Meeting of Working Group A: 20 Aug 07

Experimental Area
1)With only One Large Shaft
2)With Two Large Shafts
3) Services in U. Hall and U. Hall sections with GLDc

A. Hervé/CERN

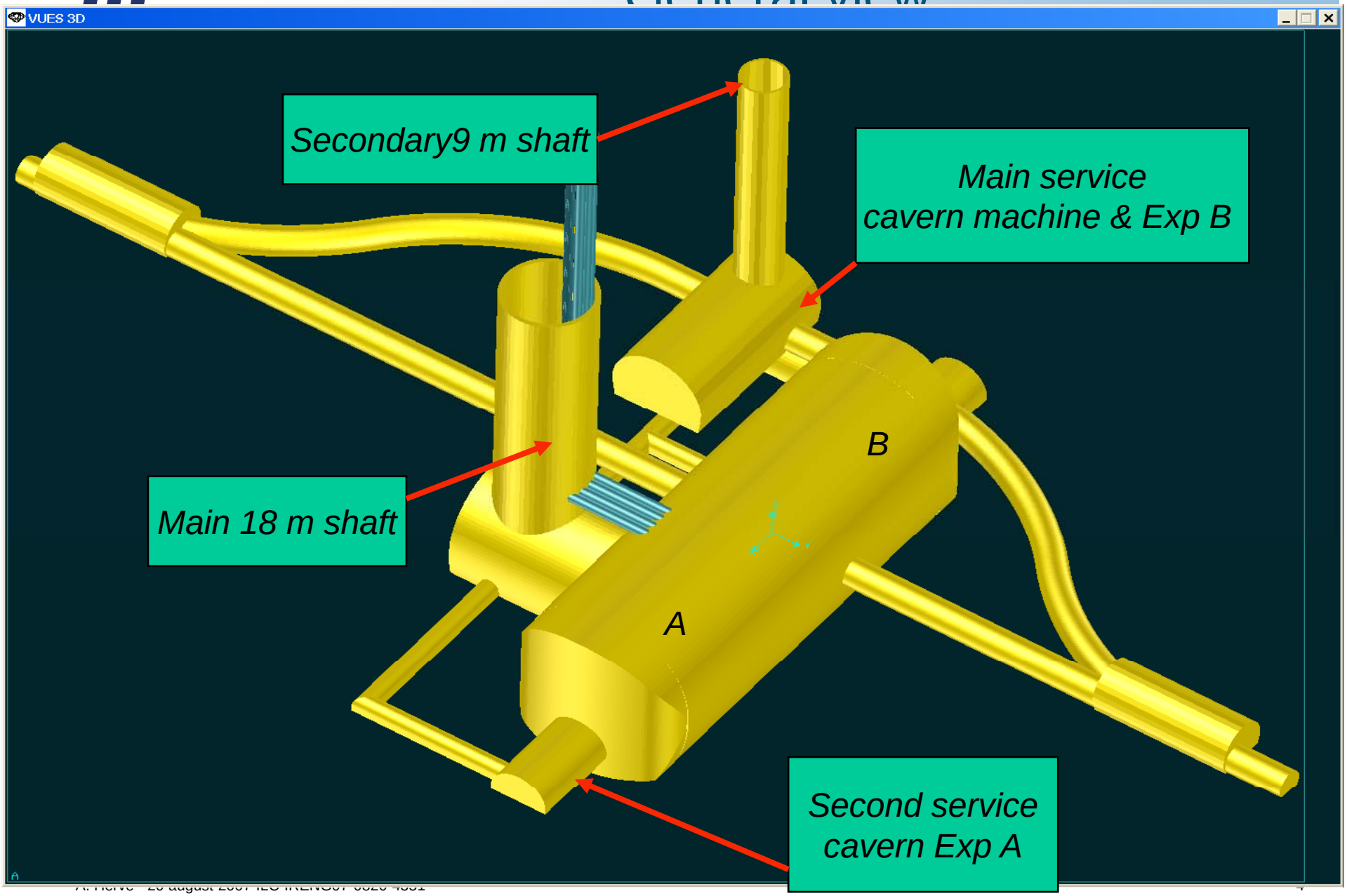
1)With only One Large Shaft

A. Hervé/CERN

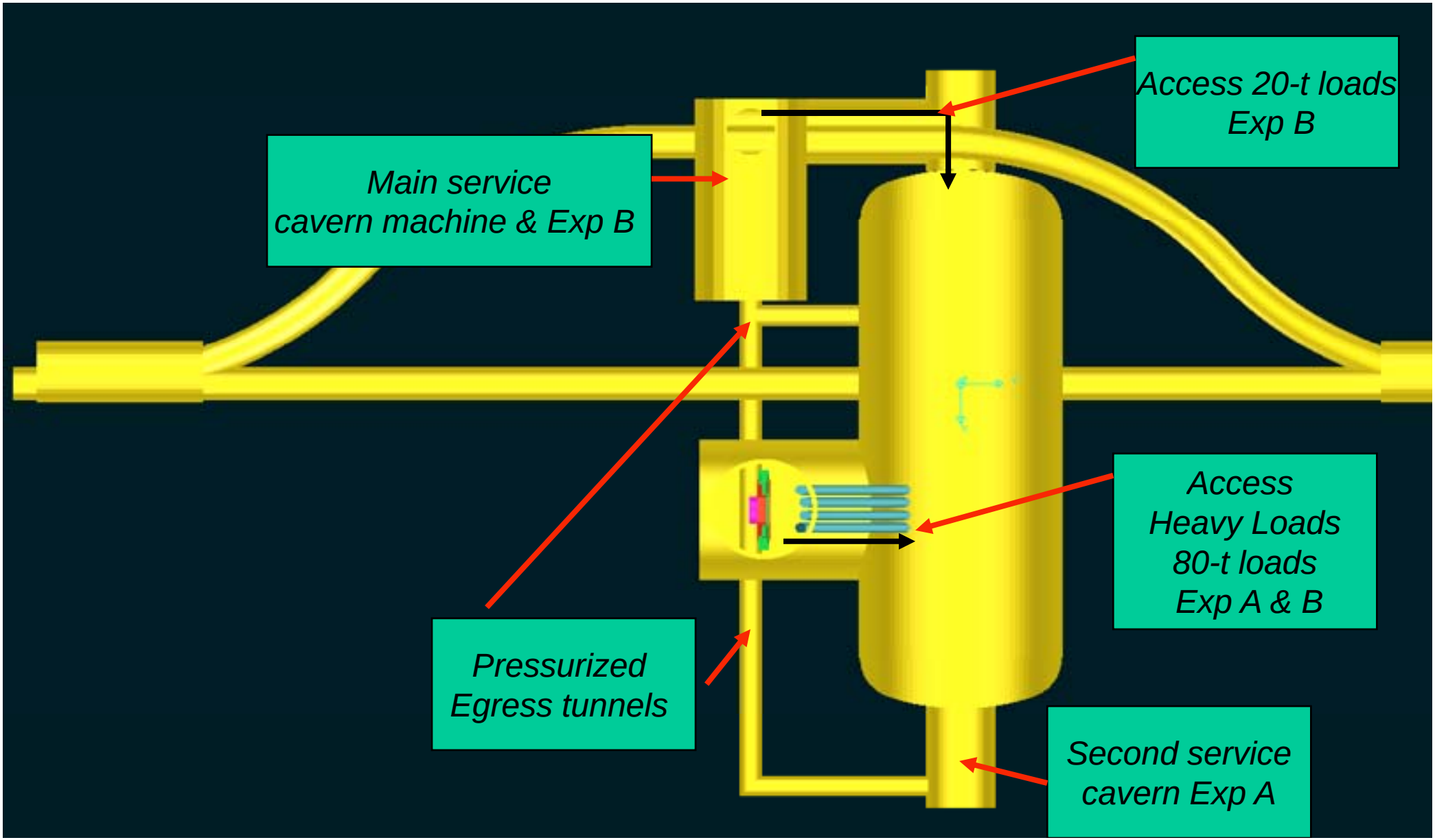
Starting point

- On the suggestion of Andrei, we have looked at the possibility of having only one large 18 m shaft, plus another 9 m shaft.
- We have positioned these two shafts outside the footprint of the main underground hall to to do away with interferences between loading/unloading areas and working areas.
- This solution has been used for 3 of the 4 LEP experiments, Aleph, Delphi, Opal.

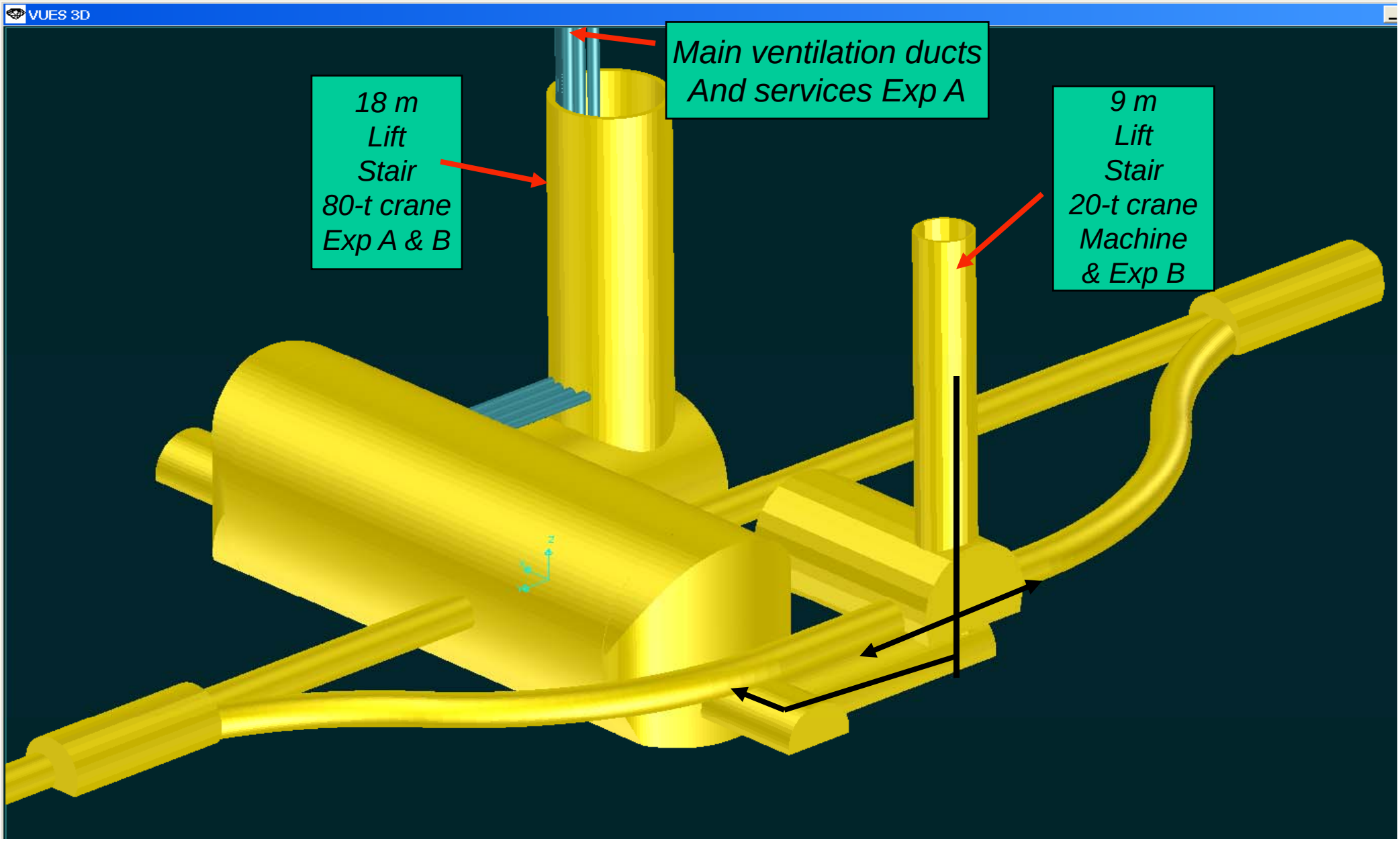
General view



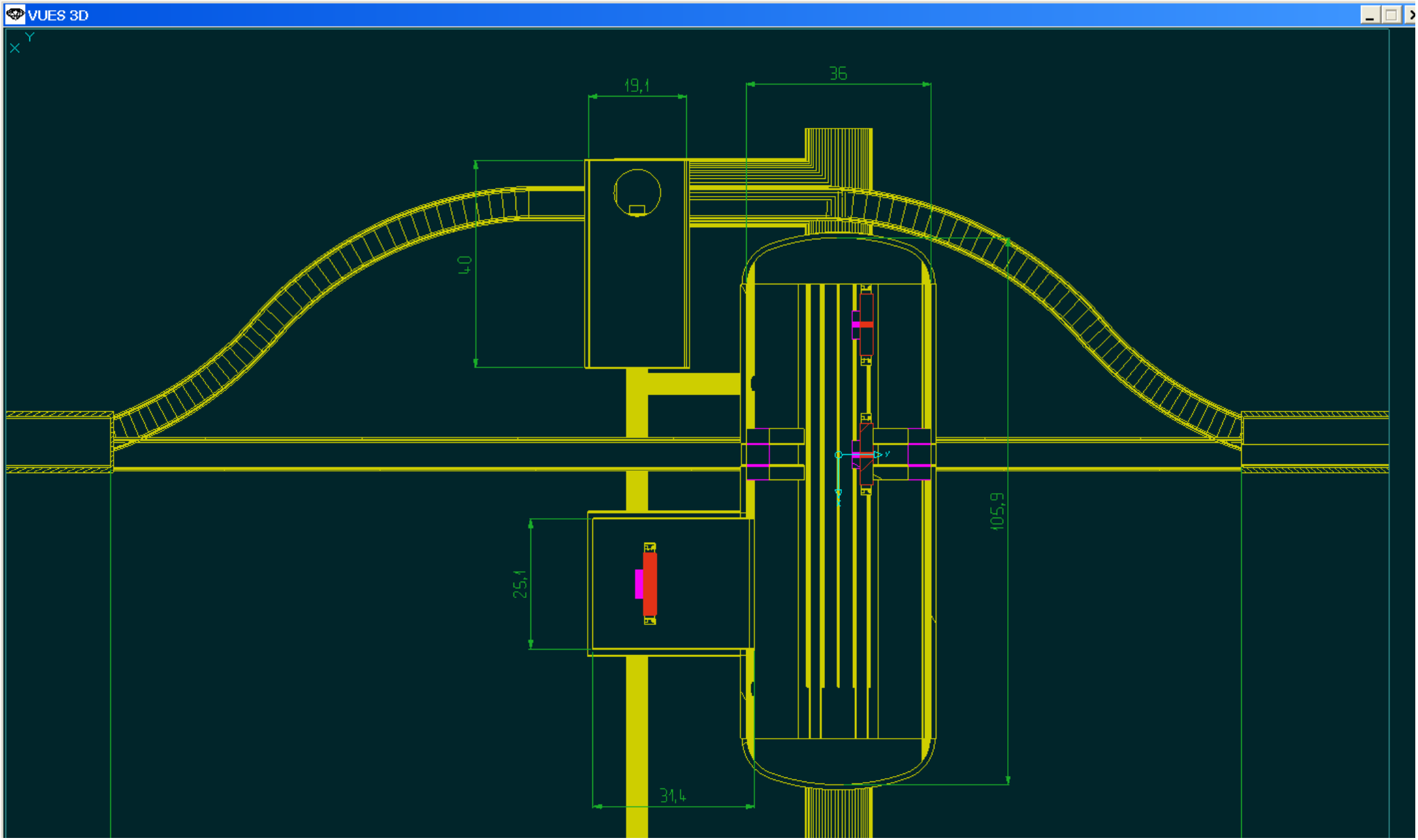
Top view


Access 20-t loads
Exp B
Main service
cavern machine & Exp B
Access
Heavy Loads
80-t loads
Exp A & B
Pressurized
Egress tunnels
Second service
cavern Exp A

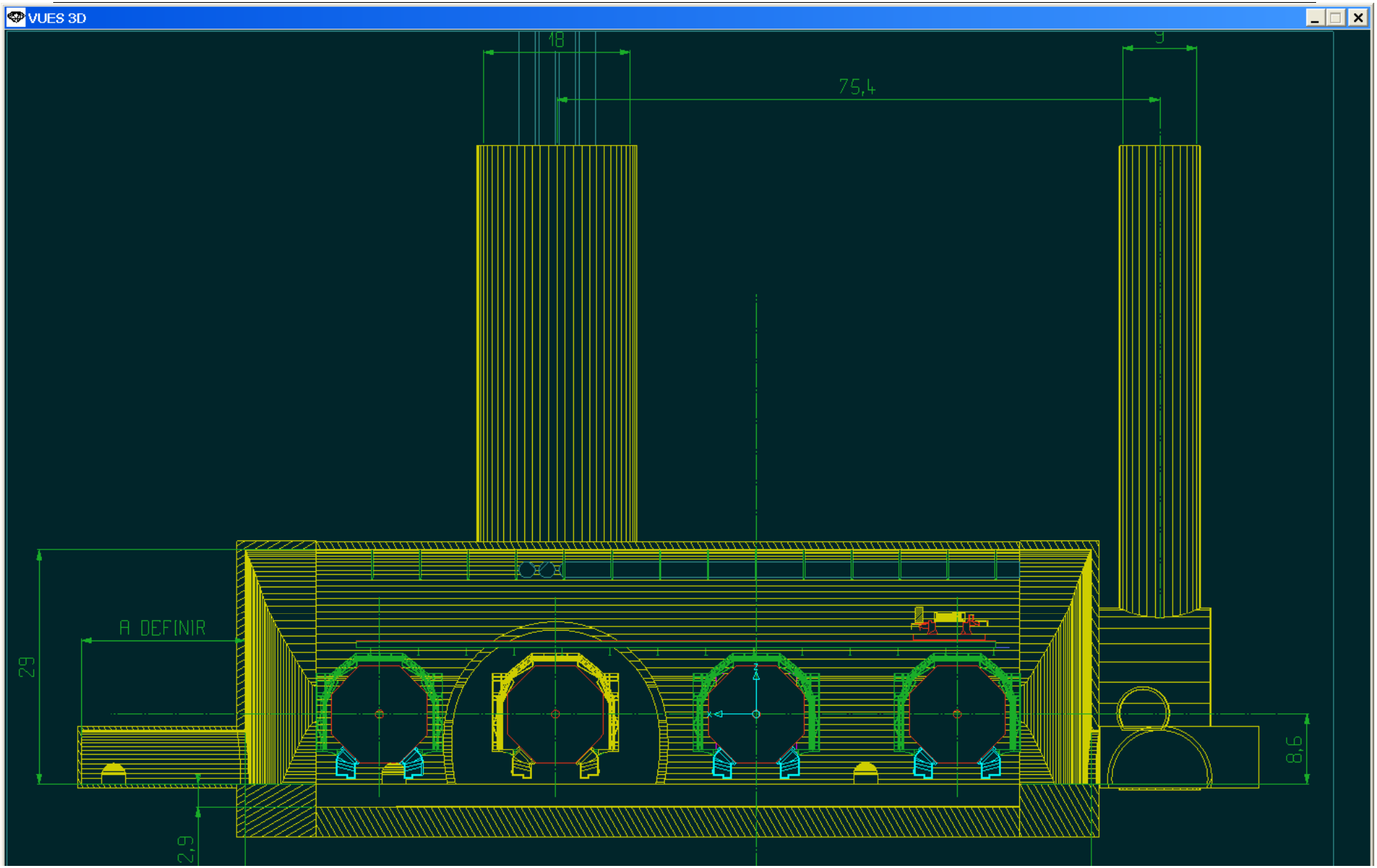
Side view


VUES 3D
Main ventilation ducts
And services Exp A
18 m
Lift
Stair
80-t crane
Exp A & B
9 m
Lift
Stair
20-t crane
Machine
& Exp B

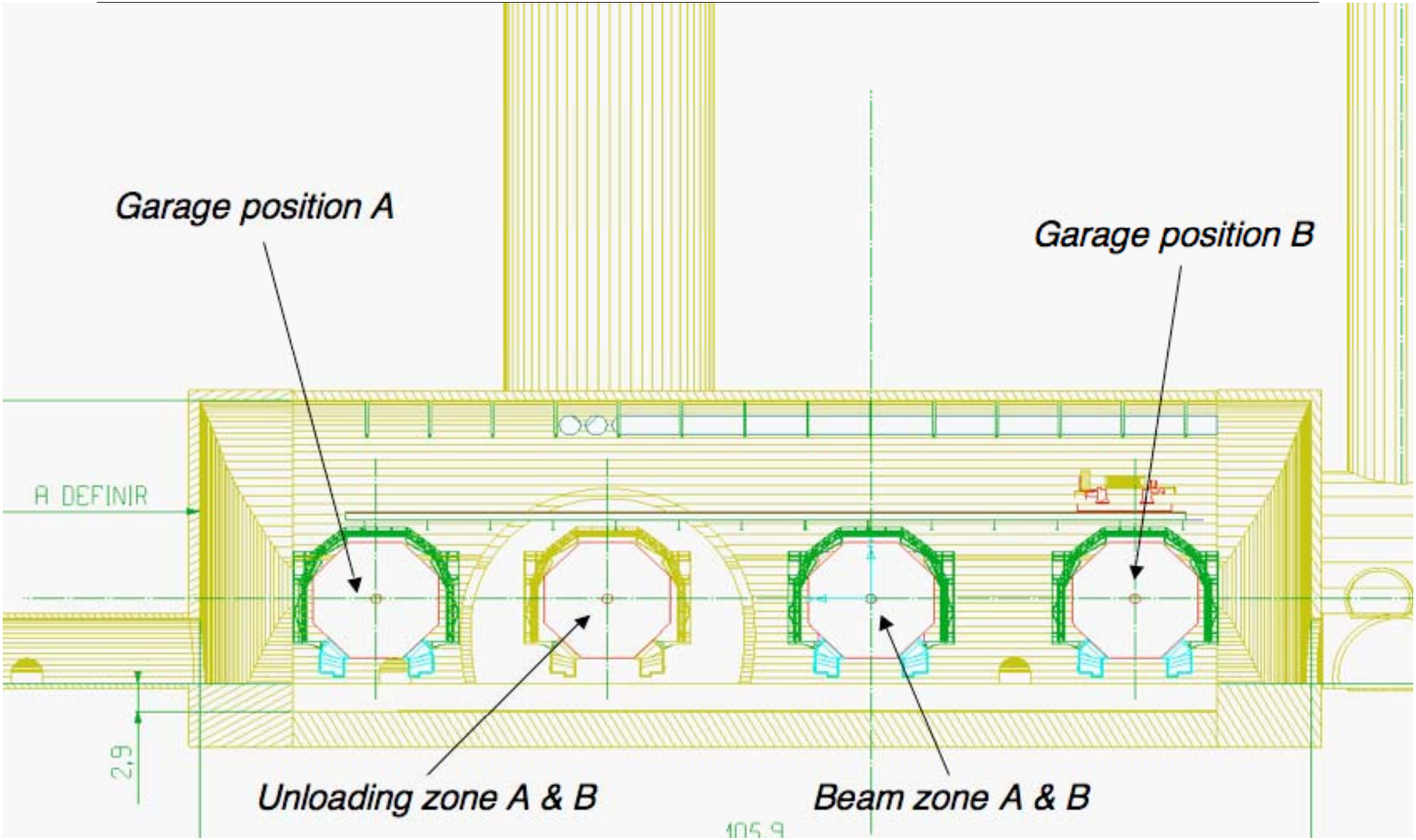
2D top view with dimensions



2D side view with dimensions

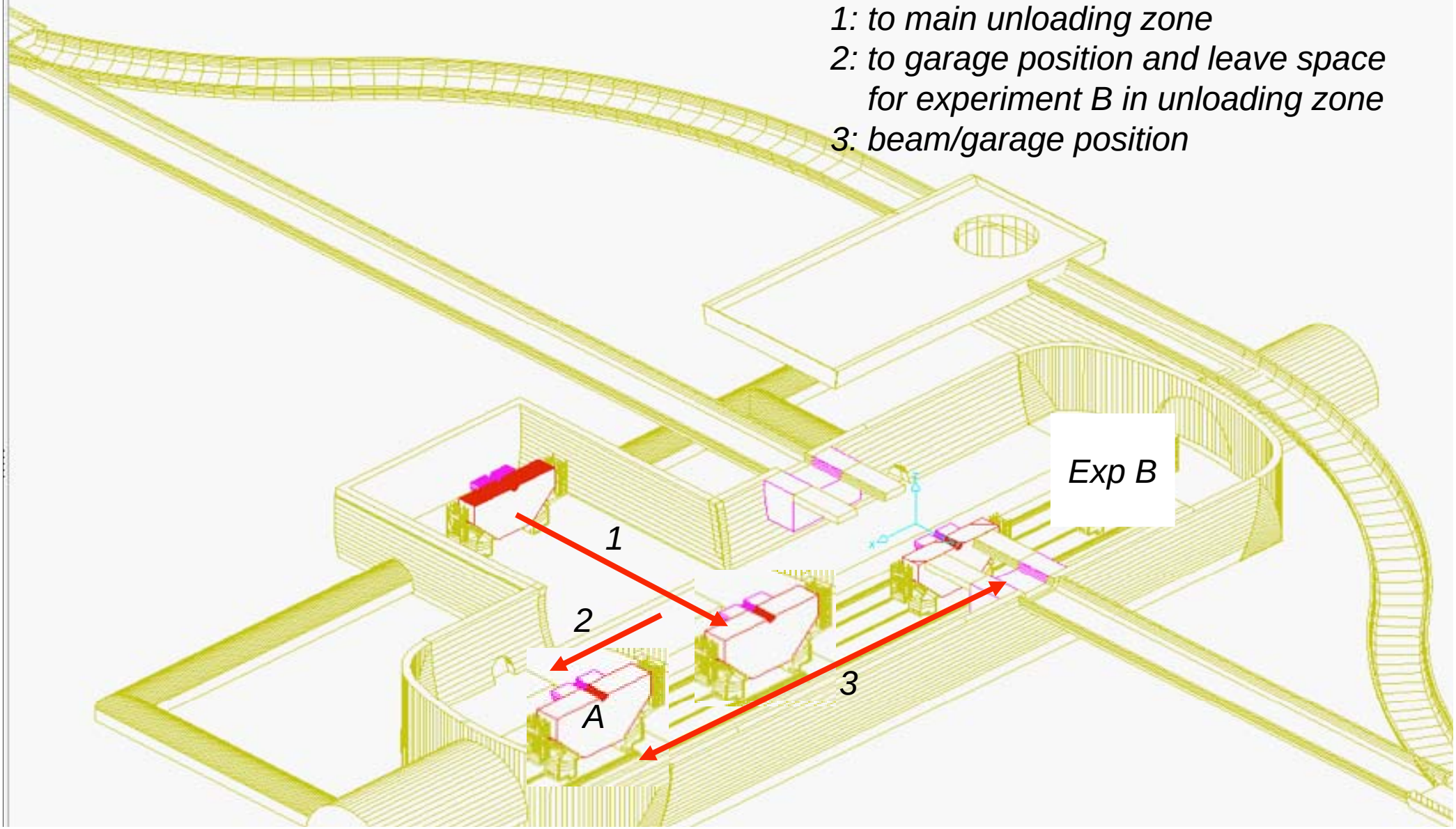


Longitudinal positions

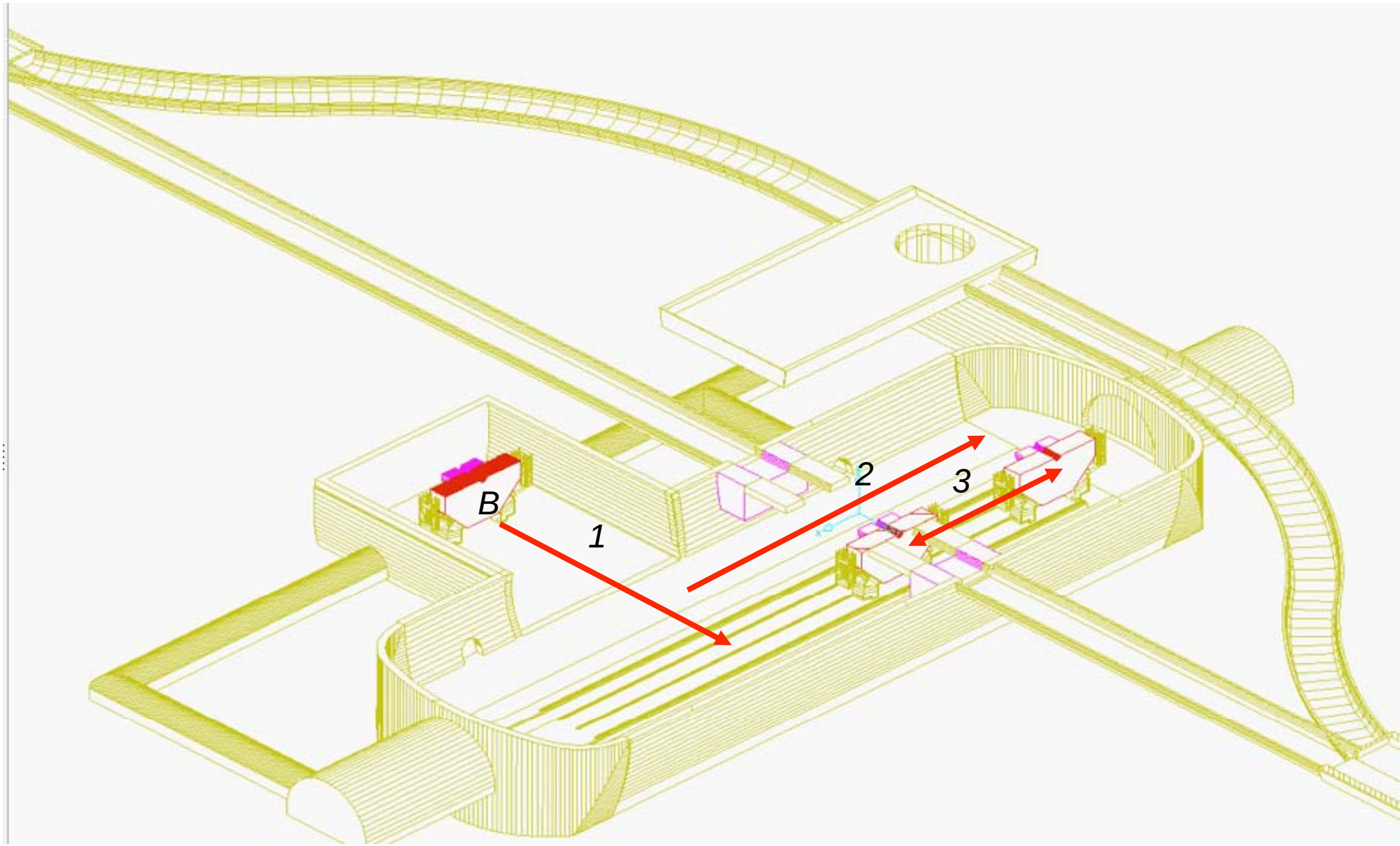


Movements of Experiment A

1: to main unloading zone
2: to garage position and leave space for experiment B in unloading zone
3: beam/garage position

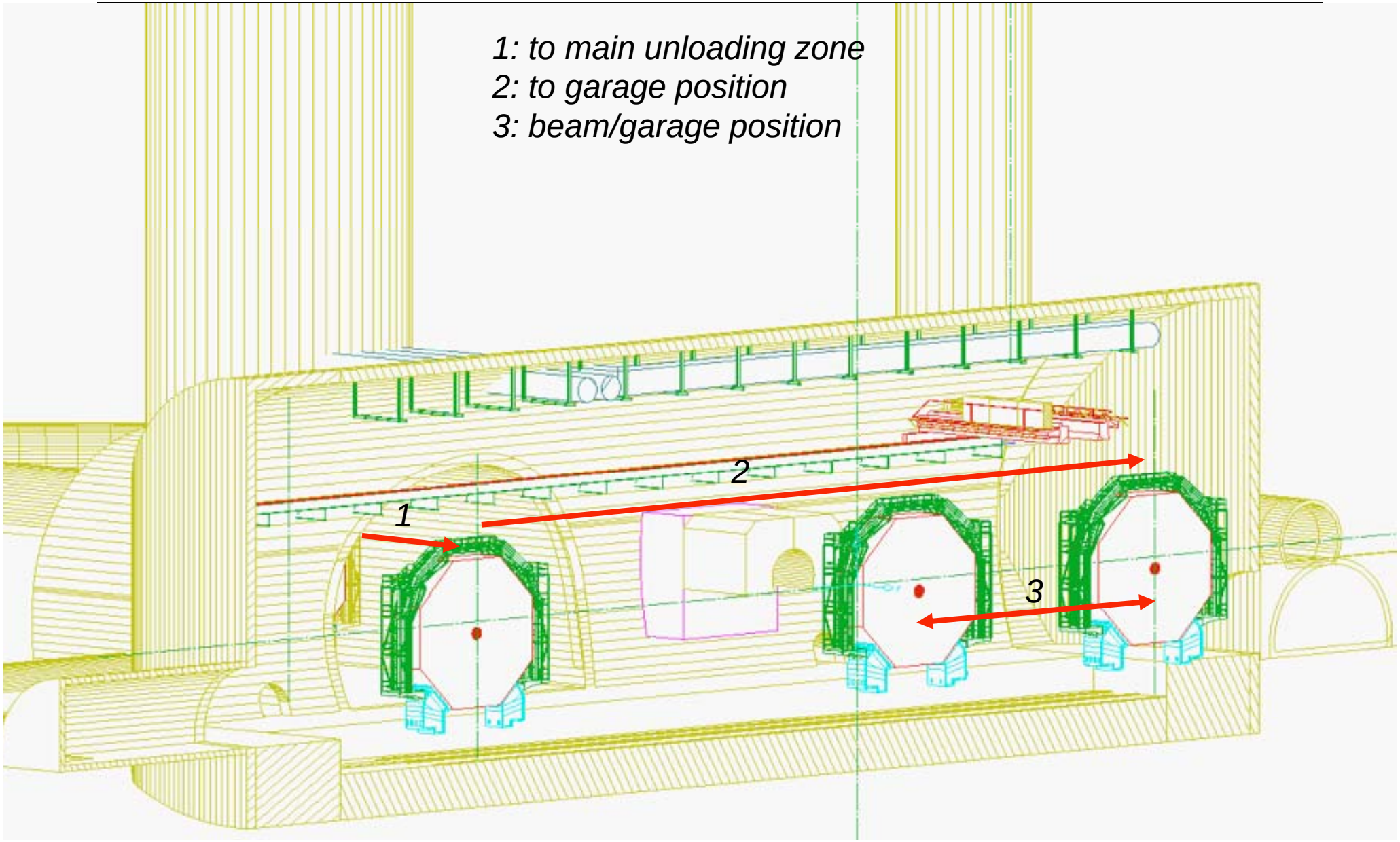


Movements of Experiment B



Movements of Experiment B

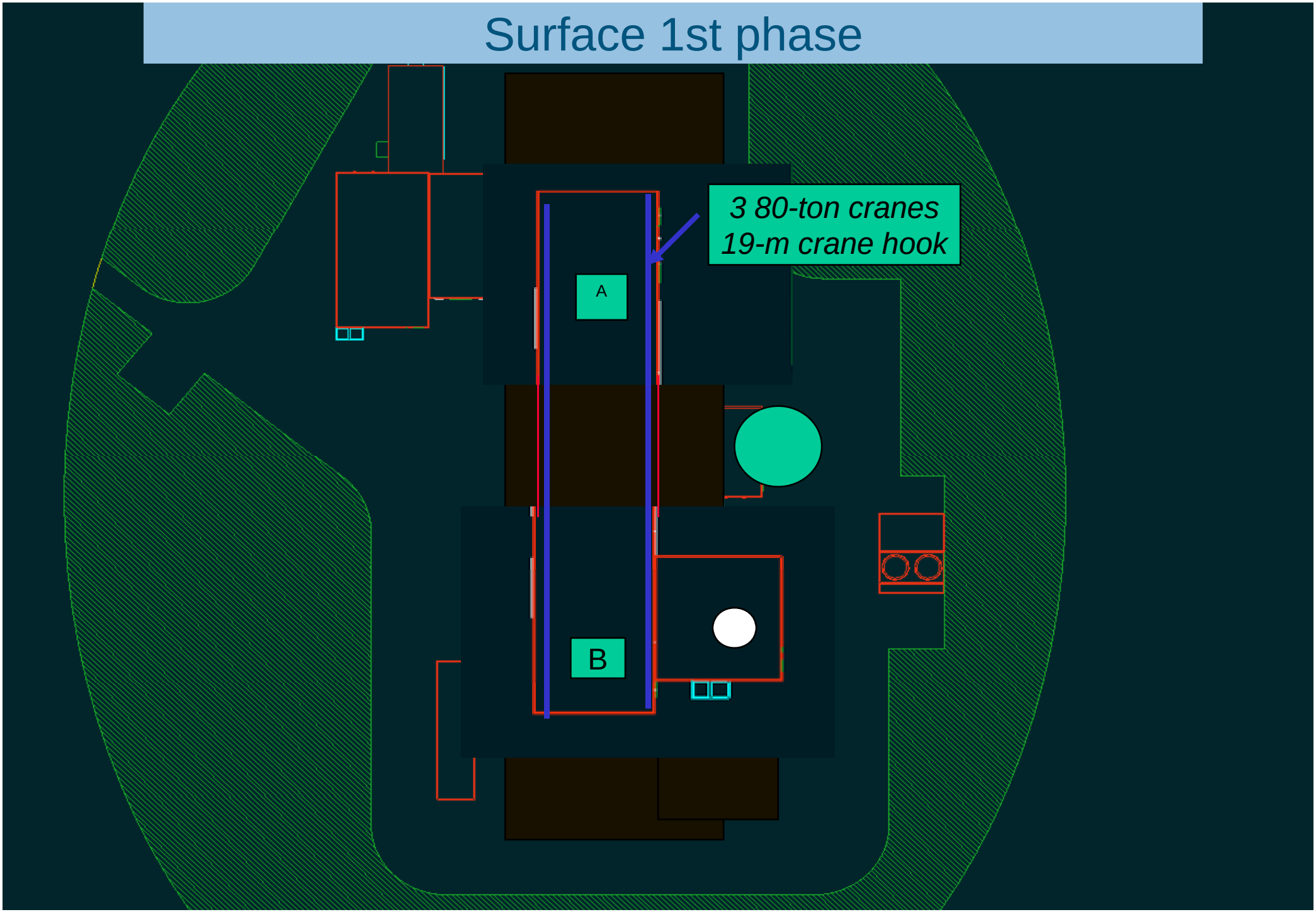
1: to main unloading zone
2: to garage position
3: beam/garage position



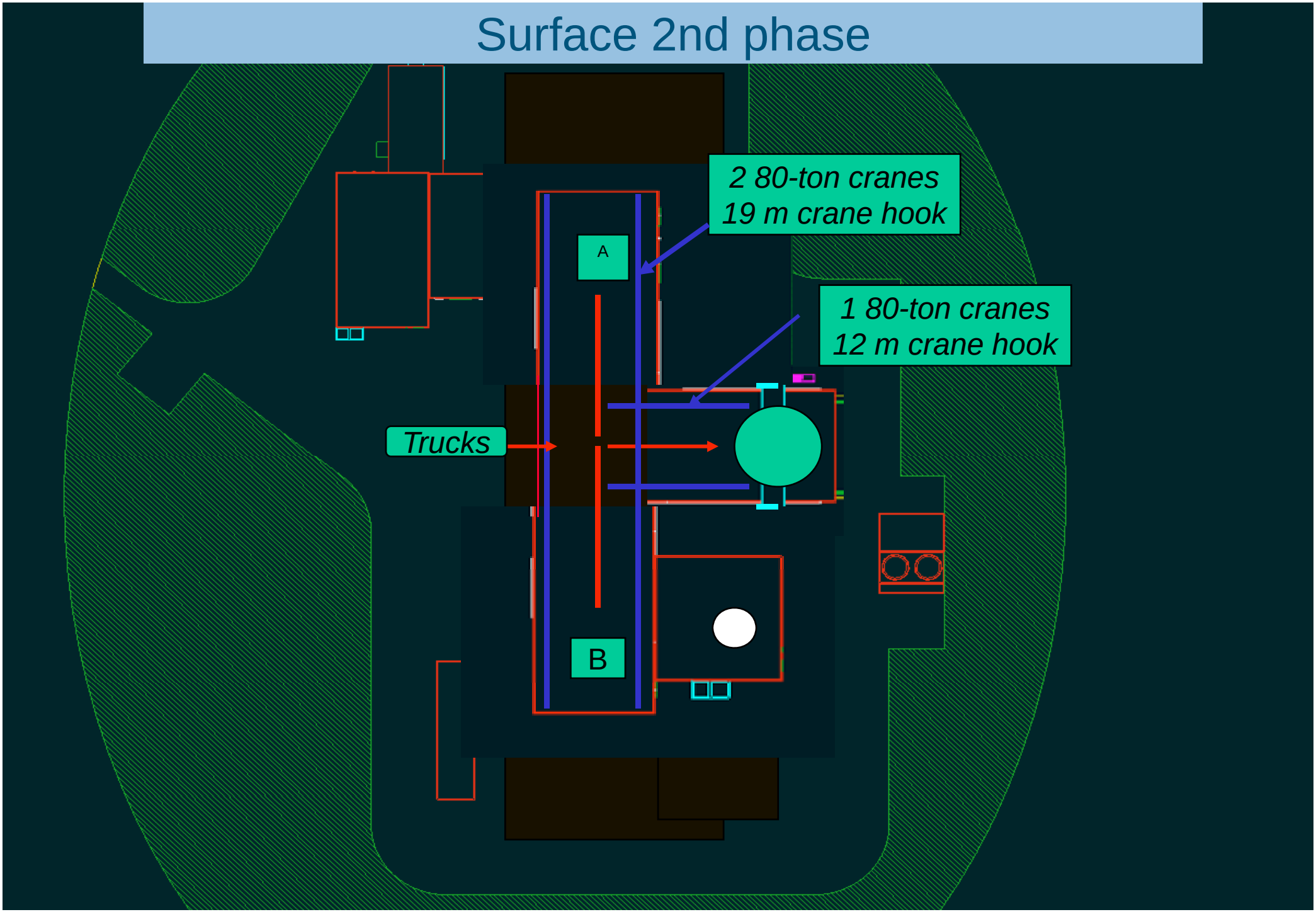
Surface

- During 1st phase, there is only one large assembly halls for Exp A and Exp B, sharing three 80-ton cranes
- During second phase, there is a side hall covering the main shaft. One 80-ton crane is used there with a 12 m crane hook, reaching to half the main assembly hall.
- The main assembly hall is left with two 80-ton cranes with a 19-m crane hook, allowing easing transfer of loads between the three cranes.

Surface 1st phase

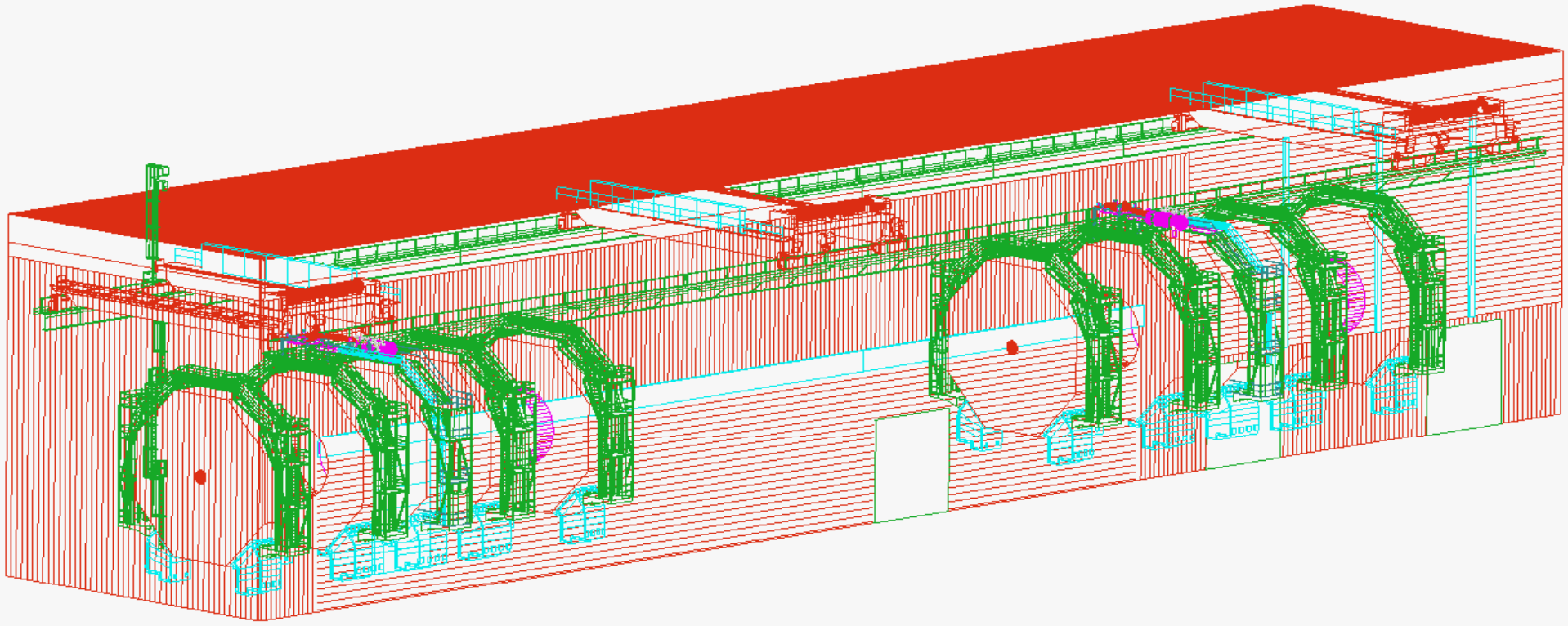


Surface 2nd phase



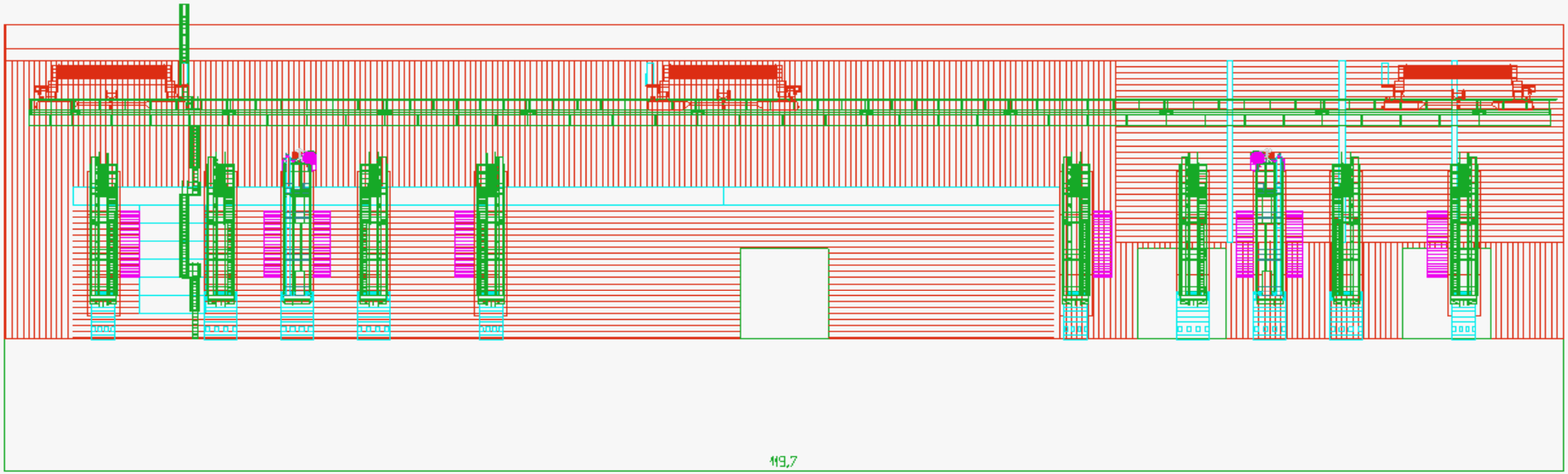
VUES 3D

Surface Hall 1st phase



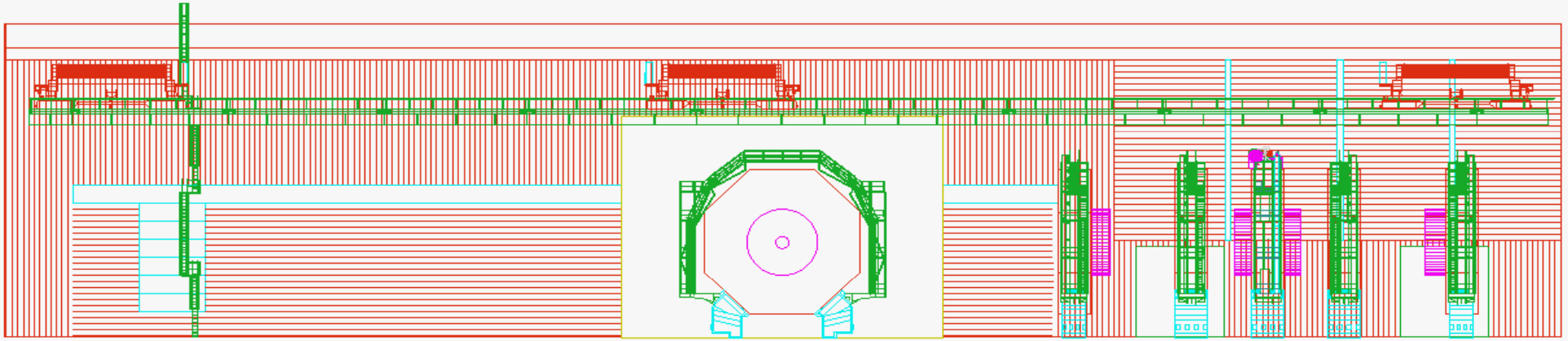
VUES 3D

Surface Hall 1st phase

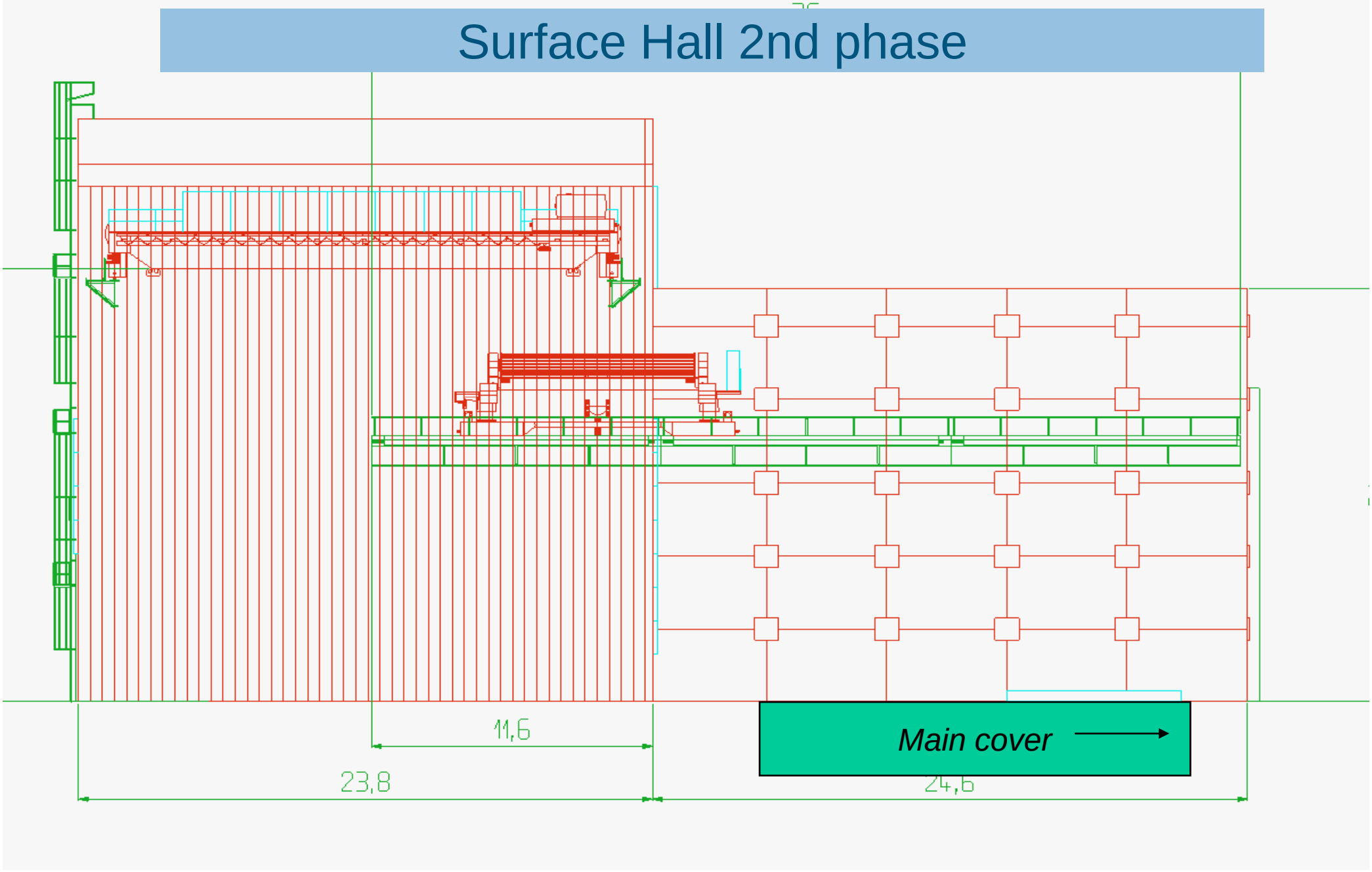


VUES 3D

Exiting Elements from Surface Hall

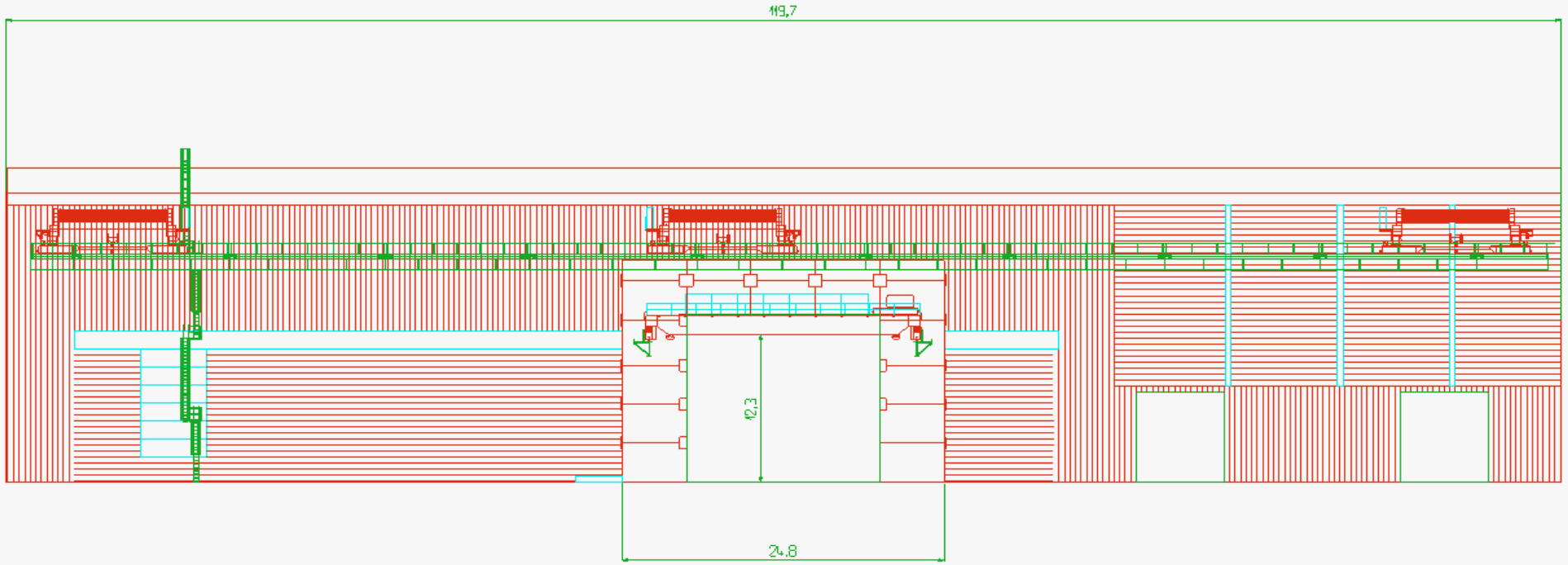


Surface Hall 2nd phase

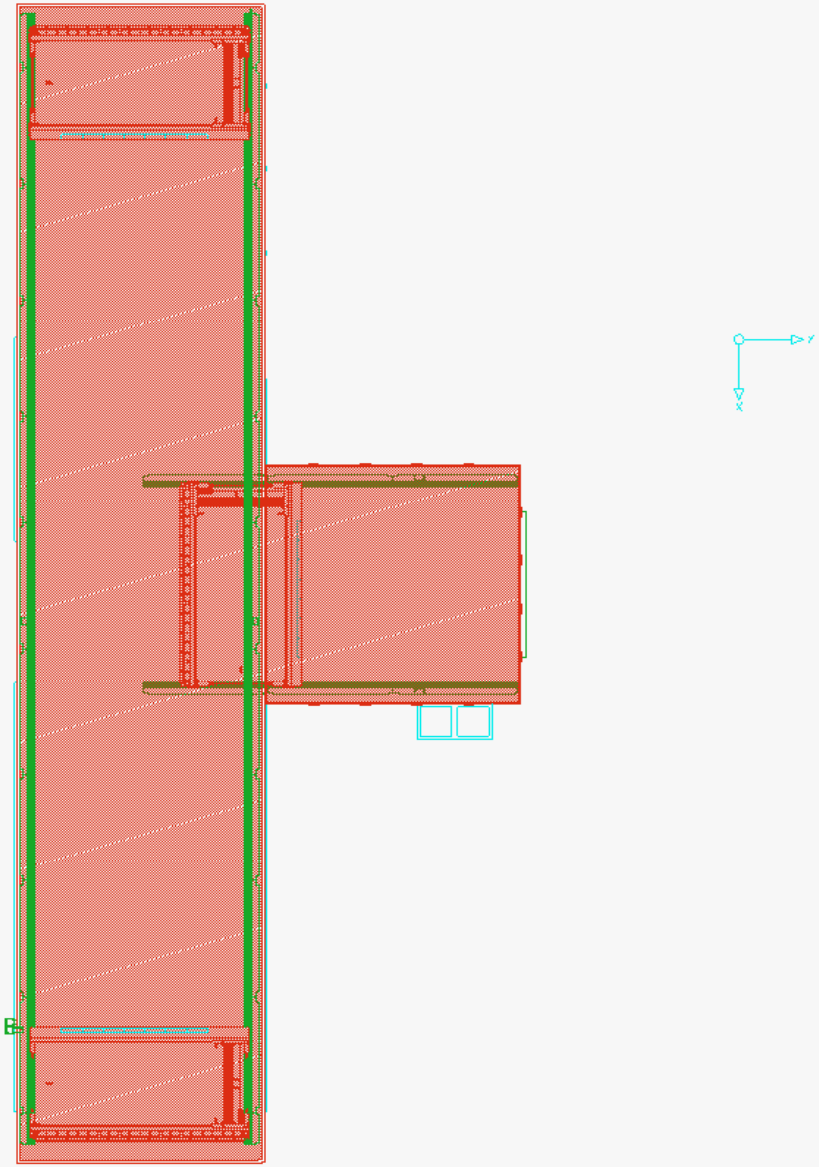


VUES 3D

Surface Hall 2nd phase

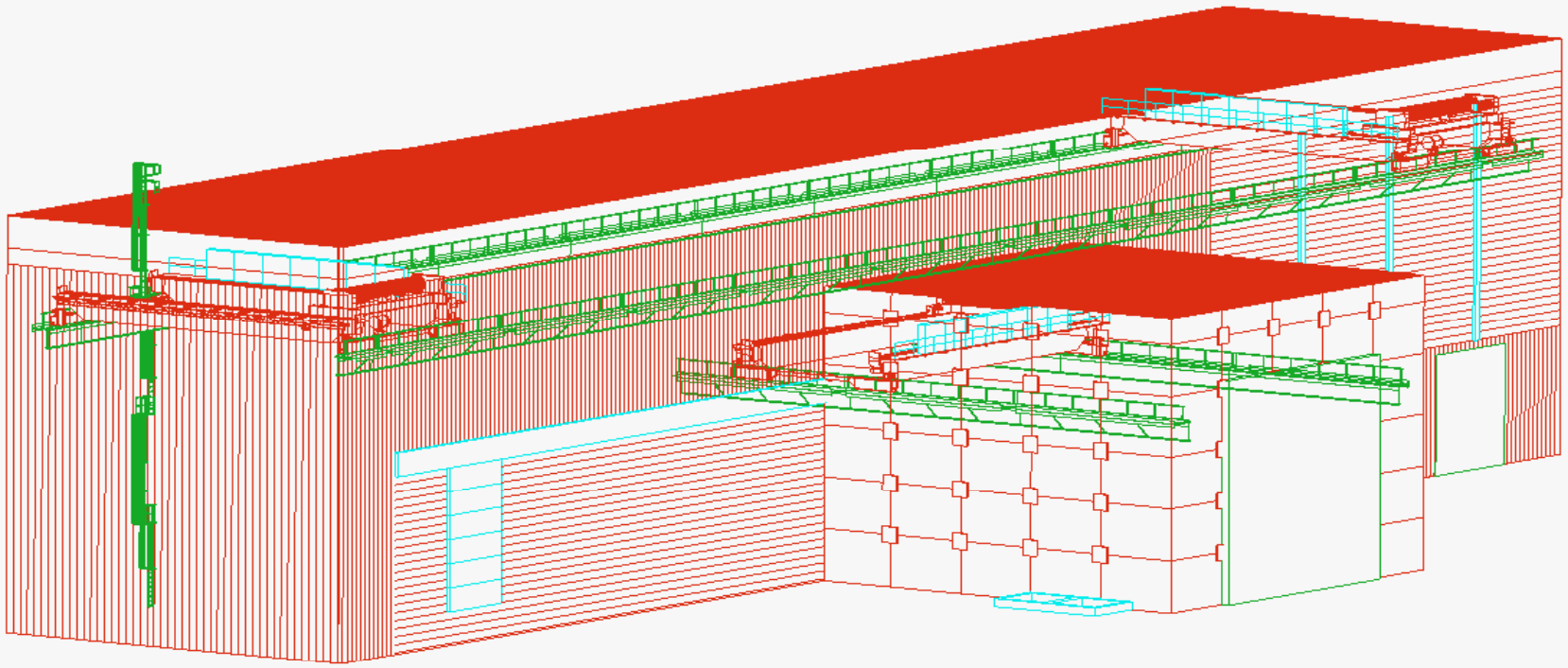


Surface Hall 2nd phase



VUES 3D

Surface Hall 2nd phase



1)With Two Large Shafts

A. Hervé/CERN

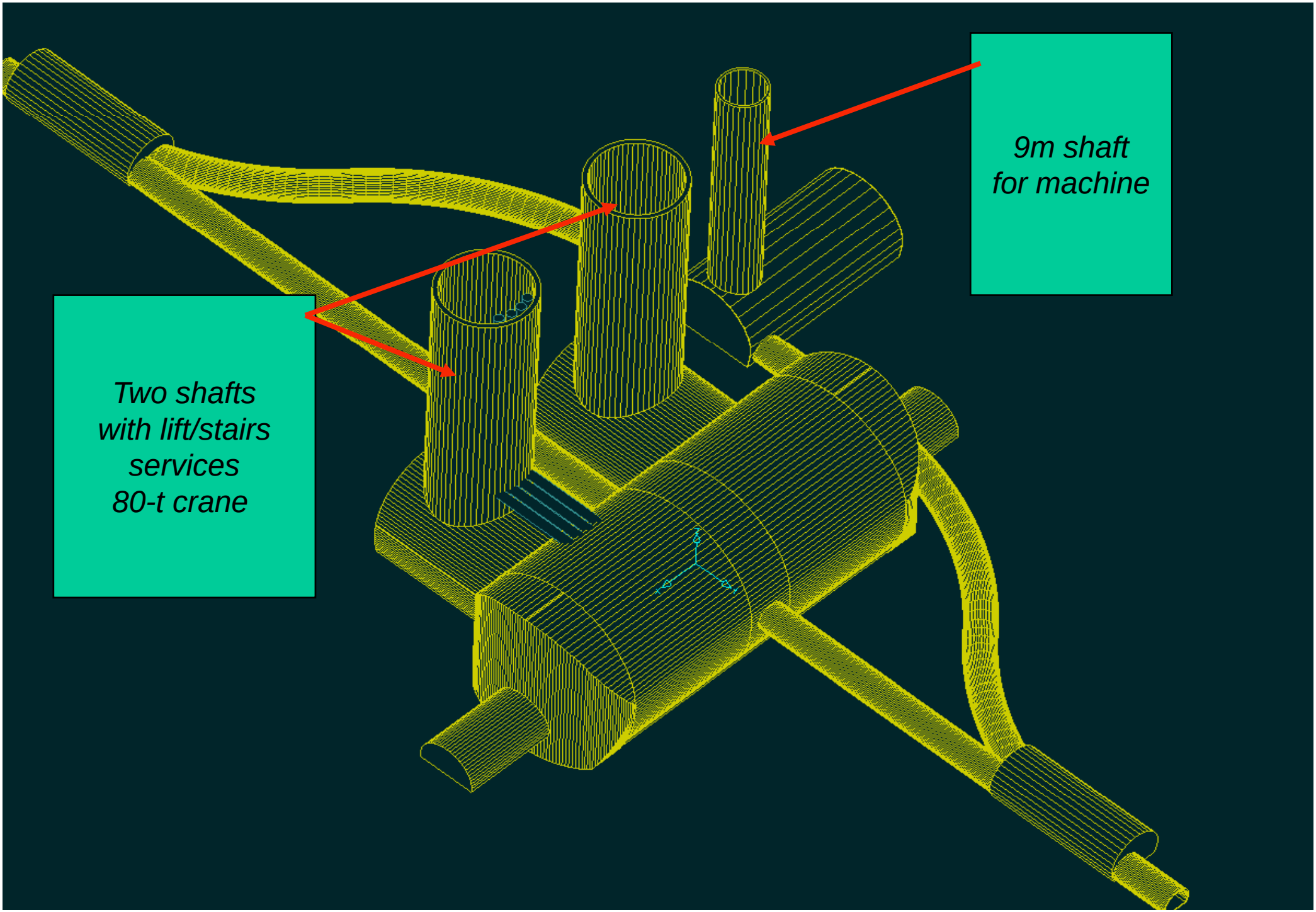
Starting point

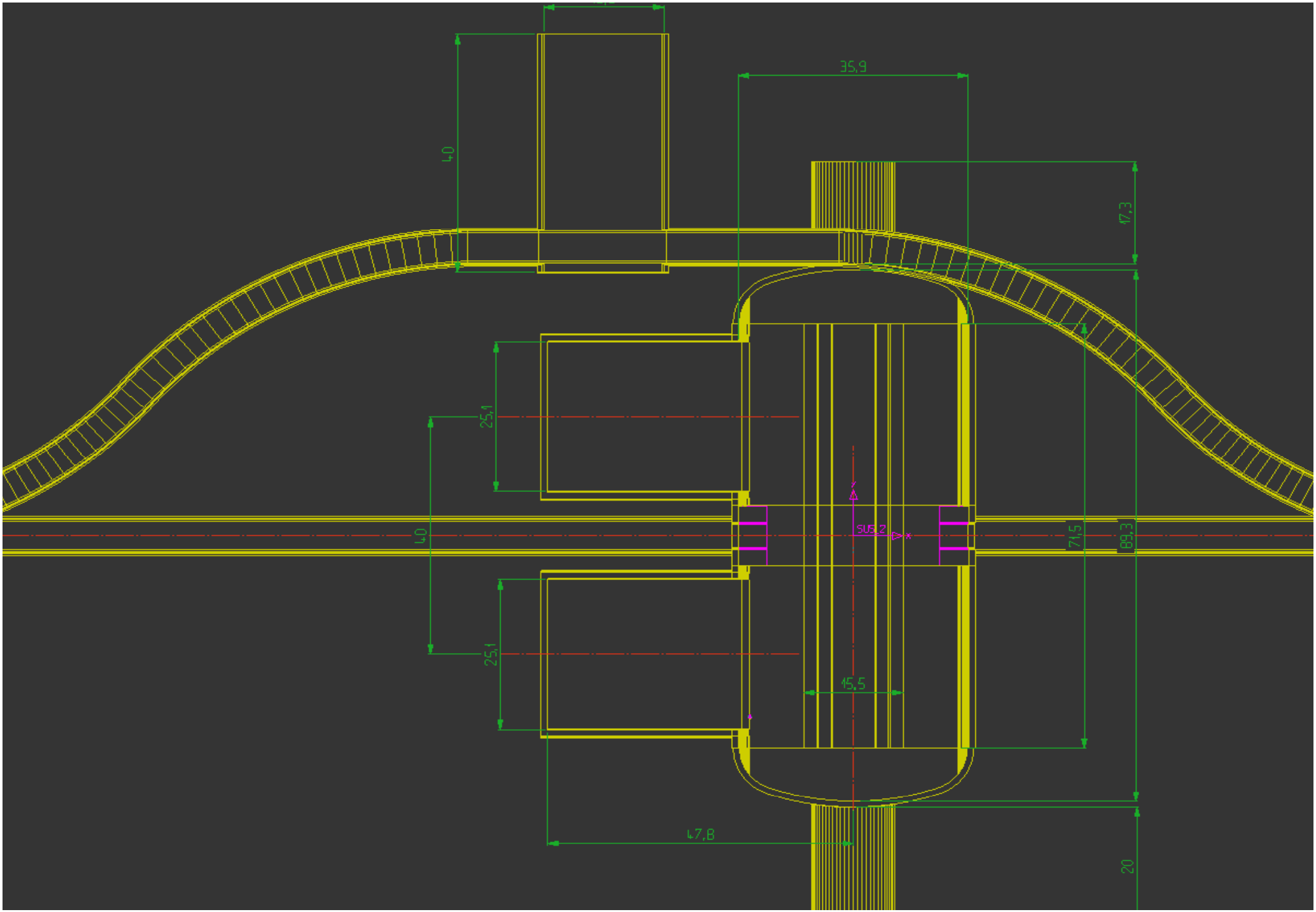
- There were comments that, with only one large shaft, symmetry was broken between the two experiments
- There were also possible interferences with commissioning of the machine
- We have looked at a solution with two large shafts outside the footprint of the main underground hall.

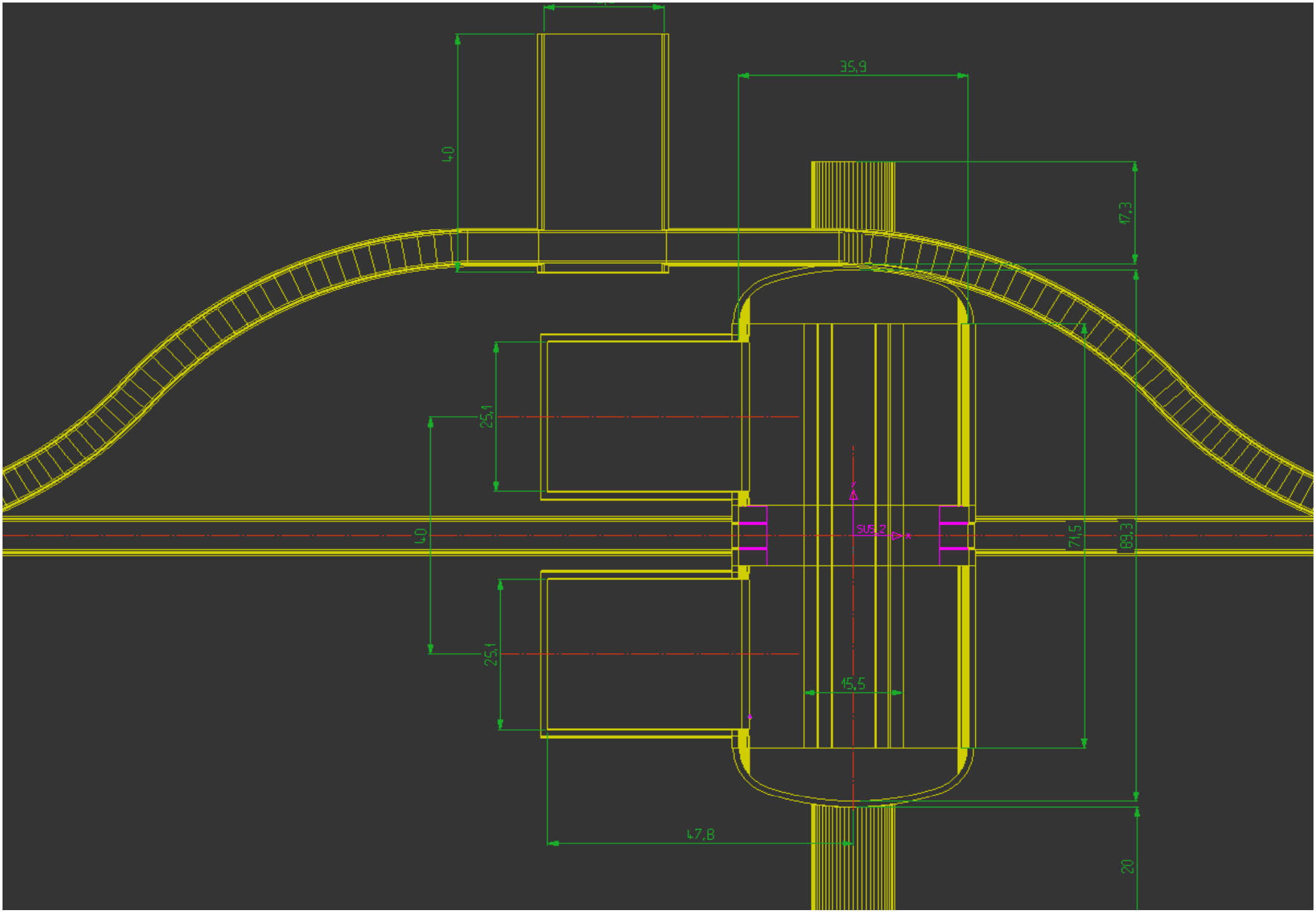
Implications

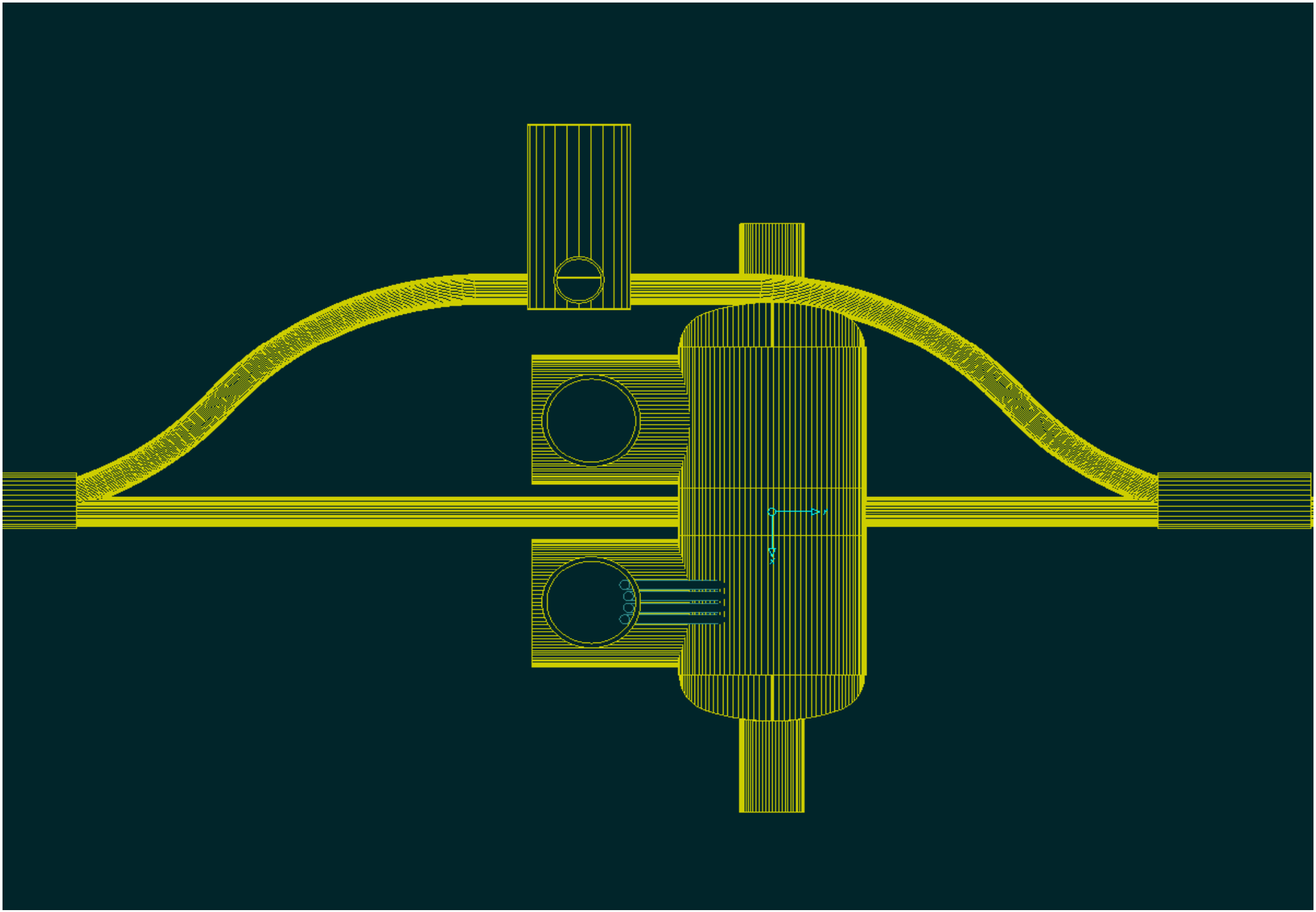
- It also necessitates horizontal transport from under the shafts to the experimental cavern, but this is not a problem for a full surface assembly scenario.
- The experiments are assembled underground on their own transport platform.
- We are still considering a 9 m shaft for the service area of the machine, can it be suppressed?

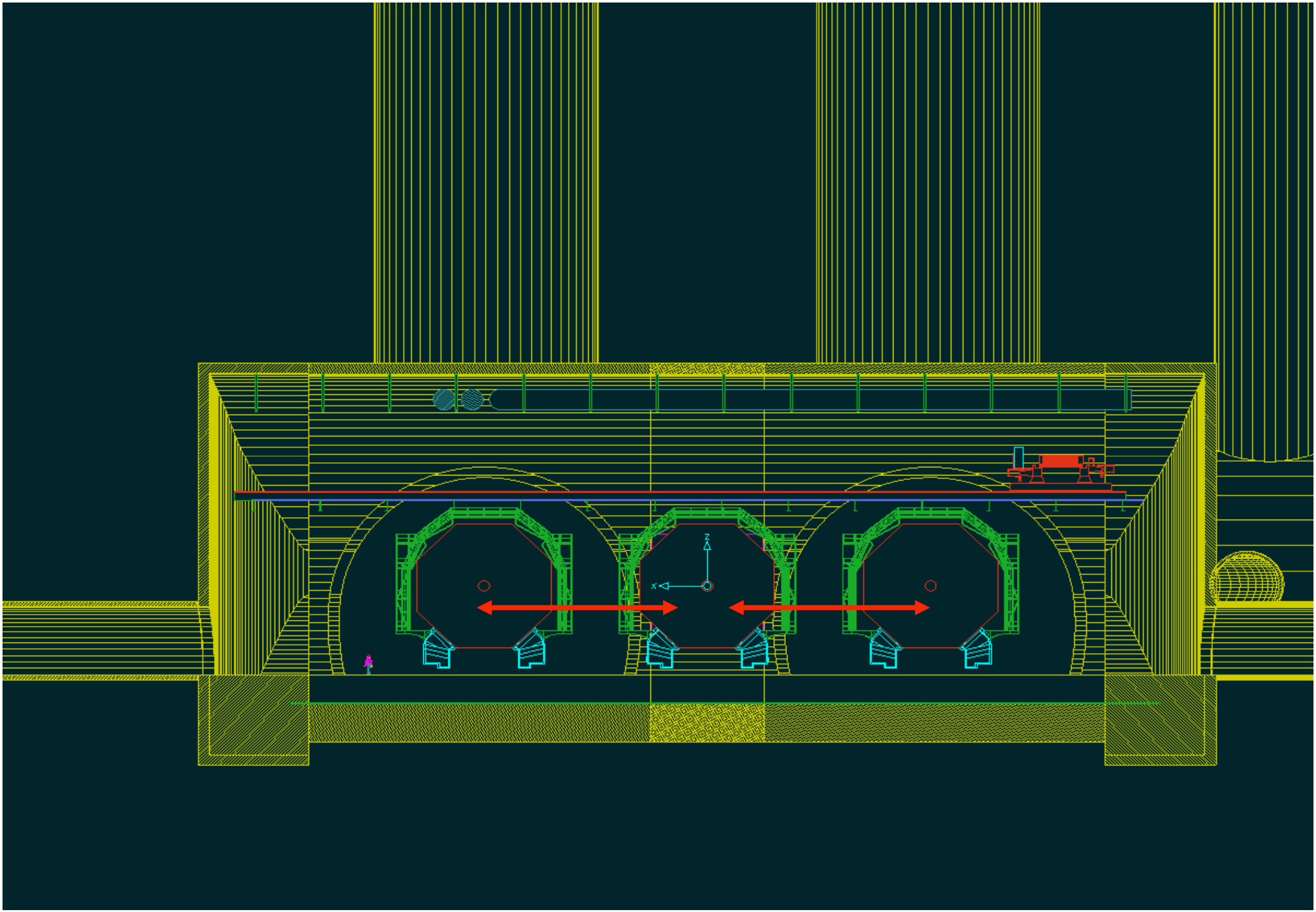
.

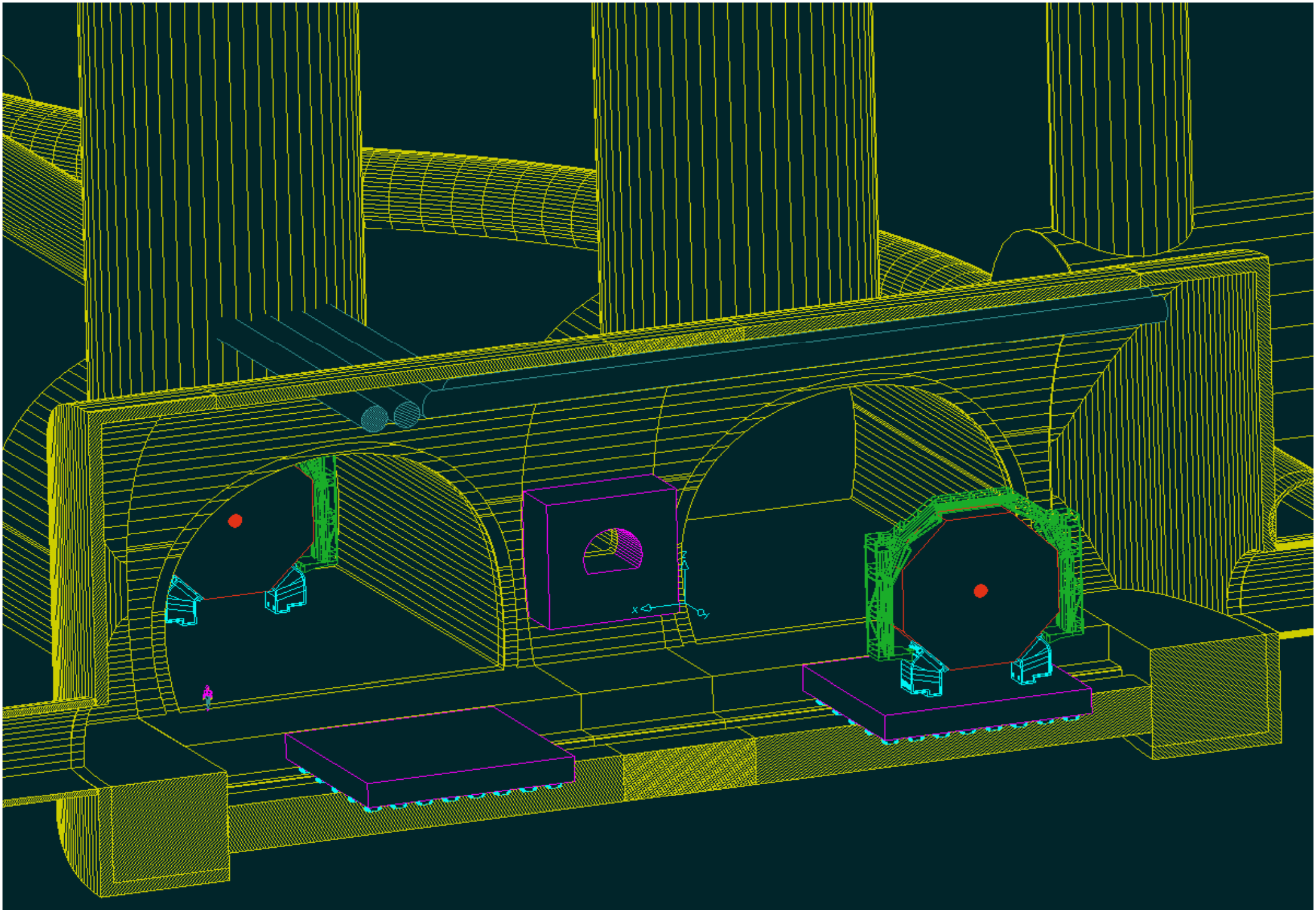

9m shaft
for machine
Two shafts
with lift/stairs
services
80-t crane

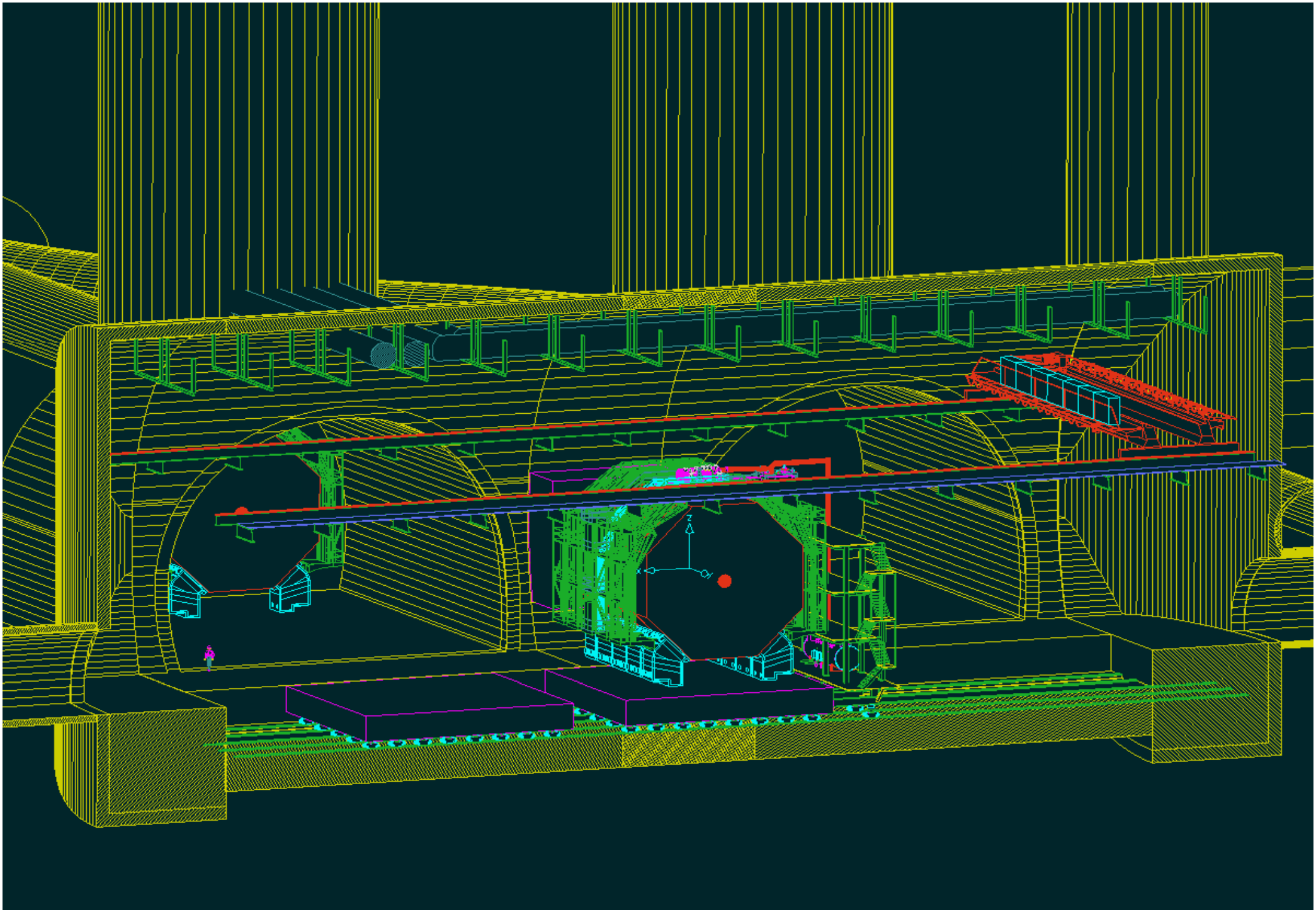

35,9
4,0
17,3
25,1
4,0
SW5,2
71,5
89,3
25,1
15,5
47,8
20

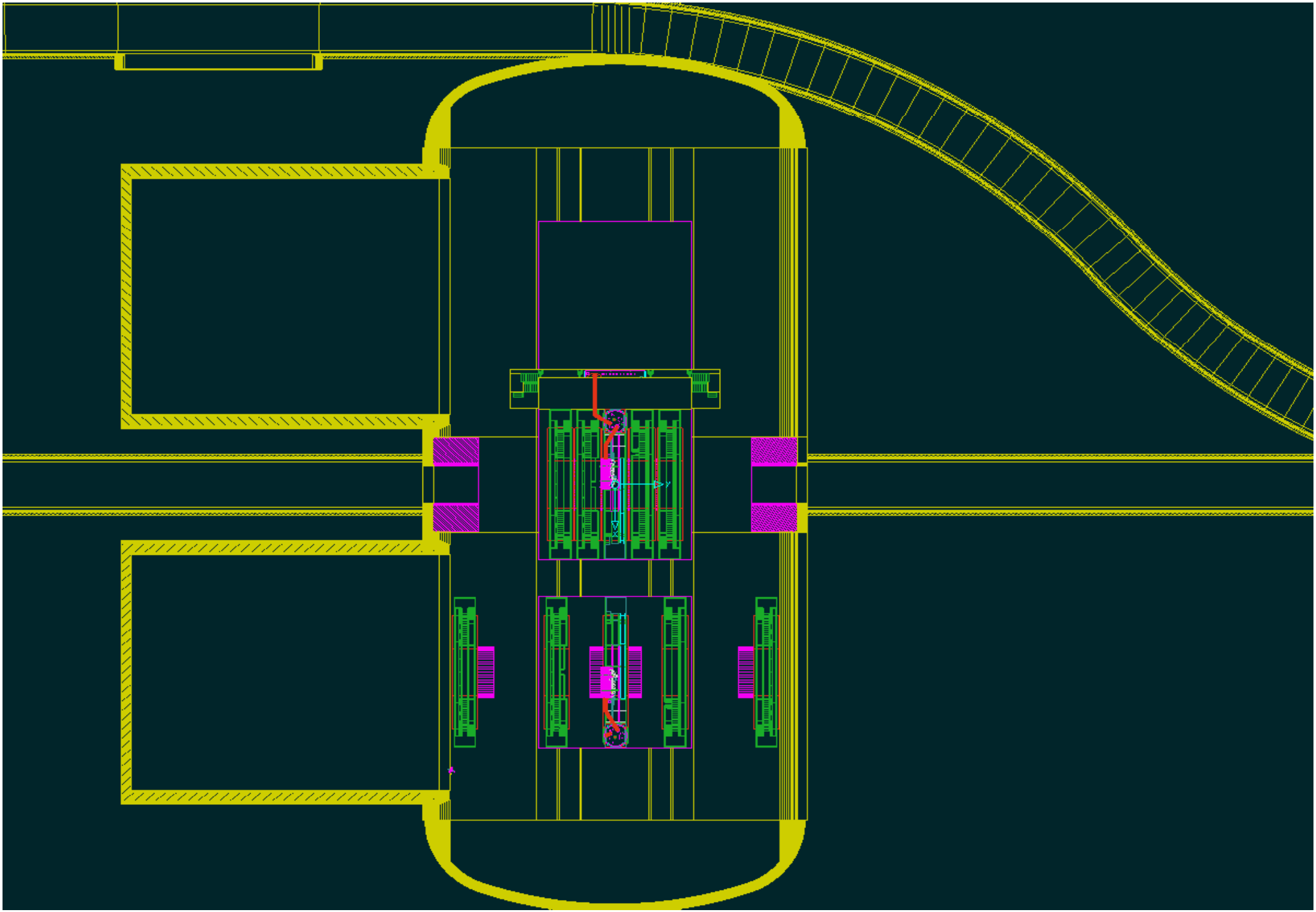

35,9
4,0
17,3
25,1
4,0
SW5,2
71,5
89,3
25,1
15,5
47,8
20



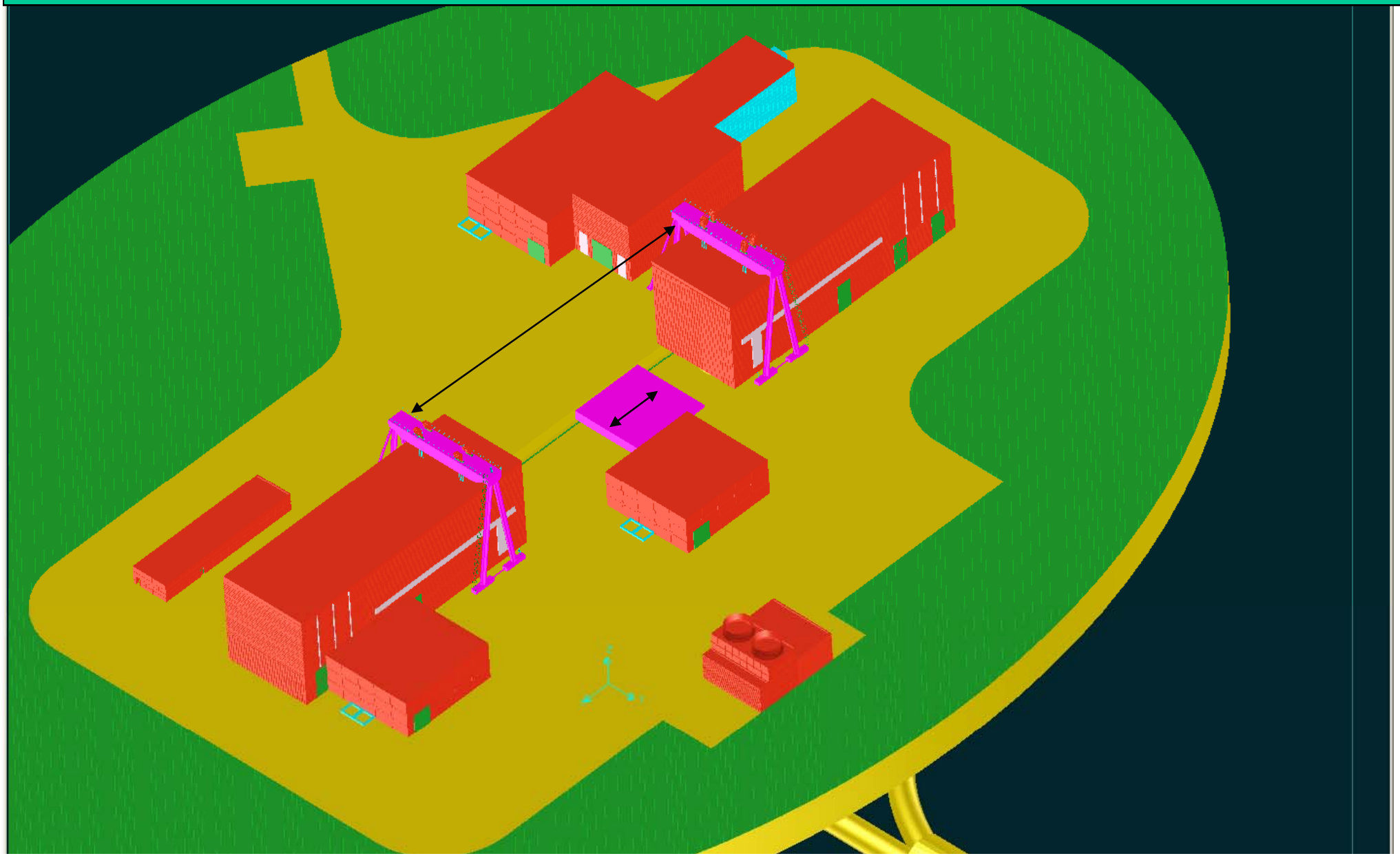

Z
X







Surface area would be a variation of what has been looked at with less distance between the shafts



3)Services in Underground Hall

Cross sections of Underground Hall with GLDc

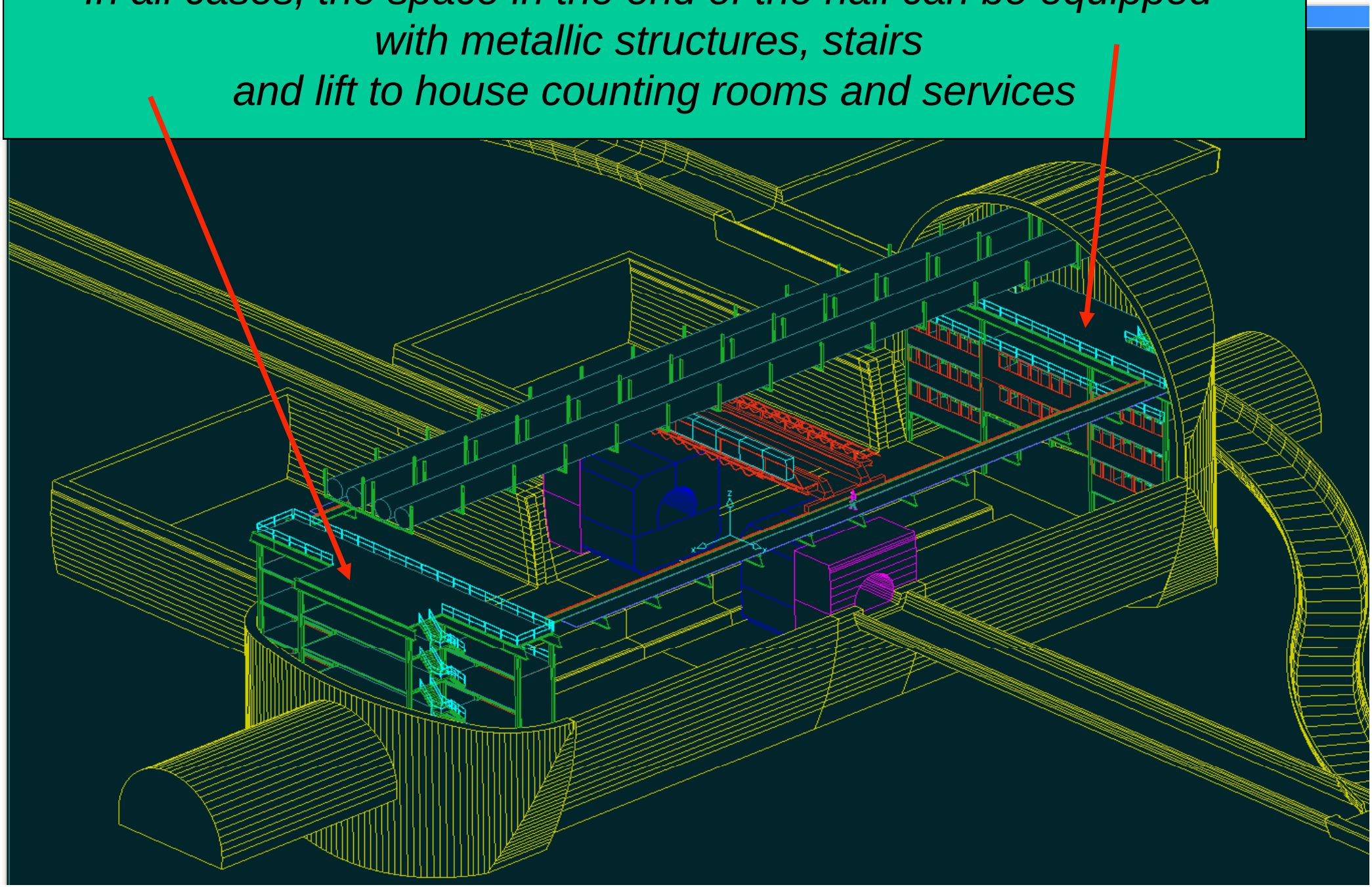
A. Hervé/CERN

Arrangement of Shaft Cover & Lifts

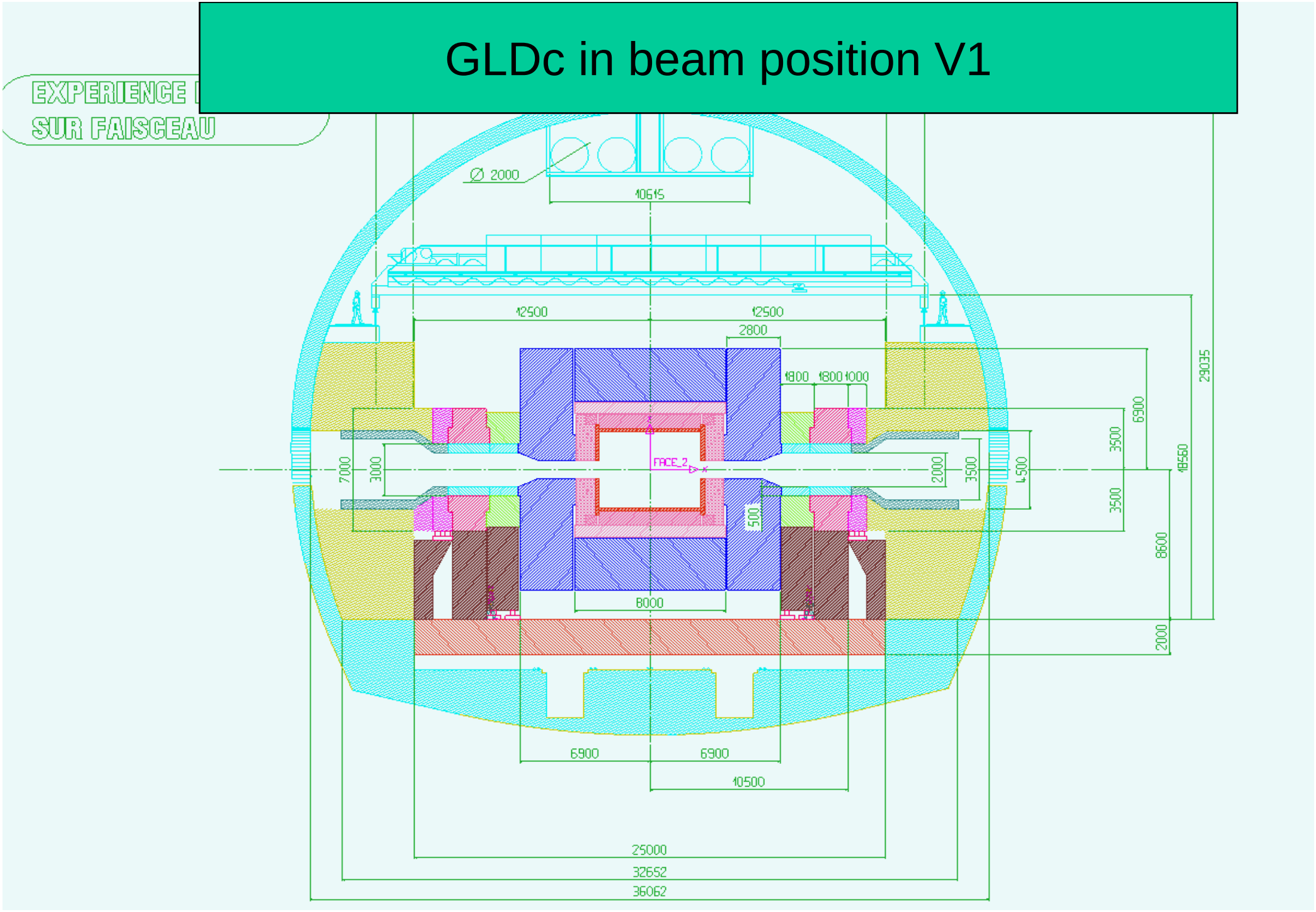
- If there are no small shaft, then lift and stairs have to be accommodated in the large shaft, with possible interferences with shaft cover and movement of large elements.
- Due to the favorable aspect ratio of GLDc, diameter vs. length of central barrel, there is enough space for placing a lift and stairs in the shaft, and accommodate the cover, but it complicates the pit head and cost has to be compared to adding a 6m shaft.

.

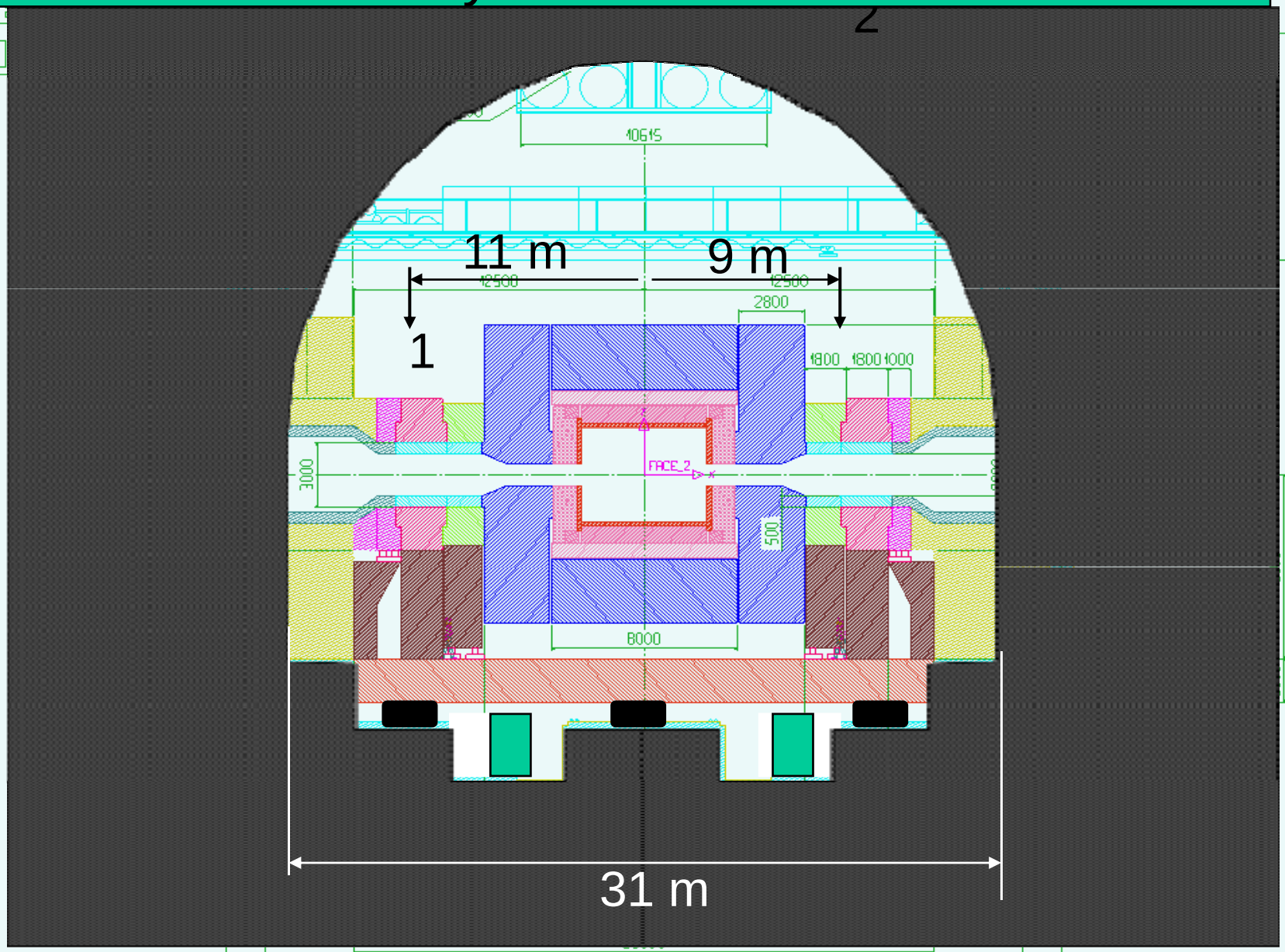
In all cases, the space in the end of the hall can be equipped with metallic structures, stairs and lift to house counting rooms and services



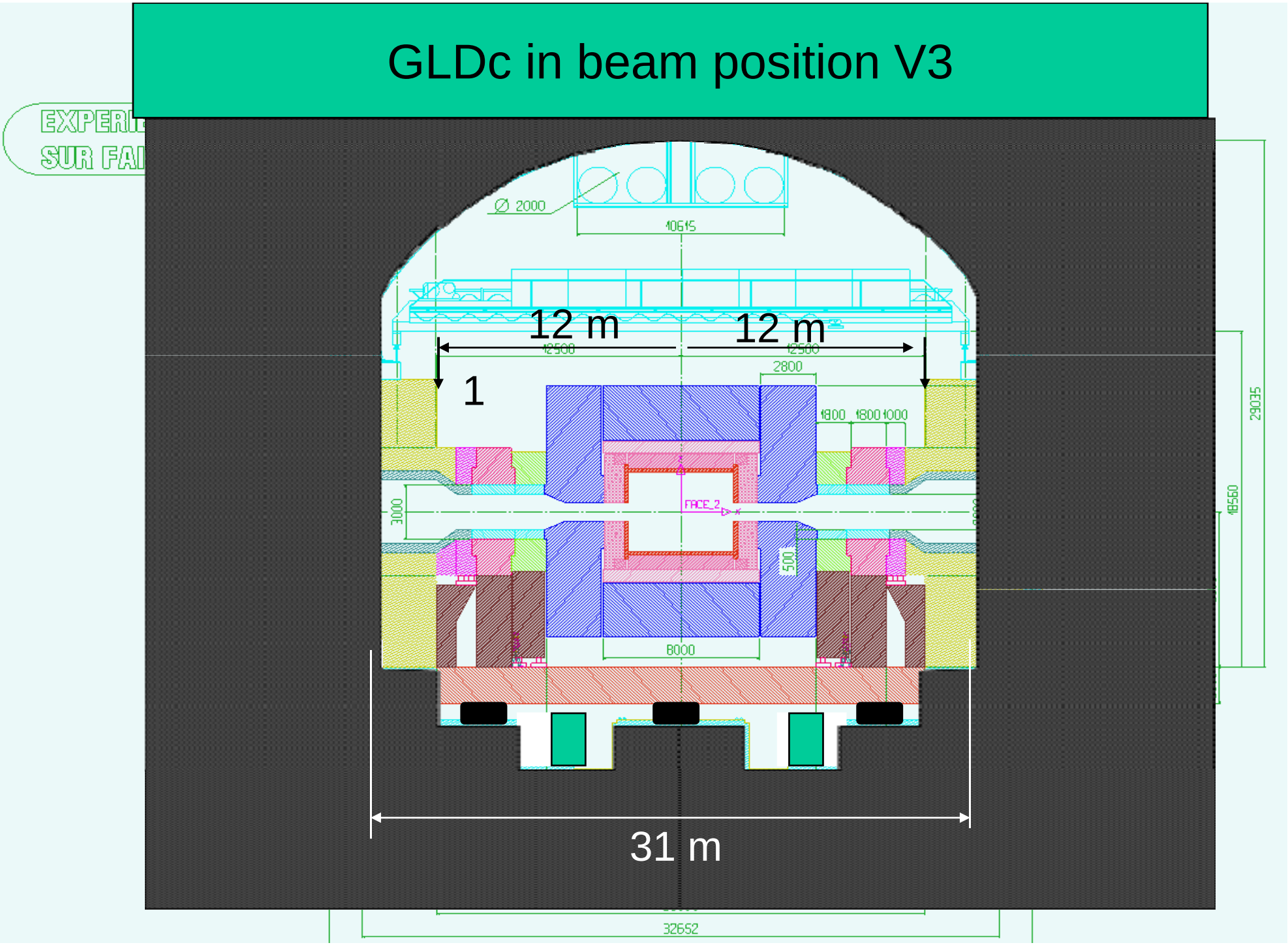
GLDc in beam position V1



GLDc in beam position V2
Asymmetric Crabs



GLDc in beam position V3



GLDc in garage position V3