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## I am thinking of building a deck in my backyard. Are there alternatives to pressure treated wood for me to consider?



The concerns associated with pressure treated lumber stem from the chemical Chromated Copper Arsenate (CCA). When applied to wood, CCA protects wood from water, sun, and pests, prolonging its functional life. However, arsenic is a known carcinogen and the arsenic in CCA treated wood can be ingested by hand-to-mouth contact after touching the wood or the soil below the wood (which may also contain elevated concentrations of arsenic if the deck has been in place for a long period of time). Children are especially vulnerable while playing on equipment built with CCA treated lumber, since they have a tendency to put everything in their mouths. This is why playground equipment constructed with CCA treated lumber has been replaced in many areas. Although there have not been any direct links between arsenic poisoning or cancer and CCA treated wood, manufacturers of the product voluntarily removed it from the market. According to Health Canada's Pest Management Regulatory Agency, existing structures made

from CCA treated wood do not need to be removed, however, measures should be taken to protect people (especially children) from the arsenic. A good sealant should be applied to the wood every two to three years, to prevent direct contact between the chemicals and any surface that can be easily accessed. There are other types of products on the market that can be used in place of CCA treated lumber. These include pressure-treated wood containing Alkaline Copper Quat (ACQ) or Copper Azole (CBA-A) (these are chemicals which are less toxic than CCA), wood with natural preservatives such as cedar or redwood, or composite materials. Composite materials consist of recycled plastics and wood by-products. It is more costly than wood, however, it requires much less maintenance and is rot, insect, salt, and weather resistant.

### What type of supports should I provide for my deck?

There are many aspects of a deck that should be considered when discussing the structure. These include: joists, beams, post size, supports, spacing, decking thickness, guard/railing height, and spindle spacing. These aspects are especially important when a deck is high off the ground or supporting large loads.

### Joists

The joists are used to support the deck's surface. The size and spacing of joists are directly proportional, that is, as the size of the joist increases, the allowable spacing also increases. Larger joists can carry a larger load, therefore, fewer joists are required. The connection of the joists to the beam or ledger board is very important (please see the following discussion on beams for further information regarding these components). If the joist is not properly secured, then it does not matter how big it is! The joists can rest directly on the beam or ledger, as long as an acceptable length of joist is resting on the beam or ledger (usually 3-4 cm). Joist hangers are also used to connect the joist to the ledger board. The proper number of nails should be used with the joist hangers to ensure that the joists are properly secured. Joists should not just be "toenailed" into the ledger board since the nails can pull away from the wood over time and detach the joist.

## Beams

The beams are provided to support the end and sometimes middle of the joists. This reduces excessive vertical flexing and side-to-side (lateral) movement. As with the joists, the size and spacing of the beams are directly proportional. In some cases, the joists are supported by a ledger board, a beam that is secured to the house at one end, and one or two additional beams at the mid-span and ends of the joists. The ledger should be secured to either the foundation or an interior structural ceiling joist, and should be attached using the proper type of bolts. This is critically important because if the bolts are not adequate or are not secured properly, the deck could fail. Although this is not related to the deck structure, it is important to make sure a proper flashing is installed around the ledger board as well. A small leak that goes undetected for a long period of time can cause significant damage to the interior wood structure and finishes.

## Posts

The deck posts transfer the load from the beams to the ground. An undersized post or posts that are installed too far apart will be incapable of supporting the deck and can eventually crack, which would be a serious safety concern. Deck posts should be at least 15 ¼ cm x 15 ¼ cm (6"x6"), unless the deck is very close to the ground. Very high and very large decks, or decks that support large loads may require larger posts, or posts spaced closer together. The method of supporting the post in the soil should also be carefully considered. Ideally, a concrete footing that extends below the frost line should be installed and the post secured to the top of the

footing above the soil level. This not only prevents wood to earth contact (which could lead to premature deterioration and rot of the wood), but also prevents the deck from heaving during the freeze-thaw cycle. Small concrete deck blocks that are placed directly on the ground surface and not buried may also be used, but only for smaller (i.e. lower) decks with very good drainage in the underlying and surrounding soil. A thick layer of well-drained sand and gravel is required under deck blocks to reduce the potential for water accumulation, freezing, and heaving, during the freeze-thaw cycle.

## Guards and Railings

The railing or guard is what keeps guests from falling off of the deck. Therefore, the guard/railing should be very sturdy and tall. The requirement for guard and railing height is mandated by local building codes and varies from municipality to municipality. Typically, guards/railings are required to be installed if a deck is more than 0.45 (1.5 m) off of the ground. Guard/railing heights are typically 0.9 meters (36 inches) for decks that are no more than 1.8 m (6 feet) above finished ground level. For decks that are more than 1.8 m (6 feet) above ground, guards are typically required to be a minimum of 1.06 m (42 inches) high. To prevent small children from crawling through the spindles (or becoming stuck), the spindles should be at the most 10 cm (4 inches) apart. The spindles should be installed vertically, since horizontal spindles could be tempting for children to climb. The above requirements are typically required for stairs associated with decks, as well. In order to confirm local requirements, your local building department should always be consulted.

## Do I need to get a building permit for my deck?

In most cases, yes. Some municipalities only require a permit if the deck is a certain height above ground or if it is anchored to the house. It is best to check with the local building department prior to construction since costly upgrades may be required if the deck does not meet local standards. In addition to local building department requirements, the local planning and zoning department should be consulted to confirm limitations, if any for the type, location, layout, etc. of the deck. Many municipal zoning rules do not allow construction of decks and other structures within a minimum distance from the property line. During a home inspection, the deck is evaluated in terms of safety, rather than code compliance, since the home inspection is not a code inspection. If connections are poor, railings too low, or supports undersized, they are identified as safety issues. They may also be considered code infraction issues by the local authority. Determining whether a permit was obtained for construction of the deck is also outside of the scope of a home inspection. If concerned, an inquiry to the vendor (if available) or your lawyer to verify that proper permits were obtained is suggested.

To speak with a certified and trained AmeriSpec home inspector, contact us today.

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