Goals of Full Scale HV Test of Field Cage, APA, Beam Plug at PC4

Most of you know these already, but to make sure we are all on the same page

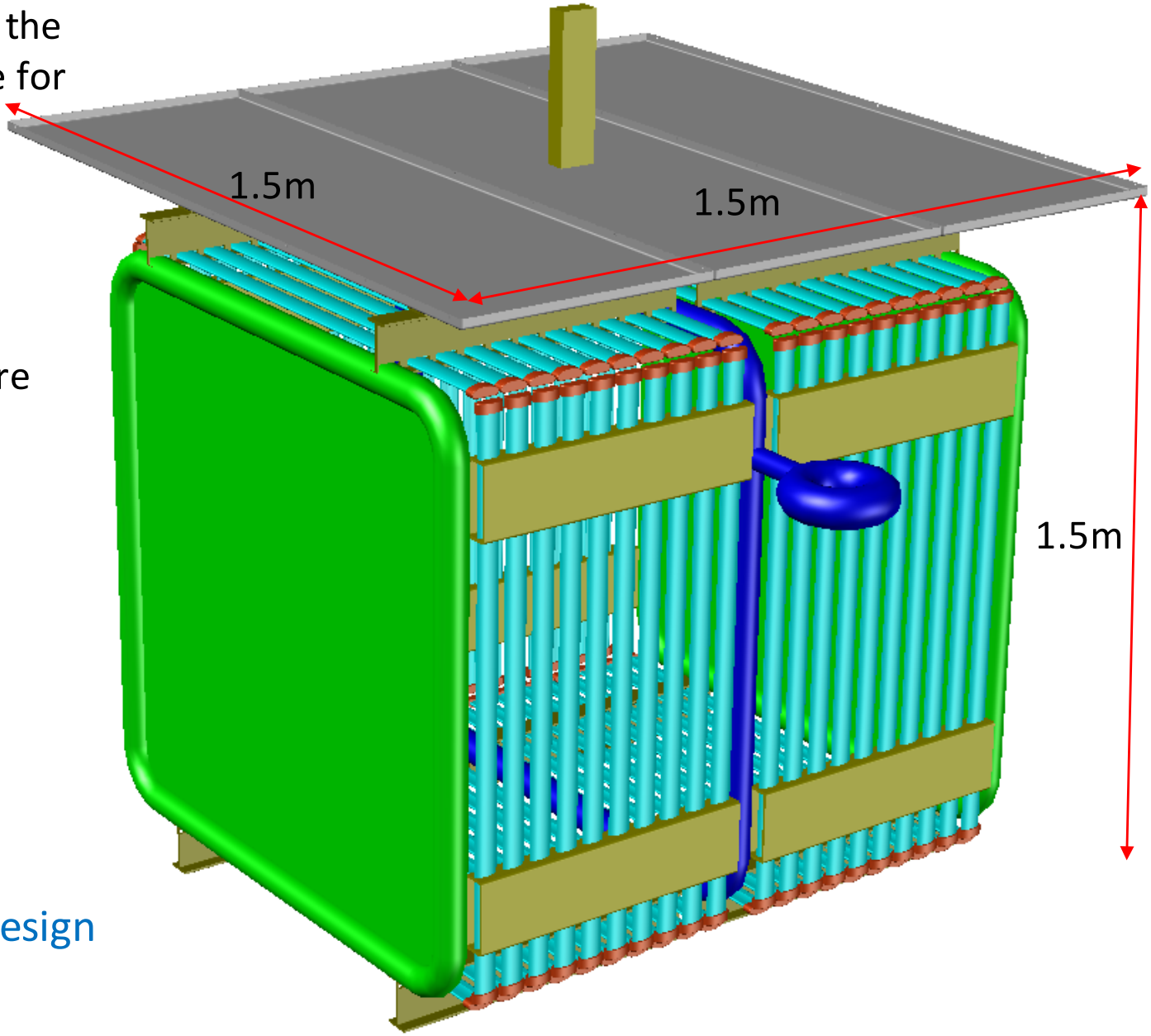
High level goals:

- Full scale HV test of roll-formed field cage and CPA mockup
- Phase 1 test: DUNE far detector configuration
- Phase 2 test: ProtoDUNE-SP specific configuration
- Verify the following:
  - Both configurations can hold HV
  - No breakdowns or micro-discharges
  - No contamination of LAr
  - Anything else

Phase 1 Configuration

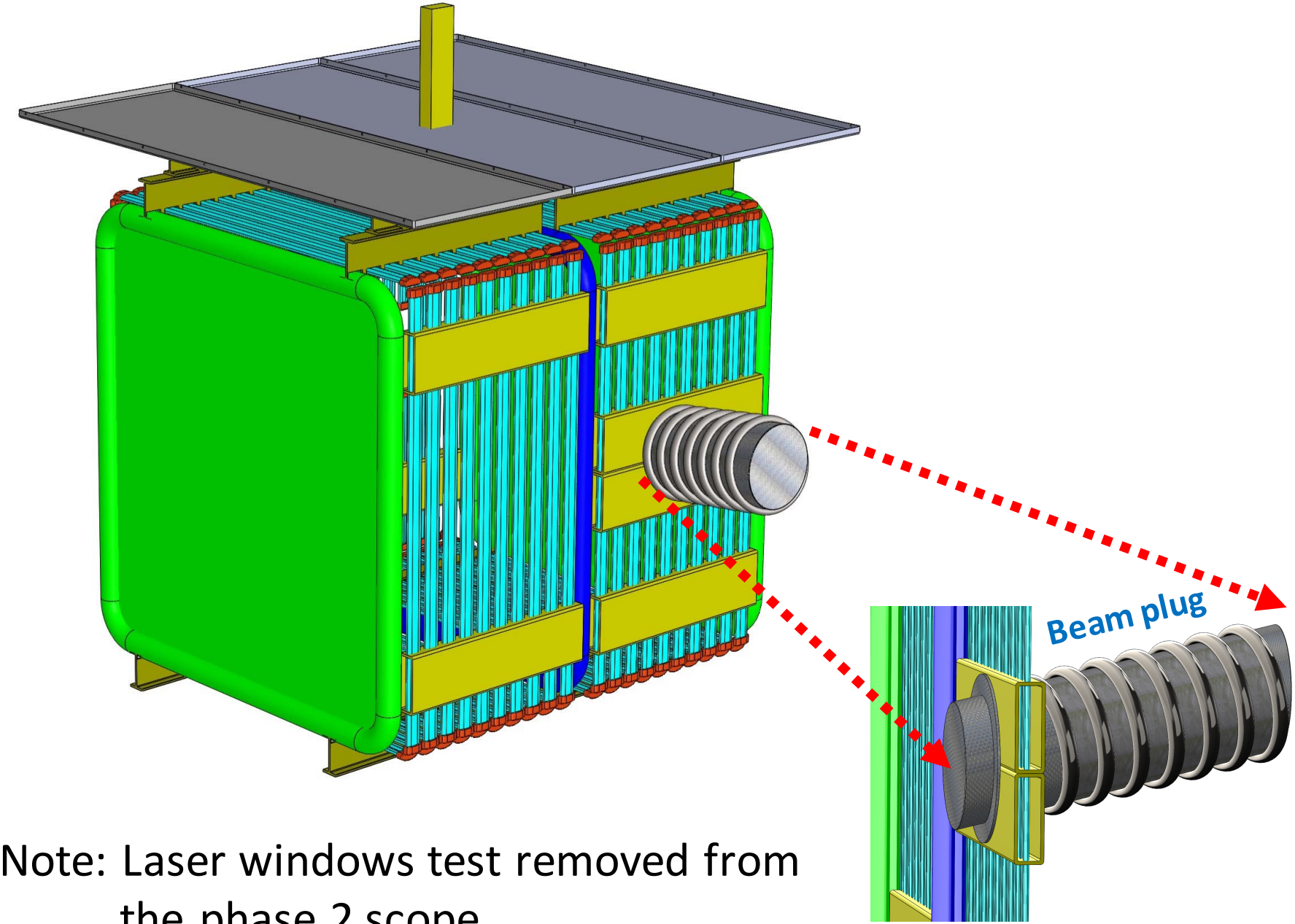
This setup will be able to test the following features at full scale for E field purpose:

- CPA lifting fixture
- Ground plane
- Ground plane overhang
- Field cage support structure
- CPA panels
- HV bus
- Field cage profiles
- Profile caps
- End wall FC box beams
- HV cup



(More from Vic on the design in the next talk)

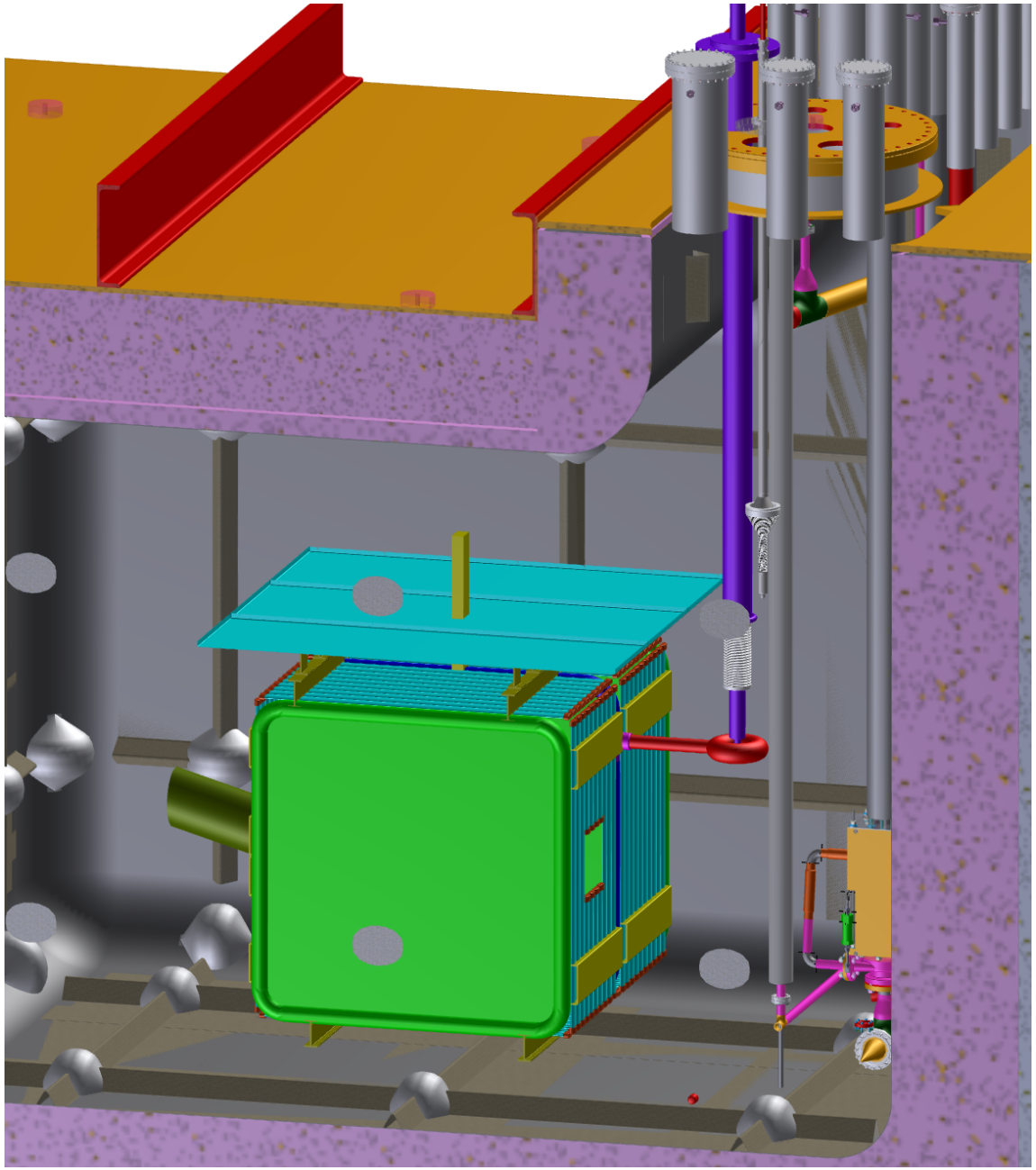
Phase 2 Configuration



Note: Laser windows test removed from the phase 2 scope

Setup in 35ton Cryostat + NP02 HV FT

- NP02 HV FT length (2.55m from flange to tip) allows the setup to be near the floor. If we keep 0.3m to the knuckle tips on the bottom, the ground plane is about 1.8m off floor: need 1.9m deep LAr fill.
- Moving the HV FT to the port @30° CW location barely clears the setup with exact ProtoDUNE HV cup orientation with a symmetric double drift setup, but no standoff distance. Still need to rotate the cup angle to get HV clearance on the near side wall
- Backup solution: use HV cable to connect to the HV cup instead of feedthrough



Schedule Guidelines

Expectations from the Tech Board:

- Installation of phase 1 start in early Fall
- Completion of phase 1 by the end of calendar year 2016
- Drain and boil LAr during the winter break
- Installation of phase 2 start at the beginning of 2017
- Completion of phase 2 by early Spring

Of course, DUNE management would like us to get the results sooner if possible