

BLASTING PLAN

**850 ROUTE 28, LLC.
TOWN OF KINGSTON, NY**

**February 2019
Revised Per C&A Comments Received February 15, 2019**

Prepared for:

850 Route 28, LLC.
Town of Kingston, New York, 2401

In care of:

Barry Medenbach, P.E.
MEDENBACH & EGGERS CIVIL ENGINEERING & LAND SURVEYING, P.C.
4305 US HWY 209
Stone Ridge, New York 12484

Prepared by:

H2H Associates, LLC
179 River Street
Troy, New York 12180
(518) 270-1620
www.h2hassociates.com



TABLE OF CONTENTS

Section	Page
1.0 1.0 INTRODUCTION	2
2.0 PURPOSE.....	2
3.0 PRE-BLASTING IMPACT ASSESSMENT.....	2
3.1 POTENTIAL IMPACT ASSESSMENT	2
4.0 BLASTING PROCEDURES AND REQUIREMENTS	2
4.1 CONTRACTOR’S BLASTING PLAN.....	2
4.2 SITE-SPECIFIC BLASTING PLAN	3
4.3 GENERAL BLASTING PROCEDURES	4
4.4 VIBRATION MONITORING.....	5
5.0 LIGHTNING HAZARDS.....	6
6.0 ENVIRONMENTAL CONCERNS.....	7

LIST OF FIGURES

Figure 1 Blasting Vibration Limit Criteria

1.0 1.0 INTRODUCTION

850 Route 28, LLC. (850 Rt. 28) is proposing to excavate consolidated sandstone and shale at a site development project located at 850 State Route 28, Town of Kingston, Ulster County, New York (site). Blasting will be required on-site to reach the grades required in the site development plan. All blasting and blasting-related activities would be performed in accordance with the guidelines and specifications presented in this Blasting Plan.

2.0 PURPOSE

This Blasting Plan is intended to serve as an overall guidance document for all blasting on the Project; however, the blasting contractor would be responsible for generating an overall Contractor Blasting Plan (CBP) and a written Site-Specific Blasting Plan (SSBP). The primary need for blasting would be to remove consolidated bedrock to reach the grades required for the site development project. The blasting contractor would need to perform a pre-blast investigation on-site in order to implement blasting techniques in accordance with local, state, and federal regulations. Blasting will only occur within the identified site development area. The contractor performing the blasting would be responsible for obtaining blasting permits and providing required notification to blasting activities.

3.0 PRE-BLASTING IMPACT ASSESSMENT

3.1 POTENTIAL IMPACT ASSESSMENT

Prior to initiating blasting operations, and as part of preparation of a CBP and SSBP, the contractor would assess the potential impacts from the proposed blasting operations on nearby residential or other structures, aboveground and below ground utilities, roadways, treed areas, waterbodies, and other sensitive environments or habitats. If federal, state, local, or Occupational Safety and Health Administration (OSHA) regulations dictate minimum distances for assessing or protecting from blasting impacts, these distance thresholds would be followed. If no such regulations exist, the impacts would be assessed and monitored as set forth in the CBP and SSBP. Estimated charges to be used during blasting would be indicated in the CBP. No blasting will occur within 600 feet of any structure.

4.0 BLASTING PROCEDURES AND REQUIREMENTS

The CBP would provide general specifications for all blasting activities, including safety procedures, and must be submitted for 850 Rt. 28 approval. In addition to meeting applicable state and local requirements, the contractor would also provide the SSBP describing detailed blasting guidelines and procedures to 850 Rt. 28 for review and approval. No blasting would be performed without prior approval of 850 Rt. 28 and permitting agencies.

4.1 CONTRACTOR'S BLASTING PLAN

A qualified blasting engineer or consultant would oversee the preparation of the CBP, which would include blasting procedures and an engineering report showing recommended blasting charges and methods to be used at specific locations. The CBP would be approved by 850 Rt. 28 or its consultant prior to any blasting activity. The CBP would include, but may not be limited to, procedures for:

- Storage, handling, transportation, loading, and firing of explosives;
- Communication with authorities and landowners;

- Pre- and post-blast inspections;
- Mitigation controls for flyrock, noise reduction, and misfires;
- Safety procedures (e.g., fire prevention, signs and flagmen, and warning signals);
- Mitigation of environmental impacts; and
- Disposal of waste blast material.
- The names of blasting professionals along with copies of licenses and a statement of qualifications summarizing the experience of each professional;
- The names and credentials of all monitoring personnel;
- Typical blasting design criteria:
 - Description of blast products and their justification for selection;
 - Delay type and interval;
 - Maximum charge per hole and per delay;
 - Method for initiating explosives;
 - Stemming material and tamping method; and
 - Hole diameter and pattern;
- A description of vibration monitoring equipment, including manufacturer, copies of calibration certificates, and specifications;
- Copies of all required federal, state, and local permits;
- Magazine types and locations for storage of explosives and detonating caps;
- Blasting log forms.

4.2 SITE-SPECIFIC BLASTING PLAN

All blasting-related activities would be performed in accordance with an SSBP (prepared by the blasting contractor) and would include measures for avoiding, abating, or minimizing potential impacts at a specific location. The following is a list of items that would be addressed by the SSBP. It is possible that additional, specific local requirements not listed herein may be required.

- Prior to blasting, the contractor would provide 24-hours advance notice to all applicable and potentially- affected parties, including local municipalities and other parties as may be required by the NYSPSC Certificate conditions, project permits, or applicable regulations. There are no permanent residences located within 600 feet of Site.
- Address of parties to be contacted - 68 Waughkonk Rd Kingston, NY 12401 / 55
Waughkonk Rd Kingston, NY 12401 / 45 Waughkonk Rd Kingston, NY 12401 / 50
Waughkonk Rd Kingston, NY 12401 / 35 Waughkonk Rd Kingston, NY 12401 / 34
Waughkonk Rd Kingston, NY 12401 / 18 Waughonk Rd Kingston, NY 12401 /
- Controlled blasting techniques would be designed specifically to impact only material within each shot.

The SSBP would contain a Safety Plan that would include, at a minimum:

- Measures that would be taken to execute the work in a manner that minimizes potential for injury to project personnel, the public-at-large, and adjacent/nearby properties. This could include the use of blast mats if there is the potential for fly rock to damage nearby structures, etc.
- All personnel would be cleared to a safe distance within the blasting area.

- Contact information for all project managerial and emergency personnel, including the local fire department, and any others as may be required by applicable permits;
- Procedures to follow in the event of injury or other emergency; Procedures for establishing sentries as needed to prevent access to the blast zone(s) by unauthorized personnel. Sentries would be deployed on all pathways (blocked access roads, closed roads, etc.) to the blasting area;
- Procedures for fire safety in accordance with a Fire Prevention and Safety Plan, including restrictions on blasting in periods of high fire danger;
- Procedures for explosive materials handling, storage, and use;
- Proper safeguards for personnel in the event of a misfire until the misfire can be re-blasted or safely removed;
- Communication protocol between vehicles and office facilities, including cease-use restrictions during blasting activities;
- Personal protective equipment and tool restrictions to avoid sparking around explosives; and
- Measures to be implemented for prevention and suppression of wildfires;

The SSBP also would contain details regarding, but not limited to:

- Primary rock type and geologic structures (e.g., competence, massive or fractured);
- Blast hole spacing, blast charge weight, delay type or configuration, and other design aspects to be used to minimize impact as depicted in the General Blasting Procedures below;
- Explosive material cut-sheets, including chemical content of the materials and potential by-products;
- Provisions for a system of signage and warning signals to warn of impending blasting activities and access limitations;
- Methodology (blasting mats or pads) for containing fly-rock, dust, fumes, and noise;
- Proposed vibration monitoring locations;
- Provisions for a monitored test blast to assess the effects of the blasting as proposed and the potential need for modifications to the blast methodologies;
- Proposed hours of drilling and blasting operations, no drilling or blasting will take place on weekends (7:00 p.m. Friday to 7:00 a.m. on the following Monday), weekdays between 7:00 p.m. and 7:00 a.m., and the following Holidays : New Year's Day, Washington's Birthday, Good Friday, Memorial Day, July 4th, Labor Day, Election Day, Thanksgiving Day, Christmas Day.
- Loaded blast holes would not be left unattended;
- Blast holes would not be left loaded overnight;
- Specific procedures for the transportation and storage of explosives and blasting materials; and
- Other criteria as appropriate.

Magazines used for storage of explosives must be located on properties permitted for use during the Project. Magazine locations would be in accordance with local, state, and federal regulations. Magazines would be located in accordance with the 175th anniversary edition of the Blasters Handbook and ATF P5400-7 Explosives Law and Regulations (Bureau of Alcohol, Tobacco, and Firearms) where no regulations apply.

4.3 GENERAL BLASTING PROCEDURES

The CBP would set forth procedures that would include, at a minimum, a test shot be conducted and monitored. The contractor would use the data from the test shot to establish standard shot in terms of pounds

of explosives per delay. Production shot procedures and delays would be identical to test shot procedures and delays.

In order to provide material suitable for aggregate production, the drilling pattern would be designed to achieve rock fragments suitable for the production of aggregate. 850 Rt. 28 will provide general guidelines as to the desired size of shot rock produced.

All proposed drilling patterns would be submitted to 850 Rt. 28 for approval prior to drilling. The following action items are intended to only provide a general order to the blasting procedure:

- Making required notifications.
- A health and safety tailgate meeting would be held prior to any blasting activities, and all personnel involved with any task associated with the blasting would attend. All safety rules and signaling would be covered during the meeting;
- Warning signs would be placed around the blasting area;
- Lightning detectors would be set up in the blasting area;
- All drilled holes would be accurately measured for both depth and location;
- Vibration monitoring equipment would be set up to measure velocities near potential receptors identified by the blasting contractor;
- The blasting affected zone would be cleared;
- Sound the warning signal(s);
- Sound the blast signal;
- Detonate the blast;
- Inspectors would inspect any aboveground or belowground facilities for damage after the blaster has checked for misfires and given the “ALL CLEAR” signal; and
- Complete the Blasting Log.

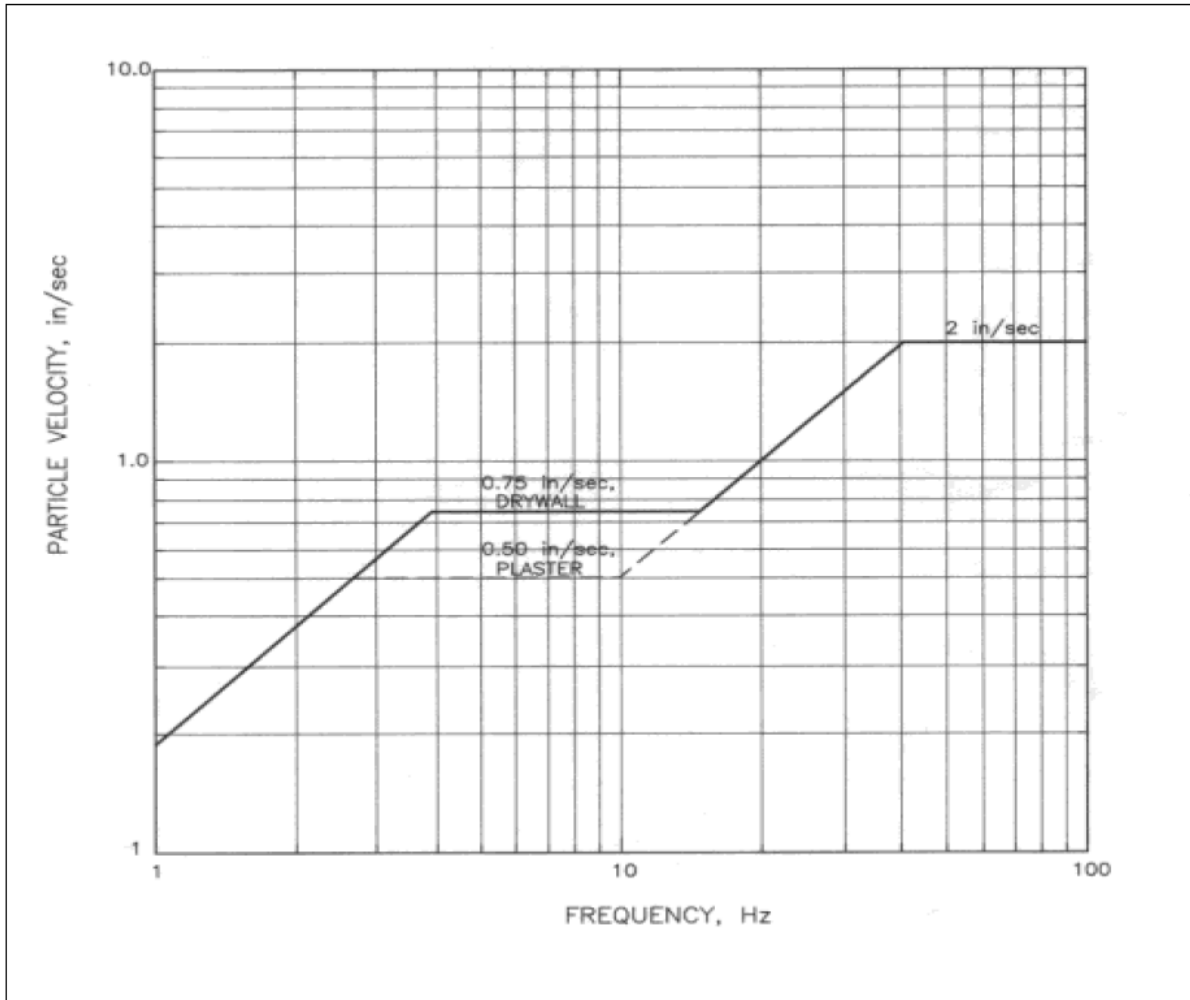
4.4 VIBRATION MONITORING

As specified in the SSBP, blast vibration and airblast overpressure monitoring would be performed and reported for each round by an experienced, qualified firm. Appropriate documentation would be maintained and available for review by appropriate agencies in accordance with the SSBP.

Unless otherwise approved, ground vibrations at adjacent and nearby structures would be kept below the safe limits recommended by the U.S. Bureau of Mines (USBM RI 8507, 1980), which are provided on Figure 4.5-1. These limits are based on the frequency and the peak particle velocity of the blast vibrations, and are generally-accepted limits for preventing cosmetic damage to residential structures.

Unless otherwise approved, air blast overpressures would normally be kept below a limit of 133 decibels (dB) (Peak Impulsive), or 0.013 pounds per square inch (psi), which is the limit recommended by the U.S. Bureau of Mines to prevent damage to windows and minimize annoyance (Figure 1). The maximum peak particle velocity allowed would take into consideration protection of the stability of natural slopes, and to minimize environmental impacts to wells, springs, waterbodies, wetlands, wildlife, and habitat.

Figure 1- Blasting Vibration Limit Criteria



Source: U.S. Bureau of Mines (USBM RI 8507, 1980)

5.0 LIGHTNING HAZARDS

The Blasting Contractor would consider the impact of contractor operated light and power circuits and would disconnect all circuits within 100 feet of the blasting site. Lighting used on site would be OSHA-approved lighting. All loading and blasting activities would cease immediately, and personnel would seek shelter a safe distance from the work area. If the Contractor determines that such a hazard exists, work would be discontinued for all operations and workers would retreat to a pre-determined safe zone away from the loaded holes when an approaching storm front is within 5 miles. Work would continue only after the nearest lightning activity is at least 5 miles beyond the blasting area.

6.0 ENVIRONMENTAL CONCERNS

850 Rt. 28 would have approval to affect the site within the identified site development area. All environmental concerns from an threatened and endangered species, and sensitive habitat perspective would be addressed. The following would be included in the CBP:

- Acceptable noise levels and guidelines for limiting shot size and frequency of blasting to control noise levels;
- Prevention of unstable geological conditions that may result from blasting operations such as landslides, mudslides, or ground failure, which could result in hazards to people or property;
- Protection of water supply wells, springs, and seeps.