



CHPP-Composite Helical Pipe Pile *Fairfield Resort, New Orleans, LA.*

Soon after hurricanes Katrina and Rita went through New Orleans, LA. Fairfield Resorts undertook a project to renovate the Old Franklin Printing Building. The building is located adjacent to the French Quarter and near the Mississippi River.

The plan was to install new deep pile supported foundations to the existing 6-story building with a ground floor area of 14,000 sq-ft. so the structure could be extended to 9 stories. In addition, they would demolish the existing 5-story building with a 4,000 sq-ft. ground area in the rear but retain the masonry brick façade. A new 9-story building was built on a new Composite Helical Pipe Pile (CHPP) foundation system.

Soil boring logs indicated relatively low blow count soil, high water table clay type soil and only a 4 to 5 ft. thick sand layer at the 53 ft. depth. Some locations required installation of foundations with limited head clearance. The minimum pile load capacity requirement was 100 KIP



The initial recommendation was for driving 8" and 10" open ended segmented steel pipe piles to a depth of 50 feet. Auger cast piles were not considered due to the high water table, soil removal and limited clearance in many locations. The composite Helical Pipe Pile (CHPP) was also considered for this application as an alternate. It was decided to install test piles with both CHPP and driven piles to confirm load capacity. Another consideration for selecting the CHPP helical foundation system was during some of the demolition, vibration from jack hammers dislodged bricks from adjoining buildings, this created concern for using driven piles.





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It was determined that the 8" diameter open ended steel pile developed an ultimate load of 50 KIP at a depth of nearly 85 feet. The 10" diameter open-ended pile was estimated at an ultimate load of 50 KIP at a depth of nearly 75 feet. There was concern with using the driven pile and resting on the sand lense. The total required installed depth for the driven piles would be considerable to meet the requirements.

The CHPP was installed to a depth of 53 feet and developed 140 KIP ultimate load with ½" settlement well exceeding the 100 KIP ultimate load. The CHPP met the desired loads with both bearing and friction.

The CHPP helical foundation system was selected as the cost effective solution to this project. A total of 197 CHPPs were installed to underpin the existing 6-story structure. The helical piles were installed in groups of 2,4,6, and up to 10 per pile cap depending on the required load at each pile location. These groups of CHPPs with the pile caps along with grade beams became the new foundations for the structure. Upon completion of each new pile system, the building load was transferred from the old foundation to the new foundations.



Lightweight and maneuverable equipment was used to install the helical piles

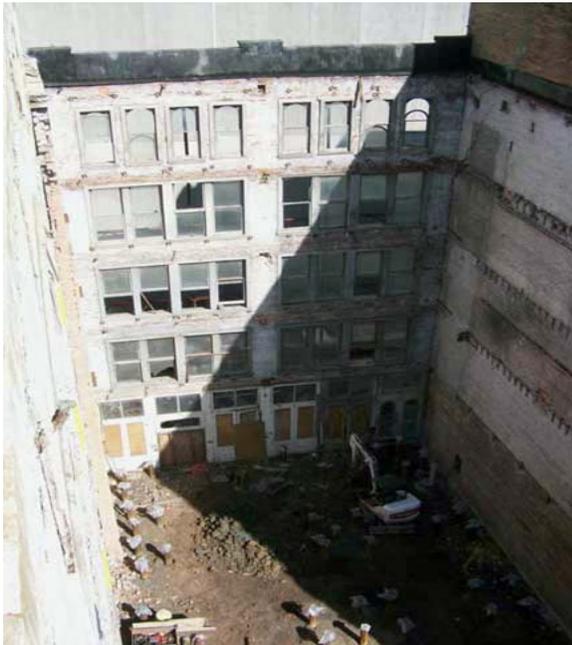
The new 9-story rear addition required a total of 71 CHPP 8" diameter helical piles with the same 100 KIP load requirement per pile. The CHPP helical pile was installed without vibration.





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The CHPP helical pile extensions were connected with square formed male/female ends and bolted together. The squared ends provided an efficient and easy to use interface needed to apply the torque of up to 20,000 ft-lbs required for this project. The inside of the helical pile provides an unobstructed view from the top to the bottom of the lead section transition. The piles were filled with concrete (grout is higher in cost) to a depth of 5 ft. below grade for added strength. The top of the CHPP was cut off at a depth of 5 ft. and the pile cap poured and a grade beam was added. All new columns were installed and the load transferred from the old foundation to the new CHPP foundation. There were no spoils with the CHPP installation.



CHPP installation in process for new 9-story rear section

The façade was protected by the smooth and vibration free helical pile installation.



Installed CHPP helical piles

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