Date: July 26, 2021

To: D. Chan, F. Kobasiuk, R. Fliller, P. Cirnigliaro, L. Hammons

From: Kin Yip, Radiation Safety Committee (RSC) Chair

Subject: Non-aggressive penetrations

This memo is written as a guidance regarding the non-aggressive penetrations being made on the shielding blocks in C-AD. We allow non-aggressive penetrations as described in SBMS\(^1\) (which, at the time of writing, is shorter than 3 inches in length and smaller than 1 inch in diameter, for drilling) and we strongly recommend that the penetrations be filled with equal or greater density material. For example, steel generally has higher density than concrete. When the penetrations are filled with equal and higher density material, the shielding function is retained. If an aggressive penetration is required, it will be subject to further review and approval.

In reality, compared to our thick shielding blocks, small penetrations as mentioned above would have negligible effect on its shielding capability. In addition, we have placed many TLD’s and chipmunks for decades in all facilities of Collider-Accelerator Department for monitoring radiation. The author has never heard of a non-aggressive penetration leading to any radiation problem. Over the years, liaison engineers and physicists for all facilities have also been very aware to ask for RSC approval before creating any significant penetration.

\(^1\) [https://sbms.bnl.gov/SubjectArea/135/Procedure/5777#2.1](https://sbms.bnl.gov/SubjectArea/135/Procedure/5777#2.1)