

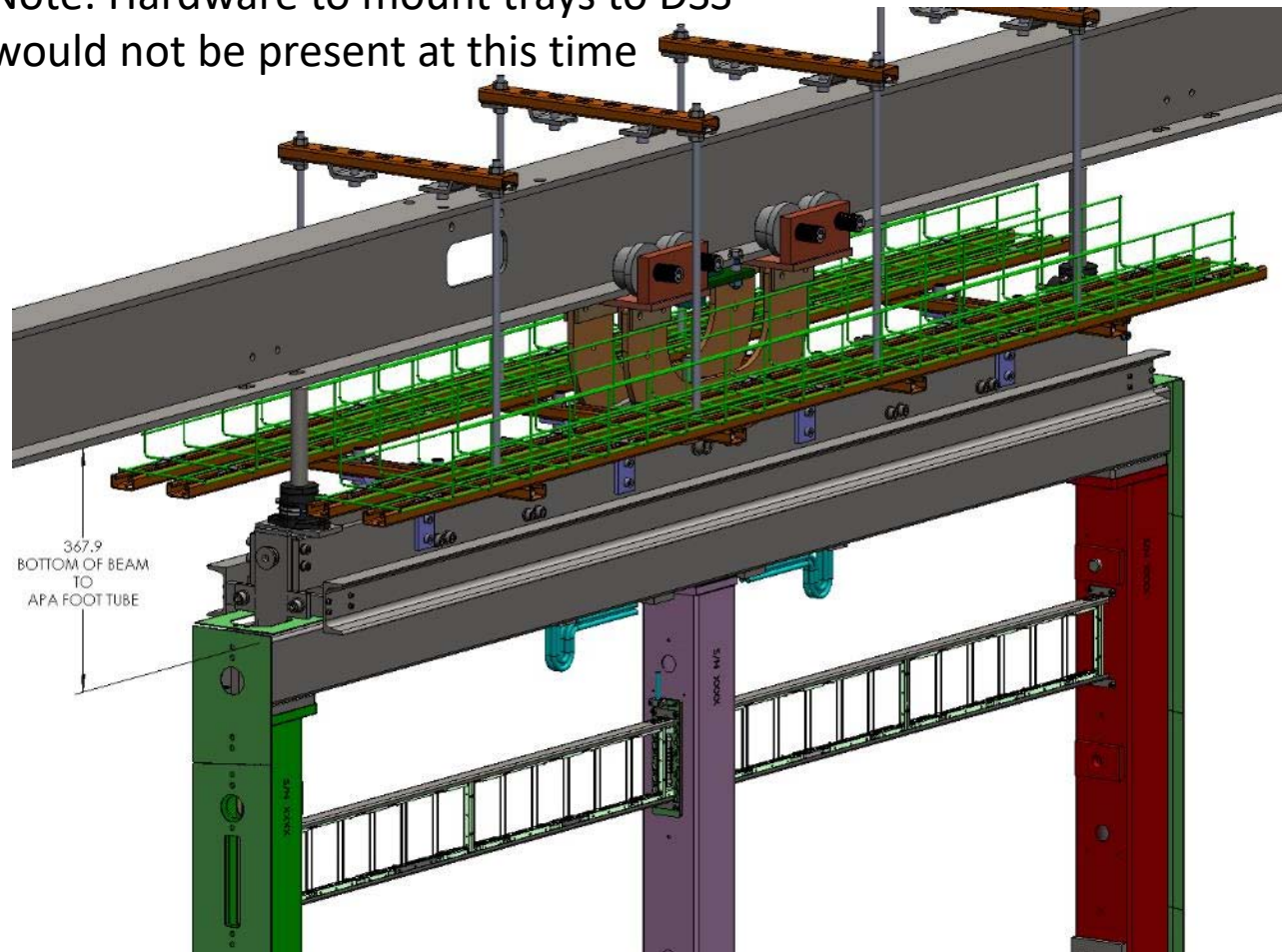
# APA/protoDUNE – II issues

## Raised position.

### Concept

- APA is mounted in the APA raised position without lowering system
- APA is cold tested.
- Lowering system is mounted to the APA before the APA is moved into the cryostat

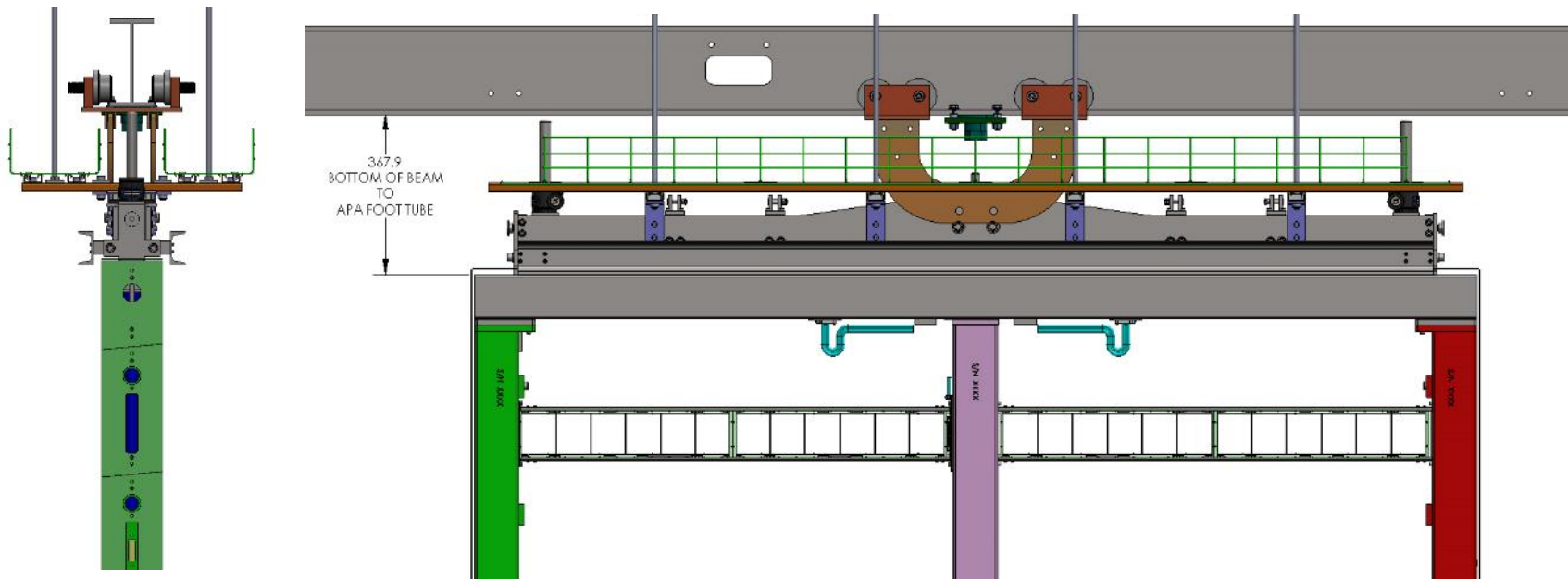
Note: Hardware to mount trays to DSS would not be present at this time



APA in raised position with lowering system installed.

# Raised Position

Note: Hardware to mount trays to DSS would not be present at this time



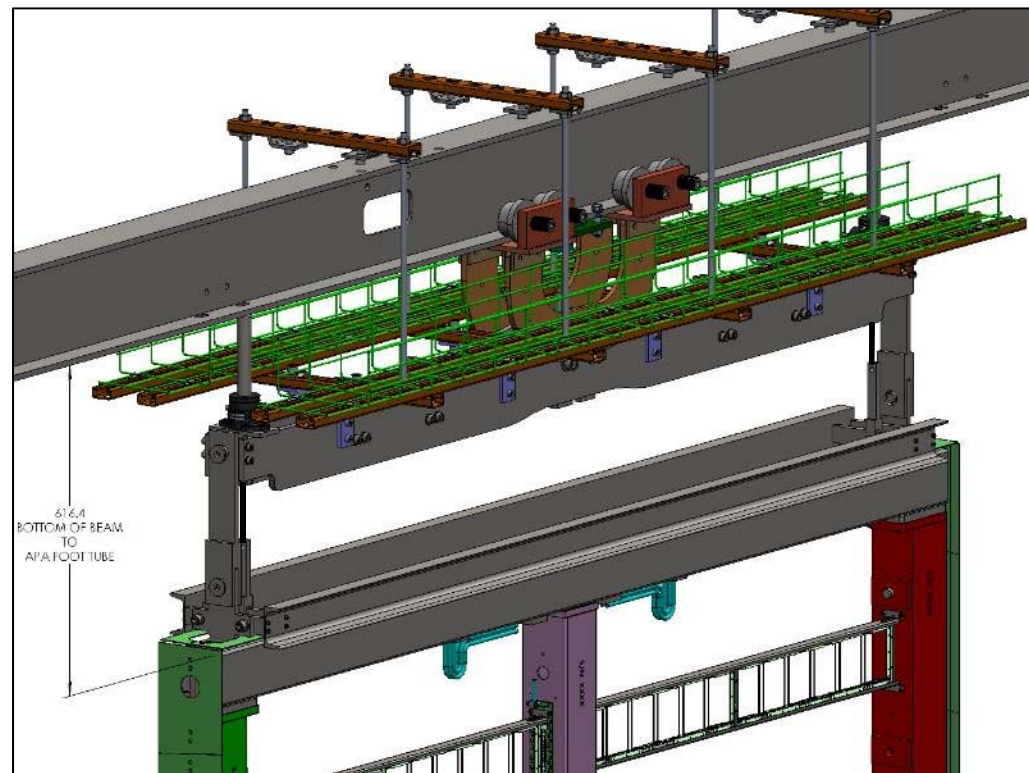
APA in raised position with lowering system installed.

# Lowered position

Note: Hardware to mount trays to DSS would not be present at this time

Concept  
(continued)

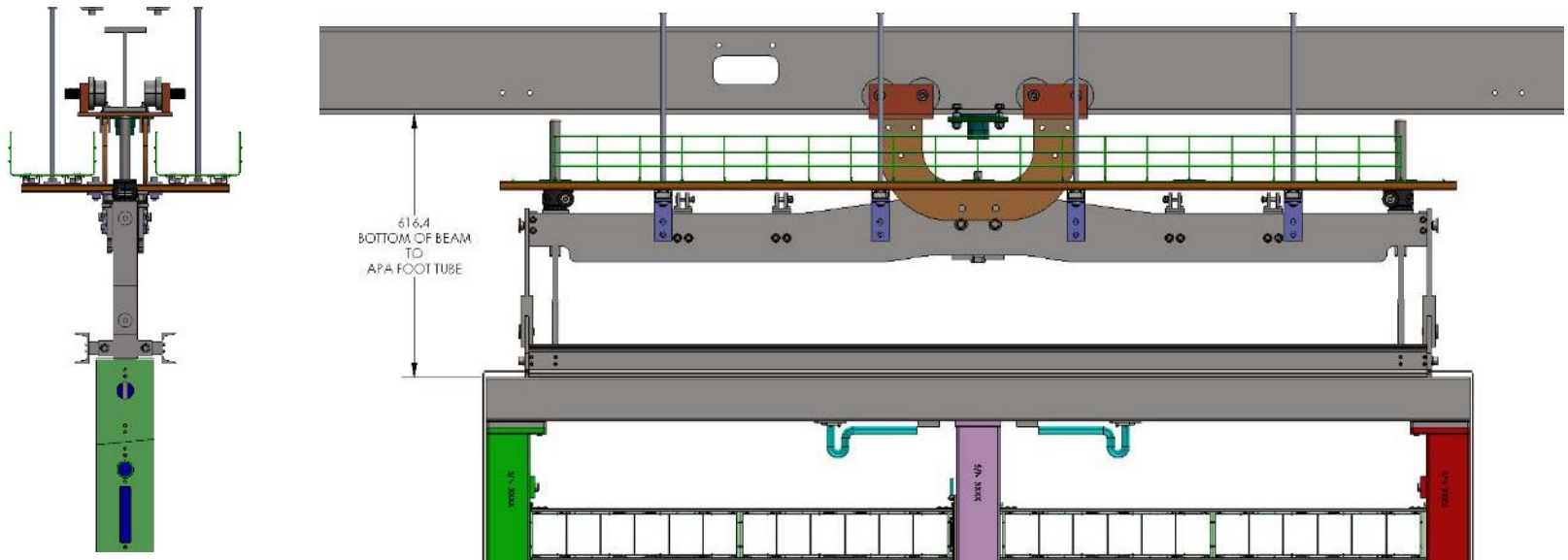
- APA is lowered 249mm (two strokes) after translation to final position.
- Load is transferred to link.



APA in lowered position with lowering system installed.

# Lowered Position.

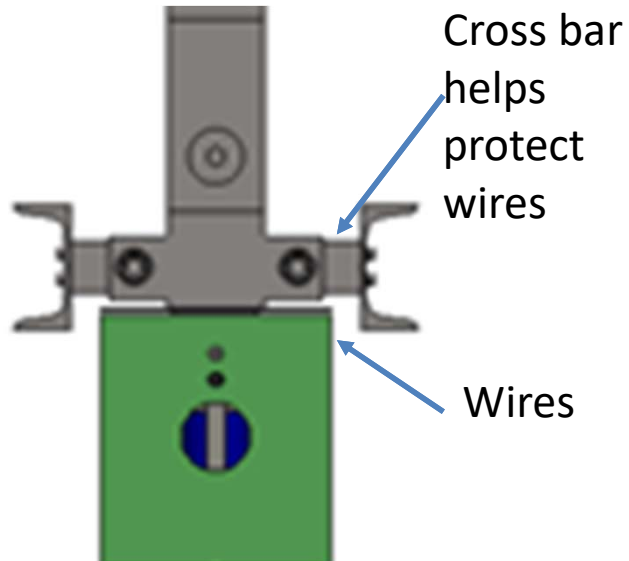
Note: Hardware to mount trays to DSS would not be present at this time



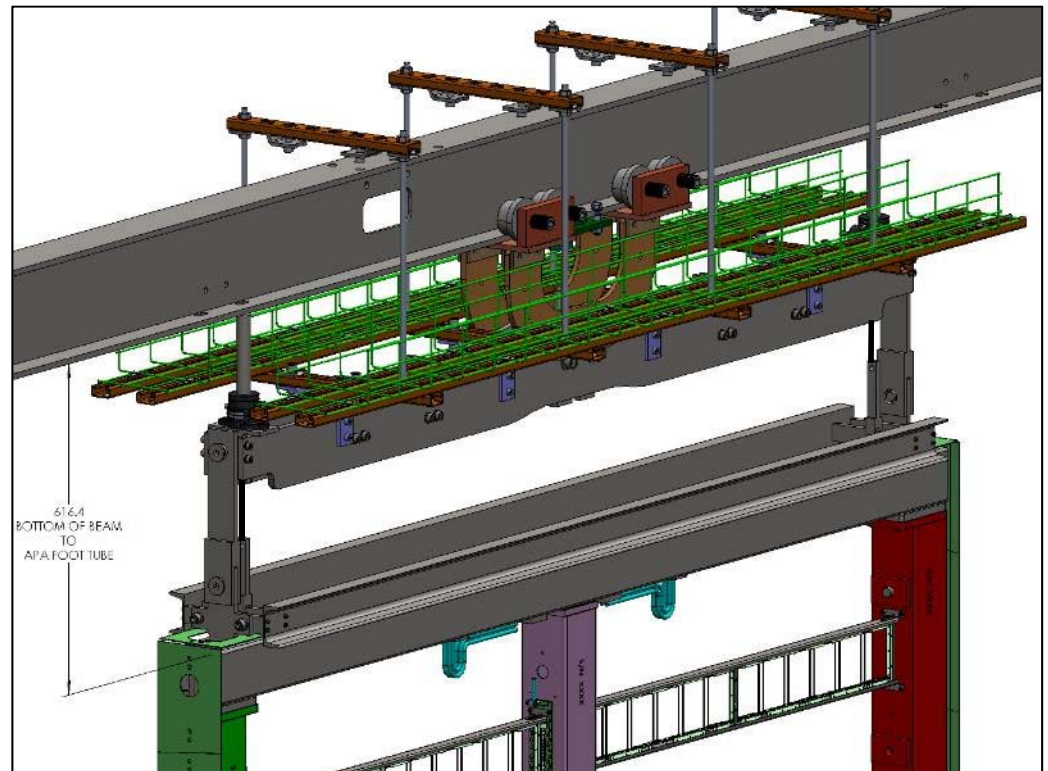
APA in lowered position with lowering system installed.

# Removal

1. Front beam is removed (24lb/11kg)
2. Back beam is removed (24lb/11kg)
3. Cross bars, clevis extensions, and actuators removed.



Note: Hardware to mount trays to DSS would not be present at this time



APA in lowered position with lowering system installed.

# Design status of lowering system.

- 2 x ½ ton jack screws (454kg\*2=908kg) mAPA=632kg
- Clevis, clevis extension, clevis pin M8 screws, M12 screws, C3x3.5 channel have been checked to AISC
- Link design is similar to DUNE
- Link to link extension connection design needs to be finalized
- CE cable support for foot tube not designed yet.
- Analysis report is needed.