

# DUNE CABLING MOCKUP

Installation and Integration Workshop

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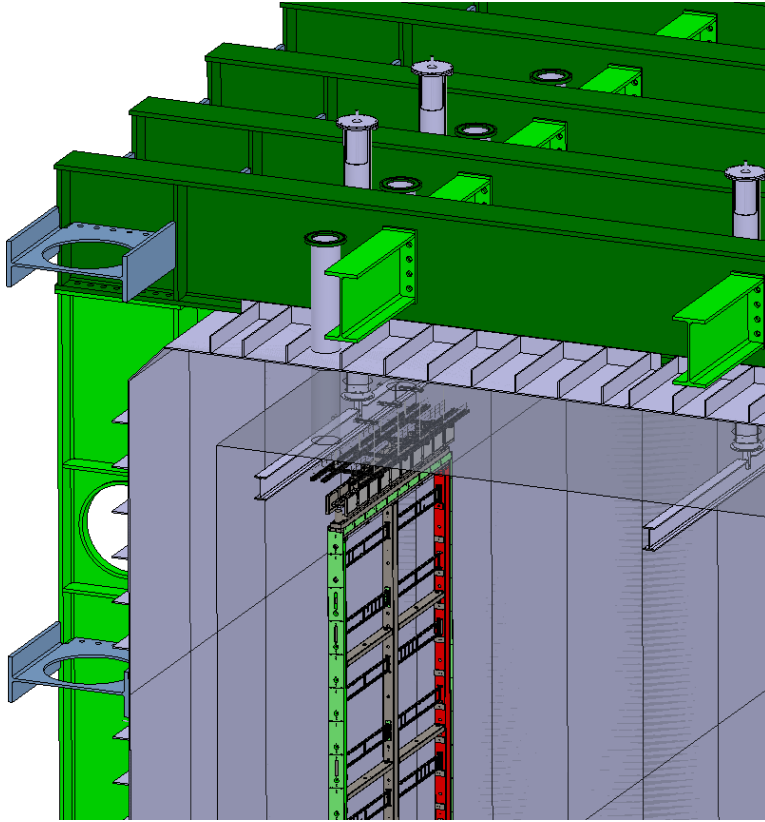
# Outline:

Mockup design

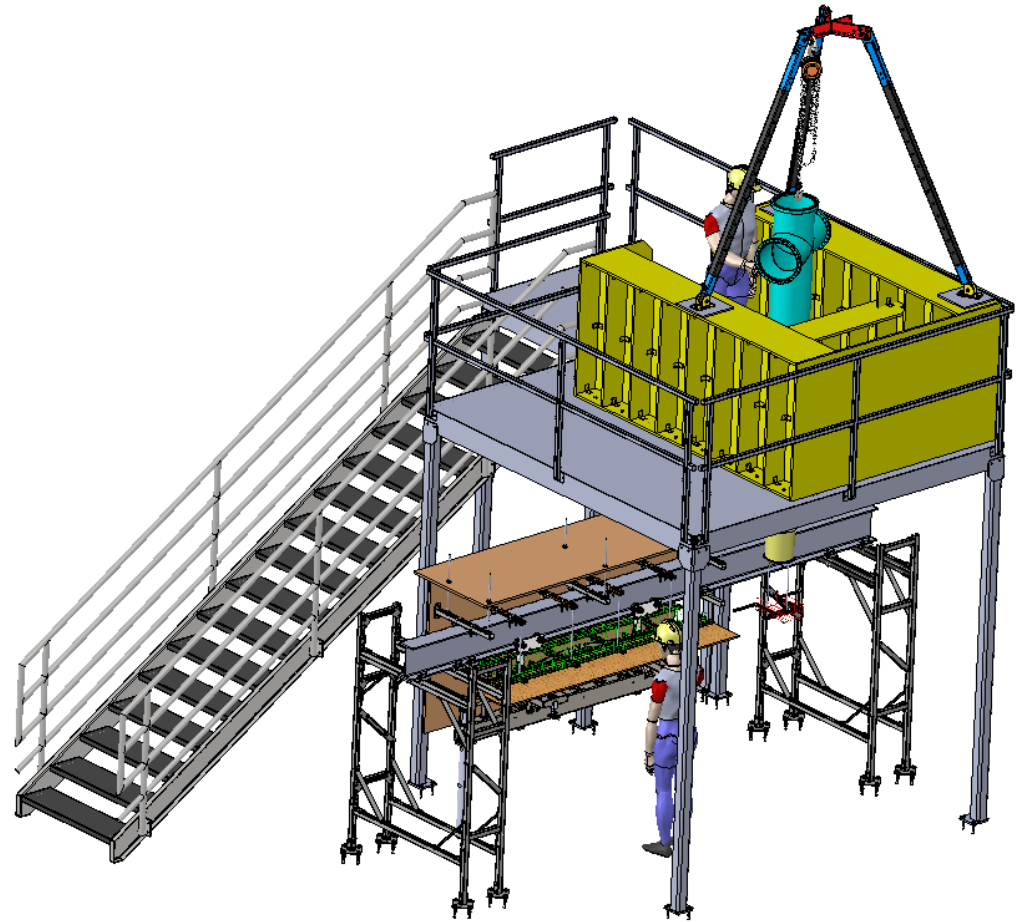
Mockup construction

What we can do with the mockup

# Mockup Design



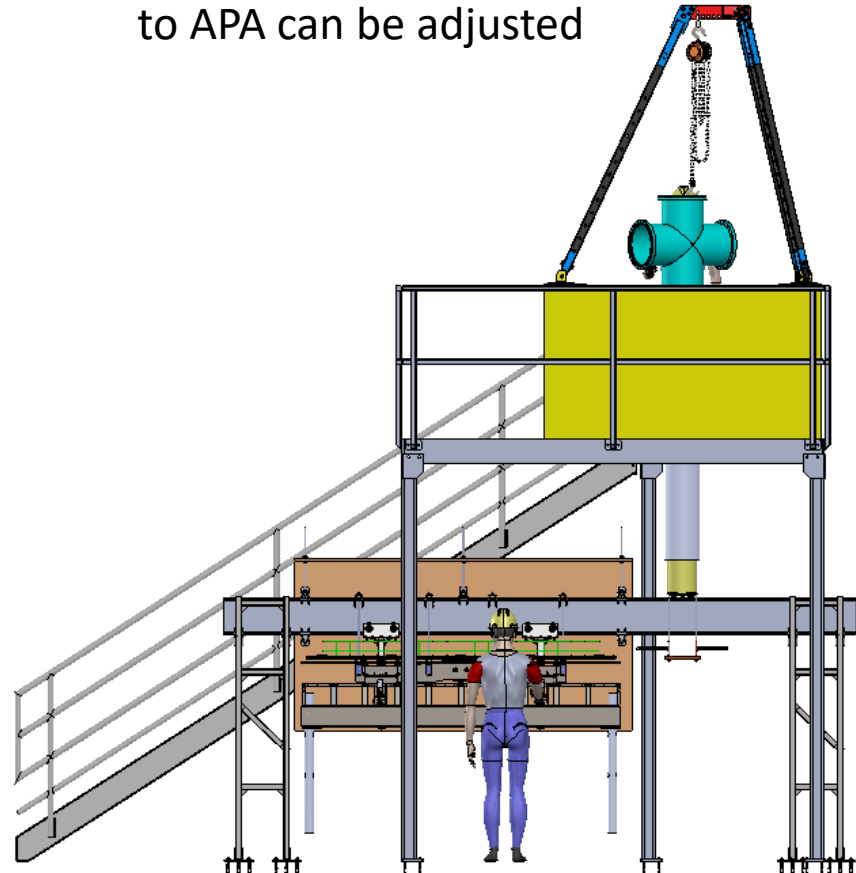
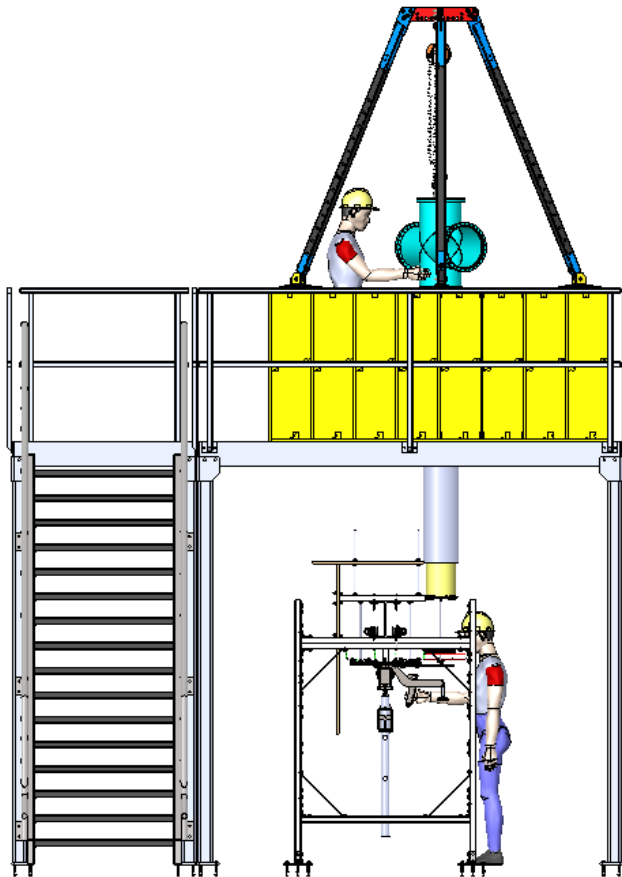
A corner of DUNE-SP detector



DUNE Cabling Mockup at BNL

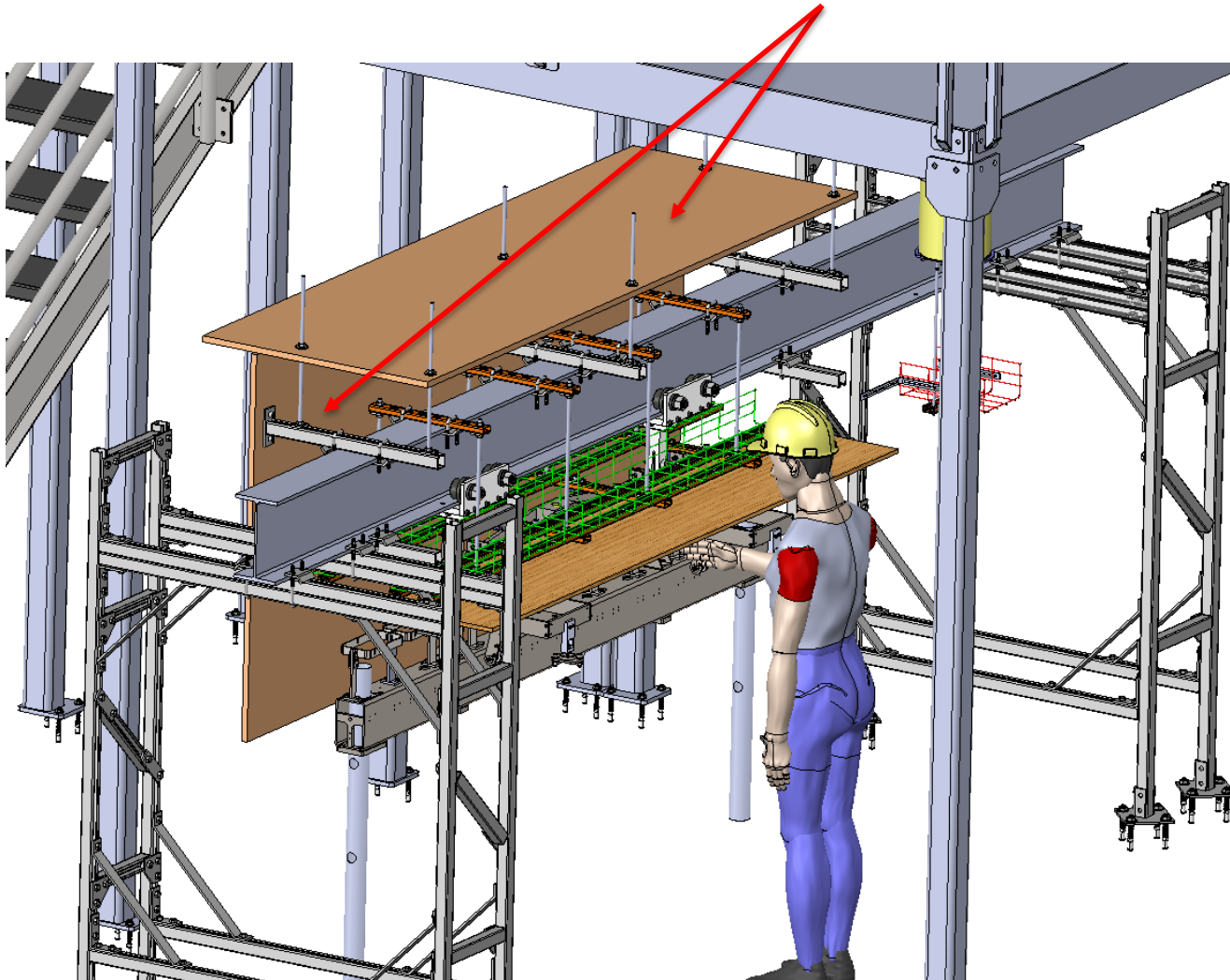
# Mockup Design

Distance from signal feedthrough to APA can be adjusted



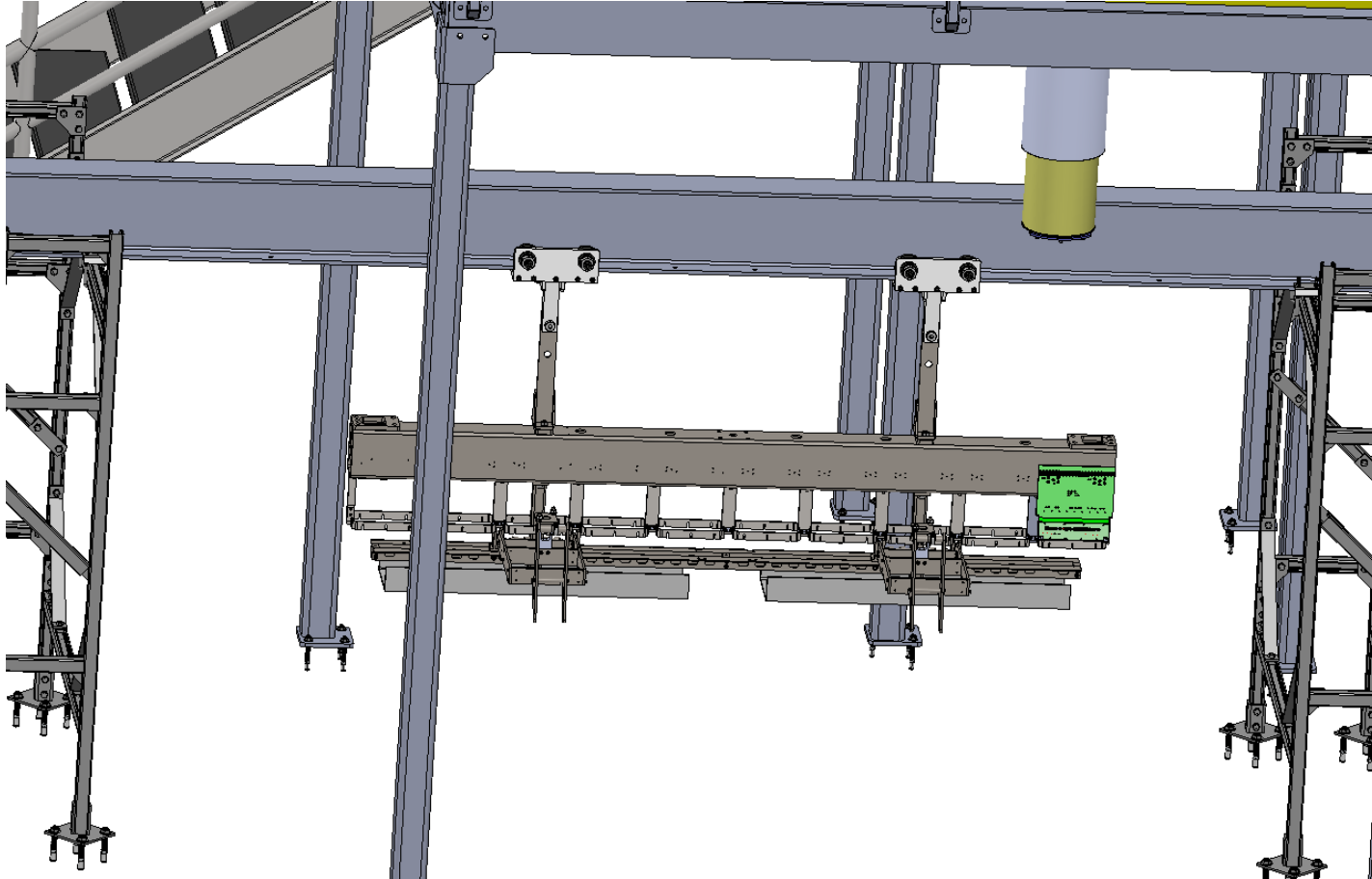
# Mockup Design

Plywood sheets to mockup  
the membrane roof and wall



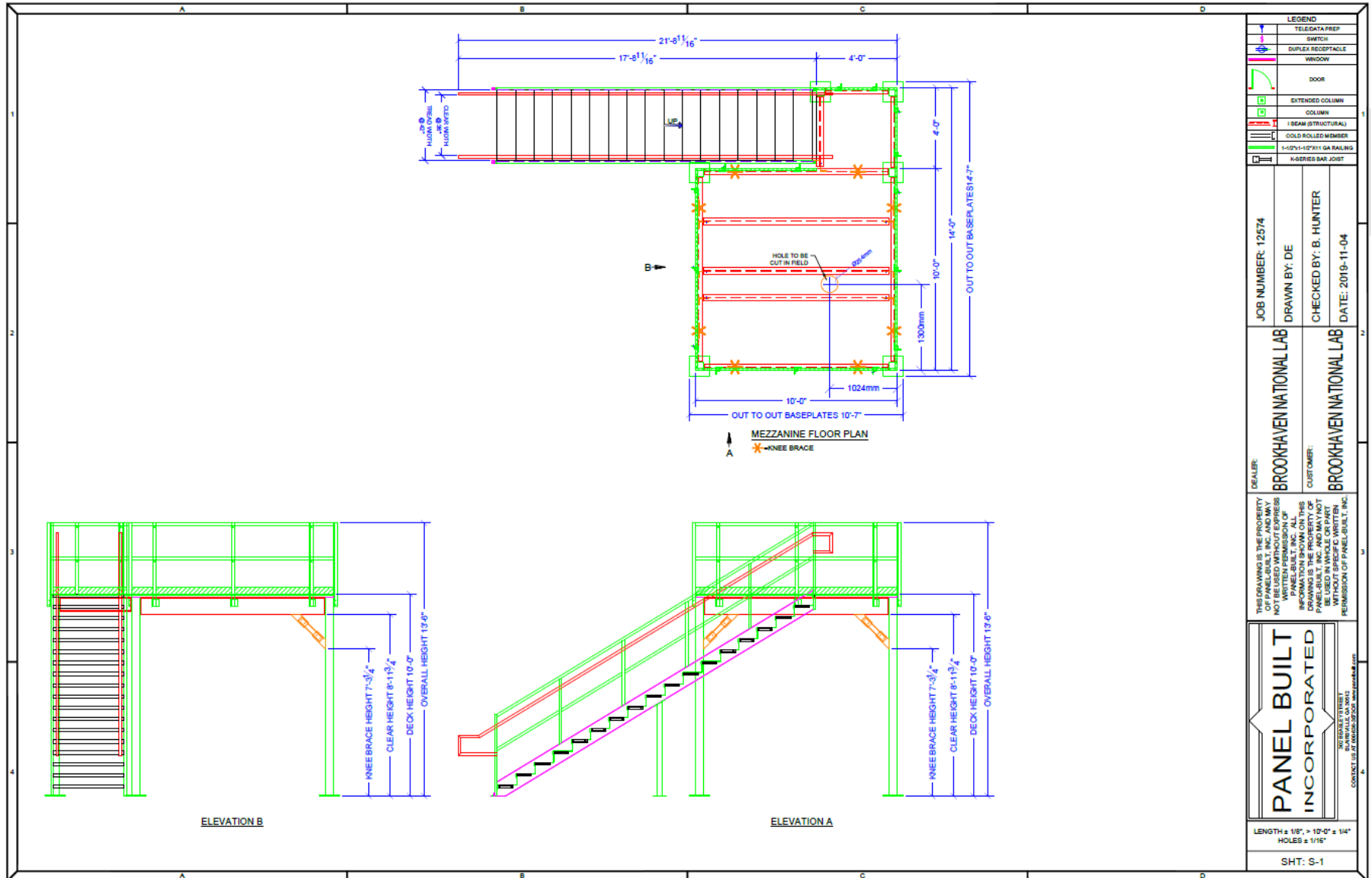
# Mockup Design

APA head tube section supported upside down to practice CE box installation and cable routing on lower APA



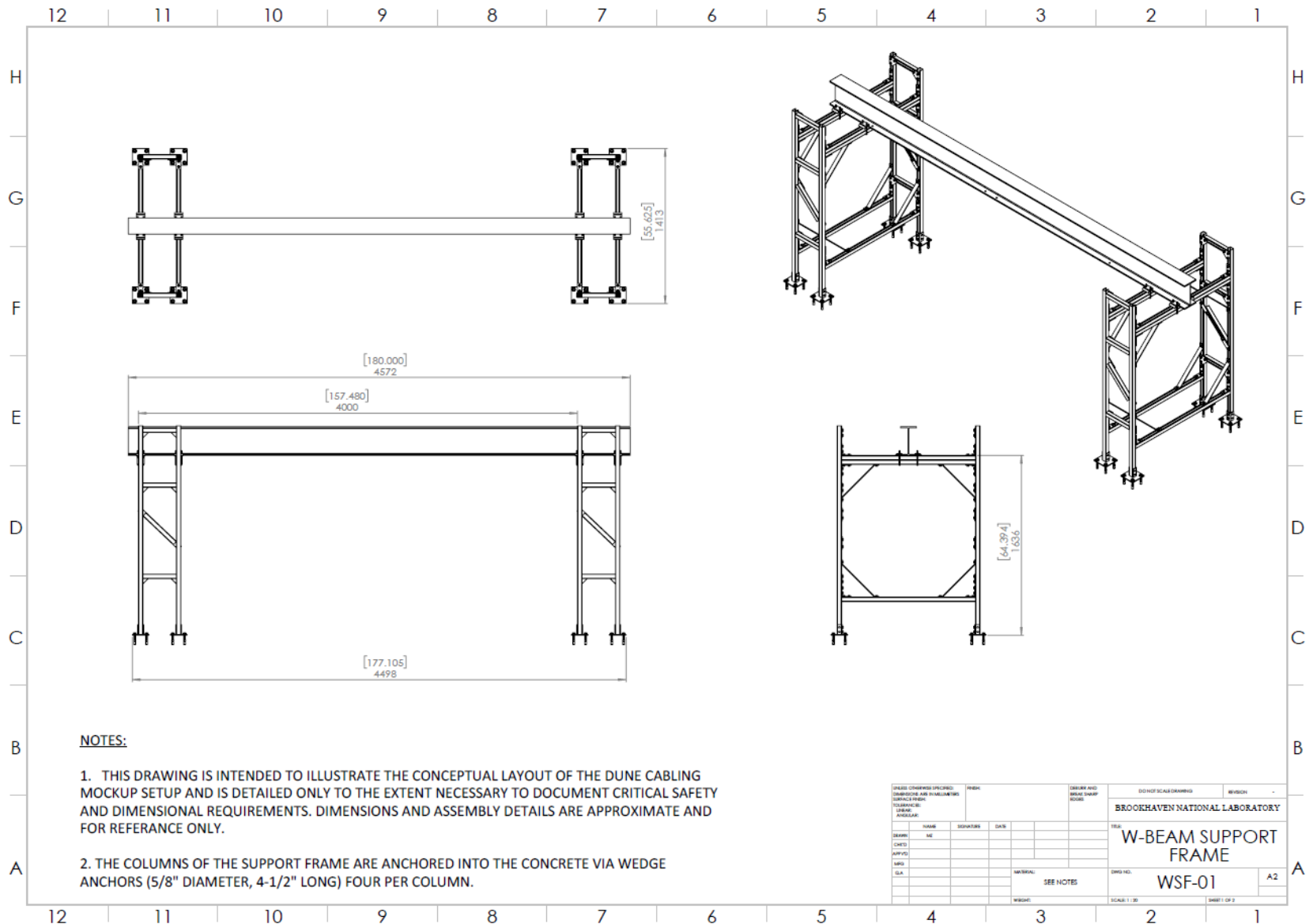
# Mockup Design

## Commercial mezzanine



# Mockup Design

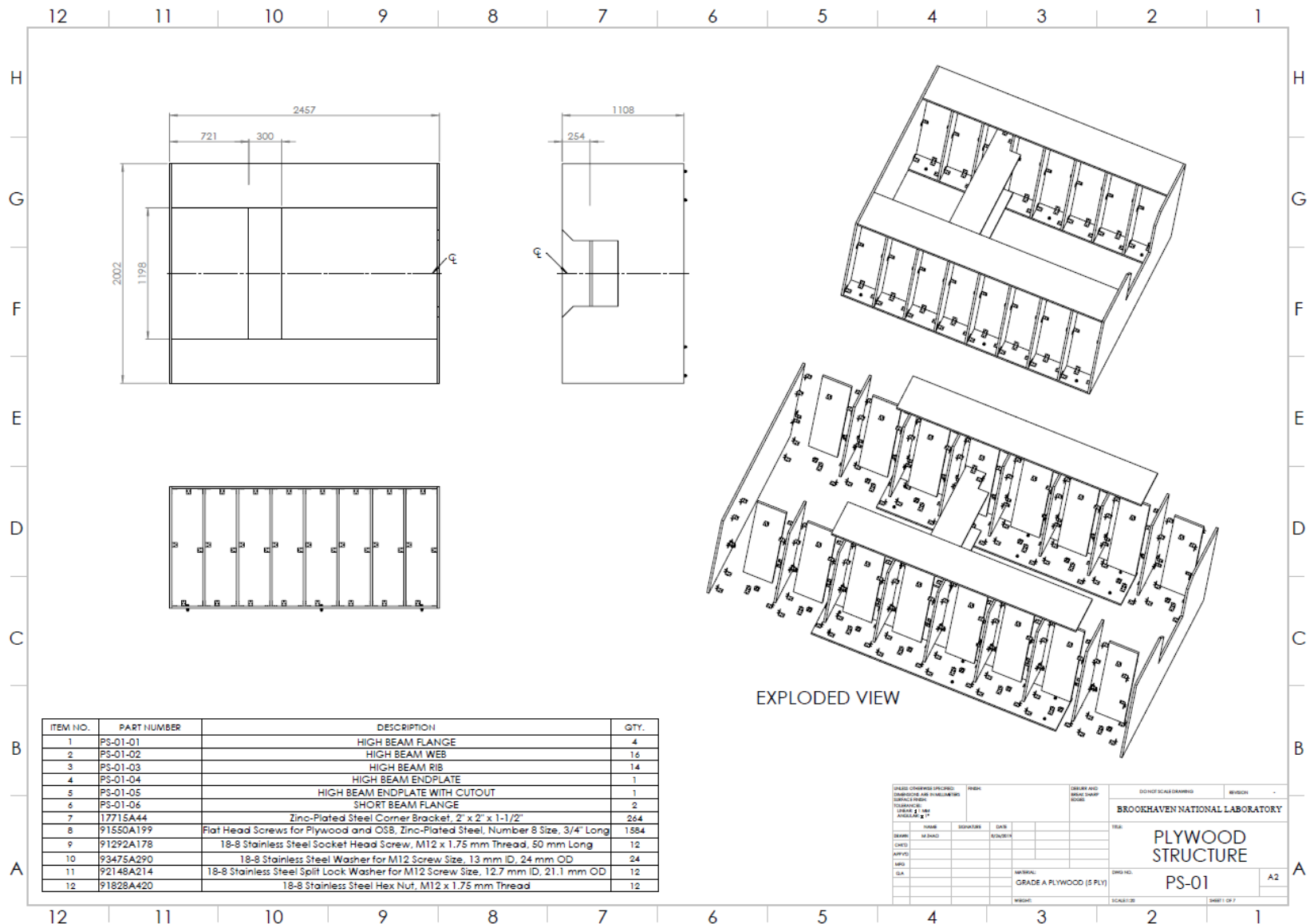
DSS beam supported  
on Unistrut frames





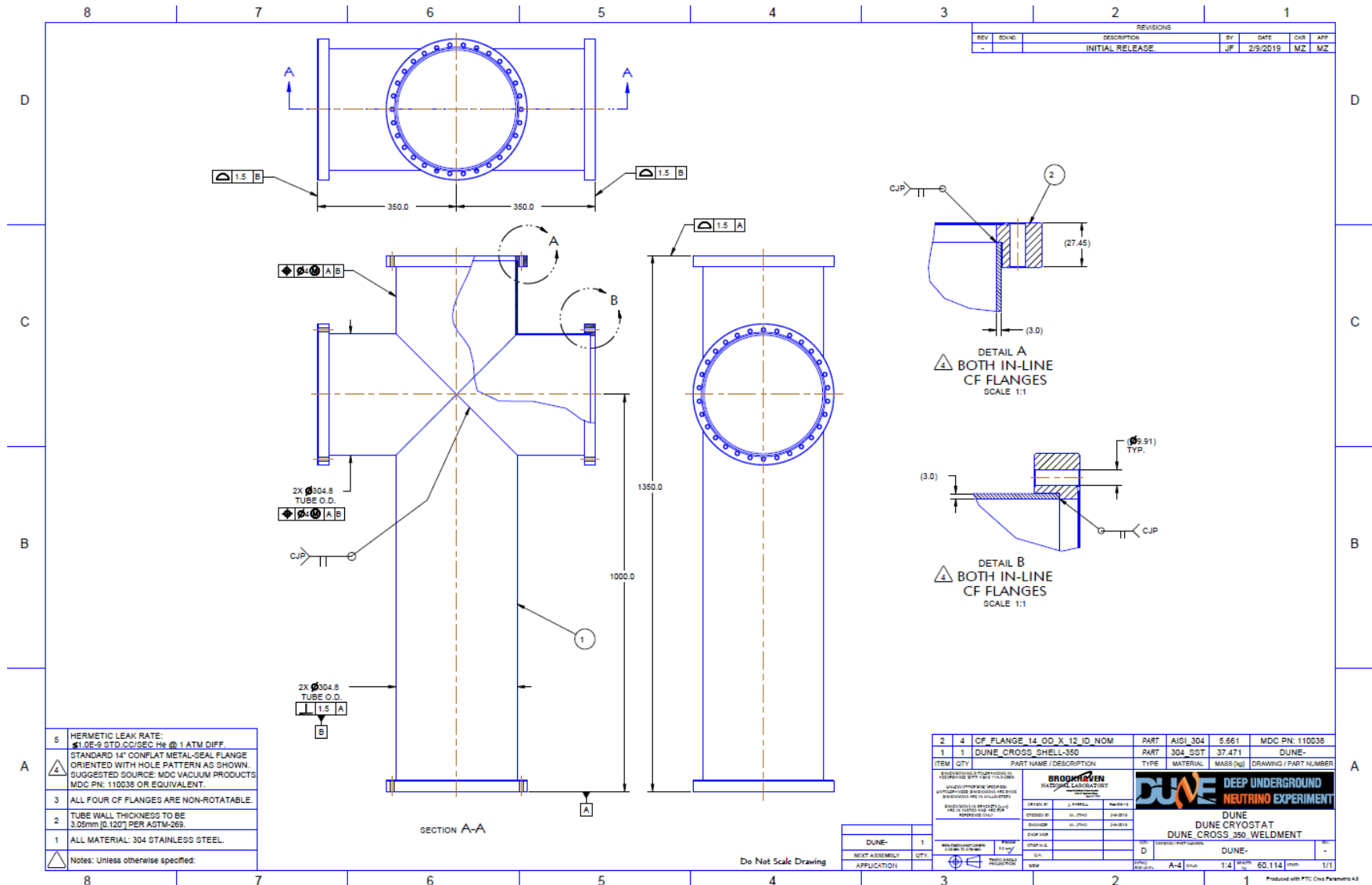
# Mockup Design

Plywood structure represents  
steel beams on cryostat



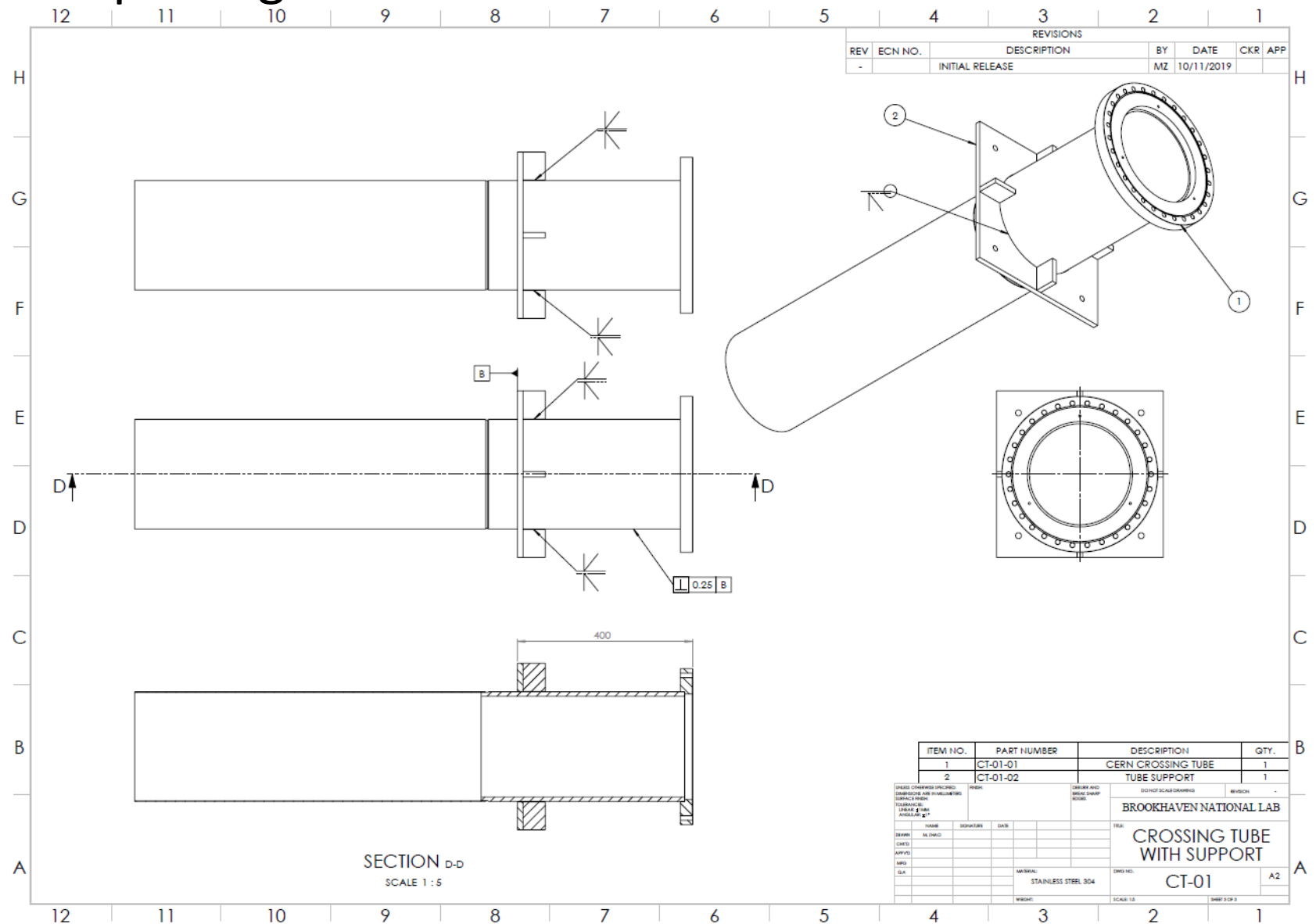
# Mockup Design

## Signal feedthrough: Cross-shaped spool piece



# Mockup Design

CERN crossing tube



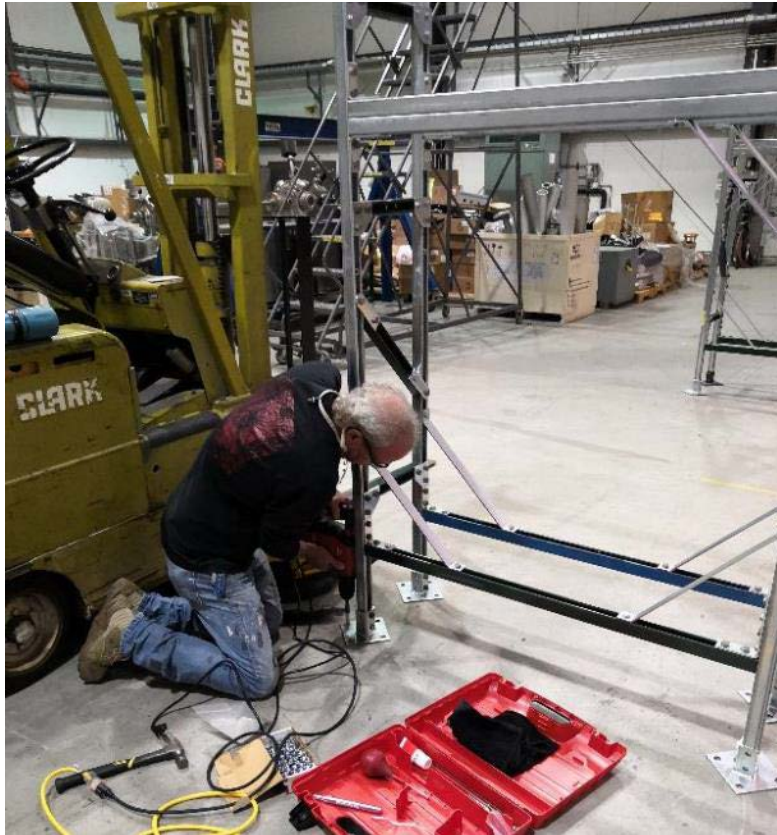
# Mockup Construction

Assemble Unistrut frames





# Mockup Construction



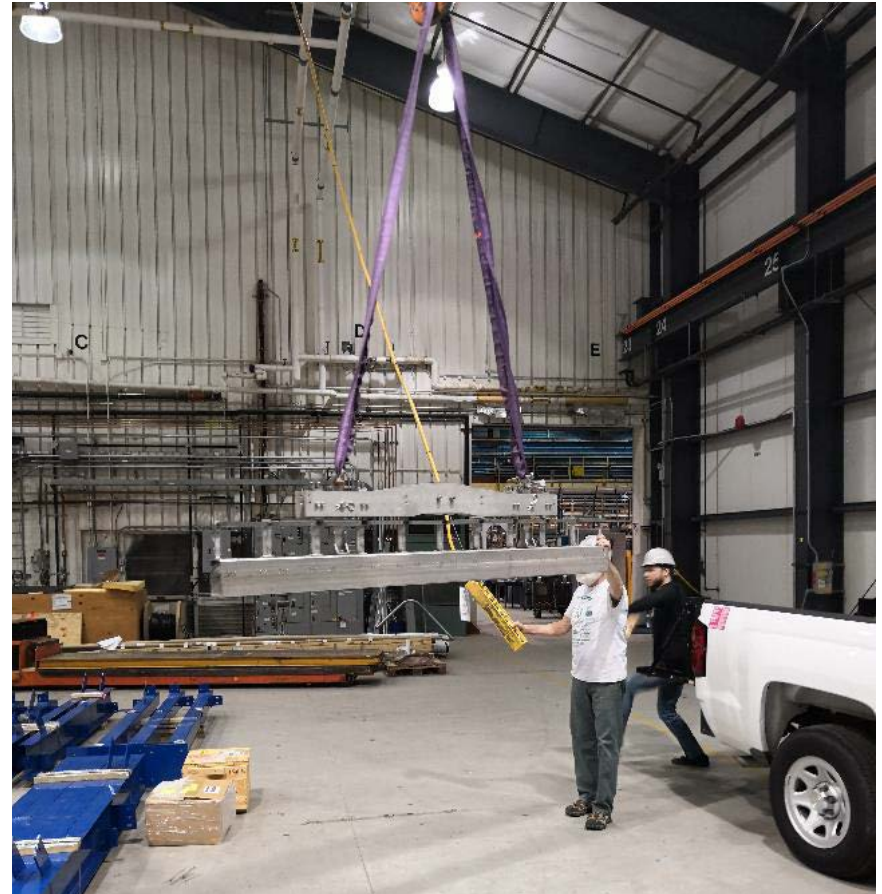
## Install DSS beam



# Mockup Construction



## Assemble APA head tube and yoke





# Mockup Construction

Attach APA + yoke to DSS beam



# Mockup Construction



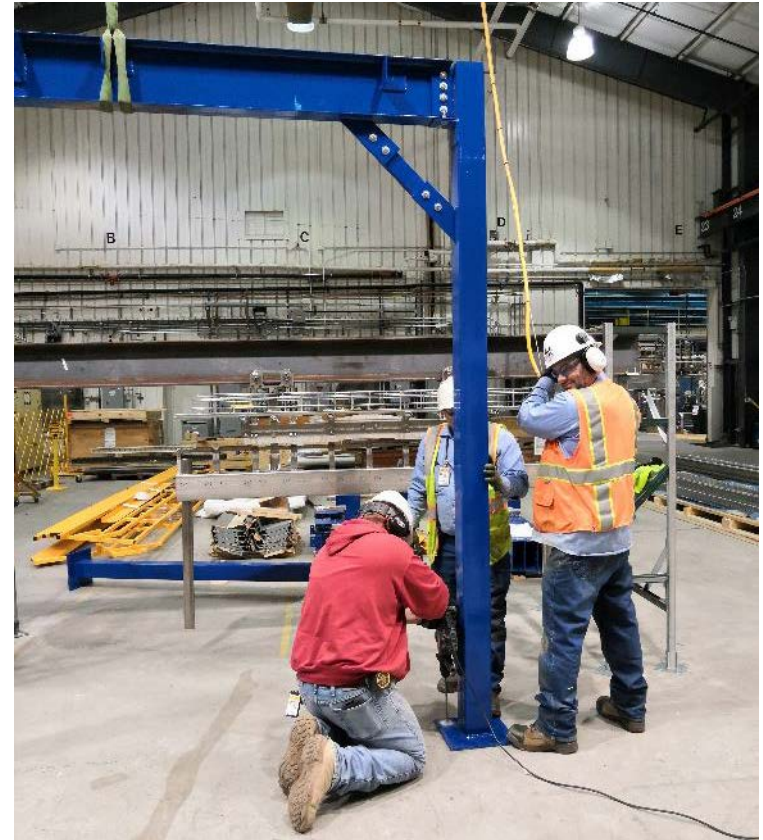
## Install cable tray system





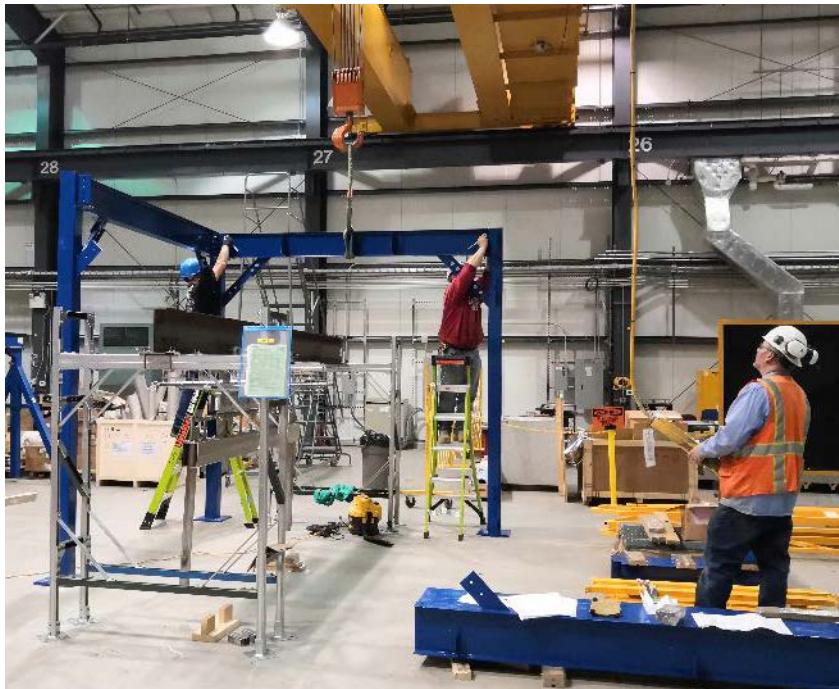
# Mockup Construction

Construct mezzanine:  
1<sup>st</sup> two columns and 1<sup>st</sup> beam



# Mockup Construction

Construct mezzanine





# Mockup Construction



## Construct mezzanine



# Mockup Construction

Construct mezzanine





# Mockup Construction

Signal feedthrough to be installed...



# What we can do with the mockup:

CE box installation on upper APA

CE box installation on lower APA

Cable routing on upper APA

Cable routing on lower APA

Cabling through signal feedthrough and feedthrough design verification

Cable bundle support on upper APA head tube

Interference check among components installed on the APA

CE flange and PD flange installation

New trolley design verification

Cold Box patch panel design

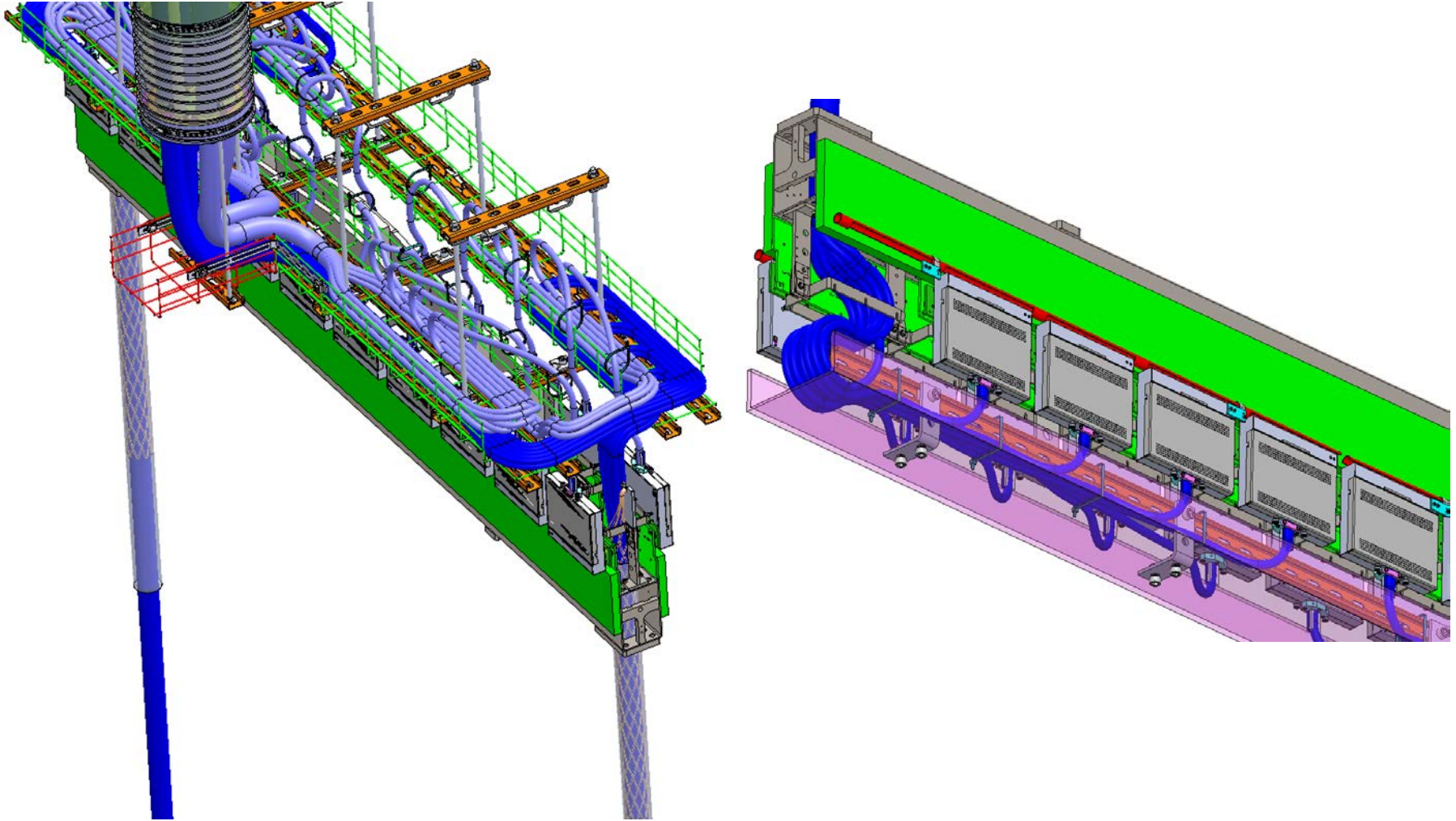
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# Backup slides



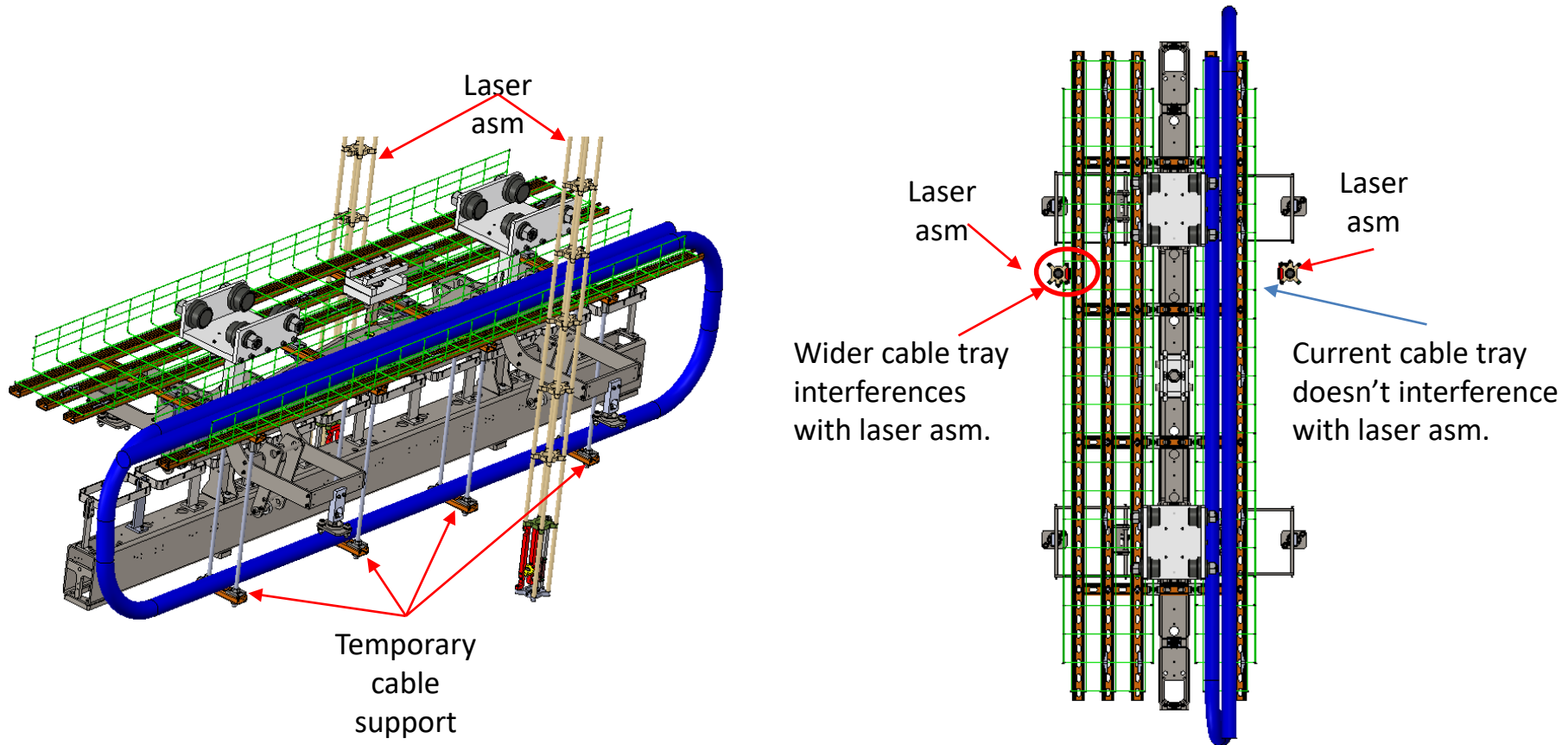
## Cable routing on upper APA and lower APA



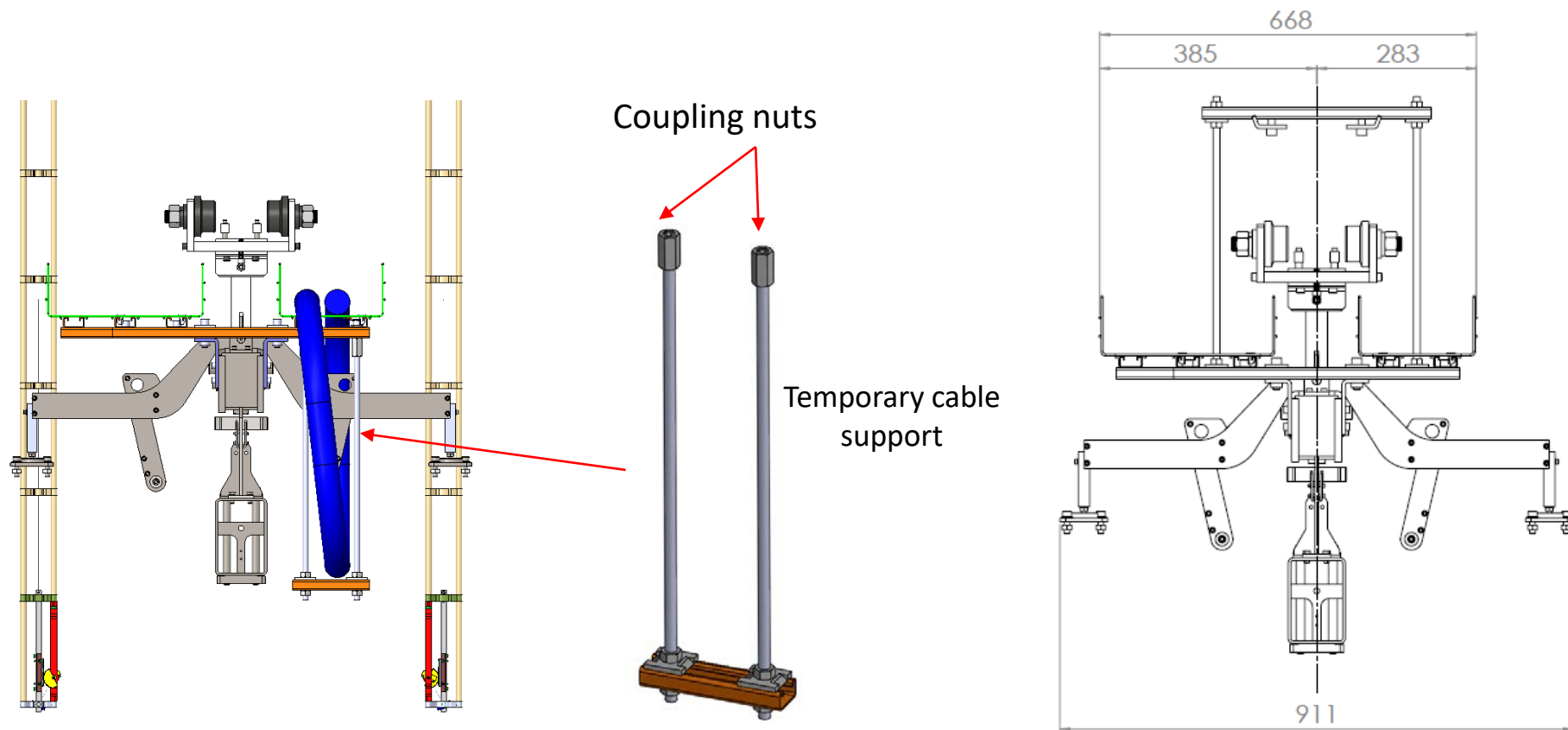
# Alternative solutions to support cables

Solution 1: Wider cable tray on the front side of the APA

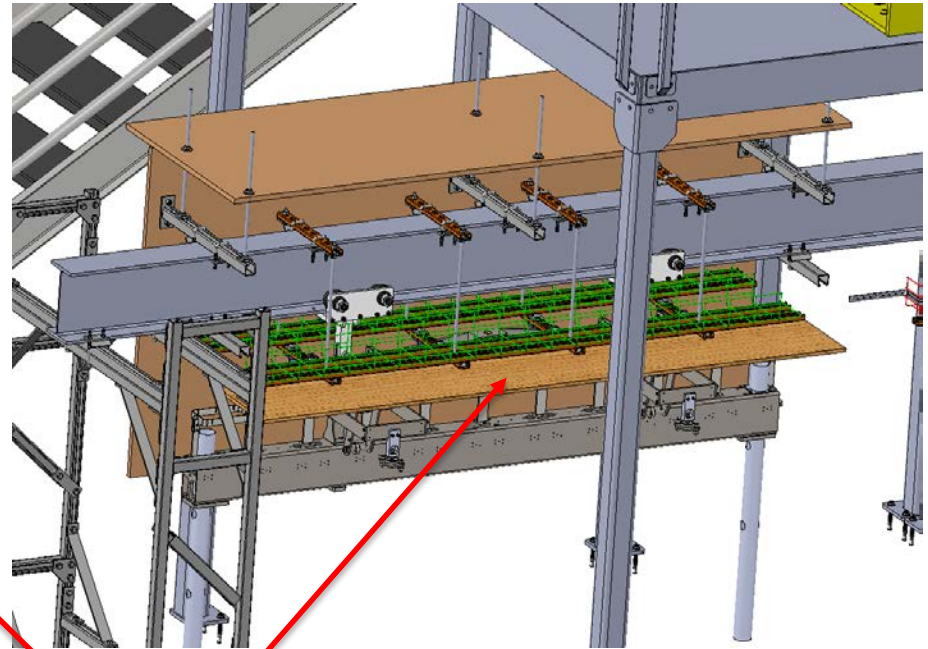
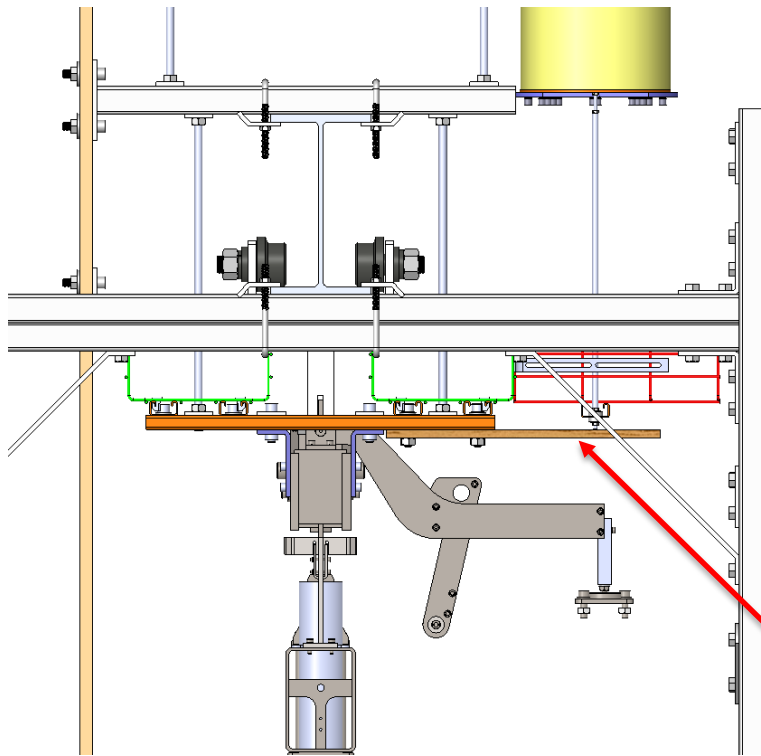
Solution 2: Temporary cable support installed underneath the front cable tray



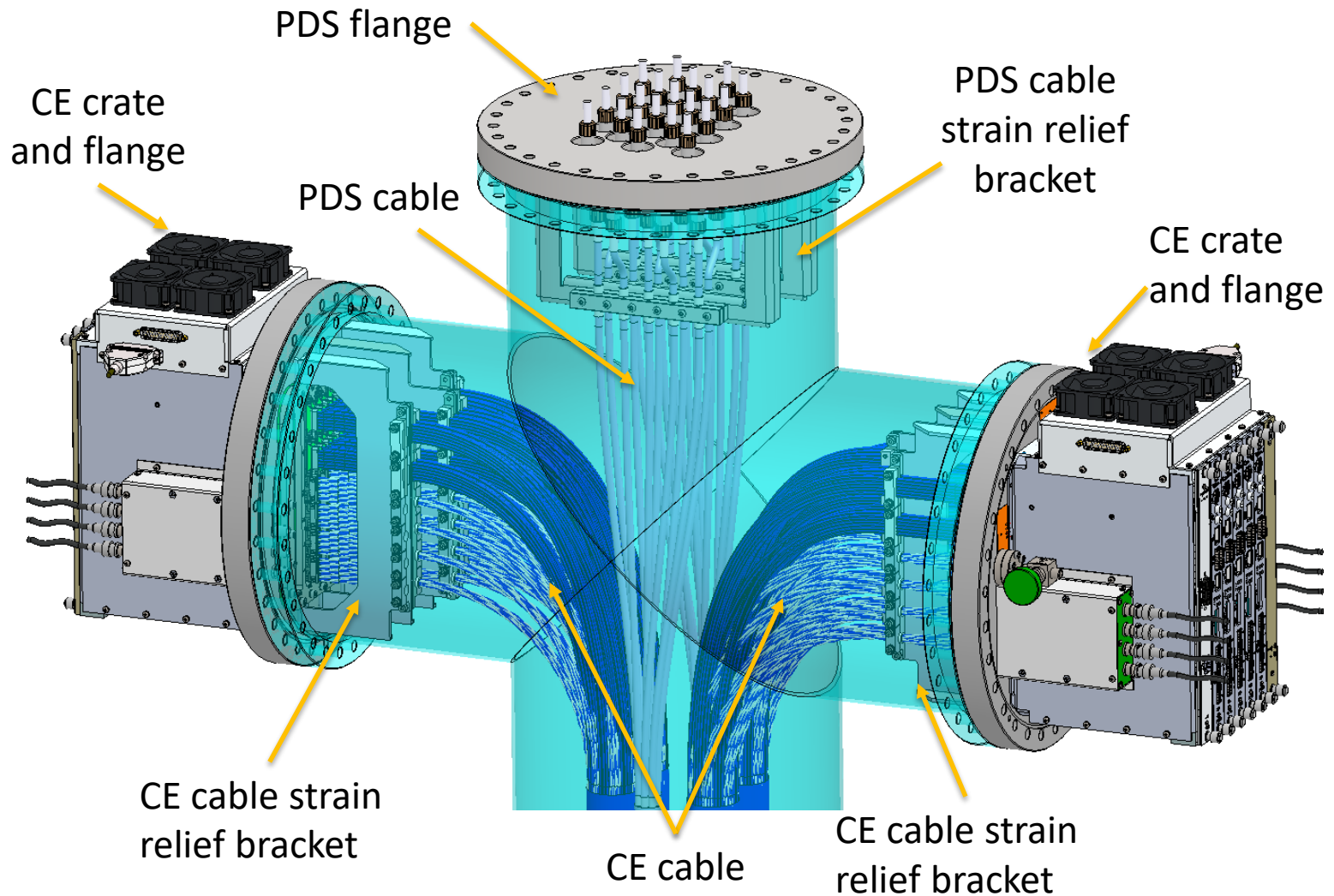
Temporary cable supports are attached underneath the cable tray by coupling nuts.



Temporary cable supports are removed after cabling completed and will be reused for the next APA cabling.

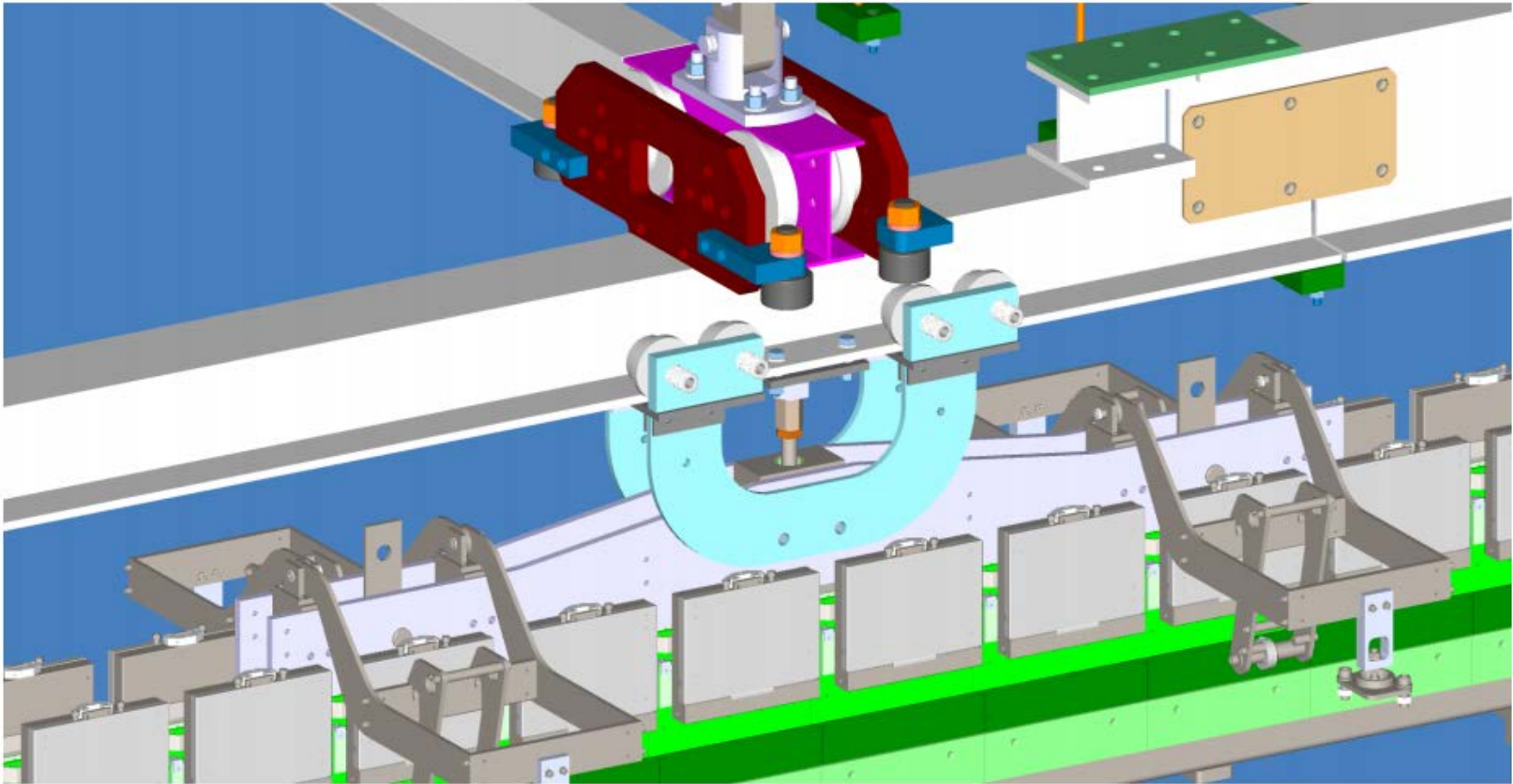


During cable routing, a board temporarily installed underneath the cable tray to prevent cables from falling to the APA wire level.





## DSS



- New Trolley
- New Yoke-to-DSS connection
- New DSS rail-to-DSS rail connection
- New Feedthrough-to-DSS rail connection