New FC Endwall Tools and Assembly Tests

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HV/FC/CA meeting
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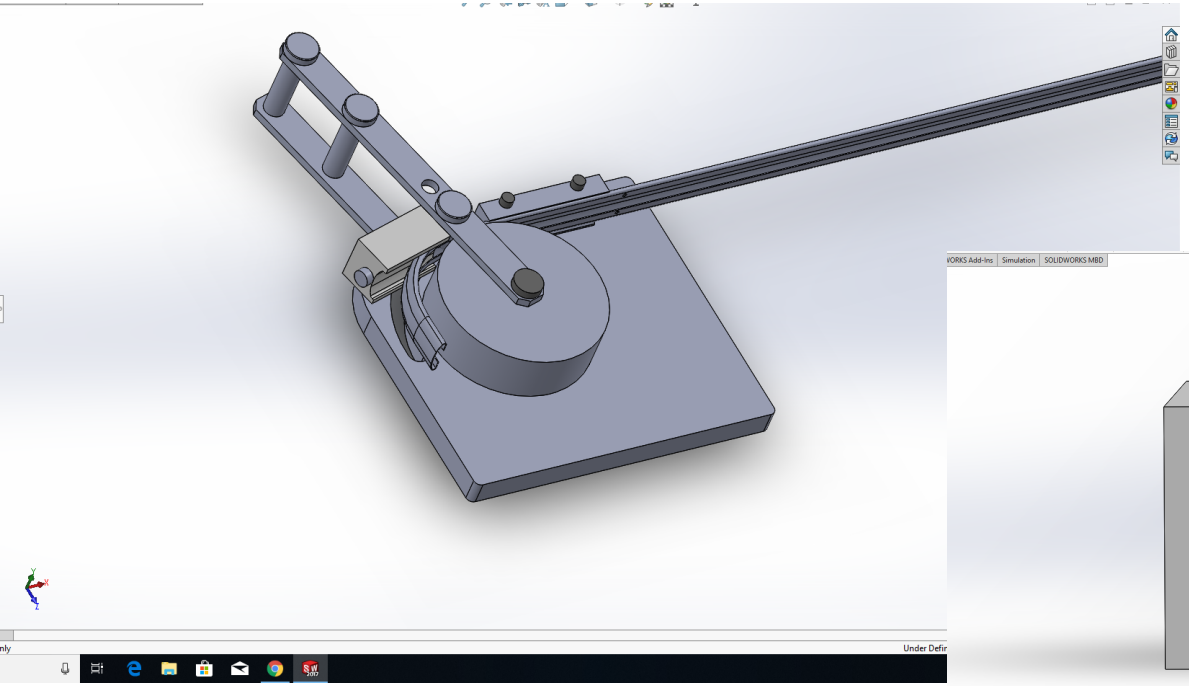
Overview

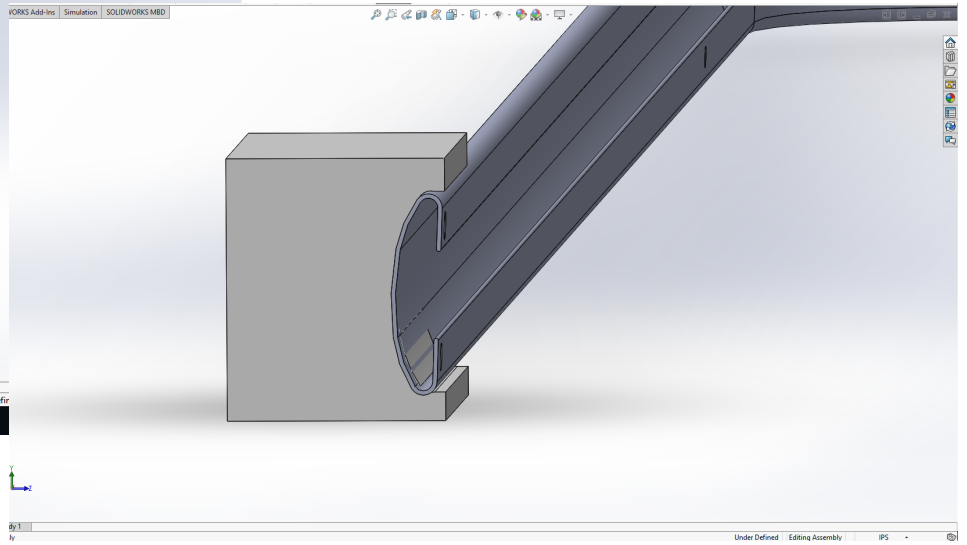
- Profile bending tool
- Comments/feedback on preliminary FC endwall design
- Suggestions of alternate components/features

Status Profile Bending Tool

Model by Jyra Bode

July version of model (some revisions expected and features missing)

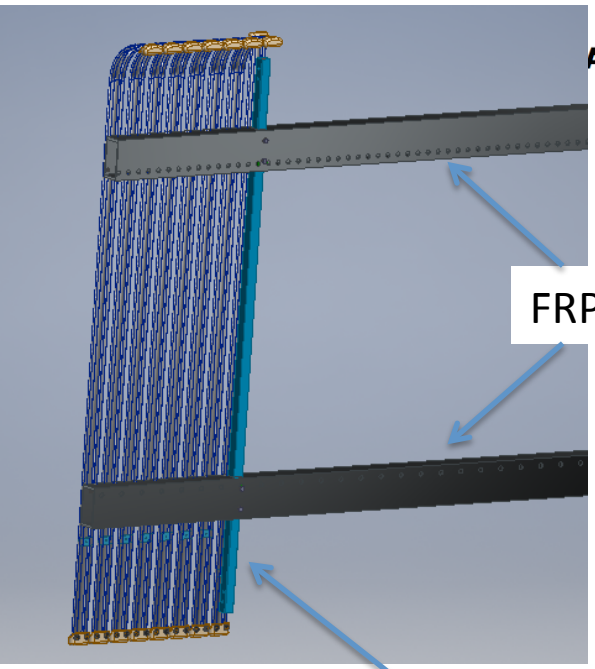


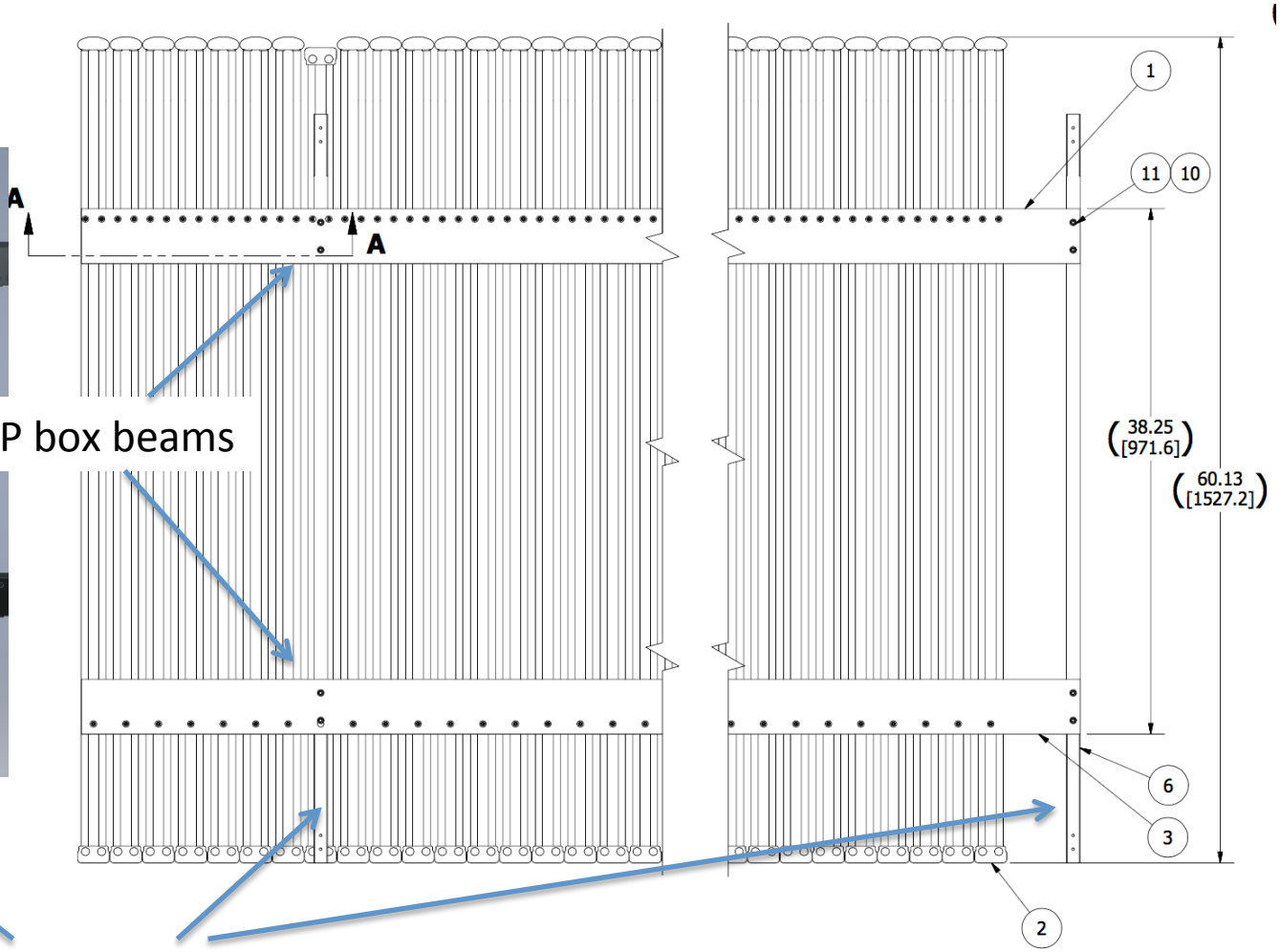


→ Revised version of model and drawings expected today
→ Finalize by end of the week

→ Nearly ready to purchase parts, construct bending tool and perform tests

New FC Endwall Design (Preliminary)

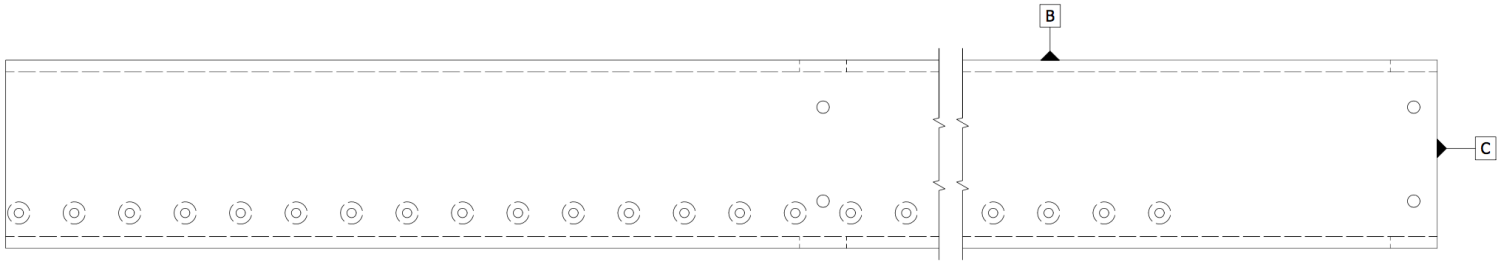




FRP box beams

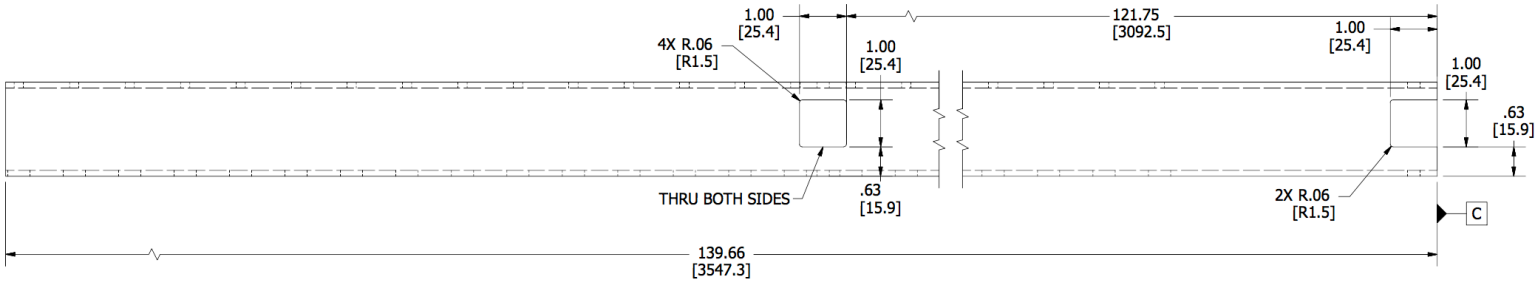
Al square beams

FRP Box Beams



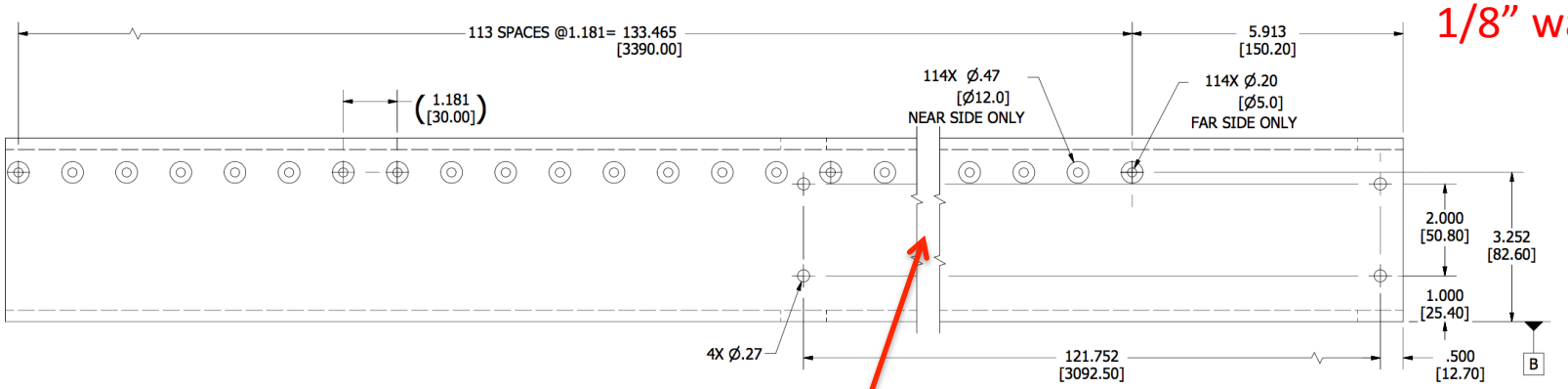
Machined up to here

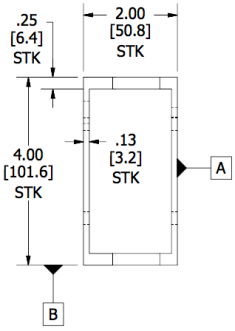
Machined up to here according to specs



2” x 4”

1/8” wall thickness

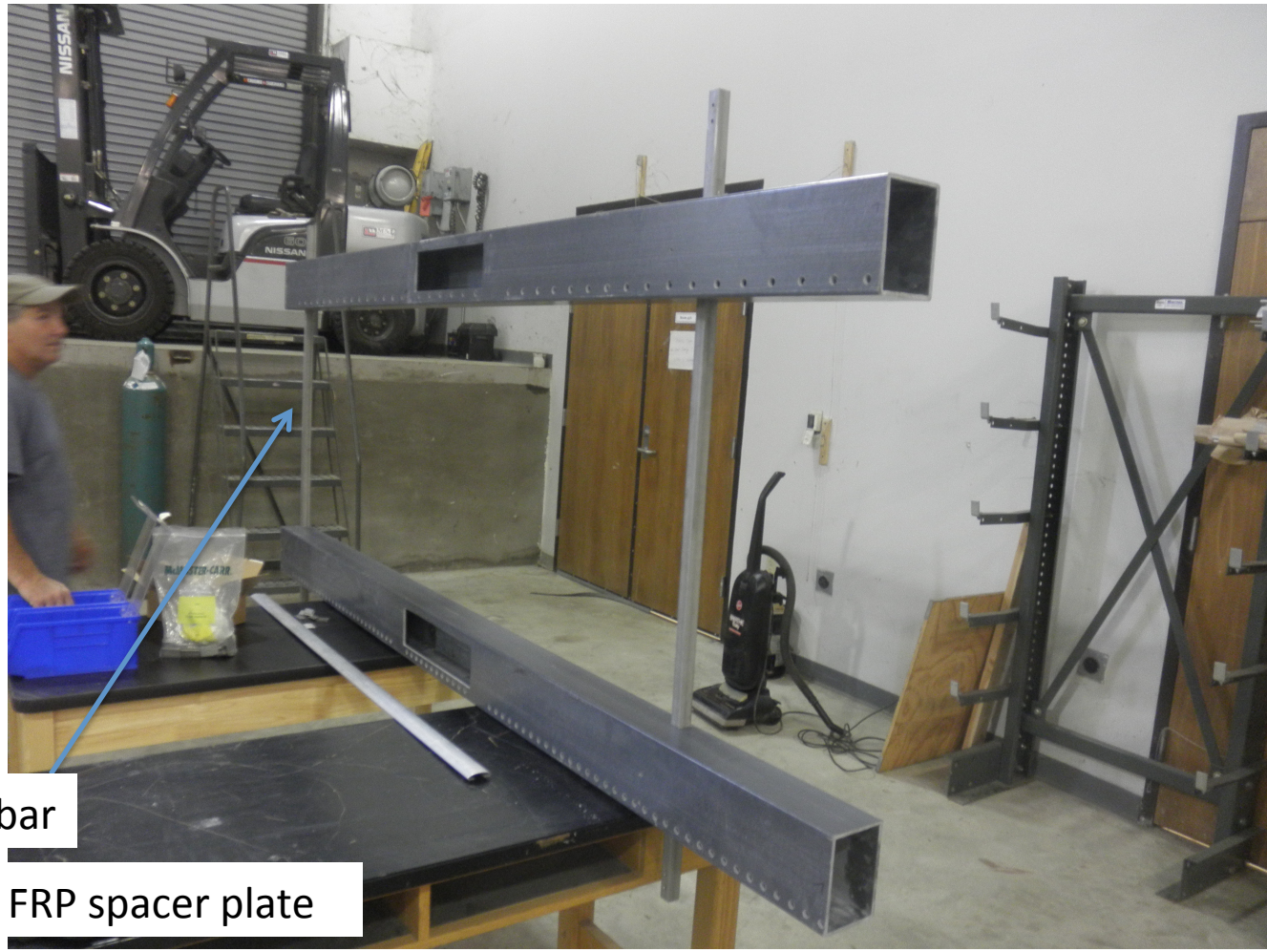




Used (reduced) central parts for exploratory options

FRP Box Beams

used 4” x 6” box beams (shorter lengths – drops from ProrotDUNE I construction)
1/4” wall thickness



1) Recommend to oversize square cut outs in box beams (to facilitate assembly and FRP box beam tolerances)

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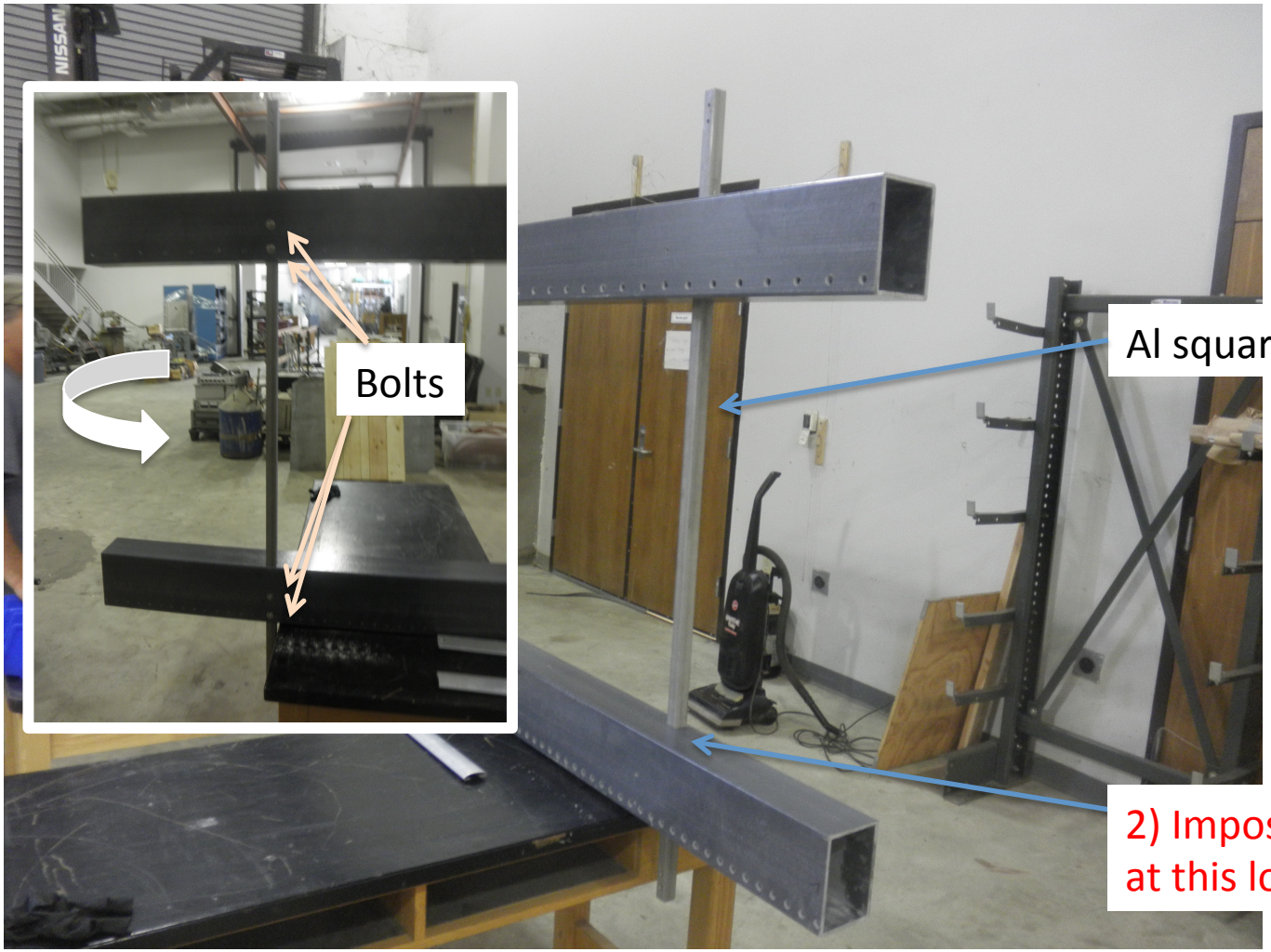

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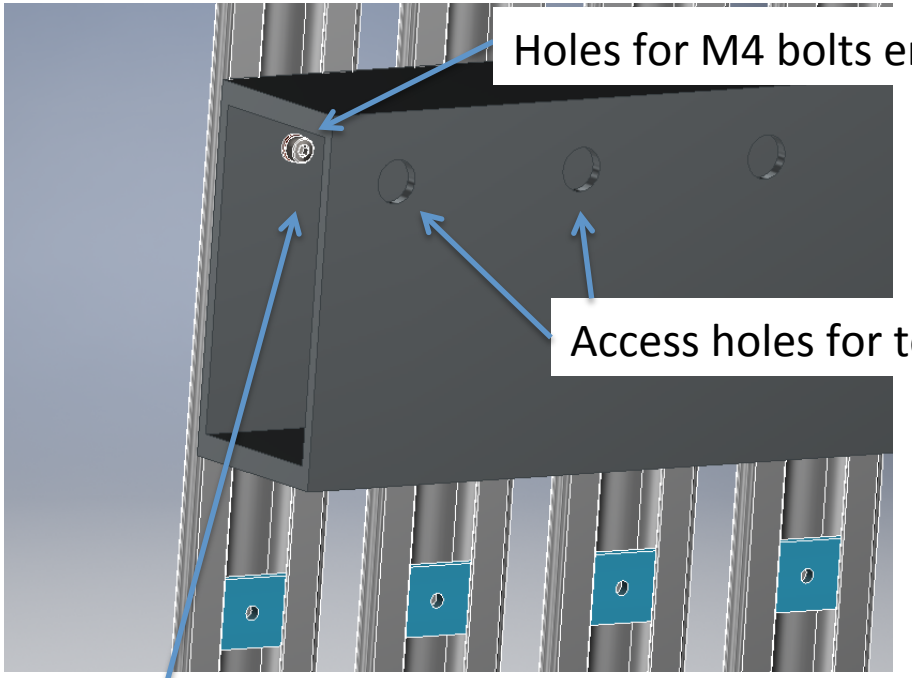
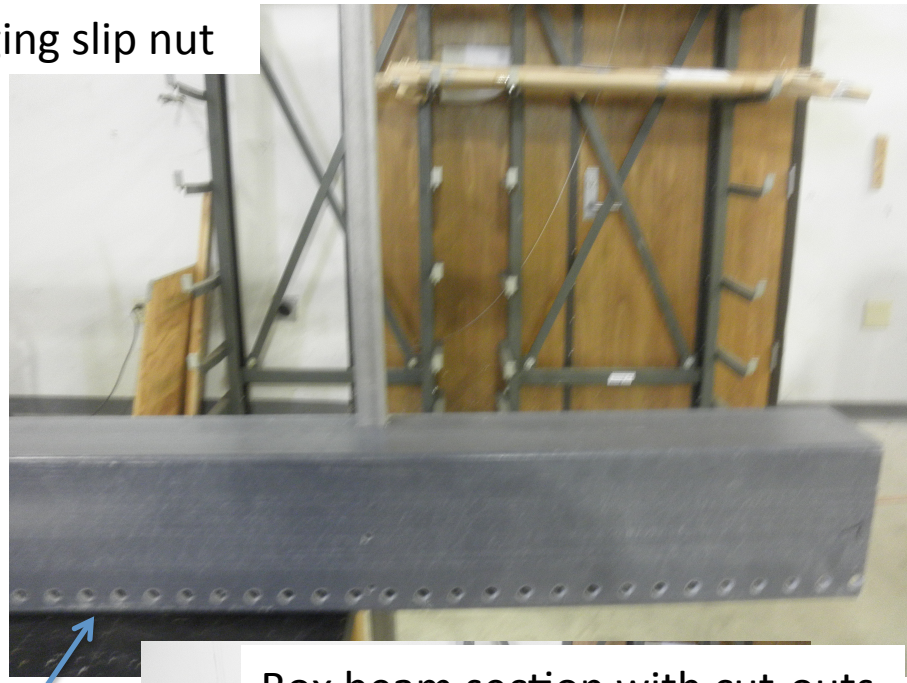
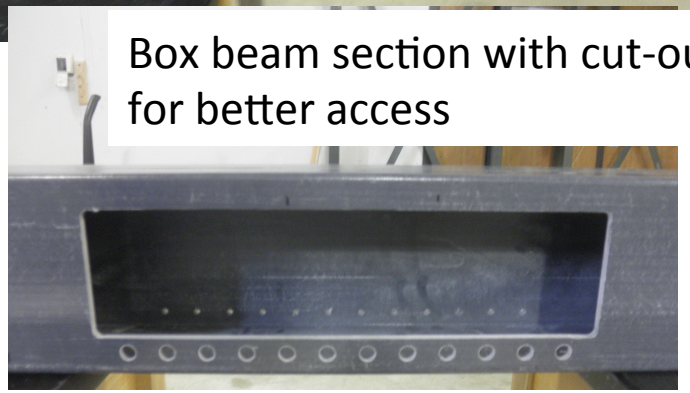
Al Profile Mounting





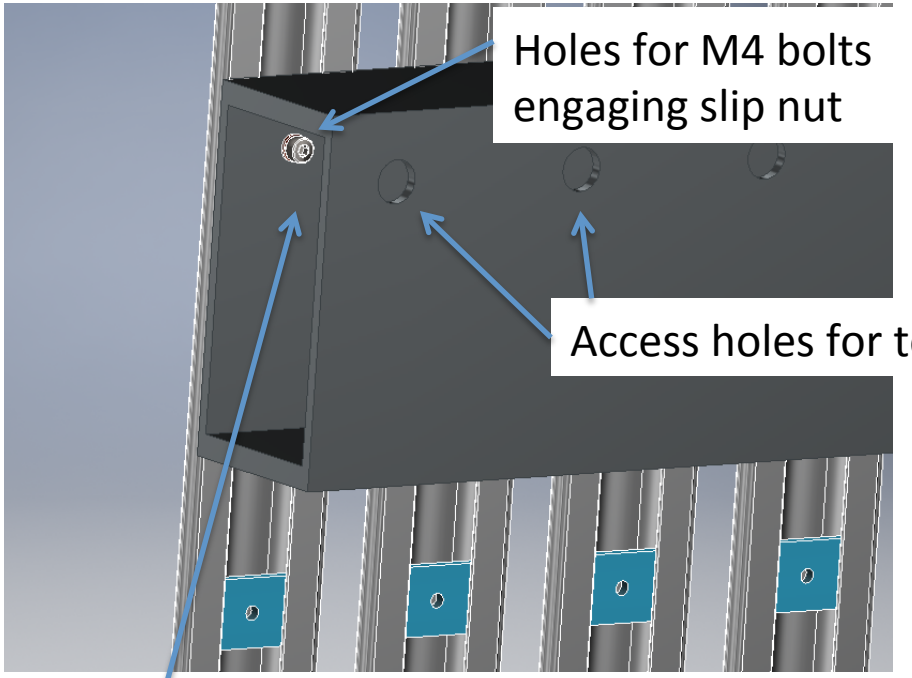
Test:

- 1st box beam for single hole slip nuts
- 2nd box beam for dual hole slip nuts



→ Mounting of Al profiles with dual hole slip nut is very cumbersome (even in easy access section of box beam)

Al Profile Mounting



Pre-mounting of single hole slip nuts

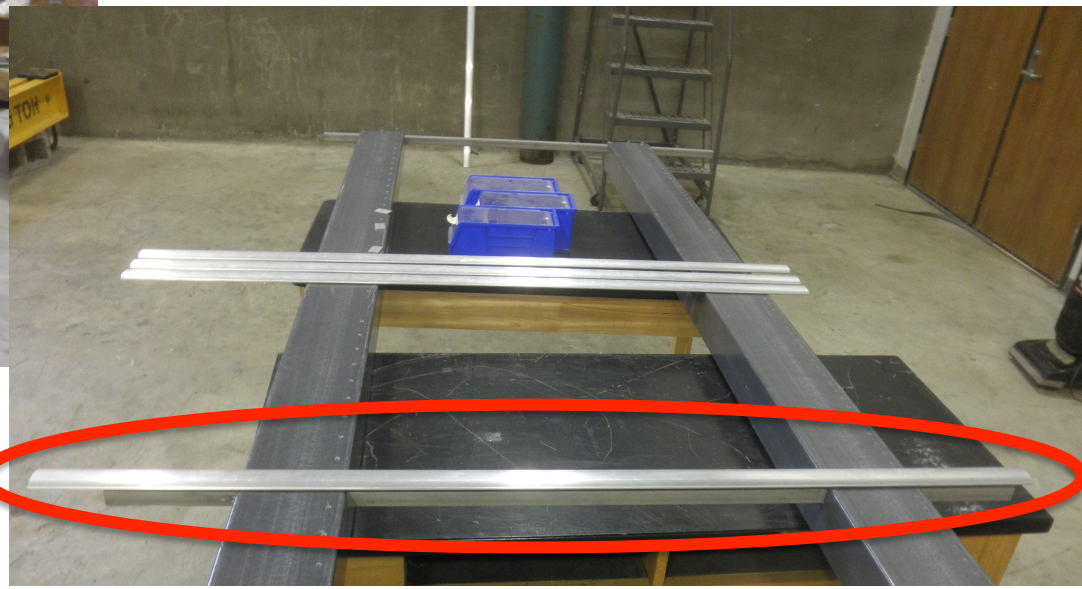
Sliding profiles over pre-mounted slip nuts And tightening bolts is straight forward

Test:

- 1st box beam foresees single hole slip nuts

→ Could increase size of single hole slip nuts if concerned about profiles slipping

Partial Endwall Module



→Interference of holes and mounting for Al square bar and Al profile

→ Mounting of resistive divider board is unresolved for this Al profile

Summary/Comments

- Tested specific design features of new FC endwall

→Some lessons learned (see comments on earlier slides)

- Why not use FRP plates: 6” wide, 1” (or ¾”) thick ?

→Could eliminate all issues related to mounting Al profiles on double wall of box beam

→Significant simplification (parts manufacture, assembly)

→Potential for cost savings

→Need to check: horizontal stiffness

Al bars and Al profiles (not shown) mounted on opposite sides of FRP plates