



## National Underground Science and Engineering Laboratory



On September 11, 2000, Homestake Mining Company announced the closure of the Homestake Gold Mine in Lead, SD, the oldest and deepest gold mine in the United States. Shortly thereafter, an adhoc committee of physicists was formed to accept proposals for the development of a world-class underground laboratory to study one of the universe's fundamental particles – *Neutrinos*.

In March 2001, the committee recommended further review of the Homestake mine along with a greenfield site in California for the location of the proposed National Underground Science and Engineering Laboratory (NUSEL). After more than two years of study, Homestake was chosen during the Summer of 2003 as the preferred site for this world-class laboratory.

### Project Data

#### Location

Lead, South Dakota

#### Building Type

Physics Laboratory  
Surface/Underground Construction  
Brownfield Site

#### Approximate Project Size

300 - 600 Miles of Underground Drifts  
50 Surface Facilities  
75 Surface Acres

#### Facility Features

Class 10 – 10,000 Cleanrooms  
(7,400 feet underground)  
Owner Utilities

#### Project Budget

\$350 million (without experiments)

#### Completion Date

Scheduled for 2008

#### Related Websites

<http://www.int.washington.edu/DUSEL/>

Our engineers assisted the South Dakota School of Mines and Technology (SDSM&T) with the study to develop the initial proposal that focused the attention of the National Science Foundation (NSF) on Homestake. Members of the Skyline Engineering team have continued to facilitate the conversion of the now-abandoned gold mine into NUSEL since the initial conceptual design was completed in January 2001.

Subsequent to the initial study and proposal, our staff has worked with multiple parties to further detail the NSF proposal, including the NUSEL Collaboration of scientists, University of Washington, State of South Dakota, and SDSM&T.

The master planning effort has included preliminary considerations such as underground site locations and orientation, security, as well as the reuse of existing structures and infrastructure to support laboratory development and operations. The project will include Class 10-10,000 cleanrooms as deep as 7400 feet underground - something that has never been done before.

Studies performed by Skyline include investigative reports of the mechanical and electrical issues associated with the site planning. Skyline has developed conceptual designs for the mechanical and electrical infrastructure including extensive underground pumping, process piping, HVAC systems, electrical power, lighting and communications. In addition to conceptual designs, order-of-magnitude cost estimates were developed to support the proposal to the NSF.

Skyline Engineering continues to assist the State of South Dakota in securing the Homestake site for the National Underground Science and Engineering Laboratory.