

Appendix M
Blasting Protocol

Blasting Mitigation Plan

Blasting Protocol and Plan

It is not anticipated that rock will be encountered in redevelopment of the Butterfield Site. If rock is encountered, mechanical means of rock removal such as ripping and hammering with a back hoe would be the first choices for rock removal. Thus it is not anticipated that blasting would be required. However, in the event that rock is encountered that would require more than mechanical removal, the Applicant has put together a blasting protocol that will then be submitted for approval prior to any blasting taking place. .

The Village of Cold Spring does not have specific blasting requirements in the Village Code however, title 12 of the New York State Code of Rules and Regulations (12 NYCRR Part 39) governs the statewide handling, transportation, and storage of explosives. The applicant will follow the requirements contained therein, and will further mitigate any impacts from possible blasting, by meeting the following protocols which are typical of those found in municipal ordinances.

The following protocols will be followed by the project:

- All blasting will be conducted in compliance with New York State requirements (Title 12 of the New York Code of Rules and Regulations [12 NYCRR Part 39]) for the possession, handling, storage, and transportation of explosives.
- Blasting will be conducted by licensed, qualified and insured blasting contractors, who are certified in New York State. The blasting contractor will adhere to all insurance needs of the company that is contracting them.
- Pre-blasting inspections will be conducted for all off-site structures located within a predetermined radius or 500 feet of the blasting/excavation area, if authorized by the property owners. These inspections will include photo documentation and/or video documentation.
- Prior to blasting, an analysis will be completed by the contractor to determine the size, placement, and timing of blasting charges. This analysis will be provided in a written blasting plan.
- This blasting plan will be available for review by the Town Engineer or designee, and will include the blasting layout, size of blast, timing of charges, and quantity of material to be extracted.
- Seismographic equipment with decibel meters will be placed on the property line between the location of the blast and the nearest residences of structures. The results of the monitoring equipment will be promptly reviewed following each blast.
- The quantity of explosives will be limited to the amount necessary to fracture the rock without endangering persons or property. Before firing, all blasts will be covered with a suitable protective device to prevent escape of broken material.
- Blasting operations will be limited to the hours between 8:00 am and 10:00 pm, Monday through Friday. Blasting will not be conducted between the hours of 10:00 pm and 8:00 am weekdays or anytime on Saturday, Sunday or any holiday.

Blasting Mitigation Plan

November 15, 2013

- The minimum required amount of explosives will be used in all blasting operations. Charges will be staggered to avoid the creation of high energy blasts.
- When blasting is to occur within 500 feet of existing off-site structures, the contractor will conduct test blasting, if necessary, prior to any other blasting to determine appropriate on-site blasting techniques.
- Blasting will be conducted so that the resulting ground vibrations at nearby structures does not exceed the standard industry measurement of a Peak Particle Velocity of 2.0 inches per second and the airborne noise does not exceed 130 dBA.
- Sufficient surficial converge of the blast area will be provided to prevent damage from air blast and vibration.
- Notifications will be made to the Village Clerk, Police, and Sheriff's Department and nearby off-site residences/structures within 500 feet of the blasting area twice prior to blasting. Initially not less than 72-hours nor more than 30 days prior to the blast, notifying residents/property owners of the approximate anticipated day and time of blasting. The second notification would be not less than 24 hours and no more than 72 hours prior to the blast, to notify the exact time of blast (within 1 hour).
- Notification would be accomplished through mailings and by telephone calls (if feasible) to the property owners. The mailings documenting the blasting schedule would be sent through the US Postal Service to the appropriate officials and all residents/property owners within 500 feet of the blasting area. Phone calls to these residents/property owners would be made within the specified time frames noted above to provide additional notification of the pending blasting. The mailed notifications will include information regarding the blasting locations and the anticipated time during which the blasting would occur.
- When blasting activities are to be conducted, warning flags or other means will be used at a reasonable distance along roadways to give proper warning to the general public.
- For each blast, an air horn will be sounded in a manner to give proper warning before the firing of the blast, and to give and ~~all~~ clearat the conclusion of each blast.

Preblast Surveys

The purpose of a preblast survey is to determine the condition of a dwelling or structure and document any preblast damage or other physical factors that could reasonably be affected by blasting. The survey can also be used to document that damage occurred after the survey was conducted.

Many structures develop hairline cracks over time. These can be caused by a number of environmental factors including humidity and temperature changes, settlement from consolidation, freeze-thaw cycles, variations in ground moisture and wind. Structural problems may result from constructing a building on improperly compacted fill, improperly sized footings or other structural elements, and not being built to Building Code requirements. Inadequate drainage around a building can also cause settling and cracking. These types of cracks will be noted during the preblast survey.

Any resident or property owner within 500 feet of the blast area may request a preblast survey. The request must be made in writing, directly to the Building Inspector who shall promptly

notify the applicant. The survey will include visual inspection of foundations and exposed walls, as well as photographic and/or video documentation of conditions prior to blasting. In locations where existing wells will also be monitored, the condition of the well, depth of casing and depth of water elevation will also be measured and recorded (see discussion of wells below).

The blasting contractor will promptly conduct a preblast survey (at his expense) and prepare a written report of the survey. Copies of the report shall be provided to the Building Inspector and to the person requesting the survey.

Wells

Blasting typically does not result in damage of existing foundations or wells if the work is completed according to current industry standards. Local variations in subsurface conditions or geology may occasionally result in unanticipated impacts to existing structures and wells. The use of proper blasting techniques and mitigation measures will minimize the potential effects of blasting on nearby residences and businesses.

As described above, preblast surveys of residences and structures within 500 feet of the blasting locations will include documentation of the existing condition of the well onsite, if there is one. This includes the year of installation, depth, depth to water, depth of the pump, water yield, and length of casing, if known. Residents or property owners concerned about potential impacts to their well may elect to have their well monitored during the proposed period of blasting. Monitoring would involve the installation of an electronic water level data logger. Monitoring of water levels would begin a minimum of two (2) weeks prior to blasting and end two (2) weeks after the final blasting event. The results of the monitoring would be provided to the Village Building Inspector as documentation regarding water levels in individual wells both pre- and post-blasting.

Complaints

Formal complaints about blasting can be sent to the Building Inspector of the Code Enforcement Officer. Complaints should include the date(s) and time(s) of the blast(s) (if known) and the owner's name, address, and telephone number (and email if preferred). A representative of the Village and the blasting contractor will follow-up all complaints with an inspection of the activities in question and provide a written response to the owner.

In the case of specific blast damage complaints, the Building inspector of the Code Enforcement Officer and blasting contractor will interview the person involved, locate the structure, determine the distance and direction to the blast sites, check the preblast survey, check the blast and seismic records and consider the probable or actual measured levels of energy from the blasting at the structure. If it is determined that blasting has caused damage the Building Inspector may issue a Notice of Violation. The notice will require appropriate mitigation to prevent recurrence of the violation. Monetary reparation for damage will be settled between the contractor and the property owner.

If the property owner believes that their well has been impacted by blasting, they would file a complaint with the Building Inspector, similar as above. A Village representative or retained hydrogeologic consultant will determine if the well damage is the result of project construction activity. If it is determined that a well was negatively impacted by blasting, then the blasting

Blasting Mitigation Plan

November 15, 2013

contractor will be responsible to provide replacement of the well function. This may include: hydro-fracturing the well, drilling the well deeper, or providing a replacement well.