



MARS SCIENCE NODE

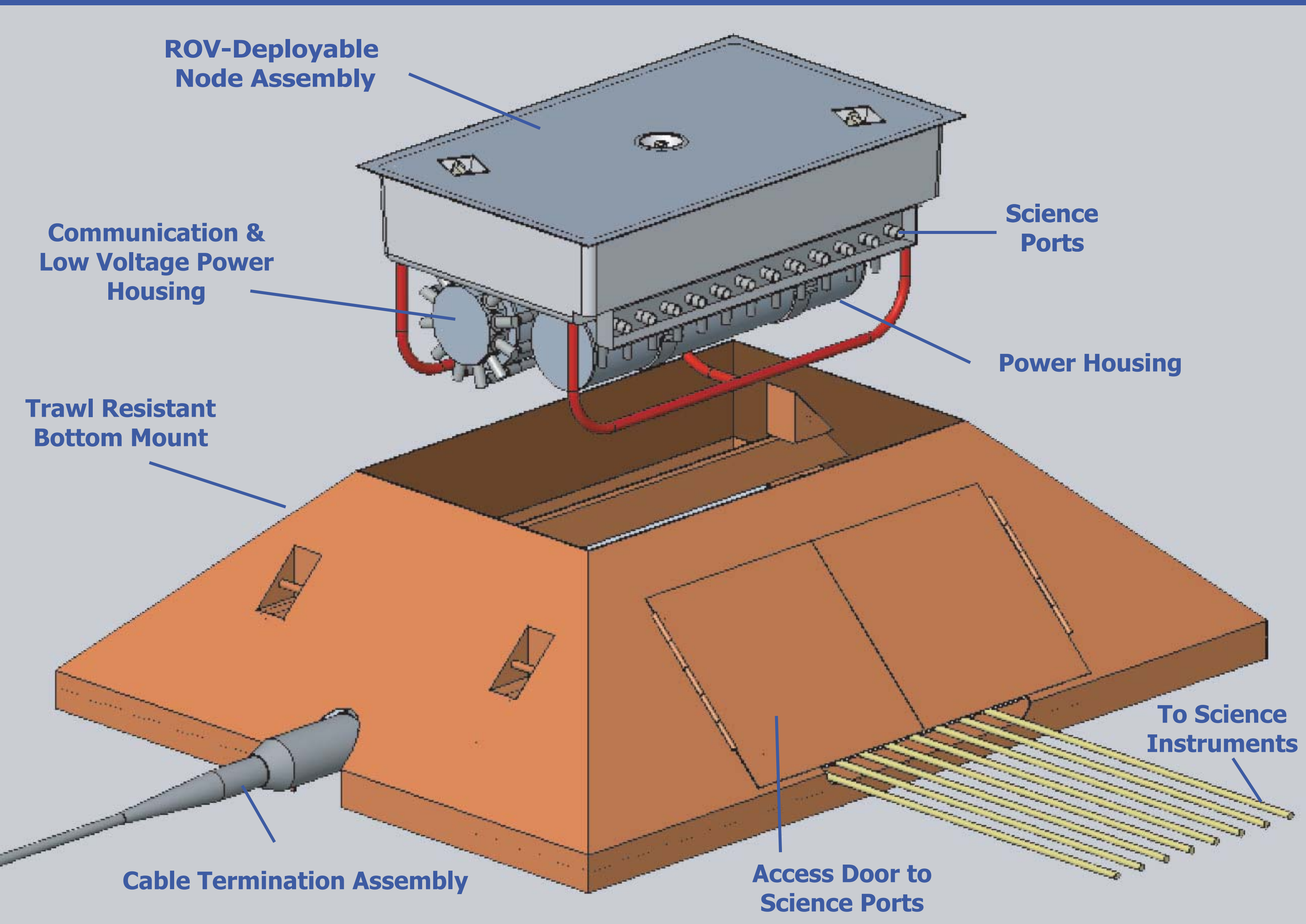


Node Description

MARS will be located in Monterey Bay offshore MBARI. It will consist of 51 kilometers of submarine cable and a science node located approximately 891 meters below the ocean surface. The node will have eight separate science ports (docking stations) for oceanographic instruments. Each port will support bi-directional data transfers of up to 100 Mbits per second. The cable and node will have the ability to supply up to 10 kilowatts of power to the instruments, several orders of magnitude more power than could be supplied using batteries alone.

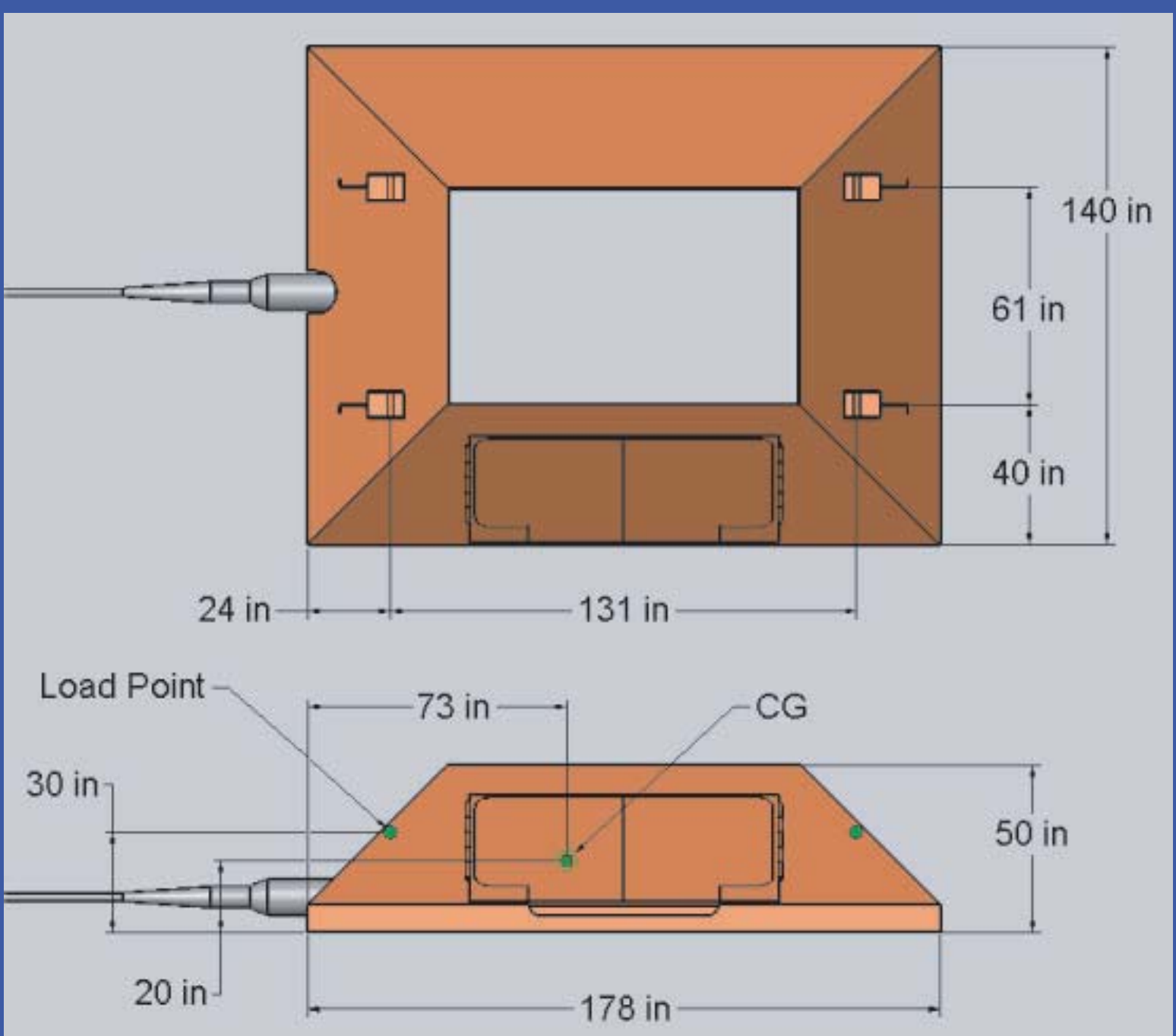
This poster illustrates different components of the node. The node itself consists of two elements, the removable node and the trawl resistant node frame. The latter will be deployed with the cable during the main cable lay operations. The removable node will be installed later using MBARI's ROVs and has been designed so that it can be readily recovered for maintenance or repair without disturbing the cable or trawl resistant node frame.

The MARS node has been carefully designed to readily allow repairs without disturbing the cable. Virtually all of the communication and power electronics components are housed in a central node that can be removed using MBARI's ROVs without disturbing the cable and the trawl resistant frame. After the ROV disconnects the underwater mateable connectors between the trawl resistant bottom mount and the node, the ROV can bring the node, which is nearly neutrally buoyant, to the surface, where it can be transported to MBARI's shore facilities for repair or maintenance.



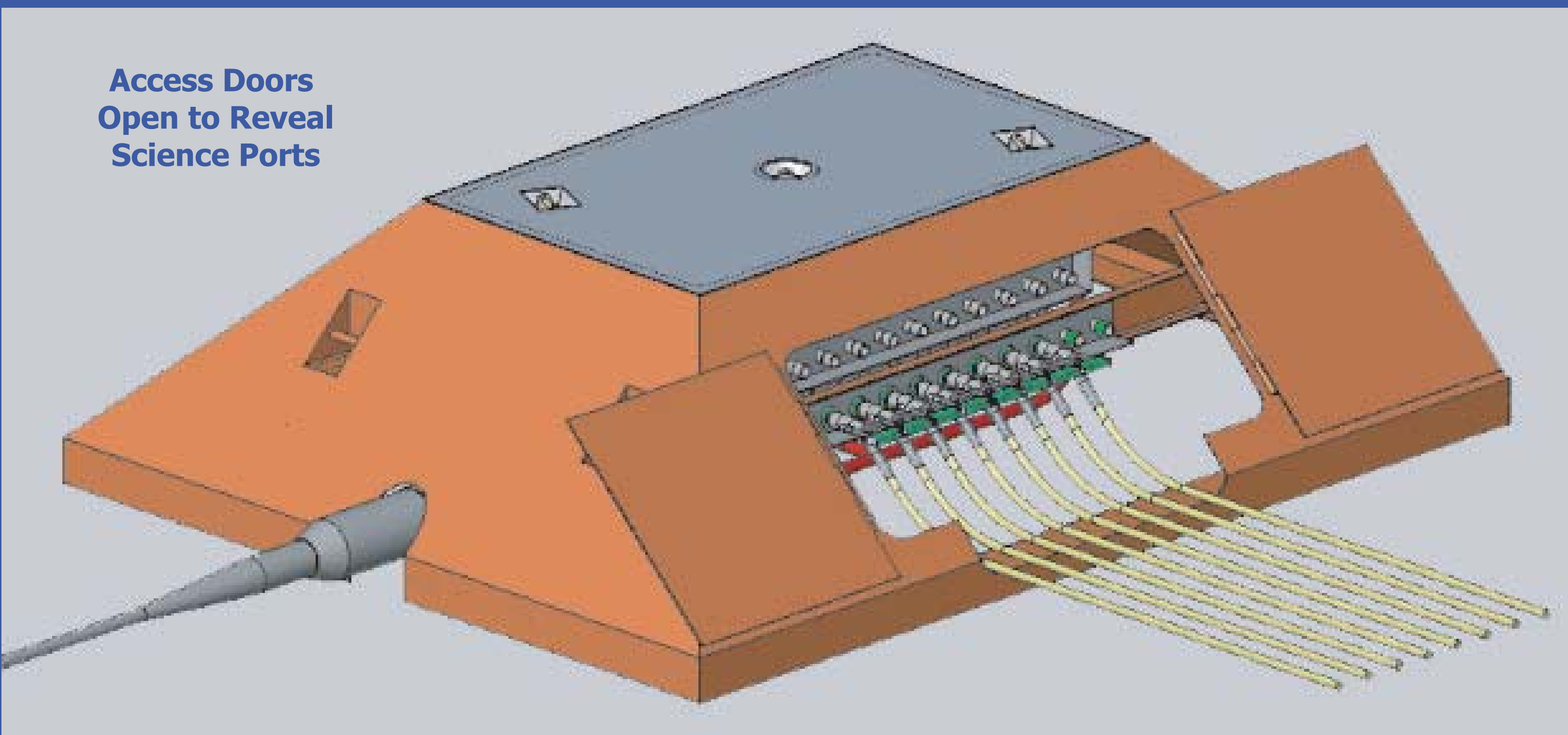
Node Top Assembly Physical Properties

Weight (in-air):	10,600 lbs.
Weight (in-water):	4,700 lbs.
Length:	178 in.
Width:	140 in.
Height:	50 in.



Node Base Physical Properties

Weight (in-air):	5600 lbs.
Weight (in-water):	4700 lbs.

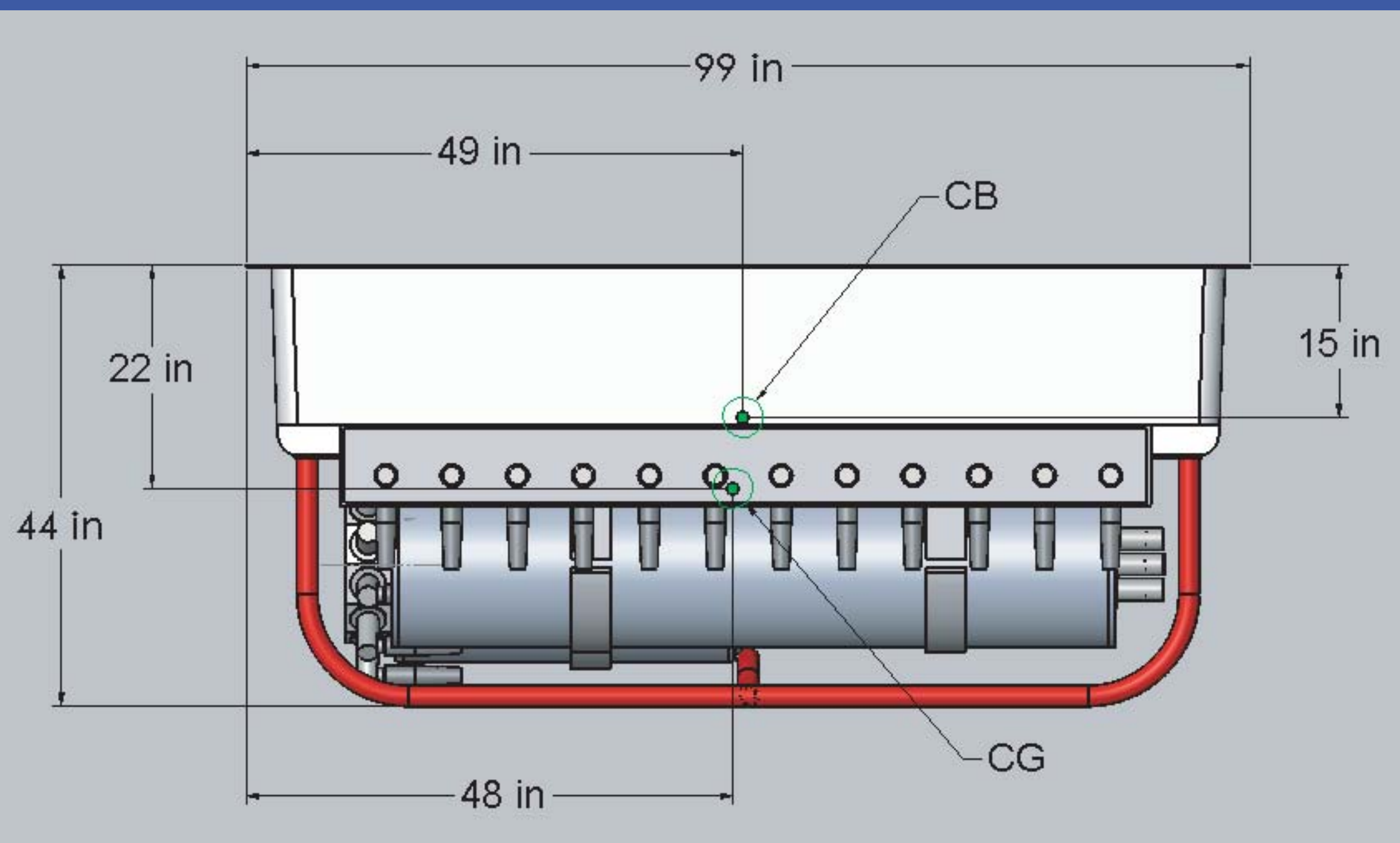


Cable and Node Installation

The cable will be installed from the sea towards the shore landing. It is anticipated that the cable will be plow buried throughout most of the cable route and that as the main lay vessel approaches the node installation point (approximately two times the water depth or two kilometers away), the plow will be recovered. It will then surface lay the cable and deploy the trawl resistant node frame on the end of a ground rope and continue surface laying the ground rope.

When the trawl resistant node frame is on the seabed, an acoustic release will be activated, which will part the ground rope just above the seabed leaving approximately two kilometers of ground rope attached to the node. This two-kilometer section of ground rope will then be recovered using the on-board ROV and a cutting tool to attach a recovery rope to the ground rope. The two-kilometer surface laid section of cable would be post lay buried by jetting.

After the cable and the trawl resistant node frame have been deployed, MBARI's R/V *Point Lobos* will lower the MARS node onto the ocean floor near to the trawl resistant node frame. ROV *Ventana* will then latch onto the trawl resistant node frame, lift it, and then lower it into the trawl resistant node frame. The ROV will then attach the underwater mateable connectors between the node and the trawl resistant node frame to allow the node electronics to be connected to the shore through the cable.



Node Module Physical Properties

Weight (in-air):	5000 lbs.
Weight (in-water):	20 lbs.
Width:	61 in.