

ARCHITECTURAL GUIDELINES FOR INJURY PREVENTION FOR OLDER HOOSIERS

1. PURPOSE STATEMENT

This brief is offered to all architects, engineers, residential designers, builders, developers, and agencies who are engaged in planning, building, developing or sponsoring housing intended to be occupied by the elderly citizens of Indiana. These housing units may be individual homes, apartments, retirement communities or other age-focused projects. The state of Indiana's Commission on Aging is seeking to improve the quality of life, to reduce health problems and to reduce the incidence of injuries among those persons age 50 and over. Most injuries to older citizens occur in their own home or apartment. We seek to assist designers and builders of these living units to become aware of features that will reduce the injury potential of the home. The end result will hopefully be safer homes, which in turn will result in more years of independent living for older Hoosiers.

2. THE ELDERLY AND INJURIES

2A. OCCURRENCE OF INJURIES

The glaring statistic that highlights the need for safer residential environments for the elderly is that about 2/3rds of all accidental falls which result in injuries that occur among only 11% of the population. This is the group 65 years old and above. Further, most of these falls occur at home. Falls are the most common cause of fatal injuries of older people. Frequent causes of falls are impaired vision and other diminished senses, fainting, imbalance, lack of dexterity and certain medical conditions. The contributing external factors to the falls are steps, loose rugs, slippery floors, tubs and showers, poor lighting, curbs, unreachable shelves, or other aspects of the built environment.

After falls, the most common accidental injury to the elderly is burns. The contributing elements here may be hot pots and pans, clothing contacting stove burners, residential fire, excessively hot water from water heaters, irons, space heaters, chemicals, or smoking in bed.

Improvements in the design of the home can reduce the incidence of some of these injuries and/or reduce the severity of others. A number of suggestions to accomplish this aim follow. There are very few suggestions in these guidelines that add cost to the price of or rent of the living unit. Those that do add modest cost are worth it in terms of benefit to the occupant.

2B. PHYSIOLOGY OF AGING

Aging is a general term, which describes the processes through which an individual eventually may manifest the socially defined characteristics of old age.

Sensory processes may deteriorate. Vision may become cloudy; colors fade; and the eye has greater difficulty focusing. The pupil is slow to adapt to bright light or glare. Hearing loss may become significant, especially in response to high frequencies. The elderly have a greater difficulty maintaining balance; hence falls are more frequent. The senses of taste and smell diminish. All general body sensations - touch, pain, muscle movement, and vibration - decrease.

Functional losses that result from aging include slower reaction time, slower processing of data by the brain, reduced muscle strength, and some memory loss. The presence of these characteristics varies among individuals and is, indeed, absent in some. However, these functional losses do characterize the elderly population as a whole and should be acknowledged and addressed in the design process.

3. CODE REQUIREMENTS AND "GUIDELINES"

These Injury Prevention Guidelines are not state regulations, nor are they mandatory. Rather they are suggestions for improving a marketable product: housing for the elderly. Also listed herein are some standards, which are taken from state building codes because these items are directly relevant to the subject here. These standards are noted as such when they occur. Design for the handicapped elderly is also not covered here; this subject is well covered in the *Indiana Handicapped Accessibility Code* and the *Americans with Disabilities Act Guidelines (ADAG)*.

4. DESIGN SUBJECTS

4A. STAIRS AND STEPS

Stairs and steps, both indoors and out, are formidable obstacles to many elderly and are the location of many seriously debilitating accidents. Stairs and steps should be avoided in environments designed for the elderly or minimized as much as possible. Successful negotiation of stairs requires strength, balance, dexterity, and good vision. . . characteristics that often diminish with aging.

1. **STAIR DIMENSIONS** - The rise of the steps should not exceed 7" and the run generally should not be less than 11", even though the *Indiana One and Two Family Dwelling Code* allows steeper slopes. Risers must be uniform in height.
2. **NUMBER OF STEPS** - A single step can easily be unnoticed and cause a fall. At least 3 steps are needed to be obvious.
3. **HANDRAILS** - Handrails should be placed on both sides of the stairs, even within the dwelling unit. The rail should extend beyond the steps at the top and the bottom.
4. **LIGHTING** - The stairs should be well illuminated by natural or artificial light. A light switch should be located at each end of the stairs. The fixture should not cause glare, nor should it cause any shadows. Window placement should not cause glare.
5. **CURBS** - Ramps are preferable to curbs outside. Either should be well lighted at night.
6. **ENTRANCES** - Do not place a step at a front or rear entrance. Provide a landing which is level with the house floor in front of the door.
7. **SURFACES** - Smooth stairs should be avoided. Use textured surface or abrasive strips. If carpeting is used, it should have a low nap. The top nosing may have a different texture or color to alert someone approaching from the upper level.
8. **PATTERNS** - Avoid patterned materials on steps that may tend to obscure the nosing edge of the step.

4B. FLOORS

The floor surface contributes to many trips and falls. Good housekeeping is a major factor, which is beyond the control of the designer, but there are design aspects, which will improve safety.

