STATE OF ALASKA
INVITATION TO BID (ITB)

PACKAGED WATER TREATMENT SYSTEM

ITB NUMBER 22-VSW-TLT-032

ISSUE DATE NOVEMBER 15, 2021

ONE TIME PURCHASE OF A PACKAGED WATER TREATMENT SYSTEM

IMPORTANT NOTICE: If you received this solicitation from the State of Alaska's "Online Public Notice" web site, you must register with the procurement officer listed below in order to receive notification of subsequent amendments to the solicitation. Failure to register with the procurement officer may result in the rejection of your offer.

BIDDER'S NOTICE: By signature on this form, the bidder certifies that they comply with the following:

(1) the bidder has a valid Alaska business license or will obtain one prior to award of any contract resulting from this ITB. If the bidder possesses a valid Alaska business license, the license number must be written below or one the following forms of evidence submitted with the bid:
- a canceled check for the business license fee;
- a copy of the business license application with a receipt date stamp from the State's business license office;
- a receipt from the State's business license office for the license fee;
- a copy of the bidder's valid business license;
- a sworn notarized affidavit that the bidder has applied and paid for a business license;

(2) the price(s) submitted was arrived at independently and without collusion, under penalty of perjury, and that the bidder is complying with:
- the laws of the State of Alaska;
- the applicable portion of the Federal Civil Rights Act of 1964;
- the Equal Employment Opportunity Act and the regulations issued thereunder by the state and federal Government;
- the Americans with Disabilities Act of 1990 and the regulations issued thereunder by the state and federal government;
- the bid will remain open and valid for at least 90 days;
- all terms and conditions set out in this Invitation to Bid (ITB).

If a bidder does not hold an Alaska Business License (1) at the time designated in the ITB for opening the state will disallow the Alaska Bidder Preference. Bids must also be submitted under the name as appearing on the bidder's current Alaska business license in order to receive the Alaska Bidder Preference. If a bidder fails to comply with (2) of this paragraph, the state may reject the bid, terminate the contract, or consider the contractor in default.

Evan Patterson Procurement Officer	_____ COMPANY SUBMITTING BID	*DOES YOUR BUSINESS QUALIFY FOR THE MBE/WBE Preference? [ ] YES [ ] NO
	_____ AUTHORIZED SIGNATURE	
	_____ PRINTED NAME	*SEE ITB FOR EXPLANATION OF CRITERIA TO QUALIFY
Email: evan.patterson@alaska.gov	_____ DATE	_____ TELEPHONE NUMBER
_____ ALASKA BUSINESS LICENSE NUMBER	_____ FEDERAL TAX ID NUMBER	_____ E-MAIL ADDRESS

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SECTION 1. INTRODUCTION & INSTRUCTIONS

SEC. 1.01 PURPOSE OF THE ITB

The Department of Environmental Conservation, Division of Water, Village Safe Water Program (department) is soliciting bids for the one time purchase of a packaged water treatment system for Tuluksak, Alaska

SEC. 1.02 DEADLINE FOR RECEIPT OF BIDS

Bids must be received no later than 10:00 AM Alaska Time on 12/6/2021, at which time they will be publicly opened. Late bids or amendments will be disqualified and not opened or accepted for evaluation.

SEC. 1.03 PRIOR EXPERIENCE

See attached Submittal Form A – Bidder Information that must be completed and submitted with the bid.

SEC. 1.04 INVITATION TO BID (ITB) REVIEW

Bidders shall carefully review this ITB for defects and questionable or objectionable material. Comments concerning defects and questionable or objectionable material in the ITB should be made in writing and received by the procurement officer at least ten days before the bid opening date. This will allow time for an amendment to be issued if one is required. It will also help prevent the opening of a defective bid, upon which award cannot be made, and the resultant exposure of bidders' prices.

SEC. 1.05 QUESTIONS PRIOR TO DEADLINE FOR RECEIPT OF BIDS

All questions must be in writing and directed to the procurement officer. The interested party must confirm telephone conversations in writing. Two types of questions generally arise. One may be answered by directing the questioner to a specific section of the ITB. These questions may be answered over the telephone. Other questions may be more complex and may require a written amendment to the ITB. The procurement officer will make that decision.

A. Specification 460713, section 1.3 Submittals B.1.a. Exceptions states “Identify any exceptions to these Contract Documents.” Bidders must submit any exceptions to Contract Documents in accordance with ITB sections 1.04 Invitation to Bid Review and 1.05 Questions Prior to Deadline for Receipt of Bids.

SEC. 1.06 SUBMITTING BIDS

Bids shall be submitted via email, the bid may be emailed to april.akers@alaska.gov and must contain the ITB number in the subject line of the email. The **maximum** size of a single email (including all text and attachments) that can be received by the state is **20mb (megabytes)**. If the email containing the bid exceeds this size, the bid must be sent in multiple emails that are each less than 20 megabytes and each email must comply with the requirements described above.

Please note that email transmission is not instantaneous. Similar to sending a hard copy bid, if you are emailing your bid, the state recommends sending it enough ahead of time to ensure the email is delivered by the deadline for receipt of bid.

It is the bidder’s responsibility to contact the issuing agency at evan.patterson@alaska.gov to confirm that the bid has been received. The state is not responsible for unreadable, corrupt, or missing attachments.

A. Specification 460713, section 1.3 Submittals B. Submittals required with Bid Documents. Bidders shall submit items in this section with their bid or within 5 days of the department's request.

SEC. 1.07 BID FORMS

Bidders shall use the front page of this ITB and any other forms identified in this ITB for submitting bids. All bids must be signed by an individual authorized to bind the bidder to the provisions of the ITB.

BIDDER'S CERTIFICATION

By signature on the bid, the bidder certifies that they comply with the following:

A. the laws of the State of Alaska;

B. the applicable portion of the Federal Civil Rights Act of 1964;

C. the Equal Employment Opportunity Act and the regulations issued thereunder by the state and federal government;

D. the Americans with Disabilities Act of 1990 and the regulations issued thereunder by the state and federal government;

E. the Clean Air and Water Pollution Control Act;

F. Copeland Anti-Kick Back Act;

G. Solid Waste Disposal Act;

H. Clean Water Act;

I. Contract Work Hours and Safety Standards Act;

J. Rehabilitation Act of 1973;

K. Age Discrimination Act of 1976;

L. Drug Free Workplace Act of 1988;

M. all terms and conditions set out in this ITB;

N. the price(s) submitted was arrived at independently arrived and without collusion, under penalty of perjury; and

O. that the bid will remain open and valid for at least 90 days.

If any bidder fails to comply with [a] through [o] of this paragraph, the state reserves the right to disregard the bid, terminate the contract, or consider the contractor in default.

CONFLICT OF INTEREST

Each bid shall include a statement indicating whether or not the company or any individuals working on the contract has a possible conflict of interest (e.g., currently employed by the State of Alaska or formerly employed by the State of Alaska within the past two years) and, if so, the nature of that conflict. The procurement officer reserves the right to **consider a bid non-responsive and reject it** or cancel the award if any interest disclosed from any source could either give the appearance of a conflict or cause speculation as to the objectivity of the contract to be performed by the bidder.

SEC. 1.08 PRICES

The bidder shall state prices in the units of issue on this ITB. Prices quoted in bids must be exclusive of federal, state, and local taxes. If the bidder believes that certain taxes are payable by the state, the bidder may list such taxes separately, directly below the bid price for the affected item.

SEC. 1.09 ASSISTANCE TO BIDDERS WITH A DISABILITY

Bidders with a disability may receive accommodation regarding the means of communicating this ITB or participating in the procurement process. For more information, contact the procurement officer no later than ten days prior to the deadline for receipt of bids.

SEC. 1.10 AMENDMENTS TO BIDS

Amendments to or withdrawals of bids will only be allowed if acceptable requests are received prior to the deadline that is set for receipt of bids, in accordance with 2 AAC 12.140. No amendments or withdrawals will be accepted after the deadline unless the delay is due to an error of the contracting agency, in accordance with 2 AAC 12.160.

SEC. 1.11 AMENDMENTS TO THE ITB

If an amendment is issued, it will be provided to all who were notified of the ITB and to those who have registered with the procurement officer after receiving the ITB from the State of Alaska Online Public Notice website.

SEC. 1.12 ITB SCHEDULE

The ITB schedule set out herein represents the State of Alaska's best estimate of the schedule that will be followed. If a component of this schedule, such as the deadline for receipt of bids, is delayed, the rest of the schedule may be shifted accordingly. All times are Alaska Time.

ACTIVITY	TIME	DATE
Issue Date / ITB Released		11/15/2021
Deadline for Receipt of Bids / Bid Due Date	10:00 AM AST	12/6/2021
Bid Evaluations Complete		12/13/2021
Notice of Intent to Award		12/14/2021
Contract Issued		12/27/2021

This ITB does not, by itself, obligate the state. The state's obligation will commence when the contract is approved by the Commissioner of the Department of Environmental Conservation, or the Commissioner's designee. Upon written notice to the contractor, the state may set a different starting date for the contract. The state will not be responsible for any work done by the contractor, even work done in good faith, if it occurs prior to the contract start date set by the state.

SEC. 1.13 ALTERNATE BIDS

Bidders may only submit one bid for evaluation. In accordance with 2 AAC 12.830 alternate bids (bids that offer something different than what is asked for) will be rejected.

SEC. 1.14 SUPPORTING INFORMATION

Bidders shall submit all required technical, specification, and other supporting information with their bid, so that a detailed analysis and determination can be made by the procurement officer that the product offered meets the ITB specifications and that other requirements of the ITB have been met. However, provided a bid meets the requirements for a definite, firm, unqualified, and unconditional offer, the state reserves the right to request

supplemental information from the bidder, after the bids have been opened, to ensure that the products or services offered completely meet the ITB requirements. The requirement for such supplemental information will be at the reasonable discretion of the state and may include the requirement that a bidder will provide a sample product(s) so that the state can make a first-hand examination and determination.

A bidder's failure to provide this supplemental information or the product sample(s), within the time set by the state, will cause the state to consider the offer non-responsive and reject the bid.

SEC. 1.15 FIRM, UNQUALIFIED, AND UNCONDITIONAL OFFER

Bidders must provide enough information with their bid to constitute a definite, firm, unqualified and unconditional offer. To be responsive a bid must constitute a definite, firm, unqualified and unconditional offer to meet all the material terms of the ITB. Material terms are those that could affect the price, quantity, quality, or delivery. Also included as material terms are those which are clearly identified in the ITB and which, for reasons of policy, must be complied with at risk of bid rejection for non-responsiveness.

SECTION 2. CONTRACT INFORMATION

SEC. 2.01 CONTRACT TERM

The length of the contract will be from the date of award until the new water treatment plant is commissioned approximately September 2022. This date is subject to change.

SEC. 2.02 CONTRACT ADMINISTRATION

The administration of this contract is the responsibility of the procurement officer or person appointed by the Department of Environmental Conservation, Division of Administrative Services.

SEC. 2.03 CONTRACT FUNDING

Payment for the contract is subject to funds already appropriated and identified.

SEC. 2.04 CONTRACT EXTENSION

Unless otherwise provided in this ITB, the state and the successful bidder/contractor agree: (1) that any extension of the contract excluding any exercised renewal options, will be considered as a month-to-month extension, and all other terms and conditions shall remain in full force and effect and (2) the procurement officer will provide written notice to the contractor of the intent to cancel the month-to-month extension at least thirty (30) days before the date of cancellation. A month-to-month extension may only be executed by the procurement officer via a written contract amendment.

SEC. 2.05 CONTRACT CHANGES – UNANTICIPATED AMENDMENTS

During the course of this contract, the contractor may be required to perform additional work. That work will be within the general scope of the initial contract. When additional work is required, the state will provide the contractor a written description of the additional work and request the contractor to submit a firm time schedule for accomplishing the additional work and a firm price for the additional work. Cost and pricing data must be provided to justify the cost of such amendments per AS 36.30.400.

The contractor will not commence additional work until the procurement officer has secured required state approvals necessary for the amendment and issued a written contract amendment.

SEC. 2.06 SUBCONTRACTORS

Subcontractors may be used to perform work under this contract. If a bidder intends to use subcontractors, the bidder must identify in the bids the names of the subcontractors and the portions of the work the subcontractors will perform.

Subcontractor experience **shall not** be considered in determining whether the bidder meets the requirements set forth in section 2.01 Prior Experience.

If a bid with subcontractors is selected, the bidder must provide the following information concerning each prospective subcontractor within five working days from the date of the state's request:

- complete name of the subcontractor;
- complete address of the subcontractor;
- type of work the subcontractor will be performing;
- percentage of work the subcontractor will be providing;

- evidence that the subcontractor holds a valid Alaska business license; and
- a written statement signed by each proposed subcontractor that clearly verifies that the subcontractor is committed to render the services required by the contract.

A bidder's failure to provide this information, within the time set, may cause the state to consider their bid non-responsive and reject it.

Note that if the subcontractor will not be performing work within Alaska, they will not be required to hold an Alaska business license.

SEC. 2.07 JOINT VENTURES

Joint ventures will not be allowed.

SEC. 2.08 CONTRACT PERFORMANCE LOCATION

The location(s) the work is to be performed, completed and managed is the vendors place of business and Tuluksak, Alaska. The state will not provide workspace for the contractor. The contractor must provide its own workspace.

By signature on their bid, the bidder certifies that all services provided under this contract by the contractor and all subcontractors shall be performed in the United States.

If the bidder cannot certify that all work will be performed in the United States, the bidder must contact the procurement officer in writing to request a waiver at least 10 days prior to the deadline for receipt of bids.

The request must include a detailed description of the portion of work that will be performed outside the United States, where, by whom, and the reason the waiver is necessary.

Failure to comply with these requirements may cause the state to reject the bid as non-responsive, or cancel the contract.

SEC. 2.09 RIGHT TO INSPECT PLACE OF BUSINESS

At reasonable times, the state may inspect those areas of the contractor's place of business that are related to the performance of a contract. If the state makes such an inspection, the contractor must provide reasonable assistance.

SEC. 2.10 SCOPE OF WORK AND SPECIFICATIONS

Packaged Water Treatment System:

The contractor shall furnish a packaged water treatment system that will be located in a new modular facility located as shown on sheets C101 and C102 of the Tuluksak Water Treatment Plant (WTP) and Washeteria drawings, in Tuluksak, Alaska. See attached specifications and drawings for further information. The contractor is referred to as the “Supplier” in the attached specifications. All items in the specifications shall be included in the bid price such as but not limited to;

- training plan,
- commissioning plan,
- operating and maintenance manuals,
- submittals, and
- installation instructions.

The department will coordinate the delivery of the packaged water treatment system from the F.O.B. Point (see ITB section 2.11) to Tuluksak, Alaska. Onsite installation services (construction) of the water treatment system is not included in this ITB and that work will be accomplished by others.

Onsite Services:
The department estimates that the packaged water treatment system will be installed around August or September 2022. The contractor shall arrive onsite in Tuluksak, Alaska within 2 weeks of the department's request. See specification section 3.5 Manufacturer Services. Regardless of when the packaged water treatment system is installed the contractor shall provide the following onsite services in Tuluksak, Alaska:

- Installation assistance,
- quality control,
- quality assurance, and inspection,
- onsite performance testing,
- equipment startup, and,
- training of the Owner's staff.

Travel costs shall not be included in the onsite lump sum amount and will be reimbursed by the department in accordance with the State's travel policies found in AAM 60 Travel. Travel time is not a billable expense. Travel must be pre-approved by the project manager. The project manager may request the contractor provide a not to exceed travel budget to include contractor travel time and onsite time.

SEC. 2.11 F.O.B. POINT

The F.O.B. point for this ITB will be the vendors choice of shipping yards in Bethel, Alaska. The department will arrange for storage and shipping the packaged water treatment system to Tuluksak, AK. The contractor will be required to prepare the items for shipping. See packaging requirements in the specifications. The contractor will prepay the shipping and delivery charges to the F.O.B. Point. The contractor will charge-back those shipping and delivery charges to the state as a separate item on the state's invoice. These charges must be billed as a pass-through charge.

SEC. 2.12 SHIPPING DAMAGE

The state will not accept or pay for damaged goods. The contractor must file all claims against the carrier(s) for damages incurred to items in transit from the point of origin to the ultimate destination. The state will provide the contractor with written notice when damaged goods are received. The state will deduct the cost of the damaged goods from the invoice prior to payment. The contractor must file all claims against the carrier(s) for reimbursement of the loss.

SEC. 2.13 DELIVERY TIME

The packaged water treatment system must be delivered to the F.O.B. Point by July 31, 2022.

SEC. 2.14 INSPECTION & MODIFICATION - REIMBURSEMENT FOR UNACCEPTABLE DELIVERABLES

The contractor is responsible for proving all products or the completion of all work set out in the contract. All products or work is subject to inspection, evaluation, and approval by the state. The state may employ all reasonable means to ensure that the work is progressing and being performed in compliance with the contract. The state may instruct the contractor to make corrections or modifications if needed in order to accomplish the contract's intent. The contractor will not unreasonably withhold such changes.

Substantial failure of the contractor to perform the contract may cause the state to terminate the contract. In this event, the state may require the contractor to reimburse monies paid (based on the identified portion of unacceptable products or work received) and may seek associated damages.

SEC. 2.15 CONTINUING OBLIGATION OF CONTRACTOR

Notwithstanding the expiration date of a contract resulting from this ITB, the contractor is obligated to fulfill its responsibilities until warranty, guarantee, maintenance, and parts availability requirements have completely expired.

SEC. 2.16 ESTIMATED QUANTITIES

The packaged water treatment plant quantity referenced in this ITB is firm.

The onsite service quantities referenced in this ITB are the state's estimated requirements and may vary more or less from the quantities actually purchased. The state does not guarantee any minimum or maximum purchase.

SEC. 2.17 INFORMAL DEBRIEFING

When the contract is completed, an informal debriefing may be performed at the discretion of the procurement officer. If performed, the scope of the debriefing will be limited to the products provided or work performed by the contractor.

SEC. 2.18 INDEMNIFICATION

The contractor shall indemnify, hold harmless, and defend the contracting agency from and against any claim of, or liability for error, omission or negligent act of the contractor under this agreement. The contractor shall not be required to indemnify the contracting agency for a claim of, or liability for, the independent negligence of the contracting agency. If there is a claim of, or liability for, the joint negligent error or omission of the contractor and the independent negligence of the contracting agency, the indemnification and hold harmless obligation shall be apportioned on a comparative fault basis.

“Contractor” and “contracting agency”, as used within this and the following article, include the employees, agents and other contractors who are directly responsible, respectively, to each. The term “independent negligence” is negligence other than in the contracting agency’s selection, administration, monitoring, or controlling of the contractor and in approving or accepting the contractor’s work.

SEC. 2.19 INSURANCE

Without limiting the contractor's indemnification, it is agreed that the contractor shall purchase at its own expense and maintain in force at all times during the performance of services under this agreement the following policies of insurance. Where specific limits are shown, it is understood that they shall be the minimum acceptable limits. If the contractor's policy contains higher limits, the state shall be entitled to coverage to the extent of such higher limits.

Certificates of Insurance must be furnished to the procurement officer prior to contract approval and must provide for a notice of cancellation, non-renewal, or material change of conditions in accordance with policy provisions. Failure to furnish satisfactory evidence of insurance or lapse of the policy is a material breach of this contract and shall be grounds for termination of the contractor's services. All insurance policies shall comply with and be issued by insurers licensed to transact the business of insurance under AS 21.

Proof of insurance is required for the following:

- Workers' Compensation Insurance: The contractor shall provide and maintain, for all employees engaged in work under this contract, coverage as required by AS 23.30.045, and; where applicable, any other statutory obligations including but not limited to Federal U.S.L. & H. and Jones Act requirements. The policy must waive subrogation against the state.

- Commercial General Liability Insurance: covering all business premises and operations used by the contractor in the performance of services under this agreement with minimum coverage limits of $300,000 combined single limit per occurrence.

- Commercial Automobile Liability Insurance: covering all vehicles used by the contractor in the performance of services under this agreement with minimum coverage limits of $300,000 combined single limit per occurrence.

SEC. 2.20 NEW EQUIPMENT

Equipment offered in response to this ITB must be new equipment. New equipment means equipment that is currently in production by the manufacturer and is still the latest model, edition or version generally offered. The equipment must be warranted as new by the manufacturer and may not have been used for any purpose, other than display (not demonstration), prior to its sale to the state. The state will not accept remanufactured, used, or reconditioned equipment. It is the contractor's responsibility to ensure that each piece of equipment delivered to the state complies with this requirement. A contractor's failure to comply with this requirement will cause the state to seek remedies under breach of contract.

SEC. 2.21 WARRANTY

The contractor warrants every unit purchased against faulty materials and workmanship for a minimum period of at least:

- 5 years for the packaged water treatment system, and
- 1 year for the chemical metering equipment.

If, during this period, faults develop with the unit or components of the unit, they will be repaired or replaced without any cost, including any transportation or freight cost, to the state. Bids, which include supplemental warranties, will be accepted, but supplemental warranties that conflict with or diminish the state's rights under this warranty clause will be considered null and void. The state is not responsible for identifying conflicting warranty conditions before issuing a contract award. After award of the contract:

1. if a conflict arises between the supplemental warranty and the warranty in this ITB, the warranty in the ITB will prevail; and

2. if the state's rights are diminished as a result of application of the supplemental warranty, the supplemental warranty will be considered null and void and the ITB warranty will prevail.

By signature on the face page of this ITB the bidder acknowledges this requirement and indicates unconditional acceptance of this warranty clause.

SECTION 3. CONTRACT INVOICING AND PAYMENTS

SEC. 3.01 BILLING INSTRUCTIONS

Invoices must be billed to the ordering agency's address shown on the individual Purchase Order, Contract Award or Delivery Order. The state will make payment after it receives the goods or services and the invoice. Questions concerning payment must be addressed to the ordering agency.

SEC. 3.02 PAYMENT FOR STATE PURCHASES

Payment for agreements under $500,000 for the undisputed purchase of goods or services provided to a state agency, will be made within 30 days of the receipt of a proper billing or the delivery of the goods or services to the location(s) specified in the agreement, whichever is later. A late payment is subject to 1.5% interest per month on the unpaid balance. Interest will not be paid if there is a dispute or if there is an agreement that establishes a lower interest rate or precludes the charging of interest.

Any single contract payments of $1 million or higher must be accepted by the contractor via Electronic Funds Transfer (EFT).

SEC. 3.03 THIRD-PARTY FINANCING AGREEMENTS NOT ALLOWED

Because of the additional administrative and accounting time required of the state when third party financing agreements are permitted, they will not be allowed under this contract.

SECTION 4. EVALUATION AND CONTRACTOR SELECTION

SEC. 4.01 EVALUATION OF BIDS

After bid opening, the procurement officer will evaluate the bids for responsiveness. Bids deemed non-responsive will be eliminated from further consideration. An evaluation may not be based on discrimination due the race, religion, color, national origin, sex, age, marital status, pregnancy, parenthood, disability, or political affiliation of the bidder.

SEC. 4.02 MBE / WBE PREFERENCE

A Minority Business Enterprise (MBE) or Women's Business Enterprise (WBE) preference of 5% will be applied to the total bid price. To receive the points, the qualified MBE / WBE bidder must provide evidence of certification and the work that they shall perform.

This procurement is funded in part or fully through federal grants or cooperative agreements. It is a national policy to award a fair share of contracts to Minority Firms and Women's Business Enterprises through affirmative action. This solicitation incorporates a five-point preference for all qualified minority firms and women's business enterprises.

In order to be deemed a bona fide MBE / WBE a firm must be an independent business concern which is at least fifty-one percent (51%) owned and controlled by minority group members or women.

SEC. 4.03 MBE / WBE CERTIFICATION

In order to qualify for the Women's Business Enterprises (WBE) or Minority Business Enterprises (MBE), the business must obtain certification from any of the following organizations:

- United States Small Business Administration,
- United States Department of Transportation,
- Indian Tribal Governments,
- State/local Governments,
- Independent private organizations.

To qualify for the federal Environmental Protection Association, Disadvantaged Business Enterprises program, an entity must be certified, and such certification must meet the criteria as stipulated in 40 CFR §33.202 and/or §33.203.

Offerors may provide their MBE/WBE certification number on the proposal form. If a certification number is not available, then the offeror must provide a letter from the certifying agency verifying the offerors certification status.

SEC. 4.04 EXTENSION OF PRICES

In case of error in the extension of prices in the bid, the unit prices will govern; in a lot bid, the lot prices will govern.

SEC. 4.05 METHOD OF AWARD

Award will be made by lot to the lowest responsive and responsible bidder.

SEC. 4.06 BRAND AND MODEL OFFERED

Unless otherwise specified, when brand names and model numbers are used to specify the type and quality of the goods desired, bidders must clearly indicate the brand names and model numbers they intend to provide. The bidder's failure to identify the brand and model offered will cause the state to consider the bid non-responsive and reject the bid.

SEC. 4.07 BRAND SPECIFIC

The department has determined the Programmable Logic Controllers (PLC) control system must be manufactured by Allen Bradley as specified in the attached specifications. Alternatives to this requirement are not allowed and will be rejected.

SEC. 4.08 NOTICE OF INTENT TO AWARD

After the responses to this ITB have been opened and evaluated, a tabulation of the bids will be prepared. This tabulation, called a Notice of Intent to Award, serves two purposes. It lists the name of each company or person that offered a bid and the price they bid. It also provides notice of the state's intent to award a contract(s) to the bidder(s) indicated. A copy of the Notice of Intent will be mailed to each company or person who responded to the ITB. Bidders identified as the apparent low responsive bidders are instructed not to proceed until a Purchase Order, Contract Award, Lease, or some other form of written notice is given by the procurement officer. A company or person who proceeds prior to receiving a Purchase Order, Contract Award, Lease, or some other form of written notice from the procurement officer does so without a contract and at their own risk.

SECTION 5. GENERAL PROCESS AND LEGAL INFORMATION

SEC. 5.01 ALASKA BUSINESS LICENSE AND OTHER REQUIRED LICENSES

Prior to the award of a contract, a bidder must hold a valid Alaska business license. However, in order to receive the Alaska Bidder Preference and other related preferences, such as the Alaska Veteran Preference and Alaskans with Disabilities Preference, a bidder must hold a valid Alaska business license prior to the deadline for receipt of bids. Bidders should contact the **Department of Commerce, Community and Economic Development, Division of Corporations, Business, and Professional Licensing, PO Box 110806, Juneau, Alaska 99811-0806**, for information on these licenses. Acceptable evidence that the bidder possesses a valid Alaska business license may consist of any one of the following:

- copy of an Alaska business license;
- certification on the bid that the bidder has a valid Alaska business license and has included the license number in the bid;
- a canceled check for the Alaska business license fee;
- a copy of the Alaska business license application with a receipt stamp from the state's occupational licensing office; or
- a sworn and notarized statement that the bidder has applied and paid for the Alaska business license.

You are not required to hold a valid Alaska business license at the time bids are opened if you possess one of the following licenses and are offering services or supplies under that specific line of business:

- fisheries business licenses issued by Alaska Department of Revenue or Alaska Department of Fish and Game,
- liquor licenses issued by Alaska Department of Revenue for alcohol sales only,
- insurance licenses issued by Alaska Department of Commerce, Community and Economic Development, Division of Insurance, or
- Mining licenses issued by Alaska Department of Revenue.

Prior the deadline for receipt of bids, all bidders must hold any other necessary applicable professional licenses required by Alaska Statute.

SEC. 5.02 AUTHORITY

This ITB is written in accordance with AS 36.30 and 2 AAC 12.

SEC. 5.03 COMPLIANCE

In the performance of a contract that results from this ITB, the contractor must comply with all applicable federal, state, and borough regulations, codes, and laws; be liable for all required insurance, licenses, permits and bonds; and pay all applicable federal, state, and borough taxes.

SEC. 5.04 SUITABLE MATERIALS, ETC.

Unless otherwise specified in this ITB, all materials, supplies or equipment offered by a bidder shall be new, unused, and of the latest edition, version, model or crop and of recent manufacture.

SEC. 5.05 SPECIFICATIONS

Unless otherwise specified in this ITB, product brand names or model numbers specified in this ITB are examples of the type and quality of product required, and are not statements of preference. If the specifications describing an item conflict with a brand name or model number describing the item, the specifications govern. Reference to brand name or number does not preclude an offer of a comparable or better product, if full specifications and descriptive literature are provided for the product. Failure to provide such specifications and descriptive literature may be cause for rejection of the offer.

SEC. 5.06 CONTRACTOR SITE INSPECTION

The state may conduct on-site visits to evaluate the bidder's capacity to perform the contract. A bidder must agree, at risk of being found non-responsive and having its bid rejected, to provide the state reasonable access to relevant portions of its work sites. Individuals designated by the procurement officer at the state's expense will make site inspection.

SEC. 5.07 ORDER DOCUMENTS

Except as specifically allowed under this ITB, an ordering agency will not sign any vendor contract. The state is not bound by a vendor contract signed by a person who is not specifically authorized to sign for the state under this ITB. Unless otherwise specified in this ITB, the State of Alaska Purchase Order, Contract Award and Delivery Order are the only order documents that may be used to place orders against the contract(s) resulting from this ITB.

SEC. 5.08 HUMAN TRAFFICKING

By signature on their bid, the bidder certifies that the bidder is not established and headquartered or incorporated and headquartered in a country recognized as Tier 3 in the most recent United States Department of State's Trafficking in Persons Report.

The most recent United States Department of State's Trafficking in Persons Report can be found at the following website: http://www.state.gov/j/tip/

Failure to comply with this requirement will cause the state to reject the bid as non-responsive, or cancel the contract.

SEC. 5.09 RIGHT OF REJECTION

Bidders must comply with all of the terms of the ITB, the State Procurement Code (AS 36.30), and all applicable local, state, and federal laws, codes, and regulations. The procurement officer may reject any bid that does not comply with all of the material and substantial terms, conditions, and performance requirements of the ITB.

Bidders may not qualify the bid nor restrict the rights of the state. If a bidder does so, the procurement officer may determine the bid to be a non-responsive counter-offer and the bid may be rejected.
Minor informalities that:

- do not affect responsiveness;
- are merely a matter of form or format;
- do not change the relative standing or otherwise prejudice other offers;
- do not change the meaning or scope of the RFP;

- are trivial, negligible, or immaterial in nature;
- do not reflect a material change in the work; or
- do not constitute a substantial reservation against a requirement or provision;

may be waived by the procurement officer.

The state reserves the right to refrain from making an award if it determines that to be in its best interest.
A bid from a debarred or suspended bidder shall be rejected.

SEC. 5.10 STATE NOT RESPONSIBLE FOR PREPARATION COSTS

The state will not pay any cost associated with the preparation, submittal, presentation, or evaluation of any bid.

SEC. 5.11 DISCLOSURE OF BID CONTENTS

All bid prices become public information at the bid opening. After the deadline for receipt of bids, all other bid material submitted become the property of the State of Alaska and may be returned only at the state's option. AS 40.25.110 requires public records to be open to reasonable inspection. All other bid information will be held in confidence during the evaluation process and prior to the time a Notice of Intent to Award is issued. Thereafter, bids will become public information.

Trade secrets and other proprietary data contained in bids may be held confidential if the bidder requests, in writing, that the procurement officer does so, and if the procurement officer agrees, in writing, to do so. The bidder's request must be included with the bid, must clearly identify the information they wish to be held confidential, and include a statement that sets out the reasons for confidentiality. Unless the procurement officer agrees in writing to hold the requested information confidential, that information will also become public after the Notice of Intent to Award is issued.

SEC. 5.12 ASSIGNMENTS

Per 2 AAC 12.480, the contractor may not transfer or assign any portion of the contract without prior written approval from the procurement officer. Bids that are conditioned upon the state's approval of an assignment will be rejected as non-responsive.

SEC. 5.13 FORCE MAJEURE (IMPOSSIBILITY TO PERFORM)

The parties to a contract resulting from this ITB are not liable for the consequences of any failure to perform, or default in performing, any of its obligations under the contract, if that failure or default is caused by any unforeseeable Force Majeure, beyond the control of, and without the fault or negligence of, the respective party.

For the purposes of this ITB, Force Majeure will mean war (whether declared or not); revolution; invasion; insurrection; riot; civil commotion; sabotage; military or usurped power; lightning; explosion; fire; storm; drought; flood; earthquake; epidemic; quarantine; strikes; acts or restraints of governmental authorities affecting the project or directly or indirectly prohibiting or restricting the furnishing or use of materials or labor required; inability to secure materials, machinery, equipment or labor because of priority, allocation or other regulations of any governmental authorities.

SEC. 5.14 DEFAULT

In case of default by the contractor, for any reason whatsoever, the state may procurement the goods or services from another source and hold the contractor responsible for any resulting excess cost and may seek other remedies under law or equity.

SEC. 5.15 DISPUTES

If the contractor has a claim arising in connection with the contract that it cannot resolve with the state by mutual agreement, it shall pursue the claim, if at all, in accordance with the provisions of AS 36.30.620 – AS 36.30.632.

SEC. 5.16 SEVERABILITY

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

SEC. 5.17 CONTRACT CANCELLATION

The state reserves the right to cancel the contract at its convenience upon written notice to the contractor. The state is only liable for payment in accordance with the payment provisions of this contract for supplies or services provide before the effective date termination.

SEC. 5.18 GOVERNING LAW; FORUM SELECTION

A contract resulting from this ITB is governed by the laws of the State of Alaska. To the extent not otherwise governed by Section 5.15 of this ITB, any claim concerning the contract shall be brought only in the Superior Court of the State of Alaska and not elsewhere.

SEC. 5.19 SOLICITATION ADVERTISING

Public notice has been provided in accordance with 2 AAC 12.220.

SEC. 5.20 QUALIFIED BIDDERS

Per 2 AAC 12.875, unless provided for otherwise in the ITB, to qualify as a bidder for award of a contract issued under AS 36.30, the bidder must:

1) Add value in the contract by actually performing, controlling, managing, or supervising the services to be provided; or

2) Be in the business of selling and have actually sold on a regular basis the supplies that are the subject of the ITB.

If the bidder leases services or supplies or acts as a broker or agency in providing the services or supplies in order to meet these requirements, the procurement officer may not accept the bidder as a qualified bidder under AS 36.30.

SEC. 5.21 FEDERALLY IMPOSED TARIFFS

Changes in price (increase or decrease) resulting directly from a new or updated federal tariff, excise tax, or duty, imposed after contract award may be adjusted during the contract period or before delivery into the United States via contract amendment.

- **Notification of Changes:** The contractor must promptly notify the procurement officer in writing of any new, increased, or decreased federal excise tax or duty that may result in either an increase or decrease in the contact price and shall take appropriate action as directed by the procurement officer.

- **After-imposed or Increased Taxes and Duties:** Any federal excise tax or duty for goods or services covered by this contract that was exempted or excluded on the contract award date but later imposed on the contractor during the contract period, as the result of legislative, judicial, or administrative action may result in a price increase provided:

    a) The tax or duty takes effect after the contract award date and isn't otherwise addressed by the contract;

    b) The contractor warrants, in writing, that no amount of the newly imposed federal excise tax or duty or rate increase was included in the contract price, as a contingency or otherwise.

- **After-relieved or Decreased Taxes and Duties:** The contract price shall be decreased by the amount of any decrease in federal excise tax or duty for goods or services under the contract, except social security or other employment taxes, that the contractor is required to pay or bear, or does not obtain a refund of, through the contractor's fault, negligence, or failure to follow instructions of the procurement officer.

- **State's Ability to Make Changes:** The state reserves the right to request verification of federal excise tax or duty amounts on goods or services covered by this contract and increase or decrease the contract price accordingly.

- **Price Change Threshold:** No adjustment shall be made in the contract price under this clause unless the amount of the adjustment exceeds $250.

SEC. 5.22 BYRD ANTI – LOBBYING AMENDMENT

The Contractor and subcontractor agree to comply with all requirements of the Byrd Anti-Lobbying Amendment (31 U.S.C 1352). A certification **must be completed and submitted by the Contractor and Subcontractor prior to award**. If the Contractor and or subcontractors do not complete the Certification and Disclosure Regarding Payments to Influence Certain Federal Transactions shall be disqualified from consideration. This form will be required to be submitted during annual renewals of the contract.

SEC. 5.23 FEDERAL DEBARMENT, SUSPENSION, INELIGIBILITY AND VOLUNTARY EXLUSION

Expenditures from this contract may involve federal funds. The U.S. Department of Labor requires all state agencies that are expending federal funds to have a certification filed in the proposal or bid (by the offeror or bidder) that they have not been debarred or suspended from doing business with the federal government. Certification regarding Debarment, Suspension, Ineligibility and Voluntary Exclusion Lower Tier Covered Transactions **must be completed and submitted by the Contractor and Subcontractor prior to award**. This certification is required by the regulations implementing Executive Order 12549, Debarment and Suspension, 29 CFR Part 98, Section 98.510, Participant's responsibilities. The regulations were published as Part VII of the May 26, 1988 Federal Register (pages 19160-19211). This form will be required to be submitted during annual renewals of the contract.

SEC. 5.24 PROTEST

AS 36.30.560 provides that an interested party may protest the content of the ITB.

An interested party is defined in 2 AAC 12.990(a) (7) as "an actual or prospective bidder or offeror whose economic interest might be affected substantially and directly by the issuance of a contract solicitation, the award of a contract, or the failure to award a contract."

If an interested party wishes to protest the content of a solicitation, the protest must be received, in writing, by the procurement officer at least ten days prior to the deadline for receipt of bids.

AS 36.30.560 also provides that an interested party may protest the award of a contract or the proposed award of a contract.

If a bidder wishes to protest the award of a contract or the proposed award of a contract, the protest must be received, in writing, by the procurement officer within ten days after the date the Notice of Intent to Award the contract is issued.

A protester must have submitted a bid in order to have sufficient standing to protest the proposed award of a contract. Protests must include the following information:

- the name, address, and telephone number of the protester;
- the signature of the protester or the protester's representative;
- identification of the contracting agency and the solicitation or contract at issue;
- a detailed statement of the legal and factual grounds of the protest including copies of relevant documents; and the form of relief requested.

Protests filed by telex or telegram are not acceptable because they do not contain a signature. Fax copies containing a signature are acceptable.

The procurement officer will issue a written response to the protest. The response will set out the procurement officer's decision and contain the basis of the decision within the statutory time limit in AS 36.30.580. A copy of the decision will be furnished to the protester by certified mail, fax or another method that provides evidence of receipt.

All bidders will be notified of any protest. The review of protests, decisions of the procurement officer, appeals, and hearings, will be conducted in accordance with the State Procurement Code (AS 36.30), Article 8 "Legal and Contractual Remedies."

SEC. 5.25 WRITTEN DETERMINATIONS

The following is a list of written determinations affecting this solicitation.

1. Section 4.07 Brand Specific: The department has determined the Programmable Logic Controllers (PLC) control system must be manufactured by Allen Bradley. The PLC is complicated to learn and the department's Remote Maintenance Workers are familiar with this PLC that used in other remote Alaska locations.
2. Section 4.02 MBE / WBE Preference: Federal funds from the Environmental Protection Agency (EPA) are being utilized for this procurement. The department shall comply with the requirements of EPA's Disadvantaged Business Enterprise (DBE) Program for procurement activities under assistance agreements, contained in 40 CFR, Part 33.

3. EPA funds are being utilized for this procurement and grant conditions specify “The recipient agrees to comply with the current EPA general terms and conditions”. The department is excluding State preferences in accordance with 2 CFR 200.319(c).

SECTION 6. ATTACHMENTS

SEC. 6.01 ATTACHMENTS

Attachments:

1) Bid Schedule
2) Submittal Form A – Bidder Information
3) Specification 460713 Package Water Treatment Plant
4) Tuluksak WTP and Washeteria Design drawings
5) Federal Debarment
6) Certification and Disclosure
7) Prohibition on certain Telecommunication and Video Surveillance Services or Equipment

BID SCHEDULE

Bidders must use this form to submit their bid cost. Bidders shall not modify this form. Do not enter additional information on this form.

Bid Item	Description	Quantity	Unit	Unit Cost	Extended Cost
A	Packaged Water Treatment System	1	Lump Sum	$	$
B	Freight to F.O.B. Point	1	Lump Sum	$	$
C	Onsite Services	1	Lump Sum	$	$
D	Subtotal (A+B+C=D)				$
E	MBE/WBE Preference (5% of D), or blank (0) if not applicable.				$
F	Total for evaluation purposes only (D-E=F)				$

SUBMITTAL FORM A – Bidder Information

PROJECT INFORMATION

ITB NUMBER: 22-VSW-TLT-032

PROJECT NAME: Packaged Water Treatment System

CONTACT INFORMATION

Provide contact information for the individual that can be contacted for clarification regarding this proposal:

Name _____

Title _____

Address _____

Email _____

Telephone _____

ADDENDA ACKNOWLEDGEMENT

The offeror acknowledges receipt of the following amendments and has incorporated the requirements of such amendments into their proposal. Failure to identify and sign for all amendments may subject the offeror to disqualification. The offeror must list all amendments (by number), then initial and date to confirm that you have received and incorporated them into your proposal (add more rows as necessary).

Number	Initials & Date

Number	Initials & Date

Number	Initials & Date

Certifications

In order for a bid to be considered responsive the bidder must respond "True" for each of the following certification criteria. A bidder's failure to respond or a "False" response to any of the following criteria will cause their bid to be considered non-responsive and rejected. The State may request the bidder to submit evidence to the State's satisfaction that the bidder has met the criteria.

No	Criteria	Response
1	The bidder is presently engaged in the business of providing the services & work required in this ITB.	True | False
2	The bidder certifies the water treatment system equipment shall be the product of a recognized manufacturer whose personnel have been regularly engaged in the design and manufacturing of water treatment systems for at least 5 years.	True | False
3	The bidder certifies the water treatment system equipment manufacturer has designed, fabricated, supplied and successfully commissioned at least 5 systems in North America for a public water system provider[1] of similar process and capacity as described in this ITB within the last 2 years. If requested, within 2 days of the State's request the bidder shall submit the clients name, city/state, and contact information for each of the 5 projects used to meet this minimum requirement.	True | False
4	The contractor certifies the manufacturer maintains a reasonable stock of spare parts for this equipment. Reasonable is defined as the ability to ship spare parts to the State within 60 days after receipt of an order.	True | False
5	The bidder certifies the manufacturer employs qualified technical personnel to ensure adequate servicing and operational control advice covering chemical, hydraulic, mechanical, and electrical optimization of water treatment procedures and practices.	True | False
6	The bidder certifies welders are American Welding Society (AWS) certified within the past 12 months.	True | False

[1] Public Water System Provider Definition: A public water system provides water for human consumption through pipes or other constructed conveyances to at least 15 service connections or serves an average of at least 25 people for at least 60 days a year. A public water system may be publicly or privately owned.

SECTION 460713
PACKAGED WATER TREATMENT EQUIPMENT

PART 1 - GENERAL

1.1 SUMMARY

A. Section includes work necessary to furnish a packaged water treatment system with a treated water capacity of 20 gpm for treatment of iron, manganese, and arsenic laden groundwater with high organics and color. The water treatment equipment will be located in a new modular facility located adjacent to the water wells and a new water storage tank.

B. The water treatment system will treat water from an existing groundwater well. After treatment the water will be disinfected and conveyed to a water storage tank and then to the distribution system. Settled solids and filter backwash water will be conveyed to an on-site lift station for conveyance to the Community's sewage lagoon.

C. It is the intent of this specification that a complete, pre-fabricated, packaged water treatment system be supplied by a single supplier and that it shall include, but not be limited to, the following components, designated with an * on the Drawings:
   1. Raw, backwash, and treated water flow meters
   2. Oxidation detention tank
   3. Factory-built, welded-steel-packaged water treatment system, with necessary tankage and equipment, capable of treating groundwater to meet potable standards.
   4. Oxidant blending and dosing
   5. Coagulant blending and dosing
   6. Flocculation
   7. Clarification
   8. Gravity filter
   9. Blowers
   10. Backwash pump
   11. Chlorine disinfection
   12. Filter piping manifolds and valves
   13. Allen-Bradley PLC based automatic Process control system
   14. J-Boxes for wire terminations on treatment train
   15. Required instrumentation for process control
   16. Grating
   17. Handrail and access ladder
   18. Bolts and lifting lugs

D. Work by the Supplier includes:
   1. Submission of Shop Drawings, Operation and Maintenance Manuals, and other descriptive information.
   2. Fabrication of the equipment.
   3. Factory test of each unit to be supplied.
   4. Delivery of the equipment to Bethel, Alaska.
   5. Installation assistance, quality control, quality assurance, and inspection.
   6. Onsite performance testing, equipment startup, and training of the Owner's staff.

E. The Supplier shall manufacture and supply the equipment. The Contractor will integrate the equipment into the water treatment facility.

F. The following system components will be designed by the Engineer and installed by the Contractor:
   1. Raw water supply and yard piping
   2. Water treatment plant building
   3. Water storage tank and distribution pumping
   4. Connecting piping and power to the packaged water treatment system, chemical feed systems, blower, and backwash pump.

1.2 DEFINITIONS

A. ADEC or DEC: The Alaska State Department of Environmental Conservation.

B. Clarification: Treatment process that removes suspended solids from water. Clarification may be accomplished by gravity settling, in which solids settle to the bottom of a settling tank, or by adsorption bed clarification, in which solids are captured by a bed of media suspended in the tank from water flowing upward.

C. Coagulation: Treatment process that causes colloid-size suspended solids in source water to coalesce into clumps with sufficient mass to settle under the influence of gravity.

D. Coliform Bacteria: General class of bacteria used as indicators of potential contamination of drinking water.

E. Contractor: General contractor responsible for delivery and assembly of the WTP building, transport of the packaged water treatment system from Bethel to Tuluksak, AK, and installation of the equipment in the WTP Building.

F. Design Flow: Required treated water flow rate.

G. Disinfection: Destruction of bacteria and protozoa and deactivation of viruses by the action of a chlorine solution.

H. Filtration: Treatment process that removes small, suspended solids after the clarification process by means of granular media.

I. Flocculation: A process wherein colloids come out of suspension in the form of floc or flakes by the addition of a clarifying agent.

J. Good: All equipment and materials supplied under this Specification.

K. HMI: Human machine interface.

L. Installer: Supplier provided field technician for installation assistance, on site performance testing, equipment start up and training of Owner’s staff.

M. Modular Building Manufacturer: The vendor responsible for fabrication of the water treatment plant building including the plumbing, electrical, and control systems inside the building.

N. NSF: NSF International, an independent, non-profit organization which provides voluntary consensus standards, product testing procedures, and certification services in the areas of public health, safety, and the environment.

O. Supplier: Packaged water treatment equipment supplier.

P. Raw Water: Water supplied from the groundwater well to the water treatment plant.

1.3 SUBMITTALS

A. Product Data: Manufacturer's product data for system materials and component equipment.

B. Submittals required with Bid Documents:
   1. Submittals provided with Bid shall be for the purpose of advancing the design of the WTP to facilitate the project schedule.
      a. Exceptions: Identify any exceptions to these Contract Documents.
      b. Drawings: provide drawings showing WTP equipment plan, minimum space between units or equipment and minimum separation clearances on all sides.
      c. Preliminary Shop Drawings:
         1) Equipment dimensions, weights (shipping and installed), and connection points.
         2) Process and Instrumentation Diagrams.
            a) Details of backwash and solids removal frequency, duration, and flow rates.
         3) Total connected electrical load in kW, kVA, and amperes for complete system.
         4) Location of single point of connection for power supply to the packaged water treatment system.
      d. Process Control Narrative.

C. Submittals required after Notice of Award:
   1. Detailed Shop Drawings:
      a. Final complete shop drawings of all water treatment system equipment.
      b. System materials and component equipment, including detailed wiring and control diagrams.
      c. Fabrication, installation, anchoring, fasteners, and other details.
   2. Electrical:
      a. One-line diagram(s), including transformers, drives, panelboards, meters, and protective devices.
      b. Panel elementary diagrams of prewired panels, including control devices and auxiliary devices.
      c. Wiring and control diagrams of systems and equipment.
      d. Interconnecting wiring diagrams. Include conductor size, type, and number between all electrical and control components. Include conduit size and type.
      e. List number and capacity of transformer(s), if any.
      f. List of special motor features being furnished (i.e., space heaters, altitude corrections, and thermal protectors).
      g. Complete motor rating for motors 3 horsepower and larger, including motor no-load, starting, and full-load current at rated voltage; full-load speed and full-load

current at 100 percent voltage; motor efficiency and power factor at 1/2, 3/4, and full load at rated voltage.

3. Instrumentation and Control:
   a. Process and instrumentation diagrams and description of functions monitored, controlled, and alarmed.
   b. Describe instrumentation and control components and features including software, hardware, control features, remote system capabilities, monitoring, data storage, and alarms. Provide examples of HMI screens that have been provided on previous projects. Provide a block diagram of proposed control system including HMI(s), PLC(s), and data highway.
   c. Software Description: Provide narrative description of control system, logic diagrams, summary of control functions, summary of monitoring functions, description of alarms, and other information to describe control system.
   d. Copy of all PLC programming.
4. Product Data Sheets for all components used in the packaged system.
5. Paint data sheets for prime and finish coating systems for each equipment item.
6. NSF 61 certifications for all materials or coatings in contact with water (raw, treated, and chemical batching).
7. Commissioning Plan.
8. Training Plan.
9. Operating and Maintenance Manuals.
10. Crating: Provide an electronic copy and one paper copy of the shipping index for all crates to be delivered. Include in the shipping index the actual scale weight, cube, dimensions, individual piece numbers for all crates, and a detailed listing of the contents of each crate.
11. Manufacturer's Certificate: Products meet or exceed specified requirements.
12. Manufacturer Instructions: Installation requirements, including storage and handling procedures, anchoring, and layout.
13. Source Quality-Control Submittals: Indicate results of factory tests and inspections.
14. Field Quality-Control Submittals: Indicate results of Supplier-furnished tests and inspections.

D. Qualifications Statements:

1. Qualifications for manufacturer, installer, and licensed professional.
2. Manufacturer's approval of installer.

1.4 CLOSEOUT SUBMITTALS

A. Final O&M Manuals: Include updates to any items that were modified during fabrication, installation, and start up.

1.5 QUALITY ASSURANCE

A. The water treatment system equipment shall be the product of a recognized manufacturer whose personnel have been regularly engaged in the design and manufacturing of water treatment systems for at least five years. The manufacturer must be able to demonstrate experience with the design, fabrication, supply and successful operation of at least five systems of similar

process and capacity within the last two years. The manufacturer/supplier shall demonstrate upon the request of the engineer that:

1. They maintain a reasonable stock of spare parts for this equipment.
2. They employ sufficient qualified technical personnel to insure adequate servicing and operational control advice covering chemical, hydraulic, mechanical, and electrical optimization of water treatment procedures and practices.

B. Welders: AWS-certified within previous 12 months.

1.6 WARRANTY

A. Furnish five-year manufacturer's warranty for packaged water treatment equipment.

B. Furnish one-year manufacturer’s warranty for chemical metering equipment.

PART 2 - PRODUCTS

2.1 GENERAL

A. The water treatment system shall be provided complete, with all necessary components, pumps, valves, instruments, control systems, accessories, and appurtenances to make a complete and operable system.

B. Products that will be in contact with process water (raw, treated, chemical batching) shall have NSF 61 certification. No exceptions.

2.2 PERFORMANCE AND DESIGN CRITERIA:

A. Flow Rate: 25 gpm.

B. 2021 Average Daily Production: 5,150 gallons per day.

C. 2041 Piped System Average Daily Production: 42,830 gallons per day, with second treatment skid.

D. Finished Water Quality Goals:

1. Turbidity (NTU): < 0.1 NTU.
2. Color (TCU): < 10 CU.
3. Total Organic Carbon (TOC, mg/L): 46.3% Removal
4. Iron (mg/L): < 0.2 mg/L
5. Manganese (mg/L): <0.03 mg/L.
6. Arsenic (µg/L): <5 µg/L.
7. pH: 6.5 – 8.5.
8. Total Trihalomethanes (TTHM µg/L): <60 µg/L.
9. Haloacetic Acids (HAA5, µg/L): <40 µg/L.

2.3 SERVICE CONDITIONS

A. Influent Water Quality Conditions:
   1. Raw water will be pumped to the WTP and supplied at an influent pressure of 15 psi.
   2. Typical raw water quality is:
      a. Arsenic: 36.3 µg/L.
      b. Iron: 6.99 mg/L.
      c. Manganese: 0.331 mg/L.
      d. Total Organic Carbon: 47.1 mg/L.
      e. Dissolved Organic Carbon: 44.8 mg/L.
      f. True Color: 65 PCU.
      g. pH 7.06
      h. Turbidity 0.85 NTU.
      i. Temperature: 35 F, preheated to 45 F.

B. The WTP equipment will be located indoors with the room temperature between 60 and 70 F.

C. Treatment Chemicals:
   1. Pre-Oxidant: 1% Potassium Permanganate dosed at 5 mg/L.
   2. Coagulant: 2%, dosed at 10 mg/L.
      a. 80% Nalco 8185 (Aluminum Chlorohydrate).
      b. 20% MagnaFloc LT27 (anionic polymer).
      c. Diluted to 2% solution.
   3. Disinfectant: 2% Calcium Hypochlorite dosed at 1.5 mg/L.

2.4 MATERIALS

A. Equipment shall fully comply with OSHA standards.

B. Electrical material and equipment shall have NRTL listing wherever standards have been established by that agency.

C. Complete electrical assembly shall meet requirements of National Electrical Code (NEC), National Electrical Manufactures Association (NEMA), and National Fire Protection Association (NFPA) and be listed as an assembly (Control panels, VFDs etc).

D. Components, including equipment, coatings and other parts of system, shall comply with AWWA standards.

E. Terminal point connections shall be ANSI standard flanges.

2.5 OXIDATION VESSEL

A. Closed FRP vessel with bottom diffuser to provide minimum of 40 minutes of reaction time at a flow rate of 25 gpm for permanganate with iron, manganese, and arsenic.

B. Dimensions: 63” diameter x 99” high, 900 gallon capacity.

C. NSF 61 certified.

D. Pentair #CH31327, or Approved Equal.

2.6 PACKAGED FILTER EQUIPMENT

A. Single process train rated for the design flow rate and criteria defined in Article 2.2 and Article 2.3.

B. The WTP operation shall be as simple as practical while maintaining finished water quality.

C. The packaged water treatment equipment shall be factory assembled and tested to the greatest extent possible. Allowable connection points:
   1. Post-oxidation coagulated water
   2. Filtered water
   3. Clarified solids removal
   4. Backwash supply and discharge
   5. Air scour
   6. Power

D. Valves required by the treatment equipment supplier shall be installed at the filter fabrication facility to the greatest extent possible. Off-skid valves and piping will require the Supplier to provide a service technician to complete the plumbing, electrical, and controls connections in addition to the required start-up and commissioning time. The Installing Contractor will be responsible for installing the plumbing, electrical and controls up to the final connection points.

E. The maximum dimensions for the footprint of the filter skid and the ceiling height are shown on the Drawings.

F. Process Components
   1. Raw Water Flow Control:
      a. Supplier’s standard via flow control valve to maintain constant flow rate through the treatment process.
   2. Chemical Blending (3)
      a. Inject treatment chemicals into an inlet pipe section equipped with baffles for hydraulically induced blending of chemicals with incoming raw water.
      b. Provide mixers for installation by Installing Contractor.
      c. Provide static mixer Westfall 2800, or Approved Equal.
   3. Flocculation
      a. Chambers: Minimum total retention time of 40 minutes at design flow rate through two chambers.
      b. Furnish each flocculation chamber with an independent mechanical flocculator with variable-speed drive.
      c. Furnish flow-straightening vanes to prevent vortexing, and to ensure establishment of a uniform particle contact/floc formation regime.
      d. Velocity Gradient: G=15-100/sec.
   4. Clarification (inclined tubes or adsorption clarifier)
      a. Inclined Tubes:
         1) Provide entire surface with tube settlers fabricated from minimum 20-mil PVC.
         2) Minimum Horizontally Projected Bottom Area: Not less than 12 sq. ft. per sq. ft. of plan area

3) Uniformly introduce flow into lower chamber section through low-velocity distribution header
4) Include launder system in upper section, with overflow-leveling provisions

b. Adsorption Clarifiers:
1) Media depth: 48 inches.
2) Media retention screen to allow for upflow, restrained operation, without fluidizing bed during normal forward flow operation. Screen shall be corrosion-resistant assembly that allows free passage of water but contains media particles.
3) Media readily fluidized by addition of small amounts of diffused air.
4) Media:
a) Buoyant adsorption media specifically manufactured for use in water treatment. Media shall be buoyant with specific gravity of less than 1.0.
b) Designed to optimize the removal of coagulated particles with clean bed head loss of less than 18 inches at 10 gpm per sq. ft.
c) Capable of building solids to a head loss of 6 feet without disruption or movement of the media

c. Sludge wasting: operator adjustable, initially set to 15-20 minutes.
1) Single sludge draw-off header.
2) Automatic and timer controlled, entirely independent of filter function.
3) Possibly only with system in ON operating mode.

5. Filtration
a. Separate chamber with total area provided to establish maximum application rate of 2.0 gpm/sq-ft, except during backwash.
b. Provide wash-water trough with adjustable weirs.
c. Provide surface agitation assembly to augment backwash process.
d. Filter Media:
1) Anthracite: Depth: 18”; Specific Gravity: 1.5-1.7; Effective Size: 0.9-1.1 mm; Uniformity Coefficient: <1.7.
2) Silica Sand: Depth: 14”; Specific Gravity: 2.5-2.7; Effective Size: 0.45-0.55 mm; Uniformity Coefficient: <1.7; Silica Content: ≥98%.
3) Garnet: Depth: 4”; Specific Gravity: 3.8-4.2; Effective Size: 1.5-1.7 mm; Uniformity Coefficient: <1.2.
4) Gravel: Depth: As Required; Specific Gravity: 2.5-2.7; Effective Size: 3/16” (#4 mesh) – 3/8”.

6. Filter Underdrain
a. Provide for uniform collection of filtered water and even distribution of backwash water and air scour across the full area of the filter bed. It shall be capable of accepting air scour, without further modification, even if this is not provided initially.
b. Ensure mal-distribution of the backwash flow and air scour does not exceed +/- 5%.
c. Be of HDPE or stainless steel construction.
d. Incorporate either:
1) A nozzle/plenum design. Nozzles shall be of plastic construction and incorporate a diffuser with slots no wider than 0.2mm. The nozzle spacing shall be no greater than 6.0 inch centers. The plenum shall be not less than 14 inches in depth and shall extend over the full area of the filter. The plenum roof shall be plane with no intrusions from supporting structures that

could impeded the even generation of the air/water interface within the plenum. An inspection access panel shall be provided into the plenum.

2) After market block underdrains with type "S" retention plate with an optional gravel support layer will not be required.

7. Effluent Pump:
   a. Provide effluent pump to transfer water from the filters to the water storage tank.
   b. Required head: 30 ft.
   c. Control: VFD based effluent discharge control system to maintain constant flow for the plant. VFD's shall be of sufficient size to accommodate the power rating of the selected effluent discharge pump motor. ALLEN BRADLEY Power Flex 70 Fan and Pump Control assembly.
8. Backwashing:
   a. Chlorinated backwash water will be supplied from the community's water storage tank.
   b. Backwash loading rate: by filter equipment Supplier.
   c. The backwash flow rate shall be automatically controlled to maintain a pre-set flow rate. For combined air scour and backwash, the backwash flow control system shall allow for pre-set flow rates, one setting for use during combined air scour and one, higher setting for use when backwashing only following air scour. Each flow setting shall be manually adjustable.
   d. The filter piping and valves shall include the ability to filter to waste after each backwash.
   e. Pump:
      1) Sizing: by filter equipment Supplier.
9. Air Scour:
   a. Blower:
      1) Provide single blower for cleaning clarifier and filter media during flushing and backwashing operations.
      2) Provide blower with inlet filter, pressure relief valve, and dirty filter indicator.
      3) Maximum air inlet temperature: 100 degrees F
      4) Minimum air inlet temperature: 40 degrees F
      5) Plant elevation: approximately 40 ft above sea level
      6) Provide complete with check valve, inlet filter and pressure relief valve
      7) Sizing: by filter equipment Supplier.

G. Materials of Construction
   1. All tankage, plate steel, and structural members, including all troughs, launders and collectors shall be fabricated from type 304 stainless steel or painted carbon steel.
      a. All fabrications shall be undertaken by a fabricator able to demonstrate at least five years of experience in the fabrication and welding of steel structures for potable water applications.
      b. Plate thickness and structural reinforcements shall be designed in accordance with accepted engineering practices for the materials used.
      c. Welding shall be performed by fully qualified and experienced welders in accordance with AWS D1.6 and shall use an inert gas shielded arc or resistance welding process.
      d. Weld penetration, strength, and integrity shall ensure optimum Brinell hardness, tensile strength, modulus in tension, compression, and shear to be exerted on the finished product.

e. All bolts, nuts, flanges, system components, etc. which are directly attached to the steel structures shall be of compatible materials or shall be suitably isolated from the stainless steel structures to avoid galvanic corrosion.
f. Full electrical isolation of all dissimilar metallic appurtenances shall be provided to prevent electrolytic corrosion.
g. Mild steel components, shall receive two coats of high build epoxy protective coating to a surface thickness of 7 to 11 mils. All paint shall be factory applied and shall be NSF 61 certified for potable water service.

2. Valves:
   a. Electrically actuated and manual butterfly valves: Valve Type: Bray Series 31 lug or approved equal.

H. Access Platforms
1. Elevated access walkway, complete with safety railings and ship ladder shall be provided to give full access along the length of the process train for routine inspection and servicing.
2. Walkways shall be aluminum construction with open mesh type flooring and integral kick plate and hand railing.
3. Walkway floor elevation shall be at least 36 inches below the top of the plant side wall. The walkway width shall be not less than 36 inches.
4. Stair treads and gratings shall be aluminum grating, serrated style. Grating shall carry a live load of 4,000 psf with a deflection of less than 0.24 inches.
5. The maximum weight of each grating section shall not exceed 60 pounds.
6. Handrailing shall conform to CSA S157, alloy GM41 for aluminum sections. All intermediate posts and all rail shall be 32mm internal diameters, Schedule 40. All end posts shall be 32 mm internal diameter, Schedule 80. Fittings shall be fabricated from similar material to the posts and railings, and shall be fixed by welding, set screws, or both.

I. Manufacturers:
1. WesTech Engineering, LLC. WaterBoy Packaged Treatment Unit.
2. AWC Water Solutions, Ltd. ST-20.
3. Approved Equal.

2.7 CHEMICAL FEED EQUIPMENT

A. Furnish equipment for mixing and feeding chemicals as required for treatment processes, including permanganate, coagulant/polymer blend, and chlorine at the dosage detailed on the Drawings.

B. Overall Chemical System Operation:
1. Chemicals will be batched manually by the WTP operators.
2. WTP Control panel shall turn on and off chemical pumps with system start/stop.
3. WTP Control panel shall have operator adjustable inputs for chemical dose adjustment.
4. The raw water flow signal shall be split between the WTP control panel and the well control panel. Supplier shall provide splitter.

C. Chemical feed equipment shall be shipped to the Modular Building Manufacturer for installation before the modules ship to Tuluksak. Assume the manufacturer will be located in Anchorage, Alaska.

D. Chemical Mixing and Batching Tanks
   1. Provide chemical mixing tanks as shown on the Drawings.
   2. Mixing tanks shall be graduated and translucent, as manufactured by Snyder or approval equal.
   3. Tank material shall be compatible with stored chemical solution.
   4. Tanks shall be provided with capability to support lid as detailed in the Drawings.

E. Chemical Mixers
   1. Mechanical mixers shall be provided for the chemical feed systems as designated on the Drawings.
   2. Electrically driven mixing device, suitable for mounting on an angled platform. Shall operate on 120 VAC, 60 Hz.
   3. Materials: Chemical Tank Schedule in Drawings.
   4. Operation:
      a. Mechanical mixers operation shall be manual by the operator when batching chemicals.
   5. Mechanical mixers shall be provided with support for mounting on tank cover.

F. Chemical Feed Pumps:
   1. Grundfos; DDA, or approved equal.
   2. Pump Control:
      a. Furnish and install listed or labeled positive displacement chemical feed pumps with autoprime, suitable for pumping dilute solutions of the chemicals for each feed point as described in the Process Pump Schedule on the Drawings.
      b. Output volume shall be manually-adjustable while pumps are in operation, from zero to the maximum capacity specified in this section and automatically controlled by the WTP control panel.
      c. Manual adjustment shall be by means of readily accessible dial knob(s).
   3. Pump Accessories:
      a. Pumps shall be provided with automatic pressure relief valve or pump shall be designed to automatically stop pulsating when discharge pressure exceeds 35% of pump pressure rating.
      b. Anti-Siphon device: All pumps shall be provided with a valve that prevents chemicals from siphoning out of chemical mixing tanks.
      c. Chemical metering pump valves shall be ball type, with ceramic balls PTFE. Valve seat and seal ring shall be renewable by replacing the combination seat-seal ring PTFE or cartridge valve assembly.
      d. Tubing: 30 feet of polypropylene tubing shall be provided per pump complete with compression connections.

2.8 POWER

A. Motors
   1. Motors are to be provided with the following basic features:
      a. Motors shall be designed for continuous duty operation, NEMA design B with a 1.15 S.F.
      b. Totally Enclosed Fan Cooled Motors are to be furnished with class “F” insulation. Open Drip Proof Motors are to be furnished with class “B” insulation.

c. Motor nameplate shall be mounted on enclosure with stainless steel fastening pins. Nameplate shall have, as a minimum, all information as described in NEMA Standard MG 1-20.40.1.
d. Open Drip Proof (ODP) motors shall have drip covers.
e. Motors over 50 lbs shall having lifting provisions.
f. Motors shall have a NEMA C-Flange for vertical mounting.
g. Drive end bearings shall be adequately sized so that the minimum L10 bearing life is 17,500 hours at the minimum allowable continuous flow rate for the pump.

B. Variable Frequency Drives: Allen Bradley PowerFlex 70 Fan and Pump Control assembly, including:
1. Full Bypass with isolation contactors (3 contactors)
2. Disconnect
3. Listed assembly
4. Incoming line fuses
5. Set up for 4-20mA input flow pacing with Packaged Panel Control
6. Remote Start signal
7. Line and load reactors
8. Front Panel Graphics
9. Front Panel Control Switches
10. DISCONNECT
11. DRIVE-DRIVE TEST-BYPASS
12. HAND-OFF-AUTO
13. Front Panel Pilot Lights
14. Ready
15. Interlock Open
16. Drive Output Enable
17. Purge (Preset speed control)
18. Bypass Trip
19. Bypass RUN

C. Electrical Requirements
1. 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 light fixture, as shown on the Drawings. The fixture shall include a 120-volt receptacle and door switch.
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 between the PLC I/O card and 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. DeviceNet cable shall be as per Allen-Bradley requirements, and terminated per Allen-Bradley requirements.

7. Wire Insulation Colors:
   a. 120 VAC Power - Black 14 AWG minimum
   b. 120 VAC Neutral - White 14 AWG minimum
   c. 120 VAC Ground - Green 14 AWG minimum
   d. 120 VAC Control - Red 14 AWG minimum
   e. 120 VAC Foreign Power - Yellow 16 AWG minimum
   f. 120 VAC Foreign Neutral - Yellow 16 AWG minimum
   g. DC Positive – Blue/Red 16 AWG minimum
   h. DC Negative - White/Blue 16 AWG minimum
8. Wire Marking: Wire numbers shall be marked using white numbered wire markers made from heat-shrink plastic. Numbers shall read from left to right.
9. Flexible conduit is only to be used where specified.
10. Conduit fittings shall be Crouse-Hinds cast fittings, or equal.
11. 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 and be connected to the electrical equipment ground of the 120-volt panel supplying power.

2.9 CONTROL SYSTEM

A. Function:
   1. An integral plant control system shall be provided and plant functions shall be automated to the extent specified elsewhere. Manual override shall be provided to all automatic controls.
   2. The plant shall be capable of fully functional and automatic operation when provided with the following external connections:
      a. Power Supply: 120 VAC, 1 phase for electrical controls and monitors and 208 V, 3-phase, 60 Hz for pumps and blowers.
      b. Plant Start/Stop Signal from, MCP, dry contacr,120 VAC, Normally open , Close on call for Water,
   3. The packaged water plant shall interface with the water plant’s Main Control Panel MCP and provide the following outputs:
      a. Process control Panel is Ready
      b. Process in Filter Backwash mode.
      c. Process in Clarifier Backwash mode.
      d. Process FAIL (combined alarms indicating water is not being filtered).
      e. Analog 4-20mA filtered water flow rate
      f. Analog 4-20mA NTU
   4. The packaged water plant shall accept a 4-20mA effluent flow rate to tank (FIT-401) signal from the MAIN control panel MCP and re-transmit to the turbidimeter controller, serving an Analog input module on channel 2.

B. Operator Interface
   1. A color LCD, touch sensitive, Operator Interface is to be provided to allow local display. The unit is to be supplied at 24 VDC and is to communicate to the PLC via an Ethernet interface. The Operator Interface shall be Allen-Bradley model Panel View 1000 Color, no exception, with a 32 MB Compactflash card Allen-Bradley 2711P-RC1, or equal.

C. Panel Design
   1. The control system panel, and all other panels that have PLC hardware or communication hardware within them, shall be fabricated by the Supplier. The Supplier shall perform the following work:
      a. Edit contract loop drawings and control panel designs to show any and all changes to the design.
      b. Test the panels at the factory.
      c. Fabricate and ship the panel.
   2. Supplier Qualifications: The Supplier shall have the resources, space, and personnel needed to design and fabricate the panels. The Supplier shall meet the following minimum qualifications:
      a. The Supplier shall build the panels to UL standards, shall be certified to build panels to UL standards, and shall attach a UL label on all new panels, or the panel builder shall build to an equal standard, shall be certified to an equal standard, and shall attach a label to all new panels with a label that is acceptable to the Owner.
      b. The Supplier shall make all wiring changes to new control panels. The changes shall be made to UL standards, or equal standard that is acceptable to the Owner & Engineer. The Supplier shall provide a UL engineer, or equal testing lab engineer that is acceptable to the Owner & Engineer, to inspect the changes and certify that the panel meets the standard, or provide a list of deficiencies.
   3. Environmental Suitability: 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 in order to maintain all instrumentation devices 20 percent within the minimums and maximums of their rated environmental operating ranges. The Manufacturer shall provide power wiring for these devices. Enclosures shall be NEMA 4X minimum. All instrumentation in hazardous areas shall be suitable for use in the particular hazardous or classified location in which it is to be installed.

D. Panel Features:
   1. Provide dry contacts to start and stop the raw water pump.
   2. Start/stop of raw water flow based on signal from WTP Control Panel and train backwashing status
   3. Automatic control of influent raw water flow, based upon adjustable set point value.
   4. Automatic initiation and control of filter backwashing.
   5. Manual initiation and control of the filter backwash sequences.
   6. Alarm indication as initiated by high and/or low conditions sensed by all on-line water quality monitors.

E. Panel Construction
   1. Control panel shall be designed to operate on 208V 3-phase building supply. All motors with starting inrush exceed 34kVA shall be equipped with reduced voltage starter or VFD with current limiting. Three phase motors may be used with appropriately de-rated VFD’s capable of phase conversion. Starters and VFDs will be self-contained.
   2. 2-door control panel NEMA 4X. Includes necessary hardware for external operator for a circuit breaker disconnect. Powder coated white.
   3. Allen Bradley 800MR operator switch, pushbuttons, lights. Mounted in right door.
   4. Integral power distribution and control including but not limited to:
      a. (1) 3 pole main circuit breaker and power contactor
      b. Motor controls and starters including short circuit and overload protection for all motors.

c. Breakers for control circuit and accessory protection.

5. 8 pin DPDT 120 VAC relays with base, under voltage monitor relay with base, Frequency Monitor relay with base.
6. 24VDC power supply for solenoid valves. Isolation transformer and surge protection for PLC power.
7. Duplex Utility Outlet 120 VAC GFCI for laptop power. Toggle switch and fluorescent light fixture.
8. SCADA Interface
   a. Provide analog and digital outputs to supply data acquisition as listed elsewhere in this specification.
9. Control panels shall be built to UL, ETL, or an independent testing laboratory acceptable to the local code enforcement agency having jurisdiction. The panels shall have UL or ETL 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.
10. Control Panels & enclosures and power panel enclosures shall be built to NEC standards for enclosures.
11. Panel construction shall conform to Article 409 of the National Electric Code.
12. The control panel controls shall be 24 VDC or 120 VAC. Control conductors shall be provided in accordance with the indicated requirements.
13. The control panel shall be the source of power for any 120 VAC solenoid or motorized valves interconnected with the control panel. All equipment associated with the control panel shall be ready for service after connection of conductors to equipment, controls, and control panel.
14. Unless indicated otherwise, control panels shall be housed in NEMA 4X rated enclosures. Control panels shall be either wall-mounted or equipment skid-mounted. Internal control components shall be mounted on an internal back-panel or side-panel as required.

F. Control Switches
   1. As a minimum, the following control switches and indicators shall be provided:
      a. Plant Hand/Off/Auto (in auto mode, plant operates automatically, stop from external stop signal.
      b. Blower and Effluent Pumps Motors: Manual Override of normal auto operation, speed adjustments (by VFD).
      c. Backwash counters for each filter.

2.10 PROGRAMMABLE LOGIC CONTROLLER (PLC)

A. General: Each PLC shall be of solid-state design. All central processor (CPU) operating logic shall be contained on plug-in modules for quick replacement. Chassis-wired logic is not acceptable. The controller shall be capable of operating in a hostile industrial environment and designed to provide high reliability specifically in this process application. The internal wiring of the controller is to be fixed, with the logic functions it must perform in a given application to be programmed into its memory. The controller shall be supplied with the CPU, input/output scanner, inputs, outputs, memory, power supply, and all power and interface cables necessary to function as a complete and operable PLC system.

B. Design: Each PLC shall have all of the facilities required to implement the control schemes and database indicated. PLCs shall have the following functions and features:

1. Modular, field-expandable design allowing the system to be tailored to this process control application. The capability shall exist to allow for expansion of the system by the addition of hardware and/or user software.
2. The processor plus input and output circuitry shall be of a modular design with interchangeability provided for all similar modules. Modules are defined herein as devices that plug together to form an interlocking modular chassis. The design must prohibit upside-down insertion of the modules.
3. The PLC shall have downward compatibility whereby all new module designs can be interchanged with all similar modules in an effort to reduce obsolescence.
4. All hardware shall operate at an ambient temperature of 0 to 60 degrees C (32 to 140 degrees F), with an ambient temperature rating for storage of - 40 to + 85 degrees C (-40 to + 185 degrees F), and shall function continuously in the relative humidity range of 5 percent to 95 percent with no condensation. The PLC system shall be designed and tested to operate in the high electrical noise environment of an industrial plant.
5. The PLC shall provide a means for mounting the chassis in a standard cabinet.

C. Central Processors: The CPU shall contain all the relays, timers, counters, number storage registers, shift registers, sequencer, arithmetic capability, and comparators necessary to perform the indicated control functions. It shall be capable of interfacing sufficient discrete inputs, analog inputs, discrete outputs, and analog outputs as shown on the drawings. The Processor shall be an Allen Bradley CompactLogix 1769-L35E, no exceptions. The CPU shall be supplied with a 64 MB Compactflash card Allen-Bradley 1784-CF-64, or equal. The PLCs shall have the following features and capabilities:
1. All PLCs shall be provided to support and implement closed loop floating and PID control which is directly integrated into the PLC's control program.
2. The CPU shall be a self-contained unit, and shall provide control program execution and support remote or local programming. This device shall also supply I/O scanning and inter-processor and peripheral communication functions.
3. The operating system shall be contained in removable programmable devices which allow for easy field replacement.
4. The CPU within the system shall perform internal diagnostic checking and give visual indication to the user by illuminating a "green" indicator when no fault is detected and a "red" indicator when a fault is detected.
5. Non-volatile memory shall store the operating system information to protect against loss in the case of power loss or system shut-down. Only at the time of a hardware change shall this configuration status be altered or re-entered.

D. Program Creation and Storage (Memory)
1. The program storage medium shall be of a static RAM type.
2. The PLC system shall be capable of addressing up to 768 kilobytes, where each word is comprised of 8 data bits.
3. Memory capacity shall be configurable to allow for the most economical match to the intended application. It shall be possible to upgrade to a processor with a larger memory size simply by saving a program, replacing the processor, and downloading the program to the new system without having to make any program changes.
4. Memory shall contain battery back-up capable of retaining all stored program data through a continuous power outage for 4 months under worst case conditions. The capability shall exist to remove all batteries from the system without removing system power. A low battery condition must be detectable in ladder logic, but shall not automatically generate a major fault.

5. The operator shall be able to backup volatile memory, including data and program logic, onto external hard disk, at their option.
6. All user memory in the processor not used for program storage shall be allocatable from main memory for the purpose of data storage. The PLC system shall be capable of storing the following data types:
    a. External Output Status
    b. External Input Status
    c. Timer Values
    d. Counter Values
    e. Signed Integer Numbers (16-bit)
    f. Floating Point Numbers
    g. Decimal Numbers
    h. Binary Numbers
    i. BCD Numbers
    j. Direct and Indexed Addressing
    k. Internal Processor Status Information
    l. ASCII Character Data
    m. ASCII String Data
    n. Block Transfer Control Structures
    o. Floating Point PID Control Structures
    p. File Instruction Control Structures
    q. Message Control Structures
7. Control logic programs shall have immediate access to the sub-elements of control structures by address and sub-element mnemonic, such as timer accumulator value, timer done bit, or PID Process Variable value.
8. Each unit shall be supplied with memory to implement the indicated control functions. The memory shall be programmed in a multi-mode configuration with multiple series or parallel contacts, counters, timers, and arithmetic functions.

E. Programming Techniques: Ladder Logic shall be used.

F. Ethernet Interface and Network
1. PLC shall be provided with provisions for Ethernet communications specifically with the Panelview Plus.
2. Provide within panel, network switch with four ports.
3. LAN capability shall include:
    a. Token passing system.
    b. Peer-to-peer communication.
    c. Message error checking.
    d. Retries of unacknowledged messages.
    e. Diagnostic checks on other stations.
    f. Interface to more than one network.
    g. A user-oriented command language for manipulation of data structures of variable size and organization, such as setting or resetting bits, word and file transfers in a peer processor.
    h. The ability to perform PLC memory uploads and downloads.
    i. The ability to communicate with all other models of PLC manufactured by said manufacturer.
    j. The ability to monitor the status of any processor remotely via the network.

k. The ability to automatically broadcast data to (and receive data from) all compatible stations on the link. Once configured, this operation shall be continuous without operator intervention.
l. A gateway interface to the Ethernet TCP/IP network for connectivity to host computers as well as other PLCs that have direct Ethernet connectivity
m. The PLC system shall allow industry standard repeaters, bridges, routers, and gateways on the network in order to access other PLCs and host computers. The controller shall be able to name a specific gateway/router IP address in order to direct data to other networks.
n. On-line programming and upload/downloads of control programs shall be able to occur over the Ethernet network.

G. PLC Power Supply
1. The PLC shall operate in compliance with an electrical service of 24 VDC. The power supply shall be mounted in the PLC housing and be sized to power all modules mounted in that housing and an "average module load" for any empty housing slots plus 25 percent above that total. Power supply shall be by the same manufacturer as the PLC and shall be of the same product line. A single main power supply shall have the capability of supplying power to the CPU and local input/output modules. Auxiliary power supplies shall provide power to remotely located racks.
2. The power supply shall be Allen-Bradley 1769-PB4, no exceptions.

H. PLC Input/Output (I/O) Modules
1. I/O Modules General: All I/O housings and modules shall be suitable for hostile industrial environments. All I/O modules shall be isolated and conform to IEEE Surge Withstand Standards and NEMA Noise Immunity Standards. The I/Os shall be 4-20 mA DC for all analog inputs and outputs and shall be 24 VDC for discrete inputs and dry relay contacts for safe discrete outputs.
2. Discrete Input Modules with Diagnostics: Defined as contact closure inputs from devices external to the programmable controller module. Individual inputs shall be optically isolated from low energy common mode transients to 1500 volts peak from users wiring or other I/O modules. Input modules shall be Allen-Bradley 1769-IQ16 or 1756-IB16. DC input for devices that operate at 5 to 30 VDC.
3. Discrete Output Modules with Electronic Fuse: Defined as contact closure outputs for ON/OFF operation of devices external to the programmable controller module. The output modules shall be optically isolated from inductively-generated, normal mode and low energy, common mode transients to 1500 volts peak. Discrete output contacts shall be provided with interposing relays in the control panel. Output modules shall be Allen-Bradley 1769-OB16 or 1756-OB16, unless noted on the Drawings. DC output for devices that operate at 10 to 30 VDC.
4. Analog Input Modules: Defined as 4 to 20 mA DC signals, where an analog to digital conversion is performed with 14-bit precision and the digital result is entered into the processor. The analog to digital conversion shall be updated with each scan of the processor. Input modules shall be source or sink to handle 2-wire or 4-wire transmitters, respectively. Input modules shall be Allen-Bradley 1769-IF4 or 1756-IF16.
5. Analog Output Modules: Defined as 4 to 20 mA DC output signals where each output circuit performs a digital to analog conversion minimum of 12-bit precision with each scan of the processor. Each analog output module shall have two isolated output points which shall be rated for loads of up to 1200 ohms. Provide current loop

isolators as required to break ground loops. Output modules shall be Allen-Bradley 1769-OF2 or 1756-OF8.

I. Loop Testing

1. General: Individual instrument loop diagrams per ISA Standard S5.4 - Instrument Loop Diagrams, expanded format, shall be submitted to the Engineer for review prior to the loop tests. The Supplier shall notify the Engineer of scheduled tests a minimum of 30 days prior to the estimated completion date of installation and wiring of the PCIS. After the Engineer's review of the submitted loop diagrams for correctness and compliance with the Specifications, loop testing shall proceed. The loop check shall be witnessed by the Engineer.
2. Control Valve Tests: Control valves, cylinders, drives and connecting linkages shall be stroked from the operator interface units as well as local control devices and adjusted to verify proper control action, hand switch action, limit switch settings, torque settings, remote control actions, and remote feedback of valve status and position. Control valve actions and positioner settings shall be checked with the valves in place to insure that no changes have occurred since the bench calibration.
3. Instrument and Instrument Component Validation: Each instrument shall be field-tested, inspected, and adjusted to its indicated performance requirement in accordance with manufacturer's specifications and instructions. Any instrument which fails to meet any Contract requirement, or, in the absence of a Contract requirement, any published manufacturer performance specification for functional and operational parameters, shall be repaired or replaced, at the discretion of the Engineer and at the Supplier’s expense.
4. Loop Validation: Controllers and electronic function modules shall be field-tested and exercised to demonstrate correct operation of the hardware and wiring. Control loops shall be checked under simulated operating conditions by impressing input signals at the primary control elements and observing appropriate responses at register in the PLC processor. Actual signals shall be used wherever available. Following any necessary corrections, the loops shall be retested.
5. Loop Validation Sheets: The Supplier shall prepare loop confirmation sheets for each loop covering each active instrumentation and control device including simple hand switches and lights. Loop confirmation sheets shall form the basis for operational tests and documentation. Each loop confirmation sheet shall cite the following information and shall provide spaces for sign-off on individual items and on the complete loop by the Instrumentation Supplier:
    a. Project name
    b. Loop number
    c. Tag number, description, manufacturer & model number for each elem.
    d. Installation bulletin number
    e. Specification sheet number
    f. Adjustment check
    g. Space for comments
    h. Space for loop sign-off by Instrumentation Supplier and date
    i. Space for Engineer witness signature and date
6. Loop Certifications: When installation tests have been successfully completed for all individual instruments and all separate analog control networks, a certified copy of each test form signed by the Engineer or the Engineer's representative as a witness, with test data entered, shall be submitted to the Engineer together with a clear and unequivocal statement that the instrumentation has been successfully calibrated, inspected, and tested.

J. Performance Test
   1. The entire PCIS hardware, field instruments, power supplies, and wiring shall operate for 10 days without failure following startup.
   2. The Supplier shall furnish support staff as required to satisfy the repair or replacement requirements.
   3. If any component, other than field instruments, fails during the performance test, it shall be repaired or replaced and the PCIS shall be restarted for another 10-day period.

2.11 Data Collection Interface

A. Included in this design is a paperless data recorder shall be used to record process variables and will also provide overall control of the plant. The Data Collection Interface is not part of the packaged system but the packaged system shall provide and accept the following signals :
   1. ANALOG OUTPUTS (4-20mA)
      a. Process Flow
   2. DIGITAL OUTPUTS (“Dry Contact)
      a. Process Fail
      b. Process in Filter Backwash
      c. Process in Clarifier Backwash
      d. Process Ready
   3. DIGITAL INPUTS
      a. Run (Normally Open Contacts CLOSE when Process operation is desired.
      b. Water Supply LOW (BACKWASH DISABLE)

2.12 SPARE PARTS

A. One shelf spare of each major pump and valve at each size including: effluent pump, backwash pump, blower, filter inlet and outlet valves.

B. Chemical Feed Pump and Accessories: Provide “O” rings, extra gaskets, check valve balls, anti-siphon valve, diaphragm, injection point check valve, pressure relief valve, and corporation stop and injection assembly, for each type of pump.

C. Mechanical Mixer: Furnish one spare shaft and propeller for each type of mixer.

D. 1 PLC processor with EEProm set to match operational unit

E. 1 of each module provided with the PLC including the main processing unit with a copy of the program installed.

F. 1 each relay, power supply module, contactor and motor starter of every type provided with the control panel including VFDs or reduced voltage starters

G. 1 each analog and digital input and output card.

H. Additional components shall be provided as recommended by the manufacturers and Supplier.

2.13 FASTENERS AND LIFTING LUGS

A. Lifting Lugs: Furnish lifting lugs to facilitate field installation of tanks; locate and reinforce to enable lifting of assemblies without causing structural damage to units.

2.14 OPERATIONS AND MAINTENANCE MANUAL

A. Provide (4) hard copies and (1) electronic copy in accordance with Section 01 70 00 – Execution and Closeout Requirements

2.15 SOURCE QUALITY CONTROL

A. Assemble complete packaged water treatment skid at factory to ensure fitting of units, piping, and equipment prior to shipment.

B. Certificate of Compliance:

1. If manufacturer is approved by authorities having jurisdiction, submit certificate of compliance indicating Work performed at manufacturer's facility conforms to Contract Documents.
2. Specified shop tests are not required for Work performed by approved manufacturer.

PART 3 - EXECUTION

3.1 SHIPPING AND DELIVERY

A. Ship pre-assembled, pre-plumbed, and pre-wired as complete as possible.

B. All packaged WTP equipment shall be delivered FOB point of delivery. Subject to the provisions of this article, Supplier shall select the means and methods of transportation. All transportation charges, including but not limited to switching, trucking, lighterage and special handling shall be paid by Supplier.

C. Packaging for shipping shall meet the requirements of all anticipated carriers and shall prevent abrasion, scratching, or damage of the materials. All components shall be packaged for ocean shipment if barge transport is utilized. Packaging shall provide substantial strength and integrity to withstand rough handling and weather and inundation by rain and salt water. Packaging shall provide protection for the fabricated materials and appurtenances for storage exposed to arctic weather and moisture for at least one year. Packaging shall be made suitable for lifting by forklift and cable sling. Packing lists shall be securely attached to each crate in a watertight carrier.

D. Supplier shall give Owner and Engineer at least seven days' prior written notice of the date when the Goods will be ready for shipment and the manner of shipment. Such notice will include instructions concerning any special equipment or services required at the point of delivery to unload and care for the packaged WTP equipment. Supplier shall also require the carrier to give Owner and Engineer not less than 24 hours notice of the anticipated time of delivery.

E. Owner may by Change Order direct Supplier to ship to another point of delivery or to accelerate or postpone the delivery period. Owner shall be responsible for additional expenses incurred by Supplier as a result of any such direction including charges for storage, reconditioning, handling, overtime, and insurance.

F. Owner and Engineer may inspect the packaged WTP equipment either prior to shipment, upon delivery, or in both instances for the sole purpose of identifying if the Goods and general verification of quantities in order to provide a basis for payment. Such inspection shall not be construed as final acceptance of any Goods nor construe that such Goods are in conformance with the Specifications. If there are apparent defects in the Goods (through damage or otherwise), Engineer will give prompt written notice thereof to Supplier. Supplier shall, without additional cost to Owner, correct the defect or replace the defective Goods with non-defective Goods.

G. All spare parts shall be handled in a manner to insure delivery in an undamaged condition, in the original protective packaging and tagged with part number, description, and part name.

3.2 EXAMINATION

A. Verify layout and orientation of treatment unit, accessories, and piping connections.

B. Verify that foundation is installed with anchor bolts correctly located.

3.3 INSTALLATION

A. Installing Contractor will assemble packaged water treatment unit in WTP building according to Drawings and manufacturer instructions.

B. Install filter effluent pump, backwash pump, air blower and motor assembly, piping, and appurtenances as indicated and according to manufacturer's instructions.

C. Complete final assembly of any loose components shipped separately from the packaged WTP.

3.4 FIELD QUALITY CONTROL

A. Inspection of Welds: If welds show evidence of leaking, empty tank and repair welds.

B. Pre-operational Check: Before operating system or components, make the following checks:
   1. Remove all pipe shavings and other deleterious materials from tanks, pipes, and mixers.
   2. Vent air from system to assure water in pump.

C. Equipment Acceptance:
   1. Adjust, repair, modify and replace components of system failing to perform and repeat tests.
   2. Installing Contractor will make final adjustments to equipment under direction of Installer.

D. Performance Testing:

1. After field adjustments are completed, test treatment unit and chemical systems under operating conditions continuously for three consecutive days to demonstrate unit compliance with design criteria.
2. Test for influent and effluent color, pH, TOC, iron, manganese, arsenic, turbidity, and total coliform bacteria.
3. Take one sample of influent and effluent at 8:00 AM and 4:00 PM on each of three days for total of six influent and six effluent samples.
4. Conduct sampling in presence of Engineer or Owner.
5. Perform tests according to Standard Methods for the Examination of Water and Wastewater.
6. Contractor shall have all mechanical and electrical connections tested prior to connecting to the plant piping system.
7. Determine calibration curves for each pumping unit by plotting capacity versus six different stroke settings between 0 and 100 percent at 10 percent increments.
8. Operate each chemical feed system on clear water for continuous period of four hours, under supervision of Installer. Demonstrate system control functions and alarms. Utilizing signal generator, demonstrate proper operation of pump pacing.
9. Hydrostatically test system piping for leaks at 150 psig.

E. Equipment Acceptance: If water treatment system does not meet specified performance criteria within 60 days, modify system to meet performance criteria and rerun performance test; equipment modifications are subject to approval of Engineer.

3.5 MANUFACTURER'S SERVICES

A. Manufacturer's Representative: Present at Site for minimum person-days listed below, assumed to occur in two trips, travel time excluded:
   1. 2 days at construction site for pre-start up inspection and media installation
   2. 10 days at construction site for start-up/commissioning/training
   3. The trip durations listed are onsite time and do not account for travel time to the site.
   4. Additional site visits as needed to ensure complete, functional system.

B. The Engineer and Contractor shall provide two weeks written notice to the Manufacturer of the date that the plant is ready for start up and shall ensure that all necessary hook ups, power supplies, chemicals and laboratory equipment are available prior to the manufacturer's representative arriving on site.

C. The representative shall inspect the plant and certify in writing that it has been installed in accordance with the manufacturers' recommendations.

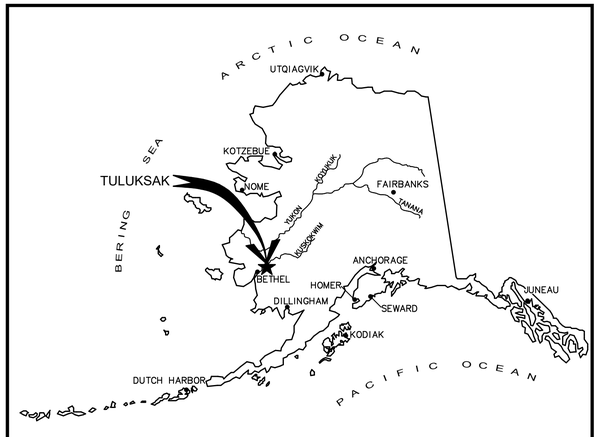
END OF SECTION 460713

TULUKSAK NATIVE COMMUNITY

TULUKSAK WTP AND WASHETERIA

VSW # 21-VSW-TLT-018

In Cooperation with the State of Alaska
Department of Environmental Conservation
VILLAGE SAFE WATER PROGRAM



LOCATION MAP

CRW ENGINEERING GROUP, LLC

K+A designstudios
ARCHITECTURE + PLANNING

CONSULTANT

STATUS:
WTP EQUIPMENT PROCUREMENT

DATE:
NOVEMBER 2021

VSW PROJECT ENGINEER DOUG POAGE, PE

FINAL DESIGN (DATE) _____

ADEC APPROVAL (DATE) _____

CONSTRUCTION PERIOD (DATE) _____ (TO) _____

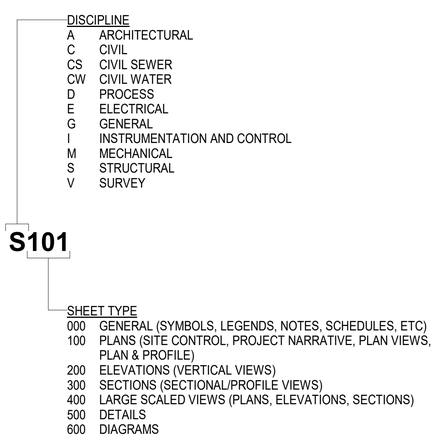
PROJECT STATUS

File: J:\JobsData\31308.00 Tuluksak Washeteria and WTP Design\00 REVIT 2022\00 Central Revit Model\31308.00-GENERAL-R22.rvt

ABBREVIATIONS

@	AT
%	PERCENT
A	AMMETER, AMPERE, AMBER
AB	ANCHOR BOLT, AGGREGATE BASE
AC	ASBESTOS CONCRETE, ALTERNATING CURRENT
AD	ANALYZER DRAINAGE
ADDL	ADDITIONAL
AF	AMPERE FRAME
AL, ALUM	ALUMINUM
ALTN	ALTERNATE
AM	AUTO-MANUAL
APPROX	APPROXIMATE
AS	AIR SCRUB SUPPLY
AUTO	AUTOMATIC
B	BOTTOM
BFV	BUTTERFLY VALVE
BLDG	BUILDING
BM	BENCH MARK, BEAM
BOT	BOTTOM
BUR	BURIED
BWS	BACKWASH WATER SUPPLY
BWW	BACKWASH WATER WASTE
CA	CITRIC ACID
CAP	CORRUGATED ALUMINUM PIPE
CB	CIRCUIT BREAKER
CD	CHEMICAL DRAIN
CF	CUBIC FOOT (FEET)
CI	CONTINUOUS INSULATION, CAST IRON
CISP	CAST IRON SOIL PIPE
CJ	CONSTRUCTION JOINT
CL	CENTERLINE, CLASS
CMP	CORRUGATED METAL PIPE
COL	COLUMN
CONC	CONCRETE, CONCENTRIC
CONT	CONTINUOUS, CONTINUED, CONTINUATION
CP	CONTROL POINT
CPEP	CORRUGATED POLYETHYLENE PIPE
CP-X	CONTROL PANEL NO. X
CTR	CENTER, CENTERED
CU	COPPER
CY	CUBIC YARDS
D	DRAIN, DEEP, DEPTH
DC	DIRECT CURRENT
DI	DUCTILE IRON
DIA	DIAMETER
DIM	DIMENSION
DN	DOWN
DT	DETENTION TANK
DWG	DRAWING
E	EAST, EASTING
EA	EACH
EF	EACH FACE, EXHAUST FAN, ELECTROFUSION
EL, ELEV	ELEVATION
ELL	ELBOW
ELEC	ELECTRIC, ELECTRICAL
ENC	ENCASED, CONCRETE
EOG	EDGE OF GRAVEL
EOP	EDGE OF PAVEMENT
EW	EACH WAY
EXP	EXPOSED, INTERIOR
EXST, EXIST	EXISTING
FD	FLOOR DRAIN
FF	FINISHED FLOOR
FG	FINISH GRADE
FL	FLANGED
FLUOR	FLUORESCENT
FRP	FIBERGLASS REINFORCED PLASTIC
FT	FOOT (FEET)
FTGS	FOOTINGS
FTW	FILTER TO WASTE
FW	FIRE WATER
G	GREEN, GROUND, GRAVITY
GA	GAUGE
GAL	GALLONS
GALV	GALVANIZED
GB	GRADE BREAK
GFD	GALLONS PER SQUARE FOOT PER DAY
GND	GROUND
GPM	GALLONS PER MINUTE
GR	GROOVED
GRTG	GRATING
H	HYDROSTATIC
HD	HUB DRAIN
HDP	HIGH DEMAND PUMP
HDPE	HIGH DENSITY POLYETHYLENE
HDG	HOT-DIPPED GALVANIZED
HH	HAND HOLE
HMA	HOT MIX ASPHALT
HOA	HAND-OFF-AUTO
HOR	HAND-OFF-REMOTE
HORIZ	HORIZONTAL
HPT	HYDROPNEUMATIC TANK
HPW	HIGH PRESSURE WATER
HS	HAND SWITCH
HT	HEIGHT
I&C	INSTRUMENTATION & CONTROL
ID	INSIDE DIAMETER
IE	INVERT ELEVATION
IN.	INCH
J, J-BOX	JUNCTION BOX
JT	JOINT
LB	POUND
LF	LINEAR FEET
LOS	LOCKOUT STOP
LR	LOCAL-REMOTE
MA	MANUAL-AUTO
MAX	MAXIMUM
MC	MODULATE-CLOSE
MCC	MOTOR CONTROL CENTER
ME	MATCH EXISTING
MECH	MECHANICAL
MFR	MANUFACTURER
MG/L	MILLIGRAMS PER LITER
MGD	MILLION GALLONS PER DAY
MH	MANHOLE
MIN	MINIMUM
MJ	MECHANICAL JOINT
MMF	MIXED MEDIA FILTER
MO	MOTOR OPERATOR
MS	MOTOR STARTER
MSC	MANUFACTURER SUPPLIED CABLE
MT	MOUNT
N	NORTH, NEUTRAL, NORTHING
N/A	NOT APPLICABLE
NC	NORMALLY CLOSED
NH	NO-HUB
NE	NORTHEAST
NF	TEST PER APPROBATE NFPA STANDARD
NIC	NOT IN CONTRACT
NO.	NUMBER, NUMBERING, NORMALLY OPEN
NPT	NATIONAL PIPE THREAD
NTS	NOT TO SCALE
NW	NORTHWEST
OAE	OR APPROVED EQUAL
O.C.	ON CENTER
OC	OPEN-CLOSE (D)
OCA	OPEN-CLOSE-AUTO
OCR	OPEN-CLOSE-REMOTE
OD	OUTSIDE DIAMETER
OF	OVERFLOW
OL	OVERLOAD RELAY
OO	ON-OFF
OOA	ON-OFF-AUTO
OOR	ON-OFF-REMOTE
OPNG	OPENING
OSC	OPEN-STOP-CLOSE
P	PUMP
PP	PRESSURE PUMP
P&P	PLAN AND PROFILE
PC	POINT OF CURVATURE, TEST PER UNIFORM PLUMBING CODE
PE	PLAIN END, POLYETHYLENE
PERF	PERFORATED
pH	HYDROGEN ION CONCENTRATION
PI	POINT OF INTERSECTION
PL	PLATE
PJF	PANEL
PNL	PREMOLDED JOINT FILLER
PO	PUSH ON
PPE	POLYPROPYLENE
PPM	PARTS PER MILLION
PSF	POUNDS PER SQUARE FOOT
PSI	POUNDS PER SQUARE INCH
PSIG	POUNDS PER SQUARE INCH, GAUGE
PT	POINT OF TANGENCY
PVC	POLYVINYL CHLORIDE
PWR	POTABLE WATER
PWR	POWER
R	RADIUS, RED
RCPT	RECEPTACLE
RDCR	REDUCER
REINF	REINFORCED, REINFORCING, REINFORCE
REQD	REQUIRED
RJ	RESTRAINED JOINT
RP	RADIUS POINT
RT	RIGHT
RW	RAW WATER
S	SOUTH
SA	SAMPLE
SCCR	SHORT CIRCUIT CURRENT RATING
SCHD	SCHEDULE
SD	STORM DRAIN
SDR	STANDARD DIMENSION RATIO
SE	SOUTHEAST
SIM	SIMILAR
SO	SOLDERED
SS	SOFT STARTER, SANITARY SEWER, START-STOP, SERVICE SINK, STAINLESS STEEL
STA	STATION
STD	STANDARD
SW	SOLVENT WELD, SOUTHWEST
T	THERMOSTAT, TOP
TD	TANK DRAW
TEMP	TEMPORARY
TESC	TEMPORARY EROSION AND SEDIMENT CONTROL
TF	TANK FILL
TH	THREADED
THK	THICK
THRU	THROUGH
TJB	TERMINAL JUNCTION BOX
TK	CHEMICAL TANK
TOPO	TOPOGRAPHY
TURB	TURBIDITY
TW	TREATED WATER
TYP	TYPICAL
UH	UNIT HEATER
UON	UNLESS OTHERWISE NOTED
UVT	ULTRAVIOLET TRANSMITTANCE
V	VOLTMETER, VOLT, VENT
VERT	VERTICAL
VFD	VARIABLE FREQUENCY DRIVE
VIB	VIBRATION
W	WELDED, WEST, WATER
WI	WIDTH, WIDE, WATT
W/	WITH
W/OUT	WITHOUT
WC	WATER CLOSET
WH	WATER HEATER
WP	WEATHERPROOF
WST	WATER STORAGE TANK
WT	WEIGHT
WTP	WATER TREATMENT PLANT
WTP/W	WATER TREATMENT PLANT & WASHETERIA
WW	WASTEWATER
XFMR	TRANSFORMER

SHEET NAMING CONVENTION



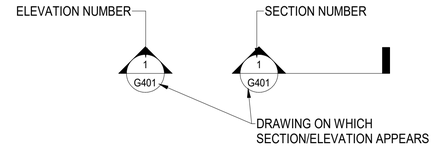
GENERAL NOTES

1. GEOTECHNICAL INFORMATION WILL BE PROVIDED AT 65% SUBMITTAL.
2. SUBMITTALS, REQUEST FOR INFORMATION (RFI), CHANGE ORDERS, ETC., SHALL BE COMPLETED IN ACCORDANCE WITH THE SPECIFICATIONS FOR THIS PROJECT.
3. ALL CALLOUTS AND NOTES ARE DIRECTED TO THE CONTRACTOR UNLESS SPECIFICALLY STATED OTHERWISE.
4. EXISTING PIPING, EQUIPMENT, AND TOPOGRAPHY ARE SHOWN SCREENED AND/OR LIGHTENED. NEW PIPING, EQUIPMENT, STRUCTURES, AND FINISH GRADE IS SHOWN HEAVY LINED.
5. PROTECT ALL EXISTING UTILITIES AND FACILITIES DURING CONSTRUCTION. USE CARE WHEN EXCAVATING ADJACENT TO EXISTING UTILITIES AND PROVIDE UTILITY SUPPORT AS NEEDED TO AVOID DISPLACEMENT OR MOVEMENT OF UTILITY. COORDINATE WITH, AND MEET ALL REQUIREMENTS OF THE APPLICABLE UTILITY WHILE WORKING AROUND OR NEAR THEIR FACILITIES.
6. LAY PIPE TO CONTINUOUS UPWARD OR DOWNWARD SLOPE BETWEEN AIR RELEASE STATIONS AND LOW POINTS WHILE MAINTAINING MINIMUM COVER, MINIMUM CLEARANCE WITH EXISTING UTILITIES, AND ALLOWING SUFFICIENT CLEARANCE AT HIGH POINTS FOR AIR RELEASE VALVE VAULTS TO BE INSTALLED AT GRADE. DO NOT EXCEED JOINT DEFLECTION ALLOWANCES OR PIPE EBNDING ALLOWANCES LISTED IN THE SPECIFICATIONS.
7. NO WORK SHALL BE DONE UNTIL ALL NECESSARY PERMITS HAVE BEEN RECEIVED FROM THE AGENCIES HAVING AUTHORITY.

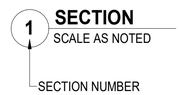
GENERAL SYMBOLOGY

SECTION IDENTIFICATION

(1) THE SECTION IS CUT ON A DRAWING:

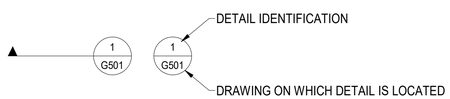


(2) ON DRAWING G401 THIS SECTION IS IDENTIFIED AS:



DETAIL IDENTIFICATION

(1) THE DETAIL IS CUT OR IDENTIFIED ON A DRAWING AS:



(2) ON DRAWING G501 THIS DETAIL IS IDENTIFIED AS:

Alaska Department of Environmental Conservation
Division of Water

Village Safe Water Program
555 Cordova Street 4th Floor
Anchorage, Alaska 99501

NOT FOR CONSTRUCTION

CRW ENGINEERING GROUP LLC
3940 ARCTIC BLVD. SUITE 300
ANCHORAGE, ALASKA 99503
PHONE: (907) 562-3252
#AECL882-AK

TULUKSAK WTP-W

GENERAL ABBREVIATIONS AND NOTES

65% DESIGN

NO.	REVISION	BY	DATE

Plot Date: Oct 2021
Designed: RAV
Drawn: MEH
Approved: RAV

Sheet No.
G003

File: J:\Jobs\Data\31308.00 Tuluksak Washeteria and WTP Design\00 REVIT 2022\00 Central Revit Model\31308.00-GENERAL-R22.rvt Plot Date: 10/11/2021 3:36:46 PM

GENERAL DESIGN CRITERIA

POPULATION

2020 (ALASKA DIVISION OF LABOR ESTIMATE)	353
2021 (1% GROWTH)	357
2041 (1% GROWTH)	435

CLIMATE INFORMATION

ENVIRONMENTAL DATA SOURCE: WESTERN REGIONAL CLIMATE CENTER (HTTP://WWW.WRCC.DRI.EDU)
TEMPERATURE AND PRECIPITATION DATA FROM 1949 - 1998

TEMPERATURE DATA (BETHEL)

MONTH	AVG. PRECIP. (INCHES)	AVG. MONTHLY MAX TEMP (°F)	AVG. MONTHLY MIN TEMP (°F)	RECORD LOW TEMP (°F)
JAN	0.77	12	-0.8	-17.3
FEB	0.71	15.4	1.4	-13.2
MAR	0.75	20.9	4.9	-3.1
APR	0.72	33.1	17.2	8.3
MAY	0.95	49.6	32.6	31
JUN	1.55	59.9	43.1	45.1
JUL	2.26	62.6	48	50.5
AUG	3.35	59.7	46.6	49
SEP	2.5	52.1	38.6	37.6
OCT	1.47	35.8	24.4	20.9
NOV	1.29	23.4	11.3	2.8
DEC	1.06	14.1	1.2	-10.7

WATER SYSTEM DESIGN CRITERIA

WATER DEMAND

	2021	2041 NO PIPES	2041 PIPED	
WATERING POINT/SELF HAUL	40	320	34050	GPD
WTP BACKWASH	2000	2000	4000	GPD
WASHETERIA	400	770	770	GPD
SCHOOL & TEACHER HOUSING	2710	3260	3260	GPD
CLINIC, TEEN CENTER, STORE, PROJECT CAMP	0	750	750	GPD
TOTAL AVERAGE DAY DEMAND (ADD)	5150	7100	42,830	GPD

RAW WATER MAIN

PIPE DIAMETER	2-INCH
PIPE TYPE	HDPE SDR 11
FREEZE PROTECTION	PIPE INSULATION AND GLYCOL HEAT TRACE

WELL PUMPS

TYPE	SUBMERSIBLE PUMP
DUTY POINT	NOMINAL 25 GPM, 52 FT TDH
MOTOR, HP	1.5
QUANTITY	1

RAW WATER QUALITY

RAW WATER SOURCE: GROUNDWATER

SAMPLES COLLECTED FROM BOTH WELLS IN 2006 FOR PILOT STUDY

ANALYTE	WELL #1	WELL #2 (FUTURE)	AVERAGE	TREATMENT GOAL
DISSOLVED ORGANIC CARBON, TOTAL (MG/L)	44.8	45.7	45.3	
ORGANIC CARBON, TOTAL (MG/L)	47.1	48	47.6	46.3% REMOVAL
UV254 (1/CM)	0.054	0.09	0.072	-
TURBIDITY (NTU)	0.85	1.99	1.42	<0.1
COLOR, TRUE (PCU)	65	55	60	<10
ALKALINITY (MG/L)	108	108	108	-
HARDNESS (MG/L)	106	104	105	-
pH	7.06	6.98	7.02	6.5 - 8.5
CALCIUM (MG/L)	36.1	29.9	33	-
MAGNESIUM (MG/L)	3.85	5.08	4.47	-
ARSENIC (UG/L)	36.3	49.9	43.1	<5
IRON (MG/L)	6.99	8.41	7.70	<0.2
MANGANESE (MG/L)	0.331	0.326	0.329	<0.03
TTHM POTENTIAL (UG/L)	69.7	140	104.9	<60
HAA5 POTENTIAL (UG/L)	60.1	147	103.6	<40

WATER TREATMENT CRITERIA

WATER TREATMENT FLOW RATE	20	GPM
TARGET RAW WATER TEMP	50	°F
FLOCCULATION CHAMBER TIME	40	MIN
FLOCCULATION STAGE	2	
FLOCCULATION VELOCITY GRADIENT	20-75	/SEC
FILTER MEDIA		
NUMBER OF FILTERS	2	
FILTER LOADING RATE	2	GPM/SF (MAXIMUM)
FILTER BACKWASH RATE	180	GPM/FILTER (ESTIMATED)
FILTER AIR SCOUR RATE	2	CFM/SF

WATER TREATMENT CHEMICALS

OXIDANT	1%	POTASSIUM PERMANGANATE SOLUTION
ESTIMATED DOSE	5	MG/L
REACTION TIME	40	MIN
COAGULANT/POLYMER BLEND	80%	NALCO 8185
	20%	MAGNAFLOC LT27
ESTIMATED DOSE	10	MG/L
DISINFECTANT	CALCIUM HYPOCHLORITE	
ESTIMATED DOSE	1.5	MG/L

WATER DISTRIBUTION PUMPS

TYPE	VERTICAL CENTRIFUGAL
DUTY POINT	45 GPM, 204 TDH
MOTOR, HP	5
QUANTITY	2

WATER STORAGE TANK

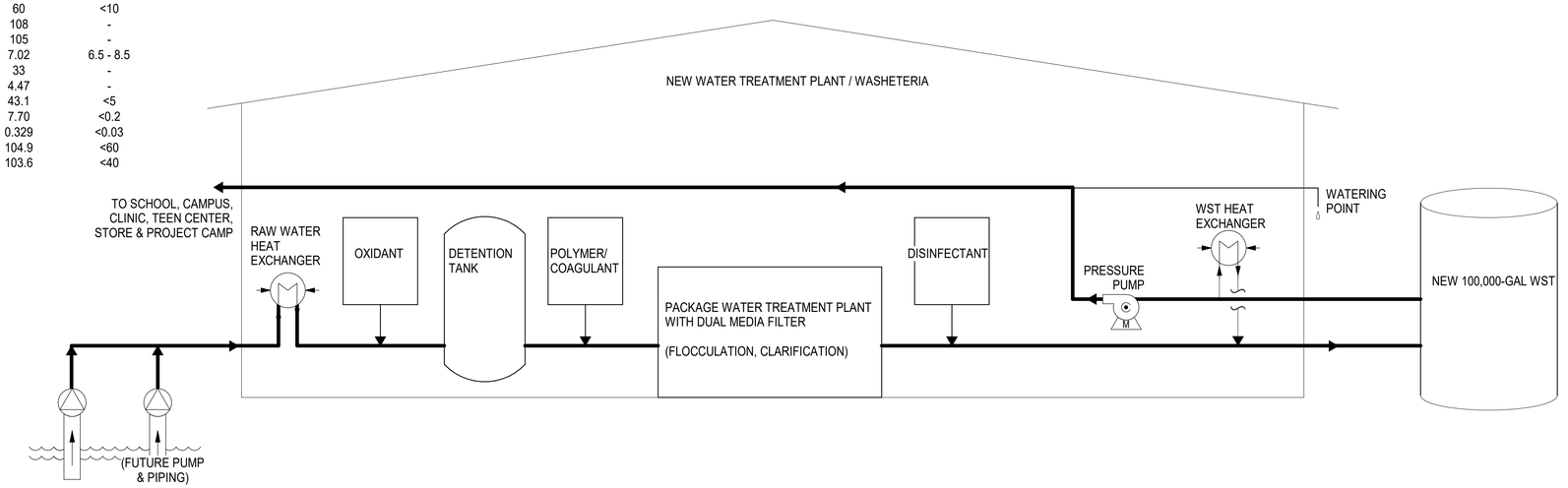
NOMINAL TANK VOLUME	100,000	GAL
USABLE TANK VOLUME	100,000	GAL
MINIMUM VOLUME FOR BACKWASH	1800	GAL
DAYS OF STORAGE AT ADD	14.1	
FLOOR ELEVATION	32.3	
OVERFLOW ELEVATION	55.3	
FILL LINE	2x10-INCH ARCTIC PIPE	
DRAW LINE	6x15-INCH ARCTIC PIPE	
FILL/DRAW LINES FREEZE PROTECTION	CIRCULATION OF HEATED WATER AND ELECTRIC HEAT TRACE	

WATER DISTRIBUTION PIPING

PIPE DIAMETER	6-INCH SUPPLY
PIPE TYPE	HDPE SDR 11
FREEZE PROTECTION	PIPE INSULATION, AND GLYCOL HEAT TRACE
NUMBER OF SERVICES	5
DISTRIBUTION LENGTH	1470 LF

WASTEWATER LIFT STATION

PEAK HOURLY FLOW	220 GPM
NUMBER OF PUMPS	2
OUTPUT PER PUMP	250 GPM
WET WELL CAPACITY	660 GAL



1 WATER SYSTEM SCHEMATIC
SCALE: NTS

Alaska Department of Environmental Conservation
Division of Water
Village Safe Water Program
555 Cordova Street 4th Floor
Anchorage, Alaska 99501

NOT FOR CONSTRUCTION

CRW ENGINEERING GROUP LLC
3940 ARCTIC BLVD, SUITE 300
ANCHORAGE, ALASKA 99503
PHONE: (907) 562-3252
#AECL882-AK

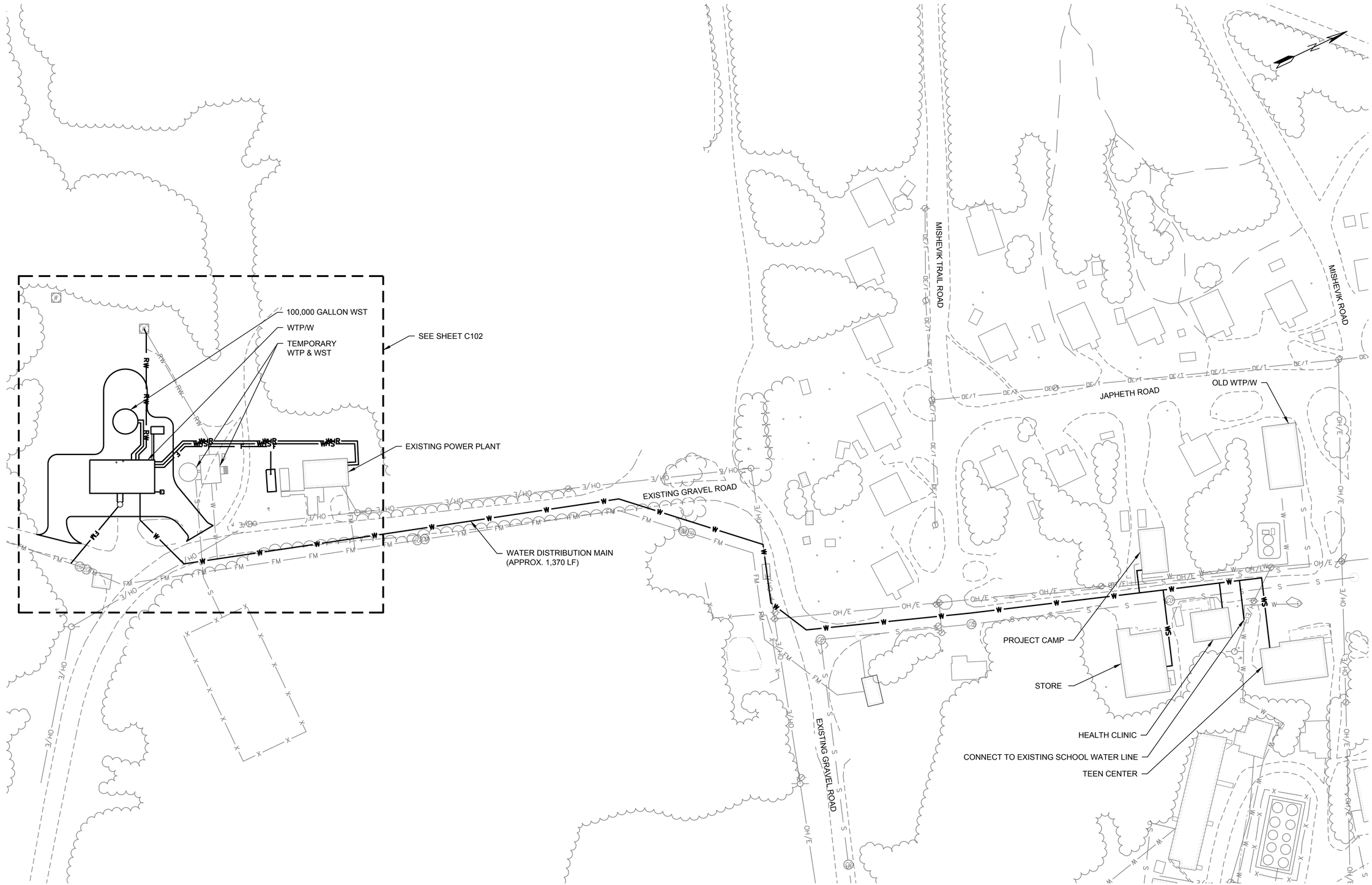
TULUKSAK WTP-W
DESIGN CRITERIA
65% DESIGN

NO.	REVISION	BY	DATE

Plot Date: Oct 2021
Designed: RAV
Drawn: CRM
Approved: RAV

Sheet No. G004

File: J:\Jobs\Data\31308.00 Tuluksak Washeteria and WTP Design\00 REVIT 2022\00 Central Revit Model\31308.00-GENERAL-R22.rvt Plot Date: 11/4/2021 9:48:17 AM



Alaska Department of Environmental Conservation
Division of Water

Village Safe Water Program
555 Cordova Street 4th Floor
Anchorage, Alaska 99501

NOT FOR CONSTRUCTION

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3940 ARCTIC BLVD., SUITE 300
ANCHORAGE, ALASKA 99503
PHONE: (907) 562-3252
#AECL-882-AK

TULUKSAK WTP-W

PROJECT LAYOUT PLAN

65% DESIGN

NO.	REVISION	BY	DATE

Plot Date	OCT 2021
Designed	MH
Drawn	SJ
Approved	JS

Sheet No.
C101

File: J:\Jobs\Data\31308.00 Tuluksak Washeteria And WTP Design\00 CADD 2019\01 Working Set\01 Civil\31308.00 - Project Layout Plan.dwg Plot Date: 10/11/2021 12:01 PM

EXISTING WELL #2
EXISTING WELL #1
BURIED RAW WATER LINE
FILL LIMITS, TYP.
FUTURE 100,000 GALLON WST
REMOVE AND DISPOSE OF EXISTING FENCING (APPROX. 300 LF)
100,000 GALLON WST ELEV = 40.0'
ABOVE GRADE WST FILL AND DRAW PIPING
EDGE OF GRAVEL PAD, TYP.
TEMPORARY ABOVE GRADE RAW WATER LINE
STANDBY GENERATOR
200' WELL SEPARATION RADIUS (TYP. OF 2)
EXISTING GRAVEL ROAD
BURIED FUEL LINES
12,000 GALLON DOUBLE-WALL FUEL TANK
EXISTING FUEL TANK
BURIED WASTE HEAT SUPPLY AND RETURN LINES
EXISTING POWER PLANT
WTP/W FF ELEV = 40.0'
RAMP AND STAIR ACCESS
COMMUNITY WATERING POINT
EXISTING FM GLYCOL HEAT TRACE LINE
TEMPORARY WTP
TEMPORARY WST
WTP/W SEWER SERVICE
FUTURE WATER DISTRIBUTION LINE, TYP.
CUT LIMITS, TYP.
PUMP STATION
BOLLARD, TYP.
TO NEW COMMUNITY LAGOON
EXISTING GRAVEL ROAD
BURIED WTP/W FORCE MAIN
EXISTING FORCE MAIN
EXISTING GRAVEL ROAD
BURIED WATER DISTRIBUTION SUPPLY AND RETURN

20' 0 20' 40'

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TULUKSAK WTP-W

SITE PLAN

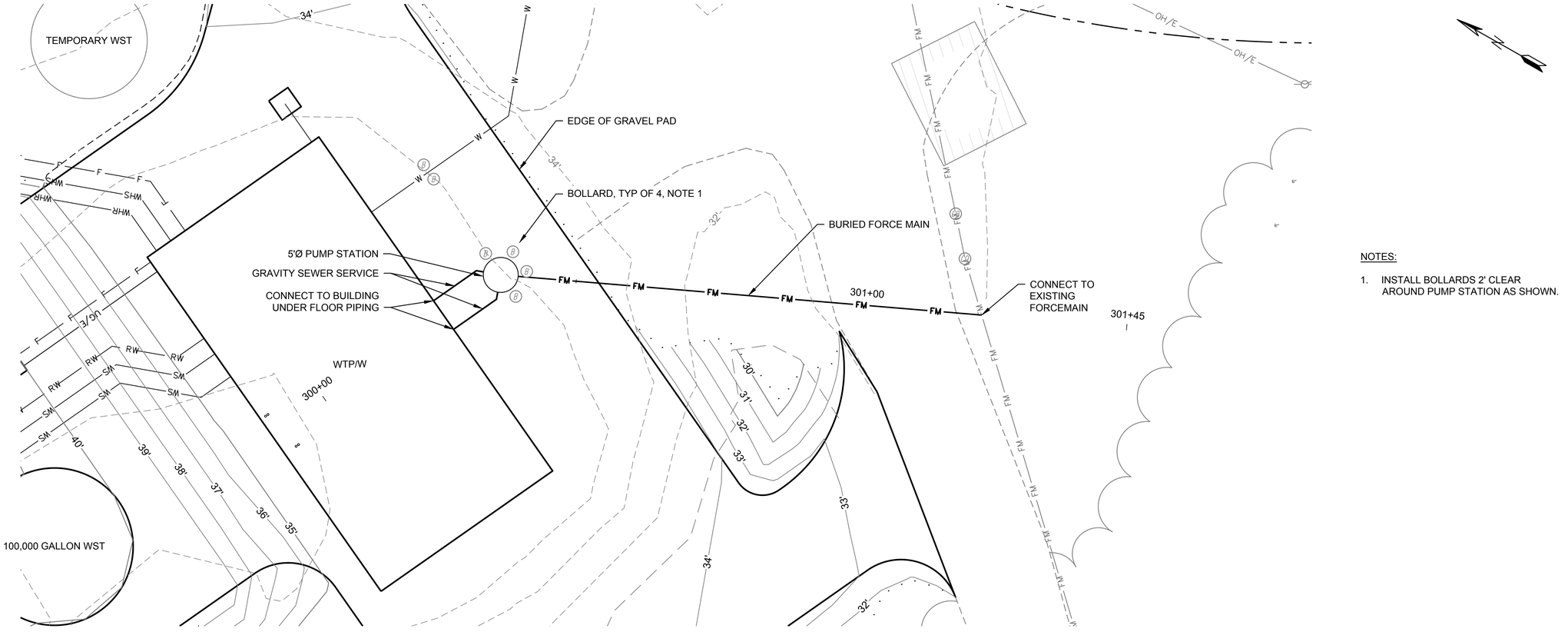
65% DESIGN

NO.	REVISION	BY	DATE

Plot Date: OCT 2021
Designed: MH
Drawn: SJ
Approved: JS

Sheet No. C102

File: J:\Jobs\Data\31308.00 Tuluksak Washeteria And WTP Design\00 CADD 2019\01 Working Set\01 Civil\31308.00 - Site Plan.dwg Plot Date: 10/11/2021 12:02 PM



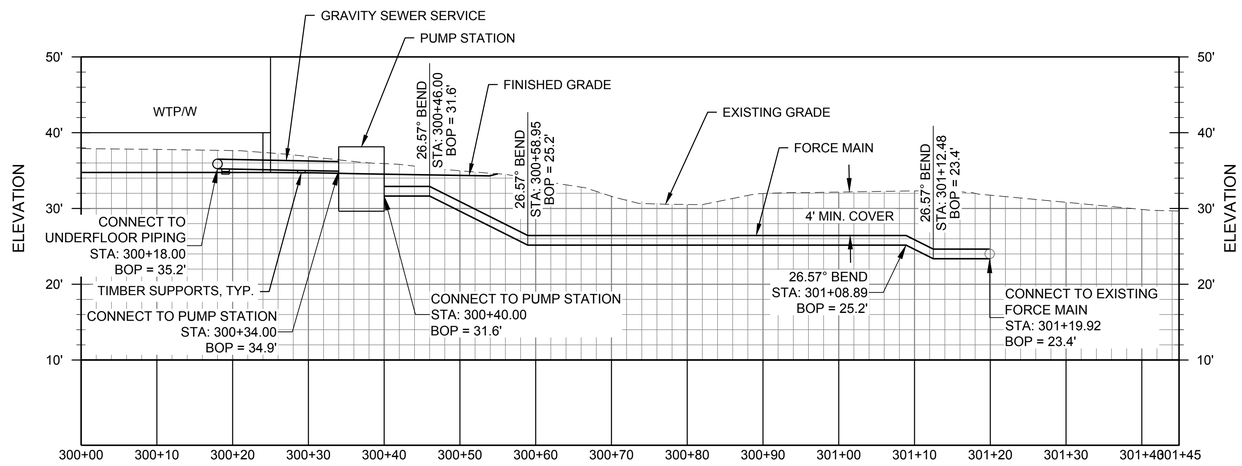
NOTES:

1. INSTALL BOLLARDS 2' CLEAR AROUND PUMP STATION AS SHOWN.

1 SEWER SERVICE PLAN

HORZ. SCALE 1" = 10'

10' 0 10' 20'



2 SEWER SERVICE PROFILE

HORZ. SCALE 1" = 10'
VERT. SCALE 1" = 10'

10' 0 10' 20'

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SEWER SERVICE PLAN & PROFILE

65% DESIGN

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Plot Date: OCT 2021
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Approved: JS

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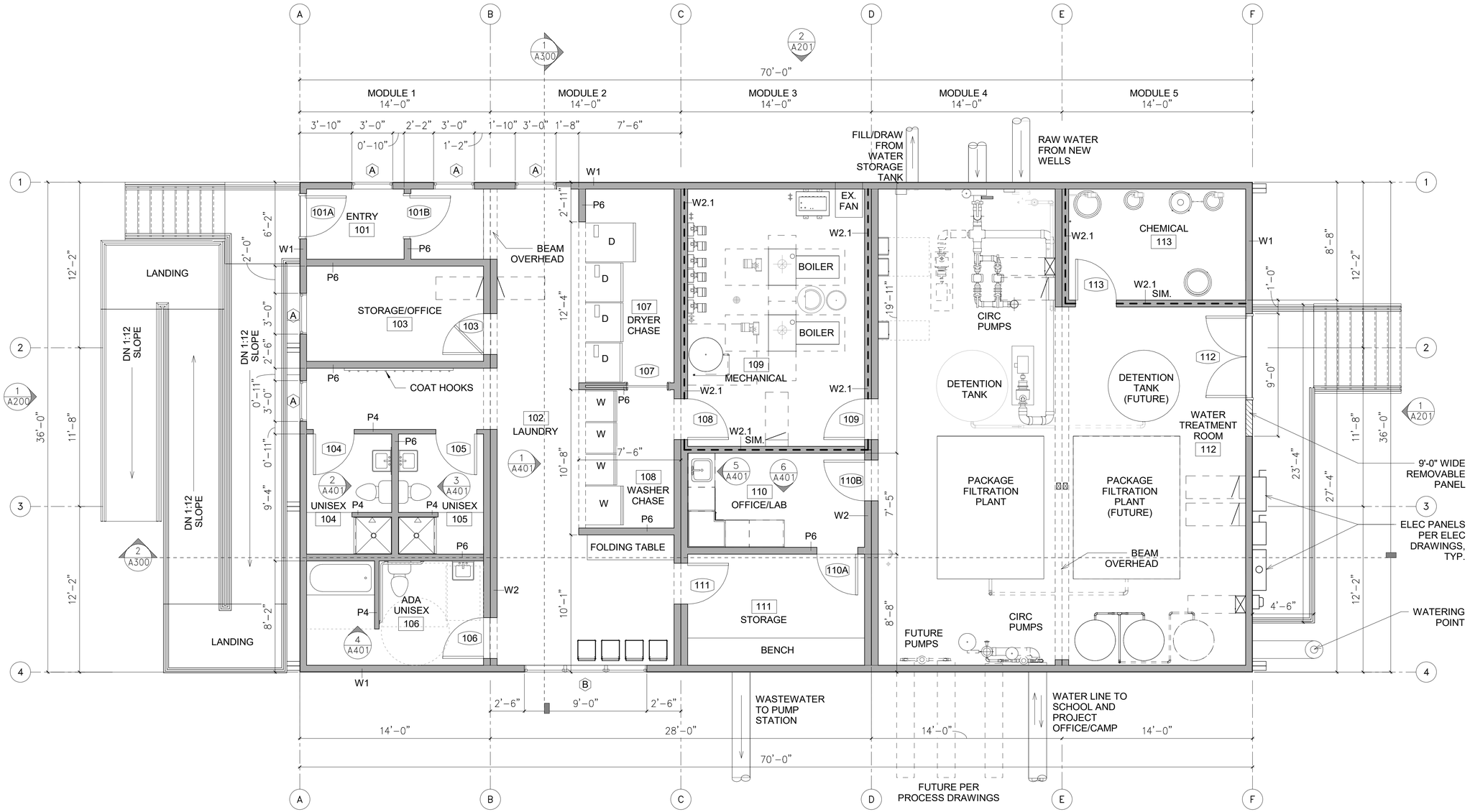
File: J:\Jobs\Data\31308.00 Tuluksak Washeteria And WTP Design\00 CADD 2019\01 Working Set\01 Civil\31308.00 - Sewer P&P.dwg Plot Date: 10/11/2021 12:09 PM



1 FLOOR PLAN

GRAPHIC SCALE: 1" 3" 5" 2" 4" 6"

REF.N W E S

2 A200

Plot Date: 10/6/2021 4:32:47 PM

File: 2151

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FLOOR PLAN

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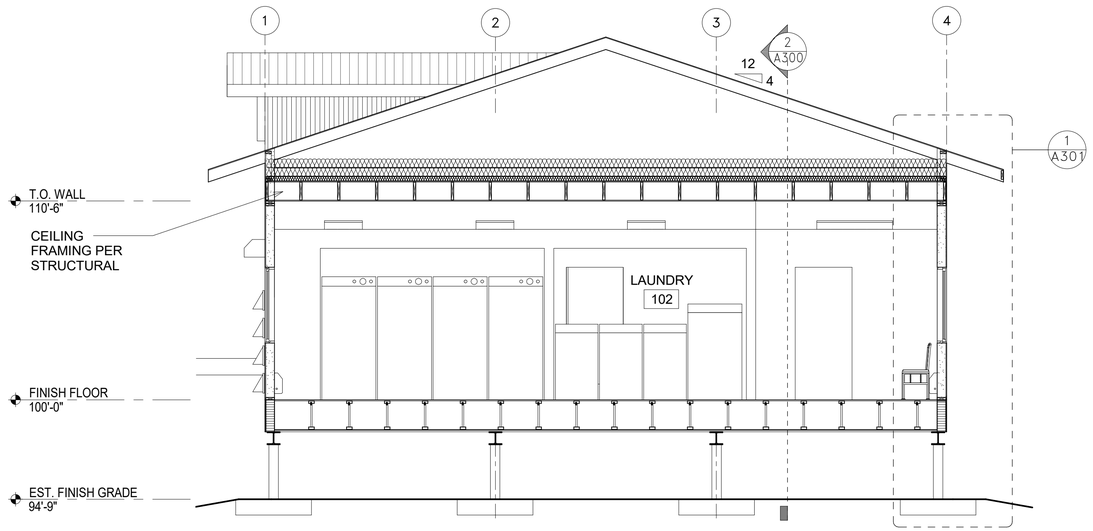
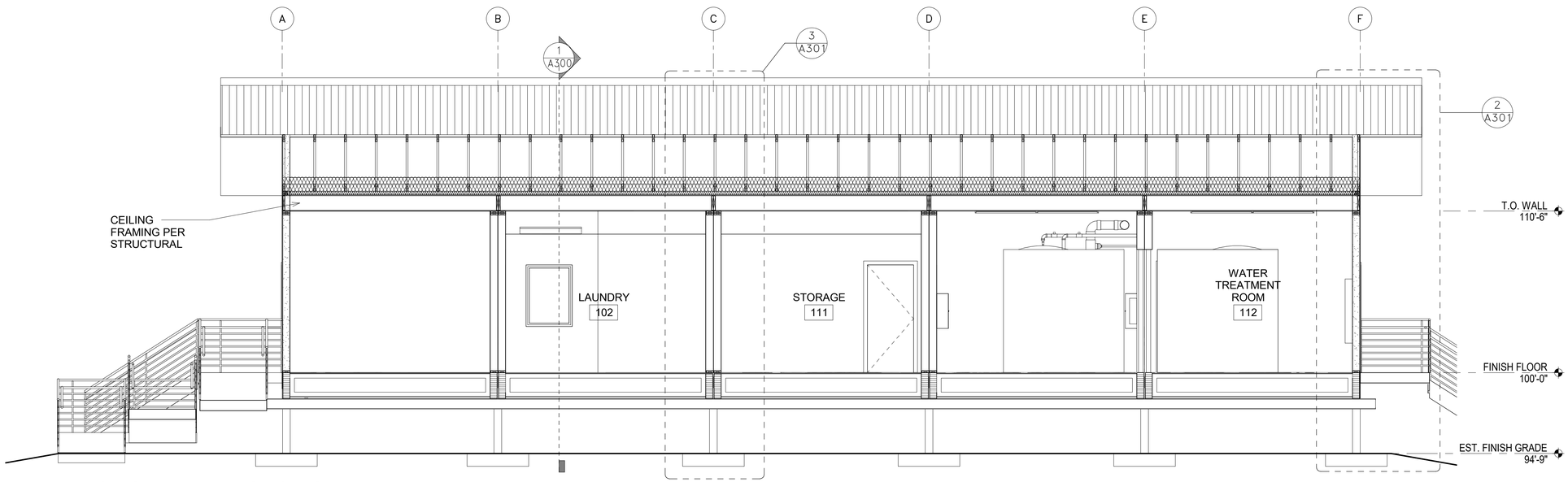
A101



1 CROSS SECTION

GRAPHIC SCALE: 2" 4" 6" / 1" 3" 5"



2 LONGITUDINAL SECTION

GRAPHIC SCALE: 2" 4" 6" / 1" 3" 5"

Plot Date: 10/6/2021 4:32:50 PM

File: 2151

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BUILDING SECTIONS

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A300

INSTRUMENTATION, SYSTEMS, AND AUTOMATION SOCIETY (ISA) TAG IDENTIFICATION LETTERS

	FIRST LETTER		SUCCEEDING LETTERS		
LETTER	**MEASURED OR INITIATING VARIABLE**	**MODIFIER**	**READOUT OR PASSIVE FUNCTION**	**OUTPUT FUNCTION**	**MODIFIER**
A	ANALYSIS		ALARM		USER'S CHOICE
B	BURNER, COMBUSTION		USER'S CHOICE	USER'S CHOICE	
C	USER'S CHOICE			CONTROL	
D	USER'S CHOICE	DIFFERENTIAL			
E	VOLTAGE		SENSOR (PRIMARY ELEMENT)		
F	FLOW RATE	RATIO OR FRACTION			
G	GAS		GLASS, VIEWING DEVICE		
H	HAND (MANUAL)				HIGH
I	CURRENT (ELECTRICAL)		INDICATE		
J	POWER	SCAN			
K	TIME OR SCHEDULE	TIME, RATE OF CHANGE		CONTROL STATION	
L	LEVEL		LIGHT		LOW
M	MOISTURE	MOMENTARY			MIDDLE, INTERMEDIATE
O	USER'S CHOICE		ORIFICE, RESTRICTION		
P	PRESSURE (OR VACUUM)		POINT (TEST) CONNECTION		
Q	QUANTITY	INTEGRATE, TOTALIZE			
R	RADIATION		RECORD		
S	SPEED OR FREQUENCY	SAFETY		SWITCH	
T	TEMPERATURE			TRANSMIT	
U	MULTIVARIABLE		MULTIFUNCTION	MULTIFUNCTION	MULTIFUNCTION
V	VIBRATION			VALVE, DAMPER, LOOUVER	
W	WEIGHT OR FORCE		WELL		
X	UNCLASSIFIED	X-AXIS	UNCLASSIFIED	UNCLASSIFIED	UNCLASSIFIED
Y	EVENT, STATE, OR PRESENCE	Y-AXIS		RELAY, COMPUTE, CONVERT	
Z	POSITION OR DIMENSION	Z-AXIS		DRIVER, ACTUATOR, UNCLASSIFIED FINAL CONTROL ELEMENT	

* DESIGNATES PACKAGE WTP EQUIPMENT. SEE SECTION 46 07 13, PACKAGED WATER TREATMENT EQUIPMENT FOR DETAILS

VALVE SYMBOLS

- AIR RELEASE VALVE
- BACKFLOW PREVENTER
- BALL VALVE (NORMALLY OPEN)
- BALL VALVE (NORMALLY CLOSED)
- BALL VALVE - 3 WAY
- BUTTERFLY VALVE
- CHECK VALVE - PISTON/BALL TYPE
- CHECK VALVE - SWING TYPE
- CONTROL VALVE PNEUMATIC ACTUATOR
- CONTROL / SEAT VALVE (GENERIC)
- CONTROL VALVE (BUTTERFLY TYPE)
- GATE VALVE OR MISCELLANEOUS (NORMALLY OPEN)
- GATE VALVE OR MISCELLANEOUS (NORMALLY CLOSED)
- PRESSURE REDUCING VALVE (REGULATOR)
- PRESSURE REDUCING VALVE (REGULATOR) WITH GAUGE
- RELIEF VALVE - SAFETY
- RELIEF VALVE - VACUUM
- 2 WAY SOLENOID VALVE

OPERATOR SYMBOLS

- HAND VALVE HANDLE
- MOTORIZED VALVE ACTUATOR
- SOLENOID ON ACTUATOR

TAGGING

- DIRECTIONAL ARROW
- FLOW ARROW
- LINE SIZE
- LINE BREAK
- SLOPE DIRECTION
- VALVE/EQUIPMENT TAG (ANGLED LINE EXTENSION)
- ITEM OR EQUIPMENT TAG

PUMP SYMBOLS

- DOSING PUMP
- GENERIC PUMP
- CENTRIFUGAL PUMP
- METERING PUMP
- VERTICAL PUMP

TYPICAL SYMBOLS

- AIR GAP
- AIR RECEIVER/VESSEL
- CALIBRATION COLUMN
- CAPPED OR PLUGGED CONNECTION (GENERIC)
- CHEMICAL STORAGE PALLET OR TOTE
- GRAVITY/HUB DRAIN
- HEAT EXCHANGER
- OPEN TANK
- PULSATION DAMPENER
- SAMPLE TAP
- STATIC MIXER
- STREAMING CURRENT DETECTOR
- TANK MIXER
- TOTE - BOTTOM SINGLE
- VENT
- "Y" STRAINER

INSTRUMENT FUNCTION SYMBOLS

- FIELD MOUNTED DEVICE
- PANEL FACE MOUNTED DEVICE
- INSIDE OF PANEL MOUNTED DEVICE
- DEVICE MOUNTED ON AUXILIARY PANEL FACE
- DEVICE MOUNTED INSIDE OF AUXILIARY PANEL
- PROGRAMMABLE LOGIC CONTROLLER IN MAIN PANEL
- PROGRAMMABLE LOGIC CONTROLLER IN LOCAL CONTROL PANEL
- PROGRAMMABLE LOGIC CONTROLLER IN LOCAL AUXILIARY PANEL
- DISPLAY ON MAIN PANEL
- COMPUTER FUNCTION PRIMARY LOCATION
- COMPUTER FUNCTION AUXILIARY LOCATION
- SUMMATION
- ELECTRIC OPERATOR
- SCOPE DATUM
- DIGITAL POSITIONER
- INTERLOCK
- ANALOG SIGNAL
- DIGITAL SIGNAL
- PURGE
- DIFFERENTIAL (FLOW)
- LOCAL TEMP. INSTRUMENT (FLANGED)

REDUCERS

- ECCENTRIC REDUCERS (FLEXIBLE & NONFLEXIBLE
- CONCENTRIC REDUCERS (FLEXIBLE & NONFLEXIBLE

FLOW METER SYMBOLS

- VARIABLE AREA FLOW METER (ROTOMETER)
- MAGNETIC FLOW METER W/ INTEGRAL ELECTRONICS
- THERMAL MASS FLOW METER
- VENTURI TUBE FLOW METER
- PADDLE WHEEL

LINE TYPE SYMBOLS

- ELECTRIC SIGNAL
- BORDER/BOUNDARY
- PRIMARY PROCESS LINE
- SECONDARY PROCESS LINE
- EXISTING PROCESS LINE
- COMPRESSED AIR PIPING/ CAPILLARY TUBING
- SERIAL COMMUNICATION LINK
- UNDEFINED SIGNAL
- PNEUMATIC SIGNAL
- SECONDARY CONTAINMENT
- CROSS OVERS

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TULUKSAK WTP-W

PROCESS LEGEND

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NO.	REVISION	BY	DATE

Plot Date: Oct 2021
Designed: RV
Drawn: CM
Approved: RV

Sheet No. D001

WATER TREATMENT PLANT

MX-230*
FP-230*
CHLORINE MIX TANK
TK-230*
CHLORINE SOLUTION
TK-240*
FP-220*
POTABLE WATER
BFP1-200
MX-220*
TK-220*
DILUTE POLYMER / COAGULANT BLEND
FP-210*
MX-210*
TK-210*
OXIDANT
TO/FROM HEAT EXCHANGER SEE MECH
VA1-100
PI 102
TIT 102
FIT 101*
MAG
ST-101
SM-100*
VB3-101
VB3-101A
VB3-100
ST-100
P-100
EXISTING WELL
VB3-102
VB3-103
DETENTION TANK DT-001*
VB3-104
SM-101*
ST-102
VB3-105
VF1-304*
FS 101*
PI 303*
FLOCCULATION
SEDIMENTATION
MULTIMEDIA FILTRATION
FILTER 1*
VF1-301*
VF1-302*
FROM WST
VB3-301*
VB3-302*
BACKWASH PUMP BP-300*
PI 301*
AIR BLOWER AB-300*
VB2-300*
VC3-300*
VF1-300*
PI 302*
MAG
301* FIT
BFP1-300*
PI 304*
VB3-300*
VF1-303*
VC1-300*
EFFLUENT PUMP EP-300*
PI 305*
VB3-301*
FS 401*
V##-300*
ST-300
SM-300*
FIT 401*
MAG
VB3-400
NEW 100,000-GAL WST
LIT 601
TIT 601
TO / FROM TANK CIRC PUMPS AND HEAT EXCHANGER SEE MECH
TO BACKWASH PUMP
HPTS
VB3-600
VB3-601
VF1-600
VF1-601A
PP-600A
VF1-602A
VC1-600A
VF1-601B
VC1-600B
VF1-602B
PP-600B
PRESSURE PUMPS
CHEMICAL SUPPLY
PS 600
ST-600
VC1-601
VF1-603
PI 601
FIT 601
MAG
DISTRIBUTION SUPPLY
BFP1-600
DOMESTIC SUPPLY
FIR 602
MAG
WATERING POINT
TO PUMP STATION SEE CIVIL
PROCESS DRAIN
FLUSH TO WASTE
DESLUDGE
BACKWASH WASTE
FILTER TO WASTE

* DESIGNATES PACKAGE WTP EQUIPMENT. SEE SECTION 46 07 13, PACKAGED WATER TREATMENT EQUIPMENT FOR DETAILS

1 PROCESS FLOW DIAGRAM
SCALE: NTS

Plot Date: 11/4/2021 12:01:40 PM

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PROCESS FLOW DIAGRAM

65% DESIGN

NO.	REVISION	BY	DATE

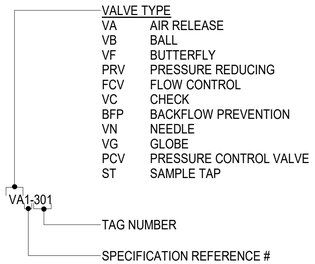
Plot Date: Oct 2021
Designed: RV
Drawn: CM
Approved: RV

Sheet No. D002

PROCESS VALVE SCHEDULE

TAG	FUNCTION	SIZE (IN)
VB3-100	RAW WATER ISOLATION	2
VA1-100	RAW WATER AIR RELIEF	1
VB3-101	DT-001 ISOLATION	2
VB3-101A	DT-001 DRAIN	2
VB3-102	DT-001 BYPASS	2
VB3-103	DT-001 ISOLATION	2
VB3-104	POLYMER MIXER ISOLATION	2
VB3-105	POLYMER MIXER ISOLATION	2
ST-100	RAW WATER SAMPLE TAP	
ST-101	HEATED RAW WATER SAMPLE TAP	
ST-102	COAGULATED SAMPLE TAP	
VB4-200	TK-230 ISOLATION	1/2
VB4-201	TK-240 ISOLATION	1/2
VB4-202	TK-230 DRAIN	1
	OXIDANT INJECTION QUILL	
	POLYMER INJECTION QUILL	
	CHLORINE INJECTION QUILL	
BFP1-300*	BACKWASH BFP	
VB2-300*	AIR BLOWER ISOLATION	
VC3-300*	AIR BLOWER CHECK	
VF1-300*	AIR BLOWER VALVE	
VF1-301*	DESLUDGE VALVE	
VF1-302*	BACKWASH WASTE VALVE	
VF1-303*	FILTERED WATER VALVE	
VB3-300*	EFFLUENT PUMP ISOLATION	
VC1-300*	EFFLUENT PUMP CHECK	
VB3-301*	EFFLUENT PUMP ISOLATION	
V##-300*	3-WAY SOLENOID - FILTER TO WASTE	
ST-300	FILTERED SAMPLE TAP	
VB3-400	WST ISOLATION	2
VF1-600	WST ISOLATION	6
VF1-601A	PRESSURE PUMP ISOLATION	4
VF1-601B	PRESSURE PUMP ISOLATION	4
VC1-600A	PRESSURE PUMP CHECK	4
VC1-600B	PRESSURE PUMP CHECK	4
VF1-602A	PRESSURE PUMP ISOLATION	4
VF1-602B	PRESSURE PUMP ISOLATION	4
VB3-600	HPT ISOLATION	1
VB3-601	HPT ISOLATION	1
VC1-601	DISTRIBUTION SUPPLY CHECK	6
VF1-603	DISTRIBUTION ISOLATION	6
BFP1-600	WATERING POINT BFP	
ST-600	POTABLE WATER SAMPLE TAP	

VALVE DESIGNATIONS



SEE SPECIFICATION SECTION 40 05 50 FOR VALVE DETAILS

INSTRUMENTATION SCHEDULE

TAG	FUNCTION	RANGE	HIGH SET POINT	LOW SET POINT	MAKE/MODEL
PI-102	RAW WATER PRESSURE INDICATOR	0-100 PSI	N/A	N/A	ASHCROFT 1009 SERIES
TIT-102	HEATED RAW WATER TEMP TRANSMITTER	-50 - 300 F			WEISS DVUT35 DIGITAL VARI-ANGLE THERMOMETER TRANSMITTER
FIT-101*	RAW WATER FLOW METER	0.5 - 70 GPM			GF SIGNET 2551
FS-101*	RAW WATER FLOW SWITCH	0.5 - 70 GPM			GF SIGNET 2551
PI-301*	AIR SCOUR ROTAMETER				ASHCROFT 1490 SERIES
PI-302*	BACKWASH PRESSURE INDICATOR	0-150 PSI			ASHCROFT 1009 SERIES
FIT-301*	BACKWASH FLOW METER	0.5 - 200 GPM			GF SIGNET 2551
PI-303*	COAGULATED WATER PRESSURE INDICATOR	0-150 PSI			ASHCROFT 1009 SERIES
PI-304*	FILTERED WATER PRESSURE INDICATOR	0-150 PSI			ASHCROFT 1009 SERIES
PI-305*	EFFLUENT PUMP DISCHARGE PRESSURE	0-150 PSI			ASHCROFT 1009 SERIES
FS-401*	FILTERED WATER FLOW SWITCH	0.5 - 70 GPM			GF SIGNET 2551
FIT-401*	FILTERED WATER FLOW METER	0.5 - 70 GPM			GF SIGNET 2551
LIT-601	WST LEVEL TRANSMITTER	0-24 FT			TE AST4510
TIT-601	WATER STORGE TANK TEMP TRANSMITTER	-50 - 300 F			WEISS DVUT35 DIGITAL VARI-ANGLE THERMOMETER TRANSMITTER
PS-600	PRESSURE PUMP PRESSURE SWITCH	40 - 60 PSI	60 PSI	30 PSI	SQUARE D 9013
PI-601	DISTRIBUTION PRESSURE INDICATOR	0-150 PSI			ASHCROFT 1009 SERIES
FIT-601	DISTRIBUTION FLOW METER	1.25 - 120 GPM			GF SIGNET 2551
FIR-602	WATERING POINT FLOW METER	0.5 - 70 GPM			BADGER RECORDALL
LIT-700	WET WELL LEVEL PROBE				FLYGT 14-414006

LABORATORY INSTRUMENTS AND SUPPLIES

DESCRIPTION	MFR / MODEL NO.	QTY	UNITS	REMARKS
PORTABLE ANALYZER	HACH PORTABLE COLORIMETER DR-900 P/N: 9385100	1	EACH	
DPD FREE CHLORINE REAGENT	HACH P/N: 2105569	10	100-PACK	POWDER PILLOWS (CHLORINE)
DPD TOTAL CHLORINE REAGENT	HACH P/N: 1406499	10	100-PACK	POWDER PILLOWS (CHLORINE)
FERROVER IRON REAGENT	HACH P/N: 2105769	10	100-PACK	POWDER PILLOWS (IRON)
ASCORBIC ACID	HACH P/N: 1457799	10	100-PACK	POWDER PILLOWS (MANGANESE)
ALKALINE CYANIDE REAGENT	HACH P/N: 2122326	10	EACH	50-ML DROPPER BOTTLE (MANGANESE)
PAN INDICATOR SOLUTION	HACH P/N: 2122426	10	EACH	50-ML DROPPER BOTTLE (MANGANESE)
ARSENIC LOW RANGE TEST KIT	HACH P/N: 2800000	1	EACH	
ARSENIC TEST KIT REFILL REAGENT SET	HACH P/N: 2799900	10	100-PACK	

CHEMICAL TANKS

TAG	TANK	SIZE	MAKE/MODEL	ACCESSORIES
TK-210*	OXIDANT TANK	55-GAL		TANK STAND, MIXER, LID
TK-220*	POLYMER TANK	55-GAL		TANK STAND, MIXER, LID
TK-230*	CHLORINE MIX TANK	15-GAL CONICAL		CONICAL TANK STAND
TK-240*	CHLORINE DOSING TANK	15-GAL		TANK STAND, LID

PROCESS PUMP SCHEDULE

TAG	PUMP	DUTY POINT	MAKE/MODEL
P-100	WELL PUMP 1	20 GPM, 52 FT TDH	GRUNDFOS 22 SQE05-80
P-101	WELL PUMP 2 (FUTURE)		
BP-300*	BACKWASH PUMP		PROVIDED BY FILTER VENDOR
EP-300*	FILTER EFFLUENT PUMP		PROVIDED BY FILTER VENDOR
AB-300*	AIR BLOWER		PROVIDED BY FILTER VENDOR
CP-600A	DISTRIBUTION CIRCULATION PUMP 1 (FUTURE)		
CP-600B	DISTRIBUTION CIRCULATION PUMP 2 (FUTURE)		
CP-601A	DISTRIBUTION CIRCULATION PUMP 3 (FUTURE)		
CP-601B	DISTRIBUTION CIRCULATION PUMP 4 (FUTURE)		
PP-600A	PRESSURE PUMP 1	45 GPM, 161 FT TDH	GRUNDFOS CR 10-4
PP-600B	PRESSURE PUMP 2	45 GPM, 161 FT TDH	GRUNDFOS CR 10-4
SP-700	LIFT STATION PUMP 1	250 GPM, 38 FT TDH	FLYGT NP 3102
SP-701	LIFT STATION PUMP 2	250 GPM, 38 FT TDH	FLYGT NP 3102
FP-210*	PERMANGANATE PUMP	0.5 GPH	GRUNDFOS DDA
FP-220*	DILUTE POLYMER PUMP	0.01 GPH	GRUNDFOS DDA
FP-230*	CALCIUM HYPOCHLORITE PUMP	0.03 GPH	GRUNDFOS DDA
HDP	HIGH DEMAND PUMP (FUTURE)		

MISCELLANEOUS EQUIPMENT

TAG	DESCRIPTION	SIZE	MAKE/MODEL
MX-210*	OXIDANT TANK MIXER	1/20 HP	JL WINGERT LDB-0050-A-EK(30)
MX-220*	POLYMER TANK MIXER	1/20 HP	JL WINGERT LDB-0050-A-EK(30)
MX-230*	CHLORINE MIX TANK MIXER	1/20 HP	JL WINGERT LDB-0050-A-EK(30)

PROCESS PIPE SCHEDULE

LEGEND	SERVICE	SIZE(S) (IN)	EXPOSURE	PIPING MATERIAL	TEST PRESSURE	JOINT TYPE	NOTES
RW	RAW WATER	2	EXP	PVC			INSULATE FIRST 5' OF PIPE IN WTP
			AP	HDPE			
CGW	COAGULATED WATER	2		PVC			
FW	FILTERED WATER	2		PVC			
TW	TREATED WATER	2		PVC			
PW	POTABLE WATER	6	EXP	PVC			INSULATE FIRST 5' OF PIPE IN WTP
			AP	HDPE			
BWS	BACKWASH SUPPLY	4		PVC			
BWW	BACKWASH WASTE	4		PVC			
AIR	AIR SCOUR		EXP	COPPER			
CHEM	CHEMICAL SUPPLY	1/2 - 1	EXP	PPE			

EXPOSURE
EXP EXPOSED, INTERIOR
AP ARCTIC PIPING, EXTERIOR

* DESIGNATES PACKAGE WTP EQUIPMENT. SEE SECTION 46 07 13, PACKAGED WATER TREATMENT EQUIPMENT FOR DETAILS

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TULUKSAK WTP-W
PROCESS SCHEDULES
65% DESIGN

NO.	REVISION	BY	DATE

Plot Date: Oct 2021
Designed: CM
Drawn: CM
Approved: RV

Sheet No. D003

File: J:\JobsData\31308.00 Tuluksak Washeteria and WTP Design\00 REVIT 2022\00 Central Revit Model\31308.00-D-R22.rvt
Plot Date: 11/4/2021 12:01:41 PM

PROCESS OVERVIEW

RAW WATER WILL BE PUMPED BY A SUBMERSIBLE PUMP FROM AN EXISTING WELL TO THE WTP. THE WATER WILL BE TREATED BY OXIDATION WITH POTASSIUM PERMANGANATE, COAGULANT AND POLYMER INJECTION, FLOCCULATION, CLARIFICATION, AND FILTRATION FOR REMOVAL OF IRON, MANGANESE, ARSENIC, AND TOTAL ORGANIC CARBON. AFTER FILTRATION, CHLORINE WILL BE INJECTED PRIOR TO STORAGE IN A 100,000-GALLON WATER STORAGE TANK. WATER WILL THEN BE PUMPED TO THE COMMUNITY FOR USE.

PROCESS NARRATIVE

- 1XX - WELL PUMP
  - a. WELL #2 PUMP AND PIPING TO BE CONSTRUCTED IN FUTURE.
  - b. WELL PUMP P-100 MANUALLY STARTED BY OPERATOR BY PUSHING CONTROL PANEL "RUN" BUTTON
  - c. WST HIGH LEVEL (LIT-601) SHUTS DOWN SYSTEM
- 1XX - RAW WATER ADD HEAT
  - a. MAINTAINS WATER TEMP OF 50° F, AS MEASURED BY TIT-102
  - b. FLOW WILL BE MEASURED AND TOTALIZED BY FIT-101
- 21X - OXIDATION
  - a. TYPE: POTASSIUM PERMANGANATE SOLUTION
  - b. PURPOSE: OXIDIZES IRON AND MANGANESE IN RAW WATER
  - c. MANUALLY BATCHED TO 1% SOLUTION, USING MANUALLY-CONTROLLED TANK MIXER
  - d. PUMP FP-210 IS FLOW-PACED BASED ON RAW WATER FLOW (FIT-101)
  - e. METERING PUMP ON/OFF CONTROL BY FILTER SUPPLIER
  - f. DETENTION TANK PROVIDES REACTION TIME FOR OXIDATION
- 2XX - POLYMER/COAGULANT
  - a. TYPE: 80% NALCO 8185 / 20% MAGNAFLOC LT27
  - b. PURPOSE: COAGULATES ORGANIC MATERIALS IN RAW WATER
  - c. MANUALLY MIXED AT 80/20 RATIO, THEN BATCHED TO 2% SOLUTION USING MANUALLY-CONTROLLED TANK MIXER
  - d. PUMP FP-220 IS FLOW-PACED BASED ON RAW WATER FLOW (FIT-101) AND OPERATOR ADJUSTABLE SETPOINT.
  - e. METERING PUMP ON/OFF CONTROL BY FILTER SUPPLIER
- 3XX - FILTRATION
  - a. CONTROLLED BY VENDOR-SUPPLIED PLC
  - b. FLOCCULATION SPEED ADJUSTABLE BY CONTROL PANEL.
  - c. SLUDGE BLOWDOWN FROM CLARIFIER TUBE SETTLERS BASED ON TIMER INTERVAL
  - d. AUTOMATIC VALVE OPERATION TO DISCHARGE SOLIDS TO LIFT STATION
  - e. BACKWASH BASED ON HEADLOSS OR TIME
  - f. BACKWASH AUTOMATED WITH BLOWER AND BACKWASH PUMP CONTROLLED BY FILTER PLC
  - g. FILTER FLOW RATE CONTROLLED BY FILTER EFFLUENT PUMP
- 24X - DISINFECTION
  - a. TYPE: CALCIUM HYPOCHLORITE
  - b. PURPOSE: PROVIDE RESIDUAL DISINFECTANT IN THE DISTRIBUTION SYSTEM
  - c. MANUALLY BATCHED TO 2% SOLUTION BY OPERATORS
  - d. PUMP FP-240 IS FLOW-PACED BASED ON FILTERED WATER FLOW (FIT-401) AND OPERATOR ADJUSTABLE SETPOINT.
  - e. METERING PUMP ON/OFF CONTROL BY FILTER SUPPLIER
- 6XX - WATER STORAGE TANK
  - a. WATER IS CIRCULATED AND HEATED PER MECHANICAL PLANS
  - b. ALARM FOR LOW WATER TEMP (TIT-601)
- 6XX - PRESSURE PUMPS
  - a. DUTY/STANDBY CONFIGURATION
  - b. LOW PRESSURE (PS-600A/B) SETPOINT CALLS FOR PUMP TO RUN
  - c. HIGH PRESSURE (PS-600A/B) SETPOINT SHUTS OFF PUMP
  - d. VFDS RAMP PUMP SPEED UP/DOWN TO REDUCE WATER HAMMER AND SMOOTH OPERATION
  - e. HPTS PROVIDE PRESSURE FOR SMALL DEMANDS TO REDUCE PUMP OPERATION
  - f. WST LOW LEVEL (LIT-601) SHUTS DOWN PRESSURE PUMPS
- 7XX - SANITARY SEWER LIFT STATION
  - a. PUMPS SP-701/702 OPERATE IN DUTY/STANDBY CONFIGURATION
  - b. WET WELL FLOAT SETPOINTS WILL CONTROL PUMP OPERATION.
  - c. HIGH HIGH WET WELL LEVEL WILL STOP FILTER BACKWASH.

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TULUKSAK WTP-W

PROCESS NARRATIVE

65% DESIGN

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Plot Date: Oct 2021
Designed: RV
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Approved: RV

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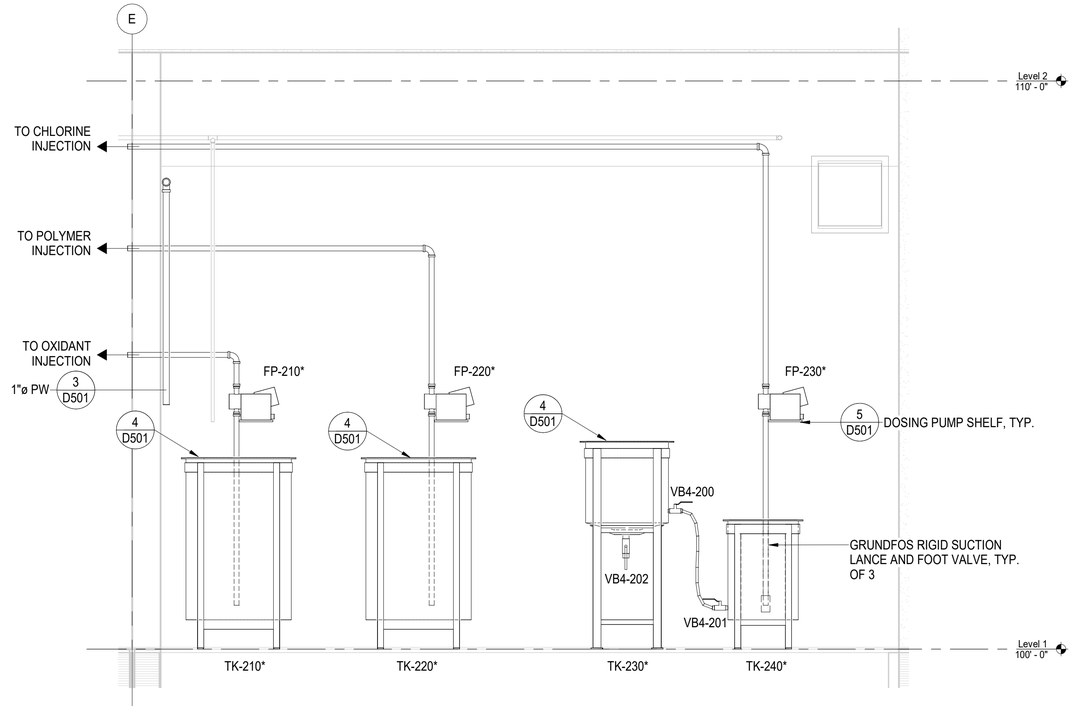
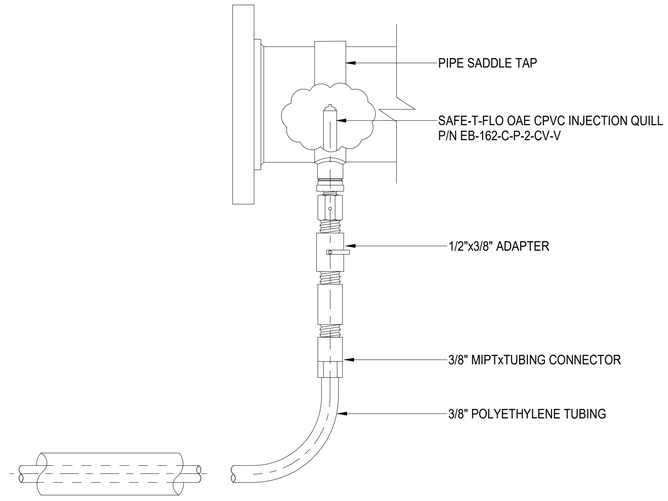
* DESIGNATES PACKAGE WTP EQUIPMENT. SEE SECTION 46 07 13, PACKAGED WATER TREATMENT EQUIPMENT FOR DETAILS



1 CHEMICAL ROOM SECTION
SCALE: 3/4" = 1'-0"



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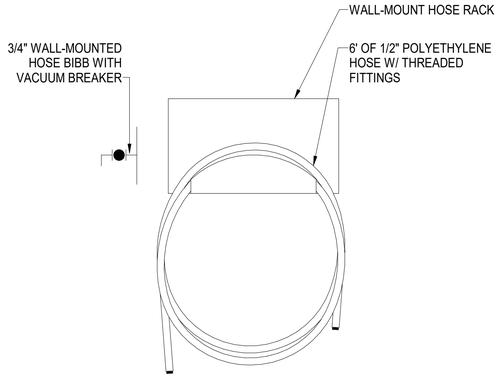

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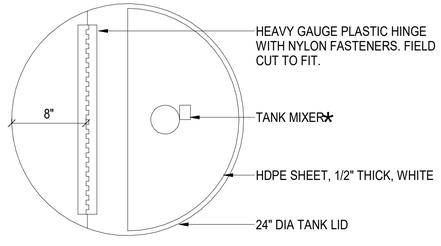

4 CHEMICAL TANK DETAIL*
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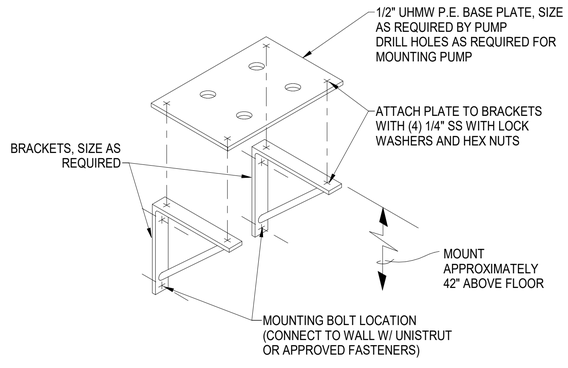

5 DOSING PUMP SHELF
SCALE: NTS

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CHEMICAL DETAILS

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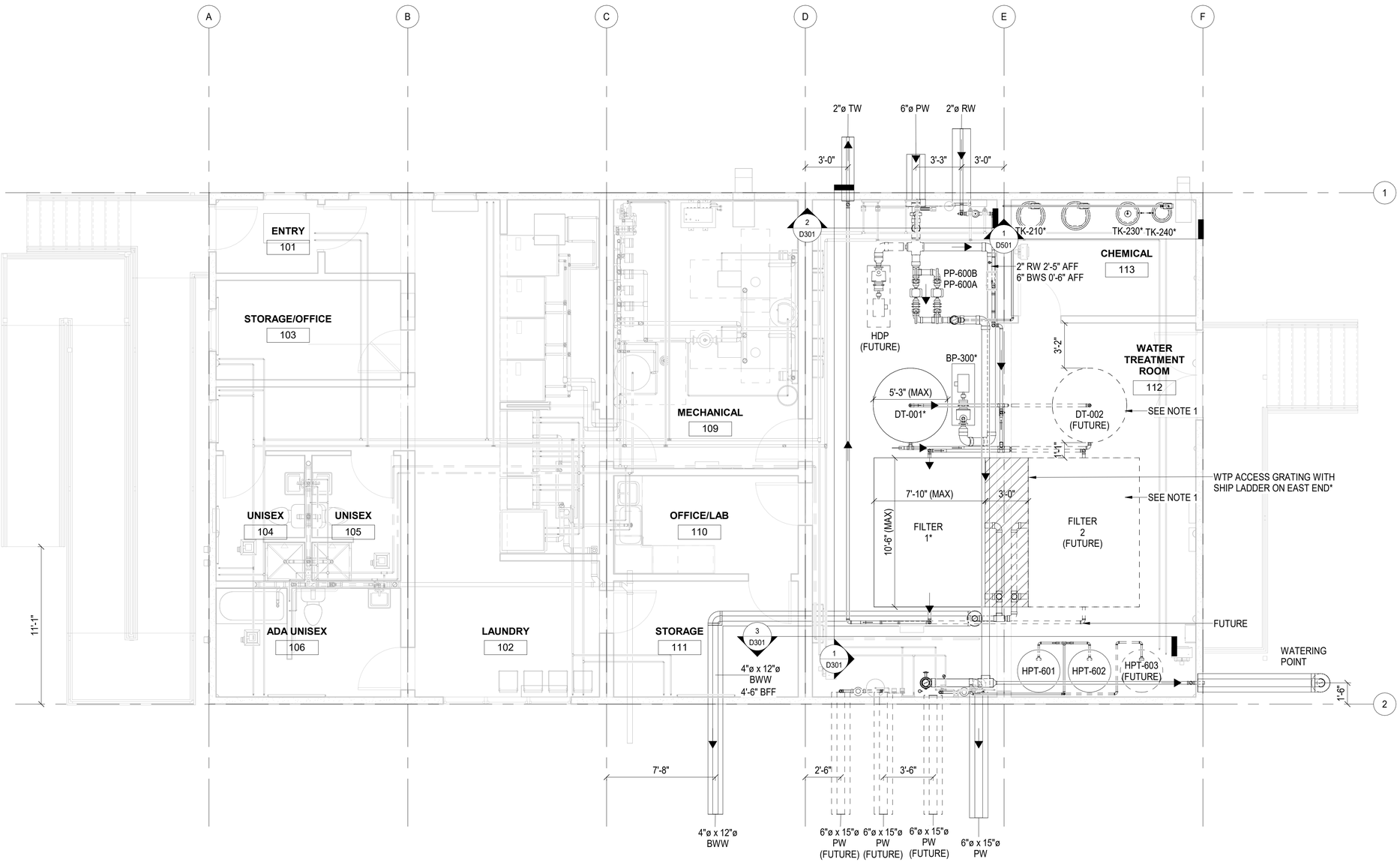
NOTES:
1. DETENTION TANK AND FILTER DIMENSIONS SHOWN ARE THE MAXIMUM ALLOWABLE EQUIPMENT DIMENSIONS. MAXIMUM FILTER HEIGHT IS 8 FT. TOP OF WALL IS 10'-6" ABOVE FINISHED FLOOR.
2. SEE SHEET D003 FOR FLOW STREAM IDENTIFIACTION AND PIPE MATERIALS.

* DESIGNATES PACKAGE WTP EQUIPMENT. SEE SECTION 46 07 13, PACKAGED WATER TREATMENT EQUIPMENT FOR DETAILS



1 PROCESS FLOOR PLAN
SCALE: 1/4" = 1'-0"

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PROCESS FLOOR PLAN

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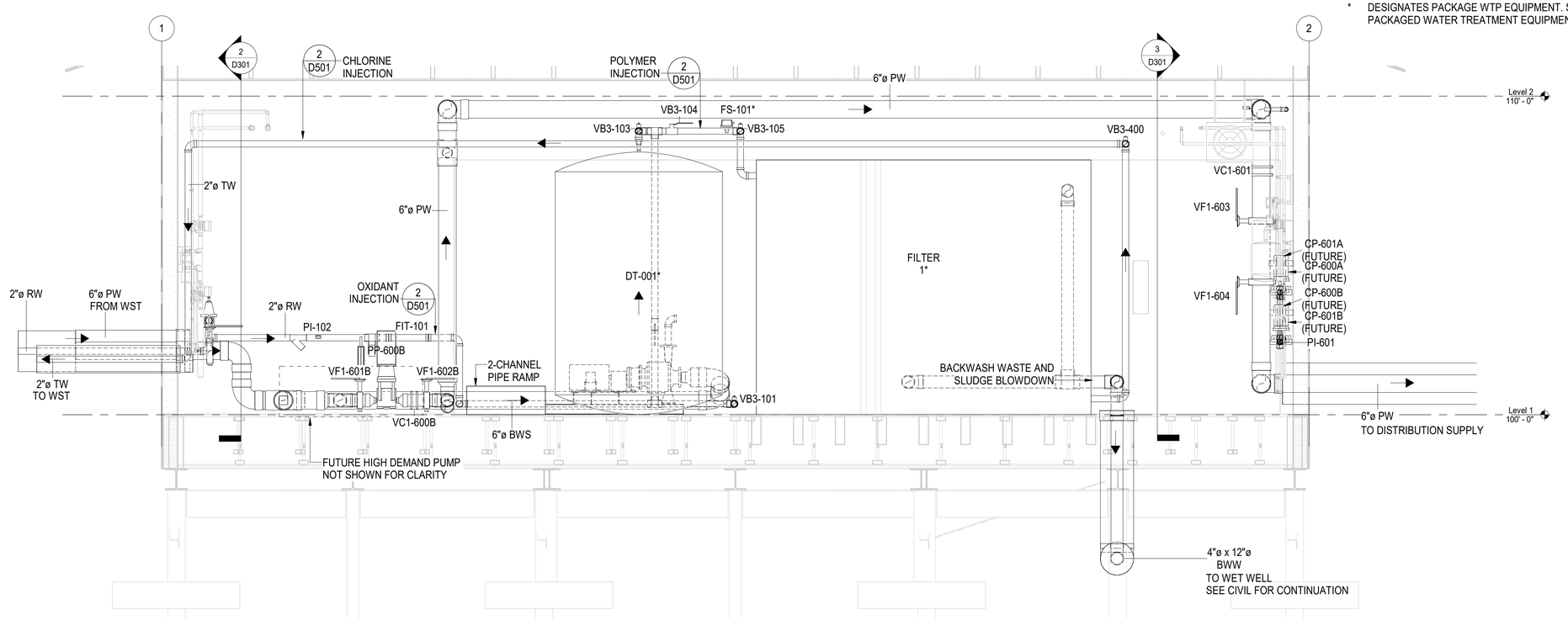
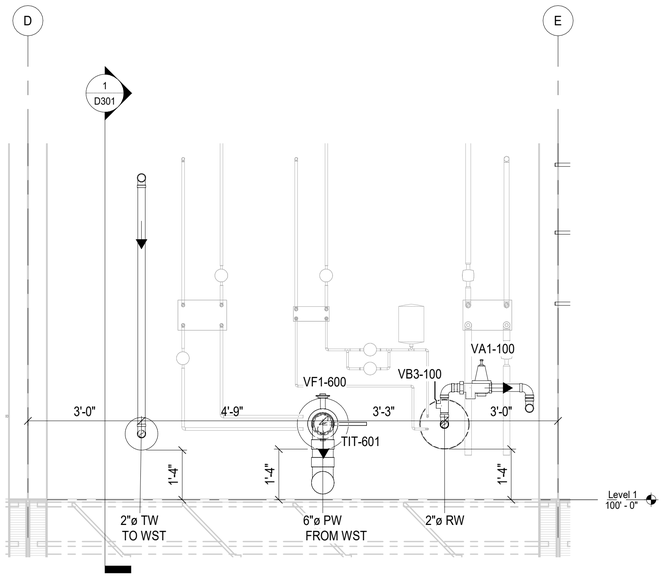
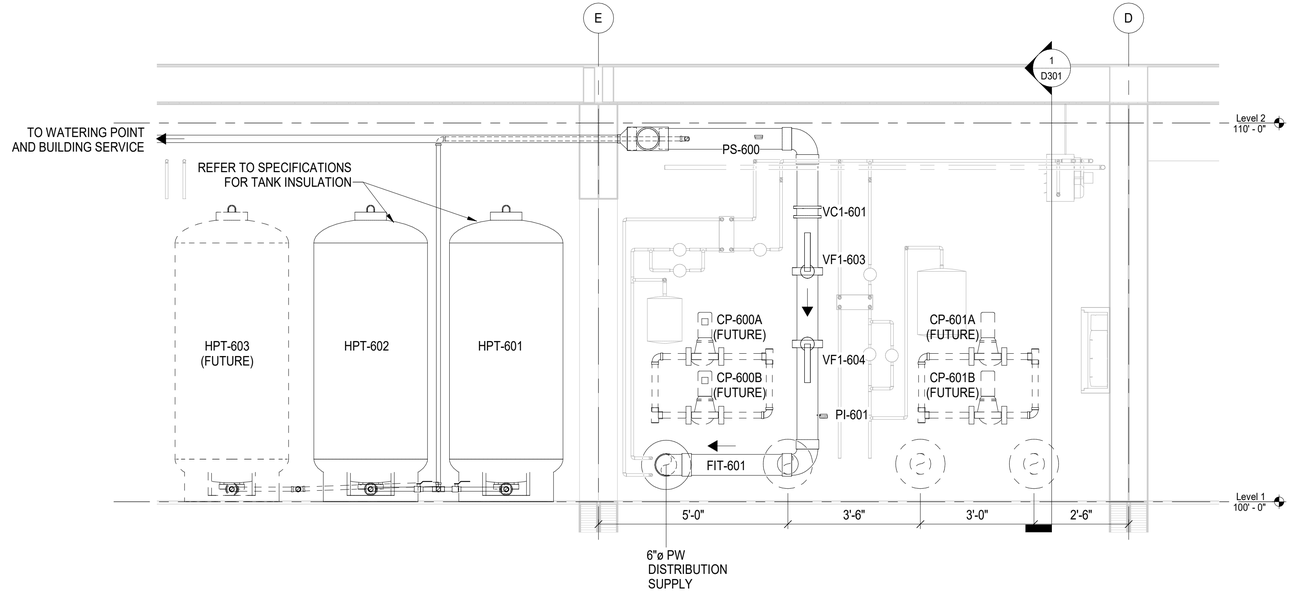


* DESIGNATES PACKAGE WTP EQUIPMENT. SEE SECTION 46 07 13, PACKAGED WATER TREATMENT EQUIPMENT FOR DETAILS

1 FACING NORTH
SCALE: 1/2" = 1'-0"



2 WEST WALL
SCALE: 1/2" = 1'-0"



3 EAST WALL
SCALE: 1/2" = 1'-0"

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PROCESS SECTIONS

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D301

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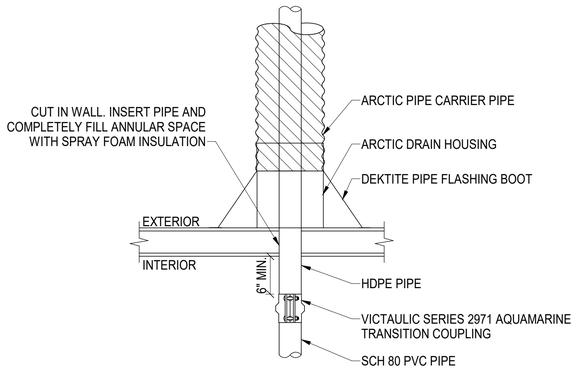
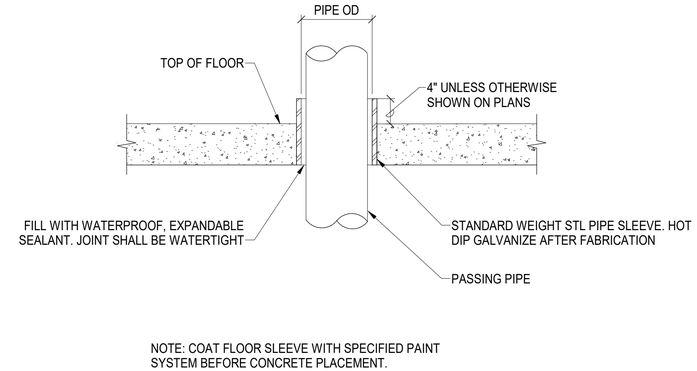
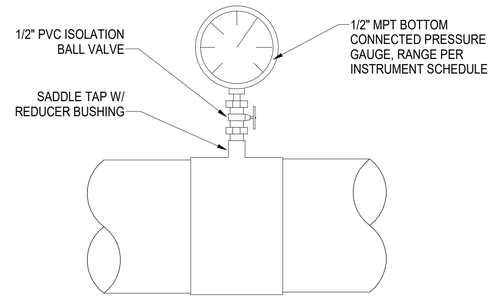


1 ARCTIC PIPE BUILDING CONNECTION
SCALE: NTS

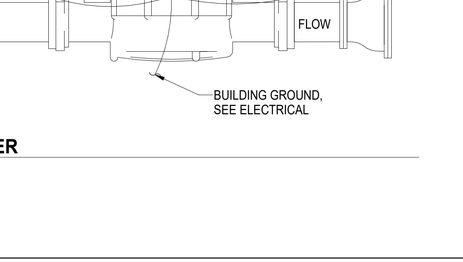


NOTE: COAT FLOOR SLEEVE WITH SPECIFIED PAINT SYSTEM BEFORE CONCRETE PLACEMENT.

2 FLOOR PENETRATION
SCALE: NTS



3 PRESSURE GAUGE
SCALE: NTS

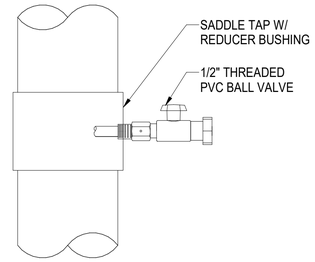


4 TEMP GAUGE
SCALE: NTS

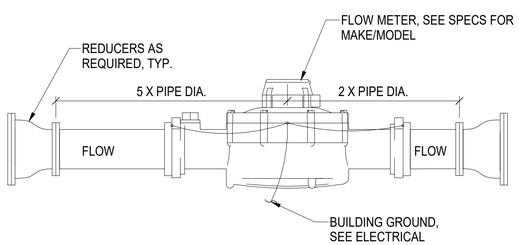
NOTES :

1. SEE SPECIFICATIONS FOR ARV/CARV DETAILS
2. THREADED CONNECTIONS TO PVC PIPE SHALL HAVE SS REINFORCED THREADS, TYPICAL.

5 CARV-ARV
SCALE: NTS



6 SAMPLE TAP
SCALE: NTS



7 FLOW METER
SCALE: NTS

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PROCESS DETAILS

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ELECTRICAL LEGEND

- CONDUIT RUN, IF SIZE AND NUMBER OF CONDUCTORS ARE NOT INDICATED, PROVIDE 1/2" CONDUIT W/ 3#12 AWG H,N,G.
- CONDUIT, BURIED OR IN-SLAB
- HOME RUN TO CIRCUIT BREAKER PANEL, OR HVAC PANEL
- LFMC, SIZE INDICATED ON DRAWING
- CONDUIT RUN - CHANGE IN ELEVATION
- HEAT TRACE
- CONDUIT SEAL OFF
- GFCI DUPLEX RECEPTACLE
- GFCI QUADRAPLEX RECEPTACLE
- SINGLE POLE SWITCH + 42" AFF UON
- SWITCH WITH PILOT LIGHT
- 3-WAY SWITCH + 42" AFF UON
- 4-WAY SWITCH + 42" AFF UON
- OCCUPANCY SENSOR
- JUNCTION BOX
- THERMOSTAT
- CONTROL PANEL
- CIRCUIT BREAKER PANEL
- METER BASE
- CT CABINET
- KILOWATT-HOUR METER
- CURRENT TRANSFORMER / CURRENT SWITCH
- SINGLE PHASE MOTOR W/ HORSEPOWER INDICATED (F=<1/3HP)
- THREE PHASE MOTOR W/ HORSEPOWER INDICATED
- GENERATOR
- SYSTEM GROUND
- VARIABLE FREQUENCY DRIVE
- INSTRUMENT (SEE TAG)
- PILOT LIGHT IN ENCLOSURE
- DISCONNECT
- COMBINATION MAGNETIC MOTOR STARTER WITH DISCONNECT
- SOLENOID VALVE
- MOTORIZED VALVE
- HEAT TRACE
- HEAT TRACE POWER POINT
- HEAT TRACE END KIT
- SOFT START MOTOR STARTER
- MANUAL TRANSFER SWITCH
- EMERGENCY SHUTDOWN
- INSTRUMENT (SEE TAG)
- HORN/STROBE
- TRANSFORMER
- ACTUATED DAMPER
- UTILITY POLE
- POLE MOUNT TRANSFORMER
- GUY WIRE AND ANCHOR

ABBREVIATIONS

A	AMPERE
AF	AMPERE RATING BREAKER FRAME
AFF	ABOVE FINISH FLOOR
AT	BREAKER TRIP RATING IN AMPERES
BCu	BARE COPPER
c	CONDUCTOR
C	CONDUIT, SIZE AS NOTED, TYPE AS REQUIRED
ckt	CIRCUIT
DWG	DRAWING
EMT	ELECTRICAL METALLIC CONDUIT
fc	FOOT CANDLE
G	GROUND CONDUCTOR
GFI	GROUND FAULT INTERRUPTING
H	HOT CONDUCTOR
HOA	HAND OFF AUTO
HL	HIGH LEVEL
HP	HORSEPOWER
HT	HEAT TRACE
KVA	KILO-VOLT-AMPERES
LFMC	LIQUID-TIGHT FLEXIBLE METAL CONDUIT
MLO	MAIN LUG ONLY
MTS	MANUAL TRANSFER SWITCH
N	NEUTRAL CONDUCTOR
OWS	OIL WATER SEPARATOR
P	POLE
PE	PHOTO ELECTRIC
RMC	RIGID METAL CONDUIT
SL	SWITCH LEG
TRAV	3-WAY SWITCH TRAVELER
TWSH	TWISTED SHIELDED
TYP	TYPICAL
UON	UNLESS OTHERWISE NOTED
V	VOLTS
VFD	VARIABLE FREQUENCY DRIVE
XFMR	TRANSFORMER
(E)	EXISTING

LUMINAIRE SCHEDULE

SYMBOL	DESCRIPTION	VOLTS	LAMP	MANUFACTURER & PART NUMBER	MOUNTING
	EXIT & EMERGENCY LIGHT	277/120V	LED	LITHONIA LHQMLEDR	WALL, ABOVE DOOR
	EMERGENCY EGRESS LIGHT, SEALED BATTERY, 12V	120V/277V	LED	LITHONIA INDX1236 W LP05VS ULT	WALL
	OUTDOOR WALL MOUNT SECURITY LIGHT LED	120V/277V	LED	GE EWAS-C4-AF-7-40-A-A	WALL
	1X2, LED FIXTURE, ACRYLIC DIFFUSER, RATED FOR WET LOCATIONS	120-277V	LED	LITHONIA DMW2-L24-4000LM-ACL-MD-MVOLT-GZ10-35K-90CRI	CEILING
	2X4, LED TOFFER, ACRYLIC DIFFUSER	120V	LED	LITHONIA 2VTL4-40L-ADP-EZ1-35K	CEILING GRID

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ELECTRICAL LEGEND AND ABBREVIATIONS

65% DESIGN

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Plot Date: OCT 2021
Designed: TK
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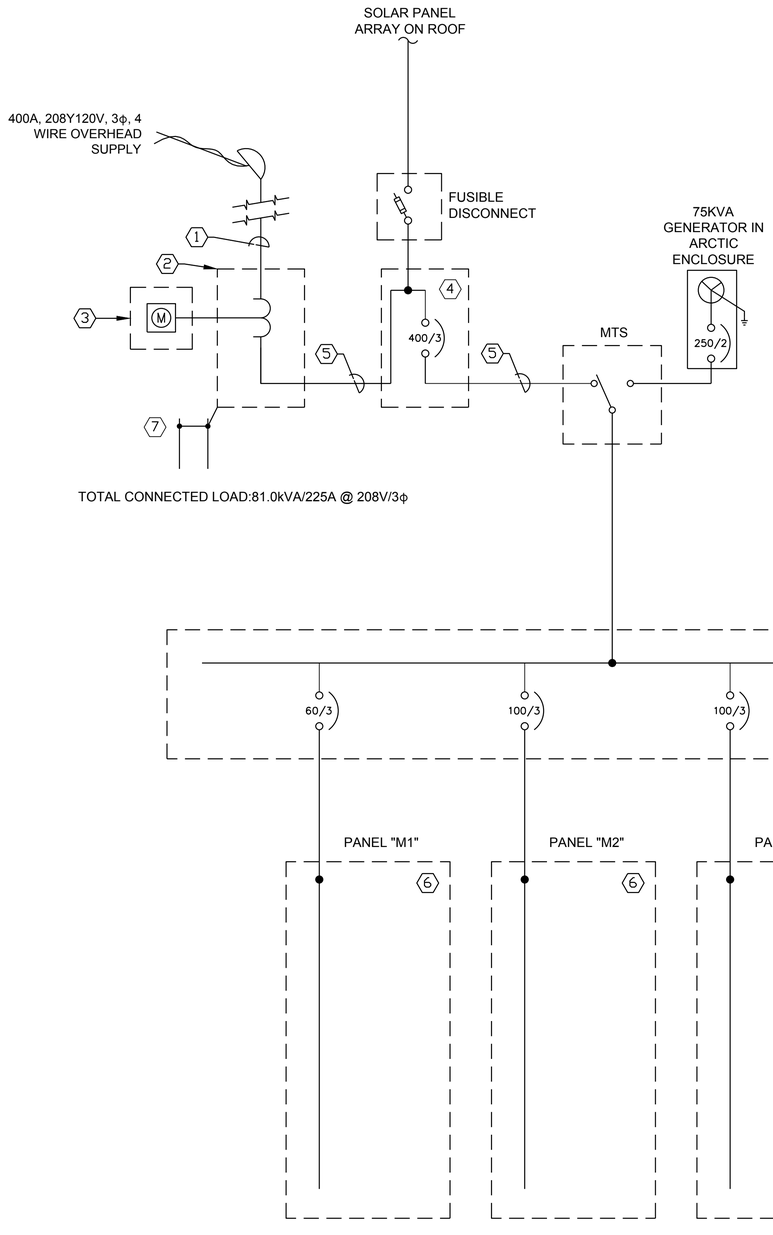
Sheet No. E001

File: J:\JobsData\31308.00 Tuluksak Washeteria And WTP Design\00 CADD 2019\01 Working Set\03 Electrical\31308.00 - Electrical Legend.dwg Plot Date: 10/11/2021 1:46 PM



1 POWER ONE-LINE

SCALE: NTS

NOTES

1. 3"C, (4)#500MCM XHHW-2 RISER & WEATHER HEAD. SERVICE PER UTILITY REQUIREMENTS.
2. 400A, 3ϕ, 250V, NEMA 3, CT CABINET, 30"W X 36"T X 11"D, WATER TIGHT AND SEALABLE PER UTILITY REQUIREMENTS. CONTRACTOR TO SECURELY INSTALL WINDOW STYLE DOUGHNUT TYPE CT'S SUPPLIED ON SERVICE CONDUCTORS.
3. CLASS 20 METERBASE WITH PLUNGER TYPE AUTOMATIC CT CIRCUIT CLOSERS PER UTILITY REQUIREMENTS.
4. 400A, 3ϕ, 4-POLE, NEMA 3R SERVICE RATED DISCONNECT PER UTILITY REQUIREMENTS.
5. 3"C, (4)#500 (3H,N), (1)#1/0 (G).
6. PROVIDE ARC FLASH WARNING LABELS WITH MAXIMUM FAULT CURRENT, INCIDENT ENERGY VALUES AND PERSONAL PROTECTIVE EQUIPMENT (PPE) IN ACCORDANCE WITH NEC ARTICLE 110.16 AND NFPA 70E. CONTACT ENGINEER FOR VALUES BEFORE ORDERING LABELS.
7. (2) 3/4"X10'CU-CLAD STEEL RODS MINIMUM 6' APART.

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POWER ONE-LINE

65% DESIGN

NO.	REVISION	BY	DATE

Plot Date: OCT 2021
Designed: TK
Drawn: TK
Approved: JS

Sheet No. E002

LOCATION	NOTE:	PANEL	INTERRUPT RATING	INSTALLATION:
RM 112		M4	10 KAIC	SURFACE MOUNT, TYPE 12 ENCL, TOP FEED

VOLTAGE	CONNECTION	TYPE	MAIN	AVAILABLE FAULT CURRENT:	SOURCE: MDS
208 / 120V	3 φ – 4 W	MLO	150A		

CKT #	TRIP/ POLES	CIRCUIT DESCRIPTION NOTE	VA	LOAD TYPE	CONNECTED KVA Aφ	Bφ	Cφ	TRIP/ POLES	CIRCUIT DESCRIPTION NOTE	VA	LOAD TYPE	CKT #
1	20/1	LTG - RM 112	380	L	1.3	–	–	20/1	RECP - RM 112	900	R	2
3	20/1	CP-1A, CP-1B	221	M	–	0.2	–	20/1	UH-3	24	S	4
5	20/1	SPARE			–	–	0.6	20/1	PANEL BAP	620	S	6
7	20/1	CP-3A, CP-3B, CP-3C	221	M	2.8	–	–	35/3	PANEL PPCP	2546	S	8
9	20/1	SPARE			–	2.5	–			2546	S	10
11	20/1	CP-5A, CP-5B	911	M	–	–	3.5			2546	S	12
13					2.5	–	–	35/2	PANEL WP/WSTCP	2538	S	14
15					–	2.5	–			2538	S	16
17					–	–	0.2	25/2	PANEL WGHTCP	221	S	18
19					0.2	–	–			221	S	20
21					–	0.5	–	25/2	PANEL FGHTCP	527	S	22
23					–	–	0.5			527	S	24
25					0.0	–	–					26
27					–	0.0	–					28
29					–	–	0.0					30
		TOTAL LOAD / PHASE:			6.8	5.9	4.8	KVA				
		DEMAND CURRENT / PHASE:			57	49	40	AMPS				

SUMMARY LOADS (KVA)

LOAD TYPE:	C	L	MM	M	N	R	X	S	
CONNECTED:	0.0	0.4	0.0	1.4	0.0	0.9	0.0	14.9	
DEMAND:	0.0	0.5	0.0	1.4	0.0	0.9	0.0	14.9	

TOTALS	KVA	AMPS
CONNECTED:	17.5	49
DEMAND:	17.6	49

NOTES [#]: G = GFCI TYPE CIRCUIT BREAKER

LOCATION	NOTE:	PANEL	INTERRUPT RATING	INSTALLATION:
RM 112		M5	10 KAIC	SURFACE MOUNT, TYPE 12 ENCL, TOP FEED

VOLTAGE	CONNECTION	TYPE	MAIN	AVAILABLE FAULT CURRENT:	SOURCE: MDS
208 / 120V	3 φ – 4 W	MLO	100A		

CKT #	TRIP/ POLES	CIRCUIT DESCRIPTION NOTE	VA	LOAD TYPE	CONNECTED KVA Aφ	Bφ	Cφ	TRIP/ POLES	CIRCUIT DESCRIPTION NOTE	VA	LOAD TYPE	CKT #
1	20/1	LTG - RM 112, 113	620	L	1.3	–	–	20/1	RECP - RM 112, 113	720	R	2
3	20/1	UH-1, UH-4, EF-4	441	S	–	2.4	–	50/2	GENERATOR ACCESSORIES	2000	S	4
5					–	–	2.0			2000	S	6
7	60/3	PROCESS (FUTURE)			5.8	–	–	75/3	PANEL LSCP	5812	S	8
9					–	5.8	–			5812	S	10
11					–	–	5.8			5812	S	12
13					0.0	–	–					14
15					–	0.0	–					16
17					–	–	0.0					18
19					0.0	–	–					20
21					–	0.0	–					22
23					–	–	0.0					24
		TOTAL LOAD / PHASE:			7.2	8.3	7.8	KVA				
		DEMAND CURRENT / PHASE:			60	69	65	AMPS				

SUMMARY LOADS (KVA)

LOAD TYPE:	C	L	MM	M	N	R	X	S	
CONNECTED:	0.0	0.6	0.0	0.0	0.0	0.7	0.0	21.9	
DEMAND:	0.0	0.8	0.0	0.0	0.0	0.7	0.0	21.9	

TOTALS	KVA	AMPS
CONNECTED:	23.2	64
DEMAND:	23.4	65

NOTES [#]: G = GFCI TYPE CIRCUIT BREAKER

Alaska Department of Environmental Conservation
Division of Water

Village Safe Water Program
555 Cordova Street 4th Floor
Anchorage, Alaska 99501

NOT FOR CONSTRUCTION

CRW ENGINEERING GROUP, LLC
3940 ARCTIC BLVD. SUITE 300
ANCHORAGE, ALASKA 99503
PHONE: (907) 562-3252
#AECL882-AK

TULUKSAK WTP-W

PANEL SCHEDULES (2 OF 2)

65% DESIGN

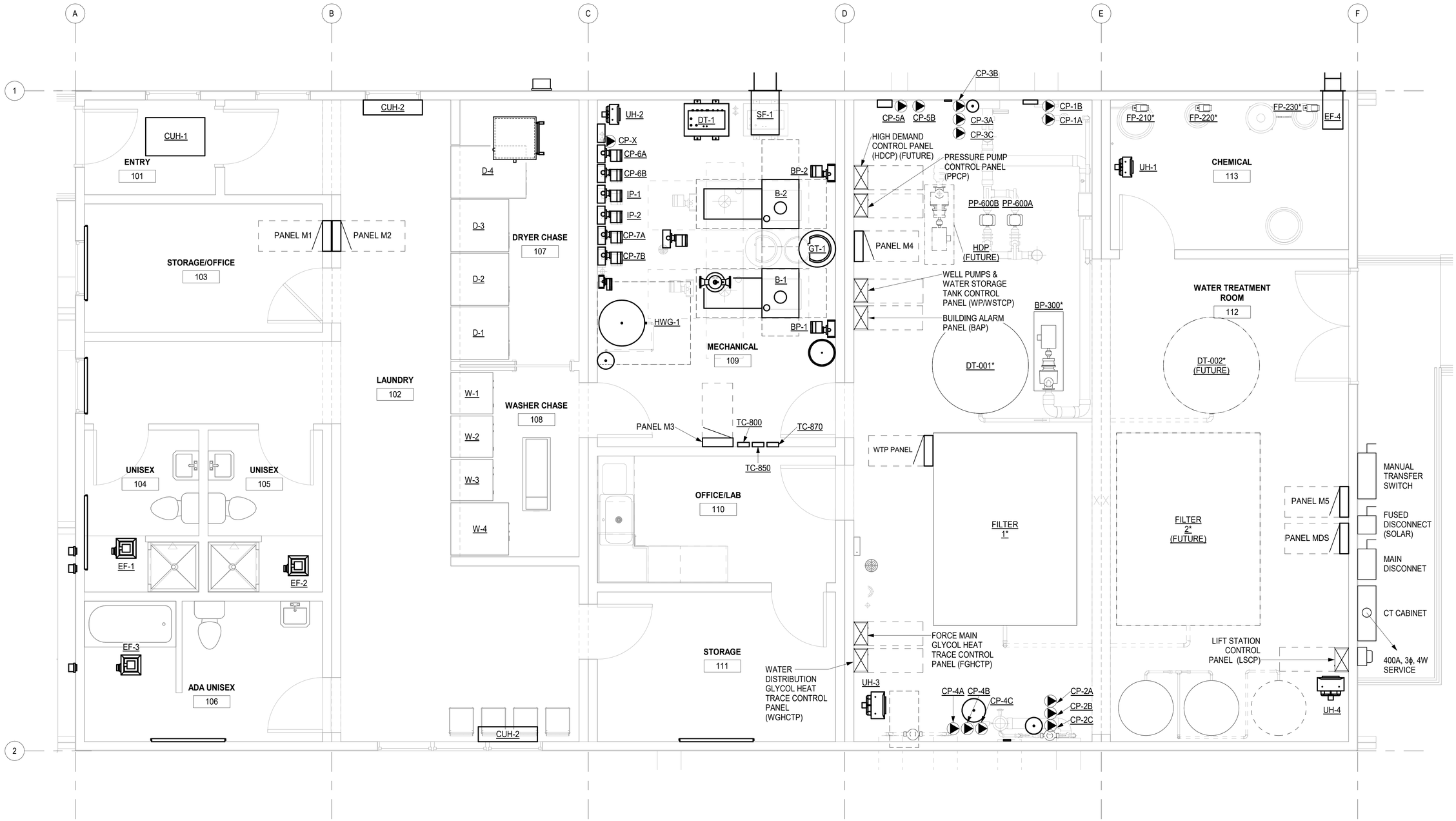
NO.	REVISION	BY	DATE

Plot Date: OCT 2021
Designed: TK
Drawn: TK
Approved: JS

Sheet No.
E004

NOTES:

1. ALL CONDUIT IN THE MECHANICAL, WATER TREATMENT AND CHEMICAL ROOMSSHALL BE SURFACE MOUNT. CONDUITS IN ALL OTHER ROOMS SHALL BE CONCEALED WITHIN WALLS OR CEILING.



1 **ELECTRICAL PLAN**
SCALE: 3/8" = 1'-0"

Plot Date: 10/12/2021 12:57:37 PM

File: J:\JobsData\31308.00 Tuluksak Washeteria and WTP Design\00 REVIT 2022\00 Central Revit Model\31308.00-ELEC-R22.rvt

Alaska Department of Environmental Conservation
Division of Water
Village Safe Water Program
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TULUKSAK WTP-W

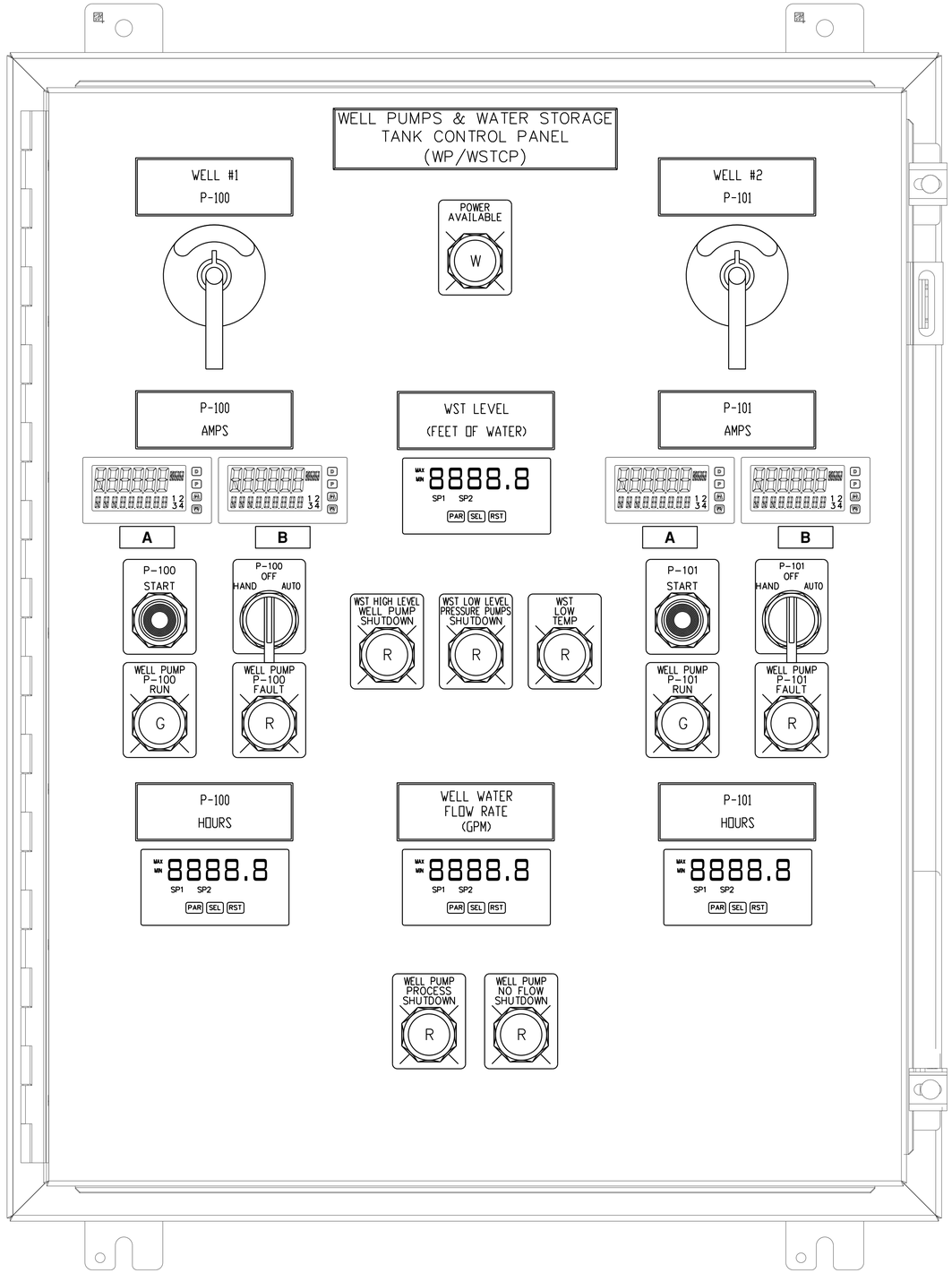
ELECTRICAL PLAN

65% DESIGN

NO.	REVISION	BY	DATE

Plot Date	Oct 2021		
Designed	TRK		
Drawn	TRK		
Approved	TRK		

Sheet No.
E102



THE PANEL IS DESIGNED TO ACCOMMODATE A SECOND WELL/PUMP IN THE FUTURE

WELL PUMPS & WATER STORAGE TANK CONTROL PANEL NARRATIVE

WELL PUMPS & WATER STORAGE TANK CONTROL PANEL (WP/WSTCP) WILL CONTROL THE WELL PUMPS AND DISPLAY WATER STORAGE TANK LEVEL. WELL PUMP P-101 WILL NOT BE INSTALLED ON THIS PROJECT AND CONTROLS ARE PROVIDED FOR A FUTURE PUMP.

THE PANEL WILL HAVE AN HAND-OFF-AUTO SELECTOR SWITCH FOR THE WELL PUMP AND A PUSH-TO-START BUTTON TO START THE ASSOCIATED WELL PUMP.

IN AUTO, THE PUMP WILL START WHEN THE PUSH BUTTON IS PRESSED AND RUN UNTIL THE TANK LEVEL REACHES HIGH LEVEL SHUTDOWN. IF THERE IS NO FLOW ONE MINUTE AFTER A PUMP IS STARTED, A NO FLOW ALARM PILOT LIGHT WILL ILLUMINATE AND STOP THE PUMP. THE WELL PUMPS WILL ALSO BE SHUTDOWN ON A PROCESS SHUTDOWN SIGNAL FROM THE PROCESS CONTROL PANEL. A PILOT LIGHT ON THE PANEL WILL ILLUMINATE PROCESS SHUTDOWN CONDITION OCCURS.

IN HAND, THE PUMP WILL RUN UNTIL SHUTOFF.

PILOT LIGHTS FOR PUMP RUN, NO FLOW AND FAULT WILL BE PROVIDED ON THE PANEL.

A FLOW INDICATOR ON THE PANEL WILL SHOW WELL WATER FLOW RATE AND TOTAL FLOW. HOUR METERS WILL TOTALIZE RUN TIMES FOR EACH PUMP. CURRENT METERS WILL SHOW CURRENT FOR EACH LEG OF POWER TO THE PUMP.

THE WST LEVEL CONTROLLER WILL DISPLAY THE WATER LEVEL IN THE TANK AND INCLUDE AT LEAST (2) ADJUSTABLE SET POINT CONTACTS. A HIGH LEVEL SET POINT WILL SHUT DOWN THE WELL PUMP TO AVOID OVERFLOWING THE TANK. A LOW LEVEL SET POINT WILL SHUT DOWN THE WATER DISTRIBUTION PRESSURE PUMPS TO PREVENT THE PUMPS FROM RUNNING DRY AND RESERVE ENOUGH WATER TO BACKWASH THE FILTERS.

PILOT LIGHTS FOR WST HIGH WATER LEVEL, LOW WATER LEVEL AND LOW WATER TEMPERATURE ALARMS WILL BE PROVIDED ON THE PANEL. A SIGNAL WILL BE SENT TO THE BUILDING ALARM PANEL WHEN THE PANEL IS IN AN ALARM CONDITION AND THE ALARM STROBE/HORN ON THE OUTSIDE OF THE BUILDING WILL BE ENERGIZED.

THROUGH-DOOR LOCKABLE CIRCUIT BREAKER ACTUATORS WILL ALLOW POWER TO BE DISCONNECTED FROM PUMPS.

A WHITE PILOT LIGHT WILL ILLUMINATE WHEN THE PANEL IS POWERED.

1 **WELL PUMPS & WATER STORAGE TANK CONTROL PANEL (WP/WSTCP)**
NTS

Alaska Department of Environmental Conservation Division of Water

Village Safe Water Program
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#AECL882-AK

TULUKSAK WTP-W

WELL PUMPS & WATER STORAGE TANK LEVEL CONTROL PANEL

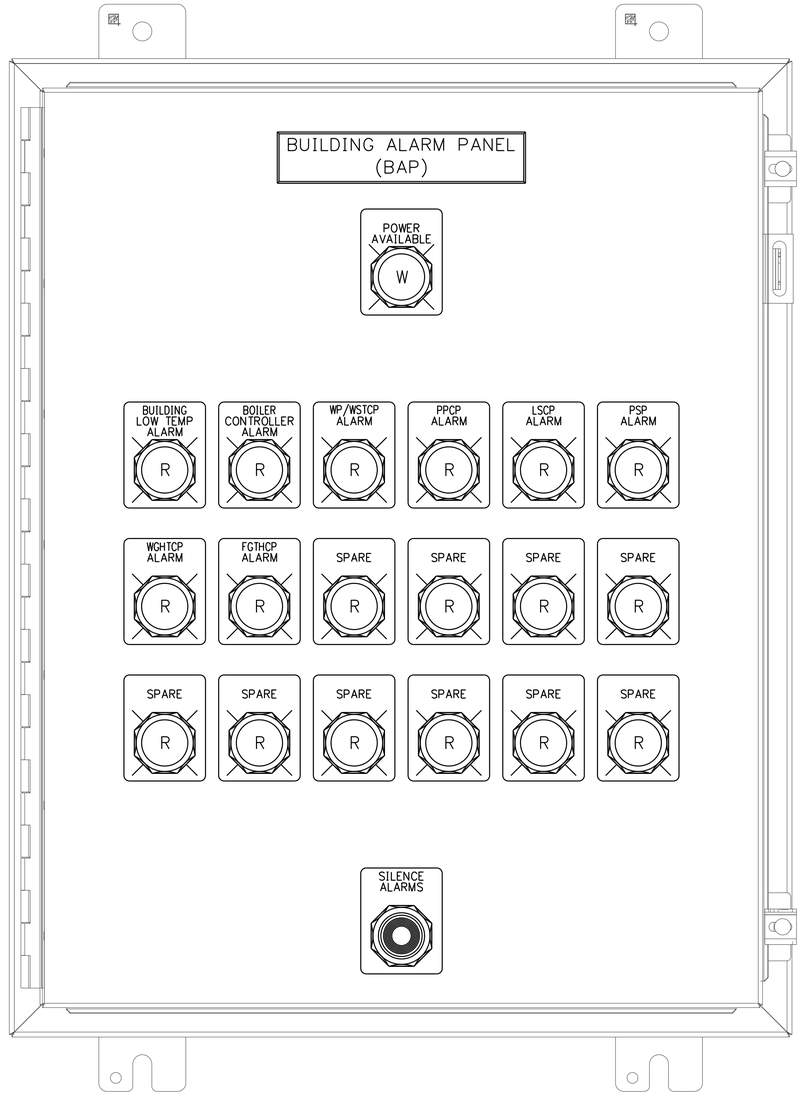
65% DESIGN

NO.	REVISION	BY	DATE

Plot Date: OCT 2021
Designed: TK
Drawn: TK
Approved: JS

Sheet No. E702

File: J:\JobsData\31308.00 Tuluksak Washeteria And WTP Design\00 CADD 2019\01 Working Set\03 Electrical\31308.00 - WP_WSTCP.dwg Plot Date: 10/11/2021 1:48 PM



1 BUILDING ALARM PANEL (BAP)

NTS

BUILDING ALARM PANEL NARRATIVE

THE BUILDING ALARM PANEL WILL INDICATE PANELS THAT ARE IN ALARM. A PILOT LIGHT WILL BE PROVIDED FOR THE FOLLOWING PANELS:

- WELLS PUMPS/WATER STORAGE TANK CONTROL PANEL (WP/WSTCP)
- PRESSURE PUMP CONTROL PANEL (PPCP)
- LIFT STATION CONTROL PANEL (LSCP)
- PROCESS CONTROL PANEL (PCP)
- WATER DISTRIBUTION GLYCOL HEAT TRACE CONTROL PANEL (WGHTCP)
- FORCE MAIN GLYCOL HEAT TRACE CONTROL PANEL (FGHTCP)
- BOILER CONTROLLER (TC-800)

AN ADDITIONAL PILOT LIGHT SHALL BE PROVIDED FOR BUILDING LOW TEMP.

THE BUILDING ALARM PANEL WILL ENERGIZE A STOBE/HORN ON THE OUTSIDE OF THE BUILDING IF THE BUILDING IS IN LOW TEMP ALARM OR ANY OF THE CONTROL PANELS ARE IN ALARM.

A PUSH BUTTON SHALL BE PROVIDED TO SILENCE THE AUDIBLE ALARM BUT INDICATOR LIGHTS AND STROBE WILL REMAIN ENERGIZED UNTIL THE ALARM CONDITION AT THE LOCAL PANEL HAS BEEN CORRECTED.

PROVIDE 10 ADDITIONAL SPARE INDICATORS FOR FUTURE ALARMS.

A WHITE PILOT LIGHT WILL ILLUMINATE WHEN THE PANEL IS POWERED.

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TULUKSAK WTP-W

BUILDING ALARM PANEL

65% DESIGN

NO.	REVISION	BY	DATE

Plot Date: OCT 2021
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Approved: JS

Sheet No. E707

Federal Debarment Certification Form

Certification Regarding Debarment, Suspension, Ineligibility and Voluntary Exclusion Lower Tier Covered Transactions

This certification is required by the regulations implementing Executive Order 12549, Debarment and Suspension, 29 CFR Part 98, Section 98.510, Participant's responsibilities. The regulations were published as Part VII of the May 26, 1988 Federal Register (pages 19160-19211).

(BEFORE COMPLETING CERTIFICATION, READ THE INSTRUCTIONS ON THE FOLLOWING PAGE WHICH ARE AN INTEGRAL PART OF THE CERTIFICATION)

(1) The prospective recipient of Federal assistance funds certifies, by submission of this bid, that neither it nor its principals are presently debarred, suspended, proposed for debarment, declared ineligible, or voluntarily excluded from participation in this transaction by any Federal department or agency.

(2) Where the prospective recipient of Federal assistance funds is unable to certify to any of the Statements in this certification, such prospective participant shall attach an explanation to this Proposal.

_____

Name and Title of Authorized Representative

_____

Signature Date

Federal Debarment Certification Form Instructions

Instructions for Certification

1. By signing and submitting this Proposal, the prospective recipient of Federal assistance funds is providing the certification as set out below.

2. The certification in this class is a material representation of fact upon which reliance was placed when this transaction was entered into. If it is later determined that the prospective recipient of Federal assistance funds knowingly rendered an erroneous certification, in addition to other remedies available to the Federal Government, the Department of Labor (DOL) may pursue available remedies, including suspension and/or debarment.

3. The prospective recipient of Federal assistance funds shall provide immediate written notice to the person to whom this Proposal is submitted if at any time the prospective recipient of Federal assistance funds learns that its certification was erroneous when submitted or has become erroneous by reason of changed circumstances.

4. The terms "covered transaction," "debarred," "suspended," "ineligible," "lower tier covered transaction," "participant," "person," "primary covered transaction," "principal," "Proposal," and "voluntarily excluded," as used in this clause, have the meanings set out in the Definitions and Coverage sections of rules implementing Executive Order 12549. You may contact the person to which this Proposal is submitted for assistance in obtaining a copy of those regulations.

5. The prospective recipient of Federal assistance funds agrees by submitting this Proposal that, should the proposed covered transaction be entered into, it shall not knowingly enter into any lower tier covered transaction with a person who is debarred, suspended, declared ineligible, or voluntarily excluded from participation in this covered transaction, unless authorized by the DOL.

6. The prospective recipient of Federal assistance funds further agrees by submitting this Proposal that it will include the clause titled "Certification Regarding Debarment, Suspension, Ineligibility and Voluntary Exclusion - Lower Tier Covered Transactions," without modification, in all lower tier covered transactions and in all solicitations for lower tier covered transactions.

7. A participant in a covered transaction may rely upon a certification of a prospective participant in a lower tier covered transaction that it is not debarred, suspended, ineligible, or voluntarily excluded from the covered transaction, unless it knows that the certification is erroneous. A participant may decide the method and frequency by which it determines the eligibility of its principals. Each participant may but is not required to check the List of Parties Excluded from Procurement or Non-procurement Programs.

8. Nothing contained in the foregoing shall be construed to require establishment of a system of records in order to render in good faith the certification required by this clause. The knowledge and information of a participant is not required to exceed that which is normally possessed by a prudent person in the ordinary course of business dealings.

9. Except for transactions authorized under paragraph 5 of these instructions, if a participant in a covered transaction knowingly enters into a lower tier covered transaction with a person who is suspended, debarred, ineligible, or voluntarily excluded from participation in this transaction, in addition to other remedies available to the Federal Government, the DOL may pursue available remedies, including suspension and/or debarment.

CERTIFICATION REGARDING LOBBYING

The undersigned certifies, to the best of his or her knowledge and belief, that:

(1) No Federal appropriated funds have been paid or will be paid, by or on behalf of the undersigned, to any person for influencing or attempting to influence an officer or employee of any agency, a Member of Congress, an officer or employee of Congress, or an employee of a Member of Congress in connection with the awarding of any Federal grant, the making of any Federal loan, the entering into of any cooperative agreement, and the extension, continuation, renewal, amendment or modification of any Federal contract, grant, loan, or cooperative agreement.

(2) If any funds other than Federal appropriated funds have been paid or will be paid to any person for influencing or attempting to influence an officer or employee of any agency, a Member of Congress, an officer or employee of Congress, or an employee of a Member of Congress in connection with this Federal contract, grant, loan, or cooperative agreement, the undersigned shall complete and submit Standard Form-LLL, "Disclosure of Lobbying Activities," in accordance with its instructions.

(3) The undersigned shall require that the language of this certification be included in the award documents of all sub-awards at all tiers (including subcontracts, sub-grants, and contracts under grants, loans, and cooperative agreements) and that all sub-recipients shall certify and disclose accordingly. The contractor and any subcontractors must return this completed certification form to the contract administering office.

This certification is a material representation of fact upon which reliance was placed when this transaction was made or entered into. Submission of this certification is a prerequisite for making or entering into this transaction imposed by section 1352, title 31, United States Code. Any person who fails to file the required certification shall be subject to a civil penalty of not less than $10,000 and not more than $100,000 for each such failure.

Organization: _____

Street address: _____

City, State, Zip: _____

_____

CERTIFIED BY: (Type or Print)

_____

TITLE:

_____ _____

(signature) (date)

FAR 52.203-11
CERTIFICATION AND DISCLOSURE REGARDING PAYMENTS TO INFLUENCE CERTAIN FEDERAL TRANSACTIONS (SEPT 2007) (a) *Definitions.* As used in this provision—"Lobbying contact" has the meaning provided at 2

U.S.C. 1602(8). The terms "agency," "influencing or attempting to influence," "officer or employee of an agency," "person," "reasonable compensation," and "regularly employed" are defined in the FAR clause of this solicitation entitled "Limitation on Payments to Influence Certain Federal Transactions" (52.203-12).

(b) *Prohibition*. The prohibition and exceptions contained in the FAR clause of this solicitation entitled "Limitation on Payments to Influence Certain Federal Transactions" (52.203-12) are hereby incorporated by reference in this provision.

(c) *Certification*. The offeror, by signing its offer, hereby certifies to the best of its knowledge and belief that no Federal appropriated funds have been paid or will be paid to any person for influencing or attempting to influence an officer or employee of any agency, a Member of Congress, an officer or employee of Congress, or an employee of a Member of Congress on its behalf in connection with the awarding of this contract.

(d) *Disclosure*. If any registrants under the Lobbying Disclosure Act of 1995 have made a lobbying contact on behalf of the offeror with respect to this contract, the offeror shall complete and submit, with its offer, OMB Standard Form LLL, Disclosure of Lobbying Activities, to provide the name of the registrants. The offeror need not report regularly employed officers or employees of the offeror to whom payments of reasonable compensation were made.

(e) *Penalty*. Submission of this certification and disclosure is a prerequisite for making or entering into this contract imposed by 31 U.S.C. 1352. Any person who makes an expenditure prohibited under this provision or who fails to file or amend the disclosure required to be filed or amended by this provision, shall be subject to a civil penalty of not less than $10,000, and not more than $100,000, for each such failure.

CONSENT TO USE OF ELECTRONIC SIGNATURES

☐ BY CHECKING HERE, I AGREE TO THE USE OF ELECTRONIC SIGNATURES AS VALID, LEGALLY BINDING SUBSTITUTES FOR ORIGINAL, HANDWRITTEN SIGNATURES ON THIS DOCUMENT.

Company _____

Name (signature) _____

Name (printed) _____

Title _____ **Date of execution** _____

DISCLOSURE OF LOBBYING ACTIVITIES

Approved by OMB
0348-0046

Complete this form to disclose lobbying activities pursuant to 31 U.S.C. 1352
(See reverse for public burden disclosure.)

1. Type of Federal Action:	2. Status of Federal Action:	3. Report Type:
☐ a. contract b. grant c. cooperative agreement d. loan e. loan guarantee f. loan insurance	☐ a. bid/offer/application b. initial award c. post-award	☐ a. initial filing b. material change **For Material Change Only:** year _____ quarter _____ date of last report _____

4. Name and Address of Reporting Entity:	5. If Reporting Entity in No. 4 is a Subawardee, Enter Name and Address of Prime:
☐ **Prime** ☐ **Subawardee** Tier _____, *if known*: **Congressional District**, *if known*: 4c	 **Congressional District**, *if known*:
6. Federal Department/Agency:	**7. Federal Program Name/Description:** CFDA Number, *if applicable*: _____
8. Federal Action Number, *if known*:	**9. Award Amount,** *if known*: $
10. a. Name and Address of Lobbying Registrant (*if individual, last name, first name, MI*):	**b. Individuals Performing Services** (*including address if different from No. 10a*) (*last name, first name, MI*):
11. Information requested through this form is authorized by title 31 U.S.C. section 1352. This disclosure of lobbying activities is a material representation of fact upon which reliance was placed by the tier above when this transaction was made or entered into. This disclosure is required pursuant to 31 U.S.C. 1352. This information will be available for public inspection. Any person who fails to file the required disclosure shall be subject to a civil penalty of not less than $10,000 and not more than $100,000 for each such failure.	Signature: _____ Print Name: _____ Title: _____ Telephone No.: _____ Date: _____
Federal Use Only:	Authorized for Local Reproduction Standard Form LLL (Rev. 7-97)

PRINT

INSTRUCTIONS FOR COMPLETION OF SF-LLL, DISCLOSURE OF LOBBYING ACTIVITIES

This disclosure form shall be completed by the reporting entity, whether subawardee or prime Federal recipient, at the initiation or receipt of a covered Federal action, or a material change to a previous filing, pursuant to title 31 U.S.C. section 1352. The filing of a form is required for each payment or agreement to make payment to any lobbying entity for influencing or attempting to influence an officer or employee of any agency, a Member of Congress, an officer or employee of Congress, or an employeeof a Member of Congress in connection with a covered Federal action. Complete all items that apply for both the initial filing and material change report. Refer to the implementing guidance published by the Office of Management and Budget for additional information.

1. Identify the type of covered Federal action for which lobbying activity is and/or has been secured to influence the outcome of a covered Federal action.

2. Identify the status of the covered Federal action.

3. Identify the appropriate classification of this report. If this is a followup report caused by a material change to the information previously reported, enter the year and quarter in which the change occurred. Enter the date of the last previously submitted report by this reporting entity for this covered Federal action.

4. Enter the full name, address, city, State and zip code of the reporting entity. Include Congressional District, if known. Check the appropriate classification of the reporting entity that designates if it is, or expects to be, a prime or subaward recipient. Identify the tier of the subawardee, e.g., the first subawardee of the prime is the 1st tier. Subawards include but are not limited to subcontracts, subgrants and contract awards under grants.

5. If the organization filing the report in item 4 checks "Subawardee," then enter the full name, address, city, State and zip code of the prime Federal recipient. Include Congressional District, if known.

6. Enter the name of the Federal agency making the award or loan commitment. Include at least one organizationallevel below agency name, if known. For example, Department of Transportation, United States Coast Guard.

7. Enter the Federal program name or description for the covered Federal action (item 1). If known, enter the full Catalog of Federal Domestic Assistance (CFDA) number for grants, cooperative agreements, loans, and loan commitments.

8. Enter the most appropriate Federal identifying number available for the Federal action identified in item 1 (e.g., Request for Proposal (RFP) number; Invitation for Bid (IFB) number; grant announcement number; the contract, grant, or loan award number; the application/proposal control number assigned by the Federal agency). Include prefixes, e.g., "RFP-DE-90-001."

9. For a covered Federal action where there has been an award or loan commitment by the Federal agency, enter the Federal amount of the award/loan commitment for the prime entity identified in item 4 or 5.

10. (a) Enter the full name, address, city, State and zip code of the lobbying registrant under the Lobbying Disclosure Act of 1995 engaged by the reporting entity identified in item 4 to influence the covered Federal action.

    (b) Enter the full names of the individual(s) performing services, and include full address if different from 10 (a). Enter Last Name, First Name, and Middle Initial (MI).

11. The certifying official shall sign and date the form, print his/her name, title, and telephone number.

PROHIBITION ON CERTAIN TELECOMMUNICATION AND VIDEO SURVEILLANCE SERVICES OR EQUIPMENT

On projects using federal funds, the Contractor shall comply with the requirements of 2 CFR 200.216, as amended effective August 13, 2020, Federal Register, Vol. 85, No. 157, 49506 - 49582, **Prohibition on certain telecommunication and video surveillance services or equipment.**

By signature of the bid, proposal, contract or contract amendment the Contractor certifies the Contractor and subcontractors have not entered into a contract nor extended or renewed a contract to procure or obtain equipment, services, or systems that uses covered telecommunications equipment or services as a substantial or essential component of any system, or as critical technology as part of any system produced by:

a. Huawei Technologies Company or ZTE Corporation (or any subsidiary or affiliate of such entities).
b. Hera Communications Corporation, Hangzhou Hikvision Digital Technology Company, or Dahua Technology Company (or any subsidiary or affiliate of such entities).
c. Any entity that the Secretary of Defense, in consultation with the Director of the National Intelligence or the Director of the Federal Bureau of Investigation, reasonably believes to be an entity owned or controlled by, or otherwise connected to, the government of a covered foreign country.

The Contractor shall further certify that it has complied the requirements of 2 CFR 200.216, as amended effective August 13, 2020, Federal Register, Vol. 85, No. 157, 49506- 49582 and that it will continue to do so throughout the term of the Contract.