

HV work at Ash River

Ash River Crew

August 13th, 2019

Status of APA Tower

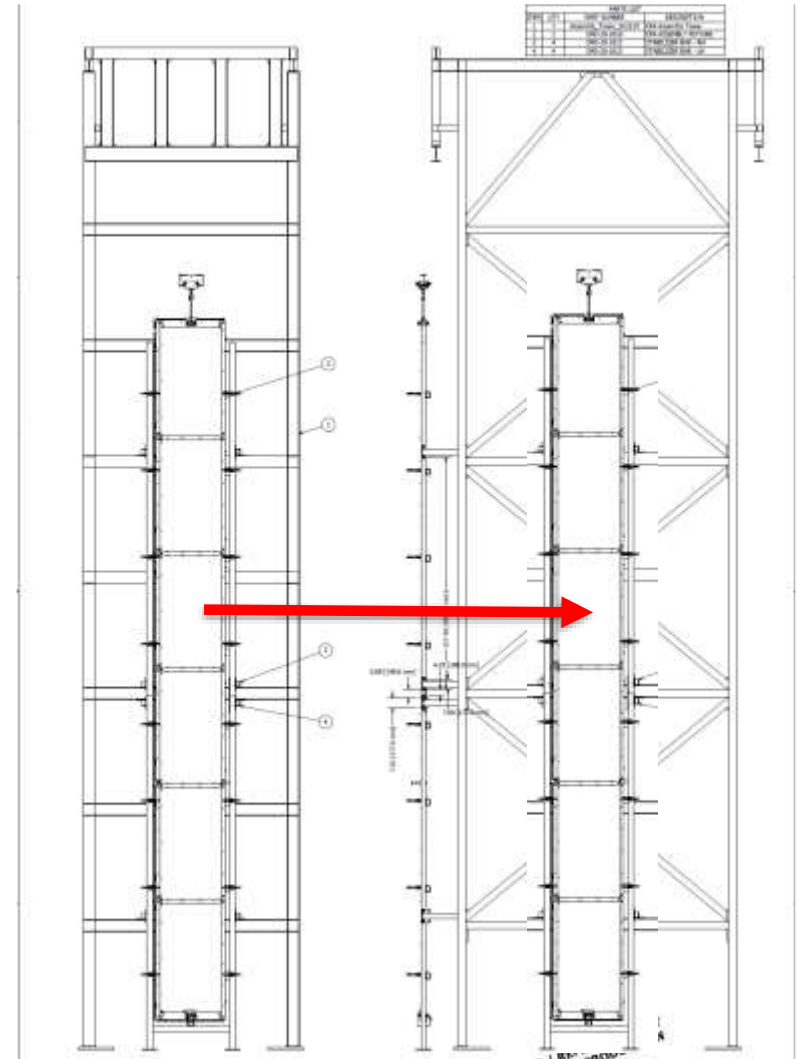
- This week work continues on the APA Assembly Frame
 - Completed approval of engineering notes, HAs and procedure documents
 - Electrical power and actuator is completed, but not tested
 - Will complete alignment and survey of APA Assembly frame
 - Load test of lifting beam and static trolleys is ready to go

Goal is to mate the first APA doublet by the end of the week



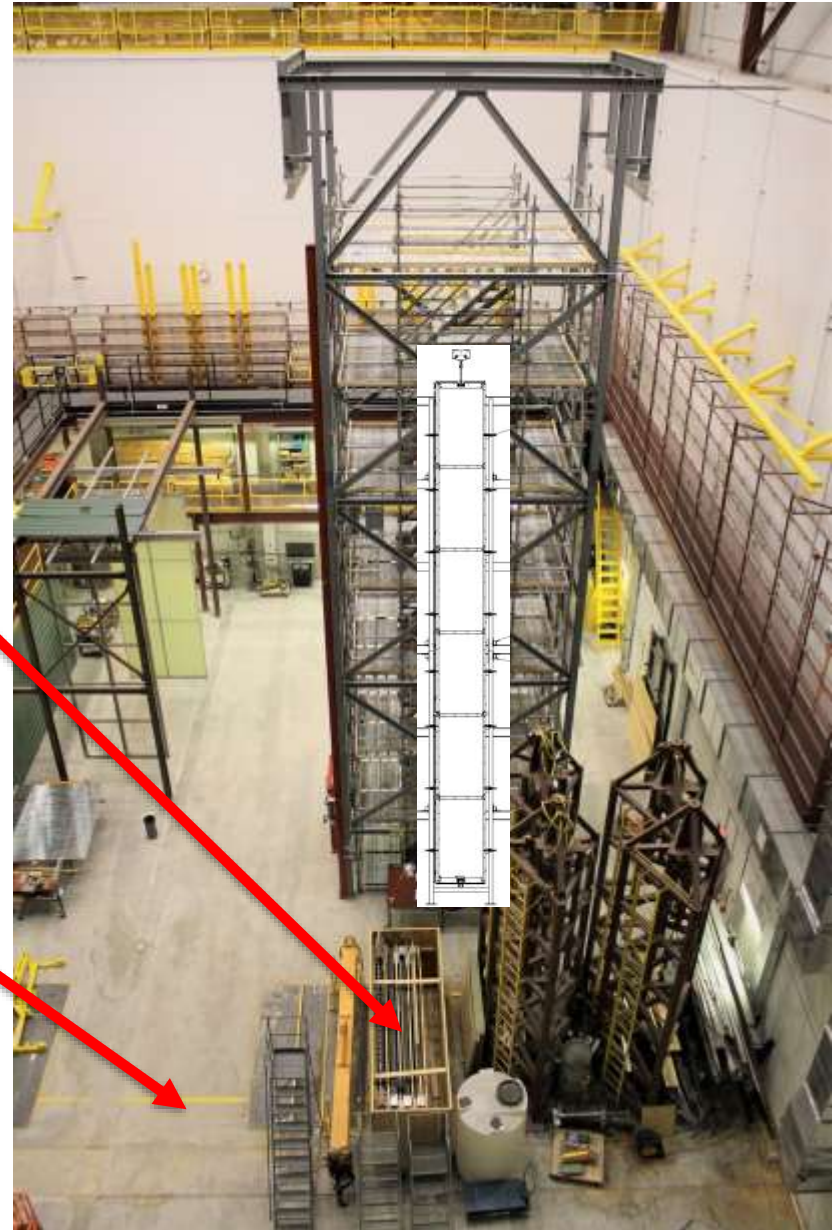
Status of CPA assembly frame

- Moved current location on end of Tower to south side. This allows us to lift a completed CPA to the East side where the two can be joined together
- Kyle has the load information to write a short engineering note about the load on the South side
- Need to work with Vic to update drawings to mount to the new location-Distance from tower needs to be reduced and brackets align to different beams
- Drawings need to be reviewed and I can put them out for bids.
- I am assuming that all clamping fixtures will be supplied by ANL



Ash River

- We will keep the old ProtoDUNE frame until we have completed the work on ProtoDUNE 2
- We will move the towers and other items out of the way.
- What do can we do with old End Wall? We said we need to keep the beam plug “stuff” since we may want to modify the ProtoDUNE 2 EW design to include a beam plug.
- The yellow line is our crane coverage



Ash River and CERN Schedule

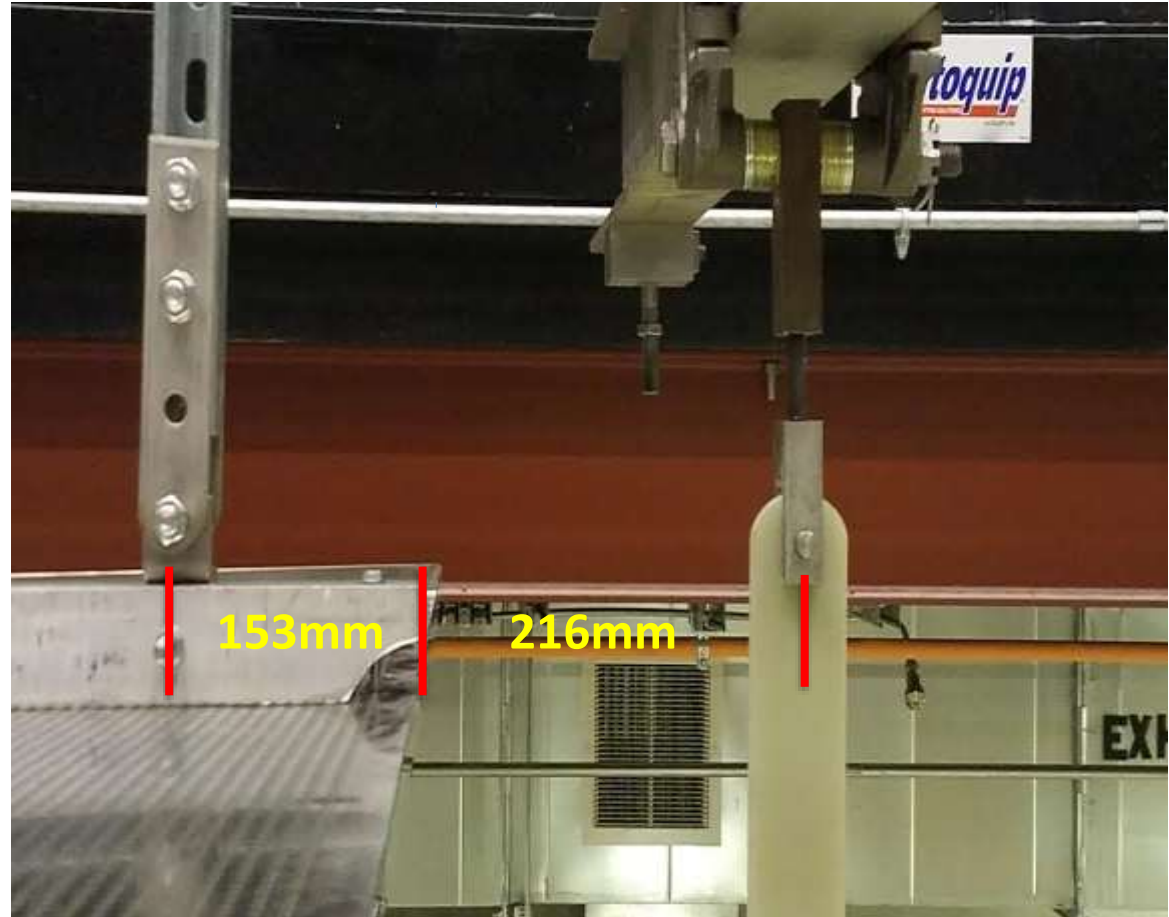
						2020												2021											
	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Trial Assembly Phase 1																													
Trial Assembly Phase 2																													
Fabricate/install CPA Assembly																													
DUNE CPA installed at AR																													
Design DSS Steel Support System																													
Design APA Work Platform																													
Review design, bid documents, procure																													
Fabricate/Install DSS steel support structure																													
Initial Test DSS																													
Module 0 TPC components delivered																													
First Row installation/deployment tests																													
25th Row Installation tests																													
Revised installation tooling and TPC																													
First Row installation/deployment tests																													
25th Row Installation/Deployment tests																													
Trial Assembly Phase 3																													
ProtoDUNE 2 Trial Assembly																													
Build first HV FC prototypes																													
Order materials/fabricate Module 0 components																													
Module 0 ProtoDUNE 2 FC delivered																													
Module 0 ProtoDUNE 2 CPA,EW delivered																													
Full scale ProtoDUNE 2 installation tests																													
ProtoDUNE 2 CERN																													
Disassembly TCO drift volume																													
Open TCO																													
Remove ProtoDUNE-SP TPC																													
Install ProtoDUNE 2-SP Detector																													
Close TCO																													
Deploy second drift volume																													
Fill Detector																													

Mounting the Ground Plane

The hinge/hang points were mounted on the ground plane support brackets at 153mm from the end of the ground plane for our testing.

This put the end of the ground plane 216mm from the center of the CPA hanger.

The hinge point to end of ground plane could possibly be extended from 153mm to 200mm and still have clearance for the rotation. This would need to be checked.



We designed the Winch Bar off the conceptual drawings provided and it worked extremely well for lifting the ground plane into position.



The ground plane was easily winched into place using the same type of cable winch and pulley used in ProtoDune for the field cage deployments.



The winch bar was then moved to the same location used to lift the field cage into place and clamped into position. Then the ground plane was then raised.



Here you can see the L-brackets on the hanger frame used to support the ground plane.

And the hanger bolt hole locations in the ground plane support beams.



Ground plane is raised into position and then the bolts are inserted and tightened down. This action can be easily done by reaching in from either side.



Leaving the winch bar in same position. The field cage was then raised into position and latches deployed with no issues.



Testing FC-Removed cross brace

- We removed the cross brace on the FC.
- The profiles and steel plate nuts we had did not match the drawings we were given so we could only put one bolt in each nut plate
- We believe if the number of bolts were increased to 2 it would not rack as much, we have not had time to try and modify our beams



Move pictures





HAZARD ANALYSIS



- **Description of Work**
- **Hazards/Environmental Aspects**
- **Precautions/Safety Procedures**
 - Each new design will result in a new revision of the HA.
 - HA 9010 has been revised to reflect both the FC and ground plane work. It will keep revising until the final FC/GP deployment designs and tested movement have been verified and approved
- **Load test**
 - Performance Testing which determines a system's performance under real-life load conditions are applied when applicable.



Engineer Notes Procedures