LEE'S SUMMIT
MISSOURI

PUBLIC WORKS ENGINEERING DIVISION

Date: Tuesday, June 19, 2018

To:
GEORGE BUTLER ASSOCIATES INC
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From: Gene Williams, P.E.
Senior Staff Engineer

Application Number:	PL2018074
Application Type:	Engineering Plan Review
Application Name:	The Grove - Mass Grading and Stormwater Plans

The Development Services Department received plans for this project on June 12, 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. The "Final Stormwater Management Study" dated June 8, 2018 contains a confusing statement in the first section (page 4). Please clarify that the composite curve number of 74.76 for the proposed site is the "existing condition curve number for the proposed site" (or equivalent language).

2. Page 8 of the Stormwater Study: Table 6 includes a column for the "100 year Low Flow Bypass". What does this mean? Is this supposed to represent the 100 year clogged condition? If so, shouldn't the elevation be 1010.4 as shown elsewhere in the report? Does this represent something else?

3. Page 9 of the Stormwater Report: The second to last paragraph on this page refers to "...a rip rap basin to be constructed to reduce the effects of downstream erosion". Shouldn't this refer to a rip rap stilling basin, designed in accordance with HEC-14, third edition? Where are the design calculations for this stilling basin?

4. Page 10 of the Stormwater Study: Since this a summary and recommendations section, we need to see a specific statement that the retention basin meets or exceeds the requirements of Section 5600 of the Design and Construction Manual, and in particular, the Comprehensive Control Strategy listed in this document.

5. As discussed in your response to comment letter, the temporary shoo-fly is currently in design. The plans

cannot be approved until this has been completed.

6. Sheet C4.1: Although the grading for the retention basin is shown, and there are various spot elevatons called-out showing the top of the dam is at 1011.04, there are questions concerning the top of the dam on the east and west side of the retention basin. No elevations were provided in these areas, so questions remain concerning the top of the dam in these areas. Please show the elevations on key contours in these areas, and ensure the top of the dam is designed no less than 1011.04 feet.

7. Sheet C4.1: Although a detailed grading plan has been provided for the retention basin, it appears that the pre-existing drainage patterns will be altered in such a way that the drainage along the dam slope shall be directed directly towards the off-site properties to the south. Without existing contour elevations on the off-site properties to the south, it is difficult to determine whether this will have an adverse impact on these properties. Please show the existing contour elevations of these off-site properties, and provide a means of drainage to these properties which will not have an adverse affect on them.

8. Sheet C5.2: Please show the grading in the vicinity of the outlet structure serving the retention basin. The grading must match what is shown on the detailed grading plan shown elsewhere in the plan set.

9. Sheet C5.2: Addtional cross-section views should be provided for the rip rap stilling basin shown at the end of the triple PPP. Perhaps Section A-A shown longitudinally, and Section B-B, C-C, D-D, E-E, etc. shown transverse? The section lines should be shown on the plan view. In addition, horizontal dimensions were missing on portions of this stilling basin. The overall length and width are provided, but this is not a rectangular basin. Please show all dimensions necessary to build this feature.

10. Sheet C5.5: Is the submerged portion of rip rap at the end of the RCB sufficient for energy dissipation? It appears only 10 feet of rip rap will be available for the submerged portion. What calculations have been provided to support this length? Stormwater discharge at this point will be supercritical, and we feel this is not sufficient for energy dissipation, even though the outlet will be submerged in most instances. In periods of pond elevation being below normal, this will be especially important, since the rip rap will likely fail during the first significant rain event.

11. Sheet C7.2: A depth dimension was missing from the toe wall.

12. Sheet C7.4: The energy dissipator detail is lacking the following details and/or features: 1) additional cross-sections in the transverse direction (see previous comment), 2) rip rap size, based on the design (see previous comment related to design), 3) material used for the toe wall (is this concrete), 4) the leader line on dimension "1.20'" is missing an arrow, 5) method used to drain stagnant water (e.g., perforated drain tile daylighted further downstream?). Finally, we have concerns that the stilling basin length and depth will be sufficient to create a hydraulic jump within the depressed stilling basin. Please see previous comments related to design calculations. Sufficient design calculations must be provided showing how the various dimensions were obtained.

13. Sheet C.7.4: In addition to cross-sectional views of the stilling basin, a larger plan view should be provided for this important feature. This plan view should include all the necessary dimensioning necessary to construct this feature.

14. Were other alternatives explored for energy dissipation at the end of the triple PPP? There may be better ways to provide energy dissipation than a rip rap stilling basin.

15. Sheet C7.8: A west wall elevation view appears to be missing. Are there any weir openings on the west wall?

16. The hydraulic grade line for the clogged condition, 100 year event must be shown within the triple PPP. This is due to the fact that this is the emergency overflow system. The system should be capable of managing this in a regime of gravity flow, in accordance with Section 5603.1 of the Design and Construction Manual. Pressure flow may be allowed on a case-by-case basis, but the City will not support such a request in this instance.

17. For all other storm lines, the hydraulic grade line must be shown for the design storm event. The same criteria as discussed above (i.e., gravity flow) should be shown for each storm line, unless justification can be provided that the storm line can be designed under a regime of pressure flow, and provided that the hydraulic grade line for the design storm is a minimum of 6 inches below the lowest opening in the system.

18. The street crossing at Summit Street (i.e., storm line shown on Sheet C5.5) should be designed for a minimum 25 year storm event, under a regime of gravity flow. The hyraulic grade line for this storm line was not shown, and should be shown on the profile view in the same manner as all other storm lines within this plan set.

19. What is the upstream headwater depth for the 100 year event at the Summit Street crossing? There is concern that this RCB will create a adverse effect on the upstream property.

20. Easements for drainage and water must be provided prior to approval of the plans.

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

Gene Williams, P.E.
Senior Staff Engineer
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cc: Development Engineering Project File