



SUBDIVISION AND NON-RESIDENTIAL LOT GRADING PLAN CHECKLIST

revised January 2006

KEY

- = Yes
- = No

Blank = Not Applicable

Site: _____

Prepared By: _____ Date: _____

Reviewed By: _____ Date: _____

GENERAL

- NPDES permit including SWWWP is referred to on plan
- Completed grading permit application form.
- Final grading plan is signed by a licensed professional, 5 copies. One copy of other documentation.
- Owner name(s) and address(es) listed on Grading Plan.
- 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.
- Directional arrows are shown for proposed drainage.
- Details of terrain and drainage are provided for areas adjacent to the proposed grading.
- Existing public and private utilities are shown.
- Boundaries of drainage areas shown. (in drainage report)
- 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.
- Property limits are shown. Streets are labeled. Lot & block information. Street address shown, if unknown.
- Proposed walk is shown for commercial/industrial sites.
- County or Mn/DOT permit obtained for work their ROW.
- Substantial Land Alteration approved for elevation changes $\geq 10'$ or other criteria that require a SLA.
- Any City Council approval conditions are met.
- The following areas are tabulated for residential (acres):
 - Total platted area (site area)
 - Total area disturbed
 - Total developable area for residential (exclude floodway, natural steep slopes, wetlands).
- The following areas are tabulated for non-residential (acres):
 - Total project area
 - Total impervious areas of project, existing & proposed.
 - Tabulation of total and impervious area by tax parcel.
- Schedule of BMP installation shown.
- BMP details included.
- Dewatering activities discharge to sediment basin.

SITE GRADING, SEDIMENT & EROSION CONTROL

- Down-slope sediment control scheduled before grading.
- Adjacent property protected from drainage and sediment.
- Stabilized vehicle exit(s) are provided, minimize number.
- Silt fences are provided per BMP Manual 6.31. In concentrated flow areas is "high flow, heavy duty" type.
- All storm sewer inlets, existing and proposed include temporary sediment control & control remains until up-slope sources stabilized.
- Maximum unbroken 3:1 or steeper slope of 75 feet horz.

- Temporary stockpiles include additional silt fence or other sediment control.
- Percent of slope is shown for streets and drainage swales.
- Fill & cut property line setbacks are $>2'$ for cut slope ht. $>10'$ or fill slope ht. $>4'$ and setback is dimensioned on the plans.
- All proposed lot corner elevations are shown.
- Proposed elevations of garage and lowest floor, ground at front and rear of building, along with the structure type are indicated on the plan.
- Top of foundation is min. 6" from the ground.
- Grade 1' below top of foundation 10' from building.
- Freeboard to structures. Floor el. or the grade adjacent to the building is at least 1' above any overflow elevation, and at least 2' above any pond 100-year water level, whichever is greater and min. 1' above FEMA flood el.
- Drainage flows away from structures at min. 2%.
- Temporary or permanent diversion swales, stabilized with turf mat, pipe, riprap, are used at the top of slopes exceeding 4:1, when applicable.
- Minimum lot slopes for vegetated areas are 2% minimum.
- Areas within 200' of surface water seeding scheduled within maximum time allowed.
 - Steeper than 3:1 – 7 days.
 - 10:1 to 3:1 – 14 days.
 - Flatter than 10:1 – 21 days.
- Temporary or permanent cover is indicated for all disturbed areas. Temporary seeding specifies seed mix including disk anchored mulch on all slopes $> 200'$ or $> 5\%$. Permanent cover specifies 4" min. topsoil, seed mix and disk anchored mulch, or 4" min. topsoil and sod.
- Slopes steeper than 4:1 and 4:1 slopes longer than 30' are seeded and protected with erosion control blankets or sodded and staked. Blanket category specified per Mn/DOT 3885.1. Plan depicts required blanket locations.
- Statement that slopes steeper than 4:1 are stable from land-sliding and surface erosion. Geotechnical report for slopes $>3:1$.
- For sites where temporary or permanent cover will not be complete by November 15, plan indicates adequate measures to control spring erosion & sedimentation.

DRAINAGE SWALES & EASEMENTS

- Drainage easements are shown and labeled on the plan.
- Drainage easements are provided where concentrated flow is received from more than 1 adjacent lot and also where concentrated flow is received from more than 1 acre of adjacent property. 100-year flow contained in easement.
- Minimum drainage easements for flows from 1 acre or less or 4 lots or less are a minimum of 15' wide. Ditch is 1.9' deep V-shaped with 4:1 slopes.

- Minimum drainage easements for flows from more than 1 acre or more than 4 lots are a minimum of 20' wide. Ditch is a minimum of 2' deep with a 4' bottom and 4:1 slopes up to the easement line. 100-year runoff contained in easement.
- Control elevations for drainage ways are provided.
- Minimum slope of small drainage swales is 2%.
- Drainage easements for flow from more than 1 acre or 4 lots are seeded and protected with erosion control blankets or sodded. 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 recording fee or 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.
- Drainage from subdrains, sump pumps, and building storm drains does not flow through public CB's.
- Not more than 3 CB's in a series (at an intersection) before connecting to the storm sewer main.
- Storm sewer main generally does not flow through CB's.
- Flow direction change is $\leq 90^\circ$ at junctions.
- Drainage does not cross intersections (no valley gutters).
- CB spacing as necessary for inlet capacity, curb spread, and not exceeding 1000' on residential streets or 600' on collector and arterial streets.
- 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.
- For other than R1 & R2, drainage from impervious surfaces is collected on-site and not sheet drained onto sidewalks, rights of way or adjacent property.
- Concentrated drainage is collected in CB before crossing walk.

- Overflow swales are provided which limit the depth of ponding in the street to 2' or less.
- Emergency overflow with the high point elevation and direction of overflow are clearly marked on plans.
- Emergency overflow swale meets minimum drainage easement standards noted above.

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

- Temporary sediment basin provided or provisions for the use of existing City facilities.
- 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.
- For areas draining less than 10 areas alternative sediment control.
 - Multiple lines of silt fence.
 - Small basins
 - Vegetative strips (full permanent vegetation before upslope excavation).

* As a reference document see

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