

Byron Grading Plan Policy

Approved - 11.29.16

The City of Byron requires a grading plan and permit application if the following criteria are met:

- If the project disturbs less than 10,000 square feet, the project shall conform to the original subdivision grading plan, if available.
 1. The developer shall submit a site sketch showing drainage arrows, building elevations and lot corner grades.
- If the project disturbs more than 10,000 square feet but less than 1 acre, but is included in an approved subdivision grading plan, the following are required:
 1. Grading permit.
 2. The developer shall submit a site sketch showing drainage arrows, building elevations and lot corner grades.
 3. Conform to the original subdivision grading plan.
- If the project disturbs more than 10,000 square feet but less than 1 acre and is ***not*** included in an approved subdivision grading plan, the following are required.
 1. Grading permit
 2. Grading plan and checklist
 3. Drainage report
- If the project disturbs more than 1 acre the following are required:
 1. NPDES permit
 2. StormWater Pollution Prevention Plan (SWPPP)
 3. Grading permit
 4. Grading plan and checklist
 5. Conform to the original subdivision grading plan, if available.
 6. Drainage Report

The City of Byron requires that a licensed civil engineer prepare the grading plan and complete the grading plan checklist. The City shall be reimbursed for any expenses of the items listed above which require a plan review and/or construction inspection of the grading project by the City Engineer.

Byron Grading/Erosion Control Application

Site Address: _____

Legal Descriptions: _____

Property Owner Address: _____

Phone No: _____ Email: _____

Project Name: _____

Engineer/Soils Engineer: _____

Engineer Phone No: _____ Engineer Email: _____

Excavator: _____ Phone No: _____

Type of Request: _____ Grading Permit _____ Erosion Control Review

Request Description: _____

Existing Use of Property: _____

Present Zoning Classification: _____

Signature of Applicant: _____ Date: _____

Signature of Property Owner: _____ Date: _____
(if different than applicant)

For Office Use Only:

Grading Permit / Erosion Control Fee \$100 + Consultant Time

Reviewed by the City Engineer on _____ (date) to consider the above request.

_____ Approve _____ Approved with attached conditions:

Signature: _____ Date: _____

Byron Grading Plan Checklist

Project Name: _____

General:

- Atlas 14, Volume 8 rainfall depths must be used with and SCS Type II, 24-hour distribution. Rainfall Depths are as follows for the listed design events:
 - 2-year: 2.94 inches
 - 10-year: 4.47 inches
 - 100-year: 7.81 inches
- Size of the drainage area served shown:
 - Total project area & total impervious surface areas of project
 - Total estimated impervious areas of ultimate development
- Final plan is signed by a licensed professional.
- NPDES permit and SWPPP are referred to on the plan.
- Completed Byron grading permit application.
- 2 copies of signed grading submitted (1 electronic).
- Owner name and address shown on plan.
- Plan is 1" = 50' or larger.
- North arrow shown on plan.
- Plan drawn in 2-foot contours (solid lines).
- Existing contours are labeled (dashed lines).
- Directional arrows shown for proposed drainage.
- Details of terrain & drainage are provided for areas adjacent to proposed grading.
- Existing public & private utilities shown.
- Boundaries of drainage area shown (drainage report).
- Soil types are shown (drainage report).
- Grading limits clearly shown on plan.
- All receiving waters, including wetlands, within ½ mile shown or identified on plan.
- Property limits are shown.
- Streets (existing & proposed) are labeled.
- Lot & Block labeled on plan.
- Schedule of BMP installation shown.
- BMP details included on plan.
- ROW Permits from proper authority.

Site Grading, Sediment & Erosion Control:

- Down-slope sediment control scheduled before grading.
- Adjacent property protected from drainage & sediment.
- Stabilized vehicle exits are provided.
- Silt fences are provided. "High-flow, heavy-duty" designated in concentrated areas.
- All storm inlets (existing & proposed) include temporary sediment control & remain in place until upstream stabilization.
- Maximum unbroken slope 3:1 or steeper of 75 feet horizontal. Min break of 8 feet horizontal.
- Temporary stockpiles include silt fence or sediment control.
- Percent of slope shown for streets & drainage swales
- Proposed elevation of garage & lowest floor, ground at front & rear of buildings, along with structure type indicated on the plan, lot corner grades.
- Top of foundation min 6" from ground.
- Grade 1' below top of foundation, 10' from building.
- Lowest opening of building at least 1' above any overflow elevation, 2' above low road crossing, 2' above pond 100-year water level & 1' above 100-year flood elevation (FEMA or other approved).
- Seeding schedule for areas within 200' of surface water within 24 hours.
- 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 & disk anchored mulch, or 4" min topsoil & sod.
- Slopes steeper than 4:1 and longer than 30' are seeded & protected with erosion control

blankets or sodded & staked. Blanket category specified per MnDOT 3885.1.

- Statement that slopes steeper than 4:1 are stable from land sliding & surface erosion. Geotechnical report for slopes >3:1.
- Sites where temporary or permanent cover will not be complete by Nov. 15, plan indicates adequate measures to control spring erosion & sedimentation.
- Min slope of drainage swales shall not be flatter than adjacent street profile. Or 1% in all other locations without prior approval.
- Typical sections for roadways & drainage ditches shown on the plan.

Infiltration/Filtration Basins:

- Type(s) used: _____
- Infiltration Basins:
 - Infiltration Trenches
 - Rain Gardens
 - Sand Filters
 - Organic Filters
 - Bioretention
 - Natural Depression (wetlands not included)
 - Other: _____
- Floating debris removed before infiltration system.
- Site sensitivity analysis included.
- Evaluation of hydraulic impact included.
- Runoff routed away from infiltration system during construction.
- Site controlled to minimize soil compaction.
- Pretreatment sediment removal included.
- Designed for ½ inch of runoff from total impervious surface areas for ultimate development within 48 hours.
- System bypass for flows that cannot be filtered.
- Min vertical separation of 3 feet between seasonal high groundwater & bottom of infiltration system.
- Min vertical separation of 3 feet between impermeable layer & bottom of infiltration system.

- Soil test results, system capacity calculations & computer modeling results provided (drainage report).
- Min 10' width maintenance access provided.
- Emergency overflow spillway provided & located to protect adjacent property & large fill sections.

Drainage Report:

- Map of existing watersheds.
- Map of proposed watersheds.
- Map of soil type.
- Discussion of existing & proposed conditions.
- Comparison of existing & proposed runoff. Proposed runoff shall not exceed runoff for 2-year, 10-year & 100-year storm.
- Modeling calculations & results included.
- Discharge & storage calculations for all stormwater ponds & infiltration basins.
- Velocity computations for all pipe outlets.
- Velocity computations for all drainage swales.
- Culvert sizing calculations.
- Storm sewer design calculations.
- Gutter spread calculations allowing for a 20' driving lane.
- Calculations for compliance with NPDES requirements.

Drainage Swales & Easement:

- Drainage easements are shown & labeled on the plan.
- Drainage easements are provided where concentrated flow is received from more than 1 adjacent lot. 100-year max flow contained within easement.
- Min drainage easements for flows from 1 acre or less, or 4 lots or less are a min of 15' wide. 4:1 side slopes shown on ditches.
- Min drainage easements for flows from more than 1 acre, or more than 4 lots are a min of 20' wide. 4:1 side slopes on ditches.
- Control elevations for drainage ways are provided.
- 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. Blanker per MnDOT 388.2A2 is specified. Plan depicts blanket locations & cross sections.

- Easement documents are signed & submitted to Byron with recording fees, or included on plat.
- Ditches stabilized within 24 hours of connection to surface water outlet.

Outlet & Energy Dissipation:

- Discharge direction of flow the flow direction of receiving ditch or stream.
- Where discharge velocities are greater than 10 fps or less, riprap & filter volumes are indicated in accordance with MnDOT Standard Plate
- Where discharge velocities are greater than 10 fps, energy dissipator is provided along with riprap & filter.
- Pipe outlet energy dissipation complete within 24 hours of connections to surface water or outlet.

Temporary Sediment Basins:

- Temporary sediment basins provided.
- Sized to store 2-year, 24-hour storm from the drainage area below the outlet pipe (no smaller than 1,800 cf/acre of drainage area, or sized at 3,600 cf/acre of drainage area).
- Designed to minimize short-circuiting.
- Discharged of floating debris prevented.
- Designed for full dewatering.
- Principal & emergency spillway designed per BMP storm frequency standards.
- Plan requires any temp. or permanent sediment ponds to be constructed at the beginning of construction.
- For areas draining less than 10 acres, alternative sediment control provided:
 - Multiple lines of silt fence.
 - Smaller basins.
 - Vegetative strips.

Storm Drain System, Inlet & 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 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 maximum capture efficiency.
- All apron elevations (inlets & outlets) are labeled. Area inlet elevations, CB, MH, are labeled. Pipe sizes and materials are labeled.
- 400' max manhole spacing for lines 15" diameter or less.
- 500' max manhole spacing for lines 18" to 10" diameter.
- Flow direction changes no greater than 90 degrees.
- Apron inlets include trash racks.
- Trash racks on inlet structures in wooded areas designed assuming a min 50% plugging condition.
- Drainage does not cross intersections.
- Overflow swales are provided which limit the depth of ponding in the roadway to 2' or less.
- Min depth of road ditch = 3' with 4' bottom & 3:1 side slopes.

Permanent Ponds:

- 100-year high water level is labeled on plan
- Permanent pool volume of 1,800 cf/acre drained.
- Water quality volume equal to ½ inch runoff over total impervious surface area at ultimate development.
- Outlet sized to discharge no more than 5.66 cf/acre of pond surface.
- Outlet designed to prevent short circuiting & discharge of floating debris.
- Emergency overflow spillway is provided to accommodate 100-year event. High point elevations & direction of flow are shown on plans.

- Emergency overflow spillway is located to protect adjacent property & 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.
- Min 10' width at top of dam (if dam is <15')
- 12' wide access & turnaround area for maintenance vehicles is shown on a slope <15% forebay at inlet.
- Entire drainage area show (drainage report).
- Pond cross section included on plan.
- Where possible, locate inlets & outlets at opposite ends of ponds & provide:
 - 10:1 bench provided for first foot 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 3-10 feet based on normal water level.
- Normal water elevation is labeled.
- DNR Dam Safety Permit obtained if dam height is >6' & storage to top of dam is >15 acre/ft.