



PUBLIC WORKS ENGINEERING DIVISION

Date: Monday, June 25, 2018

To:

PHOENIX ENGINEERING & SURVEYING LLC

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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, and ESC

The Development Services Department received plans for this project on June 14, 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 8-1/2"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: We had requested that the hatch pattern within the floodplain be defined. Although the response to comments states this is the limit of the 100 year floodplain, there is no indication of this on the Master Drainage Plan, and the cross-hatched pattern has now been removed.
2. Master Drainage Plan: There appears to be a line within the floodplain (i.e., wide line width) with no definition. What does this line represent? What is the purpose of showing this line? Please be aware that a legend must be provided. Without it, there is no way to determine what these lines represent.
3. Master Drainage Plan: The cross-hatch pattern appears to have been omitted from this version of the Master Drainage Plan. Although not specifically required to be a cross-hatched pattern like the previous submittal, the 100 year floodplain, as it currently exists, should be shown. Notes should be provided stating that this area shall be revised per a LOMR-F issued by FEMA, along with the new limits of the 100 year floodplain. As conditioned in the Preliminary Plat process, all lots were to have been removed from the 100 year floodplain. It is important that this be shown in some way, with a clear indication of where these new floodplain limits will exist.
4. Master Drainage Plan: Base flood elevations are called out for each lot, but is this really appropriate? This

will trigger the requirement that an elevation certificate be submitted for each lot abutting the floodplain, and this is not the intent. Again, all lots must be outside of the revised floodplain following issuance of the LOMR-F from FEMA. The base flood elevations should be shown along a cross-section of the creek, rather than at the corner of the lot.

5. Master Drainage Plan: The MBOEs shown on the table do not appear to make sense in terms of providing "good lot grading practice" in the back of the lots abutting the creek during preparation of plot plans during the building permit phase. A minimum of 2.0% grade is required from the low opening to the rear of all lots. It does not appear this was taken into account when calculating the MBOE for each lot abutting the creek. For instance, Lot 4 shows an MBOE of 959.6. The rear lot corner elevations are 959.95 and 961.00. This makes no sense.
6. Master Drainage Plan: The MBOEs shown on the table may be further expanded if desired to a right MBOE and a left MBOE, as looking into the lot from the street. Regardless of whether this alternative is desired, the location of the 100 year water surface elevation for lots adjoining the swale must be shown on both corners of the lot. This is due to the slope within the swale, and subsequent changing of the 100 year water surface elevation within the swale as measured from the upstream side, to the downstream side. Please be aware that if using only one MBOE, the most conservative (i.e., the highest 100 year water surface elevation along the lot) must be used to determine the MBOE for the lot.
7. Master Drainage Plan: The emergency overflow swale does not appear to be a swale, but rather, an area where a berm is located, with no grading associated with a swale. A swale must be shown, along with appropriate contours showing a swale rather than a berm, and cross-sections must be shown, along with design flows, slopes, etc.
8. Master Drainage Plan - For General Information Purposes Only: Please be aware that MBOEs shall be required for each lot during subsequent phases of this development (i.e., Phase 2 and beyond), rather than as deemed necessary by the design engineer. The City is now enforcing this existing requirement for all lots within subdivisions going forward. The design engineer is responsible for ensuring that the MBOE given for each lot is appropriate for the estimated building placement in the future, basement type, finish grades, good lot grading practice during development of the plot plan, etc.
9. Storm Drainage Study dated June 6, 2018: It appears the box culvert beneath SW River Run Dr. was designed for the 10 year event. The City of Lee's Summit's Unified Development Ordinance (UDO), "Overlay Districts - Floodplain" requirements contain the following requirements: "...until a floodway is designated, no new construction, substantial improvements, or other development, including fill, shall be permitted within any numbered A zone or AE zone on the FIRM, unless it is demonstrated that the cumulative effect of the proposed development, when combined with all other existing and anticipated development, will not increase the water surface elevation of the base flood more than one foot at any point within the City." It appears, therefore, the box is incorrectly sized. It appears the 100 year event shall increase the base flood elevation upstream of the box culvert by more than one (1) foot. The statement within the stormwater report dated June 6, 2018 "...the point of primary concern is at the property boundary where no rise in the 100 year water surface is allowed", although partially correct, is not completely valid. It should also be noted that if a floodway is established for a particular point, then a

No-Rise study and No-Rise Certificate would be required, which is in excess of that which is required for this particular situation. In other words, it appears the wrong logic was used to determine what size storm event would be appropriate for this RCB. It appears the 100 year event should have been utilized in the calculations. This comment was provided in the previous comment letter, and it is unclear why this was ignored.

10. Stormwater Study dated June 6, 2018: Please see previous comment concerning the RCB. The 100 year (i.e., the 1% annual chance event) should have been modeled. Without the 100 year event being modeled, there is no way to determine what the upstream effect of the culvert will have on existing base flood elevations. Please see previous comment letter for specific comments related to these requirements.
11. Stormwater Study dated June 6, 2018: The conclusions and recommendations section of the report lacks a discussion of the RCB box culvert at SW River Run Dr.
12. Erosion and Sediment Control Plan: What kind of turf reinforcement mat is being proposed? What are the area dimensions, horizontal dimensions, etc.? Please be specific concerning the placement and material type for these areas.
13. Sheet 7 of 29: We still do not see a call-out or label showing the location of the sediment basin. Other deficiencies concerning the sediment basin include: 1) lack of the location of the stand pipe, 2) elevation call-outs for the stand pipe within the sediment basin, 3) design details concerning the stand pipe and any associated stone in front of the stand pipe, 4) all other design elements necessary for an inspector or contractor to be able to install and inspect, and 5) a discussion within the body of the stormwater report which provides justification for the elimination of an emergency overflow spillway.
14. Sheet 5: The grading within the emergency overflow swale does not show a swale, but rather, a berm. As an emergency overflow swale, this must be installed as a swale. Contours should show a swale. Typical section(s) view(s) must be provided, along with slope call-outs, design flows, dimensions, etc.
15. Sheet 5: Grading Plan: The bottom of the water quality basin appears to be flat. A 2% minimum slope must be provided in all directions to facilitate drainage. Standing, stagnant water is considered a nuisance, and will lead to mosquitoes and public health concerns. It is also required by the Design and Construction Manual.
16. The inlet pipes to the water quality basin appear to be very close to the outlet. It is unclear why this was done, since normal procedure is to place the outlet pipe as far as practical from the inlet pipes. In other words, it does not appear this is an appropriate design for a 40 hour extended detention water quality basin. A new design appears warranted.
17. It does not appear that a sediment forebay was shown within the 40 hour extended detention basin. A method to drain the sediment forebay should be shown, so to avoid standing water greater than 40

hours. The sediment forebay should be designed to allow a suitable location to clean out the basin (i.e., sediment) on a regular basis. There are examples of an appropriate sediment forebay contained within the MARC manual for installation of sediment forebays, and they should be installed near the inlets (i.e., the incoming pipes draining into the basin), with sufficient depressions and underdrains.

18. Sheet 9: Biodegradable log ditch checks are shown, but the plan sheet does not appear to show their location. Please show the location of these features.
19. Sheet 20: The ADA-accessible ramp detail shown in the upper left hand corner should be labeled as "Terrace" rather than "Dr."
20. Sheet 20: There are at least three (3) instances where the longitudinal slope is greater than allowed by Section 5304.8. The design slope should be no greater than 7.5%.
21. Sheet 20: Cross-sectional views in accordance with Section 5304.8 were not provided for the ADA-accessible ramps. In accordance with Section 5304.8: "Cross sections of the ramp. Section A-A will be along the long axis of the ramp. Section B-B will be across the width of the ramp. Section C-C will along the curb opening of the ramp."
22. Sheet 21: Rip rap is shown at the end of storm line A. No dimensions, rip rap type, thickness, etc. is shown on the plan view. Please be aware that we are not going to allow a table to take the place of a graphical representation of the rip rap on the plans. Table lookups in the field are not acceptable either from the inspection standpoint, or the construction standpoint.
23. Sheet 5, Grading Plan: No existing elevation call-outs are evident. Please show elevations of the contours in key locations. Ensure there enough elevation call-outs within the FEMA floodplain.
24. Sheet 5, Grading Plan: Where is the existing 1% annual chance floodplain? This should be clearly shown on the grading plan. We are estimating that the base flood elevation for the 1% annual chance storm in the area adjacent to the RCB beneath SW River Run Dr. is approximately 960.0. The final stormwater study must: 1) demonstrate that the installation of a box culvert and beneath SW River Run Dr. and associated grading will not increase the existing base flood elevation by more than 1.00 feet anywhere on the site, and 2) the installation of the box culvert and associated grading activities will not increase the existing base flood elevation off-site by more than 0.00 feet.
25. Please be aware that a City-issued floodplain permit application must ultimately be submitted to the City, along with all supporting documentation, reports, plans, and model runs. The City Engineer is the designated floodplain administrator for the City of Lee's Summit, and must sign the floodplain permit prior to any grading, development, construction, or other development activities as defined by the floodplain ordinance, within the floodplain.

26. Sheet 22, Box Culvert at SW River Run Dr.: The box culvert must be designed to HL-93 standards. Please provide notes on the plans stating the box culvert will be designed to these standards.
27. Sheet 22, Box Culvert at SW River Run Dr.: It is the City's belief that the box culvert is undersized. It is only designed for the 10 year event, and as such, headwater depth for the 100 year event will most likely cause an increase in the existing base flood elevation greater than 1.00 feet, a direct violation of the City of Lee's Summit floodplain ordinance. Please be aware that if a floodway was associated with this box culvert, a No-Rise analysis and certificate would be required showing 0.00 feet rise in the base flood elevation, which is even more stringent than the 1.00 requirement.
28. Sheet 22, Box Culvert at SW River Run Dr.: A note must be added that the City shall also review the shop drawing prior to approval of the pre-cast structure(s).
29. Sheet 23: Specific design details for the rip rap must be shown in graphical format on this sheet. A table is not sufficient. Please see previous comments related to specific requirements for rip rap detailing on the plan sheets.
30. Sheet 25: Please see previous comments related to design details for the rip rap at the end of pipe.
31. Sheet 26 and Sheet 27, 40 Hour Extended Detention Basin: The following deficiencies were noted in the design details: 1) lack of any detail showing how the standpipe will be constructed (need a larger detail showing how this will be constructed), 2) lack of a method used to prevent clogging of this standpipe (rock piled up against the standpipe will not be effective in providing anti-clogging of this standpipe in our opinion), 3) lack of elevations of the orifices on the standpipe presented in a clear manner, so that the inspector and contractor can readily interpret in the field, 4) notes concerning the connection of the trash rack onto the outlet structure, including any additional information needed such as connection method, bolts, tie bars, or whatever else is necessary to provide a secure connection point.
32. Stormwater Report Comment: It is unclear from the report what the purpose of the open topped outlet structure serves. Is this intended to act as an emergency spillway, in the event that the primary outlet orifices (i.e., the smaller orifices for 40 hour extended detention) are clogged? We agree this is a good idea, but it was our understanding that due to the nature of the grading for the basin being largely below existing grade, a true emergency spillway as described in Section 5600 would not be required. A thorough discussion of these issues should be included in the report, including the purpose of this open-topped weir.
33. Sheet 26, Detention Pond Details: Grading within the bottom of the 40 hour extended detention basin must be a minimum of 2% in all directions. Please see previous comments related to this issue.
34. It was our understanding that a flume was going to be constructed near the intersection of Pryor Rd. and SW River Run, to direct stormwater which cannot enter the curb inlet. Is this still

35. A typical section view must be provided for the off-site traffic improvements. Notes are not sufficient. Please use the existing typical sections provided elsewhere in the plans as a guide. Appropriate stationing must be shown, along with all other information necessary to construct and inspect.
36. Sheet 10: Off-Site Traffic Improvements at Pryor and SW River Run Dr.: A grading plan is required for the ditches to the east of the widening project. Notes are not sufficient. A minimum 2.0% slope is required in the longitudinal direction. Side slopes must meet City standards from the edge of the shoulder, to the bottom of the ditch.
37. Please add a note to the ADA ramp plan stating that all ADA-accessible ramps shall be installed with the subdivision improvements.
38. Please show, in a clear manner, where sidewalk will be installed along all common area tracts, and along the School District property.
39. Master Drainage Plan and Grading Plan: In addition to the floodway fringe, show the location of the floodway. Ensure no grading, fill, or other prohibited activity is taking place within the limits of the floodway. Our initial review shows there may be encroachment into the floodway, based on an overlay of the FEMA maps. No fill or development of any kind can take place within the limits of the floodway, unless a study and No-Rise certification is prepared, and approved by the City.

Traffic Review

1. City standard signing details should be included in the plans.
2. Typical section that provides the pavement design for Pryor Road widening should be provided in the plans. Typical sections should show 4:1 slopes not 3:1 slopes.

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