ESB & DAQ & Readout

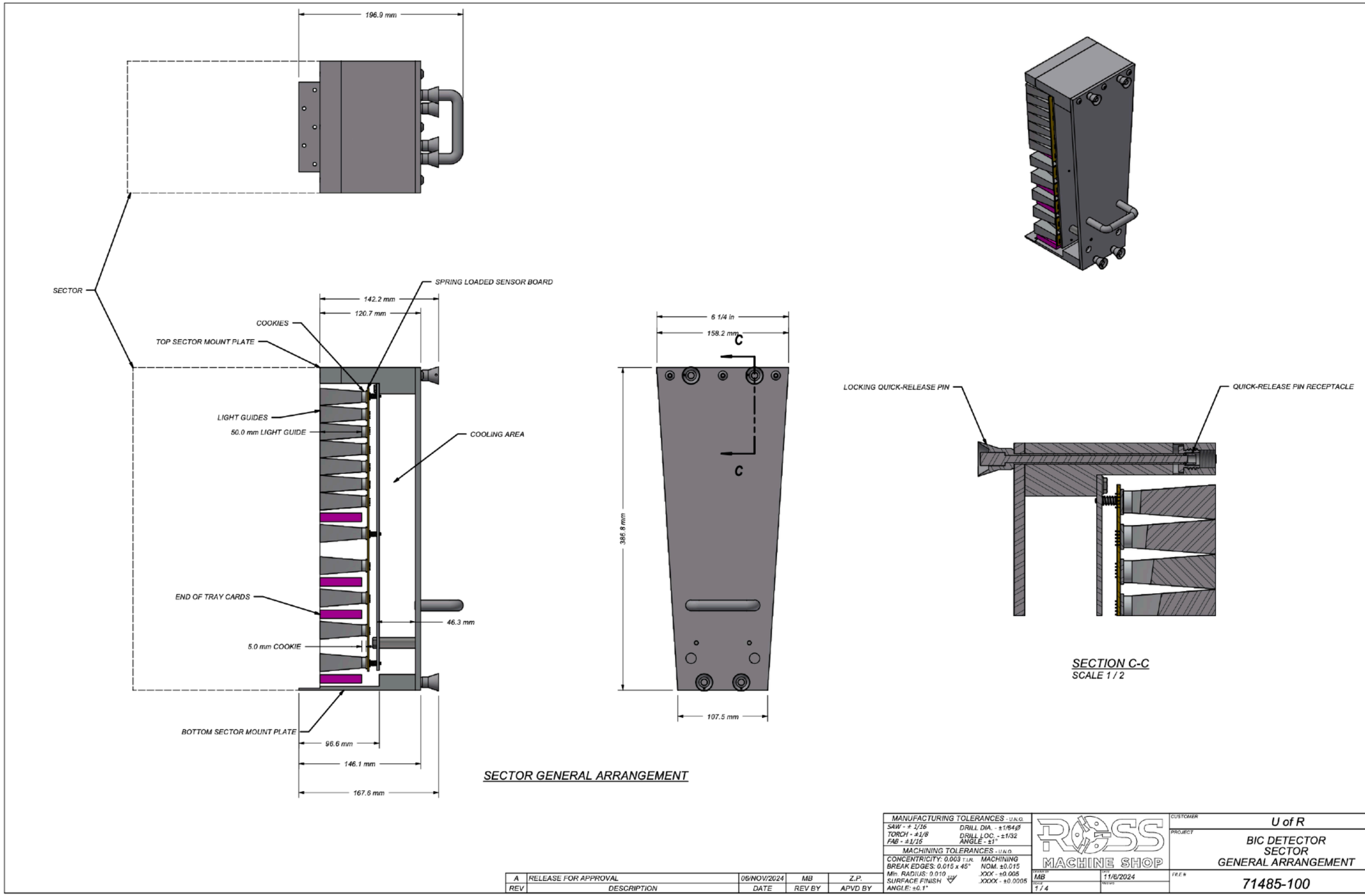
Progress Report

Z. Papandreou

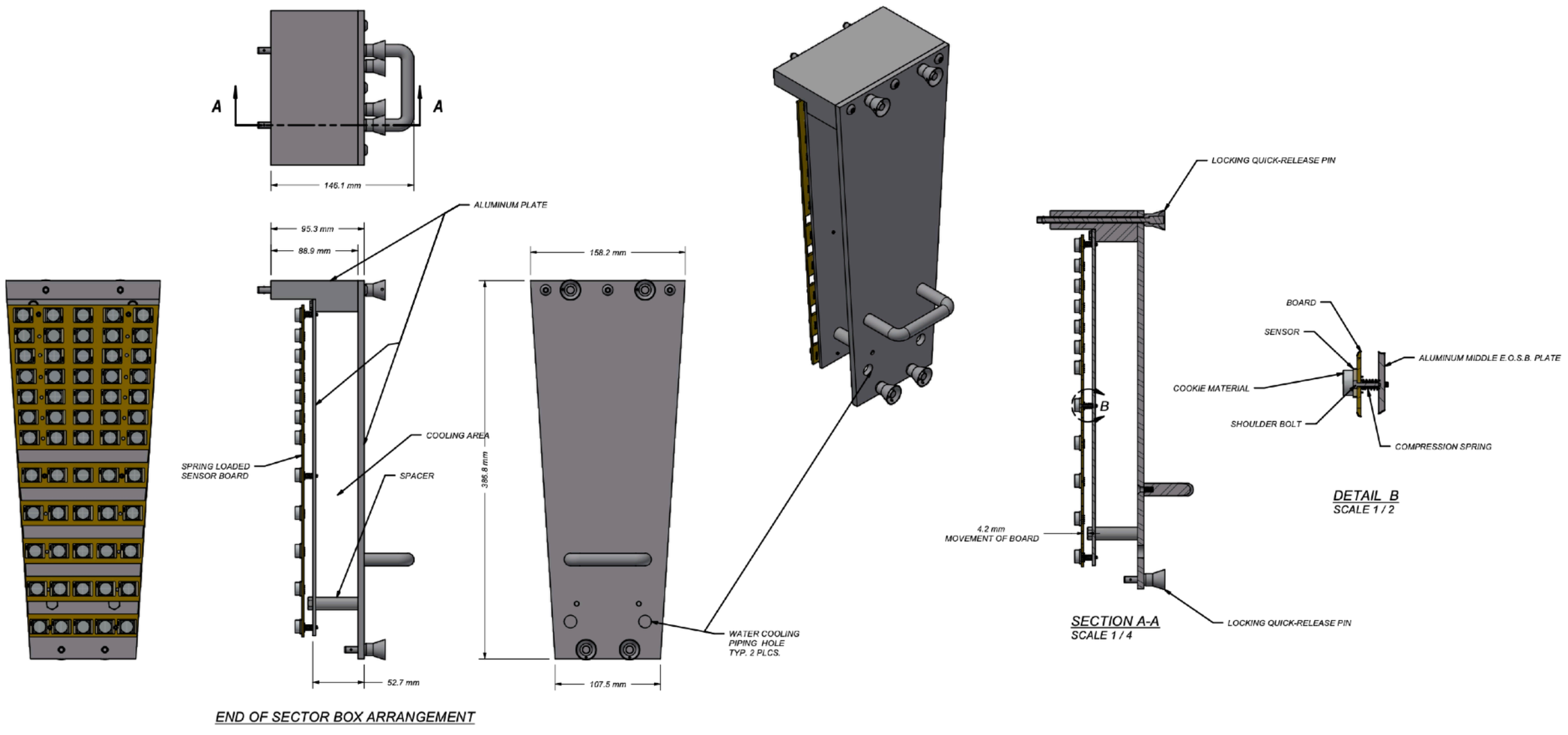
BIC General Meeting

November 22, 2024

ESB Design


196.9 mm
SECTOR
SPRING LOADED SENSOR BOARD
142.2 mm
120.7 mm
COOKIES
TOP SECTOR MOUNT PLATE
LIGHT GUIDES
50.0 mm LIGHT GUIDE
COOLING AREA
END OF TRAY CARDS
46.3 mm
5.0 mm COOKIE
BOTTOM SECTOR MOUNT PLATE
96.6 mm
146.1 mm
167.6 mm
6 1/4 in
158.2 mm
C
C
386.8 mm
107.5 mm
LOCKING QUICK-RELEASE PIN
QUICK-RELEASE PIN RECEPTACLE
SECTION C-C
SCALE 1 / 2
SECTOR GENERAL ARRANGEMENT
MANUFACTURING TOLERANCES - U.N.O.
SAW - ± 1/16
TORCH - ±1/8
FAB - ±1/16
DRILL DIA. - ±1/64Ø
DRILL LOC. - ±1/32
ANGLE - ±1°
MACHINING TOLERANCES - U.N.O.
CONCENTRICITY: 0.003 T.I.R.
BREAK EDGES: 0.015 x 45°
Min. RADIUS: 0.010
SURFACE FINISH
ANGLE: ±0.1°
MACHINING
NOM. ±0.015
XXX - ±0.005
XXXX - ±0.0005
A | RELEASE FOR APPROVAL | 06/NOV/2024 | MB | Z.P.
REV | DESCRIPTION | DATE | REV BY | APVD BY
ROSS MACHINE SHOP
CUSTOMER: U of R
PROJECT: BIC DETECTOR SECTOR GENERAL ARRANGEMENT
DRAWN BY: MB
DATE: 11/6/2024
SHEET: 1 / 4
DWG. N°: 71485-100
REV: A

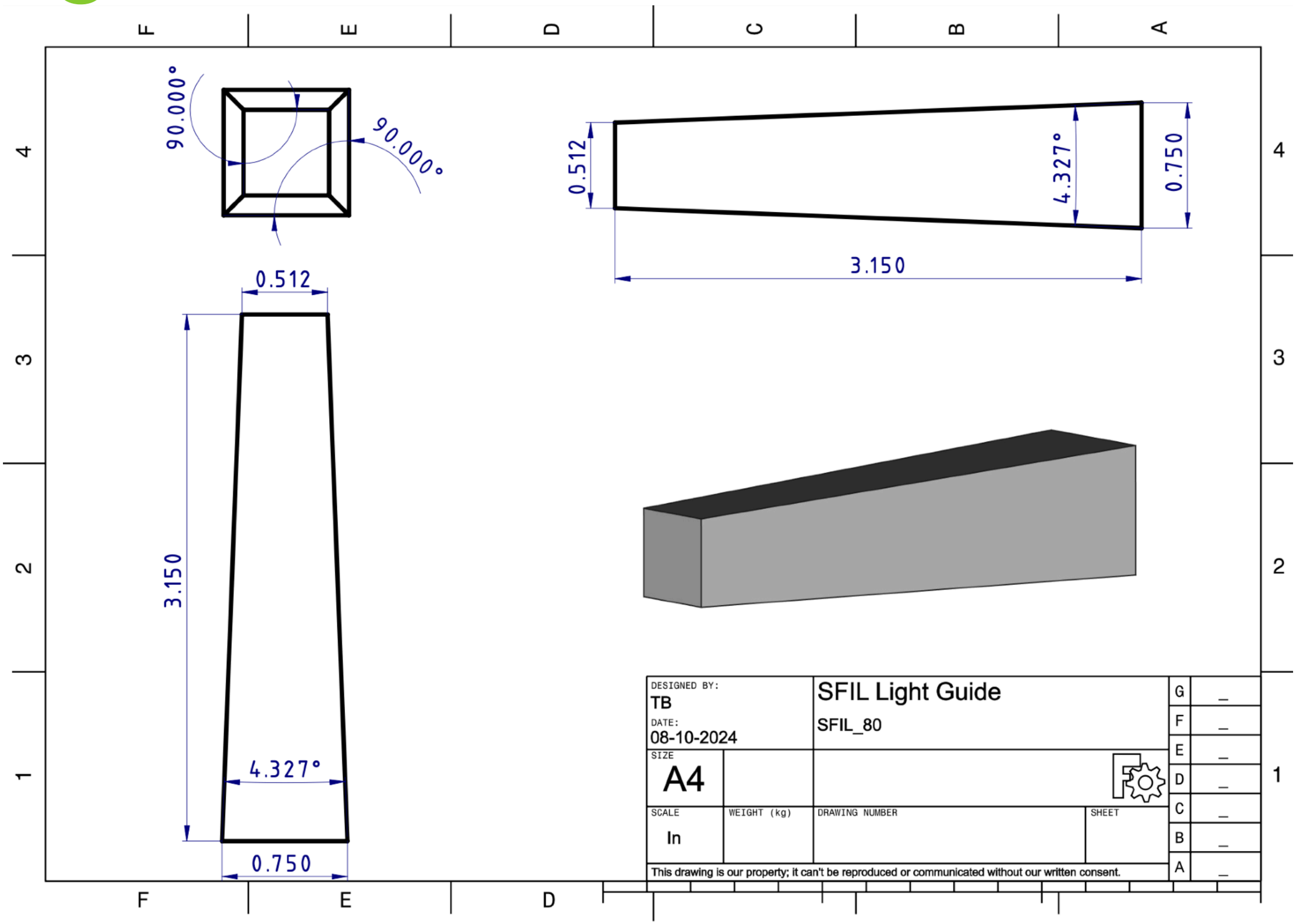
ESB Design


A
A
146.1 mm
ALUMINUM PLATE
95.3 mm
88.9 mm
158.2 mm
COOLING AREA
SPRING LOADED
SENSOR BOARD
SPACER
386.8 mm
WATER COOLING
PIPING HOLE
TYP. 2 PLCS.
52.7 mm
107.5 mm
END OF SECTOR BOX ARRANGEMENT
LOCKING QUICK-RELEASE PIN
B
4.2 mm
MOVEMENT OF BOARD
SECTION A-A
SCALE 1 / 4
BOARD
SENSOR
ALUMINUM MIDDLE E.O.S.B. PLATE
COOKIE MATERIAL
SHOULDER BOLT
COMPRESSION SPRING
DETAIL B
SCALE 1 / 2
LOCKING QUICK-RELEASE PIN
MANUFACTURING TOLERANCES - U.N.O.
SAW - ± 1/16
TORCH - ±1/8
FAB - ±1/16
DRILL DIA. - ±1/64Ø
DRILL LOC. - ±1/32
ANGLE - ±1°
MACHINING TOLERANCES - U.N.O.
CONCENTRICITY: 0.003 T.I.R.
BREAK EDGES: 0.015 x 45°
Min. RADIUS: 0.010
SURFACE FINISH
ANGLE: ±0.1°
MACHINING
NOM. ±0.015
.XXX - ±0.005
.XXXX - ±0.0005
ROSS MACHINE SHOP
DRAWN BY
MB
DATE
11/6/2024
SCALE
1 / 4
CUSTOMER
U of R
PROJECT
BIC DETECTOR
SECTOR
END OF SECTOR BOX ARRANGEMENT
FILE #
71485-110
REV
A

ESB Design - Next

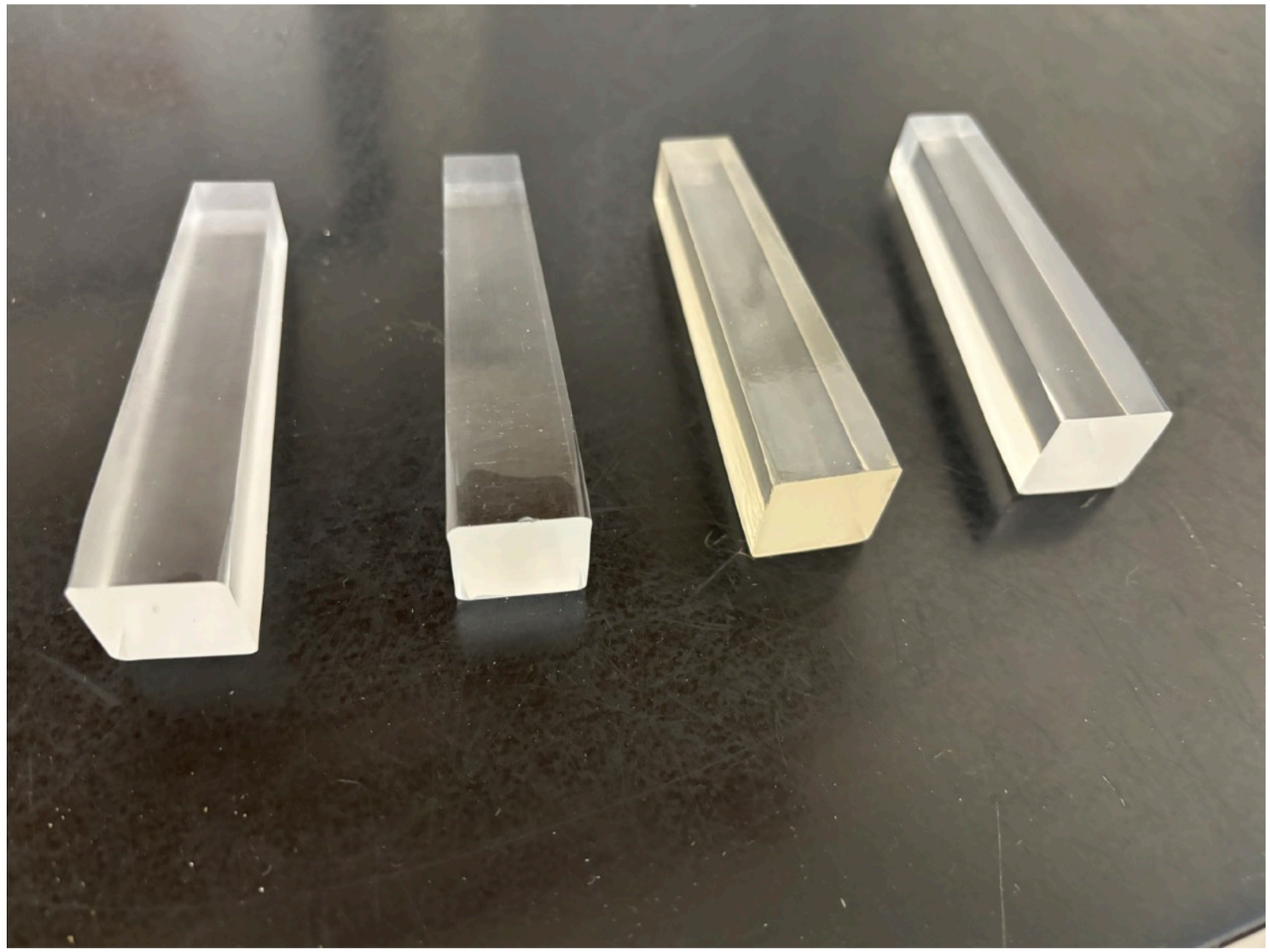
- Imperial units
- Locking pins + handle: easy install/extract
- Increase top plate thickness
- Add “ledge” for CALOROC board mounting
- Cookie thickness? (1-2mm?)
- Prototype accommodation: needs thinking
- Cooling…

Light Guides



Light Guides

- 5 LGs made by RMS: experimented with hand polishing, acrylic paint, heat gun. Last one was best.
- Ordered 4 from Brainshift Inc (Thunder Bay, ON).
- No news from U of Alberta.

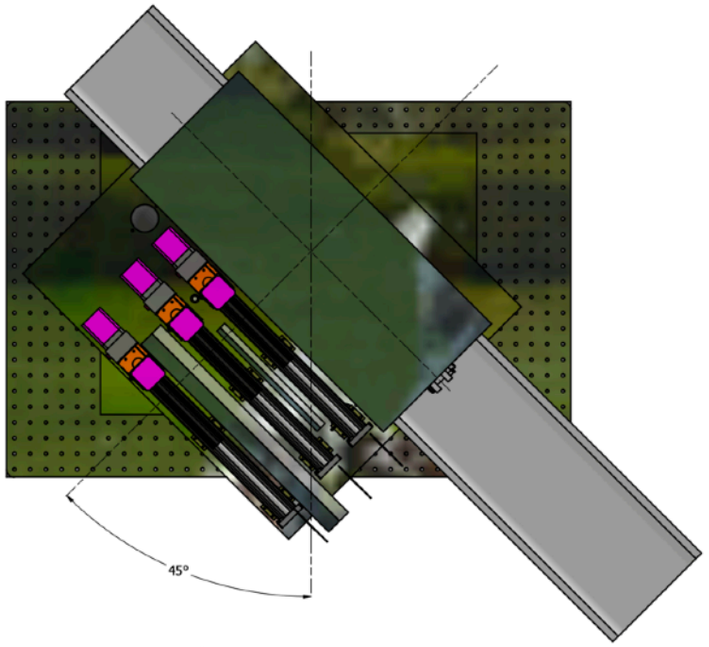


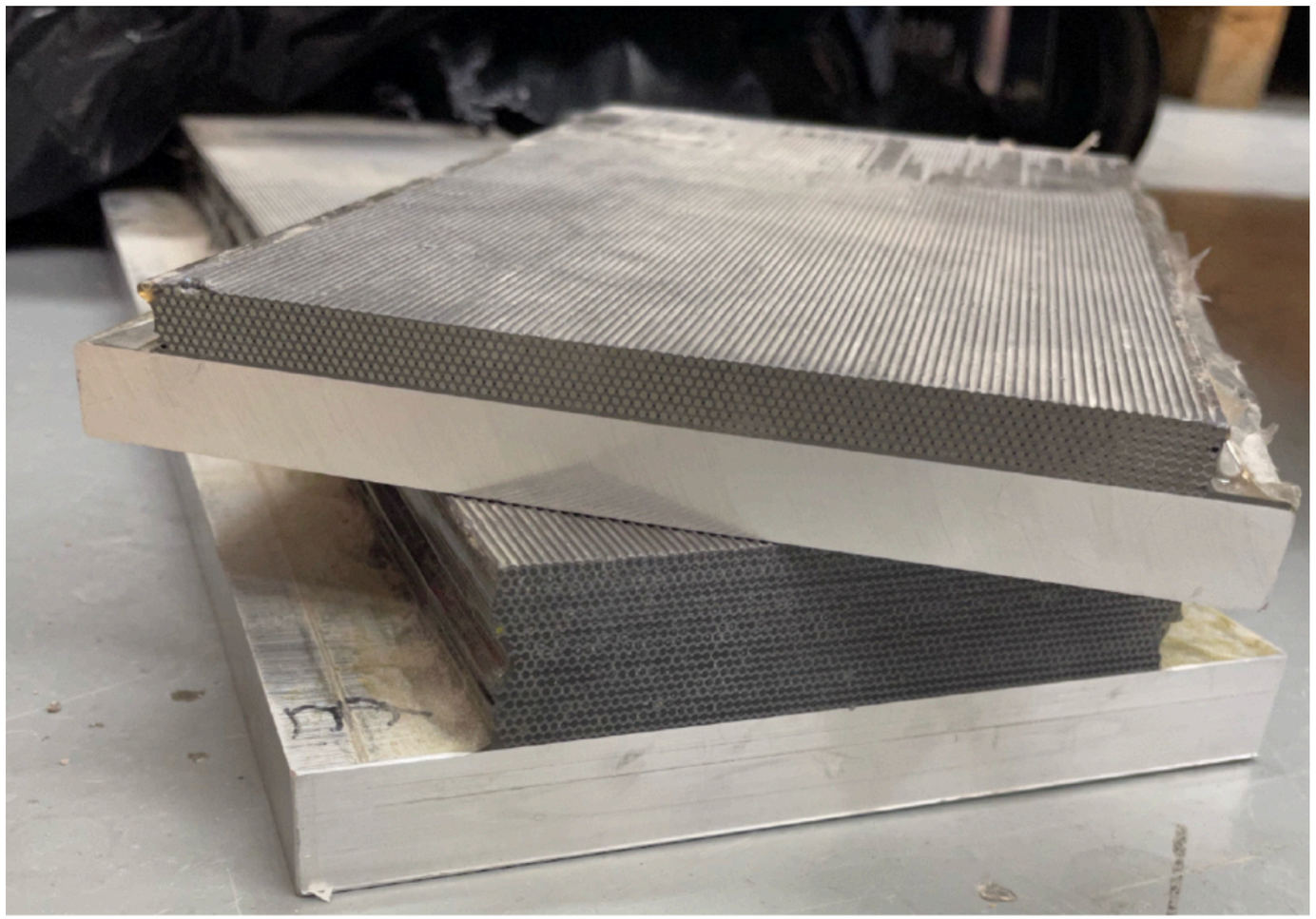
Cookies

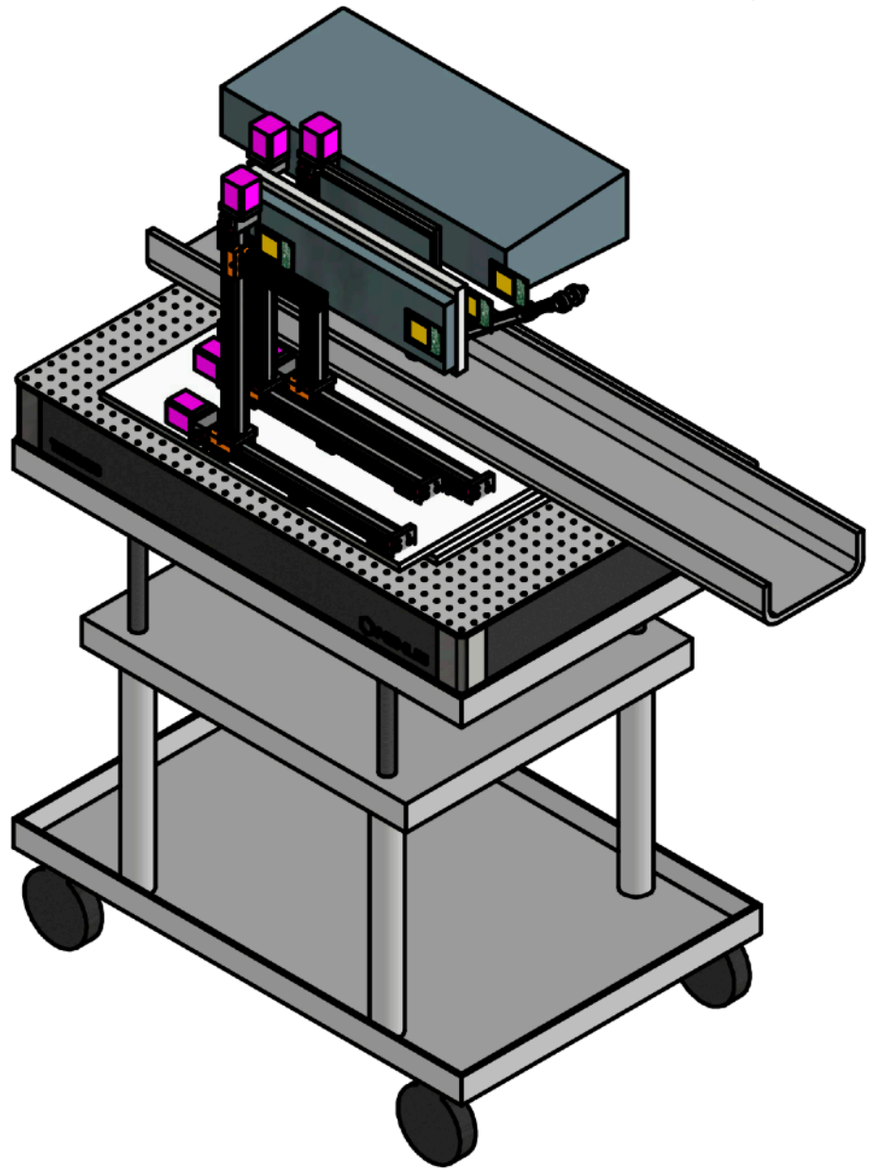
- Used Sylgard 184 (PDMS elastomer kit) to make cookies in plastic dishes.
- Technique works. Supplied sample to RMS. Cutting to be developed.
- Will make various thickness and test in our transmission setup.
- https://www.aliexpress.com/item/1005006125190988.html?src=google

SFILs

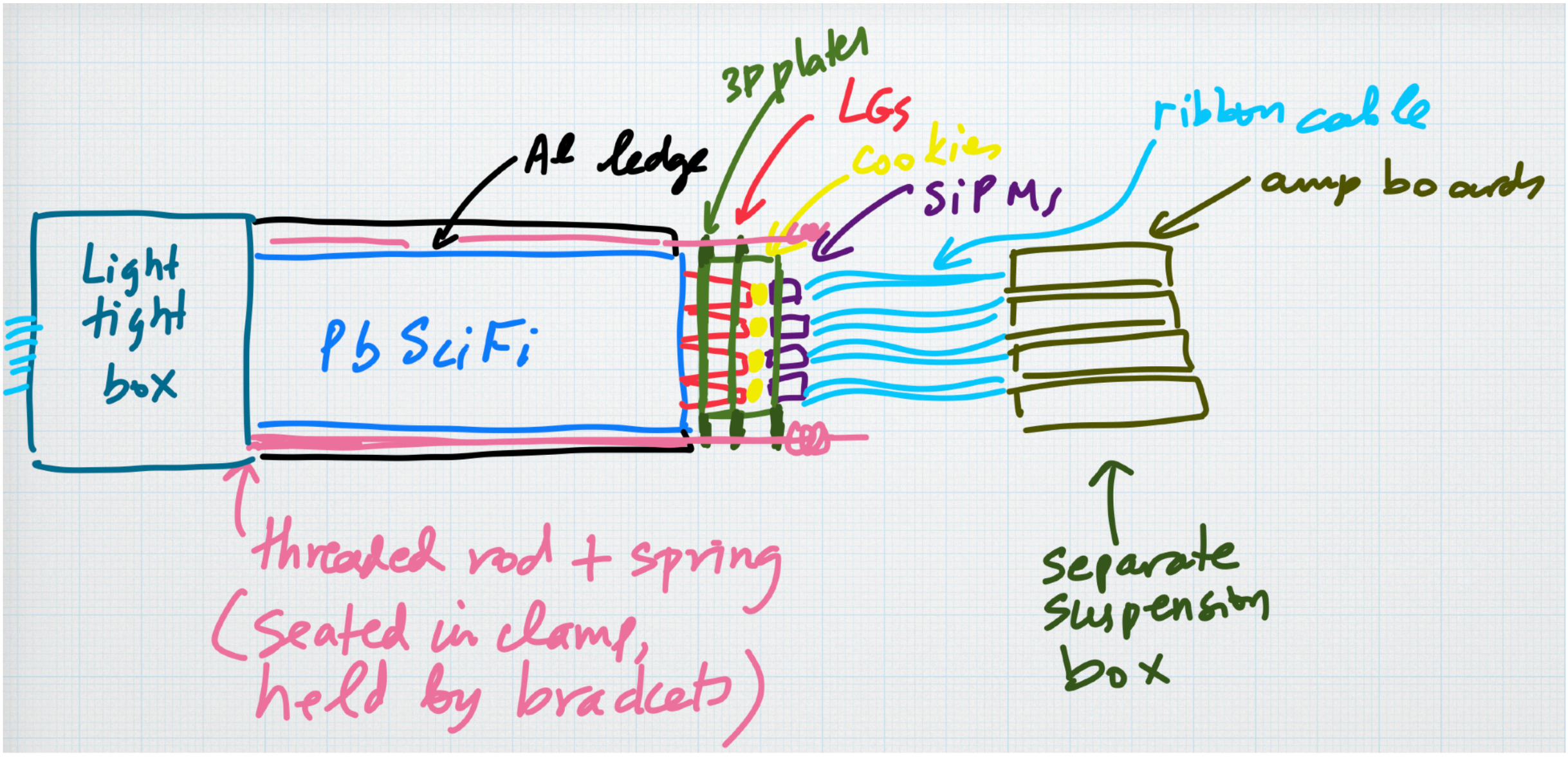
- Plates 3D-printer and weighed to prevent bowing.
- Al clamps and brackets machined next week.
- Light-tight system with box.
- Amplifier boards 1-2 feet away from beam.
- Dimensions, location on Tom's cart.





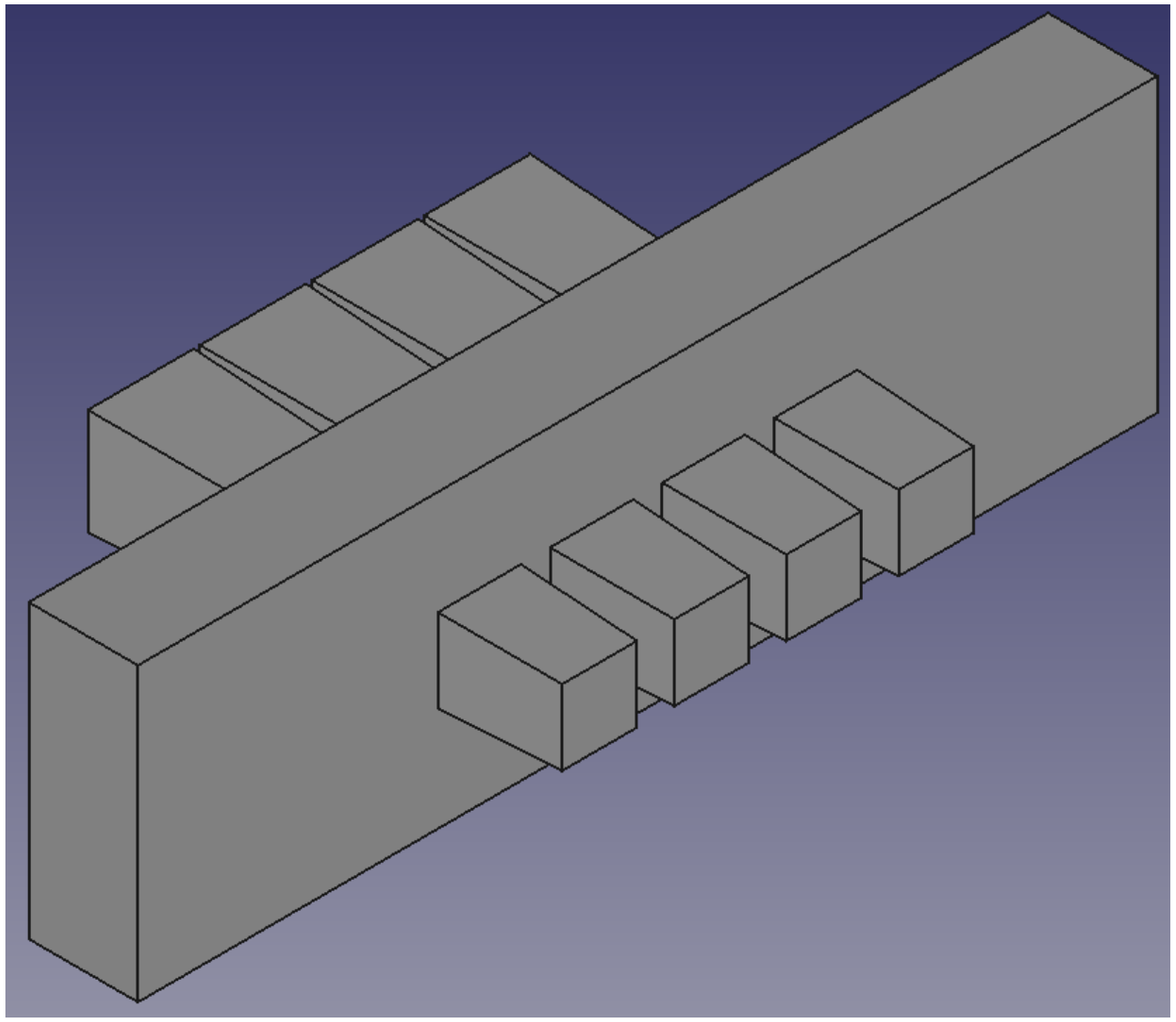


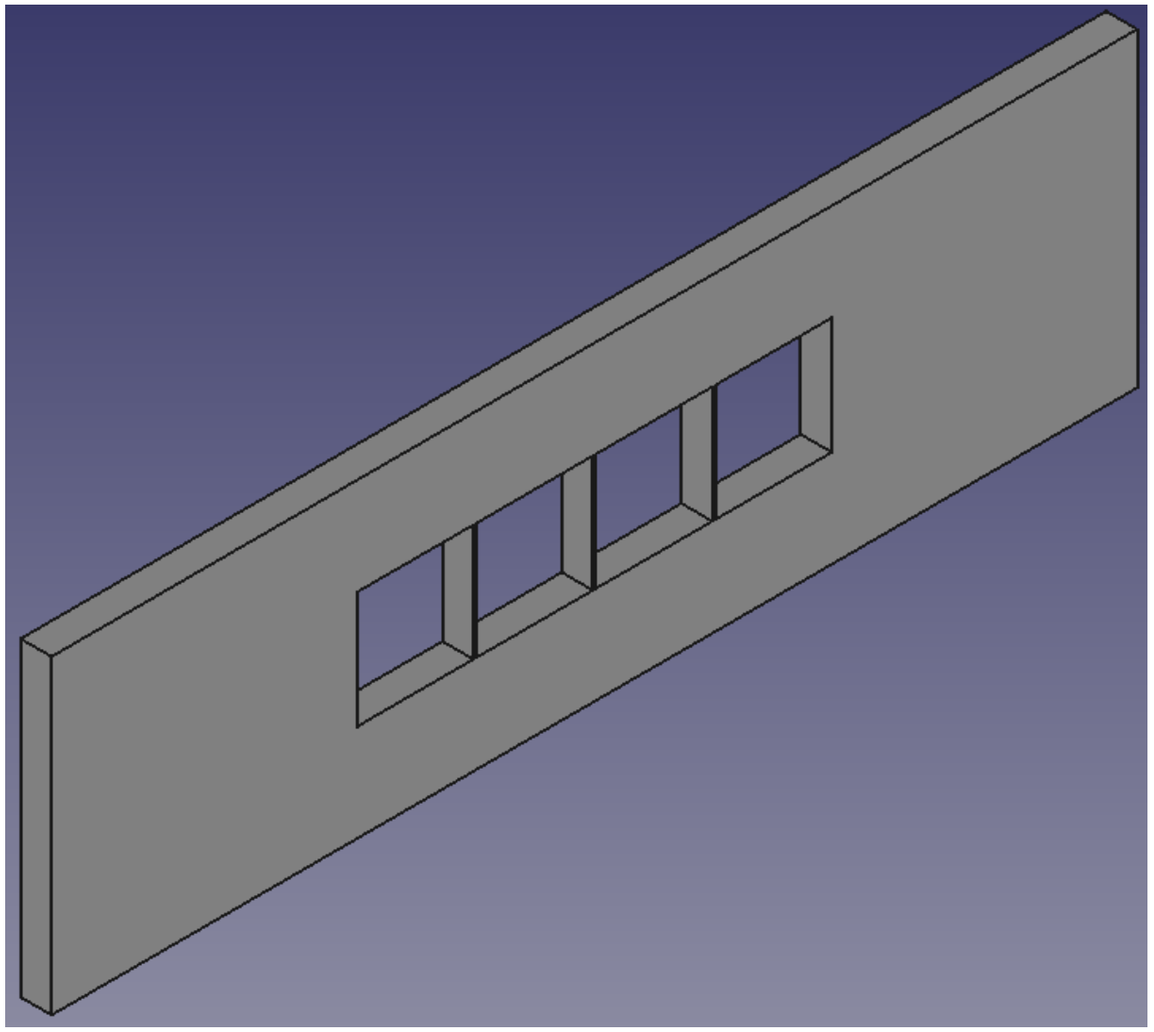
SFILs - concept



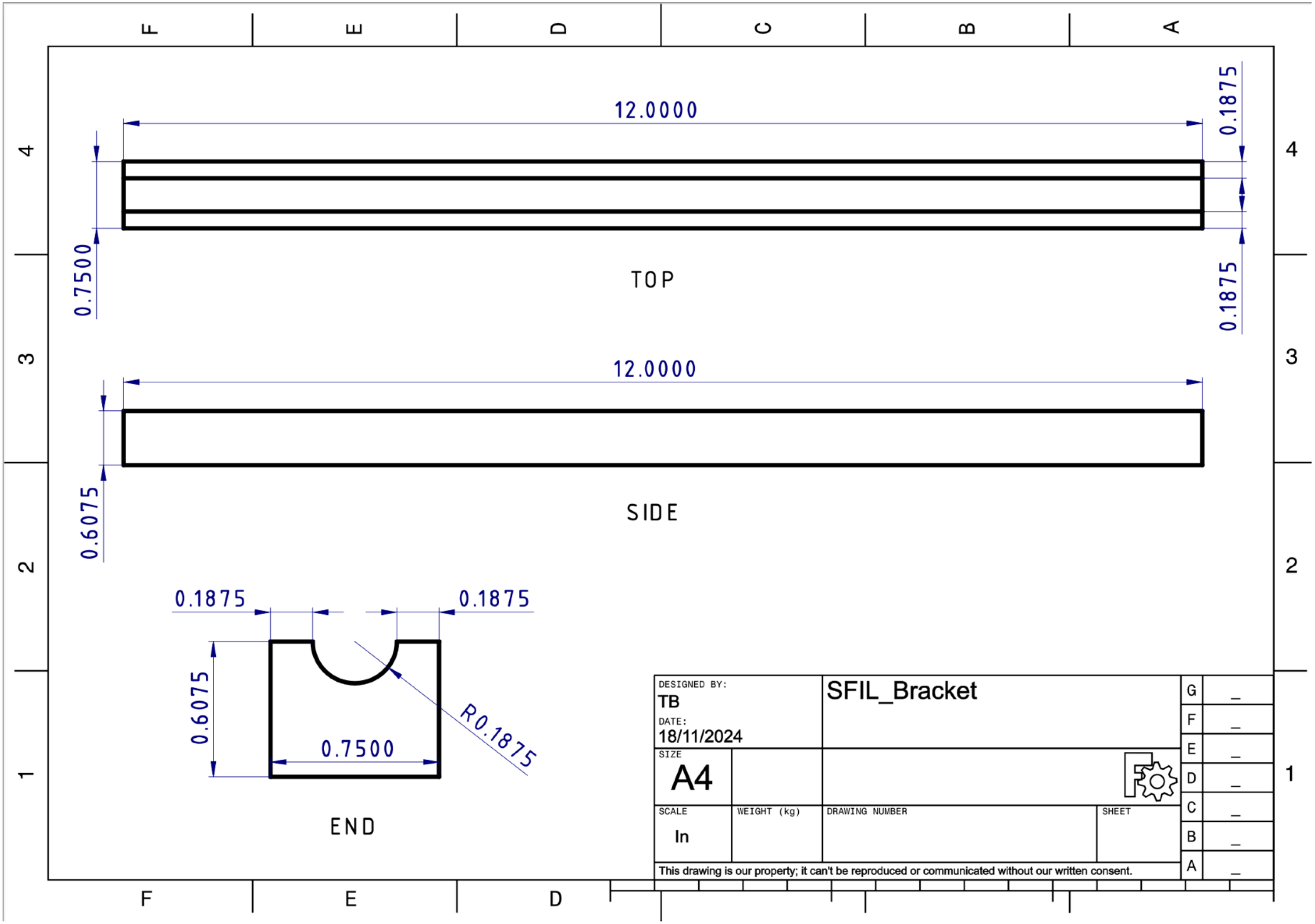
beam into the page

SFIL Plates - for LGs

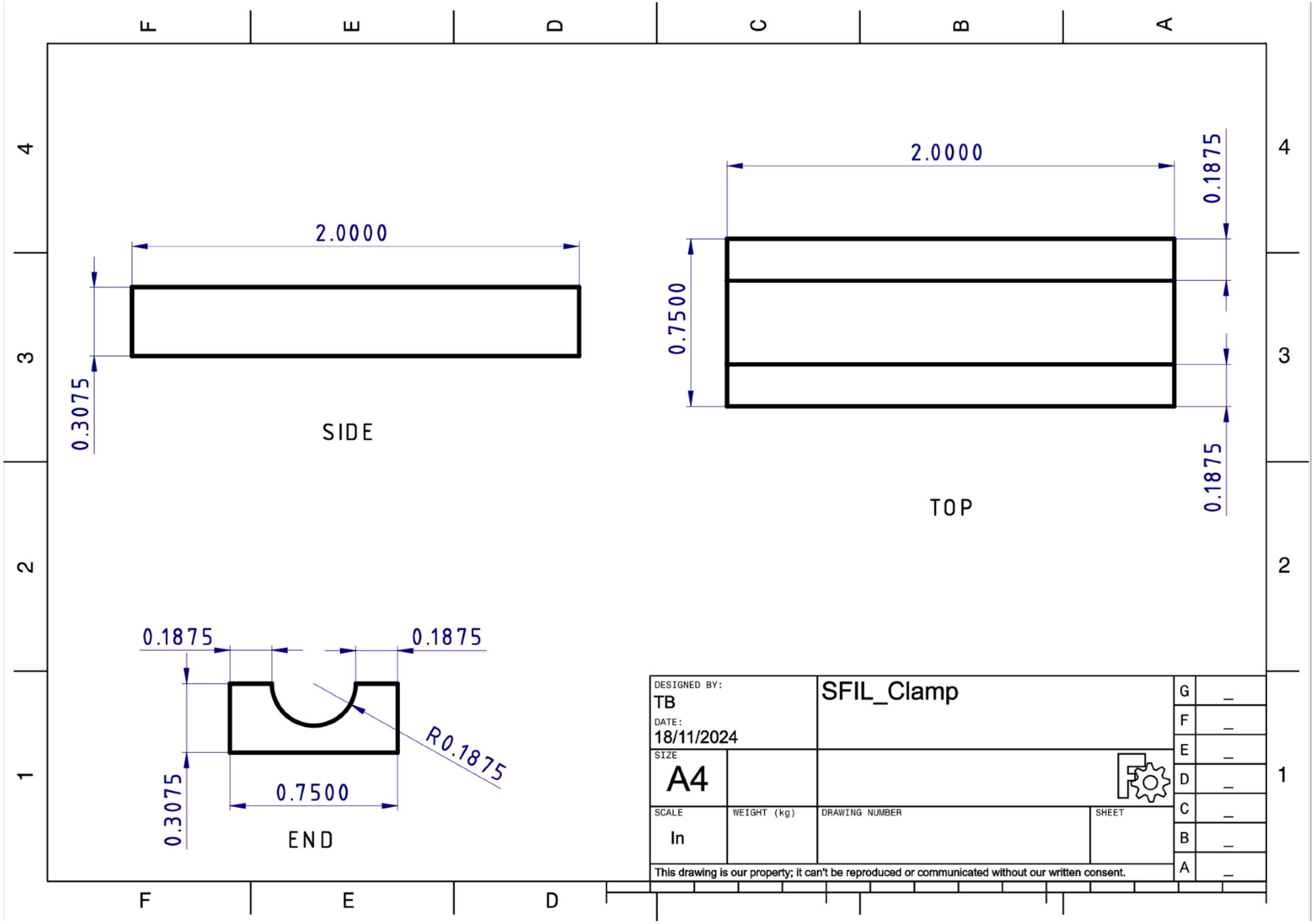




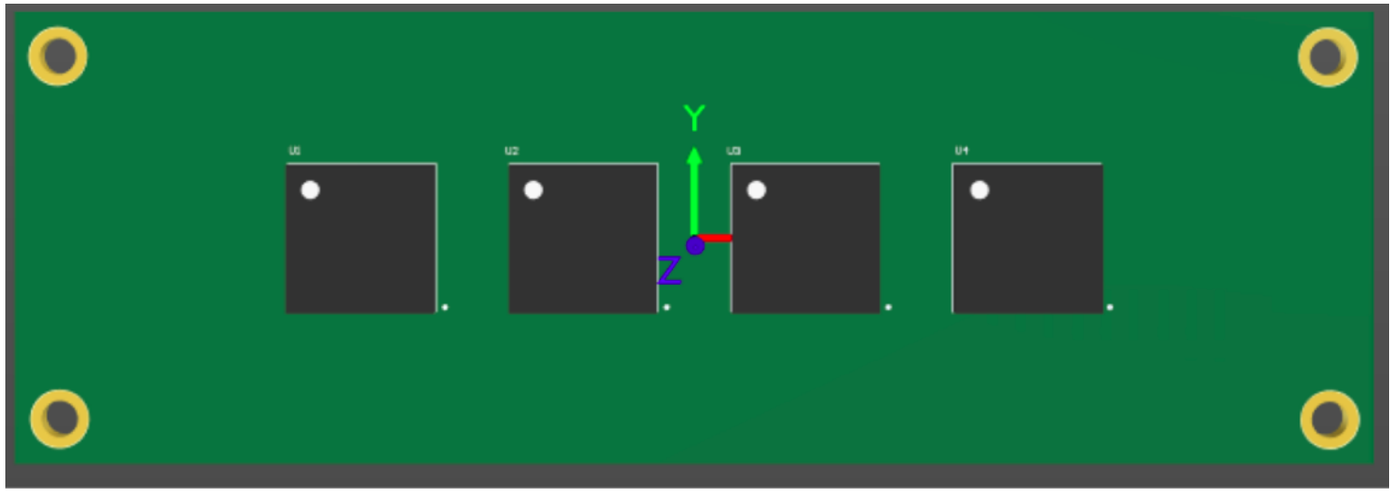
SFIL Bracket - rod/spring

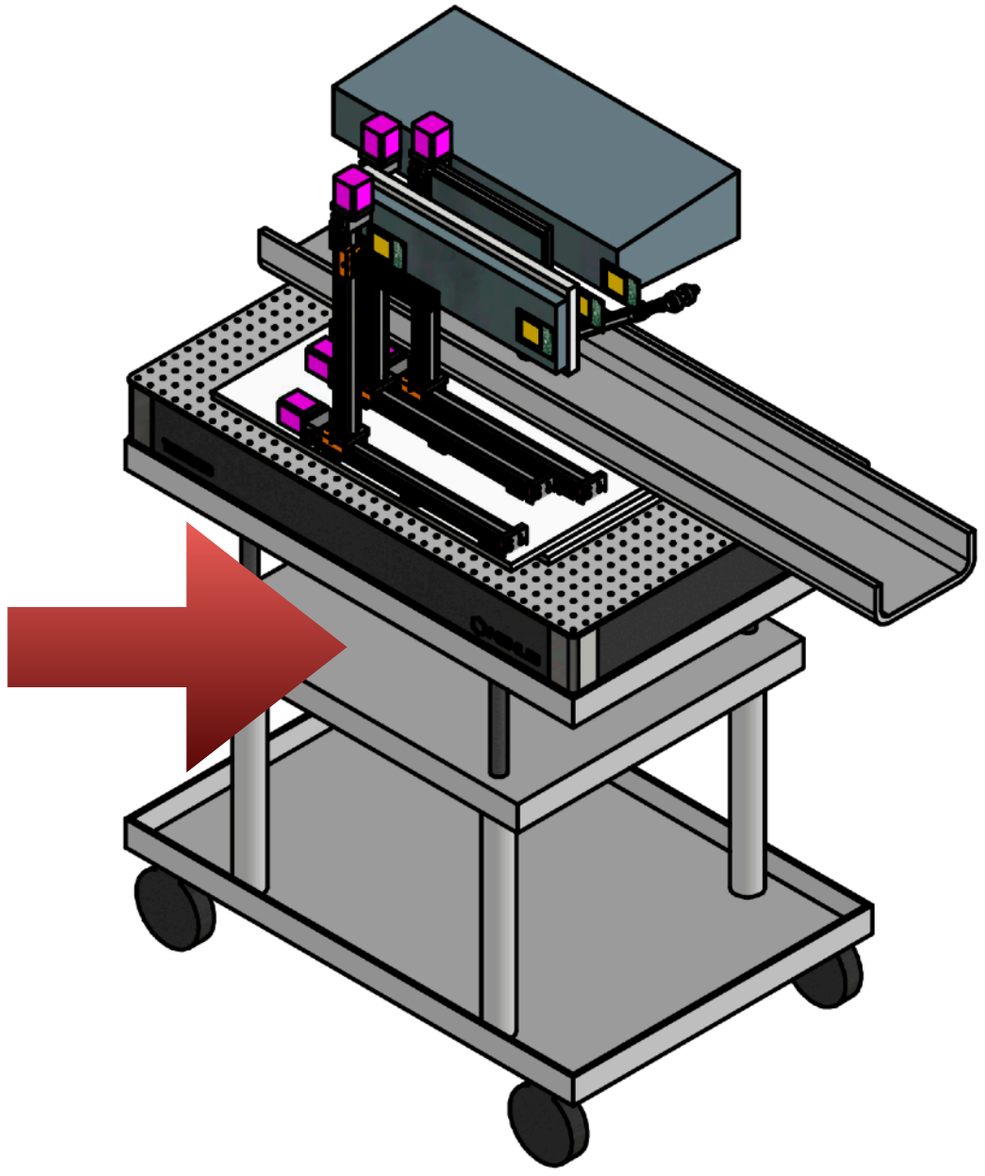


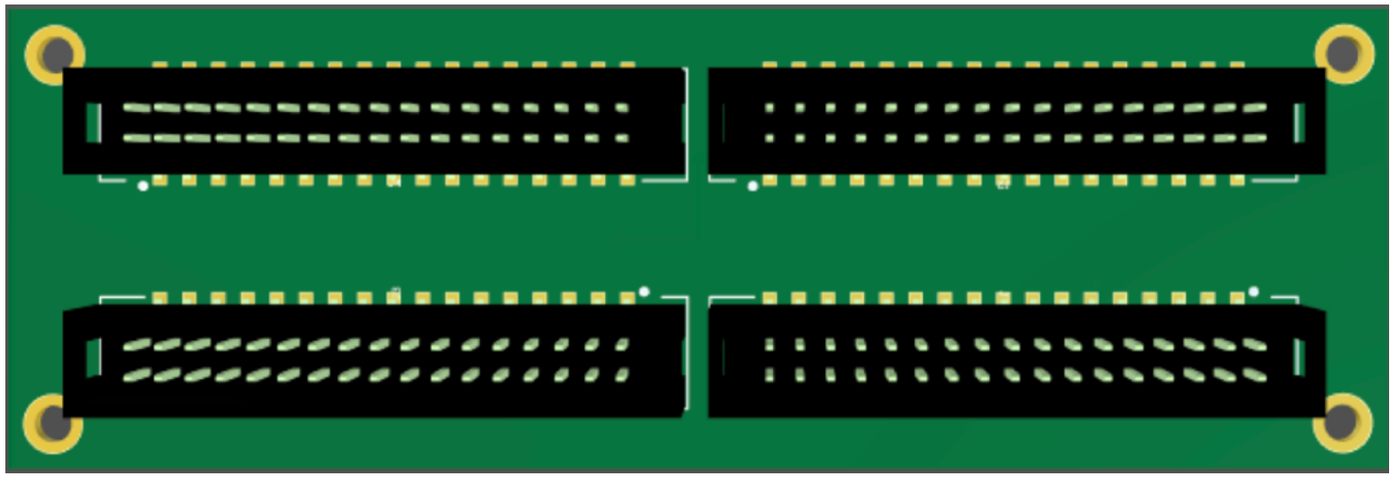
SFIL Clamp - for plates



SFILs - electronics







Summary

- **SFILs: decent Progress; to ANL before XMAS?**
- **ESB design advancing but lots to do:**
- **Flexible design for various prototypes**
- **CALOROC**
- **ETCs**
- **Cooling…**