


FAST TRACK TO SUCCESS

**Coring Machine Provides
Speed and Efficiency
on Railroad Project**

Over 23,500 holes were made along the Long Island Rail Road.





Faced with the challenge of creating over 23,500 core holes on one of the busiest rail networks in the U.S., a New Jersey-based contractor came up with an inventive way of doing the work with speed, accuracy and efficiency.

The Long Island Rail Road (LIRR) was constructed in 1834 during Andrew Jackson's Presidency as a quick travel route from Brooklyn to Boston. This historic railroad has stood the test of time and currently holds the title of the second-busiest railway in North America. There are currently 124 stations on the LIRR connected by more than 700 miles of track, helping to transport 335,000 passengers daily. In order to maintain and assure the capability and safety of the LIRR's infrastructure, a number of routine maintenance projects are in progress.



The contractor created a custom drilling machine dubbed the LIRR Railcar.



The LIRR Railcar allowed the drilling team to create four core holes at one time.

The LIRR is owned and operated by the Metropolitan Transportation Authority (MTA). In early 2013, the MTA expanded the maintenance program with the solicitation of proposals for the LIRR. The primary contract was awarded to Kiewit Infrastructure Co. of Tampa, Florida. On April 1, 2013, the Eastern District office of Kiewit, based in Woodcliff Lake, New Jersey, subcontracted local CSDA member Atlantic Concrete Cutting, Inc. of Mount Holly to core drill thousands of anchor holes in the concrete

rail bed. The holes were needed to house new direct fixation fasteners and further secure the track to the bed.

For this cutting contractor, the specified size and quantity of the holes were well within its capabilities. However, the challenge was to create the holes to strict tolerances associated with their location, diameter and depth—all within a tight time frame. Atlantic's scope of work included diamond core drilling 23,680 holes in the concrete rail bed that had

to measure 1.75 inches in diameter and 5 to 5.5 inches deep. The holes had to be precisely drilled for the replacement of direct fixation fasteners and were to receive new track anchor bolts. Atlantic Concrete Cutting was given a 16-week window to complete the work.

Because of the tight deadlines, a creative solution was needed to increase productivity and successfully complete the project on time. It came in the way of a new piece of innovative equipment. After many hours of design, manu-



facturing and testing in conjunction with Joe Gerdelmann of Gerdelmann & Son's Welding, Atlantic Concrete Cutting's custom LIRR Railcar was ready for the track.

The LIRR Railcar housed four, six-speed Cardi core drills supplied by K2 Diamond outfitted with 10-horsepower motors supplied by Hertz Engineering. The contractor was able to drill four holes simultaneously in the rail bed at speeds of 3,000 to 3,200 rpm. The custom railroad machine was designed to travel along the track like a regular railcar, but was also fitted with a 400-hertz generator, a hi-cycle water pump, a lateral hydraulic drive and a 1,285-gallon water tank for the drilling work.

A significant contribution to the LIRR Railcar's design came from Bill Furter, lead mechanic for Atlantic Concrete Cutting. Commenting on some of the difficulties encountered during the design process, Furter said, "The toughest part was making the holes perfectly perpendicular to the varying track surface. We had to figure out a way to both move the heads laterally and line up the holes precisely. We used a hydraulic drive with an air brake and laser pointer to make it happen. Under normal testing conditions the cart lived up to expectations and then some, but the most rewarding part was watching it run for the first time on the job."

The team from Atlantic had to drill 23,680 holes on a two-mile stretch of railroad. Holes were created in groups of four with one hole on each side of the two rails. The LIRR Railcar was used to make a consistent pattern of four 1.75-inch-diameter holes in the reinforced concrete rail bed every 2.5 feet, taking just 90 seconds to drill one set of four holes to depths of around 5 inches. Due to the configuration of the contractor's new piece of equipment, setup times between drilling locations were drastically reduced and precise positioning was assured. The LIRR Railcar drilling team from Atlantic was able to remain on schedule throughout the whole project, and all drilling work was completed in nine weeks and within budget.

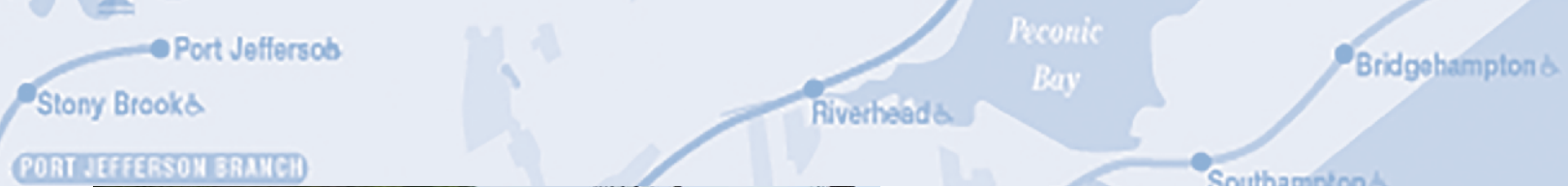
In addition to the strict time frame and tight tolerances set by the general contractor, the core drilling team had some on-site challenges to overcome. Besides the usual issues of equipment wear, minor mechanical fixes and working in the summer heat, operators had to be quick to react when the drill bits hit hidden steel reinforcement in the concrete. By making periodic adjustments to speed and the type of drill bits used, coring was able to continue as



It took an average of 90 seconds to create one set of four holes.



Slurry created during the drilling work was controlled by wet vacuums.



All 23,680 core holes were completed in just nine weeks.

planned. Slurry created during wet cutting was collected by wet vacuums and disposed of safely off-site.

“Everyone involved did an incredible job on this project. The guys took ownership of their work, always pushing both themselves and the equipment to their limits to maximize productivity. In some cases, workers on different shifts competed to see who could be more productive,” said Stu Fishman, Atlantic’s project manager for the LIRR core drilling work. “Our guys gave up weekends and family time to take on this challenge and I applaud them for their productivity, safety record and personal sacrifice,” he added.

Atlantic Concrete Cutting’s core drilling work on the LIRR is yet another example of how skilled and experienced members of CSDA are able to think outside the box to successfully deliver a project. When this contractor was issued a challenge to complete a ‘hole’ lot of coring, the company prepared itself to take the fast track to success.

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COMPANY PROFILE

Atlantic Concrete Cutting, Inc. has been a CSDA member for 23 years and is based in Mount Holly, New Jersey. Support operations are located in Totowa, New Jersey and Spring City, Pennsylvania.

The company has been in business since 1991 and has 22 operators and 31 trucks, and offers the services of core drilling, wall sawing, wire sawing, flat sawing, curb sawing, sawing and sealing, highway and bridge deck diamond grinding, sawcut grooving, grinding and polishing, selective demolition and ground penetrating radar. Atlantic Concrete Cutting, Inc. is a CSDA Certified Company and a CSDA Certified Operator company with DBE/WBE certifications issued by numerous state agencies and authorities.



RESOURCES

General Contractor:

Kiewit Infrastructure Co.

Sawing and Drilling Contractor:

Atlantic Concrete Cutting, Inc.

Mount Holly, New Jersey

Phone: 609-261-7200

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Methods Used: Core Drilling