September 7, 2022

David B. Ellington, PE
Kimley Horn & Associates
1700 Willow Lawn Drive, Suite 200
Richmond, VA 23230

RE: Brook Road Knights Inn Apartments
LOCATION: 9002 Brook Rd & 9420 Norfolk St
POD NO. 2022-00424

Dear Mr. Ellington:

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 August 12, 2022 and received by DPU on August 15, 2022.

- ❑ DPU recommends approval of these plans by the **Director of Planning**.

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. Revise water and sewer design calculations within the engineering report to accurately reflect the number of dwellings proposed by this development. We have been informed that there are 274 apartments and 36 townhouses. Also, include any other buildings left out that were not identified on the plans. Revise water system design calculations to reflect any changes in the water model per subsequent comments.

Cover Sheet

3. Provide the correct rezoning case number under site data.
4. Provide the correct number of units for townhouses and apartments under site data.
5. Include the words “Utility Plan” within the project title.

Existing Conditions (CV-101)

6. Show North arrow.
7. Show the following missing utilities:
    - Additional manhole and connecting sewer in front of the Haddad Capital Realty property that is just south of what is currently shown.
    - Where is the onsite sewer discharging to? How does this sewer connect to the county main?
    - Show location of any water and sewer utilities for the houses on Trovinger property and on northwestern corner of AADI Investments property. If not connected to county water and sewer, show private well and septic drainfield facilities.

Demolition (CD-101)

8. If a building demolition permit is desired prior to construction plan approval, then a separate disconnection or abandonment plan must be prepared and approved in advance of the demolition permit showing either disconnection locations for the water and sewer services or complete abandonment of both services at the water and sewer mains. Disconnection or abandonment of the services would be required prior to approval of the demolition permit.
9. For a **disconnection only** plan, show on plan exact locations where water and sewer services will be disconnected prior to building demolition. This would typically be on the private side of the water meter near the street and on the private side of the sanitary lateral near the street. In addition, the following notes would be added to the plan:
    - Add a note on the plan stating that the services will be capped for later abandonment.
    - Meter will stay within the box/vault. Provide the meter number on the plans.
    - Contractor shall notify DPU of disconnection schedule so that DPU metering staff can read the meter and turn off the service prior to disconnection, and DPU inspector can verify the work.
    - Account shall be transferred to Developer and will continue to be billed for service.
    - Connections shall be plugged prior to approval of site demolition permit.
10. Add the following notes on the current demolition plan sheet:
    - Contractor shall notify DPU Inspector of abandonment schedule so that work can be verified.
    - Water meter will be left in the vault and will be removed by DPU staff.
    - Service connections shall be properly abandoned prior to demolition permit approval.
    - Account will be finalized, and billing will stop only after proper abandonment of the services has been verified by DPU.
11. Clearly show and label the abandonment of three sanitary laterals and the one water service on this plan.
12. Show all existing public utilities on the plan with GIS ID numbers for manholes and fire hydrants.
13. Label existing water meter as 2” with a meter number of 61990495.

Erosion and Sediment Control (CE-101)

14. There is a conflict between the sediment basin proposed along Brook Road and the existing water and sewer services to the motel. Water and sewer services will have to be abandoned prior to installation of this basin at this location. In addition, the notes on the Demolition plan would need to be modified to allow for this utility work.

Stormwater Profiles (CG-503, 504, and 505)

15. Coordinate and show all water and sewer utility crossings on these profiles in consistent manner with the utility profiles.

Overall Utility Plan (CU-101)

16. Offsite sewer improvements within Brook Road for providing adequate downstream capacity shall be made prior to setting of water meters and issuance of any C.Os.
17. The sewer flows from this project will not be accepted, nor will a connection be allowed to the County sewer system until the offsite sanitary sewer improvements within Brook Road are accepted by the County for operation.
18. Utility plans shall be submitted to DEQ for acceptance and a certificate to construct (CTC) obtained from DEQ prior to DPU approval since design average sewer flows exceed 40,000 gpd.

19. Perform a corrosive soil study by taking soil samples along the proposed waterline alignment area in accordance with Henrico DPU Standard 4.2.02G. Provide protection of water main and appurtenances against aggressive soils in accordance with DIPRA recommendations and the ductile iron pipe manufacturer recommendations.
20. Revise water and sewer material quantities in accordance with all comments and per the following:
    - Coordinate water and sewer main material and pipe lengths with the plans.
    - The plans did not show a dual 1.5" water meter.
    - Include vertical feet of manhole depth as a quantity.
    - Include number, size, and pipe material of sanitary laterals.
    - Include monitoring manholes.

Utility Plans (CU-102, 103)

21. To improve plan legibility and simplicity, remove architectural layout from inside the buildings and just represent each building footprint outline with a prominent ID label, # of floors, square footage, # of apartments, and finished floor elevation (FFE).
22. Identify the facility in the middle of three apartment buildings. Does it use any water or discharge any sewer flows?
23. Identify the small building next to the dog park and specify the water meter size. Also, where does this building's sewer flow discharge to?
24. Sewer cannot discharge to the existing 8" sanitary lateral within Brook Road. Sewer collection system for this project must discharge to manhole on the existing main within Brook Road. This lateral must be abandoned at the main and a new connection via a doghouse manhole installed within Brook Road. See subsequent comment for information needed for the doghouse manhole installation.
25. All sewer main with laterals that is outside of the public right of way can be privately owned and maintained if there will be just one property owner for this development.
26. The run of sewer from SSMH 19 to SSMH20 needs to be relocated to within the road since it is up too close to the building foundation and is hemmed in by the property boundary. Also, the small building across from building 6 appears to need sewer service and the sewer can pick up this building if located within the road where it should be. In addition, the location of SSMH 20 is not lined up with the building lateral and doing so would place it in the middle of the sidewalk, thereby posing a tripping hazard. Therefore, extend sewer 120' west to the intersection and then about 135' south to a terminal manhole for the building 6 lateral.
27. Monitoring manholes are not required for domestic flows only. A monitoring manhole should be provided for the retail space in case there will be a restaurant or other business requiring pretreatment for non-domestic flows. See manhole "28" as an ideal choice.
28. Label manhole SSMH18 as a doghouse manhole and dimension the distance from this manhole to the nearest existing manhole. Provide field verified invert elevations at the adjacent upstream and downstream manholes on which to base the designed invert at the proposed manhole SSMH18 and allow for a 0.1-0.5-foot drop. Identify the existing sewer line size and material. Also, label the adjacent manholes with a GIS ID.
29. Provide benchmarks consistent with DPU Spec. 5.5 L. (Add note for contractor reestablishing benchmarks if temporary and can be disturbed).
30. Specify the method of waterline and sewerline installation within Brook 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 or VDOT pavement restoration detail.

31. Provide the following for the offsite sanitary sewer replacement on CU-103:
    - Provide sequence of construction for sanitary sewer relocation or replacement.
    - Submit temporary sanitary sewer bypass plan. The contractor shall prepare a specified detailed description of the proposed pumping system.
    - Dimension the distance from the nearest upstream manhole to the new manhole, where relocation will start, on the plans. The same would apply for replacement of a line with distances and stationing shown on the plan.
    - Show existing sewer line that flows into this development, as well as other nearby sewer line that might be considered for the pump around of existing flows. Label remaining existing sewer line size and material.
    - Specify approximate calculated existing sewer flow that needs to be pumped around.
32. Provide an exception request to the Director of Public Utilities for where hydrants are less than 50 feet from buildings and include the justification for the exception.
33. The two dedicated hydrant locations for buildings 4 and 5 are not acceptable in that these are not accessible due to parking spaces and the hydrant leads conflict with two storm inlet structures. One possibility is to provide a single dedicated hydrant to serve remote FDC connections for both buildings and locate this hydrant across the road in an open area that's not blocked by parking spaces.
34. Relocate other hydrants as follows:
    - Relocate hydrant at northwest corner of building 6 to across the road so it is not within the collapse zone and at least 50 feet from the apartment building.
    - Relocate hydrant on north side of building 6 to the west and at the P.T. of the intersection.
    - Adjust dedicated hydrant on west side of building 3 further west and to the nose of the peninsula to maximum distance from building.
    - Relocate dedicated hydrant for building 2 to the peninsula to the west and move FDC connection to same area with 10-foot separation.
    - Relocate hydrant at the back of dead-end alley between the two western "F" townhouse blocks to the corner P.T., where connecting with Norfolk Street as this location is not accessible by the Fire Division.
35. Adjust the following valve locations:
    - Omit valve next to meter serving building at the dog park area.
    - Omit valves on either side of domestic and fire lines going to buildings 6, 3 and 2.
    - Relocate valve on east side of tee near manhole SSMH 4 to the west side of the tee.
    - Relocate valve on the south side of tee near manhole SSMH 13 to the east side to isolate stub line.
    - Add two valves at the tee for the waterline stub going between the two "F" style townhouse blocks.
    - Remove 8" valve near water service to building 1.
36. The stub waterline between the two "F" style townhouse blocks can be omitted if the water service and fire hydrant are connected to the water main within the main drive. This will also eliminate the need for a flushing hydrant at the end of the stub waterline.
37. Show existing building footprints on adjacent parcels and account for exposure factors within the ISO fire flow calculations.
38. Provide the correct DPU detail reference of D-405 for an internal backflow preventer on the domestic services in all locations.
39. Show valve and tee/sleeve symbol for both 16" x 8" tapping sleeve and valve locations in Brook Road.

40. Show all 1 ½" water services in accordance with DPU standards D-530 using 8"x4" tee and 4" valve and a 2" copper service line to the meter.
41. Show field verified terminus of existing 6" waterline within Norfolk Street and what fittings and valves are needed to interconnect with this line.
42. Delete manhole SSMH 14 as it appears to not be needed.
43. Provide at least 8 feet separation between the water service/meter and the sanitary lateral going to each of the townhouse blocks.
44. Shorten the water service to the western most townhouse block to come directly from the main in the main access road and not the stub.
45. Locate manholes to be in the center of the travel lane or center of the road and not in the wheel path.
46. Design all laterals leaving the townhouse blocks or the apartment buildings to be 2.08% (1/4" per foot) or more.
47. Provide 10 feet horizontal separation between water main and storm sewer going between buildings 2 and 3.
48. Adjust location of underground storm sewer detention structure to be outside of the water main utility easement and at least 10 feet away.
49. Remove manhole shown just west of SSMH 3 as it doesn't appear on the profile and appears to be unnecessary.
50. Revise label for manhole 28 to be similar to the other manholes shown (e.g., use SSMH).
51. Provide 2-5% slope for lateral serving building 1 where discharging into a monitoring manhole (i.e., manhole 28).
52. Provide at least 5 feet separation between the water service lines and the fire lines to each building.
53. Show abandonment of all sanitary laterals not needed within Brook Road.
54. Show abandonment of the water service within Brook Road.
55. Label all existing manholes and fire hydrants within Brook Road with GIS IDs.
56. Reference county water and sewer book sheets within lower right-hand corner of each utility plan sheet.
57. Provide applicable DPU detail reference for each of the domestic water meters/services.
58. Label the typical dimension for waterline to curb face where water line parallels the curb for a significant distance.
59. Provide bearings, internal angles, and flow direction for all sanitary sewer main.
60. PVC is acceptable for sewer main where there is at least 5.5 feet of cover within the roads. Otherwise, DIP will be required.
61. Provide county monumentation used for the site survey and reference on the plan.
62. Provide a minimum of three (3) GIS reference points on each utility plan sheet.
63. Are there any irrigation meters that will be needed for this project site?

Utility Profiles (CU-201, 202)

64. For all sanitary sewer profiles, provide separate sewer stationing at each manhole starting at the most downstream connection and proceeding upgradient with equalities at each junction manhole. Minimize stationing changes by using the longest chain of sewerline runs in the same stationing sequence.
65. Provide profiles for all water main 8" and larger and for showing resolution of any conflicts for all water mains where crossing other lines.
66. Eliminate drop connection areas where possible as these tend to create maintenance issues and blockages.
67. Where there is more than 0.5-foot drop across the manhole which cannot be eliminated, show and provide a drop stack per D-130 in label upper and lower drop stack invert elevations.

68. Provide at least 5.5 feet of cover over all sewer main within the roads. Otherwise, DIP will be required for the sewer main.
69. Water mains and hydrant leads are to cross over the top of sewer main by at least 18".
70. Please note the following separation distance requirements which can help guide the design to meet the previously stated deep of cover and crossing requirements:
    - Sewer main can cross under storm pipe with 1 foot of separation or over the top of the storm pipe with as little as 6" separation.
    - Water main can cross under the storm pipe with 18" of separation or over the top of the storm pipe with as little as 6" separation.
71. Lay sewer main within the SSMH 4 to Building 3 profile at 0.4% slope so that it can cross under storm sewer by 1 foot and allow the water main to cross over the sanitary sewer by at least 18".
72. For manhole SSMH18, label as doghouse type manhole and complete the drop connection detail reference.
73. For SSMH 5 to SSMH15, adjust the design by lowering sanitary sewer main to 5.5 feet of cover and routing all water lines over the top of the sewer, as well as modifying storm sewer design as needed to allow for the sanitary to cross at this depth.

Water Model (CU-301)

74. Provide pipe data including lengths and C values(C=120) that were used for the model results.
75. Provide a model run for the worst case of each type of building. In addition, the 2500 fire flow is supposed to be modeled for the townhouses.

Utility Details (CU-501, 502, 503)

76. Revise the following standard details:
    - D-180 and D-185 are not applicable and can be omitted.
    - Replace D-430 with D-435 for internal RPDA assemblies.
    - Provide D-405 for internal RPZ device on domestic water services.
    - D-520 and D-525 are not applicable since there will be 1.5" meters. Replace with D-530 and D-535.
    - Include D-125 for monitoring manholes.
77. Provide exposure factors within the ISO fire flow calculations for the buildings where there is another building within 40 feet except where the exposure buildings are sprinklered.
78. Provide the building numbers for each of the meter sizing forms and ISO forms shown.
79. We were advised by Planning of the following information: there will be 274 Apartments consisting of 54 units in building 2, 40 units in building 3, and 60 units each in buildings 4, 5, and 6. Please review and revise the small apartment building form accordingly.
80. The ISO fire flow form for the small apartment building should be designed for 4 stories based on information we have received. Please confirm.
81. Revise the 4 story clubhouse apartments meter sizing form to show fixtures for 54 apartment units.
82. The meter sizing form for the townhomes shows a fixture count that requires a 1.5" meter.
83. The meter sizing form for the retail space shows a fixture count that requires a 1.5" meter.
84. Where is the garage that an ISO form was prepared for? Is there an office within this building or a place where a person is stationed to work for the day?

Lighting Plan (CL-101)

85. All light poles shall be located outside of utility easements and at least 10 feet away from utilities.
86. Plan is at too large a scale and poor quality to discern where light poles are located.

Landscape Plan

87. Tree plantings 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."
88. Adjust trees shown near Manhole 28(building 1), new dedicated hydrant location for building 2, and the corner near tie into Norfolk Street where a hydrant will be relocated too.

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

Sincerely,

John L. Clark

John L. Clark, PE
Utilities Engineer

cc: Alexi Papapieris, Middleburg Communities

bc: Ralph Claytor
Marchelle Sossong
Daniel Ivy
Ireini Botros
Christina Goggin, Planning

JLC/vr