

New England Construction

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ASBESTOS PUZZLES TUNNEL DEMOLISHERS

***Asbestos mixed with concrete
and girders too thick for shears
challenge contractor razing
New Haven truck tunnel***

By Paul Fournier

A section of a downtown New Haven, Conn., truck tunnel that was being leveled recently held a few surprises for the demolition contractor.

New Haven-based Laydon Industries was hired by Dimeo Construction Co. of Providence, R.I., to demolish about 375 feet of the tunnel on Church Street at the former location of Macy's Department Store. Dimeo is the construction manager for the \$200 million Gateway Community College under construction by the Connecticut Department of Public Works at the old Macy's site. The 36-foot-wide by 20-foot-tall tunnel slated for demolition had been built to provide access for delivery trucks to the basement loading docks of new department stores and hotels that were erected during New Haven's urban renewal program of the '50s and '60s.

Since large multistory buildings were to be built above the tunnel, it was designed with a massive framework. Among the structural features were extra-heavy steel wall columns encased in concrete; enormous built-up plate girders; a three-foot-thick base slab; and a heavily reinforced, one-foot-thick concrete roof.

Asbestos Surprise

While the framework for the tunnel was exceptionally strong, the contractor had nevertheless anticipated a routine demolition job. Laydon mobilized a fleet of heavy equipment and trucks at the site during Christmas week of 2009, fitting a number of large excavators with various demolition attachments including grapples, hydraulic hammers, hydraulic thumbs and steel shears. As it turned out, the project proved to be anything but a routine demolition.

According to company co-owner Jeffrey Laydon, crews made a startling discovery as soon as they began chipping away at the concrete tunnel roof.



Worker wearing respirator observes demolition of New Haven truck tunnel by Laydon Industries' CAT 330D, John Deere 210C and Volvo EC360B excavators.

"We had expected to remove a few small pockets of asbestos fireproofing," said Laydon. "Instead we found out that there was asbestos mixed right in with the concrete itself. So the whole roof suddenly became 'hot' and we had to temporarily shut down operations," he said.

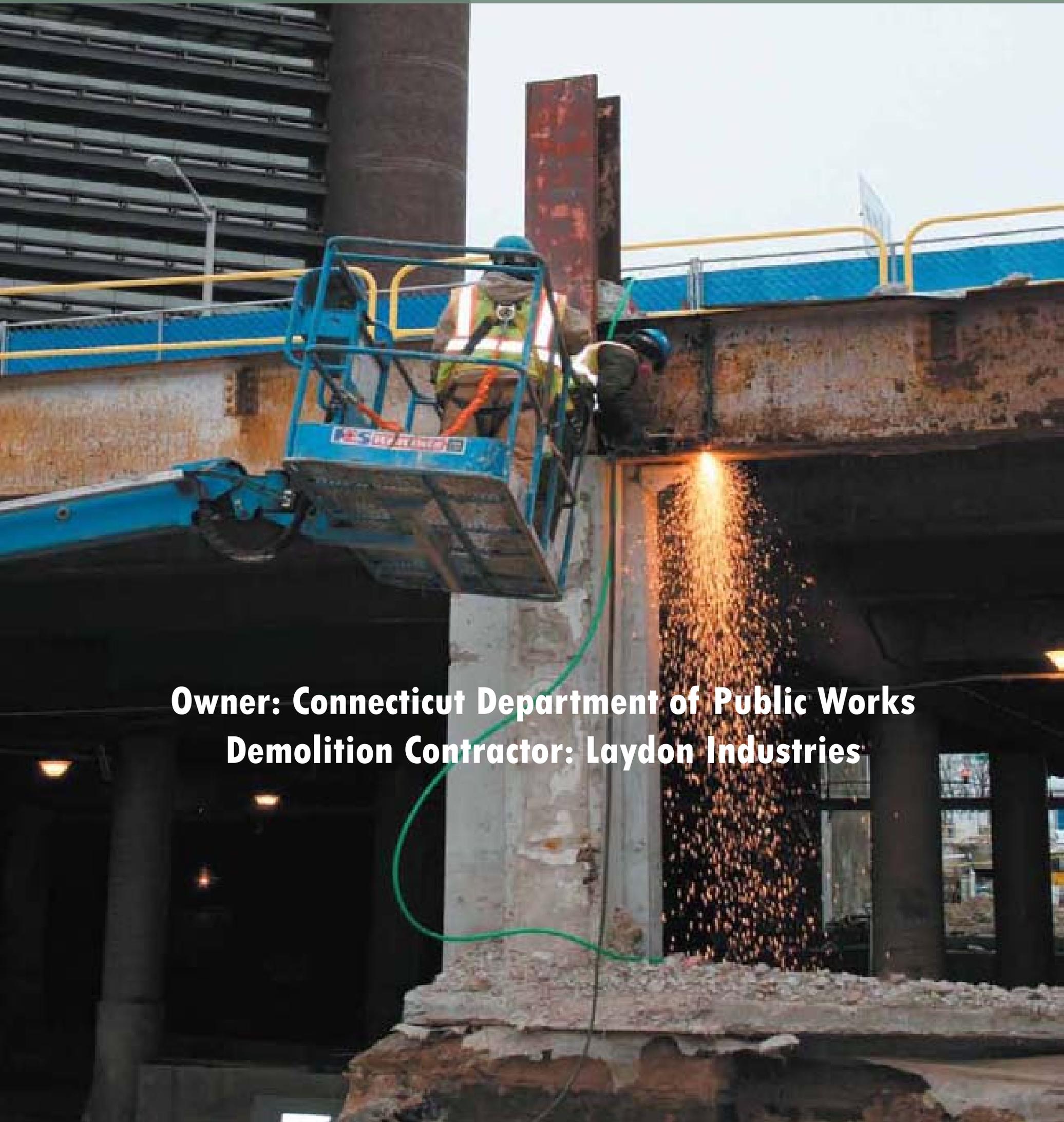
No one knew how asbestos had come to be mixed with the original concrete. Regardless, a way had to be found to deal safely with the material. Officials of the Connecticut Department of Health and the project administrators, the Connecticut Department of Public Works, huddled with engineers and contractors to resolve the problem. The solution they arrived at called for treating the entire concrete roof structure as hazardous material.

Dangerous Dust

This new approach required the contractor to forego using hydraulic hammers on the concrete roof – a procedure that could release asbestos-laden dust into the congested urban environment. Motorists using the city's Temple Street Parking Garage, located only inches from one side of the tunnel, would be especially vulnerable to asbestos exposure. It was decided that instead of employing hydraulic hammers, crews would use concrete saws and excavators to remove small sections at a time. From there, the mixed asbestos/concrete would be sent to an out-of-state hazardous waste disposal facility.

Continued page 5 »

Asbestos Puzzles Tunnel **DEMOLISHERS**



Owner: Connecticut Department of Public Works
Demolition Contractor: Laydon Industries

This method would significantly reduce the amount of dust that could arise from concrete demolition. To further control dust, the contractor would have to keep the concrete constantly wet. Unfortunately, there was no on-site surface water source. Even if a source was available, there had to be a means of wetting down an active demolition site larger than a football field.

There actually was a source of water at the site – about 20 feet underground. Laydon brought in a Godwin CD 150 pump capable of drawing up about 1,700 gallons per minute of groundwater. To apply the water to the tunnel structure, the contractor obtained a DustBoss DB 60 water cannon, which is capable of spraying a fine mist of water several hundred feet.

Piece by Piece

Laydon said the bulk of the work was performed with a CAT 330D excavator outfitted with a CAT demolition grapple, a John Deere JD 270C excavator with a hydraulic thumb, and a JD 210C excavator with a Tramac V1200 hydraulic breaker. All other heavy equipment was employed for secondary demolition and cleanup. These included a Volvo EC360B excavator with a Genesis shear, a John Deere 624J wheel loader with a three-cy bucket, a CAT D5M XL dozer, a John Deere CT332 track loader with an MP grapple bucket, and a New Holland LS170 skid steer.

Workers used a 42-inch Husqvarna FS6600D saw to cut the roof concrete into three-foot by three-foot pieces. These segments were broken off by an excavator with a grapple and loaded into specially lined 30-cubic-yard dumpster transport trucks. About 50 truckloads of the mixed asbestos/concrete were hauled from the site.

Too Thick to Shear

Crews had intended to use excavators equipped with shears to cut most of the structural steel, but girders and columns were too thick for shears, Laydon said. Torches had to be used for the cutting.

Furthermore, most steel beams and columns had originally been painted with red lead primer that had to be removed. Laydon hired AAIS Corp. to perform the lead abatement. The West Haven, Conn., contractor used needle guns to remove the lead paint. AAIS also took part in the asbestos abatement by filtering water used in tunnel demolition to remove both lead and asbestos particles before the

water could be discharged from the site.

After the lead paint was removed, Laydon crews used torches to cut the steel frame into manageable pieces. All told, torches were used to cut more than 90 percent of the steel.

Laydon finished demolishing the tunnel on January 30, 2010. The contractor disposed of non-contaminated demolition debris at its own disposal site in New Haven. Laydon operates crushing and separation equipment to recycle aggregate and other demolition debris for its own projects. Laydon Industries, a third-generation company, is a state-certified woman-owned business enterprise (WBE).



Tunnel beneath downtown New Haven provided access for large delivery trucks to basement loading docks of retail stores and hotels.

Page 4: Demolition crew on Genie boom lift uses torch to cut truck tunnel girder on site of future \$200-million Gateway Community College.



Worker cuts a severed built-up plate girder into smaller pieces using a torch.

A TramacV1200 hydraulic breaker is used by a John Deere 210C to remove concrete around a steel column.



First Gold LEED

With the tunnel gone, construction got under way on the new Gateway Community College site. According to the college's website, this is the largest construction project the state has ever undertaken and is also its first public building designed to be gold-certified in Leadership in Energy and Environmental Design (LEED).

Gold-certified LEED designation means the building was designed and is being built to U.S. Green Building Council standards for energy savings, water efficiency, carbon dioxide emissions reduction, improved indoor environmental quality, and other high-performance criteria.

The four-story, 358,000 sq. ft. campus will include a 600-car parking garage, which adds another 200,000 sq. ft. to the project. It will serve more than 11,000 students and house 90 general-purpose classrooms, 22 computer labs, 10 meeting spaces, a library, cafeteria, bookstore and a variety of other features.

Designed by architect Perkins + Will, the college is being built under the construction management of Dimeo Construction Co., with Gilbane Building Company serving as construction administrator. The Connecticut Department of Public Works is the administrative agency for the project. Additional information can be found at www.gwcc.commnet.edu. ■

