INFRASTRUCTURE, STREETS AND SITE DESIGN

1.0 PARKING STRUCTURES

Definitions

Footcandles – The standard used to specify the measured intensity of lighting.

Illumination Level – The minimum level of illumination for the specified area measured on a horizontal plane.

Standards

Design Criteria - Ramps:

Grade - maximum 12%

Transition Grade – applicable to all ramps regardless of grade and must be ½ of the ramp grade for a minimum distance of 3.66m centred on the transition point, to a maximum of 6%

One-way Ramp Width - 3.04 metre minimum

Two-way Ramp Width - 6.10 metre minimum

One-way Curved Ramp Width - 4.57 metre minimum

Two-way Curved Ramp Width - 9.10 metre minimum

One-way Curved Ramp Radius - 5.5 metre minimum (inside radius) - Two-way Curved Ramps shall include a 0.50 metre centre median.

Curved Ramp Super Elevation - 0.10 metres/metre maximum (at the point of sharpest turning).

Design Criteria - Parking Areas:

Slope of parking area and aisles - 0.5% minimum, 5% maximum – Refer to Section 3.0 for Surface Parking design standards.

Design Criteria - Street Entrance/Exits:

Distance from signalized intersection - minimum 65 metres

Distance from unsignalized intersection - minimum 33 metres

One-way lane width - minimum 3.66 metres, maximum 4.57 metres

Two-way lane width - minimum 6.1 metres, maximum 9.1 metres

Turning radius at street - 7.6 to 9.1 metres

Angle of intersection at street and driveway – 70^{o} to 110^{o}

Driveway entrance/exit shall be at grade with existing or future sidewalk.

Grade of entrance/exit shall not be greater than 4% for a distance of 7.62m from the nearest edge of the street.

The grade of the aisle ramp or driveway adjacent to a parking control device (gate, cashier booth, ticket dispenser) shall not exceed 4% for a minimum distance of 9.1m on the approach to such devices.

Where a driveway entrance/exit intersects a street, an unobstructed daylight triangle of 4.57m x 4.57m shall be maintained behind the property line on both sides of the driveway. No visual obstruction is allowed greater than 1 m over the traveled portion of the adjacent roads.

Pedestrian entrances/exits and elevators must be barrier free accessible.

Design Criteria - Traffic Circulation:

In areas where traffic circulation may require guidance for directional movement and where painted arrows are not adequate to direct traffic safely or in an organized manner for optimum site circulation, traffic signs, delineators, markings or other traffic control measures or devices will be required.

Design Criteria - Lighting:

Horizontal Illumination Levels (Footcandles)
5 General Parking Areas
2 Roof and Surface * (see also Outdoor Lighting Standards)
10 Ramps and Corners
20 Stairwell and Exit Lobbies
Uniformity Ratio
4:1 Average/Minimum

Lighting of parking structures shall:

- Clearly illuminate the interior of the structure and allow the visual inspection of the interiors of cars.
- Provide uniform distribution to avoid dark areas and shadows.
- Provide closer spacing of lower wattage fixtures rather than fewer fixtures of higher wattage.
- Protect lighting fixtures from damage by using wired glass or other suitable means of protection.
- Maximize natural light penetration.
- Provide vandal-resistant fixtures, easily maintained, and repaired on a regular basis.
- Locate fixtures in order to minimize glare.
- Highlight pedestrian entrances with additional secondary lighting fixtures.
- Paint all walls and ceilings white for greater and more even illumination.

Design Criteria - Signage:

- Signs within the parking structure shall be well illuminated, easy to read, and have a uniform graphic design and include the following:
- Large safe-exit arrows shall be displayed on safe-exit doors 1.5 meters above the floor, measured from the centre of the arrow to the floor, with the arrow pointing down.
- Designated safe-exit routes.
- Small safe-exit arrows prominently displayed on columns or walls 1.5 meters above the floor, measured from the centre of the arrow to the floor, and located:
  - At least every ten metres along the safe-exit route.
  - At all safe-exit route decision points along the safe-exit route.
  - Wherever a safe-exit route crosses a traffic aisle.
- Alert signs are to be prominently displayed on columns or walls 2.1 meters above the floor, measured from the top of the sign to the floor, located every 25 parking stalls in the garage, evenly distributed in the structure.
- The following shall be coloured green:
  - The safe-exit door.
  - The frame of the safe-exit door and wall adjacent to the safe-exit door to a distance of one metre on either side of the frame, and to a height of 3 meters above the floor or to the soffit above the bulk head over the door.
- Signs shall be used to notify users of the security measures in place (monitoring by security patrols, closed circuit TV, intercom systems) or to highlight locations of emergency telephones, intercoms or panic buttons.
- All required traffic control signing (stop, yield, crosswalks, etc.) shall be provided in accordance with typical traffic engineering practice. The sizes, shapes and colours of these signs shall conform to standards specified in the Manual of Uniform Traffic Control Devices (Ontario Ministry of Transportation).

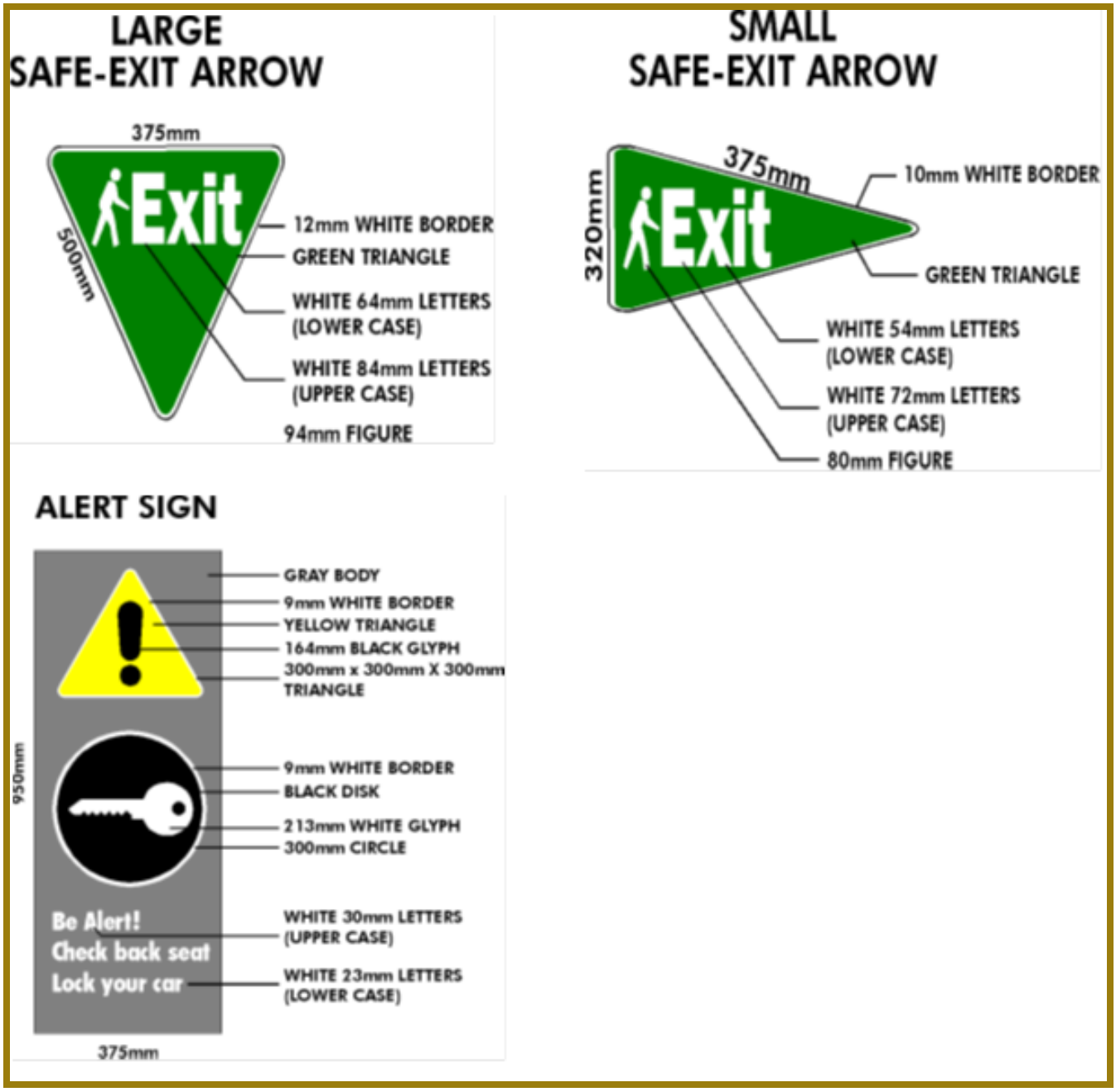

Figure 1.1: Signage for Parking Structures

- Information signs (entrance, exit, directional) and regulatory signs (No Parking, Barrier Free Parking, Fire Route) shall be clearly posted in well-lit areas to enhance pedestrian and driver safety and minimize confusion.
- Parking regulation and fee structure signs shall be placed near entrances and/or at cashier booths.
- Colour-coding and unique graphics can help orient users to locate parked vehicles quickly.

Design Criteria - Paint/Stain:

- All new or redeveloped parking structures shall have the ceilings and walls painted or stained white to enhance light reflection and brightness.

Design Criteria - Sight Lines:

- The garage shall be designed to minimize obstructions to view. Glassed stairwells, elevator lobbies and open ramps shall be used to enhance visibility and minimize entrapment areas.

Design Criteria - Barrier Free Parking:

- Barrier free parking is to be supplied in all parking garages as per the standards contained in Barrier Free Accessibility, Section 5.0.