



## Flatiron Crossing Mall

Broomfield, Colorado

GROUND Engineering performed the geotechnical investigation, environmental assessment, material testing, and structural inspection of the recently completed Flatiron Crossing Regional Mall and its associated utility, roadway, and landscape improvements. The project site was comprised of approximately 170 acres. Construction included the retail mall structures and all the outlying retail office structures. Construction included steel framed multi-level structures with caisson/grade beam foundation systems. We performed nuclear moisture/density and sand-cone testing on approximately 2 million cubic yards of material that was moved during overlot grading. We also performed testing for the 78,000 linear feet of utility lines that were installed. In addition, we performed testing and observation of the MSE walls that were built throughout the project site, as well as at the newly designed East and West Interchanges at US 36. Approximately 5,000 square yards of sub-grade material were stabilized each day for over 14 large parking lots and all of the associated roadways, access roads, highway access ramps, and loading docks.

We performed laboratory and field testing during the stabilization and paving for these areas. We were also present to perform observations and testing for over 900 caissons during construction of the main mall structure, the associated "Village" buildings, two large box culverts, and three bridges. Material testing and observations were performed for the large 102-inch storm drain and its associated inlet structures. Concrete was tested for all of the pier caps, grade beams, floor slabs, bridge abutments and decks, loading docks, curbs, gutters, and crosspans. The majority of the laboratory testing including soil testing and compressive strength of both concrete and stabilized soils was performed on-site in our mobile field laboratory. All asphalt placement was observed and tested on the materials, and samples were submitted to the laboratory for testing of Marshall stability, asphalt content and gradation. We also produced and maintained all of the final project test reports on-site in our mobile office.