



TOWNSHIP OF

Hampton

Residential Small Project Stormwater Management (SWM)

- The Township of Hampton Stormwater Management (SWM) Ordinance requires that stormwater runoff controls be installed for all projects that add 400 square feet or more of impervious surface area on any property.
- For small projects (with less than 5,000 square feet of new impervious surface area), the following options may be used. Applicants may combine SWM controls to achieve the required volume of water storage.
- Residents can also propose an alternative system for SWM; however, an engineering review will be required and the property owner will be asked to reimburse the Township for any engineering invoicing related to the review or inspections of the system.
- There will be a \$35.00 fee for any SWM application that does not accompany a building permit, due once the permit is approved. All checks made payable to "Township of Hampton".

1. Property Owner _____ Phone # _____

Site Address _____ Email _____

2. Contact (if other) _____ Phone # _____

Affiliation _____ Email _____

3. Type of construction: _____

4. Type of Stormwater Management Control: *Please check the appropriate box(es) and complete the page(s) listed. Please skip all pages associated with any unchecked boxes.*

Stormwater sump pit - *please complete pages 2, 3 & 4 – OR*
Go to page 15 for the traditional sump application (no guidance)

Infiltration trench – *please complete pages 9 & 10*

Permeable pavers – *please complete pages 12*

Cistern / Underground storage tank – *please complete pages 13 & 14*



Stormwater Sump Pit Application:

Directions:

Please read pages 5-8 for additional guidelines for constructing a stormwater sump pit.

1. What is the total amount of new impervious surface area? _____ square feet (sf)

Please provide a breakdown all new impervious surface area(s): _____

(Please include all new roof area, paved, gravel, and other impervious surface areas. You may deduct any existing impervious surfaces on the property that are being removed; however, please list them below with the square footage for each)

Existing Impervious Removed: _____

2. Volume of water you are required to control: _____ cubic feet (cf)

Use the amount listed in question 1 (impervious surface area in sf) and find the corresponding volume on the following chart:

Impervious surface area	Volume	Impervious surface area	Volume	Impervious surface area	Volume	Impervious surface area	Volume
400 sf =	170 cf	1600 sf =	680 cf	2800 sf =	1190 cf	4000 sf =	1700 cf
500 sf =	213 cf	1700 sf =	723 cf	2900 sf =	1233 cf	4100 sf =	1743 cf
600 sf =	255 cf	1800 sf =	765 cf	3000 sf =	1275 cf	4200 sf =	1785 cf
700 sf =	298 cf	1900 sf =	808 cf	3100 sf =	1318 cf	4300 sf =	1828 cf
800 sf =	340 cf	2000 sf =	850 cf	3200 sf =	1360 cf	4400 sf =	1870 cf
900 sf =	383 cf	2100 sf =	893 cf	3300 sf =	1403 cf	4500 sf =	1913 cf
1000 sf =	425 cf	2200 sf =	935 cf	3400 sf =	1445 cf	4600 sf =	1955 cf
1100 sf =	468 cf	2300 sf =	978 cf	3500 sf =	1488 cf	4700 sf =	1998 cf
1200 sf =	510 cf	2400 sf =	1020 cf	3600 sf =	1530 cf	4800 sf =	2040 cf
1300 sf =	553 cf	2500 sf =	1063 cf	3700 sf =	1573 cf	4900 sf =	2083 cf
1400 sf =	595 cf	2600 sf =	1105 cf	3800 sf =	1615 cf	5000 sf =	2125 cf
1500 sf =	638 cf	2700 sf =	1148 cf	3900 sf =	1658 cf		

3. Dimensions of Sump:

The minimum ratio of Length to Width is 3:1 (see below).

_____ ft. x _____ ft. x _____ ft.
Length Width Depth

Tips for determining the dimensions:

- When you multiply the Length x Width x Depth, the total should equal the sump volume you listed in question 2.
- Start by determining the depth of the sump.
 - The depth that is most commonly proposed is 4'; however, you should choose what works for your particular property.
 - The deeper you can make the pit, the smaller the length and width can be.
 - All sump pits must have at least 1' of fill on top and the risers must extend at least 18" below the bottom of the sump. (i.e. for a pit that's 4' deep, the depth of the hole is 6.5').
 - The sump must be able to drain naturally, so you shouldn't put it deeper than the lowest part of your property.
- For determining the Length and Width, keep in mind that the ratio between them must be at least 3:1 (i.e. the value listed for Length must be 3 times the value listed for Width – for example, 15'x5). To help determine this, you can use the following method:
 - Divide the volume of the sump by the depth (cf / depth): _____
 - Multiply the following combinations numbers until you find a set that equals (or exceeds) the number you wrote above.
 - 3x9, 4x12, 5x15, 6x18, 7x21, 8x24, 9x27, 10x30, etc.
 - Fill in the dimensions above using the numbers in that set, plus the depth you've chosen.

4. Diameter of perforated upright pipes (aka risers): 18" 24" 30"

Note: The diameter of the upright pipes (aka risers) is based on the depth.

- Sump depth of 2' or less requires 18" diameter risers
- Sump depth of 3' to 4' requires 24" diameter risers
- Sump depth over 4' requires 30" diameter risers

5. Length of perforated horizontal collection pipes: _____ feet per side

Directions: Subtract the diameter of risers (question 4) from the Length (question 3) and write above. Each side of the sump must have approximately this length of horizontal perforated pipes)

6. Diameter of perforated horizontal collection pipes: 6" 8" 10"

Directions: Use the following guidelines with your impervious surface area (question 1)

- 6" min. diameter for impervious areas less than 3,000 sf
- 8" min. diameter for impervious areas from 3,000 to 4,000 sf
- 10" min. diameter for impervious areas more than 4,000 sf

Note: Ends of pipes must be capped

7. Diameter of Outflow Orifice: _____ inches

The outflow orifice is a small hole drilled in the cap on the outflow pipe, which restricts the flow of water draining from the sump. This is what keeps the water out of the streams during a heavy rain event and prevents flooding and erosion.

Directions: Using the impervious surface area (question 1) and the depth (question 3), find the diameter of the outflow orifice on the following chart. For odd numbered impervious surface areas – please use the values in the column above.

IMPERVIOUS AREA	DEPTH OF SUMP (FT.)				
	1	2	3	4	5
	DIAMETER OF OUTFLOW ORIFICE (IN)				
400	11/16	9/16	1/2	1/2	1/2
600	13/16	11/16	5/8	9/16	9/16
800	15/16	13/16	11/16	5/8	5/8
1000	1-1/16	7/8	13/16	3/4	11/16
1200	1-3/16	1-0	7/8	13/16	3/4
1400	1-1/4	1-1/16	15/16	7/8	13/16
1600	1-3/8	1-1/8	1-0	15/16	7/8
1800	1-7/16	1-3/16	1-1/16	1-0	15/16
2000	1-1/2	1-1/4	1-1/8	1-1/16	1-0
2200	1-9/16	1-5/16	1-3/16	1-1/8	1-1/16
2400	1-5/8	1-3/8	1-1/4	1-3/16	1-1/8
2600	1-11/16	1-7/16	1-5/16	1-1/4	1-1/8
2800	1-3/4	1-1/2	1-3/8	1-1/4	1-3/16
3000	1-13/16	1-9/16	1-3/8	1-5/16	1-1/4
3200	1-7/8	1-5/8	1-7/16	1-3/8	1-1/4
3400	1-15/16	1-5/8	1-1/2	1-3/8	1-5/16
3600	2-0	1-11/16	1-9/16	1-7/16	1-3/8
3800	2-1/16	1-3/4	1-9/16	1-7/16	1-3/8
4000	2-1/8	1-13/16	1-5/8	1-1/2	1-7/16
4200	2-3/16	1-13/16	1-11/16	1-9/16	1-7/16
4400	2-1/4	1-7/8	1-11/16	1-9/16	1-1/2
4600	2-5/16	1-15/16	1-3/4	1-5/8	1-9/16
4800	2-5/16	1-15/16	1-3/4	1-5/8	1-9/16
5000	2-3/8	2-0	1-13/16	1-11/16	1-5/8

8. Location of Sump Pit:

Notes: The sump pit itself must be at least 20' from all property lines and the outflow pipe must terminate at least 10' from all property lines. The pit may not create an offsite drainage problem.

- Please attach a copy of an official stamped survey with this application
- On the survey, please draw the location of the sump and outflow pipe
- On the survey, please mark the approximate distances of the sump and the outflow to the various property lines

SUMP SPECIFICATIONS AND DIAGRAMS

General Notes Regarding Design:

1. Design parameters (volume of sump and diameter of outflow orifice) shall be based on Table 1.
2. Sump shall be filled in with either AASHTO #57 limestone or 2B gravel.
3. Sump shall be wrapped on all sides, including top and bottom, (before pipe framework is installed or gravel filled in) with PennDOT Type B Non-Woven Geotextile Material. Allow enough extra material to completely cover the top of the sump.
4. The dimensions of L (Length), W (Width), and D (Depth) shall vary as per design volume required (see Table 1 to determine volume required). *The minimum ratio of L (Length) to W (Width) is 3:1 (i.e. $L = 3W$).*
5. The total depth of the hole being dug will be the depth of the sump *plus* 12" for fill to be placed on top
6. The upright perforated pipes (risers) shall extend 18" below the bottom of the sump and shall be filled with, or sit in, 4" of concrete.
7. All pipe and fittings shall be ASTM D2729.
8. No 90 degree elbows are permitted on cleanout installation. Cleanouts shall be located just before any horizontal bends.
9. The inflow & outflow pipes shall be *solid (non-perforated)* HDPE Corrugated Plastic or PVC Collection Pipe.
10. The inflow pipe (4" diameter minimum) shall be connected to the inflow riser at the highest point possible.
11. The outflow pipe (6" diameter minimum) shall be connected to the outflow riser at the lowest point possible. and have a downward slope. The pipe shall have an outflow orifice-cap with a hole drilled (see Table 1 to determine the diameter of this hole) to restrict the flow of water. The cap is placed on the end of the outflow pipe *where it protrudes into the outflow riser.*
12. The outflow pipe may not terminate any closer than 10' to any property line *and may NOT cause additional stormwater runoff on an adjacent property where it did not previously exist.*
13. The outflow pipe shall terminate at surface level on a rock discharge pad (24"x24"x12") comprised of #57 limestone or 2B gravel.
14. Excavate the bottom of the sump to a uniform, level, un-compacted subgrade which is free from rocks and debris. Do not compact the subgrade. To the greatest extent possible, excavation should be performed with the lightest equipment practical. Excavation equipment should be placed outside the limits of the sump pit.

General Notes Regarding Location:

1. Sumps in fill areas are not permitted. Sumps underneath driveways are strongly discouraged and should only be used when no other option is available.
2. The sump shall be oriented such that the longest side is parallel to any changes in grade.
3. When feasible, the sump shall be located such that the outflow elevation is below the basement floor elevation.

Inspection Requirements:

1. A minimum of three inspections are required. The first shall be conducted after the hole has been dug, wrapped in fabric and the piping framework has been installed but *before* the hole is filled with gravel. The inspector will need to verify the size of the outflow orifice and then verify installation of the orifice cap.
2. The second inspection shall occur after the sump has been filled with gravel/limestone and the fabric has been wrapped over the top of the sump. The inspector will also verify that there is 12" of clearance for fill to be placed on top of the sump and that the risers extend to ground level.
3. The Final inspection will occur once the sump has been covered with 12" of fill and re-vegetated.

DIAGRAM 1 - OVERHEAD VIEW OF SUMP

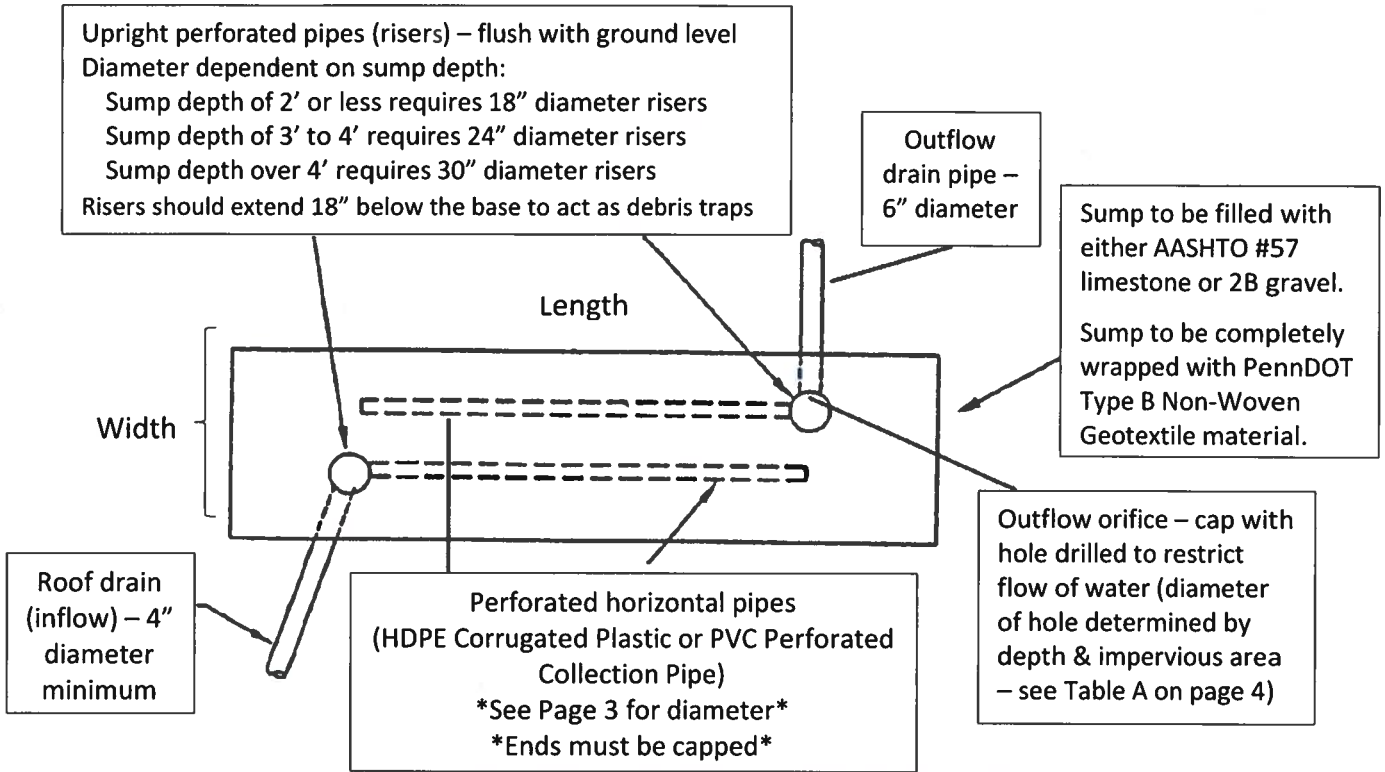


DIAGRAM 2 - SIDE VIEW OF SUMP

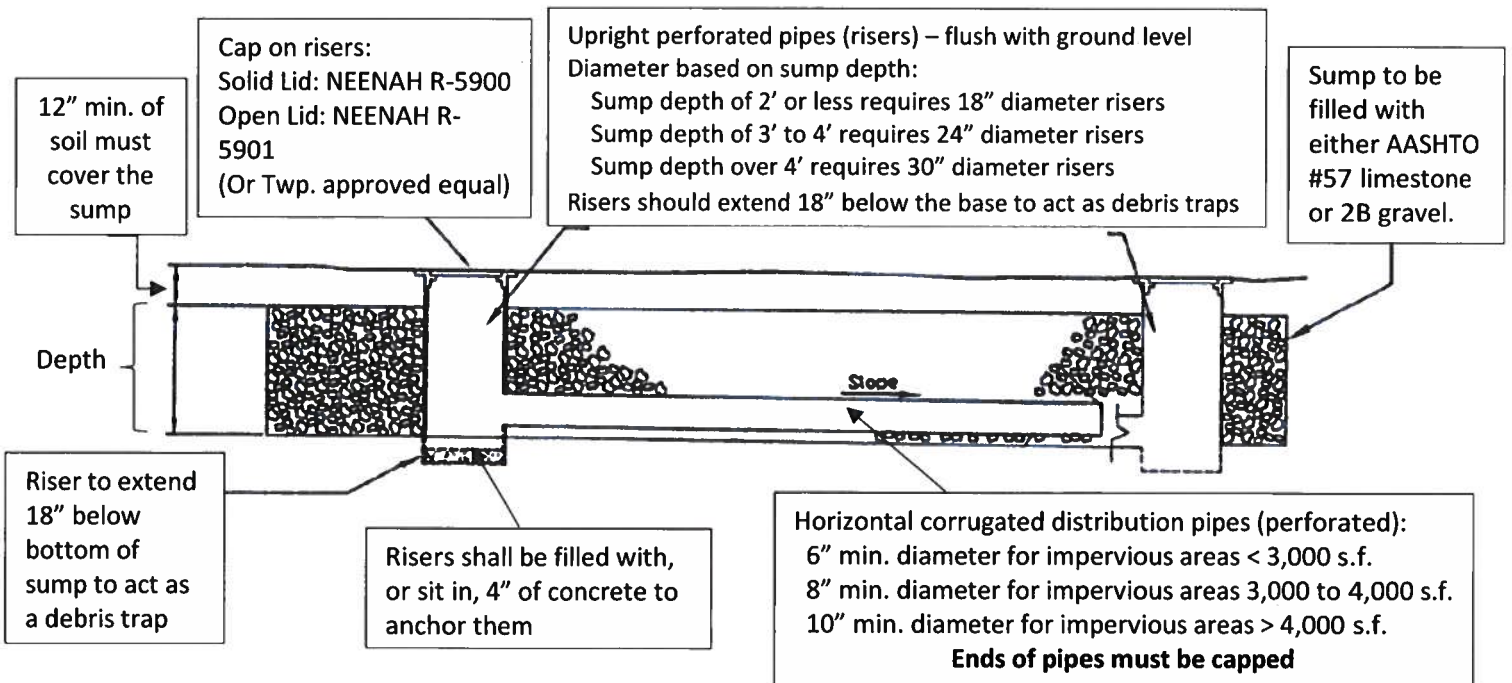


DIAGRAM 3 - END VIEW OF OUTFLOW PIPE

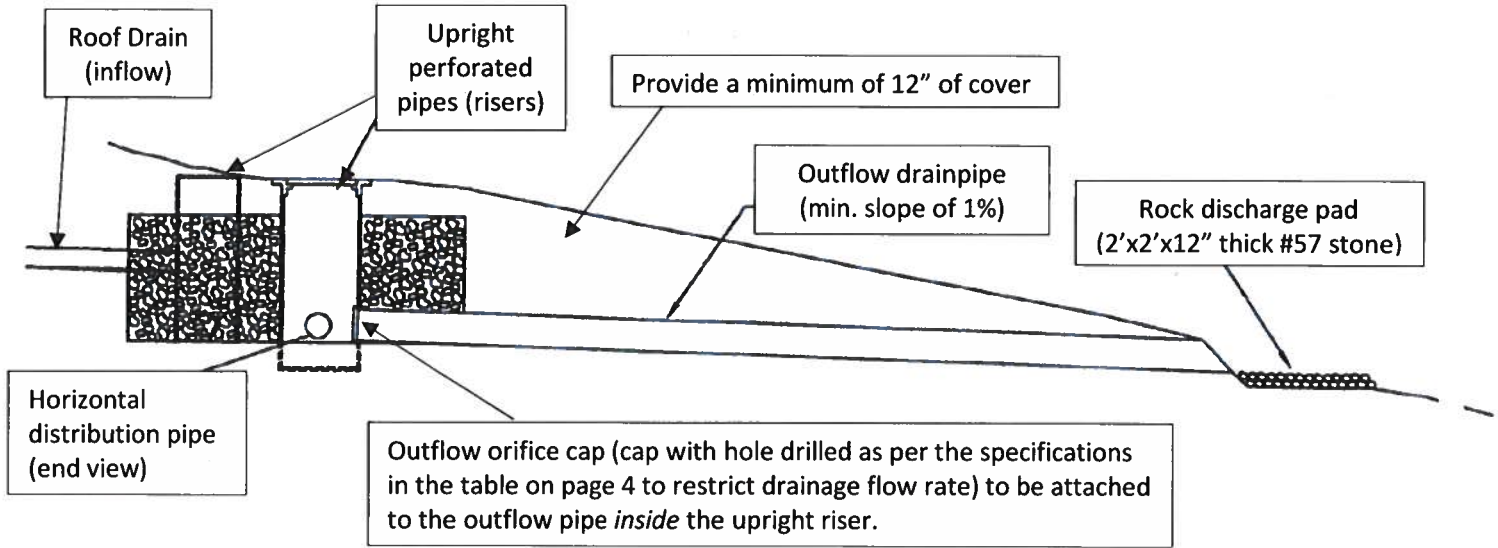


DIAGRAM 4 - EXPANDED SIDE VIEW OF OUTLET

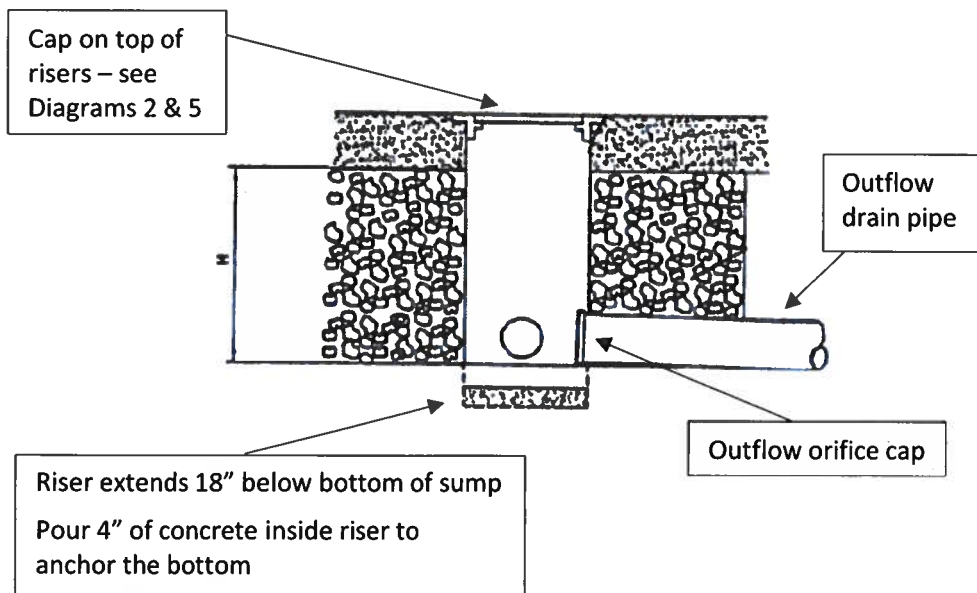
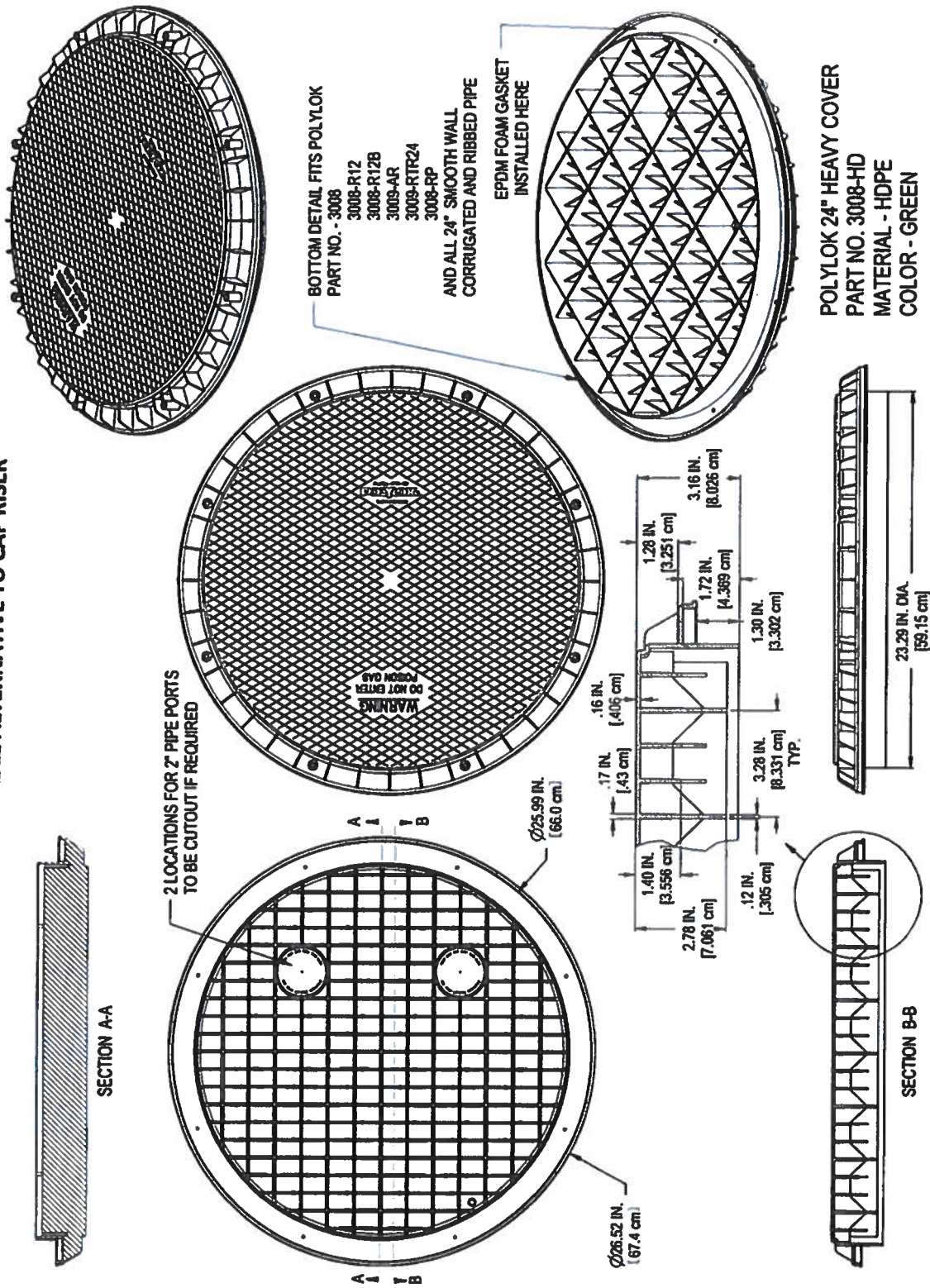


DIAGRAM 5 – ACCEPTABLE ALTERNATIVE TO CAP RISER

ACCEPTABLE ALTERNATIVE TO CAP RISER





Infiltration Trench Application:

An infiltration trench may be used as an alternative to, or in addition to, a traditional sump pit. The maximum impervious surface area for the infiltration trench is less than for a sump pit, so it works best for smaller projects or to be used with a sump pit.

4. What is the total amount of new impervious surface area? _____ square feet (sf)

Please provide a breakdown all new impervious surface area(s): _____

(Please include all new roof area, paved, gravel, and other impervious surface areas. You may deduct any existing impervious surfaces on the property that are being removed; however, please list them below with the square footage for each)

Existing Impervious Removed: _____

1. Volume of water you are required to control: _____ cubic feet (cf)

Use the amount listed in question 1 (impervious surface area in sf) and find the corresponding volume on the following chart:

Impervious surface area	Volume	Impervious surface area	Volume
400 sf =	170 cf	1600 sf =	680 cf
500 sf =	213 cf	1700 sf =	723 cf
600 sf =	255 cf	1800 sf =	765 cf
700 sf =	298 cf	1900 sf =	808 cf
800 sf =	340 cf	2000 sf =	850 cf
900 sf =	383 cf	2100 sf =	893 cf
1000 sf =	425 cf	2200 sf =	935 cf
1100 sf =	468 cf	2300 sf =	978 cf
1200 sf =	510 cf	2400 sf =	1020 cf
1300 sf =	553 cf	2500 sf =	1063 cf
1400 sf =	595 cf	2600 sf =	1105 cf
1500 sf =	638 cf		

2. Trench Length & Depth:

Directions: Using the following charts on page 11, first identify any cells that contain the amount of impervious surface area (or more) listed in question 1. Circling or highlighting the cells works well. Then, choose the pipe length and depth that works for your particular project.

Trench Length: _____ ft Trench Depth: _____ ft

3. Pipe Diameter: _____ inches

Note: The pipe diameter is listed at the top of the chart that you used for question 3.

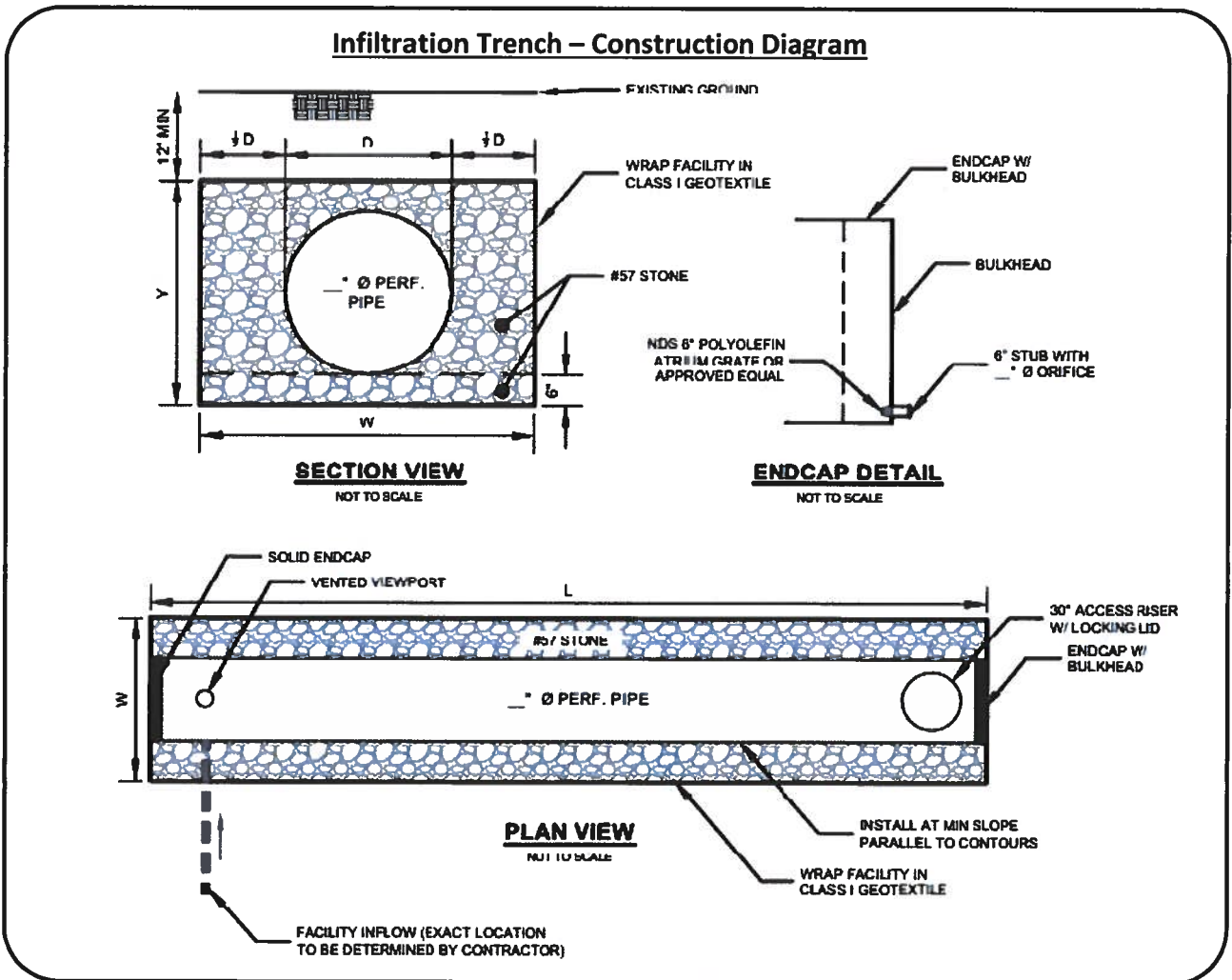
4. Trench Width: _____ feet

Note: The width of the trench is listed at the bottom of the chart that you used for question 3.

5. Location of infiltration trench:

Notes: The trench must be at least 20' from all property lines and may not create an offsite drainage problem.

Please attach a copy of a survey or plot plan and please draw the location of the infiltration trench and the distance to the nearest property line(s)



DESIGN VOLUME PARAMETERS

INFILTRATION TRENCH

TOTAL IMPERVIOUS AREA < 5,000 SQUARE FEET

8" PIPE & STONE VOLUME PROVIDED (cubic feet)

PIPE LENGTH (L) (feet)	DEPTH OF SUMP (Y) (feet)				
	1	2	3	4	5
10					
20					
30				74.5	90.5
40			78.0	99.3	120.6
50		70.8	97.4	124.1	150.8
60		84.9	116.9	148.9	180.9
70		99.1	136.4	173.8	211.1
80	70.6	113.2	155.9	198.6	241.2
90	79.4	127.4	175.4	223.4	271.4
100	88.2	141.6	194.9	248.2	301.6

Width (W) of Facility 1.33 feet

12" PIPE & STONE VOLUME PROVIDED (cubic feet)

PIPE LENGTH (L) (feet)	DEPTH OF SUMP (Y) (feet)				
	1	2	3	4	5
10					
20				79.7	95.7
30		71.6	95.6	119.6	143.6
40		95.4	127.4	159.4	191.4
50		119.3	159.3	199.3	239.3
60		143.1	191.1	239.1	287.1
70		167.0	223.0	279.0	335.0
80		190.8	254.8	318.8	382.8
90		214.7	286.7	358.7	430.7
100		238.5	318.5	398.5	478.5

Width (W) of Facility 3.00 feet

15" PIPE & STONE VOLUME PROVIDED (cubic feet)

PIPE LENGTH (L) (feet)	DEPTH OF SUMP (Y) (feet)				
	1	2	3	4	5
10					
20			84.5	104.5	124.5
30		96.8	126.8	156.8	186.8
40		129.1	169.1	209.1	249.1
50		161.3	211.3	261.3	311.3
60		193.6	253.6	313.6	373.6
70		225.9	295.9	365.9	435.9
80		258.1	338.1	418.1	498.1
90		290.4	380.4	470.4	560.4
100		322.7	422.7	522.7	622.7

Width (W) of Facility 2.00 feet

18" PIPE & STONE VOLUME PROVIDED (cubic feet)

PIPE LENGTH (L) (feet)	DEPTH OF SUMP (Y) (feet)				
	1	2	3	4	5
10					77.7
20		83.3	107.3	131.3	155.3
30		125.0	161.0	197.0	233.0
40		166.7	214.7	262.7	310.7
50		208.3	268.3	328.3	388.3
60		250.0	322.0	394.0	466.0
70		291.6	375.6	459.6	543.6
80		333.3	429.3	525.3	621.3
90		375.0	483.0	591.0	699.0
100		416.6	536.6	656.6	776.6

Width (W) of Facility 4.00 feet

24" PIPE & STONE VOLUME PROVIDED (cubic feet)

PIPE LENGTH (L) (feet)	DEPTH OF SUMP (Y) (feet)				
	1	2	3	4	5
10			79.4	95.4	111.4
20			158.8	190.8	222.8
30			238.2	286.2	334.2
40			317.6	381.6	445.6
50			397.0	477.0	557.0
60			476.4	572.4	668.4
70			555.8	667.8	779.8
80			635.2	763.2	891.2
90			714.6	858.6	1002.6
100			794.0	954.0	1114.0

Width (W) of Facility 2.50 feet

NOTES:

Use Table S1 for size of circular orifice to drill into endcap as per Figure S4 Detail.

TABLE S2
(INFORMATION FROM PVE, LLC)



Permeable Paver Application

For patios and walkways, if permeable/pervious pavers are used with the following installation guidelines, no additional stormwater controls are necessary.

6. What is the total amount of new impervious surface area? _____ square feet (sf)

Please provide a breakdown all new impervious surface area(s): _____

(Please include all new roof area, paved, gravel, and other impervious surface areas. You may deduct any existing impervious surfaces on the property that are being removed; however, please list them below with the square footage for each)

Existing Impervious Removed: _____

1. Please provide depth and type of stone subbase: _____ ft _____ stone

Note: Subbase must be a minimum of 4" clean-washed 2B gravel.

2. Please check the all boxes below to acknowledge your compliance with the following guidelines:

- The excavated area must be lined with geotextile / landscaping fabric.
- The patio must have raised edges or be sloped such that the runoff is contained.
- An underdrain is not permitted.

These provisions will be included in the conditions of approval

3. Additional Documentation:

- Please attach a copy of the manufacturers' specification sheet for your pavers.
- Please attach a copy of a survey or plot plan and draw the location of the patio/walkway with the distance to the nearest property line(s).



Cistern / Underground Storage Tank Application:

Directions:

1. What is the total amount of new impervious surface area? _____ square feet (sf)

(Please include all new roof area, paved, gravel, and other impervious surface areas. You may deduct any existing impervious surfaces on the property that are being removed; however, please list them below with the square footage for each)

Existing Impervious Removed: _____

2. Volume of water you are required to control: _____ cubic feet (cf)

Use the amount listed in question 1 (impervious surface area in sf) and find the corresponding volume on the following chart:

Impervious surface area	Volume	Impervious surface area	Volume	Impervious surface area	Volume	Impervious surface area	Volume
400 sf =	68 cf	1600 sf =	272 cf	2800 sf =	476 cf	4000 sf =	680 cf
500 sf =	85 cf	1700 sf =	289 cf	2900 sf =	493 cf	4100 sf =	697 cf
600 sf =	102 cf	1800 sf =	306 cf	3000 sf =	510 cf	4200 sf =	714 cf
700 sf =	119 cf	1900 sf =	323 cf	3100 sf =	527 cf	4300 sf =	731 cf
800 sf =	136 cf	2000 sf =	340 cf	3200 sf =	544 cf	4400 sf =	748 cf
900 sf =	153 cf	2100 sf =	357 cf	3300 sf =	561 cf	4500 sf =	765 cf
1000 sf =	170 cf	2200 sf =	374 cf	3400 sf =	578 cf	4600 sf =	782 cf
1100 sf =	187 cf	2300 sf =	391 cf	3500 sf =	595 cf	4700 sf =	799 cf
1200 sf =	204 cf	2400 sf =	408 cf	3600 sf =	612 cf	4800 sf =	816 cf
1300 sf =	221 cf	2500 sf =	425 cf	3700 sf =	629 cf	4900 sf =	833 cf
1400 sf =	238 cf	2600 sf =	442 cf	3800 sf =	646 cf	5000 sf =	850 cf
1500 sf =	255 cf	2700 sf =	459 cf	3900 sf =	663 cf		

3. Dimensions of tank:

_____ ft. x _____ ft. x _____ ft.
Length Width Height

4. Please describe the tank material/construction: _____

5. Diameter of Outflow Orifice: _____ inches

The outflow orifice is a small hole drilled in the cap on the outflow pipe, which restricts the flow of water draining from the tank. This is what keeps the water out of the streams during a heavy rain event and prevents flooding and erosion.

Directions: Using the impervious surface area (question 1) and the height (question 3), find the diameter of the outflow orifice on the following chart.

IMPERVIOUS AREA	HEIGHT OF TANK (FT.)				
	1	2	3	4	5
	DIAMETER OF OUTFLOW ORIFICE (IN)				
400	11/16	9/16	1/2	1/2	1/2
600	13/16	11/16	5/8	9/16	9/16
800	15/16	13/16	11/16	5/8	5/8
1000	1-1/16	7/8	13/16	3/4	11/16
1200	1-3/16	1-0	7/8	13/16	3/4
1400	1-1/4	1-1/16	15/16	7/8	13/16
1600	1-3/8	1-1/8	1-0	15/16	7/8
1800	1-7/16	1-3/16	1-1/16	1-0	15/16
2000	1-1/2	1-1/4	1-1/8	1-1/16	1-0
2200	1-9/16	1-5/16	1-3/16	1-1/8	1-1/16
2400	1-5/8	1-3/8	1-1/4	1-3/16	1-1/8
2600	1-11/16	1-7/16	1-5/16	1-1/4	1-1/8
2800	1-3/4	1-1/2	1-3/8	1-1/4	1-3/16
3000	1-13/16	1-9/16	1-3/8	1-5/16	1-1/4
3200	1-7/8	1-5/8	1-7/16	1-3/8	1-1/4
3400	1-15/16	1-5/8	1-1/2	1-3/8	1-5/16
3600	2-0	1-11/16	1-9/16	1-7/16	1-3/8
3800	2-1/16	1-3/4	1-9/16	1-7/16	1-3/8
4000	2-1/8	1-13/16	1-5/8	1-1/2	1-7/16
4200	2-3/16	1-13/16	1-11/16	1-9/16	1-7/16
4400	2-1/4	1-7/8	1-11/16	1-9/16	1-1/2
4600	2-5/16	1-15/16	1-3/4	1-5/8	1-9/16
4800	2-5/16	1-15/16	1-3/4	1-5/8	1-9/16
5000	2-3/8	2-0	1-13/16	1-11/16	1-5/8

6. Location of tank:

Notes: The outflow pipe must terminate at least 10' from all property lines. The pit may not create an offsite drainage problem.

- Please attach a copy of an official stamped survey with this application
- On the survey, please draw the location of the sump and outflow pipe
- On the survey, please mark the approximate distances of the sump and the outflow to the various property lines



TRADITIONAL SUMP APPLICATION:

- ❖ There will be a \$35.00 fee for any sump application that does not accompany a building permit, due once the application is approved. All checks are made payable to "Township of Hampton."
- ❖ If the scope of work requires our engineer to inspect the sump, you will be billed the actual cost of the invoice.

Site Address: _____

Contact Name: _____ Phone # _____

1. Impervious Area of Construction: _____ square feet
2. Required Sump Volume (See Table 1): _____ cubic feet

Dimensions of Sump Pit:

The minimum ratio of Length to Width is 3:1 (i.e. the value recoded for Length must be 3 times the value recorded for Width). When you multiply the Length x Width x Depth, the total should equal the required sump volume.

3. _____ ft. x _____ ft. x _____ ft.
 Length Width Depth

Pipe Information:

4. Diameter of perforated upright pipe (see Diagram 1): 18" 24" 30"
5. Length of perforated horizontal collection pipes: _____ feet *per side*
6. Diameter of perforated horizontal collection pipes (see Diagram 2): 6" 8" 10"
7. Diameter of Outflow Orifice (see Table 1): _____ inches

Location of Sump Pit:

8. Please attach a copy of an official stamped survey with this application
9. On the survey, please draw the location of the sump and outflow pipe
10. On the survey, please mark the approximate distances of the sump and the outflow to the various property lines

Signature

Date