



# Attachment M: Simplified Stormwater Management Supplemental Information & Application Checklist

## 1. INTRODUCTION

Pennsylvania's Storm Water Management Act (Act 167) was enacted in 1978. This Act was in response to the impacts of accelerated stormwater runoff resulting from land development in the state. It requires counties to prepare and adopt watershed based stormwater management plans. It also requires municipalities to adopt and implement ordinances to regulate development consistent with these plans.

The purpose of these regulations are to protect public health, safety and general welfare, property values and water quality by implementing drainage and Stormwater Management practices, criteria, and provisions included herein for land development, construction and Earth Disturbance Activities, and to achieve the following throughout the Township:

- Reduce the frequency and magnitude of flooding and stormwater impacts.
- Sustain or improve the natural characteristics and quality of groundwater and surface waters.
- Protect natural resources, including riparian and aquatic living resources and habitats.
- Maintain the natural hydrologic flow of land development sites and their receiving watersheds.
- Minimize land disturbance and protect and incorporate natural hydrologic features, drainage patterns, infiltration, and flow conditions within land development site designs.
- Reduce and minimize the volume of stormwater generated, and manage stormwater as close to the source as possible.
- Provide infiltration and maintain natural groundwater recharge to protect groundwater supplies and stream baseflows, prevent degradation of surface water and groundwater quality, and to otherwise protect water resources.
- Reduce stormwater pollutants to protect and improve the quality of ground and surface waters.
- Reduce scour, erosion and sedimentation of stream channels.
- Reduce flooding impacts and preserve and restore the natural flood-carrying capacity of streams and their floodplains.
- Protect adjacent and downgradient lands from adverse impacts of direct stormwater discharges.
- Minimize impervious surfaces and connected impervious surfaces to promote infiltration and reduce the volume and impacts of stormwater runoff.
- Provide proper long-term operation and maintenance of all permanent Stormwater Management facilities, BMPs and conveyances that are implemented within the Township.
- Reduce the impacts of runoff from existing developed land undergoing redevelopment while encouraging few development and redevelopment in urban areas and areas designated for growth.
- Implement an illicit discharge detection and elimination program that addresses non-stormwater discharges.
- Provide performance standards and design criteria based on watershed-based Stormwater Management planning.
- Provide standards to meet certain NPDES stormwater permit requirements.

- Meet legal water quality requirements under State law, including regulations at 25 Pa. Code Ch. 93, to protect, maintain, reclaim and restore the existing and designated uses of the Waters of the Commonwealth.
- Implement the requirements of Total Maximum Daily Load (TMDLs) where applicable to waters within or impacted by the Township.
- Provide review procedures and performance standards for Stormwater planning and management.
- Fulfill the purpose and requirements of PA Act 167 (PA Act 167, Section 3):
  - Encourage planning and management of storm water runoff in each watershed which is consistent with sound water and land use practices.
  - Authorize a comprehensive program of Stormwater management designated to preserve and restore the flood carrying capacity of Commonwealth streams; to preserve to the maximum extent practicable natural storm water runoff regimes and natural course, current and cross-section of water of the Commonwealth; and to protect and conserve ground waters and ground-water recharge areas.
  - Encourage local administration and management of storm water consistent with the Commonwealth's duty as trustee of natural resources and the people's constitutional right to the preservation of natural, economic, scenic, aesthetic, recreational and historic values of the environment.”

## 2. FREQUENTLY ASKED QUESTIONS

What is Stormwater Management?

*Stormwater Management is a way to reduce the effect of altering the land from natural conditions. Examples of residential stormwater management are rain gardens, rain barrels, porous pavers, drywells and infiltration trenches.*

Why do I have to do Stormwater Management for my small project?

*The new East Brandywine Township regulations, based in Federal and State mandates, require that all property owners be responsible for water quality. All projects requiring a Zoning or Building Permit will be reviewed by the Township for stormwater considerations.*

How does the Township determine if a stormwater permit is required?

*If your project or the combination of project since January 2, 2014, disturbs 5,000 sq. ft. or will result in 1,000 sq. ft. of new impervious surface (cumulative), a stormwater management plan will be required.*

Is the square footage of the BMP included in the earth disturbance calculation?

*Yes. All disturbed soils are to be included in the calculation for earth disturbance.*

What if I am removing and replacing impervious surface or changing the land cover?

*The net change in the land cover is what will be considered for the permit.*

What is the penalty if I don't apply for or follow the application process or maintenance obligations?

*The Township has legal enforcement action defined in Chapter 345-906 which includes the right to deny occupancy permits and assess fines as needed for enforcement.*

What is the cost of the permit?

*Permit fees are governed by the Township's approved fee schedule. Application and review fees are due and payable with the application for a stormwater management permit. A financial security for construction of BMPs will be required in the form of a refundable escrow based on the type of approved system. A perpetual operation and maintenance \$250.00 per property, where stormwater management is required, will be charged in addition to application and review fees upon receipt of permit.*

How do I apply for a waiver?

*There is a waiver available from the Township. Waivers are considered on a case by case basis, and must be requested in writing with an engineering justification why a waiver is applicable for the project. Cost or financial burden shall not be considered a hardship. Additional qualifications for waivers are found in Section 345-110 of the Township Code.*

What if I do a couple small projects, can I avoid Stormwater Management?

*Starting in 2014, projects and impervious surfaces will be measured cumulatively. If you do a small project this year that does not qualify for stormwater management, but next year the total impervious surface for the two projects exceed the applicability threshold, stormwater management for the entirety of the two projects will be required.*

What projects are eligible for the simplified method?

*Small projects with 1,000 to 2,000 square feet of proposed impervious surfaces (as defined in the municipality's Stormwater Management Ordinance) and/or with 5,000 to 10,000 square feet of proposed earth disturbance (as defined in the Chapter 345) may apply this simplified approach.*

*Only projects that meet the above size thresholds as specified in Chapter 345, Stormwater Management, of the code of East Brandywine Township may use this simplified approach and are then not required to submit a formal stormwater management site plan to the municipality. However, these projects are still required to address water quality and infiltration requirements as outlined in this Appendix.*

*Any project with more than 2,000 square feet of proposed impervious surface or more than 10,000 square feet of proposed earth disturbance cannot apply this simplified approach.*

Are professional services necessary to meet these requirements?

*This Appendix has been developed to assist the landowner in meeting the water quality and groundwater recharge goals of the Stormwater Management Ordinance. If the guidelines are followed, the landowner may not be required to utilize professional services to comply with these water quality and groundwater recharge goals.*

What needs to be submitted to East Brandywine Township?

*Even though an engineered stormwater management plan is not required for individual lot owners opting for the simplified approach, a brief description of the proposed underground infiltration trench, including types of material to be used, total impervious areas and volume calculations, and a simplified site plan shall be submitted to the Township prior to construction. The following information shall be submitted to East Brandywine Township: (1) Simplified Approach - Stormwater Management Worksheet; and (2) Simplified Stormwater Management Site Plan.*

What is an underground infiltration trench?

*An underground infiltration trench is a long, narrow, rock-filled trench with no outlet that receives stormwater runoff. Runoff is stored in the void space between the stones and infiltrates through the bottom and into the soil matrix. Infiltration trenches perform well for removal of fine sediment and associated pollutants. Underground infiltration trenches shall incorporate or make provisions for the following elements:*

- *Shall be constructed after all earth disturbance associated with the project or site is stabilized to avoid clogging.*
- *Perforated pipe is to be set level.*
- *The width is limited to between four feet to eight feet with a fixed stone depth of three feet.*
- *Trench(es) shall be wrapped in nonwoven geotextile (top and sides).*
- *There shall be a positive overflow that allows stormwater that cannot be stored or infiltrated to be discharged into a nearby vegetated area (clean-out or pop-up emitter).*
- *Infiltration testing is recommended to ensure soil is capable of infiltrating stormwater.*
- *It is recommended that there be a two-foot clearance above the regularly occurring seasonal high-water table, and have a minimum depth to bedrock of two feet.*
- *The underground infiltration trench shall be at least 10 feet from buildings, 10 feet from property lines, 50 feet from individual water supply wells, and 100 feet from community or municipal water supply wells. If no well is present within 50 feet of the underground infiltration trench, a note stating such must be put on the plan.*
- *The underground infiltration trench shall be at least 50 feet from any septic system absorption area and 50 feet from community or municipal sewer lines and laterals, or as otherwise approved by the Township Engineer or Municipal Authority Engineer.*
- *Shall not be located near hotspots which are areas where land use or activities generate highly contaminated runoff, with concentrations of pollutants that are higher than those that are typically found in stormwater.*
- *Shall be located so that it presents no threat to subsurface structures such as building foundations and basements.*
- *Protect infiltration areas from compaction by heavy equipment during and after construction. The ratio of the collected area to the footprint of the facility shall be as small as possible with a ratio of less than 5:1 preferred.*
- *Where roof drains are designed to discharge to the underground infiltration trench(es), they shall have appropriate measures to prevent clogging by unwanted debris (for example, silt, leaves and vegetation). Such measures shall include but are not limited to leaf traps, gutter guards and cleanouts.*

How is an underground infiltration trench constructed?

1. *Contact PA ONE CALL 8-1-1 or 1-800-242-1776.*
2. *Protect infiltration areas from compaction by heavy equipment during and after construction.*
3. *Construction of the underground infiltration trench shall only be started after all earth disturbance associated with the project or site is stabilized to avoid clogging.*
4. *Excavate the underground infiltration trench to a minimum depth of four feet. The excavated trench bottom must have a uniform, level, uncompacted subgrade free from rocks and debris. Scarify the bottom of the trench. Do not compact the subgrade.*
5. *Place nonwoven geotextile along all sides of the trench. Where separate pieces of geotextile meet, they shall overlap by a minimum of 18 inches. Fold back and secure excess geotextile during stone placement.*
6. *Place clean stone (such as: 2B, three-quarter-inch clean stone, or AASHTO #57) in trench.*
7. *Install the continuously perforated pipe and cleanouts within the trench.*
8. *If a downspout will be connected to the system, install the piping from the downspout to the trench piping. Install appropriate measures to prevent clogging by unwanted debris such as leaf traps, gutter guards and cleanouts.*
9. *Backfill with clean stone to establish an overall stone depth of three feet. Fold and secure the nonwoven geotextile over the top of underground infiltration trench with an eighteen-inch overlap.*
10. *Place a minimum of 12 inches of topsoil over geotextile. Grading shall direct surface runoff toward the center of the trench (Township will consider alternative surface materials on a project-by-project basis).*
11. *Seed and stabilize topsoil.*

What are the maintenance requirements for an underground infiltration trench?

*Vegetation along the surface of an underground infiltration trench shall be maintained in good condition, and any bare spots shall be revegetated as soon as possible. Vehicles may not be parked or driven on an underground infiltration trench, and care shall be taken to avoid excessive compaction by mowers. Any debris such as leaves blocking flow from reaching an underground infiltration trench shall be routinely removed.*

### **3. SIMPLIFIED APPROACH DESIGN PROCEEDURE**

All proposed impervious areas (as defined by Chapter 345, Stormwater Management) must be included in the determination of the amount of new impervious areas and the size of proposed underground infiltration trench needed to control stormwater. Proposed impervious areas on an individual residential lot include: roof area, pavement, sidewalks, driveways, patios, porches, permanent pools, or parking areas.

Sidewalks, driveways, or patios that are constructed with pervious pavers and will not be converted to an impervious surface in the future need not be included in this calculation. Therefore, the amount of proposed impervious area can be reduced for proposed driveways, patios, and sidewalks using turf pavers.

All proposed impervious areas must be constructed so that runoff is conveyed to the underground infiltration trench; no runoff can be directed to storm sewers, inlets or other impervious areas (i.e., street).

The downspout(s) of any increased roof area must be designed to discharge to the underground infiltration trench(es). In the alternative, the applicant may use an equal or greater area of existing impervious surface to discharge to the underground infiltration trench(es). The downspouts shall have appropriate measures to prevent clogging by unwanted debris (for example, silt, leaves and vegetation). Such measures shall include but are not limited to leaf traps, gutter guards and cleanouts. Alternative designs, or alternative stormwater structures, shall be reviewed by the Township's Stormwater Management Engineer. The Township offers a one-hour pre-application meeting with the Stormwater Management Engineer at no cost to the applicant.

**Step 1 - Prepare the Simplified Stormwater Management Site Plan that includes:**

- Name and address of the owner of the property.
- Name and address of individual preparing the plan (if different).
- Date of plan preparation.
- North arrow.
- Location of all existing features within 50 feet of the property, including (if present):
  - Buildings;
  - Driveways;
  - Roads;
  - Easements;
  - Septic Systems;
  - Streams;
  - Wetlands;
  - Floodplains; and
  - Existing Stormwater Facilities.
- Show water supply wells within 50 feet of the proposed facility or add a note that no wells are present within 50 feet of the proposed facility.
- Location and approximate size in square feet of proposed:
  - Structures;
  - Driveways; and
  - Other paved/impervious areas.
- Location, orientation, and dimensions of the proposed underground infiltration trench(es). Length, width, and depth must be included on the plan.
- Distance from the proposed underground infiltration trench(es) to any existing surface water features, such as: streams, lakes, ponds, wetlands or other natural waterbodies. Must be > 50 feet from surface water features or outside of an existing legally prescribed buffer (i.e., deed, covenants, easement, etc.), whichever is greater. Contact the Township if this is not possible.
- Distance from the proposed underground infiltration trench(es) to any existing septic system, public sewer line, or service lateral.
- Distance from the proposed underground infiltration trench(es) to any existing wells or water service lines.
- Distance from the proposed underground infiltration trench(es) to nearest property line (must be >10 feet).
- Distance from the proposed underground infiltration trench(es) to all buildings and features with subgrade elements (e.g., basements, foundation walls, etc.) must be >10 feet.
- Show distance from at least two existing fixed features to the proposed underground infiltration trench(es).
- PA ONE CALL (8-1-1 OR 1-800-242-1776) Identification Number.

**Step 2 - Determine proposed impervious surfaces:**

- Determine the total area of all proposed impervious surfaces that will need to drain to one or more infiltration trench(es).
- Also, determine the total area for proposed earth disturbance to complete the project and install the infiltration trench(es).
- Determine locations where the infiltration trench(es) need to be placed so runoff from all the proposed impervious surfaces can be captured.

Example:

Garage roof (Front)	33 feet by 25 feet	=	825 square feet
Driveway	10 feet by 26 feet	=	260 square feet
			-----
Total proposed impervious surface		=	1,085 square feet
Total proposed earth disturbance area		=	2,500 square feet (estimated)

**Step 3 - Determine the size of the underground infiltration trench**

1. Select the appropriate value of proposed impervious area in the first column of the Sizing Table.
2. Select the width of the trench(es) to be utilized to determine the length of the trench(es) required.
3. When appropriate, and when approved by the Township Engineer prior to submission, minimum trench length can be achieved through the use of more than one trench.

Note: Trench(es) to be constructed to dimensions indicated below. Modifications of the dimensions are not permitted if utilizing the simplified approach.

<b>Sizing Table</b>					
<b>Underground Infiltration Trench Sizing</b>					
Impervious Area (square feet)	Four-foot wide Trench	Five-foot wide Trench	Six-foot wide Trench	Seven-foot wide Trench	Eight-foot wide Trench
	Length of trench (feet)				
1,000	46	37	30	26	23
1,001 to 1,050	47	37	31	27	23
1,051 to 1,100	48	38	32	27	24
1,101 to 1,150	49	39	33	28	25
1,151 to 1,200	50	40	33	29	25
1,201 to 1,250	55	44	37	31	27
1,251 to 1,300	59	48	40	34	30
1,301 to 1,350	62	49	41	35	31
1,351 to 1,400	64	51	43	36	32
1,401 to 1,450	66	53	44	38	33
1,451 to 1,500	68	55	46	39	34
1,501 to 1,550	71	57	47	40	35
1,551 to 1,600	73	58	49	42	36
1,601 to 1,650	75	60	50	43	38
1,651 to 1,700	78	62	52	44	39

Sizing Table Underground Infiltration Trench Sizing					
Impervious Area (square feet)	Four-foot wide Trench	Five-foot wide Trench	Six-foot wide Trench	Seven-foot wide Trench	Eight-foot wide Trench
	Length of trench (feet)				
1,701 to 1,750	80	66	53	46	40
1,751 to 1,800	82	66	55	47	41
1,801 to 1,850	84	68	56	48	42
1,851 to 1,900	87	69	58	50	43
1,901 to 1,950	89	71	59	51	44
1,951 to 1,999	91	73	61	52	46

Note: This table is based on an overall trench depth of at least four feet, containing a minimum cover of one foot of soil cover, and three feet of stone with filter fabric, installed in accordance with the diagram included with the stormwater permit application form.

**Step 4 - Submission to Township:**

1. Prepare the simplified stormwater management site plan with the required information.
2. Complete the simplified approach - stormwater management worksheet.
3. Submit the completed forms and plan to the municipality for review and approval prior to beginning construction.
4. After the municipality has approved the submission, a signed "Simplified Approach Operation, Maintenance and Inspection Plan and Agreement" will be provided to the applicant.
5. Record the Agreement at the County's Office of Recorder of Deeds.
6. Construction can begin only after the municipality has issued its approval of the proposed project to the applicant and the Agreement has been recorded.
7. Notify the Township prior to the start of any construction and schedule any needed inspections.
8. If the applicant is using a contractor to construct the project, the approved application including the worksheet and plan must be shared with the contractor to ensure the underground infiltration trench(es) are properly installed.

Note: Property owners building underground infiltration trenches per the simplified method will need to record an Operation and Maintenance Agreement (O&M Agreement) at the Chester County Recorder of Deeds. This document is prepared by Township Staff using the template shown in this attachment. An O&M Agreement is needed to ensure access, inspection, maintenance, operation, repair and permanent protection for these stormwater management features.

**East Brandywine Township  
Simplified Approach - Stormwater Management Worksheet – Page 1 of 2**

Name of Property Owner:		Date:
Name of Applicant [If different than owner(s)]:		
Contact Phone #:	Email Address:	
Address of Project:		
Description of Project:		
Distance from earth disturbance to nearest surface water feature (stream, pond, wetland, etc.): <div style="text-align: center;"> <input type="checkbox"/> 50 feet or less      <input type="checkbox"/> More than 50 feet         </div>		
<b>PROPOSED IMPERVIOUS SURFACES*</b>		
<b>Description of Proposed Impervious Surface</b>	<b>Dimensions [length X width] (in feet)</b>	<b>Area (square feet)</b>
<b>Total Proposed Impervious Surface* (square feet):</b> (If this is less than 1,000 feet <sup>2</sup> , stormwater management is not required; if this is more than 2,000 feet <sup>2</sup> , the simplified approach may not be used)		
<b>Cumulative Total Impervious Surface Since January 2, 2014 (square feet):</b>		
<b>Total Proposed Earth Disturbance Area (square feet):</b>		
<b>PROPOSED UNDERGROUND INFILTRATION TRENCH SIZING</b>		
Proposed Impervious Area to Trench (square feet)	Proposed Dimensions	
1		
2		
Does the project involve new roof area? <input type="checkbox"/> Yes <input type="checkbox"/> No		
If yes, the downspout must be connected to the proposed Underground Infiltration Trench and must have measures to prevent clogging by unwanted debris. Indicate the measure proposed: <input type="checkbox"/> leaf trap <input type="checkbox"/> gutter guards <input type="checkbox"/> cleanout <input type="checkbox"/> other: _____		

Signature: \_\_\_\_\_ Date: \_\_\_\_\_ Printed Name: \_\_\_\_\_

**East Brandywine Township**  
**Simplified Approach - Stormwater Management Worksheet – Page 2 of 2**

Complete the checklist below to verify all required information is shown on the plan:

Yes	No	Not Applicable	Required Information
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Name and address of the owner of the property.
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Name and address of individual preparing the plan (if different).
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Date of plan preparation.
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	North arrow.
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Location of all existing features within 50 feet of the property, including (if present): <ul style="list-style-type: none"> <li>• Buildings;</li> <li>• Driveways;</li> <li>• Roads;</li> <li>• Water Lines/Wells (or a note that no wells are present within 50 feet of the proposed facility);</li> <li>• Septic Systems/Sewer Mains and Laterals;</li> <li>• Streams;</li> <li>• Wetlands;</li> <li>• Floodplains;</li> <li>• Existing Stormwater Facilities; and</li> <li>• Easements.</li> </ul>
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Location and approximate size in square feet of proposed: <ul style="list-style-type: none"> <li>• Structures;</li> <li>• Driveways; and</li> <li>• Other paved/impervious areas</li> </ul>
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Location, orientation, and dimensions of the proposed Underground Infiltration Trench(es). Length and width must be included on the plan.
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Distance from the proposed Underground Infiltration Trench(es) to any existing surface water features, such as: streams, lakes, ponds, wetlands or other natural waterbodies. Must be > 50 feet from surface water features or outside of an existing legally described buffer (i.e., deed, covenants, easement, etc.) whichever is greater. Contact the Township if this is not possible.
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Distance from the proposed Underground Infiltration Trench(es) to any existing septic system, public sewer line, or lateral.
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Distance from the proposed Underground Infiltration Trench(es) to any existing wells or waterlines.
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Distance from the proposed Underground Infiltration Trench(es) to nearest property line (must be > 10 feet)
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Show distance from at least TWO existing fixed features to the proposed Underground Infiltration Trench(es).
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	PA One Call Serial Number (Dial 8-1-1 or 1-800-242-1776).

NORTH ARROW

DATE

REV. 1 DATE

REV. 2 DATE

REV. 3 DATE



*Underground Service Alert*  
Call: TOLL FREE  
1-800-242-1776  
THREE WORKING DAYS  
BEFORE YOU DIG

PROPERTY OWNER

NAME:  
ADDRESS:

PLAN PREPARER

NAME:  
ADDRESS:

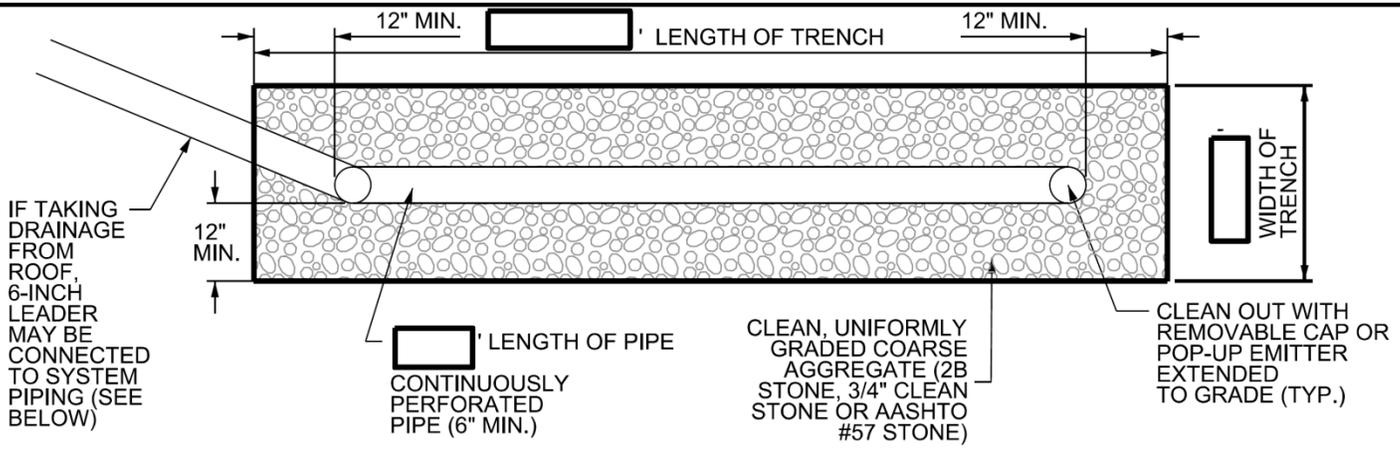
FOR USE BY TOWNSHIP ENGINEER

EAST BRANDYWINE TOWNSHIP  
CHESTER COUNTY PENNSYLVANIA

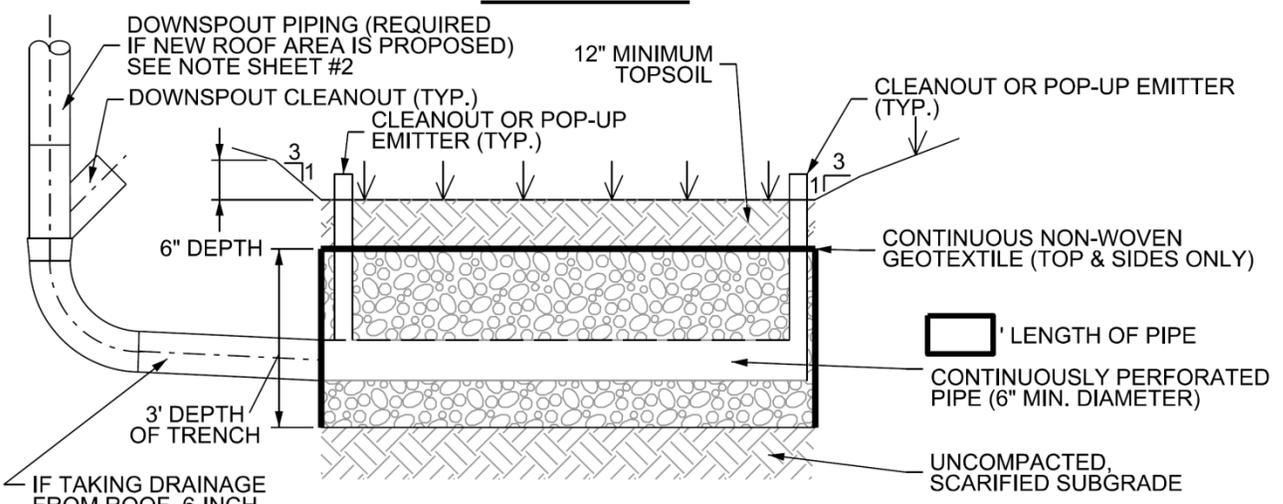
SHEET NO. 1

SIMPLIFIED STORMWATER  
MANAGEMENT SITE PLAN

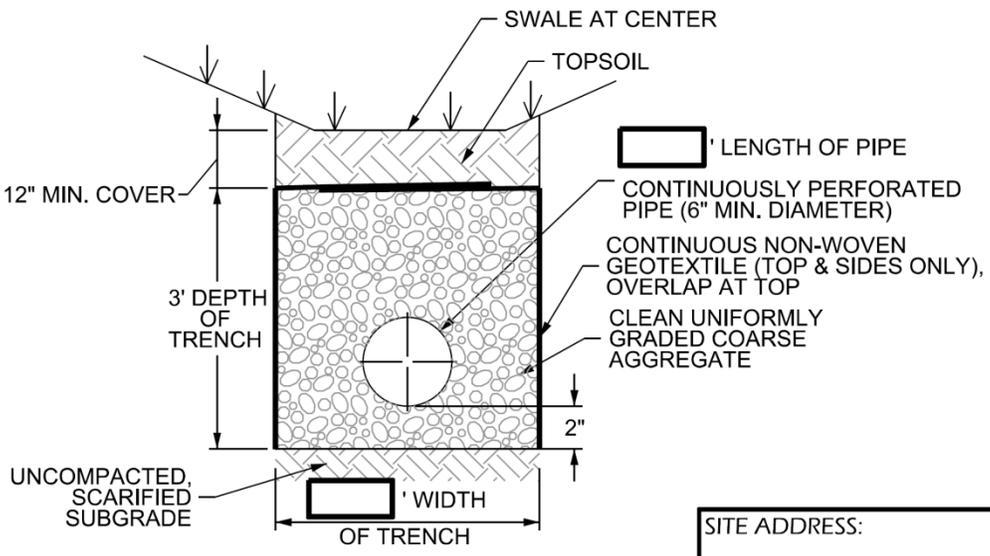
1 OF 4



**TOP VIEW**



**SIDE VIEW**



**CROSS-SECTION VIEW**

SITE ADDRESS:

DATE:



EAST BRANDYWINE TOWNSHIP  
CHESTER COUNTY PENNSYLVANIA

SHEET NO. 2

SCALE:  
NOT TO SCALE

159 East High Street, Suite #500 | Pottstown, PA 19464  
610.705.4500 (Office) | 610.705.4900 (Fax)

**INFILTRATION  
TRENCH DETAIL**

2 OF 4

## NOTES

§ 345-306.M: DURING SITE CONSTRUCTION, ALL INFILTRATION PRACTICE COMPONENTS SHALL BE PROTECTED FROM COMPACTION DUE TO HEAVY EQUIPMENT OPERATION OR STORAGE OF FILL OR CONSTRUCTION MATERIAL. INFILTRATION AREAS SHALL ALSO BE PROTECTED FROM SEDIMENTATION. AREAS THAT ARE ACCIDENTALLY COMPACTED OR GRADED SHALL BE REMEDIATED TO RESTORE SOIL COMPOSITION AND POROSITY. ADEQUATE DOCUMENTATION TO THIS EFFECT SHALL BE SUBMITTED TO THE TOWNSHIP ENGINEER FOR REVIEW. ALL AREAS DESIGNATED FOR INFILTRATION SHALL NOT RECEIVE RUNOFF UNTIL THE CONTRIBUTORY DRAINAGE AREA HAS ACHIEVED FINAL STABILIZATION.

§ 345-306.N: WHERE SEDIMENT TRANSPORT IN THE STORMWATER RUNOFF IS ANTICIPATED TO REACH THE INFILTRATION SYSTEM, APPROPRIATE PERMANENT MEASURES TO PREVENT OR COLLECT SEDIMENT SHALL BE INSTALLED PRIOR TO DISCHARGE TO THE INFILTRATION SYSTEM.

§ 345-306.O: WHERE ROOF DRAINS ARE DESIGNED TO DISCHARGE TO INFILTRATION PRACTICES, THEY SHALL HAVE APPROPRIATE MEASURES TO PREVENT CLOGGING BY UNWANTED DEBRIS (FOR EXAMPLE, SILT, LEAVES AND VEGETATION). SUCH MEASURES SHALL INCLUDE BUT ARE NOT LIMITED TO LEAF TRAPS, GUTTER GUARDS AND CLEANOUTS.

§ 345-306.R: THE FOLLOWING PROCEDURES AND MATERIALS SHALL BE REQUIRED DURING THE CONSTRUCTION OF ALL INFILTRATION TRENCHES:

- (1) EXCAVATION FOR THE INFILTRATION TRENCH SHALL BE PERFORMED WITH EQUIPMENT THAT WILL NOT COMPACT THE BOTTOM OF THE INFILTRATION TRENCH.
- (2) THE BOTTOM OF THE INFILTRATION TRENCH SHALL BE SCARIFIED PRIOR TO THE PLACEMENT OF AGGREGATE.
- (3) ONLY CLEAN AGGREGATE WITH DOCUMENTED POROSITY, FREE OF FINES, SHALL BE ALLOWED.
- (4) THE TOPS AND SIDES OF ALL INFILTRATION TRENCH SHALL BE COVERED WITH DRAINAGE FABRIC. FABRIC SHALL BE NONWOVEN FABRIC ACCEPTABLE TO THE TOWNSHIP ENGINEER.
- (5) STORMWATER SHALL BE DISTRIBUTED THROUGHOUT THE ENTIRE SEEPAGE BED/TRENCH OR LIKE FACILITY AND PROVISIONS FOR THE COLLECTION OF DEBRIS SHALL BE PROVIDED IN ALL FACILITIES.
- (6) PA ONECALL IS REQUIRED BEFORE ANY CONSTRUCTION ACTIVITIES COMMENCE.

## TRENCH LENGTH

Impervious Area (sf)	4' Wide Trench	5' Wide Trench	6' Wide Trench	7' Wide Trench	8' Wide Trench
	Length of trench (FT)				
1000	46	37	30	26	23
1001 - 1050	47	37	31	27	23
1051 - 1100	48	38	32	27	24
1101 - 1150	49	39	33	28	25
1151 - 1200	50	40	33	29	25
1201 - 1250	55	44	37	31	27
1251 - 1300	59	48	40	34	30
1301 - 1350	62	49	41	35	31
1351 - 1400	64	51	43	36	32
1401 - 1450	66	53	44	38	33
1451 - 1500	68	55	46	39	34
1501 - 1550	71	57	47	40	35
1551 - 1600	73	58	49	42	36
1601 - 1650	75	60	50	43	38
1651 - 1700	78	62	52	44	39
1701 - 1750	80	64	53	46	40
1751 - 1800	82	66	55	47	41
1801 - 1850	84	68	56	48	42
1851 - 1900	87	69	58	50	43
1901 - 1950	89	71	59	51	44
1951 - 1999	91	73	61	52	46

SITE ADDRESS:

DATE:



**CEG**  
**CEDARVILLE**

159 East High Street, Suite #500 | Pottstown, PA 19464  
610.705.4500 (Office) | 610.705.4900 (Fax)

EAST BRANDYWINE TOWNSHIP  
CHESTER COUNTY PENNSYLVANIA

SHEET NO. 3

**INFILTRATION  
TRENCH NOTES**

3 OF 4

SCALE:

NOT TO SCALE

# STORMWATER FACILITIES OPERATIONS AND MAINTENANCE PLAN

THE HOMEOWNER WILL BE RESPONSIBLE FOR THE OPERATION AND MAINTENANCE OF ALL STORMWATER AND BMP FACILITIES. THE FACILITIES WILL INCLUDE THE INFILTRATION TRENCH ON THE PROPERTY AS WELL AS ANY YARD OR ROOF DRAINS, PIPING, POP-UP EMITTERS OR CLEAN-OUTS SHOWN ON THIS PLAN.

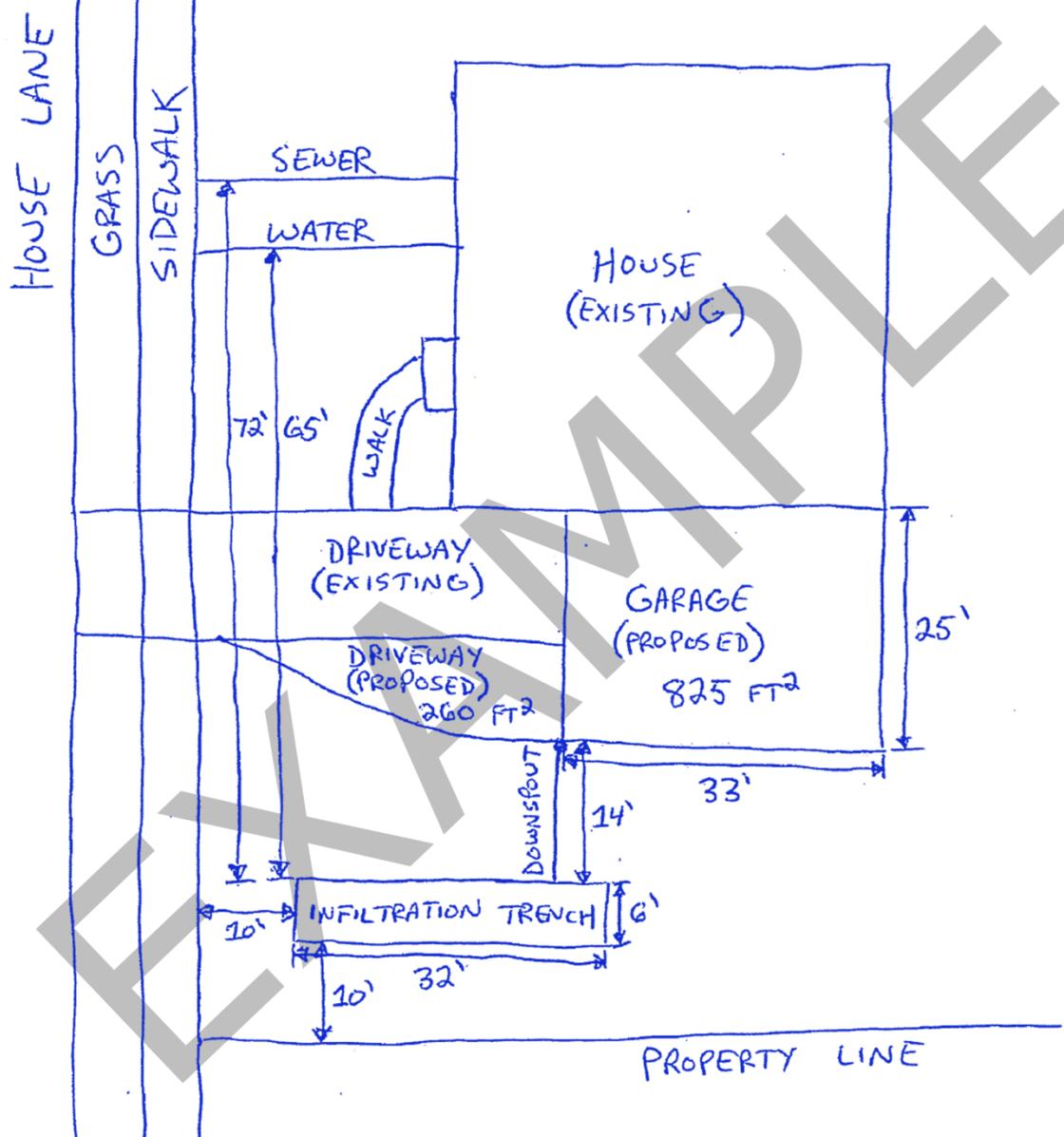
MAINTENANCE AND OPERATION WILL BE AS FOLLOWS:

1. THE INFILTRATION TRENCH AND CONVEYANCES DESCRIBED IN THIS PLAN SHALL BE INSPECTED ANNUALLY OR AS NEEDED FOLLOWING SIGNIFICANT PRECIPITATION EVENTS TO ASCERTAIN IF ANY SEDIMENT IS ENTERING THE FACILITIES. THE INFILTRATION TRENCH AND CONVEYANCES DESCRIBED IN THIS PLAN SHALL BE CLEANED IF NECESSARY. CLEANING WILL CONSIST OF REMOVING THE ACCUMULATED SILT, DEBRIS, OR SEDIMENT.
2. THE OVERLYING VEGETATION ON THE INFILTRATION TRENCH SHALL BE MAINTAINED IN GOOD CONDITION, AND ANY BARE SPOTS REVEGITATED AS SOON AS POSSIBLE.
3. VEHICULAR ACCESS ON THE INFILTRATION TRENCH SHOULD BE PROHIBITED, AND CARE SHOULD BE TAKEN TO AVOID EXCESSIVE COMPACTION BY MOWERS.
4. REPAIR ALL DAMAGED PIPING, CLEAN-OUTS, AND POP-UP EMITTERS PROMPTLY TO PREVENT SEDIMENT FROM ENTERING THE SYSTEM. SPECIAL CARE SHOULD BE TAKEN TO AVOID DAMAGING EXPOSED ELEMENTS WITH MOWERS AND/OR STRING TRIMMERS.
5. GRASSES OVER THE INFILTRATION TRENCH SHALL BE MOWED AT LEAST TWICE EACH YEAR. TREES AND SHRUBS SHOULD NOT BE PERMITTED TO GROW ABOVE THE INFILTRATION TRENCH.

SITE ADDRESS:

DATE:		EAST BRANDYWINE TOWNSHIP CHESTER COUNTY                      PENNSYLVANIA	SHEET NO. <u>4</u>
SCALE: NOT TO SCALE	159 East High Street, Suite #500   Pottstown, PA 19464 610.705.4500 (Office)   610.705.4900 (Fax)	INFILTRATION TRENCH OPERATION & MAINTENANCE NOTES	<u>4 OF 4</u>

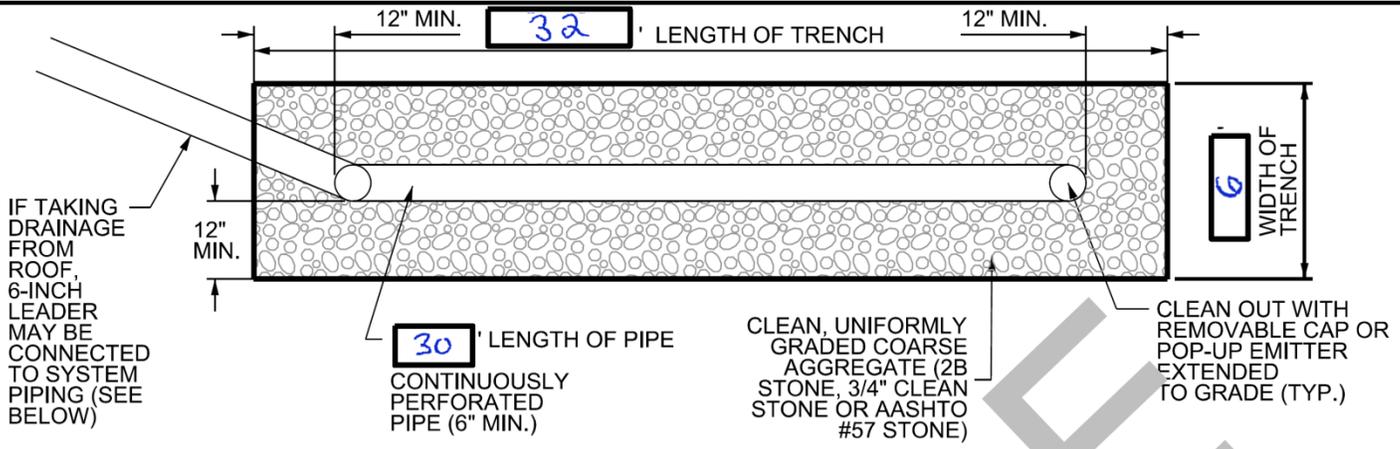
NORTH ARROW  
  
 DATE  
 10/19/2017  
 REV. 1 DATE  
 REV. 2 DATE  
 REV. 3 DATE



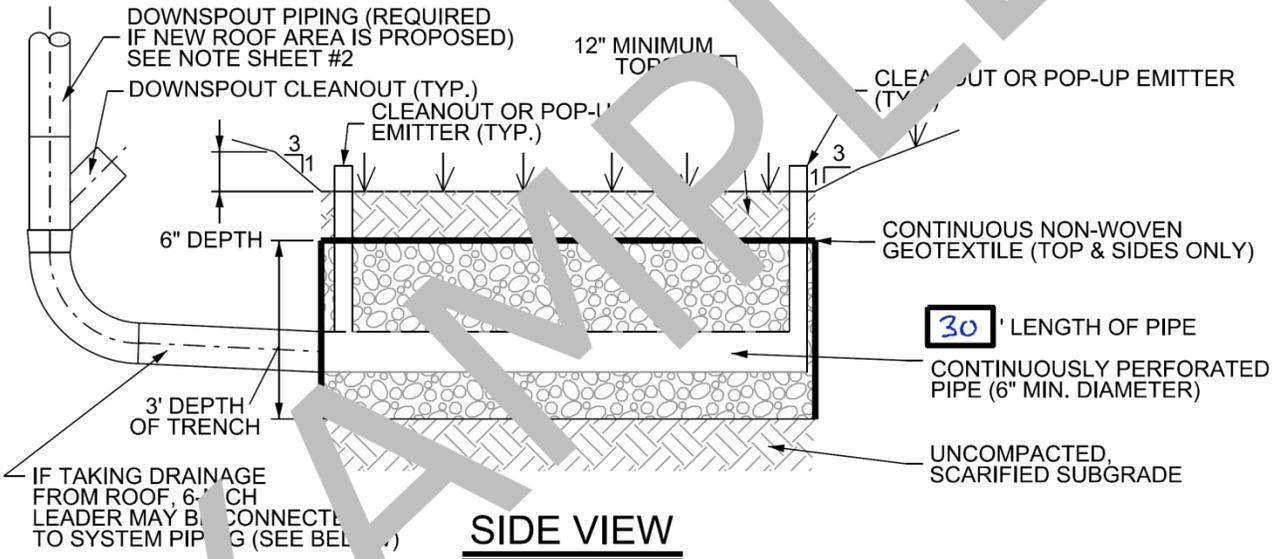
Underground Service Alert  
 Call: TOLL FREE  
 1-800-242-1776  
 THREE WORKING DAYS  
 BEFORE YOU DIG

PROPERTY OWNER  
 NAME: JOHN SMITH  
 ADDRESS: 123 HOUSE LANE, DOWNINGTOWN PA 19335  
 PLAN PREPARER  
 NAME: JOHN SMITH  
 ADDRESS: 123 HOUSE LANE, DOWNINGTOWN PA 19335

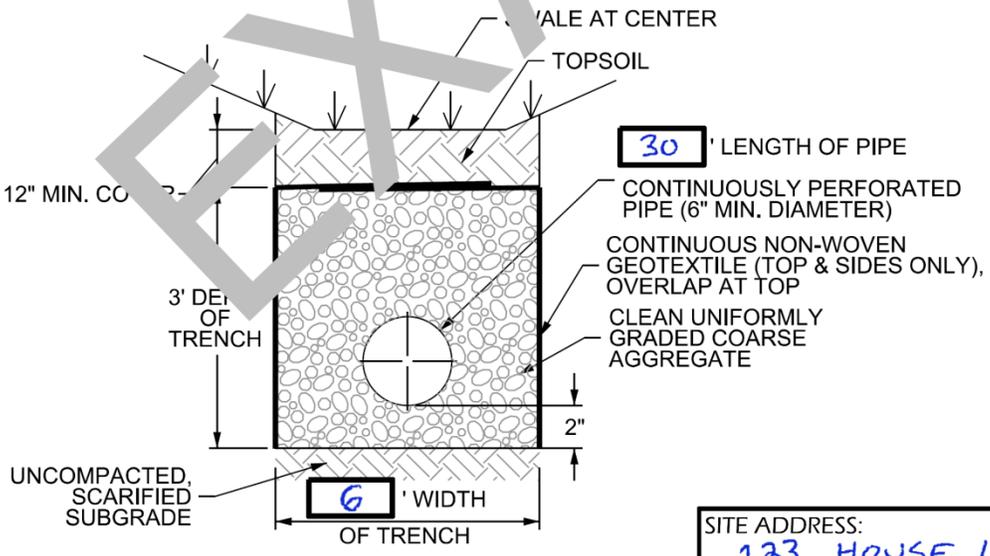
FOR USE BY TOWNSHIP ENGINEER	EAST BRANDYWINE TOWNSHIP CHESTER COUNTY	PENNSYLVANIA	SHEET NO. <u>1</u>
	SIMPLIFIED STORMWATER MANAGEMENT SITE PLAN		<u>1 OF 4</u>



**TOP VIEW**



**SIDE VIEW**



**CROSS-SECTION VIEW**

SITE ADDRESS:  
 123 HOUSE LANE, DOWNINGTOWN  
 PA 19335

DATE:  
 10/19/2017



159 East High Street, Suite #500 | Pottstown, PA 19464  
 610.705.4500 (Office) | 610.705.4900 (Fax)

EAST BRANDYWINE TOWNSHIP  
 CHESTER COUNTY PENNSYLVANIA

SHEET NO. 2

INFILTRATION  
 TRENCH DETAIL

2 OF 4

SCALE:  
 NOT TO SCALE

## NOTES

§ 345-306.M: DURING SITE CONSTRUCTION, ALL INFILTRATION PRACTICE COMPONENTS SHALL BE PROTECTED FROM COMPACTION DUE TO HEAVY EQUIPMENT OPERATION OR STORAGE OF FILL OR CONSTRUCTION MATERIAL. INFILTRATION AREAS SHALL ALSO BE PROTECTED FROM SEDIMENTATION. AREAS THAT ARE ACCIDENTALLY COMPACTED OR GRADED SHALL BE REMEDIATED TO RESTORE SOIL COMPOSITION AND POROSITY. ADEQUATE DOCUMENTATION TO THIS EFFECT SHALL BE SUBMITTED TO THE TOWNSHIP ENGINEER FOR REVIEW. ALL AREAS DESIGNATED FOR INFILTRATION SHALL NOT RECEIVE RUNOFF UNTIL THE CONTRIBUTORY DRAINAGE AREA HAS ACHIEVED FINAL STABILIZATION.

§ 345-306.N: WHERE SEDIMENT TRANSPORT IN THE STORMWATER RUNOFF IS ANTICIPATED TO REACH THE INFILTRATION SYSTEM, APPROPRIATE PERMANENT MEASURES TO PREVENT OR COLLECT SEDIMENT SHALL BE INSTALLED PRIOR TO DISCHARGE TO THE INFILTRATION SYSTEM.

§ 345-306.O: WHERE ROOF DRAINS ARE DESIGNED TO DISCHARGE TO INFILTRATION PRACTICES, THEY SHALL HAVE APPROPRIATE MEASURES TO PREVENT CLOGGING BY UNWANTED DEBRIS (FOR EXAMPLE, LEAF TRAPS, LEAVES AND VEGETATION). SUCH MEASURES SHALL INCLUDE BUT ARE NOT LIMITED TO LEAF TRAPS, FILTER GUARDS AND CLEANOUTS.

§ 345-306.R: THE FOLLOWING PROCEDURES AND MATERIALS SHALL BE REQUIRED DURING THE CONSTRUCTION OF ALL INFILTRATION TRENCHES:

- (1) EXCAVATION FOR THE INFILTRATION TRENCH SHALL BE PERFORMED WITH EQUIPMENT THAT WILL NOT COMPACT THE BOTTOM OF THE INFILTRATION TRENCH.
- (2) THE BOTTOM OF THE INFILTRATION TRENCH SHALL BE SCARIFIED PRIOR TO THE PLACEMENT OF AGGREGATE.
- (3) ONLY CLEAN AGGREGATE WITH DOCUMENTED POROSITY, FREE OF FINES, SHALL BE ALLOWED.
- (4) THE TOPS AND SIDES OF ALL INFILTRATION TRENCH SHALL BE COVERED WITH PERMEABLE FABRIC. FABRIC SHALL BE NONWOVEN FABRIC ACCEPTABLE TO THE TOWNSHIP ENGINEER.
- (5) STORMWATER SHALL BE DISTRIBUTED THROUGHOUT THE ENTIRE PERMEABLE BED/TRENCH OR LIKE FACILITY AND PROVISIONS FOR THE COLLECTION OF DEBRIS SHALL BE PROVIDED IN ALL FACILITIES.
- (6) PA ONECALL IS REQUIRED BEFORE ANY CONSTRUCTION ACTIVITIES COMMENCE.

### TRENCH LENGTH

Impervious Area (sf)	4' Wide Trench	5' Wide Trench	6' Wide Trench	7' Wide Trench	8' Wide Trench
	Length of trench (FT)				
1000	46	37	30	26	23
1001 - 1050	47	37	31	27	23
1051 - 1100	48	38	32	27	24
1101 - 1150	49	39	33	28	25
1151 - 1200	50	40	33	29	25
1201 - 1250	55	44	37	31	27
1251 - 1300	59	48	40	34	30
1301 - 1350	62	49	41	35	31
1351 - 1400	64	51	43	36	32
1401 - 1450	66	53	44	38	33
1451 - 1500	68	55	46	39	34
1501 - 1550	71	57	47	40	35
1551 - 1600	73	58	49	42	36
1601 - 1650	75	60	50	43	38
1651 - 1700	78	62	52	44	39
1701 - 1750	80	64	53	46	40
1751 - 1800	82	66	55	47	41
1801 - 1850	84	68	56	48	42
1851 - 1900	87	69	58	50	43
1901 - 1950	89	71	59	51	44
1951 - 1999	91	73	61	52	46

SITE ADDRESS:

123 HOUSE LANE, DOWNINGTOWN  
PA 19335

DATE:

10/19/2017



CEG

CEDARVILLE

159 East High Street, Suite #500 | Pottstown, PA 19464  
610.705.4500 (Office) | 610.705.4900 (Fax)

EAST BRANDYWINE TOWNSHIP  
CHESTER COUNTY PENNSYLVANIA

SHEET NO. 3

INFILTRATION  
TRENCH NOTES

3 OF 4

SCALE:

NOT TO SCALE

# STORMWATER FACILITIES OPERATIONS AND MAINTENANCE PLAN

THE HOMEOWNER WILL BE RESPONSIBLE FOR THE OPERATION AND MAINTENANCE OF ALL STORMWATER AND BMP FACILITIES. THE FACILITIES WILL INCLUDE THE INFILTRATION TRENCH ON THE PROPERTY AS WELL AS ANY YARD OR ROOF DRAINS, PIPING, POP-UP EMITTERS OR CLEAN-OUTS SHOWN ON THIS PLAN.

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EXAMPLE

SITE ADDRESS:  
 123 HOUSE LANE, DOWNINGTOWN  
 PA 19335

DATE: <i>10/19/2017</i>	 <p><b>CEG</b> CEDARVILLE</p>	EAST BRANDYWINE TOWNSHIP CHESTER COUNTY PENNSYLVANIA INFILTRATION TRENCH OPERATION & MAINTENANCE NOTES	SHEET NO. <u>4</u>  <u>4 OF 4</u>
SCALE: NOT TO SCALE	159 East High Street, Suite #500   Pottstown, PA 19464 610.705.4500 (Office)   610.705.4900 (Fax)		

**Prepared By:**

East Brandywine Township  
1214 Horseshoe Pike  
Downingtown, PA 19335

**Return To:**

East Brandywine Township  
1214 Horseshoe Pike  
Downingtown, PA 19335

UPI#: #-#-###

**STORMWATER BEST MANAGEMENT PRACTICES (BMPs) AND CONVEYANCES  
OPERATION AND MAINTENANCE AGREEMENT**

**THIS AGREEMENT**, made and entered into this \_\_\_\_\_ day of \_\_\_\_\_, 20\_\_\_\_, by and \_\_\_\_\_ (hereinafter the "Landowner"), and East Brandywine 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 is proceeding to build and develop the Property; and

**WHEREAS**, the stormwater Best Management Practices (herein after BMP(s)) And Conveyances Operations and Maintenance Plan approved by the Municipality (hereinafter referred to as the "O&M Plan") for the Property, which is attached hereto as Appendix A and made part hereof, provides for management of stormwater within the confines of the Property through the use of BMP(s) and conveyances; and

**WHEREAS**, the Municipality and the Landowner, for itself and 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 stormwater BMP(s) and conveyances be constructed and maintained on the Property; and

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

**BMP - "Best Management Practice"** - Those activities, facilities, designs, measures, or procedures as specifically identified in the O&M Plan, used to manage stormwater impacts from land development, to meet state water quality requirements, to promote groundwater recharge, and to otherwise meet the purposes of the Municipality's Stormwater Management Ordinance. BMPs may 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, manufactured devices, and operational and/or behavior-related practices that attempt to minimize the contact of pollutants with stormwater runoff. The BMPs identified in the O&M Plan are permanent appurtenances to the Property; and

**Conveyance** - As specifically identified in the O&M 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, stream channels, and like facilities or features. The conveyances identified in the O&M Plan are permanent appurtenances to the Property; and

**WHEREAS**, the Municipality requires, through the implementation of the O&M Plan, that stormwater management BMPs and conveyances, as required by said O&M Plan and the Municipality's Stormwater Management Ordinance, be constructed and adequately inspected, operated and maintained by the Landowner, its administrators, executors, successors in interest, heirs, and assigns.

**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 as if fully set forth in the body of this Agreement.

2. The Landowner shall construct the BMP(s) and conveyance(s) in accordance with the final design plans and specifications as approved by the Municipality \_\_\_\_\_  
dated \_\_\_\_\_ and last revised \_\_\_\_\_.

3. The Landowner shall inspect, operate and maintain the BMP(s) and conveyance(s) as shown on the O&M Plan in good working order acceptable to the Municipality and in accordance with the specific inspection and maintenance requirements in the approved O&M Plan.

4. The Landowner hereby grants permission to the Municipality, its authorized agents and employees, to enter upon the Property from a public right-of-way or roadway, at reasonable times and upon presentation of proper identification, to inspect the BMP(s) and conveyance(s) whenever it deems necessary for compliance with this Agreement, the O&M Plan and the Municipality's Stormwater Management Ordinance. Whenever possible, the Municipality shall notify the Landowner prior to entering the Property.

5. The Municipality intends to inspect the BMP(s) and conveyance(s) at a minimum of once every \_\_\_\_\_ years to determine if they continue to function as required.

6. 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 approved O&M 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 approved O&M 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.

7. In the event that the Landowner fails to operate and maintain the BMP(s) and conveyance(s) as shown on the O&M 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) and conveyance(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.

8. In the event that 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 \_\_\_\_\_ 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.

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

10. The Landowner, for itself and its executors, administrators, assigns, heirs, and other successors in interest, hereby releases and shall release the Municipality's employees, its agents and designated representatives from all damages, accidents, casualties, occurrences, or claims which might arise or be asserted against said employees, agents or representatives arising out of the construction, presence, existence, or maintenance of the BMP(s) and conveyance(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 any 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's 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 attorneys, regarding said damages, judgments or claims.

11. 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.

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

13. 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.

14. 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.

15. Additional items or conditions, as required by the Municipality (per §345-703B of this chapter), as attached herein:

\_\_\_\_\_

This Agreement shall be recorded at the Office of the Recorder of Deeds of Chester County, Pennsylvania, and shall constitute a covenant running with the Property, in perpetuity.

IN WITNESS WHEREOF, being duly authorized and empowered to do so, the Owner and Township have duly executed and delivered this Agreement as of the date and year first above written.

WITNESS:

OWNER(S):

\_\_\_\_\_  
For Owner

By: \_\_\_\_\_

By: \_\_\_\_\_

WITNESS:

EAST BRANDYWINE TOWNSHIP:

\_\_\_\_\_  
For Township

By: \_\_\_\_\_

Township Manager