



## BMW Dealership

Pleasant Grove, Utah

**The Geopier Impact® system provided settlement control for conventional footings while mitigating the potential for liquefaction**

**Description:** Construction of a single-story, high-bay masonry structure. Column loads are 10 to 120 kips and wall loads are 4 to 10 kips per foot.

**Subsurface Conditions:** Subsurface conditions generally consist of loose silty sand and poorly graded sand interbedded with soft to medium stiff silt and clay. Groundwater was encountered at depths of 5 to 6 feet below existing grade.

**Geopier Solution:** The Geopier Impact® system was selected for this site from a list of alternatives including overexcavation / replacement, dynamic compaction, pre-fabricated drains and a mat foundation. The Rammed Aggregate Pier®(RAP) system provided a technically-viable design solution to decrease both consolidation and liquefaction-induced settlement while providing significant cost savings over other alternatives. RAP elements were located beneath conventional spread footings to provide an allowable bearing pressure of 4,000 pounds per square foot, and in a grid pattern across the building footprint to reduce potential cyclic shear



stresses during the design seismic event. A comprehensive quality control program that included a full-scale modulus test and crowd pressure measurements during installation provided confirmation that the design pier stiffness was achieved in the soft clay layers.

### PROJECT TEAM

**Owner:**

Firmco

**Geotechnical Engineer:**

IGES

**Structural Engineer:**

Calder Richards

**General Contractor:**

Culp Construction

**Geopier Installer:**

GFC-Northwest

**Geopier Designer:**

GFC-Northwest