

Target Support Facility

The Target Support Facility for a neutrino producing research facility consists of the target hall, crane hall, the radiation handling equipment, and conventional facilities associated with the target system. The design is in a preliminary phase, therefore the level of detail shown in the figure is still evolving, and will be influenced by the results of neutronic analyses.

The proton beam-target interaction produces significant levels of neutrons and neutron induced gamma activation, therefore the facility requires steel and concrete shielding, provisions for remote handling equipment, and a hot cell. The radiation handling equipment used for replacing the target and for remotely handling life-limited components, is arranged to have minimal impact on the facility design. A large crane hall covers the target area and the decay channel, providing ample laydown space for shielding, access to the proton beam window, the target, the high field solenoid module, and all of the low field magnets. A 60-ton bridge crane and an overhead manipulator system operate along the full length of the crane hall, including the area over the hot cell.

The magnet system is presently shown to be contained in cryostat modules that are 3 meters in length. These are the major components that establish the size of the hot cell and the crane capacity. A helium vessel surrounds the target module, high field solenoid, and the transition magnets to avoid air-activation. Downstream of the target, the cryostats of the low field solenoids make up the vacuum boundary of the 50 meter long decay channel.

The ancillary buildings for water cooling, cryogenics, power supplies, vacuum, etc. are not yet included. This preliminary version of the facility arrangement shows the cylindrical concrete shield around the helium vessel, but does not yet show the steel shielding. And only a portion of the steel shield-slabs over the decay channel are shown. A partial view of the hot cell located over the proton beam tunnel can be seen in the background along with wall-mounted manipulators.