SANITARY SEWER AND STORMWATER MANAGEMENT

Site Plan Review City of Saint Paul

SEWER AND STORMWATER MANAGEMENT PLANS

Sanitary sewer and stormwater management information must be included in the site plan. Depending on the type and size of the project, this may include:

- *Sanitary and Storm Sewers*: Existing and proposed pipes with sizes, inverts, lengths and materials labeled.
- *Catch Basins*: Existing and proposed catch basins with rim elevations, invert elevations, and catch basin types labeled.
- *Ponding Areas*: Existing and proposed ponding locations with sizes in acres labeled.
- *Stormwater Calculations:* Shown on the City worksheet provided with this handout.

AutoCAD and PDF Files

An AutoCAD file titled "City of Saint Paul Sanitary and Stormwater Site Plan Map.dwg" is located at http://www.stpaul.gov/spr. The applicant is required to use this AutoCAD file along with its associated sanitary and storm layers when submitting the site plan for final sanitary and stormwater management approval. The finalized AutoCAD file and a PDF version of the site plan should be sent to Anca Sima at anca.sima@ci.stpaul.mn.us. AutoCAD drawings with external references will not be accepted.

Construction Record Drawings

For as-built records, the applicant must add all installed, modified or removed sanitary and storm structures to the AutoCAD file that was submitted to the City for final approval during the permitting process. If storm sewers were not installed, then provide as-built grading instead along with any new sanitary sewers. The plan and profile views of all new public sanitary and storm sewer lines and plan views of all private sewer lines must be included in the AutoCAD file. Every drawing in the AutoCAD file shall be identified as "Construction As-built Drawing" in the title block and shall bear the signature and seal of a professional engineer. The AutoCAD file must be submitted to the City's representative, Anca Sima at anca.sima@ci.stpaul.mn.us no later than 60 days following installation of the sewer structures. If the as-built plans confirm that the site reduces the peak runoff rate to no more than 1.64 cfs per acre, up to a 25% credit may be applied to the property's Storm Sewer System Charge.

STORMWATER MANAGEMENT REQUIREMENTS

A stormwater management plan must be submitted as part of the site plan package for review by the Department of Public Works. The purpose of the plan is to show how stormwater will be handled on the site: where it will drain to, at what rate, and steps that will be taken to protect water quality.

Sites Smaller Than 1/4 Acre

For sites less than one quarter of an acre, it may be possible to meet the requirements for stormwater management by grading the site so that stormwater flows to a street or public alley. Stormwater drainage must be shown on the plan by grades and/or drainage arrows. Stormwater may not drain across a public sidewalk at any point except at a driveway.

Sites 1/4 Acre or Larger

For sites equal to or greater than one quarter of an acre, the rate of stormwater runoff for the site may not exceed 1.64 cubic feet per second per acre. Stormwater must normally be directed to on-site stormwater detention ponds and catch basins connected to the City storm sewer system in order to control the rate of stormwater runoff from the site. If the development will be done in phases, the stormwater management plan should be presented at the first phase, for the whole area.

The following information must be submitted:

Grading

- Grades or contours to define the routing of stormwater and stormwater detention areas.
- Provide a minimum of 1ft freeboard between the 1st floor elevation and the emergency overflow (EOF). Show the amount of freeboard on the plan.

Drainage Areas

- Outline of each separate drainage area within the site property lines or improvement limits. Include roofs and all other surface areas.
- Area in acres of each drainage area.
- Separate pervious and impervious curve numbers along with drainage area descriptions.
- Time of concentration in minutes of each drainage areas.

(Continued on next page.)

On-site Detention

- Outline of each separate on-site detention area. Ponding may be provided in parking lots, green areas, roof tops or underground storage.
- Depth in feet of on-site detention.
- Area in acres of on-site detention.
- Volume in acre-ft of on-site detention.
- Emergency overflow route of on-site detention.
- Provide a maintenance plan for Best Management Practices.

Structures

- Location and details of all structures used to control the rate of discharge of storm water from the site. These include catch basins, manholes, pipes, weirs, curb openings and control flow roof drains. Rim and invert elevations in feet must be provided.

Connections to City Sewer

- Connections are not permitted to City catch basins.
- Minimum pipe size is a 4 inch diameter pipe.
- The plan must include a note stating that "Connections to public sewers must be done by a Licensed House Sewer Contractor under a permit from Saint Paul Department of Public Works."
- Set the tailwater elevation equals to the invert elevation of the connecting point of the City sewer. If the peak discharge time of the private connecting pipe coincides with that of the City sewer, the City may require that the tailwater effects on the proposed on-site storage be investigated.

Infiltration

- Soil analysis must show soil is not contaminated.
- No infiltration within 10 feet of the building foundation.

Calculations

- The standard used to check for conformance with stormwater management requirements is HydroCAD version 7.10 or newer.
- Use the SCS TR-20 Runoff Method.
- Use 5.9 inches for the Type II 24-hr 100 year storm in the City of Saint Paul.
- Use a maximum rate control rate of 1.64 cubic feet per second per acre.
- Complete the following tables provided with this handout:
    - Table 1 (Drainage area information)
    - Table 2 (Drainage area peak runoff for 100 year storm)
    - Table 3 (On-site detention information)
    - Table 4 (On-site peak detention for 100 year storm)
    - Table 5 (On-site detention outlet control for 100 year storm)
    - Table 6 (Connection pipe to City sewer)
- Submit an electronic copy of HydroCAD files used to populate above tables.

Sites One Acre or Larger

In addition to meeting the City's standards for rate control listed above, applicants of projects that disturb an acre or more must also meet the following requirements:

- Submit a Stormwater Pollution Prevention Plan to the MPCA and also obtain a General Stormwater Permit from them. (http://www.pca.state.mn.us/water/stormwater/stormwater-c.html or call 651-296-7219).
- Submit the site plan to the appropriate Watershed District for approval. A rough breakdown of the Watershed Districts in Saint Paul is as follows:
    - East third of the City: Ramsey Washington Watershed. (http://www.rwmwd.org/ or call 651-792-7950)
    - West two thirds of the City: Capitol Region Watershed. (http://www.capitolregionwd.org/ or call 651-644-8888)
    - Westside of the City: No Watershed permit required.

For more information regarding stormwater management, please call Anca Sima of Pubic Works at 651-266-6237 or visit the City's Zoning website at http://www.stpaul.gov/dsi (click on **Zoning** and then click on **Site Plan Review**).

Table 1. Drainage Area information

Drainage Area Name	Area (acres)	Curve Number	Description of Area	Time of Concentration (minutes)
Total				

Table 2. Drainage Area Peak Runoff for 100 year storm

Drainage Area Name	Runoff (cfs)	Volume (acre-ft.)
Total		

Table 3. On-site Detention information

Name of On-Site Detention Structure			
Elevation (ft)	Surface Area (acres)	Incremental Storage (acre-ft.)	Cumulative Storage (acre-ft.)

Table 4. Peak On-site Detention for 100 year storm

Name of On-site Detention Structure:			
Peak Elevation (ft)	Time (Hours)	Required Storage for 1.64 cfs Rate Control to City Sewer (acre-ft.)	Available Storage for 1.64 cfs Rate Control to City Sewer (acre-ft.)

Table 5. On-site Detention Outlet Control for 100 year storm

Name of On-site Detention Outlet Structure:		
Outlet Type	Maximum Discharge (cfs)	Tailwater Elevation (ft.)

Table 6. Connection pipe to City Sewer

Name of Connection Pipe:							
Pipe Length (ft)	Pipe Diameter (inches)	Pipe Type	Upstream Invert Elevation (ft)	Downstream Invert Elevation (ft)	Maximum Discharge (cfs)	Downstream Water Elevation (ft)	Invert of City Storm sewer (ft)

SAMPLE SANITARY & STORMWATER SITE PLAN