



UNITED STATES

**Confidential Client**  
Homer City, PA



**Owner**  
Confidential Client

**Engineer**  
Confidential Client

**General contractor**  
Confidential Client

**Dates of work**  
2012/04 2012/09

**Main figures**  
Controlled Modulus Columns (CMC)<sup>TM</sup>  
1000 EA.



**Description**

This project involved the construction of two “scrubber” buildings and numerous auxiliary equipment units for a large coal-burning power station in Homer City, PA. The two buildings house NID<sup>TM</sup> Flue Gas Desulfurization systems, which combine to eliminate the majority of pollution output from the plant.

The two identical buildings each stand 120 ft tall with a footprint of 26,000 sq ft, and rest on a foundation of alternating 4.5-ft thick mats and 12-in slabs. The additional equipment structures included booster fans, mixing tanks, water silos, electrical enclosures and a compressor building.

To improve the bearing capacity and keep total settlement requirements, Menard implemented a design-build ground improvement solution using Controlled Modulus Column (CMC)<sup>TM</sup> rigid inclusions.

**Ground conditions**

The site selected for the two buildings and the auxiliary equipment pads included four ash ponds surrounded by clay berms. In the months leading up to CMC rigid inclusions installation, the ponds were dredged to depths of 20 ft from existing grade. The ash was replaced by 13 ft of compacted granular backfill bringing the site grade down about 7 ft. The berms consisted of medium stiff clay fill above weathered bedrock.

Specifications required reducing the total settlement of the building to less than ¾ of an in. Before construction, ground improvement was specified to meet the settlement requirements and improve the bearing capacity of the soil.

**Solution**

The Menard solution consisted of the design and installation of more than 1,000 CMC rigid inclusion elements to keep total settlement within project requirements.

In the former pond areas, pre-drilling was employed to reach the bottom of the granular backfill. Then, Menard utilized a displacement method using a vibratory hammer to penetrate the compacted granular fill and medium stiff clay layer and reach termination at bedrock. In the areas outside the pond, a displacement auger was used to penetrate the clay fills. the combined displacement technique approach allowed the three-phase ground improvement work to be completed ahead of schedule and enabled the client to shorten the construction schedule.

In summary, to improve bearing capacity and maintain strict settlement requirements for two new buildings and several auxiliary structures at a generating station, Menard installed CMC rigid inclusions, which are well adapted to high surface loading and strict settlement criteria.

