



— BUREAU OF —
RECLAMATION

Brackish Groundwater National Desalination Research Facility Yard Piping and Flow Measurement Design-Build

Statement of Objectives

Alamogordo, New Mexico

Upper Colorado Basin Region

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**Brackish Groundwater National Desalination Research Facility
Yard Piping and Flow Measurement Design-Build**

Alamogordo, New Mexico

FOREWORD

Work is located on the Brackish Groundwater National Desalination Research Facility (BGNDRF) site at 500 Lavelle Road in Alamogordo, New Mexico in Otero County.

The Project shall provide upgrades to site source water (SW), potable water (PW) and concentrate water (CW) piping and flow measurement infrastructure. Drawings and conceptual layout figures to be provided in Phase 2 and are cited as follows; Figure C6-2026, Figure C8-2026, Figure C9-2026, Figure C10-2026, Figure M6-2026, and Figure M4-2026 which are provided in Section 52 00 00.

Design and Construct:

1. Yard piping and flow measurement upgrades:
 - a. The following descriptions reference points A through Q, which are shown on Figure C6-2026, Figure C9-2026, Figure C10-2026, Figure M6-2026, and Figure M4-2026, provided in Section 52 00 00.
 - b. **OPTIONAL CLIN: Locate leak and replace 50-500 ft (50-ft sections priced in Price Schedule C) of damaged Source Water Storage Tank 2 (SWST2) pipeline shown on Figure C9-2026.**
 - c. TP10 Flow Measurement Vault (Point C) including below grade vault, access hatch(es), power and controls, valves, piping, accessories, and three magnetic flow meters:
 - 1) Three (3) for the existing SW piping from SWST1, SWST2, and SWST3 to the TP10 Manifolds (Point E).
 - 2) Provide, controls, and integration with SCADA, electrical power to flow meters and heat trace, including duct bank and conduit. The flow meters shall provide local readout and remote readout to the existing plant SCADA system.
 - d. Replace existing 4" TP10 return line to SWST2 (Point B) using similar route as existing temporary (shallow) line. This requires replacement of sun-damaged piping and valves at the test pad (see Photos 51-52 in 51 00 90). The approximate location of the existing piping is shown on Figure C9-2026.
 - e. Removal of the existing partially buried TP10 manifold, which contains existing piping from SWST1 (SW 1), SWST2 (SW 2), SWST3 (SW 3), and PW source, and rerouting buried piping to the TP10 Flow Measurement Vault (Points C, D).
 - f. Buried piping for SW 1, SW 2, SW 3, and PW from TP10 Flow Measurement Vault (Point C, D) to three above grade piping manifolds at TP10 (Point E).

- g. Three TP10 Piping Manifolds (Point E) that each provide above grade connection to SW 1, SW 2, SW 3, and PW sources and a connection to CW pressure drain piping.
 - h. Separate pressure CW drain piping (three pipelines) from each of the three TP10 manifolds (Point E) to the CW Vault (Point L). The pressure drain piping shall be buried between the TP10 manifolds and the CW Vault.
 - i. A valving manifold within the CW Vault (Point L) which allows any of the three TP10 Piping Manifolds to deliver CW water to any of the three Evaporation Ponds (Point M, Point N, or Point O).
 - j. Install a magnetic flow meter on the 6" SW line at TP7 (Point I). See Figures C9-2026 and M6-2026. Provide, controls, and integration with SCADA, electrical power to flow meters and heat trace, including duct bank and conduit. The flow meters shall provide local readout and remote readout to the existing plant SCADA system.
 - k. Install a magnetic flow meter on the 4" Well 2/4 bypass line west of Pond 1. Provide, controls, and integration with SCADA, electrical power to flow meters and heat trace, including duct bank and conduit. The flow meters shall provide local readout and remote readout to the existing plant SCADA system.
 - l. Modify SW piping from acid room (Point A) valve manifold to TP 7, 8, and 9 (Points I, J, and K, respectively) as conveyed on Figures C9-2026, M4-2026, and M6-2026. Cap and abandon in place unused portions of the three pipelines that connect the acid room valve manifold to the outdoor test pads and replace with a single line that connects to the associated line from the acid room. See Figures C9-2026, M4-2026, and M6-2026. Unused piping can be removed to facilitate new design.
 - m. Remove buried interconnections between TP 7, 8, and 9 piping and provide new isolation valves above grade on the vertical section of each test pad's piping manifold. Cap and abandon in place or remove piping taken out of service as necessary to ensure each test pad is fed by a single pipeline that matches what is coming from the building. Provide, controls, and integration with SCADA, electrical power to flow meters, heat trace, and insulation, including duct bank and conduit as required.
 - n. Three (3) magnetic flow meters in the CW Vault which measure instantaneous and total CW flow to the three Evaporation Ponds (Point M, Point N, or Point O). One magnetic flow meter on the 4" Well 2/4 bypass line west of Pond 1 (Point Q). The flow meters shall provide local readout and remote readout to the existing plant SCADA system. Provide, controls, and integration with SCADA, electrical power to flow meters and heat trace, including duct bank and conduit..
2. Installation of four concrete vaults at or near the four existing valve vaults (Pond 1, Pond 2, Pond 3, and Agriculture) to provide access to the existing flow meters which measure flow to Ponds 1-3 and Agriculture magnetic flow meters (Point P). This may include relocation of the flow meters and installing gravel at Pond 2 and the Agriculture supply vaults.
 3. The contractor shall install new conduit from all new flow meter locations to the existing plant SCADA system. Controls cabling from flow meters to interface with existing SCADA system. The Contractor shall be responsible for installing and terminating

controls cabling through new terminal blocks to the existing SCADA PLC within the existing Research Facility building. The contractor shall also be responsible for providing surge/transient suppression on these new cables. The Contractor shall be responsible for programming the new signals into the existing SCADA system.

4. Temperature controlled heat trace and insulation for all pressure piping above frostline and as required for below grade or vaulted infrastructure.
5. Utilities as needed and as described herein.
6. All other components required to provide a fully functional system that meets the intent of this solicitation.
7. Testing, training, and commissioning.

FOR INFORMATION REGARDING BUREAU OF RECLAMATION'S PUBLICATION "RECLAMATION SAFETY AND HEALTH STANDARDS" WHICH IS APPLICABLE TO WORK UNDER THIS CONTRACT, SEE CLAUSE AT WBR 1452.223-81, SAFETY AND HEALTH.

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SECTION 01 11 00 SUMMARY OF WORK

PART 1 GENERAL

1.01 LOCATION

- A. Work is located on the Brackish Groundwater National Desalination Research Facility (BGNDRF) site at 500 Lavelle Road in Alamogordo, New Mexico in Otero County. Refer to Section 52 00 00 - Drawings for vicinity and location maps.

1.02 PRINCIPAL COMPONENTS OF WORK

- A. The Project shall provide upgrades to site source water (SW), potable water (PW) and concentrate water (CW) piping and flow measurement infrastructure. Drawings and conceptual layout figures to be provided in Phase 2 and are cited as follows; Figure C6-2026, Figure C8-2026, Figure C9-2026, Figure C10-2026, Figure M6-2026, and Figure M4-2026 which are provided in Section 52 00 00.
- B. Design and Construct:
1. Yard piping and flow measurement upgrades:
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 2. Three (3) for the existing SW piping from SWST1, SWST2, and SWST3 to the TP10 Manifolds (Point E).
 3. Provide, controls, and integration with SCADA, electrical power to flow meters and heat trace, including duct bank and conduit. The flow meters shall provide local readout and remote readout to the existing plant SCADA system.
 - d. Replace existing 4" TP10 return line to SWST2 (Point B) using similar route as existing temporary (shallow) line. This requires replacement of sun-damaged piping and valves at the test pad (see Photos 51-52 in 51 00 90). The approximate location of the existing piping is shown on Figure C9-2026.
 - e. Removal of the existing partially buried TP10 manifold, which contains existing piping from SWST1 (SW 1), SWST2 (SW 2), SWST3 (SW 3), and PW source, and rerouting buried piping to the TP10 Flow Measurement Vault (Points C, D).

- f. Buried piping for SW 1, SW 2, SW 3, and PW from TP10 Flow Measurement Vault (Point C, D) to three above grade piping manifolds at TP10 (Point E).
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 - m. Remove buried interconnections between TP 7, 8, and 9 piping and provide new isolation valves above grade on the vertical section of each test pad's piping manifold. Cap and abandon in place or remove piping taken out of service as necessary to ensure each test pad is fed by a single pipeline that matches what is coming from the building. Provide, controls, and integration with SCADA, electrical power to flow meters, heat trace, and insulation, including duct bank and conduit as required.
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3. The contractor shall install new conduits from all new flow meter locations to the existing plant SCADA system. Controls cabling from flow meters to interface with existing SCADA system. The Contractor shall be responsible for installing and terminating controls cabling through new terminal blocks to the existing SCADA PLC within the existing Research Facility building. The contractor shall also be responsible for providing surge/transient suppression on these new cables. The Contract shall be responsible for programming the new signals into the existing SCADA system.
4. Temperature controlled heat trace and insulation for all pressure piping above frostline and as required for below grade or vaulted infrastructure.
5. Utilities as needed and as described herein.
6. All other components are required to provide a fully functional system that meets the intent of this solicitation.
7. Testing, training, and commissioning.

1.03 SPECIFICATIONS REQUIREMENTS

- A. Requirements in Division 1, General Requirements, apply to Divisions 2 through 53.
- B. Imperative statements in these specifications are Contractor requirements, unless otherwise stated.
- C. Where specifications are written in streamlined form, words “shall be” are included by inference where a colon (:) is used within sentence or phrase.

1.04 DEFINITIONS

- A. When specifications use a word or term defined in Federal Acquisition Regulations (FAR), definition of the word or term shall be in accordance with FAR sections in effect at the time solicitation was issued.

1.05 ACRONYMS

- A. The following acronyms apply to specifications Divisions 1 through 53:
 1. CO: Contracting Officer.
 2. COR: Contracting Officer’s Representative.

PART 2 PRODUCTS

Not Used

PART 3 EXECUTION

Not Used

END OF SECTION

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SECTION 01 12 10
OTHER CONTRACTS

PART 1 GENERAL

1.01 MEASUREMENT AND PAYMENT

- A. Cost: Include in prices offered in the Price Schedule for other items of work.

1.02 OTHER CONTRACTS

- A. During work under this contract, other work may be performed in the vicinity of the work by Government or other contractors, including the following:
1. PFAS Treatment Building and associated infrastructure construction
 2. Evaporation pond liner replacement and modifications.
 3. Stormwater improvements and pavement repairs and replacement
 4. Evaporative Cooler replacement
- B. Cooperate and coordinate with other contractors on access to and use of work areas and contractor use areas. Comply with FAR 52.236-8, Other Contracts. See diagram of approximate locations for other contracts on following page.
- C. Do not interfere with work of other contractors or Government in vicinity of work.
- D. Cooperate and coordinate with other contractors on use of temporary utilities.
- E. Cooperate and coordinate with other contractors on maintaining dust-free operations.

PART 2 PRODUCTS

Not Used

PART 3 EXECUTION

Not Used



- Staging Area
- Primary Work Area
- MGC/Garver, New Building Construction
Now-Spring 2027
- TBD, Yard Piping and Meter Installations
Est. Summer 2027 – Spring 2028
- TBD, Stormwater & Pavement Improvements
Est. Winter 2027 – Winter 2028
- Evap. Pond Liner Replacements & Drainage Modifications
TBD
- TBD, Evaporative Cooler Replacement
Est. Winter 2027 – Spring 2028

Planned projects
Dec 2025 – Spring 2027

END OF SECTION

SECTION 01 12 16

WORK SEQUENCE

PART 1 GENERAL

1.01 MEASUREMENT AND PAYMENT

- A. Cost: Include in prices offered in the Price Schedules for other items of work.

1.02 WORK SEQUENCE

- A. Government is flexible to an alternate approach to packaging the design and construction submittals:
1. Contractors may propose an alternative approach including fast-tracking via early work packages for Government to review and approve during the initial design stages of the project.
 2. In lieu of an approved alternate approach, Contractor to meet specified requirements.
- B. Fast-tracking via early work packages:
1. After NTP, Contractor may begin construction on early work packages for which the Government has reviewed and accepted for constructing the 30-, 60-, 90-, and 100-percent design submittal requirements covered in the early work package.
 2. Government will not grant a time extension for a design re-submittal when, in the opinion of the CO, the initial submission failed to meet minimum quality requirements.
- C. CO will notify Contractor when approved incremental designs are cleared for construction.
- D. No payment will be made for design phase items or in-place construction until Government accepts the required submittals for the design phase or construction item.

PART 2 PRODUCTS

Not Used

PART 3 EXECUTION

Not Used

END OF SECTION

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SECTION 01 14 10

USE OF SITE

PART 1 GENERAL

1.01 MEASUREMENT AND PAYMENT

- A. Cost: Include in prices offered in the Price Schedules for other items of work.

1.02 REFERENCE STANDARDS

- A. Bureau of Reclamation (Reclamation)

1. Cleaning Manual-2021
Inspection and Cleaning Manual for
Equipment and Vehicles to Prevent the
Spread of Invasive Species, September
2021, available at
<https://www.usbr.gov/mussels/prevention>

1.03 SUBMITTALS

- A. In accordance with Section 01 33 00 - Submittals.
- B. RSN 01 14 10-1, Land Use and Landscape Rehabilitation Plan:
1. For each Contractor use site on Government land:
 - a. Show use location and extent of impact. Uses include but are not limited to the following:
 - 1) Parking areas, and temporary roads.
 - 2) Utilities including communications, power, and water lines.
 - 3) First-aid facilities.
 - 4) Areas for processing, storing, and disposing of waste materials from construction operations.
 - 5) Temporary fences.
 - b. Describe methods to preserve, protect, and repair vegetation (such as trees, shrubs, and grass) and other landscape features on or adjacent to jobsite, which are not to be removed and which do not interfere with work required under this contract.
 - 1) Include methods to mark work area limits, protect disturbed areas, and prevent erosion.
 - c. Describe methods to protect, and repair if damaged, existing improvements and utilities at or near jobsite.
 - d. Describe methods for removing temporary structures and facilities, cleanup, and rehabilitating site after completion of construction activities.
 2. Submit revised drawings of changes in use of Government land made during design and erection stages or after use of Government land is in operation.

1.04 PROJECT CONDITIONS

- A. Government land, as shown on drawings may be used for required construction facilities.
- B. When private land is used for construction facilities or other construction purposes, make necessary arrangements associated with use of private land.
- C. Location, construction, operation, maintenance, and removal of construction facilities on Government land.
- D. Do not interfere with work of other contractors or the Government in vicinity, or with reservations made by the Government for use of such land.
- E. Housing for construction personnel is not permitted on Government land.

PART 2 PRODUCTS

Not Used

PART 3 EXECUTION

3.01 CLEANING

- A. Construction Equipment:
 - 1. Before bringing onsite, clean construction equipment to remove dirt, vegetation, and other organic material to prevent introduction of noxious weeds and invasive plant and animal species.
 - 2. Contractor cleaning procedures shall result in equipment being cleaned as well or better than the procedures described in Cleaning Manual.
 - 3. Coordinate with COR to allow COR inspection of construction equipment following procedures described in Cleaning Manual before allowing equipment onsite.

3.02 RESTORATION

- A. Restore Contractor use areas to pre-construction condition.
- B. Restore temporary construction roads to original contours and make impassable to vehicular traffic when no longer required.
- C. After completion of work, regrade and scarify Government land used for construction purposes and not required for completed installation so that surfaces blend with natural terrain and are in a condition to facilitate revegetation, provide adequate drainage, and prevent erosion.
- D. Seed disturbed areas of Government land used for construction purposes in accordance with approved seed mix provided in Section 01 81 05 – General Performance Requirements.

END OF CONTENTS

SECTION 01 14 12
WORK RESTRICTIONS AND LIMITATIONS

PART 1 GENERAL

1.01 MEASUREMENT AND PAYMENT

- A. Cost: Include in prices offered in the Price Schedules for other items of work.

1.02 REFERENCE STANDARDS

- A. City of Alamogordo (City)

1. Technical Standards-2022

Available at

<https://ci.alamogordo.nm.us/861/Engineering>

1.03 WORK RESTRICTIONS AND LIMITATIONS

- A. Allowable Work Hours: 7:30 a.m. to 4:30 p.m., Monday through Friday, unless approved by COR in writing. Comply with additional work hour restrictions listed in other specification sections.
- B. Connect to City of Alamogordo infrastructure in accordance with City requirements, including the City's Technical Standards.

PART 2 PRODUCTS

Not Used

PART 3 EXECUTION

Not Used

END OF SECTION

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SECTION 01 31 19
PROJECT MANAGEMENT AND COORDINATION

PART 1 GENERAL

1.01 MEASUREMENT AND PAYMENT

- A. Cost: Include in prices offered in the Price Schedules for other items of work.

1.02 REFERENCE STANDARDS

- A. Bureau of Reclamation (Reclamation)

1. RSHS Reclamation Safety and Health Standards,
including revisions posted at
<https://www.usbr.gov/safety/rshs/index.html>

1.03 SUBMITTALS

- A. In accordance with Section 01 33 00 - Submittals:
- B. RSN 01 31 19-1, Pre-Work Conference.
- C. RSN 01 31 19-2, Design Visits and Meetings Notes.
- D. RSN 01 31 19-3, Coordination Meeting Documentation:
1. Meetings shall be held at least monthly and can be held electronically or in person. The frequency can increase as needed for design team.
 2. Provide agenda.
 3. 4-week look-ahead schedule covering the following as applicable:
 - a. Shop fabrication review items and tasks.
 - b. Construction review items and tasks.
 4. Work completed to date.
 5. Meeting minutes from the previous weekly coordination meeting to include the following:
 - a. Include date, time, and list of attendees.
 - b. Summary of topics discussed.
 - c. List of action items including the following:
 - 1) Description of action item.
 - 2) Responsible party.
 - 3) Date to be completed.

1.04 DESIGN MEETINGS

- A. Pre-Work Conference:
 - 1. Conducted after contract award and as needed.
 - 2. Government and Contractor to review design submission and review procedures, discuss preliminary design schedule, phase completion of the design documents and construction activities.
- B. Design Meetings:
 - 1. Held weekly by conference call.
 - 2. Face-to-face on a monthly basis or more frequently, as needed.
- C. Document design site visits, phone, and in-person meetings. Include subject, names, discussion, recommendations, and conclusions.
- D. 30-, 60- and 90- Percent Review Conferences:
 - 1. Held by conference call for each design review package submittal.
 - 2. Attendees: Contractor personnel responsible for the design.
 - 3. Five days after the close of the review period.
 - 4. Provide written summary of review conference.
- E. Additional meetings shall be mutually agreed upon.

1.05 CONSTRUCTION COORDINATION

- A. The following meetings are considered significant but do not relieve the Contractor from the responsibility of attending other meetings required by the specifications.
 - 1. Weekly Coordination Meetings:
 - a. Attendees as required:
 - 1) Contractor's Project manager, project engineer, superintendent, and Quality Control Supervisor, and pertinent subcontractors.
 - 2) COR, project manager, project engineer, safety personnel, and other required Government staff.
 - b. Purpose:
 - 1) Review drawings, data, and technical requirements of specifications. Schedule, progress, and coordination:
 - a) Review safety, progress made, schedule, project issues, submittals, Request for Information (RFI), and resolution necessary to meet specifications requirements.
 - b) Review dates that activities started and completed, remaining duration, and percent complete.

- c) Review submittals register, submittals currently in review and approval, and meeting submittals due dates or delivery time frames.
- d) Provide 3-week look-ahead schedule at least 3 Federal working days before start of meeting.
- e) Review As-built Drawings.
- f) Provide meeting minutes from the previous weekly meeting.

PART 2 PRODUCTS

Not Used

PART 3 EXECUTION

Not Used

END OF SECTION

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SECTION 01 32 20
CONSTRUCTION PROGRAM

PART 1 GENERAL

1.01 MEASUREMENT AND PAYMENT

- A. Cost: Include in prices offered in the Price Schedules for other items of work.

1.02 DEFINITIONS

- A. Schedule: The Critical Path Method (CPM) of planning and scheduling a construction project where activities are arranged based on activity relationships and network calculations determining when activities can be performed and the critical path of the project.
- B. Project Calendar(s): Cross reference of numerical workdays with calendar days. The project calendar serves as the basis for the day/date conversion and assigns workdays and non-workdays.

1.03 REFERENCE STANDARDS

- A. Associated General Contractors of America (AGC)
1. AGC Manual-04 Construction Planning and Scheduling Manual

1.04 SUBMITTALS

- A. In accordance with Section 01 33 00 - Submittals.
1. Furnish database files in format compatible with Oracle Primavera P6 Professional Project Management or Microsoft Project (release 2019 or newer).
 2. Upon request, provide information and data used to develop and maintain the Construction Program to CO.
- B. RSN 01 32 20-1, Baseline Schedule:
1. Include:
 - a. Construction Program/Schedule database.
 - b. Definition of project calendars.
 - c. Gantt chart (Bar chart) for project.
 - d. Activity report including all logic constraints consisting of predecessors, successors, and constraint dates.
- C. RSN 01 32 20-2, Updated Schedule:
1. Include:

- a. Construction Program database with updated activity and milestone data.
- b. Definition of project calendars if revised from baseline calendars.
- c. Gantt chart for project.
- d. Narrative report specifically stating status of project.
 - 1) If negative float exists, cite specific actions and conditions which caused the "behind schedule" condition and provide proposed course of action to complete the project within the specified delivery time.
 - 2) List of Contractor-initiated changes to the current schedule stating the reason for the action taken and unresolved issues relating to the Construction Program. Government reserves the right to reject Contractor-initiated changes to the current schedule which negatively impact Government action which was initiated on the basis of the current schedule.

1.05 SCHEDULE

- A. Develop, maintain, and use approved Construction Program to plan, monitor, report, and evaluate accomplishment of work.
- B. Prepare construction schedules using Critical Path Method outlined in AGC Manual.
- C. Failure to include an element of the work will not release Contractor from completing all required work under the contract.
- D. Construction Program:
 1. Prepare detailed activity network for accomplishing required work organized by work breakdown structure.
 2. Prepare schedule based on required sequence and interdependence of activities.
 3. Include work of subcontractors, Government interfaces, and contract milestones.
 4. Include contract title, contract number, and Contractor's name on each sheet.
 5. Adjust Construction Program/schedule for seasonal weather conditions.
 6. Define activities to a level of detail resulting in their durations being no greater than 20 workdays unless otherwise accepted by CO.
 - a. Durations for administrative activities (e.g., submittals and reviews, fabrication, manufacturing), or other specific activities identified in the contract shall not be subject to the workday limitation.
 7. Use durations in units of whole workdays.
 8. Include activities for Government reviews and approvals of submittals that are critical to the project completion data.
 - a. Include 30-, 60-, 90-, and 100-percent design submittals.

- b. Combined submittals package as described in Section 01 81 05 - General Performance Requirements.
 - c. Incremental design packages described in Section 01 12 16 - Work Sequence.
9. Update schedule with changes directed by contract modifications or approved changes to sequencing.

E. Cost-Loading Schedule:

- 1. Cost loading is defined as Contractor earnings based on payments from Government to Contractor.
- 2. Input contract values as Expenses planned costs in Primavera P6 database.
- 3. Allocate contract value to schedule activities per CLIN amounts in accordance with contract requirements and Measurement and Payment statements in specifications.
- 4. Assign values to appropriate activities:
 - a. Total of activity values equal total contract value.
 - b. Each activity does not require a value.
 - c. Examples of activities that typically have no value are submittals, submittal reviews, and manufacturing.
- 5. Include separate schedule activities to properly depict correct amount and timing of payment, if necessary, such as Deliver activities.
- 6. Generate cash flow reports showing estimated monthly earned value of activities.
- 7. Report showing each activity cash flow for project duration.
- 8. Report showing cumulative monthly cash flow for project duration.
- 9. Generate Activity value report showing value of each activity.
- 10. Assign contract values for contract modification activities.

F. Baseline Schedule:

- 1. Represents Contractor's as-planned approach to accomplishing the work.
- 2. Include planned start and completion dates for features of work.

G. Updated Schedule:

- 1. Enter actual progress.
- 2. Assign a unique project file name for each schedule update.

H. Contract Change or Delay:

- 1. Submit a time impact evaluation within 14 days of contract change or delay, showing effects of change order or delay on the progress schedule.
- 2. Time extensions for performance will be considered only to the extent that Contractor's current scheduled milestone dates exceed the contract milestone dates.

- I. Float is not for the exclusive use by or benefit of either Government or Contractor.
- J. If in the opinion of CO, Contractor falls behind the approved schedule, Contractor shall take steps necessary to improve its progress, including those that may be required by CO.
 - 1. CO may require Contractor to increase the number of shifts, overtime operations, days of work, or the amount of construction plant, and to submit for approval a supplementary schedule or schedules in chart form as CO deems necessary to demonstrate how the approved rate of progress will be regained.
 - 2. Costs for actions required to improve progress are Contractor's responsibility.

1.06 FAILURE TO COMPLY

- A. Failure to comply with the requirements of this section shall be grounds for a determination by CO that Contractor is not prosecuting the work with sufficient diligence to ensure completion within the specified time.
- B. CO may terminate Contractor's right to proceed with the work, or a separable part of it, in accordance with the default terms of this contract.

PART 2 PRODUCTS

Not Used

PART 3 EXECUTION

Not Used

END OF SECTION

SECTION 01 33 00
SUBMITTALS

PART 1 GENERAL

1.01 MEASUREMENT AND PAYMENT

- A. Cost: Include in prices offered in the Price Schedules for other items of work.

1.02 DEFINITIONS

- A. Days: Calendar days.
- B. Required Submittal Number (RSN): Identifies items to be submitted together as a complete submittal.
- C. Submittal Types, as listed in Table 01 33 00A - List of Submittals:
 - 1. A - Action:
 - a. Government will respond as to adequacy of submittal.
 - b. Action submittals are considered to be “shop drawings” within terms of clause at FAR 52.236-21, Specifications and Drawings for Construction.
 - 2. I - Informational:
 - a. Government will acknowledge receipt of Informational submittals.
 - b. Government may reject an Informational submittal when submittal does not satisfy contract requirements. Correct mistakes or deficiencies in rejected Informational submittals and resubmit.
 - c. Informational submittals are considered to be “shop drawings” within terms of clause at FAR 52.236-21, Specifications and Drawings for Construction, except that approval by Government is not required.

1.03 REFERENCE STANDARDS

- A. American Society of Mechanical Engineers (ASME)
 - 1. ASME Y14.1 Decimal Inch Drawing Sheet Size and Format
- B. National Institute of Building Sciences (NIBS)
 - 1. NIBS NCS United States National CAD Standards

1.04 SUBMITTAL REQUIREMENTS

- A. In case of conflict between requirements of this section and requirements included elsewhere in these specifications, requirements included elsewhere take precedence.

B. General:

1. Prepare in English.
2. Label with contract number and title, and RSN.
3. Measurement Units: US Customary Units.
4. Provide a unique transmittal number for each submittal.
5. Electronic documents shall have searchable text.

C. Drawings:

1. Minimum Identification in Title Block:
 - a. Contract number and title.
 - b. Contractor's or supplier's title and drawing number.
 - c. Date.
2. Reserve 3- by 3-inch space next to title block for review stamps.
3. Paper Size or Computer Drafting Paper Space: D size (22 inches by 34 inches) as defined by ASME Y14.1.
4. Draw to scale using computer drafting or drafting equipment, unless otherwise specified.
 - a. Computer drafted drawings:
 - 1) In accordance with NIBS NCS.
 - 2) Electronic file format: Compatible with Autodesk products including AutoCAD, Version 2020 or later, manufactured by Autodesk, Inc., Sausalito, CA.
 - 3) Compile using "eTransmit" utility in AutoCAD.
 - b. Drawing prepared with drafting equipment, when allowed: Lettering shall be neat.
5. Drawings Designated as "Government Format" in Specifications:
 - a. Computer drafted.
 - b. Government will provide electronic AutoCAD format template.
 - c. Title block and sheet format:
 - 1) As shown on Standard Drawing 40-D-7102.
 - 2) Government will supply template.
 - 3) Government will supply specific title block information to be used.
6. Final Drawings:
 - a. Computer drafted.
 - b. Government will supply electronic AutoCAD format template.
 - c. Show as-built changes, including revision dates, made during installation. Indicate changes by clouding.

7. Electronic Files: CD or DVD discs, portable memory storage devices, FTP site, or Electronic Management System.

D. Product Data:

1. Mark manufacturer's data for commercial products or equipment, such as catalog cut sheets.
 - a. Identify manufacturer's name, type, model, size, and characteristics.
 - b. Illustrate that product or equipment meets requirements of specifications.
 - c. Mark items to be furnished in a manner to allow clear photocopying (no highlighter).
 - d. Strike through items that do not apply.

E. Certifications:

1. Certifications by a registered professional: Signed and sealed by registered professional.
2. Manufacturer's certifications: Signed by authorized representative of manufacturer.

F. Manuals:

1. Copies: Bound and indexed.
2. Copies:
 - a. Printed copies: Bound and indexed.
 - b. Electronic copies: Adobe pdf on CD or DVD discs. Bookmark longer files to assist in navigating file.
3. Contents:
 - a. Parts identification lists, lists of special tools, and accessories.
 - b. Schematics and wiring diagrams.
 - c. Detailed instructions for installing, operating, lubricating, and maintaining equipment.
 - d. As-built Drawings, photographs, and test records or reports if required by the specifications.

G. Photographs: Include digital files on CD or DVD in .jpeg or similar format.

H. Samples and Color Selection Submittals:

1. Label with complete manufacturer's product and color identification.
2. Include type and quantity of materials specified in the referenced section in each "set" of samples.
3. Samples: Representative of product to be installed. Xerographic sheets for color selection are not acceptable.
4. Color Chips: Sample paint chips. Ink color reproductions are not acceptable.

5. Label each sample, sample kit, set of color chips, or color chart with contract number and title.
6. Government will select architectural color and pattern after product approval.

1.05 SUBMITTALS PROCEDURES

- A. Submit only checked submittals. Submittals without evidence of Contractor's approval will be returned for resubmission.
- B. Submit complete sets of required materials for each RSN as specified in "Submittals Required" column in Table 01 33 00A - List of Submittals. A complete set includes all listed items for RSNs with multiple parts.
- C. Submit number of sets specified in "No. of sets to be sent to:" columns in Table 01 33 00A - List of Submittals.
- D. Include the following information in transmittal letters:
 1. Contract number and title.
 2. RSN for each attached submittal.
 3. Responsible code.
 4. Number of sets for each RSN.
 5. Identify submittal as initial or resubmittal.
- E. Resubmittal of submittals not approved:
 1. Mark changes such that they are readily identifiable and show revision date.
 2. Describe reasons for significant changes in transmittal letter.
 3. Resubmit returned submittals within 10 days after receiving comments unless otherwise directed.
 4. Requirements for initial submittals apply to resubmittals.
- F. More than one RSN may be submitted under a transmittal letter, provided responsible code is same.

1.06 REVIEW OF SUBMITTALS

- A. Time Required:
 1. Submittal review will require 21 calendar days for review of each submittal or resubmittal unless otherwise specified.
 2. Submittal review will require 28 calendar days for review of 30-Percent Design, 60-Percent Design, and 90-Percent Design submittals unless otherwise specified.

3. Time required for review of each submittal or resubmittal begins when complete sets of materials required for a particular RSN are received and extends through return mailing postmark date.

B. Time in Excess of Specified:

1. CO may extend contract completion date to allow additional time for completing work affected by excess review time.
 - a. Time extension will be to extent that excess review time caused delay to contract completion date.
 - b. Time extension will not exceed time used in excess of specified number of days for review of submittals or resubmittals.
 - c. Concurrent days of excess review time resulting from review of two or more separate submittals or resubmittals will be counted only once in extending contract completion date.
2. No time extension will be allowed if Contractor fails to make complete action submittals in sequence and within time periods specified.
3. Adjustment for delay will be made only to extent that:
 - a. Approval was required under contract, and.
 - b. Requests for approval were properly and timely submitted and were approved.
4. Adjustment will be subject to terms of paragraphs (b) and (c) of the clause at FAR 52.242-14, Suspension of Work; however, no such delay shall be deemed to be a “suspension order” as the term is used in that clause.

C. Return of Submittals:

1. Action Submittals: One set of submittals required for action will be returned either approved, approved with comments, or not approved.
 - a. Submittals that are not approved shall be revised and resubmitted.
 - b. Do not change designs without approval of CO after drawings, documentation, and technical data have been approved.
2. Informational Submittals: Government will acknowledge Informational submittals.
 - a. Informational submittals will not be returned when they satisfy contract requirements.
 - b. Informational submittals that do not satisfy contract requirements may be returned for resubmittal or additional information may be requested.

1.07 TRANSMITTAL

A. Addresses for codes listed in Table 01 33 00A - List of Submittals:

1. Contract Specialist, Valerie Jiron, Bureau of Reclamation, 555 Broadway NE Suite 100, Albuquerque, NM 87102.
2. Project Manager, 500 Lavelle Road, Alamogordo, NM 88310.

3. Technical Service Center, Bureau of Reclamation, Attn: 86-68160, P.O. Box 25007, Denver CO 80225-0007; Express Mail: Sixth and Kipling, Building 67, Room 152.
- B. Send original transmittal letter with appropriate number of sets to office listed in “Responsible Code” column in Table 01 33 00A - List of Submittals.
1. Responsible codes starting with “86-6” are located in Technical Service Center. Send these submittals to TSC address shown above.
- C. Send copy of transmittal letter with appropriate number of sets to offices that are not responsible code, but show “No. of sets to be sent to” in Table 01 33 00A - List of Submittals.
- D. When “No. of sets to be sent to” is 0, send a copy of transmittal letter to that office.
- E. Submittals required by specifications, but not listed in Table 01 33 00A - List of Submittals:
1. Submit in accordance with this section.
 2. Submit to Project Manager unless otherwise specified.

PART 2 PRODUCTS

Not Used

PART 3 EXECUTION

Not Used

Table 01 33 00A - List of Submittals

* Submittal Types: A - Action, I - Information

** CO indicates Contracting Officer, PM indicates Project Manager, and TSC indicates Technical Service Center.

RSN	Clause or Section Title	Submittals required	Due date or delivery time	Type *	Responsible code	No. of sets to be sent to: **		
						CO	PM	TSC
01 14 19-1	Use of Site	Land Use and Landscape Rehabilitation Plan	At least 28 days before use of Government land	A	COR	0	1	0
01 31 19-1	Project Management and Coordination	Pre-Work Conference	Within 28 days after Notice to Proceed	I	COR	0	1	0
01 31 19-2	Project Management and Coordination	Design Visits and Meetings	Within 7 days after visit or meeting	I	COR	0	1	0
01 31 19-3	Project Management and Coordination	Weekly Coordination Meeting Documentation	Weekly	I	COR	0	1	0
01 32 20-1	Construction Program	Baseline Schedule	Within 21 days after receipt of Notice to Proceed	I	COR	0	1	0

Table 01 33 00A - List of Submittals

* Submittal Types: A - Action, I - Information

** CO indicates Contracting Officer, PM indicates Project Manager, and TSC indicates Technical Service Center.

RSN	Clause or Section Title	Submittals required	Due date or delivery time	Type *	Responsible code	No. of sets to be sent to: **		
						CO	PM	TSC
01 32 20-2	Construction Program	Updated Schedule	With monthly requests for progress payments	I	COR	0	1	0
01 35 10-1	Safety Data Sheets	Complete LHM and SDS	At least 14 days before jobsite delivery of hazardous material	I	COR	0	1	0
01 35 10-2	Safety Data Sheets	Updated LHM and SDS	At least 14 days before jobsite delivery of hazardous material not previously listed	I	COR	0	1	0
01 35 20-1	Safety and Health	Resumes	Submitted and accepted before mobilization	I	COR	0	1	0
01 35 20-2	Safety and Health	Safety Program	Submitted and accepted before commencing onsite mobilization. See RSHS Section 3.	I	COR	0	1	0
01 35 20-3	Safety and Health	Job Hazard Analysis List	At least 14 days before commencing work	I	COR	0	1	0
01 35 20-4	Safety and Health	Monthly Accident Summary Report	Monthly	I	COR	0	1	0
01 46 00-1	Quality Procedures	Contractor Quality Control Program	Submitted and accepted at least 28 days before mobilization	I	COR	0	1	0
01 46 00-2	Quality Procedures	Contractor's Daily Reports	Weekly	I	COR	0	1	0
01 46 00-3	Quality Procedures	Quality Control Supervisor Resume	Submitted and accepted at least 28 days before mobilization	I	COR	0	1	0
01 46 00-4	Quality Procedures	Contractor's Quality Testing Plan	Submitted and accepted at least 28 days before mobilization	I	COR	0	1	0
01 46 00-5	Quality Procedures	Summary of Test Results	Monthly	I	COR	0	1	0
01 46 20-1	Testing Agency Services	Qualifications and Testing Agency Service Plan	Submitted and accepted at least 28 days before mobilization	I	COR	0	1	0
01 46 20-2	Testing Agency Services	Initial Contractor Quality Test Results	Within 24 hours after test completion	I	COR	0	1	0
01 46 20-3	Testing Agency Services	Final Contractor Quality Testing Results	Within 7 days after test completion	I	COR	0	1	0
01 56 10-1	Protection of Existing Installations	Plan for Protecting Existing Installations	At least 21 days before mobilization	I	COR	0	1	0

Table 01 33 00A - List of Submittals

* Submittal Types: A - Action, I - Information

** CO indicates Contracting Officer, PM indicates Project Manager, and TSC indicates Technical Service Center.

RSN	Clause or Section Title	Submittals required	Due date or delivery time	Type *	Responsible code	No. of sets to be sent to: **		
						CO	PM	TSC
01 56 10-2	Protection of Existing Installations	Initial Construction Site Recording	At least 21 days before mobilization	I	COR	0	1	0
01 56 10-3	Protection of Existing Installations	Post Construction Site Recording	Within 14 days after completion of construction activities	I	COR	0	1	0
01 57 15-1	Utility Line Investigations	Locating Utility Lines Plan	Submitted and accepted at least 28 days before beginning utility lines location work	I	COR	0	1	0
01 57 15-2	Utility Line Investigations	Permits	Submitted and accepted at least 28 days before beginning work in area of each utility line	I	COR	0	1	0
01 57 15-3	Utility Line Investigations	Utility Lines Information	Within 4 days after each utility line is located	I	COR	0	1	0
01 57 30-1	Water Pollution Control	Pollution Prevention Plan	At least 28 days before start of onsite construction work	I	COR	0	1	0
01 57 50-1	Tree and Plant Protection	Protection Plan	At least 28 days before commencing construction activities	I	COR	0	1	0
01 57 90-1	Preservation of Historical and Archaeological Data	Alternate Use Area or Borrow Plan	At least 28 days before start of onsite construction work	I	COR	0	1	0
01 74 00-1	Cleaning and Waste Management	Waste Production and Disposal Plan	At least 28 days before starting onsite work	I	COR	0	1	0
01 74 00-2	Cleaning and Waste Management	Waste Production and Disposal Records	Within 7 days after disposal	I	COR	0	1	0
01 78 30-1	Project Record Documents	Final Drawings	Within 14 days after acceptance of final As-Built Drawings	I	COR	0	1	0
01 78 30-2	Project Record Documents	O&M Manuals	Within 28 days after completion of work	A	COR	0	1	0
01 78 30-3	Project Record Documents	List of Extra Materials	Within 28 days after completion of work	I	COR	0	1	0
01 78 30-4	Project Record Documents	Warranties	Within 28 days after completion of work	I	COR	0	1	0
01 79 20-1	Training	Training Materials	Submitted and accepted 28 days before training session	A	COR	0	1	1
01 79 20-2	Training	Training Video	Within 14 days after completion of training	I	COR	0	1	0

Table 01 33 00A - List of Submittals

* Submittal Types: A - Action, I - Information

** CO indicates Contracting Officer, PM indicates Project Manager, and TSC indicates Technical Service Center.

RSN	Clause or Section Title	Submittals required	Due date or delivery time	Type *	Responsible code	No. of sets to be sent to: **		
						CO	PM	TSC
01 81 05-1	General Performance Requirements	Subsurface Utility Engineering Report	Per Contractor's accepted baseline schedule and updates in RSN 01 32 20-1 and -2	A	COR	0	1	1
01 81 05-2	General Performance Requirements	30-Percent Design	Per Contractor's accepted baseline schedule and updates in RSN 01 32 20-1 and -2	A	COR	0	1	1
01 81 05-3	General Performance Requirements	30-Percent Comment Response	Within 14 days after receiving Government comments	A	COR	0	1	1
01 81 05-4	General Performance Requirements	60-Percent Design	Per Contractor's accepted baseline schedule and updates in RSN 01 32 20-1 and -2	A	COR	0	1	1
01 81 05-5	General Performance Requirements	60-Percent Comment Response	Within 14 days after receiving Government comments	A	COR	0	1	1
01 81 05-6	General Performance Requirements	90-Percent Design	Per Contractor's accepted baseline schedule and updates in RSN 01 32 20-1 and -2	A	COR	0	1	1
01 81 05-7	General Performance Requirements	90-Percent Comment Response	Within 14 days after receiving Government comments	A	COR	0	1	1
01 81 05-8	General Performance Requirements	100-Percent Design	Per Contractor's accepted baseline schedule and updates in RSN 01 32 20-1 and -2	I	COR	0	1	1
01 81 05-9	General Performance Requirements	Construction Progress Submittals	Per Contractor's accepted submittal table in RSN 01 81 05-8 100-Percent Design	I	COR	0	1	1
01 81 05-10	General Performance Requirements	100-Percent Construction	Within 28 days after completing construction	I	COR	0	1	1
01 91 16-1	Facility Commissioning	Facility Commissioning Test Plan	At least 28 days before start of facility commissioning	A	COR	0	1	1
01 91 16-2	Facility Commissioning	Facility Commissioning Test Procedures	At least 28 days before start of facility commissioning	A	COR	0	1	1
01 91 16-3	Facility Commissioning	System Turnover Books	Within 28 days after completing Monitored Test	A	COR	0	1	1
01 91 16-4	Facility Commissioning	Discrepancy List	Monthly during facility commissioning	A	COR	0	1	1

Table 01 33 00A - List of Submittals

* Submittal Types: A - Action, I - Information

** CO indicates Contracting Officer, PM indicates Project Manager, and TSC indicates Technical Service Center.

RSN	Clause or Section Title	Submittals required	Due date or delivery time	Type *	Responsible code	No. of sets to be sent to: **		
						CO	PM	TSC
01 91 16-5	Facility Commissioning	Preliminary SOPs	At least 28 days before start of facility commissioning	A	COR	0	1	1
01 91 16-6	Facility Commissioning	Final SOPs	Within 28 days after completing Monitored Test	I	COR	0	1	1
01 91 16-7	Facility Commissioning	Issues and Resolution Log	Weekly during facility commissioning	I	COR	0	1	1
01 91 16-8	Facility Commissioning	Monitored Test Report	Within 28 days after completing Monitored Test	I	COR	0	1	1

END OF SECTION

**SECTION 01 35 10
SAFETY DATA SHEETS**

PART 1 GENERAL

1.01 MEASUREMENT AND PAYMENT

- A. Cost: Include in prices offered in the Price Schedules for other items of work.

1.02 DEFINITIONS

- A. LHM: List of Hazardous Materials.
- B. SDS: Safety Data Sheet.
1. Referred to as Material Safety Data Sheets in the clause at 52.223-3, Hazardous Material Identifications and Material Safety Data - Alternate 1.

1.03 SUBMITTALS

- A. In accordance with Section 01 33 00 - Submittals.
- B. RSN 01 35 10-1, Complete LHM and SDS.
- C. RSN 01 35 10-2, Updated LHM and SDS:
1. Comply with paragraph (e) of clause at FAR 52.223-3, Hazardous Material Identification and Material Safety Data - Alternate 1.

1.04 APPLICATION

- A. For the purposes of this contract, “delivered under this contract” in paragraph (b) of the clause at FAR 52.223-3, Hazardous Material Identification and Material Safety Data - Alternate 1, includes:
1. Materials delivered to Government.
2. Materials incorporated into work.
3. Materials used by the Contractor during contract performance at the jobsite.

1.05 DELIVERY

- A. Do not deliver hazardous materials to jobsite which are not included on original or previously updated LHM and SDS before receipt of updated LHM and SDS by COR.

PART 2 PRODUCTS

Not Used

PART 3 EXECUTION

Not Used

END OF SECTION

SECTION 01 35 20
SAFETY AND HEALTH

PART 1 GENERAL

1.01 MEASUREMENT AND PAYMENT

- A. Cost: Include in prices offered in the Price Schedules for other items of work.

1.02 REFERENCE STANDARDS

- A. Applicable Tribal and State Safety and Health Regulations for Construction.
- B. ASTM International (ASTM)
- | | | |
|----|------------|--|
| 1. | ASTM D6966 | Collection of Settled Dust Samples Using Wipe Sampling Methods for Subsequent Determination of Metals |
| 2. | ASTM D7035 | Determination of Metals and Metalloids in Airborne Particulate Matter by Inductively Coupled Plasma Atomic Emission Spectrometry (ICP-AES) |
| 3. | ASTM E1368 | Visual Inspection of Asbestos Abatement Projects |
- C. Bureau of Reclamation (Reclamation)
- | | | |
|----|-----------------|--|
| 1. | FIST 1-1 (2012) | Hazardous Energy Control Program, available at:
https://www.usbr.gov/power/data/fist_pub.html |
| 2. | RSHS | Reclamation Safety and Health Standards including revisions posted at
https://www.usbr.gov/safety/rshs/index.html |
- D. Occupational Safety and Health Administration (OSHA)
- | | | |
|----|------------------|---|
| 1. | 29 CFR Part 1910 | Occupational Safety and Health Standards |
| 2. | 29 CFR Part 1926 | Safety and Health Regulations for Construction, available at
https://www.osha.gov |

1.03 SUBMITTALS

- A. In accordance with Section 01 33 00 - Submittals.

- B. RSN 01 35 20-1, Resumes:
1. Contractor's Onsite Safety Representative(s).
 - a. Include certifications.
 - b. CPR and First Aid training certificates for onsite supervisors and foremen.
- C. RSN 01 35 20-2, Safety Program:
1. Written safety program in accordance with of RSHS.
 2. Cover aspects of onsite and applicable offsite operations and activities associated with this contract.
 3. Follow outline in Appendix B of RSHS.
 4. Will not be accepted for review by COR unless it addresses, in order, lettered and numbered per Appendix B, a narrative for each applicable item in outline. For items in outline that do not apply to this contract write "Not applicable to Contract" next to number/letter.
 5. A generic company safety program is not acceptable. Safety Program shall be site specific for this contract.
 6. Submitted and accepted prior to commencing onsite work, including mobilization.
- D. RSN 01 35 20-3, Job Hazard Analysis List:
1. Provide a list of JHA's that shall be submitted throughout project.
- E. RSN 01 35 20-4, Monthly Accident Summary Report:
1. In accordance of RSHS.

1.04 QUALIFICATIONS

- A. Contractor's Onsite Safety Representative(s):
1. Competent supervisory employee with appropriate level of safety related training and experience prior to start of work.
 2. Completed OSHA authorized 30-hour training course for Construction. Course completion shall be within last 5 years.
 3. Holds current certificates for first aid and adult CPR.

1.05 CONTRACTOR'S ONSITE SAFETY PERSONNEL

- A. Designate employee(s) as Contractor's Onsite Safety Representative(s) prior to start of construction:
1. Safety Professional requirements may be met by retaining appropriate level of services of an acceptable safety consultant.
 2. Requirements may be met by retaining services of an outside consultant.

B. Contractor's Onsite Safety Personnel (CSP) authorities, duties, and responsibilities:

1. Review and approve Safety Program prior to submittal.
2. Responsible for effectively implementing Contractor's Safety Program.
3. Full authorization to correct unsafe activity on the spot.
4. Prepare safety inspection reports.
5. At least one Contractor Onsite Safety Representative shall be onsite during construction activities.

1.06 QUALITY ASSURANCE

A. Contractor's Onsite Safety Professional:

1. Effectiveness of the Contractor's Onsite Safety Professional in prosecuting safety program will be subject to continue review and approval by CO.
2. Should Contractor's safety effort be considered inadequate, CO has option to require Contractor to replace full-time qualified Safety Professional.

B. Safety Program:

1. Effectiveness of Contractor's Safety Program will be subject to continued review and approval by CO.

1.07 DOCUMENTATION AND RECORDS

A. Prepare and retain all safety plans, programs, training content, and training records that are applicable to scope of work and make them available to COR unless they are already included in written safety program. Some examples include but are not limited to:

1. Confined Space and when deemed necessary by existing or introduced hazards of Permit Required Confined Space through Written Program and Training Records.
2. Forklifts and Other Industrial Trucks Training Records.
3. Electrical Safety Requirement Training Records.
4. Emergency Action Plans Written Program and Training Records.
5. Fall Protection Written Program and Training Records.
6. Fire Protection and Prevention Written Program and Training Records.
7. Flammable and Combustible Liquids Written Spill Control Plan.
8. General Safety and Health Provisions, Written Safety Program, and Regular Safety Inspection Records.
9. Hazard Communication Written Program and Training Records.
10. Ladder Written Compliance Program and Training Records.
11. Lead Written Program and Training Records.

12. Lockout/Tagout: Refer to RSHS Section 15 Hazardous Energy Control Program (HECP) Training Records.
13. Occupational Noise Exposure Written Program and Training Audiometric Testing Records.
14. Personal Protective Equipment (PPE) Hazard Assessments and Training Records.
15. Power Operated Hand Tools Training Records.
16. Respiratory Protection Written Program and Training Records.
17. Safety Training and Education Written Program and Training Records.
18. Scaffolds Training Records.
19. Steel Erection Training Records, if applicable.
20. Welding, Cutting, and Brazing Written Program and Training Records.

1.08 SAFETY AND HEALTH

- A. Onsite work, including mobilization, shall not begin until COR has reviewed Safety Program and replied that Safety Program is adequate for proceeding with onsite work.
- B. Comply with clause at FAR 52.236-13, Accident Prevention, clause at WBR 1452.223-81, Safety and Health, RSHS, local safety programs, referenced safety and health standards, and Safety Program.
 1. In event there is a conflict between requirements contained in these documents, more stringent requirement shall prevail.
- C. Provide and maintain a work environment and procedures that:
 1. Safeguard public and Government's personnel, and Contractor employees exposed to Contractor operations and activities.
 2. Avoid interruptions of site operations and delays in project completion dates.
 3. Control costs in contract performance.
- D. Do not begin onsite work, including mobilization, until COR accepts Safety Program.
- E. Participate in Contractor Safety Program Review meeting prior to mobilization.
- F. Minimum work crew shall consist of no less than two (2) people, unless approved by COR.
- G. Develop Job Hazard Analyses for each distinct phase of work under contract:
 1. Do not begin a phase of work until a JHA is acceptable to COR and shared with construction employees.
 2. Activities involving hazardous materials shall have appropriate Safety Data Sheet(s) attached to JHA.

- H. Correct safety and health violations identified by CO or COR.
- I. When Contractor fails or refuses to correct a compliance directive, CO may issue an order to stop all or part of work.
 - 1. When satisfactory corrective action is taken, an order to resume work will be issued.
 - 2. Contractor shall not be entitled to extension of time or to claim for damage or to additional compensation by reason of either directive or stop order.
 - 3. Failure of CO to order discontinuance of Contractor's operations shall not relieve Contractor of responsibility for safety of personnel and property.
- J. Maintain accurate record of and report to CO the following occurrences during performance of this contract:
 - 1. Death.
 - 2. Occupational disease.
 - 3. Traumatic injury to employees or public.
 - 4. Property damage in excess of \$2,500.
- K. Provide appropriate safety barricades, signs, and warnings.
- L. Contractor shall be responsible for providing medical and emergency assistance in a timely manner consistent with recognized emergency protocols.
- M. In instances where local emergency responders are not readily available, responsibility to provide emergency services shall default back to Contractor.

1.09 MEDICAL SERVICES AND FIRST AID

- A. Provide medical services and first aid in accordance with RSHS Section 5.
- B. Make facilities and services available for emergency aid to employees, subcontractor employees, and Government employees.
 - 1. Provide services free of charge to Government employees injured on job.
 - 2. Government employees not injured on job may be charged fees for rendered services based on reasonable and established fee rates.
- C. Ambulance Service:
 - 1. Ensure appropriate ambulance and other emergency services are locally available.
 - 2. An onsite ambulance is not required.
 - 3. Ensure cell phones or other appropriate communication devices will connect to local 911 number.

PART 2 PRODUCTS

Not Used

PART 3 EXECUTION

Not Used

END OF SECTION

SECTION 01 42 10
REFERENCE STANDARDS

PART 1 GENERAL

1.01 MEASUREMENT AND PAYMENT

- A. Cost: Include in prices offered in the Price Schedules for other items of work.

1.02 REFERENCE STANDARDS

- A. Referenced editions of standard specifications, codes, and manuals form a part of this specification to the extent referenced.
- B. These specifications take precedence when conflicting requirements occur between specifications and referenced standard.

1.03 JOBSITE REFERENCE STANDARDS

- A. Maintain at fabrication site, access to referenced standard specifications, codes, and manuals required for work in progress at fabrication site. Make available for use by the Government.
- B. Maintain onsite, access to referenced standard specifications, codes, and manuals required for onsite work in progress. Make available for use by the Government.

1.04 AVAILABILITY

- A. Code of Federal Regulations (CFR):
1. Available online, authorized by the National Archives and Records Administration (NARA) and the Government Printing Office (GPO), at <https://www.govinfo.gov/help/cfr>.
- B. Federal Specifications, Standards, and Commercial Item Descriptions; and Military Specifications:
1. Copies of Federal Specifications, Standards, and Commercial Item Descriptions may be obtained from GSA Federal Supply Service, see the provision at FAR 52.211-1, Availability of Specifications Listed in the GSA Index of Federal Specifications, Standards and Commercial Item Descriptions, FPMR Part 101-29.
 2. Copies of Military Specifications may be obtained from Department of Defense, see the provision at FAR 52.211-2, Availability of Specifications, Standards, and Data Item Descriptions Listed in the Acquisition Streamlining and Standardization Information System (ASSIST).

C. Bureau of Reclamation (Reclamation) Documents:

1. Reclamation Safety and Health Standards (RSHS) may be downloaded at <https://www.usbr.gov/safety/rshs/index.html>.
2. Reclamation manuals and other publications including significant scientific, technical, and engineering works are available from the National Technical Information Service (NTIS). Information regarding availability and pricing may be obtained by contacting NTIS at the following address:

United States Department of Commerce
National Technical Information Service
5285 Port Royal Road
Springfield, VA 22161
Phone: (703) 487-4650 or (800) 553-6847

D. Industrial and Governmental Documents:

1. When a reference has a joint designation (e.g., ANSI/IEEE) these specifications generally cite the proponent organization (e.g., IEEE).
2. Addresses for obtaining industrial and governmental (other than Federal and Reclamation specifications and standards) specifications, standards, and codes are listed in Table 01 42 10A - Addresses for Specifications, Standards, and Codes.

Table 01 42 10A - Addresses for Specifications, Standards, and Codes

Acronym	Name and Address	Phone
AARST	American Association of Radon Scientists and Technologists Administrative Office 527 N Justice Street Hendersonville, NC 28739 www.aarst.org	(828) 348-0185
AASHTO	American Association of State Highway and Transportation Officials 444 North Capitol St. NW, Suite 249 Washington, DC 20001 www.aashto.org	(202) 624-5800 (800) 231-3475
ACI	American Concrete Institute 38800 Country Club Dr. Farmington Hills, MI 48331-3439 www.concrete.org	(248) 848-3700
AGC	Associated General Contractors of America 333 John Carlyle Street, Suite 200 Alexandria VA 22314 www.agc.org	(703) 548-3118

Table 01 42 10A - Addresses for Specifications, Standards, and Codes

Acronym	Name and Address	Phone
ANSI	American National Standards Institute 1819 L Street NW Washington, DC 20036 www.ansi.org	(202) 293-8020
ASCE	American Society of Civil Engineers 1801 Alexander Bell Drive Reston, VA 20191 www.asce.org	(800) 548-2723
ASHRAE	American Society of Heating, Refrigerating and Air-Conditioning Engineers 1791 Tullie Circle, N.E. Atlanta, GA 30329 www.ashrae.org	(800) 527-4723
ASME	American Society of Mechanical Engineers 3 Park Avenue New York, NY 10016-5990 www.asme.org	(800) 843-2763
ASSE	American Society of Sanitary Engineering 18927 Hickory Creek Drive, Suite 220 Mokena, IL 60448 www.asse-plumbing.org	(708) 995-3019
ASTM	ASTM International PO Box C700 100 Barr Harbor Drive West Conshohocken, PA 19428-2959 www.astm.org	(610) 832-9585
ICC	International Code Council 500 New Jersey Avenue NW, 6 th Floor Washington, DC 20001 www.iccsafe.org	(888) 422-7233
IEEE	Institute of Electrical and Electronics Engineers 3 Park Ave., 17 th Floor New York, NY 10016-5997 www.ieee.org	(212) 419-7900
IES	Illuminating Engineering Society 120 Wall St. Fl 17 New York, NY 10005-4026 www.ies.org	(212) 248-5000

Table 01 42 10A - Addresses for Specifications, Standards, and Codes

Acronym	Name and Address	Phone
NEMA	National Electrical Manufacturers Association 1300 N 17th Street, Suite 1847 Rosslyn, VA 22209 www.nema.org	(703) 841-3200
NFPA	National Fire Protection Association One Batterymarch Park P.O. Box 9101 Quincy, MA 02269-9101 www.nfpa.org	(800) 344-3555 (617) 770-3000
NSF	NSF International P.O. Box 130140 789 North Dixboro Road Ann Arbor, MI 48113 www.nsf.org	(800) 673-8010
OSHA	U.S. Department of Labor Occupational Safety & Health Administration 200 Constitution Avenue NW Washington, DC 20210 www.osha.gov	(800) 321-OSHA (800) 321-6742
SMACNA	Sheet Metal and Air Conditioning Contractors' National Association 4201 Lafayette Center Drive Chantilly, VA 20151-1219 www.smacna.org	(703) 803-2980
UL	Underwriters Laboratories Inc. 333 Pfingsten Road Northbrook, IL 60062-2096 www.ul.com	(847) 272-8800

PART 2 PRODUCTS

Not Used

PART 3 EXECUTION

Not Used

END OF SECTION

SECTION 01 46 00

QUALITY PROCEDURES

PART 1 GENERAL

1.01 MEASUREMENT AND PAYMENT

- A. Cost: Include in prices offered in the Price Schedules for other items of work.

1.02 DEFINITIONS

- A. Quality Assurance: Inspection and tests performed by Government to ensure compliance with the terms of the contract.
- B. Quality Control: Activities performed by Contractor to ensure work conforms to contract requirements.
1. The clause at FAR 52.246-12, Inspection of Construction, requires the Contractor to establish an inspection system to ensure quality.
 2. Quality Control includes activities in addition to specified Contractor Quality Testing to ensure work conforms to contract requirements.
- C. Contractor Quality Testing: Specified tests shall be performed by the Contractor.
1. Government may use the test results for Quality Assurance.
 2. Contractor may use the test results as part of Contractor quality control.
 - a. Government anticipates that these tests will be part of the Contractor's quality control program; however, the tests do not relieve the Contractor of providing adequate quality control measures in accordance with the clause at FAR 52.246-12, Inspection of Construction.

1.03 SUBMITTALS

- A. In accordance with Section 01 33 00 – Submittals.
- B. RSN 01 46 00-1, Contractor Quality Control Program:
1. Program shall be based upon the following definable features of work and include preparatory, initial, and follow-up, for each definable feature:
 - a. Development, improvement, maintenance of access roads for construction.
 - b. Excavation and backfill.
 - c. Vault construction.
 - d. Trenching, bedding, and backfill.
 - e. Electrical and controls installation.

- f. Valve and instrument installation.
- g. Yard piping and manifolds installation.
- h. Pipe insulation installation.
- i. Heat trace installation.
- j. Interior finishes installation.
- k. Commissioning.

C. RSN 01 46 00-2, Contractor's Daily Reports:

1. Submit daily reports on a weekly basis.
2. As a minimum, the Contractor's Daily Report shall include the following information:
 - a. The report shall include a record of all the contractor's activities throughout the shift regardless of how minor or complex.
 - 1) Start the report at the beginning of the shift, write during the shift, and complete at the end of the shift and include information pertinent to the report.
 - 2) Prepare the report in such detail so that a person not familiar with the day's work could determine what was done and could calculate the contractor's direct cost for that day.
 - 3) Report shall state specific safety violations noted during the shift including corrective actions taken, including names of people involved in the infraction and individual responsible for the correction.
 - 4) In addition, the report shall document significant discussions held between Government staff and contractor personnel or other parties involved with the project.
 - b. Report shall include the temperature (maximum/minimum), wind conditions, estimated humidity, sunshine, and precipitation (type and intensity), if necessary, for the type of work being performed.
 - 1) The name of the contractor's representative onsite during the shift shall be noted, and if the representative is onsite part time.
 - 2) Subcontractor activity shall be documented.
 - c. The main body of the report shall contain the location, a detailed description of all work, and sketches or photographs where appropriate to assist with the description of work.
 - 1) This description shall reflect what, where, when, why, who, and how the work was being performed.
 - 2) The report shall provide a record of quantities installed, specific stations or locations of the work, and description by CPM program activity (if applicable).
 - 3) The report shall show labor classification and equipment being used during the shift, work the labor force and equipment is performing, and durations.
 - 4) Equipment that is idle or being repaired shall be noted.

3. Report shall contain a list of materials and equipment delivered to the job, what materials were installed, and materials that were refused or wasted during the shift.
 - a. Other items to be reported include changes in site conditions, modifications in design and installation, photographs taken, environmental compliance or noncompliance, hazardous waste and materials concerns, worker complaints, and observed potential.
- D. RSN 01 46 00-3, Quality Control Supervisor Resume:
1. Designation of authorized individual as the Quality Control Supervisor to develop and manage quality control processes.
 2. Resume of the designated Quality Control Supervisor.
- E. RSN 01 46 00-4, Contractor's Quality Testing Plan:
1. Address methods, procedures, frequencies, and scheduling for performing quality testing as required in other specification sections.
- F. RSN 01 46 00-5, Summary of Test Results:
1. Summary of all test results submitted monthly.

1.04 QUALITY CONTROL PHASES

- A. Preparatory Phase:
1. Performed well enough in advance and prior to the beginning of work and as detailed below:
 - a. Notify the COR, in writing, 7 days in advance for beginning required actions of the preparatory phase.
 - b. Review all approved submittals and identify missing information or required submittals.
 - c. Review of each paragraph of applicable specifications and references.
 - d. Review of contract plans.
 - e. Check to ensure that all materials and equipment have been tested, submitted, and approved.
 - f. Check to ensure that provisions have been made to provide required control inspection and testing.
 - g. Examination of the work area to ensure that all required preliminary work has been completed.
 - h. Physical examination of required materials, equipment, and sample work to ensure that they are on hand and conform to the approved shop drawings or submitted data.
 - i. Review of appropriate job hazard analysis.

- j. Discussion of procedures for constructing the work including the review of repetitive deficiencies.
 - k. Arrange for quality control testing if required.
 - 2. Shall include a “Preparatory Meeting” conducted by the Quality Control Manager and shall be attended by the superintendent, other quality control personnel, the foreman responsible for the definable feature and COR.
 - a. Results of the preparatory phase actions shall be discussed in the Preparatory Meeting and shall be documented by separate minutes prepared by the Quality Control Manager and attached to the Contractor’s Daily Report.
 - a) For meeting relating to concrete batch plant or concrete placing, include the following attendees at a minimum:
 - i. Concrete forming, placing, and finishing onsite supervisor(s); Contractor or subcontractor(s) employee as applicable.
 - ii. Batch plant operator.
 - iii. Concrete pump subcontractor onsite supervisor, if applicable.
 - iv. Contractor QC and Government QA testing personnel.
- B. Initial Phase:
- 1. Accomplished at the beginning of a definable feature of work.
 - 2. Verify that control for work developed in the “Preparatory Meeting” is implemented and the work is performed to the level of workmanship required.
 - 3. Performed as detailed below:
 - a. Notify the COR, in writing, 7 days in advance of beginning required actions of the initial phase.
 - b. Review minutes of “Preparatory Meeting.”
 - c. Check preliminary work.
 - d. Verify adequacy of controls to ensure full contract compliance.
 - e. Establish levels of workmanship.
 - f. Resolve all differences.
 - g. Review of safety information shall include compliance with the safety program and job hazard analysis. Review the job hazard analysis with workers.
 - 4. Shall include an “Initial Phase Meeting” conducted by the Quality Control Manager and shall be attended by the superintendent, other quality control personnel, the foreman responsible for the definable feature and COR.
 - 5. Results of the initial phase actions shall be discussed in the Initial Phase Meeting and shall be documented by separate minutes prepared by the Quality Control Manager and attached to the Contractor’s Daily Report.

6. The initial phase shall be repeated for each new crew on the project site, or when the established level of workmanship is not being met.

C. Follow-up Phase:

1. Daily checks shall be performed to ensure continuing compliance with contract requirements, including safety and control testing, until completion of the feature of work.
2. Checks shall be made a matter of record in the Contractor's Quality Control documentation.
3. Final follow-up checks shall be conducted, and all deficiencies corrected prior to the start of additional features of work.
4. Quality control personnel shall continually refer back to the standards set in the "Preparatory and Initial Phases."

1.05 QUALIFICATIONS

- A. Designate employee as Quality Control Supervisor.
- B. Quality Control Supervisor: Experienced quality control supervisor with minimum of 2 years' experience in charge of quality control for construction similar in nature to that required by this contract, with authority to stop work if necessary.

1.06 TESTING ACCEPTANCE

- A. Acceptance of material shall be based on the passing of both quality assurance testing and quality control testing.
- B. Government quality assurance testing results will prevail in the event of a discrepancy between Contractor's test results and Government test results.

PART 2 PRODUCTS

Not Used

PART 3 EXECUTION

3.01 QUALITY ASSURANCE

- A. During the course of the work, the Government may perform quality assurance tests:
 1. Tests performed by the Government will be used to ensure compliance with contract requirements and not as a replacement for specified Contractor quality testing.
 2. Upon request, make measuring and testing devices available for use by the Government for verification tests.

B. Contractor's Quality Control Supervisor:

1. The Contractor's Quality Control Supervisor shall be at the project site during work activities and shall have complete understanding of all aspects of the work being performed.
2. The effectiveness of the Contractor's Quality Control Supervisor in prosecuting the Quality Control Program will be subject to continued review and approval by the CO.
3. Should the Contractor's Quality Control Supervisor's efforts be deemed insufficient the Contractor may be required to replace the Quality Control Supervisor at no additional cost to Government.

C. Contractor's Quality Control Program: Effectiveness of the Contractor's Quality Control Program will be subject to continued review and approval by the CO.

END OF SECTION

SECTION 01 46 20
TESTING AGENCY SERVICES

PART 1 GENERAL

1.01 MEASUREMENT AND PAYMENT

- A. Cost: Include in prices offered in the Price Schedules for other items of work.

1.02 REFERENCE STANDARDS

- A. ASTM International (ASTM)

- | | | |
|----|------------|--|
| 1. | ASTM C1077 | Agencies Testing Concrete and Concrete Aggregates for Use in Construction and Criteria for Testing Agency Evaluation |
| 2. | ASTM D3666 | Minimum Requirements for Agencies Testing and Inspecting Road and Paving Materials |
| 3. | ASTM D3740 | Minimum Requirements for Agencies Engaged in the Testing and/or Inspection of Soil and Rock as Used in Engineering Design and Construction |
| 4. | ASTM E329 | Agencies Engaged in Construction Inspection, Testing, or Special Inspection |
| 5. | ASTM E543 | Agencies Performing Nondestructive Testing |

1.03 SUBMITTALS

- A. In accordance with Section 01 12 16 - Work Sequence and Section 01 33 00 - Submittals.
- B. RSN 01 46 20-1, Qualifications and Testing Agency Service Plan:
1. Testing Agency Services Plan:
 - a. Names of agencies to perform sampling and testing.
 - b. Agency accreditation to perform specified testing or agency qualifications to perform specified testing.
 - c. Resumes of personnel performing tests.
 - d. Testing methods, procedures, frequency, sequencing and scheduling.
 - e. Samples of report forms.
 2. No change to the approved plan may be made without written concurrence by the COR.

- C. RSN 01 46 20-2, Initial Contractor Quality Test Results:
 - 1. Concurrent submission to Contractor and Government by laboratory.
 - 2. Notify COR within 24 hours if test fails.
- D. RSN 01 46 20-3, Final Contractor Quality Testing Results:
 - 1. Contractor submits checked results to Government.

1.04 QUALIFICATIONS

- A. Testing Agency Organization:
 - 1. Agencies testing construction materials: Meet requirements of ASTM E329.
 - 2. Agencies testing concrete and concrete aggregates: Meet requirements of ASTM C1077.
 - 3. Agencies testing soil and rock: Meet requirements of ASTM D3740.
 - 4. Agencies testing bituminous paving materials: Meet requirements of ASTM D3666.
 - 5. Agencies engaged in nondestructive testing: Meet requirements of ASTM E543.
 - 6. Other testing: Construction industry standard.
- B. Equipment: Calibrate measuring devices, laboratory equipment, and instruments at established intervals.

PART 2 PRODUCTS

Not Used

PART 3 EXECUTION

3.01 CONTRACTOR QUALITY TESTING

- A. Employ accredited independent agency to perform sampling, testing, and reporting.
- B. Include test requirements of applicable codes.

3.02 GOVERNMENT QUALITY ASSURANCE

- A. Testing Agency Personnel: Effectiveness in prosecuting the required testing will be subject to continued review and approval by the CO.
- B. Testing Agency Service Plan: Effectiveness will be subject to continued review and approval by the CO.

- C. Should the Testing Agency's efforts be deemed insufficient or should the Testing Agency's test results be determined to be inaccurate or unreliable, the Contractor may be required to replace the Testing Agency at no additional cost to the Government.
- D. During the course of the work, Government may perform quality assurance tests. Tests performed by Government will be used to ensure compliance with contract requirements and not as replacement for specified Contractor quality testing.
 - 1. Upon request, make measuring and testing devices available for use by Government for verification tests.

END OF SECTION

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SECTION 01 51 00
TEMPORARY UTILITIES

PART 1 GENERAL

1.01 MEASUREMENT AND PAYMENT

- A. Cost: Include in prices offered in the Price Schedules for other items of work.

1.02 REFERENCE STANDARDS

- A. Institute of Electrical and Electronics Engineers (IEEE)
1. IEEE C2 National Electrical Safety Code

1.03 TEMPORARY ELECTRICITY

- A. Provide electric power required for construction.
- B. Provide generators, transmission lines, distribution circuits, transformers, and other electrical equipment and facilities required for obtaining power and distributing power to points of use.
- C. Comply with IEEE C2 clearances and spacing for temporary communications and supply lines.

1.04 TEMPORARY WATER

- A. Non-potable water is available and may be accessed by the Contractor under the following conditions:
1. The Contractor is responsible for connecting to the facility non-potable water line located in the southwest area of the facility property. The non-potable water line is labeled "PW" in Figure C9-2026 provided in Section 52 00 00.
 2. The Contractor shall verify exact location and requirements of tie-in with the COR prior to commencing work.
 3. The Contractor shall tap into the non-potable line at the location determined by the COR and install an approved backflow preventer and water meter prior to use and remove after construction. Meter shall be visible for inspection by Government personnel.
 4. All non-potable water used by the Contractor from the facility system shall flow through the installed backflow preventer and meter.
 5. The Contractor shall limit total non-potable water use rate to 10 gpm maximum continuous.
 6. Notify COR 7 days before withdrawing water.

- B. Use water which meets reference standard and code requirements for water used in concrete, grouting, commissioning, and all other work requiring specific water quality standards.
- C. Water discharged by the contractor shall meet the conditions of the Facility Discharge Permit, see Section 51 46 00.
- D. Provide means of withdrawing and conveying water to points of use.

1.05 SANITARY FACILITIES

- A. Provide sanitary facilities for Contractor personnel.

PART 2 PRODUCTS

Not Used

PART 3 EXECUTION

3.01 REMOVAL

- A. Remove temporary equipment and facilities upon completion of work under this contract.

END OF SECTION

SECTION 01 55 00
VEHICULAR ACCESS AND PARKING

PART 1 GENERAL

1.01 MEASUREMENT AND PAYMENT

- A. Cost: Include in prices offered in the Price Schedules for other items of work.

1.02 REFERENCE STANDARDS

- A. Bureau of Reclamation (Reclamation)
1. RSHS Reclamation Safety and Health Standards, including revisions posted at:
<https://www.usbr.gov/safety/rshs/index.html>

1.03 REGULATORY REQUIREMENTS

- A. Meet requirements established by jurisdictional authority for use of existing roadways and haul routes; including seasonal or other limitations or restrictions, payment of excess size and weight fees, and posting of bonds conditioned upon repair of damage.
- B. Comply with applicable regulations for haul routes over public highways, roads, and bridges.
- C. Plans shall be prepared by a licensed engineer.

PART 2 PRODUCTS

2.01 MATERIALS

- A. Materials to maintain and repair existing roadways, parking areas, and haul routes: In accordance with requirements of jurisdictional authority.
- B. Materials to construct, maintain, and repair temporary roadways, parking areas, and haul routes: As submitted and approved.
- C. Materials to maintain roadways and parking areas constructed under this contract and used by the Contractor for construction work: In accordance with design requirements for construction of those roadways and parking areas.

PART 3 EXECUTION

3.01 EXAMINATION

- A. Investigate condition of available public or private roads for clearances, restrictions, bridge-load limits, bond requirements, and other limitations that affect or may affect access and transportation operations to and from the jobsite.

3.02 ESTABLISHED ROADWAYS AND PARKING AREAS

- A. Established roadways and parking areas are available for the Contractor's use in accordance with local jurisdiction's requirements.
- B. Designated existing onsite access roads may be used for construction traffic as accepted by COR. Tracked vehicles are not allowed.
- C. Do not allow large construction vehicles or construction equipment in established parking areas.

3.03 TEMPORARY ROADWAYS AND PARKING AREAS

- A. Temporary Access Roadways:
 - 1. Construct temporary all-weather surfaced roadways for access from public thoroughfares to serve construction area, of a width and load-bearing capacity to provide safe travel for construction purposes.
 - 2. Work shall remain within the permitted width of the right-of-way and easements established by the Government.
- B. Parking Areas:
 - 1. Construct temporary parking areas to accommodate use of construction personnel.
 - 2. Provide additional offsite parking when site space is not adequate.
- C. Parking Area Modifications: Show parking lot modifications as part of Land Use and Landscape Rehabilitation Plan in Section 01 14 10 - Use of Site.

3.04 TEMPORARY HAUL ROUTES

- A. Perform work on rights-of-way and easements established by the Government as necessary to construct and maintain roads, bridges, or drainage structures required for establishment and use of haul routes for construction operations.
- B. Use existing designated available public highways, roads, or bridges as haul routes subject to applicable local regulations and as designated on the drawings.
- C. Minimize interference with or congestion of local traffic.

- D. Provide barricades, signage, flaggers, and other necessary precautions for safety of the public where haul routes cross public highways or roads.
- E. No construction or haul roads permitted outside the Contractor Use Areas designated on the drawings. Temporary roadways may be constructed, provided these roadways are removed prior to completion of work and terrain is returned to prescribed lines and original appearance.

3.05 MAINTENANCE

- A. Maintain roadways, parking areas, and haul routes in a compacted, smooth condition.
- B. Maintain roadbed, side slopes, structures, and surfacing of roads and parking areas until completion and acceptance of all work under this contract. Defer until latest practicable date within specified completion period, placement of surfacing on roads or parking areas subject to heavy and deteriorating use by the Contractor's construction operations or equipment.
- C. Maintain surfacing of gravel-surfaced roads and parking areas in a smooth condition until completion and acceptance of all work under this contract.
- D. Snow removal for convenience of the Contractor or to facilitate work operations of the Contractor is considered to be normal required maintenance.

3.06 REPAIR

- A. Promptly repair ruts, broken pavement, potholes, low areas with standing water, and other deficiencies to maintain road surfacing and drainage in original or specified condition.

3.07 REMOVAL AND RESTORATION

- A. Remove materials used to construct temporary roadways, parking areas, pads, and haul routes. Recycle salvageable materials.
- B. Remove temporary underground work, culverts, and compacted materials to a depth of 2 feet, fill, and regrade site as specified.
- C. Restore to pre-construction condition including seeding in accordance with approved design.
- D. Restore established roadways and parking areas to pre-work conditions.

END OF SECTION

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SECTION 01 56 10
PROTECTION OF EXISTING INSTALLATIONS

PART 1 GENERAL

1.01 MEASUREMENT AND PAYMENT

- A. Cost:
 - 1. Include in prices offered in the Price Schedules for other items of work except as specified.
 - 2. Costs for repair of installations damaged by the Contractor's operations are the Contractor's responsibility.

1.02 SUBMITTALS

- A. In accordance with Section 01 33 00 - Submittals.
- B. RSN 01 56 10-1, Plan for Protecting Existing Installations.
- C. RSN 01 56 10-2, Initial Construction Site Recording.
- D. RSN 01 56 10-3, Post Construction Site Recording.

1.03 PROJECT CONDITIONS

- A. Drawings included in these specifications show items of existing materials and equipment but may not show all equipment and materials existing at the jobsite.
- B. Obtain the location of buried pipe, cable, ground mat, embedded conduit, and other buried items before performing excavation.

PART 2 PRODUCTS

Not Used

PART 3 EXECUTION

3.01 EXAMINATION

- A. Photograph and video record existing project conditions prior to mobilization:
 - 1. Include interior and exterior views of each component in the vicinity of the work taken from four orthogonal directions to show the complete system.

2. Include condition of available public or private roads for clearances, restrictions, bridge-load limits, and other limitations that affect or may affect access and transportation operations to and from jobsite.
 3. Initial construction site conditions shall be recorded to establish existing conditions of site access, site features, roads, structures, utilities, vegetation, stockpiles, stored materials, and similar conditions that may be vulnerable to damage or deterioration during construction.
 4. Site conditions shall be recorded to establish post construction conditions. The recording shall be made of the same locations identified in the initial recording for site access, site features, roads, structures, utilities, vegetation, stockpiles, stored materials, and similar conditions.
- B. Provide a minimum of three business days' notice to the COR. COR shall be present during documentation.
- C. Provide close up or detail views of significant damage or defects to the existing facilities. Documentation of existing conditions shall be used as the standard for restoration of modified facilities and for determination of subsequent damage or other impacts to existing facilities during construction.
1. Factual presentation to maximize detail while providing context for surroundings.
 2. Photos shall be in focus and high resolution with minimum distortion.
- D. Use a digital video recorder, 8 megapixel and 1080p minimum, to produce digital electronic photo files:
1. Digital files shall be in a format acceptable to the COR.
 2. Video shall include an audio track describing the conditions, including date, time, and people present. Narration shall include location, view compass directions, and observations throughout the video.

3.02 PROTECTION

- A. Provide protection for personnel and existing facilities from harm due to the Contractor's operations. Protection shall be subject to approval of the Government.
- B. Arrange protective installations to permit operation of existing equipment and facilities by the Government while work is in progress.

3.03 ENCLOSURES

- A. Provide enclosures to confine the Contractor's operations to immediate work area.
- B. Enclosures shall be subject to approval of the Government.

3.04 REMOVAL OF PROTECTIVE INSTALLATIONS

- A. Remove protective installations after purpose has been served. Materials furnished by the Contractor to provide protection remain property of the Contractor.

3.05 REPAIR

- A. Repair, at Contractor's expense, damage to existing installations due to Contractor's operations or Contractor's failure to provide adequate protection. At the Government's option, damage may be repaired by the Government and the Contractor shall be back charged repair costs.

END OF SECTION

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SECTION 01 57 15
UTILITY LINE INVESTIGATIONS

PART 1 GENERAL

1.01 MEASUREMENT AND PAYMENT

- A. Cost: Include in prices offered in the Price Schedules for other items of work.

1.02 SUBMITTALS

- A. In accordance with Section 01 33 00 - Submittals.
- B. RSN 01 57 15-1, Locating Utility Lines Plan:
1. Detailed plans and procedures for locating known and unknown existing utility lines.
- C. RSN 01 57 15-2, Permits:
1. Copy of utility lines owner's work permits.
- D. RSN 01 57 15-3, Utility Lines Information:
1. Include the following information for each utility line:
 - a. Owner company name, address, and phone number.
 - b. Utility line crossing location along work alignment.

1.03 REGULATORY REQUIREMENTS

- A. Conform to state ordinances, rules, and regulations for operations affecting utilities.
- B. Obtain permits, at Contractor's expense, for work on utility owners' rights-of-way.
- C. Have operations approved and inspected by appropriate utility agency personnel.

1.04 PROJECT CONDITIONS

- A. Unknown existing utility lines may cross the work areas.
- B. The Government does not represent that the locations of known existing utilities shown on the drawings are exact. It is the Contractor's responsibility to determine the actual location of and make provisions for known and unknown utilities.
- C. Ensure that each utility line is in service at all times as required by each utility owner.

PART 2 PRODUCTS

Not Used

PART 3 EXECUTION

3.01 GENERAL

- A. Obtain locations of utility lines in work areas before beginning work.
- B. Contact applicable State and utility line locating services to locate unknown existing utility lines.
- C. Contact owners of each utility line and obtain required construction permits.
- D. Coordinate with each utility line owner and schedule construction to adhere to each owner's in service, allowable out of service, and crossing requirements during construction.
- E. Determine elevations, diameters, and materials of each existing utility line.
- F. No excavation is permitted within 10 feet of gas lines when in service without written approval from gas company.

3.02 REPAIR

- A. Repair, at Contractor's expense, damage to existing utility lines to the satisfaction of the utility owner and the Government. At the Government's option, damage may be repaired by the Government and the Contractor shall be back charged the repair costs.

END OF SECTION

SECTION 01 57 20
ENVIRONMENTAL CONTROLS

PART 1 GENERAL

1.01 MEASUREMENT AND PAYMENT

- A. Cost:
1. Include in prices offered in the Price Schedules for other items of work except as specified.
 2. Costs for damages and work stoppage are the Contractor's responsibility.

1.02 REFERENCE STANDARDS

- A. Bureau of Reclamation (Reclamation)
1. RSHS Reclamation Safety and Health Standards, including revisions posted at <https://www.usbr.gov/safety/rshs/index.html>

1.03 REGULATORY REQUIREMENTS

- A. Comply with Federal, State, and local laws and regulations.
- B. Comply with RSHS.
- C. Conform to most stringent requirement in cases of conflict between specifications, regulatory requirements, and RSHS.
- D. Contractor shall be responsible for damages resulting from dust originating from Contractor operations in accordance with clause at FAR 52.236-7, Permits and Responsibilities.
- E. The CO may stop construction activity in violation of Federal, State, or local laws and additional expenses resulting from work stoppage will be responsibility of Contractor.

1.04 DUST CONTROL

- A. Provide dust control and abatement during performance of work. Apply at the beginning and mid shift when visible dust is present.
- B. Provide labor, equipment, and materials, and use efficient methods to prevent dust nuisance or damage to persons, property, or activities, including, but not limited to, crops, orchards, cultivated fields, wildlife habitats, dwellings and residences, agricultural activities, recreational activities, traffic, and similar conditions.

1.05 AIR POLLUTION CONTROL

- A. Use reasonably available methods and devices to prevent, control, and otherwise minimize atmospheric emissions or discharges of air contaminants.
- B. Do not operate equipment and vehicles that show excessive exhaust gas emissions until corrective repairs or adjustments reduce such emissions to acceptable levels.

1.06 NOISE CONTROL

- A. Equipment mufflers required.

1.07 LIGHT CONTROL

- A. Direct stationary floodlights shall shine downward at an angle less than horizontal.
- B. Shield floodlights so that floodlights are not a nuisance to surrounding areas.
- C. Direct lighting so that residences are not in direct beam of light.
- D. Correct lighting control problems when they occur.

PART 2 PRODUCTS

Not Used

PART 3 EXECUTION

Not Used

END OF SECTION

SECTION 01 57 30
WATER POLLUTION CONTROL

PART 1 GENERAL

1.01 MEASUREMENT AND PAYMENT

- A. Cost: Include in prices offered in the Price Schedules for other items of work.

1.02 REFERENCE STANDARDS

- A. Bureau of Reclamation (Reclamation)
1. RSHS Reclamation Safety and Health Standards, including revisions posted at <https://www.usbr.gov/safety/rshs/index.html>
- B. Code of Federal Regulations (CFR)
1. 40 CFR, Part 112 Oil Pollution Prevention
- C. Public Law
1. Sections 311, 402, and 404 Clean Water Act (Public Law 92-500, as amended)

1.03 SUBMITTALS

- A. In accordance with Section 01 33 00 - Submittals.
- B. RSN 01 57 30-1, Pollution Prevention Plan:
1. As required by the stormwater permit for discharges from construction sites.
 2. Include copy of permits.

1.04 REGULATORY REQUIREMENTS

- A. Construction Safety Standards: Comply with sanitation and potable water requirements of section 7 of RSHS.
- B. Laws, Regulations, and Permits:
1. Perform construction operations to comply, and ensure subcontractors comply, with:
 - a. Applicable Federal, State, and local laws, orders, regulations, and Water Quality Standards concerning control and abatement of water pollution; and terms and conditions of applicable permits issued by permit issuing authority.

- b. If conflict occurs between Federal, State, and local laws, regulations, and requirements, the most stringent shall apply.

C. Contractor Violations:

1. If noncompliance should occur, immediately (verbally) report noncompliance to the CO. Submit specific written information within 2 days.
2. Violation of applicable Federal, State, or local laws, orders, regulations, or Water Quality Standards may result in the CO stopping site activity until compliance is ensured.
3. Contractor shall not be entitled to extension of time, claim for damage, or additional compensation by reason of such a work stoppage.
4. Corrective measures required to bring activities into compliance shall be at Contractor's expense.

1.05 REQUIRED PERMITS

A. Stormwater Discharge Permit Associated Within a Construction Site:

1. Notice of Intent (NOI):
 - a. Both Government and Contractor shall sign the NOI to obtain coverage under a stormwater general permit to control stormwater discharges from construction site as required under section 402 of the Clean Water Act (Public Law 92-500, as amended).
2. Pollution Prevention Plan:
 - a. Prepare a Pollution Prevention Plan as required by the permit.
 - b. Comply with terms and conditions to obtain and maintain this stormwater discharge permit.
3. Monitoring and Water Treatment:
 - a. Provide monitoring and water treatment, if necessary, to achieve compliance with applicable Water Quality Standards and the Facility Discharge Permit (Section 51 46 00).
 - b. Provide the recordkeeping required by the stormwater discharge permit associated with construction activity.

1.06 CONTRACTOR RESPONSIBILITIES

A. Permits:

1. Permits obtained by Government are exceptions to the clause at FAR 52.236-7, Permits and Responsibilities, which requires Contractor to obtain necessary licenses and permits.

- B. Monitoring:
 - 1. Conduct monitoring in order to meet the requirements of the permits which may include:
 - a. Sampling,
 - b. Site inspections, and
 - c. Required laboratory tests to determine effluent characteristics.
- C. Facility process water, including raw water from wells and water stored in source water storage tanks (SWST), may contain perfluoroalkyl and polyfluoroalkyl substances (PFAS) compounds and shall not be released on the ground or discharged to the sanitary collection system.
- D. Reporting Results: The Government will report required monitoring results to appropriate agencies. The section 402 wastewater discharge permit has specific reporting requirements for the permittee for noncompliance when effluent limitations are exceeded.
- E. Recordkeeping: Retain records and data required by permits.

PART 2 PRODUCTS

Not Used

PART 3 EXECUTION

3.01 POLLUTION CONTROLS

- A. Control pollutants by use of sediment and erosion controls, wastewater and stormwater management controls, construction site management practices, and other controls including State and local control requirements.
- B. Sediment and Erosion Controls:
 - 1. Establish methods for controlling sediment and erosion which address vegetative practices, structural control, silt fences, straw dikes, sediment controls, and operator controls as appropriate.
 - 2. Institute stormwater management measures as required, including velocity dissipators, and solid waste controls which address controls for building materials and offsite tracking of sediment.
- C. Wastewater and Stormwater Management Controls:
 - 1. Pollution prevention measures:
 - a. Use methods of dewatering, unwatering, excavating, or stockpiling earth and rock materials which include prevention measures to control silting and erosion to intercept and settle runoff of sediment-laden waters.

- b. Prevent wastewater from general construction activities from entering flowing or dry watercourses without the use of approved turbidity control methods.
- c. Divert stormwater runoff from upslope areas away from disturbed areas.

D. Construction Site Management:

- 1. Contractor construction operations:
 - a. Perform construction activities by methods to prevent entrance, or accidental spillage, of solid matter, contaminants, debris, or other pollutants or wastes into streams, flowing or dry watercourses, lakes, wetlands, reservoirs, or underground water sources.
 - 1) Pollutants and wastes include, but are not restricted to: refuse, garbage, cement, sanitary waste, industrial waste, hazardous materials, radioactive substances, oil and other petroleum products, aggregate processing tailings, mineral salts, and thermal pollution.
- 2. Stockpiled or deposited materials: Do not stockpile or deposit excavated materials or other construction materials, near or on, stream banks, lake shorelines, or other watercourse perimeters where they can be washed away by high water or storm runoff or can encroach upon the watercourse.

END OF SECTION

SECTION 01 57 50
TREE AND PLANT PROTECTION

PART 1 GENERAL

1.01 MEASUREMENT AND PAYMENT

- A. Cost:
 - 1. Include in prices offered in the Price Schedule for other items of work except as specified.
 - 2. Costs for repair or treatment of injured vegetation and replacement of trees or shrubs are the Contractor's responsibility.

1.02 SUBMITTALS

- A. In accordance with Section 01 33 00 - Submittals.
- B. RSN 01 57 50-1, Protection Plan:
 - 1. Description of protective barriers or other methods used to protect vegetation from damage or injury caused by construction operations.

PART 2 PRODUCTS

2.01 REPLACEMENT TREES AND SHRUBS

- A. Species: Same as removed tree or shrub or other approved species.
- B. Size: Same size as removed tree or shrub, or maximum practicable size that can be planted and sustained in the particular environment.

PART 3 EXECUTION

3.01 PRESERVATION AND PROTECTION

- A. Preserve natural landscape and preserve and protect existing vegetation not required or otherwise authorized to be removed.
- B. Submit requests to remove vegetation not specifically required to be removed to the COR.
- C. Conduct operations to prevent unnecessary destruction, scarring, or defacing of natural surroundings in the vicinity of the work.

- D. Move crews and equipment within the rights-of-way and over routes provided for access to the work in a manner to prevent damage to grazing land, crops, or property.
- E. Protect vegetation from damage or injury caused by construction operations, personnel, or equipment by the use of protective barriers or other methods.
- F. Minimize, to the greatest extent practicable, clearings and cuts through vegetation. Irregularly shape authorized clearings and cuts to soften undesirable aesthetic impacts.
- G. Do not use trees for anchorages except in emergency cases.
 - 1. For such use, wrap the trunk with a sufficient thickness of approved protective material before rope, cable, or wire is placed.
 - 2. Submit requests to use trees for anchorage, except for emergencies. Include description of protective material.
- H. Use safety ropes where tree climbing is necessary; do not use climbing spurs.

3.02 REPAIR, TREATMENT, OR REPLACEMENT

- A. The Contractor is responsible for injuries to vegetation caused by Contractor operations, personnel, or equipment.
- B. Employ the services of an experienced arborist or licensed tree surgeon to direct repair, treatment, and replacement of injured vegetation. Submit qualifications of experienced arborist or licensed tree surgeon.
- C. Repair or treat injured vegetation without delay and as recommended by and under direction of an experienced arborist or licensed tree surgeon.
- D. Remove and dispose of trees or shrubs that are injured beyond saving.
- E. Replace removed tree or shrub with approved tree or shrub:
 - 1. For a period of 1 year, guy as required, water, and maintain replacement trees and shrubs.
 - 2. Remove and replace replacement trees or shrubs that die within the 1-year period. Maintain such replacements for a period of 1 year from the date of replacement.

END OF SECTION

SECTION 01 57 90

PRESERVATION OF HISTORICAL AND ARCHAEOLOGICAL DATA

PART 1 GENERAL

1.01 MEASUREMENT AND PAYMENT

- A. Cost: Include in prices offered in the Price Schedules for other items of work.

1.02 DEFINITIONS

- A. Cultural Resources: Includes prehistoric, historic, architectural, and traditional cultural properties. These include, but are not limited to, human skeletal remains, archaeological artifacts, records, and material remains related to such property.
- B. Cultural Items: Native American cultural items (i.e., funerary objects, sacred objects, objects of cultural patrimony, or human remains) for which protection is prescribed under the Native American Graves Protection and Repatriation Act (NAGPRA) - Public Law 101-601; 104 Stat. 3042, Section 3(d); and 43 CFR Part 10.4.
- C. Human Remains: Physical remains of the body of a person.
- D. Funerary Objects: Native American items that, as part of death rite or ceremony of a culture, are reasonably believed to have been placed intentionally at time of death or later with or near individual human remains.
- E. Native American: Of, or relating to, a tribe, people, or culture that is indigenous to the United States.
- F. Sacred Objects: Native American items that are specific ceremonial objects needed by traditional Native American religious leaders for the practice of traditional Native American religions by their present-day adherents. These items are specifically limited to objects that were devoted to a traditional Native American religious ceremony or ritual and which have religious significance or function in the continued observance or renewal of such ceremony.
- G. Objects of Cultural Patrimony: Native American items having ongoing historical, traditional, or cultural importance central to the Indian tribe itself, rather than property owned by an individual tribal member. These objects are of such central importance that they may not be alienated, appropriated, or conveyed by an individual tribal member.

1.03 SUBMITTALS

- A. In accordance with Section 01 33 00 - Submittals.

- B. RSN 01 57 90-1, Alternate Use Area or Borrow Area:
1. When use area or borrow area other than those approved shall be used, submit map showing location of unapproved use or borrow areas for Government approval.

1.04 PROJECT CONDITIONS

- A. Federal legislation provides for protection, preservation, and collection of scientific, prehistoric, historical, and archaeological data, including relics and specimens, which might otherwise be lost due to alteration of terrain as a result of Federal construction projects.
- B. Persons who, without permission, injure, destroy, excavate, appropriate, or remove a historical or prehistoric artifact, object of antiquity, or archaeological resource on public lands of United States are subject to arrest and penalty of law.
- C. Comply with Federal, State, Tribal, and local laws when operating on non-Federal and non-Indian lands.
- D. Discovery of Resources:
1. When Contractor or parties operating or associated with Contractor, in performance of this contract, discover cultural resources in right-of-way (ROW):
 - a. Immediately cease work at that location.
 - b. Verbally notify CO and COR within 2 hours giving location and nature of findings.
 - c. Follow with written confirmation to CO within 12 hours.
 2. Do not disturb or damage cultural resources uncovered during construction activities. Provide cooperation and assistance to preserve findings for removal or other disposition by CO.
 3. Do not resume work in area of discovery until receipt of written notice to proceed from CO.
- E. Where appropriate by reason of discovery, CO may order delays in time of performance or changes in work, or both. When such delays or changes are ordered, an equitable adjustment will be made in contract in accordance with applicable clauses of contract.
- F. Mitigate cultural resources as directed by the CO on lands outside of permanent or construction ROW, including private lands.
1. Coordinate Government cultural resource identifications and inspections.
 2. Obtain permission for Government access in arrangements for use of lands outside of ROW including private lands for use areas or borrow sources, access routes, and areas of disturbance.
- G. Insert this section in subcontracts which involve performance of work on jobsite terrain.

- H. Obtain Government clearance before disturbing lands outside of ROW in accordance with Section 01 14 10 - Use of Site.

PART 2 PRODUCTS

Not Used

PART 3 EXECUTION

3.01 GENERAL

- A. Fence exclusion zones as accepted by COR.

END OF SECTION

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SECTION 01 60 00

PRODUCT REQUIREMENTS

PART 1 GENERAL

1.01 MEASUREMENT AND PAYMENT

- A. Cost:
1. When Price Schedules includes a separate item for furnishing a material, include cost of furnishing, hauling, storing, and handling in the price offered in Price Schedules for the item.
 2. When Price Schedules does not include a separate item for furnishing a material, include cost of furnishing, hauling, storing, and handling in the price offered in Price Schedules for work for which the material is required.

1.02 DEFINITIONS

- A. Essential Characteristics: As used in these specifications, the term “essential characteristics” is synonymous with the term “salient characteristics.”
- B. Salient Characteristics: Those qualities of an item that are essential to ensure that the intended use of the item can be satisfactorily realized.

1.03 REFERENCE STANDARDS

- A. American Society of Mechanical Engineers (ASME)
1. ASME B1.1 Unified Inch Screw Threads, (UN and UNR Thread Form)
 2. ASME B1.20.1 Pipe Threads, General Purpose, Inch
- B. Bureau of Reclamation (Reclamation)
1. RSHS Reclamation Safety and Health Standards, including revisions posted at:
<https://www.usbr.gov/safety/rshs/index.html>

1.04 DELIVERY, STORAGE, AND HANDLING

- A. Transport and handle manufactured products in accordance with manufacturer's instructions.
- B. Store and protect manufactured products in accordance with manufacturer's instructions and RSHS. Obtain instructions from the manufacturer before delivery of materials to jobsite. Maintain a copy of instructions at jobsite.

- C. Protect materials from adverse effects of moisture, sunlight, ultraviolet light, or weather during storage at jobsite.
- D. Remove and replace damaged items with new items.
- E. Store curing compounds, sealants, adhesives, paints, coatings, sealers, joint compounds, grouts, and similar products at the temperature and environmental conditions recommended by manufacturer.

1.05 MAINTENANCE

- A. Extra Materials:
 - 1. Furnish additional maintenance materials specified as “extra materials” in the specifications. Provide maintenance material identical to installed material and provide from the same manufacturer's production lot as installed material.
 - 2. Package extra materials for storage and label with complete product identification on packaging.
 - 3. Deliver extra materials to the Government at jobsite and place in storage as approved by the COR.

PART 2 PRODUCTS

2.01 MATERIALS

- A. Provide type and quality described in these specifications. Make diligent effort to procure specified materials from all available sources.
- B. Furnish new materials conforming to referenced standards unless otherwise specified.
 - 1. References to equipment, material, articles, or patented processes by trade name, make, or catalog number, shall be regarded as establishing a standard of quality and shall not be construed as limiting competition. The Contractor may, at its option, use equipment, material, article, or process that, in the judgment of the CO, is equal to that named in the specifications, unless otherwise specified.
- C. For materials not covered by these or referenced specifications, furnish materials of standard commercial quality.
- D. If materials to be used deviate from or are not covered by recognized specifications and standards, submit, for approval, justification for and exact nature of the deviation, and complete specifications for materials proposed for use.
- E. Make parts accurately to standard gauge where possible.
 - 1. Use unified screw threads conforming to ASME B1.1 or B1.20.1 for threads, including but not limited to those of bolts, nuts, screws, taps, pipes, and pipefittings.

- 2. For internal connections only, the Contractor may deviate from ASME standards, provided a complete set of taps and dies are furnished as required to facilitate repair or replacement.
- F. Permanently mark fasteners with a symbol identifying the manufacturer and with symbol(s) indicating grade, class, type, and other identifying marks in accordance with reference or applicable standard.

2.02 WORKMANSHIP

- A. Accurately manufacture and fabricate materials in accordance with best modern practice and requirements of these specifications, notwithstanding minor errors or omissions therein.
- B. Use liberal factors of safety and adequate shock-absorbing features in designs, especially for parts subjected to variable stress or shock, including alternating or vibrating stress or shock.
- C. Include provisions which prevent components from loosening for shock-absorbing features and parts subject to vibration.

PART 3 EXECUTION

3.01 INSTALLATION

- A. Install products in accordance with manufacturer's recommendations unless otherwise specified.

3.02 GOVERNMENT CONTRACT FIELD QUALITY ASSURANCE

- A. Final inspection and acceptance of materials shall be made only at the jobsite after installation and testing.

END OF SECTION

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SECTION 01 74 00
CLEANING AND WASTE MANAGEMENT

PART 1 GENERAL

1.01 MEASUREMENT AND PAYMENT

- A. Cost:
1. Include in prices offered in the Price Schedules for other items of work except as specified.
 2. Cost of environmental site assessments are the Contractor's responsibility.

1.02 DEFINITIONS

- A. Hazardous waste: Defined as hazardous by 40 CFR 261.3; or by other Federal, State, or local laws or regulations.

1.03 REFERENCE STANDARDS

- A. Bureau of Reclamation (Reclamation)
1. RSHS Reclamation Safety and Health Standards, including revisions posted at <https://www.usbr.gov/safety/rshs/index.html>
- B. Code of Federal Regulations (CFR)
1. 40 CFR 261.3 Definition of Hazardous Waste
 2. 49 CFR 171-179 Transportation - Hazardous Waste Regulations

1.04 SUBMITTALS

- A. In accordance with Section 01 33 00 - Submittals.
- B. RSN 01 74 00-1, Waste Production and Disposal Plan:
1. For each type of waste, list estimated quantity and planned disposal location.
- C. RSN 01 74 00-2, Waste Production and Disposal Records:
1. For each type of waste, list quantity and disposal location.
 2. Include certifications that waste was properly disposed.
 3. Hazardous wastes manifests.

1.05 QUALIFICATIONS

- A. Environmental consultant: Minimum 2 years of experience in conducting environmental site assessments for similar construction (if required).

1.06 REGULATORY REQUIREMENTS

- A. Comply with Federal, State, and local laws and regulations.
- B. Comply with RSHS.
- C. Conform to most stringent requirement in cases of conflict between specifications, regulatory requirements, and RSHS.
- D. Comply with local regulations for presuppression, suppression, and prevention of fires when burning wastes.

1.07 PROJECT CONDITIONS

- A. Report waste materials discovered at jobsite to COR.
 - 1. Cease work in areas where waste may be hazardous until waste materials are investigated by the Government.
 - 2. If waste is hazardous, the CO may order delays in time of performance or changes in work, or both.
 - 3. If such delays or changes are ordered, an equitable adjustment will be made in the contract in accordance with applicable clauses of the contract.

PART 2 PRODUCTS

Not Used

PART 3 EXECUTION

3.01 PROGRESS CLEANING

- A. Keep work and storage areas free from accumulations of waste materials and rubbish.

3.02 FINAL CLEANUP

- A. Remove temporary plant facilities, buildings, concrete footings and slabs, rubbish, unused materials, concrete forms, and other similar materials which are not part of permanent work.
- B. Leave premises "broom clean."

- C. Clean interior and exterior glass surfaces exposed to view; remove temporary labels, stains and foreign substances; polish transparent and glossy surfaces; vacuum carpeted and soft surfaces.
- D. Clean equipment and fixtures to a sanitary condition.
- E. Clean debris from roofs, gutters, downspouts and drainage systems.
- F. Sweep paved areas and rake clean landscaped areas.

3.03 DISPOSAL

- A. Nonhazardous waste materials:
 - 1. Reuse at jobsite or reuse or recycle waste materials removed from jobsite whenever possible.
 - 2. Dispose of materials not reused at jobsite by removal from jobsite.
 - 3. Dispose of nonhazardous waste materials that are not reused or recycled at appropriately permitted disposal facilities.
 - 4. Disposal by Removal:
 - a. Reuse or recycle waste materials whenever possible.
 - b. Dispose of nonhazardous waste materials that are not reused or recycled at appropriately permitted disposal facilities.
- B. Hazardous Waste Disposal:
 - 1. Dispose by removal from jobsite.
 - 2. Recycle hazardous waste whenever possible.
 - 3. Dispose of hazardous waste materials that are not recycled at appropriately permitted treatment or disposal facilities.
 - 4. Transport hazardous waste in accordance with 49 CFR 171-179.
- C. Certification: Certify that wastes are disposed of in accordance with Federal, State, and local regulations.

3.04 RECORDS

- A. Keep records of types and amounts of waste materials produced.
- B. Keep records of waste material disposal.

END OF SECTION

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SECTION 01 78 30
PROJECT RECORD DOCUMENTS

PART 1 GENERAL

1.01 MEASUREMENT AND PAYMENT

- A. Cost: Include in prices offered in the Price Schedules for other items of work.

1.02 SUBMITTALS

- A. In accordance with Section 01 33 00 - Submittals.
- B. RSN 01 78 30-1, Final Drawings:
1. Drawings shall be provided in AutoCAD drawing (.dwg) format and Adobe Acrobat (.pdf) format.
 2. Drawings or output data files produced on a Computer Aided Design and Drafting (CADD) system and furnished to Government in .dwg file format.
 3. Topographical drawings shall contain point files, point groups, and intelligent Civil 3D object entities such as surfaces, alignments, profiles, and cross-sections as required.
 4. Include ASCII point files with a point descriptor glossary.
 5. Deliverables shall be “eTransmit” from with the Civil 3D application, to package .dwg files with all resource files and dependencies including fonts, external references, and images.
 6. Updated with all changes as marked on As-built Drawings to reflect approval comments.
- C. RSN 01 78 30-2, O&M Manuals.
- D. RSN 01 78 30-3, List of Extra Materials.
- E. RSN 01 78 30-4, Warranties.

1.03 RECORD DRAWINGS

- A. Maintain 2 sets of full-size prints of 100 percent design drawings marked to show accurate and complete records of as-built conditions. Keep drawings at the jobsite and mark as work progresses.
1. Mark and dimension to show variations between actual construction and that indicated or specified in contract documents.
 - a. Include buried or concealed construction and utilities.

- b. Include existing items, topographic features, and utility lines revealed during construction which differ from those shown on contract drawings.
- 2. Mark to define construction actually provided where choice of materials or methods is permitted in specifications, or where variations in scope or character of work from that of the original contract are authorized.
- 3. Also known as “As-built Drawings”.
- B. Use standard drafting practice to represent changes and include supplementary notes, legends, and details necessary to clearly portray as-built construction.
- C. Mark drawings in the following colors:
 - 1. Red - Additions.
 - 2. Green - Deletions.
 - 3. Blue - Notations necessary for explanation of markings.
- D. Allow the Government to review the drawings at all times.
- E. Update record drawings to document work or services performed for progress payments in accordance with the clauses at FAR 52.232-27, Prompt Payment for Construction Contracts.
 - 1. At a minimum, meet monthly with COR to review and approve progress made to full-sized record drawings prior to the submittal for progress payment. Meeting location to be approved by COR.
 - 2. Verify with the COR that mark-ups to the drawings are current with the progress of the work prior to submitting invoice for progress payment.

1.04 OPERATION AND MAINTENANCE (O&M) MANUALS

- A. O&M Manuals shall include information required by Government personnel to operate, maintain, and troubleshoot equipment in a safe, effective, and efficient manner including at minimum the following:
 - 1. General:
 - a. Index sheet at front of each manual which provides page or index tab number information for each device or item of equipment in manual.
 - b. Bill of Materials (BOM).
 - c. Manufacturer’s product data sheets and operation and maintenance procedures.
 - d. List of spare parts furnished for this project and list of additional recommended spares not required by these specifications.
 - e. System maintenance schedule and procedures including instructions on dismantling, replacing, installing, calibrating, configuring, and troubleshooting provided equipment.

- f. Description of equipment operation with operating procedures.
 - g. Onsite commissioning test procedures.
 - h. Warranty information.
 - i. SCADA system and communications software connection procedures.
 - j. Performance shop test reports.
 - k. Wiring and cable test reports.
 - l. Operational field test reports.
- B. A Contractor delay resulting from failure to provide timely and acceptable documents will not constitute acceptance of a time extension to the contract.

1.05 EXTRA MATERIALS

- A. List extra materials provided in accordance with the specifications and Section 01 60 00 – Product Requirements.
- B. Provide the list in the following format:

List of Extra Materials				
Specification Section	Material Designation	Material	Manufacturer	Extra Material Item

PART 2 PRODUCTS

Not Used

PART 3 EXECUTION

Not Used

END OF SECTION

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SECTION 01 79 20

TRAINING

PART 1 GENERAL

1.01 MEASUREMENT AND PAYMENT

- A. Cost: Include in prices offered in the Price Schedules for other items of work.

1.02 REFERENCE STANDARDS

- A. Bureau of Reclamation (Reclamation)
1. RSHS Reclamation Safety and Health Standards, including revisions posted at:
<https://www.usbr.gov/safety/>
- B. Institute of Electrical and Electronics Engineers (IEEE)
1. IEEE C2 National Electrical Safety Code (NESC)

1.03 SUBMITTALS

- A. In accordance with Sections 01 33 00 – Submittals.
- B. RSN 01 79 20-1, Training Materials:
1. Syllabus and outline.
 2. Schedule.
 3. Presentation, including handouts, in (.pdf) format.
- C. RSN 01 79 20-2, Training Video:
1. Digital video recording of class in .mp4 format.

1.04 QUALIFICATIONS

- A. Training Staff:
1. Competent with and knowledge of the specific equipment that training is provided for, and the material presented:
 - a. Minimum 5 years' experience on equipment of similar type and function as the equipment.
 - b. Minimum 2 years' experience on the specific type and models of equipment.
 2. Fluent in English.
 3. Instructor qualifications.

1.05 COORDINATION

- A. Coordinate instruction schedule and location with Government.
- B. Training Schedule:
 - 1. Tuesdays through Thursdays, 9:00 am to 2:00 pm.
 - 2. Exclude Mondays, Fridays, Saturdays, Sundays, and Federal holidays from potential training days.

1.06 TRAINING REQUIREMENTS

- A. General:
 - 1. Training provided on a minimum of the following topics, content shall be system and equipment specific:
 - a. Overview of how components interact and function in overall operation of the system.
 - b. Safety and protection.
 - c. How to use and operate components, including control and monitoring fundamentals and theory.
 - d. Understanding equipment feedback.
 - e. Operation and maintenance.
 - f. Testing and troubleshooting.
 - g. Hardware.
 - h. Software.
 - i. Network.
 - j. Programming and altering system.
 - k. Facility alarms if applicable. Includes:
 - 1) Alarms and events.
 - 2) How alarms are generated.
 - 3) Emergency response.
 - l. Record Drawings.
 - m. Operation and maintenance manual.
 - 2. Training Courses Quantity: One, to accommodate Government employees working alternate shifts.
 - 3. Training Course Duration: 2 hours minimum unless specified otherwise.
 - 4. Date: Government will provide at least 14 days advance notice of preferred training dates.

5. Total attendees at each training course: 5 maximum unless otherwise noted.
- B. Goal:
1. Each attendee can perform intended function on completed system.
 2. Operators can interpret feedback from system to operate and run facility.
 3. Engineers, electricians, and controls technicians can modify and maintain system.
 4. Training shall cover items contained in operating and maintenance instructions.
- C. Government has sole ownership of Contractor-provided training material.
- D. Recording of Training Session:
1. Provide audio and color video recording of training (.mp4 format).
 2. Provide necessary equipment to record classroom portions of training.
 3. Ensure projector screen presentations, white board diagrams, and flip chart paper diagrams developed during class are visible and legible on video recording.
 4. Ensure audio for both instructor and class participants are understandable.

PART 2 PRODUCTS

Not Used

PART 3 EXECUTION

3.01 TRAINING

- A. Approved Training Materials:
1. Class Presentation:
 - a. Presentation and handouts.
 - b. In progress Record Drawings.
 - c. O&M Manual for specific equipment.
 - d. Photos with descriptions of onsite installed equipment.
 - e. Government reserves the right to reproduce and modify all training materials.
- B. Where manufacturer instructions are insufficient, develop and provide procedures for system operation.
- C. Provide one copy of bound, hard-copy training materials for each attendee for each session for total of 5 sets.

- D. Government will furnish facilities for training and will retain training materials for future reference.
- E. Location: Onsite for hands-on training and in classroom at facility. Use actual installed equipment for training demonstration.

END OF SECTION

SECTION 01 81 05
GENERAL PERFORMANCE REQUIREMENTS

PART 1 GENERAL

1.1 MEASUREMENT AND PAYMENT

A. Design Baseline Improvements:

1. Payment: Lump-sum price offered in Price Schedule A.
 - a. Includes elements listed under Design Baseline Improvements and elsewhere within the Specifications, including:
 - 1) Yard piping improvements, including:
 - a) Yard piping, manifolds, valving, flow meters, piping insulation.
 - 2) Electrical improvements, including:
 - a) Temperature controlled heat tracing.
 - b) Power supply to flow meters
 - c) Conduit.
 - d) Ductbank.
 - e) Connections to existing utilities and infrastructure.
 - 3) Controls improvements, including:
 - a) Conduit.
 - b) Ductbank.
 - c) Controls cabling from flow meters to termination.
 - d) Termination of controls wiring at interface with existing system.
 - 4) Structural improvements, including:
 - a) Enclosed concrete flow measurement and valve vaults.
 - 5) Restoration of disturbed surfaces.
 - 6) Design reports and documentation, including:
 - a) Basis of Design.
 - b) Standard operating procedures.
 - c) Documentation required for City of Alamogordo approvals and permitting.

- B. Construct Baseline Improvements:
 - 1. Payment: Lump-sum price offered in Price Schedule A.
 - a. Includes elements listed under Design Baseline Improvements and elsewhere within the specifications, including:
 - 1) Construction reports and project record documents.
 - 2) Testing, training, and commissioning.

1.2 DEFINITIONS

- A. CAS: Chemical Abstracts Service.
- B. Raw Water: Water from existing wells. Refer to Section 51 46 02 – Raw Water Quality Data for raw water quality.

1.3 REFERENCE STANDARDS

- A. Use reference standards and codes current at time of award.
- B. American Concrete Institute (ACI)
 - 1. ACI 318 Building Code Requirements for Structural Concrete
- C. American Society of Civil Engineers (ASCE)
 - 1. ASCE 7 Minimum Design Loads for Buildings and Other Structures
- D. American Society of Mechanical Engineers (ASME)
 - 1. ASME A13.1 Scheme for the Identification of Piping Systems
 - 2. ASME B16.1 Standards for Pipes and Fittings
 - 3. ASME B30 American National Standards
 - 4. ASME B31.3 Process Piping
 - 5. ASME B31.9 Building Services Piping
- E. American Society for Testing and Materials (ASTM)
 - 1. ASTM C 547 Mineral Fiber Preformed Pipe Insulation
 - 2. ASTM C 585 Practice for Inner and Outer Diameters of Rigid Thermal insulation for nominal Sizes of Pipe and Tubing (NPS System)
 - 3. ASTM C 1136 Specification for Flexible, Low Permeance Vapor Retarders for Thermal Insulation
 - 4. ASTM D 1598 Test Method for Time-to-Failure of Plastic Pipe Under Constant Internal Pressure.

5. ASTM D 1599 Test Method for Short-Time Hydraulic Failure Pressure of Plastic Pipe, Tubing and Fittings.
 6. ASTM D 1784 Specification for Rigid Poly (Vinyl Chloride) (PVC) Compounds and Chlorinated Poly (Vinyl Chloride) (CPVC) Compounds.
 7. ASTM D1785 Standard Specification for Poly (Vinyl Chloride) (PVC) Plastic Pipe, Schedules 40, 80, and 120
 8. ASTM D 2122 Test Method for Determining Dimensions of Thermoplastic Pipe and Fittings.
 9. ASTM D 2241 Specifications for Polyvinyl Chloride (PVC) Pressure-rated Pipe (SDR Series).
 10. ASTM D 2774 Practice for Underground Installation of Thermoplastic Pressure Piping.
 11. ASTM D 2846 Specification for Chlorinated Poly (Vinyl Chloride) (CPVC) Plastic Hot- and Cold-Water Distribution Systems.
 12. ASTM D 3034 Specification for Type PSM Poly (Vinyl Chloride) (PVC) Sewer Pipe and Fittings.
 13. ASTM D 3222 Unmodified Polyvinylidene Fluoride (PVDF) Molding Extrusion and Coating Materials.
 14. ASTM E 84 Surface Burning Characteristics of Building Materials
 15. ASTM F 437 Specification for Threaded Chlorinated Poly (Vinyl Chloride) (CPVC) Plastic Pipe Fittings, Schedule 80.
 16. ASTM F 439 Specification for Chlorinated Poly (Vinyl Chloride) (CPVC) Plastic Pipe Fittings, Schedule 80.
 17. ASTM F 441 Specification for Chlorinated Poly (Vinyl Chloride) (CPVC) Plastic Pipe, Schedules 40 and 80.
 18. ASTM F 477 Specification for Elastomeric Seals (Gaskets) for Joining Plastic Pipe.
 19. ASTM F 493 Specification for Solvent Cements for Chlorinated Poly (Vinyl Chloride) (CPVC) Plastic Pipe and Fittings.
- F. American Water Works Association (AWWA)
1. AWWA C512 Air Release, Air/Vacuum, and Combination Air Valves for Water and Wastewater Service
 2. Water Treatment Plant Design
- G. Bureau of Reclamation (Reclamation)
1. RSHS Reclamation Safety and Health Standards including revisions posted at <https://www.usbr.gov/safety/rshs/index.html>

2. Reclamation Manual Policy and Directives and Standards – Cost Estimating – FAC P09, FAC 09-0, and FAC 09-03 available at [Reclamation Manual | Bureau of Reclamation \(usbr.gov\)](#)
- H. City of Alamogordo (City)
1. Technical Standards-2022 Available at <https://ci.alamogordo.nm.us/233/Engineering>
- I. Illuminating Engineering Society (IES)
1. IES RP-7 Lighting Industrial Facilities
- J. Institute of Electrical and Electronics Engineers (IEEE)
1. IEEE C2 National Electrical Safety Code
- K. International Code Council (ICC)
1. IBC International Building Code
 2. IECC International Energy Conservation Code
 3. IFC International Fire Code
 4. IMC International Mechanical Code
 5. IPC International Plumbing Code
 6. IPSDC International Private Sewage Disposal Code
- L. International Electrotechnical Commission (IEC)
1. IEC 61131-3 Programmable Controllers – Part 3: Programming Languages
- M. International Safety Equipment Association (ISEA)
1. ISEA Z358.1 Emergency Eyewash and Shower Equipment
- N. International Society of Automation (ISA)
1. ISA 62381 Automation Systems in the Process Industry – Factory Acceptance Test (FAT), Site Acceptance Test (SAT), and Site Integration Test (SIT)
 2. ISA 101.01 Human Machine Interfaces for Process Automation Systems
- O. National Electrical Manufacturers Association (NEMA)
1. NEMA 250 Enclosures for Electrical Equipment (1000 Volts Maximum)
- P. National Fire Protection Association (NFPA)
1. NFPA 13 Installation of Sprinkler Systems
 2. NFPA 24 Installation of Private Fire Service Mains and Their Appurtenances

3. NFPA 70 National Electrical Code
 4. NFPA 72 National Fire Alarm and Signaling Code
 5. NFPA 90A Installation of Air Conditioning and Ventilating Systems
 6. NFPA 101 Life Safety Code
 7. NFPA 255 Standard Method of Test of Surface Burning Characteristics of Building Materials
 8. NFPA 400 Hazardous Material Code
 9. NFPA 497 Classification of Flammable Liquids, Gases, or Vapors and of Hazardous (Classified) Locations for Electrical Installations in Chemical Process Areas
 10. NFPA 770 Hybrid Fire Extinguishing Systems
- Q. National Sanitation Foundation (NSF)
1. NSF/ANSI 61 Drinking Water System Components - Health Effects
- R. Natural Environmental Balancing Bureau (NEBB)
1. Testing, Adjusting, and Balancing of Environmental Systems
- S. Navajo Nation Environmental Protection Agency (NNEPA)
1. Surface and Ground Water Protection Department Domestic Wastewater Regulations
- T. New Mexico Environment Department (NMED)
1. Risk Assessment Guidance for Site Assessments and Investigations, available at <https://www.env.nm.gov/hazardous-waste/guidance-documents/>
- U. United States Access Board
1. ABA/ADA Architectural Barriers Act (ABA) and American with Disabilities Act (ADA)

1.4 SUBMITTALS

- A. In accordance with Sections 01 12 16 – Work Sequence, 01 33 00 – Submittals, 01 78 30 – Project Record Documents, 01 91 16 – Facility Commissioning.
- B. RSN 01 81 05-1, Subsurface Utility Engineering Report:
1. Documentation resulting from the subsurface utility engineering investigations.
- C. RSN 01 81 05-2, 30-Percent Design shall include at a minimum:
1. Refer to Section 01 12 16 - Work Sequence.

2. Overview of major site features including siting and layout of vaults, site drainage, power needs, power source upgrades, and yard piping.
3. Explanation of objectives and factors influencing siting decisions.
4. Include output from design meetings after time of award.
5. Summarize existing electrical conditions, the new electrical system, and proof of concept.
6. Basis of Design Report:
 - a. Summary of concerns with piping materials for below and above grade applications.
 - b. Evaluation of piping materials for below and above grade applications to address concerns and consider all relevant conditions of application including but not limited to:
 - 1) Suitability for brackish water from site wells
 - 2) Structural suitability for manifold applications
 - 3) Ease of maintenance by site staff
 - 4) UV protection for above grade piping
 - 5) Service life under design conditions
 - c. Recommendation of piping materials for below and above grade applications, including reasoning for recommendations.
 - d. Recommendation for valve type, valve materials, gasket material, coating, and connection type, as relevant, by application, including reasoning for recommendations.
 - e. Recommendation for flow meter type, materials, gasket materials, and connection type, as relevant, by application, including reasoning for recommendations.
 - f. Details of existing electrical infrastructure, description of tie in locations, and upgrades required.
 - g. Details of existing controls infrastructure, description of tie in (termination) locations.
 - h. Explanation of improvements organized by discipline including at least civil, process piping and valves, structural, electrical, and controls.
 - i. Design calculations:
 - 1) Hydraulic calculations, including pressure, head loss, and velocity for the upgrades performed in this work. Hydraulic calculations shall start at the existing pressure source and extend through existing infrastructure, with assumptions stated for existing

infrastructure, to the termination point of the pipeline. The COR will provide pump curves for the existing pressure sources.

- 2) Preliminary load calculations.
- j. Manufacturer's datasheets for all equipment, including but not limited to piping, fittings, valves, instrumentation, heat trace, insulation, jacketing, vault access hatches, and accessories.
- k. Anticipated service life of equipment.
7. Drawings:
 - a. Table of Contents for all proposed drawings to be included on cover sheet.
 - b. Existing site conditions showing existing topography, overhead and underground utilities, roads drainage features, structures.
 - c. Special site conditions and or constraints.
 - d. Proposed site improvements including structures, pipeline alignments, manifold locations, staging areas, pavement locations, site grading, drainage, and utility locations with clearance offsets.
 - e. Electrical single line diagrams.
 - f. Preliminary load calculations.
 - g. Process flow diagrams.
 - h. Piping and instrumentation diagrams.
 - i. Plan view of process piping alignments, vaults, manifolds.
 - 1) Include details conveying vault(s) piping, valve, and instrumentation configuration.
 - 2) Include details conveying above grade manifold designs at TP7, TP8, TP9, and TP10.
 - j. Preliminary network diagrams.
 - k. Preliminary selection of construction and equipment materials.
 - l. Explanation of objectives and factors influencing siting decisions. Compliance with accessibility standards and security requirements.
8. Soil investigation report, detailed listing of design criteria, and preliminary analysis prepared by a licensed professional engineer.
9. Capital cost estimate.
10. Preliminary drawing list.
11. Construction specifications table of contents.

12. Commissioning Documentation – Pre-Design Phase:
 - a. Commissioning Plan outline.
 - b. Operation and maintenance manuals outline.
 13. Preliminary equipment list.
 - a. Include mechanical and electrical ratings of equipment.
 - b. Include proposed identification nomenclature for components including but not limited to valves and instruments, based on existing site designation nomenclature.
 14. Preliminary list of extra materials.
- D. RSN 01 81 05-3, 30-Percent Comment Response:
1. Respond to Government’s comments on 30-Percent Design.
- E. RSN 01 81 05-4, 60-Percent Design:
1. Refine 30-Percent Design.
 2. Siting requirements including layout and design rationale for earthwork, utilities, and other related site improvements.
 3. Site improvement calculations. Include:
 - a. Earthwork cut and fill volumes with cross sections.
 - b. Trenching, backfill, pipe and duct bank bedding volumes with cross sections.
 4. Structural calculations.
 5. Revegetation narrative.
 6. Drawings:
 - a. Boundary and topographic survey.
 - b. Temporary construction facilities plan including site access, fencing, trailers, staging, laydown, and storage areas.
 - c. Site construction phasing.
 - d. Grading plan(s):
 - 1) Existing and proposed grades at 1-foot contour intervals, distinguishing between existing and proposed.
 - 2) Finish floor elevations for structures and other site features. Include contours and spot elevations to indicate the drainage pattern and earthwork quantities.

- e. Site plan(s):
 - 1) Structures, pipelines, and other site features.
 - 2) Revegetation. Include seed mix.
 - 3) Utilities: Locations of water valves, electric manholes and other utility structures visible at grade.
- f. Typical site details.
- g. Structural plans for vaults, pipe supports, and other major structural elements, with sizes and locations of structural elements.
- h. Structural sections for vaults and other major structural elements, with sizes and locations of structural elements.
- i. Structural details for vaults and other major structural elements.
- j. Controls:
 - 1) Schematic drawings or loop diagrams.
 - 2) Wiring diagrams.
 - 3) Conduit and duct bank plans and details.
- k. Finish schedule: Indicate paint or coatings and associated details as relevant.
- l. Pipe Insulation:
 - 1) Pipe insulation locations on relevant plan drawings.
 - 2) Relevant details and sections.
 - 3) Pipe insulation calculations.
- m. Electrical:
 - 1) Preliminary equipment layouts, including plan views.
 - 2) Grounding system layout.
 - 3) Conduit and duct bank plans and details.
 - 4) Load calculations.
- n. Vault concrete outline drawings.
- o. Piping:
 - 1) Plan and Profile drawings, indicating location and size of existing buried utility or other infrastructure crossings.
 - 2) Details required for construction including but not limited to excavation, bedding, backfill, spacing between multiple pipes, liner penetrations, pipe supports, manifolds, vault piping and piping and instrumentation layouts.

7. Lists and Product Information:
 - a. Equipment List:
 - 1) Include mechanical and electrical ratings for equipment.
 - 2) Include identification nomenclature for components, size, material, type of interface, location, and all other relevant component information.
 - 3) Valve list.
 - 4) Instrument list.
 - b. Controls:
 - 1) Manufacturer's equipment datasheets.
 - 2) Bill of materials:
 - a) List all manufacturer supplied control and networking components.
 - b) Includes manufacturer, manufacturer's part number, description, and quantity supplied.
 - 3) List of flow meter 4-20 mA analog loop calibrations.
8. Specifications:
 - a. Coordinated with the drawings.
 - b. All other details needed to construct project.
 - c. File format: Adobe Acrobat portable document format and Microsoft Word format.
9. Operation and maintenance manuals outline.
10. Commissioning Documentation – Design Phase:
 - a. Basis of Design.
 - b. Issues and Resolution Log template.
11. Reconciled submittal table in Section 01 33 00 – Submittals:
 - a. Include “To”, “From”, and “Copy” columns:
 - 1) Include builder to designer submittals and design-builder to Government submittals.
 - 2) Proposed changes to required design and construction submittals.
 - b. Modify due date or delivery time column in submittal table. Replace “per contractor's proposed schedule” with approximate due dates tied to construction of applicable item.

- F. RSN 01 81 05-5, 60-Percent Comment Response:
 - 1. Respond to Government's comments on 60-Percent Design.
- G. RSN 01 81 05-6, 90-Percent Design:
 - 1. Refine 60-Percent Design.
 - 2. Construction drawings and specifications at the level of detail needed to construct the project, including a list of equipment, fixtures, and materials, submittals, and a submittals register.
 - a. Updated site plan(s):
 - 1) Existing and new utility crossings.
 - 2) Site work sections, details, and schedules as required.
 - 3. Updated specifications in Adobe Acrobat portable document format and Microsoft Word format.
 - 4. Updated Calculations.
 - 5. Updated structural, process piping, electrical, and controls drawings and details.
 - 6. Electrical:
 - a. Panelboard schedules.
 - b. Equipment elevations.
 - c. Conduit schedules.
 - d. Raceway schedules.
 - e. Cable schedules.
 - 7. Geotechnical design analysis and reports by licensed professional engineer.
 - 8. List of operation and maintenance manuals to be submitted during construction.
 - 9. Spare parts list.
 - 10. Commissioning Documentation – Pre-Construction Phase:
 - a. Updated Basis of Design.
 - b. Updated Commissioning Plan.
- H. RSN 01 81 05-7, 90-Percent Comment Response:
 - 1. Respond to Government's comments on 60-Percent Design.
- I. RSN 01 81 05-8, 100-Percent Design:
 - 1. Drawings and specifications stamped by professionals with current, applicable licenses.

2. Construction drawings and specifications at level of detail needed to construct project, including a list of equipment, fixtures, and materials and individual submittals and a submittals table. Show construction details on the drawings.
 3. Detailed final design summary.
- J. RSN 01 81 05-9, Construction Progress Submittals:
1. Customary construction submittals to ensure an audit path record as well as to confirm adherence to approved Testing Agency Services Plan submitted in Section 01 46 20 - Testing Agency Services.
- K. RSN 01 81 05-10, 100-Percent Construction:
1. Operation and maintenance manuals.
 2. Final Basis of Design, which captures any modifications made during construction and commissioning.
 3. Commissioning Documentation – Post-Construction Phase:
 - a. Systems manual.
 - b. Systems verification checks, equipment and systems start-ups, and functional performance tests documentation.
 - c. Test and balance work documentation.
 - d. Issues report.
 - e. Final Construction Commissioning Report.
 4. Commissioning Documentation – Occupancy and Operations Phase:
 - a. Updated Basis of Design.
 - b. Test Procedures.
 - c. Test Data Reports.
 - d. Final Commissioning Report.
 5. Training in accordance with Section 01 79 20 – Training.
- L. At the end of each design phase, obtain Government acceptance prior to proceeding to the next design phase:
1. Design submittals, including re-submittals, shall contain drawings, criteria, and interview documentation and updates.
 2. Include revised drawings and related documentation resulting from the review of the submittal and additional comments in the re-submittal.

1.5 PROJECT REQUIREMENTS

A. General:

1. Purpose: Provide upgrades to site source water (SW), potable water (PW) and concentrate water (CW) piping and flow measurement infrastructure. A plan view concept of the upgrades and relevant concept details are shown on Figure C6-2026, Figure C7-2026, Figure C8-2026, Figure C9-2026, and Figure C10-2026 which are provided in Section 52 00 00.
 - a. Refer to Section 51 46 02 - Raw Water Quality Data.
2. The upgrades and associated equipment shall be designed to be fully integrated with the existing site SCADA system and capable of operating automatically without operator intervention.
3. Modify facility piping as shown in Information Drawings Figure C6-2026, Figure C7-2026, Figure C8-2026, Figure C9-2026, and Figure C10-2026, refer to Section 52 00 00 – Drawings. Configuration shown in the Information Drawings provides the project concept and is not intended to be the basis for Contractor's design, which shall be the responsibility of the Contractor.
4. Piping, equipment, and ancillary components materials and configuration shall be suitable for the application and compatible with project's Raw Water, which is brackish water. Refer to Section 51 46 02 – Raw Water Quality Data.
5. Design, approval, permitting, and construction in accordance with City of Alamogordo and State requirements.
 - a. Submit full set of construction documents to the City for review and approval prior to submittal to the State for building permits.
 - b. Coordinate submittal with Stella Rael, City Planner, 1376 East Ninth Street, Alamogordo, NM 88310, 575-439-4220 extension 2.

B. Design and Construct:

1. Yard piping and flow measurement upgrades:
 - a. The following descriptions reference points A through Q, which are shown on Figure C6-2026, Figure C9-2026, Figure C10-2026, Figure M6-2026, and Figure M4-2026, provided in Section 52 00 00.
 - b. **OPTIONAL CLIN: Locate leak and replace 50-500 ft (50-ft sections priced in Price Schedule C) of damaged Source Water Storage Tank 2 (SWST2) pipeline shown on Figure C9-2026.**
 - c. TP10 Flow Measurement Vault (Point C) including below grade vault, access hatch(es), power and controls, valves, piping, accessories, and three magnetic flow meters:

- 1) Three (3) for the existing SW piping from SWST1, SWST2, and SWST3 to the TP10 Manifolds (Point E).
 - 2) Provide, controls, and integration with SCADA, electrical power to flow meters and heat trace, including duct bank and conduit. The flow meters shall provide local readout and remote readout to the existing plant SCADA system.
- d. Replace existing 4" TP10 return line to SWST2 (Point B) using similar route as existing temporary (shallow) line. This requires replacement of sun-damaged piping and valves at the test pad (see Existing Conditions Photographs, Photo 51 00 90-48 and Photo 51 00 90-40). The approximate location of the existing piping is shown on Figure C9-2026.
 - e. Removal of the existing partially buried TP10 manifold, which contains existing piping from SWST1 (SW 1), SWST2 (SW 2), SWST3 (SW 3), and PW source, and rerouting buried piping to the TP10 Flow Measurement Vault (Points C, D).
 - f. Buried piping for SW 1, SW 2, SW 3, and PW from TP10 Flow Measurement Vault (Point C, D) to three above grade piping manifolds at TP10 (Point E).
 - g. Three TP10 Piping Manifolds (Point E) that each provide above grade connection to SW 1, SW 2, SW 3, and PW sources and a connection to CW pressure drain piping.
 - h. Separate pressure CW drain piping (three pipelines) from each of the three TP10 manifolds (Point E) to the CW Vault (Point L). The pressure drain piping shall be buried between the TP10 manifolds and the CW Vault.
 - i. A valving manifold within the CW Vault (Point L) which allows any of the three TP10 Piping Manifolds to deliver CW water to any of the three Evaporation Ponds (Point M, Point N, or Point O).
 - j. Install a magnetic flow meter on the 6" SW line at TP7 (Point I). See Figures C9-2026 and M6-2026. Provide, controls, and integration with SCADA, electrical power to flow meters and heat trace, including duct bank and conduit. The flow meters shall provide local readout and remote readout to the existing plant SCADA system.
 - k. Install a magnetic flow meter on the 4" Well 2/4 bypass line west of Pond 1. Provide, controls, and integration with SCADA, electrical power to flow meters and heat trace, including duct bank and conduit. The flow meters shall provide local readout and remote readout to the existing plant SCADA system.
 - l. Modify SW piping from acid room (Point A) valve manifold to TP 7, 8, and 9 (Points I, J, and K, respectively) as conveyed on Figures C9-2026, M4-2026, and M6-2026. Cap and abandon in place unused portions of the

three pipelines that connect the acid room valve manifold to the outdoor test pads and replace with a single line that connects to the associated line from the acid room. See Figures C9-2026, M4-2026, and M6-2026. Unused piping can be removed to facilitate new design.

- m. Remove buried interconnections between TP 7, 8, and 9 piping and provide new isolation valves above grade on the vertical section of each test pad's piping manifold. Cap and abandon in place or remove piping taken out of service as necessary to ensure each test pad is fed by a single pipeline that matches what is coming from the building. Provide, controls, and integration with SCADA, electrical power to flow meters, heat trace, and insulation, including duct bank and conduit as required.
 - n. Three (3) magnetic flow meters in the CW Vault which measure instantaneous and total CW flow to the three Evaporation Ponds (Point M, Point N, or Point O). One magnetic flow meter on the 4" Well 2/4 bypass line west of Pond 1 (Point Q). The flow meters shall provide local readout and remote readout to the existing plant SCADA system. Provide, controls, and integration with SCADA, electrical power to flow meters and heat trace, including duct bank and conduit.
- 2. Installation of four concrete vaults at or near the four existing valve vaults (Pond 1, Pond 2, Pond 3, and Agriculture) to provide access to the existing flow meters which measure flow to Ponds 1-3 and Agriculture magnetic flow meters (Point P). This may include relocation of the flow meters and installing gravel at Pond 2 and the Agriculture supply vaults.
 - 3. The contractor shall install new conduit from all new flow meter locations to the existing plant SCADA system. Controls cabling from flow meters to interface with existing SCADA system. The Contractor shall be responsible for installing and terminating controls cabling through new terminal blocks to the existing SCADA PLC within the existing Research Facility building. The contractor shall also be responsible for providing surge/transient suppression on these new cables. The Contractor shall be responsible for programming the new signals into the existing SCADA system.
 - 4. Temperature controlled heat trace and insulation for all pressure piping above frostline and as required for below grade or vaulted infrastructure.
 - 5. Utilities as needed and as described herein.
 - 6. All other components required to provide a fully functional system that meets the intent of this solicitation.
 - 7. Site Improvements:
 - a. Comply with AASHTO GDHS, ABA/ADA, and IBC.
 - b. Grading:
 - 1) Goal: Balance cut and fill for the project.

- 2) Minimum Slopes:
 - a) Provide positive slope away from structures.
 - b) Paved surfaces: Minimum 1 percent within 10 feet from a building.
 - c) Unpaved surfaces: Minimum 2 percent.
- 3) Minimize ground disturbance and impacts to the environment.
- c. Erosion Control: Provide stable surfaces.
 - 1) By grading or erosion protection.
 - 2) Engineered means such as rip rap or erosion control blanket.
- d. Exterior Pavements and Surfacing:
 - 1) Accommodate anticipated traffic for facility type and user.
 - 2) Roadways and Driveways:
 - a) Paved surfaces:
 - i. Asphalt pavement: Primary vehicular access to, from, and around the site, and parking areas.
 - ii. Concrete pavement: Aprons of no less than 10 feet by 10 feet adjacent to the building at loading and unloading zones (overhead doors), and apron of no less than 6 feet by 6 feet adjacent to the building at pedestrian access into the building (person doors).
 - b) Granular surfaces: Secondary vehicular access to areas requiring intermittent vehicular access.
 - c) Facilitate anticipated vehicular operations around the building and site for material deliveries.
- e. Provide bollards or large boulders to protect equipment and facilities from vehicular impact where there is a reasonable likelihood of occurrence.
- f. Landscaping and Revegetation:
 - 1) No additional landscaping required.
 - 2) Revegetate disturbed soils: Meet requirements of jurisdiction having authority.
- g. Concrete, gravel, asphalt, road base and other pavement materials: Comply with FP-14.
- h. Provide elements required for finished durable site. Including grading, drainage, erosion control and other outdoor improvements.
- i. Stormwater Management and Drainage Improvements:

- 1) Meet requirements of jurisdiction having authority.
 - 2) Site drainage shall not route storm water to the sanitary collection system.
8. Testing, training, and commissioning.
- C. Subsurface Utility Engineering Investigations:
 1. Subsurface investigation requirements to be determined by the Design Engineer.
 2. Document basis of design and project requirements as they relate to subsurface characteristics.
 3. Refer to Information Drawings in Section 52 00 00 – Drawings for available information on existing utility locations. It is the responsibility of the Contractor to verify the accuracy of provided drawings.
 4. Submit report documenting:
 - a. Locations, depths, sizes, and materials of current utilities in and near this project's construction areas.
 - b. Describe method to locate, mark, and document existing buried utilities in and near this project's construction areas.
 - c. Existing utilities to be located include water, sanitary sewer, stormwater, power, and communications.
 - d. Report shall meet the current standard of care and shall be prepared and stamped by a professional engineer licensed in the State of New Mexico.
- D. Design project to applicable portions of the IBC, IECC, IFC, IMC, IPC, IEEE, IEEE C2, NEMA, NFPA 70, NFPA 101, ASCE 7, and ABA unless otherwise specified.
- E. Design using industry standard materials and efficient practices.
- F. Use high quality, durable, and easily maintainable materials.
- G. Contractor shall be responsible for the professional quality, code, compliance, technical accuracy, and coordination of designs, drawings, and specifications.
- H. Government has completed preliminary analysis to determine the feasibility of the project. Contractor shall perform complete engineering analysis and assessment to size the infrastructure and associated items.
- I. Additional features not specified but necessary to make the project complete and operational shall be identified by Contractor within the contract price.
- J. Include structures and spaces typical for this type of facility and necessary for efficient use, operation, and maintenance.

- K. Where features fall under multiple design and construction requirements, meet all requirements.
- L. Design Life:
 - 1. Infrastructure and project components: High-quality components utilizing durable materials with an emphasis on product and system longevity.
 - 2. Other: Consistent with industry standards.
- M. Vaults:
 - 1. All below grade valves and flow measurement equipment shall be installed in a buried concrete vault.
 - 2. Do not use permit required confined spaces when technically reasonable alternatives available.
 - 3. Design substructures and foundations to applicable portions of the IBC and ASCE 7 unless otherwise specified.
 - 4. Layout shall provide sufficient clearance around piping, valves, and instrumentation, for maintenance access.
 - 5. Vaults shall be watertight on all sides and provide access hatch designed to ensure safe access by maintenance staff.
 - 6. Designer shall design access hatch and vault to minimize access safety concerns.
 - 7. Vault hatches shall have a lock out mechanism to prevent accidental closure of the vault hatch.
 - 8. Access hatching or lid marked with "WATER".
 - 9. Provide a heat source (heat trace or unit heater, insulation) if necessary to prevent freezing.
 - 10. Provide a sump pump for vaults if there is risk of damage to instrumentation due to water intrusion.
- N. Electrical:
 - 1. Required space and clearances per NFPA 70 for installation and maintenance of required electrical features. .
- O. Pipe Insulation:
 - 1. Match existing site insulation and jacketing materials to reduce maintenance complexity.
- P. Process Piping and Appurtenances:
 - 1. Follow industry standards for design, construction, and testing of piping systems, including applicable ASME and AWWA standards for design, construction, and

testing of piping systems as well as ASME A13.1, B31.3, ICC IBC, IECC, IFC, IFGC, IMC, IPC, IPSDC.

- a. Joint restraint as required:
 - 1) Balance thrust forces.
 - 2) Restrained couplings and expansion joints as required.
 - b. Products in contact with potable water in compliance with NSF/ANSI 61.
 - c. Design and install piping system in accordance with:
 - 1) Applicable AWWA guides and standards.
 - 2) IPC.
2. Valves:
- a. General: Comply with ASME or AWWA.
 - b. Provide isolation valves at equipment to allow removing equipment for services and avoid draining of pipeline.
 - c. Air relief valves shall be provided, when required, to remove pockets of air from the system.
 - d. Install valves to allow ease of access for operation, maintenance, and replacement. This shall include below-grade valves in vaults and above-grade valves with heat tracing.
 - e. Below grade installed valves shall be mechanical joint or flanged.
 - f. Below grade installed valves shall be installed within a valve vault.
 - g. Provide equipment necessary to actuate below grade installed valves.
 - h. Nameplate stamped or laser etched with valve information:
 - 1) Valve size and type.
 - 2) Valve identification number.
 - 3) Flow direction.
3. Relief Valves:
- a. Air Relief: AWWA C512 for applicable air and vacuum valves.
 - b. Vacuum Relief: AWWA C512 for applicable air and vacuum valves.

Q. Instrumentation:

- 1. Instrumentation Communication:
 - 1) Utilize only 4-20 mA analog loop connections from new flow meters to existing SCADA PLC. The analog loops will not be excited by the existing PLC, they must be excited by the flow

meters or external power supplies. The contractor shall provide any equipment needed to excite the 4-20 mA loops.

R. Controls:

1. Design and construction in accordance with applicable IEEE, ISA, NEMA, NFPA 70, TIA, and UL standards. Power:
 - a. Provide a power distribution system to all Control System components, including protection, to support full operation of the system. This distribution system shall include analog loop power supplies and contact interrogation voltages for dry contact inputs.
2. Testing:
 - 1) Prior to connecting new flow meters to the existing SCADA PLC, all flowmeter communication and cabling will be tested to the existing site control building, thorough the terminal blocks and surge/transient suppression using a 4-20 mA analog meter.
 - 2) Support personnel provided during testing shall be familiar with the project and be capable of fixing problems identified during testing.
 - 3) If a cable or conductor fails testing, remove, and replace cable.

S. Licenses:

1. Provide software licenses if required to operate, maintain, and program flowmeters.
2. Coordinate with Government to make copies of software for backup purposes.

T. Safety and Health Design Criteria:

1. Specific to this project's design. Adhere to RSHS.
2. Do not use permit required confined spaces when technically reasonable alternatives available.

U. Sustainable Design: Refer to Section 51 00 30 – Green Procurement for requirements.

V. Historical Requirements: Not Applicable.

W. Basis of Design Report:

1. Identify source of loading conditions, supplementary sketches, graphs, formulae, and references.
2. Explain assumptions and conclusions.

3. List design references, including Government design documents and industry standards.
 4. Provide infrastructure and equipment sizing basis, summary of relevant site water quality for which the equipment is designed for contact with.
- X. 30-, 60-, and 90-Percent Design Submittals:
1. Refer to Section 01 12 16 - Work Sequence.
 2. Government will comment on design submittals to ensure compliance with contract requirements. Review comments are considered part of the design-build process and shall be incorporated at no additional cost to the Government.
 3. Comments:
 - a. Government's review will be for compliance with contract requirements and not for technical adequacy.
 - b. Contractor Response to Government Comments:
 - 1) Identify action taken with citation of location within the relevant document.
 - 2) Provide reasons if Contractor does not intend to comply with the comment.
 - 3) Flag comments considered outside design scope and notify the Government in writing immediately.
 4. Refer to Section 01 31 19 - Project Management and Coordination for design review meetings.
- Y. Specifications:
1. Construction Specifications Institute Practice Guide and Master Format.
 2. Provide electronic files in Adobe Acrobat portable document format and Microsoft Word format.
 3. First page to include professional engineer stamp of applicable designer of record. Professional engineer license must be valid within the jurisdiction of the project.
- Z. Drawings:
1. Drawings shall include professional engineer stamp of applicable designer of record. Professional engineer license must be valid within the jurisdiction of the project.
- AA. Component Identification:
1. Provide names and unique designations for each piece of equipment supplied by the Contractor:

- a. Identify unique designations of equipment in the field, piping and instrumentation diagrams, and on facility drawings.
 - b. Equipment requiring unique designations include, but are not limited to, valves, pipelines, vaults, instruments, electrical distribution components, process system components, Control System components, panels.
 - c. All tags or equipment designations applied to components shall be used consistently throughout all project documentation and onsite installation and shall follow existing site designation nomenclature.
2. Provide unique designation for each piping component:
 - a. Identify unique designations at the piping component in the field, piping and instrumentation diagrams, design drawings, and in the Control System graphics.
 - b. Pipe components include but are not limited to:
 - 1) Valves.
 - 2) Instruments.
 - 3) Expansion Joints.
 - 4) Piping.
3. Field identification shall meet the following minimum requirements:
 - a. Panels, Enclosures, and Components Mounted in Enclosures:
 - 1) Nameplates for:
 - a) Panels and enclosures.
 - b) Terminal blocks, fuses, and components located in or on a panel or enclosure.
 - 2) Nameplates shall include individual component designation, for each component or enclosure.
 - 3) Attach nameplates with pan head self-tapping screws. Do not use adhesives to attach nameplates.
 - 4) Attach nameplates to pushbuttons, indicating lights, and selector switches in accordance with component manufacturer's instructions. Use of self-tapping screws is not required.
 - 5) Nameplates shall consist of letters and numbers engraved on phenolic-type material. Size of letters and figures shall be approximately 7/16 inch for cabinet internal device nameplates and 1 inch for cabinet designations.

- b. Cables and Raceway: Permanently affix tag with individual component designation to all cable and raceway. Cable shall include tags for the overall cable as well as each individual conductor.
- c. Piping Components: Permanently attached stainless steel tags. Include, at minimum, component designation and manufacturer's model number.

1.6 TEAM

- A. Designers of Record: Licensed professional engineer or registered architect.
- B. Contractor and designer representative shall be co-located onsite during construction.

1.7 CAPITAL COST ESTIMATE

- A. Prepare a Construction Cost Estimate for the work to be completed in accordance with Reclamation Manual Policy and Directives and Standards – FAC P09, FAC 09-01, and FAC 09-03.
 - 1. Components:
 - a. Include Pay Items, Quantities, Unit Prices, Field Data
 - b. Include Special Allowances:
 - 1) Design Contingencies
 - 2) Construction Contingencies
 - c. Include Field Cost
 - 2. Show cost assumptions, steps, factors, calculations, and other applicable items.

1.8 EXTRA MATERIALS

- A. Provide extra materials required for normal operation and maintenance during the contract's warranty period.
- B. Furnish a set of special tools and accessories required for installation, normal operation, and maintenance. Include:
 - 1. Contractor and manufacturer recommended tools and accessories.
 - 2. Tools and accessories:
 - a. Recommended for field maintenance.
 - b. Designed to aid in the diagnosis, maintenance, repair, and replacement of supplied equipment.
- C. Furnish one set of the following spare parts:
 - 1. Complete flow meter system

2. One complete flow meter system spare for each type of flow meter provided.
3. Spare SCADA cabinet terminal blocks
4. Spare SCADA cabinet transient/surge suppression devices
5. Contractor- or manufacturer-recommended spare parts.
6. Replace spare parts used during the installation, testing, and commissioning process to provide a complete set of spare parts.
7. Licensing in the Government's name for all software if required for programming flow meter

PART 2 PRODUCTS

2.1 CONCRETE

- A. In accordance with ACI 318 and IBC as applicable.

PART 3 EXECUTION

3.1 GENERAL

- A. Stop work activities when ruts exceed 6 inches as a result of wet soils.
- B. Strip topsoil from areas to be excavated.
 1. Do not use topsoil removed by stripping for backfill or constructing embankments.
 2. Transport and stockpile topsoil as necessary prior to final hauling and placing.
 3. Do not compact topsoil in stockpile.
 4. Protect stockpile from contamination and erosion.
 5. Seed with a ground cover approved by COR when storage in stockpiles is prolonged.

3.2 INSPECTION AND TESTING

- A. In accordance with Federal, State, and local codes unless otherwise specified.

END OF SECTION

SECTION 01 91 16
FACILITY COMMISSIONING

PART 1 GENERAL

1.01 MEASUREMENT AND PAYMENT

- A. Cost: Include in prices offered in the Price Schedules for other items of work.

1.02 DEFINITIONS

- A. Commissioning:
1. Systematic process to ensure the system performs interactively according to design intent and Government's operational needs.
 2. Coordinates system documentation, equipment startup, control systems calibration, testing and balancing, performance testing and training.
- B. MT: Monitored Test.
- C. Wet Commissioning/Hot Commissioning: Testing and initial operation with fluids or gases and then load.
- D. Commissioning Agent (CA):
1. An independent authority, not otherwise associated with design-build team members or Contractor, though he/she shall be hired as a subcontractor to them.
 2. Directs and coordinates day-to-day commissioning activities.
 3. Does not take an oversight role.

1.03 REFERENCE STANDARDS

- A. American Public Health Association (APHA)/American Water Works Association (AWWA)/Water Environment Federation (WEF)
1. Standard Methods for the Examination of Water and Wastewater (Standard Method)
- B. International Society of Automation (ISA)
1. ISA 62381 Automation Systems in the Process Industry – Factory Acceptance Test (FAT), Site Acceptance Test (SAT), and Site Integration Test (SIT)
 2. ISA 62382 Automation Systems in the Process Industry – Electrical and Instrumentation Loop Check

- C. International Electrical Testing Association (NETA)
 - 1. NETA ATS Acceptance Testing Specifications for Electrical Power Equipment and Systems
- D. National Fire Protection Association, Inc. (NFPA)
 - 1. NFPA 70 National Electrical Code (NEC)
- E. U.S. Environmental Protection Agency (USEPA)
 - 1. USEPA/600/B-07/001 Guidance for Preparing Standard Operating Procedures

1.04 SUBMITTALS

- A. In accordance with Section 01 33 00 – Submittals.
- B. Design and Construction Submittals: Refer to Section 01 81 05 - General Performance Requirements.
- C. RSN 01 91 16-1, Facility Commissioning Test Plan.
- D. RSN 01 91 16-2, Facility Commissioning Test Procedures.
- E. RSN 01 91 16-3, System Turnover Books:
 - 1. Submitted at the completion of startup activities for each system.
 - 2. Submitted prior to the start of Monitored Test.
- F. RSN 01 91 16-4, Discrepancy List.
- G. RSN 01 91 16-5, Preliminary SOPs:
 - 1. Ready to support system operation.
- H. RSN 01 91 16-6, Final SOPs.
- I. RSN 01 91 16-7, Issues and Resolution Log.
- J. RSN 01 91 16-8, Monitored Test Report.

1.05 QUALIFICATIONS

- A. Performed commissioning services of at least three infrastructure systems of similar scope.

1.06 SCOPE

- A. Demonstrate successful operation of components and systems, including interfaces between Contractor installed components or systems and existing facility components

and systems. New systems shall perform as described in these specifications as well as equipment manufacturer's requirements.

- B. Demonstrate hardware and software functionality, performance, and stability.
 - 1. Field verification of component rating curves or operational setpoints and tuning or adjustment of control loops or settings.
 - 2. Demonstrate component meets system performance requirements, including but not limited to:
 - a. Water tightness.
 - b. Flow.
 - c. Pressure.
 - d. Control signals.
 - e. Individual equipment and systems specific design criteria.
- C. At the completion of the commissioning activities replace spare components and maintenance equipment or materials that were consumed to provide Government with a complete, new set of spare parts and maintenance tools and materials.
- D. Coordinate with the requirements in Section 01 79 20 – Training.
- E. Maintenance and documentation of permanent equipment and systems.

1.07 SITE CONDITIONS

- A. Water requiring disposal that does not comply with the facility's discharge permit or that contains perfluoroalkyl and polyfluoroalkyl substances (PFAS) compounds must be sent to the existing onsite evaporation ponds for treatment and disposal. Coordinate with COR for maximum allowable water treatment volume and flow rate.
 - 1. Pond 1 Total Capacity: Approximately 720,000 gallons. Refer to Information Drawings 3216A049-C13 and 3216A049-C14.
 - 2. Pond 1 Maximum Volume Available to the Contractor: 360,000 gallons.
 - 3. Pond 2 Total Capacity: Approximately 340,000 gallons. Refer to Information Drawings 3216A049-C13 and 3216A049-C14.
 - 4. Pond 2 Maximum Volume Available to the Contractor: 170,000 gallons.
 - 5. Pond 3 Total Capacity: Approximately 340,000 gallons. Refer to Information Drawings 3216A049-C13 and 3216A049-C14.
 - 6. Pond 3 Maximum Volume Available to the Contractor: 170,000 gallons.

1.08 COMMISSIONING PROCESS

- A. Phases of Testing and Commissioning Work:
 - 1. Construction Testing:

- a. In accordance with equipment manufacturer's written instructions and requirements of these specifications.
 - b. Includes inspections and tests at component and device level.
2. Startup Testing:
- a. Components in a process system shall be installed prior to beginning startup testing, wet commissioning/hot commissioning activities on system, or on components within the system.
 - b. Do not perform activities to put a system or subsystem into operation until components of system or subsystem, including instrumentation and control components, have been tested to the extent practical and have proven to be operational.
 - c. Includes dry commissioning and wet commissioning activities as well as inspections of complete installation.
 - d. Perform loop checks per ISA 62382, perform verification for each loop and each input or output.
 - e. Perform site acceptance and site integration testing in accordance with ISA 62381.
 - f. Demonstrate the operation and performance of each system component. Simulate faults and failure of components as well as varying setpoint conditions.
 - g. When testing requires the availability of auxiliary systems such as electrical power, flushing or cooling water, or control air that have not yet been placed in service, provide substitute sources capable of meeting the requirements of the machine, device, or system that are acceptable to the COR.
 - h. Startup activities include but are not limited to:
 - 1) Equipment and system inspections.
 - 2) Align, calibrate, and adjust system components.
 - 3) Piping systems and equipment cleanliness check.
 - 4) Check tightness of parts to ensure each is within manufacturer recommended range. Do not over-torque connections.
 - 5) Alignment check of connected machinery.
 - 6) Pressure and vacuum testing of closed systems.
 - 7) Lubrication check.
 - 8) Equipment calibration and adjustment.
 - 9) Manual rotation/movement of moving parts.
 - 10) Electrical system testing and inspection.
 - 11) Piping system and mechanical equipment testing and inspection.

- 12) Instrumentation testing and inspection.
 - 13) Safety and security system testing and inspection.
3. Monitored Test (MT):
 - a. Follows successful completion of Construction Testing and Startup Testing activities.
 - b. Demonstrate the ability of the treatment systems to operate and produce water as specified and manage residuals as specified. Test each automated and manual function.
 - c. Perform MT:
 - 1) Monitor the operating conditions and performance.
 - 2) Continuously operate system without failures lasting for more than 1 hour.
 - 3) Meet performance requirements in Section 01 81 05 - General Performance Requirements. Account for this time in Section 01 32 20 - Construction Program submittals.
 - 4) Confirm all equipment and systems were operated during the MT.
 - 5) MT Duration: Operate in fully automatic mode continuously for 2 calendar days.
 - d. During the MT:
 - 1) Test facility startup, fault, shutdown and restart operation.
 - 2) Vary flows and setpoints during operation over the design range.
 - 3) Test all potential flow path configurations for at least 2 hours each.
 - e. If MT is not successful:
 - 1) Prepare a written plan for modifying the system to meet test requirements.
 - 2) Submit the written plan within 7 calendar days of receiving laboratory test results, or within 7 calendar days after the MT ends.
 - 3) Repeat MT.

1.09 COMMISSIONING PROCESS DOCUMENTATION

A. General:

1. Inspection and test documentation shall include the following:
 - a. Name and signature of person performing the test.
 - b. Date on which the test was performed.
 - c. Identification of component, equipment, or system tested.
 - d. Identification of tests performed.

- e. Summary of results of the test or inspection activity, including positive identification for each activity of whether the system or component passed or failed.
- f. Data or readings taken during the test to verify component, equipment, or system acceptance.

B. Documentation:

- 1. Facility Commissioning Test Plan:
 - a. Specific detailed test plan for the commissioning activities:
 - 1) Test plans for phases of the commissioning process.
 - 2) Individual planned test and inspection activities.
 - 3) Proposed operating conditions and operational parameters that would be tested.
 - b. Include all relevant performance testing.
- 2. Test and Inspection Procedures:
 - a. Detailed procedures for planned commissioning activities.
 - b. Methodology, sequence, monitoring and acceptance criteria for each test and inspection activity. Includes individual steps performed during testing as well as setpoint variations and component operation during the test.
 - c. If pressurization of a system is required, include how the system shall be pressurized, how pressurized water or air shall be discharged, and where water or air source shall be obtained.
 - d. If references are used in testing procedures, include a copy of reference in testing procedures.
- 3. System Turnover Books:
 - a. Contractor assembled and maintained at jobsite.
 - b. Documents commissioning activities performed through the start of Monitored Test.
 - c. Organized by individual component and system, to allow quick reference to commissioning activities performed for a given system or component.
 - d. Contains records of inspection and testing activities performed, including specific test data and reports.
 - e. Updated as each commissioning activity is performed.
 - f. Available for COR review immediately upon request.
 - g. Maintain onsite in a secure location. Do not remove System Turnover Books from the site without specific written approval from COR.
- 4. Test Reports:

- a. Typed.
 - b. Certified, signed, dated, and attested to having passed requirements and tests.
 - c. Provide data summary and necessary graphs and plots of tests performed.
 - d. Available for COR review upon request.
5. MT Report:
 - a. Contains system conditions, operating parameters, and performance results.
 - b. Includes printouts from the Control System indicating alarms that occurred during this period.
 - c. Shall be approved prior to Contractor demobilization.
6. Discrepancy List: Maintain a discrepancy list documenting discrepancies found during the commissioning activities.
7. Record Drawings: Marked field drawing sets with as-built drawing modifications in accordance with Section 01 78 30 - Project Record Documents.
8. Issues and Resolution Log:
 - a. Ongoing log of problems or concerns.
 - b. Maintain throughout the period the systems are in operation.
9. Maintenance Log:
 - a. Contractor assembled and maintained at jobsite.
 - b. Organized by individual component and system, to allow quick reference to maintenance activities performed for a given system or component.
 - c. Maintain an ongoing log documenting Contractor performed maintenance activities, including testing and inspection reports associated with maintenance activities.
 - d. Maintain onsite in a secure location. Do not remove the Maintenance Log from the site without specific written approval from the COR.
10. Operation and Maintenance (O&M) Manuals:
 - a. In accordance with Sections 01 78 30 - Project Record Documents and 01 81 05 - General Performance Requirements.
 - b. For individual equipment and systems as well as facility operation and maintenance.
 - c. Standard Operating Procedures (SOPs):
 - 1) Specific to this facility's components and requirements.
 - 2) For Contractor installed process systems and facility areas.

- 3) Detailed step by step instructions for maintenance, startup, shutdown, and operating the process systems and equipment.
- 4) Each procedure includes:
 - a) Procedure scope.
 - b) Procedure description.
 - c) Procedure safety requirements.
 - d) List of processes and equipment impacted by the procedure.
 - e) Operating parameters and standards to be used.
 - f) Tasks to be carried out.
- 5) Integrated with the O&M Manuals.
- 6) Prepare in accordance with USEPA Guidance for Preparing Standard Operating Procedures.
- 7) Example SOPs include system use and maintenance, standard and alternative valve orientations for specific operational conditions, and access such as confined space entry.

1.10 COORDINATION

- A. Commissioning process shall require active participation of design build mechanical and electrical engineers, general contractor, equipment manufacturers' representatives, mechanical contractor, electrical contractor, and other specific subcontractors, as deemed appropriate:
 1. CA shall witness final functional performance commissioning process.
 2. Participants to include all costs necessary to participate in and complete commissioning process.
- B. Ensure participation and co-operation of all subcontractors, as required to complete commissioning process.
- C. Complete start-up and checkout procedures and ensure complete readiness of equipment and systems prior to start of functional performance testing phase.
 1. CA shall request written confirmation of system readiness for performance testing from Contractor or its appropriate subcontractor.
 2. Once CA is provided with confirmation of all related systems completion, actual date and times for functional performance testing process shall be confirmed.
 3. Provide sufficient time and qualified representatives to complete this process.

PART 2 PRODUCTS

Not Used

PART 3 EXECUTION

Not Used

END OF SECTION

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SECTION 51 00 00
INFORMATION AVAILABLE TO OFFERORS IN PHASE 2

PART 1 GENERAL

1.01 ORDER OF PRECEDENCE

- A. In case of differences between sections in Division 51 - Information Available to Offerors and sections in other divisions of the specifications, the requirements in the other divisions will govern.
- B. The Government assumes no responsibility for deductions, interpretations, or conclusions made by the Contractor based on information made available by the Government, in accordance with the clause at FAR 52.236-3, Site Investigations and Conditions Affecting the Work.

PART 2 PRODUCTS

Not Used

PART 3 EXECUTION

Not Used

END OF SECTION