SUBDIVISION AND NON-RESIDENTIAL LOT GRADING PLAN CHECKLIST

Revised April 2014

Key
☑ = Yes
☒ = No
Blank = Not Applicable

Site: _____

Prepared By: _____ **Date:** _____

Reviewed By: _____ **Date:** _____

GENERAL

- ☐ Atlas 14, Volume 8 rainfall depths must be used with an SCS Type II, 24 hour distribution. Rainfall Depths are as follows for the listed design events; 2yr: 2.94inches, 10yr: 4.47 inches, 100yr: 7.81 inches
- ☐ NPDES permit including SWPPP 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.
- ☐ Submitted Signed Drainage Report per City Template
- ☐ Owner name(s), email address, 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 wetlands, within 1 mile shown or identified, including impaired waters.
- ☐ Property limits are shown. Streets are labeled. Lot & block information. Street address shown, if known.
- ☐ Proposed sidewalk shown for commercial/industrial sites.
- ☐ County/MNDOT permit obtained for work in their ROW.
- ☐ Substantial Land Alteration approved for elevation changes $\geq$ 10' or other criteria that require a SLA.
- ☐ All 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 (excluding 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.
- ☐ Concrete washout management and waste control BMP addressed on plan.
- ☐ Dewatering activities discharge to treatment facility.
- ☐ Per the NPDES Construction Storm Water Permit, the date and amount of all rainfall events greater than ½ inch in 24 hours must be documented. Rainfall amounts must be obtained from a properly maintained rain guage installed on site, a weather station within 1 mile of the site, or a weather reporting system that provides site specific rainfall rainfall data from radar summaries.

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 ,have inlet protection/temporary sediment control that remains until up-slope areas are stabilized.
- ☐ Maximum unbroken 3:1 or steeper slope of 75 feet horizontal.
- ☐ Temporary stockpiles include additional sediment control and temporary cover after 14 days (7 days if discharging to and within 1 mile of impaired water).
- ☐ Soil within 1 mile of impaired water stabilized within 7 days.
- ☐ 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'; 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" above the ground.
- ☐ Grade l' below top of foundation 10' from building.
- ☐ Freeboard to structures. Floor el. or the grade adjacent to the building is at least l' above any overflow elevation, and at least 2' above any pond 100-year water level, whichever is greater and min. l' 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.
- ☐ All exposed soil stabilized in 14 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 and Utility 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.

DRAINAGE SWALES & EASEMENTS (continued)

- ☐ 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 388S.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 7-07. Mats per Mn/DOT 3888.1 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 within 200' of surface water or Property line stabilized in 24 hrs after connection

STORM DRAIN SYSTEM, INLETS, & OVERFLOWS

- ☐ Atlas 14 Intensity-Duration-Frequency (IDF) curve must be used when designing storm sewer system using the rational method. If storm sewer is designed using SCS methodologies, the 10 year design event rainfall depth must be used.
- ☐ In locations where two on-grade catch basins are used, the Neenah curb opening calculator (or approved equal) shall be used to verify that double catch basins are spaced appropriately to maximize capture efficiency.
- ☐ All apron elevations (inlets and outlets) are labeled. Area inlet, CB, MH, elevations are labeled. Pipe sizes and types 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 90 degrees 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, per City requirements.
- ☐ Trash racks on inlet structures in wooded areas designed assuming a minimum of 50% plugging condition.

*As a reference document see http://www.pca.state.mn.us/index.php/water/water-types-and-programs/stormwater/stormwater-management/minnesotas-stormwater-manual.html

- ☐ For other than Rl & 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 off low 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 is prevented.
- ☐ Designed for full dewatering.
- ☐ Energy dissipation provided at 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 before other construction starts.
- ☐ For areas draining less than 10 acres provide alternative sediment control (5 acres within 1 mile of impaired waters).
  - ☐ Multiple lines of silt fence.
  - ☐ Small basins
  - ☐ Vegetative strips (full permanent vegetation before upslope excavation).

ADDITIONAL NOTES:

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