APPLICATION FOR CONSIDERATION FOR A STORM WATER MANAGEMENT SITE PLAN
RAPHO TOWNSHIP – MINOR MS4 FEE: *$225.00
MAJOR MS4 FEE: *$300.00

SW FILE NO. _____
DATE OF RECEIPT _____

The undersigned hereby applies for approval under the Rapho Township Storm Water Management Ordinance for the Storm Water Management Site Plan submitted herewith and described below:

1. Plan Name_____Plan No. _____Plan Date: _____

2. Project Location _____

3. Name of Applicant (if other than owner) _____

   Address_____Phone No. _____

4. Name of Property Owner(s)_____

   Address_____ Phone No. _____

5. Land Use and Number of Lots and/or Units (indicate answer by number):

   __ Single-Family (Detached) __ Commercial/Agricultural

   __ Multi-Family (Attached-Sale) __ Industrial

   __ Multi-Family (Attached-Rent) __ Institutional

6. Total Acreage _____

7. Application Classification: (Check One)

   ___ Minor Land Disturbance ___ Major Land Disturbance

I am aware that I cannot commence development of the property and cannot commence excavation, earthmoving, grading, or construction until a plan has been recorded in the office of the Recorder of Deeds or until a Storm Water Management Site Plan has been approved by Rapho Township. By signing this application, I certify that all facts in the application and all accompanying documentation are true and correct. This application is being made by me to induce official action on the part of Rapho Township, and I understand that any false statements made herein are being made subject to the penalties of 18 Pa. C.S. Section 4904 relating to unsworn falsification to authorities. **<u>*I understand and I am aware of and agree to reimburse Rapho Township for engineering review, inspection, recording and reasonable attorney fees incurred by Rapho Township.</u>**

_____ _____
Date Signature of Landowner or Applicant

Project Worksheets, Design Tables & Construction Notes – Stone Infiltration Trench

The following guidance has been provided for those regulated activities that qualify as a Minor Land Disturbance. This volume represents the amount of runoff to be permanently removed (managed onsite through reuse, infiltration, evaporation, or transpiration) per the Rapho Township Storm Water Management Ordinance. The volume does not account for the rate of percolation into the ground.

Variables:

A = Impervious Area in square feet (sq. ft.)
V = Required Stone Infiltration Volume in cubic feet (cu. ft.)

Compute Total Required Volume:

V = 0.5 x A
or;
V = 0.5 x _____ (impervious area in sq. ft.) = _____ (required trench volume in cu. ft.).

Sizing Chart for Stone Infiltration Trench

Impervious Area (sq. ft.)	Stone Infiltration Trench (Cu. ft. - incl. 40% void ratio)
1000	500
1250	625
1500	750
1750	875
2000	1000
2250	1125
2500	1250
2750	1375
3000	1500
3250	1625
3500	1750
3750	1875
4000	2000
4250	2125
4500	2250
4750	2375
5000	2500

Stone Infiltration Trench

Total Depth = _____inches of stone + 12 inches of cover = _____inches*
*must be between 24 inches and 40 inches

Depth of Stone (D) = _____feet (inches of stone divided by 12)

Width (W) = _____feet

Length (L) = _____feet

Note: Depth of Stone x Width x Length must be equal to or greater than (V) total required trench volume.

Trench Volume = D x W x L = _____

<u>Stone Infiltration Trench Construction - General Notes</u>

1. Use the worksheets and table to compute the required volume in the stone infiltration trench (in cubic feet) for all proposed impervious areas. The calculated total volume is the minimum requirement for on-site construction. The actual horizontal dimensions of the stone infiltration trench may vary to fit specific site configurations and constraints, but the vertical depth of the stone infiltration trench must be a minimum of twenty-four (24) inches and a maximum of forty (40) inches. The total volume of the stone infiltration trench must be equal to or greater than the required minimum.

2. Multiple stone infiltration trenches may also be utilized. If multiple stone infiltration trenches are desired, the volume for each stone infiltration trench should be a proportional amount of the calculated total storage volume (if utilizing two [2] trenches; if sixty (60) percent of the total roof area is piped to one [1] stone infiltration trench, then that stone infiltration trench should be sized for sixty (60) percent of the total required minimum volume. The second stone infiltration trench would be sized for the remaining forty (40) percent of the total required minimum volume).

3. Based on the calculations of the required stone infiltration trench dimensions computed using the worksheet and table, stake out the locations of the stone infiltration trench corners. Staking is critical and should outline the location of the stone infiltration trench. The stone infiltration trench shall be located as far as possible downslope from the proposed home. A minimum of ten (10) feet of undisturbed soil shall be provided between the stone infiltration trench and any adjoining building or structure. Maintain a minimum of ten (10) feet between the stone infiltration trench and any property lines and road rights-of-way. Stone infiltration trenches shall be located beside or downslope (not upslope of) and a minimum of ten (10) feet from of any component of any on-lot sewage disposal system or on-lot sewage disposal system replacement absorption area.

4. Excavation of the stone infiltration trench shall be conducted from outside of the stone infiltration trench perimeter, using equipment which has a bucket on a reaching arm (backhoe or trackhoe). No equipment shall be permitted in or on the stone infiltration trench area. The bottom and sides of the stone infiltration trench shall be chiseled or ripped to break up any smearing or compaction that may have occurred during excavation.

5. After excavation of the stone infiltration trench is complete, ensure that the bottom is graded with a slope that is no greater than two (2) inches per one hundred (100) feet. Line the stone infiltration trench bottom and sides with a Class 1 Geotextile filter fabric, leaving enough excess filter fabric to cover the top of the stone infiltration trench before it is backfilled with earthen fill. If multiple runs of filter fabric are required to completely enclose the stone infiltration trench, a minimum of twelve (12) inches overlapping must be provided.

6. Backfill the stone infiltration with clean aggregate (clean washed stone with no fines in the range of coarse aggregate sizes from AASHTO #1 to AASHTO #57). Backfilling of the stone infiltration trench shall be conducted from outside of the stone infiltration trench perimeter, using equipment which has a bucket on a reaching arm (backhoe or trackhoe). No equipment shall be permitted in or on the stone infiltration trench area. The stone infiltration trench shall be to a uniform depth a minimum of six (6) inches below the finished top of stone (a minimum of eighteen [18] inches below finished grade).

7. The perforated pipe (minimum four [4]-inch PVC) with cleanout pipe extension should then be placed on the stone. Connect roof drain pipes from downspouts to the stone infiltration facility. Be sure to leave the pipes exposed for observation by the Township.

8. At this time, before more stone is placed in the infiltration trench to cover the pipe, or roof leaders trenches are backfilled, the Township should be notified for inspection of the facility to verify proper pipe installation.

9. Following the Township inspection, add more stone around and over the pipe to a uniform depth a minimum of two (2) inches over the top of the pipe. Carefully cover the top of the stone bed with the remaining geotextile fabric, being careful to overlap a minimum of twelve (12) inches.

10. The infiltration trench should then be backfilled to the top of the infiltration trench with at least twelve (12) inches of clean earth fill.

11. To ease maintenance of the underground pipes, and prevent clogging of the infiltration trench, consideration should be given to providing screens for all roof gutters. The screens prevent foreign materials from clogging the pipes and stone infiltration trench.

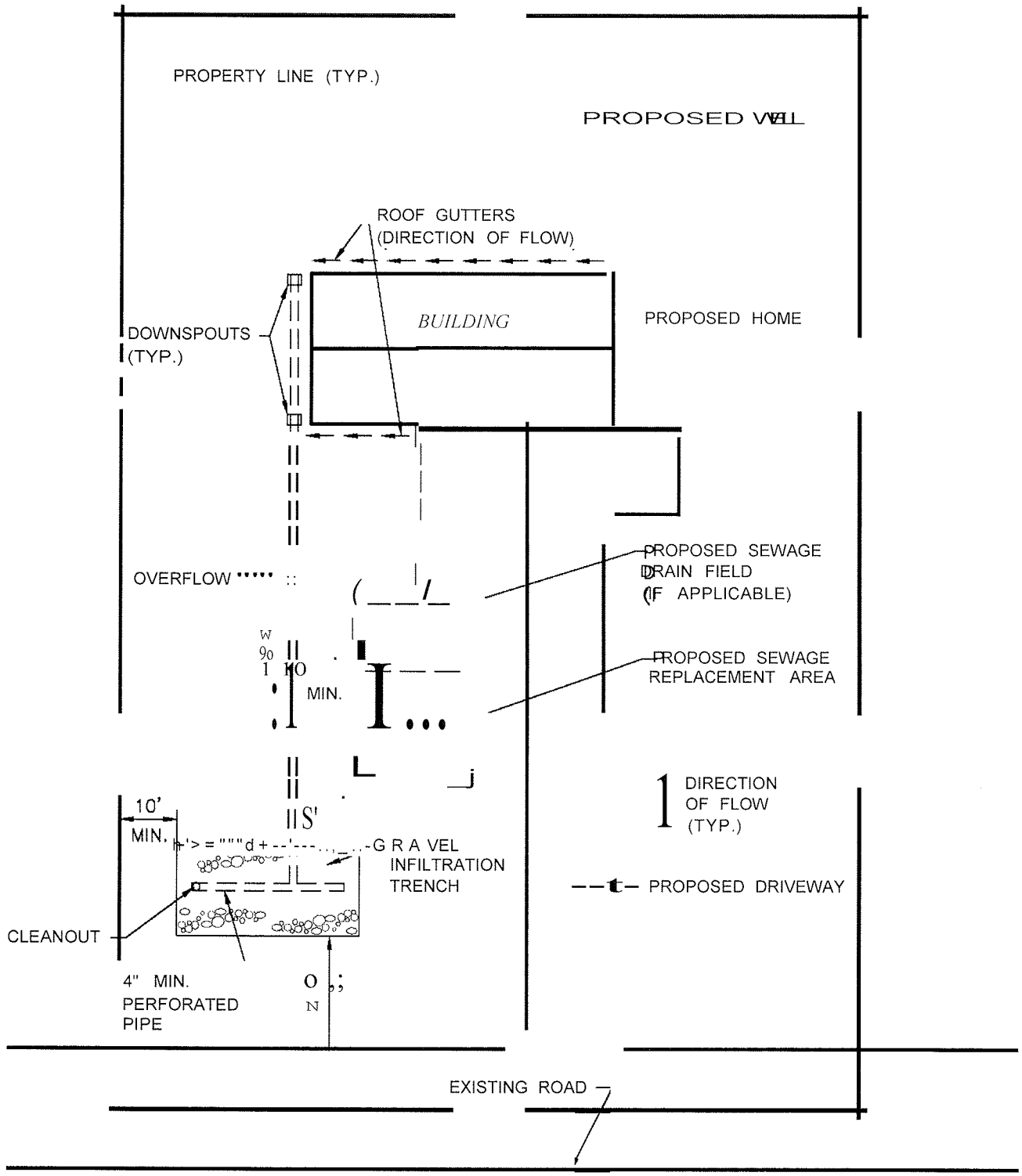


EXHIBIT A
TYPICAL INFILTRATION TRENCH PLAN

RAPHO TOWNSHIP LANCASIER COUNTY

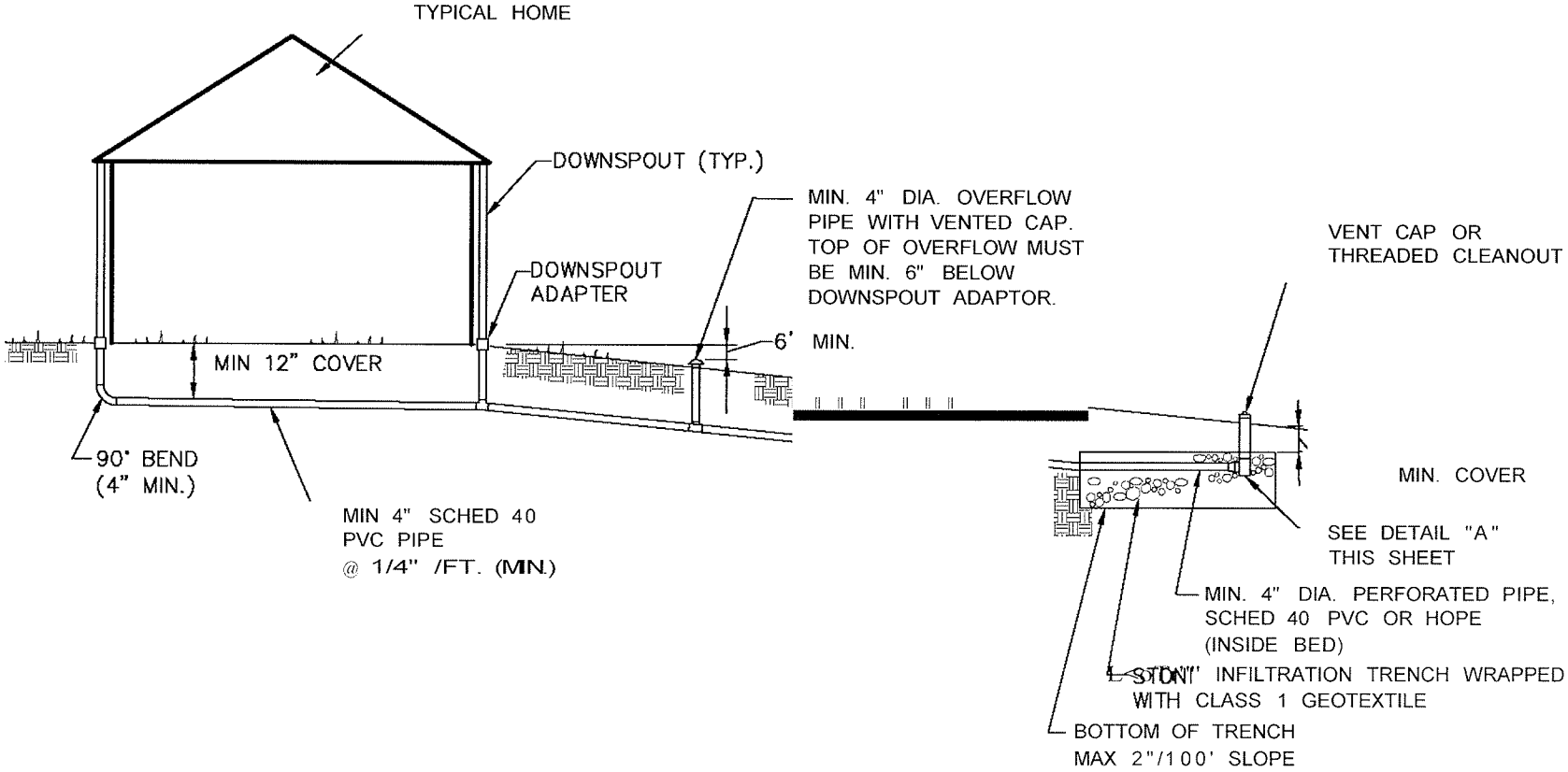
RETTEW.

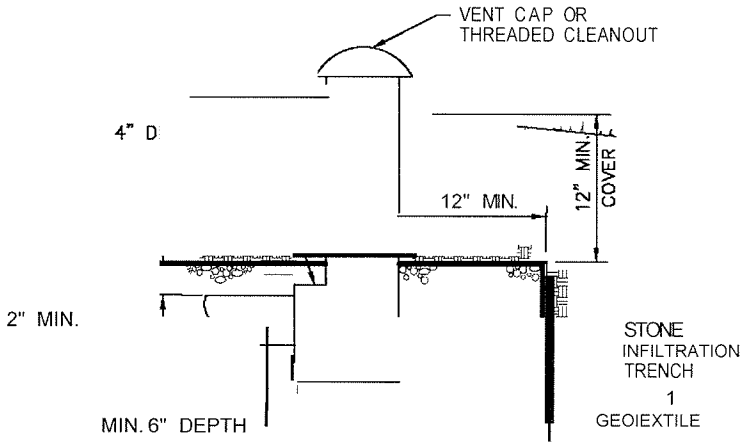
RETTEW Associates, Inc
3020 Columbia Ave., Lancaster, PA 17603
Phone (717) 394-3721 • Fax (717) 394-1063

DRAWN BY: -----
DATE --- Su/ 1/ 1 4 -
SCALE: NOT TO SCALE
DWG. NO. 011032016

RAPHO TOWNSHIP

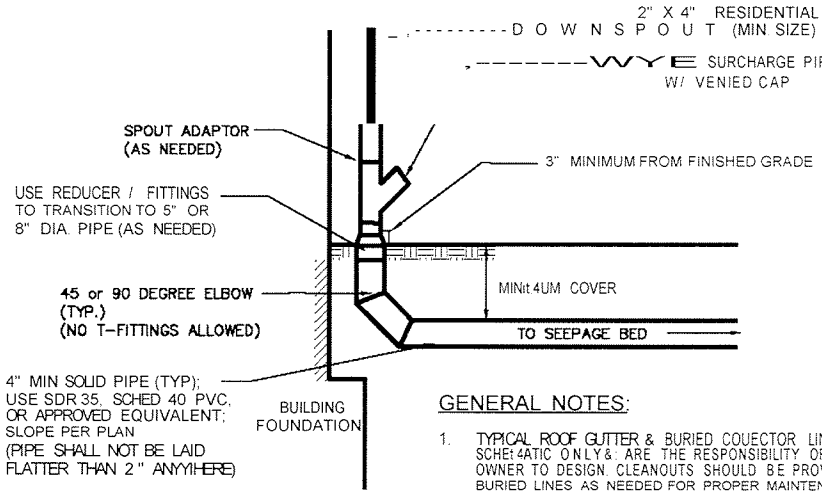
LANCASTER COUNTY





DETAIL "A"

NOT TO SCALE



GENERAL NOTES:

1. TYPICAL ROOF GUTTER & BURIED COLLECTOR LINES SHOWN ARE SCHEMATIC ONLY & ARE THE RESPONSIBILITY OF THE BUILDER & OWNER TO DESIGN. CLEANOUTS SHOULD BE PROVIDED ON ALL BURIED LINES AS NEEDED FOR PROPER MAINTENANCE.

2. WYE FITTINGS MUST BE USED AT ALL PIPE INTERSECTIONS. TEE FITTINGS SHALL NOT BE USED.

DOWNSPOUT CONNECTION DETAIL

NOT TO SCALE

RETTEW
1020 Columbia Ave., Lancaster, PA 17603
Phone (717) 394-3721 • Fax (717) 394-1063

Project Worksheets, Design Tables & Construction Notes – Rain Garden

The following guidance has been provided for those regulated activities that qualify as a Minor Land Disturbance. This volume represents the amount of runoff to be permanently removed (managed on-site through reuse, infiltration, evaporation, or transpiration) per the Rapho Township Storm Water Management Ordinance. The volume does not account for the rate of percolation into the ground.

Variables:

A1 = Impervious Area in square feet (sq. ft.)
A2 = Required Rain Garden Surface Area in square feet (sq. ft.)

A2 = 0.4 x A1
or;
A2 = 0.4 x _____(impervious area in sq. ft.) = _____(required rain garden surface area in sq.ft.).

Storage Provided = (Length) x (Width) x (Ponding Depth)
(or for irregular shapes) Storage Provided = (Surface Area) x (Ponding Depth)

Sizing Chart for Rain Garden

Impervious Area (sq. ft.)	Square Feet of Rain Garden Surface Area (6" depth)
1000	400
1250	500
1500	600
1750	700
2000	800
2250	900
2500	1000
2750	1100
3000	1200
3250	1300
3500	1400
3750	1500
4000	1600
4250	1700
4500	1800
4750	1900
5000	2000

Rain Garden Construction - General Notes

1. Use the worksheet and table to compute the required volume in the rain garden (in cubic feet) for all proposed impervious areas. The calculated total volume is the minimum requirement for on-site construction. The actual horizontal dimensions of the rain garden may vary to fit specific site configurations and constraints, but the vertical depth of the rain garden should not exceed six (6) inches. The total volume of the rain garden must be equal to or greater than the required minimum.

2. Multiple rain gardens may also be utilized. If multiple rain gardens are desired, the volume for each rain garden should be a proportional amount of the calculated total storage volume (i.e. utilizing two [2] rain gardens, if sixty (60) percent of the total roof area is piped to one rain garden, then that rain garden should be sized for sixty (60) percent of the total required minimum volume. The second rain garden would then be sized for the remaining forty (40) percent of the total required minimum volume).

3. Based on the calculations of the required rain garden dimensions computed using the worksheets and table, stake out the locations of the rain garden corners. Staking is critical and should outline the location of the rain garden. The rain garden shall be located as far as possible downslope from the proposed home. A minimum of ten (10) feet of undisturbed soil shall be provided between the rain garden and any adjoining building or structure. Maintain a minimum of ten (10) feet between the rain garden and any property lines and road rights-of-way. Rain gardens shall be located beside or downslope (not upslope of) and a minimum of ten (10) feet from any component of any on-lot sewage disposal system or on-lot sewage disposal system replacement absorption area.

4. Excavation of the rain garden shall be conducted from outside of the rain garden perimeter, using equipment which has a bucket on a reaching arm (backhoe or trackhoe). No equipment shall be permitted in or on the rain garden area. The bottom and sides of the rain garden shall be chiseled or ripped to break up any smearing or compaction that may have occurred during excavation. The side slopes of the rain garden should be no steeper than 3:1 (three [3] feet horizontal to one [1] foot vertical). The planting soil depth in the bottom of the rain garden shall be at least eighteen (18) inches deep and should be a mixture of thirty (30) percent organic material (compost) and seventy (70) percent topsoil.

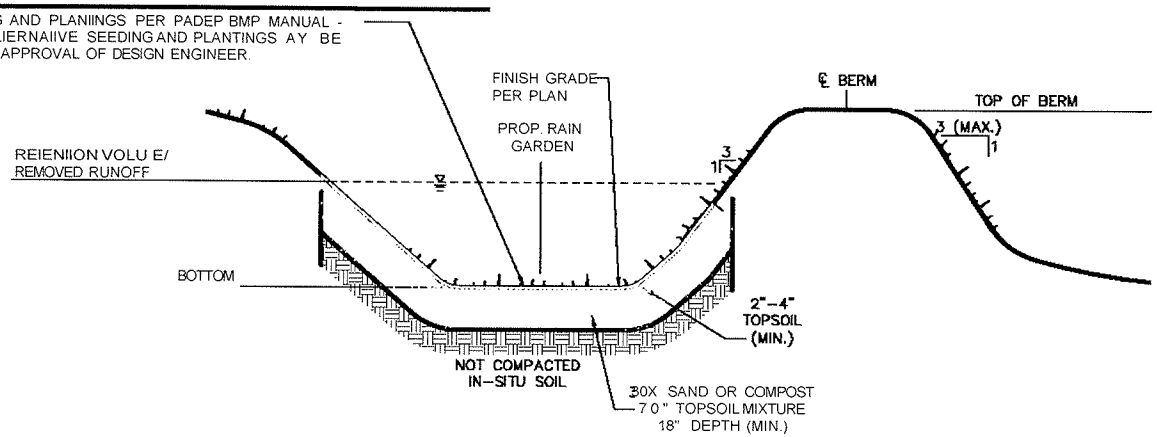
5. Backfill the rain garden with amended soils to proposed bottom elevation of facility. Connect roof drain leaders from downspouts to rain garden and contact Rapho Township for an observation.

6. At this time, before planting and placement of compost layer, the Township shall be notified for inspection of the facility to verify proper installation.

7. Following the Township observation, plant vegetation in the rain garden and add a two (2)-inch to three (3)-inch layer of shredded mulch or leaf compost. The amended soils should be overfilled to allow for settlement and lightly hand tamped in place. Presoaking the amended soils is recommended prior to planting. The plant selection should be suited to a variety of wet and dry weather conditions.

RAPHO TOWNSHIP

EXHIBIT C
TYPICAL RAIN GARDEN DETAIL



NOIE: IF UNSUITABLE SOIL IS ENCOUNIEREO OR IF SOIL IS COMPACIED SO INFILTRATION IS ELIMINAIED OR REDUCED, EXCAVAIE OUT THE UNSUITABLE SOIL (24" DEPTH) AND REPLACE WITH SOIL OF THE FOLLOI'tING SPECIFICAIION:

1. UTIUZE TOPSOIL GRADED FIROM OTHER ON-SiIIE AREAS (CLEANED AND DRAINED).
2. USE SILT LOAM SOIL I'tiTH MAXIMUM 10" CLAY; COMPOST (ORGANIC Aot ENDMENT) 5" TO 10.1: AXIMU

RAIN GARDEN CROSS SECTION

NOT TO SCALE
NG\NG015

RAIN GARDEN AREA TO BE SEEDED AND PLANnED AS SPECIFIED PER APPENDIX B OF

RAIN GMQEN·

THE PENNSYLVANIA STOR...WAIER BEST _..ANAGEMENT PRACTICES _..ANUAL WE SUGGEST THE USE OF ERNST CONSERVA110N SEED MIX ERNMX-180, WI-UCH CONTAINS MANY OF THE PLANTS LISIED IN THIS APPENDIX SECIION.

WHILE VEGETAIION IS BEING ESTABUSHED IN THE RAIN GARDEN, PRUNING AND WEEDING MAY BE REQUIRED. DETRITUS MAIERIAL MAY NEED TO BE REMOVED ANNUALLY OR AS NEEDED TO _..AINTAIN PROPER FUNCTION OF THE RAIN GARDEN. PERENNIAL PLANIINGS (IF PRESENT) MAY BE CUT DOWN AT THE END OF THE GROWING SEASON. THE RAIN GARDEN SHOULID BE INSPECIED AT LEAST TWO TIMES PER YEAR FOR SEDIMENT BUILDUP, EROSION, AND VEGETATIVE CONDiIIONS (HEALTH). ANY DEAD OR DISEASED VEGETAIION SHALL BE REPLACED IMMEDIAIELY. DURING PERIODS OF EXIENDED DROUGHT, RAIN GARDEN AREAS MAY REQUIRE WATIERING.

RAIN GMQEN NIX — EBNMX-110

20.00"	*Panl<:um rlgldu/um, PA tlC Of)p*	Redtop Panic Grass, PA Ecotype
20.DD"	*Schfzrlchylum scoporlum, Eastern tlCOIJP*	Little Blueotem, Eastern Ecotype
10.00:1:	*El;mvs virginicvs*	Virginia Wild Rye
5.00:1:	*C X IIfl/plnokl*	Fo• Sedge
5.00:1:	*Chasmonthfvm !atlfollum*	River Dab
5.00:1:	*Echinacea pvrpvreo*	Purple Coneflower
5.00 1:	*Liotrls spk:ata*	Morah (Dense) Blazing Star (Spiked Gayl'eather)
5.00:1:	*Rvdbeckia hirto*	Block 'eyed Susan
3.00 1:	*Monarda flstvlosa*	Wild Bergamot
3.00 1:	*Pt>stemon digitalis*	Tall v.hlte Beard Tongue
2.00.1:	*Andropogon gerardii, 'Iff Ecoij!Pe'*	'WI Ecotype' Big Bluestem
2.00 1:	*Aw"Pia" Incomata*	Swamp Milkweed
2.00.1:	*Ast,..- n o - o n g f*	New England Aoter
2.00.1:	*Baptisio ovsfrolis*	Blue Folse Indigo
2.00 1:	*Gt>Vm loclniotum*	Rough Avena
2.00 1:	*Senna h a*	Wild Senna
2.00 1:	*Trodescantia ohiensis*	Ohio Spiderwort
2.00 1:	*Vdrl>ena hogtato*	Blue Vervain
2.00:1:	*Zizia avreo*	Golden AleKanders
1.00.1:	*Agroslis penN nans*	Autumn Bentcross

BE NEEDED ON OCCASION AND INVASIVE SPECIES SHOUUD ALWAYS BE REMOVED.

OPERATION AND MAINTENANCE SCHEDULE

1. THE PROPERTY OWNER SHALL OWN, AINTAIN AND BE RESPONSIBLE FOR ALL STORMWATER MANAGEMENT AND PERMANENT B P FACIUIIES (I.E. RAIN GARDENS, SWALES AND LEVEL SPREADERS) THAT ARE LOCAIED OUTSIDE OF SIIREET RIGHT-OF-WAYS AS PROPOSED ON THE PLANS.
2. THE D'MIIER SHALL CONDUCT A VISUAL INSPECIION OF ALL STDRtAWAIER ANAGEMENT AND PERMANENT BMP FACILITIES AT LEAST ONCE EVERY THREE MONTHS AND It.ltIEDIAIELY AFIER STOR EVENTS. SUCH VISUAL EXAt.liNATION SHALL AT LEAST INVOLVE AN EXAt.liNATION OF THE STDRMWATIER CDLLECIION, CONVEYANCE AND BMP FACILI11ES FOR DEBRIS DEPOSiIION (SUCH DEBRIS MAY INCLUDE, BUT SHALL NOT BE UMiIED TO AGGREGAIE t.IAIERIAL, LEAVES, GRASS CUPPINGS, SOIL AND IIRASH), AND AN EXAt.liNAIION OF THE STORMWAIER Bt.IP FACIUIIES FOR SOIL AND SIIRUCTURAL SETTLEMENT, DEPRESSIONS, SINKHOLES, SEEPS, SIIRUCTURAL CRACKING, ANIMAL BURROWS, EXCESSIVE VEGETAIION, CLOGGING, EROSION AND FOUNDAIION MOVEMENT.
3. THE OWNER SHALL REt.IDVE ANY ACCUt.IULAIION OF DEBRIS AND REPAIR ANY DAMAGE TO THE STORt.IWAIER t.IANAGEMENT AND PERt.IANENT BMP FACILITIES. REPAIRS SHALL BE MADE USING MAIERIAL THAT tAEETS DR EXCEEDS THE SPECIFICATIONS PROVIDED ON THE PLANS.
4. THE O'MIIER IS REQUIRED TO MAINTAIN A RECORD OF ALL INSPECIIONS, REPAIRS AND MAINTIENANCE ACTI\IIIIES ASSOCIAIED WITH THE STORMWAIER MANAGEMENT AND PERMANENT B_P FACILITIES AT THIS PROJECT SIIE. THE OWNER SHALL IMMEDIATIELY NOTIFY THE TD'MIISHIP AND THE COUNTY CONSERVAIIDN DISTRICT PRIOR TO INITIAIING ANY MAJOR REPAIR ACII\IIIIES (SUCH AS REPAIRS THAT MAY BE REQUIRED BECAUSE OF SETTLEMENT, SINKHOLES, SEEPS, SIIRUCTURAL CRACKING OR FOUNDAIION MOVEMENT).
5. THE O'MIIER SHALL ALSO COMPLY WITH ANY OTHER t.IAINIENANCE NOTIES INCLUDED ON THE LAND DEVELOPMENT PLANS.

1• _..LLCH AND INSTALL EROSION PROIECIION AT SURFACE FLOW ENTIRANCES WHERE NECESSARY.
2. WHILE VEGETAIIDN IS BEING ESTABLISHED, PRUNING AND WEEDINGt.IAY BE REQUIRED.
3. DETIRITUS t.IAY ALSO NEED TO BE RE DVED EVERY YEAR. PERENNIAL PLANIINGS t.IAY BE CUT DOWN AT THE END OF THE GROWING SEASON.
4. t.IULCH SHOULID BE RE-SPREAD WHEN EROSION IS EVIDENT AND BE REPLENISHED AS NEEDED. ONCE EVERY 2 TO 3 YEARS THE ENIIRE AREA _..AY REQUIRE t.IULCH REPLACEMENT.
5. BIOREIENIION AREAS SHOULID BE INSPECTIED AT LEAST TWO TIMES PER YEAR FOR SEDIMENT BUILDUP, EROSION, VEGETATIVE CONDIIONS, ETC.
6. DURING PERIODS OF EXIENDED DROUGHT, BIOREIIENIION AREAS tAAY REQUIRE WAIERING.
7. IIREES AND SHRUBS SHOUUD BE INSPECIED TWICE PER YEAR TO EVALUAtE HEALTH
8. WEEDING WILL BE NEEDED THE FIRST COUPLE OF YEARS. RE...OVE BY HAND ONLY THOSE PLANTS THAT ARE POSIIIVELY IDENTIFIED AS WEEDS. IN THE THIRD YEAR AND BEYOND, THE NAIIVE GRASSES, SEDGES, RUSHES, AND WUDFLDWERS WILL BEGIN TO MATURE AND WILL OUT-CDMPEIE THE WEEDS. WEEDING ISOLATIED PATCHES MIGHT STILL

BETTEW
3020 Columbia Ave., Lancaster, PA 17603
Phone (717) 394-3721 • Fax (717) 394-106:

100.00"

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EEDING RAIE:
5UB. PER ACRE
R 1/3 -1/2 UB.
ER 1,000 SO. FT.

RAIN CMBQEN SEA, ENCE CF CCIISJBUCDQN

1. IN ST AL L IEt. IP O RA RY SE Dit

.IENT CONTROL BMPs AS SHOWN ON THE PLANS.

2. CO PLETIE SIIE GRADING. IF APPUCABLE, CONSTIRUCT CURB CUTS DR OTHER INFLOW ENTIRANCE BUT PROVIDE PROIECIIDN SO THAT THE DRAINAGE IS PROHIBITIED FROM ENTIERING THE CONSTRUCIION AREA.
3. STABILIZE GRADING WITHIN THE UMIT OF DISTURBANCE EXCEPT WITHIN THE RAIN GARDEN AREA. RAIN GARDEN BED AREAS NAY BE USED AS IEMPORARY SEDIMENT TRAPS PROVIDED THAT THE PROPOSED FINISHED ELEVAIION OF THE BED IS 12" LOWER THAN THE BOTIOM ELEVATION OF THE SEDIMENT TRAP.
4. EXCAVATIE RAIN GARDEN TO PROPOSED, INVERT DEPTH AND SCARIFY THE EXISIING SOIL SURFACS. DO NOT COMPACT IN-SITU SOILS.
5. BACKFILL RAIN GARDEN WITH AMENDED SOIL AS SHOWN ON PLANS AND SPECIFICAIIDNS. DVERFILUNG IS RECOMMENDED TO ACCOUNT FOR SETTLEMENT. UGHT HAND TAt.IPING IS ACCEPTABLE IF NECCESASARY.
6. PRESOAK THE PLAN11NG SOIL PRIOR TO PLAN11NG VEGETATION TO AID IN SETTLEt IENT.
7. CO PLETIE FINAL GRADING TO ACHIEVE PROPOSED DESIGN ELEVATIDNS, LEAVING SPACE FOR UPPER LAYER OF COMPOST, MULCH OR TOPSOIL AS SPECIFIED ON PLANS.
8. PLANT VEGETAIION USING ERNST CONSERVAIION SEED MIX ERNMX-180.
9. MULCH AND INSTALL EROSION PROIIECIION AT SURFACE FLOW ENTRANCES WHERE NECESSARY.

Project Worksheets, Design Tables & Construction Notes – Rain Barrel/Cistern

The following guidance has been provided for those regulated activities that qualify as a Minor Land Disturbance. This volume represents the amount of runoff to be permanently removed (managed on-site through reuse, infiltration, evaporation, or transpiration) per the Rapho Township Storm Water Management Ordinance. The volume does not account for the rate of percolation into the ground.

Variables:

A = Impervious Area in square feet (sq. ft.)
V = Required Rain Barrel/Cistern Volume in gallons

Compute Total Required Volume:

V = 1.5 x A
or;
V = 1.5 x _____(impervious area in sq. ft.) = _____(required rain barrel/cistern volume in gallons).

Storage Provided in Circular Cistern (cu. ft.) = [Radius (ft.)]^2 x [Height (ft.)] x (3.14)

Storage Provided in Circular Cistern (gal) = [Radius (ft.)]^2 x [Height (ft.)] x (3.14) x (7.48)

Sizing Chart for Rain Barrels and Cisterns

Impervious Area (sq. ft.)	Gallons of Storage in Cistern
1000	1496
1250	1870
1500	2244
1750	2618
2000	2992
2250	3366
2500	3740
2750	4114
3000	4488
3250	4862
3500	5236
3750	5610
4000	5984
4250	6358
4500	6732
4750	7106
5000	7480

Project Worksheets, Design Tables & Construction Notes – Vegetated Swale with Check Dam

The following guidance has been provided for those regulated activities that qualify as a Minor Land Disturbance. This volume represents the amount of runoff to be permanently removed (managed on-site through reuse, infiltration, evaporation, or transpiration) per the Rapho Township Storm Water Management Ordinance. The volume does not account for the rate of percolation into the ground.

Variables:

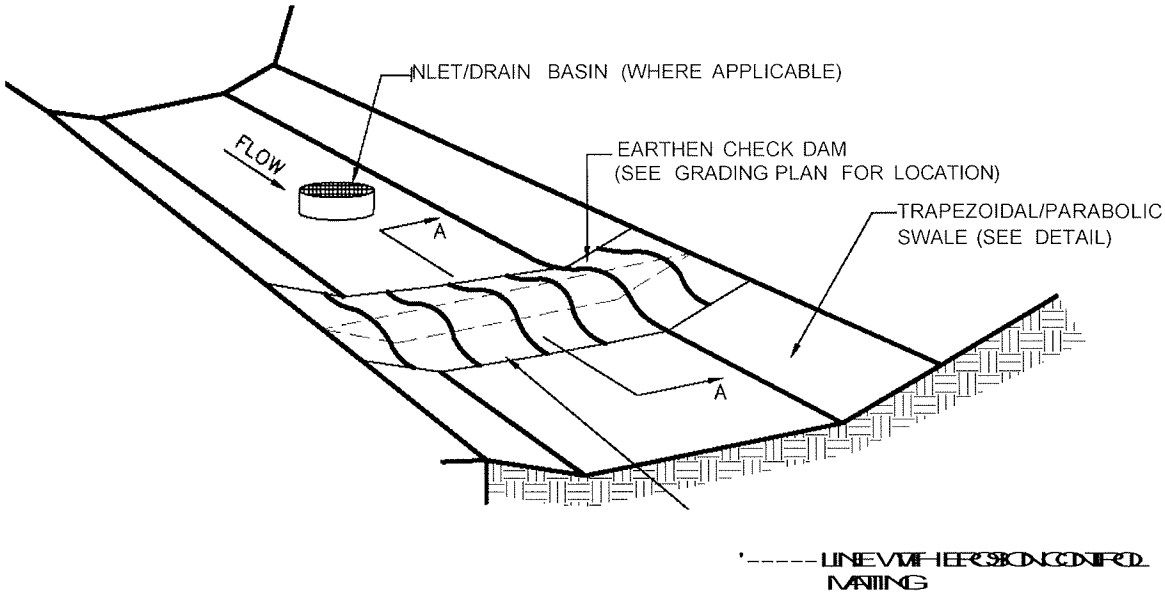
A = Impervious Area in square feet (sq. ft.)
L = Required Length of Swale in feet (ft.)

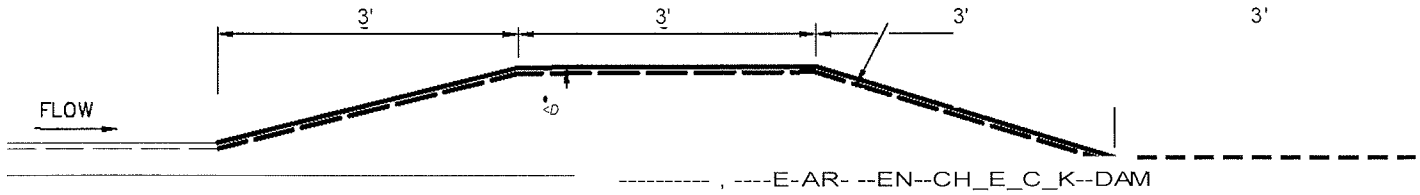
L = 0.05 x A
or;
L = 0.05 x _____ (impervious area in sq. ft.) = _____ (required length of swale in ft.).

Swale w/ Check Dam
Storage Provided = (Length) x (Bottom Width) x (Ponding Depth)

Sizing Chart for Swale with Check Dam

Impervious Area (sq. ft.)	Linear Feet of 8' Wide Swale w/Check Dam (6" ponding depth)
1000	50
1250	62.5
1500	75
1750	87.5
2000	100
2250	112.5
2500	125
2750	137.5
3000	150
3250	162.5
3500	175
3750	187.5
4000	200
4250	212.5
4500	225
4750	237.5
5000	250





SEC]ON A-A

CHECK DAM

NOT TO SCALE {SEE GRADING PLAN FOR LOCATION)

SD\50075

EXHIBIT D
TYPICAL SWALE CHECK DAM DETAIL

RAPHO TOWNSHIP LANCASIER COUNTY

RETTEW.

RETTEW Associates, Inc
3020 Columbia Ave., Lancaster, PA 17603
Phone (717) 394-3721 • Fax (717) 394-1063

DRAWN BY: -----
DA -- Su/ 1/ 1 4 -
SCALE: NOT TO SCALE
DWO. NO. 011032016