June 7, 2019

Aaron D. Breed, P.E.
Balzer & Associates
15871 City View Drive Suite 200
Midlothian, VA 23113

RE: Bickerstaff Crossing Apartments
1401 Bickerstaff Road
FILE NO. 5421 POD NO. 2019-00215

Dear Mr. Breed:

The Department of Public Utilities has completed a review of the water and sewer plans that are part of the plan of development submitted to the Planning Department on May 10, 2019 and received by DPU on May 16, 2019.

DPU recommends approval of these plans by the Planning Commission.

Please address the following comments before submitting the construction plans for signature.

General:

1. Agreements have not been executed at this time. Agreements must be executed prior to the authorization to begin utility construction or approval of building permits. An Information Sheet for the Preparation of Utility Agreements has not been submitted for review. If the Information Sheet is incomplete when submitted, we will send you comments for correction and resubmittal. If the required Information Sheet is complete when submitted, an Agreement will be forwarded to the Owner for signature within 21 days.
2. Provide a utility profile for the proposed 8" waterline onsite.
3. Revise the Project Summary Report (Form F-10) in accordance with all project comments and per the following and resubmit:
    - Identify connection type under other to be 60 apartment units and calculate the average day using 300 GPD X60 apartments / one (1) connection.
    - Revise the number of connections to 1 and revise accordingly both average day and maximum day demand.
    - Provide the pressure information within the lower hydraulic evaluation table.
4. Revise the water and sewer design calculations (form F-1, page 2) based on the previous comments and complete the downstream manhole number and lowest residual water system pressure.
5. Engineer to provide hydraulic calculations demonstrating adequate residual pressure throughout the distribution system assuming fire flow at worst case fire hydrants.

6. Include the ISO form on the plan and remove the one provided on sheet C10.3. The ISO form on sheet C10.3 is incorrect.
7. The DPU Monitoring and Compliance division is currently reviewing the NOI form information. Any comments requiring further action will be forwarded to you upon receipt by our office.

C01 (Cover Sheet):

8. Revise water and sewer material quantities in accordance with all comments and per the following:
    - Provide a separate entry for public sanitary sewer quantities and include public sewer main and manholes.
    - Include the fire line reduced pressure detector assembly and the irrigation RPZ backflow preventer.
    - Specify domestic reduced pressure backflow preventer.

C05 (Utility Plan):

9. Provide a standard 20'utility easement for the proposed sanitary sewer installed outside the right of way. Also, provide a recorded offsite utility easement for this sewer easement and note the deed book and page number on the plan view prior to DPU plan approval.
10. Provide ductile iron sanitary sewer pipe across Chesapeake and Ohio Railroad property due to cross country installation and lack of accessibility.
11. Show 100-year flood plain, topography and nearby stream in the vicinity of the sanitary sewer extension.
12. Due to existing sewer pipe age and condition (old nonreinforced concrete pipe), the proposed sanitary sewer main must connect directly at the existing manhole 050NW026 in lieu of installing a doghouse manhole. Also, provide matching crowns between the 8" sewer and the 21" sewer.
13. Provide the direction of flow arrows on the existing sewer main.
14. Label proposed sewer main as "public" and the 6" sanitary sewer lateral as "private".
15. Reference county water and sewer book sheets as CSB/CWB 50NW in the lower right corner.
16. Provide a reduced pressure detector assembly per DPU D-435 for the fire line and include the size of this device in the water material quantities and the utility plan view. Include the detail of this device on the plans.
17. Provide an isolation valve (6" gate valve) on the fire service line prior to the boundary valve. The boundary valve cannot be utilized as the isolation valve.
18. Relocate the proposed fire hydrant at the property entrance within Bickerstaff Road to the middle island in front of the apartment building approximately 105' west of the dedicated fire hydrant.
19. Relocate the proposed fire hydrant at the western corner of the apartment building to the right side of the parking lot entrance on the peninsula across from this fire hydrant.

20. Note that the irrigation meter can be replaced by an exclusion meter with service takeoff after the domestic meter as long as the exclusion meter is at least one size smaller that the domestic meter. This will eliminate the connection fee for the additional water service.
21. Provide the peak irrigation demand on the plan view callout for irrigation meter.
22. Specify a reduced pressure backflow preventer for the irrigation system and reference the applicable detail and size for this device. Include size and type of this device in the water material quantities.
23. Specify a reduced pressure backflow preventer for the domestic line and reference DPU detail D-405 for this devise.
24. Specify construction for the domestic service line in accordance with the particular DPU detail that will be used. See details D-530, D-534 and D-535.
25. Provide at least 5' of separation between the dedicated fire hydrant tee and the fire line tee.
26. Label the typical distance from the proposed water line to the proposed face of the curb within Bickerstaff Road.
27. Provide an additional valve on west side of the 12"x8" main line tee per D -480.
28. Specify the size of the boundary valve.
29. Provide DI pipe from the water main to the boundary valve for the fire line.
30. Label the retaining wall that crosses the proposed sewer lateral on the utility plan. Is this a gravity wall or are tiebacks proposed? In addition, we strongly recommend that you provide a casing pipe sleeve for the sewer lateral crossing under the wall.
31. Specify the method of waterline and sewer line installation within Bickerstaff Road. If jack and bore, provide the stationed amount of casing pipe on the plan and profile, show the bore and receiving pits, and include the standard VDOT encasement pipe detail without the leak detector. If open cut, show the extent of pavement disturbance on the plan view and include the DPW pavement restoration detail.
32. Show the existing 12" plug and label to remove this existing plug to connect to the existing 12" waterline within Bickerstaff Road.
33. Add the following note "for DPU flushing purposes" for the proposed fire hydrant at the end of the proposed 12" waterline within Bickerstaff Road. Locate this hydrant to be no more than 10' from the curb and on more level ground.
34. Use a tapping sleeve and valve instead of a tee for the proposed fire hydrant within Oakano Drive. Also, show the existing storm pipe crossing the proposed fire hydrant lead and provide a profile for this hydrant lead.
35. Cluster the 6" valve with 8"x6" tee for all proposed fire hydrants.
36. Provide a standard 20' utility easement instead of 16" for the proposed waterline installed outside the right of way.
37. Provide at least 4'-5' of horizontal separation between the proposed waterline within Bickerstaff Road and the storm structures # 9 and 29.
38. Provide a 12" gate valve immediately after removal of the existing 12" plug so that system service can be restored as soon as possible.

39. Add the following note, "Where possible in unpaved areas, manhole castings shall be approximately 12 inches above final grade using appropriate covers (i.e. - vandalproof, watertight)."
40. Provide GIS manhole ID number for the existing manholes shown on the plan.
41. Provide within typical callouts applicable references to county details for water and sanitary sewer services, fire hydrants, irrigation meter, boundary valve, reduced pressure backflow preventers and reduced pressure detector assembly.
42. Provide a different symbol for the FDC.
43. Reference on the plans and use nearest county survey monuments. Please note that there is a nearby county survey monument (#24) at Old Bronze Rd and Oakano Drive.
44. Add the following note, "Connections to existing manholes without stubs or bricked-up openings shall be the equal of either Kor-N-Seal w/stainless steel expander ring or Press-Seal w/nylon expander sleeve installed by core drilling manhole and in strict accordance with manufacturer's specifications."
45. Provide bearing and internal angle at each manhole for proposed sanitary sewer.
46. Provide benchmarks consistent with DPU Spec. 5.5 L. (Add note for contractor reestablishing benchmarks if temporary and can be disturbed).
47. Review the boxed "waterline connections notes" as these appear to be not applicable with the exception of note 3.

C08.1 (Profiles):

48. Correctly label the title of the profile as Storm Sewer 8 Profile instead of sanitary.
49. Show waterline and sanitary sewer pipe crossings.

C08.2 (Profiles):

50. Resolve the discrepancy where two sheets have same number.
51. Revise the horizontal scale in the title block and provide a vertical scale for all profiles.
52. Show storm sewer crossings in all waterline and sewer line profiles.
53. Revise all sanitary sewer and water profiles in accordance with the utility plan comments.
54. Correctly label the title of each profile. It appears that the storm profiles (12 &9) are labeled incorrectly as sanitary sewer profile.
55. Label the minimum cover depth required for both waterline (3.5' for 8" waterline, 4.0' for 12" waterline) and sewer line (5.5' with road, 3.5' in utility easement outside road).
56. Use hexagonal manhole symbols instead of triangular storm structure symbols within the Sanitary Sewer Profile to match the utility plan.
57. Provide a detail for the retaining wall design, where it crosses the proposed sanitary sewer, to include the existing and finished ground elevation, wall height, top wall elevation, the footing width, and the vertical separation between the footing and the top of the casing pipe. Also, show design details to indicate if it is a gravity wall design or vertical wall with tiebacks.
58. The following comments pertain to the Sanitary Sewer Profile:
    - Label the retaining wall.

- Provide footing width with stationed length for the beginning and end of the footing.
- Provide a casing pipe sleeve for sewer crossing under the wall and label the vertical distance between the casing pipe and the retaining wall.
- Provide the invert information for each manhole and design the invert in for proposed sewer to be at least 0.1' above the invert out.
- Eliminate storm structure reference for the invert information.
- Provide sanitary sewer stationing starting at the most downstream connection and proceeding upgradient.
- Label the sanitary sewer main from manhole 2 to existing manhole as DI pipe.
- Provide a rim elevation for manhole 3 that is 1 foot above grade and specify a vandalproof/watertight frame and cover.
- Provide at least 5.5' of cover for sewer installed under the pavement and 3.5' of cover for DI sewer outside the pavement in easements.
- Show water and storm sewer crossings.
- Include VDOT detail (EP-1) for the steel encasement pipe if provided for the lateral. Remove leak detector from encasement pipe detail (see attachment).
- Revise the size of the sanitary sewer main to 8" to match the utility plan.

59. The following comments pertain to the Waterline Profile:
    - Use different symbols for the tees and valves to differentiate from the symbol used for the bends.
    - Show existing and proposed storm crossings.
    - Show proposed sanitary sewer crossing.
    - Show the existing 12" plug and label to remove the existing plug to connect to the existing 12" waterline.
    - Install the waterline at a standard depth of 3.5'.

C10.3 (Utility Notes & Details):

60. Replace the ISO form on this sheet with the correct ISO form that was submitted separately from the plans.
61. Provide electronic marker placement detail D-750 for gravity sewer.

Schematic Landscape & Lighting Plan:

62. Tree plantings and light poles must be located outside of all utility easements or at least 10 feet away from utilities within right of ways. All other proposed landscaping must not obscure visibility or hinder maintenance of above grade or at grade utilities. Any non-tree landscaping within utility easements requires the following statement on the landscaping plan: "The owner is responsible for replacement of any planting(i.e. shrubs, etc.) damaged or removed by DPU, or it's agent, as required for maintenance of county owned water and/or sewer facilities."

If you have any questions concerning the above noted comments or the plans, please contact me at 501- 4501 or Ireini Botros at 501-4512.

Sincerely,

John L. Clark, P.E.
Utilities Engineer

cc: Jennifer Surber, Bickerstaff Crossing VA, LLC

bc: R. Claytor
M. Gallagher
C. Duverne
Mike Kennedy, Planning

INB/tt