

### I. PSR Bending Magnets, R. E. Gillis, LASL

The "H" magnets will be stacked from 1/16-inch thick laminations and will weigh ~ 19 tons. The technique of stacking and supporting the bends is in the formation stage. At this time, it appears that the laminations will not be glued together to give the magnet structural strength because the radiation levels in the ring may be high enough to affect the bonding strength of the glue. The magnet laminations may not be stamped in such a way as to allow the magnet to be split into two halves. By stacking whole laminations instead of half laminations, the stacking process will be faster and alignment of the top half to the bottom half will be eliminated. The installation of pancake coils is not expected to be a serious problem. The coil conductor will be aluminum instead of copper. Studies have shown that aluminum coils will save approximately \$100 K in capital cost and save an estimated \$1 M in power cost over a 15 year period assuming the cost of power escalates at 15%/yr.

Computer studies, using a finite element stress analysis code, have shown that the magnet can be encased in a metal box where the thickness of the sides and top will be 1/2-inch and the bottom plate will be 2-inches. Such an enclosure should provide sufficient structural support for the laminations and allow the magnet to be supported on three jack stands attached to the tunnel floor.

Several magnet support systems were presented by AT-3 personnel as possible candidates to support the ring-bend magnets in the PSR. All designs shown consisted of a jack screw with some type of self locating device such as a ball and core or a spherical washer thrust bearing. It is hoped such a support screw will allow the bending magnets in the ring to be replaced, in the event of damage, without realignment (see Fig. III-I.1.).

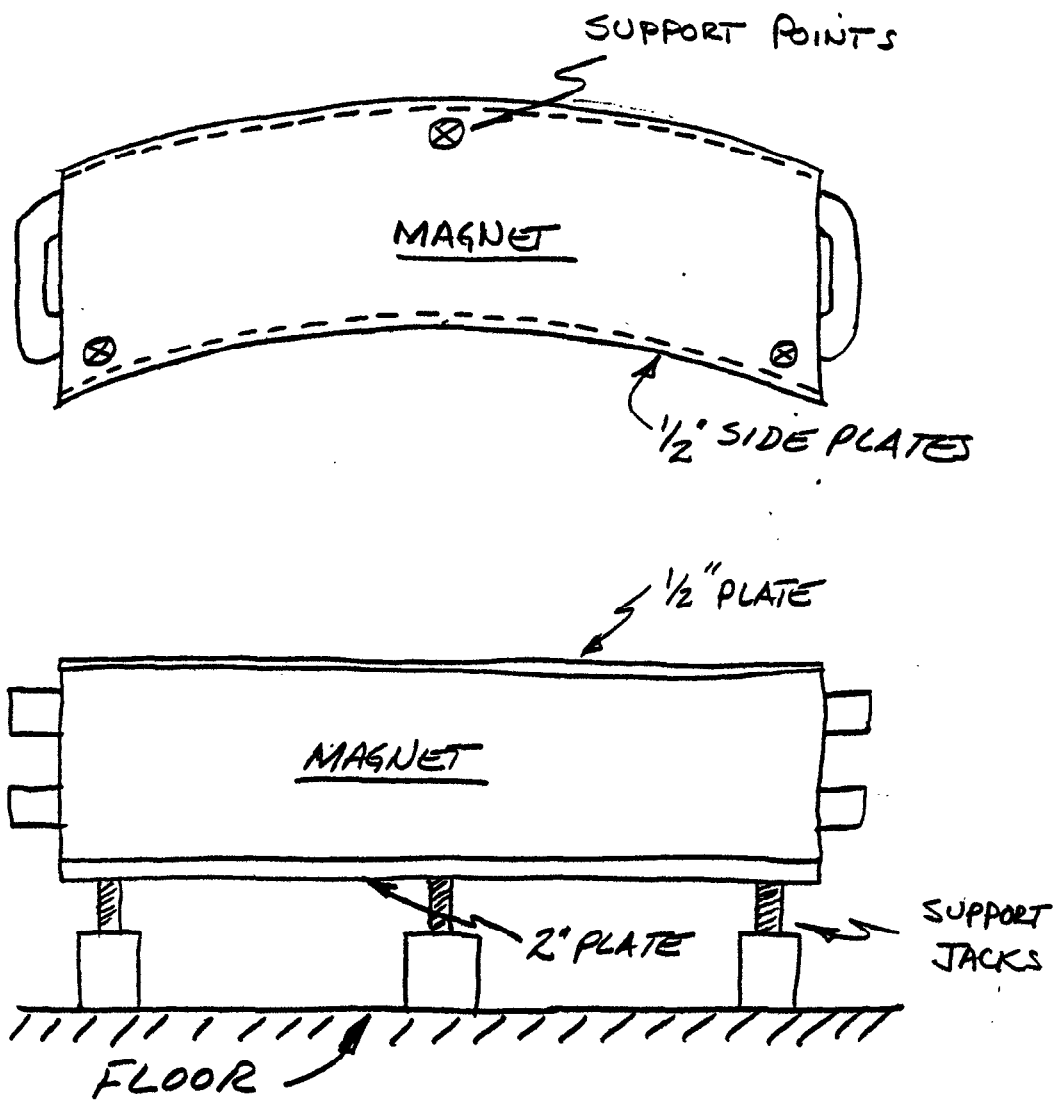


Fig. III-I.1. PSR bending magnet support system.