

**PROPERTY & BUILDING INSPECTION MODULE I
TREC Course # 39925**

**Chapter 1
Site Conditions**

**Section 1
Grading and Drainage**



Objectives: At the completion of this section, the Inspector candidate will:

- 1. Understand the principles of identifying grading and drainage issues.**

TREC – Standards of Practice (SOP)

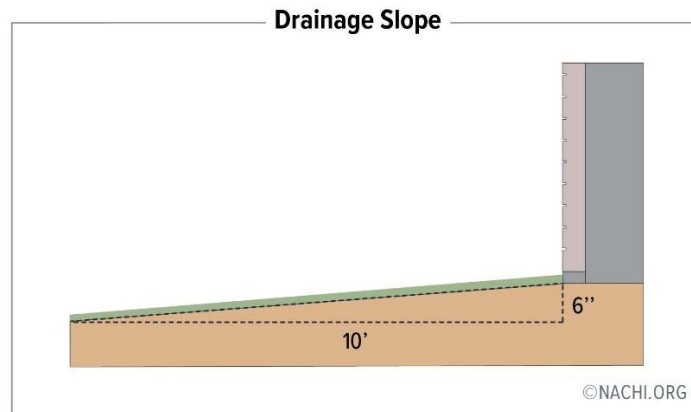
535.228 (b) Grading and Drainage.

- (1) The inspector shall report as Deficient:***
 - (A) drainage around the foundation that is not performing;***
 - (B) deficiencies in grade levels around the foundation; and***
 - (C) deficiencies in installed gutter and downspout systems.***
- (2) The inspector is not required to:***
 - (A) inspect flatwork or detention/retention ponds (except as related to slope and drainage);***
 - (B) determine area hydrology or the presence of underground water; or***
 - (C) determine the efficiency or performance of underground or surface drainage systems***

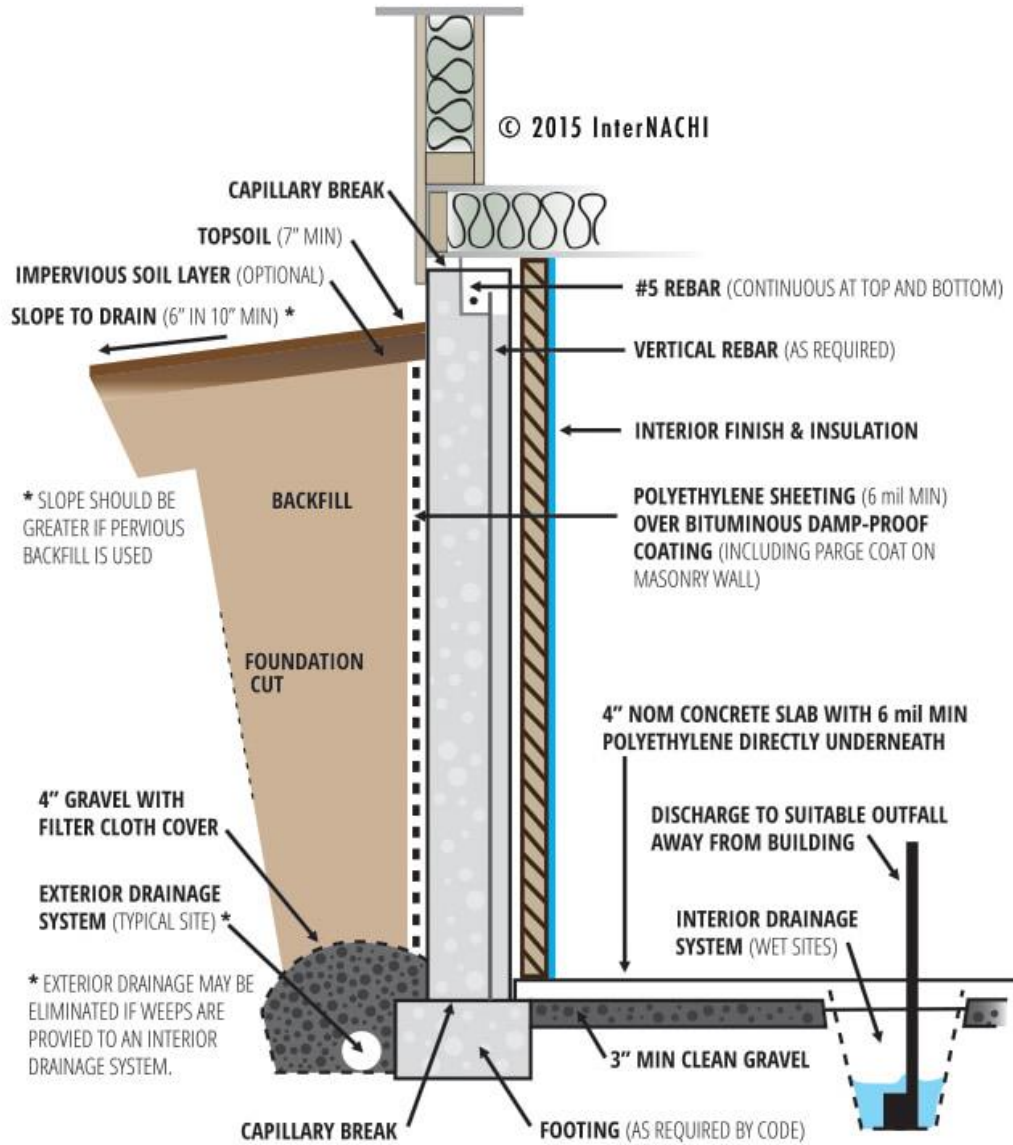
Exterior Moisture

The presence of water in a basement or crawlspace or evidence of seasonal standing water (damp areas, mildew, discoloration of the foundation walls, etc.) must be investigated and noted on the report. If interior sources such as plumbing leaks have been ruled out, consider the following potential sources.

Grading: Ideally, the ground should slope a minimum of 6" away from the foundation walls for at least the first 10 feet to direct groundwater away from the structure on all sides. Any patios, driveways, porch slabs, or sidewalks should slope away from the house at a grade of 2%. If proper slope away from the foundation cannot be established because of the home's elevation and surrounding grade, a surface drainage system ("grade gutter") should be installed to collect water and divert it away from the foundation. Or install below-grade drainage pipes at the footing.



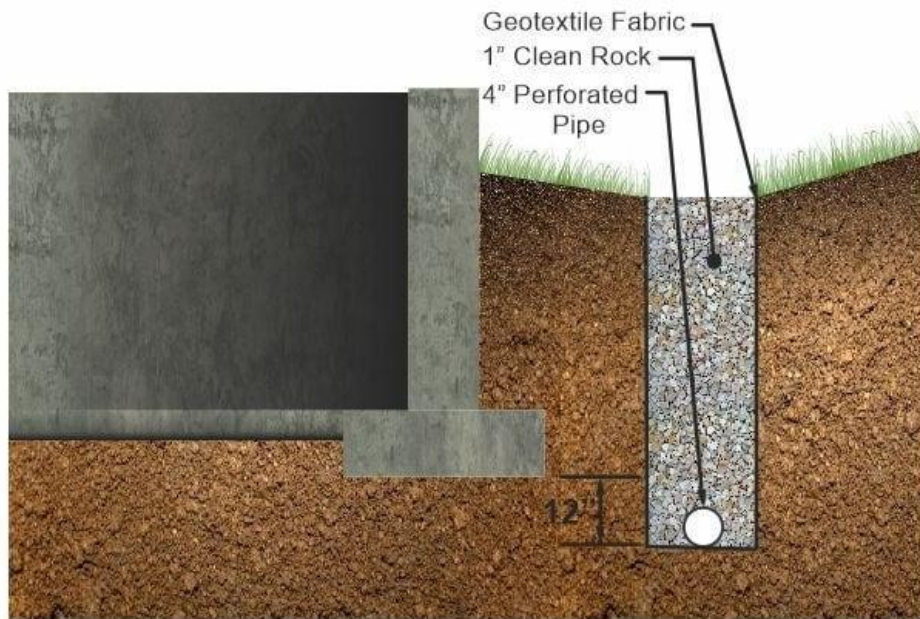
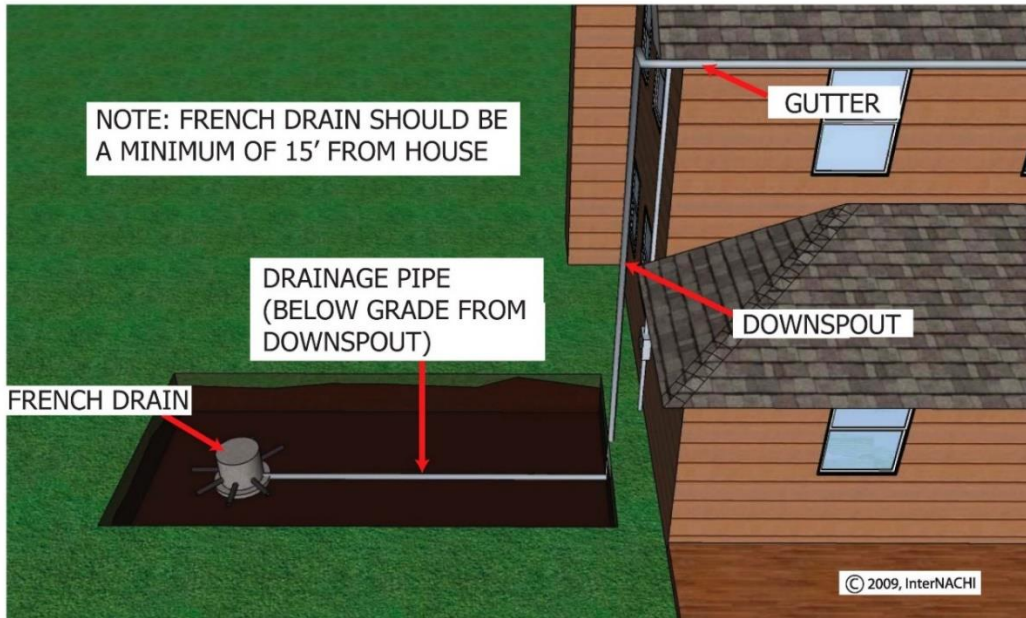
Foundation Waterproofing and Drainage: Implementing foundation damp-proofing and a perimeter drain strategy on the exterior walls may be required on exceptionally problematic sites. Such sites typically have high groundwater or water flow against the foundation that cannot be remediated in any other way. If the bottom of the crawlspace is below grade, the exterior of the foundation wall should be damp-proofed.



***The inspector is not required to:
determine area hydrology or the presence of underground water; or
determine the efficiency or performance of underground or surface drainage
systems***

A French Drain system can be installed to keep water from entering the foundation.

FRENCH DRAIN

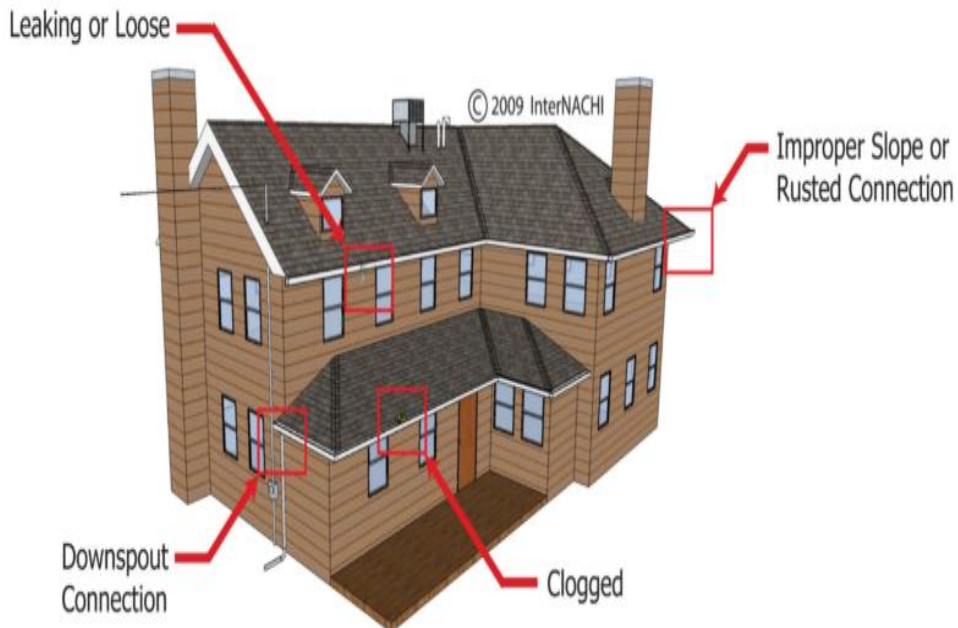


The inspector shall report as Deficient:
(A) drainage around the foundation that is not performing;
(B) deficiencies in grade levels around the foundation.



The inspector shall report as Deficient:
deficiencies in installed gutter and downspout systems.

Gutter Defects



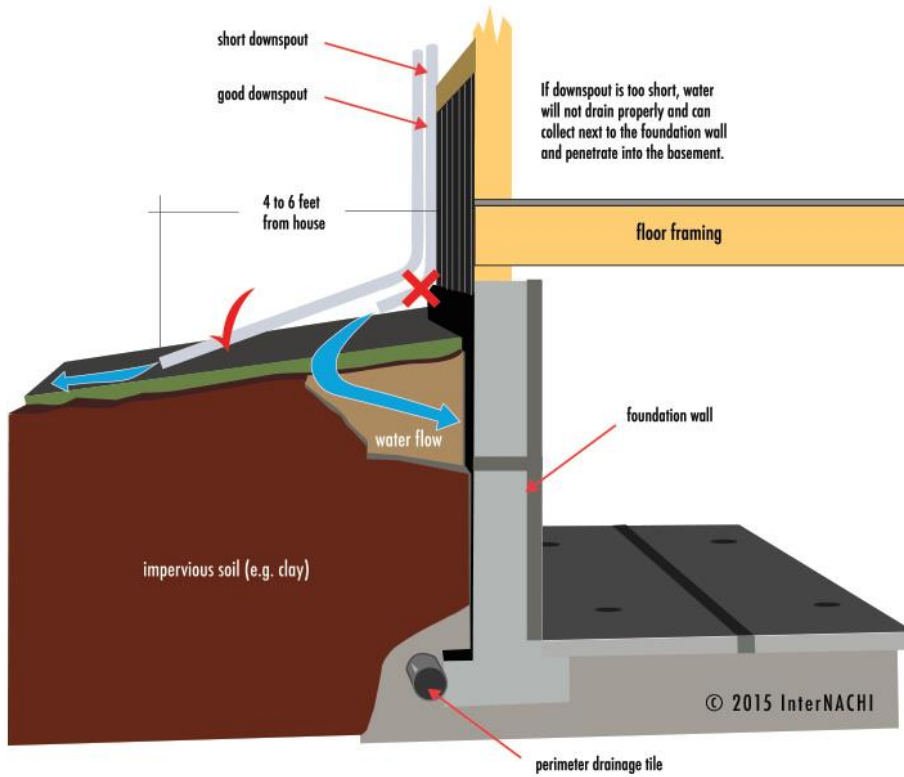
Need to keep or direct water farther from the foundation.
(Install a drain block and/or tube/pipe)

Gutters: Downspouts should drain 5' from house



Is there any visible moisture on the foundation walls?

Downspout Extension Too Short



Leaves in gutters prevent proper drainage.

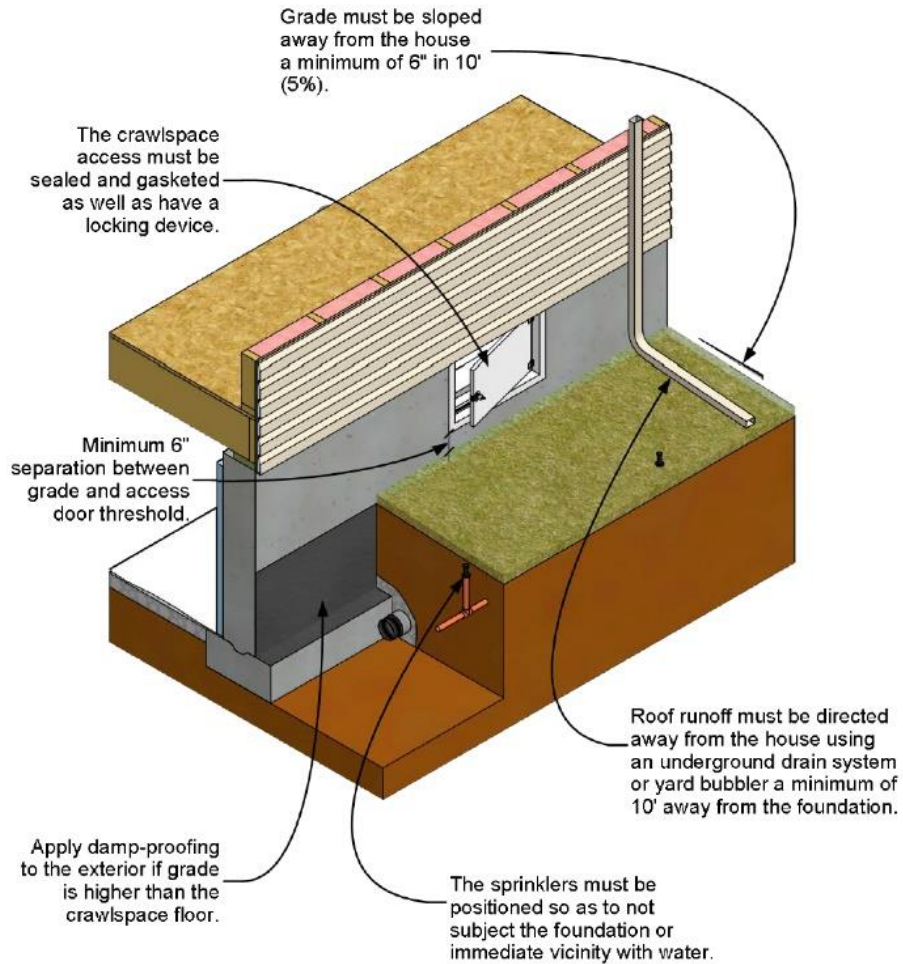


Gutters should slope 1/16" per foot.

Sprinklers: If necessary and if possible, turn on all sprinklers installed near the foundation to observe their flow pattern. The sprinklers must be positioned so they do not subject the foundation or its immediate vicinity to water. Sprinklers too close with the result in the photo below.



Crawlspace Vents: Crawlspace vents can allow bulk entry of water if they are located at or below grade. If the dirt and ground cover cannot be removed to slope the ground away from the house, install French drains or another drainage system to direct water away from the house or fill in and seal the vent. If one or more vents are sealed off, additional vents may need to be added to compensate for the lack of ventilation.



Access Door: If the crawlspace has an exterior access door, inspect to see that the grade outside the door directs rain and snow away from the door. If the door is located too low and there is not enough clearance to adjust the entry height, remove the door, seal the opening, and install a new entry at a different location on the exterior that will accommodate the clearance. If no suitable exterior location meets these criteria, it may be necessary to cut an access way through the floor system within the house.

Sump Pump: In areas with poor site drainage, non-Group 1 soils, or a high-water table, a sump pump can be installed to pump water from the foundation drainage system into an approved sewer system or other appropriate location. Grade the crawlspace floor with at least a 3% slope toward a low-spot collector to direct water to the sump. Install a battery backup for the pump, especially in areas with a high-water table. Make sure the sump has a tight-fitting, gasketed lid.



Drain Pipes: To prevent any water backups through drain pipes, Floor drains with p-traps that connect to the whole house plumbing waste drain or to a municipal sewer system may allow entry of sewer gases if (when) the trap dries out and may pose a risk of sewage backup.

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