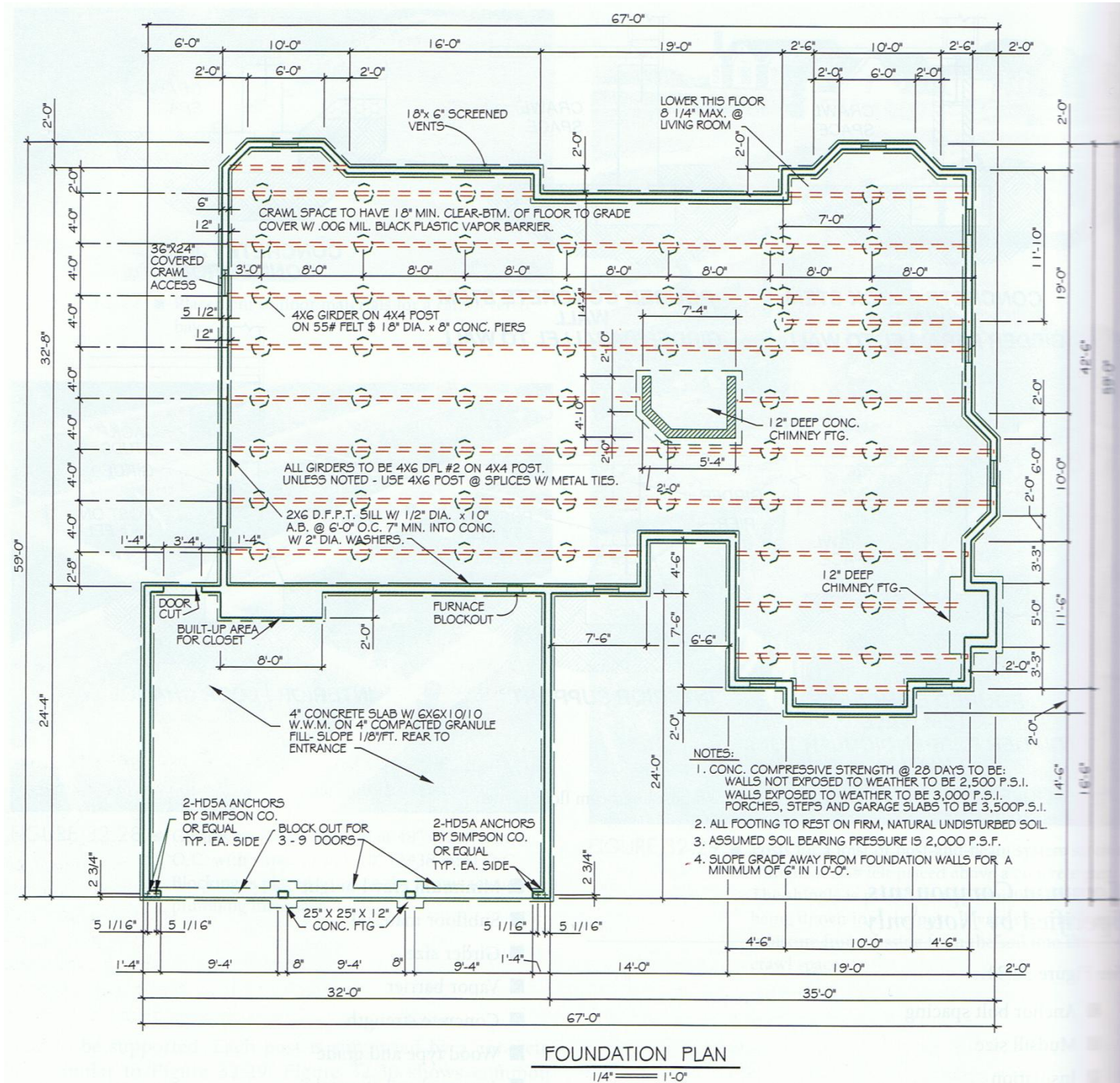


**Foundation Systems,
Floor Systems
&
Foundation Support**

Foundation Systems, Floor Systems & Foundation Support

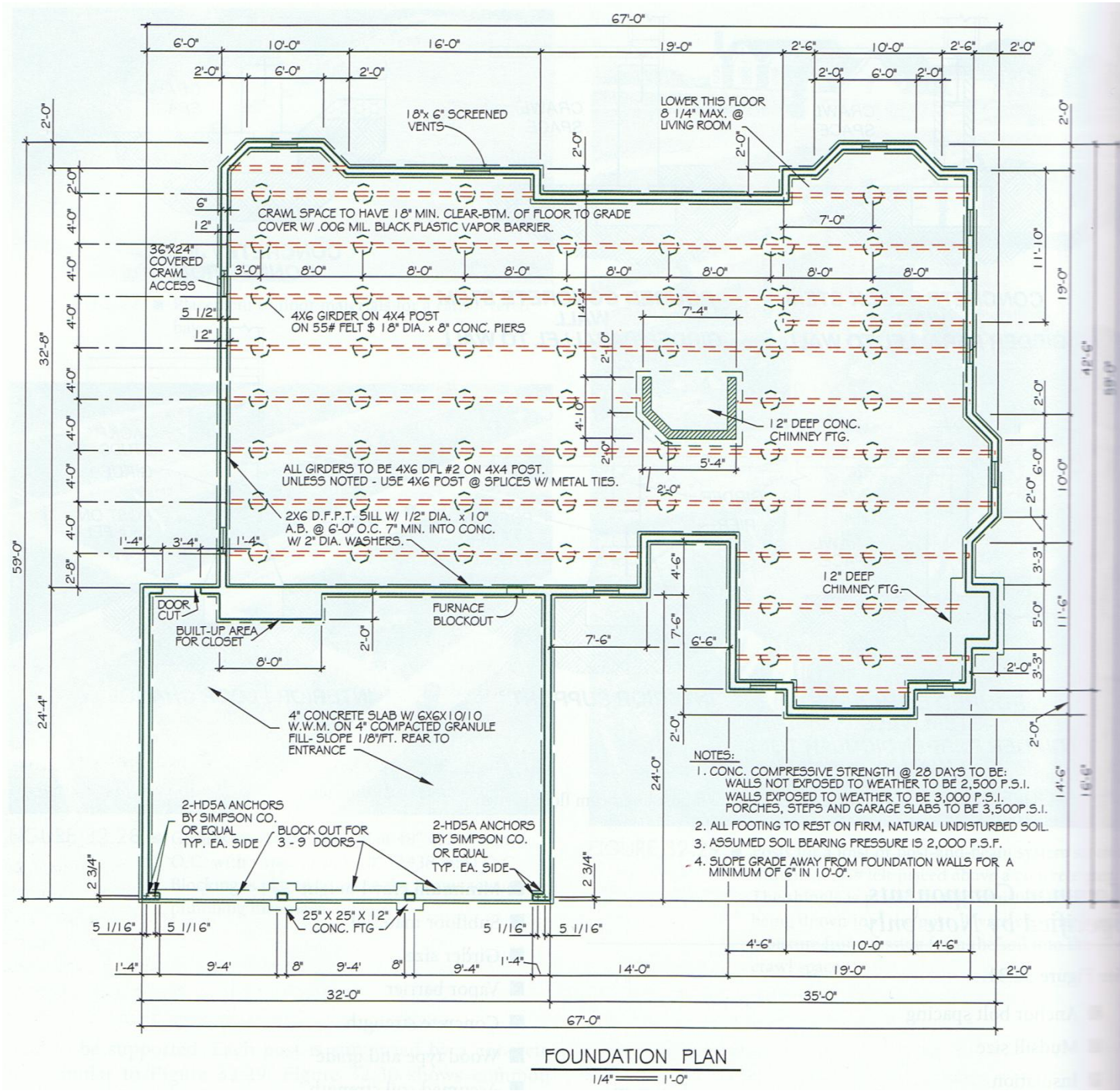
*These items are shown on the foundation plan:

- 1) Foundations walls
- 2) Footings
- 3) Piers
- 4) Columns
- 5) Supporting beams



Foundation Systems, Floor Systems & Foundation Support

*A combination of a foundation plan and a floor plan is called the finished basement plan.

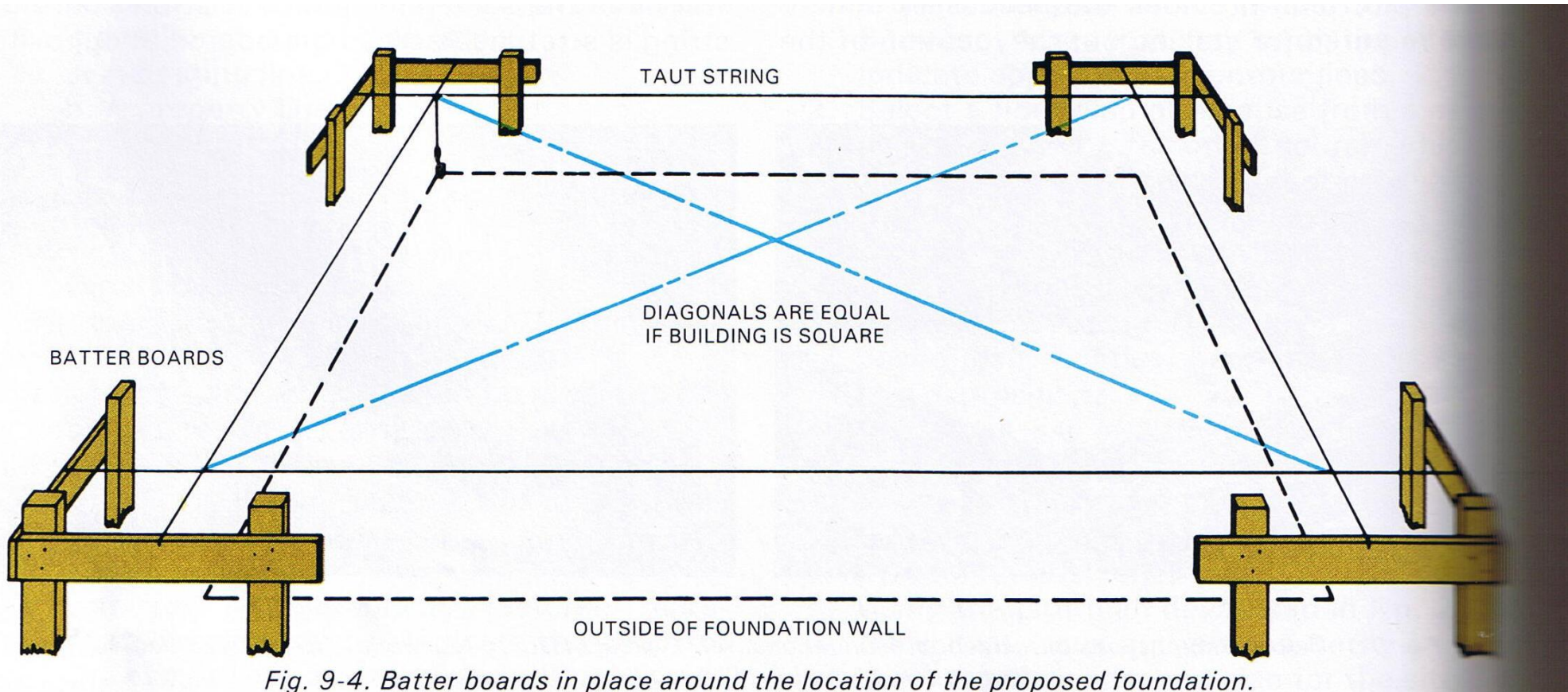


FOUNDATION PLAN

1/4" = 1'-0"

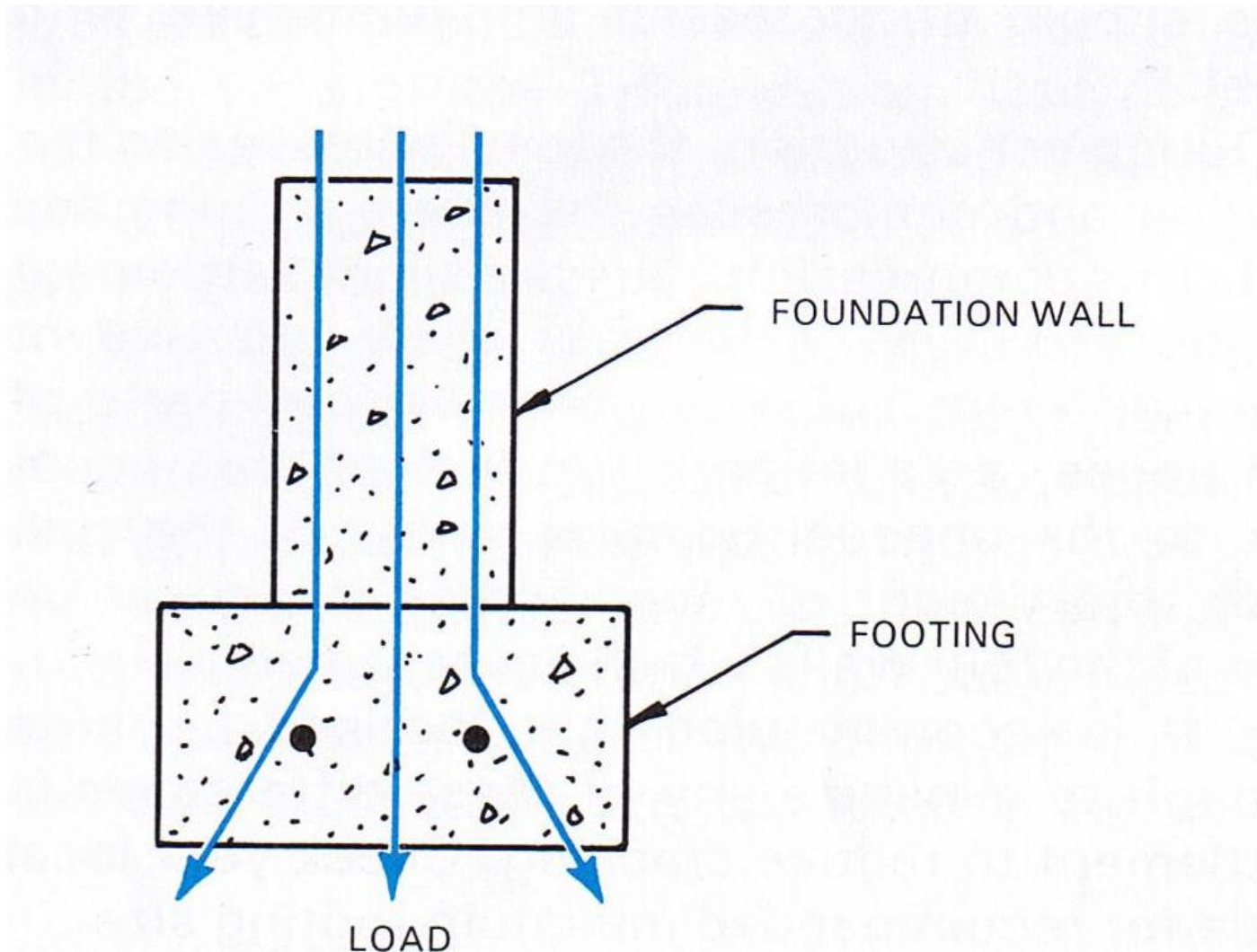
Foundation Systems, Floor Systems & Foundation Support

***Batter boards are used to retain the location of the foundation during excavation and construction.**



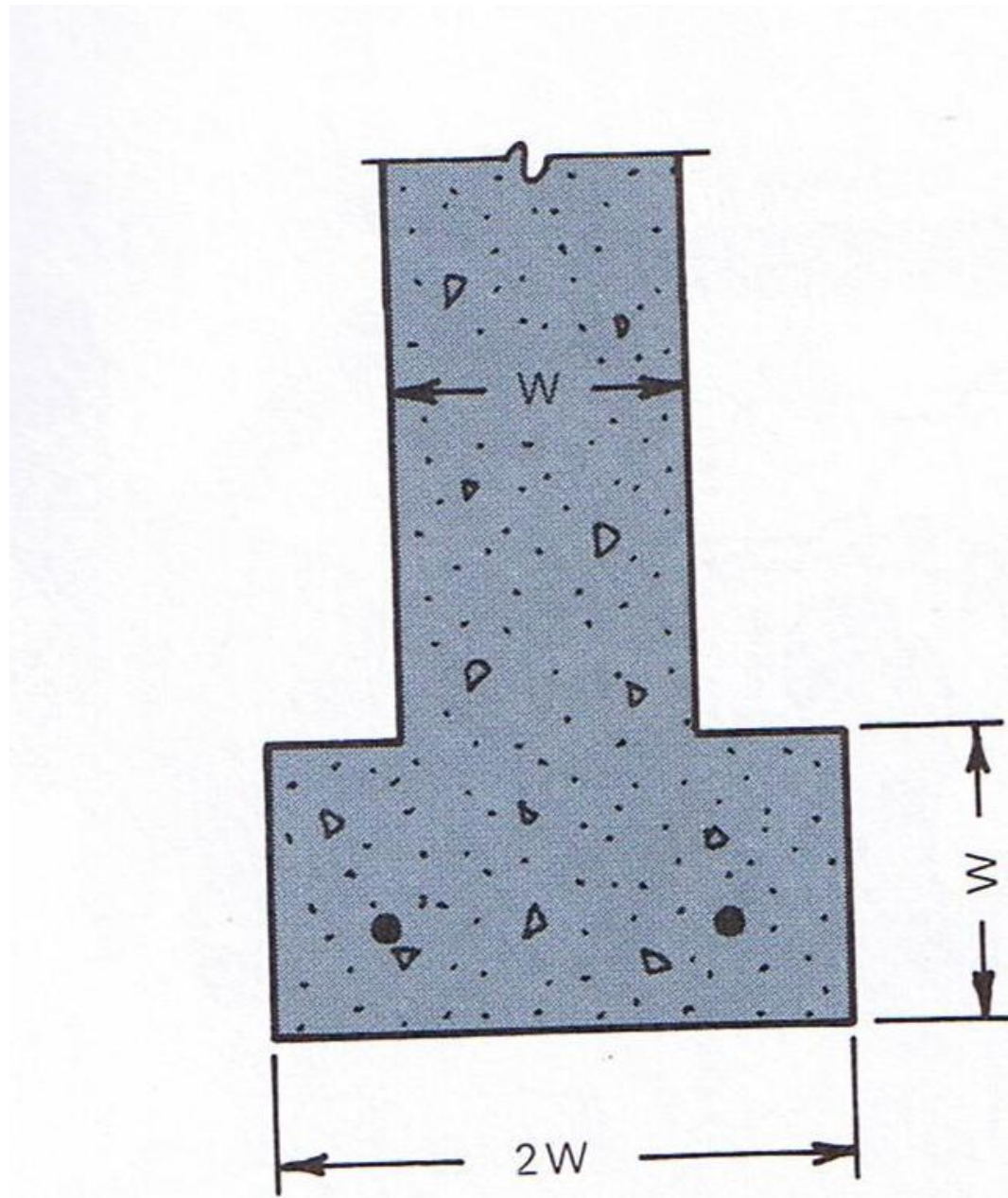
Foundation Systems, Floor Systems & Foundation Support

*A footing is used to spread building loads evenly into the soil and is represented on the foundation plan by hidden lines.



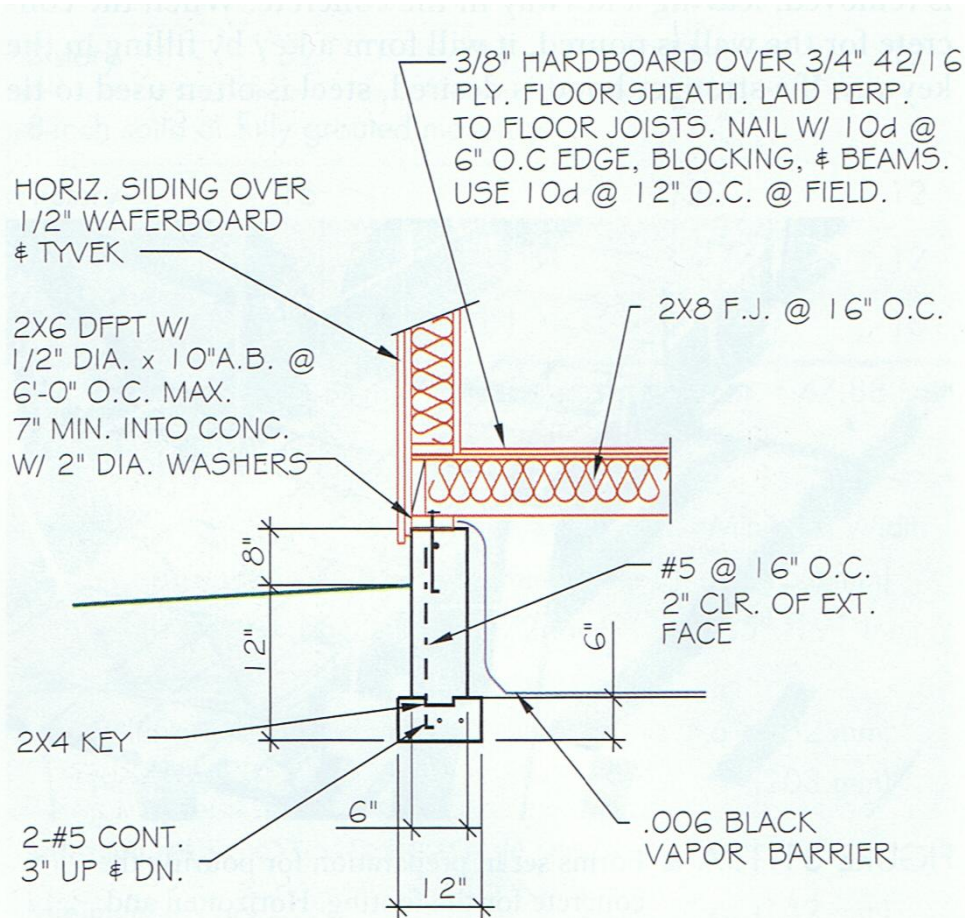
Foundation Systems, Floor Systems & Foundation Support

*The UBC standard for footings for a residential structure is generally 10" x 20".



Foundation Systems, Floor Systems & Foundation Support

Considering the fact that the foundation of a home provides a base to distribute the weight of the structure evenly over the soil it is important that you know the bearing capacity of the soil.



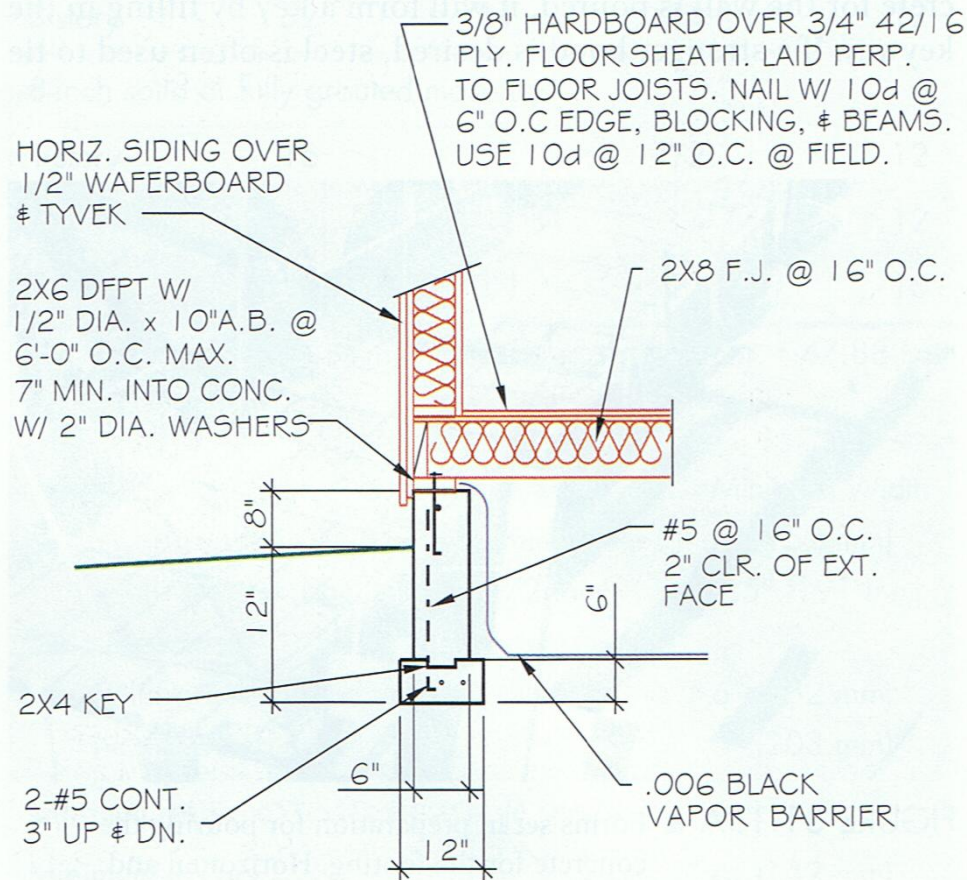
TYPICAL JOIST FOUNDATION DETAIL

Structures built on soils with low bearing capacity require footings that extend into stable soil or are spread over a wide area.



Foundation Systems, Floor Systems & Foundation Support

In addition to resisting the load of gravity, the foundation must be capable of resisting natural forces created by floods, winds, earthquakes, were these forces are a risk.



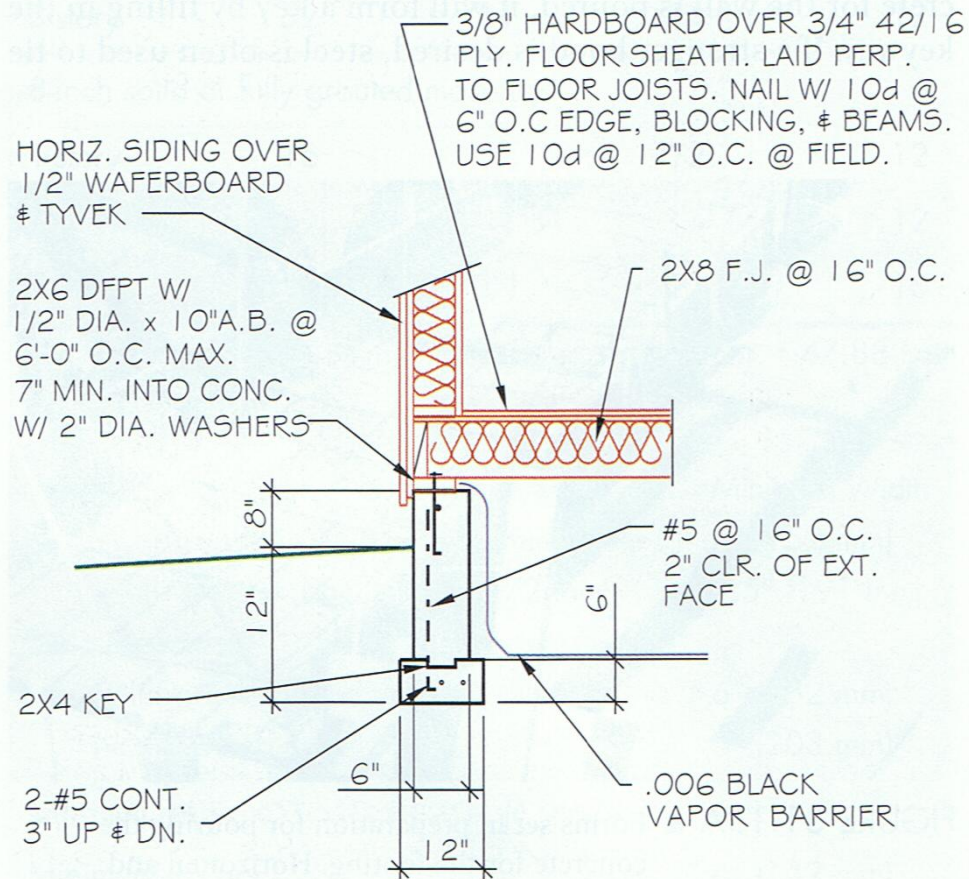
TYPICAL JOIST FOUNDATION DETAIL



Foundation Systems, Floor Systems & Foundation Support

In residential construction, the type of soil at the construction site can often be determined by checking with the local building department.

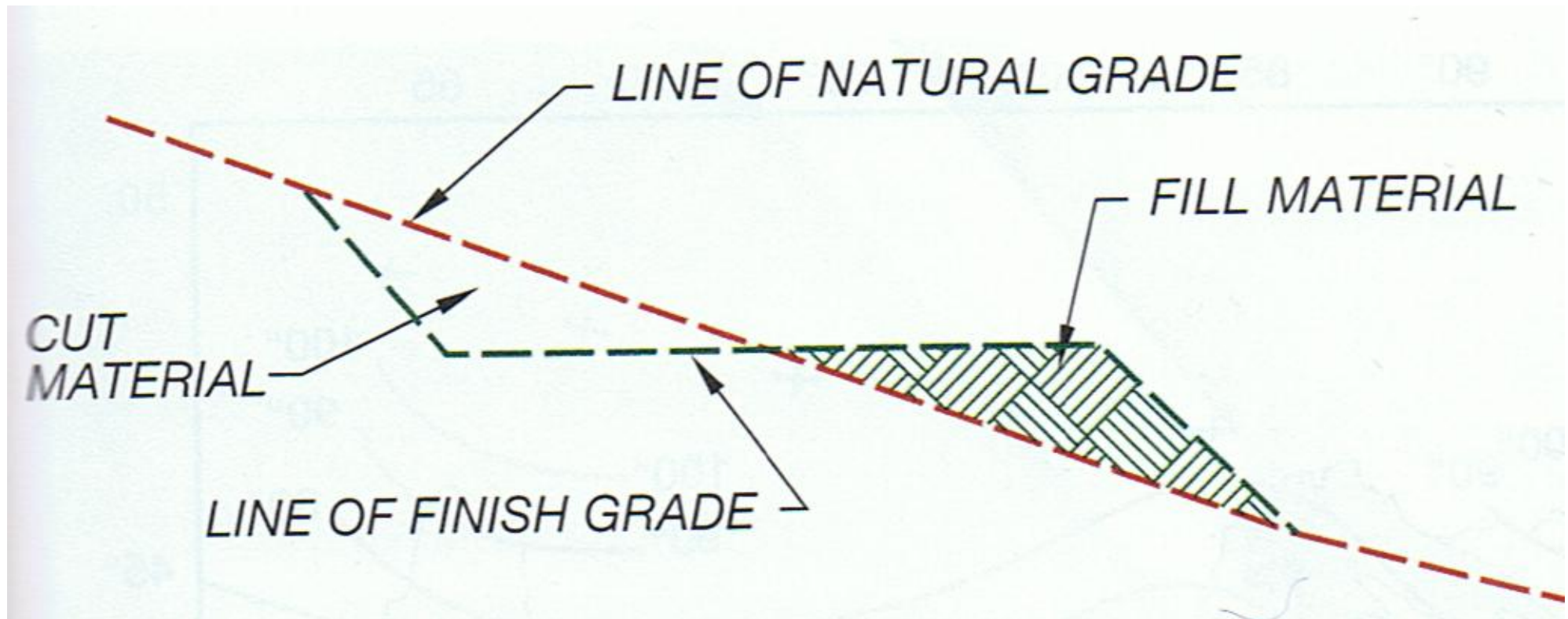
In commercial construction a soils engineer is usually required to study the soil type.



TYPICAL JOIST FOUNDATION DETAIL

Foundation Systems, Floor Systems & Foundation Support

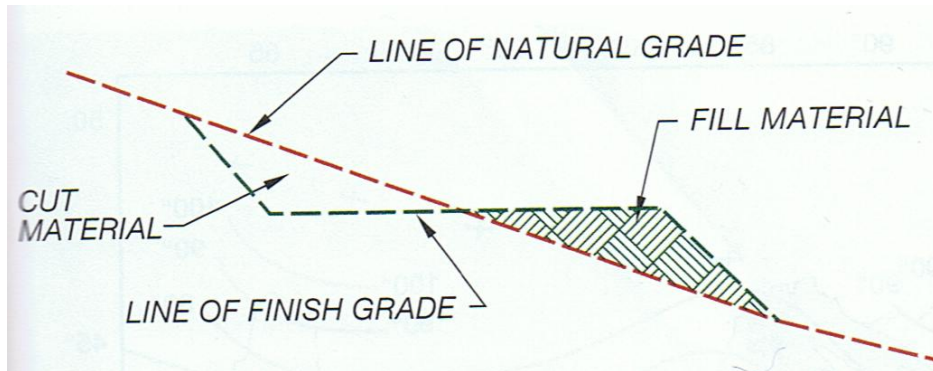
Soil that is transported into the job site and placed over the natural grade is called fill material.



Foundation Systems, Floor Systems & Foundation Support

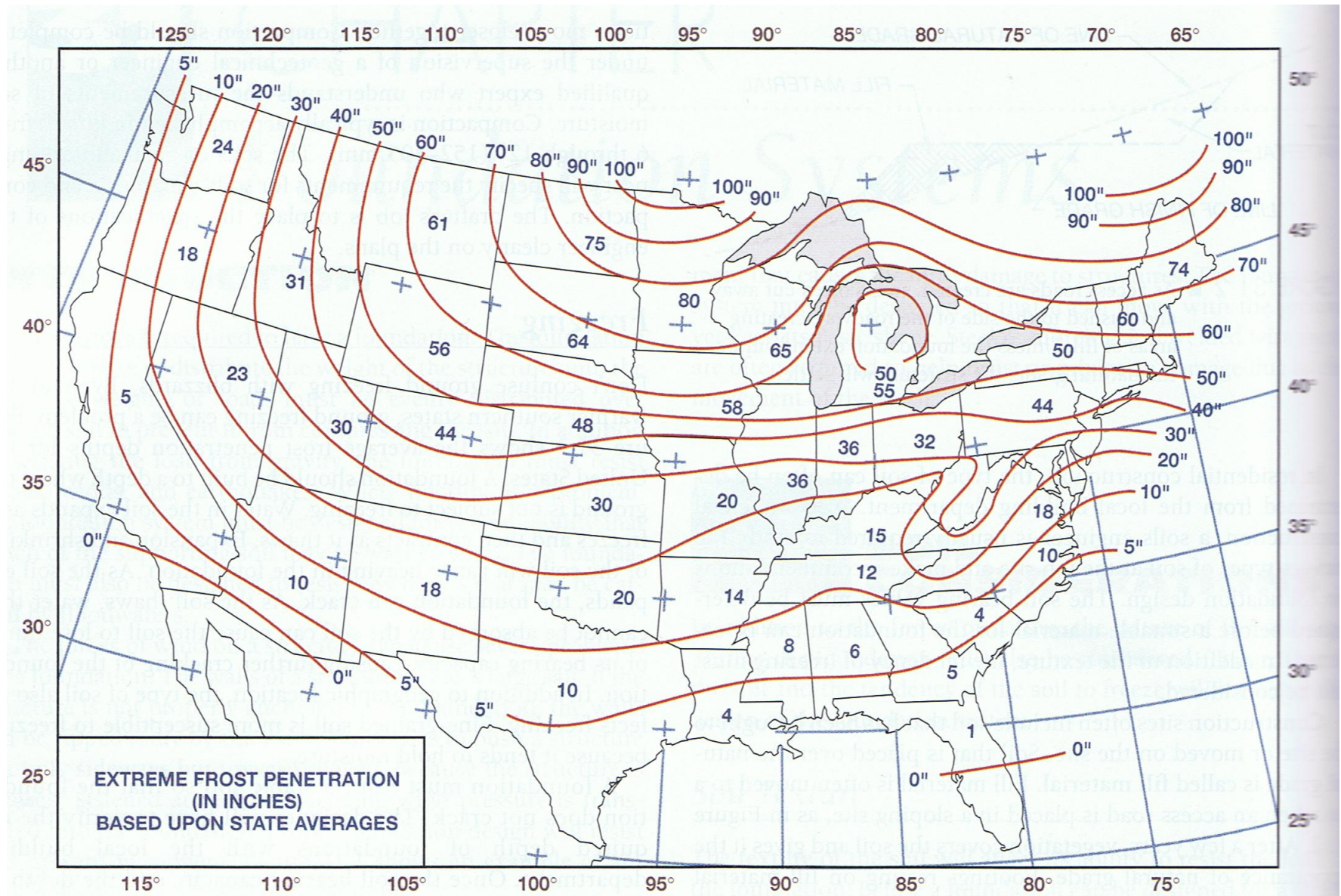
Footings resting on fill material will eventually settle under the weight of a structure. Fill material can be compacted to increase its bearing capacity. Compaction is accomplished by vibrating, tamping, rolling, or adding a temporary weight. There are three major ways to compact soil.

- 1) **Static force:** A heavy roller presses soil particles together
- 2) **Impact forces:** A ramming shoe strikes the ground repeatedly at high speed
- 3) **Vibration:** High-frequency vibration is applied to soil through a steel plate



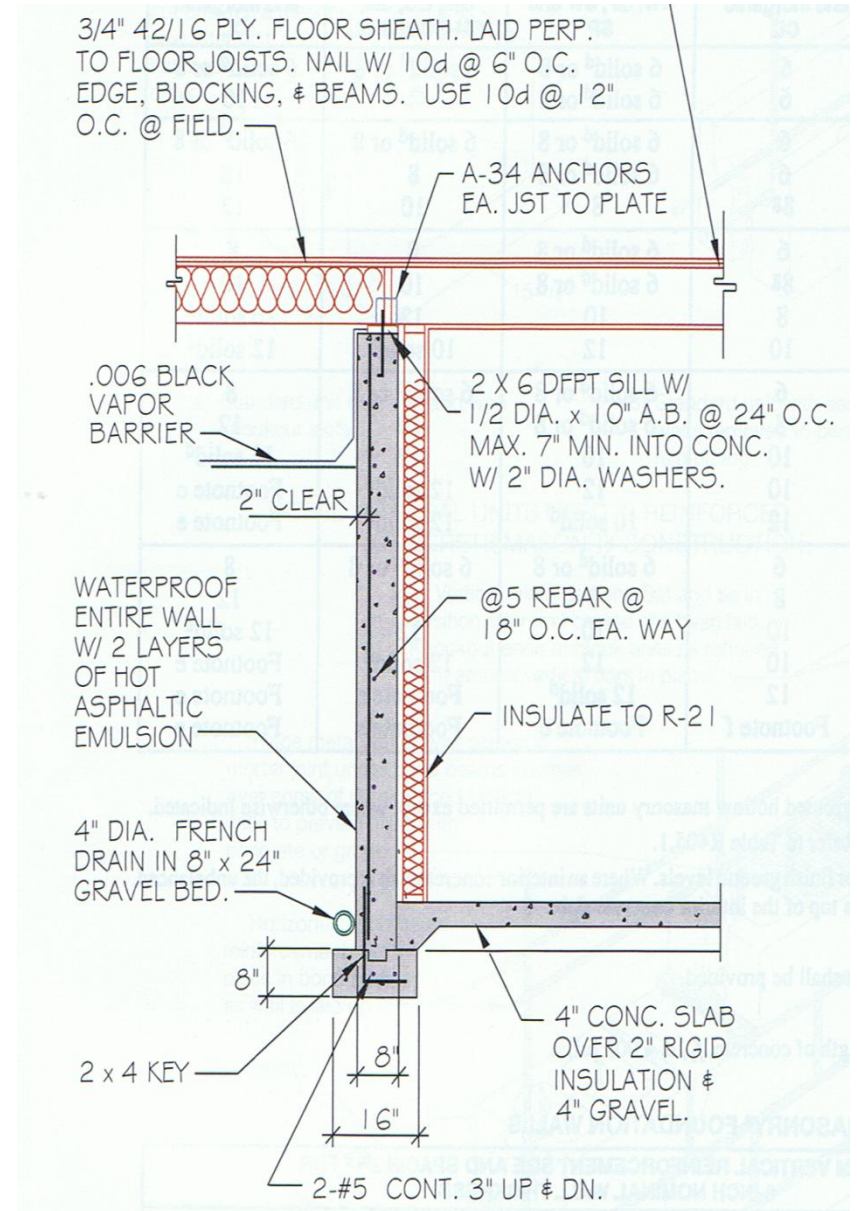
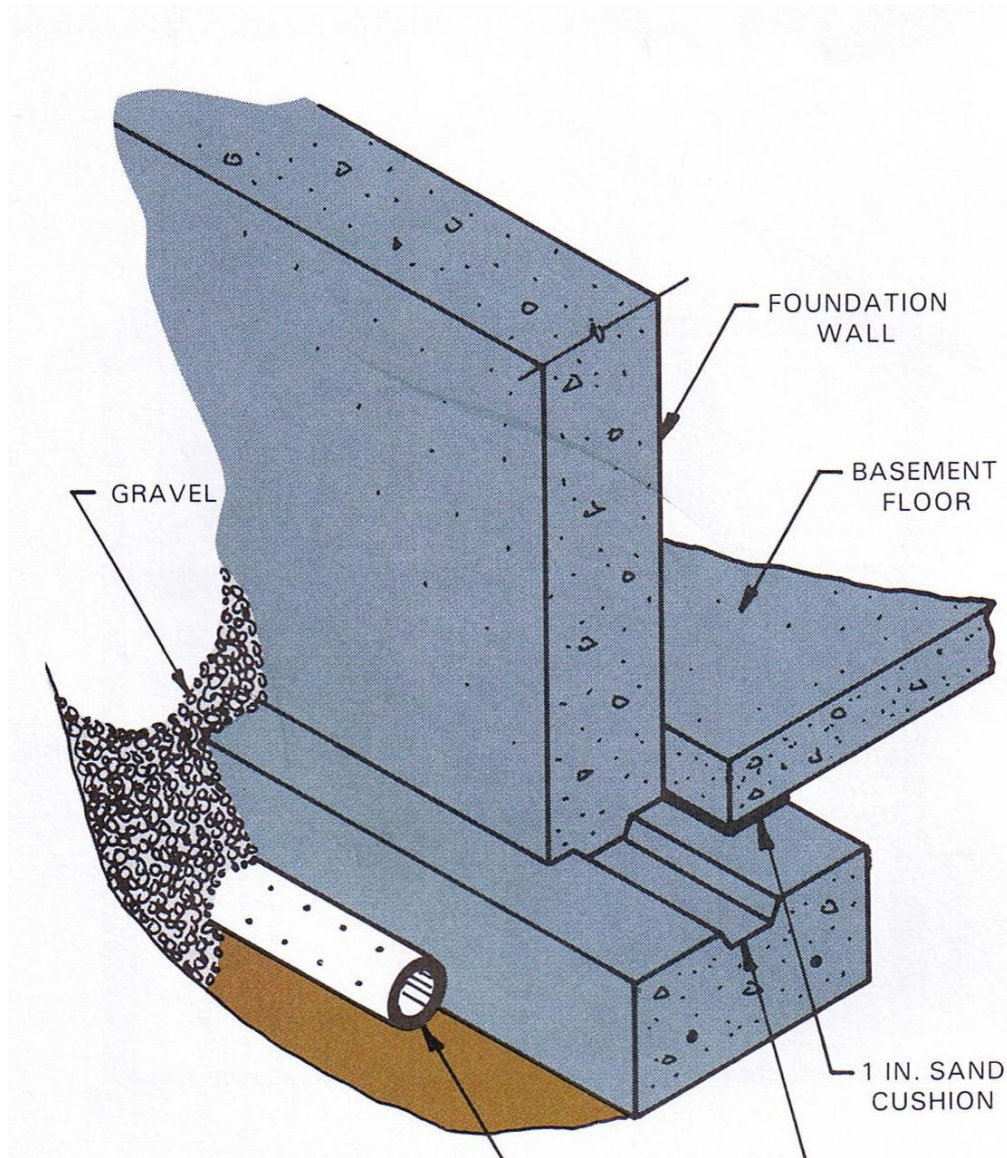
Foundation Systems, Floor Systems & Foundation Support

To prevent damage from frost heave, a foundation should be built to a depth where the ground is not subject to freezing. Local frost level and its effect on footing depth can be verified with the local building department. The frost level for our area is 30 inches.



Foundation Systems, Floor Systems & Foundation Support

Sometimes drains are placed at the base of a footing and covered with gravel to help divert water from the face of the foundation wall. Reducing water content in the soil reduces lateral pressure on the wall.

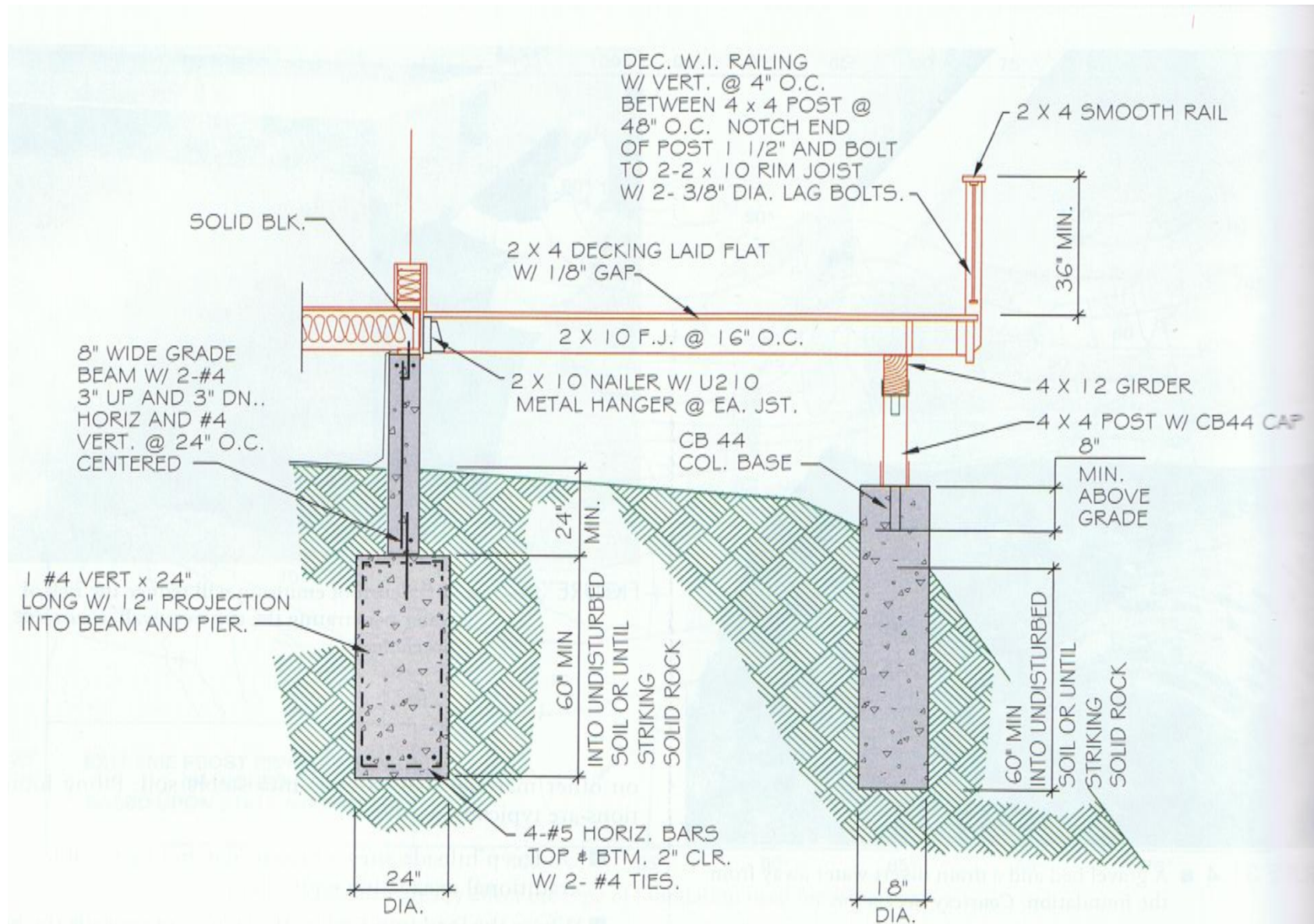


Foundation Systems, Floor Systems & Foundation Support

Structures built in areas of the country with high radon levels need to provide protection from this cancer-causing gas. The IRC and the EPA (Environmental Protection Agency) have mapped the continental United States by county and identified high-risk areas to radon.

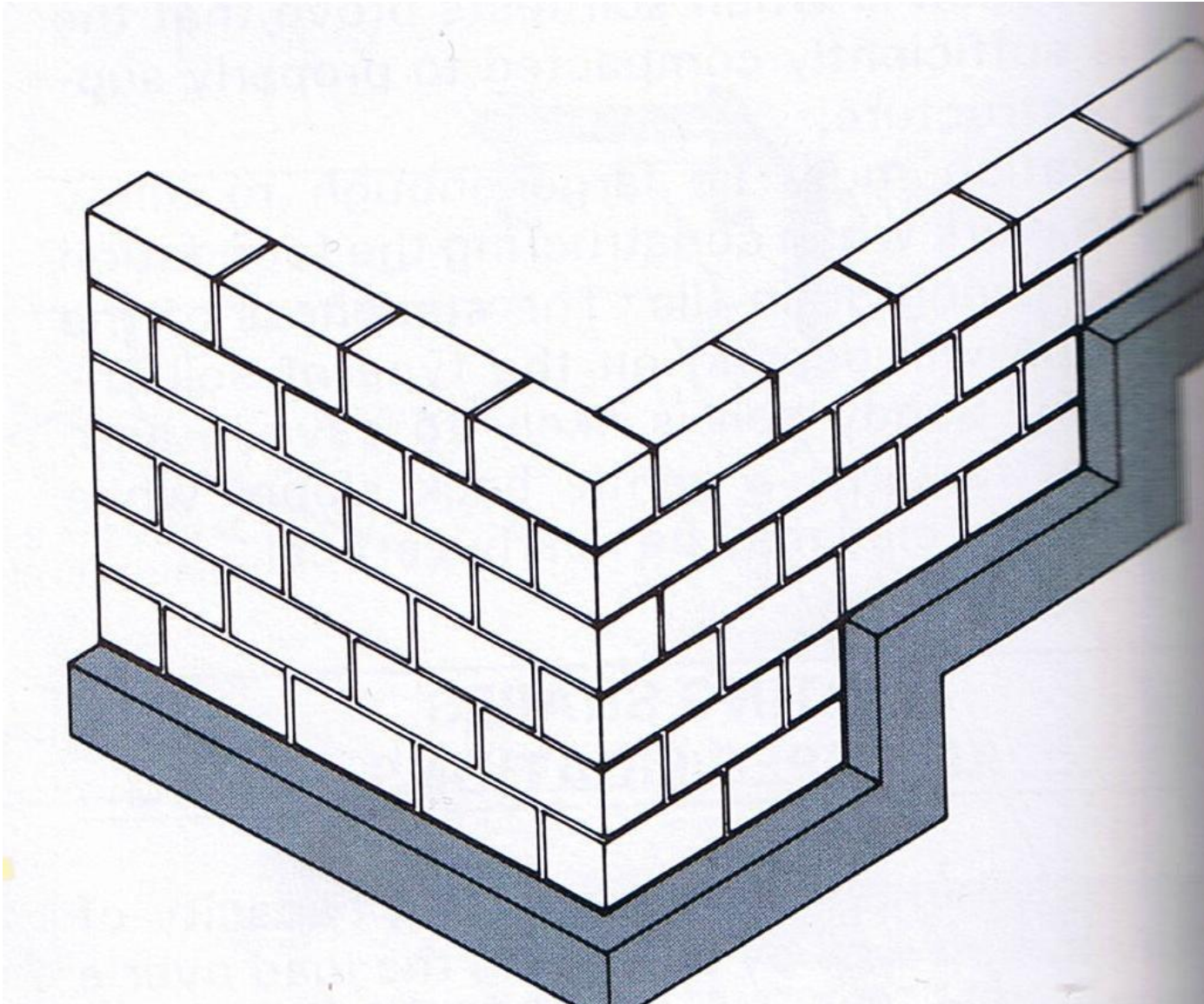
Foundation Systems, Floor Systems & Foundation Support

Piling foundations must be designed to resist forces from uplift, lateral force, and rotation as well as normal vertical gravitational loads.



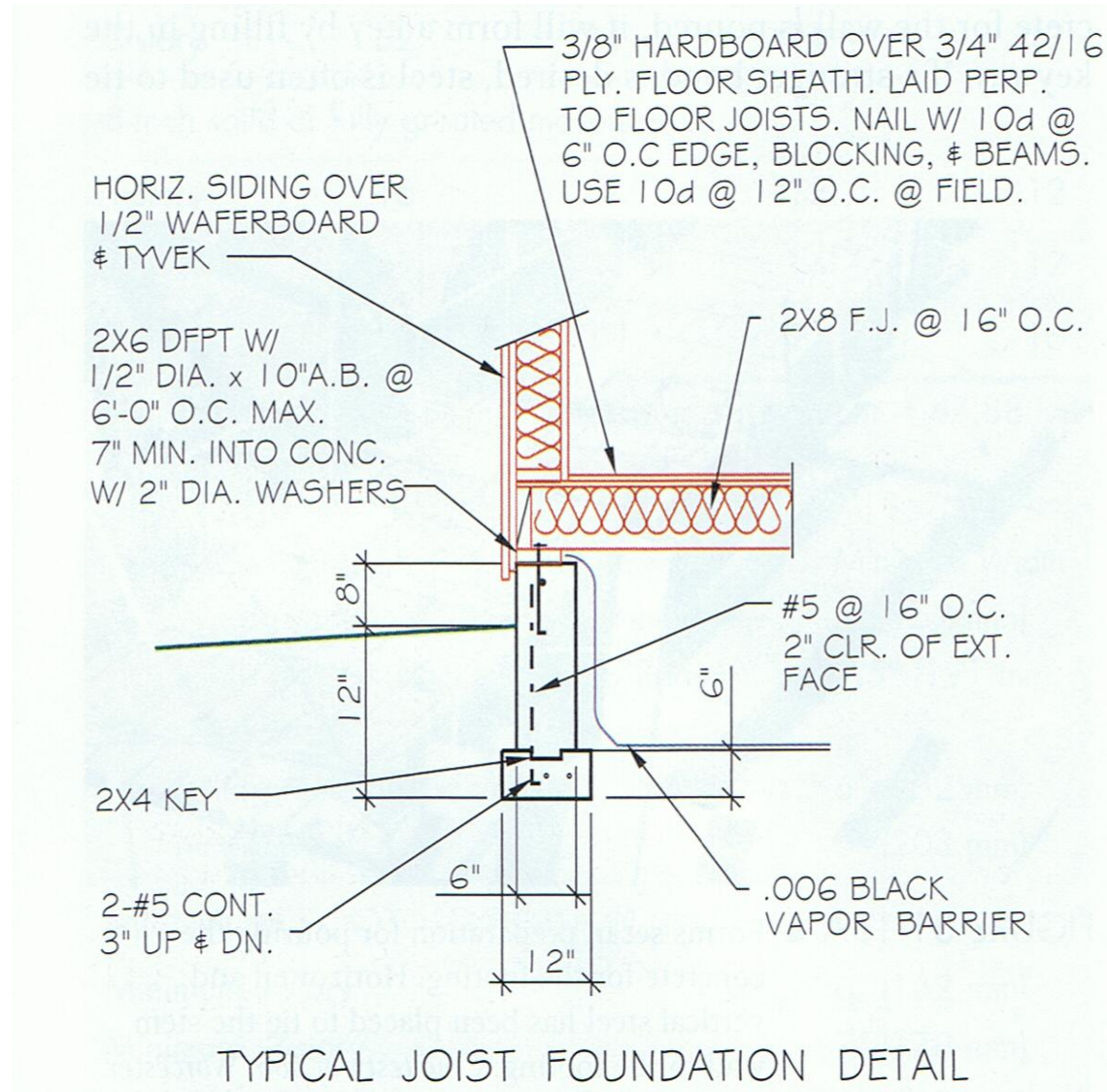
Foundation Systems, Floor Systems & Foundation Support

***When building on a hilly terrain stepped footings are used.**



Foundation Systems, Floor Systems & Foundation Support

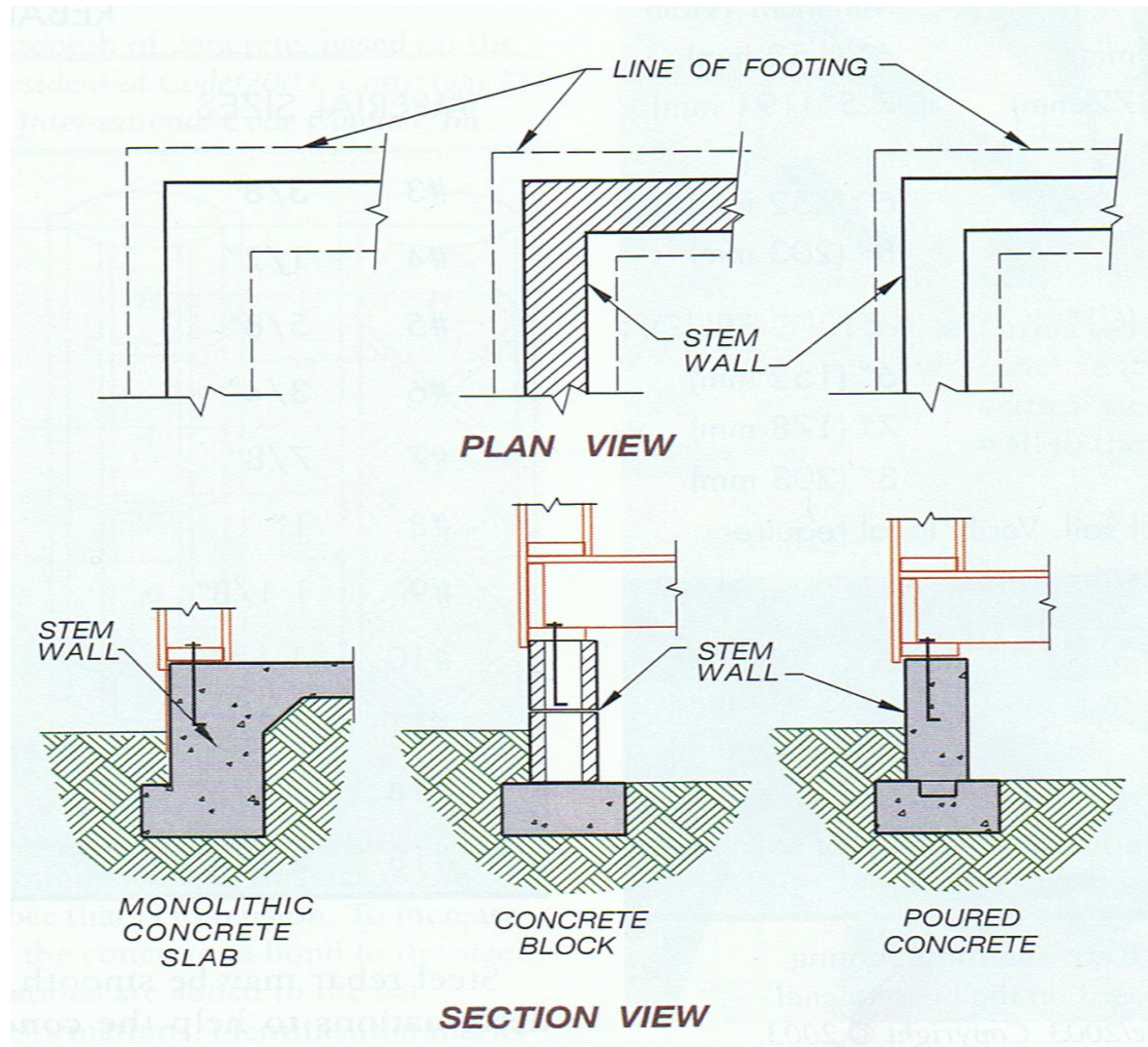
The most typical foundation used in construction is called a continuous or a spread foundation consisting of a footing and a wall.



Foundation Systems, Floor Systems & Foundation Support

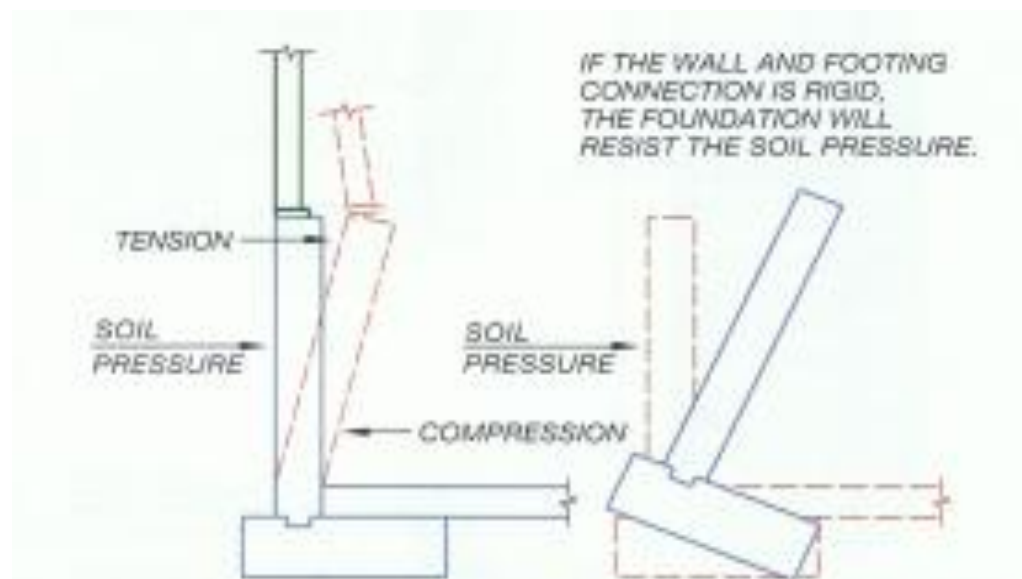
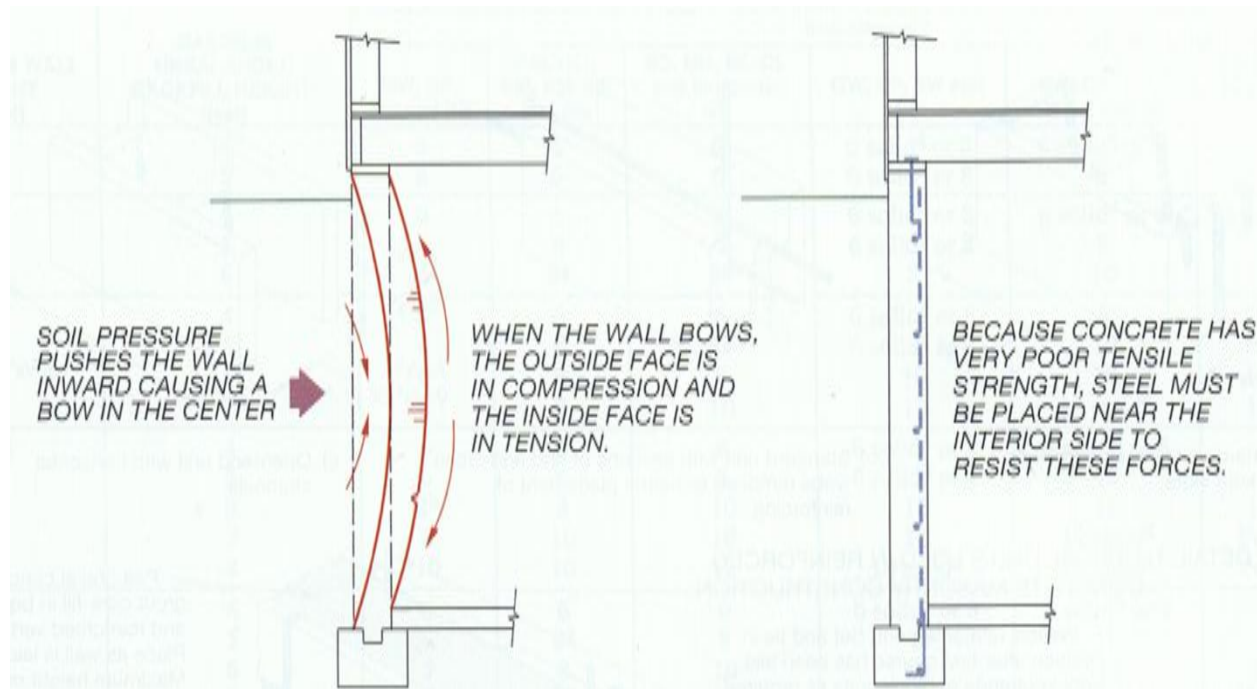
*A footing forms the base of a foundation and is used to displace building loads over the soil.

*The type of line that you as a draftsman would use to draw it on the foundation plan view is a dashed line.



Foundation Systems, Floor Systems & Foundation Support

Concrete is stronger under compressive loads than under forces of tension.



Foundation Systems, Floor Systems & Foundation Support

***Steel rods (rebar) is placed in the footing to help resist forces of tension. It is normally placed near the bottom of the footing. Steel rods (rebar) are also used to reinforce slabs and foundations walls.**



Foundation Systems, Floor Systems & Foundation Support

***A welded wire mesh is often placed in concrete slabs to reduce cracking.**

