

III.C Soils, Topography (Steep Slopes) and Geology

I. Former Project

It was determined that depth to bedrock is generally greater than six feet for much of the site, but is less than three feet in the center of the site. The Project Site is underlain by Manhattan Formation bedrock, which is metamorphic schist bedrock of Ordovician age.

The Former Project would be constructed primarily in the upper elevations of the site occupied by the following soil mapping units: HrF (Hollis Rock outcrop complex, very steep); CrC Charleton-Chatfield complex rolling, very rocky); and CsD (Charleton-Chatfield complex, hilly very rocky). The site soil mapping units and topography are depicted on Figure 3.C-1. The main construction/development limitations for these soil types as indicated by the NRCS Soil Survey are these soils' shallow depth to bedrock and their erosion potential on steeper slopes. These soils have erodibility factors (K factors) ranging from 0.24 to 0.32, meaning they are medium textured soils moderately susceptible to detachment and erosion.

The establishment and maintenance of erosion control measures (silt fence, mulch, and temporary sedimentation basins) during construction and the reestablishment of plant cover as soon as possible after construction would be employed to prevent the adverse effects of erosion and sedimentation. In accordance with the NYSDEC's State Pollutant Discharge Elimination System (SPDES) General Permit for Stormwater Discharges from Construction Activity (GP-0-15-002 at the time), a Stormwater Pollution Prevention Plan (SWPPP) was prepared. This included erosion control measures to be used during construction to avoid impacts from erosion/sedimentation.

Figure 3.C-2 depicts the existing slopes on the property.

The Former Project would require a steep slope permit from the Town of Ossining.

Steep Slope Disturbance accounted for approximately 5.3 acres of steep slopes (>15 percent slope), or about 30 percent of the site, which would be regraded during construction of the Former Project. After construction, all constructed slopes would conform to Town Engineering requirements to ensure safety and stability. The alignment of roadways within the Project Site would follow natural topography.

A detailed erosion control plan was included in the SWPPP to ensure that all steep slope disturbance (clearing/grading) did not result in the movement of soil in stormwater runoff and avoided erosion/sedimentation.

The geotechnical investigation (see Appendix C of the DEIS) concluded that some blasting might have been required. If so, blasting would be conducted in accordance with applicable local, state and federal regulations.

It was the Applicant's conclusion that with the implementation of an approved SWPPP and ESC Plan, the Former Project would have avoided any adverse impacts to soils and would not have resulted in any significant adverse impacts to soils or topography on or in the vicinity of the Project Site.

The proposed multifamily residential structure was designed to work with the existing contours of the site and also stay within the already disturbed areas from the prior hospital use to the maximum extent practicable. These measures were to minimize the need for cut/fill and avoid significant changes to the site's topography. Nevertheless, there would have been approximately 2,500 cubic yards of export (approximately 125 trucks). With the excavation and foundation trade work occurring over two to three months, the truck trips would equate to only one or two truck trips per workday during this phase.

Based on recommendations in the Geotechnical Investigation I, some blasting might

¹ "Report on Subsurface Soils and Foundation Investigation, Proposed Development" – River Knoll, 40 Croton Dam Road, Ossining, prepared by Carlin – Simpson & Associates, January 20, 2017.

have been recommended. If so, blasting would have been conducted in accordance with applicable local, state, and federal regulations, including Town Code Section 89, “Explosives,” and the Town of Ossining regulations on blasting (Town Code §123). To ensure compliance, a site-specific blasting plan would have been provided to the Town. This plan would include schedules for blasting (day, hour, night, and duration); safety protocols associated with blasting activities and the handling and transport of blasting materials; and measures to reduce noise-related impacts. Compliance with the blasting plan would minimize potential impacts associated with blasting.

Where the Geotechnical Investigation recommends removing rock, a hydraulic hammer would be used to chip and break the rock apart without the use of blasting wherever practical, however blasting would be utilized in areas where it is the remaining viable option. The impacts of rock ripping and chipping are ground vibrations in the immediate vicinity of the ripping and chipping machinery, and potential fly-off rock fragments in the immediate vicinity of the ripping and chipping operation. While there is little that can be done to mitigate ground vibrations, there are steps that could be taken to mitigate the impacts of fly-off rock fragments.

With the Applicant implementing the measures noted above, it was the Applicant's conclusion that the potential cumulative impacts on the geology, soils, and/or topography on or in the vicinity of the Project Site resulting from the development of the Former Project would not be significant.

2. Proposed Project

Full-sized drawing SP-4 “Grading Plan” and Figure 3.C-4 provide an illustration of the proposed grading of the Site. Based on the topography of the Project Site, and in order to accommodate development in accordance with the proposed plan, the project would result in a net cut of approximately 14,943 cubic yards of excess material (Figure 3.C-5). As illustrated on Figure 3.C-5, the areas in red represent areas of cut and depth of cut. Most of the cut area is on the central high points on the Site, as well as to the west adjacent to Croton Dam Road to accommodate the proposed

stormwater management basins. Fill areas are depicted in blue and are present predominantly on the eastern and southern portions of the Site, and where the proposed clubhouse is to be situated.

Approximately 89 percent of the material to be excavated will be re-used on the Project Site as compacted fill, and the balance of the excavated material would be exported from the site. The excess material would be exported in accordance with all applicable regulations to appropriate location(s).

The Grading Plan depicts the locations, lengths and top and bottom elevations of the proposed retaining walls. It is anticipated the majority of the walls will be segmental block construction.

Figure 3.C-3 depicts the impacts to steep slopes as a result of the Proposed Project. Approximately 7.6 acres of slopes in excess of 15 percent will be disturbed by the Proposed Project.

Chapter 167 of the Town Code, “Steep Slope Protection”, classifies steep slopes as follows.

- MODERATELY STEEP SLOPE
 - A slope equal to or greater than 15% but less than 25% and covering a minimum horizontal area of 3/10 of an acre (13,068 square feet).
- VERY STEEP SLOPE
 - A slope equal to or greater than 25% but less than 35% and covering a minimum horizontal area of 2/10 of an acre (8,712 square feet).
- EXTREMELY STEEP SLOPE
 - A slope equal to or greater than 35% and covering a minimum horizontal area of 1/10 of an acre (4,356 square feet).

The Code requires that the most steeply sloped area that meets the minimum area threshold noted in the above definitions is to determine the approval authority

jurisdiction and review procedures for obtaining a Steep Slope Permit. In the case of the Proposed Project, the Planning Board would be responsible for granting such a permit.

Approximately 29% of the 14.2-acre disturbance area impacts moderately steep slopes, 14% impacts very steep slopes, and 10% extremely steep slopes. Chapter 167 “Steep Slope Protection” of the Town Code regulates disturbance to steep slopes. With regard to disturbance of extremely steep slopes, §167-5.b(2) of the Code states that it is unlawful to create or disturb any extremely steep slope, as defined herein, except that the Planning Board may waive this prohibition with respect to ingress and egress for the property and in other circumstances, subject to the following provisions of this section. In these cases, the applicant is to have the burden of demonstrating that the applicant's circumstances warrant the waiver, including, at a minimum, an analysis of the relative environmental impacts of alternatives and demonstration by the applicant that:

- The site, lot or parcel cannot be reasonably used without the creation or disturbance of an extremely steep slope; or
- A traffic hazard relative to sight distance(s) would result without the creation or disturbance of an extremely steep slope.

In addition, the Planning Board may only permit the creation or disturbance of an extremely steep slope if in doing so adverse environmental impacts can be mitigated to the extent acceptable to said Board.

At this stage the site plans have not been finalized because changes may occur during the SEQRA review process. The Applicant will seek a Steep Slope Permit and a waiver from the Planning Board subject to the conditions of §167-5.b(2) during the site plan approval process following the SEQRA review.

The site has largely been previously disturbed with the former hospital use, and slope disturbance is being mitigated with erosion and sediment control measures as outlined in the SWPPP (Volume 2 Appendix) and in Section 3.D of the SDEIS.

Based on the findings of the geotechnical investigations for the Former Project, some blasting may be required. If so, blasting will be conducted in accordance with applicable local, state, and federal regulations, including Town Code Chapter 89, “Explosives.”

The licensed blasting specialist will use care and caution to prevent excessive shock waves or stones and other material from flying and endangering life and property. The blasting of material near to any building or other structure will be conducted so as not to cause any damage. All blasting will be under the direct supervision of persons approved and licensed by New York State.

At this stage the site plans have not been finalized because changes may occur during the SEQRA review process. In addition, the condition of the underlying bedrock would need to be evaluated as the excavations proceed to determine specifically if blasting is required at a specific location.

The geotechnical investigation also concluded that rock removal may be required. A hydraulic hammer would be used to chip and break the rock apart, without the use of blasting. The impacts of rock ripping and chipping are ground vibrations in the immediate vicinity of the ripping and chipping machinery, and potential fly-off rock fragments will occur in the immediate vicinity of the ripping and chipping operation. While there is little that can be done to mitigate ground vibrations, there are steps that can be taken to mitigate the impacts of fly-off rock fragments. In the first instance, the impacts of fly-off rock fragments are mitigated by providing the operator of the machinery working within an enclosed cab and/or wearing protective eye gear. Impacts of fly-off rock fragments on other persons and/or off-site will be mitigated by limiting accessibility to the area of the ripping and chipping operation with signage and

fencing to the machine operator and installing controls—such as protective screening—would help ensure that any potential fly-off rock fragments remain on-site.

Airborne dust may be created by the chipping operation, which may be mitigated by wetting of the material being ripped.

An on-site rock crushing process may be established temporarily. There are two main sources of dust at a rock crushing site. One source is the processing equipment that crushes, screens, and conveys the aggregate. The other is associated with stockpiles of pulverized rock where fines can become airborne by wind. Permits would be obtained from WCDOH for crushing and processing the rock on site. The operation will in all cases be no closer than 200 feet from any property line. Rock crushing would only occur during permitted hours of construction as required by Chapter 130 Noise of the Ossining Town Code.

The proposed on-site stormwater runoff from the impervious surfaces including building rooftops, driveway, parking areas and sidewalks will be collected and conveyed by drainage manholes and catch basins to a network of high density polyethylene (HDPE) drain pipe installed underground with discharge to proposed infiltration basins and a micropool extended detention basin.

The proposed drainage improvements include standard and green infrastructure stormwater practices, such as infiltration basins. The vegetated practices and overland discharges provide multiple opportunities for water quality enhancement and infiltration in addition to the proposed stormwater management practices.

3. Mitigation

Blasting mitigation measures

Similar to the Former Project, some blasting might be necessary. If so, blasting would

be conducted in accordance with applicable local, state, and federal regulations, including Town Code Section 89, “Explosives,” and the Town of Ossining regulations on blasting (Town Code §123). To ensure compliance, a site-specific blasting plan is to be provided to the Town. This plan would include schedules for blasting (day, hour, night, and duration); safety protocols associated with blasting activities and the handling and transport of blasting materials; and measures to reduce noise-related impacts. Compliance with the blasting plan would minimize potential impacts associated with blasting.

Where feasible, a hydraulic hammer would be used to chip and break the rock apart without the use of blasting. The impacts of rock ripping and chipping are ground vibrations in the immediate vicinity of the ripping and chipping machinery, and potential fly-off rock fragments in the immediate vicinity of the ripping and chipping operation. While there is little that can be done to mitigate ground vibrations, there are steps that could be taken to mitigate the impacts of fly-off rock fragments, such as by providing the operator of the machinery working within an enclosed cab and/or wearing protective eye gear, by limiting the area of the ripping and chipping operation with signage and fencing to the machine operator, and by installing such controls as protective screening such that any potential fly-off rock fragments remain nearby and on-site. Other impacts, such as airborne dust created by the ripping and chipping operations, will be mitigated by wetting of the material being ripped.

With the Applicant implementing the measures noted above, it is the Applicant's conclusion that the potential cumulative impacts on the geology, soils, and/or topography on or in the vicinity of the Project Site resulting from the development of the Proposed Project would not be significant.

Steep Slope and Erosion and Sediment Control Measures

Erosion and sedimentation control measures will be implemented by the Applicant in accordance with the requirements of NYSDEC SPDES General Permit No. GP-0-20-001 for Stormwater Discharges from Construction Activity, and Chapter 168,

“Stormwater Management and Erosion and Sediment Control,” of the Town of Ossining’s Code. In accordance with the prepared SWPPP plan, on-site temporary measures such as silt fences, interceptor swales to be used to direct stormwater runoff to temporary sediment traps for settlement, stabilized construction entrances, temporary seeding, and mulching. In an effort to minimize runoff and prevent runoff into wetlands and wetlands buffer areas, as well as onto neighboring properties, designated soil stockpiling areas and silt fencing will be used. Given the size of the Project Site and its considerable distance from neighboring properties, there are ample opportunities to shield and fence off construction materials and equipment.

There will be no problematic runoff to existing adjacent homes. As discussed in the Preliminary SWPPP (SDEIS Appendix Volume 2), the proposed stormwater facilities have been designed such that the quantity of stormwater runoff during and after construction is not adversely altered or is enhanced when compared to pre-development conditions.

The SWPPP analyzed anticipated drainage conditions taking into account the rate of runoff which will result from the construction of buildings, parking areas and other impervious surfaces associated with the site development.

The project employs a variety of practices to reduce peak rates of runoff associated with the proposed improvements. These measures include infiltration basins, a wet extended detention pond and stormwater planters. These improvements will mitigate runoff volumes from the proposed improvements as runoff volumes will be slightly reduced or maintained in all the analyzed storms. The SWPPP concludes that there are not anticipated to be any adverse impacts from the Proposed Project to the site or any surrounding areas.

As noted above, following the conclusion of the SEQRA process the Applicant will seek a Steep Slope Permit and a waiver from the Planning Board, subject to the

conditions of §167-5.b(2) of the Town Code as discussed above, during the site plan approval process.

Construction hours are regulated by Chapter 130 “Noise” of the Town Code. §130-6.C limits construction activity that is audible outside a building or structure to Monday through Friday, except holidays, during the hours of 8:00 AM to 8:00 PM, and Saturdays, Sundays and holidays during the hours of 9:00 AM to 5:00 PM.

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