

Notes from today's meeting on Laser Transport and 2:00 IP Laser installations (please add and correct):

Attendees: Z. Zhao, A. Fedotov, R. Meier, P. Inacker, D. Phillips, M. Minty, S.V. Badea, T. Talerico, C. Spataro, J. Tuozzolo

Topics from meeting notice:

1. Status of tunnel laser table order and phone conference with vendor (Steve, Patrick, Zhi)
2. Tunnel penetration 3" diameter, status (Dave) Frank and Matt were surveying location on Tuesday.
3. Vibration Measurements (Tom, Viorel)
4. Latest plan for stiffening of the laser building foundation under the optical table legs (Dave P.)
5. Specifications for vacuum pumps, the vacuum to air windows, for the transport lines. (Zhi)

Minutes:

1. Status of tunnel laser table order and phone conference with vendor (Steve, Patrick, Zhi).

- DC gun optics table: It was discussed and agreed that a custom concrete block would be fabricated to the plan view shape of the DC gun laser table. The laser table top would be purchase and then grouted onto the top of this concrete block.
 - a) The thickness of the laser table top was discussed. Patrick will work with Steve to define the laser table thickness. Options are purchasing a flat stainless steel plate and having tapped holes installed in the top or purchasing a standard thinner optics table then was considered previously. The thickness of this optics table top needs to be resolved so that the concrete block can be designed by Bob and purchased by Dave.
 - b) Additional DC Gun optics table dimensions: For the DC gun it was agreed that the laser optics table top will be 6" below the beam centerline height (68" off the floor). The table thickness will be defined as noted in a). The grout under the table will be 1.5" thick (Dave).
- DC gun optics table: The design presented for confirmation was the 6'x 4' table with a 1'x3' cutout on one corner and 1'x 1' on the other.
 - a) Zhi is again concerned that the last mirror element is too far from the cathode. The table was simplified in previous meetings to provide floor space for working in the area. Zhi is concerned that this will affect laser system performance. Again a 1' wide isthmus needs to be added.
 - b) Bob will find a way to show Zhi on the drawing marking for different distances from the cathode for Zhi to review and approve. This extension needs to be minimized.
 - c) Zhi will provide a maximum distance he calculates that is workable. It was noted that a removable extension could be added later if needed by bolting a re-enforced shelf to the concrete block to the table if this maximum distance does not work.
 - d) In order to better define the design of the isthmus, Patrick and/or Zhi will provide the vendor and part numbers for the last mirror assemblies so the isthmus can be accurately laid out by Laura.



- Laser relay optics table: It was discussed and agreed that a custom concrete block would be fabricated in the plan view dimension of the relay table dimensions. The laser table top would be purchase and then grouted onto the top of this concrete block.
 - a) This table top will be the same type and thickness dimension as the DC gun optics table top. Zhi requested that the table be 2' x 4'.
 - b) Additional relay optics table dimensions: For the relay optics table it was agreed that the laser optics table top will be 3" below the beam centerline height of the center of the laser transport tube coming from 1002F (~80" off the floor). The table thickness will be defined as noted in a). The grout under the table will be 1.5" thick (Dave).
 - c) In order to better define the design of the relay optics table, Patrick and/or Zhi will provide the vendor and part numbers for the mirror assemblies shown in the sketch below so that it can be accurately laid out by Laura.

2. Tunnel penetration 3" diameter, status (Dave) Frank and Matt were surveying location on Tuesday.

- It was agreed that the 3" diameter was okay. Dave was ordering the boring tool today. If the bore ends up being crooked it will be rebored as needed.
- The tube size through the wall be defined after the boring is complete and the accuracy analyzed.

3. Vibration Measurements (Tom, Viorel, Charlie)

- Tom and Viorel will be doing more measurements with help from Charles Spataro.
- 3 spots were marked on or near the beamline: the DC gun location, the booster cavity location and the laser table location.
- On spot was marked on the floor where the relay optics table will be.
- Requested that a measurement be taken either on the pier or on the side concrete block of the laser building 1002F for reference of their effectness.
- Tom will decide how long to take measurements and note any environmental factors.



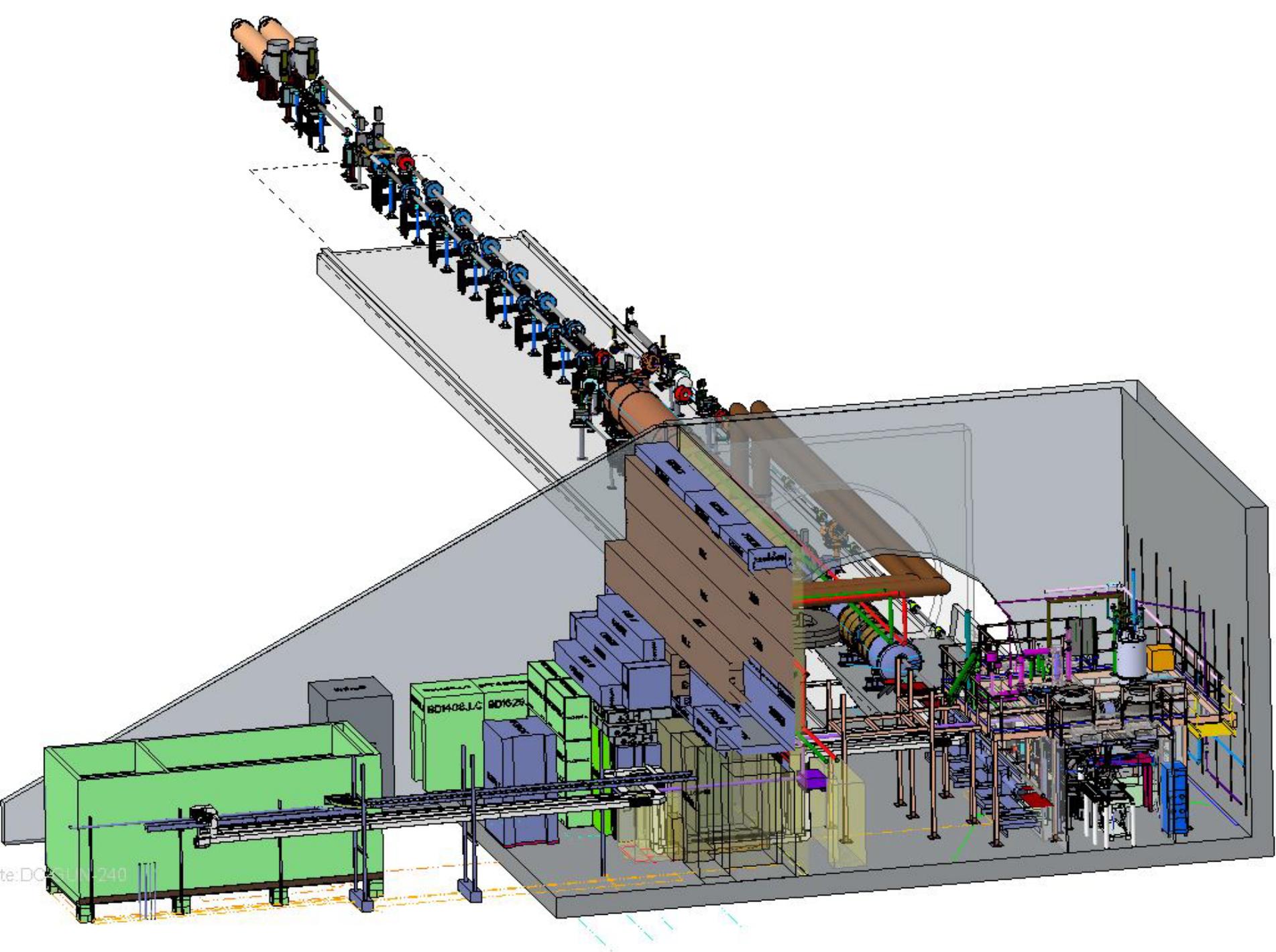
4. Latest plan for stiffening of the laser building foundation under the optical table legs (Dave P.)

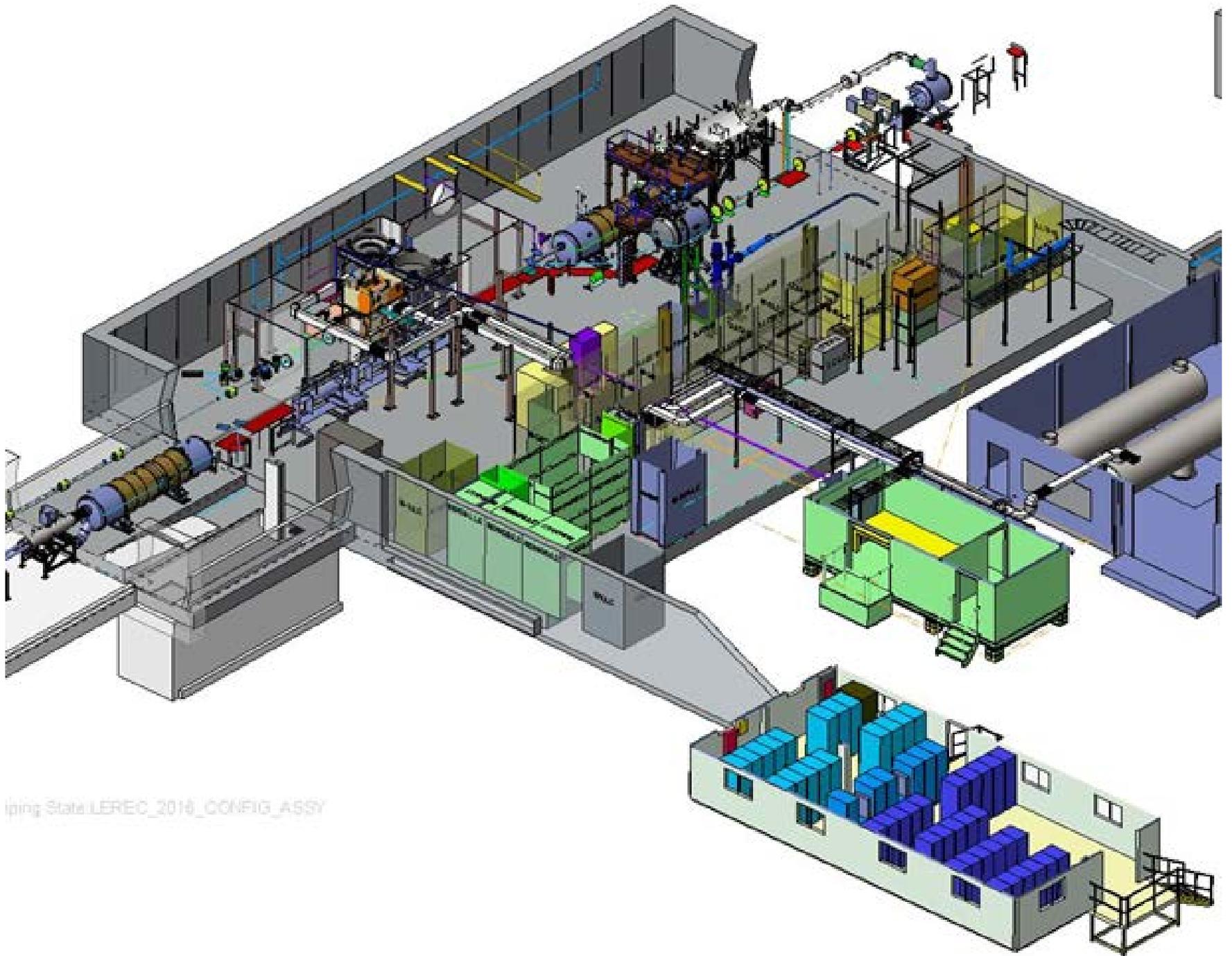
- Dave is moving forward with moving the laser building off its piers and installing a steel block that will be under the laser optics table and directly support its legs independent of the laser building.

Other topics:

- Discussion on temperature control and humidity in the tunnel and the laser building. Dave asked for specific specifications. Zhi and Patrick noted that there were no hard requirements. There were two assignments:
 - a) Zhi check with JLAB to see if they do anything specific for temperature control in the laser rooms there. (It was noted that Cornell does not do anything specific).
 - b) Patrick noted that pockel cells are sensitive to humidity. He will check with the manufacturer on specific limits.



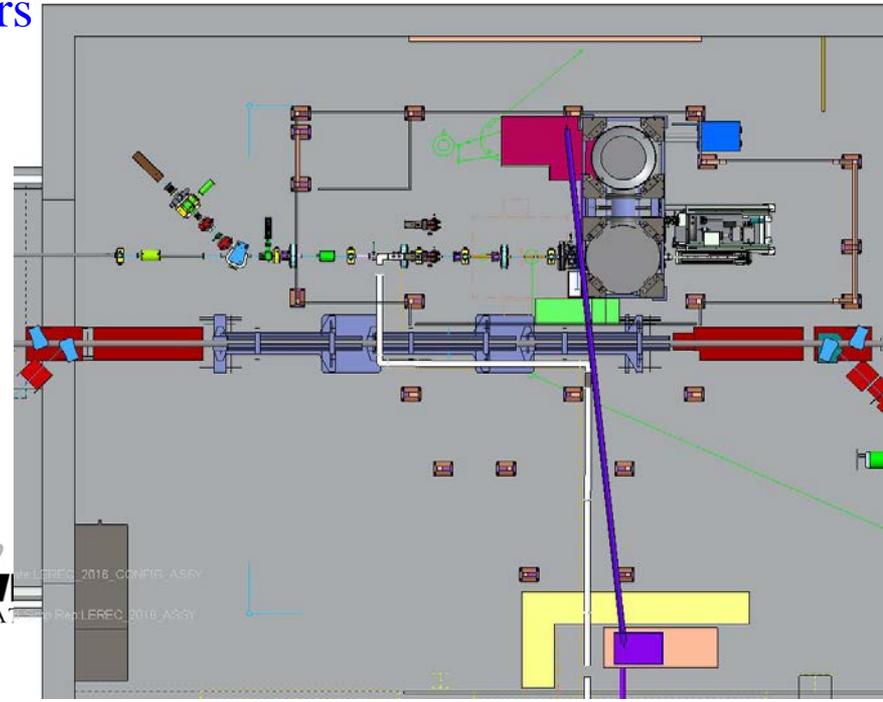
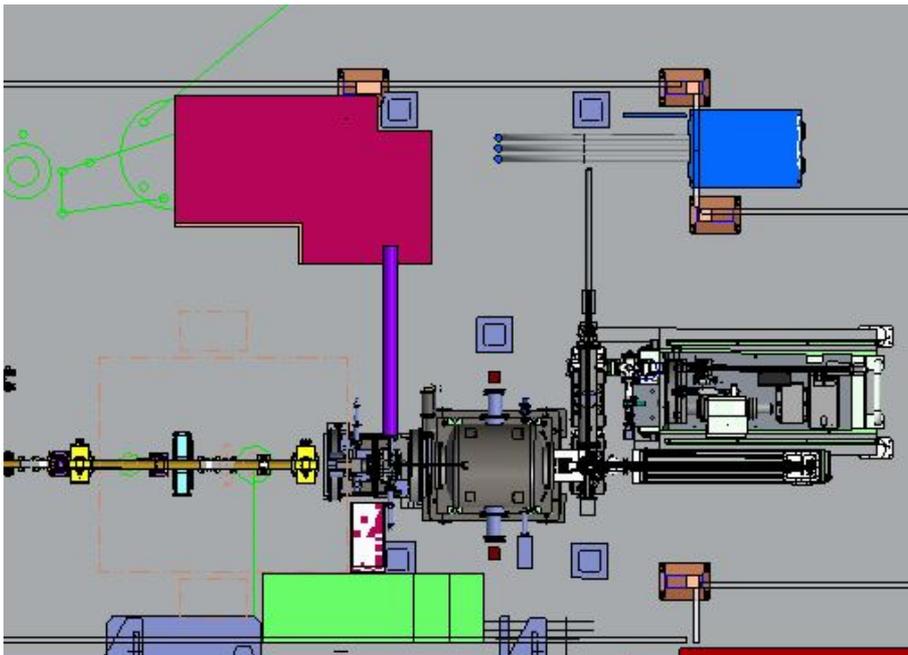




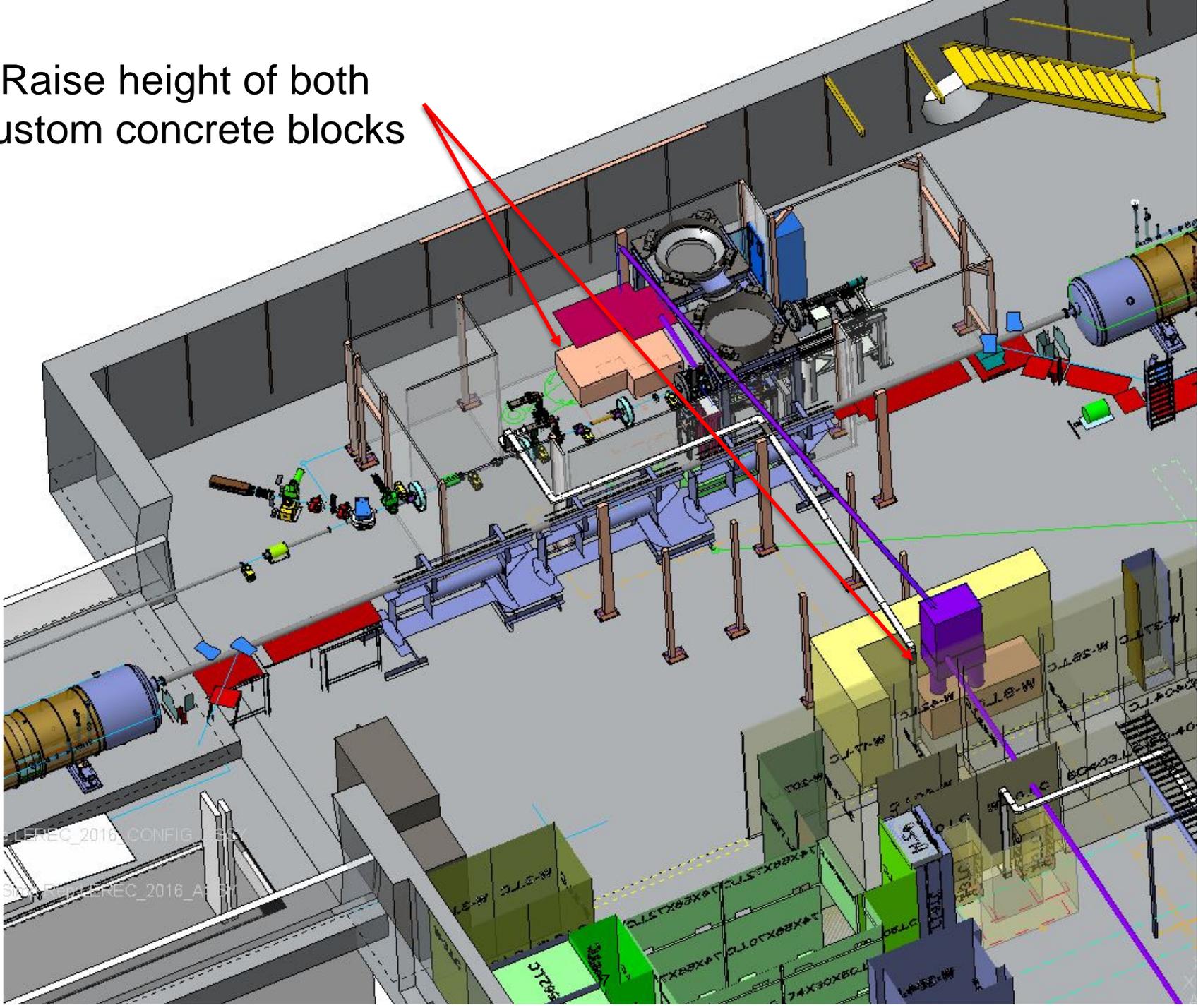
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Laser Systems

- Laser transport: (Zhi, Steve, Patrick, Bob)
 - a) Tunnel DC Gun optics table size and location defined
 - b) Tunnel wall optics table size and location almost defined (2x3) or (2x4)
 - c) Laser transport path defined
- Tunnel table (DC gun and wall) support and configuration being defined
 - a) Custom concrete block from floor to bottom of optics table top
 - b) Grout floor under block and grout optics table top to top of block
 - c) Optics table top configuration to be defined
 - d) Direct connection, no vibration absorbers

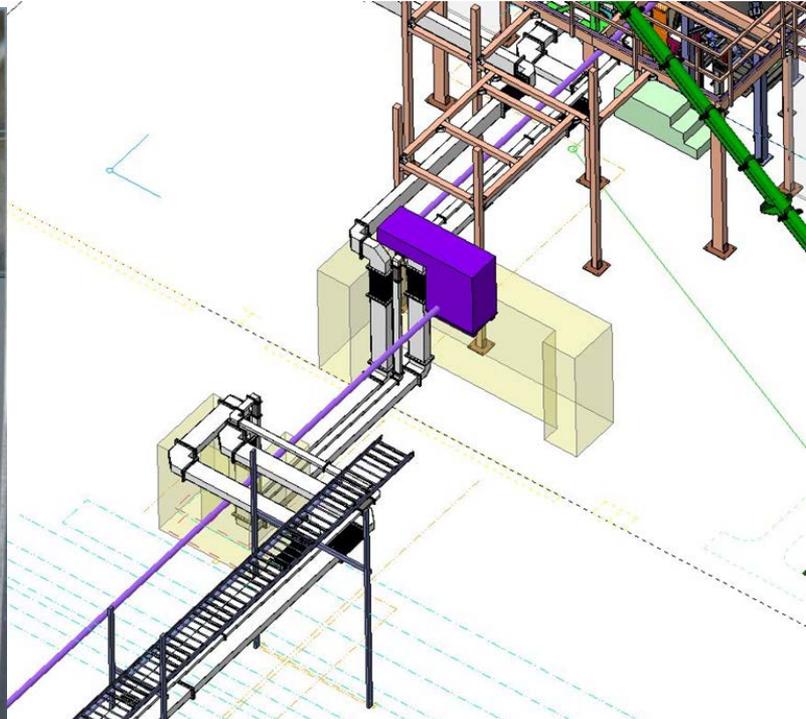


Raise height of both
Custom concrete blocks



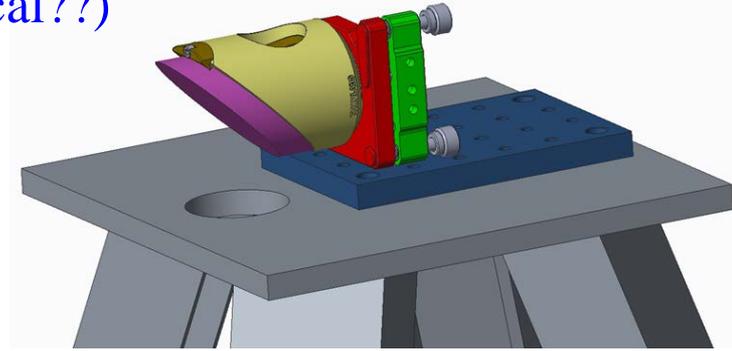
Laser Systems

- Through hole location defined/surveyed, bore work order 80" off floor. (Dave)
- Laser building modifications (AC unit change, vibration mitigation) (Dave)
 - a) Remove building from piers (planning: carpenters, electrical, and riggers)
 - b) Place steel block in ground (with concrete?)
 - c) Build up from block with heavy pipes that will extend through bored out holes in laser building floor and align with laser optics table legs
 - d) Direct connection (bolted down) to laser optics table legs, no shock absorber
- Remove optics from 1002F laser building this week (Zhi, Patrick)

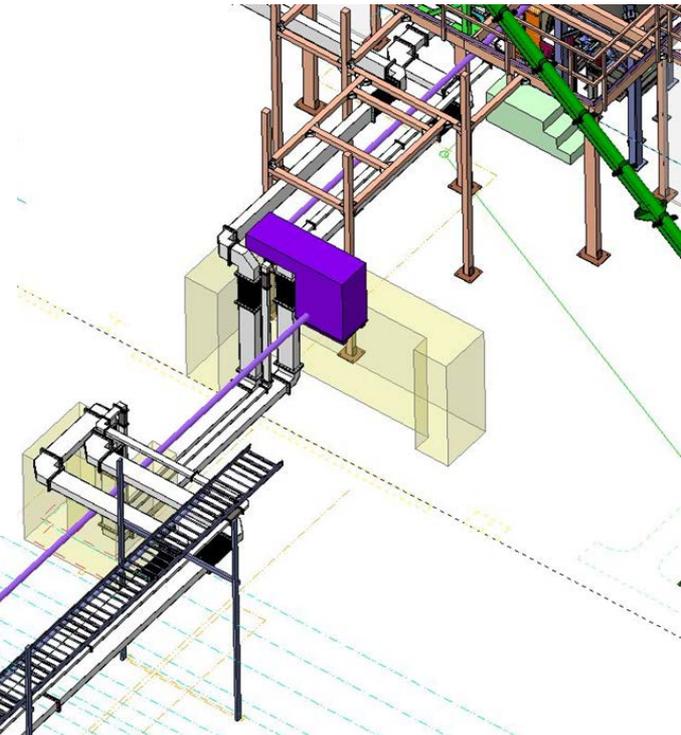
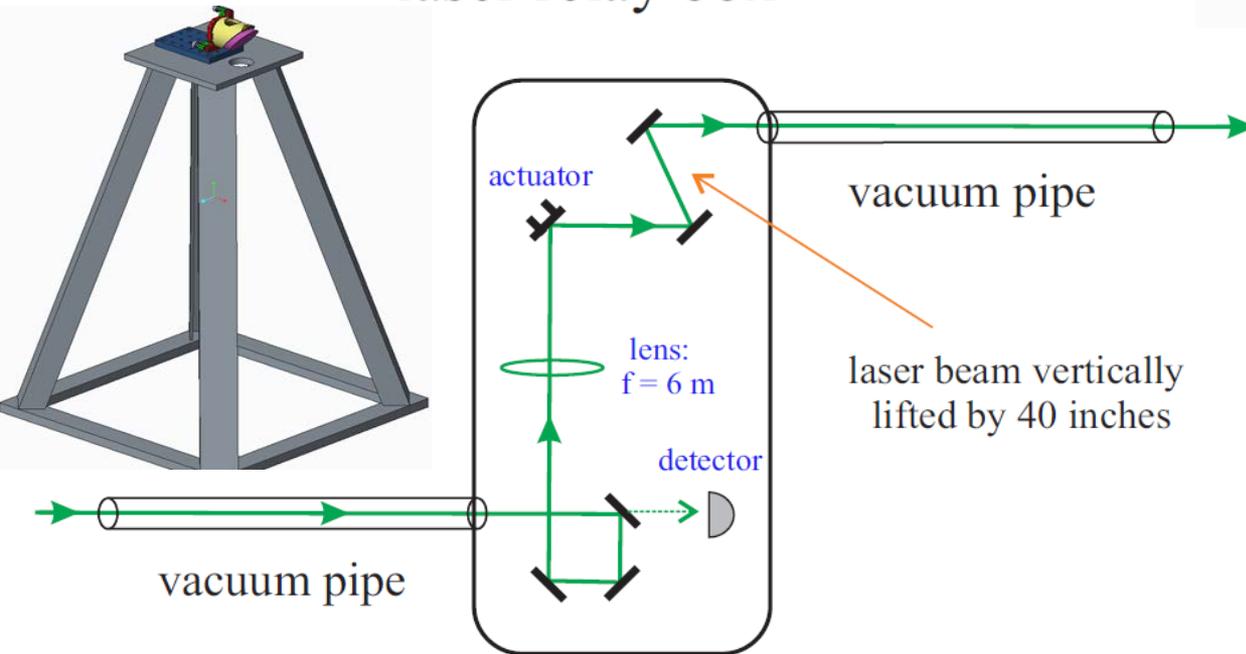


Laser Systems

- Laser relay box design (Zhi, Patrick, Steve)
 - a) Latest schematic for Laura (horizontal and vertical??)
 - b) High mirror support (Steve)



laser relay box



Laser Systems

CF Flanged Zero Length Laser Transmission Viewports

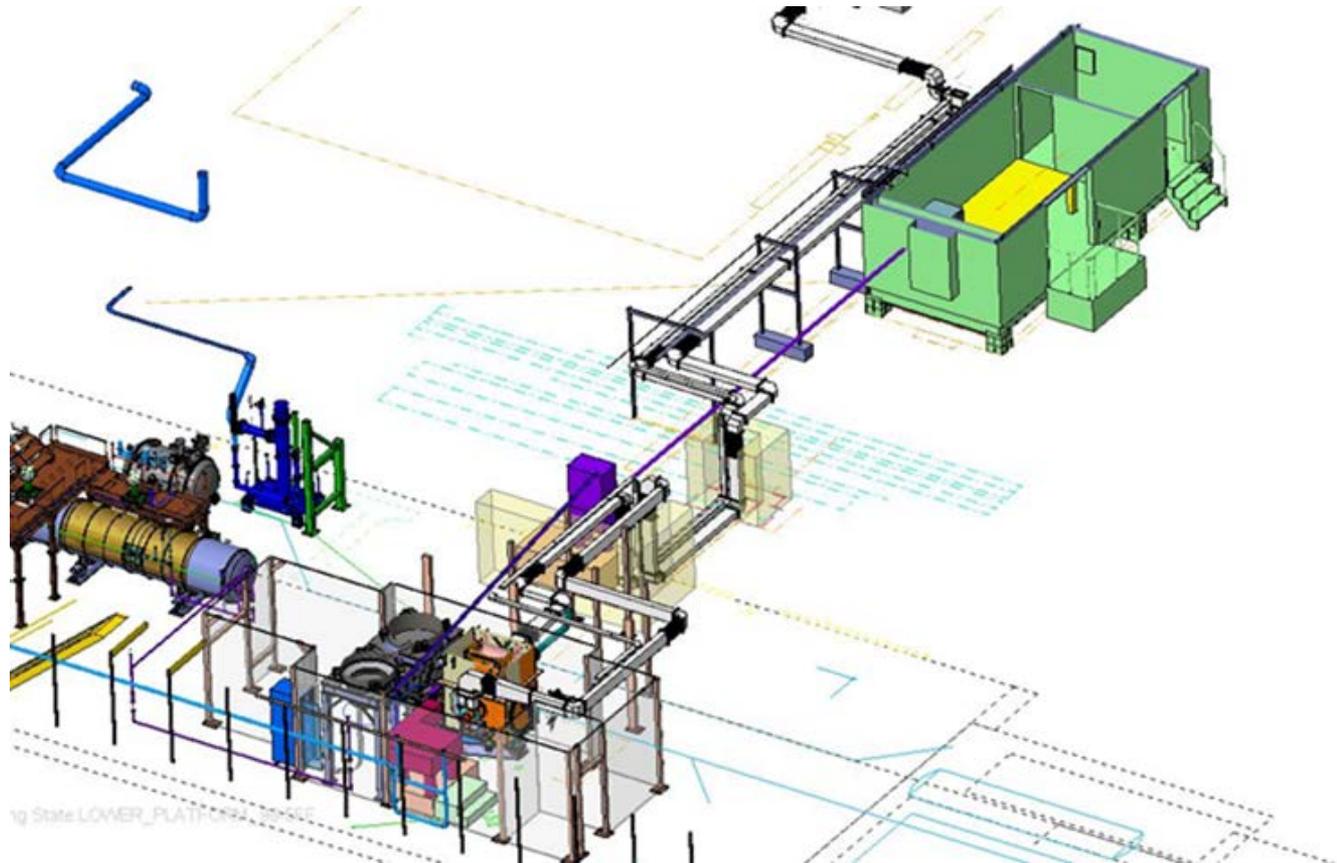


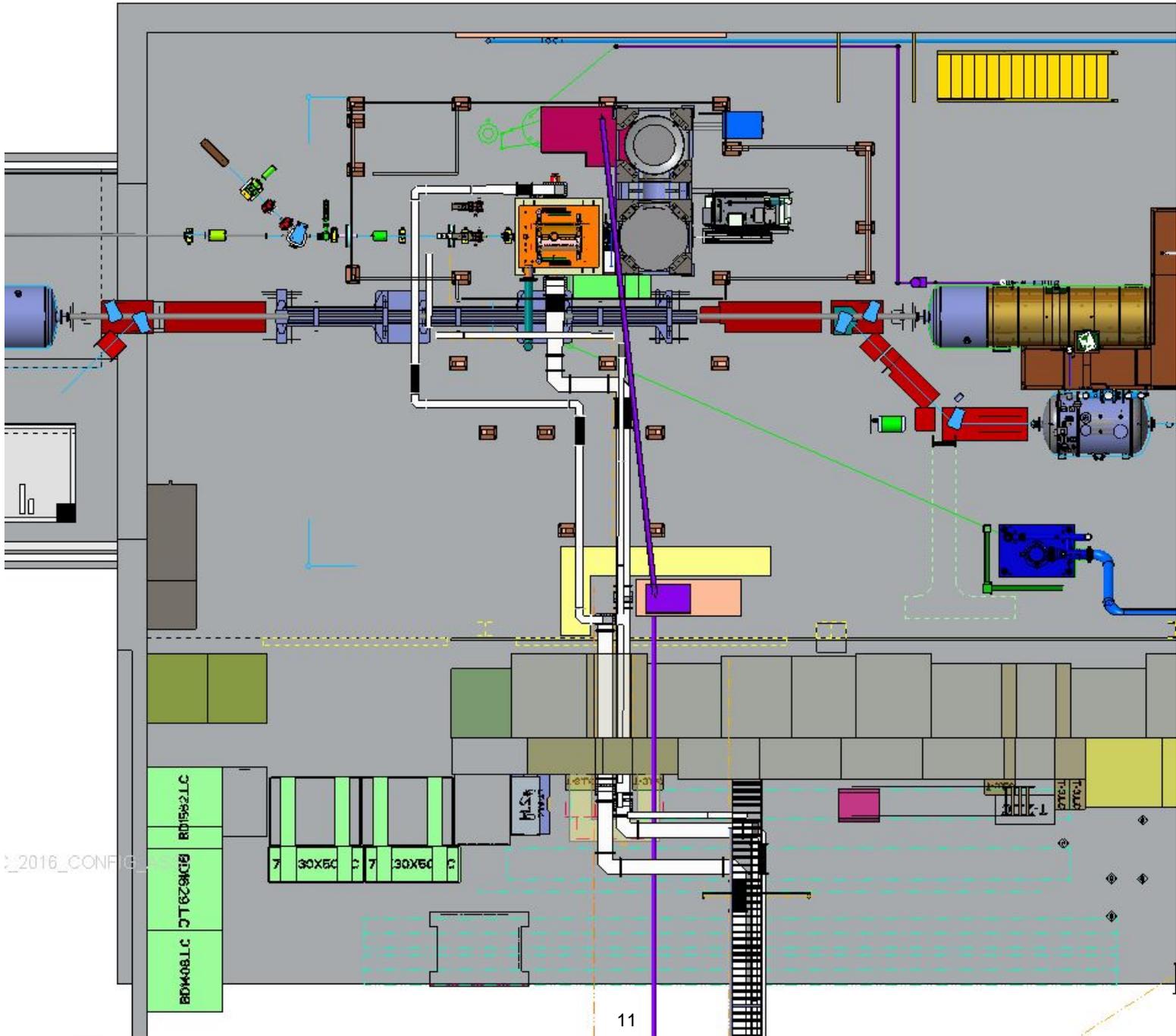
ENLARGE

Laser Transmission Series Viewports Feature:

- > Leak Rate $<2 \times 10^{-10}$ atm cc/sec He
- > Parallelism <10 Arc Seconds
- > 304L Stainless Steel Flange
- > M4 @ 632nm Transmitted Wavefront
- > Surface Finish 20/10
- > Temperature Range -100°C to 200°C
- > Corning HPFS 7980 Fused Silica
- > Homogeneity Grade A
- > Inclusion Class 0
- > R $<0.25\%$

- Vacuum transport line
 - a) 3" or 4" stainless steel tubes? Transition at shield wall.
 - b) Need pump/gauge ports + long hose, valve, pump, and gauge
 - c) Need coated, fused Silica windows (4.5" flange/2.5" window?)





Vibration Measurements – meeting 6/21/16

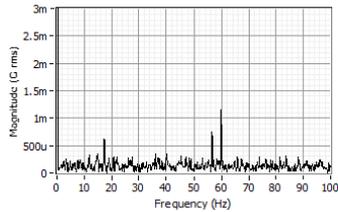
Measurements taken in laser trailer, 2:00, and 4:00 (56 MHz).

Run is coming to an end send requests to T. Tallerico/V. Badea

Request T. Tallerico/V. Badea set up a meeting to present results

RUN NUMBER 2 WITH LARGE CHILLER ONLY 4/25/2016

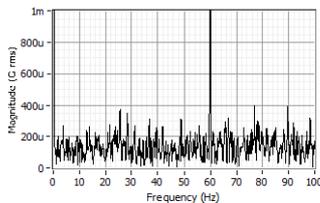
X-direction (A1=A)



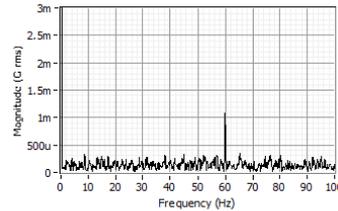
Y-direction (A1=A)

112 MHZ RUN 3 A1 FLANGE AND A3 ON FPC BLOWER OFF 5 27 16

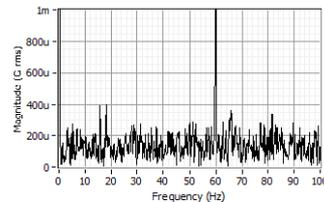
X-direction (A1=A)



Y-direction (A1=A)



Z-direction (A1=A)



Z-direction (A1=A)

