LEE'S SUMMIT
MISSOURI

PUBLIC WORKS ENGINEERING DIVISION

Date: Monday, May 14, 2018

To:

PHOENIX ENGINEERING & SURVEYING LLC
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Fax #: (660) 429-1801

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

Application Number:	PL2017195
Application Type:	Engineering Plan Review
Application Name:	Whispering Woods 1st Plat - Streets, Stormwater, Master Drainage Plan, Traffic Improvements, School Entrance, and Erosion and Sediment Control

The Development Services Department received plans for this project on May 3, 2018. We have completed our review and offer the following comments listed below.

- Resubmit three (3) full size sets of plans (no larger than 24"x36") folded to 8-½"x11", one (1) comment response letter, and one (1) digital copy following the electronic plan submittal guides as stated below.
- Revised plans will be reviewed within five (5) business days of the date received.

Engineering Review

1. Master Drainage Plan: What does the hatch pattern symbology represent? Is this the extent of the 100 year FEMA floodplain? If so, the grading plan on Sheet 5 of 29 does not show explicit contours called-out (i.e., no elevations are given) for grading within the floodplain. These contours must be explicitly called-out.

2. Master Drainage Plan: Elevations of the 100 year base flood elevation appear to be missing. The Master Drainage Plan must explicitly call-out the 100 year base flood elevation along select intervals within the floodplain.

3. Master Drainage Plan: The scale shown is 1 inch equals 70 feet. This is not a normal engineering scale, and must be changed.

4. Master Drainage Plan: Finish grade elevations at the northwest corner of Lot 1 appear to show the 100 year water surface elevation will encroach upon Lot 1. We are assuming the 100 year water surface elevation at this point is equal to the base flood elevation of the floodplain at this point. If this is the case, this contradicts your statement that all of the lots will be removed from the FEMA floodplain by a CLOMR-F.

5. Master Drainage Plan: What is the design flow within the swale?

6. Master Drainage Plan: What is the 100 year water surface elevaton within the water quality basin? It is neither shown, or called-out in terms of elevation. Please be aware that simply assuming that a 100 year storm event will create a rise in the floodplain equal to the base flood elevation is not necessarily correct. The basin should be evaluated in terms of the 100 year water surface elevaton, adequate emergency spillway design features instituted in accordance with Section 5600 of the Design and Construction Manual, and a minimum separation of 20 feet from the 100 year water surface elevation, and any property line.

7. The stormwater report discussed that the outlet structure of the water quality basin would be served by a single 24 inch pipe. We do not believe this pipe is sufficiently large to manage a localized 100 year storm event, assuming 100% clogging of the primary outlet works (i.e., all the orifices other than the emergency spillway) and zero available storage. Simply assuming that the water quality basin will be inundated during all 100 year storm events is not realistic. It is entirely possible that a local event would cause the basin to overtop and fail, while the stream is below the 100 year base flood elevation.

8. Was the MARC manual consulted for designing the water quality orifices and computing the water quality volume? It does not appear this was done.

9. The HY-8 analysis does not appear to show the design storm. This must be shown and discussed in the report and plans.

10. How was the peak flow determined for the HY-8 analysis? The only information presented in the report is a summary. Calculations must be provided. Any backwater effects upstream of the culvert may present off-site flooding issues, and any increase in the 100 year water surface elevations must be analyzed to determine their effect on upstream property owners. In other words, the base flood elevation on off-site properties cannot exceed existing conditions, and any increase on the project site cannot exceed 1 foot.

11. Sheet 7 of 29: The symbol shown in the legend for silt fence still does not match what is shown in the plans. This must be corrected.

12. Sheet 7 of 29: A final restoration plan is briefly mentioned in the notes, with no mention of the removal of inlet protection, silt fence, etc.

13. Sheet 7 of 29: Turf reinforced mats are briefly discussed, and we agree there are instances where this should be incorporated into the design. However, there is no such design, location, dimensions, material call-outs specifying where and when this will be installed.

14. Sheet 7 of 29: The note concerning sediment traps states that "...sediment traps to be removed". This

contradicts your statement that the sediment trap will be cleaned out and converted into the water quality basin. This must be explicit in terms of what, where, when, and how. Finally, the sediment trap must be clearly labeled on this sheet.

15. Typical Section Views for Streets: Base course should be specified as Type 5. Surface course should be called-out as Type 5 or Type 6.

16. Typical Section Views for Streets: It appears there is a segment of River Run Dr. which is a Residential Collector. Show the stationing to and from for the portion which is a Residential Collector, as well as the stationing for the Residential Local.

17. The width of the Residential Collector is shown as 33 feet. Where was this width obtained?

18. Is another field inlet warranted at the northeast corner of Lot 28? It appears there may be drainage issues due to the upstream drainage to this point. The response to comments stated that it is not necessary, but it would appear there is more drainage area than 2.14 acres as stated, upstream of this swale?

19. Despite requests to provide design calculations for rip rap, they were not provided. In addition, it appears there are instances where inlet control, and hence, supercritical flow will occur in the pipe, and special energy dissipation measures provided at the end of pipe. Rip rap would appear to be inadequate in these instances.

21. Underdrains are called out, but no specific detail is mentioned on the plans. Standard drafting methods would indicate that a specific design detail be referenced on the plan view, along with the sheet number or other method which clearly shows which detail is being utilized for the underdrain.

22. Sheet 13 of 29: An overstrike error is evident on the profile view.

23. ADA-Accessible Ramp Detail Sheets: Why are side tapers shown? They appear to serve no purpose other than create additional maintenance issues for the City. Please remove. If there are any questions concerning this item, please refer to the standard details located on the website showing ADA-accessible ramps. These generic details show how ADA-accessible ramps should be constructed in the City of Lee's Summit. However, specific design details must be presented for each ramp rather than using these generic details.

24. Please see the bullet point items included in Section 5304.8 of the Design and Construction Manual. ADA-accessible ramp designs should be presented in the plans with the minimum required information presented in Section 5304.8.

25. It appears that many of the ADA-accessible ramps should be modeled on the Type B Sidewalk/Shared Use

Ramp shown on the City of Lee's Summit website, while others should be modeled on the Type A Sidewalk/Shared Use Ramp shown on the City of Lee's Summit website. The ADA ramp details shown in the plans do not conform to either of these standard ADA ramps in use within the City.

26. Please ensure the locatons of tactile warning strips be shown and dimensioned on the ADA ramp details.

28. Sheet 19 of 29: The hydraulic grade line was not shown, nor the design storm for the new box culvert.

29. Sheet 19 of 29: No details were provided for the new box culvert other than a simple schematic.

30. Many of the storm lines are shown with hydraulic grade lines extending above the top of the pipe. Why was this design selected for a 10 year event? Standard practice in the City of Lee's Summit is to design these storm lines with a minimum of the 10 year event below the top of the pipe. This design appears substandard.

31. Sheet 22 of 29: FES-G1 is shown abruptly dropping off into the water quality basin, with inadequate energy dissipation. This pipe will likely flow supercritical at all times, and standard energy dissipation measures such as rip rap are likely inadequate.

32. A separate sheet must be presented for the detention basin and outlet structure. It must shown the detailed grading plan within the basin. It must show the location of the outlet structure. It must show where the trash guard will be placed. It must show the materials of construction for the outlet structure, including steel reinforcement. In short, it must show how, where, when, and what is being constructed.

33. As previously discussed, we do not feel that the 24 inch exit pipe is sufficient to manage a 100 year storm event, assuming 100% clogging of the primary outlet works. It is not clear whether the open top weir is adequately sized for the 100 year event. It is not clear whether 1 foot of freeboard is maintained between the 100 year water surface elevation, assuming 100% clogging of the outlet structure, and the top of the dam.

34. Please review Section 5600 for specific design requirements for detention basins. It appears there is confusion on this issue in terms of emergency spillway design, freeboard requirements, and calculation of the water quality volume and design of the orifice system to provide 40 hour extended detention.

35. No further review shall be peformed on the water quality basin until revised plans have been submitted. It is likely that the fundamental design will change.

36. Sheet 29 of 29: Please include only those underdrains being used on the project. Ensure the plan view references the correct detail.

37. Sheet 27 of 29: The KCMMB concrete should extend a minimum of the top of the cone section of the manhole. As shown, the concrete is shown on top of fill. Also, the asphalt type is incorrect. It should read as Type 5 or 6 for surface course. Finally, the asphalt base course should be 5.5 inches since these manholes will be installed in the Residential Collector portion of the project.

38. Since the underground storm line system is designed for a 10 year event, where are the emergency overflow swales between lots? Shouldn't the swale designated on the Master Drainage Plan be designated as an emergency overflow swale? Shouldn't there be other emergency overflow swales designated and shown on the Master Drainage Plan between lots where the underground system is not capable of managing the 100 year event?

39. It appears an ADA-accessible route across SW River Run Rd. is shown where it should not exist (i.e., a grade change in the road is proposed to accommodate a 1.5% accessible route across the road). There is no stop control on SW River Run Rd. at this location. The route should follow street grade at this location (i.e., the street grade should remain constant at this location).

40. A floodplain permit shall be required prior to approval of the plans.

41. Resubmittal and approval of the water line plans shall be required prior to approval of these plans.

42. Submittal of the off-site sanitary and off-site water line plans shall be required prior to approval of these plans.

43. A copy of any United States Army Corps of Engineers permit (if required) shall be required prior to approval of these plans.

44. It appears some form of drainage at the intersection of SW River Run Dr. and Pryor Rd. will need to be established, since the sag point occurs west of the inlet. Appropriate energy dissipation should be incorporated into the design.

Traffic Review

1. Include all City's standard details for signing and marking. All marking symbols, stop lines, crosswalk lines, diagonal lines shall be preformed thermoplastic in conformance with City specifications. All longitudinal markings shall be high-build paint in conformance with City specifications.

2. The Pryor Layout and Pryor Marking/Signing Plan appears to be missing some line work from the drawings.

3. There should be a typical section for Pryor Road widening that details the pavement design.

4. The Pryor Road improvements should detail the saw cut with dimensions and avoid sharp angles in paving

(typically a minimum 2' wide cut).

5. The left-turn lane entry taper shall be 150' in lenght with 150' reverse curve radii. The 150' straight taper for the right-turn lane is okay.

6. The 24" Diagonal Lines shall be spaced at 45' in compliance with the Standard Details.

7. The end of the striped median opposite the left-turn lane should be properly terminated with a double yellow semi-circle rather than open ended. Show the marking and radius dimension, center reference notations on the plans.

8. Street signing should indicate the names of street for each street name sign (both streets shall have a street name sign at each intersection per standard detail; four total street name signs typical application for each intersection on square steel post).

9. The Object marker signs should indicate four signs evenly spaced at the end of road "typical end of road sign treatment".

10. General horizontal alignment control detail is missing for all alignments, including Pryor Road (e.g. Control Points, Benchmarks, N/E, Bearings, Radii, etc.).

11. Do not use "Only" symbols, revise plan per standard detail.

12. The southbound lane shift taper along Pryor after the intersection appears short of the minimum required for 45 mph. The approach lane shift for southbound north of the intersection appears okay.

13. The sidewalk(s) approaching Pryor Road should be tied to the paved shoulder similar to other intersections along Pryor Road with paved shoulder/sidewalk.

14. Sidewalk along the north side of River Run should be extended through the collector transition across Lots 4, 5, 6, and 7 as a more logical termination of pedestrian accommodation.

15. The transition from CG-1 to CG-2 should be noted on the plans rather an agreed upon location. Recommend the transition occur over a specified distance somewhere near Station 8+00 as a more logical change after the full collector width has been completely narrowed to local street.

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

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 on CD in the following formats

- Plats – All plats shall be provided in Tagged Image Format File (TIFF) Group 4 compression.
- Engineered Civil Plans – All engineered civil plans shall be provided in Tagged Image Format File (TIFF) Group 4 compression. All sheets shall be individually saved and titled with the sheet title.
- Architectural and other plan drawings – Architectural and other plan drawings, such as site electrical and landscaping, shall be provided in Portable Document Format (PDF).
- Studies – Studies, such as stormwater and traffic, shall be provided in Portable Document Format (PDF).
- It is requested that each plan sheet be a maximum of 2MB.

Please contact me if you have any questions or comments.

Sincerely,

Original Signed

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cc: Development Engineering Project File