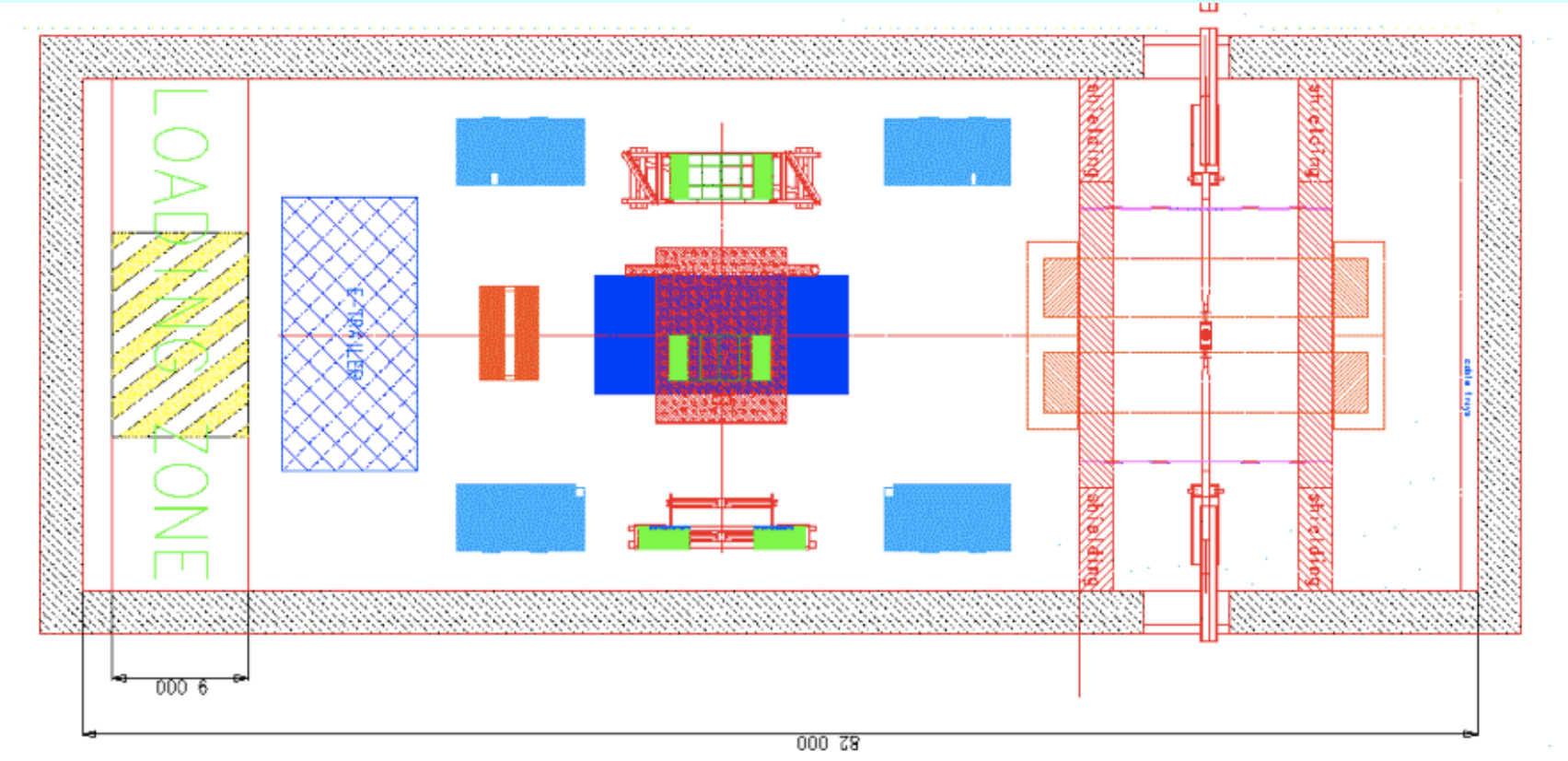
Detector Hall

- Detector hall size: 82 x 30 m
- Beam height: 8m above floor level



hall and are stored in the 9m by 30m loading and storage zone (see Fig. 3.1 and Fig. 3.2). Two cranes with a capacity of 80t each are foreseen for the handling of heavy items in the experimental hall. Fig. 9.4 (Appendix) shows a sketch a possible civil engineering solution for the underground hall construction.

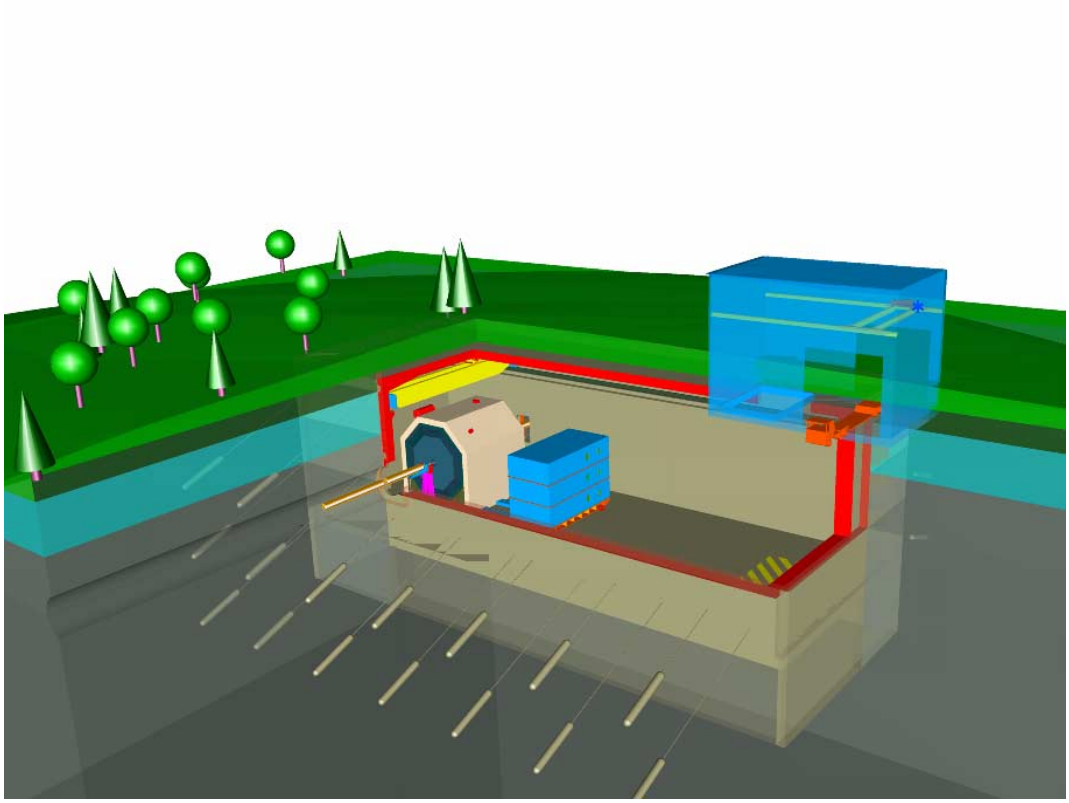


Fig. 3.1: Draft of the experimental underground/entrance hall arrangement.

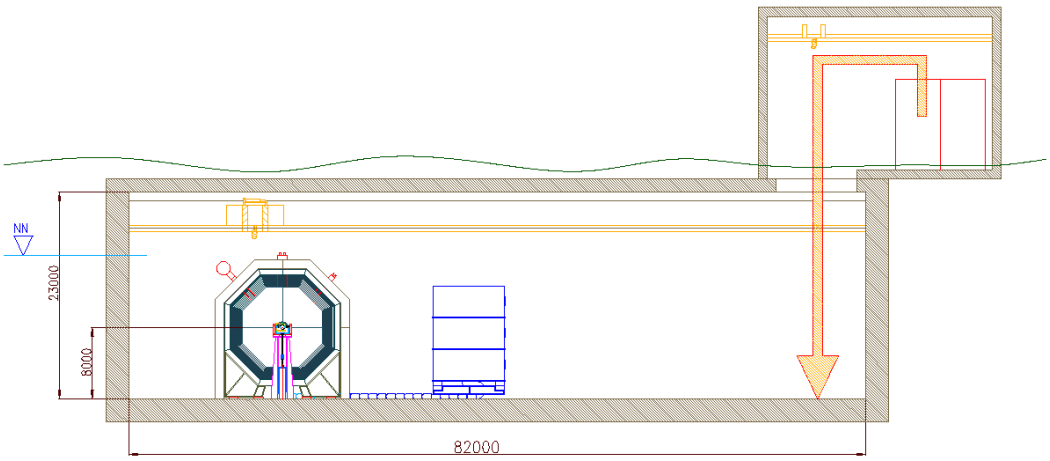


Fig. 3.2: Cross sections of the hall arrangement.

4 Shielding

The detector is designed to be selfshielding. A layer of about 1m thick concrete is mounted on the outside of the muon filter to stop slow neutrons. The machine sections in the experimental hall between linac tunnel and detector are shielded with a system of movable concrete

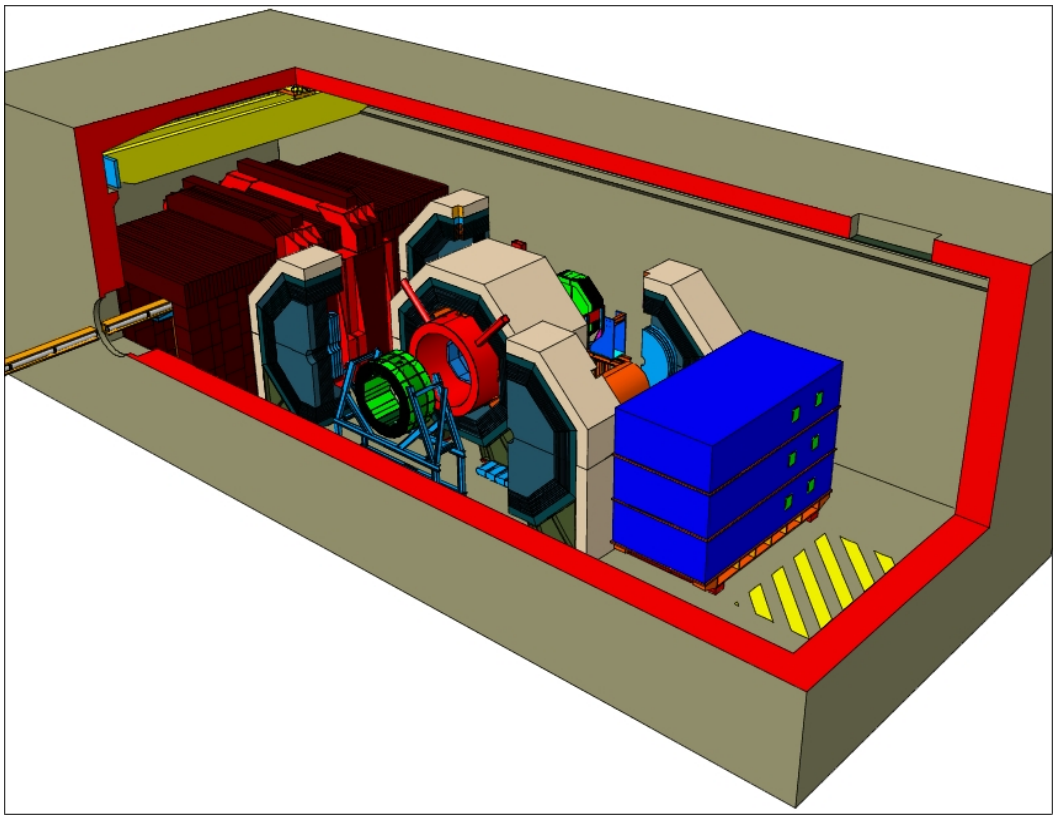


Fig. 5.2: Picture of the experimental hall during the assembly of the detector. (The beam line is shielded with concrete blocks. One half-barrel calorimeter and one end cap calorimeter and the TPC are in preparation on maintenance supports.)

Fig. 5.1 and Fig. 5.2 show a possible installation scenario in an advanced stage of detector assembly. The hadronic half-barrel calorimeter cylinder assembled on the cradle in front of the central barrel part is ready for installation, the second HCAL cylinder has already been rolled into the tank from the rear end of the cryostat. An end cap calorimeter disk on its support frame is completed in the back of the central part. The time projection chamber TPC is prepared for installation between the two corner half shells in front of the electronics trailer.

The assembly sequence for the subdetectors in the central barrel region requires a well ordered cabling sequence and installation scheme for service lines. This work on the services starts with the cabling of the HCAL barrel calorimeter after completion of the mechanical HCAL installation work and progressively continuos with the completion of the ECAL and finally TPC mechanical installation work.

The installation and cabling of the muon chamber systems in the segmented iron return yoke can be done in parallel to the work in the central detector region. When the five detector elements, central barrel part and four corner half shells are equipped with all the subdetectors, the cabling and installation of services is completed and all subdetectors systems are tested, the detector can be closed for a cosmic run before the transfer to the interaction region (Fig. 5.3).

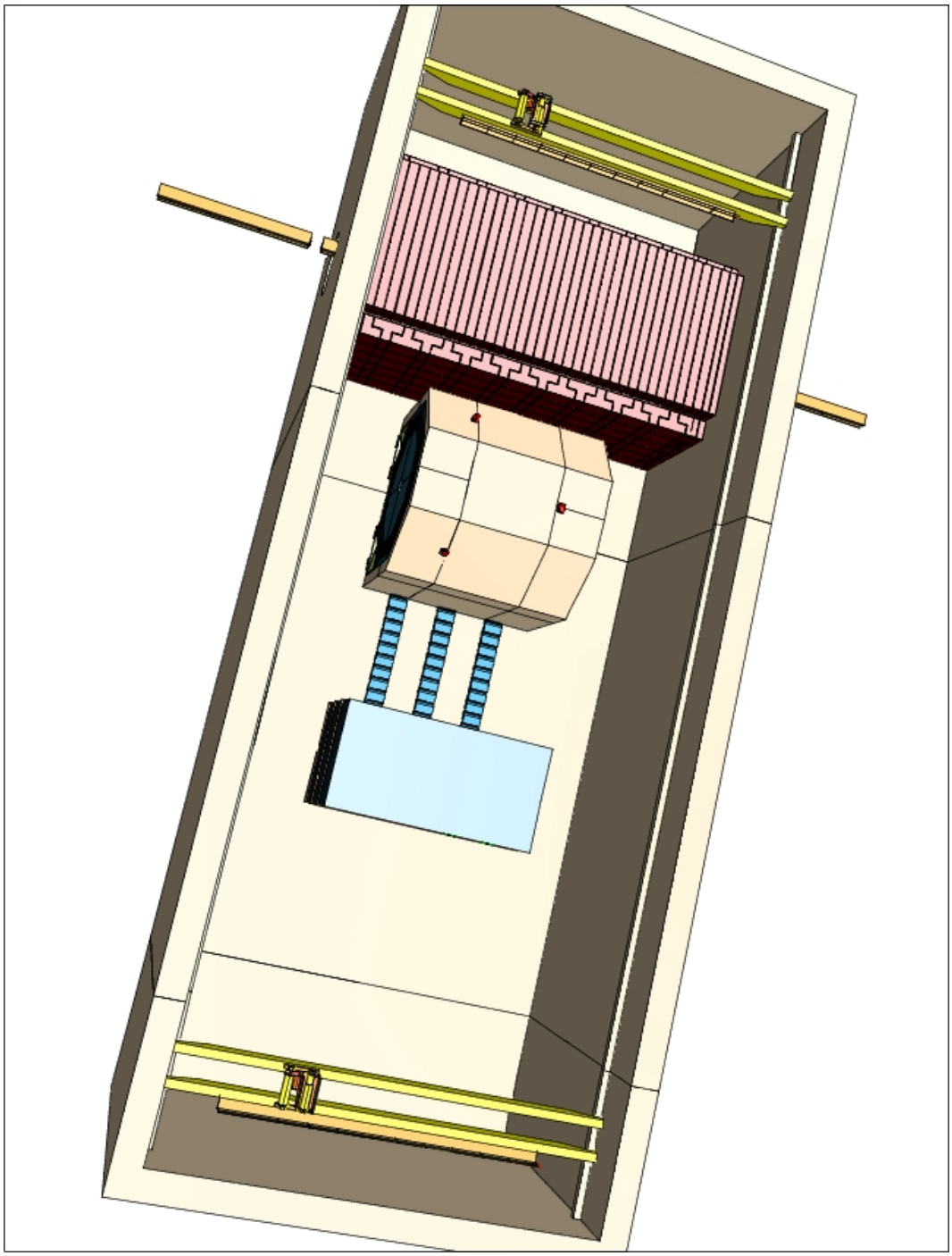


Fig. 5.3: Closed detector in the park position.

6 Maintenance in the Beam Position

Ease and speed of access to all parts of the detector for repair or normal maintenance has been an essential design criterion from the beginning. This requires that a minimum of uncabling is needed. Particular attention in the mechanical concept has been given to maintain the innermost detector elements in the interaction region without breaking the machine vacuum.

To obtain access to the central detector region from the closed position of the detector in the beam position (Fig. 6.1) the opening of the