



PERMANENT STORM WATER MANAGEMENT PLAN CHECKLIST

revised January 2006

KEY

= Yes

= No

Blank = Not Applicable

Site: _____

Prepared By: _____ Date: _____

Reviewed By: _____ Date: _____

GENERAL

- Size of the drainage area served shown:
 - Total project area and total impervious surface areas of project.
 - Total estimated impervious surface areas of ultimate development.
- Final plan is signed by a licensed professional.
- Owner name(s) and address(es) listed.
- Plan is 1"=50' or larger scale. North arrow shown.
- Plan is drawn in two-foot contours. All finished contours and adequate existing contours are labeled.
- Existing contours are dashed and proposed are solid.
- Existing public and private utilities are shown.
- Soil types shown (in drainage report).
- Areas not to be disturbed clearly defined.
- ALL receiving waters, including wetland, within 1/2 mile shown or identified.
- Temporary stockpiles include silt fence or other sediment control.
- Property limits are shown. Streets are labeled. Lot & block information shown if platted. Street address shown if unplatted.
- Drainage easements are shown and labeled on the plan.
- Storm water management areas are platted as outlots. A facility that will serve only the lot on which it is located may simply be a drainage easement on that lot.
- Schedule of BMP installation shown.

DRAINAGE SWALES & EASEMENTS

- Control elevations for drainage ways are provided. 100-year flow contained in easement
- Minimum slope of drainage swales is 2%.
- Drainage easements are seeded and protected with erosion control blankets or they are sodded where concentrated flow from more than 1 acre or 4 lots is directed. Blanket category specified per Mn/DOT 3885.1. Plan depicts required blanket locations.
- Velocity computations are provided for drainage easements where concentrated flow from more than 2 acres or 8 lots is directed. Where 10-year velocities exceed 5 ft/sec, permanent turf reinforcement mats are installed per City std. plate 7-05. Blanket per Mn/DOT 3888.2A2 or manufacturer and product is specified. Plan depicts blanket locations and cross sections.
- Easement documents are signed and submitted to Public Works with a check for recording if not included in plat.
- Ditches stabilized within 24 hours of connection to surface water or outlet.

STORM DRAIN SYSTEM, INLETS, & OVERFLOWS

- All apron elevations (inlets and outlets) are labeled. Area inlet elevations are labeled. Pipe sizes are labeled.
- 400' max. manhole spacing for lines 15" diameter or less.
- 500' max. manhole spacing for lines 18" to 30" diameter.
- Flow direction change is $\leq 90^\circ$ at junctions.
- Apron inlets to the storm sewer include trash racks.
- Trash racks on inlet structures in wooded areas designed assuming a minimum of 50% plugging condition.

OUTLETS & ENERGY DISSIPATION

- Discharge direction of flow generally 45 degrees or less to the flow direction of receiving ditch or stream.
- Discharges to rear property lines shall generally be piped to at least the rear property line.
- Where discharge pipe velocities are 10 fps or less, riprap and filter volumes are indicated in accordance with Mn/DOT Standard Plate.
- Where discharge pipe velocities are greater than 10 fps, energy dissipater is provided along with riprap and filter.
- Discharges on slopes steeper than 10% shall not be allowed unless discharge is into existing drainage ditch and volume of water in ditch is not greater than 110% of the pre-developed condition.
- Pipe outlet energy dissipation complete within 24 hours of connection to surface water or outlet.
- Evaluation of downstream adequacy provided capacity & stability).

TEMPORARY SEDIMENT BASINS

- Sized to store 2-year, 24-hr storm from the drainage area below the outlet pipe (no smaller than 1800 cf/acre of drainage area), or
 - Sized at 3,600 cf/acre of drainage area.
 - Designed to minimize short-circuiting.
 - Floating debris discharge prevented.
 - Designed for full dewatering.
 - Energy dissipation on outlet pipe.
 - Principal and emergency spillway designed per BMP storm frequency standards.
- Fenced if slopes exceed 4:1 per city detail.
- Plan requires any permanent or temporary sediment ponds to be constructed at the beginning of construction.

PERMANENT PONDS

- Entire drainage/service area shown (in drainage report).
- 50 scale or larger grading plan with pond cross section.
- Where possible, provide a forebay at the inlet; locate inlet and outlet at opposite ends of pond; and provide length to width ratio > 3.
- Multi-cell design where practical.
- 10:1 bench is provided for first 1 foot of depth below normal water elevation.
- 4:1 max slope from normal water elevation to 100-year water elevation.
- 3:1 max slope below normal water elevation.
- Pond depth is 4 to 10 feet based on normal water level.
- Normal water elevation is shown.
- 100-year high water level is shown.
- Inlets are at or below normal water level.
- Outlet is designed to prevent short-circuiting and discharge of floating debris.
- Permanent pool volume 1800 cf per acre drained.
- Water quality volume equal to 1/2 inch runoff total impervious surface area, at ultimate development.
- Outlet size to discharge no more than 5.66 cfs/acre of pond surface.
- Energy dissipation on outlet piping.
- Areas less than 1 acre not draining to pond:
 - Grassed swales.
 - Small ponds.
 - Grit chambers.
 - Other _____
- Emergency overflow spillway is provided to accommodate 100-year event. High point elevation and direction of overflow are marked on plans.
- Emergency overflow spillway is located to protect adjacent property and large fill sections.
- 100-year runoff which is designed to flow to the pond does not bypass the pond; unmodeled 100-year flow does not enter the pond.
- Minimum 10' width at top of dam (if dam is < 15' high).
- 12' wide access and turn-around area for maintenance vehicles is shown on a slope ≤ 15%, cross slope ≤ 6%.
- Pond access is included in a min. 15' wide portion of the pond outlot. If access is in an easement across private property, a 12' wide paved access road is provided.
- Seed mix Mn/DOT 310 for a 10' perimeter around the pond. Seed mix Mn/DOT 350 for the remainder of the pond outlot.
- DNR dam safety permit obtained if dam height is > 6' and storage to top of dam is > 15 acre-ft.

INFILTRATION/FILTRATION

- Type(s) used.
 - Infiltration basins
 - Infiltration trenches.
 - Rain gardens.
 - Sand filters.
 - Organic filters.
 - Bioretention.
 - Natural depressions (wetland not included)
 - Other _____
- Floatables removed before infiltration/filtration system.
- Site sensitivity analysis included
- Evaluation of hydrologic impact included.
- Infiltration scheduled after full site development and stabilization.
- Runoff route away from infiltration system during construction.
- Site controlled to minimize soil compaction.
- Pretreatment sediment removal included. Use appropriate checklist area.
- Designed for 1/2 inch of runoff from total impervious surface areas for ultimate development within 48 hours.
- System bypass for flows that cannot be filtered.
- Minimum vertical separation of 3 feet between seasonal high ground water and bottom of infiltration system.
- Soil test results, system capacity calculations, and computer modeling results included.
- Minimum 10' width maintenance access provided.
- Infiltration systems not permitted for vehicle fueling or service areas.

ALTERNATIVE AND COMBINED PRACTICES

- Combined practice (narrative in drainage report).
- Alternative practice (narrative in drainage report).
- Full calculations and plans included (narrative in drainage report).

* As a reference document see

<http://www.pca.state.mn.us/water/stormwater/index.html>
