LEE'S SUMMIT
MISSOURI

DEVELOPMENT SERVICES

Date: Friday, February 21, 2025

To: ENGINEERING SOLUTIONS
50 SE 30TH ST
LEES SUMMIT, MO 64082

To: OLDHAM INVESTORS LLC
1700 132ND ST STE 150
OVERLAND PARK, KS 66213

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

Application Number:	PRSUBD20245294
Application Type:	Public Infrastructure
Application Name:	Oldham Village - Mass Grading and Eroison control

The Development Services Department received record drawing documents for this project and we have completed our review 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 five (10) business days of the date received.

Engineer Review - Grading **Reviewed By: Gene Williams, P.E.** **Corrections**

2. Dam height for purposes of applicability to TR-60 is measured from the emergency spillway to the lowest point on the downstream face of the dam at the creek flowline. Discuss within revised stormwater report. Correction required.

3. Dam and retention basin is incomplete. As discussed during the in-person meeting, the dam design shall include cross-sections of the dam, elevation views, foundation details, dimensions and material specifications, materials used in the dam including amount of lifts, types of materials used in each lift, clay core, drainage blankets, etc. Just because the dam may or may not be subject to TR-60 design requirements does not negate the need for a detailed design. Correcton required.

4. Sheet C.300: RCP outlet pipes from the retention basin are shown with excessive slope. Is there a reason for the excessive slope? Correction required.

7. Plunge pool using rip rap, or other high discharge method of energy dissipation is warranted for the detention basin storage. Simple rip rap for three (3) RCP pipes is not going to be an acceptable method of energy dissipation. See comments below concerning the rip rap calculations, which appear erroneous. For large retention/detention basins, this has been an ongoing requirement. Recommend visiting Cobey Creek and examining the energy dissipation measures installed at that location, or the backside of the dam at Discovery Park which incorporates a rip rap-lined plunge pool. Correction required.

8. Details are now provided on the retaining walls, but there will be considerable banter especially on the higher walls. This was not shown on the plan view, but rather, a simple line. The banter will encroach upon the limits of the curb inlets shown on top of the retaining wall, as well as the storm line along the west side of the project parallel to the retaining wall. It is possible this banter will encroach-upon other features. The retaining wall viewed in plan view cannot be represented by a single line. Correction required.

9. A geotechnical report shall be prepared to support the retaining wall design, dam design, borrow areas, foundation of the dam including any test borings, soil conditions, compaction requirements, and third party testing required duriing construction. Correction required.

11. Sheet C.201: Emergency spillway is shown with potential discharge over the primary outlet works. This does not appear to meet any design standards for dams. I do not agree the location shown is the best location for an emergency spillway, and it would appear other alternatives are available. Be aware that earthen emergency spillways are not the only method to provide emergency spillway for a retention basin. Correction required.

17. Where are the steps for the outlet structures? Notes are not sufficient (i.e., "steps at 16 inch o.c." is not sufficient. We need to know where the steps are located in graphic format, not a note. Correction required.

18. Sheet C.211 shows a steel detail (i.e., Wall Corner Detail) which is illegible. Correction required.

20. It appears the majority of the dam grading on the front side has been steepened to 2:1 slope, which is not going to be acceptable without a geotechnical study and report. It appears this was changed without any discussion, notation, or explanation. Correction required.

31. Plunge pool or other high discharge method of energy dissipation is warranted for the detention basin storage. Simple rip rap for three (3) RCP pipes is not going to be an acceptable method of energy dissipation. See subsequent comments in this letter concerning the design discharge used in your calculations which appear incorrect. Complete design with details is required. Correction required.

32. We will need additional design details on the retaining walls. As shown in your typical section view, it would appear geogrid will be extended into the large stormwater pipe along the west side of the project, which would be a problem. Additional dimension callouts on the typical section view are required to assess such items as: 1) whether the shared-use path is within the limits of the retaining wall foundation, 2) whether the retaining wall foundation is part of the dam's zone of influence, 3) whether the large stormwater pipe will be within the geogrid, or worst case if the banter causes the stormwater line to be within the retaining wall itself. Correction required.

41. Where are the steps for the outlet structures? Correction required.

43. Have you received any documentation from the USACE about jurisdictional waters? We will need to see this prior to formal approval. Informational comment.

47. Final review of cost estimate to be completed at a later date, after review of final plans. Informational comment.

49. You are showiing the creek entering the basin on the southeast corner without any control structures such as a large field inlet or other structure, channels, or other methods to achieve a smooth transition to the retention basin. As shown, severe erosion will take place on the 33.3% slope, and backcutting within the first year will erode the channel back to the property line or over the property line. A method to control the incoming drainage is required. Corrections required.

50. Sediment forebay required for a retention basin with permanent pool. See Design and Construction Manual for specific details. Correction required.

51. 5608.5A4 of the Design and Construction Manual states that side slopes within wet detention basins (i.e., retention basins) shall conform to the natural grade as closely as possible, but in no case shall be greater than 3:1. If greater than 3:1 slope, it would only be supported with additiional safety measures to prevent drowinng, additional erosion control, and a geotechnical report supporting the waiver. If the area of excessive slope is within the zone of influence of dam, shared use path, or retaining wall, the geotechnical report would be required to address. Informational comment.

52. It appears the majority of the dam is being constructed on Park property. Parks will not allow a private dam on their property. All dam and associated outlet works and dissipation measures shall be contained on-site unless a suitable agreement is developed. Correction required.

53. Looking at the grading along the proposed retaining wall, it appears a portion of the retaining wall is part of the dam. Geotechnical report should address this aspect. Informational comment.

54. It appears additional grading information in the form of elevation callouts is needed on the north side, at the intersection of the two retaining walls. This area appears to be part of he dam structure, and if so, shall be subject to all ldesign and construction requirements. Correction required.

55. It appears the stormwater detention design parameters in almost all cases were pushed to the limit on freeboard and storage requirements. Suggest increasing the freeboard and storage to allow for tolerance. Correction required.

56. What is the plan for diverting stormwater during construction of the dam? A phasing plan should be developed within the plan set showing how stormwater will be managed while constructing the dam. It shall be capable of managing the 100 year event. Correction required.

57. A storm pipe exiting an existing detention basin to the north is not shown, and it is not clear how this storm line will be incorporated into the overall drainage design for the site. This is the storm line running from the existing detention basin and exiting to the southwest towards the residential subdivision. Correction required.

58. Contours shown in the vicinity of the ADA ramp near the emergency spillway do not make sense. For instance, you are showing the top of dam at 1004.5 at a point, but the contours indicate the elevation is closer to 1003.5. In addition, a contour is shown at 1004, but inexplicably the contour changes to 1003 with no transition (i.e., the line "splits" and what was once 1004 is now an impossible 1003). Correction required.

59. You appear to be missing contours in the vicinity of the ADA-accessbile ramp near the emergency spillway. As shown, contours end abruptly, with no transition shown. As previously commented, all elements of the dam shall be thoroughly detailed, including any ancilary features such as an ADA-ramp that has been incorporated into the dam. Correction required.

60. GIS records indicate there may be a storm line entering from the south. It appears to be an 18 inch private storm line draining the existing detention basin to the south. Show its location, and how the stormwater flows will be directed into the basin. This flow should be directed underground to eliminate backcutting that will occur if left to sheet flow over a 33% slope. Correction required.

61. Sheet C.211: The detail for the unnamed inset (i.e., the detail showing the trash rack for the water quality orifices) is illegible. It is also lacking the definition of A, B, and C, and the orifice diameter. Correction required.

62. Sheet C.211: Section view in lower right hand corner of this sheet is showing 3:1 slopes througout the entire dam face. This does not match your plans. Geotechnical report and study should be used to determine this slope based on the materials and site conditions. Correction required.

63. Rip rap design is based on 158 cfs as shown on Sheet C.211. Stormwater report is showing a significantly different design discharge for the retention basin. Correction required.

64. According to the incomplete grading details on the backside of the dam near the discharge point, it would appear you are proposing to match existing grades and existing foliage such as trees. Is this good engineering practice to leave tree roots within a dam? It has been my experience leaving tree roots and trees within a dam will lead to long-term issues such as piping. Evaluation and correction required.

65. A SWPPP is required prior to formal approval of the project. Informational comment.

66. Retaining wall is shown immediately abutting the 10 foot shared-use path along the north side of the pond. Typical section view of the retaining wall appears to show an unspecified flat area of unspecified distance in front of the first segmental course. It would appear additional distance was not accounted-for in the distance needed to install the 10 foot shared-use path. Correction required.

67. You are showing the ADA-ramp connecting to the Park property, but the ADA-ramp is shown with a retaining wall which is part of the dam. As previously commented, the dam should be independent of any structure(s), and retaining walls constructed within the limits of the dam shall require analysis. Correction required.

68. Reviewing the existing grades along the southwest corner of the retaining wall intersection (i.e., the intersection of the north/south retaining wall and the east/west retaining wall), the retaining wall and associated grading to the west of the retaining wall appears to be part of the dam embankment, and thus part of the overall design of the dam. As such, this shall be addressed in the geotechnical study and report. Correction required.

69. Recommend a meeting to discuss. Plans are incomplete. Informational comment.

Please contact me if you have any questions or comments.

Sincerely,

Gene Williams, P.E.
Senior Staff Engineer
(816) 969-1223
Gene.Williams@cityofls.net

cc: Development Engineering Project File