



Goochland County Policies and Procedures

Department: Building Inspection
Subject: Shrink/Swell Soil Policy

Policy Number: 01-19
Date Issued: 09/10/2024
Implementation: 09/10/2024
Supersedes: 06/03/2019

I. PURPOSE

Goochland County has soils that have the potential to shrink and/or swell with seasonal changes in moisture content. These soils are not identifiable by visual inspection. To reduce the risk of structural problems, the Department of Building Inspection implemented this shrink/swell soil policy in accordance with Uniform Statewide Building Code requirements.

II. POLICY

The Department of Building Inspection requires a written shrink/swell soil report for the following types of permits:

1. All new single-family dwellings, duplexes and townhomes
2. Residential attached structures (including but not limited to additions, screen porches, sunrooms, or any expansion to the footprint of the existing structure)
3. Residential detached heavy frame structures exceeding 400 square feet in area
4. Residential detached light frame structures exceeding 600 square feet in area
5. All new commercial construction, or expansion to the footprint of any existing commercial structure

Construction of any of the following does not require a shrink/swell soil report:

1. residential decks
2. stoops or stairs (open or covered)
3. pools
4. ground mounted solar panels
5. residential retaining walls
6. Manufactured homes (as defined in the Virginia Uniform Statewide Building Code) installed on piers with proper anchor and tie-down installation
7. Engineered metal light frame structures for undisturbed earth supported and helix anchor design, without a footing

At the discretion of the Building Official, an existing shrink/swell soil report that was prepared for the original structure may be reevaluated to determine if it is adequate for an addition.

The shrink/swell soil report shall:

- Be completed by a registered Professional Engineer or Certified Professional Soil Scientist or Certified Professional Geologist in the Commonwealth of Virginia
- Include a minimum of two soil borings, taken remotely from one another, from the area within the footprint of the proposed structure. Note that general soil testing during subdivision review will not be accepted as a site-specific shrink/swell report.
- Be submitted with the building permit application



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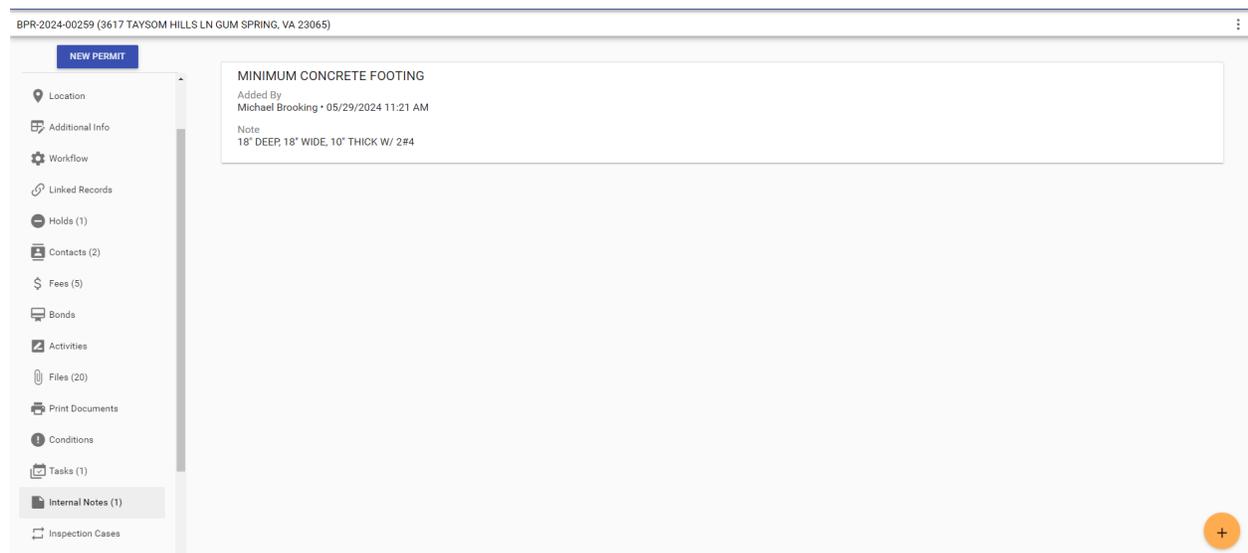
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When a soil report confirms the presence of shrink/swell soils, the permit applicant shall then be responsible for providing the Department of Building Inspection with a site-specific footing /foundation plan designed by a registered Commonwealth of Virginia professional engineer or architect to overcome the limitations presented by the soils. The footing/foundation plan shall be submitted with the building permit application.

The Department of Building Inspection staff will review stamped third-party reports to ensure that the approved footing and foundation plan has been constructed as per the county approved drawings. Once staff has reviewed and approved the shrink/swell soil report, it will be stamped and uploaded into the portal.

The plan reviewer will access the permit in Energov. They will need to add an internal note. To do this, click the plus button in the bottom right corner of the screen, add a new note, and then add the footing requirements based on the soils report (example provided below):



This will allow the required footing information to be viewed by County inspectors in the field.

When a written report of the soil's investigation, stamp by a Commonwealth of Virginia registered design professional, is submitted to the county for staff review, it shall contain, as a minimum, the following information:

- 1) Project Name
 - a. Complete geotechnical study
 - b. Owner's name
 - c. Address, GPIN Number, lot or parcel number



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- 2) Client
 - a. Name
 - b. Address
 - c. Contact information
- 3) Agency submitting or preparing report
 - a. Name
 - b. Address
 - c. Phone number
 - d. E-mail address
- 4) Date
 - a. of field exploration
 - b. report was prepared
- 5) Field exploration and subsurface condition information required on each report
 - a. Plot showing 2 borings minimum performed in accordance with ASTM D 1452 within the footprint of the building and located remotely from one another
 - b. Depth of borings
 - c. Type of soil(s) encountered
 - d. Elevation of water table (if applicable)
 - e. Plasticity index
 - f. Sand content
 - g. Moist percentage
 - h. Soil type as per the unified soil classification system
 - i. Reason for auger refusal during sampling (if applicable)
- 6) Minimum depth to provide a net allowable bearing capacity of 2000 pounds per square foot
- 7) All soil reports are to be sealed by one of the following:
 - a. Professional engineer certified in the Commonwealth of Virginia
 - b. Certified professional soil scientist certified in the Commonwealth of Virginia
 - c. Certified professional geologist certified in the Commonwealth of Virginia
- 8) For expansive or compressible soils, soil characteristics shall be classified as follows:
 - a. Low
 - b. Moderate
 - c. High
- 9) When the soil report confirms the presence of moderate or high potential to shrink/swell the minimum footing design parameters shall include:
 - a. A footing/foundation designed by a Commonwealth of Virginia registered design professional or licensed architect
 - b. Removal of existing expansive soil
 - c. Depth of footing
 - d. Width of footing
 - e. Thickness of slab
 - f. Reinforcement
 - g. Type of back fill material to be used



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h. Special drainage recommendations for roof, surface and sub-surface moisture

The permit applicant or CSC staff is responsible for having the shrink/swell soil report scanned into the public portal for County review and approval. This information shall be available at the time of plan submittal to the County.

Gary L. Fisher, CBO, MCP
Building Official