

September 25, 2025

This addendum forms a part of the contract documents and modifies the original bid documents for the project.

In case of conflicts between this addendum and previously issued documents, this addendum shall take precedence.

This Addendum consists of the following:

Addendum Language (Pages 1 through 17)

Contract Document Attachments:

Bid Form for Construction Contract

ADEC Approval to Construct

Possible Staging/Laydown Yard Locations

Technical Specification Attachments:

Section 331613 – Potable Water Storage Tank

Section 406000- Process Control System, Attachment A- Control Narrative

Drawing Attachments:

C-001, C-301, C302, C-303, C-305-C-318, C-401, C-501, C-507

D-002, D-003, D-111, D-112, D-301, D-302, D-511, D-611, D-613

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CONTRACT SPECIFICATIONS**AD3.01 Advertisement For Bids**

REPLACE Paragraph regarding bid date and location with the following:

Bids for the construction of the Project will be received by the RESPEC Administrative Assistant at 2700 Gambell St Suite 500, Anchorage, AK 99503 until **October 21 ,2025 at 2:00 PM** local time. Sealed bids must be marked “City and Borough of Yakutat- Airport Water Main Extension. Both hand delivered and mailed bids are acceptable. Please do not email your bid. Bids received will be publicly opened and read.

AD3.02 Instructions to Bidders for Construction Contract

REPLACE Paragraph 6.03 with the following:

Interpretations or clarifications considered necessary by Engineer in response to such questions will be issued by Addenda delivered to all registered plan holders.
Questions after September 29, 2025 may not be answered.

AD3.03 Bid Form for Construction Contracts

REPLACE Entirely with attached

AD3.04 Supplementary Conditions

REPLACE SC-5.03 E. REPORT Titled “Revised Final- Contaminated Materials Management Plan, Section 5, paragraph 4 with the following:

The current DEC MTG soil cleanup levels are referenced in this CMMP. However, PFAS cleanup levels are anticipated to change in the future. Updated cleanup levels would result in changes to this CMMP, in which case additional DEC coordination and approval will be necessary. Based on our current understanding of PFAS concentrations in soil within the project area, excavated material can be staged and returned to the excavated area to the approximate depth and location where it originated without sampling, however, excess material should be stockpiled and sampled for waste characterization after project completion. Soils with results exceeding DEC’s migration to groundwater cleanup levels may only be treated or

disposed of and cannot be reused. Further discussion regarding stockpiles with respect to surface water drainage is provided in Section 9.

AD3.05 Special Conditions

REPLACE SP-5 with

Clearing and grubbing shall be completed outside of the bird nesting window which is April 15th to July 15th in Southeast Alaska, to the fullest extent possible, in order to comply with U.S. Fish and Wildlife Service timing recommendations for land disturbance and vegetation clearing.

TECHNICAL SPECIFICATIONS**AD3.06 312319- Dewatering**

REPLACE 3.03, A with the following:

- A. Prepare and submit the Notice of Intent (NOI) for APDES coverage under General Permit AKG002000 for Excavation Dewatering and associated Dewatering Work Plan to the Engineer of Record for review and approval. The permit documents, forms, and further permit information can be accessed at the following location:

<https://dec.alaska.gov/water/wastewater/stormwater/permits-approvals/dewater/>

AD3.07 331100- Water Distribution Piping

ADD C. Pipe and Fittings shall be Iron Pipe Size (IPS).

AD3.08 331100- Water Distribution Piping

REPLACE 2.14 Tracer Wire with the following:

2.14 TRACER WIRE

- A. For HDPE installed by open trenching use #12 stranded copper Type UL HMWPE (High Molecular Weight Polyethylene). Daylight ends of the trace wire at each hydrant.

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- B. For HDPE installed by HDD use #10 braided stainless or Copperhead 7x7 stranded copper-clad steel SoloShot™ Xtreme Strength with 4,700 lb. break load, minimum 50 mil HDPE insulation (PBX-50*-**).

AD3.09 331100- Water Distribution Piping

ADD 4.02 F

Payment for HDPE Water Main shall be independent of the method used for installation regardless of if it is open trenched or installed by horizontal directional drilling.

AD3.10 330523 – Horizontal Directional Drilling

REPLACE 1.06, E with the following:

- E. Contractor shall monitor the strain applied to the pipe during pullback operations to prevent pipe or casing from being overstressed or damaged. Contractor shall perform pressure test per specification 331100, 3.11 prior to acceptance of line. Any deficiencies that prevent the pipe from passing the acceptance testing shall be remedied by the contractor at no additional cost to the Owner.

AD3.11 330523 – Horizontal Directional Drilling

ADD 3.03, G The inner beads of the HDPE casings shall be removed prior to the installation of the carrier piping.

AD3.12 331613 – Potable Water Storage Tank

REPLACE Entirely with attached Specification

AD3.13 406000- Process Control System

INSERT Attachment A- Control Narrative

AD3.14 407113- Magnetic Flow Meter

REPLACE 1.09, A and B with the following:

- A. Each meter shall be hydraulically factory calibrated with 3-point calibration and 0.2% accuracy.

DRAWINGS

AD3.15 C-001 GENERAL NOTES, LEGEND AND ABBREVIATIONS

REPLACE Sheet entirely with Attached.

- Added note regarding minimum limits for HDD.
- Added Cut and Fill Slope Linetypes

AD3.16 C-301 PLAN AND PROFILE OPHIR CREEK ROAD

REPLACE Sheet entirely with Attached.

- Added Clearing Limits
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AD3.17 C-302 COAST GUARD ROAD (1 OF 2)

REPLACE Sheet entirely with Attached.

- Added Clearing Limits
- Added minimum limits for HDD

AD3.18 C-303 COAST GUARD ROAD (2 OF 2)

REPLACE Sheet entirely with Attached.

- Added Clearing Limits

AD3.19 C-305 AIRPORT ROAD (2 OF 14)

REPLACE Sheet entirely with Attached.

- Added Clearing Limits
- Added specification for the Rock Outfall
- Added Cut and Fill Slopes

AD3.20 C-306- C-317 AIRPORT ROAD (3-14 OR 14)

REPLACE Sheet entirely with Attached.

- Added Cut and Fill Slopes

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AD3.21 C-318 AIRPORT AREA

REPLACE Sheet entirely with Attached.

- Added Clearing Limits

AD3.22 C-401 AIRPORT ROAD TYPICAL SECTION

REPLACE Sheet entirely with Attached.

- Revised ditch slope from 4:1 to 2:1 to match existing.

AD3.23 C-501 WATER PIPING DETAILS

REPLACE Sheet entirely with Attached.

- Revised size of HDPE Recirc Line

AD3.24 C-507 – WATER STORAGE TANK DETAILS (2 OF 2)

REPLACE Sheet entirely with Attached.

- Updated detail 1/C-507 material and thickness.
- Updated detail 4/C-501. Recirc line has been changed from 3” to 4”
D-002, D-003, D-111, D-112, D-301, D-302, D-511, D-611, D-613

AD3.25 D-002- PROCESS SCHEDULES

REPLACE Sheet entirely with Attached.

- Updated Actuated Valve Schedule to remove note #7.
- Updated Flow Meter Schedule with basis of design meter part numbers.
- Updated Pipe Schedule. Recirc line has been changed from 3” to 4” and ductile iron pipe pressure class has been updated to C52 or greater.

AD3.26 D-003, D-111, D-112, D-301, D-302, D-511, D-611, D-613**AD3.27** REPLACE Sheets entirely with Attached.

- Recirc line has been changed from 3” to 4”.

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QUESTIONS AND RESPONSES:

1. **QUESTION:** What is the Engineer's Estimate for construction costs?

RESPONSE: The Engineers' Estimate is not being provided to Bidding Contractors.

2. **QUESTION:** Did the City physically perform advanced potholing to confirm 3-Dimensional locations of existing utilities so that contractors may rely on the CAD locations and elevations being accurate?

RESPONSE: No. See Utility Note 1 on Sheet C-001.

3. **QUESTION:** Soils Analytical/Contaminated Materials Management Plan: Does the City of Yakutat have any State Accredited chemists on staff and/or will there be a conflict of interest if contractors were to hire Shannon & Wilson?

RESPONSE: No, the City does not have chemists on staff. The Contractors may choose to hire Shannon and Wilson for services during construction. The plan does not require a State Accredited Chemist. It requires a Qualified Environmental Professional as defined by Alaska Administrative Code 18 AAC 75.333.

4. **QUESTION:** Does the Fiber Ductbank at STA 175+00 just dead-end, or where does it continue so bidders can evaluate the risk of ditch excavation?

RESPONSE: CTCAK provided utility maps of the fiber. Those show the Fiber crosses Airport Road south of Cannon Beach Road. This is supported by the locates and the survey showed the fiber crossing. The F/O should have been trimmed at that crossing location.

5. **QUESTION:** On the day of the Prebid Meeting, September 11th 2025, there was a significant amount of water flooding much of the water main alignment, with very high flows seen in the existing storm culverts well above influent and effluent inverts. A great example is the culvert at STA 174+35 where the drawing's groundwater notation is 27' +/- but on Sept. 11th the static water level nearly flooded the culvert. These saturated conditions existed throughout much of the alignment and are clearly in conflict with the C-Series drawing profiles indicating "Approximate Existing Groundwater", S&W's Geotech Report, and ambitions for Dwg. C-501's Detail 1. Given Dewatering is Lump Sum, and that groundwater levels have significant variability, the groundwater levels schematically shown on the Drawings and language in Spec. 312319 will lead to major conflicts of interpretation. With enormous water management costs involved, does the Engineer intend to delete the misleading groundwater depicted in the drawings to instead rely solely on the Dewatering Spec. 312319 and 7.4 of S&W's Geotech Report, or is there further predesign investigative engineering data substantiating the simplified dewatering concept shown on Dwg. C-806?

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RESPONSE: The ground water levels fluctuate seasonally. The ground water levels shown in the plans is an approximation based on interpolation between the static ground water elevations measured in the bore holes during the geotechnical investigation.

6. **QUESTION:** Dwgs. C-301 to C-303: The designed water line alignment will require significant tree removal and impact countless Critical Root Zones of peripheral trees. Could this alignment get shifted into the existing gravel roadway to avoid disrupting the densely forested areas?

RESPONSE: The alignment of the gravel trail meanders through the ROW and near Ophir Creek outside of the ROW. Please bid the alignment as shown with clearing required. Clearing pay item has been updated from lump sum to be by acre.

7. **QUESTION:** Is the HDPE product pipe IPS or DIPS sizing?

RESPONSE: IPS. The specification has been updated with this addendum.

8. **QUESTION:** Can the HDPE casing pipe DR be changed from DR 17 to DR 11 to reduce the risk of buckling?

RESPONSE: This was revised in Addendum 2.

9. **QUESTION:** In the HDD specs you reference the need to use a load cell for monitoring pipe tension during pullback operations. Is this needed since the HDD sections are casings?

RESPONSE: The specification was modified with Addendum 2 to remove language about protecting arctic pipe insulation and jacket. Now that some of the HDD will be carrier pipe, the contractor will need protect the pipe. The requirement for a load cell will be removed. It will be the responsibility of the Contractor to perform the installation of the HDD in such way as to not overstress the water pipe during installation. Pursuant to the specifications, the water pipe will have to pass a pressure test in order to be accepted.

10. **QUESTION:** Would the gauge on the HDD machine be sufficient to monitor the pullback load?

RESPONSE: Contractor will need to determine this and provide plan. See above related question and response.

11. **QUESTION:** If a load cell is required can you reference a company that makes a load cell? The only load cell manufactured we are aware of is DCI but they no longer manufacture the product (TensiTrak).

RESPONSE: The load cell requirement has been removed with this amendment.

12. **QUESTION:** The HDD specs reference the use of a weak link. Is a weak link required for the HDPE casing pipe?

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RESPONSE: Yes, a weak link is required.

13. **QUESTION:** The HDD specs reference a fabricated pulling head that will protect artic pipe insulation. Is there any artic pipe on this project?

RESPONSE: No this reference was deleted with Addendum 2.

14. **QUESTION:** The HDPE casing bores on sheet C-318 STA 211+00 & C-320 STA 236+00 have a bend radius tighter than standard length DI pipe can make. Can a HDPE carrier pipe be installed in these casing sections or will you name a specific pipe type and manufacturer that can comply?

RESPONSE: Shorter lengths of DIP will be needed to make the radius.

15. **QUESTION:** HDD Start & Stop Distances: Given the extensive groundwater, in several locations it is prudent to extend the HDD shot-length to keep each end above groundwater. Please confirm the Contractor has full discretion to extend HDD shot-lengths beyond the current plans' limits.

RESPONSE: The payment for X" HDPE Water Main and HDPE Recirculation Main is independent of the method used for installation (open trench or HDD). The plans show minimum requirements where HDD installation is required for the pipe in a few select areas that are below creeks in order to maintain the project's permit requirements or below ADOT road. Beyond those select locations the contractor may use HDD or direct bury as they believe it is appropriate.

16. **QUESTION:** HDD at STA 197+00 should get extended beyond road to accommodate pits and arc of pipe.

RESPONSE: The HDD extents should clear the edge of the pavement. This may need to be cut back in order to accommodate the 90 degree bend. There appears to be a bust in the profile in this location.

17. **QUESTION:** STA 211+00 appears to reduce 10" to 8" on both sides of bore. Should this be 12" HDPE with 10" ID to match flow capabilities?

RESPONSE: No. The 10" DIP is to be installed inside 18" HDPE SDR 11 Casing. There is a second casing for the recirculation line. Note that Addendum 2 revised the casing size and the recirculation line size.

18. **QUESTION:** Please provide a detail showing the carrier pipe, casing pipe, end-seals (if desired), and/or casing spacers (if desired), and whether annular spaces must be filled.

RESPONSE: Casing spacers and end seals are not required.

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19. **QUESTION:** No Air-Vacs are shown, which is unexpected. Please confirm that is indeed true.

RESPONSE: No Air-Vacs are necessary since there are fire hydrants along the main. These will allow for air venting when the main is flushed and put into service and during O&M.

20. **QUESTION:** Existing culverts have structurally failed at 162+45 and 174+15 (possibly elsewhere too, but I didn't check.) With my bare hands and only light pressure I was able to remove a small token piece at the invert. Did your Bid Form's culvert quantity forecasts account for such contingency? If not, we suggest you issue a new Bid Form with either increased quantities and/or a Force Account allowance for such unforeseeable rehabilitation.

RESPONSE: Replacement of the existing culverts along Airport Road are not included in the project scope. The need for culvert replacement will be evaluated during construction and added to the project on an as-needed basis.

21. **QUESTION:** Utility Crossings: When going underneath existing utilities at STA 41+00, 162+50, 174+30, 197+00, will gradual HDPE pipe deflection be acceptable instead of the 45-degree vertical bends w/thrust blocks?

RESPONSE: Yes. Pipe deflection within the tolerances of the pipe vendor recommendations is allowable.

22. **QUESTION:** Will casings be required at all culvert crossings as well as Sewer C.503/Det.3?

RESPONSE: No. Casings will only be required where shown on the plans. Those at sewer crossings are required by ADEC as part of the waiver. The ADEC Approval to Construct is attached for contractor reference.

23. **QUESTION:** "Replace Rock Outfall" Dwg. C-305 STA 48+25 – Please quantify an aggregate tonnage and, if intended to be incidental, under which pay item should this get absorbed?

RESPONSE: Replacement of the road outfall will be subsidiary to the ditch realignment pay item. Approximately 10 CY of rock. This is noted on Sheet C-305 with this addendum.

24. **QUESTION:** Dwg. C-401 Typical Roadway Section (Bid Form's "Ditch Realignment" paid per LF): The existing Edge of Pavement elevation is fixed so contractors will not have any adaptability. Given the design requires 24-feet to 'catch' the bottom of the existing roadside ditch edge, plus the "Match Existing Ditch Width", then finally a 2:1 slope to catch the far-side's existing topography, visual observation makes me believe this concept exceeds the existing ROW limits and/or will breach any existing utilities' minimum bury depths. Please extrapolate CAD limits and verify this 'Typical Section' adequately daylight within the ROW without impacting the forecasted Clearing & Grubbing Lump Sum pay item. Also highlight any locations where bidders may anticipate conflicts with existing utility minimum bury depths.

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RESPONSE: The typical section has been corrected to indicate the catch slope is 2:1, to match the existing road slope, not 4:1 as previously labeled. The catch, fill and clearing limits have been added to the C sheets.

25. **QUESTION:** #1 impacted the Bid Form's Quantities, yet none changed. Please re-issue a new Bid Form reflecting all changes made through all Addendums.

RESPONSE: The Bid Form was updated by Addendum 2 and again with this Addendum.

26. **QUESTION:** Is there a designated laydown yard and/or man camp location available for this project?

RESPONSE: Yes. There are currently two potential locations that can accommodate materials storage and a mancamp. The first location is near the Ocean Cape Road and Ophir Creek Road intersection. The second location is behind the Yakutat Department of Public Safety office, at 609 Forest Highway #10. Attached is a map showing these locations. The CBY owns the land in both areas.

27. **QUESTION:** Per the SPEC, E. "Contractor's license number as evidence of Bidder's State Contractor's License or a covenant by Bidder to obtain said license within the time for acceptance of Bids;" Please provide a previously accepted example "covenant" for out-of-state bidders to mimic, so that we have absolute assurance it will be deemed satisfactory.

RESPONSE: An example covenant is not available. This covenant is simply a promise statement on the Contractor's Letterhead signed by an officer with authority to make such statement that licensure can be obtained within the required time period. Article 5 of the Bid Form states this time period is 60 days.

28. **QUESTION:** The water storage tank drawing shows an embedded shell design, then goes on to say 4" sand layer and the floor should remain 'uncoated' (that would be a steel floor tank) Bolted steel tanks are coated on the underside which is one of the advantages of a bolted steel tank. Specs make no mention of embedded shell. Please clarify.

RESPONSE: The 4" sand layer (with pH requirements) to remain. Factory-coated underside of tank is required. Specification 331613 section 2.04 B.2 has been modified.

29. **QUESTION:** The water storage tank drawings state 1/8 corrosion allowance, the specs state no corrosion allowance. Please clarify.

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RESPONSE: A 1/8" of additional steel above and beyond the minimum thickness required for strength is required as a corrosion allowance. Specification 331613 section 1.12 E has been modified.

30. **QUESTION:** Specs say 'active' cathodic protection. Do you want an impressed current per D104 or would a sacrificial CP system be acceptable (preferred)?

RESPONSE: This addendum has removed the active cathodic protection requirement. The contractor will be responsible for submitting a cathodic protection plan to support 50-year life of tank. See updated specification 331613.

31. **QUESTION:** Is a thermoset factory powder coated bolted steel tank coating acceptable?

RESPONSE: Bid the coating based on Construction Documents.

32. **QUESTION:** On drawing D-002 the Actuated Valve Schedule lists a note #7 that says, "PSV shall include integral pressure relief valve". This note applies to PRV-01 the 4" Pressure Sustaining/Reducing valve. Do you know what the objective of that note is?

RESPONSE: Drawing D-002 has been revised to remove this note from the Actuated Valve Schedule.

33. **QUESTION:** D-Drawings & Spec 40 05 20

- a) Please define what materials the pumphouse piping is to comprised of.
- b) Please identify where changes in materials are to occur.

Typically Pump house piping is not Ductile Iron, however spec 40 05 20 referenced in D-002 Pipe Schedule calls for ductile iron pipe. Please clarify if this is correct.

RESPONSE: Piping material for potable water system is specified on D-002 in table "Pipe Schedule" based on pipe diameter. D-drawings delineate pipe diameter and Flow Stream ID (PW or RC) which can be correlated to piping material specified in the Pipe Schedule. Ductile iron is the intended pipe material and is commonly used in pumphouses in Alaska.

34. **QUESTION:** S-302 Detail 2 & Spec 33 16 13

- a) Typically anchor bolts spacing and size design are provided by the tank manufacturer. DWG S-302 depicts a base setting ring with a leveling plate. This is atypical.
- b) Please provide basis of design or issue clarification if anchor bolts can be utilized.

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RESPONSE:

- a) Per Note 3 S-302 DESIGN ANCHOR BOLTS, ANCHOR BOLT CHAIRS, AND ATTACHMENTS TO THE AWWA D103-19 DESIGN STANDARD AND ALL APPLICABLE DESIGN CODES. The configuration of the tank attachment to the foundation is delegated to the tank manufacture's engineer. Anchor Bolts, a base setting ring or alternative method could be used. Note that the tank is located in a high seismic area and we expect to see the tank manufacture's analysis proving the tank is adequate for seismic loading.
- b) Anchor bolts would be an acceptable method to anchor the tank. These shall be designed by the tank manufacturer's engineer.

35. QUESTION: D-107 & C-507 Details 2 & 4

- 1) Arctic piping and fittings are typically too large for distance of 8 feet with 6 inch and 10 inch piping.
 - a) Please define type of insulation and covering to be used between Tank and Pumphouse.
 - b) Please define thickness of insulation.

RESPONSE: Insulation shall be polyisocyanurate insulation at 2" minimum thickness. Covering shall be an aluminum jacket. Detail 1/C-507 has been modified to match specification 220700 sections 2.05 and 2.06.

36. QUESTION: Spec 31 23 19 3.03A The link provided

<http://dec.alaska.gov/water/wastewater/stormwater/dewater-hydrostatic/>, directed us to a "file not found error 404."

Please provide the referenced documents.

- a) Will filtering during dewatering activities be required.

RESPONSE: The link has been updated with this addendum and is now:

<https://dec.alaska.gov/water/wastewater/stormwater/permits-approvals/dewater/>. The use of filters during dewatering is under the discretion of ADEC during review of Contractor's NOI and BMP plan. Per ADEC Excavation Dewatering General Permit, filtering may be necessary to minimize off-site sediment deposition.

37. QUESTION: Due to the volume of information received from Addendum 2, and the remaining outstanding questions, can the due date for the proposal be extended to October 9th, 2025.

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RESPONSE: Due to the large number of questions and recent updates to the Construction Documents we are extending the Bid Date to October 21, 2025. We will not be responding to questions received after September 29, 2025.

38. **QUESTION:** Spec 33 16 13 1.12.D. Active Cathodic protections systems are discouraged by bolted tank manufacturers and may void the warranty. Can this requirement be deleted?

RESPONSE: This addendum has removed the active cathodic protection requirement. The contractor will be responsible for submitting a cathodic protection plan to support 50-year life of tank. See updated specification 331613.

39. **QUESTION:** DWG C-506 Detail 3. The detail calls out for an aluminum dome roof. These are not typically installed in Alaska due to the snow loads. Please consider allowing tank manufacturer to specify roof type for location.

RESPONSE: The roof type shown in Detail 3 (aluminum dome) is representative only. Final roof design shall be proposed by the tank manufacturer and must be suitable for local snow loads and environmental conditions. Acceptable alternatives include sloped steel roofs or other engineered solutions that meet structural and operational requirements.

40. **QUESTION:** I have a question about the most recent addendum that came out. Addendum 2 on the 099100 Painting section. It looks like it is required to have exterior and interior paints as follows for the pump house piping. As this reads, this is for the exterior and interior of the pipe itself. I spoke to some of the manufacturers and they need this to be addressed before they can quote this. Here's what they had to say. "I am being told by the coaters that the addendum has finish paints listed that Sherwin Williams and Tnemec say that they should not be applied over top of the macro 646. My coaters are asking for full spec sheet that may call out what is running through the pipe, what temperature it might be at, and or what the acidity of what is being run through the pipe. They just want to make sure that everything is done correctly."

RESPONSE: Exterior Paint Section 2.02 is for painting outdoor piping exposed to the elements. Interior Paint Section 2.03 is for painting indoor piping. Paint shall only be applied to the exterior of the pipe. Interior lining and coating is specified in Specification 40 05 20 Plant Pipe and Fittings.

41. **QUESTION:** I am needing clarification on the flow meters. The supplier for the meter is telling me they need part numbers that would fit into the table at the end of this M2000 product data sheet before they can provide a quote. Can you provide a part number for the meters? Thank you.

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RESPONSE: Drawing D-002 Flow Meter Schedule has been updated to provide full part numbers for the basis of design meter (Badger M2000). A revision has been made in Spec 40 71 13 Magnetic Flow Meter to the calibration requirements.

42. **QUESTION:** AD2.03 (Add#2's Pg. 2 of 10) prohibits Clearing & Grubbing from April 15th to July 15th to mitigate impacts to nesting birds. Depending on what the Agency formally intends by "Clearing & Grubbing", this could become problematic given this alignment's footprint. Please be specific as to which C&G activities will be prohibited, such as this only restricting the falling of trees, etc.

RESPONSE: The time window is specific to clearing thus falling trees. This Addendum modifies the language in the Special Condition.

43. **QUESTION:** Addendum#2 – Article 2

- a. Add#2-2.01B & C implies Bidders are to provide our list of proposed Subs and Vendors at time of bid, yet Section 2 Article 10.01 states we have FIVE days after bid opening to disclose:
 - i. [Currently] "Water storage tank installer, electrical, and controls"
 - ii. [Request] Please affirm Bidders have Five (5) full business days to provide these entities.
- b. Add#2-2.01D & E both allow Covenants
 - i. Please provide previously approved templates and/or an acceptable sentence/paragraph for Bidders to copy-paste onto our Letterhead as an acceptable supplement to the Bid Package.

RESPONSE (a): Confirmed, bidders have 5 days to provide this list. The Bid Form has been updated to remove those attachments.

RESPONSE (b): An example covenant is not available. This covenant is simply a promise statement on the Contractor's Letterhead signed by an officer with authority to make such statement.

44. **QUESTION:** Retention: My understanding regarding Federally Funded projects is that Retention cannot be withheld. If I am mistaken, will CBY honor a Contractor's Retention Bond to release retention with each pay estimate?

RESPONSE: Retainage will be withheld and released in accordance with the Agreement, Article 6.02.

45. **QUESTION:** The Template provided for "Contractor's Application for Payment" does not account for Yakutat's 5% Sales Tax. Will Sales tax apply to this Federally funded project and, if so, should Bidders build the 5% into each line item or will you update the Template with a 5% Sales Tax formula that CBY automatically adds onto each Pay Application? (Essentially meaning Bidders should ignore taxes in individual line items.)

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RESPONSE: This project is exempt.

46. **QUESTION:** HDD Means & Methods: Please confirm the Add#2 HDD installation specifications apply even if Bidder's means-and-methods exceed Add#2's forecasted HDD design limits and Bid Form quantities. If acceptable, confirm that any Bidder elected 'extra HDD' linear footage will be paid at the lower unit price of HDD vs. open-cut-trench.

RESPONSE: The contractor may choose to extend HDD water main installation. The pay item for HDPE Water main is the same for HDD vs Open Trench installation.

47. **QUESTION:** I would recommend #10 braided stainless or Copperhead 7x7 stranded copper-clad steel SoloShot™ Xtreme Strength with 4,700 lb. break load, minimum 50 mil HDPE insulation (PBX-50*-**). tracer wire. With the elimination of casing pipes, it is my experience that solid 12- or 10-gauge copper has a high failure rate during pullback.

RESPONSE: Thank you for the recommendation we will upsize the requirement, and the changes will be reflected in Addendum #3.

48. **QUESTION:** Bore profiles are somewhat unrealistic based on the requirements of a 70,000 pound HDD rig

RESPONSE: The bidders are reminded that the plan and profile sheets are exaggerated in the vertical direction. The grid is set at 50' in the horizontal direction to 10' in the vertical direction resulting in a 5:1 exaggeration. The profiles show the minimum extents of HDD based on coordination with the AKDOT and Department of Fish and Game. Additionally, see response to Question #15.

49. **QUESTION:** Are you factoring the bend radius of DIP with isolators on it into the bore profiles? This could have potential issue when the crews go to insert the DIP into the HDPE.

RESPONSE: See Response to Questions 14, 15 and 18.

QUESTION: Currently there is no requirement to remove the inner beads of the HDPE after it is fused together, this will cause issues when pulling the DIP into the casing where the isolators can become lodged.

RESPONSE: The specification has been modified to include the requirement to remove the inner beads of the HDPE.

50. **QUESTION:** Sheet C318 is requiring a 10" and 18" casing; is the intent to do 2 separate bores or install these in one bore? One bore would require a 40" hole to fit both pipes. Is it feasible to use a

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24" casing and install the 2 carrier pipes in the one pipe? Either way this will drastically change the proposed bore profile

RESPONSE: This was answered in Addendum #2.

51. **QUESTION:** Based on the plan and profile the last bore on Sheet C320 Station 235+21.42 may not be doable do to set up, elevation changes and pipe limitations. This may have to be excavated using a standard practice vs HDD

RESPONSE: See response to Question #15.

52. **QUESTION:** Sheet C320 shows 6" DIP being installed would this allow for a 10' or 12" casing pipe?

RESPONSE: Bid as shown in 12" casing.

53. **QUESTION:** Can you please extend the bid date to mid/late October to allow for the next questions to be reviewed and answered?

RESPONSE: See response to Question #37.

54. **QUESTION:** The specifications indicate a "Process Control System-Attachment A- Control Narrative", however, Attachment A does not appear to be included. Would you be able to provide 'Attachment A- Control Narrative'.

RESPONSE: The Control Narrative is attached to this addendum.

BID FORM FOR CONSTRUCTION CONTRACT

The terms used in this Bid with initial capital letters have the meanings stated in the Instructions to Bidders, the General Conditions, and the Supplementary Conditions.

ARTICLE 1—OWNER AND BIDDER

1.01 This Bid is submitted to:

City and Borough of Yakutat

ATTN: City Clerk

clerk@yakutatak.us

1.02 The undersigned Bidder proposes and agrees, if this Bid is accepted, to enter into an Agreement with Owner in the form included in the Bidding Documents to perform all Work as specified or indicated in the Bidding Documents for the prices and within the times indicated in this Bid and in accordance with the other terms and conditions of the Bidding Documents.

ARTICLE 2—ATTACHMENTS TO THIS BID

2.01 The following documents are submitted with and made a condition of this Bid:

A. Required Bid security;

~~B. List of Proposed Subcontractors;~~

~~C. List of Proposed Suppliers;~~

~~D.~~ B. Evidence of authority to do business in the state of the Project; or a written covenant to obtain such authority within the time for acceptance of Bids;

~~E.~~ C. Contractor's license number as evidence of Bidder's State Contractor's License or a covenant by Bidder to obtain said license within the time for acceptance of Bids;

ARTICLE 3—BASIS OF BID—UNIT PRICES**3.01 Unit Price Bids**

A. Bidder will perform the following Work at the indicated unit prices:

Item No.	Description	Unit	Estimated Quantity	Bid Unit Price	Bid Amount
015000-1	Traffic Control	Lump Sum	All Required		\$
017300-1	Mobilization	Lump Sum	All Required		\$
017300-2	Field Engineering	Lump Sum	All Required		\$
024119-1	Selective Demolition	Lump Sum	All Required		\$
310000-1	Temporary Erosion and Pollution Control	Lump Sum	All Required		\$
311000-1	Clearing and Grubbing	Lump Sum Acre	1.95 All Required		\$
312000-1	Additional Excavation & Backfill	Cubic Yard	2,000		\$
312000-2	Gravel Road Resurfacing	Square Yard	1,940		\$
312000-3	Ditch Realignment	Linear Foot	13,550		\$
312000-4	Contaminated Soils Stockpile	Cubic Yard	940		\$
312119-1	Field Screening	Lump Sum	All Required		\$
312119-1	Dewatering	Lump Sum	All Required		\$
321216-1	3" Hot-Mix Asphalt	Ton	75		\$
321216-2	Driveway Asphalt	Square Yard	450		\$
329200-1	Topsoil	Square Yard	31,100		\$
329200-2	Seeding	Square Yard	31,100		\$
330523-1	Horizontal Directional Drilling (10" HDPE Casing SDR11)	Linear Foot	390		\$
330523-2	Horizontal Directional Drilling (12" HDPE Casing SDR11)	Linear Foot	300		\$
330523-3	Horizontal Directional Drilling (18" HDPE Casing SDR11)	Linear Foot	390		\$
331100-1	6" HDPE Water Main	Linear Foot	4,600		\$
331100-2	10" HDPE Water Main	Linear Foot	13,710		\$
331100-3	6" DIP Water Main	Linear Foot	1,160		\$
331100-4	10" DIP Water Main	Linear Foot	2,560		\$
331100-5	34" HDPE Recirculation Line	Linear Foot	13,740		\$
331100-6	Fire Hydrants	Each	31		\$
331100-7	6" Gate Valves	Each	15		\$
331100-8	10" Gate Valves	Each	30		\$
331100-9	Water Services	Each	15		\$
331100-10	Pump House	Lump Sum	All Required		\$
331100-11	4" DIP Recirculation Line	Linear Foot	2,600		\$
331613-1	500K Gallon Water Storage Tank	Lump Sum	All Required		\$
334100-1	18" Corrugated Steel Pipe	Linear Foot	120		\$
334100-2	18" Culvert End Section	Each	4		\$
334100-3	24" Corrugated Steel Pipe	Linear Foot	110		\$
334100-4	24" Culvert End Section	Each	4		\$
334100-5	36" Corrugated Steel Pipe	Linear Foot	60		\$
334100-6	36" Culvert End Section	Each	2		\$
334100-7	60" Corrugated Steel Pipe	Linear Foot	60		\$
334100-8	60" Culvert End Section	Each	2		\$

334100-9	Culvert Marker Post	Each	12		\$
334100-10	18" Corrugated Polyethylene Pipe	Linear Foot	80		\$
Total of All Unit Price Bid Items					\$

B. Bidder acknowledges that:

1. Each Bid Unit Price includes an amount considered by Bidder to be adequate to cover Contractor's overhead and profit for each separately identified item, and
2. Estimated quantities are not guaranteed, and are solely for the purpose of comparison of Bids, and final payment for all Unit Price Work will be based on actual quantities, determined as provided in the Contract Documents.

ARTICLE 4—TIME OF COMPLETION

- 4.01 Bidder agrees that the Work will be substantially complete and will be completed and ready for final payment in accordance with Paragraph 15.06 of the General Conditions on or before the dates indicated in the Agreement.

ARTICLE 5—BIDDER'S ACKNOWLEDGEMENTS: ACCEPTANCE PERIOD, INSTRUCTIONS, AND RECEIPT OF ADDENDA5.01 *Bid Acceptance Period*

- A. This Bid will remain subject to acceptance for 60 days after the Bid opening, or for such longer period of time that Bidder may agree to in writing upon request of Owner.

5.02 *Instructions to Bidders*

- A. Bidder accepts all of the terms and conditions of the Instructions to Bidders, including without limitation those dealing with the disposition of Bid security.

5.03 *Receipt of Addenda*

- A. Bidder hereby acknowledges receipt of the following Addenda: **[Add rows as needed. Bidder is to complete table.]**

Addendum Number	Addendum Date

ARTICLE 6—BIDDER'S REPRESENTATIONS AND CERTIFICATIONS6.01 *Bidder's Representations*

- A. In submitting this Bid, Bidder represents the following:
1. Bidder has examined and carefully studied the Bidding Documents, including Addenda.
 2. Bidder has visited the Site, conducted a thorough visual examination of the Site and adjacent areas, and become familiar with the general, local, and Site conditions that may affect cost, progress, and performance of the Work.
 3. Bidder is familiar with all Laws and Regulations that may affect cost, progress, and performance of the Work.
 4. Bidder has carefully studied the reports of explorations and tests of subsurface conditions at or adjacent to the Site and the drawings of physical conditions relating to existing

surface or subsurface structures at the Site that have been identified in the Supplementary Conditions, with respect to the Technical Data in such reports and drawings.

5. Bidder has carefully studied the reports and drawings relating to Hazardous Environmental Conditions, if any, at or adjacent to the Site that have been identified in the Supplementary Conditions, with respect to Technical Data in such reports and drawings.
6. Bidder has considered the information known to Bidder itself; information commonly known to contractors doing business in the locality of the Site; information and observations obtained from visits to the Site; the Bidding Documents; and the Technical Data identified in the Supplementary Conditions or by definition, with respect to the effect of such information, observations, and Technical Data on (a) the cost, progress, and performance of the Work; (b) the means, methods, techniques, sequences, and procedures of construction to be employed by Bidder, if selected as Contractor; and (c) Bidder's (Contractor's) safety precautions and programs.
7. Based on the information and observations referred to in the preceding paragraph, Bidder agrees that no further examinations, investigations, explorations, tests, studies, or data are necessary for the performance of the Work at the Contract Price, within the Contract Times, and in accordance with the other terms and conditions of the Contract.
8. Bidder is aware of the general nature of work to be performed by Owner and others at the Site that relates to the Work as indicated in the Bidding Documents.
9. Bidder has given Engineer written notice of all conflicts, errors, ambiguities, or discrepancies that Bidder has discovered in the Bidding Documents, and of discrepancies between Site conditions and the Contract Documents, and the written resolution thereof by Engineer is acceptable to Contractor.
10. The Bidding Documents are generally sufficient to indicate and convey understanding of all terms and conditions for performance and furnishing of the Work.
11. The submission of this Bid constitutes an incontrovertible representation by Bidder that without exception the Bid and all prices in the Bid are premised upon performing and furnishing the Work required by the Bidding Documents.

6.02 *Bidder's Certifications*

A. The Bidder certifies the following:

1. This Bid is genuine and not made in the interest of or on behalf of any undisclosed individual or entity and is not submitted in conformity with any collusive agreement or rules of any group, association, organization, or corporation.
2. Bidder has not directly or indirectly induced or solicited any other Bidder to submit a false or sham Bid.
3. Bidder has not solicited or induced any individual or entity to refrain from bidding.
4. Bidder has not engaged in corrupt, fraudulent, collusive, or coercive practices in competing for the Contract. For the purposes of this Paragraph 8.02.A:

-
- a. Corrupt practice means the offering, giving, receiving, or soliciting of anything of value likely to influence the action of a public official in the bidding process.
 - b. Fraudulent practice means an intentional misrepresentation of facts made (a) to influence the bidding process to the detriment of Owner, (b) to establish bid prices at artificial non-competitive levels, or (c) to deprive Owner of the benefits of free and open competition.
 - c. Collusive practice means a scheme or arrangement between two or more Bidders, with or without the knowledge of Owner, a purpose of which is to establish bid prices at artificial, non-competitive levels.
 - d. Coercive practice means harming or threatening to harm, directly or indirectly, persons or their property to influence their participation in the bidding process or affect the execution of the Contract.

BIDDER hereby submits this Bid as set forth above:

Bidder:

(typed or printed name of organization)

By:

(individual's signature)

Name:

(typed or printed)

Title:

(typed or printed)

Date:

(typed or printed)

If Bidder is a corporation, a partnership, or a joint venture, attach evidence of authority to sign.

Attest:

(individual's signature)

Name:

(typed or printed)

Title:

(typed or printed)

Date:

(typed or printed)

Address for giving notices:

Bidder's Contact:

Name:

(typed or printed)

Title:

(typed or printed)

Phone:

Email:

Address:

Bidder's Contractor License No.: (if applicable)



THE STATE
of **ALASKA**
GOVERNOR MICHAEL J. DUNLEAVY

Department of Environmental Conservation

DIVISION OF ENVIRONMENTAL HEALTH
Drinking Water Program

43335 Kalifornsky Beach Rd., Ste. 11
Soldotna, Alaska, 99669
Main: 907.262.5210
fax: 907.262.2294
dec.alaska.gov

April 21, 2025

Mr. Jon Erickson
City & Borough of Yakutat
PO Box 160
Yakutat, AK 99689

RE: City and Borough of Yakutat Community Water System – Public Water System ID# 130172
Airport Water System Extension
Conditional Construction Approval
Conditional Approval of Separation Distance Waiver Request (Project ID# 19151)

Dear Mr. Jon Erickson:

On March 28, 2025, this office received a request for approval to construct modifications to the drinking water system serving the City and Borough of Yakutat. We have reviewed the request, which includes engineering plans and specifications, and additional information received on April 19, 2025. Based on this review, we grant conditional construction and separation distance waiver approvals as detailed below. This letter and the enclosed "Construction and Operation Certificate" are the written approval required by State of Alaska Drinking Water Regulations, 18 AAC 80.200(b). Use the noted public water system identification (PWSID#) and project (Project ID#) numbers to identify this project.

This approval is for the design detailed in the noted engineering plans, subject to compliance with the following conditions. Approval of changes is required prior to implementation.

Please review and familiarize yourself with the conditions before beginning construction. Interim and Final Approvals to Operate may be withheld until all conditions are met. You are required to obtain approval from this office before serving water

Project-specific Conditions of Construction Approval

1. The NSF-61 certified tanks were not seen from One Clarion. Submit NSF-61 documentation for the One Clarion tank with the request for interim approval to operate, if this tank manufacturer will be used.*
2. The water system extension is designed to serve 15 additional service connections and has the capacity to provide for a 600 gallon per minute fire suppression demand. This project includes approximately 31 fire hydrants. This approval is limited to the construction of:

SYSTEM MODIFICATION SUMMARY			
CLASSIFICATION	Community	PWSID# 130172	
POPULATION SERVED	Residents: 540	Non-transients: 200	Transients: 0
WATER MAINS	Approximately 4,600 LF of 6-inch HDPE, 13,710 LF of 10-inch HDPE, 2,560 LF of 10-inch DIP, and 1,160 LF of 6-inch DIP Approximately 13,700 LF of 3-inch HDPE and 2560 LF of 3-inch DIP		
STORAGE TANK	500,000 gallon steel bolted tank (from CST Industries or equal)*		
BOOSTER PUMPS	Recirculation pump: Grundfos CR10-4 A-FJ-A-E-HQQE (20 gpm @ 150 ft TDH)	Primary pumps: Two Grundfos CR20-3 A-GJ-A-E-HQQE in parallel (120 gpm @ 145 ft TDH each)	High flow pump: Grundfos NBS 030-070 2P (500 gpm @ 141 ft. TDH)
CHLORINE	Chlorine Pump: LMI C92	Chlorine tank: Peabody Gemini 15-gallon tank	
PRESSURE REDUCING/SUSTAINING VALVES	Cla-Val 92-01 (PRV-01, CBY intertie)	Cla-Val 650-90 (PSV-01, Water tank fill line, 200 gpm tank fill rate)	Cla-val 50-90 (PSV-02, recirculation line)
SYSTEM EXTENSION PEAK DEMAND	600 GPM	Basis: Fire Suppression/hydrant use	

GENERAL CONDITIONS OF APPROVAL	
Separation Distance Requirements	A minimum separation distance of 200 feet must be maintained between drinking water sources and potential sources of contamination. The department has the authority to require greater distances when warranted. A minimum separation distance of 10 feet must be maintained between all drinking water lines and wastewater sewer lines and appurtenances (including sewer manholes), as measured from the closest edges of each component. A minimum separation distance of 10 feet must be maintained between all drinking water lines and wastewater treatment and disposal system components, as measured from the closest edges of each component. If these distances cannot be met, approval of separation distance waivers must be requested and granted prior to construction.
Water Main Crossings	Crossings of water and sewer mains (sanitary or storm water) must meet the requirements of Drinking Water Regulations, 18AAC80.020(f) unless a separation distance waiver has been granted for this project. Record drawings submitted with the request for Final Approval to Operate must include details adequate to confirm that the prescriptive requirements have been met during construction.

Contamination Encountered During Construction	During construction, if contaminated soil or groundwater is encountered, contact DEC to assure that concerns related to the drinking water system improvements and Spill Prevention and Response requirements are properly addressed.
Changes to Approved Plans	Deviations from approved plans which affect capacity, flow, operation, major design of units, materials of major system components, or separation distances, must be approved in writing by this office prior to their implementation.
Flushing, Pressure Testing, and Disinfection	Following construction, the system shall be flushed, pressure tested and disinfected in accordance with standards approved by this office.
Chlorinated Discharges	Water containing chlorine used during the disinfection or pressure testing processes requires proper management. This includes chlorine neutralization or disposal in an appropriate wastewater treatment and disposal system. This water must be managed to avoid adverse effects on groundwater, surface water or the environment.
2-Year Approval Duration and Extensions	This approval is valid for two years from the date of this letter. If the applicant fails to construct, install, alter, renovate, or improve the water system within two years, the approval is void and the plans and information required under 18 AAC 80.210(a) must be resubmitted for Department review and approval. If during the two-year period, the site conditions, plans, and information, and requirements of this chapter do not change, and if the applicant pays the fee required by 18 AAC 80.1910(b)(12), the Department may grant the applicant an extension.
Other Required Authorizations	This approval is also contingent upon your receipt of any other state, federal or local authorizations which are required for your project.

TO REQUEST INTERIM APPROVAL TO OPERATE	
Upon completion of construction and <i>prior to serving water</i> , the project engineer must certify the following information in the request for Interim Approval to Operate:	
Construction	Construction has been completed under the direction of a registered engineer in accordance with the DEC approved plans. Any deviations from the original plans approved for construction have been submitted to and approved by DEC.
Materials	Only materials approved by the department for installation in this system were used in the construction and only NSF/ANSI 60 listed chemicals are provided for water treatment.
Flushing, Pressure Testing and Disinfection	The system was successfully flushed, pressure tested, and disinfected in accordance using department approved methods.
Disinfection Verification Coliform Sampling	The system was properly disinfected and verified to be free of Coliform bacteria in accordance with applicable AWWA standards or methods approved by the department prior to construction. This project requires satisfactory total coliform analytical results as follows: • At least one sample taken from the water storage tank and two

	samples taken from the booster pump station. - For the distribution mains, samples taken in accordance with one of these options: Option A: Take one set, wait 16 hours and take the second set; or Option B: Wait 16 hours after filling line, take one set, flush the sampling location for 15 minutes and take the second set; - Sample sets taken approximately every 1,200 LF, plus a set taken for the end of the line and at least one from every branch greater than one pipe length. Submit copies of the satisfactory results with the request for Interim Approval to Operate.
O & M Manual	An Operations & Maintenance manual has been provided to the water system operators.
Separation Distances	All applicable minimum separation distance requirements have been met during construction. For conditional waiver approvals of separation distance requirements, provide confirmation that all conditions were met.
Conditions	All conditions of construction approval have been met.

TO REQUEST FINAL APPROVAL TO OPERATE

At least 30 days prior to the expiration of the Interim Approval to Operate, submit the following information in the request for Final Approval to Operate:	
Record Drawings	Record drawings, sealed, signed and dated by a registered engineer. The record drawings must confirm that the system meets the requirements of 18AAC80 and provides public health protection. The record drawings must include: - clear delineations of any changes or deviations from the previously submitted and approved plans; - details verifying compliance with minimum separation distance requirements; and - construction details for all water and sewer main crossings.
Operator	The Drinking Water Regulations, 18 AAC 80.007, require that this system be actively supervised as described in the Operator Certification Regulations, 18 AAC 74, by operators who are certified in accordance with AS 46.30 and 18 AAC 74. Additional information regarding Operator Certification is available at: https://dec.alaska.gov/water/operator-certification/
Outstanding Conditions	Verification and applicable documentation demonstrating that all conditions contained in this Conditional Approval to Construct have been met.
Asbestos-Cement Pipe	Provide verification that the department was notified if asbestos-cement pipe was found during construction.
Emergency Preparedness	Provide verification that the applicable emergency preparedness requirements of 18 AAC 80.055 have been met. For emergency preparedness requirements please refer to https://dec.alaska.gov/eh/dw/security/ .

Waiver Approval

On April 1, 2025, this office received engineering plan submittals supporting a request for a waiver of the minimum separation distance required under Drinking Water Regulations, 18 AAC 80.020. We have completed a review and find that the submitted information, justification, and endorsement of the project engineer adequately supports a reduction of the required minimum separation distance. Lesser separation distances as detailed below are approved as requested.

SEPARATION DISTANCE WAIVER APPROVAL CRITERIA:		
The department grants conditional approval of the following waivers of the minimum separation distance requirements of the State of Alaska Drinking Water Regulations, 18AAC80.		
Compliance with the conditions under which the waivers are granted may require the use of specific materials, construction quality assurance, inspection and testing, as recommended by the project engineer in justifying the waiver request.		
Station	Description	Required Mitigating Measures and Approval Criteria
203+90	10" and 3" DIP water main crossing over 8" cast iron sanitary sewer	Prescriptive crossing requirements include pressure testing the sewer lines or enclosing the sewer in a carrier pipe, and maintaining at least 18-inches of vertical separation between water and sewer lines. Since the depth of the sewer line is unknown, a waiver for these requirements is approved. The water lines will be enclosed in a 20 ft. long CPP carrier pipe, centered at the crossing.
205+10	10" and 3" DIP water main crossing over 8" cast iron sanitary sewer	
221+00	10" and 3" DIP water main crossing over cast iron sanitary sewer	
224+00	6" DIP water main crossing over cast iron sanitary sewer	

Approval Limitations

This waiver is valid only for the proposed use and the systems described in the waiver request dated March 28, 2025, on file in this office. This waiver is valid as long as the drinking water contaminant concentrations do not exceed the maximum contaminant levels (MCLs) established in 18 AAC 80.300.

The Department's construction approval does not guarantee correctness of the functional design or waive the owner's responsibility for compliance with applicable regulations. This approval does not imply the granting of additional authorizations, nor obligate any federal, state, or local regulatory body to grant required authorizations. This is not an approval of omissions or oversights by this office or noncompliance with any applicable regulation.

Informal Reviews and Adjudicatory Hearings

A person authorized under a provision of 18 AAC 15 may request an informal review of a contested decision by the Division Director in accordance with 18 AAC 15.185 and/or an adjudicatory hearing in accordance with 18 AAC 15.195 – 18 AAC 15.340. See DEC's "Appeal a DEC Decision" web page <https://dec.alaska.gov/commish/review-guidance/> for access to the required forms and guidance on the appeal process. Please provide a courtesy copy of the adjudicatory hearing request in an electronic format to the parties required to be served under 18 AAC 15.200.

Requests must be submitted no later than the deadline specified in 18 AAC 15.

If you have any questions, please feel free to contact me at 907-262-3400.

Sincerely:

A handwritten signature in black ink that reads "Charity Bare". The signature is written in a cursive, flowing style.

Charity Bare, PE
DEC Engineer

Enclosure: Construction and Operation Certificate

cc: Karen Brady, P.E., RESPEC (via email)
Jamie Bjorkman, Emily Holt, Kellie Alvstad, DEC Drinking Water Program (via email)
DEC Operator Training and Certification Program (via email: dec.opcert@alaska.gov)



STATE OF ALASKA
DEPARTMENT OF ENVIRONMENTAL CONSERVATION
CONSTRUCTION AND OPERATION CERTIFICATE
FOR
PUBLIC WATER SYSTEMS



A. APPROVAL TO CONSTRUCT –

Plans for the construction or modification of the City and Borough of Yakutat Airport Water System Extension (PWSID# 130172, Project ID# 19151), a Community Drinking Water System, located in Yakutat, Alaska submitted in accordance with Drinking Water Regulations, 18 AAC 80.200 by Karen Brady, P.E. / Jon Erickson, City and Borough of Yakutat Manager, have been reviewed and are

☐ approved as submitted

☒ conditionally approved (see attached conditions)

Charity Bare
(Reviewing Engineer)

4/21/2025
(Title)

4/21/2025
(Date of Approval)

If applicant fails to construct, alter, install, or modify the system within two years of the date of approval to construct, approval is void, and plans must be resubmitted for Department review and approval.

B. APPROVED CHANGE ORDERS

Change (contract order number or descriptive reference):

(Reviewing Engineer)

(Title)

(Date of Approval)

Change (contract order number or descriptive reference):

(Reviewing Engineer)

(Title)

(Date of Approval)

C. INTERIM APPROVAL TO OPERATE

This section must be completed and signed by the Department before any water is made available for public use.

The construction of the above-referenced water system was completed and approved for operation on __/__/__. The system is hereby granted **INTERIM APPROVAL TO OPERATE for 90 days** following the interim approval date. It is illegal to operate a public water system beyond 90 days without **FINAL APPROVAL TO OPERATE** from the Department.

(Reviewing Engineer)

(Title)

(Date of Approval)

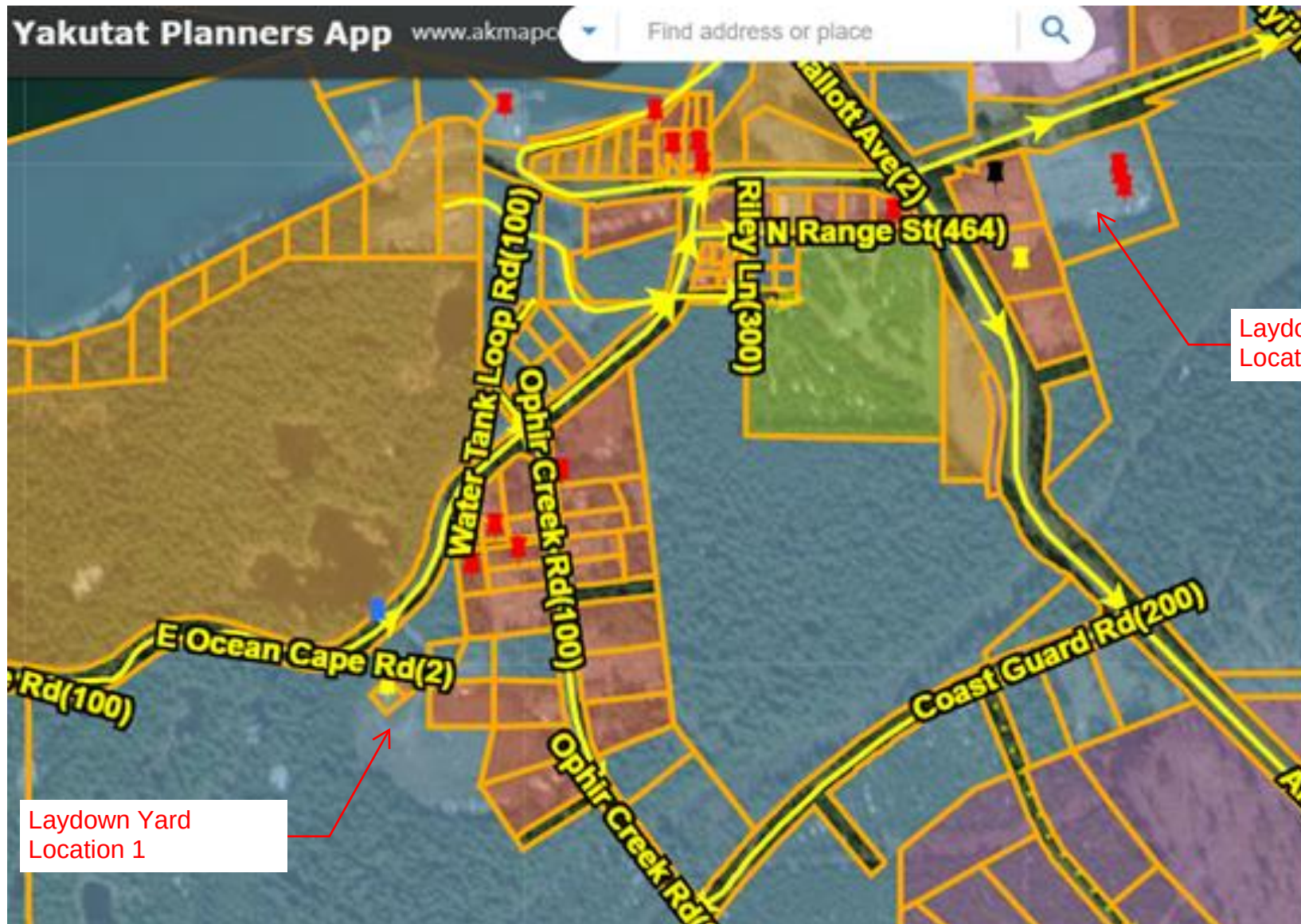
D. FINAL APPROVAL TO OPERATE

Record drawings and other documents submitted to the Department, or an inspection by the Department, has confirmed that the above-referenced water system was constructed in substantial conformance with the approved plans. The system is hereby granted **FINAL APPROVAL TO OPERATE**.

(Reviewing Engineer)

(Title)

(Date of Approval)



SECTION 311000 - SITE CLEARING

PART 1 - GENERAL

1.01 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including Division 01 Specification Sections, apply to this Section.

1.02 SUMMARY

- A. Section Includes:
 - 1. Protecting existing vegetation to remain.
 - 2. Clearing and grubbing.
 - 3. Removing above- and below-grade site improvements.
 - 4. Protection of existing structures to remain
 - 5. Disconnecting, capping or sealing, and removing site utilities or abandoning site utilities in place.
 - 6. Temporary erosion- and sedimentation-control measures.
- B. Related Sections:
 - 1. Division 01 Section "Temporary Facilities and Controls" for temporary utility services, construction and support facilities, traffic control plans, security and protection facilities, and temporary erosion- and sedimentation-control measures.

1.03 DEFINITIONS

- A. Subsoil: All soil beneath the topsoil layer of the soil profile, and typified by the lack of organic matter and soil organisms.
- B. Surface Soil: Soil that is present at the top layer of the existing soil profile at the Project site. In undisturbed areas, the surface soil is typically topsoil; but in disturbed areas such as urban environments, the surface soil can be subsoil.
- C. Topsoil: Top layer of the soil profile consisting of existing native surface topsoil or existing in-place surface soil and is the zone where plant roots grow. Its appearance is generally friable, pervious, and black or a darker shade of brown, gray, or red than underlying subsoil; reasonably free of subsoil, clay lumps, gravel, and other objects more than 2 inches in diameter; and free of subsoil and weeds, roots, toxic materials, or other non-soil materials.
- D. Vegetation: Trees, shrubs, groundcovers, grass, and other plants.

1.04 MATERIAL OWNERSHIP

- A. Except for stripped topsoil and other materials indicated to be stockpiled, temporarily relocated, or otherwise to remain Owner's property, cleared materials shall become the Contractor's property and shall be removed from the Project site before final acceptance.

1.05 INFORMATIONAL SUBMITTALS

- A. Existing Conditions: Documentation of existing trees and plantings, adjoining construction, and site improvements that establishes preconstruction conditions that might be misconstrued as damage caused by site clearing.
 - 1. Use sufficiently detailed photographs.
 - 2. Include plans and notations to indicate specific wounds and damage conditions of each tree or other plants designated to remain.
 - 3. Include work plan to protect existing structures designated to remain.
- B. Record Drawings: Identifying and accurately showing locations of capped utilities and other subsurface structural, electrical, and mechanical conditions.

1.06 DUST AND DEBRIS CONTROL

- A. Prevent the spread of all dust and debris to adjacent taxiways, roads, and land areas.
- B. Avoid the creation of nuisance or hazard in the surrounding area and adjacent property.
- C. Do not use water if it will result in or create hazardous or objectionable conditions such as, but not limited to, ice, flooding, or pollution of adjacent property, taxiways, or streets.
- D. Vacuum adjacent existing pavements as often as necessary to control the spread of dust and debris.

1.07 PROJECT CONDITIONS

- A. Traffic: Minimize interference with adjoining taxiways, roads, streets, walks, and other adjacent occupied or used facilities during site-clearing operations. See Division 01 Section "Temporary Facilities and Controls" for traffic control plans.
 - 1. Do not close or obstruct streets, walks, or other adjacent occupied or used facilities without permission from CBY and authorities having jurisdiction.
 - 2. Provide alternate routes around closed or obstructed traffic ways if required by authorities having jurisdiction.
- B. Improvements on Adjoining Property: Authority for performing site clearing indicated on property adjoining property will be obtained by Developer before award of Contract.
 - 1. Do not proceed with work on adjoining property until directed by Developer's Representative.
- C. Utility Locator Service: Notify the Alaska Dig Line for area where Project is located before site clearing.
- D. Do not commence site clearing operations until temporary erosion- and sedimentation-control measures are in place.

- E. The following practices are prohibited within protection zones:
 - 1. Storage of construction materials, debris, or excavated material.
 - 2. Parking vehicles or equipment.
 - 3. Foot traffic.
 - 4. Erection of sheds or structures.
 - 5. Impoundment of water.
 - 6. Excavation or other digging unless otherwise indicated.
 - 7. Attachment of signs to or wrapping materials around trees or plants unless otherwise indicated.
- F. Do not direct vehicle or equipment exhaust towards protection zones.
- G. Prohibit heat sources, flames, ignition sources, and smoking within or near protection zones.
- H. Soil Stripping, Handling, and Stockpiling: Perform only when the topsoil is dry or slightly moist.
- I. Do not clearing or grub during the migratory bird window, April 15-July 15, unless:
 - 1. The area has been previously and sufficiently altered to provide no nesting habitat; or
 - 2. The area has been surveyed by a qualified bird expert to determine if there are existing bird nests. If nests are present, do not clear or grub until after the nesting season is completed.

PART 2 - PRODUCTS

2.01 MATERIALS

- A. Satisfactory Soil Material: Requirements for satisfactory soil material are specified in Division 31 Section "Earth Moving."
 - 1. Obtain approved borrow soil material off-site when satisfactory soil material is not available on-site.

PART 3 - EXECUTION

3.01 PREPARATION

- A. Protect and maintain benchmarks and survey control points from disturbance during construction.
- B. Protect existing site improvements to remain from damage during construction.
 - 1. Restore damaged improvements to their original condition, as acceptable to CBY.

3.02 TEMPORARY EROSION AND SEDIMENTATION CONTROL

- A. Provide temporary erosion- and sedimentation-control measures to prevent soil erosion and discharge of soil-bearing water runoff or airborne dust to adjacent properties and walkways, according to erosion- and sedimentation-control Drawings and requirements of authorities having jurisdiction. SEE SECTION 310000 EROSION, SEDIMENT, AND POLLUTION CONTROL.

- B. Verify that flows of water redirected from construction areas or generated by construction activity do not enter or cross protection zones.
- C. Inspect, maintain, and repair erosion- and sedimentation-control measures during construction until permanent vegetation has been established.
- D. Remove erosion and sedimentation controls and restore and stabilize areas disturbed during removal.

3.03 EXISTING UTILITIES

- A. Locate, identify, and disconnect utilities indicated to be abandoned in place.
- B. Interrupting Existing Utilities: Do not interrupt utilities serving facilities occupied by CBY or others unless permitted under the following conditions and then only after arranging to provide temporary utility services according to requirements indicated:
 - 1. Notify Developer and CBY not less than four days in advance of proposed utility interruptions.
 - 2. Do not proceed with utility interruptions without CBY's written permission.
- C. Excavate for and remove underground utilities indicated to be removed.

3.04 CLEARING AND GRUBBING

- A. Remove obstructions, trees, shrubs, and other vegetation to permit installation of new construction.
 - 1. Do not remove trees, shrubs, and other vegetation indicated to remain or to be relocated.
- B. Fill depressions caused by clearing and grubbing operations with satisfactory soil material unless further excavation or earthwork is indicated.
 - 1. Place fill material in horizontal layers not exceeding a loose depth of 8 inches, and compact each layer to a density equal to adjacent original ground.

3.05 SITE IMPROVEMENTS

- A. Remove existing above- and below-grade improvements as indicated and necessary to facilitate new construction.
- B. Remove slabs, paving, and aggregate base as indicated.
 - 1. Unless existing full-depth joints coincide with line of demolition, neatly saw-cut along line of existing pavement to remain before removing adjacent existing pavement. Saw-cut faces vertically.
 - 2. Paint cut ends of steel reinforcement in concrete to remain with two coats of antirust coating, following coating manufacturer's written instructions. Keep paint off surfaces that will remain exposed.

3.06 DISPOSAL OF SURPLUS AND WASTE MATERIALS

- A. Remove surplus soil material, unsuitable topsoil, obstructions, demolished materials, and waste materials including trash and debris, and legally dispose of them off CBY's property.

PART 4 - MEASUREMENT AND PAYMENT

4.01 MEASUREMENT

- A. Clearing and grubbing will ~~not be measured since it is a lump sum item~~ be measured by the acre of area acceptably cleared and/or grubbed, measured on the ground surface. Existing roadways, lakes, ponds, stream beds, and other areas not covered by trees or brush will not be included for measurement.

4.02 BASIS OF PAYMENT

- A. Payment for clearing and grubbing by the Contractor as specified shall include furnishing all necessary material, personnel, equipment, transportation, and supplies to perform all clearing and grubbing work as shown and specified, including the legal disposal of all debris.

<u>Pay Item Number</u>	<u>Pay Item</u>	<u>Pay Unit</u>
311000-1	Clearing and Grubbing	Lump Sum <u>Acre</u>

END OF SECTION

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SECTION 331613 – POTABLE WATER STORAGE TANK, BOLTED STEEL CONSTRUCTION

PART 1 - GENERAL

1.01 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including Division 01 Specification Sections, apply to this Section.

1.02 SUMMARY

- A. This section includes furnishing and erecting the bolted steel reservoir and necessary piping and appurtenances, per AWWA D103-19 specifications, (latest revision).

1.03 BUY AMERICAN REQUIREMENTS

- A. Provide certificates to show that all products meet the following requirements.
 - 1. American Iron and Steel (AIS)
 - 2. Build America, Buy America
- B. See Supplementary Conditions for details.

1.04 ACTION SUBMITTALS

- A. Product Data: For each type of product indicated.

1.05 DEFINITIONS

- A. Water Tank: Exterior standalone bolted steel potable water storage tank, prefabricated and assembled onsite.

1.06 INFORMATIONAL SUBMITTALS

- A. Qualifications of Tank Supplier:
 - 1. The Engineer's selection of a factory applied epoxy-coated bolt together tank is predicated on a thorough examination of design criteria, construction methods, and optimum coating for resistance to internal and external tank corrosion. Deviations from the specified design, construction or coating details will not be permitted.
 - 2. The bidder shall offer a new tank reservoir as supplied from a manufacturer specializing in the design, fabrication and erection of bolted water storage tanks.
 - 3. The tank shown on the contract drawings and specified herein shall be fabricated by CST Industries, One Clarion or approved equal.
 - 4. Tank design shall be stamped by a licensed engineer in the State of Alaska.
 - 5. The tank vendor's engineer is responsible for verifying that the provided foundation design is adequate to support the final tank loads and reactions. The contractor shall include in their budget an allowance for up to 15% additional concrete and reinforcing steel beyond the quantities shown in the drawings, to accommodate any modifications required based on the final tank reactions.
 - 6. Erection of the tank is to be by the tank manufacturer or approved contractor. The installer shall be fully responsible for the entire installation including tank erection, and

the ultimate water tightness of the complete installation. The tank manufacturer shall monitor and inspect work performed by the approved contractor.

7. Strict adherence to the standards of design, fabrication, erection, product, quality, and long-term performance, established in this Specification will be required by the Owner and Engineer.

B. Submittal Drawings and Specifications:

1. Construction shall be governed by the Owner's drawings and specifications showing general dimensions and construction details. Drawings shall include ~~insulation system and~~ penetration details. There shall be no deviation from the drawings and specifications, except upon written order from the Engineer.
2. The bidder is required to furnish, for the approval of the Engineer and at no increase in contract price, five (5) sets of complete specifications and construction drawings for all work not shown in complete detail on the bidding drawings. A complete set of structural calculations shall be provided for the tank structure. ~~The tank foundation will be designed and constructed by others.~~
3. When approved, two sets of such prints and submittal information will be returned to the bidder marked "APPROVED FOR CONSTRUCTION" and these drawings will then govern the work detailed thereon. The approval by the Engineer of the tank supplier's drawings shall be an approval relating only to their general conformity with the bidding drawings and specifications and shall not guarantee detail dimensions and quantities, which remains the bidder's responsibility.
- 3.4. Cathodic protection plan to support 50-year life of tank

C. Field Quality-Control Test Reports:

1. Hydrostatic pressure test results.
2. Disinfection and biological test results.

1.07 CLOSEOUT SUBMITTALS

- A. Operation and Maintenance Data: Operational instructions for water valves and meters to include in emergency, operation, and maintenance manuals.

1.08 QUALITY ASSURANCE

- A. Steel, piping, and appurtenance materials shall bear label, stamp, or other markings of specified testing agency.
- B. NSF/ANSI Compliance: Comply with NSF/ANSI 61 for materials for water piping for domestic water.
- C. AWWA Compliance: Comply with AWWA Standard D103-19.

1.09 DELIVERY, STORAGE, AND HANDLING

- A. Preparation for Transport: Prepare prefabricated steel tank components to preclude from damage incurred during transport.
- B. Protect stored steel framing, plate, and piping from moisture and dirt. Elevate above grade. Do not exceed structural capacity of floor when storing inside.

- C. Protect flanges, fittings, and specialties from moisture and dirt.

1.10 COORDINATION

- A. Coordinate tank construction laydown requirements and schedule with the General Contractor responsible for construction of the Pump house Site.

1.11 TANK CAPACITY AND ELEVATION

- A. Tank working capacity shall be 500,000 U.S. gallons (nominal). See drawings for operating points as well as nominal height and diameter.
- B. Freeboard space at the top of tank shall be 6.5 feet.

1.12 TANK DESIGN REQUIREMENTS

- A. Design Standards: The materials, design, fabrication and erection of the bolted tank shall conform to:
 - 1. AWWA Standard D103-19, (latest edition).
 - 2. ANSI/NSF Standard No. 61
- B. Tank Foundation: The tank vendor's engineer is responsible for verifying that the provided foundation design is adequate to support the final tank loads and reactions. The contractor shall include in their budget an allowance for up to 15% additional concrete and reinforcing steel beyond the quantities shown in the drawings, to accommodate any modifications required based on the final tank reactions.
 - 1. Tank floor shall slope up inwardly at 0.01 ft/ft (minimum).
- C. Reservoir shall be furnished with piping and appurtenances as shown on the plans and as follows:
 - 1. Inlet pipe.
 - 2. Overflow pipe.
 - 3. Outlet pipe.
 - 4. Drain pipe.
 - 5. 30-inch square, hinged, lockable roof hatch.
 - 6. Two shell manholes with hinged covers.
 - 7. Outside ladder with ladder gate and lock, without fall protection.
 - 8. Screened roof vent.
 - 9. Level indicator.
 - 10. Identification nameplate.
 - 11. Tank mixer.
 - 12. Power appurtenances.
 - 13. Communications appurtenances.
- D. Cathodic Protection: ~~Active system required to~~ To be designed by tank manufacturer.
- E. Corrosion Allowance: ~~No corrosion allowance (additional plate thickness) is required on any plate steel. A corrosion maximum allowance of 1/8 inch is to be provided on all plate steel of the tank.~~

- F. Structural Requirements: All tank structural components to be designed per the requirements of AWWA D103-19 and API Spec 12B.
1. Seismic Design Criteria at Tank Site:

S_s	= 1.63
S_1	= 0.76
I_e	= 1.5
Site Class	= D
 2. Roof Design Criteria:

Balanced roof snow load	= 188 pounds per square foot (PSF)
P_g	= 186
I_s	= 1.2
C_e	= 1.0
C_t	= 1.2
 3. Wind Design Criteria:
 - a. Wind Speed = 161 mph, pressures to be the maximum of ASCE 07-16 and AWWA D103-19.
 4. Foundation: Shallow frost-protected mat foundation.

PART 2 - PRODUCTS

2.01 MANUFACTURERS

- A. All materials shall meet "Buy American" meeting Federal Acquisition Regulations (FAR).

2.02 TANK MATERIALS

- A. All tank materials shall be in accordance with all applicable standards of AWWA D103-19, Section 4.

2.03 VALVE APPLICATIONS

- A. Tank Application: Use flanged-end valves for all aboveground tank piping.

2.04 COATINGS

- A. Interior Coating System:
1. All coatings that are in contact with potable water must be certified on the current approved list of the National Sanitation Foundation to meet ANSI/NSF Standard No. 61, as well as AWWA D103-19.
 2. Coating system, including coating manufacturer brand name to be as specified in bid documents.
 3. Interior coating process shall conform to AWWA D102-17 ICS-6 and shall include:
 - a. Shop epoxy-prime.
 - b. Field spot epoxy prime.
 - c. Apply epoxy finish.

B. Exterior Coating System:

1. Exterior coating system, including coating manufacturer brand name, and average dry film thickness/mils (DFT) to be as specified in bid documents.
2. All exposed edges will be coated with primer. Underside of floor ~~will remain uncoated~~ to be factory coated.
3. Exterior coating process shall include:
 - a. Shop epoxy-prime.
 - b. Field spot epoxy prime.
 - c. Apply epoxy intermediate coating.
 - d. Apply epoxy finish coat.

2.05 TANK FABRICATION

- A. All reservoir sub-assemblies and accessories, including shell manholes, ladders, and overflow pipes, shall be fabricated in accordance with AWWA D103-19, Sec. 7 Accessories for Tanks.
- B. All exterior ladders, guard rails, brackets, hatch covers, pins and fasteners shall be steel that is hot dipped galvanized per ASTM A123/153 after fabrication.
- C. Welded steel deck assembly per AWWA D103-19.
- D. Roof construction per AWWA D103-19.

2.06 APPURTENANCES**A. Pipe Connections:**

1. Overflow piping shall be 6-inch nominal diameter Schedule 80 carbon steel coated externally.
2. Inlet and outlet connections shall conform to the sizes and locations specified on the plan sheets.
3. Provide and install all internal tank piping as flanged spool pieces that facilitate free passage through roof opening and assembly inside tank.

B. Insulation Blanket

1. Provide and install removable insulation blankets at all valves and expansion joints.
2. Provide and install removable insulation blanket covers for exterior drain and overflow piping.
3. Blankets shall be made with 4 inches of mineral-wool or fiberglass blanket insulation, sewn in grey siliconized fabric, with stainless steel lacing anchors, fabricated to be well-fitting and to close easily around equipment without air gaps or exposed surfaces. Use stainless steel tie wire for securing blankets.
 - a. Insulation shall be mineral-wool or fiberglass insulation: ASTM C 665, Type I (blankets without membrane facing); consisting of fibers; with maximum flame-spread and smoke-developed indexes of 25 and 50, respectively, per ASTM E 84; passing ASTM E 136 for combustion characteristics.

C. Outside Tank Ladders:

1. An outside tank ladder shall be furnished and installed as shown on the Drawings.

2. Safety cage and step-off platforms shall be fabricated of galvanized steel. Ladders shall be equipped with hinged lockable entry devices.
- D. Access Doors:
1. Two hinged manways shall be provided as shown on the contract drawings in accordance with AWWA D103-19.
 2. The manhole opening shall be a minimum of 30 inches in diameter. The access door (shell manway) and the tank shell reinforcing shall comply with AWWA D103-19.
- E. Roof Vent:
1. A properly sized vent assembly in accordance with AWWA D103-19 shall be furnished and installed above the maximum water level of sufficient capacity as shown on the drawings.
 2. The overflow pipe shall not be considered to be a tank vent.
 3. Provide tank vent stick-up elevation from tank roof as shown on the Drawings.
 4. The vent shall be so designed in construction as to prevent the entrance of birds and/or animals by including a 4 mesh (1/4-inch opening size) galvanized screen. If required by the contract drawings, a 16 mesh (1/16-inch opening size) galvanized screen will be installed to prevent the entrance of insects.
- F. Roof Hatch: The manufacturer shall furnish a roof opening which shall be placed in line between the outside tank ladder and tank vent and which shall be provided with a hinged cover and a hasp for locking. The opening shall have a clear dimension of at least 30 inches square. The opening shall have a curb, at least 4 inches high and the cover shall have a downward overlap of at least 2 inches.
1. Roof hatch shall be sized to allow tank mixer to freely pass through the opening.
- G. Roof Perimeter Guardrail: Perimeter guardrail and toe board around the perimeter of the deck shall be provided and installed as shown on the Drawings.
- H. Liquid Level Indicator: A liquid level indicator with stainless steel float, numbered board and high visibility target shall be provided and installed as detailed on the project drawings.
- I. Identification Plate: Manufacturer's nameplate shall list the tank serial number, tank diameter and height, and maximum design capacity. The nameplate shall be affixed to the tank exterior sidewall location approximately 5 feet from the grade elevation.
- ~~1. Nameplate mounting steel shall allow 5 inches clear space from shell to accommodate insulation panels.~~
- J. Electrical Appurtenances: Provide supporting struts and brackets, conduit entry boots, cable entry fittings, and other fittings, complete with corrosion resistant straps, fasteners and other hardware, as required, for supporting electrical equipment, and support and entry of electrical cable and conduit, as indicated in the plans.
1. All electrical materials and installations, installed in the tank interior, shall meet the applicable requirements of Articles 2.04 and 2.06 of this specification section.
 2. Struts and brackets shall be components of a mounting system, with compatible conduit straps and other required attachments, of a common manufacturer, suitable for mounting electrical raceway and equipment.

3. Struts and brackets shall be mounted to the tank with welded studs, or with mounting flanges directly welded to the tank interior and exterior, prior to applying final interior coatings ~~and exterior insulation system.~~
4. Attach struts for support of conduit and cable, at specific locations and spacing, in accordance with Article 300 of the NEC.
5. Supporting struts mounted to the exterior of the tank, shall extend a minimum of one-foot outside of the tank ~~insulation system~~ to stand-off and support electrical raceway and exterior mounted equipment.
6. Apply coatings to supporting struts, brackets, conduit straps and other associated fittings and attachments, mounted in the tank interior, in accordance with applicable requirements of Article 2.04 of this specification section.
7. Provide a cord-grip fitting, at each cable entry into top of tank, with annulus of rubber grommet sized to match outside cable diameter.
8. Provide weathertight, weatherproof, flexible conduit entry boot fitting, for the entrance of each conduit entry through the top of the tank.
 - a. Body of entry boot fitting shall be a one-piece rubber extrusion, that includes sealing flange that mates to tank surface, and flexible boot that forms an annulus seal, or gland, around the conduit.
 - b. Entry boot shall be provided as a kit, complete with corrosion resistant metallic tank mating flange, clamp(s), and attachment hardware.
 - c. Entry boots shall be flexible, permitting angled conduit entries up to 15 degrees off of perpendicular centerline, in any direction, without leaking or subjecting the conduit or conduit seal to excessive stress.
 - d. Installed entry boot, with installed conduit, shall withstand a minimum of 6 feet of water head pressure, at maximum conduit entry angle, without leakage.
- K. All ladder mounts, nozzles, and manway flanges shall be positioned to provide adequate distance from the shell to allow for stud removal and maintenance ~~without conflict with tank insulation system.~~
- L. Personal Fall Arrest System: Provide and install a fixed ladder fall arrest anchor and self-retracting lifeline. CAI Safety Systems SRL Fall Arrest Anchor or approved equal.
- M. Tank Mixer: Provide and install tank mixer where indicated in the Drawings per manufacturer's recommendations. Tank mixer shall be PAX PMW150 or approved equal.

2.07 CONNECTIONS

- A. Drawings indicate general arrangement of piping, fittings, and specialties.
- B. Connect water piping to the Pump House. Install fittings and valves shown in drawings.
- C. Install pre-insulated pipe and fittings per manufacturer's specifications.

PART 3 - EXECUTION

3.01 EARTHWORK

- A. All excavation, structural fill, and structural backfill in connection with foundation preparation and construction shall be completed by others according to the requirements of the drawings and of contract documents. A finished foundation will be provided for constructing the tank, in advance of the tank manufacturer's planned starting date.

- B. All trench excavation, pipe laying, and pipe bedding and backfill shall be done according to the requirements of the drawings and specifications.

3.02 CONCRETE

- A. All concrete work for the reservoir foundation shall be provided based on Specifications in Section 033000 – Cast-in-Place Concrete.

3.03 FIELD QUALITY CONTROL

- A. Tank fabricator shall field verify the foundation elevation and the tolerances of the in-place foundation. Any deviations shall be reported to the Engineer for correction before proceeding with any work. All tank piping must be in place prior to the commencement of tank erection.

3.04 TANK ERECTION

- A. The CONTRACTOR shall furnish all labor, tools, scaffolding, and other equipment necessary to properly erect the tank complete and ready for use.
- B. Erection shall be completed in compliance with Section 10 of AWWA D103-19 for bolted steel tanks.

3.05 FIELD QUALITY CONTROL TESTING

- A. After the erection of the reservoir is completed, it shall be tested for leaks. Any leaks that are disclosed in the shell bottom, roof, manhole, or piping shall be repaired.
- B. Inspection and testing shall be in accordance with Section 11 of AWWA D103-19, (latest revision).
- C. Make available all radiographs and other testing information to the Owner's Representative during construction.
- D. After completion of the work, the Contractor shall submit a written report and certification that all work has been inspected and tested and is in accordance with all applicable provisions of AWWA D103-19, (latest revision).
- E. All costs associated with testing shall be paid by the Contractor.
- F. Piping Tests: Conduct piping tests before joints are covered and after concrete thrust blocks ~~or field foam insulation~~ have hardened sufficiently. Fill pipeline 24 hours before testing and apply test pressure to stabilize system. Use only potable water.
 - 1. Hydrostatic Tests: Test pipe at not less than 150 psig for two hours.
 - 2. Prepare reports of testing activities and submit to Engineer of Record.

3.06 STANDARDS

- A. The tank structure shall be disinfected at the time of testing in accordance with AWWA Standard C652-02 "Disinfection of Water Storage Facilities" using chlorination method No. 2. Disinfection shall be performed by a competent water treatment contractor.

3.07 TANK MANUFACTURER'S WARRANTY

- A. The tank manufacturer shall include a warranty on tank materials and workmanship for a specified period. As a minimum, the warranty shall provide assurance against defects in material, coatings and workmanship for a period of one (1) year.
- B. Upon completion of the 1-year warranty period provide an inspection of the tank coating. The City's preference is for a submersible camera with a video that they can observe. Provide two copies of the video; one to the City and one to the RESPEC Engineers.

PART 4 - MEASUREMENT AND PAYMENT

4.01 BASIS OF PAYMENT

- A. Construction of the Potable Water Storage Tank and associated items by the Contractor shall include furnishing all necessary material, personnel, equipment, transportation, up to final grade, and supplies to perform the work as shown and specified.
- B. Payment for the Potable Water Storage Tank, pipe and fittings will not be paid until all testing are finished and the work is complete in place.
- C. Payment for the Potable Water Storage Tank shall include work shown on civil, structural, mechanical, and electrical sheets.

<u>Pay Item No.</u>	<u>Pay Item</u>	<u>Pay Unit</u>
331613-1	500K Gallon Water Storage Tank	Lump Sum

END OF SECTION

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SECTION 406000 - ATTACHMENT A- CONTROL NARRATIVE

SECTION 406000 - ATTACHMENT A- CONTROL NARRATIVE

PART 1 - INTRODUCTION

1.01 SUMMARY

- A. This document defines the controls sequences for the Pump House SCADA system. The facility PCS is comprised of a PLC-based control panel located in the Pump House Pump Room.

1.02 ACRONYMS, ABBREVIATIONS, AND DEFINITIONS

- A. HMI: Human Machine Interface.
- B. Operator HMI: Touch panel screen located on the enclosure door of PLC-01.
- C. PCS: Process Control System.
- D. SCADA: Supervisory Controls and Data Acquisition.
- E. UPS: Uninterruptible Power Supply.

PART 2 - GENERAL

2.01 OPERATOR INTERFACE

- A. Operator interface with the Pump House SCADA system shall be through a touch panel HMI screen located on the enclosure door of PLC-01 (located in the pump room). This touch panel HMI will be called the Operator HMI.
- B. The Operator HMI will provide an overall view of the Pump House process and will allow an Operator to control all equipment connected to the SCADA system.
- C. The Operator HMI shall display equipment status and process variables for the Pump House booster pumps, recirculation pump, water storage tank, water distribution piping, standby generator, automatic transfer switch (ATS), and other Pump House systems as described in the control sequences section.
- D. The Operator will have the ability to control all functions and equipment from the Operator HMI.
- E. The Operator will have the ability to view, silence, and acknowledge all alarms from the Operator HMI.

2.02 REMOTE ACCESS

- A. Remote access to the Pump House SCADA system shall be via an Ethernet connection at SCADA panel PLC-01. A secure backhaul link will be established between the Pump House and the Utility's head end.
- B. Remote users will have the ability to view all process data and equipment status at the Pump House.

- C. Remote users with the correct access controls will have the ability to control all equipment at the Pump House.
- D. Remote access shall be implemented using industry-standard operations technology (OT) and information technology (IT) cybersecurity practices.

2.03 USER ACCESS CONTROL

- A. Access to restricted functionality shall be through password-protected user access control. The SCADA system shall have two types of user access accounts.
- B. Operator level accounts shall have the following permissions:
 - 1. View all HMI screens locally at the Pump House and remotely from the Utility's head end control room.
 - 2. Execute commands locally at the Pump House HMI.
 - 3. Acknowledge and silence alarms locally at the Pump House HMI.
- C. Supervisor level accounts shall have the following permissions:
 - 1. All permissions listed under Operator level accounts.
 - 2. Execute commands remotely from the Utility's head end control room.

2.04 ALARM HANDLING

- A. The Pump House SCADA system monitors the process for alarm conditions. Alarms will notify Operators of equipment malfunction, process deviation, or abnormal conditions requiring prompt Operator response to prevent an impending loss of containment, equipment damage, or hazardous situation.
- B. There are four states associated with an alarm. These states are:
 - 1. Normal (NORM): The normal alarm state is defined as the state in which the process is operating within normal specifications, the alarm is not active, and the previous alarm occurrences have been acknowledged.
 - 2. Unacknowledged (UNACK): This is the initial state of an alarm becoming active due to abnormal conditions. In this state, the alarm is unacknowledged.
 - 3. Acknowledged (ACKED): This is the state in which the alarm is active (abnormal process condition) and the Operator has acknowledged the alarm.
 - 4. Return to Normal Unacknowledged (RTNUN): This is the state in which the process is within normal limits and the alarm becomes not active before an Operator has acknowledged the alarm.
- C. Unacknowledged Alarm State (UNACK)
 - 1. Upon detecting an alarm condition, the system will transition the alarm from the "Normal" state to the "Unacknowledged Alarm" (UNACK) state. An alarm notification will flash on the HMI. The alarm is then added to the Alarm List screen. The alarm status shall be displayed as UNACK and the alarm event will be logged to the data historian. Alarms can trigger additional actions.
 - 2. If the Operator acknowledges the alarm, the alarm transitions to the "Acknowledged" (ACKED) state
 - 3. If the alarm condition returns to normal before the Operator acknowledges it, the alarm transitions to the "Return to Normal Unacknowledged" (RTNUN) state.
- D. Acknowledge Alarm State (ACKED)

1. Upon transitioning to the “Acknowledged Alarm” state, the system will change the status of the alarm to ACKED on the Alarm List. The alarm acknowledge event will be logged to the data historian. Acknowledging an alarm will also silence any audible alarm notification devices.
 2. The ACKED alarm will remain on the Alarm List until the process condition returns to normal.
 3. If the alarm condition returns to normal, the alarm transitions to the “Normal” (NORM) state. The alarm is removed from the Alarm List screen. This event will be logged to the data historian.
- E. Return to Normal Unacknowledged Alarm State (RTNUN)
1. If the alarm condition returns to normal before an Operator acknowledges the alarm, the system transitions the alarm to the “Return to Normal Unacknowledged Alarm” (RTNUN) state. The alarm status will be displayed as RTNUN on the Alarm List. This event will be logged to the data historian. The alarm will remain on the Alarm List until the Operator acknowledges the alarm or the process condition transitions to abnormal status.
 2. If the operator acknowledges the alarm, the alarm transitions to the “Normal” state. The system will remove the alarm from the Alarm List screen and will log this event in the data historian.
 3. If the abnormal condition occurs again, the system will transition the alarm to the “Unacknowledged Alarm” (UNACK) state as described above.

2.05 DATA HISTORIAN

- A. A data historian shall log data points for all tags in the tag database. The historian shall retain data for the previous one year. Once one year’s worth of data points has been collected, the oldest data points will be overwritten to make space for the most current data points.

PART 3 - PLANT CONTROL SEQUENCES

3.01 RE-CIRCULATION PUMP (RC-01)

- A. The SCADA system modulates the speed of Re-Circulation pump RC-01 to maintain a pressure of 65 PSIG in the distribution line as measured by pressure transmitter PIT-004.
- B. The SCADA system will issue start/stop commands and send a speed modulating signal to the Re-Circulation Pump RC-01 VFD.
- C. The SCADA system will monitor the Re-Circulation Pump RC-01 run status signal, alarm signal, and speed feedback signal. This information shall be displayed on the Operator HMI.
- D. If pressure drops below 63 PSIG in the distribution (as measured by PIT-004), the SCADA system will start the Lead Booster Pump and ramp down Re-Circulation Pump RC-01 as described in paragraph PRESSURE BOOSTER PUMPS (BP-01 AND BP-02). Distribution line pressure control will switch over to the control sequence described in paragraph PRESSURE BOOSTER PUMPS (BP-01 AND BP-02).
- E. The SCADA system will stop pump RC-01 upon detecting LOW LOW PRESSURE from pump suction header pressure transmitter PIT-003. Refer to paragraph PRESSURE BOOSTER PUMPS BP-01 and BP-02 for details on this low low pressure alarm function.

- F. The SCADA system will stop pump RC-01 upon detecting HIGH HIGH PRESSURE or LOW LOW PRESSURE from water distribution pressure transmitter PIT-004. Refer to paragraph PRESSURE BOOSTER PUMPS BP-01 and BP-02 for details on pressure alarm functions.
- G. The SCADA system will monitor the pump RC-01 motor starter fault alarm status contacts and will generate an alarm if it detects a FAULT ALARM (XS-013B). Upon detecting a fault, the SCADA system will display an alarm on the Operator HMI and issue a stop command to pump RC-01.
- H. The SCADA system shall monitor pump elapsed runtime and display this information on the Operator HMI.
- I. The following SCADA system I/O points are used in these control sequences:
 - 1. Booster Pump Suction Header Pressure (PIT-003)
 - 2. Booster Pump Discharge Water Pressure (PIT-004)
 - 3. Re-Circulation pump RC-01 Pump Start/Stop Command (XY-013)
 - 4. Re-Circulation pump RC-01 Speed Command (SY-013)
 - 5. Re-Circulation pump RC-01 Speed Feedback (ST-013)
 - 6. Re-Circulation pump RC-01 Pump Run Status (XS-013A)
 - 7. Re-Circulation pump RC-01 Fault Alarm (XS-013B)
- J. The SCADA system will display the following information on the Operator HMI:
 - 1. Re-Circulation pump RC-01 Run Status (running/stopped)
 - 2. Re-Circulation pump RC-01 Speed Feedback (Hz)
 - 3. Re-Circulation pump RC-01 Elapsed Run Time (hours:minutes:seconds)
 - 4. Re-Circulation pump RC-01 Fault Alarm status

3.02 PRESSURE BOOSTER PUMPS (BP-01 AND BP-02)

- A. The SCADA system will activate the Booster Pumps BP-01 and BP-02 if the distribution line pressure as measured by PIT-004 drops below 63 PSIG. The pumps will operate in a lead/lag configuration.
 - 1. The SCADA system will start the lead booster pump and modulate the pump speed to maintain the water distribution line pressure at 63 PSIG. The SCADA system will ramp down and stop Re-Circulation Pump RC-01.
 - 2. If the pressure (as measured by PIT-004) drops below 63 PSIG for more than 30 seconds, the SCADA system will start the lag booster pump. The SCADA system will modulate the speed on both pumps to maintain pressure at 63 PSIG.
 - 3. If the pressure (as measured by PIT-004) drops to 61 PSIG, the SCADA system will switch to High Flow Mode. Refer to paragraph HIGH FLOW PUMP (BP-03) for details on the high flow pump control sequences.
 - 4. Once the lag booster pump speed drops below 51.5 Hz, the SCADA system will ramp down and stop the lag booster pump. The SCADA system will continue to modulate the lead booster pump speed to maintain distribution line pressure of 63 PSIG.
 - 5. Once lead booster pump speed drops below 52 Hz, the SCADA system will ramp down and stop the lead booster pump and start Re-Circulation Pump RC-01. The re-circulation pump will run to maintain distribution line pressure at 65 PSIG. The SCADA system will switch over to the control sequence described in paragraph RE-CIRCULATION PUMP (RC-01).

- B. The SCADA system will alternate the lead and lag pumps to equalize pump run time. The SCADA system will switch the lead pump between BP-01 and BP-02 at the start of every week. The lead and lag pumps can also be manually switched by an Operator from the Operator HMI. Each pump's lead/lag status shall be displayed on the HMI.
- C. The SCADA system will issue start/stop commands and send speed modulating signals to the Booster Pump BP-01 and BP-02 VFDs.
- D. The SCADA system will monitor the Booster Pump BP-01 and BP-02 run status signals, alarm signals, and speed feedback signals. This information shall be displayed on the Operator HMI.
- E. The SCADA system will monitor the water distribution pressure via PIT-004.
 - 1. The water distribution pressure reading will be displayed on the Operator HMI.
 - 2. Upon detecting HIGH-HIGH PRESSURE (72 PSIG), the SCADA system will generate a WATER DISTRIBUTION HIGH-HIGH PRESSURE ALARM (PAHH-004) on the Operator HMI and stop Booster Pumps BP-01 and BP-02, Re-Circulation Pump RC-01, and High Flow Pump BP-03.
 - 3. Upon detecting LOW-LOW PRESSURE (50 PSIG; Operator adjustable), the SCADA system will display a WATER DISTRIBUTION LOW-LOW PRESSURE ALARM (PALL-004) on the Operator HMI and stop Booster Pumps BP-01 and BP-02, Re-Circulation Pump RC-01, and High Flow Pump BP-03.
 - 4. The SCADA system shall display HIGH PRESSURE (68 PSIG; Operator adjustable) and LOW PRESSURE (55 PSIG; Operator adjustable) alarms on the Operator HMI. These alarms are for notification only and do not perform any control actions.
- F. The SCADA system will monitor the booster pump suction pressure via PIT-003.
 - 1. The booster pump suction header pressure reading will be displayed on the Operator HMI.
 - 2. Upon detecting LOW-LOW PRESSURE (1.5 PSIG; Operator adjustable) on pump suction header pressure transmitter PIT-003, the SCADA system will stop pumps BP-01 and BP-02 and generate a PUMP SUCTION HEADER LOW-LOW PRESSURE ALARM (PAL-003) on the Operator HMI. This low-low pressure alarm will also stop Re-Circulation Pump RC-01 and High Flow Pump BP-03 (refer to paragraphs control sequences in CIRCULATION PUMP RC-01 and HIGH FLOW PUMP BP-03).
 - 3. The SCADA system will display a LOW PRESSURE (2.0 PSIG; Operator adjustable) alarm on the Operator HMI. This alarm is for notification only and does not perform any control actions.
- G. The SCADA system will monitor the alarm status contacts on the BP-01 and BP-02 VFDs and will generate an alarm if it detects a FAULT ALARM (XS-010B or XS-011B). Upon detecting a fault, the SCADA system will display an alarm on the Operator HMI and issue a stop command to the faulted pump.
- H. The SCADA system will monitor the elapsed runtime on each pump and display this information on the Operator HMI.
- I. The following SCADA system I/O points are used in these control sequences:
 - 1. Booster Pump Discharge Water Pressure (PIT-004)
 - 2. Booster Pump Suction Header Pressure (PIT-003)
 - 3. Booster Pump BP-01 Start/Stop Command (XY-010)
 - 4. Booster Pump BP-01 Speed Command (SY-010)

5. Booster Pump BP-01 Speed Feedback (ST-010)
 6. Booster Pump BP-01 Run Status (XS-010A)
 7. Booster Pump BP-01 Fault Alarm (XS-010B)
 8. Booster Pump BP-02 Start/Stop Command (XY-011)
 9. Booster Pump BP-02 Speed Command (SY-011)
 10. Booster Pump BP-02 Speed Feedback (ST-011)
 11. Booster Pump BP-02 Run Status (XS-011A)
 12. Booster Pump BP-02 Fault Alarm (XS-011B)
- J. The SCADA system will display the following information on the Operator HMI:
1. Booster Pump Suction Header Pressure reading from PIT-003 (psig)
 2. Booster Pump Suction Header LOW-LOW and LOW pressure alarms from PIT-003 (alarm)
 3. Water Distribution Header Pressure reading from PIT-004 (psig)
 4. Water Distribution Header LOW-LOW, LOW, HIGH, AND HIGH-HIGH pressure alarms from PIT-004 (alarm)
 5. Booster Pump BP-01 Run Status (running/stopped)
 6. Booster Pump BP-01 Speed Feedback (Hz)
 7. Booster Pump BP-01 Elapsed Run Time (hours:minutes:seconds)
 8. Booster Pump BP-01 Fault Alarm status (alarm)
 9. Booster Pump BP-01 Lead/Lag Status (lead/lag)
 10. Booster Pump BP-02 Run Status (running/stopped)
 11. Booster Pump BP-02 Speed Feedback (Hz)
 12. Booster Pump BP-02 Elapsed Run Time (hours:minutes:seconds)
 13. Booster Pump BP-02 Fault Alarm status (alarm)
 14. Booster Pump BP-02 Lead/Lag Status (lead/lag)

3.03 HIGH FLOW PUMP BP-03

- A. The SCADA system will activate high flow pump BP-03 if the lead and lag pumps are unable to maintain pressure in the line. This will happen when a high flow demand condition occurs. Once the water distribution line pressure as measured by PIT-004 drops to 61 PSIG (Operator adjustable), the SCADA system will start high flow pump BP-03. The SCADA system will set the speed of booster pumps BP-01 and BP-02 to 60 Hz and will control the speed of high flow pump BP-03 to maintain a pressure of 61 PSIG in the line.
- B. The SCADA system will ramp down and stop high flow pump BP-03 once the water distribution line pressure (as measured by PIT-004) rises above 63 PSIG (Operator adjustable; this setpoint cannot be set to less than 2 PSIG above the BP-03 start pressure). The SCADA system shall transition to maintaining the distribution line pressure via the lead and lag booster pumps (BP-01 and BP-02) as described in paragraph BOOSTER PUMPS (BP-01 and BP-02 and BP-03).
- C. The SCADA system will issue start/stop commands and send speed modulating signals to the High Flow Pump BP-03 VFD.
- D. The SCADA system will monitor the high flow pump BP-03 run status signal, alarm signal, and speed feedback signal. This information shall be displayed on the Operator HMI.
- E. Upon detecting HIGH HIGH FLOW from Airport Supply Line Flow Meter FIT-006 (650 gpm), the SCADA system will generate an AIRPORT SUPPLY LINE HIGH HIGH FLOW

ALARM (FAHH-006) and will modulate the speed of high flow pump BP-03 so that the flow as measured by FIT-006 does not exceed 650 gpm.

- F. The SCADA system will stop pump BP-03 upon detecting LOW LOW PRESSURE from pump suction header pressure transmitter PIT-003. Refer to paragraph PRESSURE BOOSTER PUMPS BP-01 and BP-02 for details on this low low pressure alarm function.
- G. The SCADA system will stop pump BP-03 upon detecting HIGH HIGH PRESSURE or LOW LOW PRESSURE from water distribution pressure transmitter PIT-004. Refer to paragraph PRESSURE BOOSTER PUMPS BP-01 and BP-02 for details on pressure alarm functions.
- H. The SCADA system will monitor the alarm status contact on the BP-03 VFD and will generate an alarm if it detects a FAULT ALARM (XS-012B). Upon detecting a fault, the SCADA system will display an alarm on the Operator HMI and stop pump BP-03.
- I. The SCADA system will monitor the elapsed runtime on each pump and display this information on the Operator HMI.
- J. The following SCADA system I/O points are used in these control sequences:
 - 1. Booster Pump Discharge Water Pressure (PIT-004)
 - 2. Booster Pump Suction Header Pressure (PIT-003)
 - 3. Airport Water Supply Line Flowmeter (FIT-006)
 - 4. Booster Pump BP-03 Start/Stop Command (XY-012)
 - 5. Booster Pump BP-03 Speed Command (SY-012)
 - 6. Booster Pump BP-03 Speed Feedback (ST-012)
 - 7. Booster Pump BP-03 Run Status (XS-012A)
 - 8. Booster Pump BP-03 Fault Alarm (XS-012B)
- K. The SCADA system will display the following information on the Operator HMI:
 - 1. Booster Pump BP-03 Run Status (running/stopped)
 - 2. Booster Pump BP-03 Speed (Hz)
 - 3. Booster Pump BP-03 Elapsed Run Time (hours:minutes:seconds)
 - 4. Booster Pump BP-03 Fault Alarm status (alarm)
 - 5. Booster Pump BP-03 Lead/Lag Status (lead/lag)

3.04 WATER STORAGE TANK LEVEL CONTROL

- A. The SCADA system monitors the level of the water storage tank via a submersible pressure type level transducer (LT-200). High-high and low-low level float switches (LSHH-201 and LSL-201) provide backup tank high and low level alarm point monitoring. A tank fill valve (LV-002) modulates to fill the water storage tank.
- B. The SCADA system will display the tank level on the Operator HMI.
- C. Water Storage Tank Filling Operation: The SCADA system starts the tank filling operation when the level in the tank (as measured by LT-200) drops below tank fill start setpoint LSL-200 (5 feet; Operator adjustable). This Operator adjustable setpoint cannot be set within 12 inches above the LOW-LOW LEVEL setpoint or within 12 inches below the tank fill stop level LSH-100 setpoint.
 - 1. Upon starting the tank fill operation, the SCADA system will open valve LV-002 and modulate the valve position to maintain 200 GPM (Operator adjustable) flow from flow transmitter FIT-001. The valve actuation speed will be configured with a

- minimum travel speed of 15 seconds from fully closed to full open, and vice versa. The SCADA system will display the water tank status as FILLING on the Operator HMI.
2. Once the tank level rises above the tank fill stop setpoint (23 feet above tank floor, Operator adjustable), the SCADA system will close valve LV-002 and end the tank fill operation. The SCADA system will display the water tank status as IDLE on the Operator HMI. The Operator adjustable setpoint LSHH-200 cannot be adjusted to within 12 inches above tank fill start setpoint LSLL-200 and cannot be adjusted above 23 feet.
 3. If the level in the tank rises above the HIGH-HIGH LEVEL setpoint (23 feet 8 inches; Operator adjustable), the SCADA system will end the tank fill operation by closing valve LV-002. A WATER STORAGE TANK HIGH-HIGH LEVEL SHUTDOWN ALARM will be displayed on the Operator HMI. The high-high level alarm LAHH-200 cannot be adjusted above 23 feet 8 inches, which is the actuation elevation of float switch LSHH-202.
 4. If the level in the tank falls below the LOW-LOW LEVEL setpoint (3 feet 6 inches; Operator adjustable), the SCADA system will end the tank fill operation by closing valve LV-002 and stopping water tank mixer (MXR-01). A WATER STORAGE TANK LOW-LOW LEVEL SHUTDOWN ALARM will be displayed on the Operator HMI. The low-low level alarm LALL-200 setpoint cannot be adjusted below 3 feet 6 inches, which is the actuation elevation of float switch LSLL-201.
 5. The SCADA system will display HIGH LEVEL (23 feet 4 inches PSIG; Operator adjustable) and LOW LEVEL (4 feet; Operator adjustable) alarms on the Operator HMI. These alarms are for notification only and do not perform any control actions.
 6. An Operator can manually initiate the tank fill operation from the Operator HMI as long as the tank level is below the tank fill stop setpoint (LSH-200).
- D. Water storage tank high-high level float switch LSHH-201 is mounted at an elevation of 23 feet 8 inches. It provides backup tank fill shutdown capability in the event of a malfunction in level sensor LT-200. Upon activation of LSHH-201, the SCADA system will close tank fill valve FV-001 and will display a WATER STORAGE TANK HIGH-HIGH LEVEL FLOAT SWITCH ALARM on the Operator HMI.
- E. Water storage tank low-low level float switch LSLL-201 is mounted at an elevation of 3 feet 6 inches. It provides backup tank shutdown capability in the event of a malfunction in level sensor LT-200. Upon activation of LSLL-201, the SCADA system will close tank fill valve LV-002, stop water storage tank mixer MXR-01, and display a WATER STORAGE TANK LOW-LOW LEVEL FLOAT SWITCH ALARM on the Operator HMI.
- F. The SCADA system will compare the tank fill valve feedback position signal ZT-002 to the valve position command signal LV-002. If the deviation between the two position values exceeds 5% for more than 1 minute, the SCADA system will display a LV-002 VALVE POSITION MISMATCH alarm on the HMI. This alarm is for notification only and does not perform any control actions.
- G. The following SCADA system I/O points are used in these control sequences:
1. Water Storage Tank Level (LT-200)
 2. Water Storage Tank High-High Level Switch (LSHH-201)
 3. Water Storage Tank Low-Low Level Switch (LSLL-201)
 4. Water Tank Fill Line Flow (FIT-001)
 5. Water Tank Fill Valve Position Command (LV-002)
 6. Water Tank Fill Valve Position Feedback (ZT-002)

7. Water Storage Tank Mixer Start/Stop Command (XY-203)
- H. The SCADA system will display the following information on the Operator HMI:
 1. Water storage tank level reading from LT-100 (inches, and % full)
 2. Water storage tank LOW-LOW, LOW, HIGH, and HIGH-HIGH level alarms from LT-200 (alarms)
 3. Water storage tank LOW-LOW alarm from LSLL-201 (alarm)
 4. Water storage tank HIGH-HIGH alarm from LSHH-201 (alarm)
 5. Water storage tank mode (fill/idle)
 6. Water storage tank fill operation manual start button (touchscreen command)
 7. Water storage tank fill valve position (% open)
 8. Water storage tank fill valve LV-002 VALVE POSITION MISMATCH alarm (alarm)

3.05 CHLORINE MONITORING AND DOSING

- A. The SCADA system will monitor the chlorine content in the distribution line via chlorine analyzer AIT-007. The chlorine concentration will be displayed on the Operator HMI.
- B. If chlorine levels drop below the low concentration setpoint ASL-007 (0.2 ppm), the SCADA system will start chlorine dosing pump CP-01. The SCADA system will adjust the speed of dosing pump CP-01 using a flow-pacing control scheme. The dosing pump speed will be adjusted proportionately to the pump house discharge flow rate as measured by flowmeter FIT-006. Once the chlorine concentration rises to 0.4 ppm for 10 minutes (Operator adjustable), the SCADA system will stop the chlorine dosing pump.
- C. The SCADA system will display HIGH CHLORINE CONCENTRATION (0.5 ppm, Operator adjustable) and LOW CHLORINE CONCENTRATION (0 ppm, Operator adjustable) alarms on the Operator HMI. These alarms are notification only and will not initiate any actions.
- D. The SCADA system will monitor the fault alarm status output from chlorine dosing pump CP-01 and will generate an alarm if it detects a FAULT ALARM from alarm contacts XS-014B. Upon detecting a fault, the SCADA system will display an alarm on the Operator HMI and stop pump CP-01.
- E. The following SCADA system I/O points are used in these control sequences:
 1. Free Chlorine Concentration (AIT-007)
 2. Airport Supply Line Flow (FIT-006)
 3. Chlorine Dosing Pump Speed Control (SY-014)
 4. Chlorine Dosing Pump Start/Stop Command (XY-014)
 5. Chlorine Dosing Pump Speed Feedback (ST-014)
 6. Chlorine Dosing Pump Run Status Contact (XS-014A)
 7. Chlorine Dosing Pump Fault Alarm (XS-014B)
- F. The SCADA system will display the following information on the Operator HMI:
 1. Free chlorine concentration from AIT-007 (ppm)
 2. Chlorine dosing pump speed feedback (% speed)
 3. Chlorine dosing pump fault alarm (alarm)

3.06 WATER LINE FLOW MONITORING

- A. The SCADA system will monitor the incoming flow from the potable water distribution network via flowmeter FIT-001.

1. The flow rate readings will be displayed on the Operator HMI.
 2. The SCADA system will display a HIGH FLOW (400 gpm; Operator adjustable) alarm on the Operator HMI. This alarm is for notification only and does not perform any control actions.
- B. The SCADA system will monitor flow through the pump house intertie line via flowmeter FIT-005.
1. The flow rate readings will be displayed on the Operator HMI.
 2. The SCADA system will display a HIGH FLOW (400 gpm; Operator adjustable) alarm on the Operator HMI. This alarm is for notification only and does not perform any control actions.
- C. The SCADA system will monitor flow to the airport supply line via flowmeter FIT-006.
1. The flow rate readings will be displayed on the Operator HMI.
 2. Refer to paragraph HIGH FLOW PUMP BP-03 for details on HIGH HIGH FLOW alarm condition (FAHH-006).
 3. The SCADA system will display a HIGH FLOW (600 gpm; Operator adjustable) alarm on the Operator HMI. This alarm is for notification only and do not perform any control actions.
- D. The SCADA system will monitor return flow from the airport supply line via flowmeter FIT-008.
1. The flow rate readings will be displayed on the Operator HMI.
 2. The SCADA system will display a HIGH FLOW (35 gpm; Operator adjustable) alarm on the Operator HMI. This alarm is for notification only and does not perform any control actions.
- E. The following SCADA system I/O points are used in these control sequences:
1. Water Tank Fill Line Flow (FIT-001)
 2. CBY Intertie Line Flow (FIT-005)
 3. Airport Supply Line Flow (FIT-006)
 4. Re-circulation Line Flowmeter (FIT-008)
- F. The SCADA system will display the following information on the Operator HMI:
1. Water tank fill line flow rate from FIT-001 (gpm)
 2. HIGH flow alarms from FIT-001 (alarm)
 3. CBY intertie line flow rate from FIT-005 (gpm)
 4. HIGH flow alarms from FIT-005 (alarm)
 5. Airport supply line flow rate from FIT-006 (gpm)
 6. HIGH flow alarm from FIT-006 (alarm)
 7. Re-circulation line flow rate from FIT-008 (gpm)
 8. HIGH flow alarm from FIT-008 (alarm)

3.07 FUEL SYSTEM

- A. The fuel system consists of an above ground fuel storage tank and a day tank located in the generator room.
- B. The SCADA system will not be performing any monitoring or control functions on the above ground fuel storage tank.

- C. The day tank contains an integral fuel oil supply control valve and fuel pump controlled by the integral day tank controller.
 - 1. Refer to Section 263213.13 “Diesel-Engine-Driven Generator Sets” for information on day tank.
 - 2. The SCADA system shall monitor the day tank’s LOW LEVEL ALARM and HIGH LEVEL ALARM contacts. These alarms will be displayed on the Operator HMI. These alarms are for notification only and will not initiate any control actions.
- D. The following SCADA system I/O points are used in these control sequences:
 - 1. Day Tank DT-1 LOW LEVEL contact (LSL-101)
 - 2. Day Tank DT-1 HIGH LEVEL contact (LSH-101)
- E. The SCADA system will display the following information on the Operator HMI:
 - 1. Day Tank DT-1 low level alarm (alarm)
 - 2. Day Tank DT-1 high level alarm (alarm)

3.08 PUMP ROOM AMBIENT TEMPERATURE MONITORING

- A. The SCADA system will monitor the ambient temperature inside the pump room via temperature transmitter TT-021. Upon detecting a LOW AMBIENT TEMPERATURE condition (40 deg F; Operator adjustable), the SCADA system will generate an alarm on the Operator HMI. This alarm is for notification only and will not initiate any control actions.
- B. The following SCADA system I/O points are used in these control sequences:
 - 1. Pump Room Ambient Temperature Transmitter (TT-021)
- C. The SCADA system will display the following information on the Operator HMI:
 - 1. Pump room ambient temperature reading from TT-021 (deg F)
 - 2. LOW temperature alarm from TT-021 (alarm)

3.09 CHLORINE ROOM CHLORINE GAS ALARM

- A. Chlorine Gas Detector Panel AIT-020 monitors the ambient concentration of chlorine gas inside the Chlorine Room. The Chlorine Gas Detector Panel controls the exhaust fan and activates an alarm upon detecting high chlorine gas concentration. Refer to Section 230993 “Sequence of Operations for HVAC Controls” for information on how the Chlorine Gas Detector Panel controls Exhaust Fan EF-1 and activates audible alarms in the pump room and inside the Chlorine Room.
- B. The SCADA system will monitor the HIGH CHLORINE GAS CONCENTRATION alarm contacts ASH-020. Upon detecting an alarm condition, the SCADA system will display a CHLORINE ROOM HIGH CHLORINE GAS ALARM on the Operator HMI.
- C. The following SCADA system I/O points are used in these control sequences:
 - 1. Chlorine Gas Detector Panel Alarm Contact (ASH-020)
- D. The SCADA system will display the following information on the Operator HMI:
 - 1. HIGH chlorine gas concentration alarm from ASH-020 (alarm)

3.10 WATER STORAGE TANK MIXER

- A. A VFD-controlled tank mixer MXR-01 circulates water in the Water Storage Tank. The mixer speed will be manually set by the Operator from the tank mixer panel. The speed will remain set until the Operator changes the speed at the tank mixer panel.
- B. The SCADA system will command the tank mixer to run while the water level in the Water Storage Tank is within normal operating boundaries.
- C. The SCADA system will stop the tank mixer whenever it detects LOW LOW LEVEL in the Water Storage Tank. Refer to paragraph WATER STORAGE TANK LEVEL CONTROL for a full description on how the SCADA system turns off tank mixer on low low level.
- D. The SCADA system will monitor the trouble alarm status contact on the MXR-01 VFD and will generate an alarm if it detects a TROUBLE ALARM (XS-203B). Upon detecting a trouble alarm, the SCADA system will display an alarm on the Operator HMI and stop tank mixer MXR-01.
- E. The Operator can manually start and stop the tank mixer from the Operator HMI. The tank mixer cannot be manually started if the water level is below the LOW LOW LEVEL setpoint or if the tank mixer TROUBLE ALARM is active.
- F. The following SCADA system I/O points are used in these control sequences:
 - 1. Water Storage Tank Level (LT-200)
 - 2. Water Storage Tank Low Low Level Switch (LSLL-201)
 - 3. Water Storage Tank Mixer MXR-01 start/stop command (XY-203)
 - 4. Water Storage Tank Mixer MXR-01 run status contact (XS-203A)
 - 5. Water Storage Tank Mixer MXR-01 trouble alarm (XS-203B)
- G. The SCADA system will display the following information on the Operator HMI:
 - 1. Water storage tank mixer run status (on/off)
 - 2. Water storage tank trouble alarm (alarm)
 - 3. Water storage tank manual start/stop button (touchscreen command)

3.11 WATER STORAGE TANK INTRUSION MONITORING

- A. The SCADA system will monitor intrusion switch ZSC-202 mounted on the top hatch of the water storage tank. An INTRUSION DETECTED alarm will be generated if the hatch is opened. To minimize nuisance alarms, a bypass function button will be provided at the SCADA system PLC. Once pressed, the intrusion alarm function will be disabled for 30 minutes. An alarm will be generated if the hatch remains open after the bypass duration expires. The hatch position will be displayed on the Operator HMI.
- B. The following SCADA system I/O points are used in these control sequences:
 - 1. Water Storage Tank Hatch Intrusion Switch (ZSC-202)
- C. The SCADA system will display the following information on the Operator HMI:
 - 1. Water storage tank hatch position from ZSC-202 (open/closed position)
 - 2. INTRUSION DETECTED alarm from ZSC-202 (alarm)
 - 3. INTRUSION ALARM BYPASS function button (touchscreen command)

3.12 STANDBY GENERATOR

- A. The SCADA system will monitor the standby generator for the following conditions:
 - 1. Generator auto/hand status
 - 2. Generator run status
 - 3. GENERATOR FAULT alarm (notification only, no control actions)
- B. The following SCADA system I/O points are used in these control sequences:
 - 1. Generator Auto/Hand Status Contact (XS-103A)
 - 2. Generator Run Status Contact (XS-103B)
 - 3. Generator Fault Alarm Contact (XS-103C)
- C. The SCADA system will display the following information on the Operator HMI:
 - 1. Generator auto/hand status (auto/hand)
 - 2. Generator run status (running/off)
 - 3. Generator fault alarm (alarm)

3.13 AUTOMATIC TRANSFER SWITCH

- A. The SCADA system will monitor the automatic transfer switch (ATS) for the following conditions:
 - 1. Connected to utility power
 - 2. Connected to Generator power
 - 3. UTILITY POWER FAILURE alarm: This is a notification only alarm, it will not initiate any control actions
 - 4. FAILURE TO SWITCH TO GENERATOR alarm: This is a notification only alarm, it will not initiate any control actions
- B. The following SCADA system I/O points are used in these control sequences:
 - 1. Connected to Utility Power Status Contact (XS-102A)
 - 2. Connected to Generator Power Status Contact (XS-102B)
 - 3. Utility Power Failure Alarm Contact (XS-102C)
 - 4. Failure to Switch to Generator Alarm Contact (XS-102D)
- C. The SCADA system will display the following information on the Operator HMI:
 - 1. ATS connection status from XS-102A and XS-102B (Utility/Generator)
 - 2. UTILITY POWER FAILURE (alarm)
 - 3. FAILURE TO SWITCH TO GENERATOR (alarm)

3.14 WATER STORAGE TANK CATHODIC PROTECTION PANEL

- A. The SCADA system will monitor the cathodic protection panel for the following conditions:
 - 1. On/off Status
 - 2. Trouble alarm
- B. The following SCADA system I/O points are used in these control sequences:
 - 1. Cathodic Protection System Status Contacts (XS-204A)
 - 2. Cathodic Protection System Trouble Alarm Contacts (XS-204B)
- C. The SCADA system will display the following information on the Operator HMI:
 - 1. Cathodic protection system status (on/off)
 - 2. Cathodic protection system trouble alarm (alarm)

3.15 SCADA PANEL PLC-01 DIAGNOSTICS

- A. The SCADA system will monitor the following status conditions on the PLC UPS.
 - 1. UPS On Battery Status (XS-300A): The SCADA system will display the UPS connection status (on main power or on battery power) on the Operator HMI.
 - 2. UPS LOW BATTERY alarm (XS-300B): Upon a low battery condition, the SCADA system will display a LOW BATTERY alarm on the Operator HMI. This alarm is for notification only. It will not initiate any control actions.
- B. The SCADA system will monitor the communications connectivity between the Pump House and the SCADA Head End. The SCADA system will generate a LOSS OF COMMS alarm upon detecting a network outage exceeding 1 minute. This alarm is for notification only. It will not initiate any control actions.
- C. The following SCADA system I/O points are used in these control sequences:
 - 1. UPS On Battery status contacts (XS-300A)
 - 2. UPS Low Battery alarm contacts (XS-300B)
- D. The SCADA system will display the following information on the Operator HMI:
 - 1. UPS On Battery status (on primary/on battery)
 - 2. UPS Low Battery alarm (alarm)
 - 3. LOSS OF COMMS alarm (alarm)

END OF SECTION

IF THIS BAR DOES NOT MEASURE EXACTLY ONE INCH, THE SCALE OF THIS DRAWING HAS BEEN ALTERED DURING IT'S PRODUCTION, AFFECTING ALL LABELED SCALES

GENERAL NOTES

1. CLEARING AND GRUBBING LIMITS SHALL BE A MAXIMUM OF 10 FEET BEYOND THE TOP OF TRENCH EXCAVATION UNLESS OTHERWISE SHOWN. IN NO CASE SHALL CLEARING BE BEYOND THE EDGE OF THE ROW OR EASEMENT LIMITS. MINOR CHANGES TO CLEARING, GRUBBING AND SEEDING LIMITS SHALL BE SUBJECT TO THE ENGINEERS DISCRETION. DISTURBED AREAS OUTSIDE THE LIMITS SHOWN ON THE PLANS SHALL BE RESTORED TO ORIGINAL GRADE AND SEEDED.
2. THE CONTRACTOR WILL ENCOUNTER VARIOUS IMPROVEMENTS SUCH AS (BUT NOT LIMITED TO) ASPHALT PAVEMENT, POWER POLES AND GUYS, SIGNS, SURVEY MONUMENTS, TREES, CULVERTS, DRIVEWAYS, AND TELEPHONE PEDESTALS. IT IS THE INTENT OF THIS CONTRACT TO INSTALL A WORKING UTILITY AND RESTORE ALL IMPACTED IMPROVEMENTS AT NO ADDITIONAL COST TO THE OWNER.
3. SIGNS SHALL BE PROTECTED OR REMOVED AND REINSTALLED IN THEIR EXISTING LOCATIONS. WHEN REINSTALLED, USE DESIGNOVATIONS, INC. "SNAP-N-SAFE" BREAKAWAY SQUARE SIGN POST COUPLERS, PART NUMBER S250.
4. SURVEY MONUMENTS DISTURBED DURING PROJECT SHALL BE RESET BY A PROFESSIONAL LICENSED SURVEYOR.
5. CONTRACTOR SHALL STAKE THE ROW AND EASEMENTS PRIOR TO BEGINNING ANY CLEARING OR CONSTRUCTION. WORK OUTSIDE THE ROW OR EASEMENTS SHALL BE COORDINATED AND APPROVED BY THE ENGINEER.
6. SAWCUT ALL MATCH LINES WHERE NEW CONSTRUCTION ABUTS EXISTING ASPHALT. APPLY STE-1 ASPHALT FOR TACK COAT ON THE VERTICAL FACE OF ALL SAWCUTS. SEE SHEET C-502 FOR ASPHALT SAWCUTTING AND TYPICAL SECTION FOR REPLACEMENT.

UTILITY NOTES

1. ELEVATIONS OF EXISTING UTILITIES ARE UNKNOWN. ALL POTENTIAL CONFLICTS WITH NEW WORK SHALL BE POTHOLED, SURVEYED, AND LOCATION & ELEVATION SHALL BE PROVIDED TO ENGINEER PRIOR TO EXCAVATION FOR THE WATER MAIN. IT IS THE CONTRACTORS RESPONSIBILITY TO OBTAIN LOCATES OF EXISTING UTILITIES BEFORE EXCAVATION.
2. THE EXISTING GROUNDWATER TABLE SHOWN IN THE PLAN AND PROFILE DRAWINGS IS APPROXIMATED USING PUBLICLY AVAILABLE MONITORING WELLS DATA, AS WELL AS FIELD OBSERVATIONS IN RECENT CONSTRUCTION PROJECTS DURING THE SUMMER MONTHS WHEN GROUNDWATER ELEVATIONS TEND TO BE THE HIGHEST. NOTE THAT THE GROUNDWATER ELEVATION FLUCTUATES SEASONALLY WITHIN THE PROJECT LIMITS. DEWATERING MAY BE REQUIRED TO OBTAIN SUITABLE COMPACTION.
3. ALL UTILITIES WITHIN AND BEYOND THE PROJECT BOUNDARY SHALL REMAIN IN PLACE AND IN SERVICE DURING CONSTRUCTION UNLESS APPROVED BY THE ENGINEER.
4. ALL MATERIALS THAT COME IN DIRECT CONTACT WITH POTABLE WATER MUST BE APPROVED BY NSF/ANSI STANDARD 61.
5. FIRE HYDRANT ASSEMBLIES INCLUDE ALL FITTINGS, BOLLARDS, AND VALVES SHOWN.
6. WATER SERVICE LOCATIONS WILL BE STAKED IN THE FIELD BY THE ENGINEER. ADDITIONAL SERVICES MAY BE ADDED DURING CONSTRUCTION BY ENGINEER AND PAID FOR AT UNIT PRICES. SEE SHEET C-701 FOR WATER SERVICE SCHEDULE.
7. PROTECT EXISTING WATER LINE THRUST BLOCK ASSEMBLIES AS NECESSARY DURING CONSTRUCTION.
8. ALL UTILITY SURFACE FEATURES IN THE ROAD SHALL BE ADJUSTED PRIOR TO PAVING. NO CUTTING OF ASPHALT SHALL BE ALLOWED WITHOUT ENGINEER'S APPROVAL.
9. UNDERGROUND UTILITY LOCATIONS WERE PAINTED ON THE GROUND AND ARE APPROXIMATE. CONTRACTOR SHALL CALL THE ALASKA DIGLINE (811) TO ESTABLISH THE EXACT LOCATION OF UTILITIES PRIOR TO COMMENCING WORK.
10. PLAN AND PROFILE SHEETS SHOW MINIMUM HORIZONTAL DIRECTIONAL DRILL (HDD) LIMITS BASED ON ALASKA DEPARTMENT OF TRANSPORTATION AND ALASKA DEPARTMENT OF FISH AND GAME COORDINATION. THESE LOCATIONS MAY BE EXTENDED.

ABBREVIATIONS

ABDN	ABANDONED
ADEC	ALASKA DEPARTMENT OF ENVIRONMENTAL CONSERVATION
AFF	ABOVE FINISHED FLOOR
ANSI	AMERICAN NATIONAL STANDARDS INSTITUTE
CMP	CORRUGATED METAL PIPE
COMM	COMMUNICATIONS
CPP	CORRUGATED PLASTIC PIPE
CY	CUBIC YARD
DEMO	DEMOLITION
DIA, Ø	DIAMETER
DIP	DUCTILE IRON PIPE
DOT	DEPARTMENT OF TRANSPORTATION
E	EASTING
EG	EXISTING GROUND
ELEV, EL	ELEVATION
EM	EASEMENT
EP	EDGE OF PAVEMENT
EX	EXISTING
F/O	FIBER OPTIC CABLE
FG	FINISHED GRADE
FH	FIRE HYDRANT
GV	GATE VALVE
IE	INVERT ELEVATION
LF	LINEAR FOOT
MAX	MAXIMUM
MIN	MINIMUM
MH	MANHOLE
MJ	MECHANICAL JOINT
NTS	NOT TO SCALE
OC	ON CENTER
OFF	OFFSET
OHE	OVERHEAD ELECTRIC
PSF	POUNDS PER SQUARE FOOT
PSI	POUNDS PER SQUARE INCH
PUE	PUBLIC UTILITY EASEMENT
R	RADIUS
REV	REVISION
ROW, R/W	RIGHT OF WAY
RR	RAILROAD
SD	STORM DRAIN
SF	SQUARE FOOT
SH	SHOULDER
SHT	SHEET
SS	SANITARY SEWER
STA	STATION
TYP	TYPICAL
UGE	UNDERGROUND ELECTRIC
UV	ULTRA VIOLET
W/	WITH
W, WTR	WATER
WTP	WATER TREATMENT PLANT
X	CROSSING

LEGEND

NEW	EXISTING	
		BOLLARD
		BORE PITS
		CATCH BASIN
		CLEARING LIMITS
		COMMUNICATIONS LINE
		CULVERT
		CUT SLOPE
		EASEMENT
		EDGE OF GRAVEL
		EDGE OF PAVEMENT
		ELECTRICAL BOX
		ELECTRICAL MANHOLE
		ELECTRICAL PEDESTAL
		ELECTRICAL TRANSFORMER
		EXTERIOR LIGHTING
		FILL SLOPE
		FIRE HYDRANT
		FENCE
		FLOW DIRECTION
		GAS LINE
		GAS VALVE
		HEADBOLT HEATER
		JUNCTION BOX
		MANHOLE
		WELL
		OVERHEAD ELECTRIC LINE
		PIPE
		POST
		POWER AND LIGHT POLE
		PROPERTY LINE
		RIGHT-OF-WAY
		SANITARY SEWER
		SANITARY SEWER MANHOLE
		SIDEWALK
		STORM DRAIN MANHOLE
		SIGN
		STRUCTURE
		TELEPHONE / COMM MANHOLE
		TOE OF EMBANKMENT
		TOP OF EMBANKMENT
		TREES
		UTILITY POLE
		6" HDPE WATER MAIN
		10" HDPE WATER MAIN
		WATER MAIN
		WATER MANHOLE
		WATER SERVICE
		WATER TABLE
		WATER VALVE

[illegible]

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PROJECT :
CITY & BOROUGH OF YAKUTAT
WATER SYSTEM EXTENSION
YAKUTAT, ALASKA

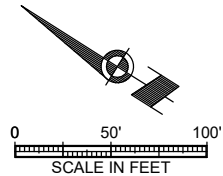
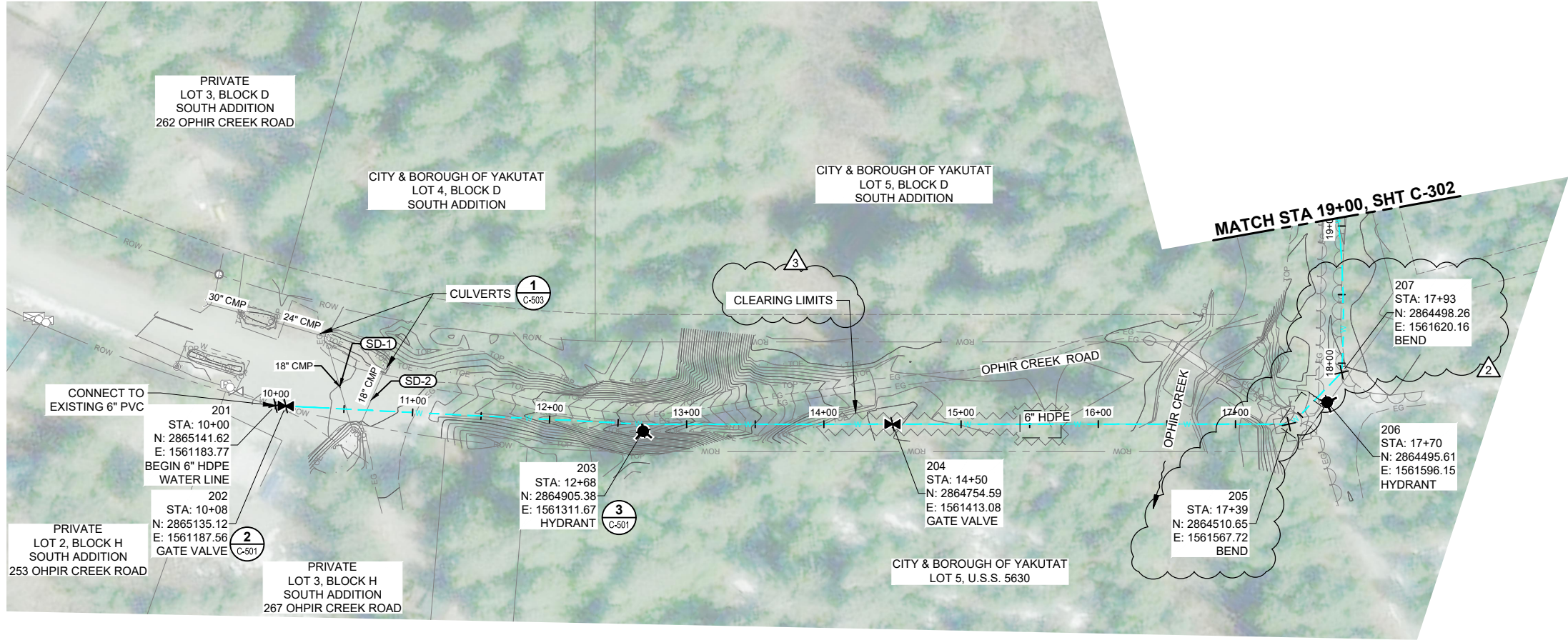
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GENERAL NOTES, LEGEND AND ABBREVIATIONS

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DRAWN	HRB
CHECKED	KAB
DATE	04-16-2025

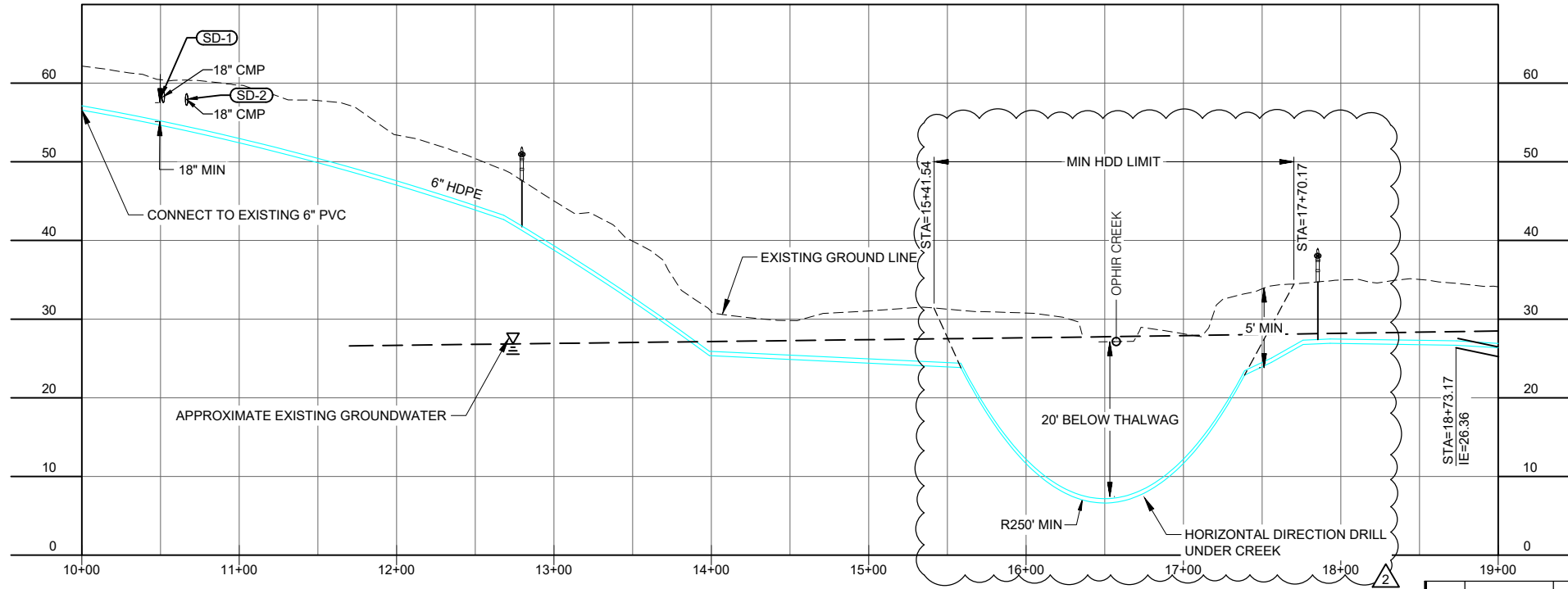
PROJECT No.
10297.24002
SHEET NUMBER

C-001



NOTES:

- GROUNDWATER DEPTHS SHOWN ON PROFILE SHEETS IS APPROXIMATE AND ELEVATIONS WERE INTERPOLATED FROM GROUND WATER MEASUREMENTS TAKEN ON 12/15/2025.



				DRAWN	HRB
				CHECKED	KAB
				DATE	04-16-2025
				PROJECT No. 10297.24002	
				SHEET NUMBER	
				C-301	
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PROJECT :
CITY & BOROUGH OF YAKUTAT
WATER SYSTEM EXTENSION

YAKUTAT, ALASKA

SHEET TITLE :
PLAN AND PROFILE -
OPHIR CREEK ROAD

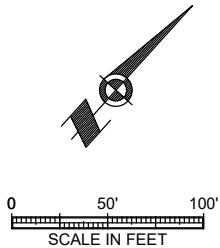
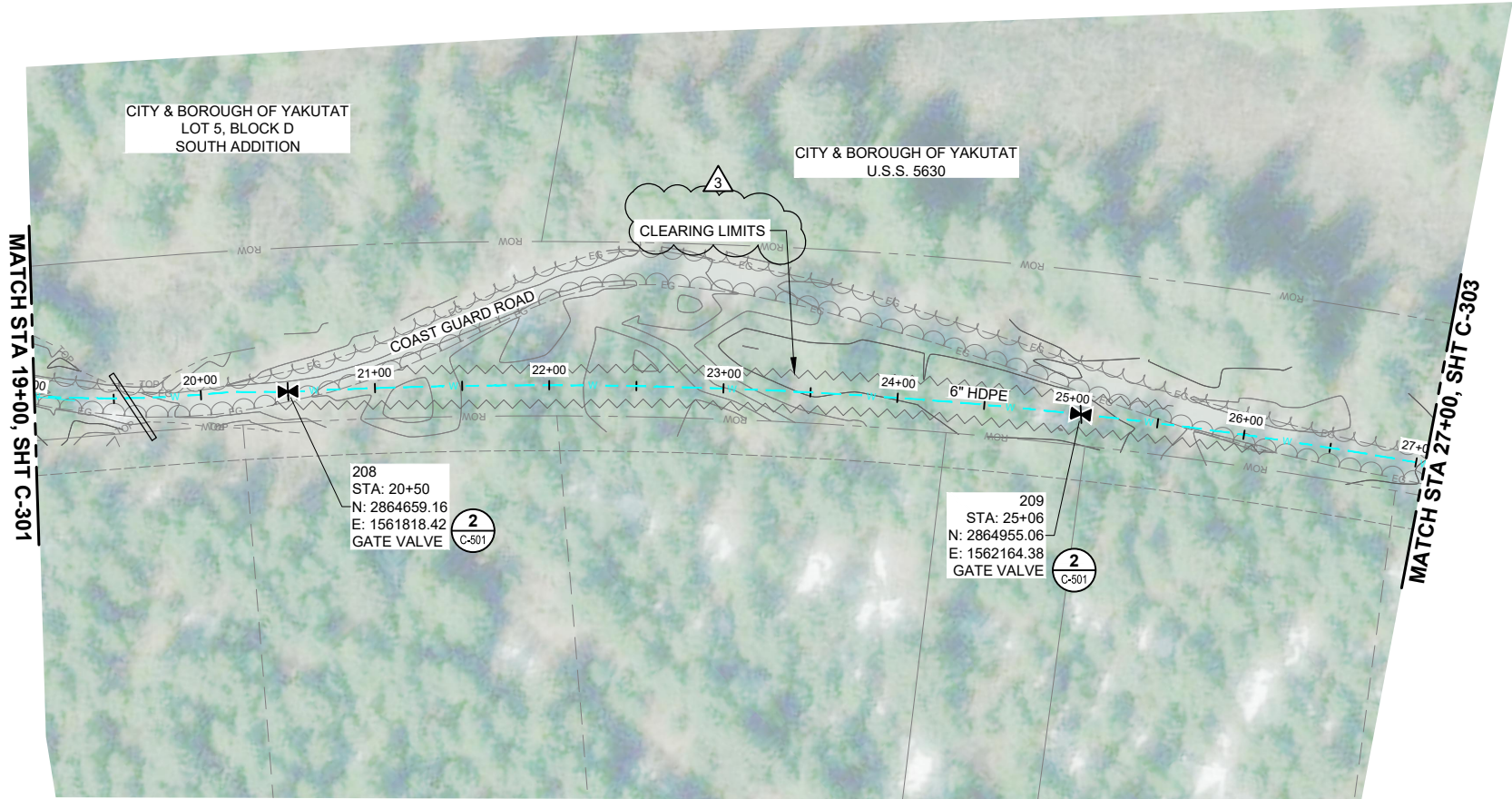
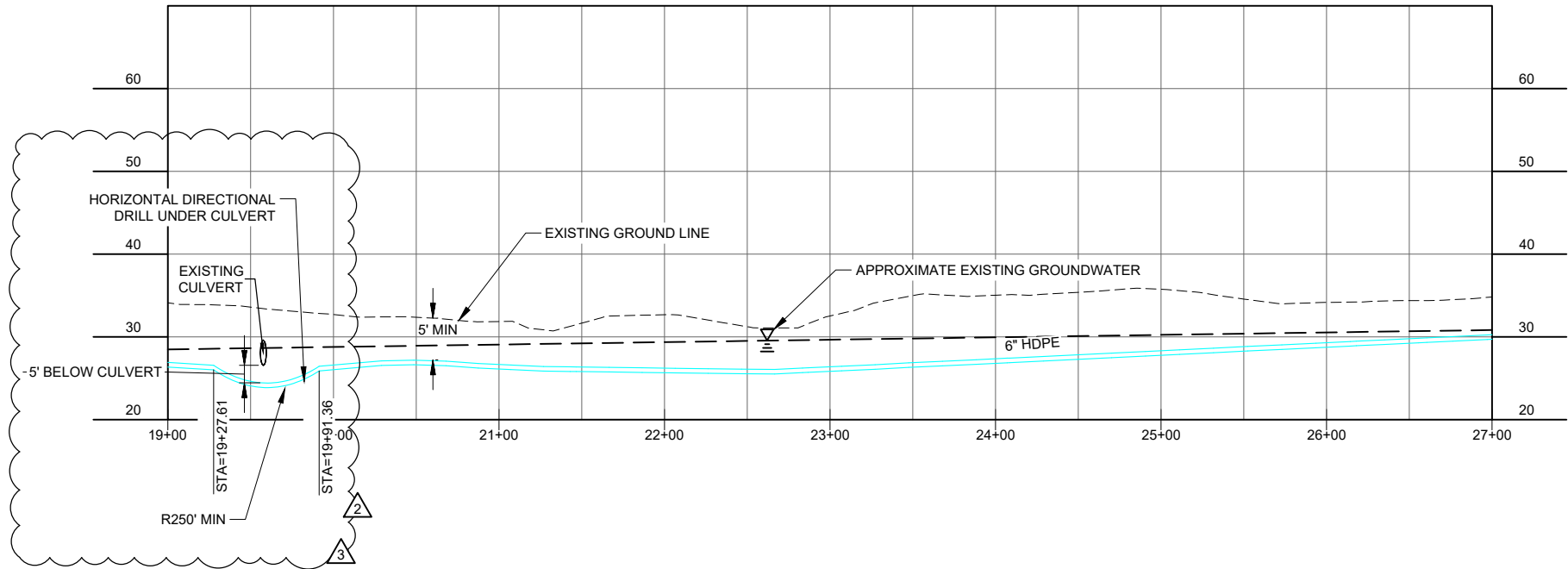
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DATE 04-16-2025

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SHEET NUMBER

C-301

1" IF THIS BAR DOES NOT MEASURE EXACTLY ONE INCH, THE SCALE OF THIS DRAWING HAS BEEN ALTERED DURING IT'S PRODUCTION, AFFECTING ALL LABELED SCALES

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No.	Date	Item
REVISIONS		
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2	09/16/2025	ADDENDUM No. 2

DESIGN	AMN
DRAWN	HRB
CHECKED	KAB
DATE	04-16-2025
PROJECT No. 10297.24002	
SHEET NUMBER C-302	

SHEET TITLE :
PLAN AND PROFILE -
COAST GUARD ROAD (1 OF 2)

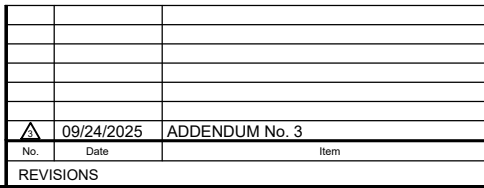
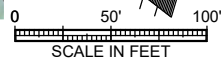
PROJECT :
CITY & BOROUGH OF YAKUTAT
WATER SYSTEM EXTENSION

YAKUTAT, ALASKA

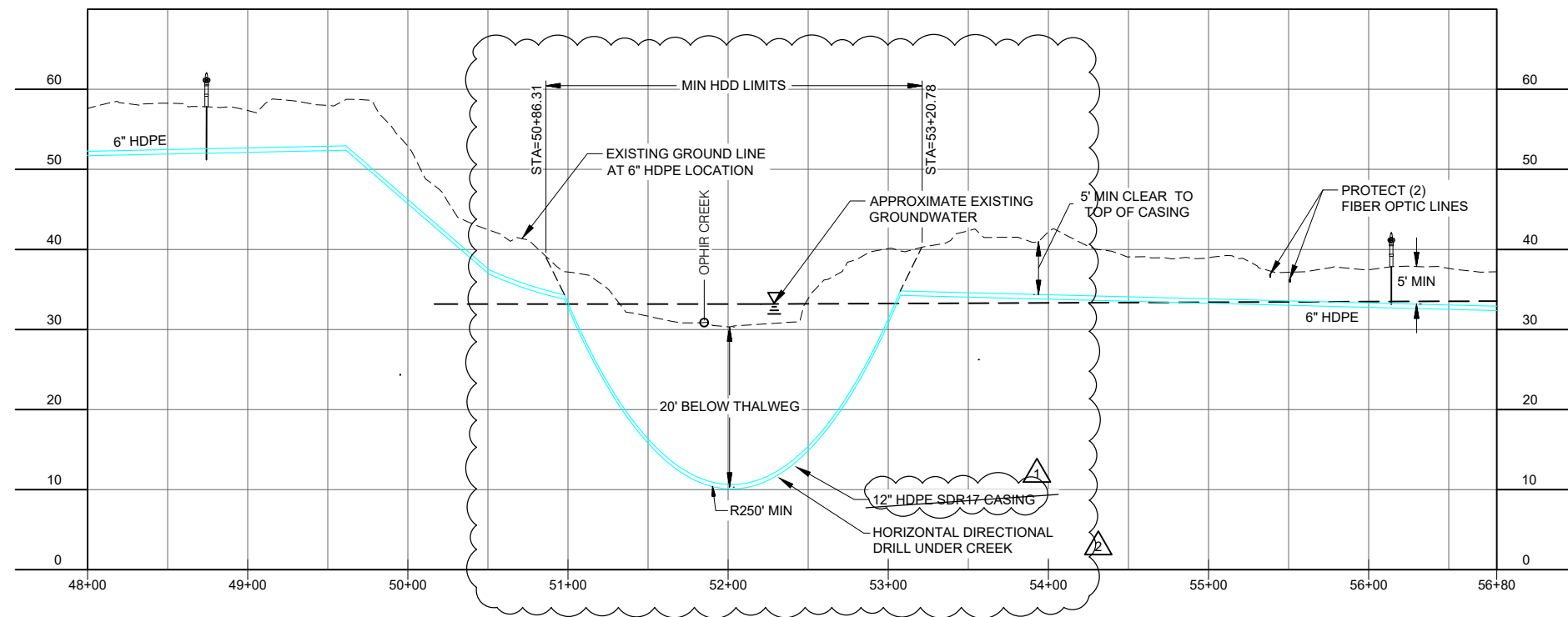
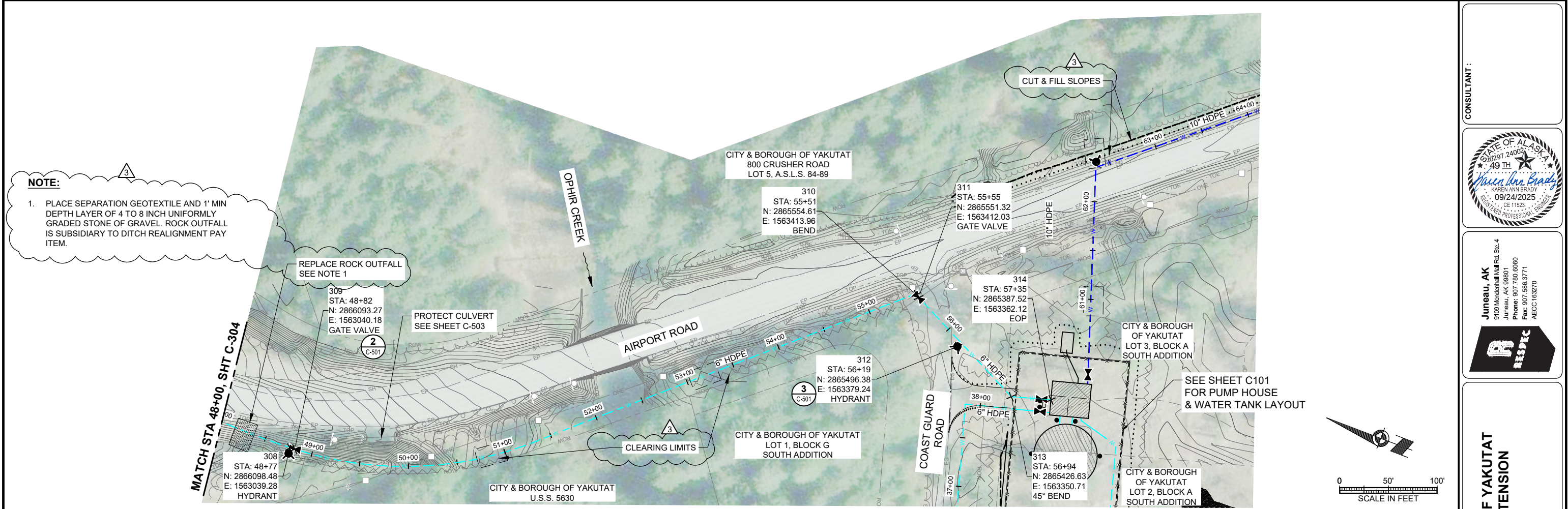
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KAREN ANN BRADY
09/24/2025
061152
REGISTERED PROFESSIONAL ENGINEER

CONSULTANT :



C-303



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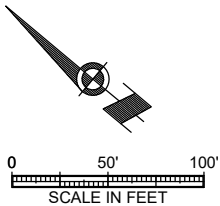
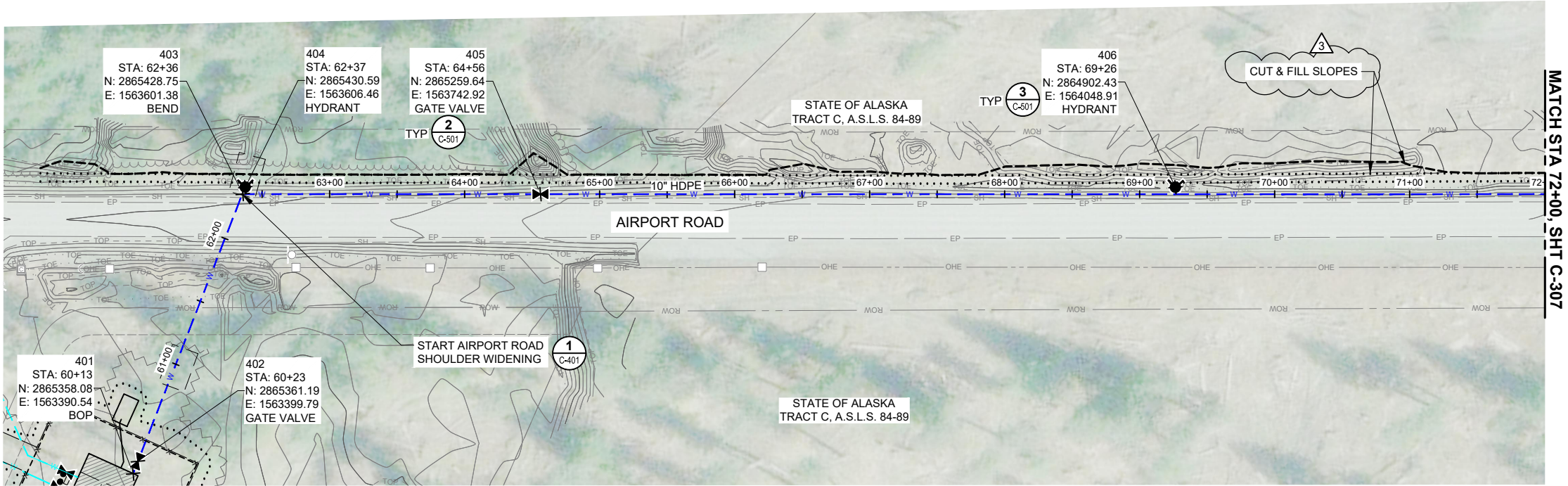
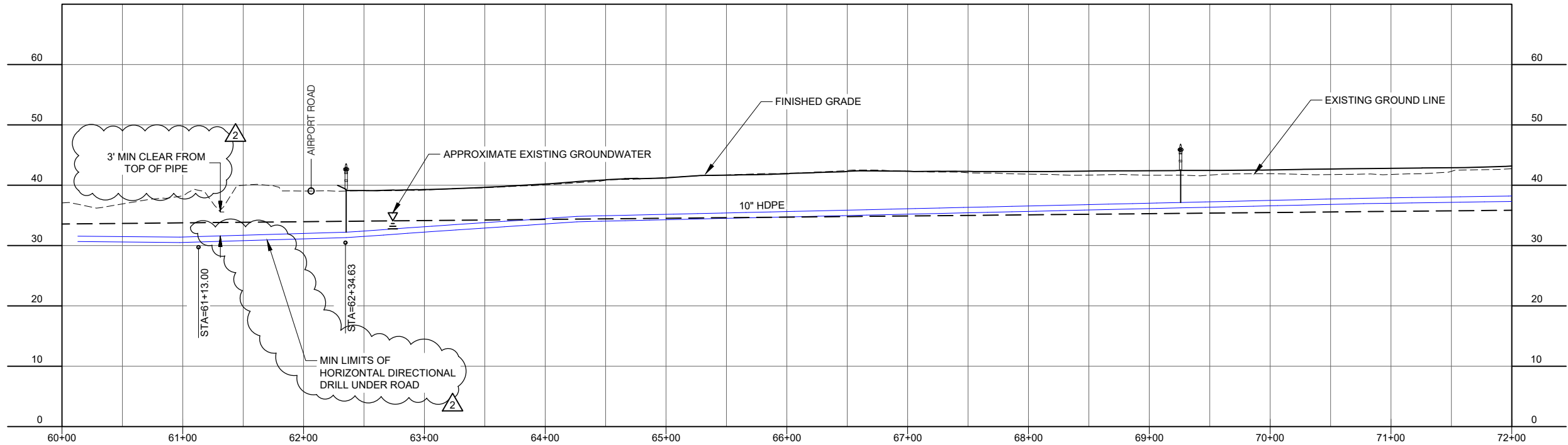
PROJECT:
CITY & BOROUGH OF YAKUTAT
WATER SYSTEM EXTENSION
YAKUTAT, ALASKA

SHEET TITLE:
PLAN AND PROFILE -
AIRPORT ROAD (2 OF 14)

STATE OF ALASKA
910297.24002
49 TH
KAREN ANN BRADY
09/24/2025
09/11/23
REGISTERED PROFESSIONAL ENGINEER

1" IF THIS BAR DOES NOT MEASURE EXACTLY ONE INCH, THE SCALE OF THIS DRAWING HAS BEEN ALTERED DURING IT'S PRODUCTION, AFFECTING ALL LABELED SCALES

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REVISIONS		
No.	Date	Item
1	09/24/2025	ADDENDUM No. 3
2	09/16/2025	ADDENDUM No. 2

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PROJECT :

CITY & BOROUGH OF YAKUTAT
WATER SYSTEM EXTENSION

YAKUTAT, ALASKA

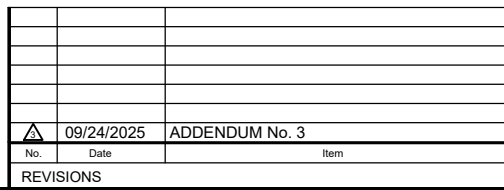
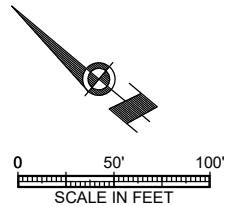
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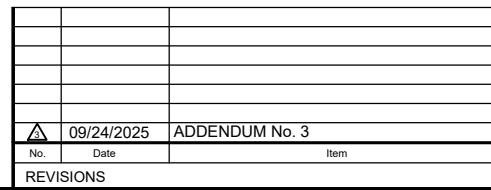
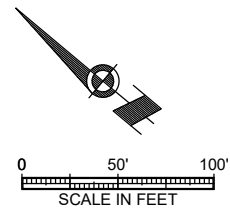
PLAN AND PROFILE -
AIRPORT ROAD (3 OF 14)

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CHECKED	KAB
DATE	04-16-2025

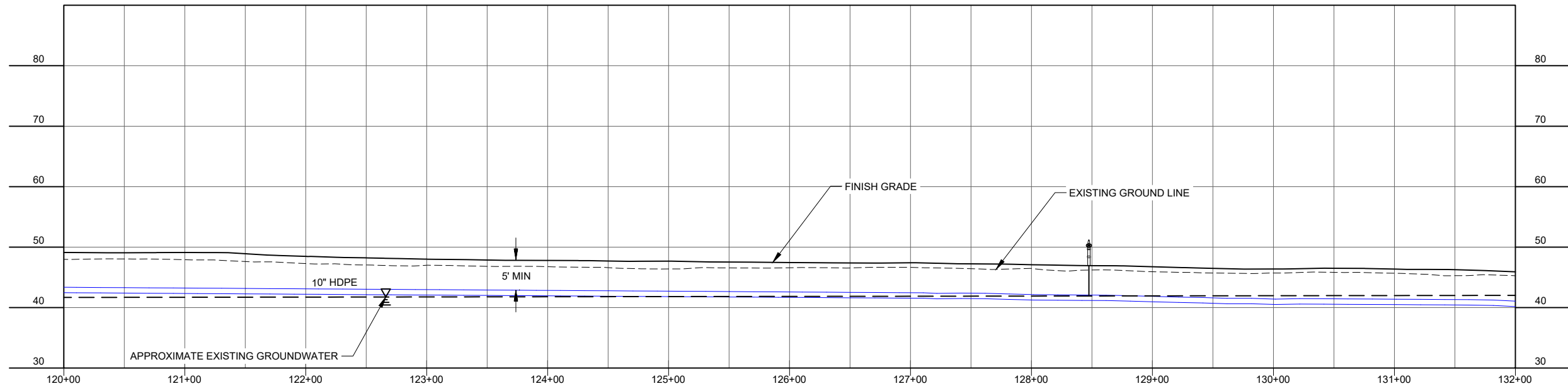
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10297.24002

SHEET NUMBER
C-306





C-308

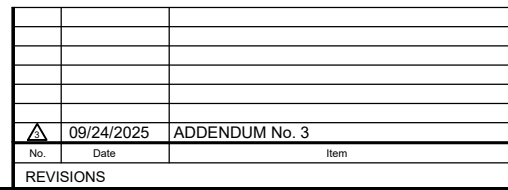
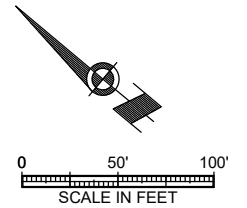


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PROJECT No. 10297.24002	
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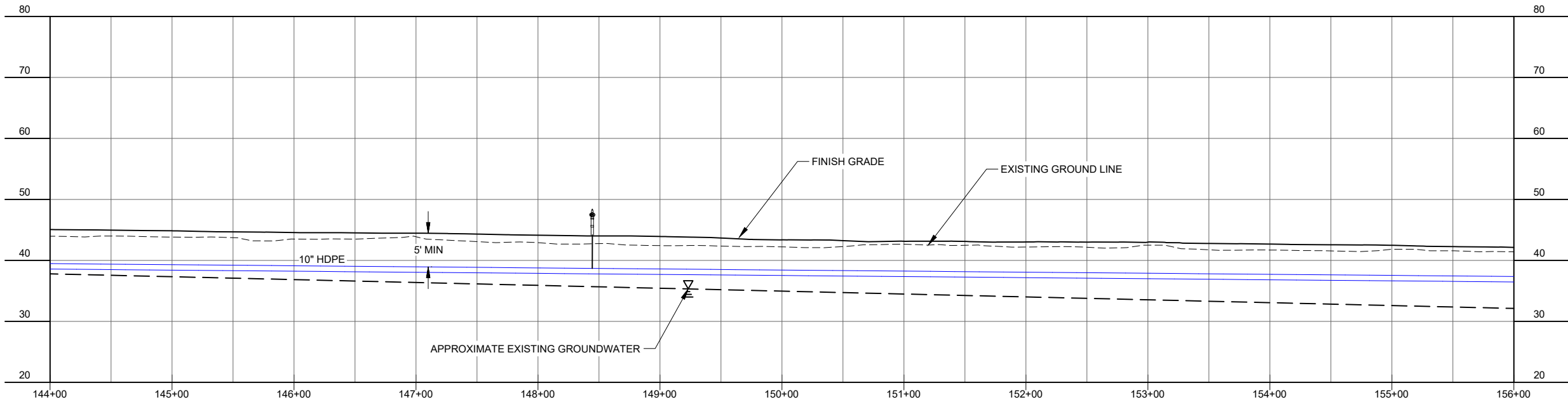
YAKUTAT, ALASKA

STATE OF ALASKA
10297 24002
★ 49 TH ★
Karen Ann Brady
KAREN ANN BRADY
09/24/2025
CE 11523
REGISTERED PROFESSIONAL ENGINEER

CONSULTANT :



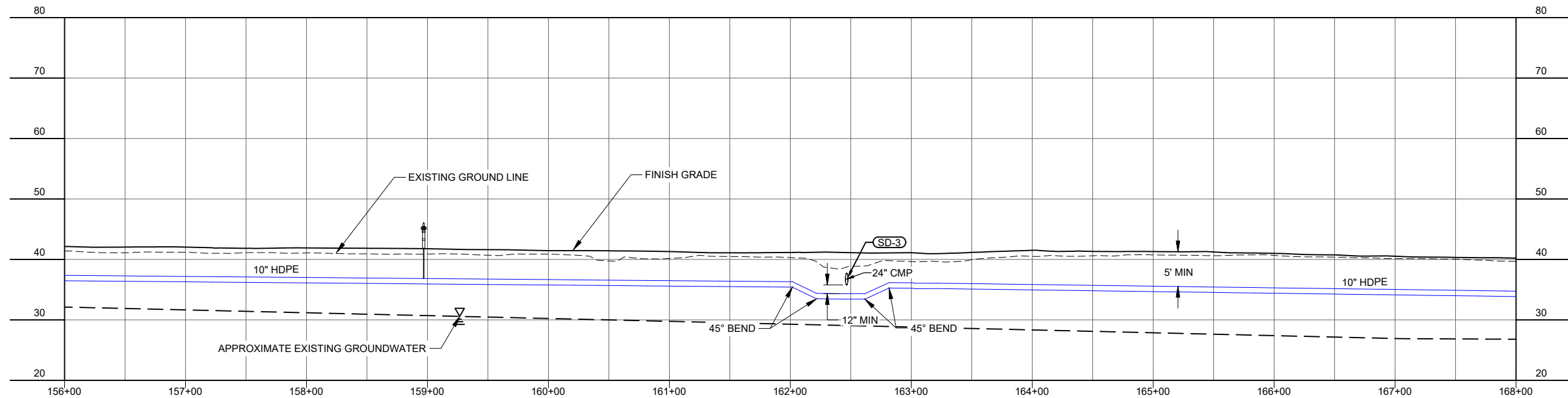
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PROJECT No. 10297.24002	
SHEET NUMBER C-312	



No.
Date
Item

REVISIONS

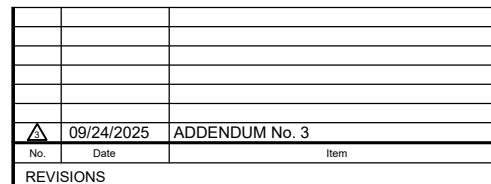
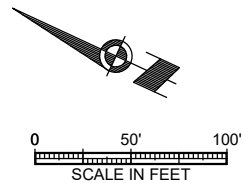
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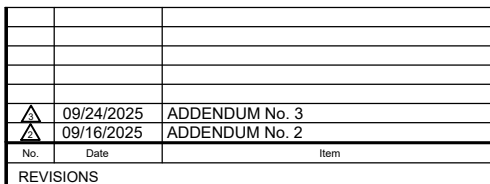
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PROJECT No.	
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SHEET NUMBER	
C-314	

YAKUTAT, ALASKA

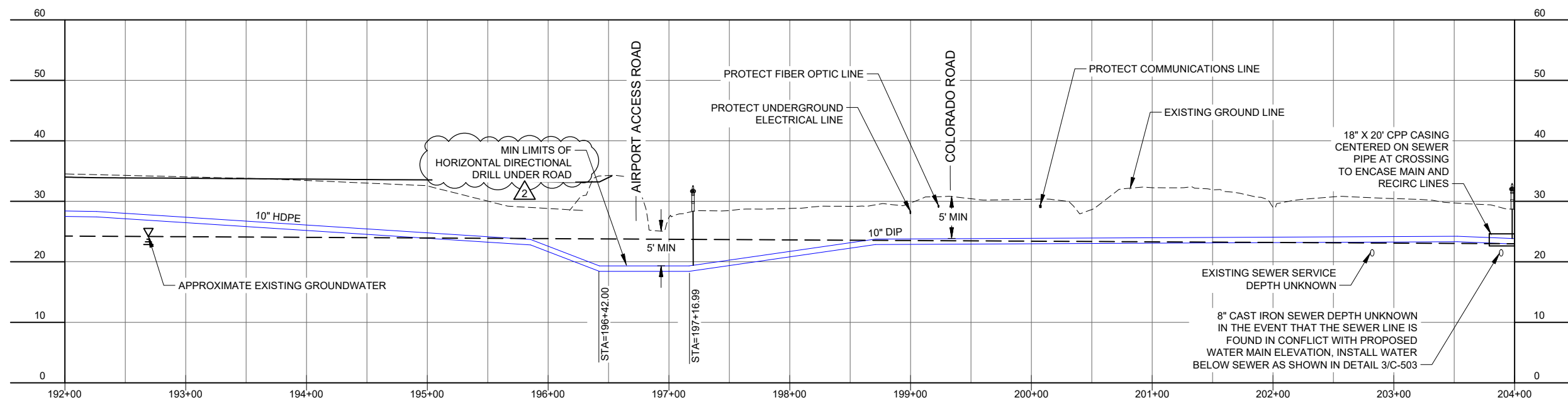
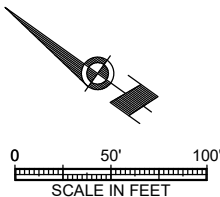
CONSULTANT :



C-315



C-316



	09/24/2025	ADDENDUM No. 3
	09/16/2025	ADDENDUM No. 2
No.	Date	Item
REVISIONS		

SHEET TITLE : PLAN AND AIRPORT	DESIGN	AM
	DRAWN	HR
	CHECKED	KA
	DATE	04-10-2024
	PROJECT No. 10297.24002	
SHEET NUMBER C-317		



1. IN THE EVENT THAT THE SEWER LINE IS FOUND IN CONFLICT WITH PROPOSED WATER MAIN ELEVATION, INSTALL WATER BELOW SEWER AS SHOWN IN DETAIL 3/C-503.
2. SOILS EXCAVATED FROM STA: 222+75 TO STA: 223+25 SHALL BE SEGREGATED AND DISPOSED OF IN ACCORDANCE WITH THE CONTAMINATED MATERIALS MANAGEMENT PLAN, UNLESS MATERIAL IS SAMPLED AND DETERMINED TO BE BELOW THE APPLICABLE CLEANUP LIMITS.



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AECC163270

CITY & BOROUGH OF YAKUTAT
WATER SYSTEM EXTENSION

YAKUTAT, ALASKA

PROJECT :

**PLAN AND PROFILE -
ENDICOTT ROAD TO
AIRPORT ACCESS ROAD**

DESIGN	AMI
DRAWN	HRR
CHECKED	KAL
DATE	04-16-202

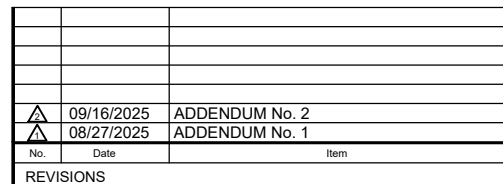
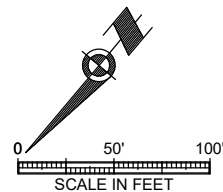
PROJECT No.
10297.24002

SHEET NUMBER

C-319

A	09/16/2025	ADDENDUM No. 2
A	08/27/2025	ADDENDUM No. 1
No.	Date	Item
REVISIONS		

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SHEET TITLE :
PLAN AND PROFILE -
AIRPORT ACCESS ROAD

PROJECT :
CITY & BOROUGH OF YAKUTAT
WATER SYSTEM EXTENSION

YAKUTAT, ALASKA

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CONSULTANT :



DESIGN	AMI
DRAWN	HRR
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DATE	04-16-202

PROJECT No.
10297.24002

SHEET NUMBER

C-320

IF THIS BAR DOES NOT MEASURE EXACTLY ONE INCH, THE SCALE OF THIS DRAWING HAS BEEN ALTERED DURING IT'S PRODUCTION, AFFECTING ALL LABELED SCALES



▲	09/24/2025	ADDENDUM No. 3
No.	Date	Item
REVISIONS		

STATE OF ALASKA
10297.24002
49TH
KAREN ANN BRADY
09/24/2025
CE 11523
REGISTERED PROFESSIONAL ENGINEER

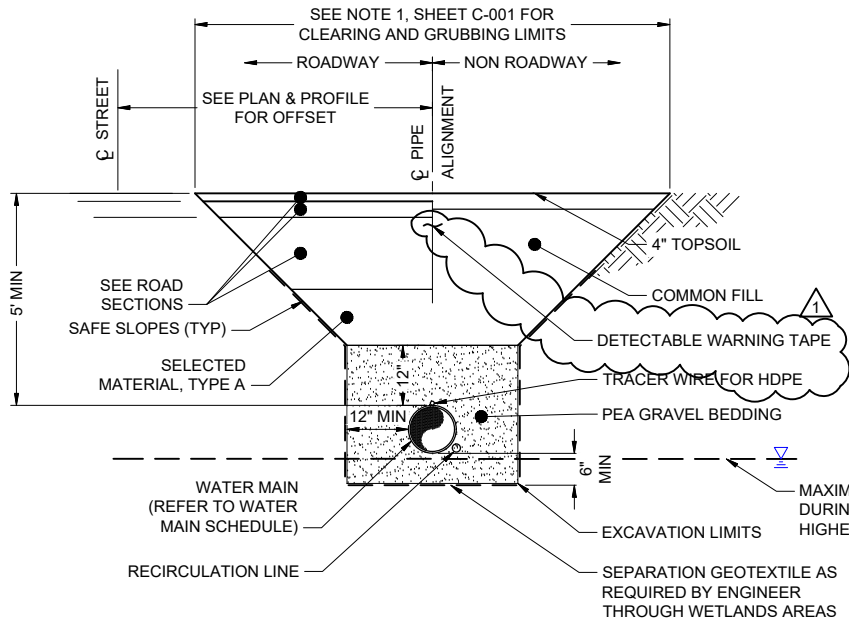
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PROJECT :
CITY & BOROUGH OF YAKUTAT
WATER SYSTEM EXTENSION
YAKUTAT, ALASKA

SHEET TITLE :
AIRPORT ROAD TYPICAL SECTION

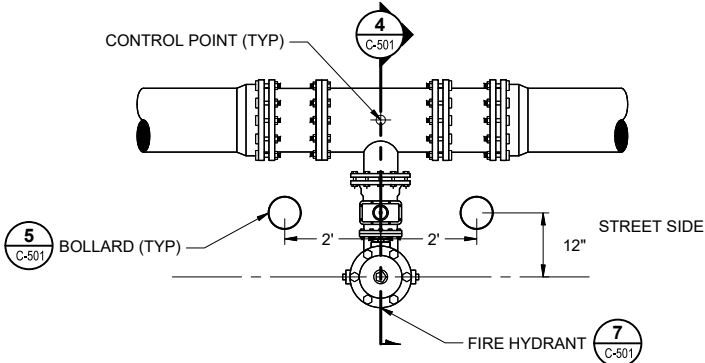
DESIGN	AMN
DRAWN	HRB
CHECKED	KAB
DATE	04-16-2025
PROJECT No. 10297.24002	
SHEET NUMBER	

C-401



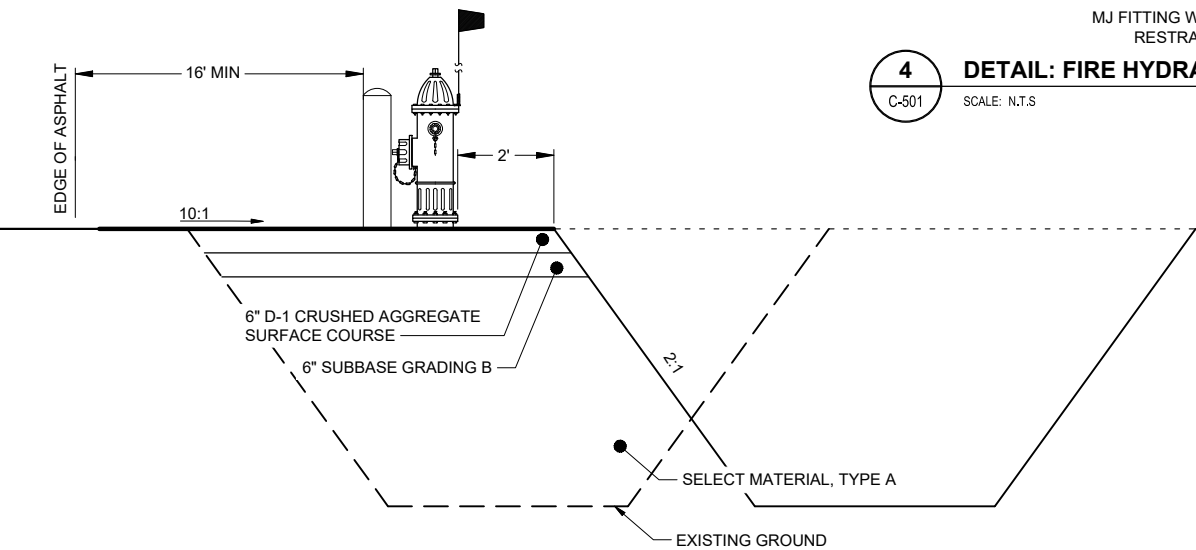
1 TYPICAL TRENCH SECTION

C-501 SCALE: N.T.S



3 DETAIL: FIRE HYDRANT PLAN

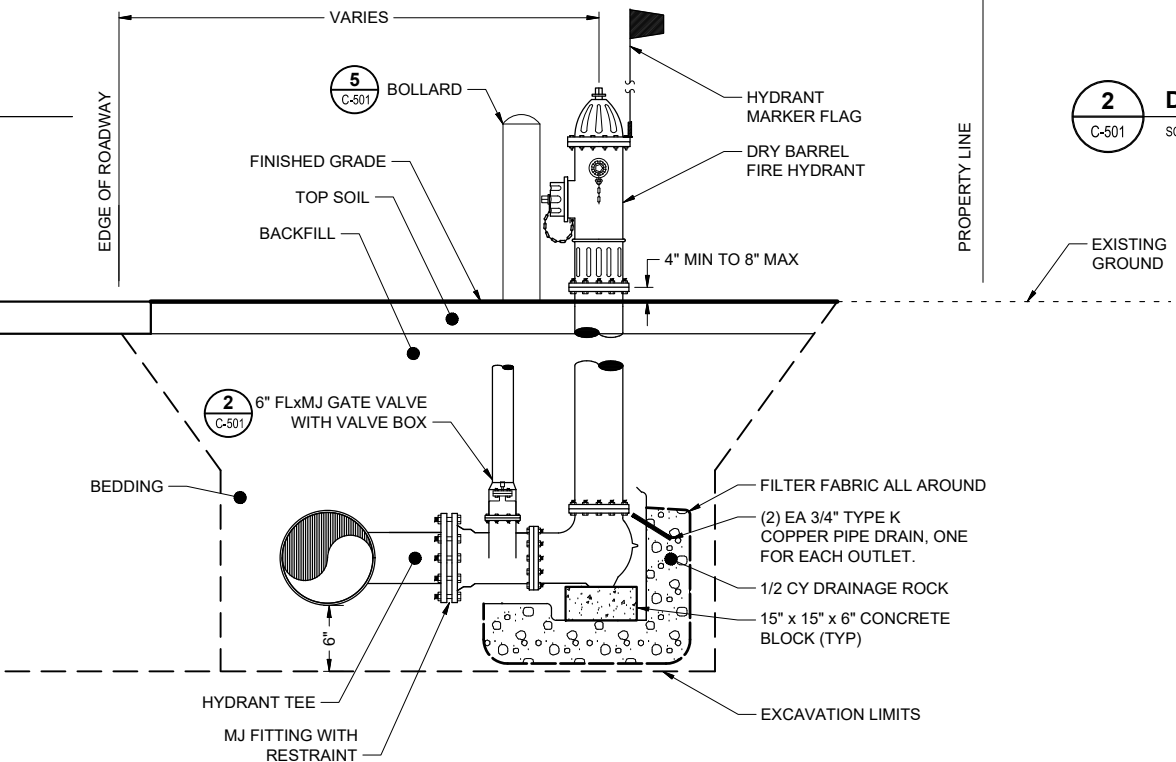
C-501 SCALE: N.T.S



6 DETAIL: HYDRANT WIDENING SECTION

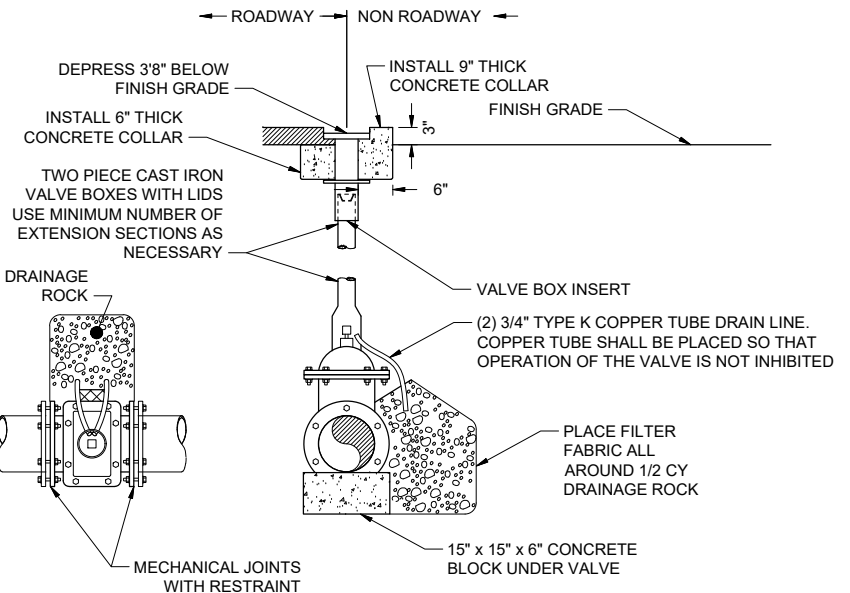
C-501 SCALE: N.T.S

PROPOSED WATER MAIN SCHEDULE				
SUPPLY RECIRC SIZE	PIPE TYPE	LOCATION	LENGTH (L.F.)	GATE VALVE QUANTITY
6" SUPPLY	HDPE SDR11	STA 10+00 TO 38+79 AND 40+37 TO 57+27	4600	15
10" SUPPLY 4" RECIRC	HDPE SDR11	STA 60+13 TO STA 197+17	13740	25
6" SUPPLY	DIP CLASS 50	STA 222+67 TO 227+03 AND 230+00 TO 236+97	1200	0
10" SUPPLY 4" RECIRC	DIP CLASS 50	STA 197+67 TO 222+67	2600	5
SIZE	DESCRIPTION		QUANTITY (EACH)	
SEE DETAIL	HYDRANT		31	
*HYDRANTS SHALL INCLUDE 6" GATE VALVES				



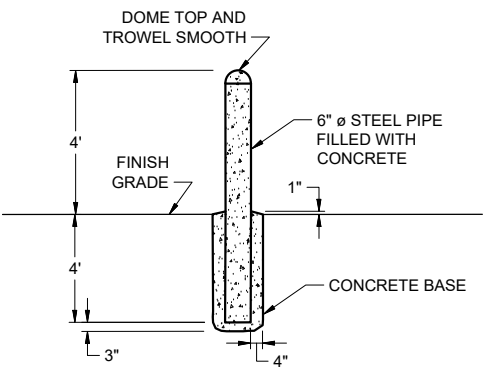
4 DETAIL: FIRE HYDRANT SECTION

C-501 SCALE: N.T.S



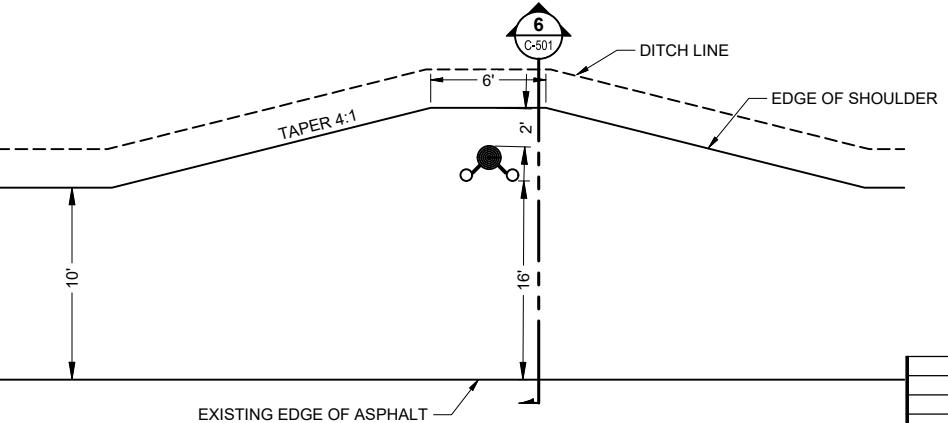
2 DETAIL: GATE VALVE

C-501 SCALE: N.T.S



5 DETAIL: BOLLARD

C-501 SCALE: N.T.S



7 DETAIL: HYDRANT WIDENING PLAN

C-501 SCALE: N.T.S

No.	Date	Item
REVISIONS		
Δ	09/24/2025	ADDENDUM No. 3
Δ	09/16/2025	ADDENDUM No. 2
Δ	08/27/2025	ADDENDUM No. 1

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PROJECT :
**CITY & BOROUGH OF YAKUTAT
WATER SYSTEM EXTENSION**

YAKUTAT, ALASKA

SHEET TITLE :
WATER PIPING DETAILS

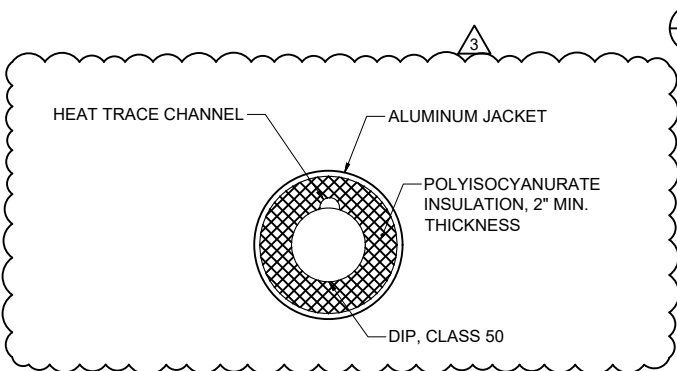
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DRAWN	HRB
CHECKED	KAB
DATE	04-16-2025

PROJECT No.
10297.24002
SHEET NUMBER

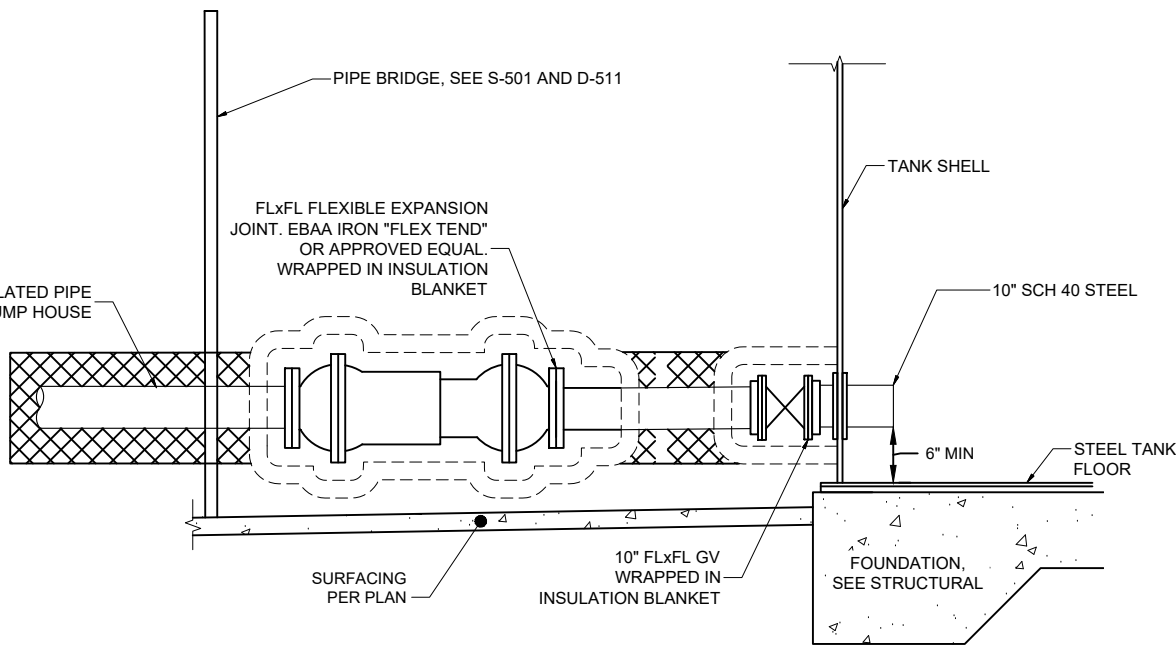
C-501

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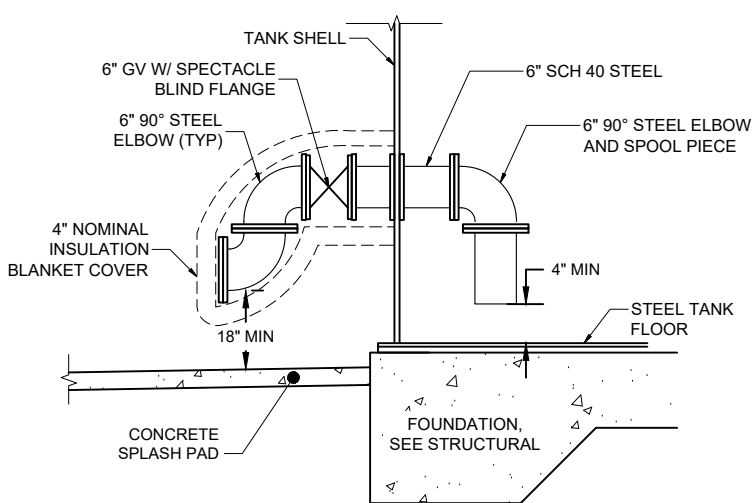
\\proj\as029724002\DWG\Alpout_Vtr_Ext\GOLD\250505a00d_Original Drawings\029724002\C-DETAILS\C-507_Sep-25, 2025_8:14 AM



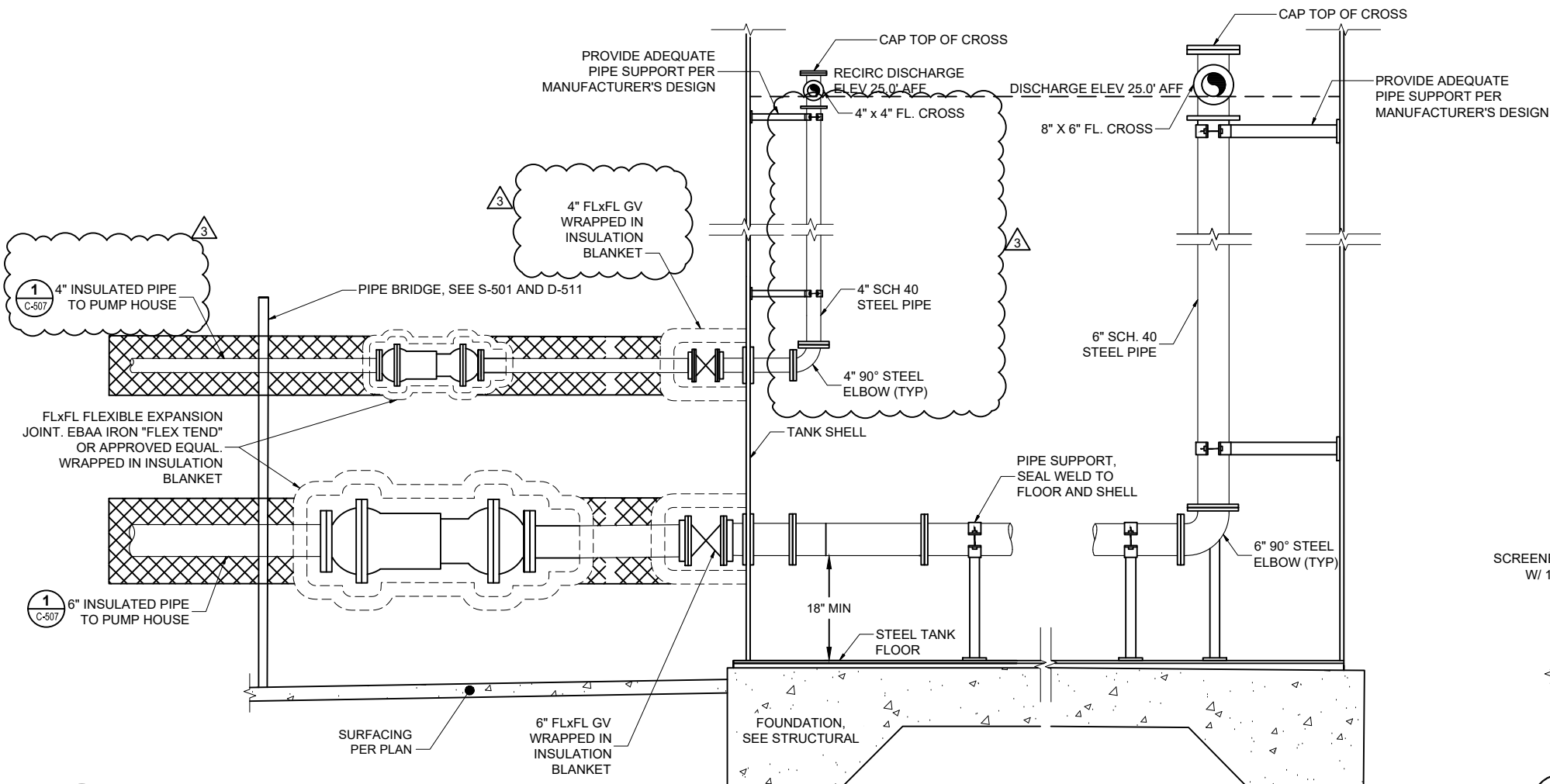
1 **DETAIL: EXTERIOR ABOVE GROUND INSULATED PIPE**
C-507 SCALE: N.T.S



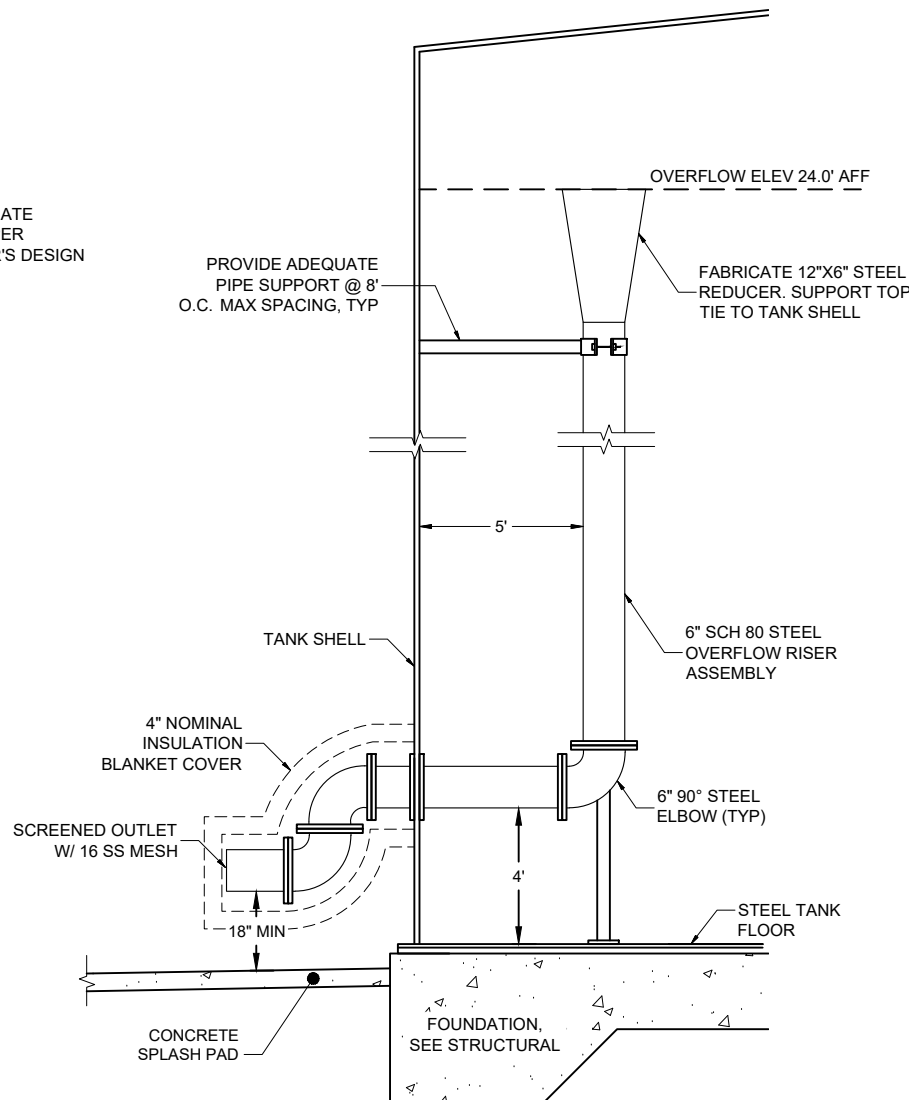
2 **DETAIL: TANK OUTLET PIPING**
C-507 SCALE: N.T.S



3 **DETAIL: TANK DRAIN PIPING**
C-507 SCALE: N.T.S



4 **DETAIL: TANK INLET PIPING**
C-507 SCALE: N.T.S



5 **DETAIL: TANK OVERFLOW PIPING**
C-507 SCALE: N.T.S

NOTES:

1. A MINIMUM TWO PIPE DIAMETER DROP CLEARANCE MUST BE MAINTAINED BETWEEN THE PIPE INVERT AND THE CONCRETE SPLASH PAD.
2. THE END OPENING OF THE TANK OVERFLOW PIPING MUST BE SCREENED TO PREVENT ENTRY BY SMALL ANIMALS. GALVANIZED 1/2" MESH HARDWARE CLOTH OR A SPECIFICALLY APPROVED MATERIAL SHALL BE USED FOR SCREENING PURPOSES. A FLAP GATE SHOULD NOT BE USED DUE TO THE POTENTIAL FOR FREEZING IN A CLOSED POSITION.

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09/15/23
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aspec

PROJECT :

CITY & BOROUGH OF YAKUTAT
WATER SYSTEM EXTENSION

YAKUTAT, ALASKA

SHEET TITLE :

WATER STORAGE TANK
DETAILS (2 OF 2)

DESIGN

DRAWN

CHECKED

DATE

PROJECT No.

SHEET NUMBER

No.

Date

Item

REVISIONS

GENERAL

DETAIL SYMBOL

1

M-101

DETAIL IDENTIFICATION

DRAWING ON WHICH
DETAIL IS SHOWN

SECTION SYMBOL

A

M-101

SECTION
IDENTIFICATION

DRAWING ON WHICH
SECTION IS SHOWN

MATCHLINE VIEW REFERENCE

1/M-102A

DETAIL IDENTIFICATION

DRAWING ON WHICH
CONTINUATION OF VIEW IS
SHOWN

ROOM NAME AND
NUMBER DESIGNATION

ROOM NAME

101

SHEET KEYNOTE

1

GENERAL SHEET NOTE

3.

POINT OF CONNECTION

NORTH ARROW

MECHANICAL TAGS

EQUIPMENT DESIGNATION,
SEE EQUIPMENT SCHEDULE

EF-1

EQUIPMENT
DESIGNATION

VALVE DESIGNATION,SEE SCHEDULE

P-01

VALVE
DESIGNATION

PIPE ACCESSORY LEGEND

SCHEMATIC	1 LINE PLAN VIEW	2 LINE PLAN VIEW	ELEVATION	SECTION	
					FLEXIBLE PUMP CONNECTOR (CRV FLEX)
					"Y" STRAINER
					"Y" STRAINER, WITH BLOWDOWN
					CHECK VALVE
					CHECK VALVE
					ISOLATION BUTTERFLY VALVE
					ISOLATION GATE VALVE
					ISOLATION BALL VALVE
					PRESSURE ACTIVATED VALVE
					BALANCE COCK
					THERMOMETER
					PRESSURE GAUGE
					PRESSURE SENSOR
					CHLORINE SENSOR
					FLOW METER
					UNION
					REDUCER
					SUCTION DIFFUSER
					FLANGE
					THERMOSTAT
					GAS DETECTOR
					BACKFLOW PREVENTER ASSEMBLY
					TANK VENT

ABBREVIATIONS

AFF	ABOVE FINISHED FLOOR	NC	NORMALLY CLOSED
AHAP	AS HIGH AS POSSIBLE	NO	NORMALLY OPEN
APPROX	APPROXIMATE	NO.	NUMBER
AS	AIR SEPARATOR	NPCW	NON POTABLE COLD WATER
BTU	BRITISH THERMAL UNIT	OA	OUTSIDE AIR
CA	COMPRESSED AIR	OC	ON CENTER
CFM	CUBIC FEET PER MINUTE	OF	OVERFLOW
CIRC	CIRCULATION	ORD	OVERFLOW ROOF DRAIN
CH	CHILLER	ORL	OVERFLOW RAIN LEADER
CLNG	CEILING	OSA	OUTSIDE AIR SUPPLY
CO	CARBON MONOXIDE	P	PUMP
CO2	CARBON DIOXIDE	PD	PRESSURE DROP
CONT	CONTINUATION, CONTINUED	PDI	PLUMBING & DRAINAGE INSTITUTE
CP	CIRCULATING PUMP	PH	PHASE
CU	COPPER	POC	POINT OF CONNECTION
CW	COLD WATER	PRV	PRESSURE REDUCING VALVE
DDC	DIRECT DIGITAL CONTROLS	PSIG	POUNDS PER SQUARE INCH GAUGE
DIA	DIAMETER	PSI	POUNDS PER SQUARE INCH
DN	DOWN	PSV	PRESSURE SUSTAINING VALVE
DX	DIRECT EXPANSION	PTFE	TEFLON (POLYTETRAFLUOROETHYLENE)
EA	EXHAUST AIR	PW	POTABLE WATER
EBB	ELECTRIC BASEBOARD	RA	RETURN AIR
EF	EXHAUST FAN	RC	RECIRCULATION WATER
ENT	ENTERING	RCP	RADIANT CEILING PANEL
ET	EXPANSION TANK	RD	ROOF DRAIN
ESP	EXTERNAL STATIC PRESSURE	RECIRC	RECIRCULATION
EUH	ELECTRIC UNIT HEATER	RFM	RADIANT FLOOR MANIFOLD
EWT	ENTERING WATER TEMPERATURE	RL	RAINLEADER
FCO	FLOOR CLEANOUT	RPBP	REDUCED PRESSURE ZONE BACKFLOW PREVENTER
FCV	FLOW CONTROL VALVE		
FD	FIRE DAMPER	RWL	RAIN WATER LEADER
FD	FLOOR DRAIN	SA	SUPPLY AIR
FM	FORCED MAIN	SCH	SCHEDULE
FT	FEET	SOFT	SQUARE FEET
FSD	FIRE SMOKE DAMPER	SF	SUPPLY FAN
GAL	GALLONS	SP	SUMP PUMP
GALV	GALVANIZED	SS	STAINLESS STEEL
GPM	GALLONS PER MINUTE	TA	TRANSFER AIR
HB	HOSE BIBB	TEMP	TEMPERATURE
HP	HORSE POWER	TDH	TOTAL DEVELOPED HEAD
HW	HOT WATER	TP	TRAP PRIMER
HWC	HOT WATER CIRCULATION	TYP	TYPICAL
HX	HEAT EXCHANGER	UL	UNDERWRITER'S LABORATORY
HZ	HERTZ	UON	UNLESS OTHERWISE NOTED
ID	INSIDE DIAMETER	UH	UNIT HEATER
IN	INCHES	V	VENT
LF	LINEAL FEET	VTR	VENT THROUGH ROOF
LVG	LEAVING	VR	VENT RISER
MAX	MAXIMUM	W	WASTE
MBH	THOUSAND BTU's PER HOUR	W/	WITH
MIN	MINIMUM	W.C.	WATER COLUMN
MISC	MISCELLANEOUS	WCO	WALL CLEANOUT
		WHA	WATER HAMMER ARRESTOR
		WPD	WATER PRESSURE DROP
		WRT	WITH RESPECT TO

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PROJECT :

CITY & BOROUGH OF YAKUTAT
WATER SYSTEM EXTENSION
YAKUTAT, ALASKA

SHEET TITLE :

PROCESS LEGENDS &
ABBREVIATIONS

DESIGN	ALN
DRAWN	TRS
CHECKED	LAR
DATE	04-16-2025

PROJECT No.	10297.24002
SHEET NUMBER	D-001

No.	Date	Item
REVISIONS		

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PUMP SCHEDULE

NOTES:													
1. PUMPS SHALL BE NSF-61 COMPLIANT.													
2. REFERENCE SPECIFICATION 46 33 00.													
3. REFERENCE SPECIFICATION 43 23 31.													
4. INJECTION PUMP SHALL BE HAVE STROKE FREQUENCY CONTROL VIA 4-20mA SIGNAL INPUT.													
MARK	PUMP NAME	FLOW GPM [GPH]	HEAD FT	SETPPOINT PSIG	FLUID	RPM	ELECTRICAL DATA				BASIS OF DESIGN		NOTES
							HP [W]	V	PH	CONTROLLER	MANUFACTURER	MODEL	
RC-01	RECIRCULATION PUMP 01	20	150	65	POTABLE WATER	3550	3	480	3	VFD	GRUNDFOS	CR 10-4 A-FJ-A-E-HQQE	1,2
BP-01	BOOSTER PUMP 01	120	145	63	POTABLE WATER	3530	7.5	480	3	VFD	GRUNDFOS	CR 20-3 A-GJ-A-E-HQQE	1,2
BP-02	BOOSTER PUMP 02	120	145	63	POTABLE WATER	3530	7.5	480	3	VFD	GRUNDFOS	CR 20-3 A-GJ-A-E-HQQE	1,2
BP-03	BOOSTER PUMP 03	500	141	61	POTABLE WATER	3530	30	480	3	VFD	GRUNDFOS	NBS 030-070 2P	1,2
CP-01	CHLORINE PUMP 01	0.63 [3.8]	150	65	CALCIUM HYPOCHLORITE SOLUTION	-	[44]	115	1	-	LMI	C92	1,3,4

CHEMICAL TANK SCHEDULE

NOTES:

1. TANK SHALL NSF 61 COMPLIANT AND COMPATIBLE FOR CONTAINMENT OF CALCIUM HYPOCHLORITE.

2. REFERENCE SPECIFICATION DIV 46 33 00 LIQUID CHEMICAL FEED EQUIPMENT.

MARK	SERVICE	DIMENSIONS	VOLUME (GAL)	BASIS OF DESIGN		NOTES
				MANUFACTURER	MODEL	
CT-01	CHLORINE SYSTEM	19 5/8"D x 21"H	15	PEABODY ENGINEERING	GEMINI DUAL CONTAINMENT TANK	1,2

ACTUATED VALVE SCHEDULE

NOTES:

1. VALVES SHALL BE NSF-61, AIS, AND BABA COMPLIANT.

2. INITIAL VALVE SIZING WAS BASED ON HYDRANT FLOW DATA. VALVE PRESSURE SETTING SHALL BE MODIFIED AS NEEDED IN THE FIELD.

3. CONTROL VALVE WITH ROTORK IQT ELECTRIC ACTUATOR OR APPROVED EQUAL.

4. VALVE SHALL BE INITIALLY SET TO REDUCE PRESSURE TO 25 PSI DOWNSTREAM AND SUSTAIN PRESSURE AT 55 PSI UPSTREAM.

5. VALVE SHALL BE INTIALLY SET TO SUSTAIN PRESSURE TO 35 PSI UPSTREAM.

6. VALVE SHALL BE SET TO SUSTAIN 20 PSIG UPSTREAM.

7. NOT USED.

8. VALVE SHALL INCLUDE INTEGRAL PRESSURE GAUGES FOR READING UPSTREAM AND DOWNSTREAM PRESSURES.

9. REFERENCE SPECIFICATION DIV 40 05 51 PLANT VALVES.

MARK	VALVE TYPE	LOCATION	FLUID	NOMINAL SIZE	BASIS OF DESIGN		NOTES
					MANUFACTURER	MODEL	
ARV-01	AIR RELIEF VALVE	CBY INTERTIE LINE	POTABLE WATER	-	VAL-MATIC	15A	1,9
ARV-02	AIR/VACUUM VALVE	AIRPORT SUPPLY LINE	POTABLE WATER	1-IN	VAL-MATIC	101S	1,9
LV-002	MOTORIZED BUTTERFLY VALVE	WATER TANK FILL LINE	POTABLE WATER	4-IN	DEZURIK	AWWA BUTTERFLY VALVE	1,3,9
PRV-01	PRESSURE SUSTAINING/REDUCING VALVE	CBY INTERTIE LINE	POTABLE WATER	4-IN	CLA-VAL	92G-01	1,2,4,8,9
PSV-01	PRESSURE SUSTAINING VALVE	WATER TANK FILL LINE	POTABLE WATER	4-IN	CLA-VAL	650G-90	1,2,5,8,9
PSV-02	PRESSURE SUSTAINING VALVE	RE-CIRCULATION LINE	POTABLE WATER	1 1/2-IN	CLA-VAL	50G-90	1,6,8,9
SV-01	PRESSURE RELIEF VALVE	AIRPORT SUPPLY LINE	POTABLE WATER	1 1/2-IN	CLA-VAL	50G-01	1,9

FLOW METER SCHEDULE

NOTES:

1. SELECT METER WITH PTFE LINER OR COMPARABLE NSF-61 APPROVED LINER.

2. INTIAL FILL RATE SETPOINT SHALL BE 200 GPM; OPERATOR TO FIELD ADJUST AS NECESSARY BASED ON AVAILABLE FLOW FROM CYB.

3. REFERENCE SPECIFICATION 40 71 13 MAGNETIC FLOW METER.

4. BASIS OF DESIGN PART NUMBER: 2M-A-040FAAC2PJAS-SAABCXWWDBABXX-NAF.

5. BASIS OF DESIGN PART NUMBER: 2M-A-060FAAC2PJAS-SAABCXWWDBABXX-NAF.

6. BASIS OF DESIGN PART NUMBER: 2M-A-010DAAC2PAXS-SAABCXWWDBABXX-NAF.

7. CONTRACTOR TO VERIFY METER CONFIGURATION OPTIONS AT THE TIME OF PURCHASE.

MARK	LOCATION	FLUID	TYPE	SIZE	GPM		ELECTRICAL DATA		BASIS OF DESIGN		NOTES
					MIN	MAX	V	W	MANUFACTURER	MODEL	
FIT-001	WATER TANK FILL LINE	WATER	MAGNETIC	4"	0	200	24V DC	14	BADGER	M2000	1,3,4,7
FIT-005	CBY INTERTIE LINE	WATER	MAGNETIC	4"	0	600	24V DC	14	BADGER	M2000	1,3,4,7
FIT-006	AIRPORT SUPPLY LINE	WATER	MAGNETIC	6"	20	600	24V DC	14	BADGER	M2000	1,2,3,5,7
FIT-008	RE-CIRCULATION LINE	WATER	MAGNETIC	1"	20	20	24V DC	14	BADGER	M2000	1,3,6,7

MANUAL VALVE SCHEDULE

NOTES:

1. BASIS OF DESIGN: DEZURIK AWWA BUTTERFLY VALVE WITH MANUAL LEVER.

2. BASIS OF DESIGN: NIBCO LEAD-FREE, FULL PORT BALL VALVES; T-585-80-LF

3. REFERENCE SPECIFICATION DIV 40 05 51 PLANT VALVES.

TYPE	SERVICE	MATERIAL		SIZE	CONNECTION TYPE	OPERATOR	NOTES
		BODY	SEAT				
BUTTERFLY VALVE	POTABLE WATER	CAST IRON	NBR	>= 3"	FLANGED	QUARTER TURN	1,3
BALL VALVE	POTABLE WATER	SILICON BRONZE	REINFORCED PTFE	< 3"	THREADED	QUARTER TURN	2,3

PIPE SCHEDULE

NOTES:

1. PIPE SHALL BE NSF-61 CERTIFIED.

2. PIPE FITTINGS ARE TO MATCH TYPE, SCHEDULE, AND CERTIFICATIONS.

3. REFERENCE SPECIFICATION 40 05 20 PLANT PIPE AND FITTINGS.

4. REFERENCE SPECIFICATION 22 11 16 DOMESTIC WATER PIPING.

FLOW STREAM ID	FLOW STREAM	PIPE MATERIAL	PIPE SIZE	PRESSURE CLASS	NOTES
PW	POTABLE WATER	DUCTILE IRON	4",6",10"	52 OR GREATER	1,2,3
PW	POTABLE WATER	COPPER	<3"	TYPE L	1,2,4
RC	RECIRCULATION WATER	DUCTILE IRON	4"	52 OR GREATER	1,2,3
RC	RECIRCULATION WATER	COPPER	<3"	TYPE L	1,2,4

3	9/24/25	ADDENDUM #3
No.	Date	Item
REVISIONS		

CONSULTANT :



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PROJECT :

CITY & BOROUGH OF YAKUTAT
WATER SYSTEM EXTENSION

YAKUTAT, ALASKA

SHEET TITLE :

PROCESS SCHEDULES

DESIGN	ALN
DRAWN	TRS
CHECKED	LAR
DATE	04-16-2025

PROJECT No.
10297.24002

SHEET NUMBER

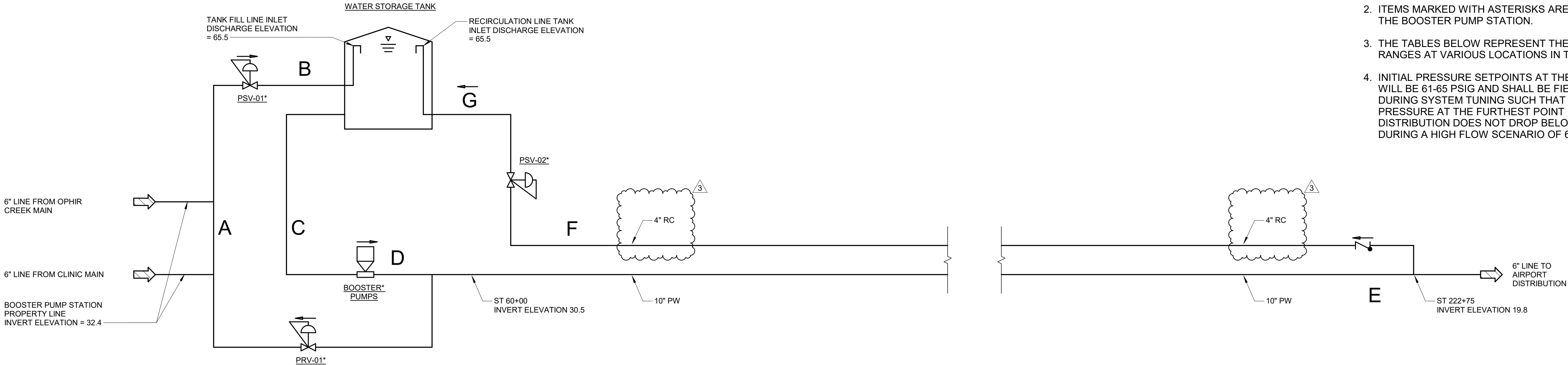
D-002

1" IF THIS BAR DOES NOT MEASURE EXACTLY ONE INCH, THE SCALE OF THIS DRAWING HAS BEEN ALTERED DURING ITS PRODUCTION, AFFECTING ALL LABELED SCALES.

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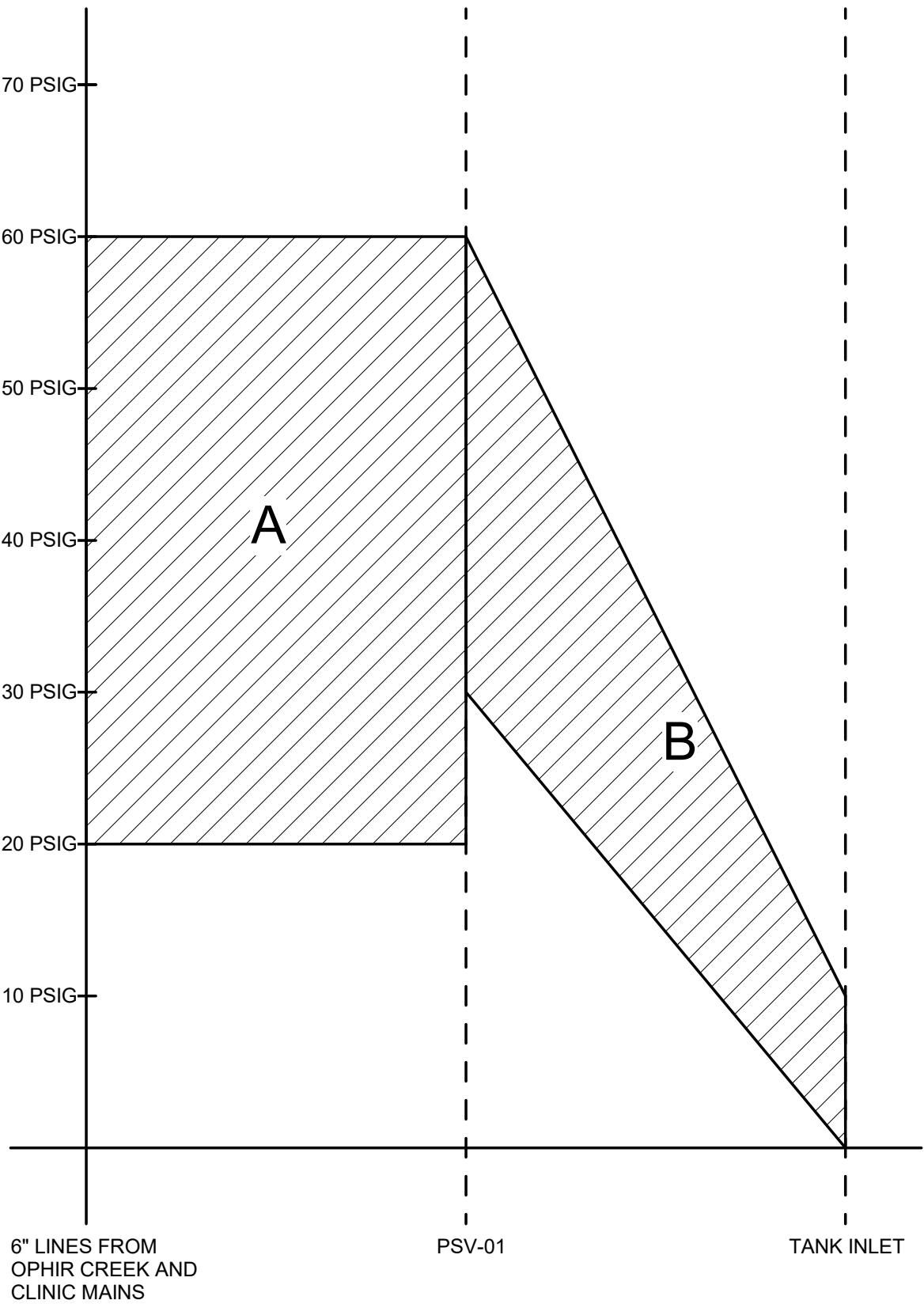
SHEET NOTES

- SEE D-002 FOR PRESSURE AND FLOW INFORMATION FOR THE BOOSTER PUMPS, PSV'S, AND PRV.
- ITEMS MARKED WITH ASTERISKS ARE LOCATED IN THE BOOSTER PUMP STATION.
- THE TABLES BELOW REPRESENT THE PRESSURE RANGES AT VARIOUS LOCATIONS IN THE SYSTEM.
- INITIAL PRESSURE SETPOINTS AT THE PUMPHOUSE WILL BE 61-65 PSIG AND SHALL BE FIELD ADJUSTED DURING SYSTEM TUNING SUCH THAT THE PRESSURE AT THE FURTHEST POINT IN THE DISTRIBUTION DOES NOT DROP BELOW 30 PSIG DURING A HIGH FLOW SCENARIO OF 650 GPM.



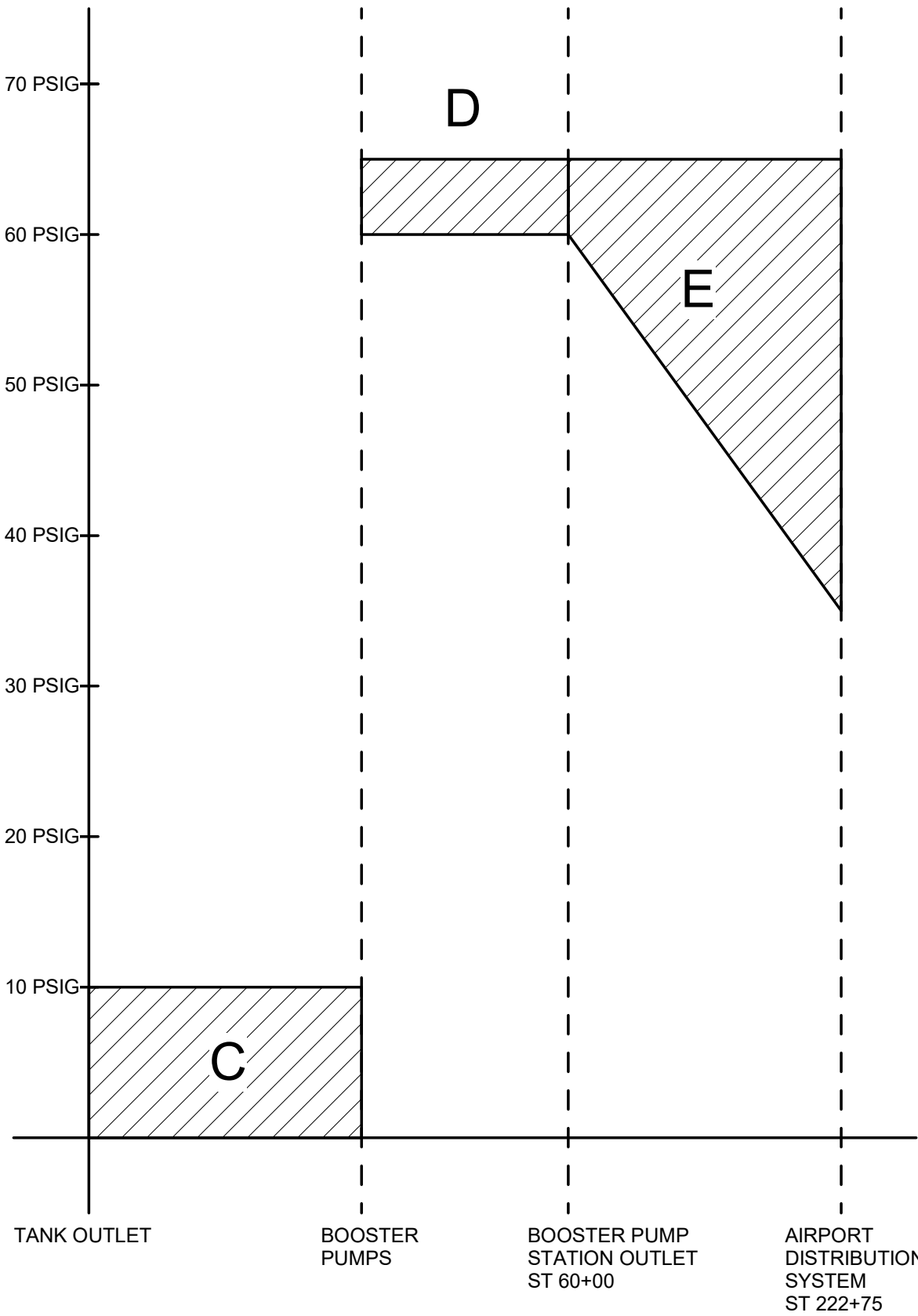
1 HYDRAULIC PROFILE DIAGRAM

D-003 SCALE: NO SCALE



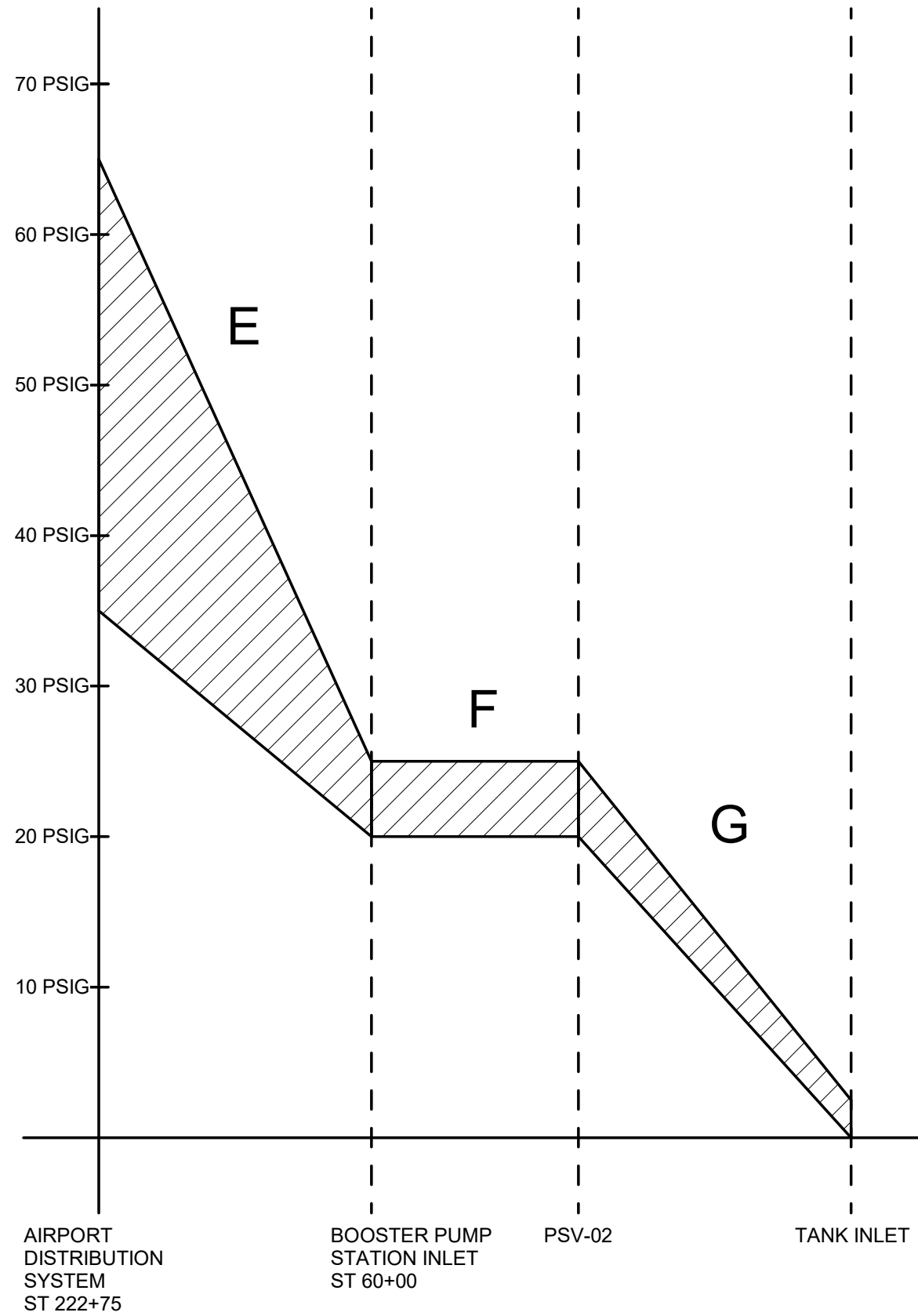
2 TANK FILL LINE

D-003 SCALE: NO SCALE



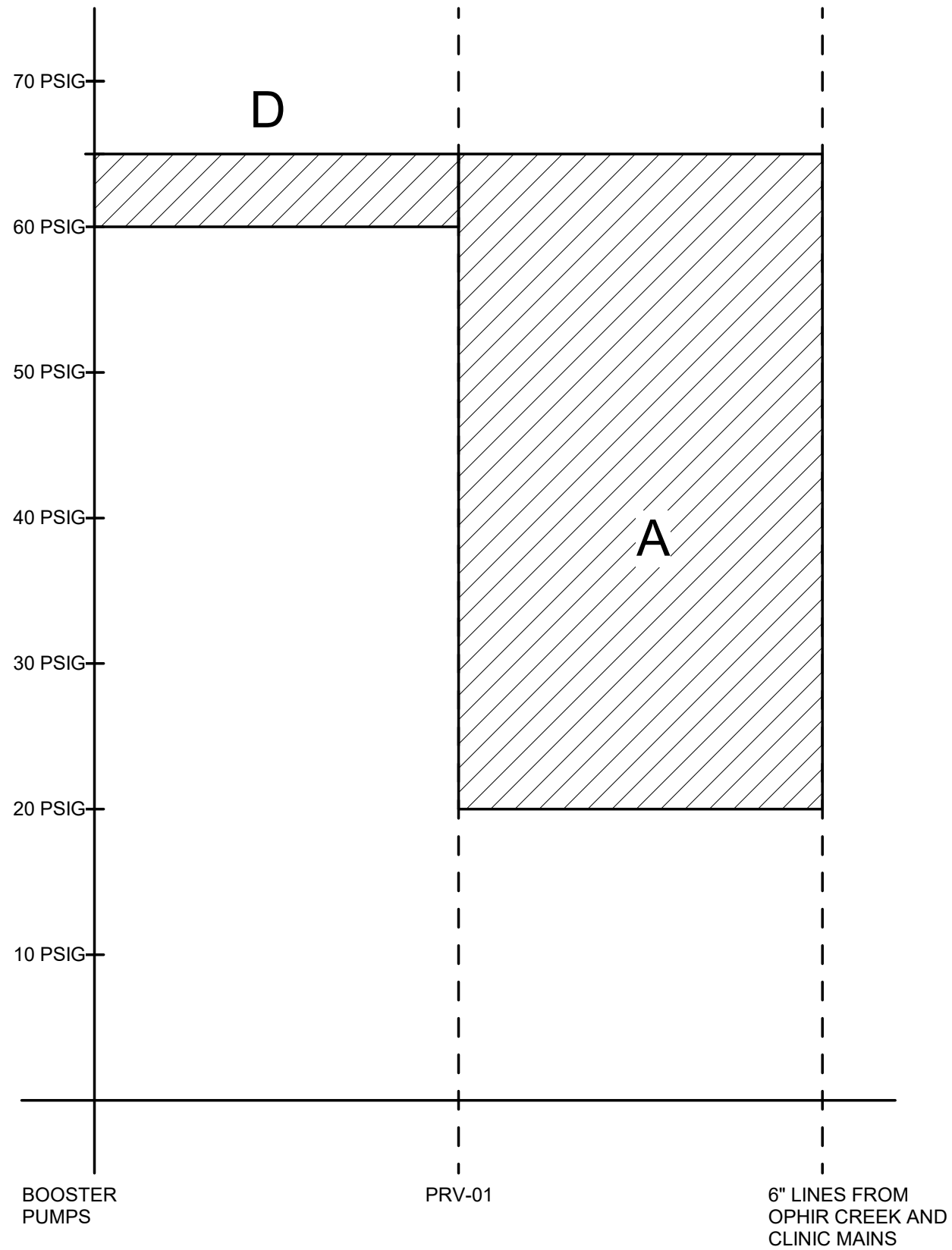
3 AIRPORT SUPPLY LINE

D-003 SCALE: NO SCALE



4 CIRCULATION LINE

D-003 SCALE: NO SCALE



5 SYSTEM INTERTIE LINE

D-003 SCALE: NO SCALE

REVISIONS		
No.	Date	Item
3	9/24/25	ADDENDUM #3

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PROJECT :
CITY & BOROUGH OF YAKUTAT
WATER SYSTEM EXTENSION

YAKUTAT, ALASKA

SHEET TITLE :
HYDRAULIC PROFILES

DESIGN ALN
DRAWN TRS
CHECKED LAR
DATE 04-16-2025

PROJECT No.
10297.24002
SHEET NUMBER

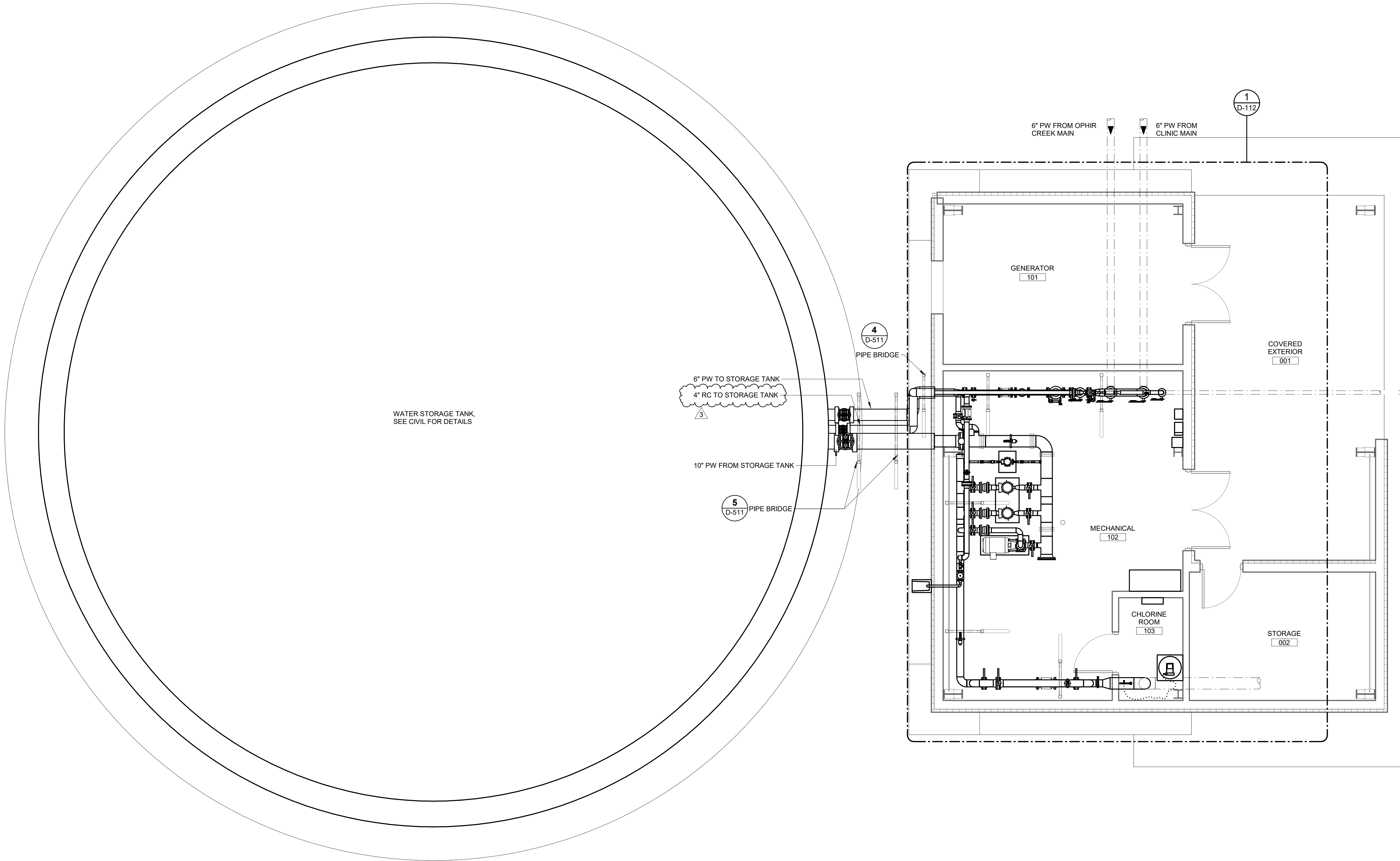
D-003

9/24/2025 11:28:20 AM Autodesk Docs://10297.24002-CBY Airport Water System Extension(INF-MECH-10297.24002_RV23.rvt) IF THIS BAR DOES NOT MEASURE EXACTLY ONE INCH, THE SCALE OF THIS DRAWING HAS BEEN ALTERED DURING ITS PRODUCTION, AFFECTING ALL LABELED SCALES 1"

1
D-111

PROCESS SITE PLAN

SCALE: 1/4" = 1'-0"



REVISIONS			
No.	Date	ADDENDUM #3	Item
3	9/24/25	ADDENDUM #3	

SHEET TITLE :

SITE PLAN - PROCESS

PROJECT :

CITY & BOROUGH OF YAKUTAT
WATER SYSTEM EXTENSION

YAKUTAT, ALASKA

DESIGN	ALN
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CHECKED	LAR
DATE	04-16-2025

PROJECT No.
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D-111

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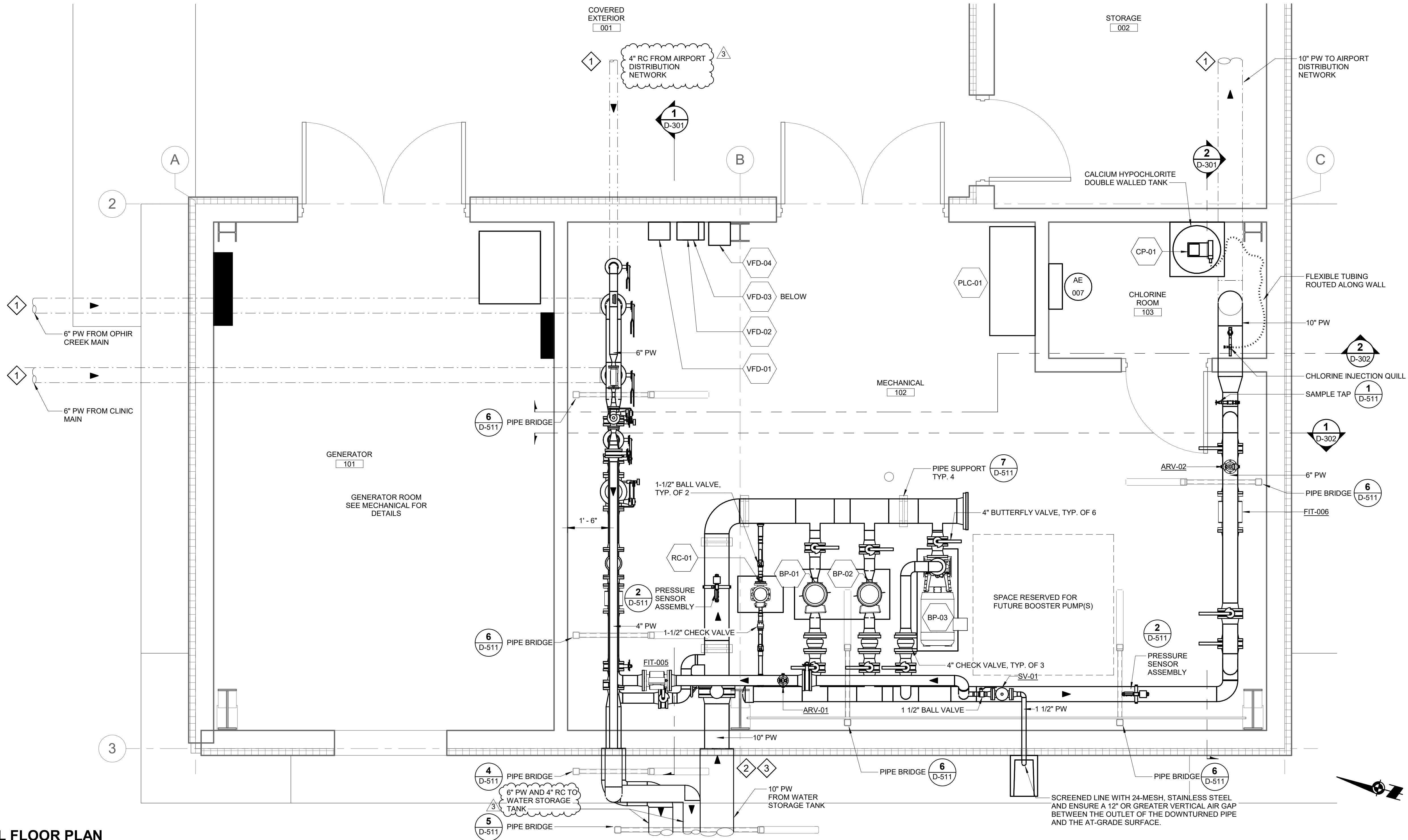
1" IF THIS BAR DOES NOT MEASURE EXACTLY ONE INCH, THE SCALE OF THIS DRAWING HAS BEEN ALTERED DURING ITS PRODUCTION, AFFECTING ALL LABELED SCALES

Room 9

9/24/2025 11:28:21 AM Autodesk Docs://10297.24002-CBY Airport Water System Extension/INF-MECH-10297.24002_RV23.rvt

1 MECHANICAL FLOOR PLAN

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



SHEET NOTES

1. CONTRACTOR SHALL COORDINATE WATER SYSTEM INTERRUPTIONS WITH CBY'S PUBLIC WORKS MINIMUM 6 DAYS IN ADVANCE.
2. SYSTEM INTERRUPTIONS ARE TO BE LIMITED TO CBY'S PUBLIC WORKS' DISCRETION.
3. CONTRACTOR TO SANITIZE ALL PIPE, VALVES, AND FITTINGS PRIOR TO INSTALLATION PER AWWA C-651.
4. ALL WETTED COMPONENTS SHALL BE NSF-61 CERTIFIED.
5. SPACE PIPE A MINIMUM OF 12-IN FROM THE BUILDING WALL UNLESS OTHERWISE NOTED.

SHEET KEYNOTES #

1. ROUTE PIPES BELOW GRADE AND UP THROUGH SLAB. TRANSITION FROM HDPE TO DUCTILE IRON OUTSIDE OF BUILDING FOOTPRINT. SEE CIVIL FOR LOCATION.
2. ROUTE PIPES THROUGH EXTERIOR WALL. SEAL WALL PENETRATION WEATHER-TIGHT AND FINISHED APPEARANCE.
3. ROUTE PIPE ABOVE GRADE TO WATER STORAGE TANK. SEE CIVIL FOR TANK PIPE CONNECTION DETAILS. EXTERIOR PIPE SHALL BE INSULATED AND HEAT TRACED WITH WEATHER-TIGHT ALUMINUM JACKETING
4. SV-01 SHALL HAVE A SETPOINT PRESSURE OF 75 PSIG.

CONSULTANT :



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PROJECT :
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WATER SYSTEM EXTENSION

YAKUTAT, ALASKA

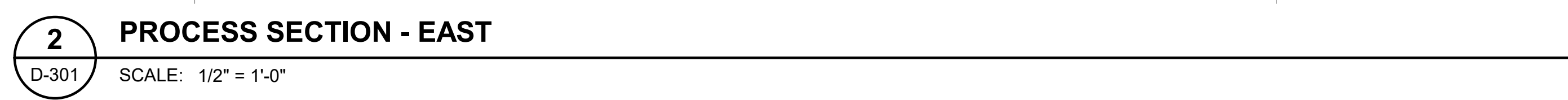
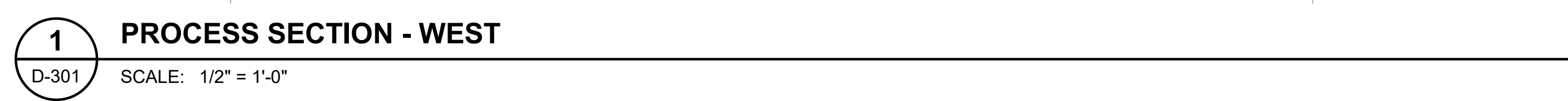
SHEET TITLE :
PUMP HOUSE FLOOR PLAN -
PROCESS

DESIGN ALN
DRAWN TRS
CHECKED LAR
DATE 04-16-2025

PROJECT No.
10297.24002
SHEET NUMBER

D-112

3	9/24/25	ADDENDUM #3	
No.	Date	Item	
REVISIONS			



1. CONTRACTOR TO SANITIZE ALL PIPE, VALVES, AND FITTINGS PRIOR TO INSTALLATION PER AWWA C-651.
2. ALL WETTED COMPONENTS SHALL BE NSF-61 CERTIFIED.
3. SPACE PIPE A MINIMUM OF 12-IN FROM BUILDING WALL UNLESS OTHERWISE NOTED.

1. ROUTE PIPES BELOW GRADE AND UP THROUGH SLAB. TRANSITION FROM HDPE TO DUCTILE IRON OUTSIDE OF BUILDING FOOTPRINT. SEE CIVIL FOR LOCATION.
2. ROUTE PIPES THROUGH EXTERIOR WALL. SEAL WALL PENETRATION WEATHER-TIGHT AND FINISHED APPEARANCE.
3. ROUTE PIPE ABOVE GRADE TO WATER STORAGE TANK. SEE CIVIL FOR TANK PIPE CONNECTION DETAILS. EXTERIOR PIPE SHALL BE INSULATED AND HEAT TRACED WITH WEATHER-TIGHT ALUMINUM JACKETING.
4. PRESSURE GAUGE SHALL HAVE A 4-1/2" DIAL WITH 270° DEGREE MOVEMENT AND MINIMUM 1/2% ACCURACY. GAUGE SHALL BE LIQUID FILLED AND RATED FOR 0 TO 100 PSIG.
5. INSTALL CALCIUM HYPOCHLORITE INJECTION QUILL PER MANUFACTURER'S SPECIFICATION. INSTALL IN TREATMENT ROOM AND UPSTREAM OF CHLORINE SENSOR. MAXIMIZE DISTANCE BETWEEN INJECTION QUILL AND SENSOR AS PRACTICAL TO ALLOW FOR SOLUTION MIXING BEFORE SENSOR.
6. ROUTE AND SECURE CALCIUM HYPOCHLORITE INJECTION TUBING NEATLY ALONG WALL WHILE MINIMIZING UNNECESSARY LOW AND HIGH POINTS.



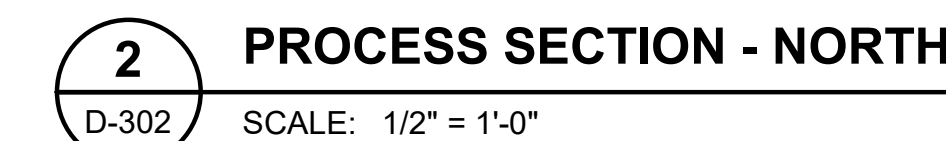
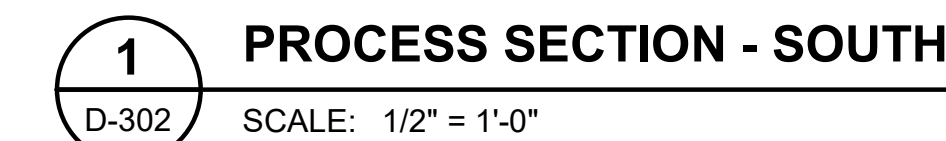
YAKUTAT, ALASKA

PROCESS SECTIONS

PROJECT No.
10297.24002
SHEET NUMBER

D-301

3	9/24/25	ADDENDUM #3
No.	Date	Item
REVISIONS		



1. ROUTE PIPES BELOW GRADE AND UP THROUGH SLAB. TRANSITION FROM HDPE TO DUCTILE IRON OUTSIDE OF BUILDING FOOTPRINT. SEE CIVIL FOR LOCATION.

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PROJECT:
CITY & BOROUGH OF YAKUTAT

YAKUTAT, ALASKA

SHEET TITLE :

PROCESS SECTIONS

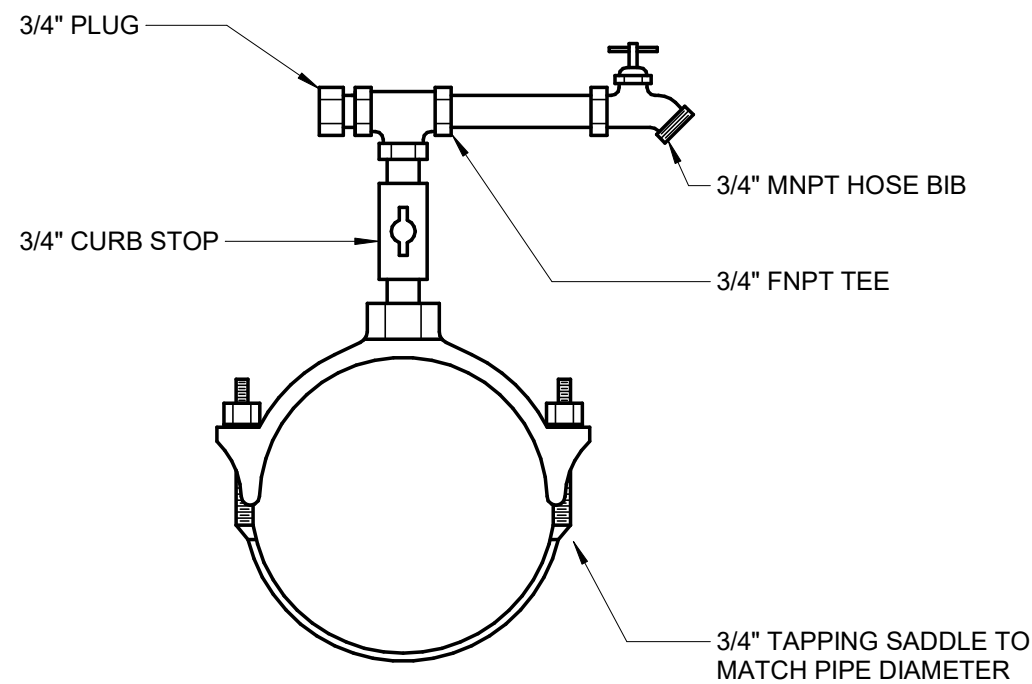
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DRAWN	TR
CHECKED	LA
DATE	04-16-202

PROJECT No.
10297.24002
SHEET NUMBER

D-302

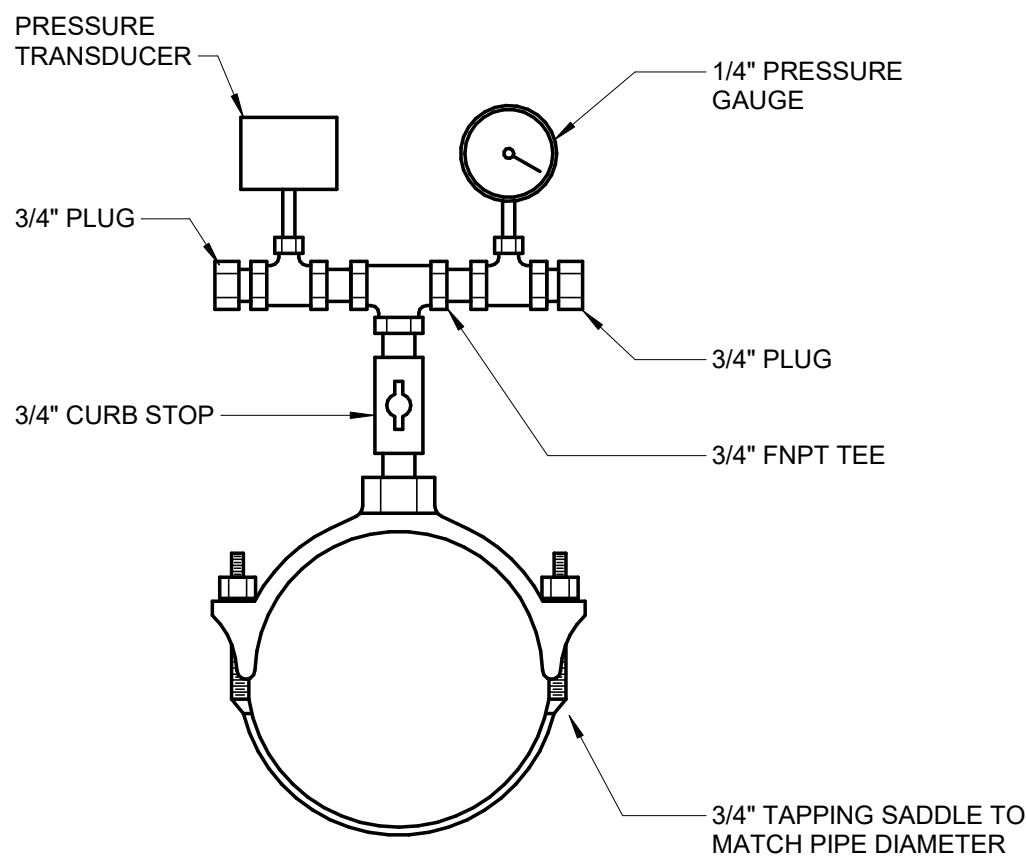
3	9/24/25	ADDENDUM #3
No.	Date	Item
REVISIONS		

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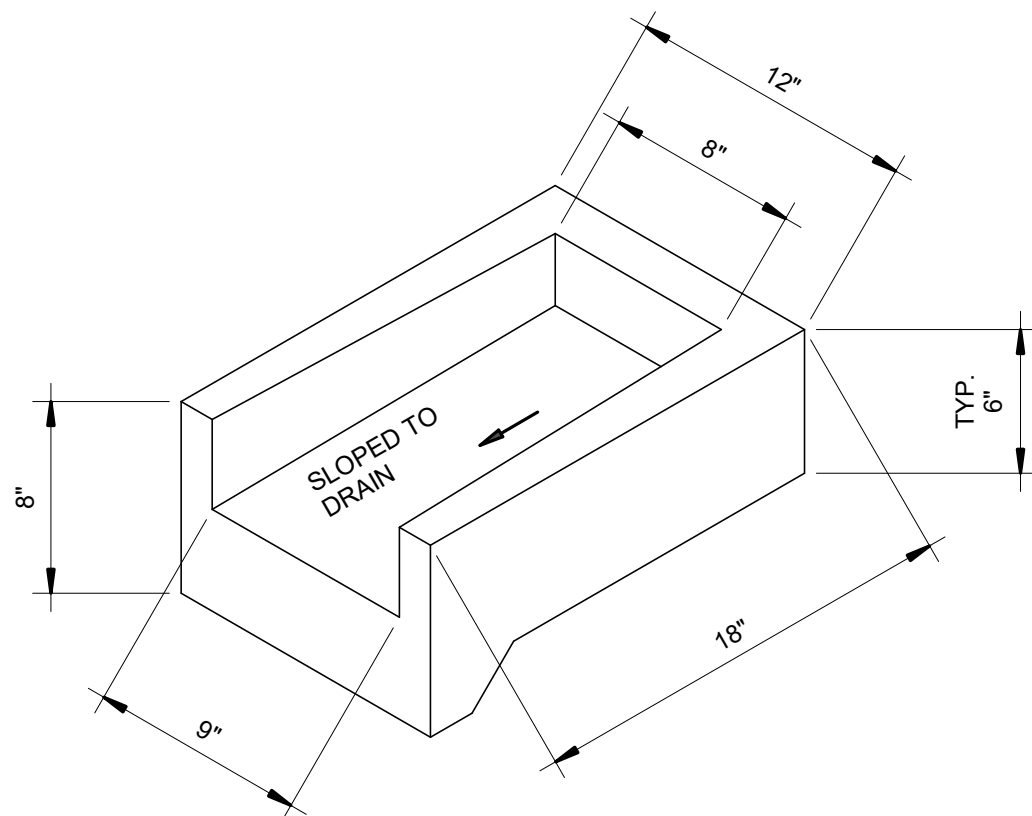


1
D-511 **SAMPLE TAP ASSEMBLY DETAIL**
SCALE: NO SCALE

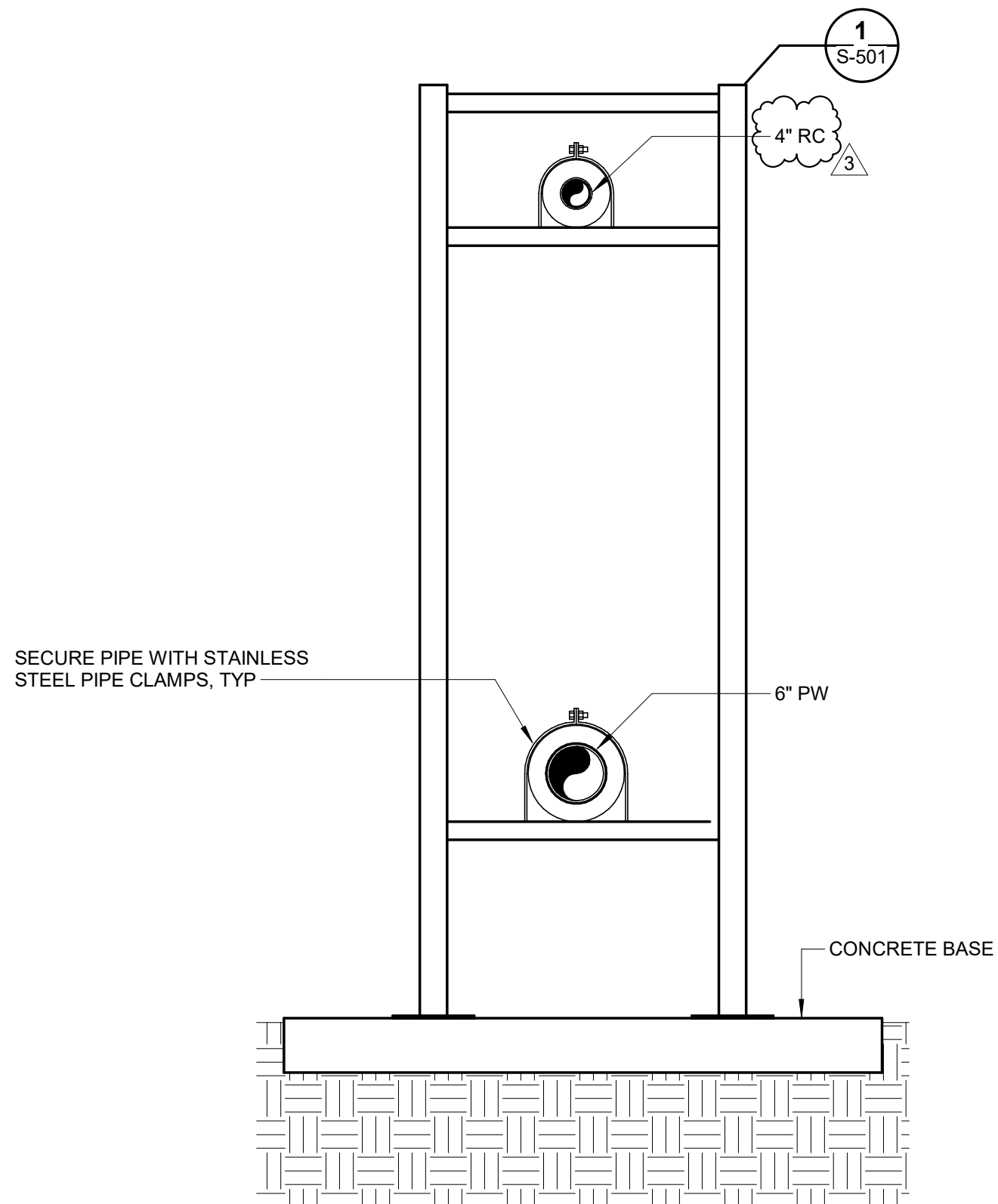
NOTE:
PRESSURE GAUGE SHALL HAVE A 4-1/2" DIAL WITH 270°
DEGREE MOVEMENT AND MINIMUM 1/2% ACCURACY. GAUGE
SHALL BE LIQUID FILLED AND RATED FOR 0 TO 100 PSIG.



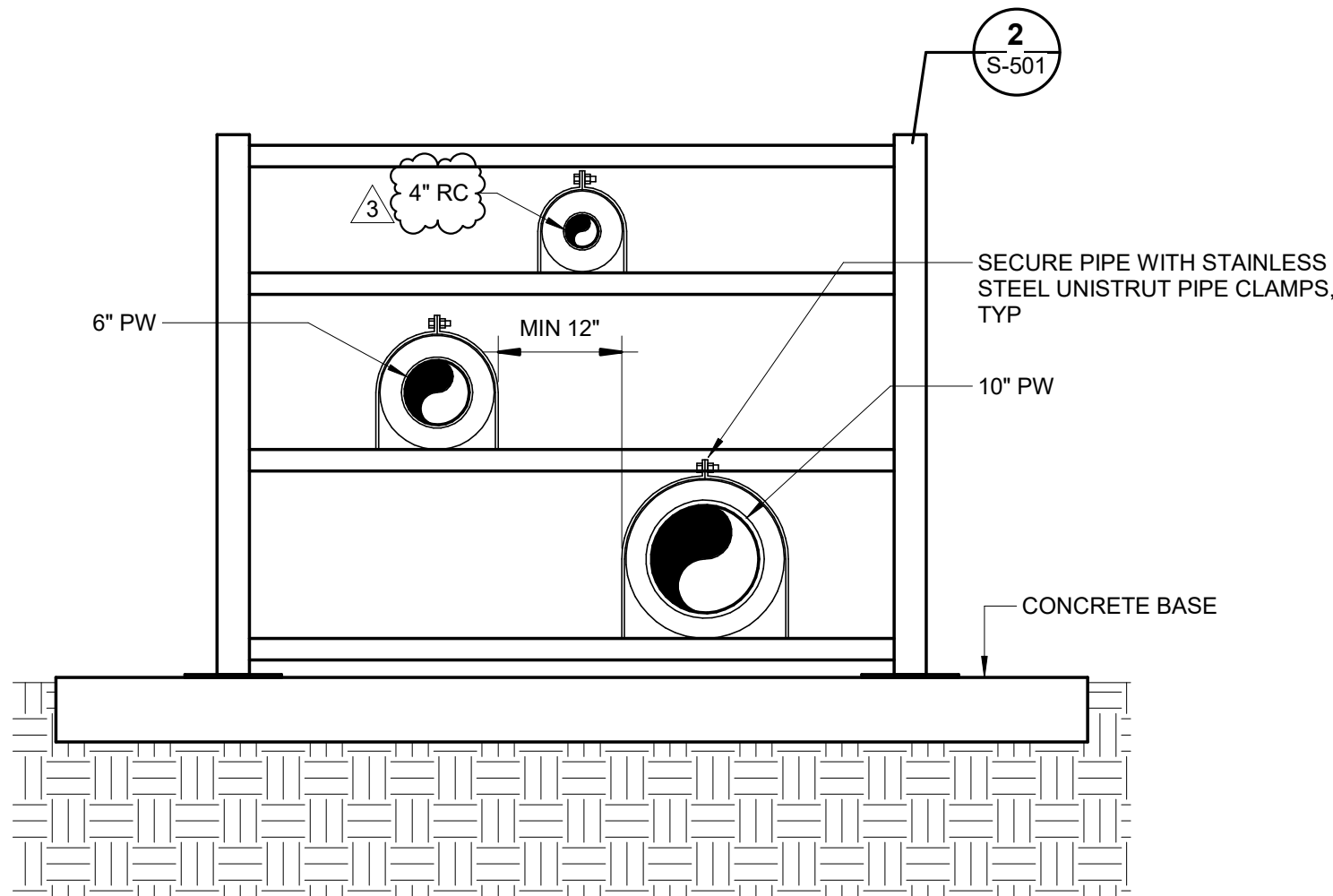
2
D-511 **PRESSURE INDICATOR/TRANSMITTER ASSEMBLY DETAIL**
SCALE: NO SCALE



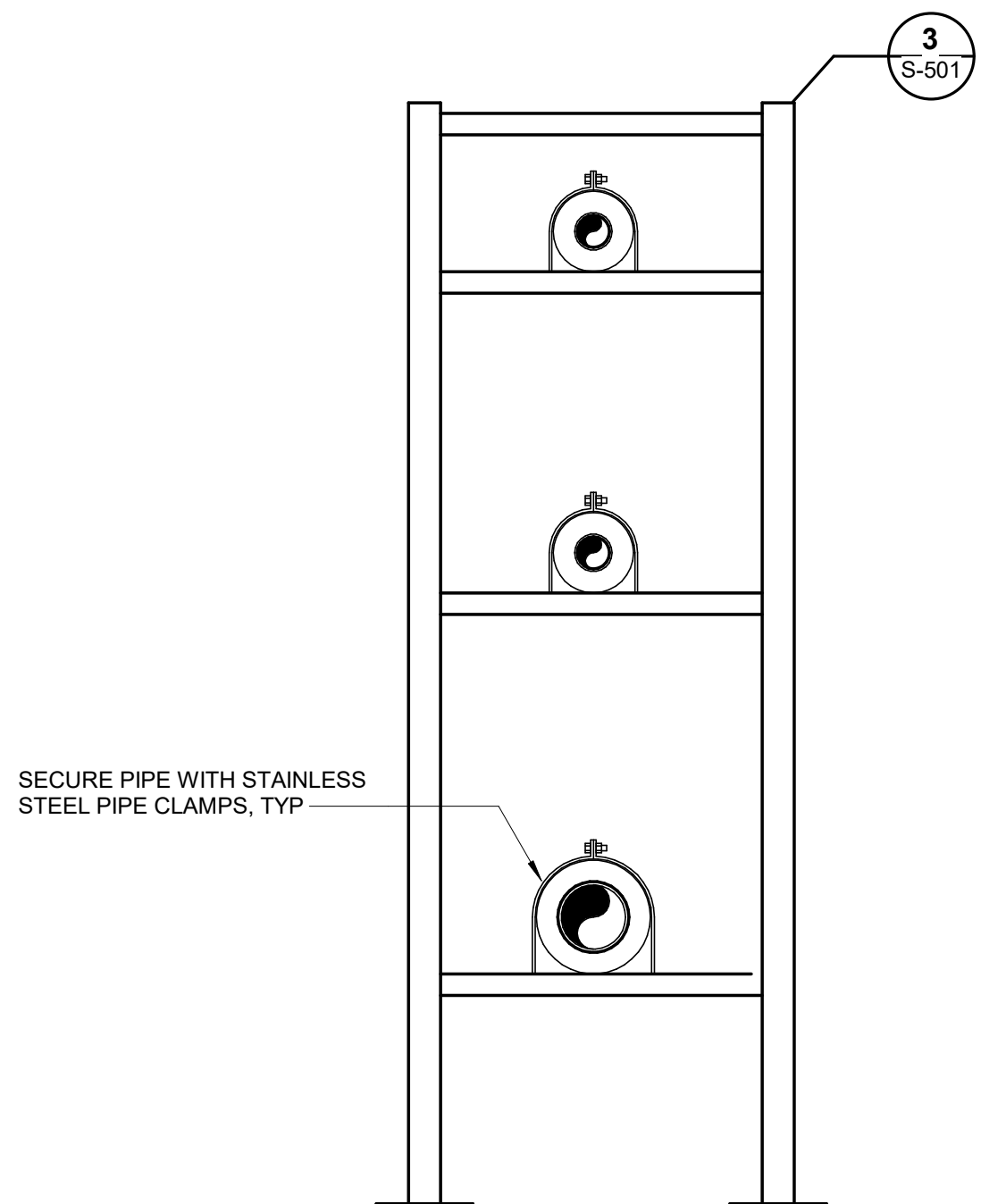
3
D-511 **SPLASH BLOCK**
SCALE: NO SCALE



4
D-511 **EXTERIOR PIPE BRIDGE DETAIL - 2 PIPE**
SCALE: NO SCALE

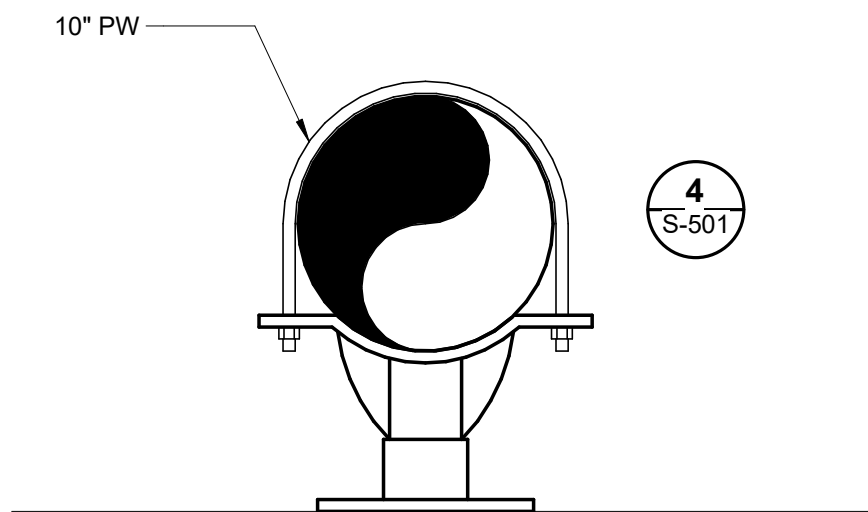


5
D-511 **EXTERIOR PIPE BRIDGE DETAIL - 3 PIPE**
SCALE: NO SCALE



NOTE: TYPICAL PIPE BRIDGE LAYOUT. ADJUST NUMBER OF
LEVELS PER NUMBER OF PIPES SUPPORTED

6
D-511 **INTERIOR PIPE BRIDGE DETAIL**
SCALE: NO SCALE



7
D-511 **INTERIOR PIPE SUPPORT DETAIL**
SCALE: NO SCALE

REVISIONS		
No.	Date	Item
3	9/24/25	ADDENDUM #3

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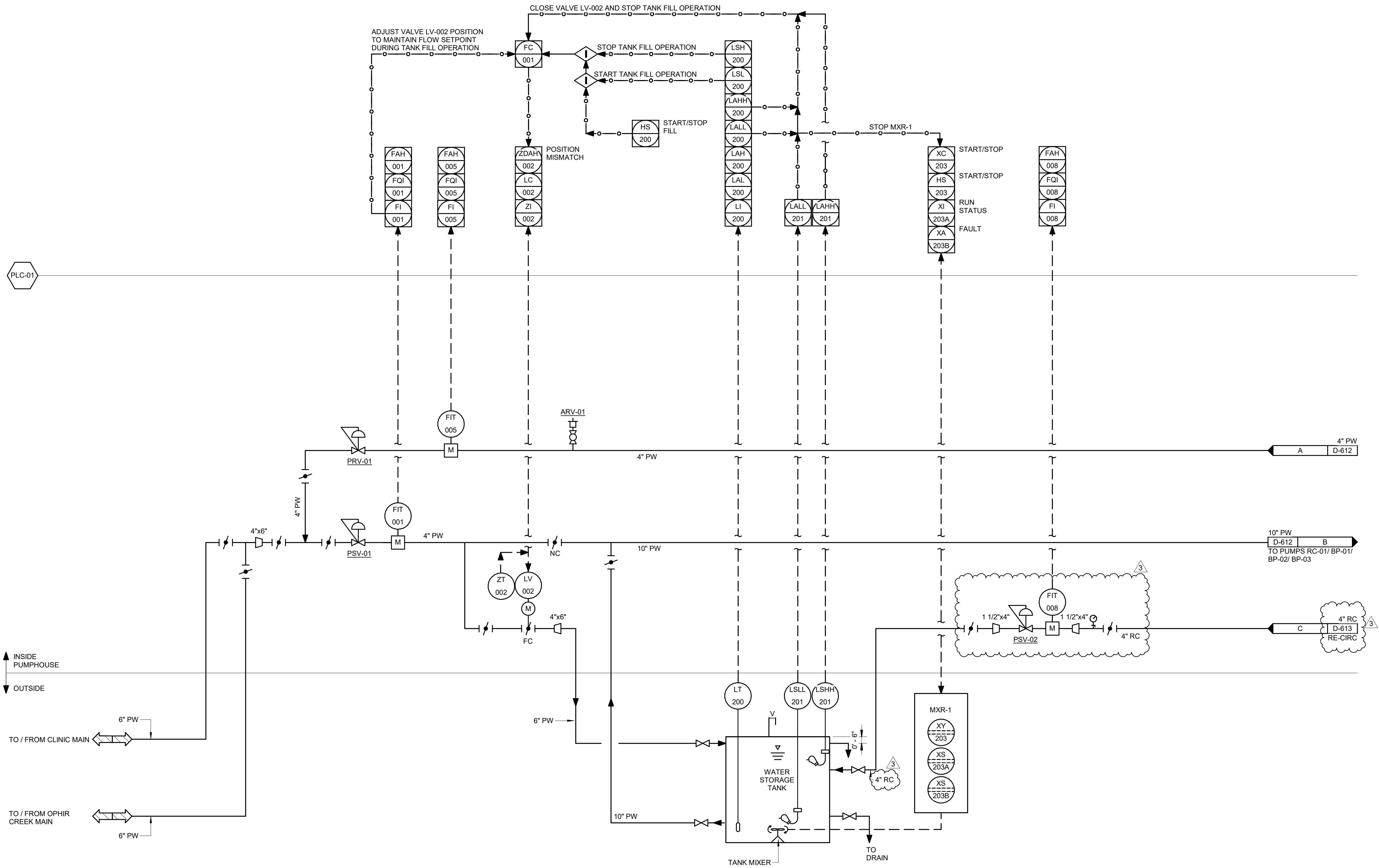
PROJECT :
**CITY & BOROUGH OF YAKUTAT
WATER SYSTEM EXTENSION**
YAKUTAT, ALASKA

SHEET TITLE :
PROCESS DETAILS

DESIGN	ALN
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DATE	04-16-2025

PROJECT No.
10297.24002
SHEET NUMBER

D-511



1

WATER TANK P&ID

D-611

SCALE: NO SCALE

REVISIONS			
No.	Date	Item	
3	9/24/25	ADDENDUM #3	



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PROJECT :

CITY & BOROUGH OF YAKUTAT
WATER SYSTEM EXTENSION

YAKUTAT, ALASKA

SHEET TITLE :

WATER TANK P&ID

DESIGN ALN

DRAWN TRS

CHECKED LAR

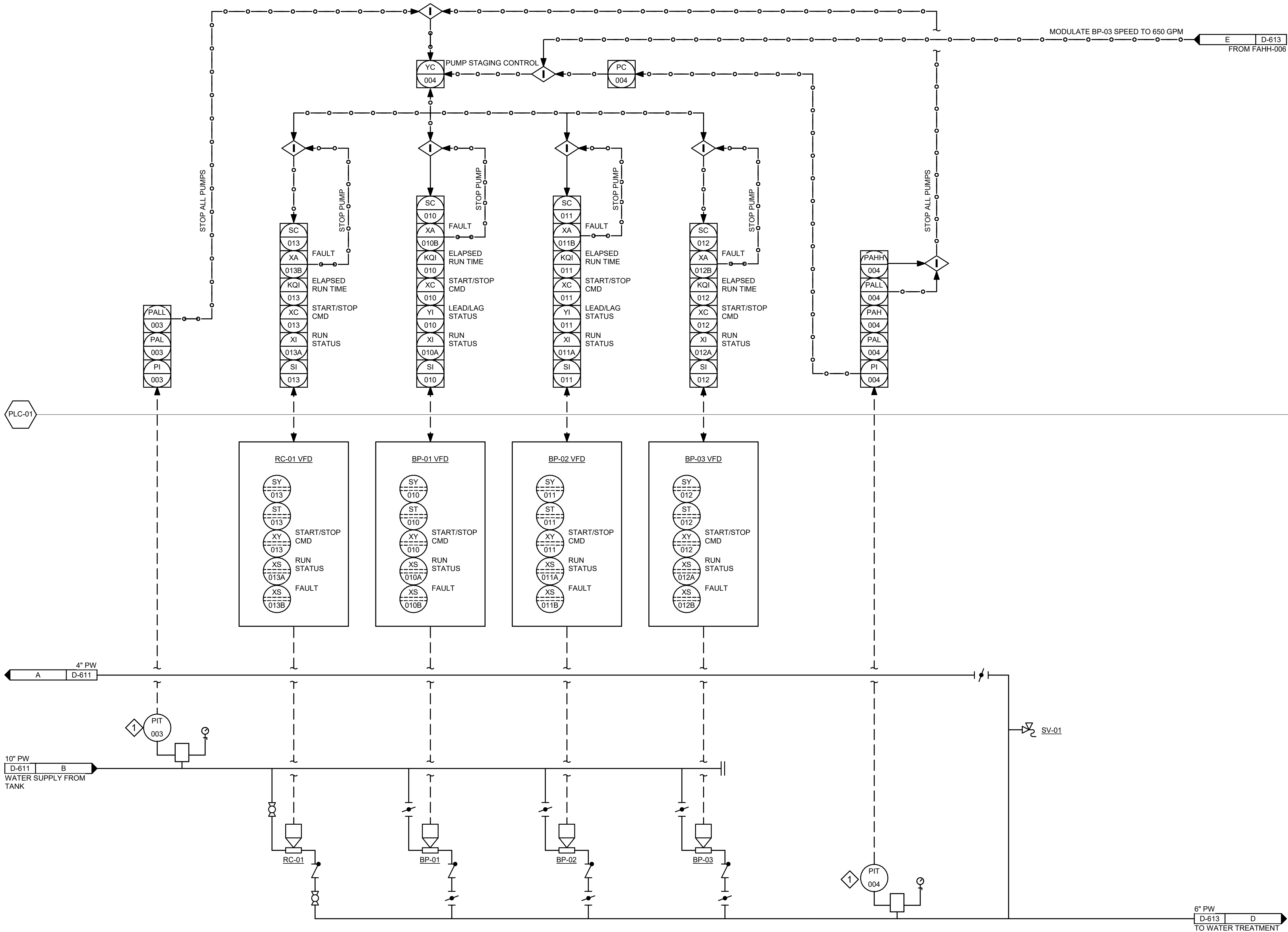
DATE 04-16-2025

PROJECT No.
I0297.24002

SHEET NUMBER

D-611

9/24/2025 11:28:24 AM AutoCAD Doc://10297.24002-CBY Airport Water System Extension/INF-MECH-10297.24002_RV23.rvt 1" IF THIS BAR DOES NOT MEASURE EXACTLY ONE INCH, THE SCALE OF THIS DRAWING HAS BEEN ALTERED DURING ITS PRODUCTION, AFFECTING ALL LABELED SCALES



1
D-612

PUMP WATER P&ID

SCALE: NO SCALE

SHEET KEYNOTES #

- SEE DETAIL 4 / SHEET D-511 FOR PRESSURE INDICATOR / TRANSMITTER ASSEMBLY DETAIL.



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PROJECT :
CITY & BOROUGH OF YAKUTAT
WATER SYSTEM EXTENSION

YAKUTAT, ALASKA

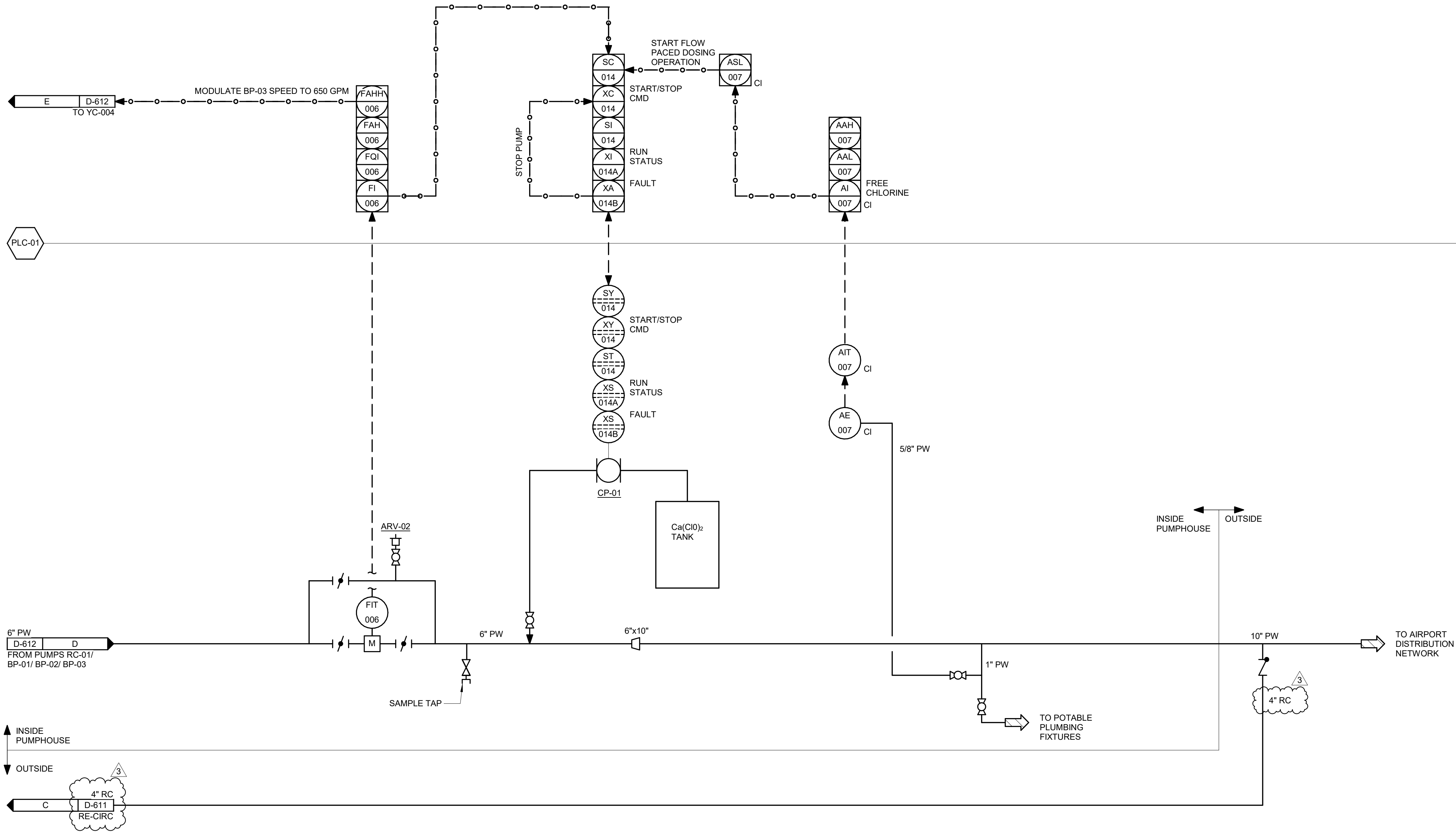
SHEET TITLE :
PUMP WATER P&ID

DESIGN ALN
DRAWN TRS
CHECKED LAR
DATE 04-16-2025

PROJECT No.
10297.24002
SHEET NUMBER

D-612

No.	Date	Item
REVISIONS		



1

WATER TREATMENT P&ID

D-613

SCALE: NO SCALE

3	9/24/25	ADDENDUM #3	
No.	Date	Item	
REVISIONS			



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WATER SYSTEM EXTENSION

YAKUTAT, ALASKA

SHEET TITLE :

WATER TREATMENT P&ID

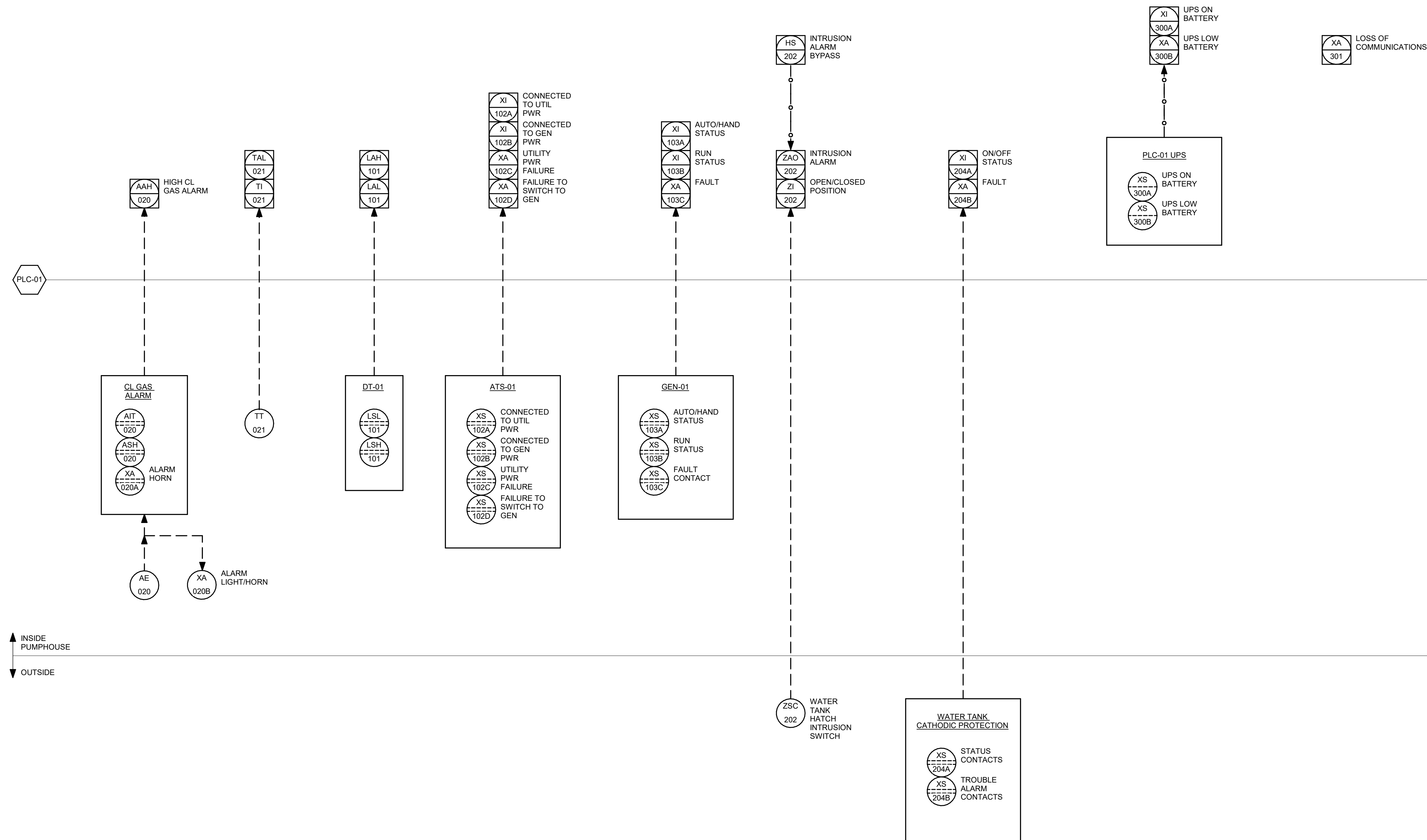
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DRAWN	TRS
CHECKED	LAR
DATE	04-16-2025

PROJECT No.

10297.24002

SHEET NUMBER

D-613



1 MISCELLANEOUS PUMP HOUSE MONITORING AND ALARMS D-614 SCALE: NO SCALE

No.	Date	Item
REVISIONS		

SHEET TITLE : MISC PUMP HOUSE MONITORING AND ALARMS		PROJECT : CITY & BOROUGH OF YAKUTAT WATER SYSTEM EXTENSION YAKUTAT, ALASKA	
DESIGN DRAWN CHECKED DATE		ALN TRS LAR 04-16-2025	
PROJECT No. 10297.24002 SHEET NUMBER			
D-614			

CONSULTANT :



STATE OF ALASKA
49 TH
YUKA A RUBALCAVA
ME-141980
REGISTERED PROFESSIONAL ENGINEER
1029-24002 09-14-2025

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**CITY & BOROUGH OF YAKUTAT
WATER SYSTEM EXTENSION**

YAKUTAT, ALASKA

SHEET TITLE :

**MISC PUMP HOUSE MONITORING
AND ALARMS**

PROJECT :

**CITY & BOROUGH OF YAKUTAT
WATER SYSTEM EXTENSION**

YAKUTAT, ALASKA

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SHEET NUMBER

D-614