Success with:
Below-Grade Waterproofing

Success with any below-grade project starts with exceptional waterproofing. *The Kansas City Star* newspaper's new printing headquarters was no exception to the rule. High-end waterproofing with quality installation delivered success for this new downtown building.

The KC Star's new printing headquarters will stretch two city blocks long and one city block wide in the middle of the thriving Kansas City downtown. Yet with any growth, especially new construction, there are challenges. Waterproofing contractors for the new headquarters encountered challenges of working in a limited below-grade workspace that was located in a very crowded downtown metropolitan area. The 425,000 square foot project's complexity extended from its shiny exterior to the root of its existence; 32-feet below ground level.

Many below-grade waterproofing projects do not go as smoothly as planned due to lack of both product and project flexibility. Whether it's a strict time schedule, a small staff, restrictive safety requirements or even limited workspace, it is critical that the design team work with the waterproofing contractor to specify products that take into account site-specific limitations and requirements.

"There was only five feet of 'overdig,' which left minimal space to work in," said Dan Hertzog, president of DH Restoration, a waterproofing company in Kansas City, Missouri. "It was a tight confinement. They didn't leave any space to spare. The groundwater and pumping systems allowed only a few people to work at any given time."

Hertzog, a veteran of the construction industry for 21 years, understands the importance of waterproofing a building and the threats that are accompanied with groundwater. During construction, water was channeled to one section of the project and then into separate pits, so the water would not come in contact with the concrete. The water was then pumped away from the building and into storm drains.

The Kansas City Star Newspaper facility is 425,000 square feet and 32-feet below ground level. (Photo courtesy of Carlisle Coatings & Waterproofing.)

"We had drawings that showed how the water channels would function, the location, depth and size of them," said Mark Teahan, vice president of George J. Shaw Construction Company. "The water was pumped 24/7 into a drainage system at the base where the footings are gravel, perforated pipe and rock cell."

With the added complications of limited space and groundwater-challenged contractors, the project's fast pace was equally strenuous.

"DH Restoration used Carlisle Coatings and Waterproofing's Barricoat product in order to cover more surface faster," said Mike Dickey, CCW's sales representative with Frieze and Associates in Leanwood, Kansas. "Two workers, a truck and pump are all it takes to use this product. The contractor can waterproof specific areas and then get out. With sheet products, contractors have to wait until they have a large area to work with so they can apply all of the waterproofing at one time."

Spray-applied system is specified

With the northern to southern point of the *Kansas City Star* newspaper's printing facility featuring a 32-foot difference in elevation, the Barricoat spray-applied system worked exceptionally well for the $199 million project. Depending on the needs of the project, CCW's spray and roller-applied barriers are ideal for a variety of applications. Barricoat-S is for below-grade only; Barriseal is for above-grade only, and Barricoat-R is a roller-grade version of the Barricoat product, typically used for detailing a specific above- and below-grade area.

Used for the KC Star project, Barricoat is an asphalt emulsion modified blend of synthetic rubbers and special additives. When sprayed on, it forms a monolithic, highly flexible membrane that cures fast. Barricoat can be applied to concrete, CMU, wood and metal.

Barricoat's flexible nature and strong waterproofing characteristics allow it to be used in a variety of applications, including decks, foundations and retaining walls. Its excellent elongation and recovery qualities along with its solid tensile strength and exceptional bonding make it a product that performs exceptionally well over concrete. The Barricoat system provides a seamless, fast curing membrane, without the use of primers.

"We are very pleased with the performance of Barricoat," commented Tim Eorgan, Director of Technical Support for CCW. "Our contractors are able to apply it to green concrete, damp surfaces and EPS forms. The product's non-flammable and solvent free characteristics have also greatly contributed to its acceptance."

"Currently, we are offering a strong rebate program for contractors to obtain spray pumps for this system," continued Eorgan. "We believe this will help contractors use the Barricoat system more effectively while saving them time and money."

The multiple benefits of the Barricoat system allowed contractors to safely and easily apply the waterproofing instantly in every section. "The construction time line of the building was very aggressive," said Teahan. "Even though the concrete was not fully cured, the Barricoat was able to be applied to it."

Prior to the Barricoat application, a large retaining wall system was constructed for the hole's perimeter. Concrete H beams were installed along with a lagging wire system. Shotcrete was then used, along with an external tie back system that held the earth vertically. "Once we installed the support system and concrete, drainage was installed, followed by the waterproofing and backfill," said Gary Ryan, senior project superintendent of The Austin Company, a design/build firm in Kansas City, Missouri. "Due to limited space, workers used lifts to waterproof small areas of the project. The walls were waterproofed in sections from the foundation up to 10 feet high and then back down using the spray pump system."

With the north end of the building almost 90-feet above-grade and the south end of the building 60-feet above-grade, the building's distinct sloped design was a challenge from beginning to end. "The architectural concept and architectural design is meant to be friendly to the public," said Ryan, who has worked for the Austin Company for nearly three decades. "When people are standing close to the building and look up, the building is perpendicular to eye level. The project was elaborately engineered."

As with any construction, there are always challenges. Operating in a small work space can be tedious, but below-grade waterproofing doesn't have to be. The success of the Barricoat spray applied system quickly becomes obvious to the building owner, contractor and all trades working on the project. This is especially true when the system's ability to waterproof in smaller, incremental applications becomes apparent. "It's like you can customize any waterproofing project," said Eorgan. "The greatest advantages Barricoat offers to contractors are versatility and flexibility. You don't see that every day, especially in the construction industry."