



Village of Harriman

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**PLANNING BOARD MEETING
JANUARY 23, 2023
7:30PM**

1. PLEDGE OF ALLEGIANCE
2. ROLL CALL
3. APPROVAL OF MINUTES - SEPTEMBER 19, 2022
4. 101-1-1.31, VILLAGE VIEW ESTATES – EXTENSION REQUESTED TO MAY 15, 2023
5. 102-4-10 & 11, HARRIMAN MANOR – REVIEW REVISED PLANS

**THE NEXT PLANNING BOARD MEETING IS SCHEDULED FOR
MONDAY FEBRUARY 27, 2023 AT 7:30PM**

**SUBMISSION DEADLINE FOR THE PLANNING BOARD MEETING IS
THURSDAY FEBRUARY 9, 2023**

VILLAGE OF HARRIMAN PLANNING BOARD MEETING
Regular Meeting
January 23, 2023

Chairwoman Escallier opened the Village of Harriman Regular Meeting of January 23, 2023, at 7:30pm.

PLEDGE OF ALLEGIANCE

ROLL CALL: *Chairwoman Irma Escallier, Board Members Jim Kelly, Ron Klare, Neil Murphy, Juan Quinones, John Russo, Engineer; Dominic Cordisco, Attorney; and Maria Hunter, Recording Secretary*

Member Klare made a MOTION to accept the Planning Board minutes of September 19, 2022, **SECOND** was made by Member Quinones.

AYE: Chairwoman Escallier
Member Kelly
Member Klare
Member Murphy
Member Quinones

NAY: -0-

ABSTAIN: -0-

102-4-10 & 11, Harriman Manor – Review revised plans:

Chairwoman Escallier acknowledged the application before the board this evening.

Present: *Michael Morgante with Arden Consulting Engineers, PLLC and Steven Brown Applicant. Project narrative dated January 5, 2023 from Arden Consulting Engineers, PLLC is attached.*

Present: *Planning Board consultant John Russo's comments, with Lanc & Tully Engineering & Surveying, are in his report dated January 20, 2023, attached.*

Mr. Morgante: Last time we were here was to get the Storm Water plan in shape. Based on Mr. Russo's comments some are still outstanding, at this point some house cleaning items will be addressed. In large part Storm Water Pollution plans are in a good spot. Will continue to make those revisions, once done after just receiving Mr. Russo's report dated January 20th. We will be hiring a Geo Technical Engineer to do some of the borings in agreement with Mr. Russo's comments.

Mr. Russo: Comment #8 speaks of the wooded area in the back that was to be an open area for people to use. Previously the board had talked about the trail up there in a sitting area and trail system loop. Still recommending some sort of trail system to be put in with seating areas for people after walking up there to enjoy the area.

Discussion with the concerns pertaining to the open area for residents. Suggestions to have the trail loop around the area or possibly the buildings, install some benches. Mr. Morgante will review the plan and revise.

Audience member questioned where the plans can be viewed. Mr. Russo and Mr. Cordisco opined that maps can be viewed at Village Hall. It was asked to call in advance so plans can be made available.

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Mr. Kelly asked if the fire department has been contacted, Mr. Russo noted that was one of his comments and advised it should be coordinated with the Village Building Department Inspector.

Mr. Morgante: On a previous submittal actually went to Mombasha and had a meeting with them on a plan with the same layout. Will provide their comments and update the plan. Will include location of hydrants with breaks along guide rail as requested by Mr. Russo.

Mr. Kelly confirming that this is a 3-story building and wants to make sure pressure is ok. Mr. Russo noted they will have to assess the existing pressure within the water system with a report from their engineer as well as fire flows. Applicant will have to comply with the Village code.

Mr. Morgante: We did do flow testing with the Village's Engineer Mr. Lanc and it appears we have adequate flow and pressure. The main holdup has been the storm water management system for the project. We need to determine proper locations, can't shape the rest of the site until we establish the system.

Mr. Russo: Eventually the Village will approve the SWPPP, with some revisions being asked to be included. NYS DOT is also asking to review it. The village will not approve until all changes and/or modifications have been done and approved. OC DOH and OC Sewer Department will not ask to see the SWPPP. Another issue is extending the sewer line on Beattie Road to the end of the circle all the way through the site. Question was raised before as to whether the county would be willing to accept that as a sewer main extension so they wouldn't have that as a service line. Basically, it is a line servicing their lot and will be crossing multiple parcels. They will be required to have a transportation corporation. The corporation will be responsible for maintaining that line.

Discussion on the grade and slope were discussed per Mr. Russo's report. Applicant will attempt to reduce the slope and see what NYS DOT will approve.

Discussion on Architectural Drawings was discussed. It was noted that the black & white and the color elevations don't match. It was requested that 1 or 2 options be shown. Mr. Brown stated going forward the height will be listed, as well as all 4 elevations. Once additional renderings are received this board will weigh in on the colors and elevations. The applicant will need to follow all Building Department codes. Mr. Murphy noted that the gable and bump outs were a nice feature.

Mr. Morgante: We will make sure the elevations are correct and will offer earth tone colors for the buildings. The goal was to demonstrate the footprint of the building and the heights. The project will be following the Village Building code.

Chairwoman Escallier noted this project has come a long way. It was noted that the holdup has been with the OC Sewer Department which has been taking time for all approvals before them.

Mr. Cordisco stated for the record as this project moves along a resubmission will be needed before a public hearing is scheduled.

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It was requested that going forward submission of 11 copies of all plans and architectural drawings (printed on 11" x 14" size paper) be submitted with a digital file to the Village Planning Board.

Chairperson Escallier thanked the consultant and applicant for streamlining future submissions.

101-1-.31, Village View Estates – Extension requested to May 15, 2023:

Chairwoman Escallier acknowledged that the Planning Board Secretary received an email request from Larry Adler on September 30, 2022, requesting to be placed on the October agenda. No meetings were held in 2022 for October, November, or December.

Resident Dina Andren was present and voiced her concerns to the members of the Planning Board.

Mr. Russo explained that the Town of Monroe Highway Department is the responsible agency that on August 10, 2013, issued the "Street Opening/Curb Cut Permit" of approval for the entrance on Overlook Road. The Village of Harriman Planning Board granted "Conditional Final Subdivision Approval" on November 20, 2017. It was also noted that applicant is waiting on outside agencies to give their approvals.

Mr. Cordisco advised with the request for the 6 (six) month extension as long as there are no changes in Village law or zoning code, this board is compelled to grant the extension.

Member Kelly made a MOTION to approve an extension for Village View Estates 101-1-1.31 to May 15, 2023, **SECOND** was made by Member Murphy.

AYE: Chairwoman Escallier
Member Kelly
Member Klare
Member Murphy
Member Quinones

NAY: -0-

ABSTAIN: -0-

Mr. Cordisco stated that the Planning Board does not have the authority, as the Village Board has, in allowing the public to speak at their meetings unless it is at a scheduled public hearing. A simple question can be addressed to the Planning Board Chairperson and can be answered at their discretion. It isn't fair to the applicant if they are not present to discuss their application amongst board members.

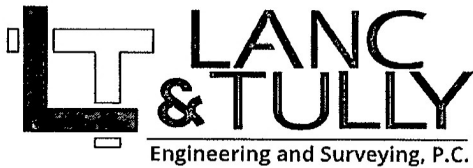
Member Kelly made a MOTION to close the Planning Board meeting of January 23, 2023, at 8:20pm. **SECOND** was made by Chairwoman Escallier.

AYE: Chairwoman Escallier
Member Kelly
Member Klare
Member Murphy
Member Quinones

NAY: -0-

Respectfully Submitted:


Maria C. Hunter, Recording Secretary



January 20, 2023

Ms. Irma Escallier, Chairwoman
Village of Harriman Planning Board
1 Church Street
Harriman, NY 10926

RE: Harriman Manor Apartments
Village of Harriman
Tax Parcels 102-4-10 & 11

Dear Chairwoman Escallier:

The applicant has submitted plans for a proposed 48-unit apartment complex, consisting of 2 buildings with 24 units in each building. The project is to be constructed along Route 17M on tax parcels 102-4-10 & 11, having a total area of 3.84± acres. The front portion of these lots along Route 17M are located within the B-2 Zone, whereas the rear portion of the lots are located in the R-M Zone. A Zoning amendment was adopted by the Village Board on March 10, 2020, that amended subsection D of section 140-8 to read "Where a district boundary divides a lot under single ownership, any part of which is located in a R-100, R-50, R-M or PAD residential district, the regulations for any such residential zoning district may, at the owner's discretion, extend to the entire lot. Where any portion of such divided lot is located within a B-1 or B-2 Business district, the applicable Business District regulations may, at the owner's discretion, extend into a residential zone but no more than thirty (30) feet beyond the boundary line of the Business District." Based upon the submission, the applicant is combining the two parcels into a single parcel and will be applying the R-M zoning regulations across the entire parcel in accordance with the adopted zoning amendment.

Our office has reviewed the following documents and plans, as recently submitted by the applicant, for the above referenced project.

- Correspondences dated January 5, 2023, from Arden Consulting Engineers, PLLC.
- Report titled "Site Plan for Harriman Manor Apartments – Stormwater Pollution Prevention Plan Narrative", with the latest revision date of December 30, 2022, as prepared by Arden Consulting Engineers.
- Plan titled "Cut & Fill Analysis – Harriman Manor Apartment", with the latest revision date of January 4, 2023, as prepared by Arden Consulting Engineers.
- Plan set titled "Site Plan for Harriman Manor Apartments – New York State Route 17M", as prepared by Arden Consulting Engineers, and consisting of the following sheets:
 - Title Sheet (1 of 35), with the latest revision date of January 4, 2023.
 - Existing Conditions & Demolition Plan (2 of 35), with the latest revision date of January 4, 2023.
 - Site Plan 1 (3 of 35), with the latest revision date of January 4, 2023.
 - Site Plan 2 (4 of 35), with the latest revision date of January 4, 2023.

- Grading & Utility Plan at 30 scale (5 of 35), with the latest revision date of January 4, 2023.
- Grading & Utility Plan at 20 scale (6 of 35), with the latest revision date of January 4, 2023.
- Grading & Utility Plan at 20 scale (7 of 35), with the latest revision date of January 4, 2023.
- Grading & Utility Plan at 10 scale (9 of 35), with the latest revision date of January 4, 2023.
- Grading & Utility Plan at 10 scale (10 of 35), with the latest revision date of January 4, 2023.
- Grading & Utility Plan at 10 scale (11 of 35), with the latest revision date of January 4, 2023.
- Grading & Utility Plan at 10 scale (12 of 35), with the latest revision date of January 4, 2023.
- Drainage Plan at 30 scale (13 of 35), with the latest revision date of January 4, 2023.
- Drainage Plan at 10 scale (14 of 35), with the latest revision date of January 4, 2023.
- Drainage Plan at 10 scale (15 of 35), with the latest revision date of January 4, 2023.
- Drainage Plan at 10 scale (16 of 35), with the latest revision date of January 4, 2023.
- Drainage Plan at 10 scale (17 of 35), with the latest revision date of January 4, 2023.
- Drainage Profiles 1 (18 of 35), with the latest revision date of January 4, 2023.
- Drainage Profiles 2 (19 of 35), with the latest revision date of January 4, 2023.
- Drainage Profiles 3 (20 of 35), with the latest revision date of January 4, 2023.
- Drainage Profiles 4 (21 of 35), with the latest revision date of January 4, 2023.
- Sewer Profiles (22 of 35), with the latest revision date of January 4, 2023.
- DOT Entrance Plan (23 of 35), with the latest revision date of January 4, 2023.
- Erosion and Sediment Control Plan (24 of 35), with the latest revision date of January 4, 2023.
- Erosion and Sediment Control Details (25 of 35), with the latest revision date of January 4, 2023.
- Construction Details (26 of 35), with the latest revision date of January 4, 2023.
- Stormwater Construction Details (27 of 35), with the latest revision date of January 4, 2023.
- Stormwater Construction Details (28 of 35), with the latest revision date of January 4, 2023.
- Stormwater Construction Details (29 of 35), with the latest revision date of January 4, 2023.
- Stormwater Construction Details (30 of 35), with the latest revision date of January 4, 2023.
- Sewage Disposal Details (31 of 35), with the latest revision date of January 4, 2023.
- Water Supply Details (32 of 35), with the latest revision date of January 4, 2023.
- Refuse Truck Turning Diagram (33 of 35), with the latest revision date of January 4, 2023.
- Fire Truck Turning Diagram (34 of 35), with the latest revision date of January 4, 2023.

- Construction Specifications (35 of 35), with the latest revision date of January 4, 2023.
- Architectural plans titled "Harriman Manor Apartments", with a plot date of December 28, 2022, as prepared by David Niemotko Architects, and consisting of 6 sheets.
- Building Elevation Option Plans.

Based upon our review of the above documents and plans, we offer the following comments. Please note that Sheet 8 of 9 was not included within the plan set submitted and should be submitted with a future submission for review. ***It should be noted at a number of our previous comments from our correspondence of October 15, 2021, have been repeated, as they are still outstanding and are noted by the applicant's consultant to be addressed in a future submission.***

General Comments:

1. The Village's Traffic Consultant, Colliers Engineering (Maser Consulting), has completed their review of the traffic impact report submitted by the applicant. Based upon Colliers (Maser) correspondence of March 18, 2021, there would be no significant traffic impacts from the proposed project, and the level of service for traffic in the area remains at acceptable levels. Colliers correspondence does go on to note 3 conditions that should be further considered by the Planning Board. The first is the improvement of sight distance at the entrance to the project. The second is submission of the plans to the fire department as related to vehicle circulation of fire trucks through the site. The third is any other improvements that NYSDOT may require during their review and approval of the site entrance. As the plans are further developed for the project, the applicant's consultant shall include all improvements required along NYS Route 17M, as required by NYSDOT. This would include any improvements required for sight distance improvement, such as grading, clearing, signage, etc. ***The applicant has acknowledged this comment and previously stated that NYSDOT has granted conceptual approval of the proposed driveway, and that they will continue to process the required permits with the NYSDOT as the project progresses. The applicant has further noted that the NYSDOT is requesting to review the SWPPP as part of the next step in their review.***
2. The response to question D.1.b.b. (total acreage physically disturbed) on the EAF will need to be updated to reflect the actual acreage as the plans are further developed. ***The applicant has noted that the EAF will be updated once a final grading plan has been established.***
3. The applicant will need to appear before the Village Board for water to service the project.
4. The project will require review by the Orange County Department of Health for the proposed water system to service the project. An Engineer's Report and technical specifications shall be prepared for the water distribution system. The Engineer's Report shall also provide the current pressure and fire flows along Route 17M, as well as calculating the fire flows for the hydrants proposed at the site and the available pressure at the fixtures on the 3rd story of each building. ***Applicant has noted that the water distribution extension will be completed once the SWPPP has been completed. An Engineer's Report with application will be submitted to the DOH at that time. A copy of all Engineer's Reports and plans submitted to the DOH shall also be submitted to the Planning Board for review.***

5. The project will require review and approval by Orange County Sewer District for the proposed connection to the sanitary sewer system. An Engineer's Report and technical specifications shall be provided for the sewer collection system. **Applicant has noted that this will be provided in a future submission.**
6. As the project moves forward, plans shall be submitted for utilities (water, sewer, drainage, etc.), landscaping, lighting, traffic signage, profiles for site driveway and utilities, erosion & sediment control, construction phasing plan and all pertinent construction details for the project. **The applicant has stated that the remaining design information will be provided in future submittals. Applicant states that once the SWPPP is completed they will provided the landscaping, lighting, etc.**
7. Enclosures and landscaping shall be provided for the dumpsters in accordance with Section 71-2 of the Village Code. **Applicant has noted that this will be provided as the project progresses.**
8. As the parcel appears to be heavily wooded, how will the residents use the open space at the rear of the parcel? The board may wish to consider having the applicant provide for more of a trail system with sitting areas along the upper open space area. The applicant has previously stated that a trail system with sitting areas could be provided, but is now stating that they are only extending a walkway to the wooded area so that they can enjoy the undisturbed natural state of the area. We are recommending that trails and sitting areas be provided for the residents of the project, as just providing a minimal walk part way up the hill is not conducive to people wanting to use this area.
9. The type of retaining wall to be employed on the site should be provided on the plans, along with the construction details for those walls at this time, as the installation of the walls may have impacts on the neighboring parcels. It should further be noted that given the height of the proposed walls, the walls shall be design by a licensed engineer in the State of New York. **Applicant states details will be provided in future submittals, but it appears that several of the retaining walls will need to be poured concrete walls.** The type of walls to be used should be determined at this time, as they could impact the site layout, installation of utilities, and/or require easements from neighboring parcels for installation and maintenance. Construction details shall be provided on the plans for each of the wall types proposed. Plans for the walls designs, along with the associated calculations for each of the walls, shall be submitted for review.
10. Thought should be given to providing multiple tiered retaining wall systems in some of the locations to allow for plantings. This would allow for plantings to be installed between the tiers in turn reducing visual impacts of the proposed walls. **The applicant notes that they are providing a tiered wall in the vicinity of the playground area.** We would further recommend that the applicant look at providing a tiered wall between the upper and lower parking lots, as it would allow for landscaping between the tiers to break the view of a 10-foot-high wall.
11. The applicant should note what will be provided in the "Play Area" and note that this area is to be fenced. **The applicant notes that the contents of the play area will be provided in a future submission.** The play area is now shown fenced with a 6-foot high chain link fence.

12. The plans should be provided to the Fire Department for their review and comments. This should be coordinated with the Village Building Department.
13. A construction phasing plan shall be provided as part of the plan set. It is recommended that this phasing plan include the location of any construction trailers proposed during the construction of the project.
14. Traffic control plans shall be prepared and made part of the plan set for the proposed work within the NYSDOT right-of-way.
15. Profiles shall be provided for each of the water mains proposed for the project.
16. Additional construction details shall be provided on the plans for the pavement cross-section of the entrance within the NYSDOT right-of-way, as well as for pavement restoration within the NYSDOT right-of-way.
17. As the buildings are to be sprinklered, the location of the fire department connections to the buildings shall be shown on the plans.

Cut & Fill Analysis Plan:

1. Based upon the updated cut & fill analysis plan, there will be a significant amount of earth work required to "cut" the site to the required grades on the rear portion of the site, with the analysis showing approximately 2,391 cubic yards of material will be removed from the site. The plan shows that cuts will range to a depth of 30 feet in one location, with the remainder of the cuts ranging from 0 to 25 feet along the rear of the site. Based upon the amount of earth work required at the site, and the depths of cuts required, we would recommend that borings be conducted across the site to determine the depth to rock across the site. Geotechnical borings will also need to be conducted for the proposed retaining walls and building foundations.

Existing Conditions Plan (Sheet 2 of 35):

1. A catch basin is shown in front of the Teglas-Geissler property across the road from the project parcel. The catch basin is shown to have a 12" storm pipe headed across Route 17M towards the project parcel but is only shown going part way across Route 17M. This drainage line shall be traced out to show where this line runs to, and the plan updated to reflect the full pipe run. ***Applicant notes the project surveyor is investigating this and will provide response shortly.***

Site Plan 1 (Sheet 3 of 35):

1. The elevation for each floor within each building shall be provided on the plan. ***Applicant notes that the floor elevations will be added to the plans in a future submittal.***
2. The bulk table requirements on the left side of the sheet note the total area of the site to be 169,012 square feet, where as the addition of the square footages for each of the lots as presented on Sheets 1 and 2 equates to 167,064 square feet. Total square footage of the project site shall be verified, and the plans revised accordingly.

3. The density calculations on this sheet should be revised to reflect the accurate lot area as per Comment No. 2. It should be noted that the minor adjustment in the lot area will not impact the total number of units currently proposed on the site.
4. The plan shall be updated to include all traffic signs (Stop, No Parking, ADA signs, etc.), stop bars, and any lane striping proposed.

Grading & Utility Plans (Sheets 5 thru 12 of 35):

1. In correspondences with the project engineer, the project engineer has noted that they would prefer to tap of the existing 8" water line located on the south side of Route 17M (project side), allowing them to reduce the number of utility crossings within Route 17M. Our office concurs with this proposal. The plans shall be updated to show the full routing for the water as proposed from this alternate connection location. ***The applicant notes that the project surveyor will provide this mapping soon so that they can reflect this change on the plans.***
2. The proposed 8" water main on Route 17M shall continue to run within the state right-of-way to the end of the applicant's parcel on the east side of the site, where it shall be terminated with a capped tee, valves and hydrant. Two individual 6" water service lines could be run off of the 8" water to each of the buildings. Having a separate service line to each building would reduce the impacts to the residents in the event of a problem with a service line in comparison to a single service line servicing both buildings. The proposed 8" water line within the state right-of-way shall be offered for dedication to the Village of Harriman.
3. As previously discussed with the applicant regarding the 8" sewer line proposed to run across Route 17M and through the Harriman Plaza parcel, the applicant should discuss with the Orange County Sewer District the possibility of offering this line to them as part of their collection system. If the Orange County Sewer District is not willing to accept this sewer run, then the applicant will need to form a transportation corporation for the proposed sewer line. ***Applicant has stated that the plans have been submitted to OCDEF and they are awaiting their response.***
4. The applicant shall provide all agreements and easements for the proposed 8" sewer line that is proposed to cross Route 17M and cross through the Harriman Plaza parcel on the opposite side of the road out to the sewer in Beattie Circle, as well as any agreements and easements for the sewer running through parcels on Beattie Circle. ***Applicant states that this information will be provided in a future.***
5. The existing water and sewer utilities on the Harriman Plaza parcel shall be shown on the plan. ***Applicant states that this information will be provided in a future submission, as they are awaiting the information from the project surveyor.***
6. We would recommend that if the sewer main running across Route 17M is to be accepted by the OCDEF, that the manhole on the south side of Route 17M be shifted out into Route 17M to allow for the future extension of the sewer collection system by others.

7. It is recommended that sewer manhole SSMH #1 be shifted to the west to allow for the last sewer lateral from Building No. 2 to connect directly to it, so as to avoid a short stub out of the manhole with an additional cleanout on the end of the stub line. We would also recommend that a manhole be installed at the end of the sewer line on the east side of building #2 to allow for proper maintenance of the sanitary sewer line.
8. We would recommend that a drop sewer manhole be installed above the retaining wall to the north of Building No. 2, so as to avoid installing the sewer main at a depth of 15 feet. Consideration should also be given to installing a drop manhole below the wall also.
9. We would recommend that the play area be re-graded so that the slope, in all directions across the play area, does not exceed 2%. Although the play area was adjusted to provide for a cross slope of 2% from west to east, the play area still has a 5% slope from the south to the north.
10. Rim elevations for all structures shall be provided on the grading plans. Although applicant notes that this has been provided, it does not appear on the plans.
11. The proposed trail/sitting area should be further laid out at this time to allow for proper grading of the trail system and grading behind Building No. 2. Please refer to General Comment No. 8 above.
12. The hydrant located at the top of the drive to Building #2 located closer to the access drive, with an opening in the proposed guiderail to allow for access to the hydrant by the fire department.
13. The hydrant in the parking lot to the north of Building #1 should be shifted out to the corner of the parking area so that access to it is not blocked by a parked vehicle.
14. As currently laid out, there is a significant amount of 6" water main crossing the site that would not be owned or maintained by the Village of Harriman, along with 2 hydrants. It is recommend that a meter pit with backflow prevention be provided on the 6" line in close proximity to where the 6" line comes off the proposed 8" line on Route 17M.
15. The plans should be revised to reflect the location of soil testing conducted for the infiltration system located in front of Building #2.
16. The slope of entrance from the site to Route 17M is noted as 6%. In accordance with NYSDOT document titled "Policy and Standards for the design of Entrances to State Highways" (Appendix 5A of the NYSDOT Highway Design Manual), dated September 1, 2017, Paragraph 5A.4.4.1 states "All driveways shall be constructed to slope away from the edge of the travel lane at the same slope as the highway shoulder which normally varies in down-slope from 2% to 6%. It is recommended that the slope towards the state road be reduced to provided for a flatter area for cars to wait to enter the roadway without sliding out into the roadway.
17. The plans shall be updated to call out the type of water pipe to be used for the proposed 8" and 6" water lines. Section 136-6 of the Village Code clearly states that all water piping shall be ductile iron Class 52. We would recommend that the applicant's

consultant review the requirements within this chapter of the code, as it also outlines other requirements as to hydrants, valves, etc.

18. The plans show "timber guide rail" to be installed atop of the retaining walls. Construction details shall be provided as to how this will be accomplished. It is recommended that the guide rail system be installed off of the wall on the interior/parking side of the wall.

Drainage Plans (Sheets 13 thru 17 of 25):

1. The storm pipe running from CB #6 to the underground R-Tank System #2 appears to have a bend in the line. We would recommend elimination of the bend by running CB #6 back to CB # 5, then having a line run from CB #5 straight into the underground R-Tank System.
2. Catch basins with outlet pipes heading into R-Tank systems shall include trash guards to prevent debris, floatables, etc. from entering the R-Tank system, with the trash guard being that as presented in the details on Sheet 28. This shall also be noted on each of the specific catch basins where this occurs.
3. The catch basins shall be clearly labeled as to whether they have a curb inlet casting or field inlet casting.

Drainage Profiles (Sheets 18 thru 21 of 35):

1. Profiles call out water pipe to be 6" C900 pipe. Please refer to Grading & Utility Comment No. 17, as the Village of Harriman Code only allows for Class 52 ductile iron pipe.
2. A profile shall be provided for the storm drainage run from FI #6 to CB #12.
3. Based upon the drainage profiles, it appears that the proposed water main on site could be at depths of 13 feet. It is recommended that the depth of the water mains be shallowed up as much as possible, while still complying with separation requirements, so as to reduce the amount of excavation required to install the lines and to allow for easier maintenance/repair of the lines in the future.

Sewer Profiles (Sheet 22 of 35):

1. The vertical scale of the profile is not to scale. Profile shall be adjusted so that it scales properly.
2. Consideration should be given to changing SSMH #3 to a drop manhole to allow for reducing the depth of the sewer line between SSMH #2 and SSMH #3. As presently shown, the sewer line is approximately 10 to 12 feet in depth for over half of its run.
3. It is unclear as to what the HDPE pipe proposed under Route 17M is presented for. It should be clearly labeled as to what this pipe shall be used for, or if not needed, then removed from the profile. This would also apply to the HDD Machine.

4. Based upon the depth of the sewer main to cross Route 17M, it appears that the depth of the entry and exit pits could be reduced in depth.

Stormwater Construction Details (Sheet 27 of 35):

1. The R-Tank systems shall show where inspection/maintenance ports are to be installed on the systems.

Stormwater Construction Details (Sheet 29 of 35):

1. The inspection/maintenance ports detail shall be revised to include a casting installed over these ports, so that they are not damaged by traffic or plowing operations.

Water Supply Details (Sheet 32 of 35):

1. The wet tap detail shall be revised to note the manufacturer and model of the wet tap valve and wet tap saddle.
2. The in-line gate valve detail shall be revised to note the model of Mueller valve to be used.
3. The hydrant detail shall be revised to note the hydrant as a Mueller Super Centurion, Model A-423.
4. The typical water service installation trench detail shall be revised to reflect the use of Class 52 ductile iron pipe. The detail shall be further revised to eliminate the use of k-concrete and note that the trench shall be backfilled with NYSDOT Item No. 304.12 Type 2 material.

Refuse Truck Turning (Sheet 33 of 35):

1. Applicant shall contact refuse hauler to verify size of refuse truck and turning movements. ***Applicant notes that this will be addressed.***

Fire Truck Turning (Sheet 34 of 35):

1. The applicant's consultant shall confirm with the Fire Department as to the size and turning radius of the trucks that would respond to the site, to ensure that the vehicle movements represented on the plan are accurate. ***Applicant has noted that they will contact the fire department to confirm truck data.***

Construction Specifications (Sheet 35 of 35):

1. Testing requirements for the proposed sewer system should be provided on the plan. This should include pressure testing of the mains, mandrel testing of the mains, and vacuum testing of the manholes at a minimum.
2. The "Paving" notes shall be revised to reflect the latest NYSDOT standard specifications.

3. The "Site Plan Map Notes" shall be revised to reflect the Federal Manual of Uniform Traffic Control (MUTCD) and the New York State MUTCD Supplement.

Stormwater Pollution Prevent Plan (SWPPP):

1. The total project area in the report is notes as being 3.88 acres, whereas the sum of the parcel square footages as presented on Sheets 1 and 2 equate to 3.84 acres. The total area of the parcels shall be verified, and the report or plans revised accordingly. The various calculations within the report shall be adjusted to reflect the proper lot area as well.
2. The pre & post drainage plans for the SWPPP shall be provided on larger sheets so that they are legible.
3. The report shall be updated to reflect the location of the soil testing that was conducted on the site as well as including the results of the soil testing conducted for the infiltration testing. The results of the soil testing conducted at the site shall be discussed within the front end of the report as well.
4. It is recommended that the pipe inlet elevations of the pipes entering into the R-Tank systems be raised so as not to have stormwater backing into the catch basins during the smaller storm events.
5. We would recommend that the outlet pipes from each of the R-Tank structures be raised to prevent short circuiting of the system.
6. The Stormwater Agreement found in the rear of the SWPPP shall be reviewed by the Planning Board Attorney for acceptance prior to the Village of Harriman entering into any agreement.

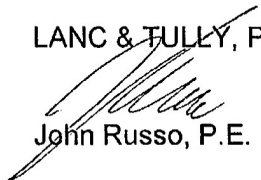
Architectural Drawings:

1. The floor plans shall be updated to show the location of the mechanical rooms. Rooms should be sized large enough to handle meters, backflow prevention devices, and fire sprinkler assemblies.

This concludes our review at this time. Further details comments will be forth coming based upon more detailed future submissions. **A written response letter should be provided with all future submissions responding to all comments.** If you have any comments, or require any additional information, please do not hesitate in contacting our office.

Sincerely,

LANC & TULLY, P.C.



John Russo, P.E.

Cc: Dominic Cordisco, Esq.
Harriman Building Inspector
Mayor Lou Medina

ARDEN CONSULTING ENGINEERS, PLLC

January 5, 2023

Village of Harriman Planning Board
1 Church Street
Harriman, NY 10926

Re: Harriman Manor
NYS Route 17M
SBL 102-4-10 & 11
Harriman, NY

Response to Comments

Hon. Irma Escallier, Chairwoman & Planning Board Members:

Arden Consulting Engineers, PLLC is providing this letter on behalf of the Applicant, Steven Brown, in response to the comments received from the Planning Board Engineer letter dated January 19, 2022. The paragraphs below contain responses to the comments in bold.

1. The Village's Traffic Consultant, Colliers Engineering (Maser Consulting), has completed their review of the traffic impact report submitted by the applicant. Based upon Colliers (Maser) correspondence of March 18, 2021, there would be no significant traffic impacts from the proposed project, and the level of service for traffic in the area remains at acceptable levels. Colliers correspondence does go on to note 3 conditions that should be further considered by the Planning Board. The first is the improvement of sight distance at the entrance to the project. The second is submission of the plans to the fire department as related to vehicle circulation of fire trucks through the site. The third is any other improvements that NYSDOT may require during their *review* and approval of the site entrance. As the plans are further developed for the project, the applicant's consultant shall include all improvements required along NYS Route 17M, as required by NYSDOT. This would include any improvements required for sight distance improvement, such as grading, clearing, signage, etc. *The applicant has acknowledged this comment and states that NYSDOT has granted conceptual approval of the proposed driveway, and that they will continue to process the required permits with the NYSDOT as the project progresses.*

Response: Duly noted and we will work to address all comments as the plans progress. The NYSDOT is requesting to review the SWPPP as part of the next step in their review. The approval of the SWPPP with the Village Planning Board is required before we can submit the SWPPP to the NYSDOT.

2. The response to question D.1.b.b. (total acreage physically disturbed) on the EAF will need to be updated to reflect the actual acreage as the plans are further

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developed. *The applicant has noted that the EAF will be updated once a final grading plan has been established.*

Response: Comment noted, and this will be revised once the grading plan is complete.

3. The project will require review by the Orange County Department of Health for the proposed water system to service the project. An Engineer's Report and technical specifications shall be prepared for the water distribution system. The Engineer's Report shall also provide the current pressure and fire flows along Route 17M, as well as calculating the fire flows for the hydrants proposed at the site and the available pressure at the fixtures on the 3rd story of each building. *Applicant has noted that this will be provided in a future submission.*

Response: The water distribution extension will be completed once the SWPPP has been completed. An Engineer's Report with application will be submitted to the DOH at that time. A hydrant flow test with the office of Lanc & Tully was recently completed and it appears that there is adequate flow and pressure to serve the subject project.

4. The project will require review and approval by Orange County Sewer District for the proposed connection to the sanitary sewer system. An Engineer's Report and technical specifications shall be provided for the sewer collection system. *Applicant has noted that this will be provided in a future submission.*

Response: The proposed connection to the sanitary sewer system with Engineer's Report will be completed and submitted to OCDEF once the SWPPP has been completed.

5. The project will require review and approval from the NYSDOT for the proposed entrance from NYS Route 17M and any utilities that are proposed in NYS Route 17M to service the proposed project. *Applicant states that they have received conceptual approval from the NYSDOT and will provide further approval updates as the project progresses.*

Response: Comment noted, please also see the response to comment 1. above also.

6. As the project moves forward, plans shall be submitted for utilities (water, sewer, drainage, etc.), landscaping, lighting, traffic signage, profiles for site driveway and utilities, erosion & sediment control, construction phasing plan and all pertinent construction details for the project. *The applicant has stated that the remaining design information will be provided in future submittals.*

Response: Comment noted, we would like to complete the SWPPP before providing landscaping, lighting, etc.

7. Enclosures and landscaping shall be provided for the dumpsters in accordance with Section 71-2 of the Village Code. *Applicant has noted that this will be provided as the project progresses.*
Response: See the response to comment 6. Above.
8. As the parcel appears to be heavily wooded, how will the residents use the open space at the rear of the parcel? The board may wish to consider having the applicant provide for more of a trail system with sitting areas along the upper open space area. *Applicant has noted that a trail system with sitting areas can be provided for the open space area in future submittals.*
Response: It is the intent of the project to provide a walkway to the open wooded area and for the remaining wooded area to be undisturbed thereby allowing to residents to enjoy this area in its natural state.
9. The type of retaining wall to be employed on the site should be provided on the plans, along with the construction details for those walls at this time, as the installation of the walls may have impacts on the neighboring parcels. It should further be noted that given the height of the proposed walls, the walls shall be design by a licensed engineer in the State of New York. *Applicant states that this information will be provided in future submission as project progresses.*
Response: Details will be provided in future submittals, but it appears that several of the retaining walls will need to be poured concrete walls.
10. Thought should be given to providing multiple tier retaining wall systems in some of the locations to allow for plantings. This would allow for plantings to be installed between the tiers in turn reducing visual impacts of the proposed walls. *The applicant notes that this can be looked at further as the project progresses, but due to tight site constraints it may not be possible.*
Response: A tiered retaining wall has been provided in the vicinity of the playground.
11. Architectural renderings, along with floor plans, should be provided to the Planning Board for the proposed buildings. *Applicant has noted that this will be provided as project progresses.*
Response: Comment noted, floor plans, elevations and renderings have been provided for review.
12. The applicant should note what will be provided in the "Play Area" and note that this area is to be fenced. *The applicant notes that the contents of the play area will be provided in a future submission.*
Response: The play area is now shown fenced with a 6-foot-high chain link fence. We will provide additional details in a future submission.

13. The plans should be provided to the Fire Department for their review and comments.

Response: Comment noted, and we await their response.

Cut & Fill Analysis Plan:

1. The cut & fill analysis plan should take into account the soils that will be removed for the proposed underground stormwater facilities to be located on site, along with the foundations for the buildings.

Response: The cut and fill analysis now takes these items noted above into account.

Existing Conditions Plan (Sheet 2 of 22):

1. A catch basin is shown in front of the Teglas-Geissler property across the road from the project parcel. The catch basin is shown to have a 12" storm pipe headed across Route 17M towards the project parcel but is only shown going part way across Route 17M. This drainage line shall be traced out to show where this line runs to, and the plan updated to reflect the full pipe run.

Response: The project surveyor is investigating this, and we will provide a response shortly.

Site Plan 1 (Sheet 3 of 22):

1. The "Play Area" shall be fully dimensioned. Based upon scaling of the plan, the area was found to be larger than that as noted on the right side of the sheet for "Provided".

Response: The play area is now dimensioned, and the area has been updated accordingly.

2. The elevation for each floor within each building shall be provided on the plan.

Response: We will incorporate the floor elevations onto the site plan in a future submittal. Building elevations are provided on the architectural elevation plans for review.

3. It is unclear if the area to the north of Building No. 1 that allows for access to the dumpster enclosure is paved based upon the striping. This should be clarified.

Response: It is intended that this area be paved, a note has been placed to provide clarity as well.

Site Plan 2 (Sheet 4 of 22):

1. The snow storage area to the north-east of Building No. 1 is proposed over a drainage swale. As the piling of snow over the drainage swale could impede the

flow for runoff and redirect the flow out of the swale, we would recommend that this portion of the swale be piped to the catch basin.

Response: This portion of the swale has been piped to a catch basin and subsequently piped to the proposed catch basin along NYS Route 17M.

Grading & Utility Plan 1 & 2 (Sheets 5 & 6 of 22):

1. We would recommend that the grading and utility plans be provided at a larger scale, and that the 1 sheet show the upper area and the 2nd sheet show the lower area. There is so much information provided on these plans that information for each utility is overlapping other utilities and not providing for a clear picture. This would also apply to the Drainage Plan (Sheet 7 of 22).

Response: Additional sheets at a larger scale have been provided.

2. In correspondences with the project engineer, the project engineer has noted that they would prefer to tap of the existing 8" water line located on the south side of Route 17M (project side), allowing them to reduce the number of utility crossings within Route 17M. Our office concurs with this proposal. The plans shall be updated to show the full routing for the water as proposed from this alternate connection location.

Response: The project surveyor will provide this mapping soon so that we can reflect this change on the plans.

3. The proposed 6" water line shown currently running across the front of the applicant's parcel shall be changed to an 8" water line and shall be shifted out into the state right of way. The proposed 8" main shall continue to run within the state right-of-way to the end of the applicant's parcel, where it shall be terminated with a capped tee, valves and hydrant. The 6" water service lines shown running to each of the buildings could be directly tapped off the 8" water line to be located within the state right-of-way. The proposed 8" water line within the state right-of-way shall be offered for dedication to the Village of Harriman.

Response: We will work to make these changes prior to submitting to the Orange County DOH for approval.

4. As previously noted, and discussed with the applicant regarding the 8" sewer line proposed to run across Route 17M and through the Harriman Plaza parcel, the applicant should discuss with the Orange County Sewer District the possibility of offering this line to them as part of their collection system. If the Orange County Sewer District is not willing to accept this sewer run, then the applicant will need to form a transportation corporation for the proposed sewer line.

Response: The plans have been submitted to OCDEF and we are awaiting their response.

5. The applicant shall provide all agreements and easements for the proposed 8" sewer line that is proposed to cross Route 17M and cross through the Harriman Plaza parcel on the opposite side of the road out to the sewer in Beattie Circle, as well as any agreements and easements for the sewer running through parcels on Beattie Circle. *Applicant states that this information will be provided in a future.*
Response: Comment noted, we will provide this once the SWPPP has been completed and approved so that we can design final sewer line locations.
6. The existing water and sewer utilities on the Harriman Plaza parcel shall be shown on the plan. *Applicant states that this information will be provided in a future submission.*
Response: We are waiting for this information from the Project Surveyor.
7. The size of the line leaving the manhole at Beattie Circle shall be revised to 8" instead of 8' as currently represented on Sheet 5 of 22.
Response: This has been revised accordingly.
8. The plans shall include all details as to how the sewer will be installed under Route 17M. This would include showing the location of boring pits and construction for details for the boring pits. *Applicant notes that this will be provided as the project progresses.*
Response: This information has been added to the sewer profile for review.
9. A steel sleeve shall be provided for the sewer line as it runs under the retaining wall below the parking lot for Building No. 2. A construction detail shall be provided on the plans for this. This would also apply to the storm drainage line running under the wall from the upper parking lot to the lower parking lot.
Response: Comment noted, this will be provided once the SWPPP has been approved.
10. The grading around the northern corner of Building No. 1 shall be revised, as it is currently showing a 1:1 slope in this area. It is recommended that slopes around the buildings be no greater than 3:1 to allow for proper maintenance of these areas.
Response: The grading in this area has been revised accordingly.
11. Spot elevations shall be provided on the 5'x5' landing pads at each of the buildings. If these pads are located below grade, the plans shall show how they will be drained so as not to hold water, in turn becoming a hazard to those walking across it.
Response: This is slab on-grade construction; therefore, no basement is proposed at this time. We will provide more detail once the architectural concept plans are completed.

12. The infiltration stormwater facility located in the upper parking lot is located only 7 to 8 feet off the back of the proposed retaining wall. This gives concern to excessive hydrostatic pressure being applied to the walls, which could lead to future failure of the retaining wall. As stated in comment No. 3 of the SWPPP comments below, we would recommend that the lower stormwater facility employ larger storm chambers along with the system being increased in size to allow for the elimination of the upper stormwater facility proposed in front of Building No. 2.

Response: The top of Stormwater Facility #2 is lower than the foundation of the retaining wall which should prevent any impacts to the proposed retaining wall. Please also find attached a letter from Kevin Patton, P.E. providing his expert geotechnical opinion.

13. If the stormwater facility in front of Building No. 2 can be eliminated or reduced in size, we would recommend that the sewer collection system for Building No. 2 be shifted to the front of the building. This would reduce the amount of sewer pipe and structures required within the collection system on site.

Response: The sewer lines have been relocated to the front of Building No.2.

14. It is recommended that a sewer cleanout be provided on each of the laterals leaving Building No. 2, and that the cleanouts on the 8" line be eliminated, and a manhole structure be provided at the end of the sewer run behind Building No. 2.

Response: Cleanouts have been provided on the laterals exiting the building and a manhole structure added.

15. We would recommend that the play area be re-graded so that the slope across the play area does not exceed 2%.

Response: This area has been re-graded accordingly.

16. The proposed contours on the plans shall be labeled with elevations more often than presently provided for on the plans.

Response: Additional contour labels have been provided.

17. Rim elevations for all structures shall be provided on the grading plans.

Response: Rim elevations are now provided for all structures.

18. Spot elevations shall be provided along the swale line on the north side and north-east side of Building No. 1.

Response: Spot elevations are now shown along the swale line.

19. The proposed grading of the area behind Building No. 2 is proposed as a 2:1 slope. This does not seem conducive to a walking trail for the open area. The proposed trail/sitting area should be further laid out at this time to allow for proper grading of the trail system and grading behind Building No. 2.

Response: Grading for the access trail has been revised; see the response to General Comment 8. above.

20. It is recommended that the 6" water line to Building No. 2 be shifted away from the bottom of the retaining wall located on the south side of the building, to allow for ease of maintenance of the line in the future without undermining the proposed retaining wall.

Response: Additional separation between the proposed water line and retaining wall has been provided.

21. The type of retaining wall to be used shall be determined at this time, as it may have impacts on the neighboring parcels if geogrid has to be provided behind the walls. This is of particular concern for the retaining wall proposed on the south side of the access drive up to Building No. 2.

Response: It appears several concrete retaining walls will be required; these details will be provided once the SWPPP is complete.

22. Grading on the west side of the play area shall be revised to provide for a swale to direct runoff away from the play area instead of across it.

Response: A swale with catch basin and piping has been added in this area.

23. The direction of the north arrow on the grading sheets should be checked, as it does not correspond with the direction of the north arrows shown on the other plans.

Response: The direction of the north arrows has been revised.

Drainage Profiles (Sheet 8, 9, 10 & 11 of 22):

1. It is recommended that the storm water piping in the parking lots be provided with a minimum of 2 feet of cover from final grade. With the minimal cover currently shown, the HDPE drainage pipes will be compromised by construction equipment when grading and paving the parking lots.

Response: Two feet of cover has been provided for drainage piping.

2. All catch basins shall be identified/called out on the plans associated with the profiles.

Response: All catch basins and piping have been labeled in the profiles.

3. The profiles shall be updated to reflect all utility crossings, along with providing the separation distance between the utilities.

Response: All utility crossings and separation distances have been noted on the profiles.

Refuse Truck Turning (Sheet 21 of 22):

1. Applicant shall contact refuse hauler to verify size of refuse truck and turning movements.

Response: Comment noted, and this will be addressed shortly.

Fire Truck Turning (Sheet 22 of 22):

1. The applicant's consultant shall confirm with the Fire Department as to the size and turning radius of the trucks that would respond to the site, to ensure that the vehicle movements represented on the plan are accurate. *Applicant has noted that they will contact the fire department to confirm truck data.*

Response: Comment noted, and this will be addressed shortly.

Stormwater Pollution Prevent Plan (SWPPP):

1. The applicant is proposing to construct infiltration systems under the parking lots for both buildings to meet storm water requirements as established by NYSDEC. As these systems will be infiltrating water back into the existing ground, joint soil testing shall be conducted with the Village Engineer's office to verify the suitability of the existing soils for the use of this type of system. The applicant's engineer shall contact the Village Engineer's office to arrange for a joint site meeting.

Response: Soil testing has been completed in the presence of the Village Engineer.

2. Soil testing for the proposed infiltration systems shall be conducted in accordance with Appendix "D" of the NYSDEC Stormwater Design Manual. In accordance with the NYSDEC responses to frequently asked questions, one test pit and infiltration test shall be conducted for every 5,000 square feet of the system, with no fewer than four test pits and percolation tests being conducted per facility.

Response: The soil testing was completed in accordance with Appendix D of the NYSDEC stormwater manual.

3. Per Section 6.3.1 of the NYSDEC Stormwater Design Manual, "Infiltration practices cannot be placed in locations that cause water problems to downgradient properties. Infiltration trenches and basins shall be setback 25 feet downgradient from structures and septic systems." This is being raised, as the stormwater facility in the upper parking lot is only 7 to 8 feet off of the retaining wall structure between the upper and lower parking lots, which gives significant concern for hydrostatic pressure on a retaining wall, that could lead to the failure of the wall. The project engineer may wish to consider using larger stormwater chambers and increasing the size of the stormwater facility under the lower parking lot to possibly allow the elimination of the upper stormwater facility.

Response: R-Tank System #1 size has been increased while the R-Tank System #2 size has been reduced. The top of the chambers of the R-Tank System #2 is below the footing elevation for the retaining wall and the separation distance from the R-Tank #2 system to the retaining wall is approximately 29-feet. A letter from Geotechnical Engineer Kevin Patton, P.E. has also been provided regarding this matter.

4. Paragraph 4 of the "Stormwater Management Facility Easement and Maintenance Agreement" shall be revised to note every "1-year" instead of every 2 years as currently noted.

Response: This has been revised accordingly.

5. The sample "Stormwater Operation, Maintenance and Management Inspection Checklist" attached to the Stormwater Management Facility Easement and Maintenance Agreement shall be updated to reflect all required components of the proposed stormwater conveyance and collection system(s) that are to be installed as part of the project, along with documenting the necessary maintenance required for each component.

Response: Appendix H has been added which incorporates these items.

6. The Stormwater Agreement found in the rear of the SWPPP shall be reviewed by the Planning Board Attorney for acceptance prior to the Village of Harriman entering into any agreement.

Response: Comment noted.

We look forward to being placed on the January 2023 Planning Board agenda to discuss this project.

Please do not hesitate to contact me if you have questions or concerns.

Sincerely,

Arden Consulting Engineers, PLLC



Michael A. Morgante, P.E.

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CLIENT:	Arden Consulting Engineers, PLLC P.O. Box 340 Monroe, NY 10950	PROJECT:	Harriman Manor Apartments Harriman, N.Y.
		PROJ. No.:	22420
		DATE:	January 5, 2023

Re: Harriman Manor Apartments
 Village of Harriman, N.Y.
 S/B/L 102-4-10, 11
 Stormwater Controls - R-Tank No. 2

Dear Mr. Morgante,

Pursuant to your request, I have reviewed the proposed 'R-Tank No. 2' which is a stormwater detention and infiltration unit proposed for installation in the upper parking lot of the proposed two-building apartment complex. The primary concern addressed by this review was the potential for the water received by this unit to affect the adjacent retaining wall.

The proposed stormwater control unit is shown on the project drawings prepared by Arden Consulting Engineers, dated 9-29-2022, on Sheet 5 (Grading and Utility Plan,) Sheet 6 (Drainage Plan,) Sheets 18 through 21 (Stormwater Construction Details,) and elsewhere. Additional information and calculations are provided in the project SWPPP manual, dated December 30, 2022, and additional data was provided by the system manufacturer during this review.

The proposed system consists of a structural void ('R-Tank'), permeable on all sides, surrounded by open-graded crushed stone on the sides and bottom for water detention and infiltration, and on top to support the pavement and to protect the chamber. A layer of non-woven geotextile is to be installed between the chamber and the stone envelope and between the stone and the surrounding soils. The soils are dense glacial till, typically with a silty gravelly sand texture, and with a design infiltration rate of three inches per hour.

The existing elevations in the proposed R-Tank 2 area are approximately 613 to 618 feet and the bottom of the proposed practice is at elevation 606.26, approximately seven to eleven feet below existing grade. The project SWPPP manual indicates that the maximum water elevation in the system resulting from a 100-year storm is 608.83 feet, a water depth of 2.57 feet, with the top of the detained water at four to nine feet below existing grade. An outlet control (weir) at elevation 607.51 feet will partially drain the chamber until the water reaches that elevation, after which it will drain only by exfiltration.

The proposed adjacent retaining wall is approximately twenty-nine feet from the proposed R-Tank 2. It is hydraulically down-gradient at the surface, with the site sloping fairly consistently from west to east. Adjacent to the stormwater system, the retaining wall has a proposed height of about one to five feet, with elevations of about 612 feet (bottom) and 613 to 617 feet (top.) The site will then have an open 3:1 to 4:1 slope down to the lower parking lot at elevation 604 to 606, beginning about twenty-eight feet from the retaining wall and fifty-seven feet from R-Tank 2.

Exfiltration from the R-Tank 2 system will take place at elevations lower than those of the down-gradient retaining wall, and do not constitute a source of potential damage to the wall. The system also does not pose a risk of causing seepage at the downhill curb line. The horizontal hydraulic conductivity of the soil will normally be between 0.1 and ten times the vertical conductivity; even in the latter case where

horizontal movement is favored, the curb is about three feet lower than the bottom of proposed R-Tank 2 and is fifty-seven feet distant, and the detained water leaving the tank will infiltrate deeper than the curb before it reaches it.

My analysis indicates that the proposed R-Tank 2 can be operated without adverse impacts to the other features of the site. This analysis was restricted to this only this stormwater control feature, and did not consider potential impacts from other existing or proposed construction. Please contact me if you have any questions.

Yours truly,

Kevin L. Patton, P.E.
kevin@pattongeotech.com
672197



KEVIN L. PATTON, P.E.