CHAPTER 12: OTHER PEDESTRIAN FACILITIES

12.1 Lighting

Pedestrians are adversely affected by low-light conditions. Two-thirds of pedestrian fatalities occur between dusk and dawn. Lighting is important at intersections and midblock crossings, particularly in locations near transit stops.

In pedestrian-oriented development projects, it is important to provide a higher quality of pedestrian lighting, particularly along sidewalks and walkways with higher volumes of night-time pedestrian activity, specifically in commercial pedestrian districts, in high density residential areas, and near colleges and universities. Street illumination levels should be determined by the type and intensity of adjacent development.

Preferred pedestrian-scale lighting is characterized by shorter light poles (i.e. 15-foot tall posts), lower levels of illumination (except at crossings), shorter spacing between lamp posts, and high pressure sodium vapor or metal halide lamps. Sodium vapor and metal halide lamps produce a better color definition and "white light" to areas with higher pedestrian volumes. Light fixtures should be a full cut-off design in order to prevent light trespass.

Pedestrian Walkways	**Commercial**		**Intermediate**		**Residential**	
	Footcandle	Lux	Footcandle	Lux	Footcandle	Lux
Sidewalks (and Shared Use Paths within the Roadway ROW)*	0.9	10	0.6	6	0.2	2
Pedestrian Walks (and Shared Use Paths within a separate ROW)	2.0	22	1.0	11	0.5	5
Building Sites: Entrances Grounds	 5.0 1.0	 55 11	Values are given in minimum Average maintained horizontal footcandles and lux.			
Parking Areas: Self Parking Attendant Parking	 1.0 2.0	 11 22				

FIGURE 12.1- Recommended Pedestrian Illumination Guidelines
(Source: Illuminating Engineering Society of North America)

*Crosswalks should be provided with additional illumination producing from 1.5 to 2 times the normal roadway lighting level.

Note: The unit of measurement in Figure 12.1 is the footcandle. A footcandle is a unit of illuminance on a surface that is everywhere 1 foot from a point source of 1 candle. Values are given in minimum average maintained light levels, in order to account for light loss over time.

Pedestrian light poles should be spaced to achieve the light level goals shown in the Figure 12.1. Pedestrian light fixtures will in-fill between street light poles. Distinctive pedestrian

lamp posts may be used to improve the appearance of the streetscape. Light poles should be placed either in the buffer zone, or on the other side of the sidewalk – and not within the pedestrian through zone (maintain the required clear width, per current accessibility standards).

Light poles should be constructed of durable, corrosion resistant materials. Poles located at the back of walk or within turf or landscaped areas must be raised six to ten inches above the adjacent ground on concrete pedestals. See the AASHTO Roadside Design Guide for breakaway requirements. Attention should be given to placing light fixtures within reach of a maintenance vehicle parked on the adjacent roadway, to avoid damage to the adjacent sidewalk and landscaped areas. Street lampposts, pedestrian lampposts, and landscape plans must be coordinated to assure that the lights are not engulfed in a canopy of trees.

Crosswalks should be illuminated at each end by a standard full cut-off street lamp. Pedestrians are most visible to motorists when the lights are placed upstream of the pedestrians. Therefore, it is recommended that lights be located in front of, rather than behind, crosswalks.

More information on lighting can be found in the AASHTO Roadway Lighting Design Guide.

12.2 Bus Stops

At transit stops, sidewalks should be constructed from the embarkation point (where people enter/exit the bus) to the nearest intersection or to the nearest section of existing sidewalk. It may be necessary to wrap a sidewalk around a corner to join an existing sidewalk on a side street.

Care should be taken to place bus stops in areas that maximize pedestrian safety and convenience. Streets within .25 mile of transit stops should have continuous sidewalks on both sides of the street, high-visibility crosswalk markings and other crosswalk safety features. Bus stops should be located on the far right hand side of intersections. Where it is necessary to locate the bus stop midblock, an assessment should be done to determine if midblock crossings are likely. If so, measures should be taken to improve the safety of the crossing (see Chapter 8).

The size and design of bus shelters vary depending on space availability and the number of passenger boardings. Shelter design must meet current accessibility guidelines. The location of the shelter will vary depending on space availability, utility placement, passenger counts and driver visibility needs.

12.3 Grade Separated Crossings

Convenience is essential in designing overpasses and underpasses. Pedestrians can rarely be convinced to use a poorly located crossing. Grade-separated crossings should be provided within the normal path of pedestrians wherever possible. Topography should be a major consideration in determining whether an underpass or overpass is appropriate – if the crossing requires pedestrians to use switchback ramps and cover considerably more distance (at a significant up-grade or down-grade) than the at-grade crossing, it may be more advantageous to improve the at-grade crossing instead, depending upon traffic conditions. The best overpasses and underpasses are those that take advantage of the existing topography to make a direct and efficient crossing that eliminates conflicts between pedestrians and vehicular traffic.

The following general characteristics apply to grade-separated crossings:

- Entrances should be as visible and accessible as possible from adjacent streets and properties, so that users are in view at all times, and have potential "exit routes" in the event that they need to quickly exit the tunnel or overpass.
- They should serve clear origin and destination points
- They should require minimal (or no) out-of-direction travel
- They should be provided in locations where an at-grade crossing would be highly undesirable.
- They should have visual appeal.
- All associated ramps and surfaces should be designed to meet current accessibility guidelines.
- If shared with bicycle traffic, the facility should meet all applicable bikeway guidelines.

Overpasses

A pedestrian bridge should have a minimum inside clear width of 8 feet. If the sidewalk leading to the bridge is wider than 8 feet, the bridge will be most effective when designed to match this width. If the bridge connects to a shared use path, it should have a minimum width of 12 feet. If the bridge is enclosed, the width should be expanded to 14 feet to reduce insecurity created by the tunnel effect. Overpasses are most effective when the street is depressed and the bridge is at ground level.

Figure 12.2- Example of Underpass in Salisbury, MD

Underpasses

Underpasses should be a minimum of 12 feet wide. It is desirable for long underpasses to be wider. Wider tunnel widths help pedestrians feel more secure because they provide a less threatening, more open environment. Underpasses are most effective when the road or railroad is elevated and the passageway is at ground level. The minimum vertical clearance for a pedestrian underpass is 8 feet, with 10 feet preferred, particularly for underpasses longer than 60 feet.

In addition to the characteristics listed above, pedestrian tunnels should have the following characteristics:

- Good lighting throughout (see below)
- Sufficient width (12 foot minimum)
- Exit is visible from the entry

Figure 12.3- Example of an Underpass in Salisbury, MD

Though adequate lighting is also important to provide security on overpasses, it is a crucial factor in underpass design. Lighting of at least 10 foot-candles should be provided in pedestrian tunnels to improve pedestrian security. In addition, variable level lighting (to match outdoor lighting closely) should be used in pedestrian underpasses to accommodate persons whose eyes adapt slowly to lighting changes. White walls and roof openings can be used to increase lighting levels in tunnels.