

1. BUILDING GEOMETRY AND ANATOMY

1.1 TYPICAL GRID DIMENSIONS¹

Preferred dimensions: Offices & retail 6.0, 7.2, 9.0, 10.5, 12, 15m grids
 Some retail outlets 5.5m or 11m grids (to suit shop units)
 Car parks (7.5 or 7.2) x (15 - 16m) grids (to span full bay)

Modular sizes for horizontal coordinating dimensions of spaces

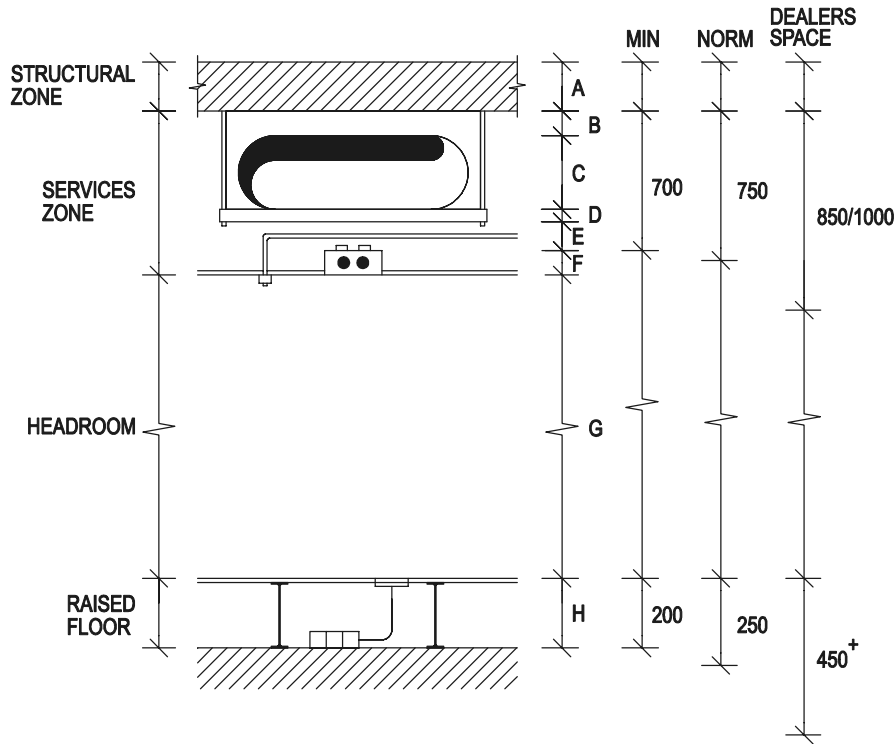
Dimension/space	Range of space (mm)	Multiples of size (mm)
A. Zones for columns and loadbearing walls	200 to 1800	300 or 100
B. Centres of columns and wall zones	from 1200	300 or 100
C. Spaces between column and wall zones	from 1200	300 or 100
D. Openings in walls (e.g. for windows and doorsteps)	from 600	300 or 100
Note: The first preference for the multiple of size in each case is 300		

1.2 TYPICAL SECTIONS¹

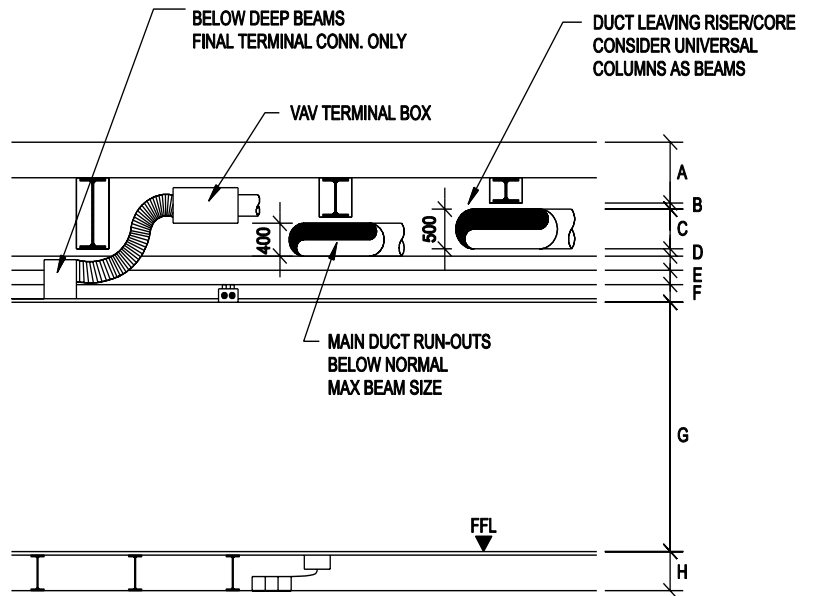
Modular sizes for vertical coordinating dimensions of spaces

Dimension/space	Range of space (mm)	Multiples of size (mm)
A. Floor to ceiling, floor to floor (and roof)	up to 3600	100
	from 3600 to 4800	300
	above 4800	600
B. Zones for floors and roofs	100 to 600	100
	above 600	300
C. Changes of floor and roof levels	300 to 2400	300
	above 2400	600
D. Openings in walls (e.g. for windows)	300 to 3000	300 or 100

1.3 TYPICAL SERVICE ZONE REQUIREMENTS²



- A Specified by structural engineer
- B 50mm deflection and tolerance
- C Approx. 500mm HVAC duct or terminal device
- D 50mm support and tolerance
- E 50 - 150mm sprinkler zone
- F 150mm lighting and ceiling zone
- G Specified by Client / Architect
- H Raised floor - data, telecoms., small power. (Specified by M&E : allow for tolerance & precamber)



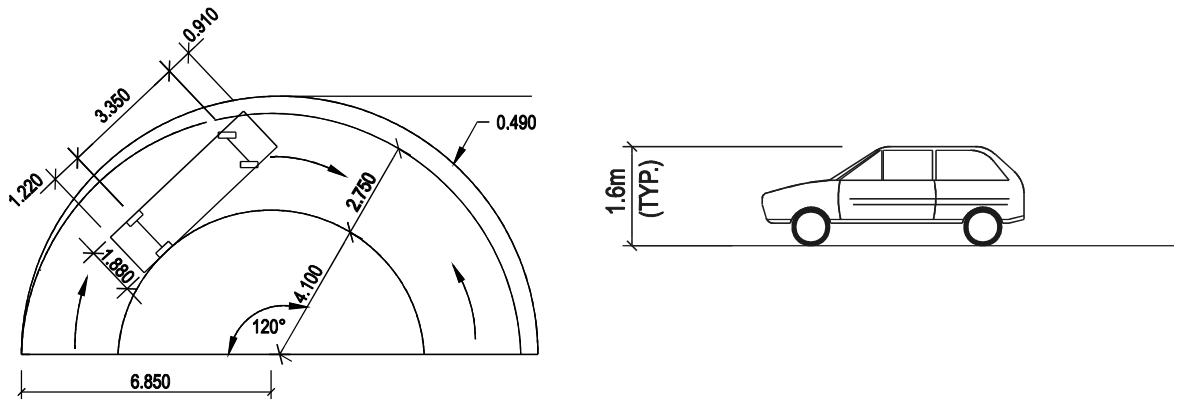
1.4 CAR PARKS

Bay sizes (UK)³

Car type	Bay length	Bay width			Turning circle diameter (m)	
		Long stay	General	Short stay	Between kerbs	Between walls
Standard car	4.75	2.30	2.40	2.50	13.0	14.0
Large car	5.65	2.60	2.75	2.90	15.0	-
Disabled persons	4.75	-	3.20 min.	-	-	-
Coaches	12.00	-	4.00	-	Approx. 13.5m	-

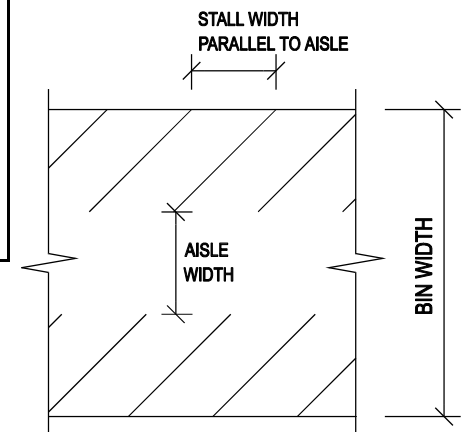
Car geometry - area swept for standard large car³

A



Angled parking³

Parking angle	Stall width parallel to aisle (m)	Aisle width (one way)		Bin width	
		Minimum (m)	Preferred (m)	Minimum (m)	Preferred (m)
90°	2.40	6.00	6.00	15.50	15.50
80°	2.45	5.25	5.25	15.4	15.4
70°	2.60	4.50	4.70	15.1	15.3
60°	2.80	3.75	4.20	14.4	14.8
50°	3.2	3.50	3.80	13.9	14.2
45°	3.4	3.50	3.60	13.6	13.7



Ramp gradients: recommended maxima³

- Straight ramps:
 - rise ≤ 1.500m 1 in 7
 - rise > 1.500m 1 in 10
- Helical ramps:
 - rise ≤ 3.000m 1 in 10
 - rise > 3.000m 1 in 12

If at the top of a ramp steeper than 1 in 10 the floor or roof is laid to a fall of 1 in 60 or steeper away from the ramp, a transition length should be provided. The transition length length should be at least 3m and its gradient half that of the ramp.

Headroom³

Recommended minimum height: 2.050m through the building.

If motorcaravans are to be used, allow approx. 2.300m.

Check if there are any specific access requirements e.g. emergency vehicles.

1.5 REFERENCES

1. BS 6750 : 1986 Modular coordination in building
2. OVE ARUP & PARTNERS, Building Services Concept Design Guide
3. INSTITUTION OF STRUCTURAL ENGINEERS & INSTITUTION OF HIGHWAYS AND TRANSPORTATION,
Design Recommendations for Multi-Storey and Underground Car Parks (1984)