

Renovating Your Basement

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Abstract:

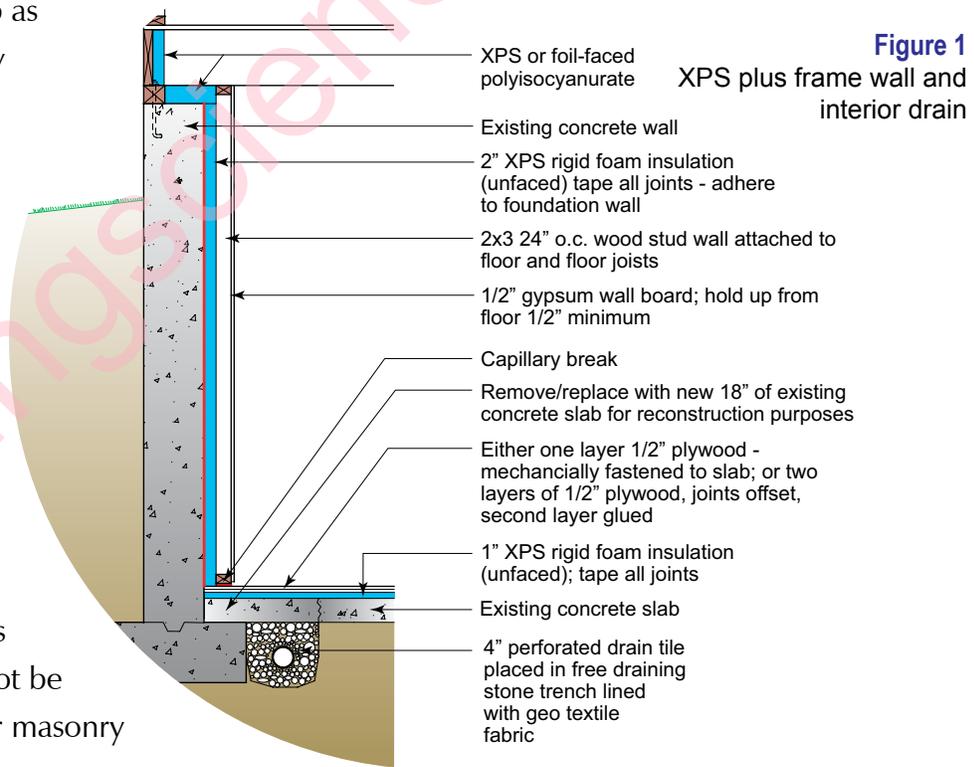
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Heat loss through uninsulated basement walls can account for up to one third of the heat loss from an average home. Installing insulation on basement walls is often inexpensive, easy to accomplish and frequently combined with “finishing the basement.” Unfortunately, basement walls are often damp or are only dry on the surface because of evaporation of water into the basement air. Installing wood framing or fiberglass batts directly against basement walls subsequently leads to mold growth and decay of the wood due to fungal growth.

Insulating basement walls can be safely accomplished by assessing the moisture conditions of these walls and applying some basic “building science” to the design process. If walls are visibly wet at times or water occasionally drains from the walls onto the floor, an interior drain system should be installed before insulating and finishing the basement. This requires cutting the concrete floor to remove the outer 12 inches which permits the installation of a drainage system below the concrete slab as shown in Figure 1. If walls are periodically damp but never have water flowing down them, omitting the interior drainage system can be considered. In this situation compare the cost of installing the drainage system to the cost of replacing the finished floor if it gets wet.

The building science principles that apply to insulating basement walls and floors include the following:

1. Moisture sensitive materials such as wood, paper and fiberglass batts should not be installed in direct contact with concrete or masonry walls and floors.
2. Moisture tolerant materials that also do not absorb liquid water should be installed in contact with concrete and masonry surfaces. These materials will not deteriorate if they get wet and they also will not wet moisture sensitive materials that are in contact with them.
3. Moisture tolerant insulation installed in an airtight manner on basement walls and floors warms the first condensing surface above the dew point of the interior air. This reduces the probability of warm moist air condensing on cool surfaces.



About this Report

This report was prepared for the US Department of Energy's Building America Program.

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