

## **N. Construction**

### **1. Introduction**

The redevelopment of the site and implementation of the Project would require building demolition, infrastructure removal, installation, and upgrades, and new construction. Although involving several different facets, development of the Project would require the use of conventional construction equipment. The equipment utilized would differ depending on the point in the construction process, but in general heavy equipment (bulldozers, dump trucks) would be used during ground clearing and excavation activities.

The projected construction sequencing for the two project phases is included in the table at the end of this Section.

Typical construction activities potentially occurring in each phase would include:

- **Building Demolition (where applicable)** – The buildings will require the remediation of any controlled materials (i.e. asbestos, lead paint). Asbestos abatement and removal projects are regulated by the New York State Department of Labor under Industrial Code Rule 56. Code Rule 56 covers installation, removal, encapsulation, application or enclosure of asbestos material. Construction and demolition debris would be disposed offsite at a regulated solid waste facility. To the extent practical, concrete and brick would be recycled for use as fill and base material. Demolition procedures would also include creation of a stabilized construction entrance and exit area comprised of a clean gravel roadway. The public roadways surrounding the demolition site would be cleaned periodically with a street sweeper and water truck. Fixed air monitoring stations would be established at locations along the perimeter to monitor for particulates and volatile organics using direct-reading in accordance with regulatory requirements.
- **Site Preparation-** Establish a temporary staging area on the site and install sediment control measures as defined in the Stormwater Pollution Prevention Plan. This phase would include demolition and remove of the existing roadways and utilities.
- **Roadway and Infrastructure Construction and Rough Grading, Site Grading, Drainage and Utilities** – Earthwork operations would begin to establish the rough grading of the site. After the approximate subgrade elevation is established, the storm drainage and utilities would be installed. Sediment control measures during this phase would include installation of sediment barriers adjacent to all areas to be disturbed. A stabilized construction entrance would be installed at all points of access to adjacent roadways. The Contractor would use the existing site roads to the extent possible. Stabilization of all slope areas would proceed immediately upon completion. Dust control measures would be implemented as required.
- **Golf Course Construction (where applicable)** –The reconstruction of the golf holes would be phased to minimize the period in which the golf course will be shutdown. .

- Building Construction - The building construction is expected after the site access roads and utilities are completed. The duration would depend to some extent on the sale of units. The first buildings would not be occupied until the utility infrastructure system serving the units are completed

## 2. Potential Impacts

Construction activities usually result in a number of temporary environmental impacts. The duration of these potential impacts are related to construction phasing and can include such impacts as increased on-site vandalism of building materials and construction equipment; construction related noise from the operation of heavy equipment; fugitive dust and emissions from operating power equipment; construction traffic relating to employee arrival/departure and material delivery routes on the adjoining roadway network; and increased soil erosion from on-going earthwork operations. The Applicant anticipates that these impacts would be mitigated through the management of the construction process. Each of these potential impacts is described in greater detail below.

### *Construction Phasing*

The construction of the project is anticipated to be completed in two phases, extending over a period of approximately 10 years. Exhibit III.N-1, DEIS Phasing Plan identifies the two phases of planned construction. In general, the Applicant intends to commence with construction of the residential units on the west side of the project, along with a majority of the project's commercial development (on both the east and the west side) during the first Phase of construction. Demolition of the former HVPC buildings and existing infrastructure would also commence during this initial phase of construction. Phase 2 would focus on completing the site's utility infrastructure, and constructing the residential units on the East Parcel along with the balance of the proposed commercial development. However, the timeline and sequence may vary to accommodate market conditions.

### *Construction Site Security*

The storage of large quantities of building materials, construction vehicles and other construction equipment on-site throughout the construction process increases the potential for on-site vandalism. Temporary construction fencing would be utilized to protect the public from potential hazards of construction to the maximum extent practical.

### *Air Quality*

The primary anticipated air quality impacts from demolition and construction activities are related to fugitive dust and mobile source emissions. Fugitive dust can result from land clearing, construction materials or debris handling, excavation, demolition, compaction, short term storage and vehicle motion over unpaved areas. Mobile sources, such as construction equipment and construction worker vehicles, would produce emissions including CO, VOCs, and NO<sub>2</sub>. Exhaust emission of particulate matter may also result from the use of diesel-powered vehicles. Given the scale of the project site and that most construction activity would occur in the interior of the site and relatively distant from neighboring uses, significant air quality impacts on surrounding uses are not anticipated.

Noise

Temporary, localized noise increases may also be expected from demolition and construction activities and vehicles during the construction period. The level of noise impact would depend on the equipment and activity involved and would decrease with distance from the construction site. Noise levels of “heavy” construction equipment ranges from 79 to 92 dBA at 50 feet. The U.S. EPA reports noise levels at housing projects range from a high of 88 to a low of 75 dBA from grading through finishing operations (U.S. EPA, Construction Noise Control Technology Initiatives, Table 2.2).<sup>1</sup> (See Section III.L for typical noise levels from construction activities.) As a point of reference, some common sound levels are listed below:

- Pile Driver at 100 feet – 90 to 100 dBA
- Chainsaw at 30 feet – 90 dBA
- Truck at 100 feet – 85 dBA
- Noisy Urban Environment – 75 dBA
- Lawn Mower at 100 feet – 65 dBA
- Average Speech – 60 dBA
- Typical Suburban Daytime – 50 dBA
- Quiet Office – 40 dBA
- Soft Whisper at 15 feet – 30 dBA

Noise levels from major construction operations at varying distances are identified below.

**Table III.N-1  
Noise Levels of Major Construction Operations**

Construction Phase	Noise Level (dBA)			
	100 Feet	400 Feet	600 Feet	1000 Feet
Ground Clearing	78	72	63	59
Excavation	83	77	68	64
Foundations	71	65	56	52
Building Erection	78	72	63	58
Finishing and Cleanup	83	77	68	64

Source (U.S. EPA, *Noise from Construction Equipment and Operations, Building Equipment and Home Appliances*, 1971)

All activities would be subject to §107 of the Town’s municipal code, which prohibits construction, demolition or excavation between after 9:00pm and before 7:00am. As previously mentioned with air quality impacts, the size of the project site and the concentration of construction activity towards the interior would be expected to minimize the potential for significant noise impacts on surrounding uses. In addition, equipment is not generally operated continuously or simultaneously. There would be times when no equipment is operating and noise would be at ambient levels.

<sup>1</sup> Construction equipment noise levels are provided in the Federal Highway Administrative Highway Construction Noise: Measurement Prediction and Mitigation, Appendix A.

*Blasting*

It is expected that rock removal would be required to complete construction of the project. While it is anticipated that some bedrock may be removed with excavators or other power equipment, rock blasting is anticipated. Blasting noise is of very short duration (less than one second) and is typically heard as a dull rather than sharp type of sound. Potential areas of concern with blasting activities include flyrock, damage to existing structures from the associated airblast, as well as damage to on and off-site structures from ground vibrations attributable to the blasting activity. The use of explosives for blasting is regulated by §69 of the municipal code. Blasting requires permitting from the Town and is prohibited on weekends and holidays. Blasting protocols are detailed below.

*Traffic*

Project implementation would generate construction-related traffic, including construction worker commuting and the delivery of materials and equipment. The numbers and types of vehicles would vary depending on the construction phase. Deliveries would generally be made on flat-bed or box trucks, with delivery routing having trucks entering the site from Route 22 at Wheeler Road. Typically, construction workers arrive on-site prior to the AM peak hour and depart before the PM peak hour, limiting the potential impact of employee traffic.

*Erosion and Sedimentation*

Disturbance and the exposure of soil during construction can create the potential for the transport of sediment in stormwater flows. Consistent with State regulations and construction best management practices, a Stormwater Pollution Prevention Plan would be prepared and implemented for the site to mitigate this impact.

3. Mitigation Measures

Potential impacts from construction equipment and activities would be managed throughout the duration of the construction process through adherence to the State construction code, and implementation of a NYSDEC-approved Stormwater Pollution Prevention Plan, including the use of construction and erosion control best management practices.

*Construction Phasing*

The planned phasing of construction over a 10-year period is expected to reduce peak construction related project impacts. Further, the planned phasing of construction as outlined above is expected to minimize project impacts by avoiding random spread of development across the site, thereby allowing for an efficient placement of construction staging and material stockpile areas. Construction staging and material stockpile areas would also be centrally located within the site to the maximum extent practical, minimizing any potential impacts to the surrounding residences.

*Construction Site Security*

The project site is currently monitored by a private security service. This type of security service would be maintained during (and after) construction of the project.

*Noise*

Contract specifications would require that all construction equipment be properly maintained with mufflers in accordance with manufacturers' recommendation to limit noise impacts. To the extent possible, noisy operations would be combined to occur during the same period. Additional measure to minimize impact would include:

- The internal combustion engine-powered construction equipment used in the construction of the project shall be limited to late model (1998 and newer) so as to take advantage of the cleaner burning engines. Exceptions to this shall be subject to the approval of the Town Building Department upon a demonstration that it is not feasible or practicable to obtain the required equipment.
- Engines shall be fitted with "critical" level exhaust silencers.
- All non-road vehicles over 50HP used shall utilize the best technology available for reducing the emission of pollutants, including, but not limited to, retrofitting such non-road vehicles with oxidation catalysts, particulate filters, and/or technology with comparable or better effectiveness. All construction equipment shall include PM2.5 emission controls.
- All diesel powered non-road vehicles in use at this construction site shall be fueled only with ultra low sulfur diesel having a sulfur content of no more than fifteen (15) parts per million. All fuel delivered for use at this construction site shall consist of said fuel.
- "Non-road engines" mean an internal combustion engine (including the fuel system) that is not used in a motor vehicle used solely for competition or that is not subject to standards promulgated under Section 7411 or Section 7521 of Title 42 of the United States Code (USC), except that this term shall apply to internal combustion engines used to power generators, compressors, or similar equipment used in any construction program or project.
- Variable volume back-up alarms shall be used on construction vehicles.

*Blasting*

As described earlier, rock removal is anticipated and would be performed either by chipping or blasting. Rock removal would be performed in accordance with all local, state and federal regulations, including §69 of the municipal code, which dictates licensing, permitting, insurance, and notification requirements for blasting activity. Blasting would be carried out by a person who is licensed in the State of New York to handle and detonate explosives, and all personnel who may handle or use explosives will have appropriate training and safety instructions. Warning signs will be posted at suitable locations.

Prior to the start of blasting, a qualified licensed professional engineer/seismologist experienced in blasting ("PE/S") would be employed by the Applicant to prepare and certify a detailed Blasting Plan, as well as supervise and be responsible for the monitoring and conducting of all blasting activities, if any. The Blasting Plan would be prepared and certified by the PE/S and submitted to the Town, prior to any blasting activities at the site. The Blasting Plan would include, among other items, a pre-blasting survey of all structures within 300 feet of the blast site, a sub-surface utility analysis, drill patterns, noise/sound and ground and air vibration analyses, instrumentation requirements and setup procedures,

measurement protocols and monitoring frequencies, proposed blasting and rock crushing procedures and operations, if any, a warning signal system for blasting occurrences, flyrock control procedures, and protocols for ongoing reporting and complaint procedures. Blasting noise and vibration analyses would be monitored by the PE/S and the PE/S will detail the results of each blasting operation.

The Blasting Plan would also provide that the contractor shall be limited to no more than four pounds of explosive per delay, and a maximum of 100 pounds per detonation. All blasting operations would be monitored by the PE/S using a seismograph placed on the property line to insure that peak particle velocities will not be exceeded.

The United States Bureau of Mines has established that a threshold of four inches per second will likely crack plaster and therefore recommended that a safe vibration criteria is two inches per second. This limitation has been used successfully in the industry, as well as being the basis for any blasting operations in proximity to the NYC Department of Environmental Protection aqueducts. As listed below in Table III.N-2, the maximum peak particle velocity would be restricted to a peak particle velocity of 1.75 inches per second or lower. The peak particle velocity emanating from any blast would be restricted to at least the following limits:

**Table III.N-2  
Peak Particle Velocity**

<b>Distance</b>	<b>Peak Particle Velocity (inches per second)</b>
0 to 100 feet	1.75
100 to 200 feet	1.50
200 to 500 feet	1.00

The PE/S would also notify the Town, the State Police, Dutchess County Sheriff’s Office, and all inhabitants or users of structures located within 300 feet of the blasting site at least 24 hours prior to commencement of any blasting operations.

The limits of the operation would be fenced in. Blasting noise and vibration would be monitored at all times. The Blasting Plan would also include that:

- No person will use during the blasting operations a quantity of explosives greater than necessary to properly fracture the rock, nor use such amount as may potentially endanger persons of property
- Prior to each detonation, regardless of its location to adjacent properties, the blast area will be covered with appropriate matting to both prevent the escape of broken rock or other materials and to sufficiently muffle the sound associated with the blast
- No person will be authorized to detonate, direct or cause to detonate any explosives unless competent persons are on hand to give proper warning of the impending blast, as required by the NYS Department of Labor and the Federal Occupational Safety and Health Administration
- While on site, all explosives will be kept in a properly constructed magazine painted red and marked “DANGER EXPLOSIVES.” Magazines to be used for the storage of explosives will be as specified in the current standards of the National Fire Protection

Code. Magazines will be kept locked, except when being inspected or when explosives are being placed therein or removed therefrom. Explosives will not be permitted to be stored on-site overnight.

As rock is encountered on the site during the excavation process, the contractor would be required to make every effort to remove as much material by means other than blasting. The Blasting Plan will contain measures to minimize noise, dust and debris emanating from the blasting and general construction activities.

In preparation for blasting operations, rock-drilling equipment would be employed to establish the hole patterns in which the explosives would be placed. Drill rigs typically generate sound levels between 80 to 100 dBA at a distance of 50 feet. A typical rock crusher generates approximately 94 dBA. If necessary, noise attenuation at the site of the drilling would be determined in consultation with the PE/S based on background noise levels and a range of dBA considered to be acceptable as per industry standards.

The rock that is blasted or excavated on the site would be processed on-site using a rock crusher to create fill or other construction aggregates. Any processing of on-site material would comply with the municipal noise code and the contractor would be prohibited from crushing any rock imported to this site, unless the additional material is required for the construction of the project's roadways and foundations. All structural rock fill must be properly compacted and would be inspected and approved by a soils testing firm. Rock crushing operations would be located centrally to the site to minimize potential impacts to adjacent residential land uses.

#### *Traffic*

The sequencing of construction and the provision of adequate construction staging and material stockpile areas over the approximate 10 year construction period would permit the recycling of building materials; coordinated use of construction crews and equipment; and the reduction of material deliveries. Further, materials from the demolition of existing on-site buildings, tunnels, other structures and pavement areas would be recycled to the maximum extent practical and would further reduce the off-site deliveries of materials to the project site. Brick and remains from the concrete foundations of the existing buildings to be demolished on the site would be crushed and reused on-site as fill material where acceptable to both the owner and local building officials. Other construction and demolition debris not suitable for reuse on-site would be stockpiled on-site until a significant quantity of material has been collected for the efficient transporting of the material off-site.

#### *Erosion and Sediment Control Plan*

An erosion and sediment control plan would be prepared in conformance with the Town Code and the NYSDEC New York State Stormwater Management Design Manual (April 2008). In addition, practices would be designed based on the NYSDEC New York State Standards and Specifications for Erosion and Sediment Control (August 2005). During and post construction, efforts would be made to preserve a similar drainage pattern as currently occurs, with undisturbed stormwater runoff and ground water being diverted from temporary swales, sediment traps and permanent stormwater management measures.

Best management practices to be employed for control of soil erosion and sedimentation and fugitive dust include:

- Installation of silt fencing and staked haybales along the limits of disturbance. Additional haybales would be installed as inlet protection.
- Installation of stabilized construction entrances.
- Installation of temporary siltation/sediment traps, as appropriate and necessary.
- Temporary seeding or planting of disturbed areas designated for landscaping.
- Water spraying of the ground surface to prevent fugitive dust emissions from construction-related traffic.
- Covering of open-body trucks with tarps during motion.
- Low speeds for all construction vehicles.

**Table III.N-3  
Projected Construction Sequencing (see Exhibit III.N-2, Construction Sequencing)**

Phase	Construction Sequence	Residential Units	Commercial SF	Amenities	Infrastructure	Required Demolition	Year
1	1A	217	82550	Golf course Great lawn Boat launch Neighborhood greens/squares	Route 22/Wheeler improvement, bridge reconstruction, utility service lines, well installation, water/wastewater plant upgrades	Clubhouse	1-3
	1B	176	119150	Neighborhood greens/squares	Utility service lines, roads	4 institutional buildings	4
	1C	156		Playfield Neighborhood greens/squares	Utility service lines, roads	Agricultural buildings	5
2	2A	493	43800	Wetland trail to Boyce  Trail linkage to AT Reservoir recreation access Smith Hall Neighborhood greens/squares	Utility service lines, roads	11 institutional buildings plus smaller accessory uses	6-8
	2B	49		Neighborhood greens/squares	Utility service lines, roads	NA	8-9
	2C	285		Neighborhood greens/squares	Utility service lines, roads	7 institutional buildings plus several smaller houses and accessory structures	9-10
*Institutional Buildings (does not account for smaller agricultural structures or single-family homes)							