CITY OF BURLINGTON
DEPARTMENT OF PUBLIC WORKS

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The City of Burlington, Department of Public Works

Drilling & Blasting Procedures

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DPW

1. Blasting:

a. All blasting will be done in accordance with procedures acceptable by the City Engineer, Department of Public Works. The contractor shall notify neighbors and minimize vibration to adjacent and nearby structures. The blasting plan shall be filed with both Planning Department and Department of Public Works at least 48 hours prior to the scheduled blasting.

b. The developer, at his expense, will engage a blasting consultant to conduct a pre-blast and post-blast geo-technical survey of all structures of abutting properties and structures on the linear ledge stratum as deemed appropriate by the City Engineer. The developer shall not be required to conduct surveys of any structure where entry is not reasonably provided within 14 days written notifications to the property owner by the developer. A licensed structural engineer shall be present at the pre-blast and post-blast surveys and attest the report of each.

c. The developer, at his expense, will engage a qualified professional blasting consultant to monitor all blasting activities and to establish procedures and charge levels necessary to minimize vibration to adjacent structures and in the presence of and in conformance with the recommendations of the blasting consultant.

d. No blasting shall occur without notifying the City Engineer, Department of Public Works, at least 48 hours prior to the scheduled blasting. All blasting shall only occur during weekday work hours of 8 am – 4:30 pm.

e. The blasting company shall carry an insurance policy in this project of an amount sufficient to insure damage on properties, structures and contents of surveyed properties. Said policy shall remain in effect for a period of no less than six months following completion of blasting. The developers shall not be released of any liability should vibration caused by blasting result in damage to nearby structures. A certificate of insurance must be filed with the Department of Public Works at least 48 hours prior to the scheduled blasting.

f. All blasting will be done at lowest detonation levels practical and feasible, and in those locations where other methods of excavation cannot be reasonably utilized.

g. A performance bond or letter of credit – in the amount to be determined by staff – shall be provided by the developer if deemed necessary by the Department of Public Works.

h. The point of contact for any issues raised regarding blasting shall be the City Engineer or a designated representative if he/she is away. At the request of the City Engineer, blasting shall cease immediately upon instruction if determined to be necessary based upon complaints of breech of the accepted blasting plan.

i. If instructed by the City Engineer, jack hammering shall be substituted for blasting.

j. Developer shall notify affected property owners included in the survey of filing and acceptance of the blasting plan.

k. Contractor is liable for Department of Public Works inspection fees. Foe information on those fees, please contact the Excavation Inspector at 802.863.9094.

BLAST PLAN

The blasting for this project will be done in a safe and efficient manner. The contractor shall employ personnel who are highly trained and very competent in controlled blasting techniques. They shall have access to equipment and technology ranging from the most basic to the most advanced in the industry and, will choose from this stock, that which will meet the needs of this project.

The equipment used will be a sequential timing system (blasting machine, sequential board, galvanometer, multimeter, etc.) to monitor the blasting, a DS-377 or a DS-477 Instantel or Blastmate II seismograph will be used. This will monitor ground vibration, airblast and wave frequencies.

All explosives, blasting agents, and initiation devices will be stored during the day in truck magazines. Magazines will be kept locked at all times, except when materials are removed for use at the blast site. Detonators will be isolated from the explosives by a separate compartment designed to IME SLP No. 22 Standards. The vehicles having explosives will be equipped with warning placards and fire extinguishers.

All work will be conducted in compliance with all applicable VOSHA requirements related to blasting, N.F.P.A. No. 295

PRE-BLAST INSPECTION PROCEDURES

The contractor shall conduct pre-blast inspections on all adjacent properties.

Inspections cover existing conditions and include cosmetic as well as structural findings. Attempts are made to gain access to the structure for a survey of the interior. If unsuccessful, an exterior survey is completed. These inspections are for the benefit of the property owners as well as the contractors.

The blast design will be the responsibility of an experienced, trained, and licensed blasting foreman. This person will select shot pattern, diameter and depth of holes, required stemming, delay pattern and amount and type of explosives to control displacement, fragmentation, vibration and airblast. Personnel on the shot will be kept to a minimum and limited to the blasting crew who work under the direction of the blaster in charge.

The blasting equipment will be of the first quality and kept in good repair in order to safely and efficiently load, cover, and detonate the explosives in the bore holes.
This normally includes:

Blasting multimeter or blasters galvanometer
Non-metallic measuring tapes
Non-sparking or wooden tamping poles
Mirrors
Friction tape
Connecting wire
Lead line
Power source (REO 175 ST BM, pegboard)
Blasting mats

All shots will be fired as soon as possible after loading is completed. Blasts will be scheduled so that exposure time of a loaded shot is kept to a minimum. A standard procedure to clear the blast area of all personnel and equipment, block roads, and post guards to access ways into the blast area, will be enforced. A blast-warning signal audible within ¼ mile will be used. Normally three warning signals at 5 minutes prior to the blast, two signals at 1 minute prior, and one signal immediately following the shot for an all clear. Roads leading to the site will be marked with warning signs showing that blasting operations are being conducted.

Drilling Procedures:

Hole diameter, spacing, burden, delay, pattern, explosives to be used, and distribution in a typical hole, shall be determined upon completion of test blast operations.

Blasting Personnel:

All blasting operations shall be conducted by experienced, trained, and competent persons who understand the hazards involved. Persons working with explosive materials shall:

1. Have demonstrated a knowledge of, and a willingness to comply with, safety and security requirements.

2. Be capable of using sound judgment in all situations.

3. Be in good physical condition and not addicted to or under the influence of intoxicants, narcotics, or other similar types of drugs. Any of the previously mentioned substances are banned from any blasting site.

4. Possess current knowledge of the Local, State, and Federal laws and regulations applicable to this work.

5. Have obtained a certificate of completion of training and qualification as required by State law.

Blasting Procedures:

1. All blasting shall be conducted only during the daytime hours, Monday thru Friday, 8 am - 4:30 pm.

2. Blasting may not be conducted at times different from those announced in the blasting schedule except in emergency situations where rain, lightning, other atmospheric conditions, or public safety requires unscheduled detonation. Any deviations from the approved blasting plan with regards to time of blasts shall be approved by the City Engineer of their designee prior to blasting.

3. Warning and all clear signals of different character that are audible within a range of ¼ mile from the point of the blast shall be given. All persons within the permit area shall be notified of the meaning of the signals through appropriate instructions and signs posted. All persons on the site shall utilize the appropriate safety equipment, including but not limited to hard hats and ear plugs.

4. Access to the blasting area shall be regulated to protect the public from the effects of blasting. Access to the blasting area shall be controlled to prevent unauthorized entry at least 10 minutes before each blast and until the permittee's authorized representative has determined that travel in or through the area can safely resume.

5. Areas in which charged holes are awaiting firing shall be guarded, barricaded, and posted, or flagged against unauthorized entry.

6. All blasts shall be made in the direction of the stress relieved face previously marked out or previously blasted.

7. All stemming shall be 3/8" clean, dry crushed stone.

8. Blasting mats will be used when there is not sufficient overburden to hold down the blast.

Blasting Record:

A record of each blast, including seismograph reports, shall be retained for at least 3 years and shall be available for inspection by the public on request. The record shall contain the following data:

1. Name of permittee, operator, or other person conducting the blast.
2. Location, date, and time of blast.
3. Name, signature, and license number of blaster in charge.
4. Direction and distance, in feet, to nearest dwelling, school, church, commercial, or institutional building (either) owned or leased by the permittee.
5. Weather conditions.
6. Type of material blasted.
7. Number of holes, burden, spacing, and stemming.
8. Diameter and depth of holes.
9. Types of explosives used.
10. Total weight of explosives used.
11. Maximum weight of explosives detonated within any 8-millisecond period.
12. Methods of firing and type of circuit.
13. If mats or other protections were used.
14. Type of delay detonator used, and delay periods used.
15. Seismograph records including:

a. Seismograph reading, including exact location of seismograph, and its distance from the blast.
b. Name, Address, & Telephone number of the person taking the seismograph reading.

THE CONTRACTOR SHALL USE THE STATE CODE FOR DETERMINING THE MAXIMUM WEIGHT OF EXPLOSIVES, IN POUNDS, THAT CAN BE DETONATED IN ANY 8 MILLISECOND PERIOD, UNLESS OTHERWISE DIRECTED.

ALL BLASTING SHALL BE MONITORED USING TWO APPROVED SEISMOGRAPHS TO INSURE A MAXIMUM PARTICLE VELOCITY OF 2.0 INCHES PER SECOND MEASURED AT THE NEAREST ADJACENT STRUCTURE.

THE CONTRACTOR'S DULY DELEGATED OFFICER SHALL INSURE COMPLIANCE WITH THE REQUIREMENTS OF THIS REPORT.