

**CHARTER TOWNSHIP OF WASHINGTON
MACOMB COUNTY, MICHIGAN
ORDINANCE NO. 143-D**

AMENDMENT OF WASHINGTON TOWNSHIP LAND DEVELOPMENT AND UTILITY ORDINANCE

TITLE

AN ORDINANCE amending the Washington Township Land Development and Utility Ordinance to revise the storm water standards to align the standards with the State of Michigan's Environment, Great Lakes, and Energy (EGLE) and Macomb County's requirements for storm water management, and repealing any and all Ordinances and/or Resolutions in conflict therewith.

**THE TOWNSHIP BOARD OF THE CHARTER TOWNSHIP OF WASHINGTON, MACOMB
COUNTY, MICHIGAN, ORDAINS:**

SECTION 1 – AMENDMENTS

Section 6.2 of Appendix B to the Engineering Design Standards to the Washington Township Land Development and Utility Ordinance is hereby repealed in its entirety and the following substituted therefor:

6.2 STORM WATER MANAGEMENT BASINS AND PRETREATMENT SYSTEMS

On-site storm water detention or retention is necessary for all developments in the Township (including private roads) whenever runoff is increased. For generally minor revisions to a historically developed site that would not include significant changes to the actual site, and therefore, not require the need for detention, a waiver may be granted by the approving authority. The Applicant will submit a request for waiver and report stating the reasons why detention or retention should not be necessary. Such Report shall include maps, charts, and calculations prepared by a Professional Engineer licensed in the State of Michigan.

For site revisions requiring Planning Commission approval, a waiver may be considered by the Planning Commission if the waiver with required documentation has been reviewed and recommended by the Township Engineer and Department of Public Works Director.

For site revisions not requiring Planning Commission approval, an engineering ordinance variance may be considered if the waiver with required documentation has been reviewed and recommended by the Township Engineer and Department of Public Works Director.

Generally speaking, detention basins temporarily store storm runoff for a period of time in which the runoff is released through a positive outlet, at a controlled rate. Retention basins do not have a positive outlet, so that the stored runoff will either percolate or evaporate.

Infiltration (recharge) systems that store and release run-off through permeable soils to the groundwater may be allowed under specific circumstances and with the review and approval of the Township.

In cases where the requirements for detention/retention basins have been waived, storm water pretreatment (in the form of permanent debris and sedimentation control systems) will be required.

1. DESIGN CONSIDERATIONS

a. Detention Basins

- i. Detention basins may only be used when the design shows that there is an adequate outlet for the storm water, and where the increased volume of storm water will not damage downstream property owners. Construction drawings must include sufficient off-site information to demonstrate the existence of an adequate outlet. Downstream easements and maintenance agreements may be required.
- ii. Water originating from off-site is not required to be detained in the detention basin. Storm water originating from off-site should be diverted around the detention basin whenever practical, and where the diversion will not increase the erosion of soils. Storm water originating from off-site may pass through the detention basin without storage.
- iii. Discharge from the detention basin shall be at a controlled rate such that the entire capacity of the basin can be discharged in about forty-eight hours.
- iv. Channel Protection Volume Control (CPVC) is necessary to protect natural watercourse from increased erosion and sedimentation resulting from increased imperviousness and runoff rates from development. The CPVC shall be equal to a 1.20-inch rainfall event over the area of the development that drains into the detention basin and shall be retained onsite. The CPVC shall be provided using infiltration and/or storage best management practices (BMPs) such as bioretention, rain gardens, bioswales, pervious pavement, green roofs and infiltration trenches prior to storage in a traditional detention basin.
- v. In addition, the Channel Protection Rate Control (CPRC) shall also be required for the post-development runoff volume equal to a 1.9-inch rainfall event over the area of the development that drains into the detention basin as extended detention.
- vi. The total storage capacity (volume) of extended detention shall be contain a capacity equivalent to a minimum of 0.2 feet or 2.4 inches of water over the area of the development that drains into the detention basin.
- vii. The maximum water level shall be controlled by gravity outlets. Pumping of storm water will only be considered if there are no other options at the discretion of the DPW Director or their designated representative.
- viii. Detention basin volumes shall not include volumes below the invert of outlet pipe(s). Provide storage for a 2-year, 24-hour event below the outlet pipe (must be a minimum of 2' of depth below the outlet pipe).
- ix. Detention basins shall be provided with an overflow spillway or manhole set at 6" above the high-water levels capable of passing a 100-year frequency storm. The overflow spillway shall be located so not to cause potential damage to adjacent properties. All overflow spillways shall be protected from erosion by surfacing with concrete or rip-rap. The edges of the surface shall have headers of the same or similar materials to prevent undercutting by the storm water overflow.
- x. One foot of freeboard shall be provided above the high-water elevation.
- xi. Side slopes for detention basins shall not be steeper than one (1) foot vertical to five (5) feet horizontal.

xii. Detention basins will not be permitted within a floodplain.

xiii. Storm water detention in paved parking lots will be considered under the following conditions:

1. The area contributing to any detention area within a paved area shall not exceed eight thousand (8,000) square feet.
2. Storm water run-off on sites with tributary areas greater than eight thousand (8,000) square feet may be detained within paved areas provided the area contributing to any individual paved detention area, shall not exceed eight thousand (8,000) square feet and individual paved detention areas shall be separated by landscaped greenbelts a minimum of ten (10') feet in width broken only by a circulation drive.
3. Storm water detained in paved areas shall not exceed six (6) inches depth. A positive overflow to an acceptable outlet shall be provided to control the six (6) inches maximum depth for each detention area.
4. Restricted catch basin covers shall be used to provide storage in paved areas. Manhole covers with two (2) vent holes often meet discharge requirements. The covers are designed to let the allowable discharge of water into the storm system. Flow calculations shall be submitted for the restricted covers specified. The flow shall be calculated for the maximum storage head.
5. Show limits of detention on plans.

xiii. Underground Detention will be considered on a case-by-case basis with the following conditions:

1. Provisions must be made in the design for the collection and removal of sediment and debris accumulated in the system. All applicable health and safety requirements shall also be incorporated in the design of systems that require access by inspection or maintenance personnel.
2. Detailed shop drawings are required for underground detention systems, including pertinent engineering calculations and soils information.

xiv. Concrete rip-rap shall be provided at all pipe entrances to the basin. All pipes entering or leaving the basin shall have either a headwall or flared-end-section at the end of the pipe.

xv. An overflow system shall be provided. The overflow system shall consist of either a pipe having an invert at the design storage level elevation or a concrete spill-way with an invert 0.5 feet above the design storage elevation. The concrete spill-way shall extend from inside the bank slope to the outlet drain.

xvi. Detention in wetland areas will be considered with the following conditions:

1. If in a regulated wetland, an EGLE permit is required.
2. A permanent pretreatment system for the removal of sediment is required prior to outletting to the wetland.

3. Calculations indicating what the water elevation will rise to during the design storm event will be required. The design must show that properties adjacent to the wetland area will not be negatively impacted by the increase in storm water runoff. Consideration must be given to future developments in the immediate area that could also use the wetland for storm water management purposes.

xvii. All approved plans shall include the following information:

1. Change in impervious area, pervious area by cover type, and total area.
2. CPVC volume provided at the site.
3. Difference between required and provided CPVC volume.
4. Percent of site in each Hydrologic Soil Group (Type A, B, C, D).
5. Site location in geographic information system (GIS) polygon format, or an approved alternative format.
6. Site outfalls and points of discharge in GIS point format, or an approved alternative format.
7. Site MS4 outfall drainage area in GIS polygon format, or an approved alternative format, including any offsite drainage that passes through the outfall or points of discharge.
8. CPRC volume provided at the site.
9. Difference between required and provided CPRC volume.
10. CPVC volume required for each primary road project with receiving water of the state identified.

b. Retention Basins

- i. If a gravity outlet cannot be provided, then the storm water holding facility shall be designed as a retention basin with a storage capacity (volume) of such retention basin shall be rated in acre feet and shall contain a capacity equivalent to a minimum of 0.4 feet of water over the entire watershed area that drains into the retention basin.
- ii. Off-site tributary areas: Retention basins must be sized for storm water that originates off-site and which cannot be bypassed around the proposed retention basin to a site where the storm water originally flowed to. In such cases, the retention basin must be sized using the following design parameters:

Tributary acres: On-site area plus the off-site area

- iv. Retention basin volumes shall not include volumes below the existing groundwater table, permanent water elevation or invert of outlet pipe(s).
- v. One foot of freeboard shall be provided above the high-water elevation.
- vi. Side slopes for retention basins shall not be steeper than one (1) foot vertical to five (5) feet horizontal.

- vii. Retention basins will not be permitted within a floodplain.
- viii. Retention of storm water in parking lots is strictly prohibited.
- ix. The retention basin design shall demonstrate that the soils are capable of providing necessary infiltration. A soils report will be required to show that the underlying soils are well-drained (hydrologic groups A or B) and the ground water is suitable for percolation.
- x. The entire retention basin area must be seeded or sodded and the turf shall be fully established before the Township will give final approval.
- xi. Concrete rip-rap shall be provided at all pipe entrances to the basin. All pipe entering the basin shall have either a headwall or flared-end-section at the end of the pipe.

c. Infiltration (Recharge) Systems

- i. An infiltration system will be considered if the design engineer can demonstrate that all of the following conditions exist:
 - 1. An adequate positive outlet is not available or it is not possible to construct an off-site drainage system to convey basin discharge to the nearest outlet, and the installation of a retention basin is not feasible or practical.
 - 2. The natural underlying soils are well-drained (hydrologic groups A or B) and the ground water is suitable for percolation.
 - 3. The underlying soils and ground water table have the ability to move water away from the site for the area and volume being drained.
- ii. Permanent pretreatment system upstream of inlet point to prevent any material from potentially clogging the infiltration medium (both surface and subsurface).
- iii. An overflow for a 100-year storm must be provided.
- iv. Infiltration system can be easily accessed for maintenance and replacement if necessary. The use of perforated storm pipe under pavements is discouraged.
- v. There must be a method for determining a failure in the infiltration system. The system cannot be designed such that a failure in the infiltration system results in short circuit to the emergency overflow without on-site ponding.
- vi. The following information shall be supplied and/or incorporated in the design of infiltration systems:
 - 1. Soil boring logs/sieve analysis/geotechnical report indicating type and properties of both surface and subsurface soils, suitability of surface soils for infiltration, capability of subsurface soils to conduct seepage to the underlying groundwater table, and flow from the system under mounding conditions at the maximum infiltration rate. Conditions of <6 inches per day. percolation rate will not be allowed.
 - 2. Computed percolation rate and infiltration/exfiltration calculations.

3. Drainage area map, including any off-site contributing areas and emergency overflow route in the event of system failure.
4. Construction methods to prevent compacting the surface soils which may reduce the infiltration capacity of the soils.

d. Permanent Pretreatment Systems

- i. Permanent pretreatment systems (e.g. forebay, infiltration trenches, mechanical swirl structures) shall be required as an integral part of all stormwater management systems and shall be sized for a "first flush" depth of 1.0 inch of runoff from the entire drainage basin area of the project.
- ii. Pretreatment can be in the form of open basins or engineered treatment systems.
 1. Open basins shall be designed with minimum side slopes of one (1) foot vertical to five (5) feet horizontal, one (1) foot of freeboard above design storm water elevation, emergency overflow, and outlet control devices.
 2. Pretreatment shall remove either 80 percent of total suspended solids or limit the discharge concentration into the main detention/retention storage not to exceed 80 mg/L.
 3. Design calculations, plans and shop drawings for engineered treatment systems shall be certified by a Professional Engineer licensed in the State of Michigan.
 4. Horizontal velocities through the system shall be minimized to prevent turbid flows and allow particles to settle in the pretreatment system.\
 5. Permanent pretreatment facilities will not be allowed within a floodplain.

2. MAINTENANCE OF STORM WATER MANAGEMENT BASINS AND PRETREATMENT FACILITIES

- a. A recorded stormwater facilities maintenance agreement shall be required for the construction of all stormwater facilities. This agreement shall describe the design and location of each structural BMP; specific timelines for all maintenance procedures and clear procedures and consequences for the Township to access the site and remedy any confirmed deficiencies.
- b. Commercial, Industrial, Residential and Office Sites: The proprietor shall maintain the storm water management basins and permanent pretreatment facilities in proper working order at all times in accordance with the approved stormwater facilities maintenance agreement.
- c. Subdivisions, condominiums and private roads: the developer and/or owners must provide for continued maintenance of stormwater management basins and permanent pretreatment facilities, through acceptance of ownership and maintenance responsibility by a homeowners or a condominium association. The developer shall be responsible for the maintenance of detention/retention basins until at least ninety-five percent (95%) of all homes have been constructed and sold. The subdivision covenants or condominium bylaws shall incorporate a procedure to finance this maintenance. The developer or owner(s) shall post a cash bond with the Township in the amount to be determined by the Township until the association can assume the maintenance responsibility.

- d. It shall be a violation of this ordinance to adjust any control structures without prior approval by the Department of Public Works. Such approval will only be granted after demonstration that the adjustment will not affect overall drainage or cause flooding to surrounding or downstream property owners.
- e. Basins will be maintained free of invasive species.

SECTION 2. REPEAL OF CONFLICTING PROVISIONS

All resolutions, ordinances or parts thereof in conflict with the provisions of this Ordinance are to the extent of such conflict hereby repealed.

SECTION 3. SEVERABILITY

If any section, paragraph, clause or provision of this Ordinance is for any reason held to be invalid or unconstitutional, the invalidity or unconstitutionality of such section, paragraph, clause or provision shall not affect any of the remaining provisions of this Ordinance.

SECTION 4. PUBLICATION

A true copy or summary of this Ordinance Amendment shall be published in full in a newspaper of general circulation in the Charter Township of Washington within fifteen (15) days after adoption.

SECTION 5. EFFECTIVE DATE

This Ordinance shall take effect immediately after publication of a true copy thereof in a newspaper circulating within the Charter Township of Washington as provide by Section 4.

**NOTICE OF ADOPTION OF
AMENDMENT TO WASHINGTON TOWNSHIP
LAND DEVELOPMENT AND UTILITY ORDINANCE**

On August 10, 2022, the Township Board of the Charter Township of Washington, Macomb County, Michigan, adopted an Amendment of the Charter Township of Washington Land Division Ordinance amending Section 6.2 of Appendix B of the Engineering Design Standards to revise the stormwater standards to align the standards with the State of Michigan's Department of Environment, Great Lakes and Energy requirements and Macomb County's requirements for stormwater management. The Ordinance Amendment shall become effective immediately after the date of this publication. A copy of the Amendment may be purchased or inspected during regular business hours at the Washington Township Clerk's Office located at 57900 Van Dyke Avenue, Washington Township, MI 48094. A copy of the Amendment is also available for inspection on the Washington Township website.

Stanley Babinski,
Washington Township Clerk