

Lick APF Lightning Protection Scope of Work RFQ.

Prepared by Adam Seedsman 30 June 2006

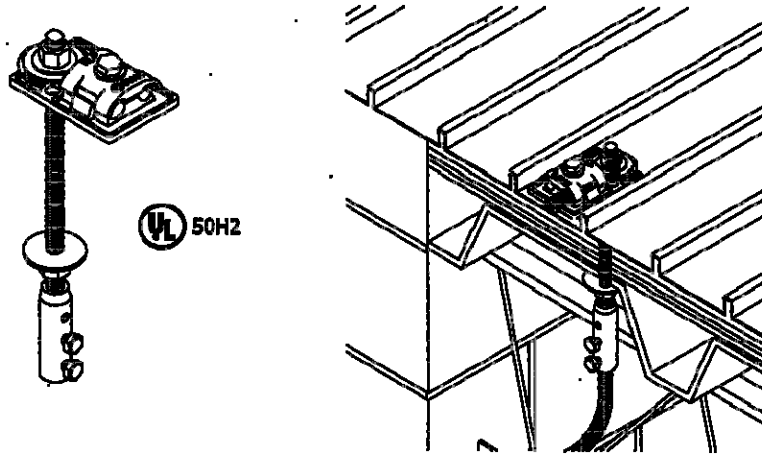
General Scope of Work

The following items are the general details which need to be included in the scope of work to install lightning protection at the Lick APF site.

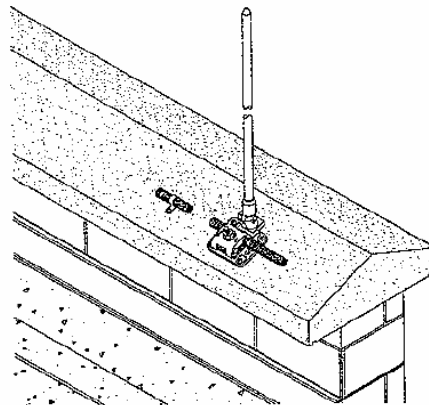
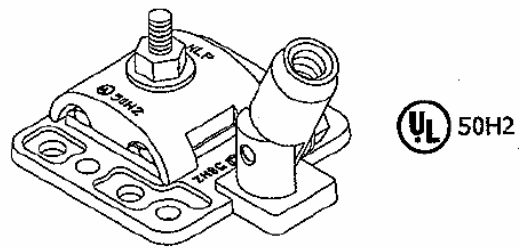
1. Installation of 6 off air terminals with supporting tripods and swivel bases (Harger). Components already on-site (see attached documentation). All pads to be assembled with structural adhesive (on-site)
2. Install 4 off sets of Conductix brush/conductor heads (11955) to EOS designed and provided mounting fixtures (possibly Uni-strut or similar)
3. Slip Rings. Installation of the following
 - a. Single pole Conductix 350 Amp slip ring on inside of ring wall at Level 2 (approx 25M length of track) with screw-in fixings every meter (Conductix single conductor clamps)
 - b. Electrical connections, each in up to 4 places
 - i. Electrical connection of 0.5" cable from enclosure to brush assemblies
 - ii. Electrical connection of 0.5" cable from slip-rings to structure (see diagrams)
4. Installation of 0.5" lightning conductor cable. The cable will be fastened to the GRP adjacent to arch beams as illustrated below (or attached to arch beam as directed to EOS staff). Cables are to be held by Harger cable clamps or bonding plates every 1 meter between the air terminals and the penetration into the enclosure adjacent to the azimuth support beam. The cables will then be terminated into the slip ring assemblies (see above) after passing through 4 thru-wall connectors
5. Installation of 8-off (total) Harger thru-wall connectors where indicated below.
6. Installation of cable from slip ring to 4 off through wall conductors in ring wall (as per 5)
7. Installation of 0.5" lightning conductor cable between thru-wall connectors and ground grid at the base of the wall as directed by UCO-Lick.
8. All cable terminations to professionally welded/soldered/brazed as directed.
9. EOS/EOST to provide all materials – lightning protection equipment, adhesive. WPY to provide all necessary tools and labor. Work to be directed by WPY Foreman under direction from EOS

It is anticipated that installation will take 2-3 days and require the use of an elevated work platform, mechanical and electrical installation skilled staff.

Equipment Illustrations

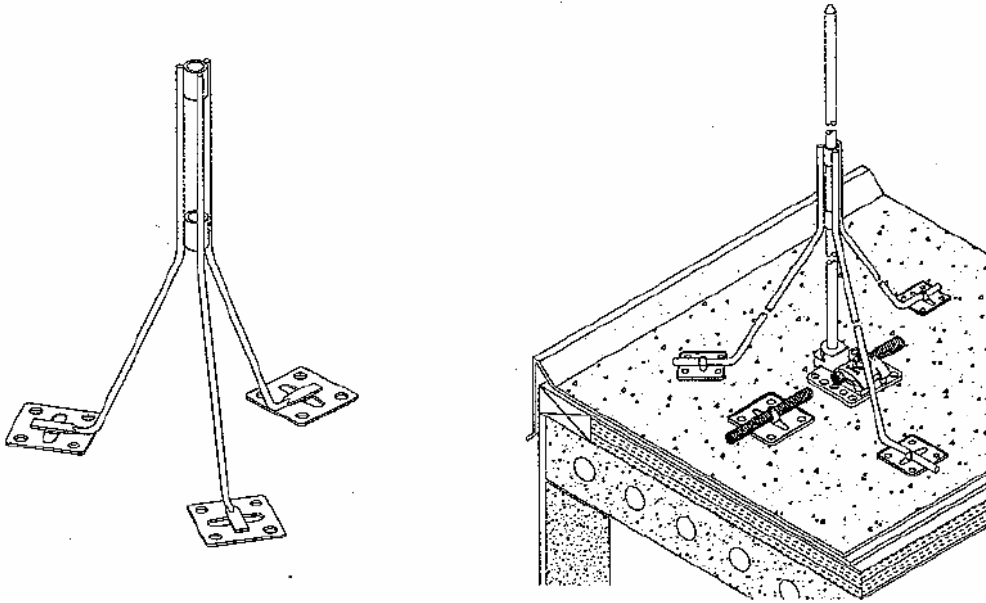


Harger Wall penetration device




Harger Swivel base for mounting air terminals

Lick APF lightning protection RFQ scope of work

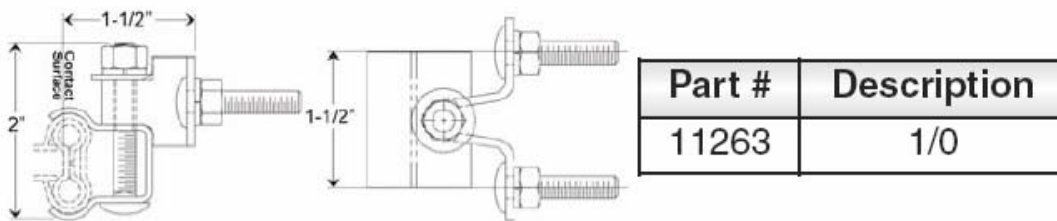


Harger Tripd mount with swivel base to be installed on enclosure

Electrolytic Copper 350 Amp.

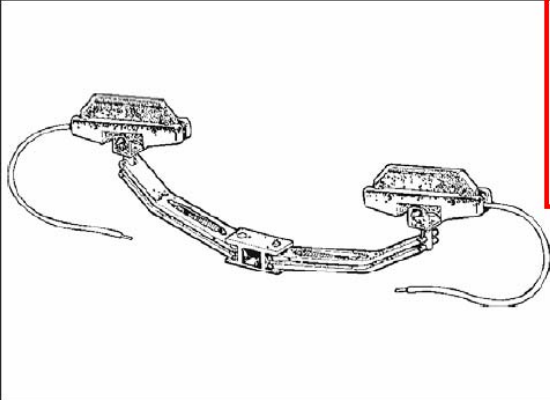
350 Amp	Description		W / Rigid PVC Cover -10°F. to +160°F.		W / Medium Heat Cover -25°F. to +250°F.	
	Part	Length	Part #	Approx. Wt.	Part #	Approx. Wt.
 <p>with connector pins</p>	Bar Section	10'	11235	7.0 lbs.	1251	6.6 lbs.
	Bar Section	5'	11236	3.5 lbs.	11252	3.3 lbs.
	Expansion Section	10'	11258	11.0 lbs.	11262	10.3 lbs.
	Powerfeed		11289	0.34 lbs.	11289	0.34 lbs.
	End Cover		11295	0.03 lbs.	11295	0.03 lbs.

Conductix slip Ring detail



Conductix slip ring clamp detail

“M” Head, “L” Base Type, Tandem 80 Amp.

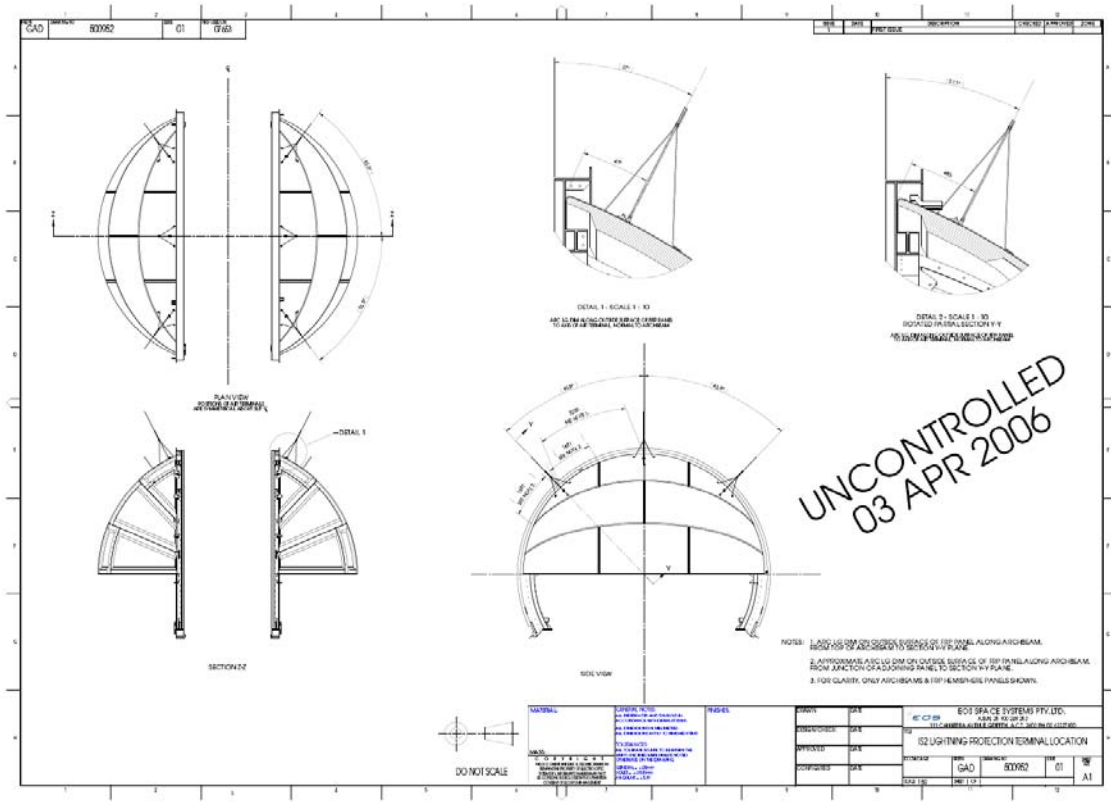
	Part #	Description
	11955	Continuous systems that require 80 amp capacity. Operates through horizontal curves to minimum radii of 24" and vertical curves to minimum radii of 8"
	11954	Self-centering tandem. For discontinued systems that require 80 amp capacity. Operates through horizontal curves to minimum radii of 24" and vertical curves to minimum radii of 8"

Conductix contactor/brush assembly

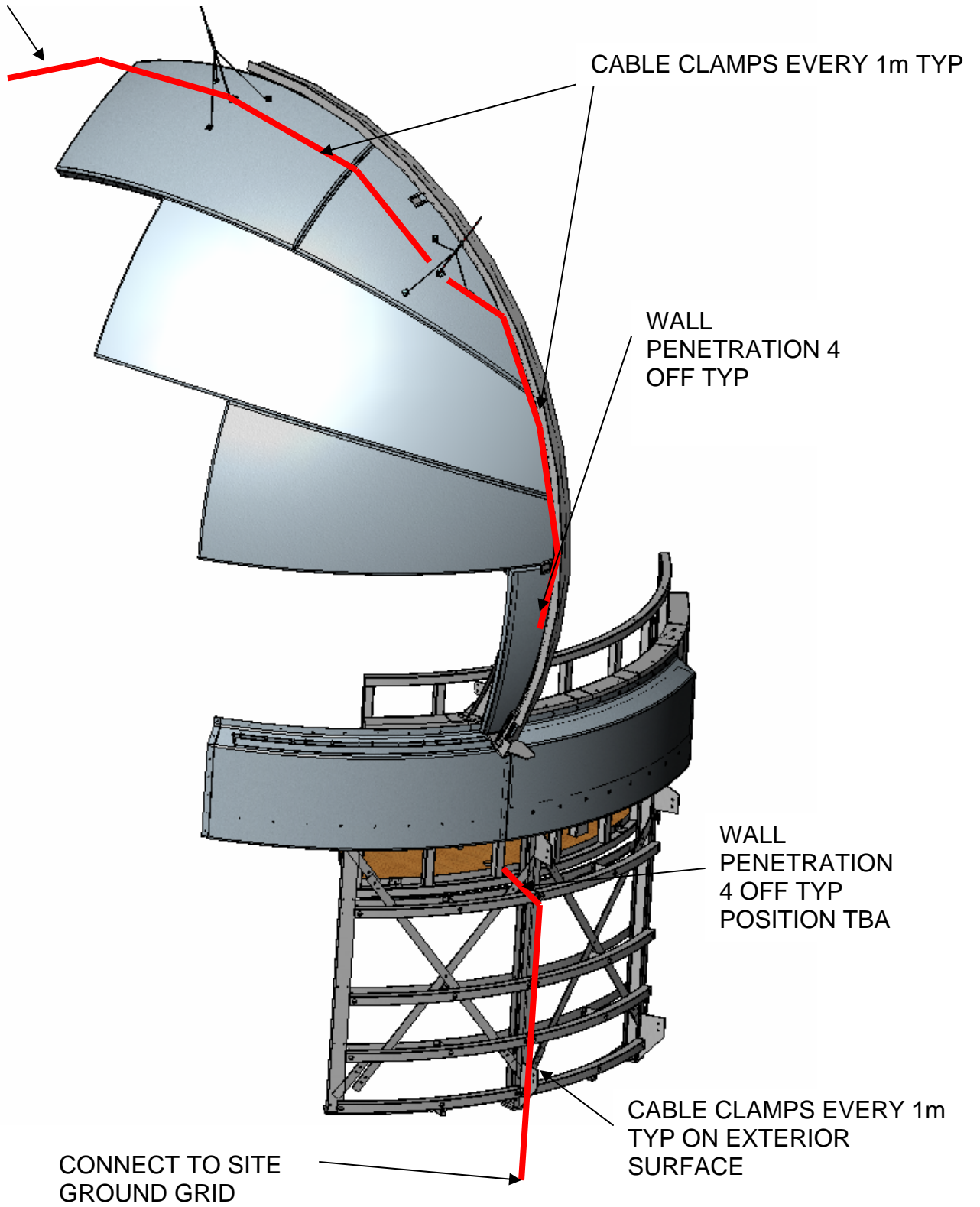
Cable routing illustrations

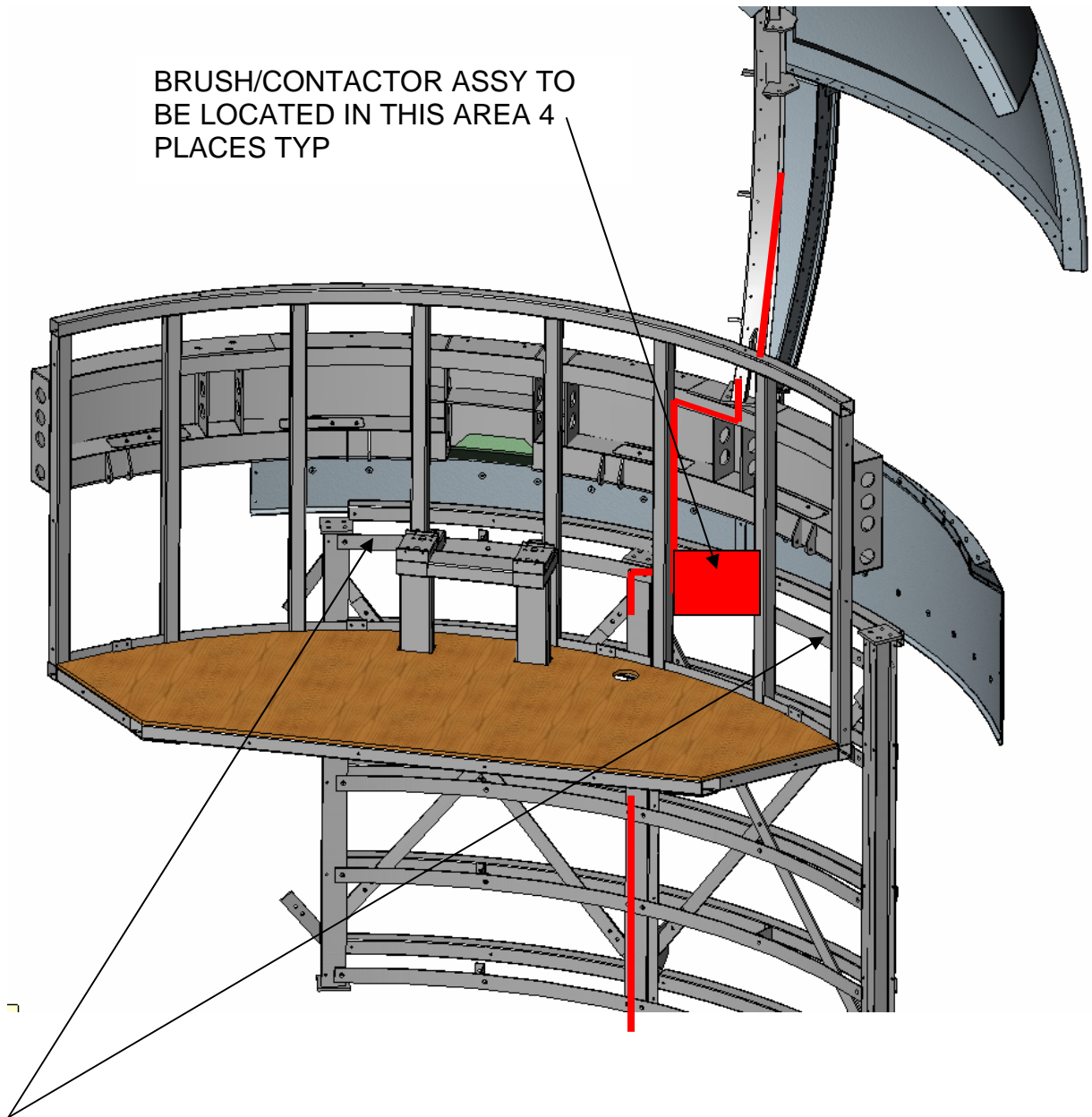
The below documents illustrate the cable routing as required. Please note that cables will be installed on **both** arch beams. Continuous cable will run from one side to other, passing through 3 air terminals each. Cables to be electrically connected to each air terminal as recommended by Harger.

Please also note attached draft drawing from EOS GAD-500952 for Air terminal location.



TO OTHER SIDE TYPICAL





BRUSH/CONTACTOR ASSY TO
BE LOCATED IN THIS AREA 4
PLACES TYP

SLIP RING ATTACHES TO THIS GIRT AROUND RINGWALL

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