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MEMORANDUM

Date: 09/01/23
To: Michael Elabarger
From: Jacqueline Thompson, PE
Subject: Parker Ridge
CID 23-06, 2nd Submittal
Town of Rolesville, NC

This memo summarizes the review of the construction infrastructure documents submitted by BGE, dated 08/01/23 (received 08/06/23).

Sheet C0-0

1. Sheets C4-7 and C4-8 in the sheet list table are showing additional text in their sheet titles that should be removed.

Sheet 4/4

2. Please label the linework that appears to be a dirt road running through the site. This is a repeat comment.
3. The property information of the property on the top left of the sheet is cut off. Please adjust the text so it can be read.
4. There are several places throughout these plans where leaders are not pointing to the correct item. Please ensure all leaders are in the correct locations.

Sheet C1-4

5. The title block is not showing up correctly on this sheet, please update.

Sheet C1-6

6. There is an existing easement shown on this sheet that is not shown on the existing conditions sheets. Please label easement and make sure existing conditions are consistent across sheets.

Sheet C2-0

7. There are multiple places where text is cut off or overlapping. Please adjust text so it is clearly shown and easy to read.

Sheet C2-2

8. Please label the dashed line going through lot 33.

9. Easements are required around public greenways. This should be added and labeled to the proposed greenway along the east side of Redford Place Drive.

Sheet C2-4

10. The adjacent property labels to the south of the site are not in the correct locations and should be adjusted accordingly.
11. The connections of Alley 2 and 3 into Redford Place Drive show existing sidewalk going through them. Please remove this walk and ensure this removal is called out in the demolition plans.

Sheet C3-0

12. There is a lot of overlapping text on this page, making it hard to read and understand. Please adjust or remove text so it can easily be read.

Sheet C3-1

13. The silt fence shown on these plans is not necessary to keep once construction is completed. Please remove linework from utility sheets and grading plan sheets.
14. The existing cleanouts should be abandoned in place if not being used for this development; the City of Raleigh will provide final approval for the sewer. This is a repeat comment.
15. Site distance triangle lines should be removed or labeled on utility plans. Suggest removing to help clean it up and make it easier to read.

Sheet C3-3

16. All utilities and storm networks are required to meet minimum horizontal separation requirements. Per the COR Public Utilities Handbook, a minimum horizontal separation of 10' is required between water and sewer and 5' is required from storm sewer. Please update plans to meet minimum requirements. This is a repeat comment.

Sheet C4-1

17. All proposed contours need to connect into existing contours. This is a repeat comment.
18. Please show how drainage at all walls will be handled. For walls where drainage pipes/structures are proposed please make sure those structures are labeled. This applies to all grading sheets.
19. Please review the angle of the pipes within the storm system and the direction of flow. Redirecting flow less than 90 degrees is not ideal. Reverse flow conditions can be considered if a detailed study is provided and the drop between inverts is equal to or greater than the diameter of the pipe out. This is a repeat comment and applies to all grading sheets.
20. Ensure all storm structures are labeled on all grading sheets so it is possible to understand what the storm tables are referencing. If they are not included in the storm tables, please add them. This is a repeat comment.
21. Please verify and update the grading by the structure and existing pipe east of lots 195 and 196. Contours should be connecting into existing and the low point should be at the structure inlet rather than slightly behind it.
22. Grades should not be steeper than 3:1 unless sufficient stabilization measures are taken. Please adjust grading as necessary.
23. Structure YI-3002 is right up against the wetland. How will this be constructed without interfering with the wetland? If the wetland is to be impacted, please indicate and show on demolition plans.

The easement and limits of disturbance also need to be adjusted to reflect the location of this structure, as they are not currently encompassing it.

24. Please design and show the rip rap needed at FES-350.
25. The contours southeast of CB-316 appear to indicate some sort of wall. If a wall is intended it should be shown, otherwise contours should be updated to reflect desired grades.
26. There is a swale north of lot 205 that ends right before the edge of the lot. This is not ideal, as that drainage is being directed into this lot without a means to collect it. Consider adding a structure at the end of the swale to collect the stormwater before it reaches lot 205.

Sheet C4-2

27. Please update the contours along the walk by lot 22. That area is not currently meeting minimum slope requirements.
28. A proposed drainage easement is required on swales crossing more than two lots. This is a repeat comment that applies to all relevant grading sheets.
29. There is a significant amount of grade going across lots 25 and 26. This will make it difficult to flatten out enough for building slabs and driveways. Please adjust grading so buildings will be possible to place in these lots.
30. Please add additional contour labels along the greenway going through Parcel A and ensure proposed contours are properly connecting into existing contours.
31. To provide clarity as to where the water is draining, additional contour labels should be added, particularly at high and low points. This comment applies to both proposed and existing contours on all sheets that have contours shown. This is a repeat comment.

Sheet C4-3

32. The rip rap and storm drainage easement shown where HW-4000 is are not centered around the pipe outlet. Please adjust both the rip rap and easement, as well as the limits of disturbance.
33. The grade along Long Melford Drive where it meets the property line is incredibly steep. Please adjust grading to meet minimum requirements.

Sheet C4-4

34. There is a low point label by lot 9 that does not appear to be located at a low point. Please adjust label location or remove the "LP" delineation from the spot elevation label. If a low point is to be located here a storm structure should be placed so water doesn't pool up.
35. Please clean up the contours along the greenway by FES-1000.
36. There are several contours around the crossing of Street E and Alleys 2 and 3 that do not meet minimum requirements. Please adjust the grading so slopes aren't too steep. If walls are needed, please ensure they are shown and called out on plans.
37. Proposed retaining wall #1 is currently located in the greenway easement. Please adjust plans to keep wall out of easement.

Sheet C4-5

38. Contours indicate a low point in the middle of lot 123 with no drainage to collect it. Please adjust grading or provide stormwater design to collect this water so it doesn't pool up.

39. A 10' minimum access around SCM 2 should be provided for maintenance. Access must extend to both forebays so the pond can be maintained. This is a repeat comment.
40. Please adjust the storm easement from FES-200 to CB-201 to be centered around storm pipes.

Sheet C4-7

41. A minimum 2' of cover, measured from top of pipe, is required for storm pipes in paved areas. A minimum 0.5' of cover is required outside of this. There are several pipes that do not currently meet this requirement.
42. There are structures shown in the storm tables that are not currently labeled in the grading sheets. Make sure structures are easily identifiable in the grading sheets and ensure that all structures and pipes shown in grading sheets are also shown on the storm tables.
43. Minimum allowable slope for storm pipes is 0.5%. There are several pipes that do not currently meet this requirement and need to be adjusted.
44. Per note at the bottom left of the sheet, rim elevations are given at top of curb. Several rim elevations shown in the tables don't appear to match the elevations shown in the plans. Please verify that all elevations are correct and up to date.
45. Please ensure minimum drop requirements are met. A 0.2' drop is required when change in alignment is between 45-90 degrees or when pipe size increases. A 0.1' is allowable if the alignment change is between 0-45 degrees.
46. Avoid using duplicate numbers for structure names to avoid any confusion.
47. The pipe tables under SCM 2 are duplicates of the SCM 1 pipe tables. Please change these tables to reflect the pipes going to SCM 2.

Sheet C4-8

48. What are the FES rim elevations representing? These elevations don't seem to correspond with the invert in elevations shown in the storm tables.
49. Please be sure to include structures and pipes not routing to ponds in the storm tables as well.

Sheet C5-1

50. Please ensure all proposed contour labels are matching the design shown in the legend. There are a few labels in the existing contour style that are placed on top of proposed contours.
51. There are several points along the silt fence where water will flow towards that don't have silt fence outlets. Please include silt fence outlets at appropriate points along the silt fence to ensure erosion control measures will work as intended. This is a repeat comment.
52. Please include existing contour labels and well as labels to all buffers on all the erosion control sheets.

Sheet C5-2

53. The silt fence outlet by the culvert in the northwest portion of this site should be adjusted to the low point.

Sheet C5-3

54. There is a thick black line by the diversion ditch on the top left of this page that should be labeled or removed.

Sheet C5-4

- 55. RB #1 contours should be labeled. This is a repeat comment.
- 56. There is an unlabeled line along TD #2, please label or remove.

Sheet C5-5

- 57. Some of the slopes on the west side of RB #2 appear to be very steep. It is recommended to keep grades less than 3:1. This is a repeat comment.

Sheet C5-8

- 58. Please show silt fence for protection until construction is done. This applies to all erosion control sheets.
- 59. Ensure all structures and pipes that are to be put in are showing on plans. Inlet protection should be placed around any added structures. This applies to all erosion control sheets.

Sheet C5-9

- 60. There are some inlet protection devices that are not currently shown around inlets. Please remove or adjust to make sure all inlets have inlet protection. This is a repeat comment.

Sheet C5-10

- 61. Wall drainage is not being shown on these erosion control plans. The wall drainage structures/pipes need to be put in at the same time as the wall.

Sheet C6-0

- 62. Please make sure dimensions are in the correct locations and it is clear what is being dimensions. Some dimensions don't seem to line up with top/bottom of pipes. If crossings do not meet minimum requirements, the design will need to be adjusted. Minimum separation requirements should be shown at all pipe crossings. This comment applies to all profile sheets.
- 63. Waterline connections need to line up across profiles. Please ensure that the elevations at tees and crosses remain consistent between profiles. This is a repeat comment and applies across all profile sheets.
- 64. Please verify minimum separation between pipes is provided at all pipe crossings. There are several locations where pipes do not appear to meet separation requirements. The minimum separation should be shown and labeled on the profile view. If a concrete cradle is required, please ensure that it is clearly shown and labeled. This is a repeat comment.
- 65. Adjust the pipe label on the pipe going between SMH-20 and SMH-29 so that the pipe size can be read.
- 66. Continue the Street A profile to include the waterline connection into existing Redford Drive waterline.

Sheet C6-1

- 67. The proposed waterline is shown to end at the hydrant, yet it continues beyond the hydrant in the profile view. Please adjust the profile or plans for consistency.

Sheet C6-2

- 68. There is a crossing between CB-206 and C B-206A in which the waterline is currently conflicting with storm. There is a vertical bend shown before this crossing, but not at this crossing. Consider extending or moving the vertical bend so minimum separation requirements are met.
- 69. Please label vertical bends on all profiles. This is a repeat comment.

Sheet C6-5

- 70. Please show the waterline connection into the existing Redford Drive waterline.
- 71. Show the waterline tee and gate valve at the end of this profile.

Sheet C6-6

- 72. All structures relevant to the profile should be labeled in both plan and profile views. This comment applies to all profile sheets.

Sheet C6-7

- 73. Show and label the waterline connection into Long Melford Drive at the start of this profile.

Sheet C6-8

- 74. Verify the extents of the waterline are properly shown in the profile view. Per the plan view, the waterline should not be extending beyond the tee connecting into Long Melford Drive.
- 75. Please show and label the blowoff assembly at the end of this waterline in the profile view.

Sheet C6-10

- 76. The fire hydrant around sta. 17+80 appears to be connecting in right where a vertical bend in. Please verify that this connection will not interfere with the bend, or update plans as needed.
- 77. There are two labels for CB-237, despite there being two different structures shown in that location. Please update one label to reflect the other structure rather than having two duplicate labels.

Sheet C6-11

- 78. At least 3' of cover is required for sanitary sewer. If cover is less than 5', DIP will need to be used. Please adjust design as needed to ensure this requirement is being met.

Sheet C6-12

- 79. Storm should be designed to meet minimum slope requirements of 0.5%. This is a repeat comment.

Sheet C6-13

- 80. The end of Long Melford Drive that is ending at the property line has very steep slopes. These slopes will need to be updated to meet minimum requirements. Please ensure when the grade here gets updated that the profile grade is adjusted to reflect the proposed grade. It currently does not match what is in the plan view.

Sheet C6-15

- 81. Please show the crossing of the existing sanitary sewer and storm between CB-116 and DI-117 in the plan view.

82. Around sta. 10+20, show the existing sanitary crossing as well as the storm pipe crossing (pipe between CB-116 and CB-116A). Label minimum separation at all crossings.
83. There appears to be a water and storm crossing around sta. 10+40 where separation requirements aren't being met. There is a vertical bend shown after this crossing, but not at this crossing. Consider extending or moving the vertical bend so minimum separation requirements are met.
84. A minimum cover of 24" is required for storm. Please adjust storm as needed to meet minimum requirements. This is a repeat comment.

Sheet C6-26

85. The rim of SMH-42 needs to be brought up to grade, it is currently being shown below the proposed grade.
86. Please include and label all pipe crossings in the outfall 3 and 4 profile views.

Sheet C7-1

87. The invert out elevation in the profile should match what is shown in the details. This is a repeat comment.
88. The title text on this sheet is not showing up properly, please adjust.

Sheet C7-3

89. The normal pool elevation shown in the profile view does not appear to be correct. Please update this value to the correct normal pool elevation.

Sheet C7-4

90. The water crossing in both the Culvert 1 and 2 profiles are not currently shown. Please show these crossings and label minimum separation to show it is being met.
91. Culvert 2 is letting out below grade, please adjust pipes or grading so the culvert outlet isn't partially buried.

Sheet C7-5

92. The headwall in the profile view does not extend the full height of the wall that is being created (as seen by the proposed grade). Please adjust the elevation of the headwall to reflect what will be constructed.

Sheet L1-2

93. Please confirm there are no conflicts with trees and structures/pipes/walls and that trees remain outside of storm and utility easements. This is a repeat comment.

Drainage and Erosion Control Calculations

94. Response to our previous comment (164) refers to a separate grading plan to be completed, what is this in reference to? We are not aware of an additional grading plan.
95. The drainage areas shown in the SCM drainage area maps don't seem to quite line up with the proposed contours. As these are construction drawings, it is expected that the drainage areas take into account the drainage that is to occur onsite. This includes expected roof drainage as well as current proposed grading. Please look into updating the drainage areas to ensure they are accurately representing where drainage will flow so that all storm pipes and structures can be

properly sized. A more thorough review can be done once contours are clearly labeled and areas updated. This is a repeat comment.

96. It is recommended that the townhome outlines are shown like they were in the previous submittal. This allows a better understanding of where the drainage will be directed.
97. For most accurate results, runoff coefficients should be determined for each structure (and therefore be different for each structure drainage area). See City of Raleigh Stormwater Management Design Manual for more information on how to get the composite runoff coefficient.
98. The profiles for SCM 1 have two identical profiles both for the 10-year analysis and the 25-year analysis. Please remove duplicate sheets from this document.
99. There are several profiles that are cut off so you can't read the entire profile and labels. Please adjust these profiles so they can be easily read.
100. For the inlet spread calculations it is listed as using 4in/hr. Please verify where this value was obtained from. Per NOAA estimates, the 5min 2yr storm is ~5.62 in/hr. This comment applies to all inlet spread calculations.
101. Inlet spread should not exceed one half of a lane width. There are a few inlets that are not meeting these requirements. Please update design to meet minimum requirements.
102. In the SCM 2 Drainage Area Map, the contours and wall by DI-220B do not match what is shown on the grading plans. Please ensure plans remain consistent across all sheets.
103. Please ensure that all storm structures and pipes are taken into account in this calculation package. For example, storm tables show DI-200A, but it is not included in the structures listed for SCM 2 analysis. This comment also applies to the storm profiles, as some pipes and structures don't appear to be included in the analysis.
104. The inlet spread table for SCM 2 is not showing any values. Please update table with data.
105. Profiles show DCB-324 going unnecessarily deep into the ground. Consider updating the structure size.
106. The culvert 1 report indicates that there should be 4 barrels, however only 3 pipes are shown on the plans. Please update as needed to keep plans consistent with calculations.
107. Please show a drainage area map for culvert 3, similar to what was done for the other three culverts.
108. The Temporary Diversion Drainage Areas map has several drainage areas that don't seem to quite match the existing contours. Please ensure drainage areas are accurately representing the water that is draining to the basins/diversion ditches. This is a repeat comment.
109. Please ensure the drainage areas going to all diversion ditches and ponds are clearly shown and labeled. There are some diversion ditches that don't appear to have areas going to them and it is hard to distinguish between different pond areas on the map. All areas should be clearly shown and easily distinguishable. This is a repeat comment.
110. The "Temporary Diversion Drainage Areas" sheet has some portions that don't match what was shown on the erosion control sheets. Please make sure plans stay consistent across all sheets.
111. In the Temporary Diversion Drainage Areas map, the temporary diversion ditch numbering does not match what is shown on the table. There are also labels in some of the temporary diversion

ditch drainage areas that do not match the numbering of the diversion ditches. Please make sure all labels are consistent so calculations can be followed and reviewed. This is a repeat comment.

- 112. Please remove text that doesn't apply to the stage of construction shown in the Temporary Diversion Drainage Areas sheet. All leaders and text should also be correctly positioned and easy to read.
- 113. Please ensure rip rap calculations are provided for all FES's. There are several, such as FES-1000, FES-2000, etc., that are not currently being shown.

Stormwater Management Calculations

- 114. There have only been two submittals of this CID, please change submittals on the cover sheet to reflect this.
- 115. The impervious shown in Table 1 Impervious Area does not match what is shown on the cover sheet. Please ensure values are correct and consistent.
- 116. Please include precipitation intensity (in/hr) NOAA rainfall data.
- 117. The drainage areas shown on the post-development drainage area map that are being routed to the ponds don't match the drainage areas shown as part of the drainage inlet maps. The areas should accurately represent the proposed conditions and be consistent throughout all sheets/calculations. This is a repeat comment.
- 118. Please label what SCM the Pond Design sheets correspond to.