

Section 20 Blasting

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20.0 BLASTING

20.1 General

The results of the soil survey for the Canton Mountain Wind Project (Project) suggest that blasting will be required for construction of the Project (see Section 11 of this application for detailed soils information and geological report). The Project design balances cuts and fills and reuses as much material as possible, thereby minimizing the need to blast exclusively for fill material (see Exhibit 1). Blasting is anticipated to be necessary for most of the turbine foundations and parts of the proposed access and ridgeline roads. Where blasting becomes necessary, a pre-blast survey (see Section 20.3) will be conducted for structures, if any, within 2,000 feet of the intended blast site. Soil boring information will be obtained prior to construction during the Project's geotechnical investigation, and a blasting plan will be developed based on the results of that investigation.

The anticipated blasting procedure for the removal of rock material at the turbine foundations will consist of implementing line control to full depth and using controlled blasting techniques in several benches to minimize breakage outside the line control while maximizing rock fragmentation. Rock anchor foundations will be considered for the turbines and will be utilized where feasible. If a rock anchor design is recommended as a result of the geotechnical and structural engineer's analysis, then less blasting will be required.

In limited circumstances, blasting may be required for breaking up or moving large boulders that restrict construction equipment from accessing structure locations. However, the relative size of the charge would be small, as only minor excavation can enable vehicle or equipment access.

Blasted rock or boulders will be broken into a well-graded mixture of the size recommended by the geotechnical engineer and will be used at the project site for deeper fills, crushed for roadway surface, topping gravel, and/or used as riprap and erosion control.

No adverse effects from blasting on either sensitive natural resources or private landowners are anticipated, both because the majority of the Project is in a remote location and because the individual charges used will be as small as possible. In all cases, blasting will be conducted in general conformance with the U.S. Department of Interior Rules 816.61-68 and 817.61-68 and the Blasting Guidance Manual, Office of Surface Mining, Reclamation and Enforcement, U.S. Department of Interior, to limit peak particle velocity and ground vibration to safe levels. For any blast at which ground vibration is monitored, the applicable limit of ground vibration at inhabitable structures not owned or controlled by the developer is the frequency-dependent standard in Figure B-1 Appendix B U.S. Bureau of Mines Report of Investigations 8507. Noise and air blast effects will be mitigated by the use of proper stemming techniques, and the occurrence of flyrock will be limited using the blasting mats, where appropriate.

20.2 Assessment

Blasting is not anticipated to occur along Ludden Lane or the existing unnamed logging road leading up to the access road. Blasting is anticipated along the ridgeline at most turbine locations, and the residences closest to these areas are located off Canton Point Road in Canton; however, all non-participating residences are expected to be more than 2,000 feet away from any blasting at turbine locations. As stated in Section 20.1, the blasting plan will be developed after completion of geotechnical surveys prior to construction. After the blasting plan is complete, structures within 2,000 feet of blasting areas, if any, will be identified, and a pre-blast survey will be conducted prior to blasting at these locations.

20.3 Pre-Blast Survey

Qualification information will be required from the blasting subcontractor. A blasting plan and schedule will be provided to potentially affected landowners with structures within 2,000 feet of a blast site and also to the Canton Selectmen. The general contractor will be required to prepare a blasting plan and a pre-blast survey prior to any rock removal. The blasting plan will identify the type and amount of explosive to be used and identify a communication protocol for notifying potentially affected landowners in advance of blasting activities. A written report of the pre-blast survey and blasting plan will be provided to Canton Mountain Wind, LLC (CMW) by the contractor and will be available for review in accordance with Maine Department of Environmental Protection (Maine DEP) requirements. The scope of the blasting plan and pre-blasting survey will conform to the requirements in Section 20.4 and the following specifications:

- All structures within a minimum distance of 2,000 feet from any blasting activity shall be surveyed as part of the pre-blast survey. The extent surveyed beyond the 2,000-foot minimum shall be determined by the contractor, their blast subcontractor, and their insurance companies.
- Private drinking water supply wells associated with identified structures shall also be located. Blasting is not expected to negatively affect groundwater or wells.
- A blasting plan shall be prepared that addresses airblast limits, ground vibrations, and maximum peak particle velocity.
- The blasting plan shall meet criteria established in Chapter 3 (Control of Adverse Effects) in the *Blasting Guidance Manual* of the U.S. Department of Interior Office of Surface Mining Reclamation and Enforcement.
- The blasting plan will include provisions and measures to monitor and assure compliance with airblast, peak particle velocity, and frequency limits.

20.4 Blasting

Blasting shall be performed only after approval has been given by CMW for such operations and must comply with the provisions set forth by the State of Maine Statute Title 38, Chapter 3, Subchapter 1, Article 8-A, Section 490-Z(14), as repeated below:

A. The contractor or any subcontractor shall use sufficient stemming, matting or natural protective cover to prevent fly rock from leaving property owned or under control of the Permittee or operator or from entering protected natural resources or natural buffer strips. Crushed rock or other suitable material

must be used for stemming when available; native gravel, drill cuttings or other material may be used for stemming only if no other suitable material is available.

B. The maximum allowable airblast at any inhabited building not owned or controlled by the developer may not exceed 129 decibels peak when measured by an instrument having a flat response (+ or – 3 decibels) over the range of 5 to 200 hertz.

C. The maximum allowable airblast at an uninhabited building not owned or controlled by the developer may not exceed 140 decibels peak when measured by an instrument having a flat response (+ or – 3 decibels) over the range of 5 to 200 hertz.

D. Monitoring of airblast levels is required in all cases for which a pre-blast survey is required by paragraph F. The contractor may file a MDEP permit modification requesting a waiver of the monitoring requirement if the contractor or subcontractor secures the permission of affected property owners to increase allowable airblast levels on their property and the MDEP determines that no protected natural resources will be adversely affected by the increased airblast levels. The cost to prepare the permit modification and the affect of project delay while the MDEP reviews the request shall be borne solely by the contractor or his subcontractor.

E. If a blast is to be initiated by detonating cord, the detonating cord must be covered by crushed rock or other suitable cover to reduce noise and concussion effects.

F. A pre-blast survey is required and must extend a minimum radius of 2,000 feet from the blast site. Notification that blasting will occur should be provided to all owners of structures to be surveyed at least 10 but not more than 30 days prior to commencement of blasting. Pre-blast surveys should include both the interior and exterior of each structure. The pre-blast survey must document any pre-existing damage to structures and buildings and any other physical features within the survey radius that could reasonably be affected by blasting. Assessment of features such as pipes, cables, transmission lines and wells and other water supply systems must be limited to surface conditions and other readily available data, such as well yield and water quality. The pre-blast survey must be conducted prior to the initiation of blasting at the operation. The contractor or subcontractor shall retain a copy of all pre-blast surveys for at least one year from the date of the last blast on the development site.

(1) The contractor or the subcontractor is not required to conduct a pre-blast survey on properties for which the Permittee or operator documents the rejection of an offer by registered letter, return receipt requested, to conduct a pre-blast survey. Any person owning a building within a pre-blast survey radius may voluntarily waive the right to a survey.

G. Blasting timeframes shall be coordinated with the local emergency responders, or as otherwise restricted by the local Fire Department. No blasting shall be completed on weekends, holidays or other weekday times until written permission is received by the local Fire Department and the Permittee.

H. Sound from blasting may not exceed the following limits at any protected location:

<u>Number of Blasts Per Day</u>	<u>Sound Level Limit</u>
1	129 decibels
2	126 decibels
3	124 decibels
4 or more	123 decibels

L. A record of each blast, including seismographic data, must be kept for at least one year from the date of the last blast, must be available for inspection at the development or at the offices of the owner or operator if the development has been closed, completed or abandoned before the one-year limit has passed and must contain at a minimum the following data:

- (1) Name of blasting company or blasting contractor;
- (2) Location, date and time of blast;
- (3) Name, signature and social security number of blaster;
- (4) Type of material blasted;
- (5) Number and spacing of holes and depth of burden or stemming;
- (6) Diameter and depth of holes;
- (7) Type of explosives used;
- (8) Total amount of explosives used;
- (9) Maximum amount of explosives used per delay period of 8 milliseconds or greater;
- (10) Maximum number of holes per delay period of 8 milliseconds or greater;
- (11) Method of firing and type of circuit;
- (12) Direction and distance in feet to the nearest dwelling, public building, school, church or commercial or institutional building neither owned nor controlled by the developer;
- (13) Weather conditions, including factors such as wind direction and cloud cover;
- (14) Height or length of stemming;
- (15) Amount of mats or other protection used;
- (16) Type of detonators used and delay periods used;
- (17) The exact location of each seismograph and the distance of each seismograph from the blast;
- (18) Seismographic readings;
- (19) Name and signature of the person operating each seismograph; and
- (20) Names of the person and the firm analyzing the seismographic data.

M. All field seismographs must record the full analog wave form of each of the 3 mutually perpendicular components of motion in terms of particle velocity. All seismographs must be capable of sensor check and must be calibrated according to the manufacturer's recommendations.

N. If any blasting activity exceeds the standards in this subsection, the department must be notified within 48 hours of the blast event. Notification must include the name of the blasting operator, the location, date and time of the blasting event and a description of the specific occurrence that is in noncompliance with this subsection. Use of explosives at the quarry may be suspended by the department until the cause of the noncompliance is identified and appropriate steps are implemented to reduce, prevent or eliminate reoccurrence.

O. Prior to blasting, the owner or operator shall develop and implement a plan that provides an opportunity for prior notification of a planned blast for all persons located within 1,000 feet of the blast site. Notification may be by telephone, in writing, by public notice in a newspaper of general circulation in the area affected or by other means identified in the plan. The plan must be in writing and available for inspection by the department.