

**Date:** Wednesday, July 22, 2020

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

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

**Application Number:** PL2020198

**Application Type:** Engineering Plan Review

**Application Name:** Napa Valley - Modification to Existing Detention Basin to Permanent Pool  
Retention Basin

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The Development Services Department received plans for this project on July 08, 2020. 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 - Corrections**

1. The "Macro Storm Water Drainage Study" dated July 8, 2020 (hereinafter referred to as the drainage study) show weir C setup in what appears to be an incorrect configuration. For instance, the setup page appears to show the 10 inch orifice within the baffle as a weir, rather than a culvert/orifice. In addition, the weir shown on the top of the baffle wall appears to be shown as a culvert, when it should be a weir. Even more concerning is the configuration of the weir/orifice geometry in relation to the permanent pool. Since the outlet structure is being placed lower than the permanent pool, it would appear the routing calculations "break down", and once the outlet structure is filled with water, the flow dynamics will not mirror what is shown in the report. At that point (i.e, when the outlet structure is fully-submerged), it would appear the only control structure acting on the outlet structure is the weir structure, above the 10 inch opening. In other words, the routing results appear questionable using this particular geometry.
2. The drainage study appears to show weir B as the emergency spillway. It appears to have been included in the routing calculations. The emergency spillway should never be included in the routing calculations, unless it is calculated separate from the outlet structure. Flow within the emergency spillway should be calculated separately assuming 100% clogging and zero available storage within the basin.
3. Sheet C.300: Why is this sheet labeled "Utility Plan"?
4. Sheet C.300: This sheet appears to be focused on the detention basin, and should be titled appropriately.

Since the focus of this sheet is the detention basin, where are the specific labels showing the emergency spillway, and the elevation of the emergency spillway? Why does this emergency spillway slightly differ from the drainage study?

5. The emergency release structure shown on the inset appears to be calling out instructions as if this were a siphon. It does not appear this design is capable of acting as a siphon. In addition, where is the trenching detail for this pipe, since it will not be acting as a siphon? Are there any plans to prevent the occurrence of "piping" around the annulus of the pipe?
6. Sheet C.300: Section A-A appears to show a 30 inch HDPE pipe, but isn't this a 36 inch HDPE pipe?
7. Sheet C.300: Where are the calculations for the rip rap at the end of the discharge pipe?
8. Sheet C.300: The top of the concrete outlet structure shows a four (4) sided weir structure with an elevation set at the emergency spillway elevation. This is not acceptable, unless the primary outlet structure is intended to work in tandem with the earthen emergency spillway. Is this the case? If so, why was this not discussed within the body of the drainage study? Although it is shown within body of the report within a summary table, it is never explicitly discussed this is the case.
9. The permanent pool elevation is shown at 983.0. The interior baffle wall orifice is shown at an elevation of 981.80. It would appear the permanent pool, therefore, would be 981.80. Without a plan and profile view, however, of the incoming 36 inch pipe, it is impossible to determine what the permanent pool elevation will be. Is the incoming pipe to be placed at 983.0 flowline elevation? Details such as this are critical to a review of these plans.
10. The emergency discharge pipe shows a valve to be installed on the 8 inch line. Please show on the profile view, in addition to the plan view.
11. Detention Sheets and Sheet C.200: Please clearly label the 100 year water surface elevation is in relation to the property lines. Ensure there is a minimum of 20 feet between this elevation and any property line. In this instance, it will be acceptable to use the nominal (i.e., fully-functioning) elevation.
12. Where are the calculations for the 100% clogged, zero available storage? This will need to include calculations showing the maximum water surface elevation, and minimum freeboard of 1.0 feet between this elevation, and the top of the dam.
13. Please see the KCAPWA requirements for anticlogging measures. 5608.4E(5) and (6). There did not appear to be any anti-clogging measures shown for the outlet structure.

### **Traffic Review - Not Required**

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**

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All Planning application and 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 in the following formats

- Plats – All plats shall be provided in multi-page Portable Document Format (PDF).
- Engineered Civil Plans – All engineered civil plans shall be provided in multi-page Portable Document Format (PDF).
- Studies – Studies, such as stormwater and traffic, shall be provided in Portable Document Format (PDF).

Please contact me if you have any questions or comments.

Sincerely,

/s/ Gene Williams July 22, 2020

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cc: Development Engineering Project File