

King Abd El Aziz University parking Project

Pedestrians Report

King Abd El Aziz University parking Project

Introduction:

“Walking is a basic human activity, and almost everyone is a pedestrian at one time or another...Even though pedestrians are legitimate roadway users, they are frequently overlooked in the quest to build more sophisticated transportation systems. Whether building new infrastructure or renovating existing facilities, it should be assumed that people will walk, and plans should be made to accommodate pedestrians. Where people aren’t walking, it is often because they are prevented or discouraged from doing so” (Zegeer, Stutts, et al., 2004).

Unfortunately, many roads and parking facilities were primarily designed to facilitate the smooth flow of motor vehicles. Yet, walking is the fundamental mode of human mobility; everyone is a pedestrian at some point in every journey that they take. This includes walking to a bus or walking to a parking lot. It includes people of all ages from children to older adults as well as pedestrians with visual and mobility impairments.

Aim of Design:

In our project the parking lot was designed not only to facilitate the cars parking or to condense the biggest number of cars in the parking area but also pedestrian’s traffic and safety was the main priority in the design concept to allow pedestrians to travel comfortably and cross safely in and through the parking area.

Methodology:

To verify the aim of the design a pre-design pedestrian’s traffic plan was taken in consideration resulting in considering the following steps:-

- Reduce pedestrian risks at crossing locations and speed of motor vehicles.
- Improve awareness of and visibility between motor vehicles and pedestrians.
- Provide walkways separate from motor vehicle traffic.
- Special pedestrian populations

1. Reduce speed of motor vehicles and pedestrian risks at crossing locations.

Pedestrian Signs:

- The main purpose of the pedestrian signs Provide regulation, warning, or information to road users as to what to expect and how to behave.
- But Overuse of signs breeds noncompliance and disrespect. Too many signs can lead to visual clutter with the result that a driver is not likely to read or pay attention to any of the signs.
- Notice to be: Signs should be checked to assure adequate dark reflectivity.



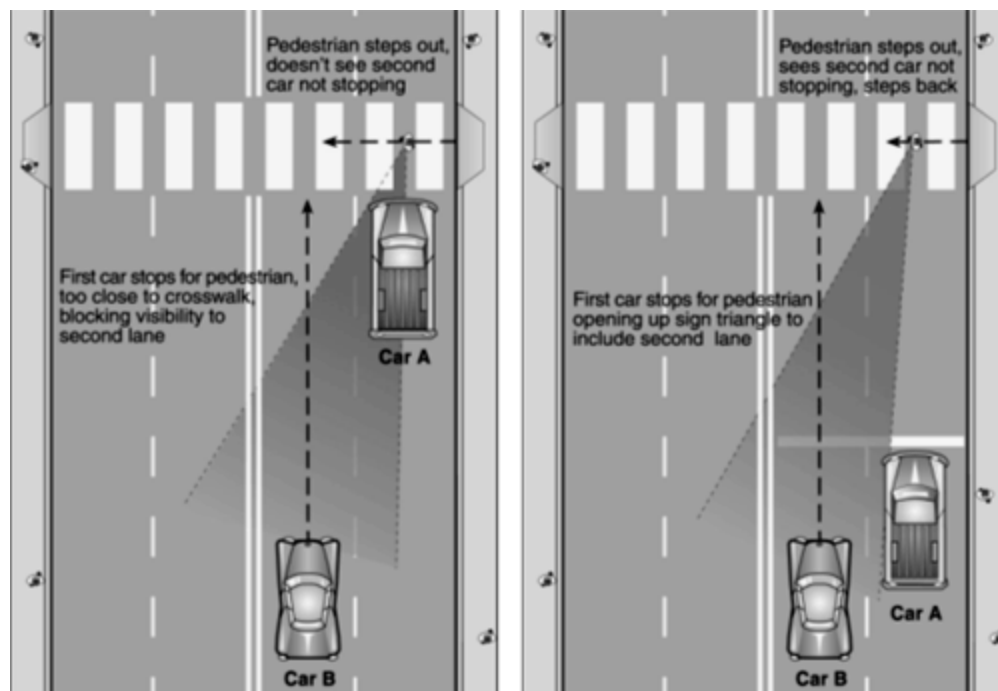
Signs can provide important information that can improve safety. By letting people know what to expect, there is a greater chance that they will react and behave appropriately. For example, giving motorists advance warning of an upcoming pedestrian crossing or that they are entering a traffic-calmed area will alert them to modify their speed. Sign use and movement should be done judiciously, as overuse breeds noncompliance and disrespect. Too many signs may also create visual clutter and signs can get lost. All signs should be periodically checked to make sure that they are in good condition, free from graffiti, reflective at night, and continue to serve a purpose.

Regulatory signs, such as STOP, YIELD, or turn restrictions require certain driver actions and can be enforced. Warning signs can provide helpful information, especially to motorists and pedestrians unfamiliar with an area. Some examples of signs that affect pedestrians include pedestrian warning signs, motorist warning signs, NO TURN ON RED signs, and guide signs.

Advance pedestrian warning signs should be used except in very urban situations where short blocks don't provide appropriate distances for locating the signs. They should always be used where pedestrian crossings may not be expected by motorists, especially if there are many motorists who are unfamiliar with the parking area.

Advance Stop Lines/Advance Yield Markings

- The main purpose of advance stop lines Improve visibility of pedestrians to motorists
- Allow pedestrians to advance in a crosswalk before motor vehicles turn
- Prevent multiple-threat crashes
- Also Effectiveness depends on motorist compliance with the marked stop line.
- If placed too far in advance of the crosswalk, motorists may ignore the line it must be design according to the limited vehicle speed.

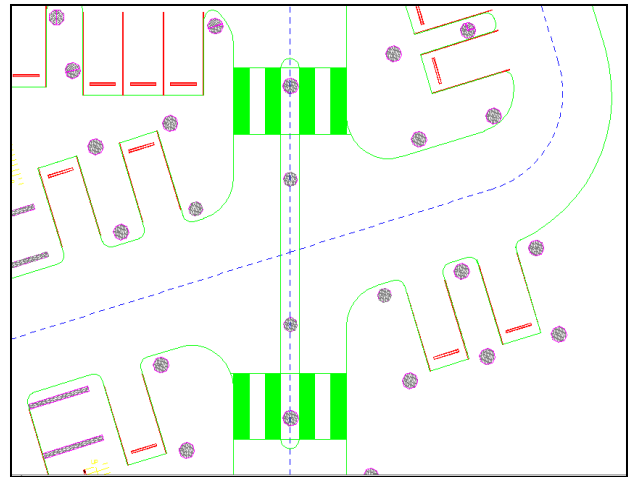


- Placing a vehicle stop or yield line back from the crosswalk has benefits at both signalized intersections and midblock crossings.
- At signalized intersections, placing an advance stop/yield line 1.2 m (4 ft) from the crosswalk allows pedestrians and drivers to have a clearer view of each other and more time in which to assess each other's intentions.
- At midblock marked crosswalks, an advance stop/yield line can help prevent a major crash type at crosswalks on multilane roads: the multiple threat crash. This occurs when a driver stops to let a pedestrian cross, but too close to the crosswalk, masking visibility of the adjacent travel lane. A motorist proceeding in the adjacent lane doesn't notice the first car has stopped to let a pedestrian cross. The pedestrian continues to cross, doesn't see the other car coming, which can result in a high-speed crash. High speed crashes usually result in fatalities or very severe injuries.

- An advance stop/yield line placed 6 to 15 m (20 to 50 ft) ahead of the crosswalk can greatly reduce the likelihood of a multiple-threat crash, as this encourages drivers to stop back far enough so a pedestrian can see if a second motor vehicle is not stopping and be able to take evasive action. Ten meters (30 ft) has been found to be a good distance for most purposes.
- The advance yield/stop line should be supplemented with "Stop Here For Pedestrians" signs (R1-5 or R1-5a) to alert drivers where to stop to let a pedestrian cross.

Crossing islands

- The purpose of the crossing islands is to :Enhance pedestrian crossings, particularly at unsignalized crossing points
- Reduce vehicle speeds approaching pedestrian crossings
- Highlight pedestrian crossings
- Design islands to accommodate pedestrians in wheelchairs. A cut-through



Design such as depicted in the photo must include detectable warnings.

- Crossing islands—also known as center islands, refuge islands, pedestrian islands, or median slow points—are raised islands placed in the center of the street at intersections or midblock to help protect crossing pedestrians from motor vehicles. Center crossing islands allow pedestrians to deal with only one direction of traffic at a time, and they enable them to stop partway across the street and wait for an

adequate gap in traffic before crossing the second half of the street. Where midblock or intersection crosswalks are installed at uncontrolled locations (i.e., where no traffic signals or stop signs exist), crossing islands should be considered as a supplement to the crosswalk. They are also appropriate at signalized crossings though they should never be used to create a two-phased pedestrian crossing at a signalized intersection (don't leave pedestrian stuck on a crossing island between moving lanes of traffic). Signalized, two-phased pedestrian crossings can be used at midblock locations where the crossing is designed with a "Z" pattern (pedestrian crosses to the middle with one signal, traverses down the fenced median at least 30 feet and then crosses to the other side with a second signal). If there is enough width, center crossing islands and curb extensions can be used together to create a highly improved pedestrian crossing. Detectable warnings are needed at cut-throughs to identify the pedestrian refuge area.

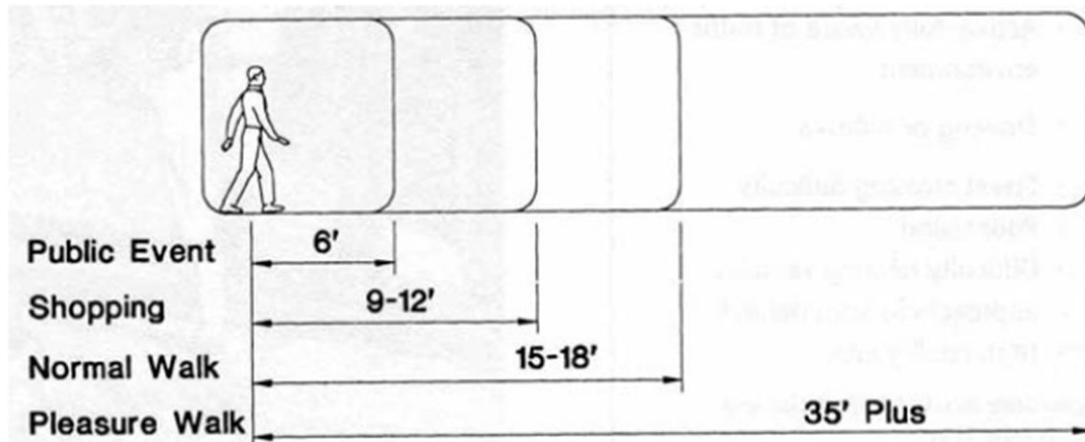
- This kind of facility has been demonstrated to significantly decrease the percentage of pedestrian crashes. The factors contributing to pedestrian safety include reduced conflicts, reduced vehicle speeds approaching the island (the approach can be designed to force a greater slowing of cars, depending on how dramatic the curvature is), greater attention called to the existence of a pedestrian crossing, opportunities for additional signs in the middle of the road, and reduced exposure time for pedestrians.
- Curb extensions may be built in conjunction with center crossing islands where there is on-street parking. Care should be taken to maintain bicycle access. Bicycle lanes (or shoulders, or whatever space is being used for bicycle travel) must not be eliminated or squeezed in order to create the curb extensions or islands.

Internal Pedestrian Walkways

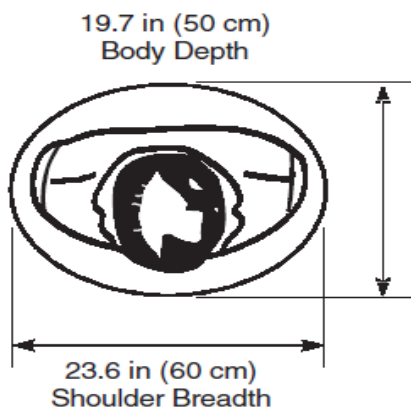
Internal pedestrian walkways should be provided in accordance with the following standards:

- Walkways should be provided to connect all on-site pedestrian circulation systems and all public entrances and exits to the public sidewalk system in a manner that minimizes out of direction pedestrian travel.
- Internal walkways shall have a minimum clear path width of 4 feet.
- Walkway/driveway crossings should be minimized and internal parking lot circulation design should maintain ease of access for pedestrians from abutting streets, pedestrian facilities, and transit stops.

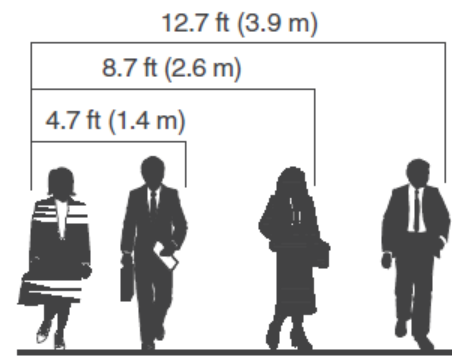
- With the exception of walkway/driveway crossings, walkways should be separated from vehicle parking or maneuvering areas by grade, different paving material, or landscaping.
- Internal sidewalks shall meet the requirements of applicable accessibility standards and other design and construction standards adopted by the City.



Forward clear space needed by pedestrians



Recommended pedestrian body ellipse dimension for standing area



Spatial dimensions for Pedestrians

Marked crosswalks

- Marked crosswalks serve to highlight the right-of-way where motorists can expect pedestrians to cross and designate a stopping or yielding location (some states are stop states, others are yield states). They can also indicate optimal or preferred locations for pedestrians to cross. The "international" (also known as "ladder" or "zebra") markings are strongly preferred, particularly at uncontrolled locations, because they are far more visible, which is particularly important at night or in low light conditions (e.g., rain).
- Marked crosswalks should often be installed in conjunction with other enhancements that physically reinforce crosswalks and reduce vehicle speeds, particularly at uncontrolled locations and on more major roads. Examples of these are given in the Crossing Enhancements section. It is also usually useful to supplement crosswalk markings with warning signs for motorists. At some locations, signs can get "lost" in visual clutter, so care must be taken in placement. Further discussion on signs can be found in the Signals and Signs section.
- Marked crosswalks can be done over **raised crosswalk** help illuminate pedestrian crossings and slow motor vehicle traffic.



Marked crosswalks over raised crosswalk

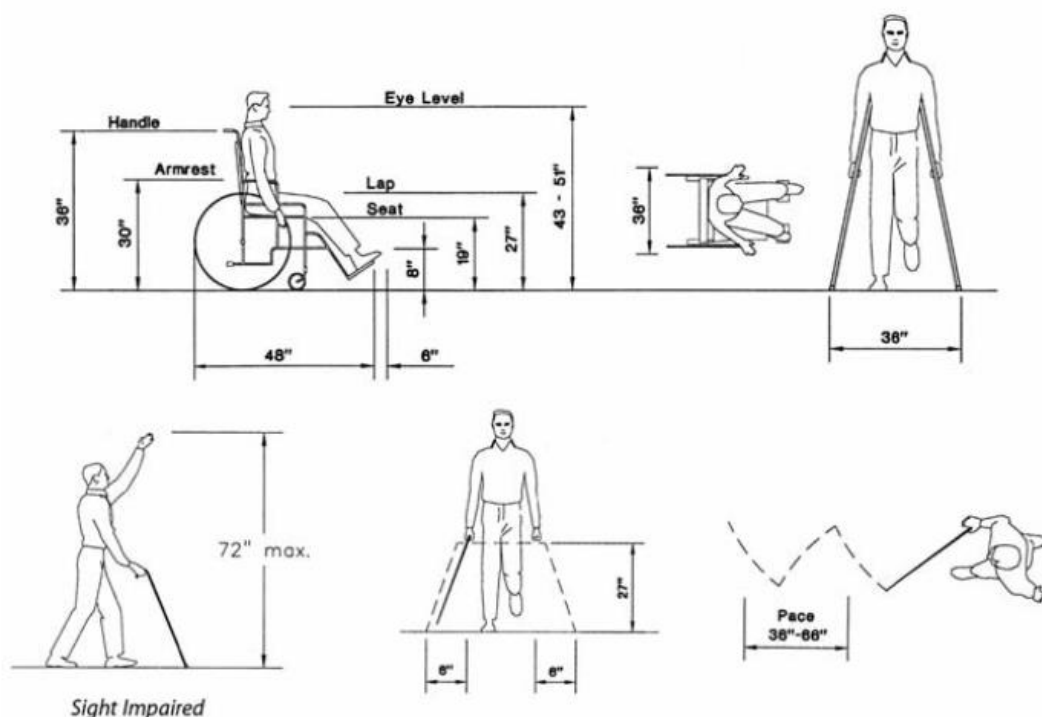
Special pedestrian populations

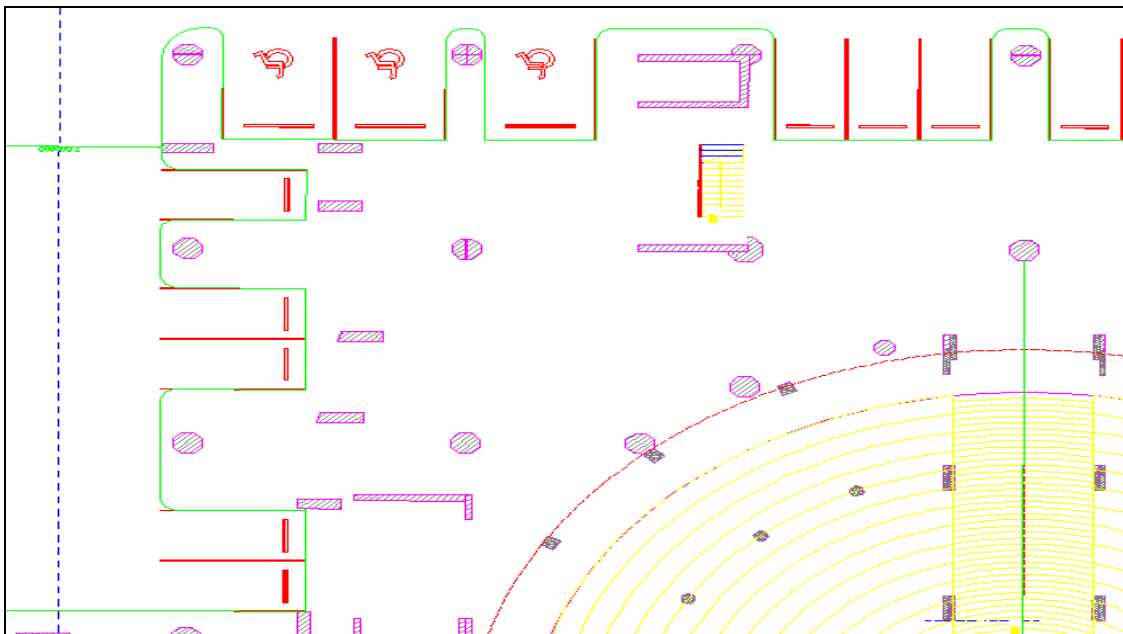
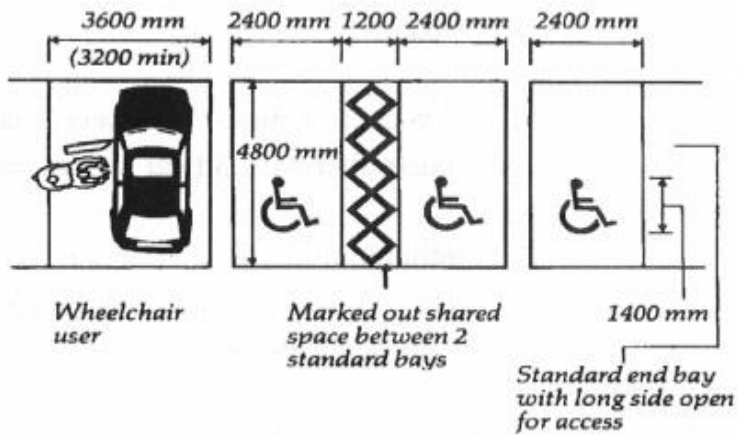
Include young children, senior citizens, and disabled pedestrians of all ages. Each special pedestrian population has their own unique set of characteristics that limit their ability to safely travel across and along roadways. For example, young children do not have the maturity and understanding — or various other cognitive abilities — to understand how to share the roadway with automobiles and how to safely cross streets. Older pedestrians are not as mobile as younger adults and/or may have limited hearing or vision. Physical disabilities may include no or limited vision, or the need to use wheelchair, walkers, or other mobility assistance devices.

Design elements that deserve special consideration for pedestrians with disabilities include:

- Wheelchair ramp placement and design (ramp slope, side-slope, level landing, crosswalk placement, detectable warning, smooth transitions, etc)
- Clear sidewalk width
- Sidewalk cross-slope
- Street furniture design and placement
- Tactile warning strips at street crossings
- Pedestrian crossing time
- Construction zones and temporary work zones

In the following figures some spatial dimensions for people with disabilities





Some references and important sites :-

<http://www.walkinginfo.org/engineering/>

<http://www.abilenetx.com/planningservices/doc/Ordinances/SidewalkDesignStandards.pdf>

http://www.charnwood.gov.uk/static/local_plan/written/cpt11.htm

Charles V. Zegeer et al.” How to Develop a Pedestrian Safety Action Plan.”
National Highway Traffic Safety Administration, February 2006.

Charlie Hales et al.” Portland Pedestrian Design Guide.” City of Portland
Office of transportation engineering and development pedestrian transportation
program, October, 1998.

Kay Fitzpatrick et al.” Improving Pedestrian Safety
at Unsignalized Crossings.” Transit cooperative research program and national
cooperative highway research program , Tcrp report 112/NCHRP report 562,
WASHINGTON, D.C.,2006