

Engineering has reviewed the plans for the Woodlands at EF Tract 5 project submitted October 1, 2019 and have the following comments:

Please provide a comment/response letter with the next submittal.

Stormwater Management Permit Application Form

1. IV. Project Information; #6, #7, #8: The Existing Impervious to Remain square footage (2,065) does not agree with the subtraction of #7 from #6.
2. IV. Project Information; #10: The square footage listed cannot be correct.
3. IV. Project Information; #11: Update the percentage.

Stormwater and EC Narrative

4. Provide any wetland determinations or impact permits.
5. Project Narrative: The TR-55 document assigns Pantego loam soils a HSG rating of 'B/D'. When dual hydrologic soils area encountered, an on-site soil investigation shall be made to determine if the soils are in an undrained state (D), otherwise Engineering will require the drained HSG designation (B) be used as outlined in the TR-55 document.
6. Proposed SW Control Measures: Storm Network 10-yr HGL information appears to be incomplete (...except one which is...?).
7. Wet Ponds 5-2 and 5-3: Pre-/Post-development curve numbers appear to have been calculated using the HSG of 'D' for the Pantego loam. As previously stated, the soils must be investigated to prove the 'D' classification, otherwise 'B' must be used.
8. Please resubmit the average depth calculations to verify accuracy of SA/DA Ratios.

Supplement-EZ Form

Drainage Area Information: Entire Site

9. #5: Total BUA in project (177,933sf) does not appear to be correct.

Drainage Area Information: 1 and 2

10. #7: Enter the New BUA outside of subdivided lots (60,660sf/88,800sf).

Drainage Area Information: 3

11. #6: Enter the New BUA on subdivided lots (20,000sf).
12. #10: Remove 20,000sf from Parking and add it to 'Other'. Complete the 'Additional Information' comment box addressing the 20,000sf as maximum per lot BUA for 4 residential lots.

Wet Pond

13. Drainage Area Number 1: #40: Drawdown time for the temporary pool is incorrect.
14. Drainage Area Number 2:
 - a. #20: Elevation of the excavated main pool depth is incorrect.
 - b. #21: Elevation of the main pool bottom is incorrect.
 - c. #40: Drawdown time for the temporary pool is incorrect.
15. Drainage Area Number 3:
 - a. #2: Design Volume of SCM is incorrect.
 - b. #345: Design Volume of SCM is incorrect.

Operation and Maintenance Agreements

16. Update page 3 for all three wet ponds.

Pond Routing Calculations

17. Revise pre-/post-development curve numbers for Ponds 2 and 3 based on earlier comment regarding the HSG issue.
18. Summary for Subcatchment 8S: Post Dev Area #5-2: Minor discrepancy-CN of 85 does not agree with CN in Narrative (83).
19. Summary for Wet Pond 6P: Wet Pond #5-1:

- a. The emergency spillway doesn't have a length assigned to it.
 - b. Since this pond outfalls into a structure, is the outflow truly a free discharge? There was a tailwater elevation assigned in the initial design. Please address.
20. Summary for Wet Pond 6P: Wet Pond #5-2: The stage-storage areas and volumes listed do not match the pond calculations.

Storm Drain Design Computations

- 21. Public storm drainage pipe shall have two (2) feet of cover. Cover shall be measured from the top of the pipe to the bottom of the base course in roadways.
- 22. The storm drain layout in the computations doesn't agree with the layout on sheet C-3.2. Please revise computations and update the Storm Schedule on C-3.3.
- 23. Please include the individual drainage areas for each system in the computations.
- 24. Minor revision: DI 208 and DI 207 should be labelled as CI's.
- 25. Inlet Computation Sheet: The system that outfalls thru FES 251 doesn't match the layout on sheet C-3.2. Structures appear to be mislabeled and missing.
- 26. 25-Year Storm calculations: Outflow from pond 1 enters the bypass system at OS-MH-2. I do not see in the calculation where that outflow is accounted for. Please explain.
- 27. Pipe Crossing Walking Trail Analysis: What design storm is the pipe sizing calculations for? What size drainage area? Add drainage area of culvert in plan set or calculations.
- 28. Swale #3 calculations were not resubmitted. Did the calculations change? Please submit current calculation for it.

Plans

- 29. DA-Map:
 - a. The drainage area text is small and linework interferes with some text making it difficult to read. Adding a drainage table would make it easier to understand.
 - b. Please make sure the structure labels are correct and match the naming convention in the calculations and other plan sheets.
 - c. The proposed contours in the northwest corner of the site appear to push runoff towards the new street but this area is not included in the pond drainage area. Please confirm.
- 30. C-2.0: The impervious information in the Site Information does not appear to match the SW application.
- 31. C-2.1:
 - a. Show the public drainage easements for the pipes that run between the buildings to Pond #2 on this sheet.
 - b. Relocate the emergency spillway from overtop of the pond outlet structure. Keeping them separated would lessen any maintenance issues.
 - c. A small portion of existing sidewalk along the roundabout at Appleton Way needs to be placed in a public pedestrian access easement.
 - d. It appears that sidewalk is being placed over some type of drainage structure on McCarley Blvd. What type of structure is it? Structures aren't allowed in sidewalk for uneven settlement reasons, i.e. tripping hazards.
 - e. The proposed curb ramp at the intersection of McCarley and CBR doesn't provide a crossing path for pedestrians. Coordinate a crossing with City Transportation/Traffic Engineering.
 - f. Per the Technical Standards for inlet locations, no curb inlets shall be constructed in the radius of curbing at intersections. The minimum distance from the end of radius to the center of a catch basin is five (5) feet.

32. C-2.2: *Previous comment:* Sewer MHs cannot be in the public sidewalk (Along Appleton Way). If the sewer is proposed, relocate the manholes outside of the sidewalk. If the sewer is existing, relocate the sidewalk to avoid manholes. Should the sidewalk meander outside of the r/w, place it in a public pedestrian access easement.
33. C-3.2: It appears that the connection from the existing pipe under CBR to the proposed 30" pipe will just be an open hole? Please install an inlet structure to eliminate a deep hole that could be a safety hazard.
34. C-3.3:
- a. *Previous comment:* Address how runoff from Lot #4 will be conveyed to the swale. Will roof runoff be piped to the swale? Please clarify on plans.
 - b. Update the storm schedule based on comments in the computations section.
 - c. Pipe material is not addressed by the Storm Schedule or in the plan views on sheets C-3.2/C-3.3.
 - d. Is there any way to install a swale parallel to the west side of the walking path adjacent to Lot #1 to collect runoff from the path and direct it to the pond? Also, I do not see a detail of the walking path? What is it to be made of? Dimensions? Please add a detail to the plan set.
 - e. The walking path appears to encroach onto Lot #1. Is a private access easement needed there?
35. C-4.0-4.3: Water and sewer services should be shown on the plan sheets to avoid placement in the sidewalks.
36. C-4.0:
- a. Add SD 1-04 and SD 1-07 to the detail sheets for the waterline installation in McCarley Blvd.
 - b. Per the Technical Standards for Inlet locations, curb inlets shall be located on the upstream sides of intersecting streets to prevent flow across the intersecting street.
37. C-5.0: Asphalt pavement section: CABC is recycled concrete? CABC would be allowable as long as it meets all the NCDOT requirements for ABC except the durability test. The city has not seen a recycled concrete that has met those requirements. Please revise the detail to show regular ABC.
38. C-5.2: *Previous comment:* Add a note that shelf plantings shall not be planted within 10 feet of the outlet structure. This helps to prevent clogging of the orifice by vegetation debris. I didn't see where the note was added.
39. C-5.3:
- a. *Previous comment:* Pipe trench details need to City standard details or NCDOT standard details.
 - b. *Previous comment:* Provide all stormwater management details (curb inlets, SDMH, drop inlets). The City prefers NCDOT standard details in lieu of City standard details for public SD infrastructure.
40. *Previous comment:* Provide the landscape plans.

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