

SAND Construction and Installation Schedule

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KLOE-TO-SAND Review - July 23, 2024

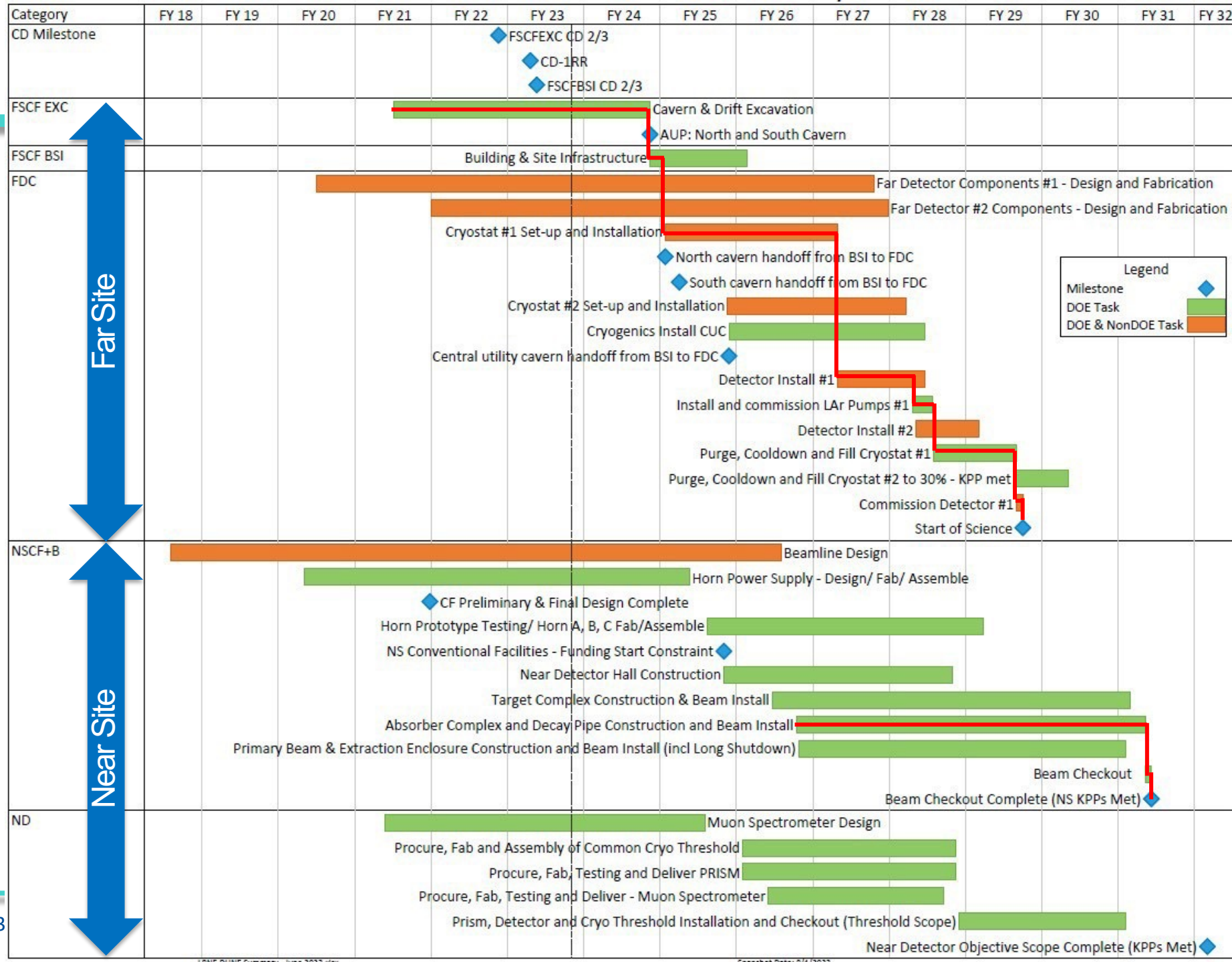
Goals, assumptions and strategy

- ✓ The main goal of the schedule is to have the detector fully operational by the time the neutrino beam is turned on.
- ✓ The following assumptions come from the official construction schedule of the ND site and the beam facilities.
 - ✓ **Start of ND site beneficial occupancy: End of September 2028.**
 - ✓ The availability of the experimental hall is presently conditioned by the availability of funds for the construction.
 - ✓ **Beam available (checkout): June 2031.**
- ✓ The assumption is made that SAND will be the first to be installed in the ND hall, before starting the installation of ND-LAr and TMS.
 - ✓ This choice minimizes risks and costs.
 - ✓ The occupation of the ND main hall must be minimized (≤ 6 months).

Think to the future,
focus on the present

Notes:

- Fiscal Year display
- June 2023 reporting cycle
- Based on “CD-1RR ESAAB” funding profile
- **Early completion dates shown**



Far Site

Near Site

Goals, assumptions and strategy (cont.)

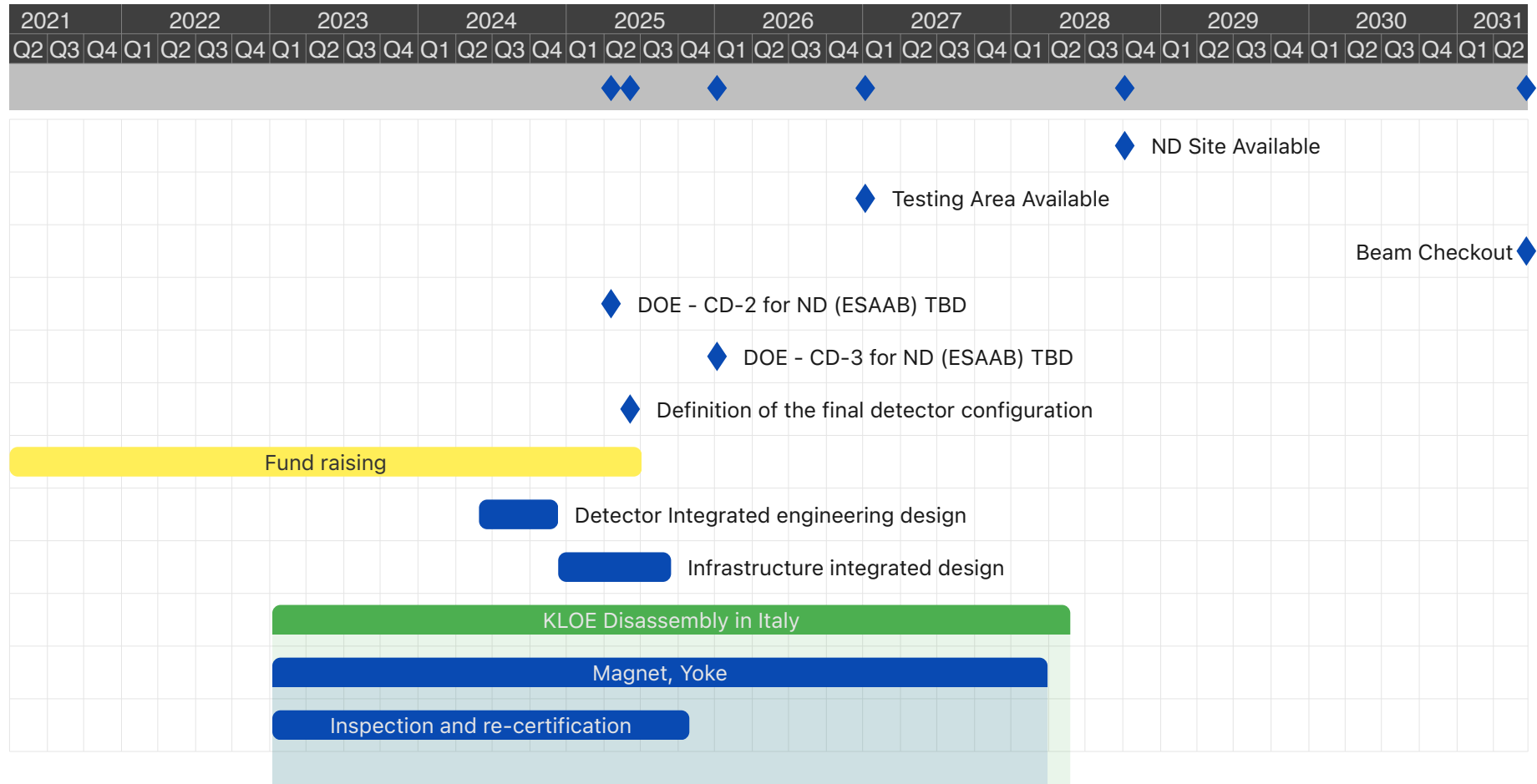
- ✓ The following assumptions come from the present status of SAND:
 - ✓ Magnet, with Yoke, and ECAL are both available in Frascati.
 - ✓ Magnet requires some re-certification and replacement/revamping of electrical components.
 - ✓ ECAL requires some replacement of PMTs, a new HV system and readout electronics.

Goals, assumptions and strategy (cont.)

- ✓ The following strategic choices are proposed
 - ✓ Minimize the work to be done in the shared part of the experimental hall → time limit \approx 6 months
 - ✓ Assemble in this area only those parts that cannot be installed in the alcove: Yoke, Magnet, Calorimeter, support structure for the Inner Tracker and GRAIN.
 - ✓ Ensure that most of installation can be done in the alcove.
 - ✓ Manage interference with ND-LAr and TMS installation (materials movement and staging).
 - ✓ Perform an extensive set of tests during the construction and assembly of the detectors (prioritize reliability over schedule).



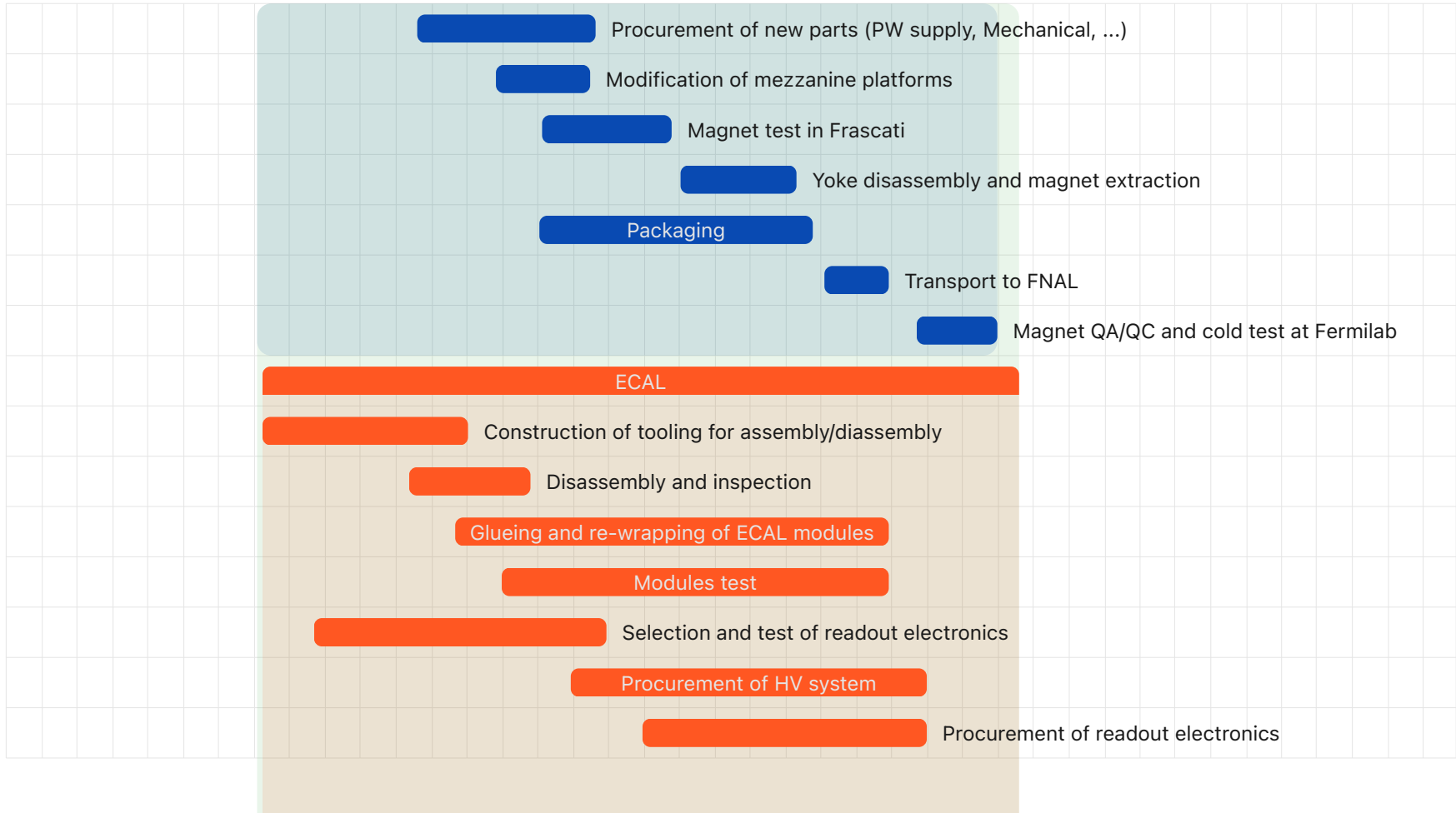
Proposed timeline for SAND – construction and delivery (I)



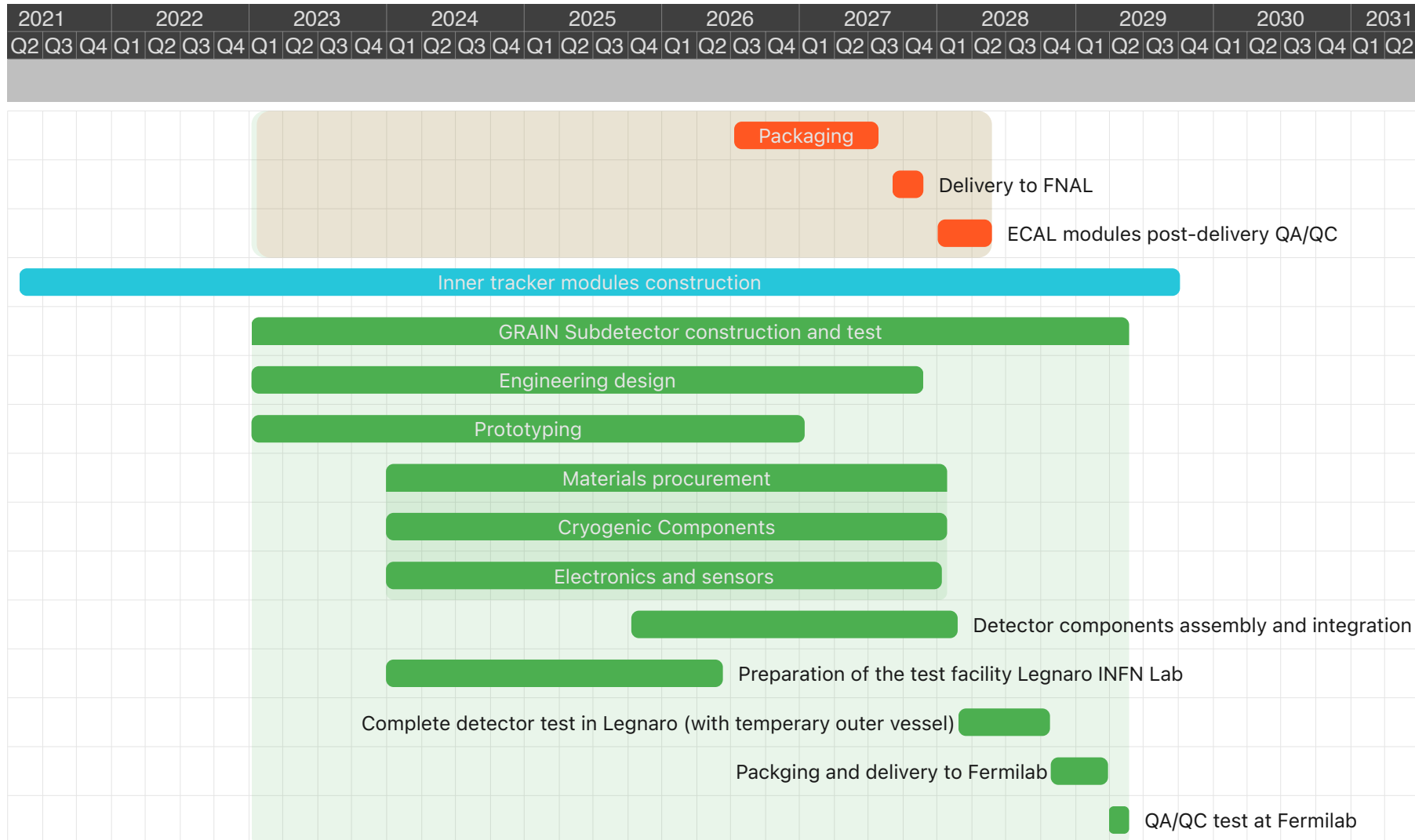


Proposed timeline for SAND – construction and delivery(II)

| 2021 | | | 2022 | | | 2023 | | | 2024 | | | 2025 | | | 2026 | | | 2027 | | | 2028 | | | 2029 | | | 2030 | | | 2031 | |
|------|----|----|------|----|----|------|----|----|------|----|----|------|----|----|------|----|----|------|----|----|------|----|----|------|----|----|------|----|--|------|--|
| Q2 | Q3 | Q4 | Q1 | Q2 | Q3 | Q4 | Q1 | Q2 | Q3 | Q4 | Q1 | Q2 | Q3 | Q4 | Q1 | Q2 | Q3 | Q4 | Q1 | Q2 | Q3 | Q4 | Q1 | Q2 | Q3 | Q4 | Q1 | Q2 | | | |

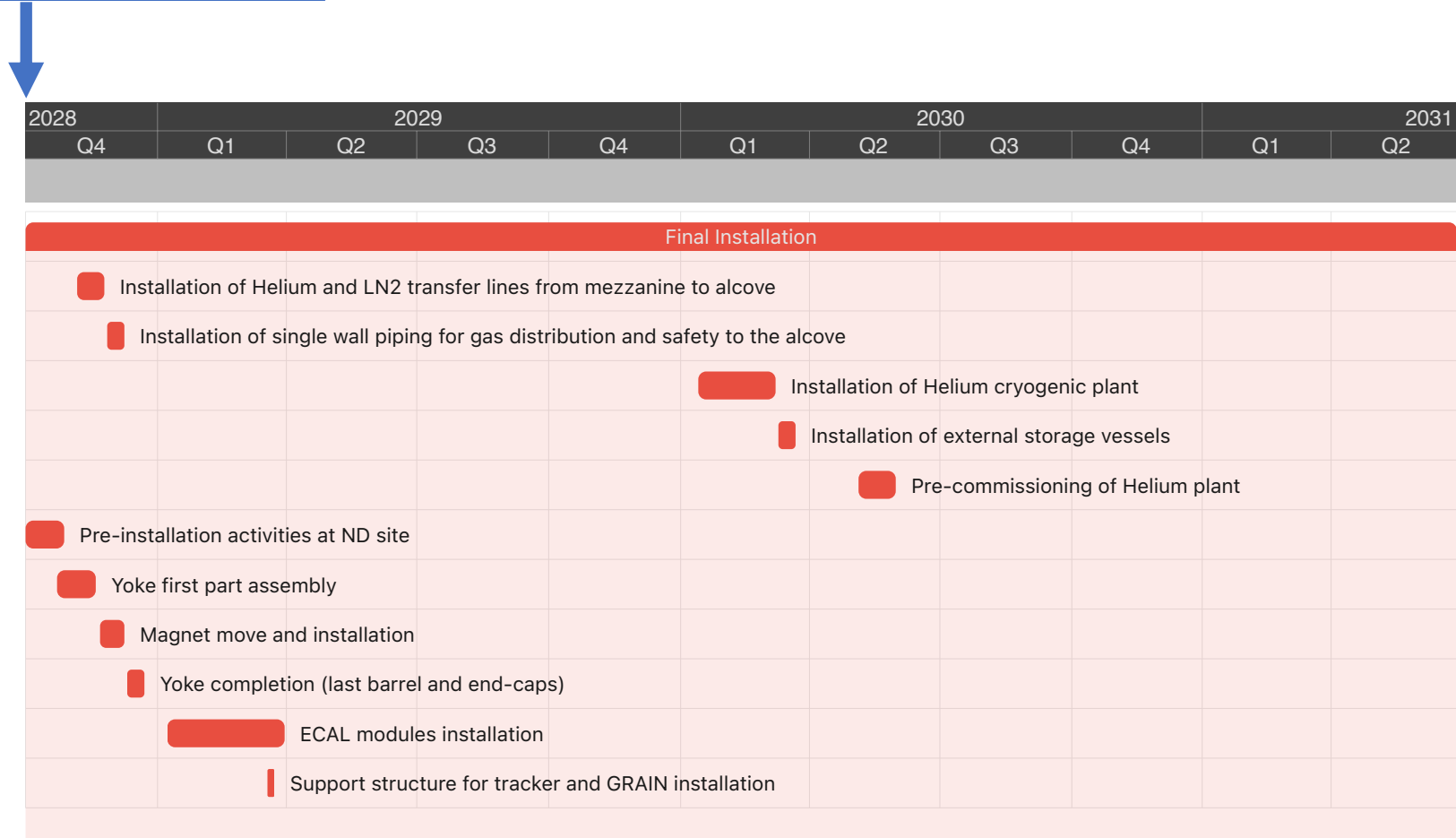


Proposed timeline for SAND – construction and delivery (III)

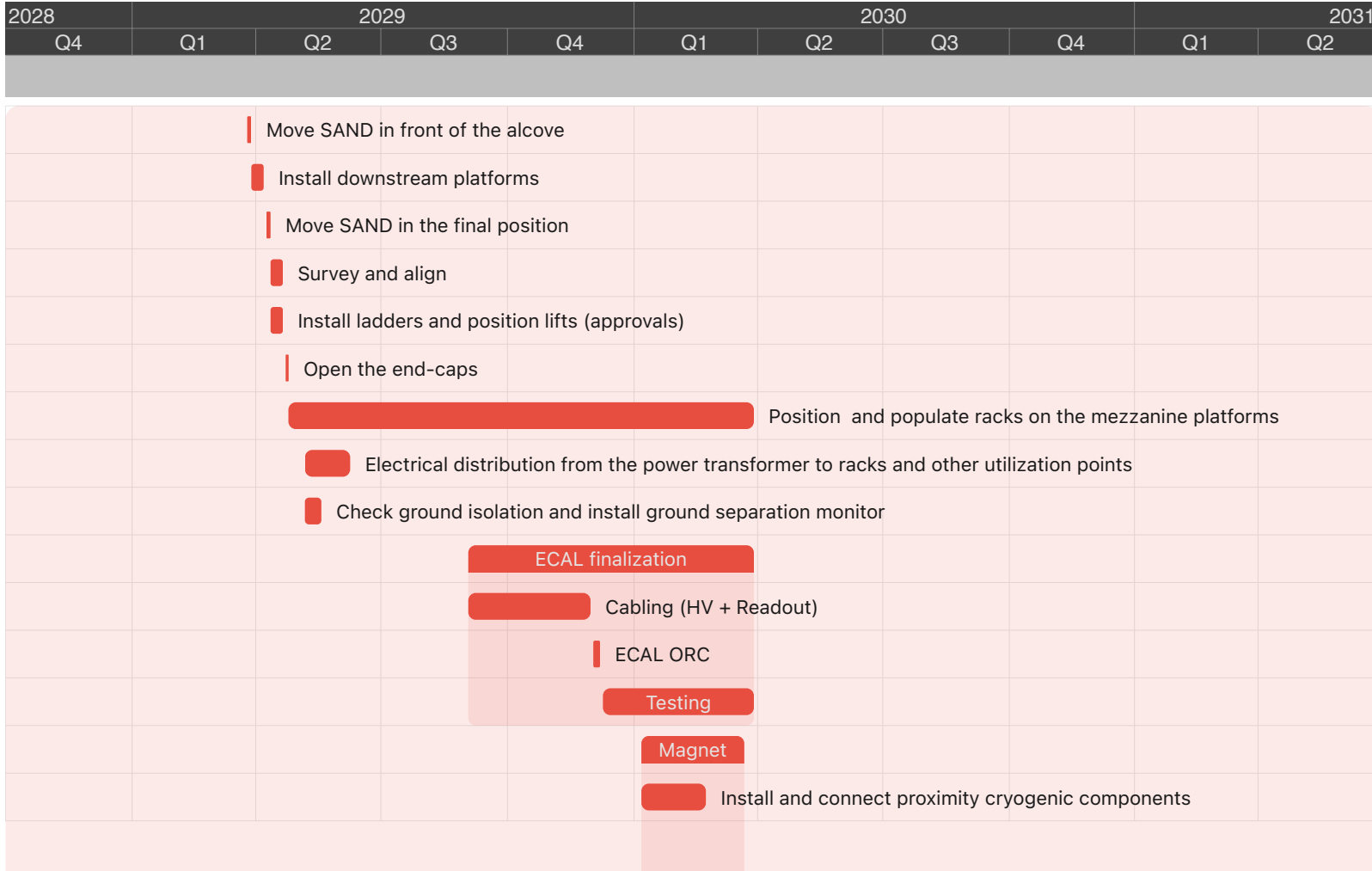


Proposed timeline for SAND – Installation (I)

ND Hall available for installation

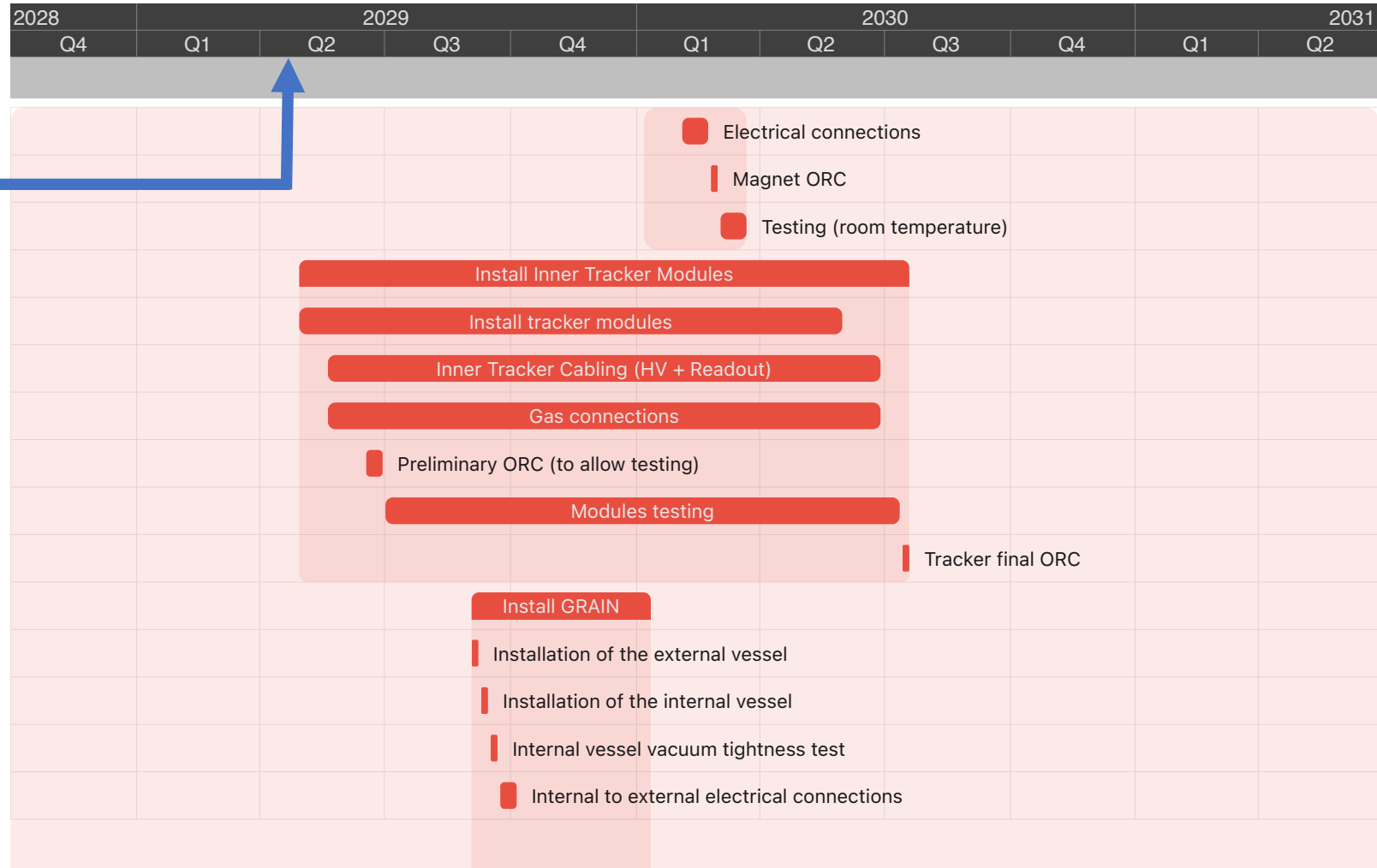


Proposed timeline for SAND – Installation (II)

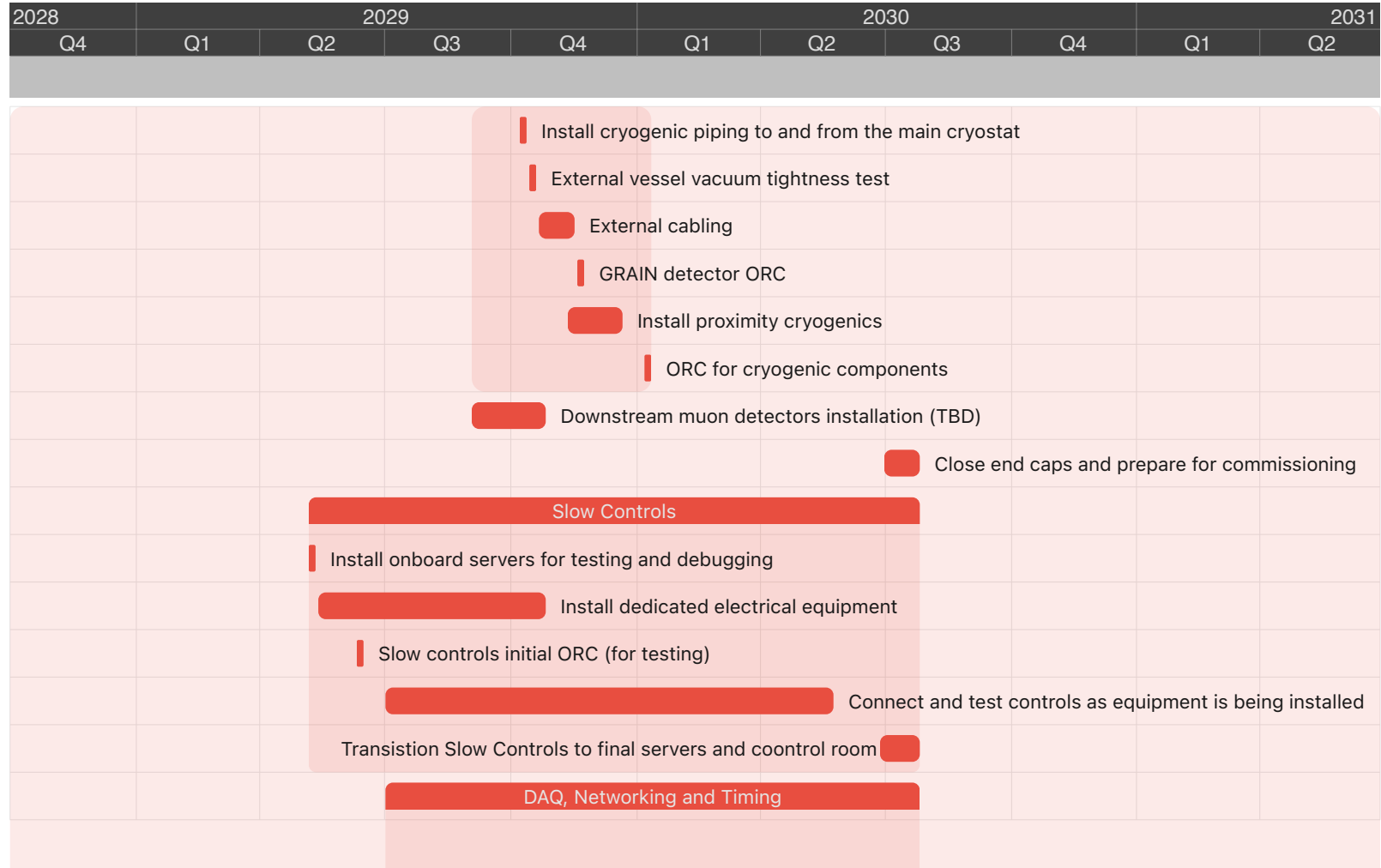


Proposed timeline for SAND – Installation (III)

SAND Positioned and ready for internal elements installation



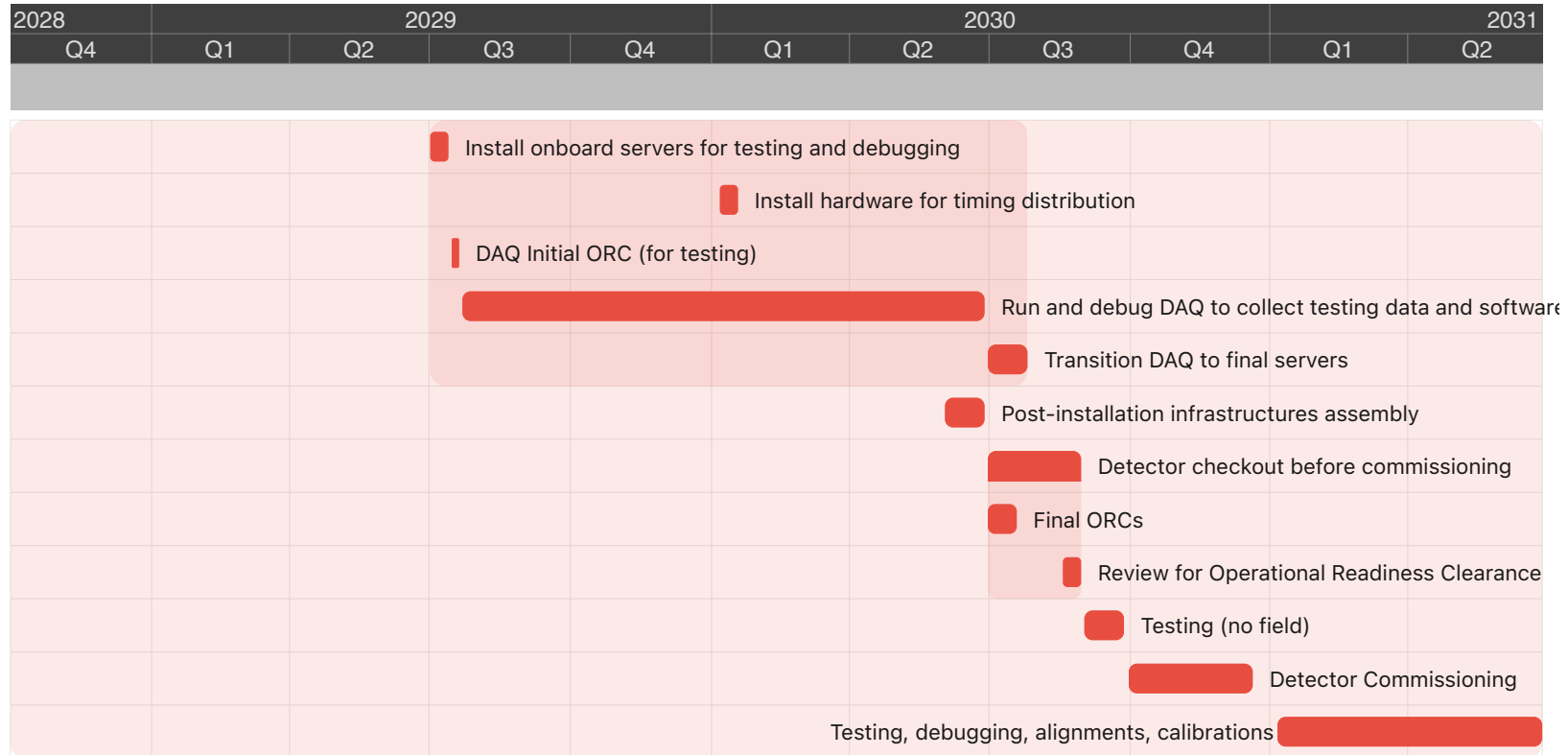
Proposed timeline for SAND – Installation (IV)



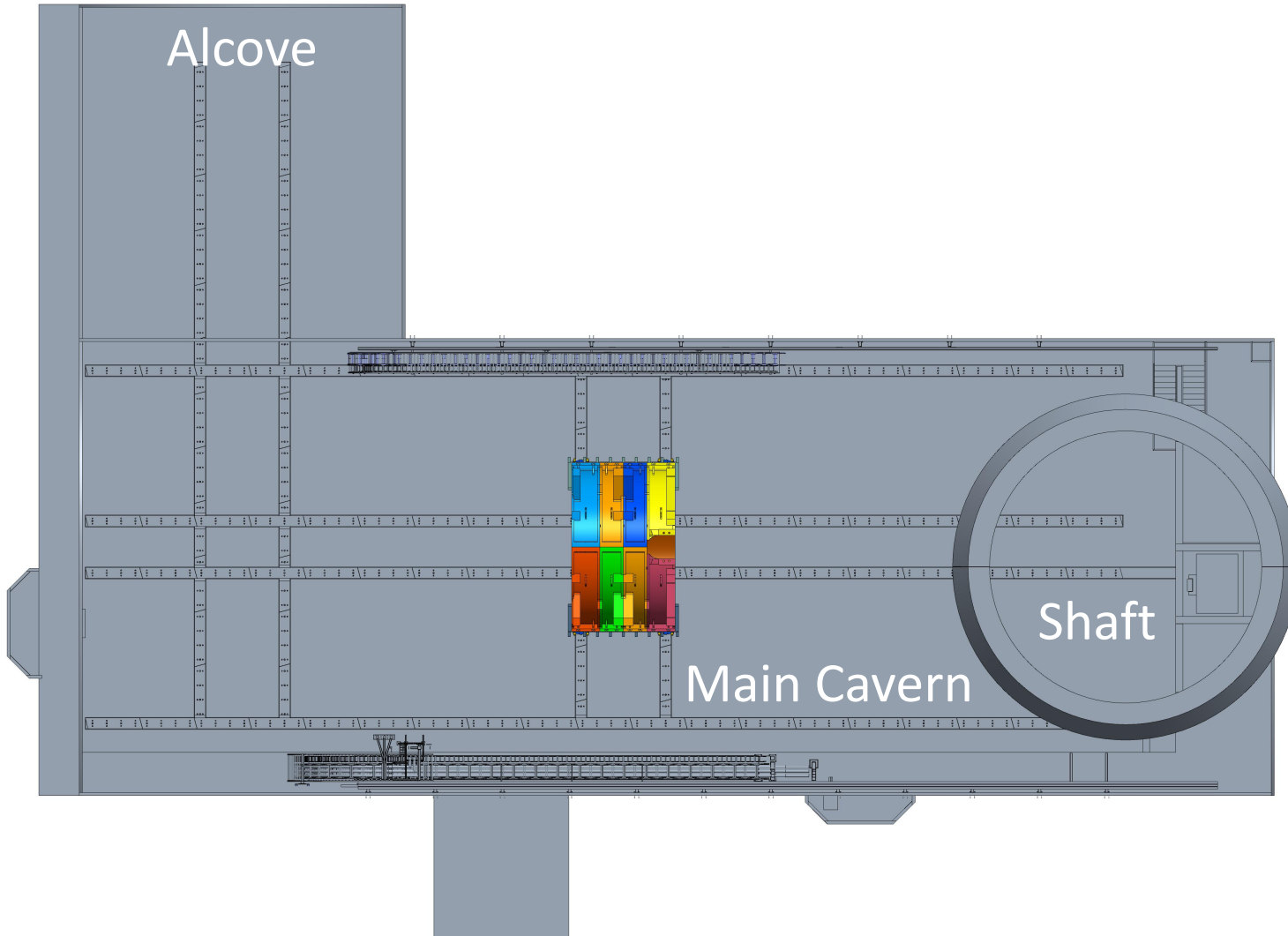


Proposed timeline for SAND – Installation (V)

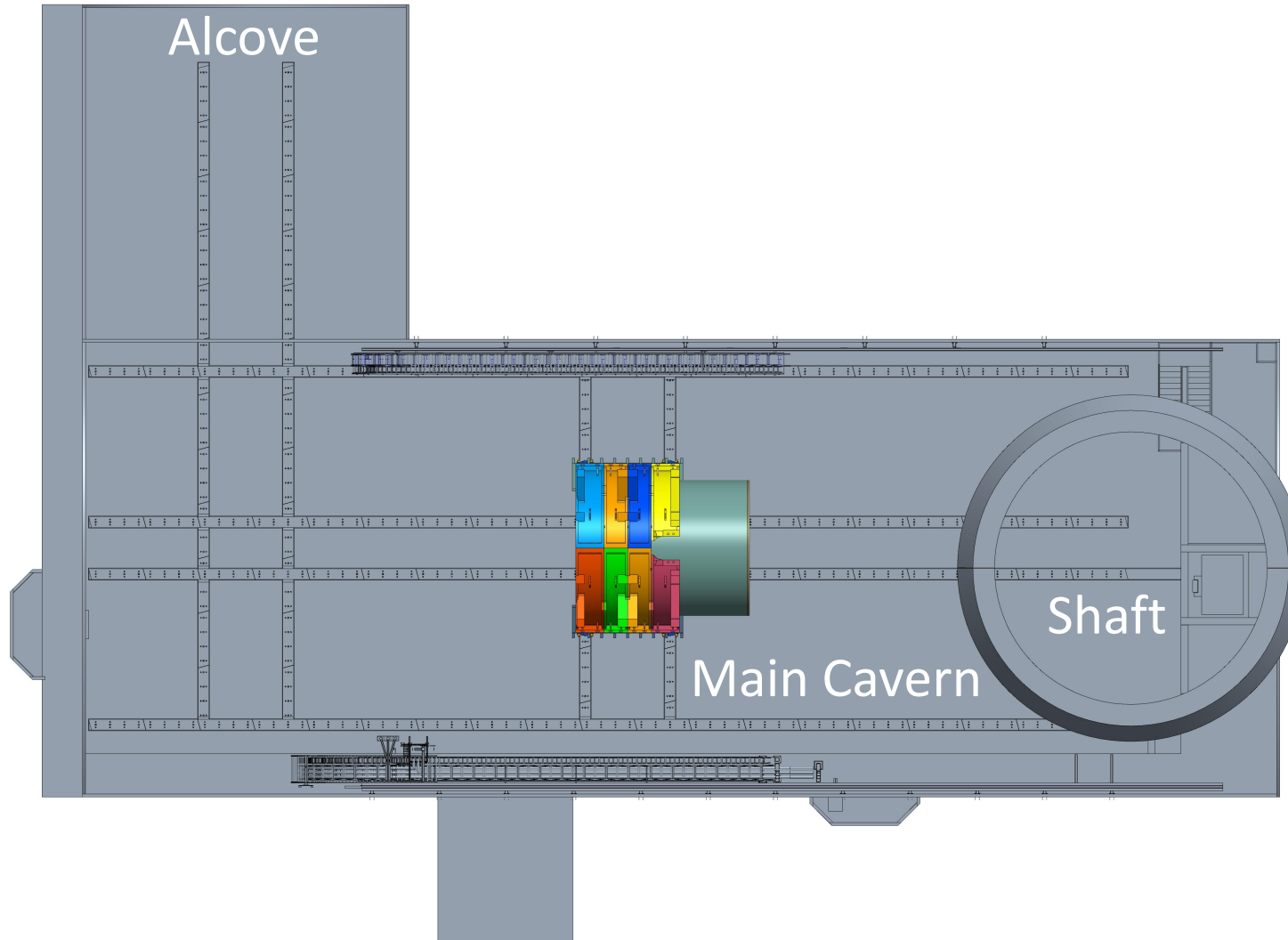
Beam checkout



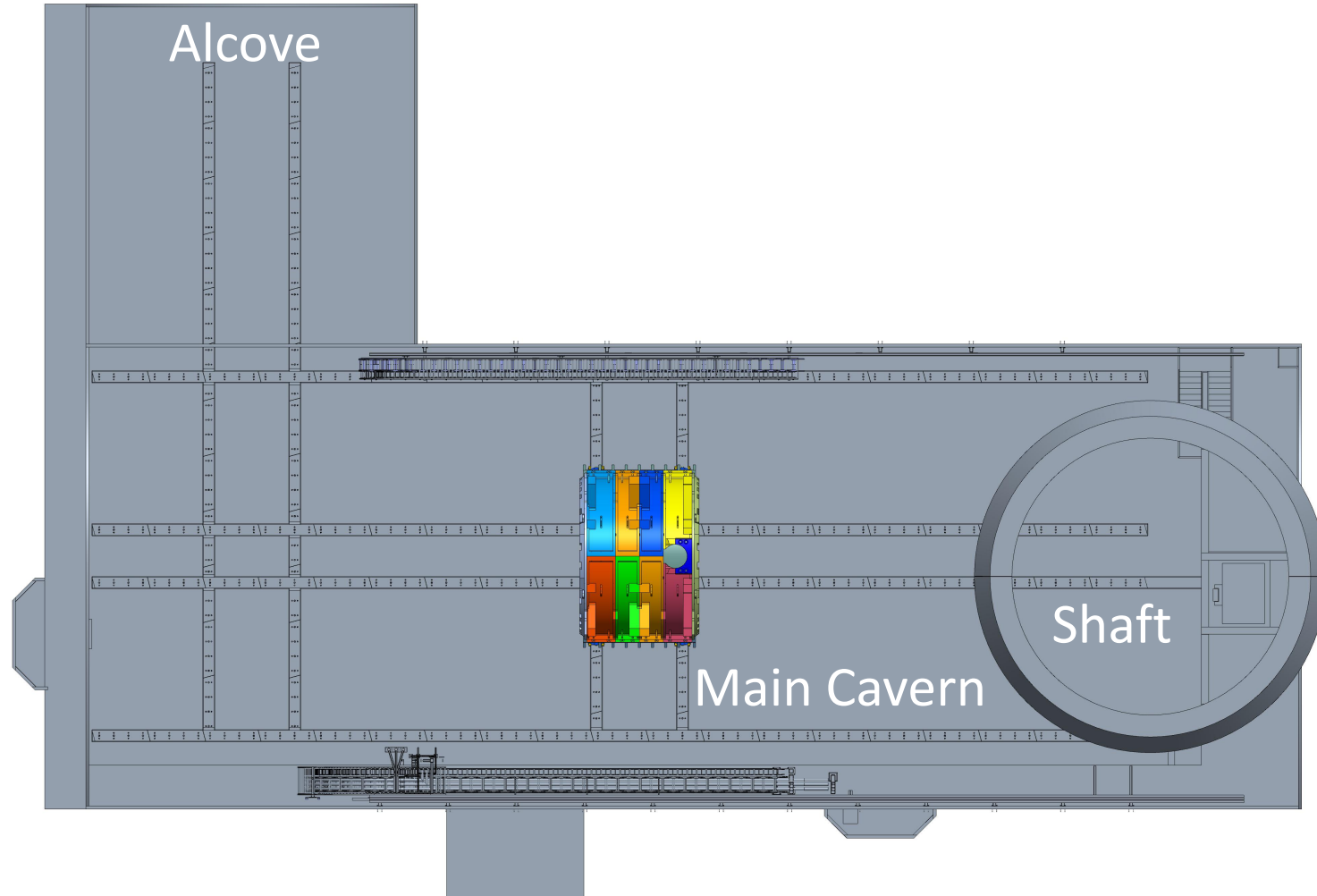
SAND Assembly Sequence in the Main Cavern – 1 – Yoke-I



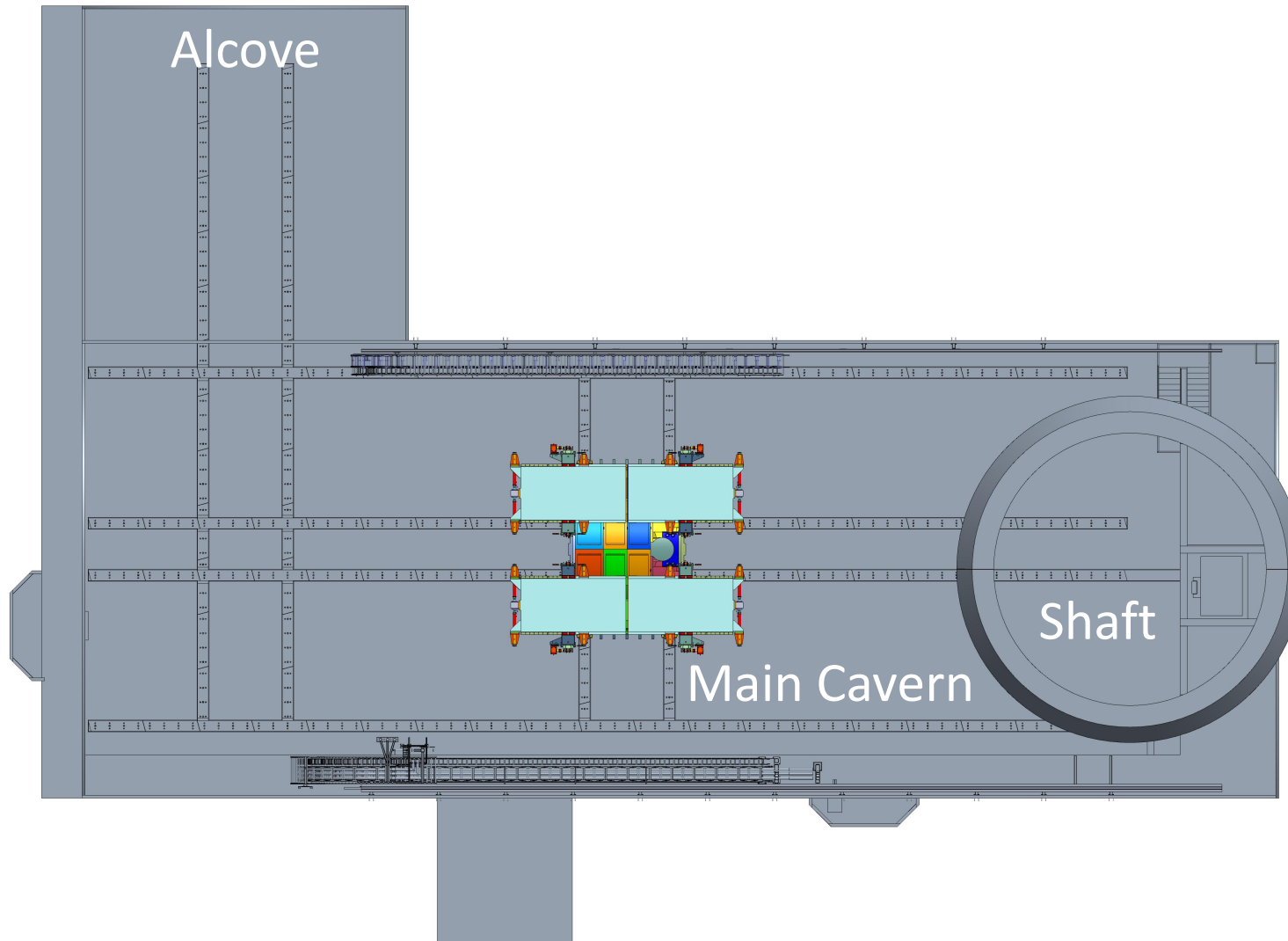
SAND Assembly Sequence in the Main Cavern – 2 – Magnet



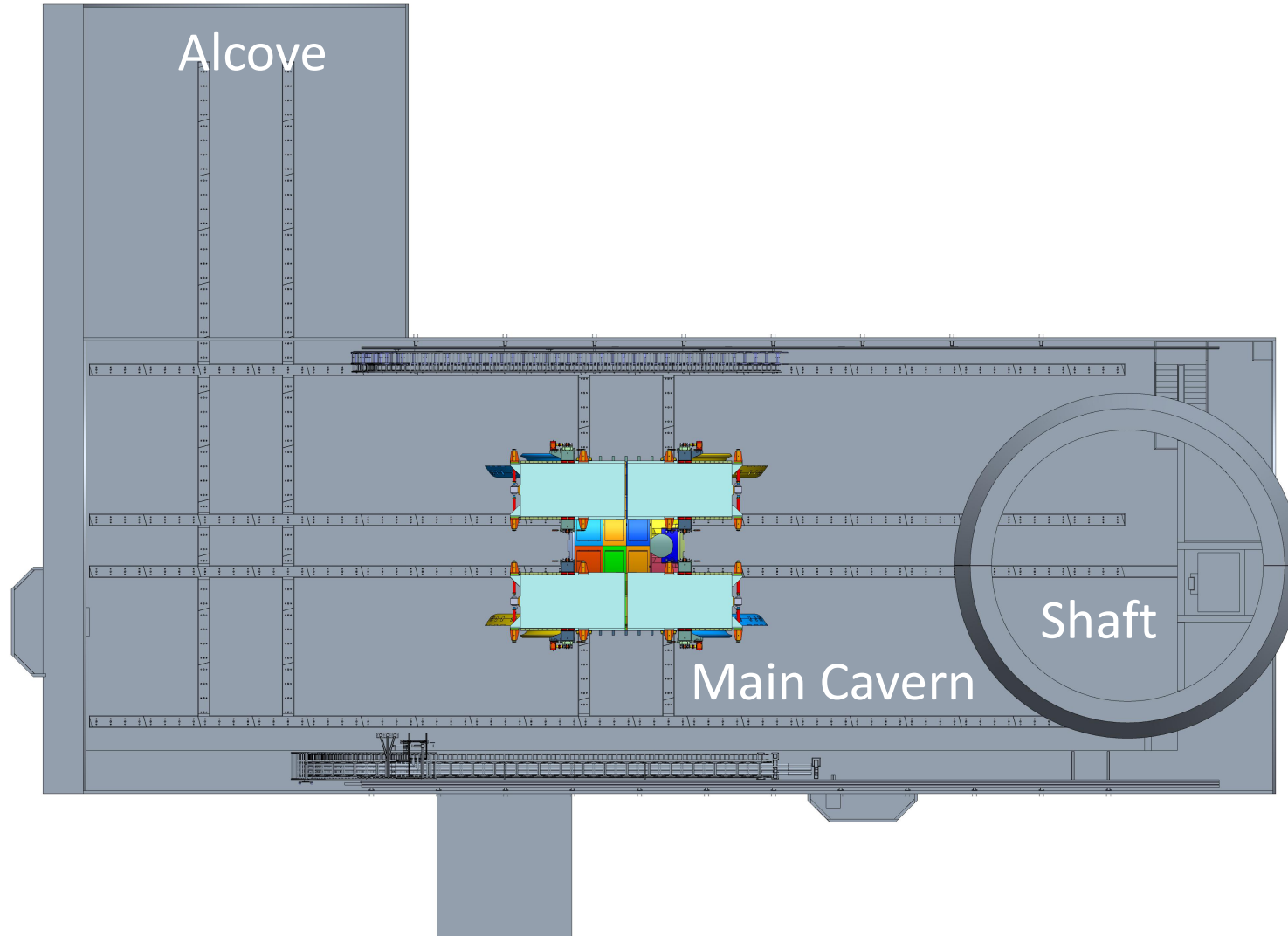
SAND Assembly Sequence in the Main Cavern – 3 – Yoke-II



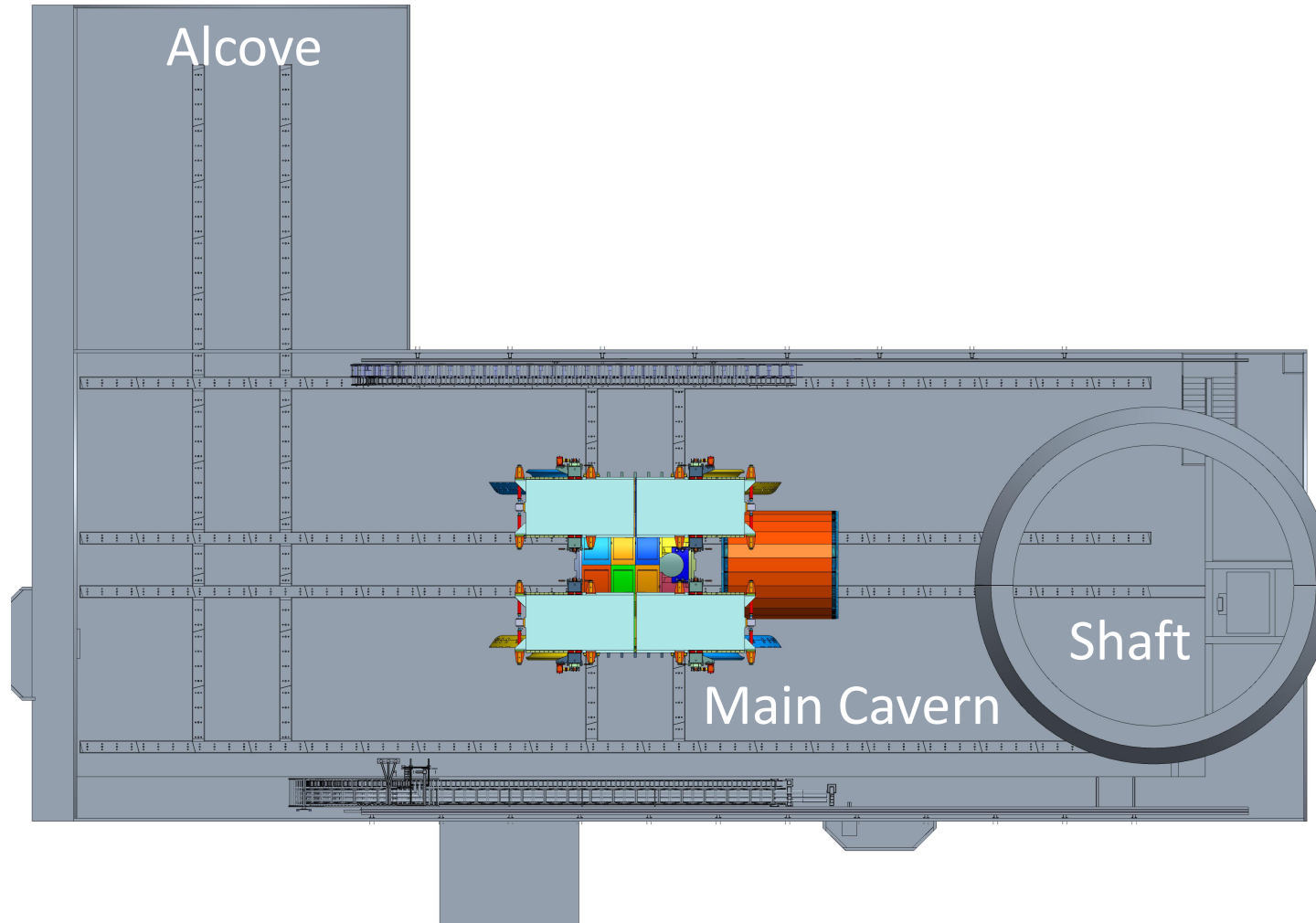
SAND Assembly Sequence in the Main Cavern – 4 – Platforms



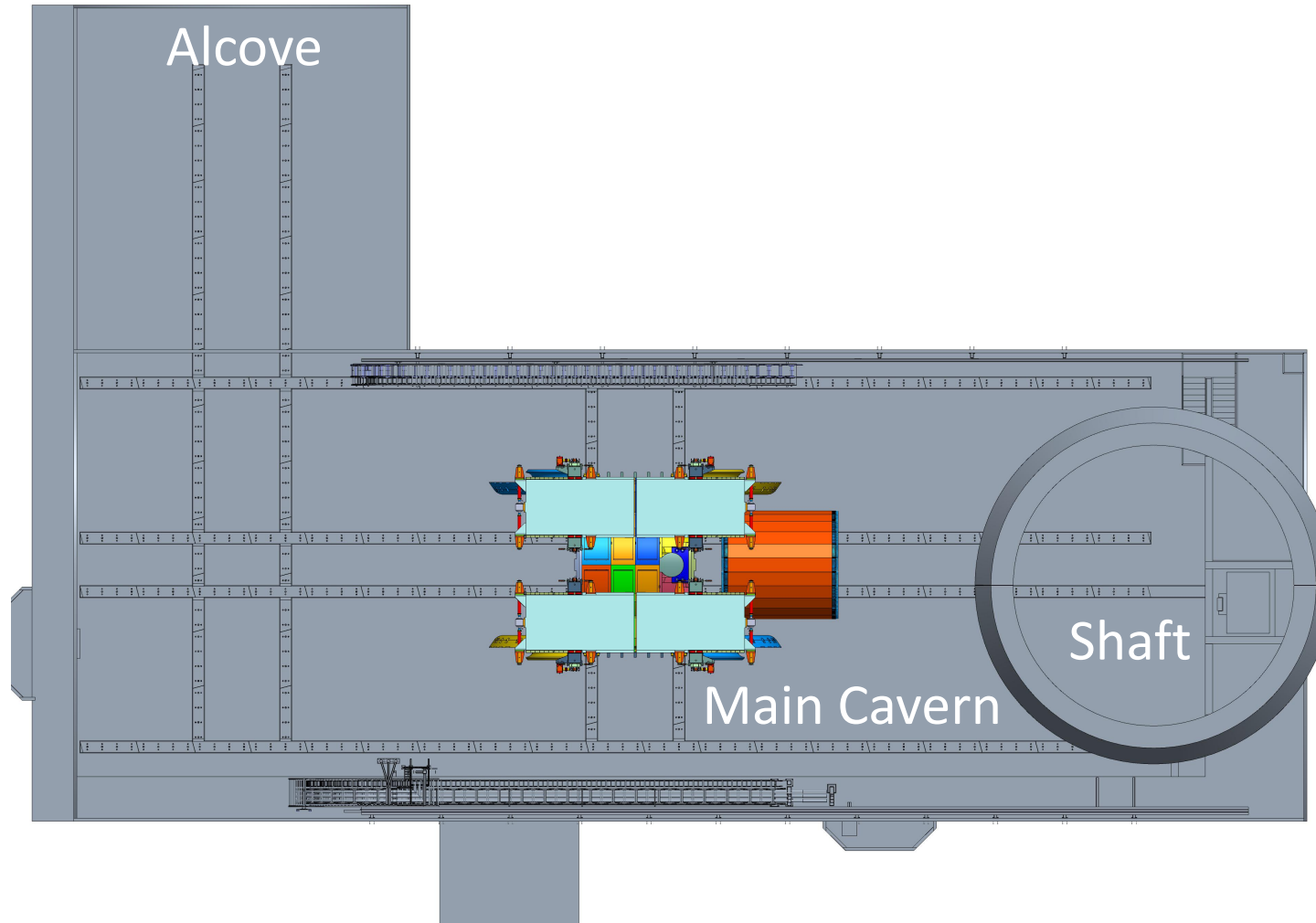
SAND Assembly Sequence in the Main Cavern – 5 – End Caps



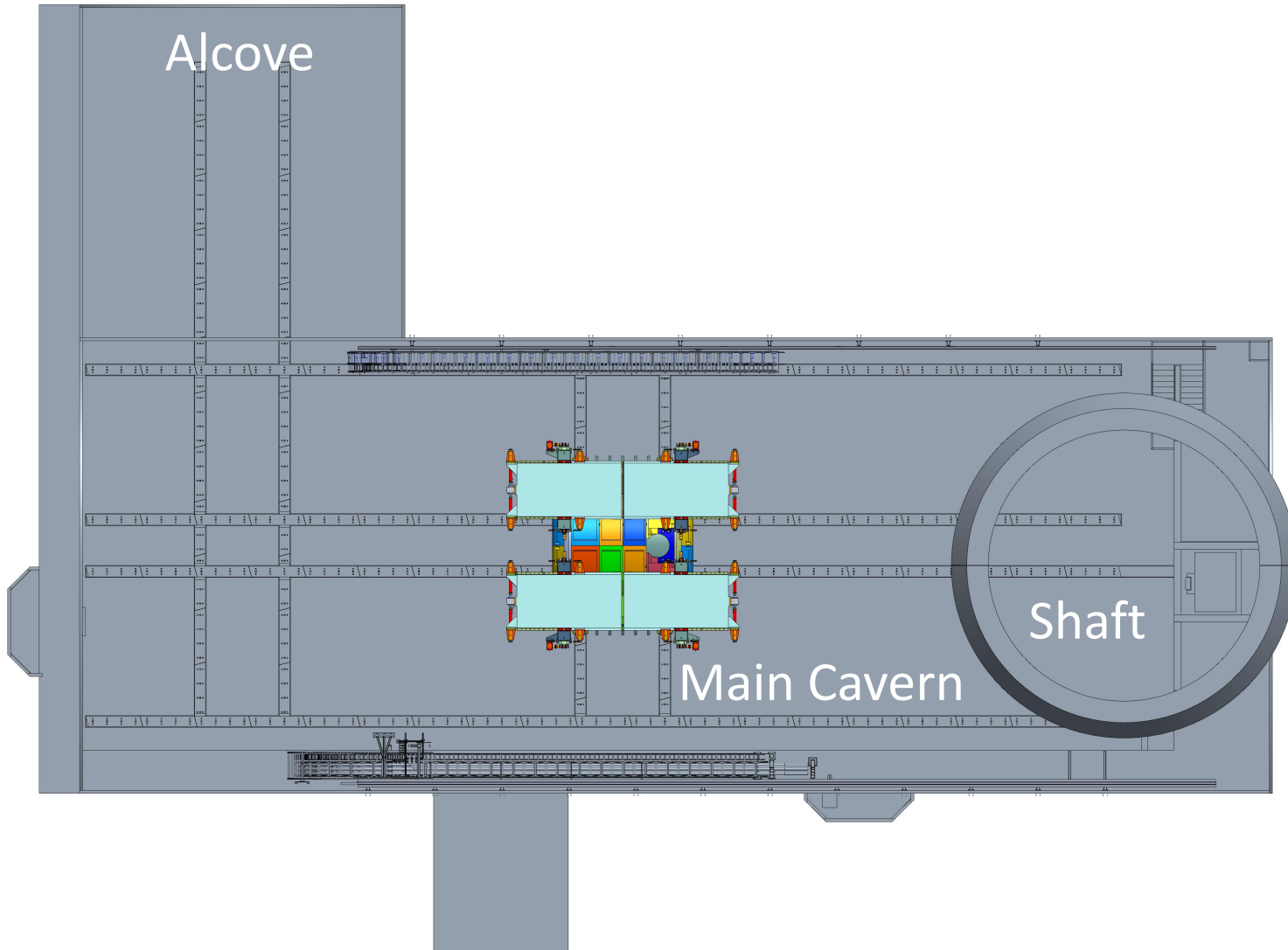
SAND Assembly Sequence in the Main Cavern – 6 – Calorimeter



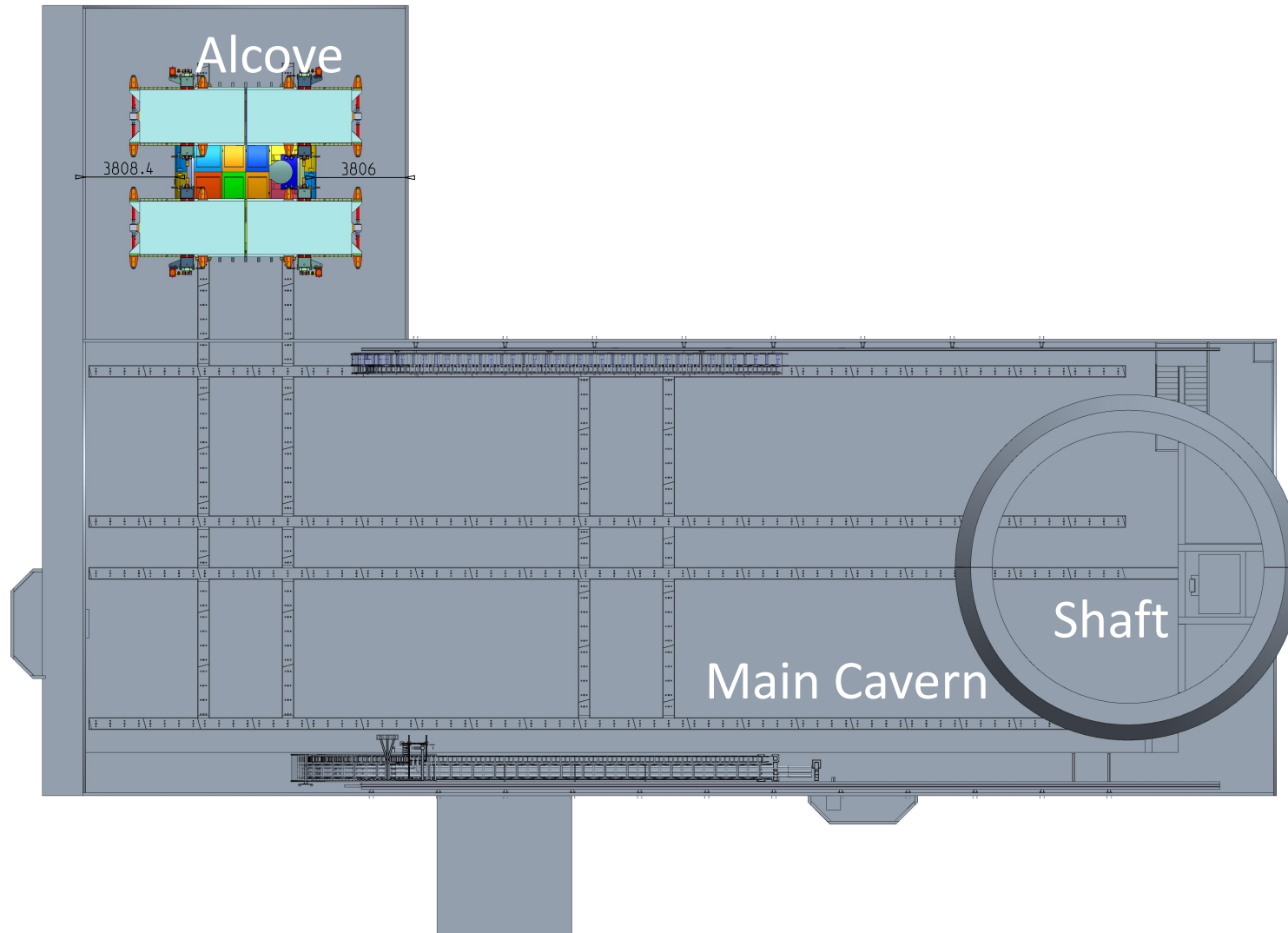
SAND Assembly Sequence in the Main Cavern – 7 – Inner Struct.



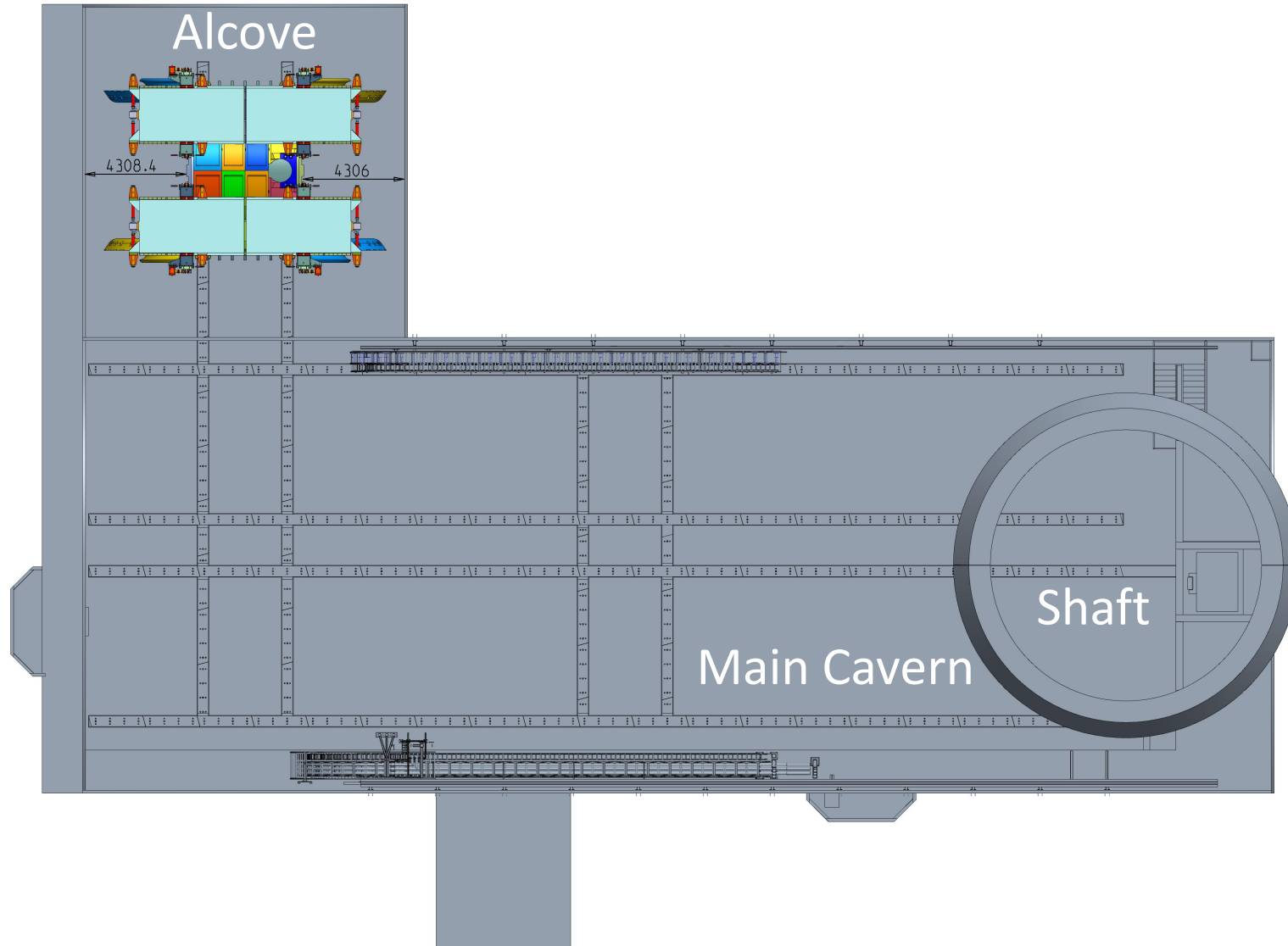
SAND Assembly Sequence in the Main Cavern – 8 – Close EC



SAND Assembly Sequence in the Main Cavern – 10 – Move



SAND Assembly Sequence in the Main Cavern – 11 – Open EC



Thanks!