Chapter 18: Concrete Slabs

While preference is to have building shell completed prior to pouring concrete slabs, at the very least roof should be installed.

Building columns tend to grow "bull's-eyes" in the presence of pre-mix concrete trucks. A completed building shell is far more resistant to potential damage. Pouring slabs with columns only in place, adds to the risk of one inadvertently being knocked out of plumb.

This section **is not** meant to provide the necessary instruction to pour a building slab. This is not because the task is beyond a novice's abilities, although many do contract out this job. Pouring a slab is within most people's abilities. However, unlike wood framing, which can be corrected if improperly constructed, work on a slab is "set in stone". Due to this, and the fact so many local codes and practices apply to concrete slabs, we have only touched on this subject. If deciding to personally undertake, we suggest talking with local professionals to know what you are getting into. Have building inspector (usually a requirement in permitted situations) or a professional inspect work *before pouring concrete.* If under 100% confident, hire a professional to work alongside during the concrete pour.

If in "frost country" a sub-base 6" or thicker should be first placed across the site. To maintain frost-free soils sub-base should be such that no more than 5% (by weight) will pass the No. 200 sieve, and it is further desired no more than 2% be finer than .02 mm.

Prior to pouring, 2" to 6" of clean and drained sand or sandy gravel is spread below where concrete is to be poured. Mechanically compact fill to at least 90% of a Modified Proctor Density, so as not to cause slab to sink. Install a good vapor barrier (such as A2V reflective insulation, available through Hansen Buildings) below any interior pour, to stop moisture from traveling up into slab through capillary action. Place 3" to 4" of clean and drained sand on top of the vapor barrier, to decrease differential drying shrinkage and floor curling. If not using fiber-mesh or similar reinforcement additives to concrete mixture, place wire mesh or rebar (reinforcing steel rods) in slab center to add rigidity to concrete to aid in minimizing cracking.

Insulation Under Concrete Slabs

Best product to use is A2V reflective insulation. Unroll reflective insulation over prepared site sand or gravel, with aluminum side facing ground (white side up). Overlap by 2" at seams. Run reflective insulation up skirt board inside by 6". Seal seams with reflective insulation white vinyl tape or white duct tape. Pour concrete on top of reflective insulation.

Aluminum side faces away from concrete as concrete's high alkalinity attacks aluminum causing facing to degrade.

 Adding sand over reflective insulation will facilitate water drainage during curing time and accelerate installation.

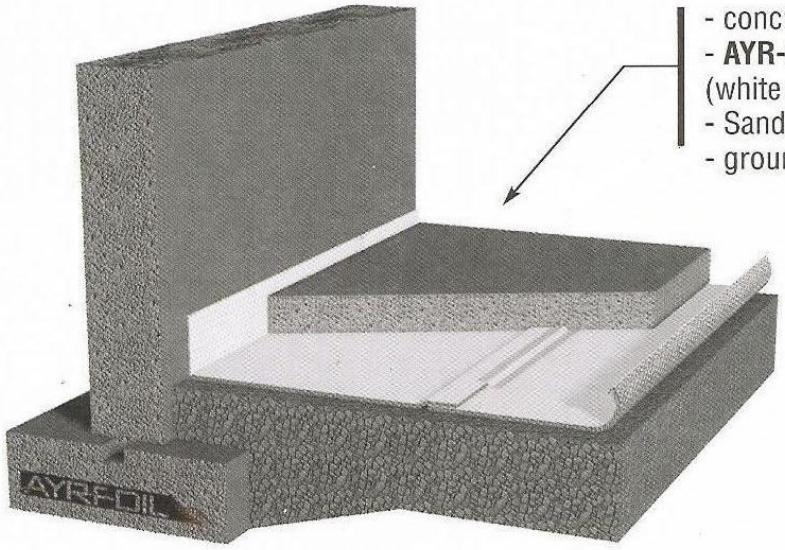
AYR-FOIL™

HI-PERFORMANCE REFLECTIVE INSULATION

UNDERNEATH A CONCRETE SLAB INSULATION SYSTEM

With AYR-FOIL™ A2V

- Eliminates basement dampness
- Increases comfort in the basement
- Slab temperature very close to room's temperature
- Very easy and quick to install
- 60 PSI crushing resistance
- Helps the slab to radiate the energy back in the room
- Breaks the thermal bridges between the slab and the ground



Thermal value: - Equivalent to R10 for the assembly
- Tested with thermography method

INSTALLATION METHOD:

1- Unroll **AYR-FOIL™** over the sand or gravel, aluminum side facing the ground. (white side up)

2- You should overlap the seams by 2". Let the material run up 6" along the wall.

3- Seal the seams with **AYR-FOIL™** white vinyl tape (2" wide).

4- Pour the concrete on top of it.

P.S. Adding 1" thick of sand over **AYR-FOIL™** will facilitate water drainage during curing time. This will accelerate the installation time.

Local code will dictate such things as slab thickness (usually 4" nominal), wire mesh sizing, gravel or sand layer thickness, and size and rebar location. Many garage or shop slabs also have a center drain. In the event structural engineering for a concrete floor (or any

concrete or other masonry footings, foundations, walls, or retaining walls) is required or requested by you, or a building official, this is outside our engineer's scope.

On solid walls of building, pressure treated skirt board will serve as forms for pouring slab. In open wall areas, or across sliding or overhead doors, a 2x4 will need to be temporarily place as a form.

 Prior to pouring a nominal 4" (3-1/2" actual completed) thick concrete slab in building, finished, graded compacted fill **TOP** will be even with skirt board **BOTTOM**. If a thicker floor is desired, excavate below skirt board bottom, by any slab thickness greater than 4". In no case, will concrete floor top, be even with either top or skirt board bottom. Using any other measure for the concrete slab top, will result in wall steel and doors not properly fitting, as well as interior clear height loss.

In other terms – after the floor is poured, when standing inside building, approximately 3-3/4" of the skirt board will be visible above the top of the slab. **See Figure 18-1**.

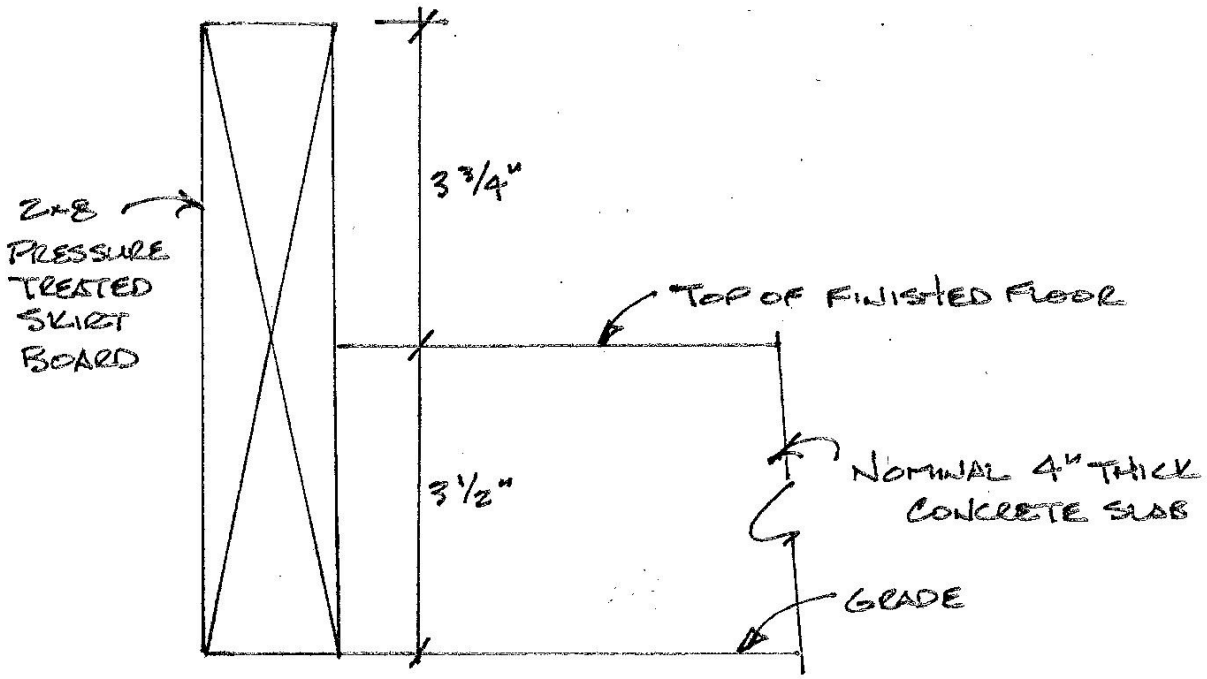


Figure 18-1

In the event a professional is hired to finish concrete, *most often* costs can be reduced by paying the local pre-mix company direct for the concrete. Many offer discounts for prompt payment, so do not be afraid to ask. On a properly leveled site, a pre-mix concrete yard will cover an 80 square feet area, nominally four inches thick.