James Engineering, Inc.
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Project Description
111 Weir Street

The proposed development at 111 Weir Street will be a 5-bedroom single family dwelling, including all utilities with driveway access from Weir Street. The lot is located on Weir Street and includes nearly all of Patterson Pond impoundments including the dam. Overall, the lot is 299,972 square feet (6.88 acres) in size. Of this total, 22,283± square feet of the parcel are occupied by either bordering vegetated wetlands, land under a water body and/or land subject to flooding. All the wetland jurisdictional limits for this parcel were flagged by Nover Armstrong & Associates in 2016 and confirmed by an ORAD issued by the Commission in March 2017. This flagging also served as the basis for the design of the Patterson Pond Estates Definitive Subdivision.

Existing Conditions

As previously noted, the parcel is 6.88 acres, much of which is occupied by Patterson Pond. The existing frontage for this lot along Weir Street is primarily located south of 109 Weir Street along with a 15.7 foot wide strip of land north of 109 Weir Street. Most of the upland area on the parcel is located north of the pond behind 109 Weir Street. The driveway from Weir Street used as a secondary means of egress for the Jordan Estate is located directly north of 109 Weir Street and is now located within the limits of this lot and will provide vehicular access to the parcel. This existing paved driveway is generally 12' wide and is bordered on the southerly edge by a masonry retaining wall. This portion of the parcel is approximately 43,000 square feet of upland area including the driveway. The northerly property line in this portion of the parcel runs east to west, starting 119' from the top of bank at the eastern edge and widening to 210' at the western edge at the driveway entrance.

There is a significant amount of exposed ledge on the parcel. Furthermore, test pits indicated that ledge is only 4"-6" inches below the surface for much of this area. On the northerly edge of the parcel, there is an existing 4' high chain link fence which protects the existing in-ground swimming pool on the Jordan Estate, now called 3 Jordan Way. This area is currently wooded, although many of the trees are small based upon the limited topsoil depth and many covered in vines (see photo). In general, this portion of the parcel which contains the proposed house site, slopes down from the northerly edge, flattens out somewhat then slopes again from north to south down to the edge of the pond, dramatically so on the eastern part within the 50' buffer. There are very little vegetated wetlands along the edge of the pond in this area. The outer boundary of the jurisdictional limits of the commission in this area is the *top of bank*. The dam for Patterson Pond has been repaired/replaced and provides an upland access from Weir Street to the proposed house. The water surface in the pond is currently being maintained at elevation 38.8± . The top of bank around the pond on the lot is approximately elevation 40.0. Specifically, along

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the pond at the eastern edge of the parcel, the slope on the first 50' will rise to elevation 55.0± at a 30 % grade. At the west edge of the parcel, this slope eases to an 8- 10% grade as grades sit between elevation 47.0 and 48.0. Beyond the 50' buffer from the top of bank up to the pool fence, the grade is generally 10-15% from north to south down to the pond. The driveway and adjacent area slope down towards Weir Street at a grade of approximately 7%.

Proposed Conditions

As previously noted, the development on 111 Weir Street will occur in the upland area directly behind the parcel at 109 Weir Street. Access to this site will come over the existing paved driveway from Weir Street, now part of the parcel. The driveway will turn south into this portion of the lot 137' up from Weir Street. The new connecting driveway surface will cover an area of 2,500± square feet and slope at a 1.00% grade down towards the pond. The proposed dwelling will be 5-bedrooms with an attached 3-car garage. Overall the footprint of the house will be 3675± square feet. The top of the foundation will be set at elevation 61.5. The basement slab will be set at elevation 54.0. At its closest, the foundation will be set 48.7 east of the rear property line of 109 Weir Street and 57' from the top of bank. The existing grade at the house location ranges from elevation 51.0 to 62.0. Regarding ledge, it is assumed that removal will extend a minimum of 5' outside of the foundation. Accordingly, total excavation quantities for the foundation will be approximately 950 cubic yards. It is anticipated that approximately 900 yards will be blasted ledge. A 4" diameter perforated HDPE subdrain will be provided around the foundation footing and discharge at the southwest corner of the foundation. A small rip rap apron will be provided at the discharge at invert elevation 47.5. The garage slab will be set at elevation 59.5, 2' below the sill. As previously noted, the driveway approach to the garage will be at a 1.00% grade from a high point at the existing driveway of elevation 59.0± down to a catch basin at the low point in the southwest corner of the driveway at elevation 57.95. To maintain the grades for the driveway, stonewalls will be placed 5' from the westerly property line and staggered as necessary to bring the grade up to the driveway. Stones to be used for this wall will come from the foundation excavation. The walls will be built in 3' increments with a 3' terrace to the start of the next wall. This alignment will provide an approximate shoulder width of 13.5± feet west of the driveway. Total height of the stepped stone terrace will be 9' from elevation 48.0 to elevation 57.0. Most of the blasted rock from the foundation should remain on site. It will primarily be used to form the walls supporting the driveway; however, any excess will be used as fill in the driveway. Most of the fill needed to bring the driveway to grade will be a clean coarse bank run sand & gravel. The catch basin at the southwest corner of the driveway will collect all the runoff from the proposed driveway surface. A 12" wide berm will be provided along the edge of the drive to direct runoff into the catch basin.

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Stormwater Improvements

The stormwater analysis for Patterson Pond Estates prepared by CHA, has already accounted for compliance with Standard 2 for all the proposed impervious surfaces on this lot. A review of the analysis reveals that flood analysis of the dam for proposed conditions was made assuming direct discharge of;

- 2,500 square feet of roof area
- 2,500 square feet of pavement; and
- 10,000 square feet of lawn area.

The house as proposed will be slightly larger at 3,675 square feet, however, the total disturbance area will be approximately 18,600 square feet, so the remaining assumptions regarding the driveway and lawn area are correct. The impact of an additional 1,100 square feet of impervious on the dam analysis will be an increase in peak flow rates for the 100-year storm of 0.03 cfs into the pond. However, 100-year peak flow rates discharging at the dam remain the same. To maintain compliance with the stormwater standards, we will be providing systems that will meet the TSS Removal Rates required by Standard 4. As noted above, a catch basin will be provided at the end of the driveway. Runoff entering this basin will be split in 2 directions. Each of the outfalls will be equipped with an eliminator tee. Primary flow will be through an 8" HDPE pipe into a Cul-tec Chamber treatment system, which will be set 3" lower than a 12" diameter HDPE outlet pipe which will direct excess flows south towards the pond. The roof leaders will be collected by an 8" diameter HDPE collector and directed into the cul-tec chamber system also.

The water quality volume for all the impervious surfaces on site is only 257 cubic feet. The static storage in the chambers is 370 cubic feet. The cul-tec system will provide 90% TSS removal based on the efficacy of the isolator row and the fact that we are providing 2-4' of sand fill beneath the chambers to act as a final filter prior to discharge. A 4" perforated HDPE collection pipe will be placed at the bottom of the sand filter to collect flow from the filter and ensure that it remains dry between events.

The new homeowners will be members of the Patterson Pond Estates Home Owners Association. Accordingly, O & M for these improvements will be in accordance with the manual on record for the subdivision. These improvements will be identified in the final as built plans which will accompany the manual. All the measures proposed are the same as improvements already in the approved subdivision plans so that no new section in the manual will be required to describe the maintenance measures required for these improvements.

Utility Improvements

The utilities required to serve the proposed dwelling will come from the improvements in the Patterson Pond Estates Definitive Subdivision and Weir Street. Sewer and gas will all come from the cul-de sac of the definitive subdivision. From the cul-de sac, these utilities will be installed

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in an easement in or along the existing driveway to the dwelling at 3 Jordan Way. These utilities will then extend within the utility easement from this point to the foundation in conjunction with the development of the house. Coming down the slope south from the driveway, we do anticipate that depth of cover can be established by a combination of excavation depth and fill. However, once these utilities turn west towards the house, it is anticipated that we may have to do some blasting to achieve depth of cover. Water and electric will be brought up from Weir Street. Each will be located beneath the existing paved driveway and then the proposed connecting paved driveway. Based upon the retaining wall, we anticipate that there will be sufficient depth of soil above the ledge to provide cover for these 2 utilities.

Construction Period Control

Construction period control for this lot is included in the SWPPP prepared for Patterson Pond Definitive Subdivision. The development of this lot is identified as Phase 3A of the SWPPP on record. This report was reviewed and approved by the Planning Board review engineer in conjunction with the Definitive Subdivision. All perimeter controls, erosion and sediment control measures, construction sequencing and designated onsite areas have been described in the report and will be adhered to throughout the construction period. Preparation for this lot will include all perimeter controls and the placement of the gravel fill for the driveway necessary to provide construction access to the foundation. Once the foundation is blasted and excavated, the stones will be placed along the westerly property line and final grades established prior to the start of the house construction. With the site stabilized and graded, the house construction will proceed to completion from this point.