

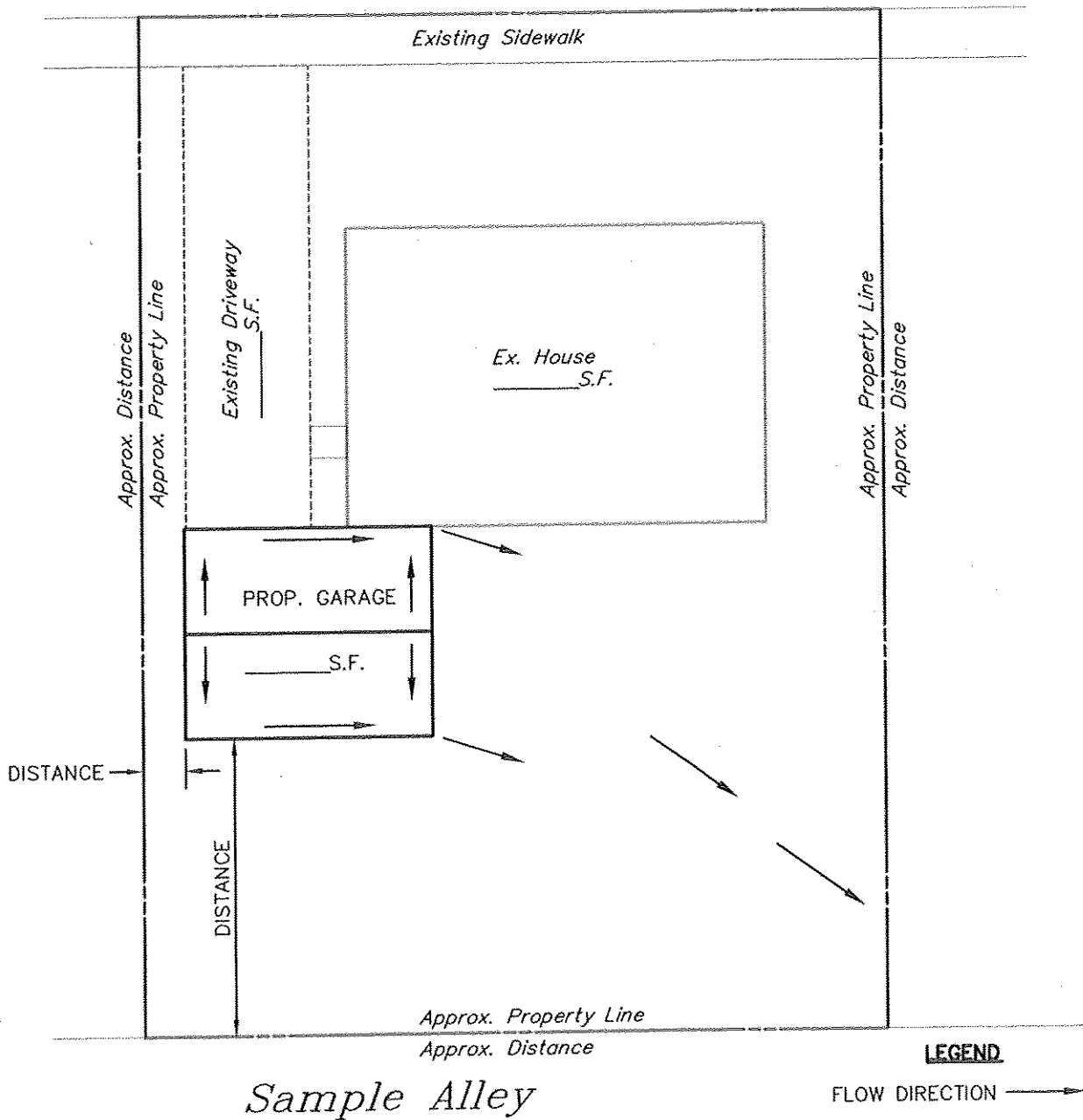
Dallastown Borough

**Stormwater Management Small
Project's Guide**



NOTE:
THIS PLAN CAN
BE HAND DRAWN.

Main Street



DALLASTOWN BOROUGH



Excellence in Civil Engineering

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 50 WEST MIDDLE ST. GETTYSBURG, PA • PHONE (717) 337-3021 • FAX (717) 337-0782
 315 W. JAMES ST., SUITE 102 LANCASTER, PA • PHONE (717) 481-2991 • FAX (717) 481-8690
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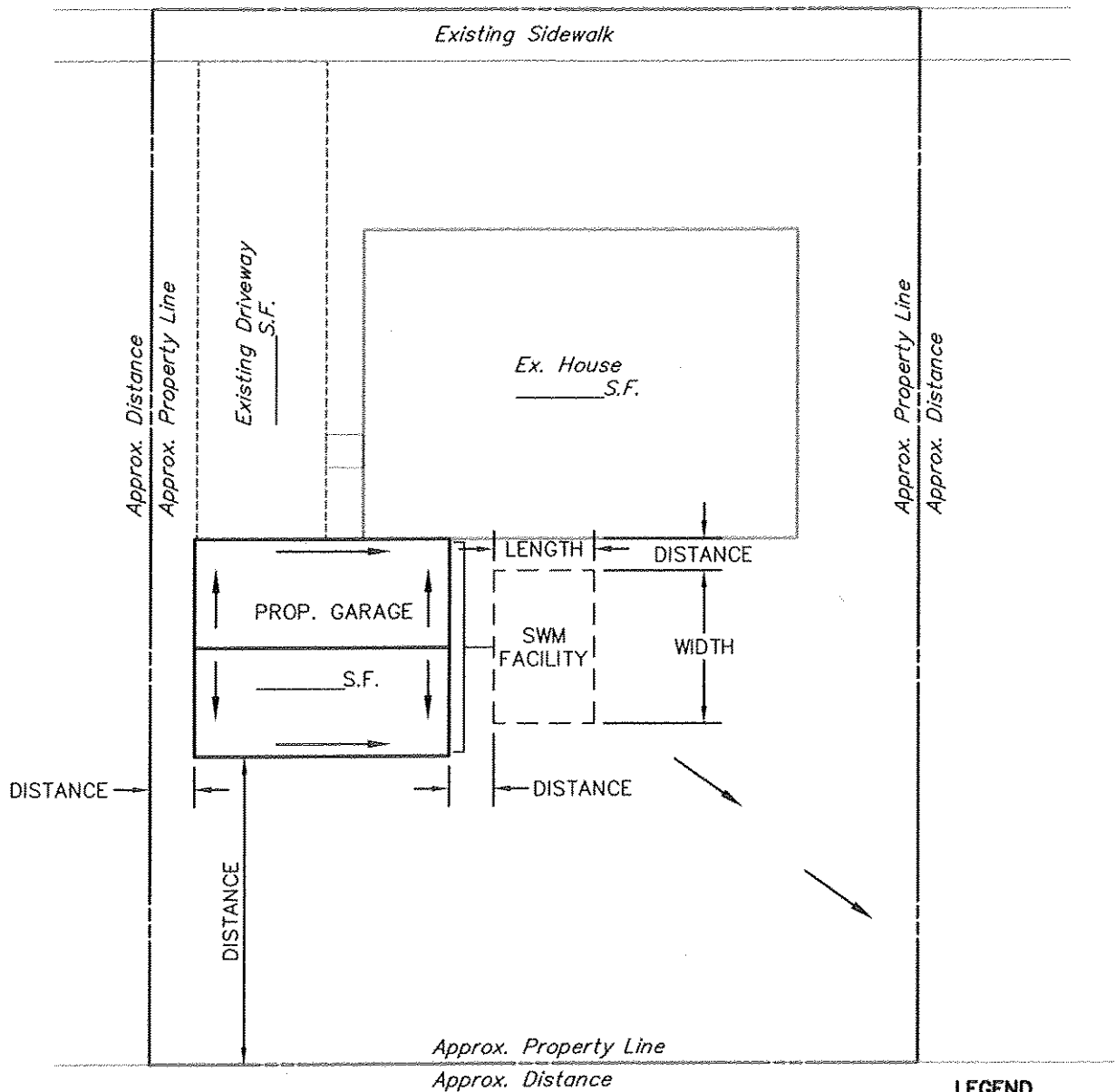
ATTACHMENT A1 SAMPLE SKETCH/ SITE PLAN

DALLASTOWN BOROUGH YORK COUNTY, PENNSYLVANIA

DRAWN BY	APS
CHECKED BY	
SCALE	N.T.S.
DATE	DECEMBER 2012
DWG. NO.	ORDINANCE EXHIBITS
FILE NO.	1209.9.00.07

NOTE:
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BE HAND DRAWN.

Main Street



Sample Alley

LEGEND

FLOW DIRECTION →

DALLASTOWN BOROUGH



C.S. Davidson, Inc.

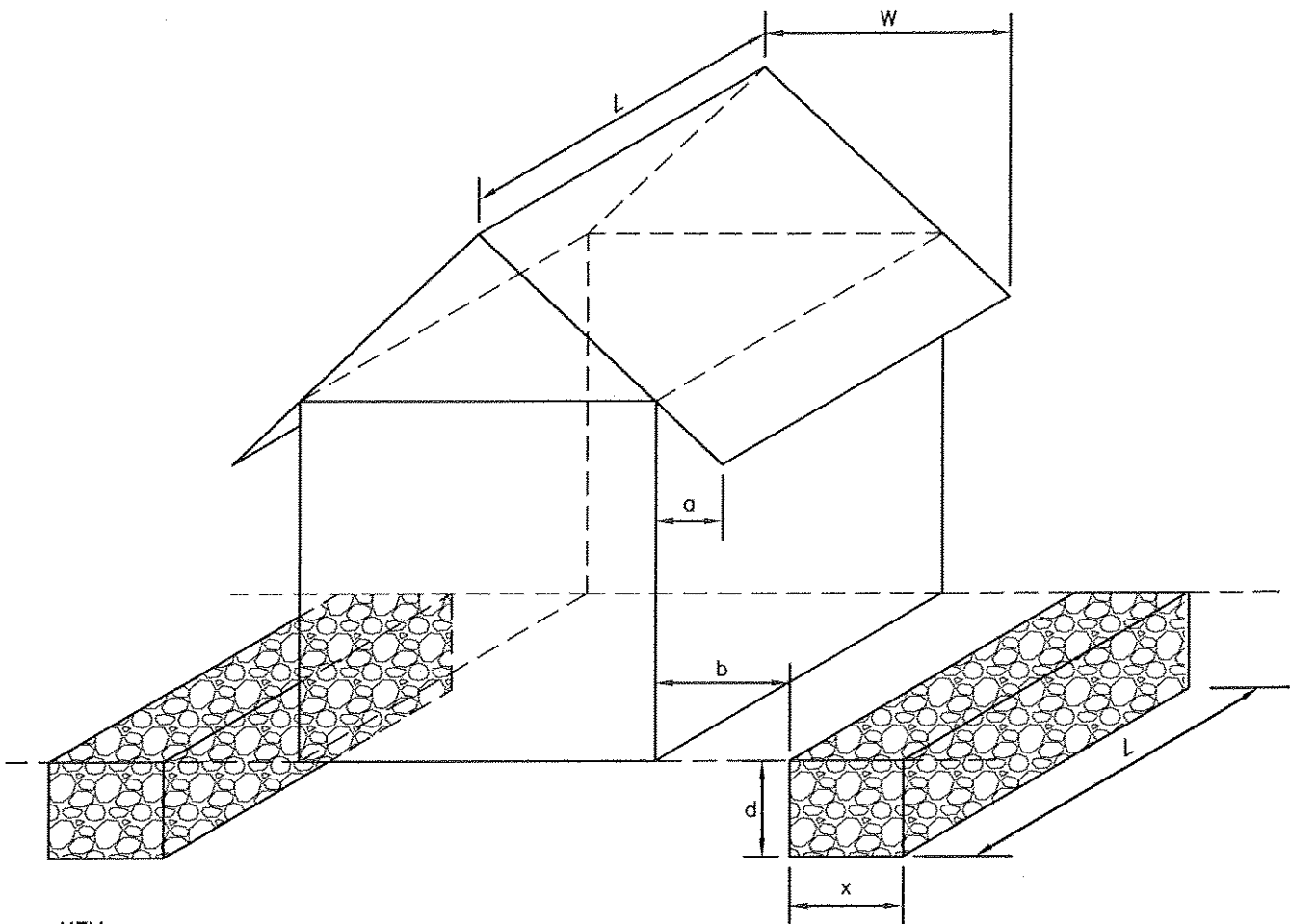
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ATTACHMENT A2 SAMPLE SWM SITE PLAN

DALLASTOWN BOROUGH YORK COUNTY, PENNSYLVANIA

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SCALE	N.T.S.
DATE	DECEMBER 2012
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KEY

- L = LENGTH OF STRUCTURE ROOF = LENGTH OF SEEPAGE TRENCH (FT.)
- W = WIDTH OF ONE SIDE OF THE ROOF (FT)
- a = EAVE OVERHANG (FT)
- b = DISTANCE FROM STRUCTURE WALL TO SEEPAGE TRENCH (FT)
- = a + 1 FT => PLACE EDGE OF TRENCH ONE FOOT PAST EAVES
- x = WIDTH OF SEEPAGE TRENCH (FT)
- d = DEPTH OF SEEPAGE TRENCH (FT)

REQUIRED VOLUME OF TRENCH => $L*W*2/12 = L*x*d*0.4$ => $X=0.28W$ (d=1.5')

RATIO: 3.6 TO 1
(IMPERVIOUS TO INFILTRATION)

NOTES

- 1.) TRENCH MUST BE PROVIDED ON EACH SIDE OF STRUCTURE.
- 2.) SIDE AND BOTTOM OF TRENCH TO BE WRAPPED IN CLASS 1 GEOTEXTILE.
- 3.) TRENCH TO BE FILLED WITH CLEAN STONE (3/4" MIN. SIZE).
- 4.) TRENCH TO BE CONSTRUCTED AT 0% SLOPE ON UNDISTURBED SOIL.
- 5.) TRENCH TO BE CHECKED REGULARLY TO MAINTAIN PROPER OPERATION.

DALLASTOWN BOROUGH



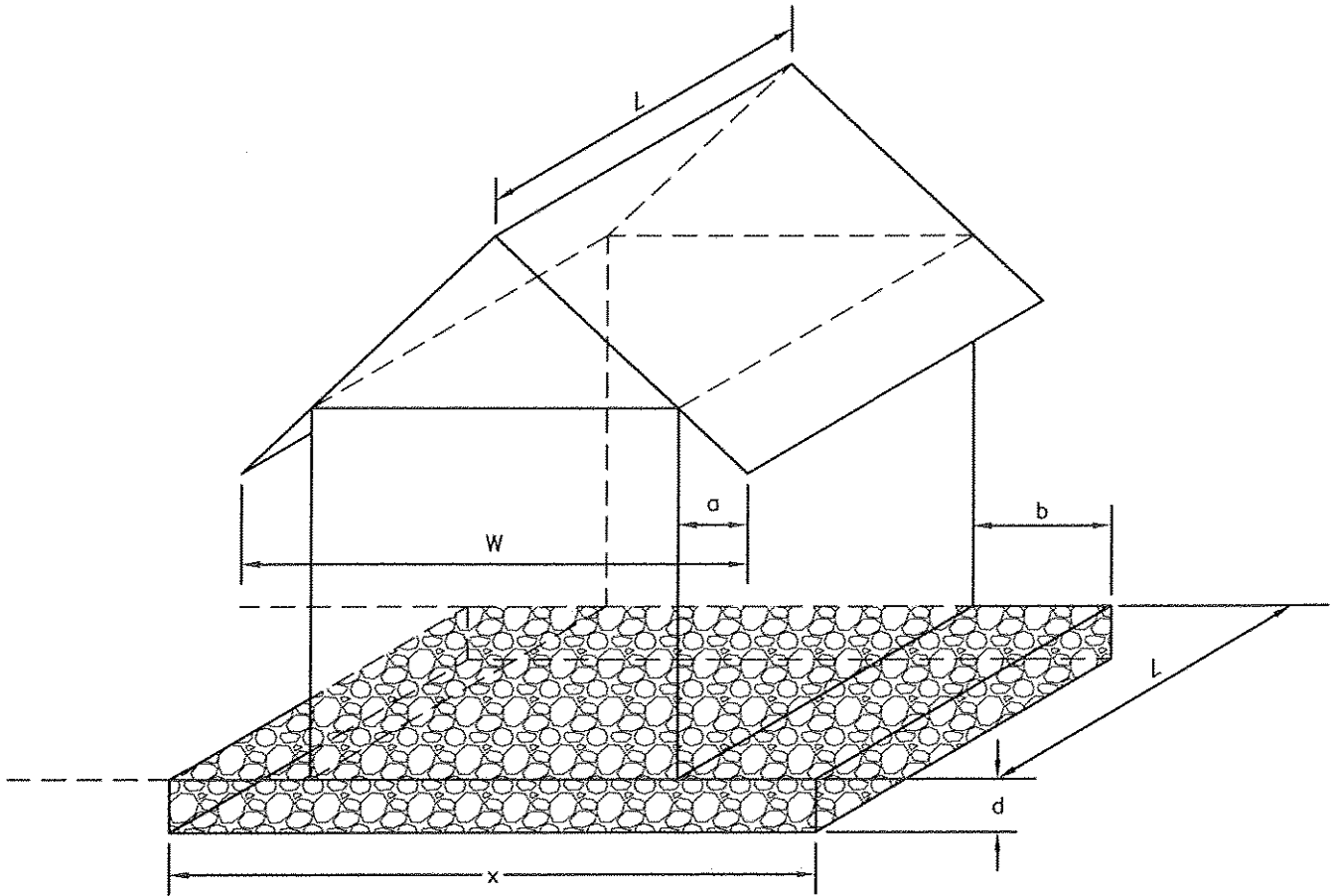
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**ATTACHMENT B1
 STORMWATER MANAGEMENT
 SAMPLE
 STRUCTURES WITHOUT GUTTERS A**

DALLASTOWN BOROUGH YORK COUNTY , PENNSYLVANIA

DRAWN BY	APS
CHECKED BY	
SCALE	N.T.S.
DATE	DECEMBER 2012
DWG. NO.	ORDINANCE EXHIBITS
FILE NO.	1029.9.00.07



KEY

- L = LENGTH OF STRUCTURE ROOF = LENGTH OF SEEPAGE BED (FT.)
- W = WIDTH OF ENTIRE ROOF (FT)
- a = EAVE OVERHANG (FT)
- b = DISTANCE FROM STRUCTURE WALL TO EDGE OF SEEPAGE BED (FT)
- = a + 1 FT => PLACE EDGE OF BED ONE FOOT PAST EAVES
- x = WIDTH OF SEEPAGE BED (FT)
- x = W + 2 FT
- d = DEPTH OF SEEPAGE BED (FT)
- d = 6" TO 8" (AVERAGE)

NOTES

- 1.) SIDE AND BOTTOM OF BED TO BE WRAPPED IN CLASS 1 GEOTEXTILE.
- 2.) BED TO BE FILLED WITH CLEAN STONE (3/4" MIN. SIZE).
- 3.) BED TO BE CONSTRUCTED AT 0% SLOPE ON UNDISTURBED SOIL.
- 4.) BED TO BE CHECKED REGULARLY TO MAINTAIN PROPER OPERATION.

DALLASTOWN BOROUGH



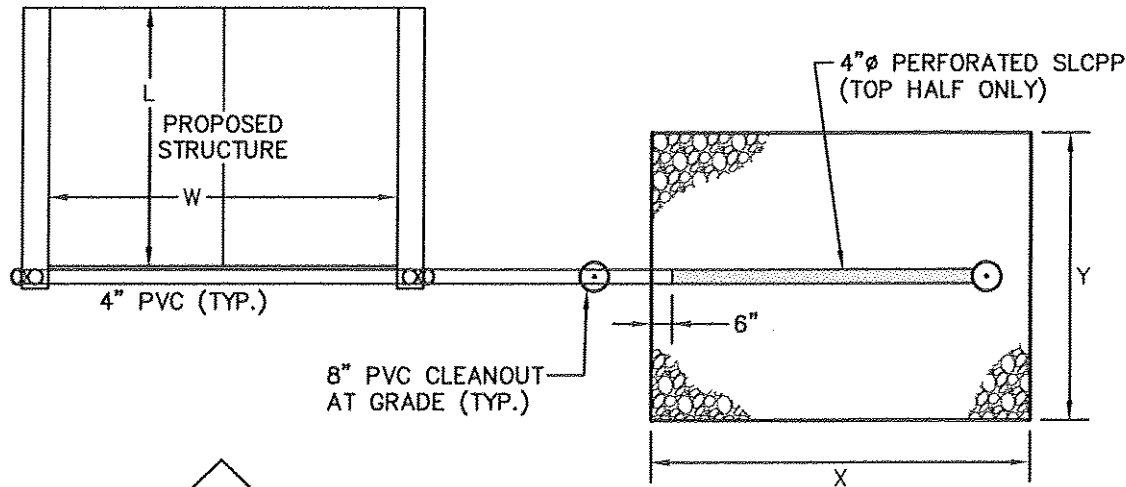
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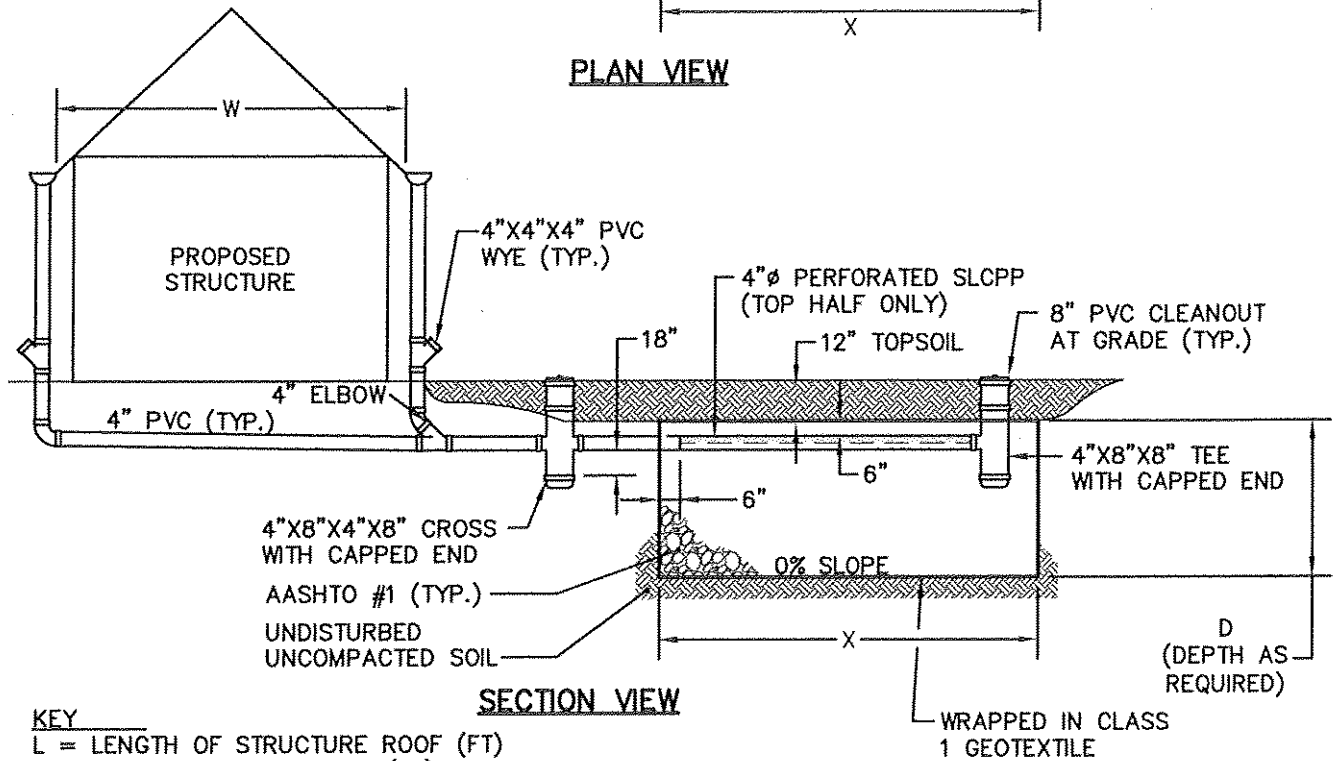
**ATTACHMENT B2
 STORMWATER MANAGEMENT
 SAMPLE
 STRUCTURES WITHOUT GUTTERS B**

DALLASTOWN BOROUGH YORK COUNTY, PENNSYLVANIA

DRAWN BY	APS
CHECKED BY	
SCALE	N.T.S.
DATE	DECEMBER 2012
DWG. NO.	ORDINANCE EXHIBITS
FILE NO.	1029.9.00.07



PLAN VIEW



SECTION VIEW

KEY

- 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 OF BED = $L*W*2/12 = X*Y*D*0.4$

ASSUME: X=W
D=2'

$Y=0.21L$

RATIO: 4.76 TO 1
(IMPERVIOUS TO INFILTRATION)

NOTES

- 1.) BOTTOM OF BED TO BE D+1' BELOW GRADE TO ACCOUNT FOR 1' OF TOPSOIL.
- 2.) PIPING AND CLEANOUTS TO BE CENTERED WITHIN INFILTRATION BED.
- 3.) BED TO BE CHECKED REGULARLY TO MAINTAIN PROPER OPERATION.

DALLASTOWN BOROUGH



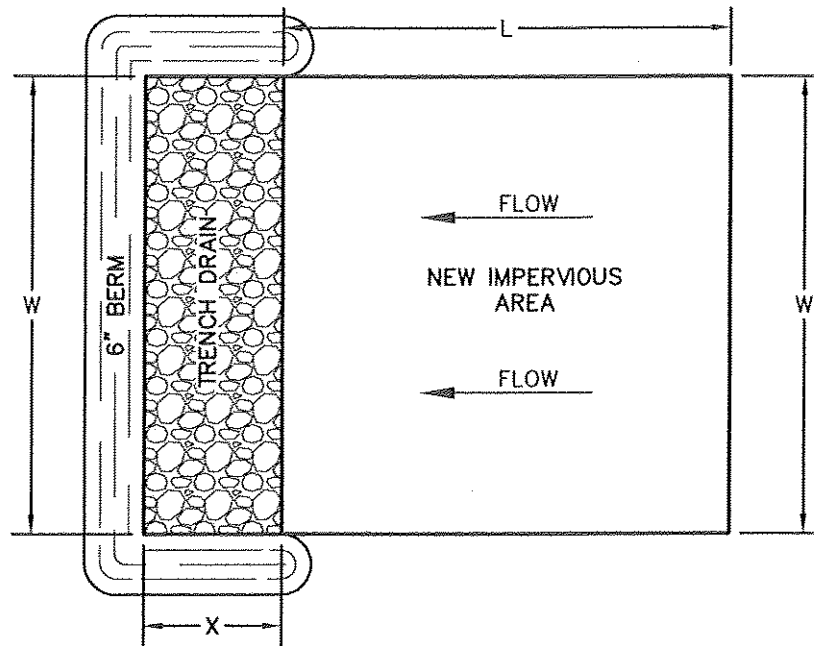
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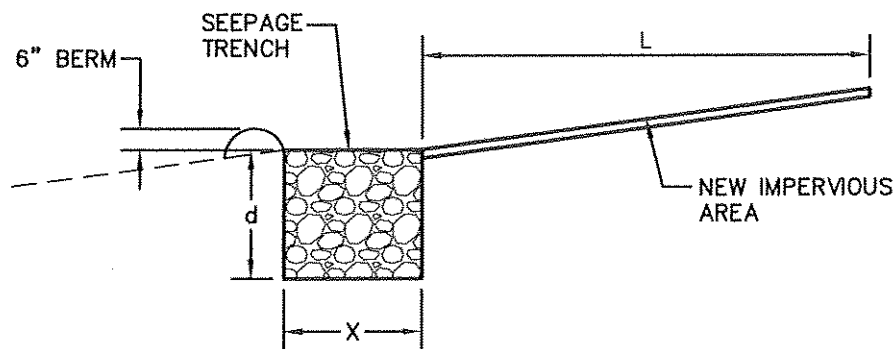
**ATTACHMENT B3
 STORMWATER MANAGEMENT
 SAMPLE
 STRUCTURES WITH GUTTERS**

DALLASTOWN BOROUGH YORK COUNTY, PENNSYLVANIA

DRAWN BY	APS
CHECKED BY	
SCALE	NONE
DATE	DECEMBER 2012
DWG. NO.	ORDINANCE EXHIBITS
FILE NO.	1209.9.00.07



PLAN VIEW



SECTION VIEW

KEY

- L = LENGTH OF NEW IMPERVIOUS SURFACE (FT) – MAY NOT EXCEED 75'
- 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 OF TRENCH => $W*L*2/12 = X*W*d*0.4 \Rightarrow X=0.28L$ (D=1.5')

NOTES

- 1.) SIDE AND BOTTOM OF TRENCH TO BE WRAPPED IN CLASS 1 GEOTEXTILE.
- 2.) TRENCH TO BE FILLED WITH CLEAN STONE (3/4" MIN. SIZE).
- 3.) TRENCH TO BE CONSTRUCTED AT 0% SLOPE ON UNDISTURBED SOIL.
- 4.) TRENCH TO BE CHECKED REGULARLY TO MAINTAIN PROPER OPERATION.

DALLASTOWN BOROUGH



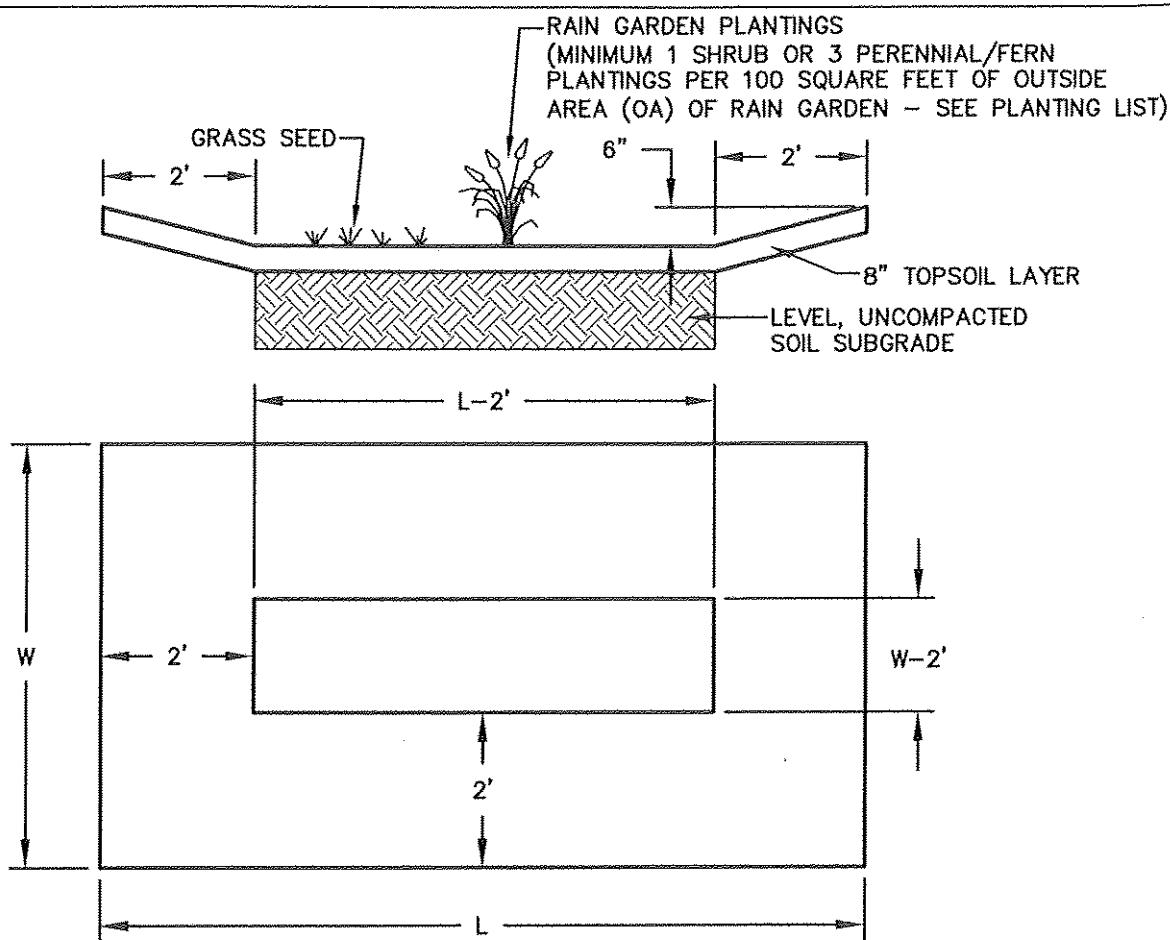
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**ATTACHMENT B4
 STORMWATER MANAGEMENT
 SAMPLE
 AT GRADE IMPERVIOUS**

DALLASTOWN BOROUGH YORK COUNTY, PENNSYLVANIA

DRAWN BY	APS
CHECKED BY	
SCALE	N.T.S.
DATE	DECEMBER 2012
DWG. NO.	ORDINANCE EXHIBITS
FILE NO.	1209.9.00.07



1. CALCULATE REQUIRED RAIN GARDEN VOLUME (V)
 $(RV) = \text{SQUARE FEET OF NEW IMPERVIOUS AREA} \times 0.17'$ RV = _____ ft³
2. CALCULATE OUTSIDE AREA OF RAIN GARDEN (OA)
 $(OA) = \text{LENGTH (L)} \times \text{WIDTH (W)}$ OA = _____ ft²
3. CALCULATE INSIDE AREA OF RAIN GARDEN (IA)
 $(IA) = [(L) - 2'] \times [(W) - 2']$ IA = _____ ft²
4. CALCULATE AVERAGE AREA OF RAIN GARDEN (AA)
 $(AA) = (OA)/2 + (IA)/2$ AA = _____ ft²
5. CALCULATE STORAGE VOLUME (SV)
 $(SV) = (AA) \times 0.5'$ SV = _____ ft³
6. CHECK FOR ADEQUATE STORAGE
 STORAGE VOLUME (SV) MUST BE GREATER THAN REQUIRED VOLUME (RV)
 $RV = \text{_____ ft}^3 > SV = \text{_____ ft}^3$
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

DALLASTOWN BOROUGH



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ATTACHMENT B5 RAIN GARDEN

DALLASTOWN BOROUGH YORK COUNTY, PENNSYLVANIA

DRAWN BY	MPA
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SCALE	N.T.S.
DATE	DECEMBER 2012
DWG. NO.	Rain Garden Detail.dwg
FILE NO.	1209.9.00.07

Rain Garden Native Planting List

Perennials and Ferns:

Blue false indigo (*Baptisia australis*)
Blue flag iris (*Iris versicolor*)
Blue star (*Amsonia tabernaemontana*)
Blue vervain (*Verbena hastata*)
Boltonia (*Boltonia asteroides*)
Boneset (*Eupatorium perfoliatum*)
Bottlebrush grass (*Hystrix patula*)
Broomsedge (*Andropogon virginicus*)
Cardinal flower (*Lobelia cardinalis*)
Cinnamon fern (*Osmunda cinnamomea*)
Culvers root (*Veronicastrum virginicum*)
Golden ragwort (*Senecio aureus*)
Goldenrod (*Solidago patula*, *S. rugosa*)
Great blue lobelia (*Lobelia siphilitica*)
Green bullrush (*Scirpus atrovirens*)
Horsetail (*Equisetum* species)
Marsh marigold (*Caltha palustris*)
Mistflower (*Eupatorium coelestinum*)
Monkey flower (*Mimulus ringens*)
New England aster (*Aster novae-angliae*)
New York aster (*Aster novi-belgii*)
Obedient plant (*Physotegia virginiana*)
Royal fern (*Osmunda regalis*)
Seedbox (*Ludwigia alternifolia*)
Sensitive fern (*Onoclea sensibilis*)
Sneezeweed (*Helenium autumnale*)
Soft rush (*Juncus effusus*)
Swamp milkweed (*Asclepias incarnata*)
Swamp rose mallow (*Hibiscus moscheutos*)
Swamp sunflower (*Helianthus angustifolius*)
Switchgrass (*Panicum virgatum*)
Threadleaf coreopsis (*Coreopsis verticillata*)
Tussock sedge (*Carex stricta*)
White turtlehead (*Chelone glabra*)
Woolgrass (*Scirpus cyperinus*)

Shrubs:

American beautyberry (*Callicarpa americana*)
Arrowwood (*Viburnum dentatum*)
Black chokeberry (*Aronia melanocarpa*)
Broad-leaved meadowsweet (*Spiraea latifolia*)
Buttonbush (*Cephalanthus occidentalis*)
Elderberry (*Sambucus canadensis*)
Inkberry (*Ilex glabra*)
Narrow-leaved meadowsweet (*Spiraea alba*)
Ninebark (*Physocarpus opulifolius*)
Possumhaw (*Viburnum nudum*)
Red-osier dogwood (*Cornus sericea*)
St. Johnswort (*Hypericum densiflorum*)
Silky dogwood (*Cornus amomum*)
Smooth alder (*Alnus serrulata*)
Spicebush (*Lindera benzoin*)
Swamp azalea (*Rhododendron viscosum*)
Swamp rose (*Rosa palustris*)
Sweet pepperbush (*Clethra alnifolia*)
Wild raisin (*Viburnum cassinoides*)
Winterberry (*Ilex verticillata*)
Virginia sweetspire (*Itea virginica*)

Small Projects Guide - Sample Operation & Maintenance Plan**Construction:**

1. Install erosion and sedimentation control facilities.
2. Stormwater Management Facility (ies) shall be installed before impervious areas are completed. If earthwork is involved during the construction of the impervious area, then extreme caution shall be taken so that sediment does not wash into the SWM Facility (ies).
3. Mark the locations of the SWM facility (ies).
4. Excavate the SWM Facility to the required depth. Contact municipality for inspection prior to filling. If standing water is encountered, a SWM Site Plan may need to be submitted; contact Municipal Engineer. All excavated materials shall be removed from the site or stabilized.

For Stone Infiltration Structures

5. Line excavation with Geotextile.
6. Backfill SWM Facility with required stone. If required: Install piping, cleanouts and associated facilities as detailed.
7. If required: Close geotextile material over stone bedding.
8. If required: Place topsoil over trench.
9. Stabilize and seed all disturbed areas.

For Rain Gardens

5. Place topsoil over excavated area.
6. Install plantings as shown on the plan.
7. Stabilize and seed all disturbed areas.

Maintenance:

1. The SWM Facility shall be checked regularly to ensure that no standing water exists in the facility 3 days after a rain event. If water is encountered, the facility may need to be modified. Notification of the municipality is required if facility is not functioning before any modifications are made.
2. Monitor the SWM facility to ensure that no sediment, grass clippings, leaves, and other similar accumulations occur on top of, and/or within, the SWM Facility.

I have read and agree to the above Operation and Maintenance Plan. I, as the property owner, am responsible for the proper construction, operation and maintenance for the SWM Facilities. If I fail to adhere to any of these tasks, the Borough may perform the services required and charge the appropriate fees. Nonpayment of the fees may result in a lien against my property.

 Applicant Name (Printed)

 Signature

 Date