

Mine Shaft Grouting Michigan Shafts – Group 1 Bay City, Michigan

Owner/Client: Department of the Interior
Office of Surface Mining

Project Features:

- Sonic Drilling with Continuous-Core
- Injection Grouting of Underground Mine Shafts
- Implementation of Anchoring System – Tether Lines
- Multiple Site Restorations

Background:

Armstrong Drilling Inc. was contracted by the Office of Surface Mining under the direction of the Department of the Interior to drill and grout abandoned underground mine shafts at 5 different locations in and around Bay City, Michigan.

Description of Work:

Armstrong Drilling used vertical and angled 6" Sonic core drilling in order to locate the open mine shaft at each location. Once a void or shaft was found, Armstrong Drilling and an OSM on-site representative worked together to establish the location and number of additional holes needed for sufficient injection grouting. These holes were then drilled and 4" PVC casing was installed. On average, there were 10 boreholes drilled at each mine shaft, ranging in depth from 40' to 140' deep. A total of over 4800' of 6" Sonic Core Drilling and 2700' of 4" Casing was installed on this project. After an open borehole into a mine shaft was established, Armstrong Drilling injected a ready-mix grout consisting of cement, fly ash, sand and water into the opening until met with refusal. The grout was pressure pumped through the Sonic Drill system directly into the hole. Over 500 cubic yards of grout was injected into 5 mine shafts over the course of this project.

Project Challenges:

Mine shaft locations were located on private properties, near homes and schools. Extra care was needed to avoid damaging utility lines, home foundations, driveways and personal property. An anchoring system was required at each location to which all field personnel were tethered to, to protect them in the event of a subsurface collapse.

Start Date: June 2012
Completion: September 2012

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