

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

Technical Note    LIGO-E980024-A -    W    2/27/98

**SPECIFICATION FOR ELECTRICAL  
PANELBOARD ASSEMBLY 'A2'**

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## ASSEMBLY 'A-2'

## DESCRIPTION

Portable 120/208 Volt, 3 Phase Service assembly complete, including panel, 45 kVA 3 phase dry type transformer, 480 Volt connection and grounding as shown on reference documents.

## REFERENCE DOCUMENTS

This section includes reference documents

A2	Portable 120/208 Volt, 3 Phase Service Bill of Materials	D980053
		D980055
A2-1	120/208 Volt, 225 Amp Panel 'A2'	E980008

## COORDINATION

- A. Provide labor and equipment to assemble the portable service assembly A-2 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.
- D. Corner Mid and End stations of LIGO facility are maintained in a 'clean room' like environment. All units shall be assembled as complete as possible in assembly areas as directed LIGO. Any activity (other than bolting) that may produce dust or other contaminants such as drilling, grinding, sawing etc., in the clean room environments shall be avoided. All unavoidable dust producing activity that would compromise the clean room environment shall conform to the requirements and procedures set forth by LIGO for that activity.

## 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.

## INSTALLATION

- A. Contractor shall fasten 480-120/208 Volt 45 kVA transformer and LIGO furnished sub-assembly Panel 'A2-1' to 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). Framing channel with attached hardware shall be constructed and braced to allow for subsequent relocation with handtruck or similar device.
- B. Contractor shall install secondary service entrance conduit and conductor between panel and 45 kVA transformer. Conduit system shall be Electrical Metallic Tubing firmly attached to framing channel. Secondary conductor shall be of a type recognized by the NEC, 600 V minimum, type XHHW copper. Conduit and conductors shall be sized as indicated on riser diagram.
- C. 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.
- D. The Contractor shall install 45 kVA transformer 480 Volt primary cord. and attachment plug as shown on drawings. Contractor shall install strain relief cord grips at transformer end of SO cord used as 480 Volt primary conductor.
- E. The Contractor shall plug finished assembly into existing 480 volt, 60A, 4 wire plug to obtain 480 Volt power. Location of existing plug and existing source panel for each installation location shall be coordinated with LIGO. Make and break all 480 Volt plug type connections cold with source breaker or disconnect in the "off" position.

## TRANSFORMERS

- A. The transformer shall be dry-type, floor mounted with 6-2 1/2 percent taps, 2 above, 4 below, UL listed and meet all IEEE, NEMA and ANSI standards. The transformer shall be designed with low losses and use a 220° C insulation system for full load operation at a maximum temperature rise of 115° C.

## 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, from left to right, 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