

Grand Bend Prefabricated Protection, Control, and Telecom Building

CLIENT

Northland Power

LOCATION

Grand Bend, Ontario

PROJECT DESCRIPTION

Black & McDonald (B&M) was awarded a contract for the detailed engineering, procurement of materials, and construction of two protection, control and telecom buildings.

Two 14 ft. x 47 ft. buildings house the protection and control equipment for the wind farm including protective relay devices, telecommunication equipment, breaker/disconnect switch controls, and network architecture equipment.

B&M SCOPE OF WORK

The project involves conceptual design, detailed engineering deliverables, specification and procurement of equipment from various suppliers, shop assembly, building integration and factory testing. This includes:

- Creation of Connection Wiring Diagrams (CWDs)
- Updating and verification of Elementary Wiring Diagrams (EWDs)
- Protective Setting Implementation for line/transformer differential, distance, restricted earth fault, breaker failure, current, voltage, and frequency elements
- Creation of logic diagrams
- Procurement of major equipment, relays, FlexiTest switches, network switches, control/selector switches, lockout relays
- Testing and commissioning
- Factory acceptance testing, quality checks
- Supply of 14 ft. x 47 ft. building for the substation with eight P&C racks
- Supply of 14 ft. x 47 ft. building for the switching station with six P&C racks
- Installation of step-up transformers and connections of the transformers to the sub-stations and interconnection of the entire system to the IESO controlled grid

The project was designed to consist of 110 Vestas V82 wind turbines. A 44 kV connection system that included both underground cable and overhead power lines was installed to connect to the turbines. Additionally, a 44/230 kV substation was built to step-up the generation to 230 kV for connection to the Hydro One owned 230 kV circuits.