
New Folder Name Vacuum Equipment (VE)

Power Requirements in the LVEA

T950083

CALIFORNIA INSTITUTE OF TECHNOLOGY
Laser Interferometer Gravitational Wave Observatory (LIGO) Project

To: Fred Asiri
From: Dennis Coyne
Phone/FAX: 395-2034/304-9834
Refer to: LIGO-T950083-01-E
Date: 27 Oct 95

Subject: Vacuum Equipment (VE) Power Requirements in the LVEA

The following is excerpted from the VE-Civil Construction (CC) ICD regarding VE electrical power requirements (in the Corner Station only). It is provided here as information to be shared with Parsons before the ICD is released. This revision includes changes as discussed at the 26 Oct 95 Technical Interchange Meeting with Parsons.

0.0.0.1 Electrical Interfaces (Corner Station)

0.0.0.1.1 Power/Ground Distribution

In the LVEA electrical power and "green wire" safety ground will be provided at locations near the VE vacuum manifolds, as indicated in drawing LIGO-D950144-sk-E. At each of these locations, the CC shall provide a vertical structure with a power outlet panel near the floor and a circuit breaker panel at eye level. All breakers shall have provision for lock outs (for lock and tag maintenance procedures). Power to these locations shall be provided via multiple embedded conduits from the LVEA walls. The number of embedded conduit and their diameter(s) shall be sufficient for the required capacity of the VE (defined in section 0.0.0.1.2) with 100% spare capacity for pulling future power cables. A pull cord shall be placed within each of the conduits for future use. The embedded conduits shall have no more than two 90 degree turns with a wire length no greater than 50 ft.

In the mechanical room, VE power will be provided at a breaker panel in the long wall perimeter of the space envelope allocated for VE (per section 0.0.0.x), as indicated in drawing LIGO-D950144-sk-E.

In accordance with the civil construction Design Configuration Control Document, there is a quiet technical ground separate from the "green wire" safety ground. VE shall be connected only to the facility ground.

0.0.0.1.2 Electrical Load Capacity

The voltages, number of circuits and their capacities required at each of the circuit breaker panel locations, referred to in section 0.0.0.1.1, with locations labeled in drawing LIGO-D950144-sk-E, are as indicated in the Table. Note that the VE power use requirements (kW) are as defined in the DCCD.

Figure 0-1: Power Required at Circuit Breaker/Distribution Panels in the Corner Station

<i>Location^a</i>	<i>120V, 1φ</i>		<i>208Y/120V, 3φ</i>		<i>480Y/277V, 3φ</i>	
	<i>No.^b</i>	<i>KVA</i>	<i>No.</i>	<i>KVA</i>	<i>No.</i>	<i>KVA</i>
C-CC-PD-VEAC_01	10	2.4	1 2	10.4 6.24	-	-
C-CC-PD-VEAC_02	10	2.4	1 2	10.4 6.24	-	-
C-CC-PD-VEAC_03	10	2.4	1 2	10.4 6.24	-	-
C-CC-PD-VEAC_04	10	2.4	1 2	10.4 6.24	-	-
C-CC-PD-VEAC_05	-	-	-	-	2	48.0
C-CC-PD-VEAC_06	-	-	-	-	2	48.0
C-CC-PD-VEAC_07	-	-	-	-	2	48.0
C-CC-PD-VEAC_08	-	-	-	-	2	48.0
C-CC-PD-VEAC_09	-	-	-	-	2	48.0
C-CC-PD-VEAC_10	-	-	-	-	2	48.0
C-CC-PD-VEAC_11	-	-	-	-	2	48.0
C-CC-PD-VEAC_12	-	-	-	-	2	48.0
C-CC-PD-VEAC_13	-	-	1	6.3	1	33.6

a. Locations are indicated in drawing LIGO-D950144-sk-E. The nomenclature is as follows:

station-system-subsystem-unit

where in this case, C = corner station, CC = Civil Construction, PD = Power Distribution, VEAC_n = n'th Vacuum Equipment AC location

b. Number of separate circuits required.

DCC:dcc

Attachment: LIGO-L950144-sk-E

cc:

John Worden

Allen Sibley

Gerry Stapfer

Mark Coles

Albert Lazzarini

Jay Heefner

Rolf Bork

Chronological File

Document Control Center