

Genna Porter

From: Rob Gordon
Sent: Sunday, December 13, 2015 11:42 PM
To: 'gpape@gsp-consulting.com'
Cc: Brian Chambers; Genna Porter
Subject: Eng Review - Summerwalk
Attachments: SWP Version 2.1BMP.pdf

Engineering has reviewed the submittal for the Summerwalk project and have the following comments:

1. Please complete a BMP data summary for each BMP (Sec IV.14 of the application). Because the project has more than 3 BMP's, please use the attached sheet.
2. Please make sure there is a North arrow on each sheet.
3. All stormdrain within the public r/w shall be RCP, not HDPE. Please revise pipe schedule.
4. You indicated that the rear patios were open slatted decking. Please make that clear on the plans.
5. Please clarify the DA map. Make sure that the DA to each flume and inlet is shown as well as the overall DA to each BMP. Please make sure each DA is delineated and labeled with the area specified.
6. You appear to be proposing pervious materials:
 - a. Where? The use of PC is called out on the application and there is a PC detail, but it is not evident on the plans where the PC is proposed. Please clarify.
 - b. There were no PC supplements or O&M documents included with the submittal
 - c. There is a PC detail, but please make sure all other design elements required in the NC BMP manual are included on the plans (construction sequence, subgrade prep?, signage detail & locations, monitoring well locations...)
7. Please clarify all proposed sidewalk and MUP locations:
 - a. Sidewalk is shown on the x-section details at the back of curb, but that is not how it is drawn on Richard Bradley.
 - b. Is there is a MUP along Greenville Loop? It is shown on the landscape plan, but not the full set reviewed.
 - c. There is no sidewalk drawn for several of the townhouse streets.
8. Please address the following regarding the details used:
 - a. Please utilize the most current City sidewalk & tree protection details.
 - b. The road section details specify valley curb, but there is no detail for valley curb, only stand up curb. Please provide a valley curb detail and clearly specify where each type is used.
 - c. It is not clear which type of storm drainage structure is proposed. You have a number of details, please add a column to the pipe schedule that specifies which type of structure is proposed.
 - d. The sidewalk over flume detail proposed does not work if there is no plaza strip because of the thickness of the concrete sidewalk. There will either need to be a metal plate mounted over flume or some other mechanism proposed to convey the runoff under the sidewalk.
9. The purpose of the offsite attenuation pond is not clear.
 - a. There is a note on the West side of the property to direct runoff from the lot line ditch to the offsite pond, but there does not appear to be a ditch along this lot line (or at least not one that carries significant drainage). There is clearly a ditch on the East side of the pond, and there appear to be ditch flowing to the area from the West (through 239/243 Bagley), but neither of these ditches appear to be directed to the pond. There is clearly a benefit to attenuation of offsite drainage, but at least some of these offsite areas need to be directed to the pond to realize that benefit. Otherwise, it is just a borrow pit that does not justify the tree removal. Please clarify.
 - b. There are trees to the south of the offsite pond that are shown as being removed, but it is not clear why. There are trees slated to remain that are within the pond. Please coordinate tree removal in this area.

- c. Is there a design to the pond? What is the outlet pipe configuration? Is there a permanent pool?
 - d. The contour of the adjacent wetland appears to be around 24 or 25. If the permanent pool is much lower than that, there is the potential for drainage of the wetland. Please address this issue.
10. The grading of the ditch offsite ditch is not clear:
 - a. The plans that were submitted to Engineering (sealed 10/9) make reference to a short retaining wall on the outlet side of the culvert, but the plans uploaded to protrak (also sealed on 10/9) show a much more extensive wall along the entire west side of the project. Please clarify.
 - b. The deck of unit 67 is overhanging the wall.
 - c. The invert of the flume off Mears Rd is listed as 25.83, the invert out of the twin 36" pipes is at 16.86. This could be an erosion problem. Please either extend the rip-rap down the slope, drop the runoff into a structure (instead of the flume) or provide other justification that the runoff will not cause an erosion problem as it descends into the ditch.
 11. Please incorporate how each system is satisfying the requirements of 16.3.9 in the BMP manual into the calc page for each system. All basins may be compliant but it is difficult to tell if they are providing the required volume.
 - a. Please clarify the volume provided on each system. For example – on system #1, you specify the provided volume is 3728 cf - which would not meet 2.5x required volume to waive bypass and filter strip requirements. However, the volume specified on your stage-storage is 7790 cf at the spillway elevation – which would have sufficient volume to waive bypass and filter strip requirements. Similar irregularities exist with other basins.
 12. Please clarify the spillway outfall for basins 1 & 8. Make sure runoff has a clear path through the fence, landscaping and MUP to an outfall in the street.
 13. There are pipe outfalls for most of the basins. Is there an outlet structure detail I am missing? The invert elevations of many of these pipes are at or near the bottom of the system. How with the basins hold water/infiltrate? These pipes are not included in the model, nor do the elevations align with the supplements.
 14. The road in front of units 16-19 appears to have a high point in the middle where structure 8 is. It drops off to the South, but there is no drainage structure there. Please clarify. Also, the rim of structure 9 is below the 25 yr WSE in basin 3. Water will simply flow out this rim instead of infiltrate.
 15. How are the swales supposed to discharge to basin #6? The invert of the flume is lower than the top of the wall of the basin.
 16. It appears as if you are infiltrating 100 yr event in lieu of providing a spillway for basin 6. We have made that allowance in the past when no outfall exists. Because this is not consistent with the tech standards, it will have to be formalized with a variance request. However, it cannot be approved if there are alternatives. Can a spillway be installed on the N side?
 17. The top of bank elevation listed for basin 7 appears incorrect.
 18. Please pull the corner of basin 7 out of the r/w.

Please submit one full set of plans and calcs along with any revised and/or required forms to engineering for additional review. Please call or email if there are any questions. Thank you.

Robert Gordon, PE
Plan Review Engineer

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BMP Drainage area information (continued)

Basin Information	BMP #	BMP #	BMP #
Receiving Stream Name			
Receiving Stream Index Number			
Stream Classification			
Total Drainage Area (sf)			
On-Site Drainage Area (sf)			
Off-Site Drainage Area (sf)			
Total Impervious Area (sf)			
Buildings/Lots (sf)			
Impervious Pavement (sf)			
Pervious Pavement, % credit (sf)			
Impervious Sidewalks (sf)			
Pervious Sidewalks, % credit (sf)			
Other (sf)			
Future Development (sf)			
Existing Impervious to remain (sf)			
Offsite (sf)			
Percent Impervious Area (%)			
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Receiving Stream Name			
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On-Site Drainage Area (sf)			
Off-Site Drainage Area (sf)			
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Pervious Pavement, % credit (sf)			
Impervious Sidewalks (sf)			
Pervious Sidewalks, % credit (sf)			
Other (sf)			
Future Development (sf)			
Existing Impervious to remain (sf)			
Offsite (sf)			
Percent Impervious Area (%)			