

April 28, 2011

Marilyn Timpone-Mohamed, ASLA, AICP  
Senior Associate  
F.P. Clark Associates  
350 Theo Fremd Ave.  
Rye, NY 10580

Re: *Response to John Meyer Consulting Comment Memo of 4-5-2011*  
*Lawrence Hospital Cancer Center and Operating Room Relocation Project*  
*55 Palmer Ave, Bronxville, NY*  
*Chazen Project # 81050.00*

Dear Marilyn:

The following is a point by point response, for convenience, addressing comments in the John Meyer Consulting memo dated April 5, 2011. Please find attached an updated Drainage Report, dated April 28, 2011 and a revised set of Site Plans, including limited Landscape and Roof Plumbing Plans.

1. *The report states that this project is not subject to the requirements of a regulated MS4, but does not state why.*

**Response: The report has been updated to identify that the Village of Bronxville is an MS4. Further, the Village of Bronxville has an established set of Stormwater requirements. The project is subject to the village stormwater requirements.**

2. *The report states that the proposed project is considered a redevelopment project. However, the report should state whether it is a redevelopment with an increase or decrease in impervious area.*

**Response: The report has been updated to reflect that the project is a redevelopment project with an increase in roof area (impervious area) of 8,421 square feet and approximately 300 square feet for the emergency generator fuel tank. The total increased impervious area is 8,721 square feet.**

- 3. The report states that the green roof system will alleviate stormwater runoff peak flow rates. Green roofs provide storage for the water quality volume and can be used to store the channel protection volume. The applicant must demonstrate how the green roof systems will provide quantity control.*

**Response: The report has been updated to reflect that the project has been changed to alleviate stormwater peak flow rates through an underground detention system.**

- 4. It is recommended that the applicant quantify the impervious area reductions and provide runoff reduction calculations. The green roof areas can be used as either an impervious area reduction or volume reduction, but not both.*

**Response: The green roof system is being designed for 100% of the water quality treatment (WQv) of new impervious areas and 25% of the water quality treatment of existing (disturbed) impervious areas. By sizing the treatment practice, the Green Roof system, to 100% of the WQv for new impervious surfaces, the project meets the Runoff Reduction Volume. Redevelopment projects do not need to comply with the newly enacted Runoff Reduction Volume requirements. As per Region 3 NYSDEC guidelines and recent seminars defining runoff reduction calculations, run off reduction practices that are sized for 100% of new impervious surface WQv, comply with runoff reduction requirements.**

- 5. The report states that the Green Roof(s) was/were designed according to the criteria set forth in Section 5.3.8 "Green Roofs" of the NYS Stormwater Design Manual, dated August 2010. However, the calculations for Green Roof Post Area 1 include area that does not drain to the practice. In addition, Green Roof Post Area 2 includes the chillers and mechanical penthouse, but it is not clear whether these areas drain to the green roof systems or not. It is recommended that the applicant create subdrainage areas for the green roof systems and the other areas that do not drain to the practices. The Tributary Drainage Areas in Table 3 should be revised accordingly. In addition, calculations for the provided WQv in Table 3 should be provided.*

**Response: Post Area 1 proposes a green roof system to replace an existing impervious walkway area. As requested, we have modified the model and tables to reflect the green roof as an independent subcatchment. The new subcatchment is labeled S1A.**

**The green roof designed in Post Area 1 (S1A) has been sized to treat the WQv from the walkway redevelopment as well redevelopment from the sidewalk replacement and roadway work for utility installation. As it is less practical to collect and treat runoff from sidewalks and roadway areas, these areas of WQv to be treated, have been applied to the green roof sizing calculations. Therefore, the green roof system atop the entryway has been increased in size to provide additional stormwater treatment.**

**Post Area 2 proposes a green roof system for the proposed building expansion.**

**Tributary areas include the roof system, including the roof garden, patio and mechanical penthouse roof. Post Area 2 has been sized to include sufficient capacity for runoff for the new impervious surface and areas of impervious surface considered redevelopment. All of the impervious areas that are considered redevelopment require a 25% WQv treatment. Impervious areas that are new impervious require 100% WQv treatment.**

**It should be recognized that redevelopment impervious surface WQv can be applied towards practices that are sized appropriately, and have sufficient tributary area. As it is impractical to collect and treat runoff from certain sidewalk, street areas, and emergency generator, these areas of WQv have been applied to the green roof. Therefore, the green roof system atop the building expansion has been sized to accommodate the new impervious roof, new roof replacing existing patio, sidewalk replacement, and generator area.**

6. *The report states that stormwater discharge from the project site is controlled by green roof practices and that it has been designed to provide quantity controls by attenuating stormwater runoff and releasing runoff at a rate equal to or less than that which existed prior to development of the site. It is unclear how the green roof practices will attenuate stormwater runoff. There are no ponds in the hydrologic model and zero depth of ponding in the Storage Volume (VS) Calculation Worksheet in Appendix J. For example, the calculations indicate that Green Roof Post Area 2 provides 943 cubic feet of water quality volume. However, the runoff from a 100-year storm for the same area, using a runoff curve number of 98 for impervious surfaces, is 6,851 cubic feet. It is recommended that the green roof areas be modeled as impervious surfaces in the hydrologic analysis. The elevations of the roof drains should be added to the plans and report.*

**Response: To provide a more conservative approach, the runoff curve number of the roof garden areas has been changed to be 98. The revised runoff curve numbers have been incorporated into the hydrologic analysis. Further, the project now includes underground attenuation to limit the peak flow rates. The full plan set provides a plumbing diagram. We have included landscape details, including roof drain information.**

7. *The following are comments on the Pre-Development Stormwater Map and Modeling:*

- a. *Short grass prairie, with a Manning's n value of 0.15, was utilized for the existing grass areas. Dense grasses, with a Manning's n value of 0.24 should be used for pre-development conditions.*

**Response: As requested, in order to provide a more conservative runoff curve number, the existing dense grass Manning's value is now 0.24.**

- b. *The entire concrete walk to the south, which is to be removed, should be included in Area 3S.*

**Response: The walkway to the south (of Area 3S) is an existing sidewalk. The sidewalk repairs are being considered a maintenance activity, as it is anticipated during construction that the sidewalk may crack or be damaged within the limits shown. The sidewalk is already included as an impervious area in the subcatchment. It is expected that the sidewalk subbase will not need to be disturbed.**

- c. *A north arrow should be added to Fig. 4 "Pre Construction Conditions."*

**Response: A north arrow has been added.**

8. *The following are comments on the Post-Development Stormwater Map and Modeling.*

- a. *Bermuda grass, with a Manning's n value of 0.41, was utilized for all proposed grass areas. Bermuda grass is appropriate for the proposed green roof areas. However, dense grasses with a Manning n value of 0.24, should be utilized for all grass areas on the ground.*

**Response: As requested, in order to provide a more conservative runoff curve number, the proposed dense grass at ground level Manning's value is now 0.24.**

- b. *A runoff curve number of 39 was utilized for green roof areas and a runoff curve number of 69 was utilized for green roof walkway. The applicant should provide either the source or calculations to substantiate these values. However, it is recommended that the applicant use a curve number of 98 in the hydrologic analyses.*

**Response: As suggested, the runoff curve number has been modified to be a value of 98.**

- c. *There are existing impervious areas that are being disturbed and new impervious areas outside of the watershed boundary. These areas should be included in the water quality and hydrologic calculations, respectively.*

**Response: The area of the proposed fuel storage area has been added to the drainage report. The areas of disturbed impervious area located in the roadway has been added to the drainage report. The areas of existing sidewalks that are going to be repaired prior to completion of the project are being considered a maintenance activity.**

- d. *There is no time of concentration flow path shown for Green Roof Post Area 1.*

**Response: The time of concentration flow path for Post Area 1 and 1A have been added.**

e. *The hydrologic calculations indicate that the sheet flow component of the time of concentration for Post Area 2 is 100 feet. The distance from the hydraulically most distant point to the first roof drain is approximately 55 feet. The calculations should be revised accordingly.*

**Response: The calculation has been modified accordingly.**

f. *The Water Quality Treatment System calculations should be revised to include only the areas draining to the green roofs. Additional water quality calculations should be provided for areas other than the green roofs.*

**Response: Additional water quality calculations for the fuel storage area have been added to the report.**

g. *A north arrow should be added to Fig. 5 "Post Construction Conditions".*

**Response: A north arrow has been added.**

9. *It is recommended that details for the intensive and extensive green roofs be provided, as well as a detail of the green roof walkway.*

**Response: As requested, please find attached drawings L-2, L-3, L-4, and L-5.**

If you have any questions or need anything further, please contact me at 845-486-1569.

Sincerely,

A handwritten signature in black ink, appearing to read 'G. Cronk', with a long horizontal flourish extending to the right.

George Cronk, P.E.  
Project Manager