

**Client:**

Iron Mountain Associates  
(IMA)

**Location:**

Park City, UT

**Services Provided:**

- Evaluation of degradation rate of MSE walls
- Reliability analysis

**Value Provided:**

- Predicting remaining service life of MSE walls enabled client to systematic approach to maintenance and repair

## Background & Project Challenges

The Colony is a 4,400-acre residential ski-resort development project tucked into the trails of The Canyons, the continent's fifth-largest ski resort.



The extreme terrain conditions posed significant challenges to the on-going construction of necessary infrastructure such as roadways and utilities. The site required an extensive system of retaining walls for side hill roadway construction, vehicle bridges and ski "cross-overs". The mechanically stabilized earth (MSE) retaining walls used consisted of welded wire face elements and steel bar mats for primary reinforcement.

Remediation work was performed on 6 walls in 2004/2005. In May 2005, during repair of these walls, evidence of corrosion of the welded wire reinforcing mats was discovered, triggering a series of investigations to evaluate the extent of corrosion.

In late 2005, Geocomp was retained by IMA to undertake a systematic approach to evaluate the condition of all the retaining walls.

## Geocomp Role & Accomplishments

Since the performance of the MSE walls on the project is dependent on the strength of the welded wire reinforcement at the end of the design life, the focus of Geocomp's evaluation has been to determine the thickness of the wire and evaluate the corrosion degradation rate. The factor of safety and remaining service life can then be evaluated for the existing and future wall conditions. A substantial amount of field and laboratory test data has been compiled from a wall deconstruction program. Statistical analyses have been performed on the data, and reliability analyses are being conducted to predict remaining wall life of the walls. A program of linear polarization measurements has been initiated to help establish project specific corrosion rates over the long term.

A method has been developed to predict the remaining life of each wall. This allows maintenance and repair work to be scheduled in a way that fixes only those walls that reach a defined degradation state which saves considerable money.