AMERICAN SAMOA POWER AUTHORITY

SCOPE OF WORK

CONSTRUCTION OF VAITELE LIFT STATION UPGRADING PROJECT

I. INTRODUCTION

The American Samoa Power Authority (ASPA) owns and operates two wastewater treatment plants (WWTP) and the associated collection system infrastructure on the island of Tutuila. The collection system assets include over 57 miles of sewer mains, 1,500 manholes and twenty (20) lift stations. Additionally, each WWTP includes head-works bar screens, pumps, clarigesters, a UV disinfection reactor and an ocean diffuser. The construction of Tutuila's collection systems began as early as the 1960's and has degraded over the years resulting in deteriorated pipelines and manholes. The two WWTPs, Utulei and Fogagogo, were built in the 1970's. The Utulei WWTP serves the eastern-central portion of the island with a 6.0 MGD capacity and the Fogagogo WWTP serves the western-central portion of the island with a 6.0 MGD capacity. The islands of Ta'u, Ofu and Olosega, as well as many outlying villages on Tutuila, utilize cesspools and onsite septic systems for wastewater handling.

II. PROJECT BACKGROUND

The construction project will focus on the upgrading and improvement of Vaitele Lift Station. The project shall be align to the approved construction drawing as per the design of the Vaitele Lift Station Currently the existing pump is not able to handle flow from its collection system and this has resulted in backflow and spills that end up into the Pala Lagoon. These construction project once completed will eliminate SSO within this collection system. The improvements is includes the improvements to the lift station's mechanical electrical and civil works as detail out in the construction drawings.

III. PROJECT LOCATION

As shown in the picture below.

IV. PRIMARY OBJECTIVE AND GOAL OF THE PROJECT:

The primary objective and goal of this project is to upgrade Vaitele Lift Station so it will be able to handle existing and proposed flow with anticipated maximum inflow and infiltration of wastewater flow rate into the system. Upgrading of the Vaitele Lift Station shall include the following:

1. Upgrading of Civil, Electrical and Mechanical installations within the lift station
2. Installation of standby generator and building and a stand-alone transformer and ATS
3. Installation of an odor control system that will reduce/eliminate odor within the area.
4. Installation of a new bypass system that will be used when the lift station is taken offline for maintenance or major repair works to be done.
5. Eliminate all potential overflow locations within the Vaitele Lift Station collection system.

V. SCOPE OF WORK (SOW)

A. GENERAL

The comprehensive construction Scope of Work (SOW) below covers a complete turn-key project. The Contractor is required to furnish, deliver, and install all materials, equipment, labor, tools, and services necessary to deliver a fully functional, upgraded facility.

1. General Project Management & Mobilization

- **Furnish & Deliver:** All safety signage, perimeter chain-link security fencing, erosion control materials (silt fences, straw wattles), and temporary field office/storage facilities. [1]
- **Install & Execute:**
    - Establish a secure construction staging yard.
    - Erect perimeter security fencing and storm-water pollution prevention barriers.
    - Conduct pre-construction topographic and utility-locate surveys to verify design benchmarks.
    - Maintain continuous redlined as-built drawings and submit final CAD/GIS asset maps to ASPA upon completion.

2. Temporary Bypass Pumping & Spill Mitigation

- **Furnish & Deliver:** Fully redundant, auto-start backup diesel pumps, temporary HDPE piping, valves, fittings, and suction/discharge manifolds capable of handling peak wastewater flows.
- **Install & Execute:**
    - Design, install, and commission the complete temporary bypass pumping loop. The hydraulic analysis to be reviewed and approved by ASPA.
    - Operate and monitor the bypass system 24/7 during all phases where the primary wet well or force main is isolated.
    - Safely dismantle and remove all temporary bypass equipment from the site once the upgraded station is fully live.

3. Demolition & Civil / Structural Works

- **Furnish & Deliver:** Concrete, reinforcing steel (rebar), structural anchors, industrial-grade concrete repair mortars, and chemical-resistant protective coatings.
- **Install & Execute:**
    - Safely isolate, demolish, and legally dispose of obsolete pumps, piping, valves, electrical panels, and targeted concrete structures.
    - Rehabilitate the existing wet well and valve vaults via concrete crack injection, structural reinforcement, and application of hydrogen sulfide (H_2S) resistant protective liners as per specification provided in the drawing and technical specification.

- Construct a new, reinforced concrete, weather-proof masonry building to safely house the standby generator and electrical switchgear.
- Finalize site civil works, including security site lighting, final grading, gravel or asphalt access driveways, and final perimeter fencing.
- All concrete work that shall be required for the Lift Station as per design. Column repair, roofing replacement and all internal and external improvements.

4. Mechanical & Process Upgrades

- **Furnish & Deliver:** High-efficiency submersible sewage pumps (typically a three-pump configuration matching design hydraulic curves), vertical bar screens, interior ductile iron piping, mechanical joint fittings, isolation gate valves, and non-slam check valves and odor control system.
- **Install & Execute:**
  - Install the new multi-pump system inside the rehabilitated wet well, ensuring perfect alignment with floor-mounted guide rail systems.
  - Assemble and install all internal collection piping, valves, and manual or mechanical screening arrays inside the valve vault. This shall include valves, pressure gauge, air valve, non-return valve and other relevant piping works.
  - Furnish and mount an advanced, standalone chemical or biological odor control air treatment system.

5. Electrical, Standby Power, & SCADA Controls

- **Furnish & Deliver:** New main electrical transformer, an outdoor-rated emergency diesel generator (with integrated fuel tank), an Automatic Transfer Switch (ATS), Motor Control Centers (MCC) featuring Variable Frequency Drives (VFDs), Programmable Logic Controllers (PLCs), and all necessary conduit, wiring, and level sensors (ultrasonic/float).
- **Install & Execute:**
  - Coordinate with ASPA to install and energize the new utility-side transformer.
  - Install and anchor the emergency generator and ATS inside the newly constructed generator building.
  - Mount and wire the new MCC, VFD enclosures, and main control panels.
  - Program, wire, and integrate the lift station's telemetry system with ASPA's centralized SCADA network for remote monitoring, alarm tracking, and control.

6. Testing, Commissioning, & Facility Handover

- **Furnish & Deliver:** All testing media, calibrated pressure gauges, clean water for hydrostatic testing, and complete Operations & Maintenance (O&M) manuals.
- **Install & Execute:**

- Conduct strict hydrostatic and pressure testing on all new internal piping and force main segments.
- Perform dry and wet factory-authorized startup testing on the new pumps, VFD sequencing, ATS power-fail transfer simulation, and SCADA alarm communication loops.
- Provide comprehensive on-site classroom and field operations training to ASPA utility personnel prior to final contract closeout.

7. Strict Compliance with Supplied Drawings & Technical Specifications

7.1. Precedence and Adherence to Contract Documents

- **Execution Standard:** The Contractor must execute all furnishing, delivery, and installation work in absolute accordance with the supplied Construction Drawings and Technical Specifications.
- **Order of Precedence**: In the event of an unresolved conflict between the documents, the Technical Specifications shall take precedence over the Construction Drawings, and both shall take precedence over general industry standards, unless otherwise directed in writing by the ASPA Project Engineer.
- **Dimensions and Materials:** No substitutions of specified dimensions, material grades (e.g., 316 Stainless Steel, Schedule 80 PVC, Ductile Iron Class 52), or manufacturer models are permitted without prior written authorization via a formal Request for Information (RFI) and subsequent Change Order.

7.2. Comprehensive Submittal and Shop Drawing Process

- **Mandatory Review:** Before ordering any equipment or materials, the Contractor must submit a detailed **Submittal Package** for every item specified in the procurement log.
- **Required Contents:** Each submittal must include:
  - Manufacturer specification sheets highlighting exact model numbers and options.
  - Certified dimensional drawings showing alignment with existing wet well and vault geometries.
  - Electrical schematic wiring diagrams matching the supplied control panel designs.
  - Certified pump performance curves showing compliance with specified hydraulic flow and head points.
- **Engineer Approval:** Material fabrication or procurement prior to receiving an **"Approved"** or **"Approved as Noted"** stamp from the ASPA Project Engineer is done entirely at the Contractor's financial and schedule risk.

7.3. Equipment Delivery, Inspection, and Field Quality Control

- **On-Site Verification:** Upon delivery of equipment to the project site in Vaitele, the Contractor and ASPA representatives will conduct a joint inventory and inspection.

- **Rejection Criteria:** Any equipment delivered that deviates from the approved shop drawings, shows signs of transit damage, or fails to meet the strict anti-corrosion coating standards outlined in the Technical Specifications will be immediately rejected and must be replaced at the Contractor's sole expense.
- **Installation Checks:** Prior to backfilling any pipelines or energizing any electrical switchgear, the Contractor must request an inspection from the Project Engineer to verify that the physical installation perfectly matches the invert elevations, pipe slopes, and structural anchoring details shown on the Construction Drawings.

8. Equipment Procurement, Quality Control, & Warranty

8.1. Material Submittals & Compliance Verification

- **Furnish & Deliver:** Detailed manufacturer shop drawings, catalog cuts, product data sheets, certified pump performance curves, and material certifications for all equipment.
- **Install & Execute:**
    - Submit complete submittal packages to ASPA and the Project Engineer for review and written approval before ordering any materials.
    - Verify that all furnished equipment (pumps, generator, valves, and electrical panels) matches the exact model numbers, dimensions, capacities, and materials specified in the technical specifications and design drawings.
    - Provide factory test reports for the submersible pumps and standby generator to prove compliance with specified hydraulic and electrical performance metrics prior to shipment.

8.2. Delivery, Storage, and Handling

- **Furnish & Deliver:** All specialized lifting equipment, protective shipping crates, weather-proof coverings, and manufacturer-recommended storage preservation materials.
- **Install & Execute:**
    - Inspect all equipment immediately upon delivery to American Samoa for any shipping damage or saltwater corrosion.
    - Store all sensitive electrical components (MCCs, VFDs, PLCs) and mechanical parts in a secure, climate-controlled environment per manufacturer specifications until installation.
    - Protect raw and fabricated metals (such as ductile iron piping and valves) from ground contact, moisture, and debris in a designated, secure staging yard.

8.3. Installation in Strict Accordance with Drawings

- **Furnish & Deliver:** All manufacturer-specified anchoring bolts, gaskets, seals, and specialized tools required for precise installation.
- **Install & Execute:**
    - Position, align, and anchor all equipment exactly as detailed in the per design drawings (including structural footings, piping invert elevations, and conduit routing layouts).
    - Engage factory-trained and authorized technicians to oversee the installation, final alignment, and pre-commissioning of the primary submersible pumps and the standby generator system.

8.4. Warranty Requirements

- **Furnish & Deliver:** Written, manufacturer-backed warranty certificates issued directly to the American Samoa Power Authority (ASPA).
- **Warranty Periods:**
    - **Submersible Sewage Pumps:** A minimum 2-year comprehensive manufacturer warranty from the date of final project acceptance, covering all defects in materials, internal seals, motors, and workmanship.
    - **Standby Diesel Generator & ATS:** A minimum 2-year or 2,000-hour (whichever comes first) manufacturer warranty covering the engine, alternator, control panel, and automatic transfer switch components.
    - **All Other Equipment & Piping:** A minimum 1-year manufacturer warranty on all valves, SCADA components, odor control systems, and process piping.
    - **Contractor Labor & Workmanship**: A 1-year general contractor correction period to repair or replace any defects resulting from faulty installation or construction workmanship at no additional cost to the owner.