DRY TORTUGAS NATIONAL PARK

CYCLIC MAINTENANCE OF WATER CISTERN

GARDEN KEY

PMIS 299691

PROJECT SPECIFICATIONS

NATIONAL PARK SERVICE
MARCH 2025

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SECTION 01 11 00 - SUMMARY OF WORK

PART 1 - GENERAL

1.1 SUMMARY OF WORK COVERED BY CONTRACT DOCUMENTS

A. Project Location: Garden Key in Dry Tortugas National Park. Dry Tortugas is located approximately 70 miles west of Key West, Florida.

B. The work of this contract is to rehabilitate a partially buried brick and concrete cistern used as the water supply for Dry Tortugas National Park. Contractor shall provide all labor, management, equipment, and material to perform the following work:

1. Remove and dispose of all roots, vegetation and debris from inside the cistern cells. No herbicides, or any other chemicals, shall be used for the removal of the vegetation inside the cistern.

2. Apply waterproof cement coating to approximately 11,682 SF of interior walls. Coating material and application shall comply with Section 07 16 00.

3. Excavate around the exterior perimeter of the tank to a depth of 18" and apply approximately 365 SF of waterproof cement coating to the exterior wall that is below grade. Coating material and application shall comply with Section 07 16 00.

4. Repair approximately 1,065 SF of parge coat along the exterior walls. Materials and repairs shall comply with Section 09 24 00.

5. Apply three coats of lime wash to approximately 4,646 SF of exposed exterior top and walls. Martials and application shall comply with Section 09 97 00.

6. Remove and dispose of the existing gutter system along edge of the cistern. Install a new 6" half circle copper gutter system. Connect to new gutter system to existing outlets draining into the cistern chambers. Material and installation shall comply with Section 07 71 00.

C. All work shall be done according to the contract specifications and drawings

D. The project will be constructed under a single contract.

E. Performance period for this project will be **60 calendar days** from the Notice to Proceed (NTP) being issued. This will include any time needed for submittal reviews, material deliveries, and travel.

1.2 SUBMITTALS

A. As specified in Section 01 33 00.

B. Submit a copy of the paperwork showing that any vessel hired to transport people or supplies to Dry Tortugas is Coast Guard inspected and certified.

1.3 MAINTAINING WATER SERVICE DURING CONSTRUCTION

A. The cistern is divided into three sections. Section 1 contains potable water. Sections 2 and 3 contain non-potable water. Only one section shall be taken out of service at one time. Interruptions to water service shall be kept to a minimum. Interruptions to either potable water or non-potable water shall be less than 2-hours.

B. The sequent of working on the tanks shall be as follows:

1. The Contractor shall first dewater Section 3 by transferring as much water as can fit into Section 2 and wasting the rest.

2. When Section 3 is complete, the Contractor shall dewater Section 1 (which contains potable water) by transferring the water to Section 3. To do this, Section 3 must first be disinfected, and the piping modified so the RO plant will discharge to Section 3 and the potable water pumps can draw from Section 3.

3. When Section 1 is complete, it shall be disinfected, and potable water shall be transferred back from Section 3. The piping shall be restored to use the Section 1 as the potable water tank.

4. Finally, Section 2 can be dewatered by transferring its water to Section 3.

1.4 USE OF PREMISES

A. Limit use of premises to the project work area. Do not disturb portions of site beyond the work area. The work area is defined as 15 feet from any of the new facilities being installed.

B. All facilities on the island shall remain open during construction. Minimize the number and length of power outages.

C. The Contractor shall always conduct his operations to ensure the least inconvenience to the public.

D. Confine storage of materials to the approved storage area. The Contractor can use up to 3,000 square feet area adjacent to the tanks for storage.

1.5 RESOURCE PROTECTION

A. All natural, archaeological, and historical features and artifacts are protected. Do not take or collect anything without a permit.

B. Do not litter.

C. Confine all operations to work limits of the project. Prevent damage to natural and historic surroundings. Restore damaged areas, at no additional expense to the Government.

D. Preservation of Archaeological Resources:

1. The ground around the cistern is considered sensitive for archeology. An archeologist shall be on site when excavating around the exterior of the tank.

2. The Government will provide and pay for the archeologist.

3. It shall be the Contractor's responsibility to identify on the initial project schedule the approximate date the excavation work will start and the length of time to do the work.

4. The Contractor shall also reconfirm an exact date 7 days prior to the start of excavation.

5. The Contractor shall not perform any excavation work until the archeologist is on site.

E. Preservation of Cultural Resources:

1. Fort Jefferson is an historic structure. All work shall be done is such a manor to minimize disturbance to the fort.

2. Attachments to historic fabric (walls, floors, and ceilings) shall be minimized.

3. All drilling shall be into the mortar joints. The contractor shall not drill directly into historic bricks.

4. All fasteners used to connect to historic fabric shall be 316 stainless steel.

5. When removing existing material, care should be taken not to damage the historic fabric. Screws shall be threaded out and not pulled. Pulling can dislodge the historic mortar.

F. Preservation of Natural Resources:

1. Do not feed any wildlife. It is harmful to them and may change their behavior or migration patterns. Feeding gulls makes them aggressive and eat the eggs and chicks of protected terns.

2. Exhausted migrating birds rest here. Forcing them to fly could kill them.

3. Do not kill or harass any wildlife (other than legal fishing).

4. Fishing is allowed with a Florida state fishing license. Follow all state & federal fishing guidelines.

G. Endangered Species

1. Dry Tortugas National Park has many endangered species. They include plants, corals, reptiles such as sea turtles and crocodiles, fishes, and birds. Avoid interaction or interfering with protected species.

2. Stand on the sand, not on sea grass or on coral. This kills the organisms that make up the reef.

3. Important bird colonies occur on Bush and Long Keys. Do not enter posted closed areas.

4. If a protected species enters your work zone, stop work and contact the Contracting Officer.

1.6 WORK RESTRICTIONS

A. The Contractor shall abide by all park regulations.

B. Observe all marine safety laws.

C. On-Site Work Hours: Work shall be generally performed during normal business working hours of 7:00 a.m. to 6:00 p.m., except when otherwise indicated. Requests for any work outside those hours, must be submitted for approval at least 48 hours in advance.

D. Park Visitors: Garden Key is a heavily visited site. Use due consideration around visitors and direct all questions to park rangers. While around the visiting public, do not use inappropriate language and gestures.

E. Open containers of alcohol are prohibited on the job site during work hours.

1.7 LOGISTICS AND OTHER INFORMATION

A. Charter/Cargo Carrying Boats.

1. Commercial Charter: There are numerous options available for hiring barges, landing craft, or other cargo-carrying vessels available to the Contractor.

2. National Park Service Boat: The NPS boat can transport people and materials for the Contractor at no charge on a space available basis during its normally scheduled trips to Dry Tortugas. Typically, the schedule is to make a trip from Key West to Dry Tortugas every two weeks, (normally going on Tuesday and returning on Thursday). Cargo is limited to 25 tons per trip. Materials must be packaged in bundles no more than 2,500. The bundles must be packaged in a manner that allows them to be hoisted using the ship's crane. The Contractor shall supply all manpower required to load and unload the boat at both Key West and Dry Tortugas.

B. Commercial Modes of Passenger Travel: The following schedules may be affected by weather conditions and are subject to change:

1. Yankee Freedom Ferry/Tour Boat: Approximately 2-1/2 hours of travel time (one-way). Boat departs at 8:00 AM from Key West daily and departs at 3:00 PM from Dry Tortugas. Contact information: 800-634-0939 or 305-294-7009.

2. Key West Adventure Seaplanes: Approximately 40 minutes of travel time. Departing from Key West morning and afternoon. Contact company for weight of transportable items and other restrictions. Contact information: 305-293-9300.

C. Accommodations:

1. Government housing is the only housing available at Dry Tortugas. This housing is limited and in high demand. Accommodations will be made available (at cost) to the Contractor for up to 4 people for up to 3 weeks.

2. The nightly rate per person is $45, to be paid directly to the Park Administration Office; payment shall be made in cash or check.

3. Those accommodations are referred to as "The Crew's Quarters," which consist of a 10-bed bunkroom, kitchen/dining room, and two restroom stalls with showers. The quarters contain pots, pans, dishes, utensils, microwave, coffeepots, refrigerators, standing freezer, and television with cable.

4. Other Contractors or Government personnel may be occupying the other beds in the crew's quarters during the time the Contractor is on site.

5. Provisions: Contractor and contractor's personnel shall provide their own twin sheets and pillowcases, food, condiments, drinks, and toiletries for the length of their stay. Recreational items desired such as fishing gear, snorkeling gear, beach accessories, or flashlights must likewise be brought to the island by the contractor.

6. "House Rules" while staying at Dry Tortugas:

   A. All plastic and aluminum are recycled.

   B. Fruit and vegetable waste shall be saved and placed in park composters.

   C. Glass containers are not allowed to be left behind on site. Any glass containers that have been brought to the island must be carried back to the mainland by the Contractor.

   D. All extra food must be removed upon departure.

   E. Water shall be conserved by taking quick showers and consolidating dirty dishes to be washed only once a day.

   F. Accommodations must be swept and cleaned upon departure. Cleaning materials are provided.

   G. Quiet hours are from 10:00 PM to 7:00 AM.

1.8 GOVERNMENT PROVIDED EQUIPMENT

A. The government has a telescoping forklift available on island which will be available for use by the Contractor to move material from the dock to the tank site. The Contractor shall provide a trained equipment operator. Fuel will be government provided. Use of the equipment is to be kept to a minimum and only as required to complete the project work.

1.9 PRECONSTRUCTION CONFERENCE

A. Before start of construction, the Contracting Officer will arrange a meeting with the Contractor. The meeting agenda will include the following as a minimum: correspondence

procedures, designation of responsible personnel, payments to the Contractor, park rules and regulations, construction schedule, shop drawings, and project closeout requirements.

1. Review of Health and Safety Plan and protocols.

2. Location of staging areas, heavy equipment, work areas, location of barricades, methods of transportation, loading and unloading onto and off-of the island, tugboat docking entrance/exit routes for heavy equipment, and work hours.

3. Lodging and facility accommodations (available at the park at the rate of $45/night/person). Payment for accommodations shall be made with cash or check directly to the Administrative Office at Dry Tortugas National Park.

4. Emergency procedures to shuttle personnel to and from the mainland.

5. Emergency access/availability to the park communication system.

1.10 FIELD VERIFICATION

A. The Contractor shall field verify all new and existing dimensions affecting the work of this contract before ordering products. Any discrepancies between construction drawings, construction specifications, and field conditions shall be brought to the attention of the Contracting Officer before work is to be performed. Any work that is performed without notifying the Contracting Officer will be done at the Contractor's own expense.

1.11 CONSTRUCTION MATERIALS

A. All materials, except sand for the mortar, shall be Contractor furnished from outside the park.

PART 2 - PRODUCTS (Not used)

PART 3 - EXECUTION (Not used)

END OF SECTION

SECTION 01 33 00 - SUBMITTALS

PART 1 - GENERAL

1.1 DESCRIPTION

A. The work of this section consists of submittal requirements before and during construction.

B. All submittals shall be transmitted electronically. One copy in PDF or MS Word format is required. If the file sizes are too large to email, the Government will provide the Contractor access to its file transfer web site.

1.2 PRE-CONSTRUCTION SUBMITTALS:

A. Submit a Progress Schedule (normally in bar chart form) showing estimated starting and completion dates for each part of the work. The first progress payment will not be issued until an acceptable progress schedule is submitted.

B. Submit a Schedule of Values showing the breakdown of the Contract amount into appropriate units of work. Include general condition costs, overhead, and profit in each part of the work and not as separate items. The Schedule of Values will form the basis for progress payments as provided for in the General Provisions.

C. Submit a safety plan per Section 01 35 00.

1.3 MATERIAL SUBMITTALS:

A. All material submittals shall be transmitted using National Park Service form DSC-1(CS). No action will be taken on a submittal item unless accompanied by the transmittal form.

B. As specified in the individual sections, forward submittals to the Contracting Officer at least 21 days before need for approval.

C. Contracting Officer reserves the right to require submittals in addition to those called for in individual sections.

D. Coordinate all submittals and review them for legibility, accuracy, completeness, and compliance with contract requirements. Forward submittals that are related to or affect one another as a package to facilitate coordinated review. Each transmittal shall contain only data specific to that individual submittal.

E. Contracting Officer's Review:
   1. Any work done or orders for materials or services placed before approval shall be at the Contractor's own risk.
   2. The returned submittal will be marked in one of three ways as defined below:
      a. APPROVED: Acceptable with no corrections.
      b. APPROVED WITH NOTATIONS: Only minor corrections or clarifications are needed and no further review is required. The Contractor shall address all review comments when proceeding with the work.

c. DISAPPROVED - RESUBMIT: Rejected as not in accordance with the contract or as requiring major corrections or clarifications. The Contracting Officer will identify the reasons for disapproval. The Contractor shall revise and resubmit with changes clearly identified.

PART 2 - PRODUCTS (not used)

PART 3 - EXECUTION (not used)

END OF SECTION

SECTION 01 35 00 - ACCIDENT PREVENTION

PART 1 - GENERAL

1.1 DESCRIPTION

A. The work of this section consists of establishing an effective accident prevention program and providing a safe environment for all personnel and visitors.

1.2 SUBMITTALS

A. Accident Prevention Program: Before on-site work begins, submit for approval an accident prevention program. The Contracting Officer will review the proposed program for compliance with OSHA, USACE EM 385-1-1 *Safety and Occupational Health (SOH) Requirements* (Latest Edition), and project requirements. If the program requires any revisions or corrections, the contractor shall resubmit the program within 10 days. No progress payments will be made until the program is approved. The program shall include:
   1. Name of responsible supervisor to carry out the program.
   2. Weekly safety meetings.
   3. First aid procedures.
   4. Outline of each phase of the work, the hazards associated with each major phase, and the methods proposed to ensure property protection and safety of the public, National Park Service personnel, and Contractor's employees. Identify the work included under each phase by reference to specification section or division numbers.
   5. Training, both initial and continuing.
   6. Planning for possible emergency situations, such as floods, fires, cave-ins, explosions, power outages, and wind storms. Such planning shall take into consideration the nature of construction, site conditions, and degree of exposure of persons and property.
   7. Housekeeping: Section 01 57 00.
   8. Fire Protection: Section 01 51 00.

B. Certificates: Provide certificates from a mechanic that all mechanical equipment has been inspected and meets OSHA requirements.

C. Submit a copy of test reports, as required by OSHA, for personnel working with hazardous materials.

D. Upon request, submit proof of employees' qualifications to perform assigned duties in a safe manner.

1.3 QUALITY ASSURANCE:

A. In case of conflicts between Federal, state, and local safety and health requirements, the most stringent shall apply. Equipment or tools not meeting OSHA requirements will not be allowed on the project sites. Failure to comply with the requirements of this section and related sections may result in suspension of work.

B. Qualifications of Employees:
   1. Ensure that employees are physically qualified to perform their assigned duties in a safe manner.

2. Do not allow employees to work whose ability or alertness is impaired because of drugs, fatigue, illness, intoxication, or other conditions that may expose themselves or others to injury.
3. Operators of vehicles, mobile equipment, hoisting equipment, and hazardous plant equipment shall be able to understand signs, signals, and operating instructions, and be capable of operating such equipment. Provide operating instructions for all equipment. Newly hired operators shall be individually tested by an experienced operator or supervisor to determine if they are capable of safely operating equipment.

1.4 ACCIDENT REPORTING

A. Reportable Accidents: A reportable accident is defined as death, occupational disease, traumatic injury to employees or the public, property damage by accident in excess of $100, and fires. Notify Contracting Officer immediately in the event of a reportable accident.

B. Other Accidents: The contractor shall report all other accidents to the Contracting Officer as soon as possible and assist the Contracting Officer and other officials as required in the investigation of the accident.

PART 2 - PRODUCTS

2.1 FIRST AID FACILITIES

A. Provide adequate facilities for the number of employees and the type of construction at the site.

2.2 PERSONNEL PROTECTIVE EQUIPMENT

A. Meet requirements of NIOSH and MSHA, where applicable, as well as ANSI.

PART 3 - EXECUTION

3.1 EMERGENCY INSTRUCTIONS

A. Contact on-island park service staff. The Park Service will arrange for emergency medical, firefighting, or law enforcement as necessary.

3.2 EGRESS

A. Provide and maintain adequate egress at all times in accordance with the Life Safety Code (NFPA 101). No corridor, aisle, door, or exit shall be obstructed or used in a manner that interferes with egress.

3.3 PROTECTIVE EQUIPMENT

A. Inspect personal protective equipment daily and maintain in a serviceable condition. Clean, sanitize, and repair, as appropriate, personal items before issuing them to another individual.

B. Inspect and maintain other protective equipment and devices before use and on a periodic basis to ensure safe operation.

3.4 HARD HATS AND PROTECTIVE EQUIPMENT AREAS

A. A hard hat area will be designated by the Contracting Officer. The hard hat area shall be posted by the contractor in a manner satisfactory to the Contracting Officer.

B. It is the contractor's responsibility to require all those working on or visiting the site to wear hard hats and other necessary protective equipment at all times.

3.5 TRAINING

A. First Aid: Provide adequate training to ensure prompt and efficient first aid.

B. Hazardous Material: Train and instruct each employee exposed to hazardous material in safe and approved methods of handling and storage. Hazardous materials are defined as explosive, flammable, poisonous, corrosive, oxidizing, irritating, or otherwise harmful substances that could cause death or injury.

END OF SECTION

SECTION 01 51 00 - TEMPORARY SERVICES

PART 1 - GENERAL

1.1 DESCRIPTION

A. The work of this section consists of providing temporary services required for contractor's performance of the work of this contract.

PART 2 - PRODUCTS

2.1 GENERAL

A. Temporary materials may be new or used, but must be adequate in capacity for the required usage, must not create unsafe conditions, and must not violate requirements of applicable codes and standards.

PART 3 - EXECUTION

3.1 ELECTRICITY AND LIGHTING:

A. Electrical Service is available at Dry Tortugas and will be provided to the Contractor.

3.2 TELEPHONE

A. No telephone or cellular service is available at Dry Tortugas.

3.3 WATER:

A. The Government will provide drinking water to the Contractor at no cost.

3.4 SANITARY FACILITIES:

A. The Contractor shall use the restroom facilities provided with the housing.

3.5 FIRE PREVENTION AND PROTECTION:

A. Responsible person: A capable and qualified person shall be placed in charge of fire protection. The responsibilities shall include locating and operating fire protective equipment.

B. Hazard Control: Take all necessary precautions to prevent fire during construction. Do not store flammable or combustible liquids within 50 feet of a structure. Provide adequate ventilation during use of volatile or noxious substances.

C. Smoking: Smoking within buildings or temporary storage sheds is prohibited. Smoking is prohibited near any combustible materials.

D. Hot Work: The Contractor shall obtain a hot work permit before performing hot work such as welding and acetylene torch cutting. The permit form is available from the Contracting Officer and shall be submitted to the Contracting Officer for signature by the Park Structural Fire Coordinator. The permit will require the hot work area to be free of non-combustibles and to have a fire extinguisher available. Hot work will not be allowed in the following areas:
   1. In areas not authorized by the Park Structural Fire Coordinator or his/her designee
   2. In sprinklered buildings while such protection is impaired
   3. In the presence of explosive atmospheres (that is, where mixtures of flammable gases, vapors, liquids, or dusts with air exist)
   4. In explosive atmospheres that can develop inside unclean or improperly prepared drums, tanks, or other containers and equipment that have previously contained such materials

3.6 PROTECTION EQUIPMENT REQUIRED:

A. Travel distance from any work station to the nearest extinguisher shall not exceed 75 feet and one extinguisher on each vehicle or piece of equipment.

END OF SECTION

SECTION 01 57 00 - TEMPORARY CONTROLS

PART 1 - GENERAL

1.1 DESCRIPTION

A. The work of this section consists of providing temporary controls.

PART 2 - PRODUCTS

2.1 BARRIERS

A. Material may be new or used, but shall be suitable for intended purpose.

B. Fencing
   1. Safety Barrier Fence: Orange plastic fence, minimum height, 4 feet.
   2. Fences and barriers shall be structurally adequate and neat in appearance.

C. Lumber
   1. Free of nails, large knot holes and splinters.

D. Barrier Tape
   1. Banner Guard, imprinted with "CAUTION: CONSTRUCTION AREA", manufactured by Reef Industries, Inc., Houston, Texas, or approved equal.

PART 3 - EXECUTION

3.1 HOUSEKEEPING

A. Keep project neat, orderly, and in a safe condition at all times.

B. Provide enough containers for collecting construction debris and construction materials to be recycled.

C. Keep volatile wastes in covered containers.

D. Utilize excavated material as soon as possible.

3.2 DISPOSAL

A. All removed material, except soil and rock, becomes the property of the Contractor and shall be taken off island for disposal.

B. Do not burn or bury refuse inside the park.

3.3 AIR AND WATER POLLUTION CONTROL

A. Dust control: The Contractor shall take all reasonable measures to reduce dust nuisances to persons and to prevent damage to buildings, existing vegetation or any other property near the project work site. Reasonable measures include watering materials during demolition, watering exposed soils, and covering stockpiles.

B. Secure trash and other debris to prevent washing or blowing off the job site.

3.4 PROTECTION OF PUBLIC

A. Fence, barricade, or otherwise block off the immediate work area to prevent unauthorized entry.

B. Protect pedestrian traffic by guardrails or fences.

C. Cover pipes, hoses, and power lines crossing sidewalks and walkways with troughs using beveled edge boards.

3.5 BARRIER TAPE

A. Install where directed by Contracting Officer. Keep a minimum of two rolls on site at all times.

3.6 REMOVAL

A. Completely remove barriers no longer needed when approved by Contracting Officer.

END OF SECTION

SECTION 01 77 00 - PROJECT CLOSEOUT

PART 1 - GENERAL

1.1 DESCRIPTION

A. The work of this section consists of final cleanup, providing operation and maintenance data, training, and final inspection procedures.

PART 2 - PRODUCTS

2.1 CLEANING MATERIALS:

A. As recommended by the manufacturer of surface to be cleaned.

PART 3 - EXECUTION

3.1 CLEANING

A. Before scheduling the final inspection, remove all tools, equipment, surplus materials, and rubbish. Restore or refinish surfaces that are damaged due to work of this contract to original condition. Remove grease, dirt, stains, foreign materials, and labels from finished surfaces. Thoroughly clean building interiors. Pick up all construction debris from the site. At time of final inspection, project shall be thoroughly clean and ready for use.

3.2 PROJECT RECORD DRAWINGS:

A. Maintain one complete full size set of contract drawings and one full size set of vendor supplied drawings. Clearly mark changes, deletions, and additions using National Park Service drafting standards to show actual construction conditions. Show additions in red, deletions in green, and special instructions in blue.

B. Keep record drawings current. Make record drawings available to the Contracting Officer for inspection at the time of monthly progress payment requests. If project record drawings are not current, the Contracting Officer may retain an appropriate amount of the progress payment.

C. On completion of the total project, submit complete record drawings. Include all shop drawings, sketches, and additional drawings that are to be included in the final set, with clear instructions showing the location of these drawings.

3.3 SUBSTANTIAL COMPLETION AND FINAL INSPECTION

A. Submit written certification that project, or designated portion of project, is substantially complete, and request in writing a final inspection. Contracting Officer will make an inspection within 10 days of receipt of request.

B. When work is determined to be substantially complete, Contracting Officer will prepare a list of deficiencies to be corrected before final acceptance and issue a Letter of Substantial Completion.

C. If work is not determined to be substantially complete, Contracting Officer will notify contractor in writing. After completing work, contractor shall resubmit certification and request a new final inspection.

3.4 ACCEPTANCE OF THE WORK

A. After all deficiencies have been corrected, a Letter of Acceptance will be issued.

END OF SECTION

SECTION 07 16 00 - WATERPROOF CEMENTITIOUS COATING

PART 1 - GENERAL

1.1 SUMMARY OF WORK

A. The work of this section is to apply a cementitious waterproof coating to the interior and underground exterior of the existing water storage cistern.

1.2 SUBMITTALS: As specified in Section 01 33 00.

A. Manufacturer's literature and installation instructions for the waterproof coating material.

B. Certification that the coating material meets the requirements for potable water service.

PART 2 - PRODUCTS

2.1 WATERPROOF CEMENTITIOUS TANK COATING

A. Thoroseal® cement based, aggregate type, waterproof coating for concrete and masonry as manufactured by Thoro System Products or approved equal. Coating shall be listed in NSF Standard 61 for potable water. The coating shall meet the following requirements:

Compressive Strength:	4000 psi at 7 days	ASTM C109-90
Flexural Strength	350 psi at 7 days	ASTM C348-86
Freeze/Thaw Resistance	No cracking or delamination after 200 cycles.	ASTM C666-90 Method B

B. Bonding Agent: Acryl 60 acrylic polymer as manufactured by Thoro System Products or approved equal. Bonding Agent shall be listed in NSF Standard 61 for potable water service.

C. Color:
   1. Base Coat: Gray
   2. Final Coat: White

PART 3 - EXECUTION

3.1 TANK COATING

A. Follow manufacturer's recommendation in applying coating products.

B. High pressure power wash (4,000 to 10,000 psi) surface to remove all foreign matter, dust, dirt, paints, oils, grease, laitance or any other surface contaminates.

C. Mix coating using 1 part bonding agent to 2 parts water. Allow mixture to rest undisturbed a minimum of 10 minutes to fully wet out.

D. Dampen surface immediately prior to application. Apply material with a Tampico brush. Apply two coats of the waterproof coating. Base coat shall have a minimum dry film thickness of 25 mils. Top Coat shall have a minimum dry film thickness of 15 mils. Allow material to dry 24 hours between coats.

E. Coating shall dry for a minimum of 7 days before filling tank.

3.2 DISINFECTION:

A. The potable water sections of the tank shall be disinfected prior to returning to service.

B. Disinfection shall be according to AWWA C652--Disinfection of Water Storage Facilities

END OF SECTION

SECTION 07 71 00 - GUTTERS

PART 1 - GENERAL

1.1 SUMMARY OF WORK

A. The work of this section is to install copper half round gutters to collect water off the top of the cistern and channel the water into the non-potable sections of the cistern.

1.2 SUBMITTALS:

A. Manufacturer's literature and installation instructions for the gutter.

1.3 SUBMITTALS

A. As specified in Section 01 33 00.

B. Product data for gutters, downspouts, and accessories: Manufacturer's technical product data, installation instructions and general recommendations for each specified sheet material and fabricated product.

1.4 DELIVERY, STORAGE, AND HANDLING

A. Packing, Shipping, Handling, and Unloading: Protect finish metal faces.

B. Acceptance at Site: Examine each component and accessory as delivered and confirm that material and finish is undamaged. Do not accept or install damaged materials.

C. Storage and Protection:
   1. Stack pre-formed material to prevent twisting, bending, and abrasions.
   2. Provide ventilation.
   3. Prevent contact with materials which may cause discoloration or staining.

1.5 INSTALLATION

A. Requirements: Fabricator is responsible for installing system, including anchorage to substrate and necessary modifications to meet specified and drawn requirements and maintain visual design concepts in accordance with Contract Documents and following installation methods as stipulated in the "Copper in Architecture" handbook published by the Copper Development Association (CDA).
   1. Drawings are diagrammatic and are intended to establish basic dimension of units, sight lines, and profiles of units.
   2. Make modifications only to meet field conditions and to ensure fitting of system components.
   3. Provide concealed fastening wherever possible.
   4. Attachment considerations: Account for site peculiarities and expansion and contraction movements so there is no possibility of loosening, weakening and fracturing connection between units and structure or between components themselves.
   5. Accommodate structure deflections in system connections to structure.

B. Performance Requirements:
   1. System shall accommodate movement of components without buckling, failure of joint seals, undue stress on fasteners, or other detrimental effects when subjected to seasonal temperature changes and live loads.
   2. Design system capable of withstanding building code requirements for negative wind pressure.

PART 2 - PRODUCTS

2.1 GUTTERS

A. Gutters: ASTM B 370, 6-inch diameter, single bead half round gutter, 20 oz (0.027” thick).

B. Hangers: Copper, half round, fascia mounted, J style.

C. Natural weathering mill finished copper. No applied finish.

D. Fabricate corners from one piece with minimum 18-inch (450-mm) long returns; solder corners for rigidity.

2.2 COPPER FLASHING.

A. ASTM B 370, 22 mil (0.0216”)

2.3 SOLDER

A. Solder: ASTM B 32; Provide 50-50 tin/lead or lead free alternative of similar or greater strength solder. Killed acid flux.

B. Flux: Muriatic acid neutralized with zinc or approved brand of soldering flux.

2.4 RIVETS

A. Pop Rivets: 1/8-inch (3-mm) to 3/16-inch (4.5-mm) diameter, with solid brass mandrels.

B. Provide solid copper rivet (tinner ' s rivets) where structural integrity of seam is required.

PART 3 - EXECUTION

3.1 INSTALLATION

A. General: Except as otherwise indicated, comply with manufacturer's installation instructions and recommendations and with the "Copper in Architecture" handbook published by the Copper Development Association (CDA). Anchor units of work securely in place by methods indicated, providing for thermal expansion of units; conceal fasteners where possible, and set units true to line and level as indicated. Install work with laps, joints, and seams that will be permanently watertight and weatherproof.

1. Install units plumb, level, square, and free from warp or twist while maintaining dimensional tolerances and alignment with surrounding construction; except install gutters with required slope.
2. Apply asphalt mastic on copper surfaces of units in contact with cementitious materials and dissimilar metals.
3. Fit gutters to downspouts and flashings for watertight connections. Make corners square, surfaces true and straight in planes, and lines accurate to profiles.
4. Miter, lap seam and close corner joints with solder. Seal seams and joints watertight with solder
5. Install expansion joints at frequency recommended by the CDA "Copper in Architecture" handbook. Do not fasten moving seams such that movement is restricted.

B. Gutters and Downspouts:
1. Flash and seal gutter to downspout.
2. Slope gutters not less than 1/8 inch per foot (1:100).
3. Provide expansion joints at 48 ' -0" (14,400-mm) maximum, not more than 24 feet (7200 mm) from corners.
4. Hang gutter with copper straps spaced 30-inches (750-mm) centers maximum. Closer spacing may be required to handle system loads.
5. Integrate gutter flashing conditions with requirements of adjacent roofing for watertight installation.

C. Seams: Fabricate nonmoving seams with 1-inch (25-mm) lapped riveted and soldered seams. Tin edges to be seamed, lap seams, rivet seams, and solder.

D. Separations: Provide for separation of metal from noncompatible metal or corrosive substrates by coating concealed surfaces at locations of contact, with bituminous coating or other permanent separation as recommended by manufacturer/fabricator.

E. Install "beehive"-type strainer-guard at downspouts in open gutters; removable for cleaning downspouts.

F. Install counterflashing as indicated to prevent water from migrating behind gutter system.

3.2 CLEANING

A. Remove protective film (if any) from exposed surfaces of copper promptly upon installation. Strip with care to avoid damage to finishes.

B. Clean exposed copper surfaces, removing substances that might cause abnormal discoloration of metal.

C. Upon completion of each area of soldering, carefully remove flux and other residue from surfaces. Neutralize acid flux by washing with baking soda solution, and then flushing clear water rinse. Use special care to neutralize and clean crevices.

D. Clean exposed metal surfaces of substances that would interfere with uniform oxidation and weathering.

END OF SECTION

SECTION 07 92 00

SEALANTS

PART 1 - GENERAL

1.1 DESCRIPTION

A. The work of this section consists of furnishing and installing sealants to provide a barrier against air, water, moisture, or dirt, and where needed for appearance.

1.2 SUBMITTALS

A. As specified in Section 01330.

B. Manufacturer's technical data and application instructions.

1.3 DELIVERY, STORAGE, AND HANDLING

A. Deliver materials in manufacturer's original, unopened containers and store in a protected area at temperatures recommended by manufacturer.

PART 2 - PRODUCTS

2.1 SEALANT

A. Sikaflex-201, one-component, flexible, polyurethane-based, non-sag elastomeric sealant.

B. ASTM C920 Type S, Grade NS, class 25.

C. NSF certified for drinking water and incidental food contact.

PART 3 - EXECUTION

3.1 INSTALLATION OF SEALANTS

A. Follow sealant manufacturer's instructions for installation of sealants. Tool joints concave.

B. Install elastomeric sealants in accordance with ASTM C1193.

END OF SECTION

SECTION 09 24 00 – NATURAL MORTAR PARGE COAT

PART 1 - GENERAL

1.1 SUMMARY OF WORK

A. The work of this section is to remove the existing water proof coating on the cistern's exterior exposed walls and install a parge coat on the wall in preparation for the lime wash finish.

1.2 SUBMITTALS: As specified in Section 01 33 00.

A. Manufacturer's literature for the natural mortar.

PART 2 - PRODUCTS

2.1 American Natural Cement

A. Use either of the following cement products or an approved equal:

1. Rosendale Natural Cement: Available from Edison Coatings, Inc. 3 Northwest Drive, Plainville, CT 06062. Telephone: 860-747-2220 or 800-341-6621.

2. Century Brand Natural Cement: Available from Freedom Cement, LLC, 24 East Brookfield Road, North Brookfield, MA 01535. Telephone: 508-867-6100.

B. Cement shall meet the requirements of ASTM C10 except cement does not have to meet initial set time requirements.

2.2 SAND

A. Use local sand available in the vicinity of the seaplane ramp.

B. Grade local sands per limits described in ASTM C144 for sieve numbers 8 through 30.

2.3 WATER

A. Clean, clear, non-potable.

PART 3 - EXECUTION

3.1 SURFACE PREPARATION

A. Remove the existing water proof coating by either grinding or chipping the top 1/8” of concrete off the exposed exterior cistern walls.

B. All surfaces must be clean, structurally sound, and free of any loose or foreign material.

C. Dampen surfaces to prevent moisture from being wicked out of the mortar.

3.2 MIXING MORTAR

A. Mix two parts sand to one part mortar. Add water to achieve a workable consistency.

3.3 APPLICATION:

A. Fill wall depressions first so the top layer can be installed in a uniform thickness.

B. Apply top layer a minimum 1/8" thickness by trowel and smooth with a darby. Use a brush to produce a light brushed finish. Avoid overlapping fresh mortar over previously dried areas as this will result in a lack of color uniformity.

3.4 CURING

A. Provide sufficient moisture to permit continuous hydration of the cementitious materials and minimize cracking. Apply moisture with a fine fog spray of water or using moist burlap. Care must be exercised to avoid erosion damage to mortar surface.

END OF SECTION

SECTION 09 97 00 – LIME WASH

PART 1 - GENERAL

1.1 SUMMARY OF WORK

A. The work of this section is to apply lime wash to the cistern exterior top and exposed exterior walls.

1.2 SUBMITTALS: As specified in Section 01 33 00.

A. Manufacturer's literature for the lime.

PART 2 - PRODUCTS

2.1 LIME

A. Use either lime putty per ASTM C1489 or hydrated lime per ASTM C206, Type S.

PART 3 - EXECUTION

3.1 MIXING LIME WASH

A. Lime wash may be made from either lime putty or hydrated lime. Add water to make a slurry with the consistency of whole milk. This consistency should be approximately 15 to 20% lime and 80 to 85% water. Lime wash should be mixed long enough to assure that all the lime is in suspension. Mix with a motorized long-stemmed paddle stirrer. Screen lime wash through a 1/8-inch screen before applying.

3.2 APPLICATION

A. Wash surface with water and scrub with a brush to remove dirt and loose material.

B. Dampen surface with water so it is wet but without standing water.

C. Apply lime wash with a large soft bristle brush. During application with the brush, use a scooping and swirling motion in the pail to keep the mix suspended. Work in patterns that assure full coverage and maintains a wet edge where applying. Apply the lime wash liberally and work it into the surface with strokes in many directions (up, down, and diagonal). Expect the lime wash to splatter off of the brush and be rather messy. Drop cloths and masking should be used for areas that will not be covered by lime wash.

3.3 COATS

A. Apply three coats of lime wash. Wait 24 hours between coats.

END OF SECTION