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A schematic outline of the extension of the SEB into the new east experimental hall

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A SCHEMATIC OUTLINE OF THE EXTENSION OF THE SEB INTO THE NEW EAST EXPERIMENTAL HALL

The extension of the SEB beyond the primary target position (approximately S91) involves the development of two target stations in the East Experimental Hall Addition with appropriate beam channels to the stations. A number of constraints on the development are imposed by facilities that already exist, by shielding requirements, and by the lateral clearance requirements of secondary beams.

The total length available for development of the facility is determined on one end by the position of SD_2, the downstream element (30D72) of the Phase II switchyard, and on the other end by the requirement that the new target stations be as close to the South wall of the EEBA as practicable. The latter condition ensures maximum crane coverage for secondary beam runs off the new target stations. It is assumed that Experiment #370 (Lindenbaum) will remain in position as an alternate user of the primary beam for a period after the beam has been carried into EEBA. This constrains the amount of rebuilding of the Phase II layout that can be done.

In the fully developed facility both target stations will be fed protons simultaneously by means of a beam splitter and appropriate optics. Several intermediate stages are planned in developing the full EEBA facility. The first stage will be to develop the EEBA target station closer to the AGS ring (target station B) as a full experimental facility. This involves a steering magnet capable of steering the beam onto the target and sufficient focusing to focus the beam with a small spot size. The steering angle involved demands use of a supercooled or superconducting dipole magnet. Sufficient vertical steering must be provided to compensate vertical misalignments.

The second stage involves the development of the second target station (Target Station C) with associated proton transport. The steering magnet used to direct the beam to target station B now is developed into a switchyard capable of feeding either station B or C.

In the final stage a beam splitting septum will be introduced upstream of the switchyard to feed protons to both stations B and C simultaneously. To do this, sufficient focusing must be included to allow both a focus at the switchyard for use when the beam is in a switched mode, and to give a broad horizontal line image at the beam splitter for use in splitting. The need to vary the proton intensity ratio between stations B and C imposes a requirement for control over the position and angle of the beam incident on the septum. Two dipoles would provide the necessary two degrees of freedom, but four would be preferable in order to have currents high enough to be readily controlled.

A schematic layout of the facility is shown in Fig. 1.

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SEB Instrumentation

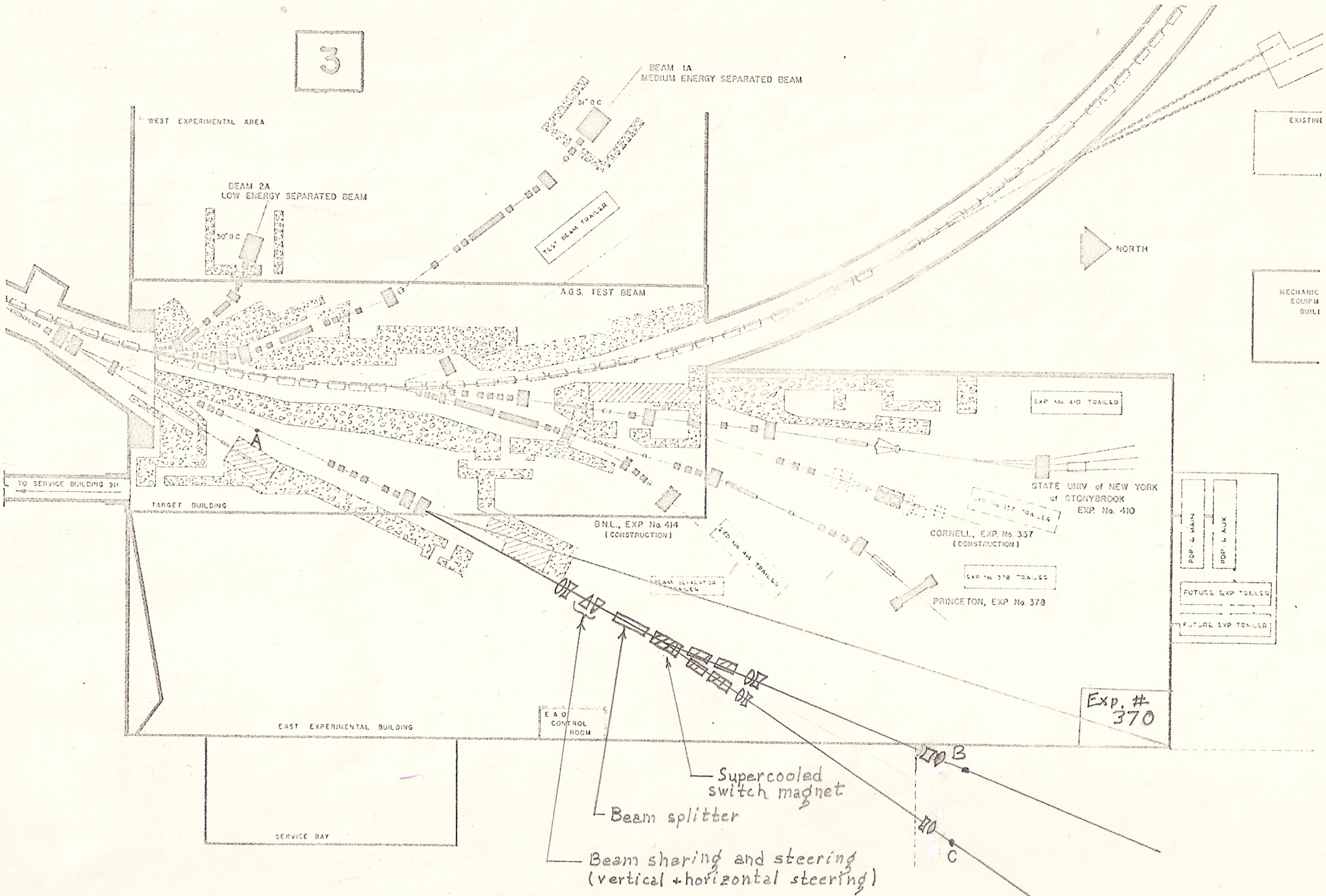

Figure 1