

Suggestions for Field Cage Assembly Table Improvements

Cristobal Garces

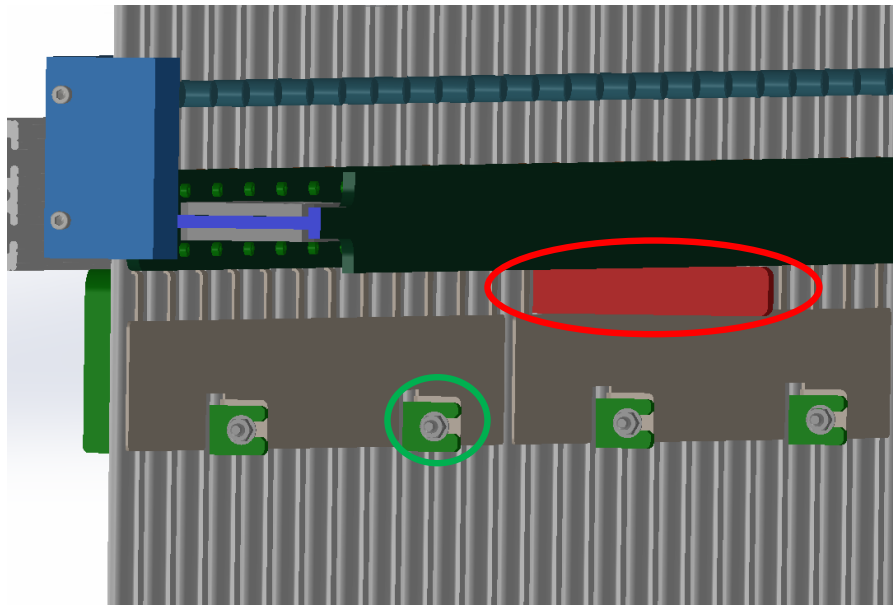
UTA HEP

January 14, 2020

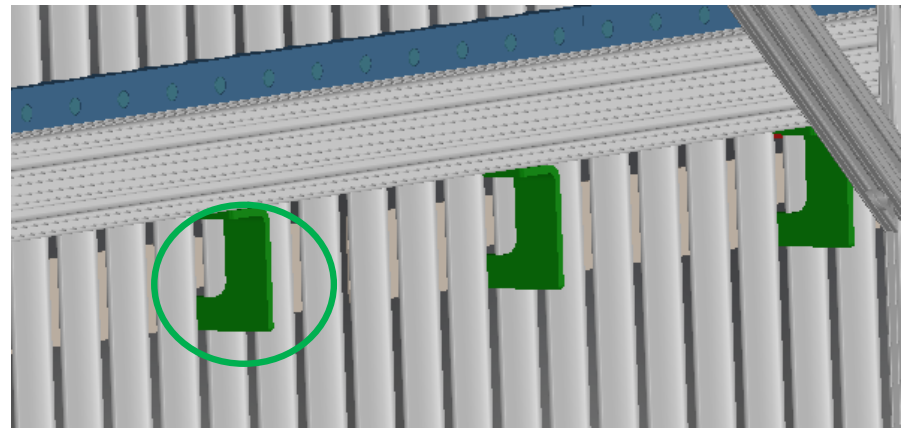
Concerns with the Current Assembly Table

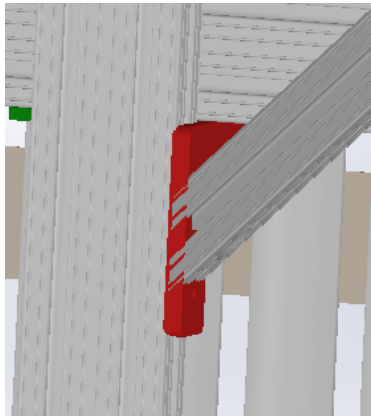
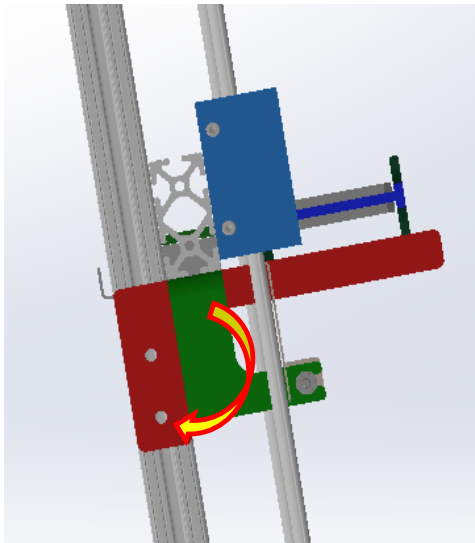
- Parts protruding past the height of the aluminum profiles may catch the profiles during lifting.
 - If 1 mm height difference on the profile divider was enough to raise concerns, surely the I-Beam support and profile nut stopper supports should be re-evaluated.
 - Both of which are much greater than 1 mm. *Seen on pg. 3

I-beam support is 12 cm higher than the profiles – 4 total



Profile slip nut support is 2.7 cm higher than profiles – 16 total





<https://www.mcmaster.com/3126a46-3126A119>

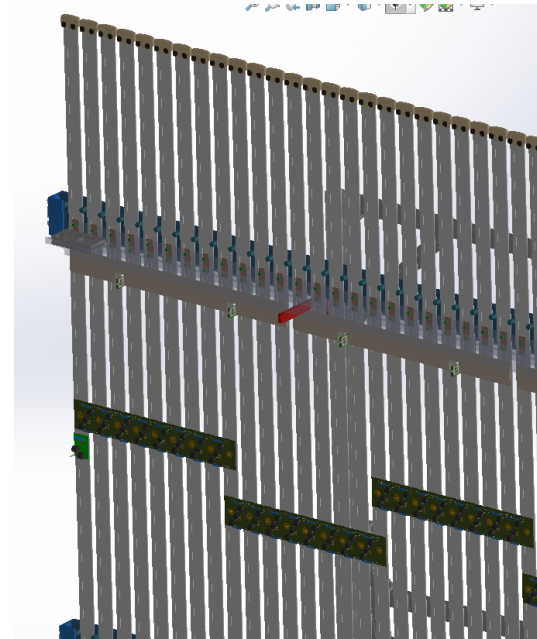
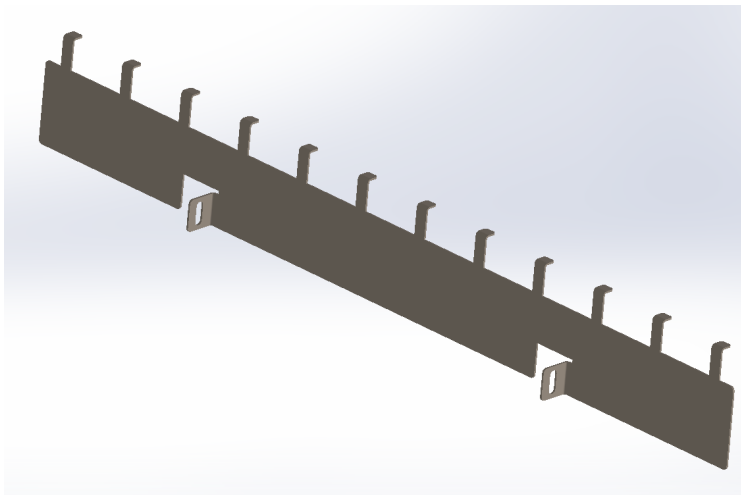
I-Beam Support Bar

- 4 total: In addition to the protrusion, two cannot be placed in the location in the current design due to large interferences with the assembly table frame
- Ideas to eliminate the need to unmount the I-beam support bar after every module completion:
 - Allow for pivoting motion on corner of support piece. (Will need a bearing?)
 - Use spring plunger that allows for locking. Ideally, we should just be able to disengage the ball to allow the support bar to swivel down.

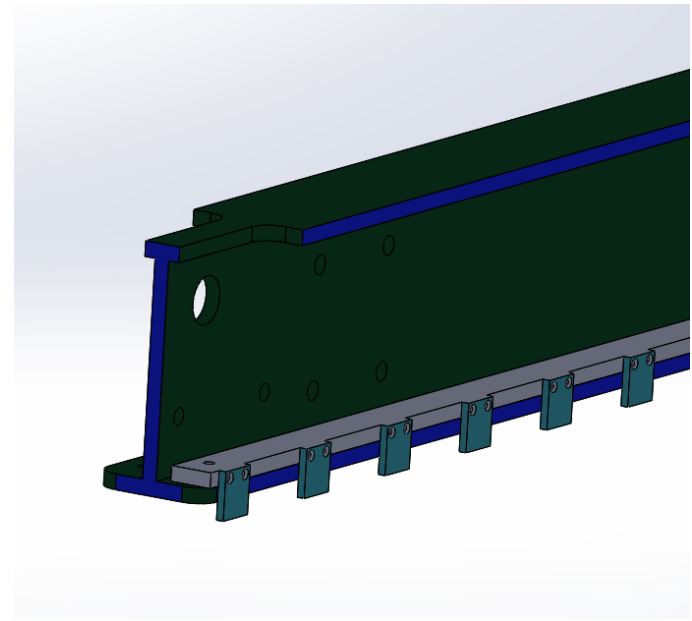
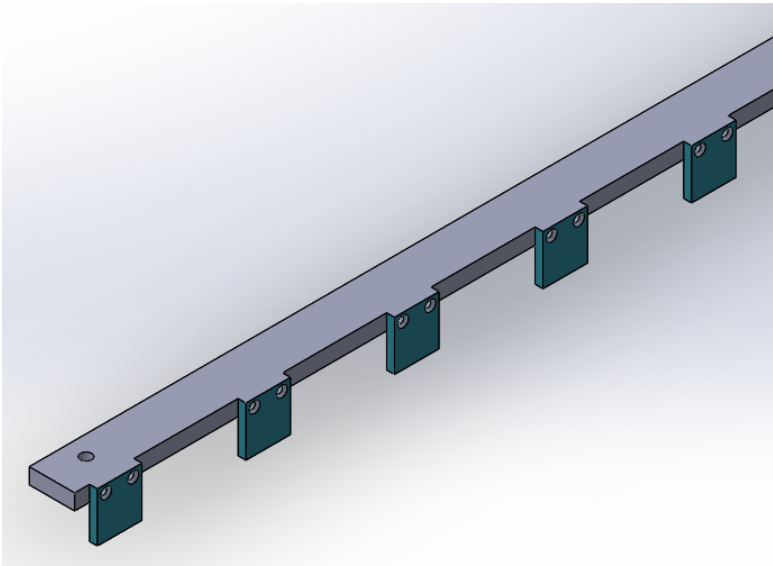
Profile Slip Nut Stopper

- Purpose of the stopper is to align the slip nuts with the holes on the I-beam.
- Stopper must be easily mounted and unmounted to reduce total time to complete a module
- Also the current design of the stopper uses a support structure that will significantly interfere with the aluminum profiles during lifting unless removed (which will waste time)

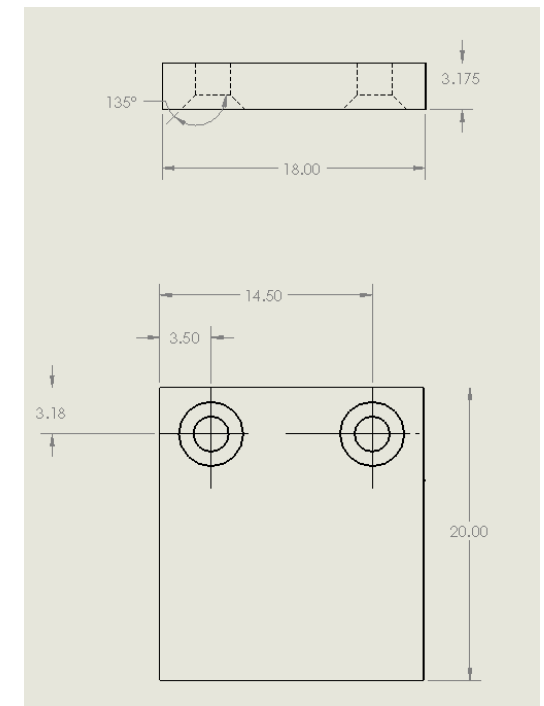
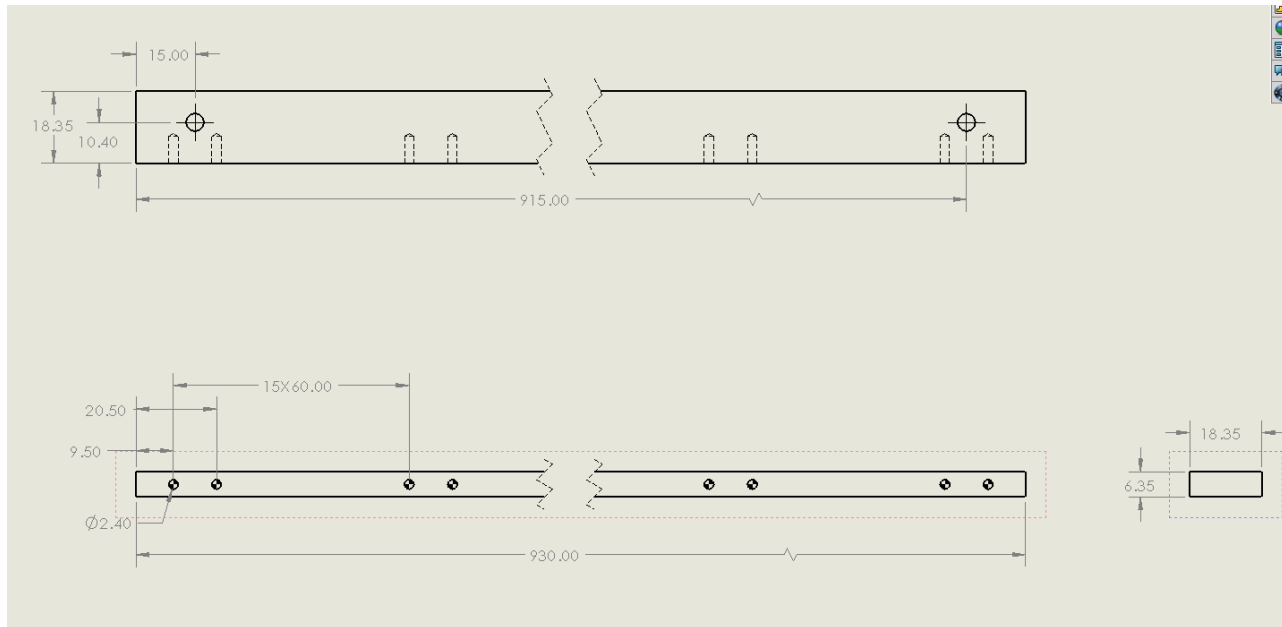
Current Profile Slip Nut Stoppers

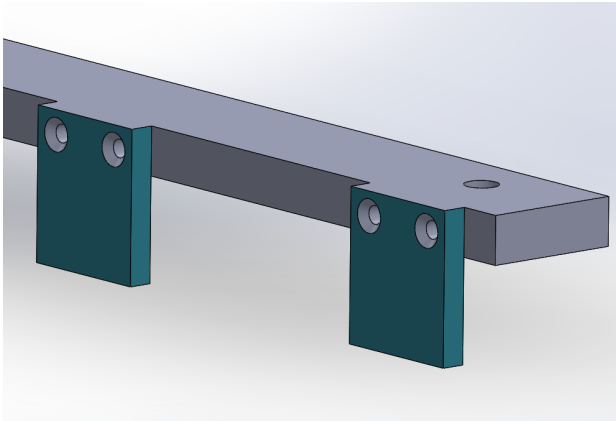


Proposed Slip Nut Stopper



Technical Drawing of Slip Nut Stopper





<https://www.zoro.com/zoro-select-retainer-blk-nylon-14in-1316in-l-pk100-5625pk/i/G5129661/>

Proposed Design Features

- Will use two pieces per stopper.
 - Stopper teeth will be cut from an Al bar stock to the necessary length. And two M2 screws will hold them in place.
 - These should be permanently fixed to allow simple addition and removal to the assembly table.
- There will be 4 slip nut stoppers per side, for a total of 8 altogether.
 - Stoppers will be pinned through the profile hole using plastic retainer fasteners.
- The stopper will be attached to the I-Beam rather than the assembly table.
 - Pros of this include: Reduced time for mounting and unmounting the stoppers and less hardware to worry about.

