Surfacing

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The Canadian population is aging, therefore, more senior citizens are using sidewalks. According to research developed by the City of Lethbridge, Alberta, senior adults normally walk within a two-block radius of their homes. However, normal walking distances depend on geography, climate conditions, and land use patterns. For sidewalks to be used efficiently, they should provide a safe and comfortable area for pedestrians separated from the flow of traffic.

One common obstacle in design of pedestrian facilities is assuming that one standard can be applied to fit an "average" population. For example, the speed that pedestrians travel can vary greatly, yet pedestrian signals are often timed for average walking speeds of 4.8 to 6.4 kph, children, older adults, and people with certain disabilities typically travel at a much lower walking speed of approximately 3.2 kph (Washington State Department of Transportation). In order to successfully design pedestrian facilities, we must recognize that pedestrian needs vary, and the design approach must meet the diversity of needs from the very young to the very old, some of who may have limited hazard perception, various mobility or sensory impairments.

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Older adults, if retired, may have more time to enjoy walking for exercise and recreation while others may rely on walking as a mode of transit to run their daily errands or they require the aid of wheelchairs, walkers, and motorized carts to travel along sidewalks and paths. Surfacing is an essential safety feature for this user group, and the selection, construction and maintenance of surfaces can have a significant impact on the number of injuries per year.

Figure #1: Curb ramp with flares allow access for mobilized scooter

Factors that affect the usability of the sidewalk surface include:

- Surface materials
- Changes in level and Curb Ramps
- Tactile Surfaces
- Dimensions of gaps, grates and openings
- Visual consistency

Figure #2: Return curb located outside the pedestrian walkway

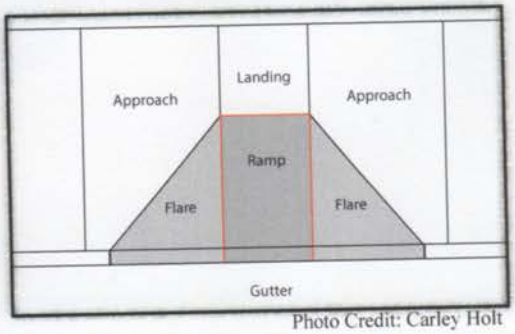

Photo Credit: Carley Holt

Figure #3: Components of a flared curb ramp

Surface Materials

Architectural style and appearance should always balance the accessibility of a design

According to the National Guide to Sustainable Municipal Infrastructure, the surface of a walkway must be firm, fairly slip resistant, and stable enough to support the wheel chair loads, walkers, crutch tips, and motorized carts. Smooth concrete or asphalt surfaces are typically the most practical materials to meet this requirement; however, tile, stone, and brick are also used. A broom finish on concrete sidewalks creates a slight texture which increases the slip resistance. However, heavy scoring patterns and pavement patterns may create surfaces which affect wheelchair instability and control, and can create mobility barriers. Surfaces that are not slip resistant are especially difficult for those who rely on wheelchairs or walking aids for transportation and create an impossible barrier when wet. Architectural style and appearance should always balance the accessibility of a design. Brick and cobblestone may improve the aesthetic quality of the sidewalk, but may also increase the amount of work required by pedestrians with mobility impairments. Exposed aggregate concrete surfaces, such as poorly maintained sidewalks, accumulate moisture which can freeze and create icy conditions on sidewalks if not maintained properly.

Photo Credit: Carley Holt

Figure #4: Stone pattern walkway

Gravel surfaces or pressed soils are not ideal and are no accessible routes for those who have nobility aids with wheels. Loose gravel, such as pea gravel and most types of wood chip surfacing are generally not acceptable as accessible surfaces. However, gravel used in certain cases such as recreational trail does increase accessibility.

Curb Ramps

Curb ramps allow universal access between the sidewalk and the street. The ramps are typically found at intersections, but can also be located between intersections or in front of commercial buildings.

A variety of curb ramp designs contain some or all of the following components shown in Figure 2 and 3. (U.S. Department of Transportation, Federal Highway Administration, Designing Sidewalks and Trails for Access Part I of II: Review

Figure #5: Tactile Ground Surface Indicators. No obstacle, just proceed straight ahead

Figure #6: Changing direction or proceeding towards the intersection. The continuous dotted yellow line at the edge indicates a complete stop before crossing

of Existing Guidelines and Practices, July 1999).

Landing – The area at the back of the sidewalk, in the middle of the curb ramp. Landings allow the wheelchair user to move around the intersection corner without using the curb ramp.

Approach – The area on each side of the landing, extending from the back to the front of the sidewalk.

Flare – The transition area between the curb ramp and the approach areas.

Ramp – The sloped transition between the landing and the curb.

Gutter – The gutter is located at the bottom front face of the curb and provides drainage along the street.

Users with visual impairments need cues to safely utilize sidewalks and pathways

Figure #7: Sidewalks should be monitored for repair to ensure smooth transitions are maintained

Tacticle Surfacing

Users with visual impairments need cues to safely utilize sidewalks and pathways. Textual changes in the surface of pathways and sidewalks serve as cues when changes will occur while walking. Several design additions are available including raised tactile surfaces, materials with contrasting sound properties, grooves in the sidewalk, and installation of audible warnings at intersections with signals. The Federal Highway Administration report is a good source of information related to curb ramps and pedestrians with visual impairments.

To ensure smooth transitions, all joints/scoring should be minimized on sidewalks and pathways. For concrete surfaces, saw cutting the control / construction joints and a broom finish is recommended. Any joints in the sidewalk should be as even, level and as narrow as possible to facilitate movement of wheeled vehicles, seniors and the visually impaired.

Final Thoughts

Well implemented surfacing practices directly affect the safety of senior adults utilizing pathways and sidewalks. It is important to encourage these seniors to remain active as means of physical activity and mental well-being. When a sense of independence can be maintained there are fewer symptoms of depression, lower rates of smoking and substance abuse. In addition, outdoor recreation provides an opportunity to increase quality of life by creating opportunities for social interaction.

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