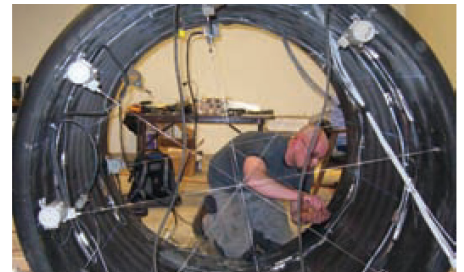


# HDPE Pipe used under 315,000 pound Rail Cars

The Plastics Pipe Institute (PPI) completed field testing of Smooth Interior Corrugated High Density Polyethylene (HDPE) pipe under heavy haul track at Transportation Technology Center, Inc. (TTCI) December 28, 2009. The testing went as expected and the HDPE pipes showed outstanding performance, allowing expanded use for railway projects.

The purpose of this testing was to elevate the Railroad Industry's confidence in HDPE pipe and to field verify calculations using Load Resistance Factor Design (LRFD). Two runs of 48" (1200 mm) HDPE pipe manufactured by ADS in accordance with AASHTO M294 and ASTM F2306 standards were installed under track at TTCI's Facility for Accelerated Services Testing (FAST). The FAST Train consisted of three to four locomotives and approximately eighty 315,000 pound (143,000 kg) gross rail load (GRL) cars. This is considered a rigorous testing environment as normal heavy haul railcars weigh 288,000 pounds (130,600 kg). After eight months of testing, the 48" (1200 mm) diameter pipes endured 101 Million Gross Ton (MGT) of cumulative load, which simulated what 50% of the track in the United States will experience over a ten year period.



## Summarized Test Results



### Deflection

Measured in the vertical, horizontal, 45 degree, and 315 degree locations. After construction and train loading, the maximum horizontal and vertical deflections were 1.3% and 1.1% respectively. Deflection in the diagonal directions was negligible, as anticipated. These results are well below the AASHTO allowable limit of 5% deflection.



### Strain

The maximum compressive strain from the construction and train loading was 8,800 microstrain or 0.88% strain. This is well below the AASHTO allowable limit of 5% strain.



### Circumferential Shortening

This phenomenon is in HDPE pipes that have been installed under very rigorous loading conditions such as deep fills. The maximum circumferential shortening from construction and train loading was 0.4 inches or 0.3%. This is well within expected and acceptable limits.



### Joint Separation

The Standard watertight and fabric wrapped split coupler connections used in the TTCI test performed extremely well. Joints were hand-measured throughout the test and there was no significant movement noted.



### Ride Quality

Locomotive engineers who operated the FAST train during the test period reported that ride quality over the pipes was satisfactory. No track geometry maintenance was required at the test site after installation.

For more information on HDPE pipe for railroad applications visit [adspipe.com](http://adspipe.com).



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