



Bowen Engineering Corporation Meadow Lake Wind Farm Phase 1 Turbine Foundations

Bowen Engineering served as Balance of Plant contractor for the 200 megawatt Meadow Lake wind farm project in White County, Indiana. A total of one hundred twenty one (121) wind turbine generators were constructed for connection to a new electrical substation and integration into the transmission grid. The wind turbine sites were dispersed over 45 square miles of northern Indiana farmland.

As Balance of Plant contractor, Bowen Engineering was responsible for providing construction management of the project as well as self-performing construction of the turbine foundations and improvements to county and access roads.

Bowen placed a total of 53,300 cubic yards of concrete for the construction of turbine foundations.

Meadow Lake was Bowen's first wind farm project. The schedule was aggressive and the mission was clear: Mobilize to Indiana farm fields and within six months build and commission 121 wind turbines, a switchyard, and a substation. Meadow Lake would be the most fast-paced project in company history.

If the required date for substantial completion was not met, the Bowen team would face liquidated damages. At the request of our client, details of the LD's cannot be disclosed, but they were significantly higher than traditional projects. Subcontractors were contracted to share in the liquidated damages to keep all parties motivated to beat the project schedule.

Thanks to detailed planning efforts, partnering, and implementation of value engineering ideas, the project was completed safely and 28 days ahead of schedule.

Some aspects of this effort that make it a truly unique project:

Zero Injuries

At the project's peak, Bowen employed 450 workers. Over 154,000 man hours were worked. The project was completed in just six months with no lost time accidents.



Best In Industry Productivity

The team developed a process for installing concrete turbine foundations that set a new standard for the wind energy industry. In the beginning, the team was building one foundation every two days. The industry norm is two per day. The Bowen team adjusted crews and strategy, which allowed production to increase to three foundations per day. Two concrete pump trucks would be used to place concrete for a single foundation. One of the trucks would later be pulled from the first foundation and begin placement for the next one.

The owner stated that Bowen is the only known contractor to achieve this level of production for the operation.

Anchor Bolt Pre-Assembly

During preplanning it was discovered that the labor budget for anchor bolt field assembly was severely underestimated. Bowen coordinated with the manufacturer of the structural assembly plates to include pre-assembly of the anchor bolts. This change saved time and money. The turbine erector stated that the quality of the anchor bolt installation was the best they had ever experienced on a project. 15,000 anchor bolts were set by Bowen crews, and not a single bolt was out of place. Before this project, anchor bolt pre-assembly was unheard of on wind projects.

Planning, innovation, and communication made this a winning project for all involved.