

## **Chapter 2     SITE WORK AND FOUNDATIONS**

### **2.1     Site Work - Monolithic Pours**

Monolithic pour sites are prepared for construction of SmartBlock form walls in the same manner as for other common foundation forming systems. Set batter boards beyond all corners and stretch string lines across the location of the exterior faces of the walls. This procedure will locate the position of the corners. Using a plumb bob, set flag nails directly below the string at a distance of 4 to 6 feet apart, 1 foot from each corner. After completing the perimeter of the building, set a stake at each flag nail. Once the exterior stakes are in place, add an additional nail  $1\frac{1}{2}$ " to the outside of the string location on the batter boards to offset the string. This will move the string out of the way for the next step and provide a wall alignment guide. Using stake material, build a spreader in an "L" shape: the bottom leg of the "L" should be  $9\frac{1}{4}$ " in length. Using the spreader, line up with the existing stake facing towards the interior of the building, setting interior rows of stakes directly opposite of exterior stakes. This setting of interior stakes will produce a  $\frac{3}{4}$ " toe-in that will hold SmartBlock insulating forms steady during pouring.

### **2.2     Forming Fabrication**

Once the stakes are set, bottom horizontal rebar may be set as needed to satisfy foundation construction requirements. Calculate the required form height by subtracting the subfloor and sill depths and mark elevation on stakes. Two courses of SmartBlock insulating forms can be assembled and slid between stakes to a point of minimum depth of spread footing and held in place by the toe-in of the stakes. Subsequent rows of forms can be added setting vertical and horizontal rebar as required. Once forms are in place to the required elevation, as marked on the stakes, and all rebar is in place, stakes should be held together at the top using SmartBlock box clips. The foundation should now be ready for inspection and may be poured upon approval. While pouring, use a 2" x 4" with the  $1\frac{1}{2}$ " string offset to check wall for alignment.

At the contractor's discretion, foundation hardware may be pre-clipped in place or set in concrete at pour. Pressure treated Douglas fir (PTDF) or foundation grade redwood sills should be placed and set while concrete is still wet.

**Note:** The forms may also be set on pre-poured footings to form a foundation and/or above grade wall, much in the same manner as in conventional concrete block construction.

## **2.3 Foundation Systems**

This section addresses various foundation systems and analyzes design criteria for use of SmartBlock insulating forms with these systems.

### *2.3.1 Slab on Grade*

Slab on grade construction with SmartBlock insulating forms (see Details 5.0 - 10.0 on pages 72-77) is similar to construction of stem wall footings in conjunction with slab construction. Trenches are excavated and SmartBlock insulating forms are installed as described in Chapter 2.1. Design and construction of the wall is similar to design with masonry block. Build the SmartBlock insulating form wall following the recommendations in Chapter 3 with reinforcing steel placed in accordance with project requirements. The slab should be standard thickness with adequate base material as required by the soils engineer, with the vapor barrier extending the full length under the slab to prevent moisture penetration.

### 2.3.2 *Stem Wall Foundation*

The use of SmartBlock insulating forms in stem wall foundations will reduce cost and improve energy efficiency especially when used for a controlled ventilated crawl space (CVC) or a perimeter insulated raised floor (PIRF) foundation system. See Detail 1.0 on page 68.

The relation between the size and location of all openings in stem wall foundations must be considered by the designer in relation to required lintel frames and other supporting elements. Crawl space openings must be framed as detailed for window openings, and reinforcement must be placed as shown in those details, considering any concentrated or point loads occurring in that locale. If vent openings are located in the wall, the same care should be taken for vertical loading as with larger openings. In all cases approved treated lumber such as PTDF or foundation grade redwood should be used in direct contact with concrete.

When joists are running parallel to the foundation (Detail 7.0 on page 74), use double joists nailed in accordance with the project documents. Inspect exterior joists for extreme size fluctuation (oversize) and warping to prevent accidental loading of this member. To insure proper wood coverage and workability of anchor bolts, it is recommended that a 2" x 6" minimum PTDF or foundation grade redwood sill be used.

In situations where incidental retaining capacities are required of a stem wall footing, SmartBlock insulating form walls will perform as any other common concrete wall system. In these situations wall design should incorporate all conditions customarily considered in retaining wall design. The building walls and design detail chapters of this manual contain tables and design criteria, respectively, that will assist the design professional in determining retaining capacities meeting with local code and soil conditions.