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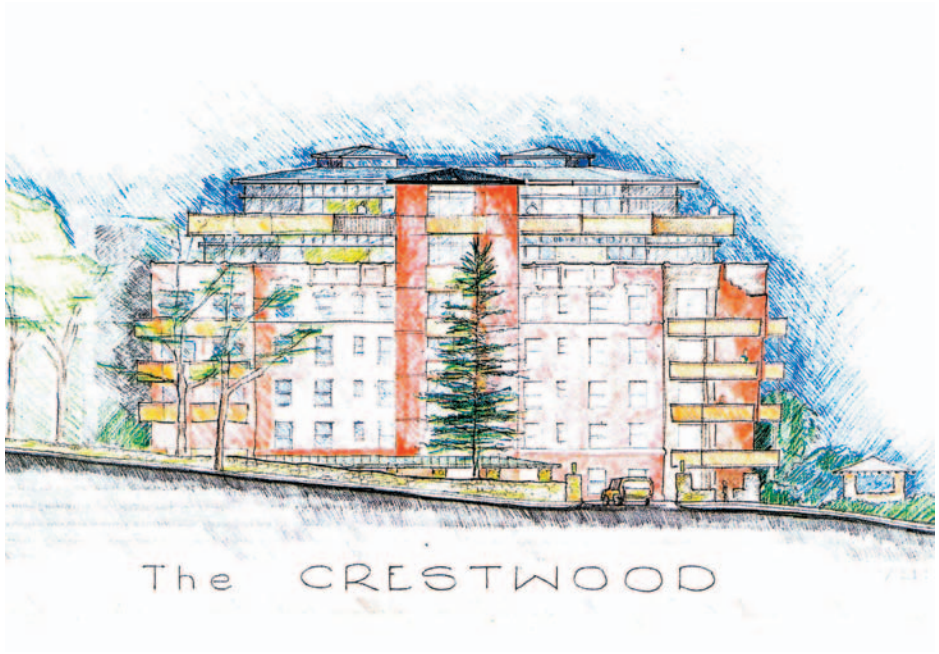
REBIRTH OF BROOKSIDE HOTEL

By Steven R. Carroll, P.E.
Bob D. Campbell & Co., Inc.

On the east side of Brookside Boulevard at 54th Street, in Kansas City stands a majestic five-story brick and terra cotta structure most recently known as Treadway Hall, a dormitory for UMKC. The building originally opened in 1919 as an upscale family apartment-style hotel to meet the needs of a rapidly growing city. The building later housed Army Air Corps personnel attending Rockhurst College during World War II and then returned to a resident hotel after the war. The St. Paul School of Theology used the building as a dormitory in the early 1960's and sold it to UMKC in 1966.

By the mid 1990's the building was in need of significant structural and cosmetic repairs which forced the University to close the doors in 1997. Local architect, Fred Truog and developer, Ralph E. Myers, Jr. put together an investment group to restore the building and turn it into luxury condominiums for private sale. The project was aptly named "The Crestwood" to fit into its quaint and classic neighborhood. The building will house 38 unique condominiums with amenities such as a library, hobby room, fitness center, social room and a catering kitchen. The building was completely gutted to accommodate the need to modernize the structure and provide abundant living space.



The initial plans called for the construction of two additional floors which created the greatest engineering challenge for the project. The original design drawings for the building allowed analysis of the existing foundations, columns and bearing walls to see if they had capacity to safely support the additional loads. The result of that analysis was a resounding maybe. Most of the above ground structural elements proved capable of supporting the additional loads while the shallow spread column footings and continuous bearing wall footings proved to be too much for the bearing capacity of the underlying clay soil.

Geotechnical testing was performed by Terracon and bedrock was revealed to be only 6 to 12 feet below grade across the site. Brainstorming design sessions were held with architect, Fred Truog; Bob D. Campbell and Company – Structural Engineers; Terracon and Berkel and Company Contractors to come up with an underpinning solution to support the weight of the additional structure. The solution was auger pressure grouted piling extending to bedrock (referred to as APG piles).

The underpinning design called for a series of APG piles placed at 8 to 10 feet on center around the perimeter of the building in pairs with one pile inside and one outside of the existing foundation wall. Holes were core drilled through the foundation wall to allow the placement of a steel beam through the hole, linking and bearing upon the inside and outside piles. The steel beams were then encapsulated with reinforced concrete to protect the steel and allow for the direct transfer of load from the original foundation wall into the new APG pile system extending to bedrock. The APG piles were designed and load tested to support the total dead and live load of the additional floors as well as the live load of the original five story structure.

Interior column footing underpinning required four APG piles to be installed in pairs at two ends of the existing concrete spread footings. Existing concrete pedestals at the base of the columns were chipped back to allow for passage of a steel beam on each side of the pedestals. The beams were positioned under the chipped out lip of the pedestal to allow for direct transfer of load from the column above. The beams again linked and rested upon the pairs of APG piles extending to bedrock and were encased in reinforced concrete to protect the steel and provide a mechanism for direct transfer of load.

Drilling of the APG piles inside the building required special low overhead equipment to accommodate the low head room. Approximately 425 piles were drilled on the project at a rate of about 10 piles per day for low overhead piles and about 18 piles per day for exterior piles. Total cost of the underpinning installation was just under $700,000.00.

Several other engineering challenges were overcome in the renovation and restoration design of this grand old structure which Bob D. Campbell and Company was honored to be a part of the team that rose to the task. The project is scheduled for completion in the fall of 2005 and a large number of the condominiums have already been purchased. We trust that the rebirth of the building that has been a home to thousands of Kansas Citians over the past 80+ years will strengthen and enhance the traditional neighborhood it towers above.

Underpinning of typical interior column footing.

Underpinning of exterior foundation wall.