

SECTION 16630  
PRE-FABRICATED GENERATOR ENCLOSURE

PART 1-GENERAL

1.01 SCOPE

- A. Products covered under this specification section will be purchased by the owner; installed and wired by the electrical contractor.
- B. The intent of this specification is to provide the owner with a generator set enclosure complete in every detail and requiring no additional in-field modifications or assembly, except where specifically allowed by these specifications. The enclosure is to be accurately dimensioned so as to be in compliance with the National Electrical Code (NEC), and the Fire Protection Association (NFPA) for clearance of all specified items included therein, and all applicable fire codes for a structure and application of this type.
- C. Construction drawings, engineering blueprints, or other bid documents accompanying these specifications which show switchgear, transfer switch (es), motor controller(s) and/or other service or distribution equipment within the generator set enclosure must be considered complimentary to and not in lieu of this written specification. Drawings submitted for approval shall reflect this fact clearly and any contradiction or omission shall be brought to the attention of the designing engineer prior to order.

1.02 SYSTEM DESCRIPTION

- A. Engine generator system integrated in “skin-tight” sound attenuated enclosure, including, outlet duct and complete pre-wired load center.

1.04 SHOP DRAWING SUBMITTALS

- A. Electrical contractor shall coordinate, process, and submit product data for owner purchased equipment as though the equipment were contractor purchased.
- B. Submit shop drawings and product data under provisions of Section \_\_\_\_\_.
- C. Submit shop drawings showing plan and elevation views with overall and interconnection point dimensions, ventilation and combustion air accommodations and electrical diagrams including schematic and interconnection diagrams.
- D. Submit manufacturer’s installation instructions under provisions of Section \_\_\_\_\_.

1.05 DELIVERY, STORAGE, AND HANDLING

- A. Electrical contractor shall coordinate shipment and accept delivery of products covered under this specification section as though the products were contractor purchased. Coordinate closely with owner and owner’s equipment suppliers.
- B. Shipment shall be F.O.B. and delivered to the project site.
- C. Accept packaged engine generator set, enclosure, and accessories on site. Arrange suitable equipment to off-load equipment. Cost for equipment to off-load is responsibility of electrical contractor.

- D. Protect equipment from dirt and moisture

## 1.06 MAINTENANCE SERVICE

- A. Provide service and maintenance of generator enclosure or one year from Date of Substantial Completion.

## PART 2-PRODUCTS

### B. Enclosures:

1. Construction: Weatherproof “*skin-tight*” or “*walk-in*” (choose one) sound attenuated enclosure, complete with outlet duct, and shall be *formed galvanealed steel construction or aluminum (choose one)* as designed and manufactured by Robinson Custom Enclosures. The enclosure is rated to a wind load of 120 MPH and 50lbs./sq ft roof load. Rain test equal to 4 inches/hour. The basic structure meets all seismic requirements of Zone 4 or equivalent. The design and construction shall be modular in that the panels shall not exceed 24” in width and shall be minimum thickness of 14 gauge. Door shall not exceed 36” in width and be a minimum of 14 gauge. The roof of the enclosure shall meet or exceed the minimum gauge requirements specified. Silencer to be mounted internally utilizing an insulated puck style silencer as described below. All exterior components of the enclosure shall be assembled utilizing stainless steel bolts, nuts and lock washers. All seams shall be sealed to prevent leaks.
2. Doors: All doors on the enclosure shall be strategically located in areas as to allow ease of maintenance on the generator set and allow good access to and visibility of instruments, controls, engine gauges, etc. The doors shall be fitted with stainless steel bolt-on, lift off hinges with pins of a diameter not less than .375”. Each door shall be fitted with flush-mounted, key lockable latches keyed alike. The latch hardware shall allow escape from within when locked externally. Door holdback hardware shall be provided to secure the door to the enclosure wall during installation and maintenance. All doors shall be Gasketed to prevent leaks.
3. Stairway(s) to be provided where required, allowing for easy access to inside of enclosure. Stairway(s) to be manufactured of aluminum complete with handrails, grip-strut step treads, and of welded construction as required. Stairway to be mounted securely to outside edge of tank or enclosure, removable and stowed internal to genset enclosure, and able to support a minimum of 350lbs.
4. Cooling: Under no circumstances shall the floor area or any of its parts be considered for cooling air intake or discharge requirements of the generator set or its associated equipment.
5. Working Clearance: The base and enclosure assembly shall allow room within the package to mount and maintain the specified battery charger, engine starting batteries, racks and cables, engine-generator control panel, and other items as specified or as shown on the drawings. Code required working clearances about the genset shall be provided.
6. Sound Attenuation: The entire enclosure except for the louvered openings shall have acoustic material installed on the interior roof and wall panels of a weight and thickness consistent with the specified level of noise reduction. The acoustic material shall be held in place by galvanized perforated metal sheeting to form a removable section easily inspected by maintenance personnel. The enclosure package shall be designed to achieve a \_\_\_\_ dBA sound rating when measured at a distance of 7 meters. Enclosure shall consist of outlet duct plenum as described below.
7. Paint: The enclosure shall be powder coat painted with a minimum of two (2) coats of rust-inhibiting primer and finished with a minimum of two (2) coats of polyurethane. Final color of finish coat will be selected at shop drawing review.
8. Load Center: The enclosure shall be equipped with a 100 amp \_\_\_\_\_-volt \_\_\_\_\_ phase load center for the battery charger, jacket water heater(s), lighting, receptacles, etc., as specified and as shown on the drawings. The load center shall be mounted within the

enclosure and allow for a single entry point for commercial power supply conduit and wiring by the installing contractor. The placement of this load center shall be shown on the submittal drawings. All internal conduit and wiring to the ancillary equipment shall be supplied within the package and shall be pre-wired by the enclosure manufacturer in accordance with all governing codes pursuant to this application. Loadcenter to be supplied complete with all circuit breakers, as required, to complete system.

9. Internal Wiring: All wiring within the enclosure shall be in conduits made from rigid metal, EMT, or liquid-tight material specifically manufactured for electrical use. All connections at the generator set shall be flexible, and all shall be provided and installed by the enclosure manufacturer.
10. Enclosure Air Intake: Motorized Air intake louvers shall be of aluminum construction. The louvers shall spring open automatically upon diesel generator start and motor close upon diesel generator shutdown. All louvers shall be designed to help prevent the entrance of driving rainwater, but shall have sufficient free area to allow for engine-generator cooling air requirements.
11. Enclosure Air Exhaust: Gravity Dampers of aluminum construction shall be designed to help prevent the entrance of driving rainwater, but shall have sufficient free area to allow for engine-generator cooling air requirements. Dampers shall be mounted on the radiator end of the unit. Engine radiator exhaust dampers shall exhaust into an integral acoustical exhaust plenum. Plenum shall be incorporated into the design of the enclosure to maintain a square building type appearance. Bolt-on scoops are not acceptable.
12. INTERIOR Incandescent LIGHTING: (AC) Vapor proof lights shall be installed within the enclosure and strategically located on either side of the generator set. They shall be ceiling mounted and parallel to the length of the unit. Their AC power source shall be taken from the load center previously specified. The light switch box, located by one of the entrance way doors, shall have its own grounded duplex receptacle mounted therein for use by maintenance personnel.
13. Thermo Insulation: The enclosure is to be thermo insulated with Gasketed doors.
14. Space Heater: The enclosure is to be fitted with 5kW, 240V, single phase space heater complete with a thermostat. Space Heater power will be supplied by the enclosure load center.
15. Insulation material is to be fiberglass held in place with a galvanized perforated metal liner.
16. Enclosure Flooring: The floor of the enclosure shall be designed and constructed in such a manner as to prevent the entrance of rodents. This shall be accomplished with solid metal or "diamond plate" but, in any event, must be capable of fully supporting any ancillary equipment specified which may be secured to it plus the anticipated weight of maintenance personnel and their tools.
17. Skid Base Mounting: The generator set and enclosure shall be mounted and shipped to the engine dealer on the structural steel skid base manufactured by the enclosure manufacturer. Provisions for crane unloading of the complete package shall be designed into the base of the unit.
18. Weight: The weight of the entire unit consisting of generator set, enclosure and other specified items including all liquids (i.e., fuel oil and cooling solutions) shall be calculated by the enclosure manufacturer. The base of the unit shall be designed and manufactured as a heavy duty, structural steel construction with lifting provisions to support the calculated weight. Details of the base construction shall be included with the drawings submitted for approval as well as all dealer weight calculations supported by manufacturer's data.
19. Skid Base Tank: Reference specification Section \_\_\_\_\_. Tank to be supplied by Enclosure manufacturer. Permitting and testing responsibility of genset vendor. Modify as required. Include fuel spill/fill box; overfill alarm, exterior venting etc. as required by local inspectors.
20. Containment Basin: Reference specification Section \_\_\_\_\_. A fluid containment basin will be integrated to the enclosure floor capable of containing 100% of the engine oil and coolant.
21. Low Fuel Indicator: A mechanical fuel level indicator with provisions for a remote electric fuel indicator shall be utilized

22. Exhaust Silencer: Critical “Pancake” / “Puck” style of pre-insulated muffler to be supplied and installed internal to enclosure by enclosure manufacturer. Exhaust system to include one Stainless Steel wye-pipe flexible exhaust inlet, silencer, mating flanges, gaskets, etc. as required. Silencer exit piping, thimbles, rain cap, etc. resulting in one complete exhaust system must be included and supplied by enclosure manufacturer. Exhaust system to be supported completely and only from roof or sides of enclosure, at no point shall the silencer weight be supported by the engine thus preventing potential damage to engine outlet turbo(s) or exhaust manifold, due to excessive weight of components.
23. Rain Skirt: At the point where the exhaust pipe penetrates the roof of the enclosure, a suitable “rain skirt: and collar shall be provided by enclosure manufacturer. It shall be designed to prevent the entrance of rain yet allow for expansion and vibration of the exhaust piping without chafing or stress to the exhaust system.
24. Battery Tray: Reference specification Section \_\_\_\_\_.
25. Battery Charger: Reference specification Section \_\_\_\_\_.
26. Gas Detection Systems: (Optional).
27. Wiring and Connectors: All conduits, wire, cables, interconnections, etc., entering or exiting the generator enclosure shall be furnished and installed by the installing contractor. All wiring shall be in conduits sized in accordance with the NEC. All power and control wiring shall be installed for a complete and operating system.
28. Enclosure manufacturer to supply complete lifting and rigging diagram, detailing lifting points and weights as required.
29. Fuel to be supplied by the contractor. Generator set supplier or enclosure manufacturer shall not be responsible for fuel fill.

## PART 3-EXECUTION

### 3.01 GENERAL

- A. Verify all site conditions are prepared and ready for delivery of integrated and enclosure.
- B. Schedule delivery of integrated generator and enclosure with owner.
- C. Arrange equipment necessary to off-load integrated generator and enclosure.
- D. Following delivery and final placement of integrated generator and enclosure check tightness of all switchboard connections that may have loosened during shipment.

### 3.02 WARRANTY

- A. Equipment furnished under this Section shall be guaranteed against defective parts and workmanship under the terms and conditions of the manufacturer and dealers standard warranty. But, in no event shall it be for a period of less than one year from date of initial start-up of the system and shall include labor and travel time for necessary repairs at the job-site. Submittal start-up data received without written warranties as specified will be rejected in their entirety.

END OF SECTION