A muddy situation in the Gould Tunnel

Entrance of the Gould Tunnel during construction.

Atlas Railroad Construction, LLC, performs a major rehabilitation project on a nearly century-old tunnel in eastern Ohio.

by Jennifer Nunez, assistant editor

In the spring of 2010, Atlas Railroad Construction, LLC, which is owned by RailAmerica, embarked on a $7 million tunnel rehabilitation project for Genesee & Wyoming Inc. in Jefferson County, Ohio, which provided one major challenge, mud.

The Gould Tunnel, located on Columbus & Ohio River Railroad, part of the Ohio Central Railroad, a nearly century-old structure near Steubenville, Ohio, underwent major reconstruction, improving the operations and safety of the tunnel.

The project, which lasted from April 2010 to November 2010, was funded by the American Recovery and Reinvestment Act (ARRA) of 2009 and a Transportation Investment Generating Economic Recovery (TIGER) grant.

The Gould Tunnel project included: 2,023 square feet of gunite repair or shotcrete, 300 linear feet of steel liner installation, 3,300 linear feet of track replacement, 3,300 tons of ballast replacement, 3,300 feet of track surfacing, 40,000 crossties, 25,000 linear feet of rail and utilized approximately 25,000 man hours. Additionally, Atlas repaired a bridge structure outside of the tunnel and provided 500 bridge timbers for the project.

Those man hours were performed by a superintendent, foreman, mechanics, operators and laborers; approximately 20-plus field personnel.

Prior to any work being done in the tunnel, the tunnel was stabilized with existing crossbeams to hold the walls in place. Beams were removed during the liner installation process. Being a general contractor and full turn-key company, Atlas contracted-out portions of the project to various suppliers

A MUDDY SITUATION IN THE GOULD TUNNEL

The Loram Railvac® with rotating nozzle.

Prior to any work being done in the tunnel, Atlas had to stabilize the walls with crossbeams in order to hold them in place.

like Loram Maintenance of Way, Inc., and RG Johnson. Atlas self-performed the bridge repair.

Atlas Railroad Construction says the most challenging part of the project was removing mud, water and debris from the tunnel. Vacuum trucks were utilized and took two months to complete the work under train traffic.

"Prior to removing mud and debris from the track, Atlas established drainage ditches to dry out the mud." explained Karen Johnson, director of business development of Atlas Railroad Construction, LLC.

Harold Tynes, president of Atlas, added, "That's the nature of tunnel work, it's damp, dark, restricted space, with ventilation issues."

Atlas hired Loram Maintenance of Way, Inc., to furnish and operate a vacuum truck to break up and suck up the mud. The work was performed utilizing a Loram Railvac® Excavator, which is an excavation, rail-mounted machine that conveys material through vacuum and airflow at 10,200 cubic feet per minute. Loram's Railvac was able to undercut all the fouled clay ballast material from tunnel wall to tunnel wall at depths up to 12 inches below the bottom of the tie.

The Railvac is equipped with a rotating nozzle capable of breaking up the toughest, most compacted, cemented ballast material. Excavated material is then deposited temporarily in a main storage hopper prior to complete disposal via a rear waste conveyor 35 feet from track center on either trackside or into an air dump or gondola.

"Considering the extreme clay and compact type material, the excavation process was extremely challenging," noted Gary Kohnert, regional sales manager at Loram, "It would be as if trying to suck a Wendy's frosty through a straw, when you really needed a spoon. The density and the gluey make up of the material was so severe that on some occasions, we needed to inject water into the material to create a more manageable liquid material."

In addition, he says, the floor of the tunnel proved to be a challenge as it consisted of shale. With the consistency of the mud, dirt and debris mixed together, the floor was difficult to locate at times.

Loram notes that other machines were used and/or considered, but did not end up working out because of the tight clearances or the inability to handle the sticky, heavily fouled ballast material.

Prior to the mud removal, Atlas contracted RG Johnson to perform the gunite work to stabilize various sections of the tunnel. Then, RG Johnson put in the steel liner, which took two and a half months to complete.

Another challenge Atlas faced during this project was timing.

Atlas had a 10-hour curfew from trains most days and had to tie up each evening for train traffic. Despite the challenges faced with the Gould Tunnel project, Atlas and its business partners successfully completed the project on time and on budget.□