MEMORANDUM

Date: 11/03/23

To: Michael Elabarger

From: Brian Laux

Subject: Parker Ridge

CID 23-06, 3rd Submittal

Town of Rolesville, NC

This memo summarizes the review of the construction infrastructure documents submitted by BGE, dated 10/02/23 (received 10/06/23).

Sheet C0-0

1. Sheet C4-9 in the sheet list table shows additional text in their sheet titles that should be removed.

Sheet 1/4

2. These existing condition sheets appear to match those from the first submittal; were the correct sheets included? The comments from the first submittal still apply and will need to be addressed before approval. Typical across existing conditions sheets. First submittal comments were left in, unnumbered, as a reference.
    a. The existing conditions sheets that were included in the PSP submittal were different than the ones submitted with this CID submittal.

Sheet C1-5

3. Clean up overlapping text so everything is legible to read. Clean up leaders so plans are easy to read and follow, preventing overlapping leaders is ideal.
    a. This comment applies to all plan sheets.

4. Tree protection fence is running through preserved trees. Please adjust the tree protection fence.

Sheet C1-6

5. REPEAT: Label the existing easement and ensure the existing conditions sheets match what is shown on the demolition sheets.
6. Clarify if sidewalks are to be removed at the locations indicated on the markups. If so, add sidewalk removal to the legend or as a call out on the sheet.
    a. This comment applies to all demolition plan sheets.
7. Sidewalk should be demo'd to closest joint (perpendicular).

Sheet C2-0

8. The minimum curve radii is 230' for residential local roads and 310' for residential collectors per NCDOT Subdivision Public Road ROW Roads Minimum Construction Standards. Several curves radii fall below these minimums; please adjust based on NCDOT standards.
    a. This comment applies to all site plan sheets.

Sheet C2-1

9. Please review all pedestrian ramp layouts to combine or reduce the number of ramps. All ramps need to be ADA compliant. Follow NCDOT requirements and types.
    a. This comment applies to all site plan sheets.

Sheet C2-2

10. Please show how curbs will transition/end. In addition, some lines appear to be missing for curb end points. Include a detail for curb transitions.
    a. This comment applies to all alleys.
11. Trees to be preserved appear to conflict with the proposed dog park fence. Adjust the dog park fence limits to provide adequate spacing between the trees and fence.
12. Check/adjust leaders and plot style for legibility.

Sheet C2-3

13. Label/ dimension the width of the easement running along the back side of Lots 205-219.

Sheet C2-4

14. The typical section for the cul-de-sac does not align with the rest of the roadway. Please clarify the width of the grass strip. Will grass grow? Please confirm the design/intent; if different than the roadway, it will need to be approved by the town.

15. Adjust the label to the outlet structure out of Lot 12.
16. The access ramp at the parking lot on the north end of Tree Moss Court should align with the walk; adjust the ramp to align.
17. There is currently a light within the storm easement at the parking lot on the south end of Tree Moss Court; please relocate outside of the storm easement.

Sheet C2-5

18. Please confirm the intent of not extending the curb through the pedestrian ramp at the west cul-de-sac on Granite Knoll Ct. It is recommended to extend curb through the pedestrian ramp as appears to be done elsewhere across the site.

Sheet C2-7

19. Storm collection for a portion of phase 1B is shown going into a pond that won't be built until Phase 2. This will need to be considered as part of the phasing plan. Consider including an SCM as a part of Phase 1B.

Sheet C2-8

20. Please confirm if there will be any stop bars throughout the site. If so, show them on plans and label.
21. Consider including a speed limit sign on road segments along Long Melford Drive.
22. Please confirm if crosswalks will be stripped on collectors throughout the site. If so, show them on plans and label.

Sheet C3-1

23. There are several instances where waterline, tees/crosses, and valve sizes differ between Utility plan sheets and Plan and Profile sheets. Please make the necessary adjustments to ensure that waterlines, connections, and valves have the correct sizes and remain consistent throughout all sheets.
    a. This comment applies to all Utility Sheets and Plan and Profile Sheets.

Sheet C3-2

24. A 8”x6” reducer is placed on top of the water service to Lot 13. Please adjust the reducer away from the service.
25. The west leg of the cul-de-sac at Redford Place Drive and Water Nest Drive call out an existing 12” water line but an 8” cross and gate valve. A reducer is needed if the surrounding labels are correct.

Sheet C3-5

26. The demolition of the road and walk are required for the water tap and valve installation.
    a. This should be shown on Sheet C1-8.
27. Is a waterline needed for future amenity/clubhouse? Sanitary service is shown but no waterline. Please confirm.
28. Label the 8” waterline on Cavalera Way.
29. There is not enough separation between structure SMH-29 and the adjacent storm pipe. Please adjust to meet separation requirements.
30. The 15’ retaining wall 3, north of SCM 2, requires guardrails. Please show on plans.
31. Can the hydrant be moved outside of the wall influence to prevent any potential conflict with the wall grid?

Sheet C4-1

32. REPEAT: A proposed drainage easement is required on swales crossing more than two lots.
    a. This comment applies to all relevant grading sheets.
33. The grading inside the private access easement is steep for a future access path to the park on the west side of the project. Review and adjust as needed.
34. Verify that the easement behind Lots 170 through 174 will cover both storm pipes and drainage swale.
35. REPEAT: 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.
    a. This comment applies to all grading sheets.
36. Clarify whether the existing driveway on the north side of the project is to be abandoned or kept. We noted an easement but the driveway is leading to a structure that will be demo’d.

37. Ensure slope requirements are being met. Grades should not be steeper than 3:1 unless sufficient stabilization measures are taken. Please adjust grading as necessary.
    a. This comment applies to all grading sheets.
38. Verify the grades at Stone Overlook Court for storm and sidewalk. Are they steeper than the road? The sidewalk must be ADA accessible.
39. Clarify how the section of pipe behind Lots 195 and 196 will be handled. Will it be removed?
40. If the trees located at SCM 3 are to be preserved, the proposed grading cannot extend into their location. Please revise grading/ the SCM or remove the trees.
41. Verify the grades at wall #7 for drainage outlets.
42. Please clarify the purpose of structure YI-3004 and the corresponding pipe. Is it a bypass storm? There are no calculations for this pipe; please include.
43. REPEAT: All proposed contours need to tie into the existing contours.
    a. This comment applies to all grading sheets.
44. Ensure the grading for the proposed grade along Zanning Drive occurs within the LOD.
45. Clarify how water will be kept from flowing over the top of the retaining wall east of SCM3, behind Lots 210-212. If no measures are in place, provide a swale or another solution to prevent this.
46. Please confirm if there is a low point behind Lot 203. Adjust the grading as needed to promote drainage to storm structures.
47. A large portion of the swales between buildings appear to be steeper than 3:1. Grading should be adjusted to meet minimum slope requirements.
48. Additional contour labels should be added to provide clarity as to where the surface water is draining, particularly at high and low points.
    a. This comment applies to both proposed and existing contours on all sheets that have contours shown.

<u>Sheet C4-2</u>

49. Provide design information for the culvert design in the storm chart. Include pipe size, IE, and riprap needed.
50. Verify the contours are correct at the north end of Tree Moss Court; there appears to be a 1' jump.
51. Provide calculations for the greenway culvert north of the Tree Moss Court cul-de-sac. Include structure DI-B103 in the storm table.
52. FES-B102 is located at a tree base. Please adjust the outlet away from the tree.
53. Verify the contours north of the Tree Moss Court cul-de-sac; it is not clear if it is a swale with breaks or broken contours.
54. Label the contour behind Lot 32 and show how it is tying in. Verify a low point isn't being created without proper drainage.
55. Check the contour on Water Nest Drive near Culvert 1. No crown is shown; this differs from the rest of Water Nest Dr.
56. Verify the contour on Water Nest Drive near Culvert 1. If this is a low point another structure will be needed on the other side of the road, across from structure CB-129.
57. Verify the proposed contours are shown correctly near the cul-de-sac on Redford Place Drive, east of the alley; they appear very closer together/ steep in some locations.
58. Show stairs in site plan or adjust the grading behind Lots 55 and between 50 and 51.
59. Adjust the tree protection fence and LOD so it does not run through dog park.
60. Structure SMH-15 runs too close to the storm by CB-221. Adjust the storm or sewer to meet horizontal separation requirements.

<u>Sheet C4-3</u>

61. Riprap should remain inside of the silt fence and LOD.
    a. This comment applies to all grading sheets.
62. Verify if there is a structure located at the end of the proposed pipe stub being shown, west of SCM 4. Add a structure label.

<u>Sheet C4-4</u>

63. Label the contour at the south cul-de-sac of Tree Moss Court and verify that this is not a low point.

64. The grading surrounding the building pads do not appear to match up with FFE's. Please verify if the grading is correct and add labels.

Sheet C4-5

65. Label all storm structures.
    a. This comment applies to all grading sheets.
66. Show a hydrant (if applicable) on the east side of the Redford Place Drive cul-de-sac at Cavalera Way.
67. Show wall elevations at the north end of the wall near Lot 127.
68. Verify the side yard swale slope for Lot 142 between the FFE and retaining wall. Adjust the grading as needed to meet slope requirements.
69. Adjust the storm easement to be centered around the pipe running from CB-202 to FES-200.
70. The area of dam at SCM 2 has steep slopes; this requires Wake County approval.

Sheet C4-7

71. The current waterline running below the pipe between structure CB-133 and CB-132 is close to 10' deep. Avoid waterlines running this deep; the waterline should be able to pass above the storm pipe. Consider flattening the slope from CB-133 to CB-132. Additionally, the slope running from CB134 to CB-133 can be increased. See profile C6-5 for reference.
72. If possible, refrain from using the same numbers to name different types of structures (CB-147, YI-147) to avoid confusion.
73. Include rip rap for major culvert design (culverts 1-4) in the "Minimum Rip Rap By Pipe Size" table.
74. Several rim elevations shown on these tables don't match what the contours indicate. Per the notes, provide a note on storm chart sheets for how rims for catch basins should be set (top of curb or other).
    a. This comment applies to all storm/ stormwater tables.
75. There are several drops between inverts, across all tables, that do not adhere to industry standard drop requirements. 0.2' drop is required when a change in alignment is 45-90 degrees or pipe size increases. A 0.1' drop is allowed if the alignment change is between 0-45 degrees. This applies to all storm/ stormwater tables.
76. Ensure minimum cover requirements are being met. A minimum of 2' cover above the top of pipe is required for all pipes in paved areas. This applies to all storm/ stormwater tables.

77. The minimum allowable slope for storm pipes per NCDOT design is 0.5%. The Town recommends 1.0% min in Lot drainage areas. This applies to all storm/ stormwater tables.
78. There are a few areas that have culverts/storm system (BYPASS). Provide a table and design in the storm package. This applies to all storm/ stormwater tables.

Sheet C4-9

79. Storm drainage pipes within the ROW shall be RCP with a 15" minimum diameter. Please adjust pipes designed to be 12".
80. Outlet structures should be shown for SCM 1, 2, and 4. Clarify the reason for tying into the SCM outfall pipe with the outfall and bypass. These should be separate, or calculations should be provided for the SCM so flow does not cause conflicts.

Sheet C5-0

81. Ensure Wake County is present at the preconstruction meeting (Construction Sequence note 1) and Wake County conducts the onsite inspection (Construction Sequence note 4). Include Wake County in the construction sequence as needed.
82. Include stockpile notes in the Construction Sequence notes.
83. Verify the order in step #3 of the Construction Sequence.
    a. TSB should be installed first (Wake County to approve the sequence)
    b. Once TSB are installed and approved, Wake County to allow TDO.
84. For the bypass to be part of the Outlet (make sure that the calcs can handle the flow) we would recommend the bypass to not connect to the SCM outlet. Flow carried by the bypass pipe to JB-3002 needs to be accounted for in the design of the pond outfall. If the flow is significant enough, the HGL in the pipe will influence discharge from the pond. Also, unless YI-3004 and the connecting pipe are designed to capture and convey the 100-year storm event, it looks like discharges exceeding the capacity of the inlet and pipe will sheet overland into the pond and the pond design should account for this.
    a. This is referenced in comment #42 and #80 as well.

Sheet C5-1

85. All stockpiles are to be 50' from LOD and silt fence; adjust as required. Wake County to verify.
    a. This comment applies to all relevant erosion control plans.

86. Provide additional silt fence outlets as needed. Ensure outlets are placed along the silt fence and do not conflict with preserved trees.
    a. This comment applies to all relevant erosion control plans.
87. Ensure all symbols on the erosion control legend match those being used on plans. The silt fence outlets on the plans, without hatch, are difficult to see.
88. It appears a FES does not align with the pipe at CB#3. Please review and adjust accordingly.

Sheet C5-2

89. Continue the silt fence around the LOD.
90. Clarify how the drainage will be captured for the highlighted area on the markups. Areas greater than 5000 SF should have measures in place to capture storm water. Add additional measures or adjust the TDDs as necessary.
91. Verify that access to the stockpile area is large enough and will not conflict with TD6A.

Sheet C5-4

92. Continue the silt fence around the construction limits.

Sheet C5-6

93. Check dam to be located on TD 4B; provide spacing as required.

Sheet C5-8

94. Verify SB#7 will be removed prior to installation of overlapping storm pipe/structures.
95. Baffles from the temporary basins are shown on Phase 2 plans. If specific baffles are not needed for Phase 2, remove from plans.
96. 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.
    a. This comment applies to all relevant erosion control plans.
97. Label the retaining wall south of Long Melford Drive.
98. Clarify which baffles shown are needed at SCM 4. Remove unneeded baffles to prevent double linework.
99. The bridge mat crossing is unmarked on Long Melford Drive. Label the mat crossing or add it to the legend.
    a. This comment applies to all relevant erosion control plans.

Sheet 5-11

100. The silt fence is missing along the limits of disturbance on the west side of the site; add silt fence as required.

Sheet 5-13

101. Clarify how the retaining wall shown on the south side of the site will be installed and brought to grade with a temporary basin in place.

Sheet 6-0

102. Please ensure the dimensions are in the correct location and it is clear what is being dimensioned. Some dimensions don't seem to line up with the 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.
    a. This comment applies to all profile sheets.

103. REPEAT: 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.

104. All structures/ waterlines relevant to the profile should be labeled in both plan and profile views.
    a. This comment applies to all profile sheets.

105. The vertical curve for roadways should be in 50' increments. Several vertical curves exceed this. Please adjust as required.
    a. This comment applies to all profile sheets.

106. REPEAT: Waterline connections need to line up across profiles. Please ensure that the elevations at the tees and crosses remain consistent between profiles.
    a. This comment applies across all profile sheets.

107. Continue the Street A profile to include the waterline connection into existing Redford Drive waterline.

108. The sheet label should read "Carved Stone CT Plan and Profile."

Sheet C6-1

109. Verify rim elevations for storm structures perpendicular to the road alignment with a standard cross section. Rim elevations should be the same.
    a. This comment applies across all profile sheets.
110. The inside drop manhole structure SMH-17 is labeled on the profile but not shown. Show structure on the profile to see conflict; extend the alignment if needed.

Sheet C6-2

111. Previous sheets show storm structures on both sides of the street. This sheet does not show structures on both sides of the street; consider revision for consistency throughout plans.
    a. This comment applies to all profile sheets.
112. Pipe and structure CB202 are not shown; please show it on the profile sheet. Extend the alignment if needed.

Sheet C6-3

113. When a concrete cradle is being used, the pipe material should be DIP. Adjust pipe material from SDR to DIP at the saddle shown near station 18+50.
114. After passing structure SMH33, the Granite Knoll CT alignment turns in the cul-de-sac. After the turn, there appears to be no change in proposed grade on the profile. Please verify this is correct.

Sheet C6-4

115. Show existing sanitary sewer conflict on the profile. Please provide invert and rim elevations for existing structures SMH13329 and SMH40466.

Sheet C6-5

116. A 8” cross shown on the profile near station 11+25 is labeled as a tee. Please correct.
117. A minimum cover of 3’ is required for waterlines. Please verify the waterline has adequate ground cover or adjust the waterline to meet minimum requirements.
    a. This comment applies to all profile sheets.

Sheet C6-6

118. FES-100 has an invert elevation of 383.0’ on sheet C4-7 as a part of the storm structure table. The actual invert appears 2’ higher in plan view. Verify what is correct; the pipe may need to be extended.

119. The 3’ min cover label is measured to the sewer on the profile (which is correct with the use of DIP pipe) but not typically labeled. Clarify whether this dimension is supposed to measure to the waterline.
120. Ensure catch basins are located at low points. There appears to be a low point just before station 12+50 with no structure in place. Adjust storm/ grading as needed.
121. An 8”x6” reducer is shown on the plan view, unlabeled, and not shown on the profile view. Add reducer to profile view and label on both plan and profile view.
122. A proposed horizontal and vertical bend occurs in the waterline at the same location, near station 17+00. Verify there is enough space for the horizontal bend. Adjust as needed so horizontal and vertical bends are not proposed for the same location.

Sheet C6-8

123. 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.
124. Please show and label the blowoff assembly at the end of the waterline on Zanning Drive, in the profile view.
125. COR to approve a 6” waterline. This seems undersized for future extension.
126. Extend waterline to property line at Zanning Drive.
127. Verify if the dark line extending past the property line on Zanning Drive is proposed sewer. If it is, show connections and note what the connection will be for clarity.

Sheet C6-10

128. The fire hydrant around station 17+80 appears to be connecting in right where a vertical bend is. Please verify that this connection will not interfere with the bend, or update plans as needed.
129. There are two labels for CB-215. Update one label to reflect the other structure (CB214).

Sheet C6-11

130. Label the street names in plan view shown on this sheet.
131. Sanitary sewer requires 5’ minimum ground cover unless the pipe material is DIP, which requires a minimum of 3’ ground cover. Areas with less than 5’ ground cover require the pipe material to be DIP. Adjust to meet minimum requirements.
    a. This comment applies to all profile sheets.

132. Verify if the waterline has room to run over the storm, preventing vertical bends.

Sheet C6-12

133. Update the street name from “Street H”.

Sheet C6-15

134. REPEAT: A minimum cover of 24” is required for storm. Please adjust storm as needed to meet minimum requirements.

135. Show structures CB131 and CB132 to verify conflicts. Extend the alignment if needed.

Sheet C6-26

136. Please correct the rim of structure DHSMH42 to be at proposed grade.

Sheet C7-2

137. REPEAT: The invert out elevation in the profile for OCS-3000 does not match the details. Please revise accordingly.

Sheet C7-4

138. REPEAT: A minimum cover of 24” is required for storm. Please adjust storm as needed to meet minimum requirements.

139. Culvert 2 is below grade. Please adjust pipes/grading so the culvert outlet isn’t partially buried.

Drainage and Erosion Control Calculations

140. The drainage areas shown in the SCM drainage area maps don’t appear to 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.

141. Utilities and stationing should not be shown on this sheet so it is easier to see the contours and drainage areas. There are several areas where the structure labels and drainage areas are not legible

142. Please ensure all contours match what is shown on plans.

143. If this is the low point then another structure will be needed on the other side of the road. If not, drainage areas need to be adjusted.

144. There are 3 catch basins for one hatched drainage area CB102B. Where is CB102B? No CB102B shown on plans.

145. If this is the low point then another structure will be needed on the other side of the road. If not, drainage areas need to be adjusted.

146. Ensure a minimum slope of 0.005 ft/ft is being met for all storm pipes. This applies to all relevant drainage calculation sheets.

147. Please clarify what pipe (348) and Pipe (349) refer to?

148. Please include CB-153 to FES-152 in storm profiles.

149. Ensure all structures and proposed grades are shown properly in profiles. Ensure proposed grade and structure rim do not take a large jump down as seen with a couple structures. This applies to all relevant drainage calculation sheets.

150. Ensure rim is set to grade and minimum cover requirements are being met for all storm structures and pipes. This applies to all relevant drainage calculation sheets.

151. 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.

152. Sheet C4-5 indicates additional structures on Carved Stone CT. Add a drainage area for this structure.

153. The divide between drainage areas for CB-216 and CB-223 are unclear. Please adjust accordingly (hatch color) to distinguish the separate drainage areas.

154. Please clarify what pipe (346), pipe (344), pipe (345) and pipe (343) refer to?

155. Structure DI-368 does not have a drainage area. Show a drainage area for structure DI-368.

156. Please verify structures (CB413, CB414). They are not shown on plan sheets.

157. Please verify CN, composite CN was shown to be 77.

158. Pull drainage area back to correct limits. This section appears to be flowing off-site.

159. Basins should be designed to a dewater time between 3-5 days. Update to keep dewatering time within range.

Stormwater Management Calculations

160. 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.

161. Update SCM's drainage area on the post development drainage area map to reflect contours.