**PART 3-ENCLOSURE**

The pre-assembled pump building shall house one diesel fire pump, one electric fire pump and a jockey pump with controls that interface with the existing DH fire control panel (in the control room). The building shall be a pre-fabricated, lighted and insulated enclosure designed in accordance with AISC “Specifications for Structural Steel Buildings” and the AISI “Specification for the Design of Cold-Formed Steel Structural Members.”

### Materials

1. The materials shall be new, unused, and fabricated in a workmanlike manner in a factory environment.
2. The components and building parts shall be clearly marked on the drawings.

### Base – Perimeter Angle System

1. Building base shall have a hot rolled steel angle framework, welded, primed and painted, with maximum deflection of 1/8” in 10’ of length. Base shall be pre-drilled for anchoring to a Steel Skid.
2. All equipment shall be mounted on a common steel base of open construction to form a complete operating pumping system.
3. Peripheral structural components shall be from channel or wide flange beam ASTM 36.
4. Internal structural components shall be from channel or rectangular tubing ASTM 36, all welded per the AICS Manual of Steel Construction, part 4, “Welded Joints:.
5. Provisions shall be made in the station base for loading and offloading and handing the station at the site.
6. Lift eyes shall be deigned to eliminate trip hazard once the station has been set in place.
7. The base shall be covered in 3/16” deck plate with structural steel plate mounted under pumps and motors.
8. All deck and structural plate shall be continuously seal welded to peripheral structural members, and skip welded to from the bottom of the internal structural members.

### Framework:

1. The enclosure shall be sized such that a minimum distance of 2 feet 6 inches is maintained all around the electric, diesel and jockey pumps to allow for maintenance.
2. The building shall have a complete, internal, self-supporting, structural steel frame which does not rely on the exterior panels or roof cover panels for its structural strength or framing.
3. The building framework shall include 8 to 16 gauge, cold-formed, galvanized steel structural members.
4. Building framework to have a flush wall, post and beam format with girts and purlins, and full trusses on both endwalls which easily allows for future expansion and/or modifications.
5. Wall and ceiling structural support system are to be designed to provide load carrying capability for anticipated equipment loads using 16 gauge galvanized steel hat channels behind liner panel for reinforcement as needed, with locations shown on approval drawings.
6. Roof to have 8 to 14 gauge solid web hot rolled steel trusses.
7. Floor drains shall be provided for each section of the enclosure.
8. Pump support structure shall be designed and built to avoid the structure's natural frequency by 25 percent.

### Loading

The building shall be designed to support the following loads:

* Roof Load - 50 PSF (40# live and 10# dead)
* Ceiling Dead Load - 10 PSF
* Wall Load - 120 mph wind, plus wall mounted equipment.
* Floor Load – N/A Slab Floor
* Seismic Zone: Per UBC for site location.
* Horizontal Wind Load shall not be less than 120 MPH based on State of Florida Building Code, 1609.1.1.

### Insulation

1. Exterior walls shall have a minimum of 3.5”, fiberglass batt insulation and a vapor barrier.
2. Ceiling shall have a minimum of 6” insulation and a vapor barrier.
3. Walls and Ceilings: Shall install an additional 1” fiber-glass insulation blanket over the entire building framework and under the exterior wall and roof panels, as a thermal break.
4. The insulation system shall provide a minimum of R-19 in the walls, R-21 above the ceiling.

### Ventilation

1. The enclosure shall be provided with automated ventilation system including fans and inlet air dampers to maintain the room temperature to less than 10°F above ambient conditions when the outside air temperature is 110°F.
2. A minimum of 5 air-changes per hour is required during summer operating conditions (above 50°F).
3. Provide controls and power distribution equipment for a completely operable automated ventilation system.

### Coatings

1. All exposed metal surfaces shall be thoroughly cleaned, and finished smooth, to remove loose rust and other foreign materials as recommended by coating Seller.
2. Base framework to be primed and painted with a self-priming, VOC compliant, catalyzed coating system designed to provide an extremely durable finish, suitable for heavy industrial, severe coastal, chemical, or off shore environments with superior corrosion protection and resistance to fading. Paint system to have a minimum Dry Film Thickness, per coat of 5 mils.
3. All non-wetted exterior exposed metal surfaces including, but not limited to, pumps, motor, engine, fuel tank, and panels, shall be painted Safety Red. Paint shall be temperature rated to 1.5 times the maximum engine temperature.
4. All wetted metal surfaces shall be coated with a non-corrosive protective coating of appropriate thickness compatible with AWWA standards.
5. Unit to come finished painted. Seller's paint shall meet the warranty requirements specified by the contract. If the paint system shows defects such as peeling, cracking, or discoloration during the warranty period, Seller shall incur the cost of repainting the equipment using a paint schedule approved by the Engineer. See GRU Coatings Specification, Attachment 2.
6. Coating must have a low fire hazard rating with a flame spread of 0 and a Fuel Contributed Index of less than 5.

### Roof

1. The roof shall be an overlapping, standard seam roofing, 24 gauge roof panels shall be installed with appropriate self-tapping fasteners with integral gaskets.
2. The roof pitch shall be pitched 1 inch in 12 or greater with minimum seam height of 2”.
3. The roof shall have a die-formed ridge cap, and a fully supported 3” overhang that matches roof.
4. The roof shall be either a gable or one way slope with pitch with a properly sized attic space ventilation.
5. Heavy duty steel lift eyes to be supplied and mounted to the roof trusses as needed for lifting the building.

### Exterior Walls

1. Exterior siding panels to be overlapped and installed with appropriate self-tapping fasteners with integral gaskets, and shall be removable without any disturbance to interior panels. Butted seams are not allowed.
2. Shall be 26 gauge “Multi-Rib” ribbed steel panels with a PVDF resin-based finish over a galvalume substrate in manufacturer’s standard colors.
3. All openings in walls are to be structurally framed, sleeved, trimmed, and provided with external drip caps.
4. Repair or replacement of exterior panels must be able to be done entirely from outside. ASTM A-653

### Exterior Trim

The exterior trim package shall include stepped or boxed eave, rake, fascia, base, corner, jamb, and header trim in, 26 gauge Galvalume material with owner’s choice of standard KYNAR colors.

### Interior Finish

1. The building’s interior walls and ceiling shall be lined with flush-fit 22 gauge, roll-formed liner panels, with concealed fasteners and a baked-on White polyester finish over G-90 galvanized substrate.
2. The building interior shall feature a complete matching trim system including base, jamb, header, and ceiling trim. Liner to be reinforced with 14 gauge hat channels mounted vertically as needed for heavy wall mounted items.

### Interior Dimensions:

1. The building’s finished interior dimensions shall be no less than 10 ½” in width and length from the exterior dimensions shown on the drawings.
2. Minimum floor to ceiling dimension shall be nominal 7” less than stated eave height.

### Fasteners, Adhesives, and Sealants

The fasteners, adhesives, and sealants utilized shall be of types approved for use on this type of structure as required by the appropriate agency or governing body.

### Closures

Matching, pre-molded, closed cell elastomer closures provided by the siding and roof panel manufacturer shall be installed according to the manufacturer’s recommendations at the eave line, beneath the roof panels, and where the trim meets the wall panels.

### Doors and Frames

1. Doors and frames shall be 72” X 84” double type at a minimum and shall be provided for access to both fire pumps.
2. Doors to be constructed of no less than 18-gauge steel faced leafs with stiffeners and 16 gauge door frames with insulated core.
3. Doors and frames to be hot-dipped galvanized to ASTM designations A924 and A653, then factory primed and painted with epoxy enamel to match the building or the trim.
4. Shall at a minimum comply with Steel Door Institute directive SDI-100, Classification Level 4, Model 1.
5. Door Hardware shall include:
6. NRP stainless steel ball bearing hinges, minimum of Three (3) per door.
7. LCN4111 closer with hold open arm.
8. Weather-stripping and sweep, Reese #797B.
9. Threshold, Reese #V301.
10. Watershed, at top of door, Reese #202C; 203C.
11. Drip cap, extending 3” past door edge.

### Electrical

1. All electrical components shall meet applicable NFPA 70 recommendations.
2. Provide disconnect switches, panelboards, and transformers as necessary to support all lighting, HVAC, receptacle and miscellaneous building services electrical needs within the enclosure.
3. The Owner will furnish a single 480V, 3-phase, 3-wire feed to the enclosure, with ampacity to be determined by Seller.
4. The Owner will provide separate 480V feeds to the electric fire pump and jockey pump as necessary to support proper pump operation.
5. Provide sufficient quantities of fluorescent indoor lighting to maintain a minimum average illumination of 30 foot-candles within the fire pump building, as measured at an elevation of 2.5 feet above the finished floor.
6. Provide a minimum of one 75 watt high pressure sodium lighting fixture installed on the exterior above each door. Outdoor building lighting shall include integral photocells and be listed for use in outdoor applications.
7. Provide emergency lighting within the enclosure that complies with the requirements of Section 265100 - Interior Lighting.
8. Provide two NEMA 2-hole copper grounding pads on each comer of the enclosure. Provide tinned-copper equipment bonding jumpers between equipment grounds and enclosure grounding pads. The Owner will connect the enclosure grounding pads to the plant grounding grid. Grounding shall comply with the requirements of NFPA 70.
9. Provide a minimum of two GFCI duplex receptacles, fed from enclosure panelboard with circuits pre-wired and pre-terminated by Seller.

**(Optional)**

### FIRE PROTECTION

1. The fire pump enclosure shall be provided with fire protection sprinkler system in accordance with NFPA 13.
2. **(Optional)** A 2-hour fire wall shall be provided between the electrical and diesel fire pump areas.
3. There shall be a wet pipe fire sprinkler system installed in the diesel engine half of the building.
4. The fire sprinkler system shall have its own riser inside the building and be supplied by the discharge piping common to the underground.
5. A control valve with tamper contacts and a flow switch shall be provided.
6. Provide a density of 0.20 gpm/ft2 over the entire protected area.

### EXECUTION

1. The building shall be mounted to the structural steel frame of the fire pump.
2. All electrical connections shall be completed between the fire pump skid and the building prior to shipment to the site.
3. Only the foundation, field connections from the source of power and connections to the firewater suction and discharge shall remain as a scope of work at the site.

(End of Section)