRESSURE	AI	1	1	3	PSI	0	XXX		
			-		CONTROL PANEL			TEMPERATURE	AI	1	1	4	degF	0	150		
			-		SPARE				AI	1	1	5					
			-		SPARE				AI	1	1	6					
			-		SPARE				AI	1	1	7					
			-		PUMP 1			IN AUTO	DI	1	3	0					
			-		PUMP 1			RUNNING	DI	1	3	1					
			-		PUMP 1			FAULT	DI	1	3	2					
			-		PUMP 1			THERMAL OK	DI	1	3	3					
			-		PUMP 1			MOISTURE	DI	1	3	4					
			-		WETWELL			OVERFLOW	DI	1	3	5					
			-		WETWELL			LEVEL HIGH	DI	1	3	6					
			-		WETWELL			LEVEL LOW	DI	1	3	7					
			-		SPARE				DI	1	3	8					
			-		SPARE				DI	1	3	9					
			-		SPARE				DI	1	3	10					
			-		SPARE				DI	1	3	11					
			-		SPARE				DI	1	3	12					
			-		SPARE				DI	1	3	13					
			-		SPARE				DI	1	3	14					
			-		SPARE				DI	1	3	15					
			-		PUMP 2			IN AUTO	DI	1	4	0					
			-		PUMP 2			RUNNING	DI	1	4	1					
			-		PUMP 2			FAULT	DI	1	4	2					
			-		PUMP 2			THERMAL OK	DI	1	4	3					
			-		PUMP 2			MOISTURE	DI	1	4	4					
			-		FLOWMETER			TOTAL PULSE	DI	1	4	5					
			-		SPARE				DI	1	4	6					
			-		SPARE				DI	1	4	7					
			-		WETWELL	HATCH		CLOSED	DI	1	4	8					
			-		VALVE VAULT	HATCH		CLOSED	DI	1	4	9					
			-		PUMP 1	CHECK VALVE		CLOSED	DI	1	4	10					
			-		PUMP 2	CHECK VALVE		CLOSED	DI	1	4	11					
			-		SPARE				DI	1	4	12					
			-		SPARE				DI	1	4	13					
			-		SPARE				DI	1	4	14					
			-		SPARE				DI	1	4	15					
			-		AUTOMATIC TRANSFER SWITCH			ON UTILITY	DI	1	5	0					
			-		AUTOMATIC TRANSFER SWITCH			ON GENERATOR	DI	1	5	1					
			-		GENERATOR CONTROL PANEL			TROUBLE	DI	1	5	2					
			-		GENERATOR CONTROL PANEL			FUEL LOW	DI	1	5	3					
			-		GENERATOR CONTROL PANEL			RUNNING	DI	1	5	4					
			-		REMOTE FUEL STATION			INTRUSION	DI	1	5	5					
			-		CONTROL POWER			OK	DI	1	5	6					
			-		SPARE				DI	1	5	7					

I-O LIST

TAG Prefix	Loop Desc. 1	Loop Desc. 2	LOOP #	PLC/HMI Tag	DESCRIPTION 1	DESCRIPTION 2	DESCRIPTION 3	FUNCTION	TYPE	Rack	Slot	Point	Units	Min	Max	P&ID Dwg	NOTES
			-		OVERFLOW STRUCTURE			OVERFLOW	DI	1	5	8					
			-		OVERFLOW STRUCTURE			LEVEL HIGH	DI	1	5	9					
			-		OVERFLOW STRUCTURE	HATCH 1		CLOSED	DI	1	5	10					
			-		OVERFLOW STRUCTURE	HATCH 2		CLOSED	DI	1	5	11					
			-		SPARE				DI	1	5	12					
			-		SPARE				DI	1	5	13					
			-		SPARE				DI	1	5	14					
			-		SPARE				DI	1	5	15					
			-		PUMP 1			CALL	DO	1	7	0					
			-		PUMP 2			CALL	DO	1	7	1					
			-		SPARE				DO	1	7	2					
			-		SPARE				DO	1	7	3					
			-		SPARE				DO	1	7	4					
			-		SPARE				DO	1	7	5					
			-		SPARE				DO	1	7	6					
			-		SPARE				DO	1	7	7					

I-O LIST

		PANEL NAME:	WAVERLY BEACH PARK CONTROL PANEL															
		PANEL NUMBER:	WB															
TAG Prefix	Loop Desc. 1	Loop Desc. 2	LOOP #	PLC/HMI Tag	DESCRIPTION 1	DESCRIPTION 2	DESCRIPTION 3	FUNCTION	TYPE	Rack	Slot	Point	Units	Min	Max	P&ID Dwg	NOTES
			-		GENERATOR			RUN	DI	1	1	0					Moved here during new panel design 4/1/25
			-		GENERATOR			ALARM	DI	1	1	1					Moved here during new panel design 4/1/25
			-		Spare				DI	1	1	2					Moved here during new panel design 4/1/25
			-		Spare				DI	1	1	3					Moved here during new panel design 4/1/25
			-		Spare				DI	1	1	4					Moved here during new panel design 4/1/25
			-		SMOKE			ALARM	DI	1	1	5					Moved here during new panel design 4/1/25
			-		INTRUSION			ALARM	DI	1	1	6					Moved here during new panel design 4/1/25
			-		PANIC			ALARM	DI	1	1	7					
			-		WET WELL	LEVEL		LOW	DI	1	1	8					
			-		WET WELL	LEVEL		HIGH	DI	1	1	9					
			-		PUMP NO. 1			RUNNING	DI	1	1	10					
			-		PUMP NO. 2			RUNNING	DI	1	1	11					
			-		PUMP NO. 1			FAIL	DI	1	1	12					
			-		PUMP NO. 2			FAIL	DI	1	1	13					
			-		TIME			MODE	DI	1	1	14					
			-		Spare				DI	1	1	15					
			-		ATS			NORMAL	DI	1	2	0					
			-		ATS			EMERGENCY	DI	1	2	1					
			-		Spare				DI	1	2	2					
			-		Spare				DI	1	2	3					
			-		Spare				DI	1	2	4					
			-		Spare				DI	1	2	5					
			-		Spare				DI	1	2	6					
			-		Spare				DI	1	2	7					
			-		Spare				DI	1	2	8					
			-		Spare				DI	1	2	9					
			-		Spare				DI	1	2	10					
			-		Spare				DI	1	2	11					
			-		120VAC Control Power			Fail	DI	1	2	12					Moved here during new panel design 4/1/25
			-		24VDC Control Power			Fail	DI	1	2	13					Moved here during new panel design 4/1/25
			-		DC UPS			On Battery	DI	1	2	14					Moved here during new panel design 4/1/25
			-		DC UPS			Alarm	DI	1	2	15					Moved here during new panel design 4/1/25
			-		Spare				DO	1	3	0					
			-		Spare				DO	1	3	1					
			-		PUMP NO.1			CALL TO RUN	DO	1	3	2					
			-		PUMP NO.2			CALL TO RUN	DO	1	3	3					
			-		Spare				DO	1	3	4					
			-		Spare				DO	1	3	5					
			-		Spare				DO	1	3	6					
			-		Spare				DO	1	3	7					
			-		Spare				DO	1	3	8					
			-		Spare				DO	1	3	9					
			-		Spare				DO	1	3	10					
			-		Spare				DO	1	3	11					
			-		Spare				DO	1	3	12					
			-		Spare				DO	1	3	13					
			-		Spare				DO	1	3	14					
			-		Spare				DO	1	3	15					

I-O LIST

TAG Prefix	Loop Desc. 1	Loop Desc. 2	LOOP #	PLC/HMI Tag	DESCRIPTION 1	DESCRIPTION 2	DESCRIPTION 3	FUNCTION	TYPE	Rack	Slot	Point	Units	Min	Max	P&ID Dwg	NOTES
			-		WET WELL			LEVEL	AI	1	4	0					
			-		Spare				AI	1	4	1					
			-		Spare				AI	1	4	2					
			-		Spare				AI	1	4	3					
			-		Spare				AI	1	4	4					
			-		Spare				AI	1	4	5					
			-		Spare				AI	1	4	6					
			-		Spare				AI	1	4	7					

I-O LIST

		PANEL NAME:		LAKE PLAZA LIFT STATION														
		PANEL NUMBER:		LP														
TAG Prefix	Loop Desc. 1	Loop Desc. 2	LOOP #	PLC/HMI Tag	DESCRIPTION 1	DESCRIPTION 2	DESCRIPTION 3	FUNCTION	TYPE	Rack	Slot	Point	Units	Min	Max	P&ID Dwg	NOTES
			-		PUMP NO. 1			IN HAND	DI	1	1	0					
			-		PUMP NO. 1			IN AUTO	DI	1	1	1					
			-		PUMP NO. 1			RESET	DI	1	1	2					
			-		PUMP NO. 2			IN HAND	DI	1	1	3					
			-		PUMP NO. 2			IN AUTO	DI	1	1	4					
			-		PUMP NO. 2			RESET	DI	1	1	5					
			-		PUMP NO. 3			IN HAND	DI	1	1	6					
			-		PUMP NO. 3			IN AUTO	DI	1	1	7					
			-		PUMP NO. 3			RESET	DI	1	1	8					
			-		ALTERNATION			ON	DI	1	1	9					NOT LOCATED ON DOOR 4/1/25
			-		ALTERNATOR SEQUENCE			1-2-3	DI	1	1	10					NOT LOCATED ON DOOR 4/1/25
			-		ALTERNATOR SEQUENCE			2-3-1	DI	1	1	11					NOT LOCATED ON DOOR 4/1/25
			-		ALTERNATOR SEQUENCE			3-1-2	DI	1	1	12					NOT LOCATED ON DOOR 4/1/25
			-		Spare			(on door)	DI	1	1	13					
			-		Spare			(on door)	DI	1	1	14					
			-		Spare			(on door)	DI	1	1	15					
			-		Spare			(on door)	DI	1	2	0					
			-		Spare			(on door)	DI	1	2	1					
			-		Spare			(on door)	DI	1	2	2					
			-		LOCAL MODE			LEVEL	DI	1	2	3					NOT LOCATED ON DOOR 4/1/25
			-		LOCAL MODE			SCUM	DI	1	2	4					NOT LOCATED ON DOOR 4/1/25
			-		LOCAL MODE			TIME	DI	1	2	5					NOT LOCATED ON DOOR 4/1/25
			-		LOCAL MODE			AUTO	DI	1	2	6					NOT LOCATED ON DOOR 4/1/25
			-		LOCAL MODE			TIME	DI	1	2	5					NOT LOCATED ON DOOR 4/1/25
			-		LOCAL MODE			AUTO	DI	1	2	6					NOT LOCATED ON DOOR 4/1/25
			-		REMOTE MODE			LEVEL	DI	1	2	7					NOT LOCATED ON DOOR 4/1/25
			-		ALARM			RESET	DI	1	2	8					
			-		WET WELL	LEVEL		LOW	DI	1	2	9					
			-		EMERGENCY STOP			LEVEL	DI	1	2	10					
			-		EMERGENCY START			LEVEL	DI	1	2	11					
			-		WET WELL	LEVEL		HIGH	DI	1	2	12					
			-		SEWAGE IN SECONDARY			WET WELL	DI	1	2	13					
			-		Spare				DI	1	2	14					Moved during new panel design 4/1/25
			-		Spare				DI	1	2	15					Moved during new panel design 4/1/25
			-		PUMP NO. 1			RUNNING	DI	1	3	0					
			-		PUMP NO. 2			RUNNING	DI	1	3	1					
			-		PUMP NO. 3			RUNNING	DI	1	3	2					
			-		PUMP NO. 1	VFD		FAULT	DI	1	3	3					
			-		PUMP NO. 2	VFD		FAULT	DI	1	3	4					
			-		PUMP NO. 3	VFD		FAULT	DI	1	3	5					
			-		CHECK VALVE NO. 1			CLOSED	DI	1	3	6					
			-		CHECK VALVE NO. 2			CLOSED	DI	1	3	7					
			-		CHECK VALVE NO. 3			CLOSED	DI	1	3	8					
			-		GENERATOR ROOM	EXHAUST FAN		RUNNING	DI	1	3	9					
			-		DRY WELL	SUPPLY FAN		RUNNING	DI	1	3	10					
			-		DRY WELL	EXHAUST FAN		RUNNING	DI	1	3	11					
			-		WET WELL	SUPPLY FAN		RUNNING	DI	1	3	12					
			-		ODOR CONTROL FAN			RUNNING	DI	1	3	13					
			-		GENERATOR ROOM	EXHAUST FAN		OVERLOAD	DI	1	3	14					
			-		DRY WELL	SUPPLY FAN		OVERLOAD	DI	1	3	15					
			-		DRY WELL	EXHAUST FAN		OVERLOAD	DI	1	4	0					

I-O LIST

TAG Prefix	Loop Desc. 1	Loop Desc. 2	LOOP #	PLC/HMI Tag	DESCRIPTION 1	DESCRIPTION 2	DESCRIPTION 3	FUNCTION	TYPE	Rack	Slot	Point	Units	Min	Max	P&ID Dwg	NOTES
			-		WET WELL	SUPPLY FAN		OVERLOAD	DI	1	4	1					
			-		ODOR CONTROL FAN			OVERLOAD	DI	1	4	2					
			-		INTRUSION ALARM			OFF	DI	1	4	3					
			-		PANIC			ALARM	DI	1	4	4					
			-		POWER/PHASE			FAIL	DI	1	4	5					
			-		STATION FLOOD			ALARM	DI	1	4	6					
			-		ODOR CONTROL	VAULT		FLOOD	DI	1	4	7					
			-		GENERATOR	FUEL		LOW	DI	1	4	8					
			-		GENERATOR	FUEL		CRITICAL LOW	DI	1	4	9					
			-		GENERATOR			FAIL	DI	1	4	10					
			-		GENERATOR			RUNNING	DI	1	4	11					
			-		EMERGENCY POWER			ON	DI	1	4	12					
			-		Spare				DI	1	4	13					
			-		Spare				DI	1	4	14					
			-		Spare				DI	1	4	15					
			-		Spare				DI	1	5	0					
			-		Spare				DI	1	5	1					
			-		Spare				DI	1	5	2					
			-		Spare				DI	1	5	3					
			-		Spare				DI	1	5	4					
			-		Spare				DI	1	5	5					
			-		Spare				DI	1	5	6					
			-		Spare				DI	1	5	7					
			-		Spare				DI	1	5	8					
			-		Spare				DI	1	5	9					
			-		Spare				DI	1	5	10					
			-		Spare				DI	1	5	11					
			-		120VAC Control Power			Fail	DI	1	5	12					Moved here during new panel design 4/1/25
			-		24VDC Control Power			Fail	DI	1	5	13					Moved here during new panel design 4/1/25
			-		DC UPS			On Battery	DI	1	5	14					Moved here during new panel design 4/1/25
			-		DC UPS			Alarm	DI	1	5	15					Moved here during new panel design 4/1/25
			-		LIFT PUMP NO. 1			CALL TO RUN	DO	1	6	0					
			-		LIFT PUMP NO. 2			CALL TO RUN	DO	1	6	1					
			-		LIFT PUMP NO. 3			CALL TO RUN	DO	1	6	2					
			-		LIFT PUMP NO. 1			FAIL	DO	1	6	3					
			-		LIFT PUMP NO. 2			FAIL	DO	1	6	4					
			-		LIFT PUMP NO. 3			FAIL	DO	1	6	5					
			-		WET WELL	LEVEL		LOW ALARM	DO	1	6	6					
			-		WET WELL	LEVEL		HIGH ALARM	DO	1	6	7					
			-		ODOR CONTROL	DAMPER		OPEN	DO	1	6	8					
			-		ATMOSPHERE			ALARM	DO	1	6	9					
			-		Spare				DO	1	6	10					
			-		Spare				DO	1	6	11					
			-		Spare				DO	1	6	12					
			-		Spare				DO	1	6	13					
			-		Spare				DO	1	6	14					
			-		Spare				DO	1	6	15					
			-		PUMP NO. 1			SPEED FEEDBACK	AI	1	7	0	%	0	100		
			-		PUMP NO. 2			SPEED FEEDBACK	AI	1	7	1	%	0	100		
			-		PUMP NO. 3			SPEED FEEDBACK	AI	1	7	2	%	0	100		
			-		WET WELL			LEVEL	AI	1	7	3	FT	0	10		

I-O LIST

TAG Prefix	Loop Desc. 1	Loop Desc. 2	LOOP #	PLC/HMI Tag	DESCRIPTION 1	DESCRIPTION 2	DESCRIPTION 3	FUNCTION	TYPE	Rack	Slot	Point	Units	Min	Max	P&ID Dwg	NOTES
			-		FLOW METER			FLOW	AI	1	7	4	GPM	0	200		
			-		OXYGEN			LEVEL	AI	1	7	5	%	0	25		
			-		DRY WELL	HYDROGEN SULFIDE		LEVEL	AI	1	7	6	PPM	0	50		
			-		WET WELL	HYDROGEN SULFIDE		LEVEL	AI	1	7	7	PPM	0	50		
			-		WATER			PRESSURE	AI	1	8	0	PSI	0	300		
			-		POWER SUPPLY			VOLTAGE	AI	1	8	1					
			-		Spare				AI	1	8	2					
			-		Spare				AI	1	8	3					
			-		Spare				AI	1	8	4					
			-		Spare				AI	1	8	5					
			-		Spare				AI	1	8	6					
			-		Spare				AI	1	8	7					
			-		PUMP NO. 1			SPEED COMMAND	AO	1	9	0	%	0	100		
			-		PUMP NO. 2			SPEED COMMAND	AO	1	9	1	%	0	100		
			-		PUMP NO. 3			SPEED COMMAND	AO	1	9	2	%	0	100		
			-		Spare				AO	1	9	3					

I-O LIST

		PANEL NAME:	YARROW BAY CONTROL PANEL															
		PANEL NUMBER:	YB															
TAG Prefix	Loop Desc. 1	Loop Desc. 2	LOOP #	PLC/HMI Tag	DESCRIPTION 1	DESCRIPTION 2	DESCRIPTION 3	FUNCTION	TYPE	Rack	Slot	Point	Units	Min	Max	P&ID Dwg	NOTES
			-		GENERATOR			RUNNING	DI	1	1	0					Moved here during new panel design 4/1/25
			-		GENERATOR			ALARM	DI	1	1	1					Moved here during new panel design 4/1/25
			-		GENERATOR			LOW FUEL	DI	1	1	2					Moved here during new panel design 4/1/25
			-						DI	1	1	3					
			-		P1 CHECK VALVE			FAIL	DI	1	1	4					Moved here during new panel design 4/1/25
			-		P2 CHECK VALVE			FAIL	DI	1	1	5					Moved here during new panel design 4/1/25
			-		SMOKE			ALARM	DI	1	1	6					Moved here during new panel design 4/1/25
			-		INTRUSION			ALARM	DI	1	1	7					Moved here during new panel design 4/1/25
			-		PANIC			ALARM	DI	1	1	8					Moved here during new panel design 4/1/25
			-		PUMP NO. 1			RUNNING	DI	1	1	9					Moved here during new panel design 4/1/25
			-		PUMP NO. 2			RUNNING	DI	1	1	10					Moved here during new panel design 4/1/25
			-		PUMP NO. 1			FAIL	DI	1	1	11					Moved here during new panel design 4/1/25
			-		PUMP NO. 2			FAIL	DI	1	1	12					Moved here during new panel design 4/1/25
			-		PANEL TEMP			HIGH	DI	1	1	13					Moved here during new panel design 4/1/25
			-		WET WELL	LEVEL		LOW	DI	1	1	14					Moved here during new panel design 4/1/25
			-		WET WELL	LEVEL		HIGH	DI	1	1	15					Moved here during new panel design 4/1/25
			-		STATION			FLOOD	DI	1	2	0					
			-		ATS			NORMAL	DI	1	2	1					
			-		ATS			EMERGENCY	DI	1	2	2					
			-		Spare				DI	1	2	3					
			-		Spare				DI	1	2	4					
			-		Spare				DI	1	2	5					
			-		Spare				DI	1	2	6					
			-		Spare				DI	1	2	7					
			-		Spare				DI	1	2	8					
			-		Spare				DI	1	2	9					
			-		Spare				DI	1	2	10					
			-		Spare				DI	1	2	11					
			-		120VAC Control Power			Fail	DI	1	2	12					Moved here during new panel design 4/1/25
			-		24VDC Control Power			Fail	DI	1	2	13					Moved here during new panel design 4/1/25
			-		DC UPS			On Battery	DI	1	2	14					Moved here during new panel design 4/1/25
			-		DC UPS			Alarm	DI	1	2	15					Moved here during new panel design 4/1/25
			-		Spare				DO	1	3	0					
			-		Spare				DO	1	3	1					
			-		Spare				DO	1	3	2					
			-		Spare				DO	1	3	3					
			-		Spare				DO	1	3	4					
			-		Spare				DO	1	3	5					
			-		Spare				DO	1	3	6					
			-		Spare				DO	1	3	7					
			-		WET WELL			LEVEL	AI	1	4	0					
			-		SEATTLE TRANSMITTER			PRESSURE	AI	1	4	1	PSI	0	150		
			-		Spare				AI	1	4	2					
			-		Spare				AI	1	4	3					
			-		Spare				AI	1	4	4					
			-		Spare				AI	1	4	5					
			-		Spare				AI	1	4	6					
			-		Spare				AI	1	4	7					

I-O LIST

		PANEL NAME:	SOUTH BAY LIFT STATION															
		PANEL NUMBER:	SB															
TAG Prefix	Loop Desc. 1	Loop Desc. 2	LOOP #	PLC/HMI Tag	DESCRIPTION 1	DESCRIPTION 2	DESCRIPTION 3	FUNCTION	TYPE	Rack	Slot	Point	Units	Min	Max	P&ID Dwg	NOTES
			-		Spare				DI	1	1	0					
			-		Spare				DI	1	1	1					
			-		Spare				DI	1	1	2					
			-		EMERGENCY STORAGE WELL			LEVEL	DI	1	1	3					Moved here during new panel design 4/1/25
			-		P1 CHECK VALVE			FAIL	DI	1	1	4					Moved here during new panel design 4/1/25
			-		P2 CHECK VALVE			FAIL	DI	1	1	5					Moved here during new panel design 4/1/25
			-		SMOKE			ALARM	DI	1	1	6					Moved here during new panel design 4/1/25
			-		INTRUSION			ALARM	DI	1	1	7					Moved here during new panel design 4/1/25
			-		PANIC			ALARM	DI	1	1	8					Moved here during new panel design 4/1/25
			-		PUMP NO. 1			RUNNING	DI	1	1	9					Moved here during new panel design 4/1/25
			-		PUMP NO. 2			RUNNING	DI	1	1	10					Moved here during new panel design 4/1/25
			-		PUMP NO. 1			FAIL	DI	1	1	11					Moved here during new panel design 4/1/25
			-		PUMP NO. 2			FAIL	DI	1	1	12					Moved here during new panel design 4/1/25
			-		PANEL TEMP			HIGH	DI	1	1	13					Moved here during new panel design 4/1/25
			-		WET WELL	LEVEL		LOW	DI	1	1	14					Moved here during new panel design 4/1/25
			-		WET WELL	LEVEL		HIGH	DI	1	1	15					Moved here during new panel design 4/1/25
			-		STATION			FLOOD	DI	1	2	0					Moved here during new panel design 4/1/25
			-		Spare				DI	1	2	1					
			-		Spare				DI	1	2	2					
			-		Spare				DI	1	2	3					
			-		Spare				DI	1	2	4					
			-		Spare				DI	1	2	5					
			-		Spare				DI	1	2	6					
			-		Spare				DI	1	2	7					
			-		Spare				DI	1	2	8					
			-		Spare				DI	1	2	9					
			-		Spare				DI	1	2	10					
			-		Spare				DI	1	2	11					
			-		120VAC Control Power			Fail	DI	1	2	12					Moved here during new panel design 4/1/25
			-		24VDC Control Power			Fail	DI	1	2	13					Moved here during new panel design 4/1/25
			-		DC UPS			On Battery	DI	1	2	14					Moved here during new panel design 4/1/25
			-		DC UPS			Alarm	DI	1	2	15					Moved here during new panel design 4/1/25
			-		Spare				DO	1	3	0					
			-		Spare				DO	1	3	1					
			-		Spare				DO	1	3	2					
			-		Spare				DO	1	3	3					
			-		Spare				DO	1	3	4					
			-		Spare				DO	1	3	5					
			-		Spare				DO	1	3	6					
			-		Spare				DO	1	3	7					
			-		Spare				DO	1	3	8					
			-		Spare				DO	1	3	9					
			-		Spare				DO	1	3	10					
			-		Spare				DO	1	3	11					
			-		Spare				DO	1	3	12					
			-		Spare				DO	1	3	13					
			-		Spare				DO	1	3	14					
			-		Spare				DO	1	3	15					

I-O LIST

TAG Prefix	Loop Desc. 1	Loop Desc. 2	LOOP #	PLC/HMI Tag	DESCRIPTION 1	DESCRIPTION 2	DESCRIPTION 3	FUNCTION	TYPE	Rack	Slot	Point	Units	Min	Max	P&ID Dwg	NOTES
			-		WET WELL			LEVEL	AI	1	4	0	ft	X	X		
			-		Spare				AI	1	4	1					
			-		Spare				AI	1	4	2					
			-		Spare				AI	1	4	3					
			-		Spare				AI	1	4	4					
			-		Spare				AI	1	4	5					
			-		Spare				AI	1	4	6					
			-		Spare				AI	1	4	7					

APPENDIX C:
RECORD DRAWINGS

City of Kirkland

APPENDIX C:
RECORD DRAWINGS – TABLE OF CONTENTS

- C1 – 14.3 Million Gallon North Reservoir
- C2 – Supply Station No. 2 (S2) Improvements
- C3 – City of Kirkland Water Meter Improvements (K1)
- C4 – Rose Point Lift Station Improvements
- C5 – City of Kirkland Lake Plaza Lift Station Replacement
- C6 – Yarrow Bay Village Improvements
- C7 – South Bay Park Development Sanitary Sewer Pump Station Improvements

City of Kirkland

APPENDIX C1:
RECORD DRAWINGS –
14.3 MILLION GALLON
NORTH RESERVOIR

City of Kirkland

ROSE HILL WATER DISTRICT

13013 NE 65th ST. KIRKLAND

1991 CAPITAL IMPROVEMENT PROJECT
14.3 MILLION GALLON NORTH RESERVOIR

[OCCUPANCY GROUP M2; CONSTRUCTION TYPE II-N]

THE BOARD OF COMMISSIONERS

RICHARD OGDEN	**President**
ROBERT WAHL	**Commissioner**
ROY HUMPHREY	**Commissioner**

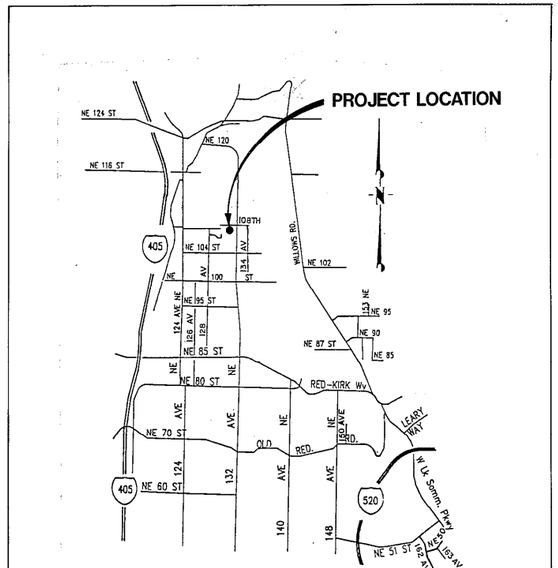
PREPARED BY

ST ENGINEERING, INC.
Municipal Engineering Consultants

733 – 7th AVE
KIRKLAND, WASHINGTON 98033
206/822-6036

SHEET INDEX

SHEET No.	TITLE
1	INDEX AND VICINITY MAP
2	SITE PLAN
3-4	DETAILS
5	LANDSCAPING
6	SPRINKLER SYSTEM



VICINITY MAP
NOT TO SCALE

REVISED TO CONFORM TO CONSTRUCTION RECORDS

O'Bond 5-1993
REVISED BY DATE

1230

S.E. 1/4, SEC. 33, T. 26N., R.5E., W.M.

PRIOR TO START OF CONSTRUCTION TURN OFF 12" VALVE APPROXIMATELY 180' WESTERLY WATER DISTRICT TO TURN VALVE OFF

INSTALL QUARRY SPALLS AND ATB PAD AT ENTRANCE TO 132ND AVE. NE IN ACCORDANCE WITH STANDARD PLAN GK-E.01 DETAIL NO.1

RELOCATE 3-MAIL BOX'S AND BUS STOP SIGN TO APPROVED LOCATION

DATUM KCAS TOP OF CASING ELEV. 338.00

N.E. 108TH ST.

PRIOR TO START OF CONSTRUCTION TURN THESE TWO VALVES OFF WATER DISTRICT TO TURN VALVE OFF

RELOCATE COVERED MAIL BOX TO APPROVED LOCATION

RELOCATE STREET SIGN TO APPROVED LOCATION

UNDERGROUND PUMP AND CONTROL VAULT OCCUPANCY GROUP B4 CONSTRUCTION TYPE II-N

FILTER FABRIC FENCE AS REQUIRED

CONTROL STRUCTURE
RIM 345.58
OVERFLOW 342.40
INV. 12" 339.83
INV. 8" 339.83
ORIFICE DIA. 1 7/8"

GROUND ELEVATION AROUND MANHOLE SHALL TO FLUSH WITH THE RIM

2' ASPHALT PAD (TYP.)

PUMP AND CAN SHALL BE REMOVED BY BYRON JACKSON PUMP CO. PIPE, FITTINGS AND VALVES FROM BOTH VAULTS TO BE REMOVED BY RESERVOIR CONTRACTOR AND STORED WITHIN THE FENCED AREA AND BOTH VAULTS TO BE REMOVED.

6"D.I. FLOOR DRAIN

6"D.I. UNDER DRAIN

6" TEE, M.J. WITH MIN. 7.5' LONG PERFORATED 6" D.I. PIPE EACH END WITH 6" CAP WRAP PERFORATED PIPE WITH FILTER FABRIC

MIN. SLOPE 2%

REMOVE EXIST. STANDPIPE AND ITS CONC. FOUNDATION

24"Ø STUMP REMOVE

30"Ø STUMP REMOVE

30"Ø MADRONA

TYPICAL GRADING BETWEEN CATCH BASINS
~~HIGH POINT AT MID BETWEEN XCB'S~~
ELEV. 346.24

154'-0" INSIDE DIAMETER x 127'-0" HEIGHT, 14.3 MG. STEEL WATER RESERVOIR; OCCUPANCY GROUP M2; CONSTRUCTION TYPE II- N

VAULT AND CONNECTIONS DONE UNDER SCHEDULE "A" PROJECT

15' EASEMENT

PROPERTY LINE N 89° 33' 55" W 309.50'

PROPERTY LINE N 02° 22' 16" E 339.47'

PROPERTY LINE S 89°43' 32" E 312.43'

132ND AVE. N.E.

EXISTING CONCRETE TANK BASE
NO SCALE

PLAN

ELEVATION

REV. NO.	DRAWN BY	REVISIONS	DATE	APPROVAL
4	NL	CHANGED CONTROL VAULT, 18" OUTLET, 12" INLET AND OUTLET, 12" OVERFLOW LOCATION.	2/3/92	KT
3	NL	CHANGE 35' RADIUS TO 25' RADIUS, ADDED ASPHALT PAD	9/30/91	KT
2	NL	ADDED NOTE	9/23/91	KT
1	LCL	Added Reservoir, Pumphouse, and Foundation Dimensions	8/30/91	SLP

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

REVISED TO CONFORM TO CONSTRUCTION RECORDS
REVISED BY 5-1993 DATE

JON R. STACK — STATE OF WASHINGTON — REGISTERED PROFESSIONAL ENGINEER

ST ENGINEERING INC., P.S.
MUNICIPAL ENGINEERING CONSULTANT
PARKADE BUILDING
733 7TH AVENUE, SUITE 210
KIRKLAND, WASHINGTON 98033
206/822-6036

ROSE HILL WATER DISTRICT

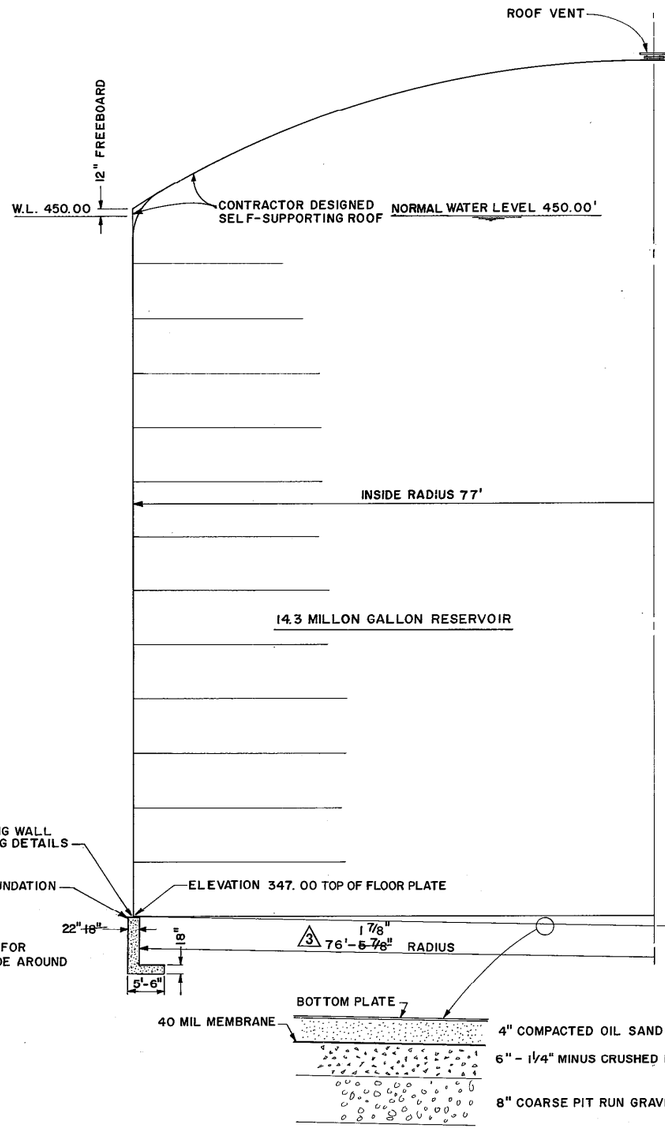
14.3 MG NORTH RESERVOIR SITE PLAN

FIELD BOOK NO.
PAGE NO.

JOB NO. RSH:056
DATE JULY, 1991
SCALE 1"=20'
DRAWING BY NL/LCL
DESIGNED BY KT
APPROVED

SHEET 2 OF 6

1230

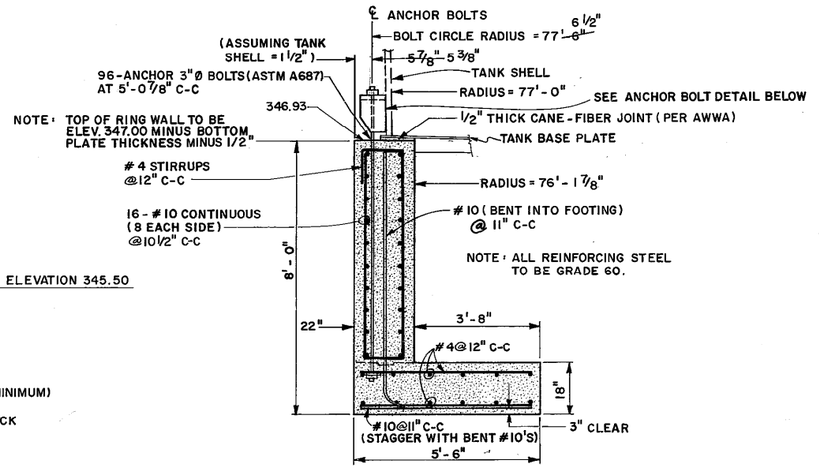


SECTION

SCALE 1" = 10'

CONTRACTOR DESIGNED APPURTENANCES:
SHOP DRAWINGS TO BE PROVIDED FOR REVIEW

1. INSIDE & OUTSIDE LADDER TO CONFORM TO O.S.H.A. REQUIREMENTS. (SEE ALSO NOTE 7). OUTSIDE LADDER TO START 10'-0" FROM BOTTOM INSIDE LADDER TO END 12" ABOVE BOTTOM
2. ROOF ACCESS HATCH MINIMUM 30" SQUARE CLEAR OPENING. (SEE ALSO NOTE 7).
3. ROOF VENT
4. 36" ROUND SHELL ACCESS MANHOLE 2 - REQUIRED OPPOSITE EACH OTHER ℄ 3'-0" ABOVE BOTTOM
5. PAINTER RAIL & PAINTERS TROLLEY
6. GROUNDING LUGS
7. THE (HORIZONTAL) LADDER SUPPORTS FOR THE OUTSIDE LADDER SHALL BE PROVIDED WITH 5/16" DIA. HOLES FOR THE INSTALLATION OF A 1/2" CONDUIT FROM A JUNCTION BOX NEAR THE ROOF ACCESS HATCH DOWN TO A JUNCTION BOX ABOVE THE FOUNDATION. PROVIDE (2) BRACKETS FROM THE LADDER TO SUPPORT THE CONDUIT AT 48" ABOVE THE FOUNDATION, AND THE JUNCTION BOX AT 24" ABOVE THE FOUNDATION. HOLES SHALL BE DRILLED AND BRACKETS WELDED PRIOR TO PAINTING THE RESERVOIR.
8. FURNISH AND INSTALL A 36" LONG STAINLESS STEEL (B-LINE #B22SH-SS4) CHANNEL ADJACENT TO THE ROOF ACCESS HATCH HIGH SIDE TO SUPPORT THE WIRE-SUSPENDED ELECTRICAL PROBES FOR REDUNDANT HIGH-LEVEL CONTROL. FURNISH AND INSTALL A 1/4" THICK RE-INFORCEMENT PLATE ON TOP OF THE TANK AND ADJACENT TO THE STAINLESS STEEL CHANNEL LOCATION, WITH 3/4" N.P.T. THREADED OPENING FOR JUNCTION BOX INSTALLATION BY OTHERS. PROVIDE 3/4" THREADED PLUG.



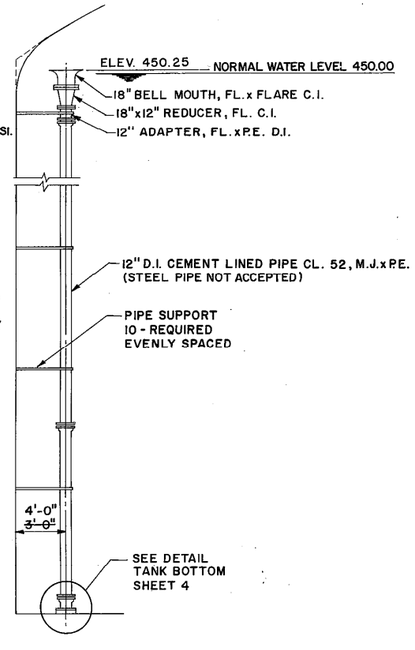
RINGWALL FOOTING DETAILS

SCALE:1/2"=1'-0"

GENERAL NOTES:

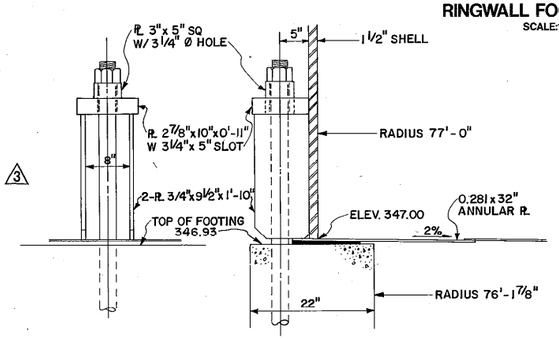
G1. CONTINUOUS SPECIAL INSPECTIONS ARE REQUIRED FOR THE FOLLOWING ITEMS:
- a. FIELD WELDING. E 70XX
- b. CONCRETE WALLS AND FOOTINGS. F'c=3750PSI.

G2. THE FOLLOWING MATERIAL SPECIFICATIONS AND STRENGTHS SHALL APPLY TO THE VARIOUS COMPONENTS:
- a. STEEL RESERVOIR SHELL, BOTTOM, AND ROOF: PER AWWA D100-84, APPENDIX C.
- b. STEEL ANCHOR BOLTS: ASTM A687 (ULT. TENSILE = 150KSI)
- c. STEEL ANCHOR BRACKET PLATES: ASTM A36 (ULT. TENSILE = 60KSI)
- d. DEFORMED REINFORCING STEEL: GRADE 60
- e. WELD ELECTRODES (ANCHOR ASSEMBLIES): E 70XX
- f. CONCRETE: CLASS A (f'c = 3750PSI - 28 DAY STRENGTH).



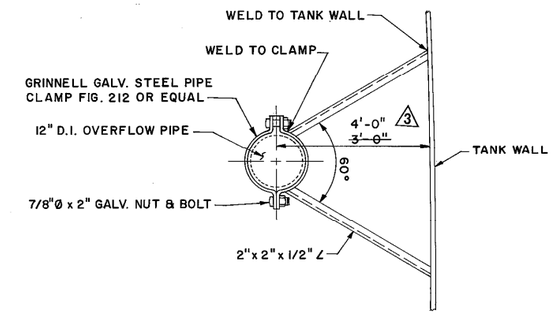
OVERFLOW ASSEMBLY

NOT TO SCALE



ANCHOR BOLT DETAIL

SCALE: 1"=1'-0"



TYPICAL OVERFLOW SUPPORTS

NO SCALE

REVISED TO CONFORM TO CONSTRUCTION RECORDS

QBond 5-1993

REVISED BY DATE

REV. NO.	DRAWN BY	REVISIONS	DATE	APPROVAL
3	N.L.	CHANGED ANCHOR BOLT DETAIL, RADIUS AND OVERFLOW DETAIL	2/3/92	KT
2	N.L.	CHANGE ELEV 474.50 TO 474.00	10/2/91	KT
1	N.L.	CHANGED FROM ANCHOR STRAPS TO ANCHOR BOLTS & ADDED NOTES	8/30/91	S.P.

KUNER-RANKEN INC. - 140281

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JON R. STACY — STATE OF WASHINGTON — REGISTERED PROFESSIONAL ENGINEER

ST ENGINEERING INC., P.S.
MUNICIPAL ENGINEERING CONSULTANT
PARKADE BUILDING
733 7TH AVENUE, SUITE 200
KIRKLAND, WASHINGTON 98033
FAX(206)889-0633 PHONE(206)822-6036

ROSE HILL WATER DISTRICT

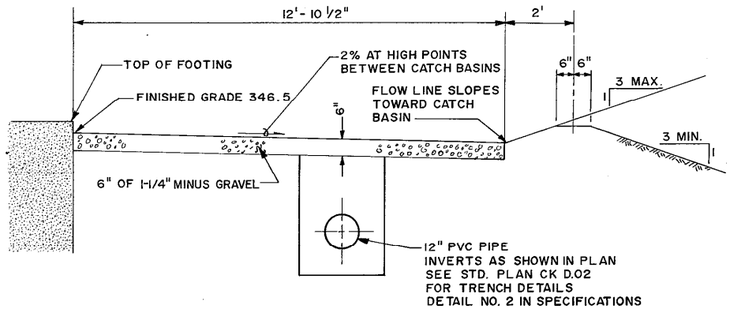
14.3 MG NORTH RESERVOIR DETAILS

FIELD BOOK NO.
PAGE NO.

JOB NO. RSH-056
DATE JULY, 1991
SCALE AS SHOWN
DRAWING BY LCL, NL
DESIGNED BY KT
APPROVED

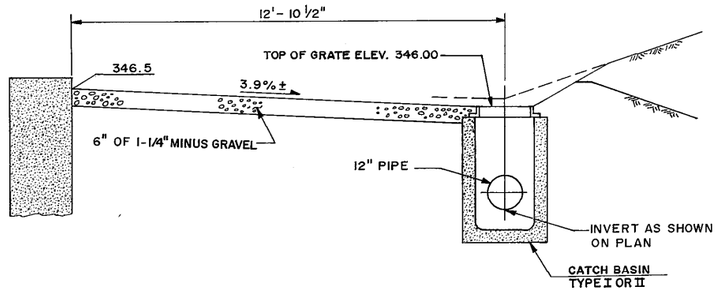
SHEET 6 OF 3

1230



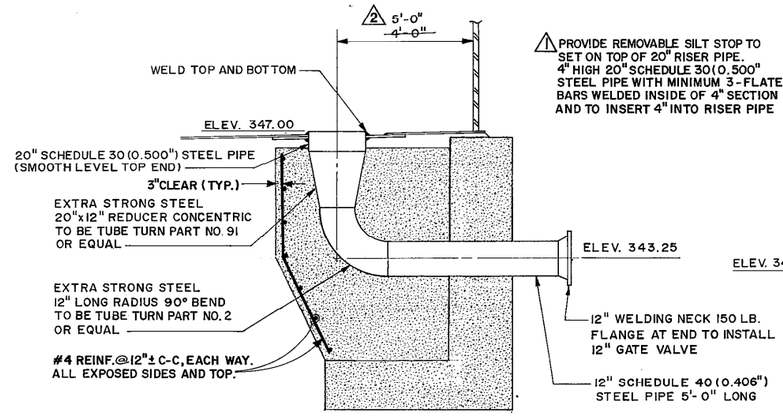
TYPICAL SECTION ALL AROUND FOOTING

SCALE: 1/2" = 1'-0"



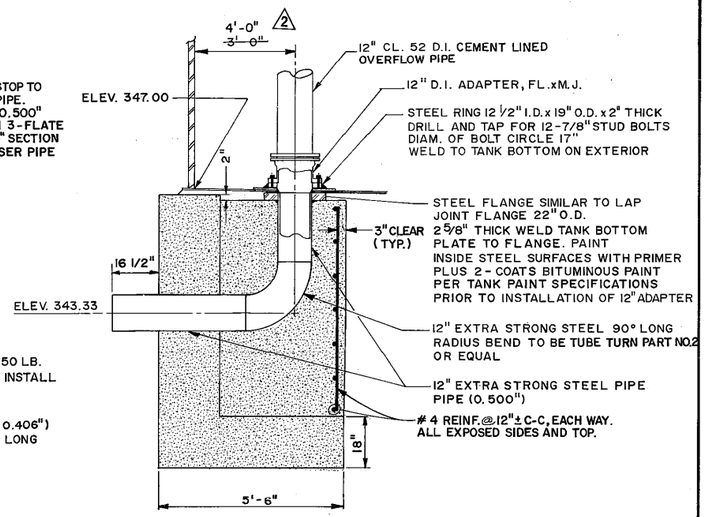
SECTION THRU CATCH BASIN

SCALE: 1/2" = 1'-0"



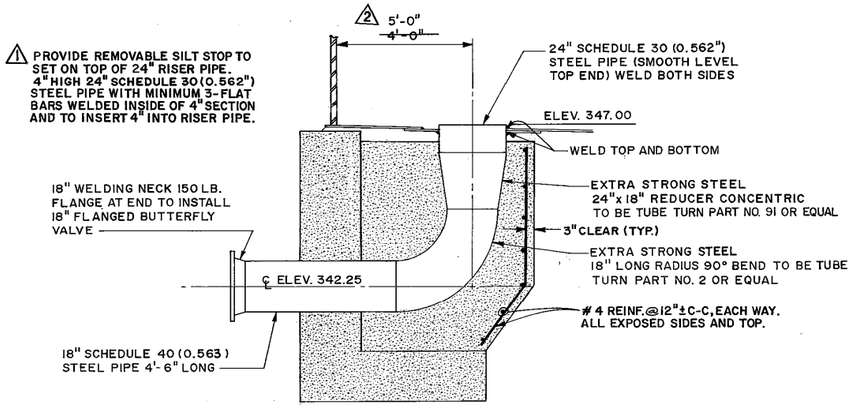
12" INLET/OUTLET

SCALE: 1/2" = 1'-0"



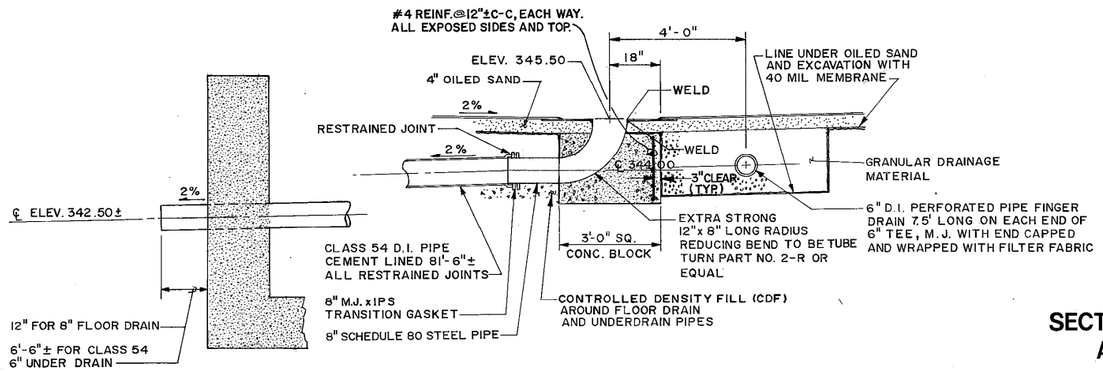
12" OVERFLOW

SCALE: 1/2" = 1'-0"



18" OUTLET

SCALE: 1/2" = 1'-0"



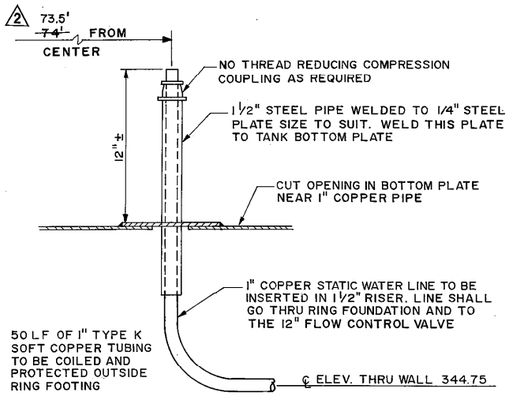
SECTION THRU FLOOR DRAIN

SCALE: 1/2" = 1'-0"



SECTION THRU 8" FLOOR DRAIN AND 6" UNDERDRRAIN

SCALE: 1/2" = 1'-0"



INLET FOR 1" STATIC WATER LINE

NOT TO SCALE

REV. NO.	DRAWN BY	REVISIONS	DATE	APPROVAL
2	NL	CHANGED 18" OUTLET, 12" INLET/OUTLET, 12" OVERFLOW AND INLET FOR 1" STATIC WATER LINE.	2/3/92	KT
1	NL	ADDED NOTE	10/2/91	KT

REVISED TO CONFORM TO CONSTRUCTION RECORDS

REVISED BY: OBond — DATE: 5-1993

JON R. STACKS — STATE OF WASHINGTON — REGISTERED PROFESSIONAL ENGINEER

ST ENGINEERING INC., P.S.
MUNICIPAL ENGINEERING CONSULTANT
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ROSE HILL WATER DISTRICT

14.3 MG NORTH RESERVOIR DETAILS

FIELD BOOK NO.
PAGE NO.

JOB NO. RSH-056
DATE JULY, 1991
SCALE 1/2"-1'-0"
DRAWING BY LCL, NL
DESIGNED BY KT
APPROVED

SHEET 6 OF 6 — 4

KUKER-RANKEN, INC. - 140281

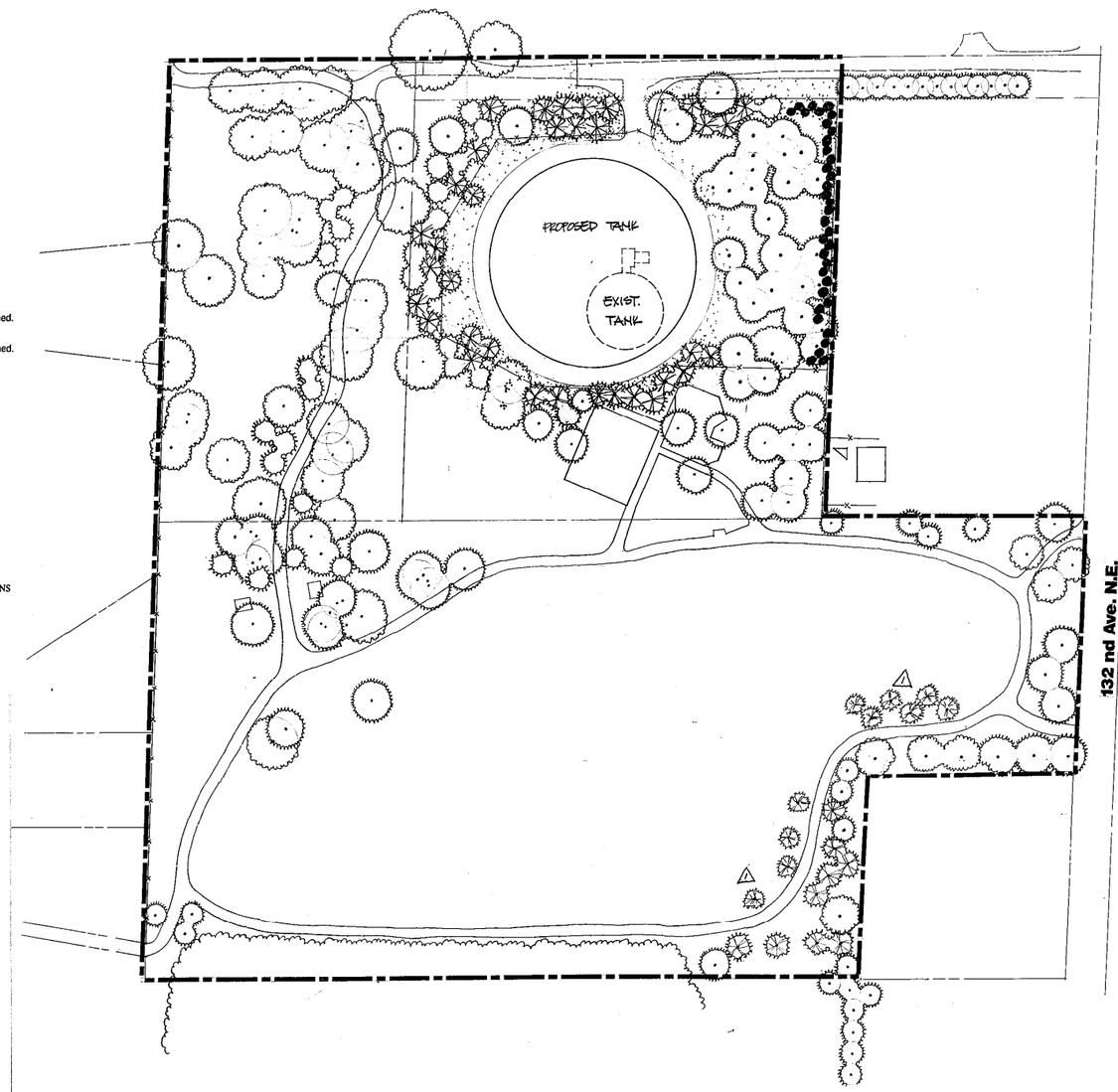
1230

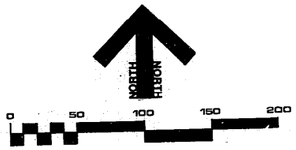
PLANT SCHEDULE

SYMBOL	BOTANICAL /COMMON NAME	SIZE	REMARKS
	Trees:		
	Pseudotsuga menziesii / Douglas Fir	8-10' ht.	Full to base; well branched. B&B--not sheared.
	Pseudotsuga menziesii / Douglas Fir	20-22' ht.	Full to base; well branched. B&B--not sheared.
	Shrub:		
	Prunus lusitanica / Portugal Laurel	4' ht.	Full; well-branched. B&B.
	Existing deciduous tree		Save and protect.
	Existing coniferous tree		Save and protect.
	Lawn Seeding		

NOTE:

1. AVOID DAMAGE TO ALL UTILITIES AND EXISTING PARK IRRIGATION SYSTEM. VERIFY EXACT LOCATIONS PRIOR TO BEGINNING WORK. SEE CIVIL DRAWINGS. REPAIR ANY DAMAGE.





REV. NO.	DRAWN BY	REVISIONS	DATE	APPROVAL
1		RELOCATE TREES	5-93	

KURDER-RAMEN INC. 140281

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REVISED TO CONFORM TO CONSTRUCTION RECORDS
O'Bond 5-1993
REVISED BY DATE

JON R. STACKER — STATE OF WASHINGTON — REGISTERED PROFESSIONAL ENGINEER

ST ENGINEERING INC., P.S.
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FAX(206)889-0633 PHONE(206)822-6036

ROSE HILL WATER DISTRICT

14.3 MG NORTH RESERVOIR
LANDSCAPING

FIELD BOOK NO.
PAGE NO.

JOB NO. RSH:056
DATE JULY, 1991
SCALE AS NOTED
DRAWING BY M.H., C.L.
DESIGNED BY
APPROVED

SHEET OF 6 — 5

1230

JONGEJAN · GERRARD · McNEAL
Incorporated P.S.

Landscape Architecture
Urban Design
Planning

23 103rd Ave. N.E.
Bellevue, WA 98004
206 • 454 • 5723

STATE OF WASHINGTON
REGISTERED
LANDSCAPE ARCHITECT

CERTIFICATE NO.

Revisions:

Job no.

Date: JULY 17, 1991

Approved by: D.M.

Drawn by: M.H., C.L.

Scale: AS NOTED

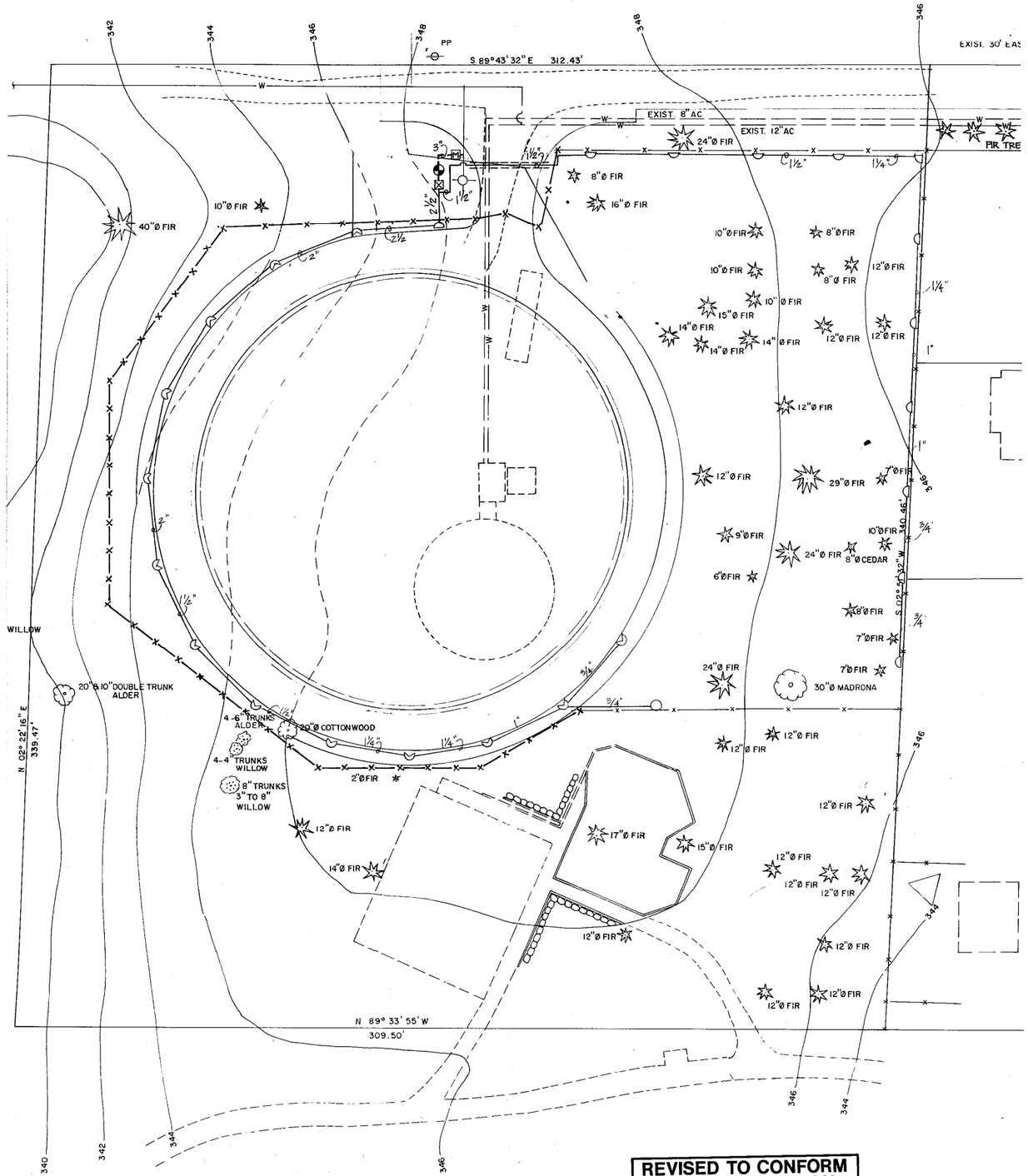
Project name:

ROSE HILL WATER DISTRICT 14.3 MG NORTH RESERVOIR

Sheet title:

Planting Plan

Sheet no.



IRRIGATION SCHEDULE

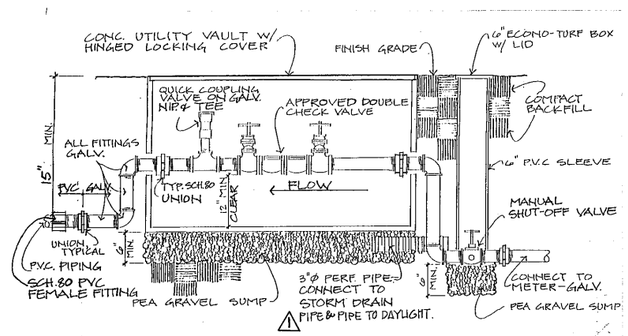
MANUFACTURER/CATALOG NUMBER	DESCRIPTION
Toro 300 Series 300-00-03	Lawn head - stream rotor. 3" pop-up gear driven rotor. 30' radius at 50 PSI with 03 nozzle. Install on triple swing joint as per detail.
Mueller Mark II Orisecal Valve	2" diameter manual control valve - bronze body. Install upstream of double check valve assembly as per detail.
Rainbird 3RC	3/4" brass quick coupling valve. Install downstream of double check valve assembly as per detail.
Febco 805Y	2" diameter double check valve assembly - bronze body with resilient seated ball valves. Install downstream of manual control valve as per detail.
	2" water meter, service and valve box by Rose Hill Water District. Coordinate work with District.
	Pressure main - PVC Schedule 40. Sizes as noted on drawings. Minimum 18" cover.
	Laterals - PVC Class 200. Minimum size 3/4" diameter. Sizes as noted on drawings. Minimum 15" cover.
	Sleeving - PVC Class 200. Minimum size shall be twice insert pipe diameter.

VERIFY MINIMUM AVAILABLE FLOW OF 100 GPM AND 80 PSI STATIC WATER PRESSURE AT POINT OF CONNECTION. NOTIFY LANDSCAPE ARCHITECT OF ANY DISCREPANCIES PRIOR TO BEGINNING WORK.

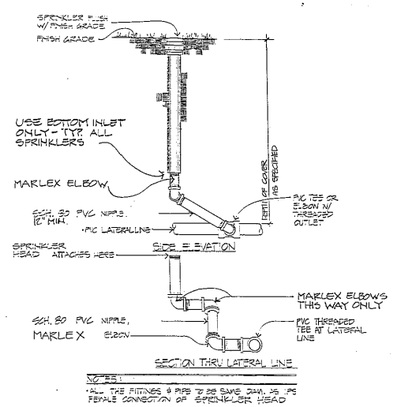
NOTE:

1. AVOID DAMAGE TO ALL UTILITIES. VERIFY EXACT LOCATIONS PRIOR TO BEGINNING WORK. SEE CIVIL DRAWINGS. REPAIR ANY DAMAGE.

2. AVOID DAMAGE TO ALL EXISTING TREES AND THEIR ROOT SYSTEMS. HAND-DIG ALL TRENCHES WITHIN DRIPLINE OF EXISTING TREES.



A DOUBLE CHECK VALVE ASSEMBLY



B TYPICAL TRIPLE SWING JOINT

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

REVISED TO CONFORM TO CONSTRUCTION RECORDS
O'Bond 5-1993
REVISED BY DATE

REV. NO.	DRAWN BY	REVISIONS	DATE	APPROVAL
1	NL	ADDED NOTE	10/2/91	KT

KUHLER-ROMLEIN, INC. / 140281

JON R. STACK — STATE OF WASHINGTON — REGISTERED — PROFESSIONAL ENGINEER

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KIRKLAND, WASHINGTON 98033
FAX(206)889-0633 PHONE(206)822-6036

ROSE HILL WATER DISTRICT

14.3 MG NORTH RESERVOIR
SPRINKLER SYSTEM

FIELD BOOK NO.
PAGE NO.

JOB NO. RSH:056
DATE JULY, 1991
SCALE AS NOTED
DRAWING BY C.L.
DESIGNED BY
APPROVED

SHEET 6 OF 6

1230

JONGEJAN · GERRARD · McNEAL
Incorporated P.S.
Landscape Architecture
Urban Design
Planning
23 103rd Ave. N.E.
Bellevue, WA 98004
206 • 454 • 5723

STATE OF WASHINGTON REGISTERED LANDSCAPE ARCHITECT

CERTIFICATE NO.

Revisions:

Job no.

Date: JULY 17, 1991

Approved by: D.M.

Drawn by: C.L.

Scale:

Project name:

ROSE HILL WATER DISTRICT 14.3 MG NORTH RESERVOIR

Sheet title:

Irrigation Schedule & Details

Sheet no.

APPENDIX C2:
RECORD DRAWINGS –
SUPPLY STATION NO. 2 (S2) IMPROVEMENTS

City of Kirkland

CITIES of KIRKLAND and REDMOND

SUPPLY STATION NO. 2 IMPROVEMENTS

Winter 2009 JOB# 06-09-PW CIP# CWA-0065

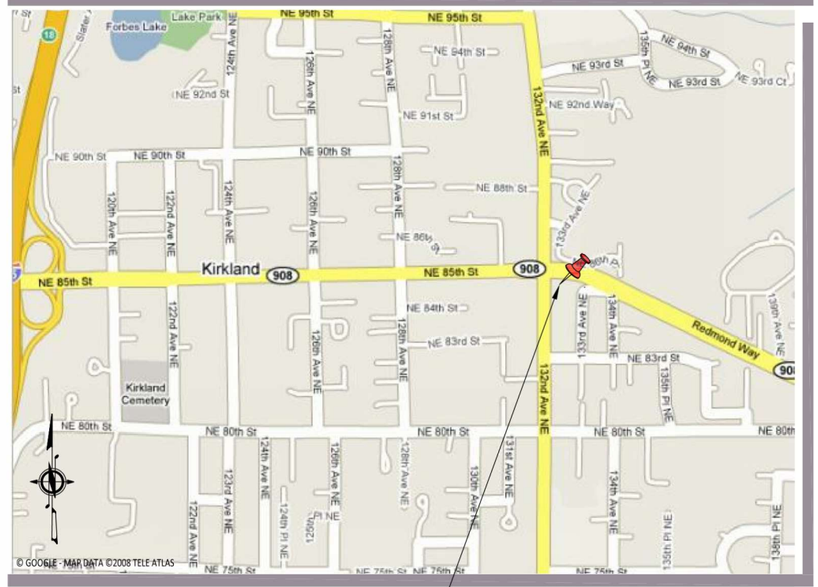
VOLUME 2 OF 2

CITY OF KIRKLAND MAYOR		CITY OF REDMOND MAYOR	
James Lauinger		John Marchione	
CITY COUNCIL MEMBERS		**CITY COUNCIL MEMBERS**	
		Hank Myers	
Joan McBride	Bob Sternoff	Kimberly Allen	Hank Margeson
Dave Asher	Jessica Greenway	David Carson	Nancy McCormick
Mary-Alyce Burleigh	Tom Hodgson	Richard Cole	Pat Vaché

CONTACT PERSONNEL

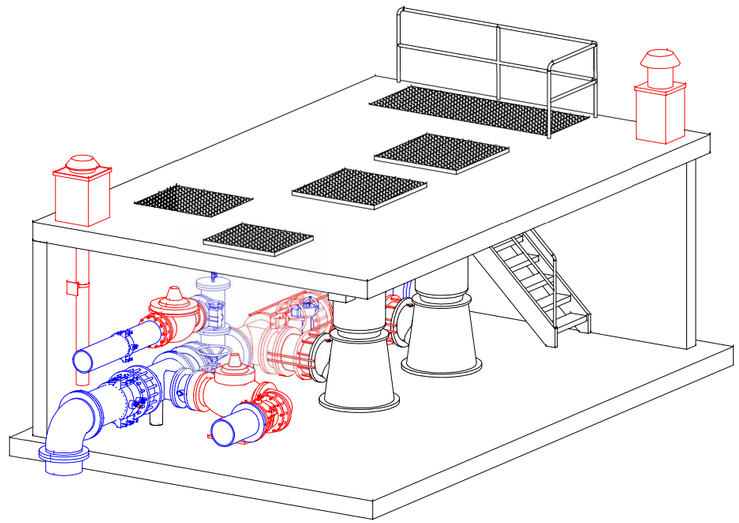
NAME	AGENCY	PHONE NO.
ANDREA MAST, P.E.	CITY OF KIRKLAND	(425) 587-3827
MICHELE CAMPBELL, P.E.	RH2 ENGINEERING	(425) 951-5394
EDWIN HALIM, P.E.	RH2 ENGINEERING	(425) 951-5332
ONE-CALL LOCATE	CALL 48 HRS BEFORE YOU DIG	1-800-424-5555

VICINITY MAP



SUPPLY STATION NO. 2 LOCATION

PROPOSED SUPPLY STATION



SHEET INDEX

SHEET NO.	TITLE	DRAWING NO.
	COVER SHEET	
1	EXISTING SITE AND DEMOLITION PLAN	M01
2	DEMOLITION DETAILS	M02
3	SUPPLY STATION MECHANICAL PLAN	M03
4	VENTILATION SYSTEM PLAN	M04
5	ELECTRICAL LEGEND	E01
6	ELECTRICAL PLAN	E02
7	ELECTRICAL SCHEDULES	E03
8	RTU: BILL OF MATERIALS AND PANEL LAYOUT	E04
9	RTU: POWER AND COMMUNICATIONS WIRING DIAGRAM	E05
10	RTU: PLC INPUTS AND OUTPUTS (SHEET 1 OF 2)	E06
11	RTU: PLC INPUTS AND OUTPUTS (SHEET 2 OF 2)	E07

NOTE:
ALL REFERENCES TO "PROPOSED" INDICATE ITEMS THAT MUST BE PROVIDED AND INSTALLED BY CONTRACTOR.

DESIGNED BY:

EDWIN HALIM — 38889 — REGISTERED PROFESSIONAL ENGINEER — STATE OF WASHINGTON — SIGNED: 02/17/09

RICHARD H. HAGEN — 16727 — REGISTERED PROFESSIONAL ENGINEER — STATE OF WASHINGTON — SIGNED: 02/17/09

MARK MILLER — 38613 — REGISTERED PROFESSIONAL ENGINEER — STATE OF WASHINGTON — SIGNED: 02/17/09

CITY OF KIRKLAND WASHINGTON

CityofRedmond WASHINGTON

RH2 ENGINEERS PLANNERS SCIENTISTS

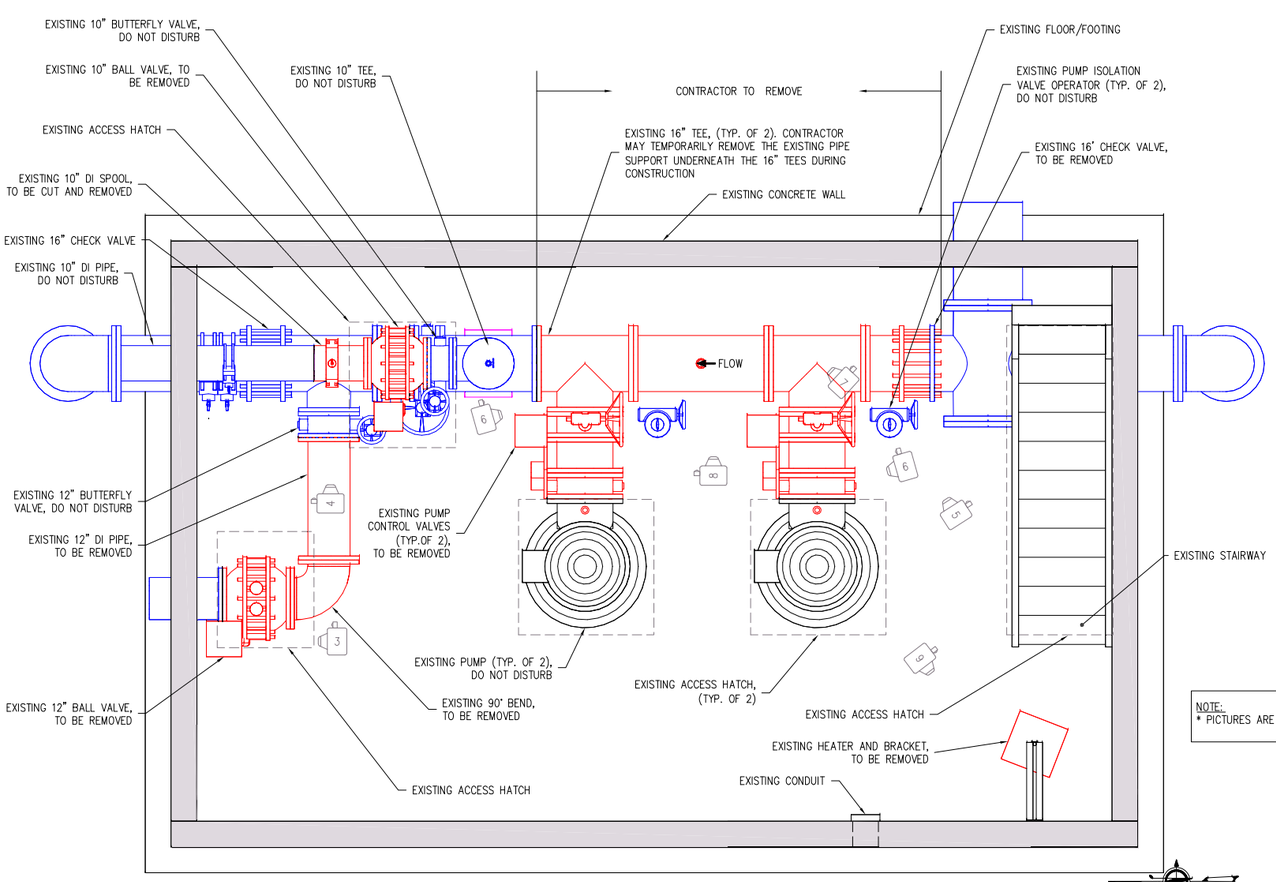
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RECORD DRAWING REVISED TO CONFORM TO CONSTRUCTION RECORDS

09/14/09
RH2 ENGINEERING INC. DATE

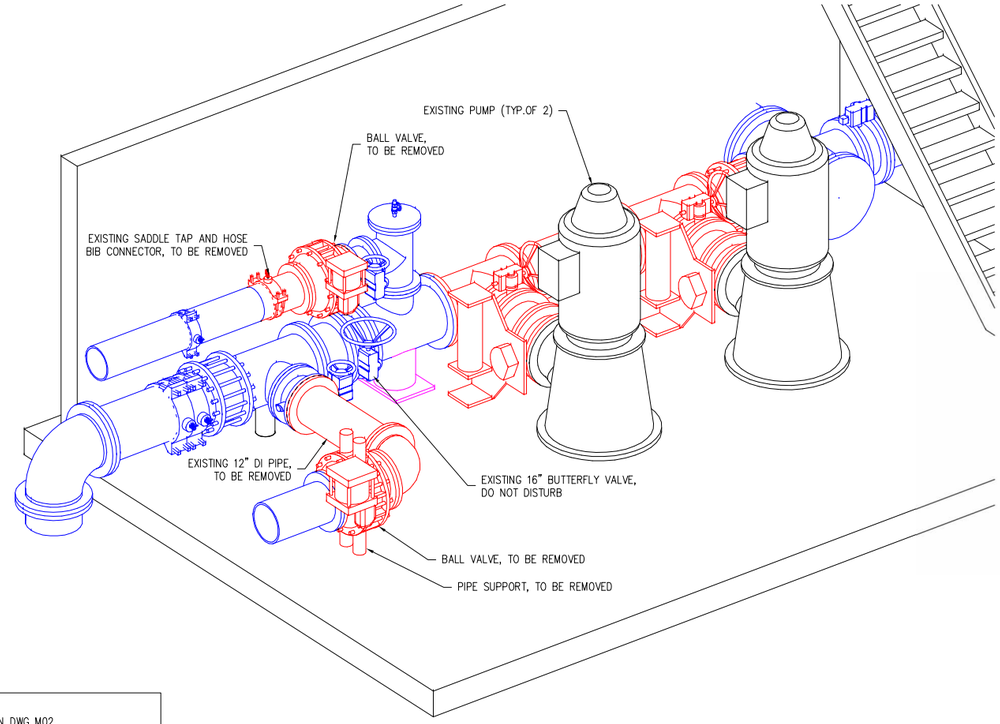
NO.	REVISION	BY	REVIEW	DATE
(CR)	REVISED TO CONFORM TO CONSTRUCTION RECORDS	RJF	EH	09/10/09

REVISION DATE: 11/26/08



EXISTING SUPPLY STATION

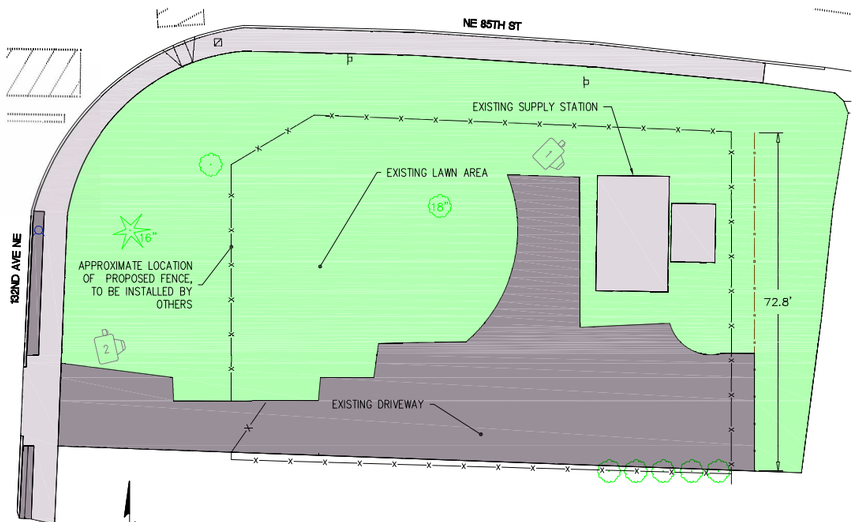
½" = 1'-0"



SUPPLY STATION OBLIQUE

NOT TO SCALE

NOTE:
* PICTURES ARE SHOWN ON DWG M02.



SITE PLAN

1" = 200'

CONSTRUCTION NOTES:

* A SITE SURVEY HAS NOT BEEN PERFORMED FOR THE PROJECT. LOCATION OF EXISTING FACILITIES ARE BASED ON AS-BUILT INFORMATION AND FIELD MEASUREMENTS. CONTRACTOR TO VERIFY EXACT LOCATION OF EXITING FACILITIES PRIOR TO CONSTRUCTION.

* PROPOSED FENCE HAS NOT BEEN CONSTRUCTED. LOCATION SHOWN ON SITE PLAN IS APPROXIMATE. FENCE IS EXPECTED TO BE INSTALLED PRIOR TO EXECUTION OF THIS PROJECT.

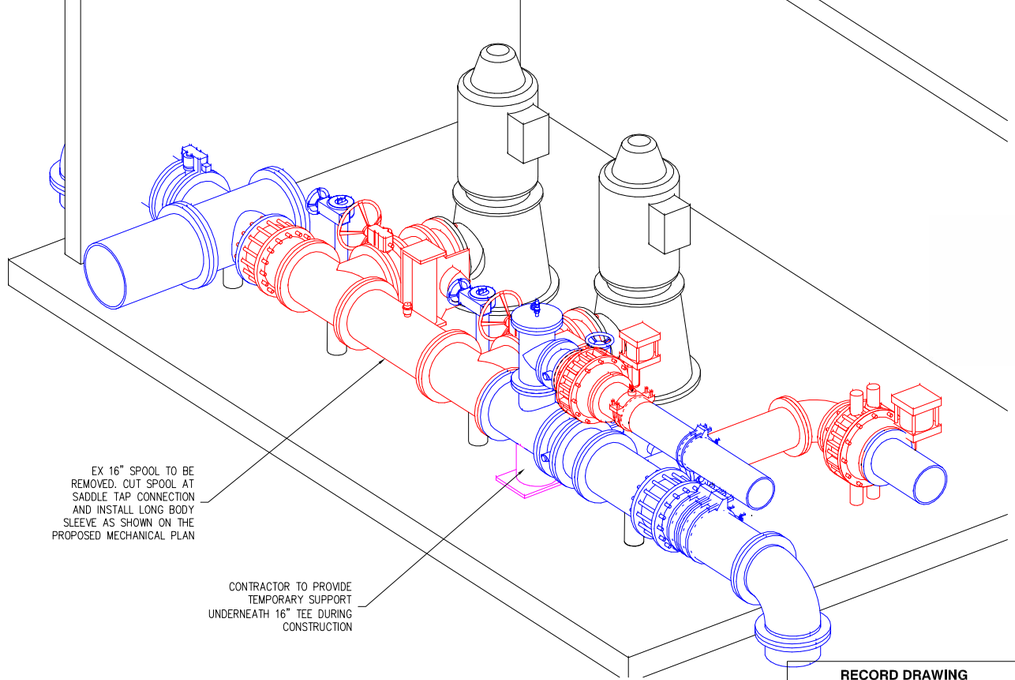
* COORDINATE WITH OWNER REGARDING STAGING AREA AND WHERE THE CONTRACTOR CAN STORE EQUIPMENT ADJACENT TO OR INSIDE OF BUILDING.

* COORDINATE WITH OWNER BEFORE REMOVING ANY EQUIPMENT FROM THE EXISTING PUMP STATION.

* COORDINATE WITH OWNER FOR VALVE SHUT OFF.

* RESTORE FENCE, PAVEMENT AND GRASSED AREA IF DAMAGED DURING CONSTRUCTION TO EXISTING OR BETTER CONDITION.

* PROVIDE OWNER WITH ACCESS TO FACILITY OR ONSITE EQUIPMENT AT ALL TIMES.



SUPPLY STATION OBLIQUE

NOT TO SCALE

RECORD DRAWING
REVISED TO CONFORM
TO CONSTRUCTION RECORDS

09/14/09
RH2 ENGINEERING INC. DATE

NO.	REVISION	BY	REVIEW	DATE
(CR)	REVISED TO CONFORM TO CONSTRUCTION RECORDS	RJF	EH	09/10/09

REGISTERED PROFESSIONAL ENGINEER — RICHARD J. FISHER — STATE OF WASHINGTON — 36828
SIGNED: 02/17/09

REGISTERED PROFESSIONAL ENGINEER — EDWIN HALMAY — STATE OF WASHINGTON — 38889
SIGNED: 02/17/09

CITY OF KIRKLAND WASHINGTON
City of Redmond

Cities of Kirkland and Redmond
Supply Station No. 2 Improvements

EXISTING SITE AND DEMOLITION PLAN

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

EAST WENATCHEE 509.886.2900
300 Simon Street, Suite 5

RICHLAND 509.886.6767
114 Columbia Point Drive, Suite C

SILVERDALE 360.876.7960
2021 NW Myhre Rd, Suite 107

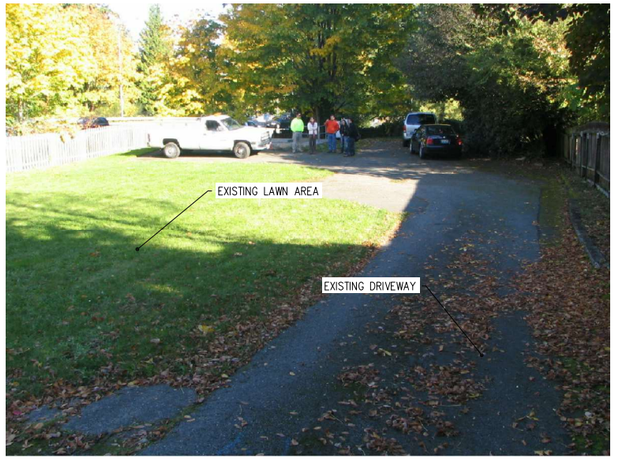
TACOMA 253.272.3059
621 Pacific Avenue Suite 104

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

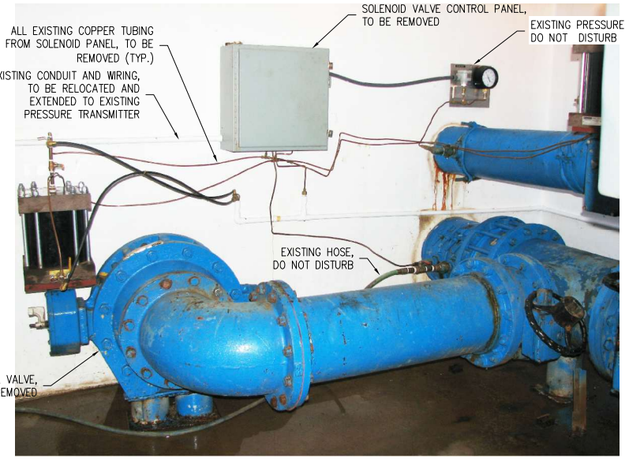
PLOT: 24	DWG NO. M01
ENGINEER: KRS	
REVIEWED: EH	
DATE: SEP 16, 2009	SHEET NO. 1
CLIENT: KIR	
JOB NO.: 108-097	11
FILENAME: SS2-D-MEC01	



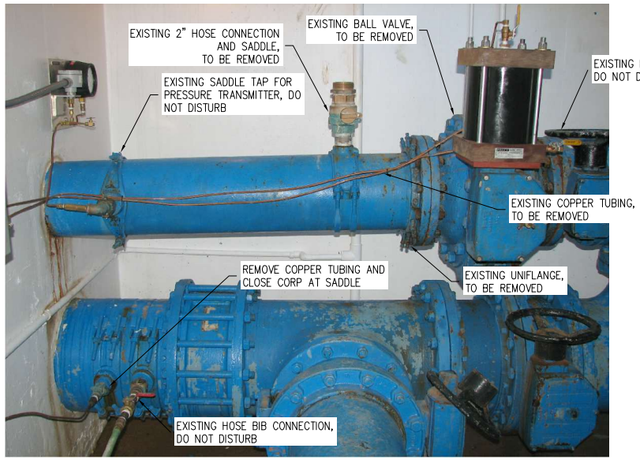
1 **SUPPLY STATION EXTERIOR**



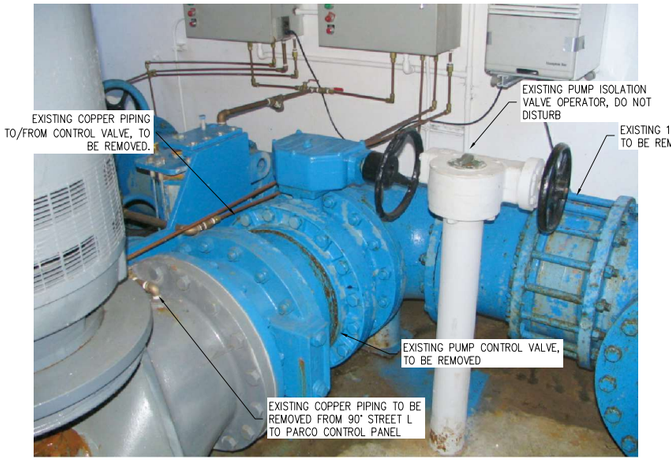
2 **SUPPLY STATION SITE**



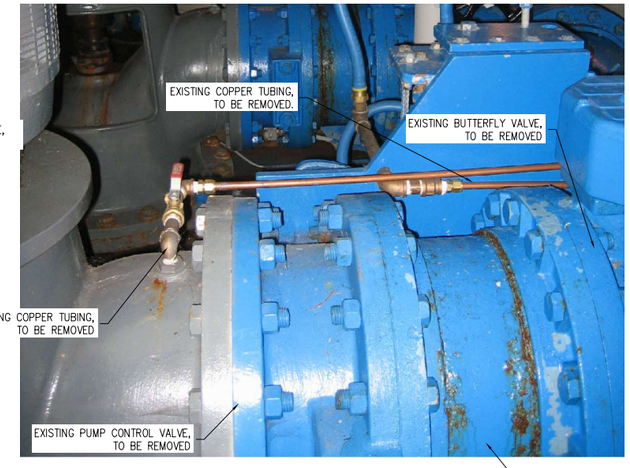
3 **EXISTING 12" BALL VALVE DETAIL**



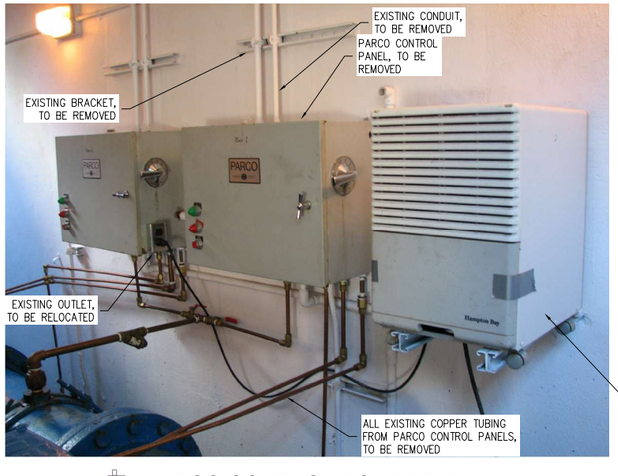
4 **EXISTING 10" BALL VALVE DETAIL**



5 **PUMP CONTROL VALVE DETAIL**



6 **PUMP CONTROL VALVE DETAIL**



7 **PARCO CONTROL BOX DETAIL**



8 **EXISTING 16" PIPE DETAIL**



9 **HEATER DETAIL**

RECORD DRAWING
REVISED TO CONFORM
TO CONSTRUCTION RECORDS
09/14/09
RH2 ENGINEERING INC. DATE

NO.	REVISION	BY	REVIEW	DATE
(CR)	REVISED TO CONFORM TO CONSTRUCTION RECORDS	RJF	EH	09/10/09

EDWIN HALMAY — STATE OF WASHINGTON — 36889 — REGISTERED PROFESSIONAL ENGINEER
SIGNED: 02/17/09

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CITY OF KIRKLAND WASHINGTON
CityofRedmond

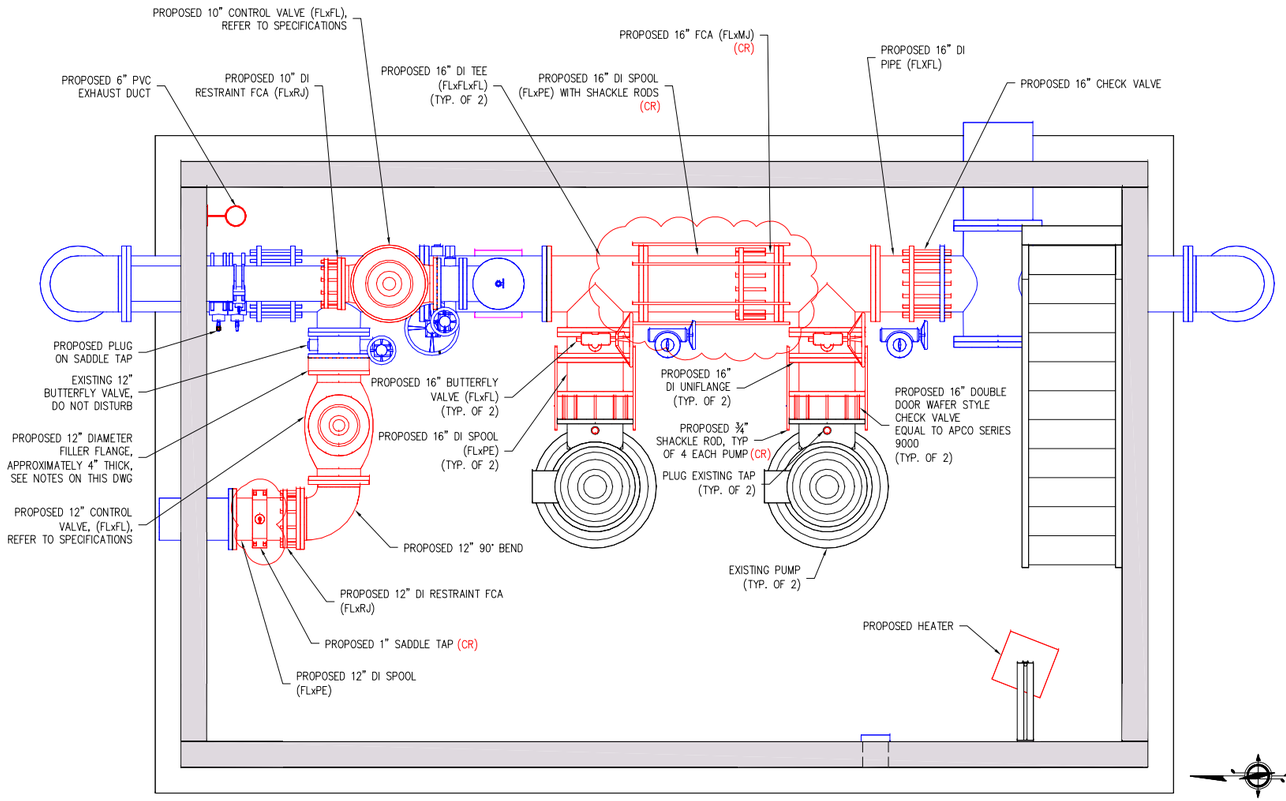
Cities of Kirkland and Redmond Supply Station No. 2 Improvements

DEMOLITION DETAILS

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
EAST WENATCHEE 509.886.2900 300 Simon Street, Suite 5
RICHLAND 509.886.6767 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

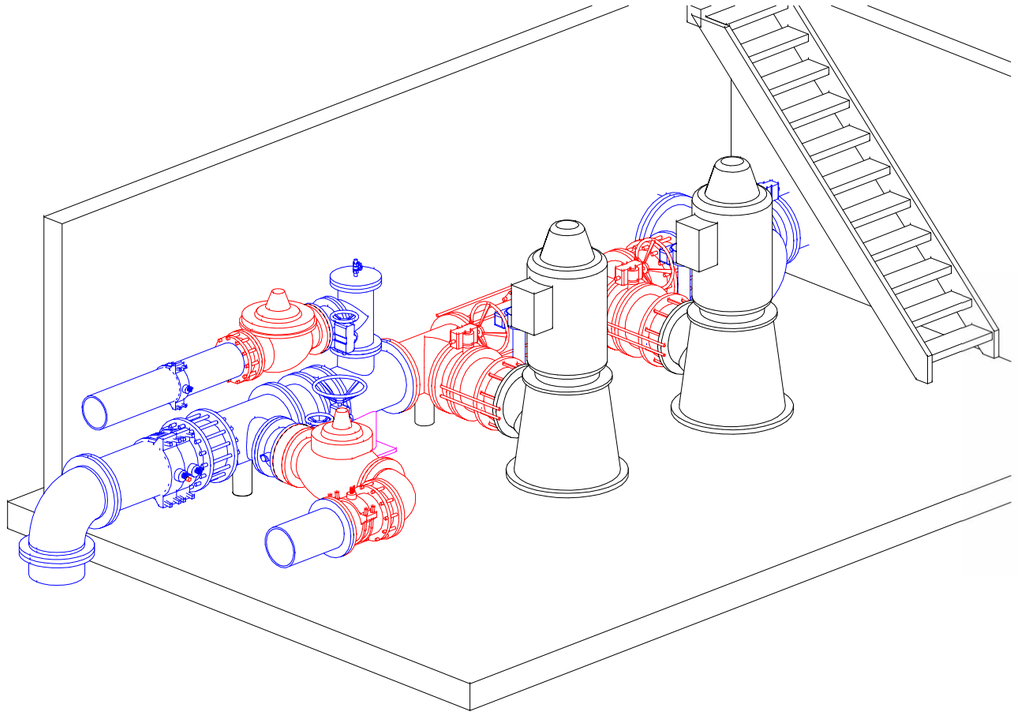
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0 1" 2"
DRAWING IS NOT TO SCALE IF BAR IS NOT 2" LONG

PLOT: 24	DWG NO. M02
ENGINEER: KRS	
REVIEWED: EH	
DATE: SEP 16, 2009	SHEET NO. 2
CLIENT: KIR	
JOB NO.: 108-097	11
FILENAME: SS2-D-MEC01	



PROPOSED SUPPLY STATION MECHANICAL PLAN

½" = 1'-0"



SUPPLY STATION OBLIQUE

NOT TO SCALE

MECHANICAL NOTES:

* AFTER COMPLETION OF PIPING INSTALLATION, CONTRACTOR SHALL SURFACE REPAIR AND COAT ALL PIPING AS SPECIFIED IN THE SPECIFICATIONS.

* CONTRACTOR TO PROVIDE ADDITIONAL COPPER PIPE FOR PILOTRY ASSEMBLY FOR EACH OF THE SOLENOIDS TO EASE FUTURE MAINTENANCE. COORDINATE WITH OWNER ON LENGTH OF PILOTRY COPPER TUBING.

* FILLER FLANGE THICKNESS IS APPROXIMATE. FIELD MEASURE FILLER FLANGE THICKNESS AFTER LAYING OUT THE LENGTH OF THE PROPOSED CONTROL VALVE. ADJUST FILLER FLANGE THICKNESS AS NECESSARY TO COMPLETE PIPING INSTALLATION.

* EXISTING FITTINGS OR PIPES THAT ARE REMOVED SHALL NOT BE REUSED FOR PROPOSED WORK.



BID ADDITIVE A-2 DETAIL (CR)

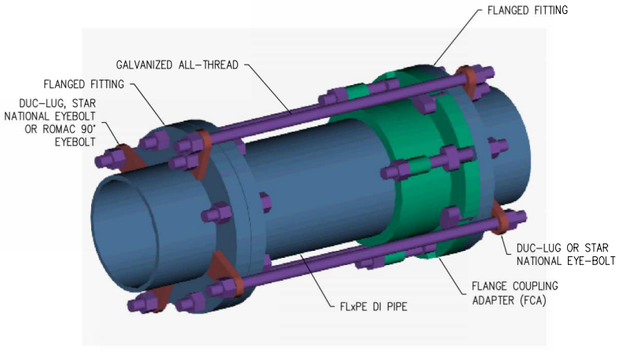


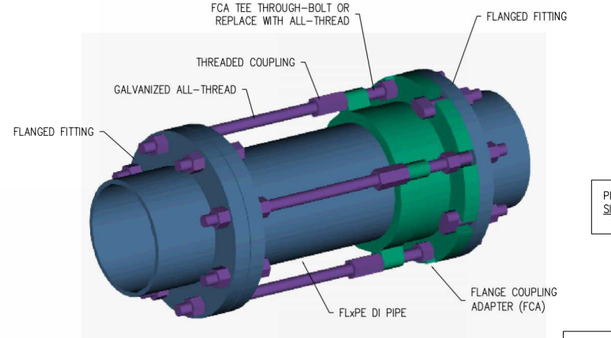
BID ADDITIVE A-2 DETAIL

NOTE:
WORK ASSOCIATED WITH PIPING REPLACEMENT SHOWN IN DETAIL SHALL BE INCLUDED IN BID ADDITIVE A-2.

EXISTING PIPING TO BE REMOVED AND REPLACED. THE EXISTING PIPING ASSEMBLY IS CONNECTED UNDERNEATH THE EXISTING PUMP FLANGES AND CONNECTED TO THE PUMP COLUMN. THE EXISTING PUMP COLUMN CONDITION AND CONNECTION CONFIGURATION ARE UNKNOWN. REPLACE PIPING ASSEMBLY WITH THE SAME CONFIGURATION AS THE EXISTING ASSEMBLY. (TYP. OF 2)

SAW CUT AND CHIP THE EXISTING CONCRETE FLOOR AS NECESSARY TO REMOVE AND REPLACE THE EXISTING PIPING ASSEMBLY. SAW CUTTING AND CHIPPING SHALL BE PERFORMED WITH CARE SO AS TO NOT DISTURB THE EXISTING PUMP FLANGES. COORDINATE WITH THE OWNER TO INSPECT CONNECTION AT PUMP COLUMN PRIOR TO RECONNECTION OF NEW PIPING ASSEMBLY. REPAIR ANY DAMAGE TO PUMP AND PUMP COATING TO EXISTING OR BETTER CONDITION. REPAIR THE EXISTING CONCRETE FLOOR USING PRE-MIXED CONCRETE AND FINISH FLOOR TO EXISTING OR BETTER CONDITION. (TYP. OF 2)





SHACKLE RESTRAINT

(6" FITTING SHOWN)

PIPE SIZE	MIN ROD DIA	NUMBER OF RODS
16"	3/4"	6

RECORD DRAWINGS
REVISED TO CONFORM
TO CONSTRUCTION RECORDS

09/14/09
RH2 ENGINEERING INC. DATE

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(CR)	REVISED TO CONFORM TO CONSTRUCTION RECORDS	RJF	EH	09/10/09

RICHARD H. HARDEN — STATE OF WASHINGTON — 16727 — REGISTERED PROFESSIONAL ENGINEER
SIGNED: 02/17/09

EDWIN HAIM — STATE OF WASHINGTON — 38889 — REGISTERED PROFESSIONAL ENGINEER
SIGNED: 02/17/09

CITY OF KIRKLAND — WASHINGTON
CityofRedmond

Cities of Kirkland and Redmond Supply Station No. 2 Improvements

PROPOSED MECHANICAL PLAN

RH2 ENGINEERS PLANNERS SCIENTISTS

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BELLINGHAM OFFICE
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454 West Horton Road

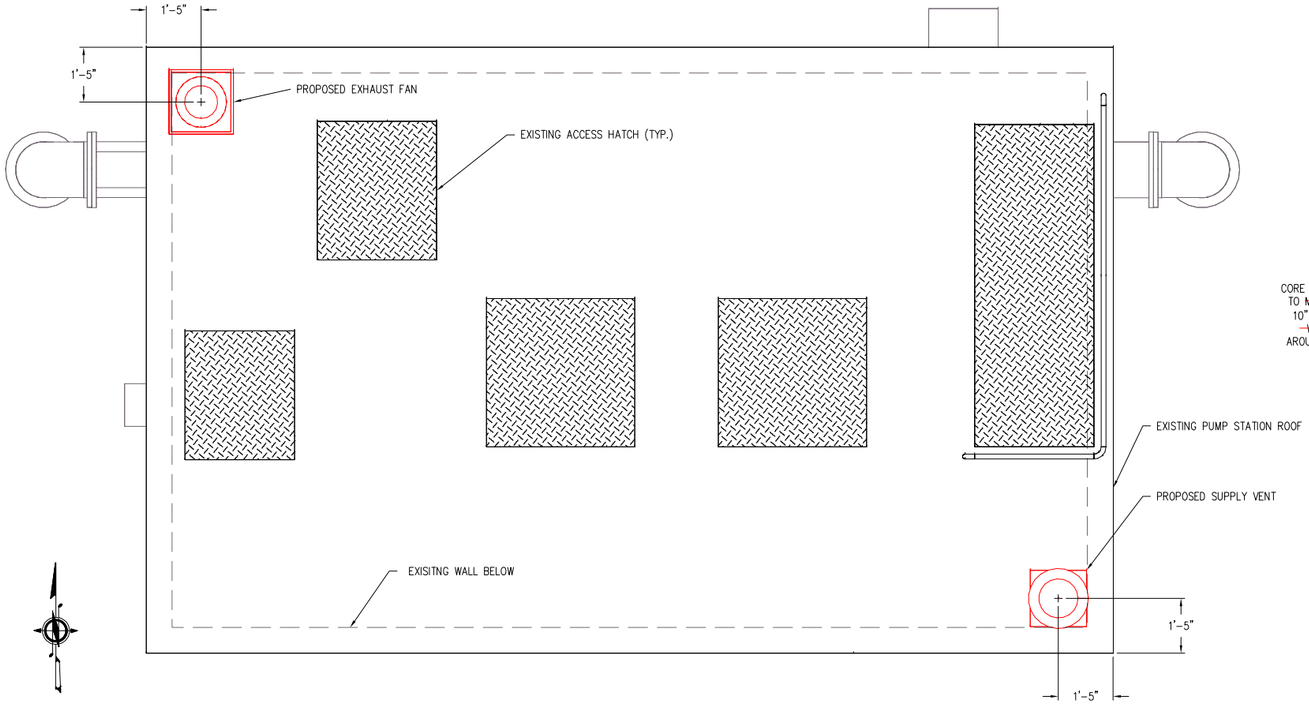
BOTHELL OFFICE
425.951.5400
12100 NE 195th Street, Suite 100

EAST WENATCHEE OFFICE
509.886.2900
300 Simon Street, Suite 5

PORT ORCHARD OFFICE
360.876.7960
600 Kitsap Street, Suite 101

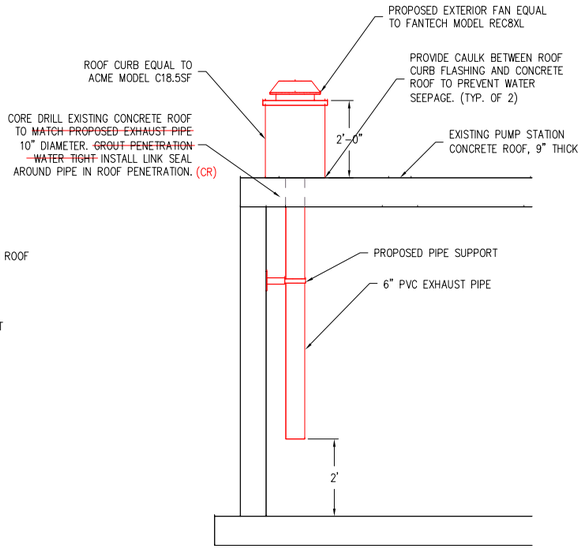
SCALE: SHOWN
0 1" 2"
DRAWING IS NOT TO SCALE IF BAR IS NOT 2" LONG

PLOT: 24	DWG NO. M03
ENGINEER: KRS	
REVIEWED: EH	
DATE: SEP 16, 2009	SHEET NO. 3
CLIENT: KIR	
JOB NO.: 108-097	11
FILENAME: SS2-D-MEC02	



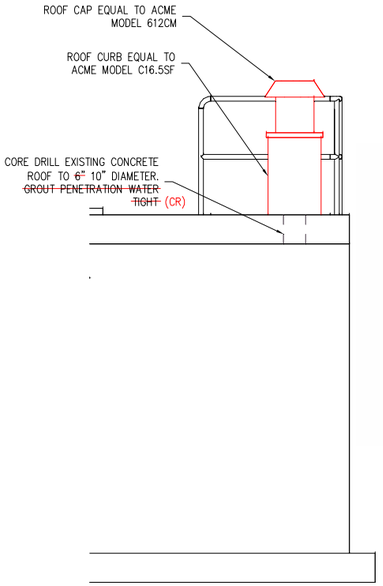
SUPPLY STATION OVERALL VENTILATION PLAN

½" = 1'-0"



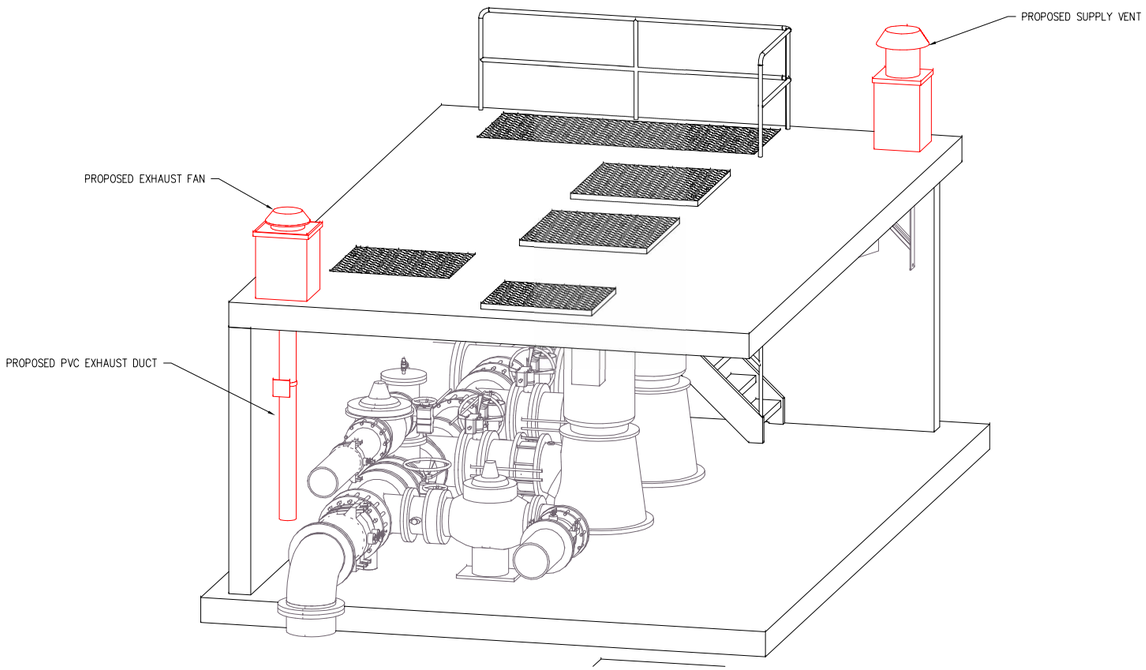
EXHAUST FAN ELEVATION

½" = 1'-0"



SUPPLY VENT ELEVATION

½" = 1'-0"



VENTILATION OBLIQUE

NOT TO SCALE

RICHARD H. HARDEN — STATE OF WASHINGTON — 16727 — REGISTERED PROFESSIONAL ENGINEER
SIGNED: 02/17/09

EDWIN HALIM — STATE OF WASHINGTON — 38889 — REGISTERED PROFESSIONAL ENGINEER
SIGNED: 02/17/09

CITY OF KIRKLAND WASHINGTON

CityofRedmond

Cities of Kirkland and Redmond
Supply Station No. 2 Improvements

VENTILATION SYSTEM PLAN

RH2 ENGINEERS PLANNERS SCIENTISTS

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mailbox@rh2.com
1.800.720.8052

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SCALE: SHOWN
0 1" 2"
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NO.	REVISION	BY	REVIEW	DATE
(CR)	REVISED TO CONFORM TO CONSTRUCTION RECORDS	RJF	EH	09/10/09

PLOT: 24
ENGINEER: KRS
REVIEWED: EH
DATE: SEP 16, 2009
CLIENT: KIR
JOB NO.: 108-097
FILENAME: SS2-D-MEC03

DWG NO. M04
SHEET NO. 4
11

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 — SSRVS – SOLID STATE REDUCED VOLTAGE STARTER
- VARIABLE FREQUENCY DRIVE
- MOTOR STARTER
- MOTOR STARTER W/ OPERATOR DEVICES (A B C D)
  - 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
- 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
- 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
- T — 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, 208V
- 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
- S3 — $ — 3WAY — 3–WAY SWITCH, 120VAC, 20 AMP
- SHOA — $ — HOA — 3–POSITION SWITCH, 120VAC, 20 AMP, LABEL SWITCH POSITION HAND–OFF–MOTION OR PHOTO

- SDEE — SINGLE–POLE
- S2 — DOUBLE–POLE
- S3 — THREE WAY
- S4 — FOUR WAY
- SD — DIMMER
- SP — PILOT–LIGHTED
- SK — KEY–OPERATED
- SLV — LOW VOLTAGE
- SM — 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 — INSTRUMENT BUBBLE
  - SUPERSCRIPT: 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)		(BACK)
C	COMMUNICATION	CONTROL	
D	DENSITY	(DELAY)	CLOSED
E	VOLTAGE		
F	FLOW		FAIL (FLOW)
G	GAS		GREEN BULB
H	HAND		HIGH
	CURRENT (INTRUSION)	MANUAL	
J	POWER (EQUIPMENT)	INDICATE	
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

INDICATE TYPE BY LETTER

- V
- AH

INSTRUMENT METER

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

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

ELECTRICAL & SIGNAL PLAN DEVICES

SV	SOLENOID VALVE COIL	ZS (S)	INTRUSION SWITCH
MV	MOTORIZED VALVE COIL	MD	MOTION DETECTOR
M	MOTOR	LT	LEVEL TRANSDUCER
FS	FLOOD SWITCH	HE	HEATING ELEMENT
LS	LIMIT SWITCH	PS	PRESSURE SWITCH
PB	PANIC BUTTON	PE	PRESSURE ELEMENT
T	THERMOSTAT SWITCH	FE	FLOW ELEMENT
ZS (KEY)	INTRUSION SWITCH – KEY	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 — 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 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 BY THE ENGINEER.

RECORD DRAWING
REVISED TO CONFORM
TO CONSTRUCTION RECORDS
09/14/09
RH2 ENGINEERING INC. DATE

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(CR)	REVISED TO CONFORM TO CONSTRUCTION RECORDS	DY	CMR	09/09/09

RICHARD H. HARRELL — STATE OF WASHINGTON — 16727 — REGISTERED PROFESSIONAL ENGINEER
SIGNED: 02/17/09

MARK MILLER — STATE OF WASHINGTON — 38613 — REGISTERED PROFESSIONAL ENGINEER
SIGNED: 02/17/09

CITY OF KIRKLAND — WASHINGTON
CityofRedmond

Cities of Kirkland and Redmond
Supply Station No. 2 Improvements

ELECTRICAL LEGEND

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360.876.7960
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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: SEP 16, 2009
CLIENT: KIR
DWG NO. E01
SHEET NO. 5
JOB NO.: 108–097
FILENAME: SS2–D–ELEC01



TELEMETRY PANEL (A)

NO SCALE



MOTOR CONTROL CENTER (B)

NO SCALE



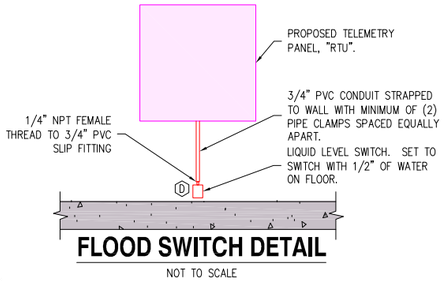
ELECTRICAL EQUIPMENT (C)

NO SCALE



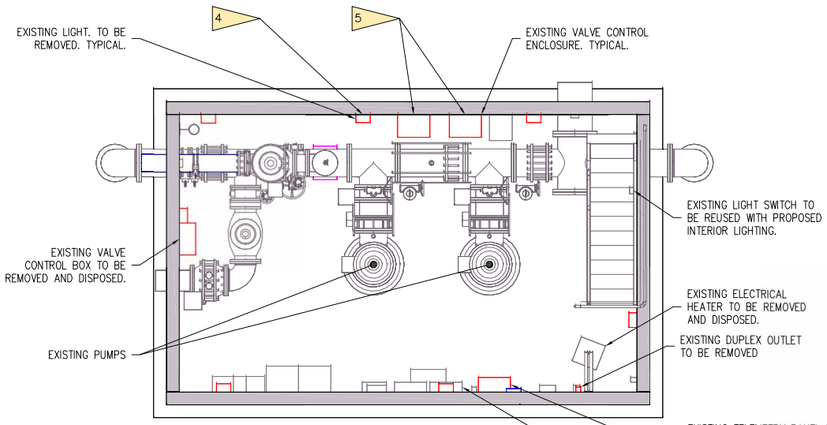
LIGHTING PANEL, "L" (D)

NO SCALE



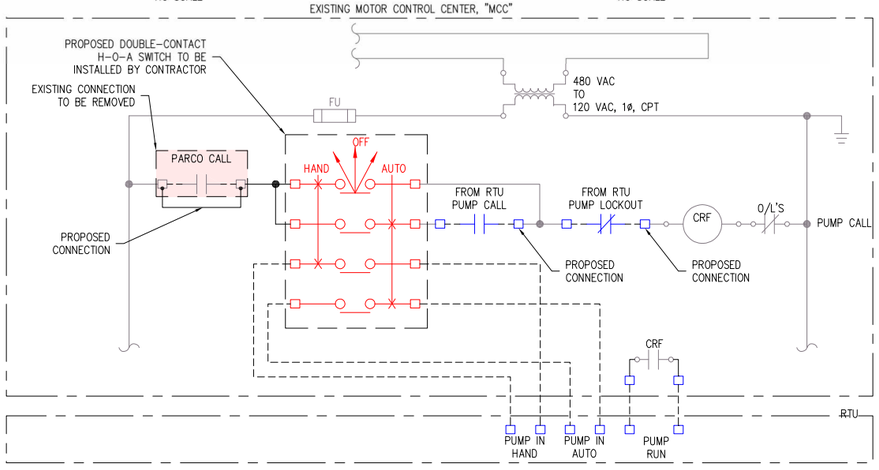
FLOOD SWITCH DETAIL

NOT TO SCALE



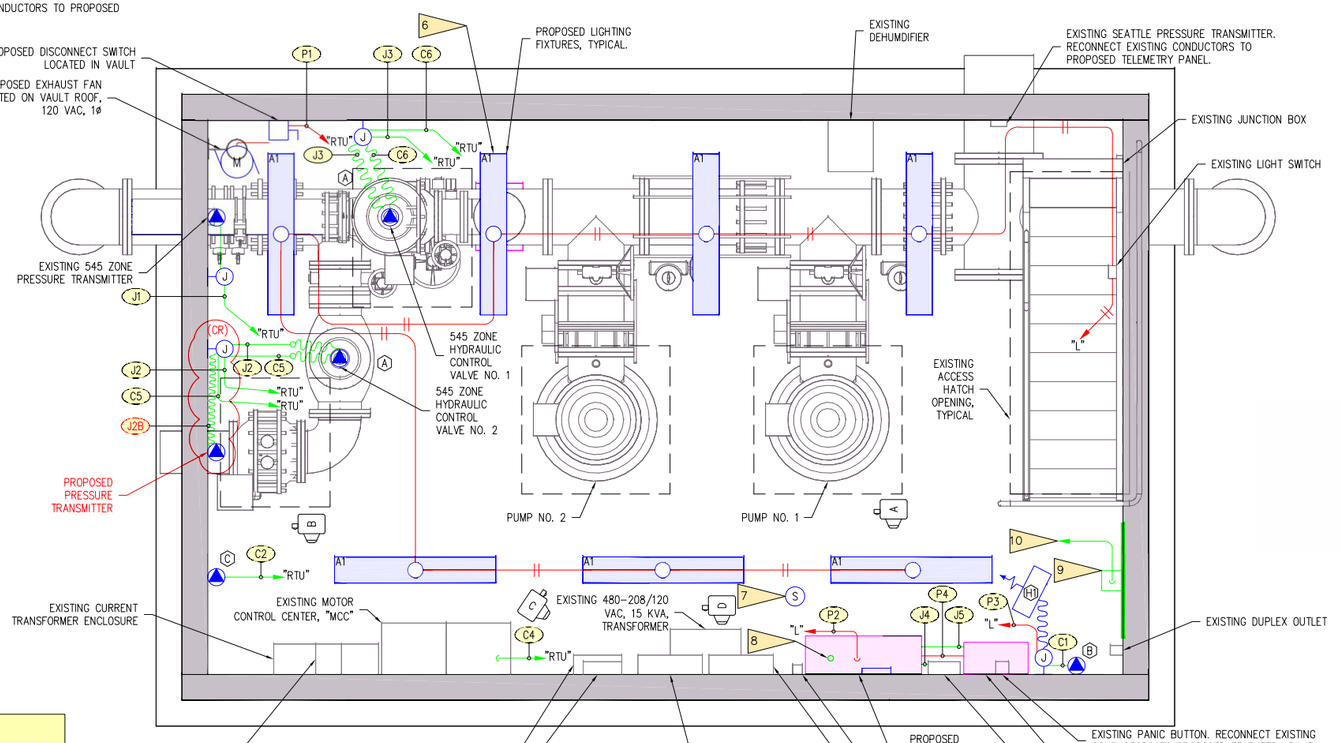
EXISTING ELECTRICAL / DEMO PLAN

1" = 4'-0"



MCC CONTROL LOGIC MODIFICATION DIAGRAM

NO SCALE



PROPOSED ELECTRICAL IMPROVEMENTS

1" = 2'-0"

ELECTRICAL NOTES

(X)	1. SEE DWG NO. E03 FOR ELECTRICAL EQUIPMENT AND INSTRUMENTATION SCHEDULE.
(XXX)	2. SEE DWG NO. E03 FOR CONDUIT/CONDUCTOR SCHEDULES.
(H)	3. SEE DWG NO. E03 FOR HEATER SCHEDULE.
4	4. CONTRACTOR SHALL REMOVE AND DISPOSE ALL INTERIOR LIGHTING INCLUDING RACEWAYS AND CONDUCTORS. RACEWAYS NOT SHOWN.
5	5. CONTRACTOR SHALL REMOVE AND DISPOSE OF PUMP CONTROL VALVE ENCLOSURE AND ASSOCIATED RACEWAYS AND CONDUCTORS. RACEWAYS NOT SHOWN.
6	6. PROPOSED LIGHT LOCATIONS MAY BE FIELD ADJUSTED AS NECESSARY, TYPICAL.
7	7. EXISTING SMOKE DETECTOR. RECONNECT ALARM EXISTING CONDUCTORS TO PROPOSED TELEMETRY PANEL.
8	8. CONDUIT (C3) TO PROPOSED FLOOD SWITCH, (D), INSTALLED BELOW PROPOSED TELEMETRY PANEL. SEE DETAIL THIS SHEET.
9	9. TELEPHONE COMPANY EQUIPMENT. PROVIDE ONE 1" GRC CONDUIT AND 56K DIGITAL TELEPHONE LINE FROM THE TELEPHONE COMPANY EQUIPMENT TO THE TELEMETRY PANEL. INSTALL TELEPHONE COMPANY EQUIPMENT AND TERMINATION PANEL PER TELEPHONE COMPANY REQUIREMENTS.
10	10. (1)-2" CONDUIT AND WIRE TO TELEPHONE UTILITY CONNECTION. EXISTING TELEPHONE UTILITY TERMINATION POINT FOR EXISITNG LEASED COMMUNICATION LINE IS LOCATED IN EXISTING TELEMETRY PANEL.

TELEMETRY PANEL REPLACEMENT NOTES

1. CONTRACTOR SHALL DISCONNECT ALL EXISTING CONDUCTORS AND DEVICES FROM EXISTING TELEMETRY PANEL (RTU) AND REMOVE THE EXISTING RTU FROM ITS LOCATION TO MAKE SPACE FOR INSTALLATION OF THE PROPOSED RTU. EACH EXISTING CONDUCTOR SHALL BE LABELED PRIOR TO DISCONNECTING FROM THE RTU TO AIDE IN THE INSTALLATION OF THE PROPOSED RTU.

2. INSTALL PROPOSED RTU IN THE SAME LOCATION AS THE EXISTING RTU AND EXTEND ALL EXISTING AND PROPOSED RACEWAYS TO THE RTU. CONNECT ALL EXISTING AND PROPOSED DEVICES AND SIGNALS AS SHOWN ON DWG NO.'S E05, E06, AND E07 TO THE PROPOSED RTU. EXISTING CONDUCTORS TO EXISTING DEVICES AND SIGNALS SHALL BE USED TO CONNECT TO THE PROPOSED RTU WHENEVER POSSIBLE WITHOUT SPLICING THE CONDUCTORS.

3. ALL EXISTING AND PROPOSED CONNECTIONS TO THE RTU ARE SHOWN ON DWG NO.'S E05, E06, AND E07. THE CONTRACTOR IS RESPONSIBLE FOR CONNECTING ALL PROPOSED AND EXISTING CONDUCTORS TO THE RTU.

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ELECTRICAL PLAN

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PLOT:	24				DWG NO. E02
ENGINEER:	CMR				
REVIEWED:	MLM				
DATE:	SEP 16, 2009				SHEET NO. 6
CLIENT:	KIR				
JOB NO.:	108-097				11

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FILENAME: SS2-D-ELEC02

ELECTRICAL EQUIPMENT AND INSTRUMENTATION SCHEDULE

ITEM	DESCRIPTION	MANUFACTURER	MODEL NO.
A	HYDRAULIC CONTROL VALVE – SEE SPECIFICATIONS.		
B	WALL MOUNTED HEATING THERMOSTAT – 24V, SPST, RANGE 40° – 99°F, SET AT 60°F, MOUNT 4 FEET ABOUVE FLOOR.	HONEYWELL	T8000C1002 OR EQUAL
C	WALL MOUNTED COOLING THERMOSTAT – SNAP ACTION, SPDT LINE VOLTAGE AIR SWITCH CONTROLLER. RANGE: –30° – 100°F, SET AT 75°F. MOUNT 4 FEET ABOVE FLOOR.	HONEYWELL	T631C1103 OR EQUAL
D	FLOOD SWITCH – N.O. REED TYPE FLOAT SWITCH, 20 VA. SEE DWG NO. E02 FOR DETAIL.	OMEGA MODEL	LVN–20 OR EQUAL

* CONTRACTOR SHALL INSTALL ALL EQUIPMENT AN DEVICES PROVIDED BY OTHERS.

HEATER SCHEDULE

ITEM	DESCRIPTION	MANUFACTURER	MODEL NO.
H1	ELECTRICAL HEATER WITH UNIVERSAL MOUNTING BRACKET – 5.0KW, 208V, SINGLE PHASE, WITH 24V CONTROL TRANSFORMER AND POWER CONTACTOR FOR THERMOSTAT CONNECTION. MOUNT BOTTOM OF HEATER 7'–0" ABOVE FLOOR.	QMARK	MUH–05–81

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, U.L. LISTED FOR DAMP LOCATIONS.	LITHONIA	DM 2 32 ARDP 120	2	32WT8 32 WATT	

* NUMBER OF LAMPS PER FIXTURE

POWER CONDUIT AND CONDUCTOR SCHEDULE

CIRCUIT	SOURCE	DESTINATION	TRADE SIZE	(QUANTITY) CONDUCTORS	NOTES
P1	TELEMETRY PANEL, "RTU"	EXHAUST FAN	3/4"	(2) – #12, (1) – #12 GRD	
P2	LIGHTING PANEL, "L"	TELEMETRY PANEL, "RTU"	3/4"	(2) – #12, (1) – #12 GRD	EXHAUST FAN POWER SUPPLY VIA TELEMETRY PANEL, "RTU"
P3	LIGHTING PANEL, "L"	HEATER, "H1"	3/4"	(2) – #8, (1) – #10 GRD	
P4	TELEMETRY PANEL, "RTU"	UPS PANEL	3/4"	(4) – #12, (2) – #12 GRD	

CONTROL CONDUIT AND CONDUCTOR SCHEDULE

CIRCUIT	SOURCE	DESTINATION	TRADE SIZE	(QUANTITY) CONDUCTORS	NOTES
C1	HEATER, "H1"	HEATING THERMOSTAT	3/4"	(2) – #14, (1) – #14 GRD	
C2	TELEMETRY PANEL, "RTU"	COOLING THERMOSTAT	3/4"	(2) – #14, (1) – #14 GRD	
C3	TELEMETRY PANEL, "RTU"	FLOOD SWITCH	3/4"	(2) – #14, (1) – #14 GRD	PVC CONDUIT
C4	TELEMETRY PANEL, "RTU"	MOTOR CONTROL CENTER, "MCC"	1"	(20) – #14, (1) – #14 GRD	
C5	TELEMETRY PANEL, "RTU"	545 ZONE HYDRAULIC CONTROL VALVE NO. 2	3/4"	(6) – #14, (1) – #14 GRD	OPEN SOLENOID, CLOSE SOLENOID, PRESSURE REDUCING SOLENOID
C6	TELEMETRY PANEL, "RTU"	545 ZONE HYDRAULIC CONTROL VALVE NO. 1	3/4"	(6) – #14, (1) – #14 GRD	OPEN SOLENOID, CLOSE SOLENOID, PRESSURE REDUCING SOLENOID

INSTRUMENTATION CONDUIT AND CONDUCTOR SCHEDULE

	CIRCUIT	SOURCE	DESTINATION	TRADE SIZE	(QUANTITY) CONDUCTORS	NOTES
	J1	TELEMETRY PANEL, "RTU"	EXISTING 545 ZONE PRESSURE TRANSMITTER	3/4"	(1) – 2–CONDUCTOR SHIELDED CABLE	
(CR)	J2A	TELEMETRY PANEL, "RTU"	545 ZONE HYDRAULIC CONTROL VALVE NO. 2	3/4"	(1) – 2–CONDUCTOR SHIELDED CABLE	VALVE POSITION TRANSMITTER
(CR)	J2B	TELEMETRY PANEL, "RTU"	545 ZONE REDUNDANT PRESSURE TRANSMITTER	3/4"	(1) – 2–CONDUCTOR SHIELDED CABLE	CIRCUITS "J2A" AND "J2B" SHARE CONDUIT "J2"
	J3	TELEMETRY PANEL, "RTU"	545 ZONE HYDRAULIC CONTROL VALVE NO. 1	3/4"	(1) – 2–CONDUCTOR SHIELDED CABLE	VALVE POSITION TRANSMITTER
	J4A	TELEMETRY PANEL, "RTU"	650 ZONE FLOW METER TRANSMITTER	1"	(1) – 2–CONDUCTOR SHIELDED CABLE	CIRCUITS "J4A" AND "J4B" SHARE CONDUIT "J4"
	J4B	TELEMETRY PANEL, "RTU"	650 ZONE FLOW METER TRANSMITTER	1"	(4) – #14, (1) – #14 GRD	CIRCUITS "J4A" AND "J4B" SHARE CONDUIT "J4"
	J5A	TELEMETRY PANEL, "RTU"	UPS PANEL	1"	(1) – CAT 5E ETHERNET CABLE	CIRCUITS "J5A" AND "J5B" SHARE CONDUIT "J5"
	J5B	TELEMETRY PANEL, "RTU"	UPS PANEL	1"	(4) – #14, (1) – #14 GRD	CIRCUITS "J5A" AND "J5B" SHARE CONDUIT "J5"

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Supply Station No. 2 Improvements

ELECTRICAL SCHEDULES

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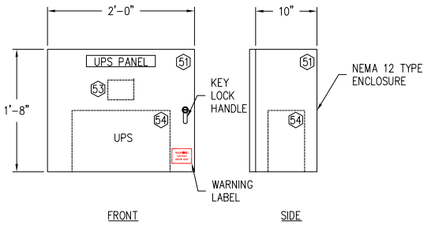
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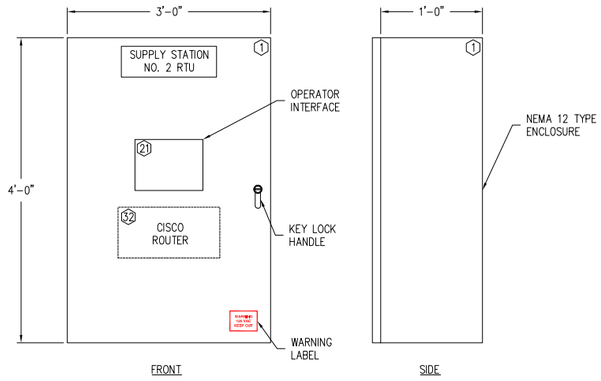
PLOT: 1
ENGINEER: CMR
REVIEWED: MLM
DATE: SEP 16, 2009
CLIENT: KIR
JOB NO.: 108–097
FILENAME: SS2–D–ELEC03

DWG NO. E03
SHEET NO. 7
11



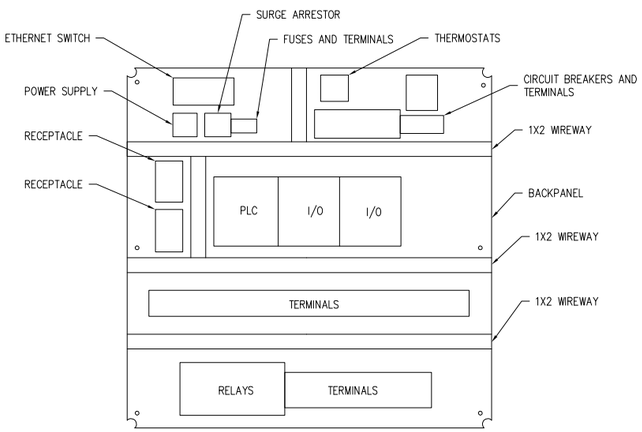
UPS PANEL EXTERIOR ELEVATION

NOT TO SCALE



RTU PANEL EXTERIOR ELEVATION

NOT TO SCALE



RTU PANEL INTERIOR ELEVATION

NOT TO SCALE

BILL OF MATERIALS - RTU PANEL

ITEM	QTY.	MANUFACTURER	PART #	DESCRIPTION
1	1	HOFFMAN	CSD362412	ENCLOSURE, 36"X24"X12", NEMA 12
2	1	HOFFMAN	CP3624	BACK PANEL
3	1	CHROMALUX	129330	OT-815 STRIP HEATER, 120 VAC, 150W
4	1	HOFFMAN	A-DP2	DATA POCKET
5	1	SQUARE D	60113	CIRCUIT BREAKER, 1 POLE 20A
6	3	SQUARE D	60106	CIRCUIT BREAKER, 1 POLE 5A
7	4	SQUARE D	60110	CIRCUIT BREAKER, 1 POLE 10A
8	1	SQUARE D	60112	CIRCUIT BREAKER, 1 POLE 15A
9	1	AUTOMATION DIRECT	PSM24-BCM360S	BATTERY CONTROL MODULE
10	1	LUMAPRO	2V914-B	FLUORESCENT FIXTURE
11	1	GENERAL ELECTRIC	F8T5/CW	FLUORESCENT LAMP
12	1	HOFFMAN	A-TEMNO	THERMONSTAT, NO, 30-140 DEG F FAN CONTROL
13	2	HOFFMAN	A-TEMNC	THERMOSTAT, NC, 30-140 DEG F, PANEL TEMP ALARM, HEATER CONTROL
14	1	SQUARE D	CLASS 9007, TYPE C	DOOR LIGHT LIMIT SWITCH
15	1	HUBBELL	HBL525121	DUAL OUTLET, BOX COVER
16	1	HOFFMAN	A6AXFN	CIRCULATION FAN, BRACKET, GUARD, 120V
17	1	HOFFMAN	AGARD6	FAN GUARD
18	1	HOFFMAN	ABRKT6	FAN MOUNTING BRACKET
19	1	HUBBELL	HBL5251I	SINGLE OUTLET BOX AND COVER
20	1	SOLA/HEVI-DUTY	SDP4-24-100	POWER SUPPLY, SWITCHING, 24 VDC, 4A
21	1	AVG	EZ-T10C-FE	10 INCH, COLOR, GRAPHICAL OPERATOR INTERFACE, ETHERNET COMMUNICATIONS
22	1	AVG	EZ-T10C-FE	OPERATOR INTERFACE PROGRAMMING SOFTWARE
23	1	AVG	EZ-T10C-FE	PROGRAMMING CABLE
24	1	SQUARE D	171 CCC 690 30	M1E PROCESSOR, 1 ENET, INTERBUS, I/O & IEC EXECUTIVE
25	1	SQUARE D	170 ADM 350 15	DI/DO, 16DI, 16DO
26	1	SQUARE D	172 JNN 210 32	OPTION ADAPTER, REAL TIME CLOCK, BATT BACK-UP
27	3	SQUARE D	170 INT 110 00	INTERBUS I/O ADAPTER
28	1	SQUARE D	170 ADI 340 00	16 PT DIGITAL INPUT - 24VDC
29	1	SQUARE D	170 AAI 030 000	8 PT ANALOG INPUT - 24VDC
30	2	SQUARE D	170 MCI 007 00	INTERBUS CABLE - 11CM LONG
31	1	N-TRON	405TX-N	5 PORT 10/100 BASE T ETHERNET SWITCH, DIN-RAIL, N-VIEW FIRMWARE OPTION
32	1	CISCO		56K CSU/DSUWIC
33	1	CISCO		1700 SERIES CHASSIS
34	1	CISCO		SUPPORT
35	1	CISCO		LABOR
36	AS REQ.	PHOENIX CONTACT	304362	TERMINAL BLOCK, UK 5N, 30A, 600V
37	AS REQ.	PHOENIX CONTACT	1051003	TERMINAL BLOCK MARKING SYSTEM, ZB6
38	5	BUSSMAN	AGC-4A	FUSE, 4A
39	5	BUSSMAN	MDL-2	FUSE, 2A
40	2	BUSSMAN	GMA-315MA	FUSE, 315MA
41	6	BUSSMAN		FUSE, SPARE, 2 EACH TYPE
42	10	PHOENIX CONTACT	304249	TERMINAL BLOCK FUSED, UK 6, 3HESI, 250V, INDICATOR
43	17	IDEC	RH2B-UL	RELAY, DPDT, 24VDC, 10A, WITH IND. LIGHT
44	18	IDEC	SH2B-05	RELAY SOCKET, DIN RAIL MOUNT
45	5	IDEC	RH2B-UL	RELAY, DPDT, 24VDC, 10A, SPARE
46	1	IDEC	RH2B-UL	RELAY, DPDT, 120VAC, 10A, WITH IND. LIGHT
47	16	ITW PAKTRON	QUL-150	SURGE SUPPRESSOR, QUENCHARC, 0.1 MF, 150 OHM
48	AS REQ.	PANDUIT		WIREWAY
49	1	CONTROL CONCEPTS	IE-120	LINE SURGE SUPPRESSOR, 45,000A SURGE CURRENT CAPACITY, 120 VAC, 20 AMP, DIN RAIL
50	2	ENERSYS INC. GENESIS	NP18-12B	BATTERY, 12 VDC, 17.2 AMP-HR

BILL OF MATERIALS - UPS PANEL

ITEM	QTY.	MANUFACTURER	PART #	DESCRIPTION
51	1	HOFFMAN	CSD202410	ENCLOSURE 20"X24"X10", NEMA 12
52	1	HOFFMAN	CP2420	BACKPANEL
53	1	HUBBELL	HBL5251I	SINGLE OUTLET, BOX & COVER
54	1	POWERWARE	05146005-5501	9125-700VA UPS, 120 VAC INPUT/OUTPUT, X-SLOT EXP.
55	1	POWERWARE	IPK-0330	SNMP WEB INTERFACE CARD

TELEMETRY NOTES

1. CONTRACTOR SHALL CONSULT WITH CITY TO DETERMINE MOUNTING LOCATION.

2. UPS LOCATED IN SEPARATE ENCLOSURE. LOCATE ADJACENT TO RTU PANEL. CONNECT RTU AND UPS PANEL WITH TWO 1" CONDUITS. ONE CONDUIT SHALL CONTAIN POWER WIRING FOR THE UPS. ONE CONDUIT SHALL CONTAIN THE CAT. 5 ETHERNET CABLE TO CONNECT THE UPS TO THE ETHERNET SWITCH.

3. THE TELEMETRY PANEL SHALL BE DESIGNED AND FURNISHED BY THE SYSTEM INTEGRATOR.

4. THESE TELEMETRY DRAWINGS ARE SCHEMATIC IN NATURE AND DOES NOT INCLUDE ALL ACCESSORIES AND APPURTENANCES NEEDED FOR A COMPLETE TELEMETRY SYSTEM. THESE DRAWINGS ARE INTENDED TO ASSIST THE SYSTEM INTEGRATOR BY IDENTIFYING THE REQUIRED I/O FOR THIS FACILITY AND TO GIVE GENERAL GUIDELINES FOR THE TELEMETRY PANEL. THE SYSTEM INTEGRATOR IS RESPONSIBLE FOR PROVIDING A COMPLETE TELEMETRY PANEL PACKAGE TO MEET THE FUNCTIONAL REQUIREMENTS OF THE BID DOCUMENTS AND TO RESULT IN A COMPLETELY OPERATIONAL SYSTEM THAT MEETS THE CITY OF KIRKLAND STANDARDS.

5. TELEMETRY COMMUNICATION SHALL BE DESIGNED AND FURNISHED BY THE SYSTEM INTEGRATOR.

6. TELEMETRY PANEL SHALL CONTAIN SPACE FOR A MINIMUM OF (2) FUTURE BASE I/O CARDS FOR FUTURE USE.

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RH2 ENGINEERING INC. — DATE 09/14/09

(CR) SEE SYSTEM INTEGRATOR AS-BUILTS FOR TELEMETRY WIRING DIAGRAMS, BILL OF MATERIALS AND TELEMETRY PANEL LAYOUT.

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SIGNED: 02/17/09

CITY OF KIRKLAND — WASHINGTON
City of Redmond

Cities of Kirkland and Redmond
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RTU: BILL OF MATERIALS AND PANEL LAYOUT

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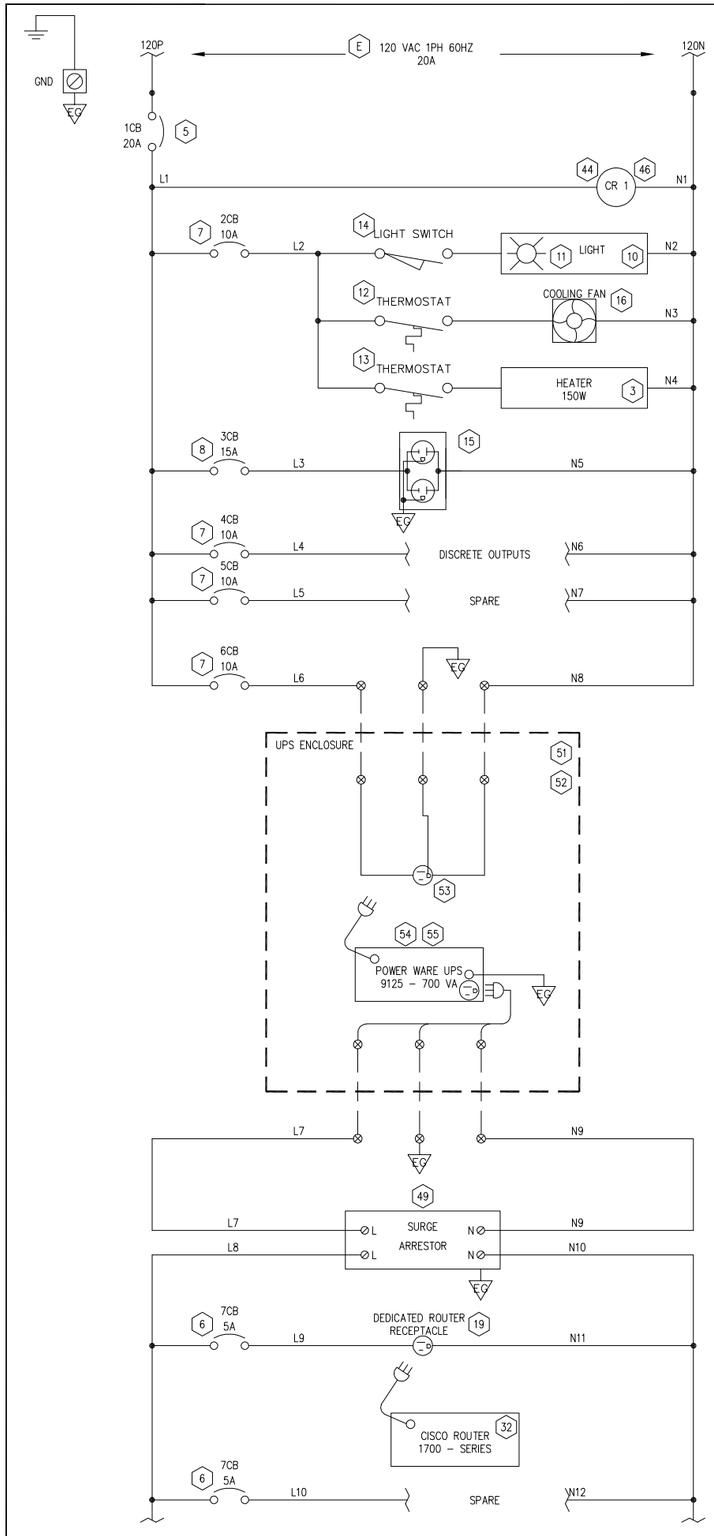
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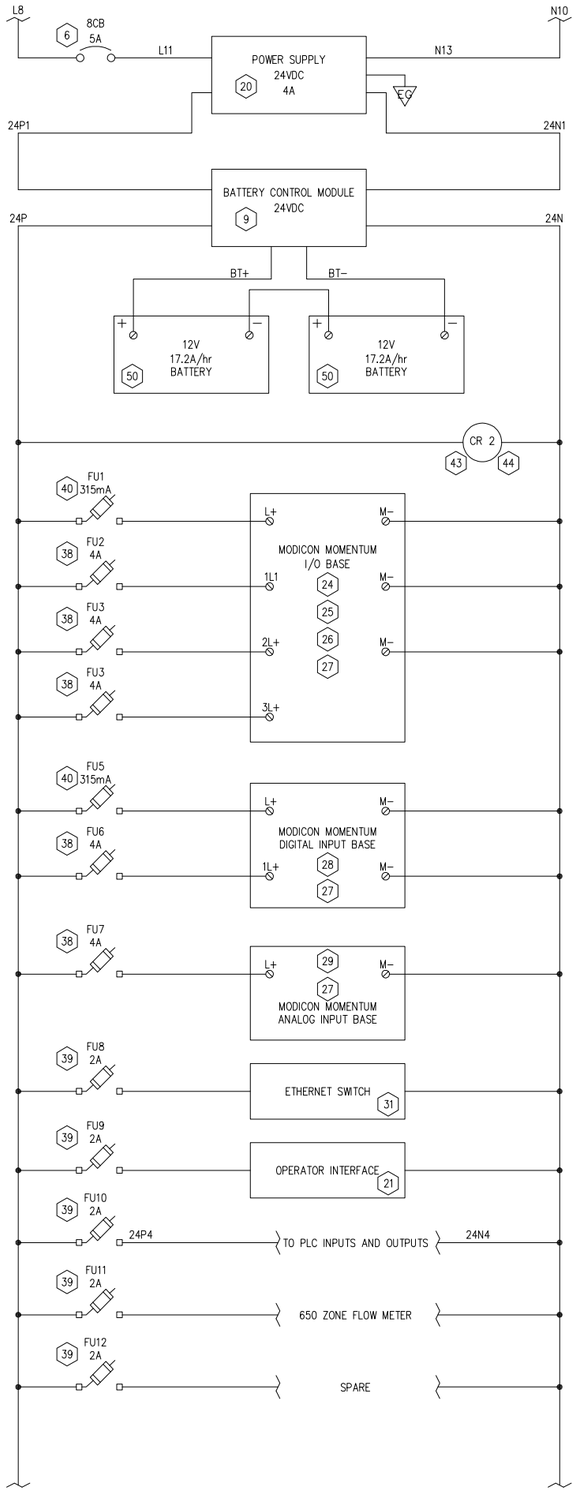
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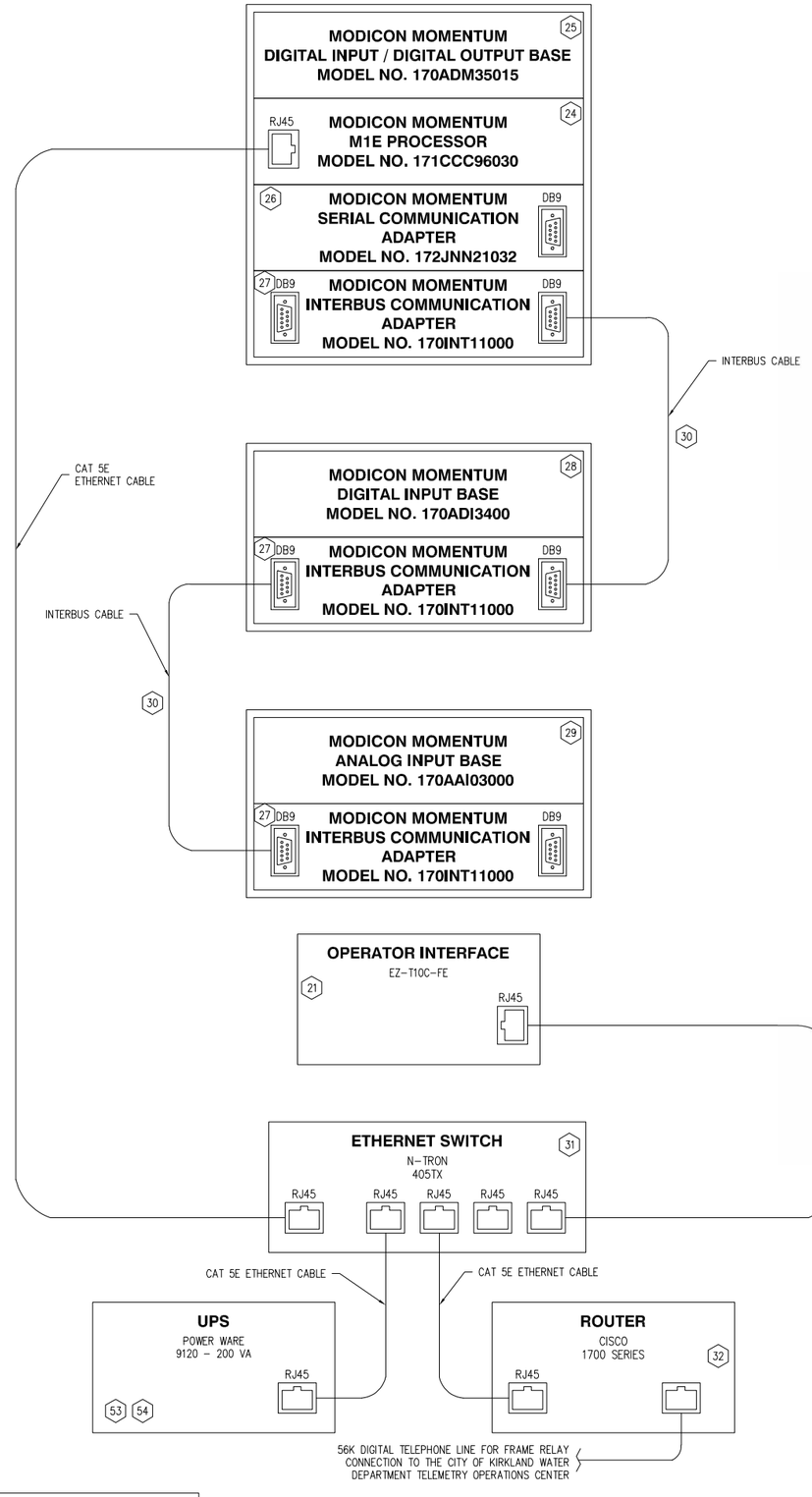
PORT ORCHARD OFFICE
360.876.7960
600 Kitsap Street, Suite 101

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

PLOT: 1 | DWG NO. E04
ENGINEER: CMR
REVIEWED: MM
DATE: SEP 16, 2009 | SHEET NO. 8
CLIENT: KIR
JOB NO.: 108-097 | 11
FILENAME: SS2-D-ELEC04







E EXISTING CONNECTION TO EXISTING TELEMETRY PANEL. RECONNECT EXISTING CONDUCTORS TO PROPOSED TELEMETRY PANEL

(CR) SEE SYSTEM INTEGRATOR AS–BUILTS FOR TELEMETRY WIRING DIAGRAMS, BILL OF MATERIALS AND TELEMETRY PANEL LAYOUT.

POWER LAYOUT
NOT TO SCALE

COMMUNICATIONS LAYOUT
NOT TO SCALE

RECORD DRAWING
REVISED TO CONFORM TO CONSTRUCTION RECORDS

09/14/09
RH2 ENGINEERING INC. DATE

NO.	REVISION	BY	REVIEW	DATE
(CR)	REVISED TO CONFORM TO CONSTRUCTION RECORDS	DY	CMR	09/09/09

RICHARD H. HARRAH — STATE OF WASHINGTON — 16727 — REGISTERED PROFESSIONAL ENGINEER
SIGNED: 02/17/09

MARK MILLER — STATE OF WASHINGTON — 38613 — REGISTERED PROFESSIONAL ENGINEER
SIGNED: 02/17/09

CITY OF KIRKLAND WASHINGTON
CityofRedmond

Cities of Kirkland and Redmond
Supply Station No. 2 Improvements

RTU: POWER AND COMMUNICATIONS WIRING DIAGRAM

RH2 ENGINEERS PLANNERS SCIENTISTS

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

BELLINGHAM OFFICE
360.676.0836
454 West Horton Road

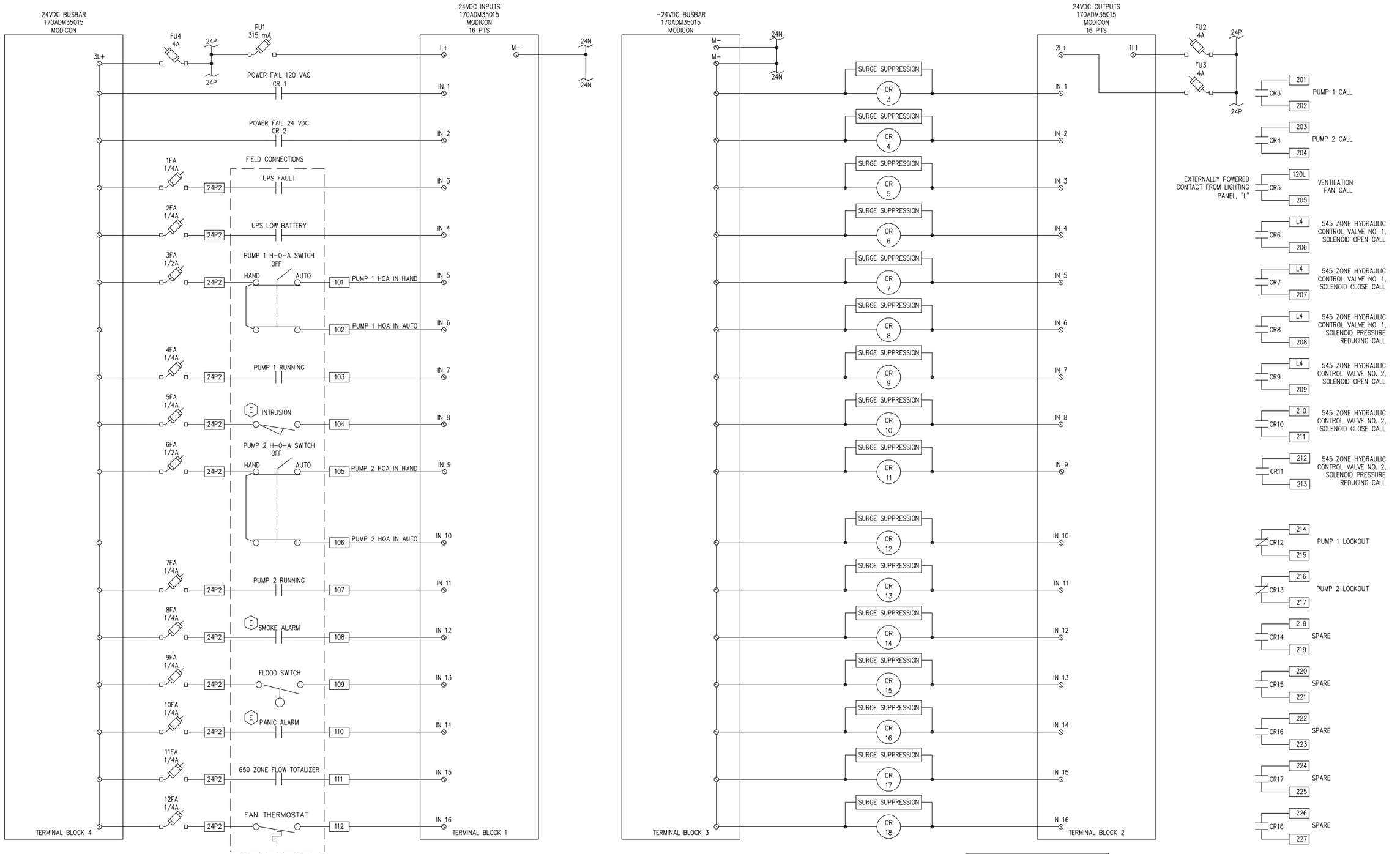
BOTHELL OFFICE
425.951.5400
12100 NE 195th Street, Suite 100

EAST WENATCHEE OFFICE
509.886.2900
300 Simon Street, Suite 5

PORT ORCHARD OFFICE
360.876.7960
600 Kitsap Street, Suite 101

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

PLOT: 1	DWG NO. E05
ENGINEER: CMR	
REVIEWED: MM	
DATE: SEP 16, 2009	SHEET NO. 9
CLIENT: KIR	
JOB NO.: 108–097	11
FILENAME: SS2–D–ELEC05	



E EXISTING CONNECTION TO EXISTING TELEMETRY PANEL. RECONNECT EXISTING CONDUCTORS TO PROPOSED TELEMETRY PANEL

(CR) SEE SYSTEM INTEGRATOR AS-BUILTS FOR TELEMETRY WIRING DIAGRAMS, BILL OF MATERIALS AND TELEMETRY PANEL LAYOUT.

RECORD DRAWING
REVISED TO CONFORM
TO CONSTRUCTION RECORDS

09/14/09
RH2 ENGINEERING INC. DATE

NO.	REVISION	BY	REVIEW	DATE
(CR)	REVISED TO CONFORM TO CONSTRUCTION RECORDS	DY	CMR	09/09/09

RICHARD H. HARBERT
STATE OF WASHINGTON
16727
REGISTERED
PROFESSIONAL ENGINEER
SIGNED: 02/17/09

MARK MILLER
STATE OF WASHINGTON
38613
REGISTERED
PROFESSIONAL ENGINEER
SIGNED: 02/17/09

CITY OF KIRKLAND
WASHINGTON

CityofRedmond

Cities of Kirkland and Redmond
Supply Station No. 2 Improvements

RTU: PLC INPUTS AND OUTPUTS (SHEET 1 OF 2)

RH2 ENGINEERS PLANNERS SCIENTISTS

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

BELLINGHAM OFFICE
360.676.0836
454 West Horton Road

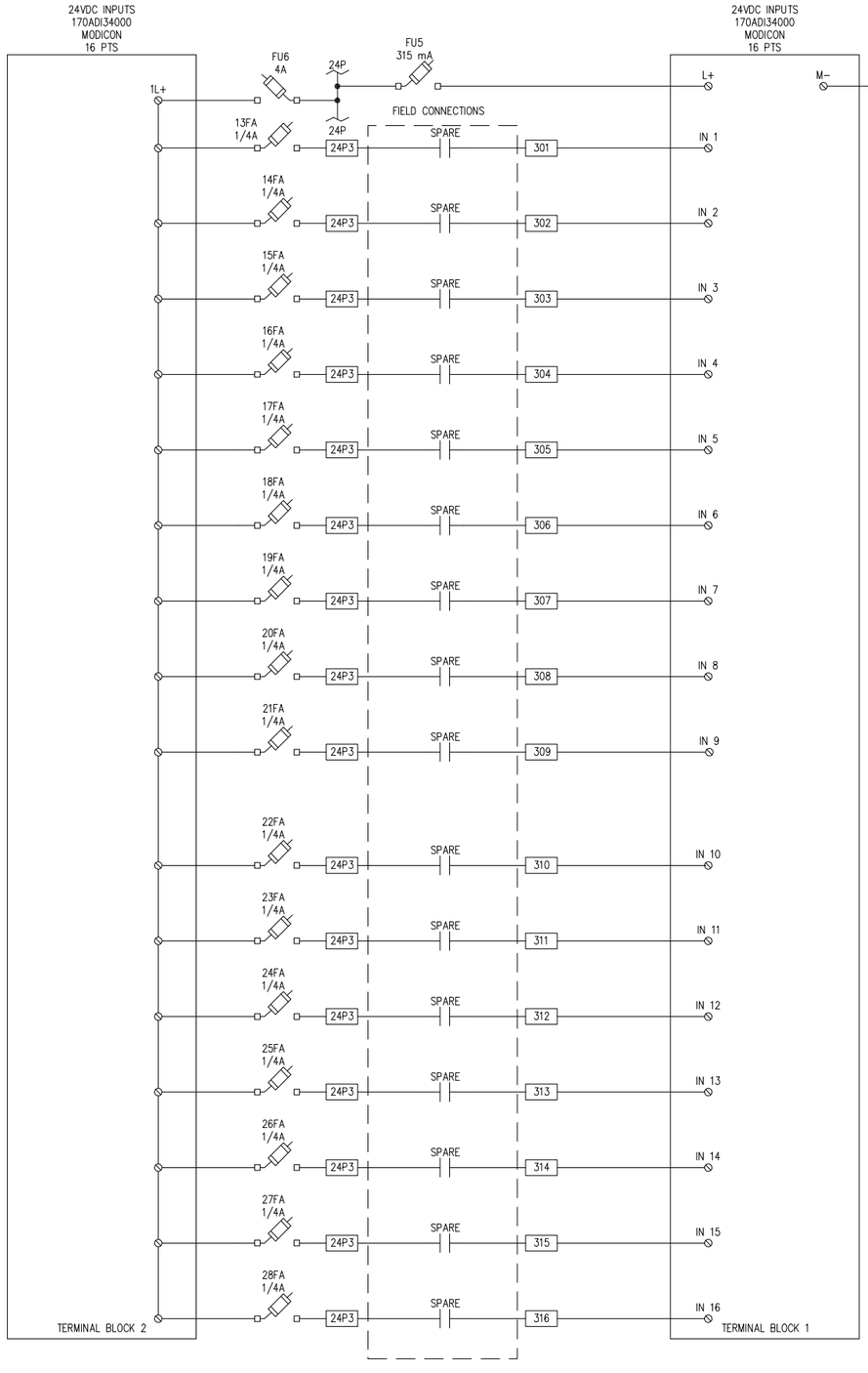
BOTHELL OFFICE
425.951.5400
12100 NE 195th Street, Suite 100

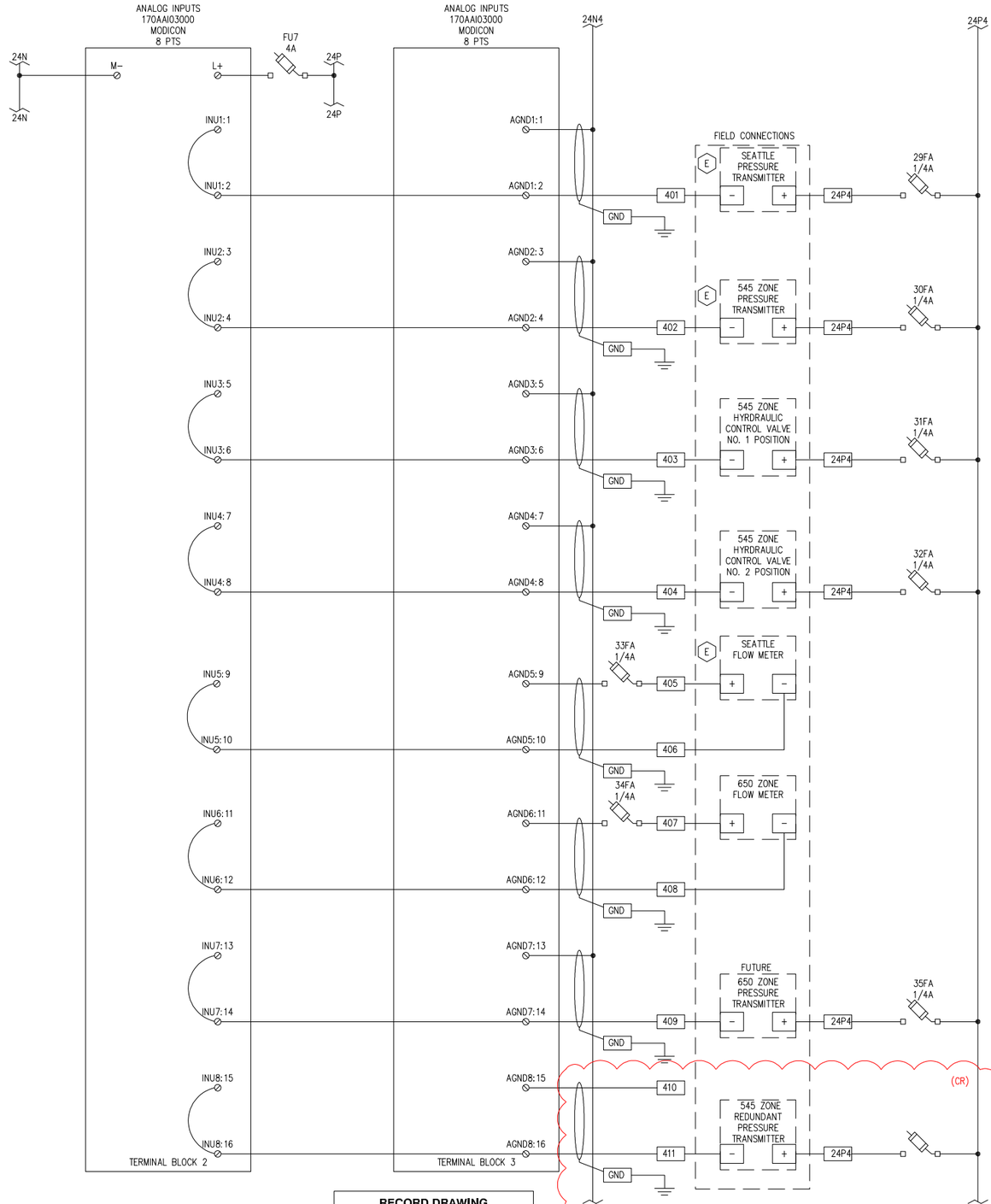
EAST WENATCHEE OFFICE
509.886.2900
300 Simon Street, Suite 5

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: 1	DWG NO. E06
ENGINEER: CMR	
REVIEWED: MM	
DATE: SEP 16, 2009	SHEET NO. 10
CLIENT: KIR	
JOB NO.: 108-097	11
FILENAME: SS2-D-ELEC06	





(E) EXISTING CONNECTION TO EXISTING TELEMETRY PANEL. RECONNECT EXISTING CONDUCTORS TO PROPOSED TELEMETRY PANEL

(CR) SEE SYSTEM INTEGRATOR AS-BUILTS FOR TELEMETRY WIRING DIAGRAMS, BILL OF MATERIALS AND TELEMETRY PANEL LAYOUT.

RECORD DRAWING
REVISED TO CONFORM TO CONSTRUCTION RECORDS

RH2 ENGINEERING INC. 09/14/09 DATE

NO.	REVISION	BY	REVIEW	DATE
(CR)	REVISED TO CONFORM TO CONSTRUCTION RECORDS	DY	CMR	09/09/09

RICHARD H. HARRIS — STATE OF WASHINGTON — 16727 — REGISTERED PROFESSIONAL ENGINEER
SIGNED: 02/17/09

MARK MILLER — STATE OF WASHINGTON — 38613 — REGISTERED PROFESSIONAL ENGINEER
SIGNED: 02/17/09

CITY OF KIRKLAND WASHINGTON
CityofRedmond

Cities of Kirkland and Redmond
Supply Station No. 2 Improvements

RTU: PLC INPUTS AND OUTPUTS (SHEET 2 OF 2)

RH2 ENGINEERS PLANNERS SCIENTISTS

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

BELLINGHAM OFFICE
360.676.0836
454 West Horton Road

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509.886.2900
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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

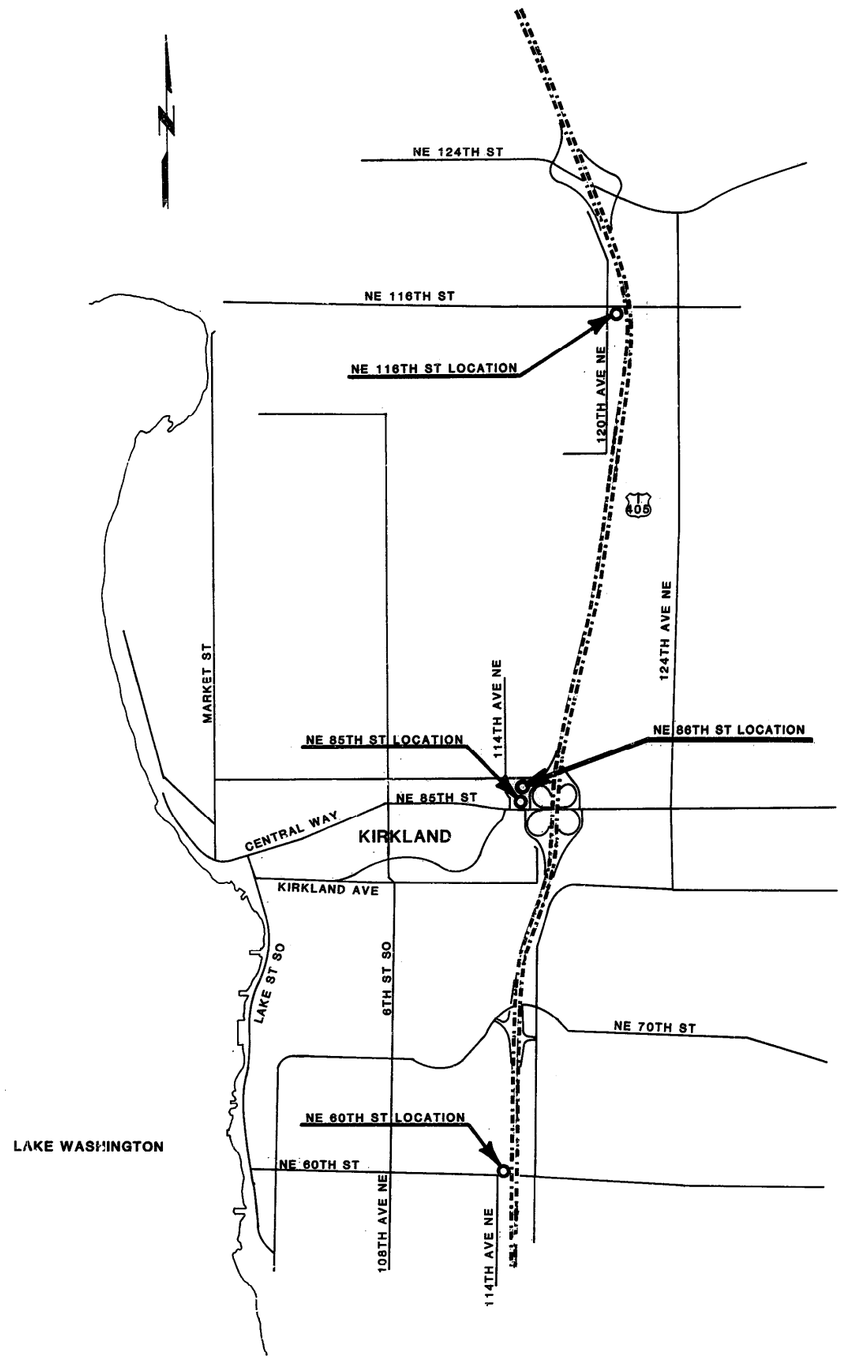
PLOT: 1	DWG NO. E07
ENGINEER: CMR	
REVIEWED: MM	
DATE: SEP 16, 2009	SHEET NO. 11
CLIENT: KIR	
JOB NO.: 108-097	11
FILENAME: SS2-D-ELEC06	

APPENDIX C3:
RECORD DRAWINGS –
CITY OF KIRKLAND WATER METER IMPROVEMENTS (K1)

City of Kirkland

CITY OF KIRKLAND WATER METER IMPROVEMENTS

DRAWING No.	TITLE
1 OF 5	COVER SHEET
2 OF 5	N.E. 60TH ST.
3 OF 5	N.E. 85TH ST
4 OF 5	N.E. 116TH ST
5 OF 5	N.E. 86TH ST



LOCATION MAP

GENERAL NOTES:

1. ALL MEASUREMENTS AND LOCATIONS OF EXISTING STRUCTURES MUST BE VERIFIED BY CONTRACTOR. THE CITY TAKES NO RESPONSIBILITY FOR DEVIATIONS OF ACTUAL LOCATIONS OF EXISTING STRUCTURES THAT MAY BE SHOWN ON THE PLANS.

2. ALL MECHANICAL JOINT PIPE TO HAVE RESTRAINED JOINTS USING APPROVED SHACKLES, TR FLEX RESTRAINED JOINT BY U.S. PIPE COMPANY, OR EQUAL.

RECORDS SUBMITTED BY DEVELOPER

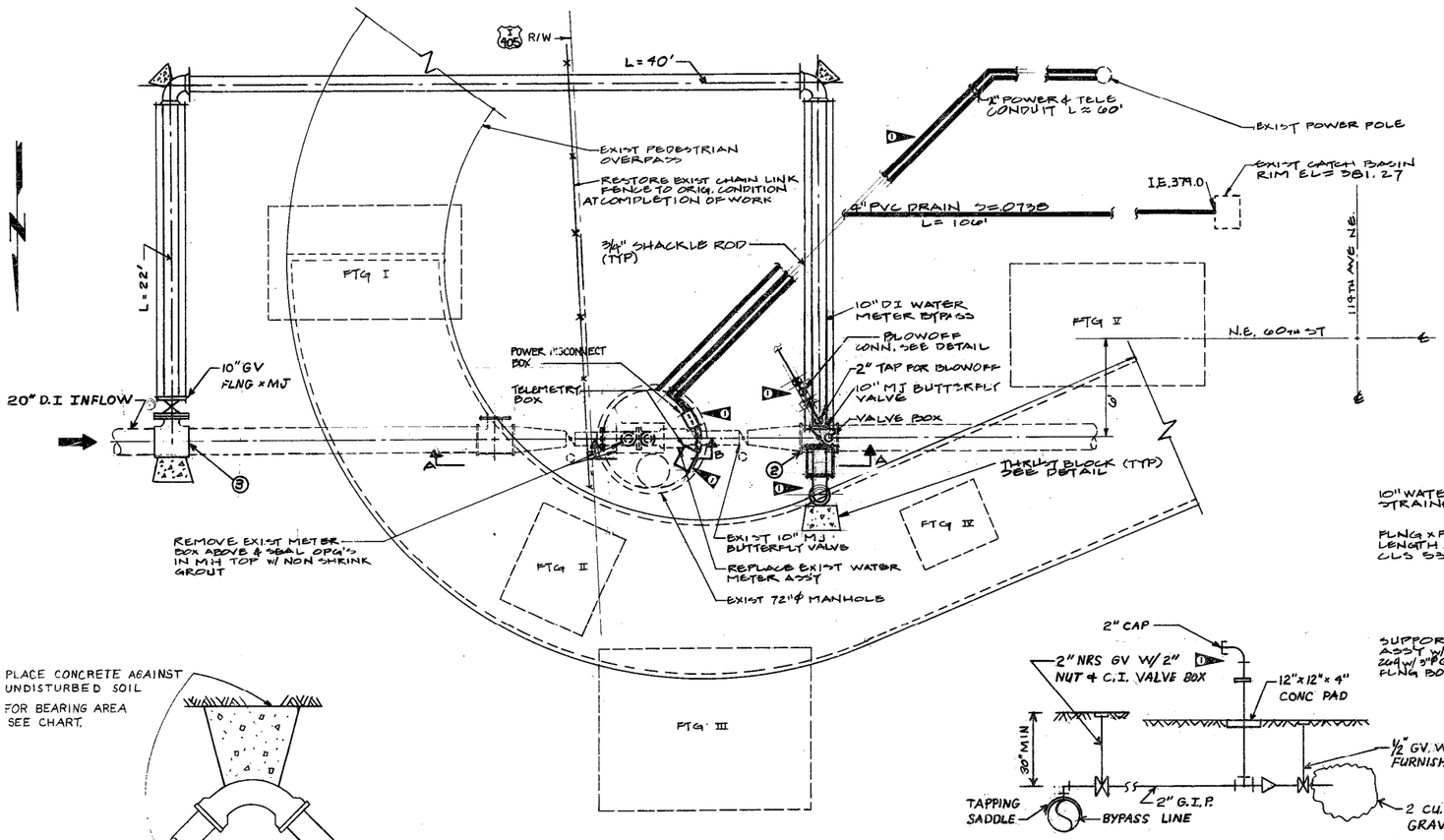
BLAZIER ENGINEERS

JAMES L. BLAZIER — STATE OF WASHINGTON — REGISTERED PROFESSIONAL ENGINEER

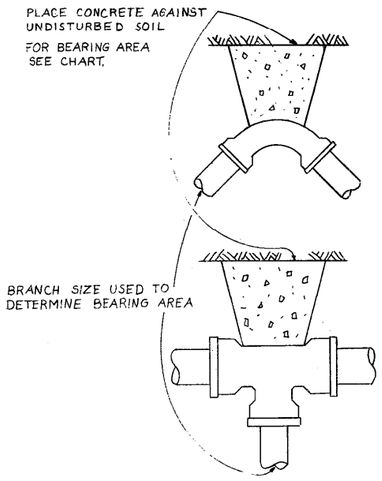
REVISIONS			
NO.	BY	DATE	

DRAWN BY C.P.L.	DATE 5/86	SCALE AS SHOWN	COVER SHEET
APPROVED BY J.L.B.	DATE	SHEET 1 OF 5	CITY OF KIRKLAND WATER METER IMPROVEMENTS

F3,09,12

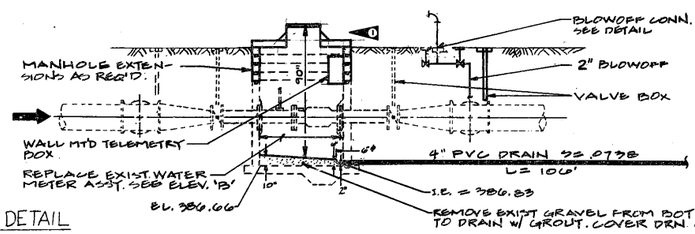


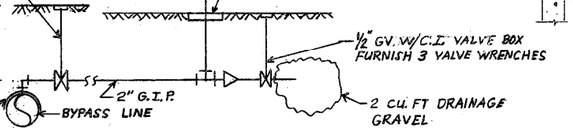
PLAN
1"=4'



TYPICAL THRUST BLOCK DETAIL
NO SCALE

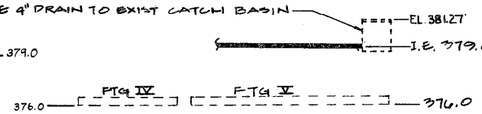
FITTING OR BRANCH SIZE	THRUST BLOCK BEARING IN SQ. FT				
	90°	45°	22½°	11¼°	TEE & BENDS
6"	3	2	2	2	3
8"	5	3	2	2	5
10"	8	5	3	2	8
12	11	6	3	2	11





BLOWOFF CONNECTON DETAIL
NO SCALE

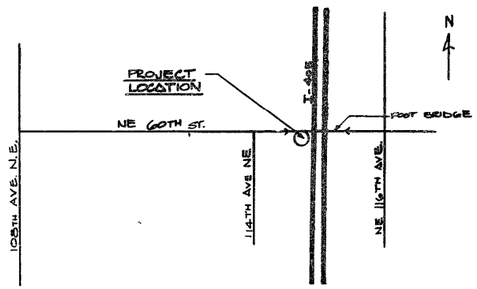
NOTE
1. SEAL ALL WALL PENETRATIONS & PATCH ALL EXIST OPGS W/ NON SHRINK GROUT UNLESS OTHERWISE DIRECTED.
2. REPLACE ANY M.H. STEPS DAMAGED OR REMOVED DURING CONSTRUCTION



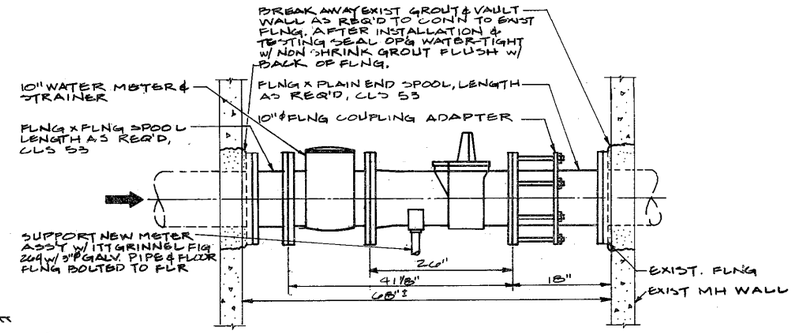
ELEVATION 'A'
1"=4'

CONSTRUCTION NOTES:

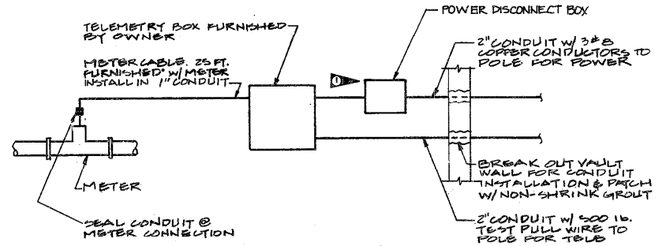
1. LOCATION TO BE DETERMINED IN THE FIELD BY THE ENGINEER.
2. CONNECT 10" BYPASS TO EXISTING 20 X 20 X 10 TEE. TEE MAY HAVE BEEN INSTALLED IN A POSITION OTHER THAN SHOWN.
3. WET TAP 20 X 20 X 10 FABRICATED STAINLESS STEEL CUTTING-IN TEE.



VICINITY MAP



NEW METER ELEVATION 'B'
1"=1'-0"



ELECTRICAL & TELEMETRY SCHEMATIC
N.E. 116TH ST. & N.E. 60TH ST.

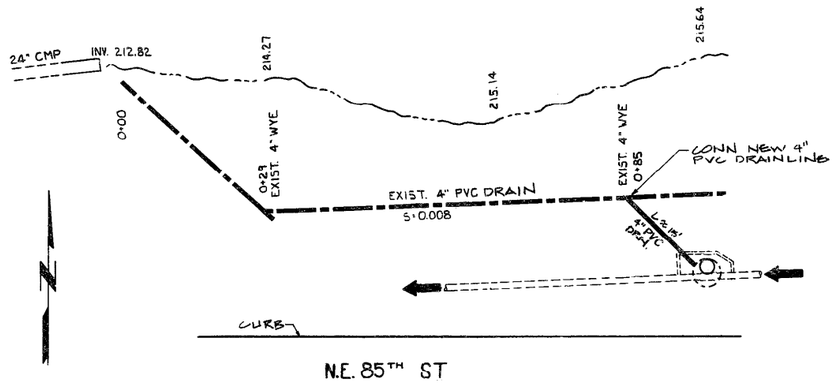
BLAZIER ENGINEERS

JAMES L. BLAZIER — STATE OF WASHINGTON — REGISTERED PROFESSIONAL ENGINEER

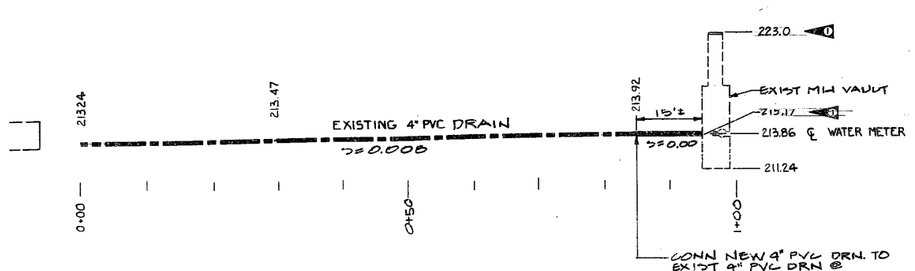
REVISIONS			
NO.	BY	DATE	
1	MMN	6-86	CONFORM TO CONST RECORDS

DRAWN BY MJM/CPL | DATE 5/85 | SCALE AS SHOWN
APPROVED BY J.L.B. | DATE | SHEET 2 OF 5

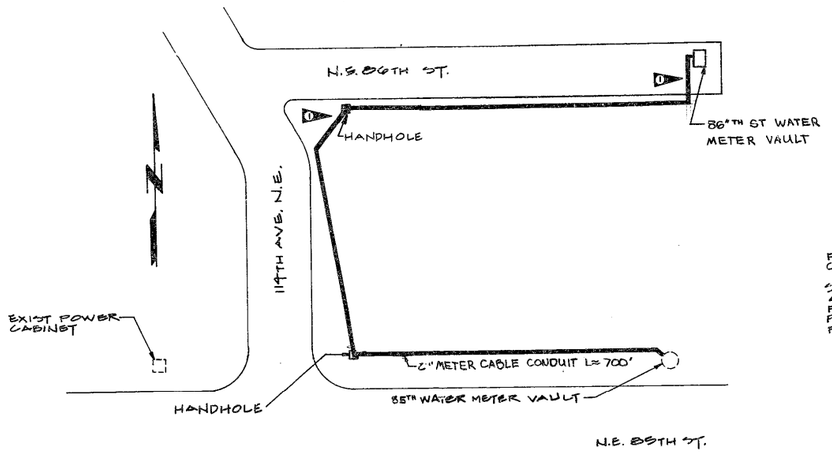
NE 60TH ST
CITY OF KIRKLAND WATER METER IMPROVEMENTS



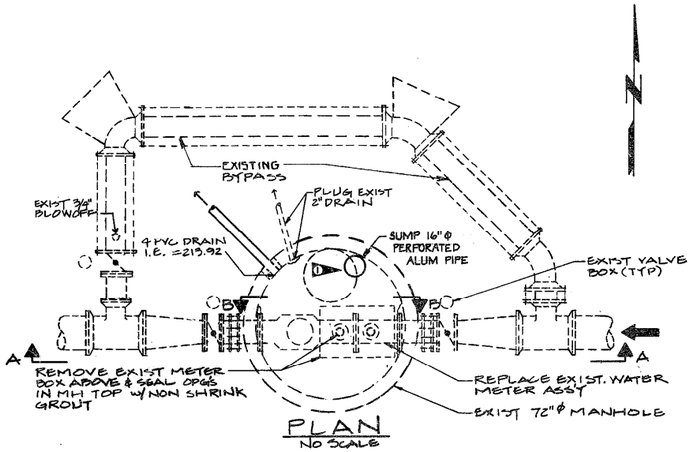
SITE PLAN
1"=10'



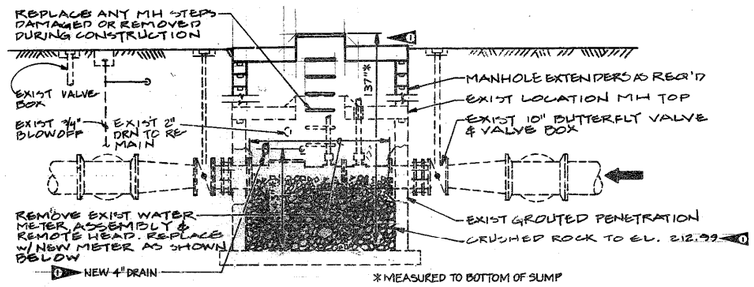
PROFILE
1"=10'



CONDUIT PLAN
NO SCALE

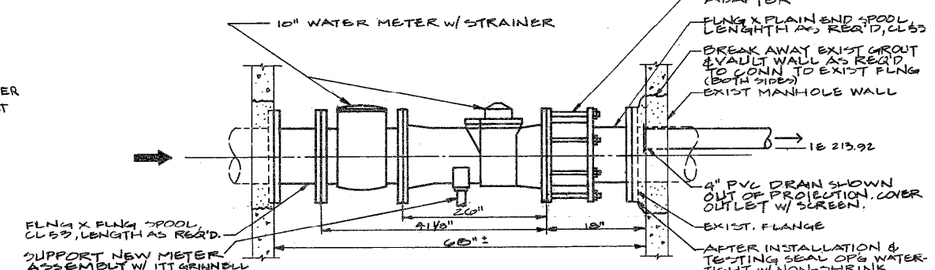


PLAN
NO SCALE



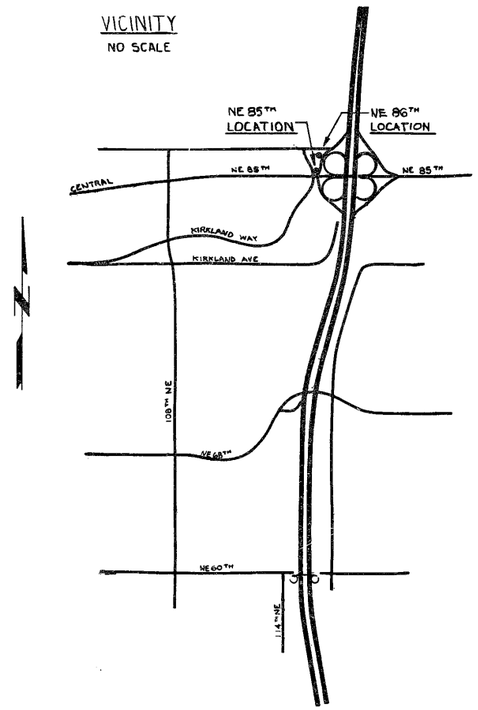
NOTE
SEAL ALL WALL PENETRATIONS & PATCH ALL EXIST OPGS W/ NON SHRINK GROUT UNLESS OTHERWISE DIRECTED

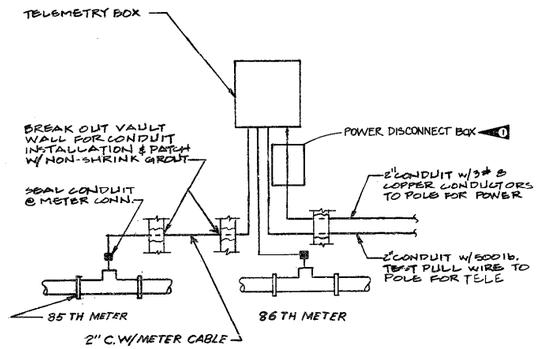
ELEVATION 'A'
NO SCALE



NEW METER ELEVATION 'B'
1"=1'-0"

VICINITY
NO SCALE





ELECTRICAL & TELEMETRY SCHEMATIC
NE 85TH & NE 86TH METERS

BLAZIER ENGINEERS

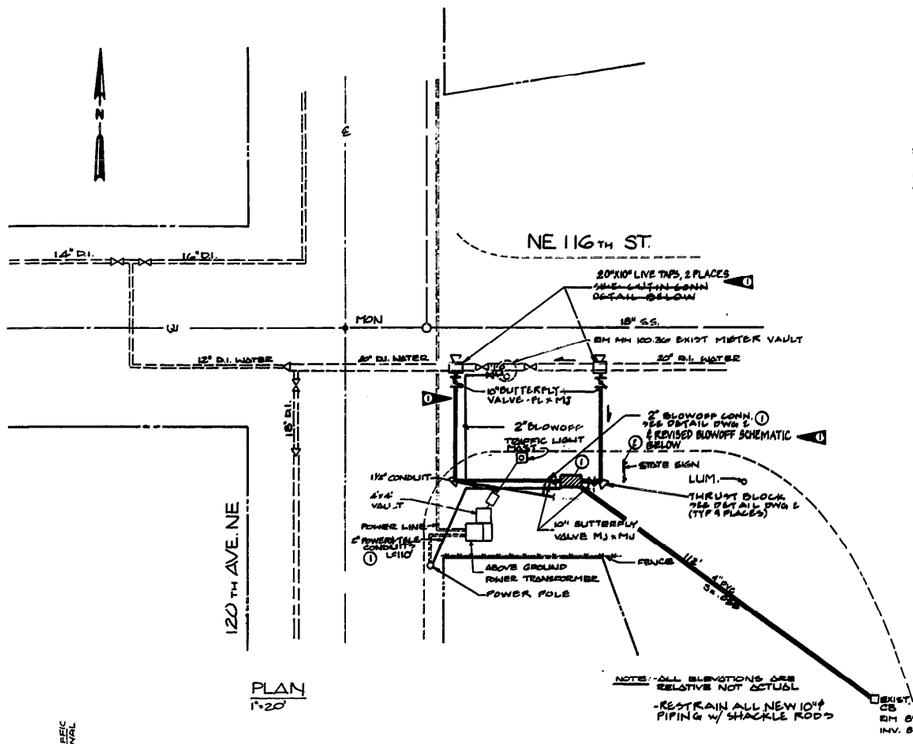
JAMES L. BLAZIER — STATE OF WASHINGTON — REGISTERED PROFESSIONAL ENGINEER

REVISIONS			
NO.	BY	DATE	
0	MMN	6-86	CONFORM TO CONST RECORDS

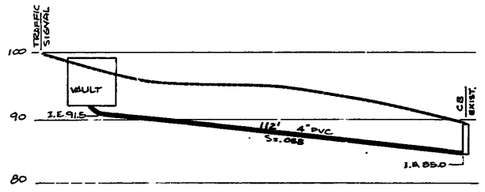
DRAWN BY	M.J.M./C.P.L	DATE 5/85	SCALE AS SHOWN
APPROVED BY	J.L.B.	DATE	SHEET 3 OF 5

NE 85TH ST
CITY OF KIRKLAND WATER METER IMPROVEMENTS

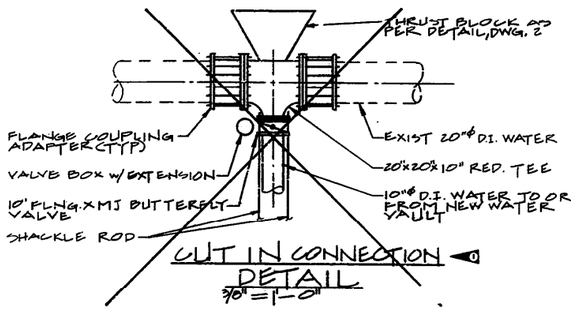
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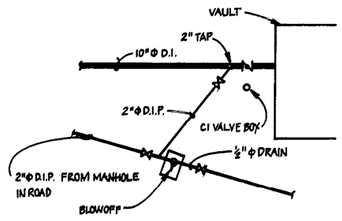
PLAN
1"=20'



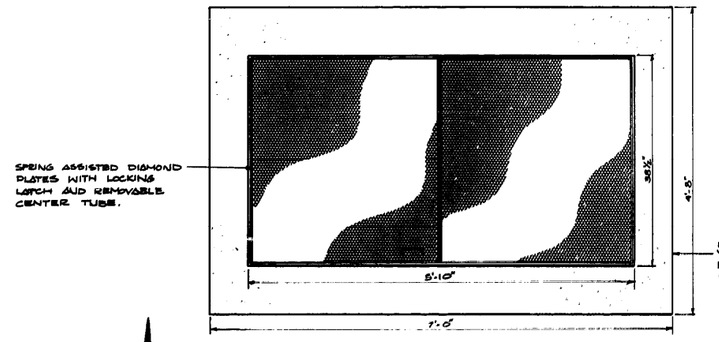
DRAIN PROFILE
NO SCALE



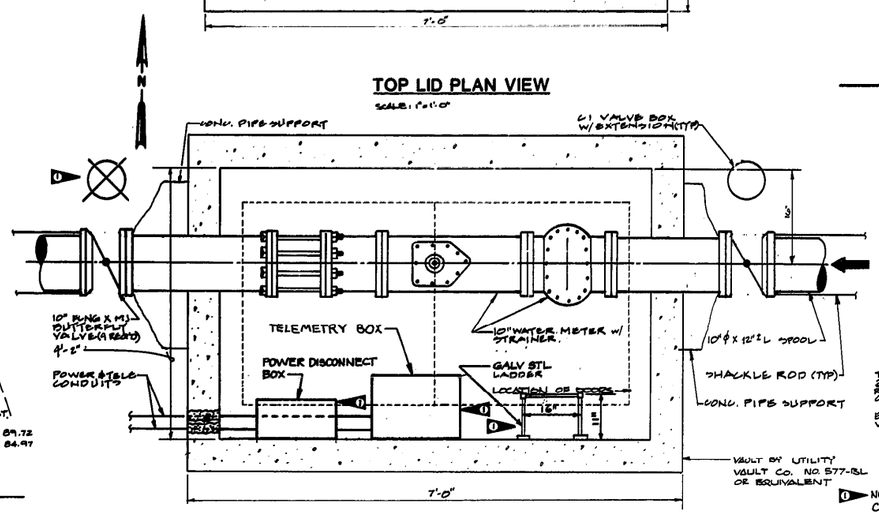
CUT IN CONNECTION DETAIL
3/8" = 1'-0"



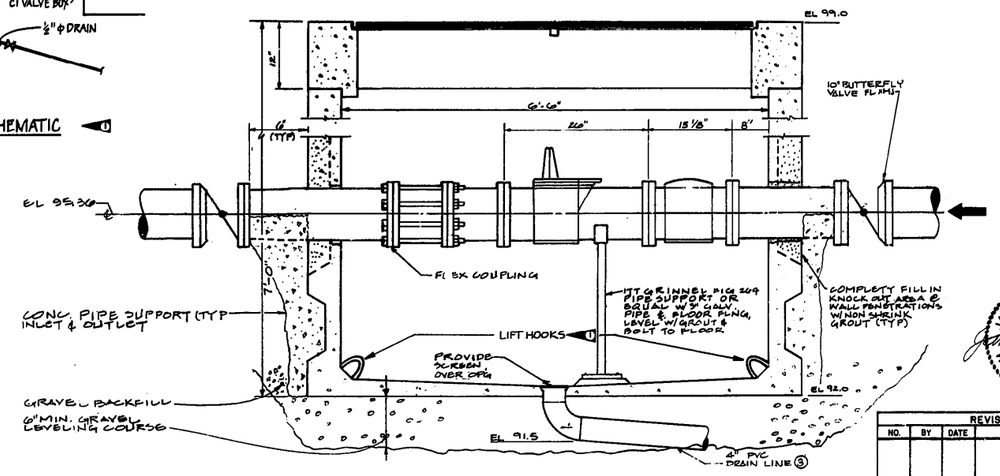
REVISED BLOWOFF SCHEMATIC
NO SCALE



TOP LID PLAN VIEW
SCALE: 1"=1'-0"

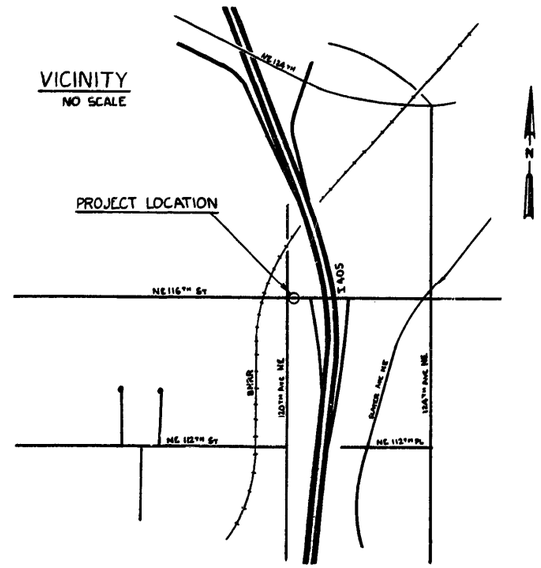


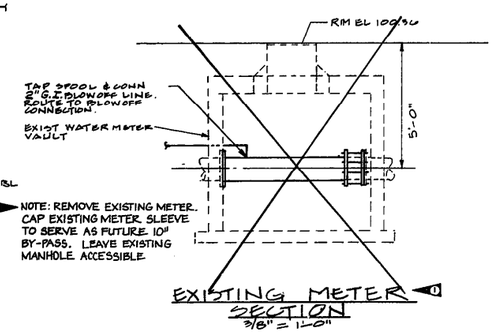
PLAN VIEW
NO SCALE



ELEVATION VIEW
NO SCALE

VICINITY
NO SCALE





NOTE: REMOVE EXISTING METER. CAP EXISTING METER SLEEVE TO SERVE AS FUTURE 10" BY-PASS. LEAVE EXISTING MANHOLE ACCESSIBLE

EXISTING METER SECTION
3/8" = 1'-0"

CONSTRUCTION NOTES:

1. LOCATION TO BE DETERMINED IN THE FIELD BY THE ENGINEER.
2. STATE SIGN MUST BE TEMPORARILY RELOCATED PRIOR TO ANY EXCAVATION AS INSTRUCTED BY THE ENGINEER.
3. ENCASE PVC PIPE IN CONCRETE WITHIN LIMITS OF VAULT EXCAVATION. 6" MIN CONCRETE ENCASEMENT.

JAMES L. BLAZIER — STATE OF WASHINGTON — REGISTERED PROFESSIONAL ENGINEER

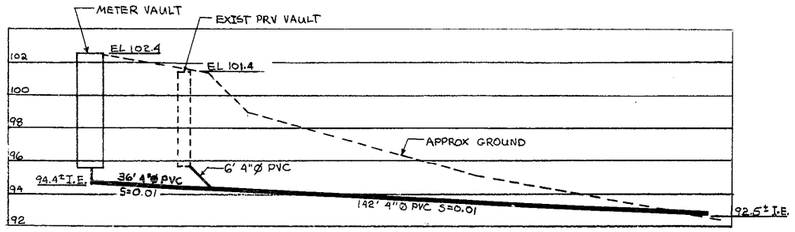
BLAZIER ENGINEERS

REVISIONS			
NO.	BY	DATE	
1	MMN	6-86	CONFORM TO CONST RECORDS

DRAWN BY C.R./C.P.L.	DATE 6/85	SCALE AS SHOWN	
APPROVED BY J.L.B.	DATE	SHEET 4 OF 5	

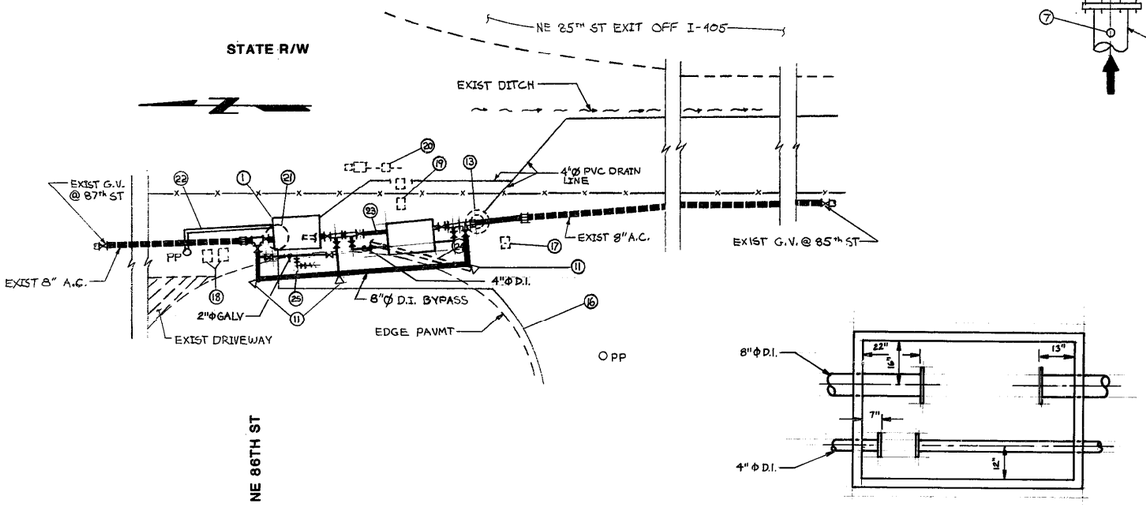
NE 116TH ST
CITY OF KIRKLAND WATER METER IMPROVEMENTS

24 X 36 PRINTED ON NO. 1000H CLEARPRINT



DRAIN LINE PROFILE

SCALE HORIZ 1"=20'
VERT 1"= 4'

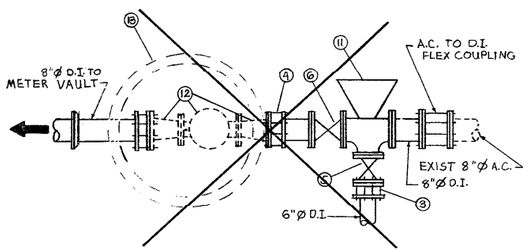


SITE PLAN

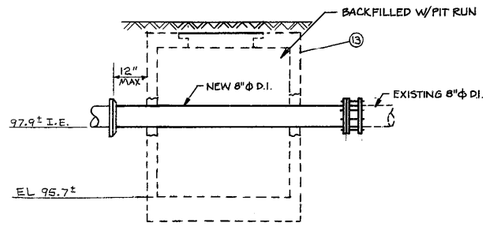
SCALE 1"=10'

PRV VAULT PLAN

SCALE ½" = 1'-0"



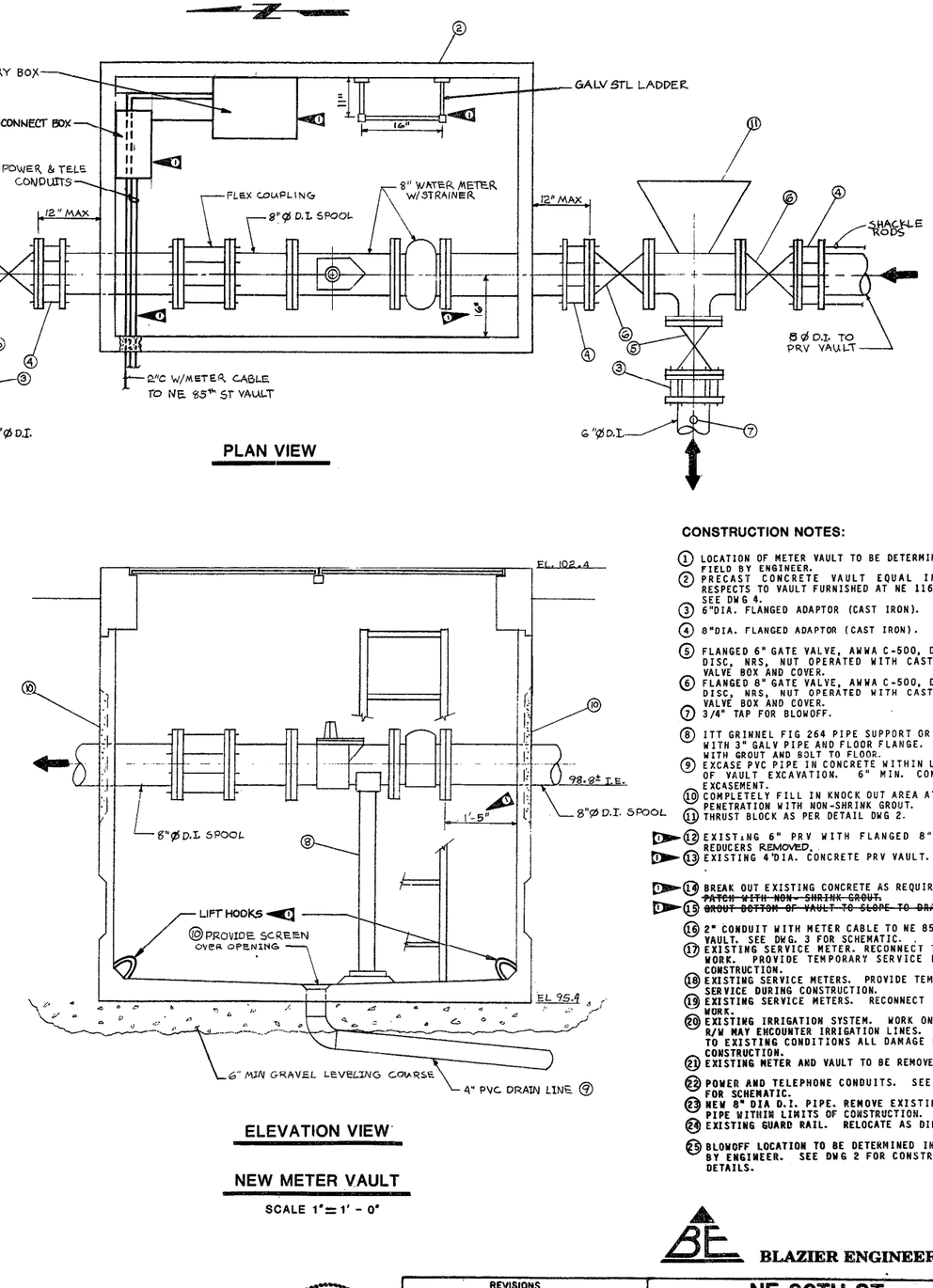
PLAN VIEW



ELEVATION VIEW

EXISTING PRV VAULT

SCALE 1/2"=1' - 0"



PLAN VIEW

ELEVATION VIEW

NEW METER VAULT

SCALE 1"=1' - 0"

CONSTRUCTION NOTES:

1. LOCATION OF METER VAULT TO BE DETERMINED IN FIELD BY ENGINEER.
2. PRECAST CONCRETE VAULT EQUAL IN ALL RESPECTS TO VAULT FURNISHED AT NE 116TH ST. SEE DWG 4.
3. 6"DIA. FLANGED ADAPTOR (CAST IRON).
4. 8"DIA. FLANGED ADAPTOR (CAST IRON).
5. FLANGED 6" GATE VALVE, AWWA C-500, DOUBLE DISC, NRS, NUT OPERATED WITH CAST IRON VALVE BOX AND COVER.
6. FLANGED 8" GATE VALVE, AWWA C-500, DOUBLE DISC, NRS, NUT OPERATED WITH CAST IRON VALVE BOX AND COVER.
7. 3/4" TAP FOR BLOWOFF.
8. ITT GRINNEL FIG 264 PIPE SUPPORT OR EQUAL WITH 3" GALV PIPE AND FLOOR FLANGE. LEVEL WITH GROUT AND BOLT TO FLOOR.
9. EXCASE PVC PIPE IN CONCRETE WITHIN LIMITS OF VAULT EXCAVATION. 6" MIN. CONCRETE EXCASEMENT.
10. COMPLETELY FILL IN KNOCK OUT AREA AT WALL PENETRATION WITH NON-SHRINK GROUT.
11. THRUST BLOCK AS PER DETAIL DWG 2.
12. EXISTING 6" PRV WITH FLANGED 8" X 6" REDUCERS REMOVED.
13. EXISTING 4'DIA. CONCRETE PRV VAULT.
14. BREAK OUT EXISTING CONCRETE AS REQUIRED ~~AND PATCH WITH NON-SHRINK GROUT.~~
15. ~~GROUT BOTTOM OF VAULT TO SLOPE TO DRAIN.~~
16. 2" CONDUIT WITH METER CABLE TO NE 85TH ST. VAULT. SEE DWG. 3 FOR SCHEMATIC.
17. EXISTING SERVICE METER. RECONNECT TO NEW WORK. PROVIDE TEMPORARY SERVICE DURING CONSTRUCTION.
18. EXISTING SERVICE METERS. PROVIDE TEMPORARY SERVICE DURING CONSTRUCTION.
19. EXISTING SERVICE METERS. RECONNECT TO NEW WORK.
20. EXISTING IRRIGATION SYSTEM. WORK ON STATE R/W MAY ENCOUNTER IRRIGATION LINES. REPAIR TO EXISTING CONDITIONS ALL DAMAGE DURING CONSTRUCTION.
21. EXISTING METER AND VAULT TO BE REMOVED.
22. POWER AND TELEPHONE CONDUITS. SEE DWG 3 FOR SCHEMATIC.
23. NEW 8" DIA D.I. PIPE. REMOVE EXISTING A.C. PIPE WITHIN LIMITS OF CONSTRUCTION.
24. EXISTING GUARD RAIL. RELOCATE AS DIRECTED.
25. BLOWOFF LOCATION TO BE DETERMINED IN FIELD BY ENGINEER. SEE DWG 2 FOR CONSTRUCTION DETAILS.

BLAZIER ENGINEERS

JAMES L. BLAZIER — STATE OF WASHINGTON — REGISTERED PROFESSIONAL ENGINEER

REVISIONS			
NO.	BY	DATE	
1	MMN	6-86	CONFORM TO CONST RECORDS

DRAWN BY	JSB	DATE 6/85	SCALE AS SHOWN
APPROVED BY	J.L.B.	DATE	SHEET 5 OF 5

NE 86TH ST
CITY OF KIRKLAND WATER METER IMPROVEMENTS

APPENDIX C4:
RECORD DRAWINGS –
ROSE POINT LIFT STATION IMPROVEMENTS

City of Kirkland

CITY OF KIRKLAND

ROSE POINT LIFT STATION IMPROVEMENTS

JOB NO. 22-18-PW

MARCH 2019

K:\TAC_Projects\15\1680 Rose Point Lift Station Upgrade\CAD\Sheets\15-1680-WA-G.dwg G-1 3/4/2019 8:22 AM BRETT.WILLIAMS 21.0s (LMS Tech)

CITY OFFICIALS

PENNY SWEET	MAYOR
JAY ARNOLD	DEPUTY MAYOR
TOM NEIR	COUNCIL MEMBER
TOBY NIXON	COUNCIL MEMBER
AMY WALEN	COUNCIL MEMBER
DAVE ASHER	COUNCIL MEMBER
JON PASCAL	COUNCIL MEMBER
KURT TRIPLETT	CITY MANAGER
KATHY BROWN	PUBLIC WORKS DIRECTOR
DAVID SNIDER, P.E.	CAPITAL PROJECTS MANAGER

CONTACT PERSONNEL

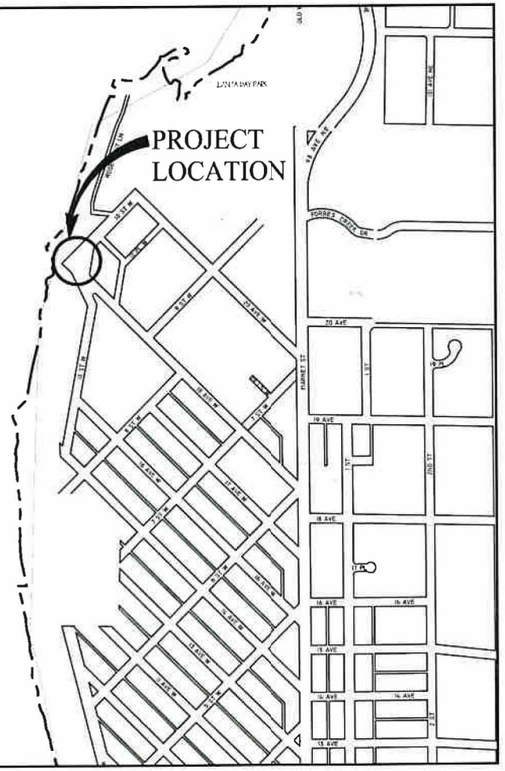
NAME	AGENCY	PHONE
AARON MCDONALD	COK SR PROJECT ENGINEER	425.587.3837
(Project Inspector)	PROJECT INSPECTOR	XXX.XXX.XXXX
RIK MAYER	COK CONSTRUCTION INSPECTOR	425.587.3801
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JOSH PANTZKE	COK UTILITIES DEPARTMENT	425.587.3917
DISPATCH	COK POLICE DEPARTMENT	425.587.3400
DISPATCH	COK FIRE DEPARTMENT	425.864.3650
DISPATCH	COK SPILL RESPONSE HOTLINE	425.587.3900
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BRAD LANDIS	VERIZON BUSINESS	425.201.0901
RAYMOND PILKENTON	COMCAST CABLE	425.263.5332
CONST.COORDINATOR	KING COUNTY METRO	206.684.2732
JEFF MILES	LAKE WASH. SCHOOL DISTRICT	425.936.1120
KELLY NESBITT	NORTHSHORE UTILITY DISTRICT	425.398.4431
KEN McDOWELL	WOODINVILLE WATER DISTRICT	425.487.4104
JAY SCHWAB	FRONTIER COMMUNICATIONS	425.263.4035
RICHARD COX	SEATTLE PUBLIC UTILITIES	206.684.8117
EMERGENCY		911
ONE CALL UTILITY LOCATE		800.424.5555
STEVE HOOPES COK INSPECTOR		425.263.5086

KIRKLAND

NO SCALE

811

Know what's **below.**
Call before you dig.



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520 PIKE STREET, SUITE 1350
SEATTLE, WA 98101
P 206.462.7030

INDEX OF DRAWINGS

SHEET #	DWG #	DESCRIPTION
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3	G-3	CITY-APPROVED PLANS NOTES-1 AND DESIGN TABLE
4	G-4	EROSION CONTROL PLAN
5	G-5	EROSION CONTROL NOTES
6	C-1	EXISTING SITE SURVEY CONTROL AND DEMOLITION PLAN
7	C-2	SITE, GRADING, DRAINAGE AND RESTORATION PLAN
8	C-3	STORM DRAIN PROFILES
9	C-4	SEWER PIPING PLAN PLAN AND PROFILES
10	C-5	GENERAL CIVIL YARD PIPING DETAILS
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40	E-9	ELECTRICAL DETAILS
41	E-10	ELECTRICAL SCHEDULES
42	L-1	PLANTING PLAN
43	L-2	PLANTING DETAILS

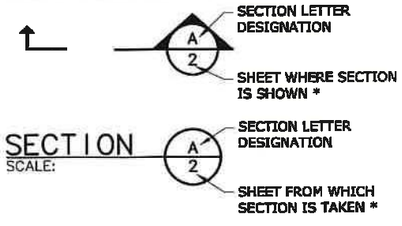
ASBUILT

ABBREVIATIONS

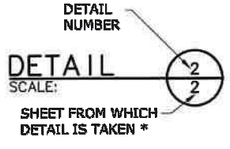
ABAND	ABANDONED
AC	ASPHALTIC CONCRETE
AL	ALUMINUM
APPVD	APPROVED
ASSY	ASSEMBLY
ATB	ASPHALT TREATED BASE
APWA	AMERICAN PUBLIC WORKS ASSOCIATION
AVE	AVENUE
AWWA	AMERICAN WATER WORKS ASSOCIATION
BLDG	BUILDING
BMP	BEST MANAGEMENT PRACTICES
BTM	BOTTOM
C/L	CENTERLINE
CARV	COMBINATION AIR RELEASE VALVE
CB	CATCH BASIN
CDF	CONTROLLED DENSITY FILL
CL	CLASS
CLR	CLEARANCE
CMP	CORRUGATED METAL PIPE
CMU	CONCRETE MASONRY UNIT
COK	CITY OF KIRKLAND
COORD	COORDINATE
CONC	CONCRETE
CONST	CONSTRUCTION
CPLG	COUPLING
CSBC	CRUSHED SURFACING BASE COURSE
CSTC	CRUSHED SURFACING TOP COURSE
CY	CUBIC YARD
DET	DETAIL
DI	DUCTILE IRON
DIA	DIAMETER
DOE	DEPARTMENT OF ECOLOGY
DR	DRIVEWAY
DWG	DRAWING
E	EAST
EA	EACH
EL, ELEV	ELEVATION
EQ	EQUAL
EXIST	EXISTING
FL	FLOW LINE
FLG	FLANGE
FM	FORCE MAIN
FT	FEET
G	GAS
GALV	GALVANIZED
GEN	GENERAL
HMA	HOT MIX ASPHALT
HORIZ	HORIZONTAL(LY)
HW	HEADWALL
ID	INSIDE DIAMETER
IE	INVERT ELEVATION
INSTL	INSTALL
INV	INVERT
L	LENGTH
LF	LINEAR FOOT
LT	LEFT
LTF	LENGTH TO FIT
MFR	MANUFACTURER
MH	MANHOLE
MJ	MECHANICAL JOINT
MIN	MINIMUM
MUTCD	MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES
N	NORTH
N/A	NOT APPLICABLE
NE	NORTHEAST
NIC	NOT IN CONTRACT
NO.	NUMBER
NOM	NOMINAL
NTS	NOT TO SCALE
NTU	NEPHELOMETRIC TURBIDITY UNITS
OC	ON CENTER
OD	OUTSIDE DIAMETER
OHWM	ORDINARY HIGH WATER MARK
P	PHONE
PCCP	PORTLAND CEMENT CONCRETE PVMT
PROP	PROPOSED
PVMT	PAVEMENT
PH	POTHOLE
PL	PLASTIC
PSF	POUNDS PER SQUARE FOOT
PVC	POLYVINYL CHLORIDE
PWR	POWER
RESTR	RESTRAIN(ED)
RDCR	REDUCER
REQD	REQUIRED
RFCA	REDUCED FLANGE COUPLING ADAPTER
RH	RIGHT HAND
RHR	RIGHT HAND REVERSE
RJ	RESTRAINED JOINT PIPE
RMJ	RESTRAINED MECHANICAL JOINT
RT	RIGHT
R/W	RIGHT OF WAY
S	SOUTH
SCHED	SCHEDULE
SD	STORM DRAIN
SDMH	STORM MANHOLE
SERV	SERVICE
SHT(S)	SHEET(S)
SLP	SLOPE
SPECS	SPECIFICATIONS
SPL	SPOOL
SQ	SQUARE
SR	SENIOR
SS	SANITARY SEWER
SSCO	SANITARY SEWER CLEANOUT
SSMH	SANITARY SEWER MANHOLE
SST	STAINLESS STEEL
ST	STREET
STA	STATION
STD	STANDARD
STL	STEEL
S/W	SIDEWALK
T, TEL	TELEPHONE
TB	THRUST BLOCK
TEMP	TEMPORARY
TESC	TEMPORARY EROSION AND SEDIMENT CONTROL
THK	THICK
TRANS	TRANSITION
TYP	TYPICAL
VERT	VERTICAL(LY)
UGP	UNDERGROUND POWER LINE
W	WATER, WEST
W/	WITH
WASH	WASHINGTON
WSDOT	WASHINGTON STATE DEPARTMENT OF TRANSPORTATION
WV	WATER VALVE
WW	WINGWALL

SECTION AND DETAIL DESIGNATIONS

SECTION DESIGNATIONS

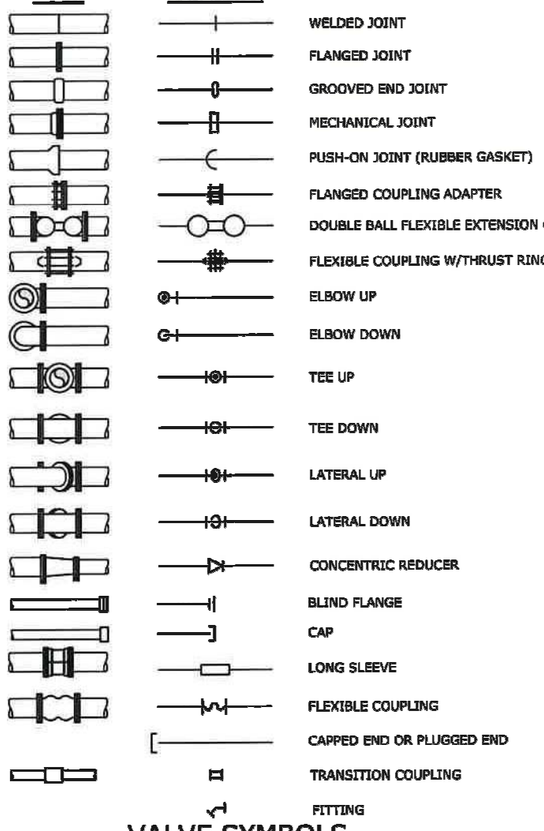


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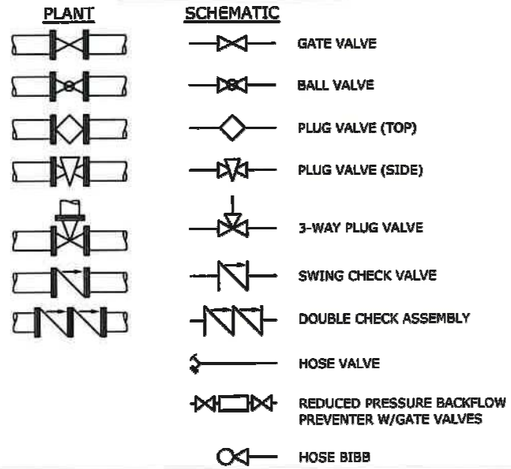


* NOTE: IF PLAN AND SECTION FOR DETAIL CALL-OUT AND DETAIL ARE SHOWN ON THE SAME DRAWING, DRAWING NUMBER IS REPLACED WITH A DASH.

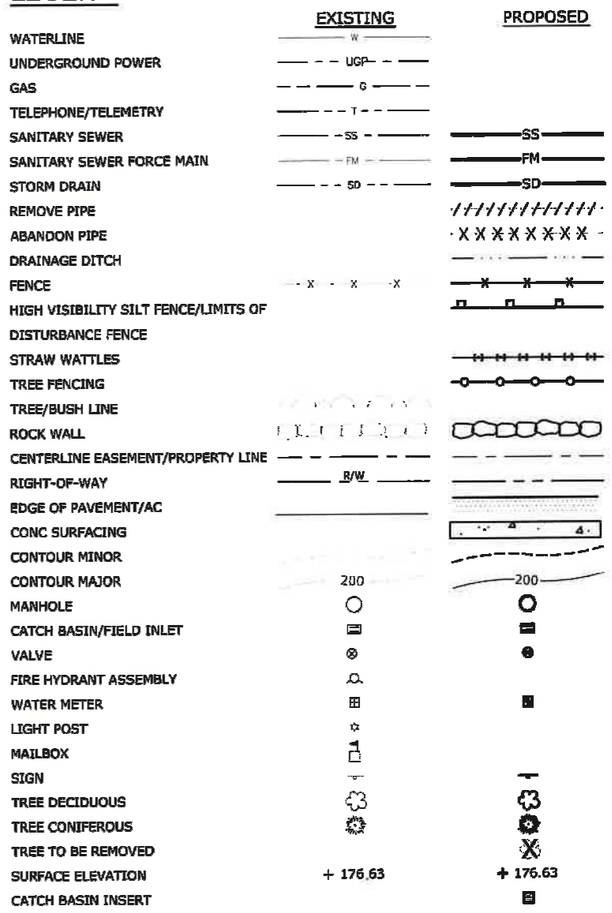
PIPE SYMBOLS



VALVE SYMBOLS



LEGEND



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SSA
DESIGNED BY: DATE

BAW
DRAWN BY: DATE

BMC
CHECKED BY: DATE

BRIAN M. CASEY STATE OF WASHINGTON 48832 REGISTERED PROFESSIONAL ENGINEER

NO.	DATE	BY	APPR.	REVISION

CITY OF KIRKLAND WASHINGTON

CITY OF KIRKLAND
PUBLIC WORKS DEPARTMENT
123 FIFTH AVENUE KIRKLAND, WA 98033 (425) 587-3800 www.kirklandwa.gov

SYMBOLS, LEGEND AND ABBREVIATIONS

SHEET: 2 of 43
SCALE: AS SHOWN
FILENAME: G-2

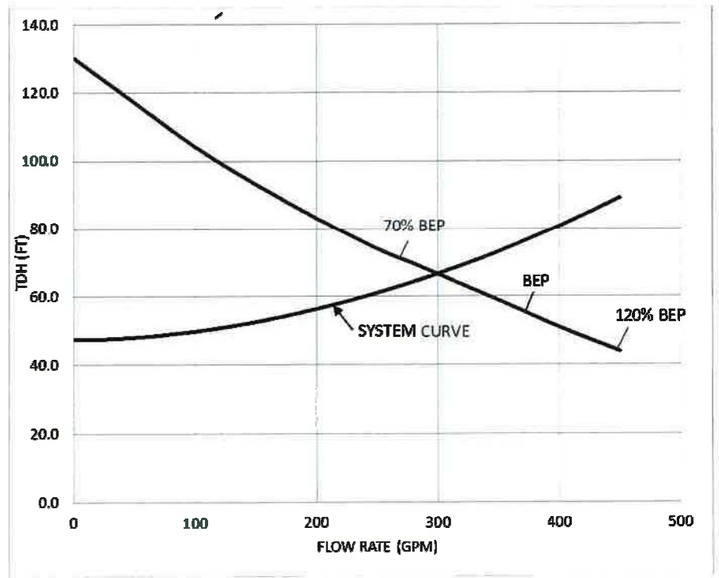
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GENERAL NOTES

1. A PRE-CONSTRUCTION CONFERENCE SHALL BE HELD PRIOR TO THE START OF CONSTRUCTION. SECURE ALL NECESSARY PERMITS BEFORE CONSTRUCTION.
2. ALL CONSTRUCTION AND MATERIALS SHALL CONFORM TO CITY OF KIRKLAND DEPARTMENT OF PUBLIC WORKS PRE-APPROVED PLANS AND POLICIES AND CURRENT WSDOT/APWA STANDARDS AND SPECIFICATIONS FOR ROAD, BRIDGE, AND MUNICIPAL CONSTRUCTION.
3. APPROXIMATE LOCATIONS OF EXISTING UTILITIES HAVE BEEN OBTAINED FROM AVAILABLE RECORDS AND ARE SHOWN FOR CONVENIENCE. VERIFY UTILITY LOCATIONS SHOWN AND FOR DISCOVERY OF POSSIBLE ADDITIONAL UTILITIES NOT SHOWN SO AS TO AVOID DAMAGE OR DISTURBANCE. THE UNDERGROUND UTILITY LOCATION SERVICE SHALL BE CONTACTED FOR FIELD LOCATION PRIOR TO ANY CONSTRUCTION. THE OWNER OR HIS REPRESENTATIVE SHALL BE CONTACTED IF A UTILITY CONFLICT EXISTS. FOR UTILITY LOCATION IN KING COUNTY, CALL 1-800-424-5555. THE CONTRACTOR IS RESPONSIBLE TO ENSURE UTILITY LOCATES ARE MAINTAINED THROUGHOUT THE LIFE OF THE PROJECT.
4. COORDINATE ACTIVITIES WITH LOCAL UTILITY COMPANIES TO ENSURE THAT ALL UTILITIES ARE INSTALLED ACCORDING TO THESE PLANS AND THE REQUIREMENTS OF THE INDIVIDUAL UTILITY COMPANIES.
5. ALL MANHOLES SHALL CONFORM TO WSDOT/APWA STANDARDS, ECCENTRIC CONES WITH MANUFACTURER-APPROVED GASKETS AND 1/2" POLYPROPYLENE-ENCAPSULATED SAFETY STEPS AND LADDERS. ALL MANHOLES SHALL HAVE CAST IRON RINGS AND DUCTILE IRON COVERS. LIDS SHALL HAVE 2" RAISED LETTERS MARKED "SEWER." ALL CLEANOUTS SHALL HAVE CAST IRON RINGS AND COVERS MARKED "CO" THAT ARE IN PAVED AREAS.
6. ALL SIDE SEWERS SHALL BE TESTED FOR ACCEPTANCE AT THE SAME TIME THE MAIN SEWER IS TESTED. SIDE SEWER LOCATIONS SHALL BE VERIFIED IN THE FIELD PRIOR TO CONSTRUCTION AND BACKFILLING. ALL SIDE SEWERS SHALL BE CAPPED WITH A WATERTIGHT PLUG, HAVE A CLEANOUT AND TEST TEE INSTALLED, AND SHALL BE MARKED FOR LOCATION WITH A 2" X 4" STAKE PAINTED WHITE, MARKED SEWER, WITH 3' EXPOSED, AND THE DEPTH OF THE CAP WRITTEN ON THE STAKE. SEE STANDARD DETAIL S.18. THE STAKE SHALL BE SECURED TO THE END OF THE PLUG WITH WIRE A MINIMUM OF 16 GAUGE. INITIAL SIDE SEWER INSTALLATION SHALL RUN TO THE PROPERTY LINE. THE REMAINING SIDE SEWER SHALL NOT BE INSTALLED UNTIL TESTING AND ACCEPTANCE OF THE SEWER TRUNK LINE BY THE CITY OF KIRKLAND IS COMPLETED. NUMBER AND LOCATION OF SIDE SEWERS SHOWN ARE APPROXIMATE ONLY AND MAY BE CHANGED AS REQUIRED DURING CONSTRUCTION. NOTIFY ENGINEER WHEN EXACT LOCATIONS ARE DETERMINED AND PROVIDE THE ENGINEER AND THE CITY OF KIRKLAND DEPARTMENT OF PUBLIC WORKS WITH AN AS-BUILT. IF APPROVED BY THE PUBLIC WORKS DEPARTMENT, ALL DOUBLE-SIDED SEWER WYES MUST BE AT THE PROPERTY LINE.
7. ALL MAIN-LINE TRENCHES SHALL BE COMPACTED PRIOR TO TESTING SEWER LINES FOR ACCEPTANCE.
8. PRESSURE TESTING OF GRAVITY SEWER MAINS SHALL CONFORM TO THE FOLLOWING STANDARDS: (1) AIR TESTING WILL REQUIRE A MINIMUM OF 4 PSI FOR 15 MINUTES WITH NO PRESSURE DROP; (2) WATER TESTING WILL REQUIRE A MINIMUM OF 10' OF HEAD IN A STANDPIPE AT THE TEST LOCATION FOR 15 MINUTES WITH NO DROP IN THE WATER LEVEL IN THE STANDPIPE. EITHER TEST IS ACCEPTABLE.
9. PRESSURE TESTING OF FORCE MAINS AND LATERALS WILL REQUIRE AN AIR TEST OF 25 PSI MINIMUM FOR 15 MINUTES WITH NO PRESSURE DROP.
10. NEW CONNECTIONS TO EXISTING MANHOLES OR SEWER LINES SHALL BE SEALED OFF UNTIL UPSTREAM CONSTRUCTION IS FINISHED, TESTED, CLEANED, AND ACCEPTED. ALL CONSTRUCTION DEBRIS AND WATER SHALL BE REMOVED PRIOR TO OPENING THE SEAL.
11. ALL PVC SEWER PIPE AND FITTINGS SHALL MEET THE REQUIREMENTS OF ASTM SPECIFICATIONS D-3034 FOR 4" TO 15" DIAMETER AND ASTM F679 FOR 18" TO 27" DIAMETER. PIPE SHALL BE SDR-35 AND SHALL CONFORM TO STANDARD SPECIFICATIONS. BEDDING AND BACKFILL SHALL MEET WSDOT AND APWA SPECIFICATIONS.
12. MINIMUM SLOPE FOR SIDE SEWERS SHALL BE TWO PERCENT (2%).
13. AN APPROVED COPY OF THE PLANS MUST BE ON SITE WHENEVER CONSTRUCTION IS IN PROGRESS.
14. PRIOR TO CONSTRUCTION OF SEWER LINES, THE NECESSARY LOT CORNERS MUST BE SET, AND THE LOCATION OF PIPES, MANHOLES, AND INVERT ELEVATIONS VERIFIED.
15. PIPE ANCHORS, IF USED, SHALL BE INSTALLED: NOT OVER 36' CENTER TO CENTER ON GRADES FROM 20 PERCENT TO 35 PERCENT; NOT OVER 24' CENTER TO CENTER ON GRADES FROM 35 PERCENT TO 50 PERCENT; AND NOT OVER 16' CENTER TO CENTER ON GRADES 50 PERCENT AND GREATER.
16. ALL MANHOLES SHALL HAVE A MINIMUM OF 0.10' TO A MAXIMUM OF 1.00' DROP BETWEEN INVERT IN AND INVERT OUT.
17. PVC SEWER PIPE SHALL BE TESTED FOR DEFLECTION ACCORDING TO WSDOT/APWA SPECIFICATIONS.
18. ALL TRENCH BACKFILL SHALL BE COMPACTED TO 95 PERCENT DENSITY IN ROADWAYS, ROADWAY SHOULDERS, ROADWAY PRISM AND DRIVEWAYS, AND 85 PERCENT DENSITY IN UNPAVED AREAS. ALL PIPE ZONE COMPACTION SHALL BE 95 PERCENT.
19. ADJUST ALL MANHOLE LIDS AND CLEANOUT LIDS TO MATCH FINAL ASPHALT ELEVATIONS IN ROADWAYS OR GROUND ELEVATIONS IN LANDSCAPED AREAS.
20. WHEN TYING INTO EXISTING MANHOLES THAT ARE BELOW MINIMUM STANDARDS, THE EXISTING MANHOLE MUST BE UPGRADED TO MEET CURRENT STANDARDS.
21. ALL NEW SEWER MAIN EXTENSIONS SHALL BE VIDEOED PRIOR TO FINAL ACCEPTANCE.

PUMP STATION	
	PROPOSED
LOCATION	1805 10TH ST W
PUMP STATION TYPE	SUBMERSIBLE
PUMP TYPE	(2) CONSTANT SPEED SUBMERSIBLE
PUMP CAPACITY (PER PUMP)	300 GPM
MAXIMUM PUMP STARTS PER HOUR	10
MOTOR HORSEPOWER, HP	10
WET WELL LEVEL CONTROL TYPE	LEVEL TRANSDUCER
WET WELL OPERATING VOLUME, PUMPS OFF TO LEAD PUMP ON	450 GALLONS
EMERGENCY STORAGE POINT/EMERGENCY STORAGE DISCHARGE ELEVATIONS	EXIST ROSE POINT LIFT STATION/20.5'
AUXILIARY POWER TYPE	STATIONARY DIESEL GENERATOR
AUXILIARY POWER LOCATION	CONTROL BUILDING
AUXILIARY POWER OUTPUT	40 KW
AUXILIARY POWER FUEL TANK CAPACITY	24 HOURS
AUXILIARY POWER TRANSFER SWITCH	AUTOMATIC
ALARM TELEMETRY TYPE	PER SPECS
EPA RELIABILITY CLASS	CLASS 1
FORCE MAIN	
	EXISTING
TYPE AND LENGTH	1,570 FT OF 6" DI
PROFILE DESCRIPTION	GENERAL ASCENDING
DISCHARGE MANHOLE LOCATION	MARKET ST AND FORBES CREEK DR
AIR & VACUUM RELEASE VALVES	N/A
AVERAGE DETENTION TIME (FORCE MAIN)	300 MINUTES @ 10 GPM DESIGN ADWF

PUMP AND SYSTEM CURVES



NOTE:

1. PUMP CURVES BASED ON MANUFACTURER INFO FOR HIDROSTAL MODEL D3K-L.

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SSA DESIGNED BY: DATE

BAW DRAWN BY: DATE

BMC CHECKED BY: DATE

BRIAN M. CASEY STATE OF WASHINGTON 48632 REGISTERED PROFESSIONAL ENGINEER

NO.	DATE	BY	APPR.	REVISION

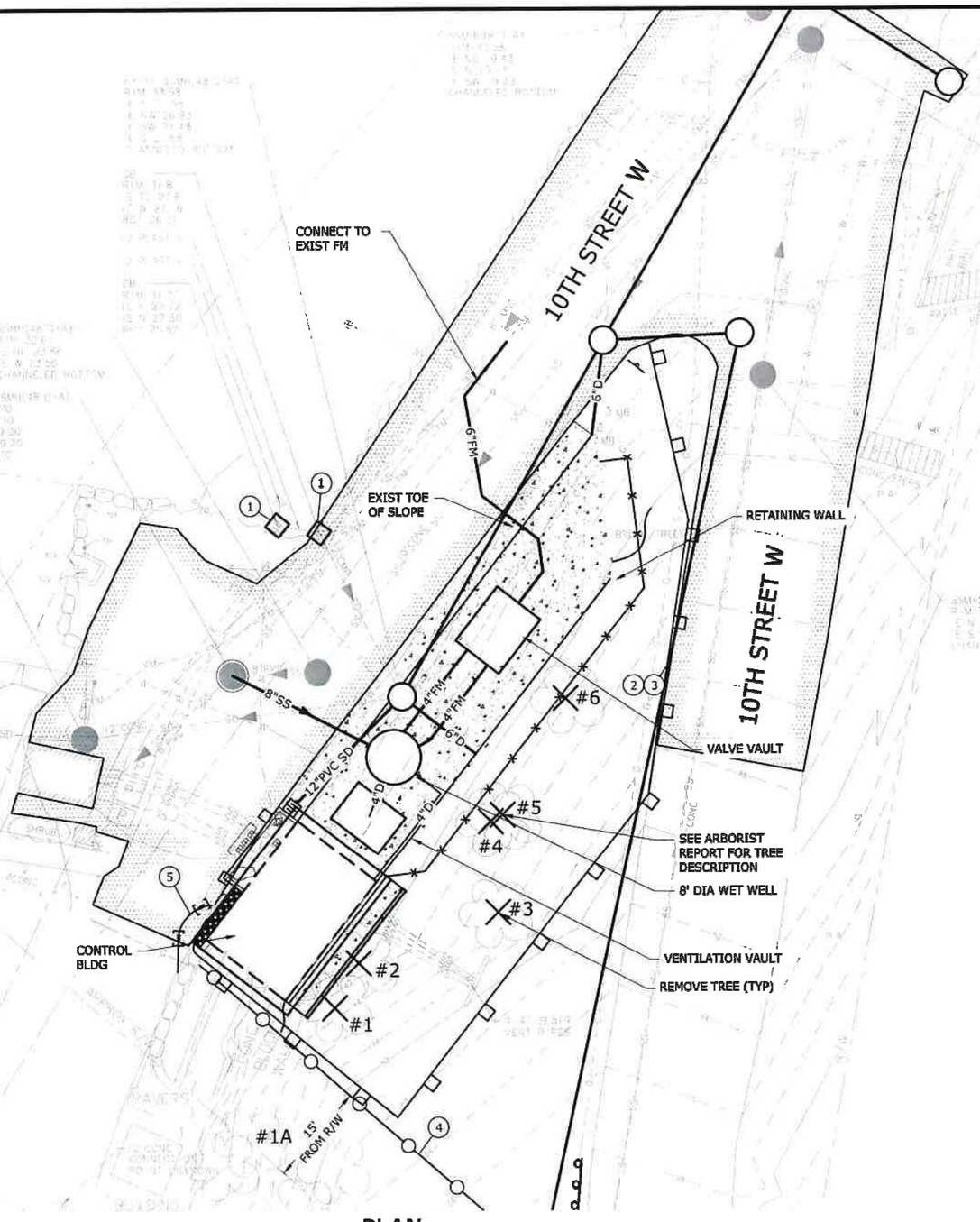
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CITY-APPROVED PLANS
NOTES AND DESIGN TABLE

SHEET: 3 of 43
SCALE: AS SHOWN
FILENAME: G-3

K:\TAC_Projects\15\11680 Rose Point Lift Station Upgrade\CAD\Sheets\15-1680-WA-G-4.dwg G-4 2/28/2019 12:03 PM BRETT.WILLIAMS 21.0s (LMS Tech)



KEY NOTES

1. INSTALL INLET PROTECTION PER CITY PRE-APPROVED PLAN CK-E.11
2. INSTALL HIGH-VISIBILITY SILT FENCING PER CITY PRE-APPROVED PLAN CK-E.03
3. MARK CLEARING LIMITS WITH LIMIT OF DISTURBANCE FENCE
4. INSTALL TREE FENCING PER CITY PRE-APPROVED PLAN CK-R.49, AT LEAST 15' NORTHWARD OF THE CLOSEST TREE LOCATED ON THE SOUTH SIDE OF THE BUILDING
5. INSTALL STRAW WATTLES PER CITY PRE-APPROVED PLAN CK-E.10, FINAL LOCATION TO BE DETERMINED IN FIELD

GENERAL NOTES

1. INSTALL INLET PROTECTION WHERE SHOWN AND ANY OTHER AFFECTED DRAINAGE STRUCTURES.

N

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PLAN
SCALE: 1"=10'

murraysmith

SSA DESIGNED BY: DATE
BAW DRAWN BY: DATE
BMC CHECKED BY: DATE

BRIAN M. CASEY STATE OF WASHINGTON 41632 REGISTERED PROFESSIONAL ENGINEER

NO.	DATE	BY	APPR.	REVISION

CITY OF KIRKLAND WASHINGTON

CITY OF KIRKLAND
PUBLIC WORKS DEPARTMENT
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EROSION CONTROL PLAN

SHEET: 4 of 43
SCALE: AS SHOWN
FILENAME: G-4

EROSION CONTROL NOTES

1. THE APPROVED CONSTRUCTION SEQUENCE SHALL BE AS FOLLOWS:
   A. CONDUCT PRE-CONSTRUCTION MEETING.
   B. FLAG OR FENCE CLEARING LIMITS.
   C. POST SIGN WITH NAME AND PHONE NUMBER OF TESC SUPERVISOR.
   D. INSTALL CATCH BASIN PROTECTION IF REQUIRED.
   E. GRADE AND INSTALL CONSTRUCTION ENTRANCE(S).
   F. INSTALL PERIMETER PROTECTION (SILT FENCE, BRUSH BARRIER, ETC.).
   G. CONSTRUCT SEDIMENT PONDS AND TRAPS.
   H. GRADE AND STABILIZE CONSTRUCTION ROADS.
   I. CONSTRUCT SURFACE WATER CONTROLS (INTERCEPTOR DIKES, PIPE SLOPE DRAINS, ETC.) SIMULTANEOUSLY WITH CLEARING AND GRADING FOR PROJECT DEVELOPMENT.
   J. MAINTAIN EROSION CONTROL MEASURE IN ACCORDANCE WITH CITY OF KIRKLAND STANDARDS AND MANUFACTURER'S RECOMMENDATIONS.
   K. RELOCATE EROSION CONTROL MEASURES OR INSTALL NEW MEASURES SO THAT AS SITE CONDITIONS CHANGE, THE EROSION AND SEDIMENT CONTROL IS ALWAYS IN ACCORDANCE WITH THE CITY TESC MINIMUM REQUIREMENTS.
   L. COVER ALL AREAS WITHIN THE SPECIFIED TIME FRAME WITH STRAW, WOOD FIBER MULCH, COMPOST, PLASTIC SHEETING, CRUSHED ROCK OR EQUIVALENT.
   M. STABILIZE ALL AREAS THAT REACH FINAL GRADE WITHIN 7 DAYS.
   N. SEED OR SOD ANY AREAS TO REMAIN UNWORKED FOR MORE THAN 30 DAYS.
   O. UPON COMPLETION OF THE PROJECT, ALL DISTURBED AREAS MUST BE STABILIZED AND BEST MANAGEMENT PRACTICES REMOVED IF APPROPRIATE.

2. ALL WORK AND MATERIALS SHALL BE IN ACCORDANCE WITH CITY OF KIRKLAND STANDARDS AND SPECIFICATIONS.

3. THE BOUNDARIES OF THE CLEARING LIMITS SHOWN ON THIS PLAN SHALL BE SET BY SURVEY AND CLEARLY FLAGGED IN THE FIELD BY A CLEARING CONTROL FENCE PRIOR TO CONSTRUCTION. DURING THE CONSTRUCTION PERIOD, NO DISTURBANCE OR REMOVAL OF ANY GROUND COVER BEYOND THE FLAGGED CLEARING LIMITS SHALL BE PERMITTED. THE FLAGGING SHALL BE MAINTAINED BY THE PERMITTEE/CONTRACTOR FOR THE DURATION OF CONSTRUCTION.

4. APPROVAL OF THIS EROSION/SEDIMENTATION CONTROL (ESC) PLAN DOES NOT CONSTITUTE AN APPROVAL OF PERMANENT ROAD OR DRAINAGE DESIGN (E.G., SIZE AND LOCATION OF ROADS, PIPES, RESTRICTORS, CHANNELS, RETENTION FACILITIES, UTILITIES, ETC.).

5. THE IMPLEMENTATION OF THIS ESC PLAN AND THE CONSTRUCTION, MAINTENANCE, REPLACEMENT, AND UPGRADING OF THESE ESC FACILITIES IS THE RESPONSIBILITY OF THE PERMITTEE/CONTRACTOR UNTIL ALL CONSTRUCTION IS APPROVED.

6. A COPY OF THE APPROVED ESC PLANS MUST BE ON THE JOB SITE WHENEVER CONSTRUCTION IS IN PROGRESS.

   THE ESC FACILITIES SHOWN ON THIS PLAN MUST BE CONSTRUCTED PRIOR TO OR IN CONJUNCTION WITH ALL CLEARING AND GRADING ACTIVITIES IN SUCH A MANNER AS TO ENSURE THAT SEDIMENT-LADEN WATER DOES NOT ENTER THE DRAINAGE SYSTEM OR VIOLATE APPLICABLE WATER STANDARDS. WHEREVER POSSIBLE, MAINTAIN NATURAL VEGETATION FOR SILT CONTROL.

7. THE ESC FACILITIES SHALL BE CONSTRUCTED IN ACCORDANCE WITH THE DETAILS ON THE APPROVED PLANS. LOCATIONS MAY BE MOVED TO SUIT FIELD CONDITIONS, SUBJECT TO APPROVAL BY THE ENGINEER AND THE CITY OF KIRKLAND INSPECTOR.

8. THE ESC FACILITIES SHOWN ON THIS PLAN ARE THE MINIMUM REQUIREMENTS FOR ANTICIPATED SITE CONDITIONS. DURING THE CONSTRUCTION PERIOD, THESE ESC FACILITIES SHALL BE UPGRADED (E.G., ADDITIONAL SUMPS, RELOCATION OF DITCHES AND SILT FENCES, ETC.) AS NEEDED FOR UNEXPECTED STORM EVENTS. ADDITIONALLY, MORE ESC FACILITIES MAY BE REQUIRED TO ENSURE COMPLETE SILTATION CONTROL. THEREFORE, DURING THE COURSE OF CONSTRUCTION IT SHALL BE THE OBLIGATION AND RESPONSIBILITY OF THE CONTRACTOR TO ADDRESS ANY NEW CONDITIONS THAT MAY BE CREATED BY HIS ACTIVITIES AND TO PROVIDE ADDITIONAL FACILITIES OVER AND ABOVE THE MINIMUM REQUIREMENTS AS MAY BE NEEDED.

9. THE ESC FACILITIES SHALL BE INSPECTED BY THE PERMITTEE/CONTRACTOR DAILY DURING NON-RAINFALL PERIODS, EVERY HOUR (DAYLIGHT) DURING A RAINFALL EVENT, AND AT THE END OF EVERY RAINFALL, AND MAINTAINED AS NECESSARY TO ENSURE THEIR CONTINUED FUNCTIONING. IN ADDITION, TEMPORARY SILTATION PONDS AND ALL TEMPORARY SILTATION CONTROLS SHALL BE MAINTAINED IN A SATISFACTORY CONDITION UNTIL SUCH TIME THAT CLEARING AND/OR CONSTRUCTION IS COMPLETED, PERMANENT DRAINAGE FACILITIES ARE OPERATIONAL, AND THE POTENTIAL FOR EROSION HAS PASSED. WRITTEN RECORDS SHALL BE KEPT DOCUMENTING THE REVIEWS OF THE ESC FACILITIES.

10. THE ESC FACILITIES ON INACTIVE SITES SHALL BE INSPECTED AND MAINTAINED A MINIMUM OF ONCE A MONTH OR WITHIN 48 HOURS FOLLOWING A STORM EVENT.

11. ALL DENUDED SOILS MUST BE STABILIZED WITH AN APPROVED TESC METHOD (E.G. SEEDING, MULCHING, PLASTIC COVERING, CRUSHED ROCK) WITHIN THE FOLLOWING TIMELINES: MAY 1 TO SEPTEMBER 30 - SOILS MUST BE STABILIZED WITHIN 7 DAYS OF GRADING. OCTOBER 1 TO APRIL 30 - SOILS MUST BE STABILIZED WITHIN 2 DAYS OF GRADING. STABILIZE SOILS AT THE END OF THE WORKDAY PRIOR TO A WEEKEND, HOLIDAY, OR PREDICTED RAIN EVENT.

12. WHERE SEEDING FOR TEMPORARY EROSION CONTROL IS REQUIRED, FAST GERMINATING GRASSES SHALL BE APPLIED AT AN APPROPRIATE RATE (EXAMPLE: ANNUAL OR PERENNIAL RYE APPLIED AT APPROXIMATELY 80 POUNDS PER ACRE).

13. WHERE STRAW MULCH IS REQUIRED FOR TEMPORARY EROSION CONTROL, IT SHALL BE APPLIED AT A MINIMUM THICKNESS OF 2".

14. ALL LOTS ADJOINING OR HAVING ANY NATIVE GROWTH PROTECTION EASEMENTS (NGPE) SHALL HAVE A 6-FT HIGH TEMPORARY CONSTRUCTION FENCE (CHAIN LINK WITH PIER BLOCKS) SEPARATING THE LOT (OR BUILDABLE PORTIONS OF THE LOT) FROM THE AREA RESTRICTED BY THE NGPE AND SHALL BE INSTALLED PRIOR TO ANY GRADING OR CLEARING AND REMAIN IN PLACE UNTIL THE PLANNING DEPARTMENT AUTHORIZES REMOVAL.

15. CLEARING LIMITS SHALL BE DELINEATED WITH A CLEARING CONTROL FENCE. THE CLEARING CONTROL FENCE SHALL CONSIST OF A 6' HIGH CHAIN LINK FENCE ADJACENT THE DRIP LINE OF TREES TO BE SAVED, WETLAND OR STREAM BUFFERS, AND SENSITIVE SLOPES. CLEARING CONTROL FENCES ALONG WETLAND OR STREAM BUFFERS OR UPSLOPE OF SENSITIVE SLOPES SHALL BE ACCOMPANIED BY AN EROSION CONTROL FENCE. IF APPROVED BY THE CITY, A 4' HIGH ORANGE MESH CLEARING CONTROL FENCE MAY BE USED TO DELINEATE CLEARING LIMITS IN ALL OTHER AREAS.

16. OFF-SITE STREETS MUST BE KEPT CLEAN AT ALL TIMES. IF DIRT IS DEPOSITED ON THE PUBLIC STREET SYSTEM, THE STREET SHALL BE IMMEDIATELY CLEANED WITH POWER SWEEPER OR OTHER EQUIPMENT. ALL VEHICLES SHALL LEAVE THE SITE BY WAY OF THE CONSTRUCTION ENTRANCE AND SHALL BE CLEANED OF ALL DIRT THAT WOULD BE DEPOSITED ON THE PUBLIC STREETS.

17. ROCK FOR EROSION PROTECTION OF ROADWAY DITCHES, WHERE REQUIRED, MUST BE OF SOUND QUARRY ROCK, PLACED TO A DEPTH OF 1-FT AND MUST MEET THE FOLLOWING SPECIFICATIONS: 4"-8" ROCK/40%-70% PASSING; 2"-4" ROCK/30%-40% PASSING; AND 1"-2" ROCK/10%-20% PASSING. RECYCLED CONCRETE SHALL NOT BE USED FOR CONSTRUCTION ENTRANCE OR TEMPORARY STABILIZATION ELSEWHERE ON THE SITE.

18. IF ANY PART(S) OF THE CLEARING LIMIT BOUNDARY OR TEMPORARY EROSION AND SEDIMENTATION CONTROL PLAN ARE DAMAGED, IT SHALL BE REPAIRED IMMEDIATELY.

19. ALL PROPERTIES ADJACENT TO THE PROJECT SITE SHALL BE PROTECTED FROM SEDIMENT DEPOSITION AND RUNOFF.

20. AT NO TIME SHALL MORE THAN 1-FT OF SEDIMENT BE ALLOWED TO ACCUMULATE WITHIN A CATCH BASIN. ALL CATCH BASINS AND CONVEYANCE LINES SHALL BE CLEANED IMMEDIATELY FOLLOWING REMOVAL OF EROSION CONTROL BMPS. THE CLEANING OPERATION SHALL NOT FLUSH SEDIMENT-LADEN WATER INTO THE DOWNSTREAM SYSTEM.

21. ANY PERMANENT RETENTION/DETENTION FACILITY USED AS A TEMPORARY SETTLING BASIN SHALL BE MODIFIED WITH THE NECESSARY EROSION CONTROL MEASURES AND SHALL PROVIDE ADEQUATE STORAGE CAPACITY. IF THE PERMANENT FACILITY IS TO FUNCTION ULTIMATELY AS AN INFILTRATION OR DISPERSION SYSTEM, THE FACILITY SHALL NOT BE USED AS A TEMPORARY SETTLING BASIN. NO UNDERGROUND DETENTION TANK, DETENTION VAULT, OR SYSTEM WHICH BACKS UNDER OR INTO A POND SHALL BE USED AS A TEMPORARY SETTLING BASIN.

22. ALL EROSION/SEDIMENTATION CONTROL PONDS WITH A DEAD STORAGE DEPTH EXCEEDING 6" MUST HAVE A PERIMETER FENCE WITH A MINIMUM HEIGHT OF 3'.

23. THE WASHED GRAVEL BACKFILL ADJACENT TO THE FILTER FABRIC FENCE SHALL BE REPLACED AND THE FILTER FABRIC CLEANED IF IT IS NONFUNCTIONAL BY EXCESSIVE SILT ACCUMULATION AS DETERMINED BY THE CITY OF KIRKLAND. ALSO, ALL INTERCEPTOR SWALES SHALL BE CLEANED IF SILT ACCUMULATION EXCEEDS ONE-QUARTER DEPTH.

24. PRIOR TO OCTOBER 1 OF EACH YEAR (THE BEGINNING OF THE WET SEASON), ALL DISTURBED AREAS SHALL BE REVIEWED TO IDENTIFY WHICH ONES CAN BE SEEDED IN PREPARATION FOR THE WINTER RAINS. THE IDENTIFIED DISTURBED AREA SHALL BE SEEDED WITHIN ONE WEEK AFTER OCTOBER 1. A SITE PLAN DEPICTING THE AREAS TO BE SEEDED AND THE AREAS TO REMAIN UNCOVERED SHALL BE SUBMITTED TO THE PUBLIC WORKS CONSTRUCTION INSPECTOR. THE INSPECTOR CAN REQUIRE SEEDING OF ADDITIONAL AREAS IN ORDER TO PROTECT SURFACE WATERS, ADJACENT PROPERTIES, OR DRAINAGE FACILITIES.

25. ANY AREA TO BE USED FOR INFILTRATION OR PERVIOUS PAVEMENT (INCLUDING A 5-FT BUFFER) MUST BE SURROUNDED BY SILT FENCE PRIOR TO CONSTRUCTION AND UNTIL FINAL STABILIZATION OF THE SITE TO PREVENT SOIL COMPACTION AND SILTATION BY CONSTRUCTION ACTIVITIES.

26. IF THE TEMPORARY CONSTRUCTION ENTRANCE OR ANY OTHER AREA WITH HEAVY VEHICLE LOADING IS LOCATED IN THE SAME AREA TO BE USED FOR INFILTRATION OR PERVIOUS PAVEMENT, 6" OF SEDIMENT BELOW THE GRAVEL SHALL BE REMOVED PRIOR TO INSTALLATION OF THE INFILTRATION FACILITY OR PERVIOUS PAVEMENT (TO REMOVE FINES ACCUMULATED DURING CONSTRUCTION).

27. ANY CATCH BASINS COLLECTING RUNOFF FROM THE SITE, WHETHER THEY ARE ON OR OFF THE SITE, SHALL HAVE ADEQUATE PROTECTION FROM SEDIMENT. CATCH BASINS DIRECTLY DOWNSTREAM OF THE CONSTRUCTION ENTRANCE OR ANY OTHER CATCH BASIN AS DETERMINED BY THE CITY INSPECTOR SHALL BE PROTECTED WITH A "STORM DRAIN PROTECTION INSERT" OR EQUIVALENT.

28. IF A SEDIMENT POND IS NOT PROPOSED, A BAKER TANK OR OTHER TEMPORARY GROUND AND/OR SURFACE WATER STORAGE TANK MAY BE REQUIRED DURING CONSTRUCTION, DEPENDING ON WEATHER CONDITIONS.

29. DO NOT FLUSH CONCRETE BY-PRODUCTS OR TRUCKS NEAR OR INTO THE STORM DRAINAGE SYSTEM. IF EXPOSED AGGREGATE IS FLUSHED INTO THE STORM SYSTEM, IT COULD MEAN RE-CLEANING THE ENTIRE DOWNSTREAM STORM SYSTEM, OR POSSIBLY RE-LAYING THE STORM LINE.

30. CONSTRUCTION DEWATERING DISCHARGES SHALL ALWAYS MEET WATER QUALITY GUIDELINES LISTED IN COK POLICY E-1. SPECIFICALLY, DISCHARGES TO THE PUBLIC STORMWATER DRAINAGE SYSTEM MUST BE BELOW 25NTU, AND NOT CONSIDERED A PROHIBITED DISCHARGE (PER KMC 15.52.090). TEMPORARY DISCHARGES TO SANITARY SEWER REQUIRE PRIOR AUTHORIZATION AND PERMIT FROM KING COUNTY INDUSTRIAL WASTE PROGRAM (206-263-3000) AND NOTIFICATION TO THE PUBLIC WORKS CONSTRUCTION INSPECTOR.

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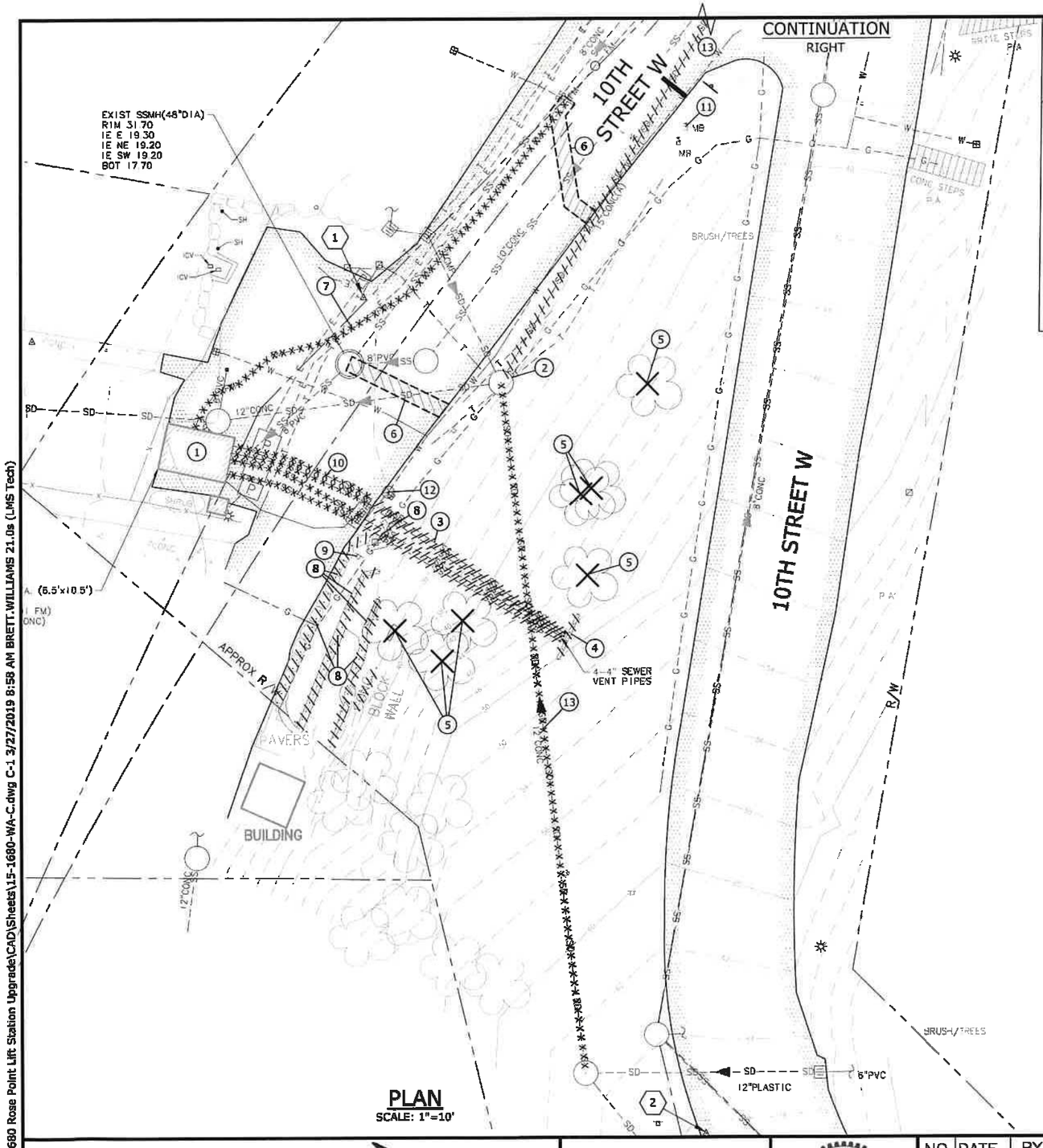
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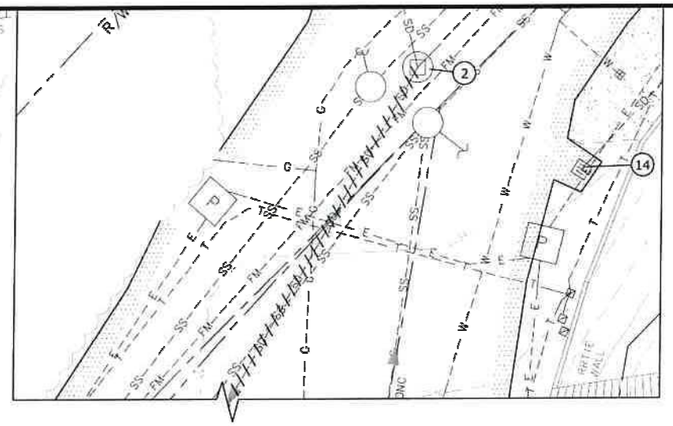
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EROSION CONTROL NOTES

SHEET: 5 of 43
SCALE: AS SHOWN
FILENAME: G-5



PLAN
SCALE: 1"=10'



KEY NOTES

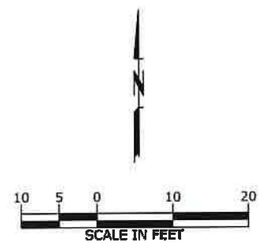
1. EXIST LIFT STATION STRUCTURE TO REMAIN IN PLACE, REMOVE ALL PUMPS, PIPING, VALVES, CONTROL PANELS, DISCONNECTS AND OTHER EQUIPMENT INSIDE OF DRY WELL, SEE SPECIFICATIONS FOR LIST OF SALVAGE MATERIAL
2. REMOVE AND REPLACE EXIST STORM DRAIN MANHOLE
3. REMOVE 4 - 4" SEWER VENT PIPES
4. REMOVE FENCE
5. REMOVE TREE, TYP
6. SAWCUT AND REMOVE EXIST PAVEMENT FOR INSTALLATION OF GRAVITY SEWER AND FORCE MAIN, SEE SHEET C-4
7. CAP AND ABANDON 6" FORCE MAIN IN PLACE CAP AND FILL EXISTING PIPE WITH CDF AT LEAST TWO DIAMETER LENGTH ON EACH END
8. REMOVE EXIST WALLS AND ROCKERY, COORDINATE REPLACEMENT WITH FINAL RESTORATION AS DIRECTED BY CITY
9. REMOVE, PROTECT AND RELOCATE EXIST SIGN, FINAL LOCATION TO BE DETERMINED BY CITY
10. CAP AND ABANDON 4 - 4" SEWER VENT PIPES, MAINTAIN MECHANICAL VENTING DURING CONSTRUCTION
11. TEMPORARILY RELOCATE MAILBOXES, COORDINATE TEMPORARY LOCATION WITH POSTAL SERVICE, TYP OF 2
12. ABANDON EXIST WATER SERVICE, REMOVE AND RELOCATE EXIST WATER METER PER SPEC, TYP OF 7
13. ABANDON EXIST STORM DRAIN PER SPEC
14. REMOVE AND REPLACE EXIST CATCH BASIN PER SPEC

CONTROL POINTS

ID	NORTHING	EASTING	ELEVATION	DESCRIPTION
1	256349.543	1299875.786	31.99	MAG NAIL WASHER
2	256212.287	1299931.750	66.41	MAG NAIL WASHER

PROJECT DATUM:

VERTICAL DATUM: NAVD88, US FEET
HORIZONTAL DATUM: WASHINGTON STATE COORDINATE SYSTEM
NORTH ZONE NAD83(91), US FEET
UTILIZING RTK GPS FIELD PROCEDURES



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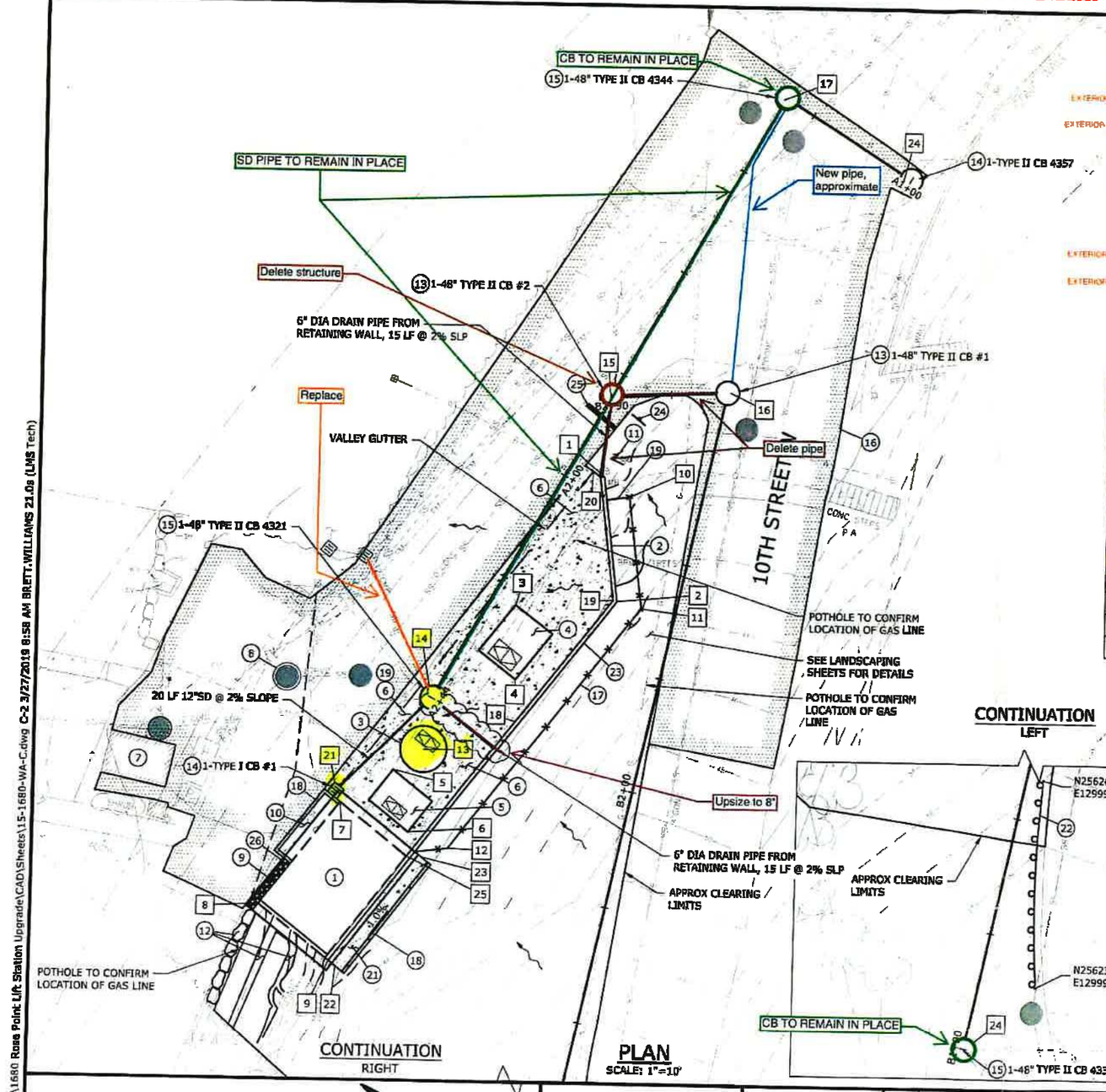
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EXISTING SITE SURVEY CONTROL AND DEMOLITION PLAN

SHEET: 6 of 43
SCALE: AS SHOWN
FILENAME: C-1

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CURRENT MARK-UP OF SHEET C-2, UPDATED BY HUNTER RICHARDS ON 2/12/2020



POINT DATA TABLE

PT NO.	DESCRIPTION	NORTHING	EASTING	ELEVATION
1	NE CORNER OF RETAINING WALL	N256379.06	E1299928.40	35.25
2	E CORNER OF RETAINING WALL	N256351.71	E1299929.11	40.67
3	NW CORNER OF VALVE VAULT	N256351.70	E1299912.36	33.11
4	SW CORNER OF VALVE VAULT	N256338.88	E1299912.48	32.99
5	NW CORNER OF BLOWER VAULT	N256323.12	E1299892.02	32.42
6	S CORNER OF BLOWER VAULT	N256312.54	E1299894.75	32.37
7	N EXTERIOR CORNER OF CONC SLAB	N256317.44	E1299883.04	32.20
8	SW CORNER OF RETAINING WALL	N256299.88	E1299869.81	43.70
9	S CORNER OF RETAINING WALL	N256290.54	E1299891.70	43.70
10	E CORNER OF FENCE	N256370.38	E1299930.77	37.00
11	E CORNER OF FENCE	N256350.87	E1299933.87	42.00
12	SE CORNER OF FENCE	N256309.94	E1299901.69	32.60
13	CENTER OF WET WELL	N256326.77	E1299897.15	32.56
14	CENTER OF TYPE II CB	N256335.59	E1299898.35	32.52
15	CENTER OF TYPE II CB	N256387.59	E1299927.90	34.00
16	CENTER OF TYPE II CB	N256388.60	E1299947.88	36.50
17	CENTER OF TYPE II CB	N256438.67	E1299957.06	33.62
18	CONC IN FRONT OF RETAINING WALL	N256326.09	E1299908.30	32.92
19	CONC IN FRONT OF RETAINING WALL	N256351.82	E1299928.32	33.45
20	VALLEY GUTTER	N256374.04	E1299924.33	33.72
21	TYPE 1 CATCH BASIN (N CORNER)	N256320.75	E1299882.03	32.15
22	PATH SW CENTER	N256289.73	E1299882.87	42.00
23	PATH NE CENTER	N256308.31	E1299897.26	41.77
24	CENTER OF TYPE II CB	N256222.12	E1299912.06	63.36
25	EAST CORNER OF EXTERIOR CONC SLAB	N256308.45	E1299894.64	32.35

KEY NOTES

1. CONTROL BUILDING, SEE ARCHITECTURAL SHEETS
2. RETAINING WALL, SEE STRUCTURAL SHEETS
3. WET WELL, SEE MECHANICAL SHEETS
4. VALVE VAULT, SEE MECHANICAL SHEETS
5. VENTILATION VAULT, SEE MECHANICAL SHEETS
6. CONCRETE SURFACE, SEE STRUCTURAL SHEETS
7. EXIST LIFT STATION STRUCTURE TO BE MODIFIED TO OVERFLOW STRUCTURE, SEE SPECS
8. EXIST 48" MH TO BE MODIFIED, SEE DETAIL 1, SHT C-5
9. EXIST WATER SERVICE TO BE ABANDONED, REPLACED W/ ¾" SERVICE AND RELOCATED ADJACENT TO STRUCTURE PER CITY PRE APPROVED PLAN CK-W.17, CK-W.18 AND CK-W.24 TYP OF 7
10. PLANTER WITH TRELLIS, SEE SHT A-2 AND SPECS
11. INSTALL NEW MAILBOX HUTCH PER CITY PRE APPROVED PLAN CK-R.45, LOCATION TBD, TYP OF 2
12. EXIST WALLS AND ROCKERY RESTORED TO ORIGINAL CONDITION
13. FURNISH AND INSTALL TYPE II CATCH BASIN PER CITY PRE-APPROVED PLAN CK-D.09
14. FURNISH & INSTALL TYPE 1 CATCH BASIN, PER CITY PRE-APPROVED PLAN CK-D.07
15. ~~CONNECT TO EXISTING TYPE II CATCH BASIN, EXISTING STRUCTURE SHALL BE BROUGHT UP TO FINISHED GRADE WITH NEW RISERS AND LINER WITH PIPE CONNECTIONS GROUTED~~
16. ASPHALT OVERLAY PER CITY PRE-APPROVED PLAN CK-R.13A
17. 4' HIGH CHAIN LINK FENCE SIMILAR TO CITY PRE-APPROVED PLAN CK-R.51A
18. CONCRETE CURB PER CITY PRE-APPROVED PLAN CK-R.17C
19. PEDESTRIAN GATE PER DETAIL 3, SHT C-5
20. VALLEY GUTTER PER CITY PRE-APPROVED PLAN CK-R.17B
21. 3' WIDE CONC PATH SIMILAR TO CITY PRE-APPROVED PLAN CK-R.23
22. BEAM GUARDRAIL PER WSDOT STD PLAN C-1B, FINAL LOCATION TO BE COORDINATED WITH CITY
23. RETAINING WALL SCREENED BY VEGETATION, SEE PLANTING PLAN
24. FURNISH & INSTALL STOP SIGN (R1-1) AND PER CITY PRE APPROVED PLAN CK-R.43. FINAL LOCATION TO BE COORDINATED WITH CITY.
25. 18-INCH THICK WHITE PAINTED STOP BAR PER CITY PRE APPROVED PLAN CK-R.28. FINAL LOCATION TO BE COORDINATED WITH CITY.
26. EXIST WATER BLOW OFF TO BE ABANDONED, REPLACED AND RELOCATED ADJACENT TO STRUCTURE PER CITY PRE-APPROVED PLAN CK-W.11.

GENERAL NOTES:

1. SEE SPECIFICATIONS AND APPENDED GEOTECHNICAL REPORT FOR SPECIFIC REQUIREMENTS FOR EXCAVATION OF THE STEEP SLOPE.
2. ANTICIPATED LIMITS OF RESTORATION. CONTRACTOR TO RESTORE ANY ADDITIONAL DISTURBED AREAS TO PRE-EXISTING CONDITIONS OR BETTER AT NO ADDITIONAL COST TO OWNER. SEE SHEET L-1 FOR LANDSCAPING PLAN.
3. SEWER AND STORM DRAIN PIPING AND ASSOCIATED TRENCH RESTORATION ARE NOT SHOWN FOR CLARITY. RESTORATION SHALL BE IN ACCORDANCE WITH CITY PRE-APROVED PLAN CK-R.12. HMA PATCH SHALL BE 3-INCHES THICK OVER 6-INCHES OF COMPACTED BASE COURSE PER GEOTECHNICAL REPORT.

SURFACING LEGEND

- AC PAVEMENT, PER CITY PRE-APPROVED PLAN CK-R.13A
- CONCRETE SURFACING PER STRUCTURAL SHEETS

N

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SCALE IN FEET

murraysmith

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BAW DRAWN BY DATE
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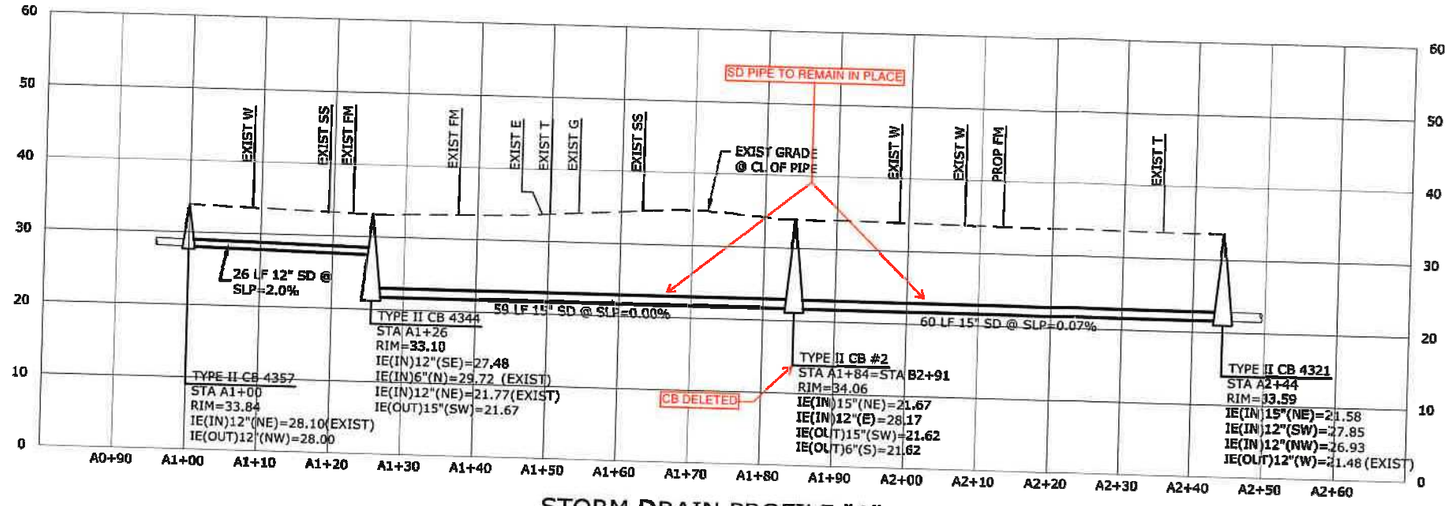
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SITE, GRADING, DRAINAGE AND RESTORATION PLAN

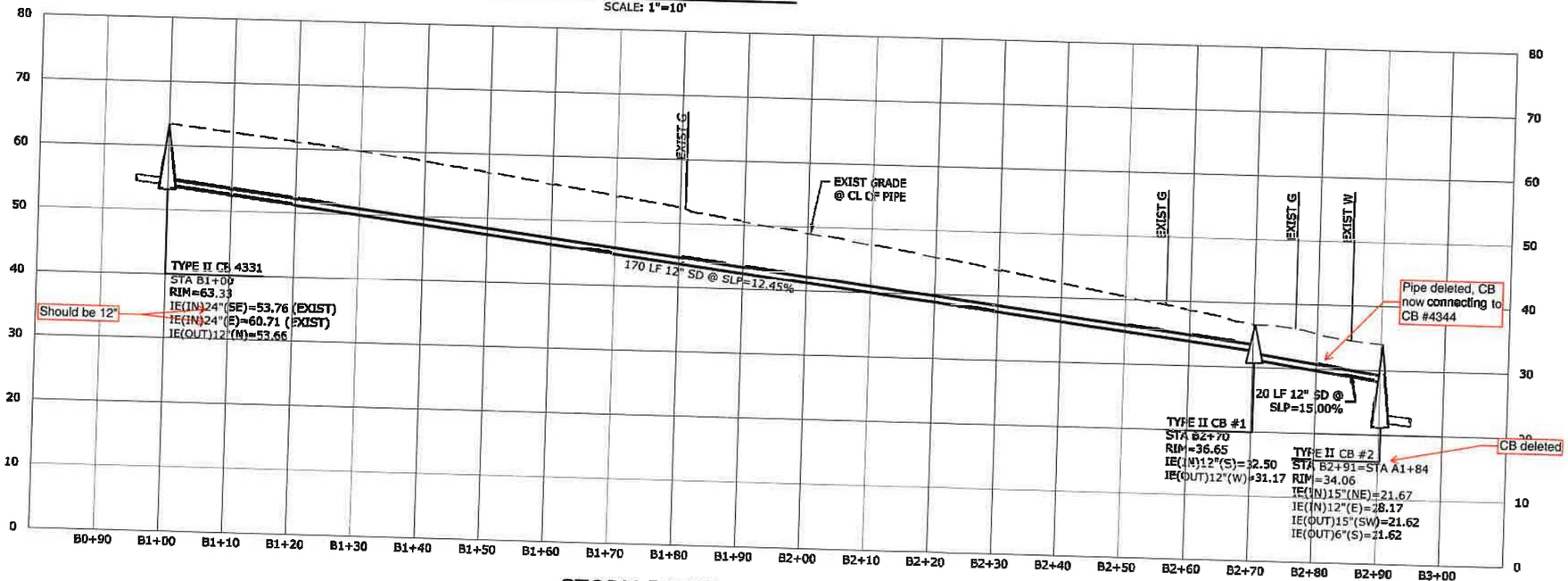
SHEET: 7 of 43
SCALE: AS SHOWN
FILENAME: C-2

K:\TAC_Projects\15\1680 Ross Point Lift Station Upgrade\CAD\Sheets\15-1680-WA-C.dwg C-2 3/27/2019 8:58 AM BRETT.WILLIAMS 21.0s (LMS Tech)

CURRENT MARK-UP OF SHEET C-3, UPDATED BY HUNTER RICHARDS ON 2/12/2020



STORM DRAIN PROFILE "A"
SCALE: 1"=10'



STORM DRAIN PROFILE "B"
SCALE: 1"=10'

SHEET NOTE:

1. POTHOLE TO CONFIRM LOCATION OF ALL EXISTING UTILITIES.

N

10 5 0 10 20
SCALE IN FEET

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BMC CHECKED BY: DATE

BRIAN M. CASEY STATE OF WASHINGTON 20153 REGISTERED PROFESSIONAL ENGINEER

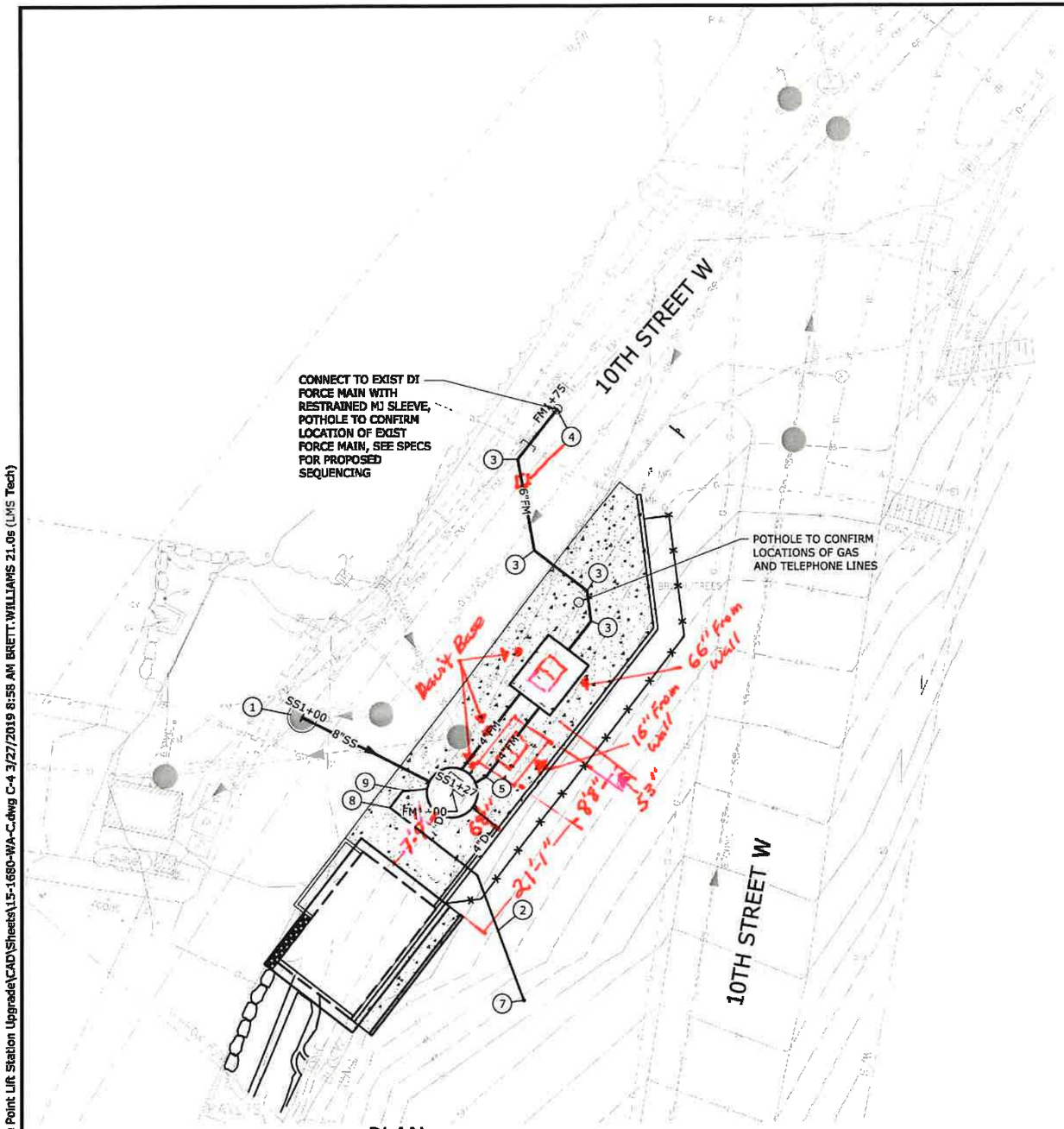
NO.	DATE	BY	APPR.	REVISION

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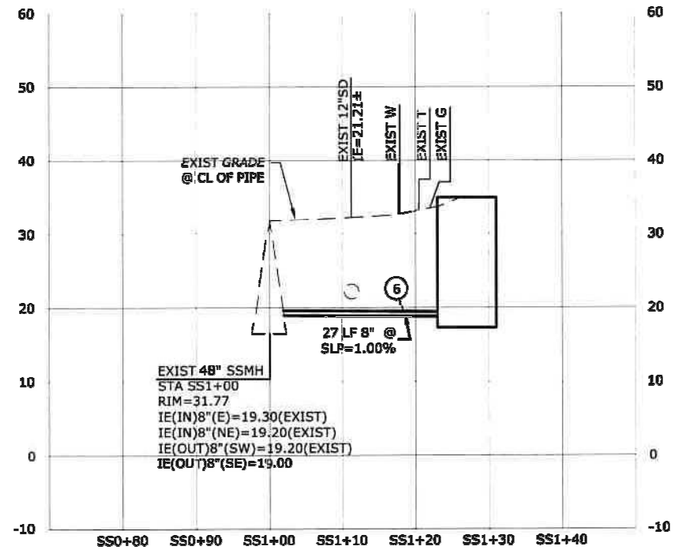
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STORM DRAIN PROFILES

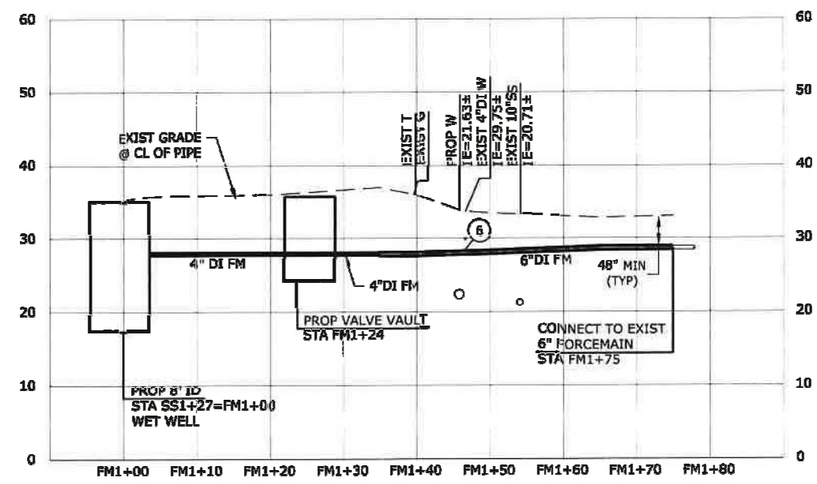
SHEET: 8 of 43
SCALE: AS SHOWN
FILENAME: C-3



PLAN
SCALE: 1"=10'



8" INFLUENT SEWER PROFILE
SCALE: 1"=10'



FORCE MAIN PROFILE
SCALE: 1"=10'

KEY NOTES:

1. MODIFY EXIST 48" SSMH PER DETAIL 1, SHT C-5
2. 6" PVC SEWER VENT PIPE
3. 6" 45 BEND RMJ
4. 6" LONG BODY SLEEVE, RMJ
5. 4" SEWER
6. CENTER FULL STICK OF 6" DI FORCE MAIN AT THE CROSSING WITH 4" WATER MAIN
7. 6" SEWER VENT PIPE, SEE DET 2, SHT C-5
8. 6" PVC 90° BEND
9. 6" PVC 45° BEND

SHEET NOTES:

1. MECHANICALLY RESTRAIN ALL PRESSURE PIPING
2. POTHOLE TO CONFIRM LOCATION OF ALL EXISTING UTILITIES PRIOR TO CONSTRUCTION.

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BRIAN M. CASEY STATE OF WASHINGTON 48612 REGISTERED PROFESSIONAL ENGINEER

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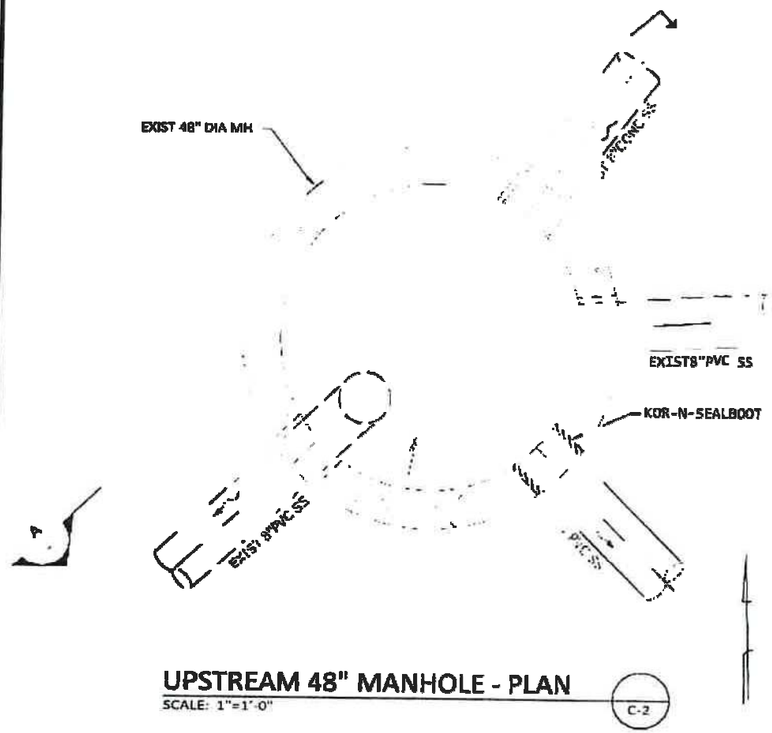
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SITE SEWER PIPING PLAN AND PROFILES

SHEET: 9 of 43
SCALE: AS SHOWN
FILENAME: C-4

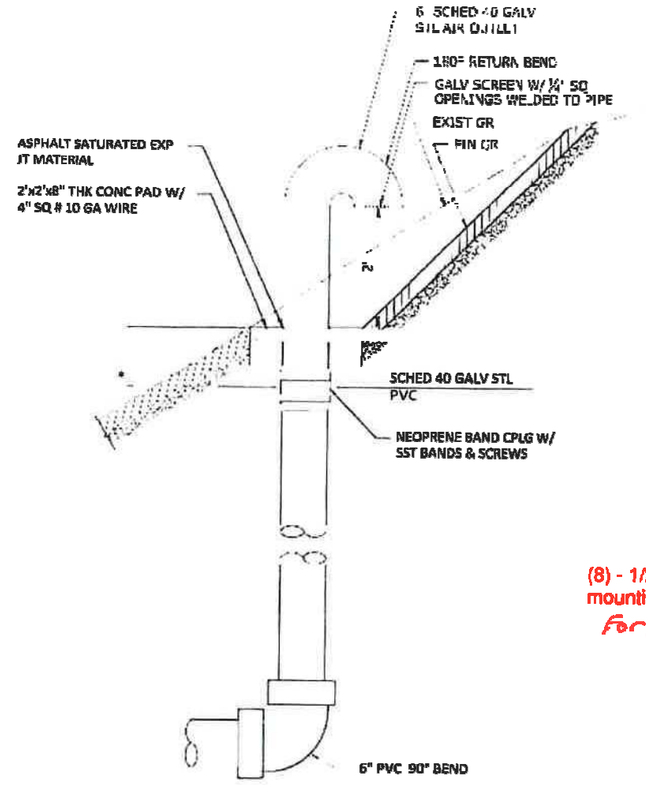
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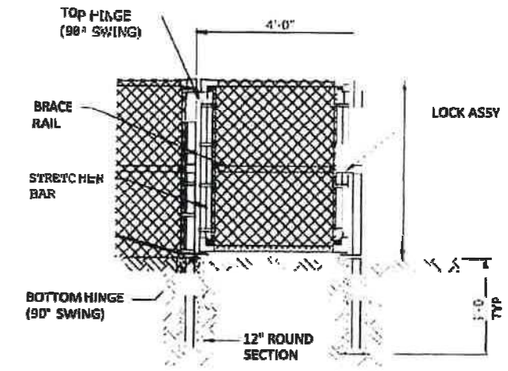
UPSTREAM 48" MANHOLE - PLAN

SCALE: 1"=1'-0" C-2



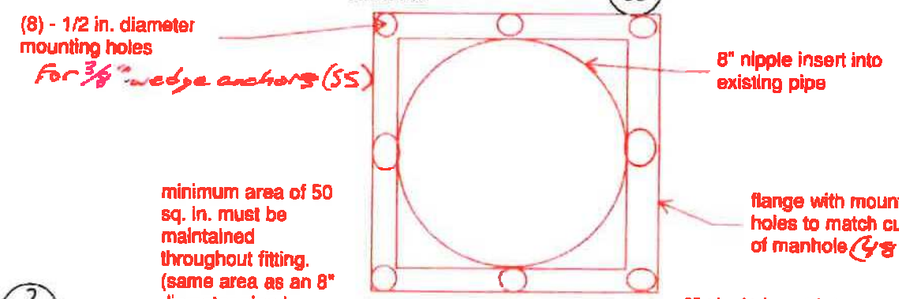
WET WELL VENTILATION OUTLET

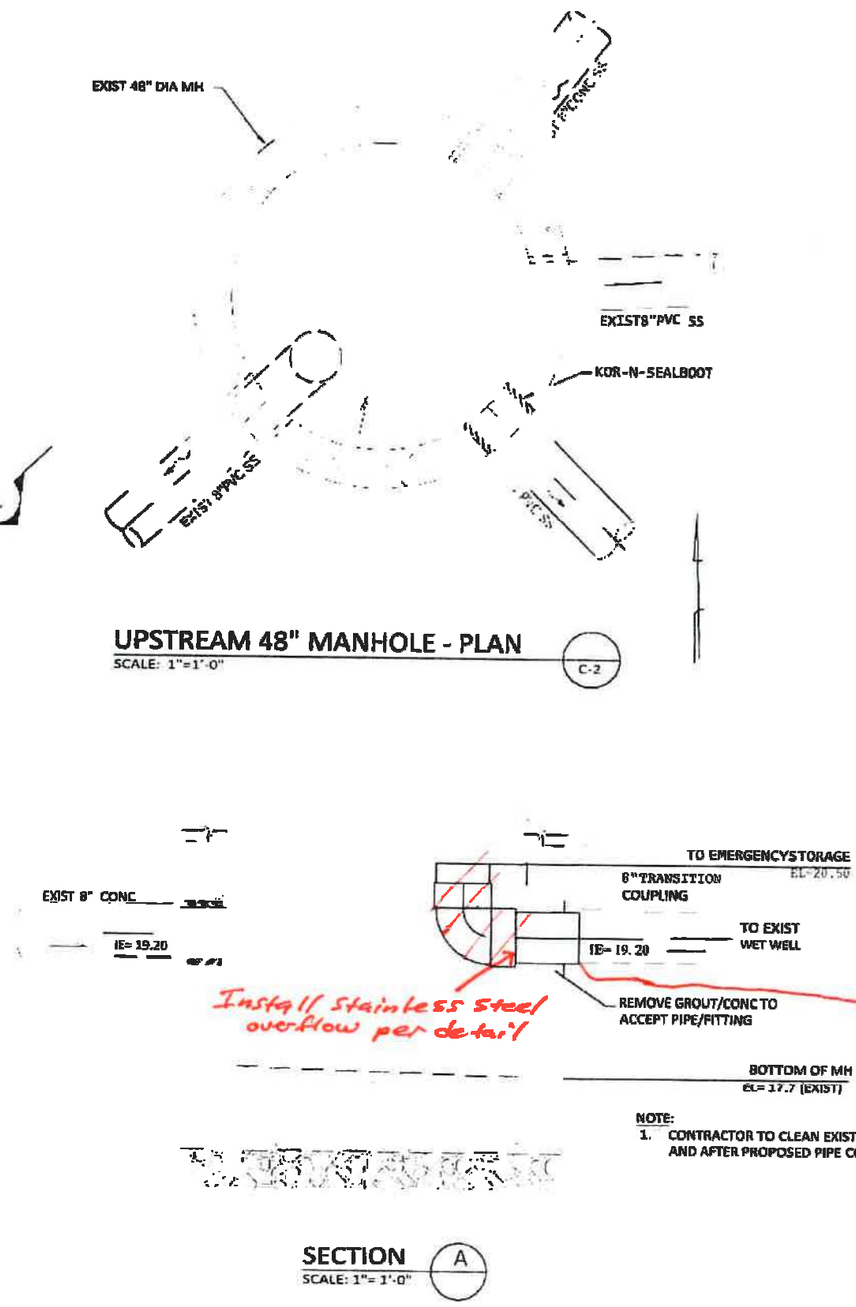
SCALE: NTS 2 C-4



PEDESTRIAN GATE

SCALE: NTS 3 C-2

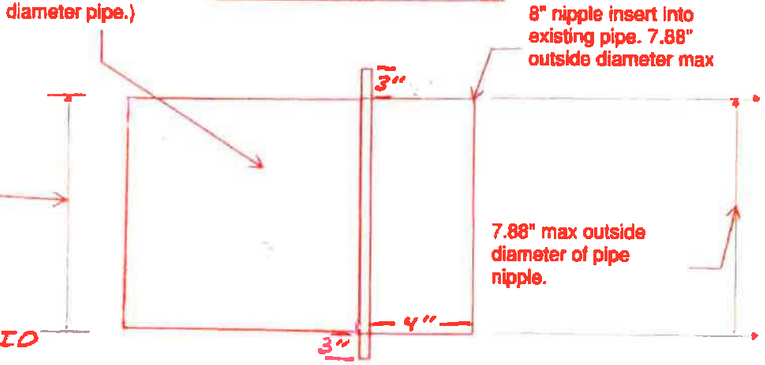




NOTE:
1. CONTRACTOR TO CLEAN EXISTING MANHOLE BEFORE AND AFTER PROPOSED PIPE CONNECTION.

SECTION

SCALE: 1"= 1'-0" A



Note : Existing Pipe is 8" SDR 35 PVC Sewer pipe 7.92 ID

Drawings not to scale. Fitting can be any shape as long as it will flow the same amount of water as an 8"diameter pipe, vertical elevation of 8" above invert of pipe, and able to bolt/seal to the inside wall of the manhole.

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BMC CHECKED BY: DATE

NO.	DATE	BY	APPR.	REVISION

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GENERAL CIVIL YARD PIPING DETAILS

SHEET 10 of 43
SCALE AS SHOWN
FILENAME C-5

KITAC Projects\15\1680 Rose Point Lift Station Upgrade\CAD\Sheets\15-1680-WA-D.dwg C-5 5/6/2019 4:23 PM BRETT.WILLIAMS1 1.0s (LMS Tech)

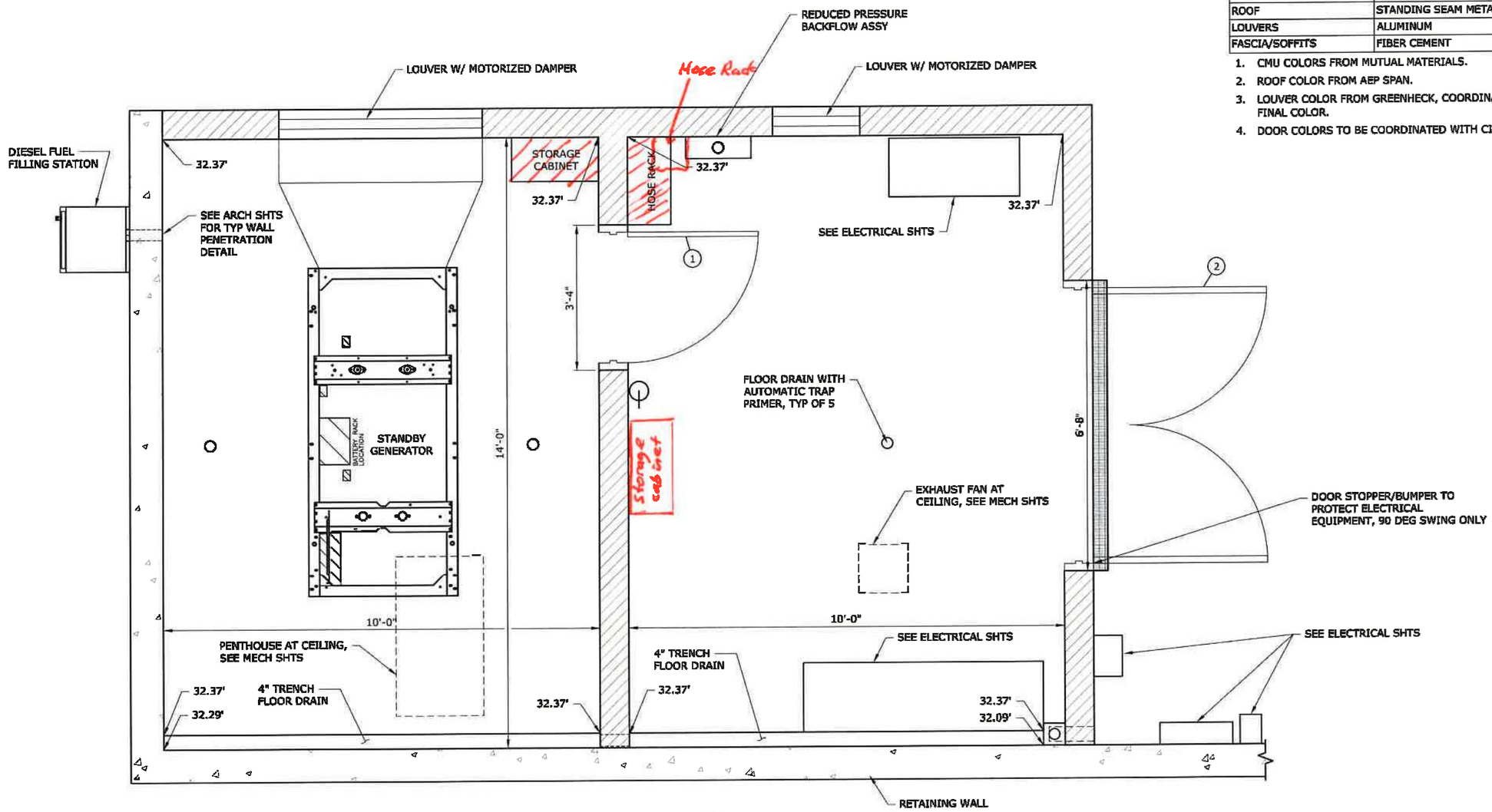
DOOR SCHEDULE

NO.	DESCRIPTION	ROUGH OPENING	SIZE	OPEN	SPECIFICATION
1	STEEL DOOR	3'-4"x7'-4"	3'x7'	RHR	08100
2	STEEL DOUBLE DOOR	6'-8"x7'-4"	2 @ 3'-7"	RH ACT LEAF	08100

FINISH SCHEDULE

ITEM/SURFACE	MATERIAL	COLOR 1, 2, 3	SPECIFICATION
EXTERIOR WALLS	SPLIT FACE CMU	SANDSTONE CMU W/ CLEAR SEALER	09800
GENERATOR ROOM WALLS	SMOOTH FACE CMU	SAND STONE CMU	N/A
CONTROL ROOM WALLS	SMOOTH FACE CMU	SAND STONE CMU	N/A
CEILING/INTERIOR GABLE	EXPOSED RAFTERS/SHEATHING	OFF WHITE	09800
INTERIOR FLOOR	SMOOTH SLAB ON GRADE	CLEAR SEALER	09800
ROOF	STANDING SEAM METAL	FOREST GREEN	07400
LOUVERS	ALUMINUM	HERRING BONE	10200
FASCIA/SOFFITS	FIBER CEMENT	LIGHT TAN	07400

1. CMU COLORS FROM MUTUAL MATERIALS.
2. ROOF COLOR FROM AEP SPAN.
3. LOUVER COLOR FROM GREENHECK, COORDINATE WITH CITY REGARDING FINAL COLOR.
4. DOOR COLORS TO BE COORDINATED WITH CITY.



PLAN

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

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DESIGNED BY: DATE

BAW
DRAWN BY: DATE

BMC
CHECKED BY: DATE

BRIAN M. CASEY STATE OF WASHINGTON 49822 REGISTERED PROFESSIONAL ENGINEER

NO.	DATE	BY	APPR.	REVISION

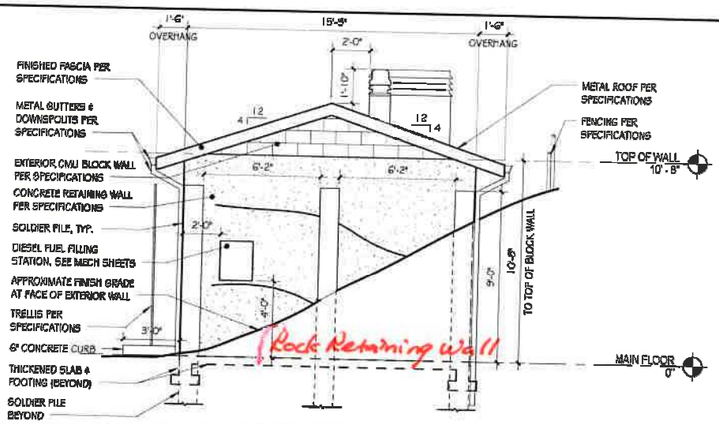
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ARCHITECTURAL GENERAL NOTES, FLOOR PLAN, DOOR AND FINISH SCHEDULES

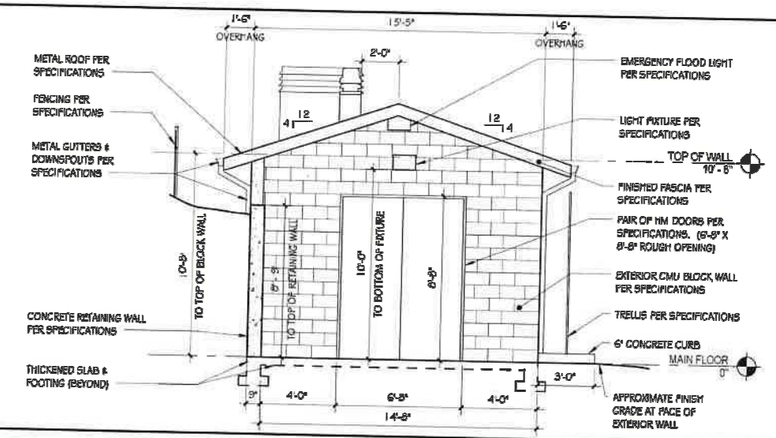
SHEET: 11 of 43
SCALE: AS SHOWN
FILENAME: A-1

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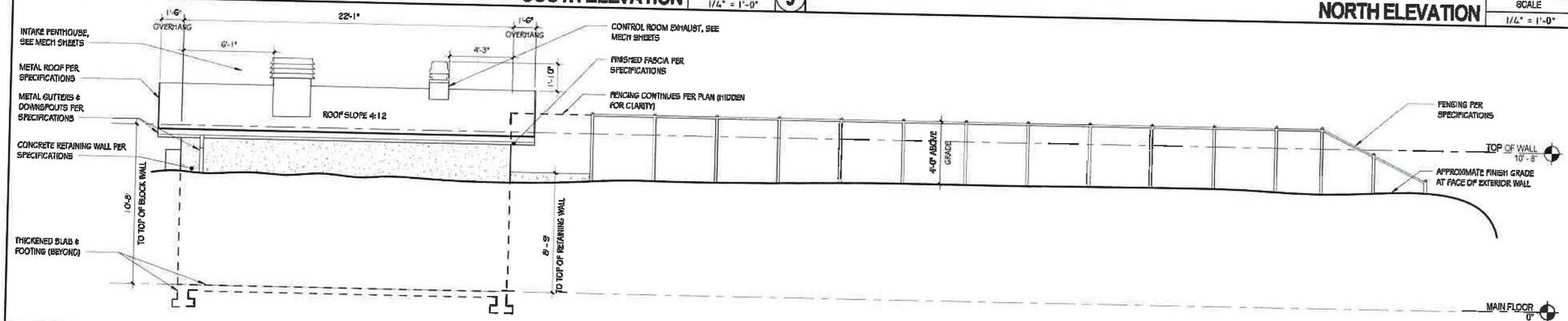
SOUTH ELEVATION

SCALE 1/4" = 1'-0" | 9



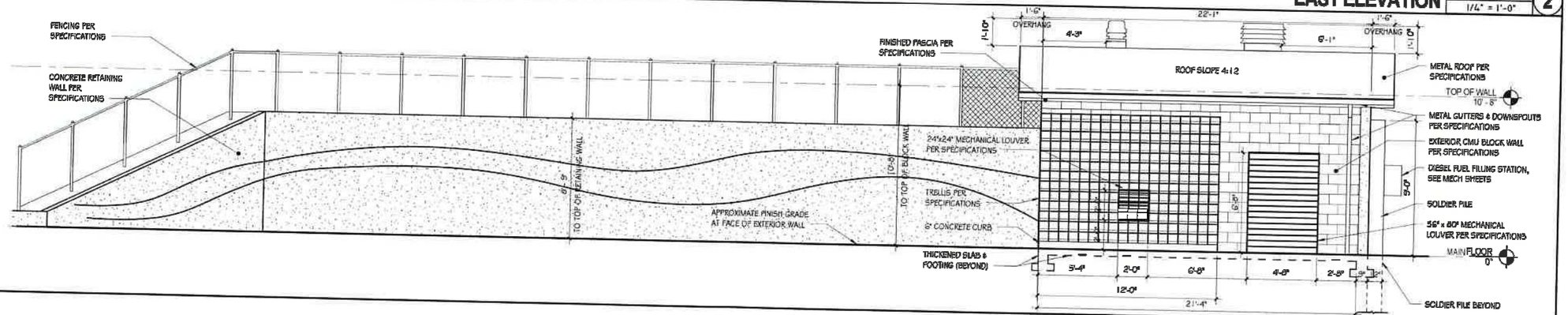
NORTH ELEVATION

SCALE 1/4" = 1'-0" | 1



EAST ELEVATION

SCALE 1/4" = 1'-0" | 2



WEST ELEVATION

SCALE 1/4" = 1'-0" | 4

The Driftmier Architects, P.S.
7863 Leary Way NE, Redmond, WA 98852 |(425) 881-7606 |mail@driftmier.com

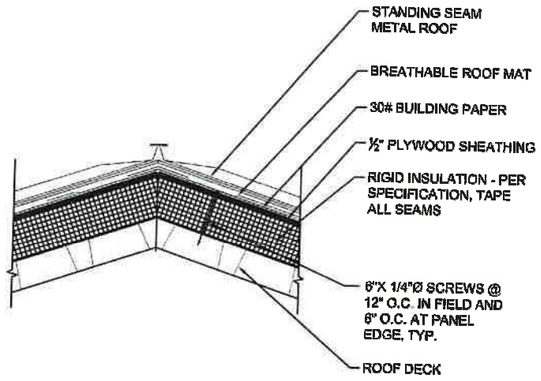
AMM DESIGNED BY	06/25/2018 DATE	
AMM DRAWN BY	06/25/2018 DATE	
LRD CHECKED BY:	06/25/2018 DATE	

NO.	DATE	BY	APP'R	REVISION
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2	01/23/2019	SA	LRD	PERMIT REVISIONS

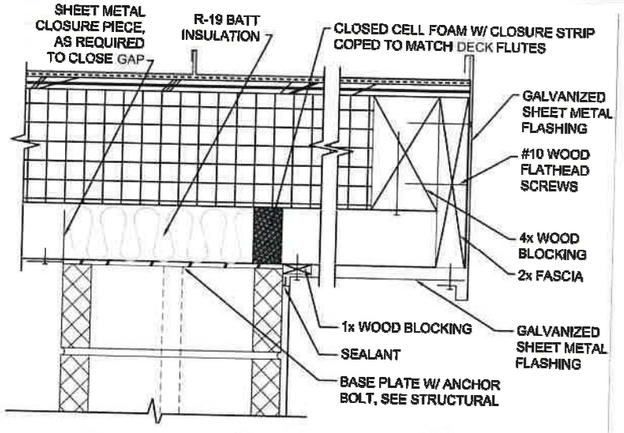
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BUILDING ELEVATIONS

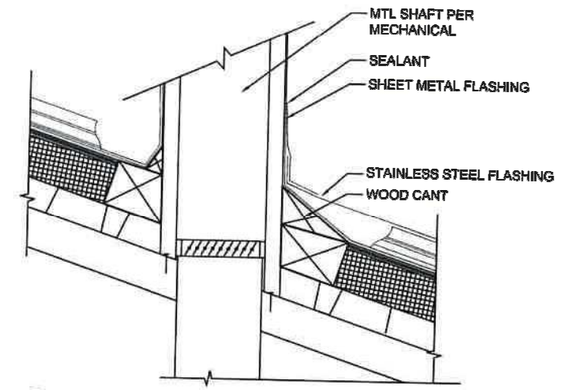
SHEET 12 of 43
SCALE AS SHOWN
FILENAME A-2



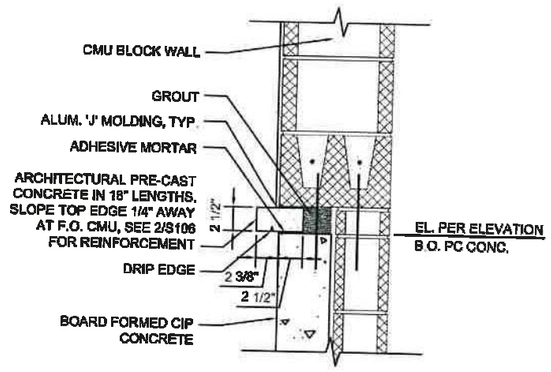
ROOF RIDGE (1 TYP)
SCALE: NTS



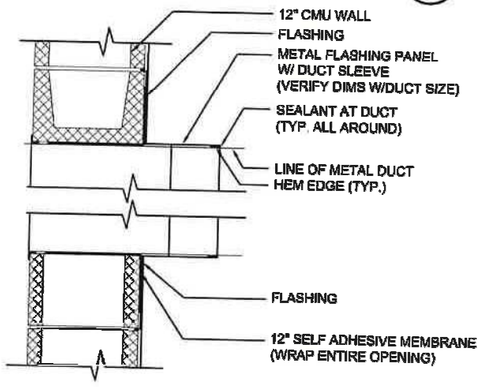
ROOF RAKE @ CMU WALL (2 TYP)
SCALE: NTS



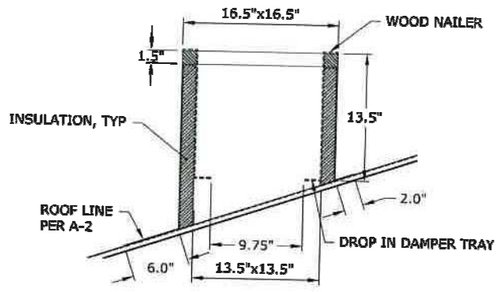
TYPICAL ROOF PENETRATION (3 M-3)
SCALE: NTS



WALL TRANSITION DETAIL (4 TYP)
SCALE: NTS



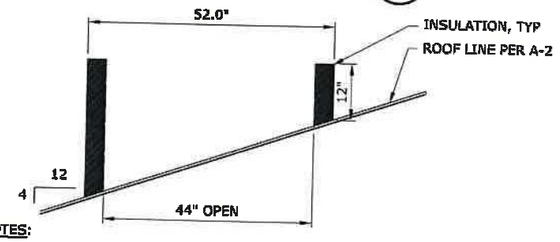
TYPICAL WALL PENETRATION DETAIL (5 A-1)
SCALE: NTS



NOTES:

1. CONTINUOUSLY WELDED CORNERS - WOOD NAILER.
2. ROOF CURB CONSTRUCTED OF 18 GAUGE GALVANIZED STEEL WITH DENSITY THERMAL AND ACOUSTICAL INSULATION PER MANUFACTURER REQUIREMENTS.
3. MOUNTED TO ROOF PER MANUFACTURER REQUIREMENTS.

GALVANIZED STEEL ROOF CURB FOR EXHAUST FAN (6 M-5)
SCALE: 1 1/2" = 1'



NOTES:

1. ROOF CURB CONSTRUCTED OF 18 GAUGE GALVANIZED STEEL WITH DENSITY THERMAL AND ACOUSTICAL INSULATION PER MANUFACTURER REQUIREMENTS.
2. MOUNTED TO ROOF PER MANUFACTURER REQUIREMENTS.

GALVANIZED STEEL ROOF CURB FOR PENTHOUSE LOUVER (7 M-5)
SCALE: 3/4" = 1'

GENERAL ARCHITECTURAL NOTES:

1. DO NOT SCALE THE DRAWINGS. THE CONTRACTOR SHALL USE THE ACTUAL FIELD MEASUREMENTS, DIMENSIONED DRAWINGS AND WRITTEN SPECIFICATIONS.
2. THE CONTRACTOR SHALL VERIFY ALL DIMENSIONS, TRADES AND EXISTING CONDITIONS PRIOR TO STARTING CONSTRUCTION. IN CASE OF CONFLICTS BETWEEN DRAWINGS AND/OR EXISTING CONDITIONS. NOTIFY THE PROJECT REPRESENTATIVE IMMEDIATELY DO NOT PERFORM RELATED WORK UNTIL THE CONFLICT HAS BEEN RESOLVED.
3. REPRESENTATIVE FEATURES WHICH ARE DRAWN AND/OR LABELED ONCE SHALL APPLY TO ALL OTHER LIKE PORTIONS OF THE WORK AND SHALL BE PROVIDED AS IF DRAWN AND/OR LABELED IN FULL.
4. VERIFY ALL ROUGHING IN REQUIREMENTS AND DIMENSIONS.
5. ALL DIMENSIONS ARE FROM FACE TO CONCRETE, CMU, OR FROM CENTERLINE OF STRUCTURE.
6. CONTRACTOR SHALL VERIFY THE SIZES AND LOCATIONS OF ALL OPENINGS FOR MECHANICAL AND HVAC EQUIPMENT. THE CONTRACTOR SHALL PROVIDE SHOP DRAWINGS TO BE REVIEWED BY THE PROJECT REPRESENTATIVE FOR COORDINATION BEFORE PROCEEDING.
7. REFER TO STRUCTURAL DRAWINGS FOR LIST OF ABBREVIATIONS.
8. ALL EXTERIOR BUILDING-MOUNTED LIGHT FIXTURES SHALL COMPLY WITH KIRKLAND ZONING CODE (83.470 LIGHTING).

ENERGY CODE:

GOVERNING CODE	2015 WASHINGTON STATE ENERGY CODE
ELECTRICAL ROOM	UNHEATED SPACE
MECHANICAL ROOM	UNHEATED SPACE
CALCULATION METHOD	PRESCRIPTIVE

BUILDING CODE INFORMATION:

GOVERNING CODE	2015 INTERNATIONAL BUILDING CODE
FLOOR AREA	290 SQFT TOTAL
OCCUPANT LOAD	NOT CUSTOMARILY OCCUPIED
OCCUPANCY	U-UTILITY
CONSTRUCTION TYPE	TYPE V-B
STRUCTURAL FRAME	NON-RATED
BEARING WALLS	NON-RATED
NON-BEARNG WALLS	NON-RATED
ROOF	NON-RATED
FLOORS	N/A
SPRINKLER SYSTEM	NOT REQUIRED
MEANS OF EGRESS	1 EXIT FROM EACH ROOM (LESS THAN 600 VOLTS)
EXIT SIGNS	NOT REQUIRED
EXIT HARDWARE	PANIC HARDWARE ON ELECTRICAL
ACCESSIBILITY	NOT REQUIRED (ACCESS ONLY FOR SERVICING EQUIP)

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BMC CHECKED BY: DATE

BRIAN M. CASEY — STATE OF WASHINGTON — 40832 — REGISTERED PROFESSIONAL ENGINEER

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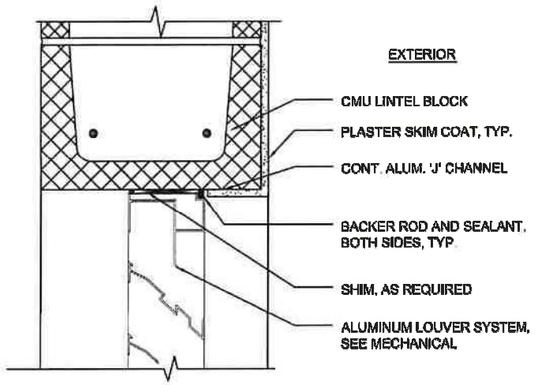
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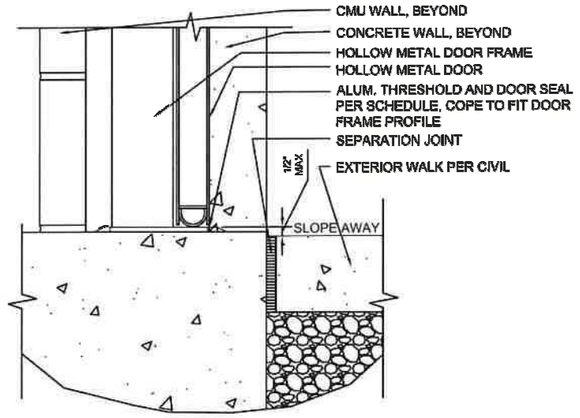
ARCHITECTURAL NOTES AND DETAILS

SHEET: 13 of 43
SCALE: AS SHOWN
FILENAME: A-3

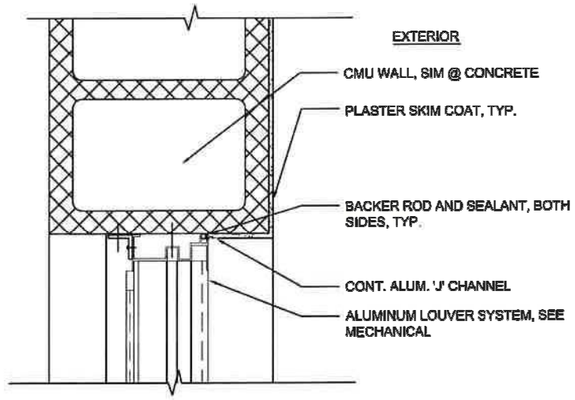
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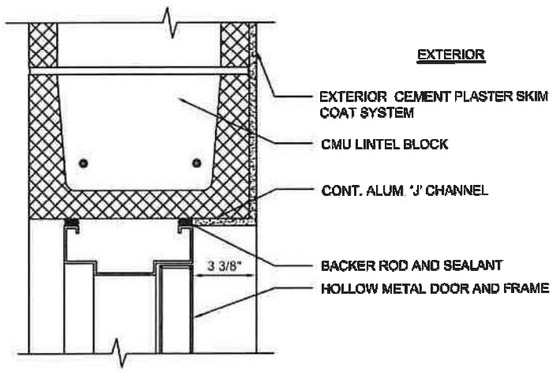
LOUVER HEAD 1 TYP
SCALE: NTS



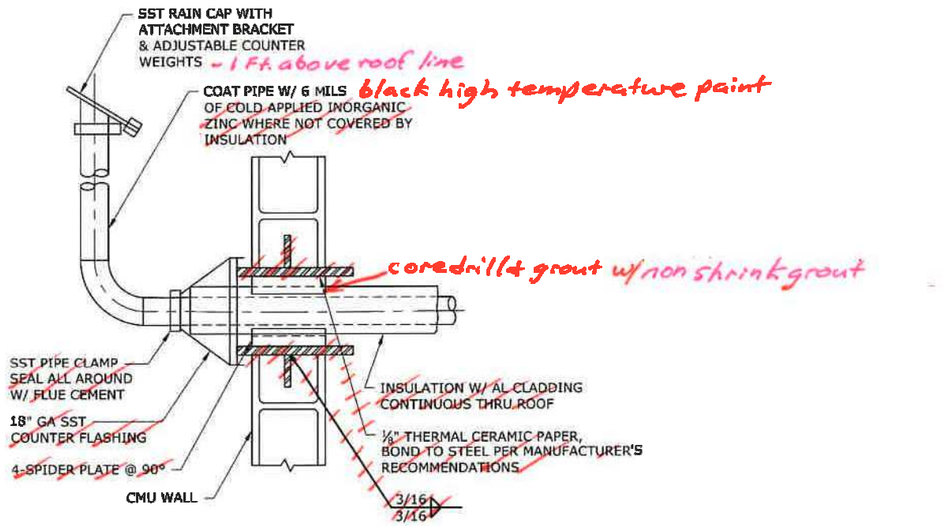
HOLLOW METAL DOOR THRESHOLD 2 TYP
SCALE: NTS



LOUVER JAMB; SIM @ SILL 3 TYP
SCALE: NTS



HOLLOW METAL DOOR HEAD 4 TYP
SCALE: NTS



HIGH TEMP PENETRATION WALL DETAIL 5 TYP
SCALE: NTS

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BRIAN M. CASEY — STATE OF WASHINGTON — 46632 — REGISTERED PROFESSIONAL ENGINEER

NO.	DATE	BY	APPR.	REVISION

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ARCHITECTURAL DETAILS

SHEET: 14 of 43
SCALE: AS SHOWN
FILENAME: A-4

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STRUCTURAL SHEETS:

S-1 GENERAL STRUCTURAL NOTES
S-2 SPECIAL INSPECTION
S-3 SPECIAL INSPECTION
S-4 PROJECT PLAN
S-5 CONTROL BUILDING FOUNDATION AND ROOF PLANS
S-6 CONTROL BUILDING SECTIONS
S-7 FOUNDATION DETAILS
S-8 WALL DETAILS
S-9 ROOF FRAMING DETAILS
S-10 SOLDIER PILE WALL SECTIONS
S-11 SOLDIER PILE WALL DETAILS

GENERAL STRUCTURAL NOTES:

1. THESE NOTES ARE GENERAL IN NATURE AND ARE INTENDED TO SET MINIMUM STANDARDS FOR CONSTRUCTION. THE CONTRACTOR SHALL BE COMPLETELY FAMILIAR WITH THE CONTRACT DOCUMENTS AND HAVE A COPY OF THEM ON SITE AT ALL TIMES.
2. FOR ANY PORTION OF THE CONSTRUCTION WHICH THE CONTRACTOR IS UNABLE TO ASCERTAIN THE REQUIRED CONSTRUCTION OR WHERE CONFLICTS EXIST, IT IS THE CONTRACTOR'S RESPONSIBILITY TO REQUEST ADDITIONAL INFORMATION (RFIs) AND/OR CLARIFICATIONS BEFORE CONSTRUCTION.
3. ALL WORK SHALL BE IN STRICT CONFORMANCE WITH THE 2015 INTERNATIONAL BUILDING CODE (IBC) AS AMENDED BY THE WASHINGTON STATE BUILDING CODE (WSBC).
4. THE CONTRACTOR SHALL VERIFY ALL DIMENSIONS AND ELEVATIONS BEFORE CONSTRUCTION. THE ARCHITECT AND ENGINEER SHALL BE NOTIFIED OF ANY DISCREPANCIES OR INCONSISTENCIES.
5. THE CONTRACTOR, SUBCONTRACTORS AND SUPPLIERS SHALL INSURE COORDINATION OF CONTRACTOR SUPPLIED/DESIGNED ELEMENTS AND DEFERRED SUBMITTALS WITH ALL DESIGN DISCIPLINES WITHIN THE CONSTRUCTION SET. COORDINATION SHALL IDENTIFY AND RECONCILE CONFLICTS BETWEEN THE CONTRACTOR SUPPLIED/DESIGNED ELEMENTS AND THE CONSTRUCTION DRAWINGS PRIOR TO FABRICATION AND DELIVERY TO THE PROJECT SITE. THE PROJECT ENGINEER SHALL BE NOTIFIED IF CONFLICTS EXIST.
6. THE CONTRACT STRUCTURAL DRAWINGS REPRESENT THE FINISHED STRUCTURE. METHODS, PROCEDURES, AND SEQUENCE OF CONSTRUCTION ARE THE RESPONSIBILITY OF THE CONTRACTOR. THE CONTRACTOR SHALL TAKE ALL NECESSARY PRECAUTIONS TO MAINTAIN AND ENSURE THE INTEGRITY OF THE STRUCTURE AT ALL STAGES OF CONSTRUCTION.
7. CONSTRUCTION LOADS SHALL NOT EXCEED THE DESIGN LIVE LOAD FOR THE STRUCTURE. PROVIDE SHORING AND/OR BRACING WHERE LOADS EXCEED DESIGN CAPACITY AND WHERE STRUCTURES HAVE NOT ATTAINED DESIGN STRENGTH.
8. CLADDING, WATERPROOFING, AND ARCHITECTURAL FEATURES ARE NOT PART OF THE STRUCTURAL DESIGN. ANY DEPICTION OF SUCH FEATURES ON THE STRUCTURAL DRAWINGS ARE NOT INTENDED TO BE USED FOR CONSTRUCTION. REPRESENTATION OF SUCH FEATURES ON THESE DRAWINGS MAY OR MAY NOT BE ACCURATE. REFER TO ARCHITECTURAL DRAWINGS AND/OR SPECIFICATIONS.

FOUNDATIONS:

1. STRUCTURES WITHIN HAVE BEEN DESIGNED IN ACCORDANCE WITH THE GEOTECHNICAL REPORT PREPARED BY GEOENGINEERS OF 17425 NE UNION HILL RD., SUITE 250, REDMOND, WASHINGTON. PHONE: (425) 861-6000, DATED AUGUST 28, 2015 (GEOENGINEERS FILE No. 0231-087-00). THE CONTRACTOR SHALL BE FAMILIAR WITH THAT SUPPLEMENTAL REPORT INFORMATION AND THE RECOMMENDATIONS CONTAINED THEREIN.
2. ALL FOUNDATIONS TO BEAR ON UNDISTURBED NATIVE MATERIAL, OR GRANULAR COMPACTED ENGINEERED FILL, PER THE PROJECT CONTRACT DOCUMENTS. COMPACT TO 95% OF OPTIMUM PER ASTM D1557. THE CONTRACTOR IS DIRECTED TO THE GEOTECHNICAL REPORT IN THE PROJECT SUPPLEMENTAL INFORMATION FOR ADDITIONAL INFORMATION. EXCAVATIONS FOR FOUNDATIONS AND RETAINING WALLS SHALL BE OBSERVED BY THE GEOTECHNICAL ENGINEER PRIOR TO PLACING OF FILL AND/OR CONCRETE FOR FOUNDATION AND RETAINING WALL.
3. FOUNDATIONS FOR THE CONTROL BUILDING SHOULD BEAR ON AT LEAST 2 FEET OF COMPACTED STRUCTURAL FILL THAT REPLACES THE EXISTING LOOSE TO MEDIUM DENSE FILL. THE COMPACTED STRUCTURAL FILL SHALL EXTEND HORIZONTALLY OUT FROM EACH EDGE OF THE FOOTING A DISTANCE EQUAL TO THE DEPTH OF THE EXCAVATION BELOW THE FOOTING SUBGRADE LEVEL. COMPACT TO 95% OF OPTIMUM PER ASTM D1557.
4. SOIL DESIGN CRITERIA, PER GEOTECHNICAL ENGINEER:
   - 4.1. SOIL BEARING – 2,500 PSF
   - 4.2. ⅓ INCREASE ALLOWED PRESUMED CAPACITIES FOR SHORT TERM LOADS
   - 4.3. SOIL PROFILE – D
   - 4.4. FRICTION COEFFICIENT – 0.35
   - 4.5. RETAINING WALLS
     - 4.5.1. PASSIVE PRESSURE: 160 PCF
     - 4.5.2. ACTIVE PRESSURE: 35 PCF, CANTILEVER SOLDIER PILE, HORIZONTAL BACK SLOPE
     - 4.5.3. ACTIVE PRESSURE: 60 PCF, CANTILEVER SOLDIER PILE, 2H:1V BACK SLOPE

- **DESIGN LOADS:** PER 2015 IBC AS AMENDED BY THE STATE OF WASHINGTON

1603.1.1 – FLOOR LOADS:

SUPERIMPOSED DEAD LOAD	15 PSF
LIVE LOAD	125 PSF

1603.1.2 – ROOF LOADS:

DEAD LOAD	15 PSF
LIVE LOAD	20 PSF

1603.1.3 – SNOW LOADS:

GROUND SNOW LOAD, Pg	25 PSF, 25 PSF (MIN)
FLAT-ROOF SNOW LOAD, Pf	24 PSF
SNOW EXPOSURE FACTOR, Ce	0.8
SNOW LOAD IMPORTANCE FACTOR, Is	1.2, CATEGORY IV
THERMAL FACTOR, Ct	1.2

1603.1.4 – WIND DESIGN CRITERIA:

ULTIMATE DESIGN WIND SPEED, Vult	115 MPH
NOMINAL DESIGN WIND SPEED, Vasd	90 MPH
RISK CATEGORY	IV
WIND EXPOSURE	EXPOSURE D
INTERNAL PRESSURE COEFFICIENT	SIMPLIFIED METHOD PER ASCE 7-10 30.4 (+/-)
COMPONENTS & CLADDING: DESIGN WIND PRESSURES	
WALL ELEMENTS (Atrib = 10ft²)	34.99/-46.89 PSF
OVERHANG ELEMENTS (Atrib = 10ft²)	NA/-109.66 PSF
ROOF ELEMENTS (Atrib = 10ft²)	20.14/-82.32 PSF

1603.1.5 – EARTHQUAKE DESIGN CRITERIA:

RISK CATEGORY	IV
SEISMIC IMPORTANCE FACTOR, Ie	1.50
SPECTRAL ACCELERATION, Ss	1.254 g
SPECTRAL ACCELERATION, S1	0.484 g
SITE CLASS	D
SPECTRAL RESPONSE COEFFICIENT, SDS	0.836 g
SPECTRAL RESPONSE COEFFICIENT, SD1	0.489 g
SEISMIC DESIGN CATEGORY	CATEGORY D
SEISMIC FORCE RESISTING SYSTEM(S)	SPECIAL REINF. MASONRY SHEAR WALLS, SPECIAL REINF. CONCRETE SHEAR WALLS
RESPONSE MODIFICATION FACTORS(S), R	5
SEISMIC RESPONSE COEFFICIENTS(S), Cs	0.167, WORKING STRESS
ANALYSIS PROCEDURE	GEN. PROCEDURE, PER ASCE-7

CONCRETE:

1. ALL CONCRETE SHALL BE HARD ROCK CONCRETE MEETING REQUIREMENTS OF ACI-301, "SPECIFICATIONS FOR STRUCTURAL CONCRETE FOR BUILDINGS". MIX PROPORTIONS SHALL BE PER ACI-301, METHOD 2 OR THE ALTERNATE PROCEDURE. SUBMIT MIX DESIGN FOR REVIEW BY STRUCTURAL ENGINEER FOR APPROVAL PRIOR TO CONSTRUCTION.
2. STRUCTURAL CONCRETE SHALL ATTAIN THE FOLLOWING MINIMUM COMPRESSIVE STRENGTH AT 28 DAYS:

TYPE	f'c	SLUMP	w/c	AIR
SLABS	3,000 psi	1-3"	0.40	5%
FOOTINGS	3,000 psi	1-4"	0.40	0%
WALLS	4,000 psi	1-4"	0.40	5%

3. ALL CONCRETE EXPOSED TO WEATHER SHALL CONTAIN 5% (±) 1% AIR ENTRAINMENT BY VOLUME. AIR ENTRAINMENT SHALL BE IN CONFORMANCE WITH ASTM C260 AND C494.
4. COLD WEATHER PLACEMENT SHALL CONFORM TO ACI-306. HOT WEATHER PLACEMENT SHALL CONFORM TO ACI-305. MECHANICALLY VIBRATE ALL FORMED CONCRETE. DO NOT OVER-VIBRATE. PLACE CONCRETE MONOLITHICALLY BETWEEN CONSTRUCTION OR CONTROL JOINTS. PROTECT ALL CONCRETE FROM PREMATURE DRYING.
5. CHAMFER ALL EXTERIOR CORNERS 1/2" UNLESS SHOWN OTHERWISE.
6. SLUMP LIMITS MAY BE INCREASED BY ADDITION OF ADMIXTURES PROVIDED THAT THE WATER/CEMENT RATIO OF THE ORIGINAL MIX DESIGN IS NOT EXCEEDED. WATER REDUCING ADMIXTURE SHALL BE IN CONFORMANCE WITH ASTM494, USED IN CONFORMANCE WITH MANUFACTURER'S INSTRUCTIONS. SUBMIT ADMIXTURES TO ENGINEER FOR REVIEW PRIOR TO CONSTRUCTION.
7. CEMENT SHALL BY TYPE I OR II IN CONFORMANCE WITH ASTM C150. AGGREGATES SHALL BE IN CONFORMANCE WITH ASTM C33. COARSE AGGREGATES SHALL NOT EXCEED ¾". WATER SHALL BE CLEAN AND POTABLE.
8. REINFORCING STEEL SHALL CONFORM TO ASTM A615, GRADE 60. GRADE 40 MAY BE USED FOR #3 AND SMALLER TIES AND STIRRUPS. DETAIL AND PLACE ACCORDING TO ACI MANUAL SP-66.
9. UNLESS OTHERWISE NOTED, MINIMUM COVER SHALL BE 1 1/2" FOR #5 AND SMALLER BARS, 2" FOR #6 AND LARGER BARS AND 3" WHEN POURED AGAINST EARTH. SUPPORT REINFORCEMENT WITH APPROVED CHAIRS, SPACERS, OR TIES.
10. PROVIDE MINIMUM 48 BAR DIAMETERS AT SPLICES. NO MORE THAN 50% OF REINFORCING SHALL BE SPLICED AT ANY LOCATION. UNLESS OTHERWISE NOTED, BEND ALL HORIZONTAL REINFORCING A MINIMUM OF 2'-0" AT CORNERS AND WALL/FOOTING INTERSECTIONS WITH MIN. EMBEDMENT BEYOND INTERFACE PER DEVELOPMENT LENGTH SPECIFIED IN ACI 318.
11. FORMWORK SHALL BE IN ACCORDANCE WITH ACI-347 "GUIDE TO FORMWORK FOR CONCRETE". FORMS SHALL BE DESIGNED BY THE CONTRACTOR. BRACING SHALL BE PROVIDED AS REQUIRED OR UNTIL THE CONCRETE HAS REACHED ITS SPECIFIED 28-DAY STRENGTH. ALL SHORING SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR. FORMWORK, SUPPORTS, AND SHORING SHALL PROVIDE FINISHED CONCRETE SURFACES AT ALL FACES: LEVEL, PLUMB, AND TRUE TO DIMENSIONS AND ELEVATIONS SHOWN IN THE DRAWINGS.

CONCRETE MASONRY (CMU):

1. CONCRETE MASONRY UNITS SHALL BE MEDIUM WEIGHT UNITS CONFORMING TO ASTM C90. THEY SHALL HAVE A MINIMUM COMPRESSIVE STRENGTH OF 2,000 PSI. CONTRACTOR TO VERIFY PER UNIT STRENGTH METHOD.
2. MORTAR SHALL BE TYPE M OR S WITH A MINIMUM COMPRESSIVE STRENGTH OF 1,900 PSI.
3. GROUT SHALL CONFORM TO ASTM C476 AND SHALL BE EQUAL TO 2,000 PSI MIN.
4. FOR GROUT LIFTS EXCEEDING FIVE (5) FEET, CLEAN OUTS SHALL BE PROVIDED AT THE BOTTOM OF EACH CELL AND AT NO MORE THAN 32" APART. GROUT SHALL ONLY BE INSTALLED IN CELLS CONTAINING REINFORCING STEEL OR AS INDICATED IN THESE PLANS. NO SOLID GROUTING UNLESS NOTED OTHERWISE.
5. IF A HIGH LIFT GROUT METHOD IS USED, REVIEW OF WALL REINFORCEMENT BY THE STRUCTURAL ENGINEER IS REQUIRED WHEN THE WALL HEIGHT IS 48" OR GREATER.
6. UNIT STRENGTH METHOD SHALL BE USED TO VERIFY MINIMUM STRENGTH OF MASONRY UNIT f'm = 1,500 PSI

SOLID SAWN LUMBER:

1. STRUCTURAL LUMBER SHALL BE DOUGLAS FIR CONFORMING TO WWPA GRADING RULES.
2. MINIMUM GRADES ARE, EXCEPT AS NOTED OTHERWISE:
   - STRUCTURAL JOISTS & PLANKS – #2
   - BEAMS & STRINGERS – #1
   - POSTS & TIMBERS – #1
3. DOUBLE JOISTS BENEATH ALL PARALLEL WALLS AND/OR PARTITIONS.
4. NOTCHING IS NOT PERMITTED IN JOISTS, RAFTERS, BEAMS, LINTELS, COLUMNS, TRUSSES, AND BRACING MEMBERS.
5. PRESSURE TREATED LUMBER SHALL CONFORM TO THE AWPA AND SHALL BEAR THE QUALITY MARK OF AN ACCREDITED ALSC INSPECTION AGENCY. MINIMUM TREATING STANDARDS (RETENTION LBS./CU. FT) SHALL BE AS FOLLOWS:

APPLICATION	ACQ/ACZA	CA-B
ABOVE GROUND	0.25	0.10
GROUND CONTACT	0.40	0.21
FRESH WATER IMMERSION	0.40	0.21
IN GROUND (STRUCTURAL)	0.60	0.31
SILL PLATES	0.25	0.10

6. ALL LUMBER IN CONTACT WITH CONCRETE SHALL BE PRESSURE TREATED WITH ACZA TO A MINIMUM RETENTION OF 0.25 POUNDS PER CUBIC FOOT BY ASSAY.
7. NAILING SHALL BE IN CONFORMANCE WITH THE 2015 IBC UNLESS NOTED OTHERWISE. FASTENERS FOR PRESERVATIVE-TREATED WOOD SHALL BE OF HOT-DIPPED ZINC-COATED GALVANIZED STEEL, STAINLESS STEEL, SILICON BRONZE OR COPPER. THE COATING WEIGHTS FOR ZINC-COATED FASTENERS SHALL BE IN ACCORDANCE WITH ASTM A-153. 5/8-INCH DIAMETER STEEL ANCHOR BOLTS & LARGER NEED NOT BE GALVANIZED, UNLESS NOTED OTHERWISE.
8. PROVIDE STANDARD 3"x3"x¼" PLATE WASHERS UNDER ALL INTERMEDIATE ANCHOR BOLT HEADS AND NUTS AT THE SILL PLATE. USE STANDARD WASHERS FOR ALL OTHER BOLT HEADS AND NUTS IN CONTACT WITH WOOD.

PREMANUFACTURED CONNECTION HARDWARE:

1. CONNECTION HARDWARE IS BY THE SIMPSON COMPANY OF SAN LEANDRO, CA. ALL STEEL CONNECTORS SHALL BE GALVANIZED OR BY SOME METHOD MADE CORROSION RESISTANT, UNLESS OTHERWISE INDICATED.
2. PROVIDE BOLTED OR NAILED CONNECTIONS FOR THE MAXIMUM CAPACITY UNLESS NOTED OTHERWISE.
3. CONNECTORS IN CONTACT WITH PRESSURE TREATED WOOD SHALL BE EITHER POST HOT-DIP GALVANIZED OR STAINLESS STEEL. FASTENERS SHALL BE OF THE SAME MATERIAL OR PROTECTIVE COATING AS THE CONNECTORS, DO NOT MIX DIFFERING METALS IN THE SAME CONNECTION.

SHEATHING:

1. WOOD STRUCTURAL PANELS SHALL BE APA RATED EXPOSURE 1 PLYWOOD, AND COVERED IN DOC PS 1 AND PS 2, UNLESS NOTED OTHERWISE.
2. MINIMUM PANEL THICKNESS SHALL BE 15/32", OR AS INDICATED IN THESE PLANS. PARTICLEBOARD IS NOT PERMITTED.
3. MINIMUM NAILING IS 8d@6" AT PANEL EDGES AND 8d@12" IN THE FIELD. ALL NAILS SHALL BE COMMON OR GALVANIZED BOX NAILS. BLOCKING IS REQUIRED WHERE NOTED ON THE PLANS.

STRUCTURAL STEEL:

1. STRUCTURAL STEEL SHALL CONFORM TO THE FOLLOWING GRADES, UNLESS NOTED OTHERWISE ON THE PLANS:
   - PLATES & BARS- ASTM A36
   - W-SECTIONS – ASTM A992
2. WELD ACCORDING TO CURRENT AWS STANDARDS WITH E70XX ELECTRODES.
3. ALL STEEL EXPOSED TO WEATHER SHALL BE PAINTED OR HOT-DIP GALVANIZED, UNLESS NOTED OTHERWISE.
4. ALL STRUCTURAL CONNECTION BOLTS SHALL BE ASTM A325, UNLESS NOTED OTHERWISE. HOOKED, HEADED, THREADED, AND NUTTED ANCHOR RODS SHALL BE ASTM F1554 (Fy = 36 ksi), UNLESS NOTED OTHERWISE.

MANUFACTURED ROOF TRUSSES:

1. MANUFACTURED ROOF TRUSSES SHALL BE AT 24" CENTERS AND SHALL HAVE A MINIMUM OF A 2x6 TOP CHORDS FOR WOOD TRUSSES.
2. TRUSSES SHALL BE DESIGNED FOR SPECIFIED ROOF LOADS. STRUCTURAL CALCULATIONS SHALL BE SEALED BY A WASHINGTON LICENSED PROFESSIONAL ENGINEER AND SUBMITTED TO THE ENGINEER FOR APPROVAL PRIOR TO FABRICATION.
3. MANUFACTURER SHALL PROVIDE BRACING, BLOCKING, HOLDOWNS, AND ALL ACCESSORIES REQUIRED FOR PROPER INSTALLATION.
4. SHOP DRAWINGS SHALL PROVIDE PLACING AND ERECTION DIRECTION TO INSTALLER. CALCULATIONS AND SHOP DRAWINGS SHALL USE COMMON IDENTIFYING MARKS TO FACILITATE SHOP DRAWING REVIEW.

SOLDIER PILE SHAFTS:

1. SOLDIER PILE SHAFTS SHALL BE FILLED WITH EITHER CONTROL DENSITY FILL (CDF) IN THE DRY OR PUMPABLE LEAN CONCRETE (PLC) IN THE WET.
2. CDF/PLC IS A SELF-COMPACTING, CEMENTITIOUS, FLOWABLE MATERIAL REQUIRING NO SUBSEQUENT VIBRATION OR TAMPING TO ACHIEVE CONSOLIDATION. THE CONTRACTOR SHALL PROVIDE A MIX DESIGN CONFORMING TO SECTION 1.04 AND UTILIZE ACI 229 AS A GUIDE TO DEVELOP THE CDF/PLC MIX DESIGN. NO CDF/PLC SHALL BE PLACED UNTIL THE ENGINEER HAS REVIEWED THE MIX DESIGN.
3. CDF SHALL BE DESIGNED TO HAVE A MINIMUM 28-DAY STRENGTH OF 50 PSI AND PUMPABLE LEAN CONCRETE SHALL BE DESIGNED TO HAVE A MINIMUM 28-DAY STRENGTH OF 50 PSI. NEITHER MATERIAL MAY EXCEED 300 PSI. THE MIX SHALL BE FLOWABLE (APPROXIMATE SLUMP 3 TO 10 INCHES).
4. TEST UNIT WEIGHT, YIELD, AND AIR CONTENT PER ASTM D6023 AND 28-DAY COMPRESSIVE STRENGTH PER ASTM D4832D
5. THE WATER/CEMENT RATIO SHALL BE CALCULATED ON THE TOTAL WEIGHT OF CEMENTITIOUS MATERIAL.
6. PROPOSED ADMIXTURES SHALL BE APPROVED BY THE ENGINEER PRIOR TO USE AND INCLUDED IN THE MIX DESIGN.
7. COMPACTION OF CONTROLLED DENSITY FILL IS NOT REQUIRED.

CONTROLLED DENSITY FILL (CDF):

SHAFT BACKFILL MATERIAL PER WSDOT 2-09.3(1)E. FOR CONTROLLED DENSITY FILL. IF LEAN MIX CONCRETE IS USED, MINIMUM COMPRESSIVE STRENGTH IS 100 PSI

SUBMITTALS:

THE CONTRACTOR SHALL PROVIDE THE ENGINEER OF RECORD AND THE BUILDING OFFICIAL SUBMITTALS FOR APPROVAL , PRIOR TO CONSTRUCTION, FOR THE FOLLOWING ITEMS:

1. CONCRETE MIX DESIGN AND PROPOSED ADMIXTURES
2. CONCRETE REINFORCING SHOP DRAWINGS
3. GROUT MIX DESIGN
4. CMU REINFORCING SHOP DRAWINGS
5. MANUFACTURED TRUSS SHOP DRAWINGS AND CALCULATIONS
6. STRUCTURAL STEEL SHOP DRAWINGS
7. SOLDIER PILE WALL SUBMITTAL
8. MECHANICAL/ELECTRICAL EQUIPMENT ANCHORAGE DESIGN CALCULATIONS SIGNED BY A WASHINGTON LICENSED ENGINEER

JOB SITE CONDITIONS AND SAFETY:

1. CONTRACTOR AGREES THAT THEY SHALL ASSUME SOLE AND COMPLETE RESPONSIBILITY FOR JOB SITE CONDITIONS DURING THE COURSE OF CONSTRUCTION OF THIS PROJECT, INCLUDING SAFETY OF ALL PERSONS AND PROPERTY; THAT THIS REQUIREMENT SHALL APPLY CONTINUOUSLY AND NOT BE LIMITED TO NORMAL WORKING HOURS; AND THAT THE CONTRACTOR SHALL DEFEND, INDEMNIFY, AND HOLD THE ENGINEER AND IT'S REPRESENTATIVE HARMLESS FROM ANY AND ALL LIABILITY, REAL OR ALLEGED, IN CONNECTION WITH THE PERFORMANCE OF WORK ON THIS PROJECT, EXCEPTING FOR LIABILITY ARISING FORM THE SOLE NEGLIGENCE OF THE ENGINEER.

PSE
PETERSEN STRUCTURAL ENGINEERS
708 BROADWAY, SUITE 110
TACOMA WA 98402
(253) 850-2140
15-147

murraysmith

KEJ 11/29/18 DESIGNED BY: DATE
KEJ 11/29/18 DRAWN BY DATE
WJS 11/29/18 CHECKED BY: DATE

WILLIAM JOHN SANDO STATE OF WASHINGTON 46224 STRUCTURAL ENGINEER PROFESSIONAL ENGINEER

NO.	DATE	BY	APPR.	REVISION

CITY OF KIRKLAND WASHINGTON

CITY OF KIRKLAND
PUBLIC WORKS DEPARTMENT
123 FIFTH AVENUE KIRKLAND, WA 98033 (425) 587-3800 www.kirklandwa.gov

GENERAL STRUCTURAL NOTES

SHEET: 15 of 43
SCALE: AS SHOWN
FILENAME: S-1

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QUALITY ASSURANCE FOR SEISMIC RESISTANCE:

QUALITY ASSURANCE FOR THE STRUCTURE'S MAIN LATERAL FORCE RESISTING SYSTEM SHALL BE PROVIDED BY SPECIAL INSPECTION AND MATERIAL TESTING OF THE FOLLOWING:

STRUCTURAL OBSERVATION REQUIREMENTS:

1. THE OWNER SHALL EMPLOY THE ENGINEER OF RECORD OR AN ALTERNATE WASHINGTON LICENSED PROFESSIONAL ENGINEER, APPROVED BY THE ENGINEER OF RECORD, TO PERFORM STRUCTURAL OBSERVATIONS IN ACCORDANCE WITH SECTION 1702 OF THE INTERNATIONAL BUILDING CODE.

2. STRUCTURAL OBSERVATION IS THE VISUAL OBSERVATION OF THE STRUCTURAL SYSTEM BY A REGISTERED DESIGN PROFESSIONAL FOR GENERAL CONFORMANCE TO THE APPROVED CONSTRUCTION DOCUMENTS AT SIGNIFICANT CONSTRUCTION STAGES AND AT COMPLETION OF THE STRUCTURAL SYSTEM. STRUCTURAL OBSERVATION DOES NOT INCLUDE OR WAIVE THE RESPONSIBILITY FOR ANY OTHER INSPECTION CRITERIA, INCLUDING SPECIAL INSPECTION, AS REQUIRED BY THE BUILDING OFFICIAL OR AS INDICATED WITHIN THE INTERNATIONAL BUILDING CODE.

3. DEFICIENCIES SHALL BE REPORTED IN WRITING TO THE OWNER AND THE BUILDING OFFICIAL (AND THE ENGINEER OF RECORD IF AN ALTERNATE ENGINEER IS USED FOR STRUCTURAL OBSERVATION). AT THE CONCLUSION OF THE STRUCTURAL SYSTEMS, INCLUDED WITHIN THE PERMIT, THE STRUCTURAL OBSERVER SHALL SUBMIT TO THE BUILDING OFFICIAL AND THE OWNER (AND THE ENGINEER OF RECORD IF AN ALTERNATE ENGINEER IS USED FOR STRUCTURAL OBSERVATION) A WRITTEN STATEMENT THAT THE SITE VISITS HAVE BEEN MADE AND IDENTIFY ANY REPORTED DEFICIENCIES WHICH, TO THE BEST OF THE STRUCTURAL OBSERVER'S KNOWLEDGE, HAVE NOT BEEN RESOLVED.

4. THE CONTRACTOR SHALL MAKE AVAILABLE ALL MEANS AND METHODS NECESSARY FOR THE STRUCTURAL OBSERVER TO PERFORM THE REQUIRED STRUCTURAL OBSERVATIONS. IN ADDITION, THE CONTRACTOR SHALL NOTIFY THE OWNER AND STRUCTURAL OBSERVER A MINIMUM OF 48 HOURS BEFORE THE TIME AT WHICH THE SPECIFIED STRUCTURAL OBSERVATIONS MAY BE PERFORMED. IN ADDITION THE CONTRACTOR SHALL UPDATE THE STRUCTURAL OBSERVER OF THE CONSTRUCTION PROGRESS.

5. STRUCTURAL OBSERVATIONS SHALL BE PERFORMED FOR THE FOLLOWING AREAS OF WORK:
   - 5.1. FOLLOWING THE DRILLING OF SHAFTS, PRIOR TO STEEL PILE PLACEMENT
   - 5.2. FOLLOWING THE FORMING AND REINFORCING OF THE CONCRETE FASCIA WALL
   - 5.3. FOLLOWING THE FORMING AND REINFORCING OF THE FLOOR SLAB, PRIOR TO CONCRETE POUR
   - 5.4. FOLLOWING THE CMU WALL REINFORCING, PRIOR TO THE FIRST GROUT POUR
   - 5.5. FOLLOWING THE REPRESENTATIVE LINTEL POUR
   - 5.6. FOLLOWING THE ROOF FRAMING AND HARDWARE PLACEMENT, PRIOR TO DECKING INSTALLATION
   - 5.7. FOLLOWING THE COMPLETION OF ALL STRUCTURAL ELEMENTS CONTAINED HEREIN

SPECIAL INSPECTIONS:

1. AN INDEPENDENT TESTING LABORATORY EMPLOYED BY THE OWNER SHALL PROVIDE SPECIAL INSPECTIONS IN ACCORDANCE WITH CHAPTER 17 OF THE INTERNATIONAL BUILDING CODE AS OUTLINED IN THE TABLES ON S-2 AND S-3 FOR THE STRUCTURAL SYSTEMS OUTLINED HEREIN. ALL OTHER ELEMENTS SHALL COMPLY WITH THE SPECIAL INSPECTION & TESTING REQUIREMENTS OF CHAPTER 17 OF THE INTERNATIONAL BUILDING CODE.

2. THE TESTING AGENCY SHALL PROVIDE THE ENGINEER OF RECORD, THE OWNER, AND THE BUILDING OFFICIAL COPIES OF ALL RELEVANT TEST REPORTS AND SPECIAL INSPECTIONS.

INSPECTIONS:
SPECIAL INSPECTIONS IN ACCORDANCE WITH IBC 1704 SHALL BE PROVIDED FOR THE ITEMS IN THE FOLLOWING TABLES.

REQUIRED STRUCTURAL SPECIAL INSPECTIONS

SYSTEM or MATERIAL	INSPECTION: IBC CODE REFERENCE	INSPECTION: CODE or STANDARD REFERENCE	FREQUENCY: Continuous	FREQUENCY: Periodic	REMARKS
FABRICATORS					
FABRICATORS	1704.2.5			X	SPECIAL INSPECTION IS REQUIRED FOR STRUCTURAL LOAD-BEARING OR LATERAL LOAD RESISTING MEMBERS OR ASSEMBLIES FABRICATED ON THE PREMISES OF A FABRICATOR'S SHOP.
	1704.2.5				THE SPECIAL INSPECTOR SHALL VERIFY THAT THE FABRICATOR MAINTAINS APPROVED DETAILED FABRICATION AND QUALITY CONTROL PROCEDURES AND SHALL REVIEW FOR COMPLETENESS AND ADEQUACY RELATIVE TO THE CODE REQUIREMENT.
	1704.2.5.1				SPECIAL INSPECTIONS REQUIRED BY SECTION 1705 ARE NOT REQUIRED WHERE THE WORK IS DONE ON THE PREMISES OF A FABRICATOR REGISTERED AND APPROVED TO PERFORM SUCH WORK WITHOUT SPECIAL INSPECTION APPROVAL SHALL BE BASED UPON REVIEW OF THE FABRICATOR'S WRITTEN PROCEDURAL AND QUALITY CONTROL MANUALS AND PERIODIC AUDITING OF FABRICATION PRACTICES BY A NATIONALLY RECOGNIZED ACCREDITING AUTHORITY. AT COMPLETION OF FABRICATION, THE APPROVED FABRICATOR SHALL SUBMIT A CERTIFICATE OF COMPLIANCE TO THE OWNER OR THE OWNER'S AUTHORIZED AGENT FOR SUBMITTAL TO THE BUILDING OFFICIAL AS SPECIFIED IN SECTION 1704.5 STATING THAT THE WORK WAS PERFORMED IN ACCORDANCE WITH THE APPROVED CONSTRUCTION DOCUMENTS.
CONCRETE					
INSPECT REINFORCING INCLUDING PRESTRESSING TENDONS, AND VERIFY PLACEMENT	TABLE 1705.3 1908.4 1901.6.2	ACI 318: CH. 20, 25.2, 25.3, 26.1-26.6.3		X	TOLERANCES AND REINFORCING PLACEMENT PER ACI 26.6.2; SPACING LIMITS FOR REINFORCING ACI 25.2 PROTECTION OF REINFORCEMENT PER ACI 20.6.1
REINFORCING BAR WELDING	TABLE 1705.3 1903.1	ACI 318: 26.6.4 AWS D1.4			
A) VERIFICATION OF WELDABILITY OF REINFORCING BARS OTHER THAN ASTM A706	TABLE 1705.3	ACI 318: 26.6.4 AWS D1.4		X	
B) INSPECT SINGLE-PASS FILLET WELS, MAXIMUM 5/16"	TABLE 1705.3	ACI 318: 26.6.4 AWS D1.4		X	
C) INSPECT ALL OTHER WELDS	TABLE 1705.3	ACI 318: 26.6.4 AWS D1.4	X		
INSPECT ANCHORS CAST IN CONCRETE	TABLE 1705.3 1901.3	ACI 318: 17.8.2		X	SPECIAL INSPECTIONS APPLY TO ANCHOR PRODUCT NAME, TYPE, AND DIMENSIONS, HOLE DIMENSIONS, COMPLIANCE WITH DRILL BIT REQUIREMENTS, CLEANLINESS OF THE HOLE AND ANCHOR, ADHESIVE EXPIRATION DATE, ANCHOR/ADHESIVE INSTALLATION, ANCHOR EMBEDMENT, AND TIGHTENING TORQUE
VERIFY USE OF REQUIRED MIX DESIGN(S)	TABLE 1705.3 1904 1908.2 1908.3	ACI 318: CHAPTER 4 ACI 318: 5.2-5.4		X	
CONCRETE/SHOTCRETE PLACEMENT	TABLE 1705.3	ACI 318: 26.5	X		
CONCRETE/SHOTCRETE CURING	TABLE 1705.3 1908.9	ACI 318: 26.5.3-26.5.5		X	
VERIFICATION OF IN-SITU CONCRETE PRIOR TO REMOVAL OF FORMS AND SHORES FROM ELEVATED BEAMS AND STRUCTURAL SLABS	TABLE 1705.3	ACI 318: 26.11.2		X	
VERIFICATION OF FORMWORK	TABLE 1705.3	ACI 318: 26.11.1.1(b)		X	SPECIAL INSPECTIONS APPLY TO SHAPE, LOCATION AND DIMENSIONS OF THE CONCRETE MEMBER BEING FORMED

REQUIRED STRUCTURAL SPECIAL INSPECTIONS

SYSTEM or MATERIAL	INSPECTION: IBC CODE REFERENCE	INSPECTION: CODE or STANDARD REFERENCE	FREQUENCY: Continuous	FREQUENCY: Periodic	REMARKS
MASONRY LEVEL C					
TABLE 1.18.3 - LEVEL C QUALITY ASSURANCE					
TESTS					
VERIFICATION OF f'_m AND f_{AAC} IN ACCORDANCE WITH SPECIFICATION ARTICLE 1.4 B PRIOR TO CONSTRUCTION AND FOR EVERY 5,000 SQ. FT (465 SQ. M) DURING CONSTRUCTION					
VERIFICATION OF PROPORTIONS OF MATERIALS IN PREMIXED OR PREBLENDED MORTAR, PRESTRESSING GROUT, AND GROUT OTHER THAN SELF-CONSOLIDATING GROUT, AS DELIVERED TO THE PROJECT SITE					
VERIFICATION OF SLUMP FLOW AND VISUAL STABILITY INDEX (VSI) AS DELIVERED TO THE PROJECT SITE IN ACCORDANCE WITH ARTICLE 1.5.B.1.b.3 FOR SELF-CONSOLIDATING GROUT					
INSPECTION					
INSPECTION TASK	**REFERENCE CODE OR STANDARD FOR CRITERIA: TMS 402/ ACI 530/ ASCE5**	**REFERENCE CODE OR STANDARD FOR CRITERIA: TMS 602/ ACI 530.1/ ASCE6**	**FREQUENCY(a): Continuous**	**FREQUENCY(a): Periodic**	**REMARKS**
1. VERIFY COMPLIANCE WITH THE APPROVED SUBMITTALS		Art. 1.5		X	
2. VERIFY THAT THE FOLLOWING ARE IN COMPLIANCE:					
a. PROPORTIONS OF SITE-MIXED MORTAR, GROUT AND PRESTRESSING GROUT FOR BONDED TENDONS		Art. 2.1, 2.6 A, 2.6 B, 2.6 C, 2.4 G.1.b		X	
b. GRADE, TYPE, AND SIZE OF REINFORCEMENT AND ANCHOR BOLTS, AND PRESTRESSING TENDONS AND ANCHORAGES	Sec. 1.18	Art. 2.4, 3.4		X	
c. PLACEMENT OF MASONRY UNITS AND CONSTRUCTION OF MORTAR JOINTS		Art. 3.3 B		X	
d. PLACEMENT OF REINFORCEMENT, CONNECTORS, AND PRESTRESSING TENDONS AND ANCHORAGES	Sec. 1.18	Art. 3.2 E, 3.4, 3.6 A	X		
e. GROUT SPACE PRIOR TO GROUTING		Art. 3.2 D, 3.2 F	X		
f. PLACEMENT OF GROUT AND PRESTRESSING GROUT FOR BONDED TENDONS		Art. 3.5, 3.6 C	X		
g. SIZE AND LOCATION OF STRUCTURAL ELEMENTS		Art. 3.3 F		X	
h. TYPE, SIZE, AND LOCATION OF ANCHORS INCLUDING OTHER DETAILS OF ANCHORAGE OF MASONRY TO STRUCTURAL MEMBERS, FRAMES, OR OTHER CONSTRUCTION	Sec. 1.18.4.3, 1.17.1		X		
i. WELDING OF REINFORCEMENT	1705.2.2.1.2 Sec. 2.1.8.7.2, 3.3.3.4(c), 8.3.3.4(b)		X		
j. PREPARATION, CONSTRUCTION, AND PROTECTION OF MASONRY DURING COLD WEATHER (TEMPERATURE BELOW 40°F (4.4°C)) OR HOT WEATHER (TEMPERATURE ABOVE 90°F (32.2°C))		Art. 1.8 C, 1.8 D		X	
3. OBSERVE PREPARATION OF GROUT SPECIMENS, MORTAR SPECIMENS, AND/OR PRISMS		Art. 1.4 B.2.a.3, 1.4 B.2.b.3, 1.4 B.2.c.3, 1.4 B.3, 1.4 B.4	X		

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SPECIAL INSPECTION-1

SHEET 16 of 43
SCALE AS SHOWN
FILENAME S-2

X:\2015\15-126 To 15-150\15-147\Acad\15-147-04.04 Bid Drawings Kirkland Rose Point.dwg S-2 1/25/2019 4:11 PM ### 23.0s (LMS Tech)

QUALITY ASSURANCE FOR SEISMIC RESISTANCE (CONT.):

INSPECTIONS (CONT.):

REQUIRED STRUCTURAL SPECIAL INSPECTIONS

SYSTEM or MATERIAL	INSPECTION: IBC CODE REFERENCE	INSPECTION: CODE or STANDARD REFERENCE	FREQUENCY: Continuous	FREQUENCY: Periodic	REMARKS
STEEL					
FABRICATION OF STRUCTURAL ELEMENTS	1704.2.5.2	AISC 360 N2		X	REFER TO INSPECTION OF FABRICATOR REQUIREMENTS APPROVAL BASED ON NATIONALLY RECOGNIZED ACCREDITING AUTHORITY
MATERIAL VERIFICATION OF STRUCTURAL STEEL	1705.2.1 2203.1 TABLE 1705.2	ASTM A6 ASTM STANDARDS SPECIFIED IN CONSTRUCTION DOCUMENTS AISC 360 N3.2 AISC 360 A3.1 AISC 360 M5.5		X	CERTIFIED MILL TEST REPORTS
MATERIAL VERIFICATION OF WELD FILLER METALS	TABLE 1705.2	AISC 360 N3.2 AISC 360 A3.5 APPLICABLE AWS A5 DOCUMENTS		X	MANUFACTURER'S CERTIFICATE OF COMPLIANCE
COMPLETE AND PARTIAL JOINT PENETRATION GROOVE WELDS	TABLE 1705.2	AWS D1.1 SECTION 6	X		ALL WELDS VISUALLY INSPECTED PER AWS D1.1 6.9
VERIFICATION OF FRAME JOINT DETAILS INCLUDING MEMBER AND COMPONENT LOCATIONS, BRACING, AND STIFFENERS	TABLE 1705.2	AISC 360 N5.7		X (a)	
MATERIAL VERIFICATION OF ANCHOR BOLTS AND THREADED RODS		AISC 360 N3.2 AISC 360 A3.4 ASTM STANDARDS SPECIFIED IN CONSTRUCTION DOCUMENTS		X	MANUFACTURER'S CERTIFIED TEST REPORTS
VERIFYING USE OF PROPER WPS'S		AISC 360 N3.2			COPY OF WELDING PROCEDURE SPECIFICATIONS
VERIFYING WELDER AND WELDING INSPECTOR QUALIFICATIONS	1705.2.2.1			X	COPY OF QUALIFICATION CARDS
WELDING STUDS EXCEPT AS NOTED OTHERWISE		AISC 360 N6 AWS D1.1 SECTION 7	X		CONTINUOUS INSPECTION IS NOT REQUIRED WHEN WELDS INSTALLED WITH AN AUTOMATICALLY TIMED STUD WELDING MACHINE PER SECTION 7 OF AWS D1.1 (ONLY PERIODIC), 1705.2 (3) ALL WELDS VISUALLY INSPECTED PER AWS D1.1 7.8.1
WELDING STUDS IN STRUCTURAL DIAPHRAGMS				X	

REQUIRED GEOTECHNICAL SPECIAL INSPECTIONS

SYSTEM or MATERIAL	INSPECTION: IBC CODE REFERENCE	INSPECTION: CODE or STANDARD REFERENCE	FREQUENCY: Continuous	FREQUENCY: Periodic	REMARKS
SOILS					
GEOTECHNICAL INVESTIGATIONS	TABLE 1705.6 1803				GEOTECHNICAL INVESTIGATION SHALL INCLUDE ITEMS OF SPECIAL INSPECTION AND TESTING AS NOTED IN TABLE 5 OF THE GUIDELINES
VERIFY MATERIALS BELOW SHALLOW FOUNDATIONS ARE ADEQUATE TO ACHIEVE THE DESIGN BEARING CAPACITY	TABLE 1705.6			X (a)	BY THE GEOTECHNICAL ENGINEER
VERIFY EXCAVATIONS ARE EXTENDED TO PROPER DEPTH AND HAVE REACHED PROPER MATERIAL	TABLE 1705.6			X	
PERFORM CLASSIFICATION AND TESTING OF COMPACTED FILL MATERIALS	TABLE 1705.6 1803.5.1			X	TESTING OF COMPACTED FILL MATERIALS (SEE TABLE 5)
VERIFY USE OF PROPER MATERIALS, DENSITIES AND LIFT THICKNESSES DURING PLACEMENT AND COMPACTION OF COMPACTED FILL	TABLE 1705.6		X		BY THE GEOTECHNICAL ENGINEER
PRIOR TO PLACEMENT OF COMPACTED FILL, OBSERVE SUBGRADE AND VERIFY THAT SITE HAS BEEN PREPARED PROPERLY.	TABLE 1705.6			X	
CAST-IN-PLACE DEEP FOUNDATION ELEMENTS					
DRILLING AND TESTING	1705.6	GEOTECHNICAL REPORT	X		BY THE GEOTECHNICAL ENGINEER
INSPECT DRILLING OPERATIONS AND MAINTAIN COMPLETE AND ACCURATE RECORDS FOR EACH ELEMENT	TABLE 1705.6		X		
VERIFY PLACEMENT LOCATIONS AND PLUMBNESS, CONFIRM ELEMENT DIAMETERS, BELL DIAMETERS (IF APPLICABLE), LENGTHS, EMBEDMENT INTO BEDROCK (IF APPLICABLE) AND ADEQUATE END-BEARING STRATA CAPACITY. RECORD CONCRETE OR GROUT VOLUMES.	TABLE 1705.6		X		
FOR CONCRETE ELEMENTS, PERFORM ADDITIONAL INSPECTIONS IN ACCORDANCE WITH SECTION 1705.3	TABLE 1705.6				

TESTING:
MATERIALS TESTING IN ACCORDANCE WITH IBC 1704 SHALL BE PROVIDED FOR THE FOLLOWING ITEMS.

REQUIRED TESTING for SPECIAL INSPECTIONS

SYSTEM or MATERIAL	TESTING: IBC CODE REFERENCE	TESTING: CODE or STANDARD REFERENCE	FREQUENCY: Continuous	FREQUENCY: Periodic	REMARKS
GEOTECHNICAL					
GEOTECHNICAL ENGINEER TO PERFORM TESTING OF COMPACTED FILL MATERIALS	1803				TESTING PER GEOTECHNICAL REPORT
FILL IN-PLACE DENSITY OR PREPARED SUBGRADE DENSITY	1705.6			X (a)	BY THE GEOTECHNICAL ENGINEER
MATERIAL VERIFICATION		VARIES: CLASSIFICATION AND TESTING OF CONTROLLED FILL MATERIALS		X (a)	BY THE GEOTECHNICAL ENGINEER
CONCRETE					
AT THE TIME FRESH CONCRETE IS SAMPLED TO FABRICATE SPECIMENS FOR STRENGTH TESTS, PERFORM SLUMP AND AIR CONTENT TESTS, AND DETERMINE THE TEMPERATURE OF THE CONCRETE	TABLE 1705.3	ASTM C 172 ASTM C 31 ACI 318: 5.6, 5.8	X		FABRICATE SPECIMENS AT TIME FRESH CONCRETE IS PLACED. ONCE EACH DAY FOR A GIVEN CLASS OF CONCRETE, OR LESS THAN ONCE FOR EACH 150 YDS OF CONCRETE, OR LESS THAN ONCE FOR EACH 5,000 FT2 OF SURFACE AREA FOR SLABS/WALLS. ONCE EACH SHIFT FROM IN-PLACE WORK OR FROM TEST PANEL AND MINIMUM ONE SPECIMEN FOR EACH 50 CUBIC YARDS. "PRECONSTRUCTION TESTS AS REQUIRED PER THE BUILDING OFFICIAL."
CONCRETE STRENGTH	TABLE 1705.3	ASTM C39	X		
CONCRETE SLUMP	TABLE 1705.3	ASTM C143	X		
CONCRETE AIR CONTENT		ASTM C231	X		
CONCRETE TEMPERATURE		ASTM C1064	X		
MASONRY					
UNIT STRENGTH METHOD	2105.2.2.1 TABLE 2105.2.2.1.1 TABLE 2105.2.2.1.2	ASTM C62 ASTM C216 ASTM C652 ASTM 1019 ASTM C55 ASTM C90 ASTM C1386	TESTING EVERY 5,000 FT2 AT LEVEL C QUALITY ASSURANCE		
COMPRESSIVE STRENGTH OF MORTAR		MSJC ASTM C270			
COMPRESSIVE STRENGTH OF GROUT		MSJC ASTM C1019			
STEEL					
MAGNETIC PARTICLE (MT) AND ULTRASONIC (UT) TESTING OF WELDS	1705.2.2	MT - AWS D1.1 6.14.4 UT - AWS D1.1 6.13 & 6.14.3	PER DRAWINGS		
PRE-CONSTRUCTION TESTING OF WELDING STUDS	1705.2.2	AWS D1.1 7.7.1	EACH SIZE AND TYPE OF STUD EACH SHIFT		THIS TESTING PERFORMED BY CONTRACTOR AND CONFIRMED BY SPECIAL INSPECTOR.
STUD APPLICATION QUALIFICATION	1705.2.2	AWS D1.1 7.8	NON-PREQUALIFIED APPLICATIONS		THIS TESTING PERFORMED BY CONTRACTOR AND CONFIRMED BY SPECIAL INSPECTOR.

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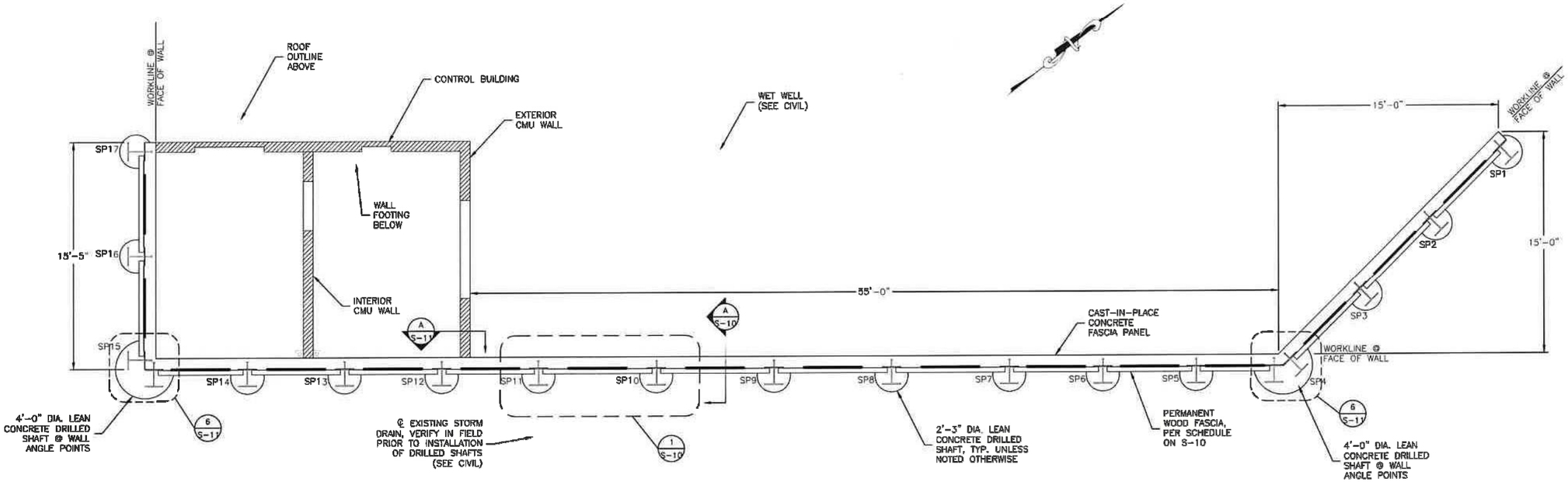
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SPECIAL INSPECTION-2

SHEET: 17 of 43
SCALE: AS SHOWN
FILENAME: S-3

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NOTE:
1. SP = SOLDIER PILE, SEE S-10 FOR SCHEDULE



PROJECT PLAN VIEW

1/4" = 1'-0"

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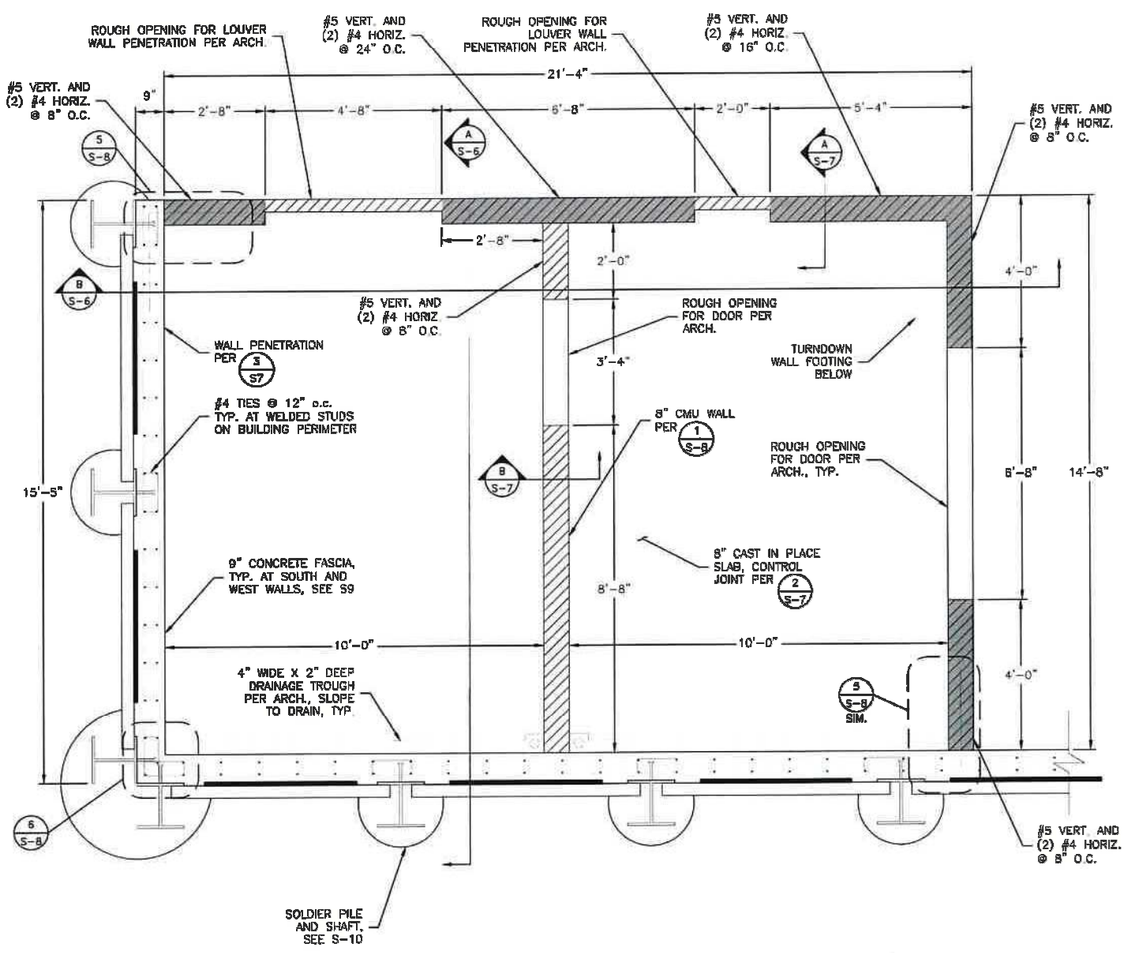
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PROJECT PLAN

SHEET 18 of 43
SCALE AS SHOWN
FILENAME S-4

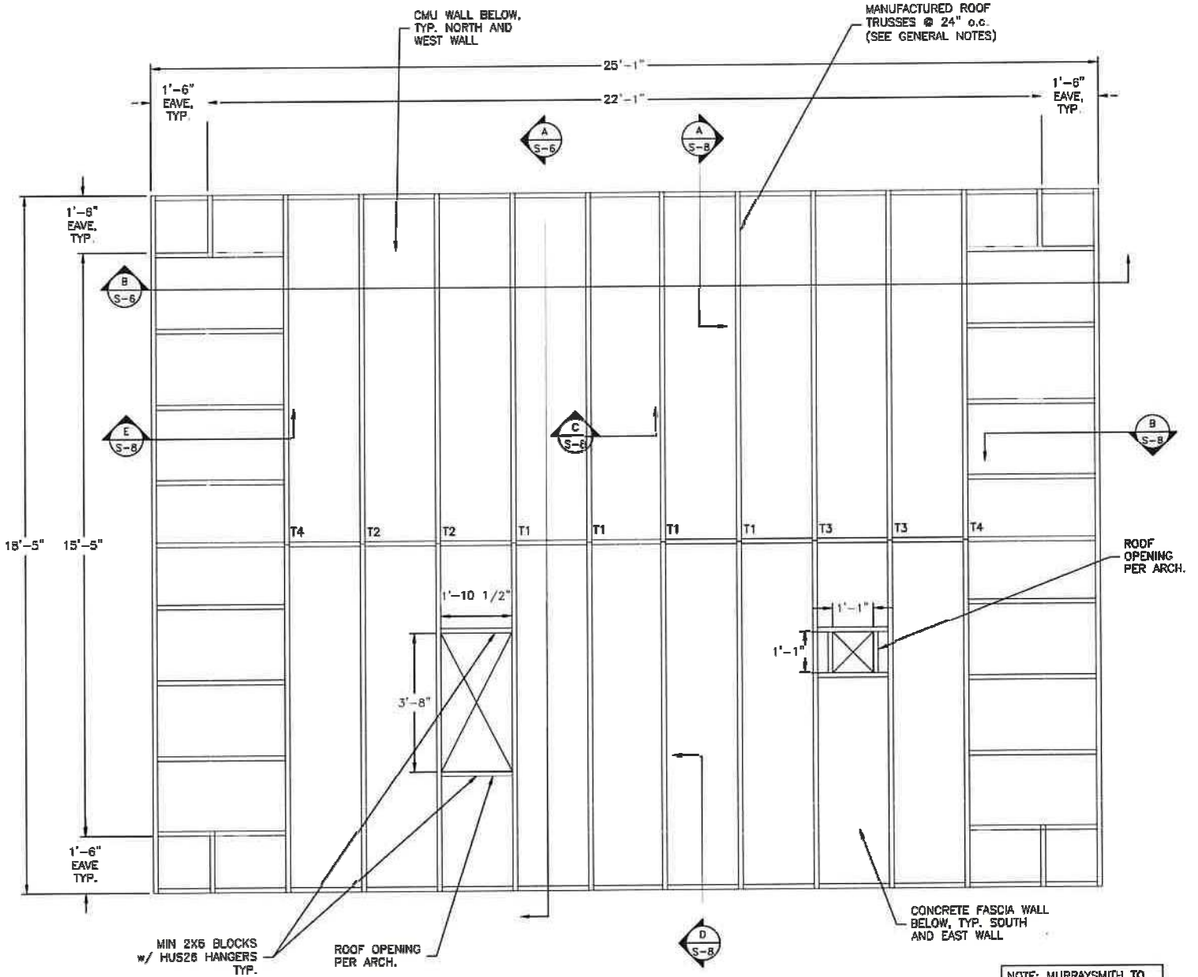
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TRUSS SCHEDULE	
MARK	DESCRIPTION
T1	STANDARD TRUSS
T2	JACK TRUSS 1
T3	JACK TRUSS 2
T4	GIRDER TRUSS



CONTROL BUILDING PLAN

1/2" = 1'-0"



CONTROL BUILDING ROOF PLAN

1/2" = 1'-0"

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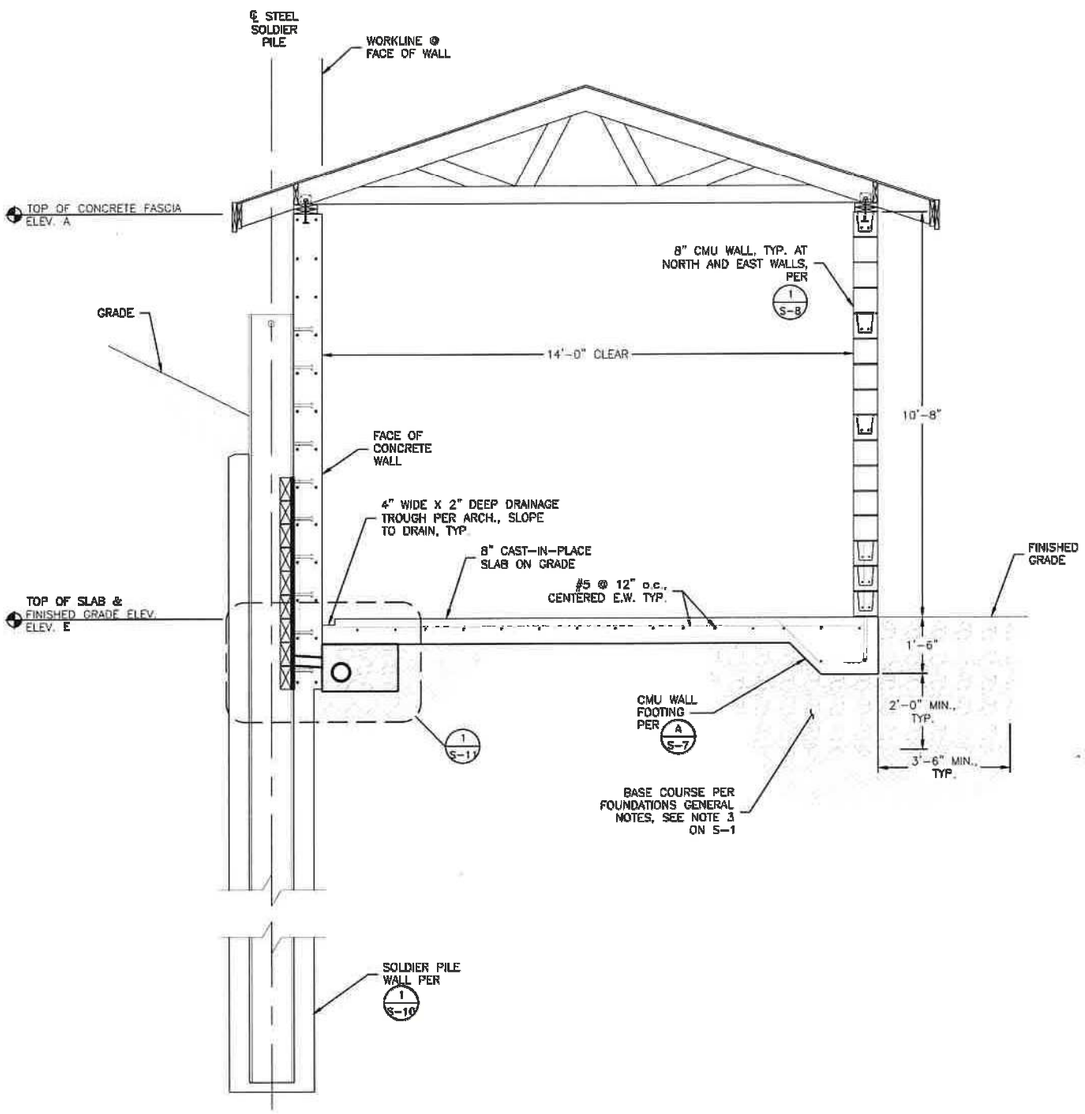
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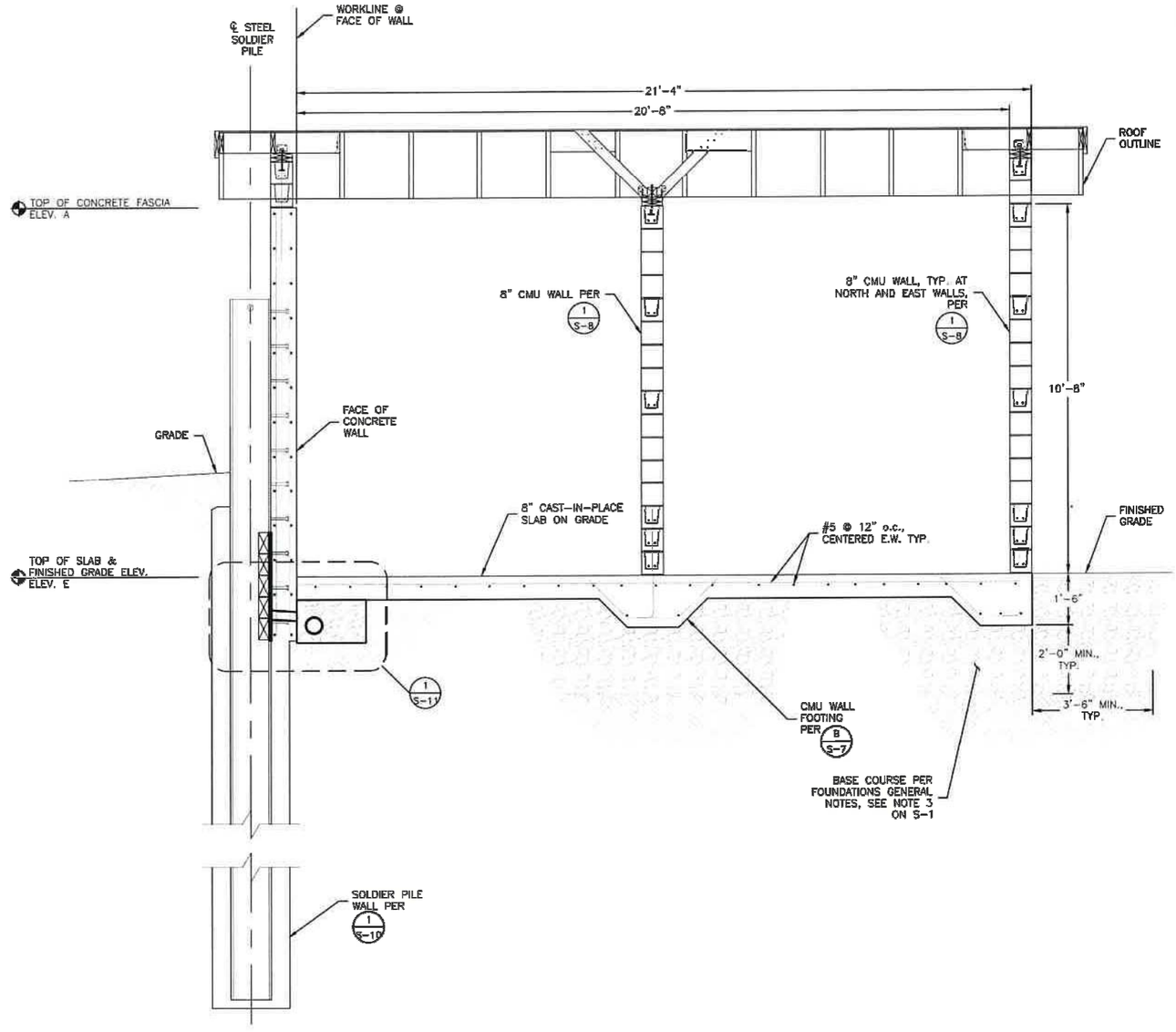
CONTROL BUILDING FOUNDATION AND ROOF PLANS

SHEET 19 of 43
SCALE AS SHOWN
FILENAME S-5

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BUILDING SECTION A S-6
1/2" = 1'-0"



BUILDING SECTION B S-6
1/2" = 1'-0"

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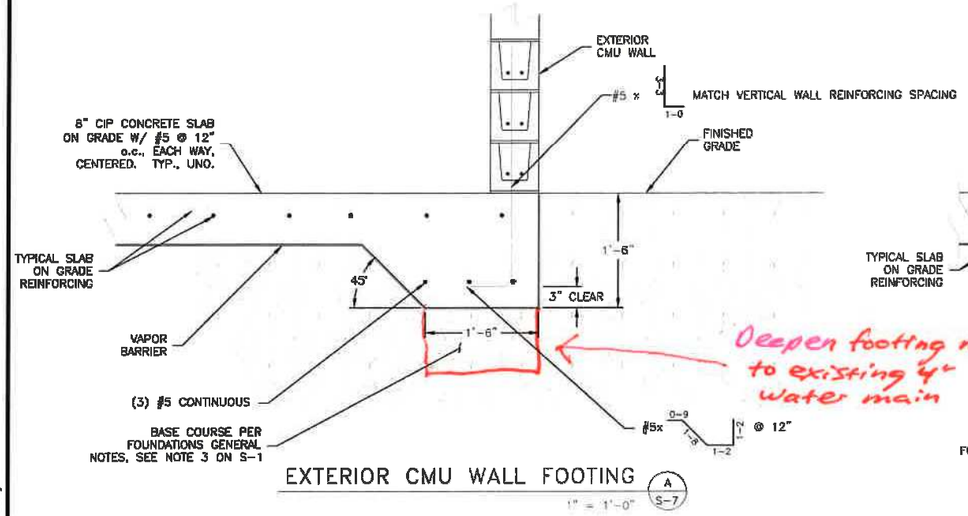
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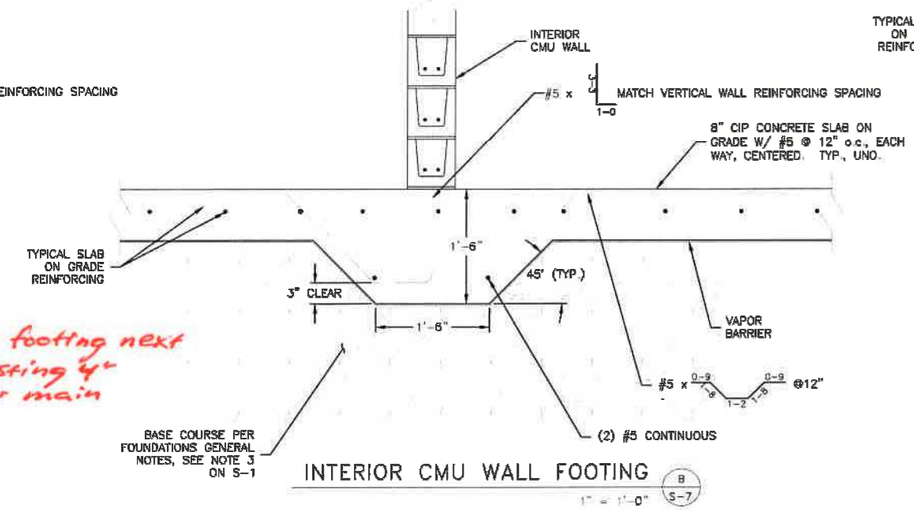
CONTROL BUILDING SECTIONS

SHEET 20 of 43
SCALE AS SHOWN
FILENAME S-6

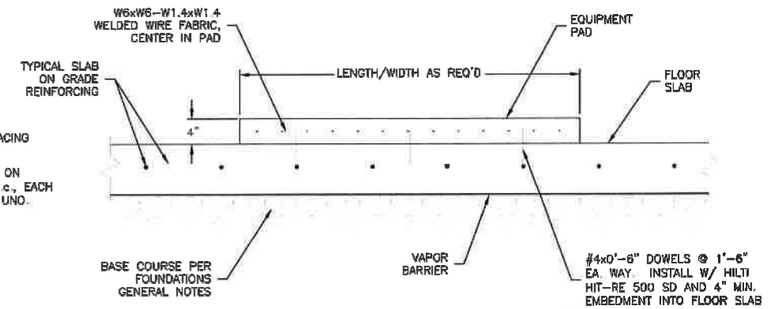
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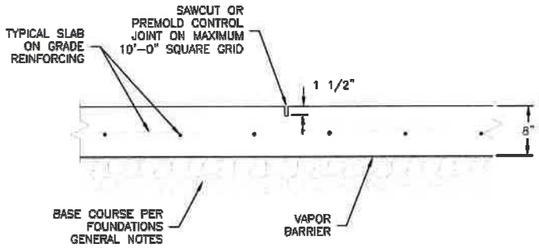
EXTERIOR CMU WALL FOOTING (A / S-7)
1" = 1'-0"



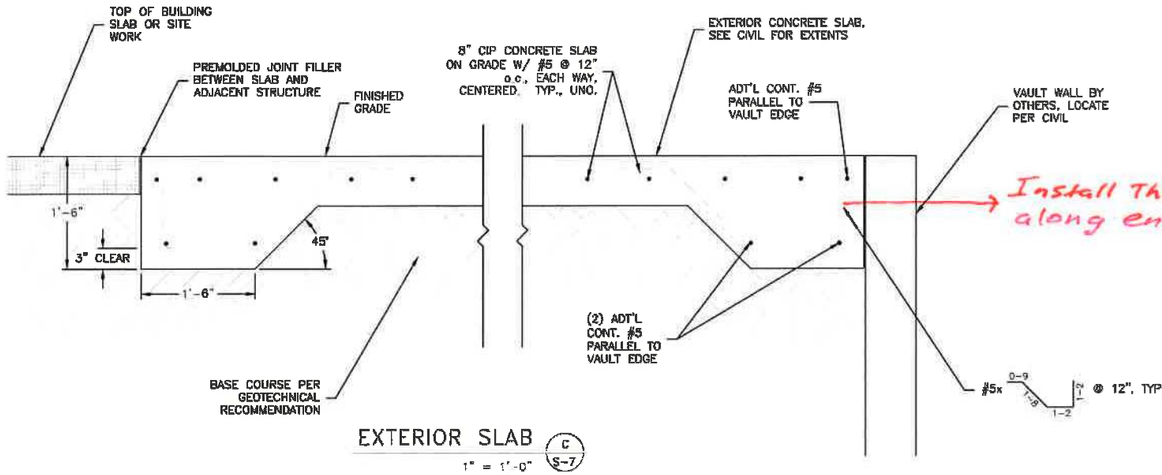
INTERIOR CMU WALL FOOTING (B / S-7)
1" = 1'-0"



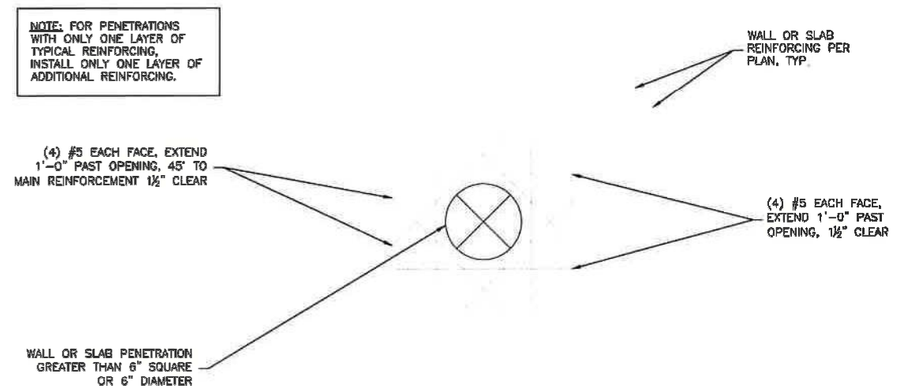
EQUIPMENT PAD DETAIL (1 / S-7)
1" = 1'-0"



CONTROL JOINT DETAIL (2 / S-7)
1" = 1'-0"



EXTERIOR SLAB (C / S-7)
1" = 1'-0"



CONCRETE PENETRATION REINFORCING (3 / S-7)
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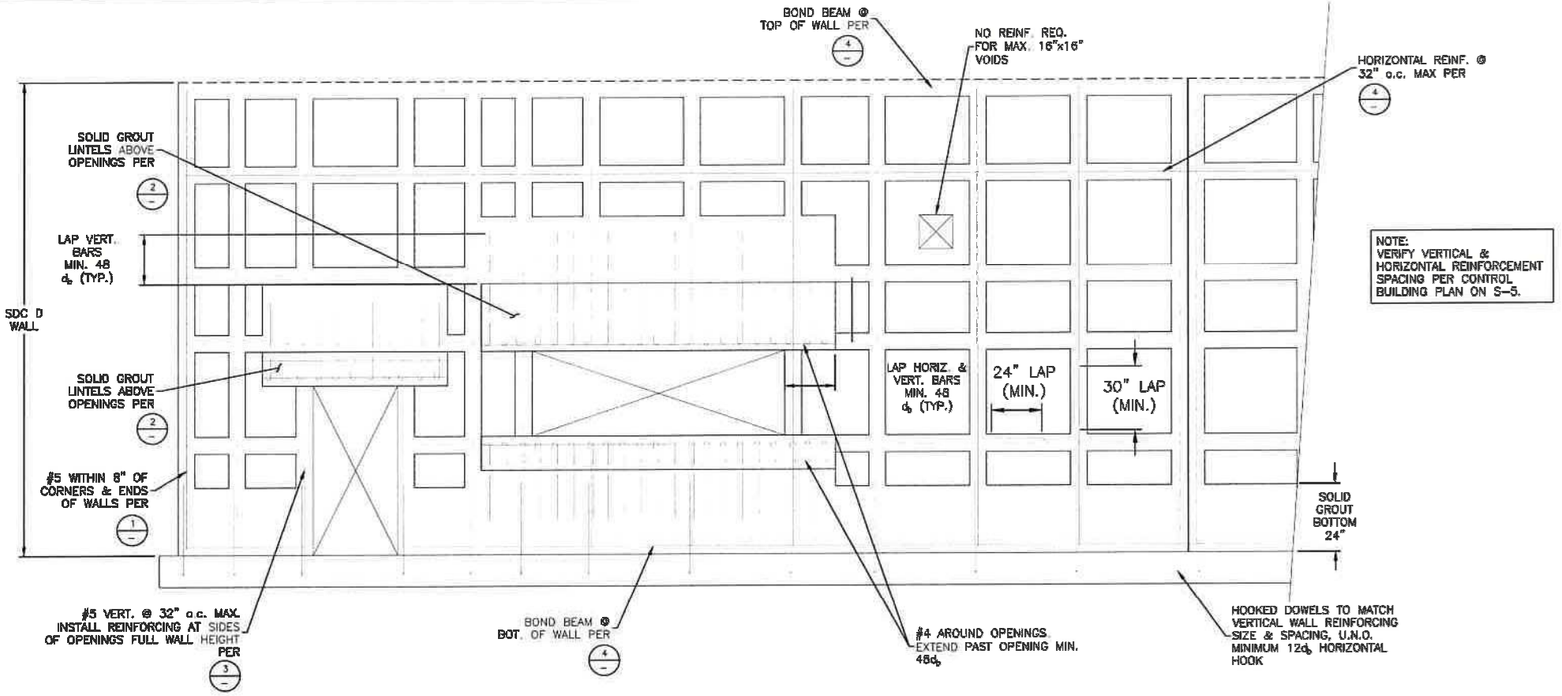
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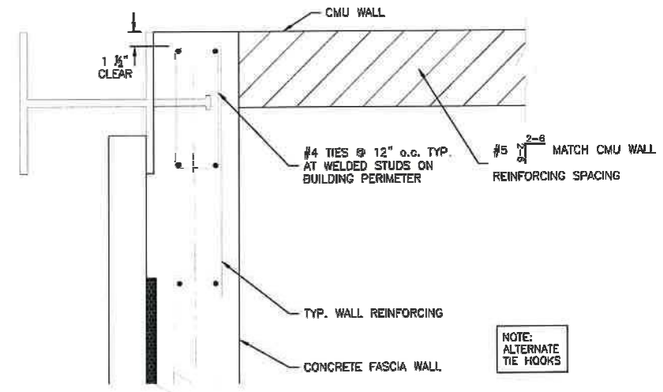
FOUNDATION DETAILS

SHEET 21 of 43
SCALE AS SHOWN
FILENAME S-7

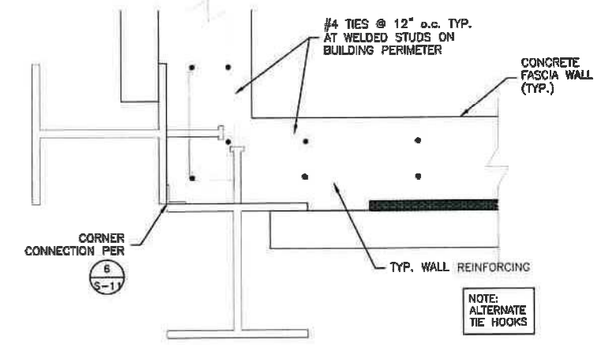
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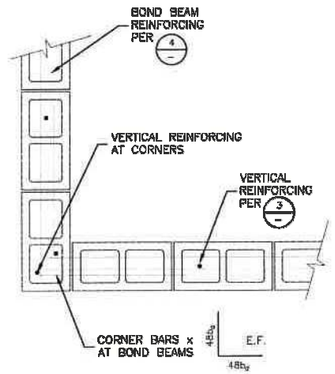
TYPICAL CMU WALL DETAIL 1/S-8
1/8" = 1'-0"



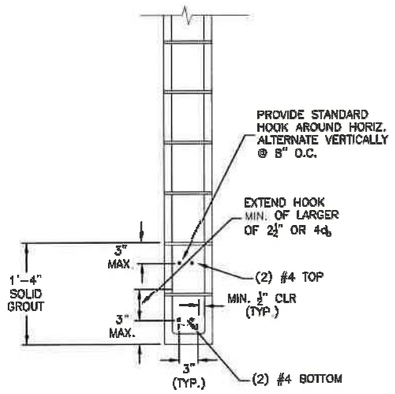
TYP. CMU TO CONCRETE CORNER DETAIL 5/S-8
1 1/2" = 1'-0"



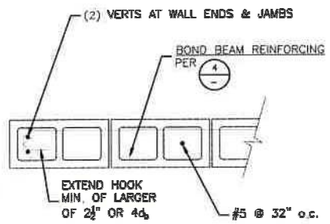
CONCRETE CORNER DETAIL 6/S-8
1 1/2" = 1'-0"



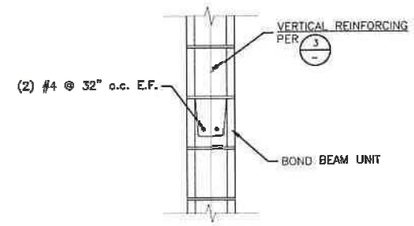
CMU WALL CORNER DETAIL 1/-
1" = 1'-0"



16" CMU LINTEL DETAIL 2/-
1" = 1'-0"



JAMB OR END OF WALL DETAIL 3/-
1" = 1'-0"



BOND BEAM DETAIL 4/-
1" = 1'-0"

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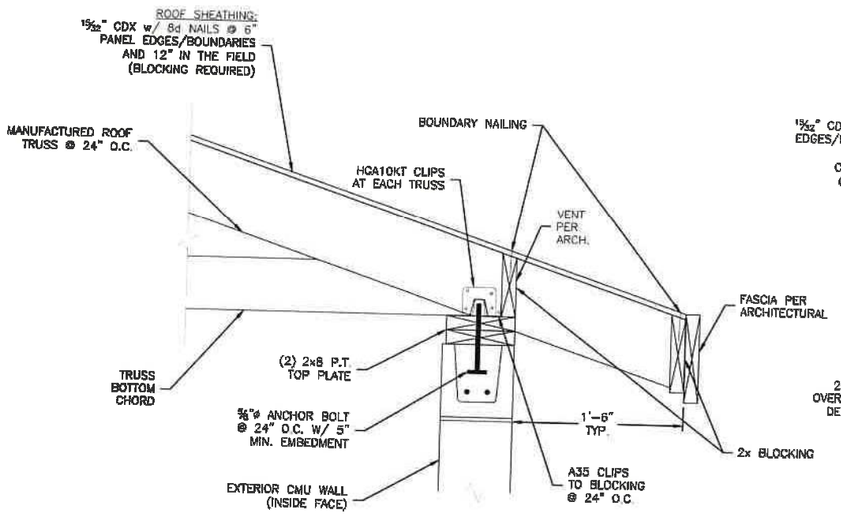
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WALL DETAILS

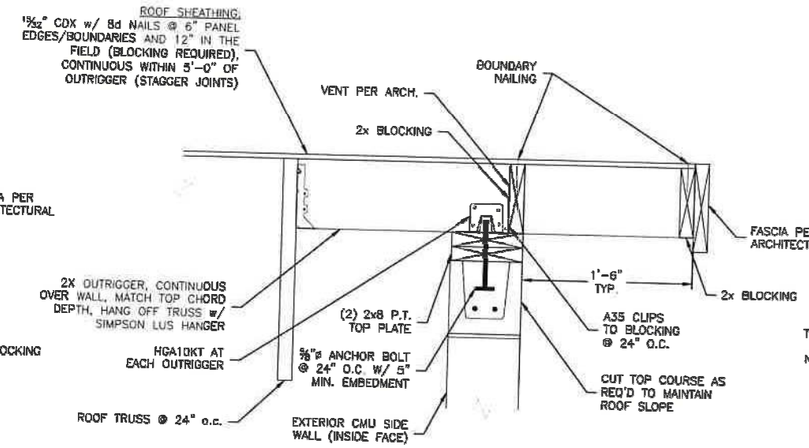
SHEET 22 of 43
SCALE AS SHOWN
FILENAME S-8

X:\2015\15-126 To 15-150\15-147\Acad\15-147-04.04 Bid Drawings Kirkland Rose Point.dwg S-8 1/25/2019 4:11 PM ### 23.0s (LMS Tech)



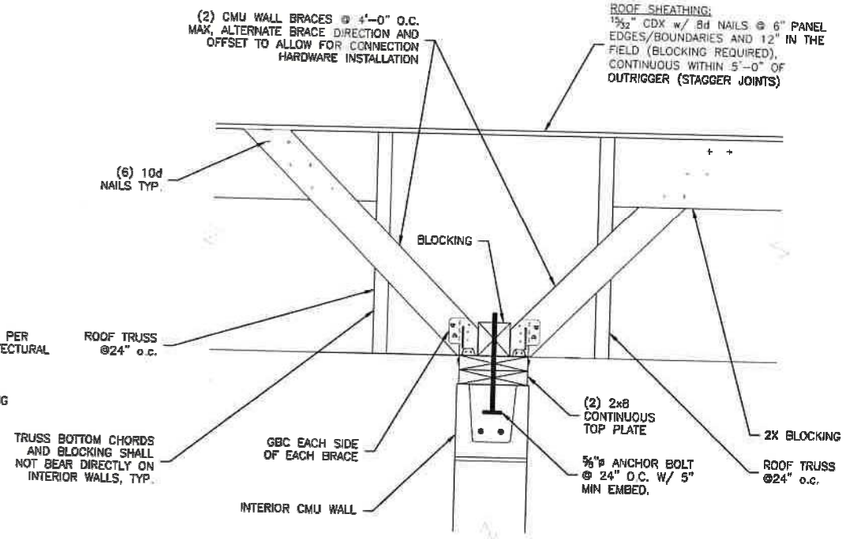
CMU SIDE WALL TOP DETAIL (A / S-8)

1 1/2" = 1'-0"



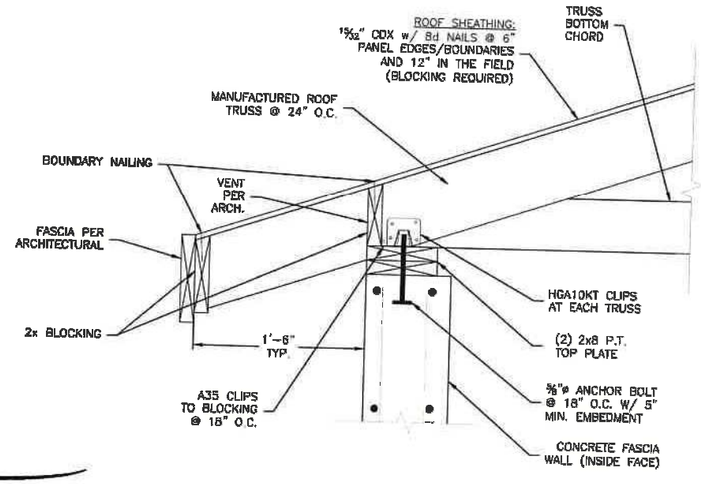
CMU GABLE END DETAIL (B / S-8)

1 1/2" = 1'-0"



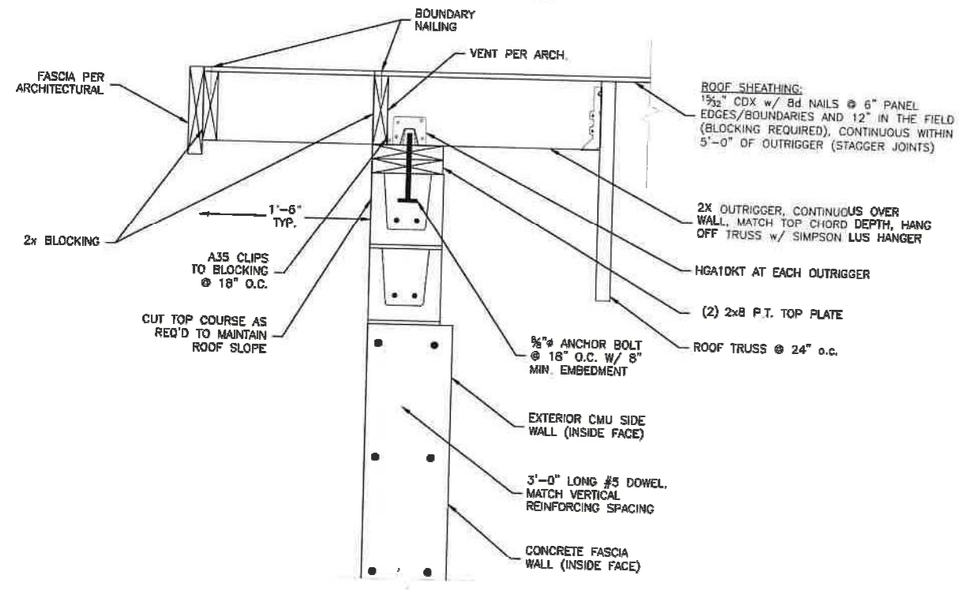
INTERIOR CMU WALL DETAIL (C / S-8)

1 1/2" = 1'-0"



CONC. SIDE WALL TOP DETAIL (D / S-8)

1 1/2" = 1'-0"



CONC. GABLE END DETAIL (E / S-8)

1 1/2" = 1'-0"

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KEJ	DRAWN BY	11/29/18 DATE
WJS	CHECKED BY	11/29/18 DATE

WILLIAM JOHN SANDBO, STATE OF WASHINGTON, 48224, STRUCTURAL ENGINEER, PROFESSIONAL ENGINEER, 11/29/2018

NO.	DATE	BY	APPR.	REVISION

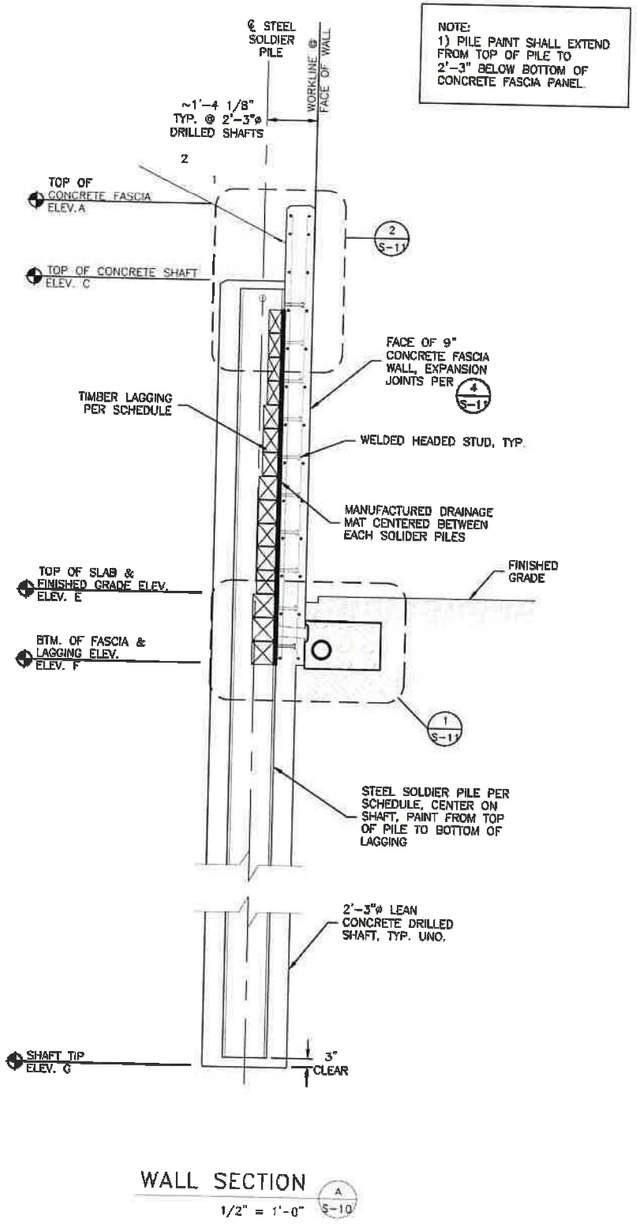
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ROOF FRAMING DETAILS

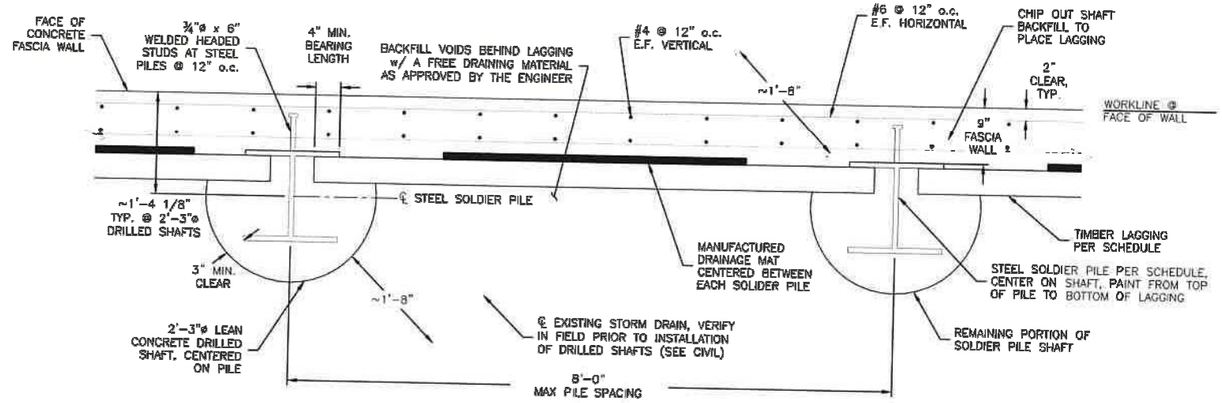
SHEET: 23 of 43
SCALE: AS SHOWN
FILENAME: S-9

X:\2015\15-126 To 15-150\15-147\Acad\15-147-04.04 Bid Drawings Kirkland Rose Point.dwg S-9 1/25/2019 4:11 PM ### 23.0s (LMS Tech)



NOTE:
1) PILE PAINT SHALL EXTEND FROM TOP OF PILE TO 2'-3" BELOW BOTTOM OF CONCRETE FASCIA PANEL.

WALL SECTION A S-10
1/2" = 1'-0"



WALL DETAIL 1 S-10
1" = 1'-0"

SOLDIER PILE SCHEDULE									
PILE NUMBER	SHAFT DIAMETER	PILE SECTION	TOP OF CONCRETE FASCIA	FINISH GRADE AT BACK OF WALL	TOP OF CONCRETE SHAFT	TOP OF SOLDIER PILE	TOP OF SLAB & FINISHED GRADE	BOTTOM OF FASCIA & LAGGING	SHAFT TIP
			ELEV. A (FT.)	ELEV B (FT.)	ELEV. C (FT.)	ELEV. D (FT.)	ELEV. E (FT.)	ELEV. F (FT.)	ELEV. G (FT.)
SP1	2'-3"	HP14X117	35.25	34.25	33.25	33.00	33.72	31.72	10.72
SP2	2'-3"	HP14X117	37.46	37.11	36.11	35.86	33.63	31.63	10.63
SP3	2'-3"	HP14X117	39.67	38.94	37.94	37.69	33.54	31.54	10.54
SP4	4'-0"	(2) HP14X117	41.70	41.17	40.17	39.92	33.45	31.45	10.45
SP5	2'-3"	HP14X117	41.70	41.23	40.23	39.98	33.34	31.34	10.34
SP6	2'-3"	HP14X117	41.70	41.30	40.30	40.05	33.21	31.21	10.21
SP7	2'-3"	HP14X117	41.70	41.36	40.36	40.11	33.08	31.08	10.08
SP8	2'-3"	HP14X117	41.70	41.44	40.44	40.19	32.92	30.92	9.92
SP9	2'-3"	HP14X117	41.70	41.52	40.52	40.27	32.76	30.76	9.76
SP10	2'-3"	HP14X117	41.70	41.60	40.60	40.35	32.60	30.60	9.60
SP11	2'-3"	HP14X117	41.70	41.68	40.68	40.43	32.44	30.44	9.44
SP12	2'-3"	HP14X117	43.70	41.81	40.81	41.70	32.37	30.37	9.37
SP13	2'-3"	HP14X117	43.70	41.87	40.87	41.70	32.37	30.37	9.37
SP14	2'-3"	HP14X117	43.70	41.93	40.93	41.70	32.37	30.37	9.37
SP15	4'-0"	(2) HP14X117	43.70	42.00	41.00	41.70	32.37	30.37	9.37
SP16	2'-3"	HP14X117	43.70	34.00	33.00	41.70	32.37	30.37	9.37
SP17	2'-3"	HP14X117	43.70	32.00	31.00	41.70	32.37	30.37	9.37

LAGGING SCHEDULE	
DEPTH BELOW GRADE	MINIMUM LAGGING SIZE
0'-4'	4X
4'-6'	5X
6'-9'	6X
9'-12'	7X

NOTE: LAGGING SIZES SHOWN ARE ROUGH SAWN (I.E. ACTUAL DIMENSIONS)

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KEJ DESIGNED BY: 11/29/18 DATE
KEJ DRAWN BY: 11/29/18 DATE
WJS CHECKED BY: 11/29/18 DATE

WILLIAM JOHN SANDBO STATE OF WASHINGTON 46224 STRUCTURAL ENGINEER PROFESSIONAL ENGINEER 11/29/2018

NO.	DATE	BY	APPR.	REVISION

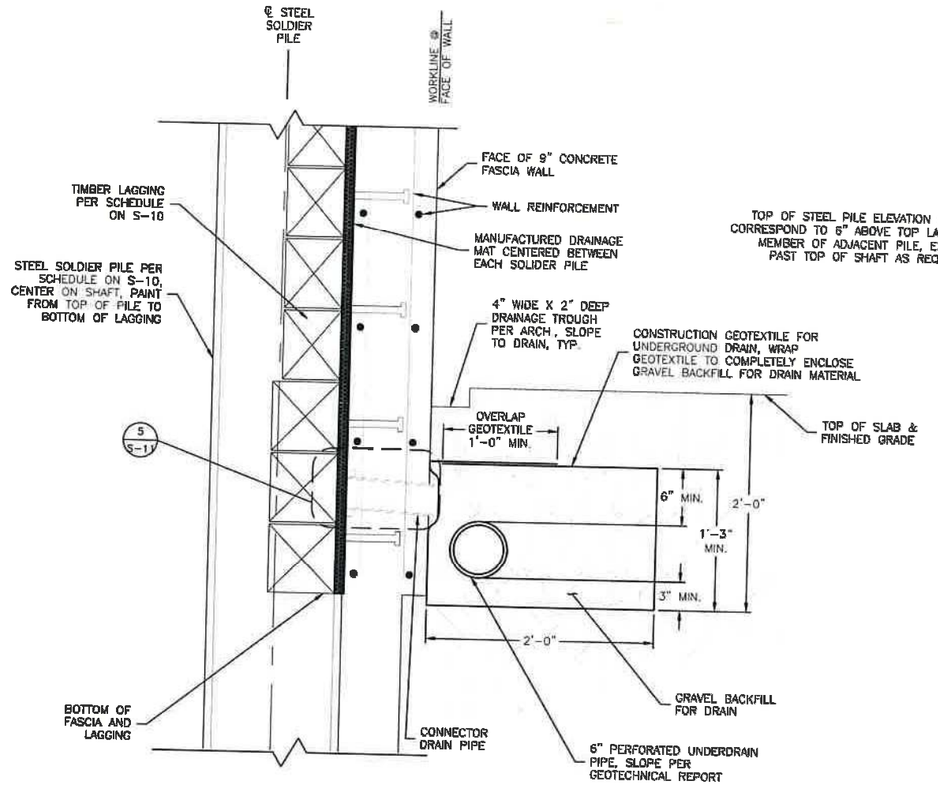
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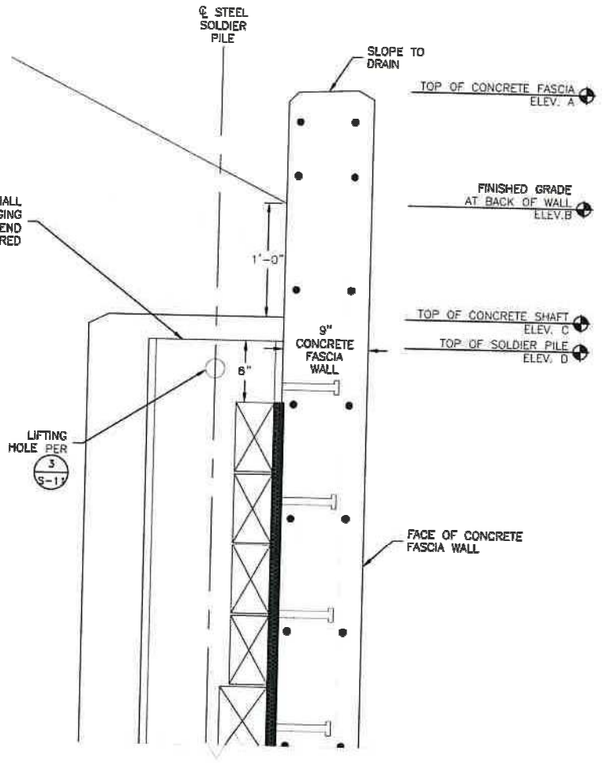
SOLDIER PILE WALL SECTIONS

SHEET: 24 of 43
SCALE: AS SHOWN
FILENAME: S-10

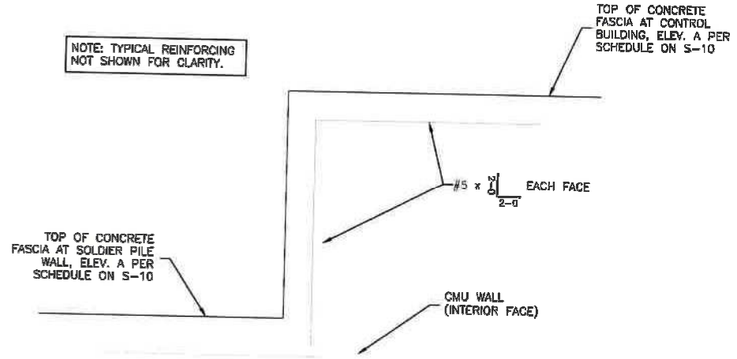
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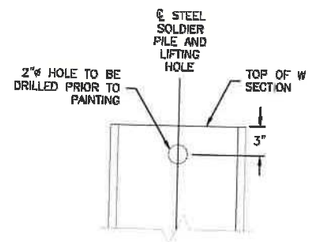
DRAIN DETAIL 1 S-11
1 1/2" = 1'-0"



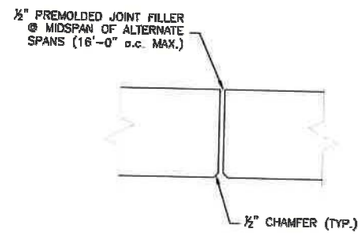
TOP OF WALL 2 S-11
1 1/2" = 1'-0"



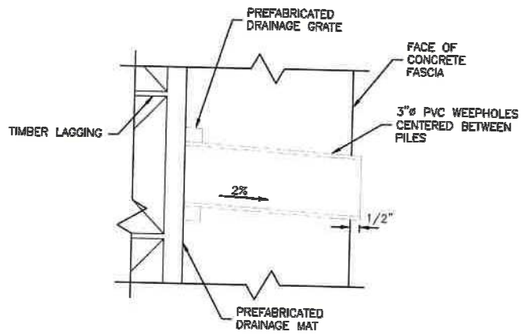
CONCRETE FASCIA AT WALL BUILDING INTERFACE A S-11
1 1/2" = 1'-0"



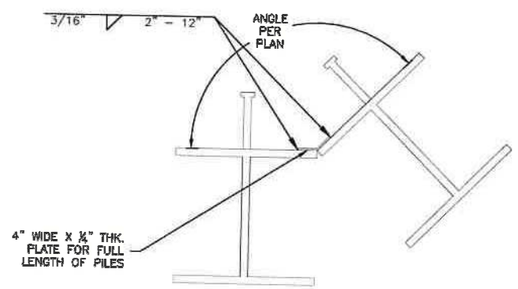
SOLDIER PILE LIFTING HOLE 3 S-11
1 1/2" = 1'-0"



FASCIA EXPANSION JOINT DETAIL 4 S-11
1 1/2" = 1'-0"



WEEP HOLE DRAIN DETAIL 5 S-11
3" = 1'-0"



PILE CORNER CONNECTION DETAIL 6 S-11
1 1/2" = 1'-0"

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KEJ DRAWN BY	11/29/18 DATE
WJS CHECKED BY	11/29/18 DATE

WILLIAM JOHN SANDBO STATE OF WASHINGTON 48224 STRUCTURAL ENGINEER PROFESSIONAL ENGINEER

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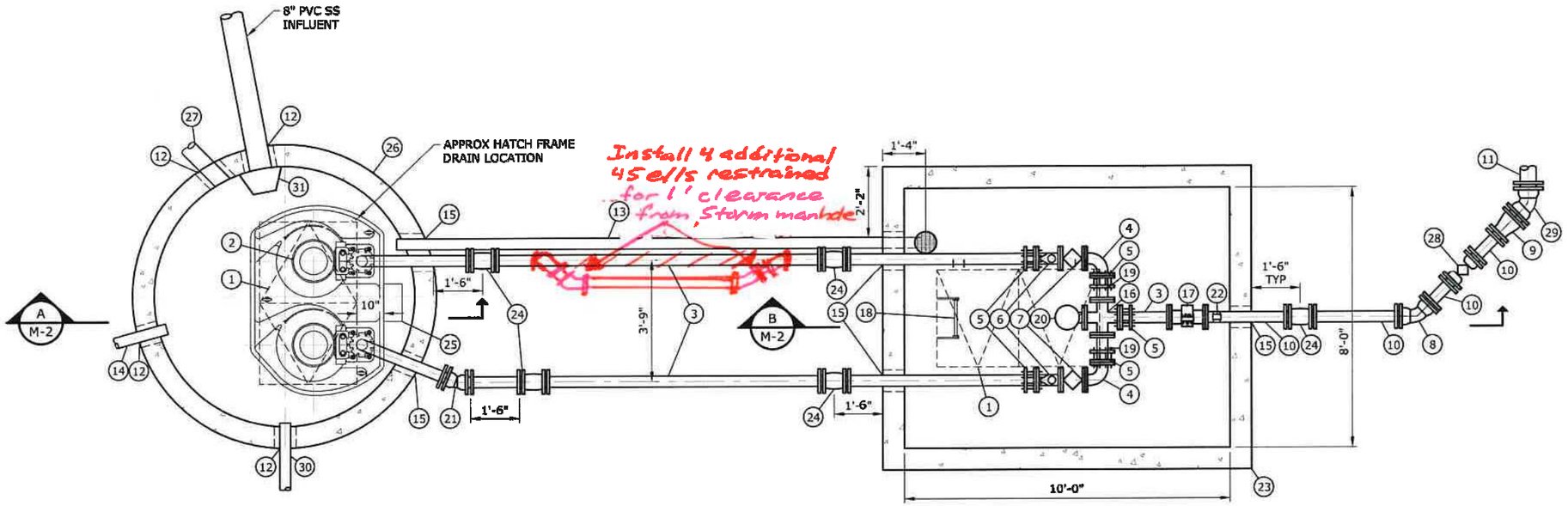
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SOLDIER PILE WALL DETAILS

SHEET 25 of 43
SCALE AS SHOWN
FILENAME S-11

X:\2015\15-126 To 15-150\(15-147)Acad\15-147-04.04 Bid Drawings Kirkland Rose Point.dwg S-11 1/25/2019 4:11 PM ### 23.0s (LMS Tech)



PLAN

SCALE: 1/2"=1'-0"

KEY NOTES:

1. 36"x60" CLEAR OPENING AL DOUBLE LEAF ACCESS HATCH, H-20 RATED W/ SAFETY GRATE, LID DRAIN AND 4" DIA PENETRATION W/ COVER, LOCATION ABOVE CAMLOCK FITTING
2. HIDROSTAL SUBMERSIBLE SEWAGE PUMP (TYP OF 2)
3. 4" DI
4. 4" DI 90° BEND, FLG
5. 4" RFCA
6. 4" ~~BALL CHECK VALVE, FLG~~ Swing check valve FLG
7. 4" PLUG VALVE, FLG
8. 4" 45° BEND, MJ, RESTR
9. 6"x4" RDCR, MJ, RESTR
10. 4" DI SPL, PE
11. 6" DI SPL, PE
12. KOR-N-SEAL BOOT
13. 4" SCHED 40 PVC DRAIN PIPE W/ TIDEFLEX TYPE CHECK VALVE FROM VALVE VAULT
14. 4" SCHED 40 PVC DRAIN PIPE W/ TIDEFLEX TYPE CHECK VALVE FROM VENTILATION VAULT
15. LINK-SEAL, SEE DET 1, SHT M-6
16. 4" CROSS, FLG
17. FLOW METER, FLG
18. VAULT LADDER
19. 4" DI SPL, FLGxPE
20. 4" 90° BEND ROTATED UP W/ BLIND FLG, AND 4" CAMLOCK SST MALE ADAPTER W/ MALE NPT (THD) OR EQUAL AND 4" ALUMINUM DUST CAP, COORDINATE WITH CITY
21. 4" 22½° BEND, MJ, RESTR
22. PRESSURE SENSOR
23. 810 LA OLDCASTLE PRECAST VAULT OR APPVD EQ
24. 4" FLEXIBLE CPLG, MJ, RESTR
25. MILLER DH-20SS FLUSH FLOOR MOUNT SLEEVE TO MATCH EXIST CITY HOIST EQUIPMENT, PRECAST MFR TO INSTALL PER SLEEVE MFR'S RECOMMENDATIONS
26. 8' ID PRECAST MH
27. 6" PVC SEWER VENT PIPE TO VENTILATION VAULT
28. 4" PLUG VALVE, MJ, RESTR, SEE DET 5, SHT M-6
29. 6" 45° BEND, MJ, RESTR
30. 4" SCHED 40 PVC DRAIN PIPE W/ TIDEFLEX TYPE CHECK VALVE FROM CONTROL BUILDING
31. STAINLESS STEEL BAFFLE, SEE DET 7, SHT M-6

NOTES:

1. MECHANICALLY RESTRAIN ALL PRESSURE PIPING.
2. PIPING SHALL BE DUCTILE IRON UNLESS OTHERWISE IDENTIFIED.
3. CONTRACTOR SHALL BE RESPONSIBLE FOR LOCATING WET WELL HATCH LOCATIONS SO THAT PUMPS CAN BE REMOVED AND REINSTALLED WITHOUT ANY CONFLICT OR BINDING.

K:\TAC_Projects\15\1680 Rose Point Lift Station Upgrade\CAD\Sheets\15-1680-WA-M-1 & M-2.dwg M-1 3/4/2019 8:24 AM BRETT.WILLIAMS 21.0s (LMS Tech)

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BRIAN M. CASEY STATE OF WASHINGTON 40632 REGISTERED PROFESSIONAL ENGINEER

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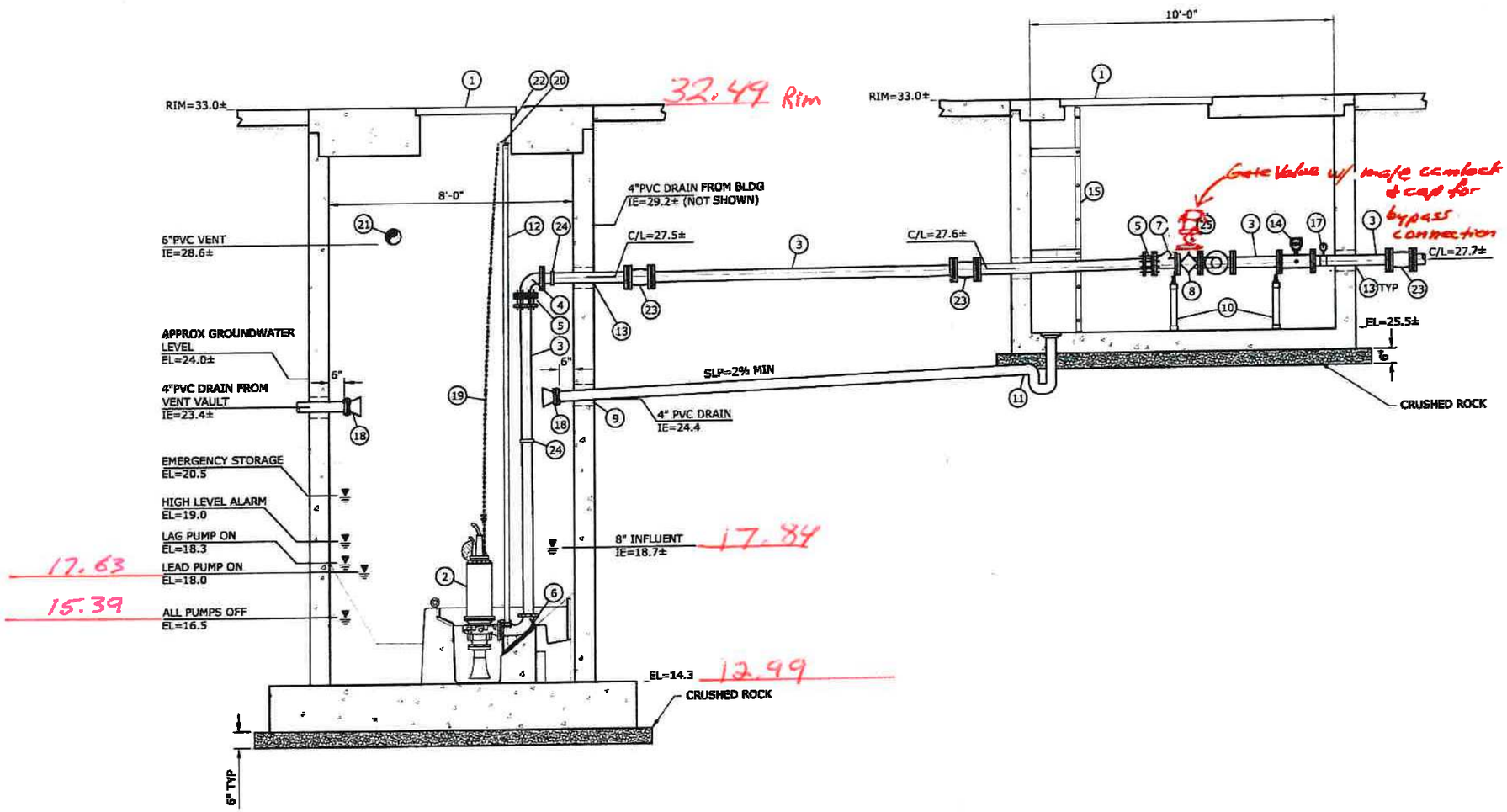
PUMP STATION MECHANICAL PLAN

SHEET: 26 of 43

SCALE: AS SHOWN

FILENAME: M-1

Baseline: from corner of Type I Catch Basin 32.15



WET WELL SECTION (A / M-1)
SCALE: 3/8"=1'-0"

VAULT SECTION (B / M-1)
SCALE: 3/8"=1'-0"

KEY NOTES:

1. 36"X60" CLEAR OPENING AL DOUBLE LEAF ACCESS HATCH, H-20 RATED W/ SAFETY GRATE, LID DRAIN AND 4" DIA PENETRATION W/ COVER, LOCATION ABOVE CAMLOCK FITTING
2. HIDROSTAL SUBMERSIBLE SEWAGE PUMP (TYP OF 2)
3. 4" DI
4. 4" DI 90° BEND, FLG
5. 4" RFCA
6. 4" PUMP DISCHARGE ELBOW-CONNECTION AS REQ'D BY PUMP MFR, ANCHOR TO BASE SLAB PER MFR'S RECOMMENDATIONS
7. 4" ~~BALL CHECK VALVE, FLG~~ Swing check valve FLG
8. 4" PLUG VALVE, FLG
9. KOR-N-SEAL BOOT
10. FLANGE PIPE SUPPORT, STANDON MODEL S96 OR APPVD EQ, SEE DET 3, SHT M-6
11. 4" SCHED 40 PVC DRAIN PIPE
12. 1½" DIA SCHED 40 316L SST GUIDE RAIL, TYP OF 2, INSTALL AS REQ'D BY PUMP MFR
13. LINK-SEAL, SEE DET 1, SHT M-6
14. FLOW METER, FLG
15. VAULT LADDER
16. 4" 90° BEND, ROTATED UP
17. PRESSURE SENSOR
18. 4" TIDEFLEX TYPE CHECK VALVE OR APPVD EQUAL, MATERIAL TO MATCH DRAIN PIPE
19. 316 SST CHAIN W/ LARGE LINK FOR HOOK EVERY 4 FEET, PLACE A LARGE LINK AT TOP
20. LOCKING SST CARABINER ATTACHED TO LARGE LINK, HOOK ON GUIDE BRACKET SUPPORT
21. 6" PVC SEWER VENT PIPE TO VENTILATION VAULT
22. 1½" HATCH FRAME DRAIN, MATERIAL PER MFR RECOMMENDATION, ANGLE TOWARDS WALL AND TERMINATE
23. 4" FLEXIBLE CPLG, M1, RESTR
24. PIPE SUPPORT, SEE DET 2, SHT M-6
25. 4" ~~BLIND FLG~~ W/4" CAMLOCK SST MALE ADAPTER W/ MALE NPT (THD) OR EQUAL AND 4" ALUMINUM DUST CAP, COORDINATE WITH CITY

NOTES:

1. MECHANICALLY RESTRAIN ALL PRESSURE PIPING.

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BAW DRAWN BY: DATE
BMC CHECKED BY: DATE

BRIAN M. CASEY — STATE OF WASHINGTON — 13622 — REGISTERED PROFESSIONAL ENGINEER

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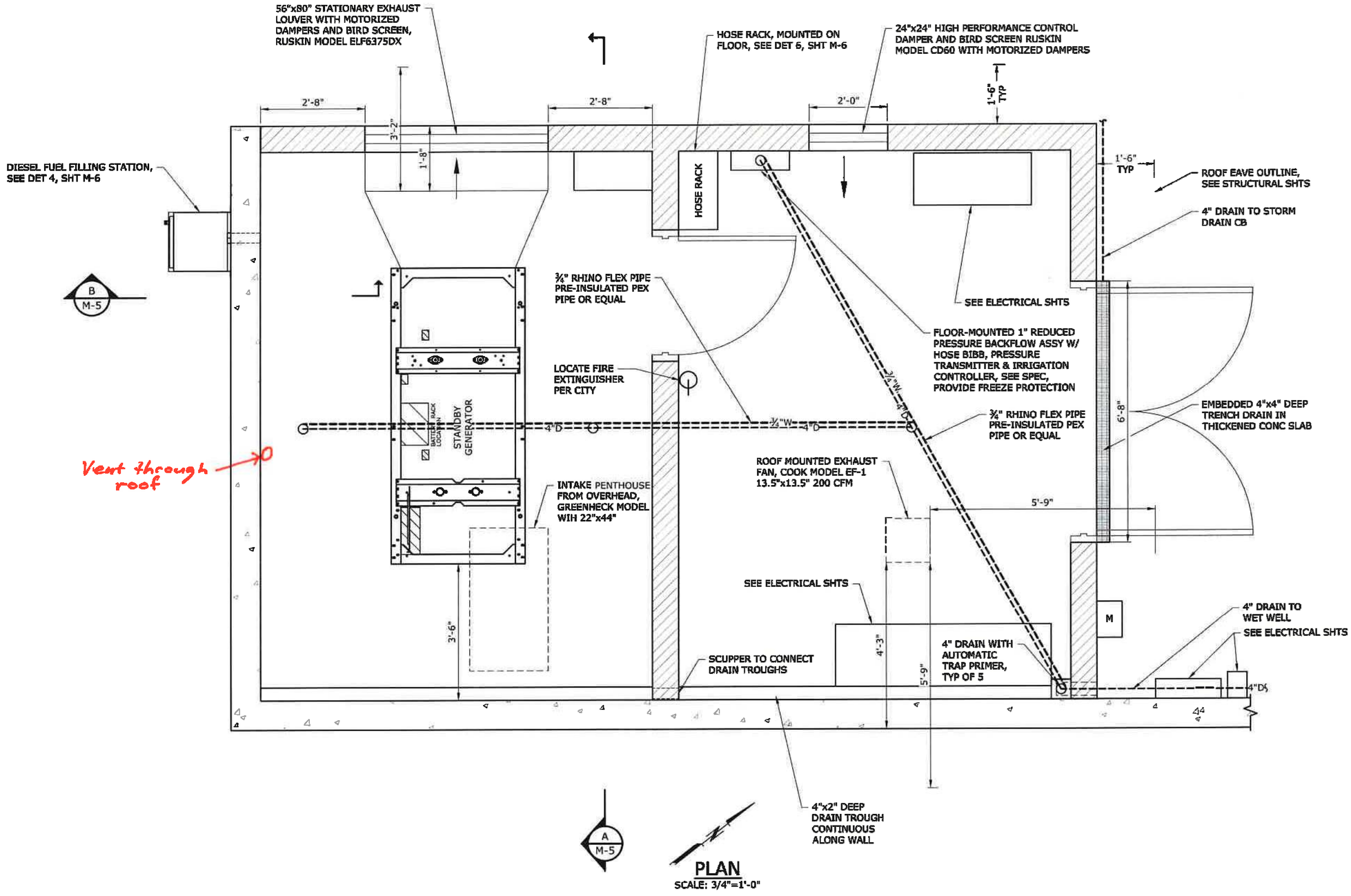
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PUMP STATION
MECHANICAL SECTIONS

SHEET: 27 of 43
SCALE: AS SHOWN
FILENAME: M-2

K:\TAC_Projects\15\1680 Rose Point Lift Station Upgrade\CAD\Sheets\15-1680-WA-M-1 & M-2.dwg M-2 3/4/2019 8:24 AM BRETT.WILLIAMS 21.0s (LMS Tech)



PLAN

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

PLUMBING NOTES:

1. THE PLUMBING SHOWN WITHIN THIS PLAN SET ONLY REPRESENTS A SCHEMATIC OF THE PLUMBING LAYOUT TO SHOW APPROXIMATE LOCATIONS AND SIZES OF PLUMBING FEATURES. A LICENSED PLUMBER IS REQUIRED TO INSTALL ALL PLUMBING FEATURES IN ACCORDANCE WITH ALL APPLICABLE CODES.
2. PROPERLY VENT ALL DRAIN LINES AS REQUIRED BY ALL APPLICABLE CODES. VENTS SHALL BE CONSOLIDATED AS MUCH AS POSSIBLE AND VENTED UP THROUGH ROOF. SEE ARCHITECHURAL SHEET FOR TYPICAL ROOF PENETRATION DETAIL.
3. CONTRACTOR SHALL INSTALL THE IRRIGATION CONTROLLER(S) AT THE LOCATION(S) SHOWN ON THE PLANS AND PER MANUFACTURER'S RECOMMENDATION. THE CONTRACTOR SHALL VERIFY THE LOCATION WITH THE CITY PRIOR TO INSTALLATION. IRRIGATION CONTROLLER FOR TEMPORARY IRRIGATION ON HILLSIDE AND PERMANENT IRRIGATION ON WEST SIDE OF CONTROL BUILDING, SEE SPECIFICATIONS FOR DETAILS.

K:\TAC_Projects\15\1680 Rose Point Lift Station Upgrade\CAD\Sheets\15-1680-WA-M-3 TO M-6.dwg M-3 3/27/2019 8:57 AM BRETT.WILLIAMS 21.0s (LMS Tech)

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BMC CHECKED BY: DATE

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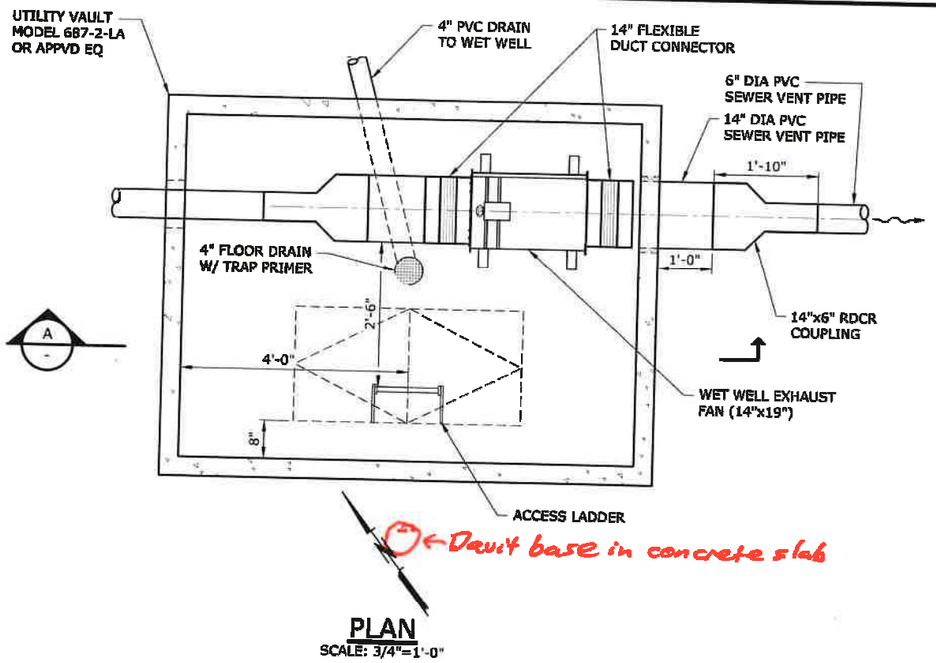
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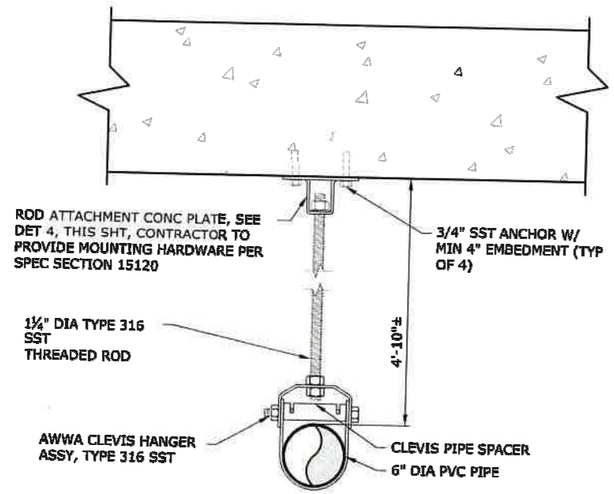
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CONTROL BUILDING PLUMBING AND HVAC

SHEET: 28 of 43
SCALE: AS SHOWN
FILENAME: M-3



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

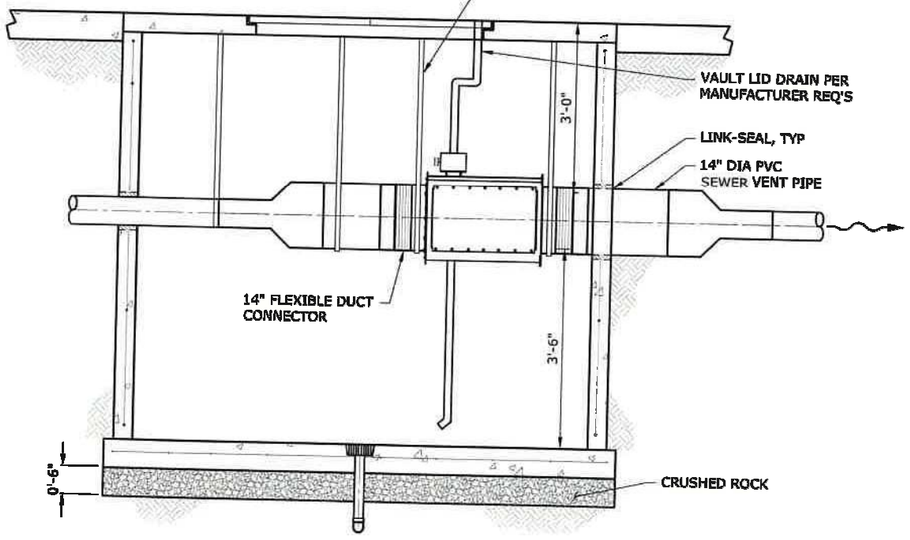


TYPICAL HANGER SECTION
SCALE: NTS
1
-

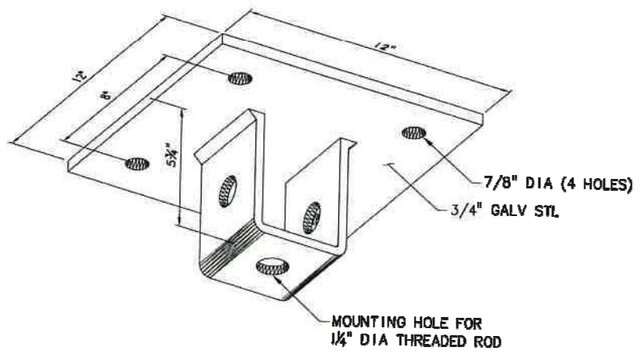
GENERAL NOTES:

1. THE PLUMBING SHOWN WITHIN THIS PLAN SET ONLY REPRESENTS A SCHEMATIC OF THE PLUMBING LAYOUT TO SHOW APPROXIMATE LOCATIONS AND SIZES OF PLUMBING FEATURES. A LICENSED PLUMBER IS REQUIRED TO INSTALL ALL PLUMBING FEATURES IN ACCORDANCE WITH ALL APPLICABLE CODES.

2. PROPERLY VENT ALL DRAIN LINES AS REQUIRED BY ALL APPLICABLE CODES. VENTS SHALL BE CONSOLIDATED AS MUCH AS POSSIBLE AND VENTED UP THROUGH ROOF.



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



ROD ATTACHMENT CONCRETE PLATE
SCALE: NTS
2
-

murraysmith

SSA
DESIGNED BY: DATE

BAW
DRAWN BY: DATE

BMC
CHECKED BY: DATE

BRIAN M. CASEY STATE OF WASHINGTON 43662 REGISTERED PROFESSIONAL ENGINEER

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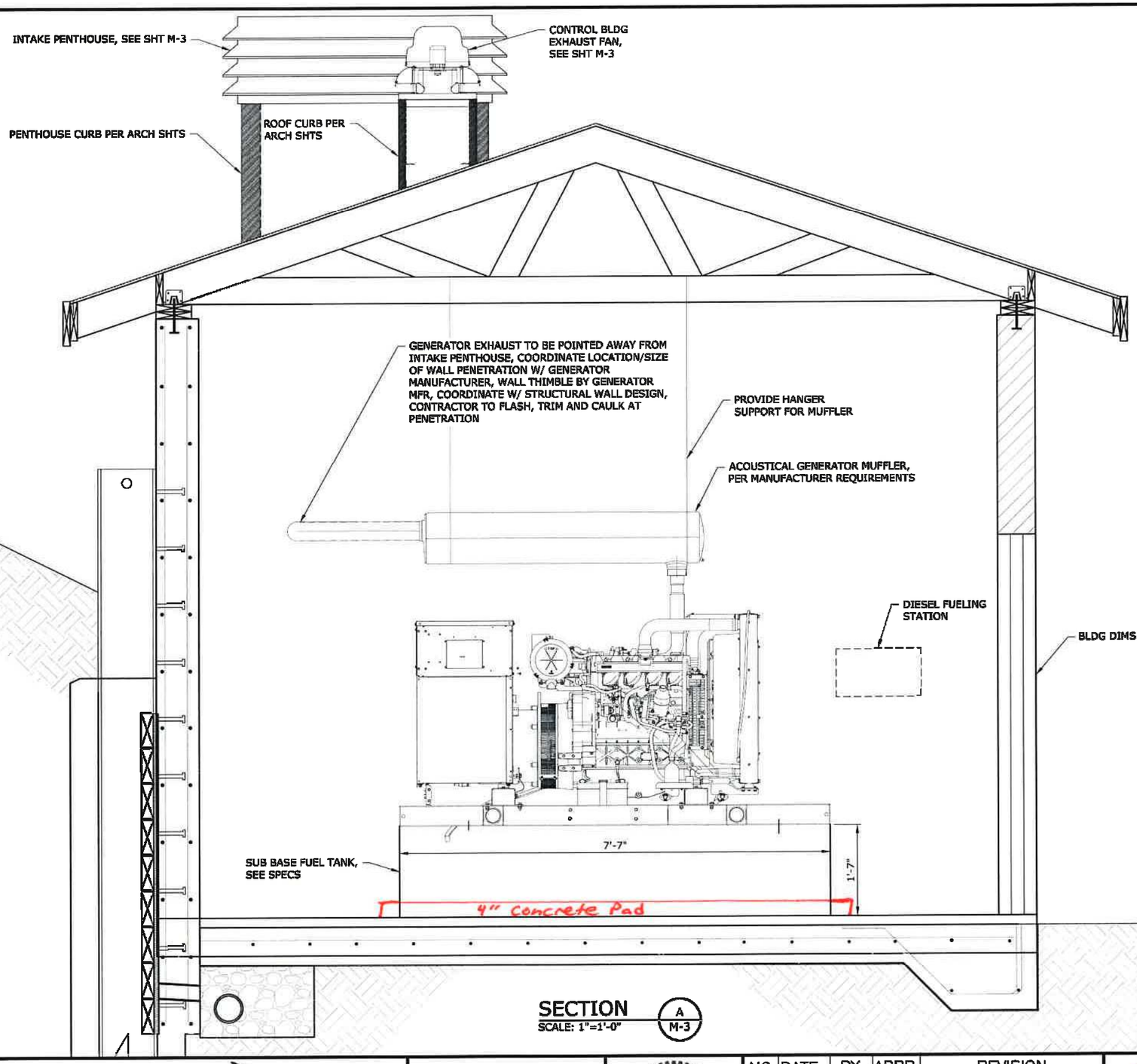
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WET WELL VENTILATION VAULT

SHEET: 29 of 43
SCALE: AS SHOWN
FILENAME: M-4

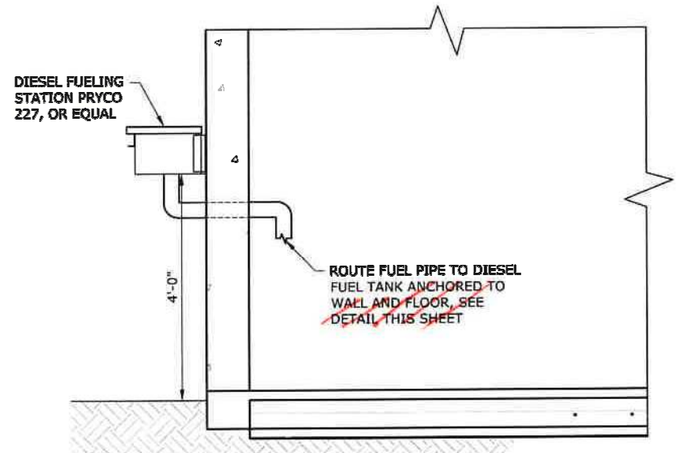
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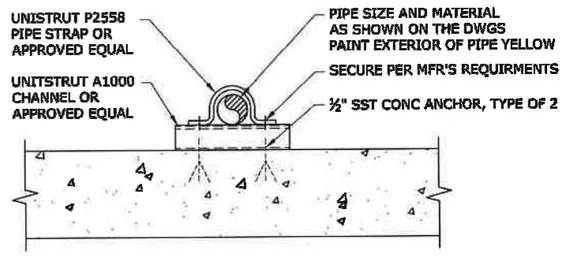
SECTION A
SCALE: 1"=1'-0"
M-3

GENERAL NOTES:

1. COORDINATE FUEL TANK VENT STACKS LOCATIONS/SIZE OF ROOF PENETRATIONS W/ GENERATOR MANUFACTURER.
2. ROUTE GENERATOR CONNECTION TO MUFFLER. PROVIDE FLEXIBLE CONNECTOR AT GENERATOR POINT CONNECTION.
3. SUBMIT SHOP DRAWINGS FOR DUCTWORK BASED ON MANUFACTURER REQUIREMENTS. BASIS OF DESIGN BASED ON KOHLER GENERATOR.
4. GENERATOR EXHAUST SHALL BE INSULATED BASED ON MANUFACTURER REQUIREMENTS FOR THIS APPLICATION.



SECTION B
SCALE: 3/4"=1'-0"
M-3



NOTES:

1. ALL SUPPORT MATERIALS SHALL BE TYPE 304 STAINLESS STEEL.

PIPE SUPPORT
SCALE: NTS
1
-

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BMC CHECKED BY: DATE

BRIAN M. CASEY STATE OF WASHINGTON 48632 REGISTERED PROFESSIONAL ENGINEER

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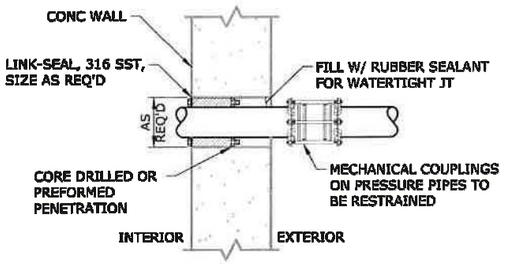
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GENERATOR ROOM SECTION

SHEET: 30 of 43
SCALE: AS SHOWN
FILENAME: M-5

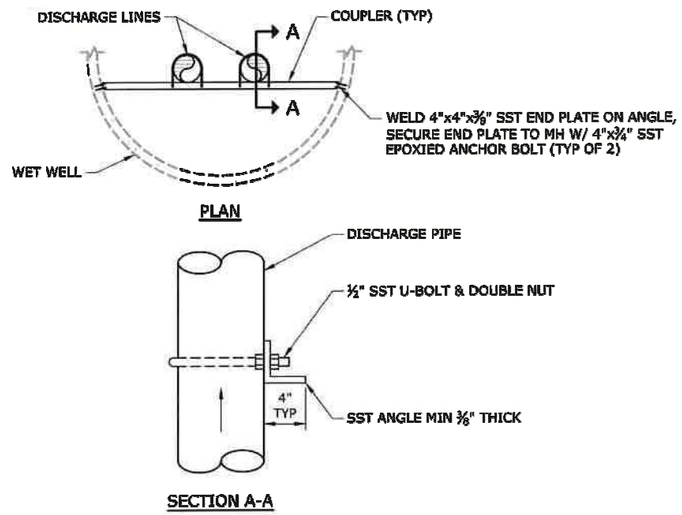
K:\TAC_Projects\15\1680 Rose Point Lift Station Upgrade\CAD\Sheets\15-1680-WA-M-3 TO M-6.dwg M-5 3/27/2019 8:57 AM BRETT.WILLIAMS 21.0s (LMS Tech)



LINK-SEAL

1 M-1

SCALE: NTS



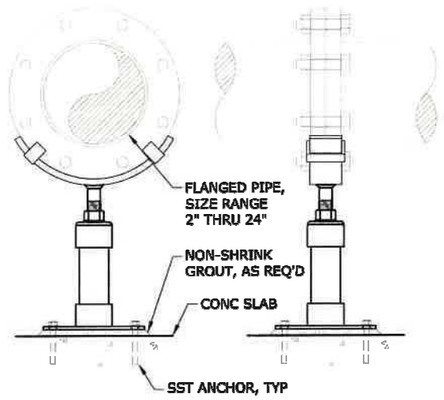
DISCHARGE PIPE SUPPORT

2 M-2

SCALE: NTS

NOTES:

1. INSTALLATION PER MANUFACTURER REQUIREMENTS.
2. SST ANCHOR SIZE PER MANUFACTURER REQUIREMENTS.



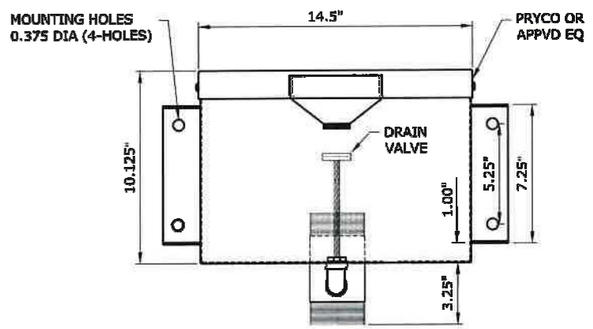
S-96 PIPE SUPPORT

3 M-2

SCALE: NTS

NOTES:

1. PANEL PER SPECS, ADD INTRUSION ALARM FOR REMOTE FUEL FILL STATION PER SPEC



DIESEL FUEL FILLING STATION

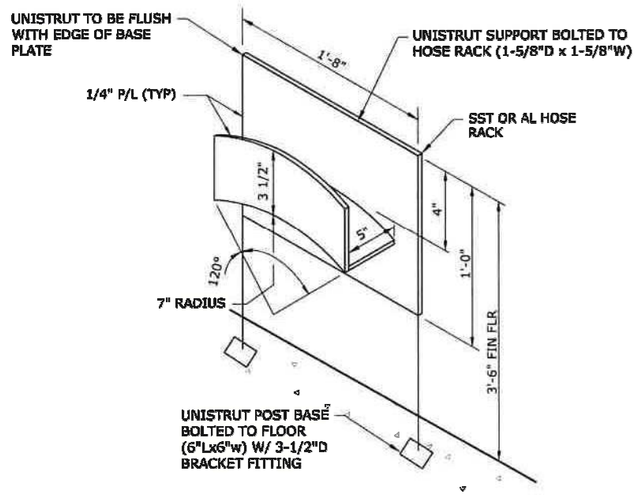
4 M-3

SCALE: NTS

BURIED VALVE INSTALLATION

5 M-1

SCALE: NTS



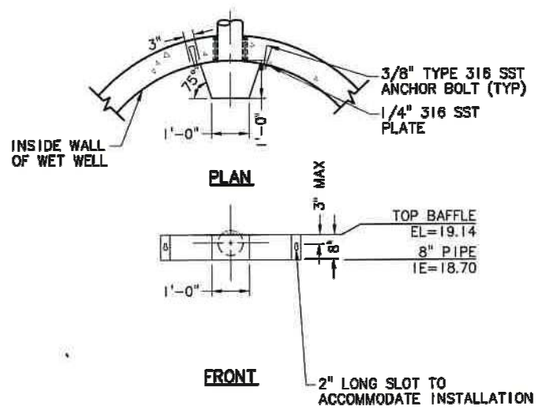
NOTES:

1. WELD ALL JOINTS 3/16
2. GRIND ALL EDGES SMOOTH

HOSE RACK

6 M-3

SCALE: NTS



BAFFLE DETAIL

5 M-1

SCALE: 1/2"=1'-0"

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MECHANICAL DETAILS

SHEET: 31 of 43

SCALE: AS SHOWN

FILENAME: M-6

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ELECTRICAL LEGEND

- WALL MOUNTED LUMINAIRE
- POLE MOUNTED LUMINAIRE
- EXIT LUMINAIRE
- SUSPENSION MOUNTED LUMINAIRE
- SUSPENSION MOUNTED LUMINAIRE W/ BATTERY BACKUP
- PHOTOCELL
- OCCUPANCY SENSOR
- SMOKE DETECTOR
- MOTION DETECTOR
- WALL SWITCH
- DOOR SWITCH (INTRUSION)
- MOTOR RATED SWITCH
- OCCUPANCY SWITCH
- DUPLEX RECEPTACLE - GROUND FAULT INTERRUPTING, NORMAL, WEATHER-PROOF
- CONNECTION TO SPECIAL EQUIPMENT OR OUTLET AS SHOWN
- MOTOR CONNECTION
- DISCONNECT SWITCH, RATING SHOWN
- ELECTRICAL EQUIPMENT
- JUNCTION BOX
- ETHERNET DATA CONNECTION (DUPLEX RJ45)
- HOME RUN, ELECTRICAL PANEL DESTINATION SHOWN.
- CONDUIT CONCEALED UNDERFLOOR OR UNDERGROUND.*
- CONDUIT CONCEALED IN WALL OR ABOVE CEILING IN FINISHED AREAS, EXPOSED IN PROCESS AND EQUIPMENT AREAS.*

*NOTES:

1. RUNS MARKED WITH CROSS-HATCHES INDICATE NUMBER OF NO. 12 WIRE. LARGER GAUGES ARE SHOWN OR NOTED ELSEWHERE. LONG CROSS HATCH INDICATES NEUTRAL, REVERSE SLANT INDICATES GREEN GROUND WIRE.
2. FOR UNMARKED CONDUIT RUNS, CONTRACTOR SHALL INSTALL REQUIRED NUMBER OF WIRES FOR POWER AND/OR CONTROL OF ELEMENTS IN CIRCUIT(S) SHOWN. SIZE OF WIRE SHALL BE NO. 12, UNLESS OTHERWISE NOTED OR REQUIRED BY CODE.
3. SIZE CONDUIT ACCORDING TO SPECIFICATIONS AND APPLICABLE CODE.

- THERMAL MAGNETIC CIRCUIT BREAKER
- MAGNETIC ONLY CIRCUIT BREAKER (MOTOR CIRCUITS ONLY) CONTINUOUS CURRENT RATING AND TRIP SETTINGS SHOWN

- DRAWING NOTE
- ELECTRICAL CIRCUIT IDENTIFICATION
- MULTIPLE ELECTRICAL CIRCUITS, SEPARATE CONDUITS
- MULTIPLE ELECTRICAL CIRCUITS, COMMON CONDUIT (SIZE SHOWN)
- CURRENT TRANSFORMER
- TRANSFORMER
- GROUND CONNECTION PER NEC ARTICLE 250
- LINE OR LOAD REACTOR. % IMPEDANCE SHOWN.
- CONTROL RELAY OR CONTACTOR, DIODE SHOWN AT RIGHT
- RELAY CONTACTS
- SELECTOR SWITCH, 3 POS. SHOWN.
- PUSHBUTTON, OR SELECTOR SWITCH CONTACTS
- TEMPERATURE SWITCH OR T-STAT CONTACTS
- LIMIT SWITCH CONTACTS
- LEVEL SWITCH CONTACTS
- ELAPSED TIME METER
- FUSE
- MOTION SENSOR OR PHOTOCELL
- INTRINSICALLY SAFE RELAY
- INTRINSICALLY SAFE BARRIER
- EXPLOSION-PROOF SEAL-OFF

ABBREVIATIONS

A	AMPERES
AC	ALTERNATING CURRENT
AIC	AMPERE INTERRUPTING CAPACITY
AFF	ABOVE FINISHED FLOOR
A.G.	ABOVE GRADE
ATS	AUTOMATIC TRANSFER SWITCH
B.G.	BELOW GRADE
BLDG	BUILDING
BLU	BLUE
BTCW	BARE TINNED COPPER WIRE
CAD	CAPTIVE AIR DEVICE
CB	CIRCUIT BREAKER
CGD	COMBUSTIBLE GAS DETECTOR
CHH	CONTROL HANDHOLE
CKT	CIRCUIT
CO	CONDUIT ONLY
CPT	CONTROL POWER TRANSFORMER
CR	CONTROL RELAY
CT	CURRENT TRANSFORMER
CU	COPPER
DC	DIRECT CURRENT
E	EMERGENCY
EF	EXHAUST FAN
EH	ELECTRIC HEATER
ETM	ELAPSED TIME METER
EXT	EXTERIOR
F, FU	FUSE
FLUOR	FLUORESCENT
FM	FLOW METER
FVNR	FULL VOLTAGE NON-REVERSING
G, GND	GROUND
GFI	GROUND FAULT INTERRUPTER
GRS	GALVANIZED RIGID STEEL CONDUIT
HH	HANDHOLE
HID	HIGH INTENSITY DISCHARGE
HOA	HAND-OFF-AUTOMATIC
HP	HORSEPOWER
IC	INTERRUPTING CAPACITY, ISOLATION CONTACTOR
INT	INTERIOR
ISB	INTRINSICALLY SAFE BARRIER
J, JB	JUNCTION BOX
KAIC	THOUSAND AMPERE INTERRUPTING CAPACITY
KVA	KILO VOLT-AMP
KW	KILOWATT
LC	LIGHTING CONTACTOR
LCP	LIGHTING CONTROL PANEL
LB	LOAD BANK
LEL	LOWER EXPLOSIVE LIMIT
LOS	LOCK-OUT-STOP
LP	LIGHTING PANEL
MB	METER BASE
MCC	MOTOR CONTROL CENTER
MCP	MOTOR CIRCUIT PROTECTOR
MD	MAIN DISCONNECT
MDP	MAIN DISTRIBUTION PANEL
MFR	MANUFACTURER
MIN	MINIMUM
MISC	MISCELLANEOUS
MTS	MANUAL TRANSFER SWITCH
N, NEUT	NEUTRAL
NEC	NATIONAL ELECTRIC CODE
NO	NUMBER
OC	OPERATION COUNTER
OL	OVERLOAD RELAY
ORN	ORANGE
PC	PHOTOCELL
PDP	PUMP DISCONNECT PANEL
PFR	PHASE FAIL RELAY
PH, Ø	PHASE
PHH	POWER HANDHOLE
PLC	PROGRAMMABLE LOGIC CONTROLLER
PM	POWER MONITOR
PNL	PANEL
PVC	POLYVINYL CHLORIDE
PVC-RGS	PVC COATED RGS
RCPT	RECEPTACLE
RGS	RIGID GALVANIZED STEEL
RTM	RUN TIME METER
SF	SUPPLY FAN
SIM	SIMILAR
SPD	SURGE PROTECTOR DEVICE
SS	STAINLESS STEEL
SSPC	SMALL STATION PUMP CONTROLLER
SSRV	SOLIDE STATE REDUCED VOLTAGE STARTER
TB	TERMINAL BLOCK
TDR	TIME DELAY RELAY
TJB	TERMINAL JUNCTION BOX
TSP	TWISTED SHIELDED PAIR
TST	TWISTED SHIELDED TRIAD
TTB	TELEPHONE TERMINAL BOARD
TVSS	TRANSIENT VOLTAGE SURGE SUPPRESSOR
TYP	TYPICAL
UG	UNDERGROUND
UH	UNIT HEATER
UPS	UNINTERRUPTIBLE POWER SUPPLY
USLC	ULTRASONIC LEVEL CONTROLLER
V	VOLT
VA	VOLT-AMP
VFD	VARIABLE FREQUENCY DRIVE
VP	VAPOR PROOF
W	WATT, WIRE
WH	WATER HEATER
WP	WEATHERPROOF
XDCR	TRANSDUCER
XFMR	TRANSFORMER
XMTR	TRANSMITTER
XP	EXPLOSION-PROOF

NOTE: NOT ALL ABBREVIATIONS OR SYMBOLS USED.

AS BUILT

R&W ENGINEERING, INC. "Engineering Integrated Solutions" 9615 S.W. Allen Boulevard Suite 107 Beaverton, Oregon 97005 Phone (503) 726-2311 Fax (503) 726-2386 E-mail rweng@rweng.com
Project No. 483.094.001 Contact: Jeff Howard

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JLH DESIGNED BY: DATE
RSC DRAWN BY: DATE
JLH CHECKED BY: DATE

JEFFREY L. HOWARD 22271 STATE OF WASHINGTON REGISTERED PROFESSIONAL ENGINEER
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ELECTRICAL LEGEND AND ABBREVIATIONS

SHEET: 32 of 43
SCALE: AS SHOWN
FILENAME: E-1

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SERVICE LOAD SUMMARY

QTY.	DESCRIPTION	LOAD		
2	10 HP PUMPS	23.3	KVA	
	MISC. (PANEL LP-1, 1-PH - SEE DETAIL 1/E10)	4.9	KVA	
	SUBTOTAL	28.2	KVA	
	LARGEST MOTOR X 25%	2.9	KVA	
	NON-MOTOR LOADS X 25%	1.2	KVA	
	SPARE CAPACITY (25%)	8.1	KVA	
	TOTAL:	40.4	KVA	97.2 AMPS
	SERVICE SIZE @ 240V, 3-PH:			200 AMPS

GENERATOR LOAD SUMMARY

QTY.	DESCRIPTION	LOAD		
2	10 HP PUMP (ON SOFT STARTERS)	23.3	kVA	
1	LIGHTING PANEL LP-1 (SEE DETAIL 1/E10)	4.9	kVA	
	SUBTOTAL	28.2	KVA	
	LARGEST MOTOR X 25%	2.9	KVA	
	NON-MOTOR LOADS X 25%	1.2	KVA	
	TOTAL	32.3	kVA	77.7 AMPS
	TOTAL kW @ 0.8 pf	25.9	kW	

SHEET NOTES:

A. ALL WITHSTAND/INTERRUPTING RATINGS SHOWN ARE "MININUM".

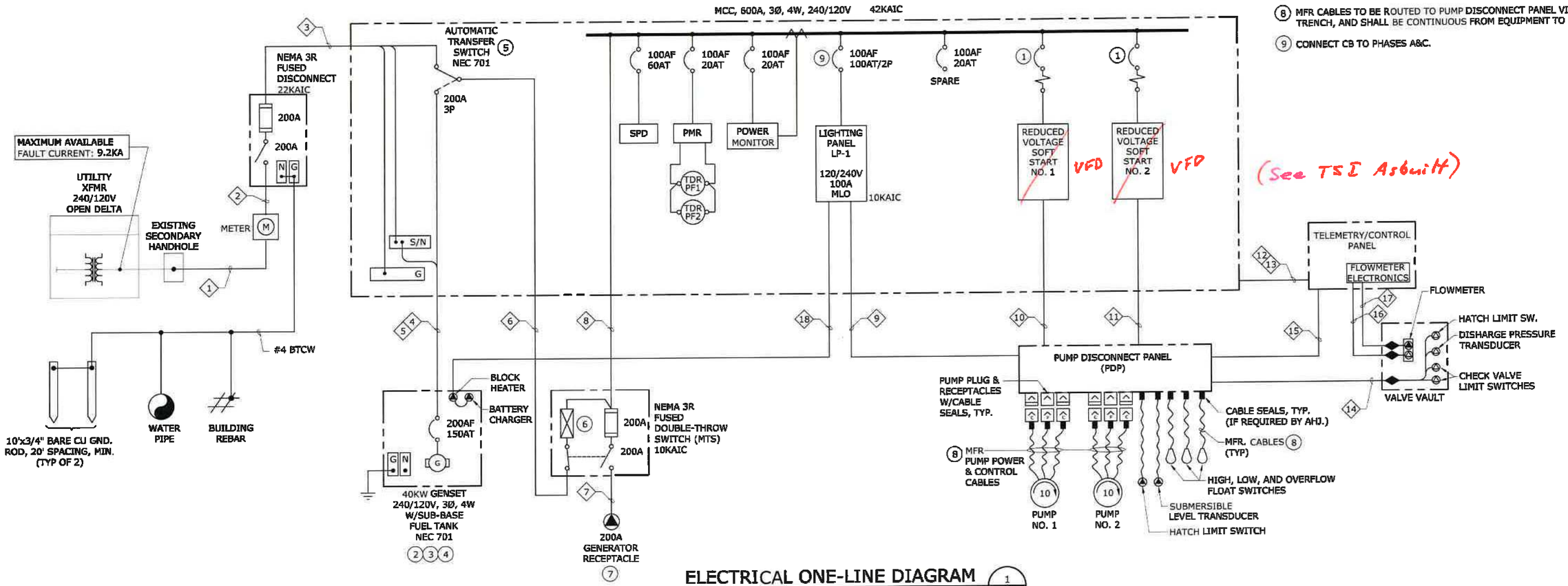
B. UNLESS OTHERWISE SHOWN, WIRES 2 AWG AND LARGER TO BE XHHW-2, SMALLER THAN 2 AWG TO BE THWN-2/THHN-2 OR XHHW-2 (CONTRACTOR OPTION).

C. SEE SHEET E-10 FOR LIGHTING PANEL LP-1 SCHEDULE.

D. B-PHASE IS "HOT LEG" - NEUTRAL LOAD CONNECTIONS ARE NOT ALLOWED.

KEY NOTES:

1. CB FOR SOFT STARTER TO BE SIZED PER MANUFACTURER'S RECOMMENDATIONS.
2. PROVIDE 100% RATED CIRCUIT BREAKER WITH SOLID-STATE ELECTRONIC TRIP. ELECTRONIC TRIP SHALL HAVE L, S, I, AND DELAY ADJUSTMENTS.
3. CONTRACTOR TO COORDINATE GENERATOR CIRCUIT BREAKER WITH ALL CIRCUIT BREAKERS IN MCC, PER NEC ARTICLE 701.
4. REMOVE NEUTRAL/GROUND BOND FROM GENSET. SYSTEM IS SOLIDLY GROUNDED THROUGH ATS AND IS NOT A SEPARATELY DERIVED SYSTEM.
5. AUTOMATIC TRANSFER SWITCH PROVIDED WITH DELAYED TRANSFER OPTION.
6. PROVIDE A 200A DUMMY FUSE FOR UTILITY SIDE OF DOUBLE-THROW SWITCH.
7. APPLETON ADR20044RS. VERIFY WITH CITY PERSONNEL.
8. MFR CABLES TO BE ROUTED TO PUMP DISCONNECT PANEL VIA CABLE TRENCH, AND SHALL BE CONTINUOUS FROM EQUIPMENT TO PANEL.
9. CONNECT CB TO PHASES A&C.



ELECTRICAL ONE-LINE DIAGRAM

SCALE: NTS

1 / E-2

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Project No.: 483.054.001 Contact: Jeff Howard

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JEFFREY L. HOWARD, STATE OF WASHINGTON, 24279, REGISTERED PROFESSIONAL ENGINEER
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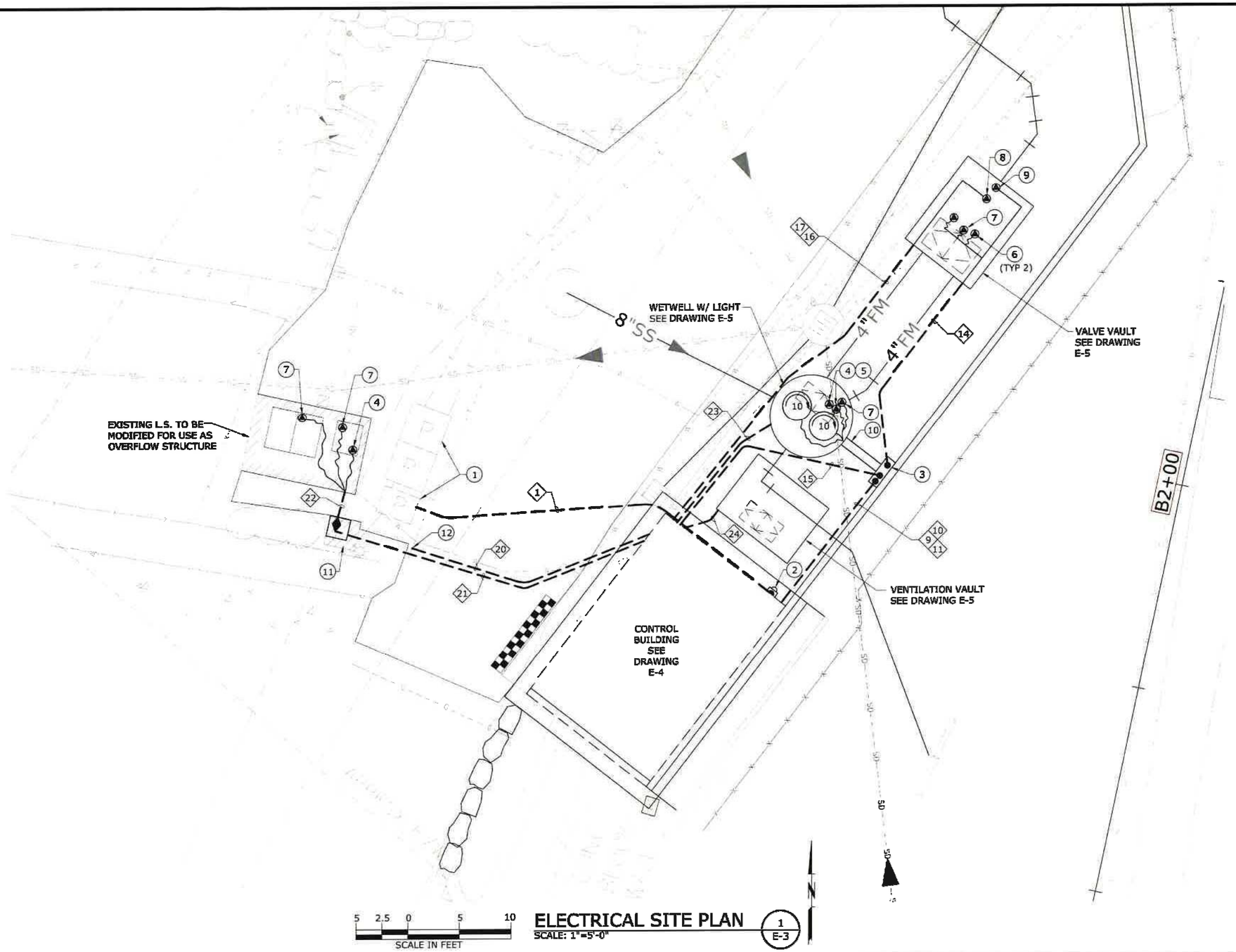
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ELECTRICAL ONE-LINE DIAGRAM

SHEET: 33 of 43
SCALE: AS SHOWN
FILENAME: E-2

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ELECTRICAL SITE PLAN

SCALE: 1"=5'-0"

1 / E-3

SHEET NOTES:

A. THE CONTRACTOR SHALL FIELD COORDINATE ALL PSE REQUIREMENTS WITH PSE PRIOR TO CONSTRUCTION.

B. THE WETWELL, VALVE VAULT AND VENTILATION VAULTS ARE HAZARDOUS CLASSIFIED LOCATIONS. SEE SHEET E-5 FOR ADDITIONAL INFORMATION.

KEY NOTES:

1. EXISTING PSE TRANSFORMER VAULT, AND PSE SECONDARY HANDHOLE.
2. METER BASE AND DISCONNECT FOR NEW SERVICE. PROVIDE PER PSE REQUIREMENTS.
3. PUMP DISCONNECT PANEL (PDP), SEE SHEET E-8.
4. HIGH LEVEL & OVERLFOW FLOAT SWITCH
5. LEVEL TRANSDUCER
6. CHECK VALVE LIMIT SWITCHES
7. HATCH SWITCH
8. FLOWMETER
9. DISCHARGE PRESSURE TRANSDUCER
10. CABLE TRENCH FOR ROUTING OF PUMP AND INSTRUMENTATION MANUFACTURING CABLING.
11. EXISTING METER AND ELECTRICAL DOGHOUSE TO BE REMOVED. IF POSSIBLE, RE-USE EXISTING CONDUITS TO WETWELL FOR ROUTING OF NEW HATCH LIMIT SWITCHES AND LEVEL FLOATS TO NEW HANDHOLE AND SEAL OFF. IF UNABLE TO INTERCEPT AND RE-USE EXISTING CONDUIT INTO EXISTING LIFT STATION, CORE AND ROUTE NEW CONDUIT AS REQUIRED FOR NEW CIRCUITS TO NEW HANDHOLE AND SEAL OFF.
12. INTERCEPT EXISTING TELCO/TELEMETRY CONDUIT TO EXISTING ELECTRICAL DOGHOUSE AND INSTALL NEW HANDHOLE FOR ROUTING TO NEW TELEMETRY/CONTROL PANEL IN NEW STATION. COORDINATE INSTALLATION AND REQUIREMENTS WITH LOCAL UTILITY.

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Project No. 483.054.001 Contact Jeff Howard

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ELECTRICAL SITE PLAN

SHEET: 34 of 43
SCALE: AS SHOWN
FILENAME: E-3

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KEY NOTES:

1. METER BASE FOR NEW SERVICE. PROVIDE PER PSE REQUIREMENTS.
2. FUSED DISCONNECT SWITCH. PROVIDE PER PSE REQUIREMENTS.
3. MOTOR CONTROL CENTER (MCC). SEE SHEETS E-2, E-6, AND E-9.
4. MANUAL TRANSFER SWITCH, OFFSET FROM WALL TO ACCOMODATE ELECTRICAL WORKING CLEARANCE.
5. GENERATOR RECEPTACLE
6. 40KW DIESEL GENERATOR. COORDINATE EXACT LOCATION FOR GENERATOR CONDUIT STUB-UPS WITH THE PROVIDED GENERATOR MANUFACTURER.
7. TELEMETRY/CONTROL PANEL, SEE SHEETS E-6 AND E-7.
8. LIGHTING PANEL "LP-1", 100A, 120/240V, 1Ø (INTERIOR TO MCC)
9. 120V MOTORIZED LOUVER TO BE POWERED CLOSED AND OPEN ON LOSS OF POWER OR WHEN GENERATOR CALLED/RUNNING.
10. OCCUPANCY SENSING WALL SWITCH WITH MANUAL OVERRIDE. CONTROLS INITIALLY SET FOR MANUAL ON, AUTO OFF (VACANCY).
11. OCCUPANCY SENSING WALL SWITCH WITH MANUAL OVERRIDE. CONTROLS INITIALLY SET FOR AUTO ON, AUTO OFF (OCCUPANCY, PER WSEC EXCEPTION).

KEY NOTES CONTINUED:

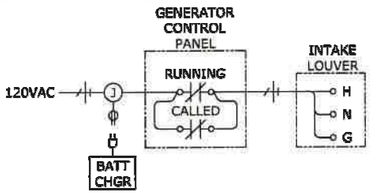
12. SEE ARCHITECTURAL SHEETS FOR ELEVATION OF LUMINAIRES.
13. PROVIDE 4 GANG SWITCH BOX AT DOOR. LABEL SWITCHES FOR WETWELL LIGHT, EXT FLOOD, EXT BLDG AND VAULT EXH FAN.

SHEET NOTES:

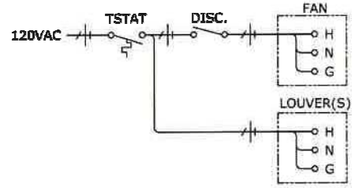
A. ALL CONDUITS TO BE ROUTED UNDERGROUND, IN-SLAB, OR CONCEALED WHEREVER POSSIBLE OR PRACTICAL.

B. ALL "IN WALL" CONDUITS TO BE RGS. UNDERSLAB CONDUIT MAY BE PVC, UNLESS OTHERWISE NOTED.

C. ROUTE UN-SWITCHED HOT CIRCUIT TO EXIT AND BACKUP LUMINAIRES.



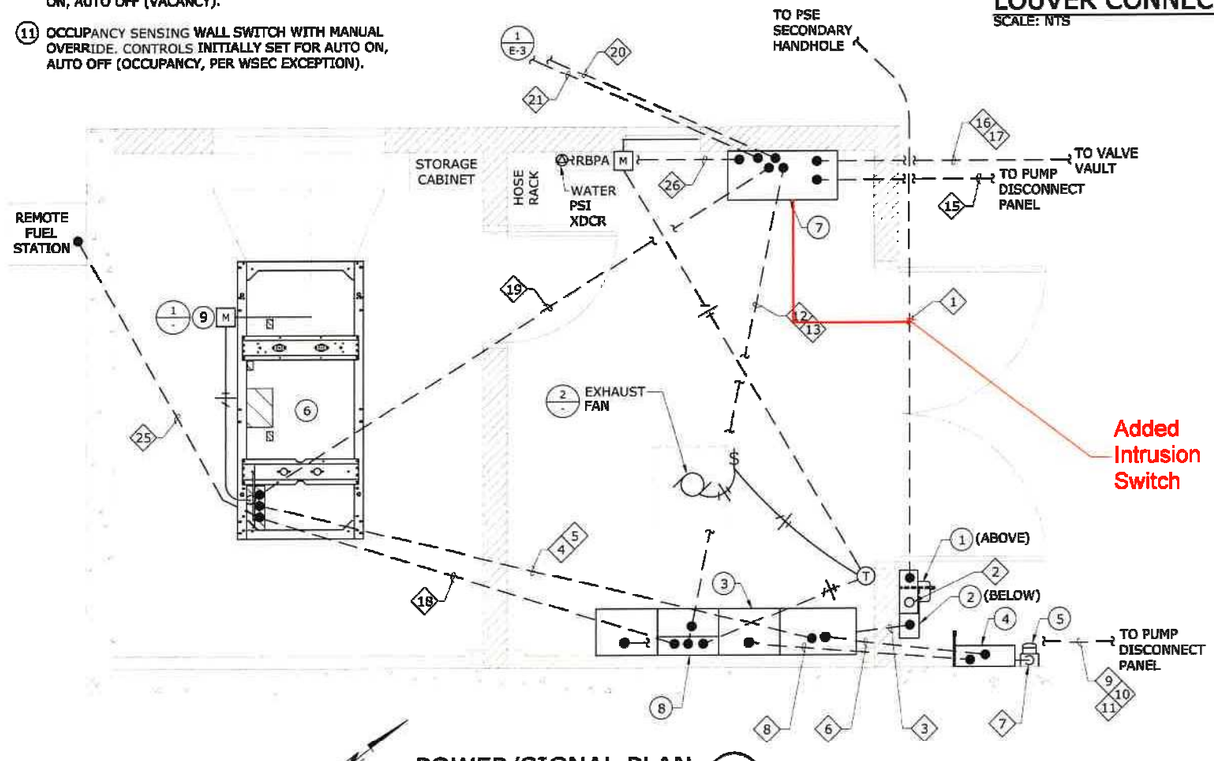
GEN. LOUVER CONNECTION (1 / E-4)
SCALE: NTS



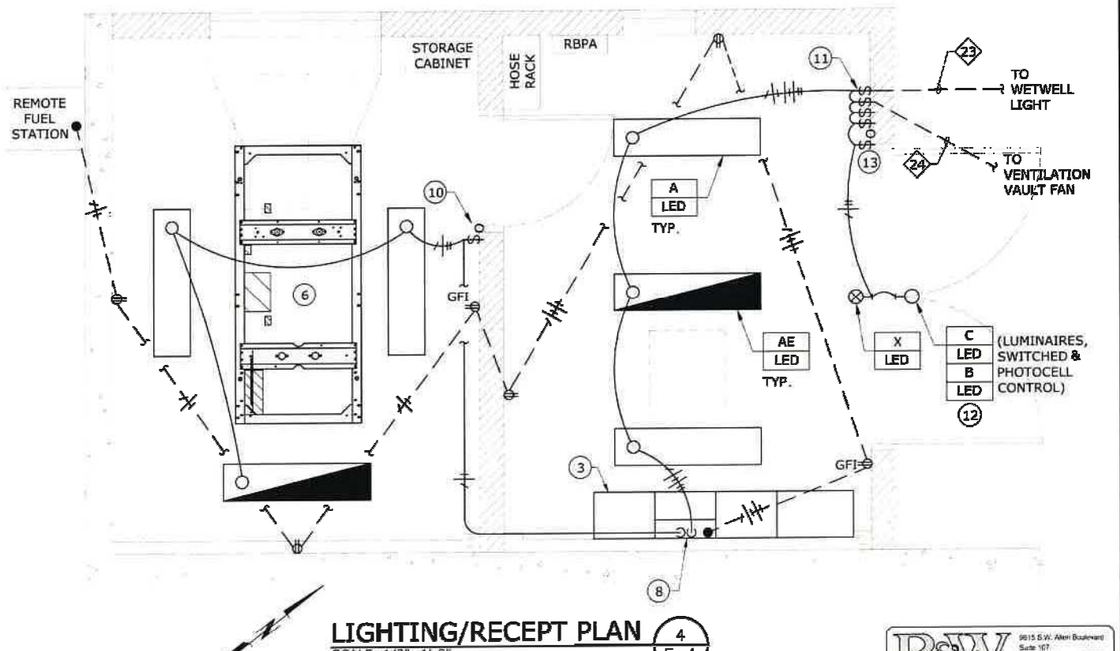
LOUVER CONNECTION (2 / E-4)
SCALE: NTS

LUMINAIRE SCHEDULE

TYPE	MANUFACTURER	WATTS	DESCRIPTION
A	LITHONIA #VAP-4000LM-FST-WD-MVOLT-GZ10-40K-90CRI	44	LED 4-FOOT SURFACE MOUNT LUMINAIRE IN INJECTION MOLDED, IMPACT-RESISTANT, FROSTED POLYCARB HOUSING W/CONTINUOUS POURED-IN-PLACE CLOSED CELL GASKET. 4000K COLOR TEMPERATURE, 4000 LUMENS, WIDE DISTRIBUTION W/RIBBED FROSTED POLYCARB LENS.
AE	LITHONIA #VAP-4000LM-FST-WD-MVOLT-GZ10-40K-90CRI-BSL722	44	LED 4-FOOT SURFACE MOUNT LUMINAIRE IN INJECTION MOLDED, IMPACT-RESISTANT, FROSTED POLYCARB HOUSING W/CONTINUOUS POURED-IN-PLACE CLOSED CELL GASKET. 4000K COLOR TEMPERATURE, 4000 LUMENS, WIDE DISTRIBUTION W/RIBBED FROSTED POLYCARB LENS. EMERGENCY BATTERY BACKUP
B	LITHONIA #OLW14	18	LED HIGH PERFORMANCE, HIGH EFFICIENCY SURFACE MOUNT LUMINAIRE 100,000 HOUR SERVICE LIFE W/ INTEGRAL PHOTOCELL. 5000K COLOR TEMPERATURE, 1490 LUMENS. WEATHER RESISTANT ALUMINUM HOUSING W/BRONZE FINISH AND CLEAR POLYCARB LENS.
C	LITHONIA #DSXF1-LED-P1-50K-FL-120-THK-UBV-PE-DDBXD	21	LED HIGH PERFORMANCE WET LOCATION FLOOD LUMINAIRE. 100,000 HOUR SERVICE LIFE W/ PHOTO CELL OPTION. 5000K COLOR TEMPERATURE, 2965 LUMENS. DIE CAST ALUMINUM HOUSING W/ BRONZE FINISH AND SINGLE ENGINE PACKAGE WITH FLOOD DISTRIBUTION.
D	EATON CROUSE-HINDS EVLED C701, 100-277VAC DRIVER, AND 5600K/72CRI COLOR	30	CLASS I, DIVISION 1 RATED WALL MOUNT, GLOBE-STYLE LED, WITH COPPER-FREE ALUMINUM HOUSING, HEAT AND IMPACT RESISTANT GLASS GLOBE, GUARD,
X	LITHONIA #LQM-S-W-3-G-120/277-ELN	1	LED EXIT SIGN IN IMPACT RESISTANT, CORROSION PROOF THERMOPLASTIC HOUSING WITH NICKEL CADMIUM BATTERY.



POWER/SIGNAL PLAN (3 / E-4)
SCALE: 1/2"=1'-0"



LIGHTING/RECEPT PLAN (4 / E-4)
SCALE: 1/2"=1'-0"

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Phone (503) 726-3311 Fax (503) 726-3325 E-mail rwengr@rweng.com
Project No. 403.094.001 Contact: Jeff Howard

murraysmith

JLH DESIGNED BY DATE
RSC DRAWN BY: DATE
JLH CHECKED BY: DATE

JEFFREY L. HOWARD STATE OF WASHINGTON 46271 REGISTERED PROFESSIONAL ENGINEER
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NO.	DATE	BY	APPR.	REVISION

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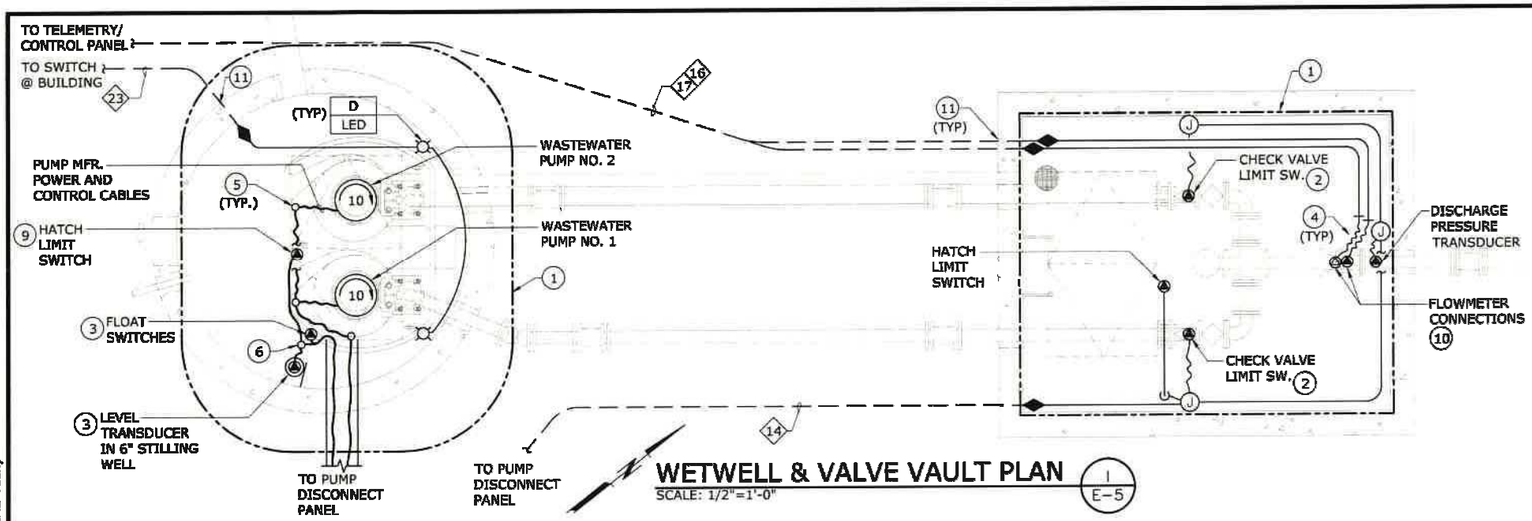
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ELECTRICAL BUILDING PLANS

SHEET: 35 of 43
SCALE: AS SHOWN
FILENAME: E-4

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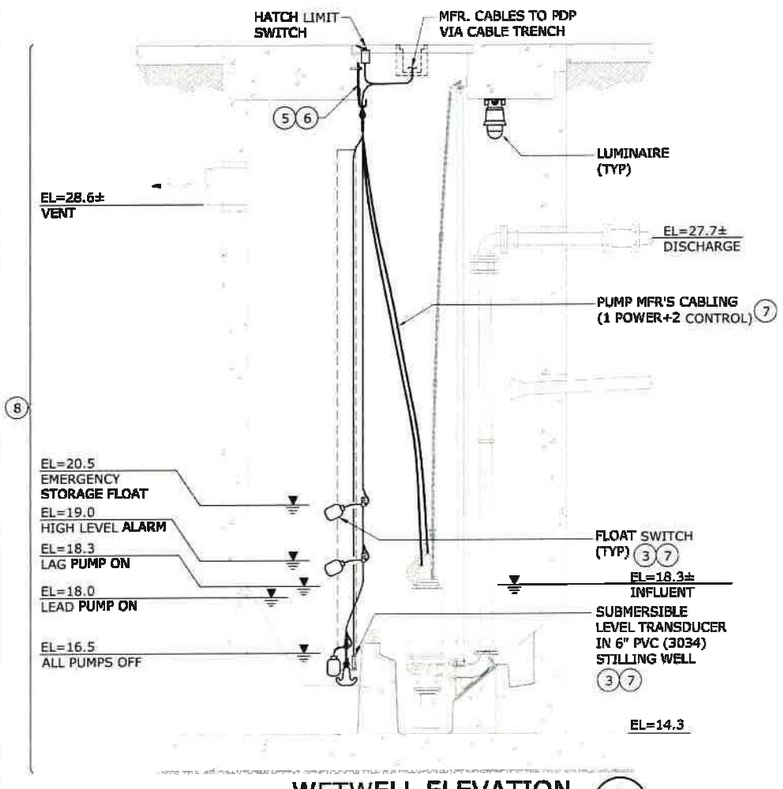
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WETWELL & VALVE VAULT PLAN

SCALE: 1/2"=1'-0"

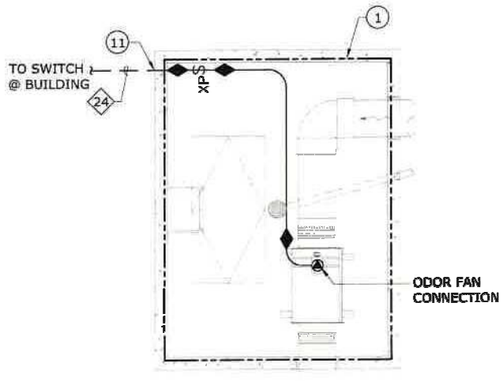
1 / E-5



WETWELL ELEVATION

SCALE: 1/2"=1'-0"

2 / E-5



VENT VAULT PLAN

SCALE: 1/2"=1'-0"

3 / E-5

SHEET NOTES:

A. PROVIDE NON-METALLIC OR STAINLESS STEEL STRAIN RELIEF FOR ALL CABLING.

B. RIGID CONDUITS USED IN HAZARDOUS (CLASSIFIED) AREAS TO BE PVC COATED. SEE SPECIFICATIONS.

KEY NOTES:

1. CLASS 1 DIV. 2 GROUP D BOUNDARY AREA IN AN ENVELOPE 18" ABOVE GRADE 3' LATERALLY FROM HATCH OPENINGS OF THE WETWELL AND ELECTRICAL HANDHOLE. CLASS 1 DIV 2 GROUP D BOUNDARY AREA WITHIN THE VALVE VAULT AND VENT VAULT. ALL WIRING AND INSTALLATION SHALL COMPLY WITH NEC ARTICLE 501 AND/OR 504 AS APPLICABLE.
2. SEE DETAIL 2 SHEET E-9 FOR MOUNTING DETAIL.
3. SEE DETAIL 3 SHEET E-9 FOR MOUNTING DETAIL.
4. FLEX FROM CONDULET TO FINAL CONNECTION AT EQUIPMENT. ROUTE ALONG PIPING AND WALL FOR CLEAN APPEARANCE.
5. PROVIDE 304 SS EYE HOOKS OR CONERY "U" TYPE HANGER WITH CONCRETE EXPANSION ANCHORS AND SS SNAP HOOK CARABINERS FOR SUSPENSION OF MFR. PUMP CABLES NEAR HATCH AREA IF NOT PROVIDED BY PUMP MANUFACTURER.
6. PROVIDE 304 SS EYE HOOKS OR CONERY "U" TYPE HANGER WITH CONCRETE EXPANSION ANCHORS AND SS SNAP HOOK CARABINERS FOR SUSPENSION OF FLOAT SWITCHES AND LEVEL TRANSDUCER CABLING NEAR HATCH AREA.
7. MANUFACTURER'S CABLING TO BE LONG ENOUGH TO ROUTE TO JUNCTION BOXES IN ELECTRICAL HANDHOLE WITHOUT SPLICING.
8. VERIFY ELEVATION INFORMATION WITH CIVIL DISCIPLINE FOR MOUNTING AND SETPOINTS FOR LEVEL TRANDUCER AND FLOATS LOCATIONS.
9. LIMIT SWITCH TO BE PROVIDED WITH MFR CORD LONG ENOUGH TO REACH PUMP DISCONNECT PANEL, OR PROVIDE #14/3 SO CORD FOR CONNECTION.
10. FLOWMETER TO BE PROVIDED WITH MFR. COIL AND ELECTRODE CABLING LONG ENOUGH TO ROUTE TO TELEMETRY/CONTROL PANEL WITHOUT SPLICING. USE MFR. POTTING MATERIAL FOR IP68 RATING.
11. CONDUITS ARE ENTERING A HAZARDOUS LOCATION AREA AND ARE REQUIRED TO BE CONTINUOUS RGS FROM HANDHOLE PENETRATION TO SEAL OFF. PROVIDE TRANSITION OUTSIDE VAULT FROM PVC TO PVC COATED RGS TO MAINTAIN CONTINUOUS CONDUITS TO SEAL OFFS.

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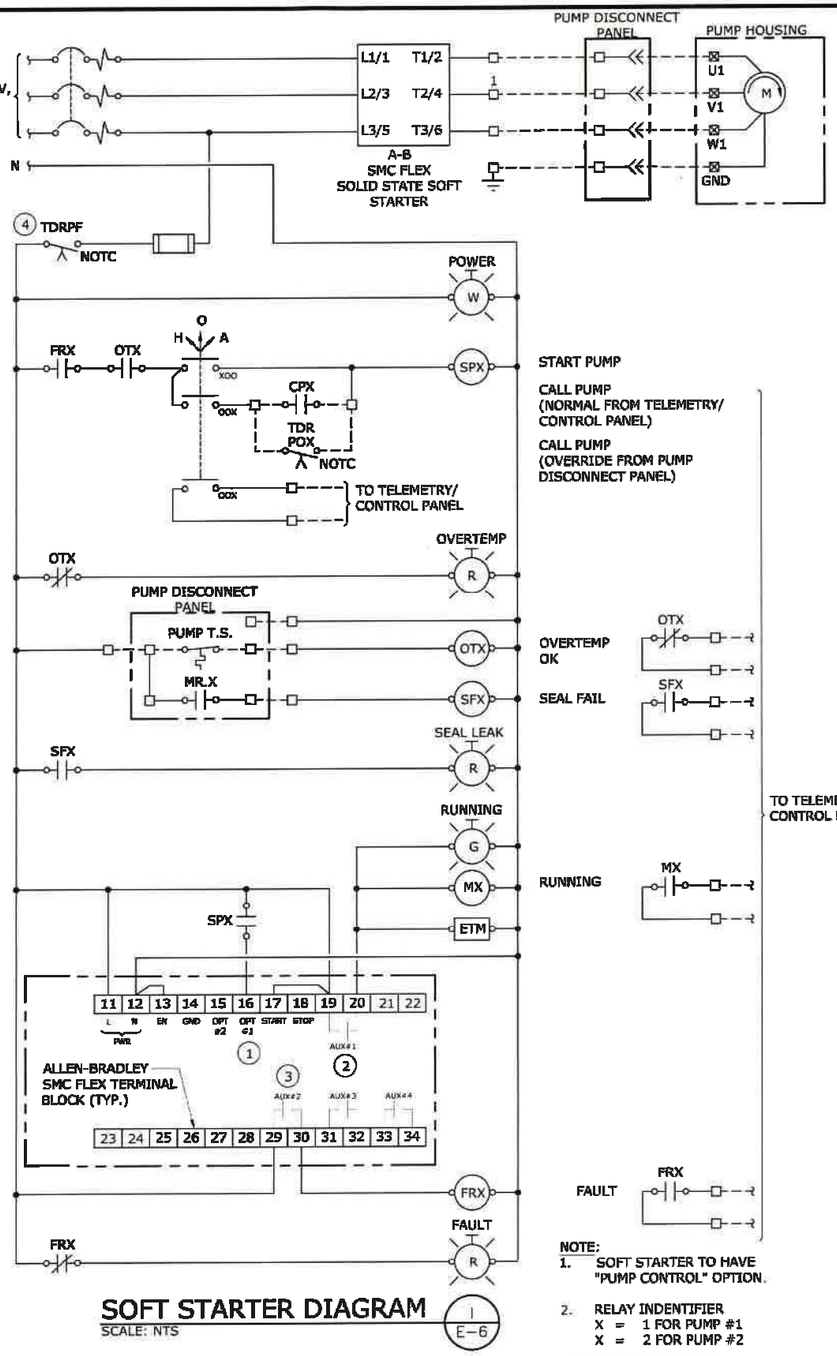
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ELECTRICAL WETWELL AND VAULT PLANS

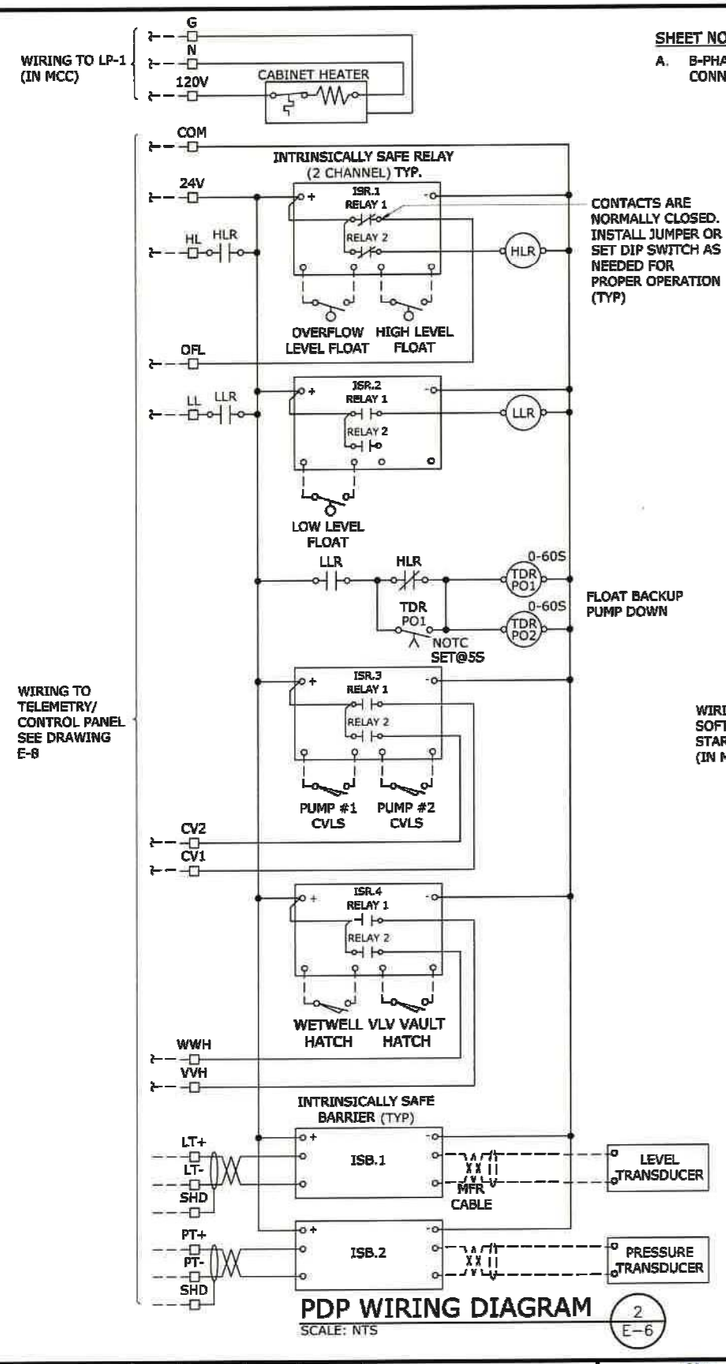
SHEET: 36 of 43
SCALE: AS SHOWN
FILENAME: E-5

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SOFT STARTER DIAGRAM (1 / E-6)
SCALE: NTS



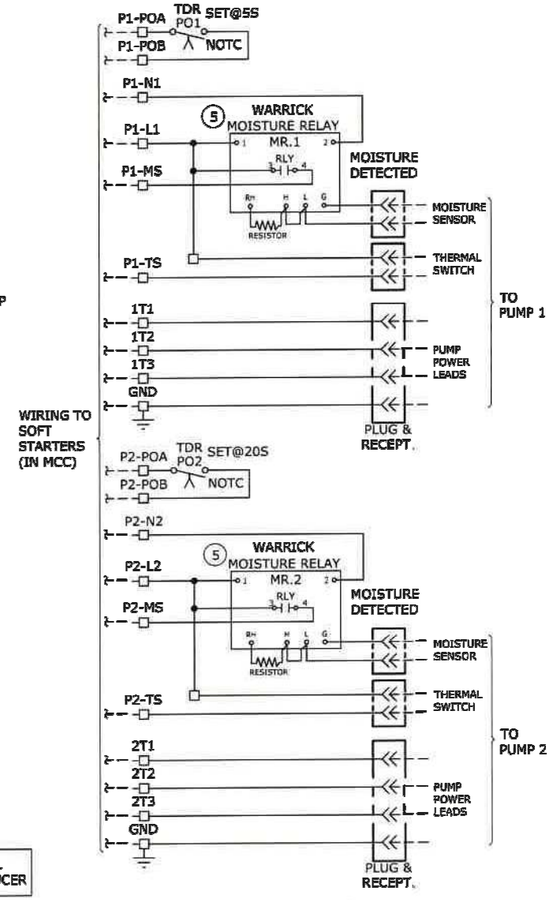
PDP WIRING DIAGRAM (2 / E-6)
SCALE: NTS

SHEET NOTES:

A. B-PHASE IS "HOT LEG" - NEUTRAL LOAD CONNECTIONS ARE NOT ALLOWED.

KEY NOTES:

1. OPTION INPUT #1 PROGRAMMED FOR "STOP OPTION" (PUMP CONTROL STOP).
2. AUX #1 PROGRAMMED FOR "UP TO SPEED (NO)".
3. AUX #2 PROGRAMMED FOR "FAULT (NC)" (CONTACTS TO OPEN ON FAULT CONDITION OR LOSS OF POWER).
4. POWER FAIL TIME DELAY LOCATED IN SEPARATE MCC SECTION. SEE ONE-LINE DIAGRAM.
5. VERIFY RELAY REQUIREMENTS WITH PUMP MANUFACTURER.



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murraysmith

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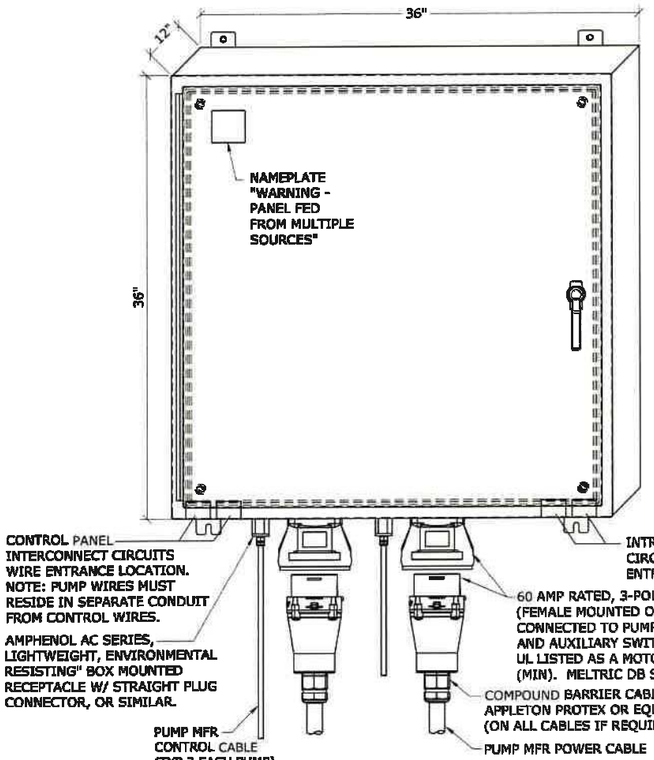
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ELECTRICAL WIRING DIAGRAMS

SHEET 37 of 43
SCALE AS SHOWN
FILENAME: E-6

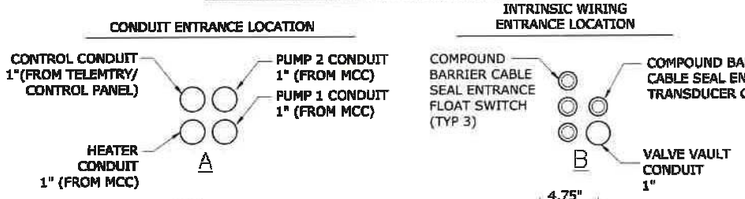
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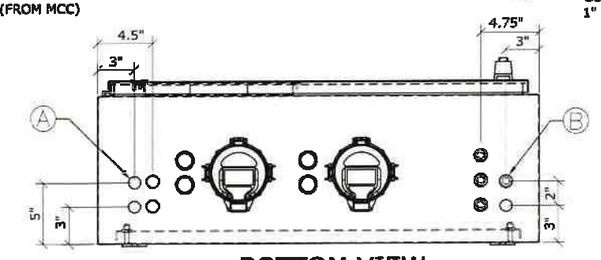
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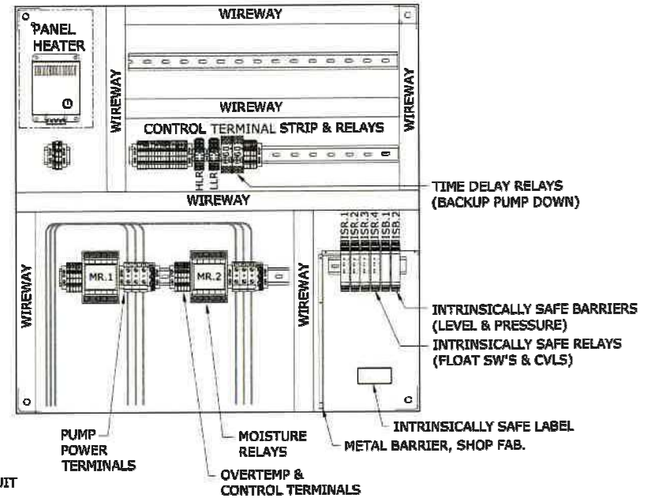
FRONT VIEW
SCALE: NTS

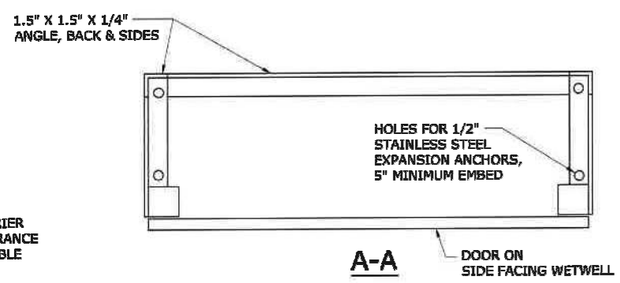
NOTE: ALL CONDUITS MUST BE CONTINUOUS RGS FROM BELOW GRADE TO CONTROL PANEL. REFERENCE NEC ARTICLE 501.15 (B2) EXCEPTION NO 1.

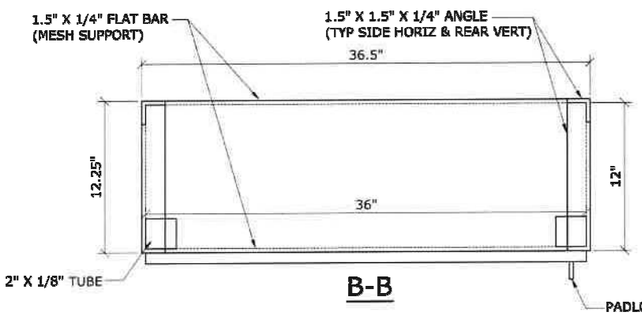




BOTTOM VIEW
SCALE: NTS





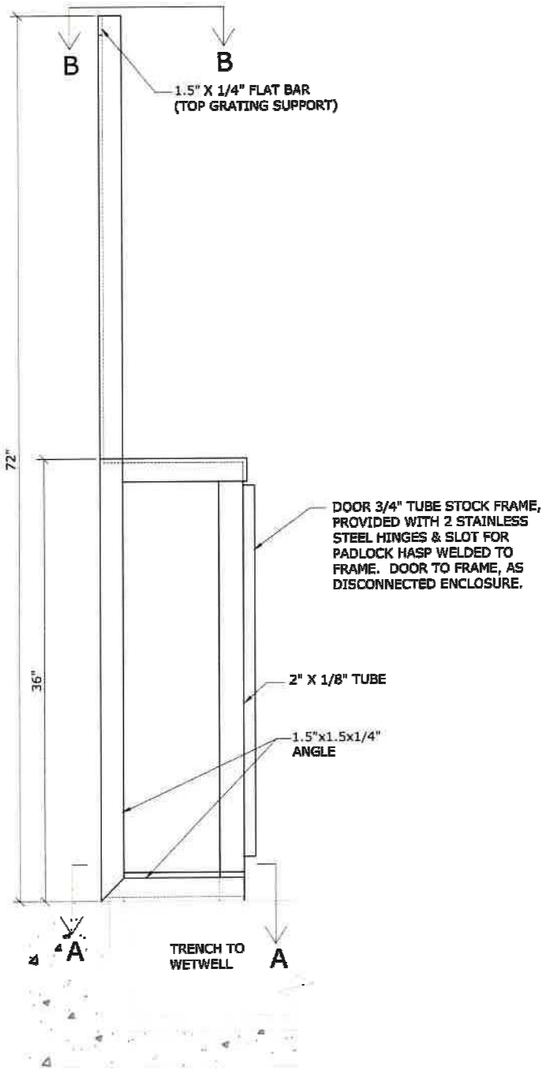


FRAME NOTES:

1. ALL MATERIAL TO BE STAINLESS STEEL.
2. BACK AND SIDES OF STAND TO BE ENCASED WITH EXPANDED METAL MESH, WELDED TO STAND AND FRAME (1/2"X13MM).
3. COVER DOOR WITH SAME MESH AS STAND.
4. CONTRACTOR TO VERIFY ALL DIMENSIONS AND CLEARANCES WITH ACTUAL PANEL BEING PROVIDED.

SHEET NOTES:

A. SEE SHEET E-6 FOR PANEL WIRING DIAGRAM.



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Project No. 483.004.001 Contact: Jeff Howard

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JLH	CHECKED BY: DATE

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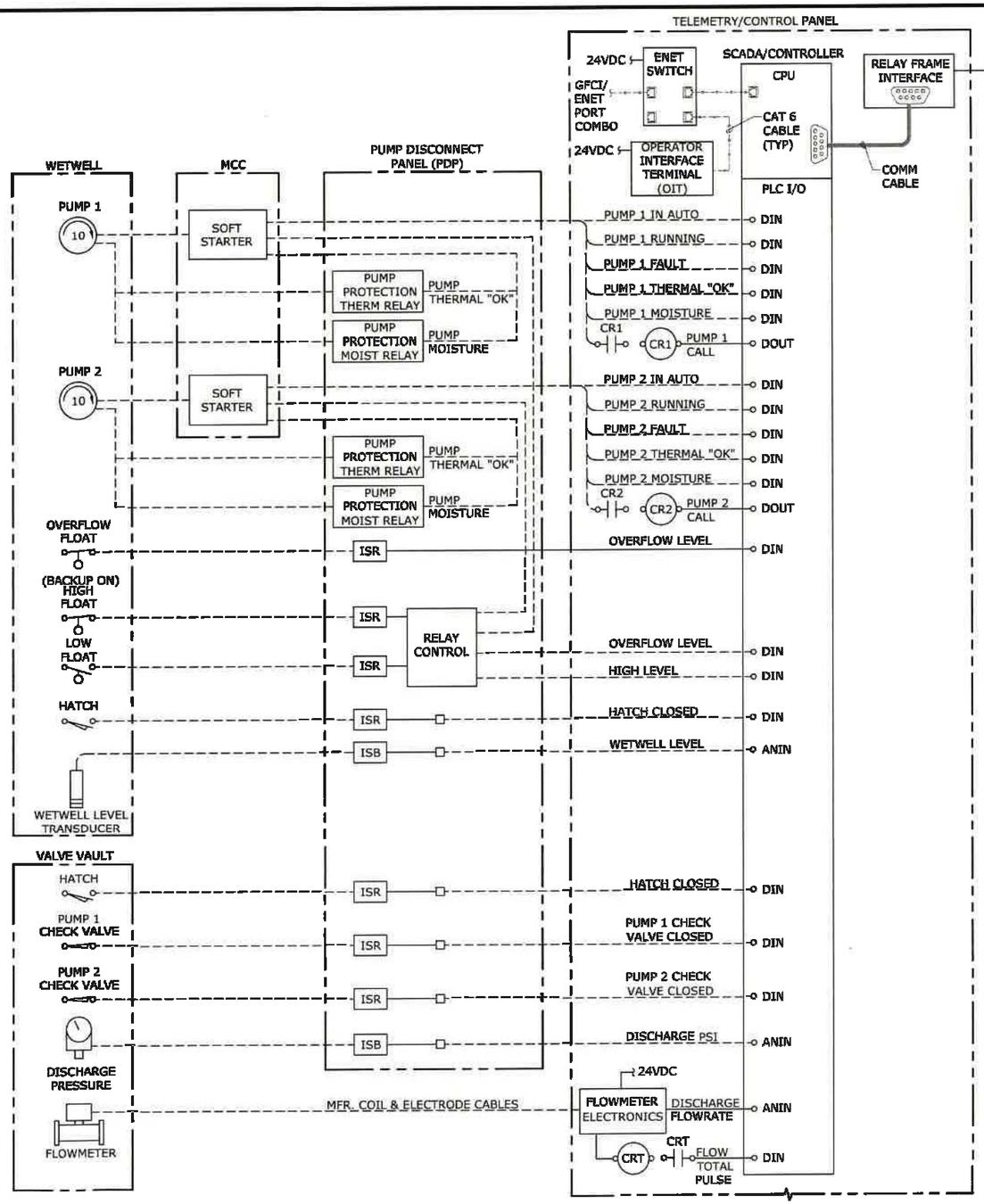
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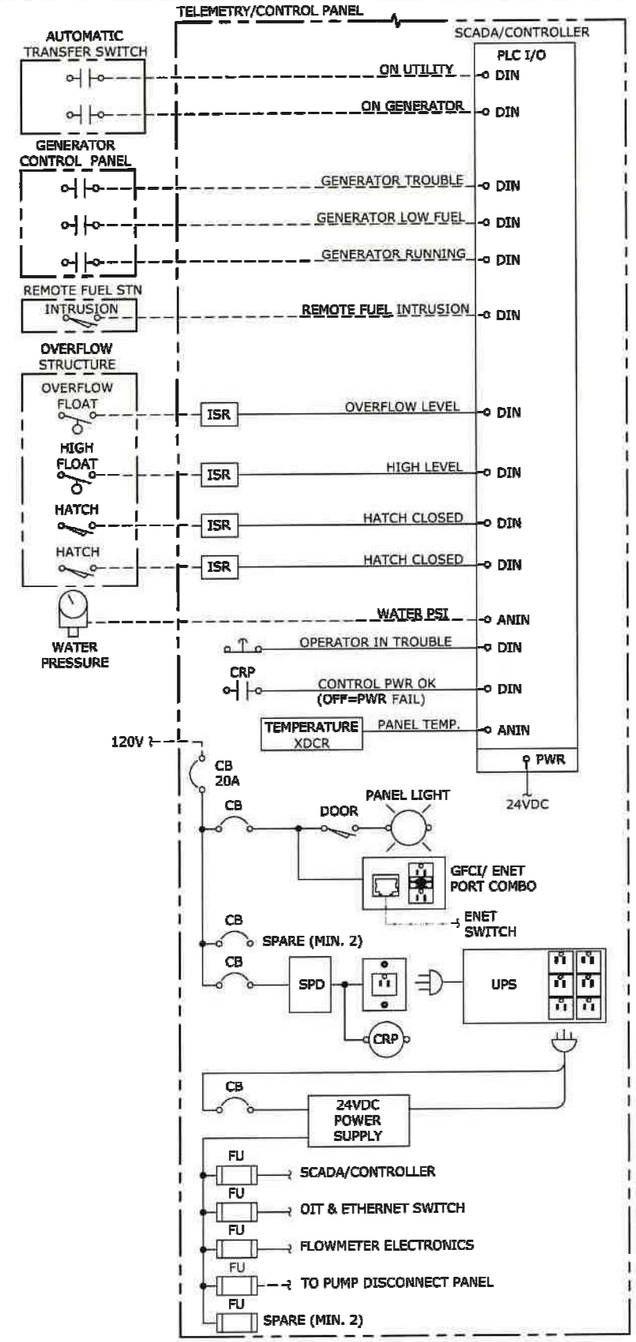
PUMP DISCONNECT PANEL (PDP) LAYOUT

SHEET: 38 of 43
SCALE: AS SHOWN
FILENAME: E-7

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SHEET NOTES:

A. TELEMETRY/CONTROL PANEL BASED ON PREVIOUS CONTROL STRATEGY AND DESIGN FROM THE CITY'S SCADA SYSTEM INTEGRATOR.

B. THE CITY'S SCADA SYSTEM INTEGRATOR TO PROVIDE FULL PANEL DESIGN, PROGRAMMING, STARTUP AND IMPLEMENT PER CITY'S EXISTING SCADA SYSTEM STANDARDS. CONTRACTOR TO PROVIDE START-UP SUPPORT.

C. ALL I/O FOR THE SYSTEM DESIGN SHALL BE 24VDC.

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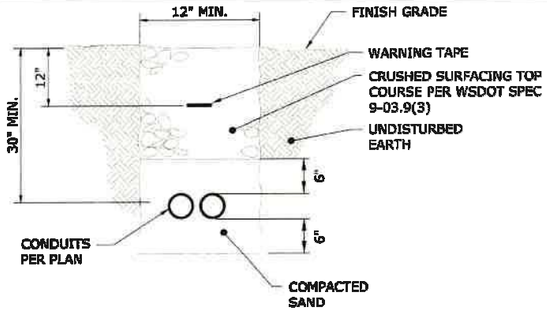
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BLOCK DIAGRAM AND CONTROL INTERCONNECTION DETAIL

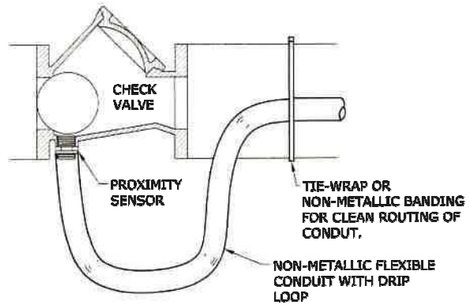
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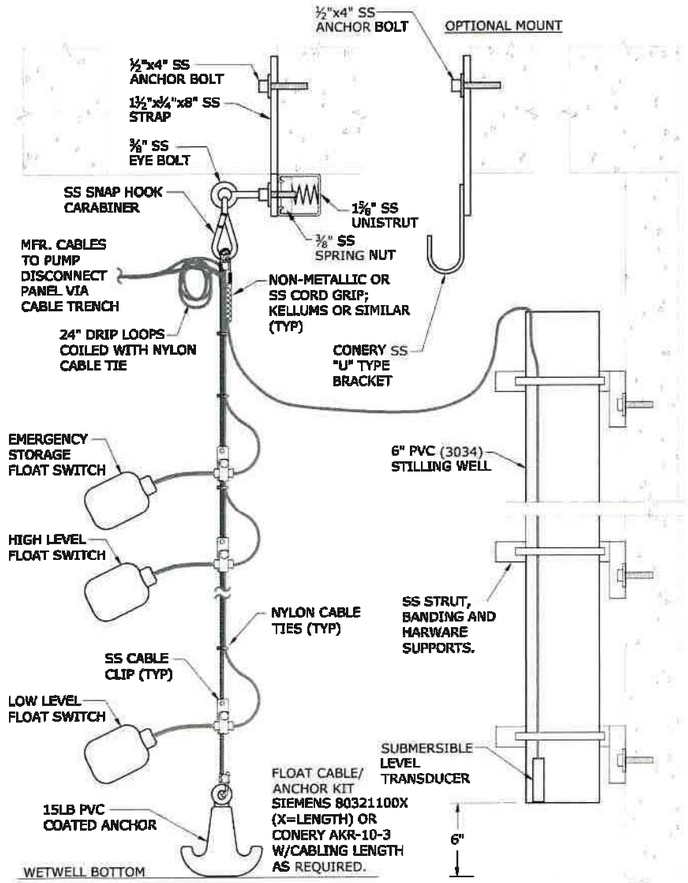
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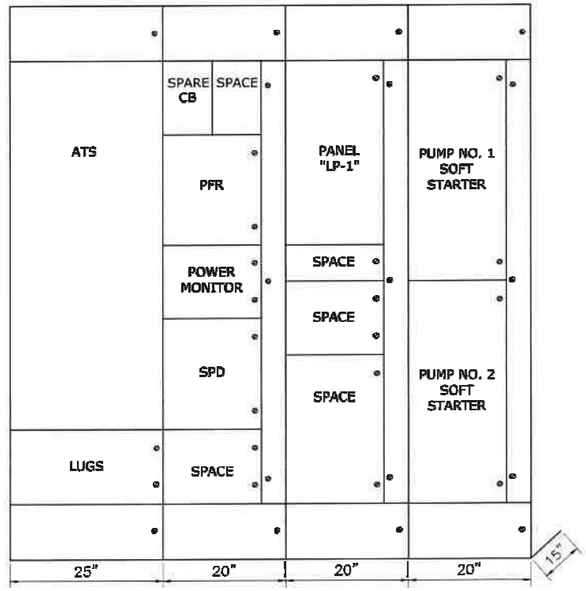
TYPICAL CONDUIT TRENCH (1 / E-9)
SCALE: NTS



CHECK VALVE LIMIT DETAIL (2 / E-9)
SCALE: NTS



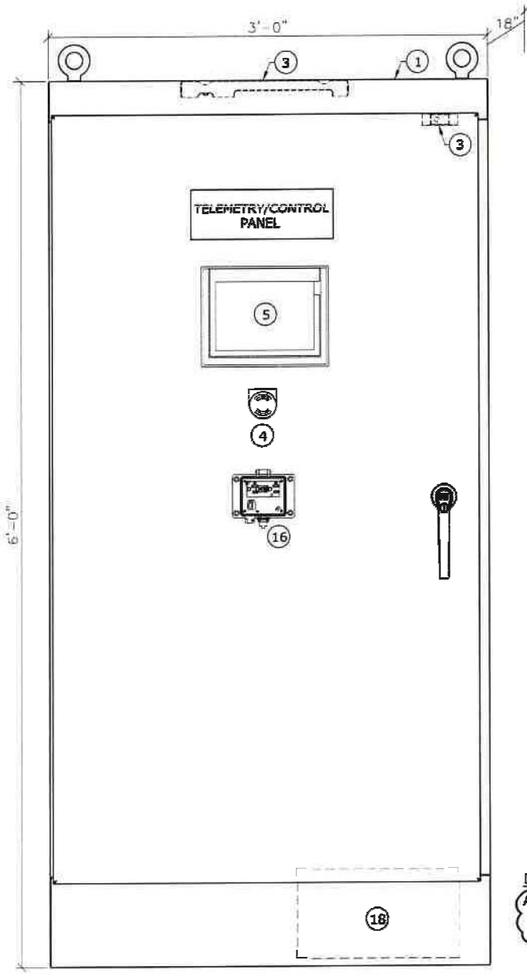
FLOAT SWITCH & XDCR MOUNTING DETAIL (3 / E-9)
SCALE: NTS



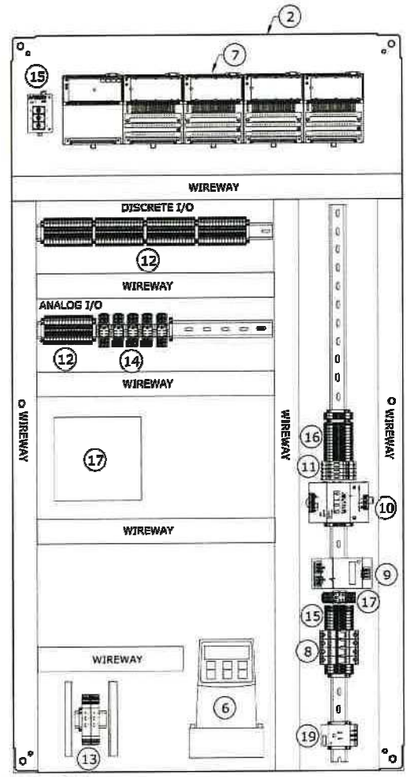
MCC ELEVATION (4 / E-9)
SCALE: NTS

KEY NOTES:

1. ENCLOSURE, NEMA 12, 72Hx36Wx18D
2. INNER PANEL
3. PANEL LIGHT W/ DOOR SWITCH
4. OPERATOR IN TROUBLE PUSHBUTTON
5. OPERATOR INTERFACE TERMINAL (OIT) 10" MINIMUM SIZE.
6. FLOWMETER ELECTRONCS
7. PLC CPU AND MODULES
8. DISTRIBUTION CIRCUIT BREAKERS
9. SURGE PROTECTIVE DEVICE (SPD)
10. DC POWER SUPPLY
11. FUSED TERMINAL BLOCKS
12. TERMINAL BLOCKS
13. INSTRINSICALLY SAFE RELAYS
14. CONTROL RELAYS
15. ETHERNET SWITCH
16. GFCI/ETHERNET PORT COMBO
17. TELCO RELAY FRAME INTERFACE EQUIPMENT
18. UPS
19. SIMPLEX RECEPTACLE



TELEMETRY/CONTROL PANEL LAYOUT (5 / E-9)
SCALE: NTS



DETAIL NOTE:

A. LAYOUT IS SHOWN FOR REFERENCE. FINAL DESIGN AND LAYOUT AS DETERMINED BY THE CITY'S SCADA CONTROLS SYSTEM INTEGRATOR.

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Project No. 463.004.001 Contact Jeff Howard

murraysmith

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DESIGNED BY	
RSC	DATE
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JLH	DATE
CHECKED BY:	

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ELECTRICAL DETAILS

SHEET: 40 of 43
SCALE: AS SHOWN
FILENAME: E-9

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KIRKLAND, ROSE POINT PUMP STATION
ELECTRICAL CIRCUIT SCHEDULE

ALL CIRCUITS ARE IDENTIFIED ON THE PLANS WITH THE DIAMOND SYMBOL. CONDUCTOR SIZES ARE BASED ON COPPER CONDUCTORS. CONDUIT SIZES ARE SHOWN FOR CASES WHEN CIRCUIT CONDUCTORS ARE RUN WITHOUT OTHER CIRCUITS. MULTIPLE CIRCUITS RUN IN COMMON CONDUITS ARE SHOWN ON PLANS AND SUPERSEDE THE BASIC CONDUIT SIZE SHOWN.

RACEWAY SIZES ARE IN INCHES WITH QUANTITIES IN EXCESS OF (1) SHOWN IN ADJACENT PARENTHESIS. CONDUCTOR CONFIGURATIONS ARE CODED AS FOLLOWS: P- FOR POWER CONDUCTORS, G - FOR GROUND CONDUCTORS, N - FOR NEUTRAL CONDUCTORS, C - FOR CONTROL CONDUCTORS, AND SP - FOR SPARE CONDUCTORS.

CIRCUITS REVISED SINCE LAST ISSUE ARE INDICATED BY AN ASTERISK(*).

CIRCUIT NUMBER	FROM	TO	CONDUCTORS	RACEWAY	NOTES
1	EXISTING UTILITY (POWER) HAND HOLE	FUSED DISCONNECT	(3) 3/0 AWG, P (1) 3/0 AWAG, N	3	COORDINATE INSTALLATION WITH PUGET SOUND ENERGY (PSE)
2	FUSED DISCONNECT	METER BASE	(3) 3/0 AWG, P (1) 3/0 AWAG, N (1) 6 AWG, G	3	COORDINATE INSTALLATION WITH PUGET SOUND ENERGY (PSE)
3	METER BASE	AUTOMATIC TRANSFER SWITCH (ATS) IN MCC (POWER)	(3) 3/0 AWG, P (1) 3/0 AWAG, N (1) 6 AWG, G	3	COORDINATE INSTALLATION WITH PUGET SOUND ENERGY (PSE)
4	GENERATOR (POWER)	AUTOMATIC TRANSFER SWITCH (ATS) IN MCC (POWER)	(3) 1/0 AWG, P (1) 1/0 AWG, N (1) 6 AWG, G	2	
5	GENERATOR (CONTROLS)	AUTOMATIC TRANSFER SWITCH (ATS) IN MCC (CONTROLS)	(8) 14 AWG, C (4) 14 AWG, SP (1) 12 AWG, G	1.25	
6	AUTOMATIC TRANSFER SWITCH (ATS) IN MCC (POWER)	FUSED DOUBLE-THROW SWITCH (MTS)	(3) 3/0 AWG, P (1) 3/0 AWAG, N (1) 6 AWG, G	2.5	
7	PORTABLE GNERATOR RECEPTACLE	FUSED DOUBLE-THROW SWITCH (MTS)	(3) 3/0 AWG, P (1) 3/0 AWAG, N (1) 6 AWG, G	2.5	
8	FUSED DOUBLE-THROW SWITCH (MTS)	MOTOR CONTROL CENTER (MCC) LUGS	(3) 3/0 AWG, P (1) 3/0 AWAG, N (1) 6 AWG, G	2.5	
9	LIGHTING PANEL LP-1 (INSIDE MCC)	PUMP DISCONNECT PANEL (PDP) (POWER)	(1) 12 AWG, P (1) 12 AWG, N (1) 12 AWG, G	1	
10	REDUCED VOLTAGE STARTER 1 (FOR PUMP 1)	PUMP DISCONNECT PANEL (PDP) (POWER)	(3) 8 AWG, P (6) 14 AWG, C (1) 10 AWG, G	1	CONTROL WIRES ARE FOR BACKUP PUMP CALL (FLOAT OVERRIDE) & PUMP LEAK AND THERMAL ALARMS
11	REDUCED VOLTAGE STARTER 2 (FOR PUMP 2)	PUMP DISCONNECT PANEL (PDP) (POWER)	(3) 8 AWG, P (6) 14 AWG, C (1) 10 AWG, G	1	CONTROL WIRES ARE FOR BACKUP PUMP CALL (FLOAT OVERRIDE) & PUMP LEAK AND THERMAL ALARMS
12	LIGHTING PANEL LP-1 (INSIDE MCC) & PUMP START SIGNALS	TELEMETRY/CONTROL PANEL (T/CP) (POWER/AC CNTRL)	(1) 12 AWG, P (1) 12 AWG, N (4) 14 AWG, C (1) 12 AWG, G	1	
13	MOTOR CONTROL CENTER (MCC) (CONTROL)	TELEMETRY/CONTROL PANEL (T/CP) (CONTROL)	(24) 14 AWG, C (8) 14 AWG, SP (1) 12 AWG, G	1.5	
14	VALVE VAULT (CONTROL)	PUMP DISCONNECT PANEL (PDP) (CONTROL)	(1) 18 TSP, C (6) 14 AWG, C (1) 12 AWG, G	1	INTRINSICALLY SAFE CKTS. CK VLV LIMIT SW'S, HATCH LIMIT SW, PRESSURE XDCR
15	PUMP DISCONNECT PANEL (PDP) (CONTROL)	TELEMETRY/CONTROL PANEL (T/CP) (CONTROL)	(16) 14 AWG, C (4) 14 AWG, SP (1) 12 AWG, G	1.5	
16	FLOW METER ELECTRONICS (IN T/CP)	VALVE VAULT FLOWMETER (COIL)	MANUF CABLE	1.25	VERIFY CABLE QTY AND SIZE(S) WITH FLOW METER MANUF PRIOR TO INSTALLING CONDUIT. VERIFY CONDUIT SIZE.
17	FLOW METER ELECTRONICS (IN T/CP)	VALVE VAULT FLOWMETER (ELECTRODE)	MANUF CABLE	1.25	VERIFY CABLE QTY AND SIZE(S) WITH FLOW METER MANUF PRIOR TO INSTALLING CONDUIT. VERIFY CONDUIT SIZE.
18	LIGHTING PANEL LP-1 (INSIDE MCC)	GENERATOR (BLOCK HTR, BATTERY CHARGER)	(2) 10 AWG, P (2) 10 AWG, N (1) 10 AWG, G	1	(2) SEPARATE CKTS; (1) CKT FOR BLOCK HTR, (1) CKT FOR BATTERY CHARGER
19	GENERATOR (CONTROLS)	TELEMETRY/CONTROL PANEL (T/CP) (CONTROL)	(8) 14 AWG, C (4) 14 AWG, SP (1) 12 AWG, G	1	GENSET STATUTS AND REMOTE FUEL INTRUSION
20	TELCO CONDUIT (E)	TELEMETRY/CONTROL PANEL (T/CP) (CONTROL)	SEE NOTES	2	COORDINATE WITH TELCO UTILITY TO RE-ROUTE EXISTING FRAME RELAY CKT TO NEW TELEMETRY/CONTROL PANEL
21	NEW HAND HOLE FOR EXISTING PS CONTROL WIRING	TELEMETRY/CONTROL PANEL (T/CP) (CONTROL)	(6) 14 AWG, C (4) 14 AWG, SP (1) 12 AWG, G	1	HATCH SW'S AND HIGH LEVEL FLOAT
22	EXIST PUMP STATION CONTROL ELEMENTS	NEW HAND HOLE FOR EXISTING PS CONTROL WIRING	SEE NOTES	2	(3) MANUF OR SO CABLES, AS REQUIRED FOR FLOAT SW AND HATCH SW'S. RUN IN COMMON CONDUIT.
23	SWITCH FOR WET WELL LIGHT	WET WELL LED LIGHT	(1) 12 AWG, P (1) 12 AWG, N (1) 12 AWG, G	1	
24	SWITCH FOR ODOR CONTROL FAN	ODOR CONTROL FAN	(1) 12 AWG, P (1) 12 AWG, N (1) 12 AWG, G	1	
25	GENERATOR (CONTROLS)	REMOTE FUEL BOX ALARM PANEL	(6) 14 AWG, C (4) 14 AWG, SP (1) 12 AWG, G	1	(2)CKTS HIGH LEVEL & LEAK DETECT TO GENSET, (1) CKT FOR INTRUSION PASS-THRU TO TELEMETRY/CONTROL PANEL, SEE CKT 19
26	WATER PRESSURE TRANSDUCER	TELEMETRY/CONTROL PANEL (T/CP) (CONTROL)	(1) 18 TSP, C (1) 12 AWG, G	1	

PANEL: LP-1 **BUS:** 100 A **DATE:** 02/27/19 **VOLTAGE:** 120 / 240 VOLTS,1 PHASE, 3 WIRE
FEEDER: SEE ONE-LINE DIAGRAM **MAIN BRKR:** 100 A **MOUNTING:**

CKT NO.	CIRCUIT DESCRIPTION	CKT BKR AMPS/POLE	LOAD TYPE	LOAD VA	PHASE	LOAD VA	LOAD TYPE	CKT BKR AMPS/POLE	CIRCUIT DESCRIPTION	CKT NO.
1	BLDG LIGHT	1-20		303	A	540		1-20	ELEC RM RECEPTS	2
3	WETWELL LIGHT	1-20		35	C	740		1-20	GEN RM RECEPTS & REMOTE FUEL STN	4
5	PLC CONTROL PANEL	1-20		1000	A	21		1-15	ELEC RM EXHAUST FAN (1/6 HP)	6
7	SPARE	1-20			C	696		1-15	VENTILATION VAULT FAN (1/4 HP)	8
9	SPARE	1-20			A	544		1-20	GENERATOR BATT CHRGR & LOUVER	10
11	SPARE	1-20			C	1000		1-20	GENERATOR BLOCK HEATER	12
13	SPARE	1-20			A			1-20	SPARE	14
15	SPARE	1-20			C			1-20	SPARE	16

CONNECTED LOAD

LOAD PER PHASE (VA)	A=	2,408	VA
	B=	2,471	VA
LOAD PER PHASE (AMPS)	A=	20.1	A
	B=	20.6	A
TOTAL LOAD (KVA)		4.9	KVA
TOTAL LOAD AMPS		20.3	A

.....NOTES.....
1.
2.
3.
4.
5.

PANEL "LP-1" SCHEDULE

NO SCALE

1 / E-10

R&W ENGINEERING, INC. "Engineering Integrated Solutions"
9615 S.W. Allen Boulevard Suite 107 Beaverton, Oregon 97005
Phone (503) 726-3941 Fax (503) 726-3325 E-mail rweng@rweng.com
Project No. 483.054.001 Contact: Jeff Howard

murraysmith

JLH DESIGNED BY: DATE
RSC DRAWN BY: DATE
JLH CHECKED BY: DATE

JEFFREY L. HOWARD STATE OF WASHINGTON 24279 REGISTERED PROFESSIONAL ENGINEER
2019.02.27 15:21:16-08'00'

NO.	DATE	BY	APPR.	REVISION

CITY OF KIRKLAND WASHINGTON

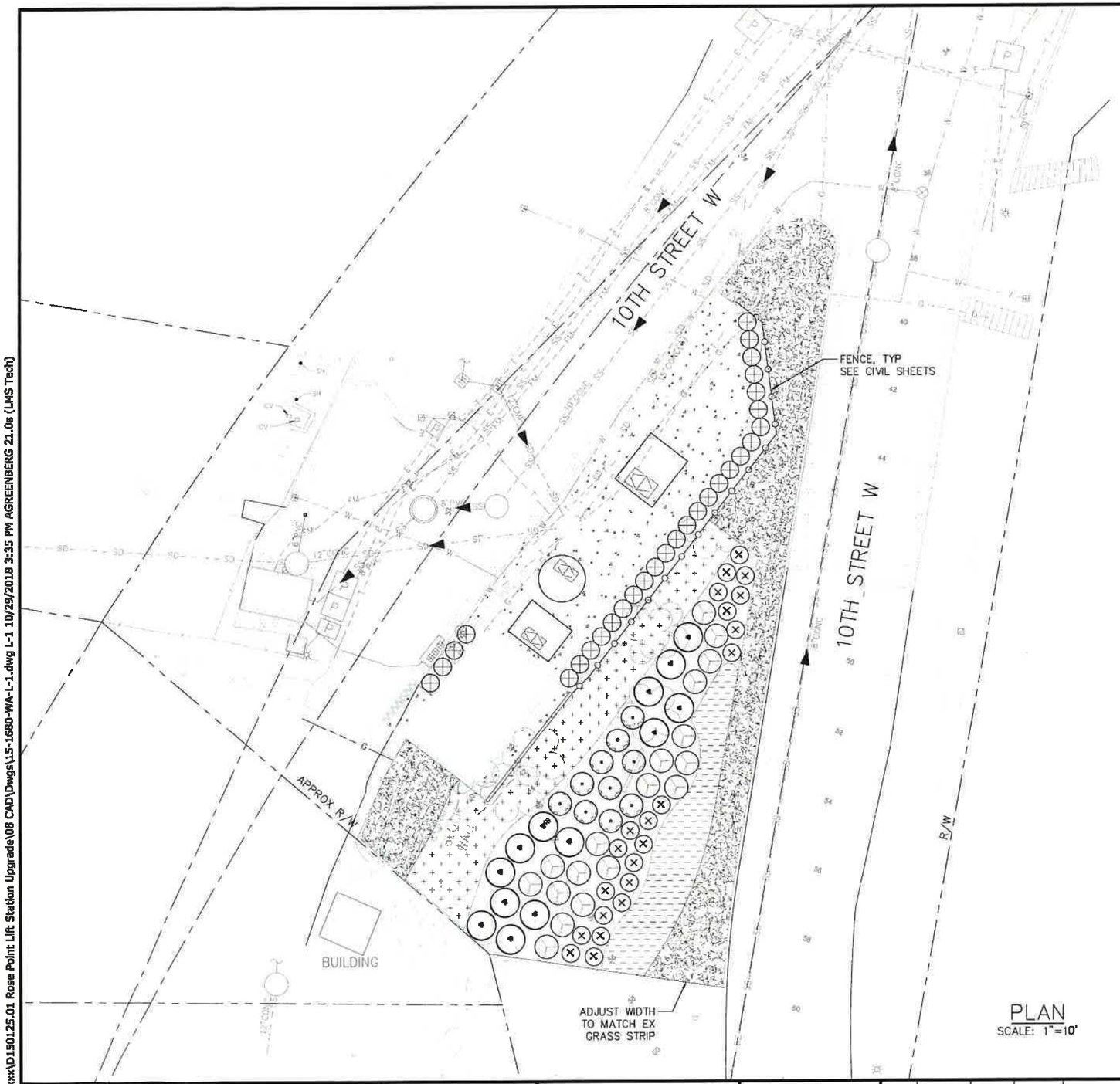
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PUBLIC WORKS DEPARTMENT
123 FIFTH AVENUE KIRKLAND, WA 98033 (425) 587-3800 www.kirklandwa.gov

ELECTRICAL SCHEDULES

SHEET: 41 of 43
SCALE: AS SHOWN
FILENAME: E-10

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PLAN
SCALE: 1"=10'

PLANTING SCHEDULE

BOTANICAL NAME	COMMON NAME	SIZE	SPACING	QTY
SHRUBS AND VINES				
LONICERA CILIOSA	ORANGE HONEYSUCKLE	1 GAL.	AS SHOWN	29
MYRICA CALIFORNIA	SWEET GALE	1 GAL.	AS SHOWN	10
OLEMARIA CERASIFORMIS	OSOBERRY	1 GAL.	AS SHOWN	13
ROSA NUTKANA	NOOTKA ROSE	1 GAL.	AS SHOWN	18
GROUNDCOVERS				
ARCTOSTAPHYLOS UVA-URSI	KINNIKINNICK	4" POT	24" O.C.	193
CAREX OBNUPTA	SLOUGH SEDGE	1 GAL.	AS SHOWN	22
FRAGARIA CHILOENSIS	SAND STRAWBERRY	4" POT	24" O.C.	97
GRASS				
SOD OR HYDROSEED TO MATCH EXISTING GRASS STRIP				

NOTES:
1. REFER TO CIVIL DRAWINGS FOR SITE PREPARATION AND TESC MEASURES.
2. REFER TO SHEET L-2 FOR PLANTING DETAILS.
3. REFER TO SPECIFICATIONS FOR IRRIGATION DETAILS.

N

10 5 0 10 20
SCALE IN FEET

ESA
5309 Shilshole Avenue NW
Suite 200
Seattle, WA 98107
P: (206) 789-9658
F: (206) 789-9684

GB DESIGNED BY: DATE
AG DRAWN BY: DATE
LA CHECKED BY: DATE

STATE OF WASHINGTON · ARIZONA B GREENBERG · NO. 0947 EXP. 7/28/2019 · LANDSCAPE ARCHITECT

NO.	DATE	BY	APPR.	REVISION

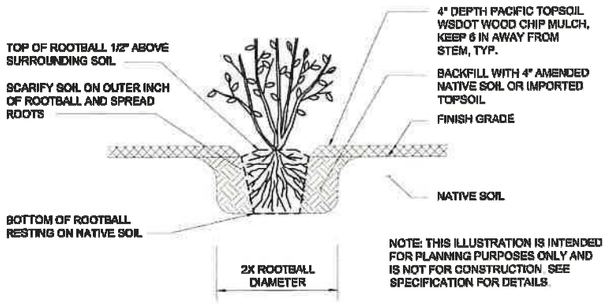
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123 FIFTH AVENUE KIRKLAND, WA 98033 (425) 587-3800 www.kirklandwa.gov

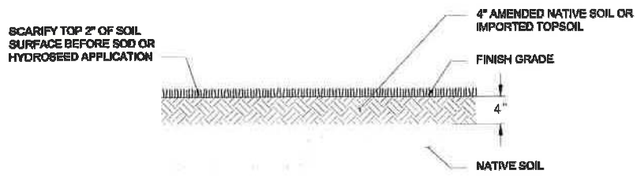
PLANTING PLAN

SHEET: 42 of 43
SCALE: AS SHOWN
FILENAME: L-1

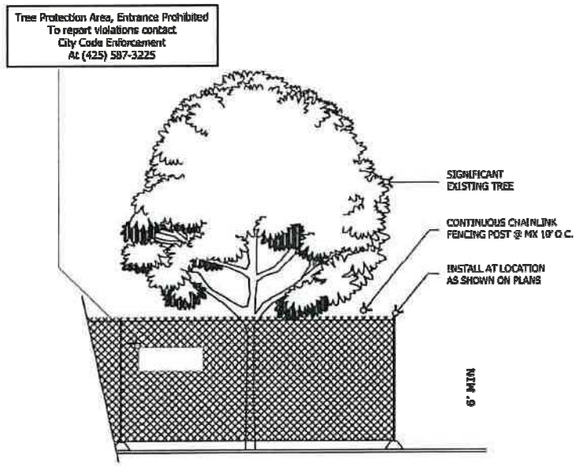
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1 TYPICAL SHRUB (CONTAINER) PLANTING



2 TYPICAL LAWN AND SOIL PREPARATION DETAIL



1. MINIMUM SIX (6) FOOT HIGH TEMPORARY CHAINLINK FENCE SHALL BE PLACED AT THE CRITICAL ROOT ZONE OR DESIGNATED LIMIT OF DISTURBANCE OF THE TREE TO BE SAVED. FENCE SHALL COMPLETELY ENCIRCLE TREE(S). INSTALL FENCE POSTS USING PIER BLOCK ONLY. AVOID POST OR STAKES INTO MAJOR ROOTS. MODIFICATIONS TO FENCING MATERIAL AND LOCATION MUST BE APPROVED BY PLANNING OFFICIAL.
2. TREATMENT OF ROOTS EXPOSED DURING CONSTRUCTION: FOR ROOTS OVER ONE (1) INCH DIAMETER DAMAGED DURING CONSTRUCTION, MAKE A CLEAN STRAIGHT CUT TO REMOVE DAMAGED PORTION OF ROOT. ALL EXPOSED ROOTS SHALL BE TEMPORARILY COVERED WITH DAMP BURLAP TO PREVENT DRYING AND COVERED WITH SOIL AS SOON AS POSSIBLE.
3. NO STOCKPILING OF MATERIALS, VEHICULAR TRAFFIC, OR STORAGE OF EQUIPMENT OR MACHINERY SHALL BE ALLOWED WITHIN THE LIMIT OF THE FENCING. FENCING SHALL NOT BE MOVED OR REMOVED UNLESS APPROVED BY THE CITY PLANNING OFFICIAL. WORK WITHIN PROTECTION FENCE SHALL BE DONE MANUALLY UNDER THE SUPERVISION OF THE ON-SITE ARBORIST AND WITH PRIOR APPROVAL BY THE CITY PLANNING OFFICIAL.
4. FENCING SIGNAGE AS DETAILED ABOVE MUST BE POSTED EVERY FIFTEEN (15) FEET ALONG THE FENCE.

TREE PROTECTION FENCING DETAIL
(for public and private trees)

3 CITY OF KIRKLAND TREE PROTECTION FENCING DETAIL

ESA
5309 Shilshole Avenue NW
Suite 200
Seattle, WA 98107
P: (206) 789-9658
F: (206) 789-9684

GB DESIGNED BY: DATE
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STATE OF WASHINGTON · ARIZONA B. GREENBERG · NO. 1047 EXP. 2/28/2019 · LANDSCAPE ARCHITECT

NO.	DATE	BY	APPR.	REVISION

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CITY OF KIRKLAND
PUBLIC WORKS DEPARTMENT
123 FIFTH AVENUE KIRKLAND, WA 98033 (425) 587-3800 www.kirklandwa.gov

PLANTING DETAILS

SHEET: 43 of 43
SCALE: AS SHOWN
FILENAME: L-2

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APPENDIX C5:
RECORD DRAWINGS – CITY OF KIRKLAND LAKE PLAZA LIFT STATION REPLACEMENT

City of Kirkland

1/39

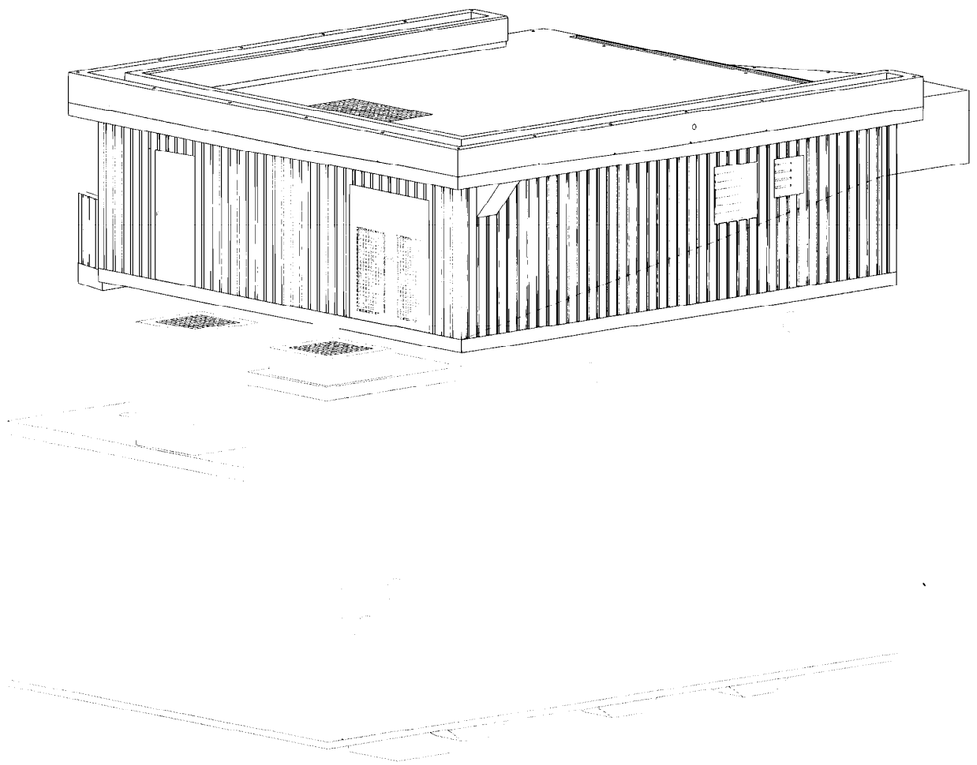
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CITY OF KIRKLAND
LAKE PLAZA LIFT STATION REPLACEMENT

CIP NO. CSS 0043

JOB NO. 29-96-P/W

CONSTRUCTION WINTER 1996/97



REVISED TO CONFORM
TO CONSTRUCTION RECORDS

RH2 ENGINEERING INC. DATE

CITY OF KIRKLAND
WASHINGTON

DESIGNED BY:

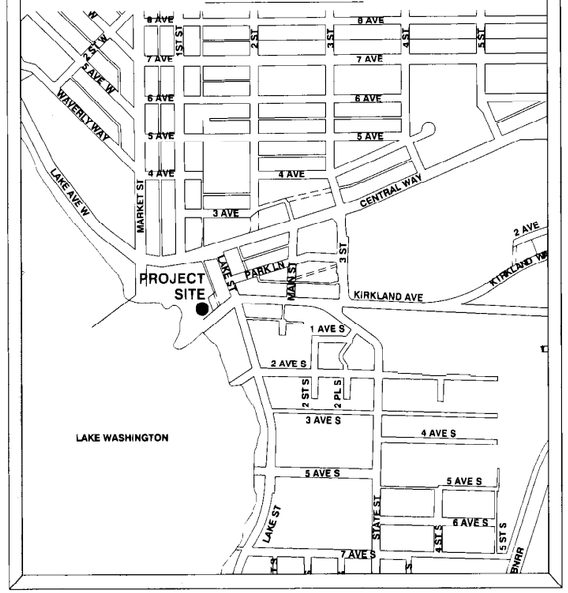
ENGINEERS
PLANNERS
SCIENTISTS

1570

2/39

1570

VICINITY MAP



GENERAL STRUCTURAL NOTES

Occupancy Group = B
Type of Construction = Minimum required, Type V-N
1st floor approx. area = 738 sq. ft.
Basement approx. area = 792 sq. ft.
Exterior deck approx. area = 670 sq. ft.

General Notes

All materials, workmanship, design, and construction shall conform to the drawings, specifications, and the Uniform Building Code (1994 Edition).

Contractor shall provide temporary bracing for the structure and structural components until all final connections have been completed in accordance with the plans.

Contractor shall be responsible for all safety precautions and the methods, techniques, sequences or procedures required to perform the work.

Design Loading Criteria

Roof Live Load (Public Accessible)	100 psf or 2,000 lb. concentrated
Floor Live Load	100 psf or 2,000 lb. concentrated
Stair and Corridor Live Load	100 psf

Geotechnical Design Criteria

Subgrade preparation including drainage, excavation, compaction, and filling requirements, shall conform strictly with recommendations given in the soils report or as directed by soils engineer. Footings shall bear on solid undisturbed earth (or controlled, compacted structural fill or both). Excavation limits shown on plans (or in details) are minimum for guidance only; the actual excavation limits must be established in the field by the testing lab and soils engineer. Backfill behind all retaining walls with free draining granular fill and provide for subsurface drainage as noted. Gravity loads of the lift station are offset by buoyancy of the structure. Geotechnical design loading and other criteria for the shoring system are included in the specifications.

Soils Report Reference

Geotechnical and Environmental Report, Lake Plaza Lift Station, Kirkland, Washington, May 1996, Shannon & Wilson, Inc.

Inspection

Concrete construction, structural steel fabrication and erection (including field welding and high-strength field bolting), expansion bolts and threaded expansion inserts, and epoxy grouted insta dowels, shall be supervised in accordance with section 1701 of the Uniform Building Code and the project specifications by a qualified testing agency designated by the engineer. The engineer shall be furnished with copies of all inspection reports and test results.

Concrete

Concrete shall be mixed, proportioned, conveyed and placed in accordance with UBC section 1905 and ACI 301. Concrete shall attain a 28-day strength of F'c=4,000 PSI and mix shall contain not less than 5 1/2 sacks of cement per cubic yard and shall be proportioned to produce a slump of 5" or less.

The minimum amounts of cement and maximum amounts of water may be changed if a concrete performance mix is submitted to the engineer and the building department for approval two weeks prior to placing any concrete. The concrete performance mix shall include the amounts of cement, fine and coarse aggregate, water and admixtures as well as the water cement ratio, slump, concrete yield and substantiating strength data in accordance with ACI 318-89, Chapter 5. Review of mix submittals by the engineer of record indicates only that information presented conforms generally with contract documents. Contractor or supplier maintains full responsibility for specified performance.

All concrete with surfaces exposed to standing water shall be air-entrained with an air-content conforming to 1994 UBC table 19-A-1.

Concrete Protection (Cover) for reinforcing steel shall be as follows.

Footings and other unformed surfaces cast against and permanently exposed to earth	3"
Formed surfaces exposed to earth (i.e. walls below ground) or weather (#6 bars or larger)	2"
(#5 bars or smaller)	1 1/2"
Column ties or spirals and beam stirrups	1 1/2"
Slabs and walls (interior face)	Greater of (Bar diameter plus 1/8") or 3/4"

Reinforcing steel shall conform to ASTM A615 (including supplement S1), grade 60, Fy=60,000 psi. Reinforcing complying with ASTM A615(S1) may be welded only if material property reports indicating conformance with welding procedures specified in A.W.S. D1.4 are submitted.

Welded wire fabric shall conform to ASTM A-185.

Reinforcing Steel shall be detailed (including hooks and bends) in accordance with ACI 315-92 and 318-89. Lap all continuous reinforcement #5 and smaller 40 bar diameters or 2'-0" minimum. Provide corner bars at all wall and footing intersections. Lap corner bars #5 and smaller 40 bar diameters or 2'-0" minimum. Laps of larger bars shall be made in accordance with ACI 318-89, class B. 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 so detailed or approved by the engineer.

Structural Steel

Structural steel design, fabrication, and erection shall be based on the latest editions of the A.I.S.C. Specification and codes:

1. Specification for structural steel buildings.
2. Code of standard practice for steel buildings and bridges, amended by the deletion of the following sentence in paragraph 4.2.1: "This approval constitutes the Owner's acceptance of all responsibility for the design adequacy of any detail configuration of connections developed by the fabricator as part of his preparation of these shop drawings."
3. Specification for structural joints using ASTM A325 or A490 bolts.

Structural steel shall conform to the following requirements.

Plates, shapes, angles, and rods	ASTM A36, Fy> 36ksi
Special shapes and plates (noted grade 50 on plans)	ASTM A572, Fy> 50ksi
Pipe columns	ASTM A53, Grade B, Type E or S, Fy>35ksi
Structural Tubing (square or rectangular)	ASTM A500, Grade B, Fy>46ksi

All welding shall be in conformance with A.I.S.C. and A.W.S. standards and shall be performed by W.A.B.O. certified welders using E70xx electrodes. Only prequalified welds (as defined by A.W.S.) shall be used. Welding of grade 40 reinforcing bars (if required) shall be performed using E70xx electrodes. Welding within 4 inches of cold bends in reinforcing steel is not permitted. See reinforcing note for material requirements of welded bars.

Steel connectors shall be as follows:

Anchor Bolts (embedded in masonry or concrete)	ASTM A307
Connection Bolts (3/4 round, unless shown otherwise)	ASTM A325-X

All A325 connection bolts shall be approved self load indicating types (such as Lejeune Control Bolts, etc.) and shall be installed in strict accordance with the manufacturer's published recommendations.

Expansion anchors will not be allowed. Anchors in concrete may be cast-in place, or may be drilled and epoxied in place.

CONTACT PERSONAL

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	KIRKLAND POLICE	828-1183
	KIRKLAND FIRE DEPT.	828-1143
	FIRST AID	911

CITY OFFICIALS

DEBBIE EDDY	MAYOR
MICHAELE MUSE	DEPUTY MAYOR
DAVE RUSSEL	COUNCIL MEMBER
SANTS CONTRERAS	COUNCIL MEMBER
ROBERT PANTLEY	COUNCIL MEMBER
NONA GANZ	COUNCIL MEMBER
LARRY SPRINGER	COUNCIL MEMBER
TERRY ELLIS	CITY MANAGER
JM ARNDT, P.E.	PUBLIC WORKS DIRECTOR
GARY SUND, P.E.	CITY ENGINEER

INDEX OF SHEETS

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3	EXISTING SITE PLAN	PLZ-D05	C02
4	CONSTRUCTION GRADING PLAN	PLZ-D14	C06
5	SHORING PLAN AND DETAILS	PLZ-D16	S07
6	PROPOSED SANITARY SEWER PLAN & DEMOLITION PLAN	PLZ-D02	C03
7	PROPOSED SANITARY SEWER PLAN AND PROFILE 1	PLZ-D9	C04
8	PROPOSED SANITARY SEWER PLAN AND PROFILE 2	PLZ-D9	C05
9	SANITARY SEWER DETAILS	PLZ-D19	C09
10	PROPOSED UTILITY PLAN	PLZ-D31	C07
11	PROPOSED SITE PLAN	PLZ-D04	C09
12	LOWER FLOOR PLAN	PLZ-D06	S01
13	LOWER FLOOR ELEVATIONS	PLZ-D10	S02
14	LOWER FLOOR DETAILS	PLZ-D33	S09
15	UPPER FLOOR PLAN	PLZ-D07	S03
16	UPPER FLOOR ELEVATIONS	PLZ-D11	S04
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19	LOWER ROOF DETAILS	PLZ-D26	S08
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NO.	REVISION	BY	BENCH	DATE
1	CONSTRUCTION RECORDS	KMP	TVP	1/30/98

RH2 ENGINEERING, INC
ENGINEERS PLANNERS SCIENTISTS
REDMOND OFFICE
WENATCHEE OFFICE

RICHARD H. HARDER — STATE OF WASHINGTON — 6577 — REGISTERED PROFESSIONAL ENGINEER
SIGNED 09/25/96
EXPIRES 6/22/98

City of Kirkland
Lake Plaza Lift Station Replacement

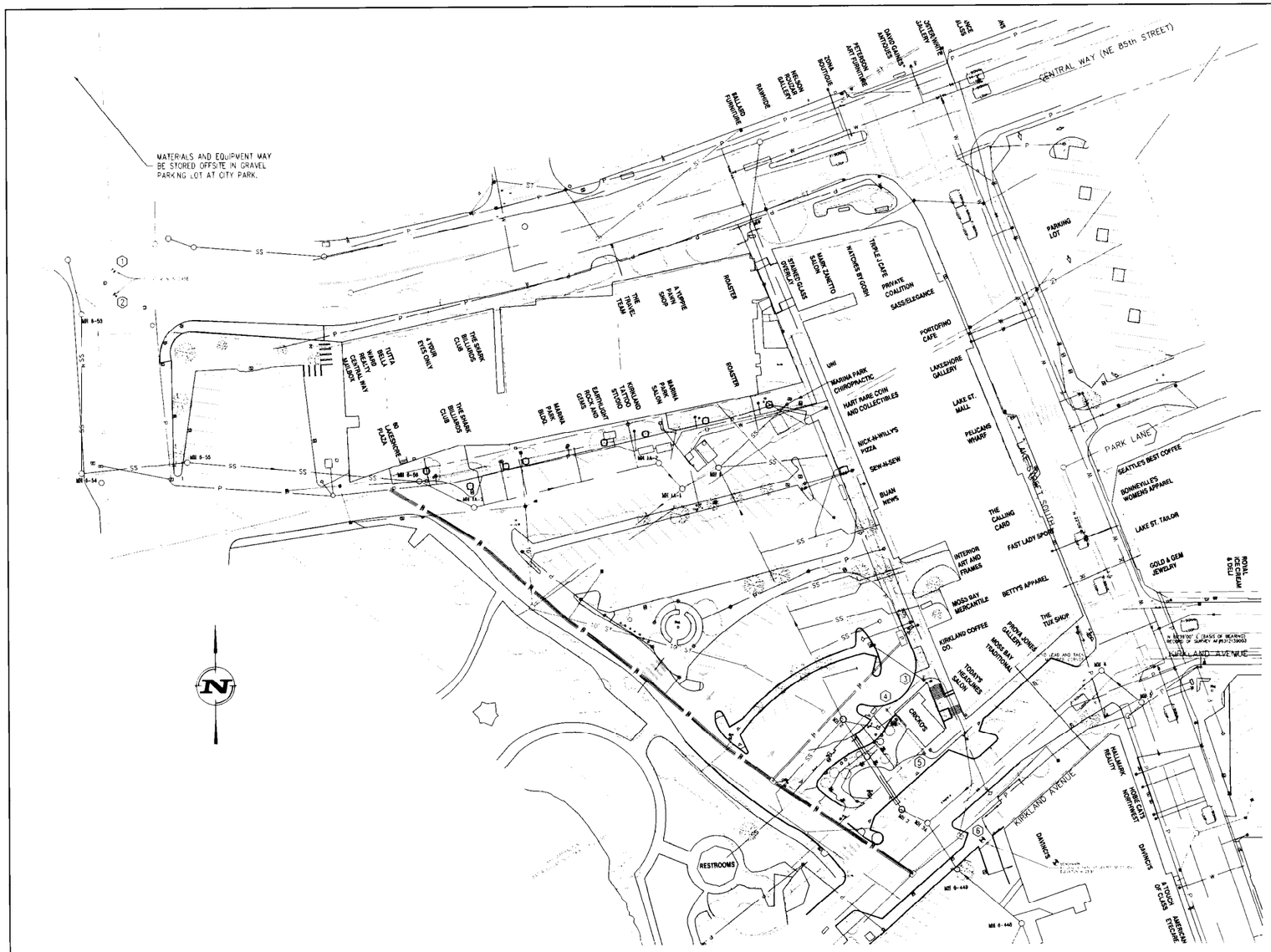
GENERAL INFORMATION

195.025	PLZ-D17	KMP	TVP	JUN 03, 1998	NONE	500	601	1 of 38

1570

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OVERALL EXISTING SITE AND UTILITY PLAN

1" = 40'

SURVEY CONTROL

POINT	NORTHING	EASTING	ELEVATION	DESCRIPTION
1	249,766.78	1,661,281.20		MONUMENT
2	249,749.03	1,661,282.21		MONUMENT
3	249,475.36	1,661,857.44		LEAD AND TACK – PROPERTY CORNER
4	249,451.97	1,661,831.11		LEAD AND TACK – PROPERTY CORNER
5	249,423.52	1,661,856.30		LEAD AND TACK – PROPERTY CORNER
6	249,356.96	1,661,902.62	25.51'	LEAD AND TACK

NO.	REVISION	BY	CK'D BY	DATE
2	CONSTRUCTION RECORDS	JMP	TVP	1/30/98

RH2 ENGINEERING, INC.
ENGINEERS PLANNERS SCIENTISTS
REDMOND OFFICE
WENATCHEE OFFICE

RICHARD H. HARDER — STATE OF WASHINGTON — REGISTERED PROFESSIONAL ENGINEER
SIGNED 09/25/96
EXPIRES 5/2/98

City of Kirkland
Lake Plaza Lift Station Replacement

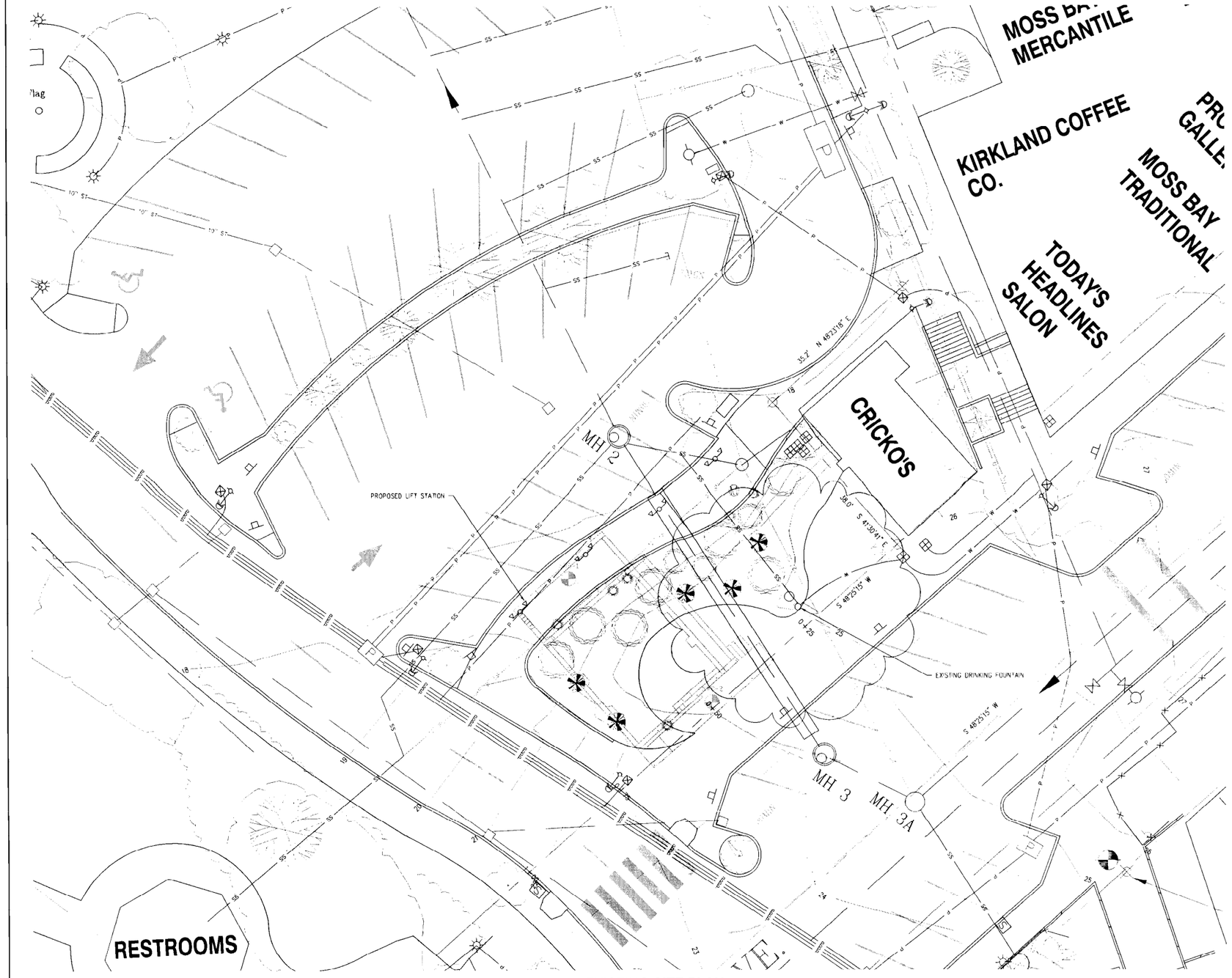
OVERALL EXISTING SITE AND UTILITY PLAN

195.025.01	PLZ-001	SLR	TVP	JAN 30, 1998	SHOWN	40	C01	2 of 38

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1570



EXISTING SITE PLAN
1"=10'

LEGEND

- WATER MAIN
- SANITARY SEWER
- ABANDONED SANITARY SEWER
- SANITARY SEWER, TO BE ABANDONED
- STORM SEWER
- GAS MAIN
- POWER
- TELEPHONE
- RIGHT OF WAY LINE
- RIGHT OF WAY CENTERLINE
- PROPERTY LINE
- MANHOLE
- CLEANOUT
- CATCH BASIN
- WATER VALVE
- WATER METER
- FIRE HYDRANT
- GAS VALVE
- TELEPHONE VAULT
- POWER VAULT
- GUY WIRE
- POWER POLE
- TRAFFIC SIGNAL BOX
- TRAFFIC SIGNAL POLE
- PEDESTRIAN PUSHBUTTON POLE
- JUNCTION BOX
- LIGHT POLE
- PARKING METER
- DOUBLE SIGN
- SINGLE SIGN
- MAILBOX
- ROCKERY
- SOIL BORING
- MONUMENT IN CASE
- LEAD AND TACK
- SHRUBS AND TREES
- LANDSCAPED AREA
- BUILDING
- CONCRETE SIDEWALK
- PAVEMENT
- EXISTING CONTOURS

NOTE: OWNER WILL REMOVE EXISTING LANDSCAPING IN LOCATION OF PROPOSED LIFT STATION PRIOR TO CONSTRUCTION

SEE DWG NO. C06 FOR CONSTRUCTION LIMITS

STATION DEFINITION

STATIONING ORIGIN: PROPERTY CORNER, POINT 5, DWG NO. C01
STATIONING BEARING: ALONG PROPERTY LINE, S 48°25'15" W

NO	REVISION	BY	APVD	DATE
1	CONSTRUCTION RECORDS	KMP	TVP	1/30/98

RH2 ENGINEERING, INC.
ENGINEERS PLANNERS SCIENTISTS
REDMOND OFFICE
WENATCHEE OFFICE

RICHARD H. HENDRICKSON — STATE OF WASHINGTON — 16725 — REGISTERED PROFESSIONAL ENGINEER
SIGNED 09/25/96
EXPIRES 6/2/98

City of Kirkland
Lake Plaza Lift Station Replacement

EXISTING SITE PLAN

195.025.01	PLZ-D05	SLR	TVP	JAN 30, 1998	S-OWN	10	C02	3 of 38

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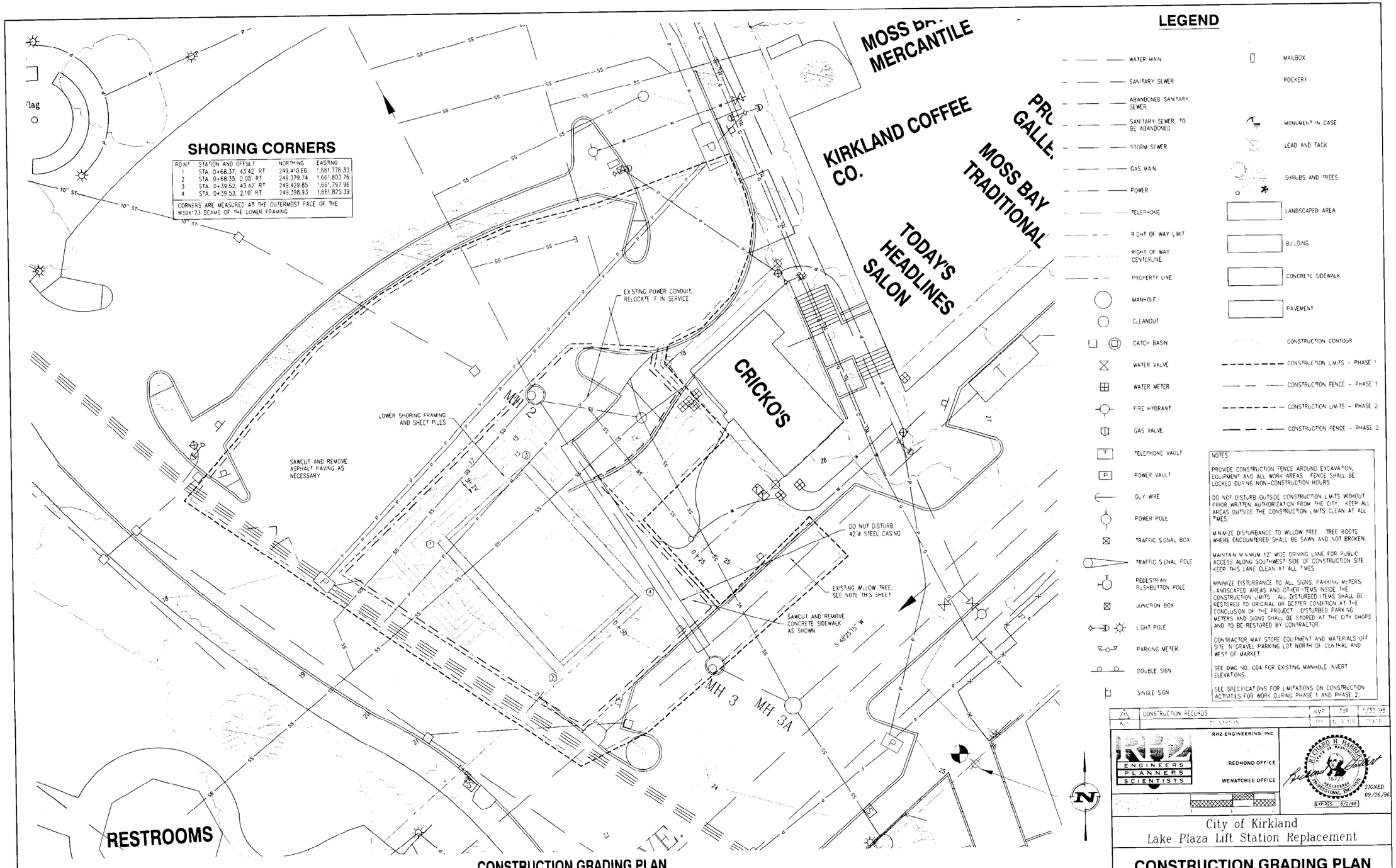
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SHORING CORNERS

POINT	STATION AND OFFSET	NORTHING	EASTING
1	STA. 0+68.37, 43.42' RT	249,410.66	1,661,776.33
2	STA. 0+68.35, 2.08' RT	249,379.74	1,661,803.76
3	STA. 0+39.52, 43.42' RT	249,429.85	1,661,797.96
4	STA. 0+39.53, 2.10' RT	249,398.93	1,661,825.39

CORNERS ARE MEASURED AT THE OUTERMOST FACE OF THE W30X173 BEAMS OF THE LOWER FRAMING.



CONSTRUCTION GRADING PLAN

1"=10'

LEGEND

- WATER MAIN
- SANITARY SEWER
- ABANDONED SANITARY SEWER
- SANITARY SEWER, TO BE ABANDONED
- STORM SEWER
- GAS MAIN
- POWER
- TELEPHONE
- RIGHT OF WAY LIMIT
- RIGHT OF WAY CENTERLINE
- PROPERTY LINE
- MANHOLE
- CLEANOUT
- CATCH BASIN
- WATER VALVE
- WATER METER
- FIRE HYDRANT
- GAS VALVE
- TELEPHONE VAULT
- POWER VAULT
- GUY WIRE
- POWER POLE
- TRAFFIC SIGNAL BOX
- TRAFFIC SIGNAL POLE
- PEDESTRIAN PUSHBUTTON POLE
- JUNCTION BOX
- LIGHT POLE
- PARKING METER
- DOUBLE SIGN
- SINGLE SIGN
- MAILBOX
- ROCKERY
- MONUMENT IN CASE
- LEAD AND TACK
- SHRUBS AND TREES
- LANDSCAPED AREA
- BUILDING
- CONCRETE SIDEWALK
- PAVEMENT
- CONSTRUCTION CONTOUR
- CONSTRUCTION LIMITS - PHASE 1
- CONSTRUCTION FENCE - PHASE 1
- CONSTRUCTION LIMITS - PHASE 2
- CONSTRUCTION FENCE - PHASE 2

NOTES:

PROVIDE CONSTRUCTION FENCE AROUND EXCAVATION, EQUIPMENT AND ALL WORK AREAS. FENCE SHALL BE LOCKED DURING NON-CONSTRUCTION HOURS.

DO NOT DISTURB OUTSIDE CONSTRUCTION LIMITS WITHOUT PRIOR WRITTEN AUTHORIZATION FROM THE CITY. KEEP ALL AREAS OUTSIDE THE CONSTRUCTION LIMITS CLEAN AT ALL TIMES.

MINIMIZE DISTURBANCE TO WILLOW TREE. TREE ROOTS WHERE ENCOUNTERED SHALL BE SAWN AND NOT BROKEN.

MAINTAIN MINIMUM 12' WIDE DRIVING LANE FOR PUBLIC ACCESS ALONG SOUTHWEST SIDE OF CONSTRUCTION SITE. KEEP THIS LANE CLEAN AT ALL TIMES.

MINIMIZE DISTURBANCE TO ALL SIGNS, PARKING METERS, LANDSCAPED AREAS AND OTHER ITEMS INSIDE THE CONSTRUCTION LIMITS. ALL DISTURBED ITEMS SHALL BE RESTORED TO ORIGINAL OR BETTER CONDITION AT THE CONCLUSION OF THE PROJECT. DISTURBED PARKING METERS AND SIGNS SHALL BE STORED AT THE CITY SHOPS AND TO BE RESTORED BY CONTRACTOR.

CONTRACTOR MAY STORE EQUIPMENT AND MATERIALS OFF SITE IN GRAVEL PARKING LOT NORTH OF CENTRAL AND WEST OF MARKET.

SEE DWG NO. C04 FOR EXISTING MANHOLE INVERT ELEVATIONS.

SEE SPECIFICATIONS FOR LIMITATIONS ON CONSTRUCTION ACTIVITIES FOR WORK DURING PHASE 1 AND PHASE 2.

NO.		BY	CHK	DATE
1	CONSTRUCTION RECORDS	KVP	TVP	1/30/98

RH2 ENGINEERING, INC.
ENGINEERS PLANNERS SCIENTISTS
REDMOND OFFICE
WENATCHEE OFFICE

RICHARD H. HARDEN, STATE OF WASHINGTON, 19727, REGISTERED PROFESSIONAL ENGINEER
SIGNED 09/26/96
EXPIRES 8/2/98

City of Kirkland
Lake Plaza Lift Station Replacement

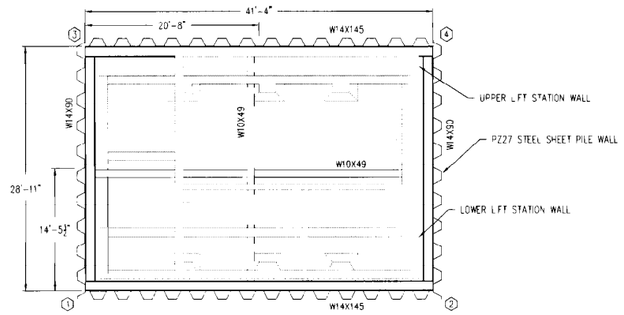
CONSTRUCTION GRADING PLAN

195.025.01	PLZ-014	TVP	TVP	JAN 30, 1998	SHOWN	10	C06	4 of 39

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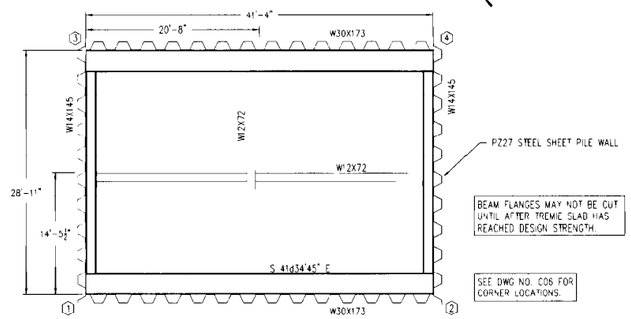
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UPPER FRAMING PLAN

1" = 8'-0"

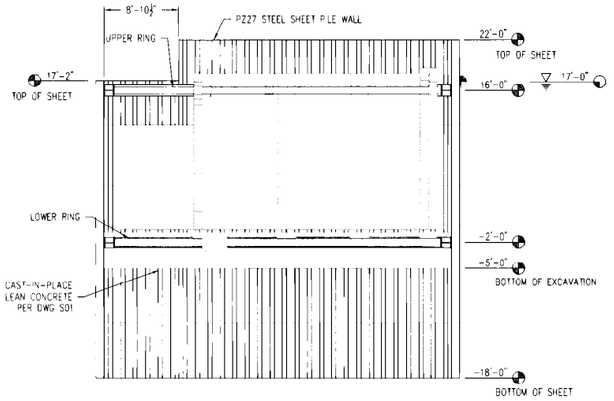


LOWER FRAMING PLAN

1" = 8'-0"

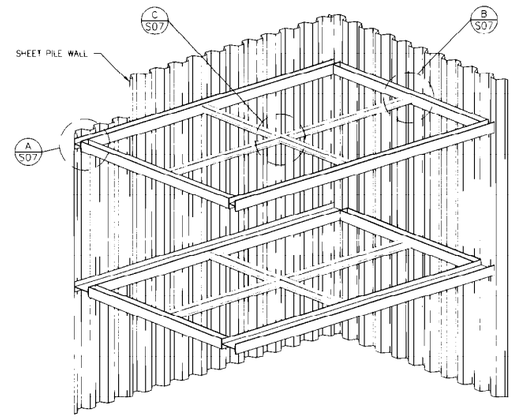
SHORING GENERAL NOTES

1. SHEET PILE SHALL BE PZ27 OR EQUIVALENT, ASTM A328, Fy = 38.5 KSI.
2. ALL INTERNAL BRACING MEMBERS, INCLUDING PLATES, SHALL BE ASTM A572-50.
3. THE GENERAL PROCEDURE FOR SHEET PILE INSTALLATION SHALL BE AS FOLLOWS:
   - INSTALL SHEET PILE TO DEPTH INDICATED IN THE SHORING ELEVATION.
   - EXCAVATE TO AN ELEVATION OF +19'.
   - DROP IN LOWER RING FRAME.
   - EXCAVATE TO AN ELEVATION OF +15'.
   - DROP IN UPPER RING FRAME - SECURE AT ELEVATION + 16'.
   - CONTINUE EXCAVATION TO ELEVATION -2.0' - THE LOWER RING FRAME SHALL BE DROPPED AS EXCAVATION PROCEEDS.
   - SECURE THE LOWER RING FRAME AT ELEVATION -2.0'.
   - CONTINUE EXCAVATION TO AN ELEVATION OF -5.0'.
4. ALL FRAME WHALER BEAMS SHALL BE SHIMMED TIGHT TO THE SHEET PILE AFTER SECURING AT THE PROPER ELEVATION.
5. UPPER FRAMING MEMBERS AND SHEET PILES SHALL BE REMOVED AFTER ALL FLOORS, WALLS, ROOFS HAVE BEEN CONSTRUCTED AND REACHED DESIGN STRENGTH.



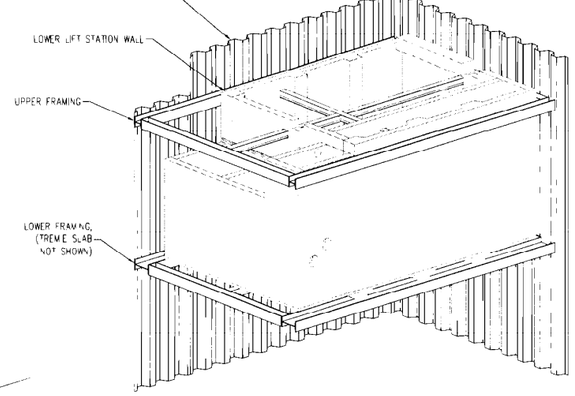
SHORING ELEVATION

1" = 8'-0"



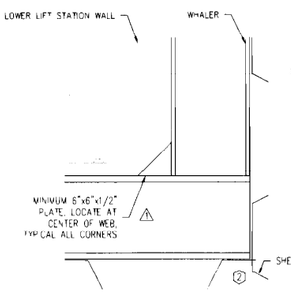
SHORING OBLIQUE

NOT TO SCALE



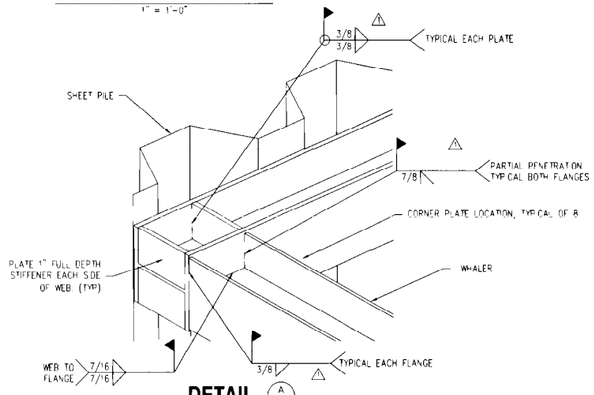
SHORING WITH LIFT STATION OBLIQUE

NOT TO SCALE



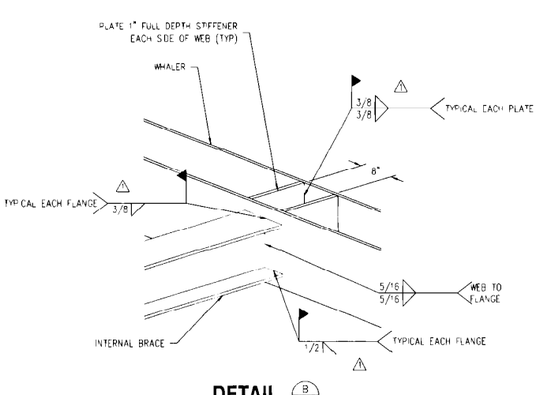
CORNER PLATE DETAIL

1" = 1'-0"



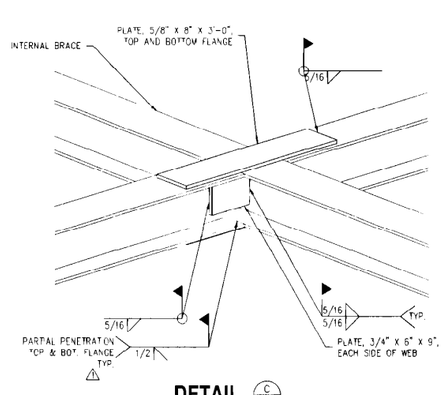
DETAIL A S07

NOT TO SCALE



DETAIL B S07

NOT TO SCALE



DETAIL C S07

NOT TO SCALE

2	CONSTRUCTION RECORDS	KMP	TVP	1/30/98
1	CONTRACTOR REQUESTED CHANGE	DLT	TVP	9/28/97
No.	REVISION	BY	APP'D	DATE

RH2 ENGINEERING INC

ENGINEERS PLANNERS SCIENTISTS

REDMOND OFFICE

WENATCHEE OFFICE

RICHARD H. HARRIS — STATE OF WASHINGTON — 16057 — REGISTERED PROFESSIONAL ENGINEER

SIGNED 05/26/98

EXPIRES 8/2/98

City of Kirkland

Lake Plaza Lift Station Replacement

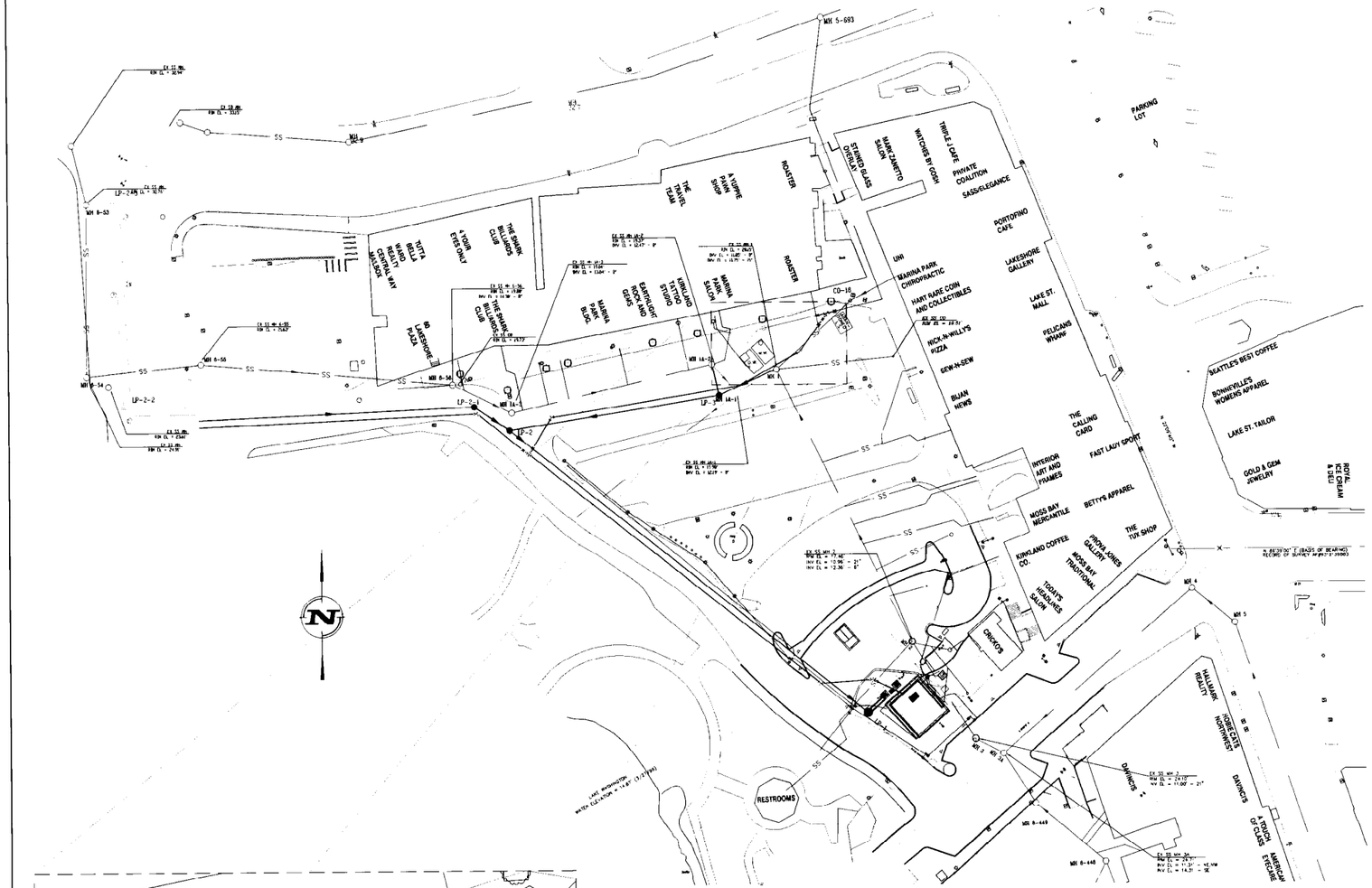
SHORING PLAN AND DETAILS

195.025.01	PLZ-A02	TVP	DRE	JUN. 01, 1998	SHOWN	96	S07	5 of 38

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PROPOSED SANITARY SEWER SITE PLAN

1" = 40'

NOTE: ONLY EXISTING AND PROPOSED SANITARY SEWER UTILITIES ARE SHOWN. SEE DWG NOs. C04 AND C05 FOR OTHER UTILITIES.

LEGEND

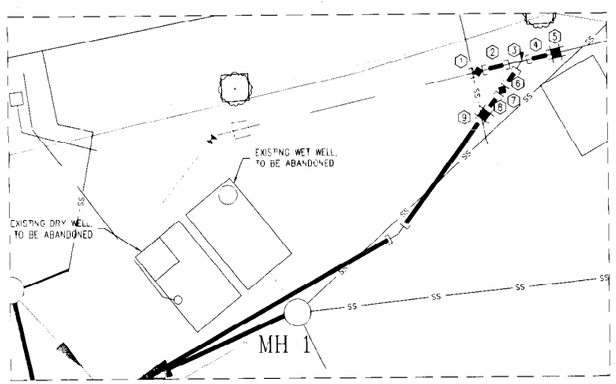
EXISTING

- SANITARY SEWER, DO NOT DISTURB
- ABANDONED SANITARY SEWER
- SANITARY SEWER TO BE ABANDONED
- MAILBOX
- ROCKERY
- MONUMENT BRASS PIN
- RIGHT-OF-WAY
- RIGHT-OF-WAY CENTERLINE
- PROPERTY LINE
- SEWER MANHOLE
- LANDSCAPE AREA
- BUILDING
- CONCRETE SIDEWALK

PROPOSED

- SEWER FORCEMAIN
- SEWER GRAVITY
- LP- XX
- SEWER MANHOLE
- ABOVE GRADE AREA
- BELOW GRADE OUTLINE
- CONCRETE SIDEWALK
- ACCESS HATCH

- POWER BOX
- LIGHT POLE
- PARKING METER
- SIGN
- SIGN POST



PROPOSED SANITARY FORCEMAIN CONNECTION DETAIL

1" = 10'

FORCEMAIN CONNECTION

(7) (1) 8" DI ECCENTRIC VALVE (MJxMJ)

(8) (6) (4) (2) 8" DI PIPE, LENGTH TO FIT

(9) (5) 8" DI TRANSITION COUPLING

(3) 8" DI WYE WITH CONCRETE BLOCKING

PROVIDE TEMPORARY PUMPING CAPABILITIES DURING INSTALLATION OF CONNECTION. ASSEMBLE PARTS 1,2,3,4,6 AND 7 PRIOR TO CUTTING EXISTING PIPE. CUT EXISTING PIPE AND INSTALL ASSEMBLED FITTINGS. INSTALL COUPLING(5) TO RESTORE OPERATION OF EXISTING LIFT STATION. KEEP VALVE(7) ON BRANCH OF WYE CLOSED UNTIL PROPOSED LIFT STATION TESTING.

DEMOLITION NOTES

CONTRACTOR SHALL REMOVE AND DISPOSE OF ALL ASSOCIATED LIFT STATION HARDWARE, EXCEPT THAT THE TELEMETRY, ELECTRICAL, MECHANICAL, FORCE MAIN BYPASS MECHANICAL ASSEMBLY, POP UP LADDER EXTENSION, AND WATER SERVICE HARDWARE SHALL BE PROTECTED FROM DAMAGE DURING REMOVAL, CLEANED, DELIVERED AND STORED AT THE CITY OF KIRKLAND SHOPS.

CONTRACTOR SHALL CONTRACT WITH PUGET POWER TO DISCONNECT THE POWER.

CONTRACTOR SHALL REMOVE TWO LIFT STATION VENTS AND SEAL LINES AT BOTH ENDS WITH CONCRETE PLUGS.

THE VAULTS SHALL BE REMOVED TO A MINIMUM DEPTH OF 24" BELOW FINAL SURFACE ELEVATION.

FOLLOWING THE ABANDONMENT OF THE LIFT STATION, THE WET AND DRY WELLS SHALL BE BACK-FILLED WITH CONTROL DENSITY FILL AND THE PAVEMENT RESTORED.

NO.	REVISIONS	BY	APP'D	DATE
1	CONSTRUCTION RECORDS	KMP	TVP	1/30/98

RICHARD H. BADER — STATE OF WASHINGTON — 16251 — REGISTERED PROFESSIONAL ENGINEER

SIGNED 03/26/96

EXPIRES 8/2/99

City of Kirkland

Lake Plaza Lift Station Replacement

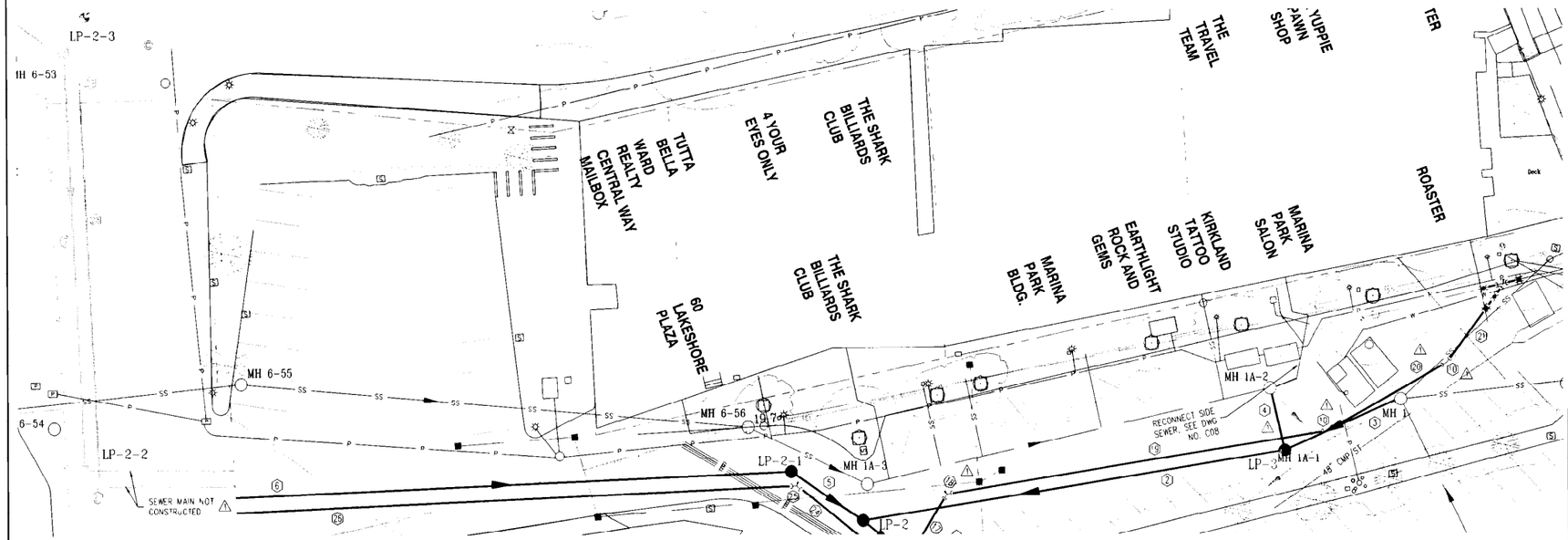
PROPOSED SANITARY SEWER PLAN AND DEMOLITION PLAN

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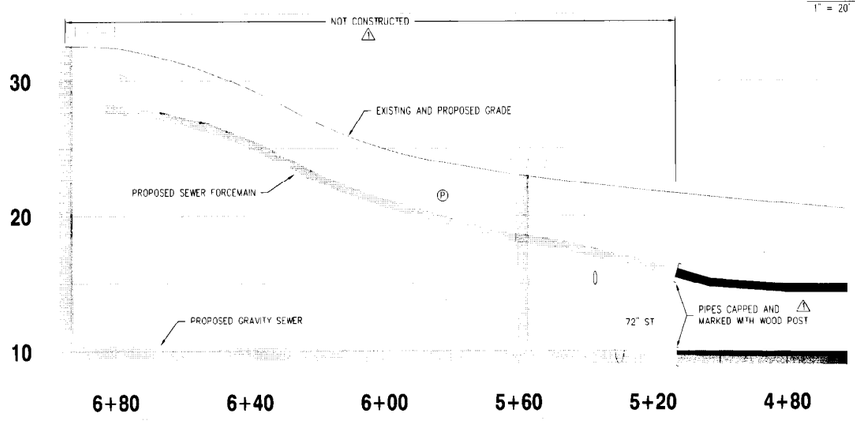
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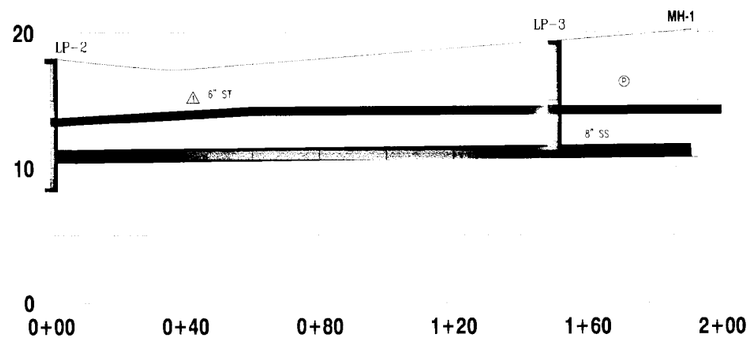
1570



PLAN
1" = 20'



PROFILE VIEW
VERT. 1" = 5' HORIZ. 1" = 20'



PROFILE VIEW
VERT. 1" = 5' HORIZ. 1" = 20'

EXISTING MANHOLE DATA

MH NO	I.E. IN	I.E. OUT	RIM
EX. MH 6-53	15.61 12" N	15.61 12" S	32.78
EX. MH 6-54	15.24 12" N	15.24 12" E	24.91
EX. MH 6-55	15.05 12" E	15.05 12" W	–
EX. MH 6-56	14.89 12" W 15.35 6" NW	14.83 8" SE	21.13
MH 1A-3	13.70 8" E	13.70 8" E	18.9
MH 1A-2	12.25 8" W	12.25 8" SE	19.85
MH 1A-1	11.91 8" NW	11.91 8" NE (OVERFLOW)	19.51
MH 1	10.74 21" S 11.60 8" SW 11.84 8" NE	10.74 21" N	
C016	14.23 6" NE	14.23 6" SW	
MH 2	10.96 21" SE	10.96 21" NW	17.46
MH 3	11.00 21" SE	11.00 21" NW	24.10
MH 3A	11.31 21" NE 14.31 12" SE (DROP CONNECTION) 11.63 12" SE	11.31 21" NW	24.71
EX. MH 448	15.56 6" SW (CITY OF KIRKLAND DATA) 15.11 12" S (CITY OF KIRKLAND DATA)	15.01 12" NW (CITY OF KIRKLAND DATA)	19.762 (CT SURVEY 8/4/92)
EX. MH 449	14.63 12" SE (CITY OF KIRKLAND DATA)	14.53 12" N (CITY OF KIRKLAND DATA)	19.833 (CT SURVEY 8/4/92)
MH 4	11.16 21" SE	11.16 21" NW	28.66
MH 5	11.24 21" NW	11.24 21" SE	30.14

LEGEND

EXISTING

- WATERMAIN
- SEWER PIPE
- ABANDONED SANITARY SEWER
- SEWER PIPE, TO BE ABANDONED
- STORM PIPE
- GAS LINE
- POWER LINE (UNDERGROUND)
- TELEPHONE LINE (UNDERGROUND)
- RIGHT-OF-WAY
- RIGHT-OF-WAY CENTERLINE
- PROPERTY LINE
- SEWER MANHOLE
- STORM CB & MANHOLE
- WATER VALVE
- WATER METER
- FIRE HYDRANT
- GAS VALVE
- TELEPHONE VAULT
- POWER VAULT
- UTILITY POLE ANCHOR
- UTILITY POLE
- TRAFFIC SIGNAL BOX
- TRAFFIC SIGNAL POLE
- PEDESTRIAN SIGNAL POLE
- POWER BOX
- LIGHT POLE
- PARKING METER
- SIGN
- SIGN POST
- MAILBOX
- ROCKERY
- MONUMENT
- BRASS PIN
- TREES & SHRUBS
- LANDSCAPE AREA
- BUILDING
- CONCRETE SIDEWALK
- PAVEMENT

PROPOSED

- SEWER FORCEMAIN
- SEWER GRAVITY
- STORM PIPE
- SEWER MANHOLE
- CONDUIT (3" PVC)
- ABOVE GRADE AREA
- BELOW GRADE OUTLINE
- CONCRETE SIDEWALK
- ACCESS HATCH

FORCE MAIN SEWER IMPROVEMENTS

PROPOSED FORCEMAIN PIPE AND FITTINGS:			
PIPE/FITTINGS ID NO.	DIAMETER	MATERIAL	LENGTH/FITTING TYPE
⑩	8"	DI	(1) 22 1/2° BEND (MJxMJ) WITH CONC. BLOCKING
⑪	8"	DI	35 LF
⑫	8"	DI	(1) 45° BEND (MJxMJ) WITH CONC. BLOCKING
⑬	8"	DI	244 LF
⑭	8"	DI	(1) TEE (MJxMJxMJ) WITH CONC. BLOCKING
⑮	8"	DI	LENGTH TO FIT
⑯	8"	DI	(1) ECCENTRIC VALVE (MJxMJ)
⚠ ⑰	8"	DI	23 LF
⑱	8"	DI	(1) 45° BEND (MJxMJ) WITH CONC. BLOCKING
⚠ ⑲	8"	DI	126 LF
⚠ ⑳	8"	DI	45 LF

PROPOSED FORCEMAIN PIPE AND FITTINGS:			
PIPE/FITTINGS ID NO.	DIAMETER	MATERIAL	LENGTH/FITTING TYPE
⚠ ㉑	8"	DI	22 LF SEE DWG NO. C03 FOR CONNECTION TO EXISTING FORCE MAIN
㉒	8"	D	LENGTH TO FIT
㉓	8"	DI	(1) ECCENTRIC VALVE (MJxMJ)
㉔	8"	DI	39 LF
㉕	8"	DI	(1) 45° BEND (MJxMJ) WITH CONC. BLOCKING
㉖	8"	DI	228 LF
⚠ ~~㉗~~	~~8"~~	~~DI~~	~~(1) 90° BEND (MJxMJ) WITH CONC. BLOCKING~~
⚠ ~~㉘~~	~~8"~~	~~DI~~	~~129 LF~~
⚠ ~~㉙~~	~~8"~~	~~DI~~	~~CAP WITH CONC. BLOCKING~~

GRAVITY SEWER IMPROVEMENTS

PROPOSED MANHOLE LOCATION TABLE:			
MH NO.	NORTHING	EASTING	STATION & OFFSET
LP-1	249398.74	1661770.81	STA. 0+00, 0.0' RT.
LP-2	249585.27	1661535.89	STA. 3+00.0, 0.0' RT.
⚠ LP-3	249607.71	1661673.81	
LP-2-1	249601.15	1661512.51	STA. 3+28.2, 0.0' RT.
~~⚠ LP-2-2~~	~~249602.07~~	~~1661281.93~~	~~STA. 5+88.8, 0.0' RT.~~
⚠ LP-2-3	249737.84	1661275.43	STA. 6+94.7, 0.0' RT.

EXISTING MANHOLE MODIFICATIONS				
MH NO.	SIZE	DEPTH (APPROX)	I.E. N (APPROX)	I.E. OUT (APPROX)
MH 1 MH 1A-2				10.74 15" W 12.25 8" S

PROPOSED PIPE TABLE:				
PIPE ID NO.	DIAMETER	MATERIAL	LENGTH	SLOPE
①	15"	PVC	300	0.220%
⚠ ②	15"	PVC	140	0.220%
⚠ ③	15"	PVC	40	0.220%
⚠ ④	8"	PVC	21	
⑤	12"	PVC	28	0.220%
⚠ ⑥	12"	PVC	182	0.220%
⚠ ⑦	~~12"~~	~~PVC~~	~~136~~	~~0.220%~~
⚠ ⑧	~~SIDE SEWER PER CITY STANDARD PLANS~~ ~~ROUTE FROM NEW RESTROOM BY OTHERS~~			

NOTE: GROUND PROFILE AND EXISTING UTILITIES ARE ALONG GRAVITY SEWER. CONTRACTOR IS RESPONSIBLE FOR DETERMINING ACTUAL GROUND PROFILE AND UTILITY CROSSING AT FORCE MAIN

PROPOSED MANHOLE ELEVATION TABLE:				
MH NO.	SIZE	DEPTH (APPROX)	I.E. N (APPROX)	I.E. OUT (APPROX)
LFT STATION			5.83 15" SW	
LP-1	72"	15.4'	7.61 15" NW	5.86 15" NE
LP-2	54"	9.7'	10.24 15" E 8.37 12" NW	8.27 15" SE
LP-3	48"	9.0'	10.65 15" E 10.65 8" N	10.55 15" W
LP-2-1	48"	10.1'	8.53 12" W	8.43 12" SE
⚠ ~~LP-2-2~~	~~48"~~	~~14.6'~~	~~9.14 12" N~~	~~9.04 12" E~~
⚠ ~~LP-2-3~~	~~48"~~	~~23.1'~~		~~9.44 12" S~~

NOTE: SET RIM ON PROPOSED MANHOLES FLUSH WITH FINAL GRADE.

NO.	REVISION	BY	REVIEW	DATE
⚠	CONSTRUCTION RECORDS	KMP	TVP	1/30/98

RH2 ENGINEERING INC.
ENGINEERS PLANNERS SCIENTISTS
REDMOND OFFICE
WENATCHEE OFFICE

REGISTERED PROFESSIONAL ENGINEER — STATE OF WASHINGTON — RICHARD H. FREDERICK — 16123 — REGISTERED PROFESSIONAL ENGINEER
SIGNED 09/26/96
EXPIRES 9/27/98

City of Kirkland
Lake Plaza Lift Station Replacement

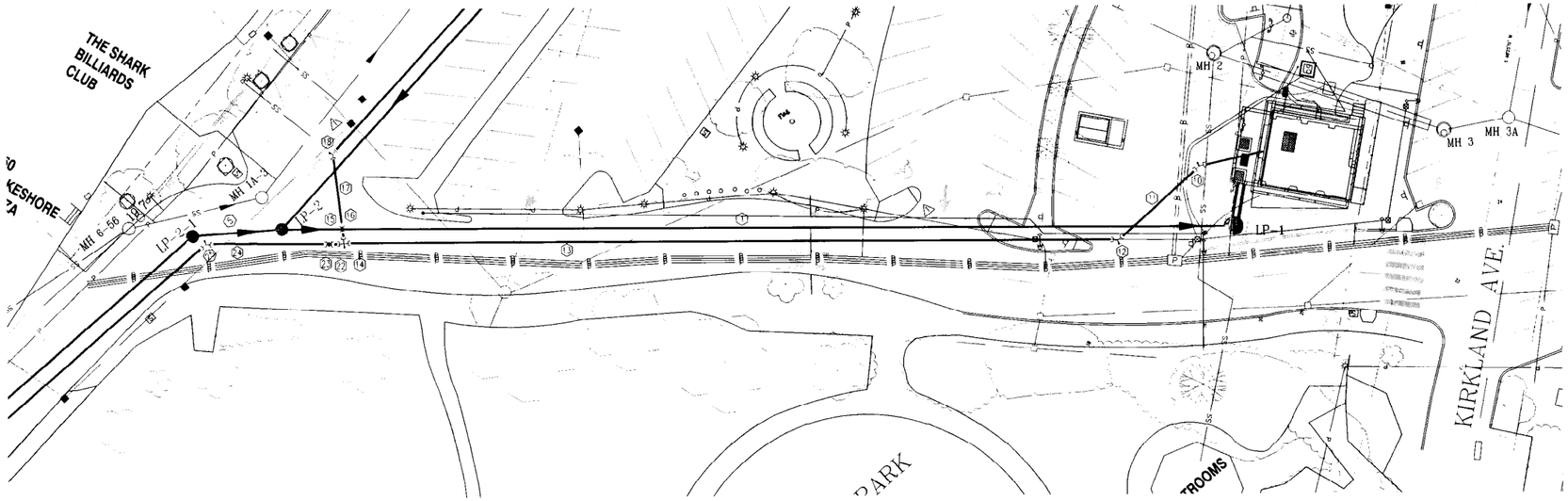
PROPOSED SANITARY SEWER PLAN & PROFILE 1

105.025.02	PLZ-09	LLT	TVP	JAN. 01, 1998	SHOWN	20	C04	7 of 38

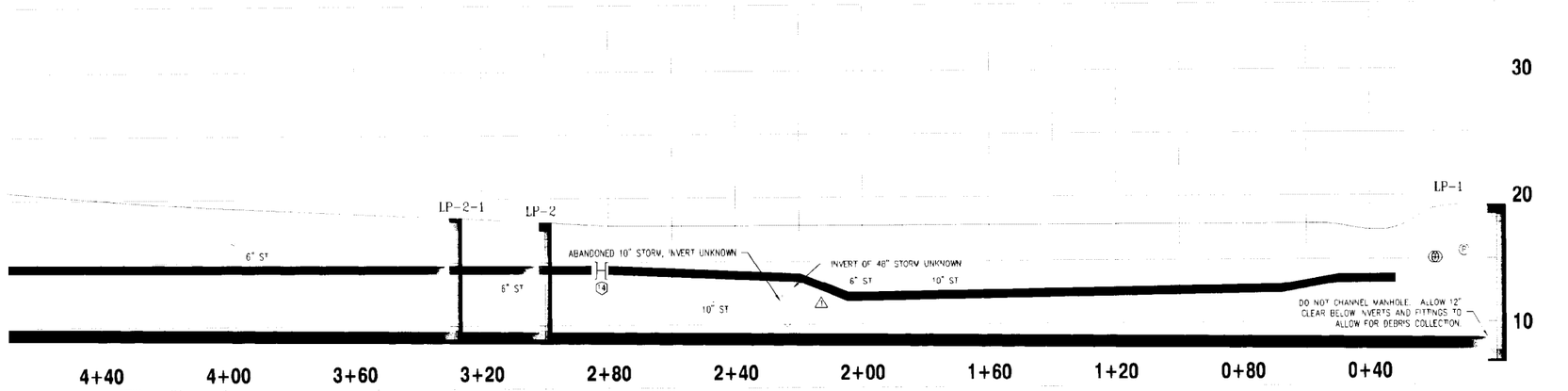
1570

9/39

1570



PLAN
1" = 20'



PROFILE VIEW
VERT. 1" = 5' - HORZ. 1" = 20'

EXISTING MANHOLE DATA

MH NO.	I.E. IN	I.E. OUT	RIM
EX. MH 6-53	15.61' 12" N	15.61' 12" S	32.76
EX. MH 6-54	15.24' 12" N	15.24' 12" E	24.91
EX. MH 6-55	15.05' 12" W	15.05' 12" E	–
EX. MH 6-56	14.89' 12" W 15.35' 6" NW	14.83' 8" SE	21.13
MH 1A-3	13.70' 8" NW	13.70' 8" E	18.9
MH 1A-2	12.25' 8" W	12.25' 8" SE	19.85
MH 1A-1	11.91' 8" NW	11.91' 8" NE (OVERFLOW)	19.51
MH 1	10.74' 21" S 11.60' 6" SW 11.84' 6" NE	10.74' 21" N	
CO16	14.23' 6" NE	14.23' 8" SW	
MH 2	10.96' 21" SE	10.96' 21" NW	17.46
MH 3	11.00' 21" SE	11.00' 21" NW	24.10
MH 3A	11.31' 21" NE 14.31' 12" SE (DROP CONNECTION) 11.63' 12" SE	11.31' 21" NW	24.71
EX. MH 448	15.56' 6" SW (CITY OF KIRKLAND DATA) 15.11' 12" S (CITY OF KIRKLAND DATA)	15.01' 12" NW (CITY OF KIRKLAND DATA)	19.762 (CT SURVEY 8/4/92)
EX. MH 449	14.63' 12" SE (CITY OF KIRKLAND DATA)	14.53' 12" N (CITY OF KIRKLAND DATA)	19.833 (CT SURVEY 8/4/92)
MH 4	11.16' 21" SE	11.16' 21" NW	28.66
MH 5	11.24' 21" NW	11.24' 21" SE	30.14

LEGEND

EXISTING

- WATERMAIN
- SEWER PIPE
- ABANDONED SANITARY SEWER
- SEWER PIPE, TO BE ABANDONED
- STORM PIPE
- GAS LINE
- POWER LINE (UNDERGROUND)
- TELEPHONE LINE (UNDERGROUND)
- RIGHT-OF-WAY
- RIGHT-OF-WAY CENTERLINE
- PROPERTY LINE
- SEWER MANHOLE
- STORM CB & MANHOLE
- WATER VALVE
- WATER METER
- FIRE HYDRANT
- GAS VALVE
- TELEPHONE VAULT
- POWER VAULT
- UTILITY POLE ANCHOR
- UTILITY POLE
- TRAFFIC SIGNAL BOX
- TRAFFIC SIGNAL POLE
- PEDESTRIAN SIGNAL POLE
- POWER BOX
- LIGHT POLE
- PARKING METER
- SIGN
- SIGN POST
- MAILBOX
- ROCKERY
- MONUMENT
- BRASS PIN
- TREES & SHRUBS
- LANDSCAPE AREA
- BUILDING
- CONCRETE SIDEWALK
- PAVEMENT

PROPOSED

- SEWER FORCEMAIN
- SEWER GRAVITY
- STORM PIPE
- SEWER MANHOLE
- CONDUIT (3" PVC)
- ABOVE GRADE AREA
- BELOW GRADE OUTLINE
- CONCRETE SIDEWALK
- ACCESS HATCH

FORCE MAIN SEWER IMPROVEMENTS

PROPOSED FORCEMAIN PIPE AND FITTINGS:			
PIPE/FITTINGS ID NO.	DIAMETER	MATERIAL	LENGTH/FITTING TYPE
⑩	8"	DI	(1) 22 1/2° BEND (MJxMJ) WITH CONC. BLOCKING
⑪	8"	DI	35 LF
⑫	8"	DI	(1) 45° BEND (MJxMJ) WITH CONC. BLOCKING
⑬	8"	DI	244 LF
⑭	8"	DI	(1) TEE (MJxMJxMJ) WITH CONC. BLOCKING
⑮	8"	DI	LENGTH TO FIT
⑯	8"	DI	(1) ECCENTRIC VALVE (MJxMJ)
⚠ ⑰	8"	DI	23 LF
⑱	8"	DI	(1) 45° BEND (MJxMJ) WITH CONC. BLOCKING
⚠ ⑲	8"	DI	126 LF
⚠ ㉘	8"	DI	45 LF

PROPOSED FORCEMAIN PIPE AND FITTINGS:			
PIPE/FITTINGS ID NO.	DIAMETER	MATERIAL	LENGTH/FITTING TYPE
⚠ ㉑	8"	DI	22 LF SEE DWG NO. C03 FOR CONNECTION TO EXISTING FORCE MAIN
㉒	8"	DI	LENGTH TO FIT
㉓	8"	DI	(1) ECCENTRIC VALVE (MJxMJ)
㉔	8"	DI	39 LF
㉕	8"	DI	(1) 45° BEND (MJxMJ) WITH CONC. BLOCKING
㉖	8"	DI	228 LF
~~⚠ ㉗~~	~~8"~~	~~DI~~	~~(1) 90° BEND (MJxMJ) WITH CONC. BLOCKING~~
~~⚠ ㉘~~	~~8"~~	~~DI~~	~~129 LF~~
~~⚠ ㉙~~	~~8"~~	~~DI~~	~~CAP WITH CONC. BLOCKING~~

GRAVITY SEWER IMPROVEMENTS

PROPOSED MANHOLE LOCATION TABLE:			
MH NO.	NORTHING	EASTING	STATION & OFFSET
LP-1	249398.74	1661770.81	STA. 0+00.0, 0.0' RT.
LP-2	249585.27	1661535.89	STA. 3+00.0, 0.0' RT.
⚠ LP-3	249607.71	1661673.81	LENGTH TO FIT
LP-2-1	249601.15	1661512.51	STA. 3+28.2, 0.0' RT.
~~⚠ LP-2-2~~	~~249602.07~~	~~1661281.93~~	~~STA. 5+88.8, 0.0' RT.~~
~~⚠ LP-2-3~~	~~249737.84~~	~~1661275.43~~	~~STA. 6+94.7, 0.0' RT.~~

EXISTING MANHOLE MODIFICATIONS				
MH NO.	SIZE	DEPTH (APPROX)	I.E. IN (APPROX)	I.E. OUT (APPROX)
MH 1				10.74' 15" W
MH 1A-2				12.25' 8" S

PROPOSED PIPE TABLE:				
PIPE ID NO.	DIAMETER	MATERIAL	LENGTH	SLOPE
①	15"	PVC	300	0.220%
⚠ ②	15"	PVC	140	0.220%
⚠ ③	15"	PVC	40	0.220%
⚠ ④	8"	PVC	21	
⑤	12"	PVC	28	0.220%
⚠ ⑥	12"	PVC	182	0.220%
⚠ ⑦	12"	PVC	136	0.220%
⚠ ⑧	~~10L SEWER PER CITY STANDARD PLANS~~ ~~ROUTE FROM NEW RESTROOM BY OTHERS~~			

NOTE: GROUND PROFILE AND EXISTING UTILITIES ARE ALONG GRAVITY SEWER. CONTRACTOR IS RESPONSIBLE FOR DETERMINING ACTUAL GROUND PROFILE AND UTILITY CROSSING AT FORCE MAIN.

PROPOSED MANHOLE ELEVATION TABLE:				
MH NO.	SIZE	DEPTH (APPROX)	E. IN (APPROX)	I.E. OUT (APPROX)
LIFT STATION			5.83 16" SW	
LP-1	72"	15.4'	7.61 15" NW	5.86 15" NE
LP-2	54"	9.7'	10.24 15" E 8.37 12" NW	8.27 15" SE
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⚠ ~~LP-2-2~~	~~48"~~	~~14.0'~~	~~9.14 12" N~~	~~9.04 12" E~~
⚠ ~~LP-2-3~~	~~48"~~	~~23.1'~~		~~9.44 12" S~~

NOTE: SET RIM ON PROPOSED MANHOLES FLUSH WITH FINAL GRADE.

NO.	REVISION	BY	APPROVED	DATE
⚠	CONSTRUCTION RECORDS	KMP	TVP	7/30/98

RICHARD H. LAMBERT
STATE OF WASHINGTON
9727
REGISTERED PROFESSIONAL ENGINEER
SIGNED 09/26/96
EXPIRES 5/22/99

City of Kirkland
Lake Plaza Lift Station Replacement

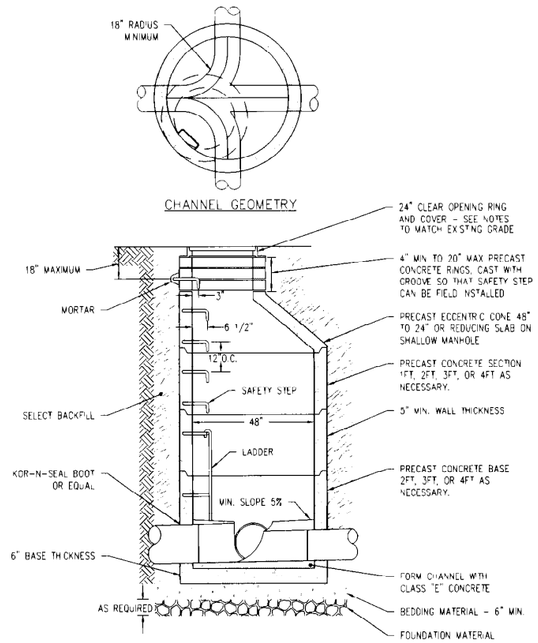
PROPOSED SANITARY SEWER PLAN & PROFILE 2

195.025.02	PLZ-09	LLT	TVP	DEC 02, 1998	SHOWN	20	C05	8 of 38

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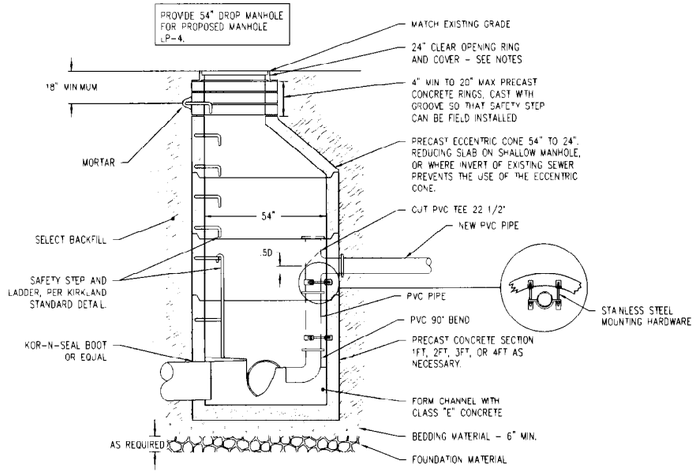
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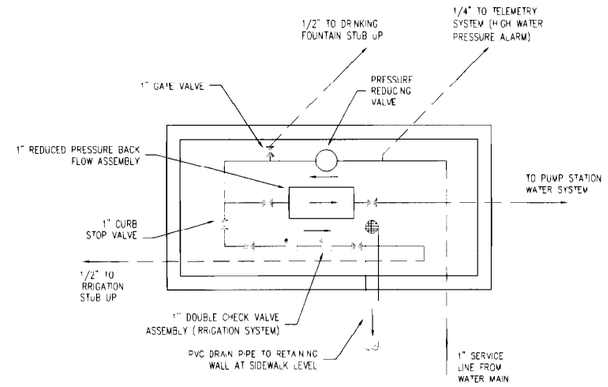
48" STANDARD MANHOLE DETAIL C/4

NOT TO SCALE



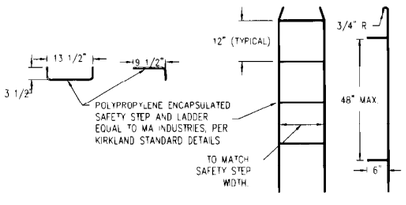
54" MANHOLE INTERNAL DROP CONNECTION DETAIL

NOT TO SCALE



1 **KIRKLAND LAKE PLAZA LIFT STATION WATER SYSTEM VALVE VAULT DETAIL**

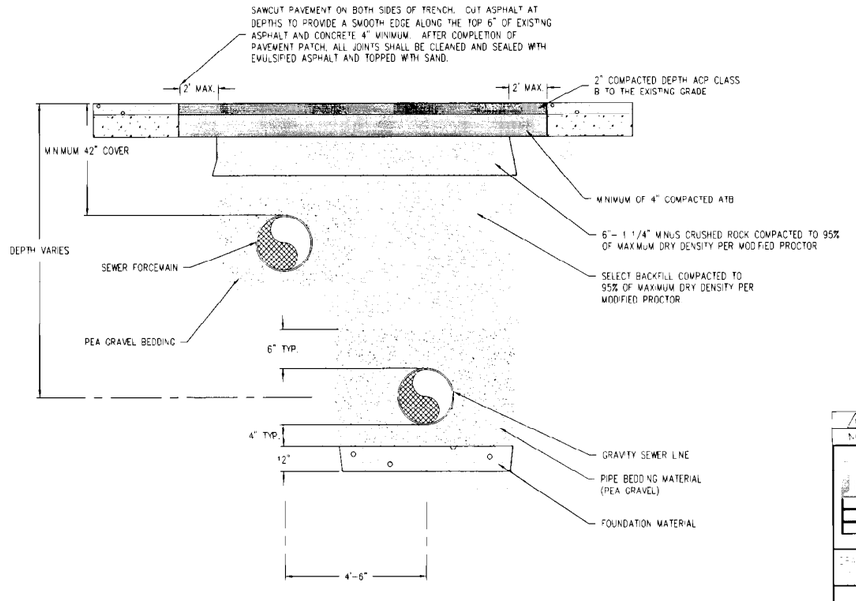
NOT TO SCALE



SAFETY STEP AND LADDER

MANHOLE GENERAL NOTES:

1. MANHOLE RING AND COVER SHALL HAVE 24" CLEAR OPENING AND BE EQUAL TO SATHER MANUFACTURING 6024-R LOCKING, WITH PICK-HOLE AND LOCKING LID. WORDING ON COVER SHALL BE "SEWER" IN 2" RAISED LETTERS.
2. MANHOLE SHOWN IS 48" INSIDE DIAMETER, 5" WALL THICKNESS. MAX. PIPE SIZE FOR THE 48" MANHOLE IS 21".
3. ALL HOLES FOR INLET AND OUTLET PIPE SHALL BE BLOCKED OUT WHEN SECTIONS ARE CAST.
4. ALL MANHOLE JOINTS SHALL USE A CONFINED ROUND GASKET MEETING ASTM C-443 SPECIFICATIONS.
5. ALL PIPE THROUGH NEW MANHOLE WALL SHALL HAVE A "KOR-N-SEAL" BOOT OR EQUAL. PIPE SHALL BE GROUTED INTO PLACE EACH SIDE.
6. MANHOLE STEPS AND LADDER SHALL BE POLYPROPYLENE ENCAPSULATED EQUAL TO MA INDUSTRIES, PER KIRKLAND STANDARD DETAILS (SEE SPECS.)
7. BEDDING AND FOUNDATION MATERIAL REQUIRED AS SHOWN ON DETAIL AND AS NOTED IN THE SPECIFICATIONS.
8. SEE CITY OF KIRKLAND STANDARD PLAN NO. CK-D.29 FOR FINISHED GRADE RESTORATION AT FRAME AND GRATE.



TYPICAL SEWER TRENCH SECTION

NOT TO SCALE

1	CONSTRUCTION RECORDS	KMP	TVP	1/30/98
NO.	REVISION	BY	APP'D	DATE

RICHARD H. HARDER — STATE OF WASHINGTON — 16525 — REGISTERED PROFESSIONAL ENGINEER

SIGNED 09/26/96

EXPIRES 8/7/99

City of Kirkland
Lake Plaza Lift Station Replacement

SANITARY SEWER DETAILS

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RELOCATE BUSH AS NECESSARY TO INSTALL VENTILATION POLE.

VENTILATION POLE, SEE VENTILATION DETAIL SHEET (DWG NO. M04) AND VENTILATION EXHAUST PLAN (DWG NO. M03) FOR DETAILS.

ODOR CONTROL VAULT, SEE VENTILATION EXHAUST PLAN (DWG NO. M03) AND VENTILATION DETAILS (DWG NO. M04).

3" CONDUIT (1)

PROPOSED SEWER PIPE, SEE PROPOSED SEWER PLAN, DWG NO. C04

DO NOT DISTURB TREES.

1" WATER METER

1" WATER SERVICE (2)

TAP EXISTING WATER MAIN FOR 1" WATER SERVICE

SUPPLY INTAKE VAULT, SEE VENTILATION SUPPLY PLAN (DWG NO. M02) AND VENTILATION DETAILS (DWG NO. M04) FOR DETAILS.

VENTILATION SUPPLY PIPE, SEE VENTILATION SUPPLY PLAN (DWG NO. M02) FOR DETAILS.

PROVIDE 1/2" PIPE FOR IRRIGATION. CAP FOR INSTALLATION OF IRRIGATION PIPING BY OTHERS.

CONNECT ROOF DRAIN DISCHARGE TO STORM SEWER.

PROVIDE TEE AND DOUBLE CHECK VALVE ASSEMBLY (1) FOR IRRIGATION SUPPLY AND REDUCED PRESSURE BACKFLOW ASSEMBLY FOR THE DOMESTIC SUPPLY. (SEE DETAIL SHEET 9)

STA. 0+62.64, 76.69' RT

STA. 0+53.06, 76.70' RT

VAULT DRAIN PIPE, APPROX. 70', SEE VENTILATION DETAIL SHEET, DWG NO. M04

ROUTE TO LIFT STATION (4)

2" PVC CONDUIT WITH PULLCORD FOR PHONE SERVICE. ROUTE TO PAY PHONE BOOTH UTILITY THIS CONTRACT.

PROVIDE DRAIN LINE AND CONNECTION FOR FUTURE DRINKING FOUNTAIN

PROVIDE WATER SERVICE PIPE FOR FUTURE DRINKING FOUNTAIN, STUB AND CAP PIPE 3" ABOVE CONCRETE SIDEWALK.

PROPOSED SEWER CONTROL MANHOLE (5)

KIRKLAND CO.

ROVA JONE ALL

MOSS BAY TRADITIONAL

TODAY'S HEADLINES SALON

CRICKO'S

RESTROOMS

AND AVE.

S 46°25'15" W

LEGEND

EXISTING

- RIGHT-OF-WAY
- RIGHT-OF-WAY CENTERLINE
- PROPERTY LINE
- SEWER MANHOLE
- SEWER CLEANOUT
- STORM CATCH BASIN AND MANHOLE
- WATER VALVE
- WATER METER
- FIRE HYDRANT
- GAS VALVE
- TELEPHONE VAULT
- POWER VAULT
- UTILITY POLE ANCHOR
- UTILITY POLE
- POWER PULL BOX
- SIGNAL POLE
- PEDESTRIAN SIGNAL POLE
- LIGHT PULL BOX
- LIGHT POLE
- PARKING METER
- SIGN
- TRAFFIC SIGN
- MAILBOX
- ROCKERY
- LANDSCAPING
- LANDSCAPE AREA
- BUILDING
- SIDEWALK
- PAVEMENT
- CONTOUR

PROPOSED

- SEWER FORCE MAIN
- SEWER GRAVITY LINE
- MANHOLE
- POWER OR IRRIGATION CONDUIT
- TELEPHONE CONDUIT
- ODOR VAULT DRAIN PIPE
- WATER SERVICE
- STORM SEWER
- LANDSCAPED AREA
- VENTILATION INTAKE LOUVER
- RESTORED SIGN
- RESTORED PARKING METER
- RESTORED LIGHT POLE AND HAND HOLE BOX
- ABOVE GRADE STRUCTURE
- BELOW GRADE STRUCTURE
- RESTORE CONCRETE SIDEWALK
- ACCESS HATCH
- PROPOSED CONTOUR

PROPOSED ELECTRICAL LEGEND

(1) NEW SERVICE CONNECTION BY UTILITY IN EXISTING UTILITY VAULT AT THIS LOCATION.

(2) CENTERLINE OF PRIMARY CONDUIT PROVIDED BY UTILITY BETWEEN EXISTING UTILITY VAULT AND PROPOSED TRANSFORMER.

(3) PROPOSED TRANSFORMER WITH VAULT TYPE PULL SECTION BELOW PROVIDED BY UTILITY.

(4) SECONDARY SERVICE CONDUIT TO BE INSTALLED BY CONTRACTOR. SEE ONE-LINE DIAGRAM

(5) 2" PVC IRRIGATION CONTROL CONDUIT FOR FUTURE IRRIGATION SYSTEM BY OTHERS. TERMINATE IN LANDSCAPING AREAS AS SHOWN. MARK TERMINATION POINTS

PROPOSED UTILITY PLAN

1" = 10'

1	REVISE LOCATION OF PRIMARY CONDUIT	SCH	TVP	12/17/96
2	BUILDING PERMIT REVIEW	KMP	TVP	11/22/96
NO.	REVISION	BY	APP'D	DATE
3	CONSTRUCTION RECORDS	KMP	TVP	1/30/98

RICHARD H. HARRIS — STATE OF WASHINGTON — 16727 — REGISTERED PROFESSIONAL ENGINEER — SIGNED 09/26/96 — EXPIRES 6/12/99

City of Kirkland
Lake Plaza Lift Station Replacement

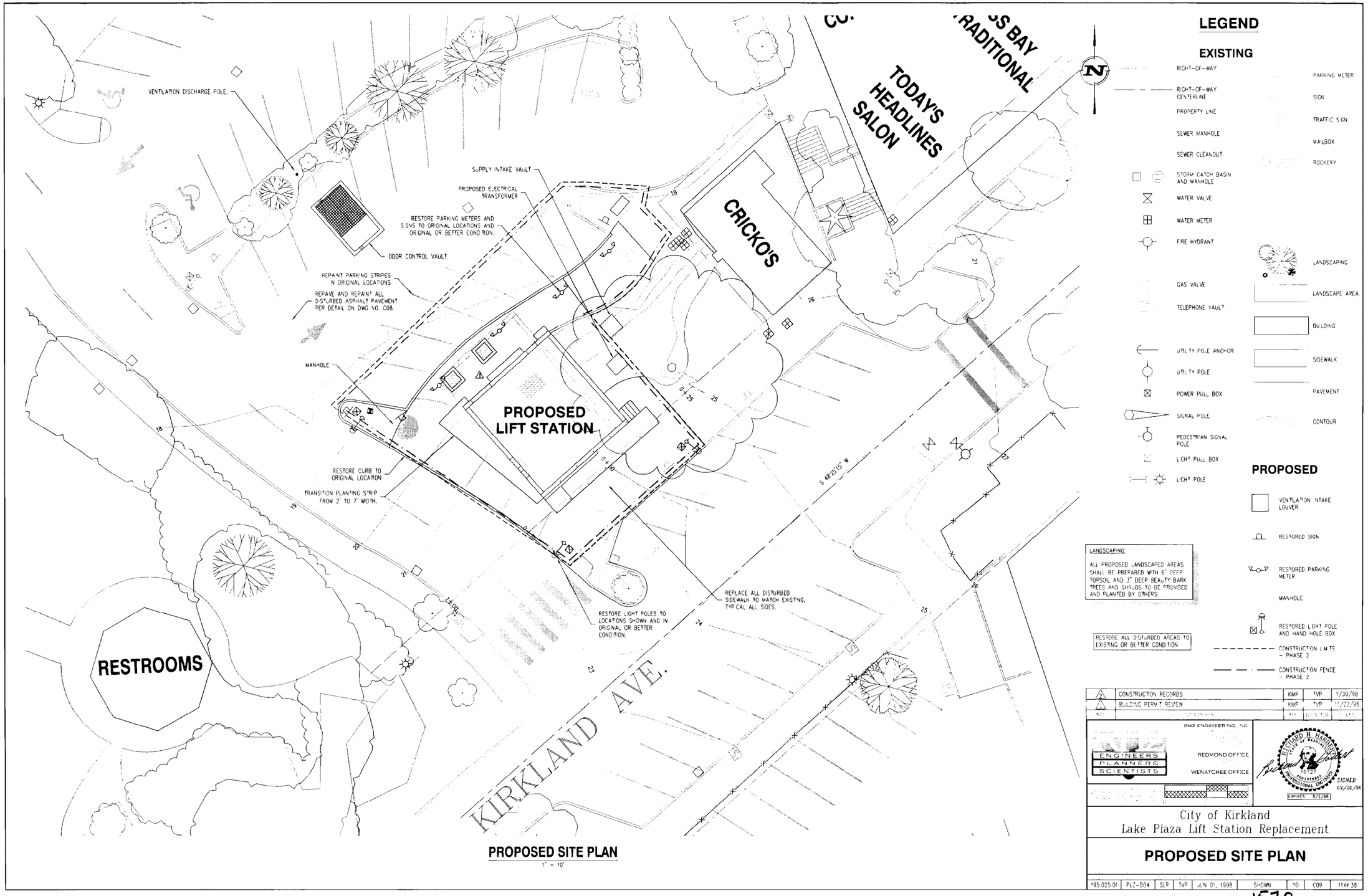
PROPOSED UTILITY PLAN

195.025.01	PLZ-03*	SLR	TVP	DEC 02, 1998	SHOWN	10	C07	10 of 38

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12/39

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PROPOSED SITE PLAN
1" = 10'

LEGEND

EXISTING

- RIGHT-OF-WAY
- RIGHT-OF-WAY CENTERLINE
- PROPERTY LINE
- SEWER MANHOLE
- SEWER CLEANOUT
- STORM CATCH BASIN AND MANHOLE
- WATER VALVE
- WATER METER
- FIRE HYDRANT
- GAS VALVE
- TELEPHONE VAULT
- UTILITY POLE ANCHOR
- UTILITY POLE
- POWER PULL BOX
- SIGNAL POLE
- PEDESTRIAN SIGNAL POLE
- LIGHT PULL BOX
- LIGHT POLE
- PARKING METER
- SIGN
- TRAFFIC SIGN
- MAILBOX
- ROCKERY
- LANDSCAPING
- LANDSCAPE AREA
- BUILDING
- SIDEWALK
- PAVEMENT
- CONTOUR

PROPOSED

- VENTILATION INTAKE LOUVER
- RESTORED SIGN
- RESTORED PARKING METER
- MANHOLE
- RESTORED LIGHT POLE AND HAND HOLE BOX
- CONSTRUCTION LIMITS – PHASE 2
- CONSTRUCTION FENCE – PHASE 2

LANDSCAPING:

ALL PROPOSED LANDSCAPED AREAS SHALL BE PREPARED WITH 6" DEEP TOPSOIL AND 3" DEEP BEAUTY BARK. TREES AND SHRUBS TO BE PROVIDED AND PLANTED BY OTHERS.

RESTORE ALL DISTURBED AREAS TO EXISTING OR BETTER CONDITION

NO.	REVISION	BY	APP'D	DATE
2	CONSTRUCTION RECORDS	KMP	TVP	1/30/98
1	BUILDING PERMIT REVIEW	KMP	TVP	11/22/96

RH2 ENGINEERING, INC.
ENGINEERS
PLANNERS
SCIENTISTS
REDMOND OFFICE
WENATCHEE OFFICE

RICHARD H. HANSEN — STATE OF WASHINGTON — 16727 — REGISTERED PROFESSIONAL ENGINEER
SIGNED 09/26/96
EXPIRES 8/2/98

City of Kirkland
Lake Plaza Lift Station Replacement

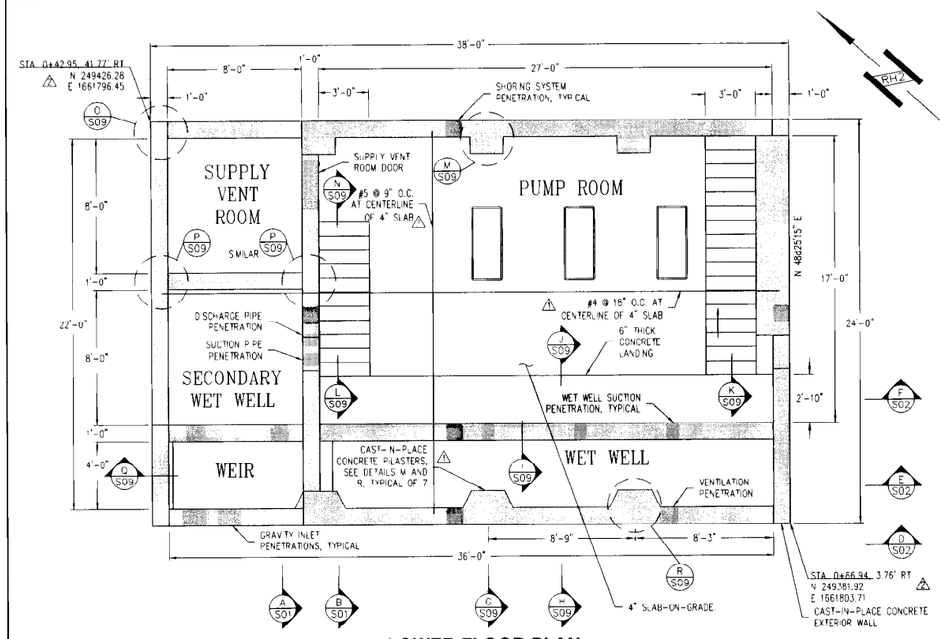
PROPOSED SITE PLAN

195.025.01	PLZ-D04	SLR	TVP	JUN. 01, 1998	SHOWN	10	C09	11 of 39

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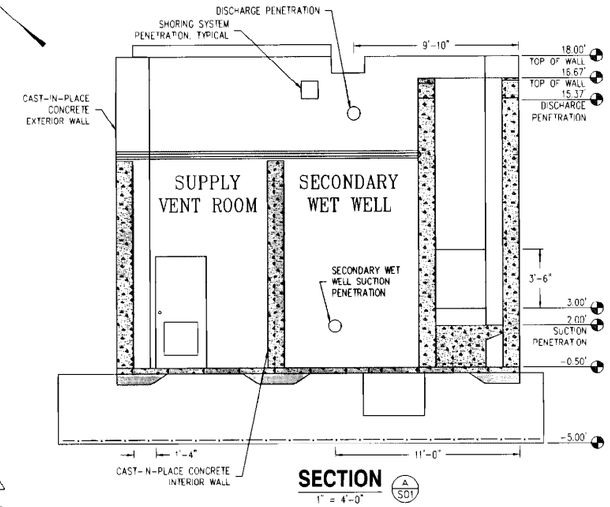
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LOWER FLOOR PLAN

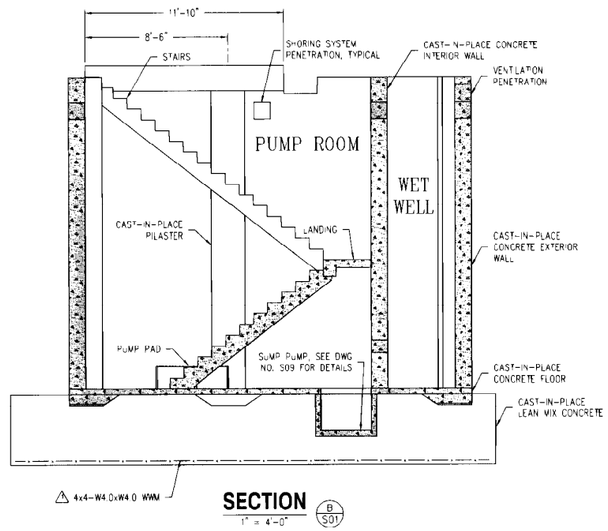
1" = 4'-0"

NOTE: CLEAN AND ROUGHEN SURFACE OF TREMIE SLAB TO 1/4" AMPLITUDE PRIOR TO POURING STRUCTURAL 4" SLAB-ON-GRADE.



SECTION

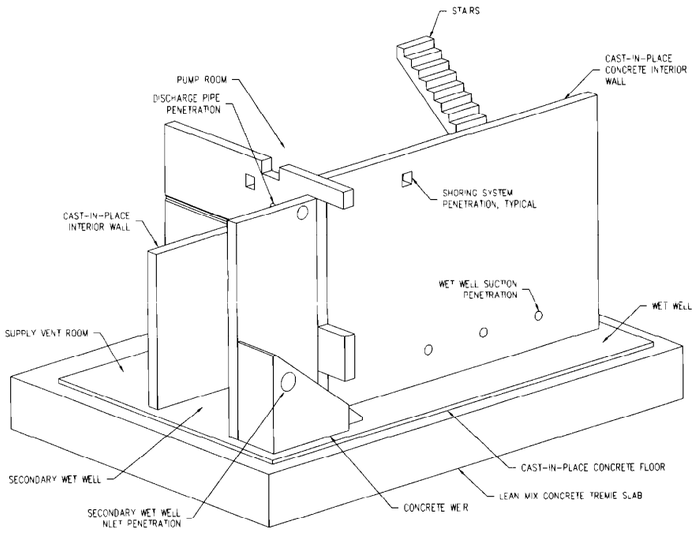
1" = 4'-0" (A/S01)



SECTION

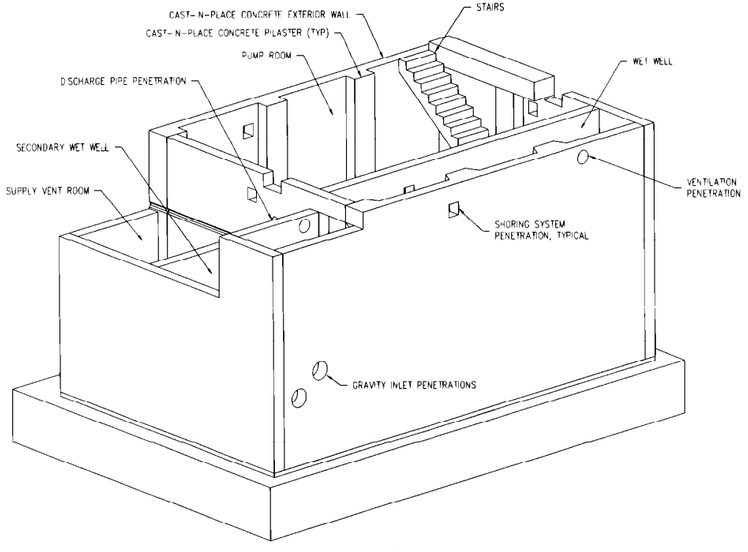
1" = 4'-0" (B/S01)

NOTE: PROVIDE WATERSTOP, FULL PERIMETER, AT ALL SHORING SYSTEM PENETRATIONS. FILL PENETRATION WITH PRESSURE GROUT AFTER SHORING BRACING HAS BEEN REMOVED TO PROVIDE A WATERTIGHT SEAL.



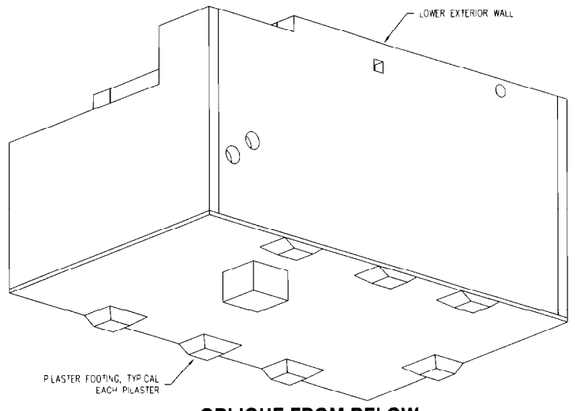
OBLIQUE

NOT TO SCALE



OBLIQUE

NOT TO SCALE



OBLIQUE FROM BELOW

NOT TO SCALE

NO	REVISION	BY	REVIEW	DATE
2	CONSTRUCTION RECORDS	KVP	TVP	1/27/98
1	BLD NG PERM T REVIEW	KVP	TVP	11/22/96

RH2 ENGINEERS PLANNERS SCIENTISTS

RH2 ENGINEERING, INC.

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RICHARD H. HARRIS — STATE OF WASHINGTON — 16127 — REGISTERED PROFESSIONAL ENGINEER

SIGNED 09/26/96

EXPIRES 6/2/98

City of Kirkland
Lake Plaza Lift Station Replacement

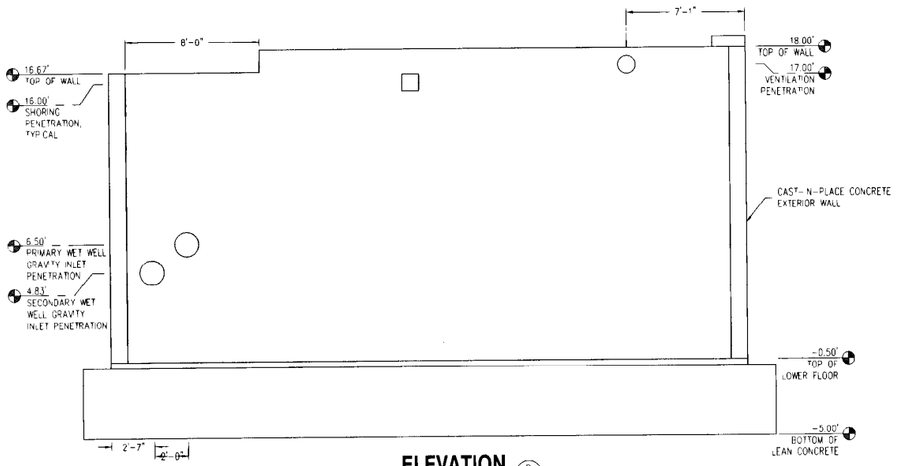
LOWER FLOOR PLAN

195.025.01	PLZ-D06	TVP	DRE	JAN. 30, 1998	SHOWN	48	S01	12 of 38

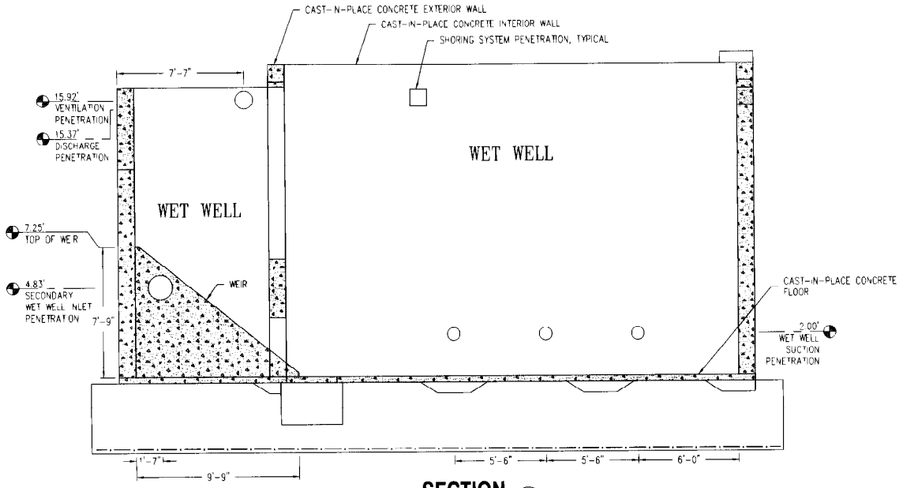
1570

14/39

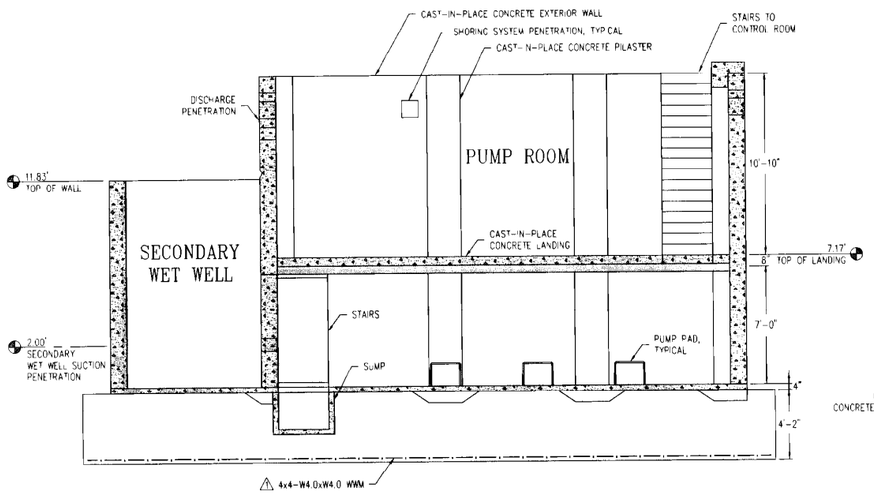
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ELEVATION (D/S01)
1" = 4'-0"

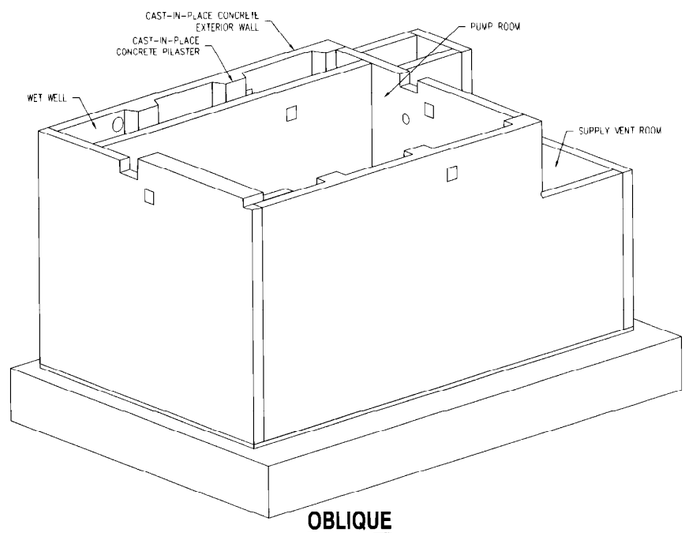


SECTION (E/S01)
1" = 4'-0"

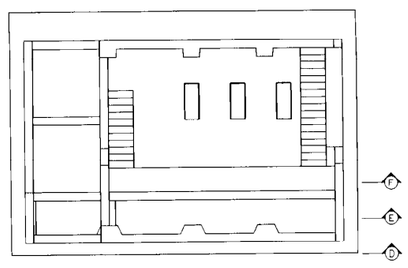


SECTION (F/S01)
1" = 4'-0"

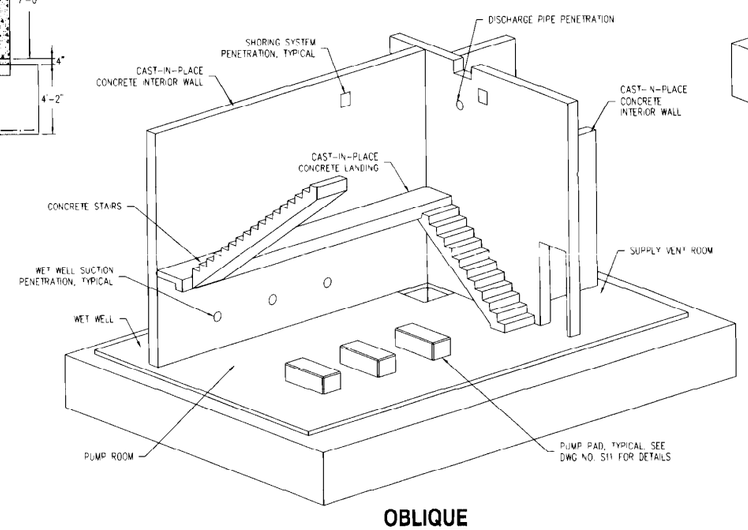
NOTE: BACKFILL WITH LEAN MIX CONCRETE TO 4' BELOW FINISHED GRADE WHILE REMOVING SHORING SYSTEM.



OBLIQUE
NOT TO SCALE



DETAIL MAP
1" = 8'-0"



OBLIQUE
NOT TO SCALE

2	CONSTRUCTION RECORDS	KMP	TVP	1/30/98
1	BUILDING PERMIT REVIEW	KMP	TVP	11/22/96
NO.	REVISION	BY	CHK'D	DATE

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SIGNED: 09/26/96
EXPIRES 8/2/98

City of Kirkland
Lake Plaza Lift Station Replacement

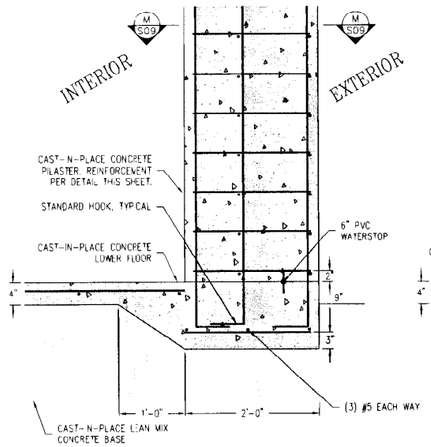
LOWER FLOOR ELEVATIONS

195.025.01	PLZ-D10	TVP	DRE	JAN 30, 1998	SHOWN	48	S02	13 of 38

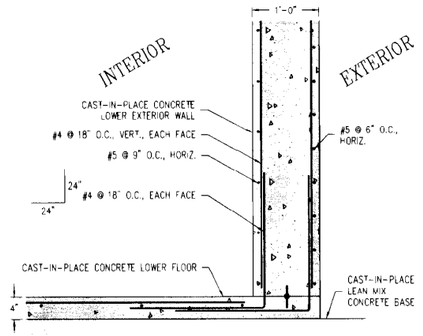
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15/39

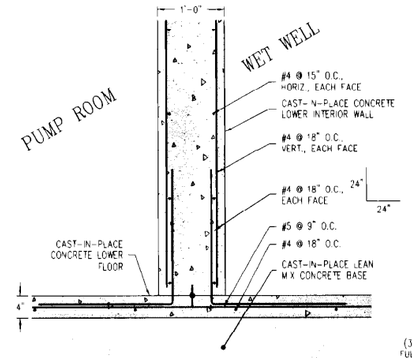
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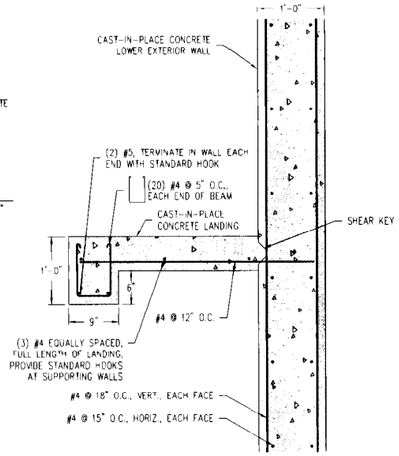
PILASTER SECTION (G S01)
1" = 1'-0"



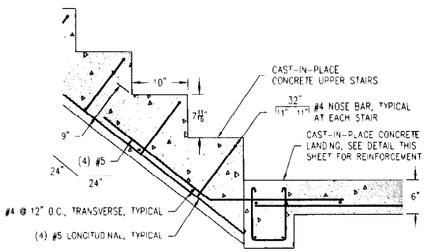
LOWER FLOOR/EXTERIOR WALL SECTION (H S01)
1" = 1'-0"



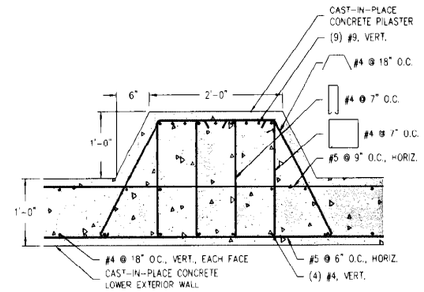
LOWER FLOOR/INTERIOR WALL SECTION (I S01)
1" = 1'-0"



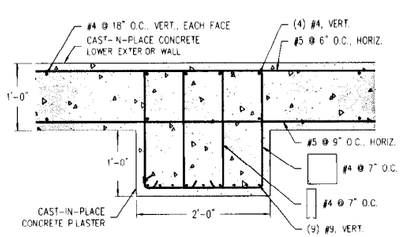
LANDING/INTERIOR WALL SECTION (J S01)
1" = 1'-0"



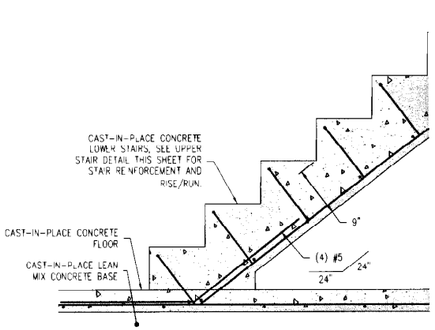
LANDING/UPPER STAIR SECTION (K S01)
1" = 1'-0"



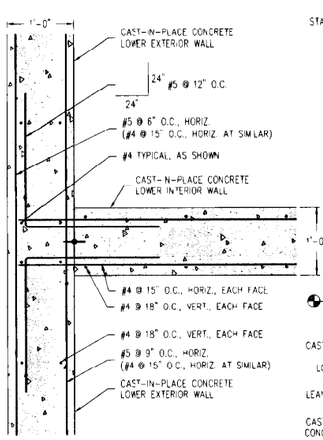
WET WELL PILASTER DETAIL (R S01)
1" = 1'-0"



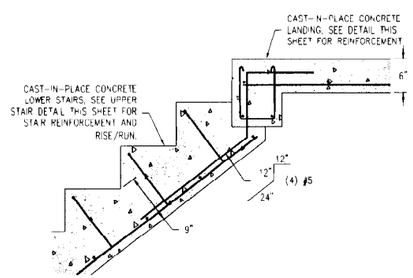
PUMP ROOM PILASTER DETAIL (M S01)
1" = 1'-0"



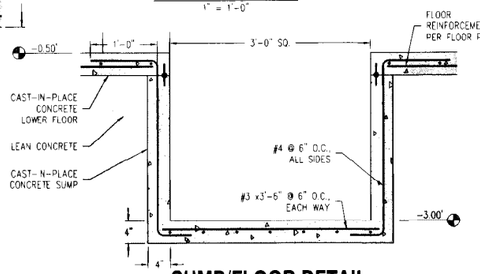
LOWER FLOOR/LOWER STAIR SECTION (N S01)
1" = 1'-0"



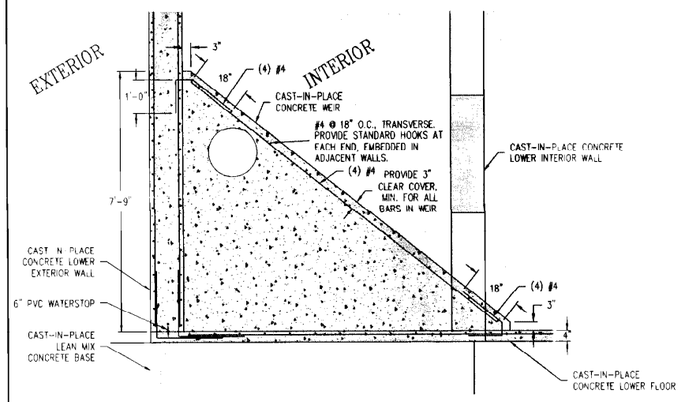
LOWER WALL INTERSECTION DETAIL (P S01)
1" = 1'-0"



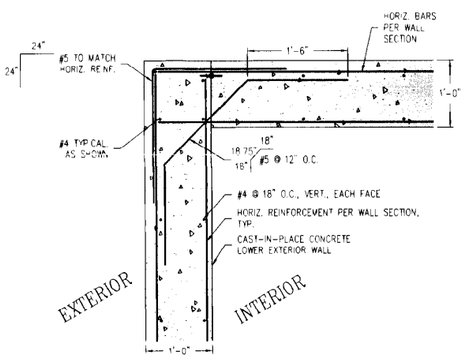
LANDING/LOWER STAIR SECTION (L S01)
1" = 1'-0"



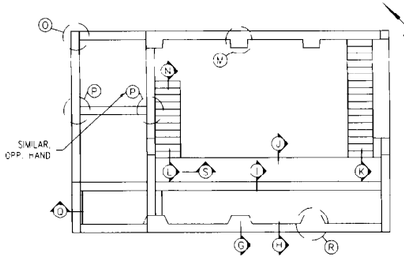
SUMP/FLOOR DETAIL (S S01)
1" = 1'-0"



WEIR DETAIL (Q S01)
1" = 2'-0"



LOWER WALL CORNER DETAIL (O S01)
1" = 1'-0"



DETAIL MAP
1" = 8'-0"

NO	REVISION	BY	REVIEW	DATE
1	CONSTRUCTION RECORDS	KMP	TVP	1/30/98

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SIGNED 09/26/96
EXPIRES 6/2/98

City of Kirkland
Lake Plaza Lift Station Replacement

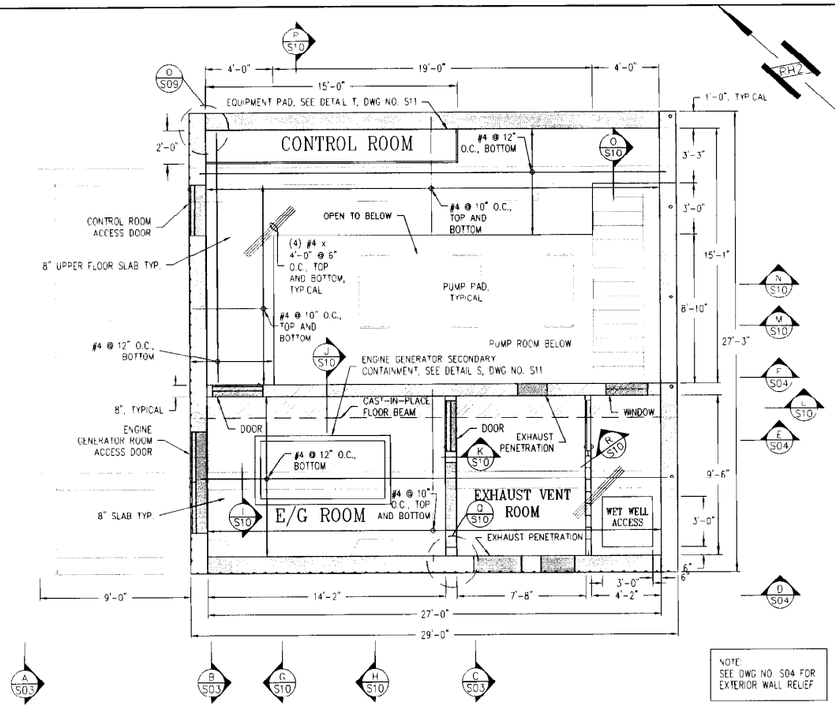
LOWER FLOOR DETAILS

195.025.01	PLZ-033	KMP	TVP	JAN 30, 1998	SHOWN	12	S09	14 OF 39

1570

10/39

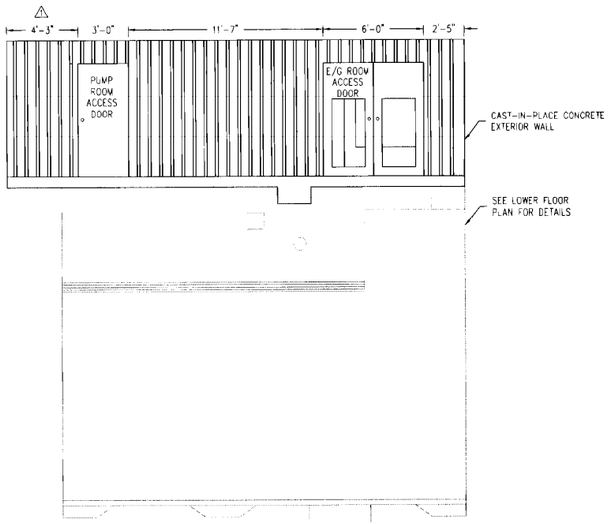
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UPPER FLOOR PLAN

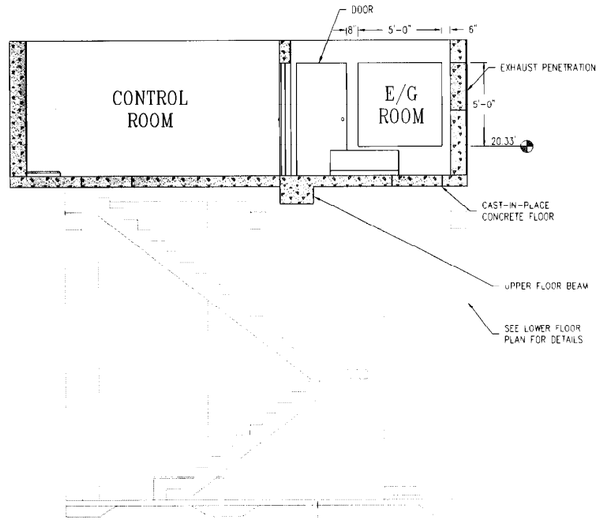
1" = 4'-0"

NOTE:
SEE DWG NO. S04 FOR EXTERIOR WALL RELIEF



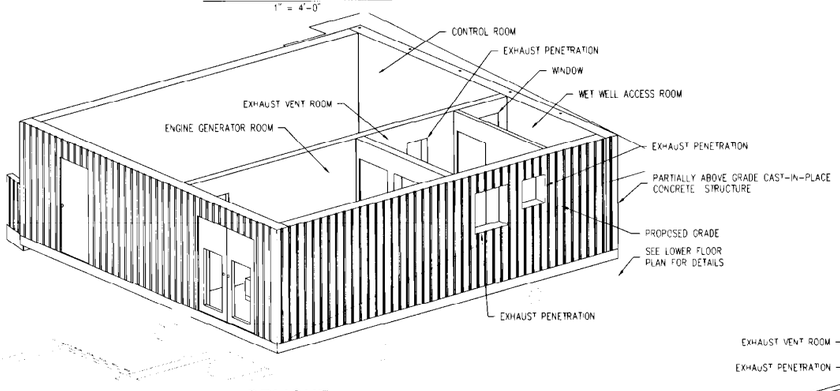
ELEVATION

1" = 4'-0"



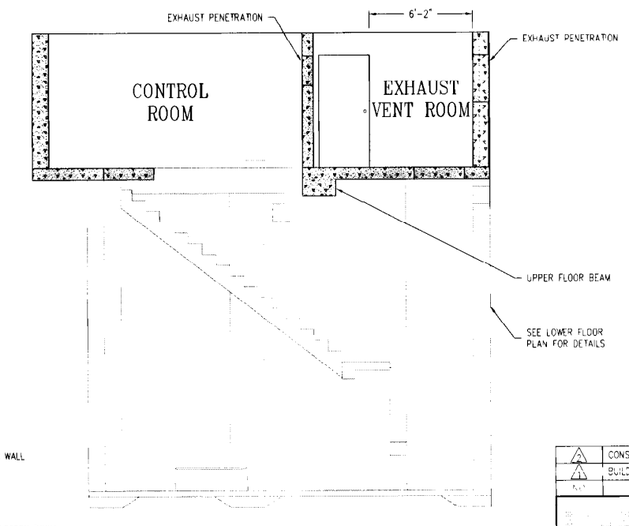
SECTION

1" = 4'-0"



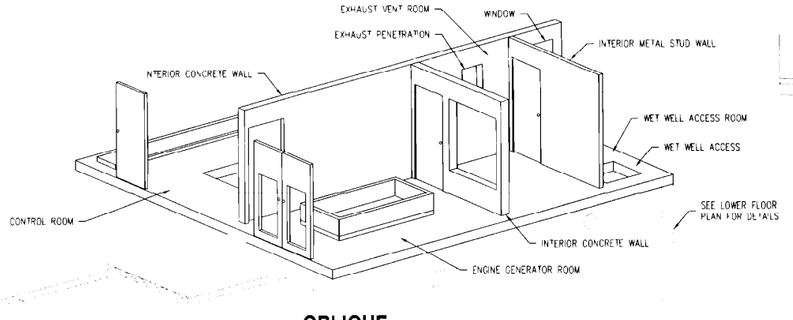
OBLIQUE

NOT TO SCALE



SECTION

1" = 4'-0"



OBLIQUE

NOT TO SCALE

2	CONSTRUCTION RECORDS	KMP	TVP	1/30/98
1	BUILDING PERMIT REVIEW	KMP	TVP	11/22/96
NO.	REVISIONS	BY	APPVD	DATE

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SIGNED 09/26/96

EXPIRES 6/2/98

City of Kirkland
Lake Plaza Lift Station Replacement

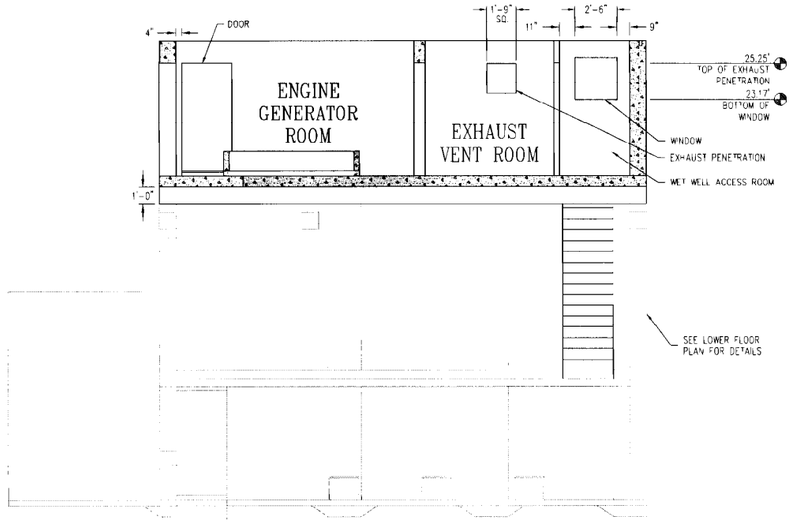
UPPER FLOOR PLAN

195.025.01	PLZ-007	TVP	DRF	JUN 01, 1998	SHOWN	48	S03	15 of 38

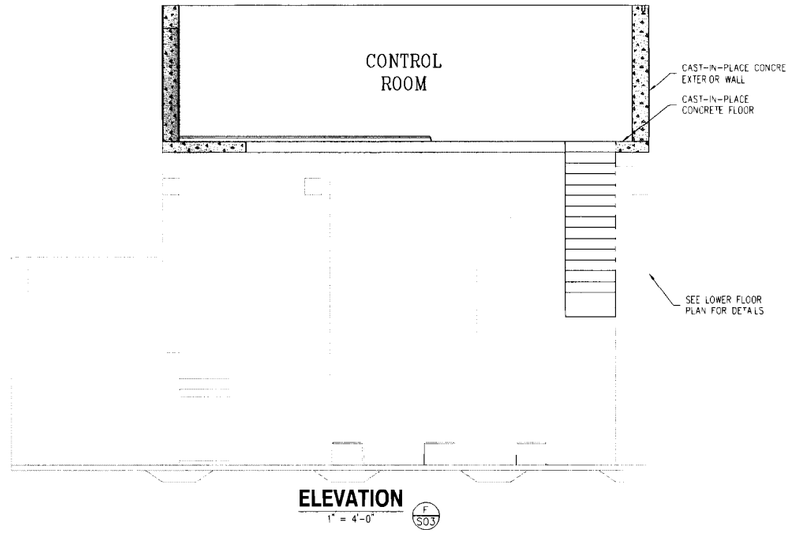
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17/38

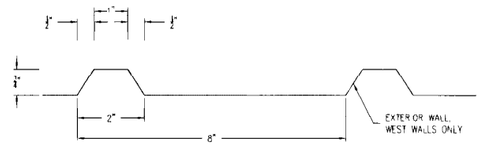
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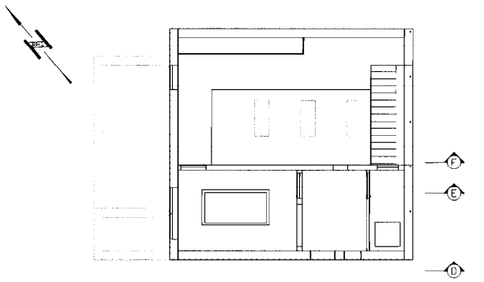
SECTION
1" = 4'-0" (E/S03)



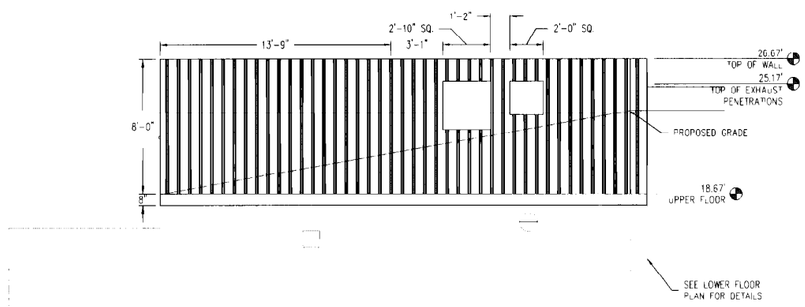
ELEVATION
1" = 4'-0" (F/S03)



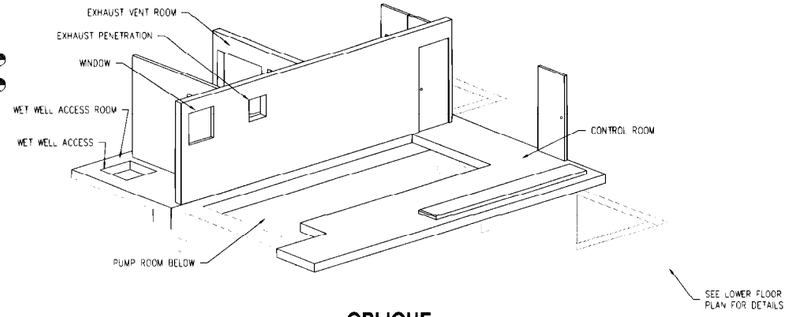
EXTERIOR WALL RELIEF
1" = 2"



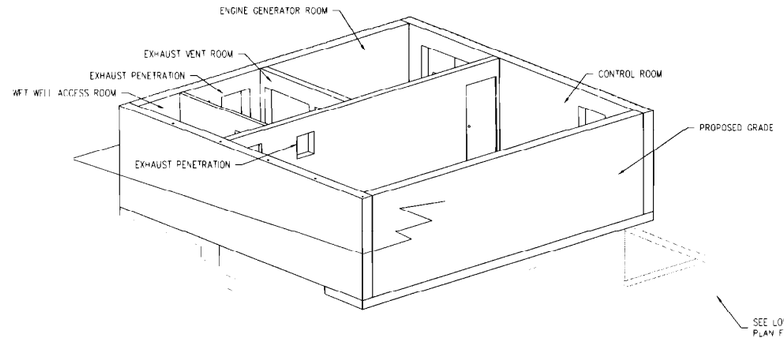
DETAIL MAP
1" = 8'-0"



ELEVATION
1" = 4'-0" (D/S03)



OBLIQUE
NOT TO SCALE



OBLIQUE
NOT TO SCALE

NO	REVISION	BY	APVD	DATE
1	CONSTRUCTION RECORDS	RMP	TVP	1/30/98

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Lake Plaza Lift Station Replacement

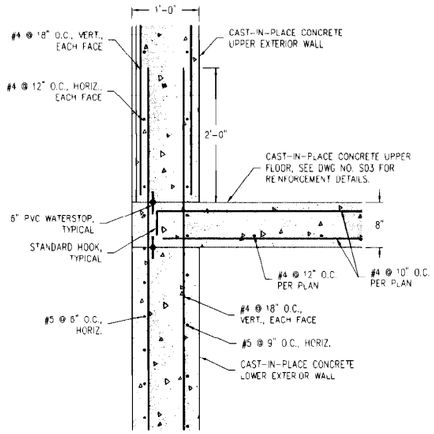
UPPER FLOOR ELEVATIONS

195.025.01	FLZ-D1	TVP	DRE	JUN. 01, 1998	SHOWN	48	S04	15 of 38

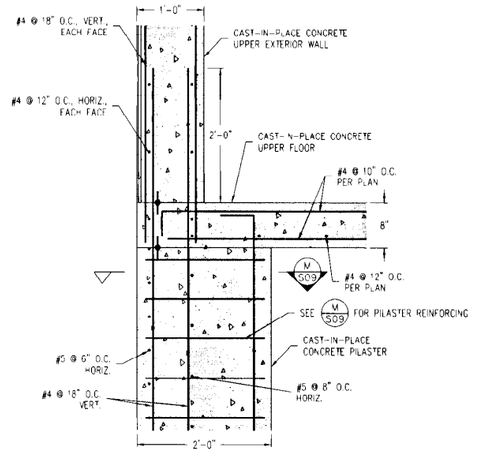
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10/39

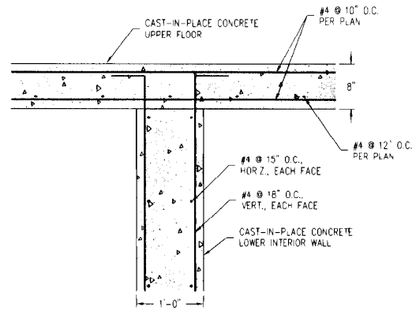
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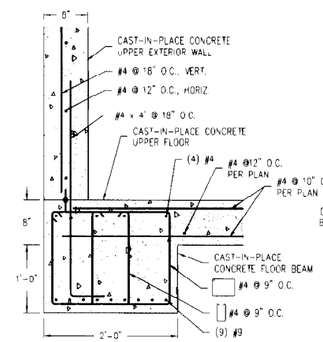
UPPER FLOOR/EXTERIOR WALL INTERSECTION (S03)
1" = 1'-0"



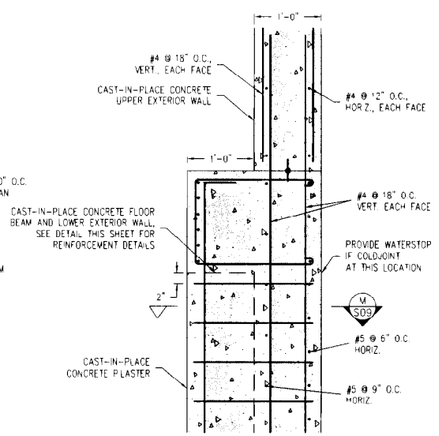
UPPER FLOOR/LOWER EXTERIOR WALL PILASTER INTERSECTION (H S03)
1" = 1'-0"



UPPER FLOOR/LOWER INTERIOR WALL INTERSECTION (I S03)
1" = 1'-0"



UPPER FLOOR/UPPER INTERIOR WALL INTERSECTION (J S03)
1" = 1'-0"



UPPER EXTERIOR WALL/PILASTER SECTION (M S03)
1" = 1'-0"

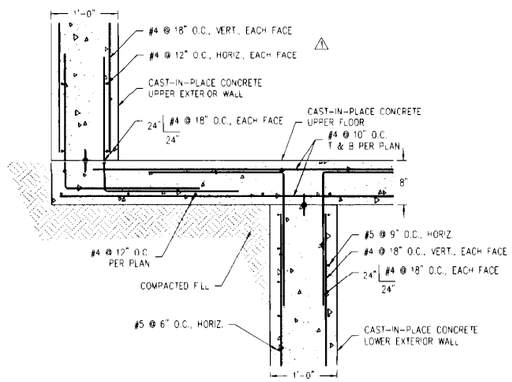
UPPER FLOOR/INTERIOR WALL INTERSECTION (Q S03)
1" = 1'-0"

UPPER INTERIOR/EXTERIOR WALL DETAIL (O S03)
1" = 1'-0"

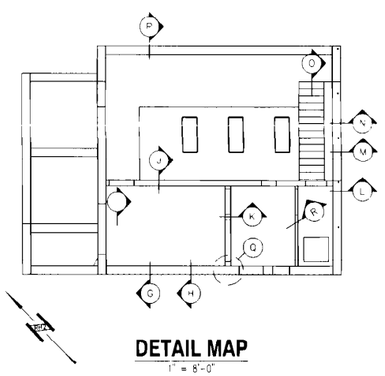
UPPER INTERIOR/EXTERIOR WALL DETAIL (L S03)
1" = 1'-0"

UPPER FLOOR BEAM/EXTERIOR WALL INTERSECTION (N S03)
1" = 1'-0"

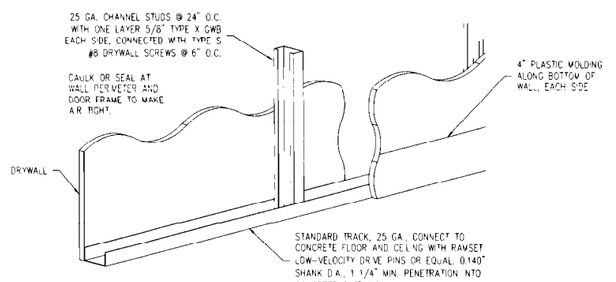
UPPER FLOOR/ STAIR SECTION (S03)
1" = 1'-0"



EXTERIOR WALL/UPPER FLOOR SECTION (P S03)
1" = 1'-0"



DETAIL MAP
1" = 8'-0"



INTERIOR STUD WALL (R S03)
NOT TO SCALE

2	CONSTRUCTION RECORDS	KMP	TVP	1/30/99
1	BUILDING PERMIT REVIEW	KMP	TVP	11/22/96
NO.	REVISIONS	BY	CHK'D	DATE

RH2 ENGINEERING, INC
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City of Kirkland
Lake Plaza Lift Station Replacement

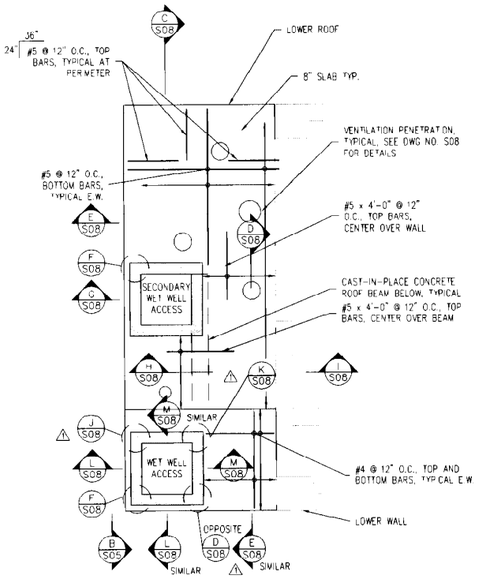
UPPER FLOOR DETAILS

195.025.01	PLZ-D34	KMP	TVP	JAN 30, 1998	SHOWN	12	S10	17 of 38

1570

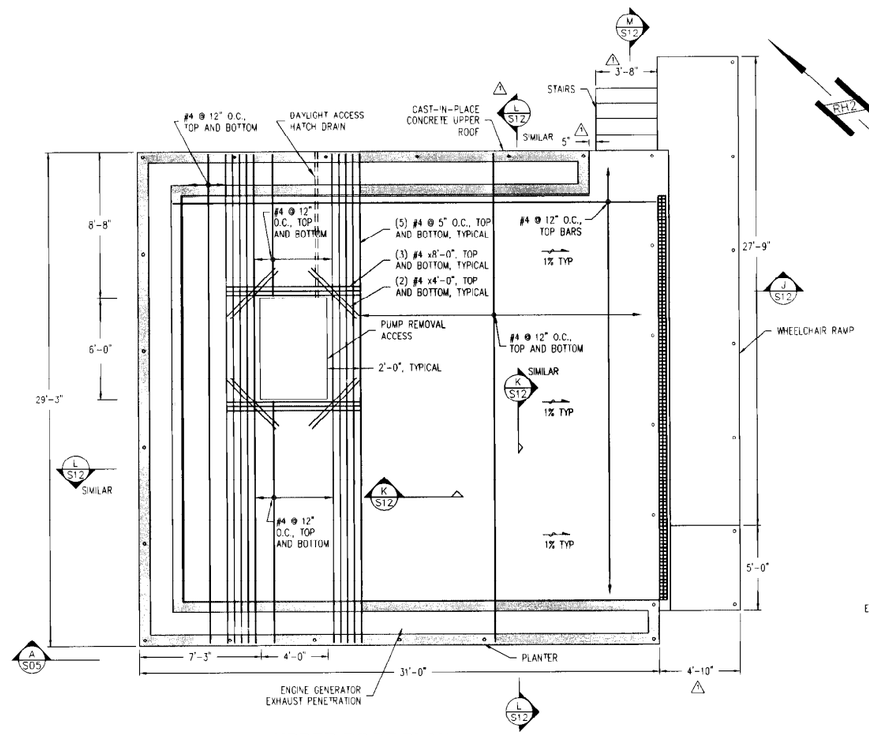
19/38

1570



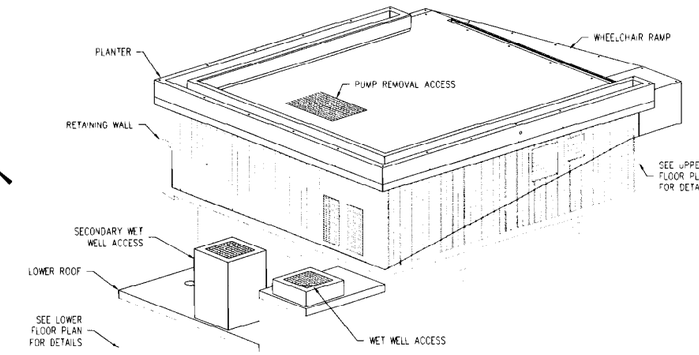
LOWER ROOF PLAN

1" = 4'-0"



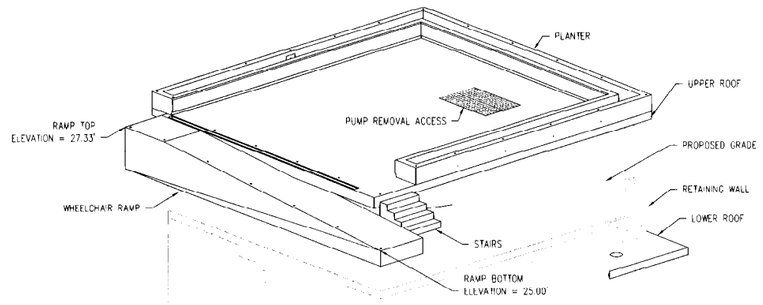
UPPER ROOF PLAN

1" = 4'-0"



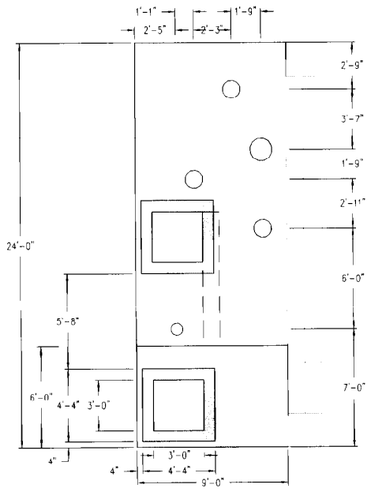
ROOF OBLIQUE

NOT TO SCALE



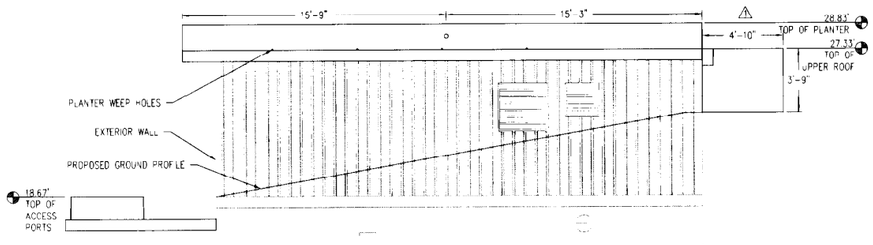
ROOF OBLIQUE

NOT TO SCALE



LOWER ROOF PLAN

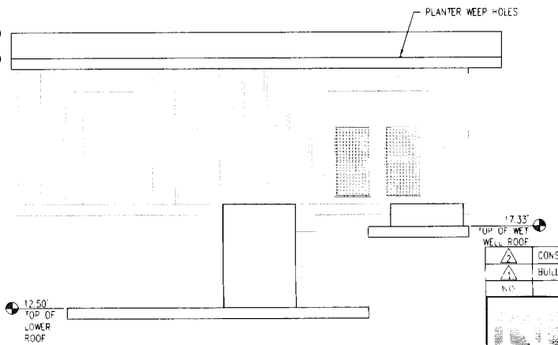
1" = 4'-0"



ELEVATION

A S05

1" = 4'-0"



ELEVATION

B S05

1" = 4'-0"

NO.	DESCRIPTION	BY	REVIEW	DATE
2	CONSTRUCTION RECORDS	KMP	TVP	1/30/98
1	BUILDING PERMIT REVIEW	KMP	TVP	11/22/96

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City of Kirkland

Lake Plaza Lift Station Replacement

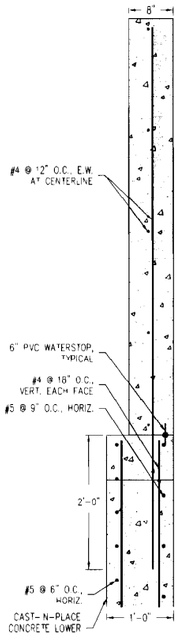
ROOF PLANS AND ELEVATIONS

195.025.01	PLZ-D12	TVP	DRE	JUN 01, 1998	SHOWN	48	S05	18 of 38

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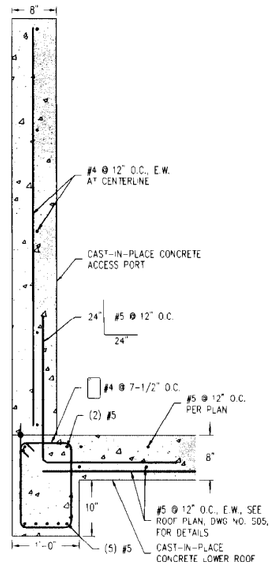
20/39

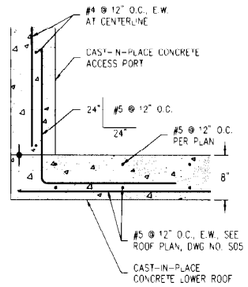
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ACCESS PORT SECTION (G/S05)

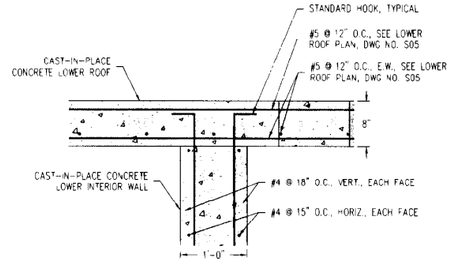
1" = 1'-0"





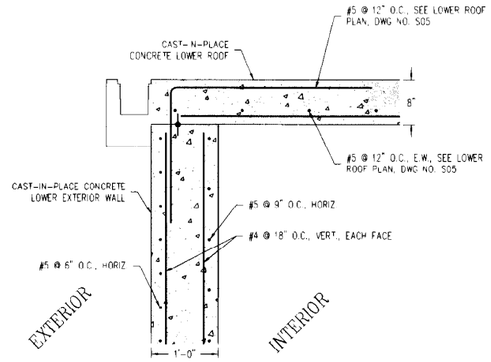
ACCESS PORT SECTION (C/S05)

1" = 1'-0"



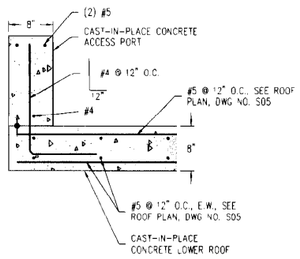
LOWER ROOF/INTERIOR WALL INTERSECTION (D/S05)

1" = 1'-0"



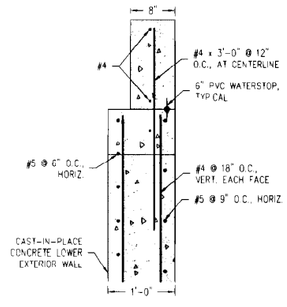
LOWER ROOF/EXTERIOR WALL INTERSECTION (E/S05)

1" = 1'-0"



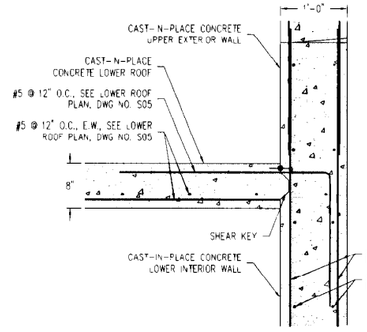
ACCESS PORT SECTION (M/S05)

1" = 1'-0"



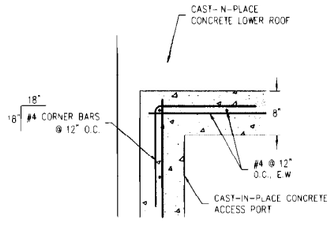
ACCESS PORT SECTION (L/S05)

1" = 1'-0"



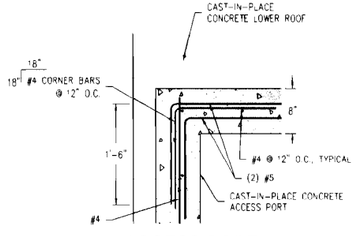
LOWER ROOF/UPPER EXTERIOR WALL INTERSECTION (I/S05)

1" = 1'-0"



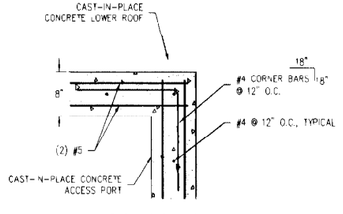
ACCESS PORT CORNER DETAIL (F/S05)

1" = 1'-0"



ACCESS PORT CORNER DETAIL (J/S05)

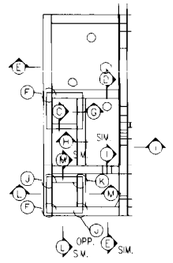
1" = 1'-0"



ACCESS PORT CORNER DETAIL (K/S05)

1" = 1'-0"

NOTE: SLAB REINFORCEMENT STEEL OPPOSITE DIRECTION AT SIMILAR DETAILS.



DETAIL MAP LOWER ROOF

1" = 8'-0"

NO.	REVISION	BY	CHK'D	DATE
1	CONSTRUCTION RECORDS	KMP	TVP	1/30/98

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SIGNED: 03/26/98
EXPIRES 6/2/99

City of Kirkland
Lake Plaza Lift Station Replacement

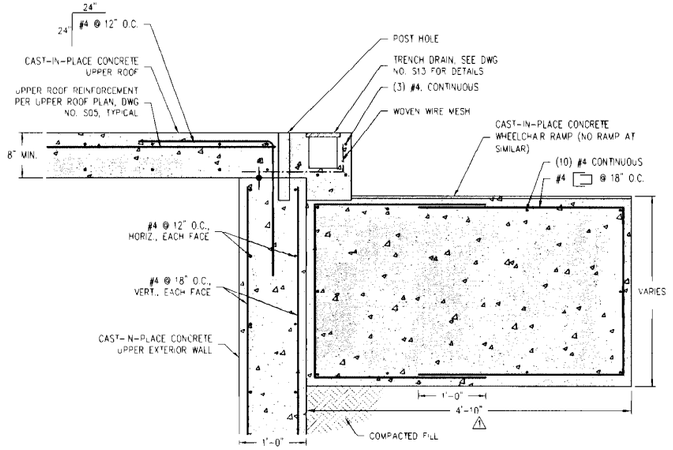
LOWER ROOF DETAILS

195.025.01	PLZ-026	TVP	DRE	JAN 30, 1998	SHOWN	12	S08	19 of 38

1570

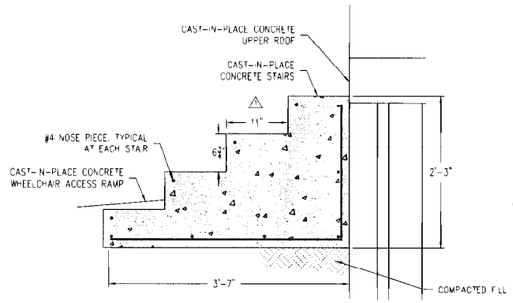
21/39

1570



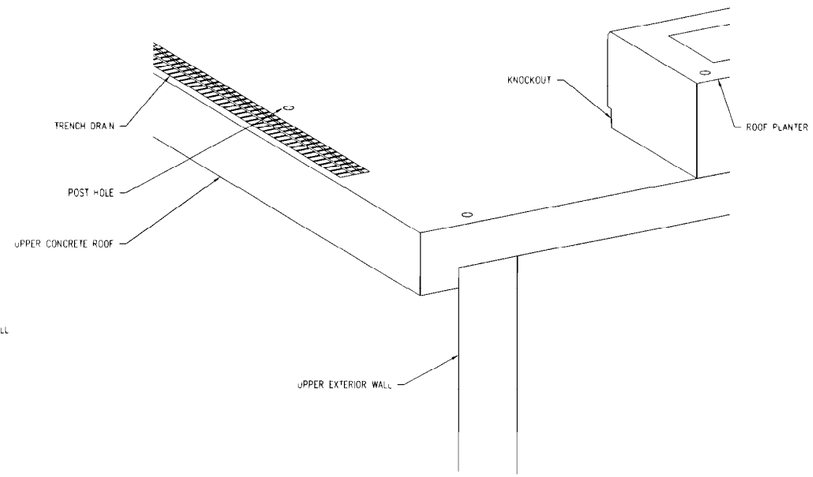
UPPER ROOF/EXTERIOR WALL INTERSECTION (J/S05)

1" = 1'-0"



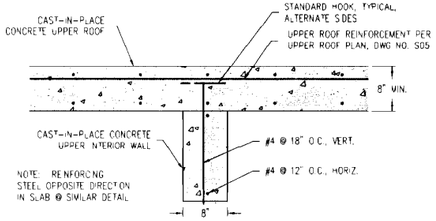
EXTERIOR STAIR SECTION (M/S05)

1" = 1'-0"



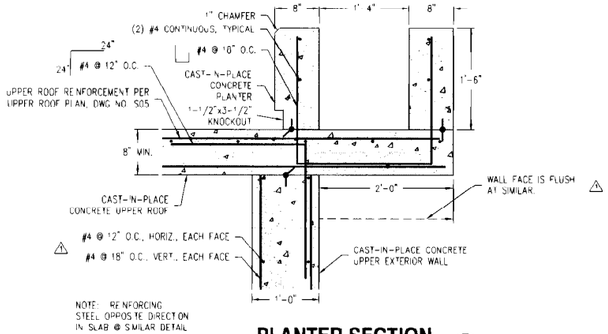
OBLIQUE

NOT TO SCALE



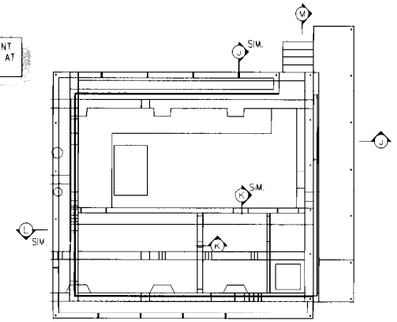
UPPER ROOF/INTERIOR WALL INTERSECTION (K/S05)

1" = 1'-0"



PLANTER SECTION (L/S05)

1" = 1'-0"



DETAIL MAP UPPER ROOF

1" = 8'-0"

2	CONSTRUCTION RECORDS	KMP	TVP	1/30/98
1	BUILDING PERMIT REVIEW	KMP	TVP	11/22/96
NO.	REVISION	BY	APP'D	DATE

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SIGNED: 09/26/96

EXPIRES 5/5/98

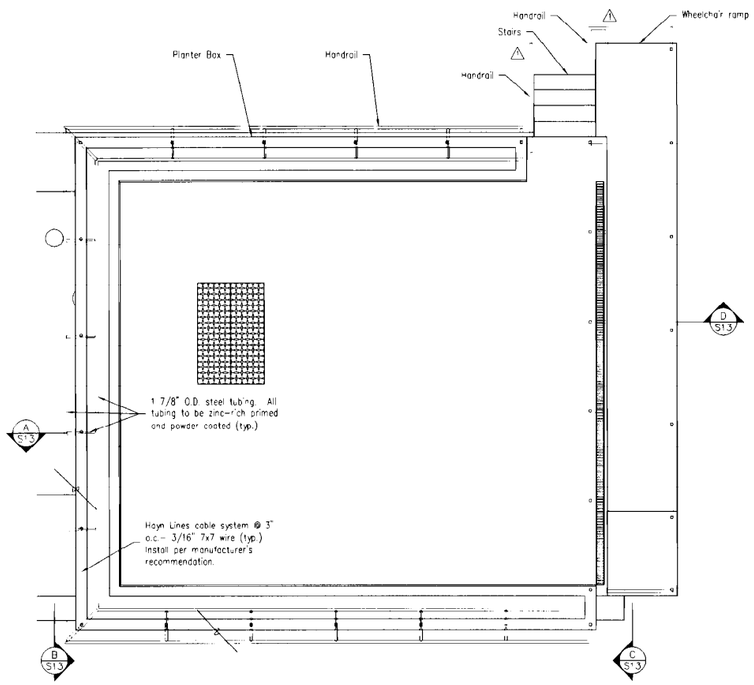
City of Kirkland

Lake Plaza Lift Station Replacement

UPPER ROOF DETAILS

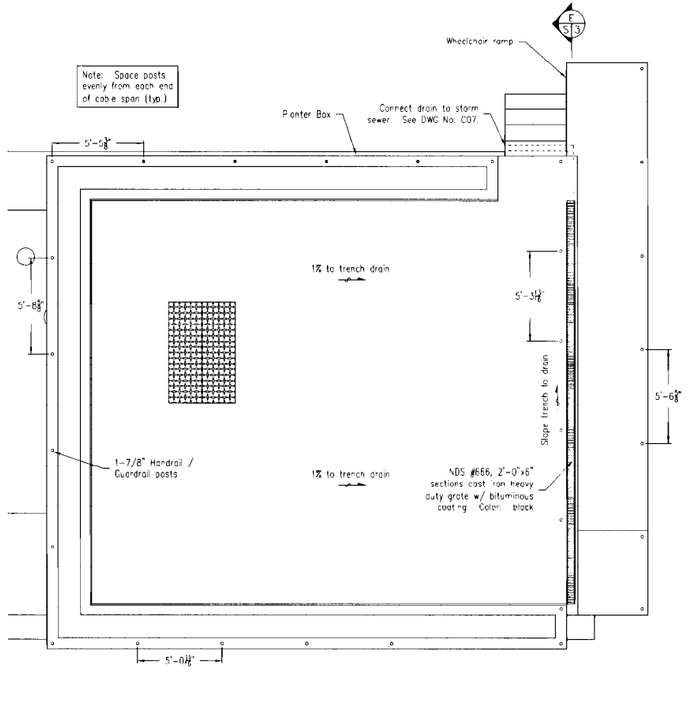
195.025.01	PLZ-D35	TVP	DRE	JAN. 30, 1998	SHOWN	12	S12	20 of 38

1570



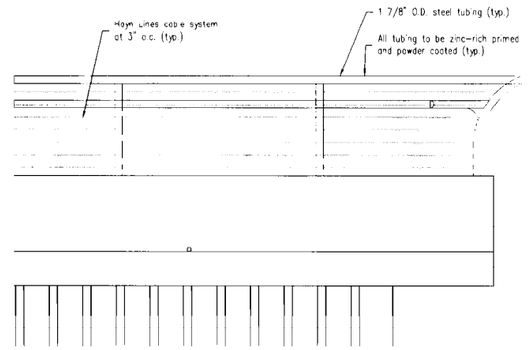
GUARDRAIL/HANDRAIL PLAN

1/4" = 1'-0"



GUARDRAIL POST LOCATION PLAN

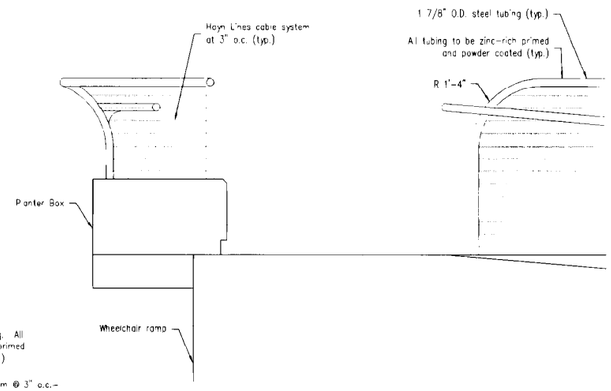
1/4" = 1'-0"



GUARDRAIL/HANDRAIL EAST ELEVATION

3/4" = 1'-0"

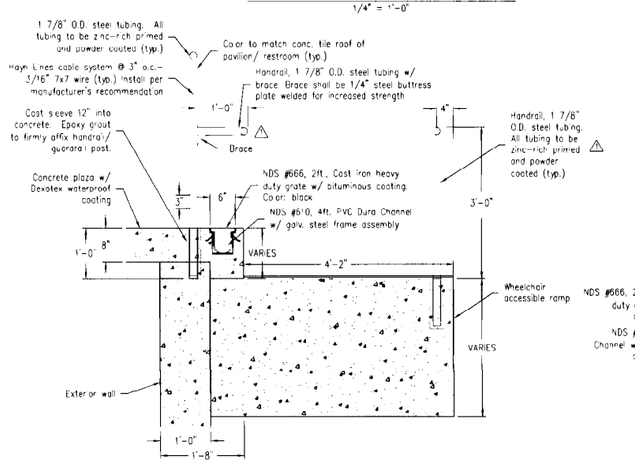
B S13



PLAZA ENTRANCE AT RAMP (WEST)

3/4" = 1'-0"

C S13

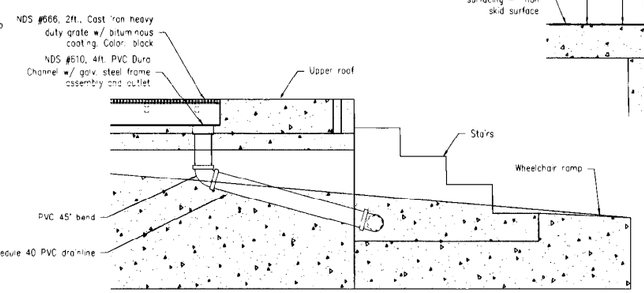


TRENCH DRAIN AND GUARDRAIL POST DETAIL

3/4" = 1'-0"

D S13

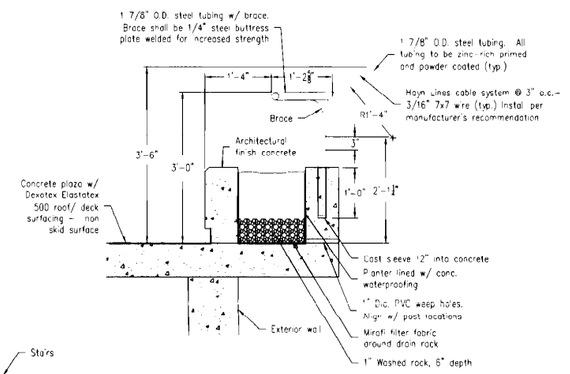
Contractor shall place posts plumb and in smooth alignment with planter wall and plaza. Guardrail height shall be consistent at 42" above plaza finish grade.



TRENCH DRAIN OUTLET DETAIL

3/4" = 1'-0"

E S13



GUARDRAIL POST AT PLANTER CONNECTION

3/4" = 1'-0"

A S13

1	CONSTRUCTION RECORDS	KMP	TVP	1/30/98
2	BUILDING PERMIT REVIEW	KMP	TVP	11/22/96
NO.	REVISION	BY	CHK'D	DATE

RHZ ENGINEERS PLANNERS SCIENTISTS

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City of Kirkland
Lake Plaza Lift Station Replacement

GUARDRAIL AND HANDRAIL DETAILS

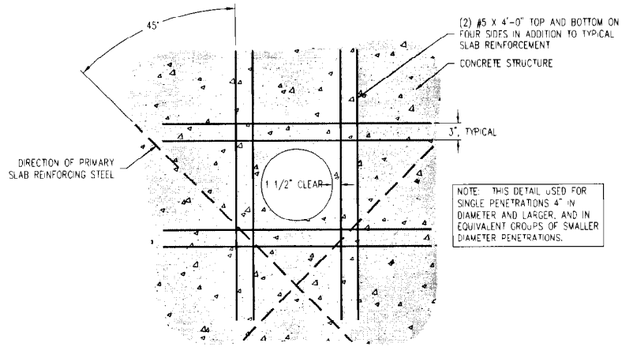
195.025.03	PLZ-037	KMP	TVP	JAN. 30, 1998	SHOWN	48	S13	21 of 38

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1570

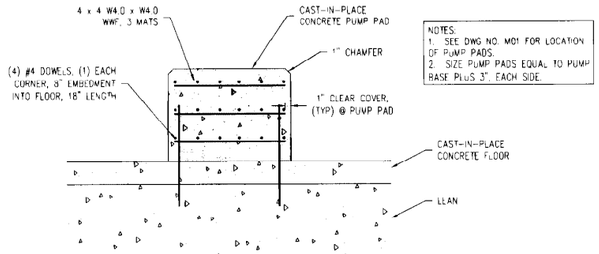
23/39

1570



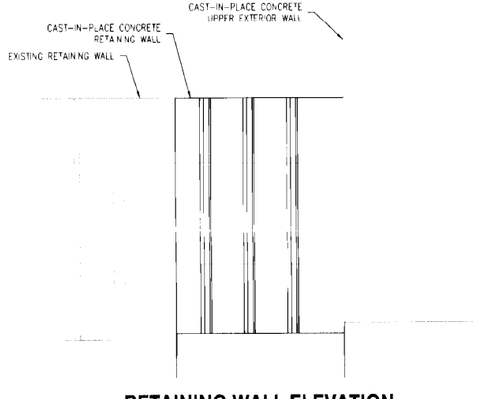
TYPICAL PENETRATION DETAIL

1" = 1'-0"



PUMP PAD SECTION

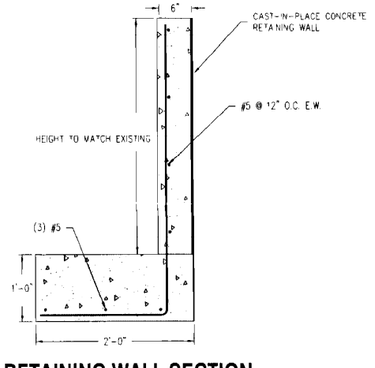
1" = 1'-0"



RETAINING WALL ELEVATION

(B / S11)

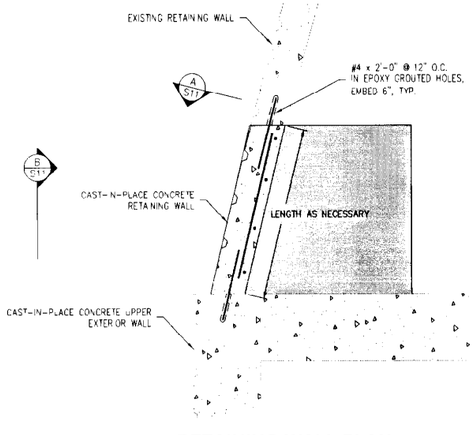
1" = 1'-0"



RETAINING WALL SECTION

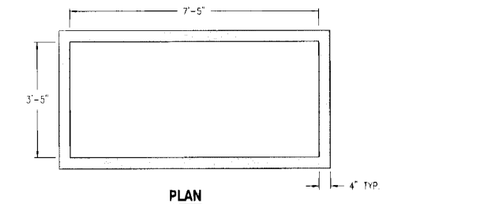
(A / S11)

1" = 1'-0"

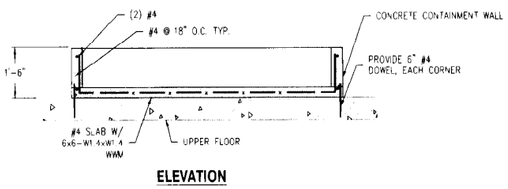


RETAINING WALL PLAN

1" = 1'-0"



PLAN

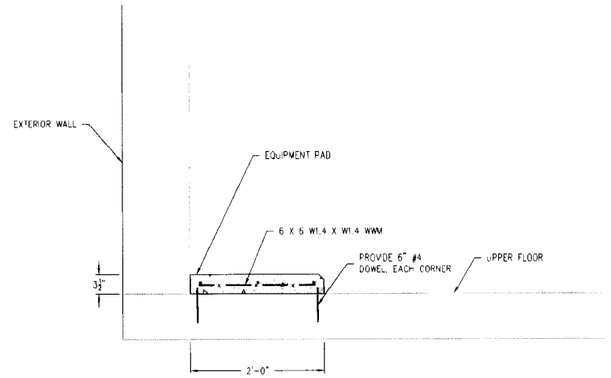


ELEVATION

ENGINE GENERATOR SECONDARY CONTAINMENT

(S / S03)

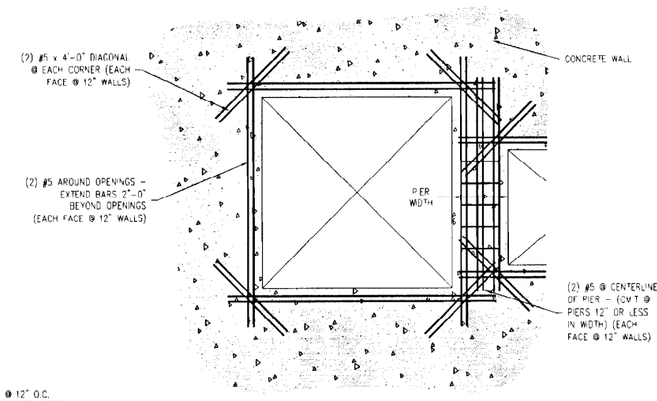
1" = 2'-0"



EQUIPMENT PAD

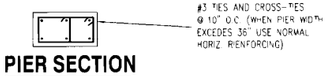
(T / S03)

1" = 1'-0"



TYPICAL OPENING REINFORCEMENT

1" = 1'-0"



PIER SECTION

NO	REVISION	BY	CHK	DATE
1	CONSTRUCTION RECORDS	KMB	TVP	1/30/98

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RICHARD H. HAEBERLE — STATE OF WASHINGTON — 6127 — REGISTERED PROFESSIONAL ENGINEER

SIGNED: 09/26/96

EXPIRES 6/2/98

City of Kirkland

Lake Plaza Lift Station Replacement

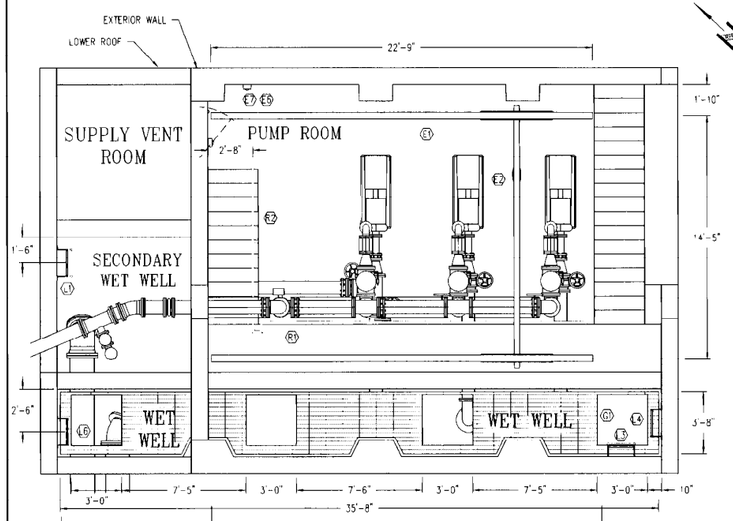
MISCELLANEOUS STRUCTURAL DETAILS

195.025	FILE-D18	TVP	DRE	JUN 01, 1998	SHOWN	12	S11	22 of 38

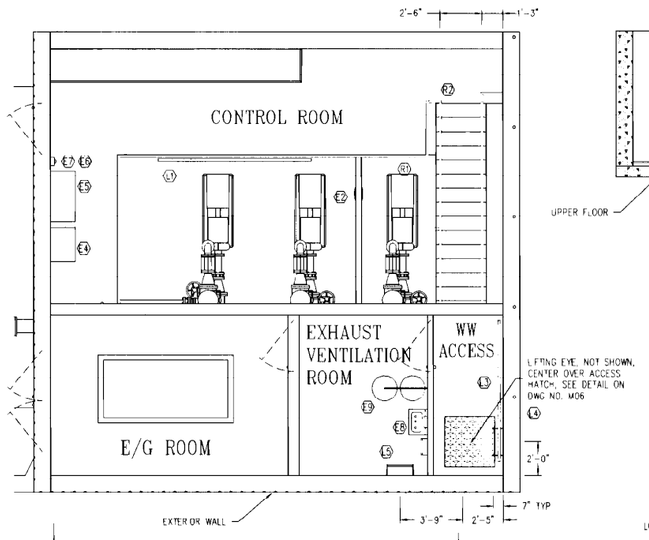
1570

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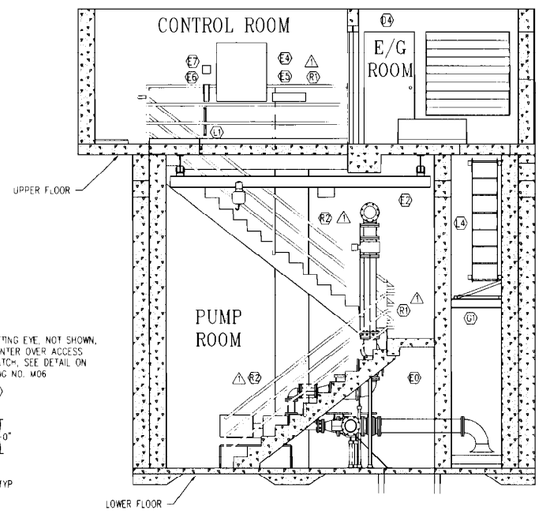
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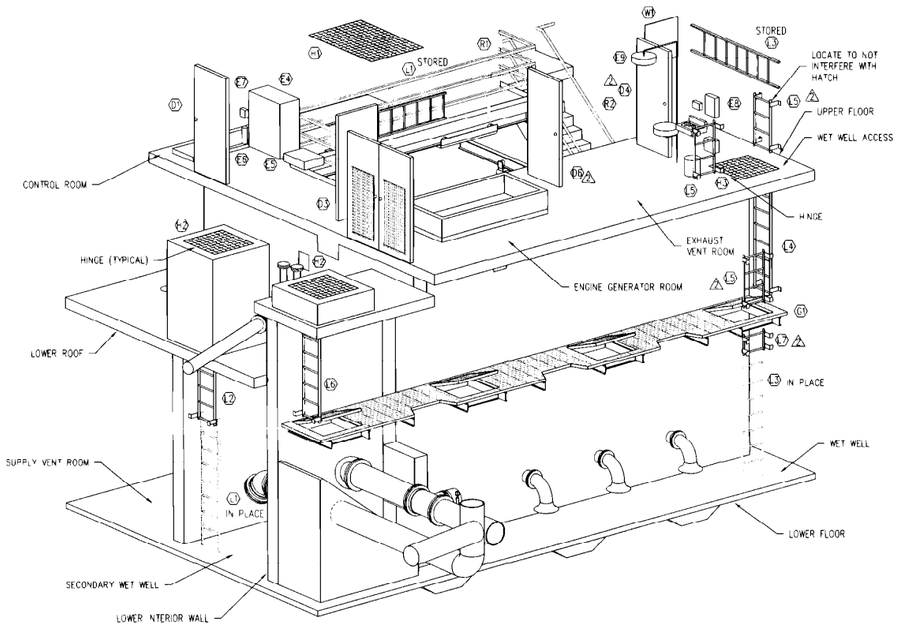
EQUIPMENT PLAN - LOWER AREA
1" = 4'-0"



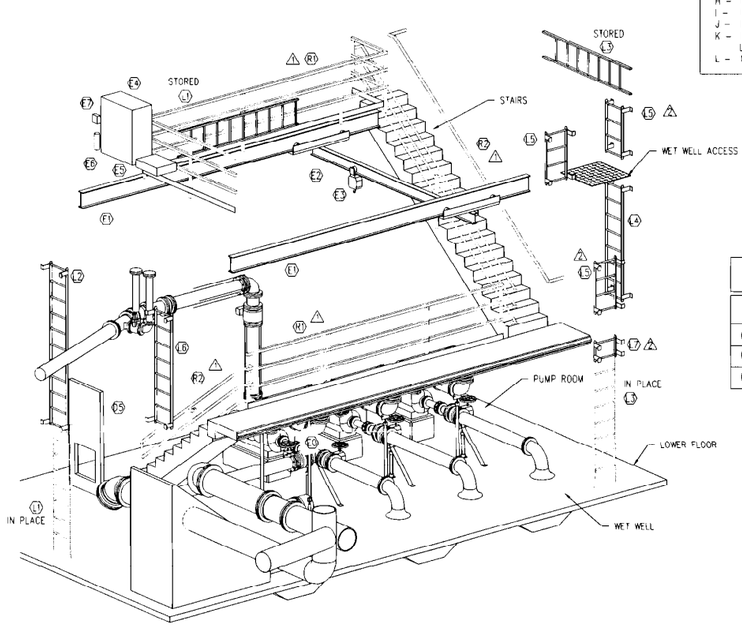
EQUIPMENT PLAN - UPPER AREA
1" = 4'-0"



SECTION
1" = 4'-0"



OBLIQUE
NOT TO SCALE



OBLIQUE
NOT TO SCALE

EQUIPMENT SCHEDULE

E1 RUNWAY BEAM, S12X31.8, A36 STEEL, SECURE WITH 3/4" DIA CAST-IN-PLACE A307 ANCHOR BOLTS @ 4' O.C. (ALTERNATE SIDES OF WEB) WITH 5" EMBEDMENT, TYP OF 2

E2 UNDER HUNG CRANE BRIDGE, 1 TON CAPACITY, SPAN AS SHOWN, EQUAL TO BUDGIT CATALOG NUMBER 305360 WITH END TRUCKS

E3 PUSH TROLLEY HOIST, 1 TON CAPACITY, EQUAL TO BUDGIT CATALOG NUMBER 8312, PROVIDE TROLLEY AND CRANE STOPS AT EACH END

F4 HEAVY DUTY LOCKING STORAGE CABINET, 36"W x 18"D x 42"H, GRAY, EQUAL TO LAB SAFETY GA-10273

E5 WRITING TABLE, 24"W x 18"D x 6"H, HINGED TOP, CONSTRUCTED FROM 1/2" CDX GRADE PLYWOOD WITH EXTERIOR GLUE, WRITING SURFACE SHALL BE LAMINATED HARD MAPLE, SANDED SMOOTH. ALL PLYWOOD SURFACES INCLUDING BOTTOM AND INTERIOR TO BE COVERED WITH WHITE PLASTIC LAMINATE. SECURE TABLE TO WALL SO WRITING SURFACE IS 36" ABOVE FLOOR.

E6 FIRE EXTINGUISHER, MOUNT ON WALL, CLEARLY VISIBLE, TYPICAL OF 2

E7 FIRST AID KIT, MOUNT ON WALL, CLEARLY VISIBLE, TYPICAL OF 2

E8 WALL HUNG SINK EQUAL TO AMERICAN STANDARD PENLYN LAVATORY 0373.029 WITH 2238.392 FAUCET, HOT AND COLD WATER WALL MOUNTED STAINLESS STEEL SOAP DISPENSER, EQUAL TO AMERICAN SPECIALTIES, INC. (ASI) 0942 WALL MOUNTED STAINLESS STEEL PAPER TOWEL DISPENSER, EQUAL TO ASI 0210 WALL MOUNTED STAINLESS STEEL TOWEL DISPOSAL, EQUAL TO ASI 0827. 6 GALLON HOT WATER TANK.

E9 SAFETY EYEWASH AND SHOWER, EQUAL TO LAB SAFETY SUPPLY WS-11443.

E0 DEHUMIDIFIER, PLUG INTO CONVENIENCE OUTLET. SEE SPECS FOR DETAILS.

W1 INTERIOR WINDOW, 24"W x 24" H

L1 PORTABLE FIBERGLASS EXTENSION LADDER, LENGTH AS SHOWN, PROVIDE HOOKS ATTACHING TO FIXED LADDER AND FOR STORING LADDER IN LOCATION SHOWN

L2 FIXED FIBERGLASS LADDER SEE DETAIL ON DWG NO. M06

L3 PORTABLE FIBERGLASS EXTENSION LADDER, LENGTH AS SHOWN, PROVIDE HOOKS ATTACHING TO FIXED LADDER AND FOR STORING LADDER IN LOCATION SHOWN

L4 FIXED FIBERGLASS LADDER SEE DETAIL ON DWG NO. M06, 4 SECTIONS

L5 FIXED FIBERGLASS LADDER SEE DETAIL ON DWG NO. M06

L6 FIXED FIBERGLASS LADDER SEE DETAIL ON DWG NO. M06

H1 RAILING AND TOE BOARD, SEE DETAIL ON DWG NO. M06

R2 STAIR HANDRAIL, SEE DETAIL ON DWG NO. M06

G1 FIBERGLASS GRATING, SEE DETAIL ON DWG NO. M05

DOOR HARDWARE CODES

A - WEATHER STRIP (ALL SIDES)
B - THRESHOLD
C - LEVER LATCH WITH LOCK
D - DEAD BOLT & FLUSH EXTENSION BOLTS & ASTRAGAL
E - DOOR STOP/HOOK (WALL MOUNT)
F - INTERIOR PANIC BAR OPENER
G - DOOR STOP (WALL MOUNT)
H - PUSH/ PULL HARDWARE
I - PASSAGE LATCH
J - DOOR CLOSER
K - INTERIOR PANIC BAR & EXTERIOR LEVER LATCH WITH LOCK
L - NON LOCKING DOOR KNOB

DOOR SCHEDULE

NO.	HARDWARE	QTY	SIZE (WxH)	FRAME	MATERIAL	LOUVER
D1	ABDEH	1	3'0" X 6'8"	STEEL	STEEL	NO
D2	ABDEH	1	6'0" X 6'8"	STEEL	STEEL	YES
D3	EL	1	3'0" X 6'8"	STEEL	STEEL	NO
2 D4	ABELJ	1	3'0" X 6'8"	STEEL	STEEL	NO
D5	EL	1	3'0" X 6'8"	STEEL	STEEL	YES
D6	EL	1	3'0" X 6'8"	STEEL	STEEL	YES

ACCESS HATCH SCHEDULE

	QUAN	LEAF	LOAD RATING	MATERIAL	BRAND	LADDER RUNGS	MODEL	SIZE LxW
H1	1	DOUBLE	300 PSF	ALUMINUM	BILCO	NO	JD-3AL	48" x 72"
H2	2	SINGLE	H20	ALUMINUM	BILCO	YES	J-4AL	36" x 36"
H3	1	SINGLE	300 PSF	ALUMINUM	BILCO	NO	J-4AL	36" x 36"

NO	REVISION	BY	CHK	DATE
2	CONSTRUCTION RECORDS	KMP	TVP	1/27/98
1	BUILDING PERMIT REVIEW	KMP	TVP	11/22/96

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SIGNED 09/26/96
EXPIRES 9/2/98

City of Kirkland
Lake Plaza Lift Station Replacement

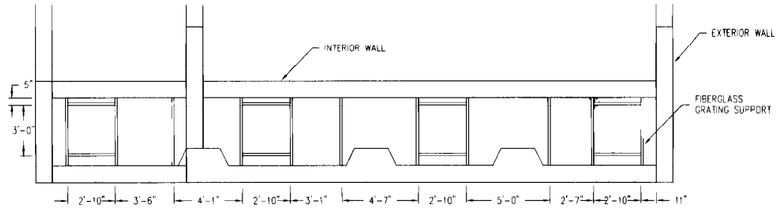
EQUIPMENT PLAN

195.025.01	PLZ-D28	TVP	DRE	JUN 01, 1998	SHOWN	48	M05	23 of 38

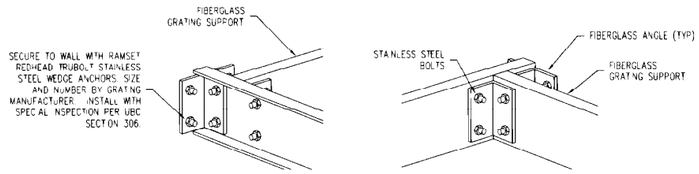
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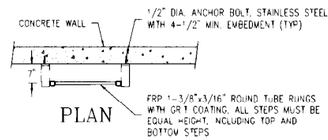
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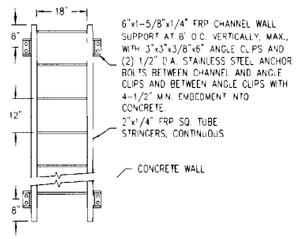
GRATING SUPPORT PLAN
1" = 4'-0"



GRATING SUPPORT ATTACHMENT
NOT TO SCALE

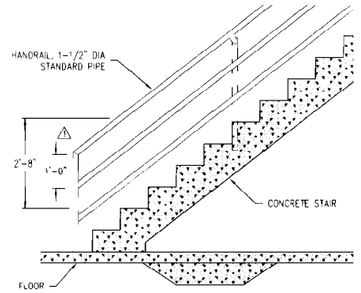


PLAN

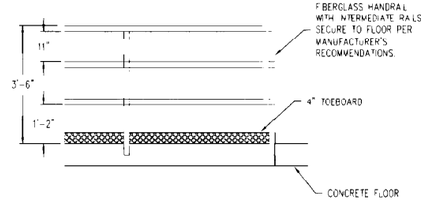


ELEVATION

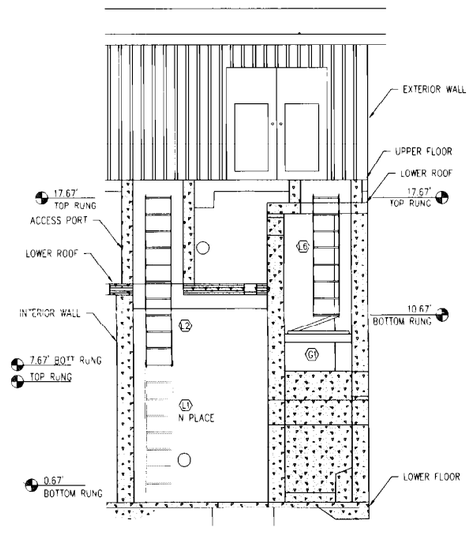
LADDER DETAIL
1" = 8'-0"



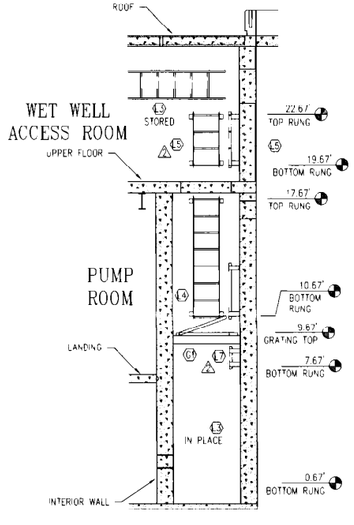
INTERIOR STAIR HANDRAIL
1" = 4'-0"



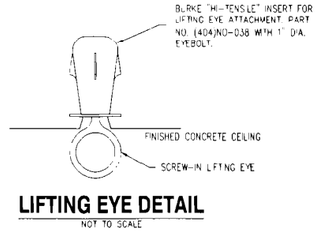
⚠ **INTERIOR RAILING**
1" = 4'-0"



SECTION (A/M05)
1" = 4'-0"



SECTION (C/M05)
1" = 4'-0"



LIFTING EYE DETAIL
NOT TO SCALE

NO.	DESCRIPTION	BY	CHK'D	DATE
⚠	CONSTRUCTION RECORDS	KMP	TVP	1/27/98
⚠	BUILDING PERMIT REVIEW	KMP	TVP	11/22/96

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City of Kirkland
Lake Plaza Lift Station Replacement

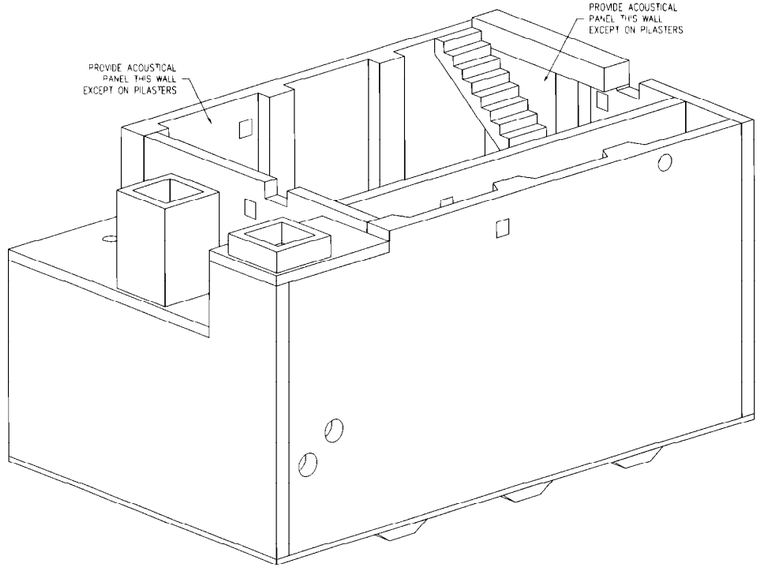
EQUIPMENT DETAILS

195.025.01	PLZ-D32	TVP	DRE	JAN 30, 1998	SHOWN	48	M06	24 of 39

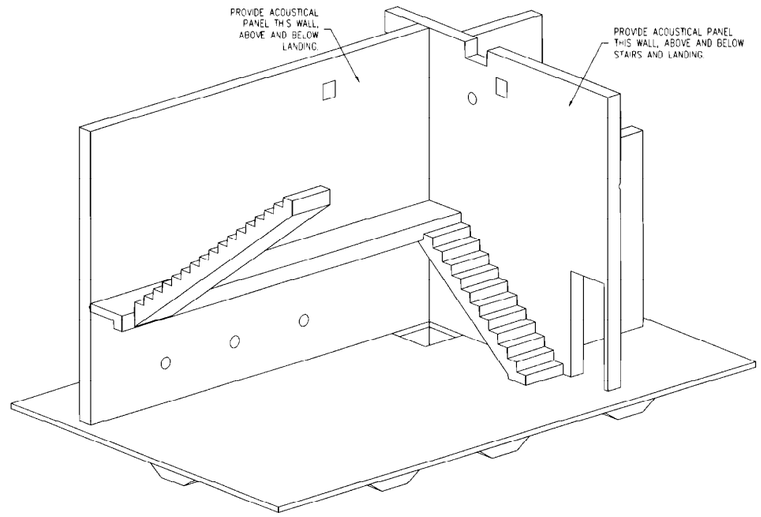
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LOWER FLOOR LOOKING EAST
NOT TO SCALE



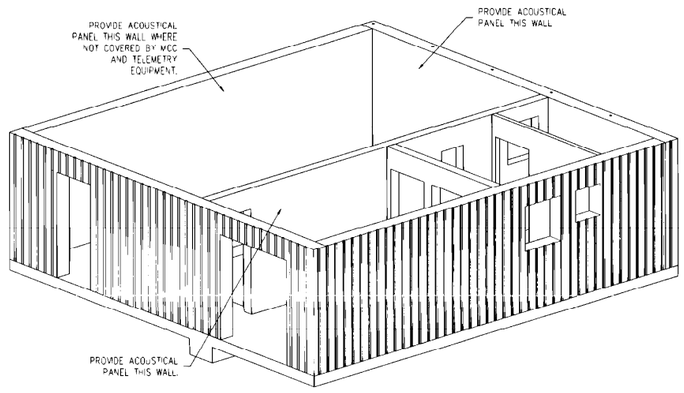
LOWER FLOOR LOOKING WEST
NOT TO SCALE

NOTES:

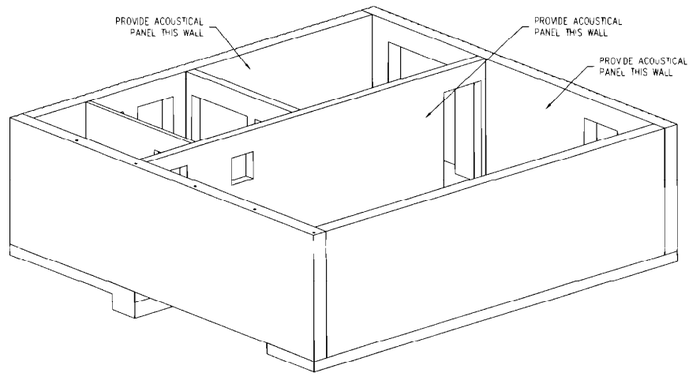
SEE SPECIFICATIONS FOR ACOUSTICAL PANEL DETAILS.

ACOUSTICAL PANELS TO BE INSTALLED PER MANUFACTURER'S RECOMMENDATIONS.

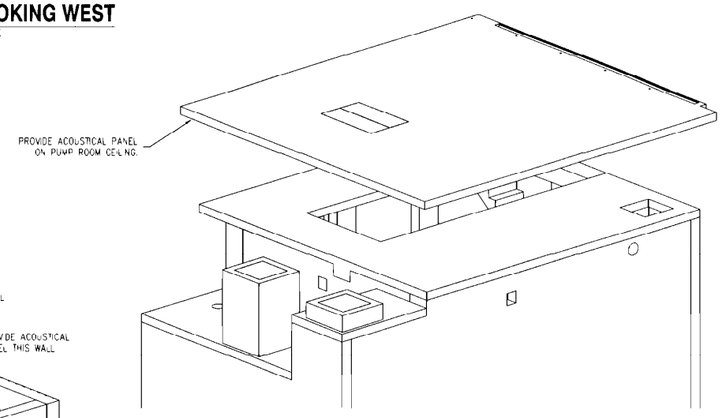
INSTALL ACOUSTICAL PANELS SO AS NOT TO INTERFERE WITH THE OPERATION, ACCESS OR MAINTENANCE OF ANY EQUIPMENT.



UPPER FLOOR LOOKING EAST
NOT TO SCALE



UPPER FLOOR LOOKING WEST
NOT TO SCALE



UPPER FLOOR AND ROOF LOOKING EAST
NOT TO SCALE

NO.	REVISION	BY	APP'D	DATE
1	CONSTRUCTION RECORDS	KMP	TVP	1/30/98

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City of Kirkland
Lake Plaza Lift Station Replacement

ACOUSTICAL PANEL PLAN

195.025.01	PLZ-D15	TVP	DRE	JUN. 01, 1998	SHOWN	48	M08	25 of 38

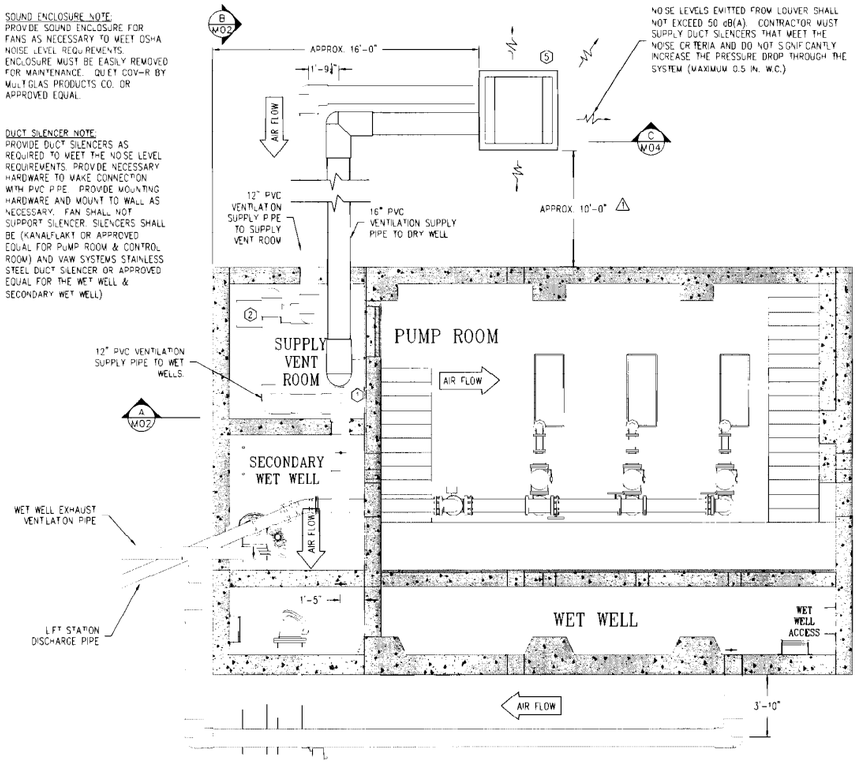
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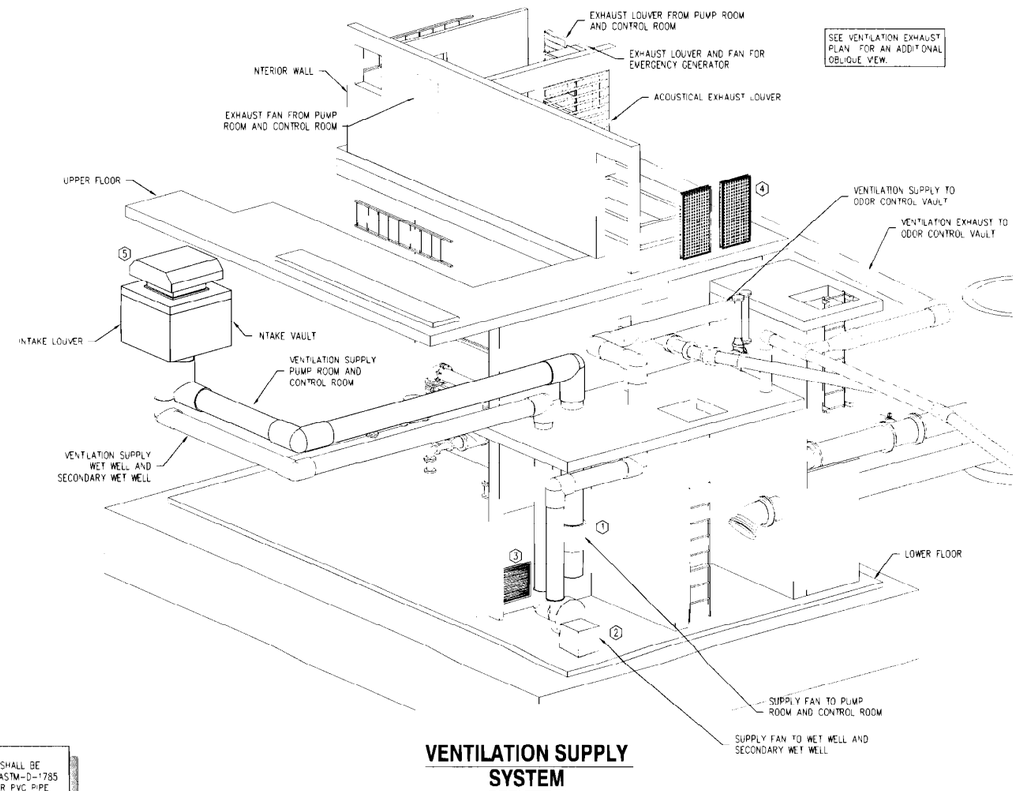
SOUND ENCLOSURE NOTE:
PROVIDE SOUND ENCLOSURE FOR FANS AS NECESSARY TO MEET OSHA NOISE LEVEL REQUIREMENTS. ENCLOSURE MUST BE EASILY REMOVED FOR MAINTENANCE. QUIET COV-R BY MULTIGLAS PRODUCTS CO. OR APPROVED EQUAL.

DUCT SILENCER NOTE:
PROVIDE DUCT SILENCERS AS REQUIRED TO MEET THE NOISE LEVEL REQUIREMENTS. PROVIDE NECESSARY HARDWARE TO MAKE CONNECTION WITH PVC PIPE. PROVIDE MOUNTING HARDWARE AND MOUNT TO WALL AS NECESSARY. FAN SHALL NOT SUPPORT SILENCER. SILENCERS SHALL BE (KANALFLAKT OR APPROVED EQUAL FOR PUMP ROOM & CONTROL ROOM) AND VAW SYSTEMS STAINLESS STEEL DUCT SILENCER OR APPROVED EQUAL FOR THE WET WELL & SECONDARY WET WELL)



LOWER FLOOR PLAN

1" = 4'-0"



VENTILATION SUPPLY SYSTEM

NOT TO SCALE

NOTES:
1.) ALL PVC PIPE AND FITTINGS SHALL BE SCHEDULE 40 AND CONFORM TO ASTM-D-1785 AND MEET ASTM-D-1784-65T FOR PVC PIPE TYPE 1 MATERIAL.

2.) SEE STRUCTURAL PLANS FOR LOCATIONS OF VENTILATION PIPE PENETRATIONS AND LOUVERS.

FAN LEGEND

(1) SUPPLY FAN TO PUMP ROOM AND CONTROL ROOM – INLINE DIRECT DRIVE CENTRIFUGAL TYPE MUST BE ABLE TO SUPPLY 1700 CFM AT 1.0" W.C., USING 0.98HP, 1 PHASE, 115 VOLT, 60HERTZ MOTOR. FAN PERFORMANCE TESTS SHALL BE CONDUCTED IN ACCORDANCE WITH AMCA STANDARD 210-85, UL AND CSA APPROVAL. MOTOR BEARINGS SHALL BE PERMANENTLY SEALED AND SELF LUBRICATING BALL TYPE, 100% SPEED CONTROL THROUGH DECREASE IN VOLTAGE USING SOLID STATE TYPE CONTROL, A THREE YEAR WARRANTY. MAXIMUM NOISE LEVEL AS MEASURED 5 FT FROM SOURCE SHALL BE 62 dB(A). THE FAN (MODEL KD16), CONNECTION CLAMPS (TYPE FK) AND MOUNTING BRACKET (TYPE MB) SHALL BE KANALFLAKT OR APPROVED EQUAL.

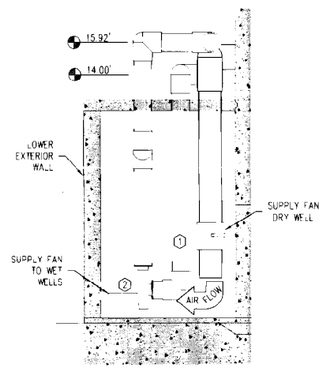
(2) SUPPLY FAN TO WET WELL AND SECONDARY WET WELL – RADIAL FUME EXHAUSTER FAN CONSTRUCTED OF FRP MATERIAL, ARRANGEMENT 10, SELECTED TO OPERATED A 600 CFM AT 2" W.C. (NORMAL OPERATION) AND 800 CFM AT 7" W.C. (EMERGENCY OPERATION). FAN SPEED AT 2720 RPM, USING A 3 HP, TEFC, 3 PHASE, 460 VOLT, 60 HERTZ MOTOR. OPERATING AT 1800/900 RPM, CONSTANT PITCH V-BELT DRIVE, 12" FLANGED OUTLET AND INLET DRILLED TO ANSI 150LB PATTERN, VITRON SHAFT SEAL, DRAIN, BELT GUARD, POSITIVE SCREW ADJUSTMENT FOR TENSIONING BELTS. MAXIMUM NOISE LEVEL AS MEASURED 5 FT FROM SOURCE SHALL BE 76 dB(A). NEW YORK BLOWER, SIZE 315 RFE OR APPROVED EQUAL.

LOUVER LEGEND

(3) 24"x24" SUPPLY LOUVER TO DRY WELL – FRAME 18 GA. COLD ROLLED, MITERED CORNERS, BAKED ENAMEL COLOR AS SPECIFIED BY OWNER. LOUVER AND DAMPERS, INC. MODEL NO. CHDL-2F OR APPROVED EQUAL

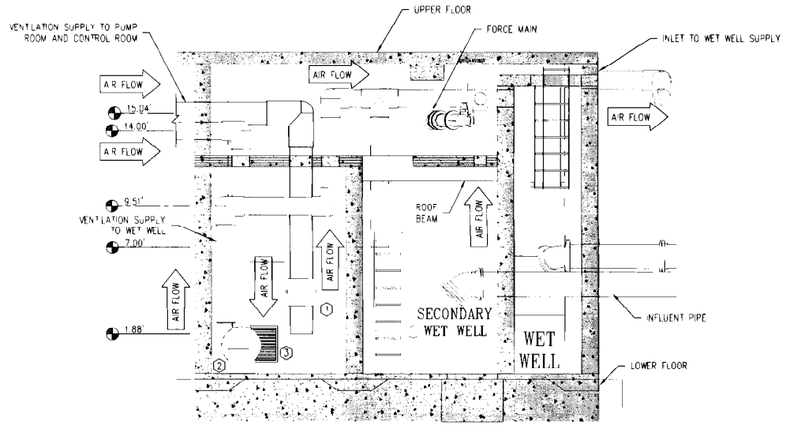
(4) 24"x 48" INTAKE LOUVER FOR EMERGENCY GENERATOR ROOM – SECURITY DOOR LOUVERS WITH INVERTED SPLIT BLADES, 18 GAUGE ROLLED STEEL, BAKED ENAMEL FINISH, COLOR AS SPECIFIED BY OWNER, TYPICAL OF 2.

(5) INTAKE LOUVER – LOW PROFILE (21" MAXIMUM HEIGHT) GRAVITY LOUVER, WITH KYNAR FINISH, HINGED HOOD, AND STAINLESS STEEL BUG SCREEN. COLOR AS SPECIFIED BY OWNER. LOUVERS AND DAMPERS, INC. MODEL NO. SGE 100 OR APPROVED EQUAL.



ELEVATION (A M02)

1" = 4'-0"



ELEVATION (B M02)

1" = 4'-0"

NOTES:
1. ALL CONTROL DAMPERS WILL BE CORROSION RESISTANT. STAINLESS STEEL HARDWARE PVC OR FIBERGLASS MATERIAL FOR THE FRAME. PROVIDE BLADE STOPS ON TOP AND BOTTOM, MANUAL LOCKING QUADRANT, AND IN DUCT MOUNTING RIBS.

DAMPER LOCATIONS	DUCT DIAMETERS	
(SUPPLY)		PROPOSED DAMPER
SECONDARY WET WELL	8"	
WET WELL	12"	
(EXHAUST)		
SECONDARY WET WELL	8"	
WET WELL	8"	

2. SYSTEM SHALL BE TESTED AND BALANCED BY A QUALIFIED BALANCING CONTRACTOR. THE DRY WELL SIDE OF THE LIFT STATION MUST HAVE A POSITIVE 0.1" H20 WATER COLUMN OF PRESSURE DIFFERENTIAL. THE WET WELL SPACES MUST HAVE A NEGATIVE 0.1" H20 WATER COLUMN OF PRESSURE DIFFERENTIAL.

NO.	REVISION	BY	APP'D	DATE
1	CONSTRUCTION RECORDS	KMP	TVP	1/30/98

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SIGNED: 09/26/96
EXPIRES: 5/2/98

City of Kirkland
Lake Plaza Lift Station Replacement

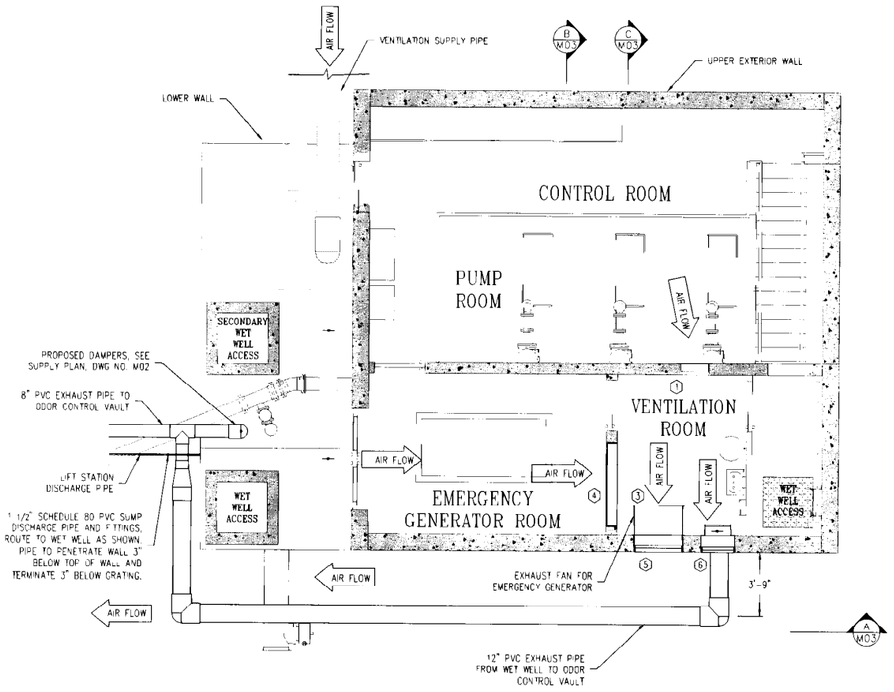
VENTILATION SUPPLY PLAN

195.025.01	PLZ-D08	SLR	TVP	JAN 30, 1998	SHOWN	48	M02	26 OF 38

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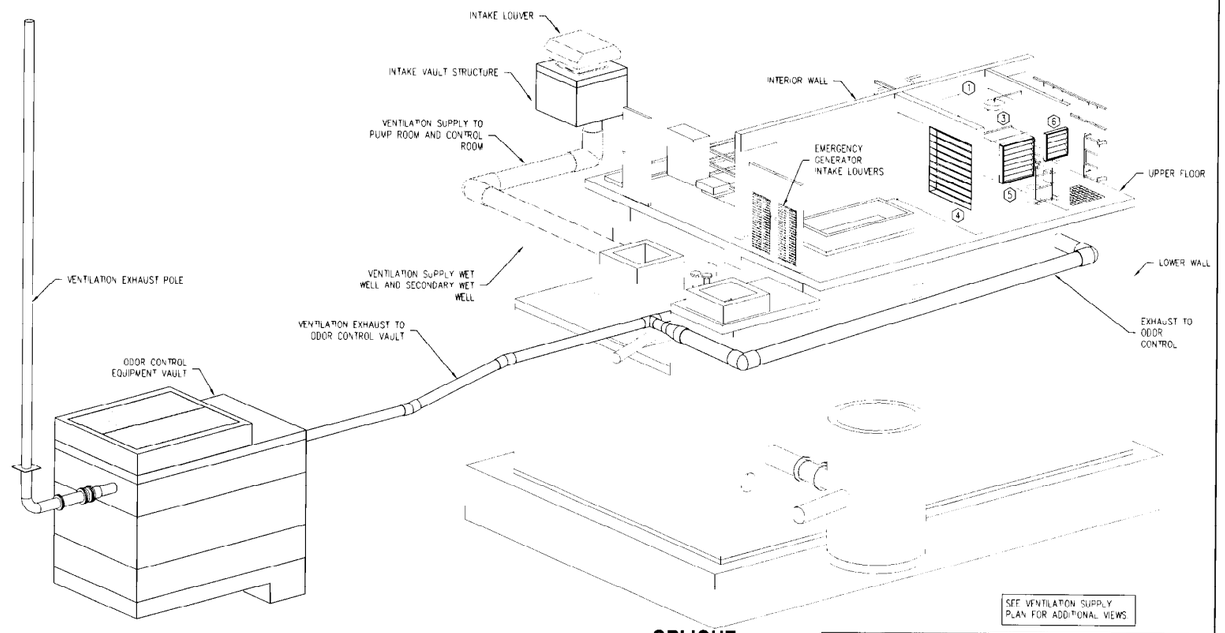
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UPPER FLOOR PLAN

1" = 4'-0"



OBLIQUE

NOT TO SCALE

NOTES:
1.) UNLESS OTHERWISE NOTED, ALL PVC PIPE AND FITTINGS SHALL BE SCHEDULE 40 AND CONFORM TO ASTM-D-1785 AND WEET ASTM-D-1784-65T FOR PVC PIPE TYPE 1 MATERIAL.

2.) SEE STRUCTURAL PLANS FOR LOCATIONS OF VENTILATION PIPE PENETRATIONS AND LOUVERS.

FAN LEGEND

(1) EXHAUST FAN FROM PUMP ROOM AND CONTROL ROOM - SIDEWALL PROPELLER FAN, 1300 CFM AT 1.0" W.C., FAN PERFORMANCE TESTS SHALL BE CONDUCTED IN ACCORDANCE WITH AMCA STANDARD 210-85, UL AND CSA APPROVAL, MOTOR BEARINGS SHALL BE PERMANENTLY SEALED AND SELF LUBRICATING BALL TYPE, 100% SPEED CONTROL THROUGH DECREASE VOLTAGE USING SOLID STATE TYPE CONTROL, THREE YEAR WARRANTY, MAXIMUM NOISE LEVEL AS MEASURED 10 FT. FROM SOURCE SHALL BE 55 dB(A). THE FAN SHALL BE KANALFAKT APOLLO SERIES MODEL NO. A20-4 (WALL OPENING SIZE 21" x 21") OR APPROVED EQUAL.

(2) EXHAUST FAN FROM WET WELL AND SECONDARY WET WELL - SEE VENTILATION DETAIL SHEET, DWG NO. M04.

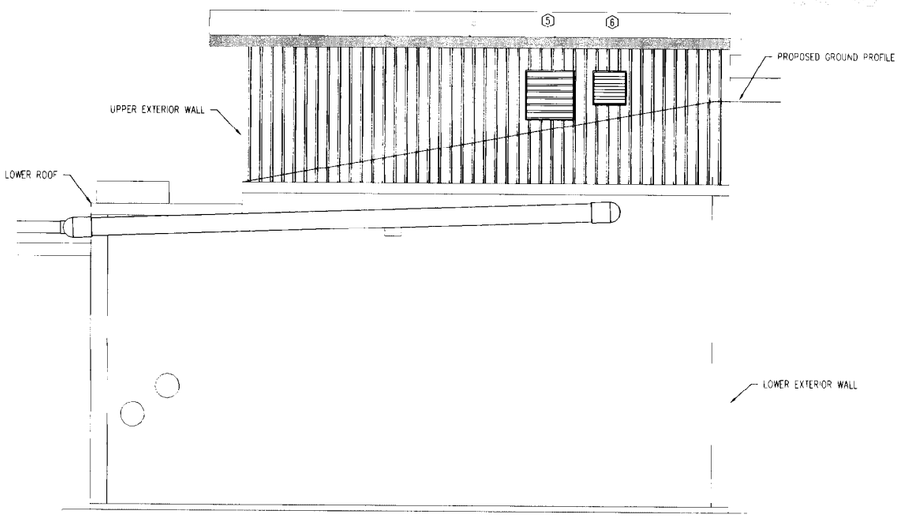
(3) EXHAUST FAN FOR EMERGENCY GENERATOR BELT DRIVEN PROPELLER FAN, 5300 CFM AT 0.25" W.C. PERFORMANCE TEST SHALL BE CONDUCTED IN ACCORDANCE WITH AMCA STANDARDS. MOTOR 1.5 HP, 480 VOLT, 3 PHASE WITH REAR GUARD AND WALL HOUSING. MAXIMUM NOISE LEVEL AS MEASURED FROM SOURCE SHALL BE 68 dB(A). ACME DCK30K OR APPROVED EQUAL.

LOUVER LEGEND

(4) EXHAUST ACOUSTICAL LOUVER, SIZE FOR 5300 CFM AT .25" W.C. (APPROX. 60"x60"), 8" DEPTH, LOUVERS AND DAMPERS MODEL NO. ACF-C9 WITH KYNAR FINISH AND SECURITY BARS OR APPROVED EQUAL. COLOR AS SPECIFIED BY OWNER.

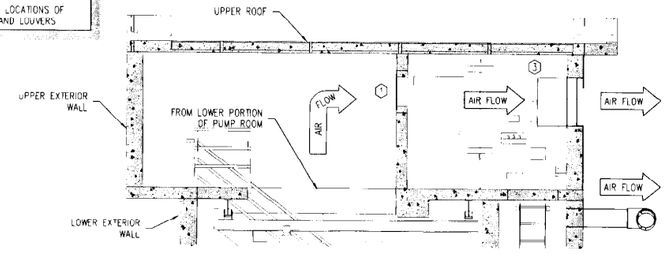
(5) EMERGENCY GENERATOR EXHAUST LOUVER, SIZED FOR EXHAUST FAN, SEE INFORMATION ON FAN FOR SIZE. APPROX. 34"x34", DEPTH 4". LOUVERS AND DAMPERS, INC. MODEL NO. EL-41-C OR APPROVED EQUAL WITH KYNAR FINISH, SECURITY BARS, AND STAINLESS STEEL INSECT SCREEN. COLOR AS SPECIFIED BY OWNER.

(6) EXHAUST LOUVER FOR PUMP ROOM AND CONTROL ROOM, SIZE IS 24"x24", WITH 4" DEPTH, LOUVER AND DAMPERS, INC. MODEL NO. EL-41-C OR APPROVED EQUAL WITH KYNAR FINISH, SECURITY BARS, AND STAINLESS STEEL INSECT SCREEN. COLOR AS SPECIFIED BY OWNER. LOUVER TO BE HINGED TO OPEN TO THE EXTERIOR. PROVIDE HASP SO THAT LOUVER CAN ONLY BE OPENED FROM THE BUILDING INTERIOR.



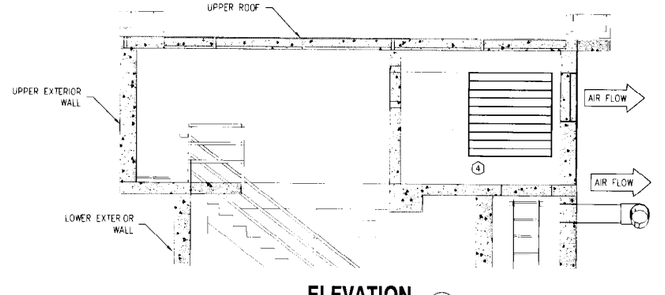
ELEVATION

1" = 4'-0" A M03



ELEVATION

1" = 4'-0" C M03



ELEVATION

1" = 4'-0" B M03

NO.	REVISIONS	BY	APP'D	DATE
1	CONSTRUCTION RECORDS	KMP	TVP	1/30/98

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RICHARD H. HANSEN — STATE OF WASHINGTON — 6757 — REGISTERED PROFESSIONAL ENGINEER

SIGNED 09/26/96

EXPIRES 9/2/98

City of Kirkland

Lake Plaza Lift Station Replacement

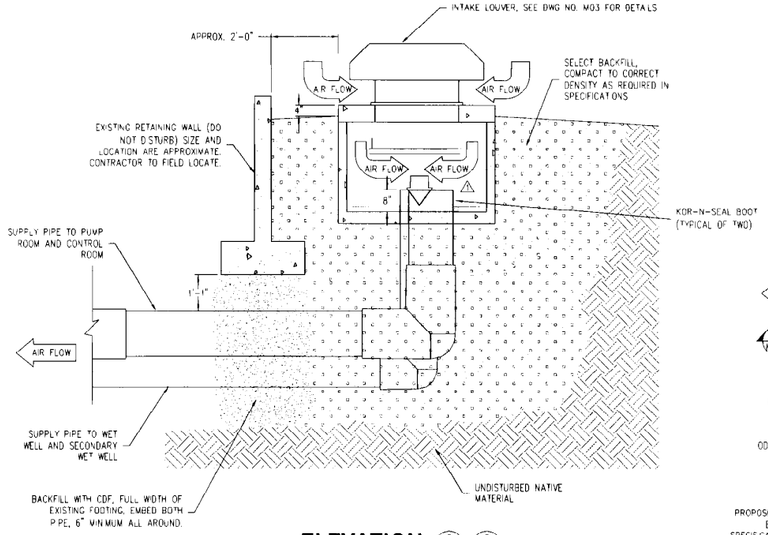
VENTILATION EXHAUST PLAN

195.025.01	PLZ-013	SLR	TVP	JUN 01, 1998	SHOWN	48	M03	27 of 38

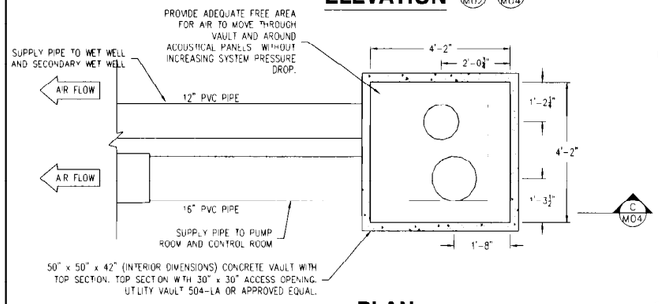
1570

29/39

1570



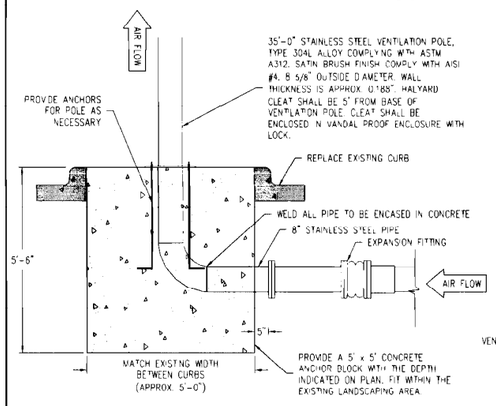
ELEVATION



PLAN

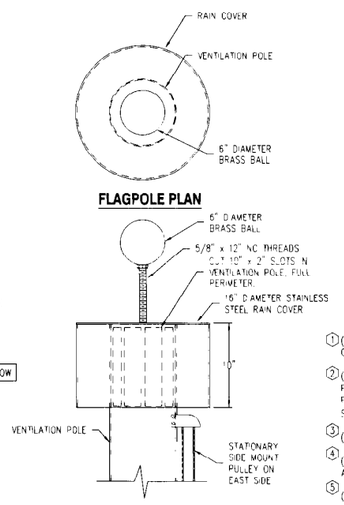
INTAKE VAULT

1" = 2'-0"



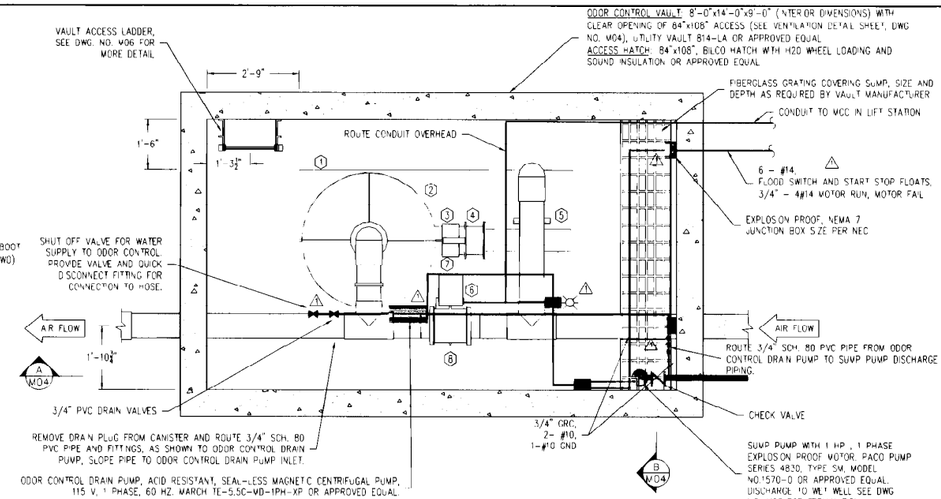
VENTILATION POLE DETAILS

1" = 1'-0"



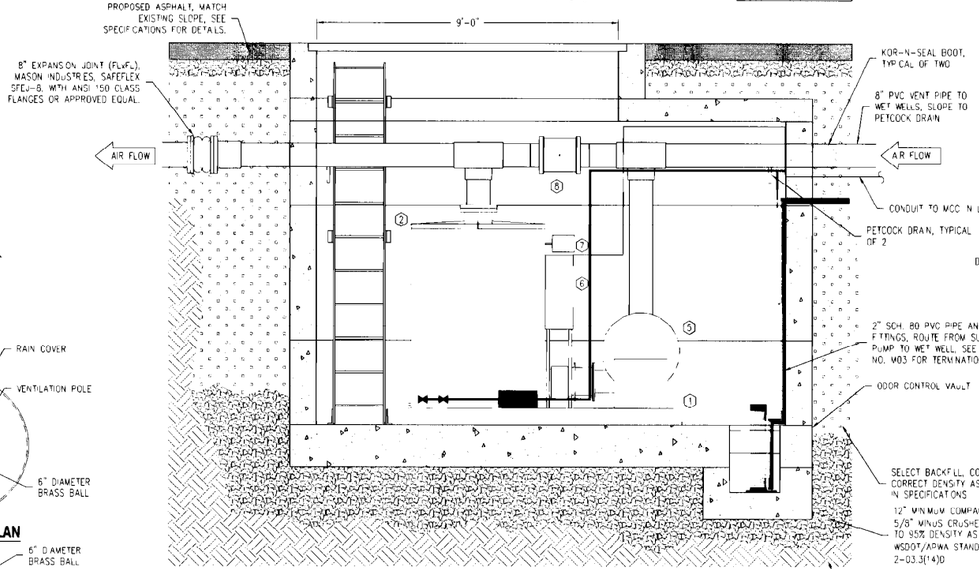
VENTILATION POLE TOP SECTION

NOT TO SCALE



ODOR CONTROL VAULT PLAN

1" = 2'-0"



ODOR CONTROL VAULT ELEVATION

A M04

1" = 2'-0"

ODOR CONTROL EQUIPMENT

(1) SKID SIZED FOR MOUNTING ALL EQUIPMENT AND THE SUPPORT THE EQUIPMENT WEIGHT, ONE PIECE CONSTRUCTION, COATED WITH FINISH AS CALLED OUT IN PLANS, AND HAVE GROUNDING LUG.

(2) (1) CARBON FILTER POLYPROPYLENE CANISTER WITH THE FOLLOWING FEATURES. 8" OUTLET SHALL BE ANS 150 FLANGE TO MATCH 8" SCH. 80 PVC FLANGE. REMOVABLE COVER WITH STAINLESS STEEL FASTENERS, DRAIN 3/4" FNPT WITH PLUG, FRP GRATING WITH PPL CARBON RETAINING SCREEN, PRESSURE GAUGE "MAGNEHELIC" STYLE, AND STAINLESS STEEL GROUNDING ROD. RATED AT 15" W.C. POSITIVE PRESSURE AND 10" W.C. VACUUM

(3) (1) NEOPRENE FLEXIBLE BOOT, MINIMUM 1/8" WALL THICKNESS.

(4) (1) PVC 90H SHUT-OFF FLOW CONTROL VALVE, WITH PVC BODY AND DISK, STAINLESS STEEL SHAFT, EPDM SEAT AND HAND QUADRANT LEVEL.

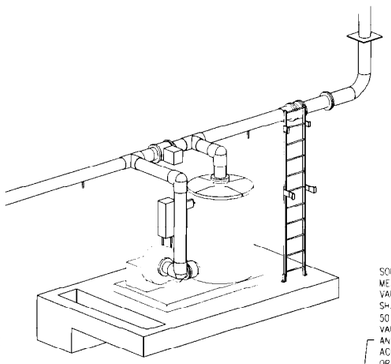
(5) (1) FRP PRESSURE BLOWER, AMCA CERTIFIED WITH A 3 PHASE, 60HZ, 460 VOLT, TEXP (CLASS 1, DIVISION 1), 5 HP, 3,500 RPM, V-BELT DRIVEN MOTOR, SIZED TO SUPPLY THE SPECIFIED AIR FLOW (APPROX. 750 CFM) AND SUFFICIENT HEAD TO OVERCOME SYSTEM STATIC PRESSURE (APPROX. 12" W.C.) INLET FLANGE SHALL BE ANSI 150 DRILL TO MATCH SCH. 80 PVC FITTING FLANGES. NEW YORK BLOWER FBP-10, ARRANGEMENT 10 OR APPROVED EQUAL.

(6) (1) MOTOR STARTER, EXPLOSION PROOF, NEMA 7 FRP ENCLOSURE WITH SIZE 1 STARTER, FUSIBLE DISCONNECT SWITCH WITH 20 AMP TIME DELAY FUSE, HEATER ELEMENTS, AND "START" AND "STOP" BUTTONS WITH GREEN PILOT "RUN" LIGHT, DRY CONTACTS FOR FAN RUN AND FAN FAIL.

(7) H2S BED MONITOR

SELF CONTAINED, SKID MOUNTED MODULAR ODOR CONTROL FILTER PACKAGE UNIT SHALL BE CAPABLE OF 1,000 CFM ODOR TREATMENT. PRODUCT SHALL BE CALGON CARBON CORPORATION MUNICIPAL HIGH FLOW VENTSORB SELF CONTAINED, SKID MOUNTED, MODULAR ODOR CONTROL SYSTEM OR APPROVED EQUAL.

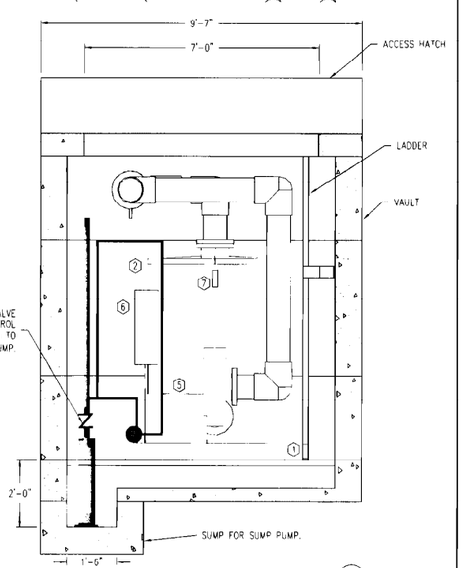
(8) 8" MOTOR OPERATED CONTROL DAMPER AND CONNECTION FITTINGS CONNECT BETWEEN TEE FROM CANISTER AND TEE TO FAN. 8" D.A. DAMPER, LENGTH 12", FLANGED AND DRILLED TO ANSI 150 BOLT CIRCLE, STAINLESS STEEL. POTTORFF SERIES CD-80 OR APPROVED EQUAL. MOTOR OPERATOR SHALL BE POWER OPEN, POWER CLOSE, 2- POSITION, 120 VOLT, EXPLOSION PROOF MOTOR. MOTOR OPERATOR TO BE BARBARA-COLEMAN MAB-418 OR APPROVED EQUAL



ODOR CONTROL SYSTEM

NOT TO SCALE

SOUND LEVEL MEASURED FROM VAULT EXTERIOR SHALL NOT EXCEED 50 dB(A). COVER VAULT WALLS, HATCH AND CEILING WITH ACOUSTICAL PANELS OR PROVIDE SOUND ENCLOSURE FOR FAN. SEE NOTE ON FAN ENCLOSURES ON DWG NO. M02.



ODOR CONTROL VAULT ELEVATION

B M04

1" = 2'-0"

NO.	REVISION	BY	APP'D	DATE
1	CONSTRUCTION RECORDS	KMP	TVP	7/28/98

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City of Kirkland
Lake Plaza Lift Station Replacement

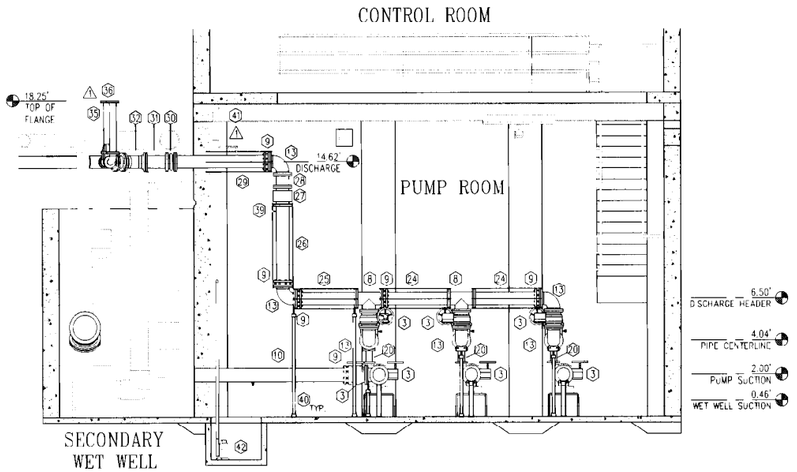
VENTILATION DETAILS

195.025.02	PLZ-D27	SLR	TVP	JUN. 01, 1998	SHOWN	24	M04	28 of 38

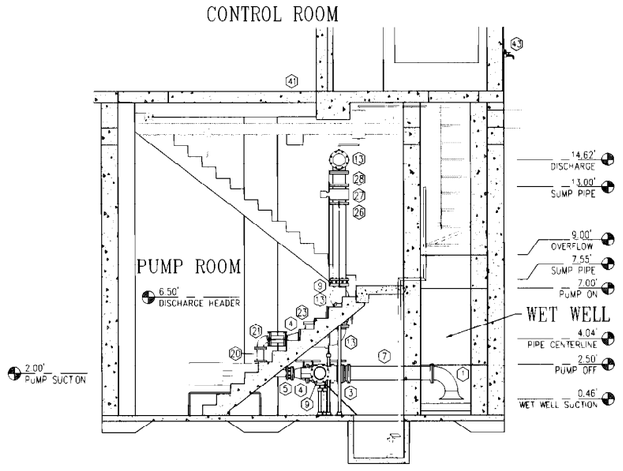
1570

39/39

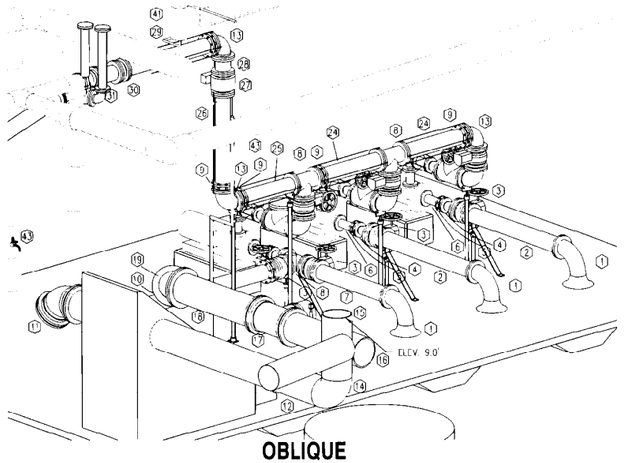
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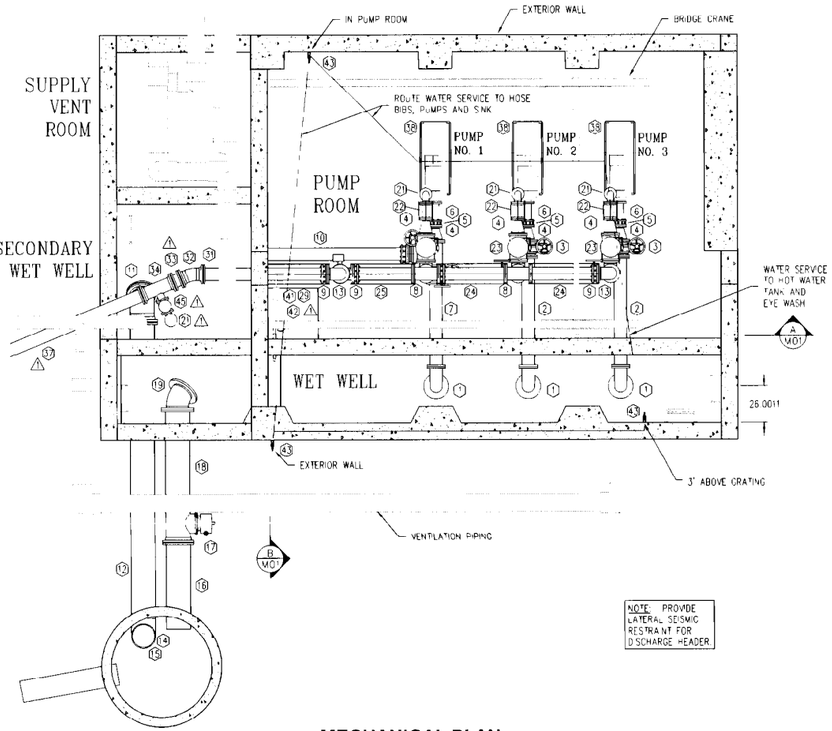
SECTION
1" = 4'-0"
(A/M01)



SECTION
1" = 4'-0"
(B/M01)

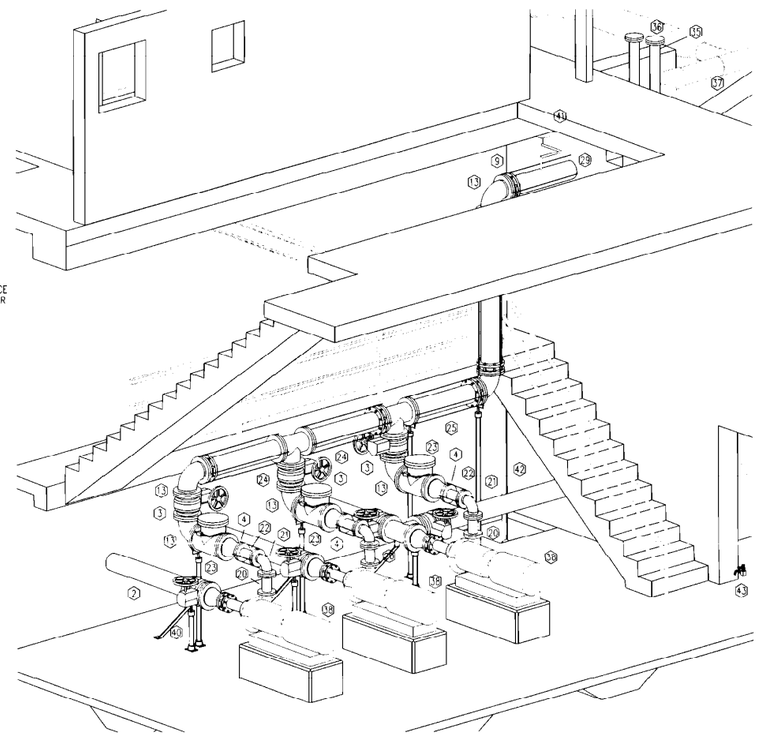


OBLIQUE
NOT TO SCALE



NOTE: PROVIDE LATERAL SEISMIC RESTRAINT FOR DISCHARGE HEADER.

MECHANICAL PLAN
1" = 4'-0"



OBLIQUE
NOT TO SCALE

MECHANICAL LEGEND

1. 8" SS 90° BEND (FLxFLARE)
2. 8" SS SPOOL (FLxFL), 6'-5 1/2" LENGTH
3. 8" DI ECCENTRIC VALVE (FLxFL) WITH HAND WHEEL ACTUATOR
4. 8"x4" DI REDUCER (FLxFL)
5. 4" DI FCA
6. 4" DI SPOOL (FLxPE), APPROX. 17" LENGTH
7. 8" SS SPOOL (FLxFL), 4'-11 1/2" LENGTH
8. 8" DI TEE (FLxFLxFL)
9. 8" DI FCA
10. 8" DI SPOOL (PExPE), APPROX. 9'-4" LENGTH
11. 16" DI 45° BEND (MJxMJ)
12. 16" DI SPOOL (PExPE), APPROX. 18'-6" LENGTH
13. 8" DI 90° BEND (FLxFL)
14. 16" D 90° BEND (MJxMJ)
15. 16" D SPOOL (PExPE), APPROX. 2'-6" LENGTH
16. 16" D SPOOL (PExPE), APPROX. 5'-4" LENGTH
17. 16" D ECCENTRIC VALVE (MJxMJ), WITH UNDERGROUND ACTUATOR AND EXTENSION STEM AND STEM GUIDE
18. 16" DI SPOOL (PExPE), APPROX. 5'-10" LENGTH
38. HORIZONTAL FRAME MOUNTED CENTRIFUGAL PUMP, 550 GPM @ 38' TDH
39. PRESSURE GAUGE WITH DIAPHRAGM SEAL, SEE SPECS FOR DETAILS
40. PIPE SUPPORT EQUAL TO STAND-ON PIPE SUPPORT
41. 1" SEWAGE COMBINATION AIR RELEASE AND VACUUM VALVE, ROUTE DISCHARGE TO WET WELL
16. 16" DI 45° BEND (FLxFL)
20. 4" DI SPOOL (FLxFL), 11" LENGTH
21. 4" DI 90° BEND (FLxFL)
22. 4" D SPOOL (FLxFL), 11" LENGTH
23. 8" D SWING CHECK VALVE (FLxFL)
24. 8" D SPOOL (FLxPE), 4'-0" LENGTH
25. 8" D SPOOL (FLxPE), 3'-7 1/2" LENGTH
26. 8" D SPOOL (FLxPE), APPROX. 4'-10" LENGTH
27. 8" MAGNETIC FLOW METER EQUAL TO TIGER MAG FM855-083-111-0
28. 8" D SPOOL (FLxFL), 9" LENGTH
29. 8" D SPOOL (PExPE), APPROX. 5'-8" LENGTH
30. 8" FLEXIBLE COUPLING
31. 8" DI SPOOL (FLxPE), APPROX. 15" LENGTH
32. 8" DI 22 1/2° BEND (MJxMJ) W/ CONCRETE BLOCKING
33. 8" DI SPOOL (PExPE), APPROX. 3" LENGTH
34. 8"x8"x4" DI TEE (MJxMJxFL)
35. 4" DI SPOOL (FLxFL), APPROX. 34" LENGTH
36. 4" DI BLIND FLANGE, PROVIDE METER BOX ACCESS
37. 8" DI SPOOL (PExPE), APPROX. 8'-8" LENGTH, SEE DWG NO. C07 FOR CONTINUATION
45. 4" DI GATE VALVE (FLxFL) WITH VALVE BOX
42. SUBMERSIBLE SUMP PUMP, 50 GPM, EQUAL TO PACO. PROVIDE 2" SUMP DISCHARGE PIPING WITH BRONZE GATE VALVE AND DOUBLE CHECK VALVE NEAR PUMP ROOM FLOOR. ROUTE AS SHOWN.
43. 1" HOSE BIB WITH 1" COPPER WATER SERVICE PIPE, 50' OF 1" HOSE AND HOSE RACK IN PUMP ROOM.

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SIGNED 09/26/96
EXPIRES 6/2/98

City of Kirkland
Lake Plaza Lift Station Replacement

MECHANICAL PLAN

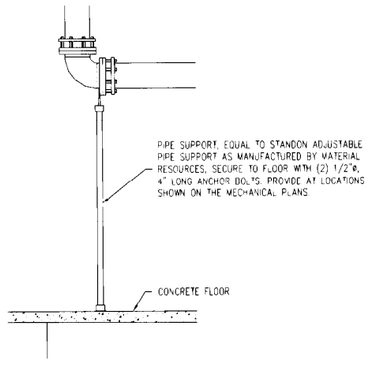
NO	REVISION	BY	REVISED	DATE
1	CONSTRUCTION RECORDS	KMP	TVP	1/30/98

195.025.01	PLZ-D09	TVP	DRE	JUN. 01, 1998	SHOWN	48	M01	29 OF 38

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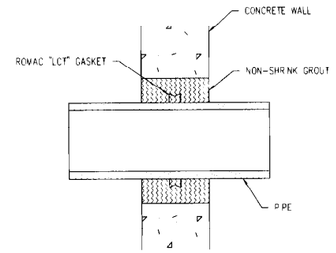
31/39

1570



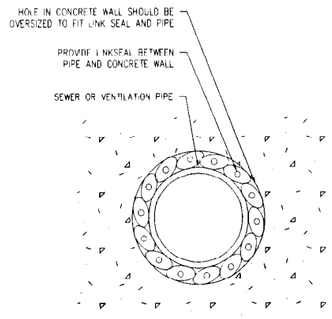
PIPE SUPPORT DETAIL

NOT TO SCALE



GROUT PENETRATION

NOT TO SCALE



PIPE PENETRATION

NOT TO SCALE

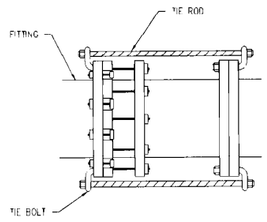
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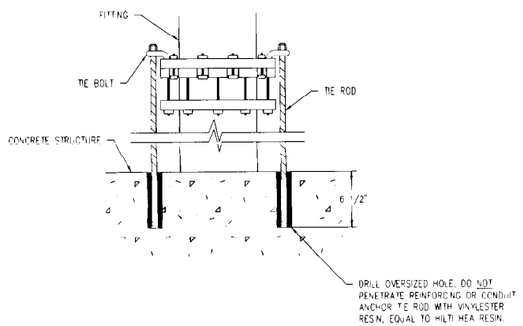
(4) 3/4"ø SHACKLE RODS REQUIRED AT 8" PIPE.
(6) 3/4"ø SHACKLE RODS REQUIRED AT 12" PIPE.

TIE BOLTS TO BE INSTALLED SYMMETRICALLY AROUND EACH JOINT.

ASTM A36 STEEL "ALL THREAD" TIE RODS USED THROUGHOUT.

RODS MUST BE COATED IN ACCORDANCE WITH SPECIFICATION DIVISION 9.





SHACKLE ROD DETAILS

NOT TO SCALE

NO.	REVISION	BY	REVIEW	DATE
1	CONSTRUCTION RECORDS	KMP	TVP	7/30/98

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City of Kirkland
Lake Plaza Lift Station Replacement

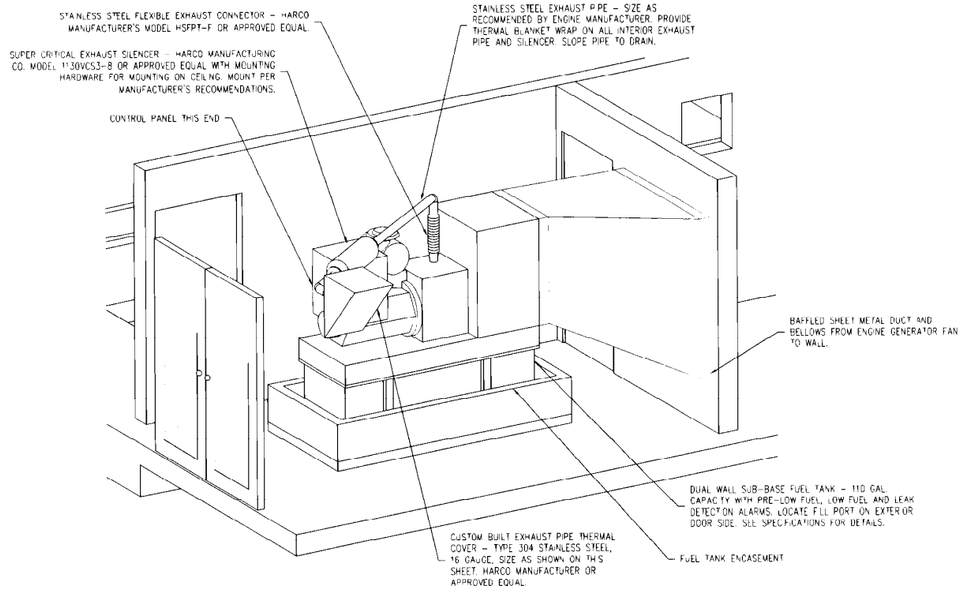
MECHANICAL DETAILS

195.025.03	PLZ-D36	KMP	TVP	JUN 01, 1998	SHOWN	1	M07	30 of 38

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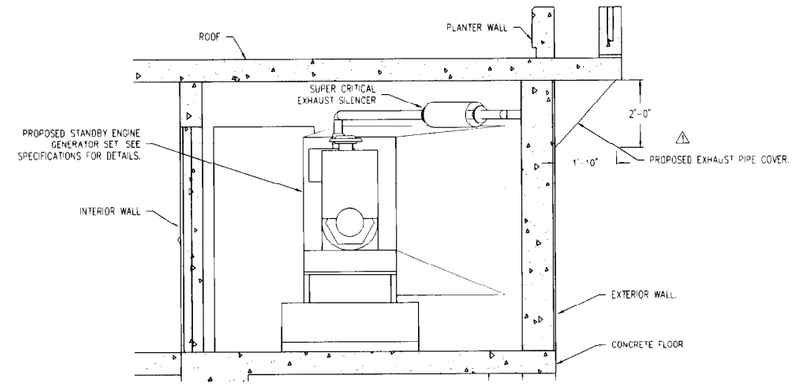
32/39

1570



ENGINE GENERATOR - OBLIQUE

NOT TO SCALE

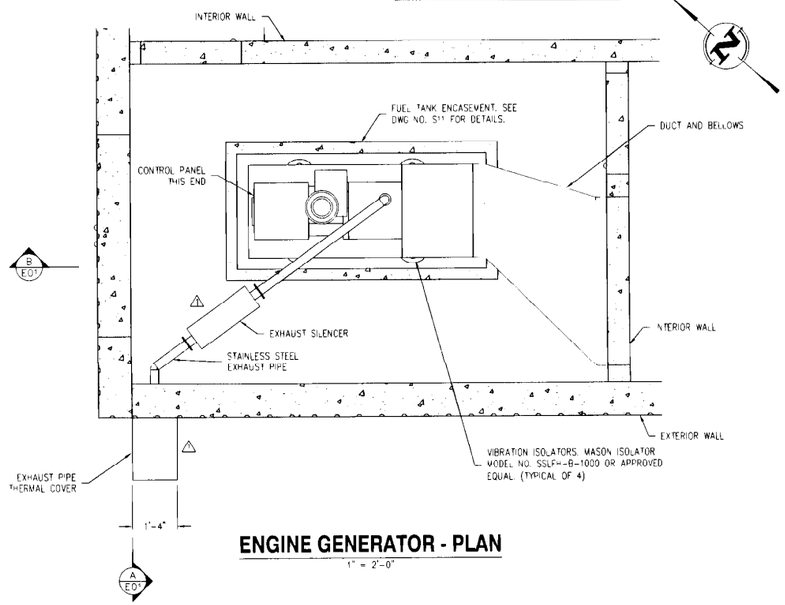


ELEVATION - SOUTHEAST WALL

1" = 2'-0"

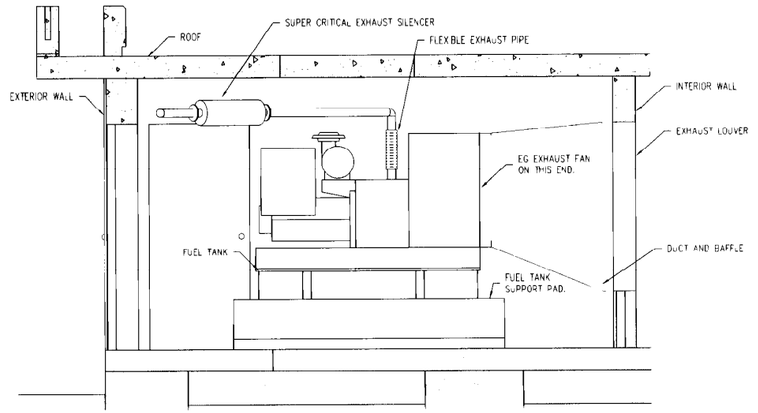
A / E01

NOTE: POWER AND SIGNAL CONDUIT NOT SHOWN THIS PLAN. SEE DWG. NO. E04 AND E05.



ENGINE GENERATOR - PLAN

1" = 2'-0"



ELEVATION - NORTHEAST WALL

1" = 2'-0"

B / E01

1	CONSTRUCTION RECORDS	KMP	TVP	1/28/99
NO.	REVISION	BY	CHK'D	DATE

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City of Kirkland
Lake Plaza Lift Station Replacement

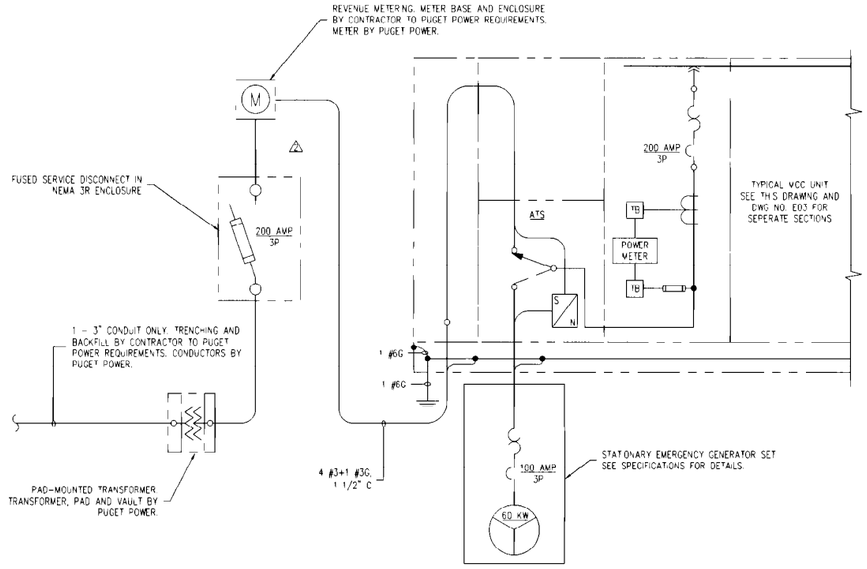
ENGINEER GENERATOR DETAILS

195.025.03	PLZ-029	MLM	TVP	JUN 01, 1998	SHOWN	24	E01	31 of 38

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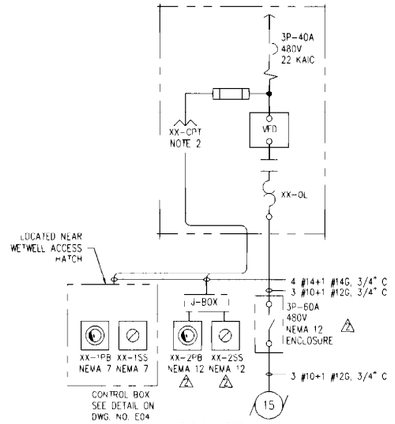
33/139

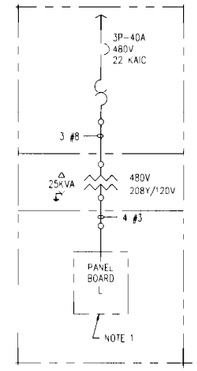
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ONE-LINE DIAGRAM

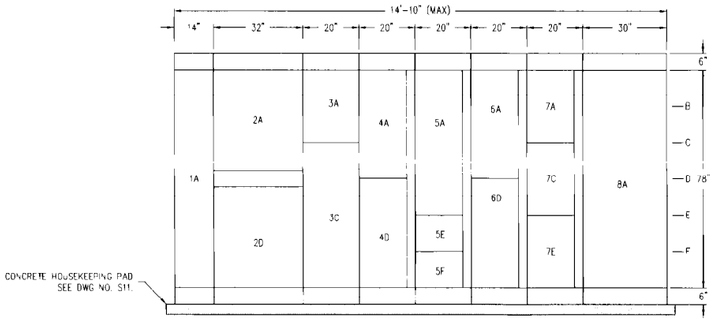
NO SCALE





PANEL BOARD L AND TRANSFORMER

MOTOR CONTROL CENTER EQUIPMENT				
600A, 480V, 3Ø, 4W, 42kA WITHSTAND				
SEC	UNIT	DESCRIPTION (NAMEPLATE)	DEVICES	TELEMETRY CONTACTS
1	A	INCOMING FEEDERS		
2	A	METERING COMPARTMENT		PHASE FAIL
2	D	AUTOMATIC TRANSFER SWITCH (2)	SOURCE 1 OK SOURCE 2 OK GENERATOR SET SIGNAL TRANSFER TIMING TRANSFER COMPLETE RETRANSFER TIMING RETRANSFER COMPLETE TIMING FOR STOP KEY-OPERATED TEST/NORMAL/RETRANSFER	EMERGENCY SOURCE
3	A	CUSTOMER OWNED METERING	DIGITAL POWER METER SEE SPECIFICATIONS	
3	C	MOTOR CONTROL CENTER MAIN DISCONNECT BREAKER		
4 4 5	A D A	LIFT PUMP NO. 1 LIFT PUMP NO. 2 LIFT PUMP NO. 3	AUTO-MANUAL SPEED SELECT EMERGENCY STOP MUSHROOM PUSHBUTTON VFD INTERFACE MODULE RUN TIME METER OVERLOAD RESET BUTTON PILOT LIGHT, TRANSFORMER TYPE, YELLOW LENS - REQUIRED PILOT LIGHT, TRANSFORMER TYPE, GREEN LENS - RUN PILOT LIGHT, TRANSFORMER TYPE, RED LENS - FAIL	PUMP RUN PUMP FAIL PUMP REQ'D PUMP SPEED FEEDBACK (0-10VDC) PUMP SPEED (4-20mA)
5	E	ODOR CONTROL EQUIPMENT 60 A FEEDER BREAKER		
5	F	WET WELL SUPPLY FAN	HAND-OFF-AUTO SELECTOR SWITCH RUN TIME METER RUN LIGHT FAIL LIGHT	FAN RUN FAN FAIL
6	A	PANEL "L"		
6	D	LIGHTING TRANSFORMER 40 A TRANSFORMER BREAKER		
7 7	A C	DRY WELL SUPPLY FAN DRY WELL EXHAUST FAN	HAND-OFF-AUTO SELECTOR SWITCH RUN TIME METER RUN LIGHT FAIL LIGHT	FAN RUN FAN FAIL
7	E	EQ ROOM EXHAUST FAN	HAND-OFF-AUTO SELECTOR SWITCH RUN TIME METER RUN LIGHT FAIL LIGHT	FAN RUN FAN FAIL
8	A	TELEMETRY PANEL		



ELEVATION
MOTOR CONTROL CENTER

NOT TO SCALE

NOTES:

1. PANELBOARD TO BE 100 AMP, 208Y/120VOLT, 3PH, 4 WIRE WITH 3P-100AMP MAIN BREAKER AND 27 POLE SPACES. SEE PANEL SCHEDULE "L" FOR BREAKERS AND CIRCUITS. PANELS AND BREAKERS TO BE 10KA.C.
2. SIZE CONTROL POWER TRANSFORMER TO OPERATE SECONDARY LOAD: SEE ELEMENTARY WIRING DIAGRAM FOR SECONDARY CONNECTIONS TO TRANSFORMER AND MOTOR CONTROL CIRCUIT.
3. DURING DESIGN, ALLEN BRADLEY CENTERLINE MOTOR CONTROL CENTER EQUIPMENT WAS USED FOR SIZING OF MCC. MCC MANUFACTURER SHALL BE ALLEN BRADLEY EQUIPMENT OR OWNER APPROVED EQUAL.
4. MCC SHALL CONSIST OF STANDARD 20" DEEP VERTICAL SECTIONS. CONSTRUCTION SHALL BE NEMA 12. MCC WILL BE MOUNTED AGAINST WALL WITH SEISMIC BRACING.
5. THE AUTOMATIC TRANSFER SWITCH (ATS) SHALL BE INSTALLED IN THE MOTOR CONTROL CENTER AT THE FACTORY PRIOR TO DELIVERY TO THE JOB SITE.
6. HORIZONTAL AND VERTICAL BUSSES SHALL BE SILVER PLATED COPPER. THE MAIN HORIZONTAL BUS SHALL BE RATED AT 600 AMPS CONTINUOUS. EACH VERTICAL SECTION SHALL HAVE A VERTICAL BUS RATED AT 300 AMPS CONTINUOUS.
7. A 1/4"x1" COPPER GROUND BUS SHALL BE LOCATED ALONG THE BOTTOM WIREWAY. A VERTICAL PLUG-IN GROUND BUS SHALL BE PROVIDED IN EACH SECTION CONNECTED TO THE HORIZONTAL GROUND BUS.
8. THE MCC SHALL INCLUDE A METERING COMPARTMENT FOR INSTALLATION OF UTILITY CURRENT TRANSFORMERS. THE CURRENT TRANSFORMERS WILL BE SUPPLIED BY PUGET POWER AND INSTALLED BY THE CONTRACTOR.
9. ALL CIRCUIT BREAKERS, STARTERS, AND OVERLOAD RELAYS SHOWN ON THE ONE-LINE DIAGRAM AND ELEMENTARY WIRING DIAGRAMS SHALL BE PROVIDED WITH THE MCC.

SYMBOL SCHEDULE
MOTOR CONTROL CENTER
ONE LINE DIAGRAMS

- DEVICE OR EQUIPMENT TERMINAL
- WIRING CONNECTED
- BUS
- WIRING
- EQUIPMENT/DEVICE ENCLOSURE
- PLUG-IN CONNECTION
- THERMAL MAGNETIC BREAKER
- MAGNETIC BREAKER ONLY
- FUSE
- CURRENT TRANSFORMERS
- POWER TRANSFORMER
- CONTROL POWER TRANSFORMER
- THERMAL OVERLOAD
- CONTRACTOR
- GROUND CONNECTION
- S/N SOLID NEUTRAL
- (10) MOTOR-NO. = HORSEPOWER
- (LS) LIMIT SWITCH
- (FS) FLOAT SWITCH
- (PS) PRESSURE SWITCH
- SELECTOR SWITCH(S)
- MUSHROOM TYPE PUSH BUTTON
- SCR CONTROLLER
- TB TERMINAL BLOCK

VFD - VARIABLE FREQUENCY DRIVE

NO.	REVISION	BY	APP'D	DATE
3	CONSTRUCTION RECORDS	KMP	TVP	1/30/98
2	REVISIONS TO SERVICE ENTRANCE EQUIPMENT/NEMA RATINGS	MLM	TVP	12/16/96
1	BUILDING PERMIT REVIEW	LJT	TVP	10/29/96

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WENATCHEE OFFICE

RICHARD H. HARDER, STATE OF WASHINGTON, REGISTERED PROFESSIONAL ENGINEER
SIGNED 09/26/96
EXPIRES 6/12/98

City of Kirkland
Lake Plaza Lift Station Replacement

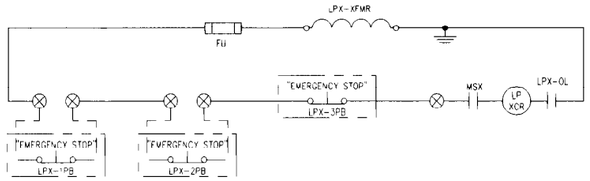
ONE-LINE DIAGRAM AND MCC LAYOUT

196.025	PLZ-021	MLM	TVP	JUN. 03, 1998	SHOWN	24	E02	32 of 38

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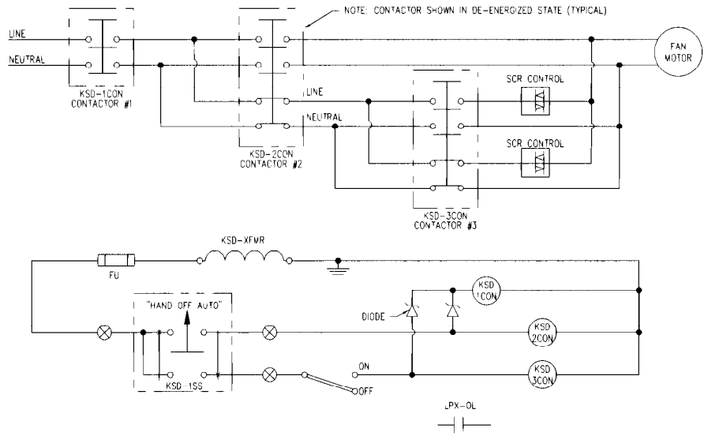
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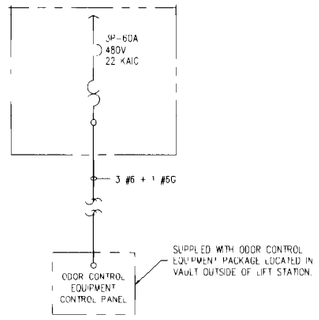
ELEMENTARY WIRING DIAGRAM NO. #1 - LIFT PUMPS

TYPICAL OF: PUMP NO. 1, CS #1
PUMP NO. 2, CS #2
PUMP NO. 3, CS #3

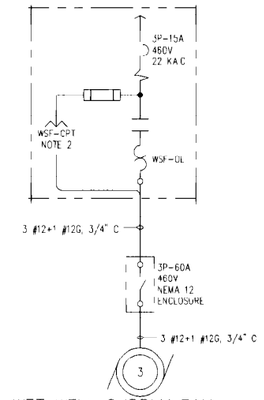


ELEMENTARY WIRING DIAGRAM NO. #2 3 SPEED VENTILATION FANS

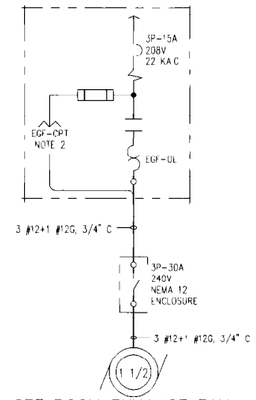
TYPICAL OF: DRY WELL SUPPLY FAN, CS #5
DRY WELL EXHAUST FAN, CS #4



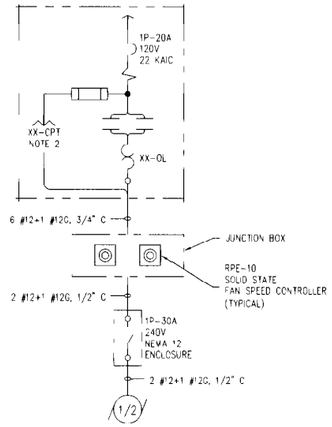
ODOR CONTROL EQUIPMENT
FEEDER BREAKER



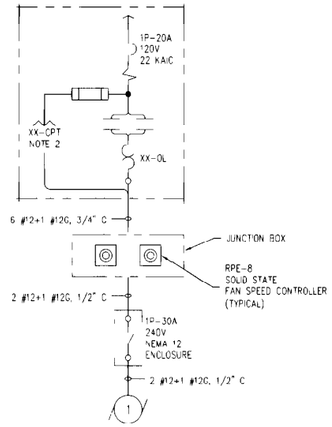
WET WELL SUPPLY FAN



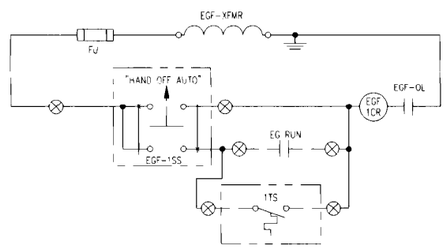
EG SET ROOM EXHAUST FAN



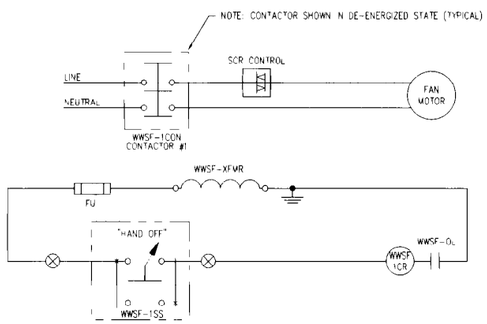
DRY WELL EXHAUST FAN



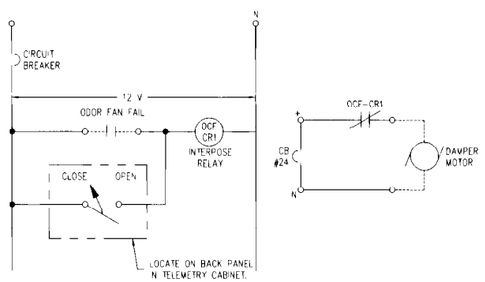
DRY WELL SUPPLY FAN



ELEMENTARY WIRING DIAGRAM NO. #3 - EG ROOM EXHAUST FAN



ELEMENTARY WIRING DIAGRAM NO. #4 - WET WELL SUPPLY FAN



ELEMENTARY WIRING DIAGRAM NO. #5 - ODER CONTROL VAULT DAMPER

(LOCATED N TELEMETRY PANEL)

SYMBOL SCHEDULE ELEMENTARY WIRING DIAGRAM

- PANEL OR DEVICE WIRING-BY EQUIPMENT VENDOR
- FIELD WIRING BY CONTRACTOR
- WIRING CONNECTED
- WIRING NOT CONNECTED
- DEVICE OR EQUIPMENT TERMINAL
- CONTROL PANEL TERMINAL
- MCC TERMINAL
- TRANSFORMER WINDING
- FUSE-BUSSMAN FNM
- GROUND CONNECTION

CONTACTBLOCK OPERATORS

- N.O. N.C. PUSHBUTTON (1PB, 2PB, ETC.)
- "HAND OFF AUTO" SELECTOR SWITCH (1SS, 2SS, ETC.) "X" = CLOSED IN THIS POSITION

MECHANICALLY ACTUATED SWITCHES

- N.O. N.C. XXTS XXTS TEMPERATURE SWITCHES (1TS, 2TS, ETC.)
- XXFS XXFS FLOAT SWITCHES (1FS, 2FS, ETC.)
- XXPS XXPS PRESSURE SWITCHES (1PS, 2PS, ETC.)
- XXLS XXLS FREE LIMIT SWITCHES (1LS, 2LS, ETC.)
- XXLS XXLS HELD LIMIT SWITCHES (1LS, 2LS, ETC.)

RELAY CONTACTS

- N.O. N.C. XXCR XXCR INSTANTANEOUS CONTACT OF RELAY (1CR, 2CR, ETC.)
- XXTR XXTR TMED DELAY CONTACT OF RELAY (DELAY ON ENERGIZATION-ON DELAY) (1TR, 2TR, ETC.)
- XXTR XXTR TMED DELAY CONTACT OF RELAY (DELAY ON ENERGIZATION-ON DELAY) (1TR, 2TR, ETC.)
- X-OL X-OL OVERLOAD RELAY (1OL, 2OL, ETC.)

MAGNETIC COILS

- XX XCR CONTROL RELAY (1CR, 2CR, ETC.)
- XX XCON MAGNETIC CONTACTOR (1CON, 2CON, ETC.)
- XX XTR TMED DELAY RELAY (1TR, 2TR, ETC.)
- XX ISR INTRINSICALLY SAFE RELAY
- XX M MAGNETIC MOTOR STARTER (1M, 2M, ETC.)

NO.	CONSTRUCTION RECORDS	KMP	TVP	1/30/98
NO.	REVISION	BY	CHK'D	DATE

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REDMOND OFFICE
WENATCHEE OFFICE

REGISTERED PROFESSIONAL ENGINEER
RICHARD H. HARDER
STATE OF WASHINGTON
SIGNED 09/26/96
EXPIRES 9/2/99

City of Kirkland
Lake Plaza Lift Station Replacement

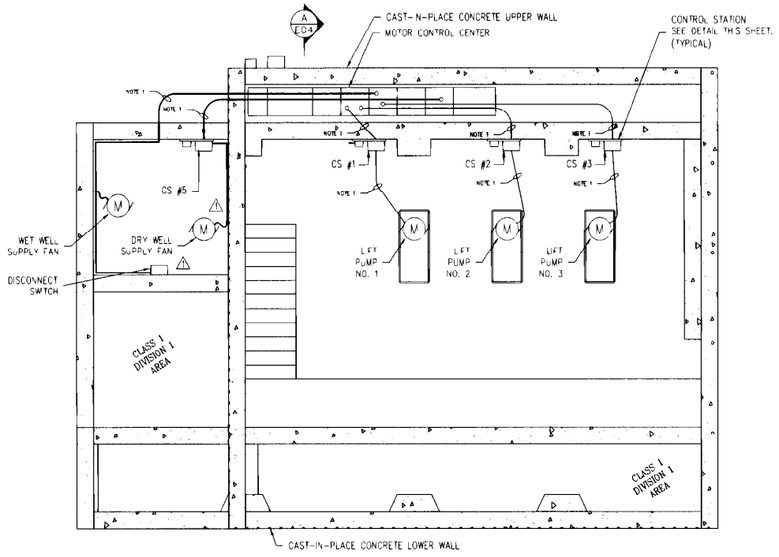
VENTILATION ONE-LINE AND ELEMENTARY WIRING DIAGRAMS

196.025.03	PLZ-D22	MLM	TVP	JUN 03, 1998	SHOWN	24	E03	33 OF 38

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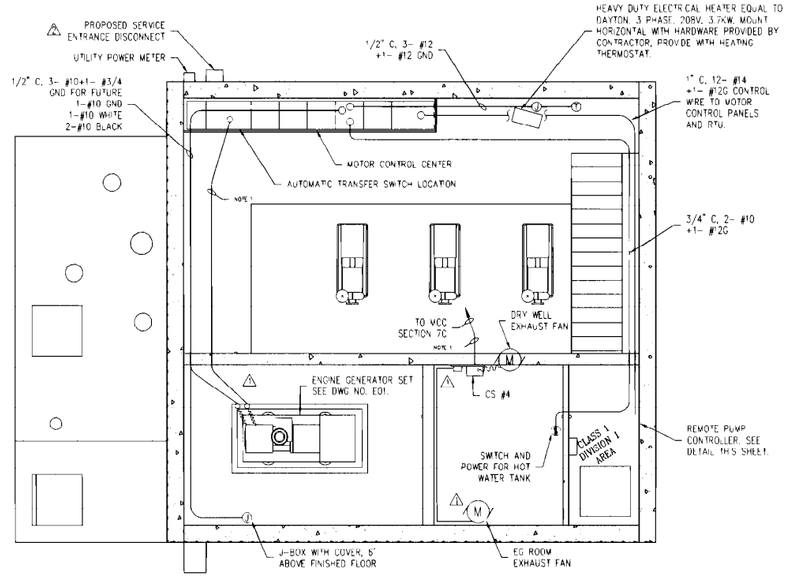
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POWER PLAN - LOWER FLOOR

1" = 4'-0"



POWER PLAN - UPPER FLOOR

1" = 4'-0"

ELECTRICAL NOTES

ALL WORK SHALL BE PERFORMED IN ACCORDANCE WITH THE 1996 EDITION OF THE NATIONAL ELECTRIC CODE OR LOCAL ORDINANCES, WHICHEVER IS MORE STRINGENT.

CONTRACTOR SHALL SUPPLY AND INSTALL ALL CONDUIT, WIRE AND EQUIPMENT AS SPECIFIED ON DRAWINGS UNLESS NOTED OTHERWISE.

CONDUIT ROUTING IS SHOWN DIAGRAMMATIC. CONTRACTOR RESPONSIBLE TO ROUTE CONDUITS IN A NEAT MANNER, PARALLEL OR PERPENDICULAR TO WALLS AND CEILING.

ALL WIRES SHALL BE ROUTED IN RIGID GALVANIZED STEEL CONDUIT UNLESS NOTED OTHERWISE. SIZE AS NOTED ON DRAWINGS.

ALL 480 AND 120VAC WIRING SHALL BE TYPE THHW INSULATION, SIZE AS NOTED ON DRAWINGS. 480V WIRING SHALL BE ROUTED IN SEPARATE CONDUITS FROM 120V (AND OTHER VOLTAGE) CIRCUITS.

THE PAD MOUNTED TRANSFORMER WILL BE SUPPLIED AND INSTALLED BY PUGET POWER. TRENCHING AND BACKFILL SHALL BE BY CONTRACTOR TO PUGET POWER REQUIREMENTS. CONTRACTOR SHALL BE RESPONSIBLE FOR SUPPLY AND INSTALLATION OF THE SERVICE FEEDER FROM THE TRANSFORMER SECONDARY. CONDUITS MUST BE SEALED AT BOTH ENDS TO PREVENT MOISTURE ENTRAINMENT. UNDERGROUND SERVICE FEEDER CONDUITS SHALL BE BURIED 24" MINIMUM BELOW GRADE.

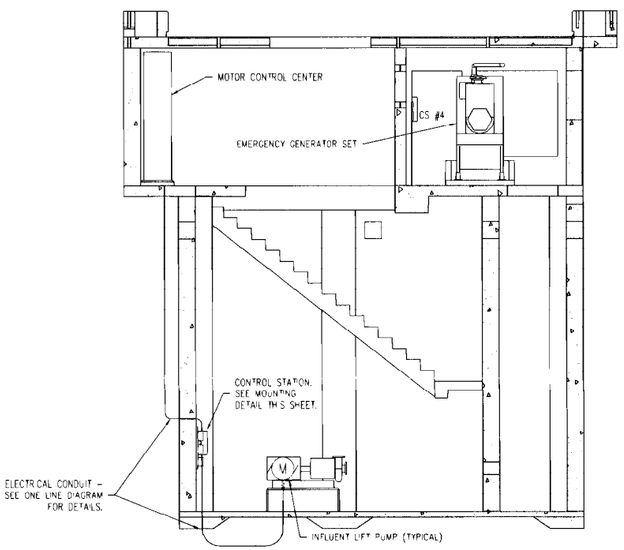
EACH OF THE LIFT PUMP MOTOR FEEDER CONDUITS SHALL BE BURIED IN THE SLAB CLEAR OF ANY PIPING.

THE MCC SHALL BE MOUNTED ON 3 1/2" CONCRETE PADS AND SECURED BY ANCHOR BOLTS TO PAD AND WALL.

LOCATION OF CONDUIT ENDS ARE SHOWN APPROXIMATELY. CONTRACTOR IS RESPONSIBLE FOR ENDING CONDUITS IN LOCATION THAT WILL NOT CONFLICT WITH EQUIPMENT IN THE MCC. ROUTE CONDUIT ENDS TO FACILITATE EASE OF EQUIPMENT MAINTENANCE. CONDUITS EXTENDING FROM THE FLOOR TO A DEVICE SHALL BE LOCATED AS CLOSE AS POSSIBLE TO AVOID CREATING A HAZARD.

LIQUID-TIGHT FLEXIBLE METALLIC CONDUIT (SAME SIZE AS RIGID CONDUIT) SHALL BE USED AT MOTOR CONNECTIONS AND ROUTED TO FACILITATE EASE OF MOTOR AND EQUIPMENT MAINTENANCE. LIFT PUMP FEEDER SHALL BE ROUTED IN FLEXIBLE CONDUIT FROM CONDUIT STUB-UP ABOVE SLAB. A 3' LENGTH OF FLEX. CONDUIT SHALL BE USED FOR ALL OTHER MOTORS.

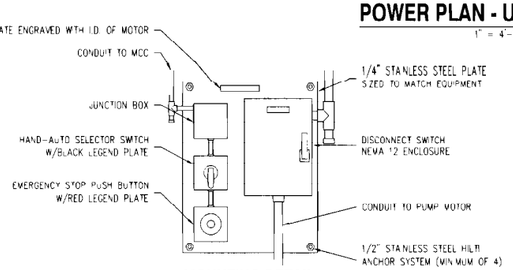
NOTE 1: SEE ONE LINE DIAGRAMS FOR SIZE OF CONDUIT AND CONDUCTORS.



POWER PLAN - ELEVATION

A E04

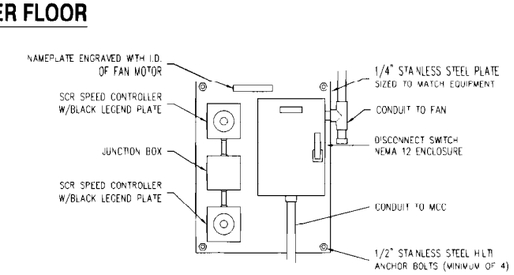
1" = 4'-0"



MOUNTING DETAIL

NOT TO SCALE

(TYPICAL OF CS #1, CS #2, & CS #3)

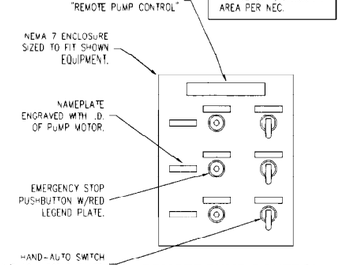


MOUNTING DETAIL

NOT TO SCALE

(TYPICAL OF CS #4 & CS #5)

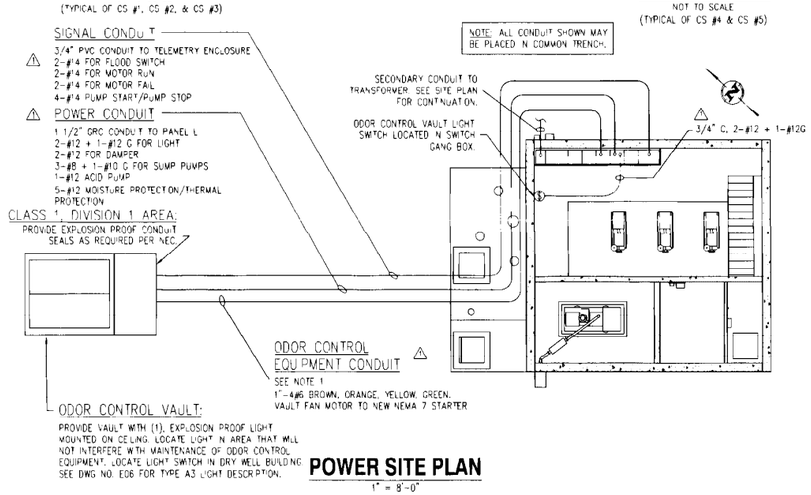
NOTE: ENCLOSURE AND DEVICES SHALL BE RATED FOR CLASS 1, DIVISION 1 AREA PER NEC.



REMOTE PUMP CONTROL DETAIL

NOT TO SCALE

NOTE: ALL CONDUIT SHOWN MAY BE PLACED IN COMMON TRENCH.



POWER SITE PLAN

1" = 8'-0"

1	CONSTRUCTION RECORDS	KMP	TVP	1/30/98
2	RELOCATE SERVICE DISCONNECT SWITCH	SCH	TVP	12/17/96
NO.	REVISION	BY	REVIEW	DATE

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REDMOND OFFICE

WENATCHEE OFFICE

RICHARD H. HANDEL — STATE OF WASHINGTON — 16727 — REGISTERED PROFESSIONAL ENGINEER

SIGNED 09/26/96

EXPIRES 6/2/98

City of Kirkland
Lake Plaza Lift Station Replacement

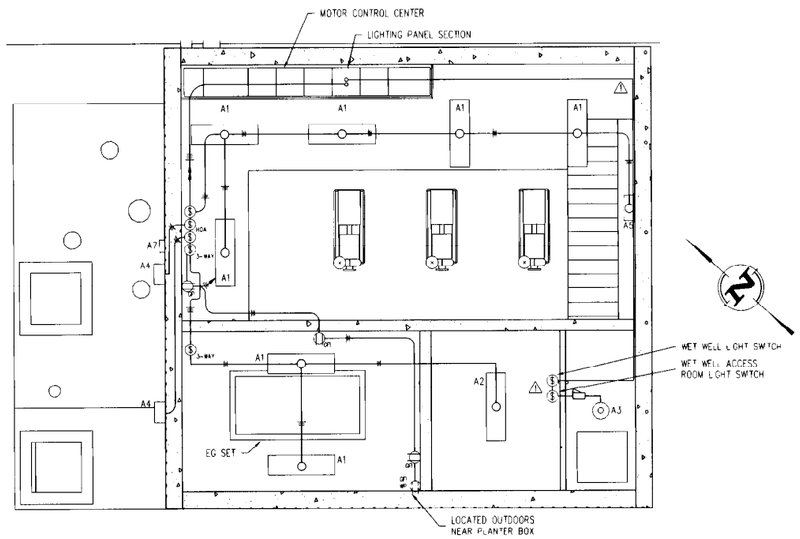
POWER PLAN

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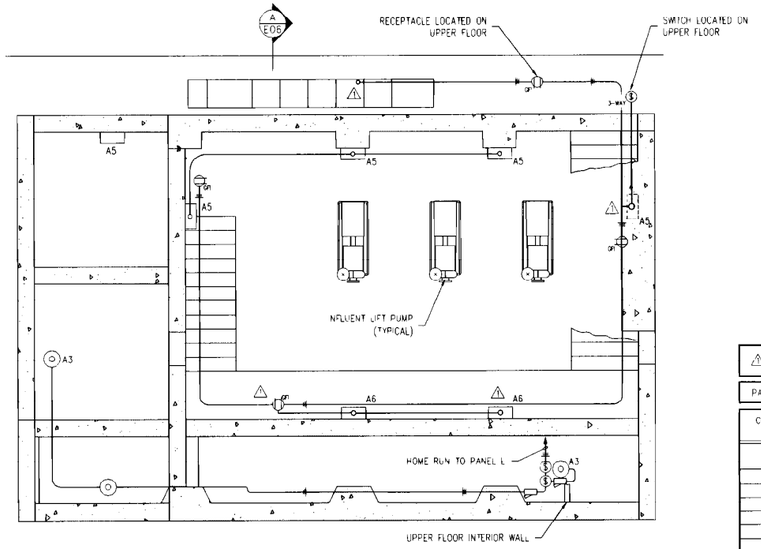
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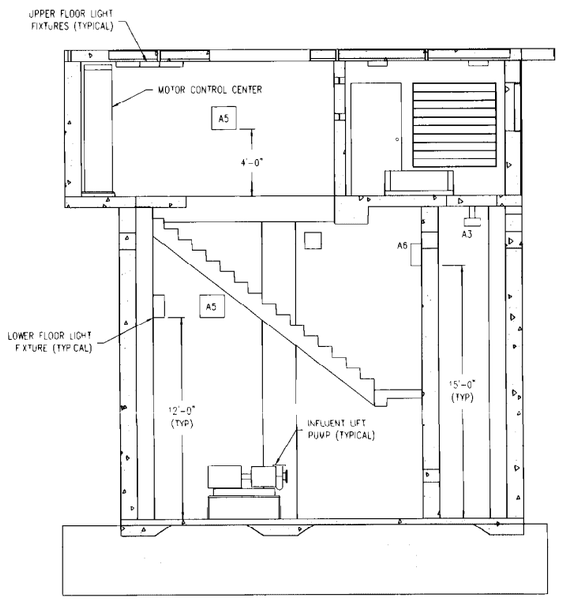
LIGHTING AND OUTLET PLAN - UPPER FLOOR

1" = 4'-0"



LIGHTING AND OUTLET PLAN - LOWER FLOOR

1" = 4'-0"



LIGHTING PLAN - ELEVATION VIEW

A E06

1" = 4'-0"

ELECTRICAL NOTES

1. ALL WORK SHALL BE ACCOMPLISHED IN ACCORDANCE WITH THE NATIONAL ELECTRIC CODE (NEC), NATIONAL ELECTRICAL SAFETY CODE, LOCAL CODES, ORDINANCES AND REQUIREMENTS OF UTILITY COMPANIES FURNISHING SERVICES TO INSTALLATION OR AUTHORITIES HAVING JURISDICTION.
2. PROVIDE GROUNDING PER NEC REQUIREMENTS OR OTHER AUTHORITIES HAVING JURISDICTION.
3. ALL WIRES SHALL BE ROUTED IN 1/2" RIGID GALVANIZED STEEL CONDUIT UNLESS OTHERWISE NOTED. SIZE AS NOTED ON DRAWING.
4. CONDUIT ROUTING IS SHOWN DIAGRAMMATIC. CONTRACTOR RESPONSIBLE TO ROUTE CONDUITS IN A MANNER, PARALLEL OR PERPENDICULAR TO WALLS AND CEILING.
5. ALL WIRE SHALL BE A MINIMUM #12 UNLESS SHOWN OTHERWISE.
6. ALL 240/120VAC WIRING SHALL BE THHW INSULATION.
7. CONTRACTOR SHALL PROVIDE ALL LIGHTING FIXTURES, RECEPTACLES, CONDUIT, WIRE, MOUNTING HARDWARE, ETC. AS SPECIFIED ON DRAWING.
8. ALL CONDUIT SHALL BE CONCEALED IN THE FLOOR, WALLS, CEILING SLAB OR BENEATH FLOOR SLAB. SURFACE MOUNTED CONDUIT WILL NOT BE ACCEPTED.
9. LOCATE ALL LIGHT FIXTURES, RECEPTACLES, SWITCHES, AND DEVICES IN LOCATION SHOWN ON THE PLANS USING ENGINEERING SCALE.

⚠ PANEL "L" 3Ø, 4W, 208Y/120VOLTS

PANEL TYPE: 100 AMP | MOUNT: IN PANEL

CIRCUIT NO.	BREAKER AMP	BREAKER POLE	BREAKER FRAME	LOAD ØA	LOAD ØB	LOAD ØC	AREA AND OR EQUIPMENT SERVED
1	20	3		375			EG SET EXHAUST FAN
3					375		
5						375	
7	20	1		900			LOWER FLOOR RECEPTACLES
9	20	1			1000		WET WELL LIGHTS
11	20	1				1300	LOWER FLOOR LIGHTS
13	20	3			1667		PUMP ROOM HEATER
15						1667	
17				1667			
19	20	1		100			FLOW METER POWER
21	30	1			2000		HOT WATER TANK
23	10	1				300	WET WELL SUPPLY FAN CONTROL
25	20	1		100			GENERATOR BATTERY CHARGER
27	20	1			100		POLE LIGHT RECEPTACLES
29							SPARE
2	20	1		500			DRY WELL EXHAUST FAN
4	20	1			750		DRY WELL SUPPLY FAN
6	20	1				300	TELEMETRY POWER
8	20	1		550			UPPER FLOOR LIGHTS
10	20	1			100		UPPER FLOOR RECEPTACLES
12	20	1				900	OUTDOOR LIGHTS
14	20	3					
15							
18							
20	40	1		1000			ODOR CONTROL VAULT SUMP PUMP
22	20	1			100		ACID PUMP/ODOR CONTROL V. DAMPER
24	15	1			100		SMOKE DETECTORS
26	100	3		1000			MAIN
28					100		
30							
TOTAL / PHASE (WATTS)				5092	5992	4009	FEEDER WIRE SIZE: #3
TOTAL CONNECTED				15093	WATTS		NUMBER: 4
TOTAL @ .85 PF				15	KVA		TYPE: THW
PROVISIONS FOR FUTURE				10			FROM: XFMR
TOTAL DESIGN LOAD				25	KVA		

LIGHTING FIXTURE SCHEDULE

TYPE	DESCRIPTION	MANUFACTURER NAME	MANUFACTURER CATALOG NO.	LAMP QTY.	LAMP CATALOG NO.	REMARKS
A1	FLUORESCENT, COMMERCIAL, 10" X 49", RECTANGULAR, SURFACE MOUNTED, WHITE POLYESTER POWER INTERIOR AND EXTERIOR, INJECTION-MOLDED PRISMATIC ACRYLIC LENS, 120 VOLT, ELECTRONIC BALLAST	DAYBRITE	HWW232-120-EB	2	FO32T8 32 WATT	
A2	FLUORESCENT, INDUSTRIAL, 13" X 54", RECTANGULAR, PENDANT MOUNTED, WHITE BAKED ENAMEL INTERIOR AND EXTERIOR, INJECTION-MOLDED PRISMATIC ACRYLIC LENS LISTED FOR CLASS 1 DIVISON 2, STAINLESS STEEL COVER HARDWARE, 120 VOLT, ELECTRONIC BALLAST, UL LISTED FOR CLASS 1, DIVISION 2, GROUP D.	DAYBRITE	VTDT232-CA-120-EB	2	FO32T8 32 WATT	PENDANT MOUNTED
A3	INCANDESCENT, INDUSTRIAL, EXPLOSION PROOF, CLASS 1, DIVISION 1, CEILING MOUNTED WITH GLOBE GUARD AND 30° ANGLE REFLECTOR	CROUSE HINDS	EVCX1207	1	PS-30 300 WATT	PROVIDE SEAL FITTINGS AS REQUIRED
A4	HIGH PRESSURE SODIUM, OUTDOOR AREA LIGHT, 14 1/2" X 14", DIE-FORMED ALUMINUM HOUSING, ALUMINUM REFLECTOR, CLEAR GLASS LENS, TYPE 2 DISTRIBUTION, PHOTOCELL, DARK BRONZE POLYESTER POWDER FINISH, 120 VOLT	DAYBRITE	WLM15HSMT-PE VSWLM	1	HPS 150 WATT	WIRE PHOTOCELL TO ON-OFF-OVERRIDE SWITCH
A5	HIGH PRESSURE SODIUM, LARGE WALL LIGHT, 17" SQUARE, DIE-FORMED ALUMINUM HOUSING, ALUMINUM REFLECTOR, CLEAR GLASS LENS, TYPE 2 DISTRIBUTION, DARK BRONZE POLYESTER POWDER FINISH, 120 VOLT	DAYBRITE	WLL20HSMT	1	HPS 200 WATT	
A6	HIGH PRESSURE SODIUM, LARGE WALL LIGHT, 17" SQUARE, DIE-FORMED ALUMINUM HOUSING, ALUMINUM REFLECTOR, CLEAR GLASS LENS, TYPE 2 DISTRIBUTION, DARK BRONZE POLYESTER POWDER FINISH, 120 VOLT	DAYBRITE	WLL15HSMT	1	HPS 150 WATT	
A7	INCANDESCENT, VANDAL RESISTANT, 9" SQUARE, FLUSH-MOUNTED, EXTRA THICK INJECTION MOLDED POLYCARBONATE LENS, STAINLESS STEEL TORX SCREW HARDWARE, CAST MOUNTING BOX, 120V, UL LISTED FOR WET LOCATION	FAIL SAFE	INEC-PP-75-120V	1	75 WATT RED BULB	WIRE TO RTU

SYMBOL SCHEDULE LIGHTING DIAGRAMS

- (J) JUNCTION BOX SIZED PER NEC.
- ($) STANDARD SWITCH, 120VAC, 20 AMP.
- ($3DA) 3-POSITION SWITCH, 120VAC, 20 AMP, LABEL SWITCH POSITION HAND - OFF - AUTO.
- (GF WP) DUPLEX OUTLET RECEPTACLE, 120VAC, 20 AMP WITH GROUND PLUG (WATERPROOF WHERE INDICATED WP) (GF WHERE INDICATED GF) MOUNT RECEPTACLE 4'-0" ABOVE FINISHED FLOOR.
- EYS EXPLOSION PROOF CONDUIT SEAL FITTING.

NO.	REVISION	BY	REVIEW	DATE
⚠	CONSTRUCTION RECORDS	KMP	TVP	1/30/98

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SIGNED 03/26/98
EXPIRES 8/2/98

City of Kirkland
Lake Plaza Lift Station Replacement

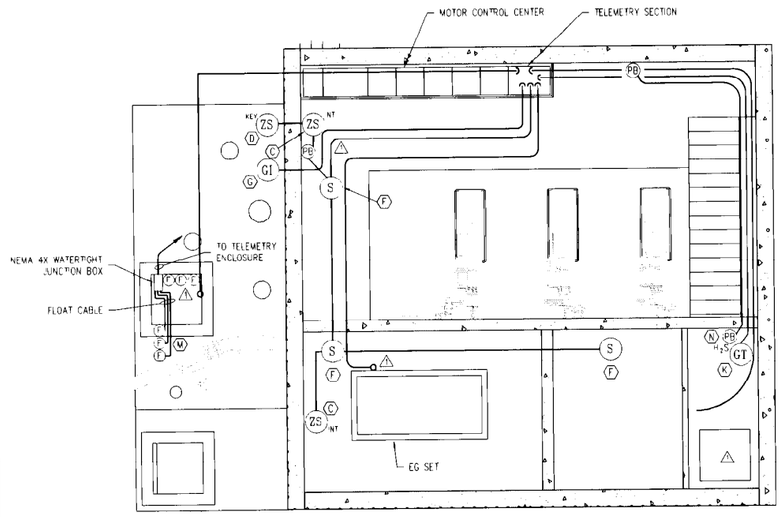
UPPER AND LOWER FLOOR LIGHTING PLAN

196.025.03	PLZ-D24	M.M	TVP	JAN. 01, 1998	SHOWN	24	E06	35 OF 38

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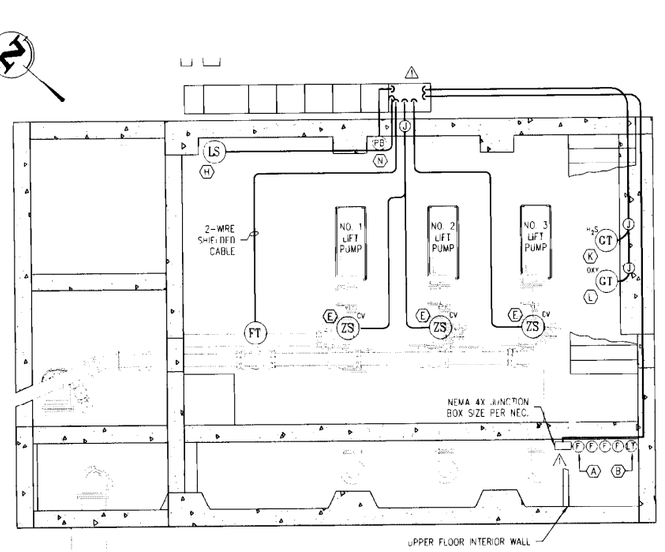
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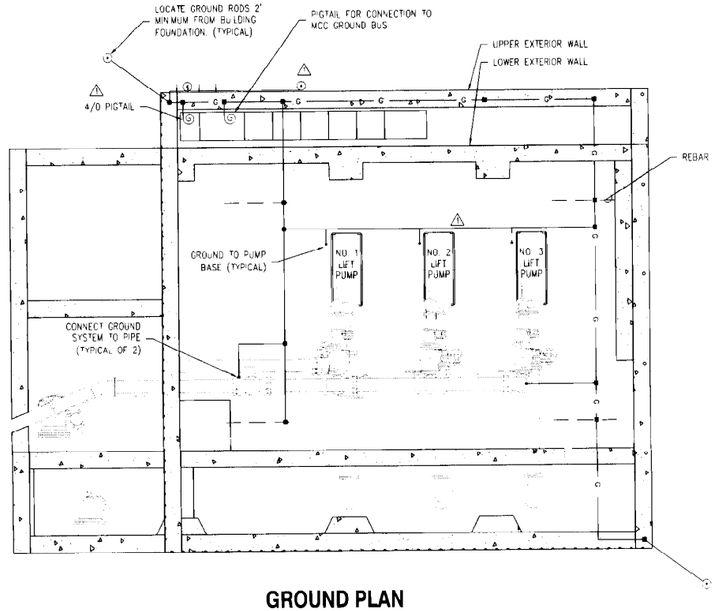
SIGNAL PLAN - UPPER FLOOR

1" = 4'-0"



SIGNAL PLAN - LOWER FLOOR

1" = 4'-0"



GROUND PLAN

1" = 4'-0"

ELECTRICAL SYMBOLS LEGEND

- (J) JUNCTION BOX SIZED PER NEC.
- #2 BARE COPPER GROUND CABLE
- CONNECTION POINT, EXOTHERMIC WELD. CADWELD OR APPROVED EQUAL
- GROUND ROD, 3/4" DIA. COPPER, 10' LONG. USE EXOTHERMIC WELD CONNECTION AT THE GROUND ROD.
- PIGTAIL, 4/0 BARE COPPER, LENGTH AS REQUIRED, 8 FOOT MINIMUM
- CONNECTION POINT, MECHANICAL, COMPRESSION TYPE

PID LEGEND SIGNAL PLAN

- (F) FLOAT SWITCH
- (LT) LEVEL TRANSMITTER
- (PB) PANIC BUTTON
- (LS) LEVEL SWITCH
- (GT$_{OXY}$) GAS TRANSMITTER – OXYGEN
- (GT$_{H_2S}$) GAS TRANSMITTER – HYDROGEN SULFIDE
- (GI) GAS INDICATOR LIGHT
- (ZS$_{INT}$) INTRUSION SWITCH
- (ZS$_{KEY}$) INTRUSION SWITCH – KEY
- (S) SMOKE SWITCH
- (FT) FLOW TRANSMITTER
- (ZS$_{CV}$) LIMIT SWITCH – CHECK VALVE

EQUIPMENT AND DEVICE SCHEDULE

(A) WET WELL FLOAT SWITCHES – ANCHOR SCIENTIFIC, INC. ROTO-FLOAT TYPE S OR APPROVED EQUAL. PROVIDE SUFFICIENT CABLE LENGTH TO EXTEND FROM BOTTOM OF WET WELL TO JUNCTION BOX PLUS 10' OF LOOPED SLACK FOR ADJUSTMENT. PROVIDE WITH STAINLESS STEEL MOUNTING HARDWARE FOR MOUNTING MULTIPLE FLOATS. ATTACH MOUNTING HARDWARE TO WET WELL CLEANING PLATFORM WITH STAINLESS STEEL HARDWARE. MOUNTING HARDWARE SHALL BE ANCHOR SCIENTIFIC OR EQUAL.

(B) WET WELL LEVEL TRANSMITTER – CONSOLIDATED ELECTRIC NO. A1000. NO SUBSTITUTION. PROVIDE SUFFICIENT CABLE LENGTH FROM BOTTOM OF WET WELL TO JUNCTION BOX WITH MINIMUM OF 5 FEET OF SLACK. PROVIDE WITH CABLE MOUNTING SUSPENSION KIT. INSTALL TRANSDUCER IN 6" PVC SCHEDULE 40 PIPE SECURED TO WET WELL WALL WITH MINIMUM OF 4 MOUNTING CLAMPS FOR RIGIDLY SECURING IN PLACE. ASSEMBLY SHALL NOT MOVE MORE THAN 1 INCH IN ANY DIRECTION DURING PUMPING CYCLES.

(C) INTRUSION ALARM SWITCH – SQUARE D HEAVY DUTY TYPE C, CLASS 9007 OR APPROVED EQUAL. USE LIQUID TIGHT FLEXIBLE CONDUIT BETWEEN JUNCTION BOX AND LIMIT SWITCH. CONTRACTOR TO SELECT ACTUATOR LEVER ARM BEST SUITED FOR MOUNTING CONFIGURATION.

(D) INTRUSION ALARM DISABLE KEY SWITCH

(E) CHECK VALVE POSITION LIMIT SWITCH – SQUARE D HEAVY DUTY TYPE C, CLASS 9007 OR APPROVED EQUAL. USE LIQUID TIGHT FLEXIBLE CONDUIT BETWEEN JUNCTION BOX AND LIMIT SWITCH. CONTRACTOR TO SELECT ACTUATOR LEVER ARM BEST SUITED FOR MOUNTING CONFIGURATION.

(F) PHOTO ELECTRIC SMOKE DETECTOR – 24 VDC POWERED WITH CONTACTS FOR REMOTE ANNUNCIATION THROUGH TWO WIRE CONNECTION TO THE TELEMETRY PANEL. ELECTRO SIGNAL COMPANY MODEL 611U WITH BASE OR APPROVED EQUAL.

(G) WARNING LIGHT – SEE LIGHTING PANEL FOR DESCRIPTION. PROVIDE 120V POWER FROM TELEMETRY ENCLOSURE. SEE ALARM LOGIC FOR DETAILS.

(H) FLOOD SWITCH – OMEGA MODEL NO. LV-32 OR APPROVED EQUAL. MOUNT TO END OF 1/4" PVC PIPE & SECURE TO WALL WITH MINIMUM OF TWO STAINLESS STEEL PIPE CLAMPS. SWITCH SHALL TRIP AT 1/2" WATER LEVEL.

(K) HYDROGEN SULFIDE GAS LEVEL DETECTION PROBE – SEE SPECIFICATIONS FOR DETAILS.

(L) OXYGEN LEVEL DETECTION PROBE – SEE SPECIFICATIONS FOR DETAILS.

(M) WET WELL FLOAT SWITCH – ANCHOR SCIENTIFIC, INC. ROTO-FLOAT TYPE S OR APPROVED EQUAL. PROVIDE SUFFICIENT CABLE LENGTH TO EXTEND FROM BOTTOM OF WET WELL TO JUNCTION BOX PLUS 10' OF LOOPED SLACK FOR ADJUSTMENT. PROVIDE WITH STAINLESS STEEL MOUNTING HARDWARE FOR MOUNTING FLOAT. ATTACH MOUNTING HARDWARE TO WET WELL WALL AND CONNECT WIRE IN JUNCTION BOX.

(N) PANIC BUTTONS – SQUARE D HEAVY DUTY TYPE, CLASS 9001, MODEL NO. KR5RH5 OR APPROVED EQUAL. FURNISH PERMANENTLY MOUNTED "PANIC ALARM – PUSH TO ALARM" SIGN ABOVE EACH BUTTON. SIGN TO BE RED WITH 1/4" HIGH WHITE LETTERING. LOCATE BUTTON ON WALL IN THIS AREA.

ELECTRICAL NOTES

1. ALL WORK SHALL BE ACCOMPLISHED IN ACCORDANCE WITH THE NATIONAL ELECTRIC CODE (NEC), NATIONAL ELECTRICAL SAFETY CODE, LOCAL CODES, ORDINANCES AND REQUIREMENTS OF UTILITY COMPANIES FURNISHING SERVICES TO INSTALLATION OR AUTHORITIES HAVING JURISDICTION.
2. PROVIDE GROUNDING PER NEC REQUIREMENTS OR OTHER AUTHORITIES HAVING JURISDICTION.
3. ALL WIRES SHALL BE ROUTED IN RIGID GALVANIZED STEEL CONDUIT UNLESS OTHERWISE NOTED. SIZE AS NOTED ON DRAWING.
4. CONDUIT ROUTING IS SHOWN DIAGRAMMATIC. CONTRACTOR RESPONSIBLE TO ROUTE CONDUITS IN A MANNER, PARALLEL OR PERPENDICULAR TO WALLS AND CEILING.
5. ALL WIRE SHALL BE A MINIMUM #12 UNLESS SHOWN OTHERWISE.
6. ALL 240/120VAC WIRING SHALL BE THHW INSULATION.
7. CONTRACTOR SHALL PROVIDE ALL LIGHTING FIXTURES, RECEPTACLES, CONDUIT, WIRE, MOUNTING HARDWARE, ETC. AS SPECIFIED ON DRAWING.
8. ALL CONDUIT SHALL BE CONCEALED IN THE FLOOR, WALLS, CEILING SLAB OR BENEATH FLOOR SLAB. SURFACE MOUNTED CONDUIT WILL NOT BE ACCEPTED.

ELECTRICAL GROUNDING NOTES

1. ALL GROUND CONDUCTORS SHALL BE #2 AWG BARE STRANDED COPPER.
2. GROUND CONNECTIONS TO MOTORS, CONTROL PANELS, MCC'S, MECHANICAL EQUIPMENT, ETC. SHALL BE COMPRESSION LUG TYPE.

1	CONSTRUCTION RECORDS	KWD	TVC	1/30/98
NO.	REVISIONS	BY	CK'D	DATE

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ENGINEERS PLANNERS SCIENTISTS

REDMOND OFFICE

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REGISTERED PROFESSIONAL ENGINEER — STATE OF WASHINGTON — 16727

SIGNED 09/26/98

EXPIRES 8/2/98

City of Kirkland

Lake Plaza Lift Station Replacement

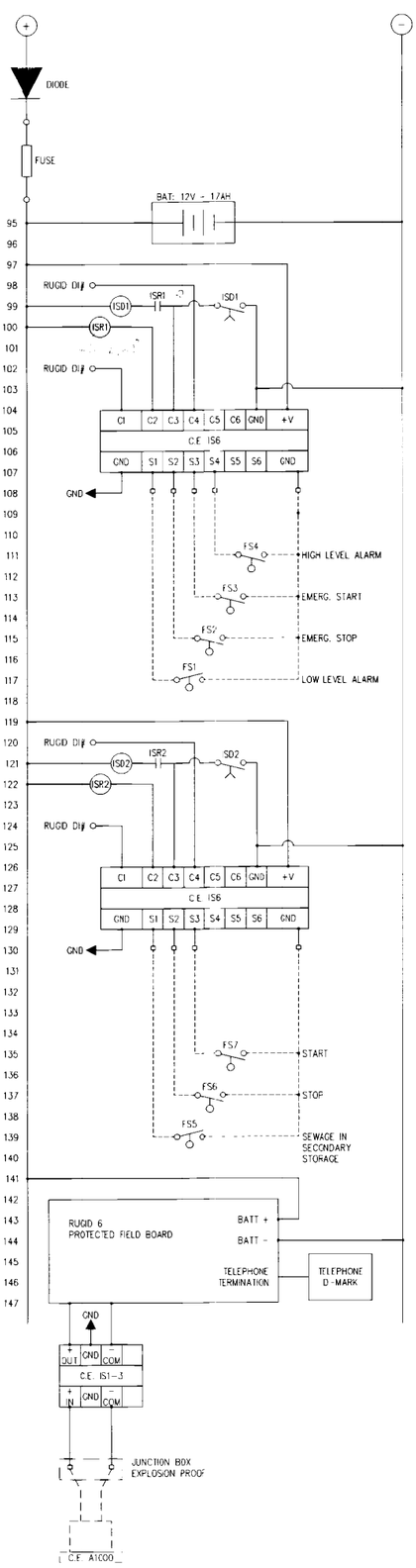
SIGNAL AND GROUNDING PLAN

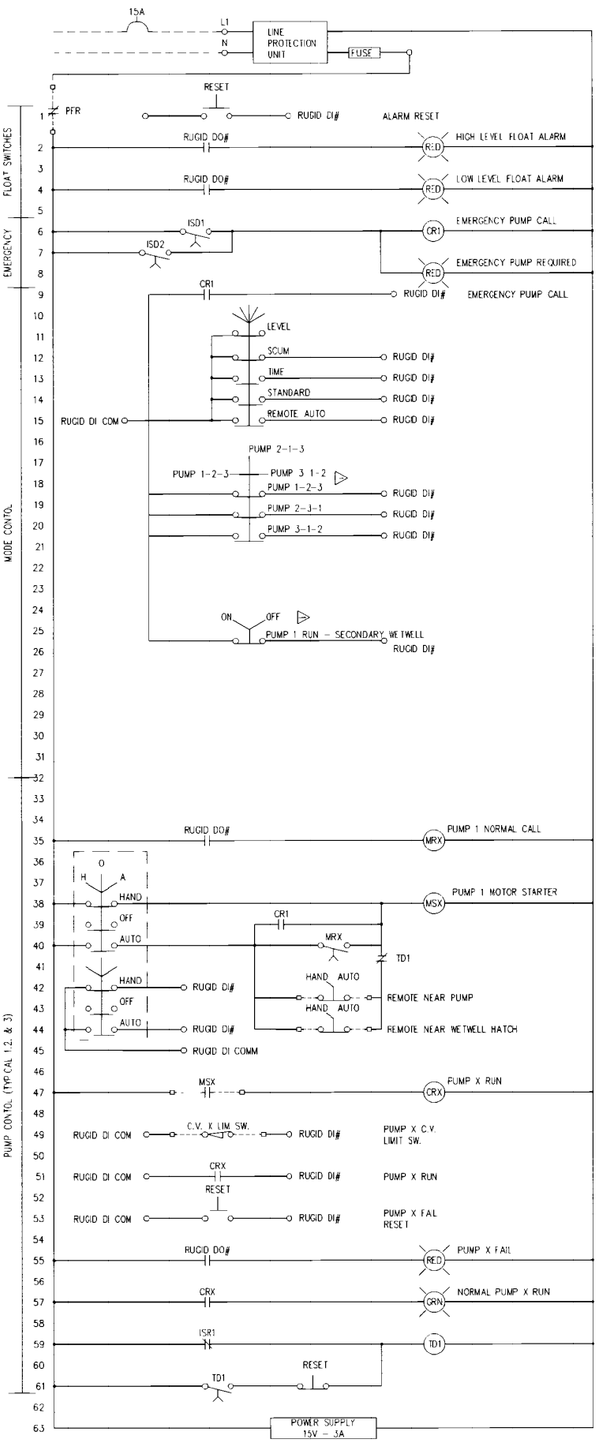
196.025.03	PLZ-D25	MLM	TVC	JUN 01, 1998	SHOWN	24	E05	36 of 38

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STATION ALARMS

RUGID DI COMM	RUGID DI#	POWER/PHASE FAIL ALARM
RUGID DI COMM	RUGID DI#	INTRUSION ALARM
RUGID DI COMM	RUGID DI#	SMOKE ALARM
RUGID DI COMM	RUGID DI#	STATION FLOOD ALARM
RUGID DI COMM	RUGID DI#	ODOR CONTROL VAULT FLOOD ALARM
RUGID DI COMM	RUGID DI#	LOW EG FUEL ALARM
RUGID DI COMM	RUGID DI#	CRITICAL LOW EG FUEL ALARM
RUGID DI COMM	RUGID DI#	COMMON E.G. ALARM
RUGID DI COMM	RUGID DI#	FUEL LEAK ALARM
RUGID DI COMM	RUGID DI#	WET WELL SUPPLY FAN RUN
RUGID DI COMM	RUGID DI#	ODOR CONTROL FAN RUN
RUGID DI COMM	RUGID DI#	DRY WELL SUPPLY FAN RUN
RUGID DI COMM	RUGID DI#	DRY WELL EXHAUST FAN RUN
RUGID DI COMM	RUGID DI#	GEN. ROOM EXHAUST FAN RUN
RUGID DI COMM	RUGID DI#	WET WELL SUPPLY FAN FAIL
RUGID DI COMM	RUGID DI#	ODOR CONTROL FAN FAIL
RUGID DI COMM	RUGID DI#	DRY WELL SUPPLY FAN FAIL
RUGID DI COMM	RUGID DI#	DRY WELL EXHAUST FAN FAIL
RUGID DI COMM	RUGID DI#	GEN. ROOM EXHAUST FAN FAIL
RUGID DI COMM	RUGID DI#	DRIVE 1 FAULT
RUGID DI COMM	RUGID DI#	DRIVE 2 FAULT
RUGID DI COMM	RUGID DI#	DRIVE 3 FAULT
RUGID DI COMM	RUGID DI#	PANIC ALARM

STATION STATUS

RUGID DI COMM	RUGID DI#	EMERGENCY POWER
RUGID DI COMM	RUGID DI#	ENGINE GENERATOR RUN

RELAY SCHEDULE

120 VAC RELAYS AND TIME DELAYS	12 VAC RELAYS AND TIME DELAYS
CRX: PUMP RUN RELAY, DPDT	ISR1: EMERGENCY PUMP STOP, SPDT
CRX: EMERGENCY PUMP RUN RELAY, 4PDT	ISD1: EMERGENCY PUMP CALL, SPDT, TIME DELAY
MRX: NORMAL PUMP CALL, DPDT, TIME DELAY	ISR2: SECONDARY PUMP STOP, SPDT
TD1: MANUAL PUMP OPERATION LOCKOUT, 3 NC & 1 NO CONTACTS, TIME DELAY.	ISD2: SECONDARY PUMP CALL, SPDT, TIME DELAY

REPLACE ALL (X)s IN THE RELAY LOGIC IDENTIFIERS WITH NUMBERS ON THE WIRE DIAGRAMS AND PANEL LABELING.

TELEMETRY LADDER LOGIC

Lake Plaza Lift Station Replacement

City of Kirkland

NO.	REVISIONS/RECORD	BY	CHK'D	APP'D	DATE
1	ISSUED FOR CONSTRUCTION				6/6/98

DESIGNED	RLZ-DJG	95.025.01				
DRAWN	WLV					
CHECKED	TWP					
APPROVED		JUN. 01, 1998	SHOWN	48	EQT	37 of 38

SHEE ENGINEERING, INC.
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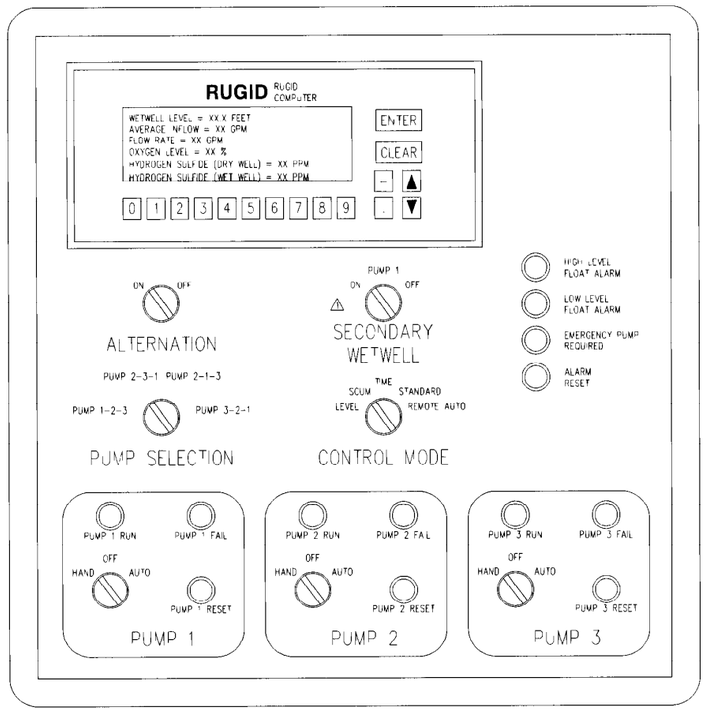
RICHARD D. HANSEN 13625 STATE OF WASHINGTON REGISTERED PROFESSIONAL ENGINEER

SIGNED 06/30/98

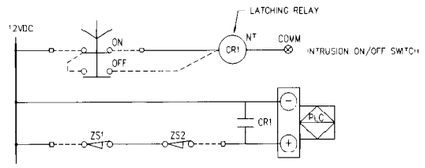
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39/39

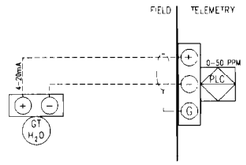
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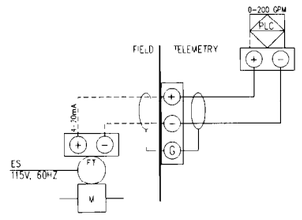
TELEMETRY CONTROL CABINET FRONT PANEL
NOT TO SCALE



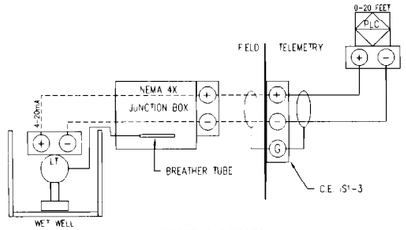
INTRUSION ALARM LOGIC



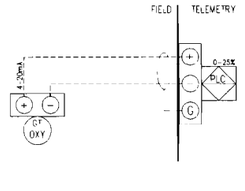
HYDROGEN SULFIDE LEVEL
(TYPICAL TWO LOCATIONS)



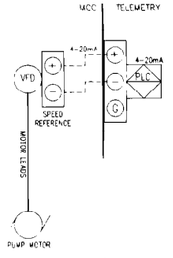
EFFLUENT FLOW



WET WELL LEVEL



OXYGEN LEVEL



VFD LOGIC
(TYPICAL)

RUGID RUGID COMPUTER

HIGH WETWELL LEVEL ALARM = XX FEET
WETWELL LEVEL SETPOINT = XX FEET
LAG PUMP STOP = XX FEET
LEAD PUMP STOP = XX FEET
LOW WETWELL LEVEL ALARM = XX FEET

TYPICAL SETPOINT SCREEN
LEVEL MODE

RUGID RUGID COMPUTER

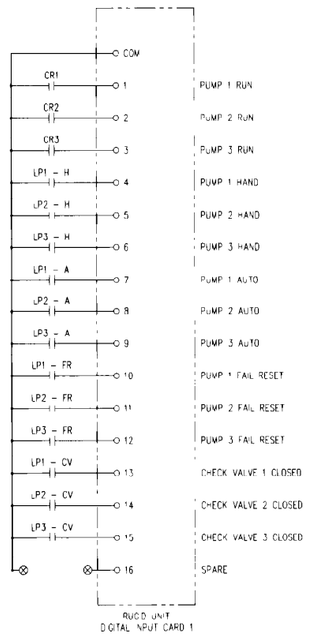
HIGH WETWELL LEVEL ALARM = XX FEET
LOW FLOWRATE SETPOINT = XX GPM
HIGH FLOWRATE SETPOINT = XX GPM
LAG PUMP STOP = XX FEET
LEAD PUMP STOP = XX FEET

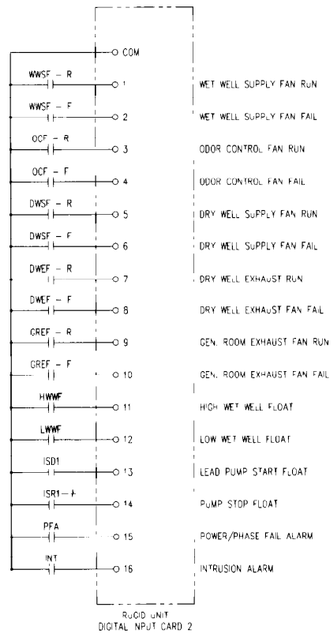
TYPICAL SETPOINT SCREEN
SCUM MODE

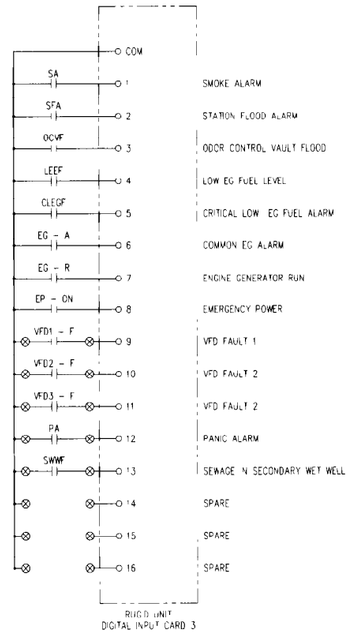
RUGID RUGID COMPUTER

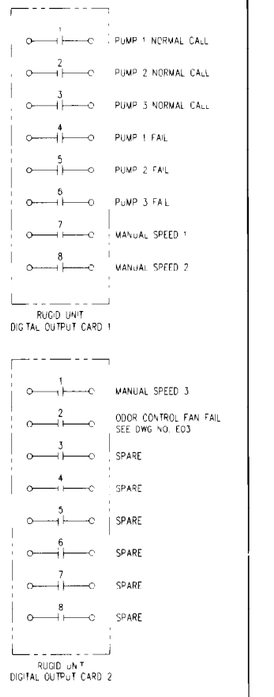
HIGH WETWELL LEVEL ALARM = XX FEET
LEAD PUMP START = XX FEET
LAG PUMP START = XX FEET
STOP PUMPS = XX FEET
LOW WETWELL LEVEL ALARM = XX FEET
HYDROGEN SULFIDE GAS ALARM = XX PPM
OXYGEN LOW LEVEL ALARM = XX %

TYPICAL SETPOINT SCREEN
STANDARD MODE









RUGID INPUT AND OUTPUT CARDS

ABBREVIATIONS
COM – COMMON
DWEF – DRY WELL EXHAUST FAN
DWSF – DRY WELL SUPPLY FAN
ES – ELECTRICAL SUPPLY
FT – FLOW TRANSMITTER
GREF – GENERATOR RUN EXHAUST FAN
GT – GAS TRANSMITTER
H2S – HYDROGEN SULFIDE
HWWF – HIGH WET WELL FLOAT
INT – INTRUSION
LT – LEVEL TRANSMITTER
LP – LIFT PUMP
LWWF – LOW WET WELL FLOAT
OXY – OXYGEN
PFA – PHASE FAIL ALARM
ZS – INTRUSION SWITCH
SWWF – SECONDARY WET WELL FLOAT

ANALOG LOOP DIAGRAMS SYMBOL SCHEDULE	
	PANEL WIRING
	FIELD WIRING BY CONTRACTOR
XX / XXX	FRONT OR PANEL DEVICE
PLC	RUGID DEVICE
M	MAGNETIC FLOWMETER
+ –	TERMINAL
	SHIELD

NO	REVISION	BY	CHK'D	DATE
1	CONSTRUCTION RECORDS	KMP	TVP	7/30/99

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SIGNED 09/26/96
EXPIRES 6/2/98

City of Kirkland
Lake Plaza Lift Station Replacement

TELEMETRY AND CONTROL LOGIC DIAGRAMS

195.025.03	PLZ-D20	MLM	TVP	JAN 01, 1998	SHOWN	48	E08	38 OF 39

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APPENDIX C6:
RECORD DRAWINGS – YARROW BAY VILLAGE IMPROVEMENTS

City of Kirkland

SEC. 19 & 20, TWP. 26 N., RGE. 5 E., W.M.

1/8

1334

YARROW BAY VILLAGE

CITY OF KIRKLAND

PHASE III
THE PLAZA AT YARROW BAY

SCALE: 1" = 40'

SEE SHEET C-4 FOR CONTINUATION

SEE SHEET C-4 FOR CONTINUATION

SEE SHEET C-9 MATCHLINE 11+50

SEE DETAIL 'C' SHT C-10

SEE DETAIL 'A' SHT C-10

6" DIA. STEEL HANDRAIL PER KIRKLAND STD PLAN A.12

4' DIA. STEEL HANDRAIL PER KIRKLAND STD. PLAN A.12.

CONSTRUCT NEW ROCKERY SEE DETAIL SHEET C-10 (BOULDERS, FILTER PIPES WITH ROCKS)

WHEELCHAIR RAMP TYPE C CITY OF KIRKLAND STD PLAN # CK A.19

MH #7 STA. 17+30 - 5' Ø

MH #4 STA. 14+50 - 5' Ø

EX. C.B. STA. 14+63.92 RESET EXISTING FRAME & GRATE

EX. C.B. (REF) REPLACE EXISTING SLOTTED GRATE WITH SOLID COVER

NEW C.B. TYPE I STA. 13+24.99 TO BE ABANDONED

11137.00 INT @ 0.00 HORIZ. ANGLE BREAK)

EX. C.B. REPLACE EXISTING SLOTTED GRATE SOLID COVER (P. ENG # 13)

NEW C.B. TYPE I LOCATE @ 10+65.50 - 164' LT. STD GRATE (FIELD SET)

EX. C.B. (REF) REPLACE EXISTING SLOTTED GRATE WITH SOLID COVER

EX. C.B. STA. 10+50 - 5' Ø

EX. 12" CMP

EX. 18" CMP

EX. 8" DIP

EX. 6" DIP

EX. 4" DIP

EX. 8" CMP

EX. 12" CMP

EX. 24" CMP

EX. 30" CMP

EX. 36" CMP

EX. 42" CMP

EX. 48" CMP

EX. 60" CMP

EX. 72" CMP

EX. 84" CMP

EX. 96" CMP

EX. 108" CMP

EX. 120" CMP

EX. 132" CMP

EX. 144" CMP

EX. 156" CMP

EX. 168" CMP

EX. 180" CMP

EX. 192" CMP

EX.

SEC. 19 & 20, TWP. 25 N., RGE. 5 E., W.M.

2/8

1334

PLACE TEMP. ASPHALT RAMP OVER STREET PAVING FOR WALKWAY GRADE ADJUSTMENT

STD. CONC. SIDEWALK (PERMANENT)

12:1 MIN

TYPICAL ROAD PAVING

TEMP. ASPHALT WALKWAY DETAIL
NO SCALE

UNPLATTED

END STEEL HANDRAIL & END GABIONS - STA. 22+25 ±

2" DIA. STEEL HANDRAIL PER KIRKLAND STD. PLAN R.22 SEE SECTION A-A

1 RDM - 3'X3'X12' GABIONS

CONSTRUCT SIDEWALK OVER GABIONS SEE DETAIL THIS SHEET

EX. OUTFALL I.E. 42.52

START STEEL HANDRAIL & START GABIONS STA. 19+40

YARROW BAY VILLAGE

EX. OUTFALL I.E. 37.86

N.E. POINTS DR.

EX. ASPHALT

EX. 8" CMP

8' SIDEWALK

N 60°22'35"E

R=1475.00

Δ=2°53'09"

L=74.35

5' SIDEWALK

EX. CATCH BASIN

SCALE: 1" = 40'

MATCHLINE 17+50 SEE SHEET C-8

INSTALL AN ASPHALT RAMP @ END OF CONC. SIDEWALK - SEE DETAIL ABOVE

#4 REINFORCING U-BAR BEAM POST

5'-0"

STEEL PIPE HANDRAIL PER KIRKLAND STD. PLAN R.22

5'-6"

CONCRETE SIDEWALK

#4 REINFORCING U-BAR

8"ø 4"DIA 16 GA. GALV. STEEL SLEEVE

4" MIN.

8"

3'x3' GABION

CONC. VERTICAL CURB & GUTTER

GABIONS FILLED WITH 4" TO 8" QUARRY STONES

MATCH EXIST. GROUND

SECTION A - A

EX. C.B. #8
RIM EL. 121.05
12" IE 117.78

STA. 23+90.50 PT

STA. 23+61.97
END VERTICAL CURB & SIDEWALK

OVERLAY & MATCH EXISTING PAVEMENT SEE DETAIL 'G' SHT. C-10

SEE DETAIL 'F' SHEET C-10

EX. C.B.
STA 22+66.84
REPLACE W/ VAULED GRATE & OFFSET TO MATCH CURBLINE

EXIST C.B. STA 20+26.67 TO BE REMOVED

SEE DETAIL 'E' SHT. C-10

NEW C.B. TYPE I STA 20+26.67

NEW C.B. TYPE I STA 17+63.75

SEE DETAIL 'D' SHEET C-10

EX. C.B. STA. 17+63.75 TO BE REMOVED

NOTE: SEE SHEET C-8 FOR MARKING DETAIL FOR N.E. POINTS DRIVE.

DATUM
CITY OF KIRKLAND

AREAS OF PVMT. REMOVAL

NOTE: BENCH EXC. FOR GABION WALL BE INSPECTED BY THE GEOTECHNICAL ENGINEER TO ASSURE STABLE FOUNDATION SOILS. OVER EXC. & RECOMPACTION MAY BE REQUIRED AT SOME LOCATIONS.

FLOWLINE (10' RT. (NORTH)

FLOWLINE (14' LT. (SOUTH)

END CURB & SIDEWALK STA. 23+61.97

EX. C.B.
EX. TOP 83.06
NEW TOP 83.80
EX. 12" I.E. 77.03
NEW CMP 12" I.E. 80.42 (OUT-NW)

600' V.C.

NOTE: VERTICAL CURVE DATA APPLIES TO THE LEFT (SOUTH) CURB LINE ONLY

EVC

NEW C.B. TOP 84.96 12"ø STUB (FIELD SET 20' LT. 0.67% GRADE)

CMP 12" I.E. 82.30 (OUT-NE)

NEW C.B. INLET TOP 41.96 12"ø STUB (FIELD SET 20' LT. 0.67% GRADE)

CMP 12" I.E. 39.19 (OUT-NE)

(PIPE 30.75)

MATCHLINE 17+50 SEE SHEET C-8

PROFILE SCALE:
HORIZONTAL 1" = 40'
VERTICAL 1" = 5'

PRELIMINARY NOT FOR CONSTRUCTION

27+00 26+00 25+00 24+00 23+00 22+00 21+00 20+00 19+00 18+00

GEO-LINE 118720

	BY	DATE
AS-CONSTRUCTED	TDF	8-1-94
REVISION		

GeoDimensions
10230 NE Points Drive • Suite 220
Kirkland, Washington 98033
Phone (206) 827 5855 • fax 828 3584
Land Surveying • Civil Engineering • Planning

CITY OF KIRKLAND — WASHINGTON

ROAD / STORM DRAINAGE PLAN / PROFILE - N.E. POINTS DRIVE

YARROW BAY VILLAGE

DATE MARCH 1994 | DESIGN A VADSET | DWN M LUDLOW | CKD H JENSEN

PROJ. NO. 88-3088

SHT. C - 8

COK PW#1334

3/8

13334

LIFT STATION / WETWELL-FORCEMAIN DETAIL

SCALE: 1" = 10'

NOTE:

CONSTRUCTED LOCATION OF SANITARY SEWER MANHOLES AND FIRE HYDRANT ASSEMBLYS ARE SHOWN (~~~~) BASED ON FIELD SURVEY. RIM AND INVERT ELEVATIONS ARE BASED ON PROJECT DATUM (CITY OF KIRKLAND) NOTED ON SHT. C-1 OF THE APPROVED PLANS DESIGNED BY GEO-DIMENSIONS DATED 7-23-91.

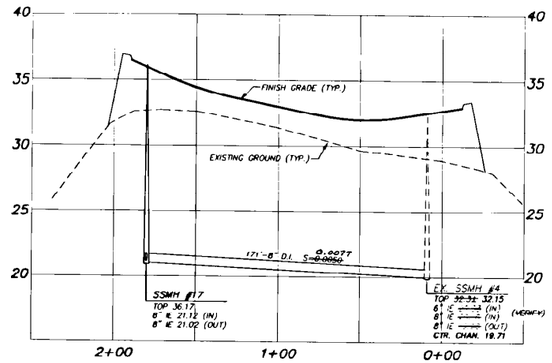
NOTES:

1. THE PORTIONS OF THE SANITARY SEWER AND WATER PLAN THAT ARE SHOWN SHADED HAVE NOT BEEN CHANGED FROM THE APPROVED PLANS DESIGNED BY GEO DIMENSIONS DATED 7-23-91. THOSE PORTIONS OF THE SYSTEMS THAT ARE SHOWN IN BOLD REPRESENT CHANGES TO LOCATION, TOP, INVERT, SIZE ETC. PLEASE REFER TO THE APPROVED PLANS FOR CALLOUTS, SIZES AND STATIONS OF THE SYSTEM THAT IS NOT BEING REVISED.
2. THE WATER SYSTEM CONNECTING 101st WAY N.E. AND 100th LANE N.E. THROUGH THE STREAM AREA HAS BEEN DELETED.
3. THE SANITARY SEWER LINE FROM SSMH #4 IN 100th LANE NE TO STA. 17+50 IN N.E. POINTS DRIVE HAS BEEN DELETED.
4. THE WATER SYSTEM IN N.E. POINTS DRIVE WEST OF 100th LANE N.E. HAS BEEN DELETED.
5. ADDITIONAL WATER BENDS MAY BE REQUIRED TO MODIFY VERTICAL ALIGNMENT TO AVOID CONFLICT WITH STORM DRAIN SYSTEM.

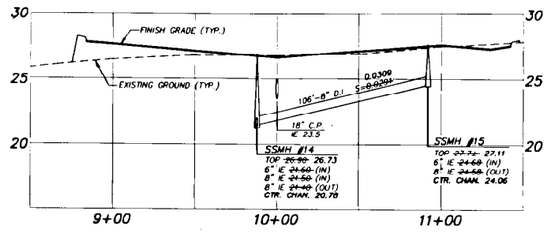
NE 38TH CT
NE 37TH CT. (WEST)
NE 37TH CT. (EAST)
100TH LN NE
101ST WAY NE
NE POINTS DRIVE
SSMH #1 SHALLOW MANHOLE ASSY. PER STD. DETAIL S.03
SSMH #2 SHALLOW MANHOLE ASSY. PER STD. DETAIL S.04
SSMH #3 SHALLOW MANHOLE ASSY. PER STD. DETAIL S.04
SSMH #4 SHALLOW MANHOLE ASSY. PER STD. DETAIL S.03
SSMH #5 SHALLOW MANHOLE ASSY. PER STD. DETAIL S.04
SSMH #6 SHALLOW MANHOLE ASSY. PER STD. DETAIL S.03
SERVICE LINE
4" TEE (MJ)
4" MJ GATE
4" CL 52 D.I. AS REQ'D
METERS TO BE TAPPED INTO 6" LINE (TYP)
SERVICE LINE
4" TEE (MJ)
2-4" MJ CAPS
4" CL 52 D.I. AS REQ'D
METERS TO BE TAPPED INTO 4" LINE (TYP)
SERVICE LINE
4" TEE (MJ)
4" MJ GATE
4" CL 52 D.I. AS REQ'D
METERS TO BE TAPPED INTO 6" LINE (TYP)
SERVICE LINE
4" TEE (MJ)
2-4" MJ GATE
4" CL 52 D.I. AS REQ'D
METERS TO BE TAPPED INTO 6" LINE (TYP)
SERVICE LINE
4" TEE (MJ)
4" MJ GATE
4" CL 52 D.I. AS REQ'D
METERS TO BE TAPPED INTO 6" LINE (TYP)
1-6" TEE (FL)
1-6" GATE VALVE (FLxMJ)
1-6"x4" REDUCER (FL)
1-4" GATE VALVE (FLxMJ)
1-4" CAP W/ 2" TAP (MJ)
1-2" BLOW-OFF ASSY.
THRUST BLOCKING
1-8"x6" TEE (MJxFL)
1-6" GATE VALVE (FLxMJ)
6" D.I.P. CL 52 (LENGTH AS REQ'D)
1-6" POST INDICATOR VALVE P.I.V.
DOUBLE CHECK VALVE ASSEMBLY W/ VAULT PER CITY STANDARD
SIAMESE CONNECTION
GONG: THRUST BLOCKING
REVISED TO 2" SERVICE FOR BUILDING SPRINKLER SYSTEM
1-8"x6" TEE (FL)
1-6" GATE VALVE (FLxMJ)
1-5-1/4" MVO FIRE HYD. ASSY.
1-6"x6" REDUCER (FLxMJ)
1-6" ADAPTER (FLxMJ)
THRUST BLOCKING
1-8"x6" TEE (FL)
1-6" GATE VALVE (FLxMJ)
1-5-1/4" MVO FIRE HYD. ASSY.
1-8"x4" REDUCER (FLxMJ)
THRUST BLOCKING
1-8"x6" TEE (FL)
1-6" GATE VALVE (FLxMJ)
1-5-1/4" MVO FIRE HYD. ASSY.
1-8" GATE VALVES (FLxMJ)
THRUST BLOCKING
1-8" TEE (FL)
2-8" GATE VALVES (FLxMJ)
1-8" ADAPTER (FLxMJ)
THRUST BLOCKING
1-8" PLUG
1-8"x10" TEE (FL)
1-12" ADAPTER (FLxMJ)
1-6" ADAPTER (FLxMJ)
1-8"x6" REDUCER (FLxMJ)
THRUST BLOCKING
1-8" GATE VALVE (FLxMJ)
1-8"x12" TEE (FL)
2-12" BUTTERFLY VALVES (FLxMJ)
1-8" GATE VALVE (FLxMJ)
1-12" PLUG (MJ)
1-12" ADAPTER (FLxMJ)
THRUST BLOCKING
1-8" TEE (MJ)
1-8" 22-1/2° BEND (MJ)
THRUST BLOCKING
1-8" 22-1/2° BEND (MJ)
THRUST BLOCKING
1-8" 22-1/2° BEND (MJ)
THRUST BLOCKING
2" BLOW-OFF ASSY.
CAR WASH CO. TOO LOW
CAP STUB & MARK FOR FUTURE DEVELOPMENT IE 21.52
CAP STUB & MARK FOR FUTURE DEVELOPMENT IE 21.52
FORCE MAIN CLEAN OUT
LIFT STATION SEE DETAIL SHEET
WATER SERVICE FOR LIFT STATION
FORCE MAIN CLEAN OUT
PER DETAIL ON LIFT STATION SHEET
SEE APPROVED PLANS BY GEODIMENSIONS DATED 7-23-91 FOR DRYDOCK CROSSING DETAILS
FIRE HYDRANT ASSEMBLY
10' GATE VALVE (MJ)
FF 27.85
FF 28.0
FF 29.03
FF 30.01
FF 32.0
FF 32.0
FF 33.5
FF 37.5
FF 35.5
FF 34.0
CLEANOUT #9B LOC. AS SHOWN TOP 27.5± 6" IE 24.68 (IN) 8" IE 24.68 (OUT) CTR. CHAN. 24.06
CLEANOUT #9C LOC. AS SHOWN TOP 27.2± 6" IE 21.56 8" IE 21.56 28'-6" @ 2% MIN.
CLEANOUT #9A LOC. AS SHOWN TOP 27.3± 6" IE 23.30 44'-6" @ 2% MIN.
CLEANOUT #8A LOC. AS SHOWN TOP 27.6± 6" IE 22.73 73'-6" @ 2% MIN.
CLEANOUT #8B LOC. AS SHOWN TOP 29.6± 6" IE 25.00 10'-6" @ 2% MIN.
CLEANOUT #8C LOC. AS SHOWN TOP 28.9± 6" IE 25.00 75'-6" @ 2% MIN.
CLEANOUT #8D LOC. AS SHOWN TOP 29.5± 6" IE 25.00 20'-6" @ 2% MIN.
CLEANOUT #7A LOC. AS SHOWN TOP 29.4± 6" IE 24.80 33'-6" @ 2% MIN.
CLEANOUT #7B LOC. AS SHOWN TOP 29.5± 6" IE 24.50 28'-6" @ 2% MIN.
CLEANOUT #7D LOC. AS SHOWN TOP 29.2± 6" IE 24.00 25'-6" @ 2% MIN.
CLEANOUT #5A LOC. AS SHOWN TOP 30.7± 6" IE 27.00 35'-6" @ 2% MIN.
CLEANOUT #5B LOC. AS SHOWN TOP 31.0± 6" IE 26.50 23'-6" @ 2% MIN.
CLEANOUT #5C LOC. AS SHOWN TOP 31.2± 6" IE 26.00 30'-6" @ 2% MIN.
CLEANOUT #4A LOC. AS SHOWN TOP 30.1± 6" IE 27.00 21'-6" @ 2% MIN.
CLEANOUT #4B LOC. AS SHOWN TOP 31.0± 6" IE 25.87 24'-6" @ 2% MIN.
CLEANOUT #4C LOC. AS SHOWN TOP 31.3± 6" IE 27.00 26'-6" @ 2% MIN.
CLEANOUT #2A LOC. AS SHOWN TOP 32.3± 6" IE 23.00 71'-6" @ 2% MIN.
CLEANOUT #2B LOC. AS SHOWN TOP 32.9± 6" IE 28.50 18'-6" @ 2% MIN.
CLEANOUT #1D LOC. AS SHOWN TOP 36.5± 6" IE 30.50 13'-6" @ 2% MIN.
CLEANOUT #1C LOC. AS SHOWN TOP 35.5± 6" IE 29.50 26'-6" @ 2% MIN.
CLEANOUT #1B LOC. AS SHOWN TOP 34.0± 6" IE 30.50 31'-6" @ 2% MIN.
CLEANOUT #1A LOC. AS SHOWN TOP 33.5± 6" IE 27.00 45'-6" @ 2% MIN.
CLEANOUT #3A LOC. AS SHOWN TOP 33.7± 6" IE 29.00 20'-6" @ 2% MIN.
CLEANOUT #3B LOC. AS SHOWN TOP 33.5± 6" IE 29.00 47'-6" @ 2% MIN.
SSMH #1 3+15, 10' LT TOP 34.03 31.02 8" IE 15.95 (IN) 8" IE 16.83 (OUT) CTR. CHAN. 15.40 IN D.I. 8" IE 22.30 (OUT-SE)
SSMH #2 LOCATE AS SHOWN TOP 33.8± 32.83 8" IE 16.35 (IN) 8" IE 16.25 (OUT) CTR. CHAN. 15.91
SSMH #3 5+20, 10' LT TOP 28.98 28.74 8" IE 19.93 (IN) 8" IE 19.83 (OUT) CTR. CHAN. 19.34
SSMH #4 1+95, 9' LT TOP 36.35 32.13 6" IE (20.33) (IN) 8" IE (20.16) (IN) 8" IE (19.96) (OUT) CTR. CHAN. 19.71
SSMH #5 4+50, 8' LT TOP 23.84 29.74 8" IE 17.93 (IN) 8" IE 17.83 (OUT) CTR. CHAN. 17.48
SSMH #6 LOCATE AS SHOWN TOP 33.55 30.98 8" IE (17.20) (IN) 8" IE (17.00) (OUT) CTR. CHAN. 17.18
SSMH #7 1+80, 10' LT TOP 36.17 6" IE 21.12 (IN) 8" IE 21.12 (IN) 8" IE 21.02 (OUT)
CATCH BASIN TOP 31.32 6" IE 27.85 (IN) 6" IE 27.75 (OUT) CTR. CHAN. 28.54
SSMH #8 LOCATE AS SHOWN TOP 32.8± 8" IE 16.35 (IN) 8" IE 16.25 (OUT) CTR. CHAN. 15.91
SSMH #9 LOCATE AS SHOWN TOP 30.98 8" IE (17.20) (IN) 8" IE (17.00) (OUT) CTR. CHAN. 17.18
SSMH #10 LOCATE AS SHOWN TOP 32.3± 6" IE 23.00 71'-6" @ 2% MIN.
SSMH #11 LOCATE AS SHOWN TOP 29.5± 6" IE 25.00 20'-6" @ 2% MIN.
SSMH #12 4+50, 8' LT TOP 23.84 29.74 8" IE 17.93 (IN) 8" IE 17.83 (OUT) CTR. CHAN. 17.48
SSMH #13 5+20, 10' LT TOP 28.98 28.74 8" IE 19.93 (IN) 8" IE 19.83 (OUT) CTR. CHAN. 19.34
SSMH #14 LOCATE AS SHOWN TOP 27.2± 6" IE 22.30 34'-6" @ 2% MIN.
SSMH #15 SHALLOW MANHOLE ASSY. PER STD. DETAIL S.03 (1+15, 7' PT TOP 36.66 32.52 6" IE 26.50 (IN) 8" IE 26.40 (OUT) CTR. CHAN. 26.54
SSMH #16 SHALLOW MANHOLE ASSY. PER STD. DETAIL S.03 0+88, 7' LT TOP 26.90 26.73 6" IE 21.40 (IN) 8" IE 21.50 (IN) 8" IE 21.40 (OUT) CTR. CHAN. 20.78
SSMH #17 1+80, 10' LT TOP 36.17 6" IE 21.12 (IN) 8" IE 21.12 (IN) 8" IE 21.02 (OUT)
CAR WASH CO. TOO LOW
CAP STUB & MARK FOR FUTURE DEVELOPMENT IE 21.52

4/8

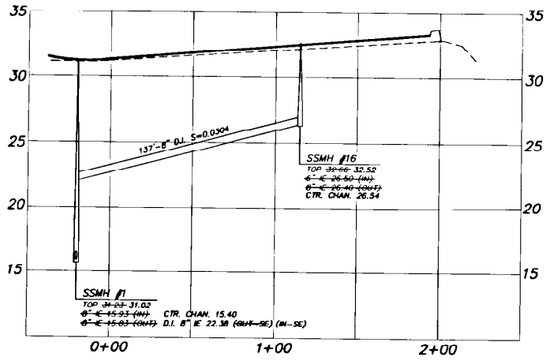
1334



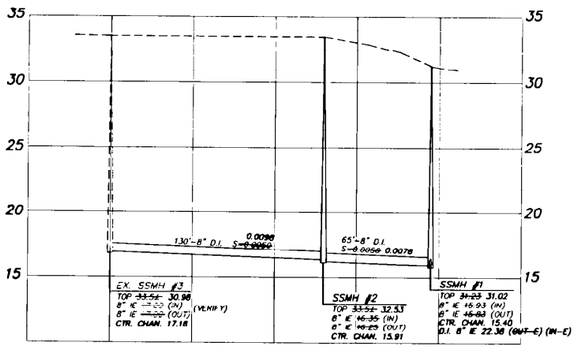
N.E. 37TH COURT (WEST)



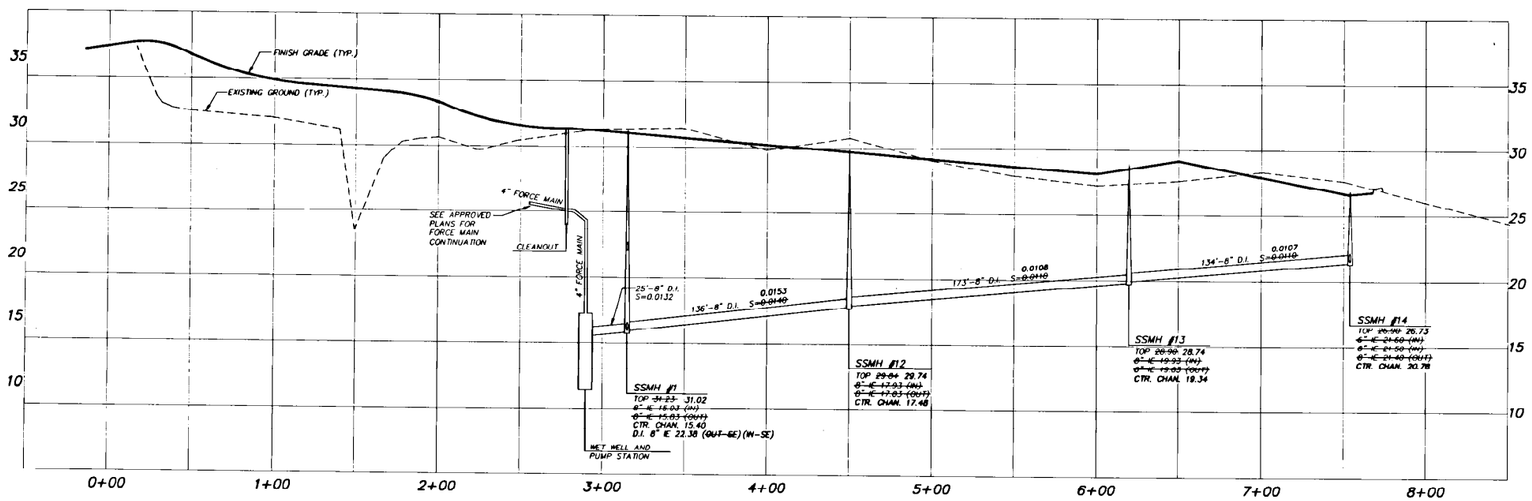
N.E. 38TH COURT



N.E. 37TH COURT (EAST)



EX. SSMH #3 TO SSMH #1



101ST WAY N.E.

AS-BUILT
DATE: 8/94

SCALE: 1"= 40' HORIZ.
1"= 5' VERT.

ENGINEER'S STAMP NOT VALID UNLESS SIGNED AND DATED

NO	DATE	REVISIONS	BY	CK
1	8-1-94	AS-CONSTRUCTED		

STATE OF WASHINGTON — JAMES L. KING — 13331 — REGISTERED PROFESSIONAL ENGINEER
EXPIRES 6/7/95

TRIAD ASSOCIATES
Project Management
Civil Engineering
Land Surveying
Land Use Planning
Environmental Analysis
11415 NE 128th Street • Kirkland, WA 98034 • (206) 821-8448 • (206) 821-3481 FAX

SANITARY SEWER PROFILES
YARROW BAY VILLAGE
CITY OF KIRKLAND, WASHINGTON

DESIGNED	JKS	
DRAWN	RF	
CHECKED	LCC	
DATE	OCTOBER 11, 1993	
PROJECT MANAGER	JAMES KING	

SHEET 2 OF 2

JOB NUMBER 93-162

COK PW# 1334

5/8

13341

SEC. 19 & 20, TWP. 25 N., RGE. 5E., W.M.

CATCH BASIN TYPE II

N.T.S.

NOTES:

1. SHEAR GATE SHALL BE
   - A. SHEAR GATE, CAST IRON BODY AND GATE, OLYMPIC FDY. STD. OR EQUAL OR
   - B. SHEAR GATE, ALUMINUM OR CAST IRON, DRAINAGE SPECIALTIES (SAVANNAH, GA) STD. OR EQUAL.
2. GATE SHALL BE 8" DIAM UNLESS OTHERWISE SPECIFIED.
3. GATE SHALL BE JOINED TO TEE SECTION BY BOLTING (THROUGH FLANGE), WELDING, OR OTHER SECURE MEANS.
4. LIFT ROD: AS SPECIFIED BY MFR. WITH HANDLE EXTENDING TO WITHIN ONE FOOT OF COVER AND ADJUSTABLE HOOK LOCK FASTENED TO FRAME OR UPPER MANDHOLD.

CITY OF KIRKLAND

STANDARD PLAN NO. CK-D.06 (MODIFIED)

SHEAR GATE DETAIL

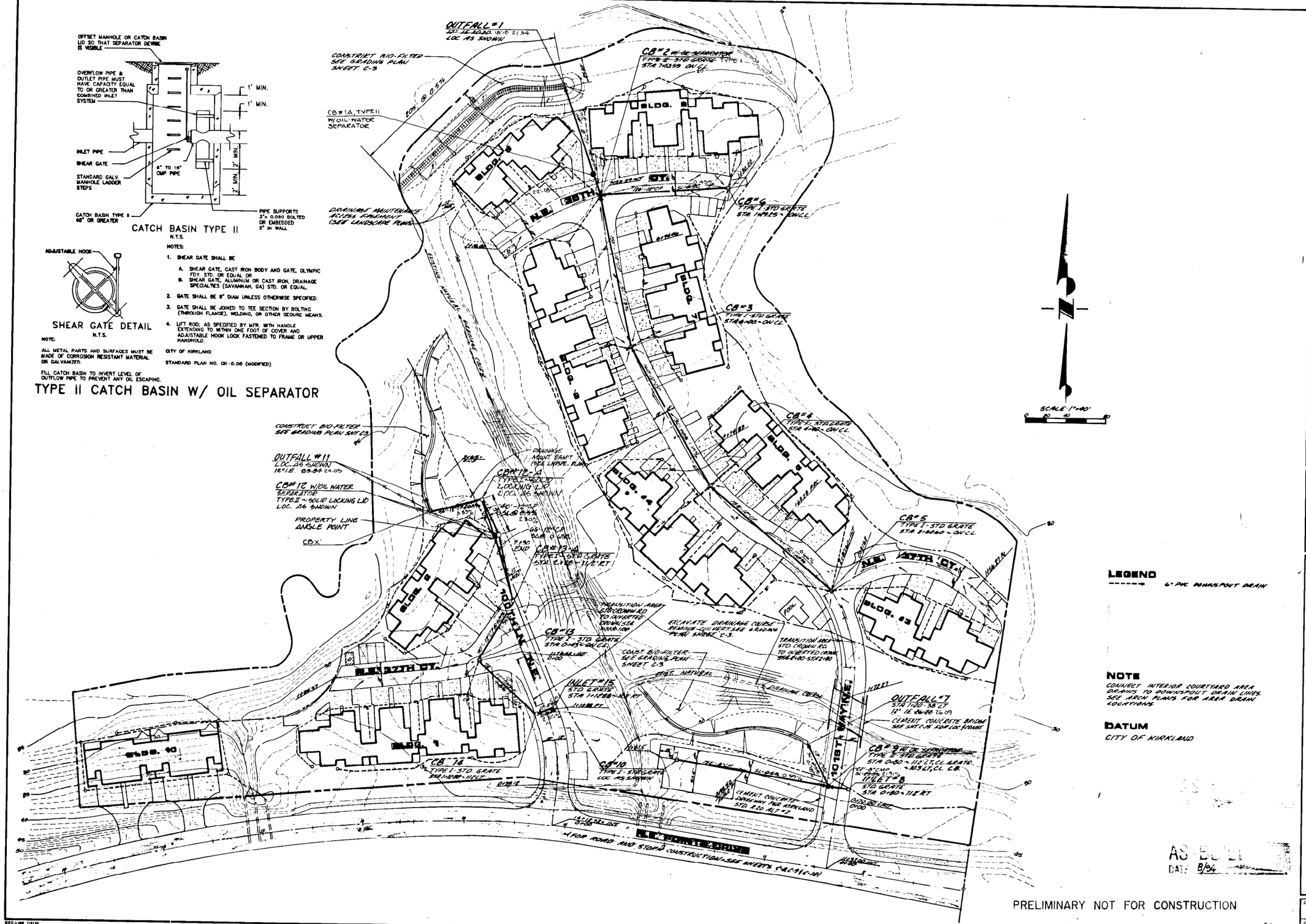
N.T.S.

NOTE:

ALL METAL PARTS AND SURFACES MUST BE MADE OF CORROSION RESISTANT MATERIAL OR GALVANIZED.

FILL CATCH BASIN TO INVERT LEVEL OF OUTFLOW PIPE TO PREVENT ANY OIL ESCAPING.

TYPE II CATCH BASIN W/ OIL SEPARATOR



REVISION	DATE	BY
AS-CONSTRUCTED REVISED STORM SYSTEM (SHT 1) TO AS-BUILT(S) REVISED ROAD LAYOUT	8-1-94 7-29-94	JDF JJ

GeoDimensions
10230 NE Points Drive • Suite 220
Kirkland, Washington 98033
Phone (206) 827-5855 • Fax 823-3684
Land Surveying • Civil Engineering • Planning

7 21 90

CITY OF KIRKLAND — WASHINGTON

ROAD & STORM DRAINAGE PLAN

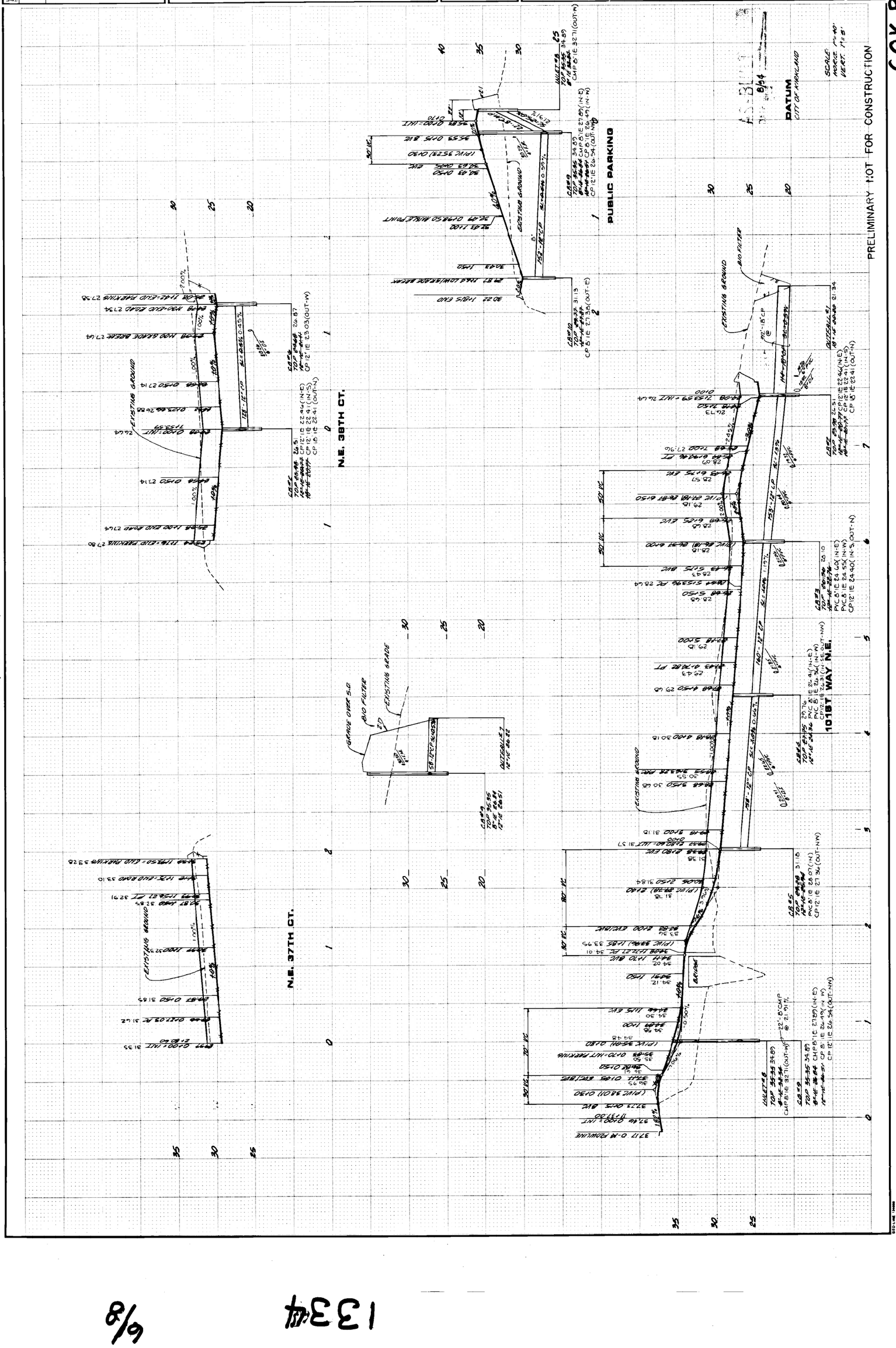
YARROW BAY VILLAGE

DATE	DESIGN	DWN	CKD
MARCH 1990	A. MASSET	DFW	M. JENSEN

PROJ NO 89-209

SHT C-4

COK PW#1334



COK PW#1334

8/9

1334

SEC. 19-20, TWP. 25 N., RGE. 5 E., W.M.

7/8

11334

SAG NOTE

N.E. 37TH CT.

100TH LN. N.E.

LOT 13

T.L. 0208

DATUM
CITY OF KIRKLAND

PRELIMINARY NOT FOR CONSTRUCTION

AS CONSTRUCTED
REVISED STORM CAP TO DETAIL 4 IN PW
REVISED ROAD LAYOUT

REVISION	DATE	BY
	6-1-94	JDF
	7-14-94	JF

GeoDimensions
10230 NE Points Drive • Suite 220
Kirkland, Washington 98033
Phone (206) 827-5855 • Fax 828-3684
Land Surveying • Civil Engineering • Planning

ROAD & STORM DRAINAGE PROFILE
YARROW BAY VILLAGE
CITY OF KIRKLAND WASHINGTON

DATE	DSGN. A. VADSET	DWN. DFM	CHD. H. JENSEN
MARCH 1990			

PROJ NO
88-3088
SHT
C - 8

COK PW #1334

SEC. 18-20, TWP. 25 N., RGE. 5 E., W.M.

8/8

1334

CEMENT CONCRETE APRON-SEE SHT C-14
1-8"x 22½° BEND (MJ)
THRUST BLOCKING
2-8"x 45° BEND (MJ)
THRUST BLOCKING
CEMENT CONCRETE BRIDGE-SEE BRIDGE PLAN
PLAN VIEW
PVMT
CEMENT CONCRETE APRON-SEE SHT C-14
SEE BRIDGE PLAN SHT C-15 FOR LOCATION AND PIPE ANCHORS
8"-DI CL52
1-8"x 22½° BEND (MJ)
USE BENDS TO ADJUST FOR VERTICAL ALIGNMENT CHANGES
ELEVATION
DETAIL B
NO SCALE
CEMENT CONCRETE APRON-SEE SHT C-14
8" DI CL52
UTILITY SLOT
2-8"x 45° BENDS (MJ) THRUST BLOCKING
CEMENT CONCRETE BRIDGE SEE BRIDGE PLAN SHT C-14
PLAN VIEW
PVMT
CEMENT CONCRETE APRON-SEE SHT C-14
UTILITY SLOT
CEMENT CONCRETE BRIDGE SEE SHT C-14
USE BENDS TO ADJUST FOR VERTICAL & HORIZONTAL ALIGNMENT CHANGES
ELEVATION
DETAIL A
NO SCALE
CLEANOUT #9C
LOC. AS SHOWN
TOP 25.2±
6"I.E. 18.20
28'-6" PVC @ 2% (OUT)
CLEANOUT #8A
LOC. AS SHOWN
TOP 25.9 ± FIELD ADJ.
6"I.E. 20.19 (OUT)
68'-6" PVC @ 2% (MIN)
CLEANOUT #8B
LOC. AS SHOWN
TOP 25.3 ±
6"I.E. 20.30
93'-6" PVC @ 2% (MIN)
CLEANOUT #9B
LOC. AS SHOWN
TOP 25.3±
6"I.E. 21.30
28'-6" PVC @ 2% (MIN)
1-6"x 90° BEND (MJ)
1-6" PIPE
1-DOUBLE CHECK VALVE ASSY
1-SLANTED 6" COIN
THRUST BLOCKING
1-¾" WATER SERVICE & METER W/ DRY
1-STRIP ROCK (STRIBACK OF CURB, TYP.)
1-¾" COPPER WATER MAIN TAP
1-¾" METER
(6 UNITS)
MH #14
STA. 0+00 ± C.L.
TOP 25.2 ± (FIELD ADJ.)
8"-I.E. 19.90 (IN)
8"-I.E. 19.80 (OUT)
CLEANOUT #9A
LOC. AS SHOWN
TOP 25.32
6"I.E. 21.30
82'-6" PVC @ 2% (MIN)
1-¾" WATER SERVICE & METER
1-HOSE BIB
DIRECT PIPE - APPROX 800' RAD.
4-¾" WATER SERVICE & METER W/ PRV
CLEANOUT #7A
LOC. AS SHOWN
TOP 27.4±
6"I.E. 22.80
93'-6" PVC @ 2% (MIN)
MH #13
STA. 4+88 ± 9' LT.
TOP 24.34
6"I.E. 18.90 (IN)
8"I.E. 18.80 (IN)
8"I.E. 18.70 (OUT)
CLEANOUT #6A
LOC. AS SHOWN
TOP 24.9±
6"I.E. 22.20 (OUT)
9'-6" PVC @ 2% (MIN)
8-¾" WATER SERVICE & METER W/ PRV
CLEANOUT #6B
LOC. AS SHOWN
TOP 27±
6"I.E. 23.20 (OUT)
12'-6" PVC @ 2% (MIN)
MH #12-A
STA. 6+20 ± 10' LT. TOP 26.9 ±
8"-I.E. 17.78 (IN)
8"-I.E. 17.18 (OUT)
CLEANOUT #6C
LOC. AS SHOWN
TOP 26.9 ±
6"I.E. 23.00 (OUT)
10'-6" PVC @ 2% (MIN)
CLEANOUT #6D
LOC. AS SHOWN
TOP 27.5±
6"I.E. 23.30 (OUT)
18'-6" PVC @ 2% (MIN)
CLEANOUT #7B
LOC. AS SHOWN
TOP 27.5 ± (FIELD ADJ)
6"I.E. 23.50 (OUT)
26'-6" PVC @ 13% (MIN)
DIRECT PIPE - APPROX. 400' RAD. (DEFLECTION NOT TO EXCEED MANUFACTURERS SPECIFICATIONS)
CLEANOUT #6E
LOC. AS SHOWN
TOP 27.5±
6"I.E. 23.60
93'-6" PVC @ 2% (MIN)
STA. 5+37 - 19' RT.
1-8"x 6" TEE (MJ x FLG)
1-8" x 4" FLG REDUCER (FLG x MJ)
1-6" GATE VALVE (FLG x MJ)
1-6" SWIVEL MJ ADAPTER (FLG x MJ)
THRUST BLOCKING
CLEANOUT #6F
LOC. AS SHOWN
TOP 28.1±
6"I.E. 24.20
93'-6" PVC @ 2% (MIN)
1-¾" WATER SERVICE & METER W/ PRV
1-3/4"x 3/4" DOUBLE STRAP SERVICE SADDLE (TYP.)
1-¾" COPPER WATER MAIN TAP
1-¾" METER
1-8"x 8"x 6" TEE (MJ x MJ x FL)
1-8" x 6" FLG REDUCER (CMJ x FL)
1-6" GATE VALVE (FLG x MJ)
THRUST BLOCKING
CLEANOUT #6G
LOC. AS SHOWN
TOP 28.9±
6"I.E. 23.00 (OUT)
10'-6" PVC @ 2% (MIN)
CLEANOUT #6H
LOC. AS SHOWN
TOP 27.5±
6"I.E. 23.30 (OUT)
18'-6" PVC @ 2% (MIN)
CLEANOUT #4A
LOC. AS SHOWN
TOP 28.1±
6"I.E. 25.00
18'-6" PVC @ 2% (MIN)
1-¾" WATER SERVICE & METER W/ PRV
1-3/4"x 3/4" DOUBLE STRAP SERVICE SADDLE (TYP.)
1-¾" COPPER WATER MAIN TAP
1-¾" METER
1-8"x 8"x 6" TEE (MJ x MJ x FL)
1-8" x 6" FLG REDUCER (CMJ x FL)
1-6" GATE VALVE (FLG x MJ)
THRUST BLOCKING
(6 PLACES)
CLEANOUT #5A
LOC. AS SHOWN
TOP 28.7±
6"I.E. 25.60
93'-6" PVC @ 2% (MIN)
1-8"x 8"x 6" TEE (MJ x MJ x FL)
1-8" x 6" FLG REDUCER (CMJ x FL)
1-6" GATE VALVE (FLG x MJ)
THRUST BLOCKING
CLEANOUT #5B
LOC. AS SHOWN
TOP 29.1±
6"I.E. 26.00
93'-6" PVC @ 2% (MIN)
STA 8+18 - 51' RT.
TOP 29.1 ± (FIELD ADJ.)
6"I.E. 26.10 (OUT)
CLEANOUT #5C
LOC. AS SHOWN
TOP 29.1±
6"I.E. 23.50 (OUT)
93'-6" PVC @ 2% (MIN)
MH #11
STA. 7+00 ± 0' LT.
TOP 29.1 ± (FIELD ADJ.)
8"-I.E. 19.70 (IN)
8"-I.E. 19.60 (IN)
8"-I.E. 19.50 (OUT)
STA. 7+55 - 16' RT.
1-8"x 6" TEE (FLG x FLG)
1-6" GATE VALVE (FLG x MJ)
1-6"x 8" MJ ADAPTER (FLG x MJ)
THRUST BLOCKING
STA. 7+55 - 16' RT.
1-8"x 8"x 6" TEE (MJ x MJ x FL)
1-6" GATE VALVE (FLG x MJ)
1-6"x 8" MJ ADAPTER (FLG x MJ)
1-8" x 6" FLG REDUCER (CMJ x FL)
THRUST BLOCKING
MH #10
STA. 7+90 ± 10' LT.
TOP 29.3 ± (FIELD ADJ.)
8"-I.E. 19.50 (IN)
8"-I.E. 19.40 (IN)
8"-I.E. 19.30 (OUT)
CLEANOUT #3A
LOC. AS SHOWN
TOP 29.4±
6"I.E. 26.80
93'-6" PVC @ 2% (MIN)
CLEANOUT #3B
LOC. AS SHOWN
TOP 29.4±
6"I.E. 27.00
8'-6" PVC @ 2% MIN
CLEANOUT #3C
LOC. AS SHOWN
TOP 29.5±
6"I.E. 27.20 (OUT)
30'-6" PVC @ 2.0% (MIN)
MH #9
STA. 8+90 ± 10' LT.
TOP 29.5 ± (FIELD ADJ.)
8"-I.E. 17.20 (IN)
8"-I.E. 17.10 (OUT)
MH #1
LOC. AS SHOWN
TOP 29.5 ± (FIELD ADJ.)
8"-I.E. 15.11 (IN)
8"-I.E. 15.01 (OUT)
MH #2
STA. 9+00 ± 0' LT.
TOP 29.5 ± (FIELD ADJ.)
8"-I.E. 13.51 (IN)
8"-I.E. 13.41 (OUT)
MH #T-A
LOC. AS SHOWN
TOP 30.5 ± (FIELD ADJ.)
8"I.E. 15.01
8"I.E. 14.81
MH #5
STA. 9+90 ± 0' LT.
TOP 29.69
8"-I.E. 13.59 (IN)
8"-I.E. 13.49 (OUT)
MH #8
STA. 10+00 ± 10' LT.
TOP 29.9 ± (FIELD ADJ.)
8"-I.E. 13.39 (IN)
8"-I.E. 13.29 (OUT)
CLEANOUT #2A
LOC. AS SHOWN
TOP 29.9±
6"I.E. 27.60
8'-6" PVC @ 2% MIN
CLEANOUT #2B
LOC. AS SHOWN
TOP 29.9±
6"I.E. 27.80
8'-6" PVC @ 2% MIN
CLEANOUT #2C
LOC. AS SHOWN
TOP 30.6±
6"I.E. 28.00
8'-6" PVC @ 2% MIN
CLEANOUT #1
LOC. AS SHOWN
TOP 31.0±
6"I.E. 27.50
12'-6" PVC @ 2% MIN
CLEANOUT #1A
LOC. AS SHOWN
TOP 31.0±
6"I.E. 27.75
8'-6" PVC @ 2% MIN
CLEANOUT #1B
LOC. AS SHOWN
TOP 31.0±
6"I.E. 27.90
8'-6" PVC @ 2% MIN
CLEANOUT #1C
LOC. AS SHOWN
TOP 31.0±
6"I.E. 28.10
8'-6" PVC @ 2% MIN
MH #4
STA. 1+99 ± 9' LT.
TOP 28.75
8"-I.E. 23.55 (IN)
8"-I.E. 23.45 (IN)
8"-I.E. 23.35 (OUT)
CLEANOUT #4A
LOC. AS SHOWN
TOP 28.8±
6"I.E. 23.85
8'-6" PVC @ 2% MIN
CLEANOUT #4B
LOC. AS SHOWN
TOP 28.8±
6"I.E. 24.05
8'-6" PVC @ 2% MIN
MH #3
STA. 3+00 ± 0' LT.
TOP 29.5±
6"I.E. 17.30 (IN)
8"I.E. 17.20 (IN)
8"I.E. 17.10 (OUT)
MH #15
STA. 3+00 ± 10' LT.
TOP 29.5 ± (FIELD ADJ.)
8"-I.E. 15.11 (IN)
8"-I.E. 15.01 (OUT)
MH #16
STA. 11+30 - 24' RT.
TOP 31.0 ± (FIELD ADJ.)
8"-I.E. 19.60 (IN)
8"-I.E. 19.50 (OUT)
CLEANOUT #3
LOC. AS SHOWN
TOP 31.1±
6"I.E. 27.00
8'-6" PVC @ 2% MIN
CLEANOUT #3D
LOC. AS SHOWN
TOP 31.5±
6"I.E. 27.50 (OUT)
25'-6" PVC @ 2% MIN
MH #17
STA. 11+30 - 51' LT.
TOP 30.97
8"I.E. 27.72 (OUT)
6"I.E. 27.82
CLEANOUT #10
LOC. AS SHOWN
TOP 35.5±
6"I.E. 29.89 (OUT)
CLEANOUT #2D
LOC. AS SHOWN
TOP 31.0±
6"I.E. 28.00
12'-6" PVC @ 2% MIN
CLEANOUT #2E
LOC. AS SHOWN
TOP 31.0±
6"I.E. 28.20
8'-6" PVC @ 2% MIN
CLEANOUT #2F
LOC. AS SHOWN
TOP 31.0±
6"I.E. 28.40
8'-6" PVC @ 2% MIN
MH #7
SEE SHT C-8 FOR LOCATION & ELEV.
MH #6
SEE SHT C-8 FOR LOCATION & ELEV.
CLEANOUT #8A
LOC. AS SHOWN
TOP 31.0±
6"I.E. 28.60
8'-6" PVC @ 2% MIN
CLEANOUT #8B
LOC. AS SHOWN
TOP 31.0±
6"I.E. 28.80
8'-6" PVC @ 2% MIN
CLEANOUT #8C
LOC. AS SHOWN
TOP 31.0±
6"I.E. 29.00
8'-6" PVC @ 2% MIN
CLEANOUT #8D
LOC. AS SHOWN
TOP 31.0±
6"I.E. 29.20
8'-6" PVC @ 2% MIN
CLEANOUT #8E
LOC. AS SHOWN
TOP 31.0±
6"I.E. 29.40
8'-6" PVC @ 2% MIN
CLEANOUT #8F
LOC. AS SHOWN
TOP 31.0±
6"I.E. 29.60
8'-6" PVC @ 2% MIN
CLEANOUT #8G
LOC. AS SHOWN
TOP 31.0±
6"I.E. 29.80
8'-6" PVC @ 2% MIN
CLEANOUT #8H
LOC. AS SHOWN
TOP 31.0±
6"I.E. 30.00
8'-6" PVC @ 2% MIN
CLEANOUT #8I
LOC. AS SHOWN
TOP 31.0±
6"I.E. 30.20
8'-6" PVC @ 2% MIN
CLEANOUT #8J
LOC. AS SHOWN
TOP 31.0±
6"I.E. 30.40
8'-6" PVC @ 2% MIN
CLEANOUT #8K
LOC. AS SHOWN
TOP 31.0±
6"I.E. 30.60
8'-6" PVC @ 2% MIN
CLEANOUT #8L
LOC. AS SHOWN
TOP 31.0±
6"I.E. 30.80
8'-6" PVC @ 2% MIN
CLEANOUT #8M
LOC. AS SHOWN
TOP 31.0±
6"I.E. 31.00
8'-6" PVC @ 2% MIN
CLEANOUT #8N
LOC. AS SHOWN
TOP 31.0±
6"I.E. 31.20
8'-6" PVC @ 2% MIN
CLEANOUT #8O
LOC. AS SHOWN
TOP 31.0±
6"I.E. 31.40
8'-6" PVC @ 2% MIN
CLEANOUT #8P
LOC. AS SHOWN
TOP 31.0±
6"I.E. 31.60
8'-6" PVC @ 2% MIN
CLEANOUT #8Q
LOC. AS SHOWN
TOP 31.0±
6"I.E. 31.80
8'-6" PVC @ 2% MIN
CLEANOUT #8R
LOC. AS SHOWN
TOP 31.0±
6"I.E. 32.00
8'-6" PVC @ 2% MIN
CLEANOUT #8S
LOC. AS SHOWN
TOP 31.0±
6"I.E. 32.20
8'-6" PVC @ 2% MIN
CLEANOUT #8T
LOC. AS SHOWN
TOP 31.0±
6"I.E. 32.40
8'-6" PVC @ 2% MIN
CLEANOUT #8U
LOC. AS SHOWN
TOP 31.0±
6"I.E. 32.60
8'-6" PVC @ 2% MIN
CLEANOUT #8V
LOC. AS SHOWN
TOP 31.0±
6"I.E. 32.80
8'-6" PVC @ 2% MIN
CLEANOUT #8W
LOC. AS SHOWN
TOP 31.0±
6"I.E. 33.00
8'-6" PVC @ 2% MIN
CLEANOUT #8X
LOC. AS SHOWN
TOP 31.0±
6"I.E. 33.20
8'-6" PVC @ 2% MIN
CLEANOUT #8Y
LOC. AS SHOWN
TOP 31.0±
6"I.E. 33.40
8'-6" PVC @ 2% MIN
CLEANOUT #8Z
LOC. AS SHOWN
TOP 31.0±
6"I.E. 33.60
8'-6" PVC @ 2% MIN
CLEANOUT #8AA
LOC. AS SHOWN
TOP 31.0±
6"I.E. 33.80
8'-6" PVC @ 2% MIN
CLEANOUT #8AB
LOC. AS SHOWN
TOP 31.0±
6"I.E. 34.00
8'-6" PVC @ 2% MIN
CLEANOUT #8AC
LOC. AS SHOWN
TOP 31.0±
6"I.E. 34.20
8'-6" PVC @ 2% MIN
CLEANOUT #8AD
LOC. AS SHOWN
TOP 31.0±
6"I.E. 34.40
8'-6" PVC @ 2% MIN
CLEANOUT #8AE
LOC. AS SHOWN
TOP 31.0±
6"I.E. 34.60
8'-6" PVC @ 2% MIN
CLEANOUT #8AF
LOC. AS SHOWN
TOP 31.0±
6"I.E. 34.80
8'-6" PVC @ 2% MIN
CLEANOUT #8AG
LOC. AS SHOWN
TOP 31.0±
6"I.E. 35.00
8'-6" PVC @ 2% MIN
CLEANOUT #8AH
LOC. AS SHOWN
TOP 31.0±
6"I.E. 35.20
8'-6" PVC @ 2% MIN
CLEANOUT #8AI
LOC. AS SHOWN
TOP 31.0±
6"I.E. 35.40
8'-6" PVC @ 2% MIN
CLEANOUT #8AJ
LOC. AS SHOWN
TOP 31.0±
6"I.E. 35.60
8'-6" PVC @ 2% MIN
CLEANOUT #8AK
LOC. AS SHOWN
TOP 31.0±
6"I.E. 35.80
8'-6" PVC @ 2% MIN
CLEANOUT #8AL
LOC. AS SHOWN
TOP 31.0±
6"I.E. 36.00
8'-6" PVC @ 2% MIN
CLEANOUT #8AM
LOC. AS SHOWN
TOP 31.0±
6"I.E. 36.20
8'-6" PVC @ 2% MIN
CLEANOUT #8AN
LOC. AS SHOWN
TOP 31.0±
6"I.E. 36.40
8'-6" PVC @ 2% MIN
CLEANOUT #8AO
LOC. AS SHOWN
TOP 31.0±
6"I.E. 36.60
8'-6" PVC @ 2% MIN
CLEANOUT #8AP
LOC. AS SHOWN
TOP 31.0±
6"I.E. 36.80
8'-6" PVC @ 2% MIN
CLEANOUT #8AQ
LOC. AS SHOWN
TOP 31.0±
6"I.E. 37.00
8'-6" PVC @ 2% MIN
CLEANOUT #8AR
LOC. AS SHOWN
TOP 31.0±
6"I.E. 37.20
8'-6" PVC @ 2% MIN
CLEANOUT #8AS
LOC. AS SHOWN
TOP 31.0±
6"I.E. 37.40
8'-6" PVC @ 2% MIN
CLEANOUT #8AT
LOC. AS SHOWN
TOP 31.0±
6"I.E. 37.60
8'-6" PVC @ 2% MIN
CLEANOUT #8AU
LOC. AS SHOWN
TOP 31.0±
6"I.E. 37.80
8'-6" PVC @ 2% MIN
CLEANOUT #8AV
LOC. AS SHOWN
TOP 31.0±
6"I.E. 38.00
8'-6" PVC @ 2% MIN
CLEANOUT #8AW
LOC. AS SHOWN
TOP 31.0±
6"I.E. 38.20
8'-6" PVC @ 2% MIN
CLEANOUT #8AX
LOC. AS SHOWN
TOP 31.0±
6"I.E. 38.40
8'-6" PVC @ 2% MIN
CLEANOUT #8AY
LOC. AS SHOWN
TOP 31.0±
6"I.E. 38.60
8'-6" PVC @ 2% MIN
CLEANOUT #8AZ
LOC. AS SHOWN
TOP 31.0±
6"I.E. 38.80
8'-6" PVC @ 2% MIN
CLEANOUT #8BA
LOC. AS SHOWN
TOP 31.0±
6"I.E. 39.00
8'-6" PVC @ 2% MIN
CLEANOUT #8BB
LOC. AS SHOWN
TOP 31.0±
6"I.E. 39.20
8'-6" PVC @ 2% MIN
CLEANOUT #8BC
LOC. AS SHOWN
TOP 31.0±
6"I.E. 39.40
8'-6" PVC @ 2% MIN
CLEANOUT #8BD
LOC. AS SHOWN
TOP 31.0±
6"I.E. 39.60
8'-6" PVC @ 2% MIN
CLEANOUT #8BE
LOC. AS SHOWN
TOP 31.0±
6"I.E. 39.80
8'-6" PVC @ 2% MIN
CLEANOUT #8BF
LOC. AS SHOWN
TOP 31.0±
6"I.E. 40.00
8'-6" PVC @ 2% MIN
CLEANOUT #8BG
LOC. AS SHOWN
TOP 31.0±
6"I.E. 40.20
8'-6" PVC @ 2% MIN
CLEANOUT #8BH
LOC. AS SHOWN
TOP 31.0±
6"I.E. 40.40
8'-6" PVC @ 2% MIN
CLEANOUT #8BI
LOC. AS SHOWN
TOP 31.0±
6"I.E. 40.60
8'-6" PVC @ 2% MIN
CLEANOUT #8BJ
LOC. AS SHOWN
TOP 31.0±
6"I.E. 40.80
8'-6" PVC @ 2% MIN
CLEANOUT #8BK
LOC. AS SHOWN
TOP 31.0±
6"I.E. 41.00
8'-6" PVC @ 2% MIN
CLEANOUT #8BL
LOC. AS SHOWN
TOP 31.0±
6"I.E. 41.20
8'-6" PVC @ 2% MIN
CLEANOUT #8BM
LOC. AS SHOWN
TOP 31.0±
6"I.E. 41.40
8'-6" PVC @ 2% MIN
CLEANOUT #8BN
LOC. AS SHOWN
TOP 31.0±
6"I.E. 41.60
8'-6" PVC @ 2% MIN
CLEANOUT #8BO
LOC. AS SHOWN
TOP 31.0±
6"I.E. 41.80
8'-6" PVC @ 2% MIN
CLEANOUT #8BP
LOC. AS SHOWN
TOP 31.0±
6"I.E. 42.00
8'-6" PVC @ 2% MIN
CLEANOUT #8BQ
LOC. AS SHOWN
TOP 31.0±
6"I.E. 42.20
8'-6" PVC @ 2% MIN
CLEANOUT #8BR
LOC. AS SHOWN
TOP 31.0±
6"I.E. 42.40
8'-6" PVC @ 2% MIN
CLEANOUT #8BS
LOC. AS SHOWN
TOP 31.0±
6"I.E. 42.60
8'-6" PVC @ 2% MIN
CLEANOUT #8BT
LOC. AS SHOWN
TOP 31.0±
6"I.E. 42.80
8'-6" PVC @ 2% MIN
CLEANOUT #8BU
LOC. AS SHOWN
TOP 31.0±
6"I.E. 43.00
8'-6" PVC @ 2% MIN
CLEANOUT #8BV
LOC. AS SHOWN
TOP 31.0±
6"I.E. 43.20
8'-6" PVC @ 2% MIN
CLEANOUT #8BW
LOC. AS SHOWN
TOP 31.0±
6"I.E. 43.40
8'-6" PVC @ 2% MIN
CLEANOUT #8BX
LOC. AS SHOWN
TOP 31.0±
6"I.E. 43.60
8'-6" PVC @ 2% MIN
CLEANOUT #8BY
LOC. AS SHOWN
TOP 31.0±
6"I.E. 43.80
8'-6" PVC @ 2% MIN
CLEANOUT #8BZ
LOC. AS SHOWN
TOP 31.0±
6"I.E. 44.00
8'-6" PVC @ 2% MIN
CLEANOUT #8CA
LOC. AS SHOWN
TOP 31.0±
6"I.E. 44.20
8'-6" PVC @ 2% MIN
CLEANOUT #8CB
LOC. AS SHOWN
TOP 31.0±
6"I.E. 44.40
8'-6" PVC @ 2% MIN
CLEANOUT #8CC
LOC. AS SHOWN
TOP 31.0±
6"I.E. 44.60
8'-6" PVC @ 2% MIN
CLEANOUT #8CD
LOC. AS SHOWN
TOP 31.0±
6"I.E. 44.80
8'-6" PVC @ 2% MIN
CLEANOUT #8CE
LOC. AS SHOWN
TOP 31.0±
6"I.E. 45.00
8'-6" PVC @ 2% MIN
CLEANOUT #8CF
LOC. AS SHOWN
TOP 31.0±
6"I.E. 45.20
8'-6" PVC @ 2% MIN
CLEANOUT #8CG
LOC. AS SHOWN
TOP 31.0±
6"I.E. 45.40
8'-6" PVC @ 2% MIN
CLEANOUT #8CH
LOC. AS SHOWN
TOP 31.0±
6"I.E. 45.60
8'-6" PVC @ 2% MIN
CLEANOUT #8CI
LOC. AS SHOWN
TOP 31.0±
6"I.E. 45.80
8'-6" PVC @ 2% MIN
CLEANOUT #8CJ
LOC. AS SHOWN
TOP 31.0±
6"I.E. 46.00
8'-6" PVC @ 2% MIN
CLEANOUT #8CK
LOC. AS SHOWN
TOP 31.0±
6"I.E. 46.20
8'-6" PVC @ 2% MIN
CLEANOUT #8CL
LOC. AS SHOWN
TOP 31.0±
6"I.E. 46.40
8'-6" PVC @ 2% MIN
CLEANOUT #8CM
LOC. AS SHOWN
TOP 31.0±
6"I.E. 46.60
8'-6" PVC @ 2% MIN
CLEANOUT #8CN
LOC. AS SHOWN
TOP 31.0±
6"I.E. 46.80
8'-6" PVC @ 2% MIN
CLEANOUT #8CO
LOC. AS SHOWN
TOP 31.0±
6"I.E. 47.00
8'-6" PVC @ 2% MIN
CLEANOUT #8CP
LOC. AS SHOWN
TOP 31.0±
6"I.E. 47.20
8'-6" PVC @ 2% MIN
CLEANOUT #8CQ
LOC. AS SHOWN
TOP 31.0±
6"I.E. 47.40
8'-6" PVC @ 2% MIN
CLEANOUT #8CR
LOC. AS SHOWN
TOP 31.0±
6"I.E. 47.60
8'-6" PVC @ 2% MIN
CLEANOUT #8CS
LOC. AS SHOWN
TOP 31.0±
6"I.E. 47.80
8'-6" PVC @ 2% MIN
CLEANOUT #8CT
LOC. AS SHOWN
TOP 31.0±
6"I.E. 48.00
8'-6" PVC @ 2% MIN
CLEANOUT #8CU
LOC. AS SHOWN
TOP 31.0±
6"I.E. 48.20
8'-6" PVC @ 2% MIN
CLEANOUT #8CV
LOC. AS SHOWN
TOP 31.0±
6"I.E. 48.40
8'-6" PVC @ 2% MIN
CLEANOUT #8CW
LOC. AS SHOWN
TOP 31.0±
6"I.E. 48.60
8'-6" PVC @ 2% MIN
CLEANOUT #8CX
LOC. AS SHOWN
TOP 31.0±
6"I.E. 48.80
8'-6" PVC @ 2% MIN
CLEANOUT #8CY
LOC. AS SHOWN
TOP 31.0±
6"I.E. 49.00
8'-6" PVC @ 2% MIN
CLEANOUT #8CZ
LOC. AS SHOWN
TOP 31.0±
6"I.E. 49.20
8'-6" PVC @ 2% MIN
CLEANOUT #8DA
LOC. AS SHOWN
TOP 31.0±
6"I.E. 49.40
8'-6" PVC @ 2% MIN
CLEANOUT #8DB
LOC. AS SHOWN
TOP 31.0±
6"I.E. 49.60
8'-6" PVC @ 2% MIN
CLEANOUT #8DC
LOC. AS SHOWN
TOP 31.0±
6"I.E. 49.80
8'-6" PVC @ 2% MIN
CLEANOUT #8DD
LOC. AS SHOWN
TOP 31.0±
6"I.E. 50.00
8'-6" PVC @ 2% MIN
CLEANOUT #8DE
LOC. AS SHOWN
TOP 31.0±
6"I.E. 50.20
8'-6" PVC @ 2% MIN
CLEANOUT #8DF
LOC. AS SHOWN
TOP 31.0±
6"I.E. 50.40
8'-6" PVC @ 2% MIN
CLEANOUT #8DG
LOC. AS SHOWN
TOP 31.0±
6"I.E. 50.60
8'-6" PVC @ 2% MIN
CLEANOUT #8DH
LOC. AS SHOWN
TOP 31.0±
6"I.E. 50.80
8'-6" PVC @ 2% MIN
CLEANOUT #8DI
LOC. AS SHOWN
TOP 31.0±
6"I.E. 51.00
8'-6" PVC @ 2% MIN
CLEANOUT #8DJ
LOC. AS SHOWN
TOP 31.0±
6"I.E. 51.20
8'-6" PVC @ 2% MIN
CLEANOUT #8DK
LOC. AS SHOWN
TOP 31.0±
6"I.E. 51.40
8'-6" PVC @ 2% MIN
CLEANOUT #8DL
LOC. AS SHOWN
TOP 31.0±
6"I.E. 51.60
8'-6" PVC @ 2% MIN
CLEANOUT #8DM
LOC. AS SHOWN
TOP 31.0±
6"I.E. 51.80
8'-6" PVC @ 2% MIN
CLEANOUT #8DN
LOC. AS SHOWN
TOP 31.0±
6"I.E. 52.00
8'-6" PVC @ 2% MIN
CLEANOUT #8DO
LOC. AS SHOWN
TOP 31.0±
6"I.E. 52.20
8'-6" PVC @ 2% MIN
CLEANOUT #8DP
LOC. AS SHOWN
TOP 31.0±
6"I.E. 52.40
8'-6" PVC @ 2% MIN
CLEANOUT #8DQ
LOC. AS SHOWN
TOP 31.0±
6"I.E. 52.60
8'-6" PVC @ 2% MIN
CLEANOUT #8DR
LOC. AS SHOWN
TOP 31.0±
6"I.E. 52.80
8'-6" PVC @ 2% MIN
CLEANOUT #8DS
LOC. AS SHOWN
TOP 31.0±
6"I.E. 53.00
8'-6" PVC @ 2% MIN
CLEANOUT #8DT
LOC. AS SHOWN
TOP 31.0±
6"I.E. 53.20
8'-6" PVC @ 2% MIN
CLEANOUT #8DU
LOC. AS SHOWN
TOP 31.0±
6"I.E. 53.40
8'-6" PVC @ 2% MIN
CLEANOUT #8DV
LOC. AS SHOWN
TOP 31.0±
6"I.E. 53.60
8'-6" PVC @ 2% MIN
CLEANOUT #8DW
LOC. AS SHOWN
TOP 31.0±
6"I.E. 53.80
8'-6" PVC @ 2% MIN
CLEANOUT #8DX
LOC. AS SHOWN
TOP 31.0±
6"I.E. 54.00
8'-6" PVC @ 2% MIN
CLEANOUT #8DY
LOC. AS SHOWN
TOP 31.0±
6"I.E. 54.20
8'-6" PVC @ 2% MIN
CLEANOUT #8DZ
LOC. AS SHOWN
TOP 31.0±
6"I.E. 54.40
8'-6" PVC @ 2% MIN
CLEANOUT #8EA
LOC. AS SHOWN
TOP 31.0±
6"I.E. 54.60
8'-6" PVC @ 2% MIN
CLEANOUT #8EB
LOC. AS SHOWN
TOP 31.0±
6"I.E. 54.80
8'-6" PVC @ 2% MIN
CLEANOUT #8EC
LOC. AS SHOWN
TOP 31.0±
6"I.E. 55.00
8'-6" PVC @ 2% MIN
CLEANOUT #8ED
LOC. AS SHOWN
TOP 31.0±
6"I.E. 55.20
8'-6" PVC @ 2% MIN
CLEANOUT #8EE
LOC. AS SHOWN
TOP 31.0±
6"I.E. 55.40
8'-6" PVC @ 2% MIN
CLEANOUT #8EF
LOC. AS SHOWN
TOP 31.0±
6"I.E. 55.60
8'-6" PVC @ 2% MIN
CLEANOUT #8EG
LOC. AS SHOWN
TOP 31.0±
6"I.E. 55.80
8'-6" PVC @ 2% MIN
CLEANOUT #8EH
LOC. AS SHOWN
TOP 31.0±
6"I.E. 56.00
8'-6" PVC @ 2% MIN
CLEANOUT #8EI
LOC. AS SHOWN
TOP 31.0±
6"I.E. 56.20
8'-6" PVC @ 2% MIN
CLEANOUT #8EJ
LOC. AS SHOWN
TOP 31.0±
6"I.E. 56.40
8'-6" PVC @ 2% MIN
CLEANOUT #8EK
LOC. AS SHOWN
TOP 31.0±
6"I.E. 56.60
8'-6" PVC @ 2% MIN
CLEANOUT #8EL
LOC. AS SHOWN
TOP 31.0±
6"I.E. 56.80
8'-6" PVC @ 2% MIN
CLEANOUT #8EM
LOC. AS SHOWN
TOP 31.0±
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8'-6" PVC @ 2% MIN
CLEANOUT #8EN
LOC. AS SHOWN
TOP 31.0±
6"I.E. 57.20
8'-6" PVC @ 2% MIN
CLEANOUT #8EO
LOC. AS SHOWN
TOP 31.0±
6"I.E. 57.40
8'-6" PVC @ 2% MIN
CLEANOUT #8EP
LOC. AS SHOWN
TOP 31.0±
6"I.E. 57.60
8'-6" PVC @ 2% MIN
CLEANOUT #8EQ
LOC. AS SHOWN
TOP 31.0±
6"I.E. 57.80
8'-6" PVC @ 2% MIN
CLEANOUT #8ER
LOC. AS SHOWN
TOP 31.0±
6"I.E. 58.00
8'-6" PVC @ 2% MIN
CLEANOUT #8ES
LOC. AS SHOWN
TOP 31.0±
6"I.E. 58.20
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CLEANOUT #8ET
LOC. AS SHOWN
TOP 31.0±
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8'-6" PVC @ 2% MIN
CLEANOUT #8EU
LOC. AS SHOWN
TOP 31.0±
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8'-6" PVC @ 2% MIN
CLEANOUT #8EV
LOC. AS SHOWN
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8'-6" PVC @ 2% MIN
CLEANOUT #8EW
LOC. AS SHOWN
TOP 31.0±
6"I.E. 59.00
8'-6" PVC @ 2% MIN
CLEANOUT #8EX
LOC. AS SHOWN
TOP 31.0±
6"I.E. 59.20
8'-6" PVC @ 2% MIN
CLEANOUT #8EY
LOC. AS SHOWN
TOP 31.0±
6"I.E. 59.40
8'-6" PVC @ 2% MIN
CLEANOUT #8EZ
LOC. AS SHOWN
TOP 31.0±
6"I.E. 59.60
8'-6" PVC @ 2% MIN
CLEANOUT #8FA
LOC. AS SHOWN
TOP 31.0±
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8'-6" PVC @ 2% MIN
CLEANOUT #8FB
LOC. AS SHOWN
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8'-6" PVC @ 2% MIN
CLEANOUT #8FC
LOC. AS SHOWN
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8'-6" PVC @ 2% MIN
CLEANOUT #8FD
LOC. AS SHOWN
TOP 31.0±
6"I.E. 60.40
8'-6" PVC @ 2% MIN
CLEANOUT #8FE
LOC. AS SHOWN
TOP 31.0±
6"I.E. 60.60
8'-6" PVC @ 2% MIN
CLEANOUT #8FF
LOC. AS SHOWN
TOP 31.0±
6"I.E. 60.80
8'-6" PVC @ 2% MIN
CLEANOUT #8FG
LOC. AS SHOWN
TOP 31.0±
6"I.E. 61.00
8'-6" PVC @ 2% MIN
CLEANOUT #8FH
LOC. AS SHOWN
TOP 31.0±
6"I.E. 61.20
8'-6" PVC @ 2% MIN
CLEANOUT #8FI
LOC. AS SHOWN
TOP 31.0±
6"I.E. 61.40
8'-6" PVC @ 2% MIN
CLEANOUT #8FJ
LOC. AS SHOWN
TOP 31.0±
6"I.E. 61.60
8'-6" PVC @ 2% MIN
CLEANOUT #8FK
LOC. AS SHOWN
TOP 31.0±
6"I.E. 61.80
8'-6" PVC @ 2% MIN
CLEANOUT #8FL
LOC. AS SHOWN
TOP 31.0±
6"I.E. 62.00
8'-6" PVC @ 2% MIN
CLEANOUT #8FM
LOC. AS SHOWN
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CLEANOUT #8FN
LOC. AS SHOWN
TOP 31.0±
6"I.E. 62.40
8'-6" PVC @ 2% MIN
CLEANOUT #8FO
LOC. AS SHOWN
TOP 31.0±
6"I.E. 62.60
8'-6" PVC @ 2% MIN
CLEANOUT #8FP
LOC. AS SHOWN
TOP 31.0±
6"I.E. 62.80
8'-6" PVC @ 2% MIN
CLEANOUT #8FQ
LOC. AS SHOWN
TOP 31.0±
6"I.E. 63.00
8'-6" PVC @ 2% MIN
CLEANOUT #8FR
LOC. AS SHOWN
TOP 31.0±
6"I.E. 63.20
8'-6" PVC @ 2% MIN
C

APPENDIX C7:
RECORD DRAWINGS –
SOUTH BAY PARK DEVELOPMENT SANITARY SEWER PUMP STATION IMPROVEMENTS

City of Kirkland

1/6

1682

A PRE-CONSTRUCTION CONFERENCE SHALL BE HELD PRIOR TO THE START OF CONSTRUCTION. THE CONTRACTOR SHALL BE RESPONSIBLE FOR SECURING ALL NECESSARY PERMITS PRIOR TO CONSTRUCTION.

ALL CONSTRUCTION AND MATERIALS SHALL CONFORM TO CITY OF KIRKLAND DEPARTMENT OF PUBLIC WORKS AND CURRENT WSDOT/APWA STANDARDS AND SPECIFICATIONS FOR ROAD, BRIDGE, AND MUNICIPAL CONSTRUCTION.

APPROXIMATE LOCATIONS OF EXISTING UTILITIES HAVE BEEN OBTAINED FROM AVAILABLE RECORDS AND ARE SHOWN FOR CONVENIENCE. THE CONTRACTOR SHALL BE RESPONSIBLE FOR VERIFICATION OF LOCATIONS SHOWN AND FOR DISCOVERY OF POSSIBLE ADDITIONAL UTILITIES NOT SHOWN SO AS TO AVOID DAMAGE OR DISTURBANCE. THE UNDERGROUND UTILITY LOCATION SERVICE SHALL BE CONTACTED FOR FIELD LOCATION PRIOR TO ANY CONSTRUCTION. THE OWNER OR HIS REPRESENTATIVE SHALL BE CONTACTED IF A UTILITY CONFLICT EXISTS. FOR UTILITY LOCATION IN KING COUNTY, CALL 1-800-424-5555. THE CONTRACTOR IS RESPONSIBLE TO ENSURE THAT UTILITY LOCATES ARE MAINTAINED THROUGHOUT THE LIFE OF THE PROJECT.

IT SHALL BE THE CONTRACTOR RESPONSIBILITY TO COORDINATE HIS ACTIVITY WITH LOCAL COMPANIES TO ENSURE THAT ALL UTILITIES ARE INSTALLED ACCORDING TO THESE PLANS AND THE REQUIREMENTS OF THE ADDITIONAL UTILITY COMPANIES.

ALL MANHOLES SHALL CONFORM TO WSDOT/APWA STANDARDS, ECCENTRIC CONES WITH MANUFACTURER-APPROVED GASKETS AND 1/2" POLYPROPYLENE-ENCAPSULATED SAFETY STEPS AND LADDERS. ALL MANHOLES SHALL HAVE CAST IRON RINGS AND DUCTILE IRON COVERS. LIDS SHALL HAVE 2" RAISED LETTERS MARKED "SEWER" . ALL CLEANOUTS SHALL HAVE CAST IRON RINGS AND COVERS MARKED "CO" THAT ARE IN PAVED AREAS.

ALL MAIN TRENCHES SHALL BE COMPACTED PRIOR TO TESTING SEWER LINES FOR ACCEPTANCE.

PRESSURE TESTING OF GRAVITY SEWER MAINS SHALL CONFORM TO THE FOLLOWING STANDARDS. (1) AIR TESTING WILL REQUIRE A MINIMUM OF 4 PSI FOR 15 MINUTES WITH NO PRESSURE DROP; (2) WATER TESTING WILL REQUIRE A MINIMUM OF 10' OF HEAD IN A STANDPIPE AT THE TEST LOCATION FOR 15 MINUTES WITH NO DROP IN THE WATER LEVEL IN THE STANDPIPE. EITHER TEST IS ACCEPTABLE.

HYDROSTATIC TEST OF FORCE PER APWA/AWWA SPECS.

NEW CONNECTIONS TO EXISTING MANHOLES OR SEWER LINES SHALL BE SEALED OFF UNTIL UPSTREAM CONSTRUCTION IS FINISHED, TESTED, CLEANED, AND ACCEPTED. ALL CONSTRUCTION DEBRIS AND WATER SHALL BE REMOVED PRIOR TO OPENING THE SEAL.

ALL PVC SEWER PIPE AND FITTINGS SHALL MEET THE REQUIREMENTS OF ASTM SPECIFICATIONS D-3034 FOR 4" TO 15" DIAMETER AND ASTM F679 FOR 18" TO 27" DIAMETER. PIPE SHALL BE SDR-35 AND SHALL CONFORM TO STANDARD SPECIFICATIONS. BEDDING AND BACKFILL SHALL MEET WSDOT AND APWA SPECIFICATIONS.

MINIMUM SLOPE FOR SIDE SEWERS SHALL BE TWO PERCENT (2%) FOR 4" PIPE AND ONE PERCENT (1%) FOR 6" PIPE.

AN APPROVED COPY OF THE PLAN MUST BE ON SITE WHENEVER CONSTRUCTION IS IN PROGRESS.

ALL MANHOLES SHALL HAVE A MINIMUM OF 0.10' TO MAXIMUM OF 1.00' DROP BETWEEN INVERT IN AND INVERT OUT.

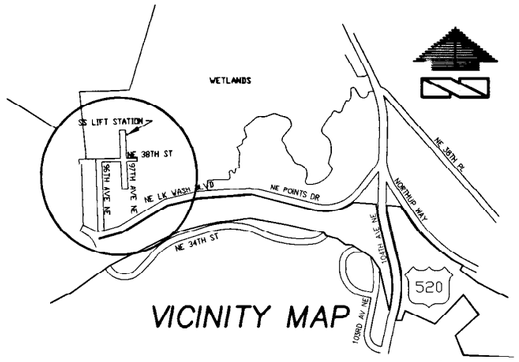
PVC SEWER PIPE SHALL BE TESTED FOR DEFLECTION ACCORDING TO WSDOT/APWA SPECIFICATIONS.

ALL TRENCH BACKFILL SHALL BE COMPACTED TO 95 PERCENT DENSITY IN ROADWAY SHOULDERS, ROADWAY PRISM AND DRIVEWAYS, AND 85 PERCENT DENSITY IN UNPAVED AREAS.

IT SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR TO ADJUST ALL MANHOLE LIDS AND CLEANOUT LIDS TO MATCH FINAL ASPHALT ELEVATIONS IN ROADWAYS OR GROUND ELEVATIONS IN LANDSCAPED AREAS.

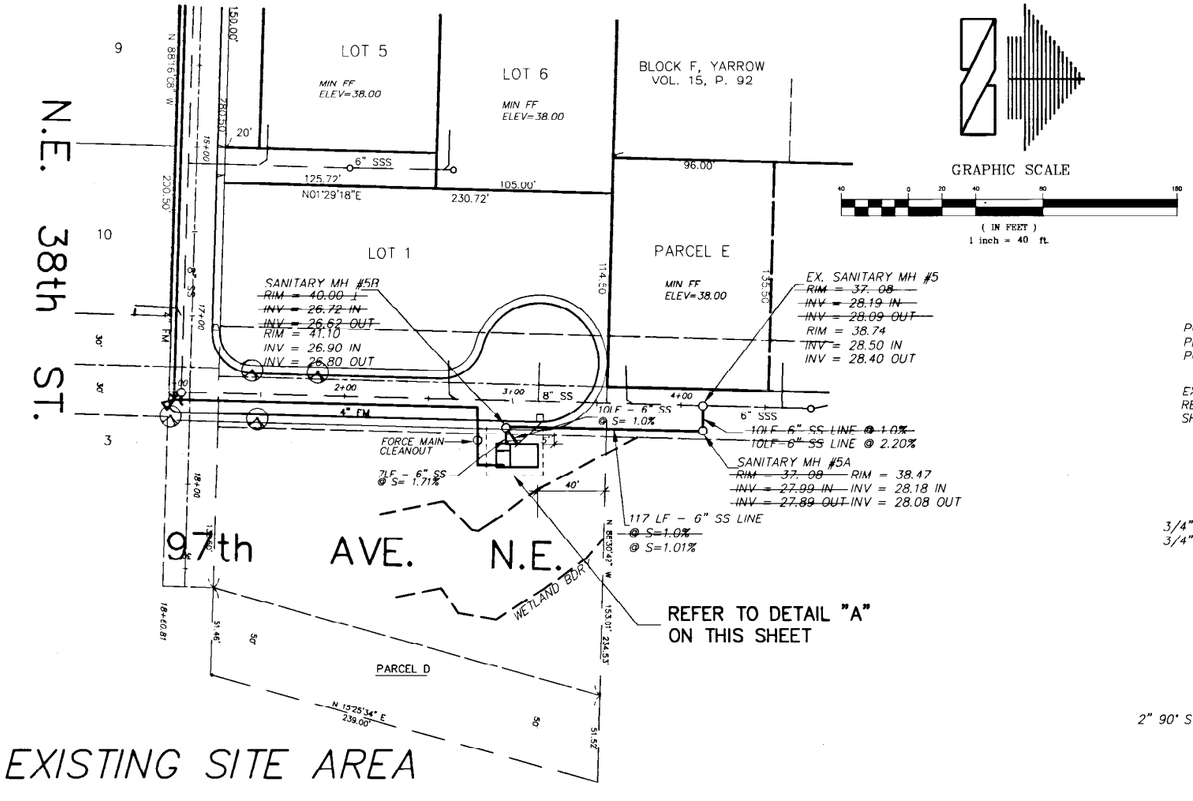
WHEN TYING INTO EXISTING MANHOLES THAT ARE BELOW MINIMUM STANDARDS, THE EXISTING MANHOLE MUST BE UPGRADED TO MEET CURRENT STANDARDS.

ALL NEW SEWER MAIN EXTENSIONS SHALL BE VIDEOED PRIOR TO FORMAL ACCEPTANCE.



VICINITY MAP

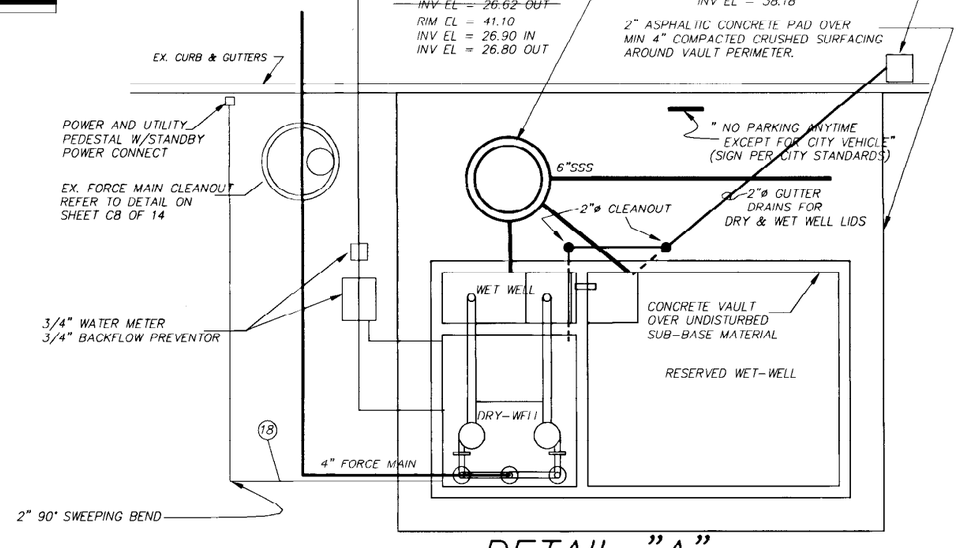
RECORD DRAWING



EXISTING SITE AREA

GRAPHIC SCALE

(IN FEET)
1 inch = 40 ft.



DETAIL "A"

SCALE 1/4" = 1'-0"

REVISIONS		
NO.	DESCRIPTION/DATE	BY
1	PER CITY REVIEW (3/25/97)	DT
2	AS-BUILT (11/01/01)	DT

EXPIRES 9/22/97

TOUMA ENGINEERS
WEST VALLEY EXECUTIVE PARK
6632 SOUTH 191ST PLACE, SUITE E-102 • KENT, WA 98032
PHONE (206) 251-0665 FAX (206) 251-0625

SOUTHBAY PARK DEVELOPMENT
SANITARY SEWER PUMP STATION
SITE PLAN
KIRKLAND WASHINGTON

JOB NO. 539-001-952	
DESIGNED MHT	
DRAWN DT	
COMP. DT	
CHECKED MHT	
DATE SEPT. 1996	
DWG. NO. 6391LIFT.DWG	

1 OF 6 SHEETS

1682

LIFT STATION NOTES

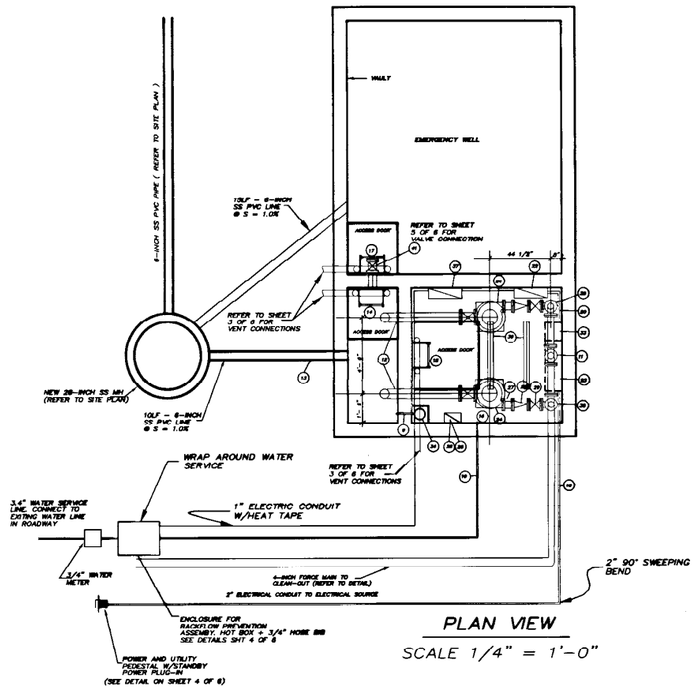
1. LOW LEVEL FLOAT – LOWER LEVEL ALARM
2. HIGH LEVEL FLOAT – HIGH LEVEL ALARM
3. WET–WELL 6–INCH PVC EXHAUST AIR VENT CONDUIT FROM BLOWER – LOWER LEVEL EXTEND AIR VENT TWO FFFT ABOVE CONRETE SLAB
4. WET–WELL 6–INCH PVC INTAKE AIR VENT CONDUIT TO BLOWER – HIGH LEVEL EXTEND AIR VENT TWO FEET ABOVE CONRETE SLAB
5. EMERGENCY–WELL 6–INCH PVC EXHAUST AIR VENT CONDUIT FROM BLOWER – LOWER LEVEL EXTEND AIR VENT TWO FEET ABOVE CONRETE SLAB
6. EMERGENCY – WELL 6–INCH PVC INTAKE AIR VENT CONDUIT TO BLOWER – HIGH LEVEL EXTEND AIR VENT TWO FEET ABOVE CONRETE SLAB
7. DRY–WELL 6–INCH PVC EXHAUST AIR VENT CONDUIT FROM BLOWER – LOWER LEVEL EXTEND AIR VENT TWO FEET ABOVE CONRETE SLAB
8. DRY–WELL 6–INCH PVC INTAKE AIR VENT CONDUIT TO BLOWER – HIGH LEVEL EXTEND AIR VENT TWO FEET ABOVE CONRETE SLAB
9. ~~1 1/4 –INCH SUMP PUMP DISCHARGE LINE, WITH (2) CHECK VALVES~~ TRANSMITTER IN 2–INCH PVC TUBE, PTX 161/D SERIES
10. ~~TRANSMITTER IN 2–INCH PVC TUBE, PTX 161/D SERIES~~ 1 1/4 –INCH SUMP PUMP DISCHARGE LINE, WITH (2) CHECK VALVES
11. 4–INCH TEE (FL X FL)
12. 6–INCH D.I. PIPE (LENGTH AS REQUIRED) WITH FLANGED COUPLING ADAPTER (CFA)
13. 8–INCH PVC SANITARY SEWER GRAVITY LINE – EMERGENCY INFLOW LINE
14. WET–WELL ACCESS LADDER SHALL BE RETRACTABLE FROM THE BOTTOM OF THE WET–WELL TO ABOVE THE HIGH WATER ELEVATION 28.00'
15. DRY–WELL ACCESS LADDER SHALL HAVE A RETRACTABLE HAND HOLD AT THE TOP.
16. 3/4" HOSE BIB. HOSE BIB SHALL BE 2 FEET OFF THE FLOOR WITH A 10 – FEET HOSE AND NOZZLE. ALSO, CONTRACTOR TO PROVIDE A RACK FOR THE HOSE PER CITY REQUIREMENTS.
17. EMERGENCY–WELL ACCESS LADDER
18. 2" ELECTRICAL CONDUITS FROM POWER AND UTILITY PEDESTAL CONTROL PANEL
19. 3/4–INCH WATER SERVICE. CONNECT TO EACH PUMP TO PROVIDE FRESH WATER FOR " DOUBLE MECHANICAL SEALS WITH CARBON/CERAMIC SEATING FACES" PROVIVE HOSE BIB TO BE LOCATED ABOVE GROUND.
20. ELECTRICAL CONDUIT. REFER TO ELECTRICAL PLANS FOR CONDUIT SIZE.
21. PROVIDE SAFFTY GRATING (STAINLESS STEEL OR FIBER GLASS). GRATING SHALL COVER ENTIRE OPENING WITH SEPARATE ACCESS OPENING FOR PUMP REMOVAL AND MAINTENANCE PERSONS. FABRICATE TO WITHSTAND 200 POUND LOADING WITH 1/4–INCH DEFLECTION.
22. TELEMETRY CABINET (24"H X 18"W X 12"D) TO BE LOCATED 54 INCHES ABOVE FLOOR.
23. CONTROL PANEL CABINET (48"H X 36"W X 12"D) TO BE LOCATED 30 INCHES ABOVE FLOOR.
24. VERTICAL CLOSE–COUPLED DRY–PIT NON–CLOG PUMP, MODEL 4X4X14T 13–INCH IMPELLER, 6–INCH SUCTION AND 4–INCH DISCHARGE, OR EQUAL. VOLUTE SHALL HAVE INSPECTION PORT
25. CASCADE MACHINERY & ELECTRIC, INC., MODEL ED 256 HUMIDIFIER OR EQUAL.
26. CASCADE MACHINERY & ELECTIC, INC. 120V METAL CASE CONVECTION HEATER OR EQUAL
27. (2) 4–INCH ADAPTER (MJ X FL) WITH FLANGED COUPLING ADAPTER (FCA)
28. ~~(2) 4–INCH AWWA SWING CHECK VALVE, 259 LEVER/SPRING (FLXFL)~~ (2) 4–INCH AWWA BALL CHECK VALVE, 259 LEVER/SPRING (FLXFL)
29. (2) 4–INCH ECCENTRIC PLUG VALVE, SERIES 100, LEVER ACTUATED VALVE (FLXFL)
30. (4) 4–INCH, 90–DEGREE ELBOW (FL X FL)
31. 4–INCH D.I. DISCHARGE PIPE (FORCEMAIN– AS REQUIRED)
32. (2) 6–INCH ECCENTRIC PLUG VALVE, SERIES 100 LEVER ACTUATED VALVES (FLXFL)
33. DRY–TYPE DISTRIBUTION TRANSFORMER (16" X 14" X 11") 240/480 PRIMARY VOLTS – 120/240 SECONDARY VOLTS
34. CASCADE MACHINERY & ELECTRIC, INC. SUMP PUMP OR EQUAL.
35. UNIVERSAL EQUIPMENT FIBERGLASS COVER MODEL MFP–150 67" X 40" X 40.75' DEEP ENCLOSURE
36. (2) TWIN–FLUORESCENT LIGHTS
37. CUTLER–HAMMER LOADCENTERS, BOX SIZE NO. 8 12 1/8" X 14 1/8" X 3 7/8" DEEP
38. (6) 6–INCH 350 CFM, 1070 RPM BLOWER DAYTON SHADED POLE, MODEL 4C445 @ .8" Hg STATIC PRESSURE 11 1/4" x 10 5/16" X 6 1/4" DEEP
39. 6"X4" ELBOW WITH CLEANOUT (INPSECTION PORT)
40. EXPLOSION PROOF LIGHT FIXTURE FOR WET WELLS.
41. 6–INCH ECCENTRIC PLUG VALVE WITH HANDLE TO BE EXTENDED TO WITHIN ONE FOOT FROM DOOR LID. HANDLE MUST HAVE ADJUSTABLE LOCK HOOK WITH LOCK SCREW.
42. A MERCURY SENSOR FLOAT CONTROL SWITCHES, MODEL 10PC TO BE INSTALLED BY SIKAMPING THE FLEXIBLE 16–GAUGE CABLE TO THE 2–INCH SENSOR PVC TUBE. ZIP TIES SHALL NOT BE USED.

SPECIAL NOTES

PIPING EXTERNAL TO THE LIFE STATION MUST BE INDEPENDENTLY SUPPORTED.

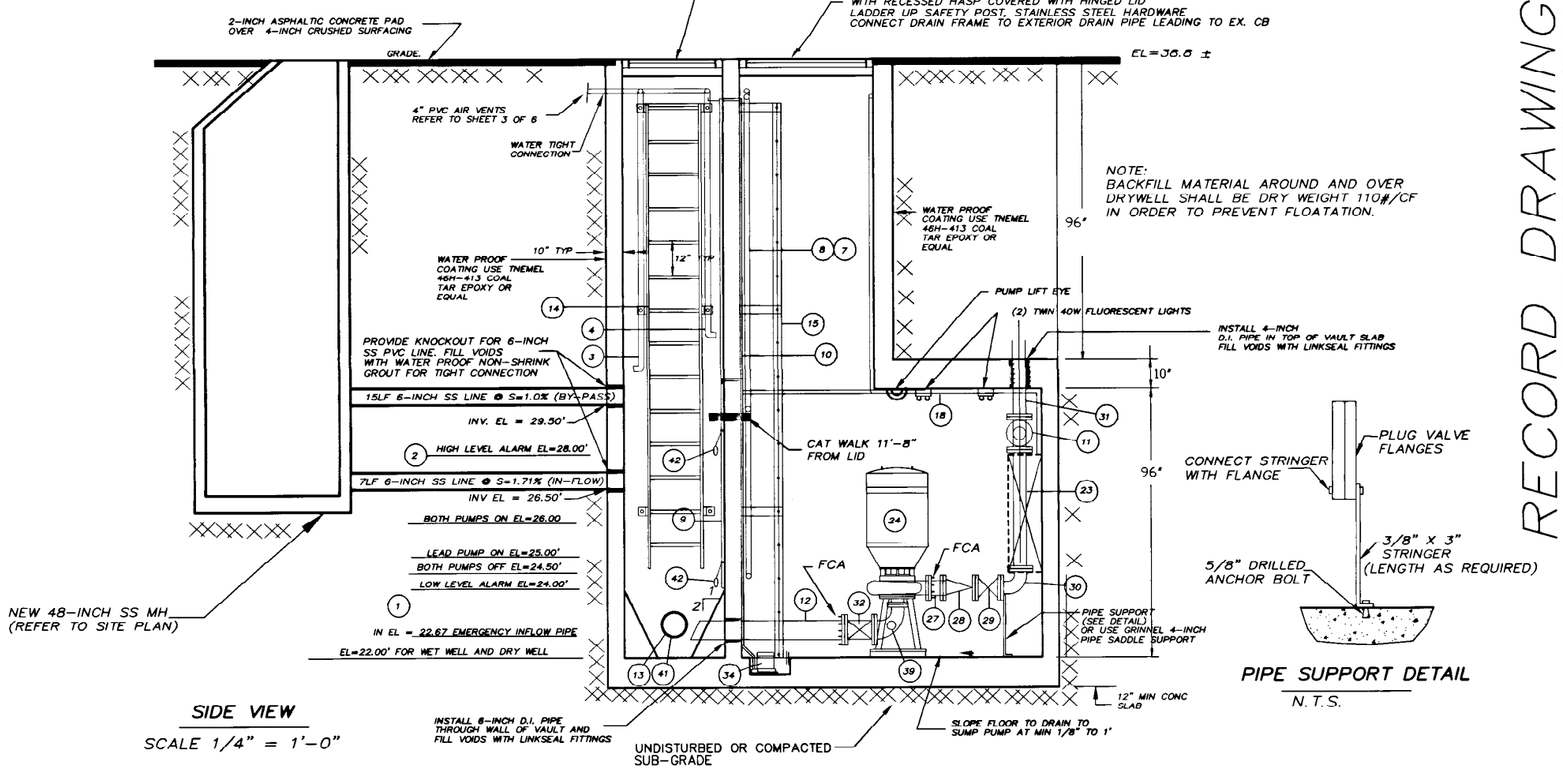
LIMIT SWITCHES FOR INTRUSION ALARMS ARE REQUIRED ON ALL ACCESS DOORS.

LIMIT SWITCHES REQUIRED ON DISCHARGE CHECK VALVE FOR SIGNAL TO INDICATE PUMP OERATIONAL.



PLAN VIEW

SCALE 1/4" = 1'–0"



SIDE VIEW

SCALE 1/4" = 1'–0"

NOTE:
BACKFILL MATERIAL AROUND AND OVER DRYWELL SHALL BE DRY WEIGHT 110#/CF IN ORDER TO PREVENT FLOATATION.

PIPE SUPPORT DETAIL

N.T.S.

RECORD DRAWING

REVISIONS			
NO.	DESCRIPTION/DATE	BY
1	ASBUILT– PER CITY (11/08/01)	DT

STEPHEN H. TOUMA — STATE OF WASHINGTON — REGISTERED PROFESSIONAL ENGINEER — EXPIRES 6/22/20

TOUMA ENGINEERS
WEST VALLEY EXECUTIVE PARK
5632 SOUTH 191ST PLACE, SUITE E–102 * KENT, WA 98032
PHONE (206) 251–0665 FAX (206) 251–0625

SOUTHBAY PARK DEVELOPMENT
SANITARY SEWER PUMP STATION EQUIPMENT & NOTES

KIRKLAND WASHINGTON

JOB NO. 69501952	
DESIGNED MHT	
DRAWN DT	
COMP. DT	
CHECKED MHT	
DATE SEPT. 1996	
DWG. NO. 695UFT2	

2 OF 6 SHEETS

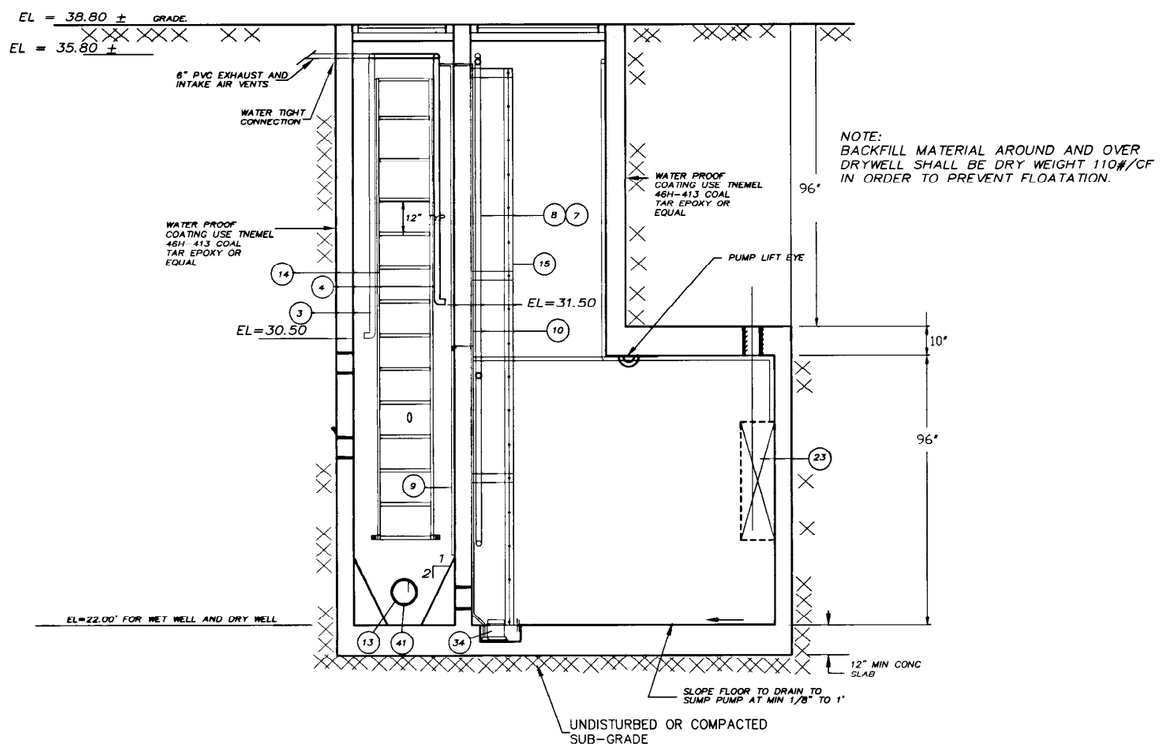
1682

2/6

1682

3/6

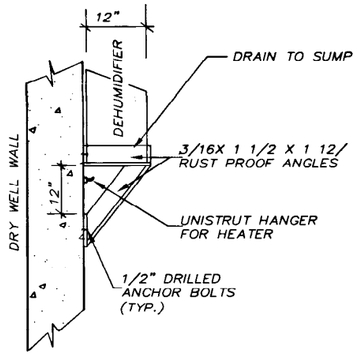
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NOTE:
BACKFILL MATERIAL AROUND AND OVER DRYWELL SHALL BE DRY WEIGHT 110#/CF IN ORDER TO PREVENT FLOATATION.

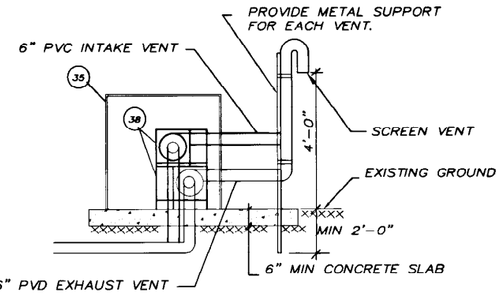
SIDE VIEW

SCALE 1/2" = 1'-0"



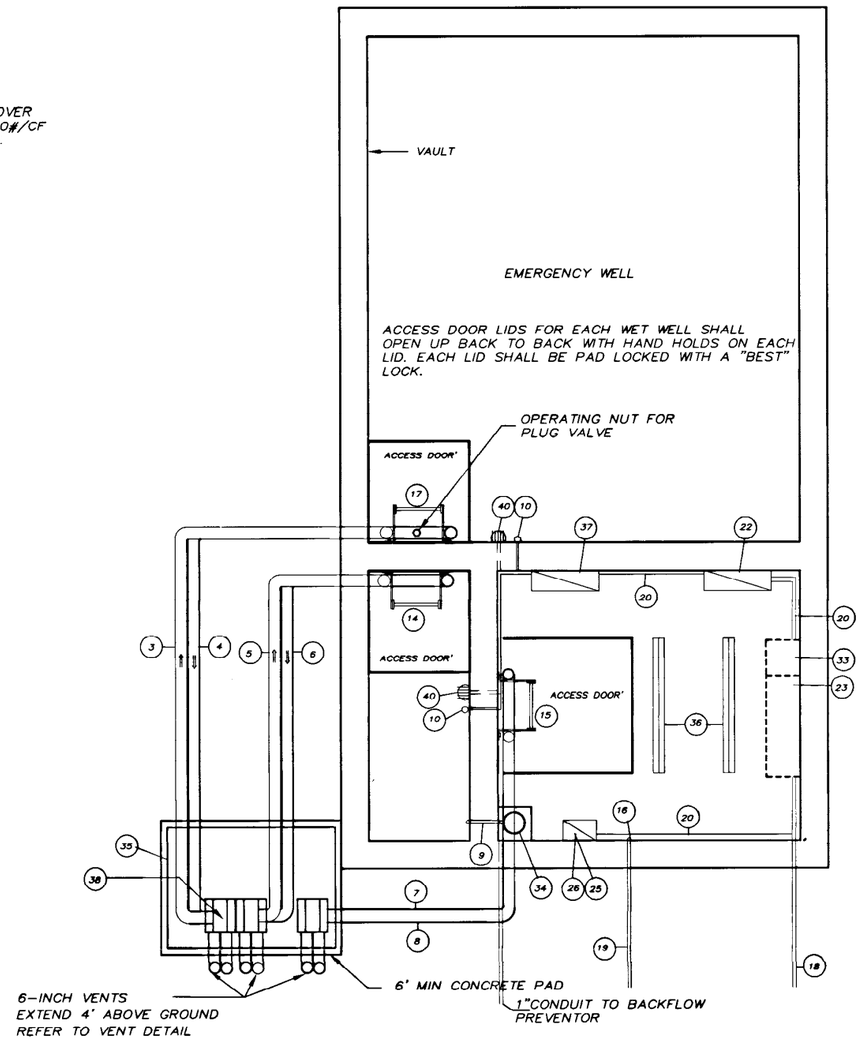
DEHUMIDIFIER MOUNTING DETAIL

N.T.S.



VENT/BLOWERS DETAILS

SCALE 1/2" = 1'-0"



PLAN VIEW

SCALE 1/2" = 1'-0"

NOTE
A 6-INCH VENT PIPES SHALL BE SLOPED A 2% MIN. TO PREVENT MOISTURE FROM BUILDING UP IN THE PIPES

RECORD DRAWING

REVISIONS			
NO.	DESCRIPTION/DATE	BY
1	PER CITY REVIEW (1/23/97)	DT
1	AS-BUILT PER CITY (11/01/01)	DT

NOUNIR H. TOUMA — STATE OF WASHINGTON — 9470 — REGISTERED PROFESSIONAL ENGINEER
EXPIRES 6/22/03

TOUMA ENGINEERS
WEST VALLEY EXECUTIVE PARK
6632 SOUTH 191ST PLACE, SUITE E-102 * KENT, WA 98032
PHONE (206) 251-0865 FAX (206) 251-0625

SOUTHBAY PARK DEVELOPMENT
SANITARY SEWER PUMP STATION VENTILATION PLAN

KIRKLAND WASHINGTON

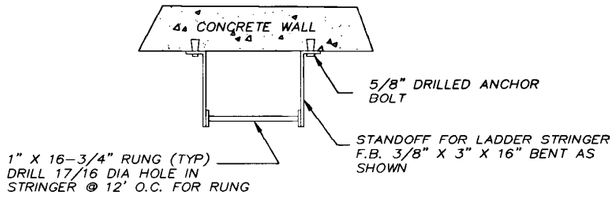
JOB NO. 69501952	
DESIGNED	MHT
DRAWN	DT
COMP.	DT
CHECKED	MHT
DATE	SEPT. 1998
DWG. NO.	695VENT

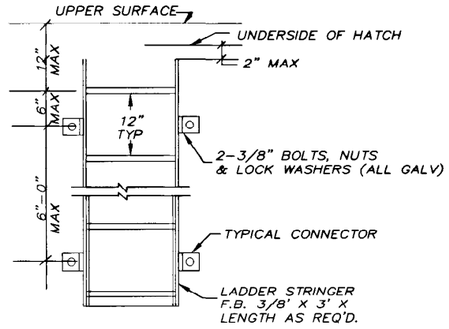
3 OF 6 SHEETS

1682

4/16

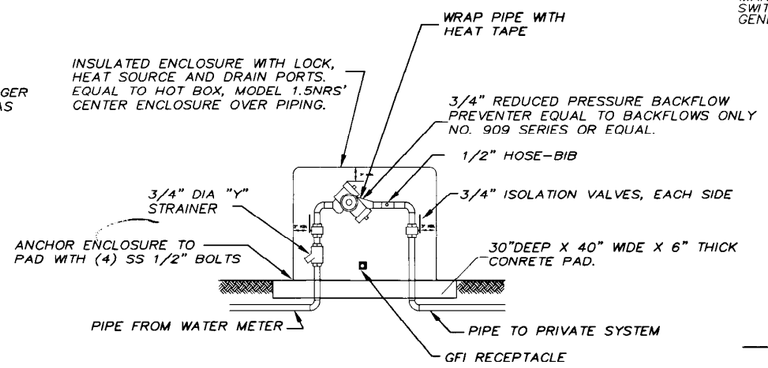
1682





VAULT LADDER DETAIL (ALUMINUM)

N.T.S.



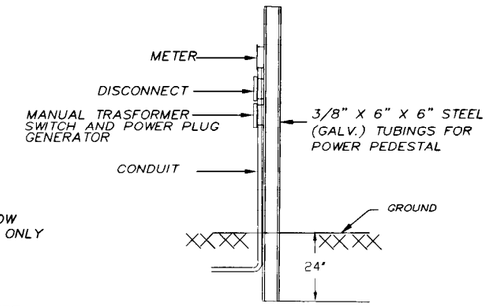
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N.T.S.

NOTES:

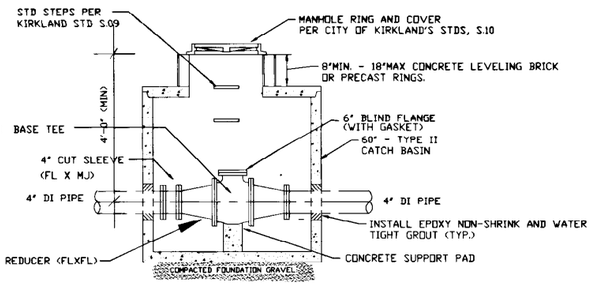
HEAT SOURCE TO PROTECT PIPING INSIDE ENCLOSURE FROM FREEZING TO -30 DEG. F

PROVIDE PADLOCK AND (2) KEYS.



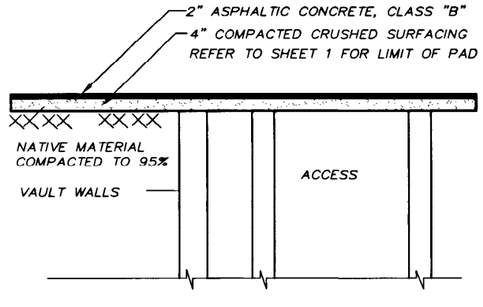
POWER & UTILITY PEDESTAL W/STANDBY POWER PLUG-IN

N.T.S.



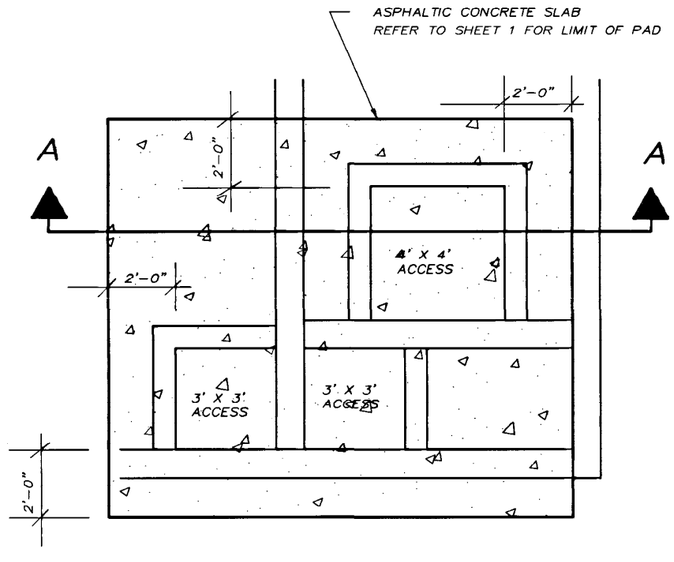
FORCE MAIN CLEANOUT DETAIL

N.T.S.



SECTION A - A

SCALE 1/2" = 1'-0"



CONCRETE SLAB DETAIL

SCALE 1/2" = 1'-0"

RECORD DRAWING

REVISIONS			
NO.	DESCRIPTION/DATE	BY
1	CITY REVISION 4/10/97	DT
2	AS-BUILT PER CITY 11/01/01	DT

MACUNTIR H. TOUMA
STATE OF WASHINGTON
9470
REGISTERED PROFESSIONAL ENGINEER
EXPIRES 6/22/03

TOUMA ENGINEERS
WEST VALLEY EXECUTIVE PARK
6632 SOUTH 191ST PLACE, SUITE E-102 • KENT, WA 98032
PHONE (206) 251-0665 FAX (206) 251-0625

SOUTHBAY PARK DEVELOPMENT
SANITARY SEWER PUMP STATION DETAILS

KIRKLAND WASHINGTON

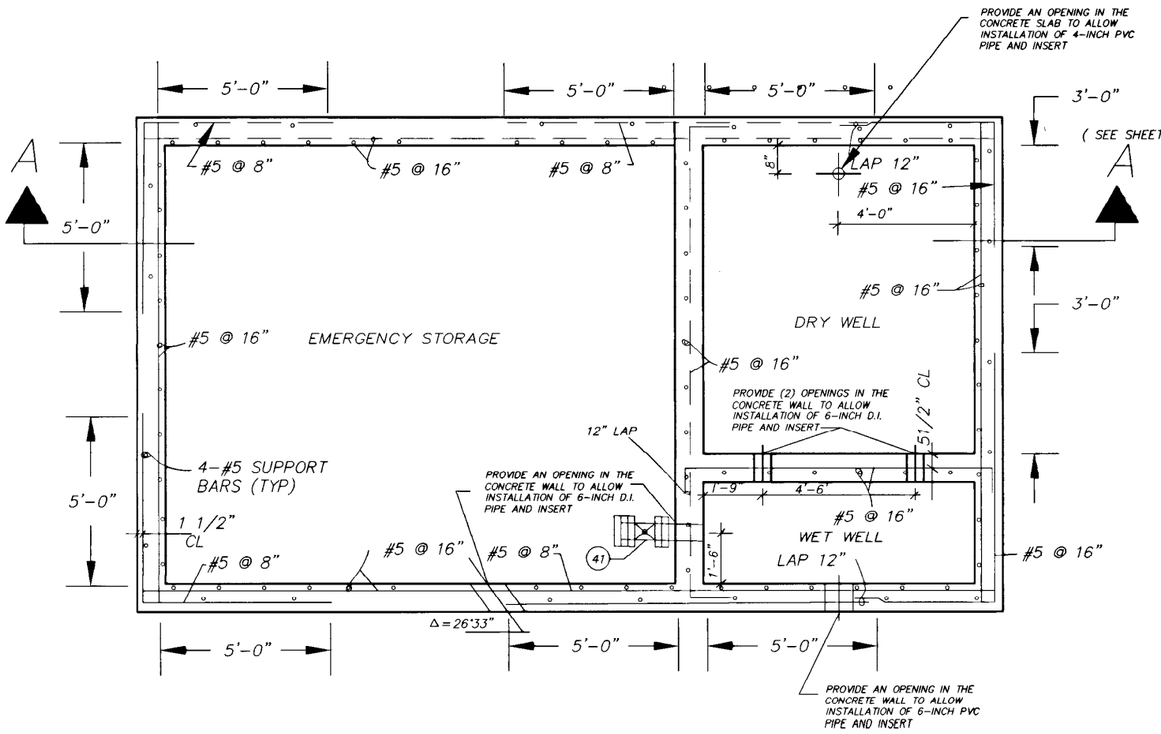
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DRAWN DT	
COMP. MT	
CHECKED MHT	
DATE SEPT. 1998	
DWG. NO. 695DTLS	

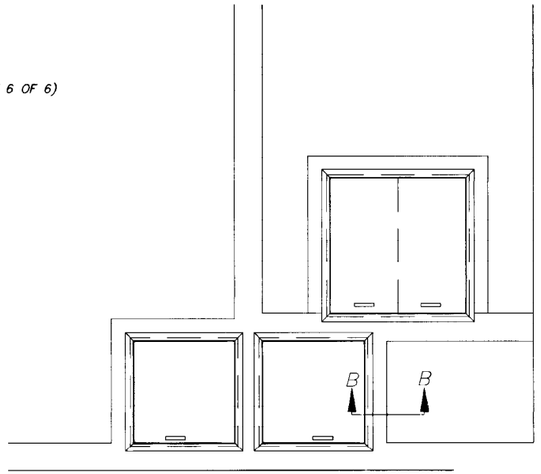
4 OF 6 SHEETS

1682

516

11682



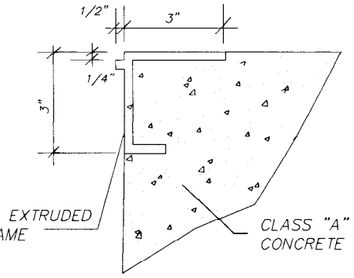


ACCESS HATCH FRAME DETAIL

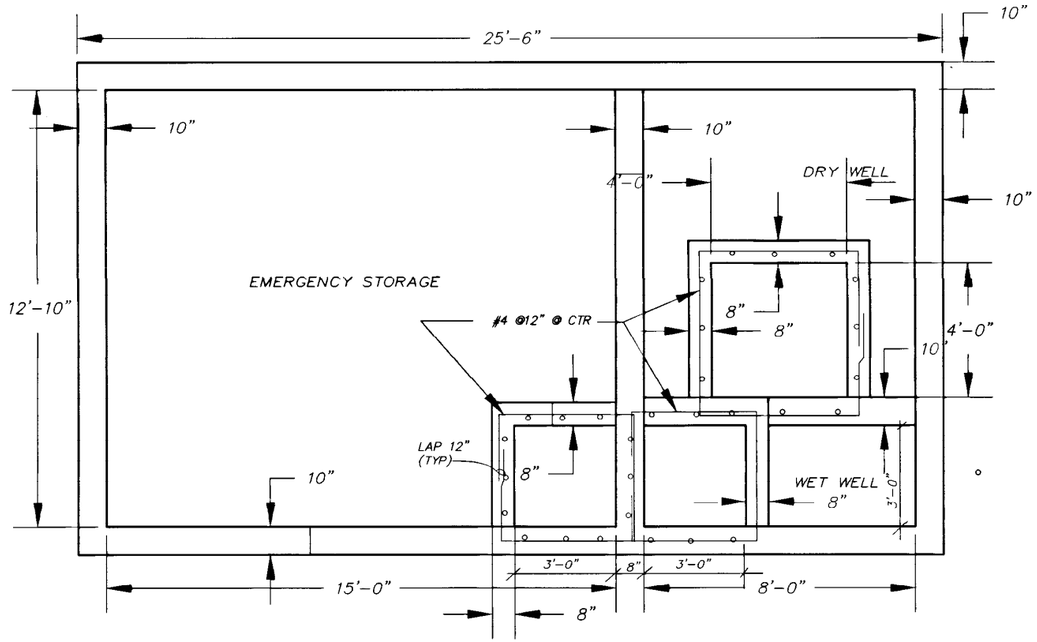
SCALE 1/2" = 1'-0"

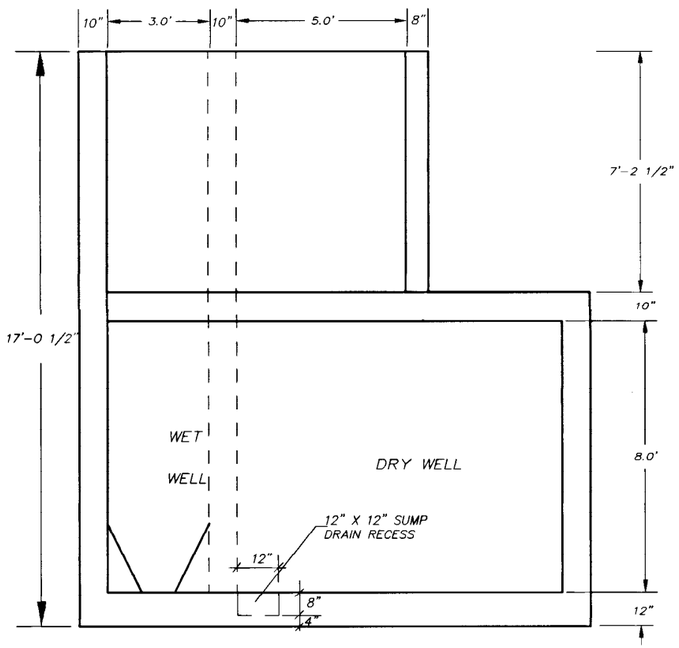
NOTES:

1. CONCRETE TO HAVE ULTIMATE 28-DAY STRENGTH f'c OF 3000 PSI.
2. REINFORCING STEEL TOI BE ASTM A615, GR 60
3. DESIGN IS BASED ON FOLLOWING SOIL DATA ASSUMPTIONS:
   - A. WATER TABLE AT GROUND SURFACE
   - B. WEIGHT OF SATURATED SOIL = 120#/C.F.
   - C. EQUIVALENT FLUID PRESSURE = 90#/C.F.



SECTION B-B





RECORD DRAWING

REVISIONS			
NO.	DESCRIPTION/DATE	BY	
1	PER CITY REVIEW (4/10/97)	DT	
2	AS-BUILT PER CITY (11/01/01)	DT	

MOUNIR H. TOUMA — STATE OF WASHINGTON — 9470 — REGISTERED PROFESSIONAL ENGINEER

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PHONE (206) 251-0665 FAX (206) 251-0625

SOUTHBAY PARK DEVELOPMENT

SANITARY SEWER PUMP STATION VAULT STRUCTURE DESIGN

KIRKLAND WASHINGTON

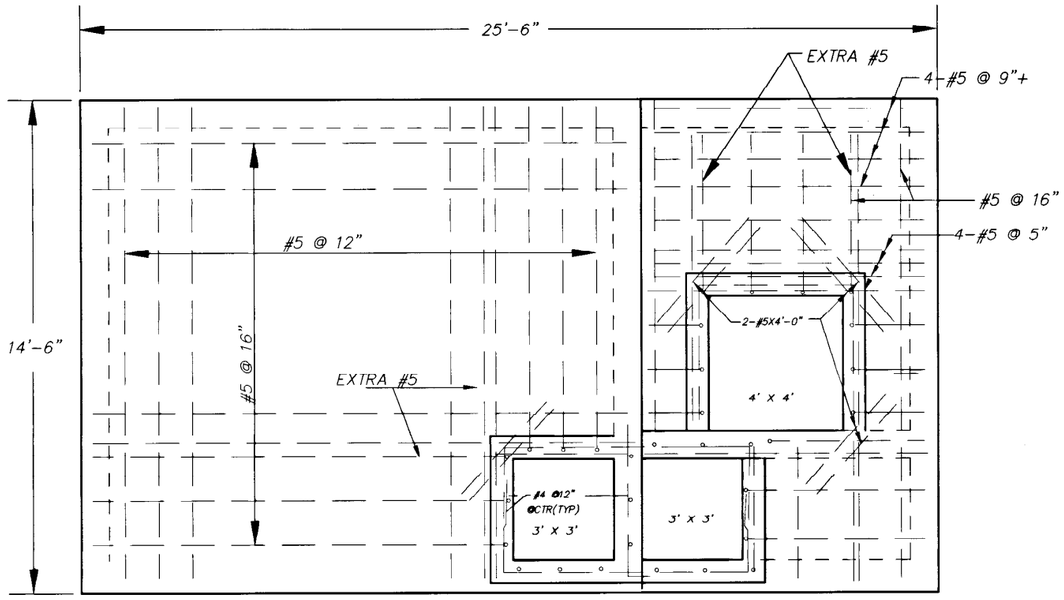
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DATE SEPT. 1996	
DWG. NO. 695FLPN.DWG	

5 OF 6 SHEETS

1682

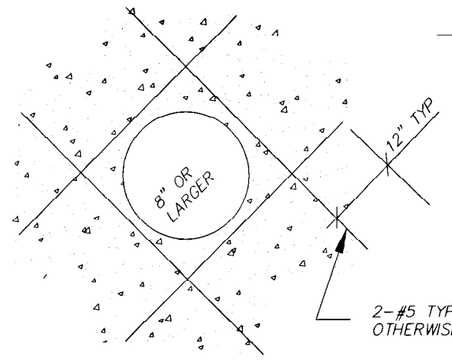
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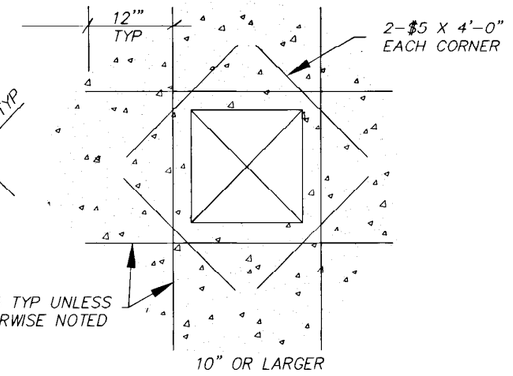
1682



TOP SLAP PLAN

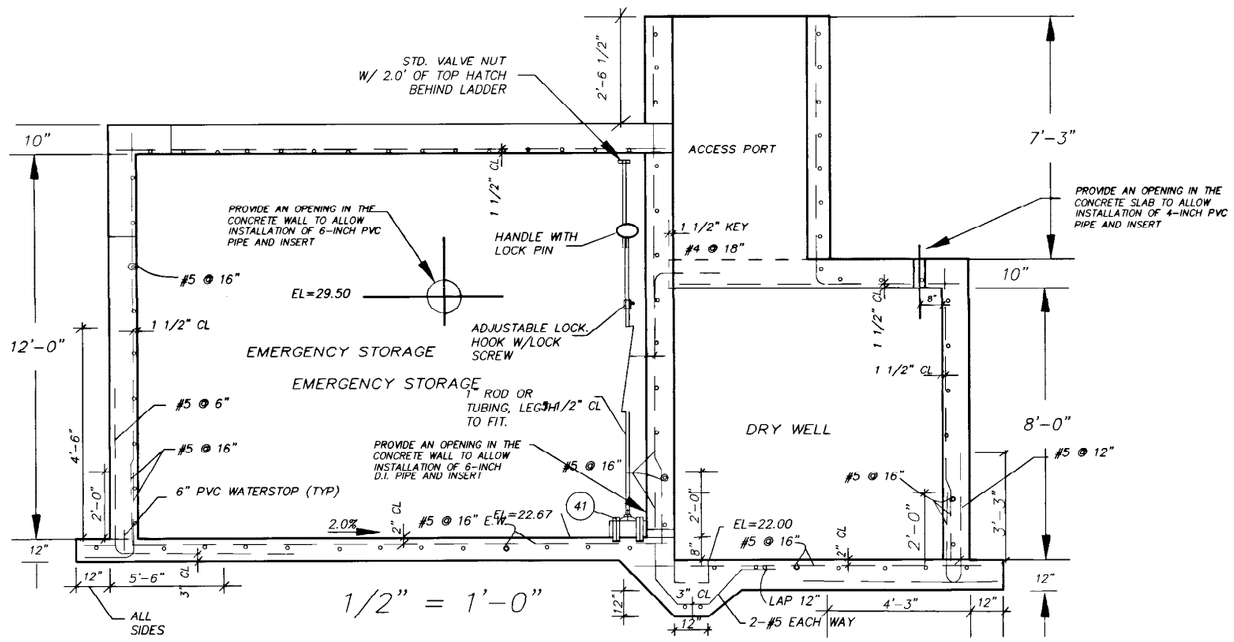
1/2" = 1'-0"





ADDED REINFORCING AROUND WALL OPENINGS

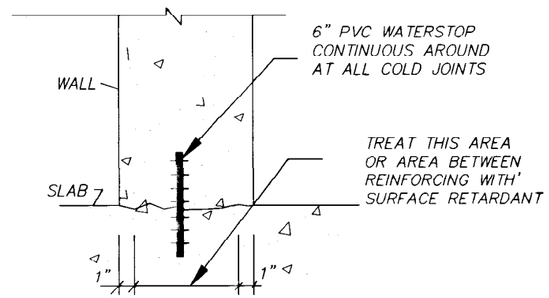
N.T.S.



1/2" = 1'-0"

SECTION A -A (SEE SHEET 5)

1/2" = 1'-0"



WATERSTOP DETAIL

N.T.S.

RECORD DRAWING

REVISIONS		
NO.	DESCRIPTION/DATE	BY
1	PER CITY REVIEW (4/10/97)	DT
2	AS-BUILT PER CITY (11/01/01)	DT

MOUNIR H. TOUMA — STATE OF WASHINGTON — 9470 — REGISTERED PROFESSIONAL ENGINEER

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SOUTHBAY PARK DEVELOPMENT
SANITARY SEWER PUMP STATION
VAULT STRUCTURE DESIGN
KIRKLAND WASHINGTON

JOB NO. 695001952	
DESIGNED DB	
DRAWN MT	
COMP. DB	
CHECKED DB	
DATE SEPT. 1998	
DWG. NO. 695FLPN.DWG	

6 OF 6 SHEETS

1682

APPENDIX D:
SCADA STRATEGIC PLAN

City of Kirkland

City of Kirkland

SCADA Strategic Plan Proposal

SCADA Strategic Plan

February 12th, 2026

Technical Systems Inc.

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Introduction

The City of Kirkland Public Works operates 17 dispersed water and wastewater sites. The sites are used for controlling distribution and storage of water and collections of surface and wastewater. The sites are automated using Programmable Logic Controllers (PLCs) with both local Operator Interface Terminals (OITs) and a remote Supervisory Control and Data Acquisition (SCADA) workstation for operations to use for monitoring and control. The system allows for automatic and manual control, data logging, and alarm notification of any abnormal process conditions.

Several sites are using years or decades old obsolete equipment that is no longer commercially available and immediate replacement is recommended.

Summary

The SCADA Improvement Project aims to enhance the efficiency, reliability, and security of the City's SCADA system. By implementing technology upgrades, robust cybersecurity measures, optimized network infrastructure, advanced data analysis capabilities, and an improved alarm management system, we will achieve a more efficient and resilient SCADA system.

Summary of Recommendations

The following systems are recommended standard equipment to be used:

1. SCADA: Ignition Perspective with Alarm Notification, Historian, Reporting, and redundancy modules. Schneider OPCUA Server Expert to communicate directly with the RTU PLCs.
2. PLCs: Modicon m340
3. OITs: Maple Systems cMT3092X Smart 9.7”
4. Network Switches at RTUs: Cisco IE3200 Series switches
5. Network: T-Mobile Private APN with Peplink MAX BR1 Mini Cellular Routers.

GAP Analysis Summary

The following systems are years past support and/or sale and strongly recommended for immediate replacement to prevent emergency replacement and/or loss of system:

1. Network – The aging frame relay solution should be replaced immediately.
2. MTU (this will require several updates to SCADA, it is recommended that SCADA is updated simultaneously to prevent the need to perform work twice)
3. Remote sites using obsolete controllers and OITs.

Central / Maintenance

The central / maintenance center location consists of one SCADA workstation, an IP PBX device for alarm notification, and a Modicon Quantum MTU running Proworx32.

SCADA Workstation



The SCADA workstation is running a Windows 10 operating system, which is currently still supported, but support ends in October 2025. Migrating to Windows 11 is now officially supported by most SCADA software.

AVEVA (formerly Wonderware) InTouch 2014 R2. This is a stable release, but is end of life as of December 2024.

Topview Alarm Management is running a version that is a couple years old, but still considered mature support.

The most significant concern for this system is a complete lack of two very widely used features:

1. Redundancy – This is a critical system that operates 100% of the time, redundancy is essential to prevent interruption.
2. Historian / Reporting – the collection and analysis of data from SCADA system is widely used to improve system performance.

Lifecycle: Recommended replacement for SCADA computers should be scheduled every 5-7 years. When the computer hardware is updated, the latest supported versions SCADA Software and windows should be installed as well.

IP PBX



The Grandstream UCM6202 has been replaced with the newer UCM6300 series, but is still functional and supported. Using IP/PBX is considered best practice for small systems with voice alarm notification through an analog line. This allows for isolation from Voice over Ethernet or internet services while still supporting modern software and hardware.

Lifecycle: Recommended replacement every 5 years to keep up with software. May be obsolete / not required if other Voice over Ethernet and/or cellular services are used. It is recommended to have multiple paths for notification including both Voice over Ethernet using the city SIP, a cellular gateway for SMS, and/or an SMTP server for email.

MTU



The Modicon Quantum PLC that is used as a Master Telemetry Unit (MTU) which communicates directly to Remote Telemetry Units (RTUs) is far past end of life. Support, production, and sale ended in 2018. The software version running the CPU last officially supported installation on Windows XP, which reached end of life in 2014.

Lifecycle: Remove permanently. MTUs are only needed on restricted bandwidth networks such as radio or frame relay. With modern networks like cellular: SCADA can communicate directly with RTUs and RTUs can communicate directly with each other.

Network



The SCADA system is connected to a city-IT managed network, which is segmented, but additional protections for isolation should be considered. The communications network between the MTU and RTUs is using Cisco 1841 Integrated Services Router on a frame-relay network. End of life for this equipment was originally announced back in 2010 and the last day of support was in 2016.

Lifecycle: Replace hardware when end of life is announced or every 7-10 years, whichever comes first.

Remote Sites

Remote sites have been slowly updated as projects and need arose over the years. The updated sites are using recommended hardware for PLCs and network. The OITs at updated sites should be updated as needed. The sites that have not been updated should be in the immediate future. All of the hardware is well past end of life and cannot be purchased commercially. Should the aging hardware fail, staff would have to depend on spares or hope they can find something on the secondary market (e.g. ebay) to get replacement parts.

Programmable Logic Controllers (PLCs)



Updated sites: modicon m340 CPUs. This is currently in mainstream support and the best option offered by Schneider / Modicon for smaller PACs or Process Automation Controllers.

The sites that have not been upgraded are using the following controllers:

- Modicon Momentum: Discontinued in 2015. End of Service on 5/31/2023
    - 80% of Sewer Sites – (4 out of 5)
    - 45% of Water sites – (5 out of 11 PLCs, some sites have multiple PLCs)
- Micrologix 1100: Discontinued in 2022
    - One at Decant Facility
- Micrologix 1400: Active Mature Lifecycle Status
    - One at South Reservoir

Lifecycle: Replace hardware when end of life is announced or every 7-10 years, whichever comes first.

Operator Interface Terminals (OITs)



Updated Sites: Maple Systems HMI5070DL. The HMI5070DL is considered a legacy product and no longer available for purchase, but other similar HMI models are still being sold (HMI5070Bv3, HMI5070L, HMI5070LB, HMI5070P). These could be used or migration to the more modern IIoT-ready cMT series should be considered.

The sites that have not been upgraded are using the following OITs:

- EZ-T10C-FH: Retired 02/2007

Lifecycle: Replace hardware when end of life is announced or every 5-7 years, whichever comes first.

Network



Updated Sites: The updated sites are using:

- Phoenix Contact Unmanaged Switch 2891001
- Delta Electronics Unmanaged Switch DVS-005I00

While these switches are functional, it is recommended that they are replaced with managed switches to implement best practices such as network segmentation and isolation via VLANs and Inter-VLAN routing at each remote site. This will improve both performance and security.

The sites that have not been upgrade as using:

- NTRON 405TX-N: The 400 series end of sale was 2011, end of life 2014
  - 60% of Sewer Sites (3 out of 5, Waverly does not have an ethernet switch in the panel)
  - 56% of Water Sites (5 out of 9)

Lifecycle: Replace hardware when end of life is announced or every 7-10 years, whichever comes first.

Cybersecurity Requirements

Best practice cybersecurity controls help protect systems from unknown or new threats that have not been mitigated due to software or firmware updates. One of the best sources for Operational Technology (OT) cybersecurity controls is from the manufacturers. The recommendations for hardening the system are included below.

Plant Business Zone

Controls in this zone should be in compliance with standard City of Kirkland IT policies. This zone should be isolated from the other cybersecurity zones via a Next-Generation-Firewall. All ignition related controls from the central process zone also apply to front-end gateways in this zone.

Central Process Zone

Device	Cybersecurity Controls Checklist
Engineering Workstation	Workstation shall follow Schneider Electric Guidelines for: - Attack Surface Reduction - Security Policy Configuration and Checking - User Account Management - Access Control Management - Securing Network Services - Enable or Install Antivirus Protection Tool - Systematic Patch Management - Backup Management - Confidentiality Management - Audit Management

Device	Cybersecurity Controls Checklist
All Ignition Gateways	1. Enforce Secure Communication a. Obtain Certificate b. Install Certificate c. Force Secure Redirect d. Set up Certificate Renewal 2. Disable Older Cipher Suites 3. Configure Strong Headers
All Ignition Gateways	Set Gateway sections and Designer access to be protected with role based access control. Details found in user manual.
All Ignition Gateways	Use OPC UA communication - Schneider Electric OPCUA Server Expert
All Ignition Gateways	Use active directory for Ignition Identify Provider. Use Role-Based Security.
All Ignition Gateways	Configure Perspective Session Security, Perspective Views Security, Component Scripting Security, Designer Security, Tag Security, and turn off Named SQL queries.
All Ignition Gateways	Use Audit Profiles to allow Ignition to record details about specific events that occurred. See user manual
All Ignition Gateways	Do not use root or sa logins. Use a separate user account with limited privileges for database connection with Ignition Gateway.
All Ignition Gateways	1. Define Ignition Privileged Users based on Active Directory Security Group. These users are able to modify projects and writing applications with all privileges. 2. Ignition Process - System Account and Persistent Connections - These accounts should a. Not use root or domain admin account b. Minimize privileges of the ignition computer and service account on the larger network c. Minimize Ignition permissions on external databases and business systems. 3. Remove Unnecessary Programs 4. Disable Remote Registry and Windows Remote Management
All Ignition Gateways	Utilize: Firewalls and Ports (see ignition default ports list) and Redundant servers
All Ignition Gateways	Use latest version of Ignition Perspective at the time of development. Install OS and Ignition Updates as needed.
Firewall/Switches	SCADA LAN should be a separate, dedicated VLAN/Subnet
Firewall/Switches	RTU Process Control Zone Cellular should be a separate, dedicated VLAN/Subnet
Firewall	Create rules to block all traffic between Plant Business Zone, Central Process Control Zone, and RTU Process Control Zone except: 1. Ignition traffic from FrontEnd Gateway(s) to BackEnd TagIO Gateways and Engineering workstation. 2. Engineering Workstation Traffic to OITs, PLCs, cellular modems, and switches. 3. SNMP/network monitoring traffic to IT as needed 4. Secured Remote Access to Engineering workstation. 5. BackEnd TagIO Gateway comms to PLCs 6. Any other required ports for system functionality

RTU Process Zone (Remote Sites)

Device	Cybersecurity Controls Checklist
PLC	Update Firmware to 15.2+
PLC	Set Password
PLC	Create Authorized IP Access List and set in PLC. Include OIT, SCADA IO Serves, Workstation, and local spare IPs
Switch	Update Firmware to latest
Switch	Change default password
Switch	Backup configuration to flash memory
OIT	Update Firmware to latest
OIT	Set Project Password
OIT	Set XOB Password to disable unauthorized decompiling
OIT	Implement Password protection at object level and display access level
OIT	Change display on login
OIT	Implement Auto Logout
OIT	Implement user action logging
OIT	Turn off EasyAccess, cMT Viewer, email
OIT	Change default administrator password

SCADA Screens Design Examples

Standard Objects

Implementation of standard graphic design is essential for operators to be familiar as they go from site to site or system to system. Pumps, valves, analog signals, discrete signals, and other similar equipment should be displayed and controlled consistently across the system.

Analog Symbols

All analog values that represent dynamic process values will appear as seen in the figure below.

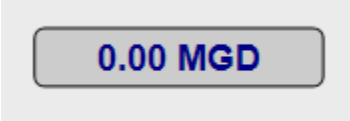


Figure 1: Digital Read-Only Analog Process Value

Analog values that can be update by operators will appear as seen in the figure below.



Figure 2: Digital Setpoint Analog Value

In order to allow operators to quickly glance at process values and determine if the value is high or low, analog meters can be added to the typical display. This makes determining if a process is in a normal or abnormal operating state much easier and more intuitive than simply a number.



Figure 3: Analog Meter

An example of an analog value that has a high alarm is shown in the Figure below with the alarm symbols and the analog meter.



Figure 4: Analog Meter with Hi-Hi Alarm

Each analog device will have a popup to get more detailed information:

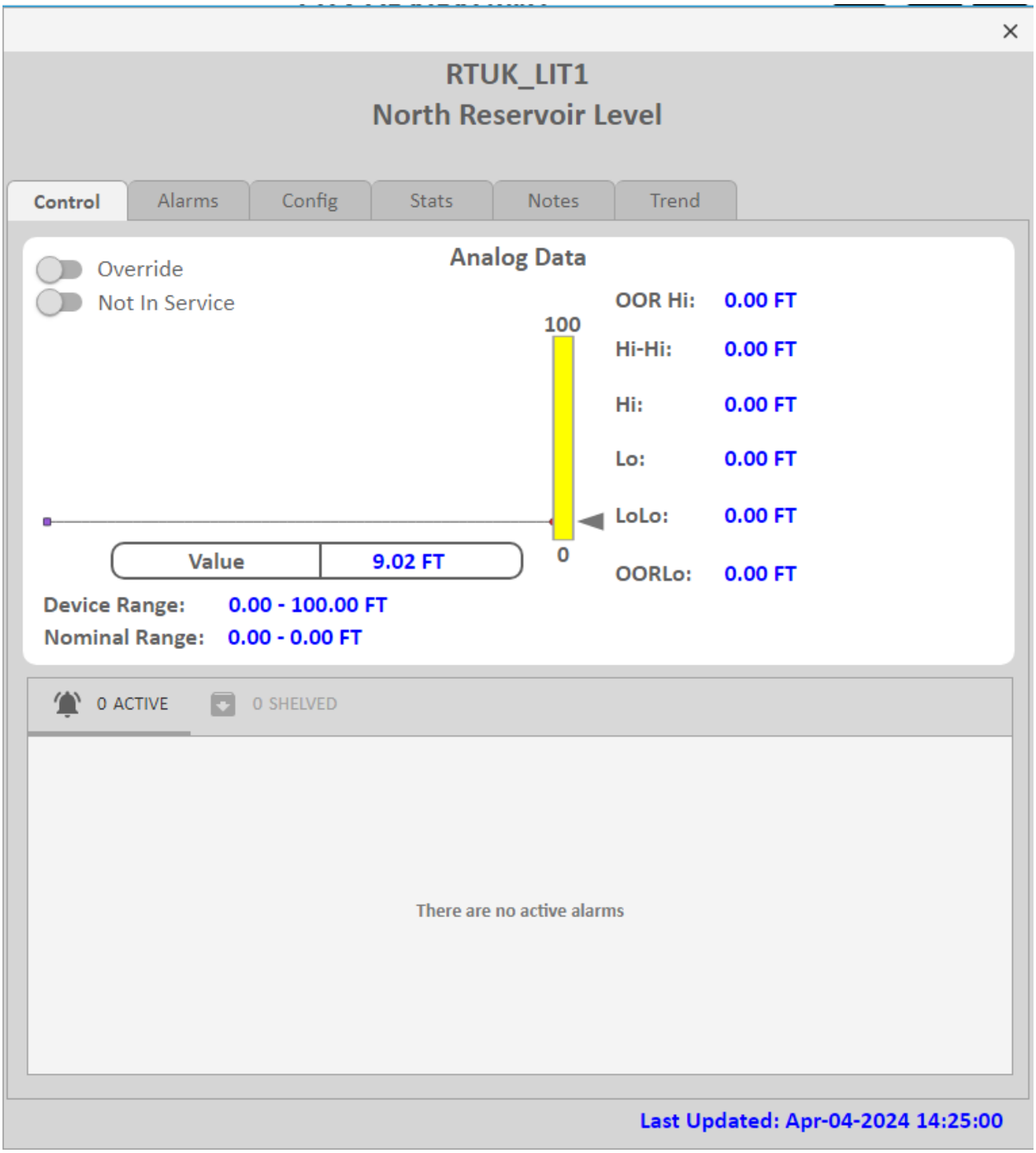


Figure 5: Analog Popup – Control

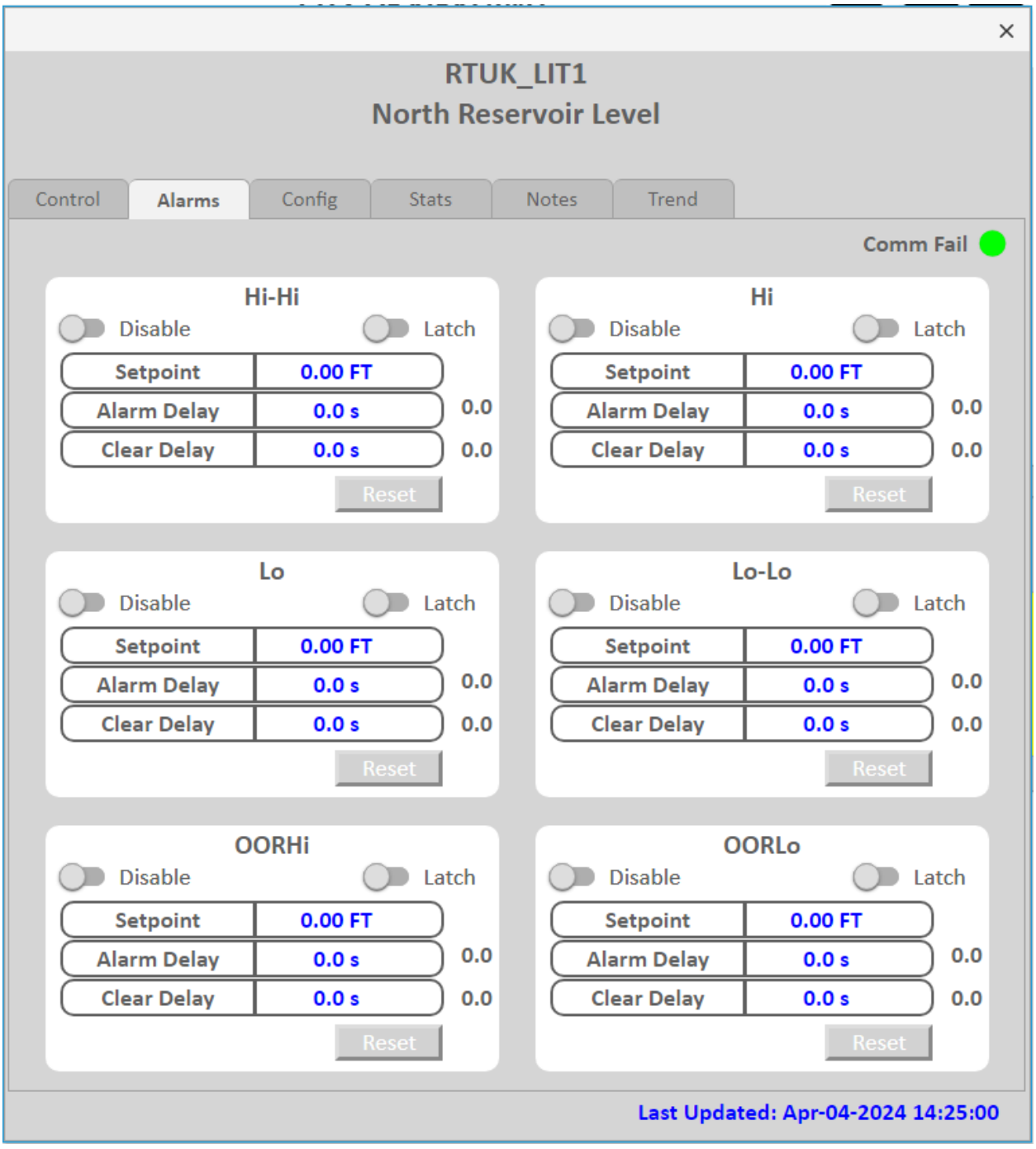


Figure 6: Analog Popup 2 – Alarms

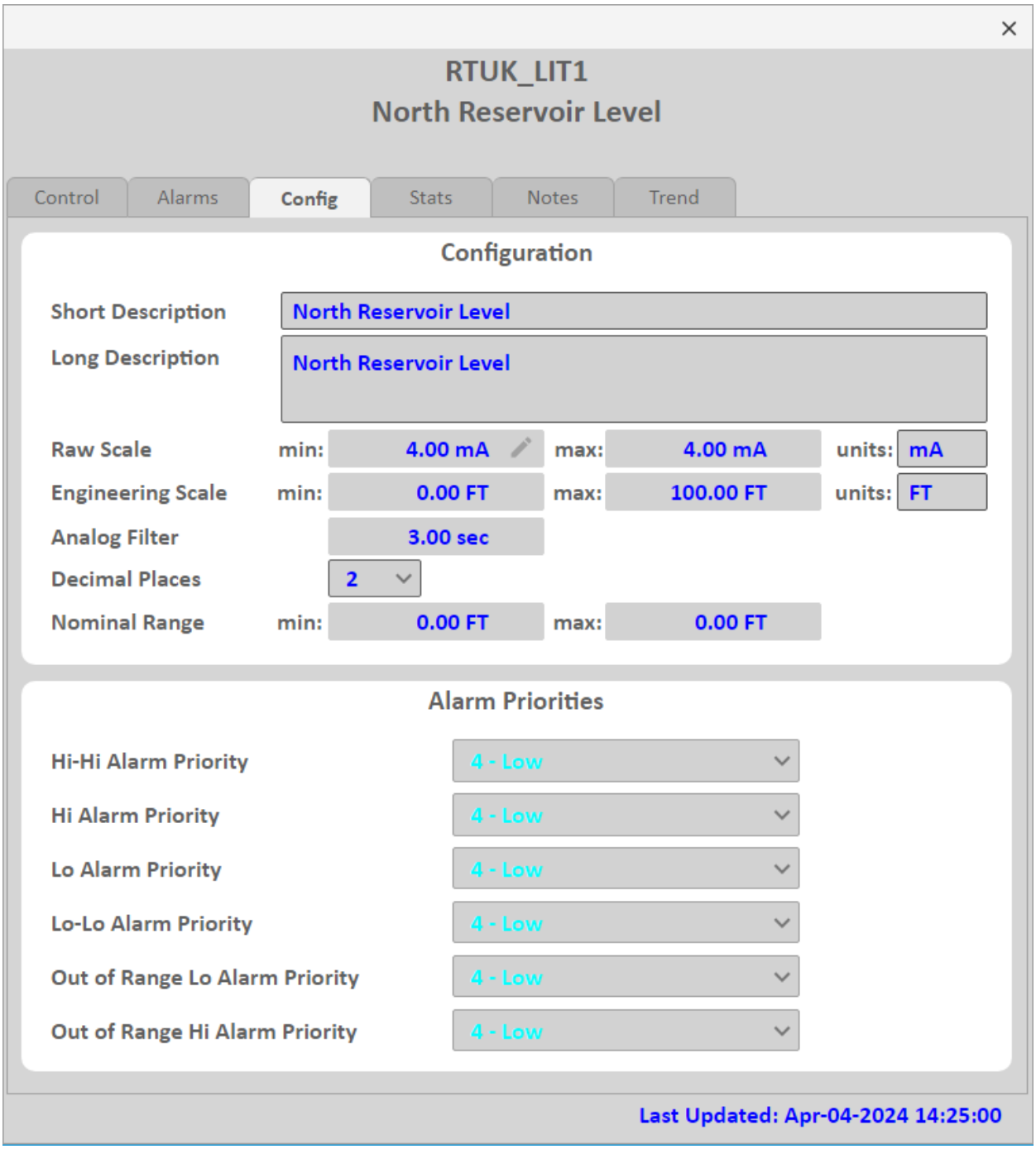


Figure 7: Analog Popup 3 – Config

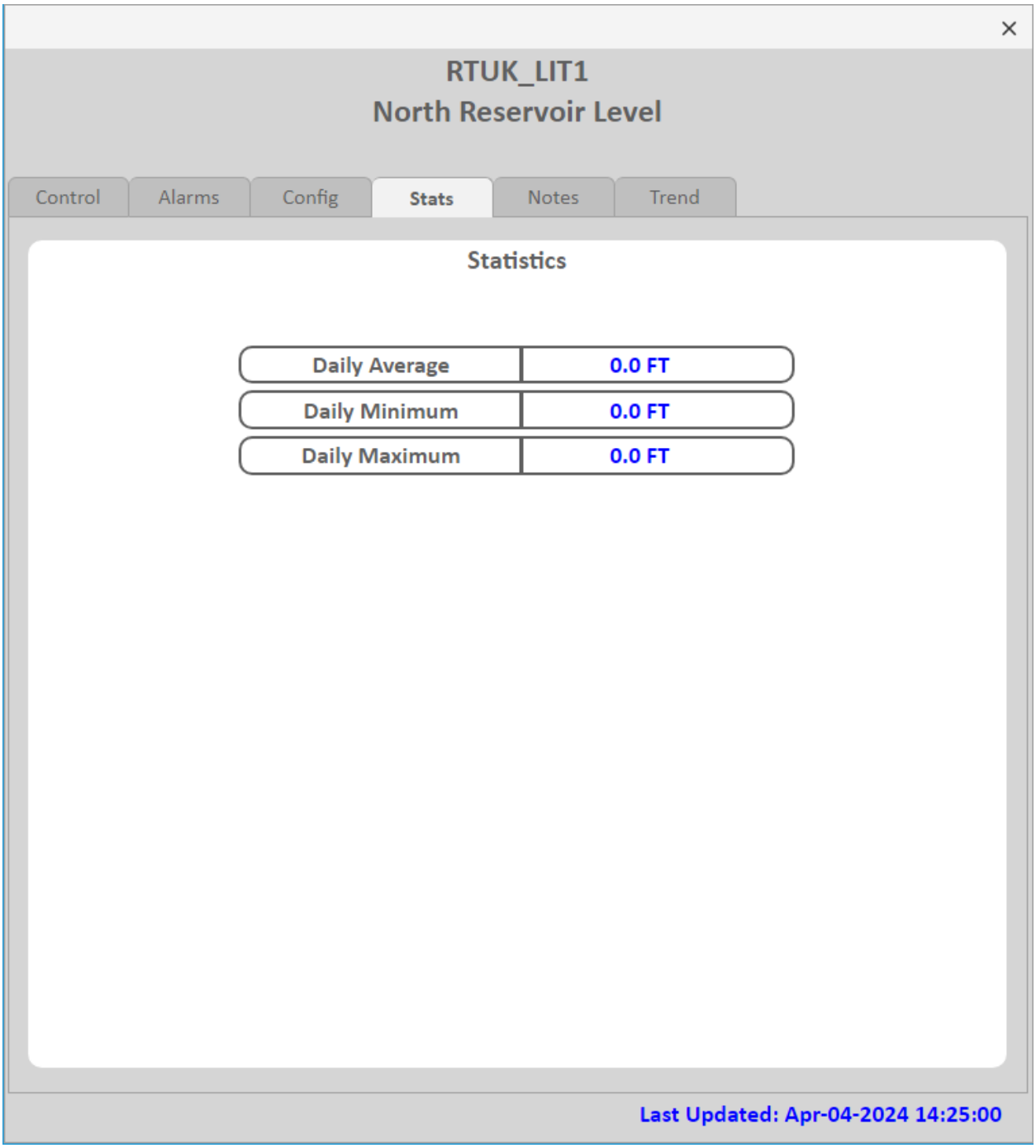


Figure 8: Analog Popup 4 – Stats

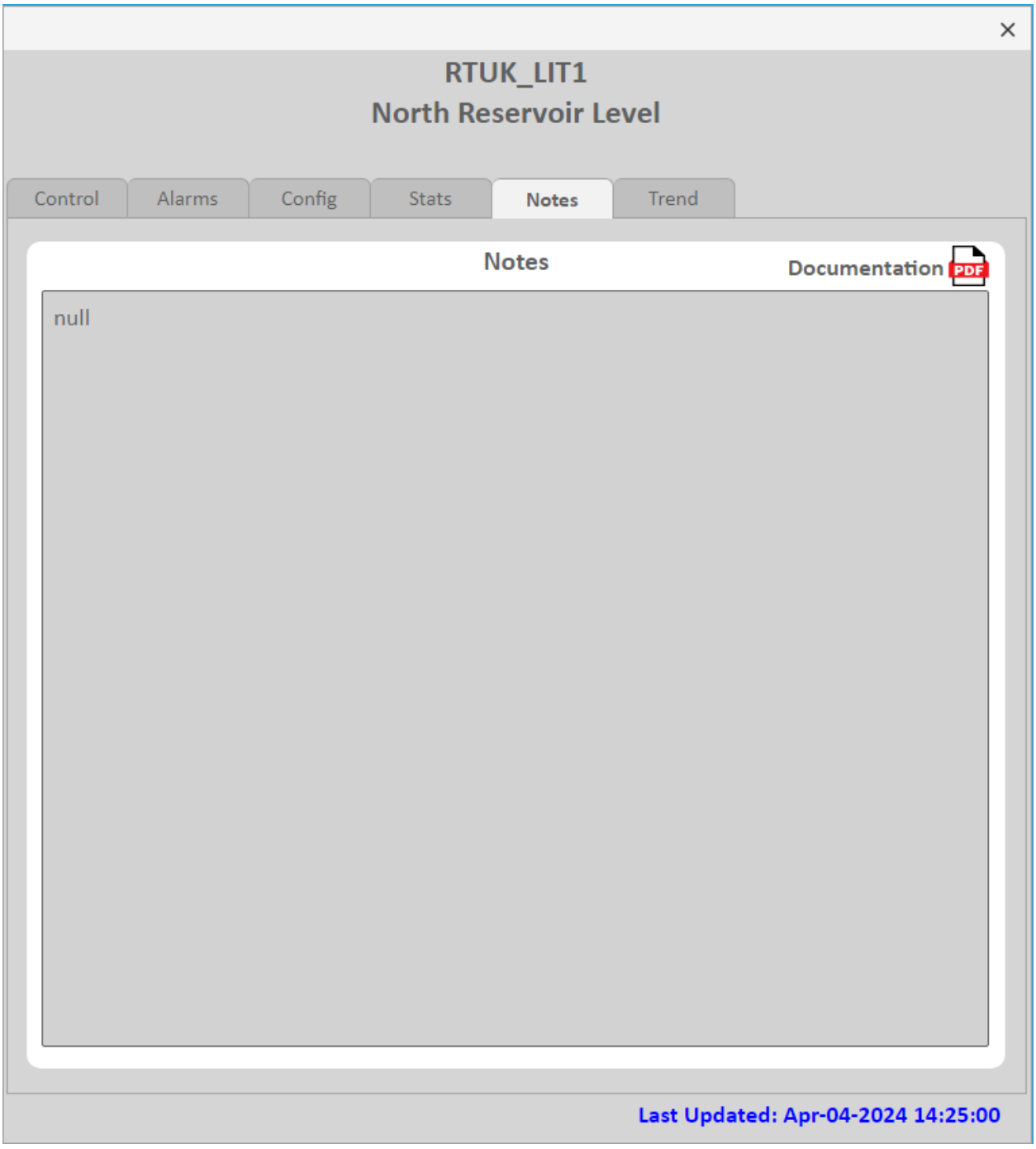


Figure 9: Analog Popup 5 - Operator Notes

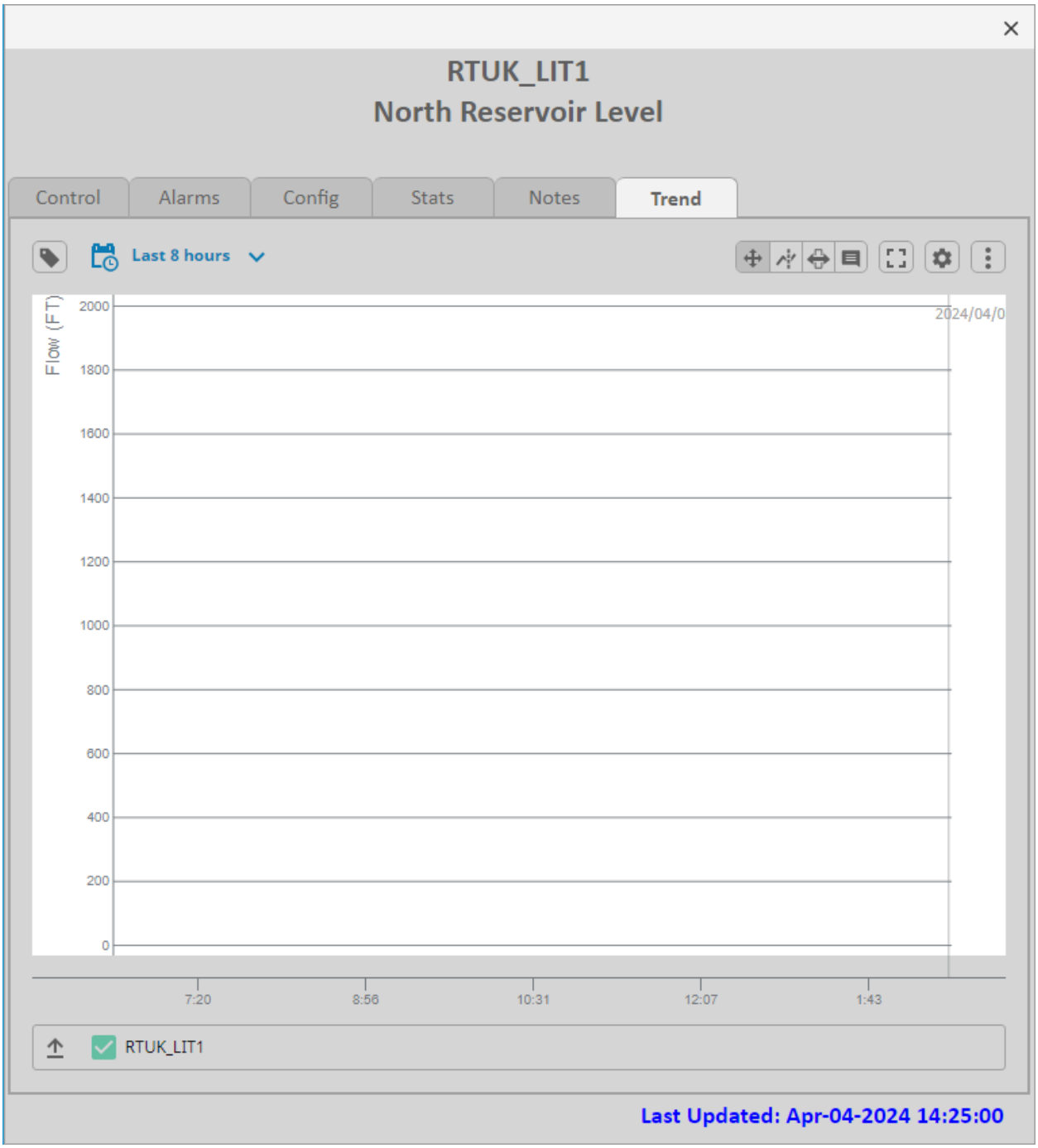


Figure 10: Analog Popup 6 - Trend

Discrete Symbols

Discrete values, such as on/off, ready/not ready, or level switches that are not directly tied to another object are displayed using a text style message.



Figure 11: Discrete Indicators

If the discrete value is setup as an alarm and goes into its alarm state, the alarm border will appear in the discrete indicator object. The Alarm State can be the ON or the OFF state, depending on device configuration.

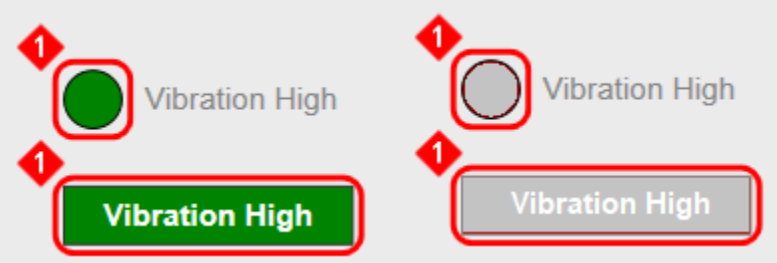


Figure 12: Discrete Indicator Alarmed

In order to send discrete commands to PLCs the following switches and button symbols were used. It is important to have feedback to an operator, so they know that the button was actually pressed, which was the primary requirement for all switch symbols:



Figure 13: Button On/Off (Text Changes)

Pump and Motor Symbols

The Full Voltage Non-Reversing (FVNR) symbols include pumps, mixers, and other motor operated equipment, like conveyors and screw presses. Keeping consistent with other equipment, states have different colors shown in the Figures below. In addition, the equipment tagname is displayed above the symbol and the description of the equipment is shown in a tooltip which becomes visible when the mouse cursor hovers over the symbol.

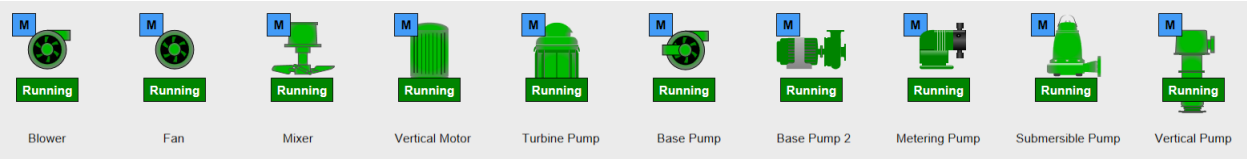


Figure 14: FVNR Running

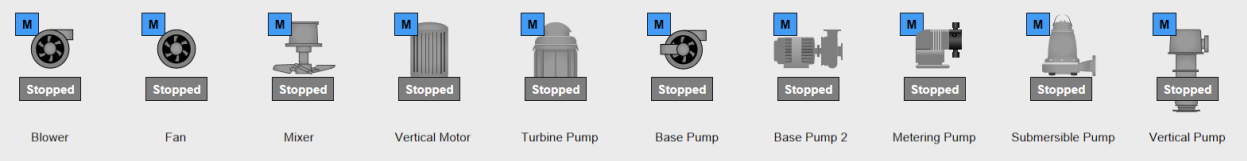


Figure 15: FVNR Stopped

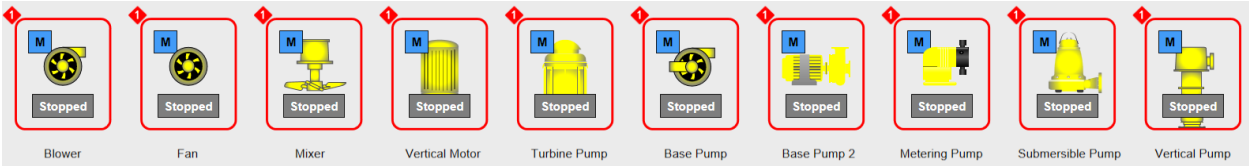


Figure 16: FVNR Alarmed

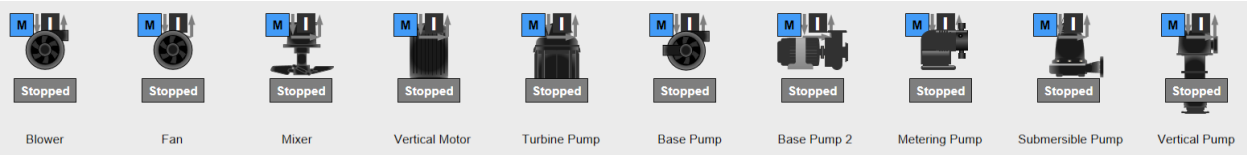


Figure 17: FVNR Interlocked

Each Pump / motor will have popups with detailed information, here are some examples:

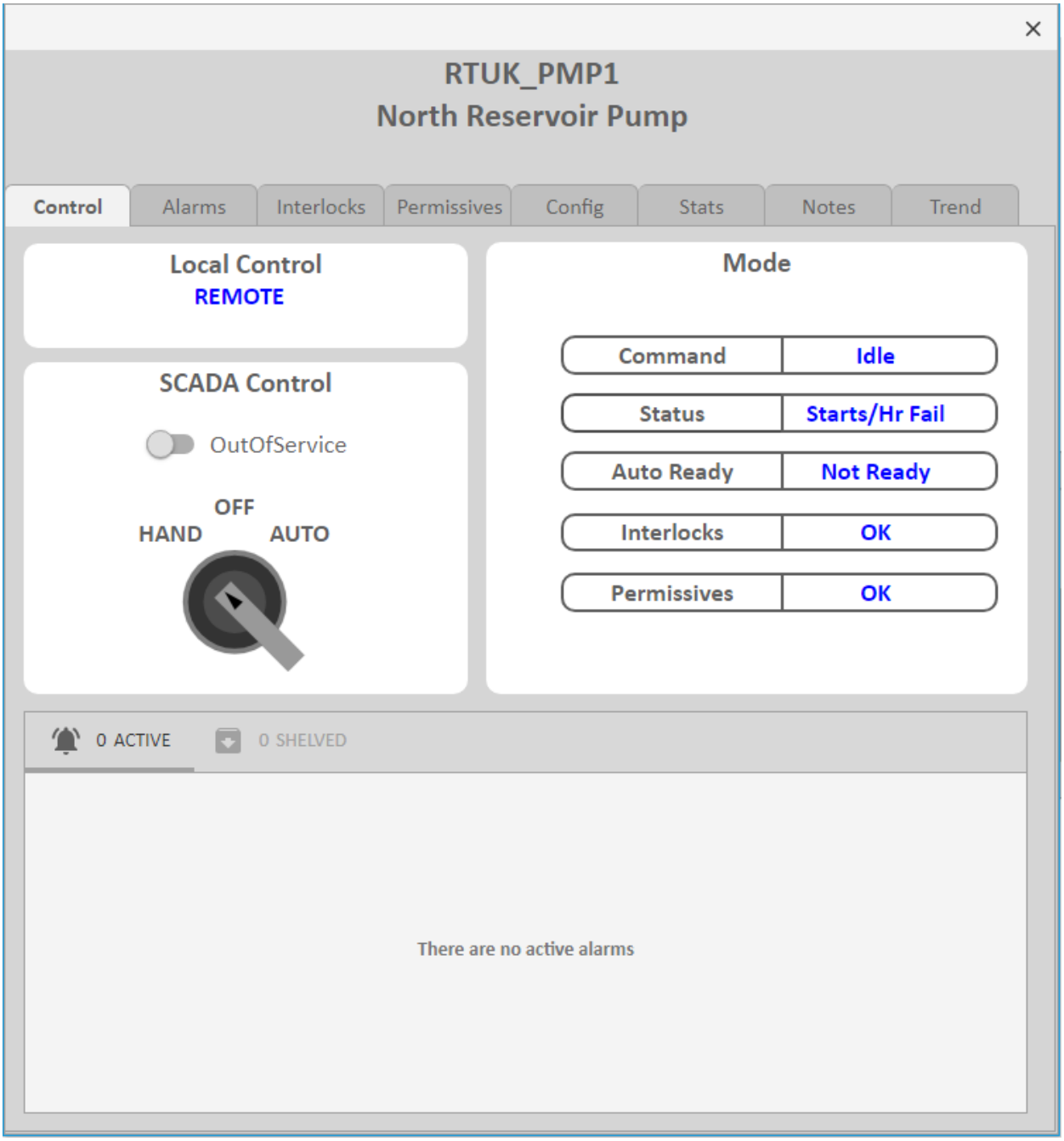


Figure 18: Pump Popup – Control

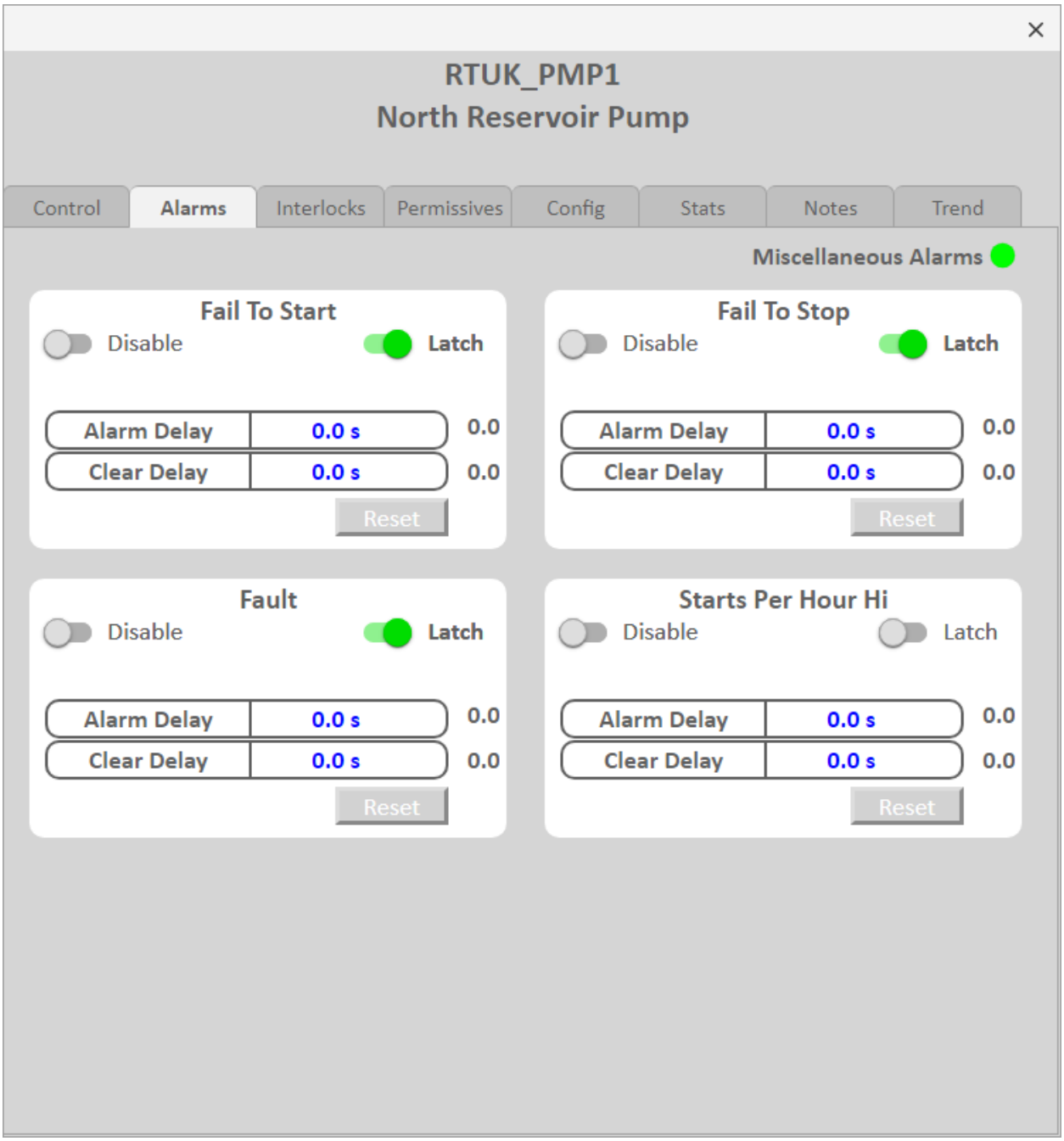


Figure 19: Pump Popup – Alarms

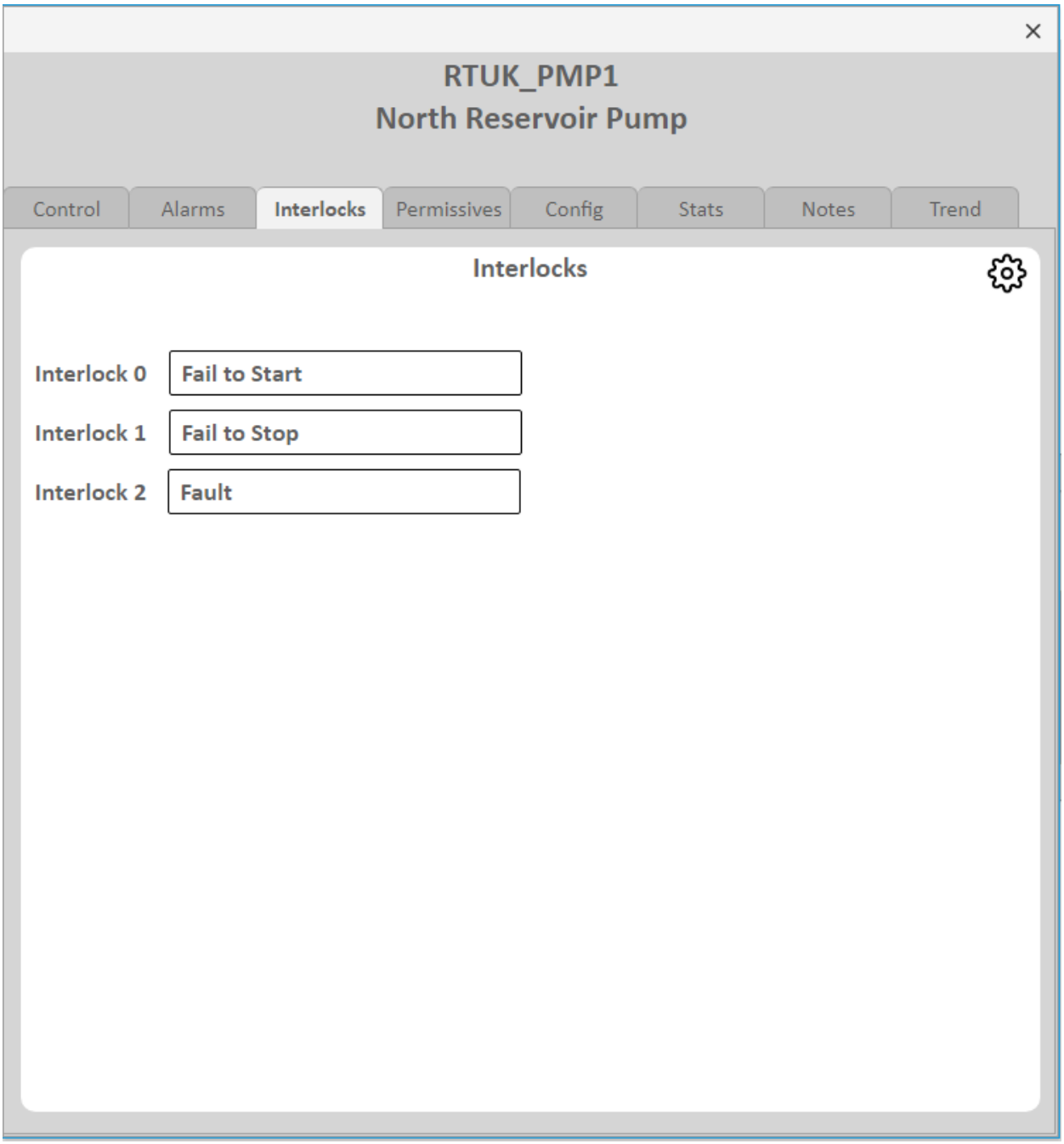


Figure 20: Pump Popup – Interlocks

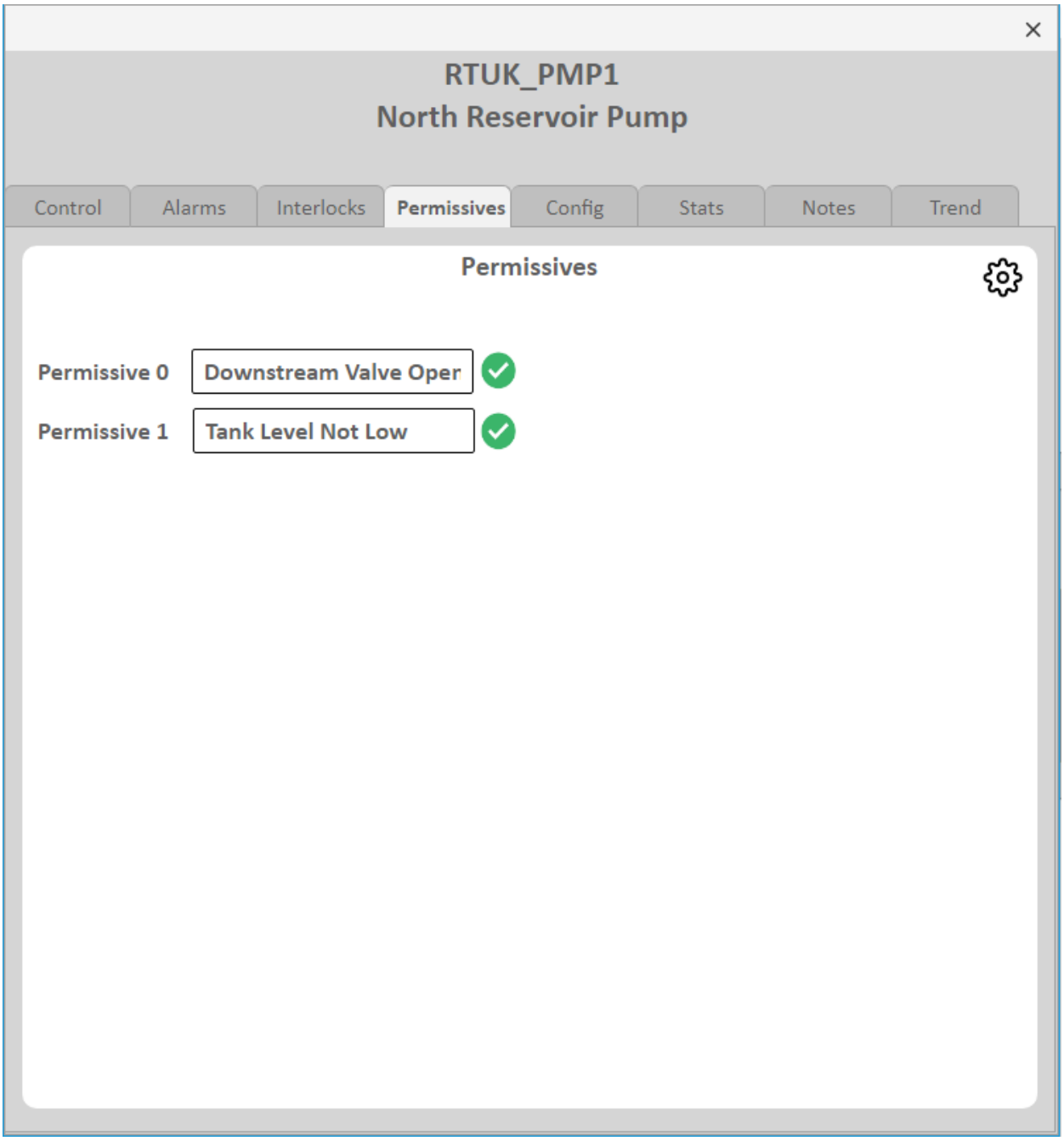


Figure 21: Pump Popup – Permissives



Figure 22: Pump Popup – Config

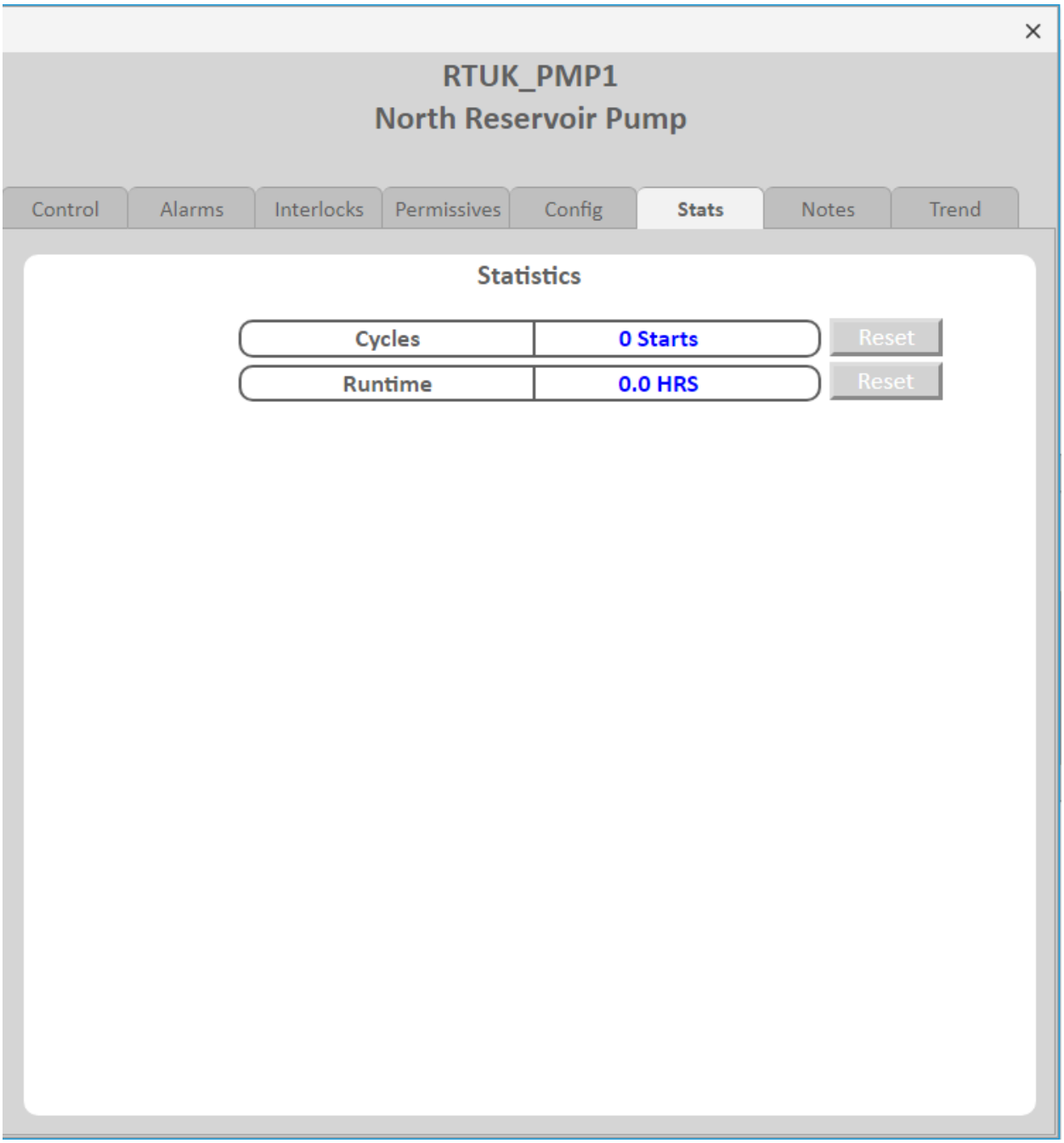


Figure 23: Pump Popup – Stats

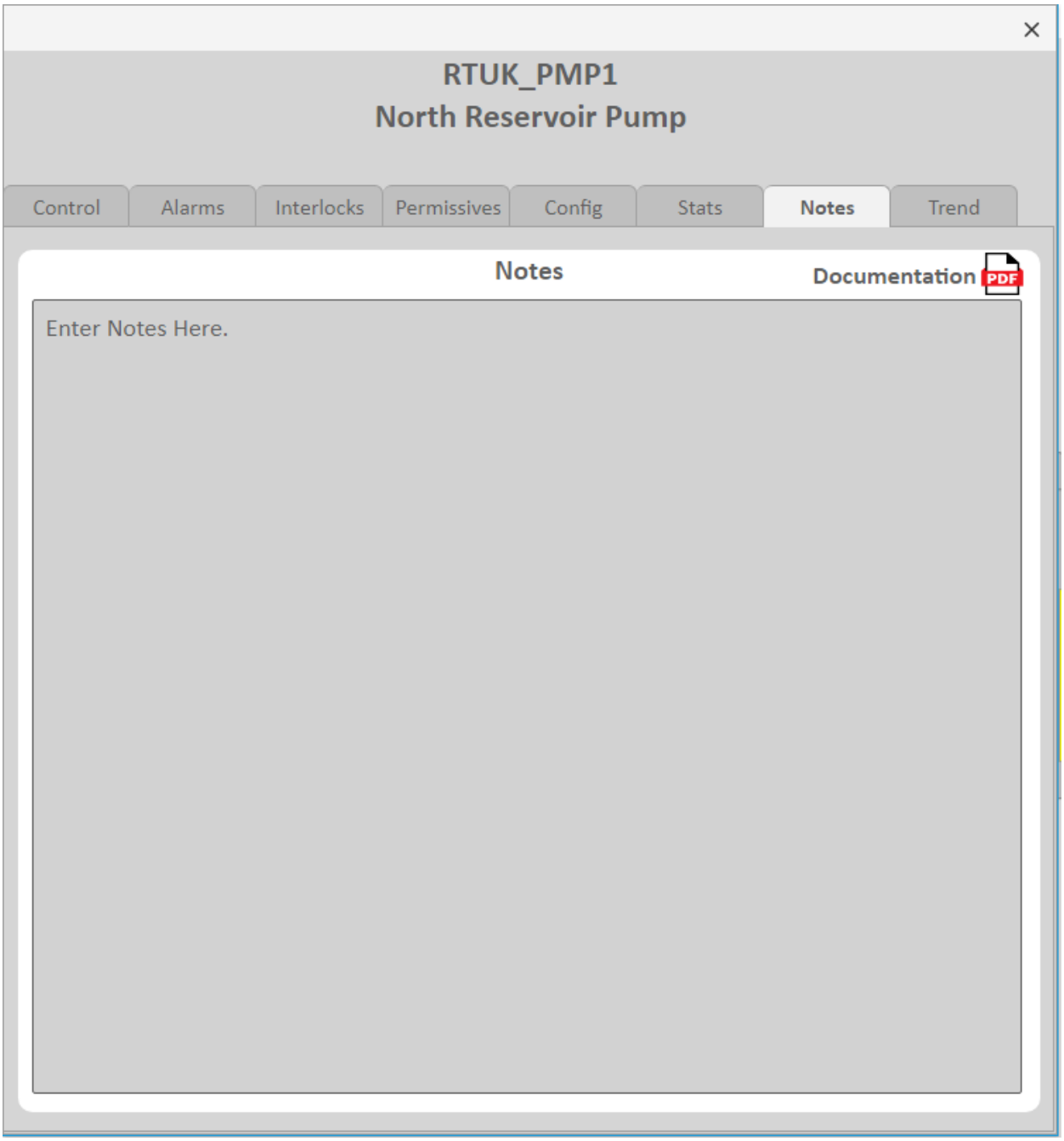


Figure 24: Pump Popup - Operator Notes

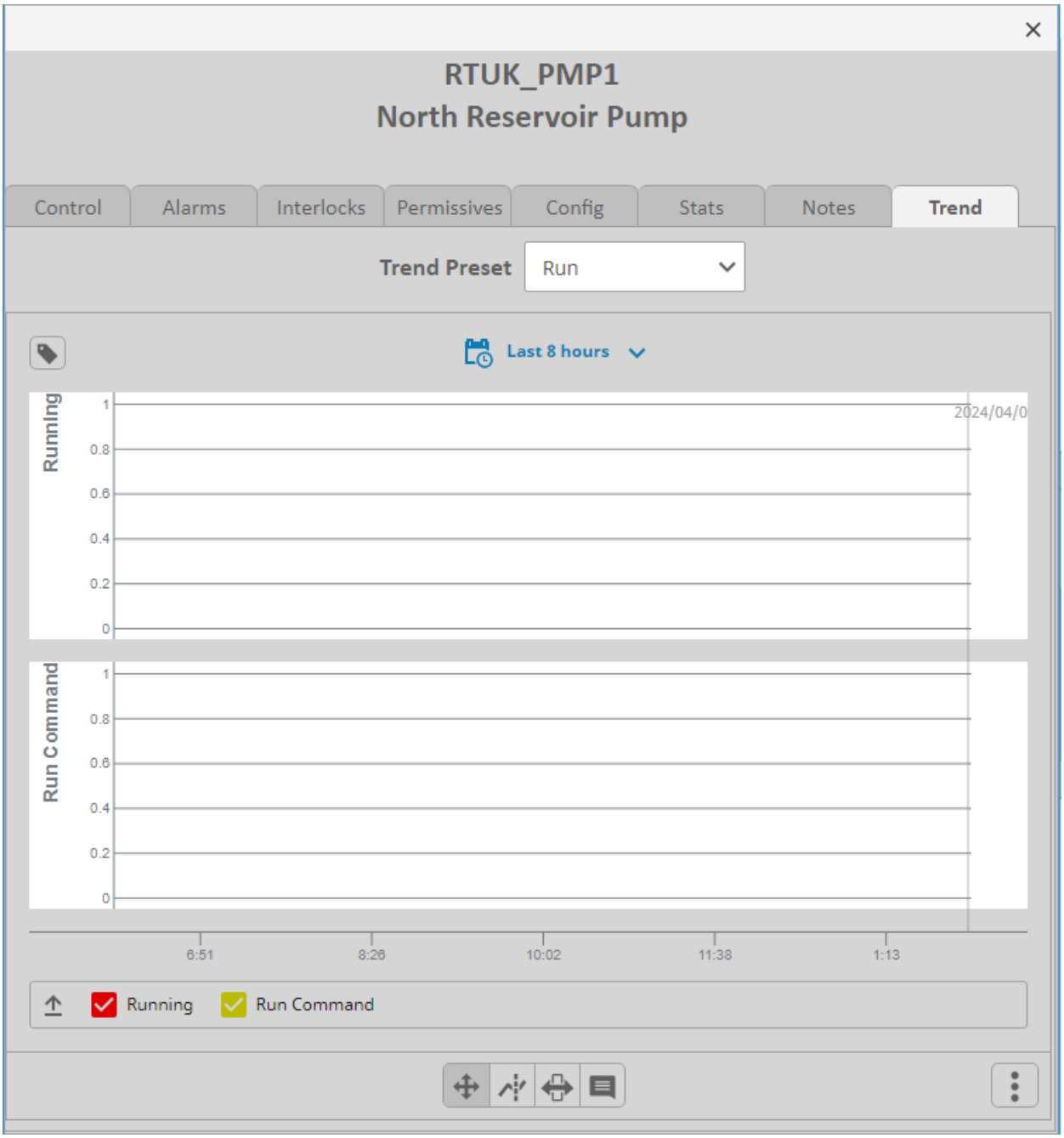


Figure 25: Pump Popup – Trend

Open-Close Valve Symbols

The Open-Close valves used for this project will be visually represented using the symbols and faceplates displayed in the Figures below. There are also small letters indicating Open/Closed/Transition position of the valve.

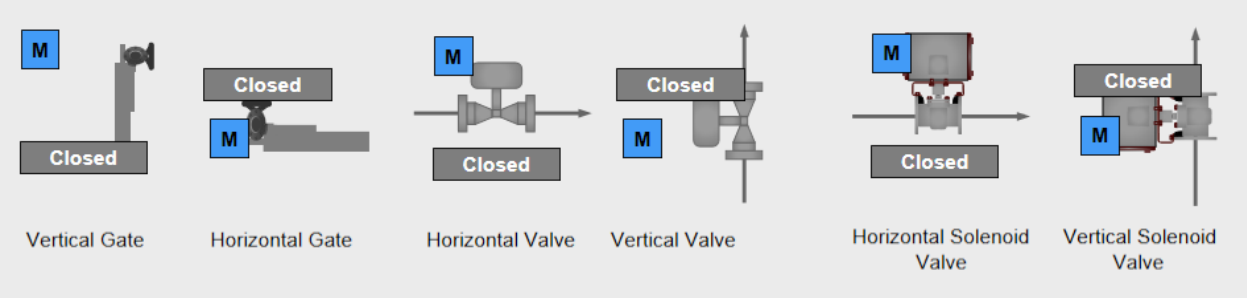


Figure 26: Open-Close Valve Closed

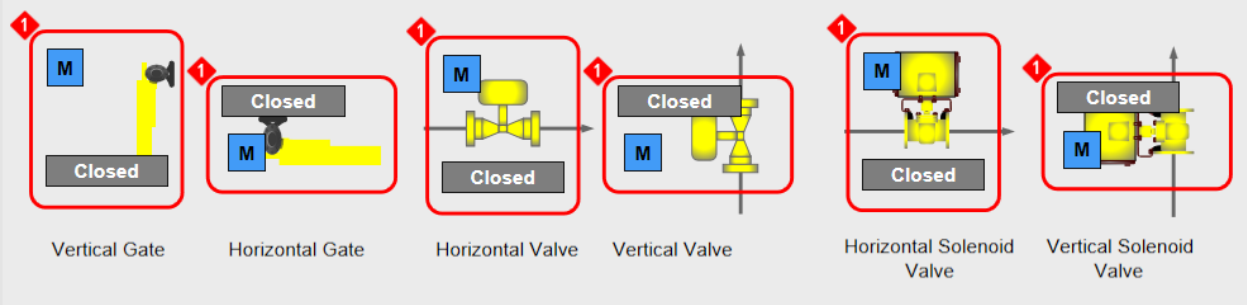


Figure 27: Open-Close Valve Failed

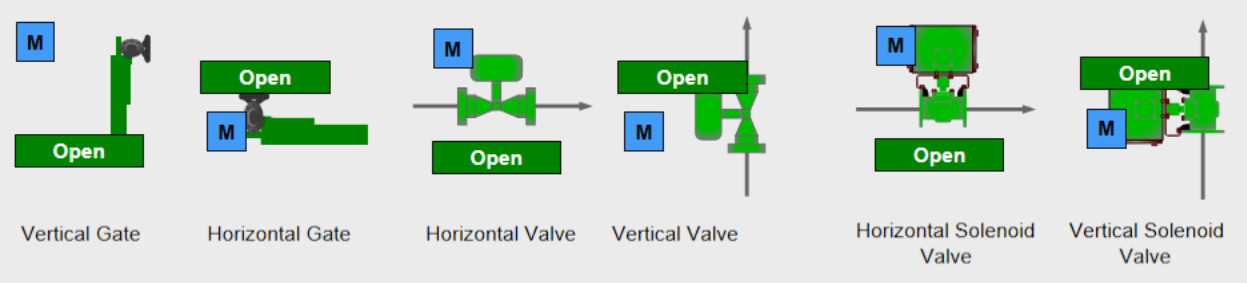


Figure 28: Open-Close Valves/Gates Opened

Modulating Valve Symbols

The Modulating valves used for this project will be visually represented using the symbols and faceplates displayed in the Figures below.

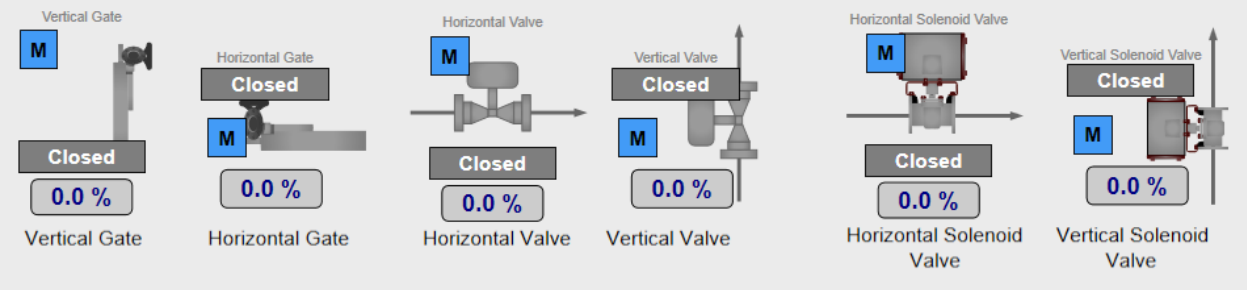


Figure 29: Modulating Valve Closed

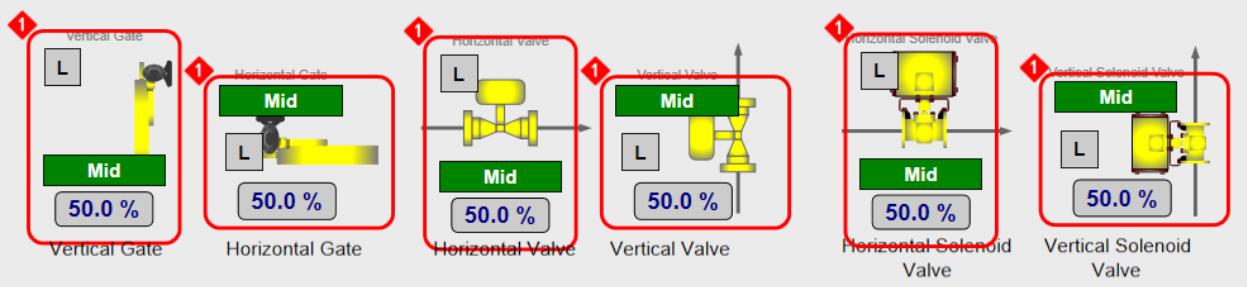


Figure 30: Modulating Valve Failed

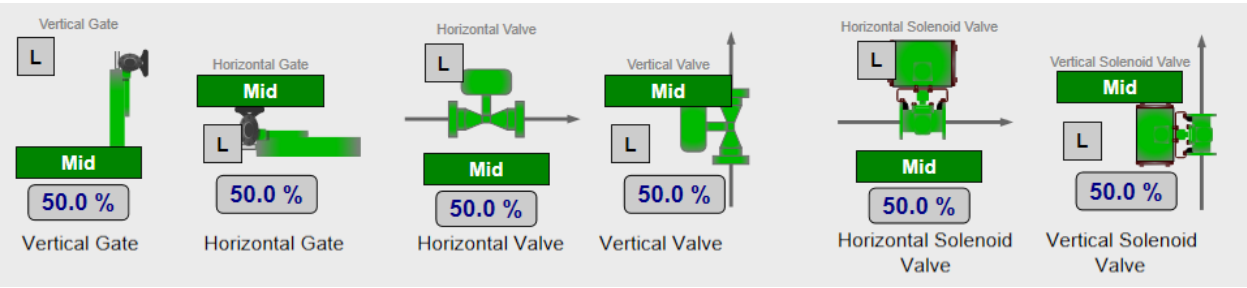


Figure 31 Modulating Valve Full Open

VFD Symbols

Variable Frequency Drives (VFDs) are used to allow equipment such as pumps and fans to operate at a range of speeds to produce precise process states. For this project, VFDs are used to control a variety of different pumps. The VFDs used for this project will be visually represented using the symbols and faceplates displayed in the Figures below.

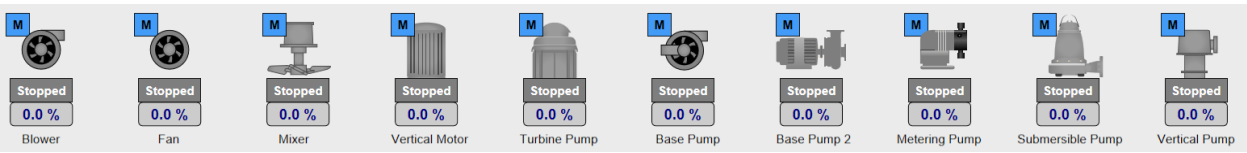


Figure 32: VFD Stopped

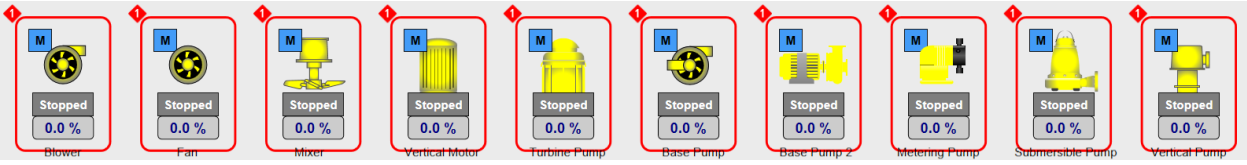


Figure 33: VFD Faulted

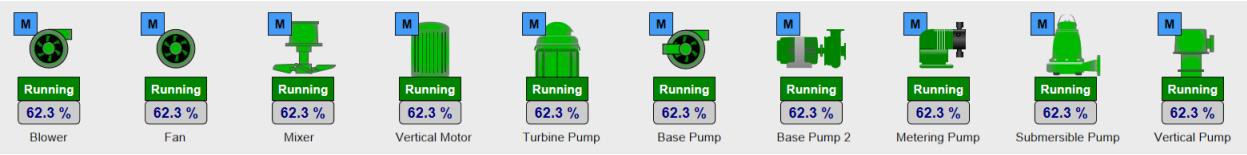


Figure 34: VFD Running

Example Displays

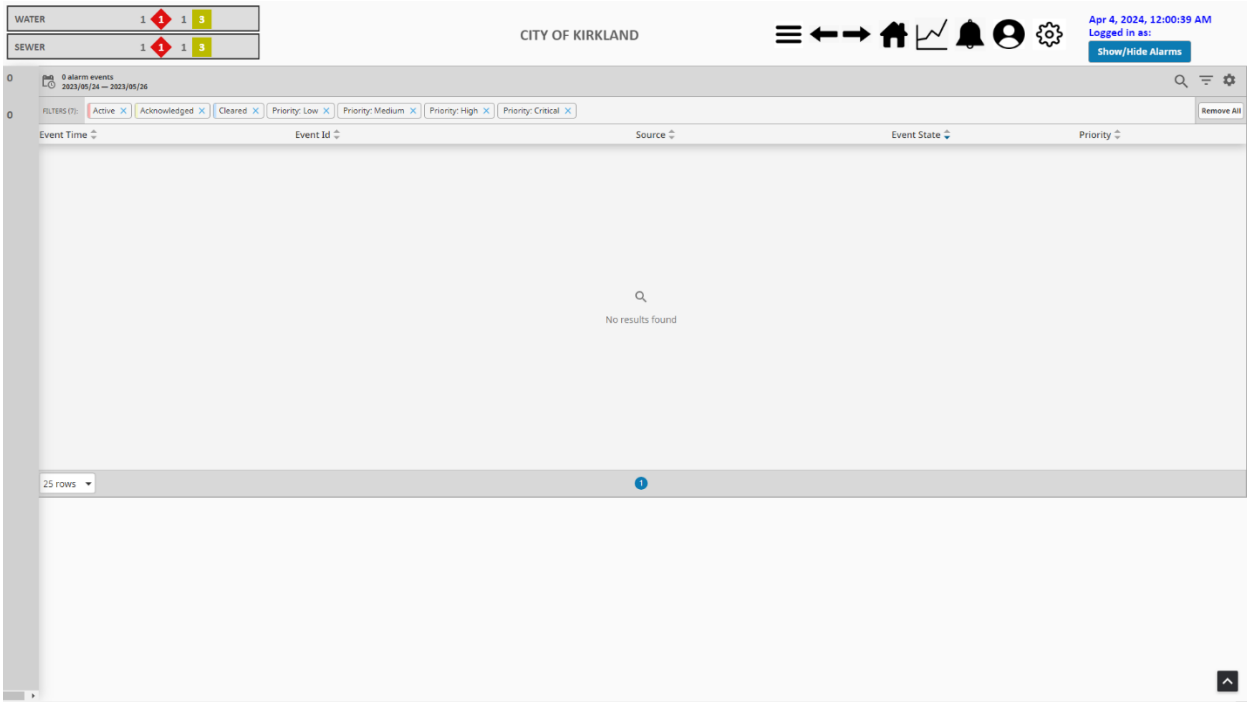


Figure 35: Alarm History

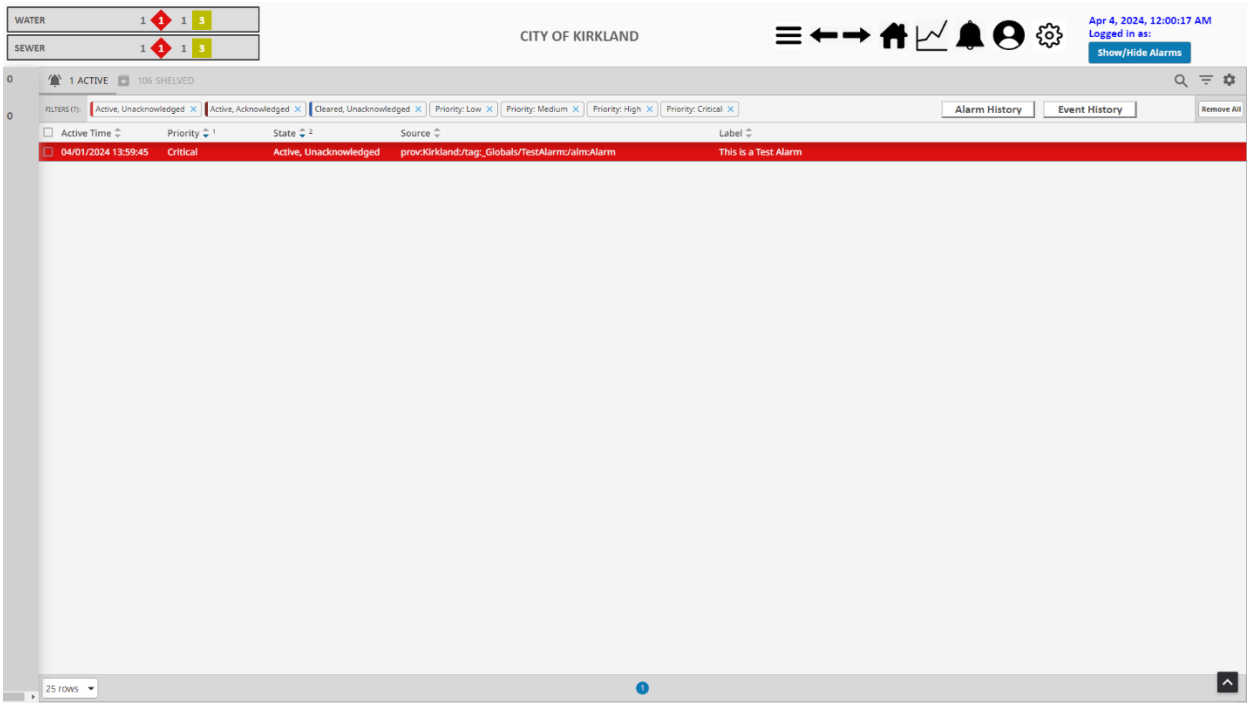


Figure 36: Alarm Summary

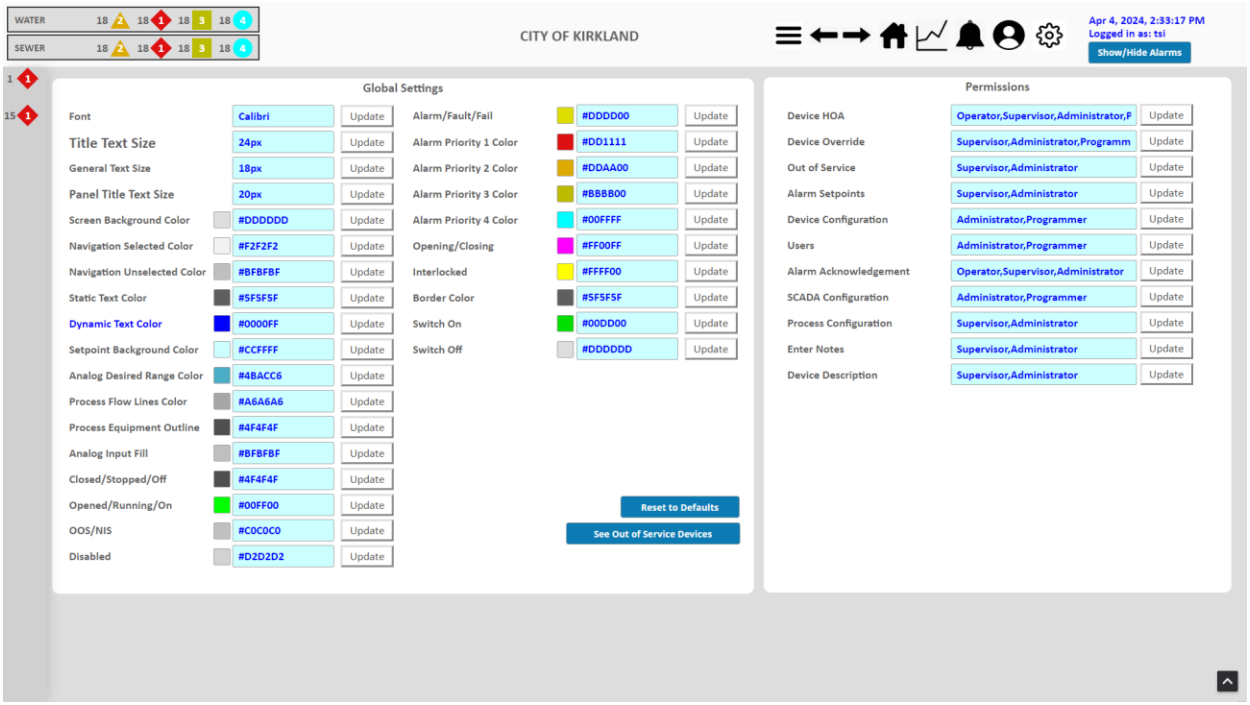


Figure 37: Global Settings to adjust colors, fonts, etc.

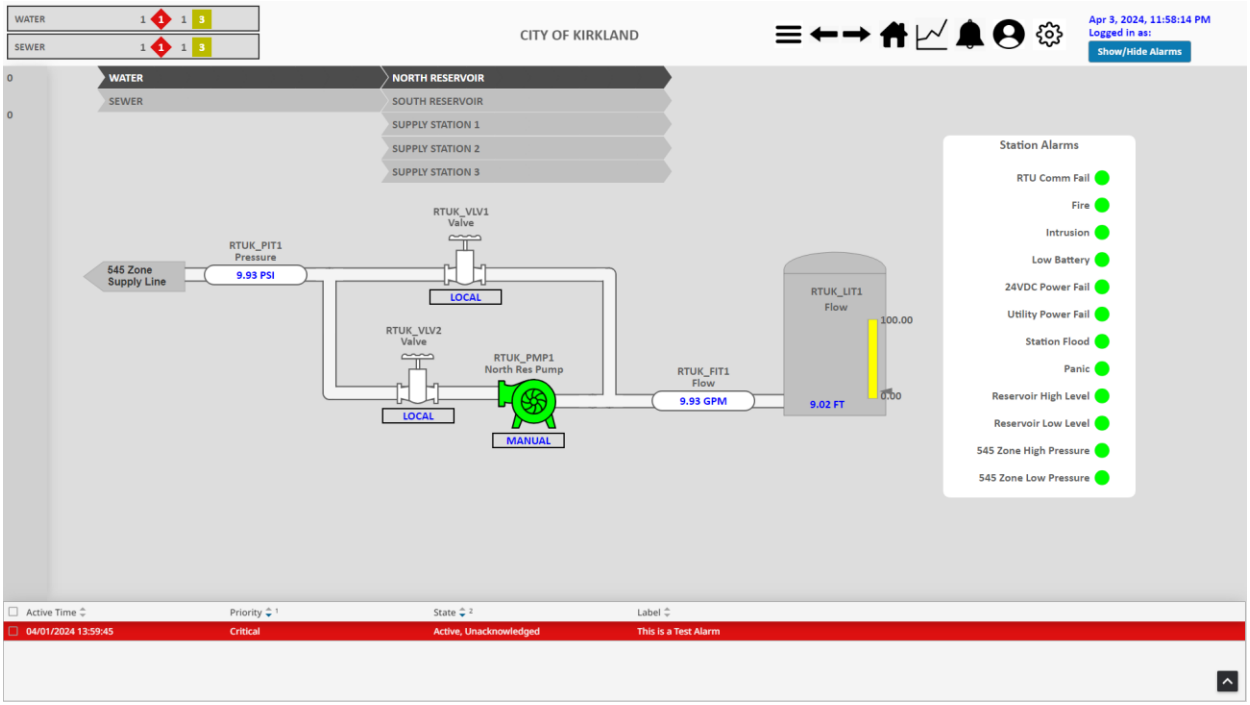


Figure 38: Example Process Display (North Res)

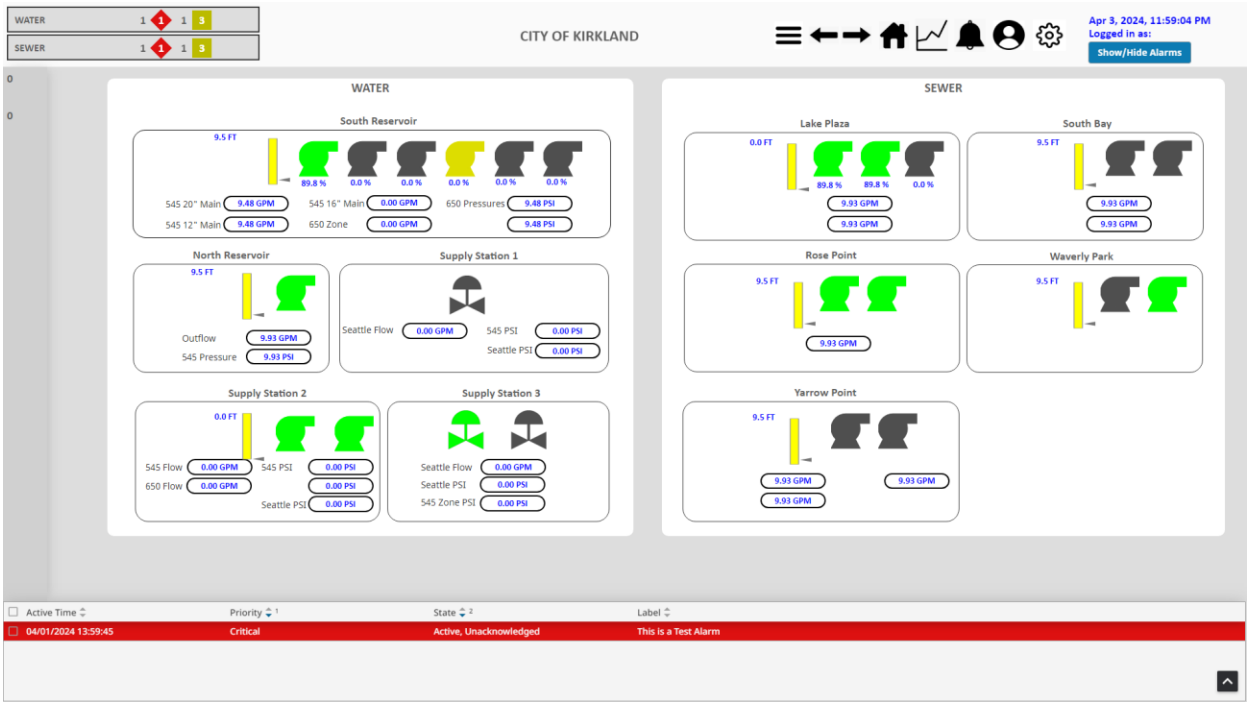


Figure 39: Example Overview

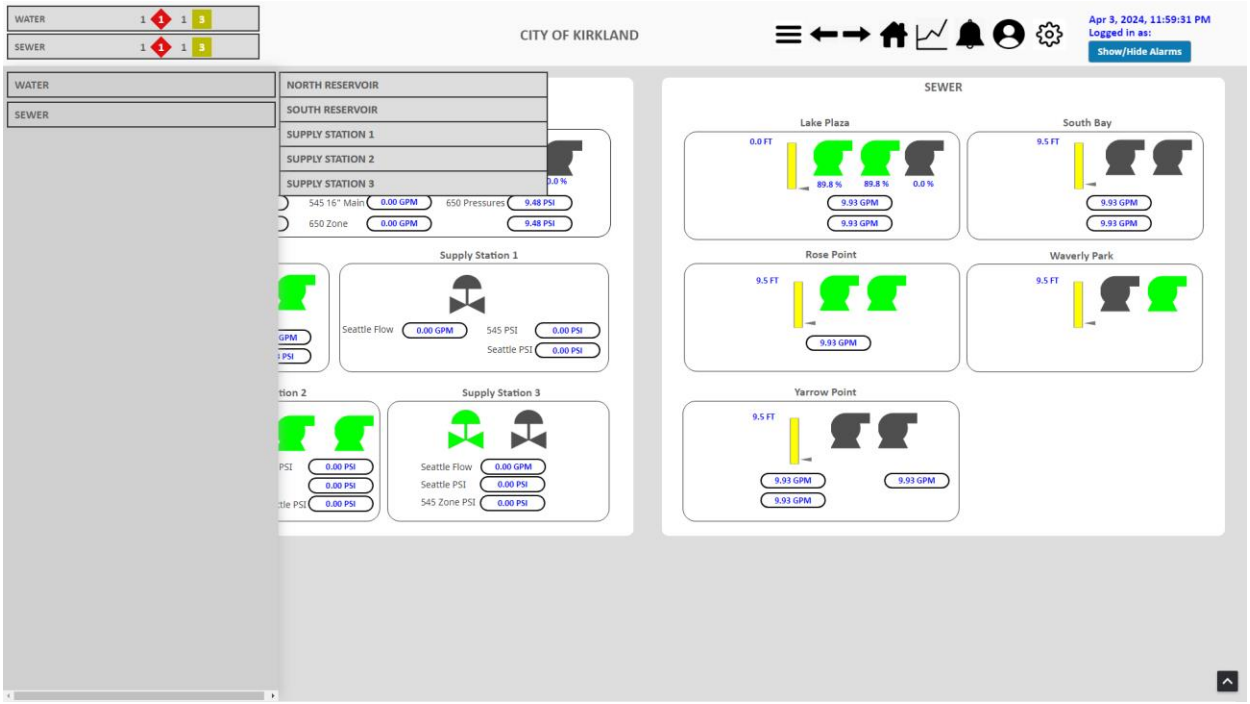


Figure 40: Overview with Navigation menu opened

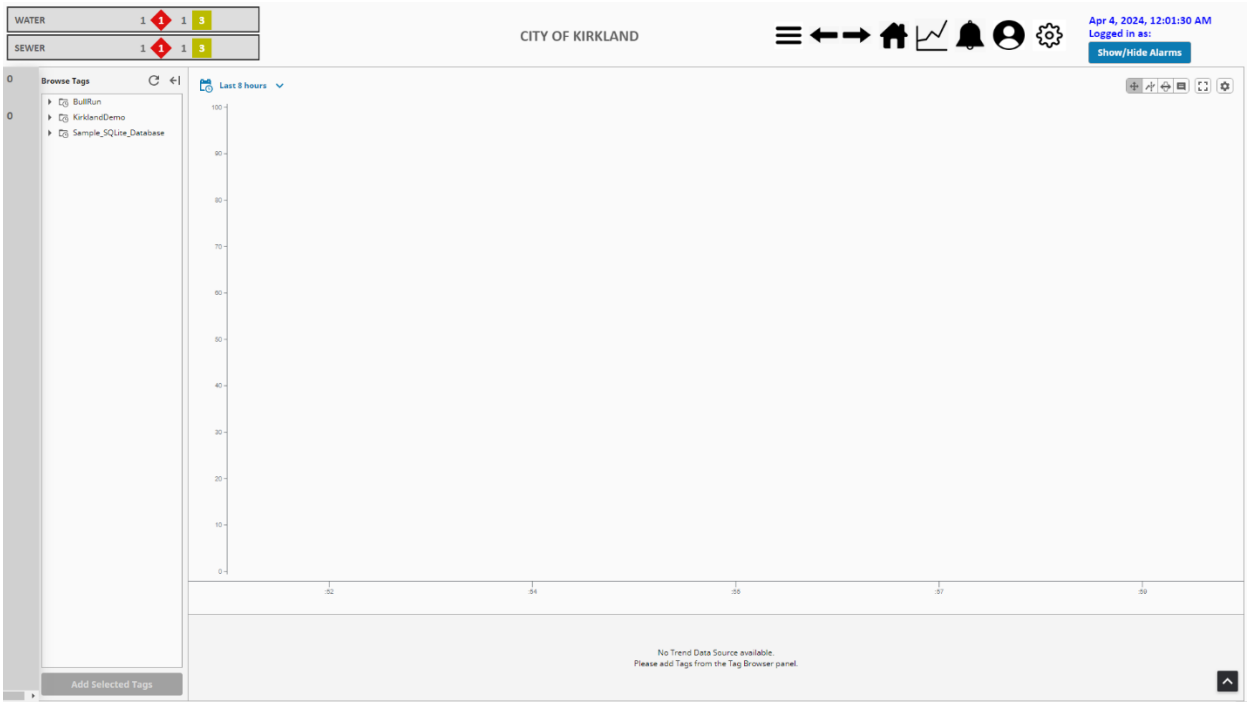


Figure 41: Trend tool

This example uses best-practice concepts to display process data for an area or site. Utilization of trends and specific color designations allow operators to increase situational awareness by seeing the direction the process is going and clearly indicating which equipment has an active alarm.

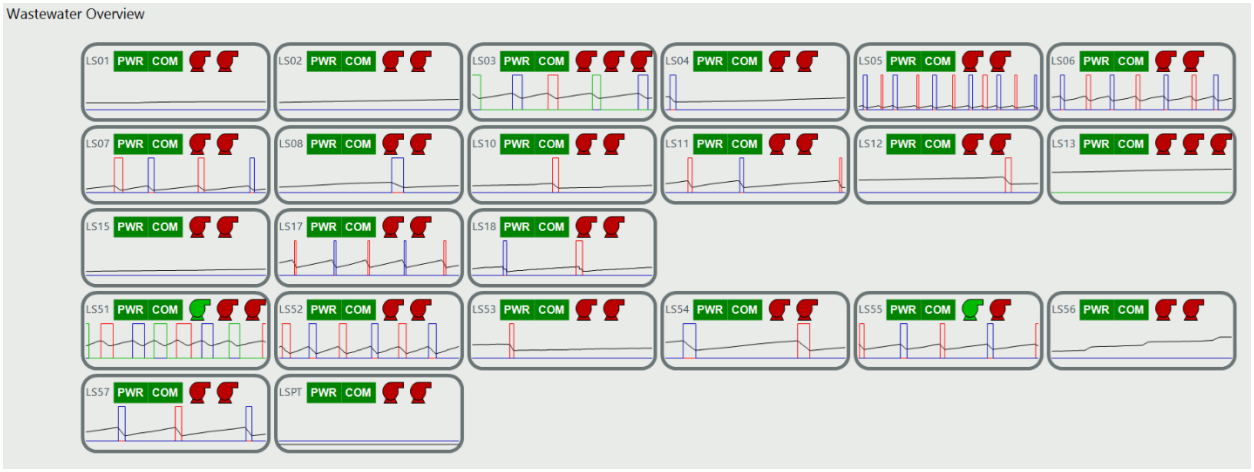


Figure 42: Example Lift Station Overview Screen

This example lift station overview screen shows how trends can be used to monitor similar sites in an easy way. Level, alternation, length of runs, etc. can all be easily interpreted from simplified overview displays like this one.

Data Reporting

Data reporting is a primary feature of SCADA systems and should be implemented for the City of Kirkland. This means the addition of a data historian to capture and store process data directly collected from all sites via SCADA.

Historians use sophisticated algorithms to optimize time-series storage of data to balance performance and accuracy.

Once the data is stored, it can be accessed and analyzed via trending and reporting tools. Both regular (daily, weekly, monthly, etc.) and ad-hoc reports should be configured to maximize the accessibility of data. Training on this software is essential for employees to get the most use of it.

Implementation Phasing Sequence and Budget

The SCADA Improvement Project construction sequence requires the initial SCADA system framework to be installed first, but the site-by-site sequence should be determined by the city based on multiple factors such as age of installed equipment, level of importance, budget, and any related capital improvement work in future years.

There are 3 phases to the project with Phase I required to be installed first to provide the SCADA system and network equipment infrastructure for the remote site upgrades. The remote sites listed under Phase IIA and Phase IIB can be upgraded in any order depending on the city's preference.

Phase 0 is done prior to the start of the project.

See Appendix G for the project budget.

Phase 0: Pre Work

Major Activities:

- Detailed System Architecture Design
- Cellular Study
    - Investigate possible alternative communications (fiber or wireless bridge) for each site
    - Procure one additional cellular modem
    - Configure test m340 PLC
    - Configure temporary SCADA VM to run on a contractor laptop located at the maintenance facility
    - Move test PLC to each site and run for 1 week to determine reliability of signal. SCADA should log all communications failures.

Phase I: Add new SCADA System

Major Activities:

- Procurement of new SCADA hardware and software
- SCADA Standards Implementation
- First site Update / migration. Select from one Phase II site listed below.
    - South Reservoir/650 Pump Station and S-2 are proposed as the first sites.

Phase IIA: Update and commission obsolete controls at remote sites

Major Activities:

- Update of all remaining sites running obsolete control hardware:
    - S1, S3, N Reservoir, Lake Plaza, Waverly, Yarrow, South Bay

Phase IIB: Migrate modern remote sites to new system

Major Activities:

- Cutover remote sites that have been updated from current SCADA / Network to the new system.
    - K1, K2, K4, P1, Rose Point, Trend (only MTU screens)

Phase III: Remove old SCADA system equipment

Major Activities:

- Remove / Decommission existing MTU and existing SCADA Workstation.
- Cancel any remaining frame relay network leases and remove equipment.

Appendices

Appendix D1: Assessment and Alternatives Report

Appendix D2: SCADA Network Architecture

Appendix D3: CSET Site Cybersecurity Plan and Risk Analysis

City of Kirkland

SCADA Strategic Plan Proposal

Assessment and Alternatives Report

TSI Technical Systems Inc.

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Summary

The SCADA Improvement Project aims to enhance the efficiency, reliability, and security of the City's SCADA system. By implementing technology upgrades, robust cybersecurity measures, optimized network infrastructure, advanced data analysis capabilities, and an improved alarm management system, we will achieve a more efficient and resilient SCADA system.

Areas of concern

Frame Relay Network Communication

The existing telemetry system was designed and installed in 2003 using Frame Relay network technology for telemetry communications. This network technology is quickly becoming obsolete. The phone companies that provide the network infrastructure have difficulty with troubleshooting and maintaining frame relay networks due to a lack of expertise with the old technology and a lack of available spare parts. Moving away from this network technology is a high priority to improve the reliability of the telemetry system.

Automation Hardware

The City's existing automation hardware is a mix of modern products and end-of-life equipment. The current city standard for automation hardware is Schneider Electric Modicon M340 PLCs and Maple Systems operator interface terminals (OITs). These products are current technology that are actively supported by the manufacturers. Five facilities have been upgraded to the M340 PLCs in recent years, and nine facilities are upgraded to Maple Systems OITs.

Several facilities are utilizing Modicon Momentum and Allen-Bradley SLC5/04 PLCs. These PLC products are end-of-life and are no longer supported. Replacement components are available only through surplus suppliers as used inventory.

Cybersecurity

There are several concerns regarding the SCADA system for cybersecurity purposes:

1. Lack of Redundancy – The SCADA system is running on a single workstation computer with no redundant systems in place. This could easily cause a system outage if a single component of that workstation failed.
2. Authentication – The system currently uses InTouch security, which is not secure.
3. Network Segmentation – The SCADA / OT system should be isolated from the IT network.
4. System Updates – The operating system for the SCADA computers should be patched regularly. Ideally this is implemented through a Windows Security Update server and all patches are verified as supported by AVEVA before being published.
5. SCADA Software Updates and Support – SCADA software should be patched as needed with minor revisions at a minimum. The city should consider remaining on support with AVEVA, Exele, and others as needed to acquire these updates.

Proposed Best Practices

Networking equipment

The Cisco IE 3200 Series is a family of industrial Ethernet switches designed for rugged environments and critical infrastructure applications. It comes with various security features such as port security, access control lists, NAT and VLAN segmentation. Cisco is a widely used vendor for automation networks.

Peplink MAX BR1 Minis offer an affordable and robust solution for connecting remote sites. City staff are familiar with their interface from other applications and they could eventually be connected to InControl2 for long term maintenance, monitoring, and updates.

The cellular devices should be added to the current T-Mobile private APN network with no outside access. The equipment at the remote sites has no need for public (internet) network connectivity and a private network greatly reduces that cybersecurity threat.

A firewall should be implemented between the SCADA and city / IT network to further isolate the OT system. TSI recommends using Cisco ASA series firewalls due to their vast array of features and reliability. Best practice is to implement an Industrial DMZ configuration between the city network and the SCADA network.

Programmable Logic Controllers

TSI recommends continuing to upgrade the city's outdated PLCs to Schneider M340 series. The M340 is a compact and powerful programmable logic controller from one of the leading manufacturers in automation equipment. It natively communicates using standard protocols such as Modbus-TCP and has an impressive development environment that allows for the creation of reusable standard code, modification of that code without full downloads which interrupt the process, and built-in simulation. There are various modules that expand on the M340's capability such as the NOC communications module, which allows for some additional security and communications to equipment if needed.

Local Operator Interface Terminals

Maple systems OITs for local sites is recommended because they have a lot of capabilities, interface well with Schneider PLCs, are reliable, and generally a cheaper option in comparison to other vendors. Maple Systems OITs use a free development software called Easy Builder Pro, so modification or supporting them has one less cost. As with most OITs, they have alarming, trending, security, and optional remote access features.

Technology Upgrades

Network

Replace the city's existing frame relays with a cellular private network for remote sites. Cellular private networks provide a dedicated, secure, and high-performance connectivity to remote sites. T-Mobile has been selected as the provider for the first site.

MTU – Master Terminal Unit

TSI recommends that the city use cellular for remote station communications and therefore would not need to use an MTU because cellular networks have bandwidth available for SCADA to communicate directly with remote sites. This greatly reduces the effort for communications and SCADA implementation for new sites. The OITs and SCADA can both communicate with the same tags and setpoints instead of having to map values and implement logic to handle setpoint updates from two locations.

SCADA

SCADA Software

The following SCADA software packages were reviewed and considered for the City of Kirkland water and wastewater SCADA system; AVEVA Intouch, AVEVA System Platform, or Inductive Automation Ignition. The succeeding sections will cover the pros and cons of using each of the recommended SCADA software packages.

AVEVA Intouch

Pros of using InTouch:

- Familiar software for the agency
    - Reduced learning curve.
    - Can use already built object or screens for operator familiarity.
- InTouch Unlimited offers scalability at a reasonable price.
- Historian and Reporting software is included in InTouch Unlimited package

Cons of using InTouch:

- Development environment limitations
    - The development environment of InTouch has certain limitations, such as the lack of built-in version control and modern SCADA features.
- Multiple computer / backup configuration is bloated and partially functional from decades of different solutions
- Requires purchasing separate alarm callout software (which the city has, but not the latest version).

AVEVA System Platform

Pros of using System Platform:

- Scalability and flexibility
    - System Platform is designed to handle large-scale and complex SCADA applications, offering scalability and flexibility to accommodate the growing needs of an organization.
    - Object orientated data types offer seamless integration to PLC data types and reduce chances of error.
- Unified development environment
    - System Platform provides a unified development environment, allowing multiple developers to work collaboratively on projects, facilitating version control, and enhancing overall project management.
- Advanced analytics
    - The software includes advanced analytics features and gains actionable insights for process optimization.

Cons of using System Platform:

- Steeper learning curve
    - Due to its robust and comprehensive features, System Platform may have a steeper learning curve compared to InTouch. Users may require more training and experience to fully leverage its capabilities.
- Higher cost

  - System Platform is generally more expensive compared to InTouch, especially for small-scale applications or organizations with limited budgets.
  - Subscription licenses with relatively high annual costs

Inductive Automation Ignition

Pros of using Ignition SCADA software:

- Cross-platform compatibility
  - Ignition is built on Java, making it compatible with various operating systems, including Windows, macOS, and Linux. This cross-platform compatibility allows for flexibility in choosing hardware and operating systems.
- Modular architecture
  - Ignition follows a modular architecture, allowing users to customize and expand their SCADA system based on specific requirements. Modules can be easily added or removed, enabling scalability and adaptability.
- Web-based access
  - Ignition offers web-based access to the SCADA system, allowing users to monitor and control processes remotely from any device with a web browser. This feature enhances accessibility and facilitates real-time decision-making.
- Robust data management
  - Ignition provides powerful data management capabilities, including historical data storage, analysis, and visualization. It offers various data manipulation tools, such as scripting, expressions, and SQL database integration, enabling advanced data handling and analysis.

Cons of using Ignition SCADA software:

- Steeper learning curve:
  - Ignition's extensive features and configuration options may have a steeper learning curve for beginners or users who are new to SCADA systems. Adequate training and resources may be required to fully leverage its capabilities.

Recommendation

TSI recommends using Inductive Automation Ignition Perspective module because of it's full featured package including reporting, alarm notification, browser based client support for future mobile and remote access, and attractive price point. Ignition continues to rapidly expand in the Water and Wastewater SCADA industry and their latest perspective module will be supported for the foreseeable future with no limits on tags, historian tags, or number of clients.

Alarm Callout

The city already uses Topview which integrates with AVEVA InTouch and AVEVA System Platform. It would not be necessary should the city choose to use Ignition as it comes with its own alarm callout module.

Historian

For trending, reporting, and data analytic purposes, TSI recommends installing a historian, ideally on its own computer or host. All three recommended SCADA software packages leverage SQL server, a widely used relational database.

Reporting

SCADA reporting software plays a crucial role in monitoring and managing processes and infrastructure in place. Reports are extremely flexible and can be tailored to the needs of the city. Some examples of reporting uses are as follows:

- Performance monitoring and optimization. Visibility into the performances of several KPI's plays a key role in identifying areas for improvement.
- Alarm management and maintenance visibility. A report can be made that lists the historical frequency of alarms and brings visibility to trouble equipment.
- Regulatory compliance reports can be generated automatically so that operations personnel aren't spending an enormous amount of their time generating them.

If AVEVA is used the options for reporting software include:

- Dream Report by Ocean Data Systems: Dream Report is a dedicated reporting software designed for industrial automation and SCADA systems. It integrates with multiple SCADA platforms and databases, including SQL Server, and provides advanced reporting capabilities with features like data visualization, templates, and scheduling.
    - Note: this is included with InTouch Unlimited
- XLReporter by SyTech: XLReporter is a comprehensive reporting and analysis tool for SCADA systems. It supports connectivity to various SCADA platforms and databases, including SQL Server. XLReporter offers a drag-and-drop report designer, advanced analytics, and options for exporting reports to different formats.

Ignition comes with its own reporting module, description below:

- Report Server by Ignition: Ignition, developed by Inductive Automation, includes a Report Server module that allows users to create, schedule, and distribute reports based on real-time and historical data. It offers a wide range of reporting tools and supports various formats like PDF, CSV, and Excel

SCADA Access

Remote access

Remote access is a necessity to address critical issues that arise as fast as possible, however comes with the downside of the potential of exposing critical networking infrastructure to bad actors. Steps can be taken to ensure that systems in place are safe when allowing remote access such as a VPN with 2-FA authentication and utilizing domain authentication for the SCADA system.

Domain Authentication

Domain controller authentication is critical for modern day SCADA systems and increases security and manages user access. The SCADA system can be tied to an already existing domain controller, or a host can be set up strictly on the SCADA network side. The domain controller will have security groups and users configured. When someone logs in, they authenticate using the domain and are given privileges in the SCADA application based on the security groups they are in.

Site by site upgrade recommendations

The following recommendations are provided for each site based on the previously discussed upgrade objectives:

- Improve reliability
- Provide robust cybersecurity
- Replace obsolete hardware
- Standardize equipment

Installation Options

Three installation options are provided below with the pros and cons of each option. Recommendations are provided for each site on the following pages.

1. Replace automation components only (PLC, OIT, Ethernet switch, and frame relay network components).
    - This option has the lowest hardware upgrade cost, but the existing power supplies, relays, terminals, and other components remain in place and have unknown life remaining.
    - All work would need to be done at the site requiring a longer duration outage for the control panel.
2. Replace the complete internal back panel assembly with all components and wiring.
    - This option has a higher hardware upgrade cost than option 1, but all components and wiring are new.
    - The back panel assembly is factory assembled, UL labeled, and bench tested providing a fully functional pre-tested assembly ready for site installation.
    - Removal of the existing back panel and swap out with the new assembly at the site requires a shorter duration outage than option 1.
3. Replace the complete control panel.
    - This option has the highest hardware upgrade cost, but the enclosure and all components and wiring are new.
    - The back panel assembly is factory assembled and bench tested providing a fully functional pre-tested assembly ready for site installation.
    - Site installation is more involved and requires conduit work to allow removal of the existing control panel. Installation cost is highest for this option.

Supply Station 1

Upgrade Recommendations:

- Replace the Momentum PLC with a Modicon M340 PLC with the latest firmware.
- Replace the EZ Automation OIT with a Maple Systems Smart HMI 9.7” with the latest firmware.
- Replace the NTRON 405TX Ethernet switch with a managed Ethernet switch.
- Replace the frame relay communication equipment with cellular communication equipment.
- Remove the 120VAC UPS. The 120VAC UPS was required only to maintain power to the frame relay network equipment during a power outage. All new equipment will utilize 24VDC power allowing the existing DC-UPS and batteries to provide battery backup to the PLC, OIT, Ethernet switch, and all communication equipment during a power outage.





Installation alternatives:

The existing control panel was installed in 2010 and the enclosure is in good condition. Installation options 1 and 2 provide the best value at this site.

Installation option 2 is recommended:

- Provide a new back panel assembly complete with all new components.
- Replace the door mounted OIT.
- Remove the door mounted frame relay network equipment.
- Remove the 120VAC UPS.
- Utilize the existing DC-UPS batteries.

Supply Station 2

Upgrade Recommendations:

- Replace the Momentum PLC with a Modicon M340 PLC with the latest firmware.
- Replace the EZ Automation OIT with a Maple Systems Smart HMI 9.7" with the latest firmware.
- Replace the NTRON 405TX Ethernet switch with a managed Ethernet switch.
- Replace the frame relay communication equipment with cellular communication equipment.
- Remove the 120VAC UPS. The 120VAC UPS was required only to maintain power to the frame relay network equipment during a power outage. All new equipment will utilize 24VDC power allowing the existing DC-UPS and batteries to provide battery backup to the PLC, OIT, Ethernet switch, and all communication equipment during a power outage.





Installation alternatives:

The existing control panel was installed in 2009 and the enclosure is in good condition. Installation options 1 and 2 provide the best value at this site.

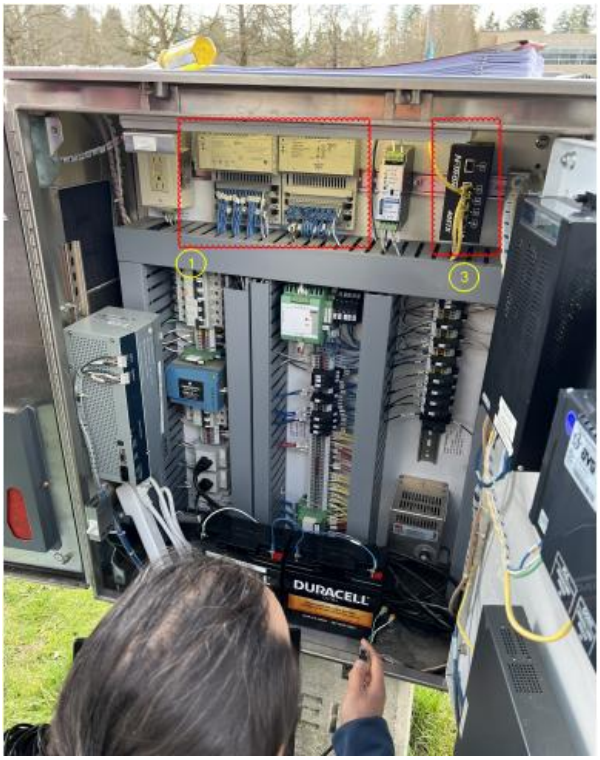
Installation option 2 is recommended:

- Provide a new back panel assembly complete with all new components.
- Replace the door mounted OIT.
- Remove the door mounted frame relay network equipment.
- Remove the 120VAC UPS.
- Utilize the existing DC-UPS batteries.

Supply Station 3

Upgrade Recommendations:

- Replace the Momentum PLC with a Modicon M340 PLC with the latest firmware.
- Replace the EZ Automation OIT with a Maple Systems Smart HMI 9.7” with the latest firmware.
- Replace the NTRON 405TX Ethernet switch with a managed Ethernet switch.
- Replace the frame relay communication equipment with cellular communication equipment.
- Remove the 120VAC UPS. The 120VAC UPS was required only to maintain power to the frame relay network equipment during a power outage. All new equipment will utilize 24VDC power allowing the existing DC-UPS and batteries to provide battery backup to the PLC, OIT, Ethernet switch, and all communication equipment during a power outage.





Installation alternatives:

The existing control panel was installed in 2010 and the enclosure is in good condition. Installation options 1 and 2 provide the best value at this site.

Installation option 2 is recommended:

- Provide a new back panel assembly complete with all new components.
- Replace the door mounted OIT.
- Remove the door mounted frame relay network equipment.
- Remove the 120VAC UPS.
- Utilize the existing DC-UPS batteries.

Pressure Station K1

Upgrade Recommendations:

- Upgrade the existing Schneider Modicon M340 with the latest firmware.
- Upgrade the existing Maple Systems Smart HMI 9.7” with the latest firmware.
- Replace the Delta DVS-005I00 Ethernet Switch with a managed Ethernet Switch.
- Replace the frame relay communication equipment with cellular communication equipment.
- Remove the 120VAC UPS. The 120VAC UPS was required only to maintain power to the frame relay network equipment during a power outage. All new equipment will utilize 24VDC power allowing the existing DC-UPS and batteries to provide battery backup to the PLC, OIT, Ethernet switch, and all communication equipment during a power outage.

Installation alternatives:

The existing control panel was installed in 2017 and the enclosure and internal components are in good condition.

Installation option 1 is recommended:

- Remove the door mounted frame relay network equipment.
- Remove the 120VAC UPS.
- Replace the ethernet switch.
- Install cellular communication equipment.

Pressure Station K2

Upgrade Recommendations:

NOTE: TSI was notified that this site will be decommissioned in an upcoming city project. Upgrading this site may not be required depending on the project timing.

- Upgrade the existing Schneider Modicon M340 with the latest firmware.
- Upgrade the existing Maple Systems Smart HMI 9.7" with the latest firmware.
- Replace the Delta DVS-005I00 Ethernet Switch with a managed Ethernet Switch.
- Replace the frame relay communication equipment with cellular communication equipment.
- Remove the 120VAC UPS. The 120VAC UPS was required only to maintain power to the frame relay network equipment during a power outage. All new equipment will utilize 24VDC power allowing the existing DC-UPS and batteries to provide battery backup to the PLC, OIT, Ethernet switch, and all communication equipment during a power outage.

Installation alternatives:

The existing control panel was installed in 2017 and the enclosure and internal components are in good condition.

Installation option 1 is recommended:

- Remove the door mounted frame relay network equipment.
- Remove the 120VAC UPS.
- Replace the ethernet switch.
- Install cellular communication equipment.

Pressure Station K4

Upgrade Recommendations:

- Upgrade the existing Schneider Modicon M340 with the latest firmware.
- Upgrade the existing Maple Systems Smart HMI 9.7” with the latest firmware.
- Replace the Delta DVS-005I00 Ethernet Switch with a managed Ethernet Switch.
- Replace the frame relay communication equipment with cellular communication equipment.
- Remove the 120VAC UPS. The 120VAC UPS was required only to maintain power to the frame relay network equipment during a power outage. All new equipment will utilize 24VDC power allowing the existing DC-UPS and batteries to provide battery backup to the PLC, OIT, Ethernet switch, and all communication equipment during a power outage.

Installation alternatives:

The existing control panel was installed in 2017 and the enclosure and internal components are in good condition.

Installation option 1 is recommended:

- Remove the door mounted frame relay network equipment.
- Remove the 120VAC UPS.
- Replace the ethernet switch.
- Install cellular communication equipment.

Pressure Station P1

Upgrade Recommendations:

- Upgrade the existing Schneider Modicon M340 with the latest firmware.
- Upgrade the existing Maple Systems Smart HMI 9.7” with the latest firmware.
- Replace the Delta DVS-005I00 Ethernet Switch with a managed Ethernet Switch.
- Replace the frame relay communication equipment with cellular communication equipment.
- Remove the 120VAC UPS. The 120VAC UPS was required only to maintain power to the frame relay network equipment during a power outage. All new equipment will utilize 24VDC power allowing the existing DC-UPS and batteries to provide battery backup to the PLC, OIT, Ethernet switch, and all communication equipment during a power outage.

Installation alternatives:

The existing control panel was installed in 2017 and the enclosure and internal components are in good condition.

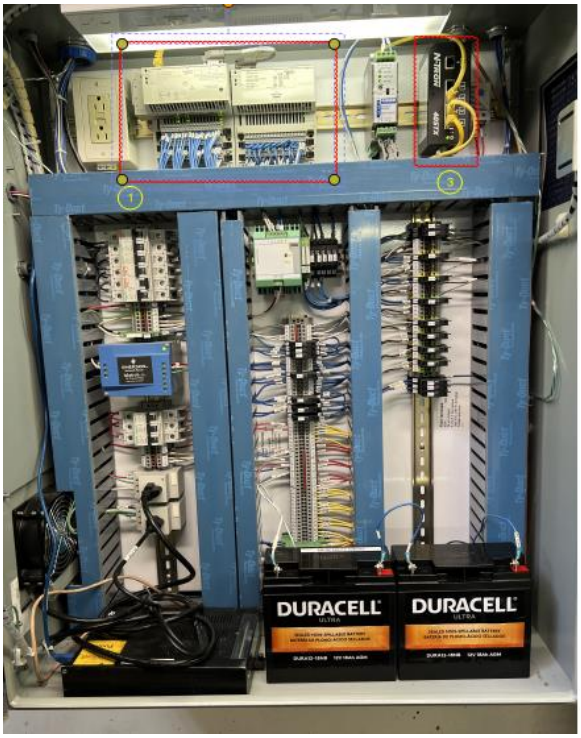
Installation option 1 is recommended:

- Remove the door mounted frame relay network equipment.
- Remove the 120VAC UPS.
- Replace the ethernet switch.
- Install cellular communication equipment.

North Reservoir

Upgrade Recommendations:

- Replace the Momentum PLC with a Modicon M340 PLC with the latest firmware.
- Replace the EZ Automation OIT with a Maple Systems Smart HMI 9.7" with the latest firmware.
- Replace the NTRON 405TX Ethernet switch with a managed Ethernet switch.
- Replace the frame relay communication equipment with cellular communication equipment.
- Remove the 120VAC UPS. The 120VAC UPS was required only to maintain power to the frame relay network equipment during a power outage. All new equipment will utilize 24VDC power allowing the existing DC-UPS and batteries to provide battery backup to the PLC, OIT, Ethernet switch, and all communication equipment during a power outage.





Installation alternatives:

The existing control panel was installed in 2010 and the enclosure is in good condition. Installation options 1 and 2 provide the best value at this site.

Installation option 2 is recommended:

- Provide a new back panel assembly complete with all new components.
- Replace the door mounted OIT.
- Remove the door mounted frame relay network equipment.
- Remove the 120VAC UPS.
- Utilize the existing DC-UPS batteries.

South Reservoir

The South Reservoir site uses a PLC panel for the pump station controls and a separate RTU panel for telemetry communication. The proposed upgrade will combine the functions of both the PLC controls and the telemetry communication in one control panel. The existing RTU panel will become a terminal junction box for extending the existing telemetry I/O points to the upgraded PLC panel.

The existing PLC control panel includes hard-wired relay logic to run pump #1 in the event of a PLC failure. The replacement PLC panel can include this feature, or the hard-wired control scheme can be modified to fit the City's requirements.

Upgrade Recommendations: PLC Control Panel

- Replace the SLC 5/04 PLC with a Modicon M340 PLC with the latest firmware.
- Replace the EZ Automation OIT with a Maple Systems Smart HMI 9.7" with the latest firmware.
- Install a managed ethernet switch and cellular communication equipment.
- Remove the external 120VAC UPS. The 120VAC UPS was required only to maintain power to the frame relay network equipment during a power outage. All new equipment will utilize 24VDC power allowing a new DC-UPS and batteries to provide battery backup to the PLC, OIT, Ethernet switch, and all communication equipment during a power outage.
- Remove Allen Bradley Micrologix PLC.

Upgrade Recommendations: RTU Panel

- Remove all internal components.
- Remove the door mounted OIT and replace it with a blank cover plate.
- Install terminal blocks to extend the existing I/O wiring to the upgraded PLC panel.





Installation alternatives:

The existing PLC and RTU control panels were installed in 2003 and the enclosures are in good condition. Installation options 2 and 3 provide the best value at this site.

Installation option 2 is recommended for the PLC panel:

- Provide a new back panel assembly complete with all new components.
- Replace the door mounted OIT.
- Remove the 120VAC UPS.
- Note: If the door mounted Pump Starts counters are to be removed, a new enclosure door should be installed.

Installation option 2 is recommended for the RTU panel.

- Provide a new back panel assembly complete with all new terminal blocks.
- Remove the door mounted display and cover the opening with a blank plate.
- Remove the wall mounted frame relay network equipment.

Rose Point Control Panel

The existing control panel includes hard-wired float backup controls to run pumps in the event of a PLC failure. Maintaining float backup control is an important requirement in any new upgrades or modifications.

Upgrade Recommendations:

- Upgrade the existing Schneider Modicon M340 with the latest firmware.
- Upgrade the existing Maple Systems Smart HMI 9.7" with the latest firmware.
- Replace the Phoenix Contact Ethernet Switch with a managed Ethernet Switch.
- Replace the frame relay communication equipment with cellular communication equipment.
- Remove the 120VAC UPS. The 120VAC UPS was required only to maintain power to the frame relay network equipment during a power outage. All new equipment will utilize 24VDC power allowing the existing DC-UPS and batteries to provide battery backup to the PLC, OIT, Ethernet switch, and all communication equipment during a power outage.

Installation alternatives:

The existing control panel was installed in 2020 and the enclosure and internal components are in good condition.

Installation option 1 is recommended:

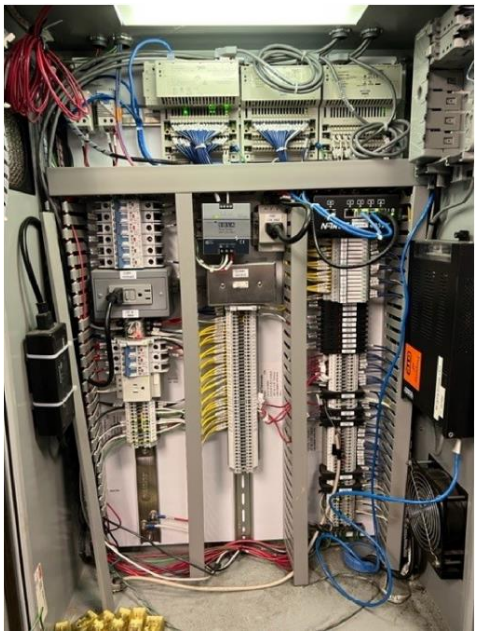
- Remove the door mounted frame relay network equipment.
- Remove the 120VAC UPS.
- Replace the ethernet switch.
- Install cellular communication equipment.

Waverly Beach Park Lift Station

The existing control panel includes hard-wired float backup controls to run pumps in the event of a PLC failure. Maintaining float backup control is an important requirement in any new upgrades or modifications.

Upgrade Recommendations:

- Upgrade the existing Maple Systems Smart HMI 9.7” with the latest firmware.
- Replace the Momentum PLC with a Modicon M340 PLC with the latest firmware.
- Replace the NTRON 405TX Ethernet switch with a managed Ethernet switch.
- Replace the frame relay communication equipment with cellular communication equipment.
- Remove the 120VAC UPS. The 120VAC UPS was required only to maintain power to the frame relay network equipment during a power outage. All new equipment will utilize 24VDC power allowing a new DC-UPS and batteries to provide battery backup to the PLC, OIT, Ethernet switch, and all communication equipment during a power outage.



Installation alternatives:

The existing control panel was installed in 2007 and the enclosure is in good condition. Installation options 1 and 2 provide the best value at this site.

Installation option 2 is recommended:

- Provide a new back panel assembly complete with all new components.
- Remove the door mounted frame relay network equipment.
- Remove the 120VAC UPS.

Yarrow Bay Lift Station

The existing control panel includes hard-wired float backup controls to run pumps in the event of a PLC failure. Maintaining float backup control is an important requirement in any new upgrades or modifications.

Upgrade Recommendations:

- Upgrade the existing Maple Systems Smart HMI 9.7" with the latest firmware.
- Replace the Momentum PLC with a Modicon M340 PLC with the latest firmware.
- Replace the NTRON 405TX Ethernet switch with a managed Ethernet switch.
- Replace the frame relay communication equipment with cellular communication equipment.
- Remove the 120VAC UPS. The 120VAC UPS was required only to maintain power to the frame relay network equipment during a power outage. All new equipment will utilize 24VDC power allowing a new DC-UPS and batteries to provide battery backup to the PLC, OIT, Ethernet switch, and all communication equipment during a power outage.





Installation alternatives:

The existing control panel was installed in 2009 and the enclosure is in good condition. Installation options 1 and 2 provide the best value at this site.

Installation option 2 is recommended:

- Provide a new back panel assembly complete with all new components.
- Remove the door mounted frame relay network equipment.
- Remove the 900MHz radio equipment.
- Remove the 120VAC UPS.

Add new ISR panel to scope

South Bay Lift Station

The existing control panel includes hard-wired float backup controls to run pumps in the event of a PLC failure. Maintaining float backup control is an important requirement in any new upgrades or modifications.

Upgrade Recommendations:

- Upgrade the existing Maple Systems Smart HMI 9.7” with the latest firmware.
- Replace the Momentum PLC with a Modicon M340 PLC with the latest firmware.
- Replace the NTRON 405TX Ethernet switch with a managed Ethernet switch.
- Replace the 900MHz communication equipment with cellular communication equipment.
- Remove the 120VAC UPS. The 120VAC UPS was required only to maintain power to the frame relay network equipment during a power outage. All new equipment will utilize 24VDC power allowing a new DC-UPS and batteries to provide battery backup to the PLC, OIT, Ethernet switch, and all communication equipment during a power outage.





Installation alternatives:

The existing control panel was installed in 2010 and the enclosure is in good condition. Installation options 1 and 2 provide the best value at this site.

Installation option 2 is recommended:

- Provide a new back panel assembly complete with all new components.
- Remove the 900MHz radio equipment.
- Remove the 120VAC UPS.

Lake Plaza Lift Station

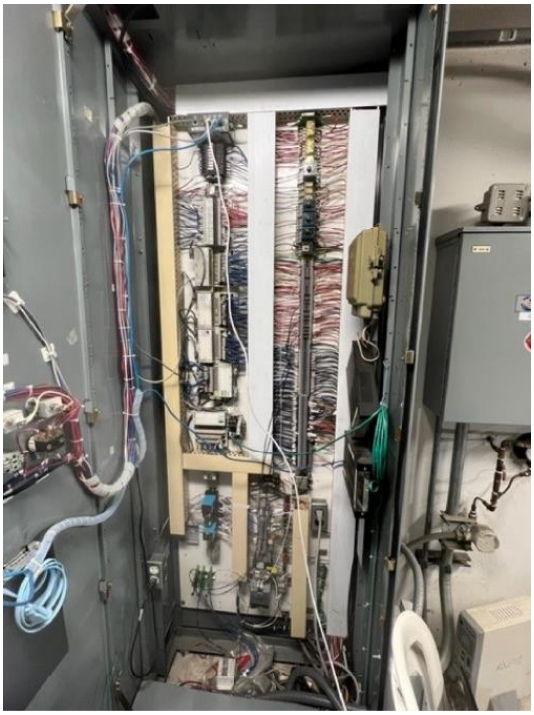
The existing control panel includes hard-wired float backup controls to run pumps in the event of a PLC failure. Maintaining float backup control is an important requirement in any new upgrades or modifications.

The existing PLC control panel also includes a large amount of hard-wired relay logic for alternate control scenarios. A thorough review of the hard-wired relay logic will need to be performed to determine the features that should be included in the control panel upgrade to fit the City's requirements.

The Lake Plaza lift station uses VFDs to drive the wetwell pumps. Several of the VFDs are old and should be considered for replacement in the near future.

Upgrade Recommendations:

- Upgrade the existing Maple Systems Smart HMI 9.7" with the latest firmware.
- Replace the Momentum PLC with a Modicon M340 PLC with the latest firmware.
- Replace the NTRON 405TX Ethernet switch with a managed Ethernet switch.
- Replace the frame relay communication equipment with cellular communication equipment.
- Remove the 120VAC UPS. The 120VAC UPS was required only to maintain power to the frame relay network equipment during a power outage. All new equipment will utilize 24VDC power allowing a new DC-UPS and batteries to provide battery backup to the PLC, OIT, Ethernet switch, and all communication equipment during a power outage.





Installation alternatives:

The existing control panel was upgraded in 2006 using the original enclosure. The control panel door has many holes that have been plugged. As an option, a new door or door skin can be provided. Installation options 2 and 3 provide the best value at this site.

Installation option 3 for replacement of the complete control enclosure would require an extended shutdown requiring operation of the pumps in manual, so installation option 2 is recommended:

- Provide a new back panel assembly complete with all new components.
- Remove the frame relay network equipment.
- Remove the external 120VAC UPS.
- Optional: Replace the existing enclosure door.

Trend Lift Station

The existing Trend lift station currently uses an auto-dialer for alarm notification. The site does not currently have telemetry. There is a future project in design to upgrade the lift station and install a new pump control panel above ground.

Upgrade recommendations for the new lift station project should be coordinated with the design engineer to include cellular telemetry within the pump control panel or in a separate RTU panel.

Stormwater Decant System

The existing Stormwater Decant system uses Allen-Bradley MicroLogix PLCs connected through wireless access points and the City's local area network to send information to a Wonderware historian computer. There is currently no SCADA associated with this system.

The existing control panels were installed in 2015 and are in good condition.

Upgrade Recommendations:

- Add the stormwater system to SCADA.
- Upgrade the existing wireless access points to provide increased network security.
- Determine the requirements for the truck scale and if reporting is needed within SCADA. Note: The existing truck scale was provided with a complicated data interface that is not compatible with SCADA at this time.

Summary of Site Hardware Upgrade Recommendations

The below table provides a summary of the upgrade recommendations provided in this report.

Summary of Site Hardware Assessment & Recommendations							
Site	**Division**	**Existing PLC**	**Existing OIT**	**Existing Comms**	**Recommended Upgrades**	**Recommended Installation Option**	**Notes**
MTU	Water & Sewer	Quantum	none	Frame Relay to RTUs	Option-1: Delete MTU. RTUs communicate direct to SCADA Option-2: Replace with M340	Option #1: Replace components	One pressure zone transmitter is monitored at the MTU PLC. PLC will be required if pressure signal is to remain.
S1	Water	Momentum	AVG	Frame Relay to MTU	Replace PLC, OIT, Communications Equipment	Option #2: Replace complete backpanel	
S2	Water	Momentum	AVG	Frame Relay to MTU	Replace PLC, OIT, Communications Equipment	Option #2: Replace complete backpanel	
S3	Water	Momentum	AVG	Frame Relay to MTU	Replace PLC, OIT, Communications Equipment	Option #2: Replace complete backpanel	
N. Reservoir	Water	Momentum	AVG	Frame Relay to MTU	Replace PLC, OIT, Communications Equipment	Option #2: Replace complete backpanel	
S. Reservoir	Water	Momentum (telemetry) SLC-5/04 (pump station)	AVG	Frame Relay to MTU ModbusTCP to 5/04	Replace pump station PLC, OIT, Communications Equipment Delete telemetry PLC and combine with pump station PLC	Option #2: Replace complete backpanel	
K1	Water	M340	Maple Systems	Frame Relay to MTU	Replace Communications Equipment only, Update Firmware	Option #1: Replace components	
K2	Water	M340	Maple Systems	Temporary Cellular	Add to new SCADA system when available.	Station will be updated to private APN and added to new SCADA when new SCADA is available.	
K4	Water	M340	Maple Systems	Frame Relay to MTU	Replace Communications Equipment only, Update Firmware	Option #1: Replace components	
P1	Water	M340	Maple Systems	Frame Relay to MTU	Replace Communications Equipment only, Update Firmware	Option #1: Replace components	
Lake Plaza	Sewer	Momentum	Maple Systems	Frame Relay to MTU	Replace PLC, Communications Equipment	Option #2: Replace complete backpanel	
Waverly	Sewer	Momentum	Maple Systems	Frame Relay to MTU	Replace PLC, Communications Equipment	Option #2: Replace complete backpanel	
Yarrow	Sewer	Momentum	Maple Systems	Frame Relay to MTU 900MHz to South Bay	Replace PLC, Communications Equipment	Option #2: Replace complete backpanel	
South Bay	Sewer	Momentum	Maple Systems	900MHz to Yarrow	Replace PLC, Communications Equipment	Option #2: Replace complete backpanel	
Rose Point	Sewer	M340	Maple Systems	Frame Relay to MTU	Replace Communications Equipment only, Update Firmware	Option #1: Replace components	
Trend	Sewer	Auto-Dialer	none	none	Replace panel as part of CIP project: PLC, OIT, Comms	Option #3: New control panel	This site is planned for a major upgrade
Decant	Stormwater	MicrolLogix-1100	none	Wireless AP & City LAN	Replace Communications Equipment only, Update Firmware	Option #1: Replace components	

All Sites	Remove 120VAC UPS systems.		All new systems will operate on 24VDC UPS battery backup systems

Located at City Datacenter in City Hall

Plant Business Zone

City Datacenter

City Network

Server VM: Ignition Gateway FrontEnd1

Server VM: Ignition Historian Database

City Hypervisors

Central Process Control Zone

Maintenance Center

SCADA LAN

Firewall

Private APN Cellular Modem

SMS Cellular Modem

SCADA Workstation:
- Ignition Gateway
- OPCUA Server

SCADA/Eng Workstation:
- PLC Software
- Productivity Tools
- Ignition Gateway

RTU Process Control Zone

Future Sites

Private Cellular Network (T-Mobile Private APN)

Smart instrument(s) w/ modbus TCP or similar

Cellular Modem

M340 PLC

Cellular Modem

Traditional Analog and Discrete signals to PLC

Decant / Stormwater

Local Historian

Cellular Modem

Local Switch / Router

Cellular Modem

All other Remote Sites (and future w/ PLCs)

Local Switch / Router

Maple Systems OIT

M340 PLC

Trend (Until Upgrade to standard)

Autodialer

Software Installed

- Ignition
  - Perspective Module
  - Reporting Module
  - Tag Historian Module
  - Alarm Notification Module
    - Voice Notification (Using City SIP/VOIP)
    - SMS Notification (Recommended)
  - Enterprise Administrator Module
- Schneider
  - OPCUA Server Expert on Back End Gateways
  - EcoStruxure Control Expert on Eng. Workstation
- Operating Systems
  - Workstation: Windows 11
  - Server: Server 2025
- Productivity Tools
  - Office Home and Business on Workstation
  - Microsoft SQL Server Express
- Additional Clients:
  - Additional Clients can connect to Ignition Gateway Server VM via HTML5 browser (default port 8088).

REV	DESCRIPTION/INIT	DATE
3	Final	1/23/25

LISTING
- ☐ UL508 S/N
- ☐ UL698A S/N
- ☐ OTHER

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CUSTOMER: City of Kirkland

DESIGN / CHKD: KB

DRAWN: KB

Kirkland, WA

City of Kirkland SCADA Strategic Plan Project
SCADA Block Diagram

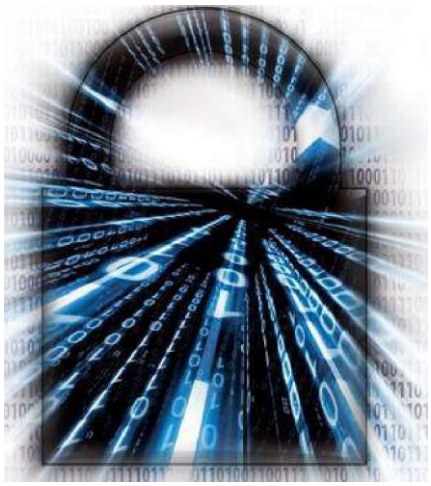
DATE CREATED: 1/23/25

REV.: 3

JOB NO.: 8160

DWG. NO.:

SITE CYBERSECURITY PLAN



CYBER SECURITY EVALUATION TOOL

CSET

City of Kirkland
07-Apr-2023
TSI

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Signatures

My signature indicates that I have reviewed and approve this Site Cyber Security Plan and the corresponding appendices. To the best of my knowledge, they accurately describe the security profile of the Untitled Assessment 21 security policies and procedures, including the operational, management, and technical controls under which they will be operated.

_____ _____

IT Manager, Network and OperationsDate

Introduction

The purpose of the security plan is to provide an overview of the security requirements of the system and describe the controls in place or planned, for meeting those requirements. The site cybersecurity plan also delineates responsibilities and expected behavior of all individuals who access the system. The security plan should be viewed as documentation of the structured process of planning adequate, cost effective security protection for a system. It should reflect input from various managers with responsibilities concerning the system, including information owners, the system operator, and the system security manager. Additional information may be included in the basic plan and the structure and format organized according to agency needs, so long as the major sections described in this document are adequately covered and readily identifiable.

The System Owner is responsible for ensuring that the security plan is prepared and for implementing the plan and monitoring its effectiveness. Security plans should reflect input from various individuals with responsibilities concerning the system, including functional "end users," Information Owners, the System Administrator, and the System Security Manager

1. System Identification

This section will include a description of the current network and its assets (hardware and software). System assets in Appendix XX.. It will include networking equipment in the SCADA network at the Maintenance Center and the local networks at each remote site. The SCADA network includes the SCADA workstation, MTU PLC, network switches, relay network equipment and miscellaneous protocol converters. The equipment in the remote sites generally include network switches, routers, RTU PLCs, and OITs.

This section will also cover the updates that will increase efficiency and productivity, and also necessary security to be included in these updates.

1.1. System Environment

The network architecture consists of the Master Telemetry Unit and SCADA workstation and data is sent and received to a number of Remote Telemetry Units mainly through a relay network. Due to the aging of the system, there are several factors that may increase security risk. These include (and may not be limited to):

- PLCs, OITs, ethernet switches are End-of-Life and are no longer supported by the manufacturer
- Relay network is obsolete and typically not used
- Software/firmware may not be updated
- May not use recommended authentication protocols (e.g. Active Directory)

2. Roles and Responsibilities

2.1. Executive Management

Often this role is comprised of the Board of Directors and CEO. Executive management is ultimately responsible for the security of the organization but will most likely delegate tasks and actual implementation.

2.2. Information Security Team (IST)

IST is a team trained or certified staff within an organization responsible for establishing and maintaining the enterprise vision, strategy and program to ensure information assets are adequately protected. The I IST contributes to, developing, implementing and maintaining processes across the organization to reduce information and information technology (IT) risks, respond to incidents, establish appropriate standards and controls, and direct the establishment and implementation of policies and procedures. The IST is also usually responsible for information related compliance.

Typically, the IST's influence reaches the whole organization. Responsibilities include:

- Information security and information assurance
- Information regulatory compliance (e.g., US PCI DSS, FISMA, GLBA, HIPAA; UK Data Protection Act 1998; Canada PIPEDA)
- Information risk management
- Supply chain risk management
- Cybersecurity
- Information technology controls for financial and other systems
- Information privacy
- Computer Emergency Response Team/ Computer Security Incident Response Team
- Identity and access management
- Security Architecture (e.g. Sherwood Applied Business Security Architecture)
- IT investigations, digital forensics, eDiscovery
- Disaster recovery and business continuity management

2.3. IT Governance Committee

The IT Governance committee is composed of a representative of all the key stakeholders in IT security. These stake holders are often representatives of the IST, IT management, physical security personnel, help desk, and key application and digitial asset owners. This committee meets regularly often quarterly to review policies and procedures, security controls implementation progress, and determine future direction for security within a company.

The IT Governance committee is responsible for making decisions on tactical and strategic security issues within the enterprise as a whole and should not be tied to one or more business units. The group should be made up of people from all over the organization so they can view risks and the effects of security decisions on individual departments and the organization as a whole. The IT Director should head this committee, and the CFO, anddepartment directors/managers, should all be on ii. This committee should meet at least quarterly and have a well defined agenda. Some of the group's responsibilities are listed next:

- Define the acceptable risk level for the organization.
- Develop security objectives and strategies.
- Determine priorities of security initiatives based on business needs.
- Review risk assessment and auditing reports.
- Monitor the business impact of security risks.
- Review major security breaches and incidents.
- Approve any major change to the security policy and program.

They should also have a clearly defined vision statement in place that is set up to work with and support the organizational intent of the business. The statement shouldbe structured in a manner that provides support for the goals of confidentiality, integrity, and availability as they pertain to the business objectives of the organization. This in turn should be followed, or supported, by a mission statement that provides support and definition to the processes that will apply to the organization and allow it to reach its business goals.

2.4. System Owners

The system owner is responsible for one or more systems, each of which may hold and process data owned by different data owners. A system owner is responsible for integrating security considerations into application and system purchasing decisions and development projects. The system owner is responsible for ensuring that adequate security is being provided by the necessary controls, password management, remote access controls, operating system configurations, and so on. This role must ensure the systems are properly assessed for vulnerabilities and must report any to the incident response team and data owner.

2.5. Data Owners

The data owner (information owner) is usually a member of management who is incharge of a specific business unit, and who is ultimately responsible for the protection and use of a specific subset of information. The data owner has due care responsibilities and thus will be held responsible for any negligent act that results in the corruption or disclosure of the data. The data owner decides upon the classification of the data he is responsible for and alters that classification if the business need arises. This person is also responsible for ensuring that the necessary security controls are in place, defining security requirements per classification and backup requirements, approving any disclosure activities, ensuring that proper access rights are being used, and defining user access criteria. The data owner approves access requests or may choose to delegate this function to business unit managers. And it is the data owner who will deal with security violations pertaining to the data he is responsible for protecting. The data owner, who obviously has enough on his plate, delegates responsibility of the day-to-day maintenance of the data protection mechanisms to the data custodian.

2.6. Security Administrators

Anyone who has a root account on x systems or an administrator account on systems actually has security administrator rights. (Unfortunately, too many people have these accounts in most environments.) This means they can give and take away permissions and set security configurations. However, just because a person has a root or administrator account does not mean they are fulfilling the security administrator role. A security administrator's tasks are many, and include creating new system user accounts, implementing new security software, testing security patches and components, and issuing new passwords. The security administrator should not actually approve new system user accounts. This is the responsibility of the supervisor. The security administrator must make sure access rights given to users support the policies and data owner directives.

2.7. Supervisors/Managers

The supervisor role, also called user manager, is ultimately responsible for all user activity and any assets created and owned by these users. The supervisor responsibilities would include ensuring that employees understand their responsibilities with respect to security, distributing initial passwords, making sure the employees' account information is up-to-date, and informing the security administrator when an employee is fired, suspended, or transferred. Any change that pertains to an employee's role within the company usually affects what access rights they should and should not have, so the user manager must inform the security administrator of these changes immediately.

2.8. Users

The user is any individual who routinely uses the data for work related tasks. The user must have the necessary level of access to the data to perform the duties within their position and is responsible for following operational security procedures to ensure the data's confidentiality, integrity, and availability to others.

3. Risk Analysis

	Threat Scenario							
Zone	Threat Source	Threat Action	Vulnerabilities	Consequences Description	Impact	Likelihood	Risk Level	Mitigation Measures
RTU Process Control Zone	Authorized Personnel	Inserts USB into OIT/PLC with general malware	- USB Ports are not blocked or disabled	- Denial of control of RTU - Runaway reaction leading to explosion - All networking equipment need to be replaced - 24-72 hours downtime - Supply chain impact	High	low	Medium	- Disable unused USB ports on OIT/PLC - Ensure Local Control Panel is in a physically secured location and Local Control Panel door is locked
		Inserts USB into OIT/PLC with targeted malware	- USB Ports are not blocked or disabled	- Denial of control of RTU - Runaway reaction leading to explosion - All networking equipment need to be replaced - 24-72 hours downtime - Supply chain impact	High	low	Medium	- Disable unused USB ports on OIT/PLC - Ensure Local Control Panel is in a physically secured location and Local Control Panel door is locked
		Plugs laptop infected with general malware into the remote site LAN	- Unused ports on Control LAN switch are enabled - No policy governing use of laptops	- Denial of control of RTU - Runaway reaction leading to explosion - All networking equipment need to be replaced - 24-72 hours downtime - Supply chain impact	High	low	Medium	- Disable unused ports on Control LAN switch - Ensure Local Control Panel is in a physically secured location and Local Control Panel door is locked

	Threat Scenario							
Zone	Threat Source	Threat Action	Vulnerabilities	Consequences Description	Impact	Likelihood	Risk Level	Mitigation Measures
		Plugs laptop infected with targeted malware into the remote site LAN	- Unused ports on Control LAN switch are enabled - No policy governing use of laptops	- Denial of control of RTU - Runaway reaction leading to explosion - All networking equipment need to be replaced - 24-72 hours downtime - Supply chain impact	High	low	Medium	- Disable unused ports on Control LAN switch - Ensure Local Control Panel is in a physically secured location and Local Control Panel door is locked
	Unauthorized Personnel	Unauthorized access to network resources	- USB Ports are not blocked or disabled	- Loss of control with potential compromise of the safety of the process - Runaway reaction leading to explosion	High	Low	Medium	- Disable unused USB ports and ethernet ports on Control LAN switch - Ensure Local Control Panel is in a physically secured location and Local Control Panel door is locked
Central Process Control Zone	Authorized Personnel	Inserts USB into Operator Workstation with general malware	- OS Computers are in the Control Room - USB Ports are not blocked or disabled - Autorun not disabled	- Denial of service on operator station that spreads to all OS and PCN - All OS and Servers need to be rebuilt - 24-72 hours downtime - Supply chain impact	High	Low	Medium	'- Disable unused USB ports/antivirus scan upon insertion - Relocate OS computers to the server room and KVM into control room - Segment the Tag & Batch servers and EWS from the PCN and Control LAN (e.g. eliminate all dual homed computers) - Maintain Antivirus - Stricter enforcement of policies
		Inserts USB into Operator Workstation with targeted malware	- OS Computers are in the Control Room - USB Ports are not blocked or disabled - Autorun not disabled - No antivirus	- Loss of control with potential compromise of the safety of the process - Runaway reaction leading to explosion	High	Low	Medium	- Disable unused USB ports/antivirus scan upon insertion - Relocate OS computers to the server room and KVM into control room - Segment the Tag & Batch servers and EWS from the PCN and Control LAN (e.g. eliminate all dual homed computers)

	Threat Scenario							
Zone	Threat Source	Threat Action	Vulnerabilities	Consequences Description	Impact	Likelihood	Risk Level	Mitigation Measures
								- Maintain Antivirus - Stricter enforcement of policies - Upgrade OS and application software to latest supported versions
		Plugs laptop infected with general malware into the Control LAN	- Unused ports on Control LAN switch are enabled - No policy governing use of laptops - No antivirus on Tag & Batch servers - Lack of segmentation allows for propagation	- Denial of service on operator station that spreads to all OS and PCN - All OS and Servers need to be rebuilt - 24-72 hours downtime - Rework batch - Supply chain impact	High	Low	Medium	- Disable unused USB ports/antivirus scan upon insertion - Relocate OS computers to the server room and KVM into control room - Segment the Tag & Batch servers and EWS from the PCN and Control LAN (e.g. eliminate all dual homed computers) - Maintain Antivirus - Stricter enforcement of policies
		Plugs laptop infected with targeted malware into the Control LAN	- Unused ports on Control LAN switch are enabled - No policy governing use of laptops - No antivirus on Tag & Batch servers - Lack of segmentation allows for propagation	- Loss of control with potential compromise of the safety of the process - Runaway reaction leading to explosion	High	Low	Medium	- Develop policiesto prohibit use of laptops on Control LAN - Block unused ports on Control LAN switch - Segment the Tag & Batch servers and EWS from the PCN and Control LAN (e.g. eliminate all dual homed computers) - Install and maintain Antivirus

	Threat Scenario							
Zone	Threat Source	Threat Action	Vulnerabilities	Consequences Description	Impact	Likelihood	Risk Level	Mitigation Measures
	Unauthorized Personnel	Unauthorized person uses the RDP credentials to gain access to SCADA	- Mishandling of VPN credentials	- Loss of control with potential compromise of the safety of the process - Runaway reaction leading to explosion	High	Low	Medium	- Develop policiesto prohibit use of laptops on Control LAN - Block unused ports on Control LAN switch - Segment the Tag & Batch servers and EWS from the PCN and Control LAN (e.g. eliminate all dual homed computers) - Install and maintain Antivirus
Plant Business Zone	Authorized Personnel	Network congestion	- Large amounts of traffic as network expands	- Slow network affects performance of network security policies	Medium	Medium	Medium	- Regularly monitor network traffic - Upgrade network bandwidth if necessary - Implement Quality of Service (QoS) policies
		Downtime due to software updates	- Computers/workstations restarting to install updates	- Unabled to use or monitor equipment	Medium	Medium	Medium	- Schedule software updates during non-peak hours - Test updates in a controlled environment before deploying to production - Have a rollback plan in case of issues
		Employee error or negligence	- Suboptimal security practices	- Increased threat of malware in network or unauthorized access	Medium	High	High	- Provide regular training on network security best practices - Implement user access controls and permissions - Monitor and audit employee network activity
	Unauthorized Personnel	Unauthorized access to network resources	- Suboptimal security practices	- Potential loss of control with potential compromise of the safety of the process - Runaway reaction leading to explosion	High	Medium	High	- Implement strong authentication methods - Regularly update access control policies - Conduct regular security audits

	Threat Scenario							
Zone	Threat Source	Threat Action	Vulnerabilities	Consequences Description	Impact	Likelihood	Risk Level	Mitigation Measures
		Data breaches	- Security policies not enforced or updated	- Potential loss of control with potential compromise of the safety of the process - Runaway reaction leading to explosion	High	Low	Medium	- Implement network firewall and intrusion detection system - Encrypt sensitive network traffic - Regularly update software and firmware - Conduct regular security audits - Educate employees on data security best practices
	Physical Occurrences	Hardware failure			High	Low	Medium	- Implement redundancy for critical network components - Regularly backup network configuration and data - Monitor for early signs of hardware failure
		Power outage			High	Low	Medium	- Implement Uninterruptible Power Supply (UPS) for critical network components - Regularly backup network configuration and data - Establish emergency power backup plan
		Network equipment theft			High	Low	Medium	- Implement physical security measures (locks, surveillance cameras, access control) - Regularly inventory network equipment - Encrypt sensitive data stored on devices

Cost Benefit Analysis

The cost of implementing controls with respect to the additional security provided is the final step in selecting the controls to implement.

3.1 Basic Model

Traditional security models define three areas of consideration Confidentiality, Integrity, and Availability. The security plan should address each of these areas with respect to data and systems.

3.1.1 Confidentiality

Confidentiality refers to preventing the disclosure of information to unauthorized individuals or systems. For example, a credit card transaction on the Internet requires the credit card number to be transmitted from the buyer to the merchant and from the merchant to a transaction processing network. The system attempts to enforce confidentiality by encrypting the card number during transmission, by limiting the places where it might appear (in databases, log files, backups, printed receipts, and so on), and by restricting access to the places where it is stored. If an unauthorized party obtains the card number in any way, a breach of confidentiality has occurred.

Confidentiality is necessary for maintaining the privacy of the people whose personal information a system holds.

3.1.2 Integrity

In information security, data integrity means maintaining and assuring the accuracy and consistency of data over its entire life cycle. This means that data cannot be modified in an unauthorized or undetected manner. This is not the same thing as referential integrity in databases, although it can be viewed as a special case of Consistency as understood in the classic ACID (Atomicity, Consistency, Isolation, Durability) model of transaction processing. Integrity is violated when a message is actively modified in transit. Information security systems typically provide message integrity in addition to data confidentiality.

3.1.3 Availability

For any information system to serve its purpose, the information must be available when it is needed. This means that the computing systems used to store and process the information, the security controls used to protect it, and the communication channels used to access it must be functioning correctly. High availability systems aim to remain available at all times, preventing service disruptions due to power outages, hardware failures, and system upgrades. Ensuring availability also involves preventing denial-of-service attacks.

4. Security Plan Controls and Status List

This section lists all the controls which constitute the security plan and implementation status. To enable easier reading of the controls list a table key is included at the start of this section.

Control Title	Control Level	Current	Target	CSET Category	Description	Implementation Plan / Comments
DE.AE-1	Medium	0%	0%	Detect / Anomalies and Events	A baseline of network operations and expected data flows for users and systems is established and managed	Baseline comms can be established after the new system has been implemented. This is a long-term goal, but not something that should be focused on as part of the initial implementation.
DE.AE-2	High	100%	100%	Detect / Anomalies and Events	Detected events are analyzed to understand attack targets and methods	All detected events are analyzed per City Information Security Policy
DE.AE-3	High	50%	100%	Detect / Anomalies and Events	Event-data are aggregated and correlated from multiple sources and sensors	Network event data is aggregated, plan to expand this feature to control system and add SCADA, OITs, and PLCs to extent possible.
DE.AE-4	Low	25%	100%	Detect / Anomalies and Events	Impact of Events is determined	If an event is detected, the impact should be determined when it is investigated.
DE.AE-5	Medium	0%	0%	Detect / Anomalies and Events	Incident alert thresholds are established	This will need baseline comms to determine thresholds. Long term goal.
DE.DP-1	High	50%	100%	Detect / Detection Process	Roles and responsibilities for detection are well defined to ensure accountability	Roles and responsibilities for employees outside of city IT staff need to be defined still.
DE.DP-2	High	0%	0%	Detect / Detection Process	Detection activities comply with all applicable requirements	There are not firm requirements for this at this time.
DE.DP-3	High	75%	75%	Detect / Detection Process	Detection processes are tested	Current IDS systems have been tested. Future systems should be as they are implemented.
DE.DP-4	High	80%	100%	Detect / Detection Process	Event detection information is communicated to appropriate parties	Current event detection systems are communicated correctly. Future additions to the system shall be set up to communicate to the appropriate parties.

Control Title	Control Level	Current	Target	CSET Category	Description	Implementation Plan / Comments
DE.DP-5	High	50%	75%	Detect / Detection Process	Detection processes are continuously improved	Current systems are continuously updated and improved. Future systems will be updated as needed.
DE.CM-1	High	50%	100%	Detect / Continuous Monitoring	The network is monitored to detect potential cybersecurity events	Current SCADA system is monitored, remote sites are not. Monitoring will expand to remote sites via Cisco IE switch logging features to the extent possible.
DE.CM-2	High	100%	100%	Detect / Continuous Monitoring	The physical environment is monitored to detect potential cybersecurity events	Physical environments are locked and have intrusion detection systems.
DE.CM-3	High	25%	100%	Detect / Continuous Monitoring	Personnel activity is monitored to detect potential cybersecurity events	Remote access to SCADA is logged and monitored. All personnel activity shall be set up to be logged at both OITs and in SCADA.
DE.CM-4	High	50%	50%	Detect / Continuous Monitoring	Malicious code is detected	Malicious code will continue to be monitored on all SCADA computer systems. PLC and OIT systems do not have bulit in features capable of monitoring for malicious code at this time.
DE.CM-7	High	50%	100%	Detect / Continuous Monitoring	Monitoring for unauthorized personnel, connections, devices, and software is performed	Intrusion detection systems are in place and active for SCADA. This will be added to remote sites when the network is completed.
DE.CM-8	High	50%	50%	Detect / Continuous Monitoring	Vulnerability scans are performed	Vulnerability scans are performed on SCADA computers. This will continue.
ID.AM-1	High	100%	100%	Identify / Asset Management	Physical devices and systems within the organization are inventoried	See asset inventory
ID.AM-2	High	100%	100%	Identify / Asset Management	Software platforms and applications within the organization are inventoried	See asset inventory
ID.AM-3	High	100%	100%	Identify / Asset Management	Organizational communication and data flows are mapped	See existing and planned network architecture
ID.AM-4	High	100%	100%	Identify / Asset Management	External information systems are catalogued	See asset inventory
ID.AM-5	High	50%	100%	Identify / Asset Management	Resources (e.g., hardware, devices, data, and software) are prioritized based on their classification, criticality, and business value	Current and spare hardware are inventoried and prioritized, will need to be re-evaluated with the updated hardware and software inventory.. Future VMs and workstations shall be designed / prioritized based on criticality.

Control Title	Control Level	Current	Target	CSET Category	Description	Implementation Plan / Comments
ID.AM-6	High	100%	100%	Identify / Asset Management	Cybersecurity roles and responsibilities for the entire workforce and third-party stakeholders (e.g., suppliers, customers, partners) are established	
ID.BE-1	Low	0%	0%	Identify / Business Environment	The organization's role in the supply chain is identified and communicated	This seems like extra documentation, will be ignored for now.
ID.BE-2	Low	100%	100%	Identify / Business Environment	The organization's place in critical infrastructure and its industry sector is identified and communicated	
ID.BE-3	Low	100%	100%	Identify / Business Environment	Priorities for organizational mission, objectives, and activities are established and communicated	
ID.BE-4	High	10%	100%	Identify / Business Environment	Dependencies and critical functions for delivery of critical services are established	Limited current documentation. Need to work with operations to determine which systems rely on each other and document it. This document should be updated as part of SCADA Strategic Plan Implementation
ID.BE-5	High	50%	100%	Identify / Business Environment	Resilience requirements to support delivery of critical services are established	Resilience requirements are likely outdated and shall be updated in SCADA Strategic Plan.
ID.GV-1	High	100%	100%	Identify / Governance	Organizational information security policy is established	See City Information Security Policy
ID.GV-2	High	0%	0%	Identify / Governance	Information security roles & responsibilities are coordinated and aligned with internal roles and external partners	Need to define roles
ID.GV-3	High	100%	100%	Identify / Governance	Legal and regulatory requirements regarding cybersecurity, including privacy and civil liberties obligations, are understood and managed	See City Information Security Policy
ID.GV-4	High	100%	100%	Identify / Governance	Governance and risk management processes address cybersecurity risks	See risk assessment / GAP
ID.RA-1	High	100%	100%	Identify / Risk Assessment	Asset vulnerabilities are identified and documented	See risk assessment / GAP
ID.RA-2	High	100%	100%	Identify / Risk Assessment	Threat and vulnerability information is received from information sharing forums and sources	See risk assessment / GAP
ID.RA-3	High	100%	100%	Identify / Risk Assessment	Threats, both internal and external, are identified and documented	See risk assessment / GAP

Control Title	Control Level	Current	Target	CSET Category	Description	Implementation Plan / Comments
ID.RA-4	High	100%	100%	Identify / Risk Assessment	Potential business impacts and likelihoods are identified	See risk assessment / GAP
ID.RA-6	High	0%	0%	Identify / Risk Assessment	Risk responses are identified and prioritized	See City Incident Response Plan
ID.SC-1	High	0%	0%	Identify / Risk Management	Cyber supply chain risk management processes are identified, established, assessed, managed, and agreed to by organizational stakeholders	Supply chain security concerns come down to two issues: 1. City staff should acquire and maintain a spare parts inventory to avoid risk of equipment failure resulting in loss of process. 2. All parts should come from official manufacturer distributors.
ID.SC-2	High	0%	0%	Identify / Risk Management	Suppliers and third party partners of information systems, components, and services are identified, prioritized, and assessed using a cyber supply chain risk assessment process	
ID.SC-3	High	0%	0%	Identify / Risk Management	Contracts with suppliers and third-party partners are used to implement appropriate measures designed to meetI the objectives of an organization's cybersecurity program and Cyber Supply Chain Risk Management Plan	
ID.SC-4	High	0%	0%	Identify / Risk Management	Suppliers and third-party partners are routinely assessed using audits, test results, or other forms of evaluations to confirm they are meeting their contractual obligations.	
ID.SC-5	High	0%	0%	Identify / Risk Management	Response and recovery planning and testing are conducted with suppliers and third-party providers	
ID.RM-1	High	50%	50%	Identify / Risk Management	Risk management processes are established, managed, and agreed to by organizational stakeholders	The IT side is defined. OT should be as well.
ID.RM-2	High	0%	0%	Identify / Risk Management	Organizational risk tolerance is determined and clearly expressed	
ID.RM-3	High	0%	0%	Identify / Risk Management	The organization's determination of risk tolerance is informed by its role in critical infrastructure and sector specific risk analysis	
PR.AC-1	High	50%	50%	Protect / Access Control	Identities and credentials are managed for authorized devices and users	Shared passwords for remote terminals will likely continue for ease of operation.
PR.AC-2	High	100%	100%	Protect / Access Control	Physical access to assets is managed and protected.	

Control Title	Control Level	Current	Target	CSET Category	Description	Implementation Plan / Comments
PR.AC-3	High	100%	100%	Protect / Access Control	Remote Access is managed.	
PR.AC-4	High	50%	50%	Protect / Access Control	Access permissions are managed, incorporating the principles of least privilege and separation of duties	This is true for active directory, but SCADA and OIT operations should be improved / reviewed.
PR.AC-5	High	100%	100%	Protect / Access Control	Network integrity is protected, incorporating network segregation where appropriate	
PR.AC-6	High	50%	50%	Protect / Access Control	Identities are proofed and bound to credentials and asserted in interactions	Shared passwords for remote terminals will likely continue for ease of operation.
PR.AC-7	High	100%	100%	Protect / Access Control	Users, devices, and other assets are authenticated (e.g., single-factor, multi-factor) commensurate with the risk of the transaction (e.g., individuals' security and privacy risks and other organizational risks)	Shared passwords for remote terminals will likely continue for ease of operation.
PR.AT-1	High	100%	100%	Protect / Awareness and Training	All users are informed and trained	
PR.AT-2	High	100%	100%	Protect / Awareness and Training	Privileged users understand roles & responsibilities	
PR.AT-3	High	100%	100%	Protect / Awareness and Training	Third-party stakeholders (e.g., suppliers, customers, partners) understand roles & responsibilities	
PR.AT-4	High	100%	100%	Protect / Awareness and Training	Senior executives understand roles & responsibilities	
PR.AT-5	High	100%	100%	Protect / Awareness and Training	Physical and information security personnel understand roles & responsibilities	
PR.DS-1	Low	50%	50%	Protect / Data Security	Data-at-rest is protected	This is an IT function, not really applicable for OIT and PLCs.
PR.DS-2	Low	50%	50%	Protect / Data Security	Data-in-transit is protected	This is an IT function, not really applicable for OIT and PLCs.
PR.DS-3	Medium	100%	100%	Protect / Data Security	Assets are formally managed throughout removal, transfers, and disposition.	Plan for removal of old control equipment in SCADA Strategic plan
PR.DS-4	High	100%	100%	Protect / Data Security	Adequate capacity to ensure availability is maintained	
PR.DS-5	Medium	0%	0%	Protect / Data Security	Protections against data leaks are implemented	This is not critical and not really a function of OT
PR.DS-6	Medium	0%	0%	Protect / Data Security	Integrity checking mechanisms are used to verify software, firmware, and information integrity	This is not critical and not really a function of OT

Control Title	Control Level	Current	Target	CSET Category	Description	Implementation Plan / Comments
PR.DS-7	Low	0%	0%	Protect / Data Security	The development and testing environment(s) are separate from the production environment	This is not critical and not really a function of OT
PR.DS-8	High	100%	100%	Protect / Data Security	Integrity checking mechanisms are used to verify hardware integrity	Instruments, process equipment, PLC, Communications, and OIT systems shall be monitored for function and alarm through SCADA if an issue is detected.
PR.IP-1	Medium	0%	50%	Protect / Information Protection Processes and Procedures	A baseline configuration of information technology/industrial control systems is created and maintained	This is a future goal
PR.IP-2	Medium	100%	100%	Protect / Information Protection Processes and Procedures	A System Development Life Cycle to manage systems is implemented	System Development Life Cycle is included as part of SCADA Strategic Plan
PR.IP-3	High	100%	100%	Protect / Information Protection Processes and Procedures	Configuration change control processes are in place	Implementation of Engineering workstation and hardening guides from manufacturers controls configuration changes.
PR.IP-4	High	75%	75%	Protect / Information Protection Processes and Procedures	Backups of information are conducted, maintained, and tested periodically	Implementation of Engineering workstation and regular system backups will cover this section. Backup testing is still needed, but may be unncessarily disruptive if it is regular.
PR.IP-5	Low	100%	100%	Protect / Information Protection Processes and Procedures	Policy and regulations regarding the physical operating environment for organizational assets are met	
PR.IP-6	Low	100%	100%	Protect / Information Protection Processes and Procedures	Data is destroyed according to policy	
PR.IP-7	Low	50%	50%	Protect / Information Protection Processes and Procedures	Protection processes are continuously improved	Control system shall be updated as needed based on cybersecurity notifications from the manufacturer and/or CISA. It shall not be updated every time updates are available, this would cause unncessary downtime and discovery of undocumented anomalies at the cost of the city
PR.IP-8	Low	50%	50%	Protect / Information Protection Processes and Procedures	Effectiveness of protection technologies is shared with appropriate parties	Only for current IT systems in place.

Control Title	Control Level	Current	Target	CSET Category	Description	Implementation Plan / Comments
PR.IP-9	High	50%	50%	Protect / Information Protection Processes and Procedures	Response plans (Incident Response and Business Continuity) and recovery plans (Incident Recovery and Disaster Recovery) are in place and managed	See City Information Security Policy
PR.IP-10	Medium	50%	50%	Protect / Information Protection Processes and Procedures	Response and recovery plans are tested	See City Information Security Policy
PR.IP-11	High	100%	100%	Protect / Information Protection Processes and Procedures	Cybersecurity is included in human resources practices (e.g., deprovisioning, personnel screening)	
PR.IP-12	Medium	0%	50%	Protect / Information Protection Processes and Procedures	A vulnerability management plan is developed and implemented	SCADA Strategic plan shall develop an overview of how to mitigate vulnerabilities from the risk assessment.
PR.MA-1	Medium	100%	100%	Protect / Maintenance	Maintenance and repair of organizational assets is performed and logged in a timely manner, with approved and controlled tools	
PR.MA-2	High	100%	100%	Protect / Maintenance	Remote maintenance of organizational assets is approved, logged, and performed in a manner that prevents unauthorized access	
PR.PT-1	Low	0%	50%	Protect / Protective Technology	Audit log records are determined, documented, implemented, and reviewed in accordance with policy	OIT and SCADA Audit logs shall be implemented.
PR.PT-2	Low	0%	0%	Protect / Protective Technology	Removable media is protected and its use restricted according to policy	Removable media is allowed for ease of use.
PR.PT-3	High	50%	50%	Protect / Protective Technology	Access to systems and assets is controlled, incorporating the principle of least functionality	Least functionality needs to be implemented at the application level for SCADA and OITs.
PR.PT-4	High	75%	100%	Protect / Protective Technology	Communications and control networks are protected	Networks are segmented. This segmentation will continue. PLCs will also be set to only communicate with listed addresses and password protected.
PR.PT-5	High	50%	100%	Protect / Protective Technology	Mechanisms (e.g., failsafe, load balancing, hot swap) are implemented to achieve resilience requirements in normal and adverse situations	The SCADA Strategic plan includes plans to add a redundant virtual environment with these features.
RC.IM-1	Low	100%	0%	Recover / Improvements	Recovery plans incorporate lessons learned	See City Incident Response Plan

Control Title	Control Level	Current	Target	CSET Category	Description	Implementation Plan / Comments
RC.IM-2	Medium	0%	0%	Recover / Improvements	Recovery strategies are updated	See City Incident Response Plan
RC.CO-1	High	100%	0%	Recover / Recovery Communications	Public relations are managed	See City Incident Response Plan
RC.CO-2	High	0%	0%	Recover / Recovery Communications	Reputation after an event is repaired	See City Incident Response Plan
RC.RP-1	High	0%	0%	Recover / Recovery Planning	Recovery plan is executed during or after an event	See City Incident Response Plan
RS.AN-1	High	100%	100%	Respond / Analysis	Notifications from detection systems are investigated	See City Incident Response Plan
RS.AN-2	High	100%	100%	Respond / Analysis	The impact of the incident is understood	See City Incident Response Plan
RS.AN-3	Low	0%	0%	Respond / Analysis	Forensics are performed	See City Incident Response Plan
RS.AN-4	Medium	100%	100%	Respond / Analysis	Incidents are categorized consistent with response plans	See City Incident Response Plan
RS.AN-5	Low	100%	100%	Respond / Analysis	Processes are established to receive, analyze and respond to vulnerabilities disclosed to the organization from internal and external sources (e.g. internal testing, security bulletins, or security researchers)	See City Incident Response Plan
RS.IM-1	Low	100%	100%	Respond / Improvements	Response plans incorporate lessons learned	See City Incident Response Plan
RS.IM-2	Low	100%	100%	Respond / Improvements	Response strategies are updated	See City Incident Response Plan
RS.MI-1	High	100%	100%	Respond / Mitigation	Incidents are contained	See City Incident Response Plan
RS.MI-2	High	100%	100%	Respond / Mitigation	Incidents are mitigated	See City Incident Response Plan
RS.MI-3	High	50%	50%	Respond / Mitigation	Newly identified vulnerabilities are mitigated or documented as accepted risks	See City Incident Response Plan
RS.CO-1	High	50%	50%	Respond / Response Communication	Personnel know their roles and order of operations when a response is needed	See City Incident Response Plan
RS.CO-2	Medium	100%	100%	Respond / Response Communication	Events are reported consistent with established criteria	See City Incident Response Plan
RS.CO-4	Low	0%	0%	Respond / Response Communication	Coordination with stakeholders occurs consistent with response plans	See City Incident Response Plan

Control Title	Control Level	Current	Target	CSET Category	Description	Implementation Plan / Comments
RS.CO-5	Low	100%	100%	Respond / Response Communication	Voluntary information sharing occurs with external stakeholders to achieve broader cybersecurity situational awareness	See City Incident Response Plan
RS.RP-1	High	100%	100%	Respond / Response Planning	Response plan is executed during or after an event	See City Incident Response Plan

APPENDIX E:
CAD FILES DISCLAIMER

City of Kirkland

Appendix E – CAD File Disclaimer:

1. The Designer has contractually agreed with the Owner/Client that others may use the electronic data for this project only. This electronic data may not be used in any form in whole or part for projects other than the project for which it was originally intended.

2. The City of Kirkland and its Consultants accept no liability for the use of this electronic data by others. In accepting this file, you assume all liability associated with its use.

3. Any electronic data has not necessarily been fully reviewed by the City or Designer and is not to be considered necessarily complete or accurate. There may be errors or omissions in this electronic data. Only the stamped and signed document/drawing can be relied on to reflect the project work.

4. Electronic data may contain The City of Kirkland and its Consultant's title blocks. All references to The City of Kirkland and its Consultants and associated logos, phone numbers, etc. shall be removed when using this electronic data.

5. It shall be the responsibility of the user(s) of this electronic data to comply with all legal, professional, and ethical requirements including local and state professional registration laws.

6. Use of our electronic data automatically binds you and/or your organization to these conditions.

City of Kirkland