

TOWN OF LAWRENCE
STORMWATER REFERENCE GUIDE

FOR THE:

CONSTRUCTION SITE EROSION CONTROL ORDINANCE



DATE:
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EXECUTIVE SUMMARY

The Town's Stormwater Reference Guide (Reference Guide) has been created to act as a companion to the Town's Construction Site Erosion Control Ordinance (Ordinance). The Ordinance cites the Reference Guide as the resource for details that were omitted from the model Ordinance due to the potential for variations in each municipality's permitting process and level of expertise in regard to the Ordinance. Items in the Reference Guide can be changed without the public hearing process as the changes are typically administrative and/or technical and do not affect the Ordinance's intent and requirements. The Reference Guide is organized similar to the Construction Site Erosion Control Ordinance for ease of relating the Reference Guide to the appropriate sections in the Ordinance.

The Construction Site Erosion Control Ordinance (Ordinance) applies to all construction sites, regardless of the land disturbance size. The Ordinance requires a permit for a construction site with 4,000 square feet or greater of land disturbance. Please refer to 15-5-04(1)(a)3. of the Ordinance and 15-5-04(1) of this Reference Guide for a description of other construction sites that may require a permit.

Construction Site Erosion Control Ordinance								
Site	Requirements ^a							
	Sediment (TSS)	Vehicle Tracking	Protect Storm Inlets	Protect Waters of State	Protect Drainage Ways	Dewater Properly	Manage Soil Stockpile	Manage Building Materials
Less than 1 Acre	No Numeric Standard ^b	Yes	Yes	Yes	Yes	Yes	Yes	Yes
1 Acre or More	5 tons / acre / year	Yes	Yes	Yes	Yes	Yes	Yes	Yes

^a Summary of Section 15-5-07 Performance Standards of the Construction Site Erosion Control Ordinance. See Ordinance and this Reference Guide for specific requirements, exemptions and prohibitions.

^b Construction sites regulated by the Wisconsin Department of Safety and Professional Services are required to comply with a numeric performance standard, regardless of the size of land disturbance. See SPS 360.20(3) and SPS 321.125(3) for specific requirements. The local municipality may also be acting as an agent of the Wisconsin Department of Safety and Professional Services.

15-5-01 AUTHORITY

15-5-02 FINDINGS OF FACT

15-5-03 PURPOSE

15-5-04 APPLICABILITY AND JURISDICTION

(1) APPLICABILITY

Pursuant to 15-5-04(1)(a)3., the administering authority may require a permit for construction sites with less than 4,000 square feet of land disturbance. Currently, the administering authority's policy is to require a permit for the following construction sites with less than 4,000 square feet of land disturbance:

- Installation, replacement, or maintenance of underground pipes, cables, fiber optics, or wires with 100 linear feet or greater of length.
- Routine ditch maintenance with 100 linear feet or greater of length.
- Land disturbing activities located in waters of the state, wetlands, or protective areas. Wetlands shall be delineated in accordance with s. NR 103.08(1m), Wis. Adm. Code.

(2) JURISDICTION

(3) EXCLUSIONS

The Wisconsin Department of Transportation (WisDOT) has entered into a memorandum of understanding with the Wisconsin Department of Natural Resources that satisfies s. 281.33 (2), Wis. Stats., such that activities directed and supervised by WisDOT are exempt from this Ordinance.

Activities directed and supervised by the local municipality are covered by this Ordinance.

15-5-05 DEFINITIONS

15-5-06 TECHNICAL STANDARDS

(1) DESIGN CRITERIA, STANDARDS AND SPECIFICATIONS

Below is a list of Technical Standards and Guidance Documents that shall be used to satisfy Performance Standards contained in the ordinance. Technical Standards specify the minimum criteria for a best management practice (BMP). Guidance Documents contain recommendations and additional "how to" guidance. Performance Standards take precedence over Technical Standards and Technical Standards take precedence over Guidance Documents.

- (a) **Technical Standards:** The following are applicable Wisconsin Department of Natural Resources (DNR) Conservation Practice Standards or Technical Standards. These standards may be found on the DNR website (http://dnr.wi.gov/topic/stormwater/standards/const_standards.html).

- 1050 Land Application of Anionic Polyacrylamide
- 1051 Interim Sediment Controls: Water Application of Polymers
- 1052 Non-Channel Erosion Mat
- 1053 Channel Erosion Mat
- 1054 Vegetative Buffer for Construction Sites
- 1055 Sediment Bale Barrier (Non-Channel)
- 1056 Silt Fence
- 1057 Stone Tracking Pad and Tire Washing
- 1058 Mulching for Construction Sites
- 1059 Seeding for Construction Site Erosion Control
- 1060 Storm Drain Inlet Protection for Construction Sites
- 1061 De-watering
- 1062 Ditch Check (Channel)
- 1063 Sediment Trap
- 1064 Sediment Basin
- 1065 Rip-rap / Stabilized Outlet (pending completion)
- 1066 Construction Site Diversion
- 1067 Temporary Grading Practices for Erosion Control
- 1068 Dust Control on Construction Sites
- 1069 Turbidity Barrier
- 1070 Silt Curtain
- 1071 Interim Manufactured Perimeter Control & Slope Interruption Products

(b) **Local Modifications to Technical Standards:** The following are local requirements that are intended to supplement, clarify, or supersede DNR Technical Standards.

(c) **Guidance Documents:** The following are the applicable Guidance Documents. Many of these Guidance Documents can be found on the DNR website (http://dnr.wi.gov/topic/stormwater/standards/const_standards.html).

- Guidance for the Establishment of Protective Areas for Wetlands
- "Construction Site" Definition – "Common Plan of Development"
- Meeting New State Standards: Construction Erosion Control Workshops (<http://dnr.wi.gov/topic/Stormwater/construction/practices.html>)
- Estimating Residue Using the Line Transect Method (UW-Extension A3533).
- Wisconsin Department of Transportation - Erosion Control Product Acceptability Lists (PAL) for Multi-Modal Applications
- Wisconsin Department of Transportation - Facilities Development Manual
- Wisconsin DOT Standard Specifications for Highway and Structure Construction
- Other National Publications

(2) OTHER STANDARDS

15-5-07 PERFORMANCE STANDARDS

(1) NON-PERMITTED SITES

Construction sites with less than 4,000 square feet of land disturbance are required to satisfy a numeric performance standard if the construction site is regulated by the Wisconsin Department of Safety and Professional Services. Please refer to SPS 360.20(3) and SPS 321.125(3) for specific requirements.

Pursuant to 15-5-07(1)(e) of the Ordinance, the administering authority may establish more stringent erosion and sediment control requirements for non-permitted sites if the administering authority determines that an added level of protection is needed.

(2) PERMITTED SITES

Construction sites with 1 acre or more of land disturbance are required to meet the ordinance's numeric performance standards.

Construction sites with less than 1 acre of land disturbance are required to satisfy a numeric performance standard if the construction site is regulated by the Wisconsin Department of Safety and Professional Services. Please refer to SPS 360.20(3) and SPS 321.125(3) for specific requirements.

Pursuant to 15-5-07(2)(f) or (g) of the Ordinance, the administering authority may establish more stringent erosion and sediment control requirements for permitted sites if the administering authority determines that an added level of protection is needed.

Computer Models:

The Wisconsin Department of Natural Resources (DNR) is working with the EPA, NRCS, and several other states to develop a Windows version of RUSLE2 for construction site erosion control. Until this software is available for statewide use, BMPs shall be designed using the Technical Standards listed in 15-5-06. The Wisconsin Department of Safety and Professional Services (SPS) is using the Universal Soil Loss Equation (USLE) spreadsheet until the new RUSLE2 software is available. Use of the spreadsheet is not required, but is encouraged (<http://dsps.wi.gov/sb/SB-SoilErosionControlProgram.html>) until such time that the RUSLE2 software is available.

(3) CLARIFICATIONS:

Erosion Control Practices - Erosion control practices are used to prevent sediment particles from becoming dislodged and suspended in runoff. Erosion control practices include land application of polyacrylamide, mulching, seeding, and erosion mats. Grading practices can be used to supplement these practices.

Sediment Control Practices - Sediment control practices are used to remove sediment particles that are suspended in runoff and being transported. Sediment control practices used for sheet flow conditions include vegetative buffers, sediment bale barriers (non-channel), silt fence, and perimeter control / slope interruption products. Sediment control practices used for concentrated flow conditions include storm drain inlet protection (< 1 acre), ditch checks (< 1 acre), sediment traps (< 5 acres), sediment basins (< 100 acres), and polymers. Sediment control practices used for lakes, rivers, and streams include turbidity barriers and silt curtains.

Construction Site Diversions - Construction site diversions are used to divert clear-water runoff away from disturbed areas. Construction site diversions are also designed to convey sediment-laden runoff from disturbed areas to sediment control practices such as ditch checks, sediment traps, and sediment basins.

Dust Control Practices - Dust control practices are used to prevent wind erosion.

Dewatering - Dewatering practices are used to remove sediment from ponding surface water or groundwater. A DNR permit is required for pumping 70 gpm or more (<http://dnr.wi.gov/topic/wells/HighCapacity.html>). The discharge must be sampled in accordance with DNR requirements.

Non-Erosive Flows - Velocity dissipation devices shall be placed at outfall locations and along the length of any channel, as necessary, to provide a non-erosive flow so that the natural, physical, and biological characteristics and functions are maintained and protected. Velocity dissipation devices could include erosion mat (channel), rip-rap, drop structures, stilling basins, and other energy dissipation devices.

Maximum Permissible Velocities for Channels			
Channel Cover	Slope Range %	Erosion-resistant soils	Easily eroded soils
Bare Soil	0-5	3-6 fps*	1.5-2 fps*
	Do not use on slopes steeper than 5%, except for side slopes in a combination channel.		
Bermuda Grass	0-5	8 fps	6 fps
	5-10	7 fps	5 fps
	>10	6 fps	4 fps
Buffalo grass, Kentucky bluegrass, Smooth brome, blue grama	0-5	7 fps	5 fps
	5-10	6 fps	4 fps
	>10	5 fps	3 fps
Grass mixture	0-5	5 fps	4 fps
	5-10	4 fps	3 fps
	Do not use on slopes steeper than 10%, except for side slopes in a combination channel.		
Lespedeza sericea, weeping love grass Ischaemum (yellow bluestem), kudzu, alfalfa, crabgrass	0-5	3.5 fps	2.5 fps
	Do not use on slopes steeper than 5%, except for side slopes in a combination channel.		
Annuals – used on mild slopes or as temporary protection until permanent covers are established, common lespedeza, Sudan grass	0-5	3.5 fps	2.5 fps
	Use on slopes steeper than 5% is not recommended		

* Maximum permissible velocities depend on specific soil properties and shear stress. Typically, the maximum velocity for sand = 1.5 fps, silt and loam = 1.7 to 2.5 fps, fine gravel = 2.5 fps, clay = 3.7 fps, coarse gravel = 4.0 fps, cobbles = 3.7 to 5.0 fps, and shale / hard pan = 6.0 fps.
 Source – Chow Open Channel Hydraulics & Civil Engineering Reference Manual for the PE Exam, Ninth Edition

Materials - No sediment or solid materials, including building materials, may be discharged in violation of the following federal, state, and local regulations:

- Navigation, Dams, & Bridges (Chapter 30 and 31, Stats.)
- Wetland Water Quality Standards (NR 103)
- Wetlands (US Army Corps of Engineers Section 404 regulations)
- Shoreland Management (NR 115, NR 117, & local regulations)

- Floodplain Management (NR 116 & local regulations).

Wastewaters - Wastewaters, such as from concrete truck washout, need to be properly managed to limit the discharge of pollutants to the municipal separate storm sewer system or waters of the state. A separate permit may be needed from the DNR where a wastewater discharge has the potential to adversely impact waters of the state. The appropriate DNR wastewater specialist should be contacted to determine if wastewater permit coverage is needed where wastewater will be discharged to the municipal separate storm sewer system or waters of the state.

Wetland Delineations - Wetland delineations shall be performed by a professional soil scientist, professional hydrologist, or other qualified individual approved by the administering authority. The individual performing the delineation shall classify the wetland as a less susceptible wetland, highly susceptible wetland, exceptional resource water, or outstanding resource water.

Protective Areas - Protective areas may be disturbed as part of a construction project, if necessary. Disturbed areas must be stabilized from erosion and restored with an adequate sod or self-sustaining vegetative cover. Best Management Practices (ponds, swales, etc.) may be located in protective areas.

Type of Vegetation - It is recommended that seeding of non-invasive vegetative cover be used in the protective areas. Vegetation that is flood and drought tolerant and can provide long-term bank stability because of an extensive root system is preferable. Vegetative cover can be measured using the line transect method described in the University of Wisconsin Extension publication number A3533, titled "Estimating Residue Using the Line Transect Method".

Adjacent Property Owners - If a stream or channel is permanently placed or relocated along a property line, an easement or letter of permission is required from any property owners impacted by the protective area's new location. Also, if a stormwater facility or structure is proposed within an onsite stream or channel, 100-year flood elevations shall be evaluated to determine if offsite property owners are impacted by backwater or a flood elevation increase. An easement or letter of permission is required from any property owners impacted by backwater. Changes to a stream, wetland, or channel should be discussed during the pre-design meeting. Changes to a navigable stream, wetland or other waters of the state will require permits from the DNR, Army Corps of Engineers, and local municipality.

Agricultural Activity Areas - Agricultural Activity Areas (i.e. farm fields and other cropland areas) are exempt from the ordinance.

Agricultural Production Areas - Agricultural Production Areas (i.e. farm buildings, structures, and other impervious surfaces) are not exempt from the ordinance. The County Land Conservation Department (LCD) may be available to prepare Erosion & Sediment Control Plans for farm structures and disturbances in the Agricultural Production Areas. Construction of farm structures and disturbances in Agricultural Production Areas of one acre or greater must also be covered by an NR 216 permit.

Regional Wet Detention Ponds - A regional wet detention pond (post-construction site) may be used as a sediment basin (construction site) until final stabilization of the wet detention pond and expiration of the erosion control permit associated with construction of the regional wet detention pond. While regional stormwater management facilities are appropriate for control of post-construction pollutants, they should not be used for construction site sediment removal at other construction sites located within the wet detention pond's watershed.

15-5-08 PERMITTING REQUIREMENTS, PROCEDURES AND FEES

- (1) PERMIT REQUIRED**
- (2) PERMIT APPLICATION AND FEES**
- (3) REVIEW AND APPROVAL OF PERMIT APPLICATION**

Meetings between the permit applicant, designer, and plan reviewer are encouraged during the pre-design, design, and plan review process. The meetings are used to educate each other about regulatory requirements, environmentally sensitive areas, and design challenges. The number of meetings held is typically commensurate with the size and complexity of the project. Meetings can be face-to-face or via telephone.

A pre-construction conference is encouraged before the start of all construction projects. For sites with 1 acre or more of land disturbance, a pre-construction conference is required. The permit applicant, designer, plan reviewer, contractor, and inspector are encouraged to attend. The purpose of the meeting is to exchange contact information, review the Erosion & Sediment Control Plan, and identify individuals responsible for permit compliance, plan amendments, and weekly inspection reports.

- (4) FINANCIAL GUARANTEE**

Construction sites with 1 acre or more of land disturbance are required to have a financial guarantee. The financial guarantee includes the cost associated with erosion and sediment control BMPs, site inspections, project administration, and contingencies.

Construction sites with less than 1 acre of land disturbance are not typically required to have a financial guarantee.

Portions of the financial guarantee may be released as the construction project progresses. The last portion of the financial guarantee is not released until the municipal inspector performs a final inspection and the permit applicant pays final inspection fees.

- (5) PERMIT REQUIREMENTS**

The permit applicant is required to post the "Certificate of Permit Coverage" in a conspicuous place at the construction site.

- (6) PERMIT CONDITIONS**

- (7) PERMIT DURATION**

- (8) MAINTENANCE**

- (9) ALTERNATE REQUIREMENTS**

15-5-09 EROSION AND SEDIMENT CONTROL PLAN

- (1) PLAN REQUIREMENTS**

Sites With Less Than 1 Acre of Land Disturbance:

The erosion and sediment control plan for construction sites with less than 1 acre of land disturbance shall contain, at a minimum, the following information unless other municipal ordinances or state regulations require more detailed information:

- (a) The name, contact person, title, mailing address, e-mail address, telephone number, and fax number of the following individuals or organizations: permit applicant, landowner, consultant or plan preparer, and contractor (if known).
- (b) Anticipated project start date and projected project end date.
- (c) Total area of the construction site and the total area of the construction site that is expected to be disturbed by land disturbing activities.
- (d) Sufficient detail so as to document ordinance compliance.
- (e) Location of all BMPs to be employed.
- (f) Pre-construction ground surface contour lines at intervals appropriate for conditions present within the proposed disturbed areas.
- (g) Identify the initial downstream receiving water of the state.

Sites With 1 Acre or More of Land Disturbance:

The erosion and sediment control plan for construction sites with 1 acre or more of land disturbance shall contain, at a minimum, the following information:

- (a) The name, contact person, title, mailing address, e-mail address, telephone number, and fax number of the following individuals or organizations: permit applicant, landowner, consultant or plan preparer, and contractor (if known).
- (b) Anticipated project start date and projected project end date.
- (c) Description of the construction site and the nature of the land disturbing construction activity, including representation of the limits of land disturbance on a USGS 7.5-minute series topographical map.
- (d) Description of the intended sequence of major land disturbing construction activities for major portions of the construction site, including clearing; stripping topsoil; rough grading; installation of erosion and sediment controls; construction of utilities, streets, and buildings; finish grading; and permanent stabilization.
- (e) Total area of the construction site and the total area of the construction site that is expected to be disturbed by land disturbing activities.
- (f) Available data describing the surface soil as well as sub-soils, including representation of the limits of land disturbance on a NRCS soils map.
- (g) Wherever permanent infiltration devices will be employed or were evaluated, the depth to the nearest seasonal high groundwater elevation or top of bedrock shall be identified.
- (h) Name of the immediate named receiving water from the United States Geological Service 7.5 minute series topographic maps.
- (i) Calculations demonstrating compliance with the 5 tons per acre per year sediment performance standard (calculations may not be feasible until RUSLE2 is completed).

The erosion and sediment control plan for construction sites with 1 acre or more of land disturbance shall include a site map. The site map shall include the following items and shall be at a scale not greater than 100 feet per inch and at a contour interval not to exceed two feet:

- (a) Existing topography, vegetative cover, impervious surfaces, natural and engineered drainage systems, roads, surface waters, and 100-year floodplains. Identify slopes of 20% or more that are to be disturbed.
- (b) Boundaries of the construction site.
- (c) Drainage patterns and approximate slopes anticipated after grading activities. Identify drainage ways that flow off the site.

- (d) Areas of soil disturbance, including soil stockpile locations.
- (e) Location of major structural and non-structural controls identified in the erosion and sediment control plan, including standard detail drawings and specifications where appropriate.
- (f) Location of areas where stabilization practices will be employed.
- (g) Areas that will be vegetated following land disturbing construction activities.
- (h) Area and location of wetland acreage on the construction site and locations where stormwater is discharged to a surface water or wetland within one-quarter mile downstream of the construction site.
- (i) Areas used for infiltration of post-construction stormwater runoff.
- (j) An alphanumeric or equivalent grid overlying the entire construction site.

The erosion and sediment control plan for construction sites with 1 acre or more of land disturbance shall include a description of appropriate erosion and sediment control best management practices that will be installed and maintained at the construction site to prevent pollutants from reaching waters of the state. The erosion and sediment control plan shall clearly describe the appropriate erosion and sediment control best management practices for each major land disturbing construction activity and the timing during the period of land disturbing construction activity that the erosion and sediment control best management practices will be implemented. The description of erosion controls shall include, when appropriate, the following minimum requirements:

- (a) Description of any interim and permanent stabilization practices, including a schedule for implementing the practices. The erosion and sediment control plan shall ensure that existing vegetation is preserved where attainable and that disturbed portions of the construction site are stabilized.
- (b) Description of any structural practices to divert flow away from exposed soils, store flows or otherwise limit runoff and the discharge of pollutants from the construction site. Unless otherwise specifically approved in writing by the local municipality, structural measures shall be installed on upland soils.
- (c) Management of overland flow at all areas of the construction site, unless otherwise controlled by outfall controls.
- (d) Trapping of sediment in channelized flow.
- (e) Staging land disturbing activities to limit exposed soil areas subject to erosion. Soil stockpiles exposed for more than 7 days shall be stabilized.
- (f) Protection of downslope drainage or storm water inlets where they occur.
- (g) Minimization of tracking at all vehicle and equipment entry and exit locations of the construction site.
- (h) Clean up of off-site sediment deposits by the end of each work day.
- (i) Proper disposal and management of onsite chemicals, cement, and other building compounds and materials.
- (j) Stabilization of drainage ways, including consideration of erosive flows at outlets and in downstream channels.
- (k) Installation of permanent stabilization as soon as possible after final grading.
- (l) Minimization of dust to the maximum extent practicable.
- (m) Dewatering activities.
- (n) Control of untreated wash water from vehicle and wheel washing into waters of the state or offsite separate storm sewers.
- (o) Spill prevention and response procedures.
- (p) Implementation of BMPs.

For construction sites with 1 acre or more of land disturbance, prepare a narrative describing the following: site location, total site area and disturbed area, purpose of project, drainage system and outfalls, drainage area for each outfall, stream and wetland locations, topsoil and subsoils, depth to groundwater and bedrock, erosion and sediment controls, sequence of construction, BMP inspection and maintenance responsibilities,

weekly inspection reports, and plan amendments.

For construction sites with 1 acre or more of land disturbance, the erosion and sediment control plan shall include a statement or narrative which includes the following: (a) erosion and sediment control practices shall be repaired or replaced within 24 hours of an inspection; and (b) when the failure of erosion or sediment control practices results in an immediate threat of sediment entering waters of the state or an offsite drainage system, procedures shall be implemented immediately to repair or replace the practices.

(2) AMENDMENTS

(3) ALTERNATE REQUIREMENTS

15-5-10 FEE SCHEDULE

15-5-11 INSPECTION

15-5-12 ENFORCEMENT

15-5-13 APPEALS

(1) BOARD OF APPEALS OR ADJUSTMENT

(2) WHO MAY APPEAL

15-5-14 SEVERABILITY

15-5-15 EFFECTIVE DATE