

**PAGE 1 OF 2** Need to look at both pages to correctly complete application

**INSTRUCTIONS FOR STORM WATER APPLICATION**

**"SMP" = storm water management plan - (minor plan)**

- This is required for new proposed impervious area coverage only.
- A copy of site plan may be used for zoning application if front back and side distances from proposed new construction to property lines are added.
- No building or zoning permits will be issued till township approval of SMP.

**If a pre-application meeting is desired. Call for an appointment 677-7356**

**To determine the type of storm water management plan you need.**

**Instructions for preparing storm water management worksheet MARKED WORK SHEET "A"** (follow instructions for each step)

- Step # 1 – If sum of all new impervious area is less than 1000 sq.ft. - SEE EXAMPLE WORK SHEET "B" sign storm water management worksheet acknowledgement (page 1), file with township, permits can be issued. If sum of all impervious area is greater than 1000 sq.ft. go to #2 step
- Step # 2 – If sum of all impervious area is greater than 1000 sq.ft. - Prepare minor storm water plan SEE EXAMPLE WORKSHEET "C". If sum of all new impervious area is 0, sign storm water management worksheet acknowledgement (page 1), file with township, permits can be issued. If greater than 0 but less than 1 acre you need go on to step # 3 and/ or step # 4.
- Step #3 & #4 - If sum of all impervious area is greater than 0 a minor storm water management plan must be prepared by one of the following;
  - a qualified design professional
  - or by applicant - SEE EXAMPLE WORK SHEET "D".Upon completion of minor storm water management plan, sign storm water management worksheet acknowledgement MARKED "E" and sign storm water management/BMP facilities operation maintenance agreement MARKED "F".
  - file with township for approval
  - record with Adams County record of deeds
  - following proof of recording, permits can be issued

NOTE: If disturbed area is greater than one acre a formal storm water management plan must be prepared by a qualified design professional and submitted to Adams County Conservation District for approval.

## PAGE 2 OF 2

### Instructions for preparing a site plan. Drawing examples MARKED IN WORKSHEETS "B, C, D"

(Site plan needs to include the following that are applicable to you plot plan)

- Name and address of developer and or property owner:
- Name and address of individual or firm preparing site plan:
- Total property area plus 25 feet beyond property line, the site plan needs to include the following:
- Graphic written plan to scale:
  - For parcels less than 20 acres: 1 inch equals 50 feet
  - For parcels more than 20 acres: 1 inch equals 100 feet
- Arrow pointing in the direction of north
- Existing and proposed land uses
- Location of existing
  - Utilities
  - Storm water facilities
  - Sanitary sewers
  - Water lines
- Significant physical features
  - Flood hazard areas
  - Sinkholes
  - Existing drainage courses
  - Natural vegetation areas
- Existing and proposed, with size and location on property
  - Structures
  - Buildings
  - Streets
  - Driveways
  - Access driveways
  - Parking areas
  - Wastewater facilities
  - Water supply wells
  - Other significant manmade features

# Municipal Stormwater Management Worksheet

**A**

*For Municipal Use and Record of Project Area*

Property Owner's Name \_\_\_\_\_

Address of Property \_\_\_\_\_

Phone Number \_\_\_\_\_ Municipality \_\_\_\_\_

New Impervious Area Associated with this Project: \_\_\_\_\_

Stormwater Project Type:  Exempt  Minor Plan  Project Requires Formal SWM Plan

Total New Impervious Area Since Adoption of SWM Ordinance \_\_\_\_\_

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

Signature \_\_\_\_\_ Date \_\_\_\_\_

**Step 1:** Determine the amount of impervious area created by the project. This includes any new surface that prevents the direct infiltration of stormwater into the ground. New stone and gravel areas are considered impervious. Existing impervious areas are not included in this calculation.

*Calculate new impervious area by completing this table.*

Surface	Length (ft)	x	Width (ft)	=	Impervious Area (ft <sup>2</sup> )
Buildings		x		=	
Driveway		x		=	
Parking Areas		x		=	
Patios/ walkways		x		=	
Other		x		=	
Total Proposed Impervious Surface Area (Sum of all impervious areas)					

- If the total impervious surface area is less than 1,000 ft<sup>2</sup>, the project is exempt. Sign Acknowledgement and file this sheet with municipality.
- If total impervious surface area is between 1,000 ft<sup>2</sup> - 9,999 ft<sup>2</sup>, complete minor stormwater site plan & Step 2.
  - If project area can be entirely disconnected, sign Acknowledgement and file worksheets with municipality.
  - If project is between 1,000 ft<sup>2</sup> and 5,000 ft<sup>2</sup> and requires BMPs, complete step 3.
  - If project area is 5,001 ft<sup>2</sup> - 9,999 ft<sup>2</sup> and can't be disconnected, the project does not qualify for the Simplified Approach.

# Municipal Stormwater Management Worksheet

A

**Step 2:** Determine Disconnected Impervious Area (DIA). All or parts of proposed impervious surfaces may qualify as Disconnected Impervious Area if runoff is directed to a pervious area that allows for infiltration, filtration, and increased time of concentration. The volume of stormwater that needs to be managed could be reduced through DIA. Prepare a minor stormwater site plan (see pg 4 for requirements).

**Criteria**

- Overland flow path from the discharge area or impervious area has a positive slope of 5% or less.
- Contributing area to each rooftop discharge (downspout) is 500 ft<sup>2</sup> or less.
- Soils are not classified as hydrologic soil group "D".
- The receiving pervious area shall not include another property unless written permission has been obtained from the affected adjoining property owner.

Partial Rooftop Disconnection	
Length of Pervious Flow Path (ft)	DIA Credit Factor
0 – 14	1.0
15 – 29	0.8
30 – 44	0.6
45 – 59	0.4
60 – 74	0.2
75 or more	0
Pervious flow path must be at least 15 feet from any impervious surface	

**Paved Disconnection Criteria:** Paved surfaces (driveways, walkways, etc.) and gravel can be considered disconnected if it meets the criteria above and:

- Runoff does not flow over impervious area for more than 75 feet.
- The length of overland flow is greater than or equal to the contributing length.
- The slope of the contributing impervious areas is 5% or less.
- If discharge is concentrated at one or more discrete points, no more than 1,000 ft<sup>2</sup> may discharge to any one point. In addition, a gravel strip or other spreading device is required for concentrated discharges. For non-concentrated discharges along the entire edge of paved surface, this requirement is waived; however, there must be provisions for the establishment of vegetation along the paved edge and temporary stabilization of the area until the vegetation is established.
- If this criteria can be met, the DIA credit = 0

Using the calculations from the minor stormwater site plan, complete the table below. This will determine the impervious area that may be excluded from the area that needs to be managed through stormwater BMPs. If total impervious area to be managed = 0, area can be entirely disconnected.

Surface	Proposed Impervious Area	x	DIA Credit	=	Impervious Area (ft <sup>2</sup> ) to be Managed
Buildings (area to each downspout)		x		=	
Driveway		x		=	
Parking Areas		x		=	
Patios/ walkways		x		=	
Other		x		=	
Total Proposed Impervious Surface Area to be managed (Sum of all impervious areas)					

If total surface area to be managed is greater than 0, continue to Step 3.

# Municipal Stormwater Management Worksheet

A

**Step 3:** Calculate the volume of stormwater runoff created by proposed impervious surfaces or see Simple BMP Sizing in Step 4.

Impervious Area (ft <sup>2</sup> ) to be Managed (Sum of Step 2)	X	2.8 in/12 in = 0.233 (2.8 in is 2-year 24-hour rainfall amount)	=	Amount of Stormwater to be Managed (ft <sup>3</sup> )
	X	0.233	=	

Best Management Practices will need to be used to manage the volume of stormwater created by the proposed impervious areas. The cubic feet of stormwater that needs to be managed may also be further reduced by planting new trees. If the criteria can be met, the amount of stormwater to be managed can be reduced per the following:

Deciduous Trees = 6 ft<sup>3</sup> per tree      Evergreen Trees = 10 ft<sup>3</sup> per tree

**Criteria:**

- Trees must be PA native species (See PA Stormwater BMP Manual for a list)
- Trees shall be a minimum 1" caliper tree and 3 feet tall shrub (min)
- Trees shall be adequately protected during construction
- No more than 25% of the required capture volume can be mitigated through the use of trees
- Dead trees shall be replaced within 12 months

Amount of Stormwater to be Managed (ft <sup>3</sup> ) (Sum of Step 3)	-	Tree Planting Credit (ft <sup>3</sup> )	=	Amount of Stormwater to be Managed (ft <sup>3</sup> )
	-		=	

**Step 4:** Select BMPs and size according to the volume of stormwater that needs to be managed. The Guide to Choosing Stormwater BMPs, included in the Simplified Approach, includes sizing calculations for specific techniques. *Simple BMP Sizing* - Sizing BMPs can also be simplified through the use of this chart. Take the sum of Step 2 and match it to the "Amount of New Impervious Area to be Managed" in the table below (rounding up to the next value if the number is between two values). Then look in the light grey box to determine the cubic footage of the BMP. For example, if a proposed 1,000 square foot impervious area must handle 240 cubic feet of stormwater in a bioretention system, a 13'x 13'x 1.5' rain garden or a 36'x 2'x 3.5' vegetated swale could be used. Add the location and size of proposed BMPs to the minor stormwater site plan.

BMP Type		Amount New Impervious Area to be Managed (sq ft)											
		250	500	750	1000	1500	2000	2500	3000	3500	4000	4500	5000
Bioretention	Rain Garden, Vegetated Swale (simple)	60	120	180	240	360	480	600	720	840	960	1,080	1,200
	Dry Well, Infiltration Trench	180	360	540	720	1,080	1,440	1,800	2,160	2,520	2,880	3,240	3,600

(Lycoming County Planning Department, 2010)

Bring the worksheets, plan, Owner Acknowledgement, and BMP Facilities and Maintenance Agreement (if applicable) to your municipality. If an area greater than 5,000 square feet is disturbed, an erosion and sedimentation (E & S) control plan must be prepared. The municipality may require that the E&S plan be submitted to, reviewed, and approved by the Adams County Conservation District.

# Municipal Stormwater Management Worksheet

**B**

*For Municipal Use and Record of Project Area*

Property Owner's Name J. CRICKET

Address of Property 104 DISNEY LANE

Parcel ID # 08012-0093 --- 000 Municipality CONEWAGO TWP.

Phone Number (112) 415-6213 New Impervious Area Associated with this Project 150<sup>sq</sup>

Stormwater Project Type:  Exempt  Minor Plan  Project Requires Formal SWM Plan

Total New Impervious Area Since Adoption of SWM Plan 1428 + 150 = 1578

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

Signature  Date 03.09.15

**Step 1:** Determine the amount of new impervious area created by the proposed project. This includes any new surface areas that prevent infiltration of stormwater into the ground. New stone and gravel areas are considered impervious. Impervious areas existing before November 23, 2011 are not included in this calculation. Use additional sheets if necessary

*Calculate new impervious area by completing this table.*

Surface	Length (ft)	x	Width (ft)	=	Impervious Area (ft <sup>2</sup> )
Buildings	10	x	15	=	150
Driveway		x		=	
Parking Areas		x		=	
Patios/ walkways		x		=	
Other		x		=	
Total Proposed Impervious Surface Area (Sum of all impervious areas)					150 sq.ft.

- If the total new impervious surface area is up to 1,000 ft<sup>2</sup>, the project is exempt from the requirement to submit a plan for approval. Sign Acknowledgement and file this sheet with municipality.
- If total impervious surface area is 1,001 ft<sup>2</sup> to 10,000 ft<sup>2</sup>, continue to Step 2.
  - If project area can be entirely disconnected, sign Acknowledgement and file worksheets with municipality.
  - If project is between 1,000 ft<sup>2</sup> and 5,000 ft<sup>2</sup> and requires BMPs, complete step 3.
  - If project area is 5,000 ft<sup>2</sup> - 10,000 ft<sup>2</sup> and can't be disconnected, the project does not qualify for the Simplified Approach.

BUCHART / BASCO  
 HORNINC. / ASSOCIATES

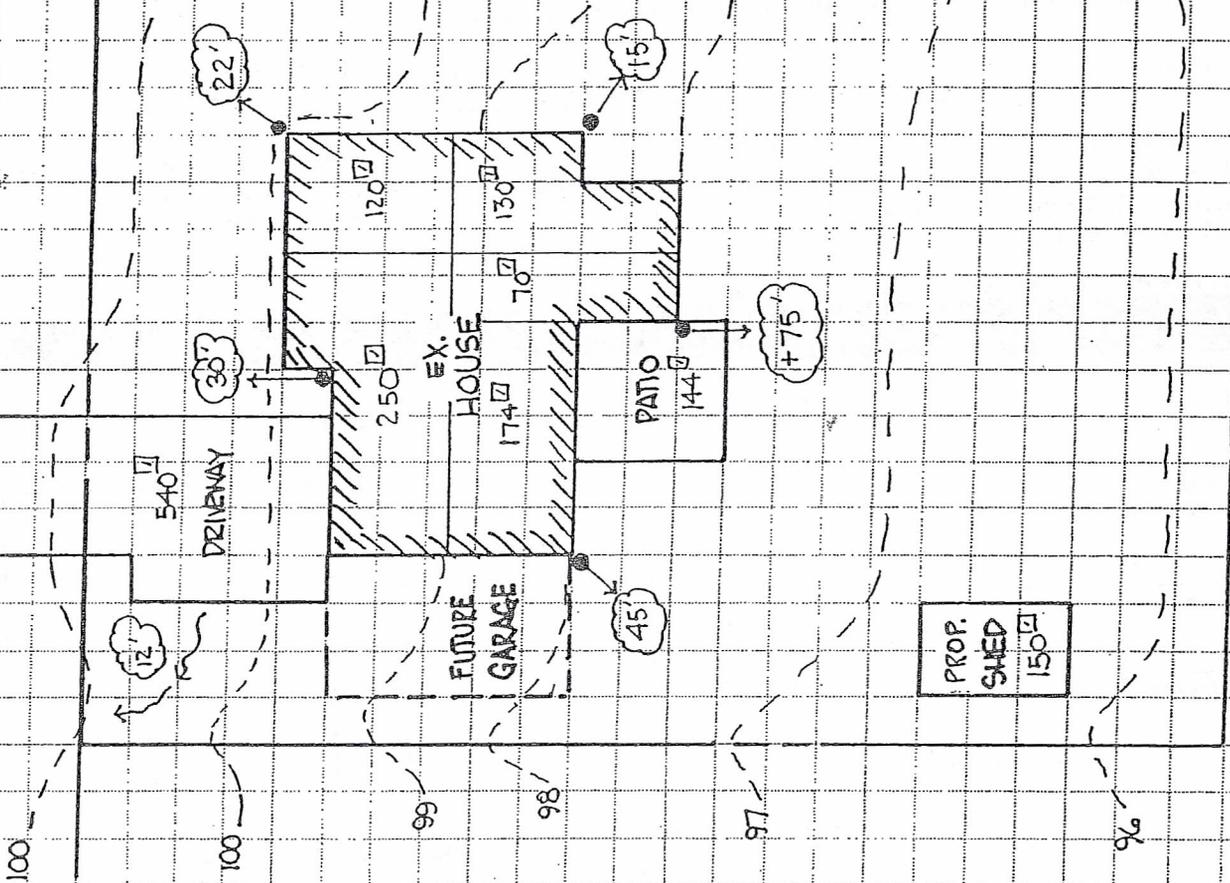
ENGINEERS, ARCHITECTS AND PLANNERS

EDGE ROAD

R/W

LOT LINE (TYP.)

B



# Municipal Stormwater Management Worksheet

C

*For Municipal Use and Record of Project Area*

Property Owner's Name J. CRICKET

Address of Property 104 DISNEY LANE

Parcel ID # 08012-0093---000 Municipality CONEWAGO TWP.

Phone Number (112) 415-6213 New Impervious Area Associated with this Project 1154

Stormwater Project Type:  Exempt  Minor Plan  Project Requires Formal SWM Plan  
(DIA)

Total New Impervious Area Since Adoption of SWM Plan 1578 + 1154 = 2732

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

Signature  Date 03.09.18

**Step 1:** Determine the amount of new impervious area created by the proposed project. This includes any new surface areas that prevent infiltration of stormwater into the ground. New stone and gravel areas are considered impervious. Impervious areas existing before November 23, 2011 are not included in this calculation. Use additional sheets if necessary

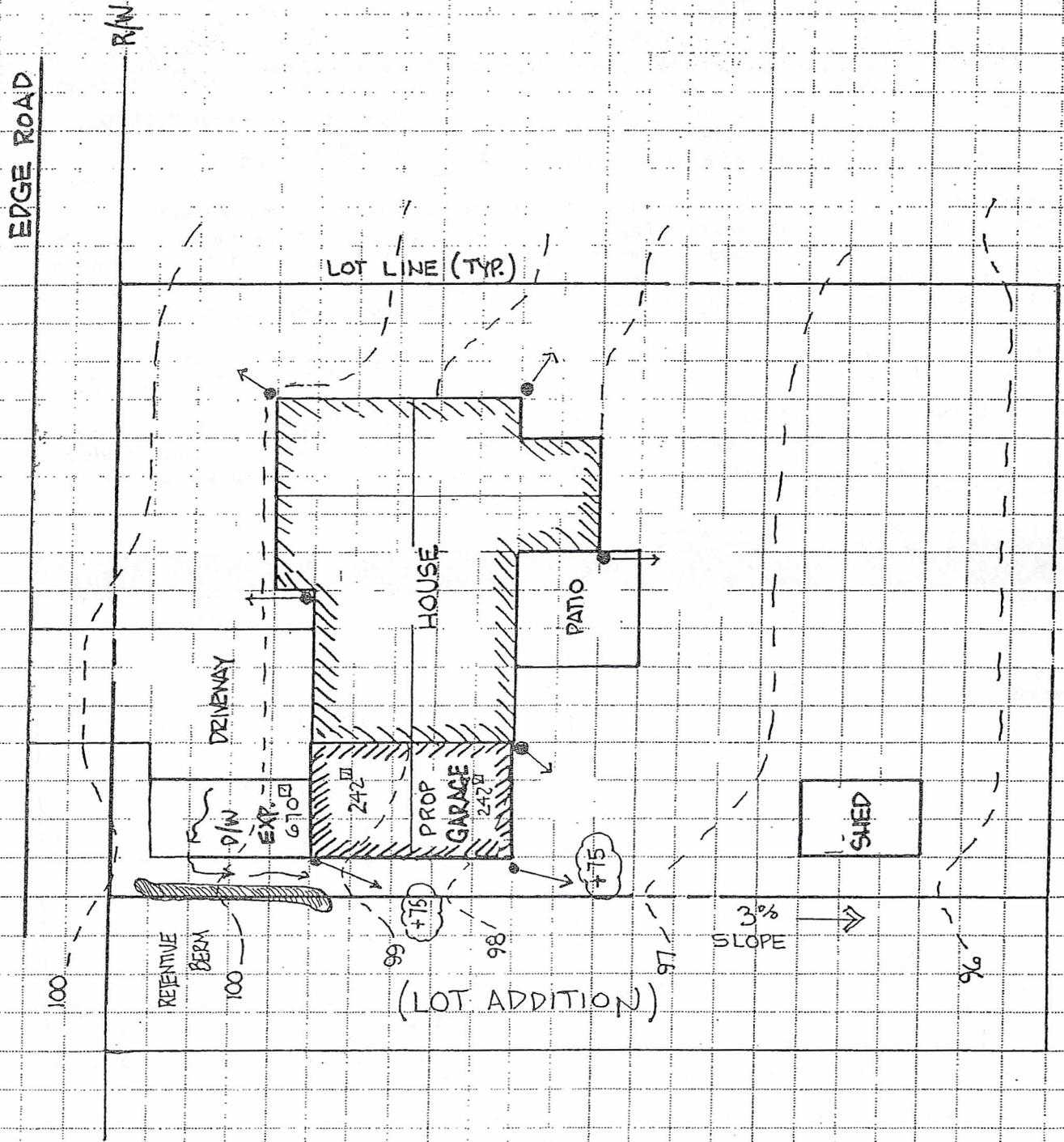
Calculate new impervious area by completing this table.

Surface	Length (ft)	x	Width (ft)	=	Impervious Area (ft <sup>2</sup> )
Buildings	11		22		242
	11	x	22	=	242
Driveway	22.3	x	30	=	670
Parking Areas	—	x	—	=	
Patios/ walkways	—	x	—	=	
Other	—	x	—	=	
Total Proposed Impervious Surface Area (Sum of all impervious areas)					1154 SQ.FT

- If the total new impervious surface area is up to 1,000 ft<sup>2</sup>, the project is exempt from the requirement to submit a plan for approval. Sign Acknowledgement and file this sheet with municipality.
- If total impervious surface area is 1,001 ft<sup>2</sup> to 10,000 ft<sup>2</sup>, continue to Step 2.
  - If project area can be entirely disconnected, sign Acknowledgement and file worksheets with municipality.
  - If project is between 1,000 ft<sup>2</sup> and 5,000 ft<sup>2</sup> and requires BMPs, complete step 3.
  - If project area is 5,000 ft<sup>2</sup> - 10,000 ft<sup>2</sup> and can't be disconnected, the project does not qualify for the Simplified Approach.

C

EDGE ROAD



# Municipal Stormwater Management Worksheet

C

**Step 2:** Determine Disconnected Impervious Area (DIA). All or parts of proposed impervious surfaces may qualify as Disconnected Impervious Area if runoff is directed to a pervious area that allows for infiltration, filtration, and increased time of concentration. The volume of stormwater that needs to be managed could be reduced through DIA. Prepare a minor stormwater site plan (see pg C-5 for requirements).

**Criteria**

- 3% X • Overland flow path from the discharge area or impervious area has a positive slope of 5% or less.
- 242<sup>sq</sup> X • Contributing area to each rooftop discharge (downspout) is 500 ft<sup>2</sup> or less.
- "C" X • Soils are not classified as hydrologic soil group "D".
- X LOT ADDITION • The receiving pervious area shall not include another person's property unless written permission has been obtained from the affected property owner.

Partial Rooftop Disconnection		
Length of Pervious Flow Path (ft) Lots ≤ 10,000 ft <sup>2</sup>	Length of Pervious Flow Path (ft)	DIA Credit Factor
35 or more	75 or more	0
30 - 34.9	60 - 74	0.2
23 - 29.9	45 - 59	0.4
16 - 22.9	30 - 44	0.6
8 - 15.9	15 - 29	0.8
0 - 7.9	0 - 14	1.0
Pervious flow path must be at least 15 feet from any impervious surface		

**Paved Disconnection Criteria:** Paved surfaces (driveways, walkways, etc.) and gravel can be considered disconnected if it meets the criteria above and:

- 75<sup>ft</sup> X • Runoff does not flow over impervious area for more than 75 feet.
- X • The length of overland flow is greater than or equal to the contributing flow path.
- 3% X • The slope of the contributing impervious areas is 5% or less.
- 70<sup>sq</sup> X • If discharge is concentrated at one or more discrete points, no more than 1,000 ft<sup>2</sup> may discharge to any one point. In addition, a gravel strip or other spreading device is required for concentrated discharges. Non-concentrated discharges along the entire edge of paved surface must include provisions for the establishment of vegetation along the paved edge and temporary stabilization of the area until the vegetation is established.

⊙ If these criteria can be met, the DIA credit = 0

Using the calculations from Step 1, complete the table below. This will determine the impervious area that may be excluded from the area that needs to be managed through stormwater BMPs. If the total impervious area to be managed = 0, the area can be considered entirely disconnected.

Surface	Proposed Impervious Area	x	DIA Credit	=	Impervious Area (ft <sup>2</sup> ) to be Managed
Buildings (area to each downspout)	242		0		0
	242	x	0	=	0
Driveway	670	x	0	=	0
Parking Areas		x		=	
Patios/ walkways		x		=	
Other		x		=	
Total Proposed Impervious Surface Area to be managed (Sum of all impervious areas)					0 ∴ REQ. MET

If total surface area to be managed is greater than 0, continue to Step 3.

# Municipal Stormwater Management Worksheet

D

*For Municipal Use and Record of Project Area*

Property Owner's Name J. CRICKET

Address of Property 104 DISNEY LANE

Parcel ID # 08012-0093---000 Municipality CONEWAGO TWP.

Phone Number (112) 415. 6213 New Impervious Area Associated with this Project 1428 SQ.FT.

Stormwater Project Type:  Exempt  Minor Plan  Project Requires Formal SWM Plan

Total New Impervious Area Since Adoption of SWM Plan 1428 (NEW CONSTRUCTION)

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

Signature  Date 03.09.12

**Step 1:** Determine the amount of new impervious area created by the proposed project. This includes any new surface areas that prevent infiltration of stormwater into the ground. New stone and gravel areas are considered impervious. Impervious areas existing before November 23, 2011 are not included in this calculation. Use additional sheets if necessary

*Calculate new impervious area by completing this table.*

Surface	Length (ft)	x	Width (ft)	=	Impervious Area (ft <sup>2</sup> )
Buildings	35		18		630
	9	x	6	=	54
	15		4		60
Driveway	15		30		450
	6	x	15	=	90
Parking Areas	0	x	0	=	0
Patios/ walkways	12	x	12	=	144
Other	0	x	0	=	0
<b>Total Proposed Impervious Surface Area (Sum of all impervious areas)</b>					<b>1428 SQ.FT.</b>

- If the total new impervious surface area is up to 1,000 ft<sup>2</sup>, the project is exempt from the requirement to submit a plan for approval. Sign Acknowledgement and file this sheet with municipality.
- If total impervious surface area is 1,001 ft<sup>2</sup> to 10,000 ft<sup>2</sup>, continue to Step 2.
  - If project area can be entirely disconnected, sign Acknowledgement and file worksheets with municipality.
  - If project is between 1,000 ft<sup>2</sup> and 5,000 ft<sup>2</sup> and requires BMPs, complete step 3.
  - If project area is 5,000 ft<sup>2</sup> - 10,000 ft<sup>2</sup> and can't be disconnected, the project does not qualify for the Simplified Approach.

**D**

HORNINC. / PASULLI ASSOCIATES

ENGINEERS, ARCHITECTS AND PLANNERS

EDGE ROAD

R/W

LOT LINE (TYP.)

100

100

99

98

97

96

12

540

DRIVEWAY

38

170

250

NEW HOUSE

174

HOUSE

70

PATIO

144

75

45

RANGAR

FUTURE SHED

150

KEY

○ = DEC. TREE

\* = EVERGREEN

○ = RAIN BARREL  
 w/ INF. OVERFLOW

# 11



For client on next page

# Municipal Stormwater Management Worksheet

# D

**Step 2:** Determine Disconnected Impervious Area (DIA). All or parts of proposed impervious surfaces may qualify as Disconnected Impervious Area if runoff is directed to a pervious area that allows for infiltration, filtration, and increased time of concentration. The volume of stormwater that needs to be managed could be reduced through DIA. Prepare a minor stormwater site plan (see pg C-5 for requirements).

## Criteria

- Overland flow path from the discharge area or impervious area has a positive slope of 5% or less.
- Contributing area to each rooftop discharge (downspout) is 500 ft<sup>2</sup> or less.
- Soils are not classified as hydrologic soil group "D".
- The receiving pervious area shall not include another person's property unless written permission has been obtained from the affected property owner.

Partial Rooftop Disconnection		
Length of Pervious Flow Path (ft) Lots ≤ 10,000 ft <sup>2</sup>	Length of Pervious Flow Path (ft)	DIA Credit Factor
35 or more	75 or more	0
30 - 34.9	60 - 74	0.2
23 - 29.9	45 - 59	0.4
16 - 22.9	30 - 44	0.6
8 - 15.9	15 - 29	0.8
0 - 7.9	0 - 14	1.0
Pervious flow path must be at least 15 feet from any impervious surface		

**Paved Disconnection Criteria:** Paved surfaces (driveways, walkways, etc.) and gravel can be considered disconnected if it meets the criteria above and:

- Runoff does not flow over impervious area for more than 75 feet.
- The length of overland flow is greater than or equal to the contributing flow path.
- The slope of the contributing impervious areas is 5% or less.
- If discharge is concentrated at one or more discrete points, no more than 1,000 ft<sup>2</sup> may discharge to any one point. In addition, a gravel strip or other spreading device is required for concentrated discharges. Non-concentrated discharges along the entire edge of paved surface must include provisions for the establishment of vegetation along the paved edge and temporary stabilization of the area until the vegetation is established.
- If these criteria can be met, the DIA credit = 0

Using the calculations from Step 1, complete the table below. This will determine the impervious area that may be excluded from the area that needs to be managed through stormwater BMPs. If the total impervious area to be managed = 0, the area can be considered entirely disconnected.

Surface	Proposed Impervious Area	x	DIA Credit	=	Impervious Area (ft <sup>2</sup> ) to be Managed
Buildings (area to each downspout)	250		0.60		150
	120		0.80		96
	130	x	0.80	=	104
	70		0.00		0
	174		0.40		70
Driveway	540	x	1.0	=	540
Parking Areas	—	x		=	
Patios/ walkways	144	x	0.0	=	0
Other	—	x		=	
Total Proposed Impervious Surface Area to be managed (Sum of all impervious areas)					960 SF

If total surface area to be managed is greater than 0, continue to Step 3.

# Municipal Stormwater Management Worksheet

D

**Step 3:** Calculate the volume of stormwater runoff created by proposed impervious surfaces or see Simple BMP Sizing in Step 4.

Impervious Area (ft <sup>2</sup> ) to be Managed (Sum of Step 2)	X	3.0 in/12 in = 0.25 (30. in is 2-year 24-hour rainfall amount)	=	Amount of Stormwater to be Managed (ft <sup>3</sup> )
960	X	0.25	=	240

Best Management Practices need to be used to manage the volume of stormwater created by the proposed impervious areas. The cubic feet of stormwater that need to be managed may also be further reduced by planting new trees. If the criteria below can be met, the amount of stormwater to be managed can be reduced per the following:

Deciduous Trees = 6 ft<sup>3</sup> per tree

Evergreen Trees = 10 ft<sup>3</sup> per tree

Criteria:

- Trees must be PA native species (See PA Stormwater BMP Manual for a list)
- Trees shall be a minimum 1" caliper tree and 3 feet tall shrub (min)
- Trees shall be adequately protected during construction
- No more than 25% of the required capture volume can be mitigated through the use of trees
- Dead trees shall be replaced by the property owner within 12 months
- Please consider the specifications for each tree species when determining location and spacing

Amount of Stormwater to be Managed (ft <sup>3</sup> ) (Sum of Step 3)	-	Tree Planting Credit (ft <sup>3</sup> )	=	Amount of Stormwater to be Managed (ft <sup>3</sup> )
240 CF	-	3 DECIDUOUS (18) 4 EVERGREEN (40)	=	58 < $\frac{1}{4}$ OF 240 CF

∴ OKAY

**Step 4:** Select BMPs and size according to the volume of stormwater that needs to be managed. The Guide to Choosing Stormwater BMPs, included in the Simplified Approach, includes sizing calculations for specific techniques. *Simple BMP Sizing* - Sizing BMPs may also be simplified through the use of this chart. Take the sum of Step 2 and match it to the "Amount of New Impervious Area to be Managed" in white boxes in the table below (rounding up to the next value if the number is between two values). Then look in the light grey box to determine the cubic footage based on the type of BMP (bioretention or infiltration). For example, if a proposed 1,000 square foot impervious area must handle 240 cubic feet of stormwater in a bioretention system, a 13' x 13' x 1.5' rain garden or a 36' x 2' x 3.5' vegetated swale could be used. Show the location and size of proposed BMPs on the minor stormwater site plan. (The following was based on a chart from the Lycoming Co. Planning Dept)

BMP Type		Simple BMP Sizing - Amount New Impervious Area to be Managed (ft <sup>2</sup> )											
		250	500	750	1000	1500	2000	2500	3000	3500	4000	4500	5000
Bioretention	Ex. Rain garden, Vegetated swale	60	120	180	240	360	480	600	720	840	960	1,080	1,200
		or	or	or	or	or	or	or	or	or	or	or	or
Infiltration	Ex. Dry well, Infiltration trench	180	360	540	720	1,080	1,440	1,800	2,160	2,520	2,880	3,240	3,600

Bring the worksheets, plan, Owner Acknowledgement, and BMP Facilities and Maintenance Agreement (if applicable) to your municipality. If an area greater than 5,000 square feet of earth is disturbed, an erosion and sedimentation (E & S) control plan must be prepared. The municipality may require that the E&S plan be submitted to, reviewed, and approved by the Adams County Conservation District.

# Municipal Stormwater Management Worksheet

E

## OWNER ACKNOWLEDGMENT

- The minor stormwater site plan assists the owner/ applicant in preparing the necessary information for the municipality to review and approve. Development activities shall begin only after the municipality approves the plan.
- The installed BMPs will not adversely affect any other property or adversely affect any septic systems or drinking water wells on this or any other property.
- If a system alternative to the approved system is used, a revised plan will need to be submitted to the municipality for approval. If a site requires a more complex system or if problems arise, a qualified professional may be required.
- It is acknowledged that the stormwater management system is to be a permanent fixture of the property that can be altered or removed only after approval by the Township.

I (we) \_\_\_\_\_, hereby acknowledge the above statements and agree to assume full responsibility for the implementation, construction, operation, and maintenance of the proposed stormwater management facilities. Furthermore, I (we) also acknowledge that the steps, assumption, and guidelines provided in this simplified approach package will be adhered to.

Signature: \_\_\_\_\_

Date: \_\_\_\_\_

Signature: \_\_\_\_\_

Date: \_\_\_\_\_

**IV. Stormwater Management/ BMP Facilities Operation and Maintenance Agreement**

THIS AGREEMENT, made and entered into this \_\_\_\_ day of \_\_\_\_\_, 20\_\_\_\_, by and between \_\_\_\_\_ hereinafter called the "Landowner," and Hamiltonban Township, Adams County, Pennsylvania, hereinafter called the Hamiltonban Township.

WHEREAS, the Landowner is the owner of certain real property described as (Adams County Tax Map / Parcel Identification Number) \_\_\_\_\_ as recorded by deed in the land records of Adams County, Pennsylvania, Book \_\_\_\_\_ Page \_\_\_\_\_, hereinafter called the "Property";

WHEREAS, the Landowner is proceeding to build on and develop the property; and

WHEREAS, the Minor Stormwater Site Plan, which is expressly made a part hereof, as approved or to be approved by Hamiltonban Township, provides for detention of stormwater within the confines of the property through the use of Stormwater Best Management Practices (Stormwater BMPs); and

WHEREAS, Hamiltonban Township and the Landowner, its successors and assigns, agree that the health, safety, and welfare of the residents of Hamiltonban Township, require that on-site Stormwater BMPs be constructed and maintained on the Property; and

WHEREAS, Hamiltonban Township requires that on-site Stormwater BMPs as shown on the Plan be constructed and adequately maintained by the Landowner, its successors and assigns. Any additional requirements imposed by Hamiltonban Township are considered part of the Plan.

NOW, THEREFORE, in consideration of the foregoing premises, the mutual covenants contained herein, and the following terms and conditions, the parties hereto agree as follows:

1. The Landowner in accordance with the specifications identified within the Plan shall construct the onsite Stormwater BMPs.
2. The Landowner, its successors and assigns, shall adequately maintain the Stormwater BMPs. This includes all pipes and channels built to convey stormwater to the facility, as well as all structures, improvements, and vegetation provided to control the quantity and quality of the stormwater. Adequate maintenance is herein defined as good working condition so that these facilities are performing their design functions.
3. The Landowner, its successors and assigns, shall inspect the Stormwater BMPs after all rainfall events exceeding one inch of precipitation in a 24-hour period.
4. The Landowner, its successors and assigns, hereby grant permission to Hamiltonban Township, its authorized agents and employees, to enter upon the Property without prior notification at reasonable times and upon presentation of proper identification to inspect the Stormwater BMPs whenever Hamiltonban Township deems necessary.
5. In the event the Landowner, its successors and assigns, fails to maintain the Stormwater BMPs as shown on the Plan and in good working condition, Hamiltonban Township may enter upon

the Property and take whatever action is deemed necessary to maintain said Stormwater BMPs and to charge the costs of such repairs to the Landowner, its successors and assigns. This provision shall not be construed to allow Hamiltonban Township to erect any structure of permanent nature on the land of the Landowner unless such structures were part of the approved Plan. It is expressly understood and agreed that Hamiltonban Township is under no obligation to routinely maintain or repair said facilities, and in no event shall this Agreement be construed to impose any such obligation on Hamiltonban Township.

6. In the event that Hamiltonban Township, 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 Hamiltonban Township within thirty (30) days of receipt of invoice for all expenses incurred. Hamiltonban Township has the right to file a municipal lien for unpaid costs and expenses that have not been reimbursed thirty (30) days after receipt of invoice.

7. The intent and purpose of this Agreement is to ensure the proper maintenance of the Stormwater BMPs by the Landowner. This Agreement shall not be deemed to create any additional liability of any party for damage alleged to result from or be caused by nonpoint source pollution runoff. This Agreement imposes no liability of any kind whatsoever on Hamiltonban Township and the Landowner agrees to hold Hamiltonban Township harmless from any liability in the event the Stormwater BMPs fail to operate properly. In the event that a claim is asserted against Hamiltonban Township, its designated representatives or employees, Hamiltonban Township shall promptly notify the Landowner and the Landowner shall defend, at his own expense, any suit based on the claim. If any judgment or claims against Hamiltonban Township shall be allowed, the Landowner shall pay all costs and expenses regarding said judgment.

8. This Agreement shall be binding to the Landowner, its administrators, executors, assigns, heirs and any other successors in interests, in perpetuity.

**Landowner:**

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

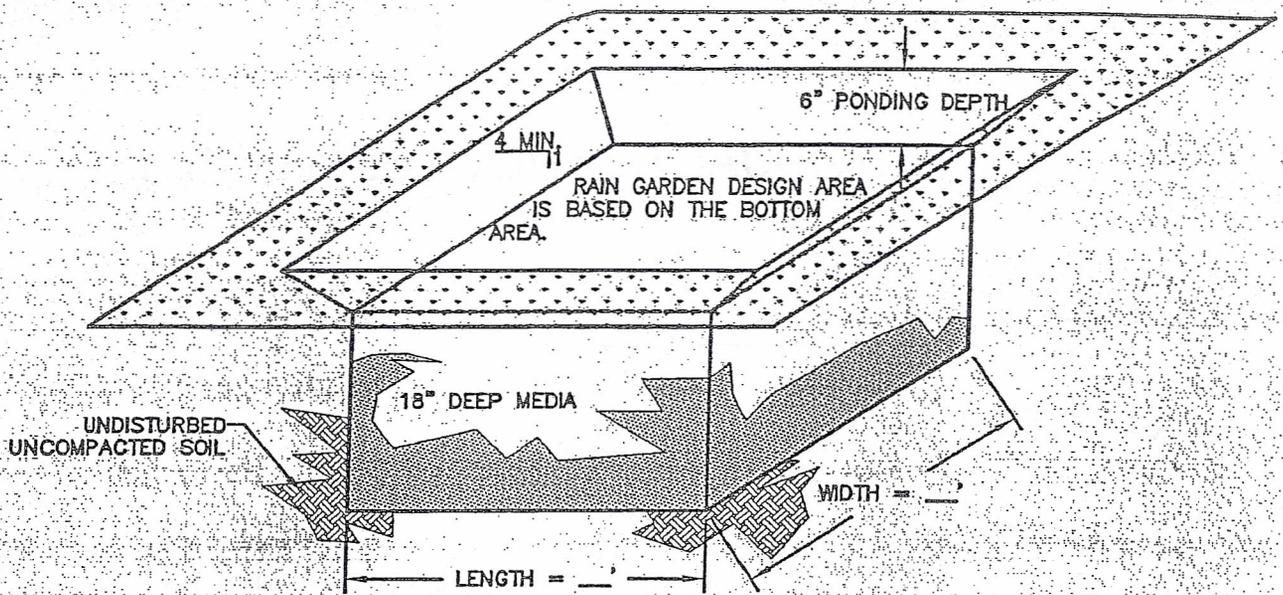
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**Hamiltonban Township:**

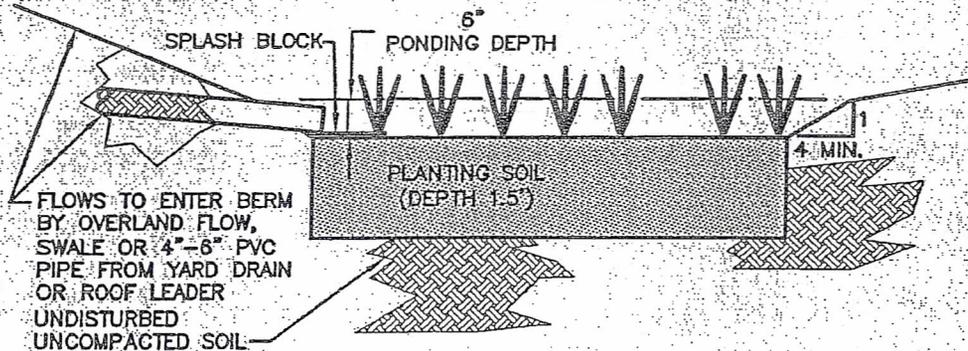
Signature: \_\_\_\_\_  
Printed Name: \_\_\_\_\_  
Title: \_\_\_\_\_

Date: \_\_\_\_\_





**DESIGN NOTE:**  
 CHOOSE LENGTH AND WIDTH TO MEET AREA REQUIREMENT PER THE BMP SIZING CHART. BERMS SHALL BE INSTALLED PARALLEL TO THE EXISTING CONTOUR SUCH THAT THE TOP OF BERM IS INSTALLED AT A UNIFORM ELEVATION.



**NOTES:**

1. PLANTING SOIL SHOULD BE A SANDY LOAM, LOAMY SAND, LOAM (USDA), OR A LOAM/SAND MIX. RATIO FOR RAIN GARDEN SOIL MIX SHOULD CONTAIN AN APPROXIMATE RATIO OF 50% SAND, 30% COMPOST AND 20% NATIVE SOILS
2. THE SOILS SHALL BE FREE OF STONES, STUMPS, ROOTS OR OTHER WOODY MATERIAL OVER 1" IN DIAMETER.
3. BRUSH OR SEEDS FROM NOXIOUS WEEDS SHALL NOT BE PRESENT IN THE SOILS.
4. PLACEMENT OF THE PLANTING SOIL SHOULD BE IN 9" LIFTS THAT ARE LOOSELY COMPACTED.
5. BIO-RETENTION AREA MUST BE PROTECTED FROM EROSION/SEDIMENTATION DURING CONSTRUCTION.
6. WET PLANTINGS IN RAIN GARDEN SHOULD BE NATIVE TO PA. DIRECTION FOR PLANTING SCHEDULE AND DENSITY BASED ON SITE CONDITIONS (SUN/SHADE/APPEAL) CAN BE OBTAINED FROM THE ADAMS COUNTY CONSERVATION DISTRICT
7. SUBGRADE IN THE RAIN GARDEN BOTTOM SHOULD NOT BE COMPACTED. IF THE SUBGRADE BECOMES COMPACTED FOR ANY REASON, IT SHALL BE SCARIFIED PRIOR TO SOIL PLACEMENT
8. IN BOROUGH'S WHERE INFILTRATION MAY BE IMPOSSIBLE DUE TO SOIL CONDITIONS OR BASEMENTS, IT IS RECOMMENDED THAT A 60 MIL HDPE POND LINER BE INSTALLED ALONG WITH 30" OF PLANTING SOIL MEDIA.

**RAIN GARDEN**  
 N.T.S.

**SIMPLIFIED APPROACH STANDARD DETAIL**

**RAIN GARDEN**

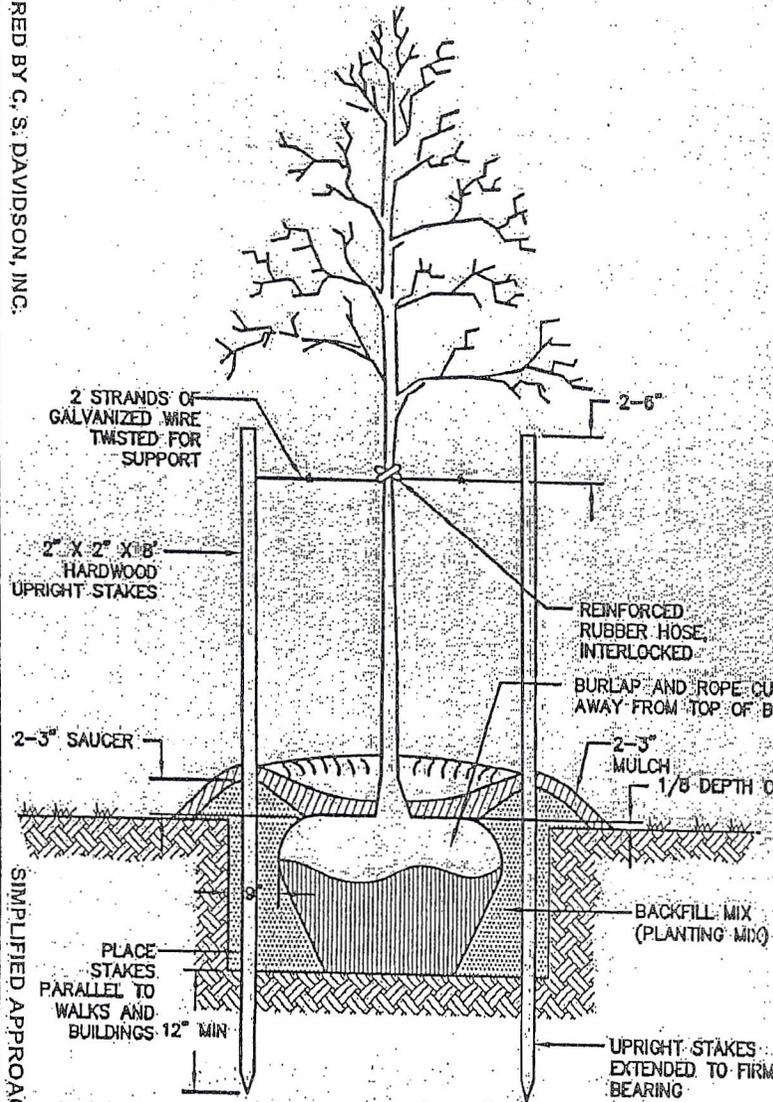
# SIMPLIFIED APPROACH STANDARD DETAIL TREE PLANTING

ADAMS COUNTY, PENNSYLVANIA

DRAWING PREPARED BY G. S. DAVIDSON, INC.

SIMPLIFIED APPROACH DETAILS.dwg  
DATE: JULY 2012

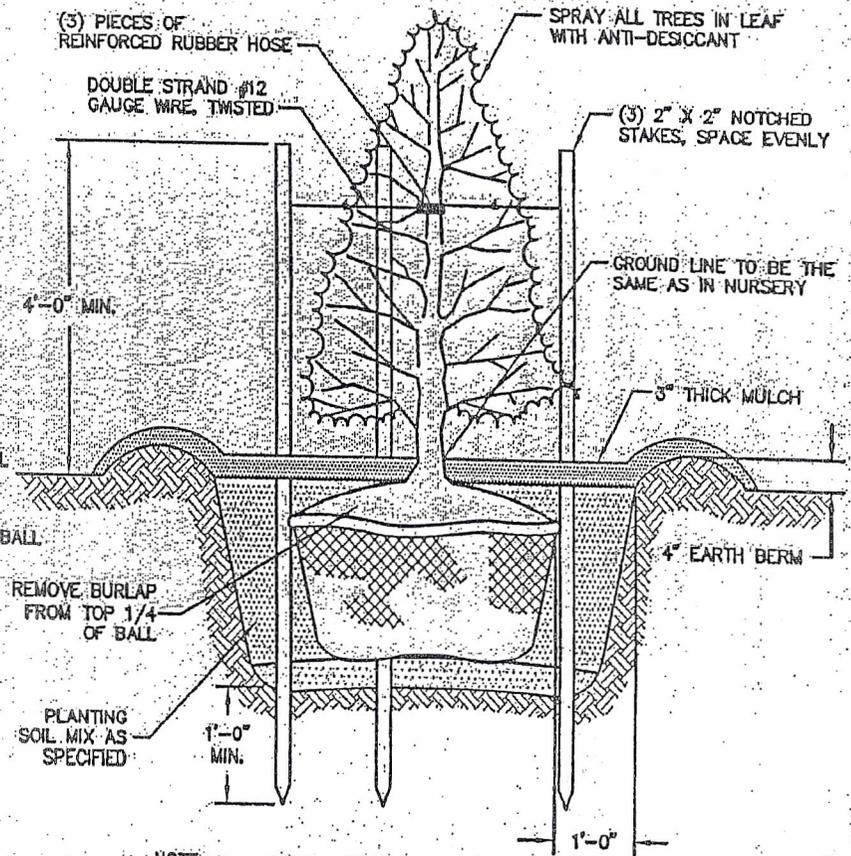
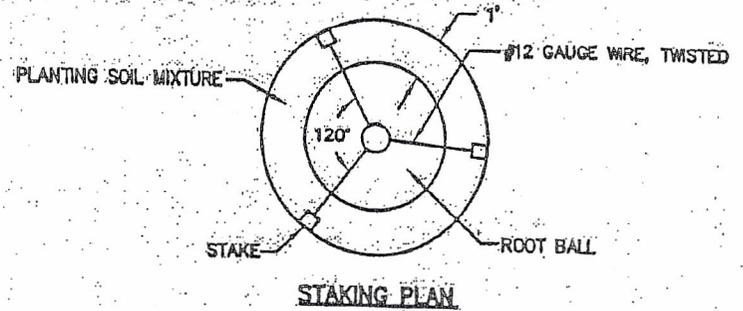
**DESIGN NOTE:**  
TREES MUST BE PA-NATIVE SPECIES, A MINIMUM OF 1" CALIPER. DEAD TREES SHALL BE REPLACED BY PROPERTY OWNER WITHIN A MINIMUM OF 12 MONTHS. NO MORE THAN 25% OF VOLUME REQUIREMENT CAN BE TAKEN FOR TREE PLANTING.



- NOTES:**
1. SPRAY ALL TREES IN LEAF WITH ANTI-DESSICANT PRIOR TO PLANTING.
  2. FLOOD SAUCER WITH WATER TWICE WITHIN 24 HOURS OF PLANTING.

**DECIDUOUS TREE PLANTING DETAIL**

N.T.S.



- NOTE:**
1. FLOOD SAUCER WITH WATER TWICE WITHIN 24 HOURS OF PLANTING.

**EVERGREEN TREE PLANTING DETAIL**

N.T.S.

DRAWING PREPARED BY G. S. DAVIDSON, INC.

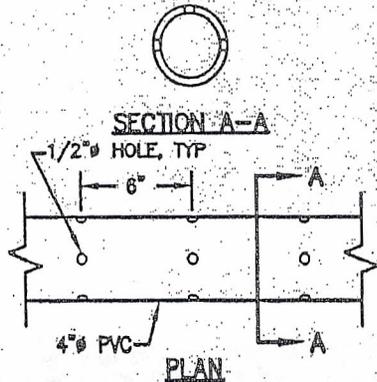
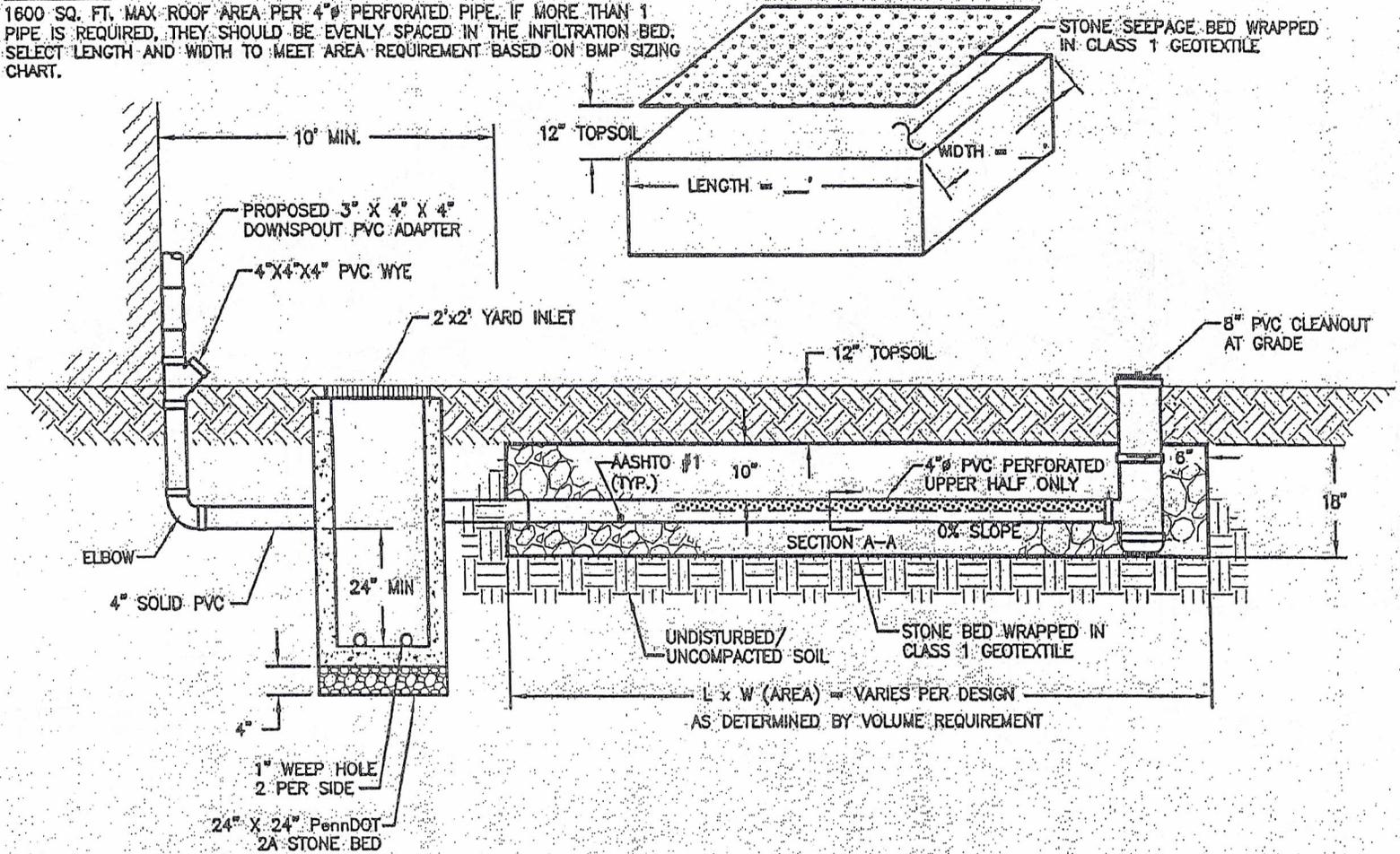
SIMPLIFIED APPROACH STANDARD DETAIL

INFILTRATION BED

SIMPLIFIED APPROACH DETAILS.dwg

DATE: JULY 2012

**DESIGN NOTE:**  
 1600 SQ. FT. MAX. ROOF AREA PER 4" PERFORATED PIPE. IF MORE THAN 1 PIPE IS REQUIRED, THEY SHOULD BE EVENLY SPACED IN THE INFILTRATION BED. SELECT LENGTH AND WIDTH TO MEET AREA REQUIREMENT BASED ON BMP SIZING CHART.



**NOTES:**

1. INFILTRATION PITS TO BE INSTALLED IN UNDISTURBED SOIL.
2. SUBGRADE BELOW THE INFILTRATION PIT SHOULD NOT BE COMPACTED. IF THE SUBGRADE BECOMES COMPACTED FOR ANY REASON, THE SOIL SHALL BE SCARIFIED PRIOR TO CONSTRUCTING THE BED.
3. SEDIMENT ACCUMULATION SHALL BE MONITORED SEASONALLY.
4. WHEN SEDIMENT ACCUMULATES TO A DEPTH OF 18" IN THE YARD BASIN, IT SHALL BE REMOVED.

**TYPICAL INFILTRATION BED DETAIL**

N.T.S.

DRAWING PREPARED BY C. S. DAVIDSON, INC.

SIMPLIFIED APPROACH DETAILS.dwg

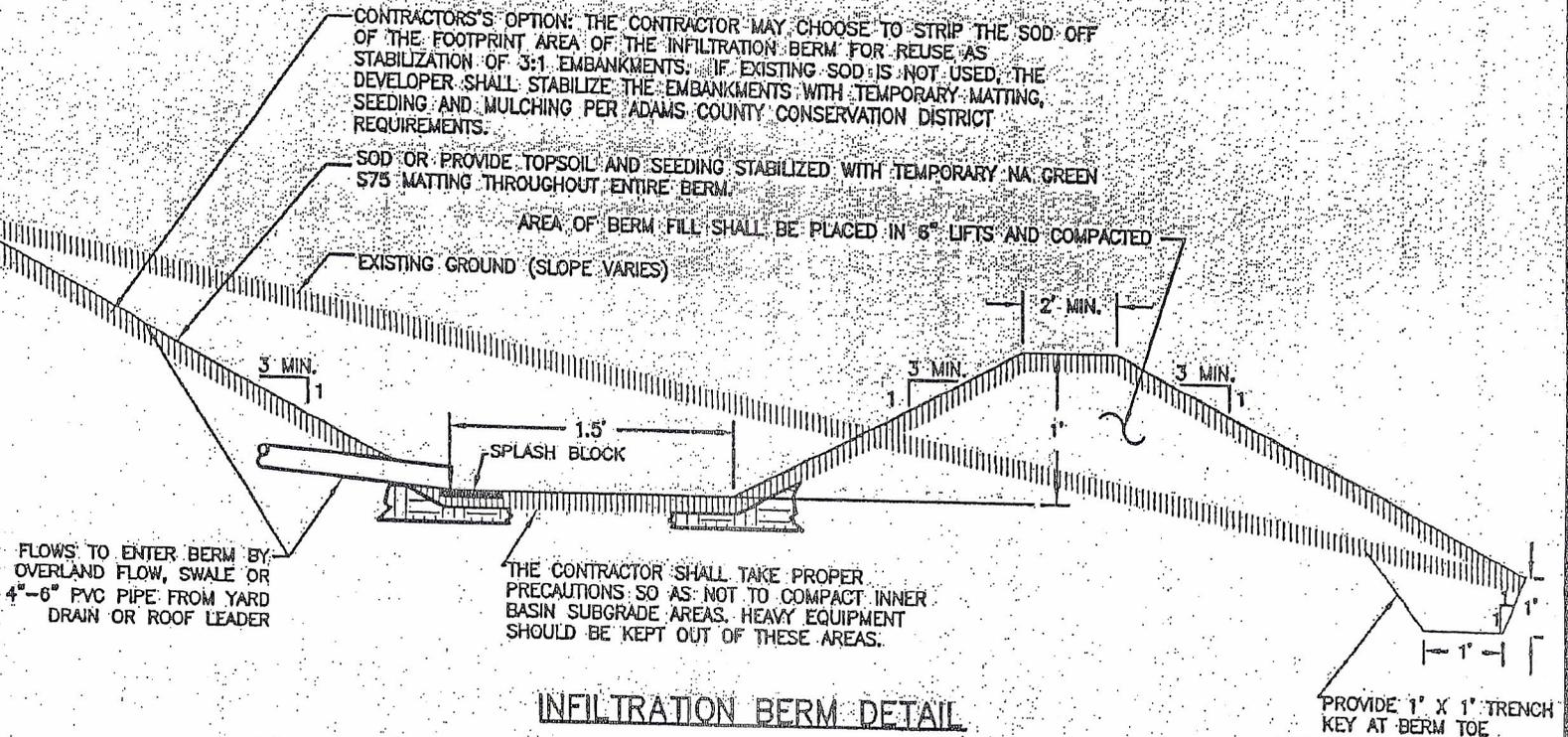
DATE: JULY 2012

# SIMPLIFIED APPROACH STANDARD DETAIL INFILTRATION BERM

ADAMS COUNTY, PENNSYLVANIA

### DESIGN NOTE:

HOME OWNER TO CHOOSE LENGTH OF THE BERM REQUIRED BASED ON THE VOLUME REQUIRED PER THE BMP SIZING CHART. BERMS SHALL BE INSTALLED PARALLEL TO THE EXISTING CONTOUR SUCH THAT THE TOP OF BERM IS INSTALLED AT A UNIFORM ELEVATION.



## INFILTRATION BERM DETAIL

### NOTES:

(N.T.S.)

1. REMOVE TOPSOIL IN AREA OF INSTALLATION OF BERM AND STOCKPILE ABOVE. PERFORM EXCAVATION OF SUBGRADE OVER EXCAVATING BERM BY 8" AND REPLACE WITH STOCKPILED SOIL.
2. SOIL IN THE INFILTRATION BERM BOTTOM SHOULD NOT BE COMPACTED. IF THE SUBGRADE BECOMES COMPACTED FOR ANY REASON, THE SOIL SHALL BE SCARIFIED PRIOR TO SEEDING.
3. SEDIMENT ACCUMULATION SHALL BE MONITORED SEASONALLY.
4. WHEN SEDIMENT ACCUMULATES TO A DEPTH OF 3" IN THE BERM, IT SHALL BE REMOVED.
5. BERM SOILS SHALL BE FREE OF STONES, STUMPS, ROOTS OR OTHER WOODY MATERIAL OVER 1" IN DIAMETER.
6. BERMS SHALL BE KEPT FREE FROM NOXIOUS WEEDS AND INVASIVE SPECIES
7. BERMS SHOULD BE MOWED ANNUALLY OR BIANNUALLY

# SIMPLIFIED APPROACH STANDARD DETAIL INFILTRATION TRENCH

ADAMS COUNTY, PENNSYLVANIA

DRAWING PREPARED BY C. S. DAVIDSON, INC.

SIMPLIFIED APPROACH DETAILS.dwg

DATE: JULY 2012

