



DEPARTMENT OF LAND USE

March 18, 2013

Andrew Hayes, P.E.
Foresite Associates Inc.
208 Delaware Street
New Castle, Delaware 19720

**RE: Revised Construction Plan Comments
Columbia Place
Application Number – 20090201**

Dear Mr. Hayes,

The Engineering Section has reviewed the construction submission and has conditionally approved the application pursuant to the satisfactory completion of the following comments. Utilize this review letter as the final comments which have been reviewed by the Department. A cover letter addressing each comment within this review letter must accompany any resubmission of this project. The letter must describe the manner in which each comment was addressed.

Date Received: 2/13/13
Date completed: 3/13/13
Number of Days: 18 days

The following comments shall be adequately addressed prior to construction plan approval:

1. As discussed with DNREC the proposed stormwater wetland feature is more reflective of an Enhanced Wet Pond that incorporates extend detention and shall be labeled as such throughout the submission. The proposed Enhanced Wet Pond does not meet the slope and safety benching requirement. Revise the grading to meet the Pond Code 378, Appendix B or provide a variance request with all supporting documentation for review. The Stormwater Variance Request form is located on the New Castle County Website.
2. The Enhanced Wet Pond does not represent the wet pool is at least 3 feet deep of fifty percent of its surface area therefore a stormwater variance shall also be provided for this code item. (NCCDC 12.05.006.B.4.h)
3. All pipes shall be a minimum diameter of 15 inches. Allowance to reduce pipe size may be considered as part of a variance request. (NCCDC 12.04.003.B).
4. The bottom of the Bioretention facilities shall be above the Seasonal High Groundwater Table. Specifically, the elevation of the seasonal high groundwater table in the Bioretention facilities with underdrains shall be at or below the stone foundation. (NCCDC 12.05.006.B –Item 3.2.8,)

Stormwater Management

5. Provide computations to demonstrate the trench drain will have adequate capacity to transport design storm event into the Bioretention facility. (NCCDC 12.04.001.A, D)
6. Provide the storm sewer design and hydraulic grade line computations for the 10, 25, and 100-year storm events. Demonstrate head and tail water assumptions to verify system capacity. (NCCDC 12.05.006.B – Item 2.1.15)
7. Revise the Filter Strip Matrix slope to reflect the proposed design. (NCCDC 12.05.006.B – Item 5.2)
8. Demonstrate the Bioswales have a minimum 6 inches of freeboard. The DURMM Capacity Depth of Flow and Freeboard shall stay within the property. (NCCDC 12.05.006.B – Item 4.2.6)
9. Provide shear stress computations for all open channels. Demonstrate the proposed land cover or matting meets or exceeds the effective shear stress. (NCCDC 12.05.006.B – Item 2.5.10.3, 4.1.7)

10. Revise the angular trash rack over the 6 inch orifice to provide the adequate spacing to prevent clogging. (NCCDC12.05.006.B4)
11. Verify with the Geotechnical Engineer the 12 inch clay liner within Enhanced Wet Pond shall extend up to the seasonal high water table. (DSSR 10.1.6)
12. Clarify the limits of the Tri- Lock Channel Lining at FES-1 shall be installed as delineated on the plan. (DSSR 10.1.6)
13. Revise the Bioretention Media limits to be consistent with the proposed grading and contours. (DSSR 10.1.6)
14. Provide the bottom of stone elevation for each Bioretention Area within the Bioretention Facility Schedule. (DSSR 10.1.6)
15. Address the following items on Sheet 12 of 14:
 - a. Demonstrate the seeding mixture for the Filter Strip meets the minimum criteria within the DESCH. (DSSR 10.1.6)
 - b. Revise all Bioswale side slopes to be no steeper than 4:1. (NCCDC 12.05.006.B – Item 4.2.5)
 - c. The bottom width of the Bioswale shall be no wider than 10 feet unless as pilot channel is provided. (NCCDC 12.05.006.B – Item 4.2.4)
16. Address the following items on Sheet 13 of 14:
 - a. Provide a railing along at the top of the lower wall for safety. (DSSR 10.1.6)
 - b. Label the headwall and identify detail. (DSSR 10.1.6)
 - c. Delineate and label the 6 inches of topsoil in the deep pools within the pond as described in the construction notes. (DSSR 10.1.6)
 - d. Revise all portions of the Orifice Trash Rack detail to consistently show the 6 inch orifice. (DSSR 10.1.6)
 - e. Include the removal of trash, debris, cleaning of trash racks, etc. as part of the Enhanced Wet Pond Inspection and Maintenance Items. (DSSR 10.1.6)
 - f. Include the Post Construction Verification Documentation as utilized in the Technical Document within the Enhanced Wet Pond Construction notes. (DSSR 10.1.6)
 - g. Include the required construction stage reviews required to be performed by the CCR within the Enhanced Wet Pond Construction notes. (DSSR 10.1.6)
 - h. Provide a detailed procedure to describe the “close out on the project” for the wetland areas as described in the Enhanced Wet Pond Inspection and Maintenance item #1 bullet point 3. How will this coincide with Construction Activity and Open Space Turnover? (DSSR 10.1.6)
 - i. Describe the planting season time frames as referenced in Enhance Wet Pond Construction Note #13.
 - j. Delineate, label and describe the location of the “Wetland Connection” As described in the Enhanced Wet Pond Construction Note #11. (DSSR 10.1.6)
 - k. Modify the Enhanced Wet Pond SOC to include the installation as TSB-1 with the liner and pools installed and the detailed process of conversion. (DSSR 10.1.6)
 - l. The Wetlands Planting Plan and construction plan shall identify and label the proposed temporary and permanent seed mixtures as referenced in Note #10. (DSSR 10.1.6)
17. Address the following items in the Stormwater Management Report (NCCDC 12.05.006.B):
 - a. The Department disagrees with the last statement in paragraph one on page 26 since not a representative of current code. Remove or modify this information.
 - b. Clarify the water quality peak rate for Post Development POA 2 is higher than Pre-Development. It appears this value is irregular.
 - c. Provide the Tc path computations for all drainage areas where the time is less than 6 min to verify the minimum time.
 - d. Document what storm events were used to perform the Culvert Reports within Appendix III.
 - e. Document how tailwater was incorporated within each GTBMP Pond routing.
 - f. Revise Pond No.2 GTBMP D1 outlet structure data to be consistent with the proposed design. Delineate and label the location of all weirs with elevations.

- g. Many inconsistencies were noticed within the pond routings. Verify all pond structure elevations, pipe lengths, pipe sizes are consistent with the storm sewer structure tables and design plans.
- h. Provide all Filter Strip computations in DURMM.
- i. It appears the Post Bulk D.A. is larger than the Pre-Bulk D.A. and TSB-1 will not have adequate storage. (SWM Appendix V)
- j. Provide the full flow computation for pipe SDP2 – SDP4.
- k. Verify the proposed pipe (line 8) is 15 inch. Revise accordingly.
- l. Demonstrate the minimum full flow velocity is 2 ft/s.
- m. Demonstrate the maximum full flow velocity in the pipes is 15 ft/s.
- n. Demonstrate the tailwater elevations as described in the SWM Report were appropriately incorporated into the storm sewer computations. These computations did not show this information.
- o. Revise the storm sewer pipe schematic and computations to demonstrate two pipes entering the pond.
- p. Provide all Closed Channel computations. Including driveway pipes.
- q. Provide all Open Channel computations.
- r. Extend all hydrograph time lengths 24 hours past the peak of the design storm event. If the program cannot provide this result demonstrate all the volume under the hydrograph curve is incorporated with in the computations appropriately.
- s. Demonstrate the 100-year storm event can be conveyed to the SWM facility or site outfall without impacting structures. (NCCDC 12.01.001.E)

General Development

- 18. Note #15 shall reflect the same information as the Record Plan regarding easements. (UDC Appendix 1.1.C.2, Checklist Item A, B, C; NCCDC 12.04.001.C5; NCCDC 12.04.005.A3; NCCDC 12.05.006.B6)
- 19. Revise Note #16 to reflect the note on the Record Plan.
- 20. Relocate the Sediment Disposal Area on all plans such that the site design can be achieved and not encumber the resident at lot 1202. (DSSR 10.1.6)
- 21. Address the following grading issues:
 - a. Revise all grading elevations and contours to be consistent with the proposed design. Include sufficient information to clearly depict proposed information. (NCCDC 12.03.006.C – Item R) There are many proposed contours that dead end or do not tie into and existing contours.
 - b. Provide spot elevations at all high and low points and elsewhere as necessary to illustrate drainage patterns and protective slopes for buildings. (NCCDC 12.03.006.C – Item S)
 - i. For example, the rear grading at unit 1242 will not drain due to existing elevations at the property line.
 - ii. Provide additional flow arrows and spot grades to demonstrate how the areas between the service drive and condos will drain.
 - iii. Include spot grades at the corners of all parking stalls and along curblines where contours are not provided, etc. (NCCDC 12.03.003.A.6)
 - c. Demonstrate protective slopes around all structures. Minimum of 6" in 10 feet change in elevation. (NCCDC 12.03.006.C – Item DD4)
 - i. Include spot grades at all building corners and doorway thresholds. (NCCDC 12.03.003)
 - ii. Provide spot grades to show all structures shall demonstrate adequate drainage.
 - iii. Those structures that drain over proposed impervious surfaces shall also demonstrate a minimum 0.5% slope. For example, refer to lots 1221, 1228, 1242, 1304-1312, 1349-1343, and 1360-1366.
 - iv. Revise the outside corner elevations at the condo structure to provide enough exposure from the Finish Floor elevation.

- d. Provide the driveway slope for each unit to demonstrate compliance. (NCCDC 12.03.003.A3)
22. Provide cross sectional details of all open channels complete with construction specifications and necessary computations consistent with the proposed grading. (NCCDC 12.03.006.C – Item W)
Example, the swale at unit 1346
 23. Identify the length of depressed curb on the plan view. (DSSR 10.1.6)
 24. Provide all necessary construction details. For example, lawn inlet, bridge crossing of SWM D1, trench drain, etc. (NCCDC 12.03.006.C –Item HH)
 25. Clarify the location where the saw tooth curb detail is utilized. (DSSR 10.1.6)
 26. Label the pad area which appears to be bike racks and provide details as required. (NCCDC 12.03.006.C –Item HH)
 27. Clearly depict and label the trench drain sidewalk crossing at all locations proposed. Identify the actual width. (DSSR 10.1.6)
 28. Clarify the media limits to be consistent with the stormwater plans. (DSSR 10.1.6)
 29. Label and dimension all existing easements on the plan. (NCCDC 12.03.006.C – Item X)
 30. The detail (2/7) identified within the forebay is miss labeled. Revise accordingly. (DSSR 10.1.6)
 31. Clearly depict the areas of depressed curb for cross walks. (DSSR 10.1.6)
 32. Label the maintenance access into SWM D15. (DSSR 10.1.6)
 33. Verify all contours are clearly labeled. (DSSR 10.1.6) For example, around the clubhouse.
 34. Verify all structures are labeled. (DSSR 10.1.3.4) For example, adjacent to Unit 1369, etc.
 35. All pipe outfalls shall have Rock Outlet Protection designed per the DESCH. (NCCDC 12.04.001.C4)
Refer to pipes SD P60, P64, P-68, P-65, etc. Demonstrate all pipes have adequate soil cover over the entire length of the pipe. (DSSR 10.1.6)
 36. Clarify the line type (line with 3 dashes) within the Bioretention Areas. Include this within the legend. (NCCDC 12.03.006.C - Item L)
 37. Rotate SD OS1A to accept the outlet pipe perpendicular to the box and not at the corner. (DSSR 10.1.6)
 38. Delineate the concrete encasement around the sewer pipe within Profile SD CB2 – SD OS1A. Include the concrete encasement detail. (DSSR 10.1.6)
 39. Provide pipe profiles for SD P60, P65, P64, P68, and OSB1 to CB 15, etc.
 40. Extend Profile SD CB2 – SD OS1A to the headwall.
 41. Provide a designed and detail of the headwall that includes all upper walls which is an integral part of the stormwater design. (DSSR 10.1.6)
 42. Revise all manhole lids to reflect standard storm sewer structures since these structures are not maintained by DelDOT or located in DelDOT ROW. (DSSR 10.1.6)
 43. Address the following items regarding the internal access drives:
 - a. As the internal drives are being proposed within the subdivision they will not be reviewed by DelDOT. Therefore provide specifications, design standards, and criteria being utilized to design and construct these drives.
 - b. Provide storm water runoff spread computations for flows directed into the drives. (DSSR 10.1.6)
 - c. Provide a sequence of construction for constructing the internal drives. The sequence shall include all points which will require a third party inspection during installation.(i.e., observation of backfilling during pipe construction, proof rolling, video and review of storm sewer pipes, placement of pavement, etc.) (DSSR 10.1.6))

Erosion & Sediment Control

44. Provide inspection schedule and procedure for inspection and maintenance of all stormwater management practices. Including the detailed items provided in the BMP Standards and Specifications for the Construction Wetlands. (NCCDC 12.05.006.B – Item 10.8)
45. Provide all E&S DATA for each practice as required in the details. For example, the Temporary Swales in Phase 4. (NCCDC 12.05.006.B – 11.10.7)

46. Specify the permanent and temporary seed mixtures for all disturbed areas including stormwater management facilities. Verify the permanent seed mixture for each stormwater facility meets the DESCH. (NCCDC 12.05.006.B – Item 12.6.7)
47. Remove General Note #15 and revise Note #16 to be consistent with the Record Plan.
48. Install the headwall as part of the Pre-Bulk Construction as the contours demonstrate. (DSSR 10.1.6)
49. Clarify the location of the SCD on the north side of TSB-1. (DSSR 10.1.6)
50. Identify the specimen tree in the location of unit 1202 as being removed. (DSSR 10.1.6)
51. The identification of Triangle with the B in it within Phase 2 at the tree to remain is not consistent with the Sequence of Construction (SOC)
52. It appears a stub pipe is located at CB46. Provide all necessary notes, data and culvert inlet protection for this pipe. (DSSR 10.1.6)
53. Add TRM (detail 4/8) to the Pre- Bulk Plan in TSB-1. (DSSR 10.1.6)
54. Address the following items as part of the SOC on the Pre- Bulk Grading Plan (DSSR 10.1.6):
 - a. Add the requirements of an interim asbuilt of TSB-1 prior to the passing the Pre-Bulk Inspection
 - b. Add necessary steps that describe the installation of TSB-1 and the proposed liner.
 - c. The SOC is missing the steps of bulk grading, boxing out roads, utility installation for building permit issuance. Provide a note that stated a building permit will not be issued unless stabilized access is provided to the structures.
 - d. Incorporate the internal drive construction, inspection, etc. into the SOC.
 - e. Include the requirement of demolition permits as part of the removal of any existing structures.
 - f. Incorporate the construction and reporting requirements as described in the Construction of Open Space and Common Facilities UDC Section 40.27.310.D into the SOC.
 - g. Remove “Construct Homes and Facilities.” from General Note #16.
55. Address the following comments on the Post Bulk Grading Plan. (DSSR 10.1.6)
 - a. Provide SST-1 & SST-2 on the plan. These facilities will not be removed until the Condo Construction Begins.
 - b. General Note #7 cannot occur without approval from NCC Inspector.
 - c. General Note #10 cannot occur until the units have stabilized access.
 - d. General Note #11 cannot occur until all upstream drainage Areas are stabilized.
56. Remove the duplicate Tri-Lock Channel Line Detail.

Record Plan

57. Provide a numerical or alphabetical identifier for each SWM area for clarification. (UDC Appendix 1.2.A Item 43, Appendix 2)
58. Note #30 is utilized for commercial projects. Further conversations with the Department has determined, all residential projects shall delineate and label all, drainage, stormwater management, access, and maintenance easements with the purpose and party responsible for maintenance or provide the easements. (UDC Appendix 1.1.C.2, Checklist Item A, B, C; NCCDC 12.04.001.C5; NCCDC 12.04.005.A3; NCCDC 12.05.006.B6)
59. Revise the Limits of Disturbance (LOD) to incorporate all areas of disturbance, including but not limited to, sidewalk construction, grading, etc. For protection of areas to remain undisturbed provide a 10 feet wide buffer between any grading, sediment control practice, and/or building and the areas designated to remain undisturbed. (NCCDC 12.03.005.B, UDC Appendix 1.2.A.59)
60. Provide a detailed Legend on all plans that clearly identifies all appurtenances, linetypes, hatching, etc. Clarify the location of the Proposed SWM Access Path (Appendix 1.2.A.21)

Landscape Open Space Management Plan

61. Relocate the trees from the top of the enhanced wet pond berm. (NCCDC 12.05.006.B.7.a)
62. If the contours are provided on this plan they must be consistent with the General Grading Plan. (UDC Appendix 2)
63. Revise the Landscape Open Space Management Plan to be consistent with the construction plans for example the double retaining wall behind the southern condo building does not exist.(Appendix 2)
64. Delineate the Bioretention Media limits on the plan. (DSSR 10.1.6)

