

South Dakota State University Underground Utility Renovation and Upgrade Brookings, South Dakota



Project Cost
\$755,000

Completion Date
2004

Client Reference
South Dakota Office of State
Engineer

System Renovation and Upgrade

Farris Engineering was selected to study and design for the replacement systems of existing facilities connected to a district campus low pressure steam distribution system. Existing utilities were housed in a walk-thru concrete tunnel system originally built in the early 1930s. Previous studies recommended replacement or abandonment of the tunnel using new heating plants at individual buildings fired by natural gas.

The study conducted by Farris Engineering representatives resulted in a project to salvage the original tunnel system. This tunnel system not only contained steam system distribution but also included electrical power, communications, IT, cable and other information systems which were distributed to each campus facility as well as connected to the main hub.

Renovations included:

- New tunnel top overlay to seal tunnel roof cracks to eliminate water penetration.
- New lighting fixtures to illuminate interiors using energy efficient long life elements.
- New tunnel entrance structures to provide for safe access using safety ladders, ventilation features to maintain dry interior conditions, and drains to dispel water accumulations from any source.
- Incorporation of ADA access at street crossings integral to tunnel topping.
- Minimization of impact to campus activities by maintaining construction work within the tunnel and away from public and vehicular traffic.
- Asbestos-free tunnel construction.
- Relocation of communications cabling to cable tray support system saving complete restoration cost of systems
Elimination of electrical power interruptions.
- Provision of temporary steam boiler for critical museum facility during critical phases of construction.
- Routing of piping through existing facilities allowing for upgrades of existing piping and pressure regulating systems
Improvement of water hammer conditions previously experienced in the existing steam distribution system.
- Provision of integral pipe support and tunnel stabilization system allowing cost savings over underground distribution system costs.