Table 5.3.11: Public furniture and signage (continued)		
Squares (continued)		
Provide functional and aesthetically pleasing public furniture (continued).	• Light poles and fixtures should fit into and preserve the historical character of the streetscape.	
Coordinate signage.	• Provide information through signage that is colourful, interesting and theme-based.	
Markets		
Provide functional and aesthetically pleasing public furniture.	• Market facilities and services should be spread evenly in clusters over the market area, to be accessible for all. • Secondary spaces should provide the settings for the location of these clusters of communal services. • Communal services to be provided are standpipes, solid waste bins, public telephones, public toilets, and metered electricity dispensers. These should be integrated. • Electricity will be needed for lighting or manufactured appliances. Water will be needed to clean the market area, also where animals are slaughtered. Water is also needed for laundry or vegetable areas, washing basins, cooking, and general hygiene.	

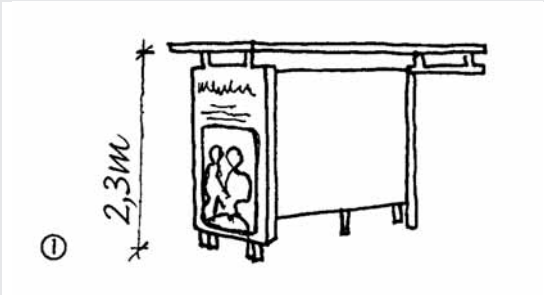
Table 5.3.11: Public furniture and signage (continued)		
Markets (continued)		
Provide functional and aesthetically pleasing public furniture (continued).	• Any extensive public investment in market infrastructure should respond to market development, rather than precede it (Behrens and Watson 1996, p 217).	
Parking areas		
Provide functional and aesthetically pleasing public furniture.	• Where parking areas abut the sidewalk, a landscaped setback should be provided, with adequate furniture such as benches.	
Coordinate signage.	• Signage to parking areas should be coordinated with signage of the building or the street, depending on its direct relationship.	
Public transport stops and stations		
Provide functional and aesthetically pleasing public furniture.	• Provide adequate shelters against rain, sun and wind, if possible. [1] • Provide places for waiting where change in transportation modes take place and at intersections. • Provide space for resting, eating or drinking while waiting for transportation. • Provide benches at bus stops or shelters. Comfortable design and location of street furniture should adhere to the needs of potential users.	

Table 5.3.11: Public furniture and signage (continued)		
Public transport stops and stations (continued)		
Provide functional and aesthetically pleasing public furniture (continued).	• Provide adequate lighting to improve safety. • Provide enough and appropriate litter bins.	
Integrate and coordinate signage.	• Integrate signage with shelters at public transport stops. [2]	

Specific quantitative guidelines

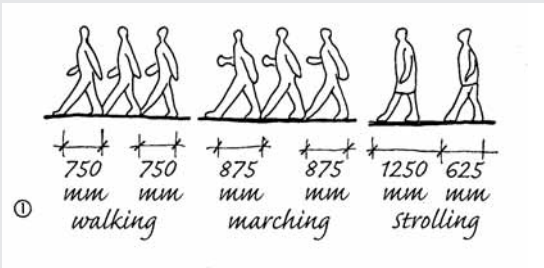
Table 5.3.12: Ratios and thresholds		
Mixed-mode streets		
On-street parking.	• In areas of high car ownership, two visitors' parking spaces should be provided onsite, in addition to on-street parking. • In areas of low car ownership, on-street parking may be sufficient.	
Pedestrian movement.	• 4,5 m per person allows a clear view of the ground ahead, for comfortable adjustment to meet changing conditions. This serves a capacity of 1 000 pedestrians per hour (Untermann 1984, p 54). However, different contexts would allow for different walking spaces. [1] • Stairs reduce walking speed to about one third the speed of level conditions and constrict traffic flows.	

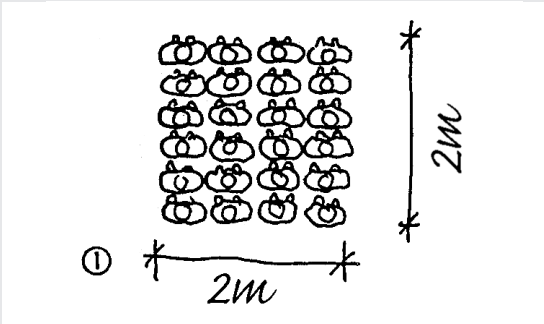
Table 5.3.12: Ratios and thresholds (continued)		
Squares		
Walking space.	• Walking on sidewalks and squares differ. On squares, the crucial spatial dimension is square metres; the more space available to adjust one's route, the faster a pedestrian can walk. Less than 1 m^2 per person can force a pedestrian to stop and less than 0,5 m^2 is totally unacceptable. The greatest density possible per m^2 is 6 people. [1]	
Markets		
Market size.	• Markets that are designed to be small, with no capacity to expand, very often fail as they are too small to attract customers. Markets should accommodate at least 70 operators to be economically viable (Behrens and Watson 1996, p 217).	
Parking areas		
Parking ratio per land use.	• Dwelling unit of 1 habitable room: 1,0 space/unit. • Dwelling unit of 2 habitable rooms: 1,0 space per unit. • Dwelling unit of 3 habitable rooms: 1,25 spaces per unit. • Dwelling unit of 4 habitable rooms: 1,5 spaces per unit. • Visitors: 0,5 space per unit. • Hotels and motels: 1 space per habitable room + 10 spaces per 100 m^2.	

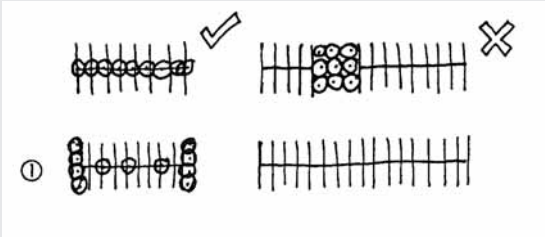
Table 5.3.12: Ratios and thresholds (continued)		
Parking areas (continued)		
Parking ratio per land use (continued).	• Residential hotels, boarding houses, etc: 0,6 spaces per habitable room. • Old-age homes, orphanages, etc: 0,3 spaces per habitable room.	
Landscaping.	• Minimise the impact of parking areas on the living environment through the provision of at least 1 shade tree per 3 parking bays. [1] • 10% of the parking area should be landscaped.	

Table 5.3.13: Dimensions and distances		
Mixed-mode streets		
Travelling distances.	• Design short and narrow residential blocks of ± 100 m x 30 m to ensure permeability and easy pedestrian access. • Shoppers carrying packages or tending to children are more aware of time and distance than people who linger. Keep walking distance and maximum length of a walkway up to a maximum of 140 m. • 20% - 25% of personal trips are under 1,6 km in length. 20% are 1,6 to 3,2 km, with only 12% - 15% being 3,2 to 4,8 km. Thus, almost one half of all urban trips are less than four kilometres long. This has implications for the intensity of information to be provided.	

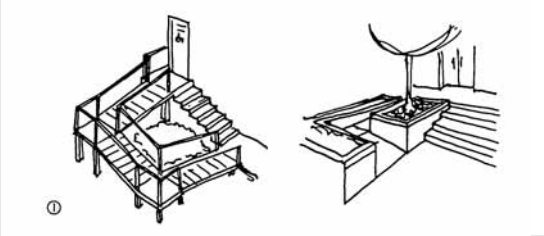
Table 5.3.13: Dimensions and distances		
Mixed-mode streets (continued)		
Travelling distances.	• Human scale is lost with a linkage longer than 1 500 m (maximum distance to establish vista).	
Ramps and stairs.	• Clear space of ramps should not be narrower than 1,2 m, allowing a person in a wheelchair to pass another person. Ramps should have continuous handrails and should form an integral part of the design of the building, not merely be an add-on.[1] • Ramps can have a slope of between 5% (1:20) and 8% (1:12). • For continuous walkways, cross-slopes of 1:12 should be avoided, with a preferred slope of 1:16. • Stairs should be avoided where large volumes of foot traffic must be accommodated. On stairs, a railing should be provided on at least one side with a height of at least 450 mm (Untermann 1984, pp 29, 41).	

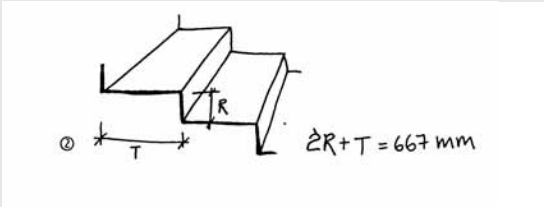
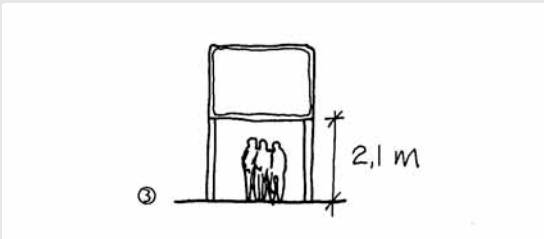
Table 5.3.13: Dimensions and distances (continued)		
Mixed-mode streets (continued)		
Ramps and stairs (continued).	• On stairways, the rise in height should not exceed 165 mm. 1,1 m is recommended as a minimum stairway width to allow passing in the opposite direction. The ideal proportions for outside steps are determined by the indicated formula. [2] For long slopes, a level rest-platform should be installed at a maximum distance of every 20 treads. This platform should be long enough for a person to walk three paces, which is approximately 1,8 m.	
Sidewalk widths.	• With walking on sidewalks, the width is a crucial dimension, since passing is possible only when there is enough width to pass easily (Untermann 1984, pp 25-28). Recommended width for sidewalks in mixed use development is 3,5 m to 4,5 m, clear of any street furniture (Cartwright 1980, p 42).	
Public furniture and landscaping.	• The minimum height for signs over pavements should be no less than 2,1 m (Cartwright 1980, p 99).[3] • Planters, kerbs, rails and other raised surfaces can be used for seating. Any height up to 600 mm will work, with 400 mm being the best. A width of at least 160 mm is appropriate.	

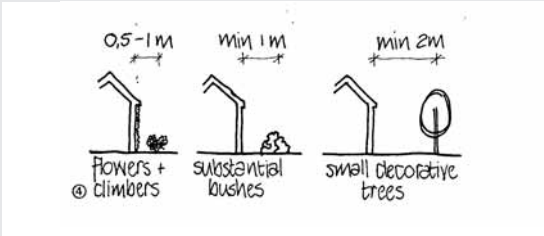
Table 5.3.13: Dimensions and distances (continued)		
Mixed-mode streets (continued)		
Public furniture and landscaping (continued).	• Appropriate distances of plants to be placed from the facade of buildings are the following: - Flowers and climbers: 0,5 m to 1 m away; - Substantial bushes: minimum 1 m away; and - Small decorative trees: minimum 2 m away. • The bigger the ground surface of the plants, the wider the sidewalk should be to ensure safety and ease of movement for pedestrians. [4]	
Pedestrian-orientated streets		
Widths and slopes.	• The maximum gradient of bicycle tracks should be 5% (1:20), with a maximum cross-fall of 2,5% (1:40). • The maximum gradient of footpaths should be 1:12 and the minimum gradient should be 1:200 (for stormwater), with a minimum cross-fall of 1:30 (3,3%). • The minimum width of dedicated pedestrian walkways in these streets is 0,8 m. • When planting slopes with grass, bear in mind that maximum slopes for mowing machines should not exceed 1:1.5, while for tractors they should not exceed 1:3 (Cartright 1980, p 13).	

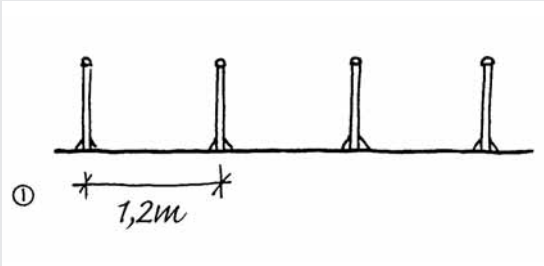
Table 5.3.13: Dimensions and distances (continued)		
Pedestrian-orientated streets		
Widths and slopes (continued).	• The minimum width of a one-way bicycle track is 2,75 m and for a two-way track it is 3,6 m (Cartwright 1980, p 43). • The maximum width for a dedicated pedestrian walkway is 12 m.	
Distances.	• To maintain coherence and safety, the maximum length of a pedestrian-orientated street should be 140 m, which is the maximum distance for discerning action.	
Public furniture.	• Bollards should not be higher than 800 mm to avoid interference with motorists' sight lines (Cartwright 1980, p 67). • A distance of 1,20 m between bollards will bar any car from access (Cartwright 1980, p 67). [1]	

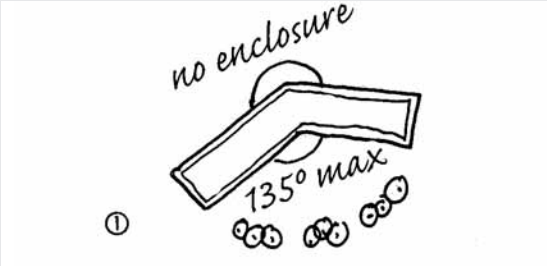
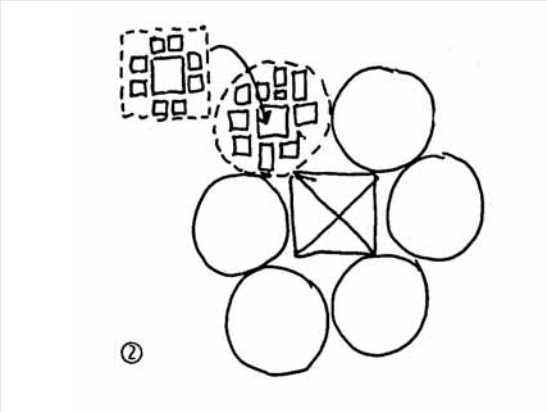
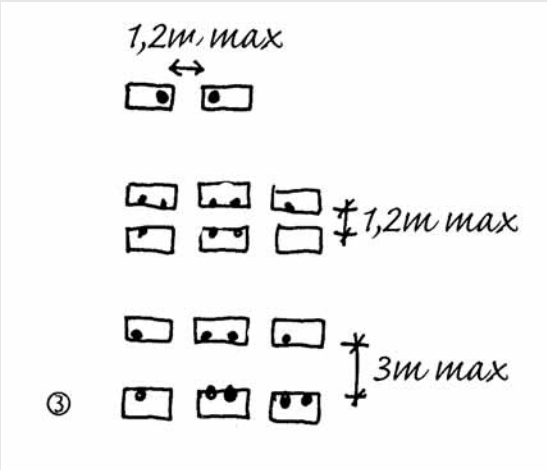
Table 5.3.13: Dimensions and distances (continued)		
Squares		
Scale and proportions.	• Hard open space with a certain sense of enclosure: below the threshold of 18° the space loses its sense of enclosure as one can see beyond its edges (Moughtin 1992, p 99). • Limit plaza size to create small, human-scaled spaces. A maximum size of 235 m^2 is appropriate with several small plazas better than one large one. • To maintain a sense of enclosure, the angle between two buildings, attached or detached, should not exceed 135°. [1] • Scale of squares (Moughtin 1992, p 42): Large plazas: 21-24 m Town or village square: 57 m x 143 m City quarter: 800 m radius. [2]	 
Landscaping and furniture.	• Provide one linear metre of seating for every m^2 of square area (Paumier 1990, p 33). • To enable communication, benches should be a maximum of 1,2 m apart. The minimum distance for normal conversation is 0,6 m. To ensure that no interaction takes place, benches should be a minimum of 3 m apart (Bentley 1987, p 74). [3]	

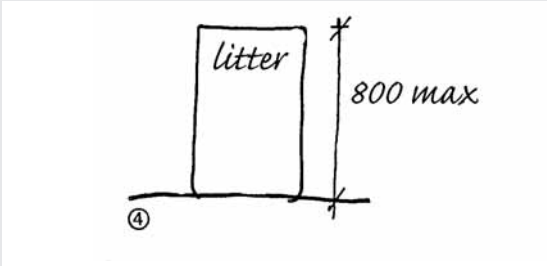
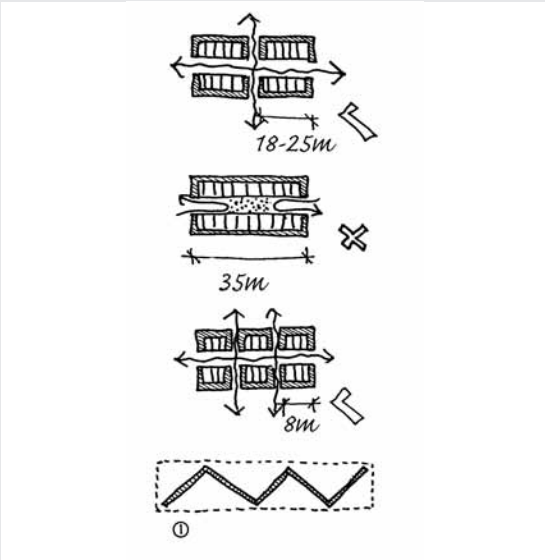
Table 5.3.13: Dimensions and distances (continued)		
Squares (continued)		
Landscaping and furniture (continued).	• Bollards with the dimensions of 500 mm (height) and a minimum of 300 mm (width) can also double as seating (Cartwright 1980, p 67). • Design litter bins preferably not higher that 800 mm. Should they be any higher, there would be seating constraints on the bins and children would have difficulty in dumping their rubbish (Cartwright 1980, p 111). [4] • Plan for at least 20% of the square to be landscaped.	
Markets		
Travelling distance.	• Distances from public transport facilities, home and work influence the positioning of markets and economic thresholds. - Driving threshold of 5-minute drive @ 60 km/h: market can be located 3,2 km away (Untermann 1984). - Walking threshold of 5 minute walk @ 6,4 km/h: market can be located at 0,5 km away (Untermann 1984).	

Table 5.3.13: Dimensions and distances (continued)		
Markets (continued)		
Market layout.	• Dead spaces and stall facades longer than 35 m, should be avoided. Shorter blocks between 18 and 25 m are more appropriate (Behrens and Watson 1996, p 215), with 8 m being the optimum length for functionality and permeability. A zig-zag layout can effectively facilitate movement on both sides. [1]	
Public transport stops and stations		
Walking distances.	• In some cases people cannot walk long distances. Pedestrians carrying packages or tending to children are more aware of time and distance and may be willing to walk an absolute maximum of 300 m (Untermann 1984). • Increase the number of formal public transport stops, as this may decrease the appearance of ad hoc stops, especially by minibus taxis. Shorten the walk length to a maximum of 150 m in high density and mixed-use areas. In lower densities, stops can be located further (up to 400 m apart).	

Management guidelines to promote multifunctional use of hard open spaces

Critical issues are currently facing many cities alike. If we want to secure the liveability and vitality of urban settlements, the preservation of public spaces and the transformation of hard open spaces to serve new purposes and accommodate multifunctional uses, is crucial. However, these spaces have to be effectively managed in order not to become neglected and consequently vulnerable to the many pressures of contemporary urban development.

Despite limited local authority powers and resources, local authorities have to practise sound judgement and good management in terms of monitoring the success of hard open spaces and responding to consumer needs. A positive and integrated approach to planning, designing and managing space is essential. It is essential to prioritise key issues and concentrate efforts where they will produce tangible results.

Through involvement and commitment, communities, the private sector (developers, banks, investors) and local governments can and have to play an active role in initiatives to protect and manage hard open spaces.

URBED (1994, p 151) proposes the following to be included in local authorities' planning processes with regard to open spaces:

- Form multidisciplinary management groups for all open spaces, integrating all relevant departments (planning, economic development, engineering, parks and recreation, cultural services).
- Periodically review the situation in a representative forum.
- Do profile and performance analysis on usage, pedestrian flows, attractions, access, and the amenities within hard open spaces.
- Promote research and study tours on the city's public spaces.
- Publish promotional material and encourage tourism and multifunctional usage.

There is thus a very important strategic planning component involved in giving care and attention to hard open spaces. This should be coupled with a strong marketing campaign to attract investment.

Apart from planning and design, the following managerial aspects should be considered:

- Who is responsible for factors that affect the function and appearance of hard open spaces?
- Who is responsible for activity and time management?
- Who is responsible for funding (maintenance, management)?

It should be borne in mind that the use of hard open space could change over time due to changes in user groups and land uses. Multifunctional use can thus more easily be accommodated and managed within a space with a sense of permanence (well defined within urban structure) and robustness (compatible buildings). Spaces should be able to accommodate changing use over time, diverse activities and temporary diversity with a change in intensity.

In addressing the crucial issues of effective management, it is believed that hard open spaces can play a vital role in ensuring vibrant and sustainable urban settlements.

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