

Date: Monday, February 28, 2022

To: SCHLAGEL & ASSOCIATES
James Long, P.E.
14920 W 107TH ST
LENEXA, KS 66215

From: Gene Williams, P.E.
Senior Staff Engineer

Application Number: PL2021487

Application Type: Engineering Plan Review

Application Name: Cornerstone at Bailey Farms 1st Plat - Public Streets, Storm Water and Master Drainage Plan

The Development Services Department has completed its review of the above-referenced plans dated Feb. 11, 2022 and offer the following comments listed below.

- See comments below to determine the required revisions and resubmit to the Development Services Department public portal located at devservices.cityofls.net. Digital documents shall follow the electronic plan submittal guides as stated below.
- Revised plans will be reviewed within ten (10) business days of the date received.

Engineering Review - Corrections

1. Sheet 13: The 100 year clogged condition/zero available storage WSE does not show the minimum 1.0 feet of freeboard between it and the top of the dam. Please correct.
2. Sheet 13: The nominal condition 100 year WSE does not show the required minimum freeboard of 0.50 feet to the emergency spillway. Please correct.
3. Sheet 13: Public easements are shown for incoming storm lines and outgoing storm lines. These shall be removed since these lines are private lines from the last junction such as a curb inlet. In the case of the outgoing pipe from the detention basin, the outlet structure is also private, and shall not include an easement. Please correct, and ensure this comment carries-through to the final plat.
4. Sheet 13: Will the steel rods forming the trash rack on top of the outlet structure be welded? If so, please note on the plans.
5. Sheet 13: The trash rack for the 15 inch line entering the outlet structure shows a trash rack, but no details are shown. Please show details of construction of this trash rack.

6. Sheet 13: The trash rack for the 15 inch line is shown connecting to an HDPE flared end section. This should be called-out as RCP due to the trash rack. It is doubtful that a trash rack can be constructed against an HDPE flared end section. Please analyze and correct.
7. Sheet 13: A graphic representation of the 100 year WSE for the nominal and the clogged/zero available storage is required, along with dimensions from the closest property lines. It appears there may be instances where the minimum setback of 20 feet is not achieved. Please update and correct as appropriate.
8. Sheet 13: Construction details were missing for the outlet structure in terms of materials, steel reinforcement, thickness, orifice plate material and method of attachment, etc. Please include all construction details necessary to construct the outlet structure.
9. Sheet 13: Construction note for the trash rack on top of the outlet structure references placement above a v notch weir which does not appear to exist on this structure. Please evaluate and correct.
10. Sheet 13: Notation of the rip rap references other details, but the sheet number is not included. Also, calculations are missing. Calculations of rip rap design is required for all areas receiving rip rap. Please analyze and update as appropriate.
11. Sheet 13: Recommend a profile view of the outlet structure in relation to the fill of the dam. It does not appear the configuration shown will work, given that the 1008 contour is at the west edge of the outlet structure, and the outlet structure weir opening is at 1007.25, approximately 9 inches below grade. Finally, the outlet structure 3901 cross-section on this sheet does not match what is proposed. It appears this is a generic detail without the trash rack on top, and was a generic detail for a closed top design. Please revise.
12. A cross-section of the dam is required at the highest point, along with slope callouts, the minimum 3 foot wide flat spot at top of dam, bottom of dam, and bottom of detention basin. Please revise as appropriate.
13. Sheet 13: Line 3900 is missing the HGL for the design storm (i.e., the 100 year event). Please revise.
14. Sheet 12: Storm line 1000 is discharging stormwater in the supercritical regime due to excessive slope. Either change the slope of the pipe, or provide a different energy dissipation method as shown. As shown, the discharge point shall experience severe erosion issues.
15. Sheet 11: Line 200 is likely flowing in the supercritical regime at the outfall. Recommend lessening the slope to create a hydraulic jump within the pipe, or provide a different method for energy dissipation. Please analyze and revise.

16. Sheet 11: Line 700 is discharging in the supercritical regime. See above comments concerning the lessening of this slope to create a hydraulic jump within the pipe, or provide a different method for energy dissipation. Please revise as appropriate.
17. All ADA-Accessible Ramp Detail Sheets: The turning spaces are mostly non-compliant at all parallel ramps. The requirement is that a design slope of 1.5% be designed for all turning spaces in any direction. A quick check of these turning spaces at parallel ramps using the elevation callouts shows a design slope in excess of 1.5% in the diagonal direction. Please analyze, and revise as appropriate.
18. Sheet 7 or Elsewhere: There is no indication of the start and stop point for construction of the ADA-accessible ramps. A clear indication of where the stop and stop point shall be shown. At an absolute minimum, the ADA-accessible ramp construction shall be carried to the turning space, and in the case of wrap around curb return ramps, shall be extended around the curb return. Please revise as appropriate.
19. comment deleted, please disregard.
20. Detention basin bottom slope callouts were not provided on Sheet 13. Please keep in mind 2% slope is not necessarily required, and may allow additional storage for this basin. The City has not adopted the MARC manual, but the MARC manual allows for slopes less than 2% and actually encourages slopes less than 2% in the basin bottom for water quality benefits. Please analyze, and revise as appropriate. Please show the slope callouts, and ensure any grading elevations callouts match the outfalls of the three (3) incoming pipes as well as the outgoing pipe elevation.
21. HGL calculations shown on the table and the profile views of the storm lines did not appear to take into account the HGL for the various storm events related to the detention basin. At least one storm line appears to surcharge out of the curb inlet at Line 1000 during the 100 year clogged event. Overflow swales at this location are required. Please analyze and revise as appropriate.
22. It is recommended the outlet structure be moved to the south end of the detention basin to allow more residence time for the stormwater. As shown, short-circuiting of the water quality aspect of the design will occur using the geometry shown.
23. Sheet 3: Table at upper right does not show the lots where an as-graded plot plan is required. Please show which lots require an as-graded plot plan.
24. Sheet 3: Swales are called-out without the required details. Cross-sections shall be shown at the beginning of the swale, the ending of the swale, and key locations along the swale (e.g., 25 feet?). The generic detail at the bottom of the sheet is not sufficient for swale detailing. Please update and revise as appropriate.

25. Sheet 3: Swale B-B is not properly detailed in terms of contours lines. This appears to be an overflow swale for the surcharged curb inlet which will not be able to manage any flow when the detention basin is at capacity for the 100 year nominal event. An emergency overflow swale is warranted at this location, and shall follow all previous comments related to swale detailing described elsewhere in this comment letter. Please analyze and revise as appropriate.
26. Private storm line 1000 between the lots 11 and 12 is too close to the building lines on each lot. Assuming the utility is centered, 11 feet on each side of the easement appears warranted. Please correct, and ensure this is carried-through to the plat.
27. Recommend separate sheet(s) for swale construction, including the emergency overflow swale, and other swales described elsewhere in this comment letter. Please revise by providing a separate sheet(s) for these features.
29. Detention basin is shown within the stream buffer, which is acceptable as long as the foreslope of the dam to the midpoint of the top of dam is considered. Any other extension of the detention basin into the buffer is considered an encroachment. There is one (1) area that is considered an encroachment, and will need to be moved outside the limits of the stream buffer unless: 1) a stream assessment and waiver is obtained for the encroachment. Please revise using these guidelines, or perform the stream assessment and waiver.
30. Sheet 14: Asphaltic concrete type was not specified on the section view. Please see the Design and Construction Manual for specific options, and update and revise as appropriate.
31. The trench backfill detail was incorrect. Please use the new standard that was updated in July 2020 which requires a minimum of 12 inches aggregate over the top of pipe. Please revise as appropriate.
32. Please remove the PCC concrete table. Unless this is being shown with a jointing and sawcutting design, it is irrelevant to the plans.
33. Please see comments related to The Manor at Bailey Farms 1st Plat in regard to the Final Stormwater Management Report dated Jan. 31, 2022 (hereinafter referred to as the stormwater study). All comments related to The Manor at Bailey Farms 1st Plat apply to this phase of the project.
34. The final stormwater report pond setup table within the appendix shows an invert elevation of 1000.0 for device #2, the incoming 15 inch pipe. This does not agree with the plans, which show the elevation at 997.91. Please reconcile, as this will have a significant impact on routing calculations.
35. The final stormwater report shows RCP from the outlet structure to the creek. The plans show HDPE. Please reconcile, and please callout RCP for this area as a suggestion.

36. Storage volumes shown for the various events within the stormwater report do not appear to agree with those shown in the table of the plans on Sheet 13. Please reconcile.
37. Sheet 13: The small inset detail showing the emergency spillway contains contradictions. One part of the detail shows the spillway with a different elevation than shown elsewhere, and
38. Sheet 13: Access hatch is shown at a questionable location. How will this hatch be used to clean the orifice when it is located on the opposite side, and not centered over the orifice plate? Please analyze and revise as appropriate.
39. To avoid confusion, please label the detention basin as EDDB 1 to match what is shown in the final stormwater report. This should be shown on general layout sheet and detention basin sheet.

Traffic Review - No Comments

In order to calculate the Engineering Plan Review and Inspection Fee, a sealed Engineer's Opinion of Probable Construction Costs shall accompany your final submittal copies. The itemized estimate (material and installation) shall be sufficiently broken down and shall include the following items, as applicable.

- Public infrastructure, both onsite and offsite.
- Private street construction, including parking lots and driveways.
- Sidewalks located within the right-of-way.
- ADA accessible ramps.
- Sanitary sewer manholes and piping between manholes, including private mains.
- Connection of the building sanitary sewer stub to the public main.
- Waterlines larger than 2 inches in diameter, valves, hydrants, and backflow preventer with vault, if outside the building.
- Stormwater piping greater than 6 inches in diameter, structures, and detention / retention facilities - public or private.
- Water quality features installed to meet the 40-hour extended duration detention requirements.
- Grading for detention / retention ponds.
- Grading to establish proper site drainage.
- Utility infrastructure adjustments to finished grade (i.e. manhole lids, water valves, etc.).
- Erosion and sediment control devices required for construction.
- Re-vegetation and other post-construction erosion and sediment control activities.

Electronic Plans for Resubmittal

All Planning application and development engineering plan resubmittals shall include an electronic copy of the documents as well as the required number of paper copies.

Electronic copies shall be provided in the following formats

- Plats – All plats shall be provided in multi-page Portable Document Format (PDF).
- Engineered Civil Plans – All engineered civil plans shall be provided in multi-page Portable Document Format (PDF).
- Studies – Studies, such as stormwater and traffic, shall be provided in Portable Document Format (PDF).

Please contact me if you have any questions or comments.

Sincerely,

/s/ electronically signed Feb. 28, 2022

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