

TO: CITY OF PORTAGE
STORM WATER DESIGN CRITERIA MANUAL HOLDERS

DATE: June 25, 2020

FROM: Kendra Gwin, P.E.
Director of Transportation and Utilities 

SUBJECT: STORM WATER DESIGN CRITERIA MANUAL
Addendum No. 1 Dated November 27, 2019 – EFFECTIVE July 1, 2020

Enclosed for inclusion in your CITY OF PORTAGE STORM WATER DESIGN CRITERIA MANUAL are the following addendum and EPA document:

Addendum No. 1: Updates the CITY OF PORTAGE STORM WATER DESIGN CRITERIA MANUAL to comply with the latest federal storm water regulations with regard to the water quality treatment and stream protection performance standards and to address sites with soil and/or groundwater contamination.

Implementing Stormwater Infiltration Practices at Vacant Parcels and Brownfield Sites (EPA, 2013):

Document is referred to in Addendum No. 1 Appendix 13 Soil and Groundwater Contamination and provides site evaluation process.

Should you have any questions please contact the Transportation and Utilities Department at 269-329-4422.

STORM WATER DESIGN CRITERIA MANUAL

CITY OF PORTAGE, MICHIGAN

ADDENDUM NO. 1

DOCUMENT: Storm Water Design Criteria Manual
City of Portage, Michigan
August 2003

DATE OF ISSUE: November 27, 2019

This addendum updates the referenced document to comply with the latest federal storm water regulations with regard to the water quality treatment and stream protection (now channel protection) performance standards. The following sections of the manual are hereby updated as indicated below:

2.0 INTRODUCTION TO THE MANUAL

2.1 BACKGROUND

➤ *The fourth paragraph is updated as follows:*

The National Pollutant Discharge Elimination System (NPDES) Municipal Separate Storm Sewer System (MS4) regulations require the City of Portage (City) to adopt an ordinance or other regulatory mechanism to address post-construction storm water runoff from new development and redevelopment projects, including preventing or minimizing water quality impacts. The City is required to obtain an individual permit under Section 402 of the Federal Clean Water Act, as amended, and under Water Resources Protection (Part 31, Act 451, PA 1994) of the Michigan Natural Resource and Environmental Protection Act (NREPA), as amended. The Post-Construction Storm Water Runoff Program of the MS4 permit requires among other things:

1. A water quality treatment performance standard to ensure specified reductions in total suspended solids.
2. A channel protection performance standard to address resource impairments resulting from increases in bankfull flow rates and volumes.
3. A review procedure for the evaluation of infiltration BMPs to meet water quality and channel protection standards in areas of soil or groundwater contamination.
4. Measures to address associated pollutants in identified "hot spots," which include land uses with the potential for significant pollutant loading that could result in the contamination of surface water or groundwater, including public water supplies.
5. A long-term operation and maintenance (O&M) plan and agreement allowing for the inspection of the BMP, including a mechanism for tracking the transfer of O&M responsibility and compliance.

The minimum standards in this manual adhere to the Post-Construction Storm Water Runoff Program requirements for new and redevelopments set forth in the *State of Michigan National Pollutant Discharge Elimination System Permit Application for Discharge of Storm Water to Surface Waters of the State from a Municipal Separate Storm Sewer System* (Michigan Department of Environmental Quality, 2013, Rev 10/2014).

3.0 GUIDELINES FOR DESIGN OF THE STORM WATER MANAGEMENT SYSTEM

3.2 UNIFORM STORM WATER TREATMENT CRITERIA

➤ *Water Quality Volume, Stream Protection Volume, and Spill Containment Volume are updated as follows:*

Table No. 4 – Summary of Uniform Storm Water Treatment Criteria

Treatment Criteria	Description
Water quality volume, V_{wq} (cft)	Treat the runoff generated from 1 inch of rain over the project site (i.e. the 90% annual nonexceedance storm) through BMPs designed to reduce post-development TSS loadings by 80%, or achieve a discharge concentration not to exceed 80 mg/L.
Channel protection volume, V_{cp} (cft)	Retain onsite the increase between the pre-development and post-development runoff volume and rate for all storms up to and including the 2-year, 24-hour rainfall event.
Flood control volume, V_{fc} (cft)	Infiltration: V_{fc} = 2-year, 24-hour rainfall with zero outflow, or 3,630 cft/acre, whichever is greater. Detention: V_{fc} = 25-year storage volume released at 0.15 cfs per contributing catchment acre.
Spill containment volume, V_{sp} (cft)	V_{sp} = 15% of V_{wq}

3.2.1 WATER QUALITY VOLUME

Treatment of the water quality volume is required for all sites to capture and treat the “first flush” of storm water runoff that typically carries with it the highest concentration of pollutants.

Capture and treatment of the runoff from the 90% annual nonexceedance storm is required for the project site. This storm is approximately equivalent to 1 inch of rain (1.00 inch for Michigan Climatic Zone 8 per MDEQ memo “90 Percent Annual Nonexceedance Storms” dated March 24, 2006).

Treatment of the runoff volume from the 90% annual nonexceedance storm with properly designed BMPs to reduce TSS loading by 80%, or achieve TSS discharge concentrations not to exceed 80 mg/L, is required by the MS4 permit.

Note: TSS is a surrogate for other pollutants normally found in storm water runoff. Control of TSS to meet this requirement is expected to achieve control of other pollutants to an acceptable level that protects water quality.

Natural areas of the site left undisturbed and BMPs that provide water quality treatment need not be included in the calculations.

Water quality volume can be provided through one of the following methods:

- Settling (Permanent Pool or Detention)
- Filtration
- Infiltration
- Absorption
- Chemical/Mechanical Treatment

Permanent Pool. The volume of a permanent pool incorporated into a storm water BMP and sized at 2.5 times the water quality volume.¹ This is the volume below the ordinary static water level (also known as dead storage).

Detention. The storage volume provided by detention of storm water.

Filtration. The volume of storm water runoff routed through a BMP that provides filtration (i.e. an underdrained BMP, a vegetated buffer).

Infiltration. The volume of storm water runoff infiltrated into the ground through a storm water BMP.

Absorption and Chemical/Mechanical Treatment. The volume of storm water runoff routed through a proprietary water quality device.

3.2.2 CHANNEL PROTECTION VOLUME

Channel protection is required for surface water discharges.

The post-development runoff rate and volume shall not exceed the pre-development rate and volume for all storms up to and including the 2-year, 24-hour storm. Onsite retention of the volume increase is required.

Pre-development is defined as the last land use prior to the planned new development or redevelopment.

Note: Volume control for channel protection is required to mitigate increases in runoff rates and volumes for the more frequent (bankfull) rainfall events that have the greatest influence on shaping stream channels. An increase in runoff volume can expose channels to critical erosive velocities for a longer duration, causing accelerated channel adjustments to occur.

Retention can be provided through infiltration, interception and evapotranspiration, or reuse.

3.2.5 REDEVELOPMENT

➤ *Revise Table 5 as follows:*

Table No. 5 – Storm Water Treatment Required for Redevelopment

Treatment	Groundwater Discharge	Surface Water Discharge
Water quality volume, V_{wq}	Yes	Yes, if reconstruction or additions to buildings, parking lots, roadways, and/or driveways results in >20,000 sft of impervious surface. ⁺
Channel protection volume, V_{cp}	No	Yes
Flood control volume, V_{fc}	Yes	Yes
Spill containment volume, V_{sp}	Yes, if 1. Storm water hot spot. 2. High-risk zoning district with >20,000 sft of impervious surface. ⁺	Yes, if storm water hot spot.
Note: The 20,000-sft limit is based on water quality modeling. ⁺Reconstruction is defined as removal of pavement, including subbase, and repaving (excludes overlays). Redevelopments conducted in phases will be regulated according to the total paved areas in all phases.		

¹ Barrett, Michael (2005). *BMP Performance Comparisons: Examples from the International Stormwater BMP Database*, Center for Research in Water Resources, PRC#119, University of Texas, 2005 Water Environment Federation.

4.0 PERFORMANCE CRITERIA FOR URBAN BMP DESIGN

➤ *Revise section heading to read:*

4.1 DETERMINATION OF SURFACE RUNOFF AND CHANNEL PROTECTION VOLUME

➤ *Add the following at the end of this section:*

4.1.3 CHANNEL PROTECTION VOLUME (V_{cp})

Channel protection consists of retaining onsite the net increase in runoff volume between pre-development and post-development conditions for a 2-year, 24-hour storm using the Runoff Curve Number Method. Channel protection volume is calculated with the following equation:

$$V_{cp} = V_{t_{post}} - V_{t_{pre}}$$

where:

- V_{cp} = minimum required channel protection volume (cubic feet)
- $V_{t_{post}}$ = runoff volume of the 2-year, 24-hour storm for post-development conditions
- $V_{t_{pre}}$ = runoff volume of the 2-year, 24-hour storm for pre-development conditions

4.5 INFILTRATION BASINS

4.6 DETENTION BASINS

4.8 PROPRIETARY STORM WATER TREATMENT SYSTEMS

4.9 WATER QUALITY SWALES

➤ *The content in the above sections is updated as follows:*

WATER QUALITY VOLUME (V_{wq})

The Small Storm Hydrology Method shall be used to calculate the water quality treatment volume. The method was developed to estimate the runoff volume from urban land uses for relatively small storm events where the Rational and NRCS (formerly SCS) Methods prove less accurate. Water quality volume is calculated by the formula:

$$V_{wq} = ARv(1)(3630)$$

where:

- V_{wq} = minimum required water quality volume (cubic feet)
- A = area (acres); the developed portion of the site, both impervious and pervious
- Rv = area-weighted volumetric runoff coefficient (from Table 8)
- 1 = 90% non-exceedance storm rainfall amount (inches)
- 3630 = factor to convert acre-inches to cubic feet

The Volumetric Runoff Coefficients (Rv) provided in Table 8 are similar to the Rational runoff coefficient, but are exclusive to the rainfall amount (1-inch).

Table 8 – Runoff Coefficients for Small Storm Hydrology Method

Rainfall Amount (inches)	Volumetric Runoff Coefficient, R_v					
	Directly Connected Impervious Area			Disturbed Pervious Area		
	Flat Roofs/ Unpaved	Pitched Roofs	Paved	Sandy Soils (HSG A)	Silty Soils (HSG B)	Clayey Soils (HSG C&D)
1.0	0.815	0.965	0.980	0.035	0.120	0.2015
Source: Adapted from SEMCOG (2008). <i>Low Impact Development Manual for Michigan</i> , Table 9.3. (R. Pitt (2003). <i>The Source Loading and Management Model (WinSLAMM): Introduction and Basic Uses</i>).						

4.6.2.2. STREAM PROTECTION VOLUME (V_{sp})

➤ *Omit this section.*

PRETREATMENT CRITERIA (INCLUDING SPILL CONTAINMENT VOLUME AND SEDIMENT FOREBAY)

➤ *All references to capacity of Pretreatment BMP being 30% of Water Quality Volume are updated to 15%.*

FIGURES

➤ *All references to capacity of Pretreatment BMP being 30% of Water Quality Volume are updated to 15%.*

APPENDIX 2 REQUIRED STORM WATER TREATMENT WORKSHEETS FOR NEW DEVELOPMENTS AND REDEVELOPMENTS

➤ *Worksheets are updated to include revised water quality and channel protection volume standards as follows:*



**REQUIRED TREATMENT VOLUME WORKSHEET
 FOR
 NEW DEVELOPMENTS**

Water Quality Volume Required?	Yes ☐
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- Water quality volume is required for all sites.

Channel Protection Volume Required?	Yes ☐	No ☐
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If the following is checked “yes,” channel protection volume is required.

- Discharge to a surface water. Yes ☐ No ☐

Flood Control Volume Required?	Yes ☐	No ☐
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If the following is checked “yes,” flood control volume is not required.

- Direct discharge to a lake. Yes ☐ No ☐

Spill Containment Volume Required?	Yes ☐	No ☐
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If any of the following are checked “yes,” spill containment volume is required.

- Surface water discharge from a storm water hot spot. Yes ☐ No ☐
- Groundwater discharge from a high-risk zoning district in GCR Areas B and C. Yes ☐ No ☐
- Groundwater discharge in GCR Area A. Yes ☐ No ☐



**REQUIRED TREATMENT VOLUME WORKSHEET
 FOR
 REDEVELOPMENTS**

Water Quality Volume Required?	Yes ☐	No ☐
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If any of the following are checked "yes," water quality volume is required.

- Groundwater discharge.
Yes ☐
No ☐
- Surface water discharge from reconstruction or addition to a building, parking lot, roadway, and /or driveway with greater than 20,000 square feet of impervious surface.*
Yes ☐
No ☐

Channel Protection Volume Required?	Yes ☐	No ☐
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If the following is checked "yes," channel protection volume is required.

- Discharge to a surface water.
Yes ☐
No ☐

Flood Control Volume Required?	Yes ☐	No ☐
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If the following is checked "yes," flood control volume is not required.

- Direct discharge to a lake.
Yes ☐
No ☐

Spill Containment Volume Required?	Yes ☐	No ☐
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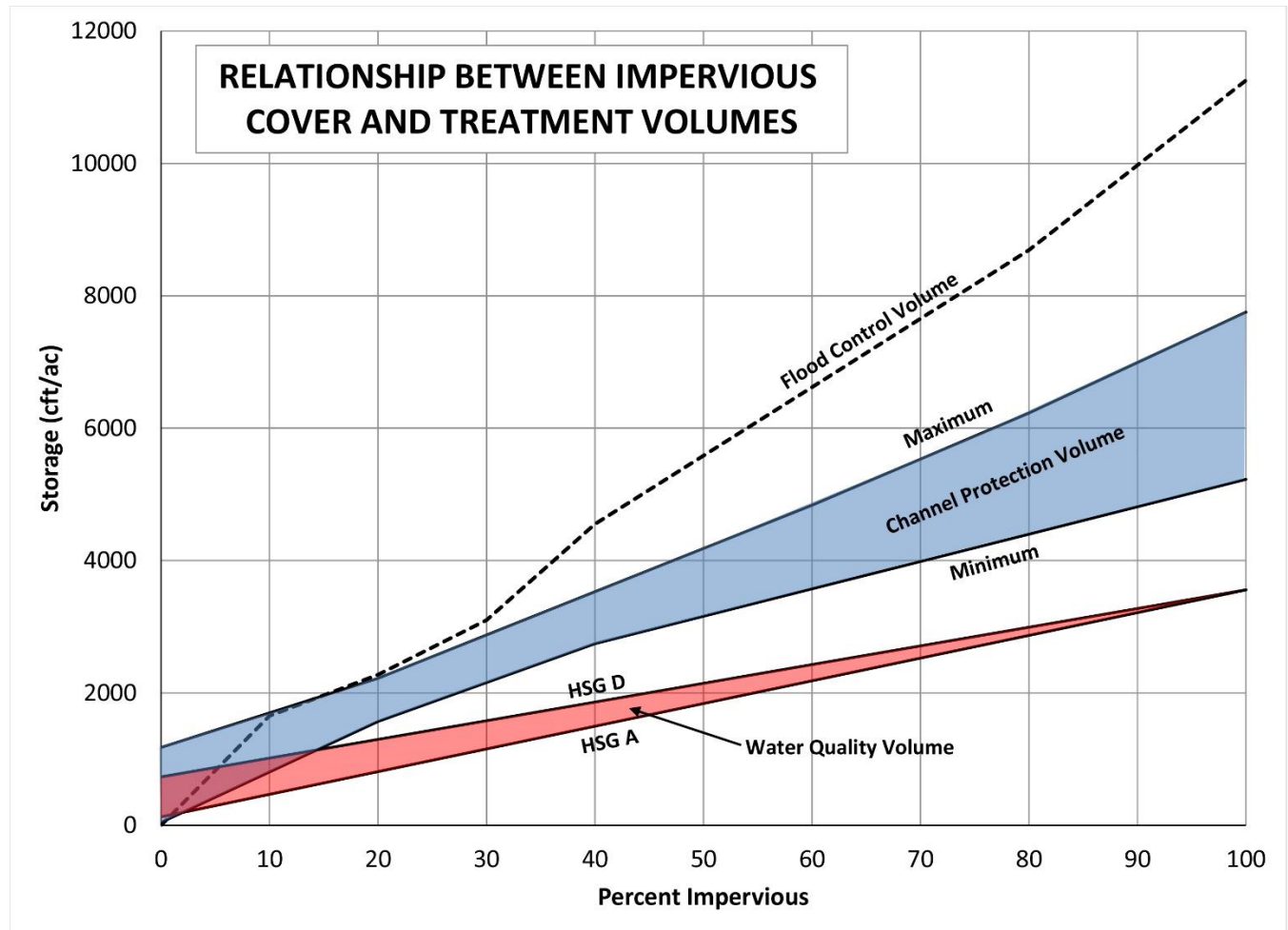
If any of the following are checked "yes," spill containment volume is required.

- Site is a storm water hot spot.
Yes ☐
No ☐
- Groundwater discharge from a high-risk zoning district with greater than 20,000 square feet of impervious surface.*
Yes ☐
No ☐

*Reconstruction is defined as removal of pavement, including subbase, and repaving (excludes overlays).
 Phased redevelopments are regulated by the total square feet of paved area in all phases.

APPENDIX 4 DESIGN PARAMETERS

➤ Diagram is updated to show revised water quality and channel protection volume standards.



APPENDIX 12 STORM WATER MANAGEMENT PLAN

➤ *Appendix 12 is added to the manual. Content follows.*

Storm Water Management Plan

No building, grading, or sediment control permit shall be issued until a satisfactory storm water management plan (or a waiver thereof) shall have undergone a review and been approved by the City after determining that the plan or waiver is consistent with the requirements of this document. After review of the storm water management plan, and modifications to that plan as deemed necessary by City, a storm water management final plan must be submitted to the City for approval. The storm water management plan shall at a minimum include the following:

- A. **Contact Information:** The name, address, and telephone number of all persons having a legal interest in the property and the tax reference number and parcel number of the property or properties affected.
- B. **Topographic Base Map:** 1" = 200' topographic base map of the site which extends a minimum of 100 feet beyond the limits of the proposed development and indicates existing surface water drainage including streams, ponds, culverts, ditches, and wetlands; current land use including all existing structures; locations of utilities, roads, and easements; significant natural and manmade features not otherwise shown; and areas of any known contamination.
- C. **Calculations:** Hydrologic and hydraulic design calculations for the pre-development and post-development conditions for the design storms.
- D. **Soils Information:** If a storm water BMP depends on the hydrologic properties of soils (e.g., infiltration basins), then a soils report shall be submitted. The soils report shall be based on on-site boring logs or soil pit profiles. The number and location of required soil borings or soil sites shall be determined based on what is needed to determine the suitability and distribution of soil types present at the location of the BMP.
- E. **Maintenance and Repair Plan:** The design and planning of all storm water management facilities shall include detailed maintenance and repair procedures to ensure their continued function. These plans will identify the parts or components of a storm water BMP that need to be maintained and the equipment and skills or training necessary. Provisions for the periodic review and evaluation of the effectiveness of the maintenance program and the need for revisions or additional maintenance procedures shall be included in the plan.
- F. **Landscaping Plan:** The applicant must present a detailed plan for management of vegetation at the site after construction is finished, including who will be responsible for the maintenance of vegetation at the site and what practices will be employed to ensure that adequate vegetative cover is preserved.
- G. **Storm Water Best Management Practices Operations & Maintenance Agreement:** Proof of a recorded Storm Water Best Management Practices Operations & Maintenance Agreement binding on all subsequent owners of land served by storm water BMPs to ensure maintenance and repair in accordance with the specifications of this document.
- H. **Due Care Plan:** The applicant must present a detailed plan for addressing soil and groundwater contamination encountered at the site during construction. Sites with known contamination must have a site evaluation completed prior to design of the stormwater management system.

APPENDIX 13 SOIL AND GROUNDWATER CONTAMINATION

Appendix 13 is added to the manual. Content follows.

All Sites

All sites must include the following paragraph on the construction drawings:

“Soil and Groundwater Contamination

If soil or groundwater contamination is encountered or suspected during construction the following steps shall be followed:

1. Contractor shall stop work immediately and notify Owner and/or Owner’s representative.
2. Owner and/or Owner’s representative shall notify the City.
3. Owner shall engage the services of a Qualified Environmental Consultant (Consultant).
4. Consultant shall conduct a site assessment and report to the above parties.
5. Consultant shall develop a plan to address any contamination which may be found during construction.
6. The Consultant together with the Design Engineer shall complete a site evaluation process following the document entitled *Implementing Stormwater Infiltration Practices at Vacant Parcels and Brownfield Sites* (EPA, 2013) to determine if the stormwater management system requires redesign and resubmittal to the City for review and approval.
7. Owner and/or Owner’s representative shall submit to the City supporting documentation of the site evaluation process. A revised stormwater review package must also be submitted if it becomes necessary to change the design of the stormwater management system.
8. Michigan Department of Environment, Great Lakes, and Energy (EGLE) Remediation and Redevelopment Division (RRD) staff shall be notified as applicable.”

Sites with Known Contamination

Contaminated sites, also referred to as “Brownfield” sites, include properties with soil or groundwater contamination under Part 201 Environmental Remediation and Part 213 Leaking Underground Storage Tanks (Act 451, PA 1994).

Contaminated sites must be evaluated before an infiltration approach can be approved so as not to exacerbate existing conditions. The following steps must be followed for sites with known contamination:

1. Include a qualified environmental consultant on the design team.
2. Show areas of known contamination on the site map.
3. Specify on the drawings how contractor is to address any contamination which may be found during construction, as directed in the previous section.
4. The site evaluation process must follow the document entitled *Implementing Stormwater Infiltration Practices at Vacant Parcels and Brownfield Sites* (EPA, 2013).
5. Submit supporting documentation of the site evaluation process with the stormwater review package.
6. Contact EGLE RRD staff for consultation as necessary.

Storm Water/Final Plan Information

Address:

Project Name:

These requirements are intended to assist the applicant in the storm water plan review process. The applicant is responsible for being sufficiently familiar with the Storm Water Design Criteria Manual of the City of Portage.

Plan Preparation and Guidelines

Yes No N/A

- ☐ ☐ ☐ 1. All plans will be drawn on uniform sheets no greater than 24" x 36".
- ☐ ☐ ☐ 2. All plans will be drawn to an engineering scale not to exceed 1" = 50' or less than 1" = 20', with a north arrow oriented to the top of the sheet.
- ☐ ☐ ☐ 3. All plans and notations will be clear, legible, and accurately scaled.
- ☐ ☐ ☐ 4. If more than one sheet per set, all required plans stapled along the left margin into sets. Please fold to a size not greater than 8½" x 14".

COMMENTS

General

Yes No N/A

- ☐ ☐ ☐ 1. Development name/subdivision number.
- ☐ ☐ ☐ 2. Description of location (including section and fractional portion thereof, Town and Range, township, city or village, and county, Michigan).
- ☐ ☐ ☐ 3. Location map.
- ☐ ☐ ☐ 4. Name, address, and telephone number of proprietor.
- ☐ ☐ ☐ 5. Name, address, and telephone number of engineer or surveyor.
- ☐ ☐ ☐ 6. North arrow and scale.

COMMENTS

Parcel Boundaries

Yes No N/A

- ☐ ☐ ☐ 1. Development boundary.
- ☐ ☐ ☐ 2. Identification of all adjoining parcels (for subdivisions show lot number, subdivision name, liber, and page numbers; for metes-and-bounds parcels show permanent parcel number).
- ☐ ☐ ☐ 3. Overall property description metes and bounds (with ties to government corner).
- ☐ ☐ ☐ 4. Lot dimensions (scaled or computed).
- ☐ ☐ ☐ 5. Lot numbers.
- ☐ ☐ ☐ 6. Building setback lines.

COMMENTS

Topographical

Yes No N/A

- ☐ ☐ ☐ 1. Existing buildings.
- ☐ ☐ ☐ 2. Proposed buildings.
- ☐ ☐ ☐ 3. Existing roads (with name, ROW width, and type of surface).
- ☐ ☐ ☐ 4. Proposed roads (with name, ROW width, and type of surface).
- ☐ ☐ ☐ 5. Proposed paved areas (include tabulation of total paved area).
- ☐ ☐ ☐ 6. Existing contours (no greater than a 2-foot interval inside the plat; no greater than a 10-foot interval outside the plat).
- ☐ ☐ ☐ 7. Proposed contours.
- ☐ ☐ ☐ 8. Typical grading plan (detail, statement, or drainage arrows).
- ☐ ☐ ☐ 9. Soils data, soil boring logs, and locations (include ground elevation and water table information).
- ☐ ☐ ☐ 10. Location of all buildings on adjacent properties within 200 feet.
- ☐ ☐ ☐ 11. Areas of known contamination.

COMMENTS

Drainage

Yes No N/A

COMMENTS

- | | | | | |
|--------------------------|--------------------------|--------------------------|---|-------|
| ☐ | ☐ | ☐ | 1. Offsite watershed areas (with boundaries and acreage to be shown on location map). | _____ |
| ☐ | ☐ | ☐ | 2. All existing drainage courses and structures (with proper labeling as to type, size, and invert elevations). | _____ |
| ☐ | ☐ | ☐ | 3. County drains (proof of permission to connect). | _____ |
| ☐ | ☐ | ☐ | 4. Proposed drainage systems (clearly identify all open and enclosed portions). | _____ |
| ☐ | ☐ | ☐ | 5. Floodplain contour (existing and proposed). | _____ |
| ☐ | ☐ | ☐ | 6. Wetlands (existing and proposed). | _____ |
| ☐ | ☐ | ☐ | 7. Buffers provided. | _____ |
| ☐ | ☐ | ☐ | 8. Proposed storm water facilities (detention/infiltration). | _____ |
| ☐ | ☐ | ☐ | 9. Landscaping for storm water facilities. | _____ |
| ☐ | ☐ | ☐ | 10. Note specifying that all work shall be completed in accordance with City of Portage Contract Conditions and Specifications. | _____ |
| ☐ | ☐ | ☐ | 11. Professional engineer's seal for all public improvement projects. | _____ |

Storm Water Management System Design

Yes No N/A

COMMENTS

- | | | | | |
|--------------------------|--------------------------|--------------------------|---|-------|
| ☐ | ☐ | ☐ | 1. Calculation of runoff (boundaries of contributing areas to each structure shall be shown). | _____ |
| ☐ | ☐ | ☐ | 2. Effective layout. | _____ |
| ☐ | ☐ | ☐ | 3. Inlet capacity/spacing. | _____ |
| ☐ | ☐ | ☐ | 4. Adequate size/slopes. | _____ |
| ☐ | ☐ | ☐ | 5. Pipe material, length, diameter, and slope. | _____ |
| ☐ | ☐ | ☐ | 6. Submergence. | _____ |
| ☐ | ☐ | ☐ | 7. Invert and rim elevations for each structure. | _____ |
| ☐ | ☐ | ☐ | 8. High water level in relation to low top-of-casting elevation (hydraulic grade line). | _____ |
| ☐ | ☐ | ☐ | 9. Storm water facilities appropriately selected. | _____ |
| ☐ | ☐ | ☐ | 10. Minimum basement floor elevations/openings in structures. | _____ |
| ☐ | ☐ | ☐ | 11. Ensure proper siting. | _____ |
| ☐ | ☐ | ☐ | 12. Required volume/release rate. | _____ |
| ☐ | ☐ | ☐ | 13. Pretreatment. | _____ |
| ☐ | ☐ | ☐ | 14. Adequate volume provided (high water levels indicated). | _____ |
| ☐ | ☐ | ☐ | 15. Hydraulic calculations for transfer or outlet pipe. | _____ |
| ☐ | ☐ | ☐ | 16. Overflow spillway. | _____ |
| ☐ | ☐ | ☐ | 17. Outlet structure dimensions. | _____ |
| ☐ | ☐ | ☐ | 18. Dimensions of storm water facility shown in plan and profile. | _____ |
| ☐ | ☐ | ☐ | 19. Side slopes. | _____ |
| ☐ | ☐ | ☐ | 20. Soil erosion controls. | _____ |
| ☐ | ☐ | ☐ | 21. Contaminated soil and groundwater procedures. | _____ |

Easements

Yes No N/A

COMMENTS

- | | | | | |
|--------------------------|--------------------------|--------------------------|---|-------|
| ☐ | ☐ | ☐ | 1. Utility easements (with dimensions and type of utility). | _____ |
| ☐ | ☐ | ☐ | 2. Existing and proposed drainage easements. | _____ |
| ☐ | ☐ | ☐ | 3. Offsite drain easements or rights-of-way. | _____ |
| ☐ | ☐ | ☐ | 4. Buffer conservation easements. | _____ |
| ☐ | ☐ | ☐ | 5. Recorded easement forms. | _____ |

Maintenance

Yes No N/A

COMMENTS

- | | | | | |
|--------------------------|--------------------------|--------------------------|---------------------------------|-------|
| ☐ | ☐ | ☐ | 1. Recordable maintenance plan. | _____ |
|--------------------------|--------------------------|--------------------------|---------------------------------|-------|