

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

Technical Note    LIGO-E980023-B -    W    5/14/98

**SPECIFICATION FOR ELECTRICAL  
PANELBOARD ASSEMBLY 'A1'**

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## ASSEMBLY 'A-1'

## DESCRIPTION

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

## REFERENCE DOCUMENTS

This section includes reference documents

A1	Portable 120/208 Volt, 3 Phase Service	D980047
	Panel 'A1' Riser Diagram	D980048
	Bill of Materials	D980049
A1-1	120/208 Volt, 225 Amp Panel 'A1'	E980008

## COORDINATION

- A. Provide labor and equipment to assemble the portable service assembly A-1 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.

## INSTALLATION

- A. Contractor shall place a LIGO furnished 45 kVA transformer on the gravel surface adjacent to the beam tube enclosure as shown on the drawings. Transformer shall be placed level as defined in transformer technical manual provided in contract documents.
- B. Contractor shall mount LIGO furnished sub-assembly Panel 'A1-1' to transformer utilizing unistrut as shown on drawings. Unistrut shall be 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. 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. 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