

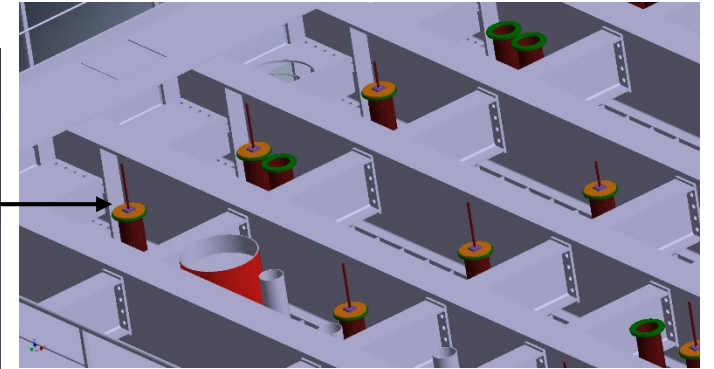
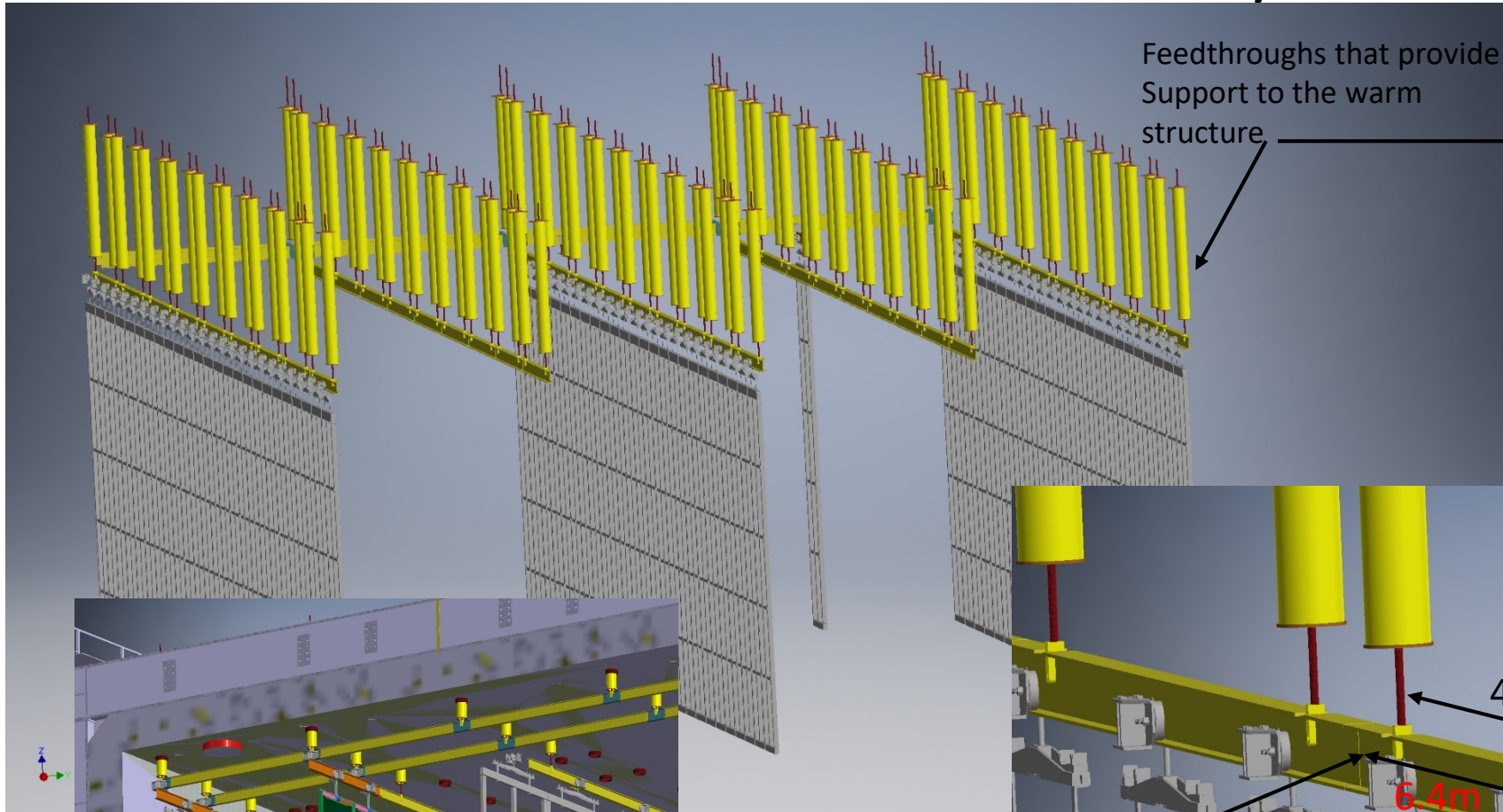
DSS and APA Gaps

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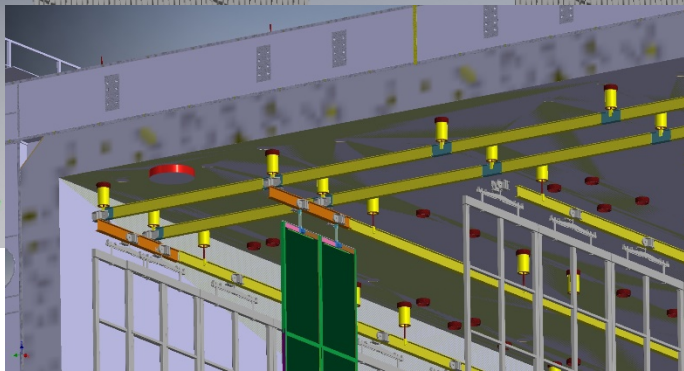
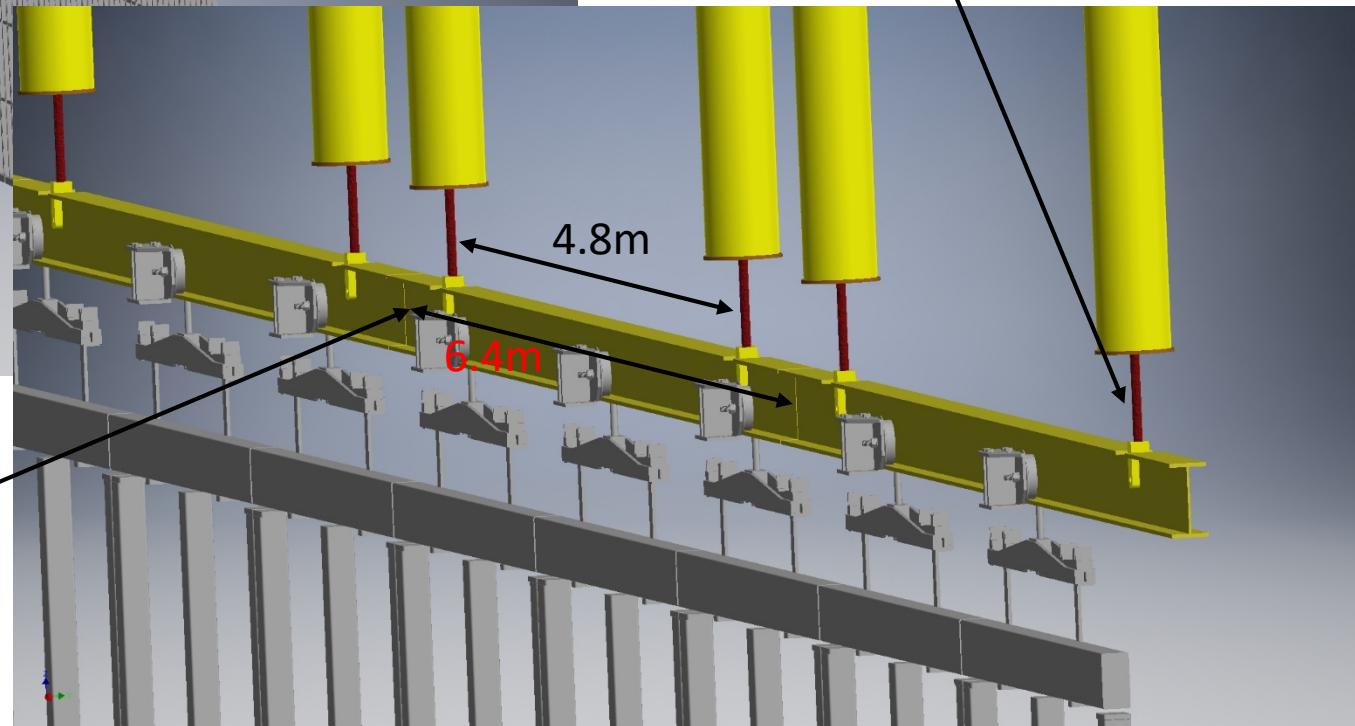
ANL

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DSS/APA Layout



Hanging rods that support Beams and allow lateral motion

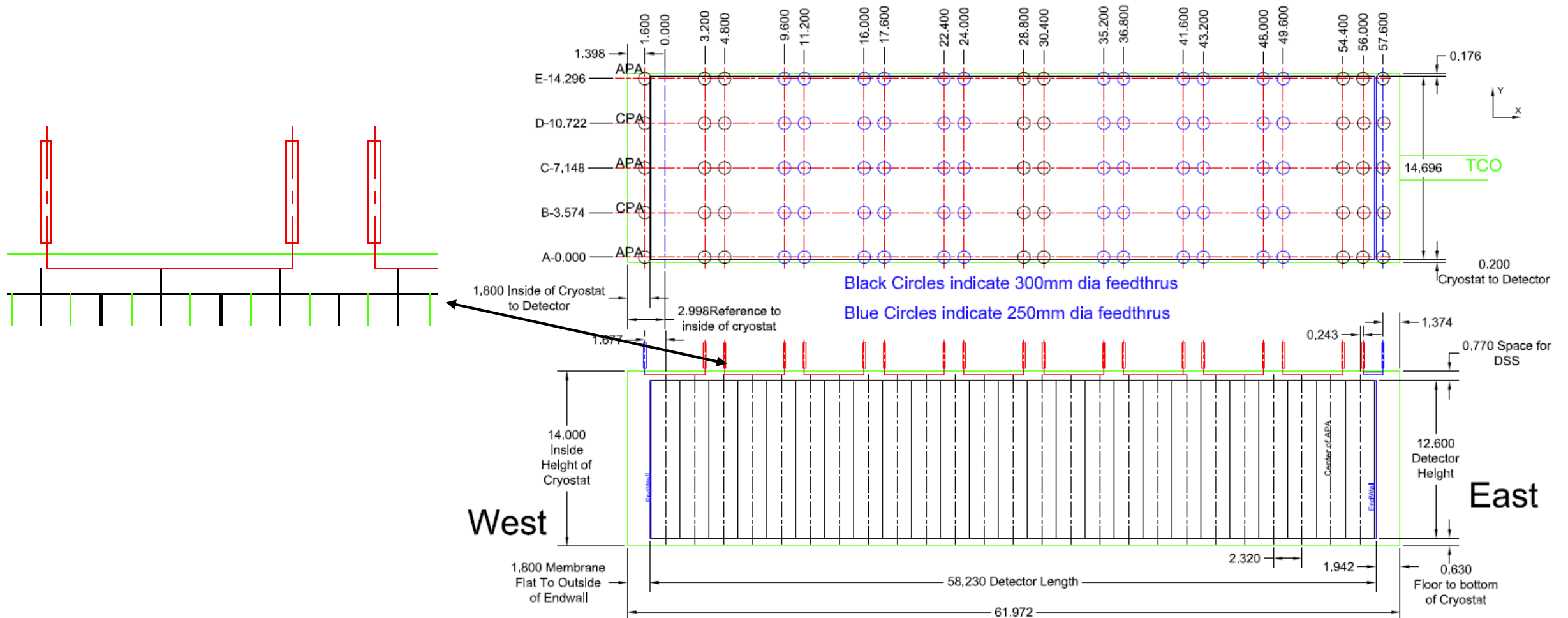


Boundary between beams

The DSS provides support to the detector from the warm vessel

DSS/APA Layout

Pitch of supports unfortunately does not match the pitch of the APAs



DSS/Switchyard Design Specifications

- Design specifications have been written and posted at DocDB 5285
- Main specifications are:
 - Support the weight, both dry and wet, of the detector (Endwall, top/bottom FC, APA, CPA)
 - Be able to accommodate the roof movement – THE ROOF DEFORMATIONS NEED TO BE DEFINED
 - Accommodate the variation in the fee thru locations and variation in the flange angle due to installation tolerances and the loading on the warm structure.
 - Accommodate the shrinkage of the detector and DSS from ambient temperatures to LAr temperatures.
 - Accommodate the installation of the detector.
 - Minimize the gaps that develop between APAs during cool down less than ??mm (WHAT IS THE CORRECT VALUE?)

APA Gaps During Cool Down

- Shrinkage can be accommodated in two ways:
 - The DSS beam can be continuous from the center of the detector to the end of the detector; the beam would shrink toward the center and no gaps develop.
 - *Requires DSS supports to accommodate 80mm of movement at the ends, the entire detector shrinks/moves*
 - The DSS beams can be segmented. Gaps open up between APA.
 - *There is less movement of detector and DSS supports accommodate a small shrinkage*
- A proposed design uses beams that are 6.4m long, which support typically 3 APAs. This design results in a zero gap developing between the three APA's on the same beam but a 17mm gap opening up between adjacent APA's that are on separate beam. Roughly there will be a 17mm gap between every 3rd and 4th APA.

Conclusion

- We are at the beginning stage of DSS design
- A design specification has been written for the DSS – we are trying to define now what design requirements need to be met.
- These specifications also impact the feedthrough design which is being fixed now.
- There are advantages to having the DSS beams divided into independent segments – less detector movement during cool down and the supports have to accommodate significantly less movement.
- The proposed design results in a ~17mm gap between every 3rd and 4th APA