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MEMORANDUM

To: *Chairman and Members of the
West Orange Planning Board*

From: *John J. Hess, PE, PP, CME
Planning Board Engineer*

Date: *July 29, 2024*

Re: *Application No. PB 24-01
West Essex Highlands, LLC
Preliminary & Final Site Plan - Review #2
Warner Road
Block 179, Lot 32
Our File: VWRP0179.01*

CC: *Geniece Gary-Adams – Zoning Official
Zayibeth Carballo, PE, PLS, PP, CME, CFM, CFS – Township Engineer
Diana McGovern, Esq. – Planning Board Attorney
George Wheatle Williams, PP – Planning Board Planner
West Essex Highlands, LLC - Applicant
Bryan D. Plocker, Esq. – Applicant's Attorney
Paul W. Anderson, PE – Applicant's Engineer
Laurance D. Appel, RA – Applicant's Architect
Walter Lublanecki, PE – Applicant's Traffic Engineer
John McDonough, LA, PP – Applicant's Planner
Jeffrey S. Grunn – Applicant's Surveyor*

Our office has received for review the following documents which were submitted in support of the above referenced application for Preliminary and Final Site Plan approval:

- A set of Preliminary & Final Site Plan drawings (60 sheets) prepared by Paul W. Anderson, PE with Anderson Consulting Services of Boonton, New Jersey and bearing a latest revision date of June 24, 2024.
- A Stormwater Management Report, prepared by Paul W. Anderson, PE and bearing a latest revision date of June 24, 2024.
- A Traffic Impact Study prepared by Karl A. Pehnke, PE and Eric J. Vilorio, PE with Langan Engineering and Environmental Services, LLC of Princeton, New Jersey and bearing a latest revision date of June 19, 2024.
- A June 27, 2024 letter from Paul W. Anderson, PE to the West Orange Planning Board which addresses the comments in our June 26, 2024 review memorandum.

In addition to the above, our office previously received the following information as part of the original submission for this application:



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- A print of a Topographic Survey of Tax Lot 32, Block 179 (1 sheet) prepared by Jeffrey S. Grunn, PLS with Lakeland Surveying of Rockaway, New Jersey dated September 6, 2023.
- A set of architectural plans (24 sheets) prepared by Laurance D. Appel, RA with Appel Design Group Architects of Florham Park, New Jersey and bearing a latest revision date of May 13, 2024.
- An executed copy of a Settlement of Litigation Agreement between West Essex Highlands, Inc., the Township of West Orange and the West Essex Highlands Condominium Association, Inc. and bearing a latest signature date of April 23, 2020.
- A completed Application Form dated December 21, 2023.
- A Written Proposal for Application for Preliminary and Final Major Site Plan Approval.
- A Disclosure of Ownership.
- A List of Contiguous or Adjacent Properties Owned by Applicant.
- A completed Site Plan/Subdivision Checklist.
- A completed Sustainability Checklist Form.
- A Verification of Taxes & Sewer Charges Paid from the Office of the Tax Collector dated December 28, 2023 which states that the taxes on Lot 32, Block 179 are paid until the 4th Quarter of 2023.
- A List of Owners within 200 Feet of Block 179, Lot 32 from the Office of the West Orange Tax Assessor dated December 12, 2023.
- A List of Owners within 200 Feet of Block 179, Lot 32 from the Office of the Essex Fells Tax Assessor dated December 12, 2023.
- A List of Owners within 200 Feet of Block 179, Lot 32 from the Office of the Verona Tax Assessor dated December 6, 2023.
- Copies of the following prior Planning Board Resolutions for the property in question:
 - Resolution of Approval for Planning Board Case No. PB-04-23 dated February 2, 2005.
 - Resolution of Approval for Planning Board Case No. PB-04-23 dated May 5, 2005.
 - Resolution of Approval for Planning Board Case No. PB-04-34 dated May 5, 2005.
 - Resolution of Denial for Planning Board Case No. PB-04-24 dated April 5, 2006.

We have reviewed the submitted information in support of this application and offer the following comments:



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A. PROJECT DESCRIPTION

The property in question is an irregularly shaped tract which fronts on the northerly ends of Warner Road, Kuzik Drive and Bayowski Road. It also abuts the municipal boundary with the Borough of Essex Fells to the north and west, the municipal boundary with the Township of Verona to the north and the West Essex Highlands Condominium development to the south. The property in question is located in the IH-1 Inclusionary Housing District and has an area of 5,245,870 sf or approximately 120.429 acres. The property is currently vacant and wooded and is traversed by several stream corridors. Development of the property is subject to the terms and conditions in a Settlement of Litigation Agreement between West Essex Highlands, LLC, the Township of West Orange and the West Essex Condominium Association, Inc.

The Applicant is seeking Preliminary & Final Site Plan approval to construct a residential development containing 496 residential apartments, 100 of which will be set aside for low and moderate income families. The Applicant proposes to construct six (6) apartment buildings, a clubhouse, a maintenance building, a dog kennel and a dog park. The residential apartments will be located within 6 separate buildings. In addition, on-site parking is proposed for 1,070 vehicles including 28 handicap accessible spaces. The proposed parking spaces include 746 under building parking spaces and 324 surface parking spaces. In addition, 5% of the parking spaces will be designed for electric vehicle charging. We note that an additional 55 parking spaces, including 2 handicap accessible parking spaces, are proposed at the clubhouse and an additional 17 parking spaces are proposed at the dog park.

The 396 market rate apartments will consist of 68 one-bedroom units, 101 one-bedroom plus den units, 25 two-bedroom units, 120 two-bedroom plus den units, 66 three-bedroom units and 16 three-bedroom plus den units. The 100 affordable units will consist of 12 one-bedroom units, 64 two-bedroom units and 24 three-bedroom units. Buildings D1& D2 will include roof top amenities including private terraces and a public sky lounge. In addition, a leasing office is proposed in the clubhouse. Also, two superintendent apartments are proposed in the maintenance building. The superintendent apartments will each be 2 bedroom units.

Access will be provided to the site via extensions of Warner Road and Kuzik Drive. In addition, an emergency access drive is proposed to Howell Drive. The Applicant has indicated that the proposed streets will be private. The site will be serviced by extensions of the existing sanitary sewer and water systems. Also, a stormwater management system consisting of one large scale infiltration basin with a manufactured treatment device, four small scale infiltration basins, five porous pavement systems (without underdrain) and two porous pavement systems (with underdrain) are proposed to mitigate the increase in stormwater runoff from the site.

As part of the Stipulation of Litigation Agreement, the Applicant is required to install a traffic signal at the intersection of Oval Road and Eagle Rock Avenue. We note that the installation of this traffic signal is not part of the application that is presently before the Planning Board.



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C. WAIVERS AND/OR EXCEPTIONS FROM THE RESIDENTIAL SITE IMPROVEMENT STANDARDS (RSIS)

This application is subject to the requirements of the Residential Site Improvement Standards (RSIS) adopted as NJAC 5:21-1, et seq.

1. The Applicant has not requested any waivers from the RSIS.
2. The Applicant has requested a *de minimis* exception from the requirement to provide access to the property from Kuzik Drive.
3. The Applicant has requested a *de minimis* exception from the requirement to provide a sidewalk on both sides of the street in certain areas due to wetlands and riparian zone restraints.

D. DESIGN COMMENTS

1. Based on our review, we find that the following items from the Township's Site Plan Checklist must be addressed:
 - a) Item #46 – *Solid waste management plan.*
 - b) As required by NJAC 13:40-7.2(a)1, a signed and sealed copy of a survey of the property being developed must be submitted to the Board with the site plan application. In his June 27, 2024 letter, Mr. Anderson states that copies of the property survey have been previously submitted as part of this application. We note that the Applicant has submitted a Topographic Survey to the Board. However, the Topographic Survey does not contain any boundary information regarding the property being developed.
2. The Applicant has requested the following waivers:
 - a) Item #13 – *Metes and bounds description showing dimension, bearings, curve data, length of tangents, radii, arcs, chords and central angles for all centerlines and right-of-way, and centerline curves on streets.*
 - b) Item #22 – *Development stages or staging plans.*
 - c) Item #42 – *Proposed street names.*
 - d) Item #47 – *Site identification signs, traffic control signs, and directional signs.*
 - e) Item #48 – *Sight triangles.*
3. The Applicant should clarify if the proposed parking will be assigned. If assigned parking is proposed, then the plans must be revised to identify the assigned parking spaces and the visitor spaces. In addition, the RSIS stipulates that the required parking includes provisions for guest parking at the rate of 0.5 spaces per dwelling unit. The guest parking must either be provided for on street or in common parking areas.



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4. It shows on the architectural plans that many of the under building parking spaces will be tandem. The Applicant should provide testimony to the Board to demonstrate that the tandem spaces will be assigned to the same unit as stipulated in §25-19.e.4 of the Ordinance.
5. The plans show that access is proposed to the site from Warner Road and Kuzik Drive. However, the Applicant has requested a de minimis exception from the RSIS to not provide access to the property from Kuzik Drive. The RSIS stipulates that a street with a single means of ingress and egress is limited to a maximum average daily traffic of 250 vehicles. The average daily traffic for a 496 unit mid-rise apartment project will be approximately 2,728 trips which requires a second means of ingress and egress.

As stipulated in the RSIS, an application for an exception shall be filed in writing with the Planning Board and shall include:

- a) A statement of the requirements of the standards from which an exception is sought;
- b) A statement of the manner by which strict compliance with said provisions would result in practical difficulties; and
- c) A statement of the nature and extent of such practical difficulties.

Within 30 days of granting a de minimis exception request, the Planning Board shall send a copy of the document(s) constituting the de minimis exception resolution and/or document to the New Jersey Department of Community Affairs, Division of codes and Standards, 101 South Broad Street, PO Box 802, Trenton, NJ 08625-0802. Such notice shall be clearly marked "Site Improvement Exception".

If the de minimis exception is granted by the Planning Board, then it is our recommendation that the connection to Kuzik Drive be maintained as an emergency access.

6. The Applicant should address the Board regarding how the storage and collection of trash and recyclables will be handled at the site.
7. The Applicant should submit turning movement plans to the Board to demonstrate that adequate maneuvering room is provided for emergency vehicles, school buses, trash trucks, delivery vehicles and moving vans.
8. The Applicant should address the Board regarding their plans to provide sanitary sewer service to the site. Sheet SP-18 shows that 2 pumping stations are proposed with the force mains for each running to Bakely Terrace. However, no information has been provided regarding the design of the pumping stations, the capacity of each pumping station, the size of the proposed force mains and the ultimate points of discharge. In addition, the Applicant must demonstrate that adequate downstream capacity is available to service the project. In his June 27, 2024 letter, Mr. Anderson states that the detailed sewer design will be provided as a condition of approval.



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9. The Applicant should address the Board regarding their plans to provide potable water to the site. The Applicant must demonstrate that the water system will be looped so that supply may be brought to the consumer from more than one direction. In addition, the system must be designed to provide the required fire demand plus the maximum daily residential demand as stipulated in §5:21-5.2 of the RSIS. The system must also be designed to maintain a minimum pressure of 20 psi at street level under all flow conditions. In his June 27, 2024 letter, Mr. Anderson states that the detailed water system design will be provided as a condition of approval.
10. The Applicant should address the Board regarding the status of the required outside agency approvals for this project.
11. It remains for the site plan drawings to be revised to identify the handicap accessible parking spaces that will be van accessible. In addition, not all of the accessible aisles have been dimensioned.
12. The plans have been revised to indicate the locations of EV parking spaces outside the proposed buildings. In his June 27, 2024 letter, Mr. Anderson states that additional EV spaces will be provided in the parking garages. Therefore, the architectural plans must be revised to identify the locations of the EV parking spaces.
13. In his June 27, 2024 letter, Mr. Anderson states that all proposed curbing on site will be Belgian Block Curb. Therefore, if concrete vertical curb is not proposed then the Concrete Vertical Curb detail on sheet SP-59 should be removed.
14. Our office notes that most of the radii of all proposed curves along each side of the proposed streets and parking areas have been labeled. All unlabeled curves along each side of the proposed streets and parking areas shall be labeled.
15. Map Reference #4 on sheet SP-1 states that the freshwater wetlands/boundary line was verified by the NJDEP under File No. 1423-07-0001.1, FWWW190001. Therefore, a copy of the NJDEP approval must be submitted to the Planning Board.
16. It shows on the Zoning Schedule on sheet SP-3 that 1,070 parking spaces are proposed. We note that the Overall Development Summary on sheet SP-3 shows that 1,070 parking spaces are proposed for the apartment units. In addition, the plans show that 55 parking spaces are proposed at the clubhouse and 17 parking spaces are proposed at the dog park. Therefore, a total of 1,142 parking spaces are proposed. The Zoning Schedule must be revised accordingly.
17. Our office notes that Sheet SP-6 has been revised to label the improvements that are proposed at the Warner Road wetlands crossing. However, some of the labels are not visible as they are out of the viewport. The plan must be revised accordingly.
18. Our office notes that Sheet SP-6 has been revised to provide a handicap parking space near the dog park and maintenance building. It shall be clarified how ADA access will be



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provided to the buildings as it appears a full height curb is proposed in front of the handicap parking space aisle.

19. The grading plans must be revised to indicate the top of curb and grade elevations of all proposed full height curb and flush curb. Additionally, spot elevations must be added to all ADA ramps and ADA accessible landing areas.
20. Additional spot elevations must be added to the handicap accessible parking spaces on the west side of the roadway across from Building D.1.
21. Spot elevations must be added to the northern corner of Building B, the corners of the Clubhouse Building, the corners of the Pump Station Building, and the rear of Building D.1. Further, spot elevations must be added to southerly door at Building B, the northerly door at Building C, the easterly door with steps at Building C, the doors at the Clubhouse Building, the doors on each side of the Kennel Building, the door at the Maintenance Building, and the doors along the east side of Building D.
22. It shows on sheets SP-13 and SP-14 that the dog kennel building has a finish floor elevation of 563 whereas the ground elevation in front of the door on the easterly side of the building is approximately 557.9 and the ground elevation in front of the door on the westerly side of the building is approximately 558.5. The grading must be adjusted to provide proper access to the building.
23. Sheet SP-13 must be revised to label the contours between Building A.1 and Kuzik Drive. Additionally, the contours on the north and easterly side of Kuzik Drive across from Building A.1 and the Maintenance Building must be labeled.
24. Sheets SP-13 and SP-14 shall be revised to clarify or remove the unlabeled contour that ties into the maintenance building between the proposed 560 and 562 contours and ties into the Kennel Building between the proposed 558 and 560 contours. Additionally, the spot elevation at the northeastern corner of the Kennel building shall be evaluated.
25. Sheet SP-15 must be revised to include additional elevation information for the retaining walls east of the clubhouse.
26. Sheets SP-16 and SP-17 shall be revised to label the proposed contours on the east and west sides of building D.2.
27. Detail No. 10 on Sheet SP-59 must be named.
28. The plans should be revised to include details of the following improvements that are proposed:
 - a) Keep Right Around Circle sign.
 - b) Electric Vehicle parking space sign.
 - c) Pump stations.
 - d) Emergency access drive to Howell Drive.



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- e) Emergency access drive gate.
- f) Retaining walls.
- g) Porous HDPE pipe installation detail.
- h) Sanitary sewer manhole.
- i) Sanitary force main.
- j) Tennis courts
- k) Gazebo
- l) Pergola
- m) Span bridge

E. DRAINAGE COMMENTS

1. The proposed development will result in the disturbance of more than one acre. As a result, it is classified as a Major Development and is subject to the stormwater management requirements set forth in Section 25-29.4 of the Ordinance.
2. In accordance with Section 25-29.4.j, manufactured treatment devices may be used to meet the requirements of this subchapter, provided the pollutant removal rates verified by the New Jersey Corporation for Advanced Technology and certified by NJDEP. The Applicant should provide copies of the NJDEP certification to confirm the proposed MTD's will meet the green infrastructure requirements.
3. It appears that soil testing, including soil profile pits and/or soil borings, have been performed throughout the site. However, copies have not been provided to the Board. The Applicant should provide a copy of the soil report to the Planning Board and our office for review.
4. The Stormwater Management Report should be revised to include a Low Impact Development Checklist.
5. The Stormwater Management Report should be revised to include a completed Hydrologic Modeling Database - Data Entry Short Form.
6. Our office notes that storm sewer pipe size calculations were provided and appear to be acceptable. However, a storm inlet drainage area map should be included in the Stormwater Management Report to verify the area draining to each inlet.
7. The Stormwater Management Report must be revised to include existing conditions hydrographs to verify the existing runoff rates as described in the report narrative.
8. The tables in the Stormwater Management Report which outline pre- and post-development peak runoffs should be revised to be consistent with the stormwater analysis. All un-detained areas must be included.
9. The Pre-Development Drainage Area Map should be revised to remove all proposed improvements and should only reflect current existing conditions. Additionally, the time of concentration flow path for each point of analysis shall be indicated.



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10. Submit a clear Post-Development Drainage Area Map that is to scale.
11. We note that the Point of Analysis (POA) in the Pre- and Post-Development Drainage Area maps are inconsistent; the POA's should be the same to verify consistency in the analysis. The stormwater analysis should be revised as necessary.
12. The impervious time of concentration calculations for large scale infiltration basin #1, small scale infiltration basin #2, porous pavement system #3, small scale infiltration basin #7, porous pavement system #8, porous pavement system #9, small scale infiltration basin #10, porous pavement system #11, and small scale subsurface infiltration basin #12 must be revised. It is not acceptable to use a pervious time of concentration calculation for impervious areas.
13. The Post-Development Drainage Area Map must be revised to depict time of concentration flow paths for DA #2, DA #3, DA #7, DA #8, and the un-detained drainage areas. Additionally, the Tc line for DA #10 must be labeled.
14. The overland flow areas listed for DA #1 and DA #6 on the Post-Development Drainage Area Map shall be reviewed for consistency with the areas listed in the "Total Undetained to PA-1" note as the overland flow areas do not add to the total un-detained area.
15. The overland flow areas listed for DA #2, DA #4, DA #7, DA #9, DA #10 and DA #11 on the Post-Development Drainage Area Map shall be reviewed for consistency with the areas listed in the "Total Undetained to PA-2" note as the overland flow areas do not add to the total un-detained area.
16. The 'Total Undetained to PA-1' and 'Total Undetained to PA-2' notes on the Post-Development Drainage Area Map shall be evaluated. It appears un-detained impervious areas are incorrectly indicated as 'pervious' and un-detained pervious areas are incorrectly indicated as 'pervious'. This discrepancy must be resolved.
17. Sheet SP-21 depicts a 24" HDPE inlet pipe to large-scale basin #1 at invert elevation 24.00, whereas the basin bottom is at elevation 23.50. This discrepancy must be resolved. Further, the basin bottom at elevation 23.50 must be depicted on the plan.
18. The top of grate elevation for outlet structure #1 is inconsistent between Sheet SP-21, SP-25 and the hydrographs. This discrepancy must be resolved.
19. Sheet SP-25 must be revised to indicate top of grate in lieu of '100 year overflow elevation' on the outlet structure #1 detail.
20. The Stormwater Management Report indicates that exfiltration will be utilized for small scale infiltration basin #2, however, the hydrograph routings do not include exfiltration. This discrepancy must be clarified.



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21. The 10-year and 100-year water surface elevations on outlet structure #2 and infiltration basin #2 details are inconsistent with the hydrographs. This discrepancy must be resolved.
22. The top of grate elevation for outlet structure #2 is inconsistent between Sheet SP-21, SP-25 and the hydrographs. This discrepancy must be resolved.
23. Per Chapter 9.8 of the NJ BMP Manual, small-scale infiltration basins require a minimum of 2.0 ft of separation between the lowest elevation of the sand layer and the seasonal high-water table, whereas small-scale basin #2 provides a separation of 1.5 ft between the lowest elevation of the sand layer and the seasonal-high water table. Design modifications appear to be required.
24. Sheet SP-20 must be revised to identify the pipes proposed in conjunction with porous pavement system #3.
25. Sheet SP-20 indicates that outlet structure #3 has a 6" orifice at elevation 559.5, however, the hydrograph routings and outlet structure #3 detail on Sheet SP-25 indicate that a 4' weir is proposed at elevation 559.22. This discrepancy must be resolved.
26. The hydrograph routings for porous pavement system #3 utilize an exfiltration rate of 10 inches per hour while the Stormwater Management Report indicates a permeability rate of 4 inches per hour and the porous pavement #3 section on Sheet SP-25 indicates a permeability rate of 8 inches per hour. This discrepancy must be resolved.
27. Verify the sizes of the pipes connected to outlet structure #3 as they are inconsistent between the plans and details. Sheet SP-20 and the details on sheet SP-25 must be revised accordingly.
28. Sheet SP-20 indicates that outlet structure #4 has a 6" orifice at elevation 573.5, however, the hydrograph routings and the outlet structure #4 detail on Sheet SP-25 indicate that outlet structure #4 has a 6" orifice at elevation 572.5 and a 4' weir at elevation 574.0. This discrepancy must be resolved.
29. Sheet SP-19 indicates that outlet structure #5 has a 6" orifice at elevation 579.5, however, the hydrograph routings and the outlet structure #5 detail on Sheet SP-25 indicate that outlet structure #5 has a 4' weir at elevation 579.25. This discrepancy must be resolved.
30. Verify the size of pipes connected to outlet structure #6 as they are inconsistent between the plans and details. Sheet SP-19 and the details on Sheet SP-25 must be revised accordingly.
31. Sheet SP-19 indicates that outlet structure #6 has a 6" orifice at elevation 600.5, however, the hydrograph routings and the outlet structure #6 detail on Sheet SP-25 indicate that outlet structure #6 has a 6' weir at elevation 600.02. This discrepancy must be resolved.



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32. The hydrograph routings for porous pavement system #6 utilize an exfiltration rate of 10 inches per hour. The Stormwater Management Report indicates that a design permeability rate of 4 inches per hour is utilized and the porous pavement #6 section on Sheet SP-25 indicates the soil replacement permeability will be 20 inches per hour. This discrepancy must be resolved.
33. Sheet SP-25 must be revised to correct the finished grade elevation on porous pavement section #6 detail.
34. Verify drainage areas 'Basin 7 – Imp' and 'Basin 7 – Perv' as same is inconsistent with the Post-Development Drainage Area Map.
35. The Stormwater Management Report indicates that exfiltration will be utilized for small scale infiltration basin #7, however, the hydrograph routings do not include exfiltration. Clarify.
36. Sheet SP-22 must be revised to indicate the size and elevation of the orifice and or weir associated with outlet structure #7. Additionally, the label for outlet structure #7 includes an invert into the structure at elevation 531.6, however, there does not appear to be a connection into outlet structure #7. This discrepancy must be resolved.
37. Sheet SP-22 indicates that the top of grate for outlet structure #7 is at elevation 533.00, however, the outlet structure #7 detail on Sheet SP-22 indicates a grate elevation of 533.02. This discrepancy must be resolved.
38. Sheet SP-22 must be revised to indicate the size and elevation of the orifice(s) and or weir(s) associated with outlet structure #8.
39. Verify the size of the pipe that exits outlet structure #8 as it is inconsistent between the plan and detail. Sheet SP-22 and the detail on Sheet SP-26 shall be revised accordingly.
40. Verify the size of the pipe that connects to outlet structure #9 as it is inconsistent between the plan and detail. Sheet SP-23 and the detail on sheet SP-26 must be revised accordingly.
41. Sheet SP-23 indicates that outlet structure #9 has a 4"x40" weir at elevation 564.9 while the hydrograph routings and Sheet SP-25 indicate that the weir is a 4' weir at elevation 564.0. This discrepancy must be resolved.
42. Sheet SP-23 shall be revised to indicate that outlet structure #9 will have a rim and not a grate.
43. Sheet SP-23 indicates that the rim of outlet structure #9 is at elevation 568.2 while the outlet structure #9 detail on sheet SP-26 indicates a rim elevation of 568.0. This discrepancy must be resolved.
44. Sheet SP-23 shall be revised to re-locate outlet structure #10 or stone rip rap #B10-1 as the outlet structure appears to be located on top of the proposed rip-rap apron.



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45. The basin #10 section on Sheet SP-26 indicates that the replacement soil will have a permeability rate of 8 inches per hour, however, the hydrograph routings utilize an exfiltration rate of 10 inches per hour. This discrepancy must be resolved.
46. Verify the size of pipes exiting outlet structure #10. Sheet SP-23 and the detail on Sheet SP-26 shall be revised accordingly.
47. Per Chapter 9.8 of the NJ BMP Manual, a minimum of 2.0 ft of separation is required between the lowest elevation of the sand layer and the seasonal high-water table. While the sand layer thickness is not provided on the basin #10 section on Sheet SP-26, the minimum 6" sand layer would put the bottom of the sand layer at elevation 575.5, which is less than 2 feet from the seasonal high-water table. Design modifications appear to be required.
48. Verify drainage areas 'Basin 11 – Imp' and 'Basin 11 – Perv' as same is inconsistent with the Post-Development Drainage Area Map.
49. Verify the sizes of pipes connecting to outlet structure #11 and they are inconsistent between the plans and details. Sheet SP-24 and the details on sheet SP-26 must be revised accordingly.
50. Sheet SP-24 must be revised to indicate the size and elevation of the orifice and or weir associated with outlet structure #11.
51. The hydrograph routings for porous pavement system #11 utilize an exfiltration rate of 10 inches per hour. The Stormwater Management Report indicates that a design permeability rate of 4 inches per hour is utilized and the porous pavement #11 section detail indicates the soil replacement permeability will be 20 inches per hour. This discrepancy must be resolved.
52. Verify the water surface elevations within the hydrograph routings and on the small-scale subsurface infiltration basin #12 detail on sheet SP-26 as they are inconsistent. Revise as necessary.
53. Verify the invert elevations of the subsurface infiltration basin #12 as they are inconsistent between the plan and details. Sheet SP-24 and Sheet SP-26 shall be revised accordingly.
54. In accordance with Chapter 13 of the BMP Manual, calculations must be submitted supporting the duration of the infiltration period ('t' within the groundwater mounding calculations).
55. The groundwater mounding calculations must be revised to correct the Kh values within each spreadsheet. Kh must be equal to the recharge rate for projects located outside of the coastal plain.
56. The recharge rate within groundwater mounding calculations for small scale infiltration basin #2 must be verified. The hydrograph routings utilize an exfiltration rate of 10 inches



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per hour where the mounding analysis utilizes an exfiltration rate of 4 inches per hour. This discrepancy must be resolved.

57. The recharge rate within the groundwater mounding calculations for porous pavement system #3 must be verified. The hydrograph routings utilize an exfiltration rate of 10 inches per hour where the mounding analysis utilizes an exfiltration rate of 5 inches per hour. This discrepancy must be resolved.
58. The recharge rate within the groundwater mounding calculations for small scale infiltration basin #10 must be verified. The hydrograph routings utilize an exfiltration rate of 10 inches per hour while the mounding analysis utilizes an exfiltration rate of 4 inches per hour. This discrepancy must be resolved.
59. The groundwater mounding calculations for small scale subsurface infiltration basin #12 must be revised as the minimum allowable recharge rate is 0.5 inches per hour.
60. Provide callouts for all Filterra systems depicted on the site plan. Verify that the dimensions included on same are consistent with the dimensions in the Stormwater Management Report.
61. Verify all information indicated on profiles on sheets SP-55, SP-56, SP-57, and SP-58 are consistent with the Stormwater Management Report. Check and revise as necessary.
62. At least one (1) inspection port, with a removable cap, must be provided for each porous pavement system with its location denoted in the maintenance plan. The inspection port must be placed at least three (3) feet from any edge. Additionally, each inspection port must be flush with the surface of the surface layer and the depth of runoff for the WQDS must be marked on each structure and its level included in the design report and maintenance plan. The size of the inspection port must be large enough to allow for maintenance activities.
63. To the maximum extent feasible, areas atop the proposed retaining walls should be graded to direct surface runoff parallel to the top of the wall. Our office does not recommend grading these areas to allow runoff to cascade over the wall or along the back of the wall.
64. It appears that a 15" HDPE pipe is proposed to traverse beneath Building D.1. Our office has concerns with possible maintenance and access issues relative to this pipe. We recommend that design modifications be made and/or Applicant provide testimony addressing same.
65. As stipulated in Section 25-29.10(b)(1) of the Ordinance, the design engineer shall prepare a maintenance plan for the stormwater management measures incorporated into the design of a major development. It further stipulates in Section 25-29.10(b)(4) of the Ordinance that the maintenance plan and any future revisions shall be recorded upon the deed of record for each property on which the maintenance described in the maintenance



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plan must be undertaken. Prior to recording, the form of the deed must be approved by the Board Attorney and our office.

F. LANDSCAPING COMMENTS

1. The Applicant has proposed deer exclusion fencing for existing wooded areas to remain. Details of the proposed fence, method of installation, maintenance responsibilities and notes should be provided for further review.
2. Revise the street tree layout to create uniformity within the site by providing the same species of trees on both sides of the roadways within substantial groupings.
3. Review and revise match lines, as they create difficulties for review (and later construction), such as labels to corresponding graphics are not on the same sheet. Also, the overall landscape plan should indicate the match line locations.
4. Our office recommends that street trees be provided on the lawn side of sidewalks, where feasible, to reduce future hardscape conflicts as well as to provide greater soil volume for a healthier tree.
5. Revise the 'Plant List', sheet 29 of 66, as indicated below:
 - a. Both BP (Paper Birch) and AS (Sugar Maple) are a northern tree species and with a warming climate, these species are not recommended.
 - b. RP (Black Locust) is an invasive species, is not commercially available, nor recommended. The Applicant has included the 25 RP within the tree credits as native trees.
 - c. Indicate single or multi-stem trees for proposed ornamental trees, to prevent any confusion. Single stem trees should be indicated by caliper and multi-stem trees by height.
 - d. Provide oak species, a keystone species of our ecosystem.
 - e. PA (American Plum) is not recommended as it is highly susceptible to black knot fungus.
 - f. Correct the common name for AM (Black Chokeberry).
 - g. Specifically indicate a minimum planting height/spread for proposed shrubs. Currently, only container sizes are listed, but many of these species will not be available at these sizes.
 - h. Provide cultivar selections for proposed trees and shrubs, to prevent confusion during construction.
 - i. Ensure shrub and perennial plantings located within parking islands do not exceed 30" at maturity to ensure visibility.



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6. Revise the plans to provide a four-season landscape screen around proposed trash enclosures. Currently, the Applicant has provided deciduous shrubs.
7. Revise the plans to shift shrub landscape beds to be a minimum of three (3) feet from edge of curb, to reduce damage from vehicles, snow clearing operations and road salt spray.
8. Review and revise proposed plant material locations, to ensure planting beds are not in conflict with proposed hardscaping. It appears shrubs are proposed across the parking garage entrance at proposed Building C, shrubs are within entrance walkway at proposed Building B, etc.
9. Revise the plans to provide shade trees within the parking lot island and the traffic circle island located in the parking area between proposed Building C and the Clubhouse. Also, shade trees should be provided in lieu of proposed CF (Flowering Dogwood) at the north end of the parking lot between proposed Buildings B and C. Sufficient space is available to support a shade tree, rather than an ornamental tree as proposed.
10. Revise the plans to provide additional native trees to revegetate open areas by the proposed basins.
11. Revise the plans to shift landscape materials outside of the dog park fence, to reduce damage. Also, benches and/or play equipment should be considered for this space.
12. It appears labels are missing for landscaping in the vicinity of proposed Building D.2. Provide shade and ornamental trees for this area.
13. The Applicant has proposed foundation landscaping for most of the proposed buildings; however, these do not consider the solar orientation of the planting beds. This should be revised to ensure a successful landscape. Also, provide foundation landscaping for the proposed buildings near the dog park and for screening the pump station.
14. Revise the plans to label proposed road names, buildings, basins, exterior utilities, etc., on the landscape sheets.
15. The Applicant has indicated Ernst Seed Mix #137 by the basins; however, there are two (2) distinct hatch lines at the basin. Revise the plans to clarify the difference. Also, provide mix specifications and maintenance notes.
16. The applicant proposes a dog park, pool, and two tennis courts, boardwalk, and a club house with a gym. Testimony should be provided that this recreation is sufficient for a development of this size (approx. 500 units). It appears that no child-specific amenities are proposed. Construction details should be provided.
17. Revise the plans to graphically depict and specifically label the proposed and existing woodline. Tree protection fencing should be depicted on the plans, to prevent confusion during construction.



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18. Revise the plans to provide mulch bed lines on the plans, to prevent confusion during construction.
19. Revise the plans to indicate proposed disposition for all open areas, such as lawn, mulch, stone, sod, etc.
20. Revise the plans to provide general planting notes and planting details, to include, but not limited to, handling, quality, watering responsibilities, etc. Our office recommends that the tree planting details provide rigid, plastic open mesh trunk guards to prevent irreparable damage from buck rub, burlap around root ball to be removed and the root flare to be at final grade.
21. Revise the plans to provide a minimum clearance of fifteen (15) between proposed trees and light fixtures.
22. It appears that wetland education signs are proposed as details are provided on sheet 28 of 66. Revise the plans to indicate proposed mounting method as well as their specific locations on site, to prevent confusion during construction.

G. LIGHTING COMMENTS

1. In accordance with IES (Illuminating Engineering Society) standards, parking lots shall have a minimum of 0.50 footcandles and residential streets should be an average of 0.40-0.45 footcandles. Revise the plans to provide a data summary chart, indicating maximum, minimum, and average footcandles, for further review.
2. Revise the plans to provide a luminaire schedule, to include, but not limited to, quantities, ordering information for both fixtures and poles, color temperature, etc. Also, provide manufacturer's catalog cuts, for further review.
3. Revise the plans to provide isolux patterns on the plans and provide isolux pattern details, with a scale and graph.
4. Revise the plans to indicate proposed timers and hours of operation. Also, indicate proposed color and finish for all fixtures and poles.
5. Revise the plans to provide a light pole footing detail, to indicate dimensions, rebars, concrete strength, etc.
6. It does not appear light fixtures are proposed within the Clubhouse amenities area. The Applicant should indicate the expected operating hours to determine if lighting should be provided.

The Applicant is hereby advised that any revised plans or other documents submitted to the Board should be accompanied by a cover letter which addresses each of the comments in this review letter and details any other changes that have been made to the plans as these may not be readily apparent.