

PROJECT DESCRIPTION

PROJECT: Dunlap Ranch PacifiCorp Wind Energy Project -Phase I

LOCATION: North of Medicine Bow, Wyoming

DESIGN TEAM: Engineering Reviewer: Black & Veatch

Geotechnical Engineer: Renewable Resource Consultants, LLC

Round Rock, TX

CONTRACTOR: Renewable Energy Systems (RES) Americas Construction

Broomfield, CO

OWNER: PacifiCorp





DESCRIPTION:

• 1½ MW General Electric Wind Turbine Generators (WTG)

• Design Loads: 426 kips axial load 453 kip-ft unfactored torque 118 kips unfactored base shear 25,746 ft-kip unfactored moment

Engineered Aggregate Piers were installed for 4 of the turbine foundations for Phase I. Piers extended to depths of 22'-24' below grade, per the GTFC-W design.

Despite cold, snowy weather and winds up to 70 mph, the GTFC-W field crew completed the installation for all 4 turbines in only 6 working days.

The pier drill cavities revealed significant variability in subsurface conditions across 2 of the turbine sites. The engineered aggregate piers rectified that variability, as evidenced by electronic Quality Control monitoring during construction.

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 were monitored by Dynamic Force Solutions, Inc. for each stroke of the rammer on each lift of aggregate, and revealed that uniform, very stiff subgrade support was achieved throughout each foundation area (see inset above for the on-board monitoring computer).

REFERENCES: Mr. Wade Ninemire, Project Manager

RES Americas (303-439-4200)

Mr. John Martin

Mr. Clint Harris, P.E.

Mr. Edward Escamilla, QA Inspector Renewable Resource Consultants (325-370-6024) Renewable Resource Consultants (432-561-5780)

Dynamic Force Solutions, Inc. (503-730-7653)

GTFC-WEST (503-640-1340)