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The levees where the Mississippi River and the Lower Wood River meet near East Alton Illinois have been a problem area for years due to under seepage. The Illinois Flood Prevention District Council (SIFPDC) in conjunction with AMEC /Foster Wheeler came up with a solution to the problem and designed a deep cutoff wall to alleviate the problem. The 2,000' long cutoff wall was to be installed up to 140' deep through fill, loose sands, cobbles, and sandy clay. The cutoff wall was terminated in either Glacial Till or sound rock. In order to provide wall permeability equal to or less than 1.0×10^{-6} cm/sec AMEC/Foster Wheeler chose to use a self-hardening slurry (SHS) composed of ordinary Portland cement, slag cement, bentonite, and water. The depths reached on this project using SHS are the deepest done to date in the United states. Along with the permeability requirements, a very narrow range for the unconfined compressive strength was specified at 50 – 180 PSI. Another challenge was a 24" water line that could not be relocated or put out of service and was parallel to the wall and at times only 4' from the edge of the wall. In order to monitor the ground movement during the excavation of the panels with the Hydromill or Clamshell, 12 automated and 3 manual inclinometers were installed and monitored continuously during panel excavation. Also 13 automated piezometers were installed. This paper will give an overview of the project with emphasis on the instrumentation.