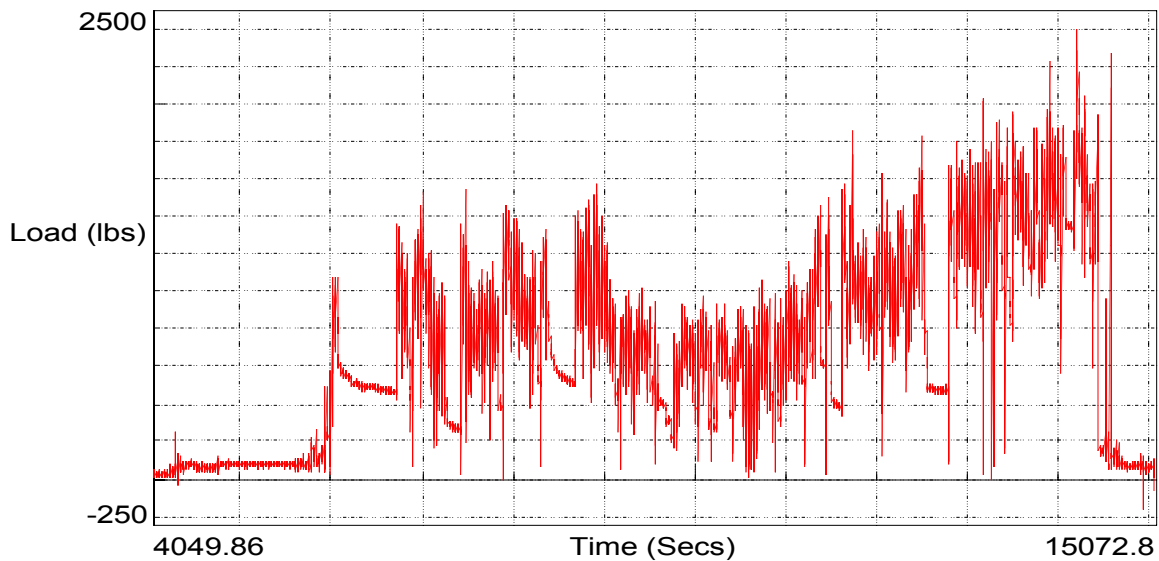


Bore-Gard® Installation - 2x 220 ft. Cleveland, OH

Pipe Pull Force Data Maximum 2,395 lbs.

Note: Pull force data generated from self-contained on-board strain gauge and data gathering computer mounted between pipe lead end and reamer. Data samples taken at a rate of 10 per second.

JOIE1.DAT-TimeHist.Load_cell



Pulling Eye
attached to
Bore-Gard
pipe

Pull-Force
Measuring
Computer

Reamer

Left: The data in the graph above was generated by our state-of-the-art, self-contained force-measuring computer, which is capable of measuring both tensile and compressive loads. It is protected by a steel cylinder and mounted on swivels at both ends. Data was sampled 10 times per second. This leading-edge technology has enabled Carlon to determine the actual loading on the pipe as it is being pulled through the ground. This is the first known application of such high technology to the development and application of pipe for boring applications.