LASER INTERFEROMETER GRAVITATIONAL WAVE OBSERVATORY
- LIGO -
CALIFORNIA INSTITUTE OF TECHNOLOGY
MASSACHUSETTS INSTITUTE OF TECHNOLOGY

Technical Note **LIGO-E980025-A - W** 2/27/98

SPECIFICATION FOR ELECTRICAL PANELBOARD ASSEMBLY 'A3'

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ASSEMBLY ‘A-3’

DESCRIPTION

Portable 120/208 Volt, 3 Phase Service assembly complete, including primary conduit, transformer frame, primary transformer and grounding as shown on reference documents.

REFERENCE DOCUMENTS

This section includes reference documents

A3		Portable 120/208 Volt, 3 Phase Service	D980059
		Panel 'A3' Riser Diagram	D980060
		Bill of Materials	D980061
	A3-1	120/208 Volt, 225 Amp Panel 'A3'	E980008

F1	45 KVA Transformer Mounting Frame	D980074

COORDINATION

A. Provide labor and equipment to assemble the portable service assembly A-1 and A-3 as shown on drawings, described in equipment lists and as specified herein. Provide all material, not specifically listed as provided by LIGO on material lists for a complete assembly. Completed assembly installation shall where required, be inspected and approved by a Washington State Department of Labor and Industries representative and ready for operation.

B. Provide labor, equipment and necessary miscellaneous materials to disconnect portable service assembly. Disconnected assemblies shall be relocated and connected at a new location at the LIGO facility as specified on plan drawings and as directed by LIGO. The Contractor shall provide the necessary means to provide for safe and efficient transport of assemblies to the new location.

PRODUCTS

A. All equipment shall be new, UL approved with necessary modifications required for complete installation

B. See material lists for type and manufacturer of required equipment.

STEEL FABRICATION AND GALVANIZING

GENERAL

A. The supplier shall furnish all materials and shall provide all labor, tools and equipment necessary to fabricate, galvanize and deliver the transformer mounting frame.

MATERIALS

A. All materials furnished by the supplier shall be new. Supplier shall furnish evidence as to the kind of quality of materials supplied.

B. Structural steel shall be of the type specified on the drawings and shall meet the requirements of ASTM Specification A36 for grade and strength. The raw steel prior to fabrication and galvanizing shall be relatively free of surface contamination.

C. The zinc galvanizing coating shall conform to specification ASTM B6 for zinc requirements.

FABRICATION

The steel shall be cut, welded and drilled according to the schedule and details on the drawings. Welds shall be continuous, free from voids, smooth and free of splatter. The finished pieces shall be dimensionally correct to within the stated drawing tolerance. Welds shall be made in such a manner as to minimize thermal distortion (bowing) of steel members.

GALVANIZING

The fabricated steel shall be zinc hot dip galvanized according to ASTM A-123-89a "Standard Specification for Zinc Coatings on Iron and Steel". The galvanized steel shall be tested for coating thickness and inspected per the requirements of A123 Section 7 and Section 8.1, "Test and Inspection by Galvanizer".

DESIGN COORDINATION

If, during the course of fabrication, the supplier notes inconsistent or incorrect design information on the drawings, the supplier shall immediately notify LIGO. LIGO shall direct what corrective course of action shall follow.

INSTALLATION

A. Contractor shall fasten LIGO furnished 45 kVA transformer to contractor supplied transformer mounting frame (assembly ‘F1’ or ‘F2’).

B. Contractor shall mount LIGO furnished sub-assembly Panel ‘A1-1’ to transformer mounting frame (assembly ‘F1’ or ‘F2’). Panel shall be mounted on framing channel equal to Superstrut A-1200. Fastening devices and support brackets shall be plated in compliance with ASTM specification A 164-71, Type LS (RS for threaded parts).

C. Contractor shall install secondary service entrance conduit and conductor between panel and 45 kVA transformer. Conduit system shall be hot-dipped galvanized rigid steel conduit with weathertight hardware firmly attached to Panel frame and/or transformer frame. Service entrance conductor shall be of a type recognized by the NEC as approved for service entrance, 600 V minimum, type XHHW copper. Conduit and conductors shall be sized as indicated on riser diagram.

D. Conductors at panels shall be terminated using properly sized solderless lugs or connectors. The Contractor shall leave sufficient conductor length at secondary compartment of transformer for termination by the serving utility.

E. The Contractor shall Provide UL approved flexible watertight conduit and fittings sized as indicated on riser diagram between existing 15 kV conduit and transformer frame. Beam tube end of 15 kV conduit is generally located in corner of each beam tube entry. The Contractor shall provide where required a 6” core drilled penetration for flexible conduit in concrete shell of beam tube. The 15 kV conductor shall be supplied and installed by serving utility. Coordinate installation with serving utility.

F. The Contractor shall properly ground main disconnect switches, conduit systems, supports, cabinets, equipment, fixtures, etc., and ground circuit conductor in accordance with latest issue of NEC. Provide all bonding jumpers and wire, grounding bushings, clamps, etc. required for complete grounding. Route conductors to provide shortest and most direct path to grounding electrode system. Install all ground conductors in conduit except where specified or noted otherwise.

WIRING

A. All conductor shall be installed in strict accordance with latest requirements of NEC.

B. Label each service conductor with colored tape at each end to indicate phase, Black - A phase, Red - B phase, Blue - C phase, and the neutral shall be color coded white.

C. All wiring inside panels shall be neatly cabled and tied to Engineer's satisfaction..

TESTING AND CLEANUP

A. Upon completion of this portion of the work the Contractor shall thoroughly clean all equipment and premises of any tools, crates, boxes, wire, etc., related to the electrical work. The Contractor shall perform all tests required to assure a complete safe operating system, including but not limited to all tests required by other sections of this specification.

END OF SECTION