

Demolishing A Washington, D.C., Garage

Wrecking Corporation of America is demolishing a 1970s-era parking garage with old school technology – a 1976 P&H crane and a 3.5-ton wrecking ball.

BY CHRISTINA FISHER

Wrecking Corporation of America (WCA) is three months into a demolition and excavation project for Maryland-based general contractor Clark Construction Group. The scope of WCA's work includes demolition of a six-level, 170,000-square-foot reinforced concrete parking garage, building excavation, and site preparation for a new 10-story office building on Capitol Hill.

Work began in June 2006 with the removal of non-pliable asbestos caulking material, a necessary step in order to recycle the demolished concrete. WCA also had to salvage approximately 100 limestone panels from the garage's exterior, which will be used later to tie in the new office building with neighboring structures.

The project site sits at the corner of 1st and D streets in Northwest Washington on a very small footprint of about 20,000 square feet. "Like most projects in a metropolitan area, this job is complicated by a number of factors," said Terry Anderson, executive vice president of Wrecking Corporation of America. "To begin with, the site abuts the occupied 51 Louisiana Ave. office building, and great care is required to mitigate impact to the existing building and its occupants, either from razing the garage or excavating the site. It's extremely important to take all necessary precautions to ensure public safety. The site is surrounded by busy streets and a hotel on the north side. Traffic and pedestrian control (has been) critical."

To demolish the garage, WCA is using a 30-year-old, 90-ton P&H TC-790 truck crane adapted for the demolition business. Featuring a heavy 150-foot boom, the crane is equipped with a 3.5-ton pear-shaped steel wrecking ball. It is also set up with a fairlead, which is a second drum similar to a dragline. This allows two lines to attach to the wrecking ball so that the operator can drop, raise and lower the ball, as well as use the ball to pull and tug on material.

Anderson explained that the 1976 P&H crane has been configured with up to 200 feet of boom and has been used on buildings up to 14 stories. "It's a very versatile piece of equipment, and we use it for a lot of razing applications in the District."



Above: A view of the project site, which abuts 51 Louisiana Ave. on Capitol Hill. Photo by James Tetro.

Left: To ensure that the demolition proceeds as safely and effectively as possible, spotters constantly monitor the site and communicate with operator Roy Scott. The truck tires are lashed on the boom at intervals of 15 feet to 20 feet to protect the struts and lacing on the boom from the sudden slap of the cable as it goes slack after releasing the wrecking ball.



A close-up view of the wrecking ball just before it makes impact with the reinforced concrete garage.

Anderson also pointed out that implosion is typically not a cost-effective or safe option on a building of this size that sits on such a small footprint. “Implosion is a methodology that’s better used on tall buildings when you have more room. The shorter the building the more cost prohibitive it becomes to implode.

“Ideally, the perfect implosion job would be 30 stories tall with nothing around it. You need the mass of the building to bring it down. As we’re fond of saying in the implosion business, it’s 10-percent explosives and 90-percent gravity. It’s the weight of the building that really does the work.”

It is cost, however, that ultimately determines the use of traditional demolition methods or implosion on a project. “(The crane) is cheaper, it’s very effective and it works well in this area,” said Anderson. “It’s an old school technology that we like to use, and we use it very well. We own two of these cranes and have two of the finest crane operators, I think, in the Atlantic area. They do a lot of this.”

To ensure safety around the site during demolition, WCA surrounds the area with spotters equipped with

radios. Their job is to monitor the process from different vantage points and provide the operator with such vital information as whether he is being effective in a location or needs to move, if other parts of the building are coming loose and getting ready to fall, or if pedestrians are in the area.

“(The operator) has limited visibility; he can’t see 360 degrees around the job,” said Anderson. “You have to really have control of the entire site.”

WCA often works after business hours and on weekends to perform demolition because street and lane closures are often required. “Much of the credit goes to DDOT and the Washington, D.C., area for their cooperation,” said Anderson. “They work very closely with us to allow us to do this. They understand the process enough that when we ask to shut down a major street two blocks from the Capitol that it’s not on a whim. It’s really critical to public safety and to expedite the work itself. It’s something we really need to do.”

While WCA closely monitors the buildings surrounding the site, the demolition process really creates very little vibration compared to pile driving, for example. The shape of the wrecking

Terry Anderson, executive vice president of Wrecking Corporation of America, explained the challenges of imploding structures in Washington, D.C.:

“We did implode the old D.C. convention center about two years ago. It was the first implosion in the D.C. area in about 30 years. Obviously, in a post-9/11 world, to do implosion work in an area like Washington, D.C., is very difficult. The regulations and the regulators require a lot of planning and paperwork. However, I will say that when we did implode the convention center, we had a tremendous amount of cooperation, but it really was a Herculean effort on the part of the local officials and federal officials, who were neighbors on that site.”

ball plays a part in this. The pear shape of the wrecking ball concentrates the energy generated from its 7,000 pounds of weight into an area about 6 inches by 6 inches. This force allows the wrecking ball to punch through the concrete rather than shaking it.

The razing process will knock the garage down to street grade and generate approximately 9,000 yards of concrete. There are about 1.5 stories below grade to demolish as well. WCA currently has two Hitachi 330 excavators onsite to remove the rubble as sections of the garage are demolished. One of the excavators is equipped with a LaBounty CP80 concrete pulverizer, and the other with a bucket and thumb. As more space becomes available, a Hitachi 450 with another pulverizer will be brought on-site.

Once the pulverizers have processed the concrete and removed the rebar, which will be recycled, the concrete will be further reduced to about a 2-foot minus. This material will then be used to build berms and

Demolishing



Two of the excavators are equipped with pulverizers and one with a bucket and thumb in order to break up the concrete. Photo by James Tetro.

benches for the sheeting and shoring subcontractor. “The pile drivers need a 30-foot-wide bench to sit their rigs on since they can’t be out in the middle of the street,” said Anderson. “The rigs have to be in the footprint of the site. We’ll build the pads or staging areas for the sheeting and shoring guys to come to work.”

Once the sheeting and shoring work is completed, WCA will remove the concrete to an off-site crushing plant to be recycled.

While the razing process requires extensive planning and safety precautions and is dramatic to watch, Anderson stated that this is a pretty straightforward demolition project for WCA. However, “it’s the excavation that really sets this job apart because of where it is – so close to the Capitol.” Adding to the challenges of the excavation phase of the project are a metro tunnel that runs along D Street

and Tiber Creek, which was buried in a stone culvert that dates to 1880 and crosses a corner of the site.

To safeguard the metro tunnel, the shoring contractor will use metro rakers, so named because they are oversized and designed to Washington Metro Area Transit Authority’s specifications. These massive steel frames will tie into the existing soldier beams and come in at an angle into the footprint of the site and into a concrete foundation, reinforcing the area around the tunnel.

The historic stone culvert is currently encased in a concrete superstructure, which was built during construction of the original garage. Anderson explained that there are transfer girders that actually have one of the building’s columns sitting on top of them. After the garage is razed, WCA will remove the girders and then the concrete encasement around the stone culvert. WCA plans to saw cut the encasement

into panels in order to avoid any vibration and damage to the culvert. The panels will be laid back and then pulled from the excavation pit.

Anderson estimates that there are 80,000 yards of spoils to excavate. WCA will place small equipment down in the hole to pull the material back from the rakers and remove it with the Hitachi 450, which can reach a depth of about 35 feet. Beyond that, WCA will bring in a long stick to excavate to a depth of about 60 feet. “If we get to a point where a long stick can’t reach, then we’ll bring in a crane with a clamshell bucket to finish the job,” said Anderson.

For Anderson and the project crew, “this job is one of finesse, different methodologies, close management, and coordination with the other trades. We’re not just gouging out a hole. This is one where you have to plan your work.”

Fortunately, this is a segment of the marketplace in which Wrecking Corporation of America excels. “I am project driven, and it’s because I love the business,” said Anderson. “It’s because the jobs are different and have unique challenges. I am also so fortunate that I have a wonderful crew of guys. I can promise the impossible, but they deliver it ... the superintendents, the equipment operators, the crane operators. We pride ourselves on taking jobs the other guys won’t.”

Wrecking Corporation of America is scheduled to complete their phase of the project by early 2007. ■

What do you think about this article? Tell us. Visit www.acppubs.com, go to the article and sound off using our Feedback Loop.

Once the sheeting and shoring work is completed, WCA will remove the concrete to an off-site crushing plant to be recycled.