



Colorado State Capitol Building Geothermal Program

May 19, 2010

Lance Shepherd, Architect
Capitol Complex
Division of Central Services
Department of Personnel and Administration
State of Colorado

- **Timeline**

Award date	January 29, 2010
Scheduled Completion Date	January 28, 2011
Contract Phase is underway	

- **Budget**

Project Budget	\$7,578,484
DOE Share	\$4,600,000
State Share	\$2,978,484

- **Partners**

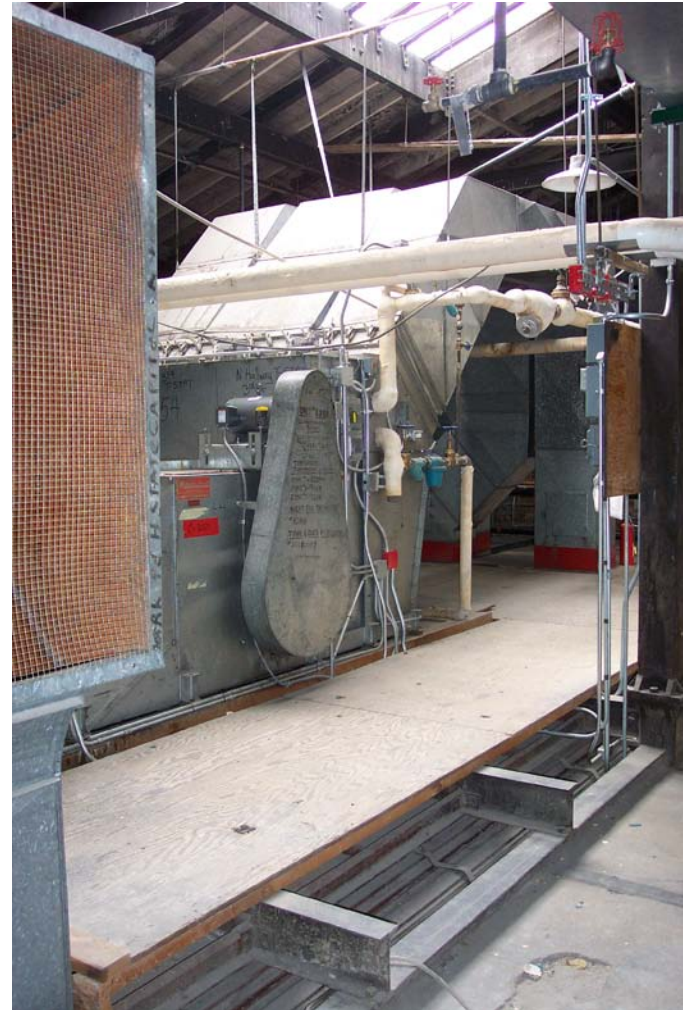
Chevron Energy Solutions
Colorado School of Mines, Geothermal Academy
The Governor's Energy Office

Project Objectives

- Retrofit a large scale ground source heat pump system into a historic building located in a built up urban area.
- Set a precedence for use of open loop ground source heating systems in Colorado.
- Fund the project on a budget neutral basis using existing utility budget and guaranteed energy savings through an Energy Performance Contract.
- Meet or exceed Colorado Greening Government goals of reducing energy consumption by 20%
- Document results through the Colorado School of Mines Geothermal Academy

Project objectives

- Replace 22 Existing Air Handlers dating from 1940's to 1980's
- Converting from inefficient steam source to ground source provides the “guaranteed” energy savings to fund the project.



- **Technical Approach**

An investment grade Technical Energy Audit has been completed documenting existing baseline energy consumption, data on existing HVAC equipment, and a preliminary Measurement and Verification Plan has been submitted to the Governor's Energy Office for review.

- **2010 Milestones**

- Well Permit process (Steps have been identified with Colorado Department of Natural Resources)
- Test Well go/no-go decision (Phase 1 test well contracts are under review)
- Production Wells
- Design
- Replacement of existing HVAC equipment
- Measurement and Verification Documentation

- Project Delays due to Attorney General Interpretation of Performance Contract Statute: Statute revised by State Legislature May 2010. (allowing DPA to accept Federal Funds)
- Certificate of Participation Legislation passed by State Legislature May 2010. (allowing use of Build America Bonds to Finance the project)
- Phase I Test Well Contract is in the review process.
- Well Permit process scheduled to start June, 2010
- Test Well/Production Well to start September/October 2010

- **Activities and Tasks**
 - Technical Analysis and Grant Application (complete)
 - Technical Energy Audit (complete)
 - Contracting, Implementation Phase
 - Permitting, Test Well and Design
 - Geothermal Exchange Exterior Installation
 - Geothermal Exchange Interior Installation
 - Monitoring
 - Project Close Out
 - Reporting/Documentation
- **Data Gathering; Colorado School of Mines, Geothermal Academy**
 - Review Measurement and Verification Plan
 - On-going data-gathering and documentation

- **Key Milestone**

The key milestone to the project will be determined by the test well results.

The test well will go down into two different sections of the Arapahoe Aquifer. (Upper and Lower Arapahoe Aquifer)

A waiver may be requested from the Department of Natural Resources to allow us to pull water from both sections from the same well.

Results of the test will determine the number of production wells (1 or 2) and the number of injections wells (1 or 2)

- Technical Energy Audit is complete
- Contracting Review is underway
- Technical Energy Audit, Measurement and Verification review is underway.
- State Statute revisions were required to accept the DOE grant.
- COP “Build America Bond” funding has delayed financing but the lower interest rate will allow us to complete more work and increase our matching funds.