



Memorandum

To: *Bruce Loney, P.E.*

From: *Stacy Harwell*
Ted Witkowski
Jeff Sandberg, P.E.

Date: *March 15, 2017*

Re: *WSB Project No. 1381-81*

The preliminary plans for the Living Hope Lutheran Church and School were reviewed for compliance with the City of Shakopee Ordinances. The following documents were submitted for our review:

- Storm Water Management Calculations for Living Hope Lutheran Church & School, February 16, 2017
- Living Hope Lutheran Church & School, Civil Set, February 16, 2017

The proposed stormwater management is in conformance with City rate control, volume control and water quality standards. The proposed project meets the minimum requirements for preliminary plat approval.

Based on the review, the following comments are offered for your consideration:

Grading, Drainage, Easements, Utility and Erosion Control Comments:

1. Grading Plans

- a. The Civil Set submitted by Rehder & Associates Inc, needs to be signed by a licensed engineer.
- b. The FFE for the existing building should be added to Sheet C3.
- c. The symbology for rip rap and proposed easement impact should be added to the legend on Sheet C3.
- d. There is a heavy line shown on Sheet 3, between the FES and the silt fence, near the entrance to the site. It is unclear what this symbol is depicting. Plans should be updated for clarification.
- e. Downspout locations and drain leaders should be added to the plans in order to evaluate overall drainage patterns and stormwater treatment.
- f. The "Site Data" summarized on Sheet 3 should indicate that the proposed impervious area is 3.15 acres. Currently it shows the net increase impervious area and is misleading.
- g. Exposed slopes should be protected to prevent erosion. Slope protection, such as mulch, sod blankets or temporary seeding should be added to Sheet C3. Currently there is no erosion protection shown on exposed slopes. Section 3.5.B of City Design standards provides recommendations for erosion protection measures for exposed slopes.

2. Utility Plans

- a. City design standards require that pipe for all public systems or connection to public systems shall be reinforced concrete pipe. Currently the site is designed with HDPE pipe and is not in conformance with this standard.
- b. City design standards prohibit the use of plastic pipe under driveway culverts. Currently the site design is not in conformance with this standard.

- c. City design standards require a minimum pipe size of 15-inches. Currently the site design is not in conformance with this standard.
 - d. The site plans do not include roof drain and downspout locations. It is unclear where runoff from the existing and proposed building addition is routed. The plans should be updated to include this information.
- 3. HydroCAD Model
 - a. All of the HydroCAD modeling incorrectly uses a Type II distribution for the Atlas 14 storm events. The HydroCAD model should be updated using an MSE3 distribution.
 - b. The HydroCAD model should be updated to include modeling of the pretreatment basin separately from the depression area. Currently the proposed model includes this area in the overall depression area. Accurately modeling the flow and velocity from the pretreatment basin is required in order to evaluate erosion potential and swale design.
 - c. The existing and proposed drainage maps should coincide with the HydroCAD modeling. The existing and proposed depression areas, along with flow arrow on site and off site, should be clearly defined on a map for each scenario.
 - d. City standards require that sites with landlocked basins demonstrate that there is adequate storage available for two back to back 100 year storm events. The HydroCAD model should be updated to include this analysis. Because the site is underlain by clayey soils, this is of particular importance.
- 4. Volume Control
 - a. City volume control standards are met with the proposed project. There is adequate capacity in the existing depression areas to retain 1" of runoff from the site.
- 5. Rate Control
 - a. City rate control standards are met with the proposed project.
- 6. Water Quality
 - a. City water quality standards are met with the proposed project.
- 7. Easements
 - a. The applicant should discuss with the City whether the storm sewer and ponding areas will be public or private. If it is a public system, all improvements need to be encompassed by a drainage and utility easement. If it is a private system, an operation and maintenance plan needs to be submitted for review.
- 8. Outstanding Submittals
 - a. SWPPP.
 - b. NPDES permit.
 - c. A complete erosion control plan showing all erosion control measures, including inlet protection, silt fencing, bio-roll erosion checks and limits of land disturbance. Refer to Chapter 16 of the City Code for a complete list of requirements.
 - d. Operation and maintenance plan for all proposed stormwater BMPs.
 - e. A Prior Lake Spring Lake Park Watershed District permit is required. Rehder & Associates should refer to the district website for all information that is required for their permitting process.

We request that Rehder & Associates address these comments and provide the outstanding submittals for review as this project continues to move forward. Please do not hesitate to contact us with any comments or questions you have regarding our review.