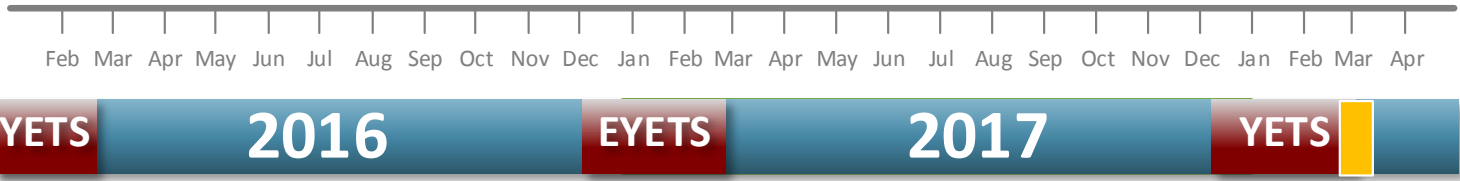
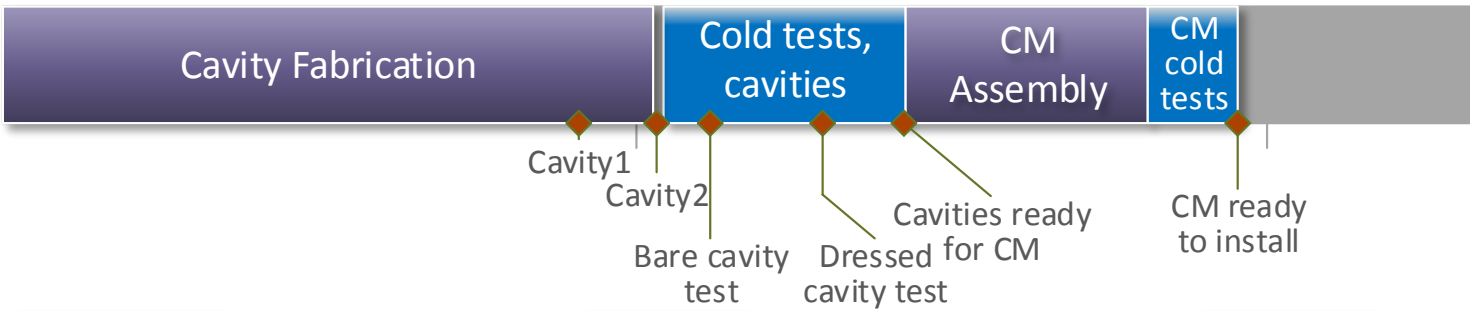


Schedule



CM



SPS

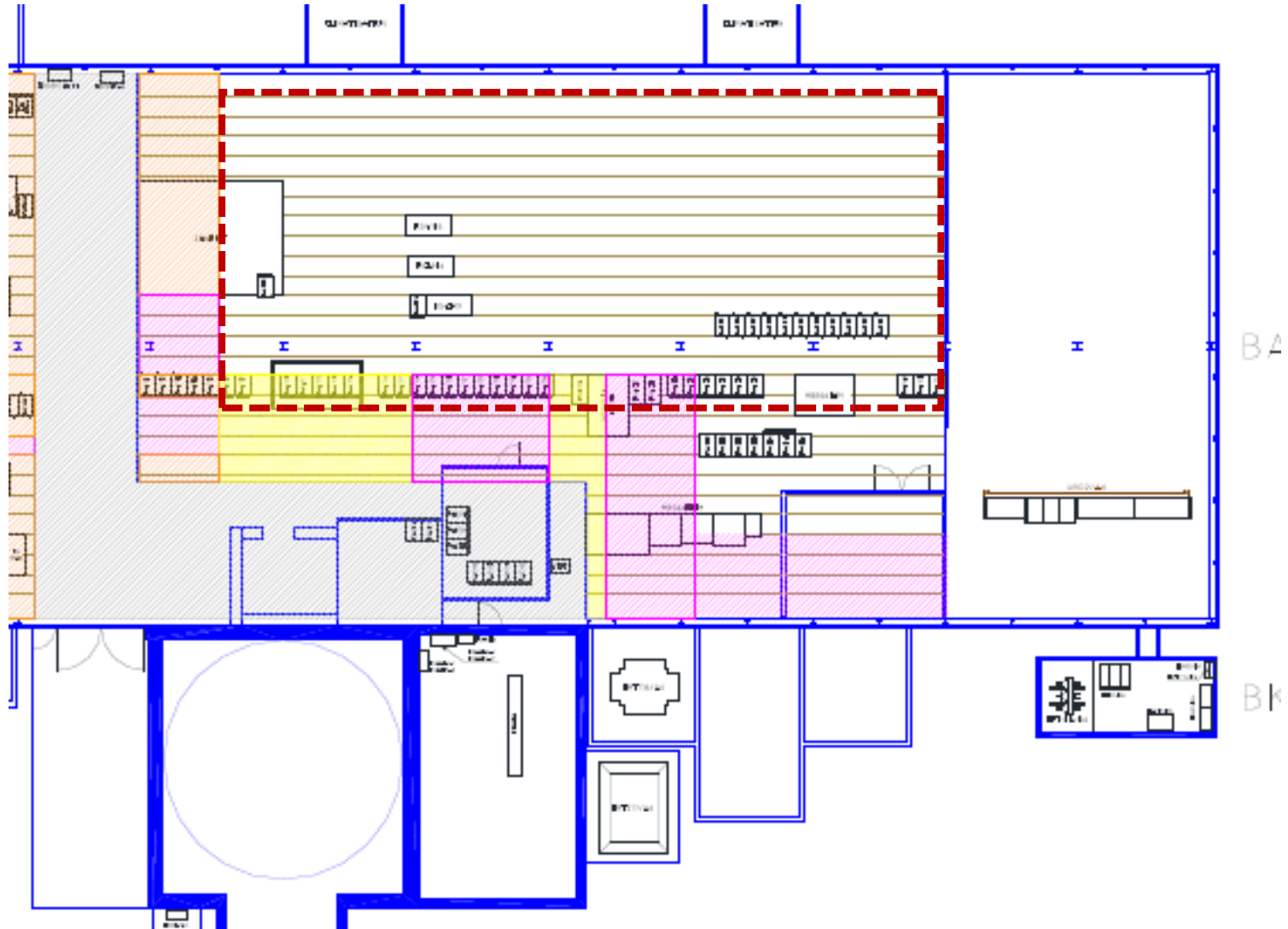


- Clear BA6
- Un-cable BA6 and tunnel
- Optical 3D Scan
- TL Bidder's visit
- Measure magnetic field

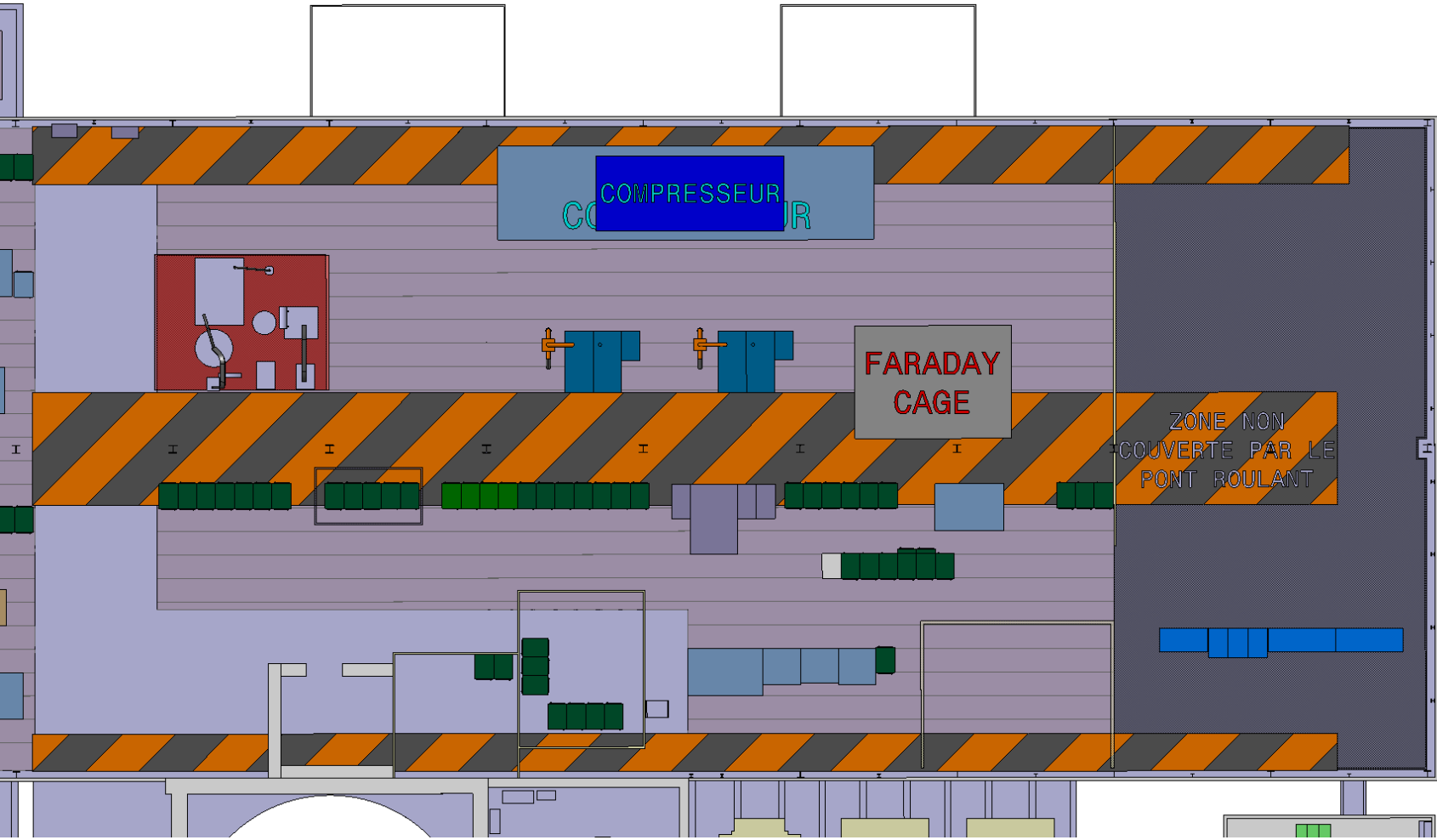
- BA6 floor reinforce
- Cabling & Services
- RF power & infrastr.
- Cryogenic infrastr.
- Cryo Transfer-Line
- Vacuum sectorization

- Cold-box
- Moving table
- CCCM** + Service Module
- RF connections
- Cryo connections
- Validation tests
- Commissioning

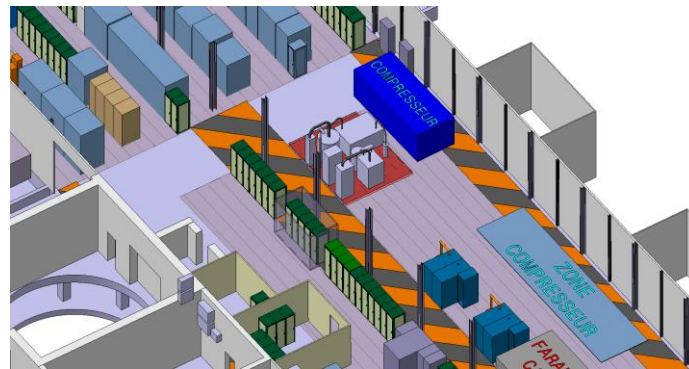
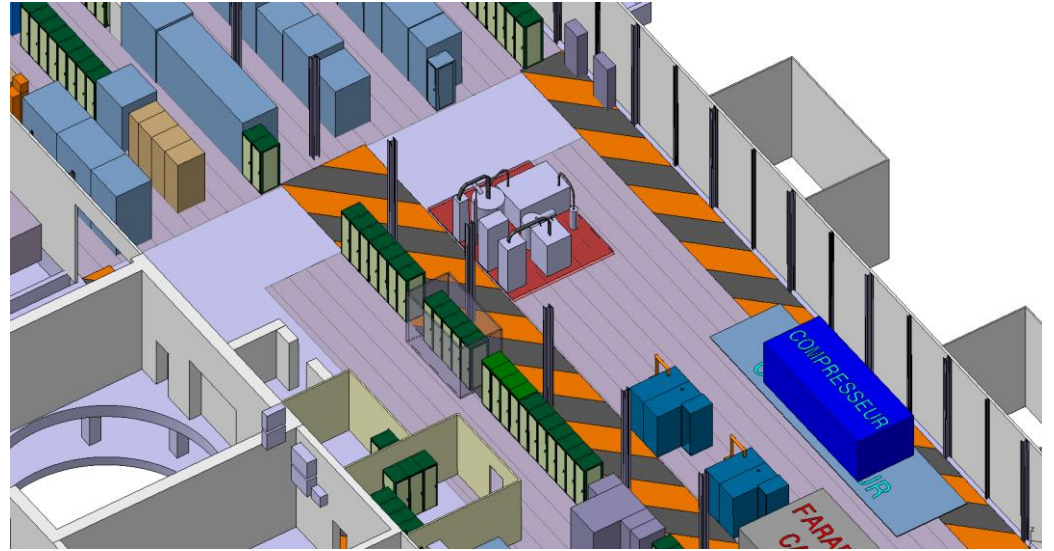
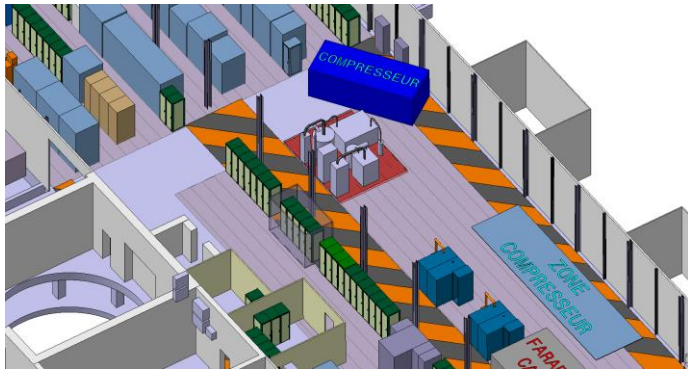
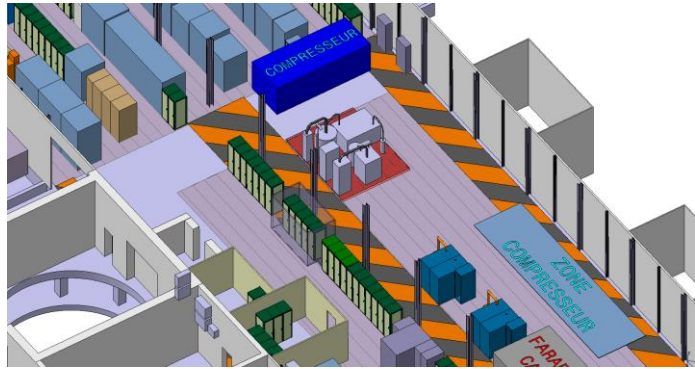
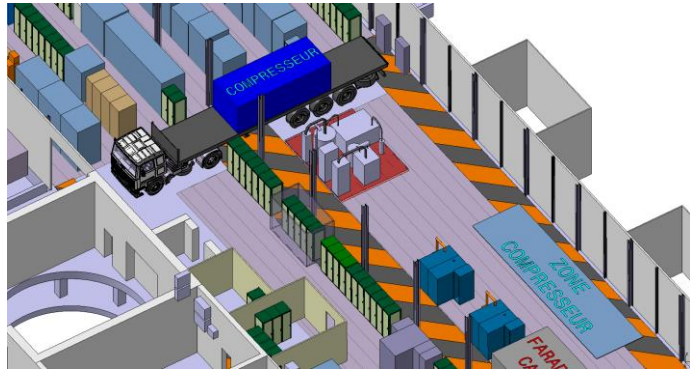
BA6 layout and crab-cavity zone



BA6 – surface equipment



BA6 – cryogenic compressor installation



BA6 layout

Generic infrastructure

In the zone between crab cavities equipment and lift, we will have pipework with their own support from underground (pipework) and cable trays attached to the existing structures.

SMB advises to attach cable trays and pipework to the pillars or support from the concrete slab to be ok. If supporting is from the beams, then structural safety is not guaranteed. No additional load should be added to the beams.

Compressor and ancillaries, cryogenics

The compressor and ancillaries are part of a mobile refrigerator. Mobile, means we may need to transport it elsewhere from times to time. For the moment we don't know if we can use the crane (because of height of the compressor below hook) for handling. We may need to use rollers. 6tons+ the weight of the skids, so 9tons, leading to 4.5tons per axis of rollers.

If rollers are to be used, we will need to reinforce the flooring along the installation path. Or to distribute the load by using a steel plate. Distributing the load, we may get to 10kN/m², then it's fine. This depends on transport. Because installation will be repeated several times, reinforcement by probs is excluded and pillars are retained.

For transport by rolling, we will substitute all wooden panels by metallic sheets along the installation path.

For static support, we would put 1 prop (column) under each foot. One prop can take 2tons. Then, it's just a matter of integration and positioning depending on cable trays or services in place.

The Invitation to Tender is in exam with HSE. The IT should go to the Spec Committee on the 1st July.

BA6 layout

RF Power and rack.

We know the structures, identical to those in BA3 SPS. The best solution is to put a column under each foot, maybe a frame. We can position the equipment such that the feet do not fall where there are beams. We have 1 column every 2.5m, but we don't need to put the new equipment exactly on top of one column. F.Galleazzi thinks we need a support structure, to have distribution of load. Do the RF amplifiers come with feet? Or with a skid? We should give the information to HSE and SMB.

The racks will be partially filled up with equipment. Need for reinforcement? Possible, but we need to know which ones are reused. We can imagine that once filled, they make 500kg. The request should be posted with the same calendar as all the rest (see below).

Faraday cage

Like for Linac4, where however the FC was directly installed on the concrete slab because the false floor is shallow (30-40cm above the slab). Here, we have nearly 1m, so some supporting skid is required.

We would remove cable trays over the surface needed: these are essentially empty in the zone reserved for the FC.

The FC for Linac4 was directly designed by P.Baudrenghien, final client. Here, we should meet with PB, Alejandro Selles, F.Galleazzi and S.Mehanneche, to get more details and propose a solution.

Calendar

Deadline is 15th August for definition of the support and start the study on that date. This date gives SMB 3 weeks before the TS of September, when they will take a look to the reality in BA6.

5 packages before 15th August:

- Compressor installation path

- Compressor static position

- RF power stations

- Faraday cage

- Racks

Cryogenics components weights & dimensions

AL Cryoplant

Designation	Component	Number	Dimensions			Ground surface (m ²)	Volume (m ³)	Weight (kg)
			L (m)	W (m)	H (m)			
CP	Compressor station	1	2.65	2.18	2.12	5.8	12.2	5,500 kg
ORS	Oil removal system	1	1.80	1.00	2.80	1.8	5.0	500 kg
CB	Cold box	1	2.60	1.80	2.60	4.7	12.2	
CB	CB control cabinet	1				0.0	0.0	

In BA6: 2 large items, the CP and the ORS(+GMP). Both suppliers approx. same weight. Plus iso-frame skid weight, 3ton±1ton. So in total 2 skids, from 3.5tons to 9.5tons. See next slide for more information.

Linde Cryoplant

Designation	Component	Number	Dimensions			Ground surface (m ²)	Volume (m ³)	Weight (kg)
			L (m)	W (m)	H (m)			
CP	Compressor station	1	2.70	2.20	2.20	5.9	13.1	5400
ORS & GMP	Oil removal system & GMP	1	1.60	1.30	2.40	2.1	5.0	500
CB	Cold box	1	2.00	1.60	2.60	3.2	8.3	2500
CB	CB control cabinet	1	0.80	0.40	1.90	0.3	0.6	110

(Mobile) Cryogenic compressor and ancillaries

Offers opened not earlier than 15th September. From the Invitation to Tender, we know that:

As the supply shall be a mobile installation, the equipment making up the compressor station is to be assembled and delivered on removable skids, **of the type of iso-frame** (dimensions to be found in § 4.3.1), to ease up the mounting and dismounting of the whole installation. The following grouping is proposed by CERN for the conforming bid:

- One common skid for the screw compressor with its motor and dedicated oil storage tank with helium cooler, oil cooler, oil pumps and oil filters for the single compression stage, as well as its main electric cabinet and its main control cabinet;
- One common skid for the final oil removal system (ORS – see § 4.9), the gas management panel (GMP), the line dryer, the Interfaces & Utilities Panel (to be defined in § 4.3.2) and the purge group.

The bidder [...] **may offer as a variant a different grouping of the skids** if he can demonstrate its advantage, in particular in terms of dismounting/remounting durations.

[...]

The layout of the compressor station shall comply with the requirements of § 4.1. In particular, skids are to be of iso-frame, **of maximum dimensions** [Length (6.10 m) x Width (2.43 m) x Height (2.60 m)].

(Mobile) Cryogenic compressor and ancillaries

From the Invitation to Tender (continues):

4.3.1 Building interfaces

The whole compressor station will be installed in the surface building 873 (SPS-BA6) located on CERN Meyrin site in Swiss territory, as described below in Figure 2.

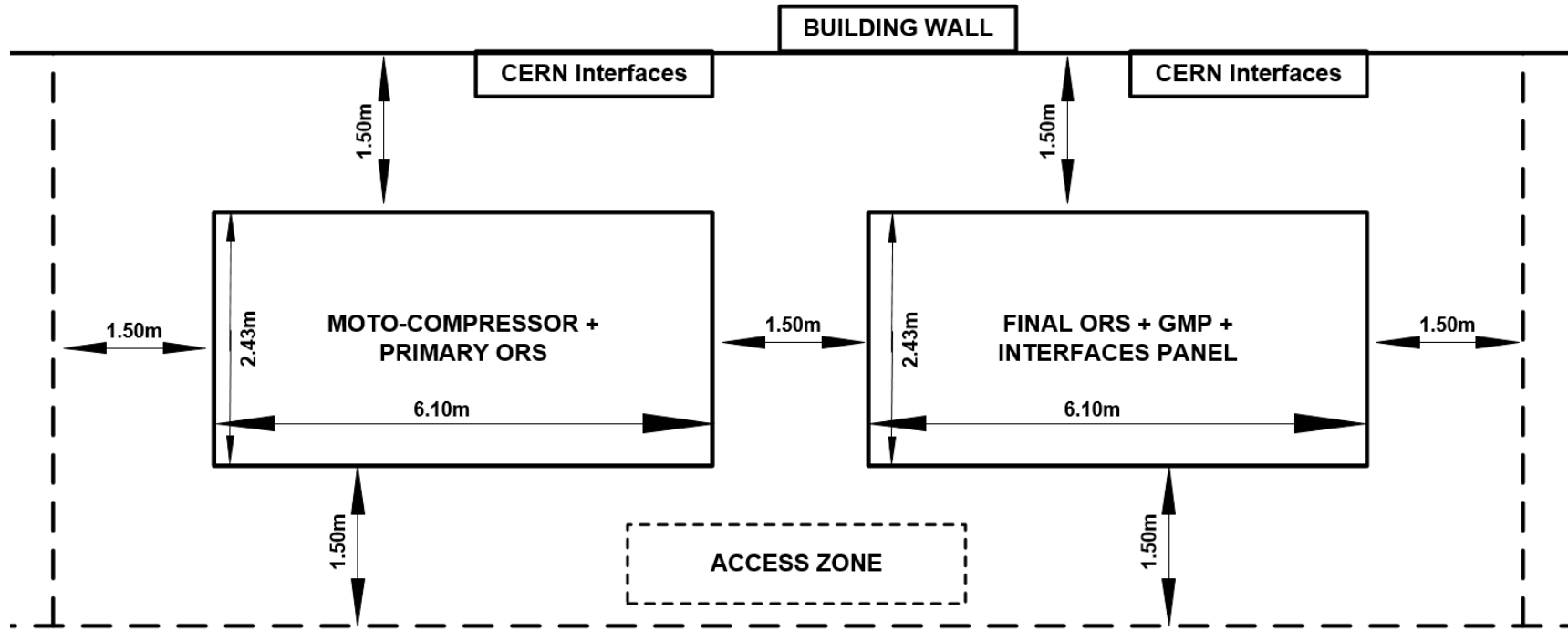


Figure 2: Surface layout principle in building 873 – SPS BA6

(Mobile) Cryogenic compressor and ancillaries

From the Invitation to Tender (continues and end):

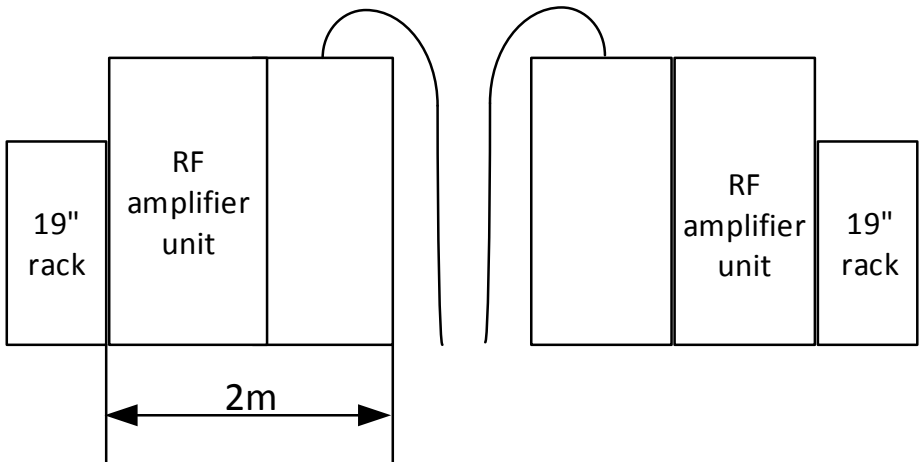
The installation conditions in the building 873 are as follows in Table 2:

Access door	Width [m]	3.15
	Height [m]	4.00
Crane hook	Height [m]	4.00
Maximum crane load	Load [t]	7.5
Maximum space available for compressor station, including all auxiliary equipment like electric cabinets, platforms,	Width [m]	2.50
	Length [m]	13.5
Maximum floor load	[kg/m ²]	10000

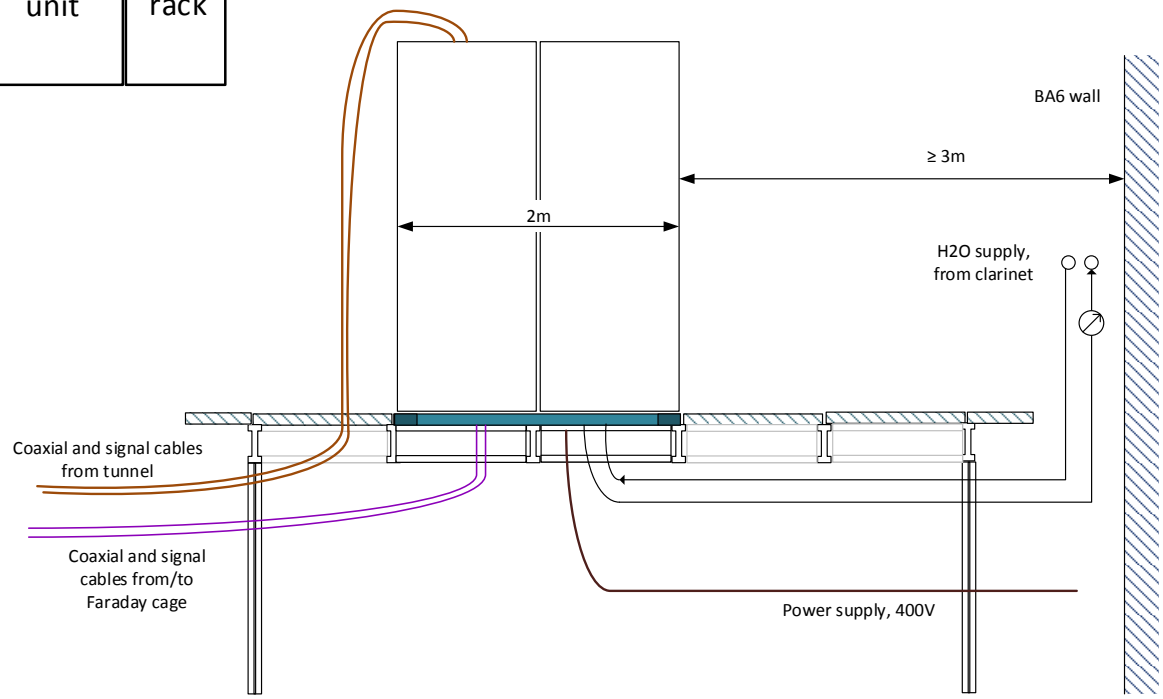
Table 2: Building interface in compressor building 873 – SPS BA6

In accordance with the dimensions given by the contractor, CERN will adapt floor interface to meet the maximum weight of the final supplied mounted skids.

RF Power cables to tunnel

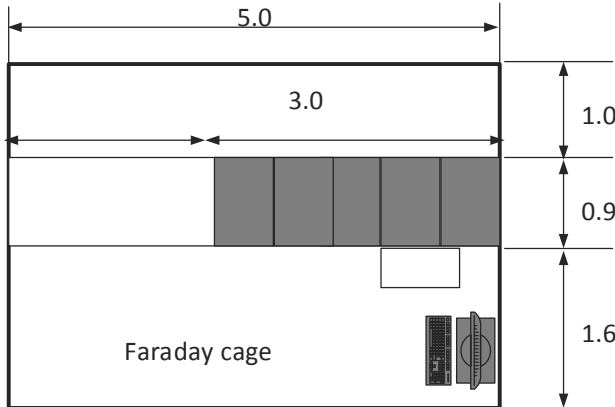
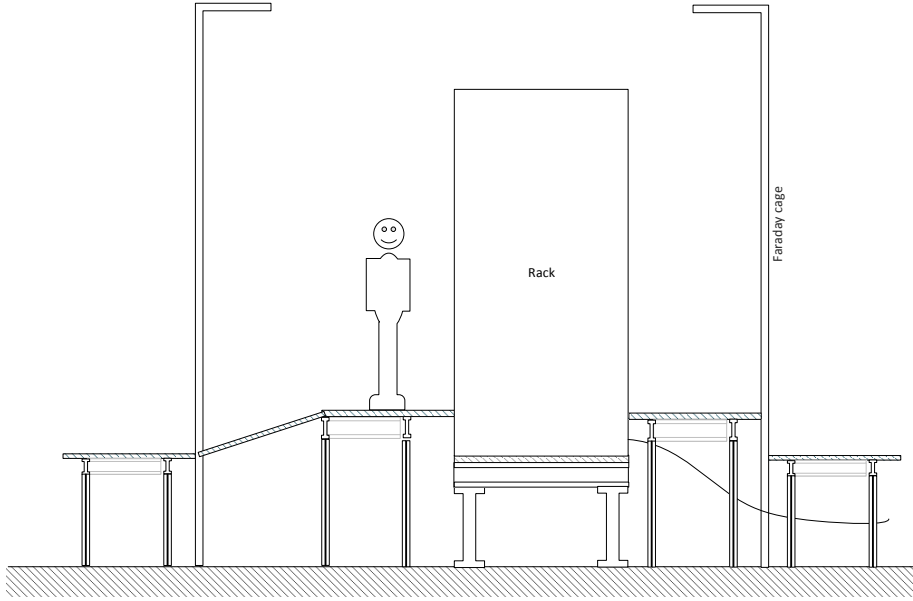
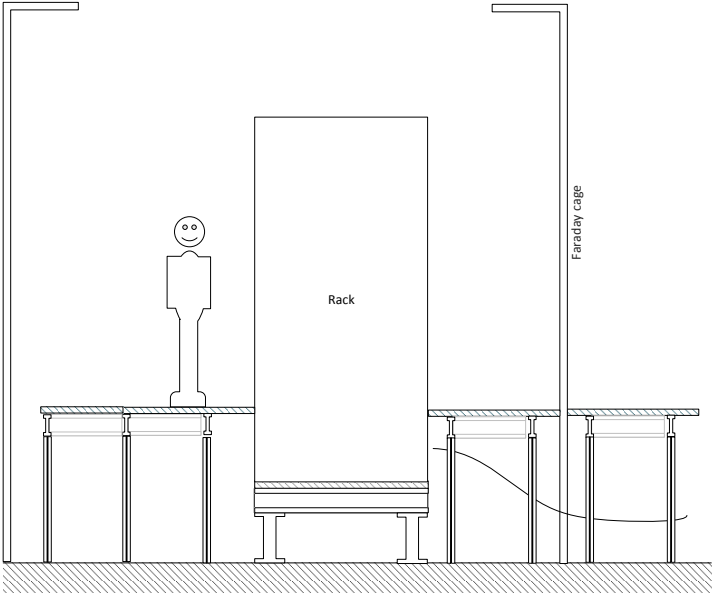


Rack: 500kg
IOT unit: 2000kg



BA6 news

LLRF



Rack: 500kg
Faraday cage: not self supporting