

PRESERVED WOOD FOUNDATIONS

Although preserved wood foundations are a relatively new concept for the general public, wood has been used for pilings (support for buildings) and various other underground applications for many years. Engineers, researchers and builders have a great deal of experience with the performance of both treated and untreated wood used in the ground.

In the early 1960's, the use of preserved wood for foundations was researched heavily, but the concept only gained acceptance in the mid 1970's. Since then, hundreds of thousands of houses have been built on preserved wood foundations.

Preserved wood foundations are sometimes called permanent wood foundations or PWFs.

MORE THAN MEETS THE EYE

To the uninitiated, the concept of making a foundation out of wood seems incredible. The concern is that wood, water and soil do not mix, even if the wood is treated.

A PWF design relies on a completely different building concept. A PWF is not simply an exchange of treated wood for concrete. The PWF design necessarily depends on a building system that keeps water away from the foundation. The entire foundation is sitting on and surrounded by gravel and free draining soil.

BENEFITS

The proponents of PWFs claim the following benefits over more traditional materials:

- **A dry basement:** One key benefit is a dry, mildew-free environment. Basement leakage, dampness and mildew are common in houses with traditional foundations. Since dampness is incompatible with PWFs, the design of the system relies on maintaining dry soil around the foundation.
- **A finished basement:** Since PWF walls are wood, finishing the basement is a snap. Insulation is placed between the wall studs, to which drywall can be directly attached. Try that with concrete!
- **A warmer basement:** The PWF is warmer and more energy efficient. This is true for two reasons: wood is a better insulator than concrete and the foundation wall studs provide a large cavity for insulation.

PROBLEMS

This system is limited in that it does not tolerate poor building practice or inexperienced builders. Strict design and a high level of supervision are required. Problems fall into two general categories:

1. Dampness problems due to an inadequate or non-performing drainage system. Unlike conventional basements, PWF basements should never be damp. A specialist should investigate at the first sign of dampness.
2. Structural problems resulting from soil pressure on the foundation walls. Any evidence of movement or failure of the structure requires a specialist in PWFs.

INSPECTION

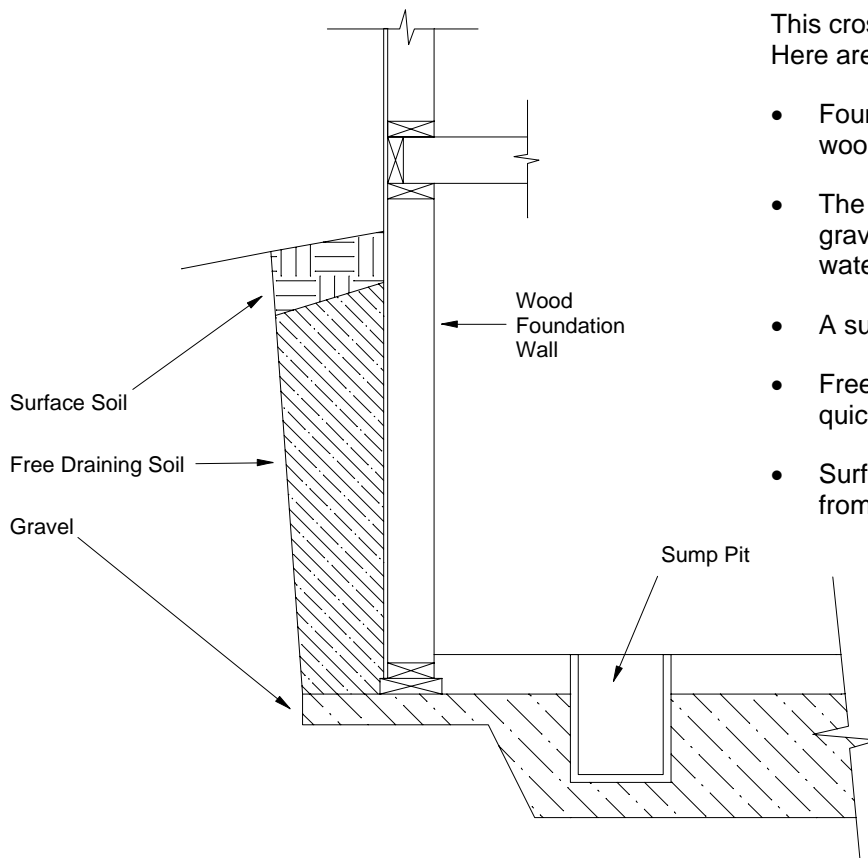
Inspection of a home with a preserved wood foundation presents special challenges as many of the critical components and details are not visible for inspection. The foundation drainage system is underground so it can't be evaluated and the critical structural details of the foundation are usually concealed behind finish surfaces. If a home inspector finds any evidence of dampness, or of non-performance of the structure, a specialist will be recommended.

PRESERVED WOOD FOUNDATIONS

EDUCATION

If you live in a home built on a preserved wood foundation, you are probably already enjoying the warm, dry basement environment. Here are a few tips:

- Because a comprehensive drainage system is built right into the design and construction of the PWF, many homeowners believe they don't have to be as concerned or diligent about proper surface-water drainage. In fact, you are better to keep the water away from the house to start with. The surrounding land should slope away from the house. Gutters and downspouts should be kept clean and in good repair and should discharge well away from the house.
- If you ever notice dampness in the basement, have an expert evaluate the situation. Before you jump to any conclusions, consider that the source of water could be from inside the basement, from an air conditioner or a high efficiency furnace, for example.
- If you notice unusual curves, bows or movement of the foundation, contact a PWF specialist. For example:
 1. The foundation wall next to the basement stairs bows in.
 2. The basement floor has a bulge.
 3. The foundation walls are not plumb.
 4. Floors are not level. For example, the main floor slopes towards an outside wall.
- Don't make structural modifications to the foundation. Adding a basement window is a job for an expert.
- Treated wood for PWFs has a higher-grade treatment and it's not the same as treated wood used for decks and fences. Wood for PWFs will have a stamp on it with the letters 'PWF'.
- Don't burn scrap pieces of pressure-treated wood. The resulting ash can be toxic.



This cross-section shows a simplified PWF. Here are some of the key features:

- Foundation wall is made of preserved wood.
- The entire structure sits on a bed of gravel. The gravel quickly deals with water.
- A sump pit to collect excess water.
- Free draining soil backfill. Water drains quickly to the gravel bed.
- Surface soil sloped to shed water away from the building.