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X-Discipline Training:
Off-street Car parking

INDEX

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1.0 STANDARD OVERVIEW

Australian Standards

AS 2890.1 is one code of a series of parking codes associated with off-street parking.

- AS/NZS 2890.1:2004 Off-Street Car Parking
  - Current Version 2004
  - Previous Version 1999
  - Current draft version 2023

➢ AS 2890.2:2002 Off- Street Commercial Vehicles Facilities
  - Current version 2018
  - Previous version 2002

➢ AS 2890.3: 1993 Bicycle Parking Facilities
  - Current version 2015
  - Previous version 1993

➢ AS 2890.5:2004 On-Street Car Parking
  - Current version 2020
  - Previous version 1993

➢ AS 2890.6 :2009 Off- Street Parking for People with Disabilities
  - Current version 2022
  - Previous version 2009

1.0 STANDARD OVERVIEW

National Code of Construction

About NCC Volume One

NCC Volume One contains technical design and construction requirements for all Class 2 to 9 buildings (multi-residential, commercial, industrial, and public assembly buildings) and their associated structures.

NCC Volume One contains the requirements for—

- all Class 2 to 9 buildings; and
- access requirements for people with a disability in Class 1b and 10a buildings; and
- certain Class 10b structures including access requirements for people with a disability in Class 10b swimming pools.

Table 1: Schedule of Referenced Documents. References AS2890.6 (2009), but not AS/NZS2890.1:2004

AS/NZS 2890 Part 6	2009	Parking facilities — Offstreet parking for people with disabilities	*D4D6*	N/A	N/A	N/A

The Territory Plan, however, does capture compliance requirement with AS/NZS2890.1:2004, refer below.

D1P8 **Carparking for people with a disability**

[2019: DP8]

Carparking spaces for use by people with a disability must be—

(a) provided, to the degree necessary, to give equitable access for carparking; and

(b) designated and easy to find.

Limitations:

D1P8 does not apply to a building where—

(a) a parking service is provided; and

(b) direct access to any carparking spaces by the general public or occupants is not available.

D4D6 **Accessible carparking**

[2019: D3.5, Table D3.5]

(1) *Accessible* carparking spaces—

(a) subject to (b), must be provided in accordance with (2) in—

(i) a Class 7a building *required* to be *accessible*; and

(ii) a carparking area on the same allotment as a building *required* to be *accessible*; and

(b) need not be provided in a Class 7a building or a carparking area where a parking service is provided and direct access to any of the carparking spaces is not available to the public; and

(c) subject to (d), must comply with *AS/NZS 2890.6*; and

(d) need not be identified with signage where there is a total of not more than 5 carparking spaces, so as to restrict the use of the carparking space only for people with a disability.

1.0 STANDARD OVERVIEW

The Territory Plan

Technical Specifications specify Assessment criteria.

https://www.planning.act.gov.au/professionals/our-planning-system/the-territory-plan/technical-specifications

For Multi Unit Housing refer to Assessment Outcome 27 per below.

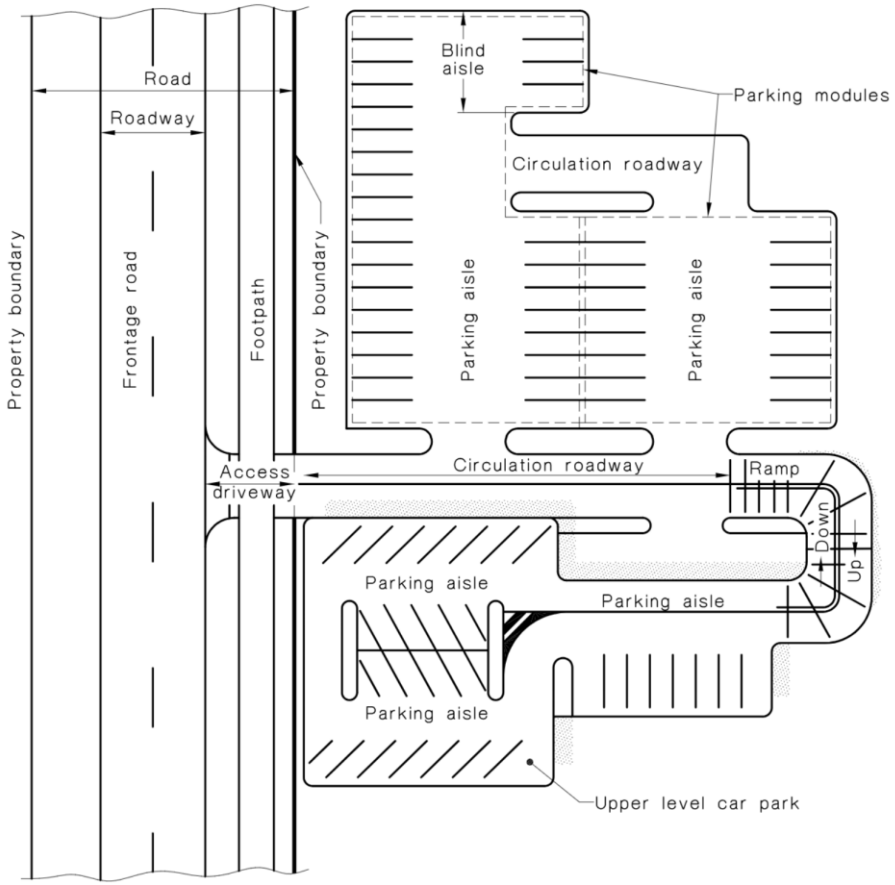
Planning (Residential Zones) Technical Specifications 2024 (No 3)

Assessment Outcome	**27. Vehicle and bicycle parking sufficiently caters for the development while minimising visual impacts from the street or public space. This includes consideration of parking location, dimensions and number of spaces provided.**

Dimensions and access for car parking spaces – multi-unit housing	27.9. Dimensions of car parking spaces, layout and vehicle manoeuvring meet: a) AS 2890.1:2004, the Australian Standard for Parking Facilities, Part 1: Off-street Car Parking including manoeuvring to and from and within the development, sightlines and gradients. The B99 vehicle template shall be used for all multi-unit housing developments. b) Australian Standard AS/NZS 2890.6:2009 Parking Facilities – Part 6: Off-street parking for people with disabilities.

2.0 PARKING CLASSIFICATION AND DIMENSIONS

a) Typical Parking Layout



2.0 PARKING CLASSIFICATION AND DIMENSIONS

b) Parking Classification

Off-street parking facilities are classified according to their **USER CLASS** per Table 1.1 below. User classes determine the dimensional requirements for parking facilities based on who will use the facility and how they will use it.
Considerations for user class include such things as:

- User familiarity – private residential or public
- Turnover of parking – short, high turnover volume versus long, low turnover volume.
- Access to the vehicle – parcels etc in shopping centres
- User limitations – disabled drivers, parents with prams, elderly

TABLE 1.1

CLASSIFICATION OF OFF-STREET CAR PARKING FACILITIES

User class	Required door opening	Required aisle width	Examples of uses (Note 1)
1	Front door, first stop	Minimum for single manoeuvre entry and exit	Employee and commuter parking (generally, all-day parking)
1A	Front door, first stop	Three-point turn entry and exit into 90° parking spaces only, otherwise as for User Class 1	Residential, domestic and employee parking
2	Full opening, all doors	Minimum for single manoeuvre entry and exit	Long-term city and town centre parking, sports facilities, entertainment centres, hotels, motels, airport visitors (generally medium-term parking)
3	Full opening, all doors	Minimum for single manoeuvre entry and exit	Short-term city and town centre parking, parking stations, hospital and medical centres
3A	Full opening, all doors	Additional allowance above minimum single manoeuvre width to facilitate entry and exit	Short term, high turnover parking at shopping centres
4	Size requirements are specified in AS/NZS 2890.6 (Note 2)		Parking for people with disabilities

2.0 PARKING CLASSIFICATION AND DIMENSIONS

c) Parking Dimensions

Off-street parking facilities are classified according to their **USER CLASS** per Table 1.1 below. User classes determine the dimensional requirements for parking facilities based on who will use the facility and how they will use it. Considerations for user class include such things as:

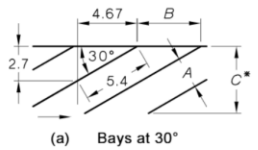
d) Small Car Spaces

Clause 2.4.1 (a) (iii)

- Minimum Dimension – 2.3m wide x 5.0m long

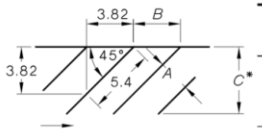
Appendix A6

- Defined as light car 1.7m wide x 4.45m long
- Deemed 50th percentile vehicle



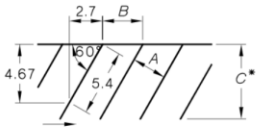
(a) Bays at 30°

User class (Note 1)	A (Notes 2 & 3)	B	C_1	C_2	C_3	Aisle width
1,1A	2.1	4.2	4.4	4.1	4.5	3.1
2	2.3	4.6	4.4	4.1	4.7	3.0
3	2.5	5.0	4.4	4.1	4.9	2.9
3A	2.5	5.0	4.4	4.1	4.9	3.45



(b) Bays at 45°

User class (Note 1)	A (Note 3)	B	C_1	C_2	C_3	Aisle width
1,1A	2.4	3.4	5.2	4.8	5.5	3.9
2	2.5	3.5	5.2	4.8	5.6	3.7
3	2.6	3.7	5.2	4.8	5.7	3.5
3A	2.6	3.7	5.2	4.8	5.7	4.2
4	(See Note 5)					



(c) Bays at 60°

User class (Note 1)	A (Note 3)	B	C_1	C_2	C_3	Aisle width
1,1A	2.4	2.75	5.7	5.1	5.9	4.9
2	2.5	2.90	5.7	5.1	6.0	4.6
3	2.6	3.00	5.7	5.1	6.0	4.3
3A	2.6	3.00	5.7	5.1	6.0	5.1
4	(See Note 5)					

(d) Bays at 90°

User class (Note 1)	A (Note 3)	B	C_1	C_2	C_3	Aisle width (Note 4)
1	2.4	2.4	5.4	4.8	5.4	6.2
1A	2.4	2.4	5.4	4.8	5.4	5.8
2	2.5	2.5	5.4	4.8	5.4	5.8
3	2.6	2.6	5.4	4.8	5.4	5.8
3A	2.6	2.6	5.4	4.8	5.4	6.6
3A	2.7	2.7	5.4	4.8	5.4	6.2
4	(See Note 5)					

*Dimension C is selected as follows (see Note 6):
C1—where parking is to a wall or high kerb not allowing any overhang.
C2—where parking is to a low kerb which allows 600 mm overhang in accordance with Clause 2.4.1(a)(i).
C3—where parking is controlled by wheelstops installed at right angles to the direction of parking, or where the ends of parking spaces form a sawtooth pattern, e.g. as shown in the upper half of Figure 2.4(b).

For Notes—see over.

DIMENSIONS IN METRES

FIGURE 2.2 LAYOUTS FOR ANGLE PARKING SPACES

3.0 PARKING SPECIFICS

a) Angled Parking

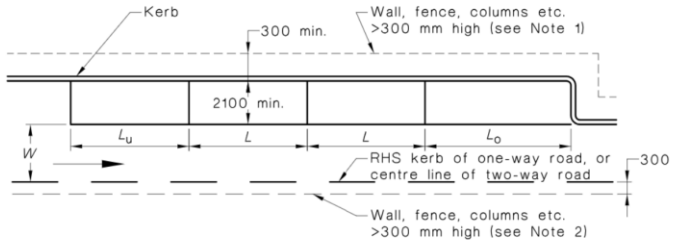
Typically, 90deg parking is the most efficient layout and most commonly used. Where less thank 90deg parking is provided circulation should be restricted to one way. One way for 90deg parking is permissible, however drivers are generally stupid and may not observe.

2.4.2 Angle parking aisle

The width of angle parking aisles is determined from either the width needed for circulating traffic or the width needed to manoeuvre into and out of a parking space. In the latter case, the width will vary according to the width of the parking spaces, wider spaces needing less aisle width for the parking manoeuvre. Minimum aisle widths shall be as shown in Figure 2.2. These widths will cater both for the angle parking manoeuvre or for circulating traffic, two-way in the case of 90 degree parking and one-way in the case of 30, 45 and 60 degree parking. For aisles where there is parallel parking on one or both sides, see Clause 2.4.4.

When designing for turns between an aisle and a ramp or circulation roadway, or between two aisles, adequate area shall be provided for the turning movements (see Clause 2.5.2(c)).

b) Parallel Parking



metres

Aisle width (one-way), W	Space length, L	Space length obstructed end spaces, L_o	Space length unobstructed end spaces, L_u (Note 4)
3.0	6.3	6.6	5.4
3.3	6.1	6.4	5.4
3.6	5.9	6.2	5.4

NOTES:

1 Spaces shall be located at least 300 mm clear of obstructions higher than 150 mm such as walls, fences and columns.

2 Where the opposite side of the aisle is bounded by obstructions higher than 150 mm, Dimension W shall be increased by at least 0.3 m.

3 If a single space is obstructed at both ends, a further 0.3 m shall be added to dimensions in this column.

4 In New Zealand only, space lengths in this column may be reduced to 5.0 m.

FIGURE 2.5 MINIMUM SPACE LENGTH AND AISLE WIDTH COMBINATIONS FOR PARALLEL PARKING MANOEUVRE

3.0 PARKING SPECIFICS

c) End Overhang – 2.4.1 (a) (i)

(i) *End overhang* Where a vehicle may overhang the end of a space, e.g. at a kerb, provided the first 600 mm immediately behind it is unobstructed, is not another parking space and is not required as a footway or for some similar purpose, space lengths measured parallel to the parked vehicle may be reduced by 600 mm. Ends of bays shall be provided with wheel stops if the requirements specified in Clause 2.4.5.4 apply.

d) Additional Clearance

Where there is a vertical obstruction greater than 150mm high to an aisle or parking space, an additional clearance of **300mm** is required to that obstruction. This includes:

- End bays adjacent walls
- One sided parking aisles

e) Turning 2.5.2 (c)

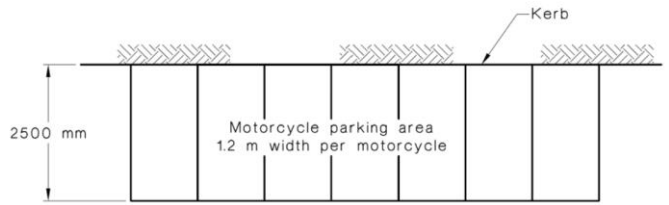
Where two-way passing is required at an intersection or base of a ramp, the intersection should be designed for a B99 vehicle passing a B85 vehicle. Where an obstruction greater than 150mm high exists, provide an additional 300mm clearance to the obstruction. For the 2 passing vehicles, do not overlap the clearances (i.e., min 600mm clearance between swept paths)

f) Motorcycles

2.4.7 Provision for motorcycles

The recommended minimum provision for motorcycles is shown in Figure 2.7.

Motorcycle parking areas should not be located so that parked motorcycles are vulnerable to being struck by a manoeuvring car.



NOTE: Transverse bay markings will usually be needed to control space usage and parking angle.

FIGURE 2.7 MOTORCYCLE PARKING PROVISION

4.0 VEHICLE BARRIERS

a) Kerbs

Typically provided to protect pedestrian walkways, landscaped areas, and non-trafficable areas.

150mm typical height

190-200mm barrier kerb

b) Barriers

2.4.5.3 *Barriers*

Barriers shall be constructed to prevent vehicles from running over the edge of a raised platform or deck of a multi-storey car park including the perimeter of all decks above ground level. They are required wherever the drop from the edge of the deck to a lower level exceeds 600 mm. At drops between 150 mm and 600 mm, wheel stops (see Clause 2.4.5.4) shall be provided. Barriers shall comply with the following requirements:

(a) They shall be designed structurally for the loading requirements of AS/NZS 1170.1.

(b) If at the end of a parking space, they shall be at least 1.3 m high so that drivers of cars backing into the space can see the barrier above the rear of the car.

NOTE: The upper portion of such a barrier may be a light structure provided for sighting purposes only.

(c) They shall not be made from brickwork, unreinforced concrete or other materials likely to shatter on impact.

c) Wheel Stops

2.4.5.4 *Wheel stops*

Wheel stops may be provided where it is considered necessary to limit the travel of a vehicle into a parking space. If used they shall meet the requirements given below.

NOTES:

1 Typical uses of wheel stops are as follows:

(a) Control of kerb overhang where inconvenient or hazardous for pedestrians.

(b) Inhibiting contact with an end barrier or high kerb.

(c) Inhibiting encroachment into an opposing parking space.

2 Wheel stops should be avoided in any situation where they may be in the path of pedestrians moving to or from parked vehicles, or crossing a car park for any other purpose.

Wheel stops shall be between 90 and 100 mm in height, and 1650 ±50 mm in width.

5.0 PARKING GRADES

2.4.6 Gradients within parking modules

2.4.6.1 *Maximum gradients*

The maximum gradients within a parking module including a motorcycle parking area shall be as follows:

(a) Measured parallel to the angle of parking—1 in 20 (5%).

(b) Measured in any other direction—1 in 16 (6.25%).

(c) Within parking spaces for people with disabilities—see AS/NZS 2890.6*.

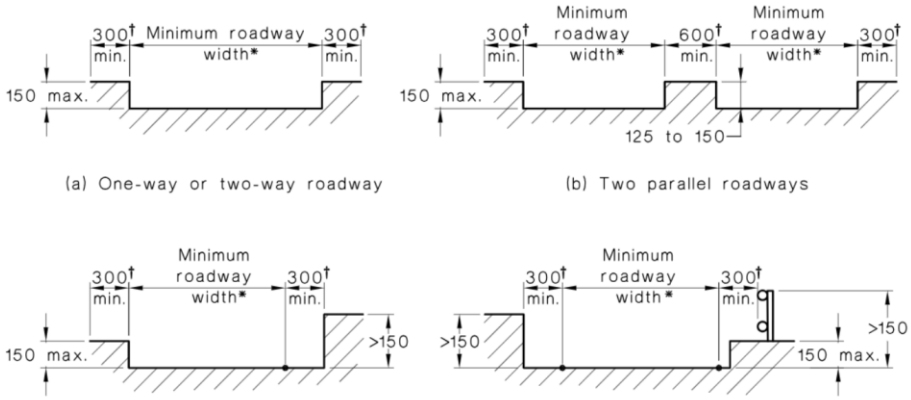
2.4.6.2 *Minimum gradients*

So that parking floors will drain adequately, the minimum gradient shall be 1 in 100 (1.0%) for outdoor areas and 1 in 200 (0.5%) for covered areas.

AS/NZS 2890.6

Maximum grade 2.5% (1:40) generally. Can be increased to 1:33 for asphalt finish.

6.0 ROADWAYS



* Minimum roadway width: One-way roadway—3000 mm
Two-way roadway—5500 mm
On curve—see Table 2.2

† Increase clearance to 500 mm if on the outside of a curve.

DIMENSIONS IN MILLIMETRES

FIGURE 2.8 CIRCULATION ROADWAY AND RAMP CROSS SECTIONS

Where a median is proposed between two parallel aisles, both aisles are to be designed as one-way with 600mm min width median island, preferred kerb height for the median island is 125mm.

Note that parking aisles are wider than roadways to allow for vehicles turning in and out of parking spaces.

7.0 RAMPS

Private ramps are able to be steeper than public ramps.

a) Public Ramps

Straight ramp longer than 20m - 1:6 (16.7%) max

Straight up to 20m long – 1:5 (20%) max

b) Private Ramps

Straight ramp longer than 20m - 1:5 (20%) max

Straight up to 20m long – 1:4 (25%) max

c) Transitions

(d) *Changes of grade*—To prevent vehicles scraping or bottoming, changes in grade in excess of—

(i) 12.5 percent algebraically (1 in 8) for summit grade changes; or

(ii) 15 percent algebraically (1 in 6.7) for sag grade changes;

require introduction of a grade transition between the main grade lines as illustrated in Figure 2.10.

(e) *Grade transitions*—Transitions of 2.0 m in length will usually be sufficient to correct bottoming or scraping at grade changes up to 18 percent. They may be in the form of a simple chord with grade calculated as half the algebraic sum of the two adjacent grades, as illustrated, but for vehicle occupant comfort may be constructed as short vertical curves. Grade changes shall be checked using the method at Appendix C in any of the following circumstances:

(i) Grade changes of 18 percent or more.

(ii) Where there are successive grade changes less than 3 m apart.

(iii) Where vehicles with unusually low ground clearances are to be catered for. A modified ground clearance template to suit the particular vehicle characteristics will be required.

(iv) Any other case where there may be doubt as to whether adequate ground clearance has been provided (e.g. along the kerb lines of a curved ramp).

Longer transitions or other adjustments to the grade line may be required in these cases.

7.0 RAMPS

d) Curved Ramps

TABLE 2.2

MINIMUM ROADWAY WIDTHS ON CURVED ROADWAYS AND RAMPS

metres

Turn radius R_o (Note 1)	Single lane		Two-way, no separator All cases (Note 3)
	Public facilities (Note 2)	Domestic property	
7.6 to 11.9	3.9	3.6	—
12.0 to 19.9	3.4	3.1	6.7 (Note 4)
20.0 to 50.0	3.2	3.0	6.3
>50.0	3.0	3.0	5.5

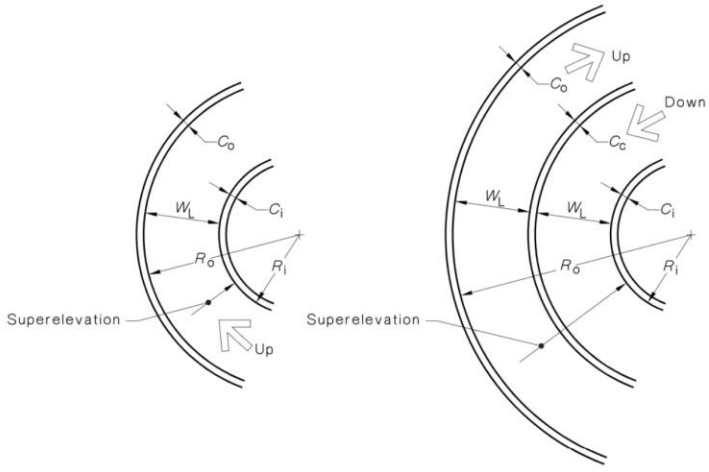
NOTES:

1 See Figure 2.9 for Dimension R_o.

2 In New Zealand only, the widths shown for domestic property shall apply also to public facilities.

3 For parallel roadways with a median or separator, each roadway width shall be determined separately as a single lane.

4 Applies to R_o range 15.0 m to 19.9 m only (see Clause 2.5.2(b)).



(a) Single (b) Double (with separator)

Characteristic	Limiting dimensions, m	
	One-way	Two-way
Outside radius, R_o	7.6 min.	11.8 min.
Inside radius, R_i	4.0 min.	4.0 min.
Lane width, W_L	See Table 2.2	See Table 2.2
Clearance to obstruction—		
(a) inside, C_i	0.3 min.	0.3 min.
(b) outside, C_o (see Note)	0.5 min.	0.5 min.
(c) between paths, C_c	—	0.6 min.
Superelevation	1 in 20 (5%) max.	1 in 20 (5%) max.

NOTE: This clearance will be sufficient to allow the outside front wheel to touch the kerb before the vehicle body can contact the obstruction.

FIGURE 2.9 DIMENSIONS OF CURVED CIRCULATION ROADWAYS AND RAMPS

7.0 RAMPS

e) Gradients of Access Driveways

3.3 GRADIENTS OF ACCESS DRIVEWAYS

At entry and exit points, the access driveway should be graded to minimize problems associated with crossing the footpath and entering the traffic in the frontage road.

Maximum gradients on and near access driveways, other than at domestic properties (see Clause 2.6), shall be as follows:

(a) *Property line/building alignment/pedestrian path*—max. 1 in 20 (5%) between edge of frontage road and the property line, building alignment or pedestrian path (except as provided in Item (d)), and for at least the first 6 m into the car park (except as provided below).

A1

The grade of the first 6 m into the car park may be increased to 1 in 8 (12.5%) provided all three of the following conditions are met:

(i) The grade is a downgrade for traffic leaving the property and entering the frontage road.

(ii) The user class is Class 1, 1A or 2 only.

(iii) The maximum car park size is—

(1) for entry into an arterial road—25 car spaces, or

(2) for entry onto a local road—100 car spaces.

The maximum grade across the property line shall remain at 1 in 20 (5%).

(b) *Vehicular control points*—max. 1 in 20 (5%) for at least 6 m prior to the control point.

(c) *Queuing area*—max. 1 in 10 (10%) for not less than 0.8 of the queue length determined in Table 3.3.

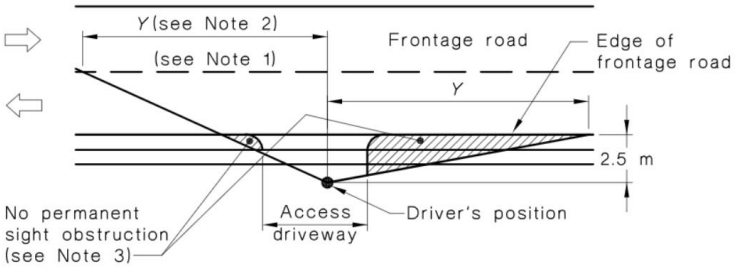
(d) *Across footpaths*—where the driveway crosses a footpath, the driveway grade shall be 1 in 40 (2.5%) or less across the footpath over a lateral distance of at least 1.0 m.

NOTE: The advice of the relevant regulatory authority should be sought to obtain grade requirements for footpaths.

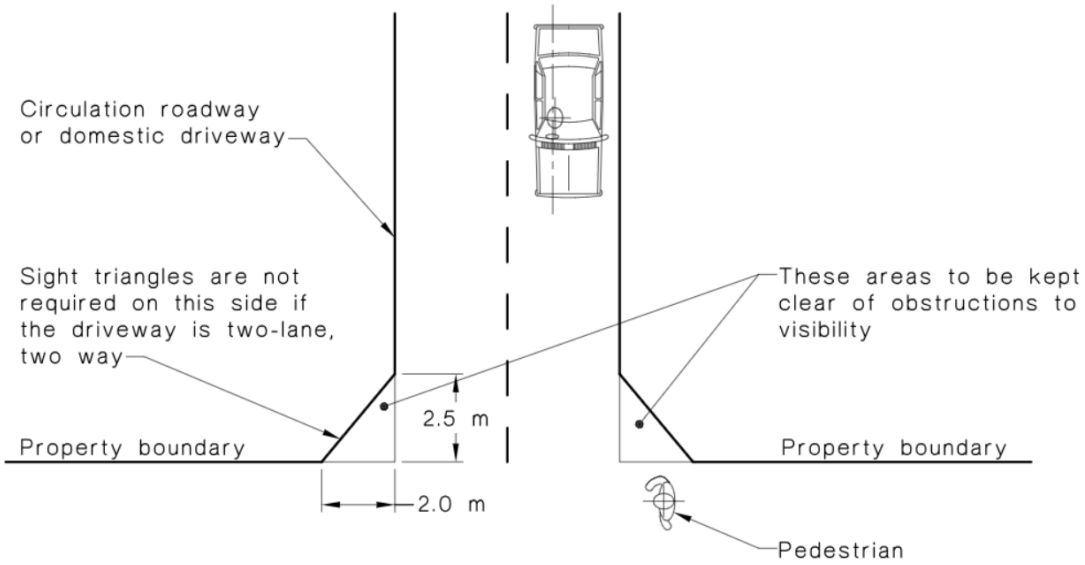
(e) For ramps and circulation roadways at locations other than in Items (a) to (d), see Clause 2.5.3.

(f) For domestic driveways, see Clause 2.6.

8.0 SIGHT LINES



Frontage road speed (Note 4) km/h	Distance (Y) along frontage road m		
	Access driveways other than domestic (Note 5)		Domestic property access (Note 6)
	Desirable 5 s gap	Minimum SSD	
40	55	35	30
50	69	45	40
60	83	65	55
70	97	85	70
80	111	105	95
90	125	130	Use values from 2nd and 3rd columns
100	139	160	
110	153	190	



DIMENSIONS IN METRES

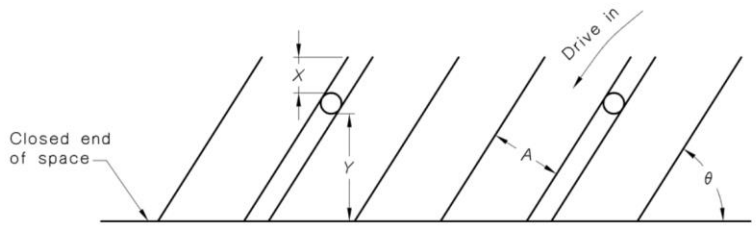
FIGURE 3.3 MINIMUM SIGHT LINES FOR PEDESTRIAN SAFETY

9.0 COLUMNS AND PARKING ENVELOPE

5.2 COLUMN LOCATION AND SPACING

The dimensions for locating columns in a short span structure shall be as given in Figure 5.1. The design envelope around a parked vehicle which is to be kept clear of columns, walls or other obstructions, is shown in Figure 5.2. If this requirement is met, the dimensions in Figure 5.1 will also be achieved.

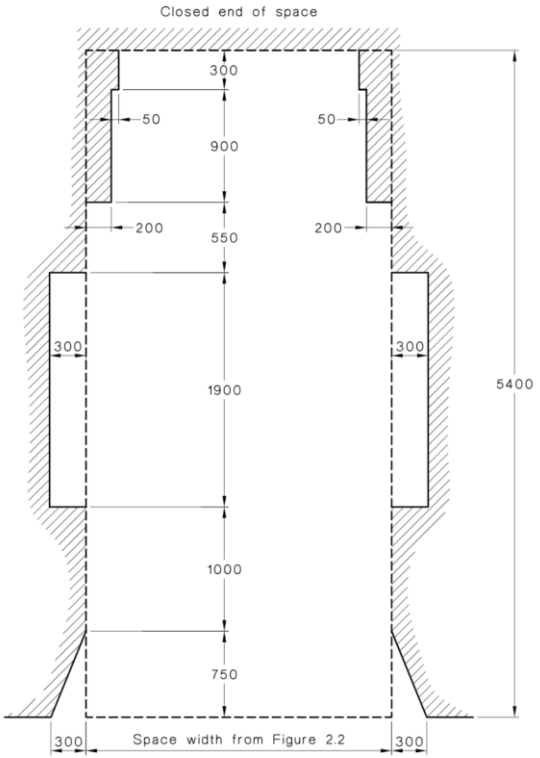
NOTE: Columns should not be located at the edge of a parking aisle. The difficulty of manoeuvring into a parking space is increased by such a location. It is also desirable to avoid locating a column directly opposite a car door.



A = parking space width (see Figure 2.2)

Parking angle, θ, degrees	Dimensions, mm	
	X, min.	*Y*, min.
30	375	1825
45	530	2581
60	650	3161
75	724	3526
90	750	3650

FIGURE 5.1 COLUMN LOCATION



NOTE: The design envelope provides for structural elements to be clear of all four side doors.

DIMENSIONS IN MILLIMETRES

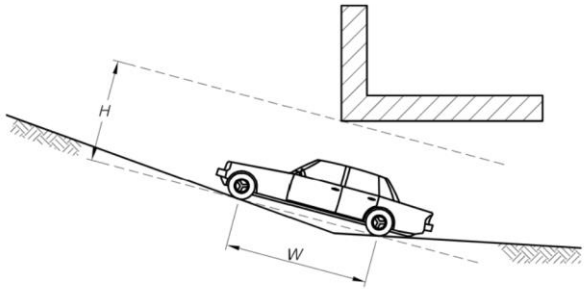
FIGURE 5.2 DESIGN ENVELOPE AROUND PARKED VEHICLE TO BE KEPT CLEAR OF COLUMNS, WALLS AND OBSTRUCTIONS

10.0 HEADROOM

a) General

Minimum headroom 2.2m for access and standard parking bays

Note that headroom is measured to the angle of the vehicle passing under the obstruction, it is not simply a vertical clearance. Clearance shall be measured from the lowest projection from the sofit over – sprinkler, mechanical duct, etc.



H = Headroom
W = Wheelbase of design (B99) vehicle

FIGURE 5.3 CRITICAL HEADROOM MEASUREMENT AT A GRADE CHANGE

Table 4.1 — Service bay dimensions

Vehicle class	Bay width m min.	Bay length m min.	Platform height m	Vertical clearance m min.
SRV	3.5	6.4	0.75 to 0.90	3.5
MRV	3.5	8.8	0.95 to 1.10	4.5[a]
HRV	3.5	12.5	1.10 to 1.40	4.5[a]
AV	3.5	20.0	1.10 to 1.40	4.5[a]

[a] 4.8 m for animal transport vehicles, vehicle carriers and 4.6 m high vehicles or where access to the top of a tall vehicle, e.g. pantechnicon or load is required.

Service Vehicle minimum clearances are provided in AS2890.2.

b) AS2890.6

Minimum headroom 2.2m for access to parking bay.

Minimum headroom 2.5m over parking bays

10.0 HEADROOM

c) Bonnet Zone

AS/NZS2890.1:2004 requires 2.2m headroom per section 5.3 headroom of the code. This headroom allowance is explained in Appendix B4 of the code which notes:

- The height of all passenger cars and station wagons is below 1.5m
- Any and off-road vehicles used as private passenger vehicles need to be catered for. A majority of these vehicles are below 2.0m height with some (often used by people with a disability) approaching 2.2m.

Appendix A5 of the code details information on the height of the 99.8th percent vehicle:

- Most van heights and commonly used passenger vehicles have a height less than 2.0m.
- Most common vans or four-wheel drive vehicles greater than 2.0m in height:
    - Toyota 78 Series Land Cruiser – 2.115m
    - Ford Transit Van with optional heights – 2.055m, 2.365m, and 2.587m the latter 2 primarily commercial and unable to enter the basement car park in any event.
    - It is noted that both of these vehicle types have a bonnet to the front permitting the encroachment of Figure 2.7 AS/NZS2890.6:2009. It is further noted that the Ford Transit range exceeds the 5.4m parking bay allowance with the L2H2 model being 5.531m long and the L3H2 model being 5.981m long. As such, it is unlikely these models would be used as a passenger vehicle by residents or visitors in a typical basement and fall outside the likely vehicle type to access typical basement parking.

Under *Section 2.4 Headroom of AS/NZS2890.6:2009*, Figure 2.7 defines a vertical clearance envelope along the length of the parking space, which includes a permitted intrusion into the bonnet zone of the vehicle.

10.0 HEADROOM

c) Bonnet Zone

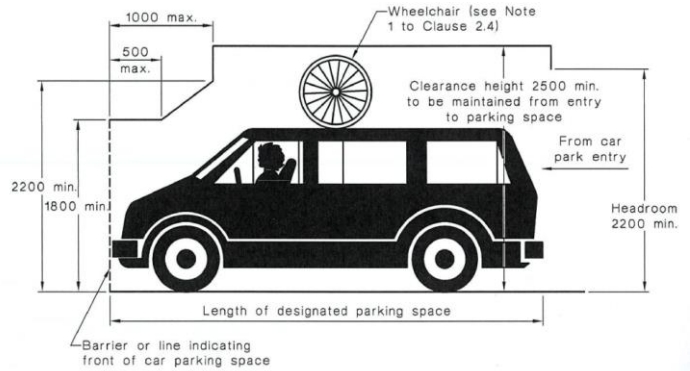


FIGURE 2.7 HEADROOM REQUIRED ABOVE CAR SPACES FOR PEOPLE WITH DISABILITIES

The permissibility of an intrusion into the headroom clearance as defined in Figure 2.7 is based on the principal of forward entry (nose in) parking. This allows for the geometric shape of vehicles that are inclined at the front to allow for engines and driver seating, and the fact that drivers have clear visibility to the intrusion. Reverse in parking is susceptible to failing this allowance as high back vehicles and driver visibility create opportunity for the intrusions to conflict with the reversing vehicle.

It is noted that the current version of the code (2022) has removed the bonnet zone, so be very careful which version of the NCC you are working to and whether it references as 2890.6:2009 or AS2890.6:2022.

AS 2890.6:2022 18

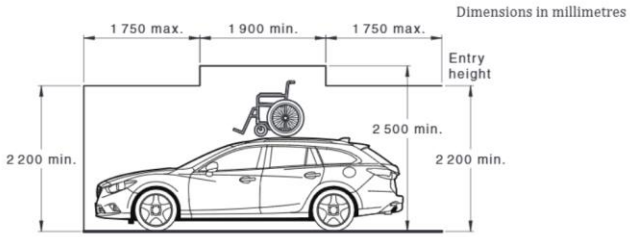


Figure 2.13(A) — Headroom required above car spaces for people with disabilities — Side on

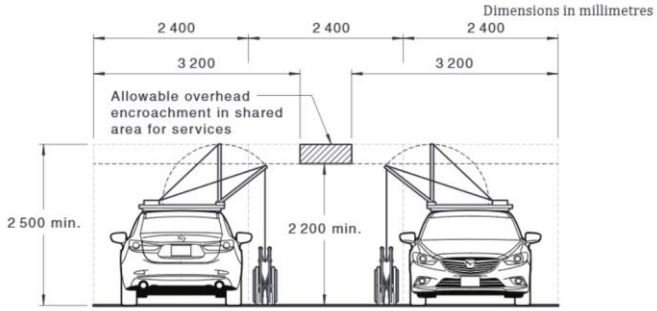


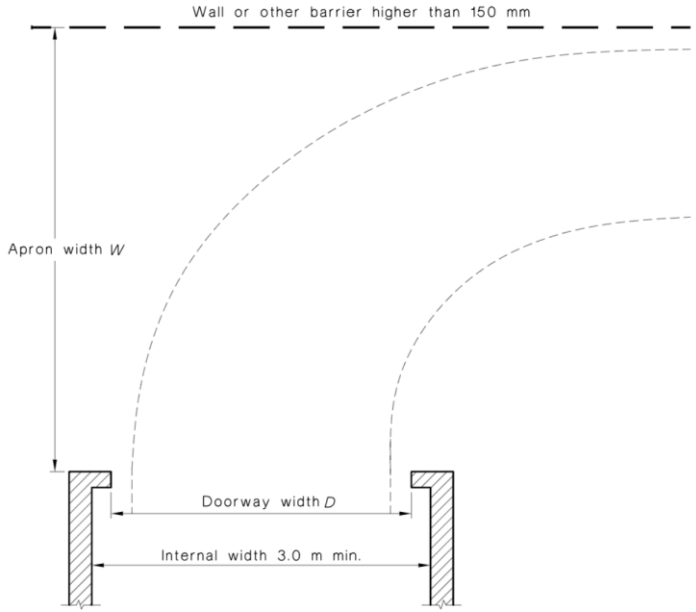
Figure 2.13(B) — Headroom required above car spaces for people with disabilities — Cross-section

11.0 ENCLOSED GARAGES

Code has a relatively convoluted explanation. In simple terms, walled enclosure triggers the 300mm additional clearance to the parking bay width.

Note apron width required opposite garage, which architects commonly do not allow for. Width of garage door opening is the most significant constraint, so as wide as you can make it is the best way to go every time.

For enclosed garages in a basement the additional width apron does not work for structural grids. Look to have single sided for garages so opposite side is not considered a vertical obstruction. Reverse parking can be a way of negotiating tighter arrangements as reversing out is the limiting factor.



metres

Doorway width (*D*)	Apron width (*W*) (See Note)
2.4	7.0
2.7	6.3
3.0	5.6

NOTE: Vehicles larger than the B85 vehicle (see Appendix B) may need to make a 3-point turn at the apron widths shown. The apron width may be reduced by 0.3 m where the edge opposite the doorway is a kerb 150 mm or less in height with a clearance of at least 0.3 m behind the kerb.

FIGURE 5.4 APRON WIDTHS FOR RIGHT ANGLE ACCESS TO SINGLE VEHICLE GARAGES

12.0 DESIGN VEHICLE CHARACTERISTICS AND DIMENSIONS

a) B99 Vehicle

99.8th Percentile vehicle is referred to as the B99 Vehicle, meaning 99.8% of cars in the Australian fleet are equal to or less in size.

There is not a typical vehicle representative of the B99. It is a statistically derived vehicle, however a Series 100 Landcruiser is a close representative.

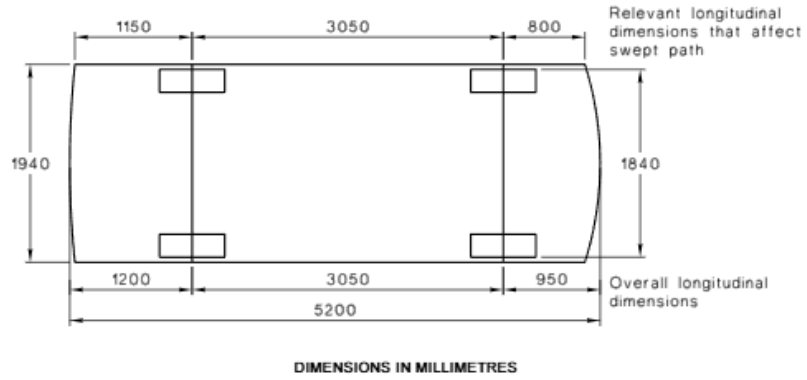


FIGURE B1 B99 (99.8TH PERCENTILE) VEHICLE

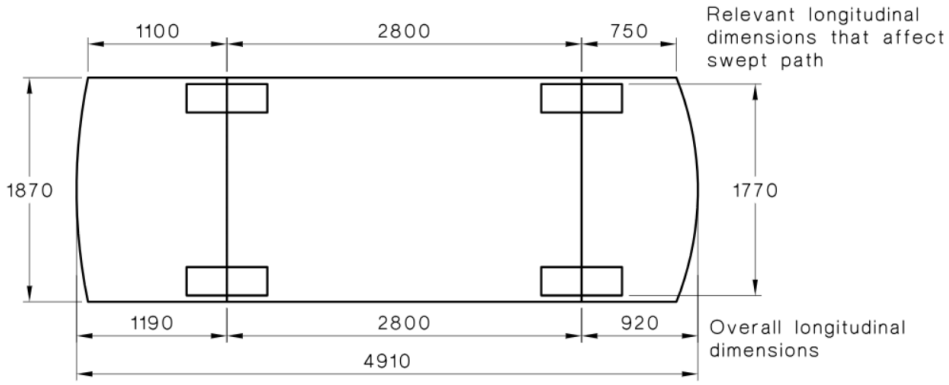
B2.2 The B99 vehicle

Design dimensions based on the B99 vehicle are required at all locations where failure of a vehicle to be able to physically fit into the facility would occasion intolerable congestion and possible hazard. Such locations shall include all access driveways, ramps and circulation roadways, unless there are special circumstances of severe space limitation coupled with relatively low traffic volumes in which case the B85 vehicle dimensions may be used.

12.0 DESIGN VEHICLE CHARACTERISTICS AND DIMENSIONS

b) B85 Vehicle

85th percentile vehicle well represented by the Ford Falcon sedan.



DIMENSIONS IN MILLIMETRES

FIGURE B2 B85 (85TH PERCENTILE) CAR

B2.3 The B85 vehicle

Except as permitted in Clause 2.5.2(c) and Paragraph B2.2, design dimensions based on the B85 vehicle shall be limited to parking spaces and parking aisles.

NOTE: This is based on the philosophy that the statistical chance of two or more longer vehicles seeking to occupy adjacent parking spaces at the one time is relatively low, and where this does occur, a driver can divert to an alternative space with only minor disruption to other users.