

SMALL PROJECT
APPLICATION & WORKSHEETS

SIMPLIFIED APPROACH
TO
STORMWATER MANAGEMENT
FOR
SMALL PROJECTS
UNDER THE STORMWATER
MANAGEMENT ORDINANCE

In
West Sadsbury Township,
Chester County, Pennsylvania

Prepared: January 29, 2014

TABLE OF CONTENTS

I.	Introduction	2
II.	Importance of Stormwater Management	2
III.	Standard Terms Used in the Manual	2
IV.	Determining What Type of Stormwater Management Submission is Needed	4
V.	Using the Stormwater Management Worksheets	5
VI.	Minor Stormwater Site Plan Requirements	6
VII.	Selecting Stormwater BMPs	8
VIII.	Stormwater Management Worksheets	8
IX.	Stormwater Management/ BMP Facilities & Maintenance Agreement	8

I. Introduction:

This design manual has been created as a tool to help property owners manage stormwater on their property and streamline the process of designing on-site stormwater management facilities for Regulated Activities that are new, relatively minor residential and accessory structure projects (less than 2,000 square feet). Through the use of this manual, residents have the ability to determine the appropriate facilities for their property, project and budget. This design method is not intended to be used with large-scale subdivision / land development projects or activities that include infrastructure such as roadways.

The Stormwater Best Management Practices (Stormwater BMPs) listed in this manual should be used as a guide and are not a comprehensive list of options. Residents should contact West Sadsbury Township to discuss alternative solutions for site specific applications.

II. Importance of Stormwater Management:

Stormwater is the runoff produced by precipitation, snow melt, or ice melt. When land is developed or changed, the flow patterns of water, volume of water and quality of water are also changed. Land development activities can affect characteristics of stormwater runoff, including the rate of runoff, volume of runoff, and quality of runoff. When runoff is not managed, the increased volume may aggravate flooding.

The objective of stormwater management is to prevent or mitigate the adverse impacts of the increase in rate and volume of stormwater runoff, while also protecting health, safety, and property. Stormwater BMPs aim to maintain water quality, encourage infiltration in appropriate areas, promote groundwater recharge, maintain the natural drainage characteristics of the site to the maximum extent practicable, and protect stream banks and beds.

III. Standard Terms Used in the Manual:

BMP (Best Management Practice) – Activities, facilities, designs, measures, or procedures used to manage stormwater impacts from Regulated Activities, to provide water quality treatment, infiltration, volume reduction, and/or peak rate control, to promote groundwater recharge, and to otherwise meet the purposes of this Ordinance. Stormwater BMPs are commonly grouped into one (1) of two (2) broad categories or measures: “structural” or “nonstructural.” In this Ordinance, nonstructural BMPs or measures refer to operational and/or behavior-related practices that attempt to minimize the contact of pollutants with stormwater runoff whereas structural BMPs or measures are those that consist of a physical device or practice that is installed to capture and treat stormwater runoff. Structural BMPs include, but are not limited to, a wide variety of practices and devices from large-scale retention ponds and constructed wetlands to small-

scale underground treatment systems, infiltration facilities, filter strips, low impact design, bioretention, wet ponds, permeable paving, grassed swales, riparian or forested buffers, sand filters, detention basins, and manufactured devices. Structural stormwater BMPs are permanent appurtenances to the Site.

Disturbed Area – Land area disturbed by or where an Earth Disturbance Activity is occurring or has occurred.

Earth Disturbance (or Earth Disturbance Activity) – A construction or other human activity which disturbs the surface of the land, including, but not limited to, clearing and grubbing; grading; excavations; embankments; road maintenance; land development; building construction; and the moving, depositing, stockpiling, or storing of soil, rock, or earth materials.

Flow Path – The path that stormwater follows from the discharge point to the nearest property line or channelized flow (i.e. stream, drainage ditch, etc.). The length of the path is measured along the ground slope.

Impervious Surface (or Impervious Area) - A surface that has been compacted or covered with a layer of material so that it prevents or is resistant to infiltration of water, including but not limited to: structures such as roofs, buildings, storage sheds; other solid, paved or concrete areas such as streets, driveways, sidewalks, parking lots, patios, swimming pools, tennis or other paved courts; or athletic playfields comprised of synthetic turf materials. For the purposes of determining compliance with this Ordinance, compacted soils or stone surfaces used for vehicle parking and movement shall be considered impervious. Surfaces that were designed to allow infiltration (i.e. areas of porous pavement) will be considered on a case-by-case basis by the Municipal Engineer, based on appropriate documentation and condition of the material, etc.

Karst – A type of topography that is formed over limestone or other carbonate rock formations by dissolving or solution of the rock by water, and that is characterized by closed depressions, sinkholes, caves, a subsurface network of solution conduits and fissures through which groundwater moves, and no perennial surface drainage features.

Minor Stormwater Site Plan – A site plan prepared and submitted for Regulated Activities which meet the Small Project and Minor Stormwater Site Plan criteria. The plan depicts existing conditions on the property, proposed impervious areas, and, if required, the location of proposed Stormwater BMPs.

Regulated Activities – Any Earth Disturbance Activity(ies) or any activity that involves the alteration or development of land in a manner that may affect stormwater runoff.

Runoff – Any part of precipitation that flows over the land surface.

Small Project - Regulated Activities that involve less than two thousand (2,000) square feet of Proposed Impervious Surfaces and less than ten thousand (10,000) square feet of

proposed Earth Disturbance are eligible to apply the modified requirements presented in this manual, *Simplified Approach to Stormwater Management for Small Projects*, provided that there are not known Site or local conditions that may preclude the use of any techniques included in the Simplified Approach.

IV. Determining What Type of Stormwater Management Submission is Needed:

The following chart provides a guide to determine what type of stormwater submission is needed. Some projects will be eligible for an exemption from preparing a stormwater management plan, but documentation of the project must still be filed with West Sadsbury Township. Completion of the **West Sadsbury Township Stormwater Management Worksheets** will determine what type of documentation is required for each project.

This manual is designed to assist those with Regulated Activities that qualify for the use of a Minor Stormwater Site Plan. If a SWM Site Plan is required in accordance with the West Sadsbury Township Stormwater Management Ordinance, **please consult a qualified professional (ex. Engineer, Surveyor)**.

Stormwater Management Ordinance Status	Proposed New Impervious Area	Proposed Earth Disturbance Area	Next Steps
Eligible for Exemption	Less than 1,000 ft ²	Less than 5,000 ft ²	File Stormwater Management Worksheet
Small Project	1,000 ft ² to ≤ 2,000 ft ²	5,000 ft ² to ≤ 10,000 ft ²	Prepare a Minor Stormwater Site Plan
Non-Exempt	Greater than 2,000 ft ²	Greater than 10,000 ft ²	Prepare a SWM Site Plan per Article IV

*Note: Regulated Activities must meet BOTH Proposed New Impervious Area and Proposed Earth Disturbance requirements to be eligible for an Exemption or a Small Project.

The Applicant should first review the planned project with West Sadsbury Township to confirm the following:

- That the proposed project is not otherwise exempt from the stormwater management control and the engineered Stormwater Management Site Plan requirements of the Municipality’s Stormwater Management Ordinance;
- That the proposed project is eligible to follow the Small Project-Minor Stormwater Site Plan requirements;
- To determine which components of the proposed project must be included in the calculation of “impervious surfaces (areas)”; and,

- Whether any local conditions are known to the Municipality that would preclude the use of any of the techniques included in this Simplified Approach.

The following shall be submitted to West Sadsbury Township depending on the proposed project:

- Eligible for Exemption
 - Stormwater Management Worksheet
- Small Project
 - Stormwater Management Worksheet
 - Owner Acknowledgement (signed)
 - Minor Stormwater Site Plan
 - Signed and notarized Stormwater Best Management Practices Operation, Maintenance and Inspection Plan and Agreement. Following approval and signature by the Municipality, the Landowner must have the Agreement recorded at the Chester County Office of the Recorder of Deeds, so that the Agreement will be applicable to future landowners.
- Non-Exempt
 - SWM Site plan and associated calculations prepared by a Professional Engineer, Landscape Architect or Surveyor

V. Using the Stormwater Management Worksheets:

Determining the new impervious area of a proposed project is the first step in using this Manual. Completing the attached West Sadsbury Township Stormwater Management Worksheets will assist the property owner, or applicant, and West Sadsbury Township in determining the impervious area of a proposed project and providing guidance through ensuing steps.

Step 1: Step 1 of the West Sadsbury Township Stormwater Management Worksheet provides a table and directions on how to calculate the new impervious area proposed to be created. If the total new impervious area is less than 1,000 square feet, the project may be exempt from the volume, rate, and SWM Site Plan requirements of the West Sadsbury Township Stormwater Management Ordinance. After completing Step 1 of the worksheet, the applicant will sign the Acknowledgement at the top of the sheet and file it with West Sadsbury Township.

West Sadsbury Township will use this as a record of exempt projects and keep a running total of proposed impervious area since the adoption of the West Sadsbury Township Stormwater Management Ordinance. After exceeding 1,000 square feet of impervious

area since the adoption of the West Sadsbury Township Stormwater Management Ordinance, a property owner will need to prepare a Minor Stormwater Site Plan or a Stormwater Management Site Plan in accordance with Article IV.

However, applicants shall note that Regulated Activities that meet the exemption criteria may be required to manage stormwater runoff and provide plans and/or calculations as required in this ordinance should West Sadsbury Township determine that there is a potential for stormwater runoff associated with the proposed Regulated Activity to adversely affect adjacent or downstream public or private properties.

If the total new impervious area is 1,000 square feet or greater and less than 2,000 square feet, the applicant will go on to Step 2. If the Regulated Activity involves only Earth Disturbance between 5,000 square feet to less than 10,000 square feet, the applicant shall contact West Sadsbury Township for additional guidance.

Step 2: Step 2 of the West Sadsbury Township Stormwater Management Worksheet provides guidance to calculate the total volume of stormwater runoff from new impervious surfaces that must be controlled using stormwater BMPs. Upon completion of these calculations, continue to Step 3.

Step 3: Step 3 of the West Sadsbury Township Stormwater Management Worksheet provides guidance regarding the preparation of a Minor Stormwater Site Plan, as outlined in this design manual, for approval by West Sadsbury Township. This includes determining the types, sizes, and location of proposed Stormwater BMPs to be employed for a given project. The worksheets, Minor Stormwater Site Plan, and Owner Acknowledgement will be submitted to West Sadsbury Township for approval. West Sadsbury Township will use this submission as a record to keep a running total of proposed impervious area since the adoption of the West Sadsbury Township Stormwater Management Ordinance, and to monitor the installation of the required Stormwater BMPs necessary to support the project.

VI. Minor Stormwater Site Plan Requirements

A Minor Stormwater Site Plan depicts the existing conditions of a property and the location of proposed impervious surfaces. Depicting the relationship between the Regulated Activities and distances to things like property lines, streams, and vegetated areas will help determine if the stormwater runoff created by the proposed project can be managed naturally within the property or if additional Stormwater BMPs are needed to accommodate the stormwater runoff.

If a project requires the submission of a Minor Stormwater Site Plan or a plan in support of an Exemption, the applicant shall prepare and submit to West Sadsbury Township a Minor Stormwater Site Plan and the West Sadsbury Township Stormwater Management Worksheet. The Chester County GIS Office can provide assistance to

applicants to obtain property maps of existing features. A Minor Stormwater Site Plan depicting the key features of the site must be drawn to scale and show the following:

- Property owner name, address, email and phone number
- Property address (if different from owner address)
- Tax Parcel ID number
- Name, address, phone number & email address of plan preparer
- Property boundary.
- Site conditions (grassed areas, agricultural fields, direction of slope and stormwater flow on the property).
- Location of all existing and proposed structures (house, driveway shed, addition, etc.) and any existing and proposed downspouts. Include the dimensions of proposed structures.
- Distance from proposed downspouts to property line.
- All existing and proposed driveways and other impervious areas (stone and gravel driveways are considered impervious).
- Natural features such as streams, wetlands, floodplains, tree lines and other vegetation on the property and within 50 feet of the property line.
- Distance from proposed structures or downspouts along the stormwater flow path to any stream or wooded area.
- Any other pertinent information that may be significant to the project site (existing drainage ways, steep slopes, exposed bedrock, upslope drainage areas, etc.).
- Wells and on-site sanitary sewer systems (septic tank, drainfield, etc.).
- Surface and subsurface utilities.
- Existing and proposed easements (gas, electric, stormwater, water, sewer, etc.).

If Stormwater BMPs are required, the following information must also be shown on the plan:

- Location and size of proposed Stormwater BMPs.
- Details of BMPs as necessary for construction.

Other Considerations for Minor Stormwater Management Plans:

- For Minor Stormwater Management Plans, soil testing is highly recommended to select and apply the appropriate Stormwater BMPs. The use of soil maps, infiltration tests, and/ or perc tests may provide the applicant basic information about soil characteristics.
- Proposed stormwater management facilities must be designed to handle flows from the contributing area.
- The site shall not have any pre-existing stormwater drainage-related problems (as verified by West Sadsbury Township), at the discretion of West Sadsbury Township.

- Water quality shall be protected per Chapter 93 of PA Code.
- West Sadsbury Township may inspect all Stormwater BMPs during and after construction / installation.
- Infiltration BMPs should not be constructed nor receive runoff until the entire contributory drainage area has achieved final stabilization.
- Ensure that infiltration in geologically susceptible areas such as, but not limited to, carbonate geology / karst topography do not cause adverse effects. The Minor Stormwater Site Plan should incorporate steps to ensure that salt or chloride will not contaminate the groundwater.
- Selected Stormwater BMPs shall be designed, constructed, and maintained in accordance with the manufacturer's recommendation, the *PA Stormwater Management BMP Manual*, or other written guidance acceptable to West Sadsbury Township.
- Proposed sump pumps shall discharge to infiltration or vegetative Stormwater BMPs to the maximum extent practicable and not adversely impact adjacent and downstream properties.

VII. Selecting Stormwater BMPs

If the submission of a Minor Stormwater Management Plan including the use of Stormwater BMPs is required, the applicant should review the compiled information in the *PA Stormwater Management BMP Manual*. This document identifies Stormwater BMPs that have been deemed to be of a nature and cost that will accomplish the goals of the Chester County Stormwater Management Plan, while not unduly burdening the residents. It will then be the Owner's responsibility to select a facility, determine the appropriate size and agree to construct and maintain that facility or facilities. The property owner is encouraged to utilize both multiple and hybrid versions of the facilities, as outlined in the documents mentioned above.

The applicant may choose to install a Stormwater BMP facility as shown in the Stormwater Management Worksheets. The Stormwater BMP facility shall be constructed in accordance with the associated construction details, requirements and notes.

VIII. Stormwater Management Worksheets

Stormwater Management Worksheets can be obtained from the West Sadsbury Township Municipal Office.

IX. Stormwater Management / BMP Facilities and Maintenance Agreement

It is the Landowner's responsibility to properly maintain BMPs. It is also the Landowner's responsibility to inform any future buyers of the function, operation, and

maintenance needed for any BMPs on the property prior to the purchase of the property. The maintenance agreement outlines the inspection and maintenance required for each type of BMP, the responsibilities of the Landowner, and the rights of the Municipality in regards to inspection and enforcement of the maintenance requirements.

The Operation, Maintenance and Inspection Plan and Agreement must be signed, notarized and submitted to the Municipality. Following approval and signature by the Municipality, the Landowner must have the Agreement recorded at the Chester County Office of the Recorder of Deeds so that the Agreement will be applicable to future landowners.

The Operation, Maintenance and Inspection Plan and Agreement can be obtained from the West Sadsbury Township Municipal Office.

West Sadsbury Township
Stormwater Management Application & Worksheets

For West Sadsbury Township Use and Record of Project Area

Applicant's Name _____

Property Owner's Name (if different from Applicant) _____

Address of Property _____

Parcel ID # _____

Phone Number _____ Email Address _____

Proposed Impervious Area Associated with this Project _____ Square Feet
(include Worksheet on following page)

Impervious Area Installed Since January 1, 2005 _____ Square Feet

Total Proposed and Previous Impervious Area Since January 1, 2005 _____ Square Feet

Stormwater Management Submission Type: _____ Exempt
_____ Small Project - Minor Stormwater Site Plan
_____ SWM Site Plan

Property Owner Acknowledgement - I declare that I am the property owner, or authorized representative of the owner, and that the information provided is true and accurate to the best of my knowledge. I understand that stormwater may not adversely affect adjacent properties or be directed onto another property without written permission. I also understand that false information may result in a stop work order or revocation of permits. Municipal representatives are also granted reasonable access to the property for review and/ or inspection of this project if necessary.

Signature _____ Date _____

West Sadsbury Township Approval

Signature _____ Date _____

Stormwater Management Worksheet

Step 1: Determine the amount of new impervious surface area and total disturbed area created by the proposed project. This includes any new impervious surface area that prevents infiltration of stormwater into the ground. New stone and gravel areas are considered impervious. Impervious surface areas existing before January 1, 2005 do not need to be included in this calculation. Use additional sheets if necessary.

Calculate new impervious area and disturbed area by completing this table and steps a. through e.

Surface	Length (ft)	x	Width (ft)	=	Impervious Area (ft ²)
Buildings		x		=	
Driveway		x		=	
Parking Areas		x		=	
Patios/ walkways		x		=	
Other		x		=	
Total Proposed Impervious Surface Area (Sum of all impervious areas)					
Area of Grading, Filling, Earth Disturbance (excluding Impervious Area)					
Total Proposed Disturbed Area (Impervious Area plus Area of Grading, Filling, Earth Disturbance)					

- a. If the total new impervious surface area is **less than 1,000 ft²** and the total disturbed area is **less than 5,000 ft²**, the project is eligible to be exempted from the requirement to submit a Minor Stormwater Site Plan or a SWM Site Plan. However, a Sketch Plan of the proposed project may be required.
- b. Applicants shall note that Regulated Activities that meet the exemption criteria may be required to manage stormwater runoff and provide plans and/or calculations as required in this ordinance should the Municipality determine that there is a potential for stormwater runoff associated with the proposed Regulated Activity to adversely affect adjacent or downstream public or private properties.
- c. If no further information is necessary, sign Acknowledgement and file this sheet with West Sadsbury Township.
- d. If total new impervious surface area is **equal to or greater than 1,000 ft² and less than 2,000 ft²**, continue to Step 2.
- e. If no new impervious area is proposed and total disturbed area is **equal to or greater than 5,000 ft² and less than 10,000 ft²**, contact West Sadsbury Township to discuss preparation of a Minor Stormwater Site Plan.

Step 2: Calculate the volume of stormwater runoff created by new impervious surfaces. Use the following chart to determine this volume.

Impervious Area (ft ²) to be Managed (Sum of Step 1)	X	3.0 in/12 in = 0.25 ft (3.0 in is approx. 2-year 24-hour rainfall amount)	=	Amount of Stormwater to be Managed (ft ³)
	X	0.25 ft	=	

Step 3: Determine the techniques to be used to manage the stormwater volume calculated in Step 2 and prepare the Minor Stormwater Management Plan. Use the following information to determine the BMPs to be used to manage the required stormwater volume.

BMP Type		Simple BMP Sizing - Amount New Impervious Area to be Managed (ft ²)									
		200	400	600	800	1,000	1,200	1,400	1,600	1,800	2,000
Bioretention	Ex. Rain garden, Vegetated swale	50 ft ³	100 ft ³	150 ft ³	200 ft ³	250 ft ³	300 ft ³	350 ft ³	400 ft ³	450 ft ³	500 ft ³
		or	or	or	or	or	or	or	or	or	or
Infiltration*	Ex. Dry well, Infiltration trench	125 ft ³	250 ft ³	375 ft ³	500 ft ³	625 ft ³	750 ft ³	875 ft ³	1,000 ft ³	1,125 ft ³	1,250 ft ³

Stormwater BMPs may be sized using the following Simple BMP Sizing table.

* Assumes stone with 40% voids is used as storage volume

The Simple BMP Sizing table is used as follows. Match the required stormwater volume to the “Amount of New Impervious Area to be Managed” in white boxes in the table (rounding **up** to the next value if the number is between two values). Then look in the light grey box to determine the required size of the type of Stormwater BMP (bioretention or infiltration) being considered. For example, 1,000 square feet of new impervious surface area could be accommodated by a 250 cubic foot bioretention system. Bioretention systems such as a 16’x 16’x 1.0’ rain garden could be used to achieve this storage volume. Similarly, a 625 cubic foot Infiltration system such as a 25’x 5’x 5’ infiltration trench could be used to achieve this storage volume.

Once the sizing of necessary stormwater BMPs has been determined, prepare the required Minor Stormwater Site Plan in accordance with the associated requirements and submit to West Sadsbury Township for review and approval. Bring the worksheets, Minor Stormwater Site Plan, Owner Acknowledgement, and BMP Facilities and Maintenance Agreement (if applicable) to West Sadsbury Township.

If an area greater than 5,000 square feet of earth is disturbed, an erosion and sedimentation (E & S) control plan must be prepared. West Sadsbury Township may require that the E&S plan be submitted to, reviewed, and approved by the Chester County Conservation District prior to approval of the Minor Stormwater Site Plan.

**OWNER ACKNOWLEDGMENT
FOR
MINOR STORMWATER SITE PLAN**

- Development activities shall begin only after West Sadsbury Township approves the Minor Stormwater Site Plan.
- The installed Stormwater BMPs shall not adversely affect any property, septic systems, or drinking water wells on this or any other property.
- If, after approval of the Minor Stormwater Site Plan by West Sadsbury Township, the applicant wishes to pursue alternative stormwater management measures in support of the project, the applicant shall submit a revised Minor Stormwater Site Plan to West Sadsbury Township for approval. If a site requires a more complex system or if problems arise, the applicant may need the assistance of a licensed professional.
- The applicant acknowledges that the proposed Stormwater BMPs shall be a permanent fixture of the property that can not be altered or removed without approval by West Sadsbury Township.
- West Sadsbury Township shall have the ability to perform periodic inspections and/or a final inspection of the proposed Stormwater BMPs to ensure installation in accordance with the approved Minor Stormwater Site Plan.
- The applicant acknowledges that they shall be responsible for paying applicable and reasonable fees associated with the Township staff and/or Township consultants processing, reviewing and inspecting the Stormwater Management Worksheet, Minor Stormwater Site Plan and installed BMPs.

I (we) _____, hereby acknowledge the above statements and agree to assume full responsibility for the implementation, construction, operation, and maintenance of the proposed stormwater management facilities. Furthermore, I (we) also acknowledge that the steps, assumptions, and guidelines provided in this submission, including but not limited to the Minor Stormwater Site Plan, the West Sadsbury Township Stormwater Worksheet, and the Stormwater Management / BMP Facilities and Maintenance Agreement (if applicable) will be adhered to.

Applicant Acknowledgement of Submission

Signature: _____

Date: _____

West Sadsbury Township Acknowledgement of Receipt

Signature: _____

Date: _____

**WEST SADBURY TOWNSHIP
STORMWATER BEST MANAGEMENT PRACTICES
OPERATION, MAINTENANCE, AND INSPECTION PLAN AND
AGREEMENT**

THIS AGREEMENT, made and entered into this _____ day of _____, 2014, by and between _____, (hereinafter the “Landowner”), and _____ West Sadsbury Township, Chester County, Pennsylvania, (hereinafter “Municipality”).

WITNESSETH

WHEREAS, the Landowner is the owner of certain real property by virtue of a deed of conveyance recorded in the land records of Chester County, Pennsylvania, at Deed Book _____ and Page _____, (hereinafter “Property”); and

WHEREAS, the Landowner recognizes that the stormwater management best management practices or BMPs (hereinafter referred to as “BMP” or “BMP(s)”) located on the Property at _____

_____ (address of Property where BMP is located) must be

inspected and maintained; and

WHEREAS, the Municipality and the Landowner, for itself and for its administrators, executors, successors, heirs, and assigns, agree that the health, safety, and welfare of the residents of the Municipality and the protection and maintenance of water quality require that on-site BMP(s) be constructed and maintained on the Property; and

WHEREAS, for the purposes of this Agreement, the following definitions shall apply:

BMP – “Best Management Practice;” activities, facilities, designs, measures or procedures used to manage stormwater impacts from land development, to protect and maintain water quality and ground water recharge and to otherwise meet the purposes of the Municipality’s Stormwater Management Ordinance, including, but not limited to infiltration trenches, dry wells, bioretention, rain

gardens, permeable paving, rain barrels and cisterns, etc. The BMP(s) are permanent appurtenances to the Property; and

Conveyance – As specifically identified in the Simplified Stormwater Management Site Plan (herein after “Plan”), a man-made, existing or proposed facility, structure or channel used for the transportation or transmission of stormwater from one place to another, including pipes, drainage ditches, channels and swales (vegetated and other), gutters, and like facilities or features. The conveyances identified in the Plan are permanent appurtenances to the Property; and

WHEREAS, the Municipality requires that the BMP(s) and conveyances as shown on Plan and in accordance with the sizing calculations found on the Simplified Method Worksheet (herein after “Worksheet”) be constructed by the Landowner; the BMP(s) shall further be maintained by the Landowner, its administrators, executors, successors, heirs, and assigns in accordance with the associated operation and maintenance requirements included herein. The Plan and Worksheet are attached hereto and incorporated herein together as Exhibit “A” hereto; and

WHEREAS, the Municipality requires that stormwater management BMP(s) be constructed and adequately inspected, operated and maintained by the Landowner, its administrators, executors, successors, heirs, and assigns, in accordance with the following maintenance requirements:

NOTE TO EDITOR:

Retain the type of BMP(s) from the following list that applies to this Property and delete any of the following BMP(s) listed below that do not apply. You may also add a BMP not listed and provide its maintenance requirement, if needed.

1. Infiltration Trenches

- a. *At least twice a year and after significant rainfall events the Landowner is to inspect the infiltration trench and remove any accumulated debris, sediment and invasive vegetation.*
- b. *Vegetation along the surface of an infiltration trench is to be maintained in good condition, and any bare spots are to be revegetated as soon as possible.*
- c. *Vehicles are not to be parked or driven on an infiltration trench, and care is to be taken to avoid excessive compaction by mowers.*
- d. *Any debris, such as leaves blocking flow from reaching an infiltration trench, is to be routinely removed.*

2. Bioretention/Rain Garden

- a. *Any debris, such as leaves blocking flow from reaching a bioretention/rain garden, is to be routinely removed.*
- b. *Pruning and weeding are required as needed including removal of invasive species, especially while vegetation is being established for a bioretention/rain garden.*
- c. *Mulch cover is to be maintained in a bioretention/rain garden, re-spread and replaced as needed to prevent erosion, reduce weed growth and assist with plant survival, without restricting the infiltration of stormwater.*
- d. *At least twice a year the Landowner is to inspect the bioretention/rain garden for sediment buildup, ground cover and vegetative conditions and make any repairs as needed.*
- e. *Watering is required as needed, including during periods of extended dry weather and drought.*
- f. *Trees and shrubs in a bioretention/rain garden are to be inspected at least twice per year by the Landowner to evaluate their health. If they are in poor health they are to be replaced.*

3. Dry Wells

- a. *Dry wells are to be inspected by the landowner at least four (4) times a year and after significant rainfalls, and debris, trash, sediment, and any other waste material need to be removed and disposed of at suitable disposal or recycling sites and in compliance with local, state, and federal waste regulations.*
- b. *For dry wells, gutters are to be regularly cleaned out and ensure that proper connections are maintained to facilitate the effectiveness of the dry well.*
- c. *The filter screen for downspouts or roof gutters which intercepts roof runoff and conveys it to the dry well must be cleaned and replaced as necessary.*
- d. *Dry wells that are damaged are to be fixed or replaced within two (2) weeks of being damaged.*
- e. *If an intermediate sump box exists in conjunction with a dry well, it must be cleaned out at least once per year.*

4. Rain Barrels and Cisterns

- a. *Rain Barrels and Cisterns are to be cleared of debris routinely at least every three (3) months and after significant storms to allow stormwater from gutters to enter them.*
- b. *Gutters that directly convey rain water to dry wells, rain barrels, and cisterns are to be routinely cleared of trash and debris at least every three (3) months and after significant rainfall events.*

- c. Rain Barrels and cisterns should be routinely emptied to allow for storage of additional rain water.*
- d. Overflow outlets from rain barrels and cisterns must be kept free and clear of debris.*
- e. Rain Barrels and cisterns that are damaged are to be fixed or replaced within two (2) weeks of being damaged.*

NOW, THEREFORE, in consideration of the foregoing promises, the mutual covenants contained herein, and the following terms and conditions, the parties hereto, intending to be legally bound hereby, agree as follows:

1. The foregoing recitals to this Agreement are incorporated as terms of this Agreement and obligations of the Landowner as if fully set forth in the body of this Agreement.
2. The Landowner shall construct the BMP(s) in accordance with the specifications identified in the Plan and Worksheet.
3. The Landowner shall inspect, operate and maintain the BMP(s) as shown on the Plan in good working order acceptable to the Municipality and in accordance with the specific inspection and maintenance requirements outlined in this Agreement.
4. The Landowner hereby grants permission to the Municipality, its authorized agents and employees, to enter upon the Property from the public right-of-way or roadway, at reasonable times and upon presentation of proper identification, to inspect the BMP(s) whenever it deems necessary for compliance with this Agreement and the Municipality's Stormwater Ordinance. Whenever possible, the Municipality shall notify the Landowner prior to entering the Property.
5. The Landowner acknowledges that, per the Municipality's Stormwater Ordinance, it is unlawful, without written approval of the Municipality, to:
 - a. Modify, remove, fill, landscape, alter or impair the effectiveness of any BMP or conveyance that is constructed as part of the Plan;
 - b. Place any structure, fill, landscaping, additional vegetation, yard waste, brush cuttings, or other waste or debris into a BMP or conveyance that would limit or alter the functioning of the BMP or conveyance;
 - c. Allow the BMP or conveyance to exist in a condition which does not conform to the Plan or this Agreement; and

d. Dispose of, discharge, place or otherwise allow pollutants including, but not limited to, deicers, pool additives, household chemicals and automotive fluids to directly or indirectly enter any BMP or conveyance.

6. In the event the Landowner fails to operate and maintain the BMP(s) as shown on the Plan in good working order acceptable to the Municipality the Landowner shall be in violation of this Agreement and the Landowner agrees that the Municipality or its representatives may, in addition to and not in derogation or diminution of any remedies available to it under the Stormwater Ordinance or other statutes, codes, rules or regulations, or this Agreement, enter upon the Property and take whatever action is deemed necessary to maintain said BMP(s). It is expressly understood and agreed that the Municipality is under no obligation to maintain or repair said facilities, and in no event shall this Agreement be construed to impose any such obligation on the Municipality.

7. In the event the Municipality, pursuant to this Agreement, performs work of any nature, or expends any funds in performance of said work for labor, use of equipment, supplies, materials, and the like, the Landowner shall reimburse the Municipality for all expenses (direct and indirect) incurred within 30 days of delivery of an invoice from the Municipality. Failure of the Landowner to make prompt payment to the Municipality may result in enforcement proceedings, which may include the filing of a lien against the Property, which filing is expressly authorized by the Landowner.

8. The intent and purpose of this Agreement is to ensure the proper maintenance of the onsite BMP(s) by the Landowner; provided, however, that this Agreement shall not be deemed to create or effect any additional liability of any party for damage alleged to result from or be caused by stormwater runoff.

9. The Landowner, its executors, administrators, assigns, heirs, and other successors in interests, hereby release and shall release the Municipality, its employees, agents and designated representatives from all damages, accidents, casualties, occurrences or claims which might arise or be asserted against the Municipality and/or its said employees, agents or representatives, arising out of the construction, presence, existence, or maintenance of the BMP(s) either by the Landowner or Municipality. In the event that a claim is asserted or threatened against the Municipality, its employees, agents or designated representatives, the Municipality shall notify the Landowner and the Landowner shall defend, at his own expense, any claim, suit, action or proceeding, or threatened claim, suit, action or proceeding against the Municipality or, at the request of the Municipality, pay the cost, including attorneys' fees, of defense of the same undertaken on behalf of the Municipality. If any judgment or claims against the Municipality, its employees, agents or designated representatives shall be allowed, the Landowner shall

pay all damages, judgments or claims and any costs and expenses incurred by the Municipality, including attorney's fees, regarding said damages, judgment or claims.

10. The Municipality may enforce this Agreement in accordance with its Stormwater Ordinance, at law or in equity, against the Landowner for breach of this Agreement. Remedies may include fines, penalties, damages or such equitable relief as the parties may agree upon or as may be determined by a Court of competent jurisdiction. Recovery by the Municipality shall include its reasonable attorney's fees and costs incurred in seeking relief under this Agreement.

11. Failure or delay in enforcing any provision of this Agreement shall not constitute a waiver by the Municipality of its rights of enforcement hereunder.

12. The Landowner shall inform future buyers of the Property about the function of, operation, inspection and maintenance requirements of the BMP(s) prior to the purchase of the Property by said future buyer, and upon purchase of the Property the future buyer assumes all responsibilities as Landowner and must comply with all components of this Agreement.

13. This Agreement shall inure to the benefit of and be binding upon, the Municipality and the Landowner, as well as their heirs, administrators, executors, assigns and successors in interest. This Agreement shall be recorded at the Office of the Recorder of Deeds of the County of Chester, Pennsylvania, and shall constitute a covenant running with the Property and/or equitable servitude, in perpetuity.

IN WITNESS WHEREOF, the parties have executed this Agreement on the day and tear as set forth above.

Witness/Attest

LANDOWNER:

By: _____

Title: _____

Attest:

MUNICIPALITY:

WEST SADSBUY TOWNSHIP

By: _____

LANDOWNER OWNER ACKNOWLEDGMENT
[Individual]

COMMONWEALTH OF PENNSYLVANIA

SS:

COUNTY OF CHESTER

On this, the _____ day of _____, 20__ before me a notary public, the undersigned officer, personally appeared, _____, known to me (or satisfactorily proven) to be the person whose name is subscribed to the foregoing instrument and acknowledged that he/she executed the same for the purposes therein contained.

IN WITNESS WHEREOF, I hereunto set my hand and official seal.

Notary Public

LANDOWNER ACKNOWLEDGMENT
[Corporate]

COMMONWEALTH OF PENNSYLVANIA

SS:

COUNTY OF CHESTER

On this, the _____ day of _____, 20__ before me a notary public, the undersigned officer, personally appeared, _____, known to me (or satisfactorily proven) to be the person whose name is subscribed to the foregoing instrument and acknowledged that he/she being authorized to do so, executed the same in his/her capacity as _____ of _____ for the purposes therein contained.

IN WITNESS WHEREOF, I hereunto set my hand and official seal.

Notary Public

MUNICIPALITY ACKNOWLEDGMENT

COMMONWEALTH OF PENNSYLVANIA

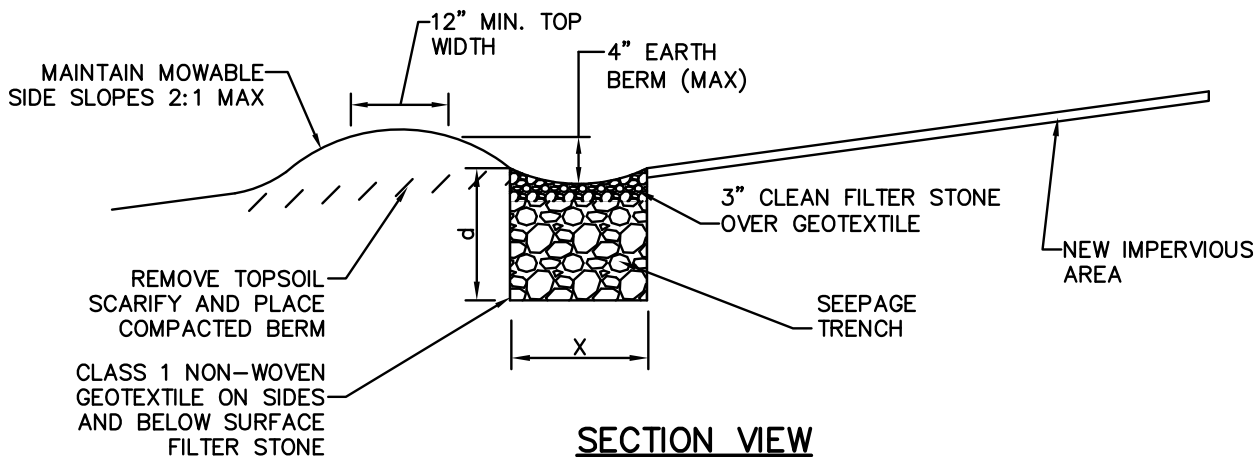
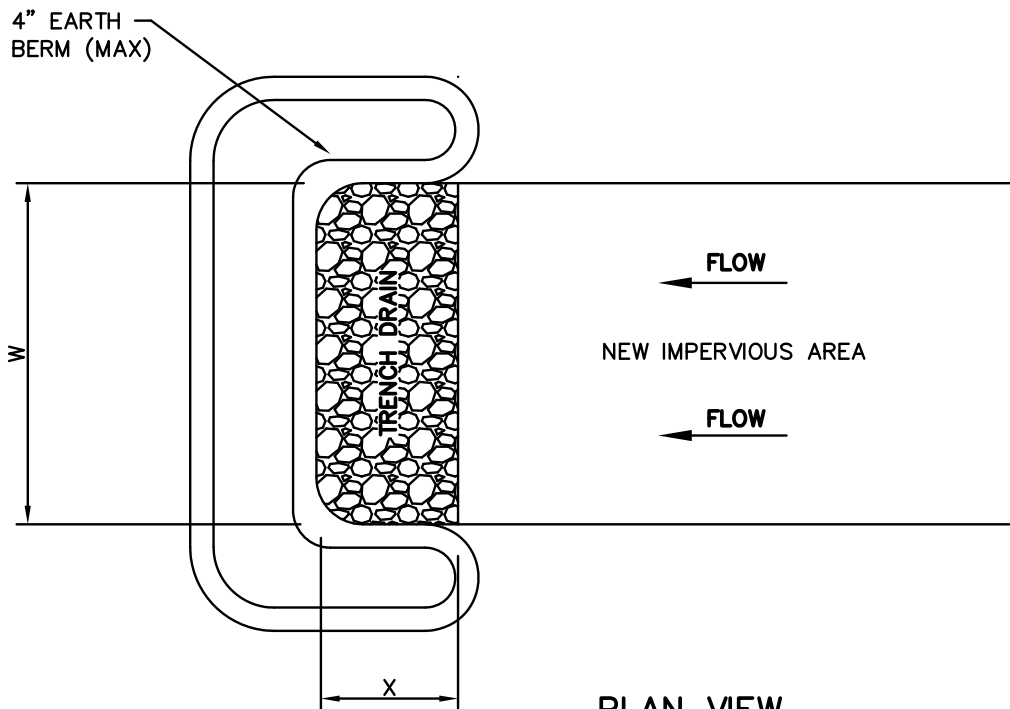
SS:

COUNTY OF CHESTER

On this, the _____ day of _____, 20__ , before me, _____, the undersigned officer, personally appeared, who acknowledged himself (herself) to be the _____ of West Sadsbury Township, a municipality of the Commonwealth of Pennsylvania and that he as such, being authorized to do so, executed the foregoing instrument for the purposes therein contained by signing his name for the Township.

IN WITNESS WHEREOF, I have hereunto set my hand and official seal.

Notary Public



KEY:

W = WIDTH OF NEW IMPERVIOUS SURFACE = LENGTH OF SEEPAGE TRENCH (FT.)

X = WIDTH OF SEEPAGE TRENCH (FT)

d = DEPTH OF SEEPAGE TRENCH (FT)

REQUIRED VOLUME (RV) FROM WORKSHEET = _____

STORAGE VOLUME OF BED (SV) = $X \cdot W \cdot d \cdot 0.4$ _____

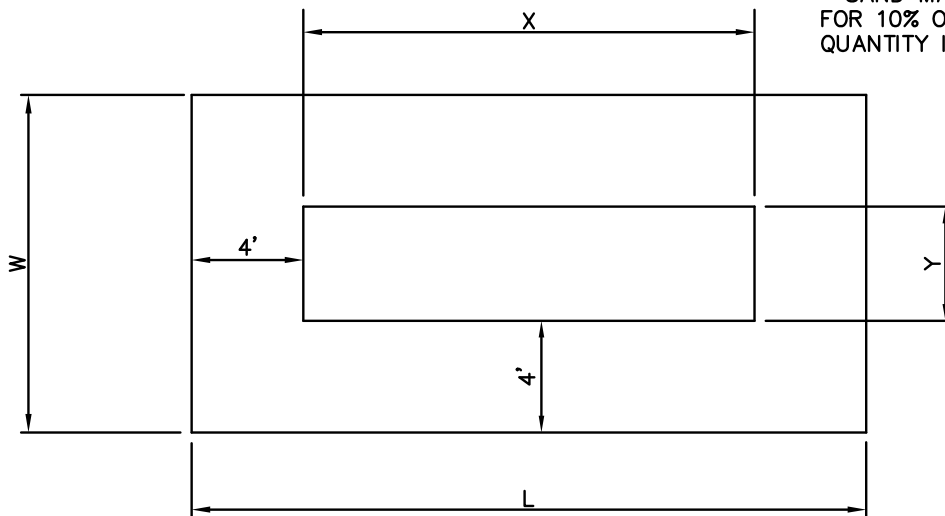
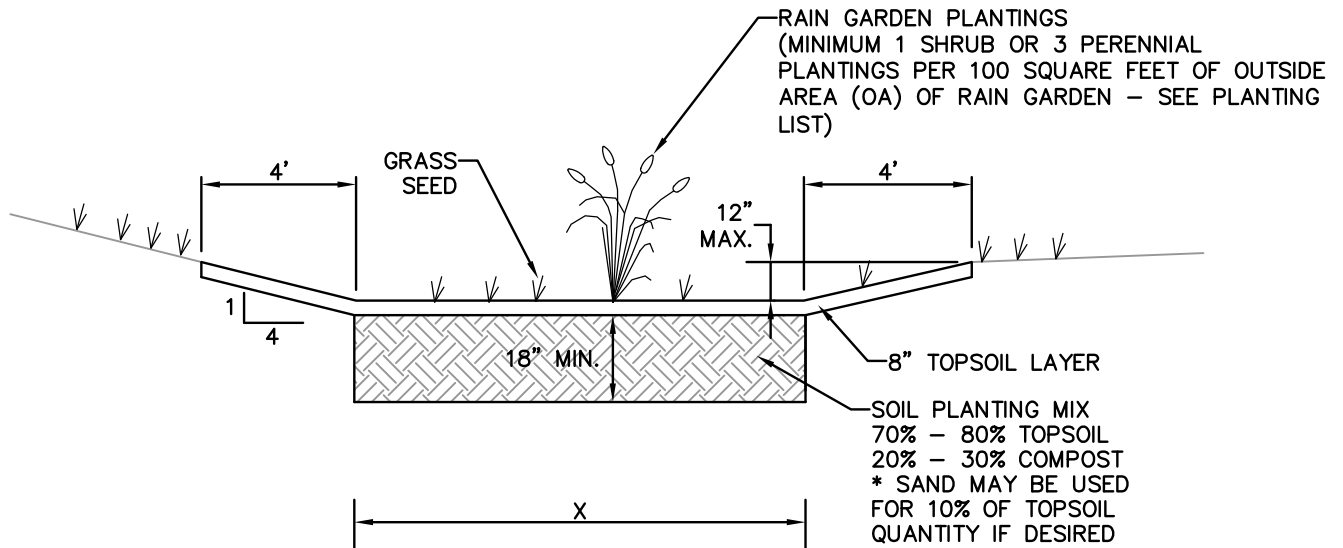
IS SV > RV _____

NOTES:

1. SIDE AND BOTTOM OF TRENCH TO BE WRAPPED IN CLASS 1 GEOTEXTILE.
2. TRENCH TO BE FILLED WITH CLEAN STONE AASHTO #1.
3. TRENCH TO BE CONSTRUCTED AT 0% SLOPE ON UNDISTURBED SOIL.
4. TRENCH TO BE CHECKED REGULARLY TO MAINTAIN PROPER OPERATION.
5. A LAWN AREA MAY BE LOCATED BETWEEN THE NEW IMPERVIOUS AREA AND INFILTRATION TRENCH AS LONG AS THE RUNOFF FROM NEW IMPERVIOUS AREA IS CONVEYED TO INFILTRATION TRENCH.

INFILTRATION TRENCH

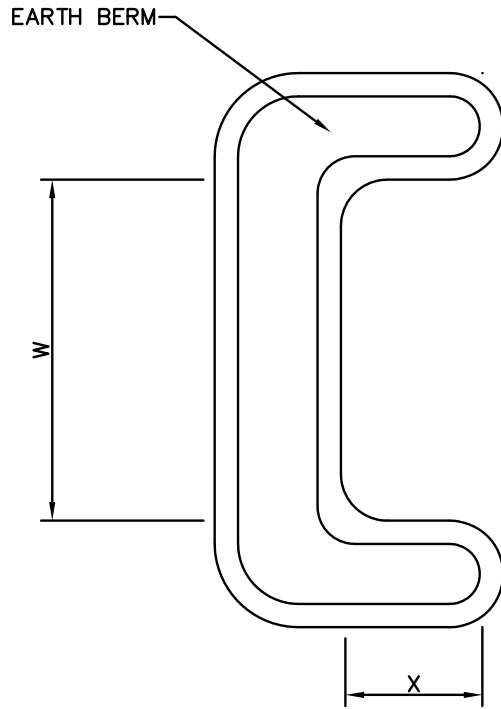
NTS



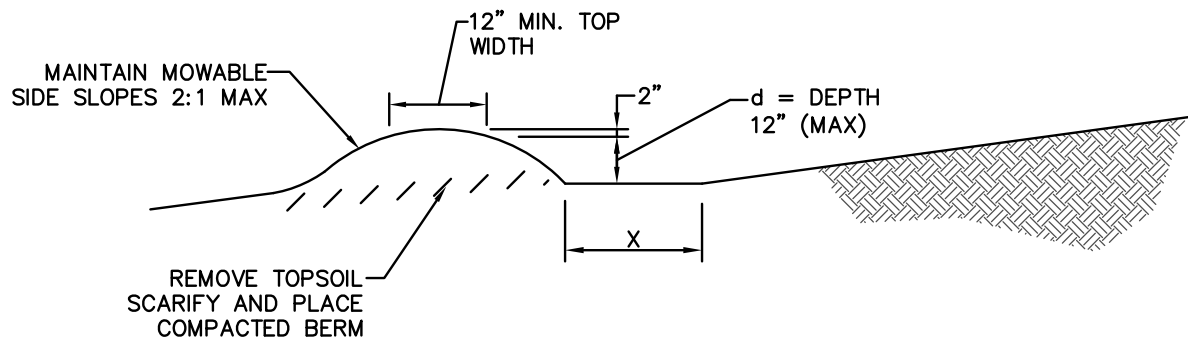
1. REQUIRED RAIN GARDEN VOLUME FROM WORKSHEET (RV) RV = _____ft³
2. CALCULATE OUTSIDE AREA OF RAIN GARDEN (OA)
(OA) = LENGTH (L) X WIDTH (W) OA = _____ft²
3. CALCULATE INSIDE AREA OF RAIN GARDEN (IA)
(IA) = [X] X [Y] IA = _____ft²
4. CALCULATE AVERAGE AREA OF RAIN GARDEN (AA)
(AA) = (OA)/2 + (IA)/2 AA = _____ft²
5. CALCULATE STORAGE VOLUME (SV)
(SV) = (AA) X 1.0' SV = _____ft²
6. CHECK FOR ADEQUATE STORAGE
STORAGE VOLUME (SV) MUST BE GREATER THAN REQUIRED VOLUME (RV)
RV = _____ft³ > SV = _____ft³
7. ADJUST RAIN GARDEN SIZE
IF STORAGE VOLUME (SV) IS NOT GREATER THAN REQUIRED VOLUME (RV), INCREASE THE SIZE OF THE RAIN GARDEN AND REPEAT STEPS 2–6

RAIN GARDEN

NTS



PLAN VIEW



SECTION VIEW

KEY:

REQUIRED VOLUME (RV) FROM WORKSHEET = _____

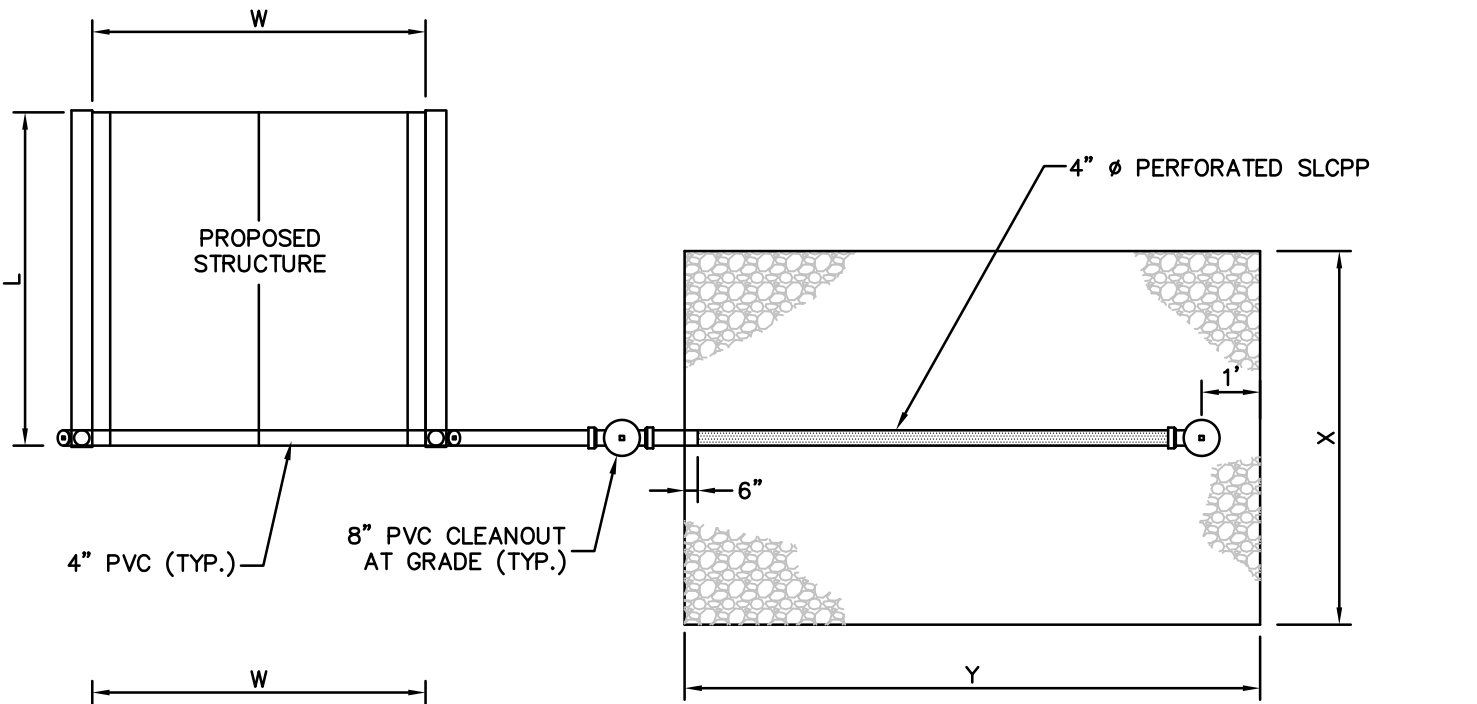
STORAGE VOLUME OF BED (SV) = $X*W*d$ = _____

IS $SV > RV$ _____

NOTES:

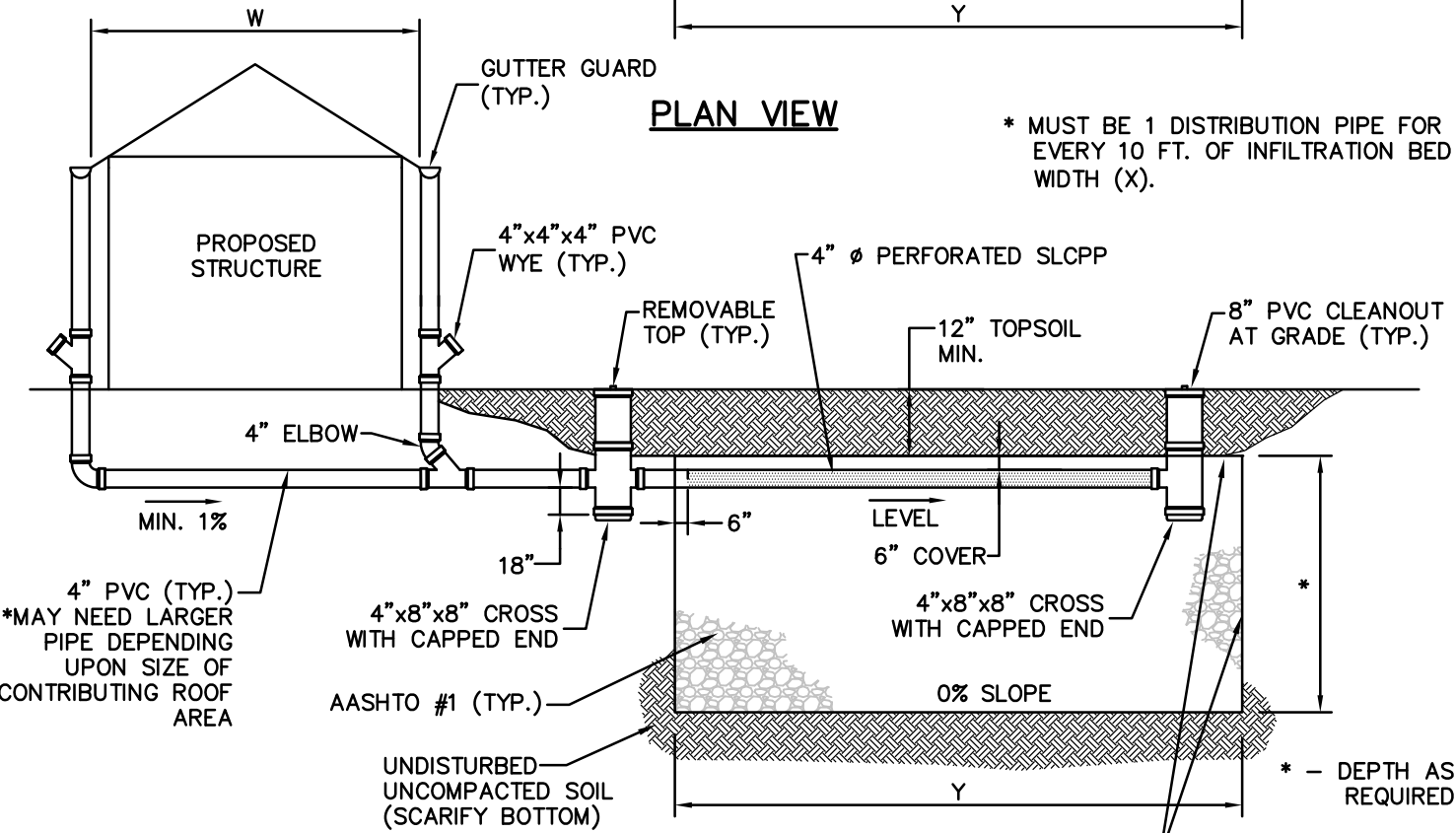
1. STORAGE AREA BEHIND BERM SHALL NOT BE COMPACTED.

EARTH BERM
NTS



PLAN VIEW

* MUST BE 1 DISTRIBUTION PIPE FOR EVERY 10 FT. OF INFILTRATION BED WIDTH (X).



SECTION VIEW

WRAP TOP AND SIDES IN CLASS 1 NON-WOVEN GEOTEXTILE

NOTES:
 L = LENGTH OF STRUCTURE ROOF (FT.)
 W = WIDTH OF ENTIRE ROOF (FT.)
 X = WIDTH OF INFILTRATION BED (FT)
 Y = LENGTH OF INFILTRATION BED (FT)

REQUIRED VOLUME (RV) FROM WORKSHEET
 STORAGE VOLUME OF BED = $X*Y*D*0.4$
 IS SV > RV _____

- NOTES:**
1. BED BOTTOM AREA CAN BE NO LESS THAN 20% OF IMPERVIOUS AREA CONTRIBUTING TO IT.
 2. PIPING AND CLEANOUTS TO BE CENTERED WITHIN INFILTRATION BED.
 3. BED TO BE CHECKED REGULARLY TO MAINTAIN PROPER OPERATION.
 4. IDENTIFY OVERFLOW LOCATIONS.

DRY WELL
 NTS