

PROJECT DESCRIPTION

PROJECT: Crossroads Wind Energy Project

LOCATION: Dewey County, Oklahoma

DESIGN TEAM: *Geotechnical Engineer: Renewable Resource Consultants, LLC
Round Rock, TX*

CONTRACTOR: *Renewable Energy Systems (RES) Americas Construction
Broomfield, CO*

OWNER: *Oklahoma Gas and Electric*



DESCRIPTION:

- 2.3 MW Siemens Wind Turbine Generators
- 80 meter hub height
- 54'-8" diameter, octagonal foundations
- Design Loads : 652 kips axial load
193 kips unfactored base shear

2382 kip-ft unfactored torque
46,909 ft-kip unfactored moment

Engineered aggregate piers were installed for 7 of the turbine foundations for Phase I. Piers extended to depths of about 20'-28' below grade, per the GTFC-W design.

The piers reinforced the native soils and provided foundation support for the turbine footings. Engineered aggregate piers were selected as a cost effective alternative to deep overexcavation and replacement filling.

One pier was subjected to a full-scale load test and revealed a stiffness modulus substantially exceeding the value used for design. During construction of each pier, rammer deflections at the end of ramming on each lift were observed visually to confirm that uniform, very stiff subgrade support was achieved throughout each foundation area.

REFERENCES: Mr. Richie Geren, Project Manager
RES Americas (512-289-0254)

Mr. James Watson, P.E., Project Manager
RES Americas (816-333-9400)

Mr. Clint Harris, Sr. Geotechnical Engineer
Renewable Resource Consultants (512-565-9356)