

TECHNICAL NOTE

NO. 4



Small Homes Council—Building Research Council, University of Illinois at Urbana-Champaign

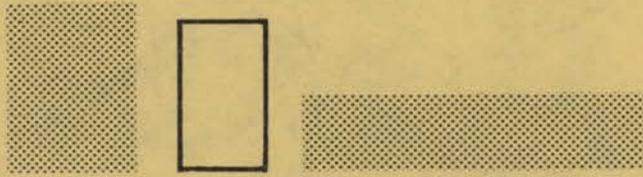
CONVERTING A CONCRETE SLAB TO A WOOD SUBFLOOR

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Twenty-five Cents

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In many cases, an existing concrete slab can be used as a basis for additional living space or a room for a house. These slabs exist as attached garages, sun porches, breezeways, and patios that were built during the initial construction of the house. They may or may not have been intended for expansion space at a later date. Following are some methods for converting an existing slab, or a new concrete slab, to a wood subfloor, which in turn may be covered with carpeting, wood strip-flooring, underlayment and resilient flooring, or other types of finish flooring.

EXISTING CONSTRUCTION

Insulation

It is important for your comfort that the slab be insulated, and when converting an existing porch or breezeway into a room there is only a slight probability that the slab originally was built with insulation and a vapor barrier. The most practical way to do this is to apply

a 1-inch, rigid moisture-proof material, such as foamed polystyrene or polyurethane, to the outer surfaces of the foundation, extending down to the footing as shown in Figure 1.

The soil around the perimeter of the slab should be removed and the concrete surfaces cleaned. The rigid insulation is then attached to the concrete with a mastic designed for this purpose. A covering material, such as asbestos-cement board, preservative-treated plywood (pressure-treated), or other material suited for underground use, is then attached to the foamed board with the mastic. Standard insulating fiberboard sheathing should not be used as underground insulation. Soil-poisoning chemicals for subterranean termite control should be mixed with the soil during the backfilling.

Perimeter-Wall Framing

If an exterior wall is not already in place, such as a garage or breezeway, fasten a pressure-treated 2 x 6 plate to the slab edge, extending it out over the insulation and covering, as shown in Figure 2. The 2 x 6 will provide a cover for the top edge of the insulation on the outside and serve as a support edge for the subfloor on the inside. The plate should be attached to the slab by concrete nails or powder-activated fasteners. The fastener heads should be buried in the plates or positioned so they will

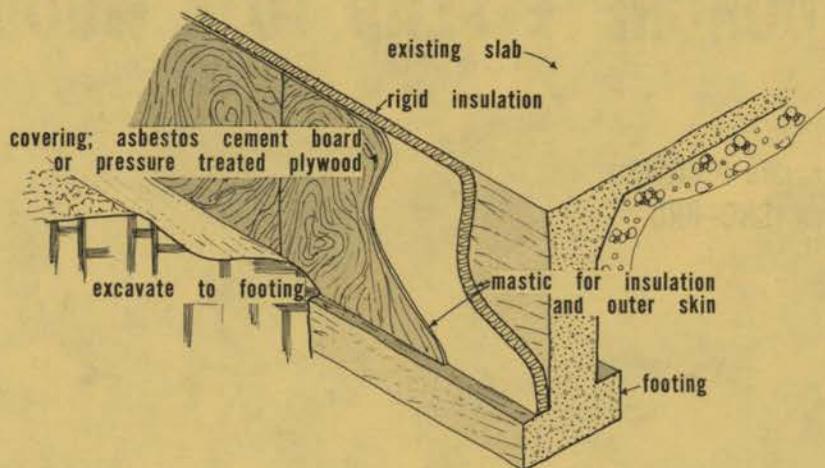


Figure 1

not interfere with placement of the wall plates or edges of the subfloor.

Subfloor Construction

Construct the subfloor by placing pressure-treated 2 x 4 sleepers on the slab, bedded in continuous strips of asphalt-base mastic, as shown in Figure 2. The spacing is dictated by the flooring materials to be used. Because the sleepers and perimeter plates are placed in contact with the concrete, and because the vapor barrier is so placed as to prevent moisture or

water vapor from moving up into the flooring, it is recommended that the sleepers be chemically treated to prevent decay. The sleepers and plates should be treated with any one of several accepted chemicals and pressure-treatment processes. For a detailed description, see the American Wood Preservers Association Manual of Recommended Practice. However, creosote-treated materials should be avoided for interior uses because of the odor. Lumber treated with salt-type chemicals or pentachlorophenol dissolved in liquified petroleum gas (Cellon^{T.M.}) is preferred.

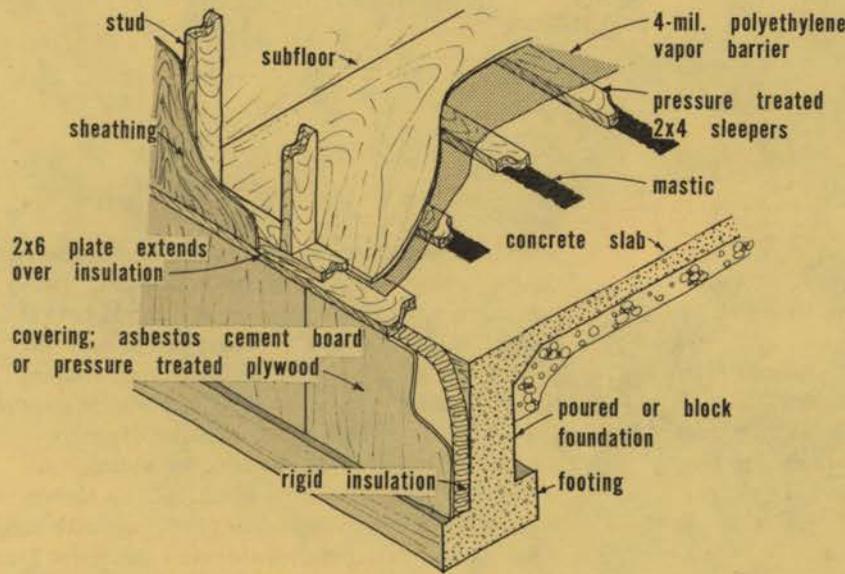


Figure 2

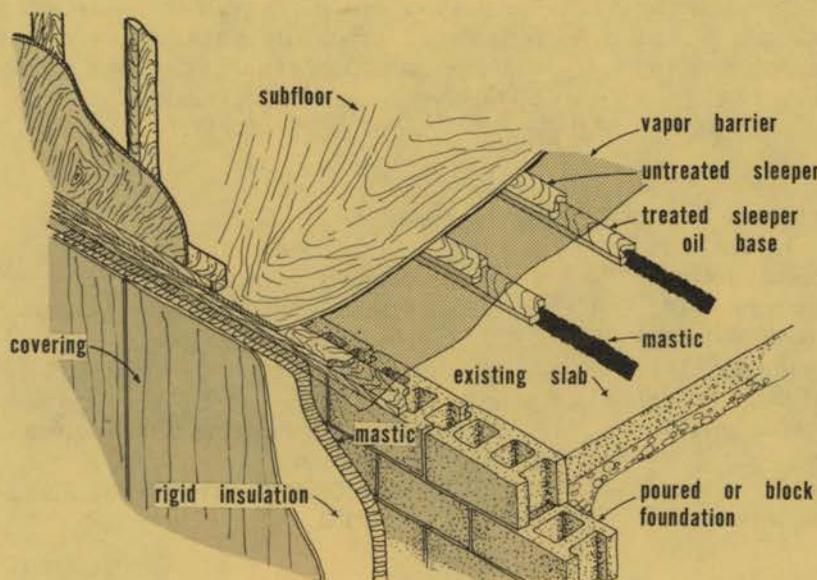


Figure 3

If lumber treated with preservatives carried in an oil-base solution is all that is available, then the sleeper system should be modified as shown in Figure 3. The lower part of the sleeper, which is in contact with the concrete, can be 2 x 2's or 1 x 4's, depending upon availability of the material. A 4-mil polyethylene film is then tacked or stapled to the lower sleeper, and a matching untreated upper member is installed over the vapor barrier, counter-sinking the nails into the top part of the sleeper. By using untreated members above the vapor barrier and using flooring nails that do not penetrate to the treated sleepers, the treating solution will not move up the shank of the nail and stain the finish flooring. This condition does not occur in lumber treated with salt-base materials or with pentachlorophenol dissolved in liquified petroleum gas (Cellon^{T.M.}).

Put a polyethylene film on top of the sleepers

as a vapor barrier, and extend it over the 2 x 6 plate before you completely install the wall framing. If the wall is not already in place, platform framing is developed. Electric, water, or gas lines can be installed between the sleepers prior to fastening down the subfloor.

The subfloor is fastened to the sleepers, just as in a normal subfloor installation, and its thickness is dictated by the finish floor material and whether or not an underlayment is to be applied.

When the vapor barrier is between the two-part sleepers (Figure 3), the subfloor can be glued to the top member. The glue will provide extra stiffness and prevent squeaky floors. Gluing also is recommended for installing a single-skin combination subfloor and underlayment. If a plywood subfloor is used, the length of the panel should run perpendicular to the sleepers.

After the subfloor is installed, the wall-framing is finished. The floor is then finished. Carpeting or wood flooring can be used over the subfloor, or an underlayment installed for resilient flooring. In any case, the subsequent materials are installed according to standard practices.

NEW CONSTRUCTION

When a slab is being poured that may be converted at a later date, a vapor barrier should be installed beneath the slab and the insulation added as shown in Figure 1 when the conversion is made. Chemical soil poisoning should be used below the slab and around the perimeter. It is both easier and cheaper to install these materials during initial construction. The wood subfloor can be added as described above.

Care should be taken when joining a new

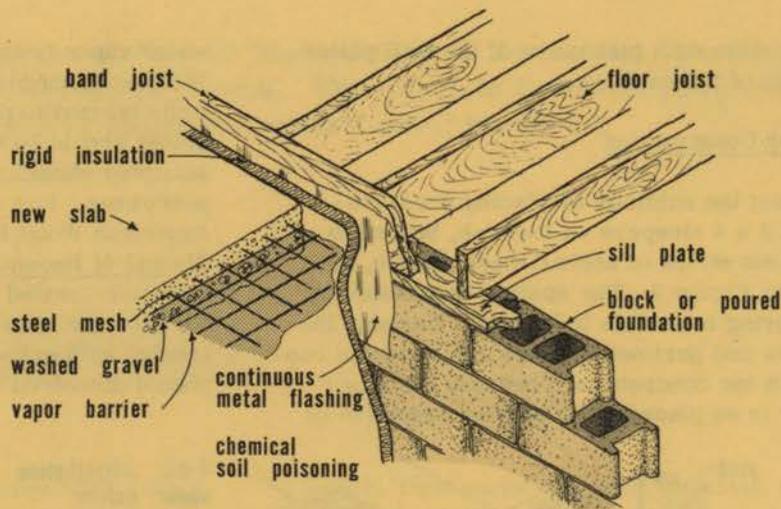


Figure 4

slab to an existing house regardless of the foundation; crawl space, slab or basement. If the new slab is to be positioned at a level between the sill-plate and the subfloor of the existing house, the siding should be removed, leaving the sheathing, sill-plate, and band-joint exposed. The concrete should not be placed directly against any untreated framing or siding. A metal flashing should be installed, as shown in Figure 4, in one continuous piece, or with soldered joints, to prevent water and concrete from coming in contact with the wood members.

Copper-coated building paper is not suitable for this purpose. Chemically treat the soil as it is replaced, especially at the junction of a slab and an existing foundation. The room can then be finished by standard methods.

References:

1. American Plywood Association
2. American Wood Preservers' Association
3. Cellon, Koppers Company
4. Current Construction Practices, SHC-BRC
5. National Oak Flooring Manufacturers Association
6. Termite Control, Circular No. F2.5, SHC-BRC