

SAFE PROCEDURES FOR MAINTAINING BELL TOWERS

1. Understanding the Problem

Older wooden church structures, particularly those with open belfries, are at risk of having their 500 pound bell crash down through the tower causing injury or death. Although this is not common, steps should be taken to prevent this problem. Most often this hazard is caused by towers that were built prior to the advent of modern building codes combined with the effects of time and weather.

2. Understanding the Risks

- Mechanical fatigue and wear of the mechanism or ropes

Over the years, the cast iron portions of the mechanism become brittle and/or corroded and will often crack. Similarly, corroded mounting bolts will lose their strength or pull out of wood. Frayed cables and ropes may fail causing injury to the bell ringer.

- Structural fatigue caused by weathering

Particularly on open belfry designs, water may accumulate on the floor of the belfry. This water then leaks down into the structure causing wooden members to rot and eventually fail. Similarly, on brick fascia structures, this water may cause the mortar to decay and bricks to become loose at which point they become a potential hazard.

- Foundation instability or poor construction practices causing failure of the entire structure

Over time, particularly if the foundation of the tower was not tied in properly to the main structure, the tower will pull away from the main building, causing a hazard. Similarly, load bearing beams and columns 50 or 100 years ago were often not adequately designed. Consider having a professional evaluate the problem if the tower appears to be warped, leaning, or pulling away from the main structure.

3. Prevention

Perform an annual check looking for problems like:

- Frayed pull ropes and cables
- Loose bolts
- Mounting bolts pulled out of supports
- Cracked, worn, or heavily corroded metal parts, particularly the cradle
- Potential routes that water can enter the structure through runoff
- Signs of water leakage on interior walls
- Loose bricks, decaying mortar
- Rotten, badly weathered, or warped wooden structural members
- Consider replacement of open belfry designs with louvers
- Particularly old structures often used structural members that were not sufficient for the actual weight supported. Have a professional evaluate the structure if necessary.
- Foundational instability causes the bell tower to pull away from the building to which it is attached. Consider if professional evaluation is necessary if hairline cracks start to develop along the walls.

Any identified problems must be repaired as soon as possible. If there are structural problems, call in a licensed building inspector, or Professional Engineer, to perform a qualified evaluation.