

## TOWNSHIP CODE AUTHORITY

### Code Compliant Guardrails

Guardrail systems that meet Building Code requirements have long been an issue, when the time comes for final inspection. A guardrail system is defined as “a building component or system of building components located near the open sides of elevated walking surfaces, that minimizes the possibility of a fall from a walking surface to the lower level”. Where a guardrail is required, height of the system, spacing of the system components and structural integrity, are all issues that must be addressed in the construction of a guardrail that meets code compliance and inspection approval. The Building code contains several requirements for guardrail systems that must be complied with, in order to have the guardrail system approved at the time of inspection. Guardrails that are too low, have openings exceeding the opening size allowed and are not constructed to withstand lateral movement will not meet code compliance and will not pass inspection.

Section R312, in the 2003 Michigan Residential Building Code (MRC) is where those requirements can be found. The first requirement, shown in Section R312.1 gives information on where guards must be installed. Guards are required on porches, balconies, decks or other raised walking surface below. The open side of stairs, where the total rise exceeds 30 inches above the floor, grade or walking surface below, would also require a guardrail. Porches or decks that are enclosed with insect screening must also be provided with code compliant guardrails, when the walking surface of the porch or deck is located more than 30 inches above the floor, grade or walking surface below.

Guardrail height is required to be a minimum of 36 inches high in 1 & 2 family dwellings, with exception of stairs, where a minimum height of 34 inches is allowed. Guardrail height is measured vertically from the finished floor surface, or on stairs, vertically from the nose of the stair treads, to the highest point of the guardrail system. There is no maximum height on a guardrail system, unless the top of the guardrail on a stairway is also being used as a code approved graspable handrail. In a guardrail system, where the top of the rail is used as a handrail, the maximum height is 38 inches.

Section R312.2 provides information non guardrail opening limitations. When a guardrail is required, there are limits as to the size of any opening within the guardrail system. Any openings created in the guardrail, such as between spindles, balusters, intermediate rails, or ornamental enclosures, can not allow the passage of a sphere 4 inches or more in diameter. There are 2 exceptions to this rule, both in regards to stair guardrail systems. Exception 1 allows a maximum opening of 6 inches in the triangular opening formed by the riser, stair tread and the bottom rail of a guardrail system. Exception 2 allows the spacing on the open sides of stair treads, to be sized so that a sphere 4 3/8 inches in diameter can not pass through any openings in the guardrail system.

Finally, structural integrity of a guardrail system must be looked at, when constructing or inspecting a guardrail system. Section R301.5 requires that a guardrail or handrail system be constructed to withstand a minimum live load of 200 pounds of pressure, applied at any point and in any direction, along the top of the guardrail system. Adequate structural stability in any guardrail system is extremely critical. The guardrail is installed to prevent a person from falling over the edge of a raised waling area. If the guardrail does not meet the minimum load requirements and is not structurally stable, and a person falls against the guardrail, and the

guardrail system fails to support the load from that person, serious injury, or even death could occur from the fall.