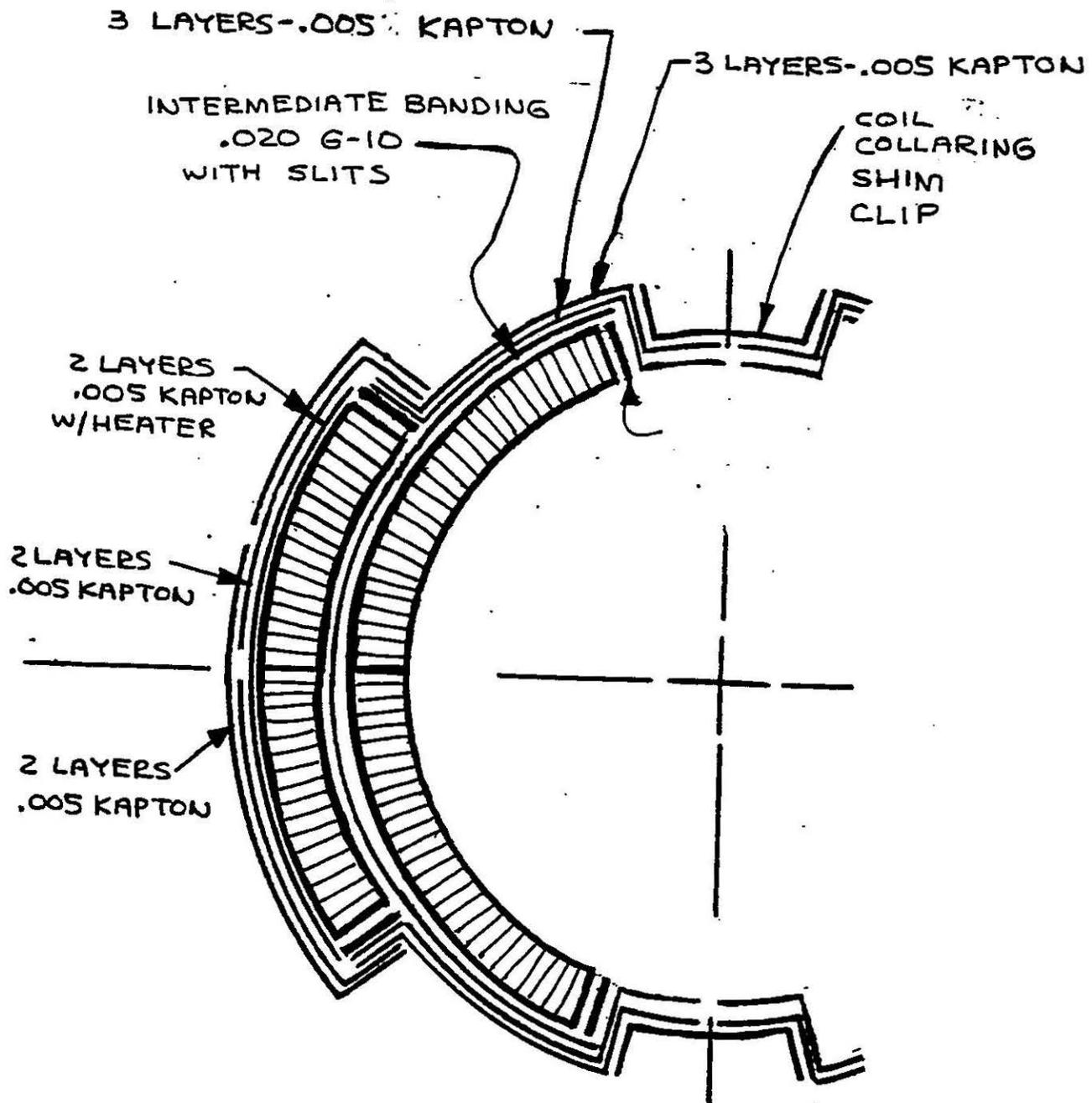


Tevatron Coil Insulation System

Rodger Bossert 9-4-90

The Tevatron coil insulation system is shown in Figure 1.

Figure 1.) Tevatron Insulation System



All insulating layers are of .005 kapton, except the "intermediate banding" which is .020 G-10. This layer of G-10 has .125 wide slits to allow helium to flow in the spaces between coils. An "irrigation spacer" is placed at the inner coil pole to allow helium to flow between the beam tube area to the area between the coils. Figure 2. shows the pole assembly. Figures 3 and 4 show the intermediate banding and irrigation spacer, respectively.

Figure 2.) Tevatron Pole Area Assembly

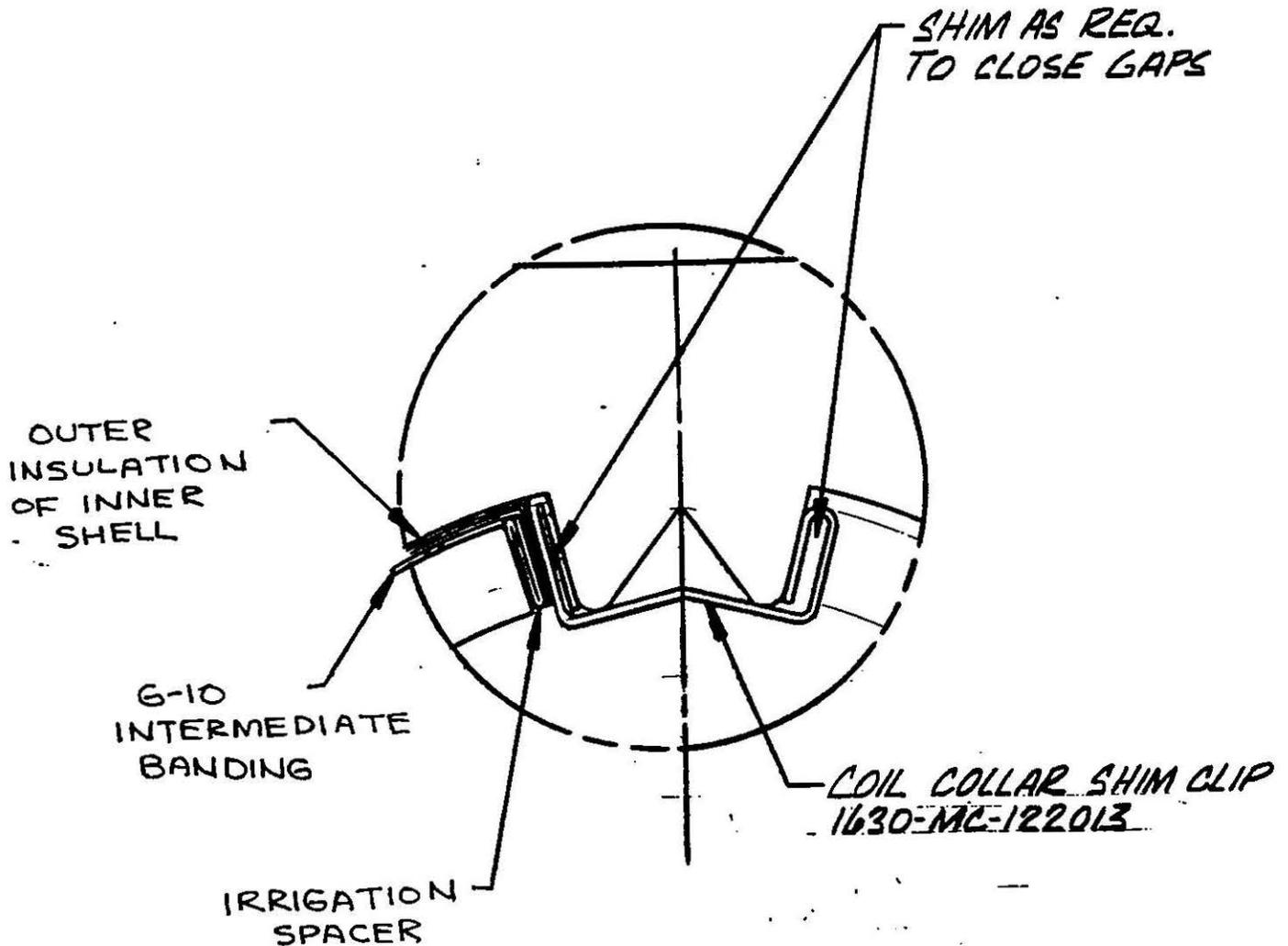


Figure 3.) Intermediate Banding

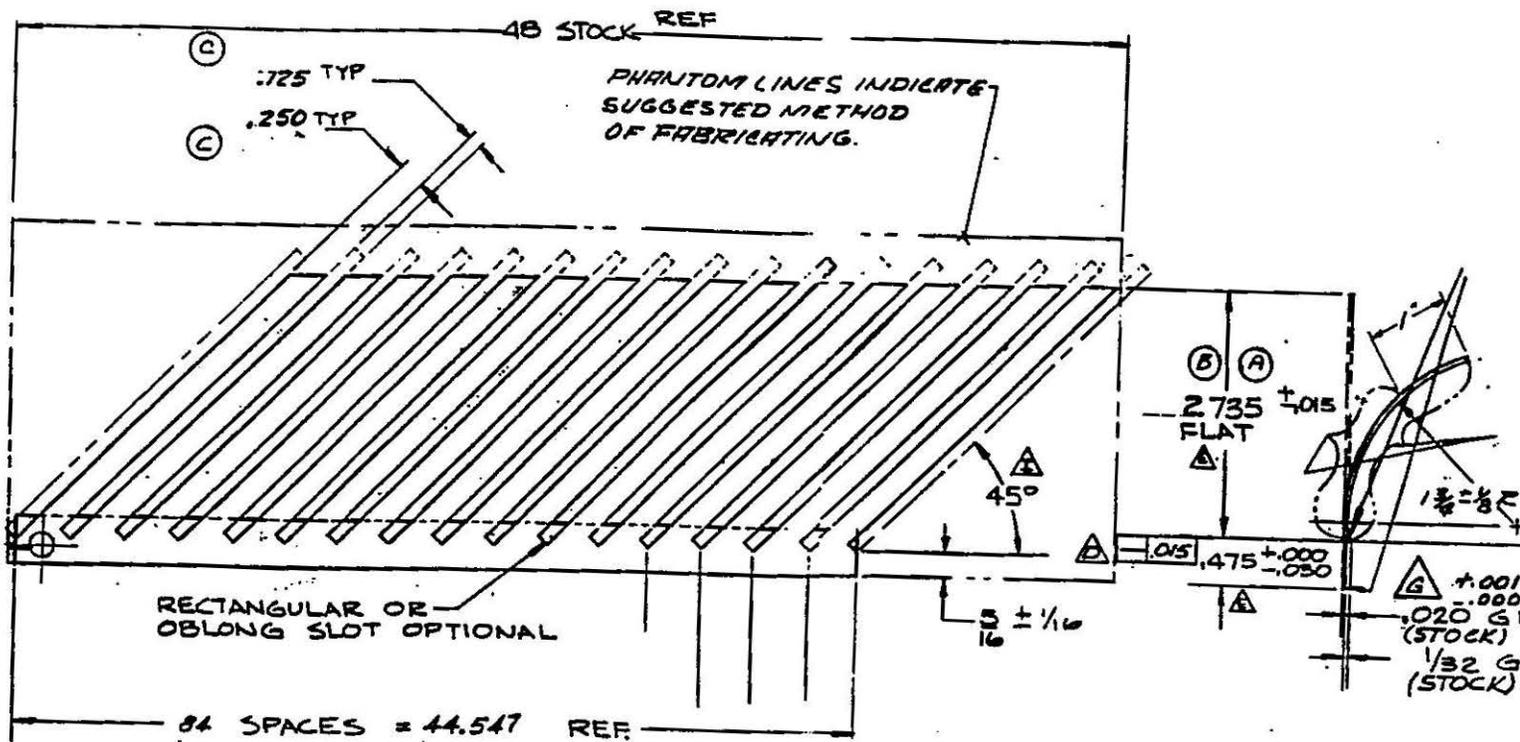
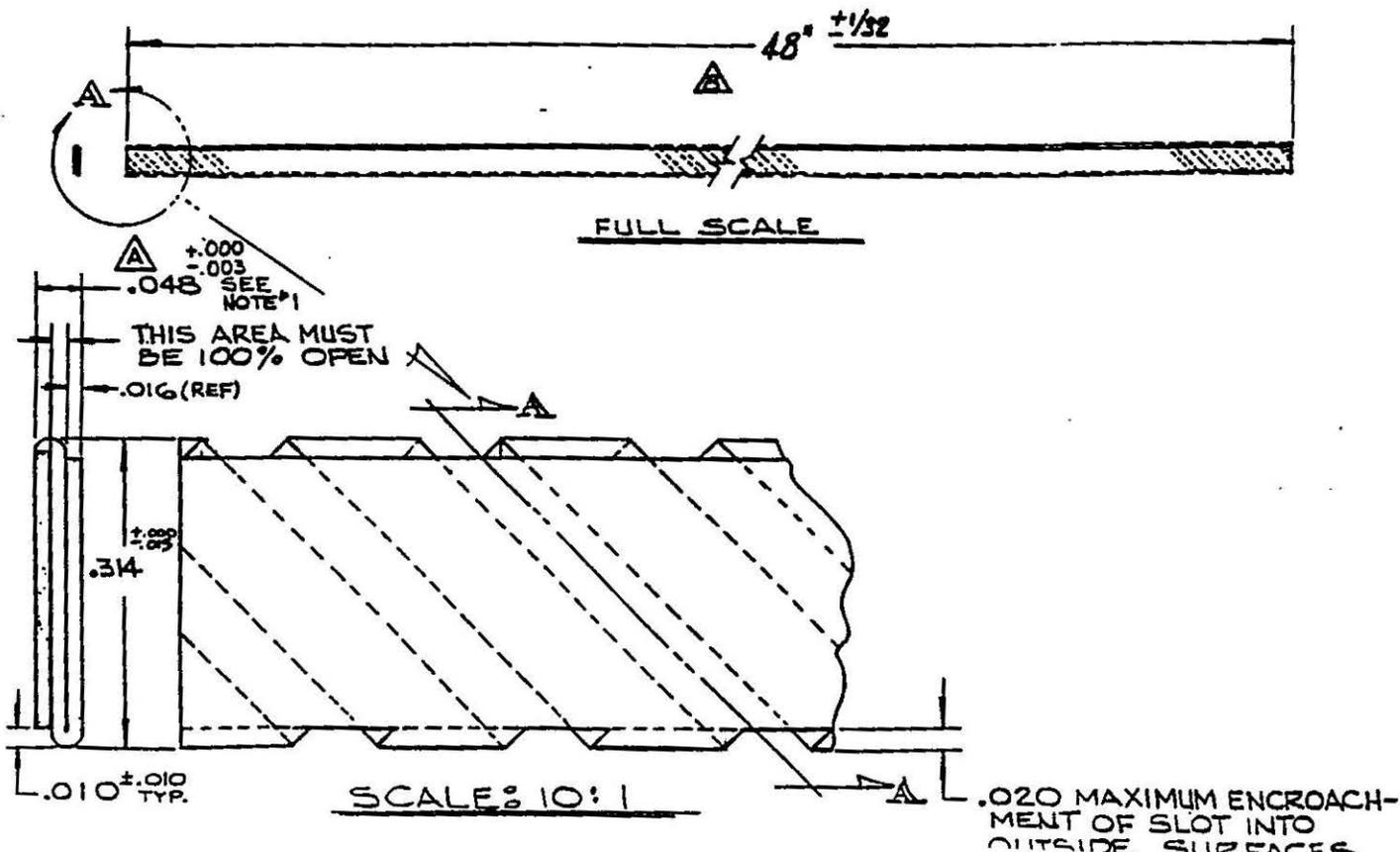


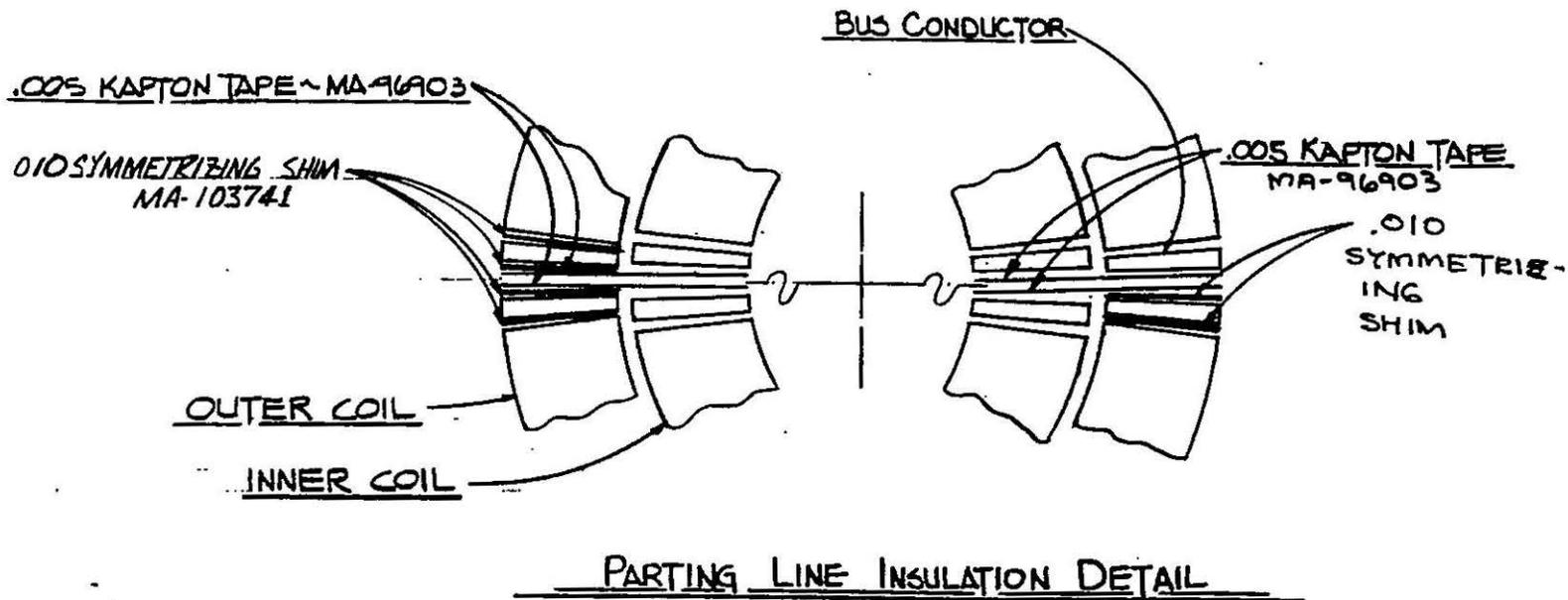
Figure 4.) Irrigation Spacer



Experiments have been done to determine whether the helium flow paths created by the intermediate banding and irrigation spacer are necessary. Tevatron magnets were built with these components replaced by kapton and steel without flow paths. No difference in magnet performance was observed.

The Tevatron parting plane insulation scheme is shown in Figure 5.) A total of .010 kapton tape is placed at the parting plane. It does not fold around the corner of the coil as do the SSC coil "caps".

Figure 5.) Tevatron Parting Plane Insulation



The Tevatron magnets have no teflon or other materials in the insulation to provide a slip plane for the layers. Kapton is relied on to provide the slip plane. There is also no collaring shoe on the outside perimeter of the outer coil. Kapton again is relied upon to provide the surface for the coil. The Kapton is .030 thick in this area.