

PROJECT PROFILE

Project: Southern Cotton Oil Co. (a Division Of ADM)
Memphis, TN

Contractor: Engineered Construction Systems Inc., St. Louis,MO (ECS)

Engineer: ADM Design Group

Classification: Industrial

Total Piers: 292 Helical Piers (8-10-12)

Completed: May 2006 – 18 Days duration



**Seed Storage
Building # 10**

04.07.2006

The FASTEEL® Systems performance data was specified by Archer Daniels Midland (ADM) Design Group engineers to correct ongoing issues with one of the massive cotton seed storage buildings. The building had sustained a tremendous amount of damage due to straight-line winds in excess of 100 mph which was causing uplift issues when the storage house was empty. In addition to the uplift, downloading of the foundation created problems at harvest time when the building was filled with harvested seed.

The engineers designed thirty-four reinforced concrete pads around the perimeter of the building, which would create the base for the massive buttresses extending up the sides of the building. Each 36" thick concrete pad had a cage of #8 rebar which was placed on top of the FASTEEL® System piers. A custom threaded tension rod assembly was manufactured and utilized to extend into the concrete pad. Each pad required a series of piers that would act in both tension and compression. The pier installation was coordinated closely with the concrete crews and iron workers and was completed in a total of eighteen (18) days for all 292 helical piers. The average depth was 45' over the entire project with battered piers reaching depths of 55'. The following photos show various stages of the project.



**Inside View
Seed House**

04.07.2006

**FASTEEL®
SYSTEMS**

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An IHI 55N mini-excavator with a 20k drive head and swivel assembly was used for the installation

Engineered flowable fill was encountered on the north side of the building and required a custom-fabricated helical with a rock bit at the tip to penetrate to depths of 12 feet below grade. After punching through the fill, normal installation resumed.



The fill was estimated to be 1500-1800 psi and as thick as 12' in some areas.

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An electronic torque tracking device was utilized to monitor the installation of all piers. The device enables the operator to view a digital display of torque values in real time to ensure that critical installation values are being met. The data from the device was uploaded to a laptop at the end of each day and a permanent file was created for each pier installed.

3 ½" pier being installed at a 45 degree angle to resist lateral movement and/or uplift.



Triple bolted, pipe on pipe connection is the standard for our 3 ½" pipe helical.

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A view of one of the thirty-four pads cut to elevation, capped and ready to receive threaded rods and rebar cage prior to forming and pouring of the concrete pile cap.

Rebar cage being placed into the hole after pier installation.

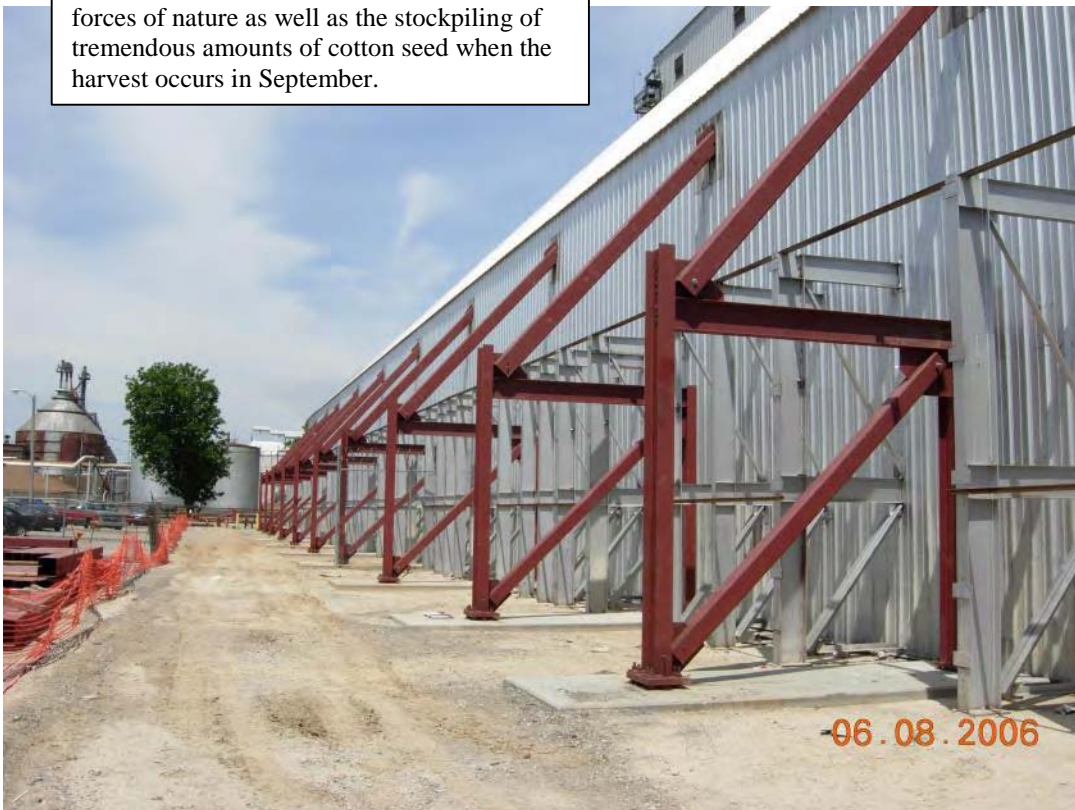


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Pile cap formed and poured over the series of piers. Lag bolts are in place and will be ready to receive the steel buttresses once the concrete reaches proper curing parameters.

Seed storage house # 10 has been fully restored and is now able to withstand the forces of nature as well as the stockpiling of tremendous amounts of cotton seed when the harvest occurs in September.



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