

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

<b>Distance of Installation:</b>	Two 220 ft. runs (440 ft. total)
<b>Maximum Pulling Force on Pipe:</b>	2,395 pounds
<b>Reamer Diameter:</b>	8 inch
<b>Soil Conditions:</b>	Clay, Gravel, and Rock Fill

As seen in the pictures below, the steep terrain of this installation would have made it nearly impossible for a reel of HDPE to be installed. However, the convenient 20 ft. lengths of Bore-Gard PVC pipe were able to be carried to the bottom of the hill before installation. With a maximum pull rating of 8,700 pounds, the pipe easily withstood a maximum pulling force of 2,395 pounds, using only 27% of its maximum rated load.



**Above:** Bore-Gard PVC pipe is being installed on a 45 degree slope near the intersection of Ohio Interstate 271 and Route 480 near Cleveland. Two 220 ft. installations were made about 20 feet apart under the active highway. In spite of the challenging terrain, the pipes were easily assembled and locked together before being installed.



**Above Left:** The 8 inch diameter reamer is seen here along with the strain gauge and on-board computer used to measure the pull force on the pipe. An expandable pulling eye was used to grip the leading end of the pipe. **Above Right:** The directional boring machine and a 1,200 gallon water tank.