

Engineering has reviewed the plans for the Jordan Lane Duplexes project submitted June 8, 2018 and have the following comments:

#### **Stormwater Management Permit Application Form**

1. II. Permit Information; #3: Verify if an erosion control permit will be required since the disturbed area is greater than an acre. If a permit is required, please complete this section of the SW application accordingly.
2. The two permeable pavement areas must be added to the BMP chart under line item 14 of the application.

#### **State Calculations**

3. Please provide the MDC required drawdown time calculation.

#### **Infiltration Basin Routing**

4. Per a May14, 2018 email from Rob Gordon, the project would be allowed to discharge to the townhome basin and out to Wrightsville via their spillway if the 25-year event was infiltrated. Your calculations show discharge in the 10-year and 25-year event. Please revise your design such that the 25-year event is infiltrated.
5. Note only: Since the basin must infiltrate the 25-year event, the pre-development runoff coefficient calculations are basically irrelevant for pre/post requirements. I would like to emphasize one point. The city requires the pre-development state to be woods in good condition for determining runoff coefficients. Using the Rational Method, the range for sandy soils is 0.10 to 0.15 and for Clay soils is 0.15 to 0.20. This can be found in the technical standards (page 5-10). Based on the submitted soils report, sandy soils were encountered on site. Based on the acceptable range for sandy soils, the runoff coefficient of 0.25 is too high.
6. 0.46 was provided as the post-development runoff coefficient. Please submit post-development weighted runoff calculations that show how it was determined.
7. Per the Technical Standards Manual (Ch V.I.5), an emergency outlet or overflow device shall be designed such that in the event of a system failure (i.e. storm water will not infiltrate) during the 10-year storm, stormwater will be conveyed to an existing drainage way or structure and not damage property. An emergency outlet or device for the 50-year storm shall be provided (i.e. piped system, driveway, overland flow, etc.).

#### **General**

8. Provide swale calculations for proposed swales. At a minimum, swales must be designed to convey the 10-year event.
9. Provide required calculations (NCDEQ Stormwater Design Manual) for the permeable pavers (Stone Base (MDC 5) and Drawdown Time (MDC 8).
10. Provide pipe calculations for the bypass storm pipe system. Technical Standards require analysis of the 10 and 50-year event.

#### **Supplements**

11. Please use the NCDEQ Supplement EZ Form for the Permeable Pavement. The current City supplement is outdated. It can be found at the link below:  
<https://deq.nc.gov/about/divisions/energy-mineral-land-resources/energy-mineral-land-permit-guidance/stormwater-bmp-manual>  
The Infiltration Basin Supplement is acceptable.

#### **Plans**

12. C-0: Please remove proposed improvements from this plan sheet to better illustrate the existing conditions. If proposed improvements are being shown to accentuate the tree save/removal then at a minimum the proposed improvements should be scaled back.

13. Is a third swale needed along the southern property line to convey roof runoff from the Lot #1 building to the infiltration basin? It would appear that roof runoff would move south to the adjacent property.
14. Note only: Sidewalks are not provided from the parking area to the front of the building. The impervious allocation for the infiltration basin does not provide any future allocation. Sidewalks cannot be added at some point in the future without permit modification.
15. Provide the finished floor elevations of the four buildings to the plans.
16. Provide spot elevations along both sides of the sidewalk to demonstrate constructability and compliance with required cross and longitudinal slopes for ADA compliance.
17. Provide sufficient spot grades to support the Flow under Sidewalk Detail. Per the city detail for sidewalk, minimum sidewalk width is to be 6 feet if placed at the back of curb.
18. Provide an energy dissipater along the edge of the sidewalk adjacent to the stub to eliminate erosion from the concentrated flow.
19. Provide observation wells for the pervious pavers.
20. Provide drainage areas for the permeable pavers and infiltration basin. Can be included as part of the calculations or added to the plan set.
21. A barrier is needed between the ABC under the asphalt and the sand base under the paver to keep the fines in the ABC from migrating into the sand base and clogging the pavers (MDC 11).
22. See Recommendation 2 for the use of Geotextiles, Geogrids and Geomembranes. Geotextiles are not recommended under the aggregate base in an infiltration design, but can line the sides of the aggregate base to prevent migration.
23. Compacted sand base course would inhibit infiltration.
24. List easements as public or private. Is a private drainage easement needed for the bypass system for the northern property (should it ever redevelop)? A private drainage easement would keep the 'outfall' open for the adjacent property.
25. Provide contours at 1-foot intervals.
26. Provided spot grades and contours are insufficient to show constructability of proposed swales and drainage patterns. The area of the bypass swale, grassed swale #1 and DI #1 and the outfall area are lacking sufficient spot grades/contours to demonstrate constructability. Building #4 appears to direct its roof runoff to the bypass swale and not Grassed Swale #1.
27. What is the purpose of the 0% bypass swale? What runoff is being bypassed?

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.