

APPEAL FORM

Questions for this promotional examination were taken solely from the source material listed in the Source Material List. Information contained in any other material will not be considered in determining the correct answer to any question.

Houston Fire Department

HFD Investigator 1/7/2015

You may only appeal **ONE** question per form.

For Question # 85 I would like the Test Review Committee to take the following action (please check one or explain in the space provided):

- Make A the only correct answer. Other (please explain below):
 Make B the only correct answer.
 Make C the only correct answer.

Consider the following as correct answers (circle the answers you feel are correct):

A B C

Give all applicants credit

Remove the question from the exam.

Explanation: Please provide a detailed explanation of your appeal / rebuttal. **DO NOT WRITE THE TEST QUESTION ON THIS FORM.** Print/ Write legibly.

Tongue and groove is known and referenced to in both the construction book and NFPA Investigator 981 as being very resistant to fire spread and strong. ~~However~~ However, construction book page 211 states that Modern tongue and groove is glued and not separate in a fire. However, question does NOT reference modern day tongue & groove roof planks.

Both ~~options~~ answer A and C are also correct because page 210 states that BOTH do not separate or delaminate in a fire.

All 3 questions CAN be correct, depending on way it is written ~~can~~. Additionally, matched lumber is referenced several times as being superior to modern building construction methods and it is tongue and groove.

The question should be given to ~~app~~ all applicants due to confusing choices given

1693470

Random Test Number

01/16/15

DATE

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Approved

Denied

Committee Chairman Signature _____

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Book teaches AND STATES that Both Laminated timbers AND Laminated wooden beams DO NOT DELAMINATE. THE Book Does TEACH that Tongue AND GROOVE Roof planks During a fire MAY Separate. Pages 210-211

21035110

Random Test Number

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kindling. A fire investigator became ill and required hospitalization after spending some time investigating the ashes of a fire that had involved pressure-treated (for retarding decay) wood.

Plywood and Other Wood Building Materials

About 100 years ago, it occurred to someone that one of wood's limitations—the lack of shear strength along the grain—could be overcome by slicing the wood into thin layers, placing the layers at right angles to one another, and gluing the entire mass together. We know this product today as plywood, which is just about equally strong in all directions. This was the first of many ways in which natural wood was engineered into a useful product.

A basic problem of plywood exposed to fire is that it delaminates, which increases the surface area and the rate of heat release. Plywood can be impregnated to render it fire retardant. The problems associated with some fire-retardant plywood roofs were noted earlier in this chapter. Plywood can be used as an interior finish, as a building sheathing without structural value, and as a structural material in floors, roofs, or walls. Such construction is often described as stressed skin or diaphragm, in which the plywood provides some of the structural strength of the building, particularly in providing resistance to shear stresses.

Spliced and Laminated Timbers

The shortage of big trees from which solid timbers could be sawn led to the development of **spliced timbers**. Various metal connections are used to transfer loads so that spliced timber acts like a single timber.

In a fire, the heated metal connections can destroy the wood and the timber may fail. More recently, laminated timbers have been developed.

Plank-like sections of nominal 2-inch (51-mm) (or thinner) boards are glued together under pressure to produce large arches, beams, girders, and columns. Such timbers are also known as **lulam**, a trade name. Sometimes bolts are used to supplement the glue. When highly finished, these timbers are very attractive. When combined with wood planks, they can provide the necessary structural strength together with an aesthetically pleasing interior finish. (Laminated timbers apparently burn like solid heavy timbers) and do not delaminate like plywood.

Do not mistake laminated wooden beams (which do not delaminate) with plywood as used in wooden I-beams (which does delaminate). Laminated wood sections were spliced together to form arches for a Daytona Beach, Florida, sports arena. In a fire, the wood was only charred but the arches fell apart at the metal connections.

We usually think of arches as having a characteristic segmental arch shape. Two-hinge arches of laminated wood are available, combining in one member both column and girder. They provide a straight-walled structure with a flat roof and a clear floor area. The Forest Products Laboratory in Madison, Wisconsin, is constructed of arches that provide a floor area the equivalent of five stories in height with a 60-foot (18.3 m) span.

Paper Wrapping

Laminated timbers and other finely finished wood are shipped in a protective paper wrapper. This cover is kept on as long as possible during the construction period. This paper is hemp-reinforced and coated with a bituminous moisture repellent. It ignites readily, has a high flame spread, and could contribute to a severe loss in a building under construction. In one fire, this paper was responsible for the extension of a grass fire to piles of packaged lumber.

In another case, an addition to a hospital was under construction. A wooden snow roof was erected over the excavation. Hemp-reinforced treated paper was selected to waterproof the roof. A potbellied

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stove in a change room spewed out sparks. A fire could have easily sent a sheet of flame up the face of the hospital.

Planks

Tongue and groove roof planks, for plank and beam construction, were fashioned in the past by wasteful methods. Such planks are now often fabricated without waste by gluing three boards together with the center board protruding on one side and indented on the other. During a fire, such planks may separate like plywood, causing the boards to fall from the overhead. It might be wise for a fire department to run its own test on materials used locally.

Chipboard

Often wood chips are glued together to make flat sheets. These **chipboards** (also known as **particle-board**) are sometimes used for the floors of mobile homes. Some chipboard is water soluble and has dissolved in fires.

On a television show many years ago, large plywood or chipboard roof panels with a gypsum board interior surface were sandwiched around a thick plastic foam core to create panels. The panels were then installed between widely spaced roof beams to provide a roof that was otherwise unsupported. It could be dangerous to vent such a roof. Even away from the fire area, heat from the fire might melt some foamed plastics and the roof may fail. If the foam is uninhibited, a fierce fire with dripping plastic would be possible.

Flitch Plate Girders

Flitch plate girders are a composite of a steel plate sandwiched between two solid sawn wood joists, or in some cases, plywood. These materials present a problem to fire fighters as failure of the connection between the wood and steel or burnout of the plywood could cause failure.

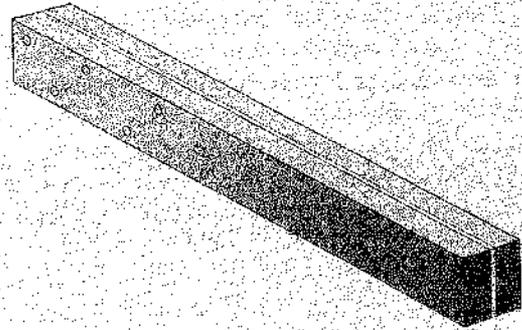


Figure 7-16 A flitch plate girder.

Sheathing

Sheathing is the covering that is applied to the studs or framing of a structure. The exterior surface covers the sheathing. Tongue and groove boards laid diagonally to provide shear strength were used in older houses. Many old houses were built without sheathing, and fire spreading through walls can come out through joints in the siding. Today, plywood is commonly used for this purpose.

In recent years, low-density black fiberboard that has been moisture- and vermin-proofed has been used in residential construction because it can be installed quickly and has relatively high insulation value. (Celotex is often misused as a generic name for any low-density fiberboard. In fact, the Celotex Company manufactures many building products, and many other companies manufacture low-density fiberboard.)

Low-density fiberboard material carries a warning: **Combustible. May burn or smolder if ignited.** A common method of ignition of this material is the plumber's torch. A similar material is often used for sound conditioning. In one school, sound conditioning sheathing was applied directly over wood studs and covered with a gypsum board. Later, a plumber used a propane torch to sweat a copper pipe. The flame from the torch ran along the pipe and found the fiberboard. This caused a fire that extended vertically to the metal deck roof.

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This section is called "Plywood and Other Wood Building Materials"

The first sentence is: About 100 years ago, it occurred to someone that one of wood's limitations - the lack of shear strength...

A & C Both verbatim state they do not separate in a fire.

Also B: is speaking of "Natural Wood does not delaminate" because there is no lamination process.

The Book states "Such planks are now often fabricated without waste by gluing..."

This is a different product and even states later by "... Such planks may separate like plywood."

The given answer references Tongue and groove roof planks, NOT their modern plywood counterparts.

209 29206

Random Test Number

1-9-2015

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Denied

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