

Structural Evaluations

BUILDINGS AND STRUCTURES

BC&E's professional engineers, licensed in a number of states, have evaluated a wide range of problems and conditions with existing buildings and structures affected by foundation movements, fire, flooding, wind, construction accidents, changes of use, improper design and construction, and deterioration due to exposure to water, de-icing salts, alkali-reactive aggregates, and freeze-thaw cycles. For distressed and deteriorated concrete structures, some of these

evaluations have included the use of ACI load testing to determine whether the existing condition of the deteriorated concrete structure is adequate. Many of these evaluations have also included designing the structural repairs, preparing drawings and specifications for the structural repair work, and observing the contractor's repair work to determine whether the work appears to be in general compliance with the drawings and specifications.



PARKING GARAGES

Parking garage structures, especially in northern climates, are prone to structural deterioration due to repeated exposure to water and de-icing salts brought into the garages by water dripping from vehicles or by simple exposure to the elements on an unprotected parking deck.

include deterioration of the surface of the concrete slabs, corrosion of mild steel and post-tensioning reinforcement, corrosion of steel decks supporting concrete slabs, cracking of double-tee and spandrel beams, and failed waterproofing systems. BC&E's evaluations often include the use of non-destructive technologies to locate embedded reinforcing steel, sampling and testing of concrete for materials properties and chloride content, structural analyses of the garage structure, load-testing, and the design of structural repairs.

BC&E's professional engineers have extensive experience in evaluating and designing repairs for the range of problems that typically occur with older parking garages and which are sometimes required to maintain newer garages. These problems



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Structural Evaluations, *continued*

FOUNDATION SYSTEMS

BC&E's professional engineers have evaluated numerous building and structural problems created by excessive movements of the underlying soils and foundations. Many of these have involved problems caused by swelling of expansive soils. BC&E's engineers have also investigated unusual foundation

issues caused by large vibratory industrial machines. Working in collaboration with geotechnical engineers and geotechnical specialty contractors, BC&E has designed foundation repairs and programs to monitor foundation movements.



CONCRETE SLABS-ON-GRADE

Concrete slabs-on-grade are commonly used as floor systems inside buildings and as exterior pavements. BC&E's professional engineers have extensive experience in evaluating problems and designing repairs for concrete slabs-on-grade used in warehouse and industrial floor slabs, post-tensioned floor slabs-

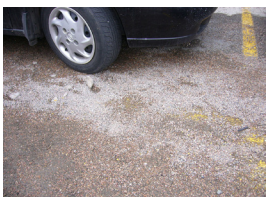
on-grade used on expansive soils, airport runway slabs and aprons, and exterior flatwork.



PAVEMENTS

BC&E's Professional engineers have investigated problems with and designed repairs for a wide variety of pavement systems. A number of these systems include sand-set paver systems, some of which have

snow-melt tubing in the sand bed to create a heated exterior pavement that has become popular in the Colorado alpine resorts.



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