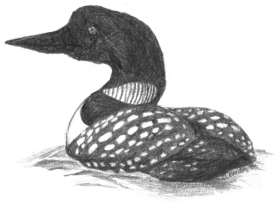
City of Ham Lake



Construction Plan Checklist

The following items are to be completed prior to the City Engineer approving the Construction Plans:

Construction Plan Drawings:

All Sheets:

- ☐ Drawings to be on sheets no larger than 24 inch x 36 inches
- ☐ Graphic scale and north arrow
- ☐ Scale to be no larger than 1"=50'
- ☐ Name of Subdivision
- ☐ Signature of Professional Engineer
- ☐ Date of preparation
- ☐ Date of revision(s) (if any)

First Sheet Only:

- ☐ Vicinity Map
- ☐ Legend

Existing conditions:

- ☐ Underground and overhead utilities including wells and septic fields within 150 feet of the Plat boundaries
- ☐ Indicate which wells and septic fields within the Plat boundaries are to be abandoned and which are to remain
- ☐ Easements shown and labeled
- ☐ Easements to be vacated shown and labeled
- ☐ Streets and street right-of-way shown and labeled
- ☐ Topographic information, including trees, with maximum contour intervals of 2 feet within 150 feet of the Plat boundaries
- ☐ Delineated wetlands
- ☐ Wetland impacts and wetland mitigation areas
- ☐ Ponds, lakes, ditches and storm drains
- ☐ NWL and HWL for pond, lakes and ditches
- ☐ Rim elevations, invert elevations, pipe size and type pipe to all drainage structures, storm drains and culverts
- ☐ FEMA Zone A limits
- ☐ Benchmark(s) based on US Geodesic Survey

Proposed conditions:

- ☐ Wells and primary and secondary ISTS areas
- ☐ Label all proposed easements
- ☐ Temporary cul-de-sac easement(s)
- ☐ Label all proposed streets
- ☐ Street pavement sections
- ☐ Lot numbers and block numbers
- ☐ Building pads & proposed contours
- ☐ Access to pond outlets
- ☐ Centerline street profile slopes and spot grades
- ☐ Three foot separation of the street section from mottling or HWL with a Geotechnical Report
- ☐ Centerline profile of side street matches gutter of through street
- ☐ Maximum 3% centerline street slope in intersections
- ☐ Catch basins at low points of vertical curves
- ☐ Vertical curb at curb returns
- ☐ If using D312, the detail must use the Modified D312 version (9¾ inch rather than 10 inch)
- ☐ Storm manhole rim elevation ½ inch below bituminous
- ☐ Catch basin rim elevation from 1 inch below gutter line
- ☐ Minimum 2% slope from center of cul-de-sac to gutter
- ☐ Spot grades at curb returns and cul-de-sacs and at centerline of street at curb returns and cul-de-sacs
- ☐ Rollover curb catch basins/manholes located within temporary cul-de-sacs. (ex. Neenah type 3508/3270)
- ☐ Slope of curb returns
- ☐ HWL and NWL of ditches, ponds and wetlands
- ☐ Erosion control details
- ☐ Vertical curves where change in grade exceeds 1%
- ☐ Minimum vertical curve K-values of 30 MPH is 19 for crest and 37 for sag. Minimum Length of curve is 50 feet for non-MSA routes and 90 feet MSA routes.
- ☐ Radius of curb returns and cul-de-sac
- ☐ Rims, inverts, pipe lengths, slopes, type of pipe, size of structure for storm drain, culverts and pond outlets
- ☐ 27-inch structures, cast-in-place (poured) or masonry or concrete block structures are not permitted.
- ☐ Outlet control structures minimum round opening is 4” diameter
- ☐ Drain tile cleanout
- ☐ Storm drain and culvert cover minimum of 1’ from top of pipe to bottom of Class 5 aggregate base
- ☐ Garage Floor Elevation must be a minimum of 1’ above the top of the street curb

Required notes on Construction Plan:

- ☐ Do not backfill catch basin until fabric wrap is inspected by the City
- ☐ Trash guards on storm drains and culverts under 48 inch diameter; no trash guards on storm drains and culverts of 48 inch diameter or greater
- ☐ Provide Class III riprap with filter fabric for all pipe outlets
- ☐ Tie last three sections of concrete pipe, including apron, for concrete pipe less than 48 inches diameter; for 48 inch diameter or larger concrete pipe, tie all sections

- ☐ Pipe length include aprons
- ☐ CPP to be dual wall with watertight joints

Storm Drain Calculations:

- ☐ Review for compliance with 2013-2018 NPDES permit requirements
- ☐ Silt fence is required at Pond NWL
- ☐ Calcs that prove that there is no net increase from pre-project conditions (on an annual average basis) for discharges of Total Suspended Solids.
    - NPDES Phase II and CCWD requires 80% TSS minimum load reduction unless other agreement is in place. NPDES P2 cautions about not breaking existing conditions such as perched water shelf, etc., refer to the document. SWPPP shore zoning ordinance points to technical field guide from soil and water conservation references.
    - The Phosphorus removal requirement is 60%
- ☐ Maximum infiltration rate of 8.3 inches/hour
- ☐ Time of concentration. City of Ham Lake SWPPP (2012) Section VIII.A.2. – no direct entry. "Method used will incorporate the time of concentration and land use for existing and proposed development...Time of concentration will be calculated, not estimated."
- ☐ NPDES General Permit requires ½ inch of runoff to be infiltrated on site when possible.
- ☐ Calculations match Grading Plan including details, pond bench
- ☐ Pond baffle calculations, 0.5 cfs maximum for 1-year event
- ☐ Filtration Shelf calculations require the 1-inch storm event. See flood elevation for storage provided between NWL and the orifice elevations in the OCS for the 1-inch storm event. Note, the surface area should be considered when reviewing the minimal change in elevation—for example, a 1-inch storm event elevation with an elevation less than the outlet control structure vertical orifice.
- ☐ ISTS leach field or tank separation from an infiltration basin is 35 feet [1/11/18 - MPCA Stormwater Manual/ Stormwater Infiltration and Setback Distances]
- ☐ Existing and proposed drainage area maps
- ☐ Drainage areas match topography and roof drainage
- ☐ Baffled weir calculations
- ☐ Walker calculations for dead storage
- ☐ Peak rates when using infiltration above the NWL - ½ rate per Soil Survey or test results
- ☐ CN values reflect impervious area, pond and wetlands
- ☐ Landlocked ponds and wetland back to back storm calculations
- ☐ Storm drain sized for 10-year storm event
- ☐ Maximum velocity in storm drain of 8 fps for 10-year storm event
- ☐ Energy dissipation reducing storm drain outlet velocity to less than 4 fps for 10-year storm event
- ☐ Spread calculations in roadway from gutter, ½ street roadway width from gutter maximum for 10-year event
- ☐ Drainage calculations are to be signed by a Professional Engineer
- ☐ Certification from ISTS designer for ISTS areas
- ☐ Custom Graded Lots require a $9,000/lot security
- ☐ NPDES phase II permit compliance and application. Special requirements if within 1 mile of impaired waters – see General Stormwater Permit for Construction Activity at http://www.pca.state.mn.us/water/stormwater/stormwater-c.html

- ☐ Copy of Storm Water Pollution Prevention Plan submitted to the MPCA for NPDES II compliance. Per General Stormwater Permit, estimated quantity tabulation is to be included in the SWPPP.
- ☐ Calculations are to be signed by a Professional Engineer

Note to Developer: This checklist is provided as a tool whereby to aid in determining whether any items have been excluded when reviewing a Construction Plan. This checklist is not to be construed as all-inclusive. Ordinance 10 provides the specific detail in regard to subdividing properties within the City of Ham Lake. Compliance with the MPCA General Permit (Authorization to Discharge Permit No. MN R100001), Stormwater Associated with Construction Activity under the NPDES/SDS Program, is required.