MANAGING STORM DRAINAGE ON SMALL SITES
The "Small Parcel Stormwater Site Plan"

A "Small Parcel" is a development that disturbs less than an acre and contains more than 2,000 square feet of new roof, paving, gravel or parking area.

1) When is a "Small Parcel Stormwater Site Plan" required?
A "Small Parcel Stormwater Site Plan" is required whenever a building application is made for residential development with more than 2,000 square feet of new roof, paving, gravel, or parking area.
2) Why is this required?
The goals of the stormwater site plan are to protect water quality, reduce water run-off, and to prevent erosion.

3) What is required?
A Small Parcel Stormwater Site Plan comprised of the following three parts should be part of your building permit application.

a) A written description of the proposed stormwater management features. (Example **A**)
b) A small parcel "Erosion & Sediment Control (ESC) Plan" for use during construction. (Example **B**)
c) A "Residential Site Improvement Plan" which shows how stormwater runoff will be controlled after construction. (Example **C**)

4) What do I need to do to control erosion during construction?
In most cases, erosion is controlled by clearing only what is necessary, working during the dry season, stabilizing the construction entrance (Handout **D**), and using silt fencing to trap sediment and prevent erosion by running water. (Handout **E & F**)

The "Erosion and Sediment Control (ESC) Plan" (Handout **B**) shows how you intend to control silt and erosion. The County will review your plan and the written description (Handout **A**) as part of your permit review.

You will be responsible for controlling erosion and silt as you show on the "Erosion & Sediment Control Plan" as soon as you begin clearing the site and exposing soil.

Proof that your plan is working is that there should be no muddy water running off your site when it rains.

5) What do I need to do to control run-off after construction?
In most cases, controlling run-off from roofs and any paved or graveled areas can reduce water run-off from your property. Surface run-off from these areas can be directed to vegetated dispersion areas (Handouts **G, H, I & J**), or infiltration features (Handouts **K & L**). For unusual cases, if the recommended surface runoff or infiltration applications will not work, other alternatives will be considered for approval by the Building Department in consultation with Public Works Engineering.

The "Residential Site Improvement Plan" (Example **C**) shows how you intend to control water run-off when your project is built. The County will review your plan and the written narrative (Example **A**) as part of your permit submittal and review. You will be responsible for installing the control measures before you can get final occupancy approval on your permit.

Note: *The attached examples and handouts are for illustrative purposes. See applicable regulations for details.*

EXAMPLE "A"
SMALL PARCEL STORMWATER SITE PLAN
WRITTEN DESCRIPTION

Marlene McResident
Mason County Tax Parcel No. 12321 50 00010

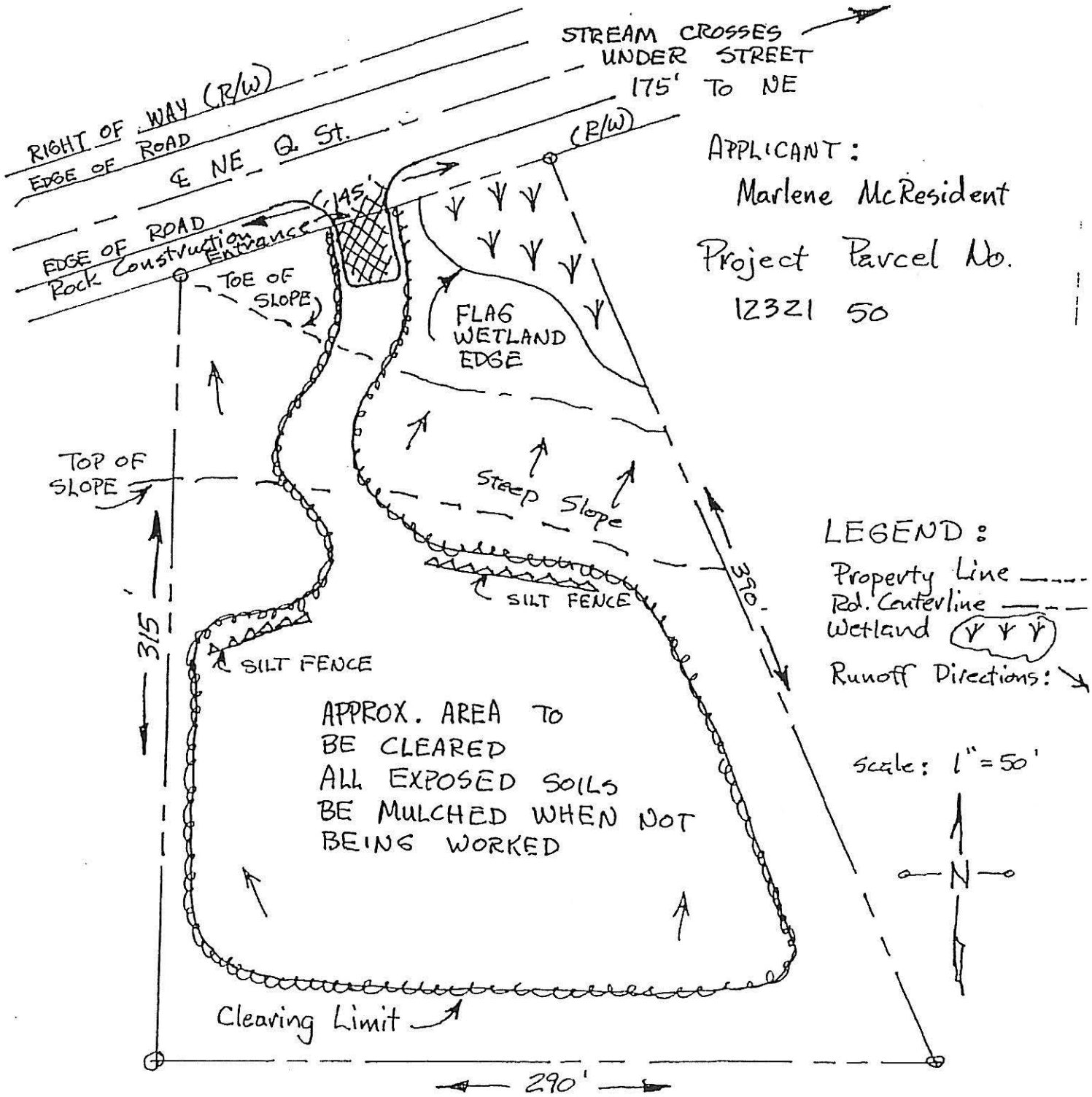
The site is located east of Shelton on a 1.69-acre lot. The lot is forested with a pond and wetland at the base of a steep (greater than 40%) slope on the east side of the property. The site slopes northerly towards the road. The slope on the west side of the property is moderate (15-40%). Approximately two-thirds of the site (the southerly portion) will be cleared. Trees and other native vegetation will be left intact along the northern edge, near the road. Neither the wetland/buffer nor the slopes (except for the driveway construction) will be disturbed. The driveway will traverse the more moderate slope with the proposed house approximately 100 feet from the top of the slope. The driveway will be approximately 10 feet by 180 feet (1,800 square feet) of impervious surfaces, the parking area 1,300 square feet, and the house 3,750 square feet. The total proposed impervious surface is 6,850 square feet, which fall within the limits for Small Parcel Drainage Review.

All stormwater flows will be dispersed through vegetation. To avoid saturating soils near the foundation of the house, roof runoff will be directed towards vegetated flow paths via downspout extensions. An onsite septic system is proposed. All small parcel drainage facilities will be located downhill of the septic tank and drainfields. The upper portion of the driveway is relatively flat. Therefore, runoff from this area can simply be allowed to sheet flow to the west side towards the existing swale and away from steeper slopes. The lower portion of the driveway is fairly steep. Runoff will be collected using small berms that will direct runoff to dispersion trenches with a 25-foot vegetated flow path. This will prevent concentration of the runoff onto the slopes and will prevent water from running out of the driveway and into the road.

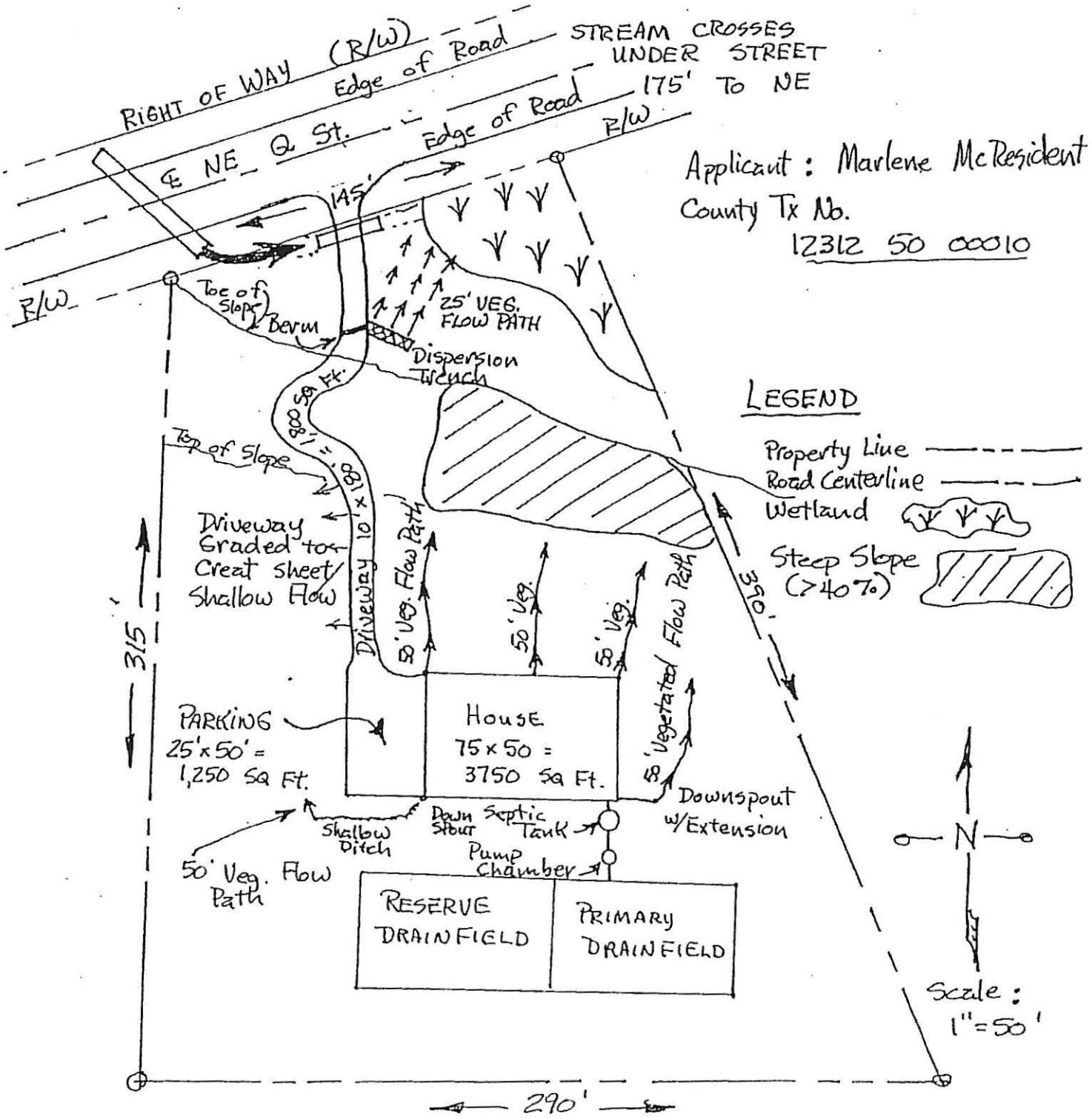
In order to prevent erosion and trap sediments within the project site, the following **B**est **M**anagement **P**ractices (**BMP**s) will be used approximately as shown on the **E**rosion and **S**ediment **C**ontrol (**ESC**) plan:

- Clearing limits will be marked by fencing or other means (ribbons) on the ground.
- The driveway will be constructed and graveled immediately. Dispersion trenches shall be placed according to flow control requirements. Areas accepting sheet flow from the driveway and parking area (that are not being left in native vegetation) will be seeded and mulched.
- Water will not be allowed to point discharge onto slopes. A rock-lined ditch will intercept and direct water from the steeper portions of the driveway down to the dispersal trench at the bottom of the slope.
- Silt fencing will be placed at the lower edge of the clearing in the vicinity of both the wetland and the slopes.
- A rocked construction entrance will be placed at the end of the driveway.
- Mulch will be spread over all cleared areas of the site when they are not being worked. Mulch will consist of air-dried straw and chipped site vegetation.

EXAMPLE "B"
EROSION and SEDIMENT CONTROL (ESC) PLAN

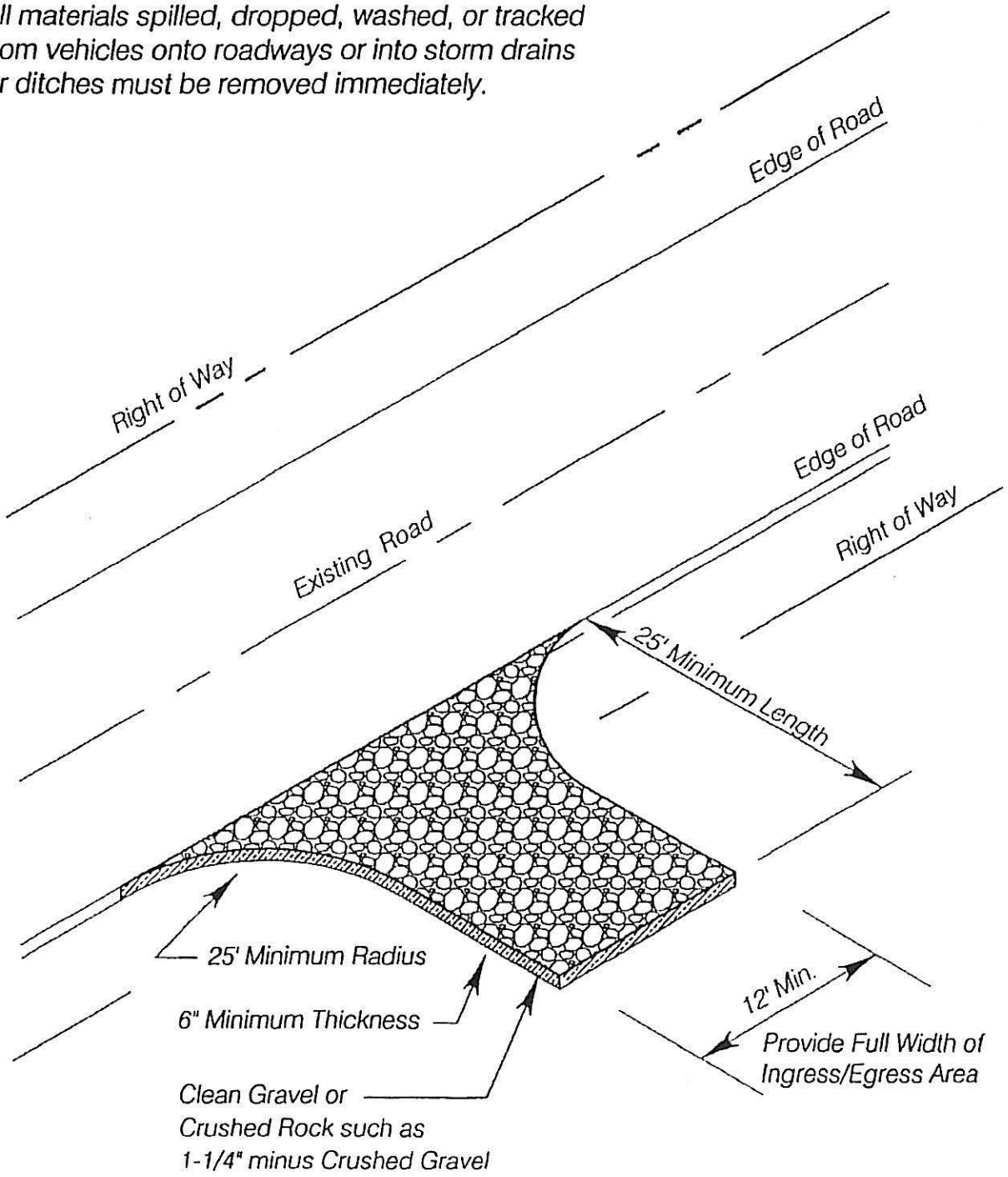


EXAMPLE "C"
RESIDENTIAL SITE IMPROVEMENT PLAN



HANDOUT "D
STABILIZED CONSTRUCTION ENTRANCE

The entrance shall be maintained in a condition which will prevent tracking or flow of mud onto Public rights-of-way. This may require periodic top dressing with additional clean gravelly material. All materials spilled, dropped, washed, or tracked from vehicles onto roadways or into storm drains or ditches must be removed immediately.



HANDOUT "E
SILT FENCE

Purpose

Use of a silt fence reduces the transport of coarse sediment from a construction site by providing a temporary physical barrier to sediment and reducing the runoff velocities of overland flow. See Figure 4.20 for details on silt fence construction.

Conditions of Use

- Silt fence may be used downslope of all disturbed areas.
- Silt fence is not intended to treat concentrated flows, nor is it intended to treat substantial amounts of overland flow. Any concentrated flows must be conveyed through the drainage system to a sediment pond. The only circumstance in which overland flow can be treated solely by a silt fence, rather than by a sediment pond, is when the area draining to the fence is one acre or less and flow rates are less than 0.5 cfs.
- Silt fences should not be constructed in streams or used in V-shaped ditches. They are not an adequate method of silt control for anything deeper than sheet or overland flow.

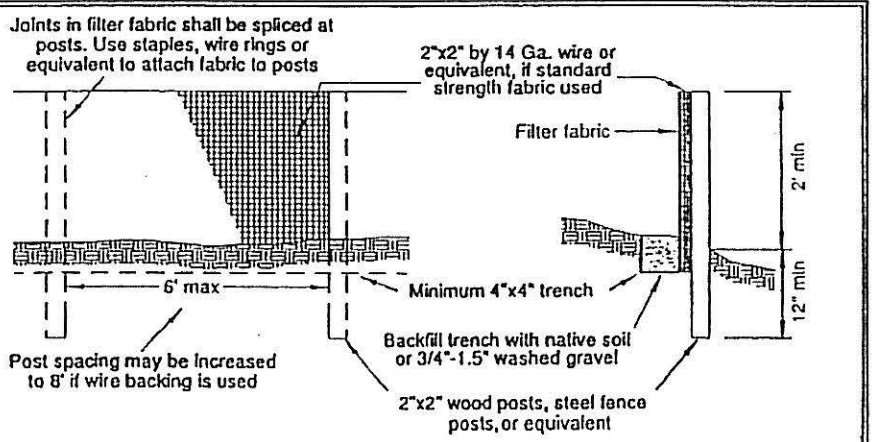


Figure 4.20 – Silt Fence

Design and Installation Specifications

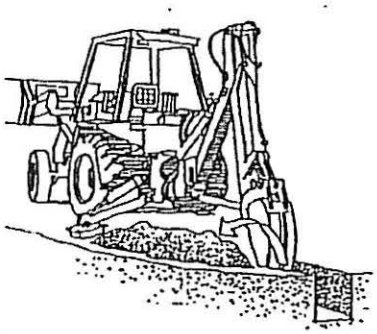
- Drainage area of 1 acre or less or in combination with sediment basin in a larger site.
- Maximum slope steepness (normal (perpendicular) to fence line) 1:1.
- Maximum sheet or overland flow path length to the fence of 100 feet.

HANDOUT "F
SILT FENCE INSTALLATION AND MAINTENANCE

Maintenance

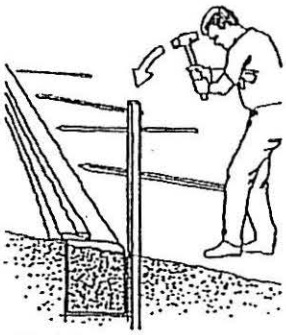
Fencing must be inspected regularly for damage. Silt fencing does break down under UV light. Sediment collected behind the fence must be removed so that this material does not push the fence over.

SILT FENCE INSTALLATION AND MAINTENANCE

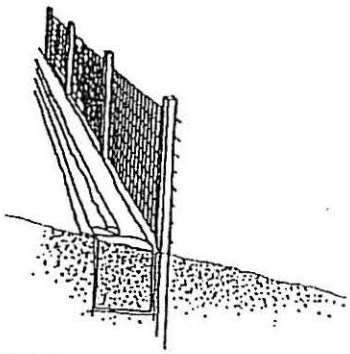


Dig trench

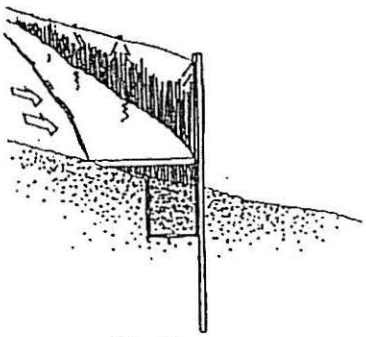
Toe-in-fabric



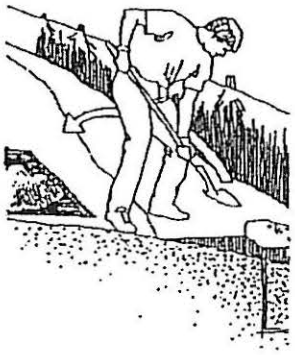
Stake



Reinforce

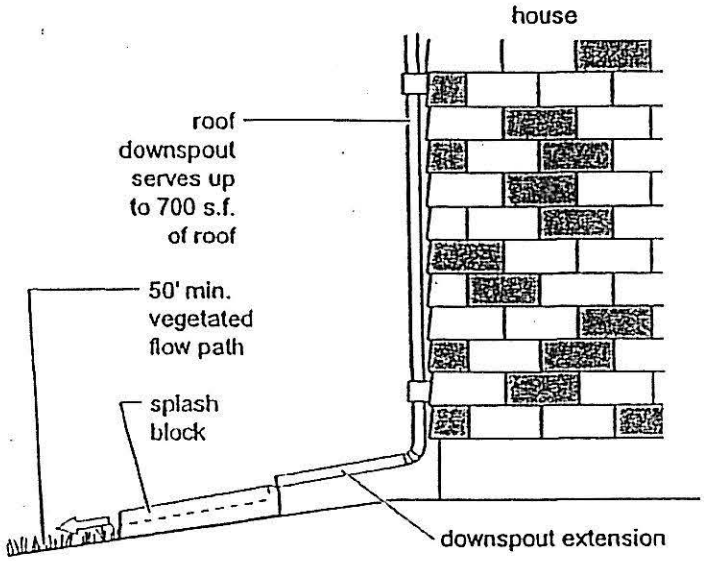


Monitor

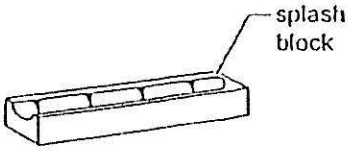


Maintain and clean

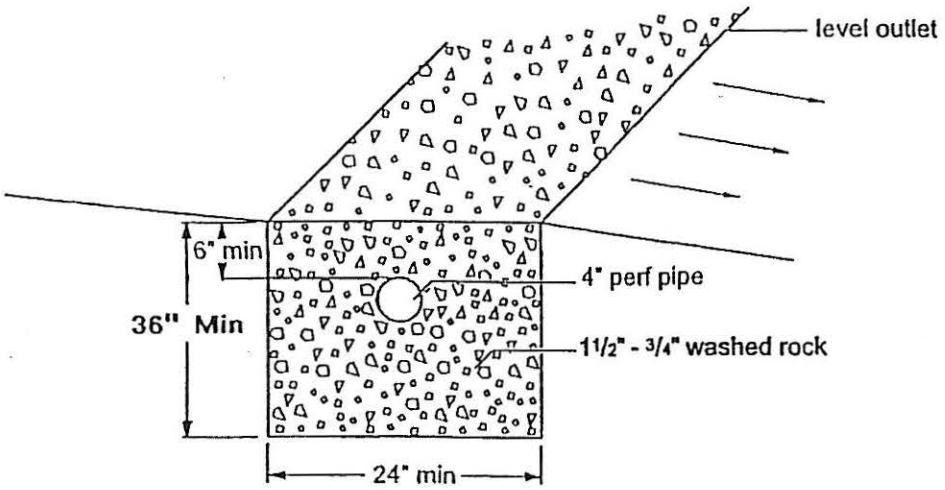
HANDOUT "G"
TYPICAL SPLASHBLOCK FOR BASIC DISPERSION



Not to Scale

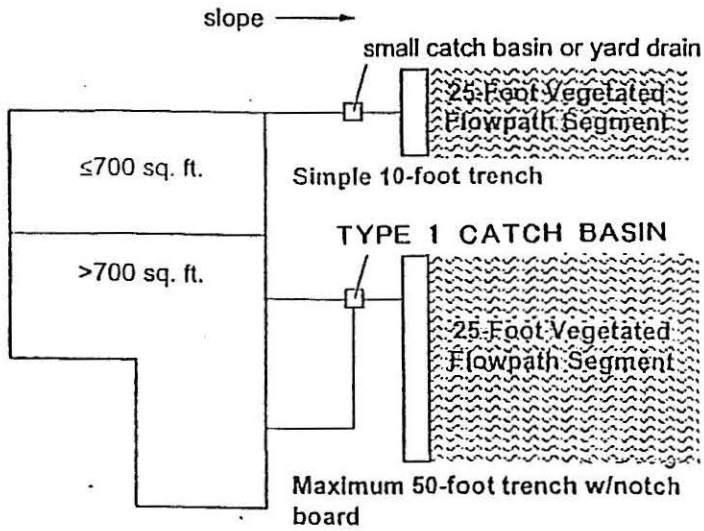


HANDOUT "H"
TYPICAL DISPERSION TRENCH DETAILS



TRENCH X-SECTION

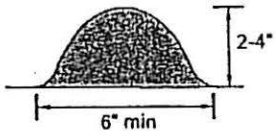
Not to Scale



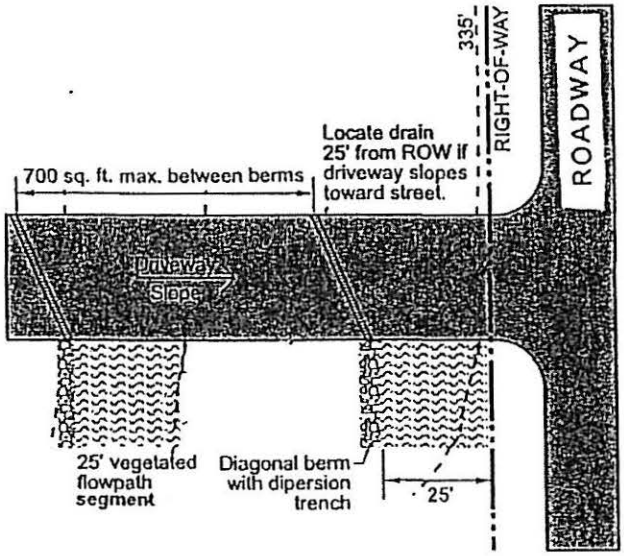
PLAN VIEW OF ROOF

Not to Scale

HANDOUT "I"
TYPICAL DRIVEWAY DISPERSION FEATURES

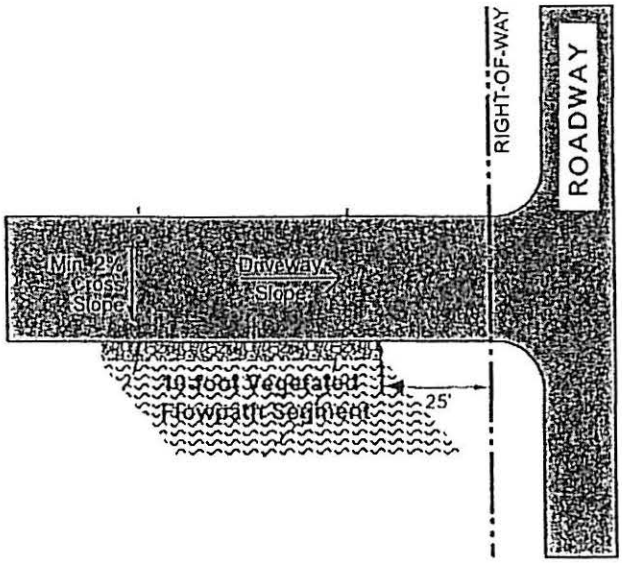


BERM DETAIL



PLAN

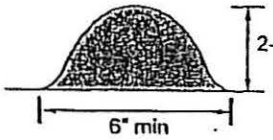
Driveway Dispersion Trench
Driveway Slope Varies and Slopes Toward Street



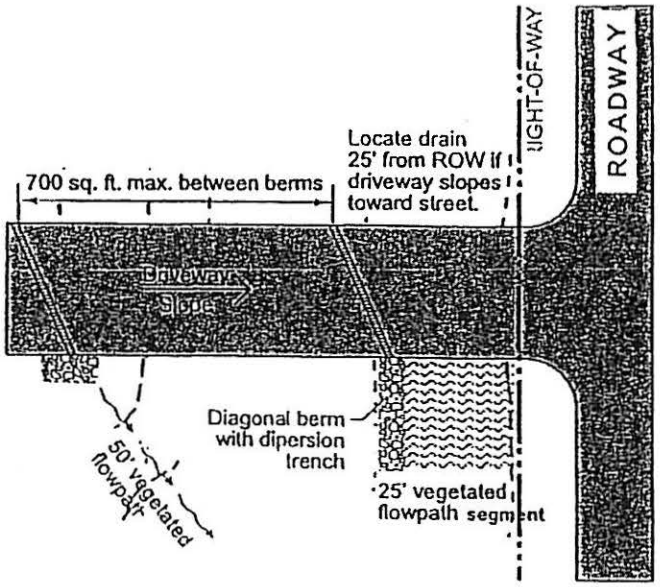
PLAN

Sheet Flow Dispersion from a Driveway
Flat to Moderately Sloping Driveways

HANDOUT "J"
STEEP DRIVEWAY DISPERSION FEATURES

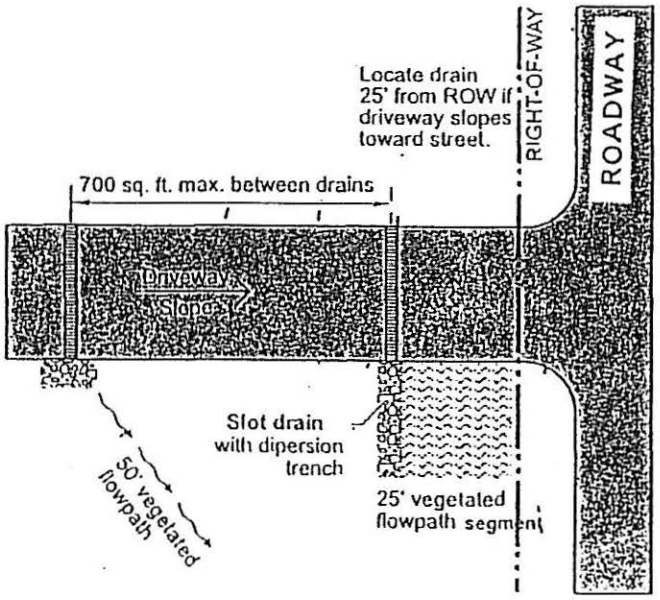


BERM DETAIL



PLAN

Steep Driveway with Diagonal Berms

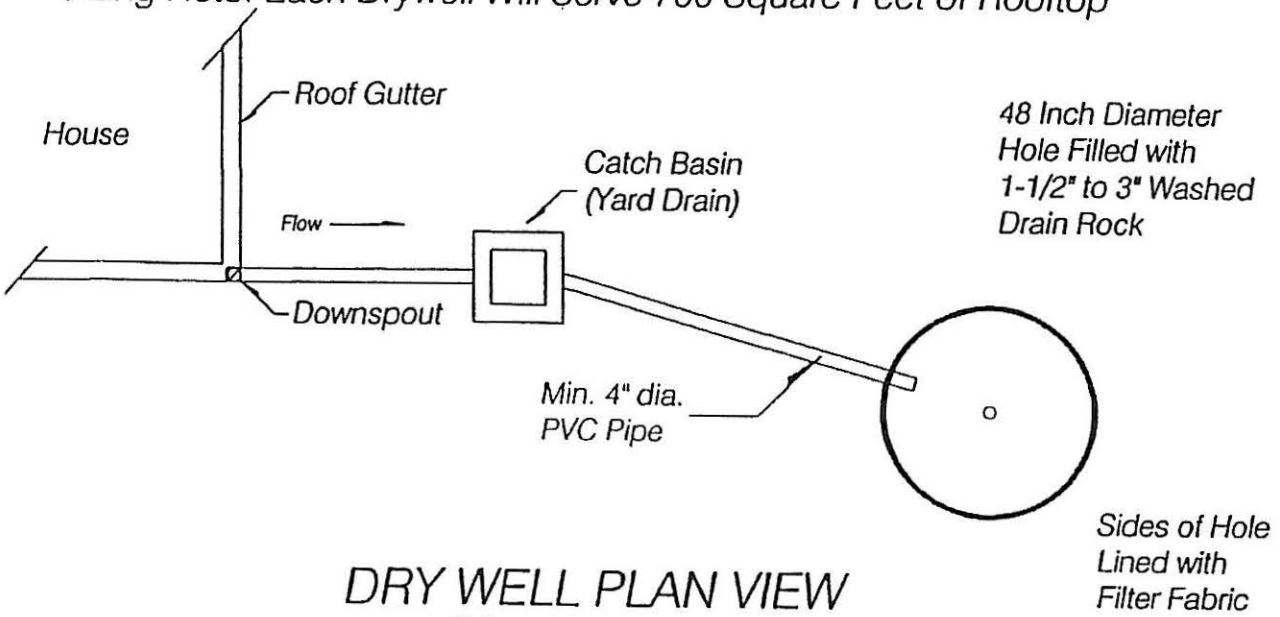


PLAN

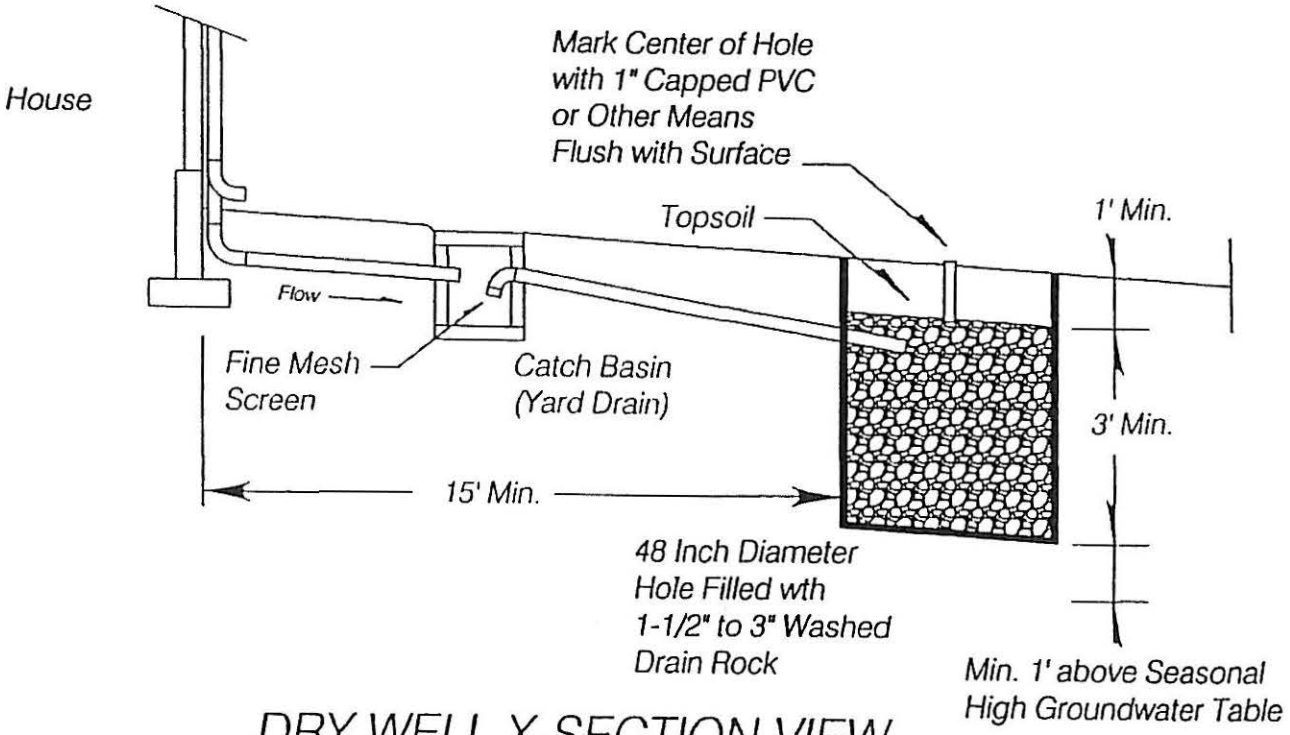
Steep Driveway with Slotted Drains

HANDOUT "K"
TYPICAL DRYWELL INFILTRATION SYSTEM

Sizing Note: Each Drywell Will Serve 700 Square Feet of Rooftop



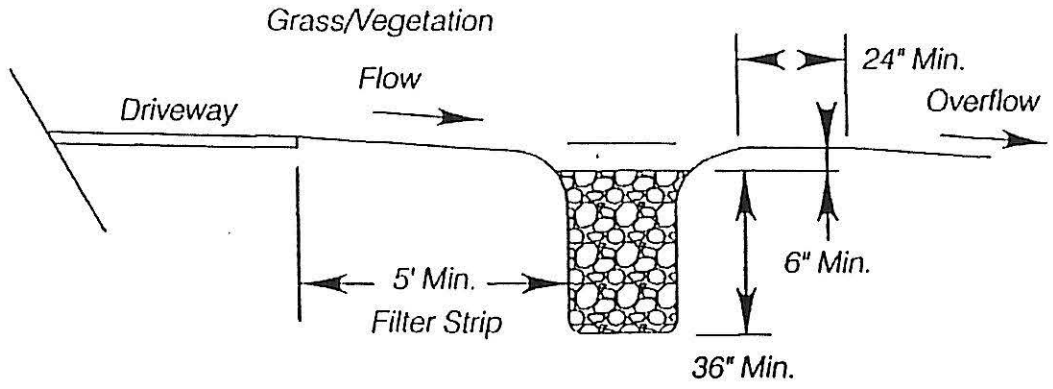
DRY WELL PLAN VIEW
(Not To Scale)



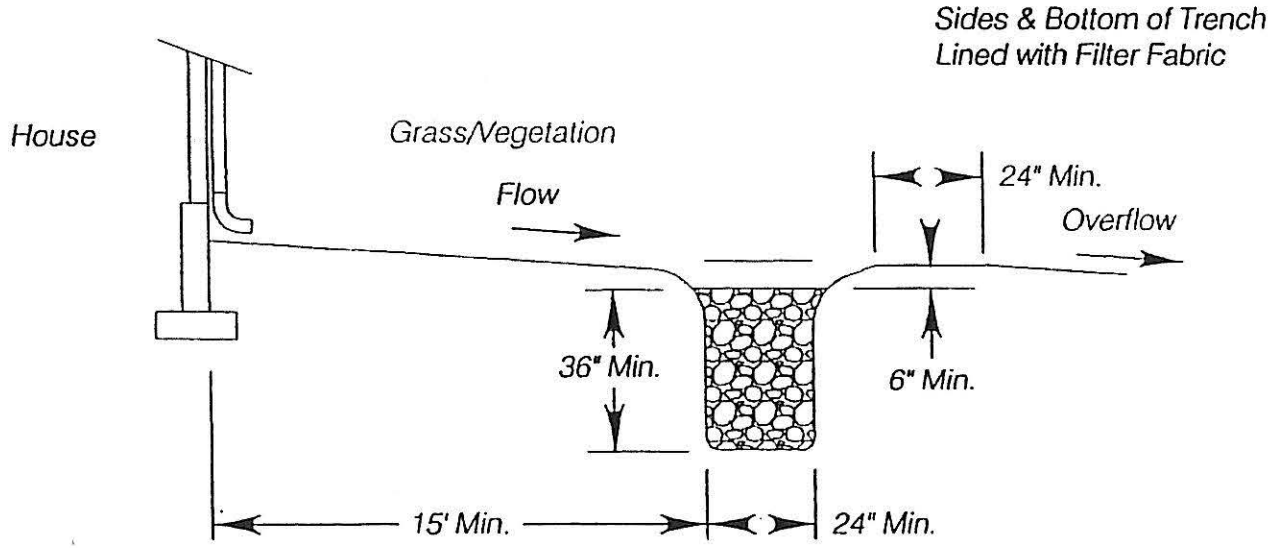
DRY WELL X-SECTION VIEW
(Not To Scale)

Typical Drywell Infiltration System

HANDOUT "L"
ALTERNATE INFILTRATION ELEMENTS



DRIVEWAY INFILTRATION TRENCH
(Not To Scale)



ROOF RUNOFF
INFILTRATION TRENCH X-SECTION VIEW
(Not To Scale)

Sizing Note: Each 10' Length of Trench Will Serve
700 Square Feet of Rooftop or Driveway