**SP00335 (01-01-21)**

### Section 00335 - Blasting Methods and Protection of Excavation Backslopes

Comply with section 00335 of the Standard Construction Specifications modified as follows:

***(Use the following subsections .44, .45, and .46 when directed by the Owner.)***

Add the following subsections:

**00335.44 Blasting Consultant** - Retain a recognized blasting consultant to assist in the blast design. The consultant shall be an expert in the field of drilling and blasting who specializes in providing blasting consulting services. The consultant shall not be an employee of the Contractor, explosives manufacturer, or explosives distributor. A list of approved blasting consultants may be obtained from the Engineer.

If the proposed blasting consultant is not on the approved list, submit the credentials of the proposed blasting consultant not later than the preconstruction conference. The blasting consultant must be approved by the Engineer before beginning any drilling and blasting work. The blasting consultant shall make an on-site inspection of the jobsite before developing a blasting plan. All blasting plans, including revisions, shall be approved, in writing, by the blasting consultant.

Submit the blast design to the Owner.

**00335.45 Vibration Control and Monitoring** - Control ground vibrations by using properly designed delay sequences and allowable charge weights per delay. Base allowable charge weights per delay on vibration levels which will not cause damage. Establish allowable charge weights per delay by carrying out test blasts and measuring vibration levels. Perform test blasts according to 00335.40(e) modified as required to limit ground vibrations to a level which will not cause damage.

Monitor each blast with an approved seismograph located, as approved, between the blast area and the closest structure subject to blast damage. The seismograph used shall be capable of recording particle velocity for three mutually perpendicular components of vibration in the range generally found with controlled and production blasting.

Do not allow peak particle velocity of each component to exceed the safe limits of the nearest structure subject to vibration damage as follows:

**Maximum Peak Particle**

**Velocity at the Structure**

 **Structure (inch/sec)**

Standard Construction Timber Frame, Brick,

and Concrete Buildings 2

Reinforced Concrete Structures 4

Steel Structures 4

Buried Utilities 2

Wells and Aquifers 2

Green Concrete (Less than 7 days) 1

Employ a qualified vibrations specialist to confirm the safe vibration limits. The vibrations specialist shall also interpret the seismograph records to ensure that the seismograph data is effectively utilized in the control of the blasting operations with respect to the existing structures. The vibrations specialist used shall be subject to the Owner's approval.

Furnish data recorded for each shot before the next blast that includes the following:

* Identification of instrument
* Name of qualified observer and interpreter
* Distance and direction of recording station from blast area
* Type of ground at recording station and material on which the instrument is sitting
* Maximum particle velocity of each component
* A dated and signed copy of photographic records of seismograph readings

**00335.46 Airblast and Noise Control** - Install an airblast monitoring system of the type specifically manufactured for that purpose between the main blasting area and the nearest structure subject to blast damage. Hold peak overpressure below 0.05 psi at nearest structure or other designated location. Use appropriate blasthole patterns, detonation systems, and stemming to prevent venting of blasts and to minimize airblast and noise levels produced by the blasting operations. Lower the overpressure limit if it proves too high based on damage or complaints. Furnish a permanent signed and dated record of the peak overpressure measurements immediately after each shot.