

COLUMN FOR JULY 30, 2005.

## HEADLINE; REPAIRING HERITAGE BEAMS

*Q; We own an older home; we think it is post and beam. We are planning on some renovations but when one contractor saw the floor beams in the cellar he advised us to fix these first and he wants to use epoxy rather than wood, is this done?*

A: The answer is a qualified yes. I contacted our reader for more information and it turns out they have a number of floor beams that are considerably rotted where they join the sill or plate beam as it is sometimes called. Some of their access is limited and there are varying degrees of decay in the floor beams or girt as some are assembled. This is a very common problem, especially in older cellars where constant dampness over many years, couple with a lack of cross flow ventilation, has proven to be a habitat for bacterial growth and wood rot.

The first step in the process is to drill the beams and attempt to establish how advanced the decay is. I use a long twist drill in a battery-powered drill. I set the drill on slow speed and after preparing a wide "W" pattern on the beam, begin to drill. While there are many variables to the problem, if the drilled wood sticks to the drill and is a natural colour it is likely stable. If it comes out brown and powdery, keep drilling, this area is decayed. Once the beams have been investigated, some form of vertical temporary support will be needed and each job is different. There are different tonnages for metal jack posts and you cannot over support a building, especially if it is a two-story structure. Once the entire temporary supporting work is done, then the cutting and chisel work can begin. One of the many problems with these types of repairs is they generally require considerable heritage carpentry experience and considerable equipment. I often see where unprofessional repairs or repairs that have gone far beyond what was needed. Epoxy resins are the wonder drug of old home restoration. In cases where the base of porch column is decayed, a homeowner who is prepared to follow the directions from the epoxy manufacturer to the letter can often repair this. Structural work is best left to the pros however but epoxy repairs can reduce your costs. The single most important issue is proper preparation of the area to be repaired. You cannot just pour this material in and forget it.

How do epoxies work? They are a two part system of a resin and a catalyst that, when mixed together set to a hard plastic. There are different kinds used in heritage restoration. Low viscosity consolidants are used for injection of decaying timbers, patching putty for surface work and high-strength structural epoxies for compressive strength. Consolidants are injected into the wood, usually accomplished by drilling a pattern of ¼" holes into the beam. Care must be taken to make sure the holes are drilled in a downward angle; this exposes more of the end grain and stops the epoxy from draining out. Make sure the holes do not go all the way thru the beam, this should be measured to stop about a ½" from the other side. This is done for about a foot or two past the main rotted area. This type of epoxy has a very slow cure and should be allowed to set fully before any further work is done. The main area should be repaired with structural epoxy. There is considerable preparation needed here. Use of steel reinforcement plates and/or fibreglass reinforcement rods are recommended. Epoxy bonds well with these products and like using rebar in concrete, these stabilizers act in the same manner to enhance the actual structural stability. One of the largest mistakes I see is where the contractor fails to use a latex or clay membrane between the epoxy repair and the wood. Epoxy dries hard and this membrane allows for the wood to move. The other issue is the toxic vapours from epoxy, especially in a confined area like a cellar if a number of large repairs are being done. Proper masks, gloves and protective eyewear and clothing are recommended. Any clean up should be done immediately, solvents will not clean these up after they cure. Epoxies create a lot of heat when they are curing and if working in a very confined space you should keep a chemical fire extinguisher handy. This will cool the wood if it begins to smoulder.

My last recommendation is to use a skilled heritage contractor or a professional engineer who has a strong restoration background before you begin any work. Get three opinions here, there is no degree in heritage homes and experience really counts when structural work in a heritage home is contemplated.

Now the answer to last weeks question. What is a stoop? The answer was C) a low platform outside the entrance door to a home. Now this week's question. What is angle bead? Is it A) a metal cap used in plastering interior arches B) a small moulding placed on an external angle of a plastered surface. C) The top bead moulding used on build-up floor trim. The answer in next week's column.

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