

the **OUTRIGGER**

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R. Baker & Son Magazine

Service-Disabled Veteran-Owned Small Business (SDVOSB)

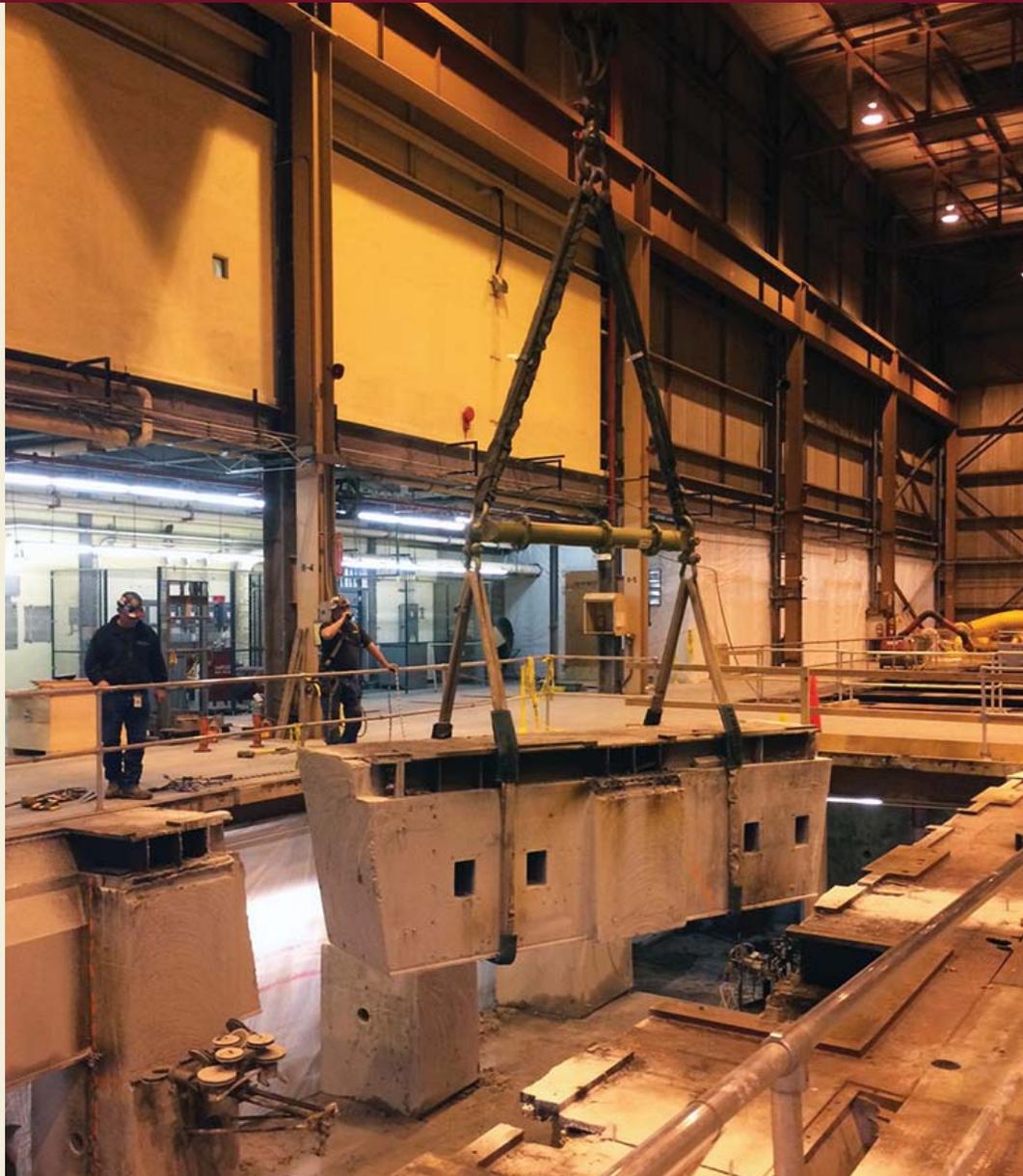
R. Baker & Son - Generator Foundation Demo Project

Earlier this year, R. Baker & Son successfully completed the demolition and removal of four motor generator foundations of a 55,000 square-foot utility plant in central New Jersey. Over 3,500 tons of concrete pedestals, slabs and foundations were removed and transported and recycled.

R. Baker & Son worked closely with the client to develop a stringent dust, noise, and vibration schedule to minimize disruption to facility operations and to address specific environmental concerns. This included the installation of a containment perimeter around the work area to prevent the migration of silica particles and dust. Work commenced with the careful removal and segregation of contaminated concrete, which was then transported to an off-site facility. Next, steel bases for the large generators were cut into sections and removed using the plant's existing overhead gantry crane. Using wire concrete cutting equipment, vertical and horizontal supporting structures and walls were cut into 50,000 lb. sections averaging 5ft. x 5ft. x 12ft. long. The large sections were core drilled to accommodate rigging gear and removed and loaded onto trucks for offsite sizing and recycling.

Once raised foundation structures were removed, the concrete slab and below-grade foundations were wet-sawed in a checkered pattern to a depth of twenty inches.

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Hydraulics: The Force Behind Rigging and Demolition

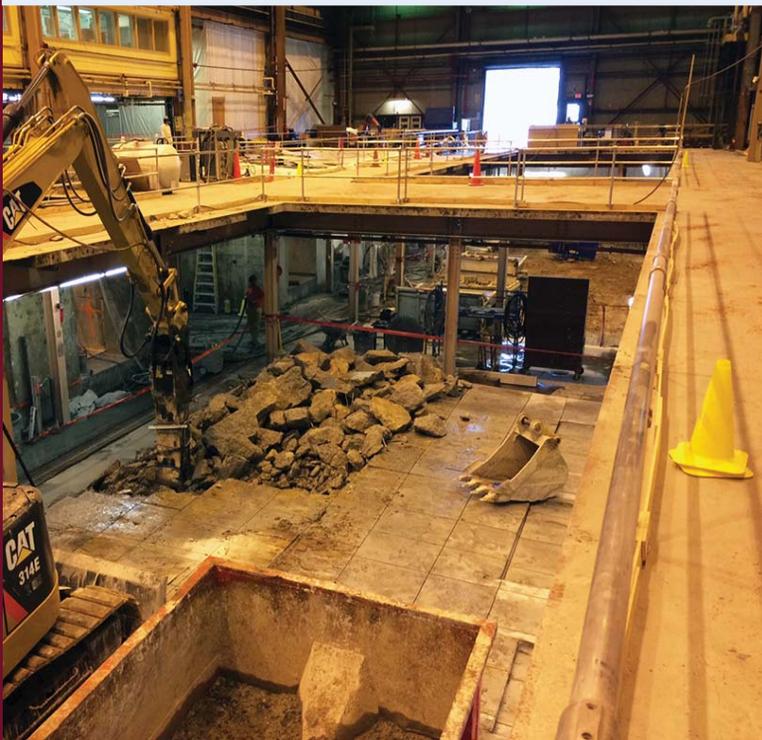
Borescopes and Robotic Crawlers / Safety Corner: Floor Openings

Hydraulics: The Force Behind Rigging & Demolition

Hydraulics is the workhorse of modern rigging and demolition, providing the muscles that lift, steer and drive the cranes, excavators, breakers, and hammers used each day. But hydraulics is not a recent innovation. In fact, examples of hydraulic power go back more than 2,000 years to ancient Rome, where it was used in water clocks, water wheels and pumping systems.

In the 17th century, French mathematician Blaise Pascal made the groundbreaking discovery that serves as the basis for the science of hydraulics. Pascal's principle states that when pressure is exerted at any point to a confined, incompressible fluid, there is an equal increase in pressure at every other point in the container. Thus, when one piston in a simple hydraulic system is pushed down, the other piston is pushed up. Applied to a more complex hydraulic system, Pascal's principle allows forces to be multiplied. If a second piston has an area ten times that of the first, the force on the second piston is ten times greater, because the pressure is equally distributed on the larger piston's entire surface area. The larger the surface of the second piston is in relation to the first, the greater the mechanical advantage.

Hydraulics have been used in rigging and demolition since the mid-19th century, when cranes powered by water were used to load coal onto barges. Nowadays, oil is the fluid most commonly used in hydraulic equipment. On any given day, hydraulic equipment is present throughout R. Baker rigging and demolition projects, powering crane booms, telescoping sections, and outriggers, excavator steering, booms and attachments, and on loaders, dump trucks, lulls, and hydraulic hammers. Wherever strength and force is required in our industry, hydraulics are overwhelmingly the power of choice.



Generator Foundation Demo Project *continued from page 1*

The cross-cut concrete cubes were then broken utilizing a hydraulic excavator equipped with an impact hammer. Concrete slurry from the cutting operations was captured and treated with a gelling agent to separate water for reuse and absorb solids into a disposable gel-like substance. Twenty-yard containers were lowered into the hole, filled with loose material, and rigged to floor level, saving considerable time.

Equipment used on this challenging project included concrete wire cutting, core drilling and floor sawing equipment, an excavator fitted with hammer and bucket attachments, mini excavators, forklifts, and a Versa-Lift 25/35 with boom attachment.

Industry News - Borescopes & Robotic Crawlers

Oftentimes during building dismantling and demolition, not knowing what lies behind walls, within pipes, and beneath floors can seriously hinder a project. To solve these mysteries, borescopes and robotic crawlers are often used to inspect ductwork interiors, wall cavities, conduit, tanks, and pipes to reveal features that are otherwise inaccessible.

A borescope is a rigid or flexible tube fitted with a lens or video device. While articulating borescopes can be maneuvered around obstacles and corners, rigid borescopes provide superior images; both types are limited by their length. Borescopes are utilized in demolition to reveal features enclosed within wall cavities, shafts, and crawl-spaces, such as structural members and mechanical, electrical and plumbing lines, and to reveal unseen issues. Robotic crawlers fitted with high-tech video cameras that can pan and tilt can be tethered or wireless to freely traverse small spaces. The smallest models can fit in pipes less than 4 inches in diameter. They are often used to locate known and unknown items slated for removal, including underground plumbing and sanitary lines, cooling towers, lines, tanks and vessels, aqueducts, and abandoned tunnels.



R. Baker & Son has used borescopes and crawlers on numerous projects with

effective and, at times, unexpected results. While using a borescope in a vertical shaft during a renovation project, significant mold growth was discovered growing along the full length of the shaft due to a water leak. The leak was repaired and the mold remediated. A substantial leak was uncovered on another project when Baker used a robotic crawler to examine underground condenser water lines leading to a cooling tower, revealing a large crack. The issue was corrected with the insertion of a pipe repair sleeve.

A floor opening is defined by OSHA as one that measures twelve inches or more at its smallest point in any floor, roof, or platform. Floor openings are commonly found on demolition jobsites and pose significant safety hazards if they are not properly protected. Not only is there the danger of a worker falling through an opening, heavy objects can fall through an opening and strike someone working below.

Worksites should be continually surveyed as work progresses for new openings, which must be covered or guarded with railings as soon as they are created. Floor openings that are not guarded with rails must be covered with material that is larger than the hole and capable of supporting the maximum weight required. A good rule of thumb is to construct covers that will support at least twice the combined weight of employees, equipment, and materials that could be imposed on the cover at any one time. Covers should be well-secured so they cannot be easily dislodged.

Safety Corner



Floor Openings