

Design of Car Parks and Loading/Unloading Facilities

Facilities for the parking of cars are often shown on plans submitted for approval under the Buildings Ordinance. These plans may also be required for submission to other authorities, eg Director of Lands and Commissioner for Transport (C for T) to ascertain if their requirements are met.

2. The Building Authority (BA) takes the view that car parks and all ancillary works and facilities should be properly designed to provide an acceptable standard of convenience and safety to users of the car parks.

3. To assist Authorized Persons (APs) in meeting the above objective, a set of general guidelines is given at Appendix A. In case where full compliance with the desirable standard is difficult due to physical constraints or other relevant considerations, the APs may use the minimum standard shown in Appendix A or may propose alternative acceptable standards. In such circumstances, APs are advised to demonstrate with swept paths and other design data that safety of and convenience to users of the car parks will not be compromised. Absolute minimum standard will only be accepted under exceptional circumstances and with full justifications.

4. When building plans showing car-parking facilities are received, the BA may check the following essential aspects of the plans :

- (a) the dimensions of spaces for the parking of cars and lorries, the loading and unloading bays and the run-ins and run-outs;
- (b) the gradients, curve radius of ramps, swept paths and the turning circles at critical locations; and
- (c) any general notes shown on the plans as to whether and what guidelines or standards have been observed.

In cases where compliance with the requirements is difficult due to physical constraints or other relevant considerations, the BA may take a flexible approach provided that traffic safety is not compromised. In this connection, APs are advised to highlight deviations and provide justification for such deviations.

5. Reference should be made to PNAP APP-2 in case a claim is made under regulation 23(3)(b) of the Building (Planning) Regulations for disregarding the floor space concerned from gross floor area (GFA) calculation, the BA would need to be satisfied as to the design of the car parks before disregarding from GFA calculation is considered. The BA may not take any item of deviations from the standards shown in Appendix A as a fundamental issue for disapproval of plans. The BA may advise on such deviations separately and APs are expected to rectify the deviations in subsequent plan submissions.

6. For the avoidance of doubt, the C for T will continue to provide advice on carparking proposals from the point of view of road safety, traffic management, planning of transport infrastructure, public transport operation and regulatory functions of public roads. The C for T will pay particular attention to run-ins and run-outs and the adjacent layout design in private building projects. The BA will assume the general responsibility of ascertaining compliance with standards of car parks and ancillary works and facilities.

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**Guidelines on Layout of Car Parks and Loading and Unloading Spaces
and Geometry of Access Roads, Ramps and Driveways**

Layout of Car Parks and Loading/Unloading Spaces

The dimensions produced below incorporate current guidelines on parking and loading/unloading areas as stipulated in Table 11, Chapter 8 of the Hong Kong Planning Standard Guidelines (HKPSG) and Transport Department's latest requirements. Reference can be made to the latest edition of stall dimensions of car parks and loading/unloading spaces of the HKPSG posted on the Planning Department's website :

https://www.pland.gov.hk/pland_en/tech_doc/hkpsg/full/pdf/ch8.pdf

Table 1 – Car Parks and Loading/Unloading Spaces

Stall Dimensions for Car Parks & Loading/Unloading Bays	Length (m)	Width (m)	Min. Clear Headroom (m)
Motorecycles	2.4 (min. 2 m)	1	2.4
Private Cars and Taxis	5	2.5	2.4
Coaches and Buses	12	3.5	3.8
Light Goods Vehicles	7	3.5	3.6
Medium/Heavy Goods Vehicles	11	3.5	4.7
Container Vehicles	16	3.5	4.7
Light Buses	8	3	3.3
Car-parks for Persons with a Disability	5	3.5	2.4
Car Park Aisles	Parking Angle	Aisle Width (m)	
		Desirable	Minimum
(a) Private Cars, and Taxis (one-way)	0°	3	-
	30°	3	-
	45°	3.6	-
	60°	4.2	-
	70°	4.7	-
	80°	5.3	-
	90°	6	5.5 (absolute min.5.0 m)
	90° (two-way aisle)	7.5	6.0 (absolute min.5.5 m)
(b) Light Goods Vehicles (one-way)	45°	7	-
	90°	10	-
(c) Medium/Heavy Goods Vehicles (one-way)	45°	8	-
	90°	12	10
	90° (two-way aisle)	16	10
(d) Container Vehicles (one-way)	45°	11	-
	90°	16	-

General guidelines on the design of car-parks and loading/unloading bays are as follows :

- (i) Run-ins for cycle and motor vehicle should be separated whenever possible. Cycle parking areas should be located at ground floor near the entrance, segregated from other vehicles parking spaces and grouped together;
- (ii) Ground floor shops/workshops/offices should be readily accessible to loading and unloading areas. It is desirable that the loading and unloading activities will not affect pedestrian or vehicular traffic outside or inside the developments;
- (iii) Parking layout should be designed with adequate clear visibility such that the conflict of a vehicle emerging from a ramp and another vehicle reversing into or leaving a parking lot is minimized;
- (iv) Goods vehicles are loaded and unloaded from the rear and perpendicular loading bays are most commonly arranged. A space of approximately one goods vehicle length should be reserved in front of the loading bay for reverse manoeuvring. The hammerhead design is recommended for loading/unloading bays. The swept path of the manoeuvre of the goods vehicles into and out of the bay should be indicated on the plans. Where there is severe constraint, a turn-table should be provided;
- (v) Parking layout should be designed such that a vehicle may be parked in one distinct manoeuvre without reversals of the steering lock;
- (vi) Appropriate traffic signs and road markings should be provided;
- (vii) Swept path analysis should be conducted to check the circulation and adequacy of turning areas whenever necessary;
- (viii) Parking spaces for motor cycles should be grouped together and at a location away from the run-in;
- (ix) Where space for bicycles is provided in buildings where there is no commercial element, the cycle parks should preferably be located near the residential entrance lobby, and there should be total segregation of the bicycle from other vehicles; and
- (x) Car-parks for persons with a disability should be designed to the standards set out in the latest Design Manual Barrier Free Access, which is posted on the Buildings Department's website :

https://www.bd.gov.hk/doc/en/resources/codes-and-references/code-and-design-manuals/BFA2008_e.pdf

Access Roads/Driveways

2. For private access roads and streets within the development, the requirements specified in the Building (Private Streets and Access Roads) Regulations should be followed. Table 2 gives general guidelines on access roads and driveways:

Table 2 - Access Roads/Driveways

Driveways				
Width for Straight Sections		Desirable Width (m)	Minimum Width (m)	Absolute Min. Width (m)
Residential Area	One-way	5.5	4.0	3.0 (private cars only)
	Two-way	7.3	5.5	5.0 (private cars only)
Industrial Area & Area of Mixed Usage	One-way	6.0	5.5	3.5
	Two-way	10.5	7.3	6.0
Gradient		Desirable	Maximum	Absolute Maximum
Straight Ramp	For Private Cars	1:10	1:7	1:6
	For Goods Vehicles	1:10	1:8	-
Helical	For Private Cars	1:12.5	1:8	-
	For Goods Vehicles	1:12.5	1:10	-
Vertical Clearance	All Vehicles	Vertical clearances for structures over driveway and that part of pavement within 600mm of its outer edge should be 5.1 m (min.)		
Horizontal Clearance	All Vehicles	Horizontal clearance should be 500 mm. If impracticable, clearance from railing and posts for signs should not be less than 200 mm.		
Widening of Access Roads/Driveways on Bends				
Width of Access Roads/ Driveways		Permitted Radius of Curve at Centre Line		Min. Widening Required. (m)
6 m or less		Less than 18 m		1.2
		18 m to 24 m inclusive		1.0
		Over 24 m		0.6
More than 6 m		Less than 18 m		1.0
		18 m to 24 m inclusive		0.6
		Over 24 m		0.3

General guidelines on the design of access roads/driveways are as follows:

- (i) The minimum vertical clearance of 5.1m is applicable to access roads/driveways intended for all types of vehicles. In case access roads/driveways are limited for certain type of vehicles, a lowered minimum vertical clearance could be considered.

Ramps in Multi-Storey Car Park (for Cars, Taxis and Light Goods Vehicles)

3. Ramps in multi-storey car park should be designed with reference to the following requirements in Table 3 :

**Table 3 - Ramps in Multi-Storey Car Park
(for Private cars and Taxis)**

Ramps in Multi-storey Car Parks (for Private cars and Taxis)			
Min. Width (between kerbs)		Straight Ramps	Helical Ramps
	One-way	3.0 m	3.65 m
	Two-way (with no central kerb)	6.0 m (min. 5.5 m)	-
Max. Gradient	See "Gradient" in "Access Roads/Driveways"		
Horizontal Clearance from structures	For Straight Ramps	300 mm	
	For Helical Ramps	600 mm	
Minimum Curve Radius	For Straight Ramps	5.5 m (min. inner radius at bends)	
	For Helical Ramps (one-way)	9.0 m (min. outer radius)	

General guidelines on the design of ramps are as follows :

- (i) The use of two-way ramps in a multi-storey car park is not recommended;
- (ii) Ramps should be designed without conflict points at both ends, e.g. no pedestrian crossings and junctions at both ends of a ramp;
- (iii) At the upper end of ramps, adequate clear visibility should be provided to minimize conflicts of movements of vehicles at the upper floor and the approach ramp; and
- (iv) The design standards for straight and helical ramps are applicable to car parks for private cars and taxis and should be modified to suit other vehicle types.

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