

Barr's qualifications and key personnel

a leader in wind power experience

Barr is a leading consultancy with unique expertise in the wind energy market. We have been involved in the engineering of wind energy projects since 1992—essentially the inception of the North American wind industry. To date, nearly 45 percent of U.S. windpower is currently supported by Barr's foundations. We have completed foundation engineering for over 410 projects representing 47.2 GW of wind farms currently in operation. We've worked across the United States, Canada, Central America, and South America; our teams have worked on five of the largest operational wind farms in the United States. Our approach to wind turbine foundation design focuses on determining relevant site conditions and selecting the most economically appropriate foundation design option(s) for the project.

Our services include:

- Foundation engineering for wind turbine foundations
- Foundation monitoring and health assessments
- Subgrade Inspections
- Geotechnical studies and investigations
- Civil Engineering
- Structural design of towers and internals
- Windpower environmental studies and assessments
- Power site permitting
- Geographic information systems
- Electrical engineering
- Independent engineering reviews

Because of our extensive wind turbine foundation design experience, we have a unique perspective on selecting the most appropriate option for your site. Our engineers understand the information that is required to design and justify the design of a wind turbine foundation because we have designed foundations for more megawatts of windpower than any other firm in the US. Our process includes identifying and helping you understand and avoid risks, assessing the ground conditions and determining key geotechnical design parameters and this leads to selecting the right foundation for your project. Barr designs include spread footings, rock anchor foundations, stone column-supported footings, rock-socket foundations and deep foundations including the 2009 Minnesota Society of Professional Engineers "Seven Wonders of Engineering" award winning foundation for the Mount Storm Wind Farm in West Virginia.

key personnel

Short biographies of our key personnel are provided below. Resumes for these key individuals are provided in Attachment A.

Barr has engineers licensed in every US state and Canadian province except Quebec.



Role: Principal in Charge

Matt Johnson **Vice President, Senior Structural Engineer**

Matt has more than two decades of experience providing leadership, project management, and engineering services. He has served as design engineer for wind turbine foundations, working on approximately 150 windpower projects representing more than 10,000 megawatts of generating capacity. Matt is licensed to practice engineering in 17 states.



Chris Kopchynski **Senior Structural Engineer, Vice President**

Chris is licensed to practice engineering in 12 states and 7 Canadian provinces. Since 1998, he and Barr's staff have been involved with hundreds of wind energy projects, including more than 235 foundation designs that have been constructed to support over 21,000 MW of wind turbines.



Joel Bahma **Senior Structural Engineer, Vice President**

Joel is a structural engineer with 25 years of experience. He provides mechanical and structural engineering services including analysis and design, forensic evaluations, and computer-aided design and drafting. Joel brings a wide knowledge of various structural materials and configurations to his project work, which includes more than 75 completed windpower projects. He has served as design engineer and project manager for wind turbine foundation projects across the country that have involved spread-footing, rock-socketed pier, and pile-supported foundations.



David Herrington **Senior Structural Engineer**

Dave has more than 14 years of experience providing structural engineering services preparing calculations, drawings, specifications, finite-element models and providing project management. Dave joined Barr in 2008, and since then he has served as design engineer, modeler, peer reviewer or 3rd party reviewer for more than 100 wind energy projects. In addition, Dave has been using Autodesk Revit for BIM modeling since 2012, and has served as Barr's Revit administrator for the last four years.



Wesley Karras
Structural Engineer

Wes has six years of experience in structural engineering, including concrete, steel, and foundation design as well as inspection, fieldwork, and drafting. He is proficient in RISA-3D, Mathcad, Revit, AutoCAD, and other programs for the structural design and analysis of structural steel frames, reinforced walls, hydropower dams, culverts, and building foundations. Wes has worked on numerous windpower and hydropower projects for power industry and municipal clients.



Rob Osburn
Senior Geotechnical Engineer, Vice President

Rob specializes in managing and overseeing geotechnical investigations for renewable energy projects across North America. He manages a team of geotechnical engineers and geologists that work to assess project site hazards and associated mitigation measures to help clients manage risks. He has served as project manager and lead geotechnical engineer on over 150 projects, primarily involving solar, wind, and biomass power developments.



Ben Borree
Geotechnical Engineer

Ben has over six years of experience with windpower projects, soil and tailings investigations and field testing; slope stabilization design and implementation; high-wall and dike design; and bridge design. Ben joined Barr in 2011 with a degree in civil engineering from the University of Minnesota. He has served as a project manager and project engineer for renewable energy, mining, and other natural-resource-management clients in both the United States and Canada.