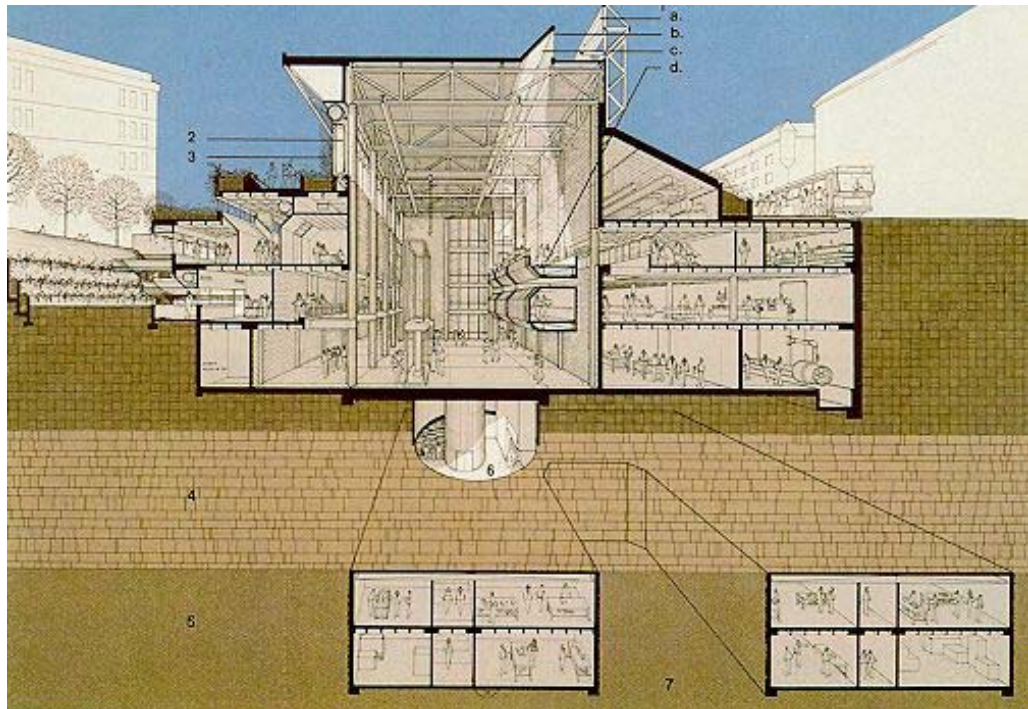


University of Minnesota Civil Engineering Building

The University of Minnesota's award-winning Civil Engineering Building was completed in 1982. The building comprises four upper floors of cut-and-cover construction and two lower floors of mined underground space some 100 feet below the surface. A flat-lying, 30-ft thick limestone layer separates the two parts of the structure. The mined underground space was excavated in a soft sandstone layer below the limestone roof. This innovative, energy-saving building was selected as the Outstanding Civil Engineering Achievement of 1983 by the American Society of Civil Engineers.



The decision by the University to design and build this underground structure relied on extensive experience and research in the area. Part of the research consisted of the excavation of an 8-ft high, 50-ft wide by 100-ft long test room on campus in the 1970's. Dr. Charles Nelson of CNA Consulting Engineers was co-principal investigator on this National Science Foundation funded project. The test room, which is now beneath recently constructed parking ramps, demonstrated the features of such construction and led to the development of design and construction techniques applicable to full-scale projects.

Dr. Nelson also planned, directed site investigation, designed and monitored construction of the mined space of the Civil Engineering Building. The mined space is a rectangular donut-shaped excavation, with a central pillar 45-ft wide by 90-ft long. The pillar supports the limestone roof, and creates usable space with a 58-ft clear span on all sides. Overall size is 175-ft long by 160-ft wide by 26-ft high. This space is finished into two floors of office, laboratory and common space.

Owner — University of Minnesota

Completion Date — 1982

Construction Cost — \$2.5 million heavy civil

CNA
Consulting
Engineers

2800 University Ave. SE
Minneapolis, MN 55414
Ph: (612) 379-8805
Fax: (612) 379-8160
E-mail: bkn@cnaengineers.com