

## FOOTING/FOUNDATION – INFORMATIONAL HANDOUT

- Permits are required for all new, replacement, and repair work on footings and foundations.
- All materials and the installation of all materials must comply with the 2015 Minnesota State Residential Code and the manufacturers' installation specifications for each product.

**PERMIT CARD AND APPROVED PLANS (throughout the project) shall be:  
POSTED prior to start of work - VISIBLE from street or driveway - ACCESSIBLE to the inspector**

### **INSPECTION REQUIREMENTS:**

- **MUST** schedule during office hours **AT LEAST** one business day prior to required inspection. If a specific date and/or time will be required, more notice may be needed – please plan ahead. A re-inspection fee may be charged for failure to cancel an inspection for which you are not ready, or for failure to pass an inspection.
- Office Hours: Monday - Friday • 8:00 a.m. - 4:30 p.m.
- Phone: (952) 442-7520 or (888) 446-1801

**Inspections:** See your permit card to determine which of the following inspections are required for your project.

- **Footings:** After forms and reinforcing are in place, but **PRIOR TO POURING CONCRETE**. Ensure 5000 psi concrete is used for all strip footings (see Table 402.2). If rebar is being placed in footings, a UFER ground must be installed for new electrical service (new buildings).
- **Poured Wall:** After forms and reinforcing are installed; but **PRIOR TO POURING CONCRETE**.
- **Foundation/pre-backfill:** **PRIOR TO BACKFILLING** around a foundation. Exterior drainage system, waterproofing, exterior insulation and wall bracing must be in place.

**Warning:** **The inspector may issue an order to remove materials to verify compliance with the MN State Building Code and manufacturer's installation requirements.**

If a re-inspection is required, a re-inspection fee will apply. The permit holder (the signing applicant) or the permit holder's representative must meet the inspector at the site to provide access. The re-inspection will not be conducted if the re-inspection fee is not paid.

**Note:** The State of Minnesota requires that all residential building contractors, remodelers, and roofers obtain a state license unless they qualify for a specific exemption from the licensing requirements. Any person claiming an exemption must provide a copy of a Certificate of Exemption from the Department of Labor & Industry to the Municipality before a permit can be issued.

**Note:** To determine whether a particular contractor is required to be licensed or to check on the licensing status of individual contractors, please call the Minnesota Department of Labor & Industry at 651-284-5065 or toll free 1-800-342-5354.

**Note:** The criteria in this handout represent general code requirements relative to a project. For specific code requirements, please contact the Building Inspection Department at 952-442-7520 or 888-446-1801 or e-mail: [info@mnspect.com](mailto:info@mnspect.com).

### **PROJECT INFORMATION:**

The following is information to assist in the compliance with the requirements of the MN State Building Code.

**Drainage:** Lots shall be graded so as to drain surface water away from foundation walls. The grade away from the foundation walls shall fall a minimum of 6" within the first 10 feet. Where slopes or physical barriers prevent this, drains or swales shall be provided.

**Minimum Footing Size R403.1.1:** Minimum sizes for concrete and masonry footings shall be as set forth in Table R403.1 (see below) and Figure R403.1.1 (see below). The footing width "W" shall be based on the load-bearing value of the soil in accordance with Table R401.4.1 (see below). Spread footings shall be at least 6" in thickness. Footing projections "P" shall be at least 2" and shall not exceed the thickness of the footing. The size of footings supporting piers and columns shall be based on the tributary load and allowable soil pressure in accordance with Table R401.4.1.1.

**Table R403.1: Minimum width of concrete, precast or masonry footings in (inches<sup>a</sup>)**

	Load-bearing value or soil (psf)			
	1,500	2,000	3,000	≥4,000
<b>Conventional light-frame construction</b>				
1-story	12	12	12	12
2-story	15	12	12	12
3-story	23	17	12	12
<b>4-inch brick veneer over the light frame or 8-inch hollow concrete masonry</b>				
1-story	12	12	12	12
2-story	21	16	12	12
3-story	32	24	16	12
<b>8-inch solid or fully grouted masonry</b>				
1-story	16	12	12	12
2-story	29	21	14	12
3-story	42	32	21	16

For SI: 1 inch = 25.4 mm, 1 pound per square foot = 0.0479 k Pa.

a. Where minimum footing width is 12", use of a single wythe of solid or fully grouted concrete masonry units is permitted.

**Table R401.4.1: Presumptive load-bearing values of foundation materials<sup>a</sup>**

Class of materials	Load-bearing pressure (Pounds per square foot)
Crystalline bedrock	12,000
Sedimentary and foliated rock	4,000
Sandy gravel and/or gravel (GW and GP)	3,000
Sand, silty sand, clayey sand, silty gravel and clayey gravel (SW, SP, SM, SC, GM and GC)	2,000
Clay, sandy clay, silty clay, clayey silt, silt and sandy silt (CL, ML, MH and CH)	1,500 <sup>b</sup>

For SI: 1 pound per square foot = 0.0479 k Pa.

a. When soil test are required by Section R401.4, the allowable bearing capacities of the soil shall be part of the recommendations.

b. Where the building official determines that in-place soils with an allowable bearing capacity of less than 1,500psf are likely to be present at the site, the allowable bearing capacity shall be determined by a soils investigation.

NOTE: Provide soil type on plans submitted for permit.

**Table R402.2:**

**Minimum specified compressive strength of concrete<sup>a</sup> (f' c)**

Type or locations of concrete construction	Weathering potential <sup>b</sup>	Negligible	Moderate	Severe
Footings <sup>g</sup>		5,000	5,000	5,000
Basement walls, foundations and other concrete not exposed to the weather		2,500	2,500	2,500 <sup>c</sup>
Basement slabs and interior slabs on grade, except garage floor slabs		2,500	2,500	2,500 <sup>c</sup>
Basement walls, foundation walls, exterior walls and other vertical concrete work exposed to the weather		2,500	3,000 <sup>d</sup>	3,000 <sup>d</sup>
Porches, carport slabs and steps exposed to the weather, and garage floor slabs		2,500	3,000 <sup>d,e,f</sup>	3,500 <sup>d,e,f</sup>

For SI: 1 pound per square inch = 6.895kPa.

<sup>a</sup> At 28 days psi.

<sup>b</sup> Minnesota is categorized Severe.

<sup>c</sup> Concrete subject to freezing and thawing during construction shall be air-entrained concrete in accordance with Footnote d.

<sup>d</sup> Concrete shall be air-entrained. Total air content (percent by volume of concrete) shall not be less than 5 percent or more than 7 percent.

<sup>e</sup> See Section R402.2 for minimum cement content.

<sup>f</sup> For garage floors with a steel trowel finish, reduction of the total air content (% by volume of concrete) to not less than 3% is permitted if the specified compressive strength of the concrete is increased to not less than 4,000 psi.

<sup>g</sup> Compressive strength (f' c) of 2,500 psi, with an approved admixture that provides a water and vapor resistance at least equivalent to 5,000 psi concrete.

1303.2402 Subp. 2 Soil gas membrane – At habitable areas, a soil-gas membrane shall be placed on top of the gas-permeable material prior to placing a floor on top of or above the soil. The soil-gas membrane shall cover the entire floor area. Separate sections of membrane must be lapped at least 12" (305 mm).

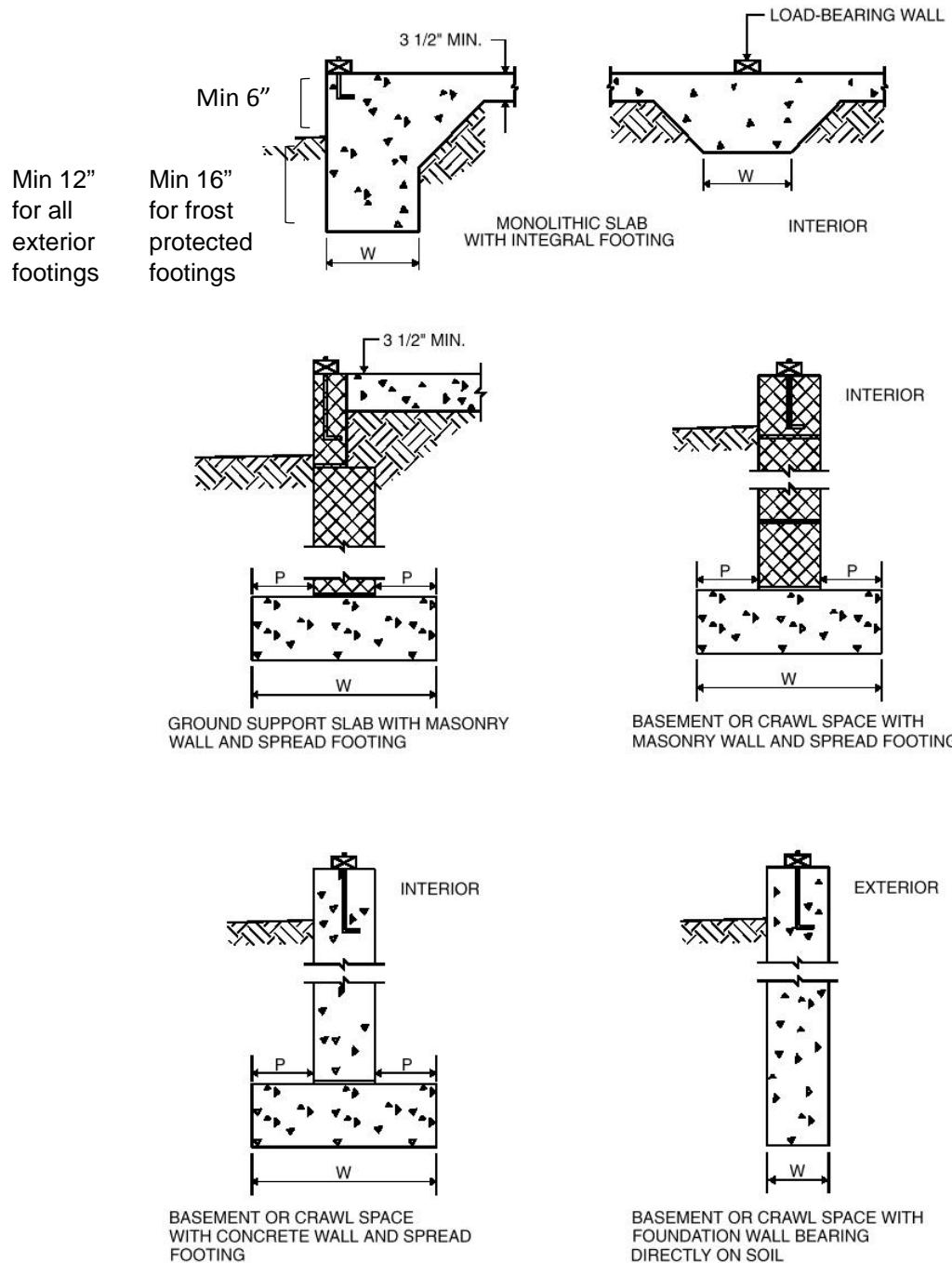
R506.2.3 Vapor Retarder. In heated areas of non-habitable structures, an approved vapor retarder with joints lapped not less than 6" (153 mm) shall be placed between the concrete floor slab and the base course or the prepared subgrade where no base course exists.

**Figure 403.1.1**

**Concrete and masonry foundation details**

W = Load bearing value of soil per table 401.4.1 and table 403.1

P = A minimum 2 inches and not to exceed the thickness of the footing



**R403.1.3.2 Slabs-on-ground with turned down footings**

Slabs on ground with turned down footings shall have a minimum of one No. 4 bar at the top and the bottom of the footing.

Exception: For slabs-on-ground cast monolithically with the footing, locating one No. 5 bar or two No. 4 bars in the middle third of the footing depth shall be permitted as an alternative to placement at the footing top and bottom. Where the slab is not cast monolithically with the footing, No. 3 or larger vertical dowels with the standard hooks on each end shall be provided in accordance with Figure R403.1.3.2. Standard hooks shall comply with Section R611.5.4.5.

**Figure R403.1.3.1**

**Dowels for slabs-on-ground with turned-down footings**

