

3/26/3

To: Safety Committee

From: Brian Clasby

Re: Safety Review of G2 and G3 Shutters (Rev A)

Attached are updated assembly drawings for safety review. These are for the G2 and G3 shutters for installation in G2 station, respectively. There is also an additional drawing that shows the relative positions of these shutter assemblies with respect to the monochromator box, the shielding walls and each other.

From the attenuation data obtained from the Berkley Labs web site, I found that $\frac{1}{2}$ inch stainless steel (data is for iron actually) used for constructing the box, we obtain about 77 attenuation lengths at 30 KeV for use as shielding from scatter. From the same site, I found that $\frac{1}{4}$ inch tungsten plates used for the shutter and mask assemblies we get some 255 attenuation lengths *each* at 30 KeV to block any direct beam.

In addition, the shutter mechanisms designs have been slightly modified to add springs as a failsafe measure in the event of loss of air pressure to the pneumatic actuators. This should not affect the relative position or overlap of the masks and shutters. Once assembly is completed each of these assemblies will be cycle tested 1000 times in accordance with normal safety committee procedure and inspected for good working operation before installation.

Each of the attached drawings have parts that are intentionally not shown to make things easier to see. Hopefully, the drawings are clear enough but please let me know if there are any questions or concerns.

-Clasby

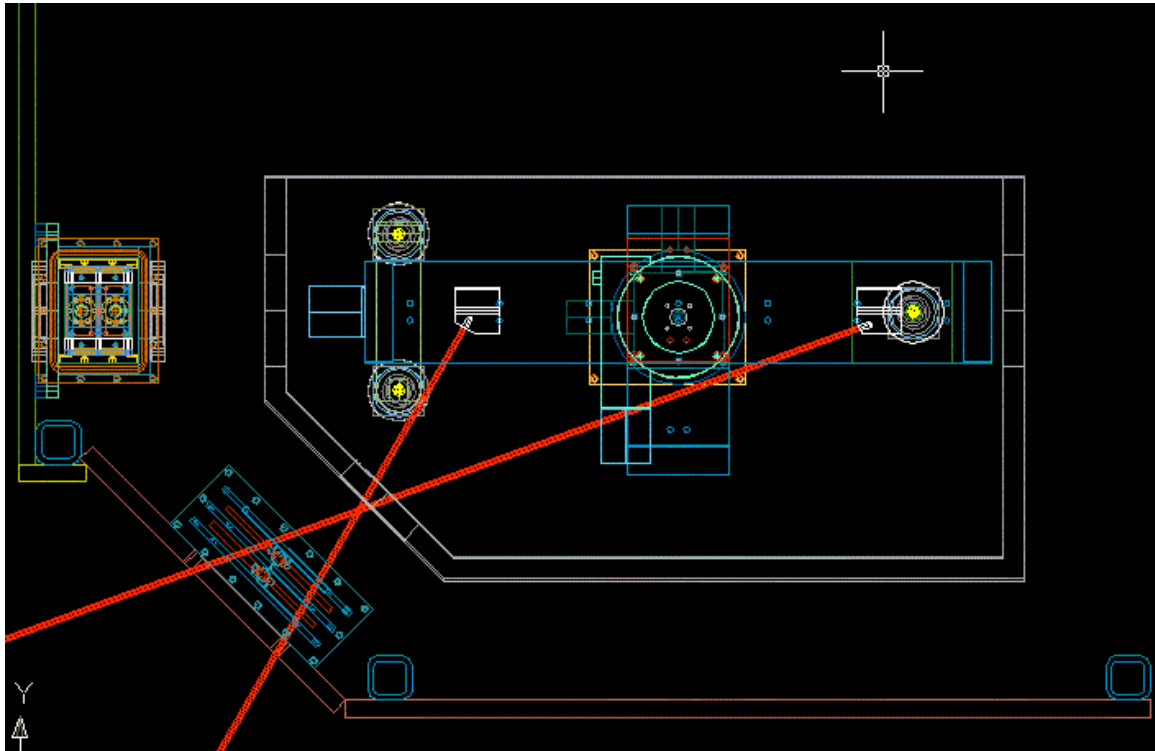


Fig. 1. Top view of the G2 cave including monochromator box, front shielding wall, and G2 and G3 shutters. The red beams indicate the maximum scattering angle range of 20° to 60° covered by the monochromator.

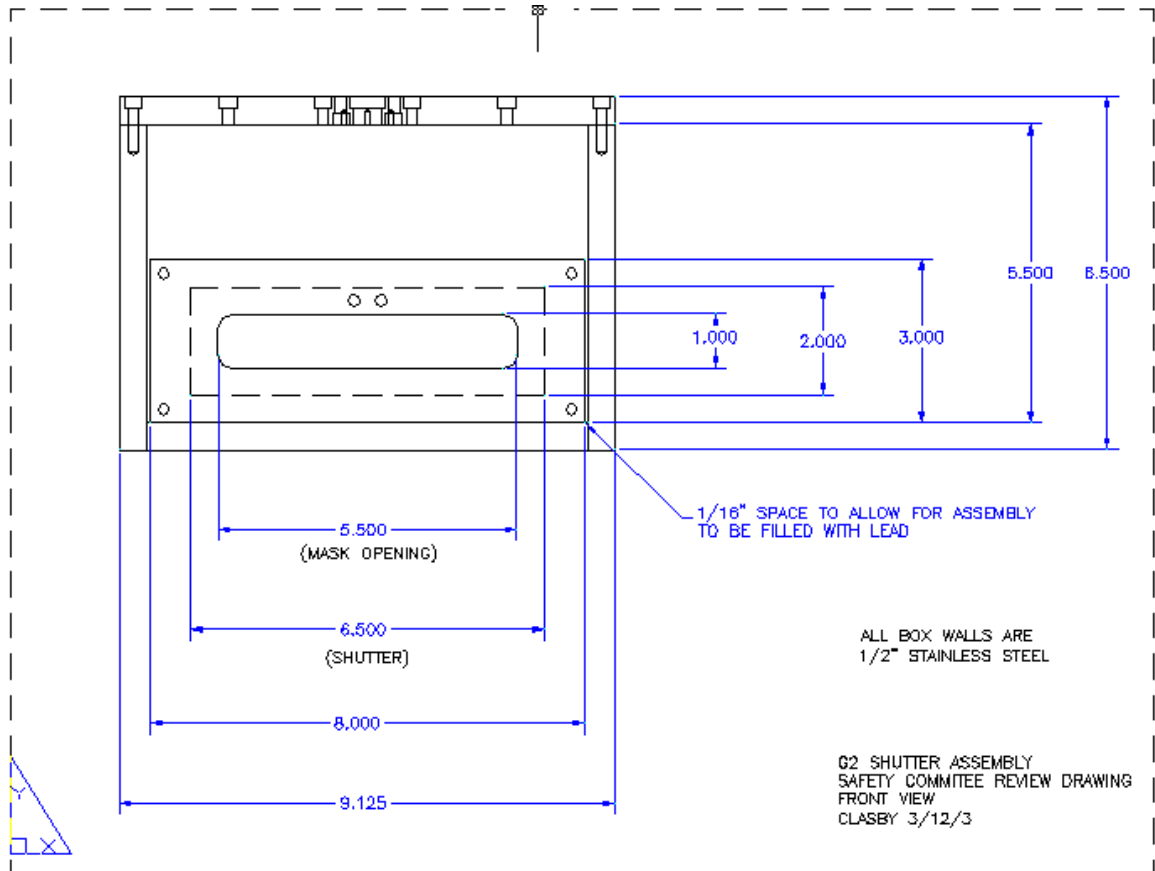


Figure 2. Front view of the G2 shutter

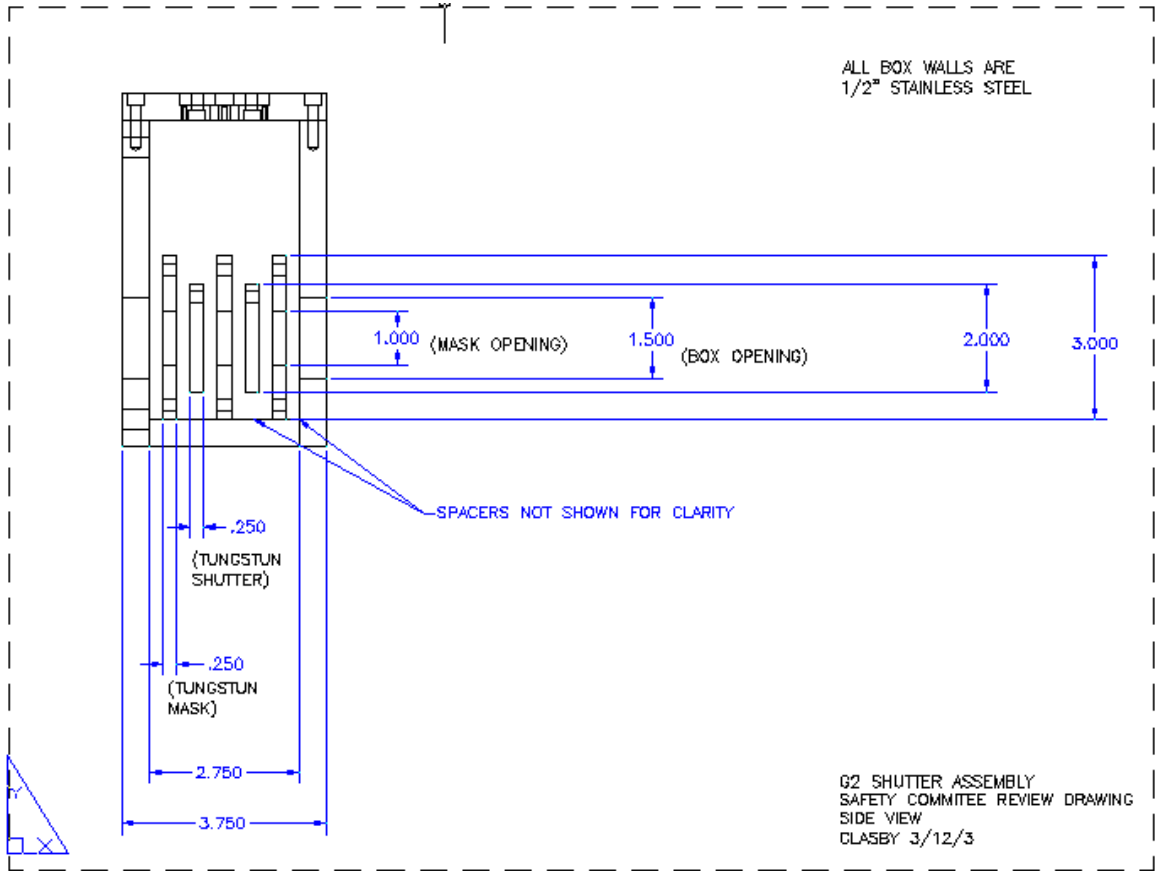


Fig. 3. Side view of G2 shutter.

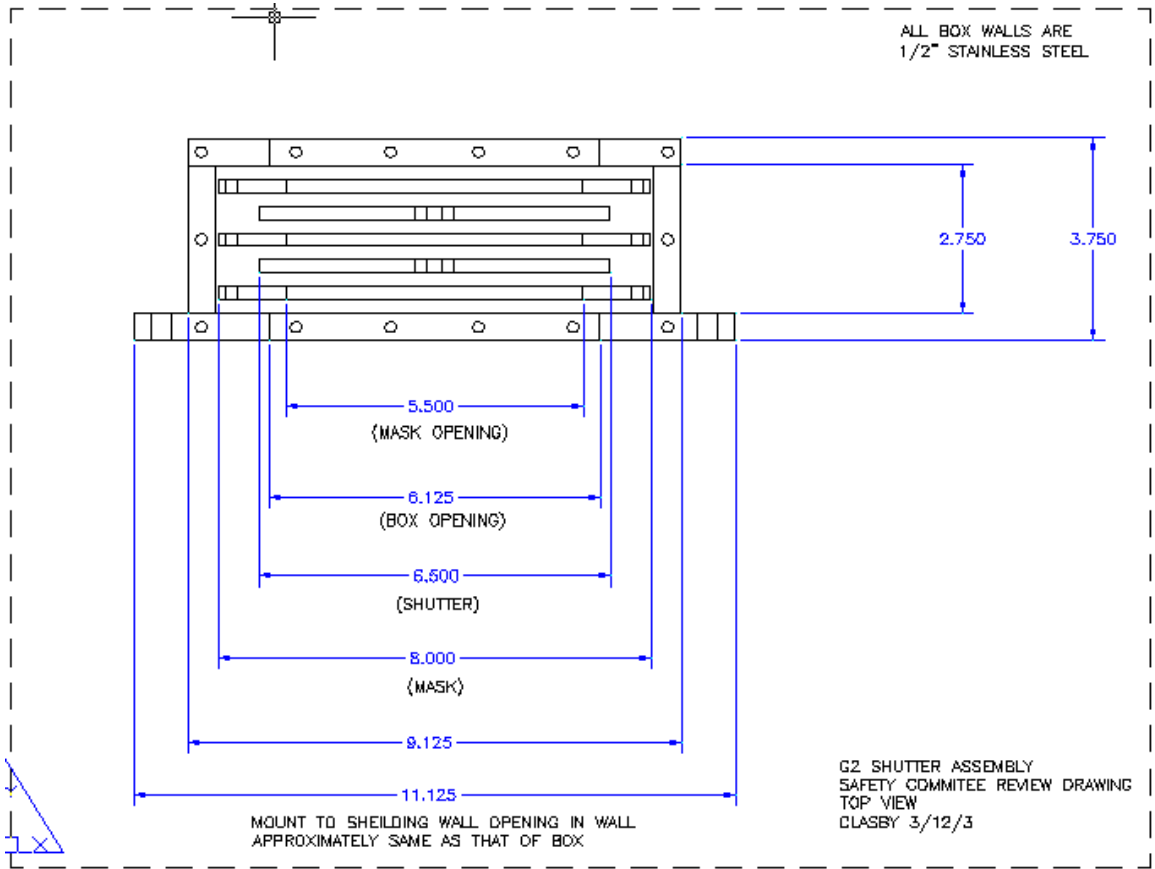


Fig. 4. Top view of G2 shutter.

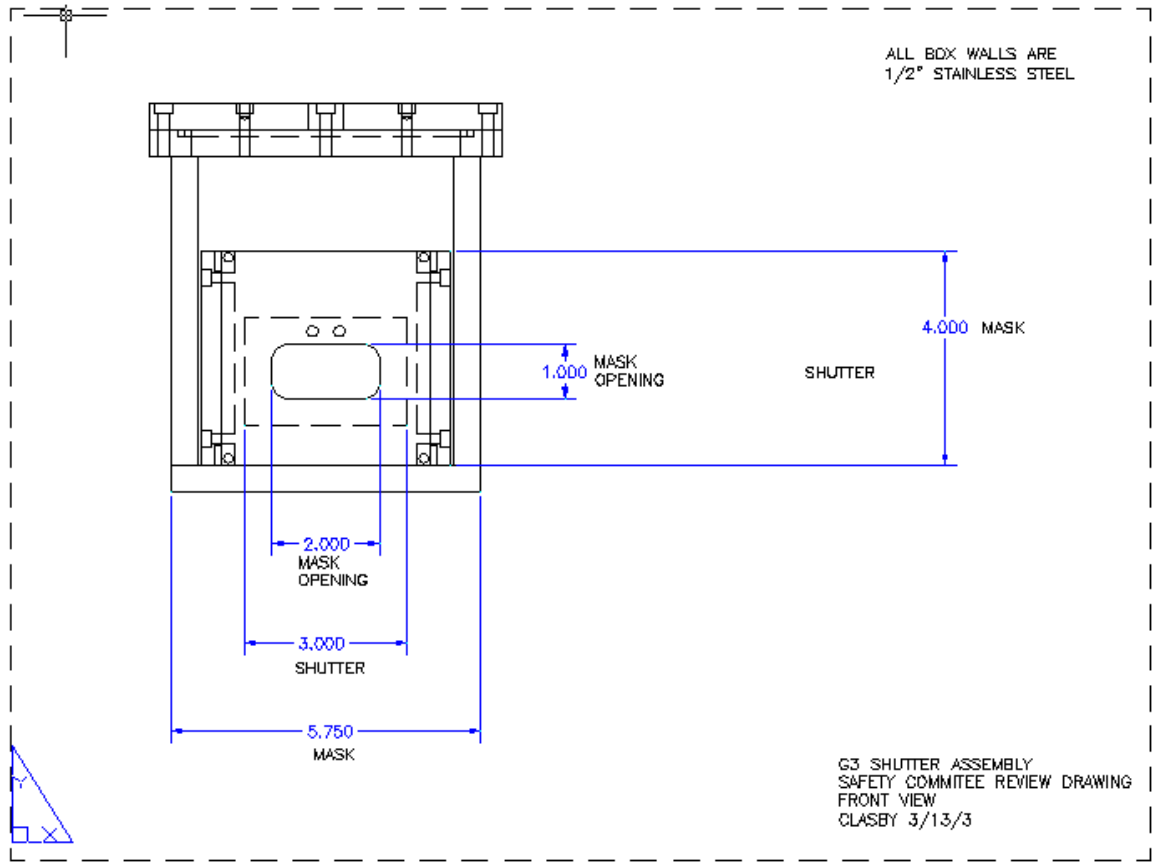


Fig. 5. Front view of G3 shutter.

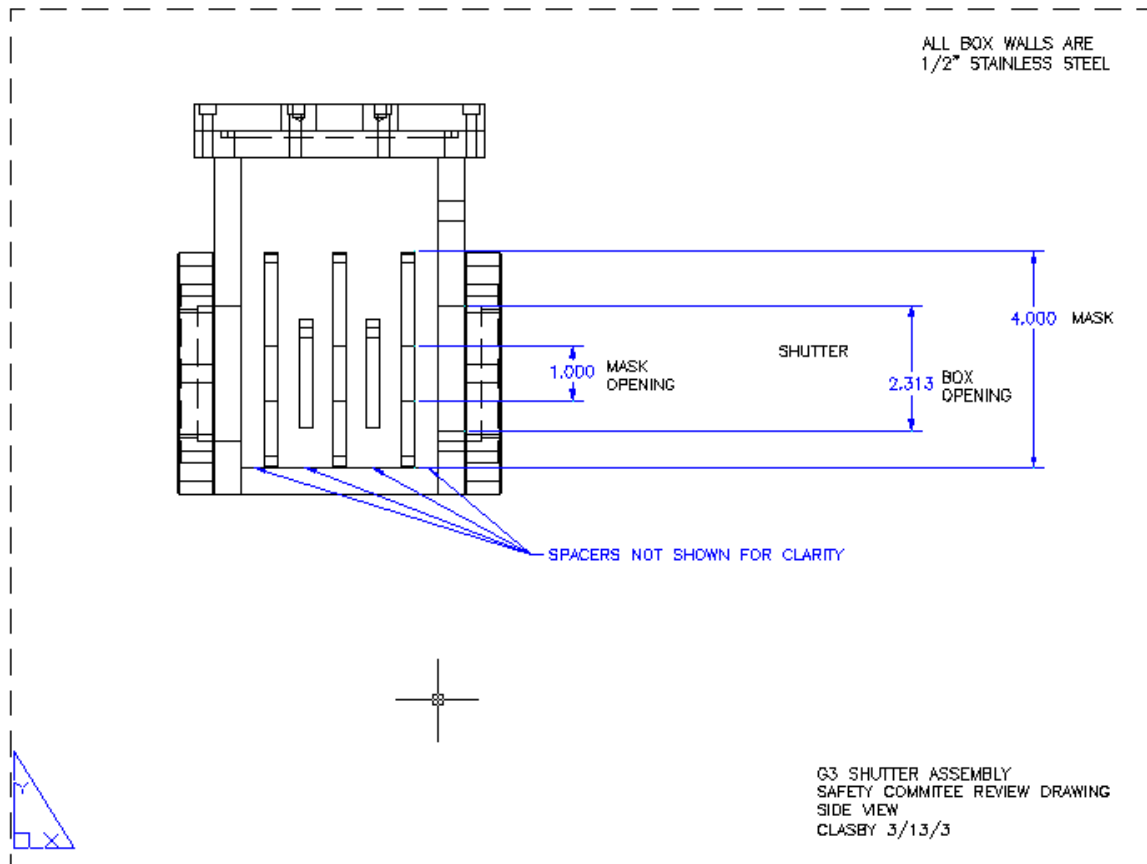


Fig. 6. Side view of G3 shutter.

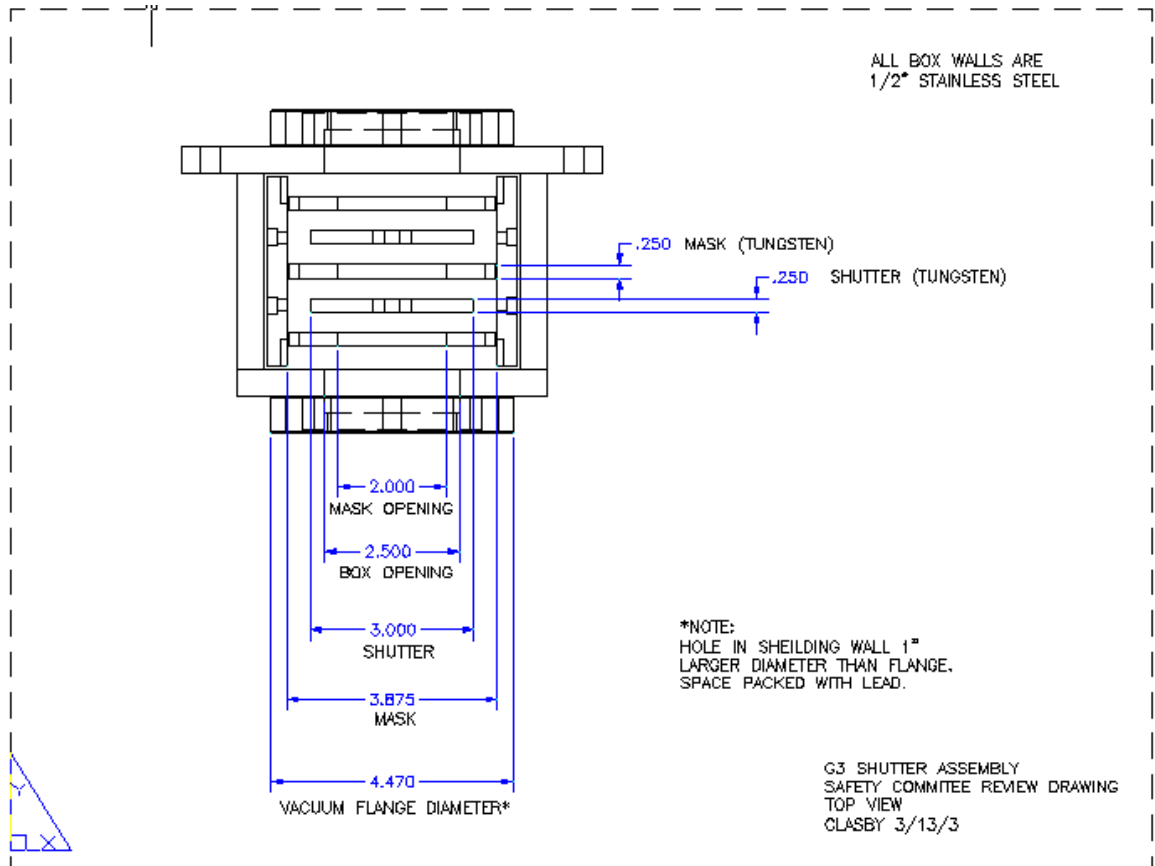


Fig. 7. Top view of G3 shutter.