9.2 Access Capacity and Queue

9.2.1 Capacities for access roads (entry and exit) are given in Table 9-1 below:

Table 9-1 Entry/Exit Lane Capacities for Car Parks

Type of Entry	Capacity (veh/hour)
Free-flow access into internal distributor road/ structure (no parking spaces immediately after access, i.e. ramp distributing to several levels of car park)	800
Free-flow access	580
Lifting-arm barrier without ticket issue (i.e. loop etc.)	550
Lifting-arm barrier with automatic ticket issue (push button)	360
Lifting-arm barrier with access card (slot-based)	235
Lifting-arm barrier with transponder (no slot – RFID etc.)	380
Type of Exit	
Ticket on entry and payment at a manned exit	240
Ticket on entry and variable payment to a machine linked to the exit barrier	270
Ticket on entry and operation of the exit barrier by a prepaid ticket or token	400
Free-flow exit	Analysis based on specific road layout (i.e. yield etc.)

Rates based on: „Design recommendations for multistory and underground car parks, Institute of Structural Engineers, 3rd Edition, June 2002“ and „HBS 2001, FGSV Verlag, January 2002“

9.2.2 A volume/ capacity ratio > 1 will not be accepted. For access roads with a volume/ capacity ratio > 0.5 a queuing assessment will be required. The assessment shall be based on the following formula:

9.2.3 $Q_{average} = \frac{p^2}{1-p}$, $Q_{95\%} = \frac{p}{1-p}$, with

$p = volume\ capacity\ ratio$

$Q_{average} = average\ queue\ (vehicles)$

$Q_{95\%} = 95\%ile\ queue\ (vehicles)$

9.2.4 The results shall be presented in a table comparing average, 95%ile queue and available queuing capacity, based on 7 meters per vehicle.