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DUFRANE NUCLEAR SHIELDING DESIGN: MODULAR/REUSABLE/COST EFFECTIVE

NEUTRON SHIELDING

Dufrane has recently completed fabrication and supply of a variety of Concrete Shield Blocks for the Spallation Neutron Source Project (SNS), Beam Line # 2, located in Oak Ridge, Tennessee. There were three types of blocks designed for the project, High Density, Standard Density, and Steel Encased High Density Concrete. SNS is a new, accelerator-based science facility that will provide neutron beams with up to ten times more intensity than any other such source in the world. SNS is being designed and constructed by a partnership of six U.S. Department of Energy (DOE) national laboratories (Argonne, Brookhaven, Jefferson, Lawrence Berkeley, Los Alamos, and Oak Ridge). Construction is scheduled to be finished in 2006 and SNS will employ around 400 permanent staff members and attract researchers and scientists from around the world.

For the project, 31 forms and ten steel encasement shells (shown to the immediate right) were designed and supplied to suit the various shapes necessary for the beam line. A total of 83 blocks were required. 17 of these blocks were High Density Concrete, ten were Steel Encased High Density Concrete. Both required a minimum density of 245 lbs/cubic foot. The remaining 56 blocks were Standard Density Concrete at 150 lbs/cubic foot. The ten steel encased units are to be located in an area of the beam line which would require maintenance upon occasion. Weights of the blocks ranged from 2,000 lbs to over 36,000 lbs. All of the blocks were provided with a primer and two finished layers of protective coating as illustrated in the photo to the lower right.



DUFRANE will work closely with you, your site ALARA coordinator, and your engineering team to assure the best design for each application. At the time you anticipate the need for a High Density or Standard Density Concrete Shield, please initiate a discussion with us.

You've Got a Problem...We've Got a Solution!