

CITY OF WHITTIER, ALASKA

LIFT STATION NO. 5 REPLACEMENT REBID

SPECIFICATIONS AND CONTRACT DOCUMENTS

February 16, 2024

Prepared for:

**CITY OF WHITTIER
P.O. Box 608
Whittier, Alaska 99693**

Prepared by:

**CRW Engineering Group, Inc.
3940 Arctic Boulevard, Suite 300
Anchorage, Alaska 99503**

CITY OF WHITTIER, ALASKA

LIFT STATION NO. 5 REPLACEMENT REBID



These documents were prepared under the supervision of a registered Professional Engineer.



3940 ARCTIC BLVD. SUITE 300
ANCHORAGE, ALASKA 99503
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CITY OF WHITTIER, ALASKA

LIFT STATION NO. 5 REPLACEMENT REBID

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CITY OF WHITTIER, ALASKA

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CITY OF WHITTIER, ALASKA
LIFT STATION NO. 5 REPLACEMENT REBID

SECTION I
BIDDING REQUIREMENTS

CITY OF WHITTIER, ALASKA
PURCHASING DIVISION
Invitation For Bids
No. 2024-02

The City of Whittier desires to receive bids from Contractors to construct the Lift Station No. 5 Replacement project. The scope of work includes furnishing and installing a complete and operable submersible wastewater lift station to include wet well vault, valve vault manhole, access doors, pump controls for new Lift Station No. 5, pump controls for existing Lift Station No. 4, electrical, piping, valves, appurtenances, fiberglass building, connections to existing septic tank piping, connection to existing force main, and sitework. Work also includes demolition of existing Lift Station No. 5; pumping, transporting, and disposal of septage from septic tanks; and other miscellaneous items of work.

Bidding documents are available electronically at: <https://www.whittieralaska.gov/rfps/>

Requests from Bidders for interpretation or clarification of the bidding documents shall be made to the City Clerk by email at cityclerk@whittieralaska.gov and must arrive at least seven (7) working days prior to the date for opening bids.

A pre-bid conference will be held at 11:00 a.m. on February 28, 2024 using Microsoft Teams. Bidders may contact the City Clerk to receive an invitation by email or use the following information to join the conference:

Microsoft Teams meeting

Join on your computer, mobile app or room device

[Click here to join the meeting](#)

Meeting ID: 226 761 621 989

Passcode: pBHJLq

[Download Teams](#) | [Join on the web](#)

All bidders are encouraged to attend the pre-bid conference.

Sealed bids must be submitted to the City Clerk as specified in the bid documents. All bids and any bid amendments or withdrawals must be received prior to the bid opening. Bids shall be submitted on the forms furnished and must be in a sealed envelope marked as follows:

BID FOR:

LIFT STATION NO. 5 REPLACEMENT
REBID

CITY CLERK
P.O. BOX 608
660 WHITTIER STREET
PUBLIC SAFETY BUILDING 2ND FLOOR
WHITTIER, ALASKA 99693

Bids will be opened publicly at 2:00 p.m. local time in the Whittier City Council Chambers, 660 Whittier Street, Public Safety Building 3rd Floor, Whittier, Alaska on March 18, 2024.

The selection of the qualified bidder will be at the sole discretion of the City of Whittier, and the City reserves the right to reject any and all bids or to not award a contract if deemed in the best interest of the City. This solicitation does not commit the City of Whittier to pay any cost incurred in the preparation of the bid or to award any contract.

Bids shall not discriminate on the basis of race, color, national origin, or sex in the solicitation of sub-bids, award of subcontracts, or performance of the work.

The contract shall be let by the Whittier City Council to the lowest qualified responsive and responsible bidder.

Provisions of both Alaska Title 36, Public Contracts, Laborers' and Mechanics' Minimum Rates of Pay, AS 36.05.010 and AS 36.05.030, and a Federal Wage Determination are applicable to this contract. This contract is subject to Disadvantage Business Enterprises (Minority and Women-Owned Business Enterprises) requirements.

By: Scott Korbe, Director of Public Works

Dated: February 16, 2024

**CITY OF WHITTIER, ALASKA
LIFT STATION NO. 5 REPLACEMENT REBID
REQUIRED DOCUMENTS**

I. DOCUMENTS REQUIRED WITH BID

A. In order to be considered a responsive and acceptable bid, the bidder must submit the following documents in accordance with MASS Section 10.02 Bidding Requirements and Conditions and Section 10.03 Award and Execution of Contract:

1. Bid Proposal
2. Bid Schedule
3. Bid Bond
4. Certification by Bidder of Compliance with the Use of American Iron and Steel Law
5. Certification Regarding Debarment, Suspension, and Other Responsibility Matters (EPA Form 5700-49)
6. Equal Employment Opportunity Statement of Acknowledgement
7. Disadvantage Business Enterprises (Minority and Women-Owned Business Enterprises) Compliance Statement

II. DOCUMENTS REQUIRED FOR AWARD

A. In order to be awarded the contract, the successful bid must be completely filled out and the following documents submitted as specified in MASS Section 10.03 Award and Execution of Contract.

1. Contract
2. Performance & Payment Bond
3. Certificate of Insurance

B. In addition to the above, the Contractor must have a current Alaska Contractor's license, a current Alaska Business License, a current City of Whittier Business License and, if a corporation or limited liability company, must be registered in Alaska.

BID PROPOSAL

TO: CITY OF WHITTIER _____, 2024
P.O. Box 608
660 Whittier Street
Public Safety Building 2nd Floor
Whittier, Alaska 99693

SUBJECT: Invitation For Bid No. 2024-02
Project Title: Lift Station No. 5 Replacement Rebid

Pursuant to and in compliance with subject Invitation For Bids, and other bid documents relating thereto, the Bidder hereby proposes to furnish all labor, materials, and equipment required to complete all work for the construction of the above referenced project in strict accordance with the bid documents at the prices established in the Bid Schedule submitted herewith.

The Bidder agrees, if awarded the contract, to commence and complete the work within the time specified in the bid documents.

The Bidder acknowledges receipt of the following addenda:

Addenda No. _____ Date of Addenda _____
Addenda No. _____ Date of Addenda _____
Addenda No. _____ Date of Addenda _____

Enclosed is a Bid Bond in the amount of _____
(Dollar Amount or Percentage of Bid)

Type of Business Organization

The Bidder, by checking the applicable box, represents that it operates as
 a corporation incorporated under the laws of the State of _____,
 an individual,
 a partnership,
 a non-profit organization, or
 a joint venture.

If a partnership or joint venture, identify all parties on a separate page.

(Bidder/Company Name) Alaska Contractor's License
Number: _____

(Address of Bidder) Employer's Tax Identification
Number: _____

(Signature)

Phone: _____

CITY OF WHITTIER, ALASKA
LIFT STATION NO. 5 REPLACEMENT REBID

BID SCHEDULE

ITEM NO.	MASS NO.	WORK DESCRIPTION	ESTIMATED QUANTITY	UNIT BID PRICE	TOTAL BID PRICE
----------	----------	------------------	--------------------	----------------	-----------------

Base Bid

1	10.07.5	Utility Work Allowance (Electric Service) per CS	1	\$10,000.00	\$10,000.00
2	50.09	Construct Lift Station No. 5 Replacement per LS	1		
3	50.10	Demolish Existing Lift Station No. 5 per LS	1		

TOTAL BASE BID \$ _____

Additive Alternate 1

A-1	50.11	Septic Tank Pumping & Septage Disposal per Gallon	82,000		
-----	-------	---	--------	--	--

TOTAL ADDITIVE ALTERNATE BID \$ _____

TOTAL BID \$ _____

BID BOND

KNOW ALL MEN BY THESE PRESENTS, That we, _____
_____ of _____
as Principal, and _____
a corporation organized under the laws of the _____
_____ and authorized to transact surety
business in the State of Alaska, of _____,
as Surety, are held and firmly bound unto the CITY OF WHITTIER, as Obligee, in the full and
just sum of _____
(\$_____) Dollars, lawful money of the UNITED STATES, for the payment of
which sum, well and truly to be made, we bind ourselves, our heirs, administrators, executors,
successors, and assigns, jointly and severally, firmly by these presents.

WHEREAS, the said Principal is herewith submitting its proposal for:

LIFT STATION NO. 5 REPLACEMENT REBID

The condition of this obligation is such that if the aforesaid Principal will, within the time
required enter into a formal Contract and give a good and sufficient bond to secure the
performance of the terms and conditions of the Contract, then this Obligation to be void;
otherwise the Principal and Surety will pay unto the Obligee the amount stated above.

Signed, sealed, and delivered _____, 2024.

WITNESS AS TO PRINCIPAL:

(Contractor Name)

(Contractor Signature)

(Name/Title)

(AFFIX CORPORATE SEAL)

(Corporate Surety)

(Surety Business Address)

By: _____

(Attorney-in-Fact)

(AFFIX SURETY SEAL)



STATE OF ALASKA
MUNICIPAL GRANTS & LOANS
ALASKA CLEAN/DRINKING WATER FUND
USE OF AMERICAN IRON AND STEEL

CERTIFICATION BY BIDDER
OF COMPLIANCE WITH THE
USE OF AMERICAN IRON AND STEEL LAW
enacted on 1/17/2014

We, the bidding prime contractor and subcontractors, as named below, hereby certify that all the American iron and steel used in the Project named _____, also identified as Project Loan No _____ will comply with the Use of American Iron and Steel Law, or obtain the necessary waiver(s) from the U.S. Environmental Protection Agency.

Prime Contractor Name: _____

Signature of Official Printed name Date

Subcontractor Name Signature of Official Date

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EPA Project Control Number

United States Environmental Protection Agency
Washington, DC 20460

**Certification Regarding
Debarment, Suspension, and Other Responsibility Matters**

The prospective participant certifies to the best of its knowledge and belief that it and the principals:

- (a) Are not presently debarred, suspended, proposed for debarment, declared ineligible, or voluntarily excluded from covered transactions by any Federal department or agency;
- (b) Have not within a three year period preceding this proposal been convicted of or had a civil judgment rendered against them for commission of fraud or a criminal offense in connection with obtaining, attempting to obtain, or performing a public (Federal, State, or local) transaction or contract under a public transaction: violation of Federal or State antitrust statutes or commission of embezzlement, theft, forgery, bribery, falsification or destruction of records, making false statements, or receiving stolen property;
- (c) Are not presently indicted for otherwise criminally or civilly charged by a government entity (Federal, State, or local) with commission of any of the offenses enumerated in paragraph (1) (b) of this certification; and
- (d) Have not within a three-year period preceding this application/proposal had one or more public transactions (Federal, State, or local) terminated or cause or default.

I understand that a false statement on this certification may be ground for rejection of this proposal or termination of the award. In addition, under 18 USC Sec. 1001, a false statement may result in a fine of up to \$10,000 or imprisonment for up to 5 years, or both.

Typed Name & Title of Authorized Representative

Signature of Authorized Representative Date

I am unable to certify to the above statements. My explanation is attached.

CITY OF WHITTIER, ALASKA
LIFT STATION NO. 5 REPLACEMENT REBID

SECTION II
CONTRACT FORMS

CONTRACT

Invitation For Bids No. _____

Contract No. _____

NAME AND ADDRESS OF CONTRACTOR:

Check appropriate box:

- Individual
 Partnership
 Incorporated in the State of _____

CITY OF WHITTIER (hereinafter the Owner)

Contract for (describe Work to be performed):

LIFT STATION NO. 5 REPLACEMENT REBID

Bid Schedules	Items	Plan Sheet File Numbers	Amount _____
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Total Amount: _____

TOTAL AMOUNT OF CONTRACT IN WORDS: _____

THIS CONTRACT, entered into by the Owner named above, and the individual, partnership, or corporation named above, hereinafter called the Contractor, WITNESSETH that the parties hereto do mutually agree as follows:

Statement of Work: The Contractor shall furnish all labor, equipment, and materials and perform the Work above described, for the amount stated, in strict accordance with the Contract Documents.

CONTRACT DOCUMENTS

I. One of the following:

_____ Alaska Department of Transportation and Public Facilities Standard Specifications for Highway Construction, 2020

_____ Municipality of Anchorage Standard Specifications, 2015 (MASS)

(Place "X" or "N/A" where applicable)

II. Specifications consisting of the following:

_____ Special Provisions consisting of _____ pages numbered _____ through _____.

_____ Technical Specifications consisting of Chapters _____ through _____.

(Place "X" or "N/A" where applicable)

III. This Contract consisting of three (3) pages.

IV. The Contract Performance and Payment Bond consisting of two (2) pages dated _____.

V. The Bid Proposal including unit price schedule(s) consisting of _____ pages numbered _____ through _____.

VI. The Contractor's Certificate of Insurance dated _____.

VII. The Laborers' and Mechanics' Minimum Rates of Pay dated _____.

VIII. The Drawings consisting of _____ sheets.

IX. Addenda No. _____ through _____.

X. Other

Time being of the essence, all Work shall be completed _____.

Contract No. _____

APPROVED AS TO FORM:

(City Attorney)

IN WITNESS WHEREOF, the parties hereto have executed this Contract as of the Contract Date entered below.

CITY OF WHITTIER, ALASKA

CONTRACTOR: _____
(Name)

By: _____
(Signature)

By: _____
(Signature)

(Name/Title)

(Name/Title)

Date of Signature: _____

Date of Signature: _____

Attest: _____
(Municipal Clerk)

Contract Date: _____
(Same as Date of Signature by City)

STATE OF ALASKA)
) ss.
THIRD JUDICIAL DISTRICT)

THIS IS TO CERTIFY that on this _____ day of _____, 2024 before me, the undersigned, a Notary Public in and for the State of Alaska, duly commissioned and sworn as such, personally appeared _____, to me known to be a/the _____ (individual, partner, president, etc.) of _____ named in the foregoing instrument, and s/he acknowledged to me that s/he had in his/her official capacity aforesaid executed the foregoing instrument as the free act and deed of the said _____, (individual, partnership, corporation, etc.) for the uses and purposes therein stated. Witness my hand and official seal on the day and year first above written.

Notary Public in and for Alaska

My Commission Expires: _____

CONTRACT PERFORMANCE AND PAYMENT BOND

KNOW ALL MEN BY THESE PRESENTS, That we, _____
_____ of _____
as Principal, and _____
a corporation organized under the laws of the _____
_____ and authorized to transact surety
business in the State of Alaska, of _____,
as Surety, are held and firmly bound unto the CITY OF WHITTIER, as Obligee, in the full and
just sum of _____
(\$ _____) Dollars, lawful money of the UNITED STATES, for the payment of
which sum, well and truly to be made, we bind ourselves, our heirs, administrators, executors,
successors, and assigns, jointly and severally, firmly by these presents.

THE CONDITIONS OF THIS OBLIGATION IS SUCH, that whereas the Principal has entered
into a certain contract dated the _____ day of _____, 2024, with the Obligee
for the construction of:

LIFT STATION NO. 5 REPLACEMENT REBID

which contract is hereby referred to and made a part hereof as fully and to the same extent as
if copied at length herein.

NOW THEREFORE, if the Principal shall well and truly perform and fulfill all the undertakings,
covenants, terms, conditions, and agreements of said Contract, and shall promptly make
payments to all persons supplying labor and materials in the prosecution of the Work provided
for in said Contract, during the original term of said Contract and any extensions or
modifications thereof that may be granted by the City of Whittier, with or without notice to the
Surety, then this obligation to be void; otherwise to remain in full force and effect.

This obligation is made for the use of said Obligee and also for the use and benefit of all
persons who may perform any work or labor or furnish any materials in the execution of said
Contract and may be sued on thereby in the name of said Obligee.

The said Surety, for the value received, hereby stipulates and agrees that no change,
extension of time, alteration or addition to the terms of the Contract or to the Work to be
performed thereunder or the Specifications accompanying the same, shall in anywise affect its
obligations on this Bond, and it does hereby waive notice of any such change, extension of
time, alteration or addition to the terms of the Contract or to the Work or to the Specifications.

IN TESTIMONY WHEREOF, the parties hereunto have caused the execution hereof in _____
_____ original counterparts as of the ____ day of _____, 2024.

WITNESS AS TO PRINCIPAL:

(Contractor Name)

(Contractor Signature)

(Name/Title)

(AFFIX CORPORATE SEAL)

(Corporate Surety)

(Surety Business Address)

(AFFIX SURETY SEAL)

By: _____
(Attorney-in-Fact)



**City of Whittier
Business License
Application YR 2024-25**

DEPARTMENT USE ONLY

License #: _____

NEW RENEWAL

PTBT SALES TAX NON-FILER

Licenses issued for the period of two calendar years (January 1 – December 31).

THE NON-REFUNDABLE BUSINESS LICENSE APPLICATION FEE IS \$50.00.

Please make checks payable to the **City of Whittier** or call (907) 472-2327 Ext. 201 for credit card payment.

Note: You must have a valid Alaska state business license before a City of Whittier business license can be issued. (Please include a copy).

ATTN: PLEASE USE DROP-DOWN ARROWS FOR REPORTING YEAR. *RECEIVED FORM WILL NOT BE CORRECTED IF REPORTED INCORRECTLY.*

Business Name: _____ DBA: _____

AK Business License Number: _____ Expiration Date: _____

Phone: _____ Secondary Phone: _____ Fax: _____

Email: _____ Website: _____

Physical Address: _____

Mailing Address: _____

Nature and description of business: _____

Will this business be selling liquor? YES NO Hotel/Motel/B&B? YES NO

Corporation or Limited Liability Company (LLC)

Corporation Name: _____ EIN: _____

Sole Proprietorship
Proprietor's Name: _____ SSN: _____

Partnership, Limited Liability or Limited Partnership
*Please provide the social security number of the primary partner and the names of the first two partners.
If there are more than two partners, please attach a complete list of partner names.*

Partner #1: _____ SSN: _____

Partner #2: _____ SSN: _____

**Have you been issued a City of Whittier Business License under a different name? Yes No*

If yes, please provide name of Business: _____ Account Number: _____

Description of Business Tax Reporting: Sales Tax Passenger Transportation Business Tax

This application must be completed in its entirety. This application must be signed and dated by the person completing this application on behalf of the business and must state the person's title or position in the business.

I declare, under penalty of perjury, that this application is true and complete.

Printed Name

Title

Signature

Date Signed

Send application to: City of Whittier
P.O. Box 608
Whittier, Alaska 99693

receptionist@whittieralaska.gov
Phone: (907) 472-2327
Fax: (907) 472-2404

City of Whittier Received Date: _____

CITY OF WHITTIER, ALASKA
LIFT STATION NO. 5 REPLACEMENT REBID

SECTION III
SPECIAL PROVISIONS

CITY OF WHITTIER, ALASKA

LIFT STATION NO. 5 REPLACEMENT REBID

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CITY OF WHITTIER, ALASKA

LIFT STATION NO. 5 REPLACEMENT

SPECIAL PROVISIONS

SECTION 95.01 GENERAL STATEMENT AND EXTENT OF WORK

All proposed Work is located within the City of Whittier, herein defined as the Owner, and is more particularly located as shown on the Drawings. The Work included in this Contract consists of furnishing all labor, materials, tools, equipment, supervision, transportation, and other facilities necessary to successfully complete the Work set forth in the Drawings and Specifications. It is the responsibility of the bidder to prepare the bid so that all materials and working arrangements harmoniously conform to the intent of the Contract Drawings, Specifications, and Special Provisions.

Base Bid:

The Work that is presented in the Base Bid Proposal for this Contract consists of furnishing and installing a complete and operable submersible wastewater lift station to include lift station wet well vault, valve vault manhole, access doors, pump controls for new Lift Station No. 5, pump controls for existing Lift Station No. 4, electrical, piping, valves, appurtenances, fiberglass building, connections to existing septic tank piping, connection to existing force main, and sitework. Work also includes demolition of existing Lift Station No. 5 and other miscellaneous items of work.

Additive Alternate 1:

The Work that is presented in the Additive Alternate 1 Bid Proposal for this Contract consists of pumping, transporting, and disposal of septage from six (6) City of Whittier municipal septic tanks. Septage will be transported to Anchorage for disposal at a site approved by the Anchorage Water and Wastewater Utility.

The Contractor awarded the Contract for this project and all subcontractors shall be required to obtain a City of Whittier business license.

This project is subject to regulations governing federal procurements. This includes the use of disadvantage owned businesses enterprises (DBE) as summarized in the State of Alaska Department of Environmental Conservation Alaska Clean Water Fund & Alaska Drinking Water Fund overview included in Section VIII EEO Contract Compliance Specifications.

American Iron and Steel (AIS) compliance is required for this project.

SECTION 95.02 REFERENCE TO MUNICIPALITY OF ANCHORAGE STANDARD SPECIFICATIONS

This Contract is subject to and hereby incorporates by reference the Municipality of Anchorage Standard Specifications, dated 2015, hereinafter referred to as MASS. All references to the Municipality of Anchorage contained in MASS shall be changed to read

the City of Whittier. All references to the Anchorage Water & Wastewater Utility, hereinafter referred to as AWWU, shall be changed to read the City of Whittier. All MASS references to work which will be performed by AWWU shall be disregarded; the Contractor is responsible for all work required to complete the Project.

MASS is available for download on the Municipality of Anchorage website at the following link:

http://www.muni.org/departments/project_management/pages/mass.aspx

All Work under this Contract shall comply with the latest edition and addenda to all applicable codes, ordinances, and standards including the AWWU Design and Construction Practices Manual (hereinafter referred to as DCPM).

The DCPM is available for download at the following link:

<https://www.awwu.biz/about-us/reliable-infrastructure/design-and-construction-practices-manual>

SECTION 95.03 TIME OF COMPLETION

This Project shall be substantially complete by September 30, 2024. Final completion date for the Project shall be October 15, 2024.

SECTION 95.04 MODIFICATIONS AND/OR ADDITIONS TO MUNICIPALITY OF ANCHORAGE STANDARD SPECIFICATIONS

The following listed provisions of MASS are amended as hereinafter stated:

A. DIVISION 10 STANDARD GENERAL PROVISIONS

Add the following Section:

SECTION 10.00 ALL APPLICABLE MASS ARTICLES

Delete any and all references to and requirements for compliance with Anchorage Municipal Code Chapter 7.60 the Disadvantaged/Women Owned Business (DBE/WBE) program and specifications.

SECTION 10.01 DEFINITIONS

Add the following item to the list of definitions:

Record Drawings – Detailed drawings that accurately depict all changes in location (both horizontal and vertical), material, equipment, and other elements of Work accomplished by the Contractor. The drawings shall also depict the horizontal and vertical locations of all other utilities and obstructions encountered during construction. Final elevations and locations shall be clearly marked with actual dimensions.

SECTION 10.03 AWARD AND EXECUTION OF CONTRACT

Article 3.7 Contractor's Warranty

Delete the first sentence of the first paragraph and replace with the following:

The Contractor shall warranty all materials and workmanship for two (2) years from the Final Acceptance Date.

SECTION 10.04 SCOPE OF WORK

Article 4.8 Work Incidental to the Contract

Delete the numbered item thirteen and replace with the following:

13. All Work required to shore, remove, and/or reset light poles and luminaires, including coordinating with Chugach Electric Association.
14. All Work required to shore, remove, and/or reset gas utility amenities including coordinating with Enstar Natural Gas Company.
15. All Work required to shore and protect in place Yukon Telephone and GCI utility amenities including coordinating with the utility.
16. Trench shoring, including the use of a portable trench box.
17. Preserving, protecting, and replacing all monuments and lot corners.
18. Removal and disposal of all wastewater utility amenities to be removed.
19. Connections to existing items specified in the Contract Documents. This includes but not limited to items specified in the Contract Documents as furnish and install pipe connecting to existing pipe.
20. Other items indicated on the Drawings or in these Specifications, but not specifically listed as a bid item in these Contract Documents.

Article 4.17 Utilities

Add the following after the sixth paragraph:

Allowances for work performed by Utility Companies are shown as an item on the Bid Proposal. Any invoices for the Work shall be paid by the Contractor and reimbursed through the utility allowances. Contractor shall provide copies of invoices to the Engineer, and no markup shall be allowed. Contractor is responsible for coordination with the Utility Companies. All costs for coordination and management are incidental to the Work.

Add the following sentence to the end of the seventh paragraph:

Utility locates are the responsibility of the Contractor to request, coordinate with the Work, maintain, and protect.

Add the following new Articles:

Article 4.22 Responsibility of Contractor to Act in Emergency

In case of an emergency that threatens loss and/or injury of property and/or safety of life, the Contractor shall act, without previous instructions from the Engineer, as the situation may warrant. The Contractor shall notify the Engineer thereof immediately thereafter. Any claim for compensation by the Contractor, together with substantiating documents in

regard to expense, shall be submitted to the Owner through the Engineer. The amount of compensation shall be determined by agreement.

The Contractor shall supply the Engineer, prior to commencement of Work, with an emergency telephone number through which a responsible Contractor's representative can be contacted on a twenty-four (24) hour a day basis.

Article 4.23 Daily Progress Reports

The Contractor shall submit daily progress reports to the Engineer. The reports for the current workweek shall be submitted no later than the following Monday by 12:00 p.m. The development, preparation, and presentation of all daily progress reports are incidental to the Contract and no separate payment shall be made. Each daily report shall include:

1. Names and hours worked for all personnel on site, including personnel for all subcontractors.
2. Construction equipment on hand, including utility vehicles such as pickup trucks, maintenance vehicles, etc.
3. Documentation of weather conditions and any resulting impacts to the Work.
4. General progress of the Work, including a list of activities started and completed, mobilization and demobilization of subcontractors, and major milestones achieved.
5. Contractor's plan for management of site (e.g., lay down and staging areas, construction traffic, etc.), utilization of construction equipment, buildup of trade labor, and identification of potential Contract changes.
6. Identification of new activities and sequences as a result of executed Contract changes (if any).
7. Description of actual or potential delays, including related causes, and the steps taken or anticipated to mitigate their impact.
8. Changes to activity logic.
9. Changes to the critical path.
10. Identification of, and accompanying reason for, any activities added or deleted since the last report.
11. Steps taken to recover the schedule from Contractor caused delays.

Article 4.24 Coordination with Other Projects

It shall be the responsibility of the Contractor to coordinate with and minimize impact to other projects.

The Contractor is responsible for affirmatively coordinating with other projects so as to not unreasonably interfere with the performance of the other projects.

If the Work of the Contractor is delayed or disrupted because of the construction or transportation activities of other projects, the Contractor is not entitled to additional

compensation from the Owner but may be entitled to an extension of time in accordance with Article 5.23 – Delays and Extension of Time.

Except with regard to a possible entitlement to an extension of time, the Contractor must hold harmless, defend, and indemnify the Owner from and against any and all claims by the Contractor arising directly or otherwise out of the other projects.

Work required to coordinate with and minimize impact to other work in the Project area will be considered incidental to the Project.

SECTION 10.05 CONTROL OF WORK

Article 5.3 Construction Progress Schedule and Schedule of Values

Replace the last sentence of the first paragraph:

The Construction Progress Schedule shall be revised and resubmitted to the Engineer at weekly project status meetings. The Contractor shall be required to attend the weekly meetings. Meeting participation and attendance is incidental to the contract and no separate payment shall be made.

Add the following paragraphs after the second paragraph:

A. Schedule of values format and content:

1. Arrange the schedule of values in tabular form with separate columns to indicate the following for each item listed:
 - a. Related specification section or division.
 - b. Description of Work.
 - c. Name of subcontractor.
 - d. Name of manufacturer or fabricator.
 - e. Name of supplier.
 - f. Change orders (numbers) that affect value.
 - g. Dollar value (percentage of contract sum to nearest percent, adjusted to total 100 percent).
2. Provide a breakdown of the contract sum in sufficient detail to facilitate continued evaluation of applications for payment and progress reports. Coordinate with the project manual table of contents. Break principal subcontract amounts down into several line items.
3. Round amounts to nearest whole dollar. The total shall equal the contract sum.
4. Provide a separate line item in the schedule of values for each part of the Work where applications for payment may include materials or equipment, purchased or fabricated and stored, but not yet installed.
 - a. Differentiate between items stored on-site and items stored off-site. Include requirements for insurance and bonded warehousing, if required.

5. Provide separate line items on the schedule of values for initial cost of the materials, for each subsequent stage of completion, and for total installed value of that part of the Work.
6. Margins of cost: Show line items for indirect costs and margins on actual costs only when such items are listed individually in applications for payment. Each item in the schedule of values and applications for payment shall be complete. Include the total cost and proportionate share of general overhead and profit margin for each item.
 - a. Temporary facilities and other major cost items that are not direct cost of actual work-in-place may be either shown as separate line items in the schedule of values or distributed as general overhead expense, at the Contractor's option.
7. Schedule updating: Update and resubmit the schedule of values prior to the next applications for payment when Change Orders or construction change directives result in a change in the contract sum.

Article 5.4 Non-Working Hours, Holidays, Saturdays, and Sundays

Replace the first sentence of the first paragraph:

The Contractor shall give the Engineer seventy-two (72) hours advance notice of his intention to work overtime, Saturdays, nights, Sundays or holidays, or any time outside the usual working hours.

Add the following sentence to the end of the last paragraph:

A standard workday is a ten (10) hour workday (excluding meal times) within the timeframe of no earlier than 7:00 a.m. and no later than 7:00 p.m.

Article 5.10 Subcontracting

Add the following item to the list:

5. The Contractor, at any time after award of contract, proposes to remove or make substitutions for MBE and/or WBE subcontractors or joint-venture partners under the contract, a written notice of such removal or substitution shall be submitted to the Engineer prior to commencement of performance of the affected work, with the names, addresses and phone numbers of the subcontractors or joint venture partners to be removed or substituted for and an explanation of the reasons for the removal and substitution. The Contractor shall make good faith efforts to utilize another MBE or WBE subcontractor as the replacement. These efforts shall be documented and the circumstances fully explained in writing, and approval obtained from the Engineer prior to such replacement. The Engineer will, within seven (7) days of receipt of such notice, approve said notice or removal and substitution where it is shown that the requested action is for good cause and not for discriminatory purposes.

Article 5.27 Liquidated Damages

Delete the first two sentences of the first paragraph and replace with the following:

The Owner may deduct out of any progress payment the sum of Five Hundred Dollars (\$500.00) per day as Liquidated Damages for each and every calendar day that the Substantial Completion Date is delayed beyond the Substantial Completion Date specified in Article 5.22, Time for Completion of Work. The Owner may deduct out of any progress payment the sum of Two Hundred Fifty Dollars (\$250.00) per day as Liquidated Damages for each and every calendar day that the Final Acceptance Date is delayed beyond the Contract Completion Date.

Add the following Article:

Article 5.34 Project Meetings

The Engineer will schedule once-per-week project meetings at a time and location determined by the Engineer. The Contractor's Project Manager, its Field Superintendent, and Subcontractors, as requested, shall attend the meetings with the Owner, its Representative, Engineer, and Inspector.

SECTION 10.06 LEGAL RELATIONS AND RESPONSIBILITIES

Article 6.1 Laws to be Observed

Add the following paragraph:

Owner is not aware of any contaminated material within the project limits. If such material is encountered, Contractor shall notify the Engineer immediately for direction. This will be treated as a changed condition unless the contamination was caused by Contractor's operation.

Article 6.14 Preference to Local Labor

Add the following paragraph to the end of the Article:

Notwithstanding page ix of the Wage & Hour Administration Pamphlet No. 600 contained in Section VII of this Invitation to Bid and in accordance with Alaska Statute 36.10.040, this clause does not apply to this Invitation to Bid.

Article 6.15 State of Alaska Prevailing Wage Scale

Add the following paragraph to the end of the Article:

The Contractor, and all Subcontractors, is responsible to identify, pay, and report the higher of the prevailing wage rates on the proper forms. Those wages for which the Federal wage rate is higher, the Contractor, and all Subcontractors, shall report those wages on the Federal forms provided included as part of the Federal wage determination contained elsewhere herein. The Contractor, and all Subcontractors, shall submit the Federal payroll forms directly to the Engineer weekly.

Article 6.16 Nondiscrimination

Add the following paragraph to the end of the Article:

The Contractor shall not discriminate on the basis of race, color, national origin, or sex in the performance of this contract. The Contractor shall carry out applicable requirements of 40 CFR, Part 33 in the award and administration of contracts awarded under EPA financial assistance agreements. Failure by the Contractor to carry out these requirements is a material breach of this contract, which may result in the termination of this contract or other legally available remedies.

Add the following new Article:

Article 6.19 Federal Contract Provisions – Retention of Records

Contractors shall retain all records of this Contract in accordance with 40 CFR 31.36(i)(10) that allows access by the grantee, the subgrantee, the Federal grantor agency, the Comptroller General of the United States, or any of their duly authorized representatives to any books, documents, papers, and records of the Contractor which are directly pertinent to that specific contract for the purpose of making an audit, examination, excerpts, and transactions.

Additionally, Contractors shall, in accordance with 40CFR 31.36(i)(11) retain all required records for a period of three (3) years after grantees or subgrantees make final payment and all other pending matters.

Add the following new Article:

Article 6.20 Federal Clauses Added by Reference

The Contractor shall comply with all provisions of the following federal clauses hereby incorporated by reference:

- Copeland Anti-Kickback Act.
- Section 306 of the Clean Air Act.
- Section 508 of the Clean Water Act.
- Energy Policy and Conservation Act (P.L. 94-163, 89 Stat.871).

Add the following new Article:

Article 6.21 Federal Certifications

The Contractor shall submit with its bid the following certification:

- Certification Regarding Debarment, Suspension, and Other Responsibility Matters (EPA Form 5700-49).

Add the following new Article:

Article 6.22 Settlement of Procurement Issues and Bid Protests

The following applies to this Invitation to Bid:

SETTLEMENT OF PROCUREMENT ISSUES. Grantees and subgrantees alone will be responsible for the settlement of all contracts and administrative issues arising out of procurement. Grantees and subgrantees will have procedures to handle and resolve procurement issues and shall disclose information regarding such issues to EPA. Such issues include, but are not limited to, source evaluation, bid protests, disputes, and claims.

EPA is not a party to any of the grantee's or subgrantee's subagreements for the construction of the proposed project. EPA's funding of this project does not relieve the grantee or subgrantee of any contractual responsibilities under its contracts. Reviews and approvals by EPA are: for administrative purposes only; used to determine compliance with Federal laws and regulations; and used to determine the level of Federal participation.

EPA will not substitute its judgment for that of the grantee or subgrantee unless the matter is primarily a Federal concern. Violations of law will be referred to the local, state, or Federal authority having jurisdiction. Reviews by EPA will be limited to the violations specified below. All other issues received by EPA will be referred to the grantee or subgrantee.

- Violations of Federal law or regulations and the standards. Violations of State or local law will be under the jurisdiction of state or local authorities; and
- Violations of the grantee's or subgrantee's protest procedures for failure to review a complaint or protest.

BID PROTESTS. Grantees and subgrantees will have procedures to resolve bid protest appeals and shall disclose information regarding the protest to EPA and the state. A protestor must exhaust all administrative remedies at the grantee's and subgrantee's level before pursuing a protest with EPA.

Only parties with a financial interest that are adversely affected by the grantee's or subgrantee's decision on the initial bid protest may file a bid protest appeal with EPA. EPA will not substitute its judgment for the grantee or subgrantee unless the matter is primarily a Federal concern. Reviews by EPA will be limited to the violations described under the preceding section entitled "Settlement of Procurement Issues". Violations of law will be referred to the appropriate local or state authority.

Bid protest appeals must be filed with the Office of Regional Counsel, EPA Region 10, ORC-158, EPA, Region 10, 1200 Sixth Avenue, Seattle, WA 98101. A protest appeal must:

- Be a written complaint regarding the grantee's or subgrantee's determination of a bid protest appeal;
- Include a copy of the grantee's or subgrantee's determination of the protest; and

- State the basis for the appeal.

The party filing the bid protest appeal must concurrently transmit a copy of all protest documents and any attachments to all other financially interested parties that may be adversely affected by the determination of the protest appeal.

EPA will only consider written protest appeals received by the Office of Regional Counsel (ORC) within seven (7) calendar days; the adversely affected party can meet the seven day notice requirements by telegraphing or faxing to ORC within the seven calendar day period its intent to file a protest appeal, provided the adversely affected party submits a complete protest appeal within seven (7) calendar days of the date it sent the telegram or fax. If the seventh day falls on a Saturday, Sunday, or holiday, the next working day shall be the last day to submit a protest appeal.

For any protest appeal based upon alleged improprieties in the solicitation that were clearly apparent before receipt of initial proposals, EPA may dismiss as untimely any such appeals if the grantee or subgrantee does not receive the initial protest before bid opening or the closing date for receipt of proposals.

Add the following new Article:

Article 6.23 American Iron and Steel Provisions

All iron and steel products used in the project shall be produced in the United States. The Contractor by signing the Contract acknowledges to and for the benefit of the City of Whittier, and the State of Alaska (the "State") that it understands the goods and services under this Contract are being funded with monies made available by the Clean Water State Revolving Fund and/or Drinking Water State Revolving Fund that have statutory requirements commonly known as "American Iron and Steel" (AIS) that requires all of the iron and steel products used in the project to be produced in the United States ("American Iron and Steel Requirement") including iron and steel products provided by the Contractor pursuant to this Contract. For the purposes of this Article, the definition of "iron and steel products" mean products made primarily of iron or steel; lined or unlined pipes and fittings, manhole covers and other municipal castings, hydrants, tanks, flanges, pipe clamps and restraints, valves, structural steel, reinforced precast concrete, and construction materials that are permanently incorporated into the public water or sanitary sewer system.

The Contractor by signing the Contract represents and warrants to and for the benefit of the City of Whittier and the State that:

- (a) the Contractor has reviewed and understands the AIS Requirement,
- (b) all of the iron and steel products used in the project will be and/or have been produced in the United States in a manner that complies with the AIS Requirement, unless a waiver of the requirement is approved, and
- (c) the Contractor will provide any further verified information, certification or assurance of compliance with this Article, or information necessary to support a waiver of the AIS Requirement, as may be requested by the City of Whittier or the State.

Notwithstanding any other provision of this Contract, any failure to comply with this Article by the Contractor shall permit the City of Whittier or State to recover as damages against the Contractor any loss, expense, or cost (including without limitation attorney's fees) incurred by the City of Whittier or State resulting from any such failure (including without limitation any impairment or loss of funding, whether in whole or in part, from the State or any damages owed to the State by the City of Whittier). While the Contractor has no direct contractual privity with the State, as a lender to the City of Whittier for the funding of its project, the City of Whittier and the Contractor agree that the State is a third-party beneficiary and neither this Article (nor any other provision of this Contract necessary to give this Article force or effect) shall be amended or waived without the prior written consent of the State.

Bidders are encouraged to read the guidance and training materials maintained by EPA at:

<https://www.epa.gov/cwsrf/state-revolving-fund-american-iron-and-steel-ais-requirement>

The successful Bidder will be required to comply with all record keeping and reporting requirements requiring information from the Contractor under the Clean Water Act/Safe Drinking Water Act, including certification letters for AIS compliance.

Sample certification forms are provided in the Contract Documents for use in ensuring compliance with the AIS requirement. The Contractor must provide a completed form documenting compliance with the AIS Requirements to the City of Whittier for all AIS products as a submittal prior to material shipment to the jobsite.

SECTION 10.07 MEASUREMENT AND PAYMENT

Article 7.5 Progress Payments

Delete the fourth sentence of the first paragraph and replace with the following:

The Owner shall process Partial Payment Estimates and make payment to the Contractor within fifteen (15) days of execution of all signatures required on the Partial Payment Estimate.

Add the following paragraphs after the second paragraph:

A. Applications for payment

1. Each application for payment shall be consistent with previous applications and payments as certified by the Owner's representative and paid for by the Owner.
 - a. The initial application for payment, the application for payment at time of Substantial Completion, and the final application for payment involve additional requirements.
2. Application preparation: Complete every entry on the form. Include notarization and execution by a person authorized to sign legal documents on behalf of the Contractor.
 - a. Entries shall match data on the schedule of values and the Contractor's construction schedule. Use updated schedules if revisions were made.

- b. Include amounts of Change Orders and construction change directives issued prior to the last day of the construction period covered by the application.
3. Transmittal: Submit one (1) signed and notarized original copy of each application for payment to the Owner's representative by a method ensuring receipt within twenty-four (24) hours. One copy shall be complete, including OEO reports and similar attachments, when required.
 - a. Transmit each copy with a transmittal form listing attachments and recording appropriate information related to the application, in a manner acceptable to the Engineer.
4. Initial application for payment: Administrative actions and submittals, that must precede or coincide with submittal of the first application for payment, include the following:
 - a. List of subcontractors.
 - b. List of principal suppliers and fabricators.
 - c. Schedule of values.
 - d. Contractor's construction schedule (preliminary if not final).
 - e. Schedule of principal products.
 - f. Schedule of unit prices.
 - g. Submittal schedule (preliminary if not final).
 - h. List of Contractor's staff assignments.
 - i. List of Contractor's principal consultants.
 - j. Copies of permits.
 - k. Initial progress report.
5. Application for payment during construction:
 - a. Progress Redlines shall be submitted with each application for payment.
6. Application for payment at substantial completion: Submit an application for payment following issuance of substantial completion.
 - a. This application shall reflect certificates of partial substantial completion issued previously for Owner occupancy of designated portions of the Work.
 - b. Administrative actions and submittals that shall precede or coincide with this application include:
 - i. Occupancy permits and similar approvals.
 - ii. Warranties (guarantees) and maintenance agreements.
 - iii. Maintenance instructions.

- iv. Changeover information related to Owner's occupancy, use, operation, and maintenance.
- v. Final cleaning.
- vi. List of incomplete Work, recognized as exceptions to Engineer's issuance of substantial completion.

Contractor shall submit, with the first application for payment, a copy of the Notice of Work executed by the State Department of Labor, Wage & Hour Administration. Failure to submit a copy of this form with the first application for payment will result in the withholding of \$5,000 from the progress payment. Additionally, a filing may be issued to the Wage & Hour Administration for failure to provide such notice.

Add the following to the list of Withholdings in the fourth paragraph, and renumber the previous six (6) through eight (8) as nine (9) through eleven (11):

- 6. Failure to submit the detailed Schedule of Values consisting of several elements as required. (The Engineer cannot pay on any of the items specified to be broken down until the breakdown is received and accepted).
- 7. A maximum of \$5,000 for failure to provide a Notice of Work and/or a Notice of Completion as required by Alaska Statute 36.05.045. For final payments, the difference between \$5,000 and the actual amount paid for the Notice of Work filing shall be withheld until such time as the Contractor provides a copy of the Notice of Completion executed by the Wage & Hour Administration to the Engineer.
- 8. The value of items missing by the contract documents. Examples include, but are not limited to, record drawings; operations and maintenance manuals; Department of Labor Notice of Work and/or Notice of Completion, ADEC Notice of Completion form, or other items as listed in the schedule of values or elsewhere required in the contract documents.

Add the following sentence to the end of the list of withholdings:

Monies withheld under Article 7.5 - Progress Payments, shall be paid to the Contractor by subsequent pay estimates that follow the date on which the Contractor satisfactorily corrects the deficiencies causing the withholding.

Delete the fifth paragraph and replace with the following:

The amount of any withholding for items one (1) through eight (8) above shall be the reasonable value of the Work or remedy to be accomplished as estimated by the Engineer, without regard to bid amount or cost to the Contractor. The amount of withholding for items nine (9) through eleven (11) shall be in accordance with the claimed amount or the applicable Contract provisions.

Add the following paragraph to the end of the Article:

The monthly pay estimate shall be computed on the basis of Work completed. All quantities shall be subject to review by the Engineer prior to approval for payment. Monthly price allocation for payment of lump sum items shall be based on the approved construction progress schedule and schedule of values.

The State of Alaska funds this Contract (in part); therefore, the provisions of Alaska Statute 36, Section 36.90, and Article 3 entitled "Public Construction Contract Payment" apply.

Article 7.7 Final Payment

Add the following paragraphs after the first paragraph:

Additional administrative actions and submittals that must precede or coincide with submittal of the final application for payment include the following:

1. Evidence of completion of project closeout requirements.
2. Completion of items specified for completion after substantial completion and all applicable punchlist(s) from the Engineer.
3. Proof that incomplete Work has been completed and accepted by the Owner.
4. Transmittal of required project construction records to the Owner's representative.
5. Removal of temporary facilities and services, surplus materials, rubbish, and similar elements.
6. Change of door and gate locks to Owner.
7. Approved redlines for record drawings.

Article 7.8 Correction of Work after Final Acceptance Date

Delete the first sentence of the first paragraph and replace with the following:

Placement of the Project on warranty shall not relieve the Contractor of his responsibility for paying all costs resulting from defects in materials or workmanship supplied under the terms of the Contract, and for correction of those defects, for a period of two (2) years following the Final Acceptance Date.

SECTION 10.08 FORMS

Delete this Section. All forms required for this Project are provided in Section V of the Contract Documents.

B. DIVISION 20 EARTHWORK

SECTION 20.01 GENERAL

Article 1.6 Subsurface Investigation

Add the following paragraph to the end of the Article:

Bore logs and groundwater data are included in Section IX of the Contract Documents.

SECTION 20.12 DEWATERING

Article 12.3 Construction

Add the following paragraph to the end of the Article:

Trench dewatering shall be required to protect adjacent utilities and property and to install the new lift station successfully. The Contractor shall provide copies of any and all dewatering permits and approvals to the Engineer.

Article 12.4 Measurement

Delete this Article and replace with the following:

No measurement will be made for Work in this Section.

Article 12.5 Basis of Payment

Delete this Article and replace with the following:

No separate payment will be made for Work in this Section. All Work associated with Dewatering will be considered incidental to the Contract.

SECTION 20.13 TRENCH EXCAVATION AND BACKFILL

Article 13.3 Construction

E. Locator Tape

Delete the fourth sentence and replace with the following:

The Contractor shall install the locator tape at least 24 inches but no more than 36 inches above the crown of the pipe.

SECTION 20.16 FURNISH BEDDING MATERIAL

Article 16.2 Materials

D. Class "E" Bedding

Add the following paragraph to the end of the subarticle:

In addition to the grading limits above, the fraction of materials passing the #200 sieve shall not be greater than 20 percent of that fraction passing the #4 sieve. The material shall not include mechanically fractured materials.

SECTION 20.27 DISPOSAL OF UNUSABLE OR SURPLUS MATERIAL

Article 27.2 Construction

Add the following paragraph to the end of the Article:

If asbestos-cement pipe is encountered and has to be removed from the trench and disposed of, the Contractor is hereby notified that Federal regulations governing the removal and disposal of asbestos are NESHAP 40 CFR, Part 61, Subpart M, and OSHA 29 CFR 1910. The Alaska Department of Environmental Conservation requirements include, but are not limited to 18 AAC 50, Air Quality Control Regulations, and 18 AAC 60, Solid Waste Management Regulations. The Alaska Department of Labor governing regulations include but are not limited to Occupational Safety and Health Standard, Subchapter 04.0103: Asbestos; 8 AAC 61.600.790 Article 8; and Alaska Workers Right to Know, AS 18.60. Asbestos-cement pipe removed from the trench must be handled and disposed in accordance with the applicable Federal and State regulations. Asbestos-cement pipe must be disposed of and declared at the Hiland Road Municipal Landfill.

Article 27.4 Measurement

Add the following paragraph to the end of the Article:

No measurement will be made for the removal, handling, and disposal of asbestos-cement pipe.

Article 27.5 Basis of Payment

Add the following paragraph to the end of the Article:

No separate payment will be made for the removal, handling, and disposal of asbestos-cement pipe. All Work associated with the removal, handling, and disposal of asbestos-cement pipe will be considered incidental to the Contract.

SECTION 20.30 SHORING, SHEETING AND BRACING/SHORING AND SHEETING LEFT IN THE TRENCH AND PORTABLE

Article 30.1 General

Add the following at the end of the Article:

The Work under this Section also includes all operations necessary to shore, brace and protect from harm existing utilities located within the project area. Utilities include underground facilities as well as overhead facilities, utility poles, supporting structures and street lights.

It is the Contractor's responsibility to furnish, install, and maintain wood sheeting, steel sheet piling, shoring, planking, and bracing, whether or not indicated on the Drawings, to prevent earth movement which could damage, but not limited to, adjacent structures and/or property, landscaping, obstruct surface drainage channels or waterways, or otherwise impair or delay the work or endanger human life.

Where the centerline of any excavation is within 10 feet of any structure (including but not limited to buildings and retaining walls) in any direction, or the excavation will impact the pressure prism of the adjacent structure foundation, the Contractor shall provide shoring to protect the foundations of the structure.

Where connections of new utility lines to existing utility lines are located within 8 feet of the face of the structure, or the excavation will impact the pressure prism of the adjacent structure foundation, provide shoring parallel to the face of the structure over the entire width of the excavation.

Contractor shall be responsible to repair or replace any portion of any, but not limited to, structures and/or property, landscaping, surface drainage channels or waterways damaged during construction.

A. Measurement to Quantify Structure Settlement

Prior to beginning excavation, the Contractor shall obtain horizontal and elevation survey data for all structural foundation corners for structures within 10 feet of excavation. Structural corners shall include all buildings and retaining walls. The Contractor shall also survey an intermediary point when the structure length or the building wall length exceeds 50 feet. The Contractor shall set PK nails (or approved equal) into the structure to conduct the survey. The Contractor shall provide the Engineer with 24 hours of written notice prior to conducting the survey. The Contractor shall remove targets and restore building surface upon written directive from the Engineer.

Repeat measurements before final completion but after substantial completion. Measurements to be on project horizontal and vertical datum, accuracy 0.01 feet (1/8-inch). Provide daily measurements if signs of settlement are identified.

Submit measurements in table form with point designations, initial locations, subsequent measured locations, dates of each measurement, and differential from original measurement. All survey and submittals shall meet the requirements of Section 65.01 and Section 65.02.

Article 30.3 Construction

Add the following to the end of the Article:

Shoring within the building foundation pressure prism will remain in place to a level one (1) foot above pressure prism. Shoring above this level may be cut off and removed. Do not cut off or remove more shoring than can be completely backfilled within same workday. Bracing may be removed when bracing is not deemed necessary for shoring stability. Ensure bracing removal allows for compaction of soils around bracing. Do not use portable trench to shore building foundations.

The shoring shall be sufficient to avoid impacting areas or facilities outside of the existing ROW, PUEs or TCPs. Methods and materials used to shore or brace utilities shall be reviewed and approved by the affected utility company before it is submitted to the Engineer for approval.

The Contractor shall prepare and submit to the Engineer for approval a Shoring Plan. The Shoring Plan shall be submitted a minimum of three (3) days prior to work involving shoring. The Shoring Plan shall detail the methods and materials to be used for trench shoring as well as utility pole shoring, if necessary. The Plan shall be prepared by and sealed by a Professional Engineer registered in the State of Alaska.

When, in the opinion of the Engineer or affected utility company, shoring is inadequate, improper, or conditions exist such that damage may occur, the Contractor shall be notified in writing by the Engineer. Such notification shall be accompanied by a statement of corrective action. If the Contractor fails to promptly comply with such instruction, the Engineer may suspend any or all Work on the project until satisfactory, corrective action is taken. Notification or lack of notification shall in no way relieve the Contractor of the responsibilities established in Section 10.04 Subsection 4.17 Utilities.

Article 30.5 Basis of Payment

Delete the text of this Article and replace with the following:

No separate payment will be made for Work in this Section. Any single technique or combination of techniques used for Shoring, Sheeting, and Bracing; Shoring and sheeting in the Trench; and Portable Steel Shield will be considered incidental to the items in the Bid Proposal.

C. DIVISION 50 SANITARY SEWERS

NEW SECTION 50.09 CONSTRUCT LIFT STATION NO. 5 REPLACEMENT

Article 9.1 General

The Work under this Section consists of providing all labor, equipment, and materials to construct the Lift Station No. 5 Replacement as shown on the Drawings and described herein.

The purpose of Lift Station No. 5 is to pump treated effluent from Septic Tanks 1 – 6 to the ocean outfall for ultimate disposal. The purpose of Lift Station No. 4 is to pump raw wastewater from the collection system into the septic tanks; flow is split approximately equal between the six tanks using plug valves. These facilities must remain in service for the duration of construction except for short periods of time when connecting new to existing piping, electrical, and controls. Bypass pumping will be required for various connections including: connection of new Lift Station No. 5 to existing septic tank effluent piping; connection of new Lift Station No. 5 to existing force main; connecting new electrical and controls to existing Lift Station No. 4; and installation of new piping within existing Lift Station No. 5. Bypassing raw wastewater into the force main shall not be allowed.

Technical specifications for the Work utilize a combination of MASS and CSI format specifications.

Refer to Part III Technical Specifications for additional CSI format specifications. If a specific work item is not listed in the Technical Specifications, reference MASS for the applicable section.

This work does not include the following items:

1. Furnishing submersible wastewater pumps. Wastewater pumps from existing Lift Station No. 5 will be salvaged and reused in the new Lift Station No. 5.
2. Furnishing and installing standby generator. The project will provide transfer switch, conduit, and concrete slab for future standby generator to be provided by others.

Article 9.2 Quality Assurance

- A. System shall comply with the standards established by OSHA, EPA, and NEC for wastewater pump system installation.
- B. Codes: Perform all work in strict accordance with all applicable national, state, and local codes including, but not limited to, the latest legally enacted editions of the following codes, including local adopted local amendments and provisions:
 1. International Building Code - IBC
 2. International Fire Code - IFC
 3. International Mechanical Code - IMC
 4. National Electric Code - NEC

5. NFPA 820, Standard for Fire Protection in Wastewater Treatment and Collection Facilities

C. Standards: Reference to the following standards infers that installation, equipment, and materials shall be within the limits for which it was designed, tested, and approved, in conformance with the current publications and standards of the following organizations:

1. American Concrete Institute - ACI
2. American Institute of Steel Construction - AISC;
3. American National Standards Institute - ANSI;
4. American Society of Civil Engineers - ASCE;
5. American Society for Testing and Materials - ASTM;
6. American Society of Heating, Refrigerating and Air Conditioning Engineers - ASHRAE (Standard 90.1);
7. Factory Mutual - FM;
8. Institute of Electrical and Electronics Engineers - IEEE;
9. National Electrical Contractors Association - NECA;
10. National Electrical Manufacturers' Association - NEMA;
11. National Fire Protection Association - NFPA; and
12. Underwriters Laboratory – UL

D. Submittals:

1. Shop drawings and product data.
2. Manufacturer's certificates of proper installation and performance.
3. Manufacturer's operation and maintenance data; including maintenance instructions, assembly views, lubrication instructions, and replacement parts list.
4. Prior to beginning work, submit a Construction Sequencing Plan that addresses, at a minimum, the following:
 - a. Construction of new Lift Station No. 5 and Controls Building.
 - b. Demolishing existing Lift Station no. 5.
 - c. Septic tank pumping and septage disposal (if included in Contract).
 - d. Bypass pumping required for connection of new Lift Station No. 5 to existing septic tank effluent piping.
 - e. Bypass pumping required for connection of new Lift Station No. 5 to existing force main.
 - f. Bypass pumping required for furnishing and installing new electrical and controls to existing Lift Station No. 4.

- g. Bypass pumping required for furnishing and installing new piping within existing Lift Station No. 5.
5. Wet Well Vault Shop Drawings and Calculations:
- a. Submit complete Shop Drawings detailing locations of access door and hinges, fall protection (safety grating) hinges, ladder, vent pipes, guide rail anchors, and penetrations for pipes and electrical components.
 - b. Provide structural calculations for the concrete vault specifically for this project, including a complete stress and deflection analysis of all structural components and connections.
 - c. Vault design requirements:
 - i. Vault dimensions shall be as indicated on the Drawings except that the supplied vault shall have all slab and wall dimensions determined based on design loadings.
 - ii. Vault design shall be based on current editions of American Concrete Institute (ACI), Concrete Reinforcing Steel Institute (CRSI), and International Building Code (IBC). Vault design shall conform to the American Society for Testing and Materials (ASTM) C857 (latest revision), Standard Practice for Minimum Structural Design Loading for Underground Precast Concrete Utility Structures.
 - iii. Design loads shall, at a minimum, be as follows:
 - 1. Soil loading (vertical): 150 pounds/cubic foot
 - 2. Soil loading (horizontal): 80 pounds/cubic foot
 - 3. Live loading (at surface): AASHTO HS-20
 - 4. Earthquake: In accordance with IBC
 - iv. Design calculations shall be stamped by a Professional Engineer registered in the State of Alaska.
 - v. Standard details used by the manufacturer for the vault and accessories shall be provided in addition to the information listed above.
6. Prior to casting valve vault top slab, submit shop drawings detailing locations of access door and hinges, fall protection (safety grating) hinges, and ladder.
7. Provide shop drawings showing layout for landscaping blocks, including each course of blocks. Detail locations for standard blocks, key blocks, corner blocks, and recess blocks. Detail locations and layout for handrails to be installed on top course of landscaping blocks.
8. Wet Well Vault Fiberglass Liner: Submit credentials for liner installer. Liner installer shall have experience installing McNeil Technologies, Inc. RAM liner systems for a minimum of five years and ten verifiable projects. Potential liner installation company: Jim Swain, CIP Construction Technologies, Inc., Kalispell, Montana, phone 406-291-8017, email jimswain@cipmanhole.com

9. In addition to requirements specified elsewhere, provide the following data prior to electric panel fabrication:
 - a. Bill of materials.
 - b. Cut sheets for all components with Manufacturer's data.
 - c. Provide fuse/circuit breaker sizes coordinated with actual installation (sizes shown on the Drawings are nominal).

Article 9.3 Shop Drawings, Product Data, and Manufacturer's Instructions

- A. Shop Drawings
 1. Basic requirements for Shop Drawings are identified in Section 10.05 Control of Work, Article 5.5 Shop Drawings.
 2. Minimum sheet size shall be 8-1/2 inches x 11 inches. Identify each element of the Shop Drawings by reference to drawing numbers or specification section.
- B. Product Data
 1. Basic requirements for Product Data are identified in Section 10.05 Control of Work, Article 5.6 Product Data.
- C. Manufacturer's Instructions
 1. Provide manufacturer's instructions for storage, preparation, assembly, installation, start-up, adjusting, balancing and finishing of material and equipment.

Article 9.4 Project Record Drawings

Maintain Record Drawings as specified in Section 10.04 Scope of Work, Article 4.19 Record Documents.

Article 9.5 Materials

Materials shall be new and conform to the details shown on the Drawings and as specified herein.

- A. General: All materials incorporated into the project shall be new and of recent manufacture. Materials manufactured more than 18 months prior to date of issuance of NTP shall not be used.
- B. Wet Well Vault: Vault shall be concrete with base, side walls, roof, access door, and fall protection (safety grating) as shown on the Drawings. Materials shall conform to the requirements of ASTM C858 (latest revision), Standard Specification for Underground Precast Concrete Utility Structures, modified as follows:
 1. Minimum 28-day concrete compressive strength shall be 4,000 psi.
 2. Aggregates shall conform to ASTM C33.
 3. Reinforcing Steel: ASTM A-615, Grade 60.

4. Average air-entrainment of 5.5 ± 0.5 percent shall be provided for concrete exposure to freezing and thawing in accordance with ACI.
5. Maximum water-to-cement ratio shall be 0.40 and maximum aggregate size of 1-1/2 inches shall be provided to minimize shrinkage cracks.
6. No chloride-containing admixtures shall be used.

If precast, vault components, including all appurtenances, shall utilize the end product of one manufacturer and shall be consistent in final appearance.

- C. Wet Well Vault Fiberglass Liner: Two layers of cured-in-place structural fiberglass layers with a dry fabric weight of 36 ounce per square yard, saturated with 100% solids epoxy. Epoxy resin shall be resistant to gases and chemicals typically encountered in domestic sewer systems and consist of a modified Polyamide Bisphenol "A" Epichlorohydrin system that is field applied. Liner shall be RAM-360 Series Liner manufactured by McNeil Technologies, Inc. or approved equal.
- D. Valve Vault Manhole: Manhole materials shall conform to the requirements of MASS Section 50.03 Sanitary Sewer Concrete Structures.
- E. Valve Vault Top Slab: Top slab materials shall conform to the requirements of MASS Section 50.03 Sanitary Sewer Concrete Structures, except as follows:
 1. Minimum Design Strength ($f'c$): 4,000 psi
 2. Maximum Water-Cement Ratio: 0.45
 3. Slump Range in Inches: 4 in (+/- 1 in)
 4. Entrained Air Range in Percentage: 6-1/2% (+/- 1-1/2%)
 5. Coarse Aggregate: No. 4 & No. 67 AASHTO
 6. Fine Aggregate: AASHTO M-6 gradation
 7. Reinforcing Steel: ASTM A-615, Grade 60, sizes as indicated on Drawings
- F. Top Slab and Vault Access Doors:
 1. Door Leaf: 1/4-inch aluminum diamond pattern plate reinforced to withstand a live load of 300 pounds per square foot.
 2. Channel Frame:
 - a. 1/4-inch extruded aluminum frame with anchor tabs around the perimeter
 - b. Angle frame and bearing plate shall be cast into and supported by concrete and reinforcing bars of top slab
 - c. 1-1/2-inch drainage coupling in corner of channel frame
 3. Door Equipment:
 - a. Heavy duty Type 316 Stainless Steel hinges with Stainless Steel hinge pins
 - b. Heavy duty lift assist mechanism ensuring ease of operation when opening cover

- c. Automatic hold-open arm with release handle
 - d. Snap lock with removable handle
 - e. Recessed lift handle
4. Nuts, Bolts, and Other Hardware: Type 316 Stainless Steel
 5. Finish: Mill-finish with bituminous coating applied to exterior of the frame
 6. Accessories:
 - a. Recessed padlock hasp covered by a hinged lid flush with surface
 - b. Provide "MasterLock" keyed padlock, or equal
 - c. Odor reducing and cushion gasket
 - d. Drain coupler
 - e. Two each hooks to attach lifting chain when not in use
 7. Fall Protection (Safety Grating):
 - a. Meet requirements of OSHA Standard 29 CFR 1926.502(c)
 - b. Aluminum grating with powder coat paint finish
 - c. Permanent hinging system which locks in the 90 degree open position
 - d. Type 316 Stainless Steel hardware
 - e. Type 316 Stainless Steel hold open device that securely locks the panel in full open position
 - f. Factory installed
 8. Guarantee: Manufacturer shall guarantee against defects in material or workmanship for 10 years after installation.
 9. Access doors shall be Bilco sized per the Drawings, or approved equal.
- G. Ladder Safety Post:
1. Tubular post shall lock automatically when fully extended.
 2. Safety post shall have controlled upward and downward movement.
 3. Release lever shall disengage the post to allow it to be returned to its lowered position.
 4. Post shall have adjustable mounting brackets to fit ladder rung spacing up to 14 inches on center and clamp brackets to accommodate ladder rungs up to 1-3/4 inch in diameter.
 5. Post shall be manufactured of high strength square tubing. A pull up loop shall be provided at the upper end of the post to facilitate raising the post.
 6. Material of construction shall be Type 304 stainless steel.

7. Balancing spring mechanism shall be suitable for use in highly corrosive atmospheres. Mechanism shall provide smooth, easy, controlled operation when raising and lowering the safety post.
 8. All mounting hardware shall be Type 316 stainless steel.
 9. Factory finish shall be mill finish stainless steel.
 10. Manhole safety post shall be Bilco Ladder Safety Post, Model LU-3, or approved equal.
- H. Pump Removal System: The pumps are quick disconnect submersible wastewater pumps capable of being removed from the discharge elbow without disturbing the suction piping, discharge piping, and volute.
1. Design:
 - a. The design of the disconnect system shall permit the easy removal of each pumping unit for inspection or service.
 - b. The pumps, when lowered into place, shall be automatically connected to the discharge piping.
 - c. There shall be no need for personnel to enter the wet well to inspect or service the pumps.
 2. Pump Discharge:
 - a. A cast iron discharge elbow will be installed on the floor of the wet well and will receive the pump discharge when the pump is lowered into place. Discharge elbow shall be suitable to accommodate Flygt NP3127.070 pumps.
 - b. Sealing of the pumping unit to the discharge elbow shall be accomplished by a machined metal to metal watertight contact.
 - c. The lower guide rail brackets for each pump shall be an integral part of the discharge elbow, in alignment for proper operation of the disconnect system.
 - d. The base assembly shall provide stable, three-point support of the pumping unit during pump operation.
 3. Guide Bracket and Guide Rails:
 - a. Each pump shall be securely attached to a sliding guide bracket designed for use with at least two guide rails.
 - b. Each sliding guide bracket shall have non-sparking material at the point of contact with the guide rails to prevent spark ignition of explosive wet well gases during pump installation and removal.
 - c. Stainless Steel pipe guide rails shall be single piece construction with continuous length and no joints.
 - d. Guide rails shall have a minimum of one intermediate Stainless Steel bracket for added rigidity of guide rails.

4. Lifting Chain:

- a. Furnish and install new lifting chain for each salvaged pump from existing Lift Station No. 5. Each pumping unit shall be provided with a 316L Stainless Steel lifting chain.
- b. The lifting chain shall be of sufficient length to extend from the pumping unit at one end to the top of the wet well of new Lift Station No. 5 at the other end.
- c. The working load of the lifting system shall be 50% greater than the pump unit weight. Pump unit weight is approximately 360 pounds.

I. Valves:

1. Check Valves

- a. Swing type spring and lever check valve.
- b. Meet all applicable parts of ANSI/AWWA C508 Standard.
- c. Flanged end dimensions and drilling shall comply with ANSI B16.1, Class 125.
- d. Iron body, bronze mounted.
- e. Bronze disc facing.
- f. O-ring sealed stuffing box.
- g. Adjustable spring tension to control opening and closing of clapper.
- h. 200 psi maximum working pressure.
- i. Manufacturer: Mueller A-2600-6-02BB or equal.

2. Plug Valves

- a. Non-lubricated eccentric type with an elastomer covering all seating surfaces. Elastomer shall be nitrile.
- b. Flanged end dimensions and drilling shall comply with ANSI B16.1, Class 125.
- c. Valve body shall be of ASTM A-126 Class B cast iron in accordance with AWWA C-517 Section 4.4.1.4.
- d. Furnish with a welded-in overlay seat of not less than 99% nickel in accordance with AWWA C-517, Section 4.3.3.4.
- e. Plug shall be of ASTM A-536 Grade 65-45-12 in compliance with AWWA C-517 Section 4.3.3.2. Plug shall be of one-piece solid construction with PTFE thrust bearings on the upper and lower bearing journals.
- f. Furnish with replaceable sleeve type bearings conforming to AWWA C-517, Section 4.3.3.6.
- g. Bearings shall be of sintered, oil impregnated type 316 Stainless Steel.

- h. Valve shaft seals shall be of the “U” cup type in accordance with AWWA C-517, Section 4.4.7. Seals shall be self-adjusting and repackable without removing the bonnet from the valve.
 - i. Furnish with worm gear operator and handwheel.
 - j. 175 psi maximum working pressure.
 - k. Manufacturer: Milliken Valve Company Millcentric Series 601 or equal.
- J. Piping:
 - 1. Lift station and force main piping shall be ductile iron pipe, Class 52 in accordance with Section 60.02 Furnish and Install Pipe.
 - 2. Septic tank effluent piping shall be ductile iron pipe, Class 50 in accordance with Section 50.02 Furnish and Install Pipe.
- K. Bolts, Gaskets, Glands and Nuts: Bolts, gaskets, glands, nuts, and miscellaneous accessories required to install all fittings and valves shall be furnished. Bolts for flanged connections shall be 316L stainless steel with American Standard regular unfinished square or hex heads. Nuts shall be 316L stainless steel with American Standard hexagonal dimensions. Gaskets for flanged connections shall be 1/8-inch-thick rubber. Gaskets shall extend from the inside diameter of the flange to at least the inside edge of the bolt holes, or they may extend beyond the bolt circle. Gaskets shall conform to Section 2.3 of AWWA C207 and applicable parts of ANSI B16.21. Bolts and nuts shall conform to Section 2.2 of AWWA C207.
- L. Flanged Coupling Adapters: Flanged coupling adapters shall be ductile iron with anchor studs. Flanged coupling adapters shall be No. 912, as manufactured by Smith-Blair, or equal.
- M. Controls Building:
 - 1. Provide building structural design drawings stamped by a Professional Engineer registered to practice in the State of Alaska. Building construction shall meet the following loads:
 - a. Wind Load – 110 MPH
 - b. Snow Load – 240 pounds/square foot
 - c. Seismic – Zone 4
 - d. Exposure – “D”
 - 2. Fiberglass modular building with vaulted roof
 - 3. Double-wall construction: Outer and Inner 1/8-inch FRP (Fiberglass Reinforced Polyester) walls, minimum
 - 4. 2-inch urethane foam insulation core
 - 5. Exterior base flange to anchor to concrete slab
 - 6. One (1) insulated fiberglass man door with standard lockable door hardware
 - 7. Two (2) 8-inch diameter louvered vents (coordinate locations with electrical)

8. Steel lifting lugs
 9. Exterior coloring shall be green. Interior coloring shall be white.
 10. Controls Building shall be FRP Mocoat MV Series Fiberglass Modular Building
- N. Concrete Landscape Blocks:
1. Unit weight – 150 pcf
 2. Average Compressive strength – 3,000 psi
 3. Concrete/Soil Friction Factor – 0.67
 4. Factor of Safety:
 - a. Wall Sliding – 1.5
 - b. Overturing – 2.0
 - c. Bearing Capacity – 3.0
 5. Landscape blocks shall be World Block as manufactured by Anchorage Sand & Gravel
- O. Conduits and Fittings: Conduit and fitting materials shall conform to the requirements of Part III Technical Specifications.
- P. Wire and Cable: Wire and cable materials shall conform to the requirements of Part III Technical Specifications.
- Q. Controls and Electrical Components: Controls and Electrical Components shall conform to the requirements of Part III Technical Specifications.
- R. Grounding: Grounding rods, wire and appurtenances shall be in accordance with Part III Technical Specifications.

Article 9.6 Construction

- A. Prepare, implement, and maintain a SWPPP in accordance with Section 20.02 Storm Water Pollution Prevention Plan.
- B. Coordinate with utility companies in accordance with Section 10.04 Scope of Work, Article 4.17 Utilities for electric service.
- C. Provide all necessary trench excavation, backfill, and compaction in accordance with Section 20.13 Trench Excavation and Backfill. Provide all necessary dewatering in accordance with Section 20.12 Dewatering.
- D. Provide all necessary bypass pumping. Average Daily Flow of raw wastewater into Lift Station No. 4 is 80,000 gallons per day. Lift Station No. 4 pumps wastewater to the septic tanks at 875 gpm.
- E. Furnish and install septic tank effluent piping in accordance with Section 50.02 Furnish and Install Pipe and as shown on the Drawings.
- F. Wet Well Vault: Cast-in-place or install precast vault per the manufacturer's recommendations and as shown on the Drawings.

- G. Wet Well Vault Fiberglass Liner: Furnish and install fiberglass liner on interior walls and ceiling in accordance with the manufacturer's recommended installation and curing processes. Hand laying of the liner is allowed.
- H. Valve Vault Manhole: Furnish and install manhole in accordance with Section 50.03 Sanitary Sewer Concrete Structures and as shown on the Drawings. Furnish and install vault drain as shown on the Drawings.
- I. Valve Vault Top Slab: Furnish and install top slab in accordance with Section 50.03 Sanitary Sewer Concrete Structures and as shown on the Drawings. Install pre-molded plastic gaskets between manhole and top slab.
- J. Top Slab and Vault Access Doors: Furnish and install access doors in accordance with the Drawings and per the manufacturer's instructions. Access doors shall be flush with the top surface of concrete.
- K. Ladder Safety Post: Furnish and install ladder safety posts on wet well and valve vault ladders below access door, as shown on the Drawings and in accordance with manufacturer's instructions.
- L. Pumps:
 - 1. Install pumps salvaged from existing Lift Station No. 5 in accordance with manufacturer's recommendations and as shown on the Drawings.
 - 2. Pumps shall be set level and plumb with no stresses on the suction and discharge flanges.
 - 3. All strain from attached piping shall be eliminated from the pumps, and any evidence of pump misalignment, noisy operation, or other signs of improper setting shall be corrected by the Contractor at no additional cost to the Owner.
 - 4. Furnish and install pump discharge elbows to wet well floor with 3/4-inch Stainless Steel anchor bolts, 4-inch minimum embedment.
- M. Pump Removal System:
 - 1. Furnish and install pump removal system in accordance with manufacturer's instructions and as shown on the Drawings. Provide a minimum of one set of intermediate guide rail brackets.
 - 2. Coordinate anchoring of guide rails to access door with access door manufacturer.
 - 3. Coordinate hooks for pump chain or cable with access door manufacturer.
- N. Lift Station Valves and Piping:
 - 1. Furnish and install lift station valves and piping as shown on the Drawings in accordance with Section 60.03 Furnish And Install Valves and Section 60.02 Furnish And Install Pipe. Before installation, carefully clean valves and piping of all foreign material, adjust stuffing boxes, and inspect valves in OPEN and CLOSED positions. Unless otherwise indicated, install valves with the stem vertical. Installation practices shall conform to manufacturer's recommendations.

2. Prior to joining flanged valves, the flange faces shall be thoroughly cleaned. After cleaning, insert the gasket and tighten the nuts progressively and uniformly. If flanges leak under pressure, loosen the nuts, reseal or replace the gasket, retighten the nuts, and retest the joint. Joints shall be watertight at test pressures before acceptance.
 3. Make final adjustments to the check valves so they function properly within the operating pressure and flow of the pump station/force main. Provide qualified personnel or a factory representative onsite during initial startup of the new check valves.
 4. Connect lift station piping to existing force main as shown on the Drawings. Coordinate with Owner prior to connecting to existing force main.
 5. Fittings and valves installed inside the wet well and valve vault shall have Flanged Joints. Fittings installed on the force main outside the lift station shall have Restrained Mechanical Joints.
- O. Flanged Coupling Adapters: Install flanged coupling adapters as recommended by the manufacturer.
- P. Concrete Landscape Blocks: Furnish and install concrete landscape blocks as shown on the Drawings and as recommended by the manufacturer. Backfill with Classified Material.
- Q. Conduits and Fittings: Installation of conduit and fittings shall be in accordance with Part III Technical Specifications.
- R. Wire and Cable: Installation of wire and cable shall be in accordance with Part III Technical Specifications.
- S. Controls: Installation of controls shall be in accordance with Part III Technical Specifications.
- T. Construct the Controls Building as shown on the Drawings and as recommended by the manufacturer. Anchor to concrete slab as required by manufacturer.
- U. Furnish and install controls and electrical improvements in accordance with Part III Technical Specifications.
- V. Furnish and install classified material in accordance with Section 20.21 Classified Fill and Backfill.
- W. Furnish and install leveling course in accordance with Section 20.22 Leveling Course.
- X. Remove and replace asphalt as required in accordance with Section 40.11 Remove and Replace Asphalt Surfacing.

Article 9.7 Start-Up

- A. After installation of all lift station equipment, the pump manufacturer's factory authorized representative shall start and field test each pump unit to demonstrate its ability to pump without excessive vibration, motor overloading, or overheating. Each pump shall be operated for a sufficient period of time to permit thorough

observation of all pump components. Verify the proper sequencing and operation of all controls. Make final adjustments as necessary to place lift station equipment in satisfactory working order.

1. Operate the controls to demonstrate each pump in lead, with lag following. Demonstrate a complete pumping cycle in automatic with lead, lag, and then high level with successful pump down to all pumps stop condition.
 2. Automatic alternation, repeat complete cycle.
 3. Demonstrate shutdown under (simulated) seal-fail, overtemperature, and overload conditions.
 4. Demonstrate all alarms and verify multiple alarms with silencing.
 5. Verify motor overload protection and fusing has been set in accordance with the motor nameplate rating. (Provide rubbing or listing of motor nameplate data.)
- B. Correct all defects or defective equipment found during start-up.
- C. Clean test water shall be used for all pumping tests. Coordinate and schedule with the City of Whittier Department of Public Works.
- D. Provide a factory authorized pump representative to provide a minimum of 1 day of start-up and maintenance instruction to the City of Whittier Department of Public Works personnel. The instruction shall be provided after all lift station equipment has been installed, field tested, and accepted and after the lift station has been placed in regular service.

Article 9.8 Operation and Maintenance Data

- A. Prepare data in the form of an instructional manual, using commercial quality, 8-1/2-inch by 11-inch binders. Identify each submittal as "Operation And Maintenance Instructions," list the title of the Project and identify subject matter of the contents. Bind drawings in with text, folding larger drawings to size of text pages.
- B. For each product or system, list names, addresses and telephone numbers of Suppliers, including local source of supplies and replacement parts. Supplement product data to illustrate relationships of component parts of equipment and systems, to show control and flow diagrams.
- C. Submit two (2) copies of draft operation and maintenance manuals 14 calendar days prior to demonstration and instruction, as required for each system by individual specification sections. Submit two (2) copies of final O&M manuals, incorporating all of the Engineer's comments, prior to Substantial Completion inspection.
- D. Materials and Finishes:
1. Include product data, with catalog number, size, composition and color and texture designations, as well as information for re-ordering custom manufactured products.

2. Include manufacturer's recommendations for cleaning agents and methods, precautions against detrimental agents and methods, and recommended schedule for cleaning and maintenance.

E. Equipment and Systems:

1. Provide a description of each unit or system and component parts, including function, normal operating characteristics, and limiting conditions. Include performance curves, with engineering data and tests, and complete nomenclature and commercial number of replaceable parts.
2. For panel board circuit directories, provide electrical service characteristics, controls, and communications. Include as-installed color-coded wiring diagrams.
3. Describe operating procedures, including start-up, break-in, and routine operating requirements and sequences. Include regulation, control, stopping, shut-down, and emergency instructions.
4. Describe maintenance requirements, including routine procedures, a guide to troubleshooting, disassembly, repair, re-assembly, adjusting, balancing, and checking instructions. In addition, provide the following information:
 - a. Servicing and lubrication schedule, and a list of lubricants required.
 - b. Manufacturer's printed operation and maintenance instructions.
 - c. Sequence of operation by controls manufacturer.
 - d. Original manufacturer's parts list, illustrations, assembly drawings, and diagrams required to perform maintenance.
 - e. List of manufacturer's spare parts, current prices, and recommended quantities to be maintained in storage.

Article 9.9 Spare Parts and Maintenance Materials

- A. Provide quantities of products, spare parts, maintenance tools, and maintenance materials specified herein.
- B. Electric Panel Boards:
 1. Provide one (1) fuse puller.
- C. Controls:
 1. Provide one spare level transducer.
 2. Provide two spare float switches.

Article 9.10 Measurement

Measurement for Construct Lift Station No. 5 Replacement shall be by lump sum.

Article 9.11 Basis of Payment

Payment for this Work shall be in accordance with Division 10 Standard General Provisions, Section 10.07, Measurement and Payment, and shall include full payment for all Work described in this Section.

The Work to Construct Lift Station No. 5 Replacement shall consist of providing all labor, materials, and equipment necessary to construct the facility as shown on the Drawings and described herein. The unit price shall include, but not be limited to, the following items: preparation, implementation, and maintenance of the SWPPP; coordination with utility company; construction survey measurement; furnishing and installing classified fill and backfill, bedding material, and leveling course; trench excavation, backfill, and compaction; excavation dewatering; trench support system; connection to existing septic tank effluent piping; furnishing and installing effluent piping, fittings, and board insulation; furnishing and installing wet well vault, access door, fall protection (safety grating), ladder, ladder safety post, vent pipes, insulation, and fiberglass liner; furnishing and installing valve vault manhole, top slab, access door, fall protection (safety grating), ladder, ladder safety post, insulation, and vault drain; furnishing and installing lift station piping, valves, fittings, pump discharge elbows, and pump removal system; installing pumps salvaged from existing Lift Station No. 5; furnishing and installing connection to existing force main; bypass pumping; remove and replace asphalt surfacing; and disposal of unusable or surplus material. In addition, the Work shall include furnishing and installing landscaping blocks, concrete pads, handrails, stairs, and bollards; construction of the Controls Building with interior and exterior lighting, electrical, and mechanical systems; furnishing and installing control panels, conduit, and conductors for Lift Station No. 4 and Lift Station No. 5; furnishing and installing automatic transfer switch; and cleanup.

Payment shall be made under the following unit:

ITEM	UNIT
Construct Lift Station No. 5 Replacement	Lump Sum

NEW SECTION 50.10 DEMOLISH EXISTING LIFT STATION NO. 5

Article 10.1 General

The Work under this Section consists of providing all labor, equipment, materials, supplies, transportation, handling, and disposal required to demolish the existing Lift Station No. 5 located within a compartment of Septic Tank No. 1 and to demolish the Electrical Panels Building as shown on the Drawings and described herein.

The submersible wastewater pumps in existing Lift Station No. 5 shall be salvaged for installation and use in the new Lift Station No. 5.

The City of Whittier shall have first rights to salvage any components of the existing lift station and Electrical Panels Building. All components designated for salvage by City of Whittier shall be cleaned and delivered to Whittier Public Works at 660 Whittier Street. All other materials shall be disposed of in accordance with Section 20.13, Disposal of Unusable or Surplus Material.

Demolishing existing Lift Station No. 5 and demolishing the Electrical Panels Building shall not commence until the new Lift Station No. 5 is commissioned and fully operational, including the new electrical and controls for Lift Station No. 4. Existing Lift Station No. 5 shall remain in service and fully operational until the new Lift Station No. 5 is complete.

Article 10.2 Construction

- A. Isolate Septic Tank No. 1 to prevent flow through the tank. Pump out, remove, and dispose of all wastewater liquid, sludge, and debris from within the existing Lift Station No. 5 compartment. Pump down Septic Tank No. 1 to a level as required to construct new 6-inch piping through the lift station compartment.
- B. Remove and dispose of all lift station and septic tank piping, valves, pump bases, appurtenances, ladder, access door, vent pipe, electrical, and controls in accordance with Section 20.27 Disposal of Unusable or Surplus Material. Salvage the two (2) submersible wastewater pumps for use in new Lift Station No. 5.
- C. Grout closed all abandoned penetrations into the existing Lift Station No. 5 compartment including 10-inch inflow pipe, 8-inch lift station pipe, 8-inch vent pipe and electrical conduits.
- D. Scale and remove all loose concrete within the compartment. Coat concrete surfaces with Sherwin-Williams Corobond 100 or equal, 6 mils, off-white color. Prepare concrete surface for coating in accordance with manufacturer's recommendations.
- E. Install new 6-inch Septic Tank No. 1 piping through compartment as shown on the Drawings.
- F. Fill the existing Lift Station No. 5 septic tank compartment with concrete in accordance with Section 30.07 Concrete – Building Structures. Concrete shall be installed in three (3) lifts of equal thickness. Allow 48 hours cure time between lifts. Finish exposed concrete surface flat, smooth, and level with top surface of Septic Tank No. 1.
- G. Coordinate with Chugach Electric Association to remove electric service to the existing Electrical Panels Building. Remove and dispose of building, concrete foundation (including jersey barriers), and concrete slab. Remove and dispose of light pole. Remove existing conductors from all conduits to existing Lift Station No. 5 and Lift Station No. 4. Conduits to existing Lift Station No. 5 may be abandoned in place. Conduits to Lift Station No. 4 will be reused as shown on the Drawings.

Article 10.3 Measurement

Measurement for Demolish Existing Lift Station No. 5 shall be by lump sum.

Article 10.4 Basis of Payment

Payment for this Work shall be in accordance with Division 10 Standard General Provisions, Section 10.07, Measurement and Payment, and shall include full payment for all Work described in this Section.

The Work to Demolish Existing Lift Station No. 5 shall consist of providing all labor, materials, and equipment necessary to demolish the lift station as shown on the Drawings

and described herein. The unit price shall include, but not be limited to, the following incidental items: removal and disposal of Lift Station No. 5 and septic tank components; grouting penetrations; scaling, cleaning, and sealing septic tank compartment; furnishing and installing concrete to fill septic tank compartment; coordination with Chugach Electric Association to remove electric service; removal and disposal of Electrical Panels Building, foundation, components, and light pole; removal and disposal of conductors; and cleanup.

Payment shall be made under the following unit:

ITEM	UNIT
Demolish Existing Lift Station No. 5	Lump Sum

NEW SECTION 50.11 SEPTIC TANK PUMPING & SEPTAGE DISPOSAL

Article 11.1 General

The Work under this Section consists of providing all labor, equipment, materials, supplies, transportation, and handling to remove and dispose of septage from the City of Whittier's six (6) septic tanks. The septage from the tanks will be disposed of in Anchorage at a site approved by the Anchorage Water and Wastewater Utility (AWWU).

Inside dimensions of the septic tanks are 58'-8" long x 14' wide x 9'-6" high and the usable volumes are as follows:

- Septic Tank No. 1 – 45,300 gallons
- Septic Tank No. 2 – 51,200 gallons
- Septic Tank No. 3 – 51,200 gallons
- Septic Tank No. 4 – 51,200 gallons
- Septic Tank No. 5 – 51,200 gallons
- Septic Tank No. 6 – 51,200 gallons

The tops of the septic tanks are located at grade. Each septic tank has four (4) hatches sized 2'-6" x 2'-6" for access into the tanks; each tank has two (2) compartments. The first compartment is 38'-8" long x 14' wide x 9'-6" high. The second compartment is 19'-4" long x 14' wide x 9'-6" high.

Septic Tank No. 1 has a third compartment that houses Lift Station No. 5; this lift station will be demolished as part of this project. The septic tank compartments for tank No. 1 are 34'-4" long x 14' wide x 9'-6" high and 17' long x 14' wide x 9'-6" high.

Article 11.2 Construction

- A. Isolate and remove septage from one septic tank at a time. Complete all septage removal on one tank before beginning to remove septage from the next tank. One septic tank will be allowed to be out of service at a time.
- B. Measure depth of the septage blanket in each septic tank compartment immediately prior to beginning work. Measure depth from floor of septic tank to top of septage blanket.

- C. Pump out the supernatant above the septage blanket from septic tank compartments, beginning with the upstream (larger) compartment. Pump supernatant to an adjacent septic tank that remains in service. Supernatant must be pumped into the same compartment of the adjacent tank: upstream (larger) compartments must be pumped into upstream (larger) compartments, and downstream (smaller) compartments must be pumped into downstream (smaller) compartments of adjacent tanks.
- D. After removing supernatant from the tank, agitate the remaining septage at the bottom of the tank for 15 minutes at each septic tank hatch, for a total of five times (three times in the larger compartment, two times in the smaller compartment). This may be accomplished by first pumping liquid from the septic tank into the transport truck, then reversing the process and pumping the liquid back into the septic tank.
- E. Pump equal volumes of septage from each septic tank hatch until no liquid remains in either compartment of the tank.
- F. The septage shall be pumped into a watertight container and transported to Anchorage for ultimate disposal at a location approved by AWWU. Care shall be exercised in transporting the septage so that no spillage occurs during transport or disposal.
- G. Obtain all permits required by local, state, and federal agencies for the transportation of septage from Whittier to its disposal site in Anchorage.
- H. Secure open hatches with safety barricades to prevent accidental entry of persons into the septic tanks while conducting this work.

Article 11.3 Measurement

Measurement for Septic Tank Pumping & Septage Disposal shall be by gallon. Only the volume of the septage blanket remaining in the septic tank after removal of the supernatant shall be measured for payment.

Article 11.4 Basis of Payment

Payment for this Work shall be in accordance with Division 10 Standard General Provisions, Section 10.07, Measurement and Payment, and shall include full payment for all Work described in this Section.

The Work for Septic Tank Pumping & Septage Disposal shall consist of providing all labor, materials, and equipment necessary to complete the work as described herein. The unit price shall include, but not be limited to, the following incidental items: measuring the depth of the septage blanket in the septic tank compartments; pumping supernatant into adjacent tank compartments; agitating septage at bottom of septic tank compartments; pumping septage from the tanks into transport trucks; transporting septage to Anchorage and disposing to AWWU system; and cleanup.

Payment shall be made under the following unit:

ITEM

Septic Tank Pumping & Septage Disposal

UNIT

Gallon

D. DIVISION 60 WATER SYSTEMS

SECTION 60.01 GENERAL

Article 1.2 Applicable Standards

Add the following items to the list of standards:

ANSI/AWWA C550-05 Standard for Protective Epoxy Interior Coatings for Valves and Hydrants

AWWA M23 PVC Pipe - Design and Installation

ASTM D1784-07 Standard Specification for Rigid Polyvinyl Chloride (PVC) Compounds and Chlorinated Poly Vinyl Chloride (CPVC) Compounds

ASTM D2837-04 Standard Test Method for Obtaining Hydrostatic Design Basis for Thermoplastic Pipe Materials or Pressure Design Basis for Thermoplastic Pipe Products

SECTION 60.02 FURNISH AND INSTALL PIPE

Article 2.3 Materials

I. Fittings and Gaskets

Delete the first two sentences of the fifth paragraph and add the following:

Only stainless steel bolts shall be used.

Add the following to the end of the fifth paragraph:

Only lubricants with NSF 61 certification shall be used as approved by the Engineer.

END OF SPECIAL PROVISIONS

CITY OF WHITTIER, ALASKA
LIFT STATION NO. 5 REPLACEMENT REBID

SECTION IV
TECHNICAL SPECIFICATIONS

CITY OF WHITTIER, ALASKA

LIFT STATION NO. 5 REPLACEMENT REBID

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Division 07 – Thermal and Moisture Protection (Not Used)

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CITY OF WHITTIER, ALASKA

LIFT STATION NO. 5 REPLACEMENT REBID

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Division 45 – Industry-Specific Manufacturing Equipment (Not Used)

Division 48 – Electrical Power Generator (Not Used)

CITY OF WHITTIER, ALASKA

LIFT STATION NO. 5 REPLACEMENT REBID

**DIVISION 23 - HEATING, VENTILATING, AND AIR-
CONDITIONING (HVAC)**

SECTION 23 82 39 - ELECTRIC HEATERS

PART 1 - GENERAL

1.1 SUMMARY

- A. Section Includes:
 - 1. Electric unit heaters.
- B. Related Sections:
 - 1. Division 26 - Equipment Wiring Connections.

1.2 REFERENCES

- A. American Society of Heating, Refrigerating and Air-Conditioning Engineers:
 - 1. ASHRAE 90.1 - Energy Standard for Buildings Except Low-Rise Residential Buildings.
- B. National Fire Protection Association:
 - 1. NFPA 70 - National Electric Code.
 - 2. NFPA 90B - Standard for the Installation of Warm Air Heating and Air Conditioning Systems.

1.3 SUBMITTALS

- A. Submit Shop drawings and product data in accordance with MASS Section 10.05 Article 5.6.
- B. Shop Drawings: Indicate assembly, required clearances, and locations and sizes of field connections.
- C. Product Data: Submit manufacturer's literature and data indicating rated capacities, weights, accessories, electrical nameplate data, and wiring diagrams.
- D. Manufacturer's Installation Instructions: Submit assembly and setting operations.

1.4 QUALIFICATIONS

- A. Manufacturer: Company specializing in manufacturing products specified in this section with minimum three years documented experience.
- B. Installer: Company specializing in performing Work of this section with minimum three years documented experience approved by manufacturer.

1.5 DELIVERY, STORAGE, AND HANDLING

- A. Deliver products to site shall be in accordance with MASS 2015.
- B. Product storage and handling requirements shall be in accordance with MASS 2015.
- C. Accept units on site in factory packing. Inspect for damage. Store under roof.

1.6 WARRANTY

- A. Warranty shall be in accordance with MASS Section 10.03 Article 3.7.
- B. The Contractor shall warranty all materials and workmanship for two (2) year from the Final Acceptance Date unless otherwise specified in the Special Provisions. This warranty shall require the Contractor to remedy promptly, without cost to the Owner, any and all defects in material and workmanship including any consequential damages resulting from defective materials or workmanship.
- C. All warranty Work shall be subject to the same Contract provisions, including materials, quality of work, authority of the Engineer and inspection, as provided for in the original Work. All warranty Work shall be at the sole expense of the Contractor. All materials and workmanship directly or indirectly involved in repairs or replacements shall carry an extended warranty of not less than one (1) year from the date of the Engineer's written acceptance of the repair or replacement Work, or through the warranty period for the original project Work, whichever is longer.

PART 2 - PRODUCTS

2.1 ELECTRIC UNIT HEATERS

- A. Manufacturers:
 - 1. Modine
 - 2. Chromalox
 - 3. Trane
 - 4. Substitutions: 2015 MASS - Product Requirements.
- B. Self-contained, packaged, factory assembled, pre-wired unit consisting of cabinet, supply fan, heating element, controls, and accessories:
 - 1. Discharge Louvers: Individually adjustable horizontal louvers to match cabinet finish.
 - 2. Controls: Unit-mounted adjustable thermostat with lowest setpoint no higher than 40°F .
 - 3. Location: Wall-mount (surface).
 - 4. Motor: Totally enclosed.
- C. Cabinet: Steel with baked on powder coat factory finish.

- D. Supply Fan: Propeller type with fan guard.
- E. Heating Element: Nickel-chromium wire elements enclosed in metallic tubes.

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Administrative Requirements in accordance with MASS 2015: Coordination and project conditions.
- B. Verify space is ready for installation of units and openings are as indicated on shop drawings.

3.2 INSTALLATION

- A. Install in accordance with Manufacturer's installation instructions.
- B. Provide hangers and supports for units.
- C. Provide connection to electrical power systems. Refer to Division 26.

END OF SECTION

CITY OF WHITTIER, ALASKA

LIFT STATION NO. 5 REPLACEMENT REBID

DIVISION 26 - ELECTRICAL

SECTION 26 00 00 - ELECTRICAL WORK, GENERAL

PART 1 - GENERAL

1.1 THE REQUIREMENT

- A. The Contractor shall provide electrical work, complete and operable, in accordance with the Contract Documents.
 - 1. These Contract Documents incorporate the Municipality of Anchorage Standard Specifications (MASS) as indicated in Special Provision Section 95.02.
- B. The provisions of this Section apply to all sections in Division 26 and Division 40, except as indicated otherwise.
- C. All material and equipment covered by this section shall be NRTL listed for its use and location, and all work performed shall meet or exceed NEC requirements.
- D. The Work of this Section is required for operation of electrically-driven equipment provided under specifications in other Divisions. The Contractor's attention is directed to the requirement for proper coordination of the Work of this Section with the Work of equipment specifications, and the Work of instrumentation sections.
- E. Concrete, excavation, backfill, and steel reinforcement required for encasement, installation, or construction of the Work of the various sections of Division 26 is included as a part of the Work under the respective sections, including duct banks, manholes, handholes, equipment housekeeping pads, and light pole bases.

1.2 REFERENCE STANDARDS

- A. The Work of this Section and all sections in Division 26 shall comply with the following, as applicable:

NEC (NFPA 70)	National Electrical Code
NETA	International Electrical Testing Association
NEMA 250	Enclosure for Electrical Equipment (1000 Volts Maximum)
- B. Electrical equipment shall be listed by and shall bear the label of Underwriters' Laboratories, Inc. (UL) or any OSHA identified Nationally Recognized Testing Laboratory (NRTL).
- C. Installation of electrical equipment and materials shall comply with OSHA Safety and Health Standards, state building standards, and applicable local codes and regulations.
- D. Where the requirements of the specifications conflict with UL, NEMA, NFPA, or other applicable standards, the more stringent requirements shall govern.

1.3 SIGNAGE

- A. Local Disconnect Switches:
 - 1. Each local disconnect switch for motors and equipment shall be legibly marked to indicate its purpose, unless the purpose is indicated by the location and arrangement.

- B. Warning Signs:
 - 1. 600 volts nominal, or less. – Entrances to rooms and other guarded locations that contain live parts shall be marked with conspicuous signs prohibiting entry by unqualified persons.

- C. Isolating Switches: Isolating switches not interlocked with an approved circuit interrupting device shall be provided with a sign warning against opening them under load.

- D. Distribution Panels, MCC's and Service Placards
 - 1. OSHA compliant labeling shall be included on all
 - a. electrical panels,
 - b. equipment, and
 - c. Applicable raceways.
 - 2. This includes the following warning placards:
 - a. high voltage warning,
 - b. arc flash hazard rating,
 - c. system voltage,
 - d. maximum fault current,
 - e. series combination rating,
 - f. amps interrupting rating (AIC),
 - g. clearance requirement warning,
 - h. turn off power prior to working inside equipment,
 - i. color coded conductor label,
 - j. power fed from label, and,
 - k. all other required installation dependent OSHA/NEC labelling.

1.4 PUBLIC UTILITIES REQUIREMENTS

- A. The Contractor shall contact the serving utility, Chugach Electric Association, and verify compliance with requirements before construction. The Contractor shall coordinate schedules for work by all utilities, including the retirement of any existing services.

- B. Electrical service shall be as indicated and be as required by the serving utility.

- C. The Contractor shall verify and provide all service conduits, fittings, grounding devices, and all service wires not provided by the serving utility.

- D. The Contractor shall provide service components as specified by the electric utility guidelines

1.5 PERMITS AND INSPECTION

- A. All electrical permits shall be obtained and inspection fees shall be paid by the Contractor.
- B. All electrical permits shall be obtained by the Contractor. The Owner has paid for the inspection fees.
- C. The Contractor shall pay all connection, disconnection and turn-on service charges required by the utility company.

1.6 CONTRACTOR SUBMITTALS

- A. Furnish submittals in accordance with MASS 10.05 and these specifications.
- B. Shop Drawings: Include the following:
 - 1. Complete material lists stating manufacturer and brand name of each item or class of material.
 - 2. Shop Drawings for all grounding Work not specifically indicated.
 - 3. Front, side, rear elevations, and top views with dimensional data.
 - 4. Location of conduit entrances and access plates.
 - 5. Component data.
 - 6. Connection diagrams, terminal numbers, internal wiring diagrams, conductor size, and cable numbers.
 - 7. Method of anchoring, seismic requirements, weight.
 - 8. Types of materials and finish.
 - 9. Nameplates.
 - 10. Temperature limitations, as applicable.
 - 11. Voltage requirement, phase, and current, as applicable.
 - 12. Front and rear access requirements.
 - 13. Test reports.
 - 14. Grounding requirements.
 - 15. Catalog cuts of applicable pages of bulletins or brochures for mass produced, non-custom manufactured material. Catalog data sheets shall be stamped to indicate the project name, applicable Section and paragraph, model number, and options. This information shall be marked in spaces designated for such data in the Engineer's stamp.
- C. Manufacturer Shop Drawings shall be custom prepared. Drawings or data indicating "optional" or "as required" equipment are not acceptable. Options not proposed shall be crossed out or deleted from Shop Drawings.

- D. Contractor Shop Drawings shall be prepared for final component location and conduit routing.
- E. Materials and Equipment Schedules: The Contractor shall deliver to the Engineer within 30 days of the commencement date in the Notice to Proceed, a complete list of all materials, equipment, apparatus, and fixtures proposed for use. The list shall include type, sizes, names of manufacturers, catalog numbers, and other such information required to identify the items.
- F. Owner's Manuals: Complete information as appropriate
- G. Record Drawings: The Contractor shall show invert and top elevations and routing of all duct banks and concealed below-grade electrical installations. Record Drawings shall be prepared as work progresses, be available to the Engineer, and be submitted.

1.7 AREA DESIGNATIONS

- A. General:
 - 1. Raceway system enclosures shall comply with Section 26 05 33 – Electrical Raceway Systems.
 - 2. Electrical Work specifically indicated in sections within any of the Specifications shall comply with those requirements.
 - 3. Electrical Work in above ground indoor facilities shall be NEMA 12.
 - 4. Electrical Work in below ground facilities and outdoors shall be NEMA 4X.
 - 5. Installations in hazardous locations shall conform strictly to the requirements of the Class, Group, and Division indicated.
- B. Material Requirements:
 - 1. NEMA 4X enclosures shall be stainless steel.
 - 2. NEMA 12 enclosures shall be steel, coated with ANSI 61 grey paint.

1.8 TESTS

- A. The Contractor shall be responsible for factory and field tests required by specifications in Division 26 and by the Engineer or other authorities having jurisdiction. The Contractor shall furnish necessary testing equipment and pay costs of tests, including all replacement parts and labor, due to damage resulting from damaged equipment or from testing and correction of faulty installation.
- B. Where test reports are indicated, proof of design test reports for mass-produced equipment shall be submitted with the Shop Drawings, and factory performance test reports for custom-manufactured equipment shall be submitted and be approved prior to shipment. Field test reports shall be submitted for review prior to Substantial Completion.
- C. Equipment or material which fails a test shall be removed and replaced.

1.9 DEMOLITION AND RELATED WORK

- A. The Contractor shall perform electrical demolition Work as indicated on the electrical drawings and in parts of this Specification Section. The Contractor is cautioned that demolition Work may also be indicated on non-electrical drawings. Coordinate electrical de-energization, disconnection, and removal with all trades and the overall sequence of construction.
- B. Electrical requirements associated with removed equipment shall be:
 - 1. Remove control and signal wiring as indicated.
 - 2. Remove all abandoned raceways.
 - 3. Encased conduits shall be cut flush to the floor and be grouted.
 - 4. Remove remote mounted starters, disconnect switches, circuit breakers, sensors, and transmitters.
 - 5. Remove remote mounted status lights and switches where indicated on the electrical drawings, and blank off openings in existing panels with field-fabricated stainless steel plates. Plates shall be attached with stainless steel finish screws.
 - 6. Remove control panels, equipment sheds, and concrete bases and posts for panels and sheds.
 - 7. Pump cords, level sensors, level switches.
- C. Where new lighting and receptacles are installed, old lighting, receptacles, switches, wiring, and conduits shall be removed.
- D. Raceways to be reused or extended shall be terminated in a new junction box. The junction box shall have a NEMA rating in accordance with the area in which it is located and shall be sized as required.
- E. Materials and equipment not indicated to be removed and returned to the Owner shall, upon removal, become the Contractor's property and shall be disposed of off-site.
- F. Material and equipment indicated to be relocated or reused shall be removed and relocated, and reinstalled with care to prevent damage thereto.
- G. Materials indicated to be returned to the Owner shall be placed in boxes with the contents clearly marked and be stored at a location determined by the Engineer.

1.10 CONSTRUCTION SEQUENCING

- A. Continuance of facility operation during demolition and the installation process is critical at some facilities. Therefore, the Contractor shall carefully examine all work to be done in, on, or adjacent to existing equipment. Work shall be scheduled, subject to the Owner's approval, to minimize required process or equipment shutdown time. The Contractor shall submit a written request including sequence and duration of activities to be performed during plant shutdown.

- B. All switching, safety tagging, etc., required for process or equipment shutdown or to isolate existing equipment shall be performed by the Contractor. In no case shall the Contractor begin any work in, on, or adjacent to existing equipment without written authorization by the City of Whittier. The Contractor shall remove the lock within 4 hours upon request of the City of Whittier, in an emergency, and if the equipment is operable.
- C. The Contractor is advised to visit the Site before submitting a Bid to better acquaint itself with the Work of this Contract. Lack of knowledge will not be accepted as a reason for granting extra compensation to perform the Work.
- D. Installation of New Equipment:
 - 1. The Contractor will install and terminate the new power distribution, motor starters, control panels, wireways, cables, and instruments in accordance with the agreed schedule. The Contractor shall provide a list, daily, of the points that are ready for service as they are connected, calibrated, and tested. The Contractor shall only connect to equipment that is new or is out of service.
 - 2. The recommended construction sequence is as follows:
 - a. To the extent possible the new installation shall be completed and tested prior to transfer of power and control.
 - b. Install new power distribution, motor starters, local control panels and instruments.
 - c. Install new raceways between power distribution, motor starters, instruments, and new local control panels.
 - d. Install all new wiring as specified.
 - e. Complete wiring modifications to existing equipment.
 - 3. LS4 shall be re-served as follows:
 - a. Once control and power junction boxes have been installed and wiring completed between the junction boxes the LCP, remove one pump from service and:
 - 1) Remove and replace the power/instrument cable
 - 2) Once cable installation is completed, re-install pump and verify operation.
 - b. Once the initial pump is commissioned, repeat the operation in step a. 1) and 2).
 - 4. LS5 shall be served as follows:
 - a. Once control and power junction boxes have been installed and wiring completed between the junction boxes and the LCP, remove one pump from the existing wet well and:
 - 1) Remove and replace the power/instrument cable,
 - 2) Once cable installation is completed, re-install pump and verify operation.
 - b. Once the initial pump is commissioned, repeat the operation in step a. 1) and 2).
 - 5. The Contractor shall sequence the Work so that only one site at any one time is in temporary condition where only one pump is connected to the new panel, or the station is being discharged by a pump truck.

6. Minimum down time Requirements: The Contractor shall minimize the amount of time a facility is out of service. The Contractor shall provide the Engineer with an estimate of the amount of time a facility will be out of service.
7. Pump sequence and levels are programmed by the contractor per the plans.
8. The Owner shall take beneficial occupancy of each facility as the Work is signed off.
 - a. Warranty: The warranty shall start from the date of final acceptance of the completed project, and shall extend for 1 year, in accordance with MASS 10.03.

PART 2 - PRODUCTS

2.1 GENERAL

- A. Equipment and materials shall be new, shall be listed by UL, and shall bear the UL label where UL requirements apply. Equipment and materials shall be the products of experienced and reputable manufacturers in the industry. Similar items in the Work shall be products of the same manufacturer. Equipment and materials shall be of industrial grade standard of construction.
- B. Where a NEMA enclosure type is indicated in a non-hazardous location, the Contractor shall utilize that type of enclosure, despite the fact that certain modifications, such as cutouts for control devices, may negate the NEMA rating.
- C. On devices indicated to display dates, the year shall be displayed as 4 digits.

2.2 MOUNTING HARDWARE

- A. Miscellaneous Hardware:
 1. Nuts, bolts, and washers shall be stainless steel.
 2. Threaded rods for trapeze supports shall be continuous-threaded, galvanized steel, 3/8-inch diameter minimum.
 3. Strut for mounting of raceways and equipment shall be galvanized or stainless steel as required by the area classification. Where contact with concrete or dissimilar metals may cause galvanic corrosion, suitable non-metallic insulators shall be utilized to prevent such corrosion. Strut shall be as manufactured by **Unistrut, B-Line**, or equal.
 4. Anchors for attaching equipment to concrete walls, floors and ceilings shall be stainless steel expansion anchors, such as "**Rawl-Bolt**," "**Rawl-Stud**" or "**Lok-Bolt**" as manufactured by **Rawl**; similar by **Star**, or equal. Wood plugs shall not be permitted.

2.3 ELECTRICAL IDENTIFICATION

- A. Nameplates: Nameplates shall be fabricated from black-letter, white-face laminated plastic engraving stock, **Formica type ES-1**, or equal. Each shall be fastened securely, using fasteners of brass, cadmium-plated steel, or stainless steel, screwed

into inserts or tapped holes, as required. Engraved characters shall be block style, with no characters smaller than 1/8-inch in height.

- B. Conductor and Equipment Identification: Conductor and equipment identification devices shall be heat-shrink plastic tubing with machine printing. Lettering shall read from left to right and shall face toward the front of the panel.

PART 3 - EXECUTION

3.1 GENERAL

- A. Incidentals: The Contractor shall provide all materials and incidentals required for a complete and operable system, even if not required explicitly by the Specifications or the Drawings. Typical incidentals are terminal lugs not furnished with vendor-supplied equipment, compression connectors for cables, splices, junction and terminal boxes, and control wiring required by vendor-furnished equipment to connect with other equipment indicated in the Contract Documents.
- B. Field Control of Location and Arrangement: The Drawings diagrammatically indicate the desired location and arrangement of outlets, conduit runs, equipment, and other items. Exact locations shall be determined by the Contractor in the field, based on the physical size and arrangement of equipment, finished elevations, and other obstructions. Locations on the Drawings, however, shall be followed as closely as possible.
 - 1. Where raceway development drawings, or "home runs," are shown, the Contractor shall route the raceways in accordance with the indicated installation requirements. Routings shall be exposed unless otherwise noted.
 - 2. Conduit and equipment shall be installed in such a manner as to avoid all obstructions and to preserve headroom and keep openings and passageways clear. Lighting fixtures, switches, convenience outlets, and similar items shall be located within finished rooms as indicated. Where the Drawings do not indicate exact locations, the Engineer shall determine such locations. If equipment is installed without instruction and must be moved, it shall be moved without additional cost to the Owner. Lighting fixture locations shall be adjusted slightly to avoid obstructions and to minimize shadows.
 - 3. Wherever raceways and wiring for lighting and receptacles are not indicated, it shall be the Contractor's responsibility to provide all lighting and receptacle-related conduits and wiring as required, based on the actual installed fixture layout and the circuit designations as indicated. Wiring shall be #12 AWG minimum, and conduits shall be 3/4-inch minimum. Where circuits are combined in the same raceway, the Contractor shall derate conductor ampacities in accordance with NEC requirements.
 - 4. Where complete raceway systems are not shown on the plans, Contractor shall submit a raceway plan for approval. Intent is to minimize number of raceway systems.
- C. Workmanship: Materials and equipment shall be installed in strict accordance with printed recommendations of the manufacturer. Installation shall be accomplished by

workers skilled in the work. Installation shall be coordinated in the field with other trades to avoid interferences.

- D. Protection of Equipment and Materials: The Contractor shall fully protect materials and equipment against damage from any cause. Materials and equipment, both in storage and during construction, shall be covered in such a manner that no finished surfaces will be damaged, marred, or splattered with water, foam, plaster, or paint. Moving parts shall be kept clean and dry. The Contractor shall replace or refinish damaged materials or equipment, including faceplates of panels and switchboard sections, as part of the Work.
- E. Incoming utility power equipment shall be provided in conformance with the utility's requirements.

3.2 CORE DRILLING

- A. The Contractor shall perform core drilling required for installation of raceways and chases through concrete walls and floors. Locations of floor penetrations, as may be required, shall be based on field conditions. Verify all exact core drilling locations based on equipment actually furnished, as well as exact field placement. To the extent possible, identify the existence and locations of encased raceways and other piping in existing walls and floors with the Owner prior to any core drilling activities. Damage to any encased conduits, wiring, and piping shall be repaired as part of the Work.
- B. All penetrations required to extend raceways through existing concrete walls, roofs, and floors or masonry walls shall be core drilled.

3.3 CONCRETE HOUSEKEEPING PADS

- A. Concrete housekeeping pads shall be provided for indoor floor standing electrical equipment. Housekeeping pads for equipment, including future units, shall be 3-1/2 inches above surrounding finished floor or grade, and 2 inches larger in both dimensions than the equipment, unless otherwise indicated.
- B. Concrete housekeeping curbs shall be provided for all conduit and support post stub-ups in indoor locations that are not concealed by equipment enclosures. Such curbing shall be 3 inches above finished floor or grade.

3.4 EQUIPMENT ANCHORING

- A. A equipment shall be mounted independently of the shelter walls unless specifically noted on the plans.
- B. Anchoring methods and leveling criteria in the printed recommendations of the equipment manufacturers are a part of the Work of this Contract. Such recommendations shall be submitted as Shop Drawings.

- C. Panels, raceways, and other equipment shall be anchored and supported for Seismic requirements.

3.5 EQUIPMENT IDENTIFICATION

- A. General: Equipment and devices shall be identified as follows:
 - 1. Nameplates shall be provided for all panelboards, control and instrumentation panels, starters, switches, and pushbutton stations. In addition to nameplates, control devices shall be equipped with standard collar-type legend plates.
 - 2. Control devices within enclosures shall be identified as indicated. Identification shall be similar to the subparagraph above.
 - 3. Equipment names and tag numbers, where indicated on the Drawings, shall be utilized on all nameplates.
 - 4. The Contractor shall furnish typewritten circuit directories for panelboards; circuit directory shall accurately reflect the equipment connected to each circuit.
 - 5. Generator receptacles shall be identified with the incoming service voltage with 1" lettering.
 - 6. Generator transfer switches shall be labeled "Main" and "Generator" with ½" lettering.

3.6 CLEANING

- A. Before final acceptance, the electrical Work shall be thoroughly cleaned. Exposed parts shall be thoroughly clean of cement, plaster, and other materials. Oil and grease spots shall be removed with a non-flammable cleaning solvent. Such surfaces shall be carefully wiped, and all cracks and corners cleaned out. Touch-up paint shall be applied to scratches on panels and cabinets. Electrical cabinets or enclosures shall be vacuum-cleaned.
- B. Contractor shall group, coil, and tie wrap all spare cables at the bottom of the Local control Panels. The wires shall be grouped according to the device, control panel, or MCC section they originate from. Cable groups shall be tagged according to their point of origin.
- C. All debris shall be removed from the void below the panels.

3.7 CONTROL PANEL WIRING

- A. The Contractor shall ensure all panels are listed by and Agency acceptable to OSHA upon completion of the Work.

3.8 FINAL ACCEPTANCE

- A. In accordance with MASS 10.05 Article 5.26

END OF SECTION

SECTION 26 01 26 - ELECTRICAL TESTS

PART 1 - GENERAL

1.1 THE REQUIREMENT

- A. This Section specifies the Work necessary to test, commission, and demonstrate that the electrical Work satisfies the criteria of these Specifications and functions as required by the Contract Documents.
- B. The requirements of Section 26 00 00 – Electrical Work, General, apply to the Work of this Section.

1.2 TESTING

- A. The following test requirements supplement test and acceptance criteria that may be stated elsewhere.
 - 1. Lighting: Switching, including remote control, if indicated. Circuitry is in accordance with panel schedules.
 - 2. Power Instrumentation: Demonstrate that power monitor, power monitoring, current monitoring, and voltage monitoring is functional.
 - 3. Demonstrate mechanical and/or electrical interlocking by attempting to subvert the intended sequence.
 - 4. Activate ground fault tripping by operating test features provided with ground current protective systems and by injecting a known and reasonable current in the ground current sensor circuit. In general, ground fault tripping should occur at a ground current equivalent to 20 percent of phase current. Current injection is not required of circuit 400 amps or less.
 - 5. Cable Testing: 480-volt circuits shall be tested for insulation resistance with a 1000-volt megohm meter. Testing shall be done after the 480-volt equipment is terminated. Control and signal wires shall be tested for continuity and resistance to ground.
 - 6. Test Ground Fault Interrupter (GFI) receptacles and circuit breakers for proper operation by methods sanctioned by the receptacle manufacturer.
 - 7. A functional test and check of all electrical components is required prior to performing subsystem testing and commissioning. Compartments and equipment shall be cleaned as required by other provisions of these Specifications before commencement of functional testing. Functional testing shall comprise:
 - a. Visual and physical check of cables, circuit breakers, transformers and connections associated with each item of new and modified equipment.
 - b. Circuit breakers that have adjustable time or pick-up settings for ground current, instantaneous overcurrent, short-time overcurrent, or long-time overcurrent, shall be field-adjusted by a representative of the circuit breaker manufacturer. Setting shall be tabulated and proven for each circuit breaker in its installed position. Test results shall be certified by the person performing the tests and be transmitted to the Engineer.

8. Complete ground testing of grounding electrodes per requirements prior to operating the equipment.
- B. Subsystem testing shall occur after the proper operation of alarm and status contacts has been demonstrated or otherwise accepted by the Engineer and after process control devices have been adjusted as accurately as possible. It is intended that the Contractor will adjust limit switches and level switches to their operating points prior to testing and will set pressure switches, flow switches, and timing relays as dictated by operating results.
- C. After initial settings have been completed, each subsystem shall be operated in the manual mode and it shall be demonstrated that operation is in compliance with the Contract Documents. Once the manual mode of operation has been proven, automatic operation shall be demonstrated to verify such items as proper start and stop sequence of pumps, proper operation of valves, proper speed control, etc.
- D. Motor operated valves shall be tested after having been phased and tested for correct motor rotation and after travel and torque limit switches have been adjusted by a representative of the valve manufacturer. Tests shall verify status indication, proper valve travel, and correct command control from local and remote devices.
- E. Provide ground resistance tests on the main grounding bars in all control panels in the presence of the Engineer and submit results.
- F. Subsystems shall be defined as individual and groups of pumps, conveyor systems, chemical feeders, air conditioning units, ventilation fans, air compressors, etc.
- G. General: Carry out tests indicated herein for individual items of materials and equipment in other Sections.
- H. Megger each complete phase wire, cable, termination, and submersible pump winding to ground.

PART 2 - PRODUCTS (NOT USED)

PART 3 - EXECUTION (NOT USED)

END OF SECTION

SECTION 26 05 19 - WIRE AND CABLES

PART 1 - GENERAL

1.1 THE REQUIREMENT

- A. The Contractor shall provide wires and cable, complete and operable, in accordance with the Contract Documents.

1.2 CONTRACTOR SUBMITTALS

- A. The Contractor shall submit Shop Drawings in accordance with 26 00 00 – Electrical Work, General.

PART 2 - PRODUCTS

2.1 GENERAL

- A. Conductors, include grounding conductors, shall be copper. Aluminum conductor wire and cable will not be permitted. Insulation shall bear the label of Underwriters' Laboratories, Inc. (UL), the manufacturer's trademark, and identify the type, voltage, and conductor size. All conductors except flexible cords and cables, fixture wires, and conductors that form an integral part of equipment, such as motors and controllers, shall conform to the requirements of Article 310 of the National Electric Code, latest edition, for current carrying capacity. Flexible cords and cables shall conform to Article 400, and fixture wires shall conform to Article 402. Wiring shall have wire markers at each end.
- B. Conductors for the field wiring of Owner furnished equipment shall be as specified in the PALL drawings and terminated in accordance with the shop drawings. PALL equipment that does not have a specified cable shall be wired using the cable/cord/conduit/conductor specified on the raceway and conduit schedules.

2.2 LOW VOLTAGE WIRE AND CABLE

- A. Power and Lighting Wire
 1. Power and lighting wire shall be No. 12 copper AWG minimum size.
 2. Wire rated for 600 volts in duct or conduit for all power shall be
 - a. In above grade interior locations: Class B Type THWN-2
 - b. In underground and below grade installations XHHW-2
 - c. Direct burial shall use XLPE outer jacketed cable.
 3. Wiring for 600-volt class power and lighting shall be as manufactured by General Cable, Okonite, or Rome Cable.
- B. Control Wire

1. Control wire in duct or conduit shall be the same type as power and lighting wire indicated above.
 2. Control wiring shall be copper as sized on the drawings.
- C. Instrumentation Cable
1. Instrumentation cable shall be rated at 600 volts.
 2. Individual conductors shall be No. 18 AWG stranded, tinned copper. Insulation shall be color-coded polyethylene: black-red for two-conductor cable, and black-red-white for three-conductor cable.
 3. Instrumentation cables shall be composed of the individual conductors, an aluminum polyester foil shield, a No. 18 AWG stranded, tinned copper drain wire, and a PVC outer jacket with a thickness of 0.048-inches.
 4. Single pair, No. 18 AWG, twisted, shielded cable shall be Belden Part No. 9341, or equal.
 5. Single triad, No. 16 AWG, twisted, shielded cable shall be Belden Part No. 1119A, or equal.
- D. Tray Cable - Tray cable is not to be used.
- E. Submersible Pump Power Cable: All of the existing pumps will require new cable to accommodate the new supply and or location, submersible pumps shall be wired with manufacturer approved submersible multi-conductor cable as required. The cable shall be Type W Portable Power Cable rated at 600V and 70C temperature with (2) #14 control cables. The insulation shall be EPR, and conduction shall be rope-lay-stranded copper per UL-62. The cabling shall be round with round or flat fillers as needed, with an extra-hard usage, oil resistant, thermoset, CPE jacket, per UL-1581. Cable shall be Flygt SubCab, or equal.

2.3 CABLE TERMINATIONS

- A. Compression connectors shall be Burndy "Hi Lug", Thomas & Betts "Sta-Kon," or equal. Threaded connectors shall be split bolt type of high strength copper alloy. Pressure type, twist-on connectors will not be acceptable.
- B. Pre-insulated fork tongue lugs shall be Thomas & Betts, Burndy, or equal.
- C. General purpose insulating tape shall be Scotch No. 33, Plymouth "Slip-knot," or equal. High temperature tape shall be polyvinyl as manufactured by Plymouth, 3M, or equal.
- D. Labels for coding 600-volt wiring shall be heat-shrink plastic tubing type with machine print. Lettering shall read from left to right and face the front of the panel. Field wires terminating at a Control Panel shall be labeled with the wire number shown on the LCP Panel wiring diagrams. The Contractor shall mark all as-built drawings with wire labels.

PART 3 - EXECUTION

3.1 GENERAL

- A. The Contractor shall provide and terminate all power, control, and instrumentation conductors, except where indicated.

3.2 INSTALLATION

- A. Conductors for feeders as defined in Article 100 of the NEC shall be sized to prevent a voltage drop exceeding 3 percent at the farthest outlet of power, heating, and lighting loads, or combinations of such loads, and where the maximum total voltage drop on both feeders and branch circuits to the farthest connected load does not exceed 5 percent.
- B. Conductors for branch circuits as defined in Article 100 of the NEC, shall be sized to prevent a voltage drop exceeding 2 percent at the farthest connected load or combinations of such loads, and where the maximum total voltage drop on both feeders and branch circuits to the farthest connected load does not exceed 5 percent.
- C. Conductors shall not be pulled into raceway until raceway has been cleared of moisture and debris.
- D. Pulling tensions on raceway cables shall be within the limits recommended by the cable manufacturer. Wire pulling lubricant, where needed, shall be UL-approved.
- E. The following wiring shall be run in separate raceways:
 - 1. 24 and 12 VDC discrete signal and instrument power supply.
 - 2. 4-20 mA analog signal.
 - 3. All AC circuits.
- F. Wire in panels, cabinets, and wireways shall be neatly grouped using nylon tie straps and shall be fanned out to terminals.
- G. Wet Well Conduit Seals: Conduit entering wet wells shall be sealed with duct seal at the end of the conduit before the conduit enters the wet well. Provide cloth rag backing and 1" of duct seal so duct seal can be removed in the future. This is not the required explosion proof seal-off that is required at the classified boundaries.

3.3 SPLICES AND TERMINATIONS

- A. General
 - 1. Wire taps and splices are not allowed unless the Contractor can convince the Engineer that they are essential, and the Engineer gives written permission.
 - 2. Stranded conductors shall be terminated directly on equipment box lugs, making sure that all conductor strands are confined within the lug. Use forked-tongue lugs where equipment box lugs have not been provided.

3. Excess control and instrumentation wire shall be properly taped and terminated as spares.
- B. Control Wire and Cable
1. Control conductors shall be spliced or terminated only on terminal strips in panels or vendor-furnished equipment.
 2. In terminal cabinets, junction boxes, motor control centers, and control panels, control wire and spare wire shall be terminated to terminal strips.
- C. Instrumentation Wire and Cable
1. Shielded instrumentation cables shall be grounded at one end only, the receiving end (i.e., in the SCADA panel) on a 4-20 mA system.
- D. Power Wire and Cable
1. No 120/208-volt, 120/240-volt, and 480/277-volt branch circuit conductors may be spliced unless the Contractor can convince the Engineer that they are essential, and the Engineer gives written permission.
 2. Shielded power cable shall be terminated with pre-assembled stress cones in a manner approved by the cable and terminal manufacturer. The Contractor shall submit the proposed termination procedure as a Shop Drawing.

3.4 CABLE IDENTIFICATION

- A. General: Wires and cables shall be identified for proper control of circuits and equipment and to reduce maintenance effort.
- B. Identification Numbers: The Contractor shall assign to each control and instrumentation wire and cable a unique identification number. Numbers shall be assigned to all conductors having common terminals and shall be shown on "as built" drawings. Identification numbers shall appear within 3 inches of conductor terminals. "Control Conductor" shall be defined as any conductor used for alarm, annunciator, or signal purposes.
1. Multiconductor cable:
 - a. Assign a number that shall be attached to the cable at intermediate pull boxes and at stub-up locations beneath freestanding equipment.
 - b. Cable number shall form a part of the individual wire number.
 - c. Individual control conductors and instrumentation cable shall be identified at pull points as described above.
 - d. The instrumentation cable numbers shall incorporate the loop numbers assigned in the Contract Documents.
 2. All 120/208-volt system feeder cables and branch circuit conductors shall be color-coded as follows:
 - a. Phase A - Black
 - b. Phase B - Red
 - c. Phase C - Blue
 - d. Neutral - White
 3. Color-coding tape shall be used where colored insulation is not available.

- a. Branch circuit switch shall be Yellow.
 - b. Insulated ground wire shall be Green.
 - c. Neutral shall be Gray.
4. Color coding and phasing shall be consistent throughout the Site, but bars at panelboards, switchboards, and motor control centers shall be connected Phase A-B-C, top to bottom, or left to right, facing connecting lugs.
 5. General purpose AC control cables shall be Red.
 6. General purpose DC control cables shall be Blue.
 7. Spare cable shall be terminated on terminal screws and shall be identified with a unique number as well as with destination.
 8. Terminal strips shall be identified by computer-printable, cloth, self-sticking marker strips attached under the terminal strip.

3.5 TESTING

- A. Cable Assembly and Testing: Cable assembly and testing shall comply with applicable requirements of ICEA Publication No. S-68-516 - Ethylene-Propylene-Rubber Insulated Wire and Cable for the Transmission and Distribution of Electrical Energy. Factory test results shall be submitted in accordance with Section 01 30 00 – Contractor Submittals, prior to shipment of cable. The following field tests shall be the minimum requirements:
 1. Power cable rated at 600 volts shall be tested for insulation resistance between phases and from each phase to a ground using a megohmmeter.
 2. Field testing shall be done after cables are installed in the raceways.
 3. Field tests shall be performed by a certified test organization acceptable to the cable manufacturer. Test results shall be submitted to the Engineer for review and acceptance.
 4. Cables failing the tests shall be replaced with a new cable or be repaired. Repair methods shall be as recommended by the cable manufacturer and shall be performed by persons certified by the industry.
- B. Continuity Test: Control and instrumentation cables shall be tested for continuity, polarity, undesirable ground, and origination. Such tests shall be performed after installation and prior to placing all wires and cables in service.

END OF SECTION

SECTION 26 05 26 - GROUNDING

PART 1 - GENERAL

1.1 THE REQUIREMENT

- A. The Contractor shall provide the electrical grounding system, complete and operable, in accordance with the Contract Documents.
- B. The requirements of Section 26 00 00 – Electrical Work, General apply to this Section.
- C. Single Manufacturer: Like products shall be the end product of one manufacturer in order to achieve standardization of appearance, operation, maintenance, spare parts and manufacturer's services.

1.2 CONTRACTOR SUBMITTALS

- A. Furnish submittals in accordance with Section 26 05 00 – Electrical Work, General.
- B. Shop Drawings: Manufacturer's product information for connections, clamps, and grounding system components, showing compliance with the requirements of this Section.

PART 2 - PRODUCTS

2.1 GENERAL

- A. Components of the grounding electrode system shall be manufactured in accordance with ANSI/UL 467 - Standard for Safety Grounding and Bonding Equipment, and shall conform to the applicable requirements of National Electrical Code Article 250 and local codes.

2.2 GROUNDING SYSTEM

- A. Grounding Network bonded to service ground consists of
 1. All metallic pipe
 2. Metallic frame of the building
 3. Ground rods as shown on the plans
 4. UFER ground in the building and wet well slab
 5. Ground rings around wet wells (LS 4 and 5) and valve vaults
 6. All non-current-carrying metal structure, frames, racks, hatches and lids.

- B. Grounding ring conductors shall be bare annealed copper conductors suitable for direct burial. Conductors shall No. 2, unless indicated otherwise on the plans.
- C. Ground Rods
 - 1. Unless indicated otherwise, the ground rod shall be a minimum of 3/4-inch in diameter, 8 feet long, and have a uniform covering of electrolytic copper metallurgically bonded to a rigid steel core. The copper to steel bond shall be corrosion resistant.
 - 2. Conform to ANSI/UL 467.
 - 3. Sectional type joined by threaded copper alloy couplings.
- D. Buried cable-to-cable and cable-to-ground rod connections shall be made using exothermic welds by Cadweld, Enrico Products, or equal.
- E. Exposed grounding connectors shall be of the compression type (connector to cable), made of high copper alloy, and be manufactured specifically for the particular grounding application. The connectors shall be Burndy, O.Z. Gedney, or equal.
- F. Grounding clamps shall be used to bond each separately derived system to the grounding electrode conductors.
- G. Equipment Grounding Circuit Conductors
 - 1. These conductors shall be the same type and insulation as the load circuit conductors. The minimum size shall be as outlined in Table 250.122 of the National Electrical Code, unless indicated otherwise.
 - 2. Metallic conduit systems shall have equipment grounding wires as well as being equipment grounding conductors themselves.
- H. Ground clamps in concrete shall be rated for use with rebar and embedded in concrete.
- I. Manufacturers of grounding materials shall be Copperweld, Blackburn, Burndy, or equal.

PART 3 - EXECUTION

3.1 GROUNDING

- A. Provide a separate grounding conductor, securely grounded in each raceway independent of raceway material.
- B. Provide a separate grounding conductor for each motor and connect at motor box. Do not use bolts securing motor box to frame or cover for grounding connectors.
- C. Size in accordance with the NEC-Article 250 and local amendments.

- D. Route conductors inside raceway.
- E. Provide a grounding type bushing for secondary feeder conduits which originate from the secondary section of each MCC section, switchboard, or panelboard.
- F. Individually bond these raceways to the ground bus in the secondary section.
- G. Provide a green insulated wire as grounding jumper from the ground screw to a box grounding screw and, for grounding type devices, to equipment grounding conductor.
- H. Provide a separate grounding conductor in each individual raceway for parallel feeders.
- I. Interconnect the secondary switchgear neutral bus to the ground bus in the secondary switchgear compartment only at service entrance point or after a transformer.
- J. Bond cold water pipe systems and metallic building structure per NEC. Bond ALL metallic water pipe penetrations.
- K. Measure ground impedance in accordance with IEEE STD 81 after installation but before connecting the electrode to the remaining grounding system.
- L. Low Voltage Grounded System (600-volt or less): A low voltage grounded system is a system where the local power supply is a transformer with the transformer secondary grounded.
 - 1. Grounding system connections for a premises wired system supplied by a grounded AC service shall have a grounding electrode connector connected to the grounded service conductor at each service, in accordance with the NEC.
 - 2. The grounded circuit conductor shall not be used for grounding non-current carrying parts of equipment, raceways, and other enclosures except where specifically listed and permitted by the NEC.
- M. Embedded Ground Connections
 - 1. Underground and grounding connections embedded in concrete shall be UL listed compression type ground grid connectors.
 - 2. The connection shall be made in accordance with the manufacturer's instructions.
 - 3. The Contractor shall not conceal or cover any ground connections until the Engineer or authorized representative has established that every grounding connection conforms to the Contract Documents and has given the Contractor written confirmation.
- N. Ground Rods
 - 1. Locations shall be as determined in the field.
 - 2. Rods forming an individual ground array shall be equal in length.
 - 3. Rod spacing shall be a minimum of the rod length.

O. Shield Grounding

1. Shielded instrumentation cable shall have its shield grounded at one end only unless Shop Drawings indicate the shield will be grounded at both ends.
2. The grounding point shall be at the control panel or otherwise at the receiving end of the signal carried by the cable.
3. Termination of shield drain wire shall be on its own terminal screw.
4. Terminal screws shall be jumpered together using manufactured terminal block jumpers.
5. Connection to the ground bus shall be via a green No. 12 conductor to the main ground bus for the panel.

END OF SECTION

SECTION 26 05 33 - RACEWAY AND BOXES FOR ELECTRICAL SYSTEMS

PART 1 - GENERAL

1.1 SUMMARY

- A. Section includes conduit and tubing, surface raceways, wireways, outlet boxes, pull and junction boxes, and handholes.
- B. Related Sections:
 - 1. Section 26 05 26 - Grounding.
 - 2. Section 26 27 26 - Wiring Devices.

1.2 REFERENCES

- A. American National Standards Institute:
 - 1. ANSI C80.1 - Rigid Steel Conduit, Zinc Coated.
 - 2. ANSI C80.3 - Specification for Electrical Metallic Tubing, Zinc Coated.
- B. National Electrical Manufacturers Association:
 - 1. NEMA 250 - Enclosures for Electrical Equipment (1000 Volts Maximum).
 - 2. NEMA FB 1 - Fittings, Cast Metal Boxes, and Conduit Bodies for Conduit and Cable Assemblies.
 - 3. NEMA OS 1 - Sheet Steel Outlet Boxes, Device Boxes, Covers, and Box Supports.
 - 4. NEMA OS 2 - Nonmetallic Outlet Boxes, Device Boxes, Covers, and Box Supports.
 - 5. NEMA RN 1 - Polyvinyl Chloride (PVC) Externally Coated Galvanized Rigid Steel Conduit and Intermediate Metal Conduit.
 - 6. NEMA TC 2 - Electrical Polyvinyl Chloride (PVC) Tubing and Conduit.
 - 7. NEMA TC 3 - PVC Fittings for Use with Rigid PVC Conduit and Tubing.

1.3 SYSTEM DESCRIPTION

- A. Raceway as scheduled and boxes located as indicated on Drawings, and at other locations as required for splices, taps, wire pulling, equipment connections, and compliance with regulatory requirements. Raceway schedule locations and boxes are shown in approximate locations unless dimensioned. Provide raceway and boxes to complete wiring system.

1.4 DESIGN REQUIREMENTS

- A. Minimum Raceway Size: $\frac{3}{4}$ " inch unless otherwise specified.
- B. Raceway routing is to be developed by the Contractor and shop drawings reflecting the individual routing and supporting means shall be submitted for review and approval. In-slab routing is to be depicted by dashed lines and riser locations dimensioned.

1.5 SUBMITTALS

- A. Furnish submittals in accordance with Section 26 00 00.
- B. Product Data: Submit for the following:
 - 1. Flexible metal conduit.
 - 2. Liquidtight flexible metal conduit.
 - 3. Raceway fittings.
 - 4. Conduit bodies.
 - 5. Wireway.
 - 6. Pull and junction boxes.
 - 7. Handholes.
 - 8. Galvanized rigid conduit
 - 9. Polyolefin Coated Rigid steel conduit
 - 10. Intermediate metal conduit
 - 11. Electrical metallic tubing
- C. Manufacturer's Installation Instructions: Submit application conditions and limitations of use stipulated by Product testing agency specified under Regulatory Requirements. Include instructions for storage, handling, protection, examination, preparation, and installation of Product.
- D. Raceway Routing
 - 1. May be hand drawn with annotated sketches
 - 2. Include intended combining of circuits

1.6 CLOSEOUT SUBMITTALS

- A. Project Record Documents:
 - 1. Record actual routing of all raceways including underground and concealed conduits.

1.7 DELIVERY, STORAGE, AND HANDLING

- A. Protect conduit from corrosion and entrance of debris by storing above grade. Provide appropriate covering.

- B. Protect PVC conduit from sunlight.

1.8 COORDINATION

- A. Coordinate installation of outlet boxes for equipment connected under Section 26 05 03.
- B. Coordinate mounting heights, orientation and locations of outlets mounted above counters, benches, and backsplashes.
- C. Coordinate equipment penetrations and access ports prior to rough-in.

PART 2 - PRODUCTS

2.1 METAL CONDUIT

- A. Manufacturers:
 - 1. Allied Tube & Conduit.
 - 2. EGS/Appleton Electric.
 - 3. Republic Conduit.
 - 4. Thomas & Betts Corporation; a member of the ABB Group.
 - 5. Western Tube and Conduit Corporation.
 - 6. Wheatland Tube Company.
 - 7. Substitutions: In accordance with MASS Section 10.05 Article 5.7.
- B. Galvanized Rigid Steel Conduit (GRC): ANSI C80.1.
- C. Intermediate Metal Conduit (IMC): Rigid steel.
- D. Fittings and Conduit Bodies: NEMA FB 1; material to match conduit.

2.2 PVC COATED METAL CONDUIT

- A. Manufacturers:
 - 1. GALCO.
 - 2. Substitutions: In accordance with MASS Section 10.05 Article 5.7.
- B. Product Description: NEMA RN 1, UL 514B ; galvanized rigid steel conduit with external Polyolefin coating, 40 mil thick interior Thermoset Polymer coating 2 mil thick,
- C. Fittings and Conduit Bodies: NEMA FB 1, UL 514B; galvanized rigid steel fittings with external Polyolefin coating, 40 mil thick interior Thermoset Polymer coating 2 mil thick.

2.3 FLEXIBLE METAL CONDUIT

- A. Manufacturers:
 - 1. AFC Cable Systems, Inc.
 - 2. EGS/Appleton Electric.
 - 3. Southwire Company.
 - 4. Substitutions: In accordance with MASS Section 10.05 Article 5.7.
- B. Product Description: Interlocked aluminum construction.
- C. Fittings: NEMA FB 1.
 - 1. Insulated throat Connectors

2.4 LIQUIDTIGHT FLEXIBLE METAL CONDUIT

- A. Manufacturers:
 - 1. Anamet Electrical, Inc.
 - 2. Carlon Electrical Products.
 - 3. EGS/Appleton Electric.
 - 4. Southwire Company
 - 5. Substitutions: In accordance with MASS Section 10.05 Article 5.7.
- B. Product Description: Interlocked aluminum construction with PVC jacket.
- C. Fittings: NEMA FB 1.
 - 1. Insulated throat connectors

2.5 ELECTRICAL METALLIC TUBING (EMT)

- A. Manufacturers:
 - 1. Carlon Electrical Products.
 - 2. Emerson Process Management.
 - 3. Republic Conduit.
 - 4. Western Tube and Conduit Corporation.
 - 5. Wheatland Tube Company.
 - 6. Substitutions: In accordance with MASS Section 10.05 Article 5.7.
- B. Product Description: ANSI C80.3; galvanized tubing.
- C. Fittings and Conduit Bodies: NEMA FB 1; steel or malleable iron, compression type.
 - 1. Insulated throat connectors.
- D. Set screw or indenter type fittings and conduit bodies not permitted.

2.6 NONMETALLIC CONDUIT

- A. Manufacturers:
 - 1. Carlon Electrical Products.
 - 2. EGS/Appleton Electric.
 - 3. Hubbell Premise Wiring.
 - 4. Substitutions: In accordance with MASS Section 10.05 Article 5.7.
- B. Product Description: NEMA TC 2; Schedule 40 or 80 PVC as indicated on plans. If not indicated than SCH 80 is to be used.
- C. Fittings and Conduit Bodies: NEMA TC 3.
- D. Transition to threaded conduits shall use ShurLok II fittings. Provide Direct burial rated Heat Shrink outer jacket extending a minimum of 2" past fitting ends.

2.7 WIREWAY

- A. Manufacturers:
 - 1. Carlon Electrical Products.
 - 2. Cooper B-Line, Inc.; a division of Cooper Industries.
 - 3. Hammond Mfg. Co. Inc.
 - 4. Hoffman; a brand of Pentair Equipment Protection.
 - 5. Panduit Corp.
 - 6. Square D; by Schneider Electric.
 - 7. Wiremold / Legrand.
 - 8. Substitutions: In accordance with MASS Section 10.05 Article 5.7.
- B. Product Description: Weather-tight NEMA 4 type wireway.
- C. Knockouts: Manufacturer's standard.
- D. Size and length as indicated on Drawings. If not shown, provide 6x6 wireway, length as required.
- E. Cover: Hinged cover with full gaskets.
- F. Connector: Flanged.
- G. Fittings: Lay-in type with removable top, bottom, and side; captive screws.
- H. Finish: Rust inhibiting primer coating with gray enamel finish.

2.8 OUTLET BOXES

- A. Manufacturers:
 - 1. Allied Moulded Products, Inc.
 - 2. Carlon Electrical Products.
 - 3. Emerson Electric Co.
 - 4. RACO; Hubbell.
 - 5. Substitutions: In accordance with MASS Section 10.05 Article 5.7.
- B. Nonmetallic Outlet Boxes: NEMA OS 2.
- C. Sheet Steel Boxes
- D. Cast Boxes: NEMA FB 1, Type FD, cast ferrous alloy. Furnish gasketed cover by box manufacturer. Furnish threaded hubs.
- E. Wall Plates for Finished Areas: As specified in Section 26 27 26.
- F. Wall Plates for Unfinished Areas and Surface mounted raceway: Furnish gasketed cover.

2.9 PULL AND JUNCTION BOXES

- A. Manufacturers:
 - 1. Emerson Process Management.
 - 2. Hoffman; a brand of Pentair Equipment Protection.
 - 3. Kraloy.
 - 4. RACO; Hubbell.
 - 5. Substitutions: In accordance with MASS Section 10.05 Article 5.7.
- B. Hinged Enclosures: As specified in Section 26 27 26.
- C. Surface Mounted Cast Metal Box: NEMA 250, Type 4X; flat-flanged, surface mounted junction box:
 - 1. Material: Galvanized cast iron.
 - 2. Cover: Furnish with ground flange, neoprene gasket, and stainless-steel cover screws.

2.10 SEAL OFF FITTINGS AND ACCESSORIES

- A. Fittings
 - 1. Seal Rigid Conduit or IMC Raceways with up to 40% wire fill.
 - 2. A 40% wire fill capacity

3. Large openings with threaded closures to provide easy access to conduit hubs for making dams
4. Integral bushing in conduit hubs to protect conductor insulation from damage
5. NPT threaded hubs to ensure ground continuity
6. Minimum turning radius
7. Material/Finish
 - a. Copper-free Aluminum (less than 4/10 of 1%)
 - b. Electrostatically applied powder coating
 - c. Duraloy Iron
 - d. Tri-Coat Finish of electrozinc, chromate sealant, and electrostatically applied powder coating
8. Killark or ENY40 or EYD 40 or equal

B. Accessories

1. Packing Fiber
 - a. Made from an environmentally safe, non-asbestos material.
 - b. Forms a positive dam to hold compound (Killark SC Type) in ENY, EY, and EYS Series fittings.
2. Water based sealing compound (SC)
 - a. Provides exact amount of compound and water packaged together into a two compartment plastic pouch.
 - b. The precise amount of compound and water are available for mixing. No mixing or measure implements are required.
 - c. The mixed sealing compound can be poured directly into the sealing fitting.
 - d. A tubular straw is provided for those difficult seals to reach.
 - e. The package label indicates the size and quantity of sealing fittings each pouch will properly fill.
3. Killark Series SC/PF or equal.

2.11 CONDUIT SEALANT – GENERAL

- A. Duct sealant shall be a 2-part, 98% closed-cell urethane foam that reacts to set in 5-10 minutes at 70°F (21°C).
- B. It shall be reusable and capable of sealing up to 12-inch (30-cm) conduits with multiple cable configurations.
- C. Duct sealant shall be reenterable.
- D. It shall be capable of withstanding temperatures from -20°F to 200°F (-30°C to 95°C); and be chemically resistant to gasoline, oils, dilute acids and bases.
- E. Duct sealant shall not affect the physical or electrical properties of wire and cable.

- F. Duct sealant shall have good adhesion to duct and cable jacket surfaces with good structural strength.
- G. It shall have 145-lb compressive strength (ASTM D1621).
- H. Duct sealant shall be capable of holding 22 ft (6.7 m) water head pressure continuous or 90 ft (27 m) water head pressure short-term.
- I. It shall block up to 5 psi (0.3 bar) gas or vapor continuous.
- J. It shall meet NEC codes for raceway seals and meet UL 94 fire rating HBF to be UL recognized.
- K. Duct sealant shall be Polywater FST Foam Sealant or equal.

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Verify outlet locations and routing and termination locations of raceway prior to rough-in.

3.2 EXISTING WORK

- A. Remove exposed abandoned raceway.
- B. Remove concealed abandoned raceway to its source.
- C. Disconnect abandoned outlets and remove devices. Remove abandoned outlets when raceway is abandoned and removed. Install blank cover for abandoned outlets not removed.
- D. Maintain access to existing boxes and other installations remaining active and requiring access. Modify installation or provide access panel.
- E. Extend existing raceway and box installations using materials and methods as specified.
- F. Clean and repair existing raceway and boxes to remain or to be reinstalled.

3.3 FLOODING MITIGATION

- A. All Junction boxes, pull boxes, enclosures and accessories (with the exception of conduit) shall be mounted at least 3 feet above finished grade to mitigate the effects of flooding.

- B. Conduit risers that drop below the 3-foot barrier shall be sealed with approved sealant.

3.4 INSTALLATION

- A. Ground and bond raceway and boxes in accordance with Section 26 05 26.
- B. Fasten raceway and box supports to structure and finishes in accordance with Section 26 05 29.
- C. Identify raceway and boxes in accordance with Section 26 05 43.
- D. Arrange raceway and boxes to maintain headroom and present neat appearance.
- E. In or Under Slab on Grade: Provide plastic coated rigid steel conduit sweeps and risers and schedule 80PVC for horizontal runs. Provide cast or metal boxes.
- F. At point where risers terminate provide duct sealing compound.
- G. Outdoor Locations, Above Grade: Provide Plastic coated galvanized rigid conduit. Provide plastic coated cast metal outlet, pull, and junction boxes.
- H. Wet and Damp Locations: Provide rigid steel conduit, intermediate metal conduit. Provide electrical metallic tubing above 8-foot AFF. Provide cast metal or nonmetallic outlet, junction, and pull boxes.
- I. Concealed Dry Locations: Provide electrical metallic tubing. Provide sheet-metal boxes with access. Provide flush mounting outlet box in finished areas. Provide hinged enclosure for large pull boxes.
- J. Exposed Dry Locations: Provide electrical metallic tubing. Provide sheet-metal boxes. Provide hinged enclosure for large pull boxes.

3.5 INSTALLATION - RACEWAY

- A. Raceway routing to be developed by Contractor. Route to complete wiring system.
- B. Arrange raceway supports to prevent misalignment during wiring installation.
- C. Support raceway using coated steel or malleable iron straps, lay-in adjustable hangers, clevis hangers, and split hangers.
- D. Group related raceway; support using conduit rack. Construct rack using steel channel; provide space on each for 25 percent additional raceways.

- E. Do not support raceway with wire or perforated pipe straps. Remove wire used for temporary supports
- F. Do not attach raceway to ceiling support wires or other piping systems.
- G. Construct wireway supports from steel channel.
- H. Route exposed raceway parallel and perpendicular to walls.
- I. Route raceway installed above accessible ceilings parallel and perpendicular to walls.
- J. Route conduit in and under slab from point-to-point.
- K. Maintain clearance between raceway and piping for maintenance purposes.
- L. Maintain 12-inch clearance between raceway and surfaces with temperatures exceeding 104 degrees F.
- M. Cut conduit square using saw or pipe cutter; de-burr cut ends.
- N. Bring conduit to shoulder of fittings; fasten securely.
- O. Join nonmetallic conduit using cement as recommended by manufacturer. Wipe nonmetallic conduit dry and clean before joining. Apply full even coat of cement to entire area inserted in fitting. Allow joint to cure for minimum 20 minutes.
- P. Provide thread lubricant on all threaded connections.
- Q. Install conduit hubs or sealing locknuts to fasten conduit to sheet metal boxes in damp and wet locations and to cast boxes without hubs.
- R. Install no more than equivalent of three 90-degree bends between boxes. Install conduit bodies to make sharp changes in direction, as around beams. Install factory elbows for bends in metal conduit larger than 2-inch size.
- S. Avoid moisture traps; install junction box with drain fitting at low points in conduit system where accessible.
- T. Install fittings to accommodate expansion and deflection where raceway crosses, control and expansion joints.
- U. Install suitable pull string or cord in each empty raceway except sleeves and nipples.
- V. Install suitable caps to protect installed conduit against entrance of dirt and moisture.
- W. Close ends and unused openings in wireway.
- X. Duct seal interior of conduits where they pass from exterior to interior.

3.6 INSTALLATION - BOXES

- A. Install wall mounted boxes at elevations to accommodate mounting heights as indicated on Drawings (notes or elevations) unless specified in section for outlet device.
- B. Adjust box location up to 10 feet prior to rough-in to accommodate intended purpose.
- C. Orient boxes to accommodate wiring devices oriented as specified in Section 26 27 26.
- D. Install pull boxes and junction boxes above accessible ceilings and in unfinished areas only.
- E. In Accessible Ceiling Areas: Install outlet and junction boxes no more than 6 inches from ceiling access panel or from removable recessed luminaire.
- F. Do not install flush mounting box back-to-back in walls; install with minimum 6 inches separation. Install with minimum 24 inches separation in acoustic rated walls.
- G. Secure flush mounting box to interior wall and partition studs. Accurately position to allow for surface finish thickness.
- H. Install stamped steel bridges to fasten flush mounting outlet box between studs.
- I. Install flush mounting box without damaging wall insulation or reducing its effectiveness.
- J. Install adjustable steel channel fasteners for hung ceiling outlet box.
- K. Do not fasten boxes to ceiling support wires or other piping systems.
- L. Support boxes independently of conduit.
- M. Install gang box where more than one device is mounted together. Do not use sectional box.
- N. Install gang box with plaster ring for single device outlets.

3.7 INTERFACE WITH OTHER PRODUCTS

- A. Install conduit to preserve fire resistance rating of partitions and other elements.
- B. Route conduit through roof openings for piping and ductwork or through suitable roof jack with pitch pocket.
- C. Locate outlet boxes to allow luminaires positioned as indicated on Drawings.

- D. Align adjacent wall mounted outlet boxes for switches, thermostats, and similar devices.

3.8 ADJUSTING

- A. Adjust flush-mounting outlets to make front flush with finished wall material.
- B. Install knockout closures in unused openings in boxes.

3.9 CLEANING

- A. Clean interior of boxes to remove dust, debris, and other material.
- B. Clean exposed surfaces and restore finish.

END OF SECTION

SECTION 26 05 43 - UNDERGROUND RACEWAY SYSTEMS

PART 1 - GENERAL

1.1 THE REQUIREMENT

- A. The Contractor shall provide underground raceway systems, including trenching, backfill, compaction, and restoration, complete and in place, in accordance with the Contract Documents.

1.2 CONTRACTOR SUBMITTALS

- A. Shop Drawings
 - 1. Complete catalog cuts of all conduits, fittings, and pullboxes, marked where applicable to show proposed materials and finishes.
- B. Record Drawings
 - 1. Show routings, burial depths, and pullbox locations and sizes.

PART 2 - PRODUCTS

2.1 GENERAL

- A. Pullboxes, and fittings that are dedicated to the underground raceway system shall comply with the requirements of this Section.

2.2 PULLBOXES

- A. Shall be mounted above grade on supports holding them at least three feet above grade to mitigate water intrusion during flooding events.

2.3 UNDERGROUND CONDUITS

- A. Underground raceways shall be:
 - 1. Schedule 80 PVC conduit as indicated, sunlight resistant. Conduit shall be manufactured in accordance with NEMA TC-2 - Electrical Plastic Tubing and Conduit, and UL-651 - Standard for Rigid Non-metallic Conduit, or where called for on the Drawings,
 - 2. HDPE for buried horizontal runs shall be Listed. Compliant with NEC articles 300 and 353 and Listed to UL 651 A&B.
- B. Identification Tape: Continuous lengths of underground warning tapes shall be installed 12-inches above and parallel to conduits. Tape shall be 6-inches wide polyethylene film imprinted "CAUTION - ELECTRIC UTILITIES BELOW." Tape shall

have non-ferrous metal foil conductor sandwiched in the tape for detection purposes. Tape shall be as manufactured by **Brady**, or equal.

PART 3 - EXECUTION

3.1 GENERAL

- A. Underground raceways shall be installed between structures and pullboxes as indicated. Raceway systems shall be electrically and mechanically complete before conductors are installed. Bends and offsets shall be smooth and symmetrical, and shall be fabricated with tools designed for this purpose. Factory elbows shall be utilized wherever possible. Unless otherwise noted provide plastic coated RSC for vertical sweeps and risers.
- B. Raceway routing shall be adjusted to avoid obstructions.

3.2 INSTALLATION

- A. Raceways shall be installed in accordance with the criteria below:
 - 1. Raceway shall be laid on a grade line of at least 3-inches per 100-feet, sloping towards structures. Conduit shall be installed so that the top of the conduit is a minimum of 24-inches below grade and a minimum of 24-inches below roadways, driveways, and bike trails.
 - 2. Changes in direction of the duct envelope by more than 10 degrees horizontally or vertically shall be accomplished using factory elbows.
 - 3. Raceway shall be installed in accordance with the Manufacturer's requirements and recommendations. The bottom of trench shall be of select backfill or sand.
 - 4. Each of the completed raceways shall be cleaned by drawing through it a standard flexible mandrel one foot long and 1/4-inch smaller than the nominal size of the duct. After passing of the mandrel, a wire brush and swab shall be drawn through.
 - 5. Provide heat shrink tubing around conversion fittings when converting between different raceway materials (i.e.: HDPE to PVC coated RSC).
 - 6. Raceway risers shall be Plastic coated rigid steel sweeps and risers.
- B. When raceway enters a building, conduit shall transition to rigid steel PVC-coated conduit on stub-up.
- C. Where an underground raceway enters a structure through a concrete wall, provide a **Link-Seal**, or equal sealing device. The sealing device shall be utilized with plastic coated rigid steel conduit. Transition from PVC to plastic coated RSC prior to building entry.

END OF SECTION

SECTION 26 24 16 05 - PANELBOARDS

PART 1 - GENERAL

1.1 THE REQUIREMENT

- A. The Contractor shall provide panelboards complete and operable, in accordance with the Contract Documents.
- B. Single Manufacturer: Like products shall be the end product of one manufacturer in order to achieve standardization of appearance, operation, maintenance, spare parts, and manufacturer's services.

1.2 CONTRACTOR SUBMITTALS

- A. General: Submittals shall be in accordance Section 26 00 00 – Electrical Work, General.
- B. Shop Drawings
 - 1. Breaker layout drawings with dimensions and nameplate designations
 - 2. Component list
 - 3. Drawings of conduit entry/exit locations
 - 4. Assembly ratings including:
 - a. Short circuit rating
 - b. Voltage
 - c. Continuous current
 - 5. Cable terminal sizes
 - 6. Descriptive bulletins
 - 7. Product sheets
 - 8. Installation information
 - 9. Seismic certification and equipment anchorage details

PART 2 - PRODUCTS

2.1 PANELBOARDS

- A. Panelboards shall be dead front factory assembled. Panelboards shall comply with NEMA PB-1-Panelboards, as well as the provisions of UL 50 – Safety Enclosures for Electrical Equipment and UL 67 – Safety Panelboards. Panelboards used for service equipment shall be UL labeled for such use. Panelboards shall be rated for 120/208-volt, 3-phase operation
- B. The manufacturer of the panelboard shall be the manufacturer of the major components within the assembly, including circuit breakers.

C. Ratings

1. Panelboards rated 240 VAC or less shall have short circuit ratings not less than 18,000 amps RMS symmetrical or as indicated by the Short Circuit Study, whichever is greater.
2. Panelboards shall be labeled with a UL short circuit rating. Series ratings are not acceptable.

D. Construction

1. All lighting and power distribution panels shall have copper bus bars.
2. Breakers shall be one, two, or three pole as indicated, with ampere trip ratings as required by the equipment. Breakers shall be quick-make and quick-break, inverse time trip characteristics, to trip free on overload or short circuit, and to indicate trip condition by the handle position.
3. The panels shall have hinged doors with combination catch and latch. The front panels shall be so arranged that when the plates are removed, the gutters, terminals and wiring will be exposed and accessible. The doors shall have inner doors within the plates to have only the breaker operating mechanism exposed when they are opened. Live conductors and terminals shall be concealed behind the plates.
4. All panelboards shall be rated for the intended voltage.
5. All circuit breakers shall be interchangeable and capable of being operated in any position as well as being removable from the front of the panelboard without disturbing adjacent units. No plug-in circuit breakers will be acceptable.
6. Lighting and power distribution panels shall be constructed in accordance with Section 26 00 00 – Electrical Work, General. Panels shall have the necessary barriers, supports, and liberal wiring gutters. Trim screws shall be stainless steel. All panelboard parts of metal other than copper, aluminum, or stainless steel shall be cadmium plated. Panelboards shall be as manufactured by Allen-Bradley, General Electric, or Cutler-Hammer.
7. Panelboards shall be UL listed except for special enclosures which are not available with UL listing.
8. Panelboards shall be suitable for use as service entrance as indicated or as otherwise required by the N.E.C.

PART 3 - EXECUTION

3.1 GENERAL

- A. All WORK of this Section shall be installed as indicated in Section 26 00 00 – Electrical Work, General.

END OF SECTION

SECTION 26 27 26 - WIRING DEVICES

PART 1 - GENERAL

1.1 THE REQUIREMENT

- A. The Contractor shall provide all wiring devices, plates, and nameplates in accordance with the Contract Documents.
- B. The requirements of Section 26 00 00 – Electrical Work, General apply to this Section.
- C. Single Manufacturer: Like products shall be the end product of one manufacturer in order to achieve standardization of appearance, operation, maintenance, spare parts, and manufacturer's services.

1.2 CONTRACTOR SUBMITTALS

- A. Furnish submittals in accordance with Section 26 00 00.
- B. Shop Drawings
 - 1. Complete catalog cuts of switches, receptacles, enclosures, covers, and appurtenances, marked to clearly identify proposed materials.
 - 2. Documentation showing that proposed materials comply with the requirements of NEC and UL.
 - 3. Documentation of the manufacturer's qualifications.

PART 2 - PRODUCTS

2.1 GENERAL

- A. All devices shall carry the UL label.
- B. General purpose duplex receptacles and toggle switch handles shall be brown everywhere except in finished rooms where they shall be ivory. Special purpose receptacles shall have a body color as indicated. Receptacles and switches shall conform to Federal Specifications W-C-596E and W-S-896E, respectively.

2.2 LIGHTING SWITCHES

- A. Local branch switches shall be toggle type, rated at 20 amps, 120-277 VAC, and shall be General Electric Cat. No. GE-5951-1 for single pole, GE-5953-1 for 3-way and GE-5954-1 for 4-way, or similar types as manufactured by Hubbell, or equal.

2.3 GENERAL PURPOSE RECEPTACLES

- A. Duplex receptacles rated 120-volt, 20 amps shall be polarized 3-wire type for use with 3-wire cord with grounded lead and 1 designated stud shall be permanently grounded to the conduit system (NEMA 5-20R). Duplex 120-volt receptacles shall be G.E. 5362, Hubbell 5362, or equal. Single receptacles shall be G.E. 4102, Hubbell 4102, or equal.
- B. Ground-fault circuit interrupting receptacles (GFCI's) shall be installed at the locations indicated. GFCI's shall be rated 125-volt, 20 amps and shall be Hubbell GF-5362, or equal.
- C. Receptacles for hazardous locations shall be single gang receptacles with spring door. Receptacles shall have a factory sealed chamber. The receptacles shall have a delayed action feature requiring the plug to be inserted in the receptacle and rotated before the electrical connection is made. The receptacle shall not work with non-hazardous rated plugs. One plug shall be furnished with each receptacle. The receptacles shall be rated for 20 amps at 125 VAC. Hazardous location receptacles shall be Appleton EFSB, Crouse-Hinds ENR, or equal.
- D. Where indicated, hazardous location receptacles shall be provided with ground fault protection. Ground fault protection shall be Appleton EFSR-GFI, Crouse-Hinds GFS 1, or equal.

2.4 ENCLOSURES AND COVERS

- A. Surface mounted switches and receptacles shall be in FS or FD type cast device boxes.
- B. In finished areas, switch and receptacle boxes shall be provided with SUPER STAINLESS STEEL COVERS as manufactured by Harvey Hubbell, Arrow Hart, Bryant, or equal.
- C. In areas where cast boxes are used, switch and receptacle covers shall be Crouse-Hinds Catalogue No. DS185 and WLRD-1, or Adalet No. WSL and WRD, or equal.
- D. Receptacles in exterior locations shall be with s-hinged cover/enclosure marked "Suitable for Wet Locations when in use" and "UL Listed." There shall be a gasket between the enclosure and the mounting surface and between the hinged cover and mounting plate/base. The cover shall be TayMac Specification Grade, or equal.

2.5 NAMEPLATES

- A. Provide nameplates or equivalent markings on switch enclosures to indicate ON and OFF positions of each switch. ON and OFF for 3-way or 4-way switches is not acceptable. Provide receptacles for special purposes with nameplates indicating their use. Conform to requirements of Section 26 00 00 – Electrical Work, General.

PART 3 - EXECUTION

3.1 CONNECTION

- A. Securely fasten nameplates using screws, bolts, or rivets centered under or on the device, unless otherwise indicated.

3.2 GROUNDING

- A. Ground all devices, including switches and receptacles, in accordance with NEC, ART 250, and Section 26 05 26 – Grounding.
- B. Ground switches and associated metal plates through switch mounting yoke, outlet box, and raceway system.
- C. Ground flush receptacles and their metal plates through positive ground connections to outlet box and grounding system. Maintain ground to each receptacle by spring-loaded grounding contact to mounting screw or by grounding jumper, each making positive connection to outlet box and grounding system at all times.

3.3 FIELD TESTING

- A. Provide checkout, field, and functional testing of wiring devices in accordance with Section 26 00 00 – Electrical Work, General.
- B. Test each receptacle for polarity and ground integrity with a standard receptacle tester.

END OF SECTION

SECTION 26 29 13.16 – SOLID-STATE REDUCED VOLTAGE STARTERS

PART 1 - GENERAL

1.1 THE REQUIREMENT

- A. General: The CONTRACTOR shall provide solid-state reduced voltage motor starters, complete and operable, in accordance with the Contract Documents.
- B. Single Manufacturer: Like products shall be the end product of one manufacturer in order to standardize appearance, operation, maintenance, spare parts, and manufacturer's services. However, the CONTRACTOR shall remain responsible to the OWNER for the WORK of the Contract.
- C. Coordination: Equipment provided under this Section shall operate the electric motor and the driven equipment indicated under other equipment specifications. The CONTRACTOR's attention is specifically directed to the need for proper coordination of the WORK under this Section with the WORK under the equipment section.

1.2 CONTRACTOR SUBMITTALS

- A. Furnish submittals in accordance with Section 26 00 00, except that Shop Drawing information for the drives shall be submitted as part of the information for the driven equipment.
- B. Shop Drawings
 - 1. Equipment information
 - a. Name of drive manufacturer
 - b. Type and model
 - c. Assembly drawing and nomenclature
 - d. Maximum heat dissipation capacity (kW)
 - 2. Written description of ladder diagram operation. Custom schematics shall be furnished. Diagrams shall include all remote devices.
 - 3. System block diagram and interconnection diagrams.
 - 4. Replacement parts list and operation and maintenance instructions.

PART 2 - PRODUCTS

2.1 GENERAL

The CONTRACTOR shall provide solid-state starters, in quantity and type as shown on the Contract Drawings.

- A. Solid-state reduced voltage soft starters (RVSS) shall be UL listed and consist of a SCR-based power section, logic board, and paralleling bypass contactor.
- B. Starters shall conform to the following:
 - 1. The SCR-based power section shall consist of 6 back-to-back SCRs, 2 SCRs per phase, and shall be rated for a minimum peak inverse voltage rating of 2.5 times line voltage, 1200 PIV for 480 volts. Units using triacs or SCR/diode combinations shall not be acceptable. Resistor/capacitor snubber networks shall be used to prevent false firing of SCRs due to dv/dt characteristics of the electrical system.
 - 2. Starters shall include the following logic and control functions:
 - a. Adjustable maximum starting current from 200 percent to 500 percent
 - b. Ramp time adjustment from 1 to 40 seconds
 - c. Adjustable linear voltage deceleration
 - d. Kick start
 - e. Phase loss protection
 - f. Undervoltage protection
 - g. Current unbalance protection
 - h. Phase rotation protection (prevents starting)
 - i. Class 20 electronic overload protection. Heat sink overtemperature protection shall be provided.
 - j. Dry contacts for remote indication of RUN and TRIP status
 - 3. The paralleling bypass contactor shall energize when the motor reaches full speed. The contactor shall be an integral part of the reduced voltage starter and be connected directly across the power SCRs.
 - 4. The starter shall be housed in a NEMA 12 enclosure. Heaters and cooling fans shall be provided if required to maintain the equipment within the manufacturer's environmental guidelines.
 - 5. The starter shall be provided with a control power transformer sized to accommodate all controls indicated on the Contract Drawings. An input power circuit breaker shall be provided. Lug termination of the incoming power conductors shall not be permitted. The starter and circuit breaker shall be rated for 65 KAIC RMS at 480 volts.
 - 6. The starter shall have door-mounted indication of motor run in the form of a 'green' LED lamp.
 - 7. The starter shall be provided with the operator controls indicated. Operator interface controls shall be heavy duty, oil-tight, 30.5 mm.
 - 8. Starter shall have a lockable disconnect switch.

2.2 MANUFACTURERS, OR EQUAL

- A. Solid-state reduced voltage starters shall be **Allen-Bradley SMC with pump control option**, or equal.

PART 3 - EXECUTION

3.1 GENERAL

- A. The CONTRACTOR shall install the solid-state reduced voltage starters in accordance with the manufacturer's published instructions.
- B. The CONTRACTOR shall
 - 1. Verify that the overload devices are properly adjusted for the equipment installed.
 - 2. After the equipment is installed, touch up scratches and verify that nameplate and other identification is accurate.
- C. Inspection, Startup, Field Adjustment: An authorized service representative of the manufacturer shall supervise the following and certify the equipment and controls have been properly installed, aligned, and readied for operation.
 - 1. Installation of the equipment
 - 2. Inspection, checking, and adjusting the equipment
 - 3. Startup and field testing for proper operation

END OF SECTION 26 29 13.16

SECTION 26 36 05 - HEAVY-DUTY SAFETY SWITCHES

PART 1 - GENERAL

1.1 THE REQUIREMENT

- A. Furnish and install heavy-duty, double-throw safety switches for manual transfer of loads between alternate sources of supply and single-throw safety switches for motor disconnect.

1.2 CODES AND STANDARDS

- A. The heavy-duty safety switches shall conform to the requirements of:
 - 1. UL 98 – Enclosed Switches

1.3 SUBMITTALS

- A. Provide outline drawings with dimensions, and equipment ratings for voltage, amperage and short circuit in accordance with Specification Section 26 000 00.

PART 2 - PRODUCTS

2.1 SAFETY SWITCH

- A. The safety switches used as transfer switches shall be heavy-duty, manually operated, single-throw or double-throw switches, full load make or break rated. Switches shall include a NO contact that is made in the A and B position.
- B. Switch shall be UL listed for use as service equipment and is to be labeled for this application.
- C. Switch shall have switch blades which are visible when the switch is OFF and the cover is open.
- D. Lugs shall be front removable and UL listed for aluminum or copper.
- E. All current carrying parts shall be plated to resist corrosion.
- F. The UL listed short circuit current rating of the double throw switch shall be 10,000 rms symmetrical amperes.
- G. Provisions for padlocking the switch in the OFF position shall be provided.

2.2 ENCLOSURE

- A. The safety switch shall be furnished in a NEMA Type 3R (Exterior) or NEMA 12 (Interior) enclosure.
- B. The enclosure shall be supplied with a metal nameplate which includes ON-OFF markings.

2.3 MANUFACTURERS

- A. Safety switches shall be manufactured by Square D, Allen-Bradley, or equal.

PART 3 - EXECUTION

3.1 INSTALLATION

- A. The safety switch shall be installed in accordance with the Manufacturer's requirements and recommendations.
- B. Provide appropriately sized disconnecting means where required.
- C. Provide placard indicating device served and source.

END OF SECTION

SECTION 26 36 23 - AUTOMATIC TRANSFER SWITCH

PART 1 - GENERAL

1.1 THE REQUIREMENT

- A. Furnish and install automatic transfer switches (ATS) with number of poles, amperage, voltage, withstand and close-on ratings specified herein and as shown on the plans. Each automatic transfer switch shall consist of an inherently double throw power transfer switch mechanism and a microprocessor controller to provide automatic operation.

1.2 CODES AND STANDARDS

- A. The automatic transfer switches and controls shall conform to the requirements of:
 - 1. UL 1008 - Standard for Transfer Switch Equipment
 - 2. IEC 947-6-1 Low-voltage Switchgear and Control gear; Multifunction equipment; Automatic Transfer Switching Equipment
 - 3. NFPA 70 - National Electrical Code
 - 4. NFPA 99 - Essential Electrical Systems for Health Care Facilities
 - 5. NFPA 110 - Emergency and Standby Power Systems
 - 6. IEEE Standard 446 - IEEE Recommended Practice for Emergency and Standby Power Systems for Commercial and Industrial Applications
 - 7. NEMA Standard ICS10-1993 (formerly ICS2-447) - AC Automatic Transfer Switches
 - 8. UL 508 Industrial Control Equipment

PART 2 - PRODUCTS

2.1 MECHANICALLY HELD TRANSFER SWITCH

- A. The transfer switch shall be electrically operated and mechanically held. The electrical operator shall be a momentarily energized, single-solenoid mechanism. Main operators which include overcurrent disconnect devices, linear motors or gears shall not be acceptable. The switch shall be mechanically interlocked to ensure only two possible positions, normal or emergency.
- B. Either CLOSED or OPEN transition operation with preset delay before closing will be possible via programming.
- C. The switch shall be positively locked and unaffected by momentary outages. All main contacts shall be silver composition. Inspection of all contacts shall be possible from the front of the switch without disassembly of operating linkages and without disconnection of power conductors.

- D. Designs utilizing components of molded-case circuit breakers, contactors, or parts thereof, which are not intended for continuous duty, repetitive switching or transfer between two active power sources, are not acceptable.

2.2 MICROPROCESSOR CONTROLLER

- A. The controller's sensing and logic shall be provided by a single built-in microprocessor.
- B. A single controller shall provide twelve selectable nominal voltages. Voltage sensing shall be true RMS type and shall be accurate to $\pm 1\%$ of nominal voltage. Frequency sensing shall be accurate to $\pm 0.2\%$. The panel shall be capable of operating over a temperature range of -20 to +60 degrees F and storage from -55 to +85 degrees F.
- C. The controller shall be connected to the transfer switch by an interconnecting wiring harness. The harness shall include a keyed disconnect plug to enable the controller to be disconnected from the transfer switch for routine maintenance. Interfacing relays shall be industrial grade plug-in type with dust covers. The panel shall be enclosed with a protective cover and be mounted separately from the transfer switch unit.
- D. All customer connections shall be wired to a common terminal block to simplify field-wiring connections.
- E. The controller shall meet or exceed the requirements for Electromagnetic Compatibility (EMC) as follows:
 - 1. EN 55011:1991 Emission standard - Group 1, Class A
 - 2. EN 50082-2:1995 Generic immunity standard, from which:
 - EN 61000-4-2:1995 Electrostatic discharge (ESD) immunity
 - ENV 50140:1993 Radiated Electro-Magnetic field immunity
 - EN 61000-4-4:1995 Electrical fast transient (EFT) immunity
 - EN 61000-4-5:1995 Surge transient immunity
 - EN 61000-4-6:1996 Conducted Radio-Frequency field immunity
 - 3. IEEE472 (ANSI C37.90A) Ring Wave Test.

2.3 ENCLOSURE

- A. The ATS shall be furnished with a NEMA 1.

2.4 CONTROLLER DISPLAY AND KEYPAD

- A. A four-line, 20 character LCD display and keypad shall be an integral part of the controller for viewing all available data and setting desired operational parameters.

2.5 VOLTAGE, FREQUENCY AND PHASE ROTATION SENSING

- A. Voltage and frequency on both the normal and emergency sources (as noted below) shall be continuously monitored, with the following pickup, dropout, and trip setting capabilities (values shown as % of nominal):

<u>Parameter</u> <u>Reset</u>	<u>Sources</u>	<u>Dropout / Trip</u>	<u>Pickup /</u>
Undervoltage	N&E, 3 ϕ	70 to 98%	85 to 100%
Overvoltage	N&E, 3 ϕ	102 to 115%	2% below trip
Underfrequency	N&E 85 to 98%	90 to 100%	
Overfrequency	N&E 102 to 110%	2% below trip	
Voltage unbalance	N&E 5 to 20%	1% below dropout	

- B. Voltage and frequency settings shall be field adjustable in 1% increments either locally with the display and keypad or remotely via serial communications port access.
- C. The controller shall be capable of sensing the phase rotation of both the normal and emergency sources. The source shall be considered unacceptable if the phase rotation is not the preferred rotation selected (ABC or CBA).
- D. Source status screens shall be provided for both normal and emergency to provide digital readout of voltage on all 3 phases, frequency, and phase rotation.

2.6 TIME DELAYS

- A. An adjustable time delay of 0 to 6 seconds shall be provided to override momentary normal source outages and delay all transfer and engine starting signals.
- B. A time delay shall be provided on transfer to emergency, adjustable from 0 to 60 minutes, for controlled timing of transfer of loads to emergency.
- C. Two-time delay modes (which are independently adjustable) shall be provided on re-transfer to normal. One time delay shall be for actual normal power failures and the other for the test mode function. The time delays shall be adjustable from 0 to 60 minutes. Time delay shall be automatically bypassed if the emergency source fails and the normal source is acceptable.
- D. A time delay shall be provided on shut down of engine generator for cool down, adjustable from 0 to 60 minutes.

- E. All time delays shall be adjustable in 1 second increments using the LCD display and keypad.

2.7 ADDITIONAL FEATURES

- A. A SPDT contact, rated 5 amps at 30 VDC, shall be provided for a low-voltage engine start signal. The start signal shall prevent dry cranking of the engine by requiring the generator set to reach proper output and run for the duration of the cool down setting, regardless of whether the normal source restores before the load is transferred.
- B. Auxiliary contacts rated 10 amps, 250 VAC shall be provided consisting of one contact, closed when the ATS is connected to the normal source and one contact closed, when the ATS is connected to the emergency source.
- C. LED indicating lights shall be provided; one to indicate when the ATS is connected to the normal source (green) and one to indicate when the ATS is connected to the emergency source (red).
- D. LED indicating lights shall be provided and energized by controller outputs. The lights shall provide true source availability of the normal and emergency sources, as determined by the voltage sensing trip and reset settings for each source.
- E. An inphase monitor shall be provided in the controller. The monitor shall control transfer so that motor load inrush currents do not exceed normal starting currents and shall not require external control of power sources. The inphase monitor shall be specifically designed for and be the product of the ATS manufacturer.
- F. The controller shall be capable of accepting a normally open contact that will allow the transfer switch to function in a non-automatic mode using an external control device.
- G. Self-Diagnostics: The controller shall contain a diagnostic screen for the purpose of detecting system errors. This screen shall provide information on the status input signals to the controller which may be preventing load transfer commands from being completed.
- H. Communications Interface: The controller shall be capable of interfacing through an optional serial communication module.
- I. Data Logging: The controller shall have the ability to log time and date stamped data and to maintain the last 99 events in the event of total power loss, including:
 - 1. Event Logging
 - a. Data and time and reason for transfer normal to emergency.
 - b. Data and time and reason for transfer emergency to normal.
 - c. Data and time and reason for engine start.
 - d. Data and time engine stopped.
 - e. Data and time emergency source available.
 - f. Data and time emergency source not available.

2. Statistical Data
 - a. Total number of transfers.
 - b. Total number of transfers due to source failure.
 - c. Total number of days controller is energized.
 - d. Total number of hours both normal and emergency sources are available.

2.8 WITHSTAND AND CLOSING RATINGS

- A. The ATS shall be rated to close on and withstand the available RMS symmetrical short circuit current at the ATS terminals with the type of overcurrent protection shown on the plans.
- B. The ATS shall be UL listed in accordance with UL 1008 and be labeled in accordance with that standard's 1½ and 3 cycle, long-time ratings.

2.9 ACCEPTABLE MANUFACTURERS

- A. Automatic transfer switches shall be **ASCO 300 SERIES**, Or equal

PART 3 - EXECUTION

3.1 TESTS AND CERTIFICATION

- A. The complete ATS shall be factory tested to ensure proper operation of the individual components and correct overall sequence of operation and to ensure that the operating transfer time, voltage, frequency and time delay settings are in compliance with the specification requirements.
- B. The ATS manufacturer shall be certified to ISO 9001 International Quality Standard and the manufacturer shall have third party certification verifying quality assurance in design/development, production, and installation and servicing in accordance with ISO 9001.

END OF SECTION

SECTION 26 50 00 - LIGHTING

PART 1 - GENERAL

1.1 THE REQUIREMENT

- A. The Contractor shall provide lighting fixtures, supports, and lamps, and accessories, complete and operable, in accordance with the Contract Documents.

1.2 REFERENCE

- A. 26 00 00 Electrical Work, General

1.3 CONTRACTOR SUBMITTALS

- A. If the Contractor proposes to install equivalent equipment to that suggested, then he shall furnish the following product information in accordance with Section 26 00 00.
 - 1. Interior luminaires
 - a. Catalog data sheets and pictures.
 - b. Luminaire finish and metal gauge.
 - c. Lens material, pattern, and thickness.
 - d. Candle power distribution curves in two or more planes.
 - e. Candle power chart 0 to 90 degrees.
 - f. Lumen output chart.
 - g. Average maximum brightness data in foot lamberts.
 - h. Coefficients of utilization for zonal cavity calculations.
 - i. Mounting or suspension details.
 - j. Heat exchange and air handling data.
 - 2. Exterior luminaires
 - a. Catalog data sheets and pictures.
 - b. Luminaire finish and metal gauge.
 - c. Lens material, pattern, and thickness.
 - d. IES lighting classification and isolux diagram.
 - e. Fastening details to wall or pole.
 - f. Ballast type, location, and method of fastening.
 - g. For light poles, submit wind loading, complete dimensions, and finish.
 - 3. Lamps
 - a. Voltages (120V Only).
 - b. Colors.
 - c. Approximate life (in hours).
 - d. Approximate initial lumens.
 - e. Lumen maintenance curve.
 - f. Lamp type and base.
 - 4. Ballasts / Drivers

- a. Type.
 - b. Wiring diagram
 - c. Nominal watts and input watts.
 - d. Input voltage (120V unless with special permission) and power factor.
 - e. Starting current, line current, and restrike current values.
 - f. Sound rating.
 - g. Temperature rating.
 - h. Efficiency ratings.
 - i. Low temperature characteristics.
 - j. Emergency ballasts rating and capacity data.
- B. Seismic Bracing
- 1. Provide calculations and intended means of providing required seismic bracing of all pendant and suspended fixtures.

PART 2 - PRODUCTS

2.1 FIXTURES - GENERAL

- A. Luminaires: Specific requirements relative to execution of WORK of this Section are located in the Luminaire Schedule on Contract Drawings.
- B. All fixtures shall be pre-wired with leads of 18-AWG, minimum, for connection to building circuits.

2.2 EXTERIOR FIXTURES

- A. Exterior fixtures in combination with their mounting pole and bracket shall be capable of withstanding 100 MPH winds without damage. Exterior fixtures shall have corrosion-resistant hardware and hinged doors or lens retainer. Fixtures specified to be furnished with integral photo-electrical control shall be of the fixture manufacturer's standard design.

2.3 INTERIOR FIXTURES

- A. Interior fixtures without diffusers shall be furnished with end plates. Where diffusers are required, they shall be of high molecular strength acrylic. Minimum thickness of the acrylic shall be 0.125 inches for all diffusers, except that those on 4-foot square fixtures shall be 0.187 inches thick.
- B. Emergency Exit Signs
 - 1. As shown on the plans.

2.4 FIXTURE TYPES

- A. Specific requirements are located in the Lighting Fixture Schedule on the Contract Drawings.

PART 3 - EXECUTION

3.1 LUMINAIRES

- A. Install in accordance with manufacturer's recommendations.
- B. Provide necessary hangers, pendants, and canopies.
- C. Provide additional ceiling bracing, hanger supports, and other structural reinforcements to building required to safely mount. Provide seismic bracing as required by
- D. Install plumb and level.
- E. Locate luminaires to avoid both conflict with other building systems and blockage of luminaire light output.

3.2 LAMPS

- A. Provide in each fixture, the number and type for which the fixture is designed, unless otherwise indicated.

3.3 CLEANING FOLLOWING INSTALLATION

- A. Remove all labels and other markings, except UL listing mark.
- B. Wipe luminaires inside and out to remove construction dust.
- C. Clean luminaire plastic lenses with antistatic cleaners only.
- D. Touch up all painted surfaces of luminaires and poles with matching paint ordered from manufacturer.
- E. Replace all defective lamps at time of Substantial Completion.

END OF SECTION

CITY OF WHITTIER, ALASKA

LIFT STATION NO. 5 REPLACEMENT REBID

DIVISION 40 - PROCESS INTEGRATION

SECTION 40 91 23 36 - LEVEL MEASURING SYSTEMS

PART 1 - GENERAL

1.1 THE REQUIREMENT

- A. General: The Contractor shall provide level measuring systems, complete and operable in accordance with the Contract Documents.
- B. "Smart" transmitters shall be furnished when or wherever possible.
- C. All instruments shall be FM-approved, or equal.

1.2 SUBMITTALS

- A. Furnish submittals in accordance with Section 26 00 00 .

PART 2 - PRODUCTS

2.1 WET WELL SUBMERSIBLE TRANSDUCER

- A. Submersible level transducers/transmitters for waste water service shall be **CONTEGRA OR AST 4520** , and accessories as noted on drawings, or equal.

2.2 WET WELL FLOAT SWITCH

- A. Manufacturer: **Xylem**, or equal.

PART 3 - EXECUTION

3.1 GENERAL

- A. Level measuring systems shall be handled, installed, calibrated, loop-tested, precommissioned, and performance tested according to Section 40 90 00 – Process Control and Instrumentation Systems.

3.2 INSTALLATION

- A. Coordinate with the manufacturer prior to installation to identify installation requirements.
- B. Install the level transducers in accordance with the Manufacturer's requirements.

END OF SECTION 40 91 23.36

SECTION 40 95 13 - CONTROL PANELS

PART 1 - GENERAL

1.1 THE REQUIREMENT

- A. General: The Contractor shall provide control panels, complete and operable, in accordance with the Contract Documents.
- B. The provisions of this Section apply to local panels provided in equipment systems specified in other sections, unless indicated otherwise in those sections.
- C. Control and Control Power panels shall be built to UL 508, or an independent testing laboratory acceptable to the local code enforcement agency having jurisdiction. The panels shall have NRTL labels attached to them by the panel builder. The panel builder shall provide with each panel a certification from the independent testing lab inspector that the panel is built to their standards.
- D. All control enclosures and power panel enclosures shall be built to NEC standards for enclosures.

1.2 REFERENCE DOCUMENTS

- A. UL 508A –Standard for Industrial Control Panels
- B. NFPA 79 – Electrical Standard for Industrial Machinery
- C. NFPA 70 – Article 409

1.3 SUBMITTALS

- A. General: Submittals shall be furnished in accordance Section 26 00 00.
- B. Control Panel Engineering Submittal: The Contractor shall submit a control panel engineering submittal (CPES) for each control panel and enclosure provided under Division 40. The CPES shall completely define and document the construction, finish, fuses, circuit breakers, internally mounted hardware, communications hardware, and PLC system components. All panel drawings shall, as a minimum, be "B" size with all data sheets and manufacturer specification sheets being "A" size. The submittal shall be in conformance with ISA-S20 – Standard Forms for Process Measurement and Control Instruments, Primary Elements and Control Valves, shall be submitted as a singular complete bound volume or multi volume package within 60 calendar days after Notice to Proceed, and shall have the following contents:
 - 1. A complete index shall appear in the front of each bound volume. All drawings and data sheets associated with a panel shall be grouped together with the panels being indexed by systems or process areas. All panel tagging and

nameplate nomenclature shall be consistent with the requirements of the Contract Documents.

2. Scale construction drawings which define and quantify the type and gauge of steel to be used for panel fabrication, the ASTM grade to be used for structural shapes and straps, panel door locks and hinge mechanisms, type of bolts and bolt locations for section joining and anchoring, details and proposed locations for "UNISTRUT" members, stiffener materials and locations, electrical terminal box and outlet locations, electrical access locations, print pocket locations, writing board locations, and lifting lug material and locations.
3. Cutout locations with nameplate identifications shall be shown.
4. The Contract Drawing wiring diagrams shall be edited to identify electrical devices, terminals, and interconnecting wiring. These diagrams shall show interconnecting wiring by lines, designate terminal assignments, and show the physical location of all electrical and control devices.
5. Completed ISA S20 data sheets for all instrumentation devices associated with each control panel supplemented with manufacturer specification sheets which verify conformance to the requirements of the Contract Documents.
6. A bill of material which enumerates all devices associated with the control panel.

1.4 OPERATION AND MAINTENANCE DATA

- A. Submit in PDF composite electronic indexed file.
- B. Submit final copy bound in 8-1/2 x 11-inch text pages, three D side ring binders with durable cloth covers.
- C. Prepare binder cover with printed title "OPERATION AND MAINTENANCE INSTRUCTIONS," title of Project, and subject matter of binder when multiple binders are required.
- D. Internally subdivide binder contents with permanent page dividers, logically organized as described below; with tab titling clearly printed under reinforced laminated plastic tabs.
- E. Drawings: Provide with reinforced punched binder tab. Bind in with text; fold larger drawings to size of text pages.
- F. Contents: Prepare table of contents for each volume, with each product or system description identified, typed on white paper, in three parts as follows:
 1. Part 1: Directory, listing names, addresses, and telephone numbers of Architect/Engineer, Contractor, Subcontractors, and major equipment suppliers.
 2. Part 2: Operation and maintenance instructions, arranged by system and process flow and subdivided by Specification Section. For each category, identify names, addresses, and telephone numbers of Subcontractors and suppliers. Include the following:
 - a. Significant design criteria.
 - b. List of equipment.
 - c. Parts list for each component.

- d. Operating instructions.
 - e. Maintenance instructions for equipment and systems.
 - f. Maintenance instructions for finishes, including recommended cleaning methods and materials, and special precautions identifying detrimental agents.
 - g. Safety precautions to be taken when operating and maintaining or working near equipment.
3. Part 3: Project documents and certificates, including the following:
- a. Shop Drawings and product data.
 - b. Air and water balance reports.
 - c. Certificates.
 - d. Photocopies of warranties.

G. Manual For Equipment And Systems

1. Submit two copies of preliminary draft or proposed formats and outlines of contents before start of Work. Architect/Engineer will review draft and return one copy with comments.
2. For equipment, or component parts of equipment put into service during construction and operated by Owner, submit documents within ten days after acceptance.
3. Submit one copy of completed volumes before Substantial Completion. Completed volumes, with Architect/Engineer comments, will be returned after Substantial Completion. Revise content of document sets as required prior to final submission.
4. Submit three sets of revised final volumes and PDF composite electronic indexed file within 30 days after receipt of comments.
5. Equipment and Systems: Include description of unit or system and component parts. Identify function, normal operating characteristics, and limiting conditions. Include performance curves, with engineering data and tests, and complete nomenclature and model number of replaceable parts.
6. Panelboard Circuit Directories: Provide electrical service characteristics, controls, and communications; by label machine.
7. Include color-coded wiring diagrams as installed.
8. Operating Procedures: Include startup, break-in, and routine normal operating instructions and sequences. Include regulation, control, stopping, shutdown, and emergency instructions. Include summer, winter, and special operating instructions.
9. Maintenance Requirements: Include routine procedures and guide for preventative maintenance and troubleshooting; disassembly, repair, and reassembly instructions; and alignment, adjusting, balancing, and checking instructions.
10. Include servicing and lubrication schedule and list of lubricants required.
11. Include manufacturer's printed operation and maintenance instructions.
12. Include sequence of operation by controls manufacturer.
13. Include original manufacturer's parts list, illustrations, assembly drawings, and diagrams required for maintenance.
14. Include control diagrams by controls manufacturer as installed.

15. Include Contractor's coordination drawings indicating installed color-coded piping diagrams.
16. Include charts of valve tag numbers, with location and function of each valve, keyed to flow and control diagrams.
17. Include list of original manufacturer's spare parts, current prices, and recommended quantities to be maintained in storage.
18. Additional Requirements: As specified in individual product Specification Sections.
19. Include listing in table of contents for design data with tabbed dividers and space for insertion of data.

H. Spare Parts And Maintenance Products

1. Furnish spare parts, maintenance, and extra products in quantities specified in individual Specification Sections.
2. Deliver to place in location as directed by Owner; obtain receipt prior to final payment.

I. Product Warranties And Product Bonds

1. Obtain warranties executed in by responsible Subcontractors, suppliers, and manufacturers within ten days after completion of applicable item of Work.
2. Execute and assemble transferable warranty documents and bonds from Subcontractors, suppliers, and manufacturers.
3. Verify documents are in proper form, contain full information, and are notarized.
4. Co-execute submittals when required.
5. Include table of contents and assemble in three D side ring binder with durable plastic cover.
6. Submit prior to final Application for Payment.
7. Time of Submittals:
 - a. For equipment or component parts of equipment put into service during construction with Owner's permission, submit documents within ten days after acceptance.
 - b. Make other submittals within ten days after date of Substantial Completion, prior to final Application for Payment.
 - c. For items of Work for which acceptance is delayed beyond Substantial Completion, submit within ten days after acceptance, listing date of acceptance as beginning of warranty or bond period.

PART 2 - PRODUCTS

2.1 GENERAL

- A. Environmental Suitability: All indoor and outdoor control panels and instrument enclosures shall be suitable for operation in the ambient conditions associated with the locations designated in the Contract Documents. Heating, cooling, and dehumidifying devices shall be provided as shown on the Drawings in order to maintain all instrumentation devices 20 percent within the minimums and maximums

of their rated environmental operating ranges. The Contractor shall provide all power wiring for these devices. Enclosures suitable for the environment shall be provided. All instrumentation in hazardous areas shall be suitable for use in the particular hazardous or classified location in which it is to be installed.

- B. Panel construction shall conform to NFPA 70 (NEC) Article 409 and NFPA 79.
- C. The control panel controls shall be the voltages as indicated on the drawings. Control conductors shall be provided in accordance with the indicated requirements.
- D. If the control panel is the source of power equipment interconnected with the control panel the circuit shall be derived from the panel with its own distribution and main breaker. All equipment associated with the control panel shall be ready for service after connection of conductors to equipment, controls, and control panel.
- E. Unless indicated otherwise, control panels shall be housed in NEMA-rated enclosures as shown on the Drawings. Control panels shall be either wall-mounted, pedestal-mounted or equipment skid-mounted, as indicated. Internal control components shall be mounted on an internal back-panel or side-panel as required.
 - 1. All interior control or relay panels mounted above ground level shall be NEMA 12.
 - 2. All control or relay panels mounted below ground level, unless noted otherwise on the Drawings, shall be NEMA 4X.
 - 3. All exterior control panels and enclosures mounted above ground level, unless noted otherwise on the Drawings, shall be NEMA 4 with rain shield across top of doors.
- F. Each source of 'external' voltage shall be isolated by providing disconnecting fused terminal blocks, circuit breaker or DIN rail mounted relays. Each control panel shall be provided with identified terminal strips for the connection of all external conductors. The Contractor shall provide sufficient terminal blocks as shown on the Drawings.
- G. All control panel mounted devices shall be provided as shown on the Drawings.
- H. Painting: Steel control panels shall be thoroughly cleaned and sand blasted per Steel Structures Painting Council Specification SSPC SP 6 (Commercial Blast) after which surfaces shall receive a prime coat of **Amercoat 185**, or equal, 3 mils DFT, for a total thickness of the prime plus finish system of 6 mils. The finished color of the outside surfaces shall be ANSI 61 gray paint. Interior of the control panel, back-panel, and side-panels shall have a white finish coat.

2.2 CONTROL PANELS

- A. NEMA 4X
 - 1. Enclosure shall be 16-gauge or 14-gauge thickness, unless otherwise indicated on the Drawings, Type 304 or 316L stainless steel.
 - 2. Enclosures shall have stainless steel hinges, hinge pins, and door clamps.

3. Finish shall be unpainted, smooth #4 brushed finish, as specified for steel control panels.
4. Enclosures and Panels shall be as manufactured by **Hoffman**, or equal.

B. NEMA 12

1. Steel panel section faces shall be No. 14 gauge minimum thickness, unless otherwise indicated on the Drawings. All materials shall be selected for levelness and smoothness.
2. Structural shapes and strap steel shall comply with ASTM A 283 – Low and Intermediate Tensile Strength Carbon Steel Plates, Grade C.
 - a. Bolting Material: Commercial quality carbon steel bolts, nuts, and washers shall be 1/2-inch diameter with UNC threads. Carriage bolts shall be used for attaching end plates. All other bolts shall be hex end machine bolts. Nuts shall be hot pressed hex, American Standard, heavy. Standard wrought washers shall be used for foundation bolts and attachments to building structures. All other bolted joints shall have SAE standard lock washers.
3. Construction: Dimensions shall be as shown on the Drawings.
4. Enclosures and Panels shall be as manufactured by **Hoffman**, or equal.

C. Weatherproof NEMA 3R Enclosures: Large, weatherproof enclosures, 4 feet high or higher, shall be built to NEMA 4 standards and shall be rated for outdoor use in wet environments. The enclosures shall be built of 12ga steel to the size shown on the Drawings, and have the following features:

1. Fully gasketed single or double door access as shown on the Drawings, with removable post.
2. Seams continuously welded.
3. Lifting eyes.
4. 3-point latching pad lockable handle on each door.
5. Rollers for the latching rods for 3-point latch.
6. Back panels (full size).
7. Deadfront with inner operator door
8. Insulation.
9. Open bottom with 2" flange for pad mounting.
10. Provision for mounting fluorescent lights.
11. Enclosures shall be Hoffman, or equal.

D. Fabrication

1. End plates, top plates, and top closure panels (to hung ceiling) shall be provided when required by the material requisition. End plates, top plates, and top closure panels shall be removable with countersunk bolts to match panels. Top closure panels shall be furnished in lengths that match the widths of standard panels, except that one top closure panel may extend across two 4 feet 6 inches wide or five 2 feet wide standard panels. The vertical joints of these panels shall align with the vertical joints of the standard panels.
2. Doors shall be flush fitting, gasketed, and be of the hinged type with door handles. Screwdriver 1/4 turn or Dzus type fasteners are not acceptable.

- a. The flanged edges of all panels shall be straight and smooth. Corners shall be welded and ground smooth.
- b. The face of the panel shall be true and level after flanging.
- c. All panel cut outs and holes may be cut or drilled by any standard method that does not cause deformation. Burrs shall be ground smooth.
- d. Adjacent panels shall assemble with faces flush. Gaps or cracks shall not be visible from the front of the assembled instrument board.
- e. Stiffeners shall be welded to the back of panels, as required to prevent panel deformation due to the weight of face-mounted instruments.
- f. Panels shall be self-supporting as defined below.

E. Framework and Supports

1. The rear of each panel section shall have a steel framework assembled to it for supporting conduit, wireways, switches, piping, and all instrument accessory items such as relay or terminal enclosures, transducers, pressure switches, valves, and air relays. The main framework shall be constructed of standard structural shapes. Special shapes such as "Unistrut" may be used for secondary supports. Framework must neither interfere with instrument connections nor interfere with access needed for maintenance or adjustments.
2. Steel framework shall extend 2 feet 4 inches back from the panel face, or as indicated in the material requisition. Where indicated, individual adjustable leg supports shall be provided at the back of the framework so that the entire panel is self-supporting.

F. Preparation of Panel Surface

1. The following requirements apply to the front and rear face of the panel, both sides and the edges of all flanges, and the periphery of all holes or cut outs.
 - a. All high spots, burrs, and rough spots shall be ground smooth.
 - b. The surfaces shall be sanded or sandblasted to a smooth, clean, bright finish.
 - c. All traces of oil shall be removed with a solvent.
 - d. The first coat of primer shall be applied immediately.

G. Instrument Finishing: The final coats applied to painted surface of instrument cases, doors, or bezels that are visible from the front of panels shall be manufacturer's standard, unless otherwise indicated. Black japan or "crinkle" finishes on instrument cases are not acceptable.

H. Mounting of Instruments

1. The panel vendor shall provide cut outs and shall mount all instrument items indicated to be panel-mounted, including any instruments indicated to be furnished by other vendors but installed in the panel.
2. The panel vendor shall also mount behind the panels other instrument accessory items as required for functionality or as indicated.
3. Equipment mounted at the rear of panel shall be installed to allow for commissioning adjustments, servicing requirements, and cover removal.
4. Spare space shall be kept clear of wiring, etc., to give maximum space for future additions.

I. Electrical Requirements

1. The Contractor shall provide conduit, wireways, switches, wire, and electrical fittings for all 24 VDC and 120 VAC circuits to instruments and other electrical devices as required for a complete and operable installation.
2. Conduit, wireways, junction boxes and fittings shall include those required between sensors and transmitters and between the junction boxes and instruments.
3. Each terminal connection shall have a plastic plate with a terminal and instrument tag number. Wiring shall be identified with stamped tubular wire end markers. Terminals shall be DIN rail mounted, rated at 400 VAC, manufactured by **Entrelec**, or equal.
4. Each panel shall be provided with a switched 60-watt incandescent T-10 style light fixture, as shown on the Drawings. The fixture shall include a 120-volt receptacle and door switch. The fixture shall be **Hoffman model A-LTDB1**, or equal.
5. Wiring Methods: Wiring methods and materials for all panels shall be in accordance with the N.E.C. requirements for General Purpose (no open wiring) unless otherwise indicated.
6. Signal and Control Circuit Wiring
 - a. Wire type and sizes: Conductor shall be flexible stranded copper wire, UL. Wires for instrument signal circuits and alarm input circuits shall be No. 16 AWG Type MTW rated for 300 volts. The analog cables internal the panel terminal strips shall be (8) conductor No. 18 AWG cable rated 300 volts for loop powered devices and 8-pair shielded No. 18 AWG cable rated 300 volts for 4-wire loops.
 - b. Wire Insulation Colors:
 - 1) 120 VAC Power - Black 14 AWG minimum
 - 2) 120 VAC Neutral - White 14 AWG minimum
 - 3) 120 VAC Ground - Green 14 AWG minimum
 - 4) 120 VAC Control - Red 14 AWG minimum
 - 5) 24 VAC Power - Yellow 16 AWG minimum
 - 6) 24 DC Positive - Blue 16 AWG minimum
 - 7) 12 DC Positive - Orange 16 AWG minimum
 - 8) DC Common - White/Green 16 AWG minimumAll 120 VAC power wiring protected by the main circuit breaker and incoming power service shall be No. 12 AWG.
 - c. Wire Marking: Wire numbers shall be marked using white numbered wire markers made from heat shrink plastic. Wires shall be marked as shown on the Drawings. Numbers shall read from left to right.
 - d. Flexible conduit is only to be used where specified.
 - e. Conduit fittings shall be **Crouse Hinds cast fittings**, or equal.
 - f. For equipment grounding, panels shall be provided with a 1/4 inch by 1 inch copper ground bus complete with solder-less connector for one No. 4 AWG bare stranded copper cable. The copper cable shall be provided by the Contractor and be connected to the electrical equipment ground of the 120-volt panel supplying power.
7. Power Supply Wiring

- a. Unless otherwise indicated, all instruments, alarm systems, and motor controls shall operate on 24 VDC circuits.
- b. The panel fabricator shall provide terminal box connections for the main power supply entry as shown on the Drawings.
- c. When instruments do not come equipped with integral fuses, provide fuses as required for the protection of individual instruments against fault currents. Fuses shall be mounted on the back of the panel in a fuse holder, and each fuse shall be identified by a service name tag. Fuses shall be as manufactured by **Bussmann Manufacturing Division, Type KAW TRON**, or equal. Circuit breakers shall be provided as shown on the Drawings.

J. Relays:

1. Refer to drawings for relay type, voltage, and if approved equals are allowed.

K. Terminals: Fused Terminals for analog input and output points shall be a 3-wire terminal with a fused circuit, a feed through circuit and a ground terminal. Fused Terminals for the discrete input points shall be 2-wire terminal with a fused circuit and a feed through circuit. Provide a one-tenth of an ampere rapid blow 250-volt fuse for all analog circuits and all discrete input circuits. The analog terminals shall be **Weidmuller model KDKS 1 part 953245**, and the discrete input terminal shall be **Weidmuller model KDKS 1 PE part 953245**.

L. Spare Fuses: For each panel, provide the following spare fuses:

1. A minimum of two spare fuses of each size
2. One spare fuse for every ten fused circuits

Provide the fuses in a spare fuse box mounted on the interior wall of the panel. Fuse box shall be **Plano Tackle Systems 1061 Accessory Box, Plano, IL**, www.planomolding.com, or equal.

M. 120 VAC Surge Arrestor: A 120 VAC three-stage surge protector shall be provided on the main leads of each control power panel. The surge protector shall include a first stage inline inductor, a second stage MOV to ground with a thermal fuse, and a third stage array of MOVs to provide a small amount of capacitance. The unit shall be DIN rail-mounted. The MOV shall include green LED to indicate the status of the second stage MOV. Provide two (2) spare units for each panel. The unit shall be rated for 120 VAC and shall be either **Advance Surge Suppressor model TSP-WG6-120VAC-10A-01**, **Control Concepts 'Islatrol Elite' model IE-110**, or equal.

N. Labor and Workmanship: Panels shall be fabricated, piped, and wired by fully qualified workmen who are properly trained, experienced, and supervised.

O. Spare Parts:

1. Provide spares as per drawings indicated.

P. No components in any control panels other than the data recorder shall be required to be configured via programming.

2.3 MARKING

- A. Control panels shall be marked with the following information that is plainly visible after installation:
1. Manufacturer's name
 2. Supply voltage
 3. Short-circuit rating of the main breaker
 4. Name of the project and site
 5. Enclosure rating
 6. Additional marking as required by the drawings.

PART 3 - EXECUTION

3.1 INSTALLATION

- A. Preparation for Shipment and Shipping
1. Panels shall be crated for shipment using a heavy framework and skids. Panel sections shall be cushioned to protect the finish of the instruments and panel during shipment. Instruments that are shipped with the panel shall further have suitable shipping stops and cushioning material installed to protect parts that could be damaged due to mechanical shock. Each separate panel unit shall be provided with removable lifting lugs to facilitate handling.
 2. All control panel factory testing and inspection shall be performed prior to crating and shipping.

3.2 CONTROL PANEL SIGNAL AND CONTROL CIRCUIT WIRING

- A. Wiring Installation:
1. All wires shall be run in plastic wireways except
 - a. field wiring,
 - b. wiring between mating blocks in adjacent sections,
 - c. wiring from components on a swing out panel to components on a part of the fixed structure, and
 - d. wiring to panel mounted components.
 2. Wiring run from components on a swing out panel to other components on a fixed panel shall be made up in tied bundles. These bundles shall be contained with spiral wrap and shall be secured to panels at both sides of the "hinge loop" so that conductors are not strained at the terminals.
 3. Terminals intended to be used for external connections shall be installed on raised supports to permit space for conductor routing and ease of access for installation and troubleshooting.
- B. Wiring run to control devices on the front panels shall be tied together at short intervals with nylon wire ties and be secured to the inside face of the panel using adhesive mounts.

- C. Wiring to rear terminals on panel mount instruments shall be in plastic wireway0s secured to horizontal brackets above or below the instruments in about the same plane as the rear of the instruments.
- D. Shop Drawings shall show conformance to the above wiring installation requirements.
- E. Wire Marking: Each signal, control, alarm, and indicating circuit conductor connected to a given electrical point shall be designated by a single unique number as shown on the Contract Drawings. These numbers shall be marked on all conductors at every terminal.

3.3 CALIBRATION, TESTING, AND INSTRUCTION

- A. General: Calibration, testing, and instruction shall be performed.
- B. Inspection and Approval
 - 1. Panel fabricator shall conduct the following tests prior to arrival of the Engineer or before shipment, if the Engineer chooses not to witness factory testing.
 - a. All status, control, analog and alarm circuits rung out to determine their operability.
 - b. All electrical power circuits checked for continuity and where applicable, operability.
 - c. Any other test required to place the panel in an operating condition.
 - 2. Contractor shall notify the Owner at least fourteen days prior to the FAT when and where the FAT will occur.
 - 3. In the event an in-person attendance is not possible, panel fabricator shall make reasonable accommodation for remote viewing of the testing by the Owner and the Engineer. Use of video conference software and cameras meets this intent.
 - 4. It shall be the responsibility of the Contractor to furnish all necessary testing devices and sufficient manpower to perform the tests required by the Engineer.
 - 5. Field Testing: Each control panel shall be tested again for functional operation in the field after the connection of external conductors and prior to equipment startup.
- C. Instruction
 - 1. Provide no less then three hours of training in the use and maintenance of LS4 and LS5-CP. This includes but is not limited to:
 - 1) Sequence of Operation
 - 2) Meaning of lights and alarms
 - 3) Purpose of each switch
 - 4) Typical issues and how to resolve them
 - 2. Contractor shall notify the Owner at least fourteen days prior to the training.
 - 3. Training shall be recorded for clients use and future training purposes.
 - 4. Training shall incorporate the use of the posters from section 2.4

END OF SECTION

CITY OF WHITTIER, ALASKA
LIFT STATION NO. 5 REPLACEMENT REBID

SECTION V
CONSTRUCTION FORMS

DEVIATION REQUEST (DR)

PROJECT _____ **DR NO.** _____
CONTRACTOR _____ **CONTRACT NO.** _____
ORIGINATOR _____ **SPEC. SECTION** _____
DATE SUBMITTED _____ **DRAWING NO.** _____ **SHEET** _____ **OF** _____

DESCRIPTION OF DR	
A. Original Contract Requirements:	
B. Reason for Deviation Request:	
C. Proposed Deviation:	
D. Any Changes in Contract Time or Cost <input type="checkbox"/> YES <input type="checkbox"/> NO	
CONTRACTOR SIGNATURE - Date _____	RESPONSE REQUIRED BY (Date) _____

RESPONSE TO DR
RESPONSE BY (Name/Company) _____

ROUTING	RECEIVED BY NAME / COMPANY	DATE RECEIVED	DATE FORWARDED	COMMENTS
Project Manager				
Designer				
Project Manager				
Contractor				

DIRECTION

Approved
 Approved as Noted **BY** _____
 Disapproved (Signature)

SUBSTITUTION REQUEST (SR)

PROJECT _____ **SR NO.** _____
CONTRACTOR _____ **CONTRACT NO.** _____
ORIGINATOR _____ **SPEC. SECTION** _____
DATE SUBMITTED _____ **DRAWING NO.** _____ **SHEET** _____ **OF** _____

SPECIFIED ITEM:

SECTION	PAGE	PARAGRAPH	DESCRIPTION
---------	------	-----------	-------------

The undersigned requests consideration of the following:

PROPOSED SUBSTITUTION: _____

Attached data includes product description, specifications, drawings, photographs and performance and test adequate for evaluation of the request. Applicable portions of the data are clearly identified.

The undersigned states that the following paragraphs, unless modified on attachments, are correct:

1. The proposed substitution does not affect dimensions shown on Drawings and will not require any change in any of the Contract Documents.
2. The undersigned will pay for changes to the design, including engineering design, detailing, and construction costs caused by the requested substitution which is estimated to be \$ _____.
3. The proposed substitution will have no adverse affect on other contractors, the construction schedule (specifically the date of substantial completion), or specified warranty requirements.
4. Maintenance and service parts will be locally available for the proposed substitution.
5. The incorporation or use of the substitution in connection with the work is not subject to payment of any license fee or royalty.

The undersigned further states that the function, appearance, and quality of the Proposed Substitution are equivalent or superior to the Specified Item.

Submitted by CONTRACTOR	Reviewed by ENGINEER
<p>Signature: _____</p> <p>Firm: _____</p> <p>_____</p> <p>Date: _____</p> <p>Telephone: _____</p> <p>Attachments:</p> <p>_____</p> <p>_____</p>	<p><input type="checkbox"/> Accepted</p> <p><input type="checkbox"/> Accepted as Noted</p> <p><input type="checkbox"/> Not Accepted</p> <p><input type="checkbox"/> Received too Late</p> <p>By: _____</p> <p>Title: _____</p> <p>Date: _____</p> <p>Remarks: _____</p>

DESIGN CLARIFICATION/VERIFICATION REQUEST (DC/VR)

PROJECT _____ **DC/VR NO.** _____
CONTRACTOR _____ **CONTRACT NO.** _____
ORIGINATOR _____ **SPEC. SECTION** _____
DATE SUBMITTED _____ **DRAWING NO.** _____ **SHEET** _____ **OF** _____

DESCRIPTION OF DC/VR

RESPONSE REQUESTED BY (Date) _____

RESPONSE TO DC/VR

RESPONSE BY (Name/Company) _____

ROUTING	RECEIVED BY NAME / COMPANY	DATE RECEIVED	DATE FORWARDED	COMMENTS
Project Manager				
Designer				
Project Manager				
Contractor				

DIRECTION

- Proceed per Engineers Response. No change in contract price or time is recognized.
- Do not proceed until _____
- _____

SUBMITTAL TRANSMITTAL

PROJECT _____ SUBMITTAL NO. _____

CONTRACTOR _____ CONTRACT NO. _____

ORIGINATOR _____ SPEC. SECTION _____

DATE SUBMITTED _____ DRAWING NO. _____ SHEET _____ OF _____

TO: CITY OF WHITTIER
 Lift Station No. 5 Replacement
 P.O. Box 608
 Whittier, Alaska 99693

ATTN:

ITEM: _____ SUPPLIER/CONTRACTOR:		REVIEW ACTION						
		COPIES SENT	NO EXCEPTION TAKEN	MAKE CORRECTIONS AS NOTED	AMEND AND RESUBMIT	REJECTED RESUBMIT	COPIES RETURNED	NOTES ATTACHED
IDENT. NO.	DETAILED DESCRIPTION (Provide Itemized List of Contents of this Submittal)	A	B	C	D			

Complete either (a) or (b), following:

- (a) We have verified that the material or equipment contained in this submittal meets all the requirements specified or shown (no exceptions).
- (b) We have verified that the material or equipment contained in this submittal meets all the requirements specified or shown, except for the following deviations (list deviations, attach a separate sheet if necessary).

Corrections or comments made relative to submittals during this review do not relieve the Contractor from compliance with the requirements of the drawings and specifications. This submittal is only for review of general conformance with the design concept of the project and general compliance with the information given in the contract documents. The Contractor is responsible for confirming and correlating all quantities and dimensions; selecting fabrication processes and techniques of construction; coordinating his work with that of other trades, and performing his work in a safe and satisfactory manner.

CONTRACTOR: _____
(Signature)

ENGINEER: _____
(Signature)

ROUTING	RECEIVED BY NAME / COMPANY	DATE RECEIVED	DATE FORWARDED	COMMENTS
Project Manager				
Designer				
Project Manager				
Contractor				



STATE OF ALASKA
MUNICIPAL GRANTS & LOANS
ALASKA CLEAN/DRINKING WATER FUND
USE OF AMERICAN IRON AND STEEL

Sample Step Manufacturer Certification

(Documentation must be provided on company letterhead)

Date

Company Name

Company Address

City, State Zip

Subject:

American Iron and Steel Step Manufacturer Certification for
Project Name _____

I, _____ (company representative), certify that the _____
(melting, bending, coating, galvanizing, cutting, etc.) process for _____
(manufacturing or fabricating) the following products and/or materials shipped or provided for
the project is in full compliance with the American Iron and Steel requirement as mandated in
EPA's State Revolving Fund Programs.

Item, Products and/or Materials:

1. _____
2. _____
3. _____

Such process took place at the following location: _____ (address)

If any of the above compliance statements change while providing material to this project we
will immediately notify the prime contractor and the engineer.

Company representative

Signature

Date

CITY OF WHITTIER, ALASKA

LIFT STATION NO. 5 REPLACEMENT REBID

SECTION VI

OTHER UTILITY REQUIREMENTS

CEA Facility Requirements

ENSTAR Safety Requirements



December 7, 2020

ELECTRICAL FACILITY CLEARANCE REQUIREMENTS

Enclosed please find a copy of Chugach Electric Association, Inc.'s (Chugach) Electrical Facility Clearance Requirements policy. Periodically, copies of this policy are mailed out to various companies and agencies whose activities may bring their personnel in close proximity to Chugach's electrical facilities. Chugach distributes copies of this policy in an effort to help minimize and identify potential hazards for construction personnel and the general public. In addition, Chugach is concerned with preventing damage to its electrical facilities and any disruption of electrical service to its customers. Please note that the Electrical Facility Clearance Requirements publication may be found on Chugach's website at: www.chugachelectric.com. Click on the "Member Services" tab and go to "Regulations & Requirements", click on "Electrical Facility Clearance Requirements" (December 7, 2020).

For your additional information, Alaska State Statute ("AS 42.30.400 "Excavator's Notice of Proposed Excavation") has been included as an attachment.

Please thoroughly read and understand the entire document. It could save your life or the life of your employees and the public. We request that particular attention be paid to the following provisions:

(Paragraph B. 2.) "Under no circumstances will Chugach allow any of its underground cable(s) to remain energized after it has been exposed, unless it is protected by supplementary mechanical protection approved by Chugach or unless a *qualified person* is on site at all times".

(Paragraph H. 7.) "Chugach defines a *qualified person* as a journeyman lineman who holds a current Certificate of Fitness in the Journeyman Lineman category issued by the State of Alaska". These two provisions clearly emphasize Chugach's position relating to the exposure and approach to energized facilities.

Chugach strongly recommends that prior coordination takes place between Chugach and the construction entity or contractor, either during the design phase of a project or prior to the start of construction, to help eliminate or minimize conflicts. If you have questions, please contact the Line Operations Division at (907) 762-7679 and your call will be directed to the appropriate department for assistance.

Sincerely,

A handwritten signature in black ink that reads "James Mullican".

James Mullican
Senior Manager Line Operations

Enclosures

cc: MOA Development Services; State of Alaska OSHA Inspector; SOA Electrical Inspector; AGC, Cook Inlet Housing, GCI, ACS, Enstar, AWWU, Anchorage Home Builders Association

Chugach Electric Association, Inc.

5601 Electron Drive, P.O. Box 196300, Anchorage, Alaska 99519-6300 • (907) 563-7494 • Fax (907) 562-0027 • (800) 478-7494
www.chugachelectric.com

CHUGACH ELECTRIC ASSOCIATION, INC.

CLEARANCE REQUIREMENTS FOR CONSTRUCTION OR MAINTENANCE NEAR ELECTRICAL FACILITIES

Chugach's concern for the safety of non-qualified personnel working adjacent to its electrical facilities, its concern for the public in general, and its requirement that only *qualified personnel* under the employ of *qualified electrical contractors* handle electrical facilities such as conductors, cables, poles, transformers, padmounted equipment, etc., is based upon the following considerations:

- The potential for serious injury and resulting liability is extremely high when dealing with all electric utility voltage levels up to 230,000 volts on overhead and underground lines.
- Certain types of equipment, particularly cable, can easily be damaged by improper handling. For example, when cable is hit or improperly suspended (common during excavation adjacent to cables), the scraped, cut, or stressed insulation will almost always result in premature cable failure. The highest risk to unqualified personnel is a cable failure while the cable is being handled during excavation or construction. Undetected cable damage may result in a subsequent cable failure with consumer outages for periods of up to a week's duration during winter conditions.
- The inherent stability of overhead pole lines or padmounted equipment is jeopardized with improper excavation and backfill, often resulting in hazardous voltage exposure to the public and contractors and leads to consumer power outages.

The above concerns can be minimized by the use of properly trained, licensed, and certified electrical outside linework personnel. The National Electrical Safety Code (NESC), the United States Occupational Safety and Health Administration (OSHA) and the Alaska State OSHA support this position as well as the clearances addressed herein.

The NESC, defines "*qualified*" as "*Having been trained in and having demonstrated adequate knowledge of the installation, construction, or operation of lines and equipment and the hazards involved, including identification of and exposure to electric supply and communication lines and equipment in or near the workplace.*" Only qualified persons are permitted to handle or work on or adjacent to energized electrical facilities. This includes not only overhead pole lines but also padmounted

and underground facilities. Within the NESC, two rules specifically address the need for qualified persons to perform work on or near energized facilities:

Rule 420B1 states, *"Employees whose duties require working on or in the vicinity of energized equipment or lines shall perform only those tasks for which they are trained, equipped, authorized, and so directed. Inexperienced employees shall: (a) work under the direction of an experienced and qualified person at the site; and (b) perform only directed tasks."*

Rule 420B4 states, *"Employees who do not normally work on or in the vicinity of electric supply lines and equipment but whose work brings them into these areas for certain tasks shall proceed with this work only when authorized by a qualified person."*

OSHA 29CFR 1910.269 contains the training and documentation requirements for a qualified person.

OSHA 29CFR 1926.1408 addresses equipment operations near electrical lines. If any part of the equipment, when operated up to the equipment's maximum working radius, could get closer than twenty (20) feet to a power line, then the operator must notify the utility, verify line voltage, and implement one of the safety options in OSHA 29CFR 1926.1408.

At no time may equipment violate minimum required clearance to an energized power line: ten (10) feet for lines up to 50 kilovolts (kV), or ten (10) feet plus 0.4 inches per one (1) kV over 50 kV. Minimum clearances are provided below for common Chugach system voltages.

CHUGACH SYSTEM VOLTAGES	
Normal Voltage (Phase-to-Phase)	Minimum Clearance Required At All Times
Operations Near High-Voltage Overhead Power Lines to 50 kV	10 Feet
Over 50 kV to 200 kV	15 Feet
Over 200 kV to 350 kV	20 Feet

Specifically, 29CFR1926.1408 (b)(4)(ii) requires a "Safety Observer" during equipment operations if the equipment is operating where it is difficult for the operator to maintain twenty (20) feet of clearance to the overhead power line(s) by visual means. Alaska Statutes (AS) Sections 18.60.670 through Section 18.60.695 govern placement and operation of equipment near electrical lines or conductors. 29CFR1926, Subpart P addresses the specific requirements involved with trenching operations. These include prior notice to utility companies, prior location of utility facilities, and proper supports once the facilities are exposed. Furthermore, 29CFR Sections 1910.180; 1910.333; 1926.416; and 1926.651 regulate activities relative to job site electrical facilities.

In summary, Chugach's concern for the safety of all personnel affected by work adjacent to its energized facilities has led to the development of the attached policy.

ELECTRICAL FACILITY CLEARANCE REQUIREMENTS

The following requirements have been developed to help provide a safer work site to those personnel working adjacent to Chugach's electrical facilities and to protect Chugach facilities that are in proximity to the area of work being done by State or Municipal entities and private construction and maintenance projects.

A. NOTIFICATION

It is recommended that Chugach be informed of construction/maintenance activities as early as possible in the design process and be included in timely plan reviews. Any work that needs to be performed on Chugach facilities must have prior Chugach approval.

1. Overhead Facilities

Any work in the proximity of overhead power lines shall be preceded by a call to Chugach at (907) 762-7679, at least 48 hours in advance, as notification of the planned work and compliance with OSHA 29CFR1926 (1408), and AS 18.60.670. If equipment, tools, machinery, or material must work in proximity closer than the minimum clearances outlined in OSHA 29CFR1926 (1408), and AS 18.60.670, the requirements of AS 18.60.680 shall be implemented before work can proceed. All necessary arrangements with Chugach by the requesting party for compliance with AS 18.60.680 shall be arranged in advance of the project start date.

2. Underground Facilities

Alaska Statutes 42.30.400 through 42.30.490, Anchorage Municipal Code, 24.40 and 26.90, and 29CFR1926, Subpart P place requirements on contractors who will be excavating around or adjacent to underground utilities. Advance notification requirements, underground facility locates, and the responsibilities for protection of utility facilities by contractors are specified in these regulations. All requests for locates of Chugach's underground facilities are to be made through the Alaska Digline at 811. Prior to excavation, Chugach's Line Operations Department shall be contacted at (907) 762-7679 a minimum of two (2) business days in advance of construction.

Locate surface markings are only reasonably accurate to +/- two (2) feet. Chugach and State law require hand-digging within two (2) feet of locate marks. In some cases, hand-digging may be required within three (3) or four (4) feet of the markings, depending on the facility involved and field

conditions at the project site. Maintaining locate marks is the responsibility of the party requesting the locate. Chugach may charge for re-locating and re-marking facilities that were previously marked.

B. UNDERGROUND CABLE EXCAVATION

1. Any excavation which is within a three (3) foot radius of a cable and parallels a cable for a distance greater than twenty (20) feet in length (see Section H.1 below) may require relocation of that cable. Excavations shorter in length and/or closer may also require relocation. At a minimum, cables that will require exposure must be exposed by *hand-digging* only, by a *qualified person* under the employ of a *qualified electrical contractor* (see Section H). See Drawing No. F-062388 attached.
2. Any excavation, such as a trench which crosses cable and/or conduit, shall be limited to twenty (20) feet in width and have provisions for the exposed cable/conduit to be supported every two (2) feet on a Chugach approved support system, to prevent cable damage. The cable support work and excavation within the three (3) foot radius (see Section H-1) shall be performed by a *qualified person* under the employ of a *qualified electrical contractor*.

NOTE: When excavation must occur within the limits specified in B.1, and B.2, above, reasonable efforts will be made by Chugach to de-energize the cable if system conditions and personnel requirements allow. Even if the cable has been de-energized, a "Cable Watch" by a qualified person under the employ of a qualified contractor is still required. To request the de-energization of the cable, contact the Chugach Line Operations Department at (907) 762-7679 and your call will be directed to the appropriate department for assistance. Requests must be made three (3) business days in advance of the outage date requested. For emergencies, contact Chugach's Dispatch Center at (907) 762-4660.

Under no circumstances will Chugach allow any of its underground cable(s) to remain energized after it has been exposed, unless it is protected by supplementary mechanical protection approved by Chugach or unless a qualified person is on site at all times.

3. Should any cable be exposed by non-qualified personnel, Chugach must be immediately contacted for field investigation before work may resume in the immediate area of such exposed cable.

Chugach recognizes that reasonable continuation of work may be required around energized underground cables after Chugach inspects the site. When this occurs, it is the responsibility of the construction contractor working at the site to arrange for qualified personnel as well as payment of the costs of said personnel and/or equipment. Chugach will neither arrange for, nor provide qualified personnel to satisfy this requirement unless Chugach determines this course of action is in its best interest, on a case-by-case basis. Where Chugach is otherwise forced to subsequently take steps to ensure the safety of the site, Chugach will advise the construction contractor that Chugach will pass these costs to the construction contractor.

4. In all cases, a final minimum burial depth of forty (40) to sixty (60) inches for primary-voltage (above 1000 volts) circuits and thirty (30) inches for secondary voltage (480V or below) circuits shall be maintained. If, however, existing Federal, State, or Municipal permit conditions require depths in excess of forty (40) inches, then the cable/conduit shall be buried at the depth required in the permit. The depth is measured from the top of the cable/conduit to final grade at the shallowest depth. Burial shall be in compliance with Chugach Construction Standard SUR 2-3, 5 or 6 (supplied upon request).
5. Projects that will increase final grade to sixty (60) inches or greater above Chugach direct buried cable shall require relocation at the customer's expense. Where cables are in conduit, review and written approval by Chugach is required for proposed grade changes resulting in a burial depth of sixty (60) inches or greater.
6. Projects which propose to modify the grade over Chugach's underground cables/circuits at voltages above 25kV require review and written approval by Chugach in all cases.
7. Excavations near underground cable/circuits energized above 25kV will require the following:
 - a) Excavation Adjacent to Cables/Circuits Energized Above 24kV
Chugach will require its Locate Contractor to notify excavators when a locate request includes the locating of cables are energized above 25kV.

When excavation is planned that will come within ten (10) feet, expose, parallel, or undermine sections of Chugach's underground cables energized above 25kV, special precaution and safety

consideration must be taken. These distribution and sub-transmission cables operate at voltages of 34.5kV (34,000 volts) and transmission cables operate above 34.5kV up to 230kV (230,000 volts), provide power to tens of thousands of Chugach customers and require extraordinary protection. The following guidelines shall apply:

Chugach Line Operations Department shall be contacted at (907) 762-7679 in advance of the planned excavation a minimum of five (5) business days prior to beginning excavation. Chugach requires that a *qualified person* be on site at all times during excavation activity that comes within ten (10) feet of any circuit cable energized above 24kV. The contractor shall arrange and pay for a *qualified person* from Chugach or, with approval, from one of Chugach's approved and *qualified contractors*. Excavations closer than ten (10) feet shall require exposure of the cables (vac-truck, pot-holing or other approved means) at the intersecting point or at intervals of not less than every twenty-five (25) feet for parallel excavations by *qualified personnel* to determine the exact location of the cable prior to machine excavation.

Excavations within ten (10) feet of cables energized above 25kV can expose unqualified workers to potentially high fault currents and extremely unsafe conditions. Prior planning by the construction contractor with coordination and approval from Chugach for any excavation projects within ten (10) feet of circuits or cables energized above 25kV is mandatory.

Chugach may require a special locate utilizing Ground Penetrating Radar to locate critical facilities. "Pothole" locates utilizing vacuum excavation in conjunction with an air-knife tool may be used, with Chugach approval.

C. STRUCTURE EXCAVATION

1. Equipment Pads or Vaults

Temporary excavation is allowed with a maximum slope of 1:1 beginning three (3) feet from the exterior edge of a concrete pad or vault. The final grade shall consist of a level area radiating out a minimum of four (4) feet, measured from the exterior edge of the pad or vault, and a maximum slope of 2:1 beginning from that four (4) foot distance from the exterior edge of the pad or vault. For both temporary and final grade situations, a level

area extending ten (10) feet out from the edge of the concrete pad in front of equipment doors or access panels is necessary. Refer to Drawing No. F-062388 attached.

If the slope cannot be maintained at the grades specified above, additional protection such as barriers or piling is required. All shoring and excavation (closer than the above limits) shall be done by a qualified person(s) under the employ of a qualified electrical contractor.

2. Concrete-Encased Duct

Excavation wider than five (5) feet under a concrete-encased duct requires a method designed and certified by an Alaska-registered civil engineer and approved by Chugach. Installation of the temporary shoring or bracing shall be done under the supervision of a qualified person under the employ of a qualified electrical contractor.

D. POLE/GUY ANCHOR EXCAVATION

Excavation beginning no closer than a three (3) foot radius from a pole or guy anchor in stable soil conditions or a ten (10) foot radius from a pole or guy anchor in organic/unstable soil conditions is allowed, provided the slope from that point does not exceed 1:1. Refer to Drawing No. F-062388 attached.

Excavation closer than the limits defined above or within a ten (10) foot radius of more than one consecutive pole where excavation will be open while more than one pole is affected, may require shoring of each pole. Chugach review and approval of a shoring plan is required for all excavations where more than one pole is subject to an open excavation. Pole shoring shall be approved by Chugach for the specific excavation. All work for installing poles must be performed within OSHA guidelines. Shoring by other methods requires prior approval by Chugach on a case-by-case basis. Streetlight poles may be temporarily removed, subject to a written agreement with Chugach, prior to excavation.

Any excavation that may expose the pole butt requires a structural analysis of the pole shoring method. The analysis shall be performed by an Alaska-licensed professional engineer familiar with electrical transmission and distribution design standards in use by Chugach. Chugach also reserves the right, at contractor expense, to have a structural engineer examine any excavation deeper than the pole butt within a fifteen (15) foot radius of the pole.

All shoring and excavation (closer than the above limits) shall be done by a qualified person under the employ of a qualified electrical contractor.

E. RELOCATION REQUIRED

Where protection of the cable and structures cannot be maintained, as required in Sections A, B, and C, relocation of those facilities will be required prior to the intended work and at the contracting agency's expense.

F. BACKFILL

Replacement backfill for electrical facilities must be in accordance with Chugach specifications and performed by a qualified person under the employ of a qualified electrical contractor.

A damaged underground facility may not be reburied until it is repaired or relocated to the satisfaction of Chugach.

G. INSPECTION AND APPROVAL

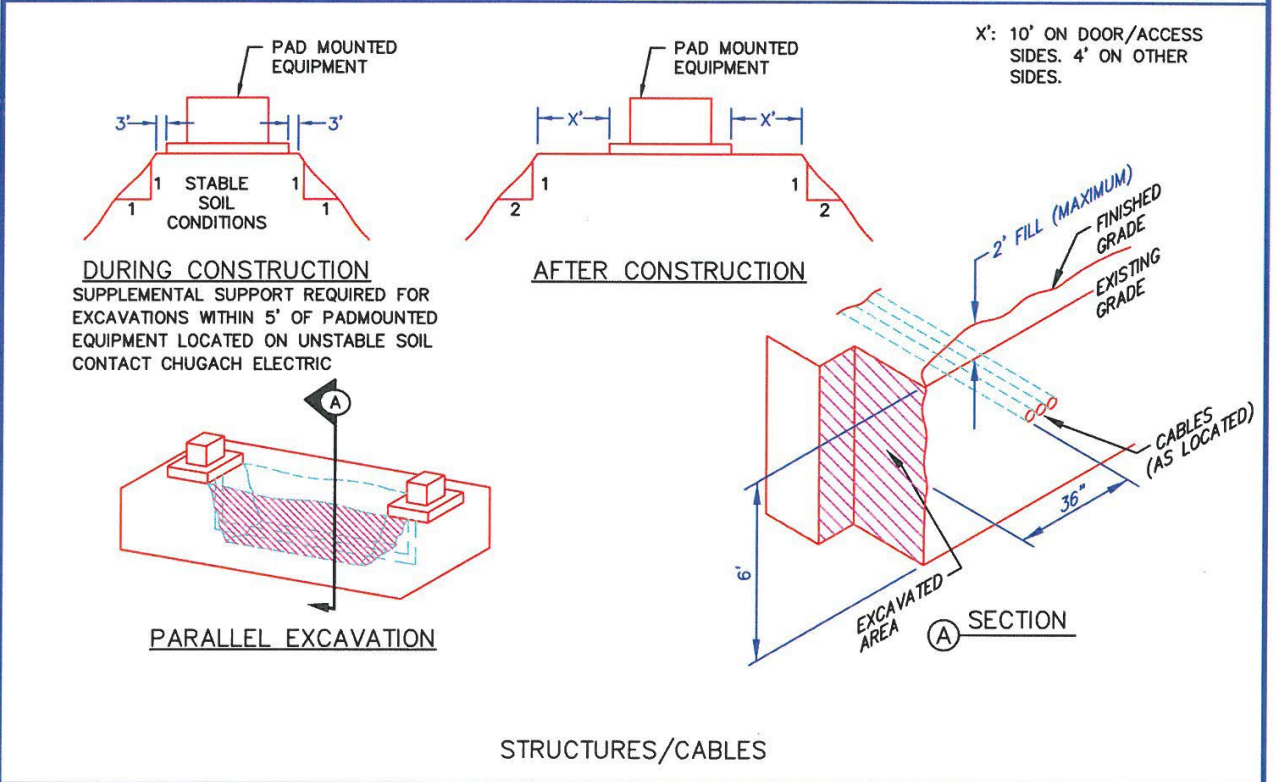
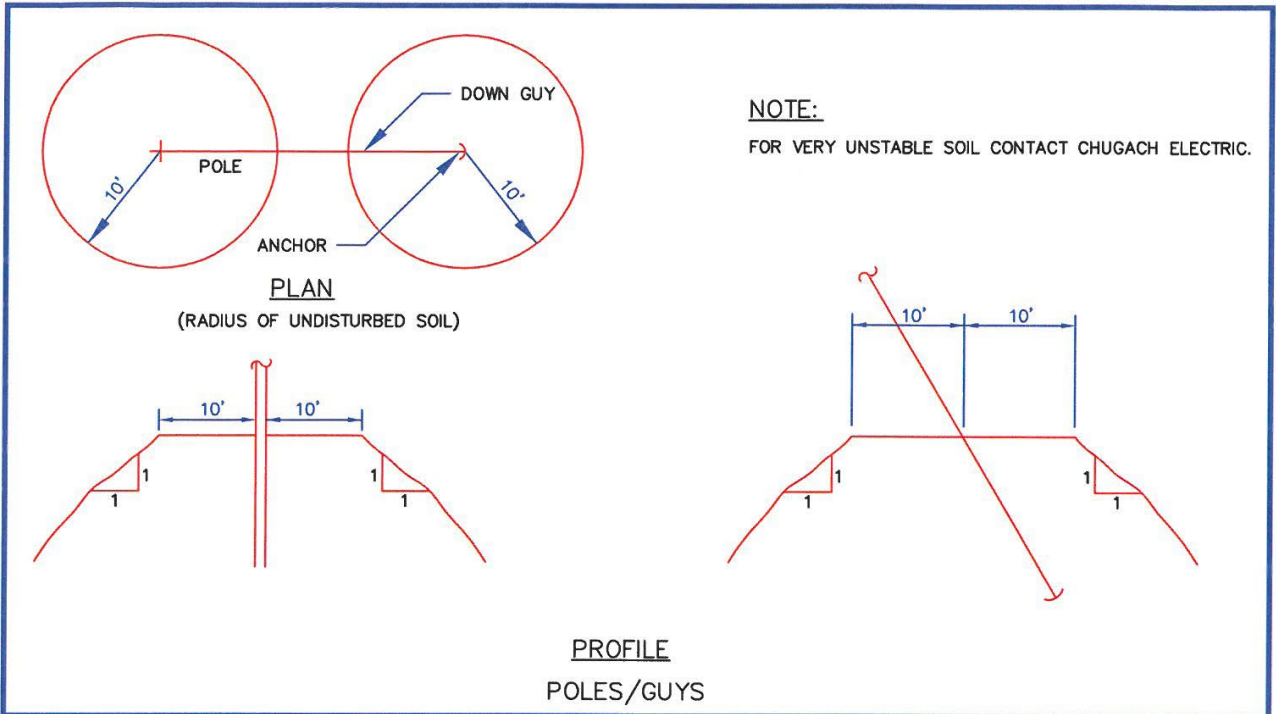
All work on or in the immediate vicinity of Chugach facilities, such as backfilling, temporary support, shoring, and relocations are subject to prior approval and inspection by Chugach. On large projects where inspection time is substantial, all costs for inspection shall be the responsibility of the agency or entity contracting for the work. Reimbursement to Chugach shall be in accordance with Chugach's tariff, Section 8.

For any questions or approvals involving these requirements contact Chugach Line Operations at (907) 762-7679 and your call will be directed to the appropriate department for assistance.

H. MISCELLANEOUS

1. Depending on the soil type, depth and length of the excavation, type of Chugach facility involved, and the certainty of the cable locate markings, excavations can be approved within a two (2) foot radius of cable on a case-by-case basis.
2. Stable soil conditions are defined as all dry and non-organic. Soil conditions shall be evaluated and approved on a case-by-case basis by Chugach. The evaluation will be done using 29CFR1926, Subpart P, "*Excavations*" as a guide.

3. Excavation, except as noted, shall be defined as mechanically performed by a backhoe, trencher, scraper, grader, auger, or other equipment.
4. Cables are defined as insulated conductors whether buried directly or in conduit. The guidelines for cables also include 600-Volt pedestals and other small electrical apparatus associated with cables but not included under pads or vaults.
5. Spare conduit is not included in these provisions except to the extent of providing temporary support when exposed and inspected by Chugach prior to the placement of proper backfill.
6. Chugach defines a *qualified electrical contractor* as a contractor registered in the State of Alaska who has an Electrical Administrator's License in the Outside Linework category; or who has an employee with an Electrical Administrator's License in the same category registered with the contractor.
7. Chugach defines a *qualified person* as a journeyman lineman who holds a current Certificate of Fitness in the Journeyman Lineman category issued by the State of Alaska.
8. Chugach defines *hand-digging* as the removal of soil with hand tools, an air-knife tool (compressed air jet), or a vacuum truck.



REV. NO.: 3 DATE: 1/28/98
 Standards Engineer: _____
 Mgr., Dist. Engineering: _____
 Mgr., Const. & Maint.: _____
 Dir., T&D Services Div.: _____



EXCAVATION LIMITS
 DEFINITION OF LIMITS REQUIRING
 NO ADDITIONAL STRUCTURAL SUPPORT

DRAWING NUMBER: **F-062388** SHEET 1 OF 1

Sec. 42.30.450. Waiver of requirements by written agreement.

An operator and an excavator may, by written agreement, waive the requirements of AS 42.30.400 - 42.30.490 that the excavator notify the operator of planned excavations and that the operator locate underground facilities. The agreement must identify the geographic areas to which the waiver applies and the time period for which the waiver is valid.

Sec. 42.30.460. Underground facility owner.

If the operator of an underground facility is not the owner of the facility and if the operator cannot be identified or has been identified but cannot be reached in a reasonable amount of time, the excavator may give the notice required by AS 42.30.400 - 42.30.490 to the owner of the underground facility and the owner shall assume the duties and responsibilities of the operator under AS 42.30.400 - 42.30.490.

Sec. 42.30.490. Definitions.

(1) "damage" means

(A) the substantial weakening of structural or lateral support of an underground facility;

(B) penetration, impairment, or destruction of any underground protective coating, housing, or other protective device; and

(C) the partial or complete severance of an underground facility to the extent that the project owner or facility operator determines that repairs are required;

(2) "emergency" means

(A) a condition that constitutes a clear and present danger to life, health, or property; or

(B) an unplanned service interruption;

(3) "excavation" means

(A) an activity in which earth, rock, or other material on or below the ground is moved or otherwise displaced by any means;

(B) road maintenance that changes the original road grade;

(C) demolition or movement of earth by equipment, tools, or explosive device except tilling of the soil less than 12 inches in depth for agricultural purposes;

(4) "excavator" means a person who conducts excavation in the state;

(5) "inaccessible" means impossible or unreasonably difficult to reach due to conditions beyond the control of the underground facility operator;

(6) "notification center" or "center" means a service through which a person is able to call one number to notify member operators of underground facilities that an excavation is proposed and to request the operators to mark facilities located inside of the proposed excavation area;

(7) "operator" means a person who supplies a service for commercial or public use by means of an underground facility;

(8) "person" means any individual, public or private corporation, political subdivision, government agency, municipality, industry, partnership, copartnership, association, firm, trust, estate, or any other entity whatsoever;

(9) "remote" means not accessible by road;

(10) "underground facility" means a pipe, sewer, conduit, cable, valve, line, or wire, including attachments and those parts of poles or anchors that are below ground, for use in connection with the storage or conveyance of water, sewage, telecommunications, cable television, electricity, petroleum, petroleum products, hazardous liquids, or flammable, toxic, or corrosive gas;

(11) "unstaffed" means not normally staffed with employees;

(12) "working day" means a day on which an underground facility operator is open for regular business.

ALASKA STATUTES

TITLE 42

**PUBLIC UTILITIES
&
CARRIERS**

Sec. 42.30.400. Excavator's notice of proposed excavation.

(a) Before beginning an excavation, an excavator shall give notice of the proposed excavation to each underground facility operator who has an underground facility in the area of the proposed excavation and request the operator to field mark the location of its underground facility. The excavator shall notify an underground facility operator who subscribes to a notification center by giving notice to the center. The excavator shall notify an underground facility operator listed in the applicable telephone directory who is not a subscriber to a notification center by giving notice directly to the operator.

(b) Except in the case of an emergency locate request or a request to locate in a remote, unstaffed, or inaccessible location, the excavator shall notify an underground facility operator who may have a facility in the area of a proposed excavation at least two but not more than 15 working days before the date scheduled for beginning the excavation. In the case of a request to locate in a remote or unstaffed location, the excavator shall notify the operator at least 10 but not more than 20 working days before the scheduled date for beginning excavation.

(c) In an emergency, the excavator shall immediately notify each underground facility operator in the area of the emergency and of the need for the excavation and request prompt location of underground facilities.

Sec. 42.30.410. Operator's response to request to locate; immunity related to unmarked or inaccurately marked facilities.

(a) An underground facility operator shall accept requests to locate underground facilities during the operator's regular business hours. An operator who receives a request to locate shall maintain for at least one year an accurate record of the request and responses to the request.

(b) When an underground facility operator receives a request to locate, it shall notify the excavator of the location of the underground facilities that the operator is able to field mark with reasonable accuracy and field mark those facilities. If the operator owns, uses, or operates an underground facility that is identified as being in the area of the proposed excavation but that the operator cannot field mark with reasonable accuracy, the operator shall provide the excavator with the best information available to the operator about its location and shall provide on-site assistance until the facility is located or until the excavator no longer needs assistance in locating that facility.

(c) The field marks for an underground facility buried 10 feet deep or less must be located within 24 horizontal inches of the outside dimensions of the facility. For a facility buried deeper than 10 feet, the operator shall locate the field marks within 30 horizontal inches of the outside dimensions of the facility. The operator shall use stakes, paint, or other clearly identifiable material to show the field location of the underground facility. The marker used to designate the approximate location of an underground facility must follow the current color code standard used by the American Public Works Association.

(d) Except for an underground facility in a remote, unstaffed, or inaccessible location, an underground facility operator shall respond to a request to locate promptly. A response is considered to be prompt if it is made within two working days after the operator receives the request or at a later time so long as the response occurs before the beginning of the excavation. For an underground facility in an accessible remote or unstaffed location, the operator shall respond within 10 working days after the operator receives the request or at a later time

so long as the response occurs before the beginning of excavation.

(e) After an operator has field marked an underground facility, the excavator is responsible for maintaining the markings.

(f) An excavator may not begin to excavate until each underground facility has been field marked.

(g) When an operator has field marked an underground facility once at the request of an excavator, the operator has the right to receive compensation from the excavator for costs incurred in responding to subsequent requests to locate the same underground facility during the same excavation project if the excavator failed to maintain the original marking.

(h) If an excavator discovers an underground facility that was not field marked or was inaccurately field marked, the excavator shall immediately stop excavating in the vicinity of the facility and shall notify the operator of the discovery. The excavator may notify the operator by means of a notification center. The operator shall treat the notification as a request to locate in an emergency and shall respond accordingly. An excavator may not be held liable for inadvertent damage caused to an unmarked or an inaccurately marked underground facility.

(i) Unless the request to locate is made in response to an emergency, an underground facility operator has the right to receive compensation for costs incurred in responding to a request to locate that gives the operator less notice than the minimum notice required by this section. This subsection may not be interpreted to require the operator to respond to the request to locate within the time requested in the notice.

Sec. 42.30.420. Responsibility of construction project owners.

The owner of a construction project that will require excavation shall indicate in bid documents or contracts for construction the existence of underground facilities that the project owner knows are located inside of the proposed area of excavation. This requirement does not release the

excavator from the excavator's responsibility under AS 42.30.400 - 42.30.490.

Sec. 42.30.430. Obligations concerning the conduct of excavations.

(a) An excavator shall use reasonable care to avoid damaging an underground facility. The excavator shall

(1) determine, without damage to the facility, the precise location of an underground facility whose location has been marked;

(2) plan the excavation to avoid damage to and minimize interference with an underground facility in or near the excavation area; and

(3) to the extent necessary to protect a facility from damage, provide support for an underground facility in and near the construction area during the excavation.

(b) An excavator who, in the course of excavation, contacts or damages an underground facility shall notify the operator. If the damage causes an emergency, the excavator shall also alert appropriate local public safety agencies and take reasonable steps to ensure public safety. A damaged underground facility may not be reburied until it is repaired or relocated to the satisfaction of the operator. The operator of an underground facility that was damaged during excavation shall arrange for repair or relocation of the facility as soon as practical.

Sec. 42.30.440. Penalties; injunctive relief.

(a) In addition to all other remedies provided by law, a person who violates a provision of AS 42.30.400 - 42.30.490 is subject to a civil penalty of not less than \$50 nor more than \$1,000 for each offense if the violation results in or significantly contributes to damage to an underground facility.

(b) If the court finds that an excavator is violating or threatening to violate a provision of AS 42.30.400 - 42.30.490 and the violation may result in damage to an underground facility, the court may grant injunctive relief to the underground facility operator.



Excavation Safety for Natural Gas Pipelines

Safety



ENSTAR Natural Gas Company provides natural gas service through 3,580 miles of gas mains to over 142,000 customers in South Central Alaska. ENSTAR's gas pipeline system is designed, installed, and maintained with the highest regard for safety in compliance with applicable federal, state, and local government statutes and regulations. ENSTAR is regularly inspected to ensure that its operation meets industry standards.

The US Department of Transportation, Pipeline & Hazardous Materials Safety Administration (PHMSA) oversees minimum safety regulations for the transportation of natural gas by pipelines. The DOT safety regulations are currently published in Title 49, Part 190, 191, 192 & 199 of the Code of Federal Regulations (CFR).

The Law

Call **811** before you dig; it's free and it's the law. Calling for locates is now as simple as dialing **811** or go online to www.akonecall.com. In Alaska, dialing **811** connects you with Alaska Digline Inc. Alaska Digline Inc. will take your excavation information and notify all affected utilities. Utilities have two business days to mark their utilities after receiving your call.

PHMSA is the excavation damage enforcement agency in the State of Alaska. The enforcement program protects the public from the risk of pipeline ruptures caused by excavation damage. Should an excavator violate any of the damage prevention requirements prescribed in 49 CFR part 196, Subpart B, they may face civil and or criminal penalties. Civil penalties of not more than \$200,000 for each violation, not to exceed \$2,000,000 may be levied. Criminal penalties may be enforced with imprisonment of not more than 5 years per violation. More information about the PHMSA ruling can be found at <http://www.phmsa.dot.gov/>.



Excavation Safety for Natural Gas Pipelines

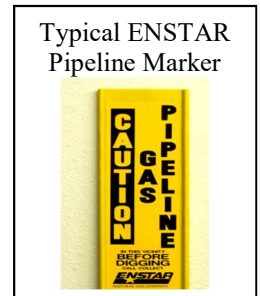
Pipeline Markers

Do not assume there is not a pipeline if there is no marker.

ENSTAR transmission pipelines are generally marked above ground with pipeline markers similar to the one shown. Transmission pipelines are located in the vicinity of the pipeline markers. Transmission pipelines are steel and range in size from 2" to 20" in diameter. They are typically coated with a protective coating. Pipeline coatings are predominantly yellow and black, but may also be green or brown.

Distribution pipelines are steel, or High Density polyethylene with locate wire. These pipelines range in size from 1" diameter to 12" in diameter. Gas "Mains" are typically found in street right-of-ways or utility easements and supply the natural gas to an entire street or subdivision.

Natural gas service lines are connected to the gas main. Service lines generally serve a single building or small group of buildings on private property. Service lines are typically 1/2" to 2" in diameter. Service lines can be rigid steel, steel tubing, copper or polyethylene with locate wire. Gas mains and service lines are generally black or yellow in color.



Steps to Follow

- 1 Line Locating: A Free Service:** To request a locate, dial **811**, the Nationally recognized One-Call number and you will be connected to Alaska Digline Inc. Call at least 2 but not more than 15 working days before the date scheduled for beginning the excavation.
- 2 Request a Relocate Ticket when:** the marks have not been maintained, the excavator is unable to accurately "read" the locate marks, the marks have been destroyed, or the marks are more than 15 working days old.
- 3 Excavating around Locate Marks:** In Alaska, you must use reasonable care when digging within 24 horizontal inches of the outside dimensions of the locate marks. If you are digging to a depth of 10 feet or greater, you must use reasonable care within 30 horizontal inches. *Treat all buried lines as if they were active.*

Typical means of excavating around locate marks:

- Hand Dig
- Air Knife
- Vac Truck

- 4 Standby/Inspection Requirements:** Extreme caution must be exercised whenever pipelines are encountered. All excavations in the immediate vicinity of ENSTAR Natural Gas facilities (including backfill, compaction, temporary support, and shoring), are subject to prior approval and inspection by ENSTAR personnel. Pipeline inspections are provided whenever an excavator is working within 10 feet of a transmission pipeline, or within 5 feet of a distribution line. If excavation occurs without either locates or standby (qualified ENSTAR personnel), ENSTAR Natural Gas reserves the right to excavate to determine if there has been any damage to ENSTAR Natural Gas facilities. If damage has occurred ENSTAR Natural Gas has the right to charge the excavator for repairs.





Excavation Safety for Natural Gas Pipelines

- 5 Support for Steel Pipeline Crossings:** If an excavation below a **steel gas** pipeline leaves the pipeline unsupported for a distance of more than 20 feet, the excavator must provide additional support for the pipeline. Support must be provided in a way as to not damage the pipe or its coating during construction, backfill placement, and compaction. Generally, a support spacing of 5 feet or less will provide the required support. ENSTAR Engineering must approve all excavations crossing steel pipelines above 4-inch diameter. If support is required, ENSTAR engineering written approval is required prior to beginning construction. Call ENSTAR Engineering (907)334-7740 for further information. Extra care must be taken when geotextile fabric and/or rigid insulation are used. Geotextile fabric and/or rigid insulation shall be sufficiently separated from steel pipeline and in addition to continuous support under the pipeline, compacted fill material shall be placed between the geotextile fabric/rigid insulation and the pipeline (see item 10 clearance). Care shall be taken to insure stability for the ENSTAR facility. Failure to properly protect ENSTAR's facilities could result in future damage if differential settlement occurs.
- 6 Support for Polyethylene Line Crossings:** If an excavation is below a **polyethylene gas pipeline** the excavator must continuously support such pipeline during construction, backfill placement, and compaction. Geotextile fabric and/or rigid insulation shall be sufficiently separated from the polyethylene gas pipeline to prevent undue stress during the compaction/settlement process. (see item 10 clearance)
- 7 Excavation Parallel to Pipeline: Whenever an excavation (horizontal or vertical) is performed within 5 feet of a distribution pressure pipeline and 10 feet of a transmission pressure pipeline, the gas pipeline must be exposed to visually determine the exact location.** When parallel excavations are expected to expose or undermine sections of pipeline, the excavator must notify ENSTAR engineering in advance. Care must be taken not to damage the pipeline, or to induce stresses due to differential settlement following construction. **Long parallel excavations exposing pipelines can be very dangerous if not properly performed and shall not be attempted without prior approval by ENSTAR.** Unless otherwise approved by ENSTAR engineering, all excavations parallel to a gas pipeline require that the pipeline be exposed at intervals no greater than every 25 feet to visually determine the pipeline's exact location. Contact ENSTAR Engineering at (907)334-7740 for additional information.
- 8 Blasting:** All plans for blasting that will occur within 500' of any Company Facility, shall be reviewed by an ENSTAR engineer. The person performing the blasting shall take all appropriate measures as recommended by ENSTAR engineering, (i.e. require minimum distance from facilities, minimize blasting charge intensity, etc.) to protect the integrity of the Company's Facilities. A leak survey shall be performed before and after any blasting activity, within 500' of any Company Facility.
- 9 Trenchless Excavation (Vertical or Horizontal): Whenever a trenchless excavation (horizontal or vertical) is performed within 5 feet of a distribution pressure pipeline and 10 feet of a transmission pressure pipeline, the gas pipeline must be exposed to visually determine the exact location.** If the trenchless excavation is expected to cross the pipeline within the aforementioned distances, the pipeline in question shall be fully exposed to a minimum of 1 foot beneath the pipeline prior to the expected crossing to ensure that the pipeline is not unduly damaged due to ground movement in the immediate vicinity of the pipeline. **When performing a trenchless excavation parallel to a gas pipeline, the gas pipeline must be exposed at intervals of 25 feet or less to visually determine the pipeline's exact location.** Trenchless excavation is defined as drilling, directional drilling, boring, pile installation etc.
- 10 Clearance:** Natural Gas pipelines require a **12 inch minimum separation from other underground structures** not associated with ENSTAR's pipeline system. Additional clearance from other underground structures may be required to allow proper maintenance and reduce the possibility of damage due to



Know what's below.
Call before you dig.



Excavation Safety for Natural Gas Pipelines

the proximity of other structures (49 CFR § 192.325.) This clearance requirement includes rigid insulation and geotextile fabrics. **ENSTAR requires a 36-inch minimum separation from certain electrical facilities, including any grounded components i.e. ground rods, non-insulated conductors and associated structures.**

- 11 Pipeline Cover:** ENSTAR pipelines in public rights-of-way are generally installed with 36 inches to 48 inches of cover, and in private rights-of-way with 12 inches to 36 inches of cover. Projects that decrease cover or increase cover in excess of 60 inches must receive prior approval from ENSTAR Engineering Department (907)334-7740. ENSTAR has limited ability to prevent the removal of cover over gas pipelines. Increasing pipeline cover more than 5 feet or decreasing pipeline cover to less than 3 feet may be considered a damage that may result in relocation of the gas pipeline at the expense of the Excavator. The depth of cover listed above cannot be assumed after installation. The excavator is responsible for any damage to ENSTAR pipelines regardless of the depth at which they are encountered.
- 12 Landscaping:** Most landscaping activities require locates, and when it is determined that landscaping activities are within 5 feet of a distribution pipeline, or 10 feet of a transmission pipeline, Inspection/Standby requirements as listed above are applicable. Planting of trees and shrubs over existing pipelines is not permissible and can present a safety and reliability hazard to the pipeline.

Damage Reporting

If you damage a gas line, immediately Call 911 and ENSTAR at 1-844-SMELL GAS (1-844-763-5542). It's the Law.

Gas lines that have been pulled, stretched, kinked or bent could be damaged underground away from where the line is connected. If you pull or stretch gas lines call ENSTAR at (907)277-5551 and an ENSTAR Representative will investigate for possible underground leakage.

Pipe Wall Protection

Dents, scrapes, gouges and scratches reduce pipeline wall thickness and affect the safety of the facility in two ways. First, the reduced wall thickness decreases the pressure at which the pipeline can safely operate. Second, the damage serves as a stress concentration that can cause a future brittle failure of the pipeline. **An ENSTAR representative must inspect each dent, scrape, gouge or scratch, no matter how small, before it is reburied.**

Corrosion Protection

ENSTAR's **steel** pipelines are protected from corrosion by a dielectric coating and an impressed current or galvanic anode cathodic protection system. Direct contact with metallic objects (a short) or removal of the protective coating can compromise this system. Contact the ENSTAR Engineering Department (907)334-7740, whenever coating damage or a short is encountered. **An ENSTAR representative must inspect each short or section of damaged coating before it is reburied.**

Locate Wire Protection

ENSTAR's **polyethylene** pipelines are installed with a parallel copper wire, which is used to locate the pipeline. If the locate wire or wire coating is damaged, ENSTAR's ability to properly locate the pipeline may be severely compromised. Electrical continuity must be maintained. **An ENSTAR representative must**





Excavation Safety for Natural Gas Pipelines

inspect and/repair each possible locate wire damage before it is reburied, accidental locate wire damage repair is free of charge.

Excess Flow Valves

An Excess Flow Valve (EFV) is a safety device installed in a natural gas service line near the gas main that is designed to automatically shut off the flow of natural gas in the event that the service line is broken. Effective April 14th, 2017, all gas companies nationwide are required to install an EFV or a curb-side shut off valve in any new or renewed service lines.

What does this mean to you as an Excavator?

Should you damage a natural gas service line that has an EFV, the gas will blow for a short duration and shut off automatically if the flow of gas is sufficient to close the EFV. Damages that do not sever the service line completely may not cause the EFV to close and the gas will continue to blow. Regardless, **you must report all damages to ENSTAR immediately**. EFVs are designed to allow a small amount of "bleed-by" so they can be reset without excavating the gas main. Backfilling a damaged service line with gas bleeding underground is extremely dangerous and could fuel an explosion if it is not repaired timely. **Do not assume a damaged service is dead or abandoned if it is not blowing gas**. The EFV may have shut down the flow of gas. Report all damages immediately by calling **1-844-SMELL-GAS**.

Please remember that the vast majority of ENSTAR service lines WILL NOT have an EFV. Should you damage a service line without an EFV, gas will blow at full line pressure until ENSTAR can arrive to shut it off. Your best protection against damaging underground utilities is to call **811** for locates and hand dig within 2 feet of the locate marks.

What to do if You Smell Gas

Natural gas actually does not have a natural odor, but mercaptan compounds are added to distribution system gas to enable you to smell a leak. If you smell the characteristic Sulphur odor, call ENSTAR at 1-844-SMELL GAS (1-844-763-5542)

Qualified Personnel Requirements

Only qualified individuals meeting all applicable requirements may perform work on Natural Gas facilities. At a minimum, such individuals must comply with applicable federal, state and local regulation, statutes, and ordinances.

Additional pipeline information can be found on the following websites:

PHMSA/DOT	https://phmsa.dot.gov/pipeline
Common Ground Alliance	http://www.commongroundalliance.com
Pipeline 101	http://www.pipeline101.com
Alaska Digline, Inc.	http://www.akonecall.com/



Excavation Safety for Natural Gas Pipelines

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Call before you dig.

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akonecall.com

BURIED CABLE
BURIED SEWER
BURIED GAS LINE
BURIED WATER
BURIED ELECTRIC

**SMELL GAS?
ACT FAST!**

CALL US, TOLL-FREE.
1-844-SMELL GAS
1-844-763-5542

For further information about ENSTAR, visit our web site @ www.enstarnaturalgas.com



CITY OF WHITTIER, ALASKA
LIFT STATION NO. 5 REPLACEMENT REBID

SECTION VII
MINIMUM RATES OF PAY
A. State of Alaska Wage Rate



MINIMUM RATES OF PAY For Laborers and Mechanics

Effective September 1, 2023

Issue 47

PAMPHLET No. 600

Title 36. Public Contracts
AS 36.05

DEPARTMENT OF LABOR
AND WORKFORCE DEVELOPMENT
Wage and Hour

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September 1, 2023

TO ALL CONTRACTING AGENCIES:

At the Alaska Department of Labor and Workforce Development our goal is putting Alaskans to work. This pamphlet is designed to help contractors awarded public construction contracts understand the most significant laws of the State of Alaska pertaining to prevailing wage.

This pamphlet identifies current prevailing wage rates for public construction contracts (any construction projects awarded for the State of Alaska or its political subdivisions, such as local governments and certain non-profit organizations). Because these rates may change in a subsequent determination, please be sure you are using the appropriate rates. The rates published in this edition become effective September 1, 2023.

The prevailing wage rates contained in this pamphlet are applicable to public construction projects with a final bid date of September 11, 2023, or later. As the law now provides, these rates will remain stable during the life of a contract or for 24 calendar months, whichever is shorter. **The 24-month period begins on the date the prime contract is awarded.** Upon expiration of the initial 24-month period, the latest wage rates issued by the department shall become effective for a subsequent 24-month period or until the original contract is completed, whichever occurs first. This process shall be repeated until the original contract is completed.

The term "original contract" means the signed contract that resulted from the original bid and any amendments, including changes of work scope, additions, extensions, change orders, and other instruments agreed to by the parties that have not been subject to subsequent open bid procedures.

If a higher federal rate is required due to partial federal funding or other federal participation, the higher rate must be paid.

For additional copies of this pamphlet go to: <http://labor.state.ak.us/lss/pamp600.htm>

For questions regarding prevailing wage or employment preference requirements, please contact the nearest Wage and Hour office. These offices are listed on Page x.

Sincerely,

A handwritten signature in blue ink that reads "Catherine Muñoz".

Catherine Muñoz
Acting Commissioner

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Note to Readers: The statutes and administrative regulations listed in this publication were taken from the official codes, as of the effective date of the publication. However, there may be errors or omissions that have not been identified and changes that occurred after the publication was printed. This publication is intended as an informational guide only and is not intended to serve as a precise statement of the statutes and regulations of the State of Alaska. To be certain of current laws and regulations, please refer to the official codes.

EXCERPTS FROM ALASKA LAW

Sec. 36.05.005. Applicability.

This chapter applies only to a public construction contract that exceeds \$25,000.

Sec. 36.05.010. Wage rates on public construction.

A contractor or subcontractor who performs work on a public construction contract in the state shall pay not less than the current prevailing rate of wages for work of a similar nature in the region in which the work is done. The current prevailing rate of wages is that contained in the latest determination of prevailing rate of wages issued by the Department of Labor and Workforce Development at least 10 days before the final date for submission of bids for the contract. The rate shall remain in effect for the life of the contract or for 24 calendar months, whichever is shorter. At the end of the initial 24-month period, if new wage determinations have been issued by the department, the latest wage determination shall become effective for the next 24-month period or until the contract is completed, whichever occurs first. This process shall be repeated until the contract is completed.

Sec. 36.05.040. Filing schedule of employees, wages paid, and other information.

All contractors or subcontractors who perform work on a public construction contract for the state or for a political subdivision of the state shall, before the Friday of every second week, file with the Department of Labor and Workforce Development a sworn affidavit for the previous reporting period, setting out in detail the number of persons employed, wages paid, job classification of each employee, hours worked each day and week, and other information on a form provided by the Department of Labor and Workforce Development.

Sec. 36.05.045. Notice of work and completion; withholding of payment.

- (a) Before commencing work on a public construction contract, the person entering into the contract with a contracting agency shall designate a primary contractor for purposes of this section. Before work commences, the primary contractor shall file a notice of work with the Department of Labor and Workforce Development. The notice of work must list work to be performed under the public construction contract by each contractor who will perform any portion of work on the contract and the contract price being paid to each contractor. The primary contractor shall pay all filing fees for each contractor performing work on the contract, including a filing fee based on the contract price being paid for work performed by the primary contractor's employees. The filing fee payable shall be the sum of all fees calculated for each contractor. The filing fee shall be one percent of each contractor's contract price. The total filing fee payable by the primary contractor under this subsection may not exceed \$5,000. In this subsection, "contractor" means an employer who is using employees to perform work on the public construction contract under the contract or a subcontract.
- (b) Upon completion of all work on the public construction contract, the primary contractor shall file with the Department of Labor and Workforce Development a notice of completion together with payment of any additional filing fees owed due to increased contract amounts. Within 30 days after the department's receipt of the primary contractor's notice of completion, the department shall inform the contracting agency of the amount, if any, to be withheld from the final payment.
- (c) A contracting agency
 - (1) may release final payment of a public construction contract to the extent that the agency has received verification from the Department of Labor and Workforce Development that
 - (A) the primary contractor has complied with (a) and (b) of this section;
 - (B) the Department of Labor and Workforce Development is not conducting an investigation under this title; and
 - (C) the Department of Labor and Workforce Development has not issued a notice of a violation of this chapter to the primary contractor or any other contractors working on the public construction contract; and

- (2) shall withhold from the final payment an amount sufficient to pay the department's estimate of what may be needed to compensate the employees of any contractors under investigation on this construction contract, and any unpaid filing fees.
- (d) The notice and filing fee required under (a) of this section may be filed after work has begun if
 - (1) The public construction contract is for work undertaken in immediate response to an emergency; and
 - (2) The notice and fees are filed not later than 14 days after the work has begun.
- (e) A false statement made on a notice required by this section is punishable under AS 11.56.210.

Sec. 36.05.060. Penalty for violation of this chapter.

A contractor who violates this chapter is guilty of a misdemeanor and upon conviction is punishable by a fine of not less than \$100 nor more than \$1,000, or by imprisonment for not less than 10 days nor more than 90 days, or by both. Each day a violation exists constitutes a separate offense.

Sec. 36.05.070. Wage rates in specifications and contracts for public works.

- (a) The advertised specifications for a public construction contract that requires or involves the employment of mechanics, laborers, or field surveyors must contain a provision stating the minimum wages to be paid various classes of laborers, mechanics, or field surveyors and that the rate of wages shall be adjusted to the wage rate under AS 36.05.010.
- (b) Repealed by §17 ch 142 SLA 1972.
- (c) A public construction contract under (a) of this section must contain provisions that
 - (1) the contractor or subcontractors of the contractor shall pay all employees unconditionally and not less than once a week;
 - (2) wages may not be less than those stated in the advertised specifications, regardless of the contractual relationship between the contractor or subcontractors and laborers, mechanics, or field surveyors;
 - (3) the scale of wages to be paid shall be posted by the contractor in a prominent and easily accessible place at the site of the work;
 - (4) the state or a political subdivision shall withhold so much of the accrued payments as is necessary to pay to laborers, mechanics, or field surveyors employed by the contractor or subcontractors the difference between
 - (A) the rates of wages required by the contract to be paid laborers, mechanics, or field surveyors on the work; and
 - (B) the rates of wages in fact received by laborers, mechanics, or field surveyors.

Sec. 36.05.080. Failure to pay agreed wages.

Every contract within the scope of AS 36.05.070 shall contain a provision that if it is found that a laborer, mechanic, or field surveyor employed by the contractor or subcontractor has been or is being paid a rate of wages less than the rate of wages required by the contract to be paid, the state or its political subdivision may, by written notice to the contractor, terminate the contractor's right to proceed with the work or the part of the work for which there is a failure to pay the required wages and to prosecute the work to completion by contract or otherwise, and the contractor and the contractor's sureties are liable to the state or its political subdivision for excess costs for completing the work.

Sec. 36.05.090. Payment of wages from withheld payments and listing contractors who violate contracts.

- (a) The state disbursing officer in the case of a state public construction contract and the local fiscal officer in the case of a political subdivision public construction contract shall pay directly to laborers, mechanics, or field surveyors from accrued payments withheld under the terms of the contract the wages due laborers, mechanics, or field surveyors under AS 36.05.070.
- (b) The state disbursing officer or the local fiscal officer shall distribute to all departments of the state government and to all political subdivisions of the state a list giving the names of persons who have disregarded their obligations to employees. A person appearing on this list and a firm, corporation, partnership, or association in which the person has an interest may not work as a contractor or

subcontractor on a public construction contract for the state or a political subdivision of the state until three years after the date of publication of the list. If the accrued payments withheld under the contract are insufficient to reimburse all the laborers, mechanics, or field surveyors with respect to whom there has been a failure to pay the wages required under AS 36.05.070, the laborers, mechanics, or field surveyors have the right of action or intervention or both against the contractor and the contractor's sureties conferred by law upon persons furnishing labor or materials, and in the proceedings it is not a defense that the laborers, mechanics, or field surveyors accepted or agreed to accept less than the required rate of wages or voluntarily made refunds.

Sec. 36.05.900. Definition.

In this chapter, "contracting agency" means the state or a political subdivision of the state that has entered into a public construction contract with a contractor.

EXCERPTS FROM ALASKA ADMINISTRATIVE CODE

*****Notice:** Regulations relating to board and lodging and per diem went into effect on November 25, 2018. The new regulations are excerpted here***

8 AAC 30.051. Purpose. The purpose of 8 AAC 30.052 – 8 AAC 30.056 is to ensure that wages paid to laborers, mechanics, and field surveyors do not fall below the prevailing rate of pay.

8 AAC 30.052. Board and lodging; remote sites. (a) A contractor on a public construction project located 65 or more road miles from the international airport closest to the project area in either Fairbanks, Juneau, or Anchorage, or that is inaccessible by road in a two-wheel drive vehicle, shall provide adequate board and lodging to each laborer, mechanic, or field surveyor while the person is employed on the project. If commercial lodging facilities are not available, the contractor shall provide temporary lodging facilities. Lodging facilities must comply with all applicable state and federal laws. For a highway project, the location of the project is measured from the midpoint of the project.

(b) A contractor is not required to provide board and lodging:

(1) to a laborer, mechanic, or field surveyor who is a domiciled resident of the project area; or

(2) on a laborer, mechanic, or field surveyor's scheduled days off, when the person can reasonably travel between the project and the person's permanent residence; for the purposes of this paragraph, "scheduled day off" means a day in which a person does not perform work on-site, is not required to remain at or near the job location for the benefit of the contractor, and is informed of the day off at least seven days before the day off.

(c) Upon a contractor's written request, the commissioner may waive the requirements of (a) of this section where:

(1) the project is inaccessible by road in a two-wheel drive vehicle, but the laborer, mechanic, or field surveyor can reasonably travel between the project and the person's permanent residence within one hour; or

(2) a laborer, mechanic, or field surveyor is not a domiciled resident of the project area, but has established permanent residence, with the intent to remain indefinitely, within 65 road miles of the project, or for a highway project, the mid-point of the project.

8 AAC 30.054. Per diem instead of board and lodging. (a) A contractor may pay a laborer, mechanic, or field surveyor per diem instead of providing board and lodging, when the following conditions are met:

(1) the department determines that per diem instead of board and lodging is an established practice for the work classification; the department shall publish and periodically revise its determinations in the pamphlet *Laborers and Mechanics Minimum Rates of Pay*;

(2) the contractor pays each laborer, mechanic, or field surveyor the appropriate per diem rate as published and periodically revised in the pamphlet *Laborers and Mechanics Minimum Rates of Pay*; and

(3) the contractor pays the per diem to each laborer, mechanic, or field surveyor on the same day that wages are paid.

(b) A contractor may not pay per diem instead of board and lodging on a highway project located

- (1) west of Livengood on the Elliot Highway, AK-2;
- (2) on the Dalton Highway, AK-11;
- (3) north of milepost 20 on the Taylor Highway, AK-5;
- (4) east of Chicken on the Top of the World Highway; or
- (5) south of Tetlin Junction to the Alaska-Canada border on the Alaska Highway, AK-2.

8 AAC 30.056. Alternative arrangement. Upon a contractor’s written request, the commissioner may approve an alternative board and lodging or per diem arrangement, provided

- (1) the arrangement does not reduce the laborer, mechanic, or field surveyor’s wages below the prevailing wage rate; and
- (2) the laborer, mechanic, or field surveyor voluntarily enters into and signs the written arrangement; a labor organization representing laborers, mechanics, or field surveyors may enter into the written agreement on their behalf.

8 AAC 30.900. General definitions (selected excerpts only):

In this chapter and in AS 36

- (22) “domiciled resident” means a person living within 65 road miles of a public construction project, or in the case of a highway project, the mid-point of the project, for at least 12 consecutive months prior to the award of the public construction project;
- (23) “employed on the project” means the time period from the date the laborer, mechanic, or field surveyor first reports on-site to the project through the final date the person reports on-site to the project.

ADDITIONAL INFORMATION

PER DIEM

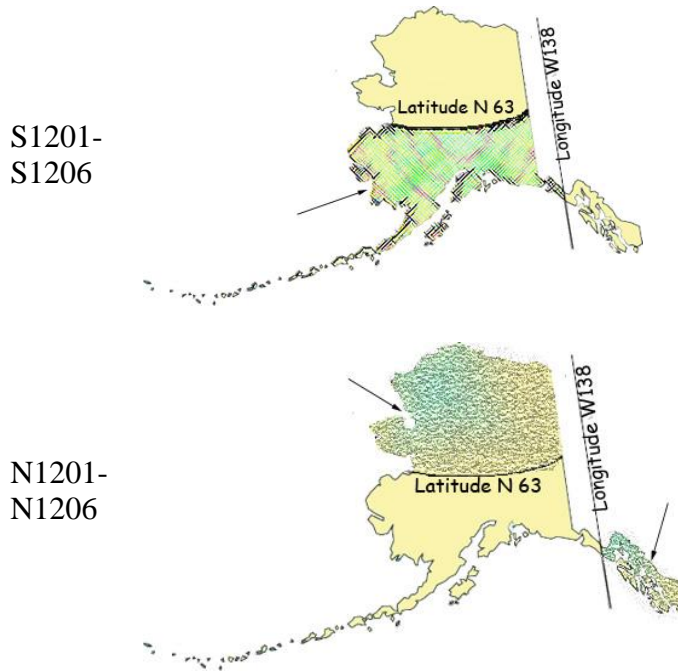
Notice: New regulations relating to board and lodging and per diem went into effect on November 25, 2018. The regulations provide a comprehensive set of requirements for the provision of board and lodging or per diem for workers on remote projects. Please refer to Alaska Administrative Code 8 AAC Chapter 30 and read the chapter carefully.

The Alaska Department of Labor and Workforce Development has determined that per diem is an established work practice for certain work classifications. These classifications are indicated throughout the Pamphlet by an asterisk (*) under the classification title. If all of the conditions of 8 AAC 30.054 are met, an employer may pay workers in these classifications per diem instead of providing board and lodging on a remote project.

Per Diem Rate: As of May 1st, 2019, the minimum per diem rate is \$100.00 per day, or part thereof, the worker is employed on the project. In the event that a contractor provides lodging facilities, but no meals, the department will accept a payment of \$48 per day for meals to meet the per diem requirements.

LABORER CLASSIFICATION CLARIFICATION

The laborer rates categorized in class code S1201-S1206 apply in one area of Alaska; the area that is south of N63 latitude and west of W138 Longitude. The laborer rates categorized in class code N1201-N1206 apply in two areas of Alaska; the Alaska areas north of N63 latitude and east of W138 longitude. The following graphic representations should assist with clarifying the applicable wage rate categories:



APPRENTICE RATES

Apprentice rates at less than the minimum prevailing rates may be paid to apprentices according to an apprentice program which has been registered and approved by the Commissioner of the Alaska Department of Labor and Workforce Development in writing or according to a bona fide apprenticeship program registered with the U.S. Department of Labor, Office of Apprenticeship Training. **Any employee listed on a payroll at an apprentice wage rate who is not registered as above shall be paid the journeyman prevailing minimum wage in that work classification.** Wage rates are based on prevailing crew makeup practices in Alaska and apply to work performed regardless of either the quality of the work performed by the employee or the titles or classifications which may be assigned to individual employees.

FRINGE BENEFIT PLANS

Contractors/subcontractors may compensate fringe benefits to their employees in any one of three methods. The fringe benefits may be paid into a union trust fund, into an approved benefit plan, or paid directly on the paycheck as gross wages.

Where fringe benefits are paid into approved plans, funds, or programs including union trust funds, the payments must be contributed at least monthly. If contractors submit their own payroll forms and are paying fringe benefits into approved plans, funds, or programs, the employer’s certification must include, in addition to those requirements of 8 AAC 30.020(c), a statement that fringe benefit payments have been or will be paid at least monthly. Contractors who pay fringe benefits to a plan must ensure the plan is one approved by the Internal Revenue Service and that the plan meets the requirements of 8 AAC 30.025 (eff. 3/2/08) in order for payments to be credited toward the prevailing wage obligation.

SPECIAL PREVAILING WAGE RATE DETERMINATION

Special prevailing wage rate determinations may be requested for special projects or a special worker classification if the work to be performed does not conform to traditional public construction for which a prevailing wage rate has been established under 8 AAC 30.050(a) of this section. Requests for special wage rate determinations must be in writing and filed with the Commissioner at least 30 days before the award of the contract. An applicant for a special wage rate determination shall have the responsibility to support the necessity for the special rate. An application for a special wage rate determination filed under this section must contain:

- (1) a specification of the contract or project on which the special rates will apply and a description of the work to be performed;
- (2) a brief narrative explaining why special wage rates are necessary;
- (3) the job class or classes involved;
- (4) the special wage rates the applicant is requesting, including survey or other relevant wage data to support the requested rates;
- (5) the approximate number of employees who would be affected; and
- (6) any other information which might be helpful in determining if special wage rates are appropriate.

Requests made pursuant to the above should be addressed to:

Director
Alaska Department of Labor and Workforce Development
Labor Standards and Safety Division
Wage and Hour
P.O. Box 111149
Juneau, AK 99811-1149
-or-
Email: statewide.wagehour@alaska.gov

EMPLOYMENT PREFERENCE INFORMATION

In October 2019, the Alaska Attorney General issued a formal opinion stating that the Alaska Statutes 36.10.150 of the State’s 90% Employment Preference law, also known as the Alaska Resident Hire law, violates both the U.S. and Alaska Constitutions. As a result, the state has stopped all enforcement activity. A copy of the Attorney General opinion is found here:

http://law.alaska.gov/pdf/opinions/opinions_2019/19-005_AK-hire.pdf

Alaska Department of Labor and Workforce Development
Labor Standards and Safety Division
Wage and Hour
Web site: <http://labor.state.ak.us/lss/pamp600.htm>

Anchorage

1251 Muldoon Road, Suite 113
Anchorage, Alaska 99504-2098
Phone: (907) 269-4900

Email:
statewide.wagehour@alaska.gov

Juneau

PO Box 111149
Juneau, Alaska 99811
Phone: (907) 465-4842

Email:
statewide.wagehour@alaska.gov

Fairbanks

Regional State Office Building
675 7th Ave., Station J-1
Fairbanks, Alaska 99701-4593
Phone: (907) 451-2886

Email:
statewide.wagehour@alaska.gov

LABOR STANDARDS AND SAFETY NOTICE REQUESTS

If you would like to receive Wage and Hour or Mechanical Inspection **regulation notices** or **publications information**, they are available via electronic mail, by signing up in the GovDelivery System, <https://public.govdelivery.com/accounts/AKDOL/subscriber/new> and selecting topics *LSS – Wage and Hour – Forms and Publications*, *LSS – Mechanical Inspection Regulations*, or *LSS – Wage and Hour Regulations*.

Publications are also available online at <http://labor.alaska.gov/lss/home.htm>

DEBARMENT LIST

AS 36.05.090(b) states that “the state disbursing officer or the local fiscal officer shall distribute to all departments of the state government and to all political subdivisions of the state a list giving the names of persons who have disregarded their obligations to employees.”

A person appearing on the following debarment list and a firm, corporation, partnership, or association in which the person has an interest may not work as a contractor or subcontractor on a public construction contract for the state or a political subdivision of the state for three years from the date of debarment.

Company Name

Debarment Expires

No companies are currently debarred.

Laborers' & Mechanics' Minimum Rates of Pay

Class Code	Classification of Laborers & Mechanics	BHR	H&W	PEN	TRN	Other	Benefits	THR
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Boilermakers

*See per diem note on last page

A0101	Boilermaker (journeyman)	48.15	8.57	18.40	2.15	VAC	SAF	81.86
						4.25	0.34	

Bricklayers & Blocklayers

*See per diem note on last page

A0201	Blocklayer	42.01	9.00	10.20	0.62	L&M		62.03
						0.20		

Bricklayer
Marble or Stone Mason
Refractory Worker (Firebrick, Plastic, Castable, and Gunitite Refractory Applications)
Terrazzo Worker
Tile Setter

A0202	Tuck Pointer Caulker	42.01	9.00	10.20	0.62	L&M		62.03
						0.20		

Cleaner (PCC)

A0203	Marble & Tile Finisher	35.84	9.00	10.20	0.62	L&M		55.86
						0.20		

Terrazzo Finisher

A0204	Torginal Applicator	35.84	9.00	10.20	0.62	L&M		55.86
						0.20		

Carpenters, Region I (North of 63 latitude)

*See per diem note on last page

N0301	Carpenter (journeyman)	44.39	10.35	15.82	1.75	L&M	SAF	72.71
						0.20	0.20	

Lather/Drywall/Acoustical

Carpenters, Region II (South of N63 latitude)

*See per diem note on last page

S0301	Carpenter (journeyman)	44.39	10.35	16.36	1.75	L&M	SAF	73.25
						0.20	0.20	

Lather/Drywall/Acoustical

Cement Masons

*See per diem note on last page

Wage benefits key: BHR=basic hourly rate; H&W=health and welfare; IAF=industry advancement fund; LEG=legal fund; L&M=labor/management fund; PEN=pension fund; SAF=safety; SUI=supplemental unemployment insurance; S&L=SUI & LEG combined; TRN=training; THR=total hourly rate; VAC=vacation

Cement Masons
 *See per diem note on last page

A0401	Group I, including:	44.43	8.80	11.80	1.53		L&M 0.10	66.66
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- Application of Sealing Compound
- Application of Underlayment
- Building, General
- Cement Finisher
- Cement Mason (journeyman)
- Concrete
- Concrete Paving
- Concrete Polishing
- Concrete Repair
- Curb & Gutter, Sidewalk
- Curing of All Concrete
- General Concrete Pour Tender
- Grouting & Caulking of Tilt-Up Panels
- Grouting of All Plates
- Patching Concrete
- Screed Pin Setter
- Screeder or Rodder
- Spackling/Skim Coating

A0402	Group II, including:	44.43	8.80	11.80	1.53		L&M 0.10	66.66
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- Form Setter

A0403	Group III, including:	44.43	8.80	11.80	1.53		L&M 0.10	66.66
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- Concrete Saw Cutter Operator (All Control Joints and Self-powered)
- Curb & Gutter Machine
- Floor Grinder
- Pneumatic Power Tools
- Power Chipping & Bushing
- Sand Blasting Architectural Finish
- Screed & Rodding Machine Operator
- Troweling Machine Operator (all concrete surfaces)

A0404	Group IV, including:	44.43	8.80	11.80	1.53		L&M 0.10	66.66
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- Acoustical or Imitation Acoustical Finish
- Application of All Composition Mastic
- Application of All Epoxy Material
- Application of All Plastic Material
- Finish Colored Concrete
- Gunite Nozzleman
- Hand Powered Grinder

Wage benefits key: BHR=basic hourly rate; H&W=health and welfare; IAF=industry advancement fund; LEG=legal fund; L&M=labor/management fund; PEN=pension fund; SAF=safety; SUI=supplemental unemployment insurance; S&L=SUI & LEG combined; TRN=training; THR=total hourly rate; VAC=vacation

Class Code	Classification of Laborers & Mechanics	BHR	H&W	PEN	TRN	Other	Benefits	THR
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Cement Masons
*See per diem note on last page

A0404	Group IV, including:	44.43	8.80	11.80	1.53		L&M 0.10	66.66
	Preparing, scratching and browsing of all ceilings and walls, finished with terrazo or tile							
	Tunnel Worker							

A0405	Group V, including:	44.43	8.80	11.80	1.53		L&M 0.10	66.66
	Casting and finishing							
	EIFS Systems							
	Finishing of all interior and exterior plastering							
	Fireproofing (Pryocrete, Cafco, Albi-Clad, sprayed fiberglass)							
	Gypsum, Portland Cement							
	Kindred material and products							
	Operation and control of all types of plastering machines, including power tools and floats, used by the industry							
	Overcoating and maintenance of interior/exterior plaster surfaces							
	Plasterer							
	Veneer plastering process (Rapid Plaster, U.S.G. "Imperial Systems", and Pabcoat Systems")							
	Venetian plaster and color-integrated Italian/Middle-Eastern line plaster							

Culinary Workers

A0501	Baker/Cook	29.95	7.53	8.83			LEG	46.31
A0503	General Helper	25.92	7.53	8.83			LEG	42.28
	Housekeeper							
	Janitor							
	Kitchen Helper							
A0504	Head Cook	29.95	7.53	8.83			LEG	46.31
A0505	Head Housekeeper	26.20	7.53	8.83			LEG	42.56
	Head Kitchen Help							

Dredgemen
*See per diem note on last page

A0601	Assistant Engineer	46.91	11.40	14.75	1.00		L&M 0.10 0.05	74.21
	Craneman							

Wage benefits key: BHR=basic hourly rate; H&W=health and welfare; IAF=industry advancement fund; LEG=legal fund; L&M=labor/management fund; PEN=pension fund; SAF=safety; SUI=supplemental unemployment insurance; S&L=SUI & LEG combined; TRN=training; THR=total hourly rate; VAC=vacation

Class Code	Classification of Laborers & Mechanics	BHR	H&W	PEN	TRN	Other	Benefits	THR
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Dredgemen
*See per diem note on last page

A0601	Assistant Engineer	46.91	11.40	14.75	1.00	L&M		74.21
	Electrical Generator Operator (primary pump/power barge/dredge)					0.10	0.05	
	Engineer							
	Welder							
A0602	Assistant Mate (deckhand)	45.65	11.40	14.75	1.00	L&M		72.95
						0.10	0.05	
A0603	Fireman	46.13	11.40	14.75	1.00	L&M		73.43
						0.10	0.05	
A0605	Leverman Clamshell	49.64	11.40	14.75	1.00	L&M		76.94
						0.10	0.05	
A0606	Leverman Hydraulic	47.74	11.40	14.75	1.00	L&M		75.04
						0.10	0.05	
A0607	Mate & Boatman	46.91	11.40	14.75	1.00	L&M		74.21
						0.10	0.05	
A0608	Oiler (dredge)	46.13	11.40	14.75	1.00	L&M		73.43
						0.10	0.05	

Electricians
*See per diem note on last page

A0701	Inside Cable Splicer	46.44	14.40	14.22	0.95	L&M		LEG	76.41
						0.25	0.15		
A0702	Inside Journeyman Wireman, including:	46.44	14.40	14.22	0.95	L&M		LEG	76.41
	Technicians (including use of drones in electrical construction)					0.25	0.15		
A0703	Power Cable Splicer	65.19	14.40	19.15	0.95	L&M		LEG	100.09
						0.25	0.15		
A0704	Tele Com Cable Splicer	52.53	14.40	17.98	0.95	L&M		LEG	86.26
						0.25	0.15		
A0705	Power Journeyman Lineman, including:	63.44	14.40	19.09	0.95	L&M		LEG	98.28
	Power Equipment Operator								
	Technician (including use of drones in electrical construction)								
A0706	Tele Com Journeyman Lineman, including:	50.78	14.40	17.92	0.95	L&M		LEG	84.45
	Technician (including use of drones in telecommunications construction)					0.25	0.15		
	Tele Com Equipment Operator								

Wage benefits key: BHR=basic hourly rate; H&W=health and welfare; IAF=industry advancement fund; LEG=legal fund; L&M=labor/management fund; PEN=pension fund; SAF=safety; SUI=supplemental unemployment insurance; S&L=SUI & LEG combined; TRN=training; THR=total hourly rate; VAC=vacation

Class Code	Classification of Laborers & Mechanics	BHR	H&W	PEN	TRN	Other	Benefits	THR
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Electricians
*See per diem note on last page

A0707	Straight Line Installer - Repairman	50.78	14.40	17.92	0.95	L&M	LEG	84.45
A0708	Powderman	61.44	14.40	19.03	0.95	L&M	LEG	96.22
A0710	Material Handler	28.07	14.02	5.84	0.15	L&M	LEG	48.38
A0712	Tree Trimmer Groundman	31.78	14.40	14.30	0.15	L&M	LEG	60.93
A0713	Journeyman Tree Trimmer	40.71	14.40	14.57	0.15	L&M	LEG	70.13
A0714	Vegetation Control Sprayer	44.26	14.40	14.68	0.15	L&M	LEG	73.79
A0715	Inside Journeyman Communications CO/PBX	46.44	14.40	14.22	0.95	L&M	LEG	76.41

Elevator Workers
*See per diem note on last page

A0802	Elevator Constructor	46.08	16.07	20.56	0.70	L&M	VAC	89.52
A0803	Elevator Constructor Mechanic	65.83	16.07	20.56	0.70	L&M	VAC	111.46

Heat & Frost Insulators/Asbestos Workers
*See per diem note on last page

A0902	Asbestos Abatement-Mechanical Systems	41.35	9.24	11.12	1.50	IAF	LML	63.40
A0903	Asbestos Abatement/General Demolition All Systems	41.35	9.24	11.12	1.50	IAF	LML	63.40
A0904	Insulator, Group II	41.35	9.24	11.12	1.50	IAF	LML	63.40
A0905	Fire Stop	41.35	9.24	11.12	1.50	IAF	LML	63.40

IronWorkers
*See per diem note on last page

A1101	Ironworkers, including:	42.99	10.16	26.45	0.77	L&M	IAF	80.81
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Wage benefits key: BHR=basic hourly rate; H&W=health and welfare; IAF=industry advancement fund; LEG=legal fund; L&M=labor/management fund; PEN=pension fund; SAF=safety; SUI=supplemental unemployment insurance; S&L=SUI & LEG combined; TRN=training; THR=total hourly rate; VAC=vacation

Class Code	Classification of Laborers & Mechanics	BHR	H&W	PEN	TRN	Other	Benefits	THR
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IronWorkers
 *See per diem note on last page

						L&M	IAF	
A1101	Ironworkers, including:	42.99	10.16	26.45	0.77	0.20	0.24	80.81
	Bender Operators							
	Bridge & Structural							
	Hangar Doors							
	Hollow Metal Doors							
	Industrial Doors							
	Machinery Mover							
	Ornamental							
	Reinforcing							
	Rigger							
	Sheeter							
	Signalman							
	Stage Rigger							
	Toxic Haz-Mat Work							
	Welder							

						L&M	IAF	
A1102	Helicopter	43.99	10.16	26.45	0.77	0.20	0.24	81.81
	Helicopter (used for rigging and setting)							
	Tower (energy producing windmill type towers to include nacelle and blades)							

						L&M	IAF	
A1103	Fence/Barrier Installer	39.49	10.16	26.45	0.77	0.20	0.24	77.31

						L&M	IAF	
A1104	Guard Rail Layout Man	40.23	10.16	26.45	0.77	0.20	0.24	78.05

						L&M	IAF	
A1105	Guard Rail Installer	40.49	10.16	26.45	0.77	0.20	0.24	78.31

Laborers (The Alaska areas north of N63 latitude and east of W138 longitude)
 *See per diem note on last page

						L&M	LEG	
N1201	Group I, including:	36.00	9.55	21.16	1.65	0.30	0.20	68.86
	Asphalt Worker (shovelman, plant crew)							
	Brush Cutter							
	Camp Maintenance Laborer							
	Carpenter Tender or Helper							
	Choke Setter, Hook Tender, Rigger, Signalman							
	Concrete Labor (curb & gutter, chute handler, curing, grouting, screeding)							
	Crusher Plant Laborer							
	Demolition Laborer							

Wage benefits key: BHR=basic hourly rate; H&W=health and welfare; IAF=industry advancement fund; LEG=legal fund; L&M=labor/management fund; PEN=pension fund; SAF=safety; SUI=supplemental unemployment insurance; S&L=SUI & LEG combined; TRN=training; THR=total hourly rate; VAC=vacation

Laborers (The Alaska areas north of N63 latitude and east of W138 longitude)
 *See per diem note on last page

N1201	Group I, including:	36.00	9.55	21.16	1.65	L&M	LEG	68.86
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- Ditch Digger
- Dumpman
- Environmental Laborer (hazard/toxic waste, oil spill)
- Fence Installer
- Fire Watch Laborer
- Flagman
- Form Stripper
- General Laborer
- Guardrail Laborer, Bridge Rail Installer
- Hydro Seeder Nozzleman
- Laborer, Building
- Landscaper or Planter
- Laying of Mortarless Decorative Block (retaining walls, flowered decorative block 4 feet or less - highway or landscape work)
- Material Handler
- Pneumatic or Power Tools
- Portable or Chemical Toilet Serviceman
- Pump Man or Mixer Man
- Railroad Track Laborer
- Sandblast, Pot Tender
- Saw Tender
- Slurry Work
- Steam Cleaner Operator
- Steam Point or Water Jet Operator
- Storm Water Pollution Protection Plan Worker (SWPPP Worker - erosion and sediment control Laborer)
- Tank Cleaning
- Utiliwalk & Utilidor Laborer
- Watchman (construction projects)
- Window Cleaner

N1202	Group II, including:	37.00	9.55	21.16	1.65	L&M	LEG	69.86
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- Burning & Cutting Torch
- Cement or Lime Dumper or Handler (sack or bulk)
- Certified Erosion Sediment Control Lead (CESCL Laborer)
- Choker Splicer
- Chucktender (wagon, air-track & hydraulic drills)
- Concrete Laborer (power buggy, concrete saws, pumpcrete nozzleman, vibratorman)
- Culvert Pipe Laborer
- Cured Inplace Pipelayer

Wage benefits key: BHR=basic hourly rate; H&W=health and welfare; IAF=industry advancement fund; LEG=legal fund; L&M=labor/management fund; PEN=pension fund; SAF=safety; SUI=supplemental unemployment insurance; S&L=SUI & LEG combined; TRN=training; THR=total hourly rate; VAC=vacation

Laborers (The Alaska areas north of N63 latitude and east of W138 longitude)
 *See per diem note on last page

						L&M	LEG	
N1202 Group II, including:	37.00	9.55	21.16	1.65	0.30	0.20	69.86	
Environmental Laborer (asbestos, marine work)								
Floor Preparation, Core Drilling								
Foam Gun or Foam Machine Operator								
Green Cutter (dam work)								
Gunite Operator								
Hod Carrier								
Jackhammer/Chipping Gun or Pavement Breaker								
Laser Instrument Operator								
Laying of Mortarless Decorative Block (retaining walls, flowered decorative block over 4 feet - highway or landscape work)								
Mason Tender & Mud Mixer (sewer work)								
Pilot Car								
Pipelayer Helper								
Plasterer, Bricklayer & Cement Finisher Tender								
Powderman Helper								
Power Saw Operator								
Railroad Switch Layout Laborer								
Sandblaster								
Scaffold Building & Erecting								
Sewer Caulker								
Sewer Plant Maintenance Man								
Thermal Plastic Applicator								
Timber Faller, Chainsaw Operator, Filer								
Timberman								
N1203 Group III, including:	37.90	9.55	21.16	1.65	0.30	0.20	70.76	
Bit Grinder								
Camera/Tool/Video Operator								
Guardrail Machine Operator								
High Rigger & Tree Topper								
High Scaler								
Multiplate								
Plastic Welding								
Slurry Seal Squeegee Man								
Traffic Control Supervisor								
Welding Certified (in connection with laborer's work)								
N1204 Group IIIA	41.78	9.55	21.16	1.65	0.30	0.20	74.64	
Asphalt Raker, Asphalt Belly Dump Lay Down								
Drill Doctor (in the field)								

Wage benefits key: BHR=basic hourly rate; H&W=health and welfare; IAF=industry advancement fund; LEG=legal fund; L&M=labor/management fund; PEN=pension fund; SAF=safety; SUI=supplemental unemployment insurance; S&L=SUI & LEG combined; TRN=training; THR=total hourly rate; VAC=vacation

Laborers (The Alaska areas north of N63 latitude and east of W138 longitude)

*See per diem note on last page

						L&M	LEG	
N1204	Group IIIA	41.78	9.55	21.16	1.65	0.30	0.20	74.64

- Driller (including, but not limited to wagon drills, air-track drills, hydraulic drills)
- Pioneer Drilling & Drilling Off Tugger (all type drills)
- Pipelayers
- Powderman (Employee Possessor)
- Storm Water Pollution Protection Plan Specialist (SWPPP Specialist)
- Traffic Control Supervisor, DOT Qualified

						L&M	LEG	
N1205	Group IV	25.57	9.55	21.16	1.65	0.30	0.20	58.43

- Final Building Cleanup
- Permanent Yard Worker

						L&M	LEG	
N1206	Group IIIB	47.36	5.50	21.16	1.65	0.30	0.20	76.17

- Driller (including, but not limited to wagon drills, air-track drills, hydraulic drills)(over 5,000 hours)
- Federal Powderman (Responsible Person in Charge)
- Grade Checking (setting or transferring of grade marks, line and grade, GPS, drones)
- Pioneer Drilling & Drilling Off Tugger (all type drills)(over 5,000 hours)
- Stake Hopper

Laborers (The area that is south of N63 latitude and west of W138 longitude)

*See per diem note on last page

						L&M	LEG	
S1201	Group I, including:	36.00	9.55	21.16	1.65	0.30	0.20	68.86

- Asphalt Worker (shovelman, plant crew)
- Brush Cutter
- Camp Maintenance Laborer
- Carpenter Tender or Helper
- Choke Setter, Hook Tender, Rigger, Signalman
- Concrete Labor (curb & gutter, chute handler, curing, grouting, screeding)
- Crusher Plant Laborer
- Demolition Laborer
- Ditch Digger
- Dumpman
- Environmental Laborer (hazard/toxic waste, oil spill)
- Fence Installer
- Fire Watch Laborer
- Flagman

Wage benefits key: BHR=basic hourly rate; H&W=health and welfare; IAF=industry advancement fund; LEG=legal fund; L&M=labor/management fund; PEN=pension fund; SAF=safety; SUI=supplemental unemployment insurance; S&L=SUI & LEG combined; TRN=training; THR=total hourly rate; VAC=vacation

Laborers (The area that is south of N63 latitude and west of W138 longitude)

*See per diem note on last page

						L&M	LEG	
S1201	Group I, including:	36.00	9.55	21.16	1.65	0.30	0.20	68.86

- Form Stripper
- General Laborer
- Guardrail Laborer, Bridge Rail Installer
- Hydro Seeder Nozzleman
- Laborer, Building
- Landscaper or Planter
- Laying of Mortarless Decorative Block (retaining walls, flowered decorative block 4 feet or less - highway or landscape work)
- Material Handler
- Pneumatic or Power Tools
- Portable or Chemical Toilet Serviceman
- Pump Man or Mixer Man
- Railroad Track Laborer
- Sandblast, Pot Tender
- Saw Tender
- Slurry Work
- Steam Cleaner Operator
- Steam Point or Water Jet Operator
- Storm Water Pollution Protection Plan Worker (SWPPP Worker - erosion and sediment control Laborer)
- Tank Cleaning
- Utiliwalk & Utilidor Laborer
- Watchman (construction projects)
- Window Cleaner

						L&M	LEG	
S1202	Group II, including:	37.00	9.55	21.16	1.65	0.30	0.20	69.86

- Burning & Cutting Torch
- Cement or Lime Dumper or Handler (sack or bulk)
- Certified Erosion Sediment Control Lead (CESCL Laborer)
- Choker Splicer
- Chucktender (wagon, air-track & hydraulic drills)
- Concrete Laborer (power buggy, concrete saws, pumpcrete nozzleman, vibratorman)
- Culvert Pipe Laborer
- Cured Inplace Pipelayer
- Environmental Laborer (asbestos, marine work)
- Floor Preparation, Core Drilling
- Foam Gun or Foam Machine Operator
- Green Cutter (dam work)
- Gunite Operator
- Hod Carrier

Wage benefits key: BHR=basic hourly rate; H&W=health and welfare; IAF=industry advancement fund; LEG=legal fund; L&M=labor/management fund; PEN=pension fund; SAF=safety; SUI=supplemental unemployment insurance; S&L=SUI & LEG combined; TRN=training; THR=total hourly rate; VAC=vacation

Laborers (The area that is south of N63 latitude and west of W138 longitude)
 *See per diem note on last page

S1202	Group II, including:	37.00	9.55	21.16	1.65	L&M	LEG	69.86
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- Jackhammer/Chipping Gun or Pavement Breaker
- Laser Instrument Operator
- Laying of Mortarless Decorative Block (retaining walls, flowered decorative block over 4 feet - highway or landscape work)
- Mason Tender & Mud Mixer (sewer work)
- Pilot Car
- Pipelayer Helper
- Plasterer, Bricklayer & Cement Finisher Tender
- Powderman Helper
- Power Saw Operator
- Railroad Switch Layout Laborer
- Sandblaster
- Scaffold Building & Erecting
- Sewer Caulker
- Sewer Plant Maintenance Man
- Thermal Plastic Applicator
- Timber Faller, Chainsaw Operator, Filer
- Timberman

S1203	Group III, including:	37.90	9.55	21.16	1.65	L&M	LEG	70.76
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- Bit Grinder
- Camera/Tool/Video Operator
- Guardrail Machine Operator
- High Rigger & Tree Topper
- High Scaler
- Multiplate
- Plastic Welding
- Slurry Seal Squeegee Man
- Traffic Control Supervisor
- Welding Certified (in connection with laborer's work)

S1204	Group IIIA	41.78	9.55	21.16	1.65	L&M	LEG	74.64
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- Asphalt Raker, Asphalt Belly Dump Lay Down
- Drill Doctor (in the field)
- Driller (including, but not limited to wagon drills, air-track drills, hydraulic drills)
- Pioneer Drilling & Drilling Off Tugger (all type drills)
- Pipelayers
- Powderman (Employee Possessor)
- Storm Water Pollution Protection Plan Specialist (SWPPP Specialist)

Wage benefits key: BHR=basic hourly rate; H&W=health and welfare; IAF=industry advancement fund; LEG=legal fund; L&M=labor/management fund; PEN=pension fund; SAF=safety; SUI=supplemental unemployment insurance; S&L=SUI & LEG combined; TRN=training; THR=total hourly rate; VAC=vacation

Class Code	Classification of Laborers & Mechanics	BHR	H&W	PEN	TRN	Other	Benefits	THR
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Laborers (The area that is south of N63 latitude and west of W138 longitude)

*See per diem note on last page

S1204	Group IIIA	41.78	9.55	21.16	1.65	L&M	LEG	74.64
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Traffic Control Supervisor, DOT Qualified

S1205	Group IV	25.57	9.55	21.16	1.65	L&M	LEG	58.43
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Final Building Cleanup
Permanent Yard Worker

S1206	Group IIIB	47.36	5.50	21.16	1.65	L&M	LEG	76.17
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Driller (including, but not limited to wagon drills, air-track drills, hydraulic drills)(over 5,000 hours)
Federal Powderman (Responsible Person in Charge)
Grade Checking (setting or transferring of grade marks, line and grade, GPS, drones)
Pioneer Drilling & Drilling Off Tugger (all type drills)(over 5,000 hours)
Stake Hopper

Millwrights

*See per diem note on last page

A1251	Millwright (journeyman)	51.38	10.35	12.87	1.10	L&M		76.15
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A1252	Millwright Welder	52.38	10.35	12.87	1.10	L&M		77.15
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Painters, Region I (North of N63 latitude)

*See per diem note on last page

N1301	Group I, including:	37.83	9.77	15.10	1.08	L&M		63.85
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Brush
General Painter
Hand Taping
Hazardous Material Handler
Lead-Based Paint Abatement
Roll

N1302	Group II, including:	38.35	9.77	15.10	1.08	L&M		64.37
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Bridge Painter
Epoxy Applicator
General Drywall Finisher
Hand/Spray Texturing
Industrial Coatings Specialist

Wage benefits key: BHR=basic hourly rate; H&W=health and welfare; IAF=industry advancement fund; LEG=legal fund; L&M=labor/management fund; PEN=pension fund; SAF=safety; SUI=supplemental unemployment insurance; S&L=SUI & LEG combined; TRN=training; THR=total hourly rate; VAC=vacation

Class Code	Classification of Laborers & Mechanics	BHR	H&W	PEN	TRN	Other	Benefits	THR
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Painters, Region I (North of N63 latitude)
 *See per diem note on last page

N1302	Group II, including:	38.35	9.77	15.10	1.08		L&M 0.07	64.37
	Machine/Automatic Taping							
	Pot Tender							
	Sandblasting							
	Specialty Painter							
	Spray							
	Structural Steel Painter							
	Wallpaper/Vinyl Hanger							

N1304	Group IV, including:	42.24	9.77	18.21	1.05		0.05	71.32
	Glazier							
	Storefront/Automatic Door Mechanic							

N1305	Group V, including:	39.86	9.77	5.00	1.10		0.10	55.83
	Carpet Installer							
	Floor Coverer							
	Heat Weld/Cove Base							
	Linoleum/Soft Tile Installer							

N1306	Group VI, including:	70.00	10.79	5.00	1.10		0.10	86.99
	Traffic Control Striper							

Painters, Region II (South of N63 latitude)
 *See per diem note on last page

S1301	Group I, including :	34.47	9.77	16.45	1.08		L&M 0.07	61.84
	Brush							
	General Painter							
	Hand Taping							
	Hazardous Material Handler							
	Lead-Based Paint Abatement							
	Roll							
	Spray							

S1302	Group II, including :	35.72	9.77	16.45	1.08		L&M 0.07	63.09
	General Drywall Finisher							
	Hand/Spray Texturing							
	Machine/Automatic Taping							
	Wallpaper/Vinyl Hanger							

Wage benefits key: BHR=basic hourly rate; H&W=health and welfare; IAF=industry advancement fund; LEG=legal fund; L&M=labor/management fund; PEN=pension fund; SAF=safety; SUI=supplemental unemployment insurance; S&L=SUI & LEG combined; TRN=training; THR=total hourly rate; VAC=vacation

Class Code	Classification of Laborers & Mechanics	BHR	H&W	PEN	TRN	Other	Benefits	THR
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Painters, Region II (South of N63 latitude)
 *See per diem note on last page

							L&M	
S1303	Group III, including :	35.72	9.77	16.45	1.08	0.07		63.09
	Bridge Painter							
	Epoxy Applicator							
	Industrial Coatings Specialist							
	Pot Tender							
	Sandblasting							
	Specialty Painter							
	Structural Steel Painter							

							L&M	
S1304	Group IV, including:	42.45	9.77	17.25	1.08	0.07		70.62
	Glazier							
	Storefront/Automatic Door Mechanic							

							L&M	
S1305	Group V, including:	39.86	9.77	5.00	1.10	0.10		55.83
	Carpet Installer							
	Floor Coverer							
	Heat Weld/Cove Base							
	Linoleum/Soft Tile Installer							

							L&M	
S1306	Group VI, including:	70.00	10.79	5.00	1.10	0.10		86.99
	Traffic Control Striper							

Piledrivers
 *See per diem note on last page

							L&M	IAF	
A1401	Piledriver	44.39	10.35	15.82	1.75	0.20	0.20		72.71
	Assistant Dive Tender								
	Carpenter/Piledriver								
	Rigger								
	Sheet Stabber								
	Skiff Operator								

							L&M	IAF	
A1402	Piledriver-Welder/Toxic Worker	45.39	10.35	15.82	1.75	0.20	0.20		73.71

							L&M	IAF	
A1403	Remotely Operated Vehicle Pilot/Technician	48.70	10.35	15.82	1.75	0.20	0.20		77.02
	Single Atmosphere Suit, Bell or Submersible Pilot								

							L&M	IAF	
A1404	Diver (working) **See note on last page	88.50	10.35	15.82	1.75	0.20	0.20		116.82

Wage benefits key: BHR=basic hourly rate; H&W=health and welfare; IAF=industry advancement fund; LEG=legal fund; L&M=labor/management fund; PEN=pension fund; SAF=safety; SUI=supplemental unemployment insurance; S&L=SUI & LEG combined; TRN=training; THR=total hourly rate; VAC=vacation

Class Code	Classification of Laborers & Mechanics	BHR	H&W	PEN	TRN	Other	Benefits	THR
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Piledrivers
*See per diem note on last page

A1405	Diver (standby) **See note on last page	48.70	10.35	15.82	1.75	L&M	IAF	77.02
A1406	Dive Tender **See note on last page	47.70	10.35	15.82	1.75	L&M	IAF	76.02
A1407	Welder (American Welding Society, Certified Welding Inspector)	49.95	10.35	15.82	1.75	L&M	IAF	78.27

Plumbers, Region I (North of N63 latitude)
*See per diem note on last page

N1501	Journeyman Pipefitter	46.86	12.00	18.20	1.75	L&M	S&L	80.01
	Plumber							
	Welder							

Plumbers, Region II (South of N63 latitude)
*See per diem note on last page

S1501	Journeyman Pipefitter	41.00	12.38	15.27	1.55	L&M		70.40
	Plumber							
	Welder							

Plumbers, Region IIA (1st Judicial District)
*See per diem note on last page

X1501	Journeyman Pipefitter	43.50	14.17	11.75	2.95	L&M		72.61
	Plumber							
	Welder							

Power Equipment Operators
*See per diem note on last page

A1601	Group I, including:	47.74	11.40	14.75	1.00	L&M		75.04
	Asphalt Roller: Breakdown, Intermediate, and Finish							
	Back Filler							
	Barrier Machine (Zipper)							
	Belcrete with Power Pack & similar conveyors							
	Bending Machine							
	Boat Coxswain							
	Bulldozer							
	Cableways, Highlines & Cablecars							

Wage benefits key: BHR=basic hourly rate; H&W=health and welfare; IAF=industry advancement fund; LEG=legal fund; L&M=labor/management fund; PEN=pension fund; SAF=safety; SUI=supplemental unemployment insurance; S&L=SUI & LEG combined; TRN=training; THR=total hourly rate; VAC=vacation

Power Equipment Operators

*See per diem note on last page

	L&M						
A1601 Group I, including:	47.74	11.40	14.75	1.00	0.10	0.05	75.04
Cleaning Machine							
Coating Machine							
Concrete Hydro Blaster							
Cranes (45 tons & under or 150 feet of boom & under (including jib & attachments))							
(a) Hydralifts or Transporters, (all track or truck type)							
(b) Derricks							
(c) Overhead							
Crushers							
Deck Winches, Double Drum							
Ditching or Trenching Machine (16 inch or over)							
Drag Scraper, Yarder, and similar types							
Drilling Machines, Core, Cable, Rotary and Exploration							
Finishing Machine Operator, Concrete Paving, Laser Screed, Sidewalk, Curb & Gutter Machine							
Grade Checker and/or Line and Grade including Drone							
Helicopters							
Hover Craft, Flex Craft, Loadmaster, Air Cushion, All-Terrain Vehicle, Rollagon, Bargecable, Nodwell, & Snow Cat							
Hydro Ax, Feller Buncher & similar							
Hydro Excavation (Vac-Truck and Similar)							
Loaders (2 1/2 yards through 5 yards, including all attachments):							
(a) Forklifts (with telescopic boom & swing attachment)							
(b) Front End & Overhead, (2-1/2 yards through 5 yards)							
(c) Loaders, (with forks or pipe clamp)							
(d) Loaders, (elevating belt type, Euclid & similar types)							
Material Transfer Vehicle (Elevating Grader, Pickup Machine, and similar types)							
Mechanic, Welder, Bodyman, Electrical, Camp & Maintenance Engineer							
Micro Tunneling Machine							
Mixers: Mobile type with hoist combination							
Motor Patrol Grader							
Mucking Machine: Mole, Tunnel Drill, Horizontal/Directional Drill Operator and/or Shield							
Off-Road Hauler (including Articulating and Haul Trucks)							
Operator on Dredges							
Piledriver Engineer, L.B. Foster, Puller or similar paving breaker							
Plant Operator (Asphalt & Concrete)							
Power Plant, Turbine Operator 200 k.w & over (power plants or combination of power units over 300 k.w.)							
Remote Controlled Equipment							
Scraper (through 40 yards)							

Wage benefits key: BHR=basic hourly rate; H&W=health and welfare; IAF=industry advancement fund; LEG=legal fund; L&M=labor/management fund; PEN=pension fund; SAF=safety; SUI=supplemental unemployment insurance; S&L=SUI & LEG combined; TRN=training; THR=total hourly rate; VAC=vacation

Power Equipment Operators
 *See per diem note on last page

						L&M		
A1601	Group I, including:	47.74	11.40	14.75	1.00	0.10	0.05	75.04
	Service Oiler/Service Engineer							
	Shot Blast Machine							
	Shovels, Backhoes, Excavators with all attachments, and Gradealls (3 yards & under)							
	Sideboom (under 45 tons)							
	Sub Grader (Gurries & similar types)							
	Tack Tractor							
	Truck Mounted Concrete Pump, Conveyor/Tele-belt, & Creter							
	Wate Kote Machine							

						L&M		
A1602	Group IA, including:	49.64	11.40	14.75	1.00	0.10	0.05	76.94
	Camera/Tool/Video Operator (Slipline)							
	Certified Welder, Electrical Mechanic, Camp Maintenance Engineer, Mechanic (over 10,000 hours)							
	Cranes (over 45 tons or 150 feet including jib & attachments)							
	(a) Clamshells & Draglines (over 3 yards)							
	(b) Tower Cranes							
	Licensed Water/Waste Water Treatment Operator							
	Loaders (over 5 yards)							
	Motor Patrol Grader, Dozer, Grade Tractor (finish: when finishing to final grade and/or to hubs, or for asphalt)							
	Power Plants (1000 k.w. & over)							
	Profiler, Reclaimer, and Roto-Mill							
	Quad							
	Scrapers (over 40 yards)							
	Screed							
	Shovels, Backhoes, Excavators with all attachments (over 3 yards)							
	Sidebooms (over 45 tons)							
	Slip Form Paver, C.M.I. & similar types							
	Topside (Asphalt Paver, Slurry machine, Spreaders, and similar types)							

						L&M		
A1603	Group II, including:	46.91	11.40	14.75	1.00	0.10	0.05	74.21
	Boiler - Fireman							
	Cement Hogs & Concrete Pump Operator							
	Conveyors (except those listed in Group I)							
	Hoists on Steel Erection, Towermobiles & Air Tuggers							
	Horizontal/Directional Drill Locator							
	Locomotives, Rod & Geared Engines							
	Mixers							
	Screening, Washing Plant							

Wage benefits key: BHR=basic hourly rate; H&W=health and welfare; IAF=industry advancement fund; LEG=legal fund; L&M=labor/management fund; PEN=pension fund; SAF=safety; SUI=supplemental unemployment insurance; S&L=SUI & LEG combined; TRN=training; THR=total hourly rate; VAC=vacation

Power Equipment Operators
 *See per diem note on last page

		L&M						
A1603	Group II, including:	46.91	11.40	14.75	1.00	0.10	0.05	74.21
	Sideboom (cradling rock drill, regardless of size)							
	Skidder							
	Trenching Machines (under 16 inches)							
	Water/Waste Water Treatment Operator							

		L&M						
A1604	Group III, including:	46.13	11.40	14.75	1.00	0.10	0.05	73.43
	"A" Frame Trucks, Deck Winches							
	Bombardier (tack or tow rig)							
	Boring Machine							
	Brooms, Power (sweeper, elevator, vacuum, or similar)							
	Bump Cutter							
	Compressor							
	Farm Tractor							
	Forklift, Industrial Type							
	Gin Truck or Winch Truck (with poles when used for hoisting)							
	Hoists, Air Tuggers, Elevators							
	Loaders:							
	(a) Elevating-Athey, Barber Greene & similar types							
	(b) Forklifts or Lumber Carrier (on construction job sites)							
	(c) Forklifts, (with tower)							
	(d) Overhead & Front End, (under 2-1/2 yards)							
	Locomotives: Dinkey (air, steam, gas & electric) Speeders							
	Mechanics, Light Duty							
	Oil, Blower Distribution							
	Posthole Digger, Mechanical							
	Pot Fireman (power agitated)							
	Power Plant, Turbine Operator, (under 200 k.w.)							
	Pumps, Water							
	Roller (other than Asphalt)							
	Saws, Concrete							
	Skid Hustler							
	Skid Steer (with all attachments)							
	Stake Hopper							
	Straightening Machine							
	Tow Tractor							

		L&M						
A1605	Group IV, including:	39.42	11.40	14.75	1.00	0.10	0.05	66.72
	Crane Assistant Engineer/Rig Oiler							
	Drill Helper							
	Parts & Equipment Coordinator							

Wage benefits key: BHR=basic hourly rate; H&W=health and welfare; IAF=industry advancement fund; LEG=legal fund; L&M=labor/management fund; PEN=pension fund; SAF=safety; SUI=supplemental unemployment insurance; S&L=SUI & LEG combined; TRN=training; THR=total hourly rate; VAC=vacation

Class Code	Classification of Laborers & Mechanics	BHR	H&W	PEN	TRN	Other	Benefits	THR
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Power Equipment Operators
 *See per diem note on last page

		L&M						
A1605	Group IV, including:	39.42	11.40	14.75	1.00	0.10	0.05	66.72
	Spotter							
	Steam Cleaner							
	Swamper (on trenching machines or shovel type equipment)							

Roofers
 *See per diem note on last page

		L&M						
A1701	Roofer & Waterproofer	47.62	13.75	3.91	0.81	0.10	0.06	66.25

		L&M						
A1702	Roofer Material Handler	34.23	13.75	3.91	0.81	0.10	0.06	52.86

Sheet Metal Workers, Region I (North of N63 latitude)
 *See per diem note on last page

		L&M						
N1801	Sheet Metal Journeyman	51.93	12.55	15.86	1.80	0.12		82.26
	Air Balancing and duct cleaning of HVAC systems							
	Brazing, soldering or welding of metals							
	Demolition of sheet metal HVAC systems							
	Fabrication and installation of exterior wall sheathing, siding, metal roofing, flashing, decking and architectural sheet metal work							
	Fabrication and installation of heating, ventilation and air conditioning ducts and equipment							
	Fabrication and installation of louvers and hoods							
	Fabrication and installation of sheet metal lagging							
	Fabrication and installation of stainless steel commercial or industrial food service equipment							
	HVAC-R Service Mechanic, servicing and maintaining HVAC-R Systems							
	Manufacture, fabrication assembly, installation and alteration of all ferrous and nonferrous metal work							
	Metal lavatory partitions							
	Preparation of drawings taken from architectural and engineering plans required for fabrication and erection of sheet metal work							
	Sheet Metal shelving							
	Sheet Metal venting, chimneys and breaching							
	Skylight installation							

Sheet Metal Workers, Region II (South of N63 latitude)
 *See per diem note on last page

Wage benefits key: BHR=basic hourly rate; H&W=health and welfare; IAF=industry advancement fund; LEG=legal fund; L&M=labor/management fund; PEN=pension fund; SAF=safety; SUI=supplemental unemployment insurance; S&L=SUI & LEG combined; TRN=training; THR=total hourly rate; VAC=vacation

Class Code	Classification of Laborers & Mechanics	BHR	H&W	PEN	TRN	Other Benefits	THR
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Sheet Metal Workers, Region II (South of N63 latitude)

*See per diem note on last page

							L&M	
S1801	Sheet Metal Journeyman	47.05	12.55	14.90	2.01	0.43		76.94
	Air Balancing and duct cleaning of HVAC systems							
	Brazing, soldering or welding of metals							
	Demolition of sheet metal HVAC systems							
	Fabrication and installation of exterior wall sheathing, siding, metal roofing, flashing, decking and architectural sheet metal work							
	Fabrication and installation of heating, ventilation and air conditioning ducts and equipment							
	Fabrication and installation of louvers and hoods							
	Fabrication and installation of sheet metal lagging							
	Fabrication and installation of stainless steel commercial or industrial food service equipment							
	HVAC-R Service Mechanic, servicing and maintaining HVAC-R Systems							
	Manufacture, fabrication assembly, installation and alteration of all ferrous and nonferrous metal work							
	Metal lavatory partitions							
	Preparation of drawings taken from architectural and engineering plans required for fabrication and erection of sheet metal work							
	Sheet Metal shelving							
	Sheet Metal venting, chimneys and breaching							
	Skylight installation							

Sprinkler Fitters

*See per diem note on last page

							L&M	
A1901	Sprinkler Fitter	54.01	11.45	18.25	0.52	0.25		84.48

Surveyors

*See per diem note on last page

							L&M	
A2001	Chief of Parties	54.50	12.48	13.64	1.20	0.10		81.92
A2002	Party Chief	50.69	12.48	13.64	1.20	0.10		78.11
A2003	Line & Grade Technician/Office Technician/GPS, Drones	47.94	12.48	13.64	1.20	0.10		75.36
A2004	Associate Party Chief (including Instrument Person & Head Chain Person)/Stake Hop/Grademan	45.69	12.48	13.64	1.20	0.10		73.11

Wage benefits key: BHR=basic hourly rate; H&W=health and welfare; IAF=industry advancement fund; LEG=legal fund; L&M=labor/management fund; PEN=pension fund; SAF=safety; SUI=supplemental unemployment insurance; S&L=SUI & LEG combined; TRN=training; THR=total hourly rate; VAC=vacation

Class Code	Classification of Laborers & Mechanics	BHR	H&W	PEN	TRN	Other	Benefits	THR
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Surveyors
*See per diem note on last page

A2006	Chain Person (for crews with more than 2 people)	41.09	12.48	13.64	1.20		L&M 0.10	68.51
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Truck Drivers
*See per diem note on last page

A2101	Group I, including:	46.84	12.48	13.64	1.20		L&M 0.10	74.26
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- Air/Sea Traffic Controllers
- Ambulance/Fire Truck Driver (EMT certified)
- Boat Coxswain
- Captains & Pilots (air & water)
- Deltas, Commanders, Rollagons, & similar equipment (when pulling sleds, trailers or similar equipment)
- Dump Trucks (including articulating end dumps, rockbuggy, side dump, belly dump, & trucks with pups) over 40 yards up to & including 60 yards
- Fueler
- Helicopter Transporter
- Liquid Vac Truck/Super Vac Truck
- Material Coordinator or Purchasing Agent
- Oil Distributor Truck
- Ready-mix (over 12 yards up to & including 15 yards) (over 15 yards to be negotiated)
- Semi with Double Box Mixer
- Tireman, Medium Duty (Truck Tires up to 1200-24")
- Water Wagon (250 Bbls and above)

A2102	Group 1A including:	48.19	12.48	13.64	1.20		L&M 0.10	75.61
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- Dump Trucks (including rockbuggy, side dump, belly dump & trucks with pups) over 60 yards up to & including 100 yards (over 100 yards to be negotiated)
- Jeeps (driver under load)
- Lowboys, including tractor attached trailers & jeeps, up to & including 12 axles (over 12 axles or 150 tons to be negotiated)
- Tireman Heavy Duty (earthmover tires, i.e., loader, scraper, haul truck)

A2103	Group II, including:	45.51	12.48	13.64	1.20		L&M 0.10	72.93
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- All Deltas, Commanders, Rollagons, & similar equipment
- Batch Trucks (8 yards & up)
- Batch Trucks (up to & including 7 yards)
- Boom Truck/Knuckle Truck (over 5 tons)
- Cacasco Truck/Heat Stress Truck
- Construction and Material Safety Technician

Wage benefits key: BHR=basic hourly rate; H&W=health and welfare; IAF=industry advancement fund; LEG=legal fund; L&M=labor/management fund; PEN=pension fund; SAF=safety; SUI=supplemental unemployment insurance; S&L=SUI & LEG combined; TRN=training; THR=total hourly rate; VAC=vacation

Truck Drivers								
*See per diem note on last page								

A2103	Group II, including:	45.51	12.48	13.64	1.20		L&M 0.10	72.93
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- Dump Trucks (including articulating end dump, rockbuggy, side dump, belly dump, & trucks with pups) over 20 yards up to & including 40 yards
- Gin Pole Truck, Winch Truck, Wrecker (truck mounted "A" frame manufactured rating over 5 tons)
- Mechanics
- Partsman
- Ready-mix (up to & including 12 yards)
- Stringing Truck
- Turn-O-Wagon or DW-10 (not self loading)

A2104	Group III, including:	44.64	12.48	13.64	1.20		L&M 0.10	72.06
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- Boom Truck/Knuckle Truck (up to & including 5 tons)
- Dump Trucks (including articulating end dump, rockbuggy, side dump, belly dump, & trucks with pups) over 10 yards up to & including 20 yards
- Expeditor (electrical & pipefitting materials)
- Gin Pole Truck, Winch Truck, Wrecker (truck mounted "A" frame manufactured rating 5 tons & under)
- Greaser - Shop
- Semi or Truck & Trailer
- Thermal Plastic Layout Technician
- Traffic Control Technician
- Trucks/Jeeps (push or pull)

A2105	Group IV, including:	44.02	12.48	13.64	1.20		L&M 0.10	71.44
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- Air Cushion or similar type vehicle
- All Terrain Vehicle
- Buggymobile
- Bull Lift & Fork Lift, Fork Lift with Power Boom & Swing Attachment (over 5 tons)
- Bus Operator (over 30 passengers)
- Cement Spreader, Dry
- Combination Truck-Fuel & Grease
- Compactor (when pulled by rubber tired equipment)
- Dump Trucks (including rockbuggy, side dump, belly dump, & trucks with pups) up to & including 10 yards
- Dumpster
- Expeditor (general)
- Fire Truck/Ambulance Driver
- Flat Beds, Dual Rear Axle
- Foam Distributor Truck Dual Axle
- Front End Loader with Fork

<p>Wage benefits key: BHR=basic hourly rate; H&W=health and welfare; IAF=industry advancement fund; LEG=legal fund; L&M=labor/management fund; PEN=pension fund; SAF=safety; SUI=supplemental unemployment insurance; S&L=SUI & LEG combined; TRN=training; THR=total hourly rate; VAC=vacation</p>

Truck Drivers
 *See per diem note on last page

		44.02	12.48	13.64	1.20	0.10	L&M	71.44
A2105	Group IV, including:							
	Grease Truck							
	Hydro Seeder, Dual Axle							
	Hyster Operators (handling bulk aggregate)							
	Loadmaster (air & water operations)							
	Lumber Carrier							
	Ready-mix, (up to & including 7 yards)							
	Rigger (air/water/oilfield)							
	Tireman, Light Duty							
	Track Truck Equipment							
	Truck Vacuum Sweeper							
	Warehouseperson							
	Water Truck (Below 250 Bbls)							
	Water Truck (straight)							
	Water Wagon, Semi							

		43.22	12.48	13.64	1.20	0.10	L&M	70.64
A2106	Group V, including:							
	Buffer Truck							
	Bull Lifts & Fork Lifts, Fork Lifts with Power Boom & Swing Attachments (up to & including 5 tons)							
	Bus Operator (up to 30 passengers)							
	Farm Type Rubber Tired Tractor (when material handling or pulling wagons on a construction project)							
	Flat Beds, Single Rear Axle							
	Foam Distributor Truck Single Axle							
	Fuel Handler (station/bulk attendant)							
	Gear/Supply Truck							
	Gravel Spreader Box Operator on Truck							
	Hydro Seeder, Single Axle							
	Pickups (pilot cars & all light-duty vehicles)							
	Rigger							
	Swamper							
	Tack Truck (welders/gear)							
	Team Drivers (horses, mules, & similar equipment)							

Tunnel Workers, Laborers (The Alaska areas north of N63 latitude and east of W138 longitude)
 *See per diem note on last page

		39.60	9.55	21.16	1.65	0.30	0.20	L&M	LEG	72.46
N2201	Group I, including:									
	Brakeman									
	Mucker									

Wage benefits key: BHR=basic hourly rate; H&W=health and welfare; IAF=industry advancement fund; LEG=legal fund; L&M=labor/management fund; PEN=pension fund; SAF=safety; SUI=supplemental unemployment insurance; S&L=SUI & LEG combined; TRN=training; THR=total hourly rate; VAC=vacation

Tunnel Workers, Laborers (The Alaska areas north of N63 latitude and east of W138 longitude)
 *See per diem note on last page

N2201	Group I, including:	39.60	9.55	21.16	1.65	0.30	0.20	72.46
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- Nipper
- Storm Water Pollution Protection Plan Worker (SWPPP Worker - erosion and sediment control Laborer)
- Topman & Bull Gang
- Tunnel Track Laborer

N2202	Group II, including:	40.70	9.55	21.16	1.65	0.30	0.20	73.56
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- Burning & Cutting Torch
- Certified Erosion Sediment Control Lead (CESCL Laborer)
- Concrete Laborer
- Floor Preparation, Core Drilling
- Jackhammer/Chipping Gun or Pavement Breaker
- Laser Instrument Operator
- Nozzlemen, Pumpcrete or Shotcrete
- Pipelayer Helper

N2203	Group III, including:	41.69	9.55	21.16	1.65	0.30	0.20	74.55
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- Miner
- Retimberman

N2204	Group IIIA, including:	45.96	9.55	21.16	1.65	0.30	0.20	78.82
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- Asphalt Raker, Asphalt Belly Dump Lay Down
- Drill Doctor (in the field)
- Driller (including, but not limited to wagon drills, air-track drills, hydraulic drills)
- Pioneer Drilling & Drilling Off Tugger (all type drills)
- Pipelayer
- Powderman (Employee Possessor)
- Storm Water Pollution Protection Plan Specialist (SWPPP Specialist)
- Traffic Control Supervisor, DOT Qualified

N2206	Group IIIB, including:	52.10	5.50	21.16	1.65	0.30	0.20	80.91
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- Driller (including, but not limited to wagon drills, air-track drills, hydraulic drills)(over 5,000 hours)
- Federal Powderman (Responsible Person in Charge)
- Grade Checking (setting or transferring of grade marks, line and grade, GPS, drones)
- Pioneer Drilling & Drilling Off Tugger (all type drills)(over 5,000 hours)
- Stake Hopper

Wage benefits key: BHR=basic hourly rate; H&W=health and welfare; IAF=industry advancement fund; LEG=legal fund; L&M=labor/management fund; PEN=pension fund; SAF=safety; SUI=supplemental unemployment insurance; S&L=SUI & LEG combined; TRN=training; THR=total hourly rate; VAC=vacation

Tunnel Workers, Laborers (The area that is south of N63 latitude and west of W138 longitude)
 *See per diem note on last page

S2201	Group I, including:	39.60	9.55	21.16	1.65	L&M	LEG	72.46
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- Brakeman
- Mucker
- Nipper
- Storm Water Pollution Protection Plan Worker (SWPPP Worker - erosion and sediment control Laborer)
- Topman & Bull Gang
- Tunnel Track Laborer

S2202	Group II, including:	40.70	9.55	21.16	1.65	L&M	LEG	73.56
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- Burning & Cutting Torch
- Certified Erosion Sediment Control Lead (CESCL Laborer)
- Concrete Laborer
- Floor Preparation, Core Drilling
- Jackhammer/Chipping Gun or Pavement Breaker
- Laser Instrument Operator
- Nozzlemen, Pumpcrete or Shotcrete
- Pipelayer Helper

S2203	Group III, including:	41.69	9.55	21.16	1.65	L&M	LEG	74.55
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- Miner
- Retimberman

S2204	Group IIIA, including:	45.96	9.55	21.16	1.65	L&M	LEG	78.82
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- Asphalt Raker, Asphalt Belly Dump Lay Down
- Drill Doctor (in the field)
- Driller (including, but not limited to wagon drills, air-track drills, hydraulic drills)
- Pioneer Drilling & Drilling Off Tugger (all type drills)
- Pipelayer
- Powderman (Employee Possessor)
- Storm Water Pollution Protection Plan Specialist (SWPPP Specialist)
- Traffic Control Supervisor, DOT Qualified

S2206	Group IIIB, including:	52.10	5.50	21.16	1.65	L&M	LEG	80.91
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- Driller (including, but not limited to wagon drills, air-track drills, hydraulic drills)(over 5,000 hours)
- Federal Powderman (Responsible Person in Charge)
- Grade Checking (setting or transferring of grade marks, line and grade, GPS, drones)
- Pioneer Drilling & Drilling Off Tugger (all type drills)(over 5,000 hours)

Wage benefits key: BHR=basic hourly rate; H&W=health and welfare; IAF=industry advancement fund; LEG=legal fund; L&M=labor/management fund; PEN=pension fund; SAF=safety; SUI=supplemental unemployment insurance; S&L=SUI & LEG combined; TRN=training; THR=total hourly rate; VAC=vacation

Class Code	Classification of Laborers & Mechanics	BHR	H&W	PEN	TRN	Other	Benefits	THR
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Tunnel Workers, Laborers (The area that is south of N63 latitude and west of W138 longitude)
 *See per diem note on last page

S2206	Group IIIB, including:	52.10	5.50	21.16	1.65		L&M	LEG	
	Stake Hopper						0.30	0.20	80.91

Tunnel Workers, Power Equipment Operators
 *See per diem note on last page

A2207	Group I	52.51	11.40	14.75	1.00		L&M		
							0.10	0.05	79.81
A2208	Group IA	54.60	11.40	14.75	1.00		L&M		
							0.10	0.05	81.90
A2209	Group II	51.60	11.40	14.75	1.00		L&M		
							0.10	0.05	78.90
A2210	Group III	50.74	11.40	14.75	1.00		L&M		
							0.10	0.05	78.04
A2211	Group IV	43.36	11.40	14.75	1.00		L&M		
							0.10	0.05	70.66

* Per diem is an established practice for this classification. This means that per diem is an allowable alternative to board and lodging if all criteria are met. See 8 AAC 30.051-08 AAC 30.056, and the per diem information on page vii of this Pamphlet.

** Work in combination of classifications: Employees working in any combination of classifications within the diving crew (working diver, standby diver, and tender) in a shift are paid in the classification with the highest rate for a minimum of 8 hours per shift.

Wage benefits key: BHR=basic hourly rate; H&W=health and welfare; IAF=industry advancement fund; LEG=legal fund; L&M=labor/management fund; PEN=pension fund; SAF=safety; SUI=supplemental unemployment insurance; S&L=SUI & LEG combined; TRN=training; THR=total hourly rate; VAC=vacation

Shipyards Rates Addendum

This Addendum was developed to address the specialized industry of shipbuilding/repair in Alaska, as it relates to public works. For the purposes of providing rates for shipyard work the Department is adopting Shipyards rates from the state of Washington (King County). These rates only apply to work done in shipbuilding/repair in Alaska, under a public contract. This addendum will be updated two times a year to coincide with the corresponding Issue of *Laborers and Mechanics MINIMUM RATES OF PAY*.

Class Code	BHR H&W PEN TRN Other Benefits	THR
Shipyards Workers *See total hourly(THR) note below		
A2300	Ship Building/Repair Boilermaker	50.35
A2305	Ship Building/Repair Carpenter	50.95
A2310	Ship Building/Repair Crane Operator	45.06
A2315	Ship Building/Repair Electrician	50.42
A2320	Ship Building/Repair Heat & Frost Insulator	84.84
A2325	Ship Building/Repair Laborer	50.95
A2330	Ship Building/Repair Mechanist	50.95
A2335	Ship Building/Repair Operating Engineer	45.06
A2340	Ship Building/Repair Painter	50.95
A2345	Ship Building/Repair Pipefitter	50.95
A2350	Ship Building/Repair Rigger	50.35
A2355	Ship Building/Repair Sheet Metal	50.35
A2360	Ship Building/Repair Shipwright	50.95
A2365	Ship Building/Repair Warehouse	45.06

*The THR includes the base hourly rate (BHR) and fringe benefits. Employers must pay a BHR and fringe benefit package that adds up to the THR. Fringe benefits included in the THR can be paid to employees in three ways; paid into a union trust fund, into an approved benefit plan, or paid directly on the paycheck as gross wages.

Wage benefits key: BHR=basic hourly rate; H&W=health and welfare; IAF=industry advancement fund; LEG=legal fund; L&M=labor/management fund; PEN=pension fund; SAF=safety; SUI=supplemental unemployment insurance; S&L=SUI & LEG combined; TRN=training; THR=total hourly rate; VAC=vacation

CITY OF WHITTIER, ALASKA

LIFT STATION NO. 5 REPLACEMENT REBID

SECTION VII

MINIMUM RATES OF PAY

B. Federal Wage Determination with Attachments

"General Decision Number: AK20240001 01/05/2024

Superseded General Decision Number: AK20230001

State: Alaska

Construction Types: Building and Heavy

Counties: Alaska Statewide.

BUILDING AND HEAVY CONSTRUCTION PROJECTS (does not include residential construction consisting of single family homes and apartments up to and including 4 stories)

Note: Contracts subject to the Davis-Bacon Act are generally required to pay at least the applicable minimum wage rate required under Executive Order 14026 or Executive Order 13658. Please note that these Executive Orders apply to covered contracts entered into by the federal government that are subject to the Davis-Bacon Act itself, but do not apply to contracts subject only to the Davis-Bacon Related Acts, including those set forth at 29 CFR 5.1(a)(1).

<p>If the contract is entered into on or after January 30, 2022, or the contract is renewed or extended (e.g., an option is exercised) on or after January 30, 2022:</p>	<ul style="list-style-type: none"> . Executive Order 14026 generally applies to the contract. . The contractor must pay all covered workers at least \$17.20 per hour (or the applicable wage rate listed on this wage determination, if it is higher) for all hours spent performing on the contract in 2024.
<p>If the contract was awarded on or between January 1, 2015 and January 29, 2022, and the contract is not renewed or extended on or after January 30, 2022:</p>	<ul style="list-style-type: none"> . Executive Order 13658 generally applies to the contract. . The contractor must pay all covered workers at least \$12.90 per hour (or the applicable wage rate listed on this wage determination, if it is higher) for all hours spent performing on that contract in 2024.

The applicable Executive Order minimum wage rate will be adjusted annually. If this contract is covered by one of the Executive Orders and a classification considered necessary for performance of work on the contract does not appear on this wage determination, the contractor must still submit a conformance request.

Additional information on contractor requirements and worker protections under the Executive Orders is available at <http://www.dol.gov/whd/govcontracts>.

Modification Number Publication Date
 0 01/05/2024

ASBE0007-006 02/27/2023

	Rates	Fringes
Asbestos Workers/Insulator (includes application of all insulating materials protective coverings, coatings and finishings to all types of mechanical systems).....	\$ 41.35	16.46
HAZARDOUS MATERIAL HANDLER (includes preparation, wetting, stripping, removal scrapping, vacuming, bagging, and disposing of all insulation materials, whether they contain asbestos or not, from mechanical systems).....	\$ 37.38	19.55

BOIL0502-002 01/01/2021

	Rates	Fringes
BOILERMAKER.....	\$ 47.03	30.59

BRAK0001-002 07/01/2020

	Rates	Fringes
Bricklayer, Blocklayer, Stonemason, Marble Mason, Tile Setter, Terrazzo Worker.....	\$ 42.16	19.67
Tile & Terrazzo Finisher.....	\$ 35.99	19.67

CARP1281-001 09/01/2022

	Rates	Fringes
CARPENTER Including Lather and Drywall Hanging.....	\$ 43.34	28.86

CARP1281-002 09/01/2022

	Rates	Fringes
MILLWRIGHT.....	\$ 46.48	24.32

CARP2520-003 09/01/2022

	Rates	Fringes
Diver		
Stand-by.....	\$ 47.65	28.32
Tender.....	\$ 46.65	28.32
Working.....	\$ 87.45	28.32
Piledriver		
Piledriver; Skiff Operator and Rigger.....	\$ 38.34	26.51
Sheet Stabber.....	\$ 38.34	26.51
Welder.....	\$ 43.90	26.51

DEPTH PAY PREMIUM FOR DIVERS BELOW WATER SURFACE:

50-100 feet \$1.00 per foot
 101 feet and deeper \$2.00 per foot

ENCLOSURE PAY PREMIUM WITH NO VERTICAL ASCENT:
 5-50 FEET \$1.00 PER FOOT/DAY
 51-100 FEET \$2.00 PER FOOT/DAY
 101 FEET AND ABOVE \$3.00 PER FOOT/DAY

SATURATION DIVING:
 The standby rate applies until saturation starts. The saturation diving rate applies when divers are under pressure continuously until work task and decompression are complete. the diver rate shall be paid for all saturation hours.

WORK IN COMBINATION OF CLASSIFICATIONS:
 Employees working in any combination of classifications within the diving crew (except dive supervisor) in a shift are paid in the classification with the highest rate for that shift.

 ELEC1547-004 09/01/2023

	Rates	Fringes
CABLE SPLICER.....	\$ 46.44	3%+28.39
ELECTRICIAN.....	\$ 46.44	3%+28.39

 ELEC1547-005 04/01/2023

Line Construction

	Rates	Fringes
CABLE SPLICER.....	\$ 63.44	3%+31.90
Linemen (Including Equipment Operators, Technician).....	\$ 61.29	3%+30.98
Powderman.....	\$ 61.44	3%+32.69
TREE TRIMMER.....	\$ 40.71	3%+28.05

 ELEV0019-002 01/01/2023

	Rates	Fringes
ELEVATOR MECHANIC.....	\$ 65.83	37.335+a+b

FOOTNOTE: a. Employer contributes 8% of the basic hourly rate for over 5 year's service and 6% of the basic hourly rate for 6 months to 5 years' of service as vacation paid credit. b. Eight paid holidays: New Year's Day; Memorial Day; Independence Day; Labor Day; Veteran's Day; Thanksgiving Day; Friday after Thanksgiving, and Christmas Day

 ENGI0302-002 04/01/2023

	Rates	Fringes
POWER EQUIPMENT OPERATOR		
GROUP 1.....	\$ 47.74	27.20
GROUP 1A.....	\$ 49.64	27.20
GROUP 2.....	\$ 46.91	27.20
GROUP 3.....	\$ 46.13	27.20

GROUP 4.....	\$ 39.42	27.20
TUNNEL WORK		
GROUP 1.....	\$ 52.51	27.20
GROUP 1A.....	\$ 54.60	27.20
GROUP 2.....	\$ 51.60	27.20
GROUP 3.....	\$ 50.74	27.20
GROUP 4.....	\$ 43.36	27.20

POWER EQUIPMENT OPERATOR CLASSIFICATIONS

GROUP 1: Asphalt Roller: Breakdown, Intermediate, and Finish; Back Filler; Barrier Machine (Zipper); Beltcrete with power pack and similar conveyors; Bending Machine; Boat Coxwains; Bulldozers; Cableways, Highlines and Cablecars; Cleaning Machine; Coating Machine; Concrete Hydro Blaster; Cranes-45 tons and under or 150 foot boom and under (including jib and attachments): (a) Hydralifts or Transporters, all track or truck type,(b) Derricks; Crushers; Deck Winches-Double Drum; Ditching or Trenching Machine (16 inch or over); Drilling Machines, core, cable, rotary and exploration; Finishing Machine Operator, Concrete Paving, Laser Screed, Sidewalk, Curb and Gutter Machine; Helicopters; Hover Craft, Flex Craft, Loadmaster, Air Cushion, All Terrain Vehicle, Rollagon, Bargecable, Nodwell, and Snow Cat; Hydro Ax: Feller Buncher and similar; Loaders (2 1/2 yards through 5 yards, including all attachments): Forklifts with telescopic boom and swing attachment, Overhead and front end, 2 1/2 yards through 5 yards, Loaders with forks or pipe clamps; Loaders, elevating belt type, Euclid and similar types; Mechanics, Bodyman; Micro Tunneling Machine; Mixers: Mobile type w/hoist combination; Motor Patrol Grader; Mucking Machines: Mole, Tunnel Drill, Horizontal/Directional Drill Operator, and/or Shield; Operator on Dredges; Piledriver Engineers, L. B. Foster, Puller or similar Paving Breaker; Power Plant, Turbine Operator, 200 k.w. and over (power plants or combination of power units over 300 k.w.); Scrapers-through 40 yards; Service Oiler/Service Engineer; Sidebooms-under 45 tons; Shot Blast Machine; Shovels, Backhoes, Excavators with all attachments, and Gradealls (3 yards and under), Spreaders, Blaw Knox, Cedarapids, Barber Greene, Slurry Machine; Sub-grader (Gurries, Reclaimer, and similar types); Tack tractor; Truck mounted Concrete Pumps, Conveyor, Creter; Water Kote Machine; Unlicensed off road hauler

GROUP 1A: Camera/Tool/Video Operator (Slipline), Cranes-over 45 tons or 150 foot (including jib and attachments): (a) Clamshells and Draglines (over 3 yards), (b) Tower cranes; Licensed Water/Waste Water Treatment Operator; Loaders over 5 yds.; Certified Welder, Electrical Mechanic, Camp Maintenance Engineer, Mechanic (over 10,000 hours); Motor Patrol Grader, Dozer, Grade Tractor, Roto-mill/Profiler (finish: when finishing to final grade and/or to hubs, or for asphalt); Power Plants: 1000 k.w. and over; Quad; Screed; Shovels, Backhoes, Excavators with all attachments (over 3 yards), Sidebooms over 45 tons; Slip Form Paver, C.M.I. and similar types; Scrapers over 40 yards;

GROUP 2: Boiler-fireman; Cement Hog and Concrete Pump Operator; Conveyors (except as listed in group 1); Hoist on steel erection; Towermobiles and Air Tuggers; Horizontal/Directional Drill Locator; Licensed Grade Technician; Loaders, (i.e., Elevating Grader and Material

Transfer Vehicle); Locomotives: rod and geared engines; Mixers; Screening, Washing Plant; Sideboom (cradling rock drill regardless of size); Skidder; Trenching Machine under 16 inches; Waste/ Waste Water Treatment Operator.

GROUP 3: "A" Frame Trucks, Deck Winches: single power drum; Bombardier (tack or tow rig); Boring Machine; Brooms-power; Bump Cutter; Compressor; Farm tractor; Forklift, industrial type; Gin Truck or Winch Truck with poles when used for hoisting; Grade Checker and Stake Hopper; Hoist, Air Tuggers, Elevators; Loaders: (a) Elevating-Athey, Barber Green and similar types (b) Forklifts or Lumber Carrier (on construction job site) (c) Forklifts with Tower (d) Overhead and Front-end, under 2 1/2 yds. Locomotives: Dinkey (air, steam, gas and electric) Speeders; Mechanics (light duty); Oil, Blower Distribution; Post Hole Diggers, mechanical; Pot Fireman (power agitated); Power Plant, Turbine Operator, under 200 k.w.; Pumps-water; Roller-other than Plantmix; Saws, concrete; Skid Steer with all attachments; Straightening Machine; Tow Tractor

GROUP 4: Rig Oiler/Crane Assistant Engineer; Parts and Equipment Coordinator; Swamper (on trenching machines or shovel type equipment); Spotter; Steam Cleaner; Drill Helper.

FOOTNOTE: Groups 1-4 receive 10% premium while performing tunnel or underground work. Rig Oiler/Crane Assistant Engineer shall be required on cranes over 85 tons or over 100 feet of boom.

IRON0751-003 07/01/2023

	Rates	Fringes
IRONWORKER		
BENDER OPERATOR.....	\$ 42.99	37.38
BRIDGE, STRUCTURAL, ORNAMENTAL, REINFORCING MACHINERY MOVER, RIGGER, SHEETER, STAGE RIGGER, BENDER OPERATOR.....	\$ 42.99	37.38
FENCE, BARRIER INSTALLER....	\$ 39.49	37.38
GUARDRAIL INSTALLERS.....	\$ 40.49	37.38
GUARDRAIL LAYOUT MAN.....	\$ 40.23	37.38
HELICOPTER, TOWER.....	\$ 43.99	37.38

LAB00341-001 04/01/2023

	Rates	Fringes
LABORER (South of the 63rd Parallel & West of Longitude 138 Degrees)		
GROUP 1.....	\$ 36.00	32.56
GROUP 2.....	\$ 37.00	32.56
GROUP 3.....	\$ 37.90	32.56
GROUP 3A.....	\$ 41.78	32.56
GROUP 3B.....	\$ 47.36	28.51
GROUP 4.....	\$ 25.57	32.56
TUNNELS, SHAFTS, AND RAISES		
GROUP 1.....	\$ 39.60	32.56
GROUP 2.....	\$ 40.70	32.56
GROUP 3.....	\$ 41.69	32.56

GROUP 3A.....	\$ 45.96	32.56
GROUP 3B.....	\$ 52.10	28.51

LABORERS CLASSIFICATIONS

GROUP 1: Asphalt Workers (shovelman, plant crew); Brush Cutters; Camp Maintenance Laborer; Carpenter Tenders; Choke Setters, Hook Tender, Rigger, Signalmán; Concrete Laborer (curb and gutter, chute handler, grouting, curing, screeding); Crusher Plant Laborer; Demolition Laborer; Ditch Diggers; Dump Man; Environmental Laborer (asbestos (limited to nonmechanical systems), hazardous and toxic waste, oil spill); Fence Installer; Fire Watch Laborer; Flagman; Form Strippers; General Laborer; Guardrail Laborer, Bridge Rail Installers; Hydro-Seeder Nozzleman; Laborers (building); Landscape or Planter; Laying of Decorative Block (retaining walls, flowered decorative block 4 feet and below); Material Handlers; Pneumatic or Power Tools; Portable or Chemical Toilet Serviceman; Pump Man or Mixer Man; Railroad Track Laborer; Sandblast, Pot Tender; Saw Tenders; Scaffold Building and Erecting; Slurry Work; Stake Hopper; Steam Point or Water Jet Operator; Steam Cleaner Operator; Tank Cleaning; Utiliwalk, Utilidor Laborer and Conduit Installer; Watchman (construction projects); Window Cleaner

GROUP 2: Burning and Cutting Torch; Cement or Lime Dumper or Handler (sack or bulk); Choker Splicer; Chucktender (wagon, airtrack and hydraulic drills); Concrete Laborers (power buggy, concrete saws, pumpcrete nozzleman, vibratorman); Culvert Pipe Laborer; Cured in place Pipelayer; Environmental Laborer (marine work, oil spill skimmer operator, small boat operator); Foam Gun or Foam Machine Operator; Green Cutter (dam work); Gunnite Operator; Hod Carriers; Jackhammer or Pavement Breakers (more than 45 pounds); Laying of Decorative Block (retaining walls, flowered decorative block above 4 feet); Mason Tender and Mud Mixer (sewer work); Pilot Car; Plasterer, Bricklayer and Cement Finisher Tenders; Power Saw Operator; Railroad Switch Layout Laborer; Sandblaster; Sewer Caulkers; Sewer Plant Maintenance Man; Thermal Plastic Applicator; Timber Faller, chain saw operator, filer; Timberman

GROUP 3: Alarm Installer; Bit Grinder; Guardrail Machine Operator; High Rigger and tree toppler; High Scaler; Multiplate; Slurry Seal Squeegee Man

GROUP 3A: Asphalt Raker, Asphalt Belly dump lay down; Drill Doctor (in the field); Drillers (including, but not limited to, wagon drills, air track drills; hydraulic drills); Powderman; Pioneer Drilling and Drilling Off Tugger (all type drills); Pipelayers

GROUP 3B: Grade checker (setting or transferring of grade marks, line and grade)

GROUP 4: Final Building Cleanup

TUNNELS, SHAFTS, AND RAISES CLASSIFICATIONS

GROUP 1: Brakeman; Muckers; Nippers; Topman and Bull Gang; Tunnel Track Laborer

GROUP 2: Burning and Cutting Torch; Concrete Laborers; Jackhammers; Nozzleman, Pumpcrete or Shotcrete.

GROUP 3: Miner; Retimberman

GROUP 3A: Asphalt Raker, Asphalt Belly dump lay down; Drill Doctor (in the field); Drillers (including, but not limited to, wagon drills, air track drills; hydraulic drills); Powderman; Pioneer Drilling and Drilling Off Tugger (all type drills); Pipelayers.

GROUP 3B: Grade checker (setting or transferring of grade marks, line and grade)

Tunnel shaft and raise rates only apply to workers regularly employed inside a tunnel portal or shaft collar.

LAB00942-001 04/01/2023

	Rates	Fringes
Laborers: North of the 63rd Parallel & East of Longitude 138 Degrees		
GROUP 1.....	\$ 36.00	32.56
GROUP 2.....	\$ 37.00	32.56
GROUP 3.....	\$ 37.90	32.56
GROUP 3A.....	\$ 41.78	32.56
GROUP 3B.....	\$ 47.36	28.51
GROUP 4.....	\$ 25.57	32.56
TUNNELS, SHAFTS, AND RAISES		
GROUP 1.....	\$ 39.60	32.56
GROUP 2.....	\$ 40.70	32.56
GROUP 3.....	\$ 41.69	32.56
GROUP 3A.....	\$ 45.96	32.56
GROUP 3B.....	\$ 52.10	32.56

LABORERS CLASSIFICATIONS

GROUP 1: Asphalt Workers (shovelman, plant crew); Brush Cutters; Camp Maintenance Laborer; Carpenter Tenders; Choke Setters, Hook Tender, Rigger, Signalman; Concrete Laborer (curb and gutter, chute handler, grouting, curing, screeding); Crusher Plant Laborer; Demolition Laborer; Ditch Diggers; Dump Man; Environmental Laborer (asbestos (limited to nonmechanical systems), hazardous and toxic waste, oil spill); Fence Installer; Fire Watch Laborer; Flagman; Form Strippers; General Laborer; Guardrail Laborer, Bridge Rail Installers; Hydro-Seeder Nozzleman; Laborers (building); Landscape or Planter; Laying of Decorative Block (retaining walls, flowered decorative block 4 feet and below); Material Handlers; Pneumatic or Power Tools; Portable or Chemical Toilet Serviceman; Pump Man or Mixer Man; Railroad Track Laborer; Sandblast, Pot Tender; Saw Tenders; Scaffold Building and Erecting; Slurry Work; Stake Hopper; Steam Point or Water Jet Operator; Steam Cleaner Operator; Tank Cleaning; Utiliwalk, Utilidor Laborer and Conduit Installer; Watchman (construction projects); Window Cleaner

GROUP 2: Burning and Cutting Torch; Cement or Lime Dumper or Handler (sack or bulk); Choker Splicer; Chucktender (wagon, airtrack and hydraulic drills); Concrete Laborers (power buggy, concrete saws, pumpcrete nozzleleman, vibratorman); Culvert Pipe Laborer; Cured in place Pipelayer; Environmental Laborer (marine work, oil spill skimmer

operator, small boat operator); Foam Gun or Foam Machine Operator; Green Cutter (dam work); Gunnite Operator; Hod Carriers; Jackhammer or Pavement Breakers (more than 45 pounds);Laying of Decorative Block (retaining walls, flowered decorative block above 4 feet); Mason Tender and Mud Mixer (sewer work); Pilot Car; Plasterer, Bricklayer and Cement Finisher Tenders; Power Saw Operator; Railroad Switch Layout Laborer; Sandblaster; Sewer Caulkers; Sewer Plant Maintenance Man; Thermal Plastic Applicator; Timber Faller, chain saw operator, filer; Timberman

GROUP 3: Alarm Installer; Bit Grinder; Guardrail Machine Operator; High Rigger and tree topper; High Scaler; Multiplate; Slurry Seal Squeegee Man

GROUP 3A: Asphalt Raker, Asphalt Belly dump lay down; Drill Doctor (in the field); Drillers (including, but not limited to, wagon drills, air track drills; hydraulic drills); Powderman; Pioneer Drilling and Drilling Off Tugger (all type drills); Pipelayers

GROUP 3B: Grade checker (setting or transferring of grade marks, line and grade)

GROUP 4: Final Building Cleanup

TUNNELS, SHAFTS, AND RAISES CLASSIFICATIONS

GROUP 1: Brakeman; Muckers; Nippers; Topman and Bull Gang; Tunnel Track Laborer

GROUP 2: Burning and Cutting Torch; Concrete Laborers; Jackhammers; Nozzleman, Pumpcrete or Shotcrete.

GROUP 3: Miner; Retimberman

GROUP 3A: Asphalt Raker, Asphalt Belly dump lay down; Drill Doctor (in the field); Drillers (including, but not limited to, wagon drills, air track drills; hydraulic drills); Powderman; Pioneer Drilling and Drilling Off Tugger (all type drills); Pipelayers.

GROUP 3B: Grade checker (setting or transferring of grade marks, line and grade)

Tunnel shaft and raise rates only apply to workers regularly employed inside a tunnel portal or shaft collar.

PAIN1959-001 07/01/2022

NORTH OF THE 63RD PARALLEL

Rates Fringes

PAINTER

BRUSH/ROLLER PAINT OR WALL COVERER.....	\$ 36.08	25.45
TAPING, TEXTURING, STRUCTURAL PAINTING, SANDBLASTING, POT TENDER, FINISH METAL, SPRAY, BUFFER OPERATOR, RADON MITIGATION, LEAD BASED PAINT ABATEMENT, HAZARDOUS		

MATERIAL HANDLER.....\$ 36.60 25.45

PAIN1959-002 12/01/2021

SOUTH OF THE 63RD PARALLEL

Rates Fringes

PAINTER

General Painter.....\$ 32.64 25.95

Industrial Painter.....\$ 32.74 25.95

Taper / Paper & Vinyl

Hanger.....\$ 32.64 25.95

PAIN1959-003 12/01/2021

NORTH OF THE 63RD PARALLEL

Rates Fringes

GLAZIER.....\$ 41.16 28.16

PAIN1959-004 07/01/2019

Rates Fringes

FLOOR LAYER: Carpet.....\$ 28.75 14.44

PAIN1959-006 12/01/2021

SOUTH OF THE 63RD PARALLEL

Rates Fringes

GLAZIER.....\$ 41.37 27.25

PLAS0528-006 04/01/2023

Rates Fringes

PLASTERER

North of the 63rd parallel..\$ 44.43 22.13

South of the 63rd parallel..\$ 44.43 22.13

PLAS0528-007 04/01/2023

Rates Fringes

CEMENT MASON/CONCRETE FINISHER

North of the 63rd parallel..\$ 44.43 22.13

South of the 63rd parallel..\$ 44.43 22.13

PLUM0262-002 01/01/2023

East of the 141st Meridian

Rates Fringes

Plumber; Steamfitter.....\$ 41.50 27.62

PLUM0367-002 07/01/2021

South of the 63rd Parallel

Rates Fringes

Plumber; Steamfitter.....\$ 41.00 27.95

PLUM0375-002 07/01/2023

North of the 63rd Parallel

Rates Fringes

Plumber; Steamfitter.....\$ 46.86 32.50

PLUM0669-002 04/01/2023

Rates Fringes

SPRINKLER FITTER.....\$ 54.01 30.22

ROOF0189-006 04/01/2023

Rates Fringes

ROOFER.....\$ 47.62 18.53

SHEE0023-003 07/01/2023

South of the 63rd Parallel

Rates Fringes

SHEET METAL WORKER.....\$ 47.05 29.41

SHEE0023-004 07/01/2023

North of the 63rd Parallel

Rates Fringes

SHEET METAL WORKER.....\$ 51.93 30.16

TEAM0959-003 04/01/2023

Rates Fringes

TRUCK DRIVER
GROUP 1.....\$ 46.84 24.33
GROUP 1A.....\$ 48.19 24.33
GROUP 2.....\$ 45.51 24.33
GROUP 3.....\$ 44.64 24.33
GROUP 4.....\$ 44.02 24.33
GROUP 5.....\$ 43.22 24.33

GROUP 1: Semi with Double Box Mixer; Dump Trucks (including rockbuggy and trucks with pups) over 40 yards up to and including 60 yards; Deltas, Commanders, Rollogans and similar equipment when pulling sleds, trailers or similar equipment; Boat Coxswain; Lowboys including attached trailers and jeeps, up to and including 12 axles; Ready-mix over 12 yards up to and including 15 yards); Water Wagon (250 Bbls and above); Tireman, Heavy Duty/Fueler

GROUP 1A: Dump Trucks (including Rockbuggy and Trucks with pups) over 60 yards up to and including 100 yards; Jeeps (driver under load)

GROUP 2: Turn-O-Wagon or DW-10 not self-loading; All Deltas,

Commanders, Rollogans, and similar equipment; Mechanics; Dump Trucks (including Rockbuggy and Trucks with pups) over 20 yards up to and including 40 yards; Lowboys including attached trailers and jeeps up to and including 8 axles; Super vac truck/cacasco truck/heat stress truck; Ready-mix over 7 yards up to and including 12 yards; Partsman; Stringing Truck

GROUP 3: Dump Trucks (including Rockbuggy and Trucks with pups) over 10 yards up to and including 20 yards; batch trucks 8 yards and up; Oil distributor drivers; Oil Distributor Drivers; Trucks/Jeeps (push or pull); Traffic Control Technician

GROUP 4: Buggymobile; Semi or Truck and trailer; Dumpster; Tireman (light duty); Dump Trucks (including Rockbuggy and Truck with pups) up to and including 10 yards; Track Truck Equipment; Grease Truck; Flat Beds, dual rear axle; Hyster Operators (handling bulk aggregate); Lumber Carrier; Water Wagon, semi; Water Truck, dual axle; Gin Pole Truck, Winch Truck, Wrecker, Truck Mounted "A" Frame manufactured rating over 5 tons; Bull Lifts and Fork Lifts with Power Boom and Swing attachments, over 5 tons; Front End Loader with Forks; Bus Operator over 30 passengers; All Terrain Vehicles; Boom Truck/Knuckle Truck over 5 tons; Foam Distributor Truck/dual axle; Hydro-seeders, dual axle; Vacuum Trucks, Truck Vacuum Sweepers; Loadmaster (air and water); Air Cushion or similar type vehicle; Fire Truck/Ambulance Driver; Combination Truck-fuel and grease; Compactor (when pulled by rubber tired equipment); Rigger (air/water/oilfield); Ready Mix, up to and including 7 yards;

GROUP 5: Gravel Spreader Box Operator on Truck; Flat Beds, single rear axle; Boom Truck/Knuckle Truck up to and including 5 tons; Pickups (Pilot Cars and all light duty vehicles); Water Wagon (Below 250 Bbls); Gin Pole Truck, Winch Truck, Wrecker, Truck Mounted "A" Frame, manufactured rating 5 tons and under; Bull Lifts and Fork Lifts (fork lifts with power broom and swing attachments up to and including 5 tons); Buffer Truck; Tack Truck; Farm type Rubber Tired Tractor (when material handling or pulling wagons on a construction project); Foam Distributor, single axle; Hydro-Seeders, single axle; Team Drivers (horses, mules and similar equipment); Fuel Handler (station/bulk attendant); Batch Truck, up to and including 7 yards; Gear/Supply Truck; Bus Operator, Up to 30 Passengers; Rigger/Swamper

WELDERS - Receive rate prescribed for craft performing operation to which welding is incidental.
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Note: Executive Order (EO) 13706, Establishing Paid Sick Leave for Federal Contractors applies to all contracts subject to the Davis-Bacon Act for which the contract is awarded (and any solicitation was issued) on or after January 1, 2017. If this contract is covered by the EO, the contractor must provide employees with 1 hour of paid sick leave for every 30 hours they work, up to 56 hours of paid sick leave each year. Employees must be permitted to use paid sick leave for their own illness, injury or other health-related needs, including

preventive care; to assist a family member (or person who is like family to the employee) who is ill, injured, or has other health-related needs, including preventive care; or for reasons resulting from, or to assist a family member (or person who is like family to the employee) who is a victim of, domestic violence, sexual assault, or stalking. Additional information on contractor requirements and worker protections under the EO is available at <https://www.dol.gov/agencies/whd/government-contracts>.

Unlisted classifications needed for work not included within the scope of the classifications listed may be added after award only as provided in the labor standards contract clauses (29CFR 5.5 (a) (1) (iii)).

The body of each wage determination lists the classification and wage rates that have been found to be prevailing for the cited type(s) of construction in the area covered by the wage determination. The classifications are listed in alphabetical order of ""identifiers"" that indicate whether the particular rate is a union rate (current union negotiated rate for local), a survey rate (weighted average rate) or a union average rate (weighted union average rate).

Union Rate Identifiers

A four letter classification abbreviation identifier enclosed in dotted lines beginning with characters other than ""SU"" or ""UAVG"" denotes that the union classification and rate were prevailing for that classification in the survey. Example: PLUM0198-005 07/01/2014. PLUM is an abbreviation identifier of the union which prevailed in the survey for this classification, which in this example would be Plumbers. 0198 indicates the local union number or district council number where applicable, i.e., Plumbers Local 0198. The next number, 005 in the example, is an internal number used in processing the wage determination. 07/01/2014 is the effective date of the most current negotiated rate, which in this example is July 1, 2014.

Union prevailing wage rates are updated to reflect all rate changes in the collective bargaining agreement (CBA) governing this classification and rate.

Survey Rate Identifiers

Classifications listed under the ""SU"" identifier indicate that no one rate prevailed for this classification in the survey and the published rate is derived by computing a weighted average rate based on all the rates reported in the survey for that classification. As this weighted average rate includes all rates reported in the survey, it may include both union and non-union rates. Example: SULA2012-007 5/13/2014. SU indicates the rates are survey rates based on a weighted average calculation of rates and are not majority rates. LA indicates the State of Louisiana. 2012 is the year of survey on which these classifications and rates are based. The next number, 007 in the example, is an internal number used in producing the wage determination. 5/13/2014 indicates the survey completion date for the classifications and rates under that identifier.

Survey wage rates are not updated and remain in effect until a new survey is conducted.

Union Average Rate Identifiers

Classification(s) listed under the UAVG identifier indicate that no single majority rate prevailed for those classifications; however, 100% of the data reported for the classifications was union data. EXAMPLE: UAVG-OH-0010 08/29/2014. UAVG indicates that the rate is a weighted union average rate. OH indicates the state. The next number, 0010 in the example, is an internal number used in producing the wage determination. 08/29/2014 indicates the survey completion date for the classifications and rates under that identifier.

A UAVG rate will be updated once a year, usually in January of each year, to reflect a weighted average of the current negotiated/CBA rate of the union locals from which the rate is based.

WAGE DETERMINATION APPEALS PROCESS

1.) Has there been an initial decision in the matter? This can be:

- * an existing published wage determination
- * a survey underlying a wage determination
- * a Wage and Hour Division letter setting forth a position on a wage determination matter
- * a conformance (additional classification and rate) ruling

On survey related matters, initial contact, including requests for summaries of surveys, should be with the Wage and Hour National Office because National Office has responsibility for the Davis-Bacon survey program. If the response from this initial contact is not satisfactory, then the process described in 2.) and 3.) should be followed.

With regard to any other matter not yet ripe for the formal process described here, initial contact should be with the Branch of Construction Wage Determinations. Write to:

Branch of Construction Wage Determinations
Wage and Hour Division
U.S. Department of Labor
200 Constitution Avenue, N.W.
Washington, DC 20210

2.) If the answer to the question in 1.) is yes, then an interested party (those affected by the action) can request review and reconsideration from the Wage and Hour Administrator (See 29 CFR Part 1.8 and 29 CFR Part 7). Write to:

Wage and Hour Administrator
U.S. Department of Labor
200 Constitution Avenue, N.W.
Washington, DC 20210

The request should be accompanied by a full statement of the interested party's position and by any information (wage payment data, project description, area practice material,

etc.) that the requestor considers relevant to the issue.

3.) If the decision of the Administrator is not favorable, an interested party may appeal directly to the Administrative Review Board (formerly the Wage Appeals Board). Write to:

Administrative Review Board
U.S. Department of Labor
200 Constitution Avenue, N.W.
Washington, DC 20210

4.) All decisions by the Administrative Review Board are final.

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END OF GENERAL DECISION"

CITY OF WHITTIER, ALASKA

LIFT STATION NO. 5 REPLACEMENT REBID

SECTION VIII

EEO CONTRACT COMPLIANCE SPECIFICATIONS

DISADVANTAGE BUSINESS ENTERPRISES OVERVIEW

EQUAL EMPLOYMENT OPPORTUNITY STATEMENT OF ACKNOWLEDGEMENT

**STATE OF ALASKA
DEPARTMENT OF ENVIRONMENTAL CONSERVATION
ALASKA CLEAN WATER FUND & ALASKA DRINKING WATER FUND**

**DISADVANTAGE BUSINESS ENTERPRISES
OVERVIEW**

The loan recipient, consultant and contractor of an Alaska Clean Water or Drinking Water Fund revolving loan project are required to comply with EPA regulations (40 CFR Part 33) concerning the use of disadvantage owned businesses enterprises (DBE). Also required is compliance with EEO/Affirmative Action Regulations of the Department of Labor (see attached Statement of Acknowledgement). These regulations help ensure that economic opportunities are available to all people of this country.

The expenditure of Federal funds must reflect equal opportunity, anti-discrimination provisions of the 1964 Civil Rights Act, affirmative action and DBE or more specifically small, minority and women-owned businesses utilization under EPA's DBE program. Utilization may be through prime contracting, subcontracting, joint-venture, procurement of supplies, material or equipment, or other business participation utilized in completing a project. For all situations, contractors must take necessary and reasonable steps to ensure DBE's have the maximum opportunity to compete for and/or perform contracts. Contractors shall not discriminate on the basis of race, color, national origin, or sex in the award and performance of projects where assistance is provided from an ADEC revolving loan fund program.

NOTE: On March 26, 2008, the Environmental Protection Agency (EPA) Office of Small Business Programs (OSBP) published its final rule, "Participation by Disadvantaged Business Enterprises in Procurement under Environmental Protection Agency Financial Assistance Agreements (DBE Rule) in the Federal Register (40 CFR part 30-40). The final rule took effect on May 25, 2008." The EPA DBE Program encompasses many of the components of the former MBE/WBE Program and also includes changes.

Some changes are:

- Creation of the Disadvantaged Business Enterprise (DBE) Program (formerly the Minority Business Enterprise/Women's Business Enterprise (MBE/WBE) Program).
- Recipients receiving a total of \$250K or less in financial assistance in a given fiscal year are exempt from this requirement.
- The "Six Affirmative Steps" and "Six Positive Efforts" were combined into the "Six Good Faith Efforts."
- A recipient must require its prime contractor to pay its subcontractor for satisfactory performance no more than 30 days from the prime contractor's receipt of payment from the recipient.
- The loan recipient must be notified in writing by its prime contractor prior to any termination of a DBE subcontractor.

- If a DBE subcontractor fails to complete work under the subcontract for any reason, the prime contractor must use the Six Good Faith Efforts in selecting a replacement subcontractor.
- The prime contractor must employ the Six Good Faith Efforts even if the prime has achieved its Fair Share Objectives.
- Recipients who reported quarterly under the old MBE/WBE program will report semi-annually. [Note – this has been recently updated to now only require annual reporting.]
- MBE's and WBE's can no longer self-certify. They must be certified by EPA, Small Business Administration (SBA), Department of Transportation (DOT) or by state, local, Tribal or private entities whose certification criteria match EPA's. (MBEs and WBEs must be certified in order to be counted toward a recipient's MBE/WBE accomplishments.) The new requirements affect all financial assistance agreements entered into from the effective date of the rule (May 25, 2008). The new DBE rule won't affect those financial assistance agreements entered into before May 25, 2008; those will still operate under the old MBE/WBE program requirements.

SUMMARY OF GOALS

Stated simply, in meeting DBE goals under this program, the prime contractor must either 1) achieve the goal of contracting to Minority or Women-Owned Enterprises (MBE/WBE), or 2) follow the proper procedures in thoroughly documenting good faith efforts to achieve MBE/WBE goal participation. A prime contractor who is an MBE/WBE firm can also be counted towards the goal. (see attached current participation goals for the Department)

REQUIREMENTS

A. Definitions

- Disadvantaged Business Enterprise – Per EPA requirements for projects funded under the Alaska Drinking Water Fund and Alaska Clean Water Fund loan programs, Disadvantage Business Enterprises only include entities owned and/or controlled by socially and economically disadvantaged individuals (as described in 42 USC 7601 and 42 USC 4370d) – which includes Women's Business Enterprises (WBE) and Minority Business Enterprises (MBE). (for more information go to: <http://www.epa.gov/osbp/grants.htm>)
- Minority Business Enterprise or Women Owned Business Enterprise – means a small business concern which is owned and controlled by one or more minorities or women. Owned and controlled means a business:
 1. Which is at least 51 percent owned by one or more minorities or women, or in the case of a publicly owned business, at least 51% of the stock is owned by one or more minorities or women;

2. Whose management and daily business operations are controlled by one or more such individuals.

- Socially Disadvantaged Individual – means a person who is a citizen or lawful permanent resident of the United States and who is:
 - Black;
 - Hispanic;
 - Portuguese;
 - Asian American;
 - American Indian and Alaskan Native; and
 - Members of other groups, or other individuals, found to be economically and socially disadvantaged by the United States Small Business Administration under section 8(a) of the federal Small Business Act.
- Economically Disadvantaged Individual – those socially disadvantaged individuals whose ability to compete in the free enterprise system has been impaired due to diminished capital or credit opportunities, as compared to others in the same business area who are not socially disadvantaged.

B. Implementation for DBE Procurement

As part of ADEC’s capitalization grants for both the ADWF and ACWF loan programs, the programs have an overall Fair Share (or utilization goal) objective of 3.26% for MBE entities and 1.48% for WBE entities for construction only (effective October 1, 2019 – September 30, 2022). The loan recipient, engineering firm responsible for construction phase services, and prime contractor are required to adopt this same fair objective. The fair share objective is not a quota, EPA cannot penalize ADEC, the loan recipient, engineering firm, of the prime contractor for not meeting MBE or WBE participation objectives.

The prime contractor and consulting engineer responsible for construction phase services are required to make the good faith efforts and apply necessary administrative requirements. If the good faith efforts are not made when subcontracts are considered for the prime construction contract or for engineering construction phase services, the ability of ADEC to fund the project, or portion thereof, may be jeopardized.

C. How to Count DBE (MBE/WBE) Goals

The proposed MBE/WBE firms to be used must be declared by the Bidder before contract award. The MBE/WBE may act as a prime contractor, subcontractor, joint venture partner, or supplier. To be counted toward a goal, the MBE/WBE must perform a commercially useful function. To calculate the minimum dollar value for MBE/WBE participation, multiply the total estimated contract price (including additives or alternates, if any) by the goal percentage.

D. How to Obtain DBE (MBE/WBE) Participation

Prior to the scheduled pre-bid conference, solicit MBE/WBE participation to meet the goal. By contract award, the Bidder must either meet the goal or have made good faith efforts to do so. Good faith efforts include, but are not limited to the following:

1. Including qualified small, minority and women's business enterprises on solicitation lists.
2. Assuring that small, minority and women's businesses are solicited. If the MBE/WBE is only certified as a DBE, such as through the Alaska Department of Transportation, and the bidder has exhausted all efforts to determine the subcontractor MBE/WBE status, the bidder may document either category of certification to meet goal objectives.
3. Dividing total requirements when economically feasible, into small tasks or quantities to permit maximum participation of small, minority and women's businesses.
4. Establish delivery schedules, where requirements of the work permit, which will encourage participation by small, minority and women's businesses.
5. Using the services and assistance of the Small Business Administration and the Minority Business Development Agency of the U.S. Department of Commerce, as appropriate.
6. If the prime contractor or proposer awards subcontracts/procurements, require the subcontractor to take the affirmative steps 1 through 5 above.

E. How to Credit DBE (MBE/WBE) Participation

If the Bidder's firm is a qualified Minority or Women-Owned Business Enterprise, credit will be given for the portion of the contract for which the Bidder performs a commercially useful function, and for that portion that is subcontracted to other MBE/WBE firms. For example, a MBE/WBE prime contractor proposes to perform 60% of a project quoted at \$500,000, and subcontracts 20% to a majority firm and the remaining 20% to another MBE/WBE. This means the credited MBE/WBE participation will be 80% for the project (60% + 20%) or \$400,000.

F. The DBE (MBE/WBE) Reporting Package

To meet the MBE/WBE reporting requirements of the program, the following forms need to be submitted during the course of bidding, contract award, and administration of this project:

1. COMPLIANCE STATEMENT - acknowledges the MBE/WBE requirement by the bidder. It must be provided with the bid.
2. REPORT OF PARTICIPATION – documents the level of anticipated MBE/WBE participation. It is submitted after bid opening, but before contract award.
3. CONTACT DOCUMENTATION – documents the efforts taken to attain the MBE/WBE goals and it, or other documentation should be submitted with the Report of Participation if the bidder did not meet the established goal.
4. CONTRACT & PROCUREMENT ANNUAL REPORT – documents the actual MBE/WBE contracts executed by the Prime Contractor and submitted to the Community. In the first week of October each year (reporting period, Oct – Sep), the Community will submit a listing of the executed contracts (for the previous reporting period) through

ADEC's State Revolving Fund Program online reporting form "SRF loan – MBE/WBE Utilization Form" under the OASys "Reports" tab at the following link:

<https://dec.alaska.gov/Applications/Water/OASys/ValidationInfo.aspx>

G. Create and Maintain a Bidders List

Any entity that receives an ACWF or ADWF SRF loan is required to create and maintain a bidders list if the loan recipient is subject to, or chooses to follow, competitive bidding requirements. **The list must include all firms that bid or quote on prime contracts, or bid or quote subcontracts, including both MBE/WBEs and non-MBE/WBEs** and must be maintained until the end of the project.

H. DBE Anti-Discrimination Contract Clause

Under 40 CFR part 33, Appendix A, the following statement must be included in **every contract** issued by an ACWF/ADWF borrower to a prime contractor. The statement cannot be changed, modified, or altered in any way.

"The contractor shall not discriminate on the basis of race, color, national origin or sex in the performance of this contract. The contractor shall carry out applicable requirements of 40 CFR part 33 in the award and administration of contracts awarded under EPA financial assistance agreements. Failure by the contractor to carry out these requirements is a material breach of this contract which may result in the termination of this contract or other legally available remedies."

**STATE OF ALASKA
DEPARTMENT OF ENVIRONMENTAL CONSERVATION**

**EQUAL EMPLOYMENT OPPORTUNITY
STATEMENT OF ACKNOWLEDGEMENT**

This statement of acknowledgement is required by the Equal Employment Opportunity Regulations of the Secretary of Labor (41 CFR 60-1.7(b)(1)) and must be completed by each Bidder and proposed Subcontractor participating in this contract.

PLEASE CHECK THE APPROPRIATE BOXES

THE Bidder proposed Subcontractor hereby **CERTIFIES:**

PART A. Bidders and proposed subcontractors with 50 or more employees and a federal contract amounting to \$50,000 or more are required to submit one federal Standard Report Form 100 during each year the two conditions (50 employees and a \$50,000 federal contract) exist.

The company named below (Part C) is exempt from the requirements of submitting the Standard Report Form 100 this year.

NO (go to PART B) YES (go to PART C)

PART B. The company named below (Part C) has submitted the Standard Report Form 100 this year, or intends to at this time.

NO YES

NOTE: Bidders and proposed Subcontractors who file Standard Report Form 100 may also be required to file Form CC-257 Monthly Employment Utilization Report if the project has significant financial impact on a community, or the bidder/subcontractor has signed an agreement to do so. At a minimum, the bidder/subcontractor is required to maintain records which reflect the reporting requirements of CC-257. Standard Report Form 100 and instructions may be obtained by writing to:

EEO-1 Joint Reporting Committee
P.O. Box 19100
Washington, DC 20036-9100
Telephone (866) 286-6440
Email: el.techassistance@eoc.gov

PART C.

Signature of Authorized Representative of Company

Date

Name of Company

(_____)_____
Telephone No.

Address of Company

Zip Code

Project Name

Contract Number

- Joint Reporting Committee
- Equal Employment Opportunity Commission
 - Office of Federal Contract Compliance Programs (Labor)

EQUAL EMPLOYMENT OPPORTUNITY

EMPLOYER INFORMATION REPORT EEO-1

Standard Form 100
REV. 01/2006

O.M.B. No. 3045-0007
EXPIRES 01/2009
100-214

Section A—TYPE OF REPORT

Refer to instructions for number and types of reports to be filed.

1. Indicate by marking in the appropriate box the type of reporting unit for which this copy of the form is submitted (MARK ONLY ONE BOX).

(1) Single-establishment Employer Report

Multi-establishment Employer:

(2) Consolidated Report (Required)

(3) Headquarters Unit Report (Required)

(4) Individual Establishment Report (submit one for each establishment with 50 or more employees)

(5) Special Report

2. Total number of reports being filed by this Company (Answer on Consolidated Report only) _____

Section B—COMPANY IDENTIFICATION (To be answered by all employers)

1. Parent Company

OFFICE
USE
ONLY

a. Name of parent company (owns or controls establishment in item 2) omit if same as label

a.

Address (Number and street)

b.

City or town

State

ZIP code

c.

2. Establishment for which this report is filed. (Omit if same as label)

a. Name of establishment

d.

Address (Number and street)

City or Town

County

State

ZIP code

e.

b. Employer identification No. (IRS 9-DIGIT TAX NUMBER)

f.

c. Was an EEO-1 report filed for this establishment last year? Yes No

Section C—EMPLOYERS WHO ARE REQUIRED TO FILE (To be answered by all employers)

Yes No 1. Does the entire company have at least 100 employees in the payroll period for which you are reporting?

Yes No 2. Is your company affiliated through common ownership and/or centralized management with other entities in an enterprise with a total employment of 100 or more?

Yes No 3. Does the company or any of its establishments (a) have 50 or more employees AND (b) is not exempt as provided by 41 CFR 60-1.5, AND either (1) is a prime government contractor or first-tier subcontractor, and has a contract, subcontract, or purchase order amounting to \$50,000 or more, or (2) serves as a depository of Government funds in any amount or is a financial institution which is an issuing and paying agent for U.S. Savings Bonds and Savings Notes?

If the response to question C-3 is yes, please enter your Dun and Bradstreet identification number (if you have one):

NOTE: If the answer is yes to questions 1, 2, or 3, complete the entire form, otherwise skip to Section G.

Section D-EMPLOYMENT DATA

Employment at this establishment - Report all permanent full- and part-time employees including apprentices and on-the-job trainees unless specifically excluded as set forth in the instructions. Enter the appropriate figures on all lines and in all columns. Blank spaces will be considered as zeros.

Job Categories	Number of Employees (Report employees in only one category)															Total Col A - N
	Race/Ethnicity															
	Hispanic or Latino		Not-Hispanic or Latino													
	Male	Female	Male						Female							
White			Black or African American	Native Hawaiian or Other Pacific Islander	Asian	American Indian or Alaska Native	Two or more races	White	Black or African American	Native Hawaiian or Other Pacific Islander	Asian	American Indian or Alaska Native	Two or more races			
	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	
Executive/Senior Level Officials and Managers 1.1																
First/Mid-Level Officials and Managers 1.2																
Professionals 2																
Technicians 3																
Sales Workers 4																
Administrative Support Workers 5																
Craft Workers 6																
Operatives 7																
Laborers and Helpers 8																
Service Workers 9																
TOTAL 10																
PREVIOUS YEAR TOTAL 11																

1. Date(s) of payroll period used: _____ (Omit on the Consolidated Report.)

Section E - ESTABLISHMENT INFORMATION (Omit on the Consolidated Report.)

1. What is the major activity of this establishment? (Be specific, i.e., manufacturing steel castings, retail grocer, wholesale plumbing supplies, title insurance, etc. Include the specific type of product or type of service provided, as well as the principal business or industrial activity.)

Section F - REMARKS

Use this item to give any identification data appearing on the last EEO-1 report which differs from that given above, explain major changes in composition of reporting units and other pertinent information.

Section G - CERTIFICATION

Check 1 All reports are accurate and were prepared in accordance with the instructions. (Check on Consolidated Report only.)
 one 2 This report is accurate and was prepared in accordance with the instructions.

Name of Certifying Official	Title	Signature	Date
Name of person to contact regarding this report	Title	Address (Number and Street)	
City and State	Zip Code	Telephone No. (including Area Code and Extension)	Email Address

All reports and information obtained from individual reports will be kept confidential as required by Section 709(e) of Title VII. WILLFULLY FALSE STATEMENTS ON THIS REPORT ARE PUNISHABLE BY LAW, U.S. CODE, TITLE 18, SECTION 1001

**STATE OF ALASKA
DEPARTMENT OF ENVIRONMENTAL CONSERVATION**

**DISADVANTAGE BUSINESS ENTERPRISES
(MINORITY AND WOMEN-OWNED BUSINESS ENTERPRISES)
COMPLIANCE STATEMENT**

To be eligible for award of this contract, the bidder/proposer must execute and submit, as part of his or her bid proposal, this statement relating to Disadvantage Business Enterprises (Minority and Woman-Owned Business Enterprises). This statement shall be deemed a material factor in the City's evaluation of this bid proposal. Failure to complete and submit this statement, or the inclusion of a false statement, shall render the bid proposal non-responsive.

The _____ (Company Name) acknowledges that Minority/Woman-Owned Business Enterprises (MBE/WBE) goal of 4.74% participation (with a good faith effort of 3.26% MBE and 1.48% WBE, Effective October 1, 2019 thru September 30, 2022) has been established for this contract, and hereby assures that it will meet the goal or provide documentation to show that the mandatory good faith efforts have been made.

The undersigned certifies that this bidder/proposer is aware of and will comply with MBE/WBE goals of this project and all applicable federal and state statutes and regulations concerning Disadvantage Business Enterprises (Minority and Woman-owned Business Enterprises).

We certify that should we be declared successful bidder/best proposer we shall submit such data as required for award of the contract within the time limits set forth in the contract specifications unless otherwise specified. In addition, we acknowledge that Minority/Woman-Owned Business Enterprises Contract and Procurement Reports will be submitted to the City for each half year of active construction.

We understand that if we are the successful bidder/best proposer and we fail to meet the MBE and/or WBE goals, or fail to demonstrate that we have made the required good faith effort the City can render the bid proposal non-responsive.

Company Name _____ RFP/Contract _____

Authorized Signature _____

Title _____

**STATE OF ALASKA
DEPARTMENT OF ENVIRONMENTAL CONSERVATION**

**DISADVANTAGE BUSINESS ENTERPRISES
(MINORITY AND WOMEN-OWNED BUSINESS ENTERPRISES)
REPORT OF PARTICIPATION**

Project Name _____ RFP/Contract No. _____

Company Name _____ Prepared By _____

The successful bidder/proposer must complete and submit this form after bid time, but prior to contract award. Please list below the name and address of each DBE (MBE/ WBE) subcontractor who will perform work under this contract, along with the contracted amount that will be applicable to the goal. Indicate whether the firm is MBE or WBE, and include your own firm if MBE/WBE eligible. A proposal submitted without adequate MBE/WBE participation or showing of good faith efforts to achieve such participation can render the bid proposal non-responsive. One copy of each executed MBE/WBE subcontract must be provided to the City by the successful prime contractor. Any changes to the list below must have prior approval by the City. Please note, if the MBE/WBE is only certified as a DBE, such as through the Alaska Department of Transportation, and the bidder has exhausted all efforts to determine the subcontractor MBE/WBE status, the bidder may document either category of certification to meet goal objectives.

Firm Name	AK Contractor's License No.	Contact Name & Phone No.	Type of Work	Contract Amount	MBE/WBE
_____	_____	_____	_____	\$ _____	_____
_____	_____	_____	_____	\$ _____	_____
_____	_____	_____	_____	\$ _____	_____
_____	_____	_____	_____	\$ _____	_____
_____	_____	_____	_____	\$ _____	_____
_____	_____	_____	_____	\$ _____	_____
_____	_____	_____	_____	\$ _____	_____
_____	_____	_____	_____	\$ _____	_____
_____	_____	_____	_____	\$ _____	_____
_____	_____	_____	_____	\$ _____	_____
_____	_____	_____	_____	\$ _____	_____
_____	_____	_____	_____	\$ _____	_____
_____	_____	_____	_____	\$ _____	_____
_____	_____	_____	_____	\$ _____	_____
_____	_____	_____	_____	\$ _____	_____

Contract(s) Total: \$ _____ MBE/WBE Goal: _____ % Achieved: _____ % = \$ _____

Authorized Representative's Signature _____ Date _____

**STATE OF ALASKA
DEPARTMENT OF ENVIRONMENTAL CONSERVATION
DISADVANTAGE BUSINESS ENTERPRISES
(MINORITY AND WOMEN-OWNED BUSINESS ENTERPRISES)
CONTACT DOCUMENTATION**

Project Name _____ **RFP/Contract No.** _____

Company Name _____ **Authorized Signature/Title** _____

This form is provided for your convenience to document your efforts in meeting DBE (MBE/WBE) utilization goals. You may use additional sheets if needed. If you do not meet the MBE/WBE goal, you may return this form, or other supporting documentation (explanations, advertising notices, solicitations, etc.) with your MBE/WBE Report of Participation.

Firm _____ **MBE** _____ **WBE** _____
Address _____

Type of Work _____ **Bid Amount \$** _____
Dates of Contact _____
Method of Contact _____
Contact's Name _____
Results of Contact _____
If rejected, why _____

Firm _____ **MBE** _____ **WBE** _____
Address _____

Type of Work _____ **Bid Amount \$** _____
Dates of Contact _____
Method of Contact _____
Contact's Name _____
Results of Contact _____
If rejected, why _____

Firm _____ **MBE** _____ **WBE** _____
Address _____

Type of Work _____ **Bid Amount \$** _____
Dates of Contact _____
Method of Contact _____
Contact's Name _____
Results of Contact _____
If rejected, why _____

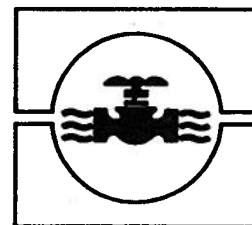
CITY OF WHITTIER, ALASKA
LIFT STATION NO. 5 REPLACEMENT REBID

SECTION IX
RECORD DRAWINGS & PUMP DATA

WHITTIER SEWER SYSTEM IMPROVEMENTS - PHASE II

Whittier, Alaska

March 1999



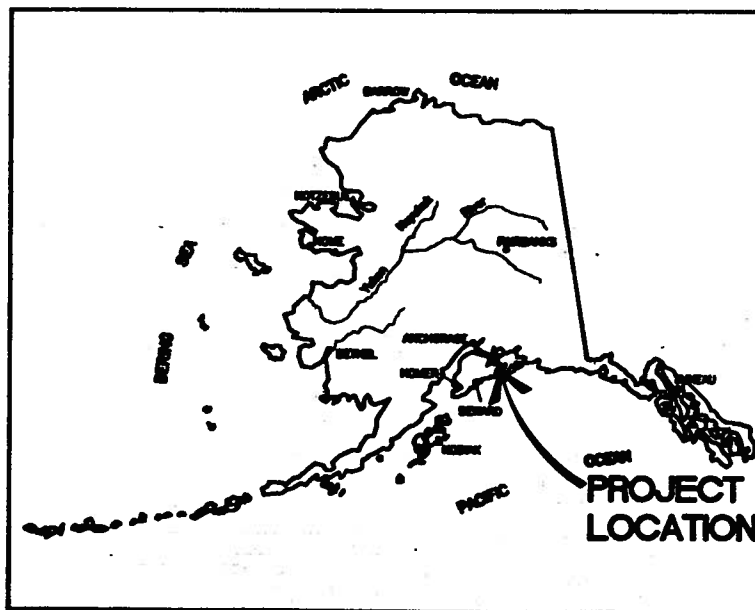
In Cooperation with the State of Alaska
Department of Environmental Conservation
VILLAGE SAFE WATER PROGRAM



As-Built

SHEET INDEX

No.	Title
1	COVER SHEET
2	INDEX SHEET & LEGEND
3	SURVEY CONTROL
4	TRAFFIC CONTROL
5	F1 FORCE MAIN STA. 2+46.34 - STA 9+00.00
6	F2 FORCE MAIN STA. 9+00.00 - STA. 22+00.45
7	D1 FORCE MAIN DETAILS
8	T1 WASTEWATER TREATMENT FACILITY SITE PLAN
9	T2 WASTEWATER TREATMENT FACILITY SEPTIC TANK PIPING LAYOUT
10	T3 WASTEWATER TREATMENT FACILITY SEPTIC TANKS NO. 2 - NO. 6 PIPING DETAILS
11	T4 WASTEWATER TREATMENT FACILITY SEPTIC TANK NO. 1 PIPING DETAILS
12	S1 STRUCTURAL - SEPTIC TANK
13	S2 STRUCTURAL - SEPTIC TANK
14	LS1 LIFT STATION NO. 4
15	LS2 LIFT STATION DETAILS
16	LS3 LIFT STATION NO. 5
17	E1 ELECTRICAL - SITE PLAN AND LEGEND
18	E2 ELECTRICAL - PLAN, ELEVATION & POWER ONE-LINE
19	E3 ELECTRICAL - SHELTER PLAN AND DETAILS
20	E4 ELECTRICAL - LIFT STATION LS 4 & 5 CONTROLS NARRATIVE AND LAYOUT
21	E4A LIFT STATION #4 CONTROL PANEL
22	E4B LIFT STATION #5 CONTROL PANEL
23	E5 ELECTRICAL - LS #4 & 5 CONTROL PANEL LADDERS - N.I.C.



Location Map

Project Number (Consultant) 9527 (VSW) 90908
 VSW Project Engineer Jim Patterson, P.E.
 Construction Foreman _____
 Final Design (Date) March 1999
 ADEC Approval (Date) April 12, 1999
 Construction Period (From) _____ (To) _____
 As-Built (Date) _____

RECORD DRAWING CERTIFICATE

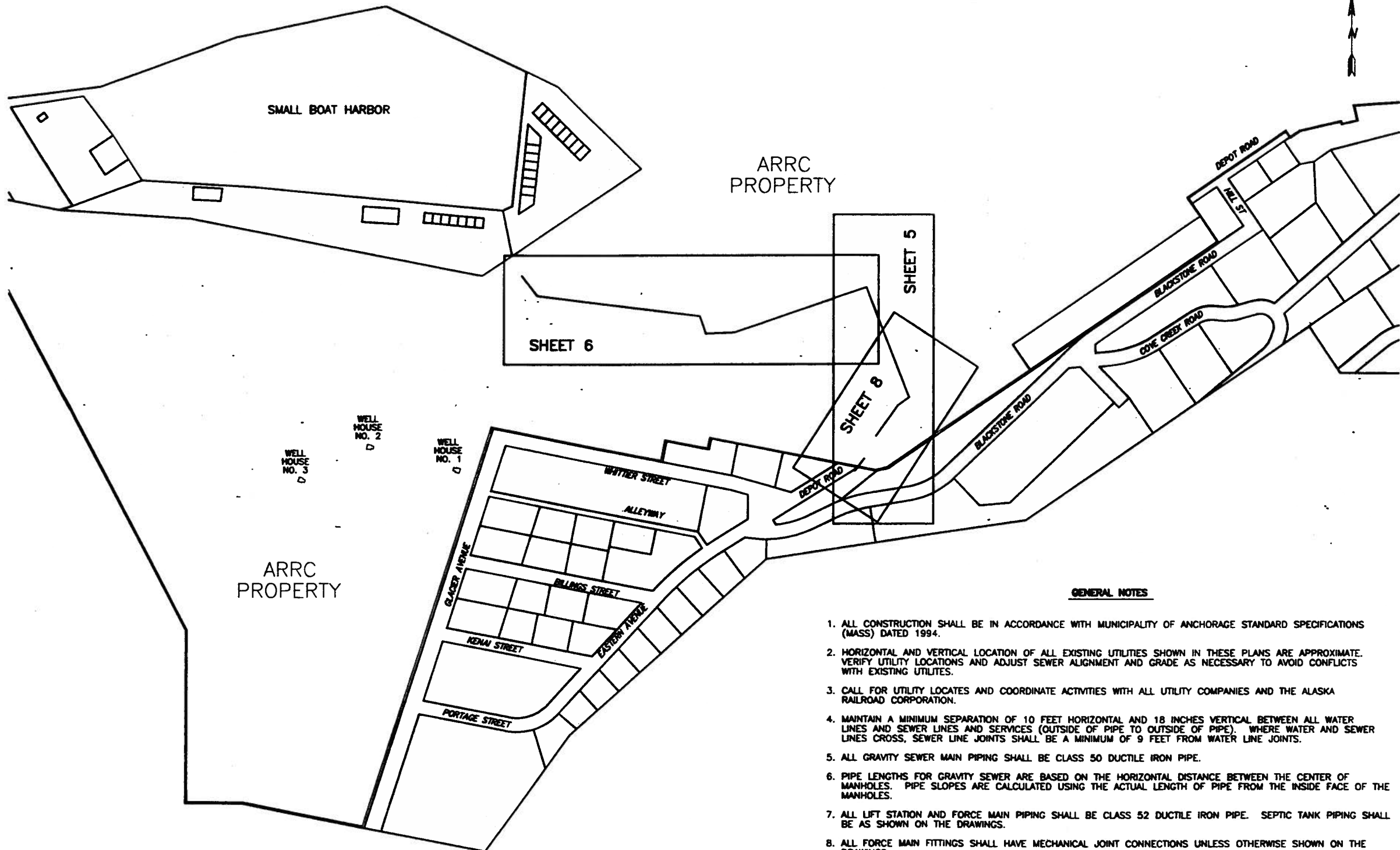
THESE DRAWINGS REFLECT RECORDED INFORMATION OBTAINED DURING CONSTRUCTION. INFORMATION PROVIDED HEREIN IS ACCURATE TO THE BEST OF MY KNOWLEDGE.

Charles L. Eggman 4/00
 NAME DATE

ERU
 engineering group
 anchorage, alaska

8800 Arctic Blvd. Suite 203
 Anchorage, Alaska 99503
 PHONE (907) 562-9292
 FAX (907) 561-2273

Consultant



ARRC PROPERTY

ARRC PROPERTY

GENERAL NOTES

1. ALL CONSTRUCTION SHALL BE IN ACCORDANCE WITH MUNICIPALITY OF ANCHORAGE STANDARD SPECIFICATIONS (MASS) DATED 1994.
2. HORIZONTAL AND VERTICAL LOCATION OF ALL EXISTING UTILITIES SHOWN IN THESE PLANS ARE APPROXIMATE. VERIFY UTILITY LOCATIONS AND ADJUST SEWER ALIGNMENT AND GRADE AS NECESSARY TO AVOID CONFLICTS WITH EXISTING UTILITIES.
3. CALL FOR UTILITY LOCATES AND COORDINATE ACTIVITIES WITH ALL UTILITY COMPANIES AND THE ALASKA RAILROAD CORPORATION.
4. MAINTAIN A MINIMUM SEPARATION OF 10 FEET HORIZONTAL AND 18 INCHES VERTICAL BETWEEN ALL WATER LINES AND SEWER LINES AND SERVICES (OUTSIDE OF PIPE TO OUTSIDE OF PIPE). WHERE WATER AND SEWER LINES CROSS, SEWER LINE JOINTS SHALL BE A MINIMUM OF 9 FEET FROM WATER LINE JOINTS.
5. ALL GRAVITY SEWER MAIN PIPING SHALL BE CLASS 50 DUCTILE IRON PIPE.
6. PIPE LENGTHS FOR GRAVITY SEWER ARE BASED ON THE HORIZONTAL DISTANCE BETWEEN THE CENTER OF MANHOLES. PIPE SLOPES ARE CALCULATED USING THE ACTUAL LENGTH OF PIPE FROM THE INSIDE FACE OF THE MANHOLES.
7. ALL LIFT STATION AND FORCE MAIN PIPING SHALL BE CLASS 52 DUCTILE IRON PIPE. SEPTIC TANK PIPING SHALL BE AS SHOWN ON THE DRAWINGS.
8. ALL FORCE MAIN FITTINGS SHALL HAVE MECHANICAL JOINT CONNECTIONS UNLESS OTHERWISE SHOWN ON THE DRAWINGS.
9. THRUST BLOCKS SHALL BE INSTALLED AT ALL FORCE MAIN FITTINGS OR CHANGES IN ALIGNMENT.
10. MINIMUM COVER FOR SEWER LINES AND FORCE MAIN SHALL BE 6 FEET.
11. ALL DUCTILE IRON AND CAST IRON PIPE AND FITTINGS SHALL BE WRAPPED WITH ONE LAYER OF POLYETHYLENE ENCASUREMENT. SEE SPECIAL PROVISIONS.
12. "BOP" IS DEFINED AS THE OUTSIDE BOTTOM OF PIPE. "INVERT" IS DEFINED AS THE INSIDE BOTTOM OF PIPE.
13. RESTORE ALL DISRUPTED PROPERTY TO ORIGINAL CONDITION.

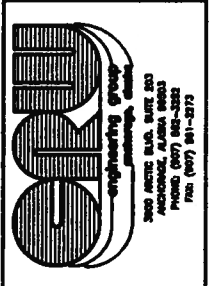
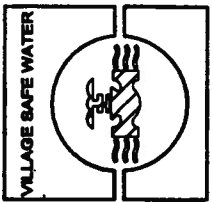
EXISTING LEGEND - Plan	
Symbol	Description
---	PROPERTY LINE
---	EASEMENT LINE
---	LIMITS OF ARRC PROPERTY
⊙	ALUMINUM CAP
⊕	SURVEY MONUMENT
⊙	IRON PIN RECOVERED
⊙	UTILITY POLE
⊙	LIGHT POLE
⊙	CUY WIRE AND ANCHOR
---	OVERHEAD ELECTRIC
---	UNDERGROUND ELECTRIC
⊠	ELECTRIC MANHOLE
⊕	ELECTRIC RISER
---	OVERHEAD TELEPHONE
---	UNDERGROUND TELEPHONE
⊠	TELEPHONE MANHOLE
---	UNDERGROUND TELEPHONE AND CABLE LINES
---	PETROLEUM OIL LINE
---	SEWER LINE
⊠	SEWER CLEANOUT
⊙	SEWER MANHOLE
---	SEWER PLUG
---	WATER LINE
⊠	FIRE HYDRANT
---	WATER PLUG OR CAP
⊠	WATER MAIN VALVE
⊠	WATER SERVICE KEY BOX
---	STORM DRAIN LINE
⊕	STORM DRAIN MANHOLE
⊠	STORM CATCH BASH
---	DRAINAGE CULVERT
---	FLOW LINE
---	EDGE OF PAVEMENT
---	CURB AND GUTTER
---	EDGE OF GRAVEL ROAD
---	GUARD RAIL
+	STREET SIGN
⊕	TREE OR SHRUB
---	RAILROAD TRACKS
⊕	RAILROAD TRACK SWITCH
⊠	BUILDING
⊕	TEST HOLE

EXISTING LEGEND - Profile	
Symbol	Description
⊠	UTILITY LINE CROSSING/PROFILE
⊠	UTILITY MANHOLE

PROPOSED IMPROVEMENTS LEGEND	
Symbol	Description
---	SEWER LINE-PLAN
---	SEWER LINE PROFILE AND CROSSING-PROFILE
⊠	AIR RELEASE VALVE



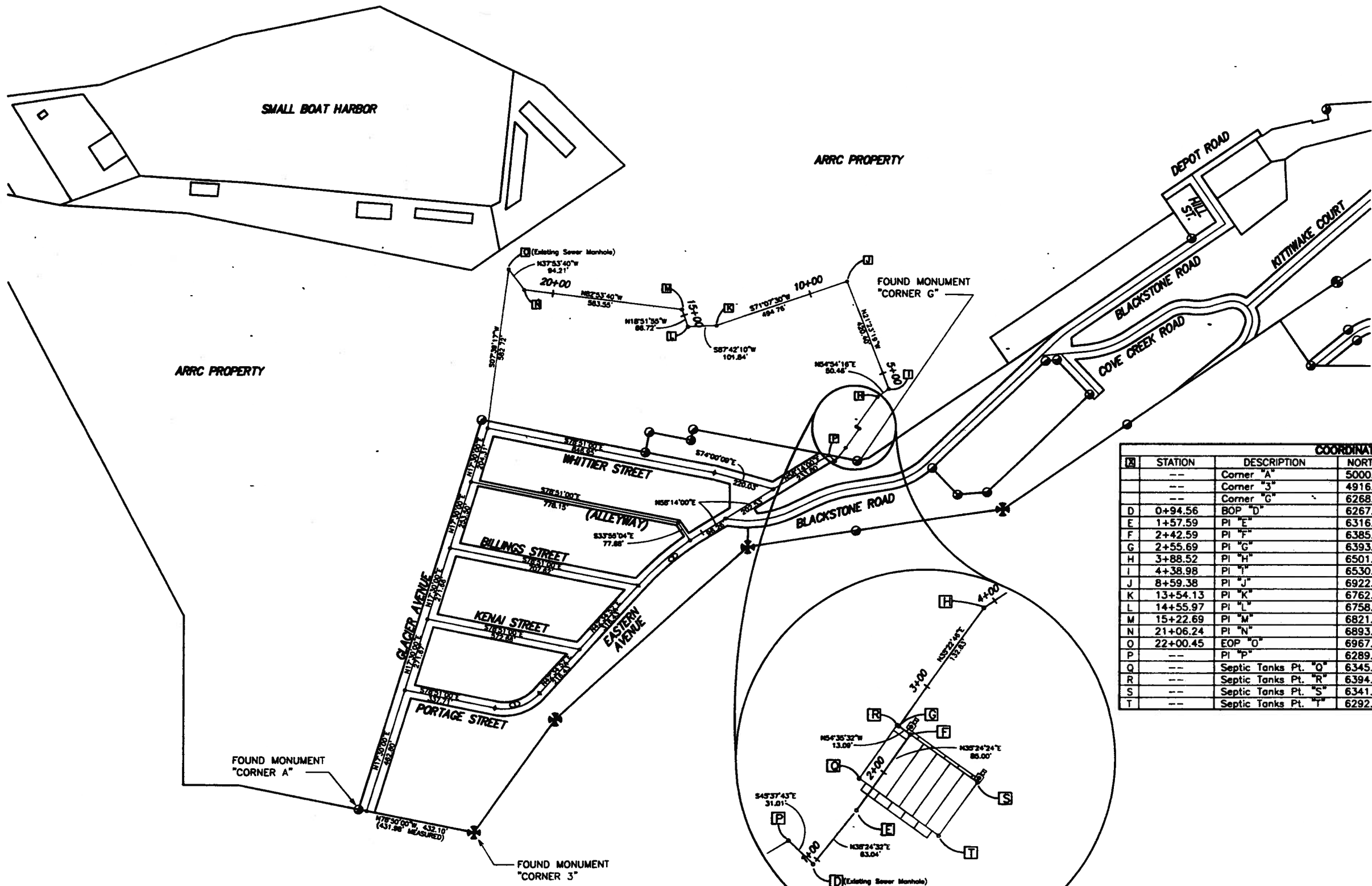
RECORD DRAWING CERTIFICATE
 THESE DRAWINGS REFLECT RECORDED INFORMATION OBTAINED DURING CONSTRUCTION. INFORMATION PROVIDED HEREIN IS ACCURATE TO THE BEST OF MY KNOWLEDGE.
 Charles L. Jensen
 ENGINEER
 DATE



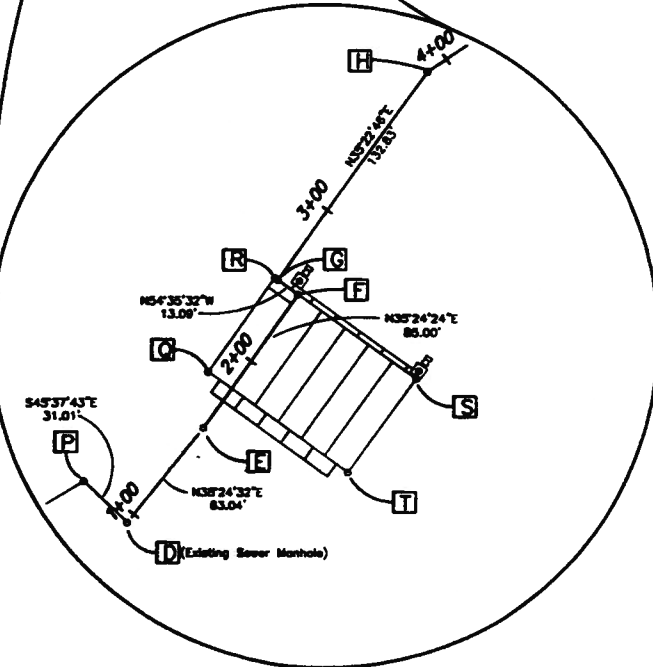
WHITTIER SEWER SYSTEM IMPROVEMENTS - PHASE II
 INDEX SHEET & LEGEND

REVISION	BY	DATE

Project No. 9527
 Date JAN 1999
 Designed PB
 Drawn RB
 Approved WWH



COORDINATE DATA					
STATION	DESCRIPTION	NORTHING	EASTING	COMMENT	
--	Corner "A"	5000.0000	5000.0000	Found Monument B.O.C.	
--	Corner "3"	4916.3179	5423.9195	Found Monument	
--	Corner "G"	6268.7635	6813.7810	Found Monument	
D	0+94.56 BOP "D"	6267.3223	6733.2447	Sewer Manhole (Existing)	
E	1+57.59 PI "E"	6316.7183	6772.4078	Proposed Lift Station No. 4	
F	2+42.59 PI "F"	6385.9987	6821.6552		
G	2+55.69 PI "G"	6393.5849	6810.9834	Force Main Alignment	
H	3+88.52 PI "H"	6501.8882	6887.8923	Force Main Alignment	
I	4+38.98 PI "I"	6530.9001	6929.1789	Force Main Alignment	
J	8+59.38 PI "J"	6922.3419	6775.8640	Force Main Alignment	
K	13+54.13 PI "K"	6762.2840	6307.7101	Force Main Alignment	
L	14+55.97 PI "L"	6758.2019	6205.9521	Force Main Alignment	
M	15+22.69 PI "M"	6821.3376	6184.3785	Force Main Alignment	
N	21+06.24 PI "N"	6893.5215	5605.3122	Force Main Alignment	
O	22+00.45 EOP "O"	6967.8649	5547.4491	Outfall Manhole (Existing)	
P	-- PI "P"	6289.0050	6711.0810		
Q	--	6345.9779	6774.3944	West Corner	
R	--	6394.8939	6809.1405	North Corner	
S	--	6341.6188	6884.1463	East Corner	
T	--	6292.7028	6849.4002	South Corner	



MONUMENTS LEGEND

- ⊗ G.L.O. BRASS CAPPED MONUMENT
- ⊙ ALUMINUM CAPPED MONUMENT ON REBAR
- ⊕ BRASS CAPPED MONUMENT

NOTE: Monuments not found unless specifically indicated.

CURVE DIMENSION TABLE							
PC STATION	DELTA	RADIUS	TANGENT	LENGTH	CHORD	CH. BEARING	
1 6+01.30EA	58°34'08"	178.31'	100.00'	182.27'	174.44'	N71°51'56"E	
2 13+16.42EA	15°39'08"	1104.71'	151.84'	301.79'	300.85'	N50°24'26"E	

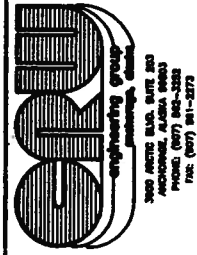
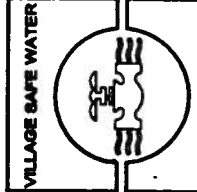


VERTICAL CONTROL
 Basis of vertical control: U.S.G.S. B.M. Q-74 located at floor level on the northwest bay of doors in the Composite (P-12) Building. Elevation = 28.13 MLLW.

HORIZONTAL CONTROL
 The horizontal control from Sta. 0+94.56 to Sta. 22+00.45 is calculated. Actual force main placement may vary from the control lines.

All other survey control lines are based on center line of rights-of-way within City of Whittier Subdivision, Phases 1 and 2 plats. Control line stationing and bearings are based on recorded information from the City of Whittier Subdivision, Phases 1 and 2 plats.

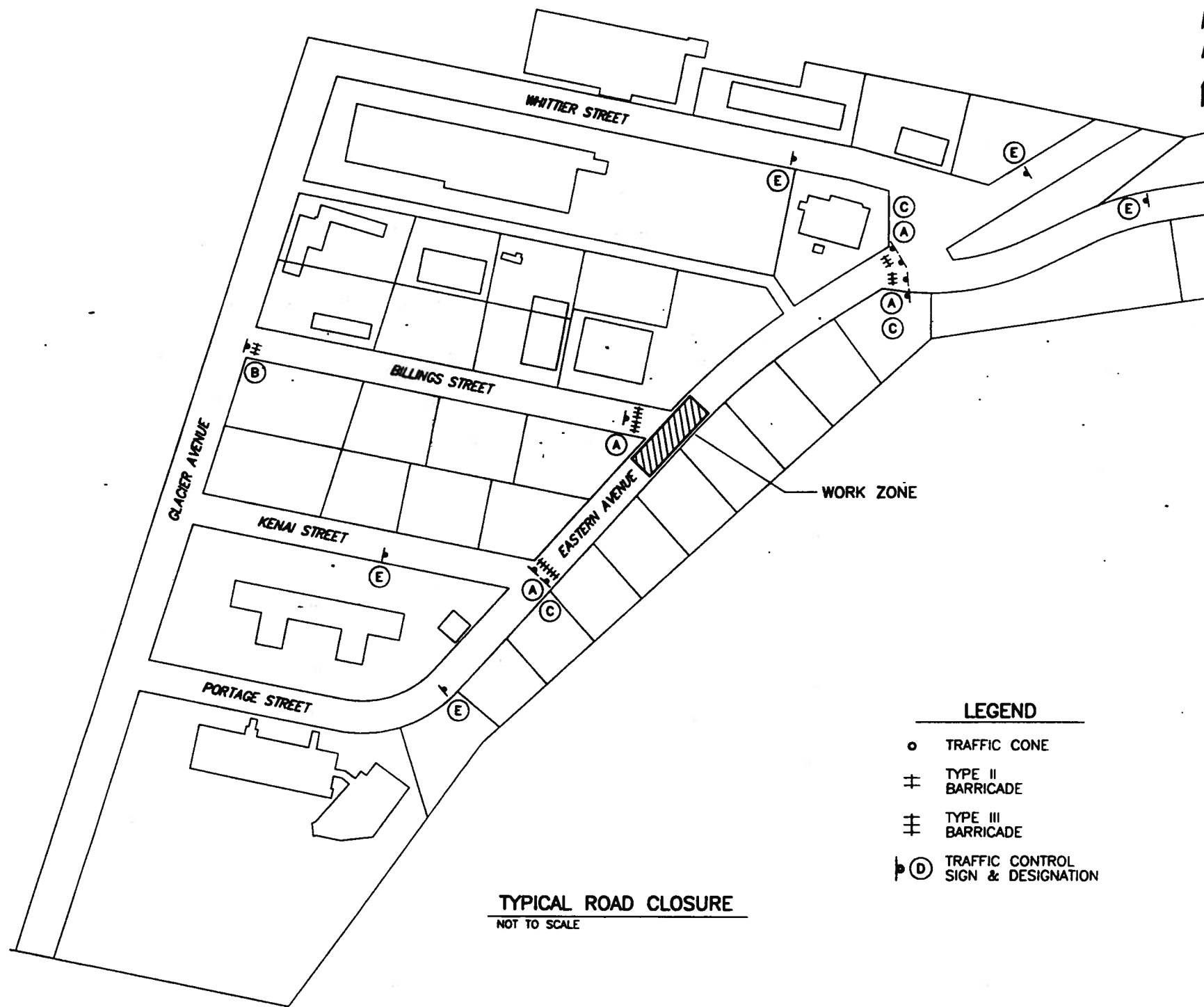
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 Charles L. Stegeman, P.E.
 NAME DATE



WHITTIER SEWER SYSTEM IMPROVEMENTS - PHASE II
 SURVEY CONTROL

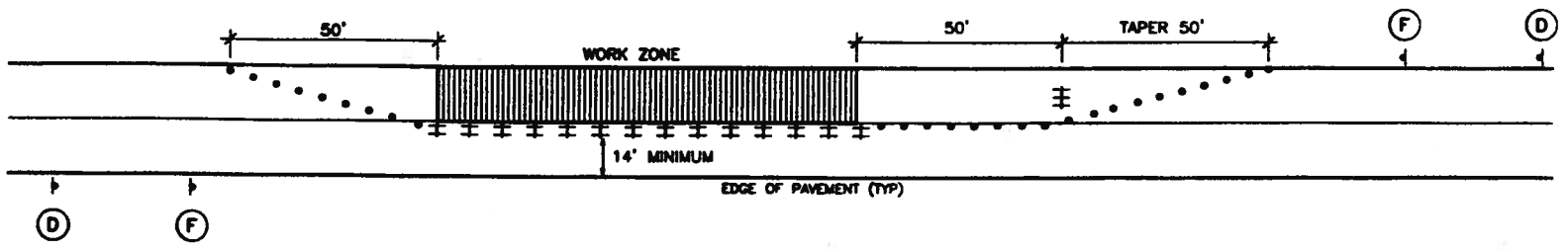
BY	DATE

Project No. 9527
 Date JAN 1999
 Designed PB
 Drawn BJ
 Approved WHH
 Sheet No. SHEET 3 OF 23



TYPICAL ROAD CLOSURE
NOT TO SCALE

- LEGEND**
- TRAFFIC CONE
 - ⊕ TYPE II BARRICADE
 - ⊕ TYPE III BARRICADE
 - Ⓧ (D) TRAFFIC CONTROL SIGN & DESIGNATION



PARTIAL ROAD CLOSURE
NOT TO SCALE

TRAFFIC CONTROL SIGNS

DESIGNATION	SIGN TYPE	LEGEND	SIZE (INCHES)
(A)	R11-2	ROAD CLOSED	48 x 30
(B)	R11-4	ROAD CLOSED TO THRU TRAFFIC	60 x 30
(C)	CW1-6	[Arrow pointing right]	36 x 18
(D)	CW20-1F	ROAD CONSTRUCTION AHEAD	36 x 36
(E)	CW20-3F	ROAD CLOSED AHEAD	36 x 36
(F)	CW20-4	ONE LANE ROAD	36 x 36

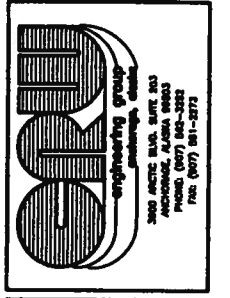
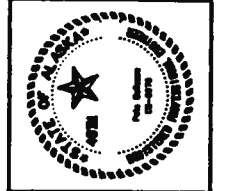


AS-BUILT

TRAFFIC CONTROL NOTES

- The Traffic Control Details presented in these plans are a generalization of the Traffic Control required.
- All work shall be performed in accordance with the "Alaska Traffic Manual."
- Type A flashing warning lights shall be used to mark each Type III barricade. Type C steady burn lights shall be provided on barricades used as channeling devices.
- Construction signs and special construction signs, including sign supports, shall conform to the requirements of Standard Signs (Section 615) of ADOT&PF, the Alaska Traffic Manual, and the Alaska Sign Design Specifications.
- Portable sign supports shall be wind resistant with no external ballasting and capable of supporting a 48-inch by 48-inch traffic sign such that the height of the sign above the adjacent roadway is that required by the Alaska Traffic Manual. The sign support shall support the sign vertically.
- Traffic cones and/or tubular markers shall conform to the requirements of the Alaska Traffic Manual. The minimum height shall be 28 inches. All cones and tubular markers shall be reflectorized.
- No two adjacent parallel streets may be closed at the same time.
- Emergency units shall be provided vehicular access at all times.
- Access to property owners shall be provided at all times.
- Notify the Whittier Police Chief and Fire Chief 24 hours in advance of a road closure.
- Post notices 24 hours in advance of a road closure at the following locations: Begich Towers, Anchor Inn, Anchor Inn Annex, Harbor Master's office, and Sportsmans Inn/Whittier Manor.
- Coordinate activities with all individuals and entities conducting business in the City of Whittier and avoid any delays to their operations, including, but not limited to, the following: Alaska Marine Highway, Cruise Ships, Tour Boats, Alaska Railroad Corporation, Hydrotrain Barge, Harbor Master Operations, Whittier Self Storage, Great Pacific Fisheries.

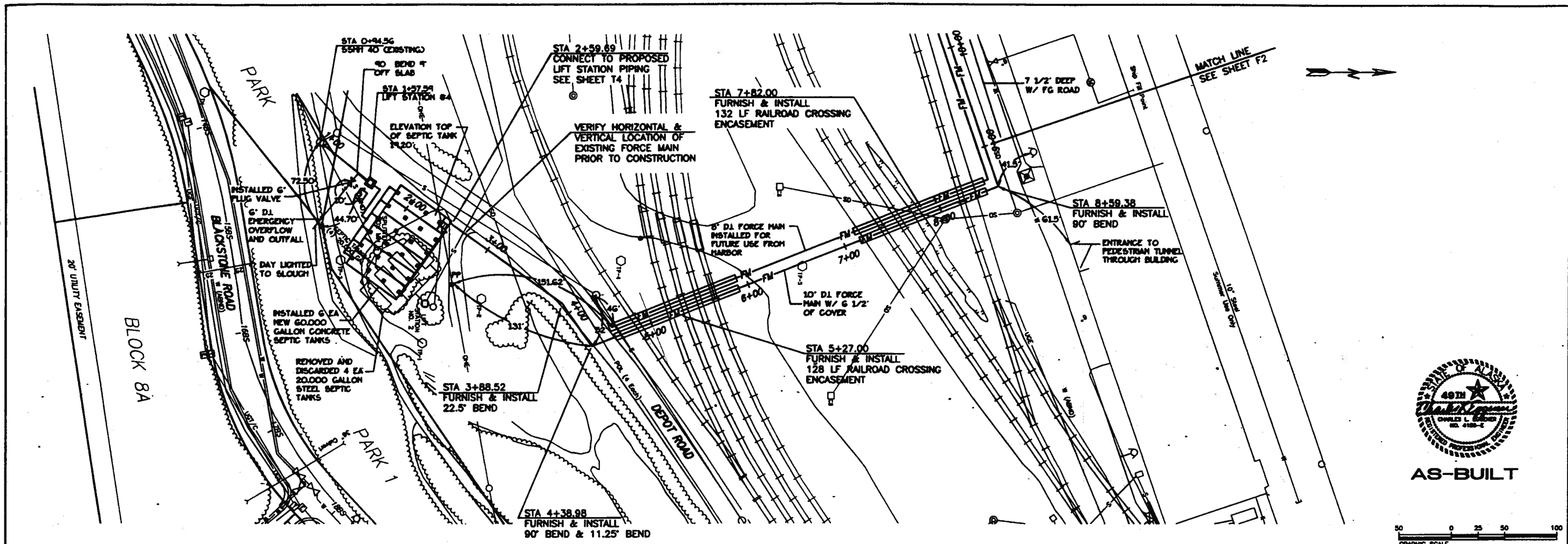
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Charles L. Eggen
NAME DATE



WHITTIER SEWER SYSTEM IMPROVEMENTS - PHASE II
TRAFFIC CONTROL

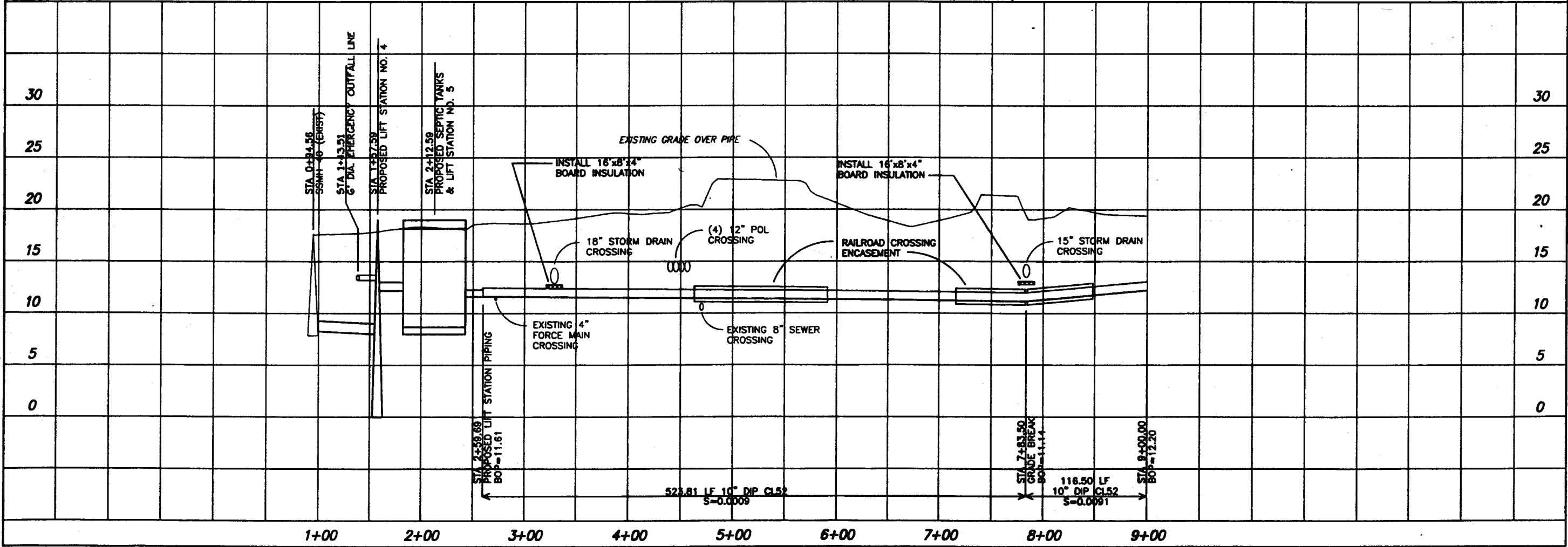
REVISION	BY	DATE

Project No. 9527
Date JAN 1999
Designed PB
Drawn RB
Approved WWH



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50 0 25 50 100
GRAPHIC SCALE



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 Charles L. Brown
 ENGINEER

VILLAGE SAFE WATER

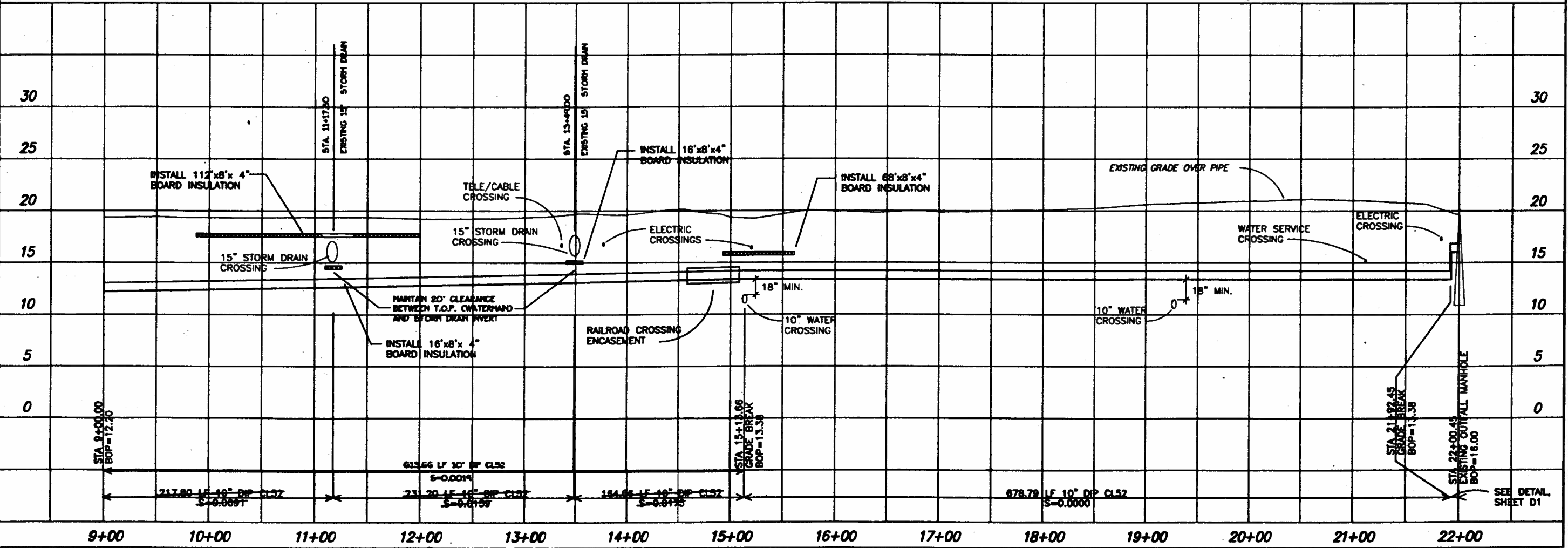
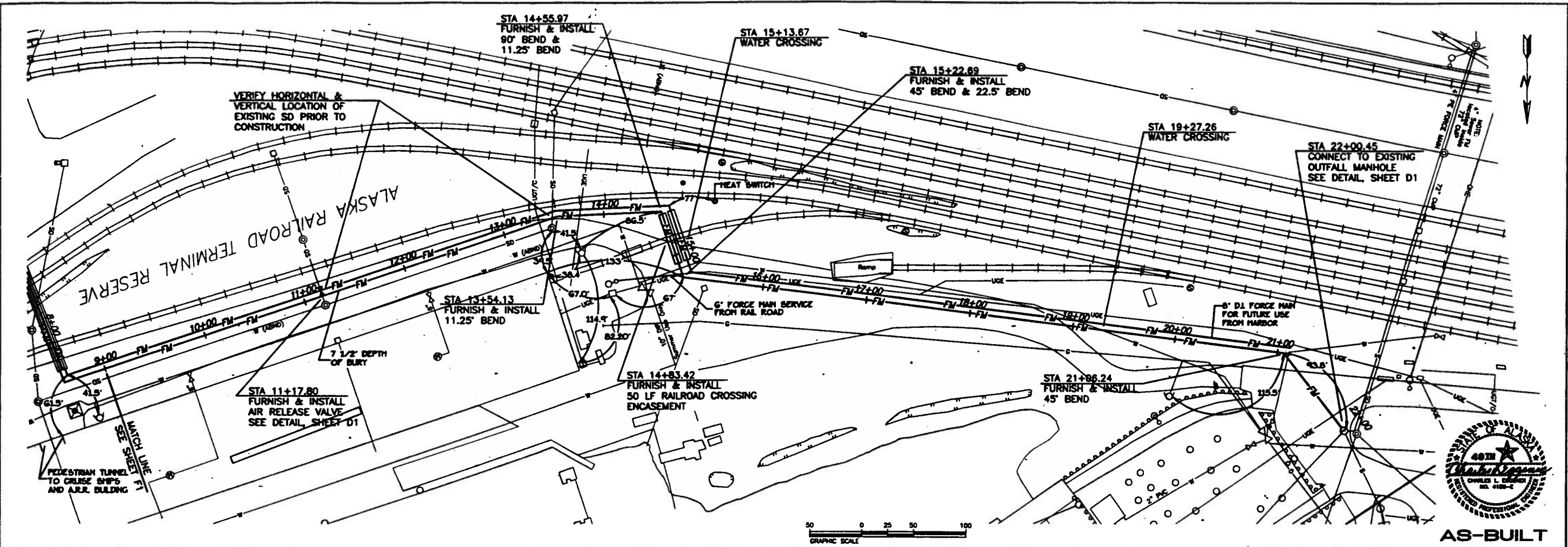
AS-BUILT

WHITTIER SEWER SYSTEM IMPROVEMENTS - PHASE II
 FORCE MAIN
 STA 2+46.34 - STA 9+00.00

REVISION	DATE	BY
ADDED AS-BUILT INFO.	JTC 12/99	JTC

Project No. 9527
 Date: JAN 1999
 Design: PB
 Drawn: RB
 Approved: WWH

Sheet #. **F1**
 SHEET 5 OF 23



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Charles J. Eggen
NAME DATE

VILLAGE SAFE WATER

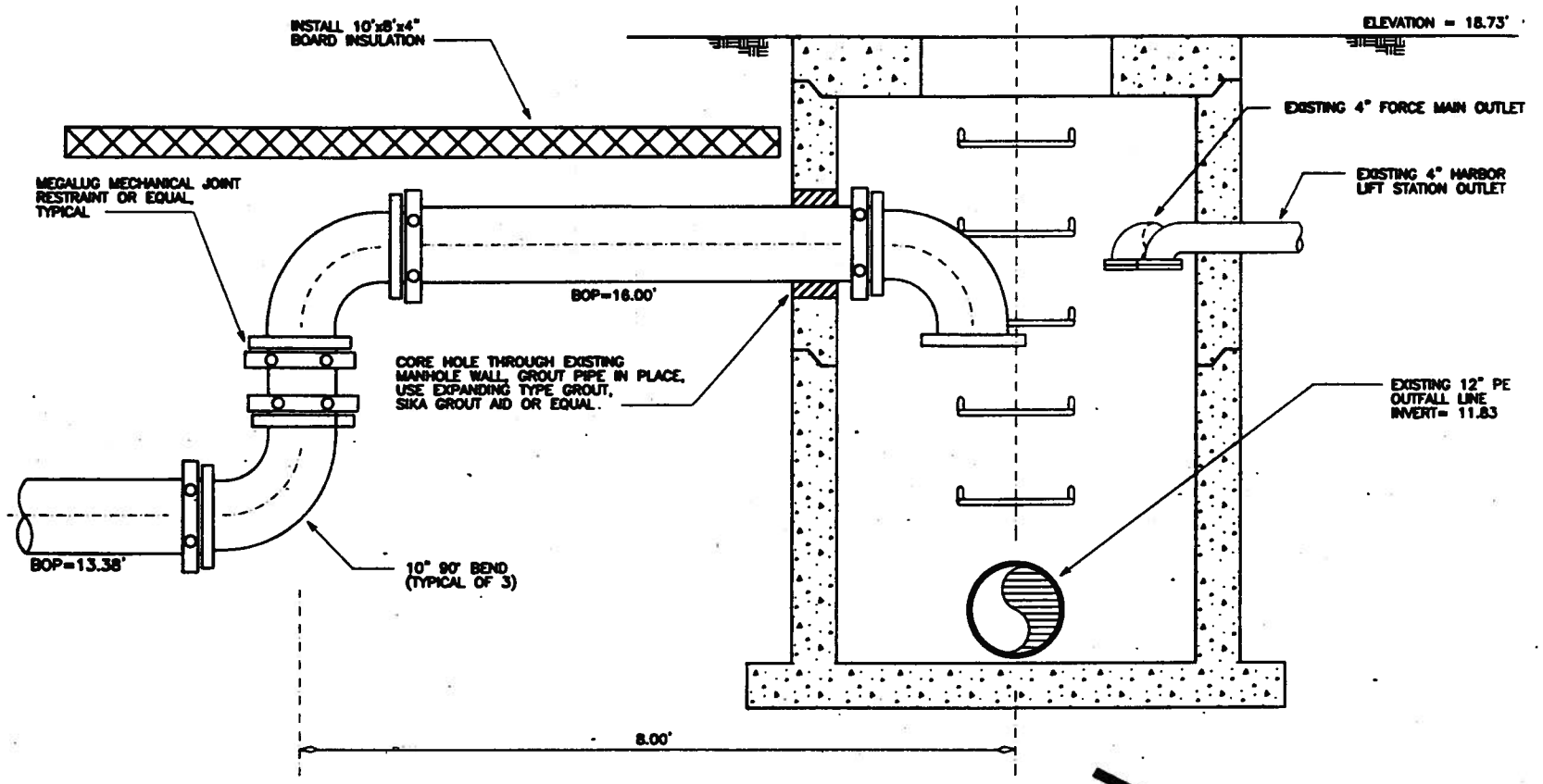
STATE OF ALASKA
Professional Engineer
No. 4188-E

Whittier Sewer System Improvements - Phase II
FORCE MAIN
STA 9+00.00 - STA 22+00.45

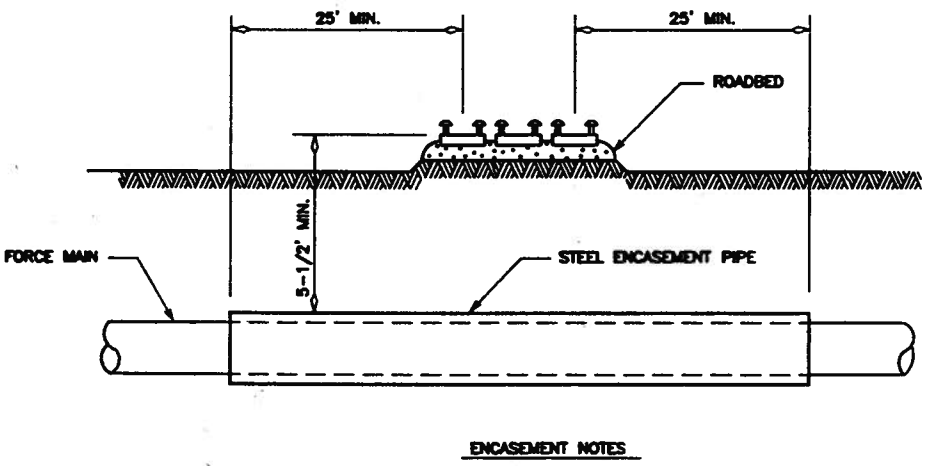
REVISION	DATE	BY	ADDED/AS-BUILT INFO

Project No. 9527
Date: JAN 1999
Designed: PB
Drawn: RB
Approved: WHH

Sheet No. **F2**
SHEET 6 of 23

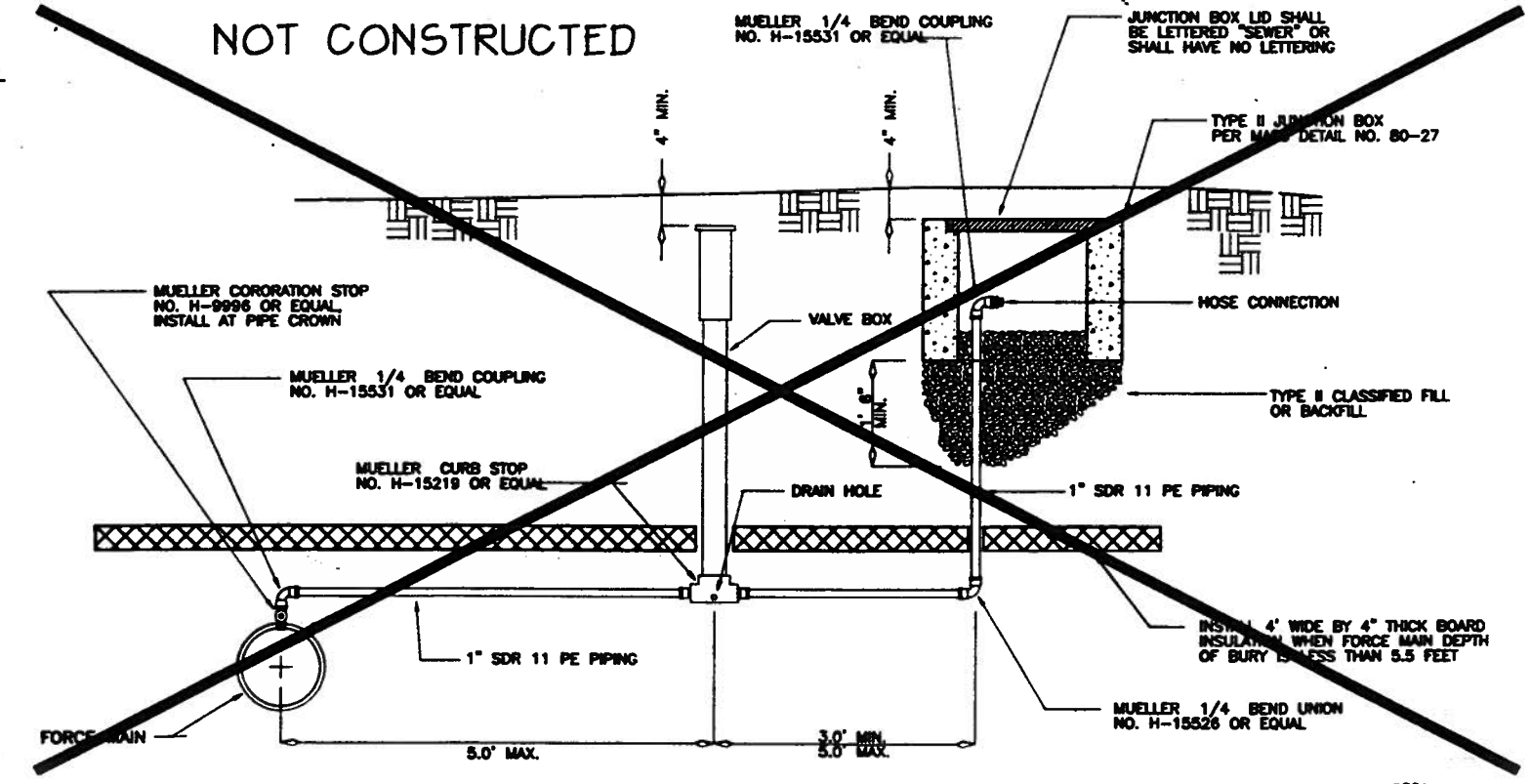


1 FORCE MAIN CONNECTION TO OUTFALL MANHOLE
N.T.S.

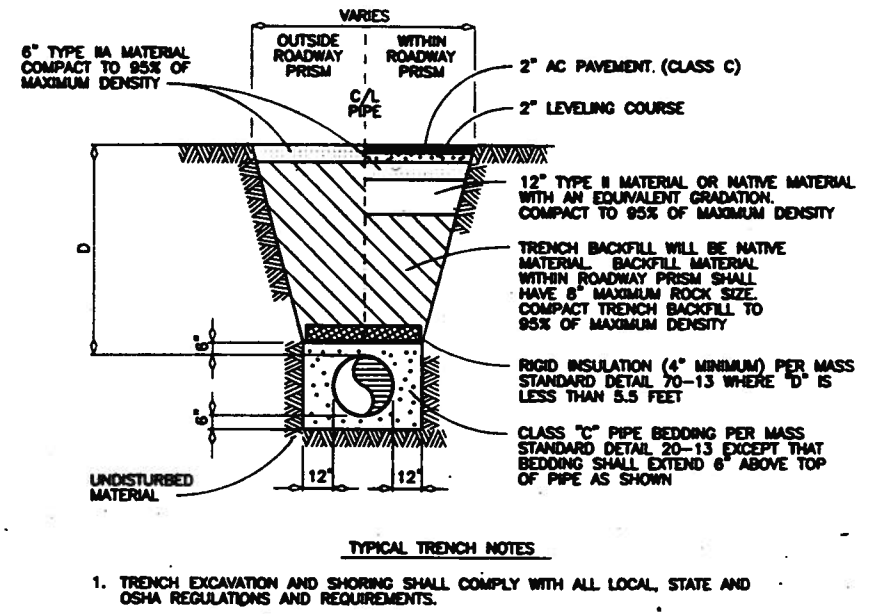


- ENCASEMENT NOTES
- SEE SPECIFICATIONS FOR MINIMUM WALL THICKNESS OF STEEL ENCASEMENT PIPE.
 - INSTALL WOODEN END PIECE AT EACH END OF STEEL ENCASEMENT PIPE. SEE SPECIFICATIONS.

2 ENCASEMENT PIPE UNDER RAILROAD TRACKS
N.T.S.



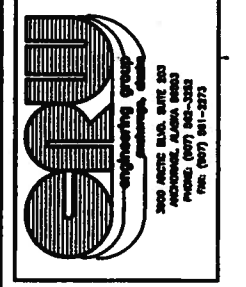
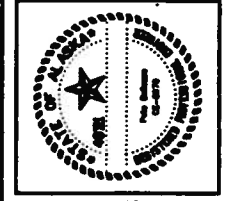
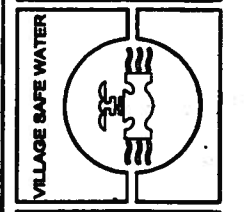
4 AIR RELEASE DETAIL
N.T.S.



3 TYPICAL TRENCH DETAIL
N.T.S.

NOT CONSTRUCTED

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Charles E. Leggett
DATE

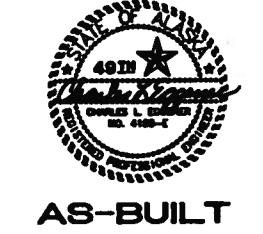


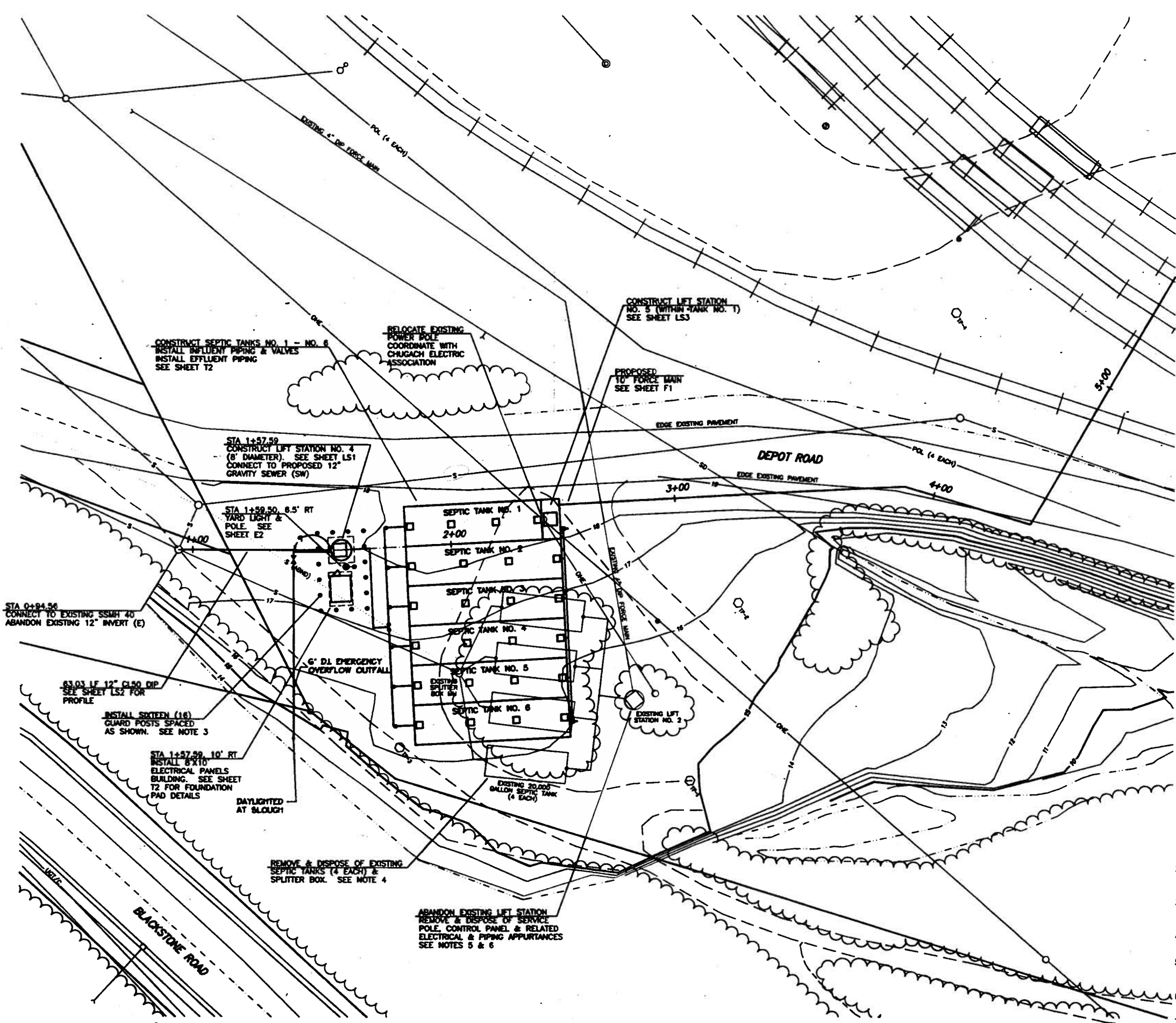
WHITTIER SEWER SYSTEM IMPROVEMENTS - PHASE II
FORCE MAIN DETAILS

REVISION	DATE	BY	DATE
ADDED AS-BUILT INFO.	MTC 12/99		

Project No. 9527	Date JAN 1999	Designed PB	Drawn RB	Approved WWH
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Sheet No. D1
SHEET 7 OF 23

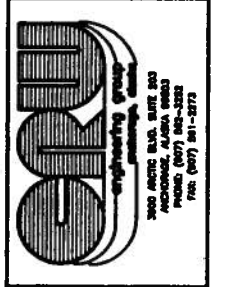
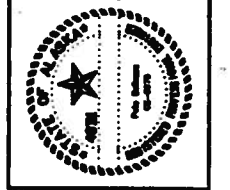
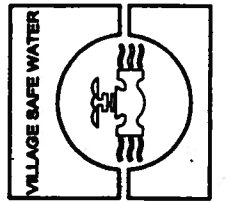




SITE PLAN NOTES

- See Sheet 3 for Survey Control and septic tank coordinates.
- Backfill from top of proposed lift station and septic tanks to existing grade at 5:1 slope. Furnish and install Type IA Classified Fill and Backfill as necessary. Compact to 95% of maximum density.
- Guard posts shall be 6" heavy walled steel pipe filled with concrete and installed in accordance with MASS Standard Detail 60-8. Paint each guard post Caterpillar yellow after installation.
- A minimum of two existing septic tanks shall remain in service at all times during construction.
- Existing Lift Station No. 2 shall remain fully operational and in service until a minimum of two proposed septic tanks are complete and placed in service.
- Remove existing pumps and power cables, clean them thoroughly, and deliver them to the Whittier City Shop.
- The Contractor is advised that evidence of hydrocarbon contamination was noted near the proposed septic tanks during the geotechnical investigation. Construction operations should be planned and executed to avoid any contamination of adjacent surface waters.

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 Charles L. Eggen
 NAME: _____
 DATE: _____

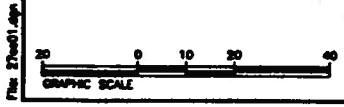


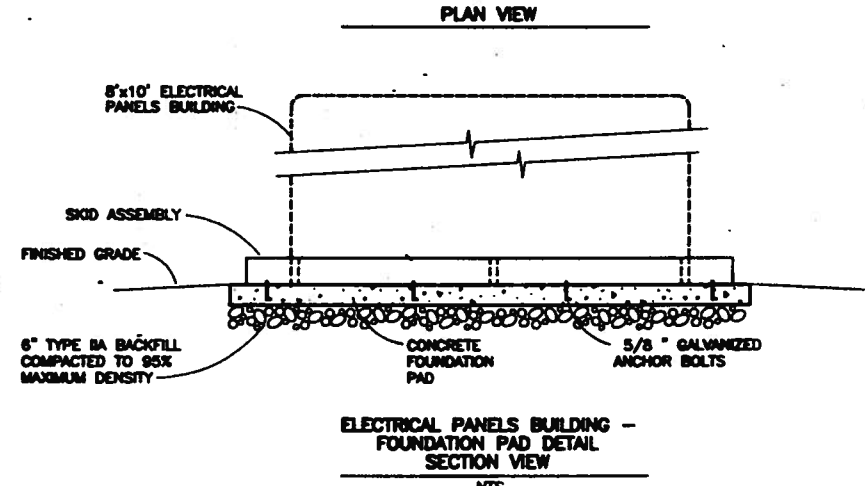
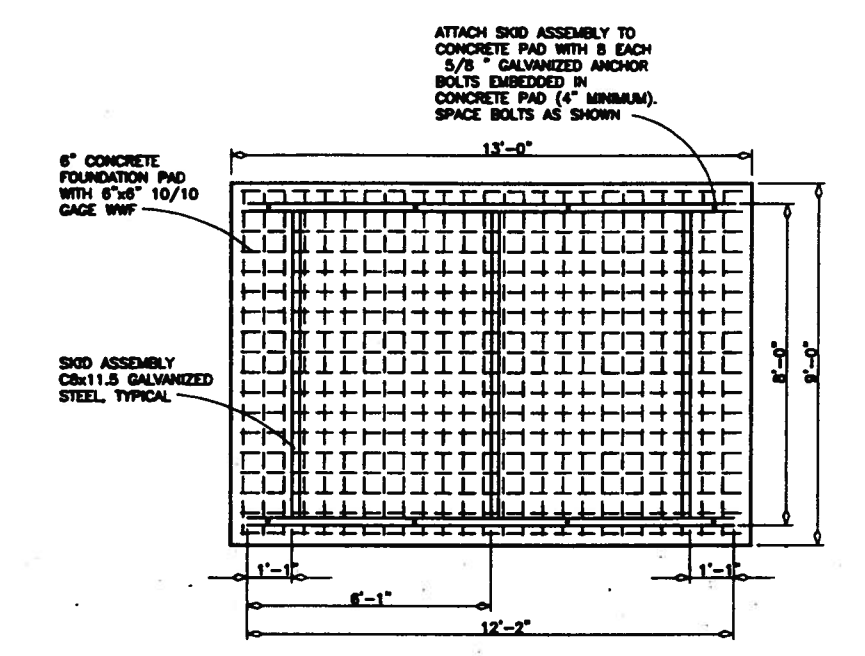
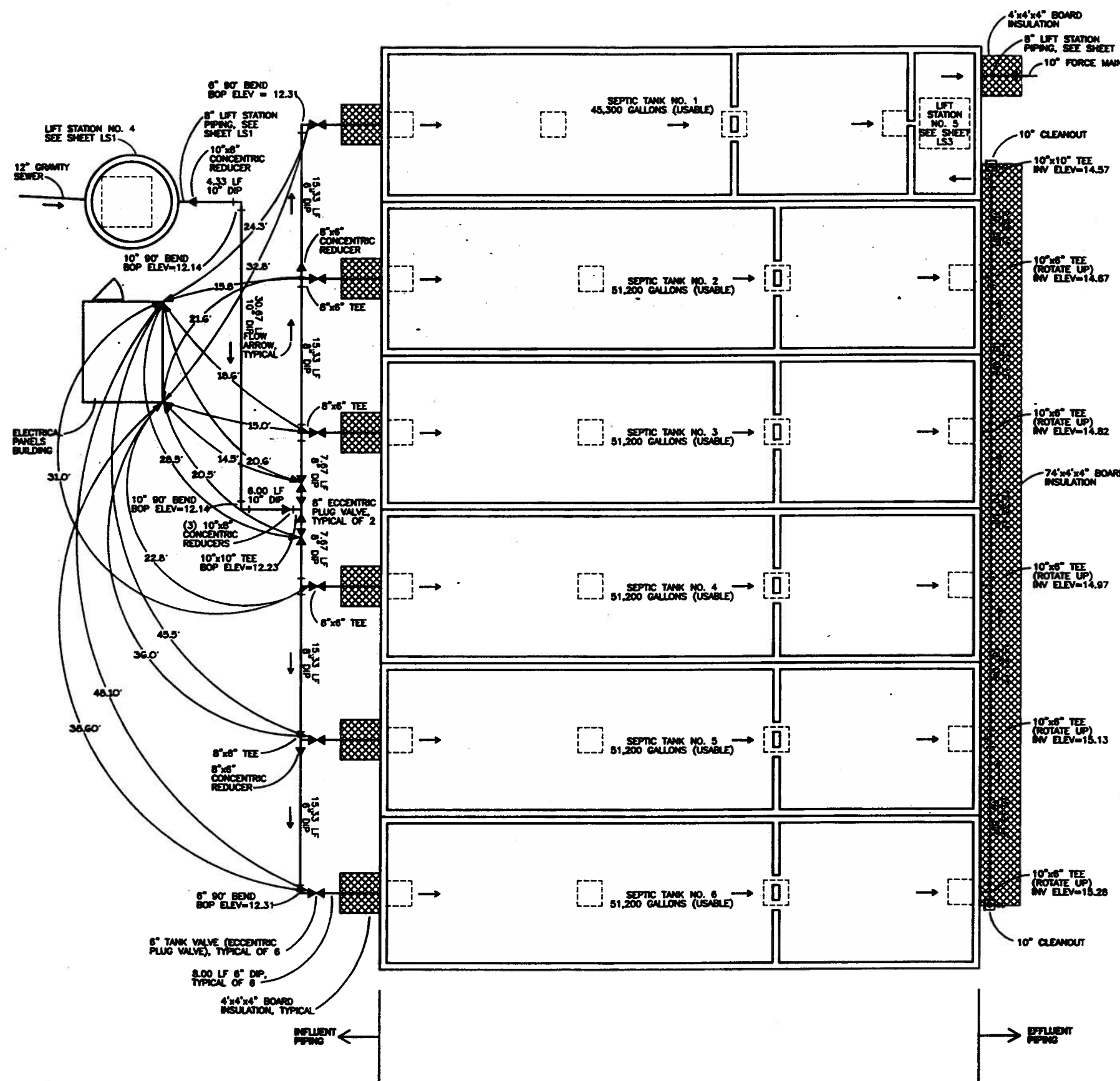
WHITTIER SEWER SYSTEM IMPROVEMENTS - PHASE II
WASTEWATER TREATMENT FACILITY
SITE PLAN

REVISION	DATE	BY	ADD'D AS/DATE	INTD.

Project No. 9527
 Date: JAN 1998
 Designed: PB
 Drawn: RB
 Approved: WWH

Sheet No. T1
 SHEET 8 OF 23





TANK VALVE SCHEDULE

PROVIDE EQUAL FLOWS TO EACH SEPTIC TANK BY THROTTLING FLOWS THROUGH THE 6" ECCENTRIC PLUG VALVES. DURING INITIAL OPERATION, UTILIZE THE VALVE OPEN PERCENTAGES SHOWN BELOW.

TANK NO. 1	6" VALVE OPEN 100%
TANK NO. 2	6" VALVE OPEN 96%
TANK NO. 3	6" VALVE OPEN 78%
TANK NO. 4	6" VALVE OPEN 78%
TANK NO. 5	6" VALVE OPEN 96%
TANK NO. 6	6" VALVE OPEN 100%

SEPTIC TANK NOTES

- Influent piping shall be Class 52 ductile iron pipe. All influent piping shall have restrained joints.
- Effluent piping shall be Class 50 ductile iron pipe.
- See Sheets T3 and T4 for details of piping near and within the septic tanks.
- See Sheets S1 and S2 for structural design.
- Provide equal flow to each tank utilizing the 6" eccentric plug valves. During startup operations, refer to the Tank Valve Schedule shown above for initial valve settings. Contractor shall adjust valves and confirm equal flow by dye testing.



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Charles L. Eggen
REGISTERED PROFESSIONAL ENGINEER
NO. 49318
STATE OF ALASKA
DATE

VILLAGE SAFE WATER

SECURITY SEAL

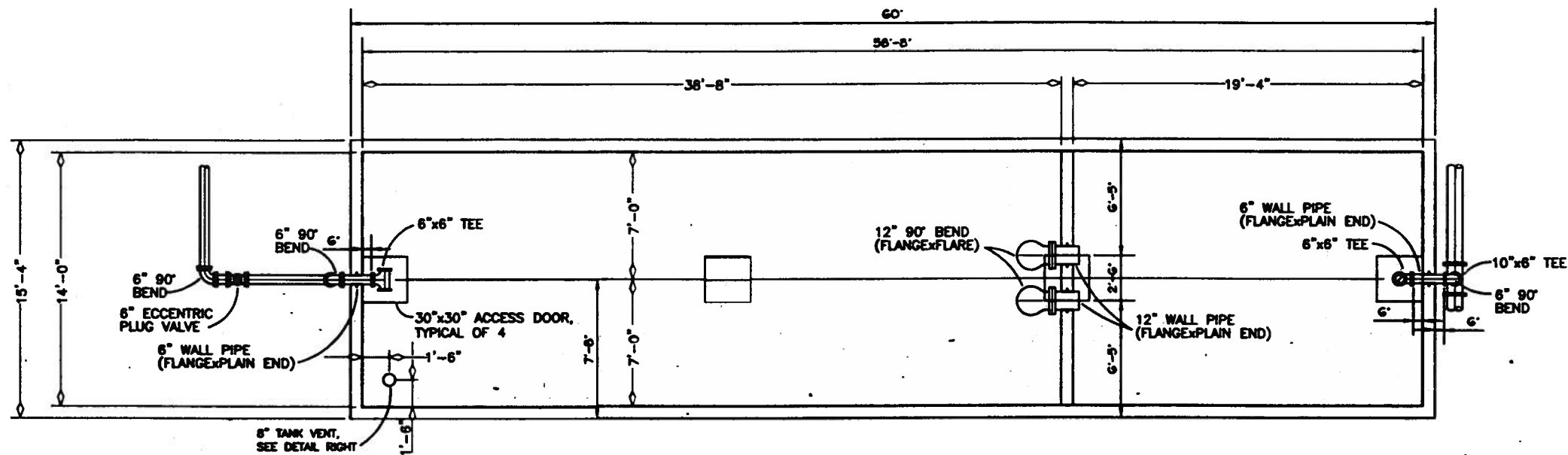
SEWAGE DISPOSAL

WHITTIER SEWER SYSTEM IMPROVEMENTS - PHASE II
WASTEWATER TREATMENT FACILITY SEPTIC TANK PIPING LAYOUT

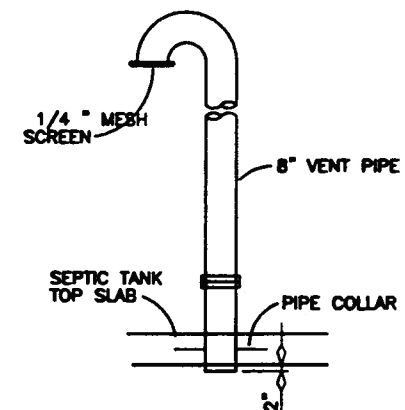
DATE	BY
12/29	MTC
REVISION	ADDED AS BUILT INFO.
NO.	
Project No.	9527
Date	JAN 1999
Designed	PB
Drawn	RB
Approved	WH

Sheet No. **T2**

SHEET **9** OF **23**



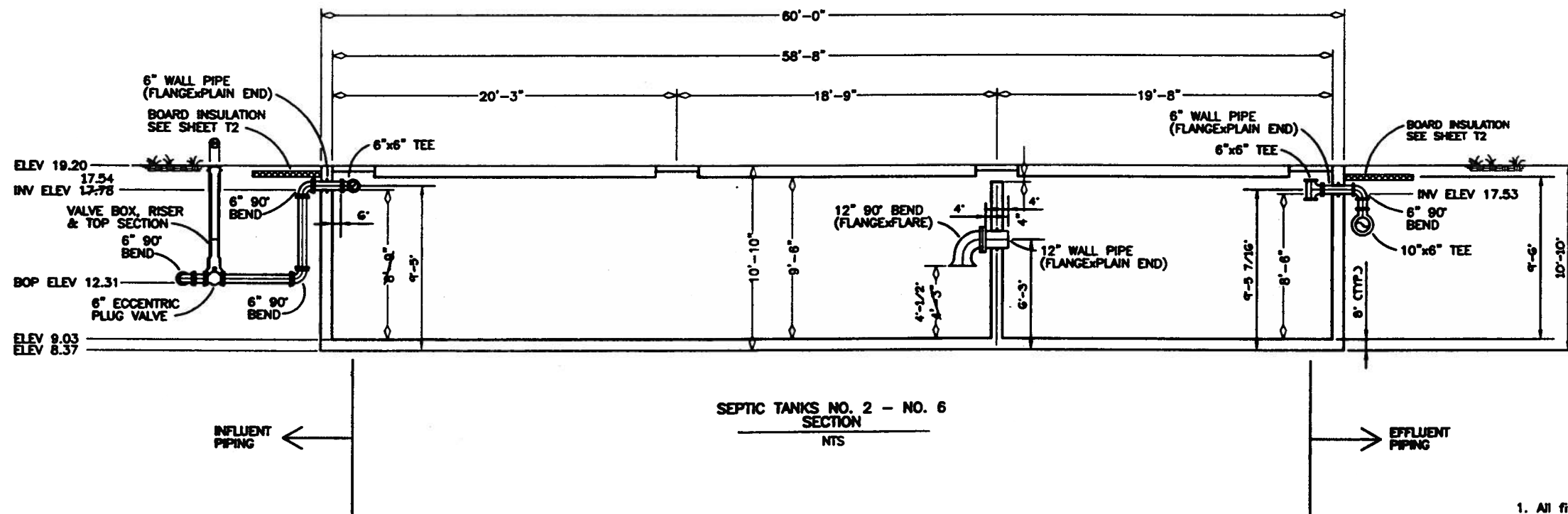
SEPTIC TANKS NO. 2 - NO. 6
PLAN VIEW
NTS



NOTES

- Vent shall be hot dip galvanized Schedule 40 steel pipe with pipe collar. Cast pipe and collar into top slab.
- Terminate vent 6" above top slab with a 180° return bend. Install 1/4" galvanized mesh insect screen over bend opening.

8" TANK VENT DETAIL
NTS



SEPTIC TANKS NO. 2 - NO. 6
SECTION
NTS



SEPTIC TANK NOTES

- All fittings within the septic tanks shall be flanged.
- All fittings outside the septic tanks shall be mechanical joint.
- Influent piping shall be Class 52 ductile iron pipe. All influent piping shall have restrained joints.
- Effluent piping shall be Class 50 ductile iron pipe.

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NAME: Charles L. Eggen
DATE:

VILLAGE SAFE WATER

STATE OF ALASKA
DIVISION OF PUBLIC SAFETY
REGISTERED PROFESSIONAL ENGINEER
NO. 4180-E

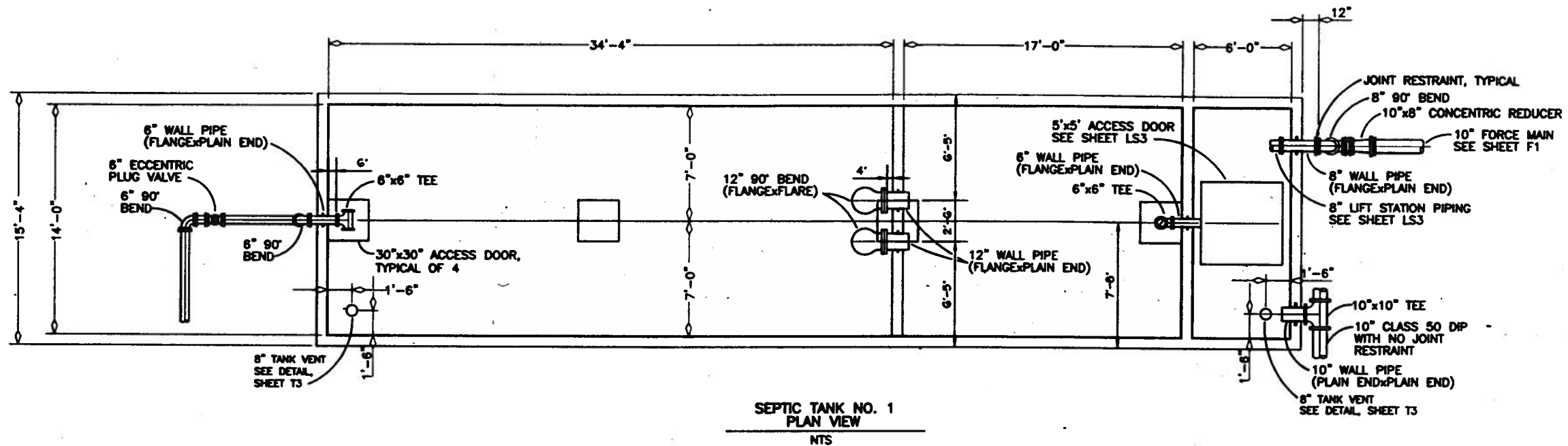
AS-BUILT

WHITTIER SEWER SYSTEM IMPROVEMENTS - PHASE II
WASTEWATER TREATMENT FACILITY
SEPTIC TANKS NO. 2 - NO. 6
SEPTIC PIPING DETAILS

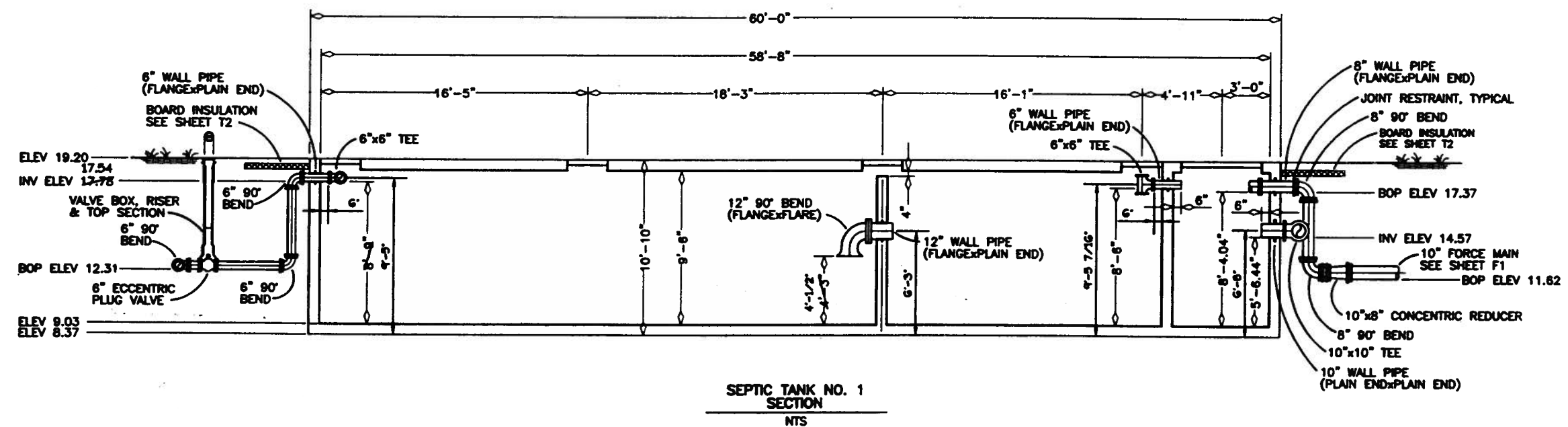
REVISION	DATE	BY	ADD'D AS-BUILT INFO
9527	JAN 1999	MTC	12/98

Project No. 9527
Date JAN 1999
Designed PB
Drawn RB
Approved WWH

Sheet No. T3
SHEET 10 OF 23



SEPTIC TANK NO. 1
PLAN VIEW
NTS



SEPTIC TANK NO. 1
SECTION
NTS

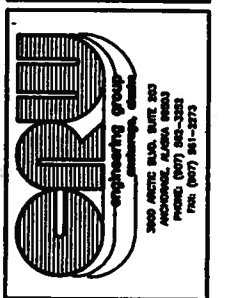
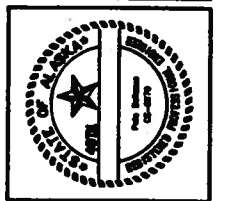
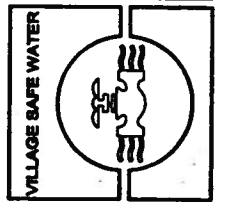


AS-BUILT

SEPTIC TANK NOTES

1. All fittings within the septic tank shall be flanged.
2. All fittings outside the septic tank shall be mechanical joint.
3. All piping shall be Class 52 ductile iron pipe and shall have restrained joints, except as noted.

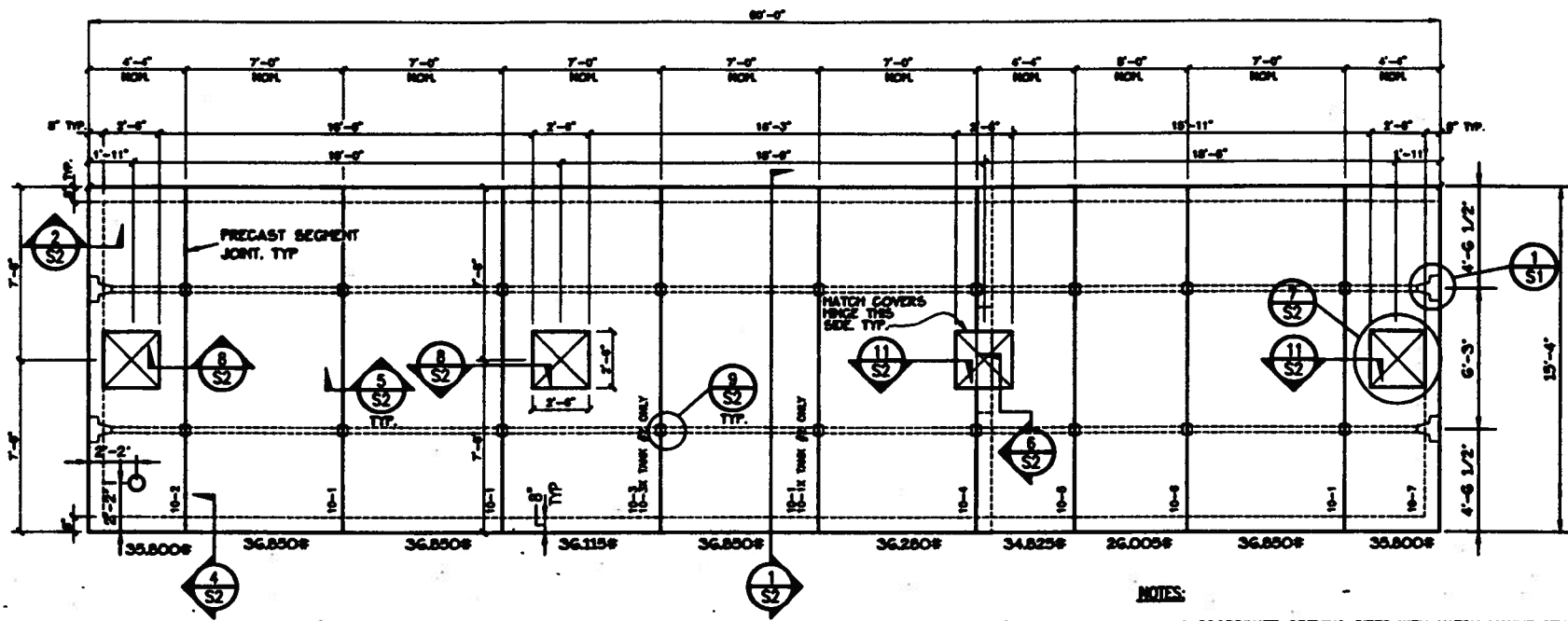
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Charles L. Eggen
NAME DATE



WHITTIER SEWER SYSTEM PHASE II
WASTEWATER TREATMENT FACILITY
SEPTIC TANK NO. 1
PIPING DETAILS

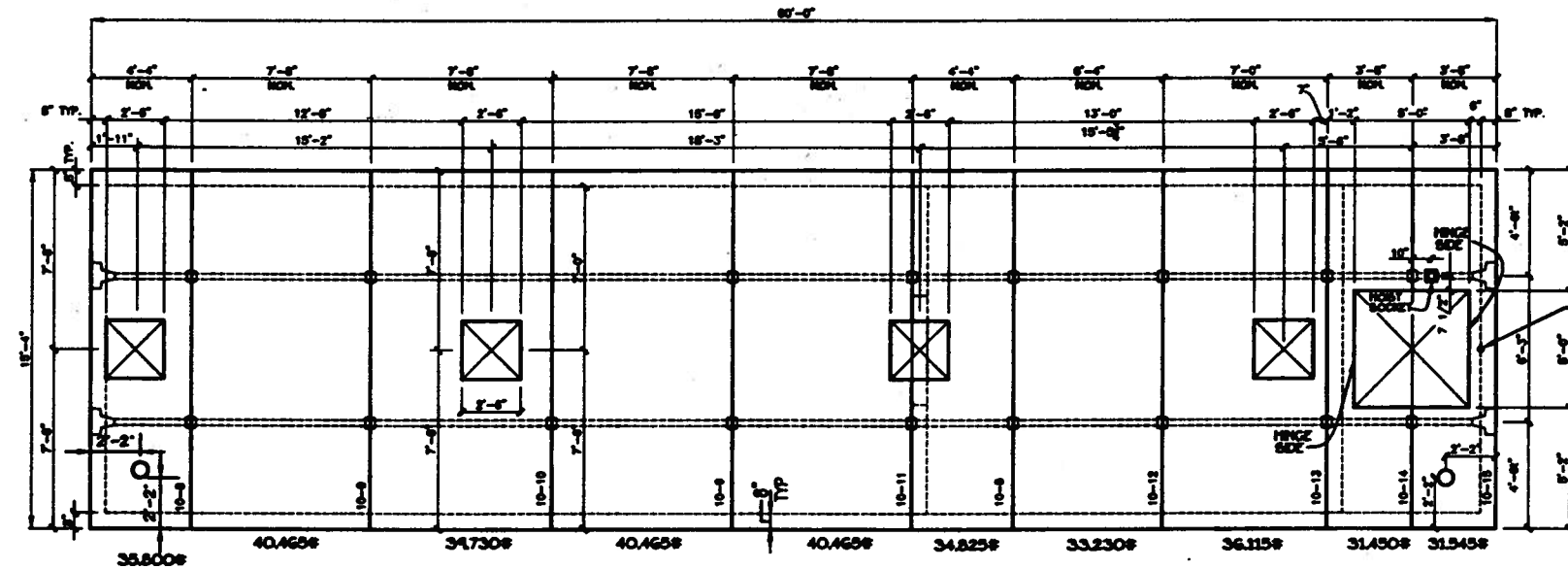
REVISION	DATE	BY	DATE
ADDED AS-BUILT INFO.	MTC 12/2/99		

Project No.	9527	Designed	PB	Drawn	RB	Approved	WH
Date	JAN 1999						



PRECAST CONCRETE TANK #2 - #6 PLAN
SCALE: 1/4" = 1'-0"

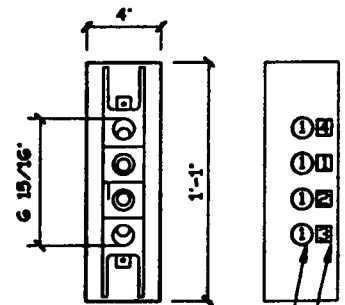
NOTES:
1. COORDINATE OPENING SIZES WITH HATCH MANUFACTURER, HATCH TO BE CAST INTEGRALLY WITH CONCRETE TANK WHEREVER POSSIBLE. COORDINATE LOCATIONS WITH CIVIL DWGS.



PRECAST CONCRETE TANK #1 PLAN
SCALE: 1/4" = 1'-0"

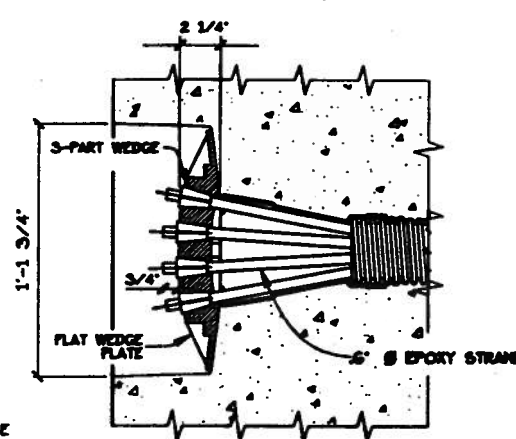
STRESSING PROCEDURE (PER CELL)

- CUT 32 PGS. .6 270K EPOXY COATED STRANDS APPROX. 65' LONG
- PLACE 4 STRAND IN EACH POST-TENSIONING DUCT.
- STRESS 2 - .6 STRANDS IN DUCT #1 TO .70fy F1 = 41.0k EA. $\Delta = 5 \frac{3}{8}$ ' INCLUDE SEATING LOSSES.
- STRESS 4 - .6 STRANDS IN DUCT'S #2, 3, 4 + F1 = 41.0k EA. $\Delta = 5 \frac{3}{8}$ '
- STRESS THE REMAINING 2 - .6 STRANDS IN DUCT #1 F1 = 41.0k EA.
- STRESS 4 - .6 STRANDS IN DUCTS #5, 6, 7 + 8 F1 = 41.0k EA. $\Delta = 5 \frac{3}{8}$ '
- GROUT EACH DUCT AS SOON AS POSSIBLE AFTER STRESSING ALL 4 - .6 STRANDS IN EACH DUCT, AND DRY PACK THE STRESSING BLOCKOUTS AT EACH END.
- THE TOTAL EFFECTIVE PRESTRESS FORCE PER TANK IS 1136.8 KIPS (34.9K/STRAND)



STRESSING SEQUENCE
NO. OF .6" STRANDS

1 CABLE TENSIONING DETAIL
SCALE: NTS



F4-0.6 ANCHORS
6" W/ 6" EPOXY STRAND
STRESSED = .70 Fy f. = 41.0 EA
Fp = 34.9K EA



AS-BUILT

GENERAL STRUCTURAL NOTES

RECORD DRAWING CERTIFICATE

UNIFORM BUILDING CODE, 1994 EDITION.
3000 PSF MAX DEAD + LIVE LOAD.

SET TANK SEGMENTS ON 6" THICK COMPACTED GRANULAR FILL OVER FIRM UNDISTURBED NATIVE SOILS OR COMPACTED SUBGRADE. ANY UNRELIABLE SOIL AT BOTTOM OF EXCAVATION SHALL BE REMOVED AND REPLACED WITH STRUCTURAL FILL COMPACTED TO 95% MINIMUM DENSITY. EXCAVATION SHALL BE BENTONITED AND INSPECTED BY GEO-TECHNICAL ENGINEER PRIOR TO PLACING TANK.

REINFORCEMENT

TANK LID = 40MBS 18-20 TRUCK LOADING
EQUILIBRIUM LATERAL FLUID PRESSURE - SOIL OR TANK CONTENTS
TANK WALLS = 63 PCF ACTING ANY DIRECTION

CONCRETE

ALL CONCRETE - f'c = 3000 PSI, MINIMUM W/C RATIO = 0.42, MINIMUM 9 BAGS OF CEMENT PER CUBIC YARD. SEE SPECIFICATIONS FOR ADJUSTMENTS. SPECIAL INSPECTION REQUIRED.

UNLESS OTHERWISE NOTED, REINFORCING STEEL SHALL BE EPOXY COATED AND CONFORM TO ASTM A615, GRADE 60. SUBMIT REINFORCING STEEL SHOP DRAWINGS WITH DETAILS PER ACI 315 MINIMUM OF STANDARD PRACTICE. LAP BARS WITH A CLASS B SPLICE.

WHERE PRECAST MEMBERS ARE DESIGNED TO BE ABUTTED TOGETHER IN THE FINISHED WORK, EACH MEMBER SHALL BE MATCH-CAST WITH ITS ADJACENT MEMBER TO ENSURE PROPER FIT DURING ERECTION. AS THE MEMBERS ARE MATCH-CAST THEY MUST BE PRECISELY ALIGNED TO ACHIEVE THE FINAL STRUCTURE GEOMETRY. DURING ALIGNMENT, ADJUSTMENTS TO COMPENSATE FOR DEFLECTION SHALL BE MADE.

PRECASTER IS RESPONSIBLE FOR DESIGNING AND PROVIDING ALL LIFTING DEVICES. LIFTING INSERT BLOCKOUTS SHALL BE GROUTED PRIOR TO BACKFILLING.

WALLS

REINFORCE AS SHOWN ON DRAWINGS.

AT CORNERS, PROVIDE CORNER BARS IN OUTSIDE FACE OF SAME SIZE AND SPACING AS HORIZONTAL BARS, 40 DIA. EACH LEG.

AT INTERSECTIONS, PROVIDE CORNER BARS OF SAME SIZE, NUMBER AND SPACING AS HORIZONTAL BARS OF INTERSECTING WALL, 40 DIA. EACH LEG.

SUBMIT SHOP DRAWINGS SHOWING EMBEDDED HEAD, BLOCKOUTS, ADDED REINFORCING REQUIRED FOR LIFTING, AND TYPE AND LOCATION OF ALL LIFTING DEVICES. PROVIDE TEMPORARY BRACING TO RESIST WIND LOADING UNTIL PERMANENT SUPPORT IS INSTALLED. FABRICATION, TRANSPORTATION, AND ERECTION PER PCI STANDARDS.

CONCRETE COVER: 2"

FORMWORK

REINFORCING STEEL, DETAILS, AND SUBMITTALS AS NOTED FOR REINFORCED CONCRETE. PRESSUREING BARS - DURING THROUGH SYSTEMS, EPOXY COATED REFORMED BARS PER ASTM A722, TYPE 1, Fu = 190 KSI. INSTALL AND STRESS TENDONS PER PCI STANDARDS. JACK TENDONS TO 0.85fy. PRESSURE GROUT DUCTS AFTER STRESSING. SUBMIT SHOP DRAWINGS SHOWING ANCHORAGE SYSTEM, JACKING FORCES, AND TENSIONING SEQUENCE.

INSPECTION

THE FOLLOWING SPECIAL INSPECTIONS SHALL BE PERFORMED BY QUALIFIED PERSONNEL EMPLOYED BY THE OWNER OR THE OWNER'S AGENT. THE OWNER OR THE OWNER'S AGENT SHALL SUBMIT INSPECTOR'S RESUMES TO THE ENGINEER FOR APPROVAL. THE CONTRACTOR SHALL COORDINATE WORK WITH THE SPECIAL INSPECTORS.

SPECIAL INSPECTORS SHALL OBSERVE THE WORK ASSIGNED FOR PERFORMANCE WITH APPROVED DESIGN DRAWINGS AND SPECIFICATIONS. INSPECTION REPORTS SHALL BE FURNISHED TO THE BUILDING DEPARTMENT/OWNER AND THE ENGINEER OF RECORD. ALL DISCREPANCIES SHALL BE BROUGHT TO THE IMMEDIATE ATTENTION OF THE CONTRACTOR FOR CORRECTION, AND TO THE ATTENTION OF THE ENGINEER OF RECORD.

THE SPECIAL INSPECTORS SHALL SUBMIT A FINAL SIGNED REPORT STATING WHETHER THE WORK REQUIRING SPECIAL INSPECTION WAS, TO THE BEST OF THE INSPECTORS' KNOWLEDGE, IN CONFORMANCE WITH THE APPROVED PLANS AND SPECIFICATIONS AND THE APPLICABLE WORKMANSHIP PROVISIONS OF THE APPLICABLE CODES.

PROVIDE THE FOLLOWING SPECIAL INSPECTIONS PER SECTION 1701 OF THE 1994 UNIFORM BUILDING CODE (UBC):

REINFORCING STEEL:
PRIOR TO CLOSING THE FORMS AND DELIVERY OF CONCRETE.

PRESSUREING STEEL TENDONS:
DURING ALL STRESSING AND GROUTING OF TENDONS.

REINFORCED CONCRETE:
DURING THE CURING OF TEST SPECIMENS FOR SLUMP, AIR ENTRAINMENT, AND COMPRESSIVE STRENGTH CYLINDERS AND PLACES OF CONCRETE, FOR A MINIMUM OF ONE HOUR AT THE BEGINNING OF EACH POUR.

MISCELLANEOUS

REFER TO CIVIL DRAWINGS FOR OPENINGS AND DIMENSIONS NOT SHOWN.

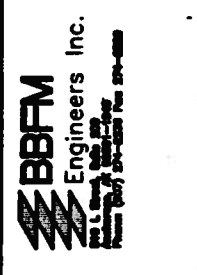
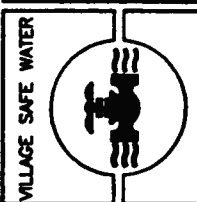
SHOP DRAWINGS SHALL BE SUBMITTED AND REVIEWED PRIOR TO FABRICATION.

VERIFY ALL DIMENSIONS AND CONDITIONS AT THE PROJECT SITE PRIOR TO STARTING WORK AND NOTIFY THE ENGINEER IMMEDIATELY OF ANY DISCREPANCIES.

PROVIDE TEMPORARY BRACING AND SHORING AS REQUIRED FOR STABILITY OF THE STRUCTURE DURING ALL PHASES OF CONSTRUCTION.

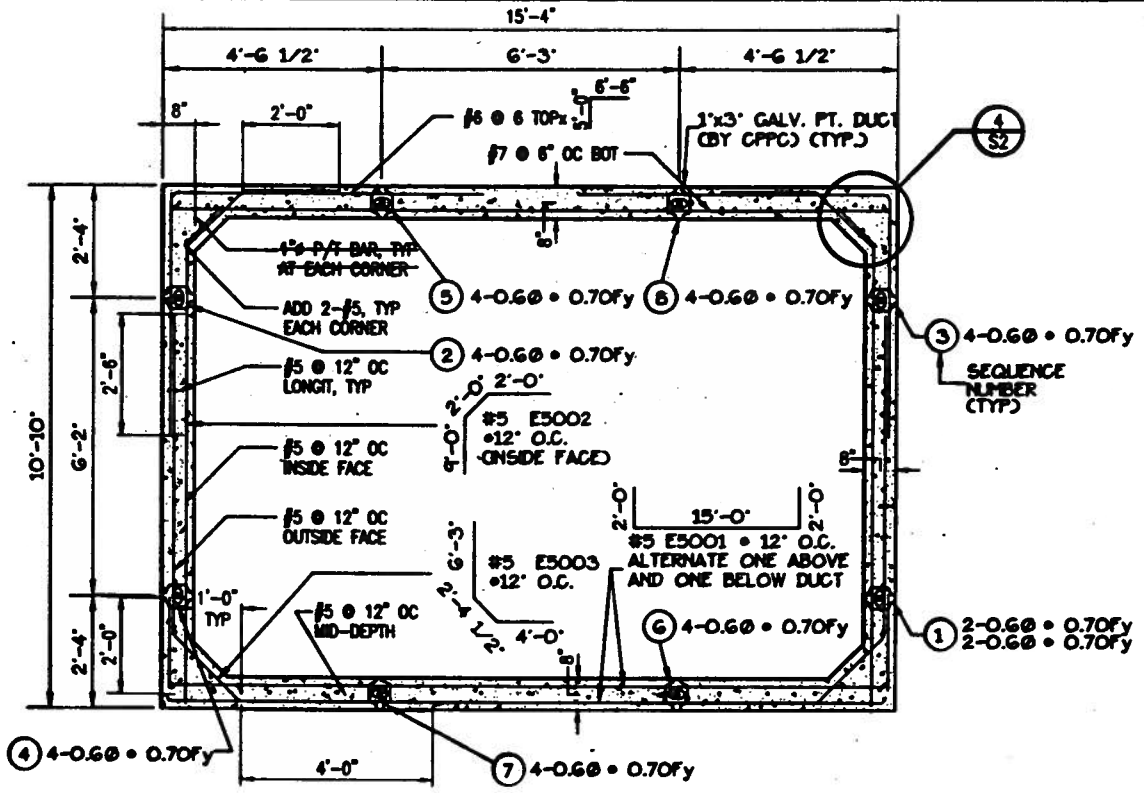
REFER TO SPECIFICATIONS FOR INFORMATION NOT CONTAINED IN THESE GENERAL NOTES.

RECORD DRAWING CERTIFICATE
THESE DRAWINGS REFLECT RECORDED INFORMATION OBTAINED DURING CONSTRUCTION. INFORMATION PROVIDED HEREIN IS ACCURATE TO THE BEST OF MY KNOWLEDGE.
Charles L. Roberts
NAME DATE

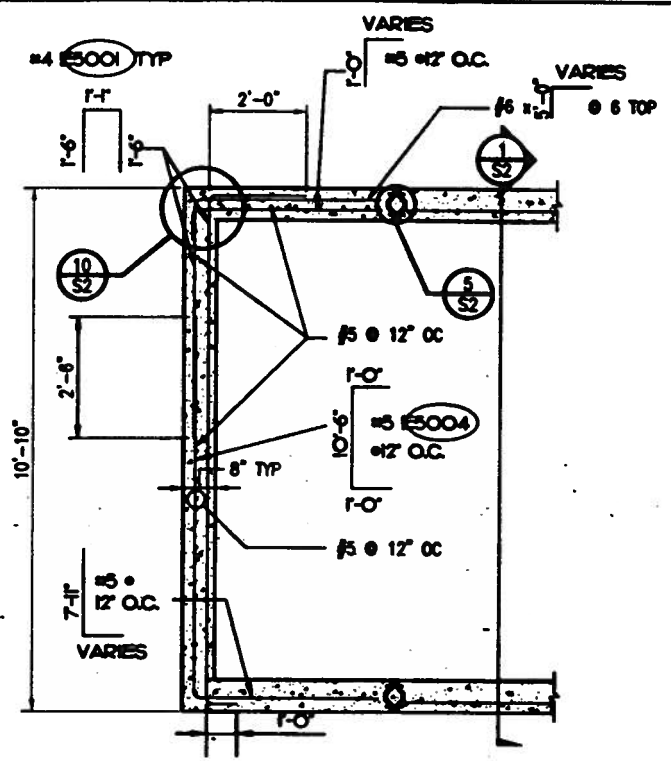


WHITTIER SEWER SYSTEM IMPROVEMENTS - PHASE II
SEPTIC TANK

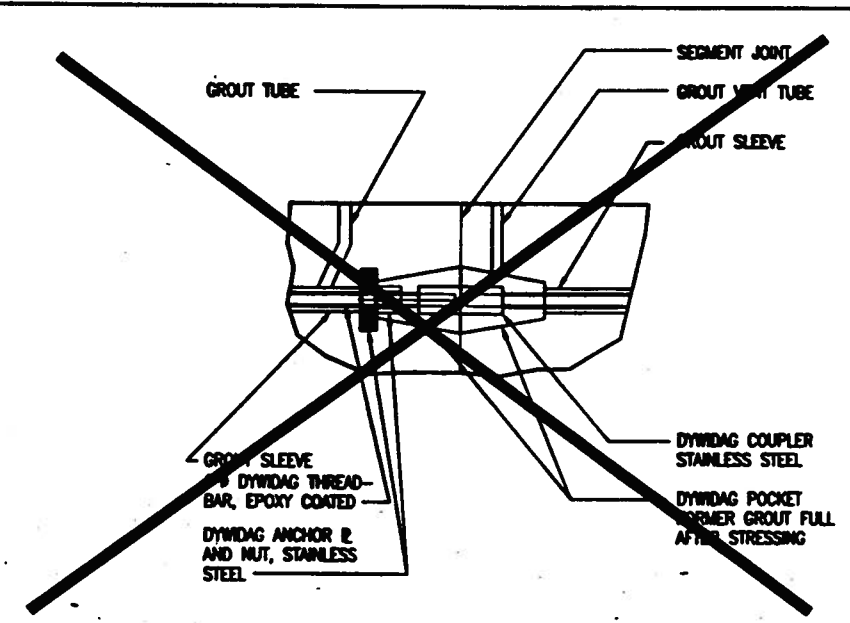
REVISION	DATE	BY	DATE
ADDED AS-BUILT INFO.	12/29/99	MTC	12/29/99
Project No.	9527	Date	JAN 1999
Designed	TJF	Drawn	KWK
Approved	TJF		
Sheet No.	S1		
SHEET	12	of	23



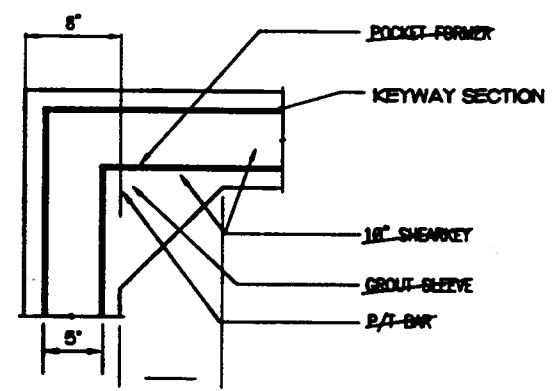
1 TANK SECTION
SCALE: 1/2" = 1'-0"



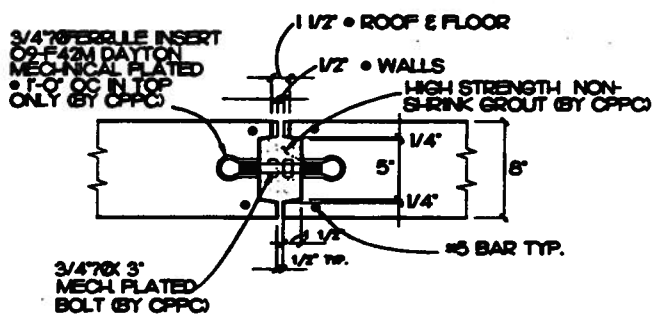
2 SECTION AT END SEGMENT
SCALE: 1/2" = 1'-0"



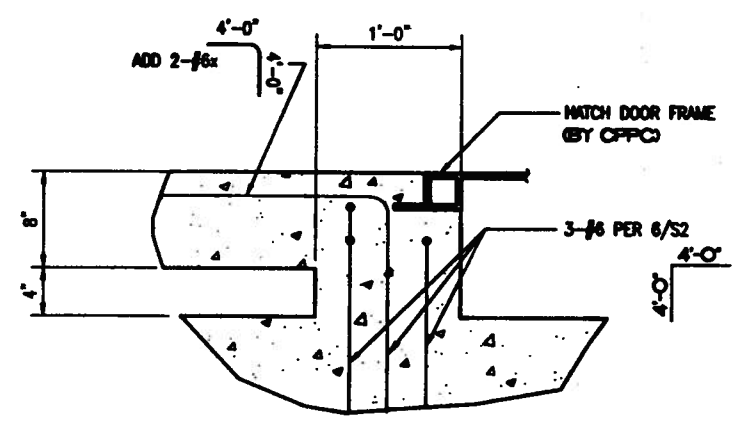
3 POST-TENSION ANCHOR AND COUPLER
SCALE: 1 1/2" = 1'-0"



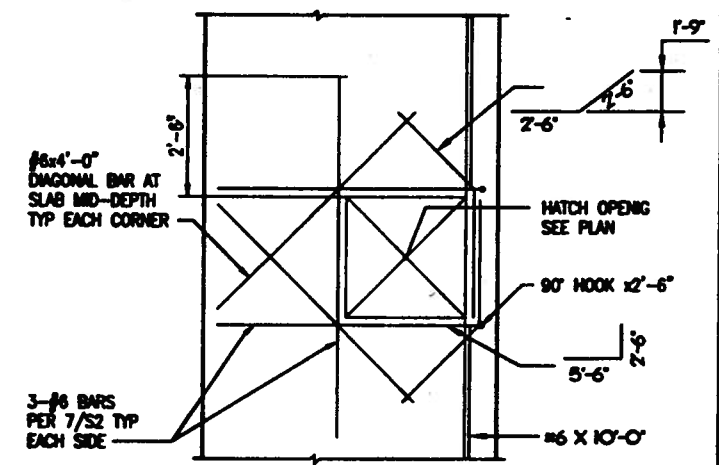
4 SHEARKEY AT CORNER
SCALE: 1 1/2" = 1'-0"



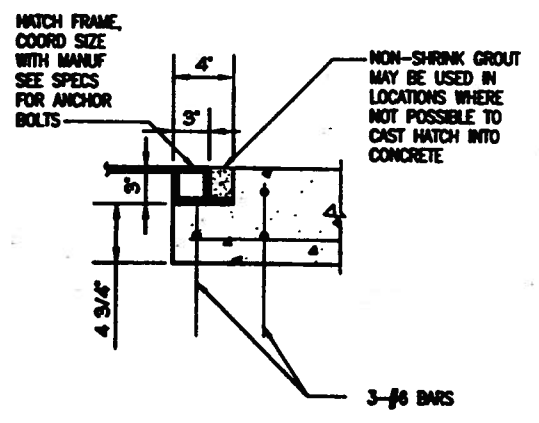
5 TYPICAL JOINT
SCALE: 1 1/2" = 1'-0"



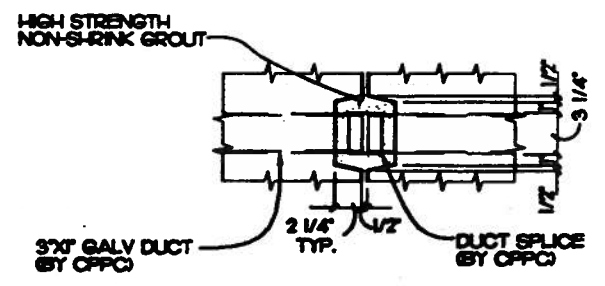
6 Baffle Wall at Hatch
SCALE: 1 1/2" = 1'-0"



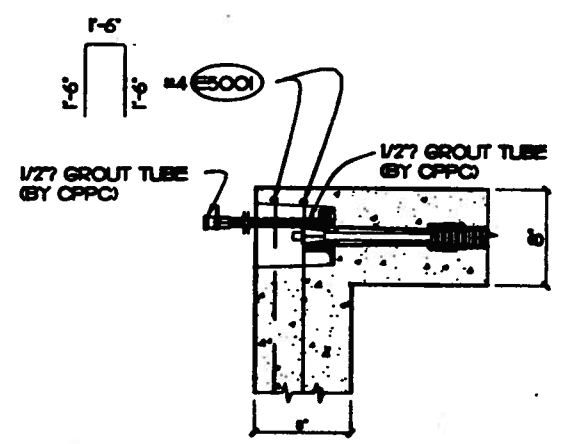
7 PARTIAL PLAN AT HATCH
SCALE: 1/2" = 1'-0"



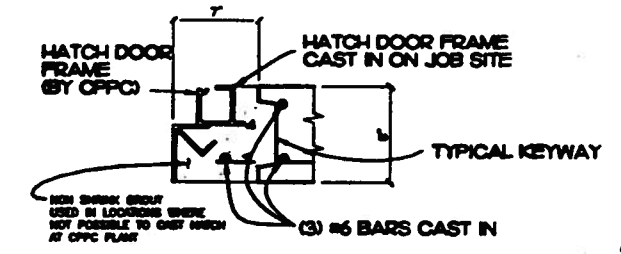
8 HATCH AT TANK LID
SCALE: 1 1/2" = 1'-0"



9 JOINT AT TANK BOTTOM
SCALE: 1 1/2" = 1'-0"



10 SECTION
SCALE: 1 1/2" = 1'-0"



11 SECTION
SCALE: 1 1/2" = 1'-0"



AS-BUILT

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Charles L. Egan
NAME DATE

VILLAGE SAFE WATER

STATE OF ALASKA
4921
PROF. A. ELLER
CE 4391
ENGINEER

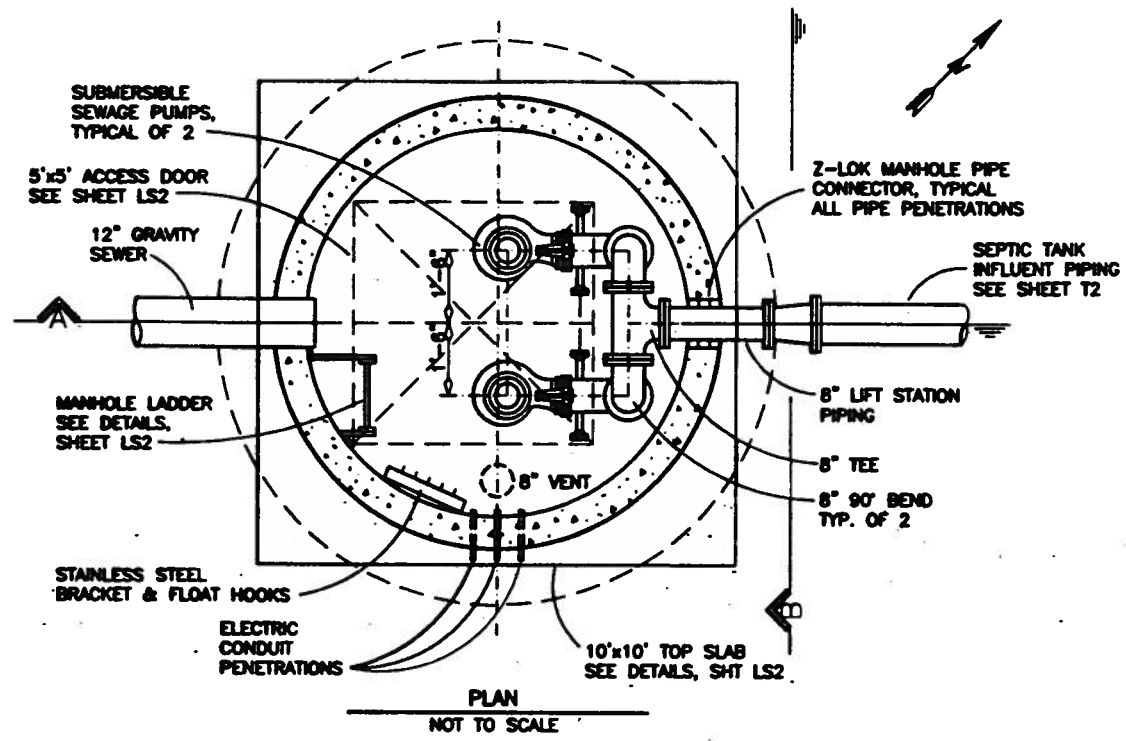
BBFM Engineers Inc.
1000 W. 10th Ave., Anchorage, Alaska 99501
Phone: (907) 562-1111

WHITTIER SEWER SYSTEM IMPROVEMENTS - PHASE II
SEPTIC TANK

REVISION	BY	DATE
ADDED AS-BUILT INFO.	JWC	12/99

Project No. 9527
Date: JAN 1999
Designed: T.J.F.
Drawn: K.W.K.
Approved: T.J.F.

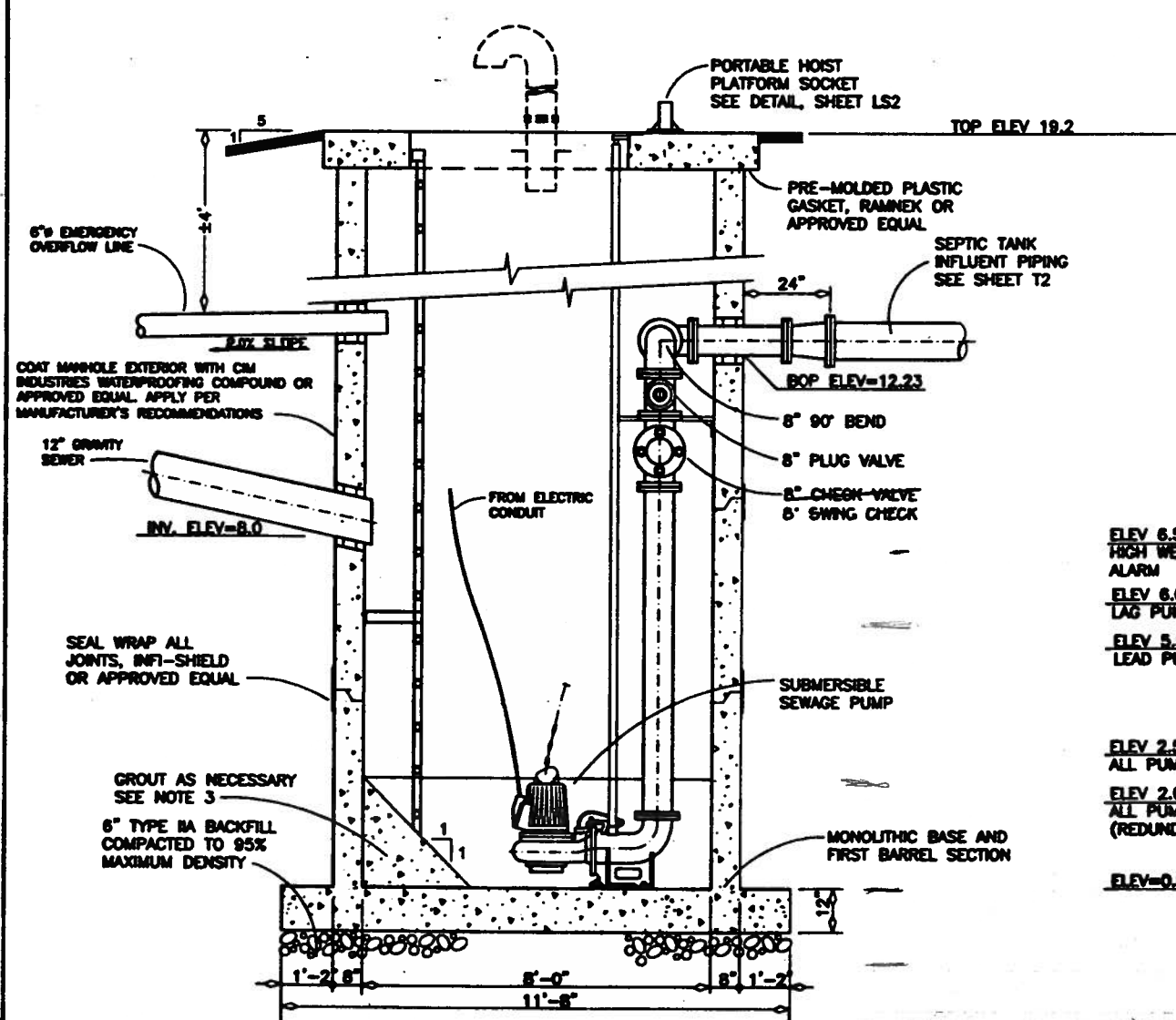
Sheet # 13 of 23



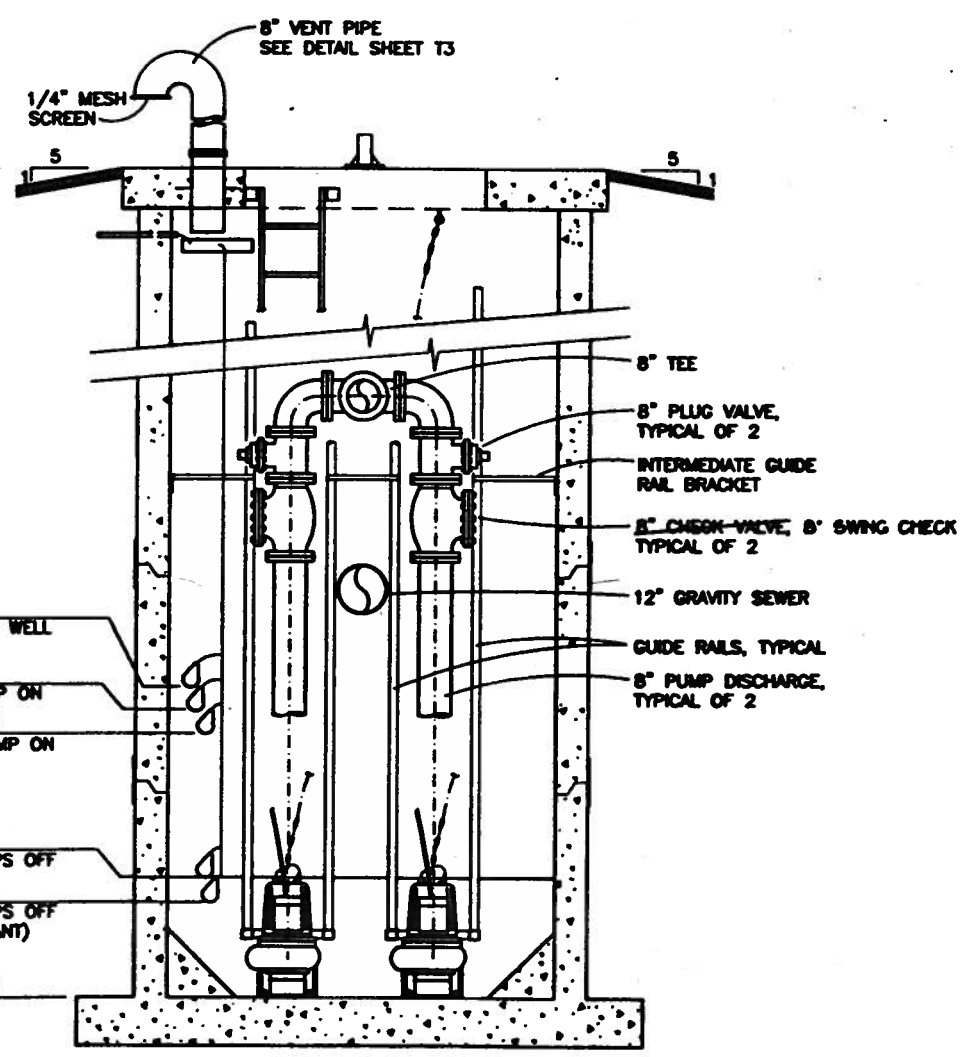
PLAN
NOT TO SCALE

LIFT STATION NO. 4 NOTES

1. MANHOLE FOR LIFT STATION SHALL CONFORM TO MASS SANITARY MANHOLE TYPE C EXCEPT AS MODIFIED BY THESE PLANS.
2. EXCAVATIONS ADJACENT TO LIFT STATION SHALL BE BACKFILLED WITH NATIVE MATERIAL, PLACE IN 8-INCH LIFTS AND COMPACT TO 95% OF MAXIMUM DENSITY. USE LIGHT HAND COMPACTION EQUIPMENT AS NECESSARY TO AVOID DAMAGE TO STRUCTURE AND APPURTENANCES.
3. GROUT BOTTOM OF WET WELL TO PROVIDE MINIMUM 1:1 SLOPE TO PUMP SUCTION. ELEVATION OF GROUT SHALL NOT EXCEED ELEVATION 2.5 FEET IN WET WELL.
4. ALL LIFT STATION PIPING SHALL BE CLASS S2 DIP ALL LIFT STATION FITTINGS SHALL BE FLANGED.



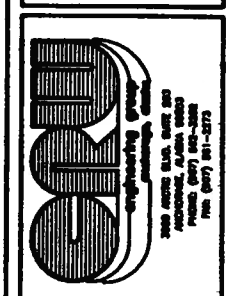
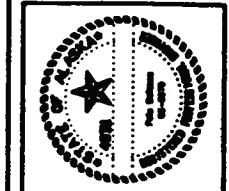
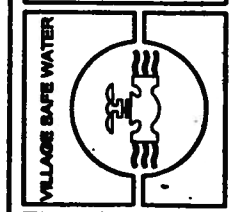
SECTION A
NOT TO SCALE



SECTION B
NOT TO SCALE



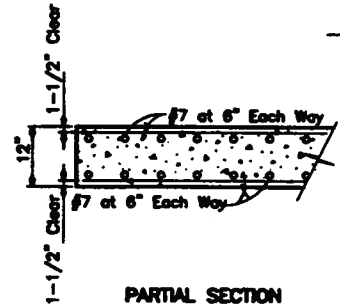
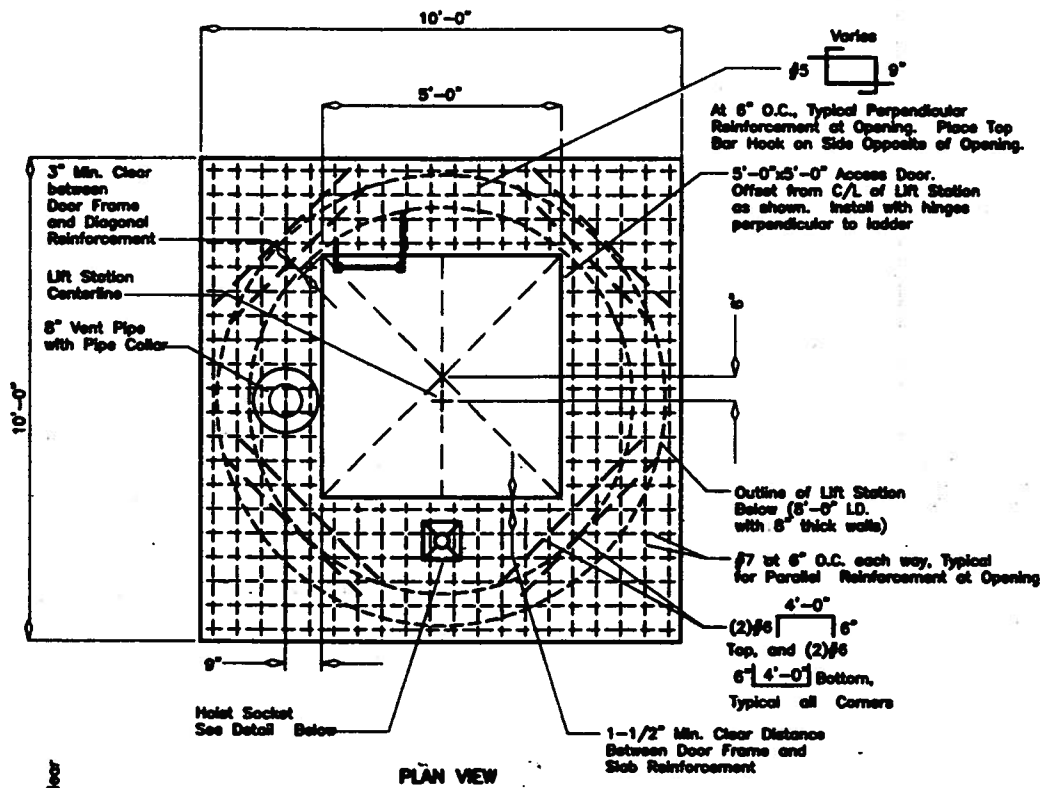
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REVISION INFORMATION OBTAINED
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IS ACCURATE TO THE BEST OF
MY KNOWLEDGE.
Charles J. ...
DATE



WHITTIER SEWER SYSTEM
IMPROVEMENTS - PHASE II
LIFT STATION NO. 4

REVISION	DATE	BY	ADD'D ASBUILT INFO.

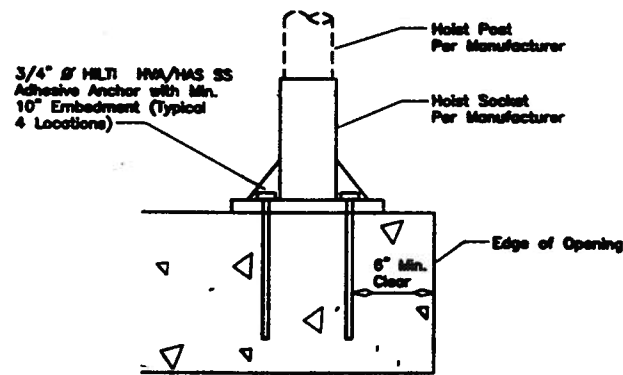
Project No. 0527
Date: JAN 1999
Designed: PB
Drawn: RB
Approved: WHH



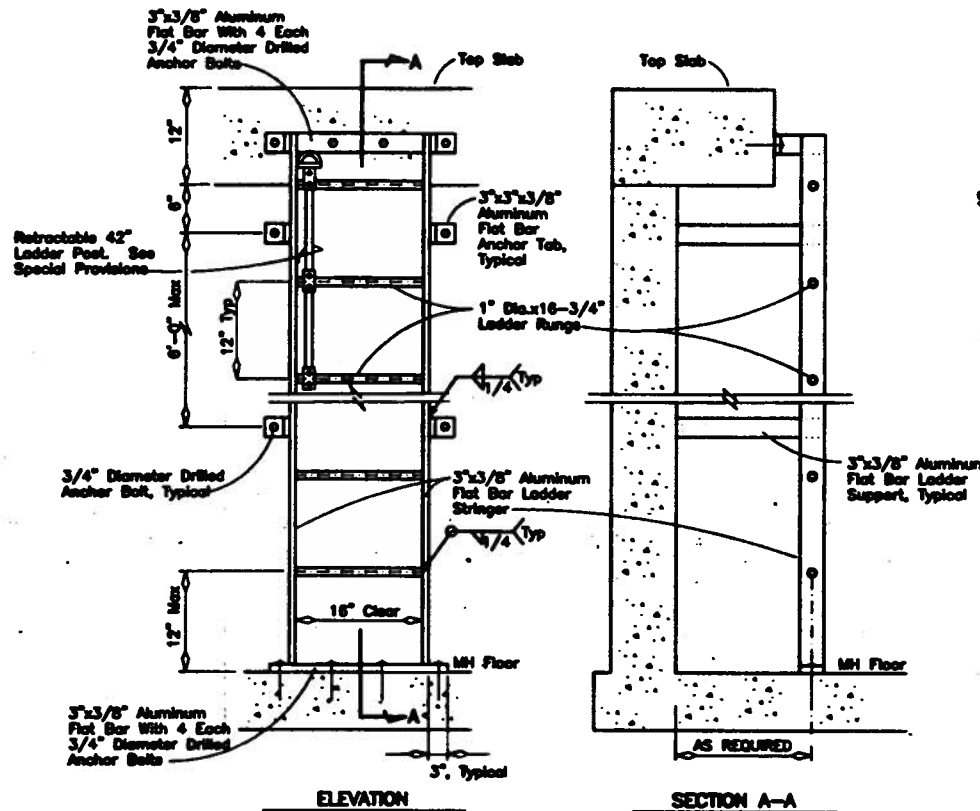
TOP SLAB NOTES:

1. Cast top slab with access door frame in place.
 2. Cast top slab with vent pipe and collar in place.
 3. Provide eye bolts as required for lifting and placement. Fabricate eye bolts with top slab and weld to the rebar; cut flush with top surface after placement.
- F_c=4000 psi minimum
F_y=80 ksi (ASTM A615, Grade 80)

1 LIFT STATION NO. 4 TOP SLAB DETAILS
Not To Scale



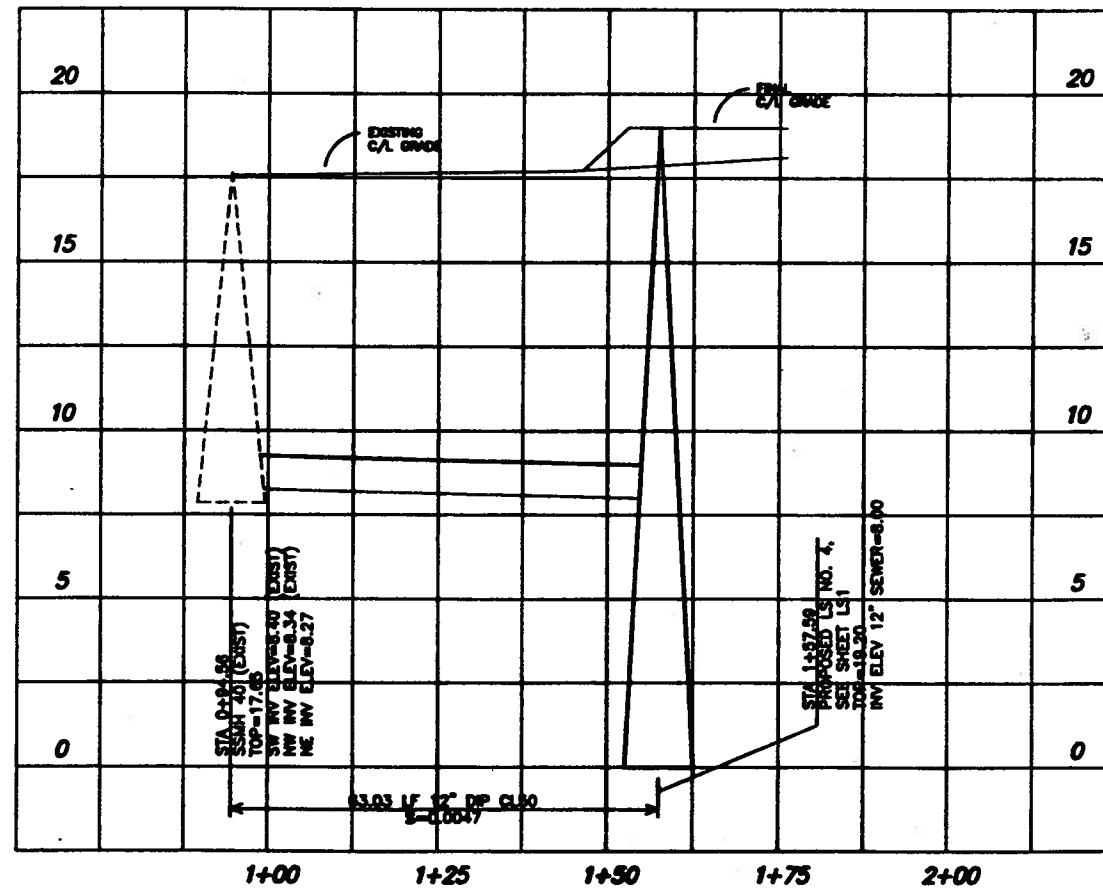
2 LIFT STATION NO. 4 HOIST SOCKET DETAIL
Not To Scale



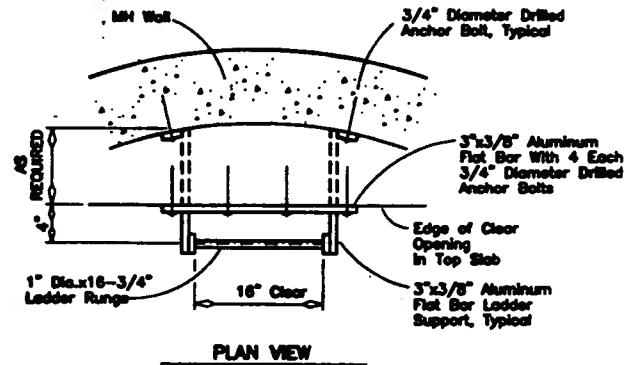
MANHOLE LADDER NOTES:

1. Drill 1-1/16" diameter holes in ladder stringers to support ladder rungs prior to welding.
2. All sharp corners and edges shall be rounded off.
3. Ladder rungs shall be of extruded Aluminum, non-slip, 800 lb.
4. Connectors and anchor bolts shall be Stainless Steel.
5. Minimum embedment = 5" for anchor bolts in concrete.
6. Ladder shall accommodate Retractable Ladder Post assembly.

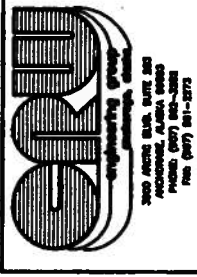
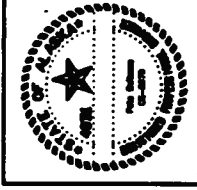
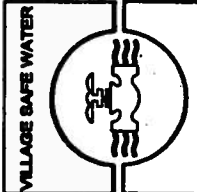
3 LIFT STATION NO. 4 LADDER DETAILS
Not To Scale



4 PROFILE: SSMH 40 TO LS NO. 4
Not To Scale



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Check of [Signature] DATE

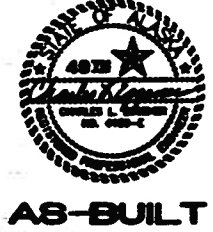


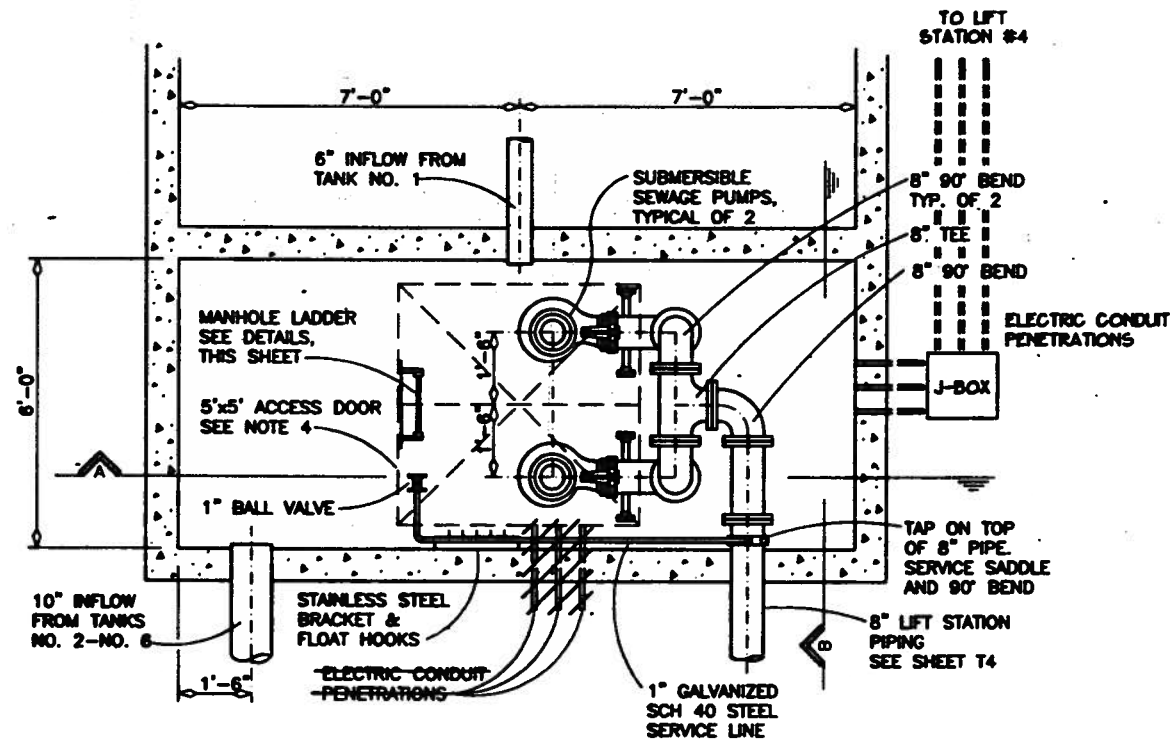
WHITTIER SEWER SYSTEM IMPROVEMENTS - PHASE II
LIFT STATION DETAILS

REVISION	BY	DATE

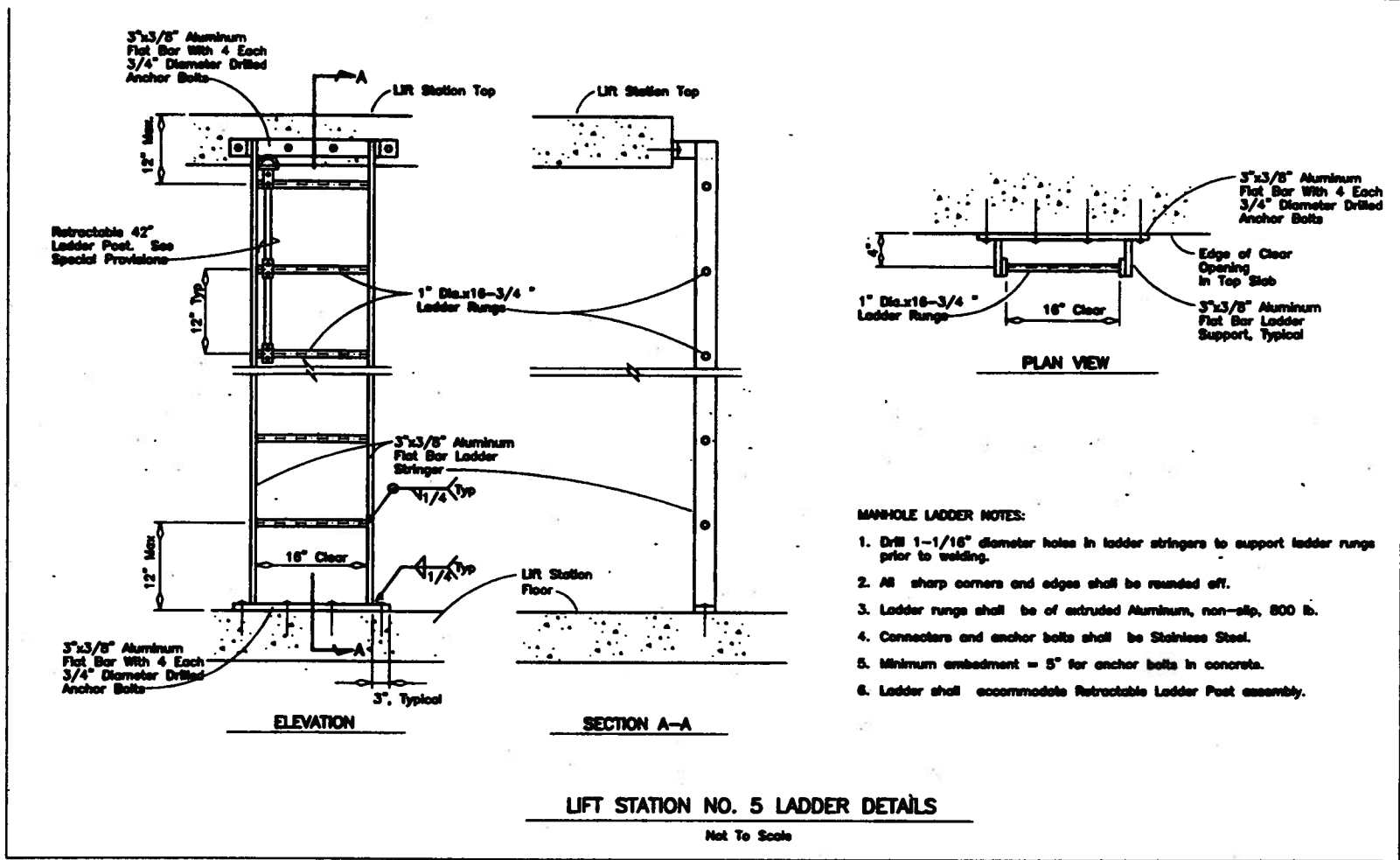
Project No. 9527	Date: JAN 1999	Designed: PB	Drawn: RB	Approved: WHH
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Sheet No. **LS2**
SHEET 15 OF 23



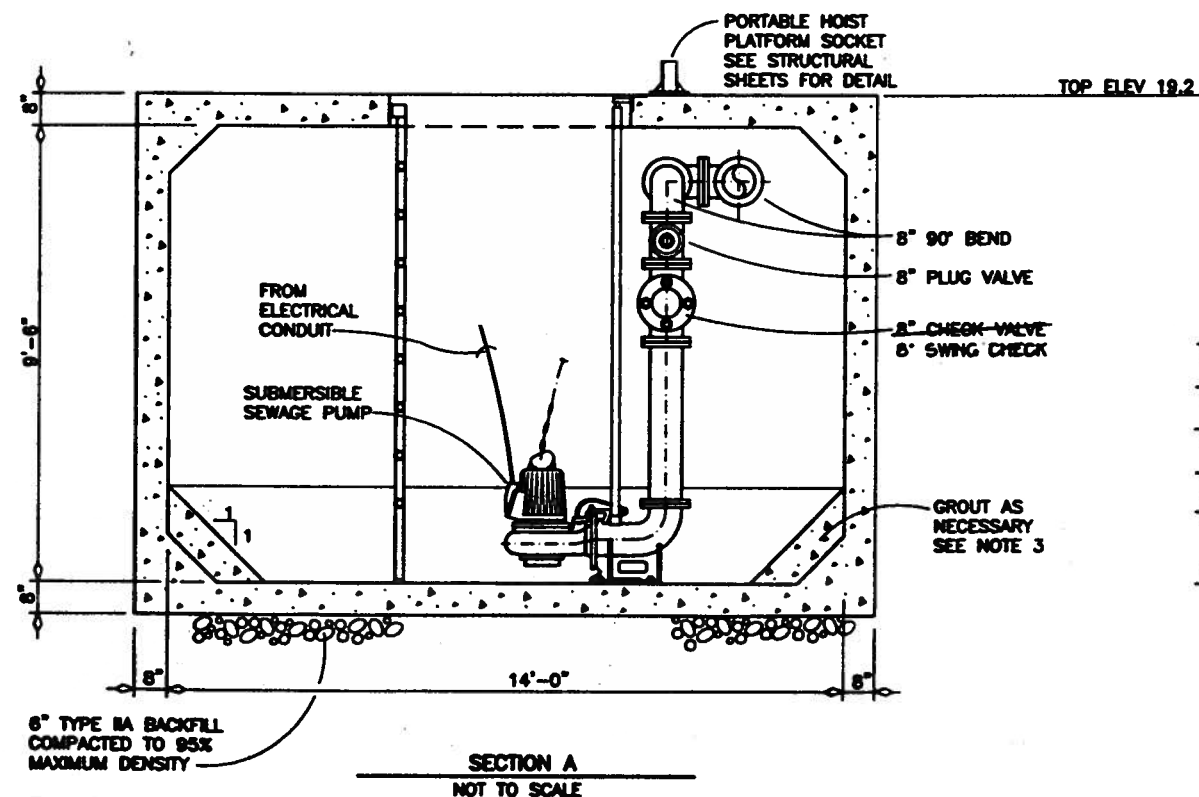


LIFT STATION # 5 PLAN
NOT TO SCALE

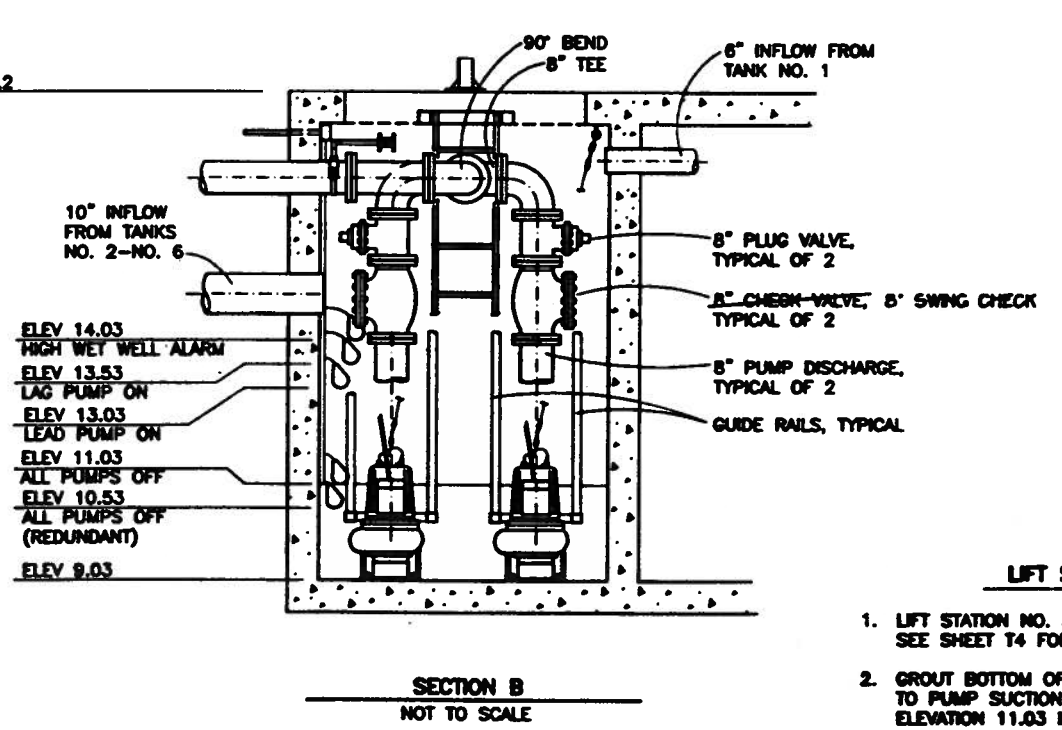


LIFT STATION NO. 5 LADDER DETAILS
Not To Scale

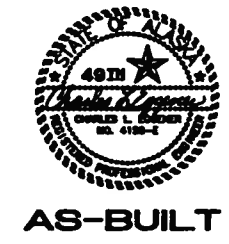
- MANHOLE LADDER NOTES:
1. Drill 1-1/16" diameter holes in ladder stringers to support ladder rungs prior to welding.
 2. All sharp corners and edges shall be rounded off.
 3. Ladder rungs shall be of extruded Aluminum, non-slip, 800 lb.
 4. Connectors and anchor bolts shall be Stainless Steel.
 5. Minimum embedment = 5" for anchor bolts in concrete.
 6. Ladder shall accommodate Retractable Ladder Post assembly.



SECTION A
NOT TO SCALE



SECTION B
NOT TO SCALE



LIFT STATION NO. 5 NOTES

1. LIFT STATION NO. 5 IS LOCATED WITHIN SEPTIC TANK NO. 1. SEE SHEET T4 FOR PIPING ELEVATIONS.
2. GROUT BOTTOM OF WET WELL TO PROVIDE MINIMUM 1:1 SLOPE TO PUMP SUCTION. ELEVATION OF GROUT SHALL NOT EXCEED ELEVATION 11.03 IN WET WELL.
3. ALL LIFT STATION PIPING SHALL BE CLASS S2 DP. ALL LIFT STATION FITTINGS SHALL BE FLANGED.
4. INSTALL ACCESS DOOR WITH HINGES PERPENDICULAR TO LADDER.

RECORD DRAWING CERTIFICATE

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Charles L. Rogers & Sons, Inc.

VILLAGE SAFE WATER

STATE OF ALABAMA PROFESSIONAL ENGINEER

CHARLES L. ROGERS, INC. ENGINEERING ARCHITECTS

200 ARCADE BLDG., SUITE 100, BOYDSDALE, ALABAMA 36824
PHONE: (205) 982-3282 FAX: (205) 981-2873

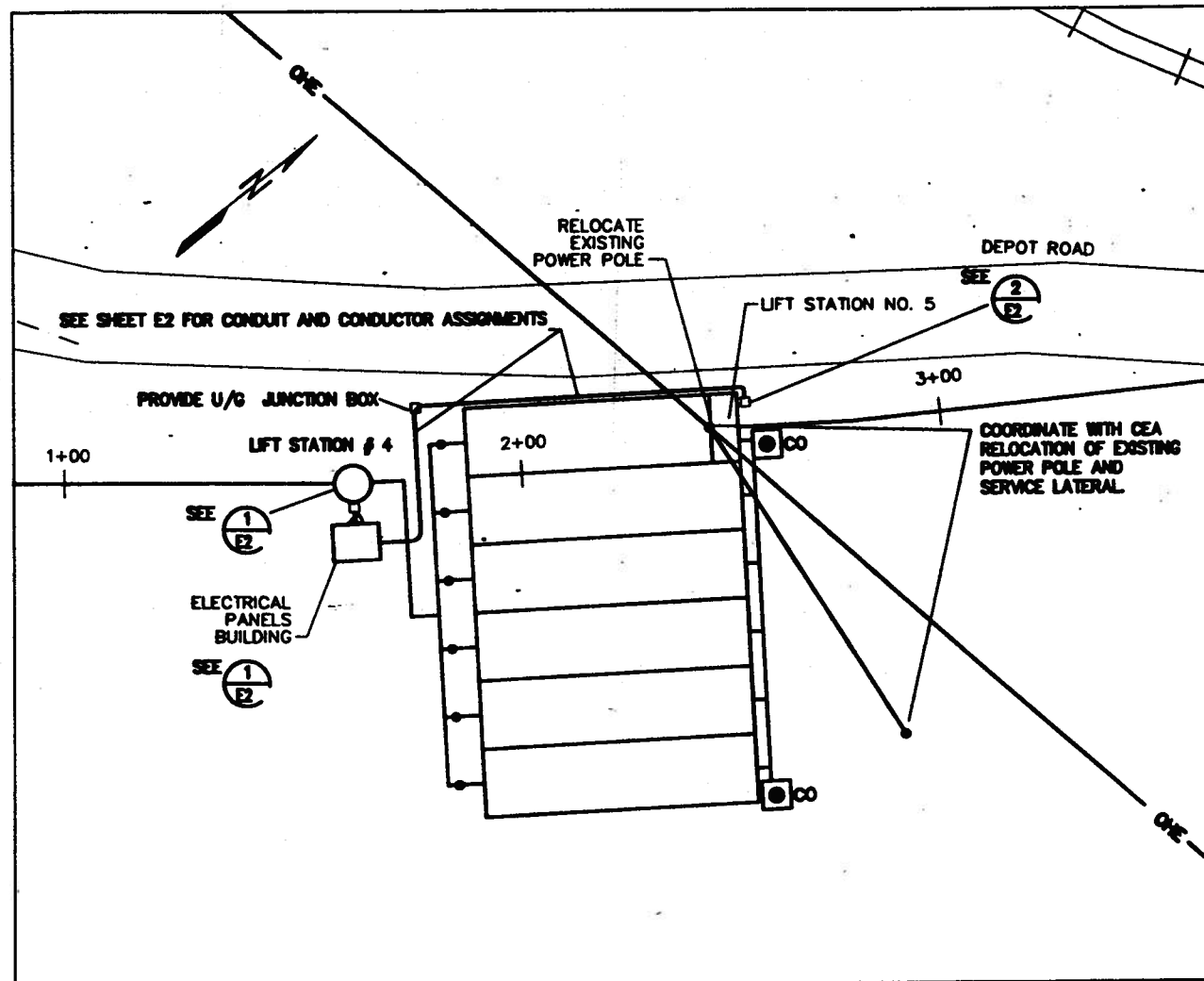
WHITTIER SEWER SYSTEM IMPROVEMENTS - PHASE II

LIFT STATION NO. 5

REVISION	BY	DATE
ADDED AS-BUILT INFO.	MTC	12/29/99

Project No. 9527 Date: JAN 1999
Designed: PB
Drawn: RB
Approved: WHH

Sheet No. LS3
SHEET 16 of 23



SITE PLAN

 SCALE IN FEET

LEGEND

Note: 1. Some items shown below are generally described with greater detail given on the drawings.
 2. Symbols not listed are integral to other components.

- | | | | |
|--|------------------------------------|--|---|
| | METER | | MOTOR, THREE PHASE |
| | THREE PHASE POWER RECEPTACLE | | MOTOR OVERLOAD |
| | RECEPTACLE-DUPLEX-SINGLE PHASE | | COIL |
| | CIRCUIT BREAKER | | HEAT TRACE END KIT OR POWER POINT (RAYCHEM) |
| | FUSE | | LIGHT |
| | FUSED DISCONNECT | | ALARM BEACON |
| | NORMALLY OPEN CONTACT | | GROUND |
| | NORMALLY CLOSED CONTACT | | FLOAT |
| | NORMALLY CLOSED TEMPERATURE SWITCH | | TRANSFORMER |
| | NORMALLY OPEN FLOAT SWITCH | | |
| | NORMALLY OPEN CONTACT | | |
| | 2 CIRCUIT PUSHBUTTON | | |
| | HAND-OFF-AUTO SWITCH | | |

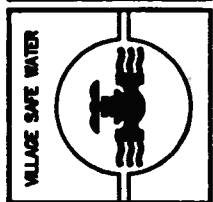


AS-BUILT

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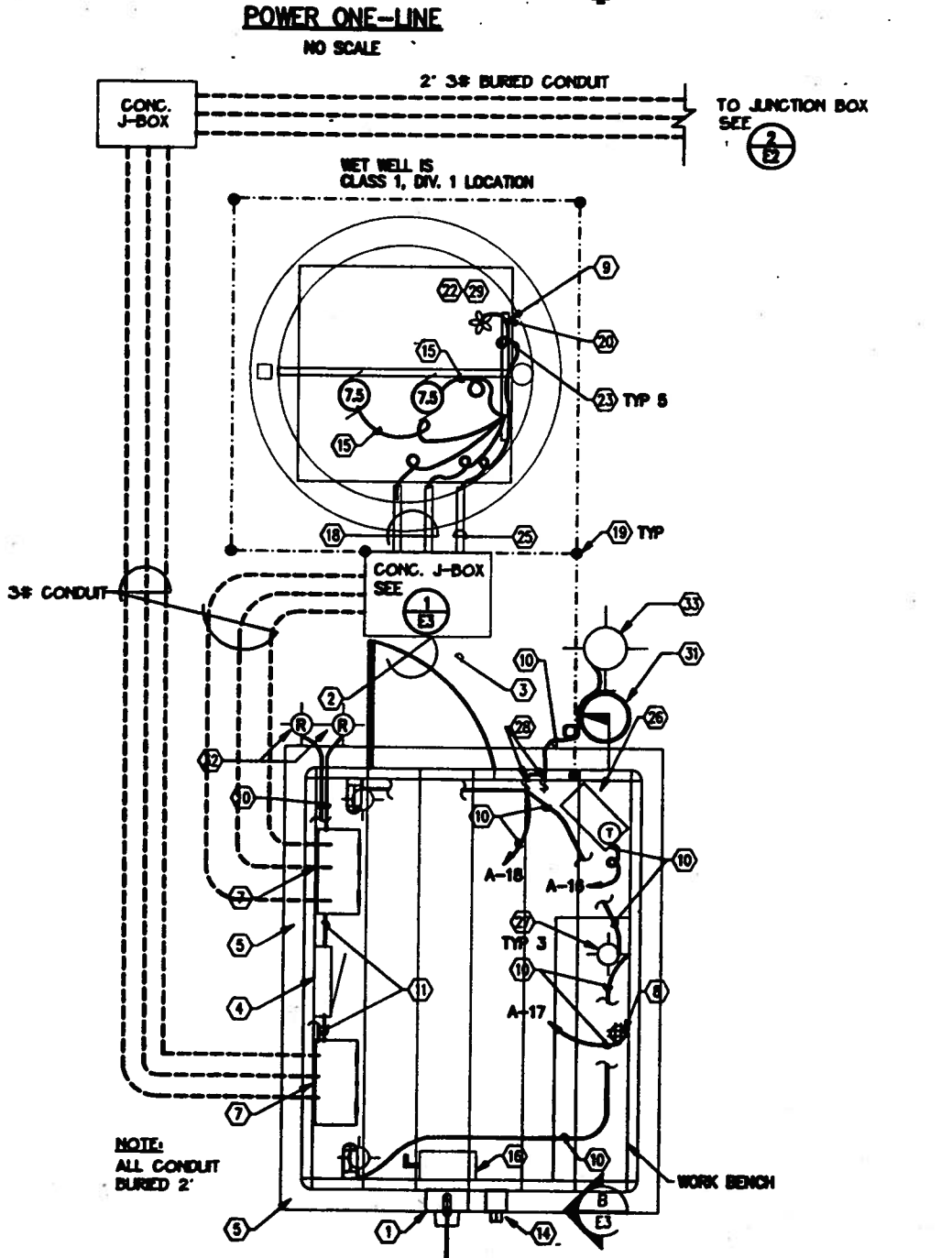
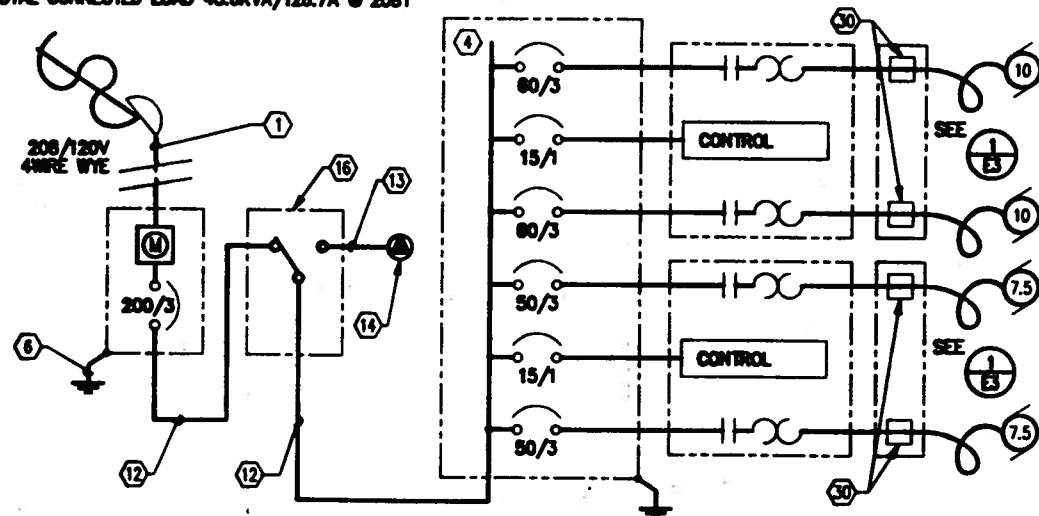
Charles L. Eggen
 NAME DATE



WHITTIER SEWER SYSTEM IMPROVEMENTS
 SITE PLAN AND LEGEND

REVISION	BY	DATE

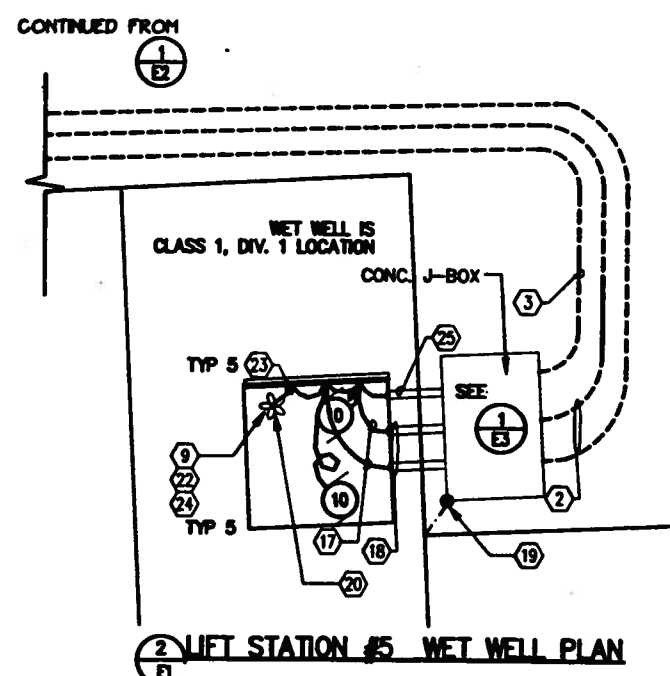
Project No.	Date	Designed	Drawn	Approved
	MAR 1999			



LIFT STATION #4 WET WELL AND CONTROL SHED PLAN
SCALE IN FEET

PANEL SCHEDULE

PANEL A		208Y120V			3Ø, 4 Wire		225A MAINS	
ELECTRICAL BLDG		MLO			SURF/NEMA 12		10,000 AIC	
POLE	AMP TRIP	LOAD DESCRIPTION	POLE KVA	A Ø	B Ø	C Ø	POLE KVA	LOAD DESCRIPTION
1		LIFT STATION # 5 PUMP 1	3.9	7.0		3.1		LIFT STATION # 4 PUMP 1
3	80/3		3.9		7.0	3.1		
5			3.9			7.0	3.1	
7	15/1	LS# 5 CONTROLS	0.5	1.0		0.5		LS # 4 CONTROLS
9			3.9		7.0	3.1		
11	80/3	LIFT STATION # 5 PUMP 2	3.9			7.0	3.1	NORTH PUMP 2
13			3.9	7.0		3.1		
15	20/1	SPARE	0.0		1.5		1.5	HEATER
17	20/1	RECPS	0.4			1.1	0.7	LIGHTS
			15.0	15.5	15.1			
			TOTAL KVA = 45.8					
			AMPS = 128.7					



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NAME _____ DATE _____

- #### NOTES
- 3Ø, 4 WIRE, 208Y120V, 200A METER MAIN COMBO W/2" RISER, 4 #3/0 XHHW-2 PER CEA REQUIREMENTS. PROVIDE SAFETY SWITCH PER CEA.
 - 1" C, 3/8 (MOTOR FEEDERS), 1/10 (G). BURY NLT 24" BELOW GRADE. PROVIDE SEAL-OFF (ITEM 21) AT BOTH ENDS.
 - 1" C, 11/14 (LEVEL CONTROL, G). ALL INTRINSICALLY SAFE. PROVIDE SEAL-OFF (ITEM 21) AT BOTH ENDS.
 - PANELBOARD, SEE PANEL SCHEDULE THIS SHEET. ITE OR EQUAL.
 - 8' x 10' FRP CONTROL SHED. SEE ENCLOSURE DETAILS ON DWG E3. BASIC UNIT TO BE AS MANUFACTURED BY PLASCHEM, ANCHORAGE, ALASKA. VERIFY COLOR WITH OWNER PRIOR TO CONSTRUCTION.
 - #8 BCU GROUND TO GROUND SYSTEM, SEE ITEM 18.
 - CONTROL PANEL SEE DRAWING E3/E4 FOR LAYOUT AND SCHEMATIC.
 - QUADRUPLX RECEPTACLE. MOUNT 6" ABOVE WORKBENCH.
 - SEE DRAWING E3 FOR CABLE/CORD SUSPENSION.
 - 1/2" C, 3/12
 - 2" C, 7/8 (6 MOTOR, G), 2/12 (H, N)
 - 2" C, 4/3/0 (3H, N), 1/8 (G).
 - 2" C, 4/2 (3H, N), 1/8 (G).
 - 100A, 3P, 4W MOTOR INLET WITH MATCHING CONNECTOR BODY. CONNECT TO ITEM 18 USING ITEM 13. GROUSE NIBBS OR EQUAL.
 - 4ø10 WITH 3ø12 TYPE SOW EXTRA HARD USAGE CORD.
 - NEMA 1 ENCLOSED, 200A, 240V, 3 POLE, DOUBLE THROW TRANSFER SWITCH WITH S/N. BOND NEUTRALS AND GROUND AT THIS POINT. ITE NF353DTK W/GROUND NOT DT100NK.
 - 4ø8 WITH 3ø10 TYPE SOW EXTRA HARD USAGE CORD.
 - 1" GRC CHASE. PROVIDE GROUNDING BUSHING AT EITHER END. EXTEND TO 3" BEHIND HATCH OPENING IN WET WELL.
 - BOND 5 EA. 5/8" x 8' Cu CLAD GROUND RODS CONNECTED BY #2 BCU BURED NOT LESS THAN 2-1/2 FEET, MAIN DISCONNECT, EQUIPMENT ENCLOSURE, CONDUITS, POWER JUNCTION BOX, AND HATCH FOR SYSTEM GROUND.
 - WEIGHTED 1/8" SS CABLE SUPPORT FOR TRANSDUCER MOUNTING. SECURE TO HATCH FRAME. EQUAL TO CONSOLIDATED #CBM.
 - SEAL-OFF FITTING WITH DRAIN.
 - LIQUID LEVEL FLOAT. CONSOLIDATED LSA-X.
 - TYPE 80 CORD (INTRINSICALLY SAFE CIRCUIT).
 - SEE CIVIL DRAWINGS FOR FLOAT ELEVATIONS.
 - 2" C. PROVIDE GROUNDING BUSHING AT EITHER END. EXTEND TO 3" BEHIND HATCH OPENING IN WET WELL.
 - HEATER 1.5kW, 120V W/ INTEGRAL THERMOSTAT, AUTO RESET, CHROMALOX HCH-151 OR EQUAL.
 - INCANDESCENT LIGHT. SEE NOTE 27, E3.
 - SINGLE POLE SWITCH, 120/277V, 20A RATED, STAINLESS COVER, LEVTON OR EQUAL.
 - SEE SHEET LS-4 FOR FLOAT ELEVATIONS.
 - PROVIDE WATER TIGHT (U/G RATED) SPLICES.
 - 30' CLASS 5 WOOD POLE. BURY NLT 6' WITH DOUBLE WRAP, 6mil VISQUEEN AND NPS BACKFILL.
 - ALARM STROBE WITH HORN BELOW. SEE E3 FOR DESCRIPTION.
 - 150W, 120V HPS YARD LIGHT WITH INTEGRAL PHOTOELECTRIC CONTROL. MOUNT AT 20' ABOVE GRADE. HUBBELL DA1-ASKS-ASSOX OR EQUAL. XX-BRACKET TYPE. USE A HUBBELL108-K31 GALVANIZED BRACKET (2"6" LENGTH WITH 10.5" RISE).

VILLAGE SAFE WATER

WHITTIER SEWER SYSTEM IMPROVEMENTS

ELECTRICAL PLAN, ELEVATION & POWER ONE-LINE

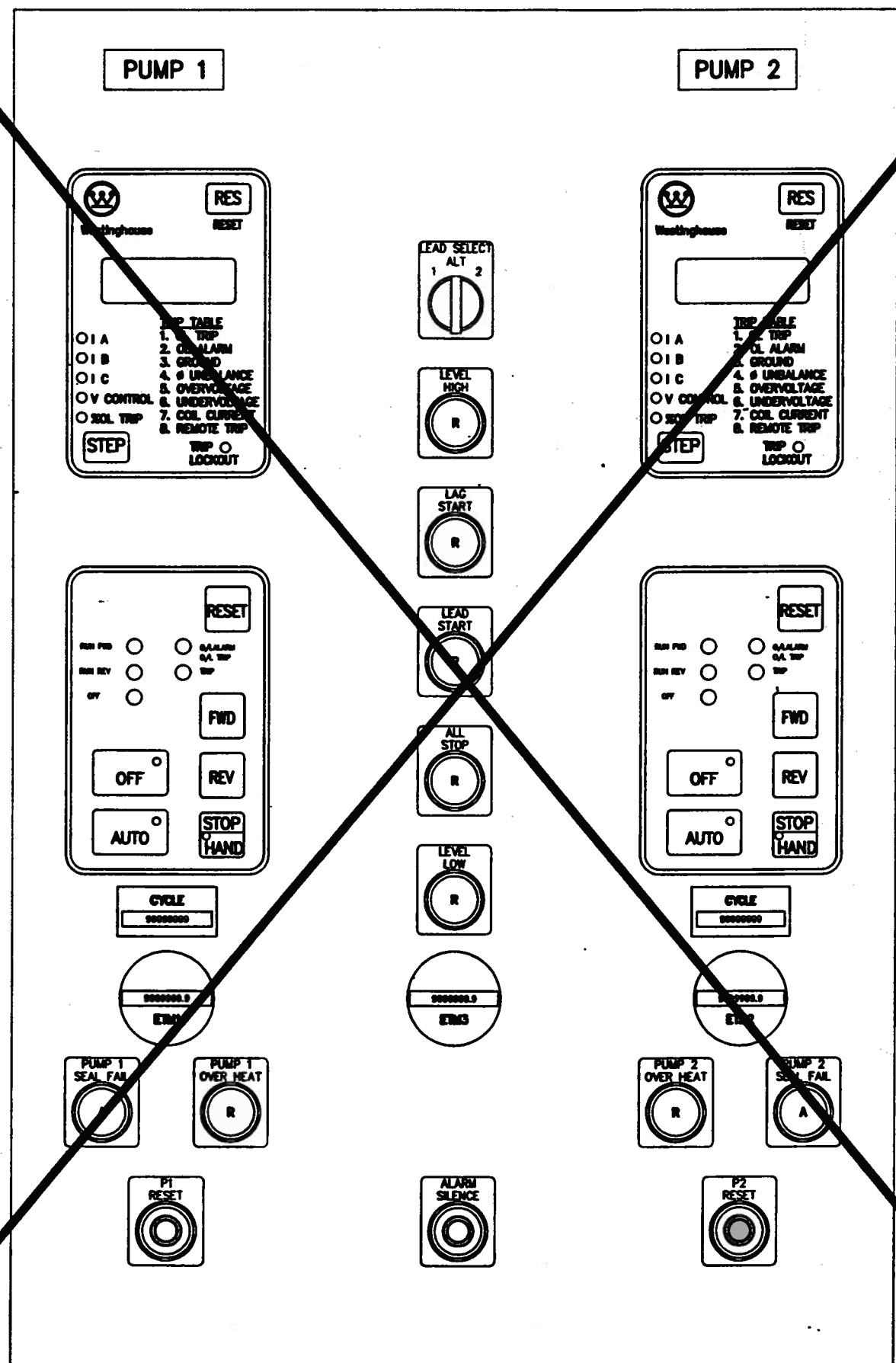
REVISION	BY	DATE	ADDED ASBUILT INFO.	DATE	DATE

Project No. _____ Date: **MAR 1999**

Designed: _____ Drawn: _____ Approved: _____

Sheet No. **E2**

SHEET **18** OF **23**



N.I.C.

NOTE:
SEE SHEET E4A
FOR LIFT STATION
#4 CONTROL PANEL
LAYOUT, AND
SHEET E4B FOR
LIFT STATION #5
CONTROL PANEL
LAYOUT

FUNCTIONAL NARRATIVE
THE LIFT STATION CONTROL PANEL IS A 208V, 3ø, DUPLEX PUMP CONTROLLER OPERATING ON MANUAL OR AUTOMATIC MODES WITH REMOTE, INTRINSICALLY SAFE CONTROLS FOR AUTOMATIC FUNCTIONS. THE PANEL IS NEMA 12 CONSTRUCTION. FRONT PANEL DOOR CONTAINS ALL OF THE OPERATOR-ACCESSIBLE CONTROLS AND PILOT LIGHTS.

EITHER (OR BOTH) PUMPS WILL RUN CONTINUOUSLY WHEN THEY ARE PLACED IN THE 'HAND' MODE. NORMAL OPERATION IS IN THE 'AUTO' MODE.

WHEN IN 'AUTO', THE PUMPS OPERATE IN A 'LEAD' 'LAG' MODE WITH OPERATOR SELECTION OF WHETHER PUMP 1 OR PUMP 2 IS ALWAYS TO BE THE LEAD PUMP OR IF THE PUMPS ALTERNATE AUTOMATICALLY AFTER EVERY PUMPING CYCLE. THE TRANSDUCER CONTROLS DETERMINE AT WHAT LEVEL THE 'LEAD' AND 'LAG' PUMPS START AND STOP AND ALSO PERFORM THE ALTERNATIVE FUNCTION. PUMP OPERATION IS INDICATED ON THE CONTROL PANEL DOOR BY A PILOT LIGHT ON THE OPERATOR CONTROL MODULE.

THE PUMPS ARE MONITORED CONTINUOUSLY FOR OVERHEATING (OVER TEMP) AND SEAL FAILURE. THE OCCURRENCE OF AN OVER TEMPERATURE CONDITION WILL CAUSE THE PUMP TO BE SHUT DOWN. PUMP SHUTDOWN IS INDICATED BY A FRONT PANEL PILOT LIGHT (EACH CONDITION HAS ITS OWN LAMP) AND IS ALSO SENT TO THE DIALER. AN ALARM ACKNOWLEDGE PUSH-BUTTON IS ON THE INNER OPERATOR DOOR.

THE PANEL IS EQUIPPED WITH INTERNAL TEST SWITCHES THAT WILL PERMIT SIMULATION OF EACH OF THE FLOAT SIGNALS AND EACH PANEL IS SUPPLIED WITH A SEAL FAIL AND OVERHEAT RELAY TESTER FOR MAINTENANCE AND TROUBLESHOOTING.

THE PANELS ARE ALSO EQUIPPED WITH METER MODULES THAT WILL ALLOW DISPLAY OF ALARM/FAIL HISTORY, PROVIDE LOW VOLTAGE BROWNOUT AND PHASE REVERSAL PROTECTION AND PROVIDE READOUTS OF MOTOR CURRENT FOR EACH PHASE AND WILL DISPLAY PERCENT OF OVERLOAD TRIP SETTING.

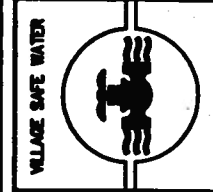
THE CONTROLS ALSO PROVIDE A MOTOR REVERSE OPERATION TO ATTEMPT CLEARING CLOGS WITHOUT FILLING THE MOTOR. OPERATION REQUIRES MOTOR TO BE PUT IN THE "REVERSE" MODE AND MANUALLY OPERATED.

IN ADDITION TO THE REVERSE FUNCTION, MOTORSTARTERS ARE INTERNALLY EQUIPPED WITH 3-PHASE VOLTAGE MONITORS THAT WILL STOP THE MOTOR AND RECORD THE OCCURRENCE AT THE METER MODULE. UPON RESTORATION OF POWER, THE MOTORS WILL RESTART AND OPERATE NORMALLY.

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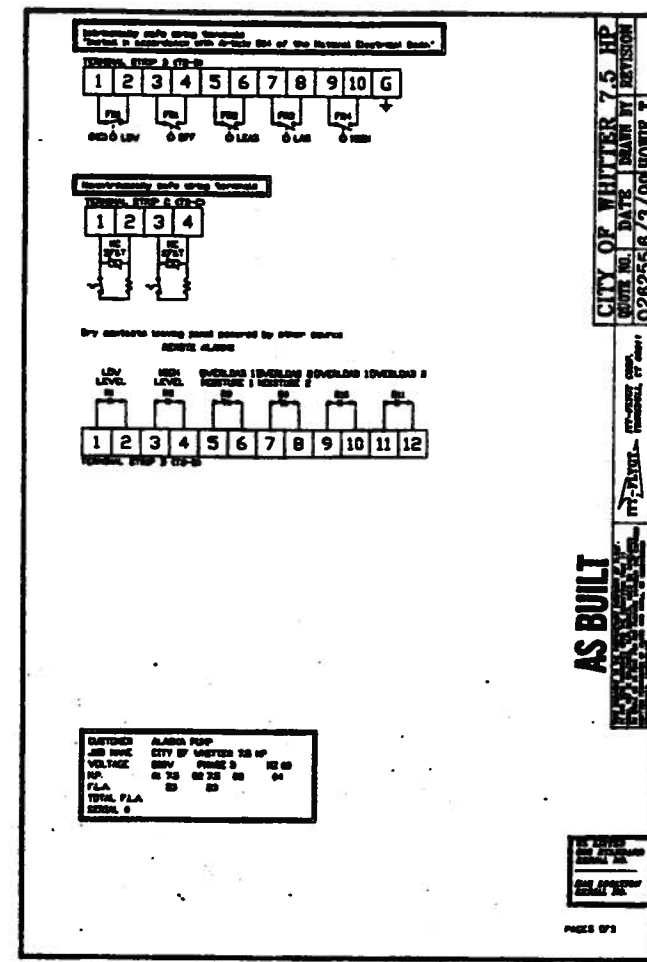
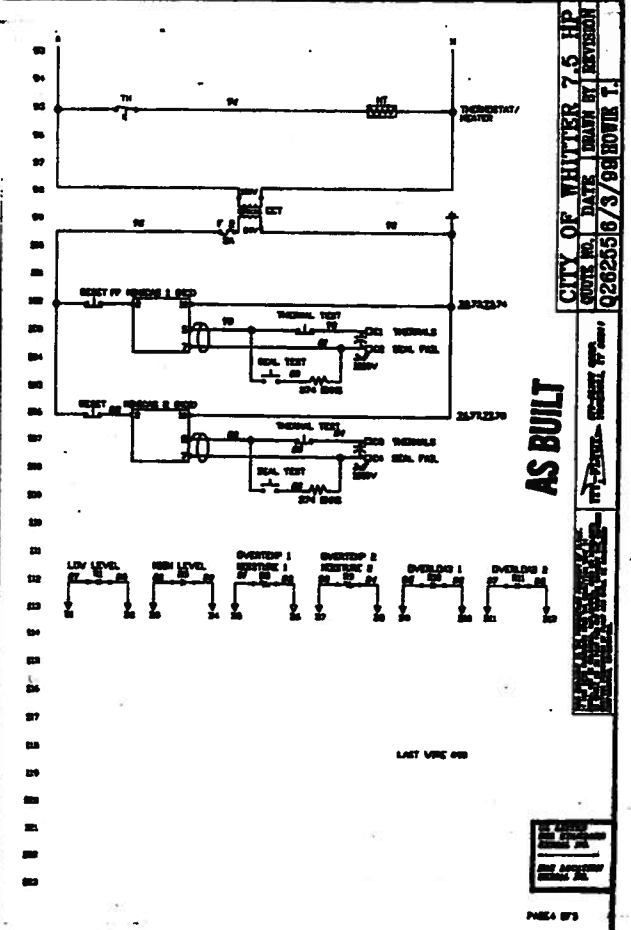
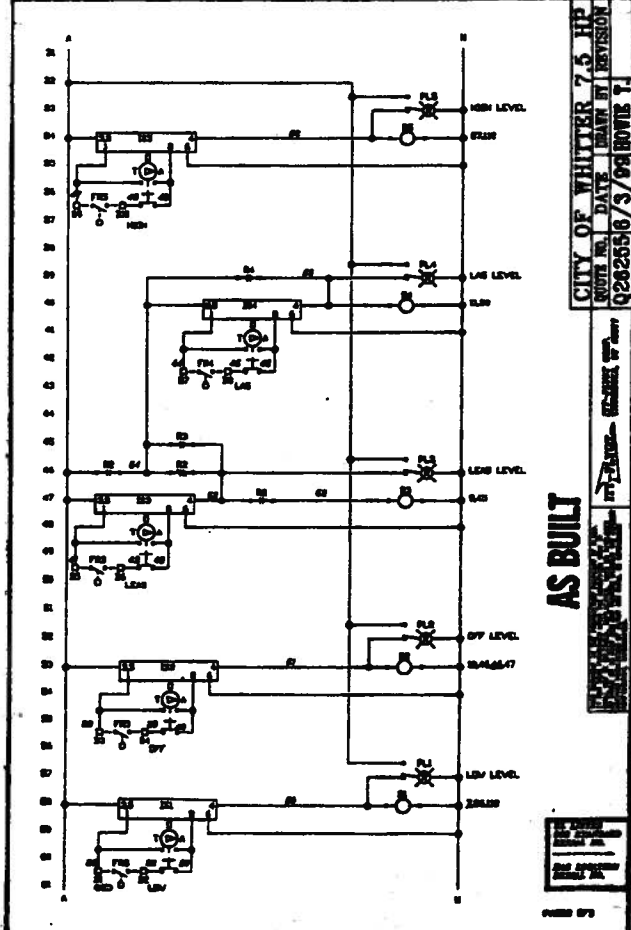
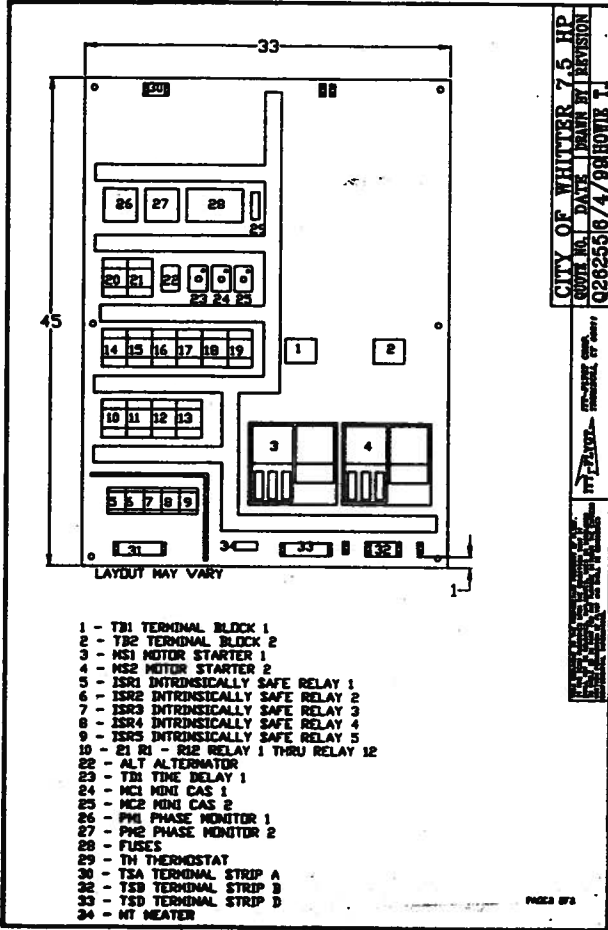
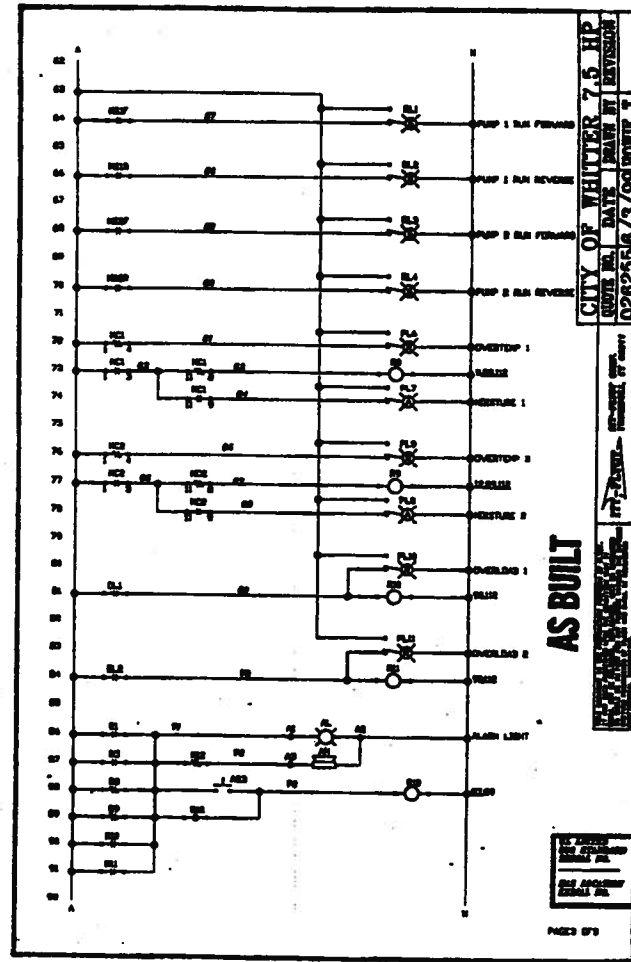
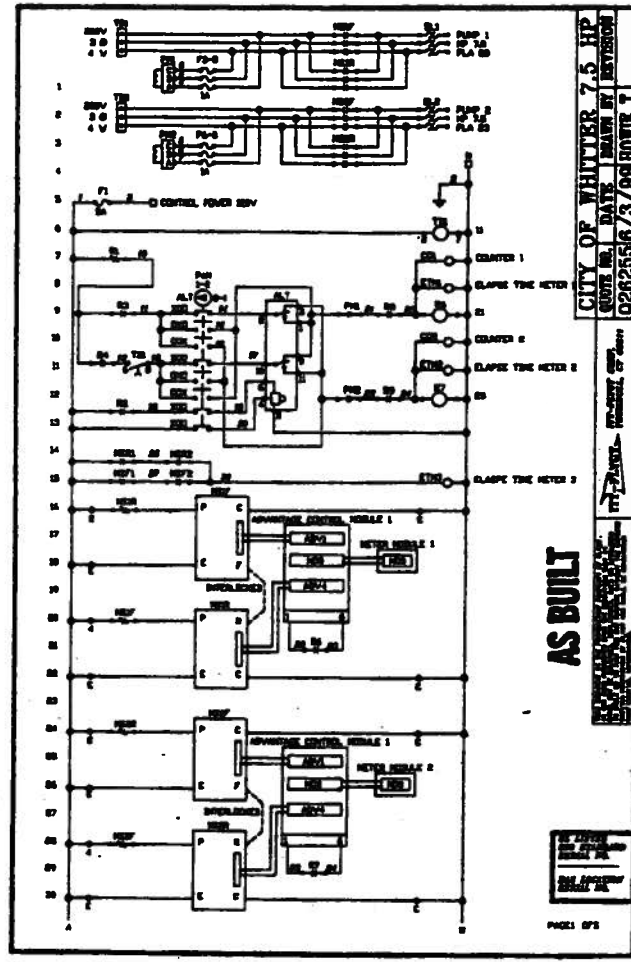
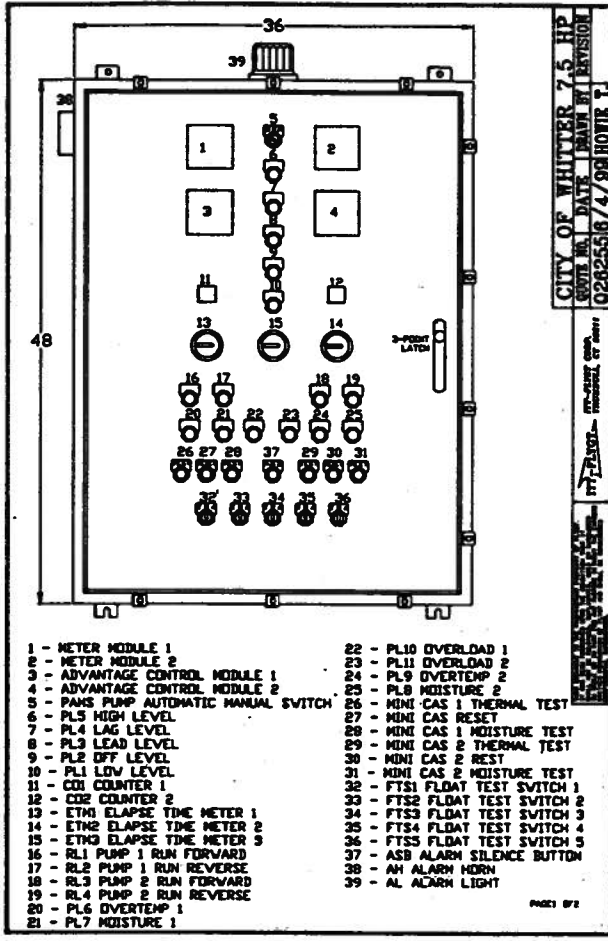
NAME _____ DATE _____



WHITTIER SEMER
SYSTEM IMPROVEMENTS
LIFT STATION LS 4 & 5
CONTROLS NARRATIVE AND
LAYOUT

REVISION	BY	DATE

Project No.		Date	MAR 1999	Designed		Drawn		Approved	
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VILLAGE SAFE WATER

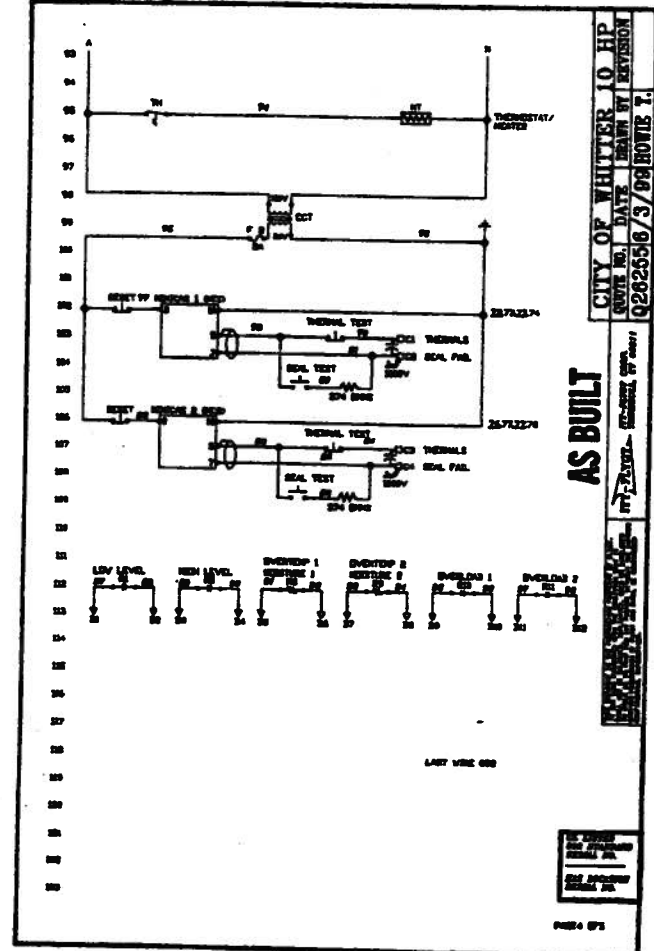
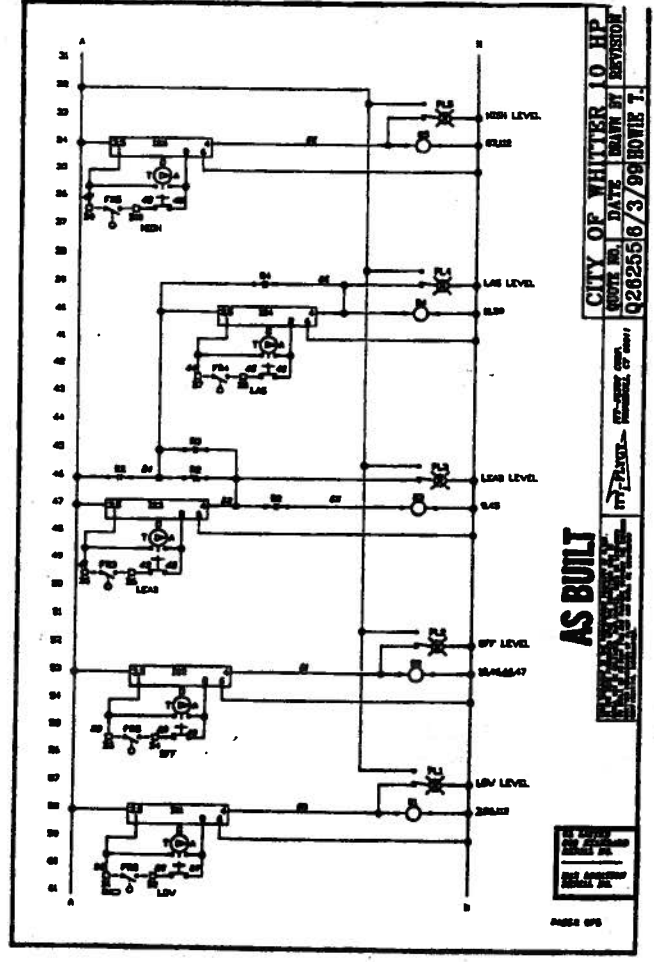
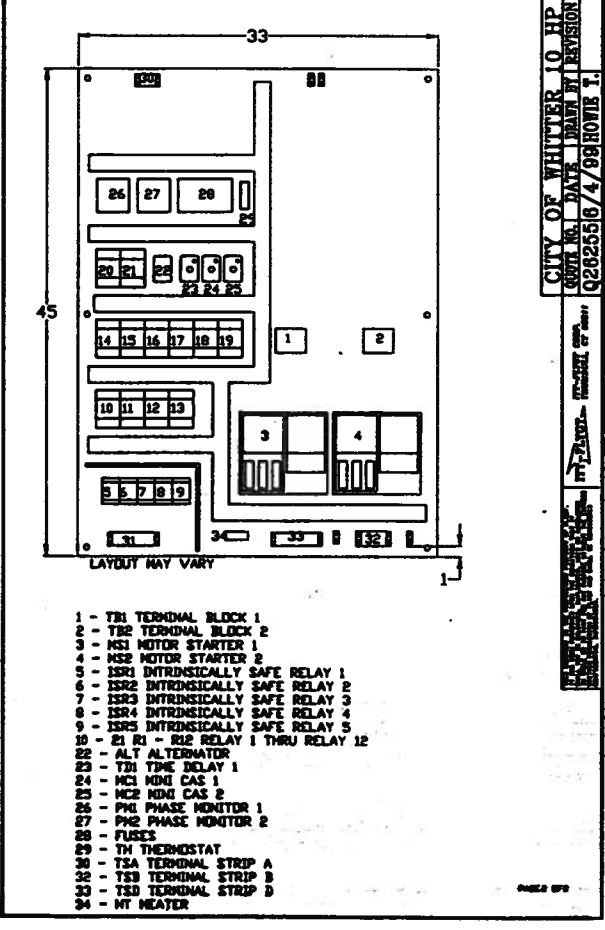
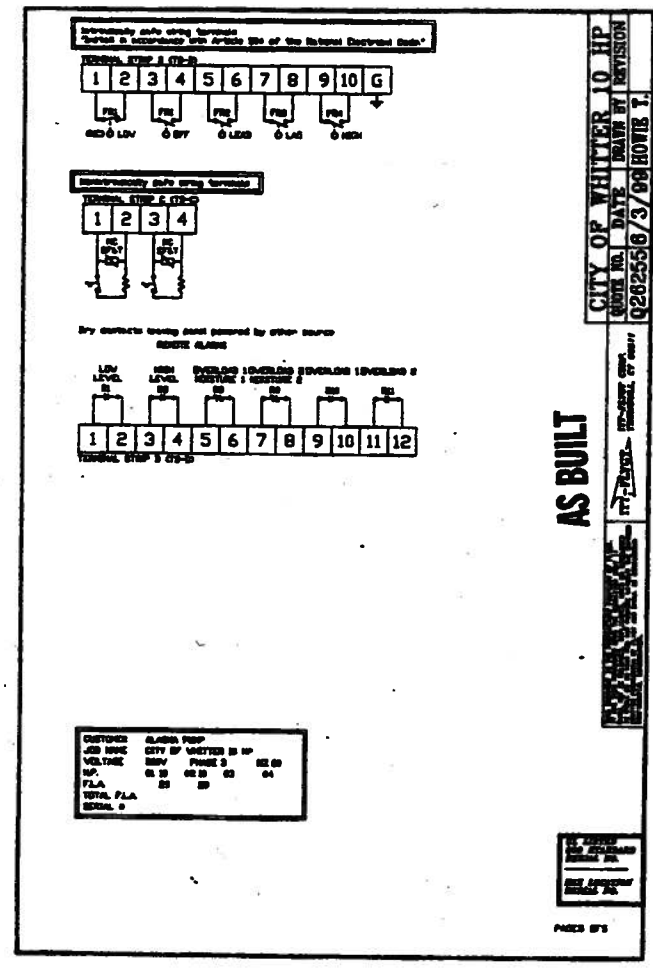
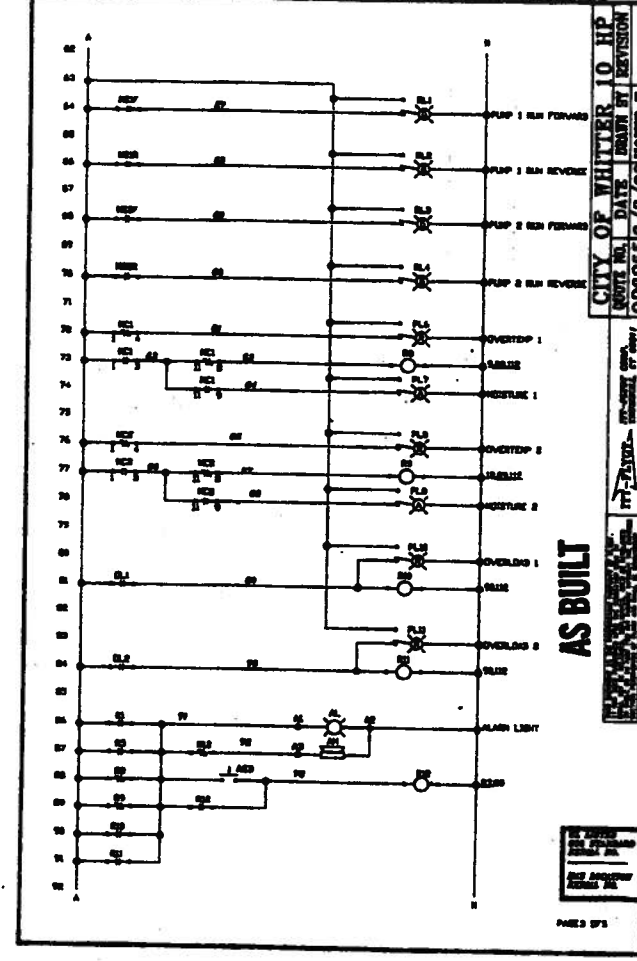
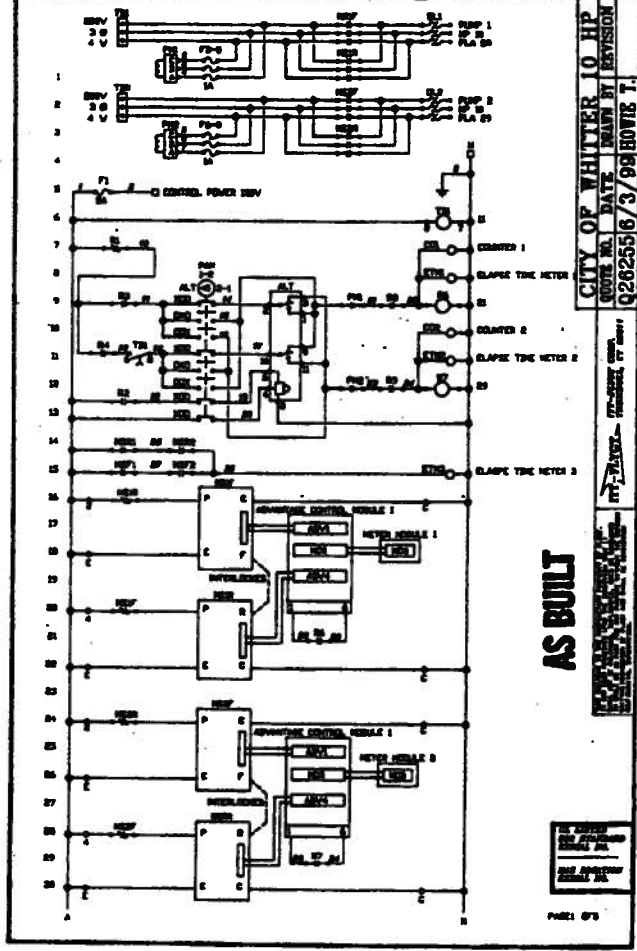
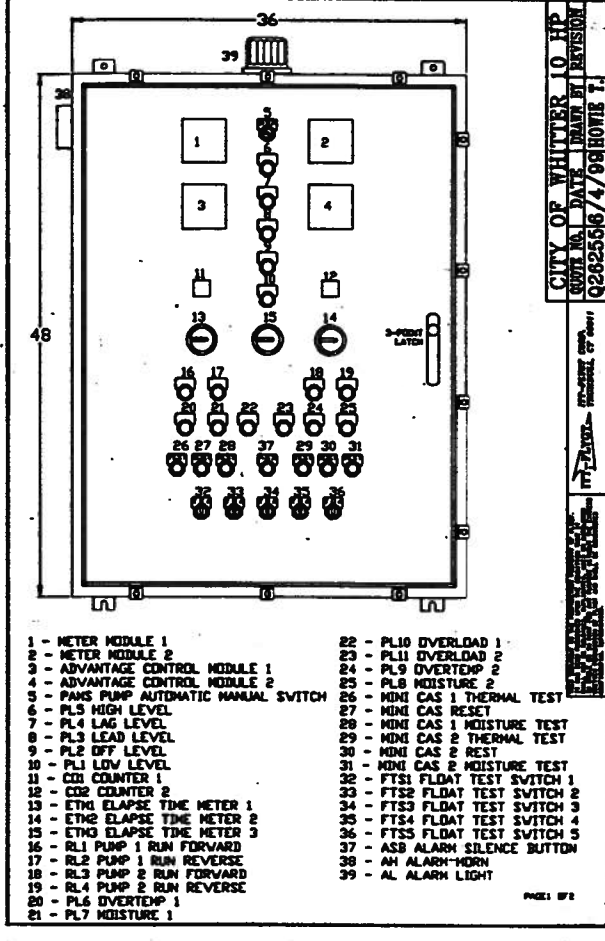
WHITTIER SEWER SYSTEM IMPROVEMENTS PHASE II
LIFT STATION 4 CONTROL PANEL
 WHITTIER, ALASKA

BY DATE 4/99

REVISION ADDED AS BUILT INFO.

Project No. Date Designed Drawn Approved

Sheet No. **E-4A**
 SHEET 21 OF 23



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VILLAGE SAFE WATER

WHITTIER SEWER SYSTEM IMPROVEMENTS PHASE II
 LIFT STATION 5 CONTROL PANEL
 WHITTIER, ALASKA

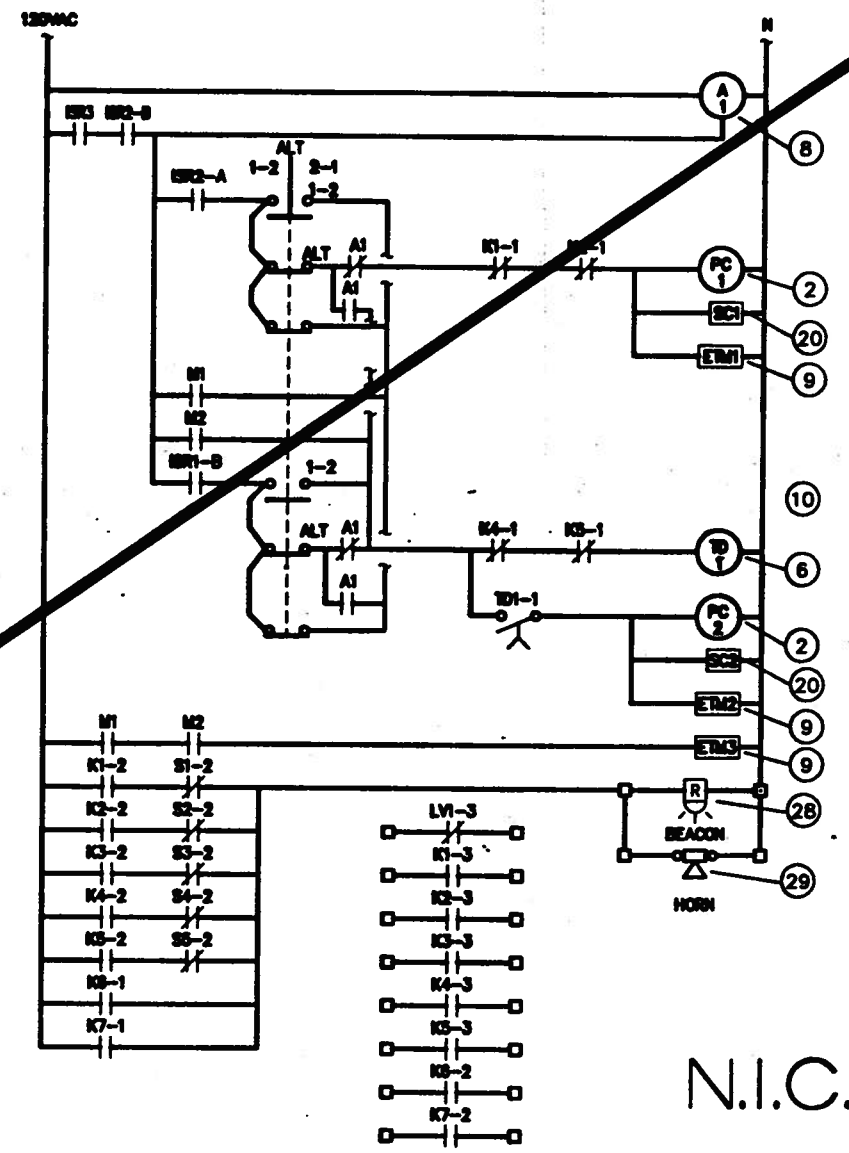
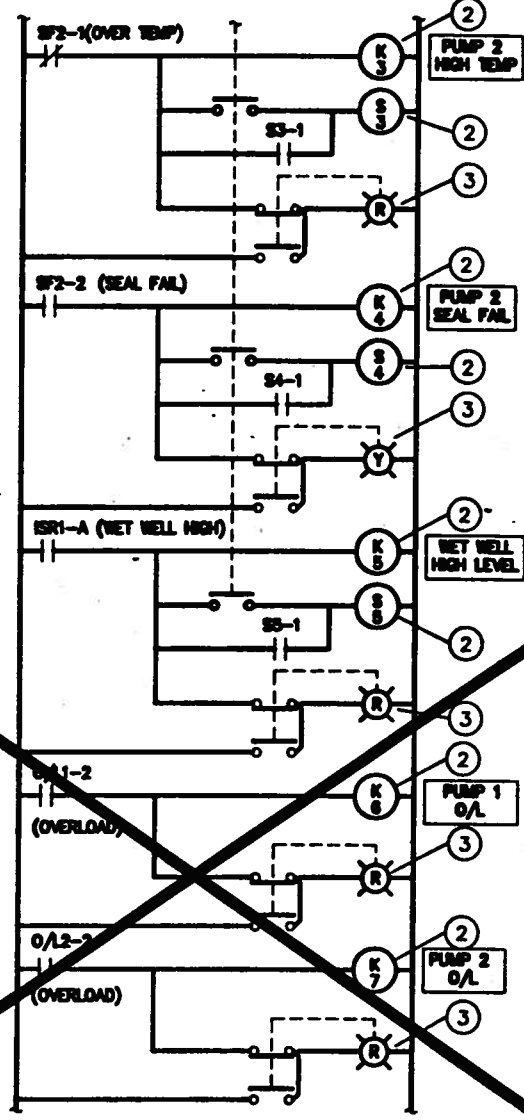
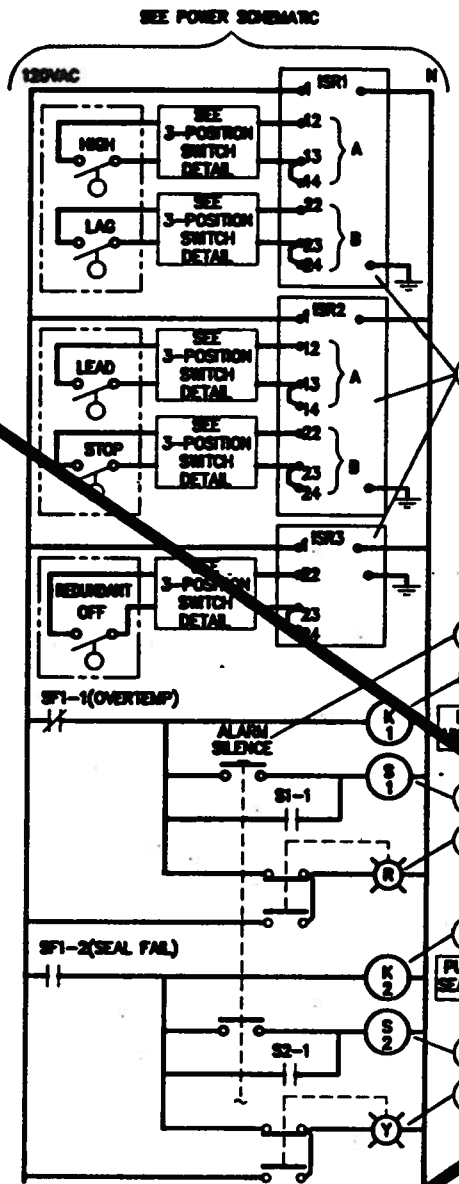
REVISION	BY	DATE
ADDED AS-BUILT INFO.		4/98

Project No. _____ Date _____
 Drawn _____ Approved _____

Sheet No. **F-4B**
 SHEET 22 OF 23

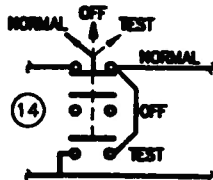
COMPONENT SCHEDULE	
1	HERMISELLY SAFE RELAY 2-OHM WARRICK OR EQUAL
2	RELAY SPDT, 11-PIN OCTAL SOCKET MOUNT SQUARE D
3	PILOT LIGHT, 115V, 11-PIN OCTAL SOCKET MOUNT SQUARE D TYPE K111(R-31, G-31, A-31, B-31) LED LAMP
4	FLYGT MRS-CAS PUMP MOTOR RELAY
5	3-POLE REVERSING MOTOR STARTERS, NEMA SIZE 2, 120V COIL W/ SOLID STATE OVERLOAD PROTECTION W/ SERIAL LIST INTERCONNECT WITH ITEMS 17, 18 AND 19. CUTLER HAMMER ADVANTAGE SERIES
6	RELAY, TIME DELAY ON, SPDT, 8-PIN SQUARE SOCKET MOUNT SQUARE D TYPE JCK 9050 JCK 16120
7	FUSED SWITCH WITH 1/2" DOOR OPERATOR BUSBAR BDF100J16 W/ BHS10 HANDLE AND SHAFT AS REQUIRED.
8	3-PUMP ALTERNATOR, 120V COIL TIME MARK MODEL 2610 120
9	ELAPSED TIME METER, 0-9999.9 HR, 120VAC VEEDER-ROOT (#771089 TYPE 779536-201
10	3-POSITION SELECTOR SWITCH SQUARE D TYPE SK 9001 SK3428H2
11	MRS-CAS TEST UNIT (TYP OF 2), PROVIDE (2) BANANA JACK TERMINALS, (2) TOGGLE & 1/4W RESISTORS AS SHOWN IN A PHENOLIC CASE WITH TOGGLE LEGGERS AS SHOWN. SWITCH-OP TOGGLE, SPST, ON-OFF, SCREW TERMINAL, 15A, 125VAC, NEWARK SH875-488, CARLIN SW TYPE 2FAS473
12	NOT USED
13	N.O. PUSHBUTTON TO SILENCE ALARM SQUARE D, TYPE SK 9001 - CONTACT BLOCKS AS REQUIRED
14	ON-OFF-ON SWITCH, GENERAL PURPOSE TOGGLE, SPDT, SCREW TERMINAL, 15A, 125VAC, NEWARK SH875-488/CARLIN SWITCH TYPE 2FCS4-73. MOUNT SWITCHES ON BRACKET BEHIND OPERATOR DOOR W/ LABEL.
15	INCOMING LINE SURGE ARRESTER, SQUARE D 6871 SP1175
16	RELAY, 4P, N.O. (CONVERTIBLE), 120V COIL SQUARE D TYPE X 8501 X040 Y02
17	INTEGRATED MOTOR CONTROL PANEL PROVIDING HAND-OFF-AUTO AND FORWARD-REVERSE-STOP CONTROL, STATUS LED'S FOR RUN, OFF, O/L, AND TRIP STATUS. CUTLER HAMMER WPB13 W CABLE.
18	METER MODULE PROVIDING STATUS MESSAGE FOR TRIP ALARMS, LINE CURRENT FOR EACH OF THE THREE PHASE CONDUCTORS, RATION OF MOTOR CURRENT TO SELECTED OVERLOAD SETTING AND UP TO THREE TRIP ALARM HISTORY. CUTLER HAMMER METER W CABLE.
19	MOTOR STARTER BELL ALARM PROVIDES O/L TRIP INDICATION FOR ALARM OUTPUT. CUTLER HAMMER BELL
20	CYCLE COUNTER, PANEL MOUNT, RESETABLE, 120V VEEDER-ROOT (#772992 TYPE 743895-211
21	NOT USED
22	VOLTAGE MONITOR, 3-PHASE, 240V, ADJUSTABLE, 2 SEC DELAY TIME MARK 2588, PROVIDE SHUNT IMPEDANCE
23	N.C. PUSHBUTTON SQUARE D, TYPE SK 9001 - CONTACT BLOCKS AS REQUIRED
24	NOT USED
25	NOT USED
26	STATIONARY STROBE FEDERAL ELECTRA FLASH 141 WITH RED LEXAN DOME
29	ALARM HORN, 120V, WEATHERPROOF, FEDERAL 3508B 120
30	ENCLOSURE HEATER, CONNECTION TYPE W/ INTERNAL THERMOSTAT, HOFFMAN OR EQUAL

PROVIDE ONE EACH SPARE FOR ITEM # 5, 17, 18 AND 19.

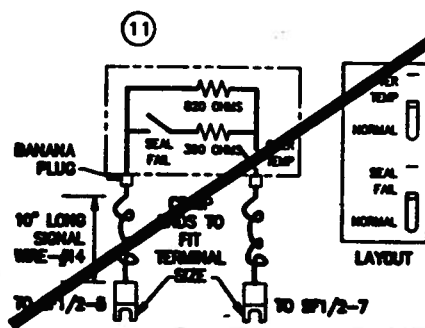


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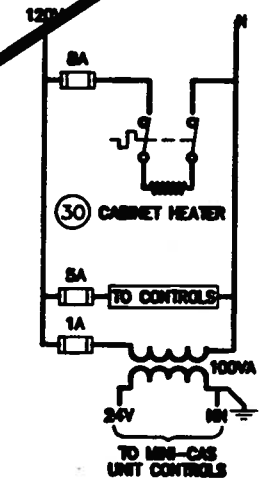
NOTE: SEE SHEET E4A FOR LIFT STATION #4 CONTROL PANEL LADDER DIAGRAMS, AND SHEET E4B FOR LIFT STATION #5 CONTROL PANEL LADDER DIAGRAMS.



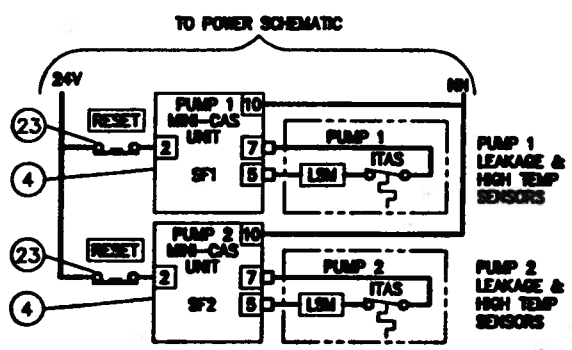
3-POSITION SWITCH DETAIL



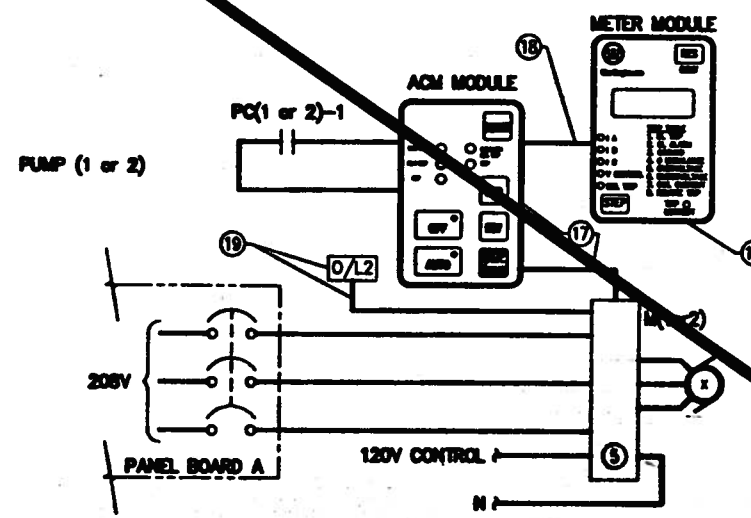
PUMP STATUS TESTER (TYP OF 2)



CONTROL POWER WIRING

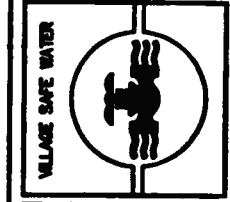


PUMP SEAL AND TEMPERATURE MONITOR



MOTOR STARTER CONNECTIONS (TYP OF 2)

RECORD DRAWING CERTIFICATE. THESE DRAWINGS REFLECT RECORDED INFORMATION OBTAINED DURING CONSTRUCTION. INFORMATION PROVIDED HEREIN IS ACCURATE TO THE BEST OF MY KNOWLEDGE.



WHITTIER SEWER SYSTEM IMPROVEMENTS

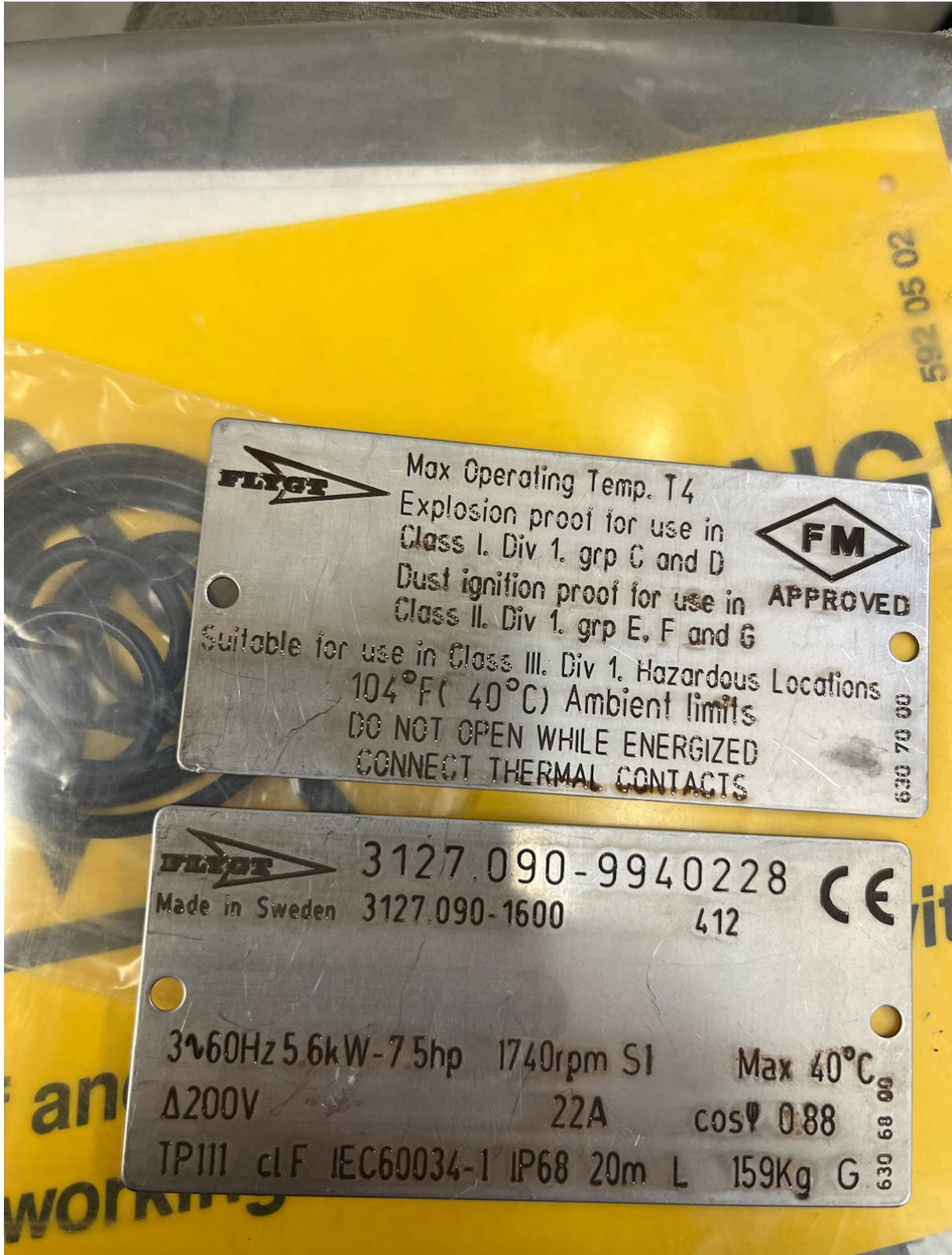
LS #4 & 5 CONTROL PANEL LADDERS

DATE

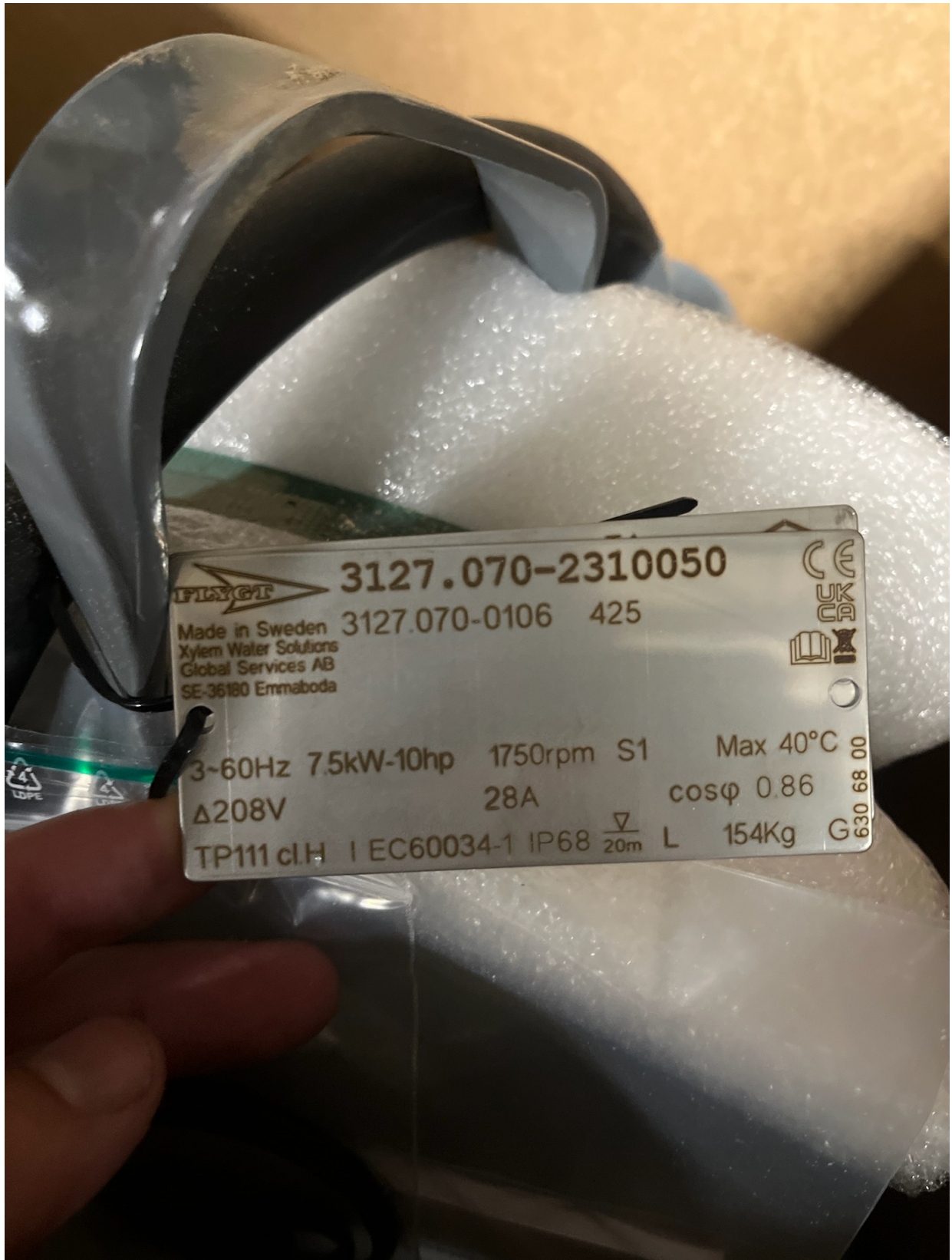
Project No. Date: MAR 1989
 Designer: _____
 Drafter: _____
 Approved: _____

REV.	DATE	BY	DESCRIPTION
1	MFC 12/87		

Existing Lift Station No. 4 Pump Tag



Existing Lift Station No. 5 Pump Tag



CITY OF WHITTIER, ALASKA
LIFT STATION NO. 5 REPLACEMENT REBID

SECTION X
SOIL BORING LOGS

WHITTIER WASTEWATER TREATMENT FACILITY

GEOTECHNICAL REPORT

Prepared For:

City of Whittier
P.O. Box 608
Whittier, Alaska 99693
(907) 472-2327

Prepared By:

CRW Engineering Group
3900 Arctic Boulevard, Suite 203
Anchorage, Alaska 99503
(907) 562-3252

October 1998

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V. DISCUSSION.....8

FIGURES

FIGURE 1: Project Area2

FIGURE 2: Test Pit Locations.....4

APPENDICES

APPENDIX I TEST PIT LOGS

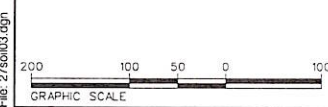
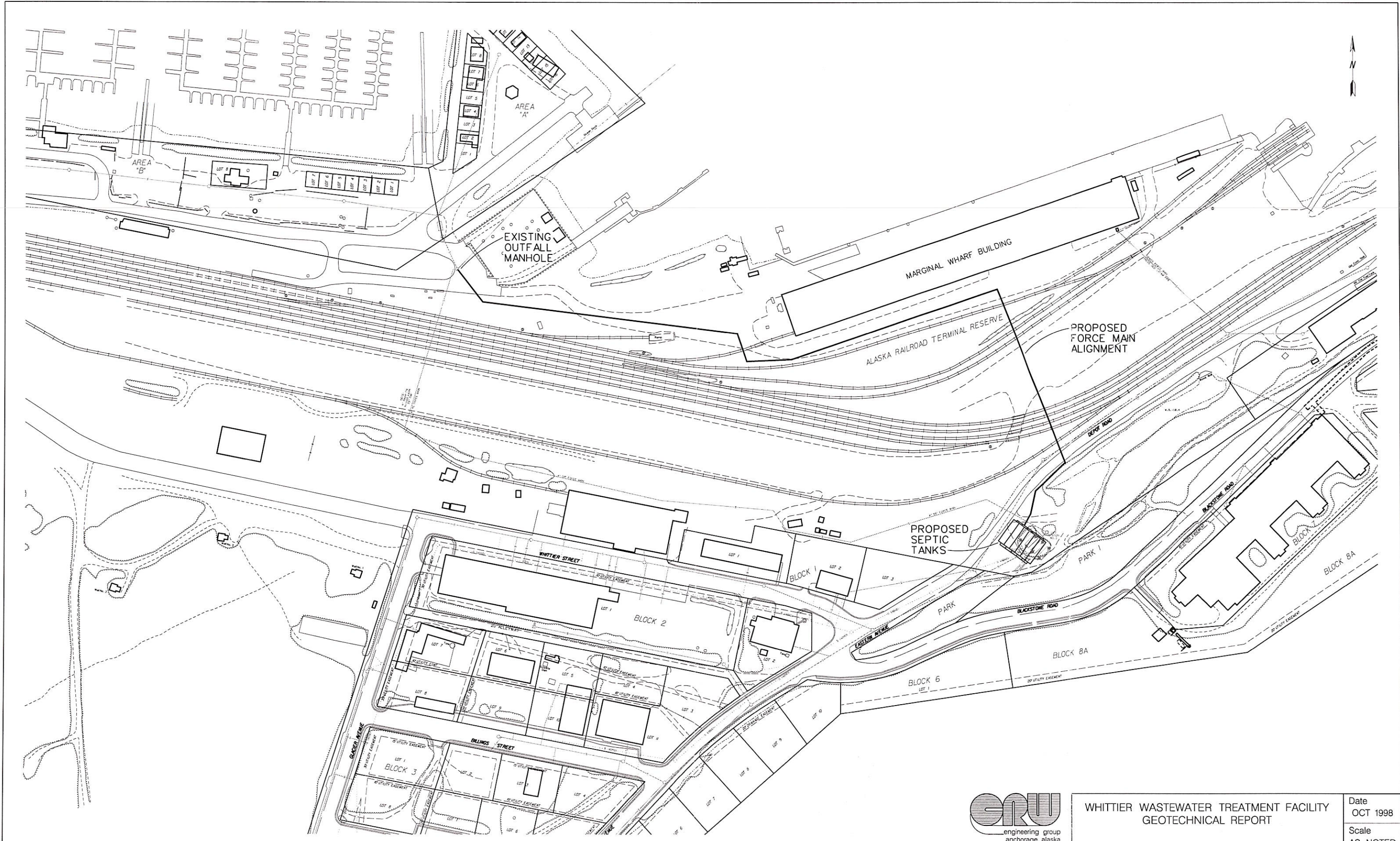
APPENDIX II UNIFIED SOILS CLASSIFICATION SYSTEM

I. INTRODUCTION

A geotechnical investigation was conducted for the proposed wastewater treatment facility in Whittier, Alaska. The purpose of the geotechnical investigation was to determine the general nature of the underlying soils within the project area and to evaluate bedrock potential. Also, the investigation was for identifying groundwater conditions and determining whether or not there are abandoned foundations or other manmade debris within the project area.

The proposed facility will treat the City of Whittier's wastewater and transport treated effluent to the existing ocean outfall manhole. The facility will consist of septic tanks and lift stations and will be located at the site of Whittier's existing treatment facility on Depot Road. The wastewater effluent will be transported across the railroad yard to the outfall manhole via force main. Figure 1 shows the project area.

The geotechnical investigation involved excavating test pits, logging the materials, surveying test pit locations, and reporting the results. A previous soil investigation, conducted as part of the design for the City of Whittier's water improvements, was used as a reference. That investigation was completed by Ross Engineering Associates in November, 1992.



WHITTIER WASTEWATER TREATMENT FACILITY
GEOTECHNICAL REPORT

Project: 9527
Status: PRELIMINARY

PROJECT AREA

Date
OCT 1998
Scale
AS NOTED
Figure
1

II. FIELD INVESTIGATION

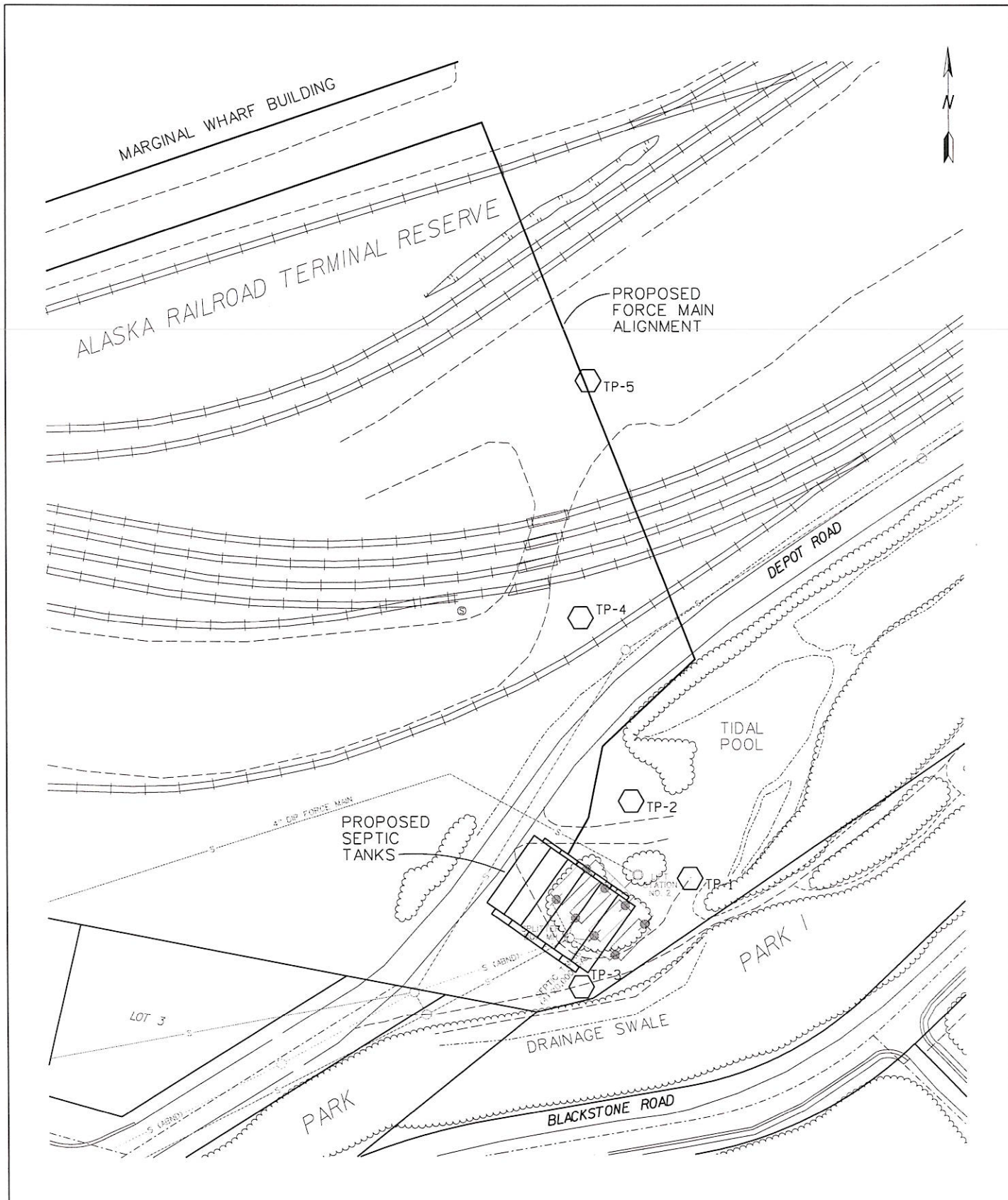
A total of five test pits were excavated for the geotechnical investigation. Three test pits were excavated at the proposed septic tank site on Depot Road and two were excavated along the alignment of the force main where it crosses the railroad yard. The location of each test pit is shown in Figure 2.

Test pits were dug by Ben Leniz from the City of Whittier Department of Public Works using the City's Case 580E rubber tired backhoe. Cam Bender and Ron Graham of the City of Whittier assisted with the work. CRW Engineering Group personnel logged the materials excavated from the test pits. The materials were classified using the Unified Soil Classification System. Test pits were excavated on October 2, 1998 and October 9, 1998.

Upon completion of the test pit excavations, the location of each pit was surveyed relative to nearby features. This data was subsequently transferred to the project's computerized drafting files.

For two of the test pits, 4" diameter tubes were installed from the bottom of the excavations to the surface for future monitoring of groundwater elevations. These test pits are located at the proposed septic tank site, near a tidal pool. After the excavations were backfilled, the elevations of the top of the tubes were surveyed.

No test pits were excavated between the Marginal Wharf Building and the existing outfall manhole. The force main alignment through this area will closely parallel the existing water main which was constructed in 1994. Daily inspection reports from the water main construction were relied upon for soils information in this area.



LEGEND


 TP-2 TEST PIT

NOTE: 4" MONITORING TUBES
INSTALLED AT TEST PIT 1 & 2



Project: 9527

Status: PRELIMINARY

**WHITTIER WASTEWATER TREATMENT FACILITY
GEOTECHNICAL REPORT**

TEST PIT LOCATIONS

Date
OCT 1998

Scale
AS NOTED

Figure
2

III. SURFACE CONDITIONS

Topography is generally flat within the project area. Relief varies between elevations 16' and 23', with the higher elevations at the railroad tracks and the lower elevations at the proposed septic tank site near the tidal pool.

The proposed septic tank site is partially covered by grasses and low brush. A drainage swale runs west to east along the southern edge of the site. The swale had only a small amount of flow on October 2, 1998 and October 9, 1998, but flow increases dramatically during rainfall events. The swale drains into the tidal pool, which is isolated from the shoreline of Passage Canal by fill imported for the railroad yard.

Depot Road borders the north edge of the site. The road is strip paved with asphalt and the asphalt is currently in poor condition, with potholes and areas of unraveling pavement.

There are nine sets of railroad tracks in the railroad yard. Each set of tracks sits on a bed of heavy, consistently graded, railroad ballast rock. Most of the area between the tracks is gravel-surfaced. There are isolated patches of low brush between the tracks.

The area between the Marginal Wharf Building and the outfall manhole is flat and gravel-surfaced. Near the outfall manhole is the staging area for vehicles waiting to load on the train. This area is strip paved with asphalt.

IV. SUBSURFACE CONDITIONS

The materials encountered in the test pit excavations consisted of poorly graded sandy gravels with cobbles and boulders to 3' in diameter. The gravels were generally medium dense to dense and moist. The materials included some small manmade debris. Groundwater was exposed near the tidal pool at the septic tank site. No bedrock was found within the project area.

For that portion of the project area between the Marginal Wharf Building and the outfall manhole, soils information obtained from the daily inspection reports generated during the 1994 water main construction report the soils as gray sandy gravel and gray sand with some gravel. There were occasional cobbles and no bedrock was exposed. The water main was installed approximately 7' below grade and no groundwater was found.

A summary of the test pits and the materials excavated from each is given below. Logs of the test pits are given in Appendix I.

A. Test Pit No. 1

Test Pit No. 1 is located 38' east of existing Lift Station No. 2 at the septic tank site. The material consisted of poorly graded gravels and sandy gravels (GP) with an occasional angular cobble to 13" in diameter and an occasional boulder to 27" in diameter. The material was moist. Ground water was first noted at 7' below grade and there was standing water in the excavation at 9' below grade. No bedrock was encountered. Abandoned building bricks were noted at 2' to 3' below grade. The bottom of the excavation was at 12.3' below grade.

A 13' long 4" diameter tube was placed for monitoring groundwater levels. The top of the tube is at elevation 15.71'. On 10/9/98 at 11:55 AM the elevation of groundwater in the monitoring tube was measured at 8.71'. The local low tide was at 10:19 AM (1.5') and high tide was at 4:22 PM (14.3').

B. Test Pit No. 2

Test Pit No. 2 is located 54' north of existing Lift Station No. 2 at the septic tank site. The material consisted of poorly graded gravels and sandy gravels (GP) with cobbles to 10" in diameter and an occasional boulder to 17" in diameter. The material was damp and medium dense. Groundwater was first noted at 8.3' below grade and there was standing water in the excavation at 8.5' below grade. No bedrock was encountered. An odor of hydrocarbons and a bluish sheen on the excavated material was noted beginning at 8' below grade. Timbers, wood stave piping, and other wooden debris was noted beginning at 6' below grade. The bottom of the excavation was at 11.3' below grade.

A 13' long 4" diameter tube was placed for monitoring groundwater levels. The top of the tube is at elevation 17.65'. On 10/9/98 at 1:35 PM the elevation of groundwater in the monitoring tube was measured at 8.31'. The local low tide was at 10:19 AM (1.5') and high tide was at 4:22 PM (14.3').

C. Test Pit No. 3

Test Pit No. 3 is located 36' south of the existing splitter box manhole at the septic tank site. The material consisted of poorly graded gravels and sandy gravels (GP) with cobbles to 16" in diameter. The material was damp and medium dense. Beginning at 2.4' below grade, there was a 2.1' layer of brown silty material (GM). Groundwater was first noted at 8' below grade and there was standing water in the excavation at 8.5' below grade. A slight sheen on the groundwater and the slight odor of hydrocarbons was noted. No bedrock was encountered. The bottom of the excavation was at 11.4' below grade.

D. Test Pit No. 4

Test Pit No. 4 is located in the railroad yard just north of Depot Road. The material consisted of poorly graded gravels and sandy gravels (GP) with subangular rocks to 10" in diameter. The material was moist and medium dense. No bedrock was encountered. The bottom of the excavation was at 9.2' below grade.

E. Test Pit No. 5

Test Pit No. 5 is located in the middle of the railroad yard between Depot Road and the Marginal Wharf Building. The material consisted of poorly graded gravels and sandy gravels (GP) with round cobbles to 16" in diameter. The material was dense. Beginning at 3' below grade the material consisted of poorly graded gravels and sandy gravels (GP) with subangular to angular rock to 24" in diameter – it was apparent "shot" rock. At 7' below grade a boulder 3'+ in diameter was encountered and the excavation was subsequently terminated. The bottom of the excavation was at 7.6' below grade.

V. DISCUSSION

The entire project area is overlain with fill created during site grading by the military in the early 1940's. The material generally consists of poorly graded gravels and sandy gravels with occasional cobbles to 16" in diameter and boulders to 3' in diameter. Interspersed within the fill are small pockets of various man-made debris including bricks, timbers, and wood stave piping. Along the force main alignment, there are areas of backfill material consisting of "shot" bedrock. No stratified bedrock was encountered within the project area.

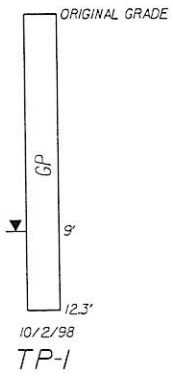
Near the tidal pool at the proposed septic tank site, ground water was located at elevations between 8.3' and 8.7' (10/9/98). No groundwater was found in the railroad yard at the depths of the test pit excavations.

There is evidence of hydrocarbon contamination at the septic tank site. However, it appears to be the result of contaminated storm runoff from the nearby drainage swale and not from a point source. The hydrocarbons were noted near the elevations of the groundwater.

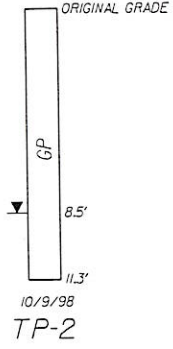
The soils encountered were all easily excavated by backhoe, with the exception of the larger "shot" bedrock encountered in the railroad yard. A mainline backhoe will not have difficulty excavating this larger rock. At the test pits located near the tidal pool, excavation was hindered by groundwater at the lower elevations of the test pits. Dewatering may be necessary during construction. The manmade debris encountered within the test pit excavations was minor and may easily be excavated with a mainline backhoe.

APPENDIX I

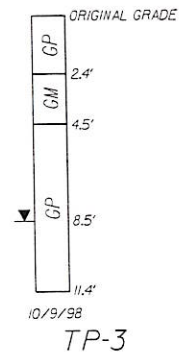
TEST PIT LOGS



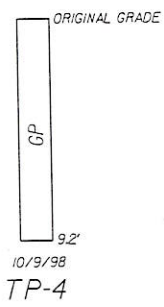
POORLY GRADED GRAVELS, SANDY GRAVELS
 OCCASIONAL ANGULAR COBBLE TO 13"
 OCCASIONAL BOULDER TO 27"
 MOIST
 MEDIUM DENSE
 BUILDING BRICKS 2' TO 3' BELOW GRADE
 PLACED 4" MONITORING TUBE
 ORIGINAL GRADE ELEVATION = 15.3'



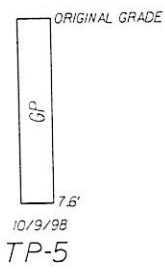
POORLY GRADED GRAVELS, SANDY GRAVELS
 COBBLES TO 10"
 OCCASIONAL BOULDER TO 17"
 DAMP
 MEDIUM DENSE
 ODOR OF HYDROCARBONS AND BLuish
 SHEEN ON MATERIAL BEGINNING AT 8'
 BELOW GRADE
 TIMBERS, WOOD STAVE PIPING, & OTHER
 WOODEN DEBRIS AT 6' BELOW GRADE
 PLACED 4" MONITORING TUBE
 ORIGINAL GRADE ELEVATION = 15.7'



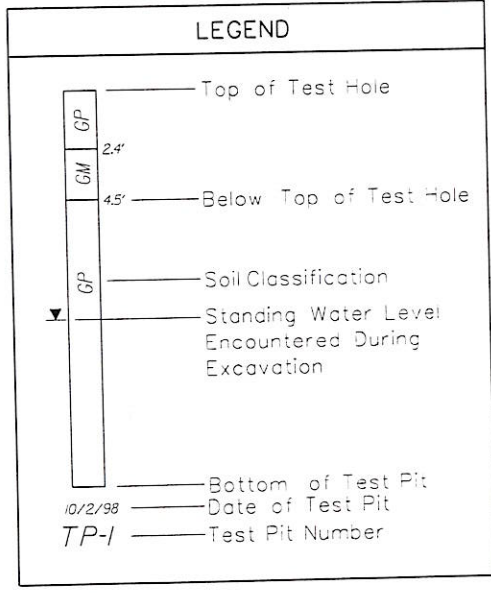
POORLY GRADED GRAVELS, SANDY GRAVELS
 COBBLES TO 16"
 DAMP
 MEDIUM DENSE
 LAYER OF BROWN SILTY MATERIAL FROM
 2.4' TO 4.5' BELOW GRADE
 SLIGHT ODOR OF HYDROCARBONS AND
 SLIGHT SHEEN ON WATER
 ORIGINAL GRADE ELEVATION = 16.1'



POORLY GRADED GRAVELS, SANDY GRAVELS
 SUBANGULAR ROCKS TO 10"
 MOIST
 MEDIUM DENSE
 ORIGINAL GRADE ELEVATION = 23.3'



POORLY GRADED GRAVELS, SANDY GRAVELS
 ROUND COBBLES TO 16"
 DENSE
 SUBANGULAR TO ANGULAR "SHOT" ROCK TO
 24" DIAMETER BEGINNING AT 3' BELOW GRADE
 3" DIAMETER BOULDER AT 7' BELOW GRADE
 ORIGINAL GRADE ELEVATION = 18.6'



WHITTIER WASTEWATER TREATMENT FACILITY
 GEOTECHNICAL REPORT

TEST PIT LOGS

Project: 9527
 Status: PRELIMINARY

Date	OCT 1998
Scale	AS NOTED
Figure	A

File: 2750102.dgn

APPENDIX II

UNIFIED SOILS CLASSIFICATION SYSTEM

Major divisions		Group symbols	Typical names
Coarse-Grained Soils More than 50% retained on No. 200 sieve ¹	Gravels 50% or more of coarse fraction retained on No. 4 sieve	Clean Gravels	GW Well-graded gravels and gravel-sand mixtures, little or no fines
			GP Poorly graded gravels and gravel-sand mixtures, little or no fines
		Gravels with Fines	GM Silty gravels, gravel-sand-silt mixtures
			GC Clayey gravels, gravel-sand-clay mixtures
	Sands More than 50% of coarse fraction passes No. 4 sieve	Clean sands	SW Well-graded sands and gravelly sands, little or no fines
			SP Poorly graded sands and gravelly sands, little or no fines
		Sands with Fines	SM Silty sands, sand-silt mixtures
			SC Clayey sands, sand-clay mixtures
Fine-Grained Soils 50% or more passes No. 200 sieve ¹	Silts and Clays Liquid limit 50% or less	ML Inorganic silts, very fine sands, rock flour, silty or clayey fine sands	
		CL Inorganic clays of low to medium plasticity, gravelly clays, sandy clays, silty clays, lean clays	
		OL Organic silts and organic silty clays of low plasticity	
	Silts and Clays Liquid limit greater than 50%	MH Inorganic silts, micaceous or diatomaceous fine sands or silts, elastic silts	
		CH Inorganic clays of high plasticity, fat clays	
		OH Organic clays of medium to high plasticity	
Highly Organic Soils	PT	Peat, muck, and other highly organic soils	

*After ASTM (1982)

¹Based on the material passing the 75- μ m (3-in.) sieve

APPENDIX III

GROUNDWATER DATA

WHITTIER WASTEWATER TREATMENT FACILITY
Groundwater Elevations At Proposed Site

File: 27gwlevel.xls

Date	Time	Monitoring Well No. 1 (Near Creek) Groundwater Elevation	Monitoring Well No. 2 (Near Depot Road) Groundwater Elevation	TIDE DATA							
				HIGH TIDES				LOW TIDES			
				AM	FT	PM	FT	AM	FT	PM	FT
09-Oct-98	11:55 AM	8.71	8.32	4:29	12.7	4:22	14.3	10:19	1.5	11:00	-1.3
28-Oct-98	9:00 AM	8.51	9.15	7:15	9.3	6:39	9.9	0:09	2.2	12:28	5.6
29-Oct-98	10:30 AM	8.21	8.75	8:22	9.9	8:07	10.0	1:16	2.5	1:50	5.2
30-Oct-98	8:40 AM	4.21	8.45	9:15	10.7	9:16	10.7	2:29	2.3	3:11	4.1
02-Nov-98	9:15 AM	8.41	8.15	11:26	14.0	-	-	5:18	0.6	5:52	-1.1
03-Nov-98	9:00 AM	9.31	9.35	0:03	12.9	12:08	14.9	6:02	0.3	6:36	-2.3
05-Nov-98	9:00 AM	9.41	9.75	1:43	13.4	1:31	15.6	7:28	0.8	8:06	-3.2
05-Nov-98	1:00 PM	9.21	9.55								
05-Nov-98	2:00 PM	9.91	9.60								
05-Nov-98	3:00 PM	10.41	9.65								
06-Nov-98	1:00 PM	8.91	9.35	2:26	12.9	2:09	15.0	8:14	1.5	8:54	-2.7
09-Nov-98	8:30 AM	8.31	8.80	5:10	11.0	4:38	11.7	10:48	4.2	11:30	0.6
11-Nov-98	9:00 AM	8.01	8.25	7:39	10.7	7:24	10.0	0:29	1.7	1:08	5.1
12-Nov-98	9:00 AM	6.96	8.05	8:42	11.0	8:42	9.8	1:37	2.5	2:36	4.7
16-Nov-98	9:00 AM	7.86	7.90	11:23	12.5	-	-	5:20	2.6	5:57	0.6
17-Nov-98	9:00 AM	8.01	8.05	0:07	10.8	11:54	12.9	5:54	2.6	6:30	-0.1
19-Nov-98	8:30 AM	9.66	9.20	1:20	11.3	12:55	13.3	7:00	2.8	7:34	-0.8

CITY OF WHITTIER, ALASKA
LIFT STATION NO. 5 REPLACEMENT REBID

SECTION XI
PERMITS



THE STATE
of **ALASKA**
GOVERNOR MIKE DUNLEAVY

Department of Environmental
Conservation

Division of Water
Engineering Support and Plan Review

dec.alaska.gov
septic.alaska.gov

August 30, 2023
Mike Leguineche
CRW Engineering Group
mleguineche@crweng.com

Plan Tracking No.: PA-000226

**RE: City of Whittier WWTF and Collection System
Lift Station No. 5 Replacement
New septic effluent header, wet-well, duplex pumps, valve vault, force main, & control building
Conditional Construction Approval**

Mike Leguineche:

On 7/28/2023, the Alaska Department of Environmental Conservation (ADEC or Department) received a submittal requesting construction approval for Whittier Lift Station No. 5 Replacement located in Whittier. The information was reviewed in accordance with Wastewater Disposal Regulations 18 AAC 72 and **conditional construction approval is granted.**

Project Description

Lift Station No. 5 is experiencing severe corrosion and needs prompt repair and upgrade. The existing, failing wet-well is constructed as separate volume but is integrally cast in concrete with the rest of septic tank 1. This project will construct several new sewer components to collect and pump domestic wastewater effluent from the City's existing treatment system. This work includes select demolition and reuse of piping and pumps (pumps were replaced with like-kind prior to this project), connection to the existing effluent gravity header, a new wet-well and reused duplex Flygt NP 3127 pumps, valve vault, an 8-inch DIP force main connection to the existing outfall manhole, and a raised control building.

Construction Approval Conditions

This project is approved for construction submit to the following condition(s):

1. This project shall install a pipe stub to extend from the existing 6-inch DI flanged tee down to at least 12-inches below the water surface into the operating volume. This modification to the effluent baffle shall be noted and included as part of the Record Drawings.

The baffle deficiency noted above was also identified in the remaining tanks (2-6). During each of these tanks routine maintenance, such as pumping, the City of Whittier shall install a pipe stub to extend from the existing 6-inch DI flanged tee down to at least 12-inches below the water surface into the operating volume. The City of Whittier shall correct these deficiencies and submit separate documentation to the Department to confirm its completion.

Approval to Operate Requirements

This construction approval includes a 90 day interim approval to operate provided that construction substantially complied with the approved design drawings. In order to receive final operational approval, please submit the following information within 60 days of the completion of this project:

1. Written request for operational approval that includes a statement regarding any changes made during construction
2. Record drawings prepared (signed and dated) by the engineer responsible for observing the construction of this project (The Department prefers drawings that are no larger than 11" x 17".)
3. Certification of Construction form complete with signatures from the Owner, Construction Contractor, and Engineer (A copy of this form may be downloaded and printed from the Department of Environmental Conservation website <http://dec.alaska.gov/water/wwdp/onsite/pdf/construction.pdf> or a copy will be provided upon request.)

If the approval to operate requirements cannot be met within 90 days of construction completion, an extension of the interim approval to operate must be requested at least 30 days in advance by addressing item 3 above.

Disclaimers

Approval of submitted plans is not approval of omissions or oversights by this office or noncompliance with any applicable regulation. The Department's construction approval does not guarantee correctness or the functionality of the design, or waive the owner's responsibility for continued compliance with state regulations. Deviations from approved plans which affect capacity, flow, pressure, operation, compliance, or materials of major system components must be approved by this Department prior to their construction or implementation.

This approval is valid for two years from the date of this letter. If the applicant fails to construct, alter, install, or modify the system, the approval is void and plans must be resubmitted for department review and approval according to 18 AAC 72.200.

This approval is contingent upon your receipt of any other state, federal, or local authorizations which are required for your project. You are required to obtain all other necessary authorizations before proceeding with your project. This approval does not imply the granting of additional authorizations nor obligate any state, federal, or local regulatory body to grant required authorizations.

Informal Reviews and Adjudicatory Hearings

A person authorized under a provision of 18 AAC 15 may request an informal review of a contested decision by the Division Director in accordance with 18 AAC 15.185 and/or an adjudicatory hearing in accordance with 18 AAC 15.195 – 18 AAC 15.340. See DEC's "Appeal a DEC Decision" web page <https://dec.alaska.gov/commish/review-guidance/> for access to the required forms and guidance on the appeal process. Please provide a courtesy copy of the adjudicatory hearing request in an electronic format to the parties required to be served under 18 AAC 15.200. Requests must be submitted no later than the deadline specified in 18 AAC 15.

If you have questions please contact me at (907) 269-7673 or by e-mail at thomas.brannan@alaska.gov.

Sincerely,



Engineer 1

cc: Scott Korbe, SKorbe@whittieralaska.gov



STATE OF ALASKA
DEPARTMENT OF ENVIRONMENTAL CONSERVATION
CERTIFICATION OF CONSTRUCTION FOR
DOMESTIC WASTEWATER SYSTEMS



Instructions: In accordance with 18 AAC 72.235, within 90 days after the completion of the construction, installation, or modification of a project, the owner of the project, the contractor(s) responsible for constructing the project, and the registered professional engineer responsible for construction observation, must complete and sign this form certifying that the project was constructed in accordance with the most recent Department-approved plans, or in accordance with prepared record drawings submitted with this form.

If a project is being completed in phased construction, a site plan shall be attached showing the portion of the project being declared completed on the date stated in Section A – Project Information. Completion of each phase of the project must be declared as it is completed. This form may be downloaded from the Alaska Department of Environmental Conservation (ADEC) Engineering Support and Plan Review (ESPR) website: dec.alaska.gov/water/wastewater/engineering/

Section A – Project Information

If project involved a community-wide system or utility extension of a collection system, the property legal description and street address may not be applicable.

Project Name:	
Property Legal Description (if applicable):	
Property Street Address (if applicable):	
Plan Tracking No.:	Date Project Completed:

Section B – Owner’s Section

The owner signing this form must be the same person who signed the Owner’s Statement. If different, submit a new signed Owner’s Statement (available on the Department’s website).

Owner Name:
Entity Representing (if applicable):
Mailing Address:
Email Address:

I certify that I am the owner of the above-referenced project or property. I further certify that this project was constructed in accordance with the latest plans submitted to and approved by ADEC, or in accordance with the attached record drawings. I understand that I may be required to take remedial measures to correct any construction which was completed without prior ADEC approval, was not constructed in accordance with approved design drawings, and/or is found to be inconsistent with applicable regulations including, but not limited to, Wastewater Disposal Regulations 18 AAC 72.

Signature

Date

Section C – Contractor’s Section

I certify that I, or an individual under my direct supervision, have constructed the project (or portions of the project) referenced in Section A, in accordance with the latest plans submitted to and approved by ADEC, or in accordance with the attached record drawings.

Printed Name	Signature	Date
--------------	-----------	------

Printed Name	Signature	Date
--------------	-----------	------

Printed Name	Signature	Date
--------------	-----------	------

Section D – Engineer’s Section

If the observing engineer is other than the design engineer, attach a letter signed and sealed that documents the scope of construction observation services and identifies each person who contributed to the record documents (18 AAC 72.235(b)(3)).

Engineer Name:
Engineering Firm:
Mailing Address:
Email Address:

I certify that I, or an individual under my direct supervision, have visually observed the quality of construction and materials used so that I, or an individual under my direct supervision, has the information necessary to provide a professional opinion regarding the contractor’s conformance to the plans approved by the Department or to the attached record drawings. I further certify that to the best of my knowledge and information available, the project was constructed in accordance with all conditions placed on the construction approval issued by the Department.

Check all that apply:

Project was constructed in accordance with the plans received by the Department on _____(date) and approved by the Department on _____(date).

Project was constructed in accordance with the attached record drawings.

The observing engineer is the same as the design engineer

Attached is a sealed and signed letter by the observing engineer in accordance with 18 AAC 72.235(b)(3)

All conditions placed on the construction approval have been met (attach cover letter)

No conditions were placed on the construction approval

Printed Name	Signature	Registration No.	Date
--------------	-----------	------------------	------

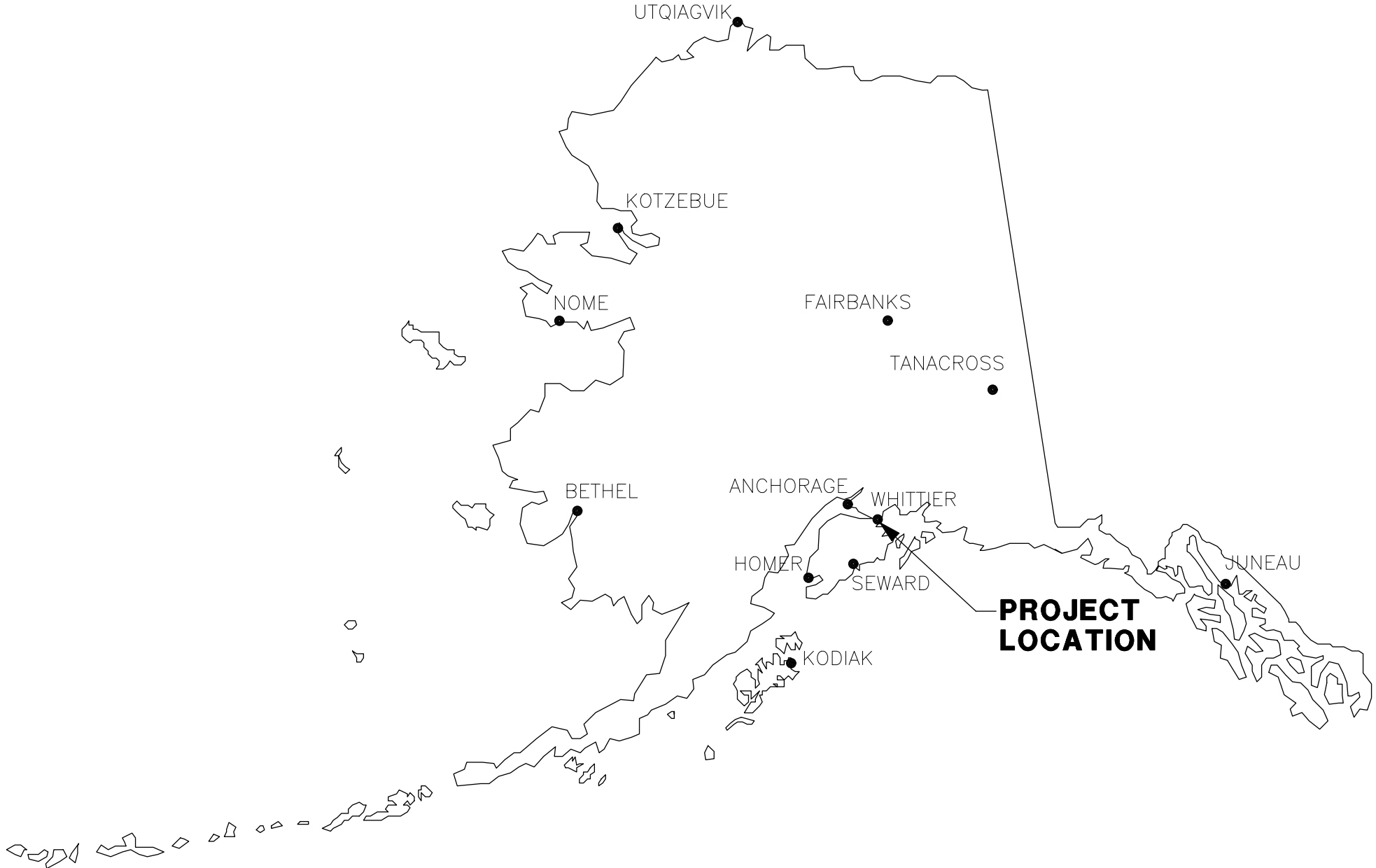
CITY OF WHITTIER, ALASKA
LIFT STATION NO. 5 REPLACEMENT REBID

SECTION XII
DRAWINGS

CITY OF WHITTIER, ALASKA

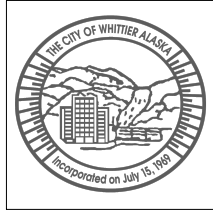
LIFT STATION NO.5 REPLACEMENT REBID

FEBRUARY 2024



SHEET INDEX	
SHEET NUM	SHEET TITLE
GENERAL	
G001	COVER
CIVIL	
C001	CIVIL LEGEND AND ABBREVIATIONS
C002	DEMOLITION PLAN
C100	OVERALL SITE PLAN
C101	SITE LAYOUT & SITE PLAN
C102	WET WELL SITE PLAN AND SECTION
C200	TYPICAL SECTIONS
C201	CIVIL DETAILS
C202	CIVIL DETAILS
ELECTRICAL	
E001	ELECTRICAL LEGEND AND ABBREVIATIONS
E002	PANEL AND CONDUIT SCHEDULES
E100	ELECTRICAL SITE PLAN & POWER ONE-LINE
E101	GROUNDING PLAN
E102	SITE HAZARDOUS LOCATION CLASSIFICATION
E110	CONTROLS SHELTER PLAN
E200	EXISTING WET WELL PLAN AND SECTION
E201	NEW WET WELL PLAN AND SECTION
E202	WET WELL JUNCTION BOX DETAILS
E203	EQUIPMENT MOUNTING DETAIL
INSTRUMENTATION CONSTRUCTION	
IC001	INSTRUMENTATION LEGEND
IC100	LCP-LS LAYOUT
IC201	LEVEL AND PUMP CONTROLS
IC202	PUMP, SP-501 & 502 CONTROLS
IC203	LIFT STATION 4 SP PUMP RSS STARTERS
IC204	LIFT STATION 5 SP PUMP RSS STARTERS

PREPARED FOR:



CITY OF WHITTIER

PREPARED BY:



3940 ARCTIC BLVD, SUITE 300
ANCHORAGE, ALASKA 99503
PHONE: (907) 562-3252
#AECL882-AK

GENERAL NOTES:

- ALL CONSTRUCTION SHALL BE INSTALLED AS SPECIFIED IN THE MOST CURRENT EDITION OF THE MUNICIPALITY OF ANCHORAGE STANDARD SPECIFICATIONS FOR STREETS-DRAINAGE-UTILITIES-PARKS (MASS), THE AWWU DESIGN AND CONSTRUCTION PRACTICES MANUAL (DCPM), AND THE SPECIAL PROVISIONS.
- "BOP" IS DEFINED AS THE OUTSIDE BOTTOM OF PIPE. "INV" IS DEFINED AS THE INSIDE BOTTOM OF PIPE.
- CONTRACTOR SHALL VERIFY AND RECORD THE HORIZONTAL AND VERTICAL LOCATIONS OF ALL UTILITIES ENCOUNTERED IN THE FIELD AND RECORD ANY CHANGES ON THE CONTRACTOR RECORD DRAWINGS.
- CONTRACTOR SHALL SUBMIT ALL FIELD SURVEY BOOKS (SURVEY LINE AND GRADE BOOKS) ALONG WITH THE RECORD DRAWINGS PRIOR TO CONTRACT FINAL PAYMENT.
- CONTRACTOR SHALL RESTORE ALL PROPERTY DISTURBED BY CONTRACT ACTIVITIES, INCLUDING DRAINAGE SWALES, TO PRE-CONSTRUCTION CONDITIONS OR AS SHOWN ON THE PLANS.
- WATER RESULTING FROM CONTRACTOR'S DEWATERING EFFORT MAY NOT BE PUMPED OR OTHERWISE DIVERTED INTO EXISTING STORM DRAINS UNLESS PERMITS ARE OBTAINED BY THE CONTRACTOR. UNDER NO CIRCUMSTANCES WILL THE CONTRACTOR BE ALLOWED TO DIVERT WATER FROM AN EXCAVATION ONTO ROADWAYS. CONTRACTOR SHALL PROVIDE A DISPOSAL SITE FOR EXCESS WATER AND SHALL BE RESPONSIBLE FOR SECURING ALL NECESSARY PERMITS AND APPROVALS. CONTRACTOR SHALL PROVIDE COPIES OF NECESSARY PERMITS AND APPROVALS TO THE ENGINEER.
- THE CONTRACTOR SHALL BE RESPONSIBLE FOR EROSION AND SEDIMENT CONTROLS AS NECESSARY TO COMPLY WITH FEDERAL, STATE, AND MUNICIPAL LAWS THAT PROHIBIT UNPERMITTED DISCHARGE OF POLLUTANTS, INCLUDING SEDIMENTS, THAT ARE A RESULT OF EROSION AND OTHER CONSTRUCTION ACTIVITIES. THE CONTRACTOR SHALL CONDUCT ALL WORK SO SEDIMENT IS NOT TRANSPORTED ONTO THE ROADWAY OR ADJACENT PROPERTY. AT A MINIMUM, THE CONTRACTOR SHALL SWEEP UP ANY SEDIMENT TRACKED ONTO PAVED SURFACES IN PUBLIC RIGHT-OF-WAY WITHIN 24 HOURS OF THE TRACKING TO MINIMIZE THE WASH-OFF OF SEDIMENT INTO THE STORM DRAINS OR WATERWAYS.
- ALL INSULATION PLACED ABOVE SEWER PIPES SHALL BE RIGID BOARD, HIGH DENSITY EXTRUDED POLYSTYRENE, MIN. 60 P.S.I. COMPRESSIVE STRENGTH, FOR UNDERGROUND INSTALLATIONS EQUIVALENT TO R-20 PER FOUR (4) INCH THICK INSULATION.
- A TOPOGRAPHIC SURVEY WAS NOT PERFORMED. ALL ELEVATIONS ARE BASED ON AN ASSUMED ELEVATION OF 19.2 FEET AT TOP OF SEPTIC TANK 2.
- CAUTION! UNDERGROUND UTILITIES EXIST WITHIN THE PROJECT AREA. CONTRACTOR SHALL CALL FOR UTILITY LOCATES PRIOR TO BEGINNING CONSTRUCTION. PROVIDE A MINIMUM OF 10 DAYS' NOTICE IN ADVANCE OF UTILITY LOCATING. CALL 811 FOR GENERAL LOCATES. CALL THE CITY OF WHITTIER PUBLIC WORKS DEPARTMENT (907-240-2019) TO COORDINATE LOCATES FOR WATER, SEWER, AND STORM.

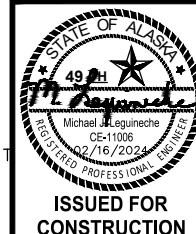
SEWER NOTES

- ALL PIPING SHALL BE DUCTILE IRON PIPE (DIP), CLASS 52. ALL FITTINGS INSIDE OF WET WELL AND VALVE VAULT SHALL BE FLANGED. ALL FITTINGS OUTSIDE OF WET WELL AND VALVE VAULT SHALL BE RESTRAINED MECHANICAL JOINT (EBAA IRON MEGALUG OR APPROVED EQUAL).
- ALL DUCTILE IRON PIPE AND FITTINGS SHALL BE ENCASED IN ONE LAYER OF 8-MILS POLYETHYLENE ENCASEMENT. POLYETHYLENE ENCASEMENT IS TO INCLUDE V-BIO FILM SYSTEM INCORPORATING CORROSION CONTROL ADDITIVES AND MICROBIOLOGICAL INFUSED CORROSION CONTROL ADDITIVES AS PROVIDED BY US PIPE OR APPROVED EQUAL.
- ALL NUTS, BOLTS AND WASHERS SHALL BE STAINLESS STEEL (TYPE 316L)
- INSTALL 4 INCH X 4 FEET WIDE RIGID BOARD INSULATION ABOVE ALL NEW BELOW GRADE PIPING PER GENERAL NOTE 8.
- PIPE BEDDING MATERIAL SHALL BE BEDDING CLASS 'E' PER THE SPECIAL PROVISIONS.
- SEWER FORCE MAIN AND GRAVITY SEWER MAIN TRENCHES AND BEDDING SHALL BE COMPACTED TO A MINIMUM OF 95% OF MAXIMUM DENSITY.

LEGEND

SYMBOL		LEGEND
EXISTING	PROPOSED	
		SANITARY SEWER MANHOLE
		WATER WELL
		WATER MAIN MANHOLE
		WATER KEY BOX/VALVE MARKER
		FIRE HYDRANT
		STUBOUT CAPPED OR PLUGGED END
		GAS METER
		UNDERGROUND ELECTRIC PEDESTAL
		ELECTRICAL MANHOLE/J-BOX
		ELECTRIC METER
		ELECTRICAL VAULT
		LUMINAIRE
		UTILITY POLE
		GUY ANCHOR
		JOINT USE POWER & TELE. POLE
		UNDERGROUND TELE. PEDESTAL
		UNDERGROUND TV CABLE PEDESTAL
		CENTERLINE
		PROPERTY LINE
		EASEMENT LINE
		UNPAVED (GRAVEL) EDGE OF ROAD/DRIVEWAY
		EDGE OF PAVED ROAD/DRIVEWAY
		DRAINAGE ARROW
		CHAINLINK FENCE
		VEGETATION, BRUSH & TREELINE
		STREET SIGN
		BOLLARD
		TEST BORING OR TEST HOLE
		HOUSE OR STRUCTURE
		ELECTRIC LINE
		ELECTRIC LINE (OVERHEAD)
		STORM DRAIN
		NATURAL GAS LINE
		SANITARY SEWER LINE
		FORCEMAIN
		WATER LINE

COMMON ABBREVIATIONS	
ABBR.	DESCRIPTION
AC	ASPHALT CONCRETE
APPROX, APPX	APPROXIMATE
BM	BENCH MARK
BOP	BEGINNING OF PROJECT
C&G	CURB AND GUTTER
CB	CATCH BASIN
CBMH	CATCH BASIN MANHOLE
C/L, CL	CENTERLINE
CMP	CORRUGATED METAL PIPE
CO	CLEANOUT
CONST	CONSTRUCTION
CPEP	CORRUGATED POLYETHYLENE PIPE
DIA	DIAMETER
DIP	DUCTILE IRON PIPE
D.W.	DETECTABLE WARNING
E	EAST
ELEC	ELECTRIC / ELECTRICAL
ELEV, EL	ELEVATION
EOP	END OF PROJECT / EDGE OF PAVEMENT
EX, EXIST	EXISTING
F&I	FURNISH AND INSTALL
FG	FINISHED GRADE
GB	GRADE BREAK
JB	JUNCTION BOX
LC	LOAD CENTER
IAW	IN ACCORDANCE WITH
IE	INVERT ELEVATION
INTX	INTERSECTION
INV	INVERT
LF	LINEAR FOOT
LT, L	LEFT
LUM	LUMINAIRE
MAX	MAXIMUM
MH	MANHOLE
MIN.	MINIMUM
MON	MONUMENT
MSL	MEAN SEA LEVEL
N	NORTH
N/A	NOT APPLICABLE
N.I.C.	NOT IN CONTRACT
NTS	NOT TO SCALE
NWT	NO WATER TABLE
OC	ON CENTER
OCEW	ON CENTER EACH WAY
OD	OUTSIDE DIAMETER
OH	OVERHEAD
PC	POINT OF CURVATURE
PCC	PORTLAND CONCRETE CEMENT
PCC	POINT OF CONTINUOUS CURVATURE
PI	POINT OF INTERSECTION
PL, P/L	PROPERTY LINE
PCMP	PRECOATED CORRUGATED METAL PIPE
PCPEP	PERFORATED CORRUGATED POLYETHYLENE PIPE
PT	POINT OF TANGENCY
PUE	PUBLIC USE EASEMENT
PVC	POINT OF VERTICAL CURVATURE
PVI	POINT OF VERTICAL INTERSECTION
PVT	POINT OF VERTICAL TANGENT
ROW, R/W	RIGHT OF WAY
RT, R	RIGHT
R.W.	RETAINING WALL
S	SOUTH
SEC COR	SECTION CORNER
SCH/SCHD	SCHEDULE
SI	STREET INTERSECTION
SS	SANITARY SEWER, STAINLESS STEEL
ST	STREET
STA	STATION / STATIONING
STD	STANDARD
STRUCT	STRUCTURE
S/W	SIDEWALK
TBC	TOP BACK OF CURB
TBM	TEMPORARY BENCH MARK
TCP	TEMPORARY CONSTRUCTION PERMIT
TELE	TELEPHONE
TH	TEST HOLE
(TYP.)	TYPICAL
UG	UNDERGROUND
UTIL	UTILITY
V	VOLT
VB	VALVE BOX
VC	VERTICAL CURVE
W	WEST

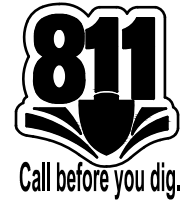


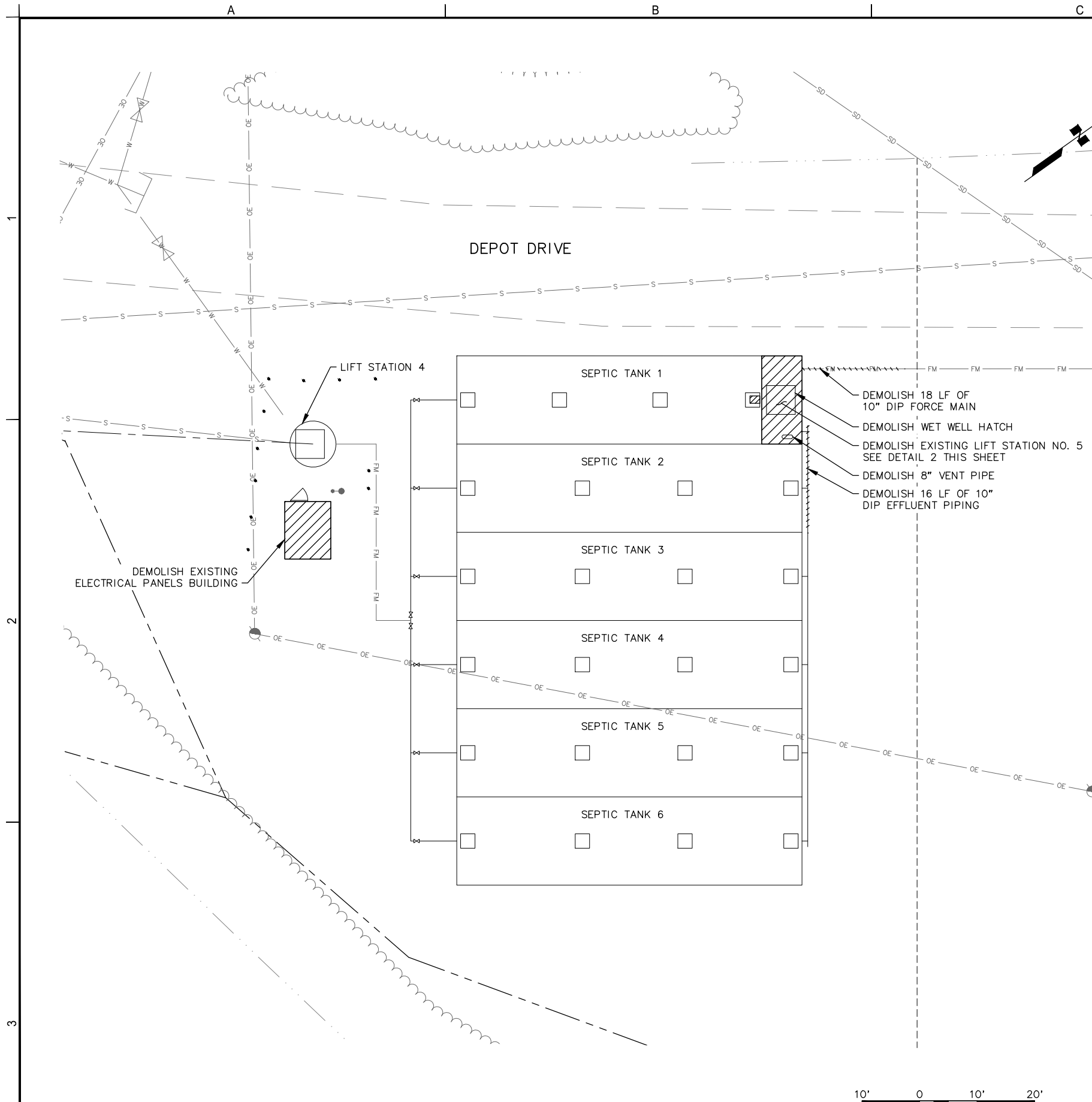
VERIFY SCALE
BAR REPRESENTS 1" ON ORIGINAL DRAWING
0" 1"
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LIFT STATION NO.5 REPLACEMENT REBID
WHITTIER, AK
PROJECT No. 20403.21
CIVIL LEGEND AND ABBREVIATIONS

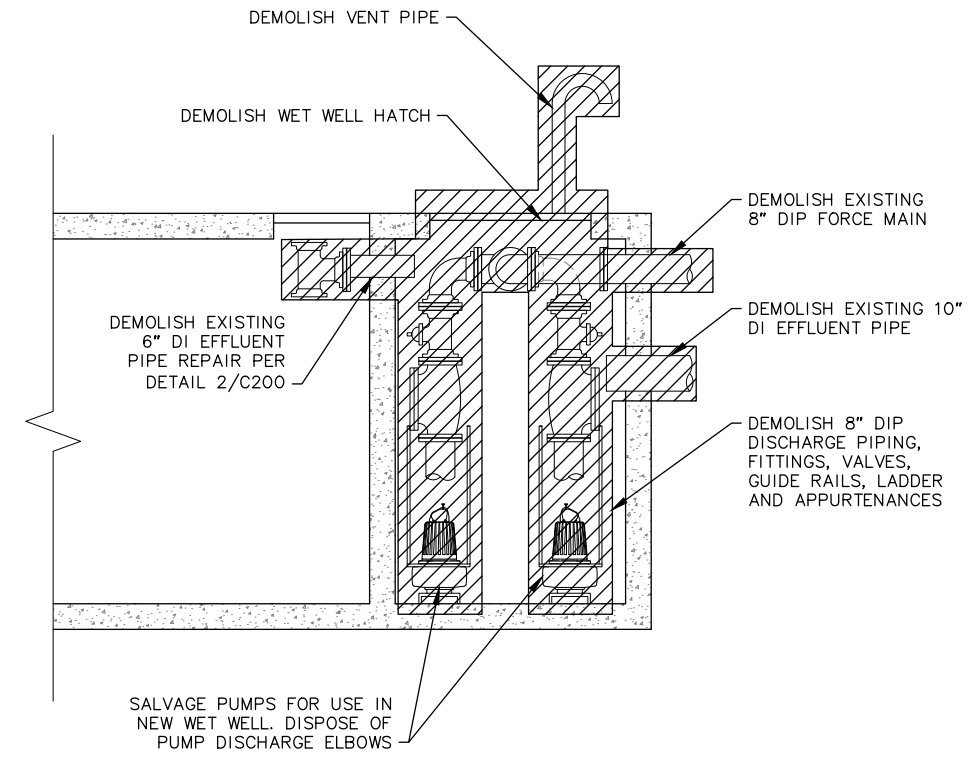
REVISION SCHEDULE		
NO.	DESCRIPTION	DATE

PROJECT NO.	20403.21
DATE	FEB 2024
DRAWN	MJL
DESIGNED	MJL
REVIEWED	PB
SHEET NO.	C001





1 **SITE DEMOLITION PLAN**



2 **LIFT STATION DEMOLITION DETAIL**



ISSUED FOR CONSTRUCTION

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 0" = 1"
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LIFT STATION NO.5 REPLACEMENT REBID

WHITTIER, AK
 PROJECT No. 20403.21
DEMOLITION PLAN

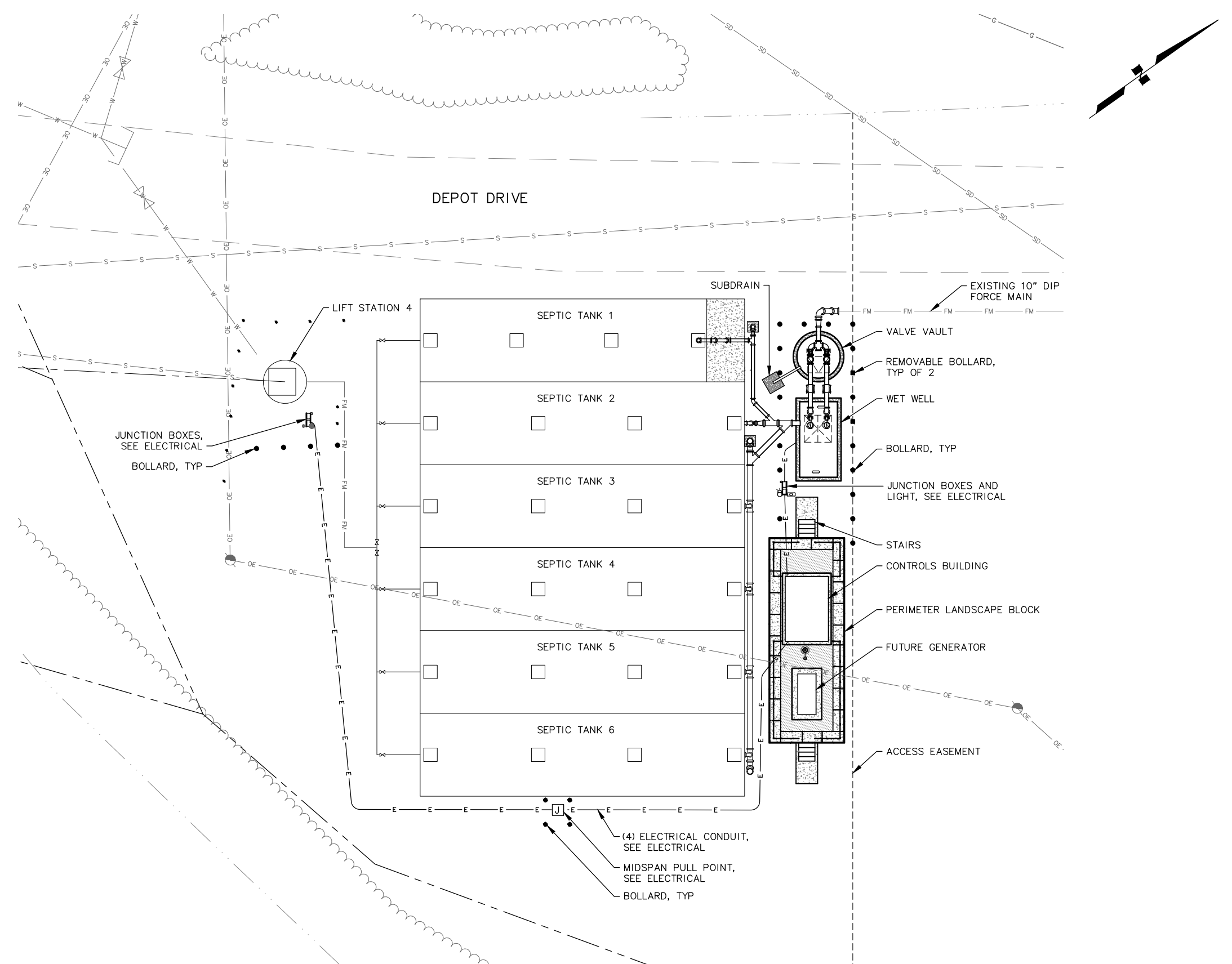
REVISION SCHEDULE		
NO.	DESCRIPTION	DATE

PROJECT NO.	20403.21
DATE	FEB 2024
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DESIGNED	MJL
REVIEWED	PB

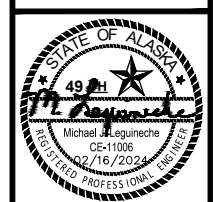
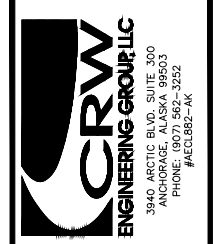
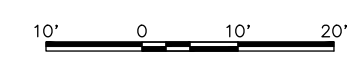
SHEET NO.
C002

PLOT DATE: 2/16/2024

A B C D



1 **OVERALL SITE PLAN**



ISSUED FOR CONSTRUCTION

VERIFY SCALE
 BAR REPRESENTS 1" ON ORIGINAL DRAWING
 0" 1"
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LIFT STATION NO.5 REPLACEMENT REBID
 WHITTIER, AK
 PROJECT No. 20403.21
OVERALL SITE PLAN

REVISION SCHEDULE	
NO.	DATE

PROJECT NO.	20403.21
DATE	FEB 2024
DRAWN	MJL
DESIGNED	MJL
REVIEWED	PB

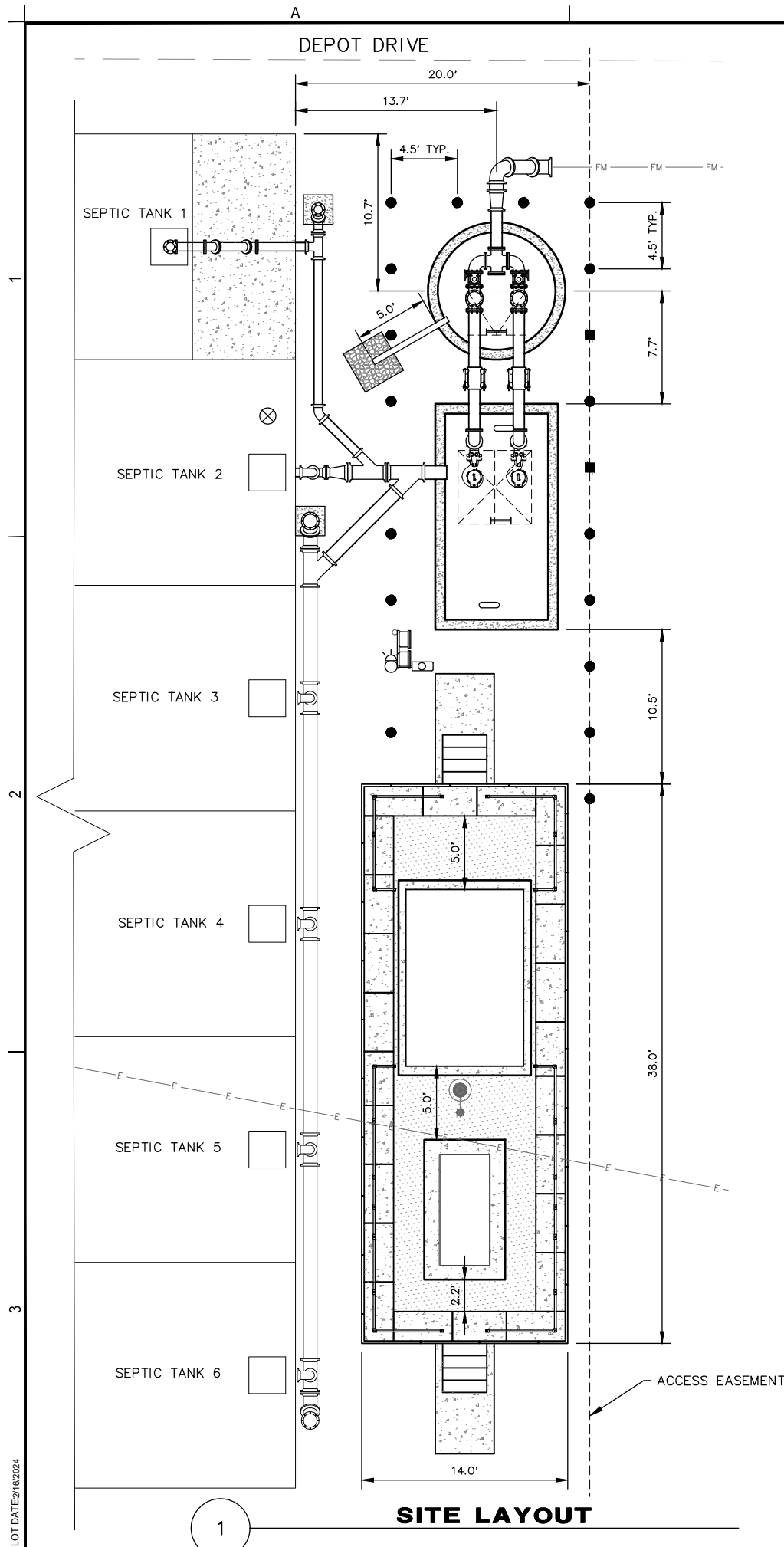
SHEET NO. **C100**

PLOT DATE: 2/16/2024

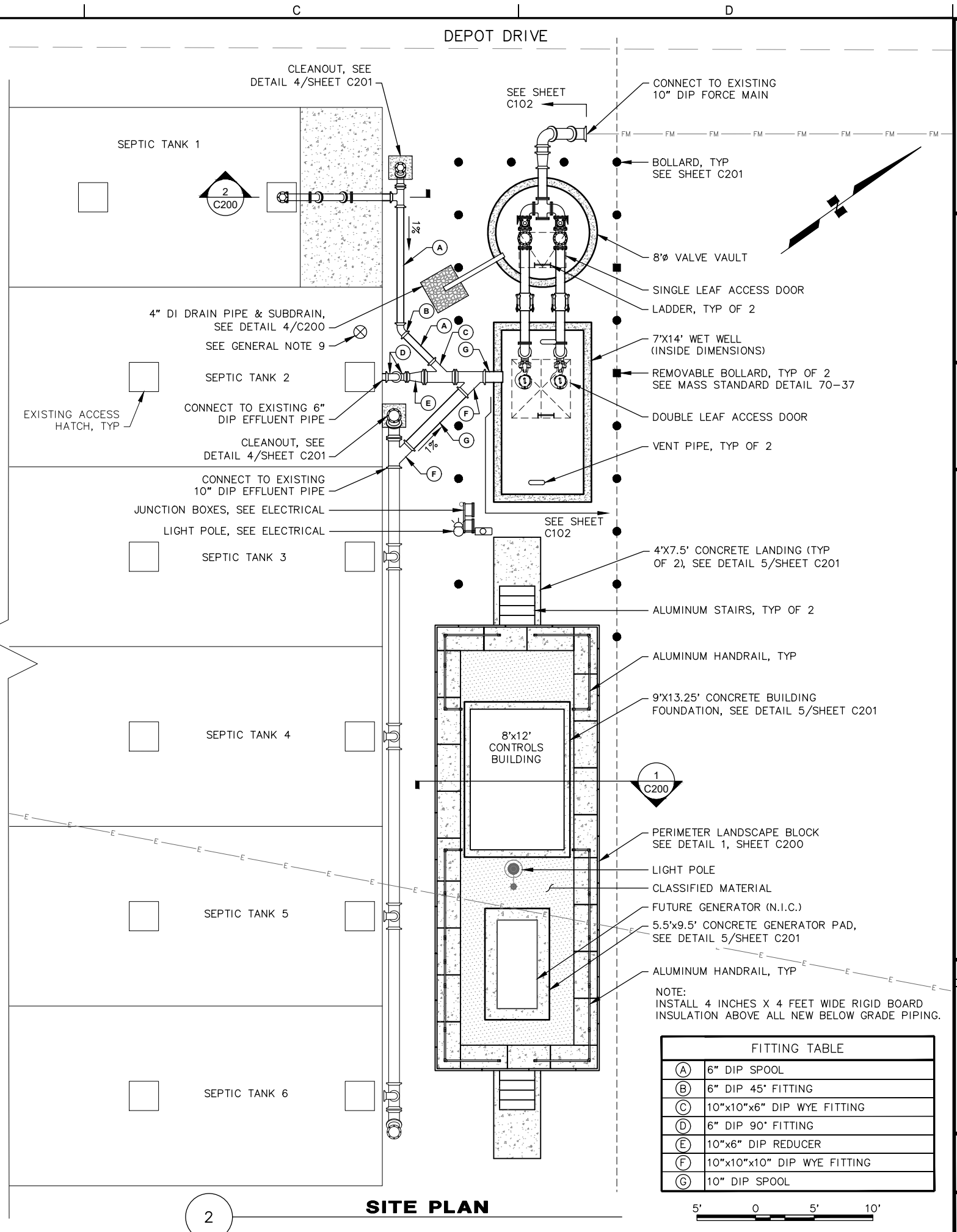
1

2

3



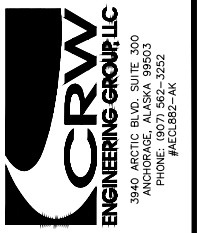
SITE LAYOUT



SITE PLAN

FITTING TABLE	
(A)	6" DIP SPOOL
(B)	6" DIP 45° FITTING
(C)	10"x10"x6" DIP WYE FITTING
(D)	6" DIP 90° FITTING
(E)	10"x6" DIP REDUCER
(F)	10"x10"x10" DIP WYE FITTING
(G)	10" DIP SPOOL

NOTE:
INSTALL 4 INCHES X 4 FEET WIDE RIGID BOARD INSULATION ABOVE ALL NEW BELOW GRADE PIPING.



ISSUED FOR CONSTRUCTION

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LIFT STATION NO.5 REPLACEMENT REBID

WHITTIER, AK
PROJECT No. 20403.21

SITE LAYOUT & SITE PLAN

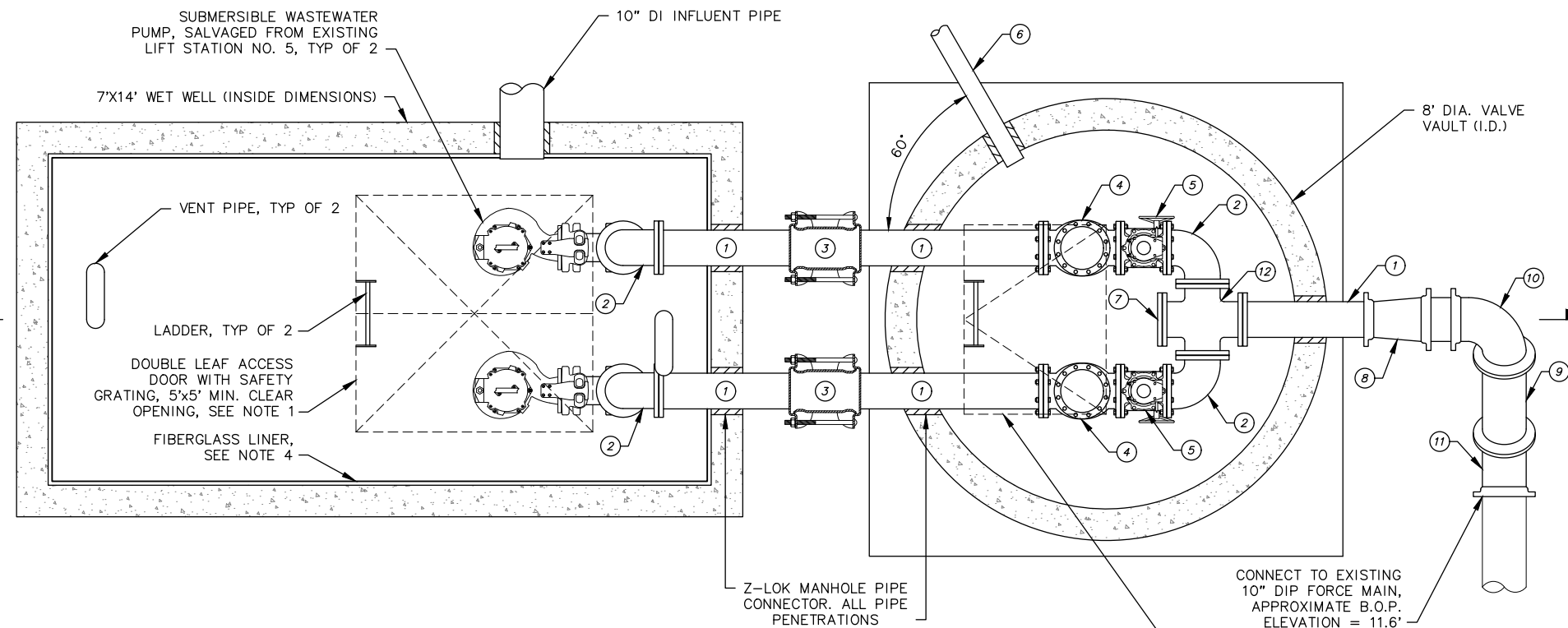
REVISION SCHEDULE		
NO.	DESCRIPTION	DATE

PROJECT NO. 20403.21
DATE FEB 2024
DRAWN MJL
DESIGNED MJL
REVIEWED PB

SHEET NO.

C101

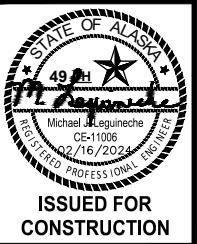
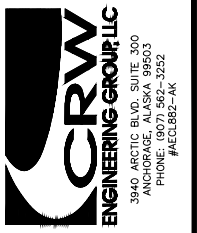
PLOT DATE: 2/16/2024



TYPICAL LIFT STATION NOTES:

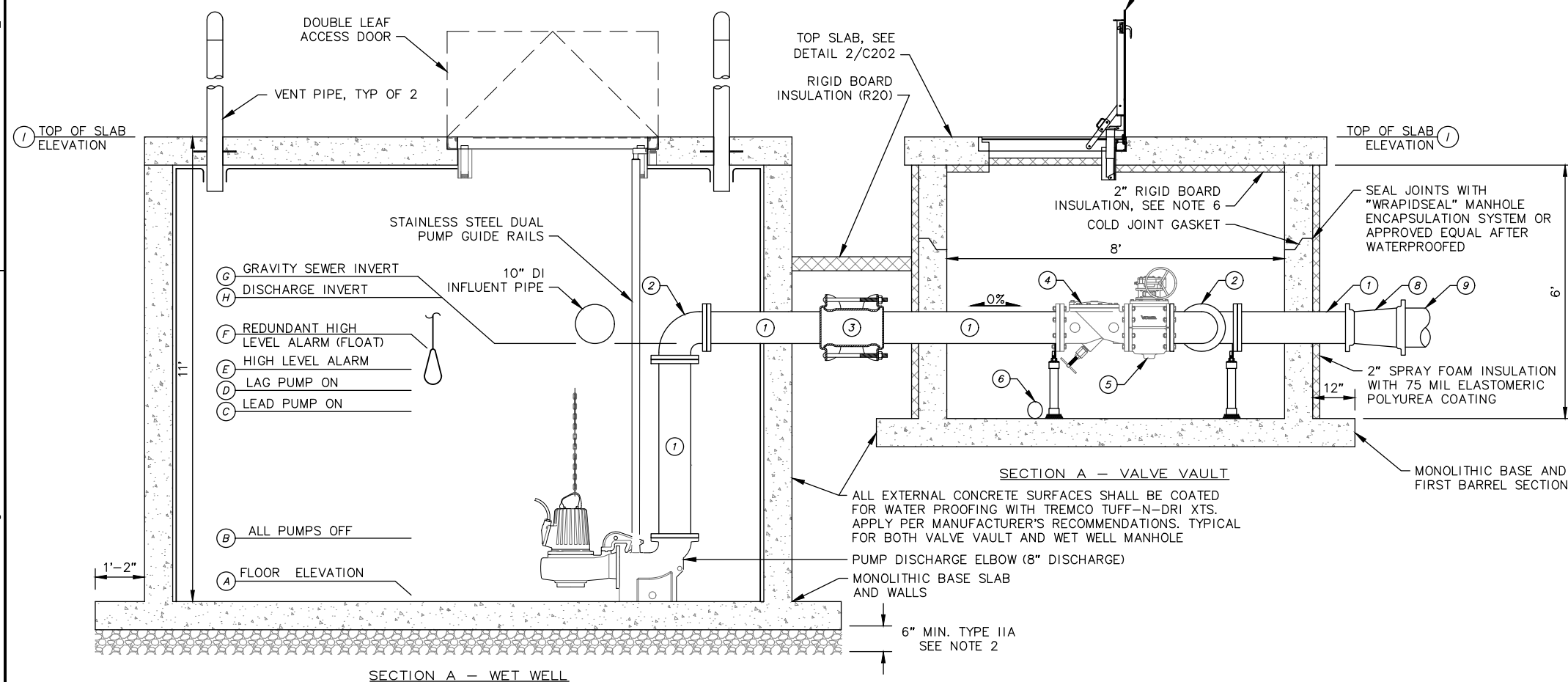
1. LOCATIONS AND DIMENSIONS OF ACCESS HATCH, PUMP GUIDE RAILS, AND PUMP ANCHOR BOLTS DETERMINED BY PUMP MANUFACTURER SPECIFICATIONS. CONTRACTOR TO VERIFY DIMENSIONS PRIOR TO START OF CONSTRUCTION.
2. IF UNSUITABLE MATERIAL IS FOUND BELOW THE BASE OF STRUCTURES, ENGINEER MAY DIRECT CONTRACTOR TO OVEREXCAVATE, PLACE TYPE A GEOTEXTILE SEPARATION FABRIC AND REPLACE WITH TYPE IIA MATERIAL COMPACTED TO A MINIMUM OF 95% OF MAXIMUM DENSITY.
3. PUMP GUIDE RAILS SHALL BE CONSTRUCTED OF A SINGLE LENGTH OF STAINLESS STEEL PIPE.
4. INTERNAL CONCRETE SURFACES (WALLS AND CEILING) OF WET WELL STRUCTURE ABOVE FLOOR SHALL BE LINED WITH CURED-IN-PLACE FIBERGLASS LINER. SEE SPECIFICATIONS.
5. ALL EXPOSED CONCRETE SURFACES WITHIN WET WELL VAULT NOT COVERED BY FIBERGLASS LINER SHALL BE SEALED WITH 75 MIL ELASTOMERIC POLYUREA COATING.
6. MOUNT 2" RIGID INSULATION ON UNDERSIDE OF LID. ATTACH WITH ADHESIVE MOUNTED STICK PINS AND SPEED WASHERS AT 18" O.C. EACH WAY.
7. ALL BACKFILL WITHIN 3 FEET OF THE WET WELL AND VALVE VAULT SHALL BE TYPE II-A CLASSIFIED MATERIAL.
8. ALL NUTS, BOLTS AND WASHERS SHALL BE STAINLESS STEEL (TYPE 316L).

FITTING TABLE	
①	8" DI DISCHARGE PIPE
②	8" DI 90° FITTING (FL)
③	8" DRESSER STYLE 38 FLEX COUPLING
④	8" SWING CHECK VALVE (FLANGED)
⑤	8" PLUG VALVE (FL)
⑥	4" DI DRAIN PIPE SLOPED @ 2%
⑦	8" BLIND FLANGE
⑧	8"x10" DI REDUCER (MJ)
⑨	10" DI FORCE MAIN PIPE
⑩	10" DI 90° FITTING (MJ)
⑪	10" DI 45° FITTING (MJ)
⑫	8" DI CROSS



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DIMENSION	DESCRIPTION	ELEVATION
(A)	WET WELL FLOOR	8.50
(B)	ALL PUMPS OFF	10.00
(C)	LEAD PUMP ON	13.00
(D)	LAG PUMP ON	13.50
(E)	HIGH LEVEL ALARM	14.00
(F)	REDUNDANT HIGH LEVEL ALARM (FLOAT)	14.50
(G)	INFLUENT PIPE INVERT	14.59
(H)	DISCHARGE INVERT	14.59
(I)	TOP SLAB ELEVATION	19.50

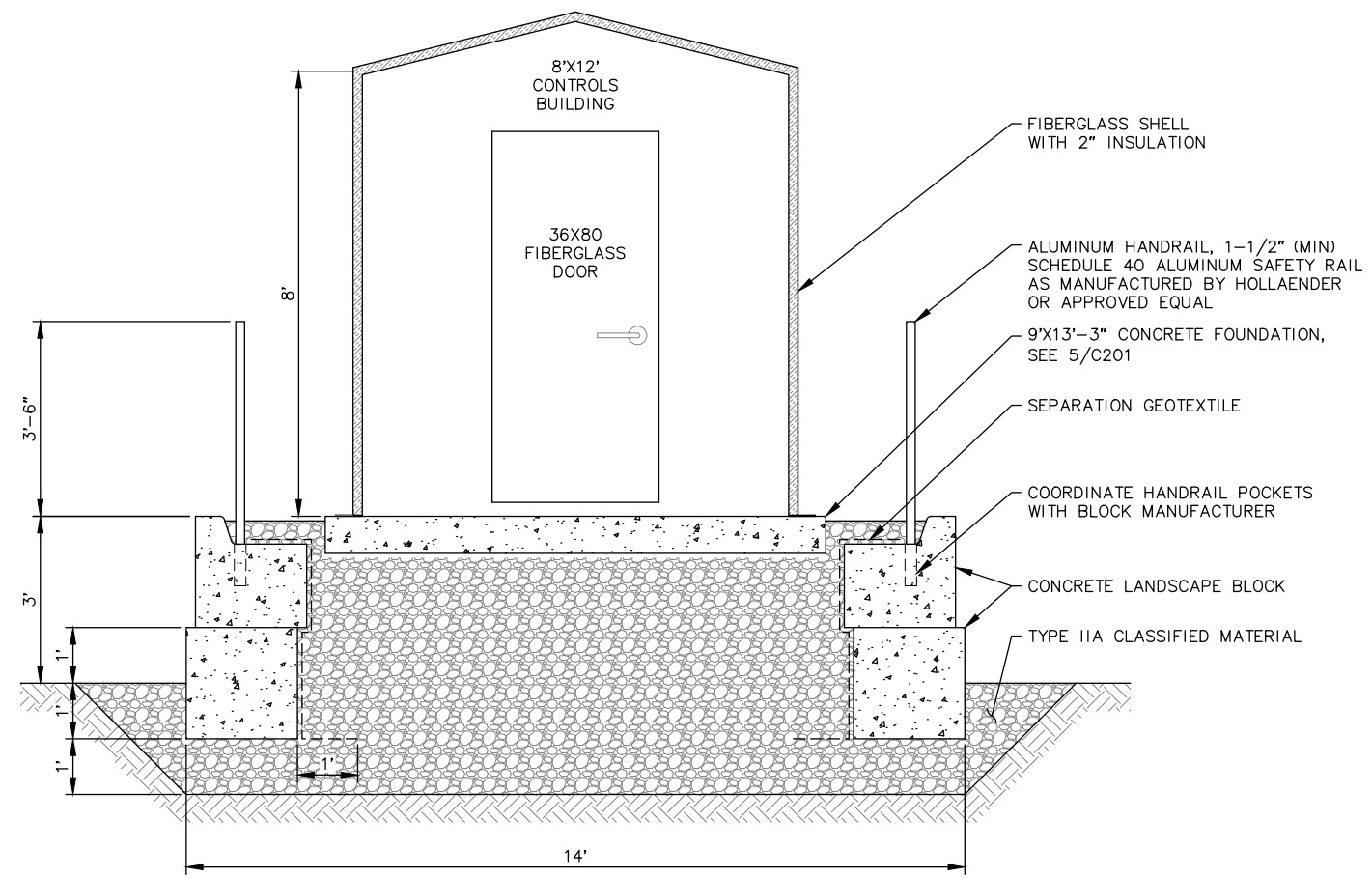
LIFT STATION NO.5 REPLACEMENT REBID
 WHITTIER, AK
 PROJECT No. 20403.21
WET WELL SITE PLAN AND SECTION

REVISION SCHEDULE		
NO.	DESCRIPTION	DATE

PROJECT NO. 20403.21
 DATE FEB 2024
 DRAWN MJL
 DESIGNED MJL
 REVIEWED PB
 SHEET NO.

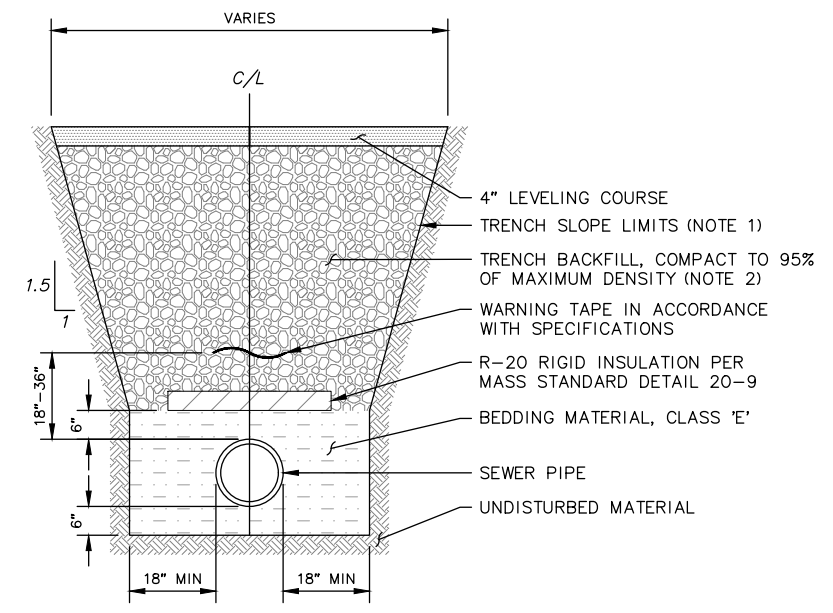
C102

PLOT DATE: 2/16/2024



1 MAINTENANCE PAD SECTION

SCALE: NTS

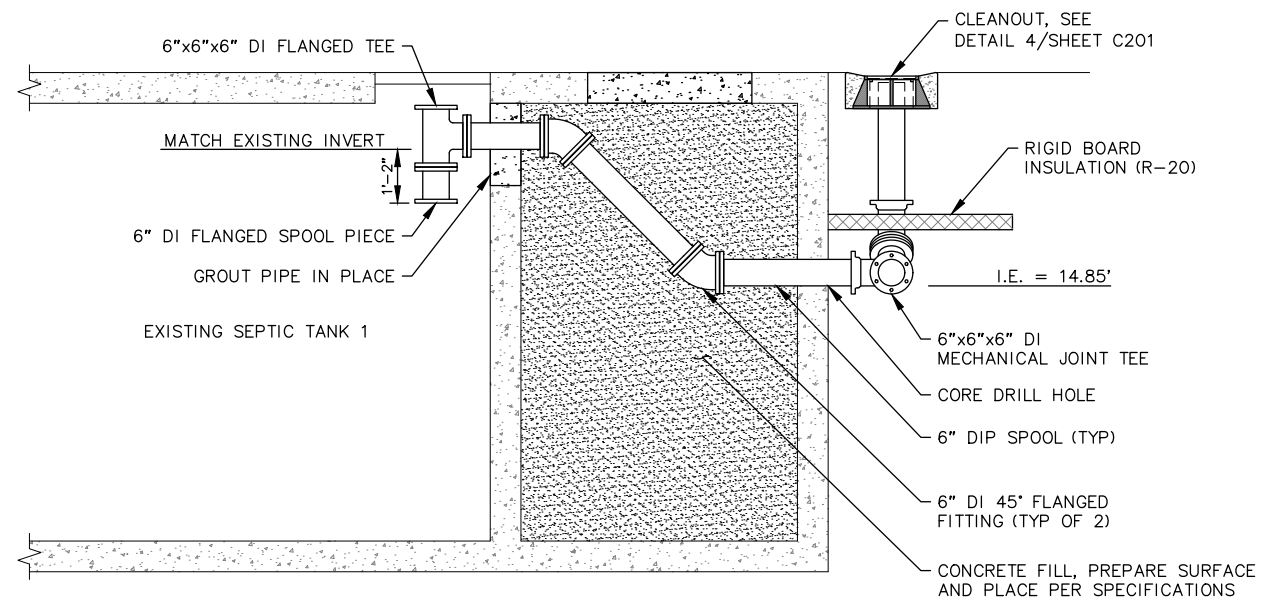


UTILITY TRENCH SECTION NOTES

1. TRENCH EXCAVATION AND SHORING SHALL COMPLY WITH ALL LOCAL, STATE, AND OSHA REGULATIONS AND REQUIREMENTS.
2. TRENCH BACKFILL SHALL BE NATIVE MATERIAL MEETING TYPE III CLASSIFIED FILL AND BACKFILL CLASSIFICATION (MINIMUM) AS APPROVED BY THE ENGINEER. NATIVE MATERIAL NOT MEETING TYPE III CLASSIFIED FILL AND BACKFILL CLASSIFICATION SHALL BE REMOVED AND REPLACED WITH TYPE IIA CLASSIFIED FILL AND BACKFILL.
3. REMOVE AND DISPOSE OF ALL ORGANIC MATERIALS IN ACCORDANCE WITH MASS SECTION 20.27.

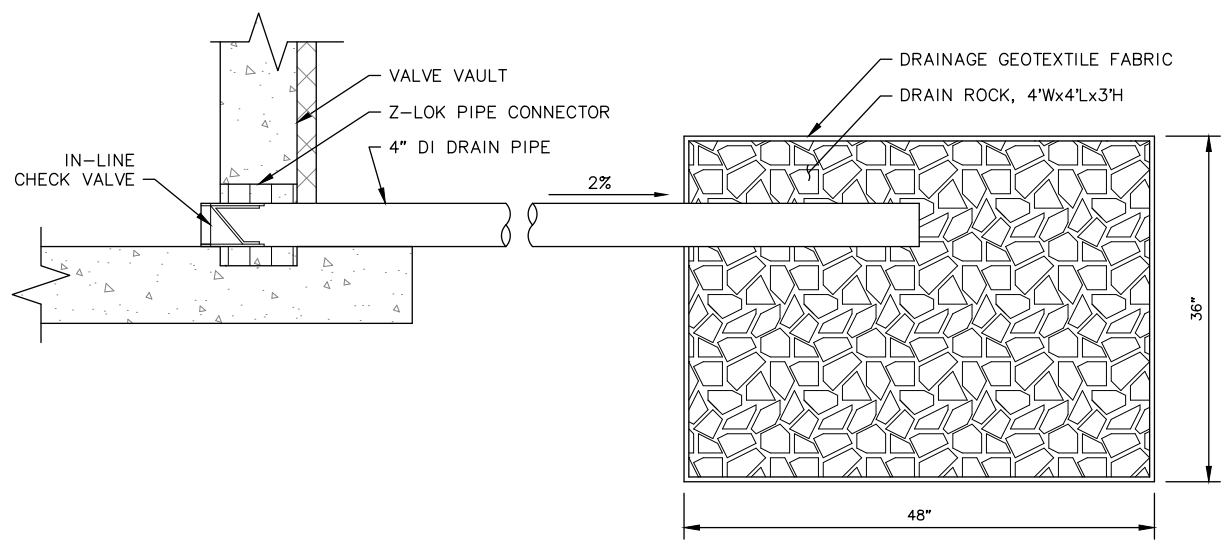
3 TYPICAL UTILITY TRENCH SECTION

SCALE: NTS



2 INFLOW PIPE SECTION

SCALE: NTS



4 SUBDRAIN SECTION

SCALE: NTS



ISSUED FOR CONSTRUCTION

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LIFT STATION NO.5 REPLACEMENT REBID

WHITTIER, AK
PROJECT No. 20403.21

TYPICAL SECTIONS

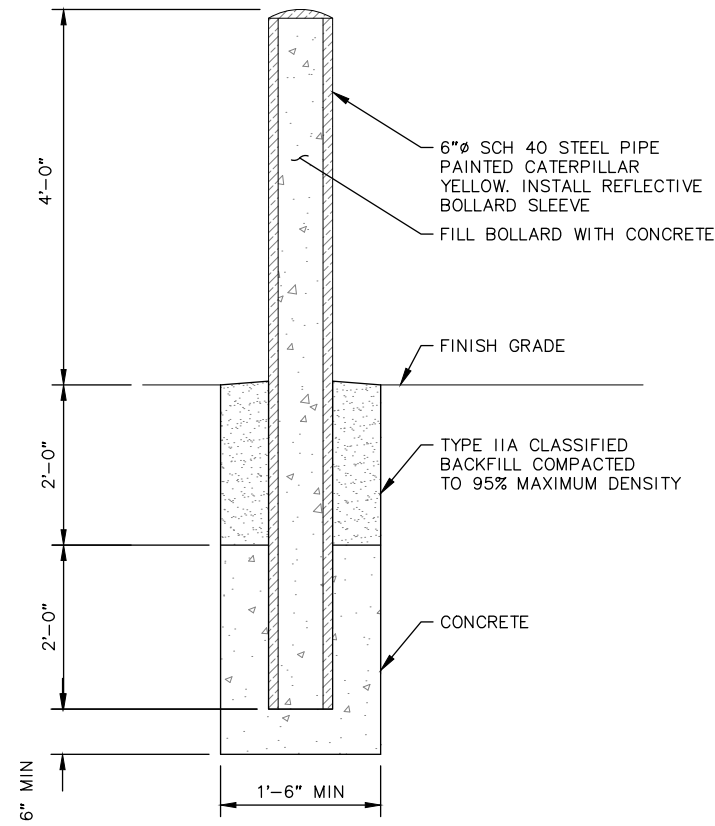
REVISION SCHEDULE

NO.	DESCRIPTION	DATE

PROJECT NO. 20403.21
DATE FEB 2024
DRAWN MJL
DESIGNED MJL
REVIEWED PB

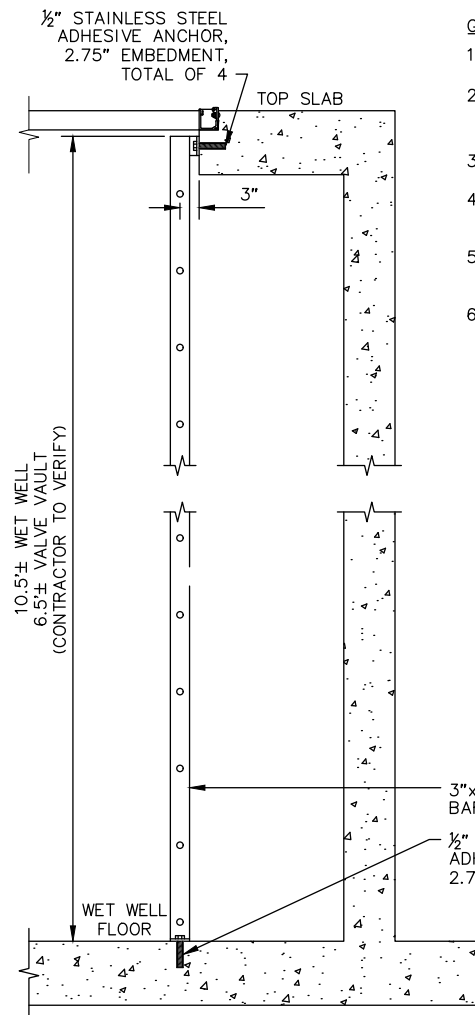
SHEET NO. **C200**

PLOT DATE: 2/16/2024



TYPICAL BOLLARD

SCALE: NTS

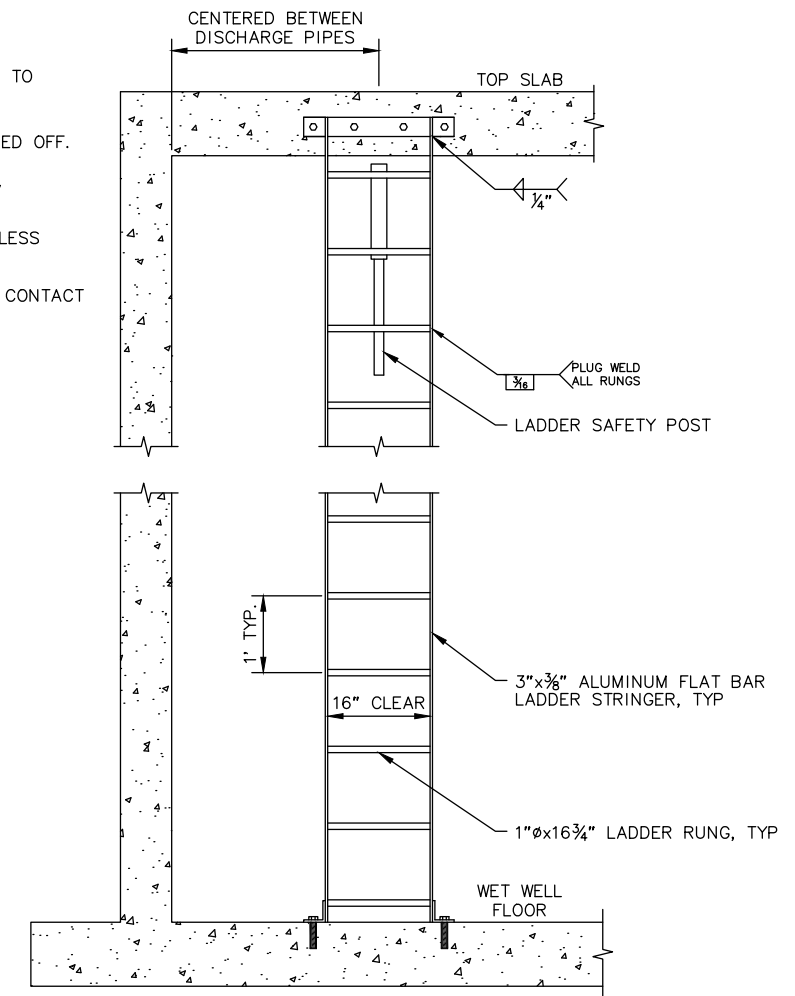


WET WELL LADDER DETAILS

SCALE: NTS

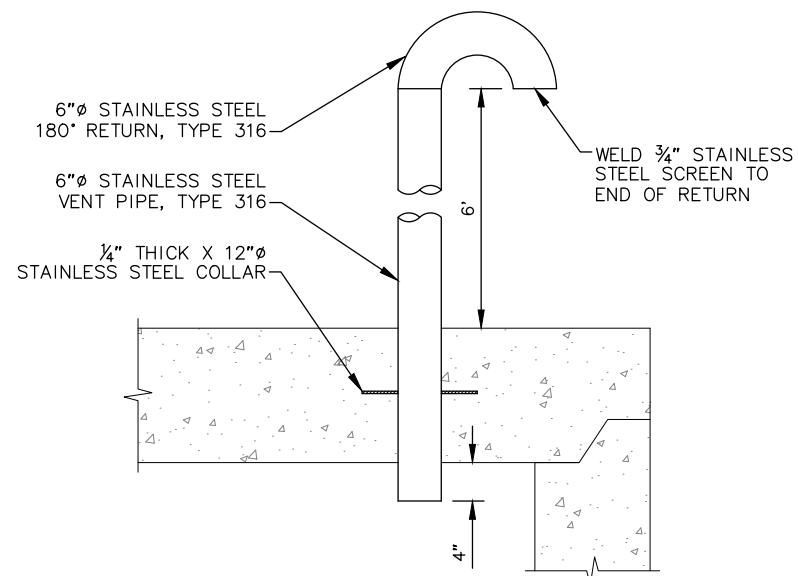
GENERAL NOTES

1. ALL ALUMINUM SHALL BE 6061-T6.
2. DRILL 1 1/8" DIAMETER HOLES IN LADDER STRINGERS TO SUPPORT LADDER RUNGS PRIOR TO WELDING.
3. ALL SHARP CORNERS AND EDGES SHALL BE ROUNDED OFF.
4. LADDER RUNGS SHALL BE OF EXTRUDED ALUMINUM, NON-SLIP, 800 LB.
5. CONNECTORS AND ANCHOR BOLTS SHALL BE STAINLESS STEEL, TYPE 316.
6. COAT ALUMINUM WITH COLD TAR EPOXY WHERE IN CONTACT WITH CONCRETE.



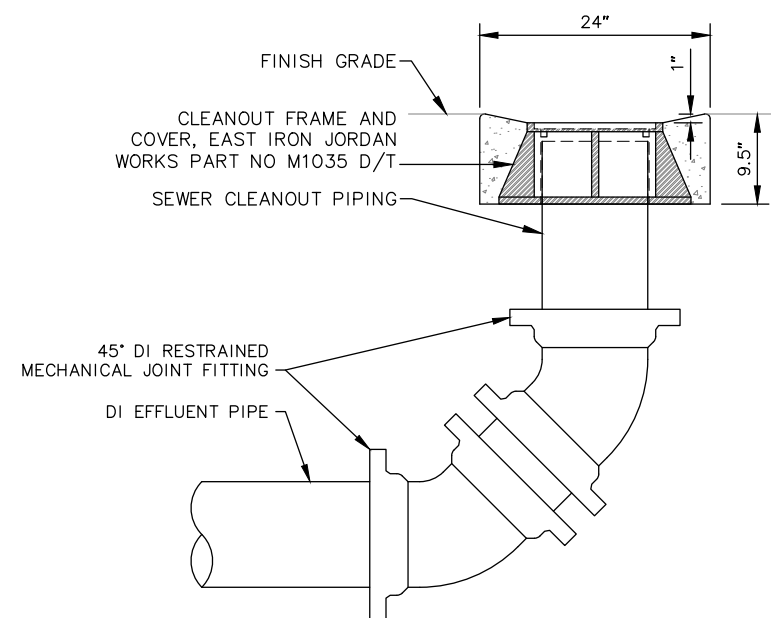
CONCRETE PAD DETAIL

SCALE: NTS



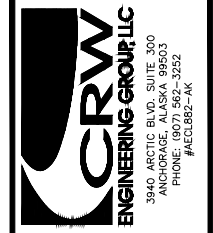
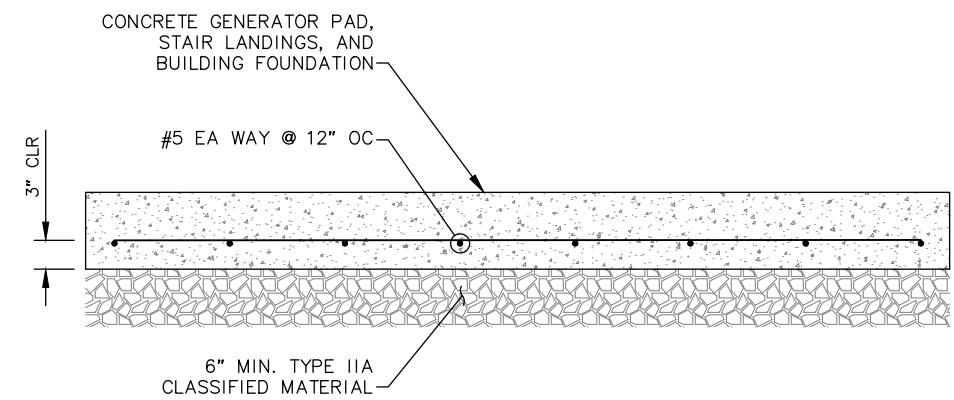
VENT PIPE DETAIL

SCALE: NTS



SEWER CLEANOUT DETAIL

SCALE: NTS



ISSUED FOR CONSTRUCTION

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0" 1"

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LIFT STATION NO.5 REPLACEMENT REBID
WHITTIER, AK
PROJECT No. 20403.21

CIVIL DETAILS

REVISION SCHEDULE		
NO.	DESCRIPTION	DATE

PROJECT NO.	20403.21
DATE	FEB 2024
DRAWN	MJL
DESIGNED	MJL
REVIEWED	PB

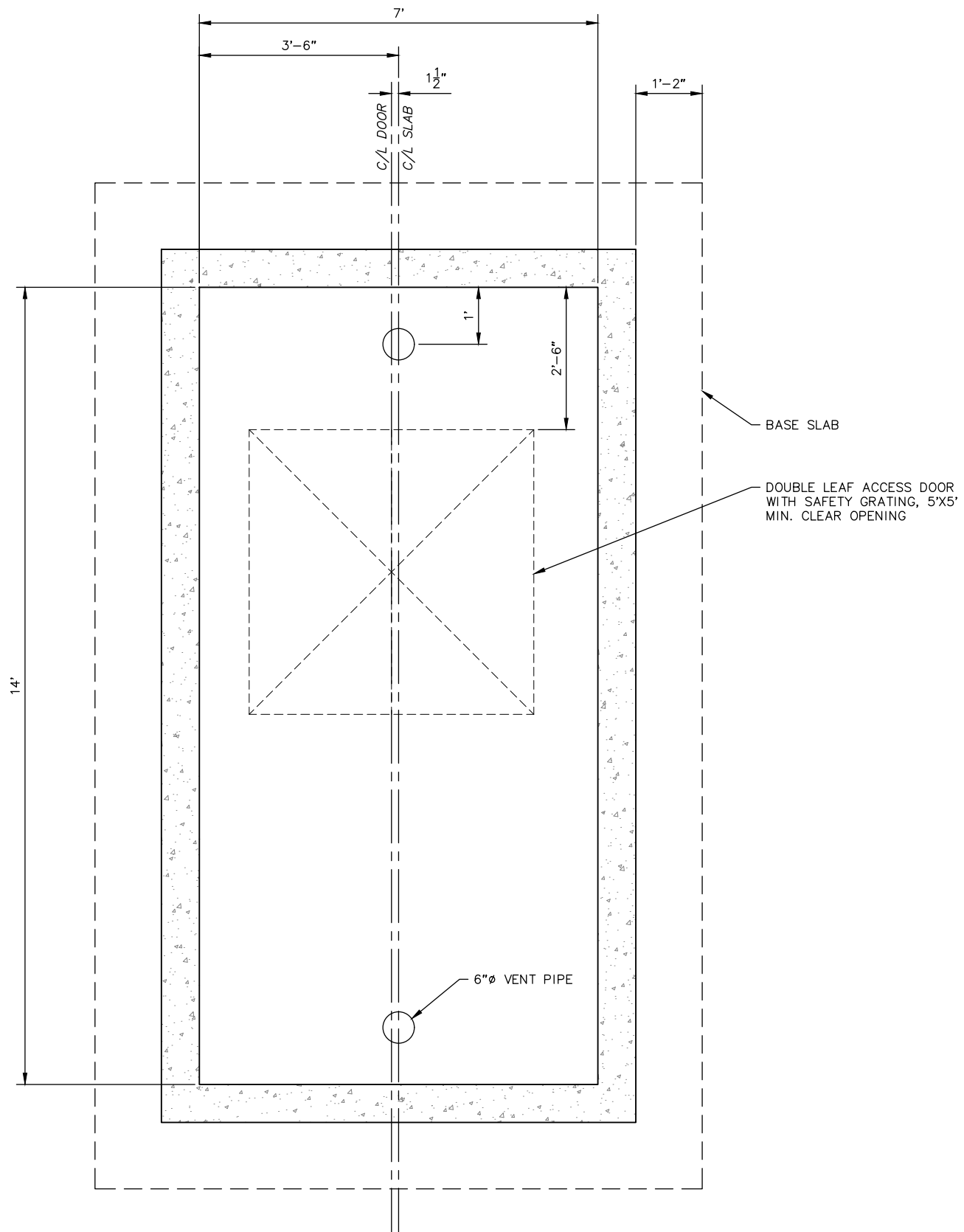
SHEET NO.

C201

PLOT DATE: 2/16/2024

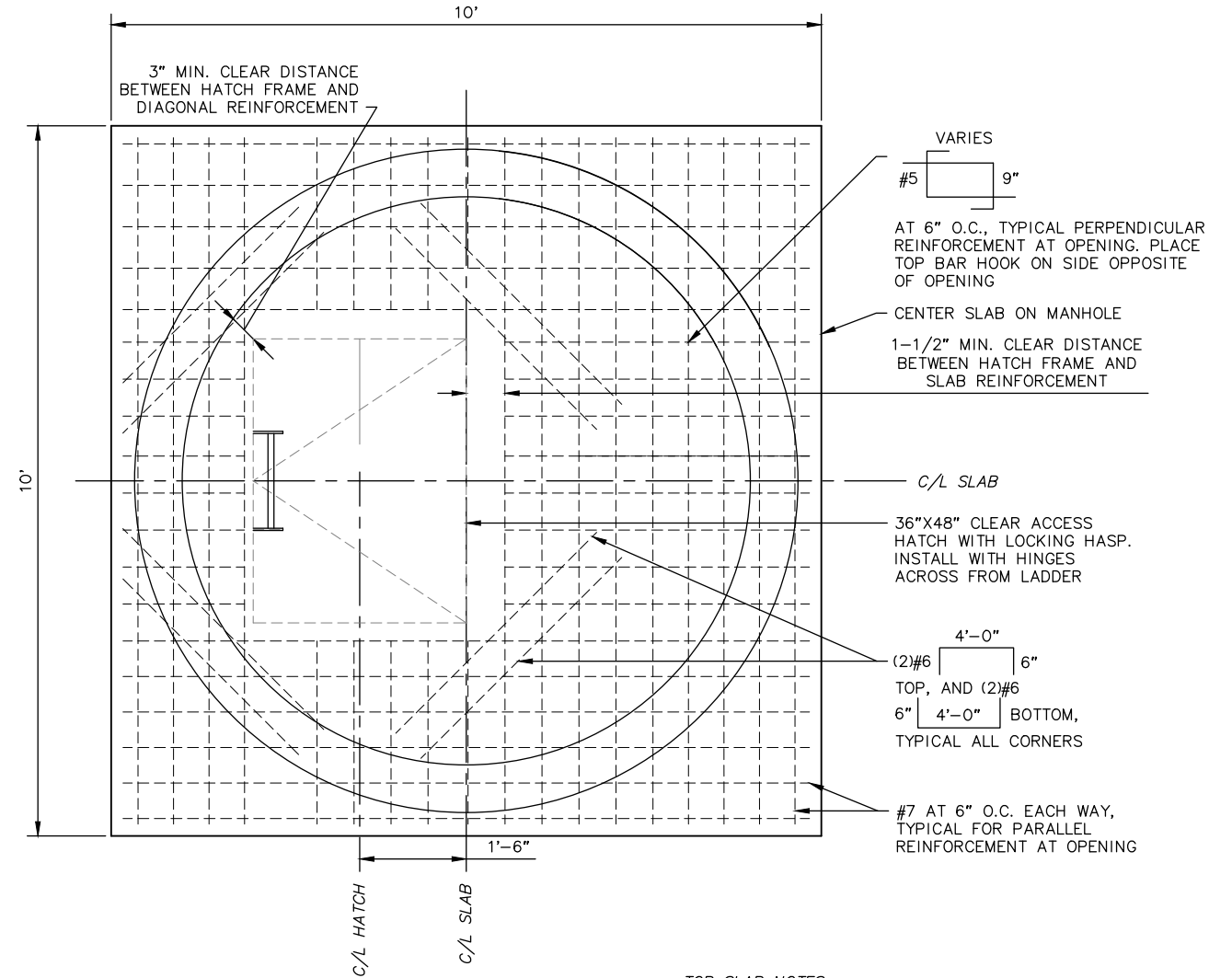
NOTE

1. BASE SLAB AND WALL SHALL BE MONOLITHIC.



WET WELL DETAILS

SCALE: NTS

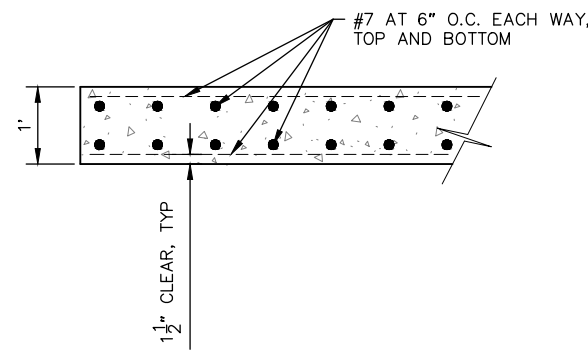


VALVE VAULT

TOP SLAB NOTES:

1. Cast top slab with access door frame in place.
2. Provide eye bolts as required for lifting and placement. Fabricate eye bolts with top slab and weld to the rebar; cut flush with top surface after placement.
3. Top slab details are provided in English units.

$F'_c=4000$ psi minimum
 $F_y=60$ ksi (ASTM A615, Grade 60)



PARTIAL SECTION

TOP SLAB DETAILS

SCALE: NTS



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LIFT STATION NO.5 REPLACEMENT REBID

WHITTIER, AK
 PROJECT No. 20403.21
 CIVIL DETAILS

REVISION SCHEDULE

NO.	DESCRIPTION	DATE

PROJECT NO. 20403.21
 DATE FEB 2024
 DRAWN MJL
 DESIGNED MJL
 REVIEWED PB

SHEET NO.

C202

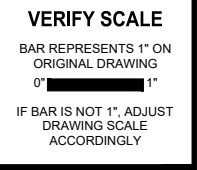
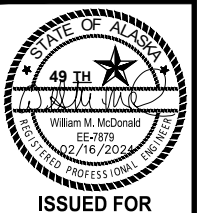
LEGEND

	BUS		MOTOR OVERLOAD
	EXPOSED CONDUIT		FIELD MOUNTED INSTRUMENT XX = FUNCTION; YY = TAG NO.
	CONDUIT/CABLE RUN UNDERGROUND OR IN CONCRETE		INSTRUMENT DEVICE LOCATION (SEE TAG)
	HOMERUN TO PANEL "X", CIRCUITS NO. Y AND Z CONDUIT RUNS NOT DEFINED ARE 1/2" C with 3#12.		NORMALLY OPEN CONTACT
	GROUND		NORMALLY CLOSED CONTACT
	CONDUIT RUN - CHANGE IN ELEVATION		PILOT LIGHT R=RED, B=BLUE, A=AMBER, G=GREEN, W=WHITE
	GROUND ROD		RELAY COIL
	LIQUID-TIGHT FLEXIBLE CONDUIT		TIME DELAY ENERGIZED RELAY CONTACTS NORMALLY CLOSED TIMED OPEN XXX= DESCRIPTION YYY=RELATED COIL & CONTACT #
	MOTOR, HP AS SHOWN, SINGLE PHASE, "F" = FRACTIONAL		TIME DELAY ENERGIZED RELAY CONTACTS NORMALLY OPEN TIMED CLOSED XXX= DESCRIPTION YYY=RELATED COIL & CONTACT #
	SHEET NOTE "X"		TIME DELAY DE-ENERGIZED RELAY CONTACTS NORMALLY OPEN TIMED OPEN XXX= DESCRIPTION YYY=RELATED COIL & CONTACT #
	ELECTRICAL EQUIPMENT TAG "X"		TIME DELAY DE-ENERGIZED RELAY CONTACTS NORMALLY CLOSED TIMED CLOSED XXX= DESCRIPTION YYY=RELATED COIL & CONTACT #
	ELECTRICAL ENCLOSURE AS NOTED		FLOAT OPERATED SWITCH, NORMALLY CLOSED
	DISCONNECT SWITCH		FLOAT OPERATED SWITCH, NORMALLY OPEN
	TRANSFORMER		PUSHBUTTON NORMALLY CLOSED, MOMENTARY CONTACT
	KILOWATT-HOUR METER		PUSHBUTTON NORMALLY OPEN, MOMENTARY CONTACT
	125V DUPLEX GROUND FAULT INTERRUPT WEATHER PROOF RECEPTACLE, CONFIGURATION 5 - 20R		MOTORIZED VALVE
	GENERATOR		TEMPERATURE SWITCH, CLOSE ON RISE
	TRANSFER SWITCH		TEMPERATURE SWITCH, OPEN ON RISE
	FLEX CONDUIT		PHOTO ELECTRIC CONTROL
	STARTER		INSTRUMENT DEVICE LOCATION (SEE TAG)
	CURRENT TRANSFORMER		MUSHROOM HEAD, EMERGENCY PUSHBUTTON
	JUNCTION BOX OR FITTING		REMOTE OPERATOR FOR CONTROL PANEL
	CONDUIT TEE		PUSH TO TEST PILOT LIGHT X= LENS TINT
	FUSE, X=SIZE IN AMPS		TERMINAL - X = CONTRACTOR DERIVED NUMBERING
	MOLDED CASE CIRCUIT BREAKER, X = AMPERE RATING, Y = NO. OF POLES THERMAL/MAGNETIC UON		STROBE ALARM
	CONTROL PANEL		HAND-OFF-AUTO SWITCH
	SINGLE POLE SWITCH 120/277V 20A		
	SEAL-OFF FITTING		

ABBREVIATIONS

A	AMPERE
AFF	ABOVE FINISH FLOOR
AIC	AMPERES INTERRUPTING CAPACITY
ATS	AUTOMATIC TRANSFER SWITCH
bCU	BARE COPPER
C	CONDUCTOR
C	CONDUIT
C1D1	CLASS 1, DIVISION 1
C1D2	CLASS 1, DIVISION 2
CEA	CHUGACH ELECTRIC ASSOCIATION
COAX	COAXIAL CABLE
CP	CONTROL PANEL
CPP	CONTROL POWER PANEL
CT	CURRENT TRANSFORMER
CU	COPPER
DWG	DRAWING
EA	EACH
ESD	EMERGENCY SHUTDOWN
EXP	EXPLOSION PROOF
FD	FUSED DISCONNECT
G	GROUND CONDUCTOR
GFI	GROUND FAULT INTERRUPTING
H	HOT CONDUCTOR
HOA	HAND OFF AUTO
HP	HORSEPOWER
KVA	KILO-VOLT-AMPERES
KW	KILOWATT
LFMC	LIQUID-TIGHT FLEXIBLE METAL CONDUIT
LTG	LIGHTING
MAX	MAXIMUM
MCM	THOUSAND CIRCULAR MILLS
MCP	MAIN CONTROL PANEL
MIN	MINIMUM
MV	MOTORIZED VALVE
MS	MOTOR STARTER
MTS	MANUAL TRANSFER SWITCH
N	NEUTRAL CONDUCTOR
NEC	NATIONAL ELECTRICAL CODE
NEMA	NATIONAL ELECTRICAL MANUFACTURES ASSOCIATION
NTS	NOT TO SCALE
OC	OVERCURRENT PROTECTION
P	POLE
PNL/MPZ	PANEL / MINI POWER ZONE
RCP	RECEPTACLE
RMC	RIGID METAL CONDUIT, GALVANIZED
SIG	SIGNAL CONDUCTOR
SL	SWITCH LEG
SPD	SURGE PROTECTION DEVICE
SS	STAINLESS STEEL
TDD	TIME DELAY DE-ENERGIZED
TDE	TIME DELAY ENERGIZED
TSP	TWISTED/SHIELDED PAIR
TWSH	TWISTED/SHIELDED CONDUCTOR
TYP	TYPICAL
U/G	UNDERGROUND
UON	UNLESS OTHERWISE NOTED
V	VOLTS
VA	VOLT-AMPERES
VAC	VOLTS AC POWER
VFD	VARIABLE FREQUENCY DRIVE
WP	WEATHER PROOF
WW	WIREWAY, WET WELL
XFMR	TRANSFORMER

EQUIPMENT LIST	
#	ITEM
1	208Y/120V 3φ-4W COMBINATION METER/MAIN WITH 200A BREAKER IN NEMA 3R (MIN) ENCLOSURE
2	208Y/120V, 4P, 200A RATED ATS WITH OPEN TRANSITION. NEMA 3R (MIN) ENCLOSURE.
3	200A ENCLOSED CIRCUIT BREAKER. NEMA 3R (MIN) ENCLOSURE.
4	200A, 600V MOTOR INLET (REVERSE RECEPTACLE) AND MOUNTING BOX WITH MATCHING CONNECTOR BODY (REVERSE PLUG) TO MATCH CITY OF WHITTIER STANDBY GENERATOR: APPLETON P/N 30452 CAT NO ADJA20044RS-200AMP-4W4P-STY-1-600VAC-5-400HZ
5	208Y/120V, 4P, 200A RATED MTS. NEMA 3R (MIN) ENCLOSURE.
6	50KW, 208Y/120V 3φ-4W STANDBY GENERATOR.
7	208Y/120V 3φ-4W 200A MLO PANELBOARD. SEE PANEL SCHEDULE, SHEET E002.
8	SOLID-STATE REDUCED VOLTAGE MOTOR STARTER.
9	EXPLOSIONPROOF JBOX. 12"X12"X8" CAST WITH TERMINALS AS SHOWN.
10	THREE STAGE ALARM LIGHT FEDERAL SIGNAL RSL-BW-WMH-(3)LM5G A R



LIFT STATION NO.5 REPLACEMENT REBID
 WHITTIER, AK
 PROJECT No. 20403.21
ELECTRICAL LEGEND AND ABBREVIATIONS

REVISION SCHEDULE		
#	DESCRIPTION	DATE

PROJECT NO.	20403.21
DATE	FEB 2024
DRAWN	JEH
DESIGNED	JEH
REVIEWED	WMM
SHEET NO.	E001

CONDUIT DEVELOPMENT - POWER									
CONDUIT		FROM	TO	OCP RATING	CONDUCTORS				REMARKS
NO.	SIZE				QTY.	SIZE	CONFIG.	GND	
P001	2"	METER	RISER	200	4	3/0	3H, N	-	RISER AND 36" PIGTAIL
P002	2"	ATS	METER	200	4	3/0	3H, N	#4	
P100	2"	MTS	ATS	200	4	3/0	3H, N	#4	
P101	2"	ECB	MTS	200	4	3/0	3H, N	#4	
P102	2"	GEN	MTS	200	4	3/0	3H, N	#4	
P103	2"	MOTOR INLET	ECB	200	4	3/0	3H, N	#4	
P200	2"	PANEL "A"	ATS	200	4	3/0	3H, N	#4	
P201	1"	SSRV-LS4-P1	"A"-1, 3, 5	60	3	#6	3H	#6	
P201A	1"	WW-LS4	SSRV-LS4-P2		3	#6	3H	#6	
P202	1"	SSRV-LS4-P2	"A"-7, 9, 11	60	3	#6	3H	#6	
P202A	1"	WW-LS4	SSRV-LS4-P2		3	#6	3H	#6	
P203	3/4"	SSRV-LS5-P1	"A"-1, 3, 5	80	3	#8	3H	#8	
P203A	3/4"	WW-LS5	SSRV-LS5-P1		3	#8	3H	#8	
P204	3/4"	SSRV-LS5-P2	"A"-7, 9, 11	80	3	#8	3H	#8	
P204A	3/4"	WW-LS5	SSRV-LS5-P2		3	#8	3H	#8	
P205	1/2"	EUH-1	"A"-13, 15, 17	20	3	#12	3H	#12	
P206	1/2"	LIGHT SWITCH	"A"-14	20	2	#12	H, N	#12	
P206A	1/2"	LTG	LTG/ LIGHT SWITCH	20	2	#12	SL, N	#12	
P207	1/2"	RECS	RECS/"A"-16	20	2	#12	H, N	#12	
P208	1/2"	LCP-LS4	"A"-18	20	2	#12	H, N	#12	
P209	1/2"	LCP-LS5	"A"-20	20	2	#12	H, N	#12	
P210	1/2"	EUH-2	"A"-19, 21, 23	20	3	#12	3H	#12	
P211	3/4"	JB4A	"A"-25, "A"-22	(2) 20	4	#10	2H, 2N	#10	LUMINAIRE AND RECEPTACLE
P211A	3/4"	LS4 LUMINAIRE	PC401	20	2	#10	H, N	#10	CONNECT VIA CONDUIT BODY
P212	3/4"	JB4B	"A"-27, "A"-24	(2) 20	4	#12	2H, 2N	#10	LUMINAIRE AND RECEPTACLE
P212A	3/4"	LS5 LUMINAIRE	PC501	20	2	#10	H, N	#10	CONNECT VIA CONDUIT BODY
P213	1/2"	CTRL SHED LUMINAIRE	"A"-29	20	2	#12	H, N	#12	
P301	1-1/2"	LS4 POWER JBOX	WW-LS4	(2)60	6	#6	6H	#6	PROVIDE SEAL OFF FITTING
P301A	1-1/2"	LS4-P1	LS4 POWER JBOX	60	1	MFR			CABLE CHASE FOR PUMP CABLE
P301B	1-1/2"	LS4-P2	LS4 POWER JBOX	60	1	MFR			CABLE CHASE FOR PUMP CABLE
P302	1-1/2"	LS5 POWER JBOX	WW-LS5	(2) 80	6	MFR			PROVIDE SEAL OFF FITTING
P302A	1-1/2"	LS5-P1	LS5 POWER JBOX	80	3	MFR			CABLE CHASE FOR PUMP CABLE
P302B	1-1/2"	LS5-P2	LS5 POWER JBOX	80	3	MFR			CABLE CHASE FOR PUMP CABLE

NOTE: CONDUIT AND CONDUCTOR SIZES SHOWN ARE MINIMUMS. SIZES MAY BE INCREASED PROVIDED IT IS DONE IN ACCORDANCE WITH THE NEC, WILL NOT INCREASE COST TO OWNER, AND WILL NOT IMPACT PROJECT SCHEDULE. FEEDER CIRCUITS MAY BE SPLIT INTO PARALLEL CONDUITS PROVIDED IT MEETS THE SAME CRITERIA.

CONDUIT DEVELOPMENT - POWER / CONTROLS					
CONDUIT		FROM	TO	CONDUCTORS	REMARKS
NO.	SIZE				
PC400	1-1/2"	JB 5 (LS 4)	JB 4A	(4) #12 (5) #10	FAIL/TROUBLE/RUN, COM (ALARM); 2H,2N (LUMINAIRE & REC); G
PC401	1-1/2"	CONDUIT TEE	JB 5 (LS 4)	(4) #12 (3) #10	FAIL/TROUBLE/RUN, COM (ALARM); H,N (LUMINAIRE); G
PC500	1-1/2"	JB 5 (LS 5)	JB 4B	(4) #12 (5) #10	FAIL/TROUBLE/RUN, COM (ALARM); 2H,2N (LUMINAIRE & REC); G
PC501	1-1/2"	CONDUIT TEE	JB 5 (LS 5)	(4) #12 (3) #10	FAIL/TROUBLE/RUN, COM (ALARM); H,N (LUMINAIRE); G

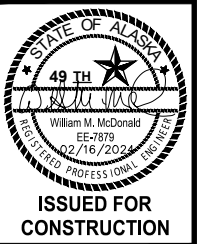
LIGHTING FIXTURE SCHEDULE		
SYMBOL	DESCRIPTION	CAT#
	4' LINEAR LED	LITHONIA LIGHTING - CSS L48 4000LM MVOLT 40K 80CRI (OR APPROVED EQUAL)
	COMBINATION EXIT/EM. LIGHT WITH REMOTE CAPACITY	LITHONIA LIGHTING - ECRG HO SQ M6 (OR APPROVED EQUAL)
	EM. LIGHT REMOTE HEAD	LITHONIA LIGHTING - ERE GY T WP SQ (OR APPROVED EQUAL)
	SITE SECURITY LIGHT	ENERGYLITE - SECURELITE 3. SL3 7H 5S 730 STD 10 70 SGY (OR APPROVED EQUAL)

LOCATION		NOTE:		PANEL		INTERRUPT RATING		INSTALLATION:						
CONTROLS SHELTER		NEW PANEL		A				SURFACE MOUNT, TYPE 1 ENCL						
VOLTAGE		CONNECTION		TYPE		AVAILABLE FAULT CURRENT:		SOURCE:						
208 / 120V		3 φ - 4 W		MLO 225A				ATS						
CKT #	TRIP/POLES	CIRCUIT DESCRIPTION	NOTE	VA	LOAD TYPE	CONNECTED KVA			TRIP/POLES	CIRCUIT DESCRIPTION	NOTE	VA	LOAD TYPE	CKT #
1	60/3	LS4-P1 (VIA SSRV)		2906	M	6.6	-	-	80/3	LS5-P1 (VIA SSRV)		3699	MM	2
3				2906	M	-	6.6	-				3699	MM	4
5				2906	M	-	-	6.6				3699	MM	6
7	60/3	LS4-P2 (VIA SSRV)		2906	M	6.6	-	-	80/3	LS5-P2 (VIA SSRV)		3699	M	8
9				2906	M	-	6.6	-				3699	M	10
11				2906	M	-	-	6.6				3699	M	12
13	20/3	EUH-1		500	C	0.7	-	-	20/1	INTERIOR LIGHTS		220	L	14
15				500	C	-	1.6	-	20/1	RECEPTACLES		1080	R	16
17				500	C	-	-	0.6	20/1	LCP-LS4		100	C	18
19	20/3	EUH-2		500	C	0.6	-	-	20/1	LCP-LS5		100	C	20
21				500	C	-	0.7	-	20/1	LS-4 RECEPTACLE		180	R	22
23				500	C	-	-	0.7	20/1	LS-5 RECEPTACLE		180	R	24
25	20/1	LS4 LUMINAIRE		150	L	0.2	-	-	20/1	SPARE				26
27	20/1	LS5 LUMINAIRE		150	L	-	0.2	-	20/1	SPARE				28
29	20/1	CONTROL SHED LUMINAIRE		150	L	-	-	0.2	20/1	SPARE				30
31	-	SPACE				0.0	-	-	-	SPACE				32
33	-	SPACE				0.0	-	-	-	SPACE				34
35	-	SPACE				-	-	0.0	-	SPACE				36
37	-	SPACE				0.0	-	-	-	SPACE				38
39	-	SPACE				-	0.0	-	-	SPACE				40
41	-	SPACE				-	-	0.0	-	SPACE				42

TOTAL LOAD / PHASE:						14.7	15.6	14.6	KVA
DEMAND CURRENT / PHASE:						132	141	132	AMPS
SUMMARY LOADS (KVA)									
LOAD TYPE:	C	L	MM	M	N	R	X		
CONNECTED:	3.2	0.7	11.1	28.5	0.0	1.4	0.0		
DEMAND:	4.0	0.8	13.9	28.5	0.0	1.4	0.0		
TOTALS									
CONNECTED:	KVA		AMPS						
DEMAND:	44.9		125						
	48.7		135						

CONDUIT DEVELOPMENT - CONTROLS						
CONDUIT		FROM	TO	CONDUCTORS		REMARKS
NO.	SIZE			CONTROL		
C100	3/4"	GEN	ATS			PROVIDE PULL CORD
C201	3/4"	AUTODIALER	ATS	(6) #14		START/FAIL/STANDBY
C204	1/2"	AUTODIALER	LS4CP	(6) #14		FAIL/HIGH LEVEL
C205	1/2"	AUTODIALER	LS5CP	(6) #14		FAIL/HIGH LEVEL
C400	1-1/2"	LS4 CTRL JBOX	LS4CP	(2) #14 (FLOAT) #18TSP (LT)		INTRINSICALLY SAFE
C401	1-1/2"	LS4	LS4 CTRL JBOX	(2) #14 (FLOAT) #18TSP (LT)		INTRINSICALLY SAFE
C402	3/4"	JB4A	LS4CP	(5) #12		FAIL/TROUBLE/RUN, COM, G
C403	3/4"	LS4 ALARM	PC400	(5) #12		FAIL/TROUBLE/RUN, COM, G. CONNECT VIA CONDUIT BODY.
C404	1"	LS4 POWER JBOX	LS4CP	(4) #12		MOTOR MONITOR CIRCUIT
C500	1-1/2"	LS5 CTRL JBOX	LS5CP	(2) #14 (FLOAT) #18TSP (LT)		INTRINSICALLY SAFE
C501	1-1/2"	LS5	LS5 CTRL JBOX	(2) #14 (FLOAT) #18TSP (LT)		INTRINSICALLY SAFE
C502	3/4"	JB4B	LS5CP	(5) #12		FAIL/TROUBLE/RUN, COM, G
C503	3/4"	LS5 ALARM	PC500	(5) #12		FAIL/TROUBLE/RUN, COM, G. CONNECT VIA CONDUIT BODY.
C504	1"	LS5 POWER JBOX	LS5CP	(4) #12		MOTOR MONITOR CIRCUIT

NOTE: CONDUIT SIZES SHOWN ARE MINIMUMS. SIZES MAY BE INCREASED PROVIDED IT IS DONE IN ACCORDANCE WITH THE NEC, WILL NOT INCREASE COST TO OWNER, AND WILL NOT IMPACT PROJECT SCHEDULE.



VERIFY SCALE
BAR REPRESENTS 1" ON ORIGINAL DRAWING
0" = 1"
IF BAR IS NOT 1", ADJUST DRAWING SCALE ACCORDINGLY

LIFT STATION NO.5 REPLACEMENT REBID
WHITTIER, AK
PROJECT No. 20403.21
PANEL AND CONDUIT SCHEDULES

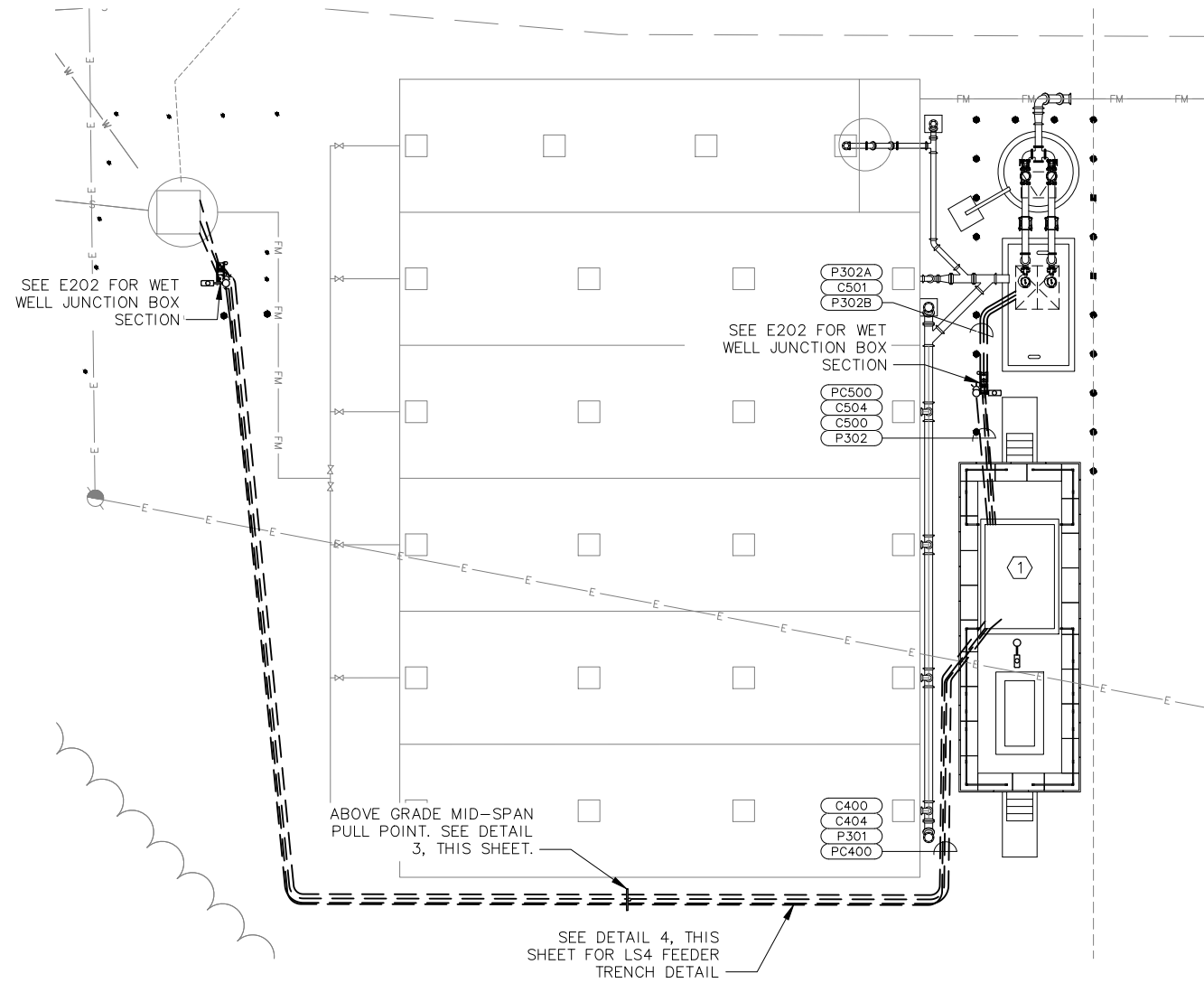
REVISION SCHEDULE		
NO.	DESCRIPTION	DATE

PROJECT NO. 20403.21
DATE FEB 2024
DRAWN JEH
DESIGNED JEH
REVIEWED WMM
SHEET NO.

E002

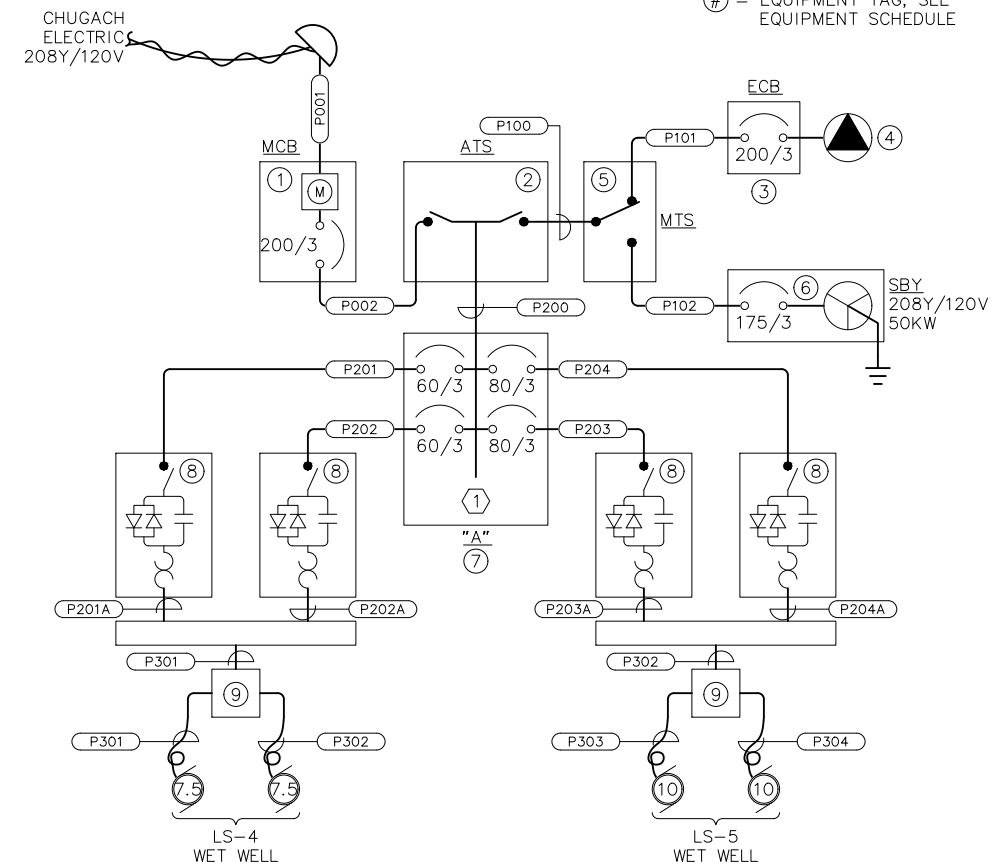
SHEET NOTES

1. SEE E110 FOR CONTROLS SHELTER PLAN.



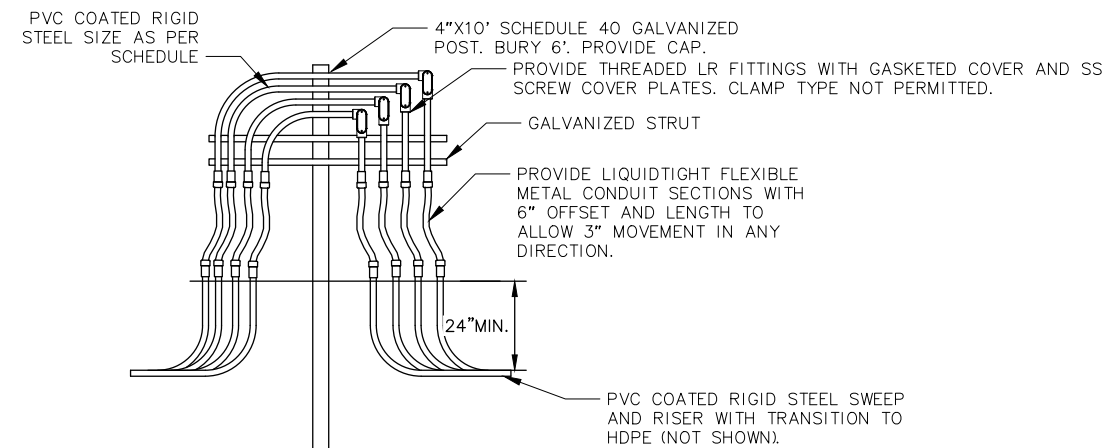
ELECTRICAL SITE PLAN

GRAPHIC SCALE



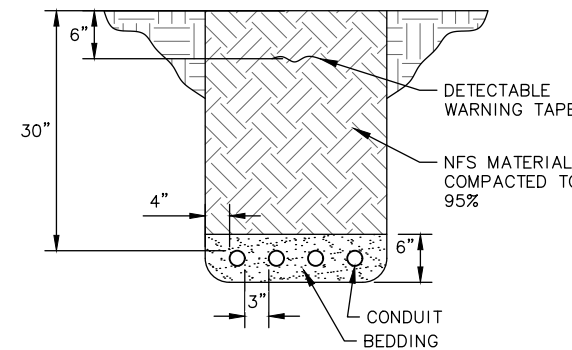
POWER ONE-LINE

NTS



ABOVE GRADE MID-SPAN PULL POINT

NTS



LS4 FEEDER TRENCH DETAIL

NTS



ISSUED FOR CONSTRUCTION

VERIFY SCALE

BAR REPRESENTS 1" ON ORIGINAL DRAWING

IF BAR IS NOT 1", ADJUST DRAWING SCALE ACCORDINGLY

LIFT STATION NO.5 REPLACEMENT REBID

WHITTIER, AK
PROJECT No. 20403.21

ELECTRICAL SITE PLAN & POWER ONE-LINE

REVISION SCHEDULE

NO.	DESCRIPTION	DATE

PROJECT NO. 20403.21
DATE FEB 2024
DRAWN JEH
DESIGNED JEH
REVIEWED WMM

SHEET NO.

E100

A

B

C

D

SHEET NOTES

1. BOND EACH METALLIC PIPE SYSTEM.
2. PROVIDE 20"MIN #4 CONCRETE ENCASED ELECTRODE (UFER).
3. PROVIDE 5' PIGTAIL FOR FUTURE GENERATOR.
4. BOND RISERS.
5. BOND ALL METALLIC STRUCTURE AND NON CURRENT CARRYING COMPONENTS.
6. BOND METALLIC WET WELL CONTENTS, FRAME, REBAR, AND HATCH.
7. GROUND TEST POINT.
8. 3/4"X8' CU CLAD GROUND ROD, SPACE AT NO LESS THAN (1) ROD LENGTH APART.
9. #2 GROUNDING ELECTRODE CONDUCTOR PER NEC TABLE 250.66.
10. #2 MAIN/EQUIPMENT BONDING JUMPER PER NEC TABLE 250.102(C1).
11. #4 BCU GROUND.
12. EXTEND NEW GROUND SYSTEM TO EXISTING GROUND AND BOND AT LS4.



ISSUED FOR CONSTRUCTION

VERIFY SCALE

BAR REPRESENTS 1" ON ORIGINAL DRAWING
0" 1"

IF BAR IS NOT 1". ADJUST DRAWING SCALE ACCORDINGLY

LIFT STATION NO.5 REPLACEMENT REBID

WHITTIER, AK
PROJECT No. 20403.21

GROUNDING PLAN

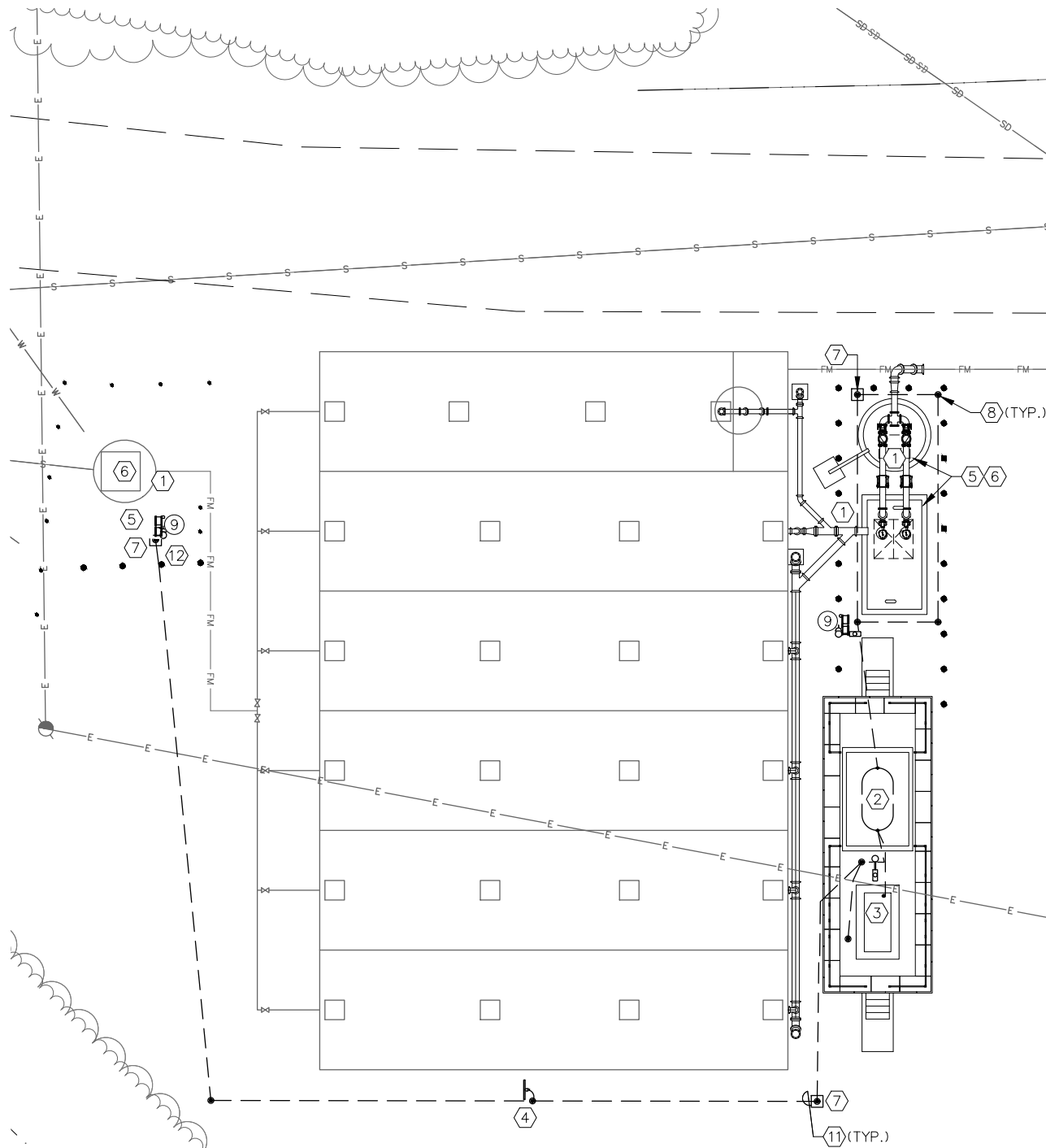
REVISION SCHEDULE

NO.	DESCRIPTION	DATE

PROJECT NO.	20403.21
DATE	FEB 2024
DRAWN	JEH
DESIGNED	JEH
REVIEWED	WMM

SHEET NO.

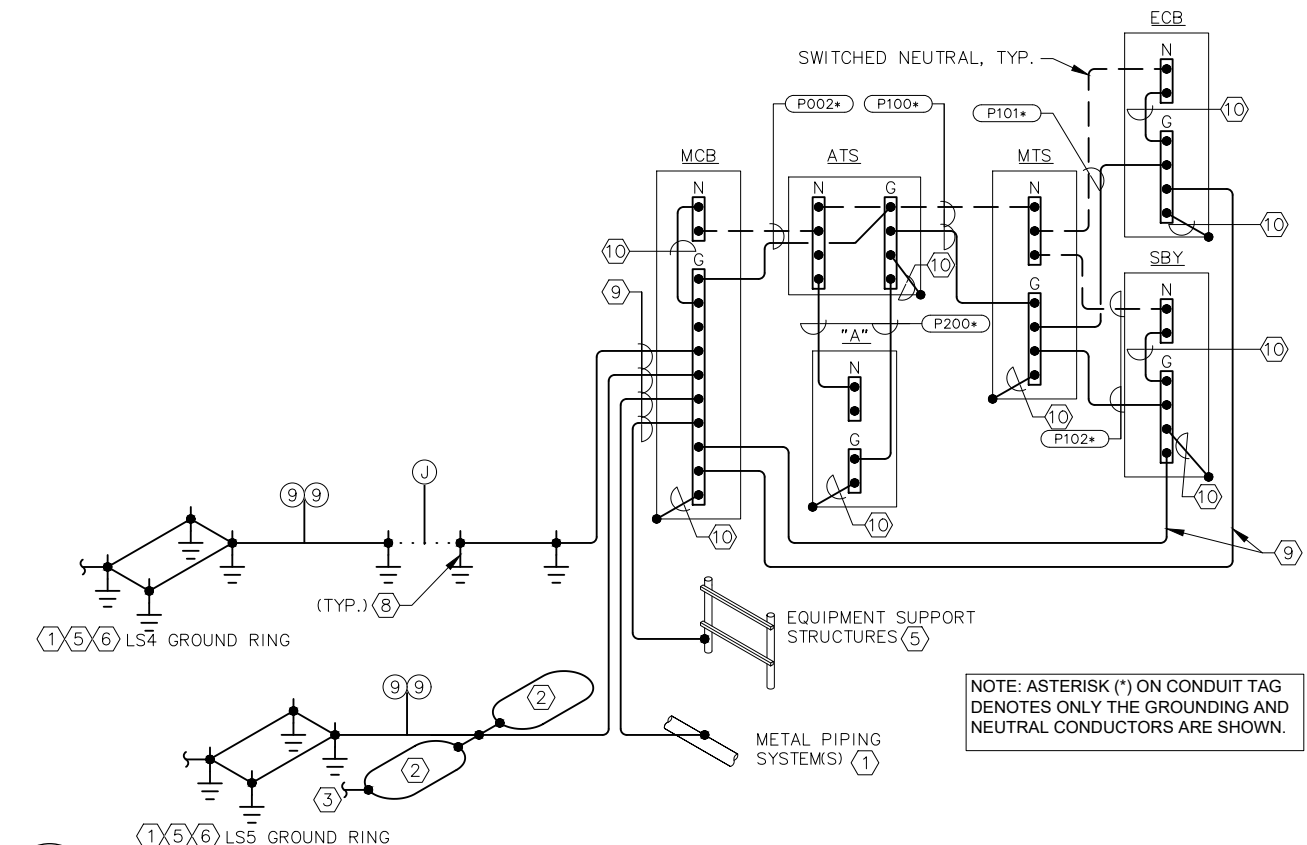
E101



SITE GROUNDING PLAN

GRAPHIC SCALE

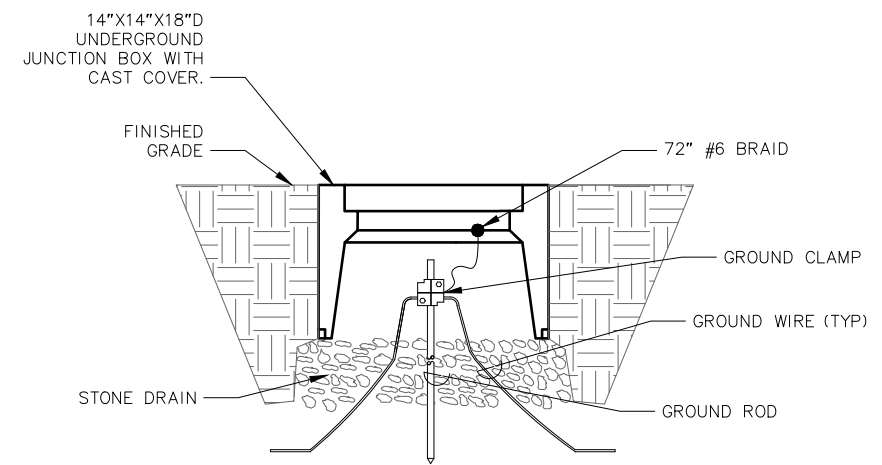
10' 0 10' 20'



GROUND SYSTEM DIAGRAM

NTS

2



GROUND TEST POINT

NTS

3

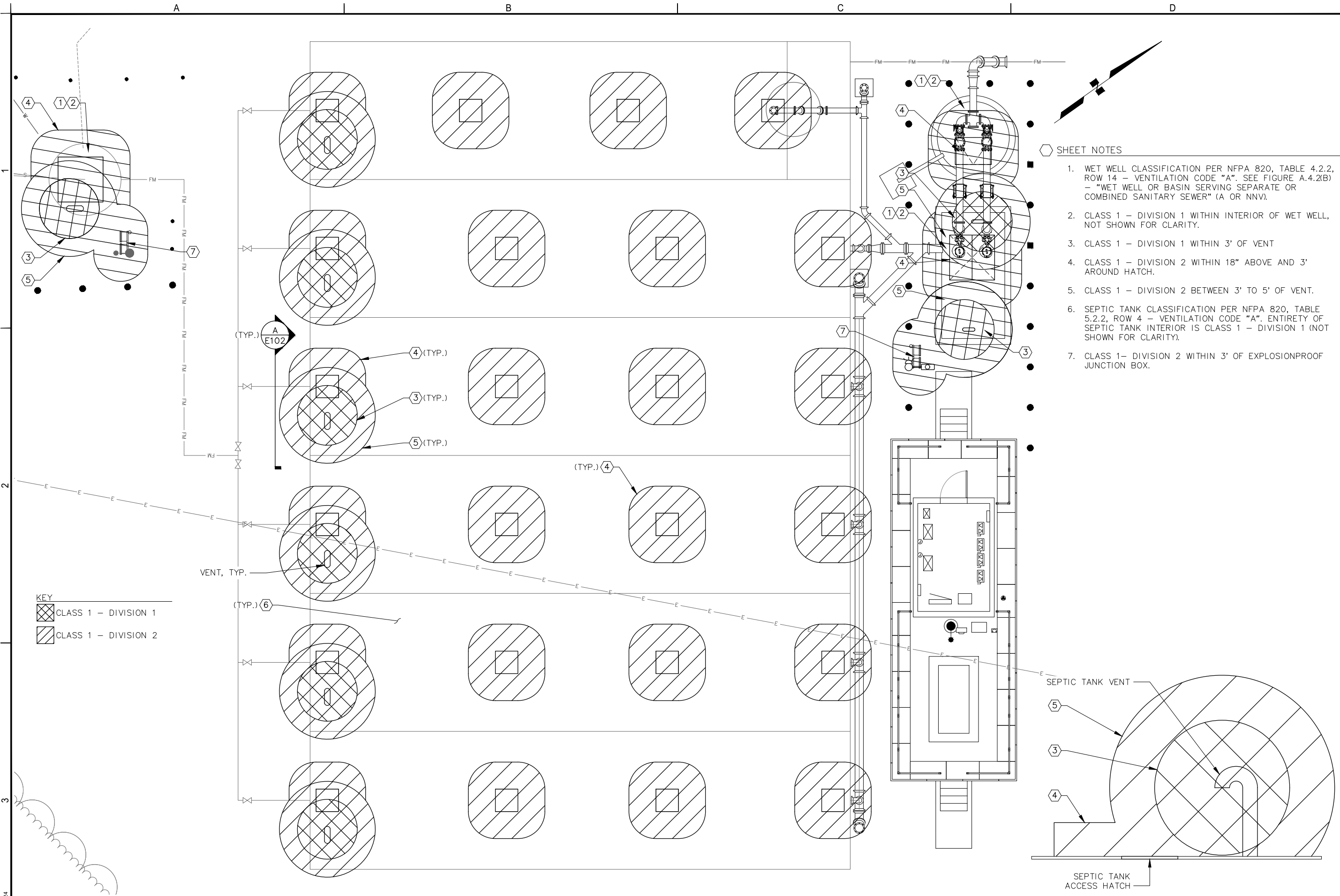
PLOT DATE: 2/16/2024

1

1

2

3



- SHEET NOTES**
1. WET WELL CLASSIFICATION PER NFPA 820, TABLE 4.2.2, ROW 14 - VENTILATION CODE "A". SEE FIGURE A.4.2(B) - "WET WELL OR BASIN SERVING SEPARATE OR COMBINED SANITARY SEWER" (A OR NNV).
 2. CLASS 1 - DIVISION 1 WITHIN INTERIOR OF WET WELL, NOT SHOWN FOR CLARITY.
 3. CLASS 1 - DIVISION 1 WITHIN 3' OF VENT
 4. CLASS 1 - DIVISION 2 WITHIN 18" ABOVE AND 3' AROUND HATCH.
 5. CLASS 1 - DIVISION 2 BETWEEN 3' TO 5' OF VENT.
 6. SEPTIC TANK CLASSIFICATION PER NFPA 820, TABLE 5.2.2, ROW 4 - VENTILATION CODE "A". ENTIRETY OF SEPTIC TANK INTERIOR IS CLASS 1 - DIVISION 1 (NOT SHOWN FOR CLARITY).
 7. CLASS 1 - DIVISION 2 WITHIN 3' OF EXPLOSIONPROOF JUNCTION BOX.

KEY

CLASS 1 - DIVISION 1
 CLASS 1 - DIVISION 2

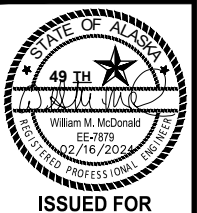
ELECTRICAL SITE PLAN

GRAPHIC SCALE



SEPTIC TANK VENT/HATCH TYP. CLASSIFICATION SECTION

NTS



ISSUED FOR CONSTRUCTION

VERIFY SCALE

BAR REPRESENTS 1" ON ORIGINAL DRAWING
0" = 1"

IF BAR IS NOT 1", ADJUST DRAWING SCALE ACCORDINGLY

LIFT STATION NO.5 REPLACEMENT REBID

WHITTIER, AK
PROJECT No. 20403.21

SITE HAZARDOUS LOCATION CLASSIFICATION

REVISION SCHEDULE

NO.	DESCRIPTION	DATE

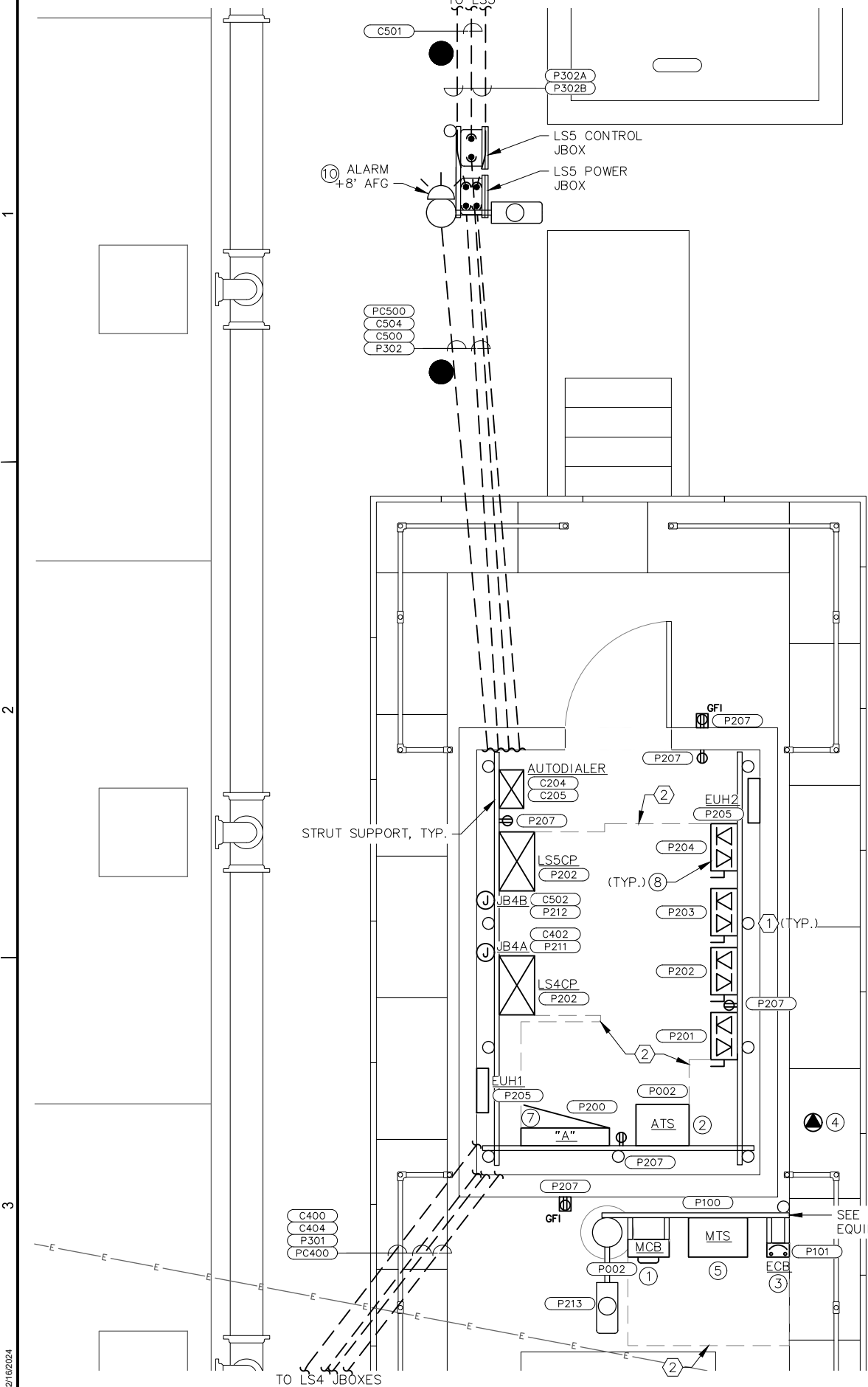
PROJECT NO. 20403.21
DATE FEB 2024
DRAWN JEH
DESIGNED JEH
REVIEWED WMM

SHEET NO.

E102

PLOT DATE: 2/16/2024

1

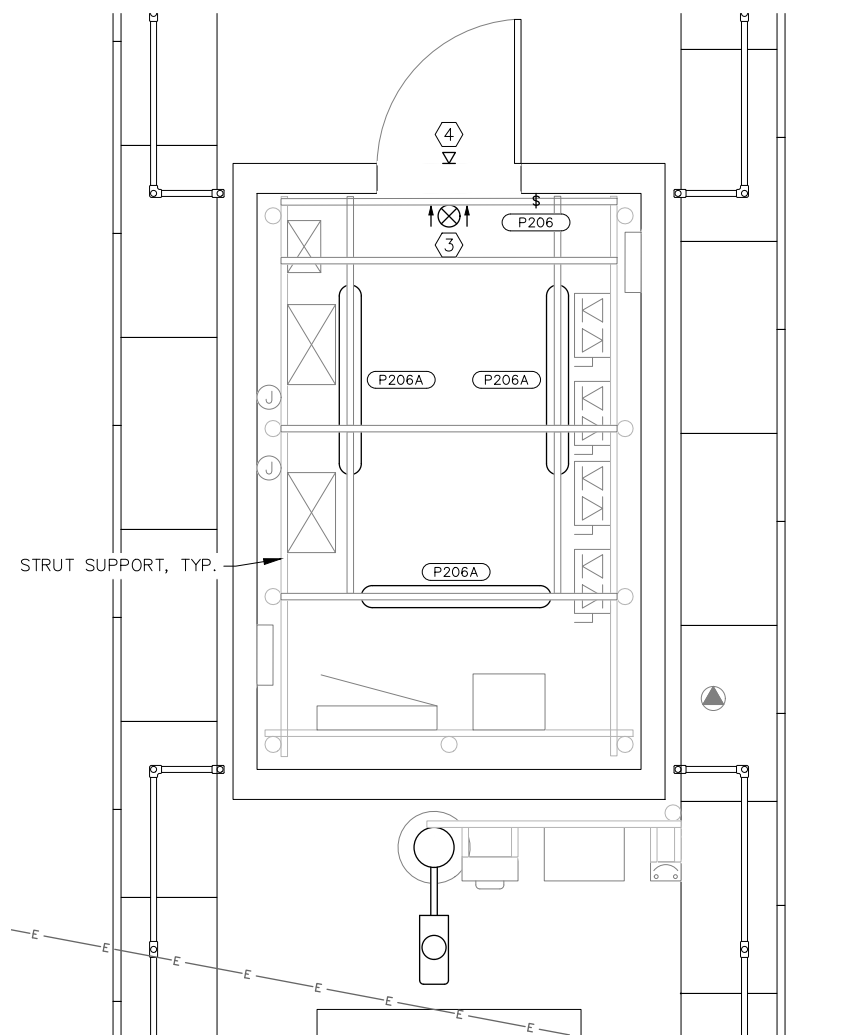


CONTROLS SHELTER PLAN
GRAPHIC SCALE



SHEET NOTES

1. EQUIPMENT SUPPORT: ALL EQUIPMENT AND LIGHTING TO BE SUPPORTED INDEPENDENT OF FIBERGLASS BUILDING ENCLOSURE. INTERIOR ELECTRICAL AND LIGHTING EQUIPMENT TO BE SECURED TO GALVANIZED STRUT, SECURED TO GALVANIZED 4" POSTS. SEE SHEET E203 FOR EXTERIOR ELECTRICAL EQUIPMENT.
2. MANUFACTURER CLEARANCE/EQUIPMENT WORKING SPACE. WORKING SPACE DEPTH PER NEC 110.26(A)(1).
3. EMERGENCY LIGHTING: PROVIDE 1/2" C (3) #12 (H, N, G) FOR CONNECTION TO NEAREST NON-SWITCHED PORTION OF INTERIOR LIGHTING CIRCUIT.
4. REMOTE HEAD SERVED BY EMERGENCY EXIT/LIGHT COMBO BATTERY. PROVIDE CONDUCTORS IN 1/2" C PER MANUFACTURER REQUIREMENTS.



CONTROLS SHELTER LIGHTING
GRAPHIC SCALE



ISSUED FOR CONSTRUCTION

VERIFY SCALE
BAR REPRESENTS 1" ON ORIGINAL DRAWING
0" 1"
IF BAR IS NOT 1". ADJUST DRAWING SCALE ACCORDINGLY

LIFT STATION NO.5 REPLACEMENT REBID
 WHITTIER, AK
 PROJECT No. 20403.21
CONTROLS SHELTER PLAN

REVISION SCHEDULE

NO.	DESCRIPTION	DATE

PROJECT NO. 20403.21
DATE FEB 2024
DRAWN JEH
DESIGNED JEH
REVIEWED WMM

SHEET NO. **E110**

PLOT DATE: 2/16/2024

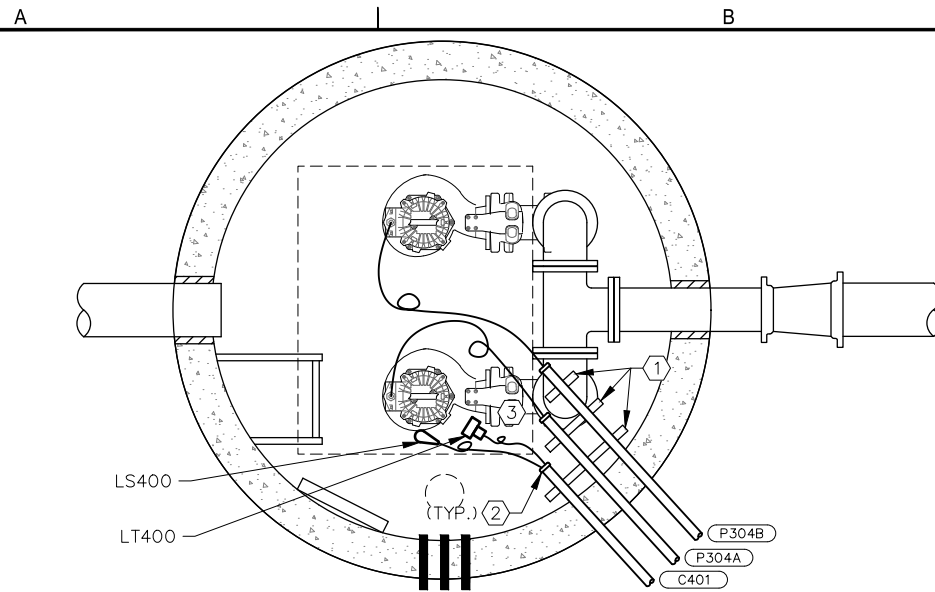
1

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1

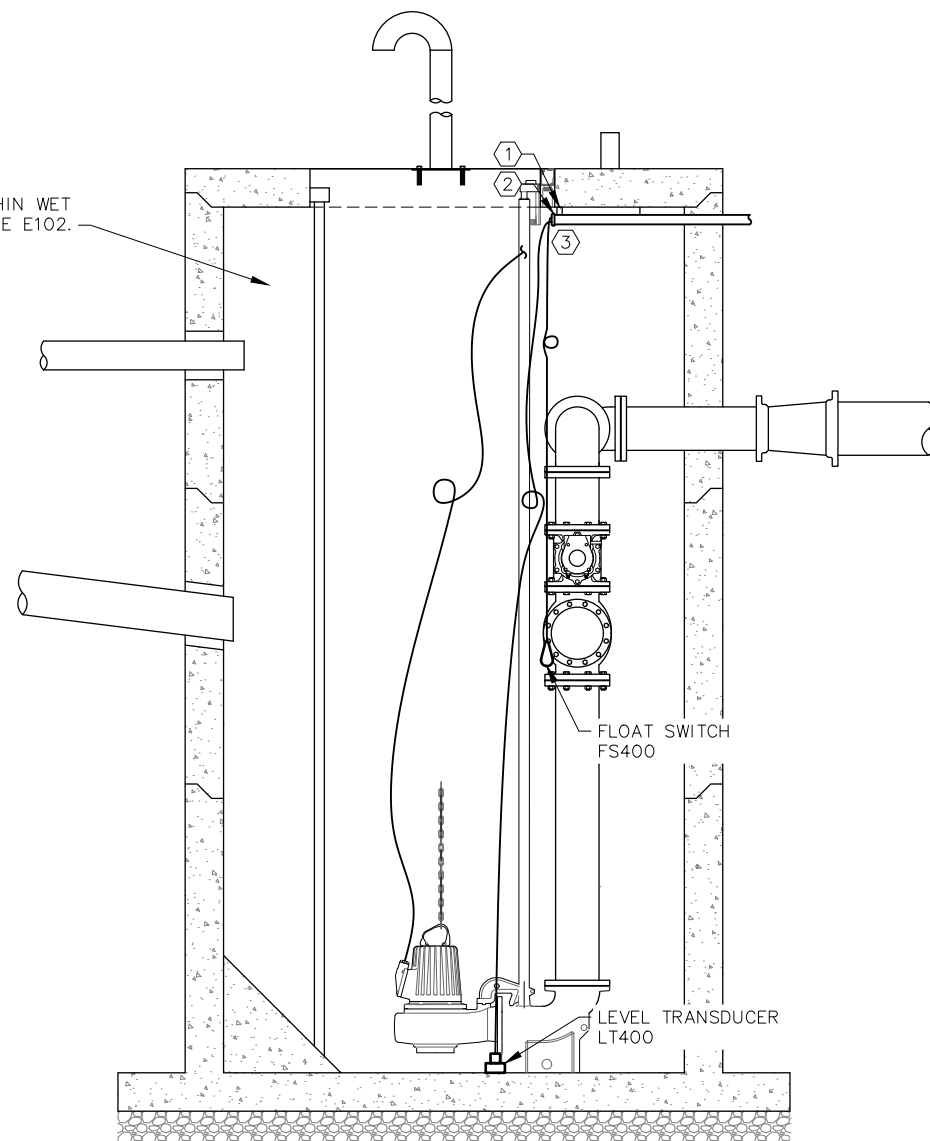
2



SHEET NOTES

1. PROVIDE SS UNISTRUT SUPPORTS AND BRACKETS FOR CONDUITS.
2. PROVIDE GROUNDING BUSHINGS TO ENDS OF ALL CONDUITS, BOND TOGETHER AND USE TO EXTEND GROUND TO ALL METALLIC STRUCTURE AND SUPPORTS.
3. ALIGN CONDUITS SO THAT ENDS DO NOT INTERFERE WITH PUMP REMOVAL, BUT ARE ACCESSIBLE FROM ABOVE TO AVOID ENTERING WET WELL FOR REMOVAL.

CLASS I - DIVISION 1 WITHIN WET WELL, SEE E102.



EXISTING WET WELL PLAN AND SECTION

NTS



ISSUED FOR CONSTRUCTION

VERIFY SCALE

BAR REPRESENTS 1" ON ORIGINAL DRAWING
0" 1"
IF BAR IS NOT 1". ADJUST DRAWING SCALE ACCORDINGLY

LIFT STATION NO.5 REPLACEMENT REBID

WHITTIER, AK
PROJECT No. 20403.21

EXISTING WET WELL PLAN AND SECTION

REVISION SCHEDULE

NO.	DESCRIPTION	DATE

PROJECT NO.	20403.21
DATE	FEB 2024
DRAWN	JEH
DESIGNED	JEH
REVIEWED	WMM

SHEET NO.

E200

PLOT DATE: 2/16/2024

1

A

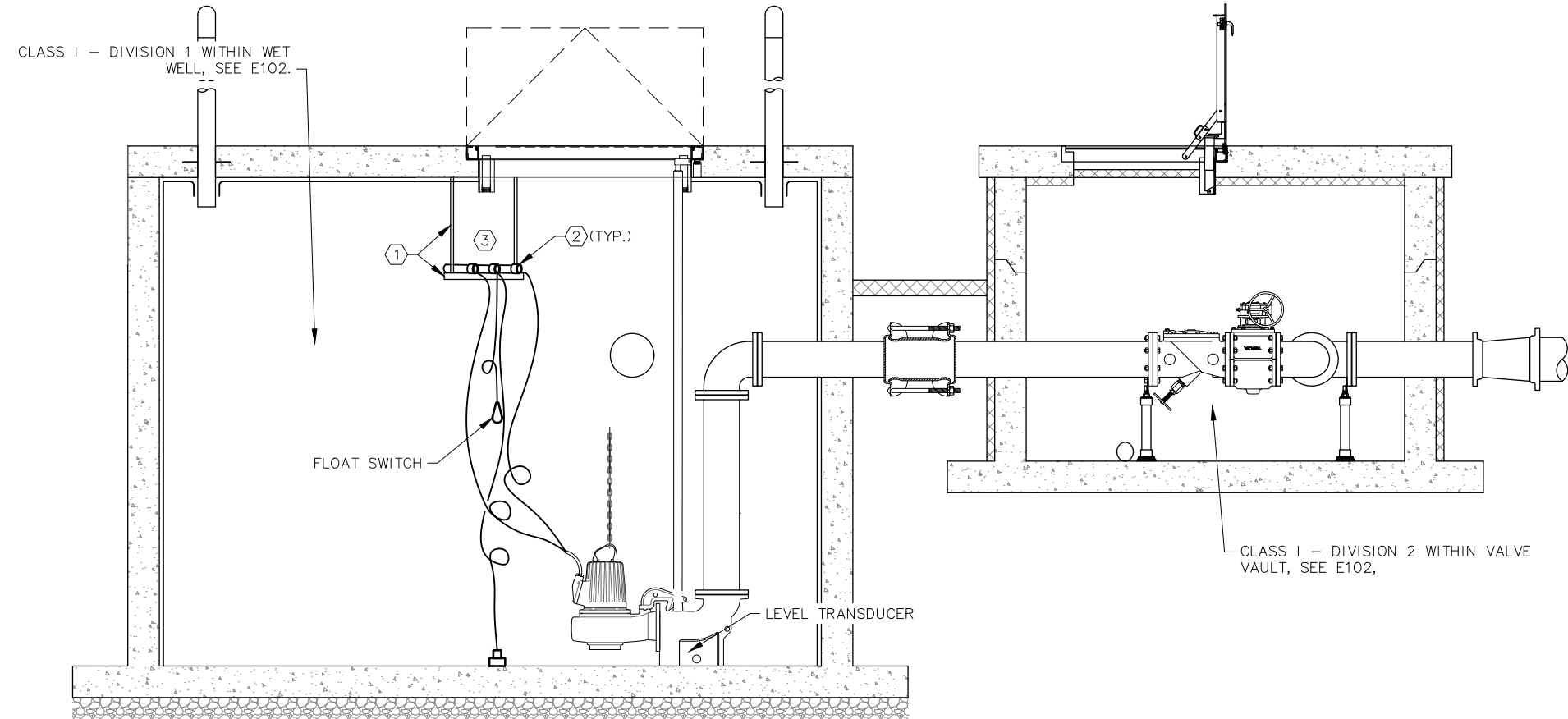
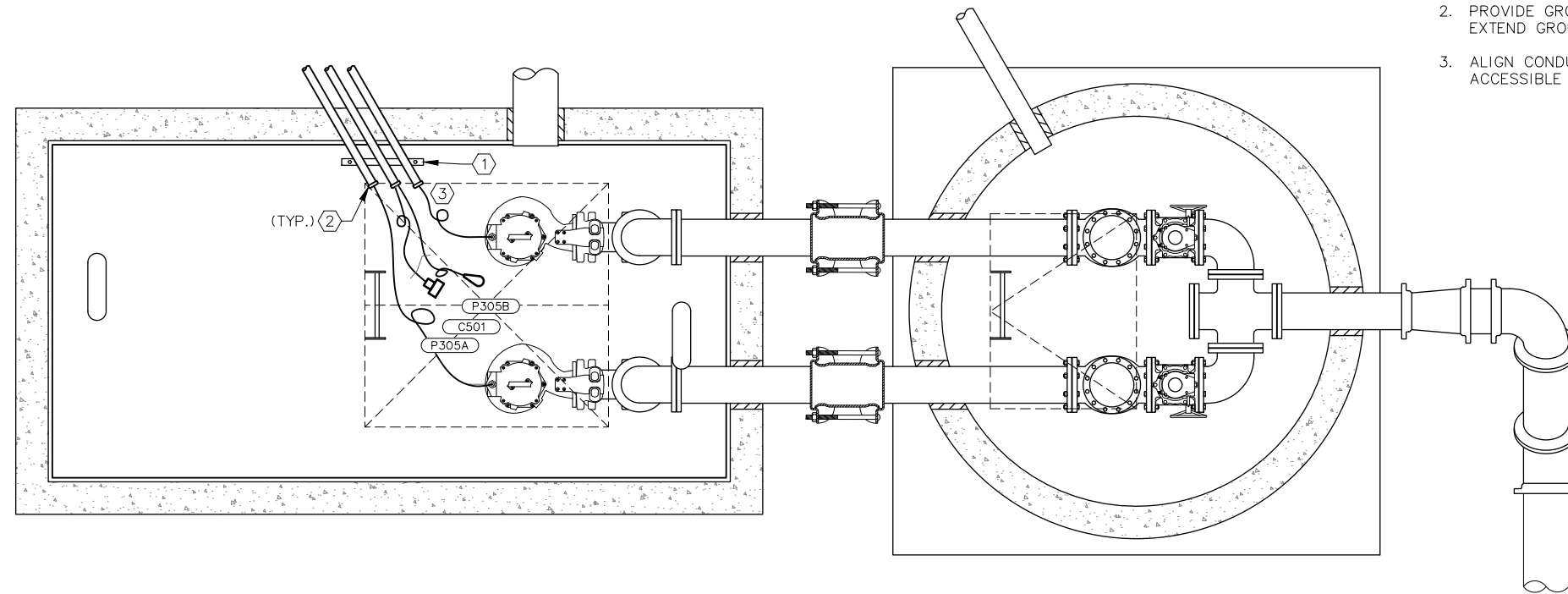
B

C

D

SHEET NOTES

1. PROVIDE SS UNISTRUT SUPPORTS AND BRACKETS FOR CONDUITS.
2. PROVIDE GROUNDING BUSHINGS TO ENDS OF ALL CONDUITS, BOND TOGETHER AND USE TO EXTEND GROUND TO ALL METALLIC STRUCTURE AND SUPPORTS.
3. ALIGN CONDUITS SO THAT ENDS DO NOT INTERFERE WITH PUMP REMOVAL, BUT ARE ACCESSIBLE FROM ABOVE TO AVOID ENTERING WET WELL FOR REMOVAL.



NEW WET WELL PLAN AND SECTION

NTS

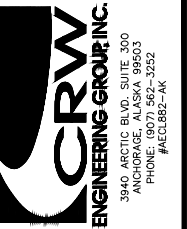
1

2

3

PLOT DATE: 2/16/2024

1



ISSUED FOR CONSTRUCTION

VERIFY SCALE

BAR REPRESENTS 1" ON ORIGINAL DRAWING

0" 1"

IF BAR IS NOT 1", ADJUST DRAWING SCALE ACCORDINGLY

LIFT STATION NO.5 REPLACEMENT REBID

WHITTIER, AK
PROJECT No. 20403.21

NEW WET WELL PLAN AND SECTION

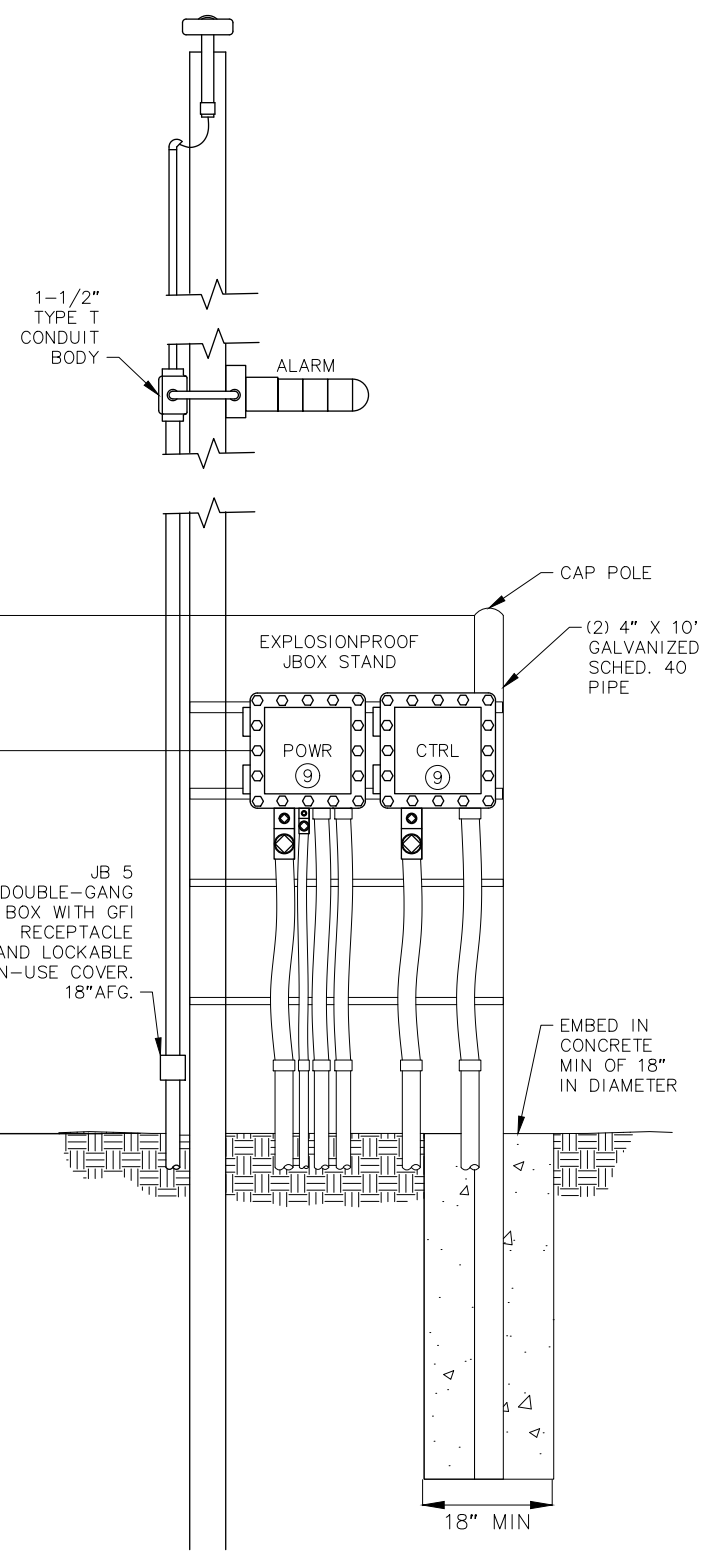
REVISION SCHEDULE

NO.	DESCRIPTION	DATE

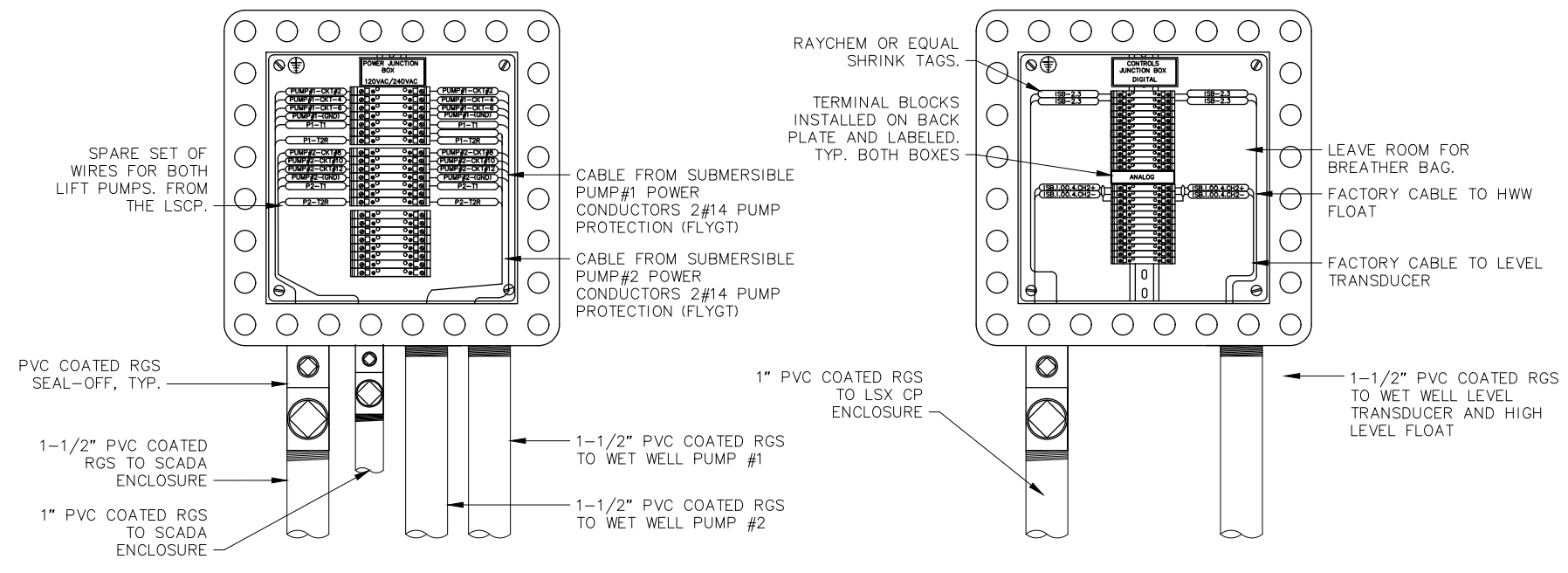
PROJECT NO.	20403.21
DATE	FEB 2024
DRAWN	JEH
DESIGNED	JEH
REVIEWED	WMM

SHEET NO.

E201



1 WET WELL JUNCTION BOX SECTION
NTS



2 ENLARGED WET WELL JUNCTION BOX SECTION
NTS



ISSUED FOR CONSTRUCTION

VERIFY SCALE

BAR REPRESENTS 1" ON ORIGINAL DRAWING
0" 1"
IF BAR IS NOT 1", ADJUST DRAWING SCALE ACCORDINGLY

LIFT STATION NO.5 REPLACEMENT REBID

WHITTIER, AK
PROJECT No. 20403.21

WET WELL JUNCTION BOX DETAILS

REVISION SCHEDULE	
NO.	DATE

PROJECT NO.	20403.21
DATE	FEB 2024
DRAWN	JEH
DESIGNED	JEH
REVIEWED	WMM

SHEET NO.

E202

PLOT DATE: 2/16/2024

A

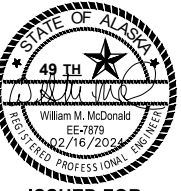
B

C

D

SHEET NOTES

- 1. MARINE-GRADE PLYWOOD BACKING SECURED TO GALVANIZED UNISTRUT. PROVIDE SUPPORTS AS REQUIRED.
- 2. 4" GALVANIZED POST.
- 3. PROVIDE SUPPORTS AS REQUIRED TO ALIGN FACES OF EACH PIECE OF EQUIPMENT ON THIS DETAIL THAT THEY MAY SHARE THE WIDTH OF WORKING SPACE.



ISSUED FOR CONSTRUCTION

VERIFY SCALE

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 0" 1"
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LIFT STATION NO.5 REPLACEMENT REBID

WHITTIER, AK
PROJECT No. 20403.21

EQUIPMENT MOUNTING DETAIL

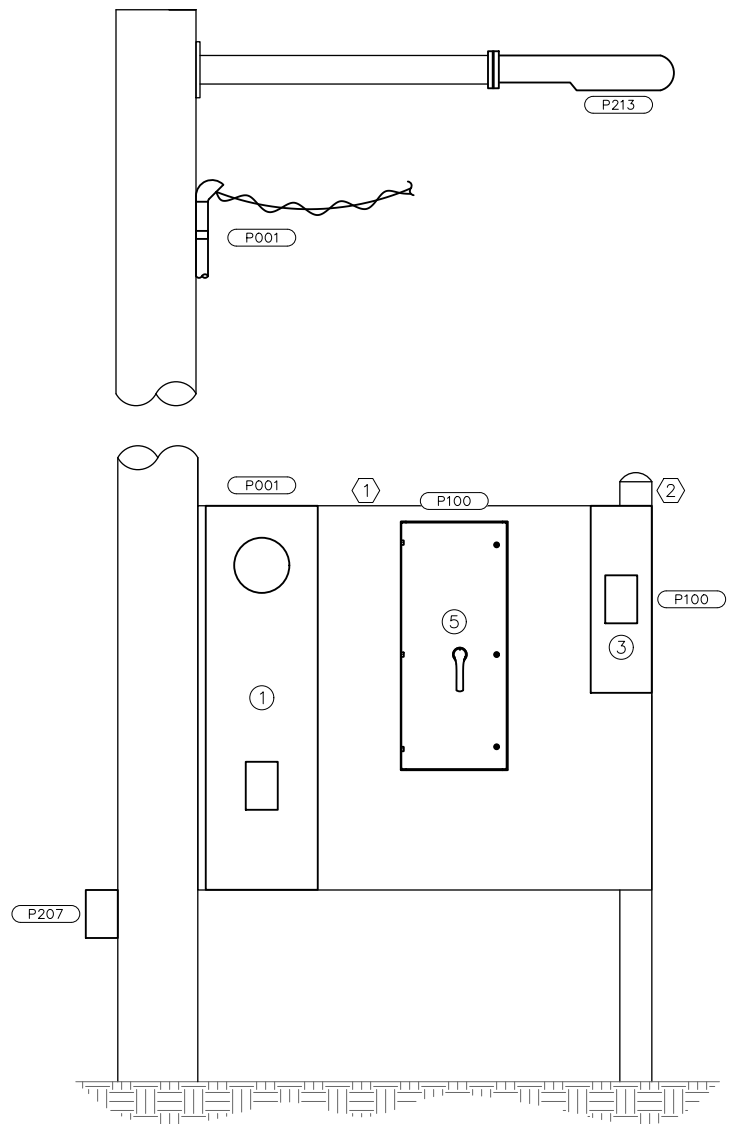
REVISION SCHEDULE

NO.	DESCRIPTION	DATE

PROJECT NO.	20403.21
DATE	FEB 2024
DRAWN	JEH
DESIGNED	JEH
REVIEWED	WMM

SHEET NO.

E203



1 **EQUIPMENT MOUNTING DETAIL**
 NTS

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PLOT DATE: 2/16/2024



CONTROL RELAY OR COIL
 * INDICATES DEVICE
 CR — CONTROL RELAY
 TD — TIME DELAY RELAY
 (TIMING RANGE AS INDICATED)
 M — MOTOR STARTER
 PC — PHOTOCELL
 SV — SOLENOID VALVE



NORMALLY OPEN CONTACT



NORMALLY CLOSED CONTACT

TIMED CONTACTS — CONTACT ACTION DELAYED
 AFTER COIL IS:
ENERGIZED



NORMALLY OPEN WITH TIME DELAY CLOSING



NORMALLY CLOSED WITH TIME DELAY OPENING
DE-ENERGIZED



NORMALLY OPEN WITH INSTANT CLOSING AND TIME DELAY OPENING



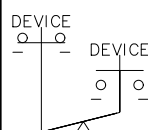
NORMALLY CLOSED WITH INSTANT OPENING AND TIME DELAY CLOSING



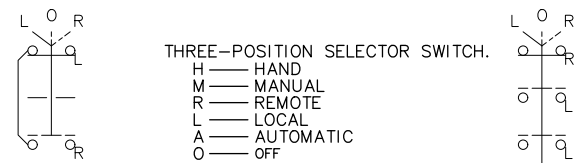
NORMALLY OPEN PUSHBUTTON



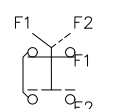
NORMALLY CLOSED PUSHBUTTON



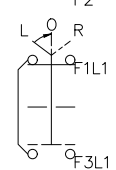
NC/NO MAINTAINED PUSHBUTTON



TWO-POSITION SELECTOR SWITCH



THREE POSITION SPRING RETURN-TO-CENTER MOMENTARY CONTACT SWITCH



VACUUM OR PRESSURE SWITCH, CLOSE ON RISING PRESSURE



VACUUM OR PRESSURE SWITCH, OPEN ON RISING PRESSURE



FLOAT LEVEL SWITCH, CLOSE ON RISING LEVEL



FLOAT LEVEL SWITCH, OPEN ON RISING LEVEL



NORMALLY OPEN



NORMALLY CLOSED



NORMALLY OPEN HELD CLOSED



NORMALLY CLOSED HELD OPEN



MAINTAINED POSITION



TEMPERATURE SWITCH, CLOSE ON RISING TEMPERATURE



TEMPERATURE SWITCH, OPEN ON RISING TEMPERATURE



FLOW SWITCH, CLOSE ON INCREASING FLOW



FLOW SWITCH, OPEN ON INCREASING FLOW



TORQUE SWITCH OPENS ON INCREASING TORQUE



DEVICE TAG



CIRCUIT INTERRUPTER



SINGLE POLE TOGGLE SWITCH



SOLENOID



LED PILOT LIGHT
 * INDICATES LENS COLOR
 R — RED
 G — GREEN
 A — AMBER
 W — WHITE



LED PILOT LIGHT PUSH-TO-TEST SEE ABOVE FOR LENS COLORS



HORN



ELAPSED TIME METER



HEATER



GROUND CONNECTION



CROSSING OF CONDUCTORS—NOT CONNECTED



CONDUCTORS CONNECTED



FUSE



TERMINAL BLOCK



FUSED TERMINAL BLOCK



FUSED TERMINAL BLOCK



CONTINUATION



INTERRUPTION



VALVE OFF SEAT SWITCH



INTRUSION SWITCH



COMBINATION STARTER



EXISTING WIRING/RACEWAY



NEW WIRING/RACEWAY



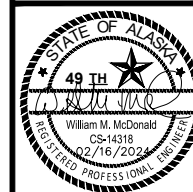
OBJECT BORDER



FLEX CONDUIT



INSTRUMENT CABLE



ISSUED FOR CONSTRUCTION

VERIFY SCALE

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 0" 1"
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LIFT STATION NO.5 REPLACEMENT REBID

WHITTIER, AK PROJECT No. 20403.21

INSTRUMENTATION LEGEND

REVISION SCHEDULE

NO.	DESCRIPTION	DATE

PROJECT NO. 20403.21
 DATE FEB 2024
 DRAWN JEH
 DESIGNED JEH
 REVIEWED WMM

SHEET NO.

IC001

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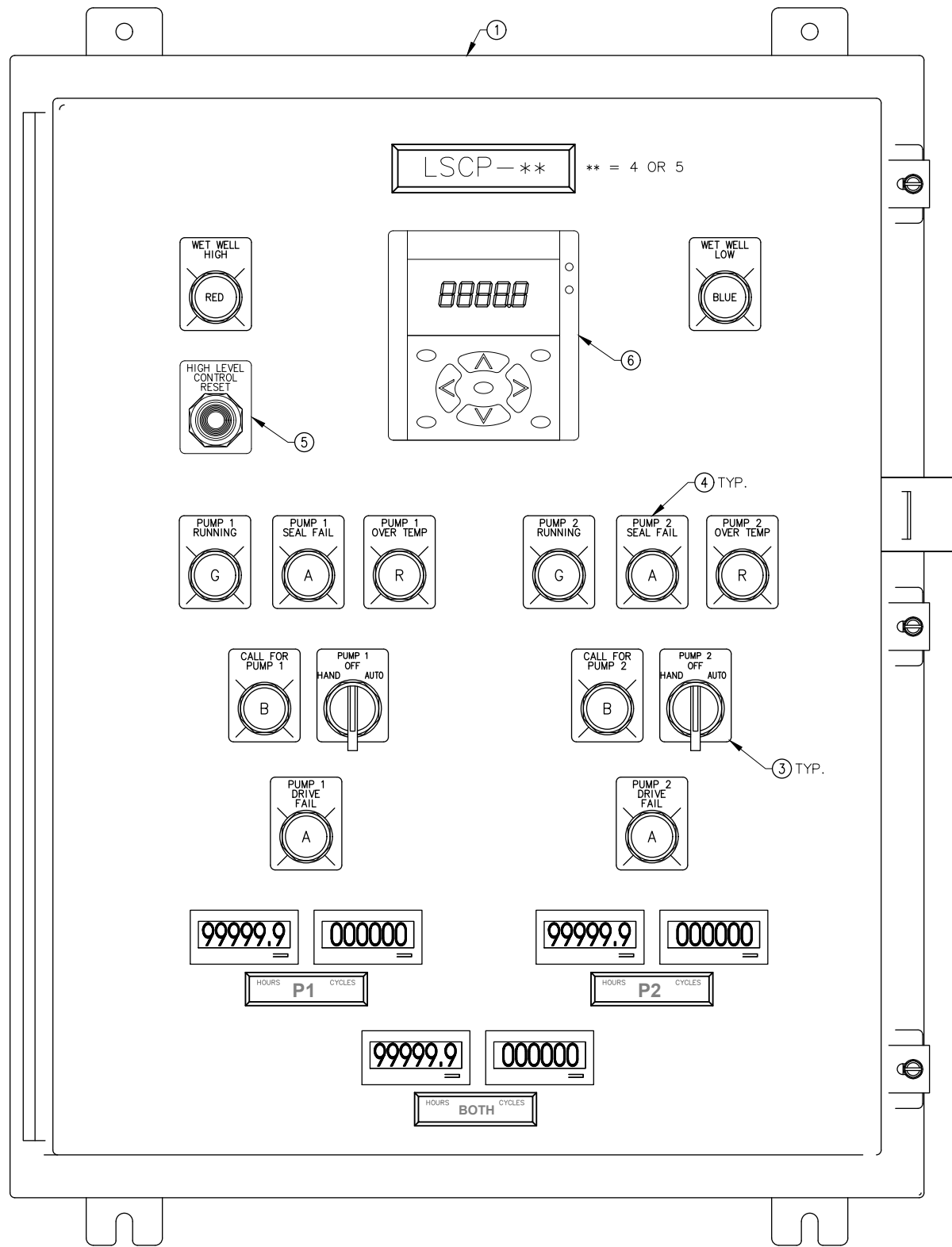
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PLOT DATE: 2/16/2024



LIFT STATION LS AND LS 5 CONTROL PANEL LAYOUTS (2 PANELS)

NTS

FUNCTIONAL NARRATIVE

EACH LIFT STATION CONTROL PANEL (LSCP) PROVIDES OPERATING LOGIC AND STATUS MONITORING FOR THE LIFT STATION PUMPS. THE LEVEL CONTROLLER PROVIDES AUTOMATIC ALTERNATION, LEAD/LAG OPERATION, AND WHEN ONE PUMP IS TURNED OFF OR HAS FAILED, THE CONTROLLER WILL KEEP THE REMAINING PUMP AS LEAD AND NOT ALTERNATE. THE LEVEL CONTROLLER WILL ALSO DISPLAY WET WELL LEVEL AND PUMP STATUS.

THE PANEL PROVIDES A LOCAL ALARM SIGNAL LIGHT DURING HIGH WET WELL LEVEL CONDITION. IN ADDITION TO THE LEVEL SIGNAL, THE PANEL PROVIDES PUMP STATUS AND AN ANALOG LEVEL SIGNALS FOR USE BY AN EXTERNAL DIALER.

THE PANEL IS EQUIPPED WITH PUMP MONITORS THAT CHECK FOR OVER HEATING (AND WILL SHUT DOWN IF DETECTED) AND SEAL FAILURE. SEAL FAILURE WILL PRODUCE A LIGHT ON THE PANEL FRONT BUT NO OTHER ACTION IS TAKEN.

PANEL MOUNTED COUNTERS SHOW EACH PUMPS ELAPSED TIME AND NUMBER OF CYCLES. ALSO PROVIDED IS A COUNTER SHOWING TIME BOTH PUMPS WERE NEEDED AND TOTAL TIME.

COMPONENT SCHEDULE

#	ITEM
1	NEMA 12 ENCLOSURE, 20 x 24 x (TBD), STEEL BACK PLATE, HINGED DOOR WITH LOCKING HASP. HOFFMAN OR EQUAL, PROVIDE PANEL DEPTH SUFFICIENT TO HOUSE THE CONTROLLER WITH PANEL BACK PLATE IN PLACE.
2	COMBO SOFT START 208V, 3-PHASE, 7.5HP RATED CIRCUIT BREAKER DISCONNECT, WITH UNIT MOUNTED HIM MODULE. ALLEN BRADLEY SMC SERIES WITH REVERSE AND BYPASS IN NEMA 12 ENCLOSURE.
3	3-POS SELECTOR SWITCH, 30.5mm FULL SIZE, NEMA 4X, 120V WITH ETCHED LAMACOID LABEL WITH LEGEND AS SHOWN. SQUARE D, ALLEN BRADLEY OR EQUAL.
4	120V PILOT LIGHT, LED LAMP WITH LENS / LAMP TINT AS SHOWN. NEMA 4X RATED, SQUARE D, ALLEN BRADLEY OR EQUAL.
5	NORMALLY OPEN, MOMENTARY CONTACT PUSHBUTTON 30.5mm FULL SIZE, NEMA 4X, CONTACTS AS REQUIRED. PROVIDE ETCHED LAMACOID LABEL WITH LEGEND AS SHOWN. SQUARE D, ALLEN BRADLEY OR EQUAL.
6	PUMP LEVEL CONTROLLER WITH AUTO ALTERNATION, SINGLE PUMP OVERRIDE, ANALOG DISPLAY OF PUMP, WET WELL AND SET POINT STATUS. FRONT PANEL BEZEL/MOUNTING BRACKET. CONTEGRA STATION MASTER 703C. PROVIDE WITH REMOTE LIQUID LEVEL SENSOR. PROGRAM UNIT TO PROVIDE AUTO ALTERNATION IN LEAD/LAG MODE. AUTO LOCKOUT ON FAILED PUMP, CONTINUOUS DISPLAY OF WET WELL LEVEL.
7	100W 240V SELF CONTAINED HEATER/TSTAT WITH INTEGRAL FAN, HOFFMAN. SET AT LOWEST TEMP SETTING FOR CONDENSATION CONTROL.
8	1, 2, 3, OR 4 POLE RELAY AS REQUIRED, 120V COIL. ALLEN BRADLEY BULLETIN 700 HB
9	2-CHANNEL INTRINSICALLY SAFE BARRIER RELAY. PART NUMBER: INGRAM SR 2 R 120A R 10K.
10	ITEM 8 WITH TIMER MODULE. ALLEN BRADLEY BULLETIN 700 HB SERIES TIMING MODULE, PROVIDE ON OR OFF DELAY SETTING AS REQUIRED.
11	RUNNING TIME METER, RESETTABLE. REDDINGTON MODEL 63. SET FOR HUNDREDS/TENTHS.
12	CYCLE COUNTER. REDDINGTON MODEL 63. SET FOR CYCLE UP COUNT.
13	TERMINAL BLOCKS. ENTRELEC OR EQUAL. PROVIDE ACCESSORIZED BLOCKS AS OCP AND SWITCHABLE AS NEEDED. PROVIDE TERMINALS WITH TEST PROBE CAPABILITY.



ISSUED FOR CONSTRUCTION

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0" 1"

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LIFT STATION NO.5 REPLACEMENT REBID

WHITTIER, AK
PROJECT No. 20403.21

LCP-LS LAYOUT

REVISION SCHEDULE

NO.	DESCRIPTION	DATE

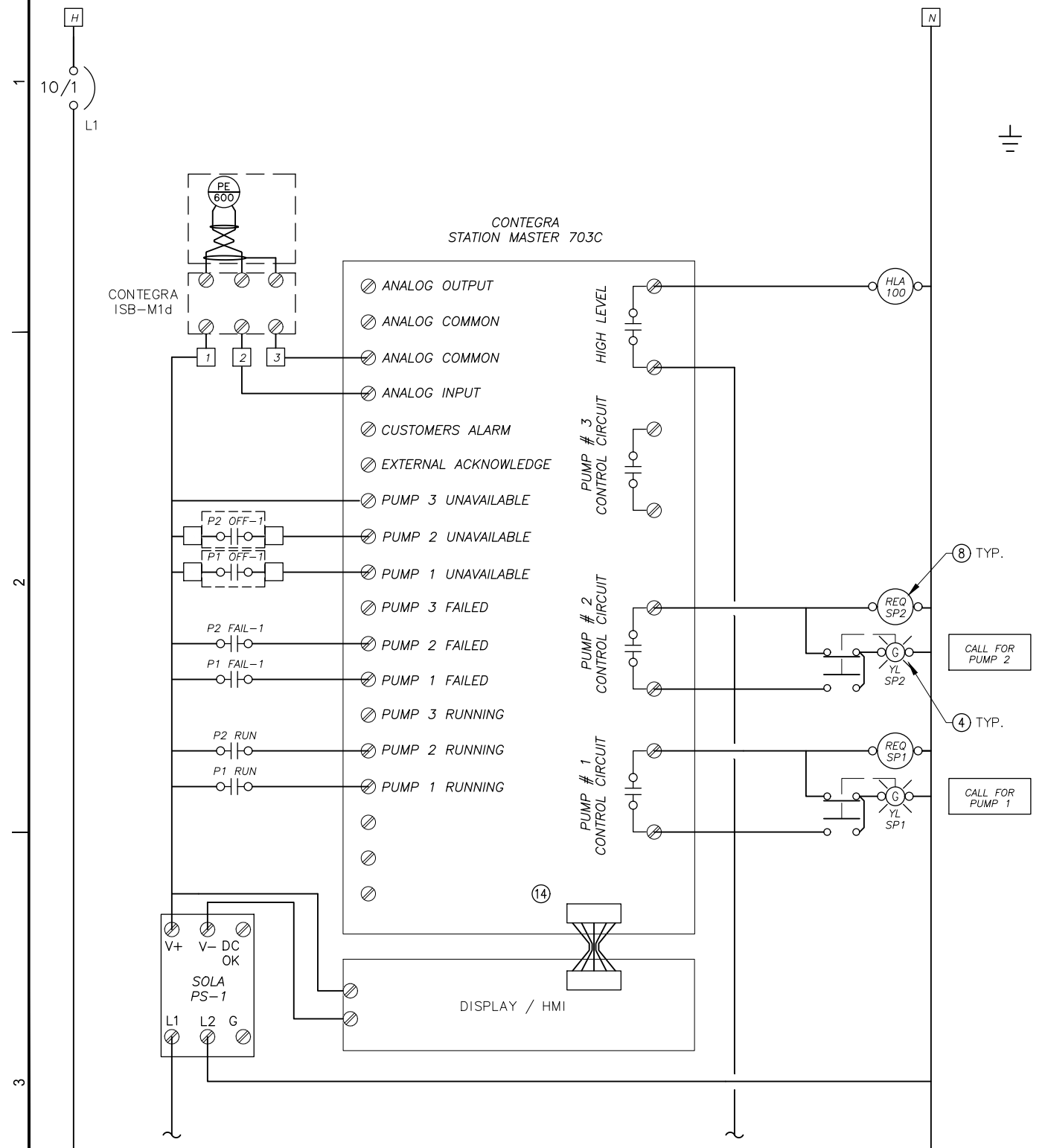
PROJECT NO. 20403.21
DATE FEB 2024
DRAWN JEH
DESIGNED JEH
REVIEWED WMM

SHEET NO.

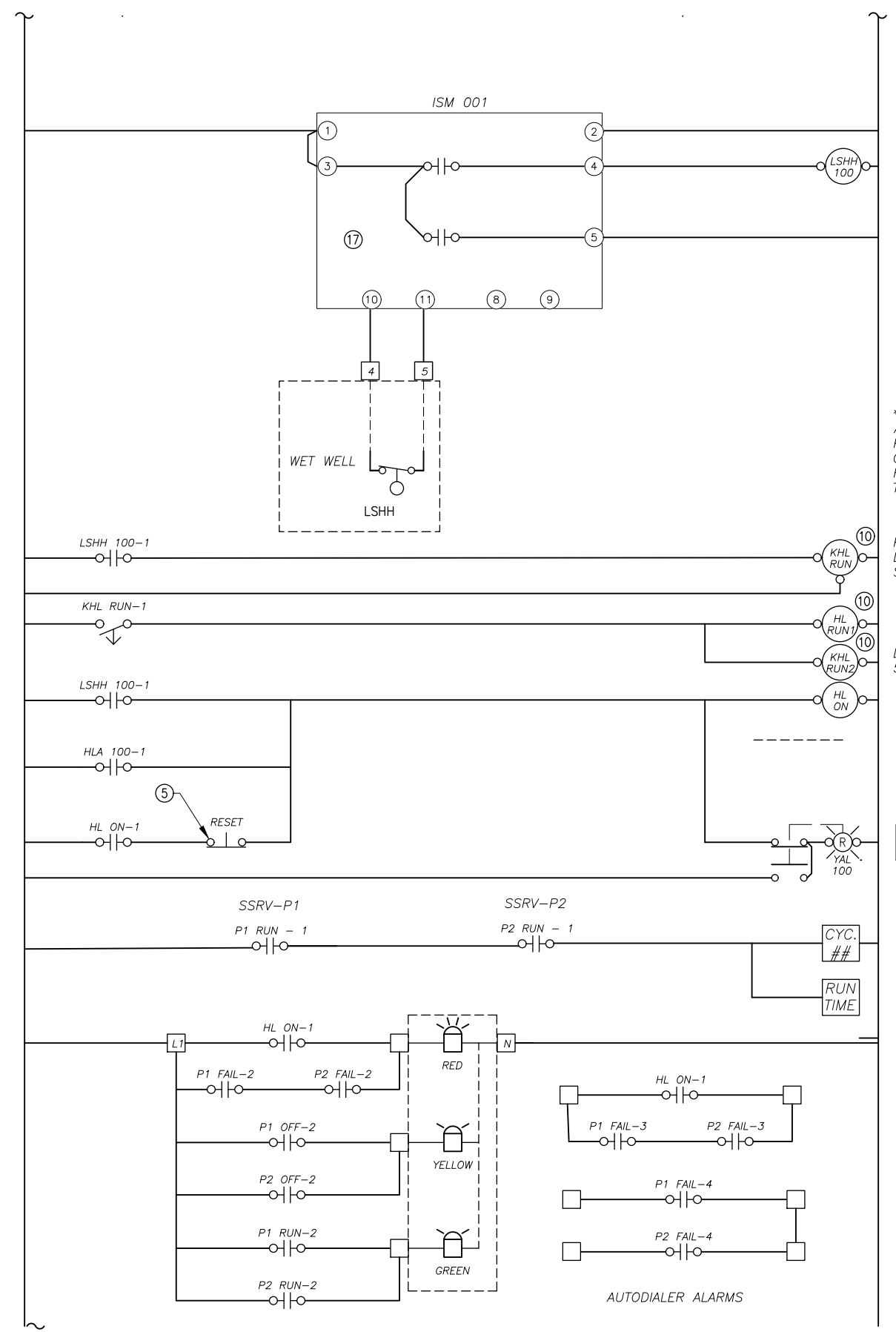
IC100

CONTROL POWER SEE ONE-LINE EC202

120V



1 ANALOG LEVEL AND PUMP CONTROL
NTS



2 WET WELL HIGH LEVEL AND REDUNDANT CONTROLS
NTS

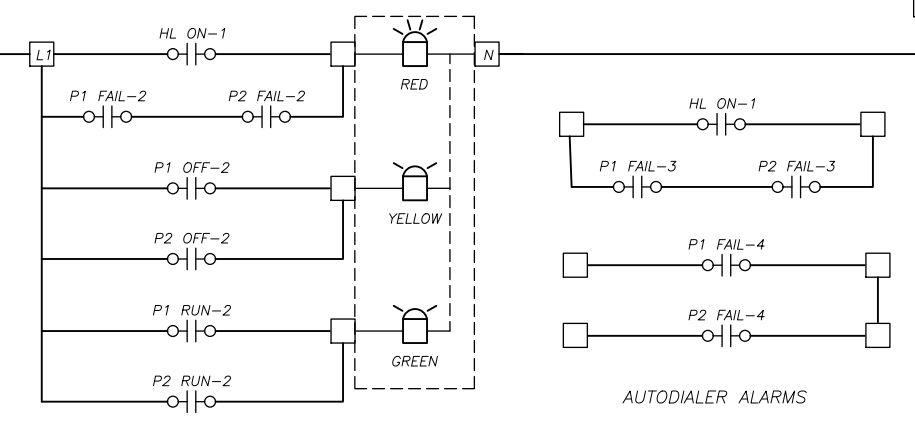
*SET DELAY OFF AFTER TIMING A PUMP DOWN CYCLE FROM THE HIGH FLOAT TO TOP OF PUMP

PUMP RUN DELAY OFF SET IN FIELD*

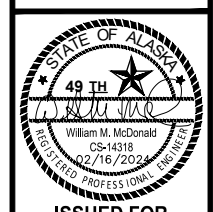
DELAY ON 5 SEC

WET WELL HIGH LEVEL

CYC. ##
RUN TIME



AUTODIALER ALARMS



ISSUED FOR CONSTRUCTION

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0" = 1"
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LIFT STATION NO.5 REPLACEMENT REBID
WHITTIER, AK
PROJECT No. 20403.21
LEVEL AND PUMP CONTROLS

REVISION SCHEDULE		
NO.	DESCRIPTION	DATE

PROJECT NO. 20403.21
DATE FEB 2024
DRAWN JEH
DESIGNED JEH
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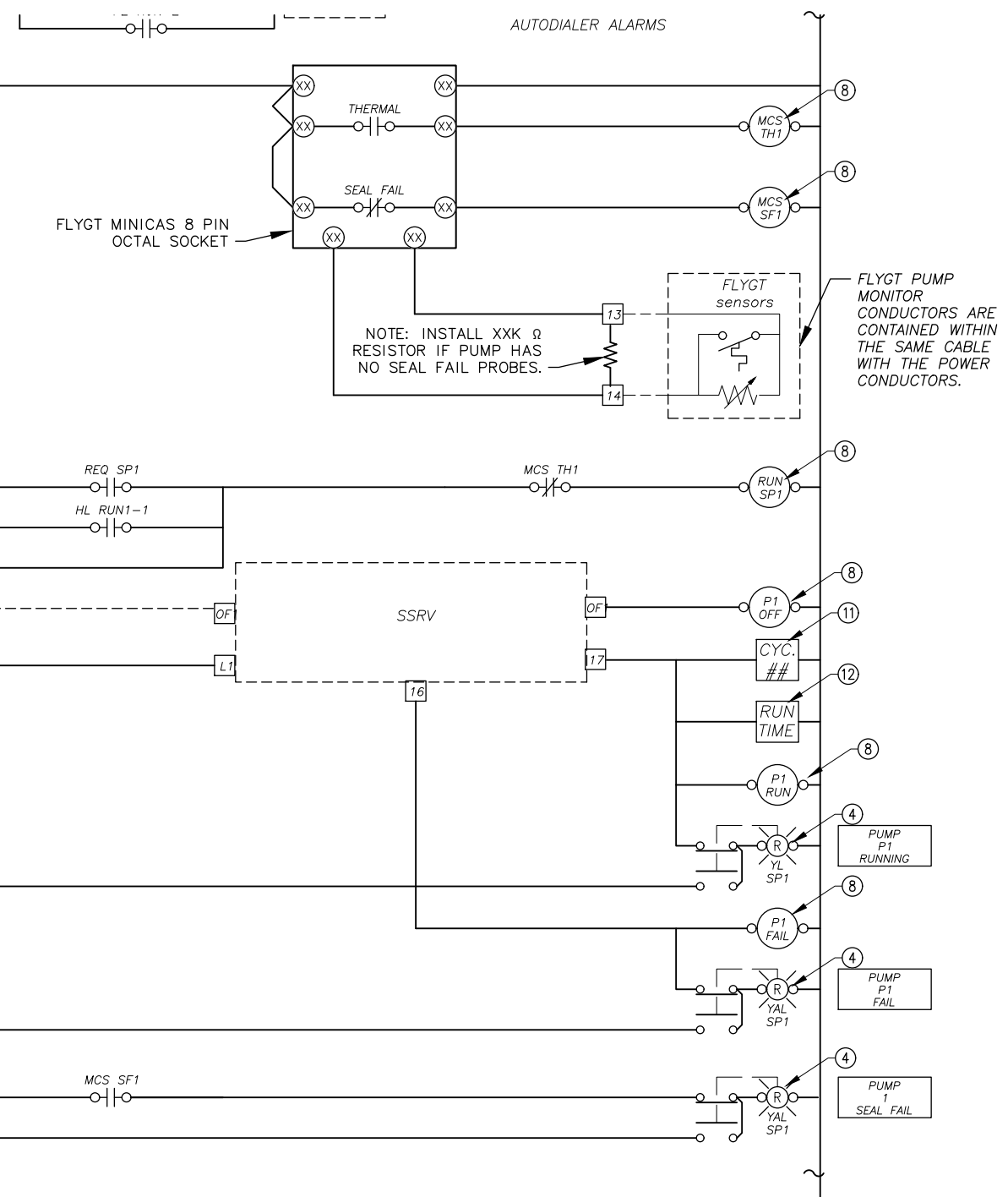
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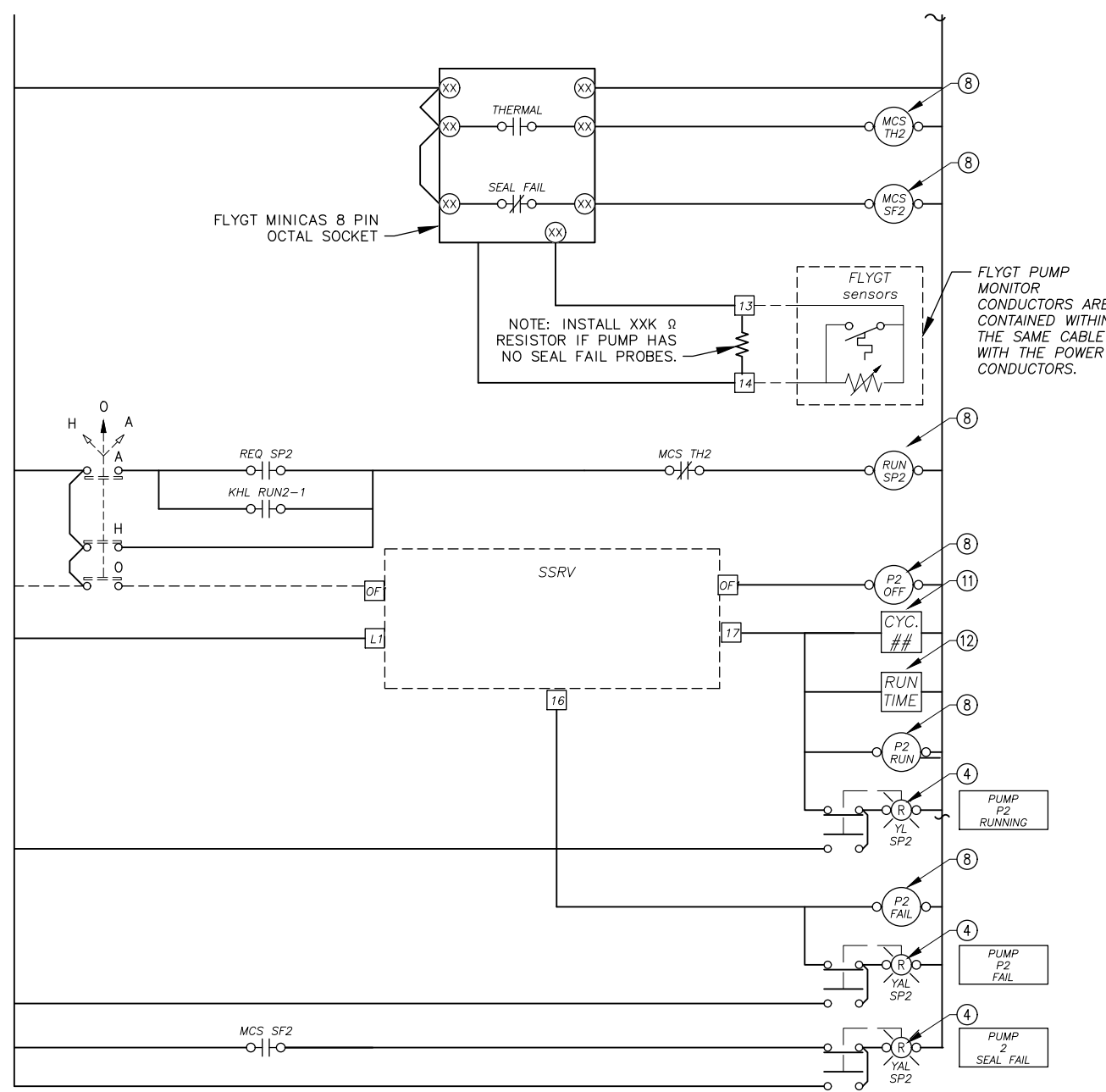
B

C

D



1 PUMP P1 MONITOR
NTS



2 PUMP P2 MONITOR
NTS



ISSUED FOR CONSTRUCTION

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LIFT STATION NO.5 REPLACEMENT REBID

WHITTIER, AK
PROJECT No. 20403.21

PUMP, SP-501 & 502 CONTROLS

REVISION SCHEDULE		
NO.	DESCRIPTION	DATE

PROJECT NO. 20403.21
DATE FEB 2024
DRAWN JEH
DESIGNED JEH
REVIEWED WMM

SHEET NO. **IC202**

PLOT DATE: 2/16/2024

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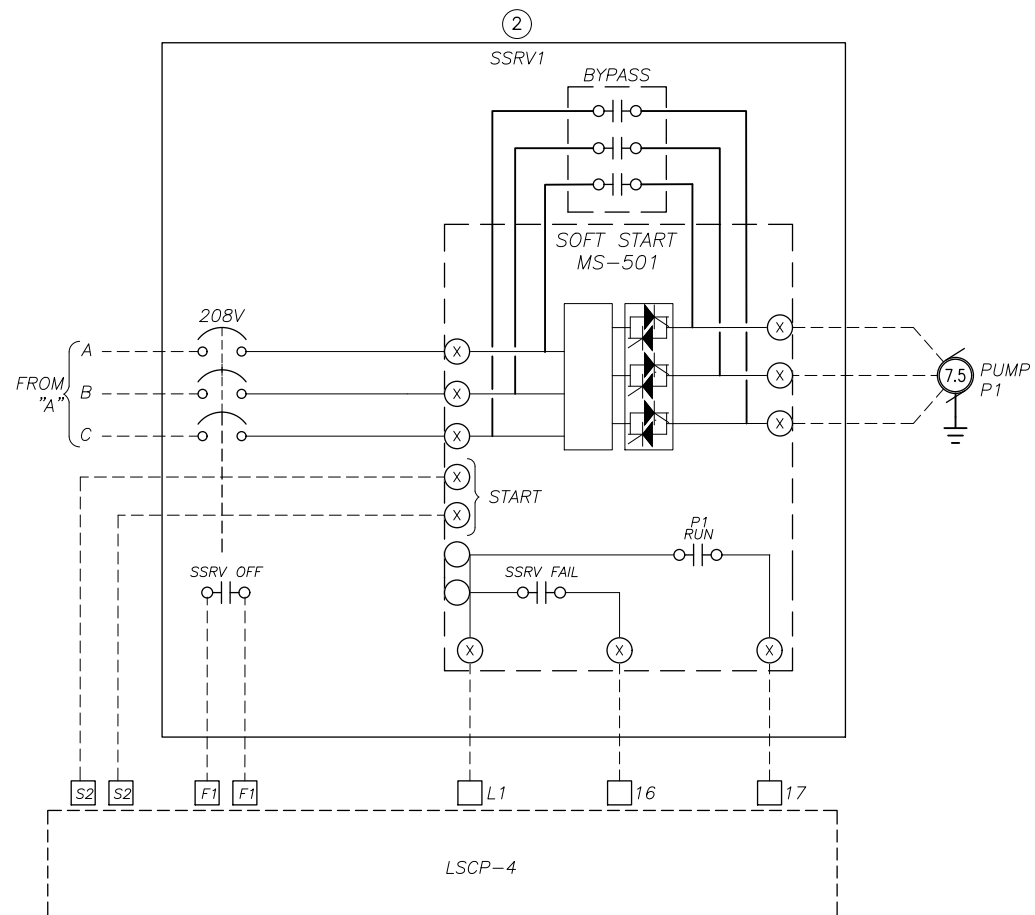
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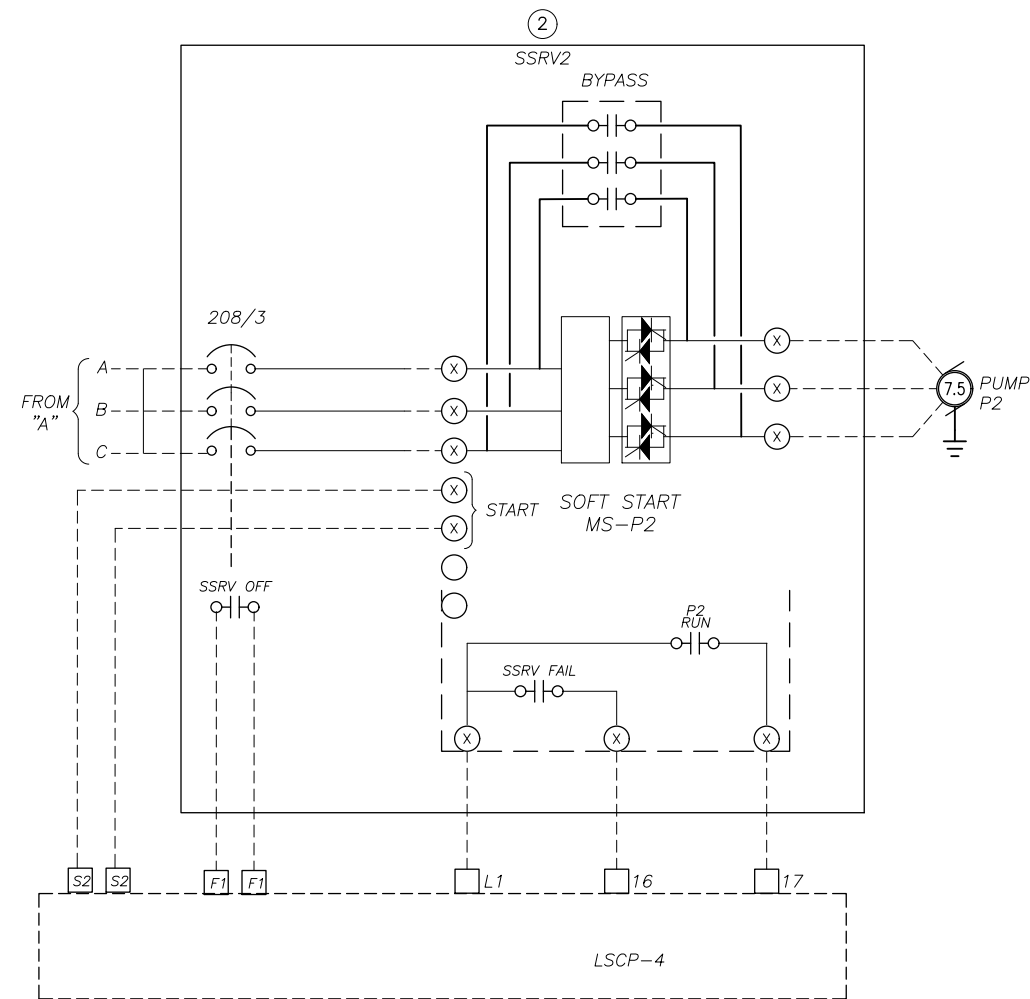
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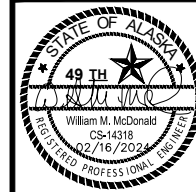
PLOT DATE: 2/16/2024



1 LS 4 PUMP 1 SSRV1 STARTER
NTS



2 LS 4 PUMP 2 SSRV2 STARTER
NTS



ISSUED FOR
CONSTRUCTION

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ACCORDINGLY

LIFT STATION NO.5 REPLACEMENT REBID

WHITTIER, AK
PROJECT No. 20403.21

LIFT STATION 4 SP PUMP RSS STARTERS

REVISION SCHEDULE		
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PROJECT NO. 20403.21
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DESIGNED JEH
REVIEWED WMM

SHEET NO.

IC203

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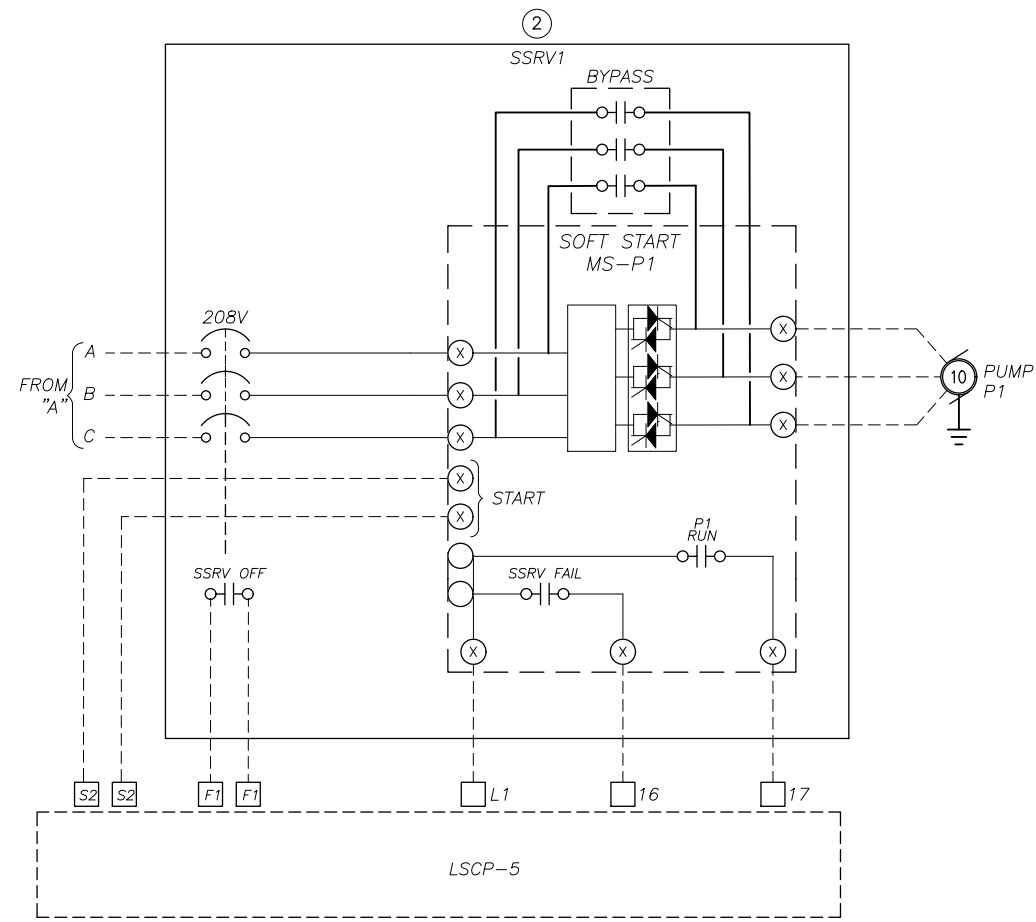
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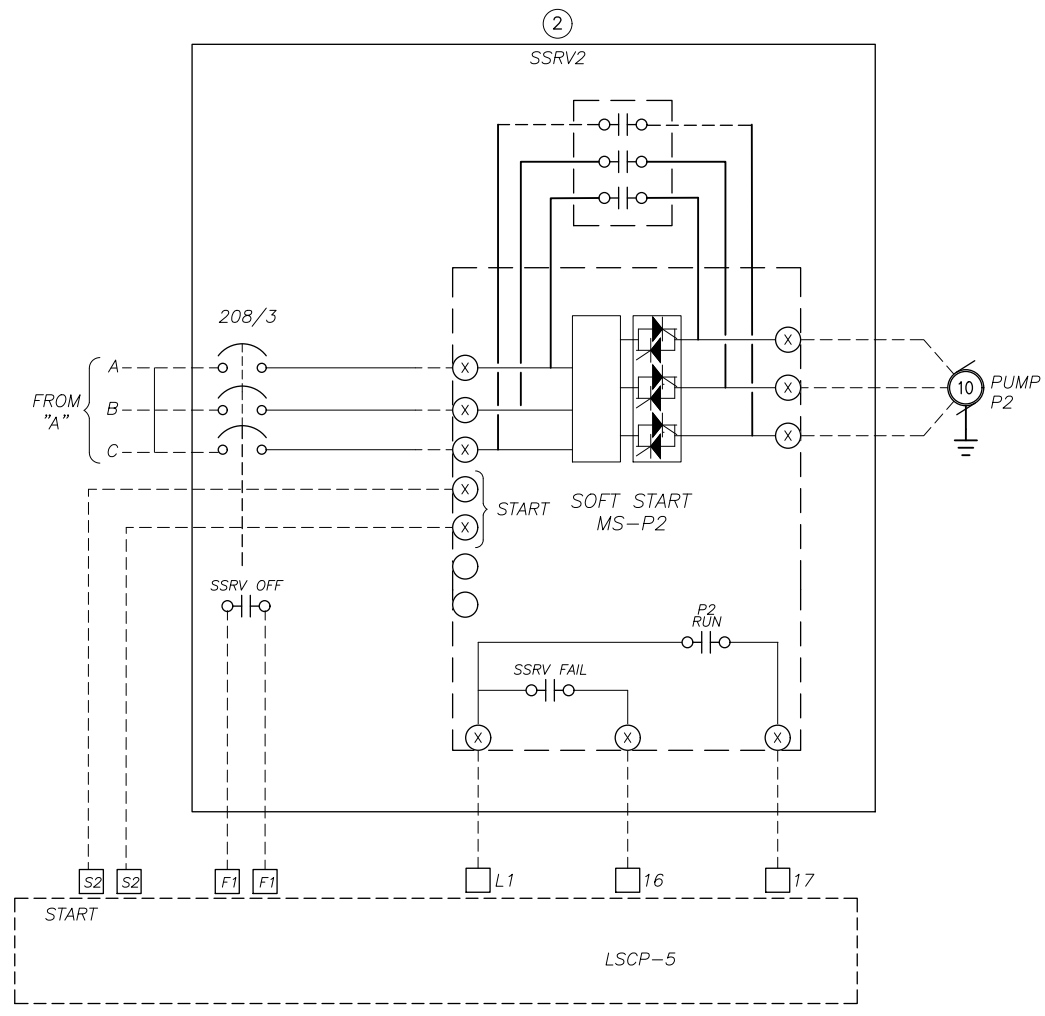
1

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1 LS 5 PUMP 1 SSRV1 STARTER
NTS



2 LS 5PUMP 2 SSRV2 STARTER
NTS



ISSUED FOR CONSTRUCTION

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LIFT STATION NO.5 REPLACEMENT REBID
WHITTIER, AK
PROJECT No. 20403.21
LIFT STATION 5 SP PUMP RSS STARTERS

REVISION SCHEDULE	
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PROJECT NO. 20403.21
DATE FEB 2024
DRAWN JEH
DESIGNED JEH
REVIEWED WMM

SHEET NO.
IC204