Carroll County Policy
Stormwater Management for Agricultural Buildings

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In November 2014, the Maryland Department of the Environment published "Agricultural Practices and Agricultural Structures, Erosion and Sediment Control, Stormwater Management and NPDES Permit Guidance". (Agricultural Structures Guidance) which clarifies the applicability of state and local stormwater management and sediment control laws and ordinances to agricultural practices and structures.

Carroll County created this policy to aid production agriculture in complying with the MDE document. Except where noted, all references are to that document.

The following table from page 6 of the Agricultural Structures Guidance shows the applicable regulatory requirements.

Table 1

Agricultural Practices and Agricultural Structures
Erosion and Sediment Control, Stormwater Management, and
NPDES Stormwater Permit Requirements

Activity*	Erosion and Sediment Control Required	Stormwater Management Required	NPDES General Permit for Construction Activity Required
Agriculture Practices**			
●<5000 square feet	No	No	No
●5000 sq. ft. to 1 acre	No	No	No
●>1 acre	No	No	No
Agricultural Structures			
●<5000 square feet	No	No	No
●5000 sq. ft. to 1 acre	No	Yes	No
●>1 acre	Yes	Yes	Yes***

"Activity" refers to the area disturbed during construction and operation and may include access roads, staging areas, parking areas, etc. All small land disturbing activities need to be considered when determining appropriate controls.

***Provided that the practice is part of a farm's Soil Conservation and Water Quality Plan and the appropriate Soil Conservation District (SCD) has reviewed and approved the practice to be used.*

****A Notice of Intent (NOI) is to be submitted to MDE for permit coverage.*

Definition:

This Carroll County policy only applies to agricultural structures and appurtenant paved surfaces that are defined as follows:

"*A building that is integral to the operation of the farm it is built on and is used for:*

1. *The storage of equipment or materials used on the farm;*
2. *The storage of the farm's products; or*
3. *The basic processing of farm products including cutting, drying, and packing necessary to store and market these products."*

"Examples of structures meeting this definition include barns for hay and equipment storage, livestock production and shelter buildings, milking operations, etc. These agricultural structures are considered integral to the operation of the farm."

This Carroll County policy does not apply to:

"Construction of structures disturbing land area of 5,000 square feet or more whose primary purpose is to support commercial or industrial activities. [These structures are] not exempt from State erosion and sediment control and stormwater management requirements. Commercial and industrial activities include, but are not limited to: retail sales operations, processing operations that produce wastewater, and facilities with public parking areas and access roads."

Any structure of this type must have a site plan and pass through the normal erosion and sediment control and stormwater management reviews, approvals, bonding and as-built process, per state law and the Code of Public Local Laws of Carroll County.

Application

If the farm contains less than 15% impervious surfaces "on site", Environmental Site Design to the Maximum Extent Practical (ESD to the MEP) can be achieved by providing water quality treatment for the first 1" of runoff from all the impervious surfaces within the limit of disturbance. In effect, additional structures on an existing farm can be treated as redevelopment per §151.019 of the Carroll County Maryland Code of Public Local Laws and Ordinances.

Of course, if downstream drainage/erosion or flooding problems exist or may be created per §151.035 A(3) *The county may require more than the minimum control requirements specified in this chapter if downstream flooding problems or danger to health and safety or damage to property or the environment exist or may be created by runoff from the development. When the county determines that there are existing buildings within the floodplain or undersized hydraulic structures immediately downstream of a project, management of the runoff from the 25-, 50-, and 100 year-design storm events or greater will be required as appropriate.*

Therefore, when a new agricultural building is proposed on an existing farm, please:

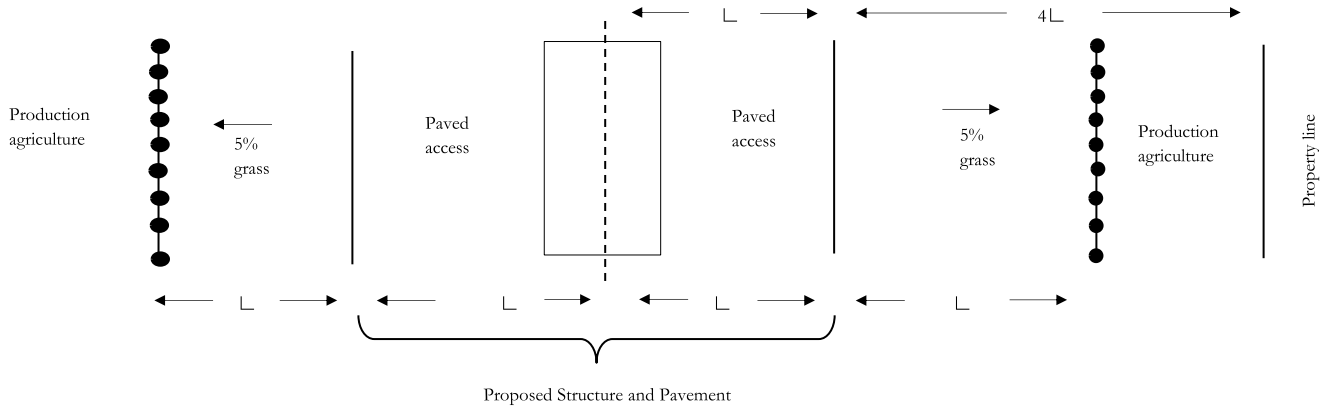
1. Determine whether this policy applies. Pay particular attention to make sure that the building is not intended for "open to the public" activities. It must be for farm not commercial purposes as defined above.
2. Determine if there are less than 15% impervious surfaces on the property.
3. Determine the drainage area and percentage impervious at the property line where runoff from the proposed building leaves the farm.
4. Which of the following scenarios is your project most similar too? Follow the specified procedure.

Scenario 1

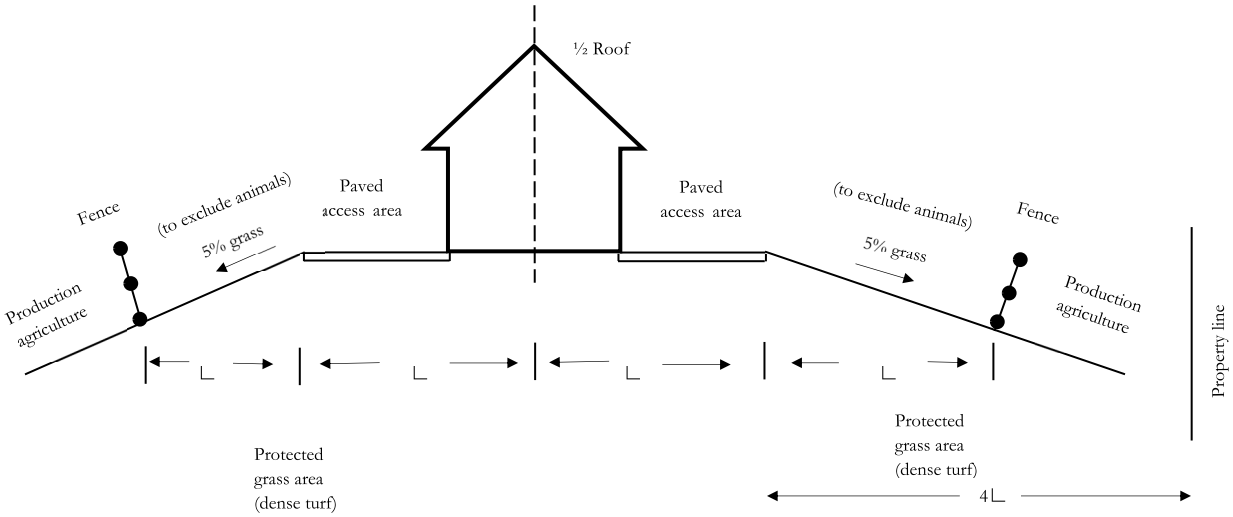
(Stormwater Management through Grading and Vegetation)

If the proposed agricultural building is at least 4 times the roof/paved access area width away from the nearest property line and there is no existing drainage/erosion/flooding problems at the property line provide a protected (fenced) grass area along the paved access at a grade of 5% or less equal in width to the roof/paved area. This satisfies the water quality needs for stormwater management with reasonable assurance that quantity control should not become an issue.

Plan View



Profile View



Submittal Needs

1. Aerial photography with building sited and contours.
2. Cross section shown as above with dimensions.
3. Site visit (contact Myron Frock at 410-386-2211).

Example

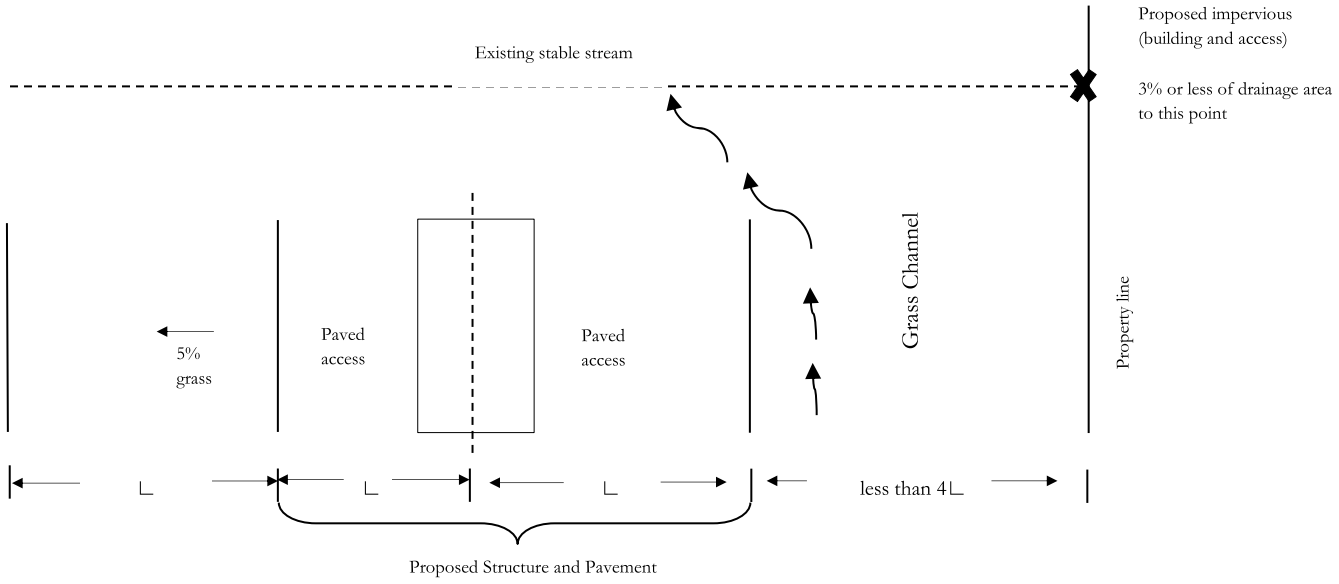
Scenario 2

(Stormwater Management through Adequate Grass Channels)

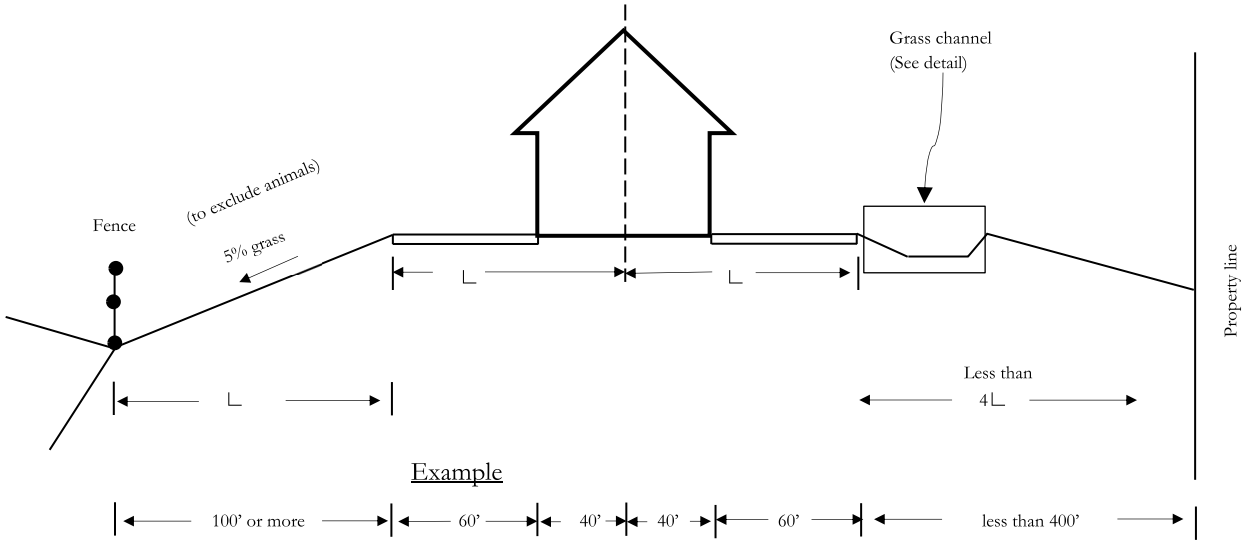
If the proposed agricultural building drains onto another property that is less than 4 times the length of the contributing impervious area away from the impervious area, runoff may be collected in a grass channel parallel to the building, that meets the stormwater management criteria and discharges via a stable watercourse at a point where the proposed building and paved access is 3% or less of the drainage area.

The grassed channel must be designed and submitted to Carroll County for stormwater management review and approval.

Plan View



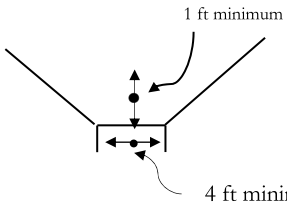
Profile View



Building & pavement = .91 acres

DA to property line = more than 31 acres

Grass channel detail



4:1 side slopes or flatter

4 ft minimum width grass

1% slope along building
1 ft/sec at peak of 1 inch storm in the ditch parallel to the building
4 ft/sec at peak of 10 year storm everywhere
10 year storm contained in the channel everywhere

Submittal Needs:

Same as Scenario 1 plus:

1. Drainage area map (on aerial) with total limit of disturbance and total drainage area to property line shown.
2. Cross section and profile of proposed channel with drainage area and calculations proving that the 1 inch rainfall runoff velocity is less than 1 ft./sec. (per 5.14 of the design manual). Note: The 1 inch rainfall discharge can be approximated by:

$$Q\ {}^{ft^3}/_{sec} = Ia\ (ft^2) \times \frac{1\ (in)}{2\left({}^{in}/_{ft}\right)} \div 1800 \text{ seconds}$$

Where Ia = impervious area draining to grassed channel in ft^2
1800 seconds are ½ hour. This approximation is based on the assumption that the water quality event is a summer thunderstorm.

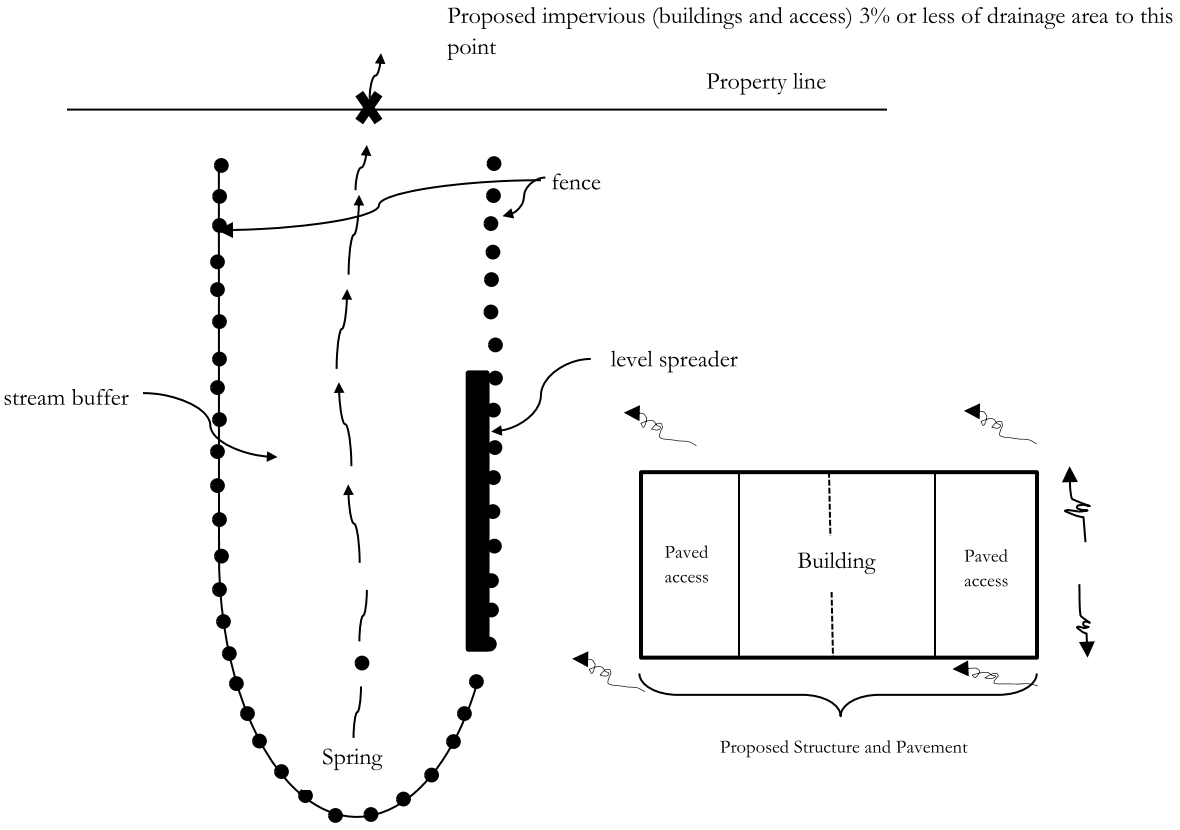
Scenario 3

(Stormwater Management through Sheet Flow to Stream Buffer)

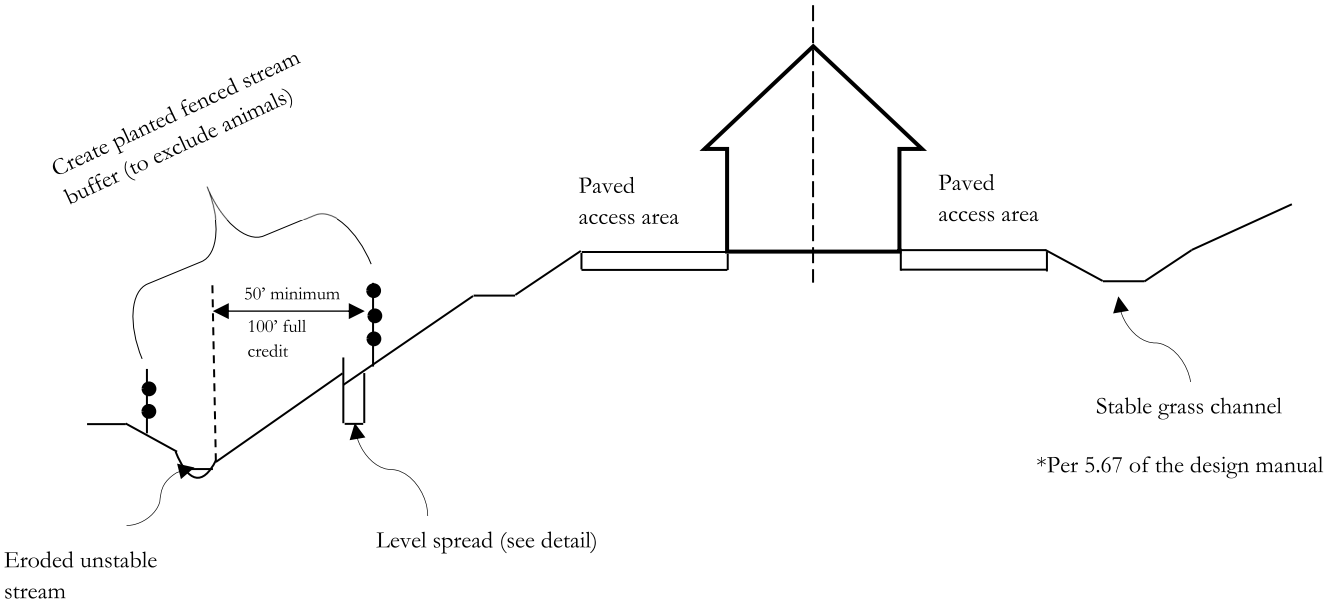
This applies if the proposed agricultural building drains into an onsite existing stream that discharges via a stable water course at a point where the proposed building and paved access is 3% or less of the drainage area, but the channel is unstable. To provide stormwater management, create a protected (fenced) stream buffer with an adequate level spreader just inside the fence and stable (non-eroding) grass channels to direct all runoff to the level spreader.

The buffer/level spreader must be designed and submitted to Carroll County for stormwater management review and approval.

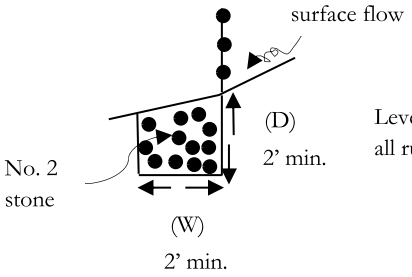
Plan View



Profile View



Level Spreader Detail



Level spreader must be long enough to intercept all runoff from the proposed building.

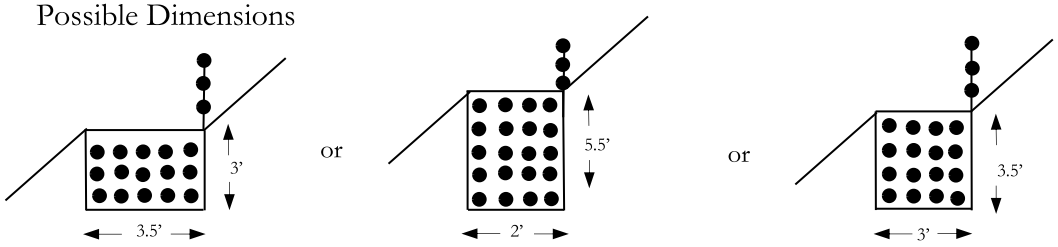
Example 1

Building & pavement = .91 acres
DA to property line = more than 31 acres

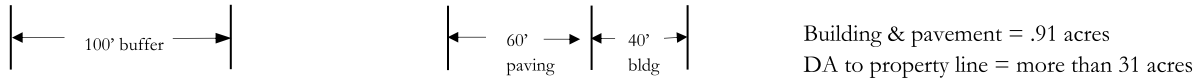
50' of buffer provides ½" of water quality from the contributing impervious surfaces (up to 100' of impervious). The remaining ½" of water quality must be provided in an expanded level spreader.

$$100\ {}^{ft}/_{ft} \times \frac{1}{2}\ \text{in.} \times \frac{1\ \text{ft}}{12\ \text{in}} \div 0.4\ \text{void ratio} = 10.4\ \frac{ft^2}{ft}$$

Possible Dimensions



Example 2



100' of buffer provides 1" of water quality from the contributing impervious surfaces (up to 100' of impervious) install the minimum 2' x 2' level spreader.

Submittal Needs:

Same as Scenario 2 plus:

1. Drainage area map (on aerial) with stream buffer and level spreader shown.
2. Calculations showing that the combination of stream buffer and level spreader is wide enough to treat the first 1" of runoff from the proposed structure and paving and long enough to capture it.

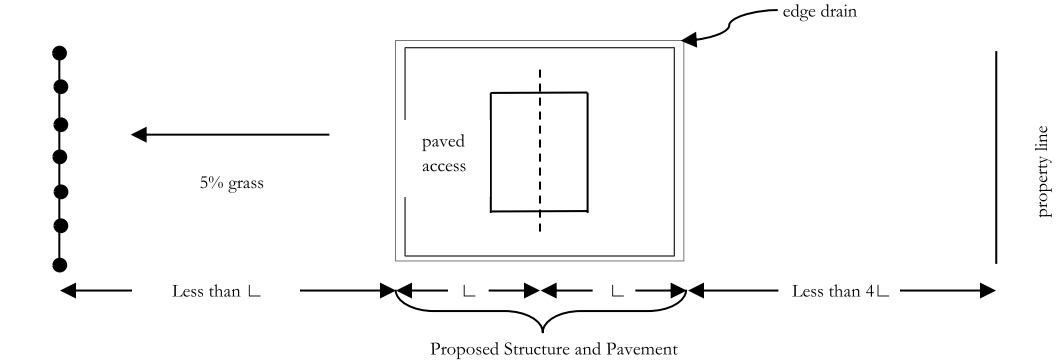
Scenario 4

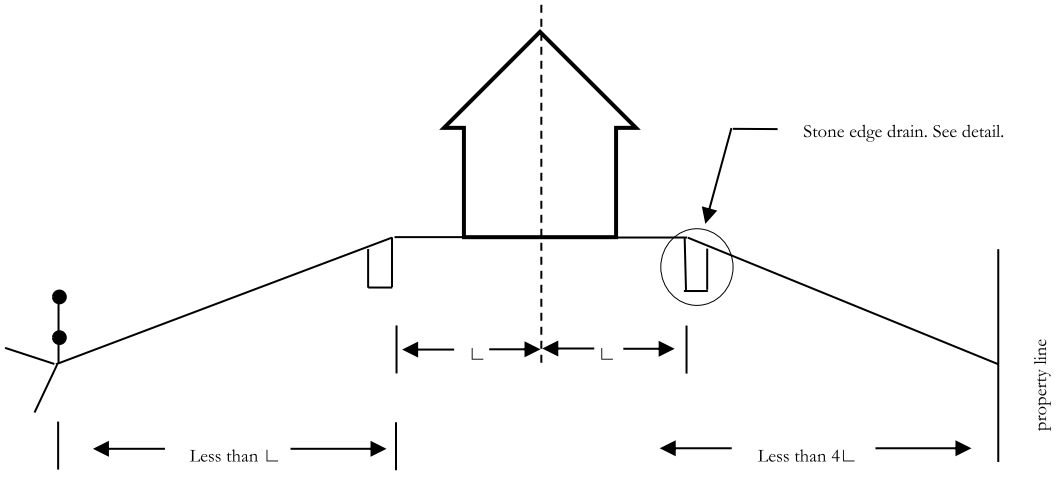
(Stormwater Management Quantity (Flood) Control)

If the runoff from the proposed agricultural building and paved access cannot be treated by grading and vegetation (scenario 1) or drains off the property at a point where it makes up more than 3% of the drainage area (scenarios 2 and 3) full stormwater management is required for at least the first 2.5" of runoff from all onsite impervious.

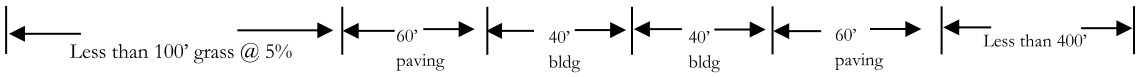
If the site contains "B" or "C" (infiltratable) soils, a stone edge drain can be designed and submitted to Carroll County for stormwater management review and approval.

Plan View





Example

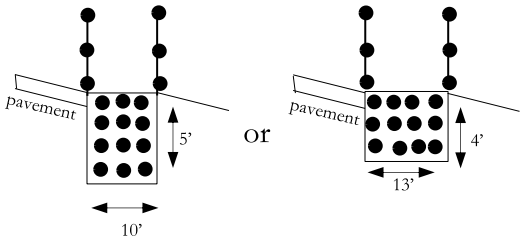


Building & pavement = .91 acres
DA to property line = less than 31 acres

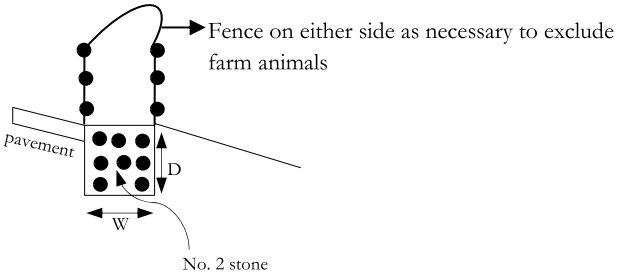
Edge Drain (for stormwater management)

$$100\frac{ft^2}{ft} \times 2.5 \text{ in.} \times \frac{1 \text{ ft}}{12 \text{ in}} \times \frac{1}{0.4 \text{ (void ratio)}} = 52 \frac{ft^2}{ft}$$

Dimensions



Stone Edge Drain Detail



Stone edge drain must be parallel to the proposed building/paved area to intercept all runoff from the impervious surfaces, extend around each end and close on itself.

<u>Submittal Needs:</u>

1. Aerial photography with building sited and contours.
2. Cross section shown as above with dimensions.
3. Site visit (contact Myron Frock at 410-386-2211).
4. Stone edge drain detail with calculations and dimensions.