

**PUBLIC WORKS ENGINEERING DIVISION**

**Date:** Tuesday, May 15, 2018

**To:**

SCHLAGEL & ASSOCIATES

Mark Breuer, P.E.

Email: mab@schlagelassociates.com

Fax #: (913) 492-8400

**From:** Gene Williams, P.E.

Senior Staff Engineer

**Application Number:** PL2018066

**Application Type:** Engineering Plan Review

**Application Name:** Winterset Valley 12th Plat - Street, Stormwater, Master Drainage Plan, and  
Erosion and Sediment Control

---

The Development Services Department received plans for this project on April 23, 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. Sheet 2: The north arrow appears mis-oriented. Also, wouldn't it be better to orient north so it matches the other plan sheets? As presented, it is very confusing to use in the field. We recommend Sheet 2 General Layout be re-oriented with north facing the top of the sheet, and the scale changed slightly to allow the General Layout to be shown on one sheet.
2. Sheet 2: The project location doesn't really convey any useful information. Wouldn't it be better to show some street references? Section, township and range information is of little use to the contractor or inspector.
3. Sheet 3: Cross-sections are required for swales of no more than 50 feet spacing, and additional cross-sections at structures, and intersecting drainage systems. A generic detail is not acceptable.
4. Sheet 3: The table showing the various design parameters of the 100 year overflow swales shows what appear to be bottom widths and top widths and side slopes with virtually no depth. If using the figures shown on this table, they do not appear to match the contour elevations. The contour elevations show a more pronounced and more "normal" swale. The dimensions shown on the table show what appear to be extremely shallow swales, based on the information provided.

5. Sheet 3: Note 2 on the lower left hand corner of the sheet states that "...individual plot plans may alter the constructed swales in elevation from the grading plan as long as the MBOE is adjusted". We do not agree with this statement. The swales shown on the Master Drainage Plan cannot be altered without specific application and approval by the City Engineer.
6. Master Drainage Plan Comment: The basement type (i.e., standard, daylight, or walkout) must be specified for each lot.
7. Sheet 3: There appear to be several drafting issues with this sheet. Proposed contours are not shown tying into existing contours. If showing a proposed contour tying into existing grade, it should terminate at the existing contour if the same elevation?
8. General Comment on Sheet 3: Is the grading plan part of the Master Drainage Plan? While a separate grading plan is good, many of the required features of a Master Drainage Plan are shown on this sheet, such as MBOEs, drainage swales, etc. These items should be combined with the Master Drainage Plan.
9. Sheet 13: Master Drainage Plan: Existing and proposed elevations at lot corners must be shown.
10. Sheet 13: Please see previous comment concerning the requirements of a Master Drainage Plan. Drainage swales, cross-sections of drainage swales, design flows within drainage swales, overflow routes, 100 year water surface elevations, MBOEs, basement type, etc. must be shown on the Master Drainage Plan.
11. Sheet 3: Grading Plan: It may be better to remove the details for swales, MBOEs, and other features reserved for the Master Drainage Plan, and place them later within the plan set. Normally, the Master Drainage Plan consists of 2 to 3 sheets total, with all of the required information contained on these sheets.
12. Sheet 3: Grading Plan: What is the plan for drainage along the rear of Lots 1435 through 1438? It appears there may be issues without an engineered underground system.
13. A stormwater detention memorandum should be submitted which discusses the reasons why detention is not being proposed for this phase of the subdivision.
14. A profile view of the retaining wall is required.
15. Will the retaining wall be designed so stormwater is allowed to sheet flow over the top, or will the retaining wall be designed with a swale to divert stormwater? It appears stormwater will sheet flow over the top of the wall?

16. Sheet 4: Drafting issues exist on this sheet, where proposed contours tie into existing contours. It appears the majority of the proposed contours terminate beyond the existing contour?
17. Sheet 4: Will there be any turf reinforcement mat for the area northwest of Lot 1451? It appears this may be necessary to provide a stabilized slope.
18. Street Plan and Profile Views: There appear to be several sag locations where the k value is below the minimum value. Please review and adjust as necessary.
19. Sheet 9: Intersection Details: This sheet is incomplete and no further review is provided at this time.
20. ADA-accessible ramp details are missing. Standard details should be removed, and site-specific plans must be provided. Ensure that all bullet point items contained in Section 5304.8 of the Design and Construction Manual are provided. In addition, refer to Table LS-5 contained in Section 5300 for specific design criteria for running slope, cross-slope, turning space, etc.
21. Ensure that no ADA-accessible ramp includes side tapers unless absolutely necessary. In most cases, side tapers can be eliminated completely, and grading can be performed or side curb installed. Please see the generic standard details shown on the City of Lee's Summit website for a guide to designing these ADA-accessible ramps.
22. Sheet 10: CMP end sections are called-out in the Storm Sewer Construction Notes. Why is CMP end sections called-out? HDPE should be called out for HDPE pipe.
23. Sheet 10: Please label all streets on the General Layout Sheet.
24. Sheet 10: Aluminized CMP is shown as an option. The Design and Construction Manual specifically prohibits the use of CMP, either aluminized or galvanized, for public infrastructure. Please revise.
25. Sheet 10: Material Notes refer to the KC APWA curb inlets, junction boxes, and grated inlets. The City of Lee's Summit has a different design detail for these features. The standard details shown elsewhere in the plan set show the City of Lee's Summit standard details, so this note is contradictory in nature. Please revise as appropriate.
26. Sheet 11: Storm Profiles: Line 100 is shown discharging in what appears to be supercritical flow conditions onto a very steep section of rip rap. This rip rap is not sufficient to dissipate the energy at this discharge point. Additional measures must be considered and evaluated since this will likely lead to severe erosion issues.
27. Sheet 11: Storm Profiles: Line 200 is shown in what appears to be supercritical flow discharging onto rip

rap. We do not feel this energy dissipation method is sufficient to manage the energy at this discharge point.

28. Where are the calculations showing rip rap sizing, dimensions, etc.? The bigger question is "is rip rap appropriate for these locations".
29. Storm Profile Views: It appears the underground storm system is only able to manage the 10 year event. The Design and Construction Manual requires these systems to be designed for the 100 year event, OR if the 100 year event cannot be managed, a suitable overflow route be established. Was the system evaluated in terms of suitable overflow routes? Are there any swales that need to be designated as "emergency overflow swales" on the Master Drainage Plan?
30. Sheet 13: Calculations are provided in table format, but no corresponding design event was shown. Please specify.
31. Sheet 13: Were the calculations shown on the table assuming steady uniform flow? Was there any consideration given to the velocity calculations for supercritical flow? Of particular importance is the pipe velocity calculation of 23.6 ft/sec for Line 201. This exceeds the maximum allowable, but the bigger question is whether this calculation is realistic. Was supercritical flow considered at this location, and other locations within the system?
32. Erosion and Sediment Control Plan: Is a sediment basin or sediment trap warranted?
33. Sheet 20: Standard Details: Which underdrain is being utilized, and where is it being utilized?
34. Sheet 21: The underdrain detail contradicts previous standard details for underdrains.
35. Sheet 21: Standard Details: The "sidewalk and handicapped ramp details" contradict the City standard drawings for these features. In addition, standard details should be consulted, but not used, for this plan set because site-specific design drawings are required for each ADA-accessible ramp. Please use the generic standard details on the City of Lee's Summit website as a guide in preparing the site-specific design drawings for each ADA-accessible ramp.
36. When designing the ADA-accessible ramp, provide an ADA-accessible route across all street crossings where there is stop control (i.e., stop sign in this instance). It appears at least one (1) must be provided at NW Thoreau and Carson Dr. (i.e., north/south crossing), where a minimum 5 foot wide crossing must be provided across the road, with no more than 1.5% cross slope. Please include all bullet point items contained in Section 5304.8 of the Design and Construction Manual when detailing these drawings.
37. Sheet 21: The typical sidewalk detail does not follow the Design and Construction Manual. Sidewalks must be designed for 1.5% cross slope, not a quarter inch per foot.

38. Please re-title the plans to "Street, Stormwater, Master Drainage Plan, and Erosion and Sediment Control".
39. A Stormwater Pollution Prevention Plan (SWPPP) is required prior to final approval of these plans, or prior to a land disturbance permit being issued.
40. A note must be provided on the Final Plat concerning the fill issue on Lot 1451. This note must state that a geotechnical report is required prior to issuance of a building permit for this lot, or equivalent language.

### **Traffic Review**

1. Revise the vertical profile of Audubon Lane such that the minimum K value for the sag, 26, near Station 2+45 (future road extension) meets standards, whether shown on the planned improvement or future alignment.
2. Revise the vertical profile of Thoreau Drive such that the minimum K value for all sags, 26, are met including those near Station 0+55 (future road extension), Station 6+55, and Station 10+95 meets standards, whether shown on the planned improvement or future alignment. The minimum K value along residential streets shall not rely on continuous lighting for a lower K value.
3. Intersection Detail Sheets not complete; pending resubmittal for review.
4. Signing Plan - Stop signs at the intersection of Carson Dr. and Thoreau Drive should be on Carson Drive, not Thoreau Drive.
5. Signing Sheet - The Object Markers should be noted or detail amended to show quantity 4, not 3, and spacing (e.g. typical 4 evenly spaced object marker signs for end of road treatment).

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  
(816) 969-1223  
Gene.Williams@cityofls.net

cc: Development Engineering Project File