

Re: Village of Libertyville Stormwater Management Regulations
Proposed Update to 'Appendix P'

MEMORANDUM

Background

Staff was requested to review all code and engineering related standards that impact private property drainage for any necessary amendments. This was largely due to the flooding impacts that were experienced in July of 2017, as well as the increased rainfall totals that have been experienced throughout the area.

One item that sets the standards for many of the property drainage regulations that are enforced by Staff is the Village's 'Appendix P' Stormwater Management Regulations. These regulations were adopted as an amendment to the Lake County Watershed Development Ordinance (WDO) in 2015 as a means to identify stormwater requirements for properties that would otherwise fall beneath the threshold of the current standards set forth in the WDO.

The majority of plan reviews and permits issued by the Engineering Division fall subject to the Appendix P regulations. As such, Staff has provided a thorough review of the existing requirements in an effort to explore means of addressing the concerns about increased rainfall totals while also using this as an opportunity to create a set of updated regulations that are intended to be more 'user-friendly' for homeowners, designers, and Staff reviewers. The attached 'draft' set of revised regulations incorporates many of the general concepts that the Engineering Division has been enforcing since the original inception of 'Appendix P', while also addressing more conservative volume requirements and other various items that have been identified by Staff for further clarification or adjustments.

Summary of Revisions

The following is a brief summary of some of the main revisions that have been incorporated into the revised 'Appendix P' regulations:

1. **Appendix P regulations are now triggered at an increase in impervious surface area of 400 sf** (previously 200 sf).
 - a. The minimum threshold was increased due to the volume requirements being increased (see more info below). It was staff's opinion that the proposed volume requirements may be unreasonable for small projects that only result in 200 sf of impervious surface increase, such as patios, decks, etc.
2. **Developments with impervious surface area increases between 400 sf and 4,999 sf shall now determine the required detention volume from Table P-1.**
 - a. The table format is being proposed largely in an effort to simplify the process for everyone. Many times we are meeting within homeowners before their projects begin, and they are trying to understand approximately how much volume may be required. This format allows them to understand the detention implications early on in the process, in case that impacts their final design.
 - b. The volume requirements in Table P-1 were evaluated in several different ways, and ultimately the volumes that are listed are based on the modified rational method and routing tables (see Exhibit P-2). We took the low end of the proposed impervious ranges (i.e. 400 sf, 500 sf, etc.) and ran them through this worksheet at 100% impervious with a C-Factor of 0.95 and Bulletin 70 rainfall totals. This approach is more conservative than the previous methods of calculations, as it utilized the higher rainfall totals and a conservative C-Factor. And although the required volume is based on the lowest impervious value within the set ranges, the volume requirements were still determined to be more conservative than current requirements when considering the high end of each range (i.e. 499 sf, 599 sf, etc.).
3. **Developments with impervious surface area increases at 5,000 sf or greater (up to 0.5 acre at which time the WDO requirements would be triggered) shall now determine the required detention volume from Worksheet P-2 or by approved methods as outlined in the current WDO.**

4. **A Project Data Worksheet and Project Checklist shall both be required for all projects subject to the Appendix P requirements (both attached).**
 - a. These were created largely in an effort to clarify for designers some of the main items that are required on every project.
5. **The minimum restrictor size shall be increased to 2-inches in diameter (previously 1 inch).**
 - a. The current WDO requires a minimum diameter of 4 inches. The 2-inch minimum diameter proposed will still be more restrictive than the WDO regulations, but the increase in size will help reduce the potential for clogging. The current 1-inch minimum diameter would be very susceptible to clogging and system failures, and are very reliant on continual observation and maintenance.
6. **No credit for impervious surface areas shall be given to the ‘open water’ portion of swimming pools.**
 - a. The previous regulations did not count the open water portion of a pool to be impervious, as long as it was set 6 inches below the elevation of the pool deck. However, it is the opinion of Staff that this credit should no longer be considered due to the fact that many pools are often covered with tarps, as well as the fact that the water collected within these pools still needs to be drained out through the pool system. The ‘open water’ does not provide the potential for water to be absorbed into the ground, which is the intent of ‘pervious’ areas.
7. **The impervious surface area credit for permeable pavers and porous pavement systems shall be reduced to 50%.**
 - a. The previous regulations stated that permeable systems would be counted as 40% impervious (60% pervious). This often led to confusion with designers, as systems would be counted at 60% impervious, etc. Also, it is staff’s opinion, given the high clay soils content of Lake County, that a decrease in this credit to 50% may be more appropriate.
8. **The impervious surface area credit for open-grid wood decks shall be reduced to 50%.**
 - a. For reasons similar to the permeable paver credits, Staff feels that a reduction to 50% helps to minimize confusion during the design process while also reducing the credit slightly to account for the clay soils. Staff considered a potential elimination of this credit altogether given that homeowners often place stone or other hard surfaces beneath decks at a later date, but felt that a slight reduction only was appropriate at this time.
9. **All projects that are subject to the Appendix P requirements shall require a plan prepared by a Licensed Professional Engineer.**
 - a. This was often an unclear item for homeowners, and there was not specific language as to when an engineer was needed. This resulted in Staff having to make judgement calls based on the scale of the project, which often resulted in pushback. Given that the minimum threshold is now increased to 400 sf and volume requirements are greater, it is Staff’s opinion that a Licensed Engineer shall be required for all plan submittals.
10. **All plans shall require a Drainage Statement (specific language provided as Item IV.O. on attached draft).**
11. **Clarifications added for the use of ‘sub-surface stone’ as a means for stormwater storage.**
 - a. Previous regulations did not specify the porosity credit or requirements for these systems. Language now clarifies that an underdrain is required, storage is only counted from the invert of the underdrain upward (no dead storage), and that the stone can be calculated with 33% porosity for means of stormwater storage.
12. **Clarifications added for the use of rain gardens as a means for stormwater storage.**
 - a. Similar to the item above, the previous regulations did not specify how rain gardens would be considered. The new regulations clarify that volumes must be counted ‘above ground’, that the planting list must be provided by the design engineer on the plans, and that an ‘as-built planting plan’ or list of the installed plants from the landscaper must be provided at the end of the project.
13. **The ‘Vacant Lot Credit’ that was previously included in the original Appendix P regulations has been removed.**
 - a. The previous regulations allowed for a 50% reduction of the required detention volume for lots that are ‘vacant’ prior to development. Given that the main purpose of the regulations is to ensure that improvements do not result in adverse impacts to adjacent properties due to increased runoff rates, it is Staff’s opinion that this reduction is not appropriate and that the entire net increase of impervious coverage should be accommodated by appropriate detention measures. It should also be noted that the previous regulations stated that this credit would not be granted for lots that were deemed to be located within sensitive drainage areas, and that the credit was not granted on several recent developments due to concerns about storm sewer capacities in the area.

Attachments

- ***Appendix P – Village of Libertyville Stormwater Management Regulations – Revised January 2019***

Public Works Department

Administration and Engineering Division (847) 918-2100 (847) 918-9439 fax
200 East Cook Avenue Libertyville, Illinois 60048