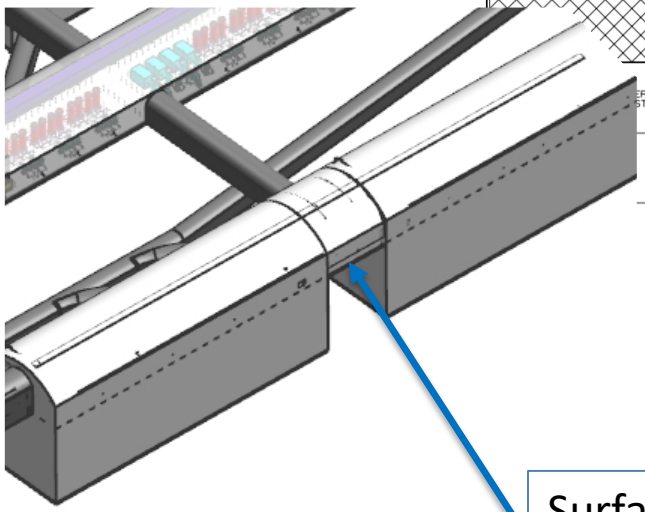
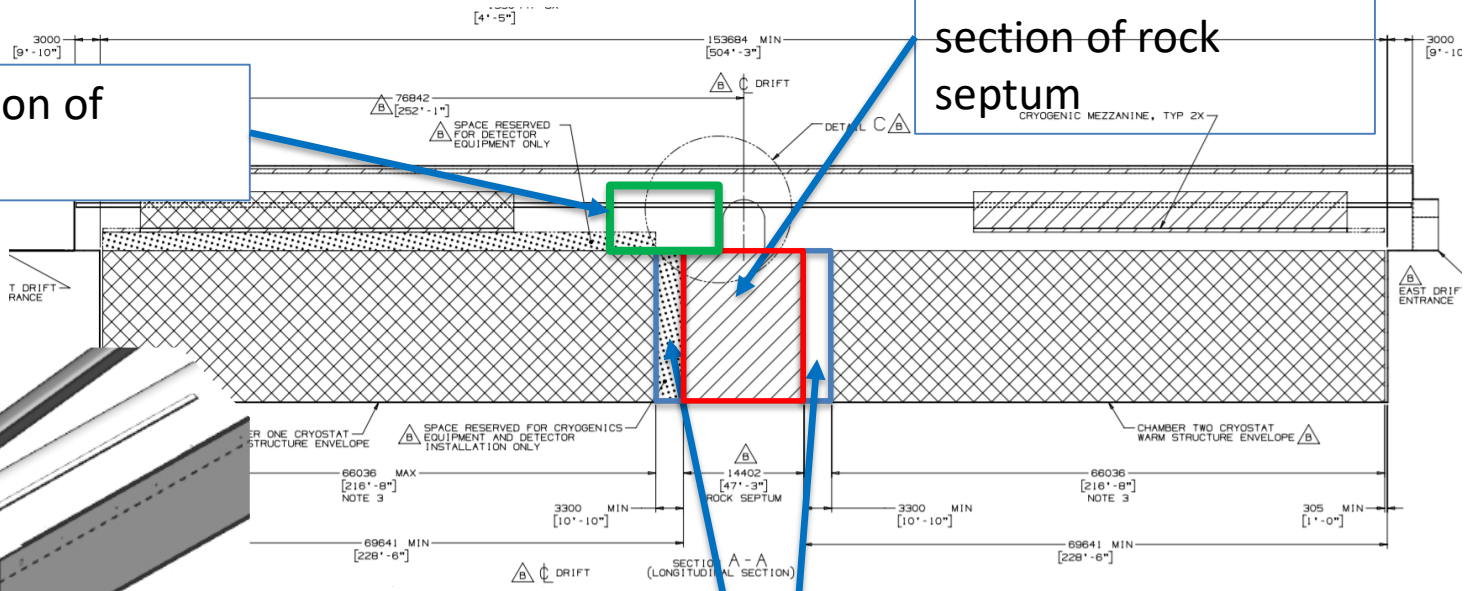
FSCF Pending Changes into Final Design

Slides from Arup Final Design Kick-Off Meeting (11/7/17)

April 11, 2018

Current Rock Septum details





Proposed location of cleanroom

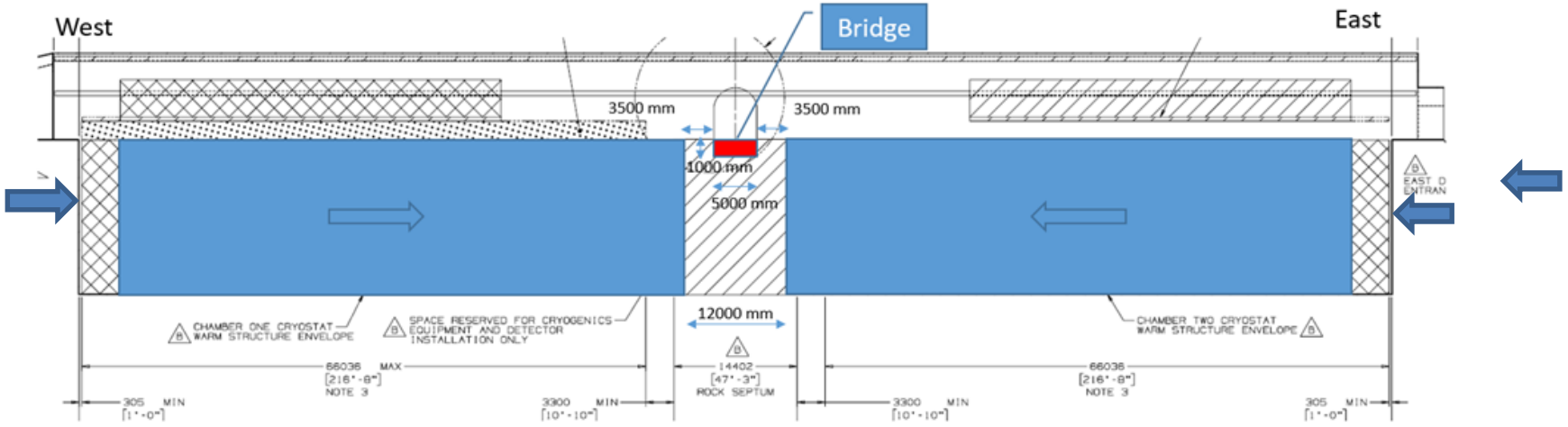
2D view of cross section of rock septum

Surface of the rock septum at 4850

Outline of current 3.3 m space for installation of inner membrane and detector components into cryostat and location for cryogenic pumps for operation

Scope of change

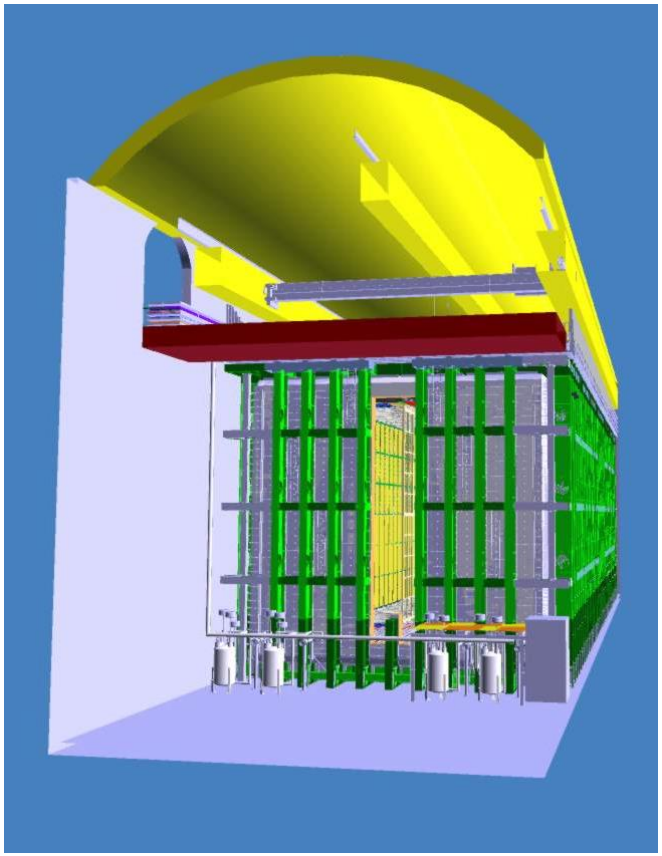
- Remove rock septum down to 4910 level (**?**)
- Move east CS 4.5 m to the west, and west CS 4.5 m to the east, reduce overall cavern length by 9 m.
- Build 5.00 m (**?**) wide bridge between north and south drifts
  - Bridge capacity to allow industrial equipment passage (**?**)
- Route all “crossing” utilities below bridge to allow continuous monorail/bridge operation
  - Does this section of monorail need to be removable (**?**)
- Moves the cleanroom (supported by bridge (**?**)) for detector installation below the 4850 level to liberate the space above. This reduces the interferences with overhead conveyances, rack installation and materials moving into the CUC.
- Cranes below bridge for assembly supported by bridge (**?**)

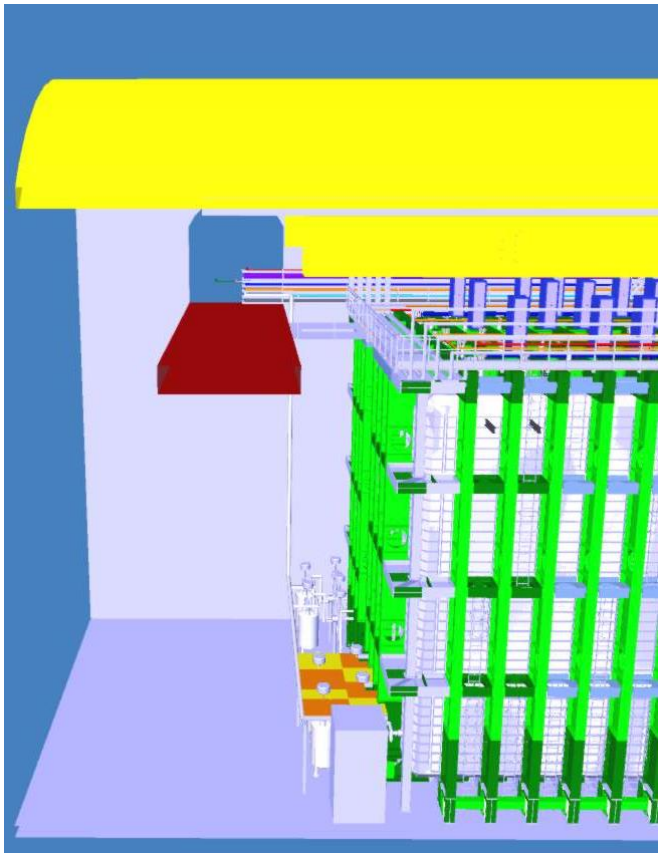


South elevation view

More views with rock septum removed

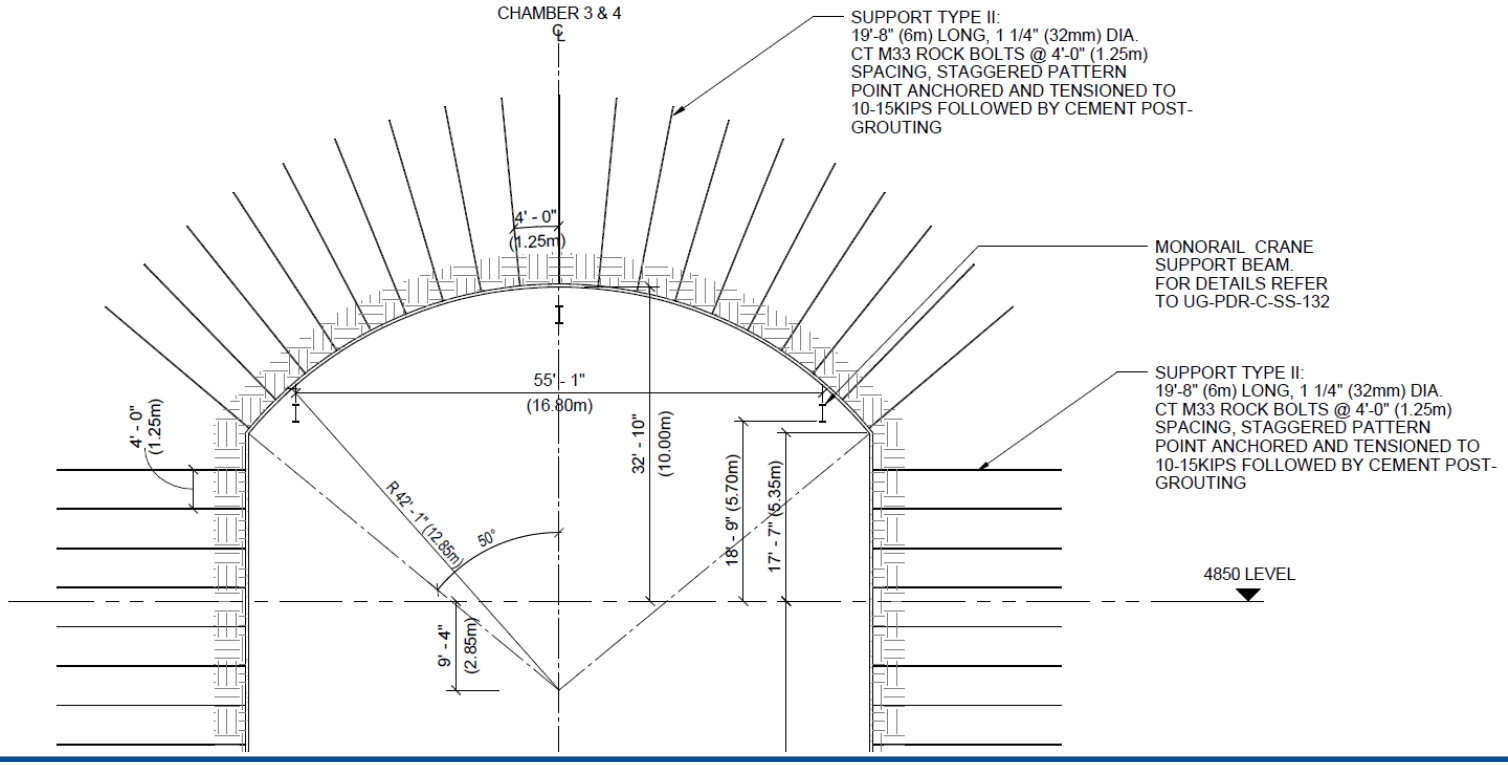
- Where do we add vertical access, and in what form (stairway vs. Alimak style, temporary vs. permanent) (**?**)



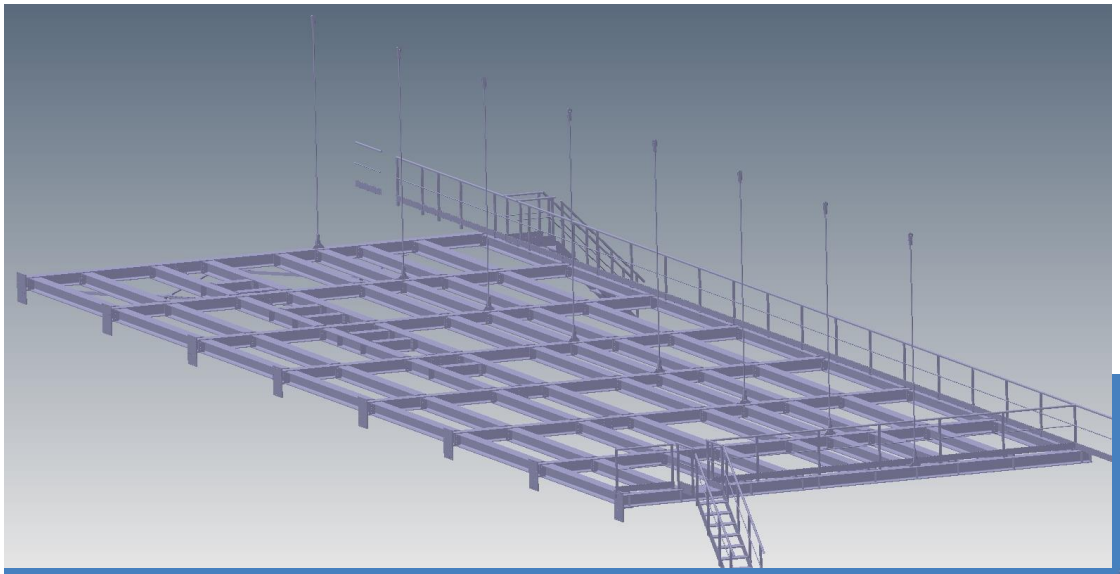


Hoists and cranes

- Bridge crane – full width (**?**), half width (**?**), both (**?**), how many (**?**)
- Monorail hoists – how many per beam (**?**), design to handle full load adjacent to bridge or other monorail hoists(**?**)

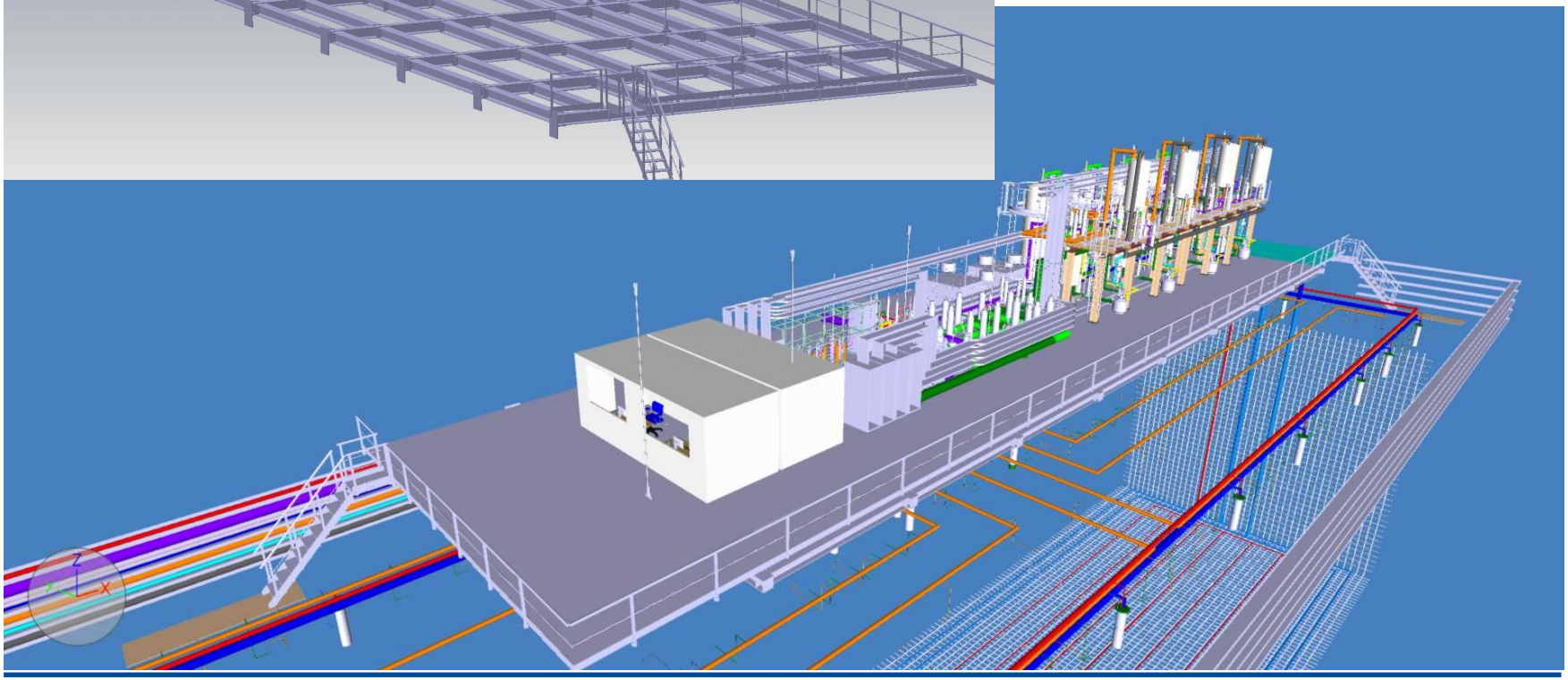


Mezzanine



12.3m x 45m mezzanine

Arup to provide attachments to crown and walls



Construction Utilities

- Power, water, and compressed air are required for CF, Cryo, and DUNE construction in the CUC, drifts, and in the detector caverns at both 4850L and 4910L
- FSCF proposes to provide power at the 4850L at both 120V single phase and 480V 3 phase at a standard spacing (**?**).
- Compressed air would be managed the same way, with a ½" or ¾" valve at a set spacing(**?**).
- Water would be provided only where requested(**?**).
- FSCF would propose all of this as permanent at the 4850L for future maintenance use.

- The 4910L is proposed to have some permanent power and compressed air in the space between detectors, plus a 120V and a 480V distribution panel to allow for temporary distribution by others.
- The mezzanine level could also have distribution panels on the wall for later distribution by others.

- ALL of this is independent of other defined base loads (LAr pumps as one example).

Questions?