

Kentucky Fired **CHARCOAL**

Cutting Contractor Takes Part in Explosion Vent Installation Project



The team had to drill through a quarter-inch of medium strength steel to start.



Holes were required at the plant to prevent pressure build-ups.

Sawing and Drilling projects, big or small, come with many complex elements that must be overcome by the cutting contractor to get the job done. People may think that the difficulty of a project is directly proportionate to the size. However, this is not always the case. There are just as many small, complex projects being undertaken by relatively small cutting and coring companies—one of which is CSDA member company Taylor's Concrete Cutting Services of Franklin, Kentucky.

Taylor's has been asked to tackle many unusual projects during its time in the industry, but in July of 2008 they were asked to participate in one of its most unusual yet. Jeff Blanton, project manager for general contractor Madison Smith Machine & Tool Company, contacted Ron Taylor to discuss a project he was working on at Kingsford Products Company's charcoal plant in Summer Shade, Kentucky. Kingsford pro-

duces charcoal briquettes, and Madison Smith had been contracted by Kingsford to install nine "explosion vents" at the plant. The installation would require nine clean, round holes to be located in an exterior wall. The new explosion vents would provide a safe release of pressure should an explosion occur.

The project called for nine, 20-inch-diameter holes to be located in an exterior wall. The wall had a total depth of only two inches, but was constructed of an outer layer of quarter-inch medium strength steel and an inner layer of inch and a half refractory material. The refractory material consisted of a concrete-like material embedded in a horizontal and vertical grid of 3/16-inch stainless steel flat bar. What made the project difficult for the general contractor was that the holes had to penetrate both the steel and refractory material. Using a torch was not an option, as a torch would cut through the outer layer of steel but not the refractory material. The solution had to involve core drilling, and that's where Taylor's came in.

There were three basic criteria for the project: First of all, the general contractor required nine 20-inch-diameter, clean, round holes in the wall. Secondly, no holes could be drilled in the wall for drill mounting purposes. Thirdly, the holes had to be drilled from the outside of the wall, which meant that drilling had to begin on quarter-inch medium strength steel.



The contractors carefully maintained drilling speed and pressure to achieve success.



Nine 20-inch diameter holes were drilled by Taylor's.

The cutting team worked with Diamond Products to satisfy the first part of the criteria by designing a core drill bit that would penetrate the steel as well as the refractory material. Diamond Products designed a 20-inch-diameter, 12-inch-deep bit with 32 segments. The segments were formulated with a bond that would allow the bit to efficiently cut the steel.

Once the bit was designed, Ron Taylor worked with Dave Gillespie, Madison-Smith's site supervisor, to design a drill mounting system. The second project criteria stated that no mounting holes could be drilled in the wall, therefore a machinist from the general contractor fabricated a steel plate that contained threaded rods on which to mount the drill. Gillespie tack-welded the steel plate at the hole location and the drill was mounted to the plate. The mounting system allowed the drill to be mounted without drilling additional holes in the wall.

The third criteria stated by the general contractor was that holes had to be drilled from the outside of the wall, meaning each hole had to begin on the surface of a quarter-inch medium strength steel panel. Core drill bits have a tendency to "walk," that is to move vertically and horizontally when beginning a hole on a flat steel surface. Since the project called for clean, round, 20-inch-diameter holes, something had to be done to keep the bit from "walking." The core drilling team's solution was to use guide rollers to stabilize the bit. The machinist at Madison-Smith installed the guide rollers on a plate that they designed and fab



It took Taylor's six days to complete the six holes.

ricated. The site supervisor tack-welded the guide roller plate underneath each hole location to stabilize and support the bit as it turned.

Ron Taylor, along with his cutting team, began drilling at Kingsford on September 18, 2008. The team used a Diamond Products Char-Lynn hydraulic drill, powered by a Diamond Products model CB24XL gasoline powered hydraulic power pack. A 30-foot lift provided them with access to the wall. Drilling through the refractory material was especially challenging as the bit had a tendency to get hung on the stainless steel mesh. Taylor had to ensure the correct drilling speed and pressure was maintained to guard against hanging the bit. Taylor's team spent the entire day drilling the first hole, but as the drilling progressed, the cutting team experimented with speed and pressure, perfecting their technique.

It took Taylor's Concrete Cutting Services approximately six hours to drill each hole, two hours to drill through the quarter-inch steel plate and four hours to drill through the 1.5-inch-thick stainless steel and refractory material. All nine holes were completed in six days. The custom-made bit, drill mount and guide roller plate worked as expected, a testament to the innovative approach and excellent planning executed by Ron Taylor, Jeff Blanton and their respective teams. By working on the principles of mutual trust and cooperation, the cutting contractor was able to overcome the challenges of a most unusual small project.

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COMPANY PROFILE

Taylor's Concrete Cutting Services, LLC, are based in Franklin, Kentucky, and have been a CSDA member since 2006. The company has been operating for nine years, and specializes in diamond drilling, sawing, and controlled demolition. Taylor's has a team of seven operators and carry out sawing and drilling jobs in the Middle Tennessee and Southern Kentucky areas.

RESOURCES

General Contractor:

Madison-Smith Machine & Tool Company

Sawing and Drilling Contractor:

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Methods Used:

Core Drilling