From:	Rob Gordon
To:	Genna Porter
Subject:	FW: Eng Review - Family Dollar
Date:	Monday, March 24, 2014 5:03:15 PM
Attachments:	image002.png

Please upload the comments below to protrak, thanks.

Robert Gordon, PE
Project Engineer
City of Wilmington/Engineering
(910) 341-5856

From: Rob Gordon
Sent: Monday, March 24, 2014 5:03 PM
To: 'mpeedin@pamlicoengineeringservices.com'
Cc: Kathryn Thurston; Derek Pielech
Subject: Eng Review - Family Dollar

Engineering has reviewed the plans for the Family Dollar proposed on Wooster St and have the following comments:

1. Please resolve the following issues with the application:
    a. The proposed impervious area listed on the site data table does not match what is listed on the application. The discrepancy appears to be with the amount of pervious concrete (PC). Also, please break down the impervious area (buildings, sidewalks…) on the site data table.
    b. Please complete the amount of newly constructed impervious area being constructed outside the property (within the r/w) in Section V (12) of the application. This area does not have to be treated/attenuated, but it does need to be tracked.
    c. Sec IV (14) is not filled out properly for BMP 1 & 2. The impervious portion of the PC has to be documented on the application. Please note the % credit.
2. The routing is different than we typically see. I like the (LID) concept of drainage to PC, with overflow to an infiltration area. But you are allowed to route and take credit for the infiltration into the PC layer during the storm – as you would for an infiltration trench. We have had several projects propose a similar configuration and it is best modeled as two interconnected BMP's in series. First the PC footprint + associated run-on drains to the PC (as a BMP). The outflow from the PC would then flow to the adjacent basin, along with any drainage that flows directly into the basin. Give me a call if you would like further clarification. I am almost certain this would end up benefiting you (smaller infiltration areas) because of the added infiltration in the PC. We do need the system re-modeled because it is also not clear if you accounted for the impervious portion of the PC in your CN calc. Note - reducing the size of the basins could help create enough space to save the tree in the middle of the site.
3. Similarly, there should only be one predevelopment calc for the entire site. The total post developed flow is compared to the predevelopment rate to determine compliance with the water quantity aspects of our code. The total post development flow determined by

combining the hydrographs of the 3 BMP's + any undeveloped portion NOT draining to a BMP. This undeveloped portion will take into account any portion of the site that could not be collected. However, the portion of the sidewalk that is on your property is a public improvement will NOT have to be attenuated.

4. Are the drainage areas listed at the top of C-002 supposed to represent the stormwater drainage areas? They do not match what is listed in the application and calcs. Please clarify. It is assumed that the 11x17 is intended to serve as the drainage area map. If so, the areas for each BMP must be annotated on the map.
5. Please provide a curb detail for all driveway cut closures within the r/w.
6. The PC/Concrete transition detail and some of the associated notes on the enlarged version on C-003 do not show up clearly.
7. Please specify the width of the curb/barrier between the PC and the asphalt pavement.
8. How can you ensure 1/3 of the building will be directed to BMP 3 & 2/3 will be directed to the PC? Is there a pitch in the roof that corresponds to this split?
9. Note only - Is there regulatory significance to the 5-yr stone depth calc for the PC or is this something you check for your own professional judgment? You are required to provide an overflow/bypass for the 10-yr storm, which you provide with the basin – no calc or additional stone depth necessary.
10. Please specify a location for the PC signage. Because there are two areas, I would prefer two signs.
11. Please provide additional detail on the overflow structure. The detail appears to show an open throat style box with a concrete lid. What is the throat height? Does the rim correspond to the invert of the throat or the top?
12. Please provide a detail for the curb around the perimeter of the PC. Is this an extruded curb? Note Only – a raised barrier (timber, curb etc…) is required around the landscape islands of the parking lot. It is not required around the entire parking lot as long as you provide wheel stops. Consider a header curb instead of openings for the areas that will overflow into the basins. A header curb will provide a clean edge and better maintain sheet flow for any overflow from the PC to the basin. If you choose to keep the vertical curb, you will need to specify the distance from the wheel stop to the curb.
13. Sec 18-761(a) of city code requires the predevelopment condition be assumed to be woods in good condition, which (for B soils) would be CN 55. Please revise the predevelopment calcs.
14. There are weirs and orifices in the hydraflow model for the outlet of all three BMP's that do not appear to be specified on the plans. Please revise.
15. A low flow orifice at ground level of a dry basin is a maintenance issue. Hopefully, if modeled as suggested in comment #2, one will not be necessary. If not, please add a small concrete pad or some other measure to prevent the orifice from clogging. This is not necessary for weirs/orifices higher on the outlet structure.
16. We will need to see the 50 & 100-yr hydraflow output. There is no need for the culvert analysis; it is built into the hydraflow output assuming the tailwater condition and outlet pipe are property applied to the model.
17. The infiltration basins should be landscaped per the City Standard detail for stormwater facility landscaping. (SD 15-16).

Please submit one complete set of revised plans & calcs along with any revised forms to Engineering for further review. Please call or email with any questions. Thank you.

Robert Gordon, PE
Project Engineer

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