

Engineering has reviewed the plans for the ALDI #98 Wilmington NC project submitted August 15, 2016 and have the following comments:

Stormwater Management Report

1. The pond calculations appear to be inaccurate. First, the average depth calculated appears to be incorrect. A depth of 6 feet was used, but the depth should be 7 feet. Depth is measured from the bottom of the shelf to the bottom of the pond, excluding sediment storage. In this case it should be 41'-34', which equals 7'. d_{av} should equal 4' (after rounding down to nearest 0.5 feet). With a d_{av} = 4.0' and 76% impervious, the SA/DA becomes 6.60 and the required permanent pool surface area should be 6,181sf. Please check calculations to confirm.
2. Appendix F:
 - a. Check the slopes and inverts for the pipe crossing under the College Road entrance and make sure they match the pipe calculations.
 - b. Add rip rap aprons at the inlet locations of catch basins 5 and 6 and FES 1 to prevent bank erosion as the runoff enters the pond.
 - c. Update the pipe label from junction box 1 to catch basin 4. It reads an invert of 41.67'. It should be 41.79'.
 - d. Add the invert information for the 8" PVC coming from the plumbing tee into catch basin 3 to the label (invert: 40.89').
 - e. The label for the 8" PVC pumping to JB 2 is labeled as being pumped to JB 4. Also, update the invert to 42.91' per the pipe calculations.
3. Appendix J: Wet Detention Basin Supplement:
 - a. Check the average depth calculated, average depth used, and SA/DA inputs based on previous comments.
 - b. The drain mechanism for maintenance and emergencies is not the purpose of the emergency spillway. Either a valve assembly or a well-defined low point to allow for pumping must be provided as a method of draining all water from the pond for maintenance or in case of an emergency. Please revise.
 - c. Keep the Supplement (and O&M Agreement) separate from the Stormwater Management Report as it will be part of the actual stormwater permit.
4. Appendix K: O&M Agreement: Please revise the permanent pool depth in the main pond and the forebay to read 7.50 instead of 5.50 feet for sediment removal. The permanent pool elevation is 41.50' and the top of the sediment storage is 34.00', therefore when the depth of the pond and forebay reads 7.50' the sediment shall be removed.
5. Appendix L: Add rip rap apron design calculations for the rip rap aprons that are needed at the three proposed pond inlet structures.
6. Provide buoyancy calculations to support the concrete sump in the detail for the outlet structure.

Plans

7. Please add the Engineering Approval stamps to each sheet in the plan set. I wasn't clear about this before, so forgive me. What is currently on the plans (Owner's/Designer's Certifications) is not current and should be removed. I will send you the CAD file that has the approval blocks needed for signature. Again, these will need to be on every sheet in the plan set.

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8. Please provide some type of backflow prevention mechanism to the pumped systems to keep water from draining back down the PVC towards each pump when the pumps are off or are not functioning properly.
9. Recheck the driveway pipe inverts and slopes for accuracy.
10. Add spot elevations to the rear of the sidewalk, parallel with the spot elevations that are already shown to show the cross slope of the proposed sidewalk within the rights of way.
11. Match the invert in elevation of the 8" PVC with the invert elevation of Junction Box 2.
12. Per the state BMP Manual, emergency spillways must be designed with hardened materials. Please revise.
13. Add an invert elevation of 40.89' to the catch basin 3 label for the 8" PVC to support the 1.46% slope.
14. There appears to be an inaccurate spot elevation next to catch basin 3

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15. Per the state BMP Manual, emergency spillways must be designed with hardened materials. Please revise.

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16. These pump systems will operate similarly to sanitary sewer pump stations. More information must be provided before these stations can be approved. Please show locations of control panels and any other electrical components on the site plan. Will any signage that provides contact information in case of emergency, alarm or general malfunction be provided? Will these areas need some level of security, i.e. lockable enclosures, etc.? How will the pumps operate? Will there be floats (pump off, pump on, high water alarm)? At what elevation will the floats be set? How will the owners be made aware if the systems quit operating properly, will the pumps have a visual and/or audible alarm? Are pump lifting chains necessary since Junction Box 1 is at least 6 feet deep? Will the owner have an inspection schedule to follow to ensure proper functioning of the systems? Please provide all pertinent information to the plans and/or Stormwater Management Report so that I may understand how these two systems are to operate.

Please submit one complete revised set of plans, the stormwater management report and any other supporting documentation to Engineering for additional review. Please call or email if there are any questions. Thank you.