

## Memorandum

**To:** *Cindy Nash – Hanover City Planner*

**From:** *Justin Messner, PE – Hanover City Engineer*

**Cc:** *Brian Hagen – Hanover City Administrator*  
*Todd McLouth, PE – Loucks, Inc.*

**Date:** *March 6, 2019*

**Re:** *River Town Villas of Hanover Preliminary Plat Submittal Review*  
*WSB Project No. 013676-000*

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As requested, we have reviewed the River Town Villas of Hanover preliminary plat documents as prepared by Loucks Inc., dated February 22, 2019 and we offer the following comments:

### **Stormwater Management**

#### ***General Comments***

1. The rate control requirement for the City listed in Chapter 9 of the City Code is as follows, *“the proposed post-development runoff rate must not exceed 0.1 cubic feet per second per acre.”* The project consists of a parcel approximately 4.1 acres in size and would only be allowed a discharge of 0.41 cubic feet per second. Currently, the project is not meeting this rate control requirement.
2. An operations and maintenance plan for the proposed stormwater management system should be included with future submittals. Applicant should callout maintenance access location for the stormwater BMPs to the plans.
3. The SWMP states an infiltration rate of 0.8 inches per hour was used for design purposes and that the infiltration rate would be verified with a double-ring infiltrometer test later in the spring. The City requests the results of the double-ring infiltrometer test be submitted when obtained.
4. A NPDES permit will need to be obtained prior to the start of construction.

#### ***Pond/ Basin /Rain Garden Comments***

5. The contours in the corner of the ponding areas should be smoothed out to make them constructible.
6. Side slopes for the pond shall be no greater than 5:1 between the permanent water level and the top of the slope per Chapter 9 of the City Code.
7. The soil borings provided show there are permeable soils throughout the site. A pond liner should be added to the stormwater pond to ensure water does not infiltrate into the underlying soil from the pond.

8. The property to the northwest of the proposed development is currently landlocked. Additional consideration should be given for discharges onto this property.
9. A note should be added to the plans stating that the infiltration basin and raingarden shall be kept offline until impervious area construction is completed and vegetation has been established, per the Minnesota Stormwater Manual.
10. Riprap should be shown on the plans at all FES outlets.
11. It is recommended the applicant consider dropping the invert of the pipe leaving CBMH 101 to flatten the pipe and reduce the velocity of water entering the pond.
12. The outlet from Pond 1 is shown right at or slightly over the parcel boundary. Applicant should move the outlet so that the entire outlet (including FES and riprap) will be within the parcel boundary.
13. The Pond 1 EOF elevation is called out as 904.5 on the north side of the pond however the berm surrounding the pond on the north, west and southwest sides all show a max elevation of 904.5. Applicant should update the grading so the EOF is a defined spillway which would direct water in one direction rather than allowing water to overtop the berm of the pond in multiple directions.

#### ***Modeling Comments***

14. The SWPPP and the narrative in the SWMP list 1.67 acres of new impervious for the project but the HydroCAD model is only showing an increase in 1.51 acres of impervious. Applicant should update the model so the increase in impervious matches what is shown in the plans.
15. From the hydrographs provided it appears that there are oscillations occurring between the infiltration basin and the pond. It is recommended the infiltration basin and the pond be modeled together in one node with an exfiltration outlet starting at the overflow elevation between the two basins (currently 902.5) to remove the oscillations. No overflow between the infiltration basin/pond would be included in this updated model.
16. The EOF for the rain garden is shown on the plans at 916.3 but is being modeled at 916. Applicant should update the elevation of the EOF in the model to match what is shown in the plans.
17. It is unclear if water quality requirements are being met at this time. The removal efficiencies may be overestimated with the way the stormwater pond and infiltration basin are being modeled in MIDS currently. With the current design shown in the plans only the volume of the pond between 902.5 and 902.6 will be routed to the infiltration basin, but the way MIDS is currently configured all of the outflow from the pond is being routed through the infiltration basin. It is recommended that the applicant model the system in P8 to accurately model the two outlets from the stormwater pond. Alternatively, the outlet for the pond could be raised so that the majority of the pond's outflow is routed to the infiltration basin rather than out the pipe or the piped outlet could be moved from the pond to the infiltration basin.

#### **Preliminary Plan Set**

***Landscape Plan Comments***

18. There are trees proposed within a few feet of the storm sewer (e.g. west end of Street B near CBMH-104). All trees should be a minimum of 10 feet from the storm sewer system to protect the storm sewer and prevent trees from needing to be removed with future maintenance.
19. Verify boulevard site distances are being met with the two trees located at the entrance (see City Detail STR-26).

***Existing Conditions Comments***

20. Show any existing sanitary sewer and water facilities that are proposed to be removed or abandoned with the removal of the existing house.

***Grading Plan Comments***

21. Basement floor, garage floor, and low opening elevations should be added on the plans.
22. We are unable to confirm freeboard requirements are being met with respect to the proposed raingarden, stormwater pond, and observed groundwater until elevations are shown on the plans. Lots 15-18 at a minimum, will most likely need to be shown as 'SOG' only.
23. Retaining walls exceeding 4' in height will require structural design calculations and certification of licensed engineer with experience in retaining wall design.
24. We recommend the developer define ownership and responsibility for future retaining wall maintenance.
25. The retaining wall on the north end is shown within 10 feet of Lot 10 with a greater than 3:1 slope coming off the back of the house.
26. There are some areas with surface grades greater than 3:1 (e.g. at the ends of the eastern retaining wall, east end of Street B, north of lots 7-10, etc.). Revise proposed contours or modify proposed retaining walls to eliminate these areas.
27. There are some areas with surface grades less than 2% (e.g. west of Lots 4 and 5, etc.). Revise proposed contours to eliminate areas.
28. The spot elevations shown between lots do not appear to always be the high point (e.g. between Lots 13-14, 5-6, etc.). Adjust the spot elevations and possibly add drainage arrows to define the grade breaks between the lots and throughout the development. Maintain minimum 2% and maximum 3:1 slope requirements with the adjacent lots.
29. Provide additional detail showing the drainage on the east side of Lot 11 and how it gets away from and around the house.
30. Provide the EOF for the low point in Street B.
31. FES-401 for the pipe discharging to the infiltration pond is missing on several sheets (e.g. C3-1).

32. Describe the purpose of the 906.00 spot elevation west of Lot 7. It is between the proposed 906 and 908 contours.

***Utility Plan Comments***

33. Describe and show the proposed extents of the roadway restoration associated with the connections to the existing utilities.
34. The proposed utility plan shows an 8" watermain connecting to the existing 6" watermain on Church Street NE. Verify the upsizing will maintain adequate pressures within the proposed development.
35. Show all water services on the upstream side of the sanitary services (e.g. lots 5,6,8,13,14).
36. Show a gate valve after the connection to the existing watermain at Church Street NE in accordance with City Detail WAT-03.
37. Show proposed curb stops for the development. Place them 10' behind the back of curb in accordance with City Detail WAT-04.
38. Replace the 8" stub at the west end of Street B with a hydrant and gate valve.
39. Provide an additional gate valve at the intersection of Street A and Street B.
40. Provide service risers for the sanitary sewer services on Street A.
41. The two middle sanitary sewer segments (MH 3-MH 2, MH 4-MH 3) are at minimum grade while the upstream and downstream segments have grade available to give.
42. CB-201 & CB-202 are only 2' deep which presents concerns with frost heave. Consider using structures with filled or unfilled sumps to provide additional depth.
43. There is as little as 1' of cover over portions of the pipe from CB-201 to FES-200.
44. With the submittal of final plat and construction plans a minimum 18 inches of separation and insulation per City Detail WAT-06 will need to be shown between the watermain and all sewer crossings.

***Miscellaneous Comments***

45. The street section shows 24" of select granular but does not show draitile. Draitile will be needed in accordance with City Detail STO-15 "PVC Perforated Pipe Installation".
46. Limit standard detail plates to 8 per page for minimal legibility at half size (11x17) print.
47. Include City Detail SAN-07 "Sanitary Sewer Junction Manhole".
48. Include City Detail WAT-08 "Insulation Detail". Insulation will be needed between the storm sewer and watermain at the intersection of Street A & Street B and where the watermain goes under CB-107.
49. Include City Detail BED-01, BED-02, BED-03.