STATE PLANNING AUTHORITY
MAJLIS PERANCANGAN NEGERI

DEVELOPMENT CONTROL STANDARDS MANUAL

MINISTRY OF PLANNING AND RESOURCE MANAGEMENT

DEVELOPMENT CONTROL STANDARDS MANUAL

Residential
Commercial
Industrial
Open Space
Roads
Parking

MINISTRY OF PLANNING AND RESOURCE MANAGEMENT

1999

WALTER KAM
CAWANGAN PERANCANG
JABATAN TANAH DAN SURVEI
BAHAGIAN SRI AMAN

FOREWORD

With the amendments to the Land Code (Cap.81) In November, 1997, the State Planning Authority is established on 1st August, 1998.

The amendments incorporate Part X which concerns basically with the procedures and requirements of Development Control. One of the most important tools used in development control works is the Development Control Standards Manual. Presently, the existing standards that are used are those of the Land and Survey Department which have been in existence since 1968. Naturally, after thirty years, most of the standards are outdated and are no longer useful to regulate the modern type or scale of development. Therefore, the State Planning Authority considers that this is the opportune time to review and update the existing standards. Hence, the publication of this new State Planning Authority's Development Control Standards Manual, 1998.

It must be emphasized that these standards merely serve as a guide to the members of the Authority when considering applications for subdivision and development of land. Flexibility in applying these standards to the differing situation of the individual application is expected of the Authority in order to achieve innovative, interesting and sustainable urban environment

Since the environmental condition of our urban areas change over time, the Authority therefore must review these standards from time to time in order to ensure that they are always relevant as development control tool.

(HAJI ZAIDI K. ZAINIE)
Secretary,
State Planning Authority/
Permanent Secretary,
Ministry of Planning and Resource Management

August, 1998

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PART I

INTRODUCTION

INTRODUCTION

This ***Development Control Standards Manual, 1998,*** is adopted by the State Planning Authority as a guide for regulating the subdivision and development of land or buildings under Part X, Section 248 of the Land Code (Amendment) Ordinance, 1997. It is basically an updated and slightly amplified version of the previous ***Development Control Standards Manual, 1968,*** published by the Land and Survey Department.

The ***Development Control Standards Manual, 1998,*** set out the standards which are basically concerned with the physical and spatial dimensions of space provision, in relation to land and buildings, so as to ensure orderly, well-planned and sustainable development. However, there are of course other important environmental factors and government's planning policies, which are not necessarily covered in these standards, but are all to be given significant weights in the decision making process.

It must therefore be reiterated that these standards should only served as a general guide. Flexibility in applying these standards is acceptable if, in the opinion of the State Planning Authority, it can be proven to result in more innovative and sustainable designs.

As the State Planning Authority must respond to changes in physical, environmental, socio-economic and other relevant factors, the Authority must therefore review these standards from time to time.

PART II

ACCESS AND CIRCULATION

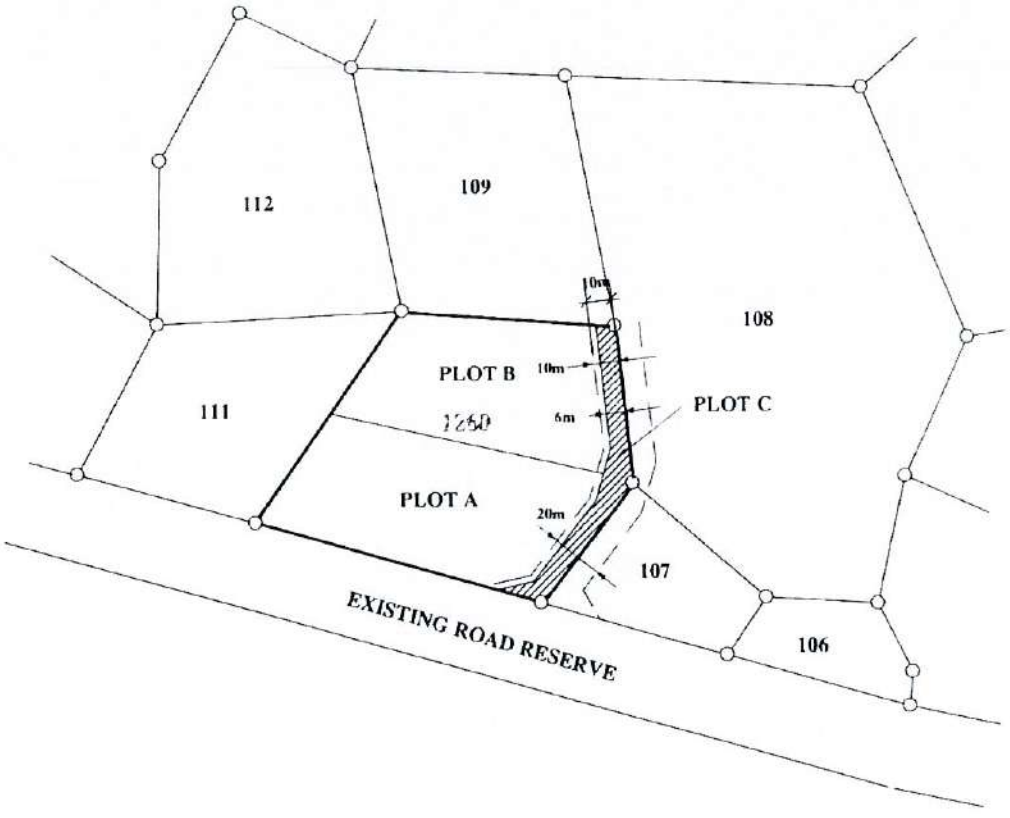
CHAPTER 1

ADEQUATE CONTINUOUS LEGAL ACCESS TO EVERY PLOT OF LAND

1.1 The Land Code provides that every land owner has an implied right of access over neighbouring land. This only works reasonably well in rural areas where access for motorised vehicles is not required, and where the land is used for agricultural purposes. However, in anticipation of the need for farmers to use motorised vehicles to transport their produce, a minimum 6-metre wide reserve should, wherever possible and essential, be excised to serve every agricultural lot, at the time of subdivision of land. In areas closer to towns or where they are ripe for development, the minimum width of the road reserve to be excised in connection with agricultural subdivision shall be a minimum of 7.5 metres. This is to enable the construction of a half-width road in subsequent subdivision and development of the relevant plot(s) as shown in Fig. 1.1, Fig. 3.13 and Fig. 3.14.

1.2 In urban areas, the existence of an adequate continuous legal access is a prerequisite for subdivision. This means that, every subdivided plot laid out in any proposed subdivision must have access of a width adequate for the traffic likely to require access to it without crossing other plots of land.

1.3 The widths of the road reserves that are required to be provided in a development would depend on the locations and functions of the proposed roads, and according to the defined functional hierarchy of roads (see Chapter 2). The standard road reserve widths of various categories of roads are given in Chapter 3.



Land under agricultural subdivision

NTS

Land to be excised (Plot C) for road reserve.
(so as to ensure a continuous legal access for Plot B, Lot 109 and Lot 108 from the main road.)

FIG. 1.1 CONTINUOUS LEGAL ACCESS

Chapter 2

HIERARCHY OF URBAN ROADS

TABLE 2.1: ROAD CATEGORIES WITHIN URBAN ROAD HIERARCHY

Road Categories	Functions	Direct access to fronting lots
1. DISTRIBUTOR ROADS		
a. Trunk distributors	They form the primary network for the town as a whole and serve all longer distance traffic movements to, from and within the town.	Prohibited
b. Arterial distributors	They form the links between the primary network and,via the local distributors, the roads within a zone, and serve traffic movements between zones.	Prohibited
c. Local distributors	They form the links between the arterial distributors and access roads, and they distribute traffic within zones and districts.	Limited
2. ACCESS ROADS	They provide direct access to buildings and land as well as distributing local traffic.	Permitted

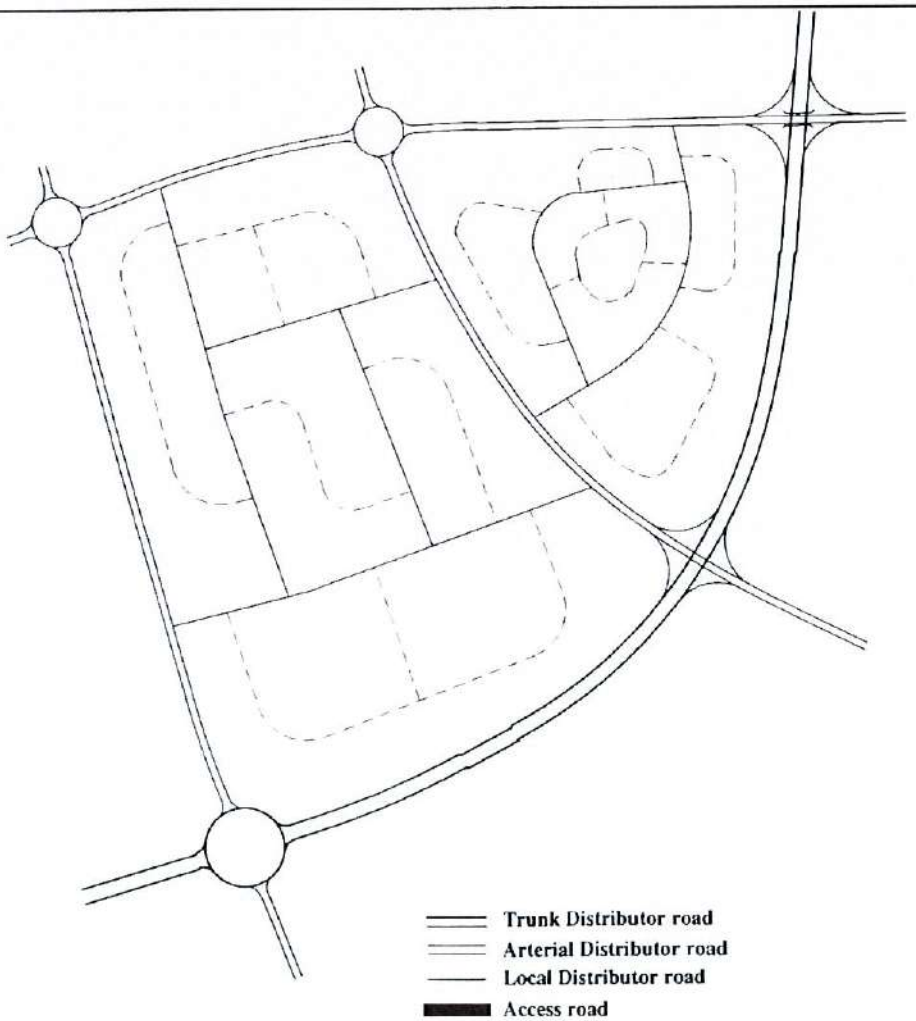


FIG. 2.1 FUNCTIONAL HIERARCHY OF URBAN ROADS

CHAPTER 3

ROADS WIDTHS AND CROSS-SECTIONS

CHAPTER 3

ROAD WIDTHS AND CROSS-SECTIONS

3.1 Road reserves not only perform the obvious traffic functions, but they also normally serve as common corridors for drainage and utility service lines, as well as areas for landscaping and beautification of the town. Road reserves must therefore be wide enough to accommodate:-

(a) carriageway(s) of a width sufficient to carry the type and volume of traffic anticipated;

(b) footpath;

(c) cycle-paths and lay-bys, where necessary;

(d) hard shoulders;

(e) drainage channels (until a proper overall drainage plan is available, they are assumed to follow the road reserve network, with the larger drains alongside the more important roads);

(f) utility service lines for
   i. electricity supply,
   ii. water supply,
   iii. telecommunications, and
   iv. any other services (e.g. gas supply, sewers system);

(g) road dividers, verges and areas for landscaping; and

(h) street lights.

3.2 The widths of the reserve for the various categories of roads in the urban road hierarchy are shown, together with some other design standards, in Table 3.1 and for residential, commercial and industrial access roads, in Table 3.2. As for roads in commercial areas and Town Centres, it is not practical to prescribe a simple set of standards, in view of the complexities inherent in designing such areas. The design of such areas must provide for shops and other relatively intensive developments, pedestrian and motor traffic, parking areas, etc., in a very dense layout. In such cases, advice should be sought from a Town Planner.

3.3 The cross-sections of the various categories of roads are shown in Fig. 3.1 to 3.14. These standards first came into effect in 1983 with the issuance of Departmental circulars "Urban Road Cross-Sections and Location of Utility Service Lines", etc. by the Land and Survey Department. They are now revised and expanded to include more reserves bigger than 46m.

3.4 In order to minimise repeated digging of roads by Public Utility Agencies such as Water Board, SESCO and Telecommunication companies, ductile iron service pipe of 250mm minimum is required to be provided under ground across roads at 300m intervals or at every road junctions to serve as conduit for utility cables.

TABLE 3.1: URBAN ROAD STANDARDS

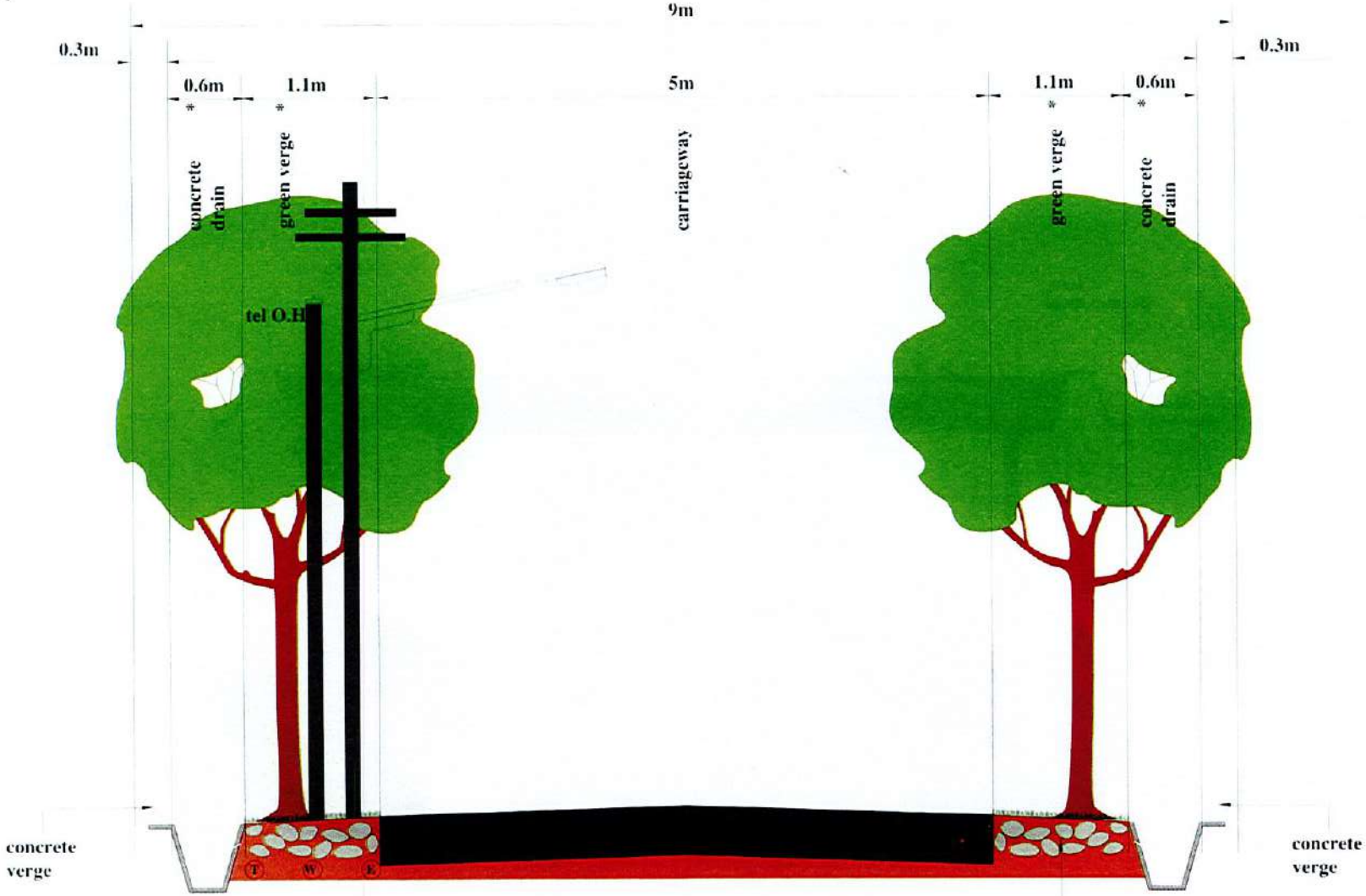
Road categories	Design Speed (kmh)	Carriageways	Minimum Curve Radius (m)**	Reserve Widths (m)
Trunk distributors	80-110	Dual carriageways 4 to 10 lanes (2 x 7.4m to 2 x 18.5m)	230	100, 85, 65, 50 or 40
Arterial distributors	65-80	Dual carriageways or 4 lanes (2 x 11.1m) (2 x 7.4m or 2 x 11.1m)	230	40 or more
Local distributors	50	2 lanes (7.4m)	75	25
Access roads*	30-40	2 lanes (5.5m, 5m or 5m)	50	20, 15, or 9
Front Service Road	30-40	2 lanes (6m, 5.5m or 5m)		15m, 12.5m or 10m

Notes: * For details on access road, see Table 3.2
** Assuming 7% super-elevation

TABLE 3.2: ACCESS ROAD STANDARDS

Type of access road		Length	Reserve Widths (m)	Carriageway widths (m)
1.	**RESIDENTIAL:**			
a.	i. Loop road	over 500m	25	7.4
	ii. Cul-de-sac	200-300m	25	7.4
b.	i. Cul-de-sac	under 200m	20	5.5
	ii. Loop road	under 500m	20	5.5
c.	Short service road			
	i. serving not more than 20 houses		15	5
	ii. serving not more than 4 houses		9	5
2.	**COMMERCIAL:**			
a.	Front lane (one-way		6	6
	two-way)		7	7
b.	Back lane (single block)		7	7
c.	Back lane (between two blocks)*		10	10
3.	**INDUSTRIAL:**		25	7.4

Notes: * This applies to buildings of 3 storeys maximum height only. For buildings of more than 3 storeys, the half-height rule shall apply.

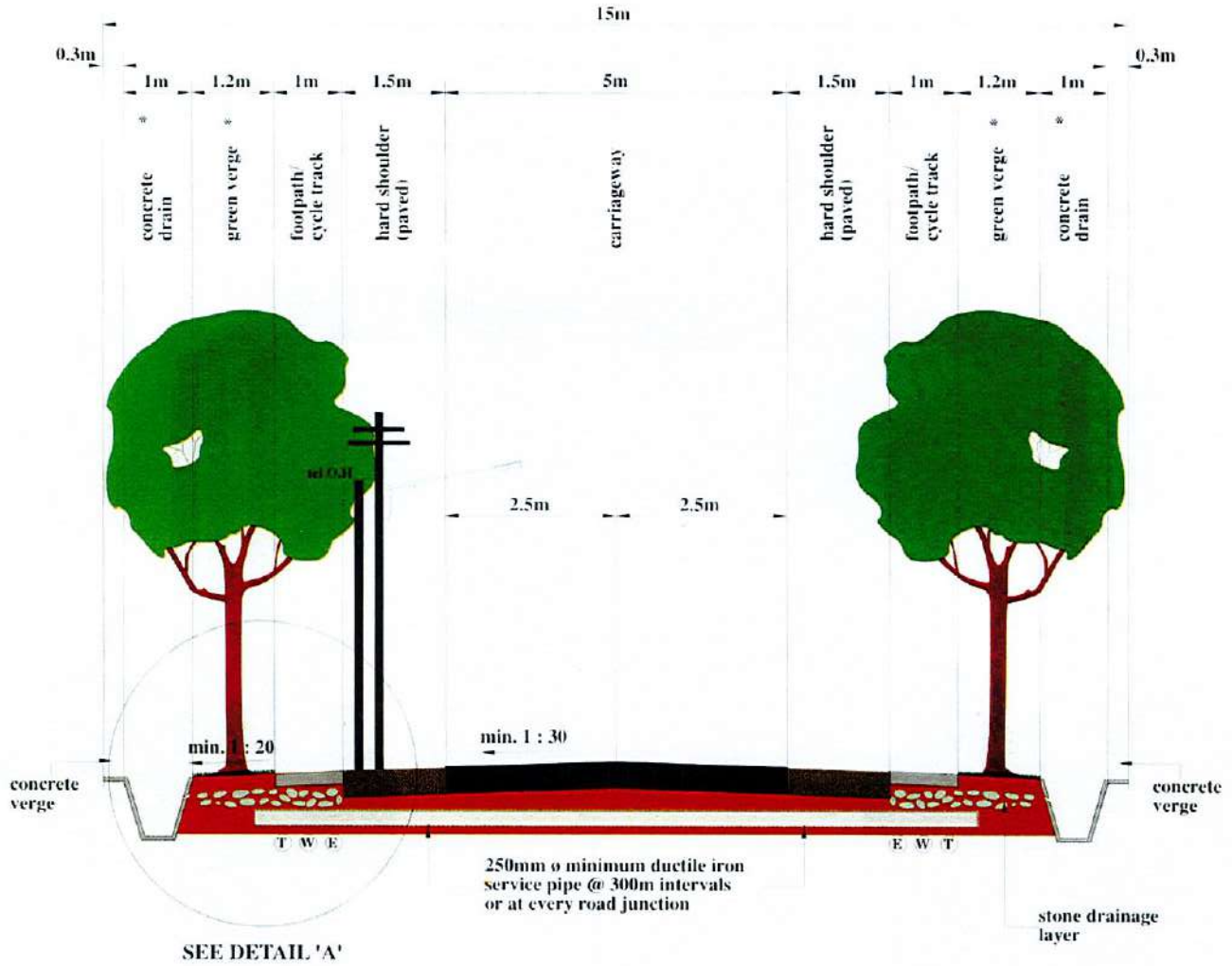


9m ROAD CROSS-SECTION

Scale 1 : 50

W = Water line
E = Electricity line
T = Telecomunication line
* = Drain size varies according to its catchment
* = Grass verge size varies depending on the size of drain

FIG. 3.1

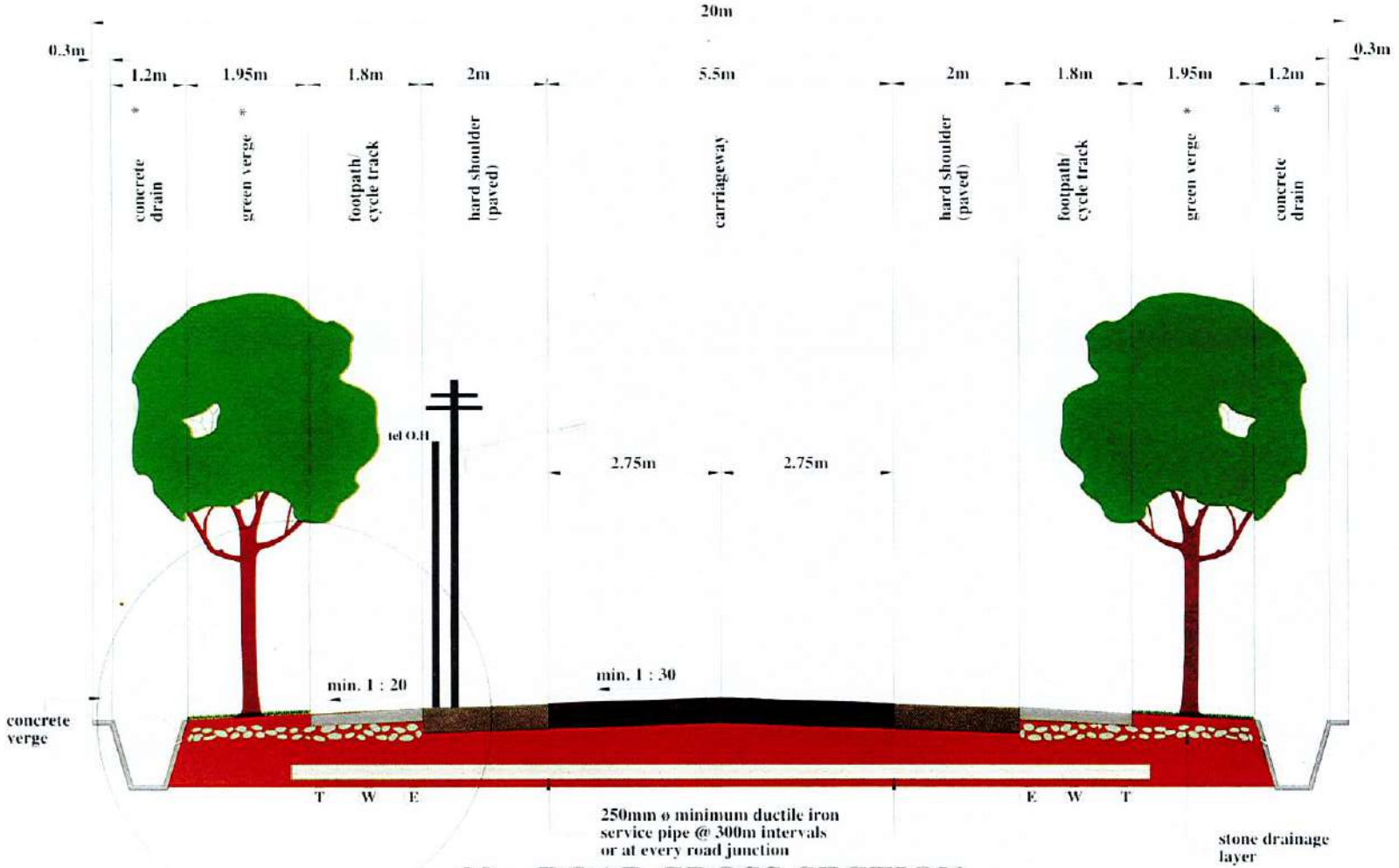


15m ROAD CROSS-SECTION

Scale 1 : 100

W = Water line
E = Electricity line
T = Telecomunication line
* = Drain size varies according to its catchment
* = Grass verge size varies depending on the size of drain

FIG. 3.2

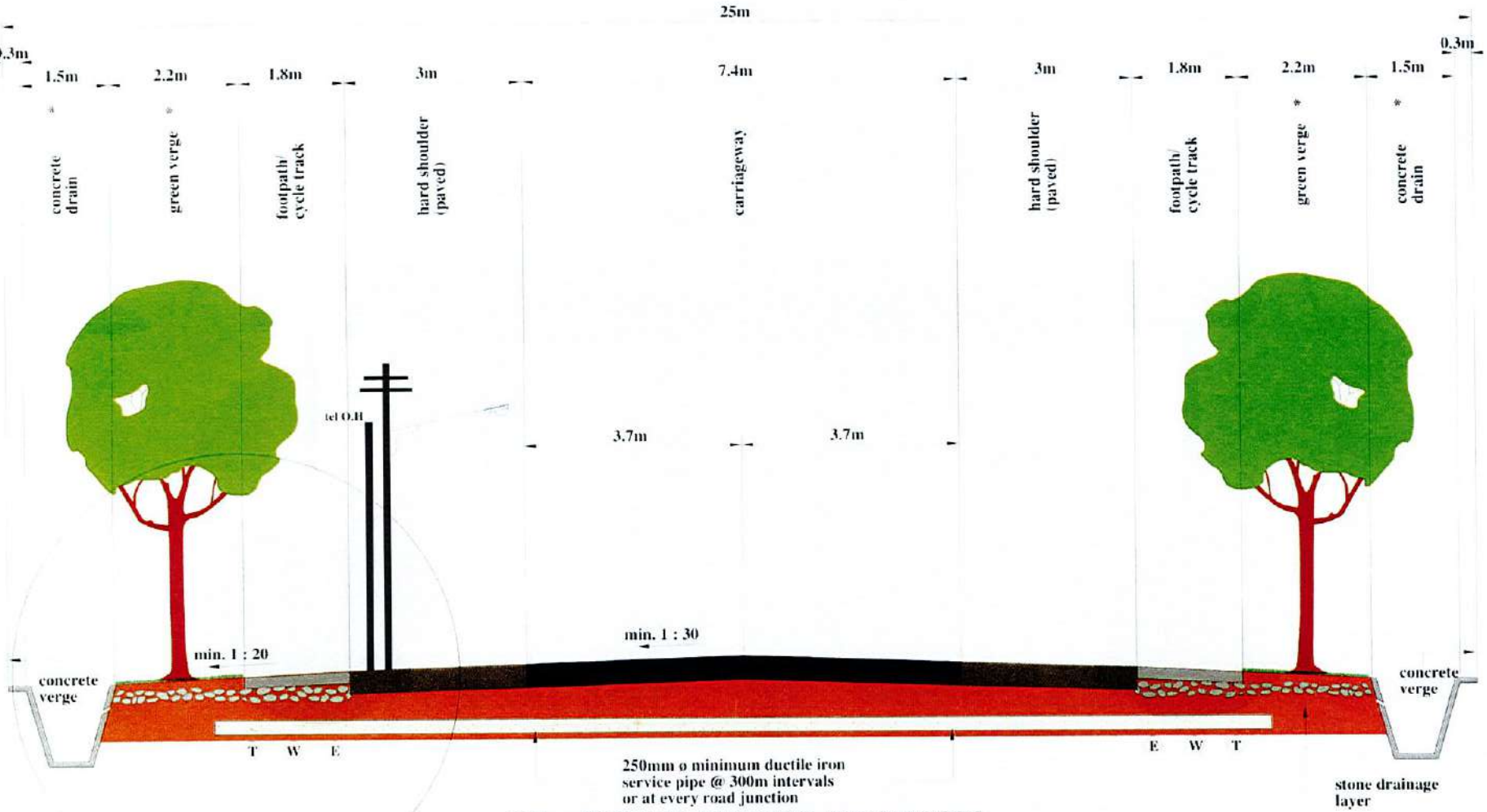


20m ROAD CROSS-SECTION

Scale 1 : 100

W = Water line
E = Electricity line
T = Telecomunication line
* = Drain size varies according to its catchment
* = Grass verge size varies depending on the size of drain

FIG. 3.3

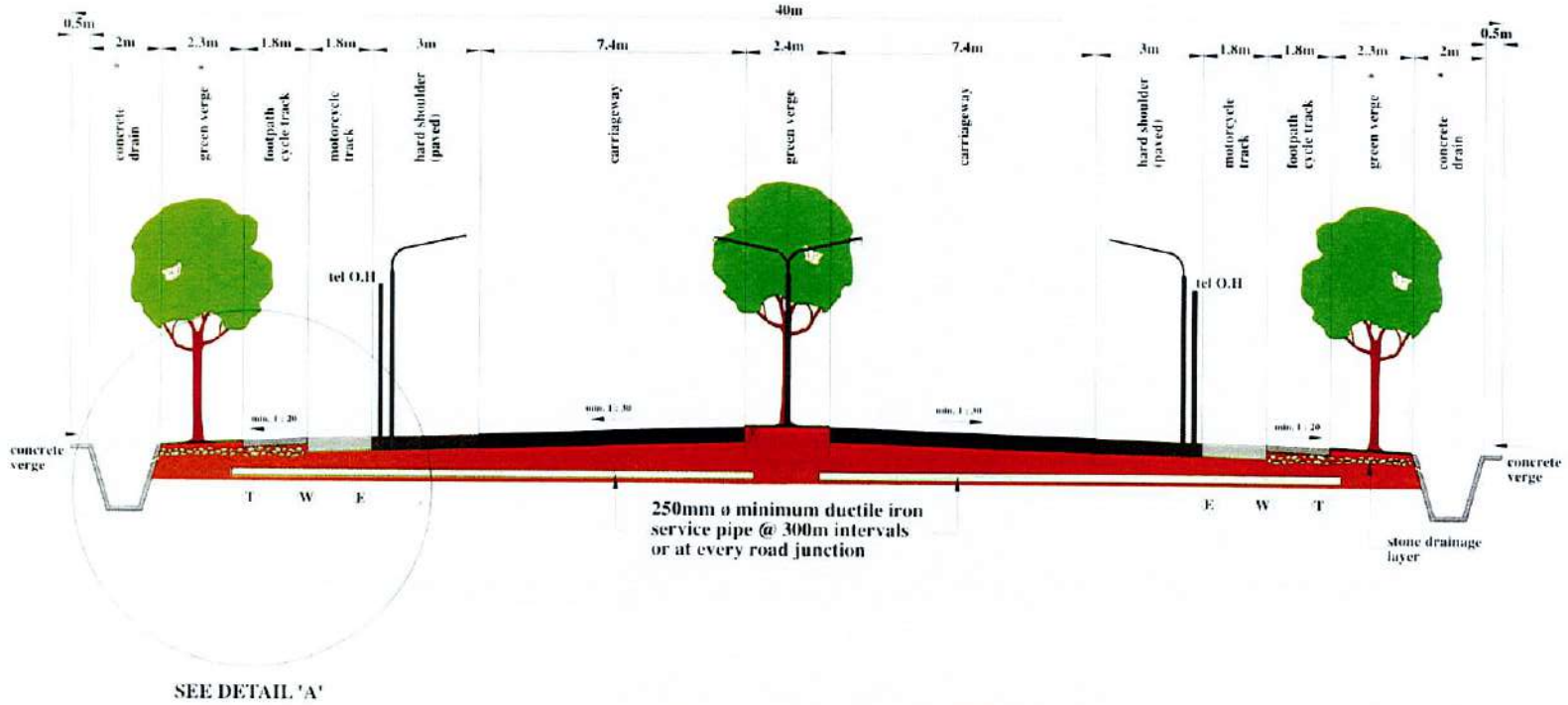


25m ROAD CROSS-SECTION

Scale 1 : 100

W = Water line
E = Electricity line
T = Telecomunication line
* = Drain size varies according to its catchment
* = Grass verge size varies depending on the size of drain

FIG. 3.4

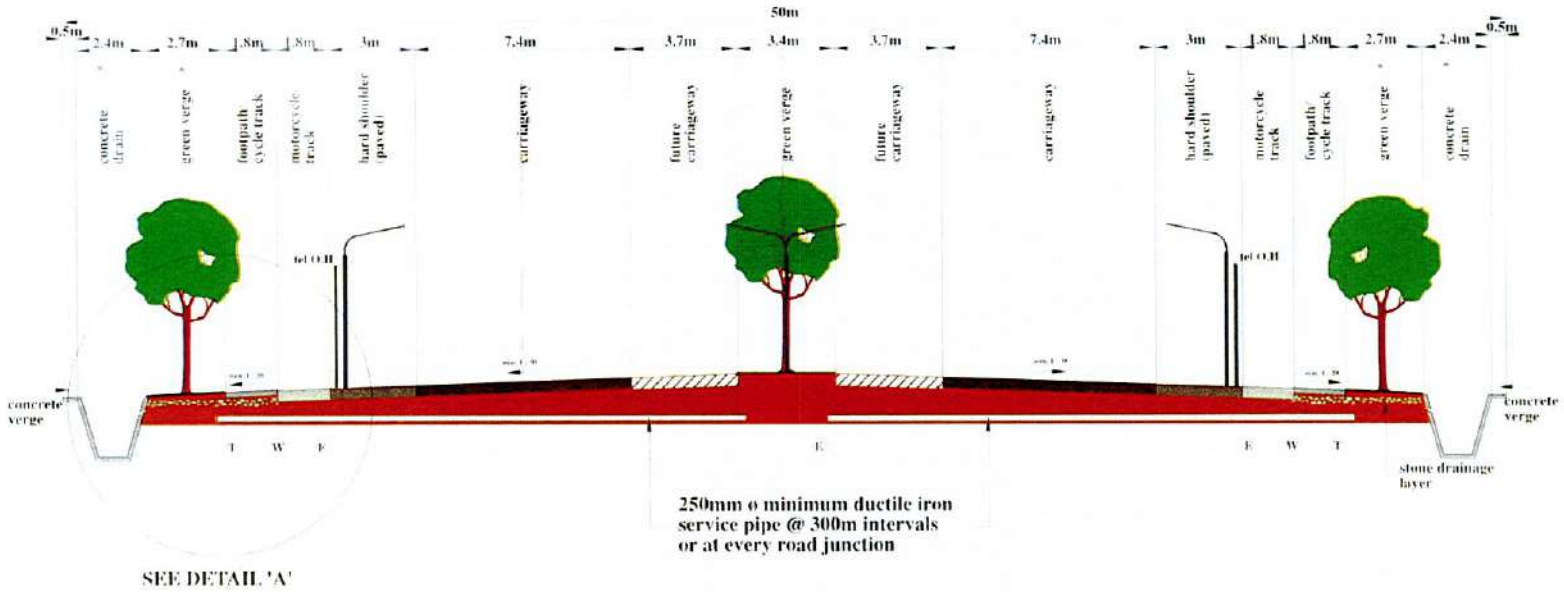


40m ROAD CROSS-SECTION

Scale 1 : 200

W = Water line
E = Electricity line
T = Telecomunication line
* = Drain size varies according to its catchment
* = Grass verge size varies depending on the size of drain

FIG. 3.5

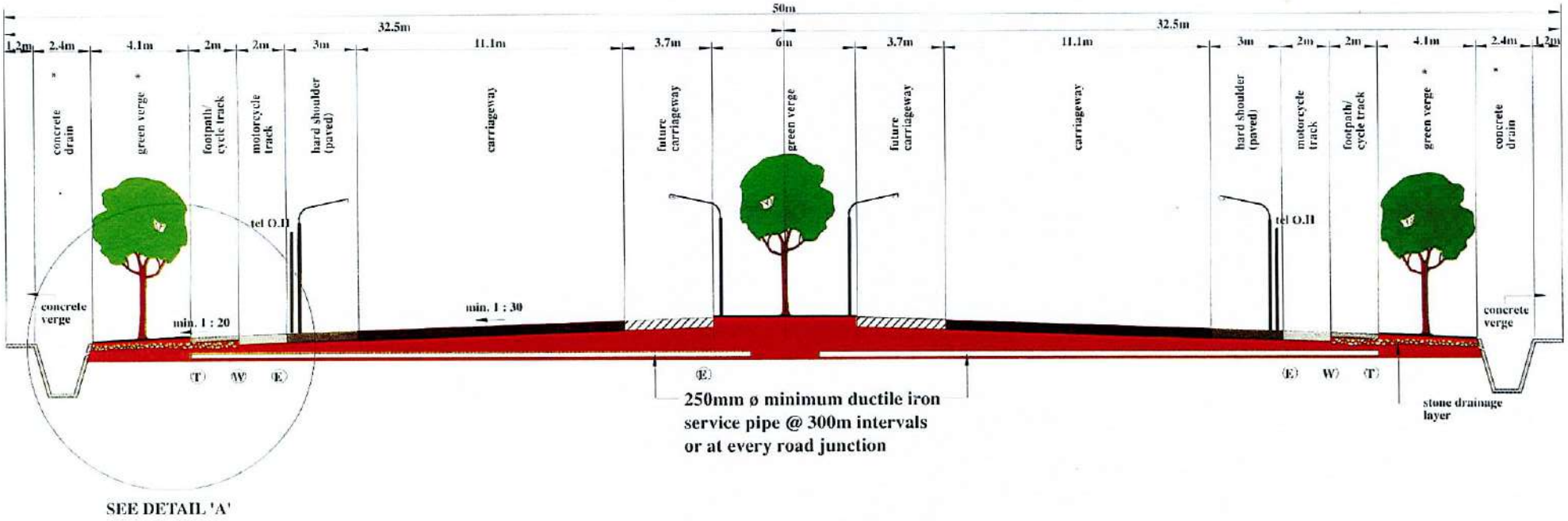


50m ROAD CROSS-SECTION

Scale 1 : 250

W = Water line
E = Electricity line
T = Telecomunication line
* = Drain size varies according to its catchment
* = Grass verge size varies depending on the size of drain

FIG. 3.6

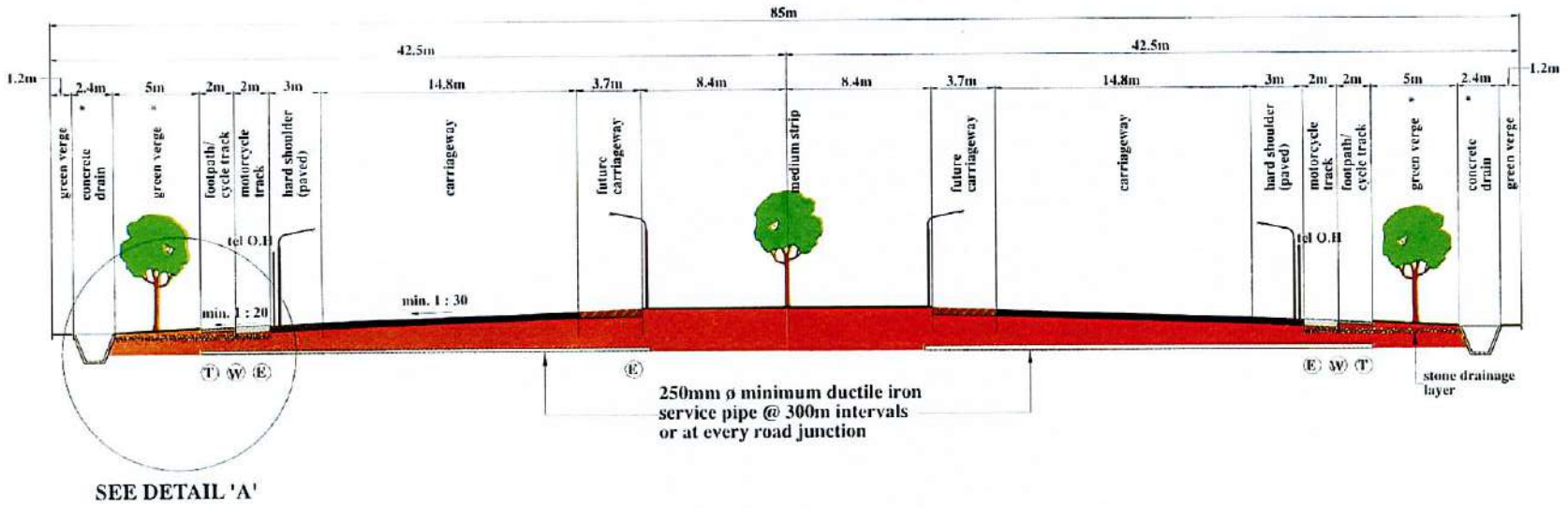


65m ROAD CROSS-SECTION

Scale 1 : 250

W = Water line
E = Electricity line
T = Telecomunication line
* = Drain size varies according to its catchment
* = Grass verge size varies depending on the size of drain

FIG. 3.7

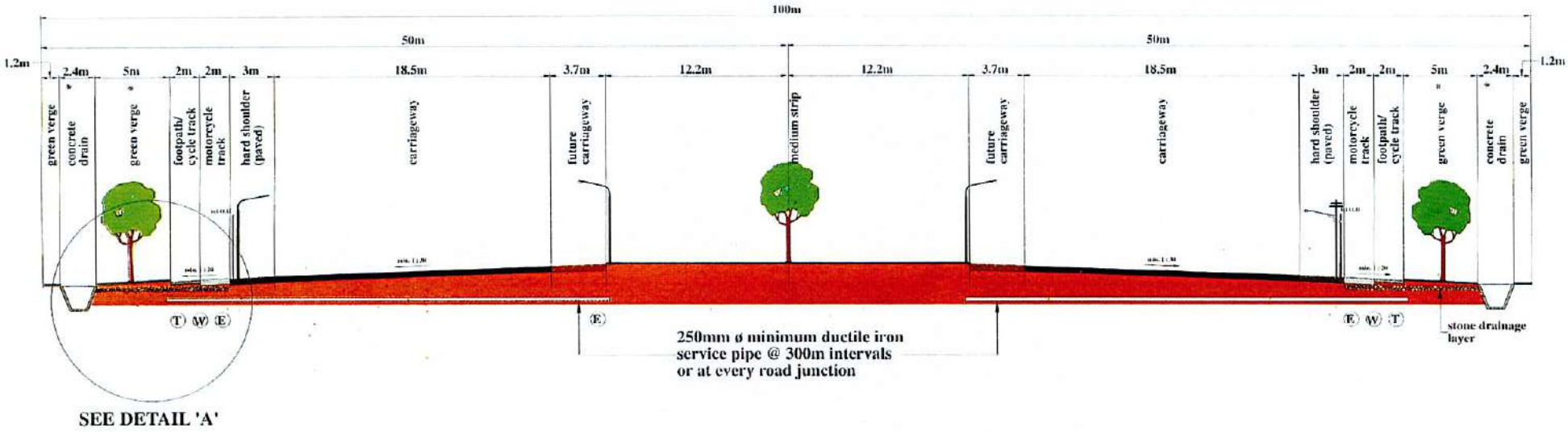


85m ROAD CROSS-SECTION

Scale 1 : 400

W = Water line
E = Electricity line
T = Telecomunication line
* = Drain size varies according to its catchment
* = Grass verge size varies depending on the size of drain

FIG. 3.8

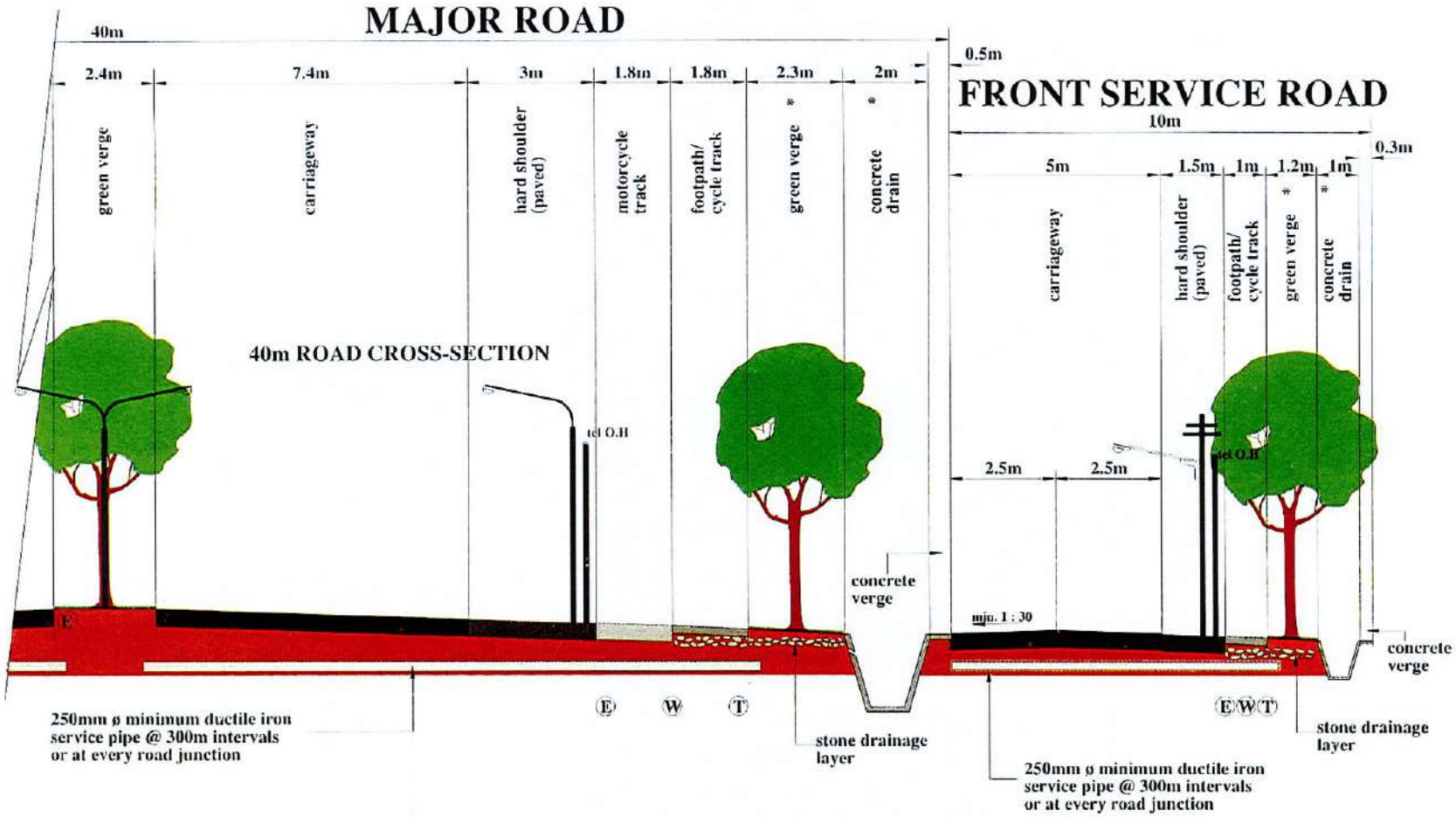


100m ROAD CROSS-SECTION

Scale 1 : 400

W = Water line
E = Electricity line
T = Telecomunication line
* = Drain size varies according to its catchment
* = Grass verge size varies depending on the size of drain

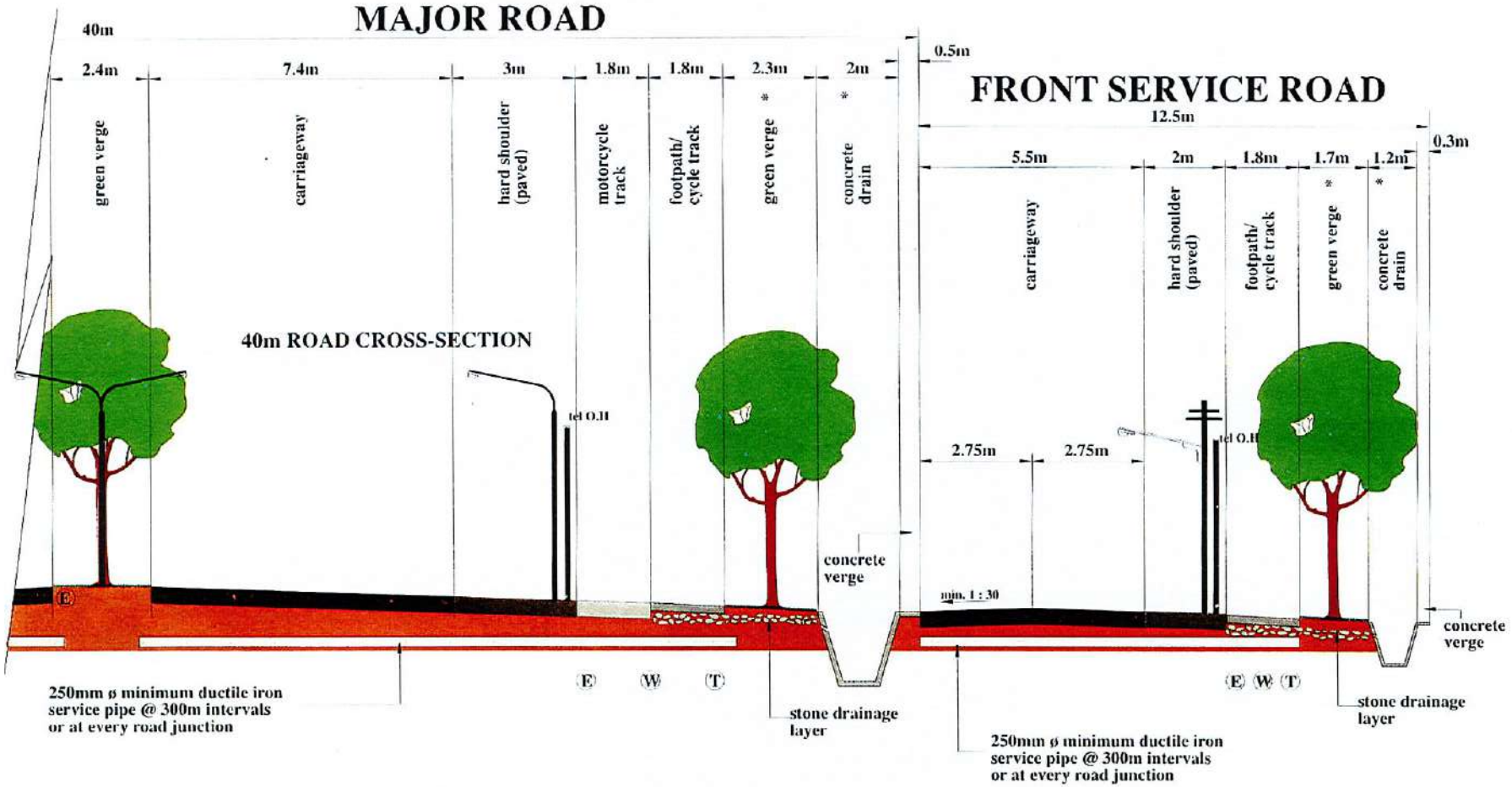
FIG. 3.9



10m FRONT SERVICE ROAD CROSS-SECTION
(Equivalent to 15m Road reserve)
Scale 1 : 150

W = Water line
E = Electricity line
T = Telecomunication line
* = Drain size varies according to its catchment
* = Grass verge size varies depending on the size of drain

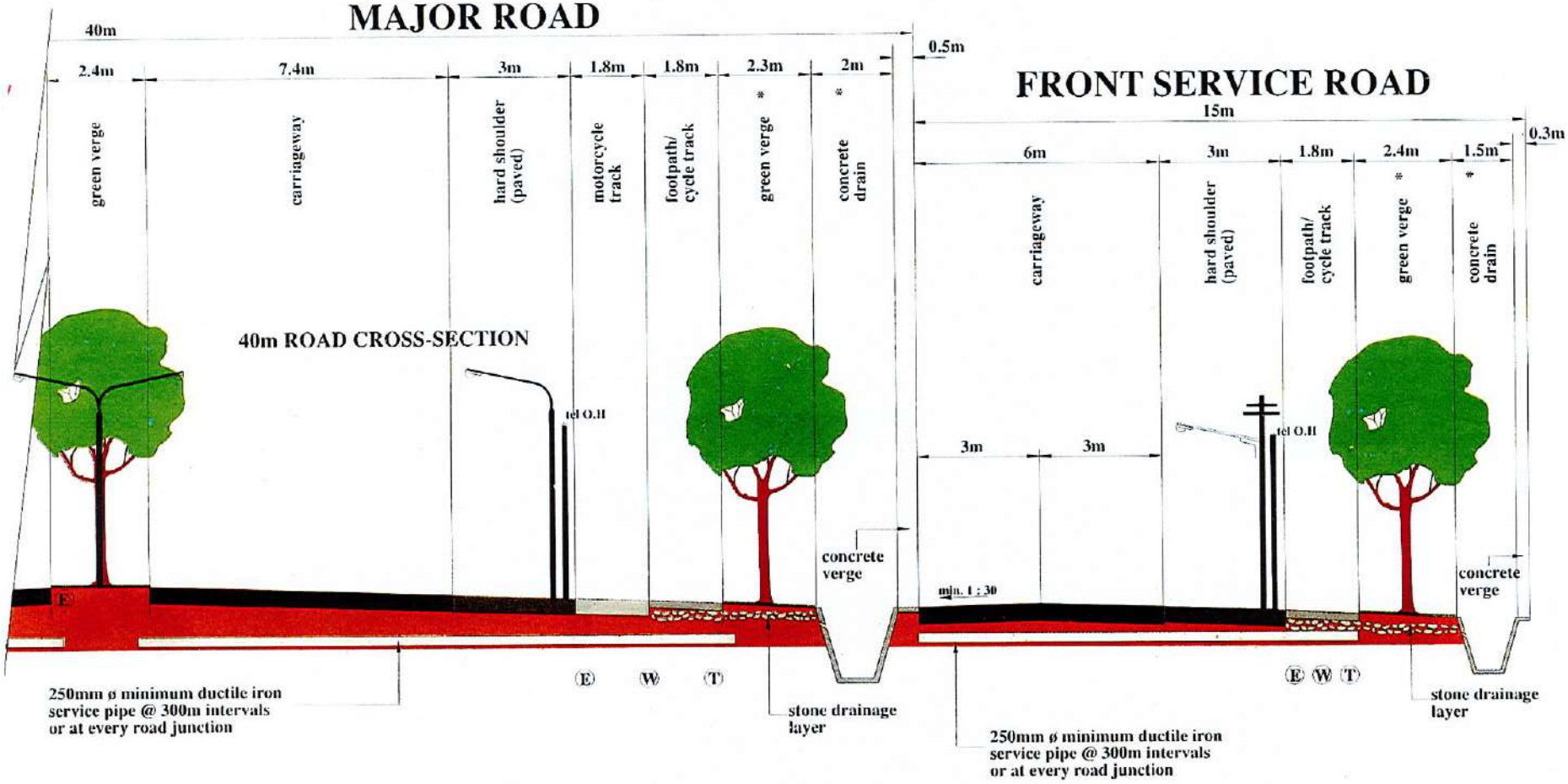
FIG. 3.10



12.5m FRONT SERVICE ROAD CROSS-SECTION
(Equivalent to 20m Road reserve)
Scale 1 : 150

W = Water line
E = Electricity line
T = Telecomunication line
* = Drain size varies according to its catchment
* = Grass verge size varies depending on the size of drain

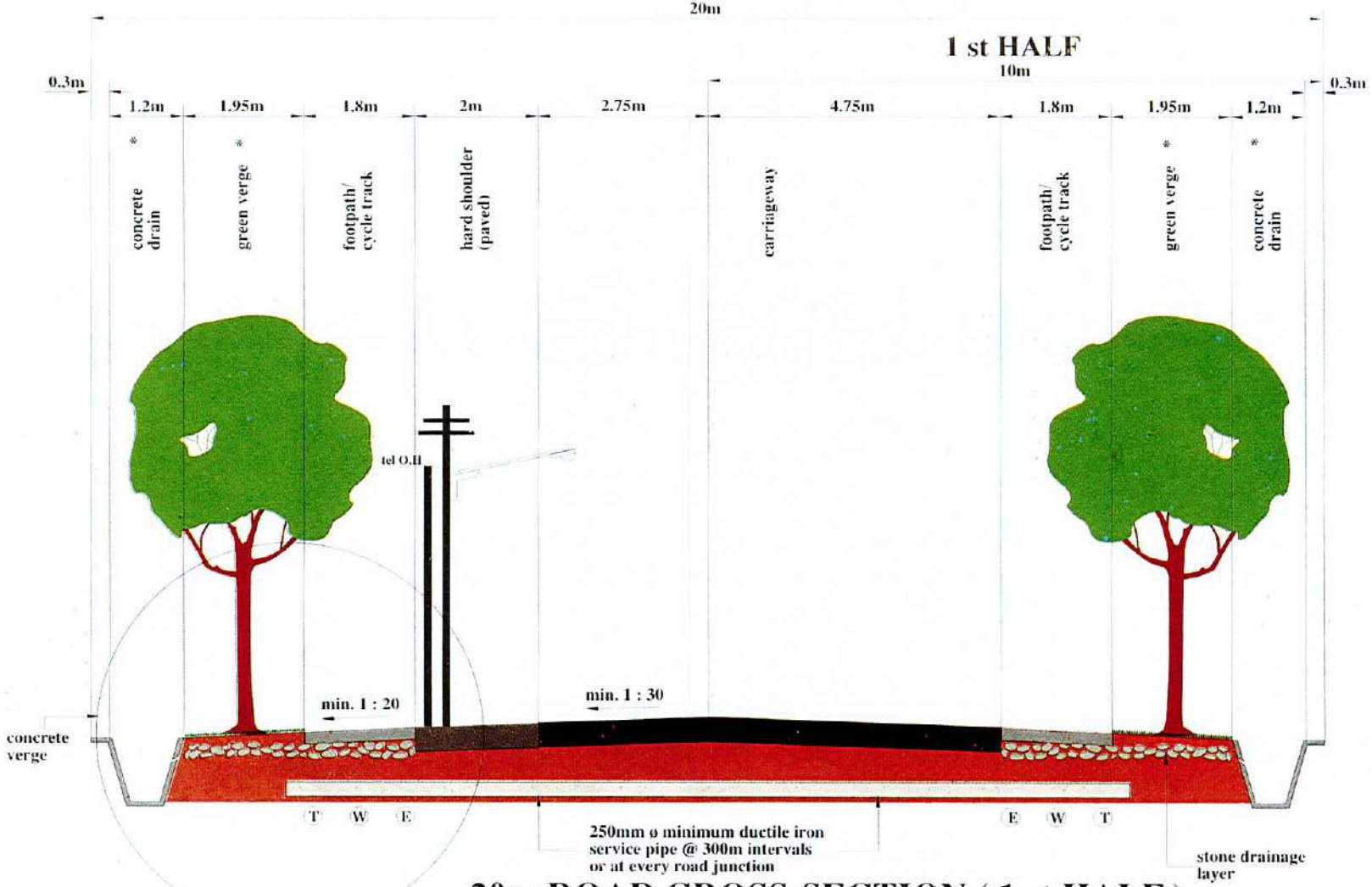
FIG. 3.11



15m FRONT SERVICE ROAD CROSS-SECTION
(Equivalent to 25m Road reserve)
Scale 1 : 150

W = Water line
E = Electricity line
T = Telecomunication line
* = Drain size varies according to its catchment
* = Grass verge size varies depending on the size of drain

FIG. 3.12

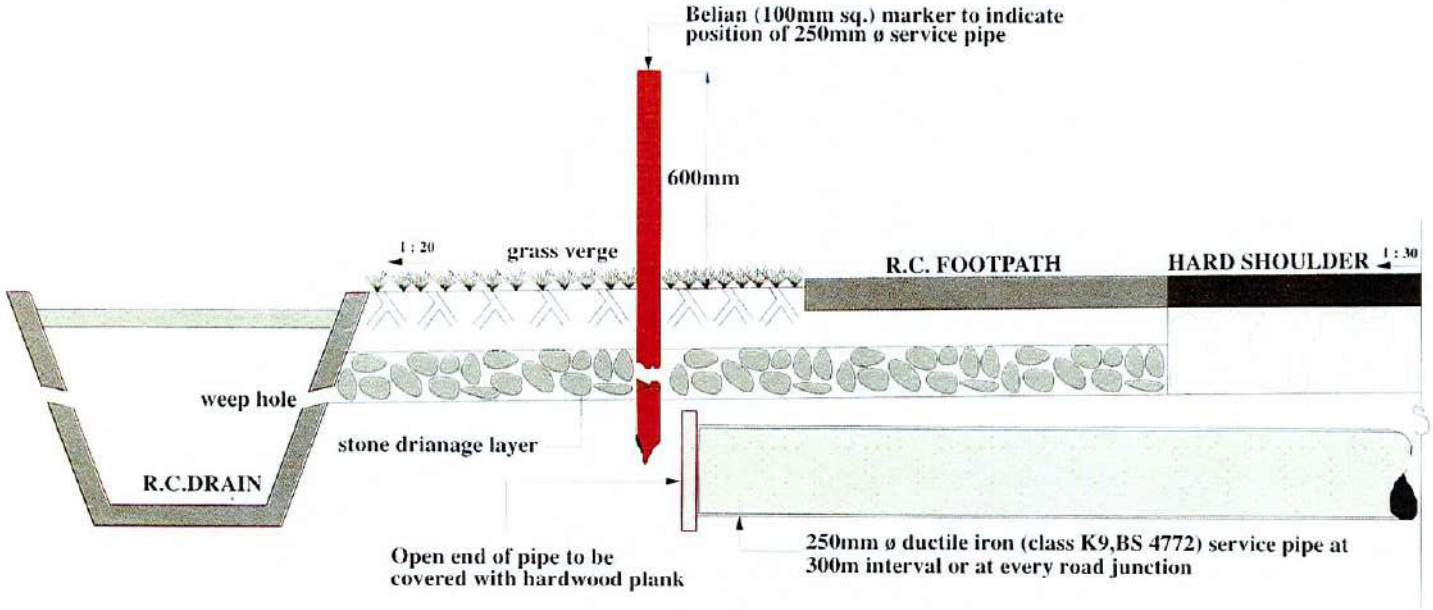


20m ROAD CROSS-SECTION (1 st HALF)

Scale 1 : 100

W = Water line
E = Electricity line
T = Telecomunication line
* = Drain size varies according to its catchment
* = Grass verge size varies depending on the size of drain

FIG. 3.13

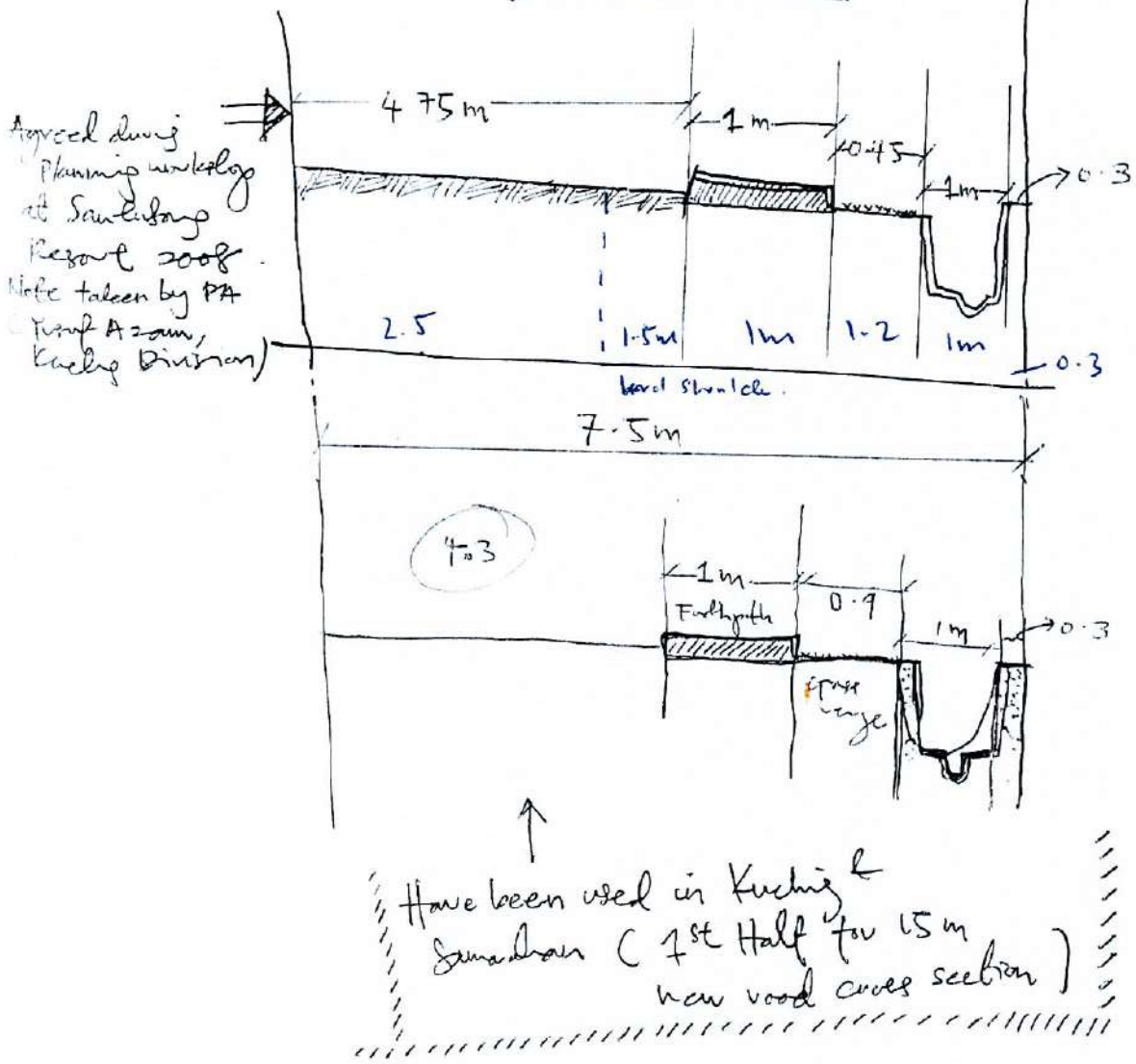


DETAIL 'A'
Scale 1 : 20

FIG. 3.15

*44 51
*10.02
*2/00

1st Half 15m (New C-Section)



CHAPTER 4

ROAD JUNCTIONS

CHAPTER 4

ROAD JUNCTIONS

4.1 The capacity of an urban road network is often governed by the capacity of its junctions. In designing a particular junction or in planning the road network as a whole, it is important to ensure that the proposed junction capacity is reasonably consistent with the required capacity of the roads between junctions, in order to minimise bottle-necks. As far as possible, junctions should be designed with sufficient capacity to accommodate the planned future peak flows that are practicable on the network.

4.2 Junction designs should have regard to the flows, speeds, composition, distribution and future growth of traffic, as well as the safety of all the road users for whom the junctions are planned. The design of a particular junction should be tailor-made, with due regard to the physical conditions of the site, the amount and cost of construction and the impact of the proposal on the environment. These considerations are often complex and as such the services of professionals should be sought in the design of all major or special junctions.

4.3 Junction spacing

At the macro level, the spacing between junctions should be related to the overall road network and the hierarchy of urban roads. At the micro level, the spacing should always have regard to design and traffic requirements such as the lengths needed for right-turn or speed-change lanes or for weaving manoeuvers. As a guide, the followings are suggested as the minimum junction spacing along various types of road, and they are shown in Table 4.1.

TABLE 4.1: RECOMMENDED DISTANCE BETWEEN JUNCTIONS

Road Categories	Reserve Width (m)	Minimum junction spacing (m)
Trunk distributors	50 or more	550
Arterial distributors	40 or 50	210
Local distributors	20 or 25	90
Access Roads	20 or less	45

4.4 Junction truncations

4.4.1 Junction truncations are necessary in order to ensure good visibility and to provide adequate space to accommodate carriageway with sufficient turning radius.

4.4.2 Junction visibility

Good visibility is essential to ensure safety and maximum capacity. In this respect, there should be unobstructed sight along both roads at an intersection and across their included corner (or "sight triangle") for distances sufficient to allow the drivers of vehicles approaching simultaneously to see each other in time to avoid a collision at the intersection.

4.4.3 Junction curves

Junctions should be designed so that vehicles can turn with reasonable ease without going over the kerbs or encroaching into another traffic lane. A kerb radius of 11m will normally suffice in urban areas for junctions used by commercial vehicles. A corner radius of 6m will usually be adequate for those junctions used by smaller vehicles. Turning can be made easier and safer by providing transition or compound curves on the corners instead of circular arcs. This would reduce the risk due to vehicles swinging out of lane to avoid the rear wheels hitting the kerb.

4.4.4 Dimensions of truncations

The dimensions of truncations at junctions are given in Table 4.2 and illustrated in Figures 4.1(a) and 4.1(b).

TABLE 4.2: DIMENSIONS OF TRUNCATIONS AT JUNCTIONS
(in metres)

Width of Major Road Reserve	Width of Minor Road Reserve	"A"* (in Fig. 4.1)	"B"* (in Fig. 4.1)
50	40 or 50	**	**
	25	120	27
40	40	**	**
	25	68	27
	20	68	24
25	25	55	24
	20	46	24
	15	46	21
	9	38	15
20	20	38	24
	15	38	21
	9	21	13
15	15	21	21
	9	18	12
9	9	18	8

NOTES on Table 4.2:

* A and B measured along centre line of road or centre line of carriageway for dual carriageway.

** Special requirement according to design of intersection
For major roads with reserves of 65m and more their junctions require special requirements.
For "front service roads" of 10m, 12.5m and 15m, use the equivalent measurements for 15m, 20m and 25m road reserves.

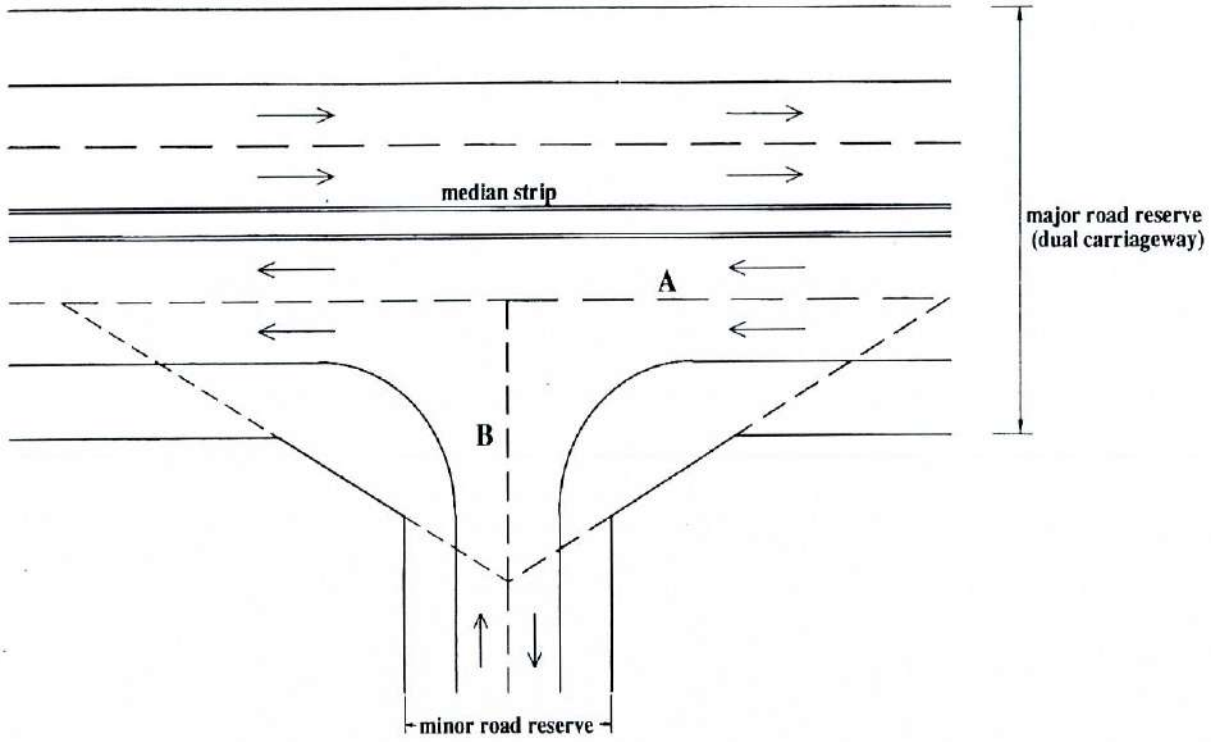


FIG. 4.1(a) TYPICAL TRUNCATION AT T-JUNCTION (DUAL CARRIAGEWAY)

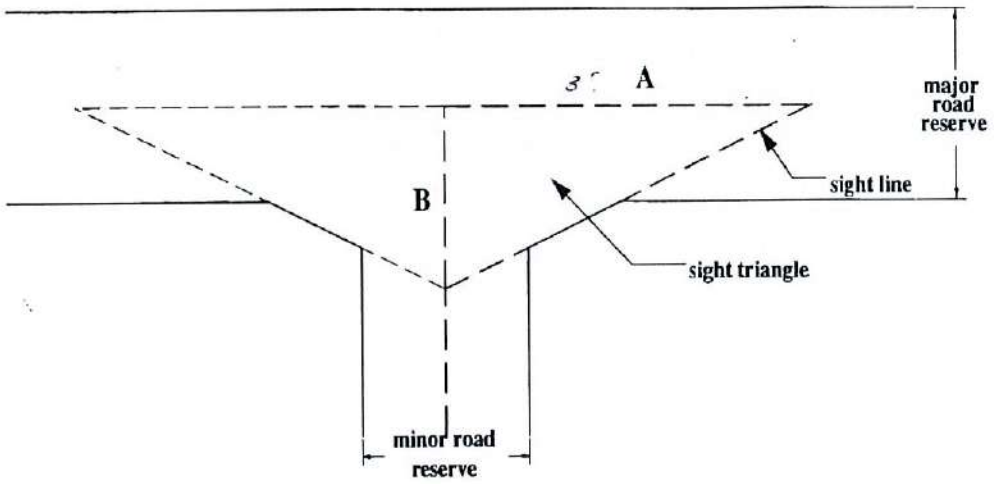


FIG. 4.1(b) TYPICAL TRUNCATION AT T-JUNCTION

Note: nts

CHAPTER 5

SECONDARY ACCESS TO THE REAR OF BUILDINGS

CHAPTER 5

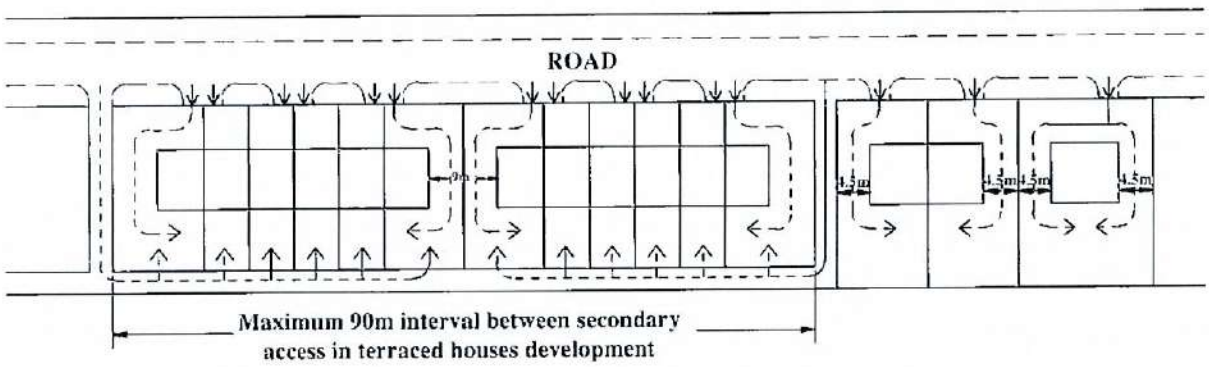
SECONDARY ACCESS TO THE REAR OF BUILDINGS

5.1 An established practice under the Development Control Standards Manual (1968) is the requirement to have an adequate secondary access to the rear of all buildings. This access is necessary for the purpose of scavenging, servicing of septic tanks, delivery of goods and more particularly to facilitate effective fire fighting. This type of access is normally of smaller dimensions than the primary access. The primary access is the principal access (usually vehicular) to a building or plot of land.

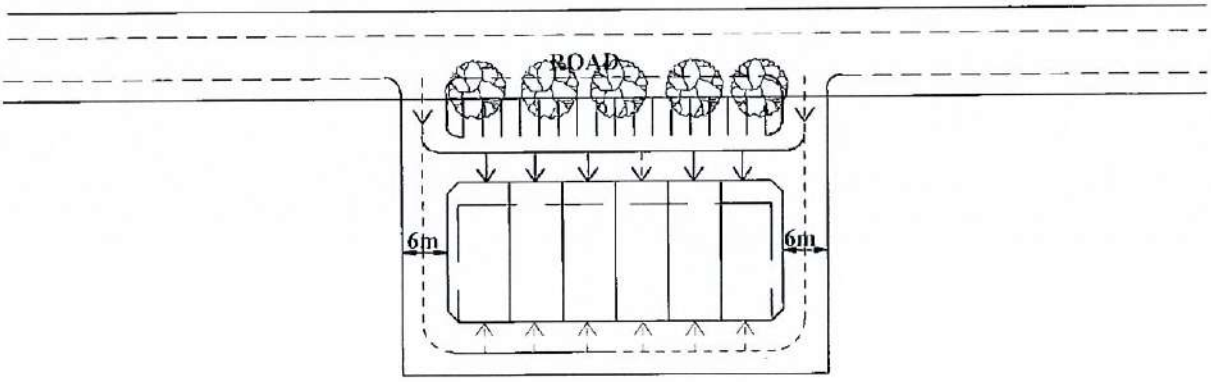
5.2 For a block of shophouses or other commercial buildings, a secondary access is required in the form of a 6m wide side lane and 7m wide back lane. For terraced residential buildings, the required secondary access is in the form of a minimum 3m wide footpath/drain reserve. Where there are rows of terraced houses along a primary access, the rear footpath should be linked to this primary access at regular intervals. Each interval should not be more than 90m long.

5.3 In the case of detached/semi-detached residential and industrial buildings, the access to the rear can be obtained by way of side yards of 4.5m and 6m minimum width, respectively.

5.4 Fig. 5.1 illustrates the above requirements.



(a) Secondary access for residential



(b) Secondary access for shophouses

--> Primary access

--> Secondary access

FIG. 5.1 PRIMARY AND SECONDARY ACCESS

CHAPTER 6

PEDESTRIAN AND CYCLIST MOVEMENT

CHAPTER 6

PEDESTRIAN AND CYCLIST MOVEMENT

6.1 The Need

6.1.1 There has been a marked decline in the use of bicycles as a means of transport. There is also a noticeable trend towards the increased use of motor-vehicles for short trips within walking distance in our towns.

6.1.2 The decline in walking and cycling activities may be attributed, amongst others, to the increased hazards on the road and the lack of adequate provision of suitable facilities for cyclists and pedestrian. Such facilities should be made available to provide the choice of taking up cycling and walking for those people who want to pursue these activities.

6.1.3 In recognition of the above, a conscious effort to promote and provide a safe, convenient and pleasant network for walking and cycling should be made in the planning of urban areas.

6.2 Creation of safe, convenient, and pleasant footpaths and cycle-paths

6.2.1 The design for the layout and the alignment of a footpath or cycle-path should be considered at the early stages in the process of urban planning, together with the design for vehicular network of transport. This will ensure that the needs of pedestrians and cyclists are properly considered and the conflict between vehicles and pedestrians or cyclists be reduced.

6.2.2 A good footpath or cycle-path system is one which is safe, convenient and pleasant. In residential areas, this means the provision of a network of continuous, direct and safe routes from areas of housing to the various community facilities such as schools, kindergartens, local neighbourhood shops, public transport stops or terminals and recreational or amenity open spaces. As far as possible, footpaths and cycle-paths should be segregated from vehicular routes to make them safer and more attractive to use.

6.2.3 In town centres or commercial areas, this means the provision of a network of pedestrian/cycle paths or precincts segregated from vehicular traffic.

6.2.4 NOTE: In cases where cycle-paths are required along roadsides, the standard road cross-sections as shown in Chapter 3 should be modified as shown in Fig. 6.1.

6.3 Pedestrian/cyclist crossings

6.3.1 Where footpaths or cycle-paths intersect with roads, appropriate connecting facilities should be provided at these points to facilitate safe, and where possible, uninterrupted pedestrian/cyclist movements.

6.3.2. The following connecting facilities may be used at intersection points:

(a) **Zebra or Pelican crossing** - this can be used only where the approach road is straight and motorists have a clear view of the crossing from at least 30 metres away;

(b) **Pedestrian/cyclist phases** at signal-controlled junctions;

(c) **Underpass or pedestrian tunnel** built under the road surface - the headroom should not be less than 2.4m with a minimum width of 3m.

(d) **Overhead bridge** - the overhead clearance of the bridge must be high enough for heavy vehicles to pass under it. The international standards for headroom height vary between 5.1m to 5.5m. However, in view of the local situation where resurfacing of roads by "topping-up" is a frequent practice, an allowance of a minimum of 5.8 metres headroom is required until such time when alternative methods of resurfacing without raising the level of the road are introduced; and

(e) **Refuge island** - this can be used to provide refuge or waiting area to enable pedestrian to cross the road in stages, at busy junctions or dual carriageways;

6.3.3 In addition, the erection of guardrails can help to increase safety since they have the effect of directing pedestrians towards the correct points for crossing and at the same time preventing overspilling onto busy roads. Clearly posted sign-posts and carriageway markings indicating traffic flows can also help to improve safety. Footpaths should be sufficiently lighted at night and bushes alongside them cleared regularly in order to make them safer.

6.4 Width of footpaths and cycle-paths

The width of footpaths and cycle-paths should be determined by the number of people likely to use them. They should be able to permit pedestrians and cyclists to pass each other freely and conveniently . In cases where the use of wheelchair is expected, wider footpaths with appropriate ramps should be designed. For footpaths or cycle-paths linking housing areas to community facilities (such as local shops, public transport stops, recreational and amenity open spaces) more generous width allowing pedestrians or cyclists to pass each other comfortably would be ideal. In town centres and other commercial areas, footpath should be even wider to cater for the greater number of people likely to be using them. Table 6.1 shows some of the minimum width requirements for footpaths and cycle-paths besides those already stipulated in Chapter 3 under Road W idths and Cross-sections.

6.5 Footpaths for shophouses

It has been the local tradition to provide a pedestrian way (commonly called Kaki Lima) in front and by the sides of the shops, but within the boundaries of the shoplots. This provision proves to be very practical and convenient to pedestrians and it is to be continued. The required dimensions is normally 3m and is measured from the boundary to the external wall(s) of the shop. This is shown in Fig. 6.2. Where side kaki-lima is required for the corner shophouse, its width should be at least 1.5m.

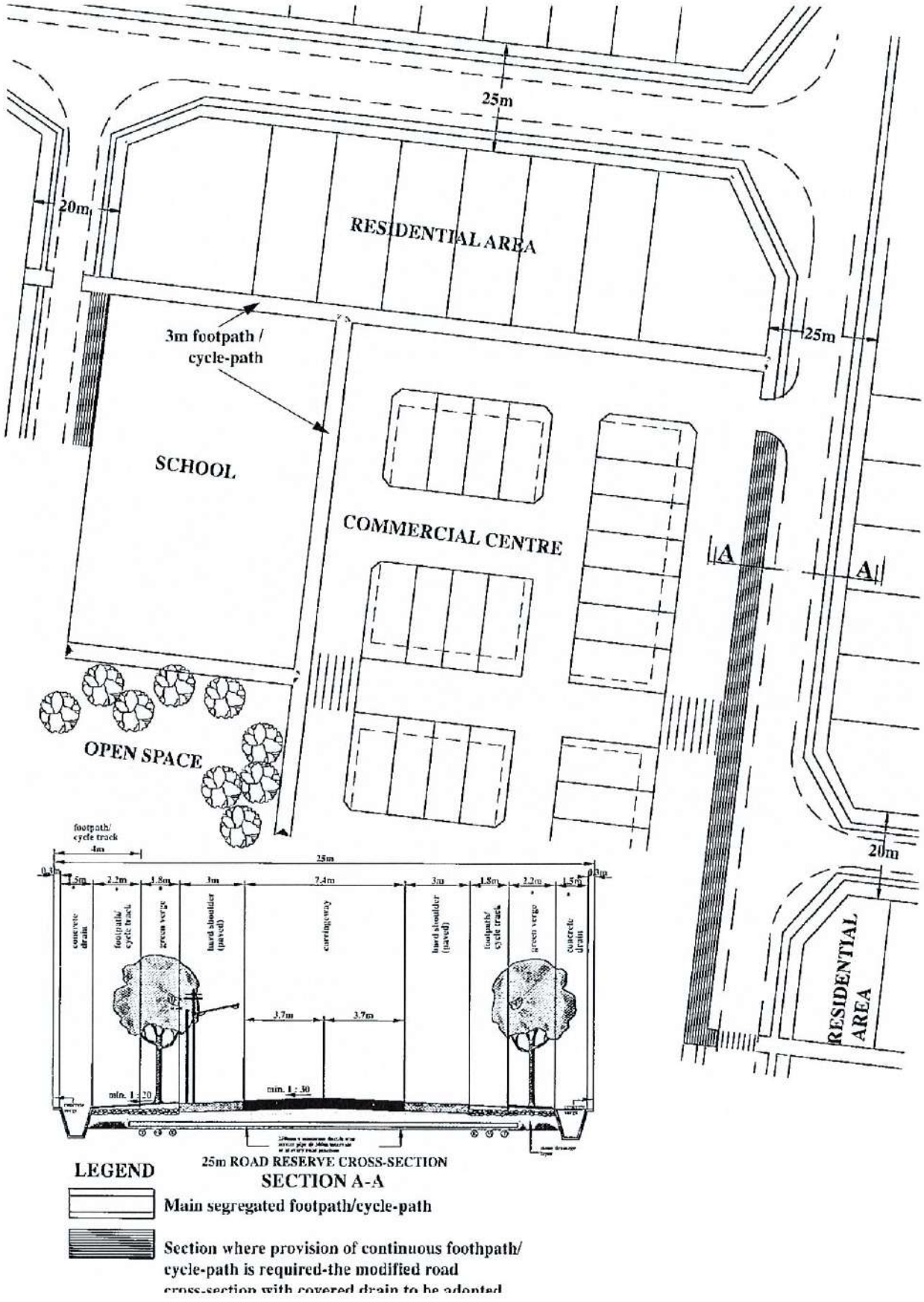


FIG. 6.1 MODIFIED ROAD CROSS-SECTION TO ACCOMMODATE CYCLE-PATH

TABLE 6.1: MINIMUM WIDTHS FOR FOOTPATHS AND CYCLE-PATHS

Type of Footpaths and Cycle-paths *	Minimum width of path (in metres) **	Minimum reserve width *** (in metres)
1. Footpath allowing two persons to pass each other	1.0	2
2. Footpath allowing two persons to pass each other comfortably	1.2	2
3. Footpath allowing two wheelchairs to pass each other comfortably	1.8	3
4. Footpath within recreational and amenity open space	3.0	-
5. Footpath in town centres and other commercial areas (In many cases wider footpaths should be provided)	3.0	-
6. Cycle-paths allowing two cyclists to pass each other	2.0	3
7. Cycle-paths where large numbers of cyclists are expected (e.g. near schools)	3.0	6
8. Combined footpath/cycle-path allowing one cyclist and one pedestrian to pass each other	3.0	6

NOTE:

* Appropriate traffic barriers should be provided to prevent vehicles entering the footpath/cycle- paths.

** The minimum width of footpath/cycle path does not include the space requirement for drains, landscaping, etc. The minimum widths for footpaths along roadsides are stipulated in Chapter 3.

*** The minimum reserve widths refer only to footpaths/cycle paths which require an independent reserve. This reserve allows space for comfortable movement of pedestrian and cyclists, create a more attractive environment for the users, as well as providing space for drains, landscaping, etc.

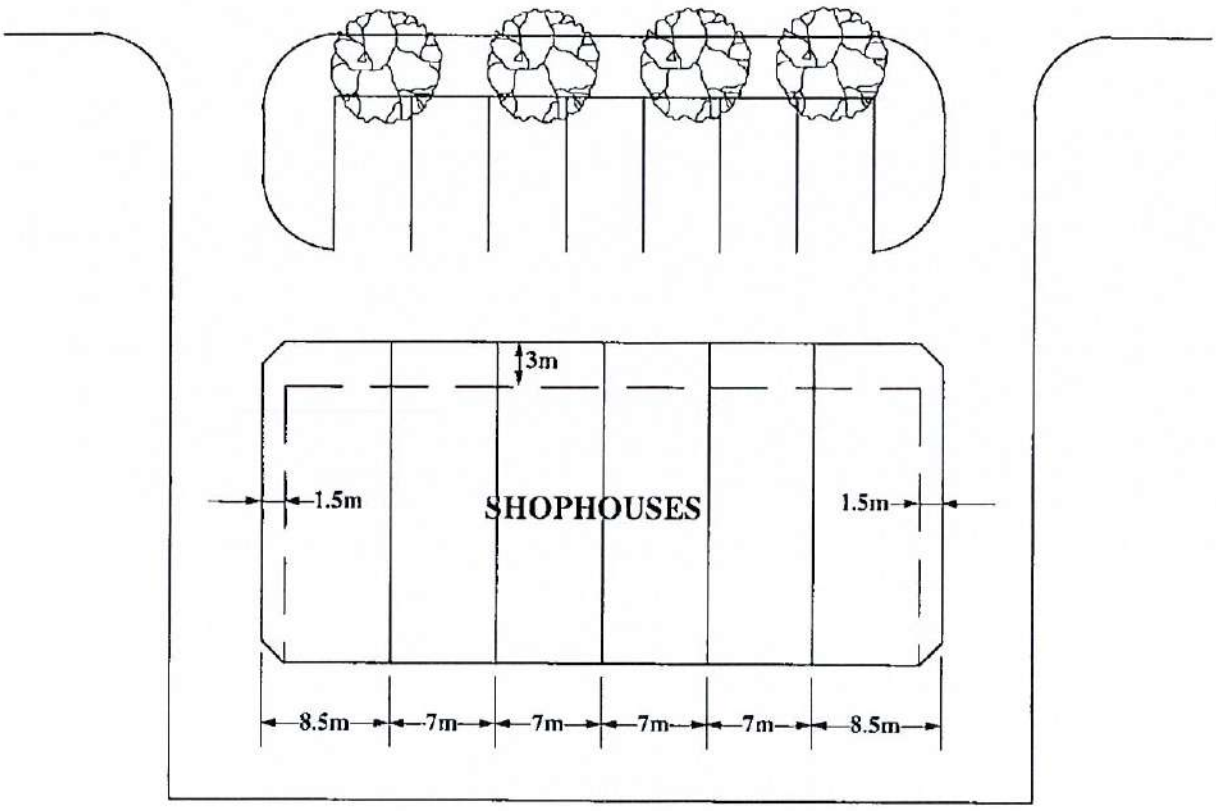


FIG. 6.2 WIDTH OF "KAKI-LIMA"

PART III

PARKING

CHAPTER 7

PARKING REQUIREMENTSAND PARKING SPACES

CHAPTER 7

PARKING REQUIREMENTS AND PARKING SPACE

7.1 Parking requirements

7.1.1 Whilst a good road network is essential for the efficient movement of passengers and goods within the urban area, parking spaces are also required for the purpose of storing vehicles at the origins and destinations. These spaces should preferably be located within the property to be served and, if that is not possible, as a general rule they should be located within walking distance from the property and linked to it by a convenient pedestrian route.

7.1.2 Motorcycle ownership has increased tremendously over the years since the previous Development Control Standards Manual (1968) was published. The motorcycle population is now comparable to the population of the four-wheel vehicles. In view of this, it is considered necessary to provide more parking space for motorcycles in the urban areas.

7.1.3 Table 7.1 shows the parking requirements for different uses.

7.2 Definition:

In the following Tables, the terms used are defined as follows:

GROSS FLOOR AREA is the area at each floor enclosed within the external walls of the building, excluding permitted extension.

NET FLOOR AREA is the gross floor area excluding circulation areas, staircases, toilets, store and plant rooms.

TABLE 7.1: MINIMUM PARKING REQUIREMENTS

NOS.	USE	MINIMUM PARKING REQUIREMENTS	
		car park (C/P) bus/coach park (B/P) lorry park (L/P)	motor cycle park (M/P)
1.	**RESIDENTIAL:**		
(a)	Detached, semi-detached and terraced houses, and dwelling units above shops	- 1 C/P per dwelling unit	—
(b)	Flats / Apartments / Condominium type of housing	- 1 C/P per flat plus 10% additional spaces for visitors' parking and multiple car ownership.	1 M/P per flat

[TABLE 7.1: Minimum parking requirements - continues]

NOS.	USE	MINIMUM PARKING REQUIREMENTS	
		car park (C/P) bus/coach park (B/P) lorry park (L/P)	motor cycle park (M/P)
2.	**COMMERCIAL:**		
	(a) Shops -		
	(i) Retail shops	-1 C/P per 50m^2 of net floor area	1 M/P per 200m^2
	(ii) Eating shops including hawker stalls and open-air markets	-1 C/P per 10m^2 of net dining floor area OR -2 C/P per stall (whichever is the higher)	1 M/P per 50m^2 OR 1 M/P for every 2 stalls
	(iii) Supermarkets and departmental stores	-1 C/P per 50m^2 of gross floor area	1 M/P per 200m^2
	(b) Fish, vegetable, and meat markets.	-1 C/P per 50m^2 of gross floor area	1 M/P per 200m^2
	(c) Restaurants, coffee houses, cafeterias, canteens, bars, pubs and night clubs.	-1 C/P per 10m^2 of net floor area	1 M/P per 50m^2
	(d) Conference rooms, function halls, and exhibition space.	-1 C/P per 10m^2 of gross floor space	1 M/P per 50m^2
	(e) Banks and financial institution	-1 C/P per 50m^2 of gross floor area and	1 M/P per 200m^2
	(f) Any other commercial premises not elsewhere classified.	- 1 C/P per 50m^2 of gross floor area	1 M/P per 200m^2
3.	**HOTEL:**		
	(including boarding houses, residential clubs and hostels) [Restaurants, cafe and other uses within the hotel to be calculated in accordance with their respective car parking requirement standard.]	- 1 C/P per 5 bedrooms or part thereof. - 1 B/P for first 50-100 rooms and 1 additional B/P for each additional 100 rooms or part thereof.	1 M/P per 5 bedrooms (including staff parking)
4.	**OFFICE:**		
	Private or public offices.	- 1 C/P per 50m^2 of net floor area	1 M/P per 200m^2

[TABLE 7.1: Minimum parking requirements - continues]

NOS.	USE	MINIMUM PARKING REQUIREMENTS	
		car park (C/P) bus/coach park (B/P) lorry park (L/P)	motor cycle park (M/P)
5.	**INDUSTRIAL:**		
	Godowns, warehouses and factories [detached, semi-detached, terraced] [Note: subject to a minimum of 1 C/P and 1 L/P per premises]	- 1 C/P per 150m^2 of gross industrial floor area - 1 L/P per 200m^2 of gross industrial floor area. - 1 C/P per 50m^2 of net office floor area.	1 M/P per 600m^2
6.	**EDUCATIONAL (Urban):**		
	In all categories below except (a), a queuing space / lane of at least 10m length per classroom, leading to the school entrance, should be provided to enable smooth disembarking and embarking of students, without interfering or obstructing traffic on the public road.		
(a)	Tuition and learning centres	- 1 C/P per 25m^2 of gross floor area.	—
(b)	Nurseries, play schools, child care centres and kindergartens.	- 2 C/P per classroom (including visitors' parking)	—
(c)	Primary and secondary schools	- 2 C/P per classroom (including visitors' parking)	1 M/P per classroom
(d)	Technical and vocational schools, other training centres	- 1 C/P per 2 members of teaching staff - 1 C/P per 20 students	1 M/P per 4 students
(e)	All other institutions of higher leaning (non-residential	- 1 C/P per member of staff - 1 C/P per 10 students	1 M/P per 4 students
7.	**PLACE OF ENTERTAINMENT AND RECREATION:**		
(a)	Cinemas, theatres and concert halls.	- 1 C/P per 5 seats	1 M/P per 10 seats
(b)	Discotheques, dance halls night clubs and 'karaoke' lounges.	- 1 C/P per 10m^2 net floor area (including dance floor, seating areas, bar, bandstand and stage).	1 M/P per 50m^2

[TABLE 7.1: Minimum parking requirements - continues]

NOS.	USE	MINIMUM PARKING REQUIREMENTS	
		car park (C/P) bus/coach park (B/P) lorry park (L/P)	motor cycle park (M/P)
(c)	Bowling alleys	- 2 C/P per bowling lane - 1 C/P per $10m^2$ of public floor area	1 M/P per $50m^2$
(d)	Gymnasium, health and and fitness centres	- 1 C/P per $10m^2$ of net floor area.	1 M/P per $50m^2$
8.	**SPORTS:**		
(a)	Tennis, badminton and squash courts	2 C/P per court	4 M/P per court
(b)	Volleyball and sepak takraw courts	3 C/P per court	6 M/P per court
(c)	Basketball court	5 C/P per court	10 M/P per court
(d)	Football, hockey and rugby	10 C/P per field	20 M/P per field
(e)	Swimming Pool	1 C/P per $25m^2$ of pool area	1 M/P per $50m^2$ of pool area
(f)	Sports stadium	1 C/P per 5 seats 1 B/P per 1,000 seats	1 M/P per 5 seats
9.	**MEDICAL:**		
	Hospital, nursing and maternity homes	- 1 C/P per $50m^2$ of gross floor area	1 M/P per $50m^2$
10.	**PLACES OF ASSEMBLY**		
(a)	Mosques	- 1 C/P per $5m^2$ of net "praying" floor area	1 M/P per $5m^2$
(b)	Suraus	- 1 C/P per $10m^2$ of net "praying" floor area	1 M/P per $10m^2$
(c)	Churches	- 1 C/P per $5m^2$ of net "praying" floor area	1 M/P per $5m^2$
(d)	Chapel	-1 C/P per 10 sq. metres of net "praying" floor area	1 M/P per $10m^2$
(e)	Temples	- 1 C/P per $5m^2$ of net "praying" floor area	1 M/P per $5m^2$
(f)	Community halls including civic centres, association buildings and assembly halls.	- 1 C/P per $10m^2$ of public floor area	1 M/P per $50m^2$

7.3 Parking Spaces

In order to ensure the smooth circulation and parking of vehicles, the following standards are set to regulate parking spaces and parking aisles. For this purpose, the minimum widths of circulation lanes given in T able 7.3 should be applicable to all types of car parking arrangement, irrespective of the angle of parking, although it is possible to have narrower aisles with angled parking lots. In the case of motorcycle parking bays, they should not be placed at small left-over spaces scattered all over the site, which would be difficult for the motor cyclists to locate. Motorcycle bays should be grouped together in clusters, visible or clearly-signed. In view of the hot climate, it is useful to provide shade for the vehicles. Where car sheds are not provided, the most effective way is to plant trees which not only provide shade, but beautify the car park as well. In order to achieve this, tree planting areas have to be provided. This can take the form of: (Fig. 7.1)

(a) a planting median strip of not less than 1.2m wide between two rows of car park, or by the side of a single row of car park; or

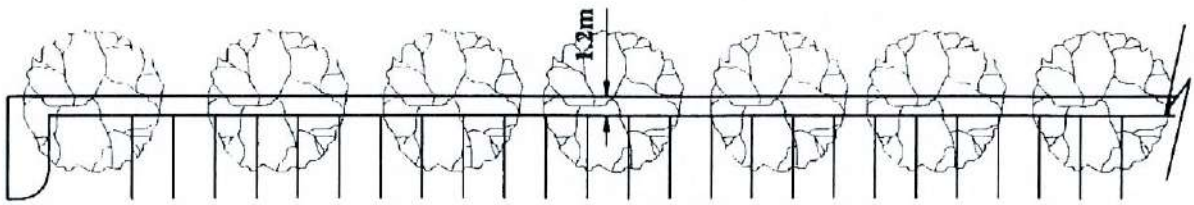
(b) planting pits taking the place of car parking lots, at 6 parking lot intervals, and/or at the end of two rows of parking lots.

TABLE 7.2: MINIMUM DIMENSIONS OF PARKING SPACES
(See Figure 7.2)

VEHICLE TYPE	WIDTH	LENGTH (angle parking)	LENGTH (parallel parking)
Motor cycle	1.25m	2.5m	-
Car	2.5m	5.0m	6.0m
Lorry, bus, coach or commercial vehicle	3.0m	11m	13m

TABLE 7.3 MINIMUM WIDTHS OF PARKING AISLES/CIRCULATION LANES

VEHICLE TYPE	MINIMUM WIDTH OF LANE
Motor-cycle	2.5m
Car	6.0m (one way) 7.0m (two ways)
Lorry, bus, coach or commercial vehicle	12.0m



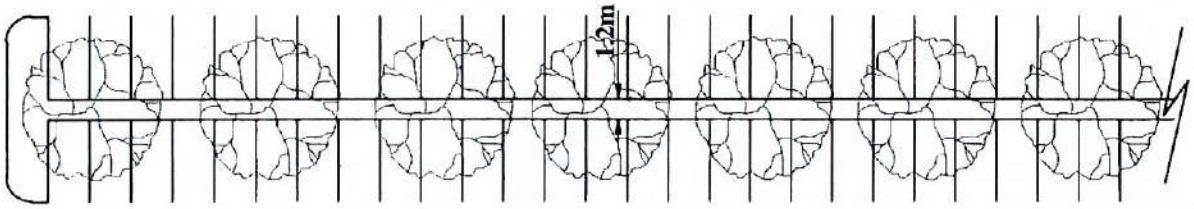


Fig.7.1.A

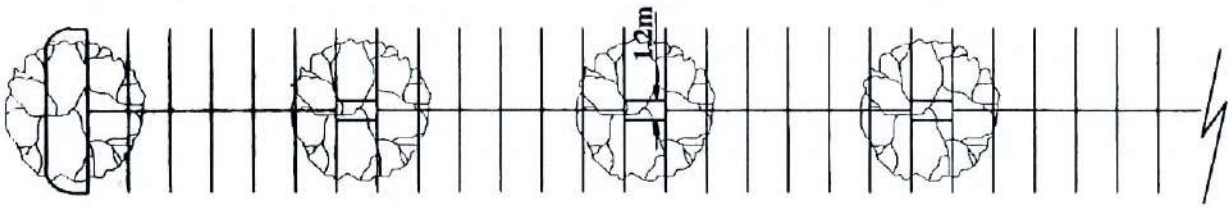


Fig.7.1.B

FIG. 7.1 CAR PARKING AREAS

TABLE 7.4: RAMP AND HEADROOM STANDARDS

(a) **STRAIGHT RAMP** (See Figure 7.3)

	Straight Section	At Bend	
		inner lane	outer lane
Minimum lane width (clearway)	3.0m	3.5m	3.3m
Minimum corner radius	-	5m	-
Minimum width of:			
(i) side kerb	0.3m	0.3m	0.5m
(ii) median divider	0.3m	—— 0.5m ——	

Maximum gradient: 1:10 * (10%)

** [may be increased to 1:7 (14%) for short straight ramps e.g. linking two split-level car parking floors.]*

(b) **CIRCULAR RAMP**

	Inner Lane	Outer Lane
Minimum lane width	3.5m	3.3m
Minimum inside kerb radius	7.0m	-
Minimum width of:		
(i) side kerb	0.3m	0.5m
(ii) median divider	—— 0.5m ——	

Maximum gradient: 1:12 (8%)

NOTE: *For all types of ramps: A minimum 5m transitional length of half-gradient or 'flat section' (of maximum gradient of 1:18 or 6%) should be provided at both ends of the ramp. (See Fig.7.3)*

(c) **HEADROOM**

The floor height clearance or headroom	not less than 2.4m or 3.2m if lorry parking is expected.

Below this height, only the underside of beams, directional signs, sprinkler heads, electrical fittings and other similar items may be allowed to project if the undersides of such items are not less than 2.2m from the floor level.

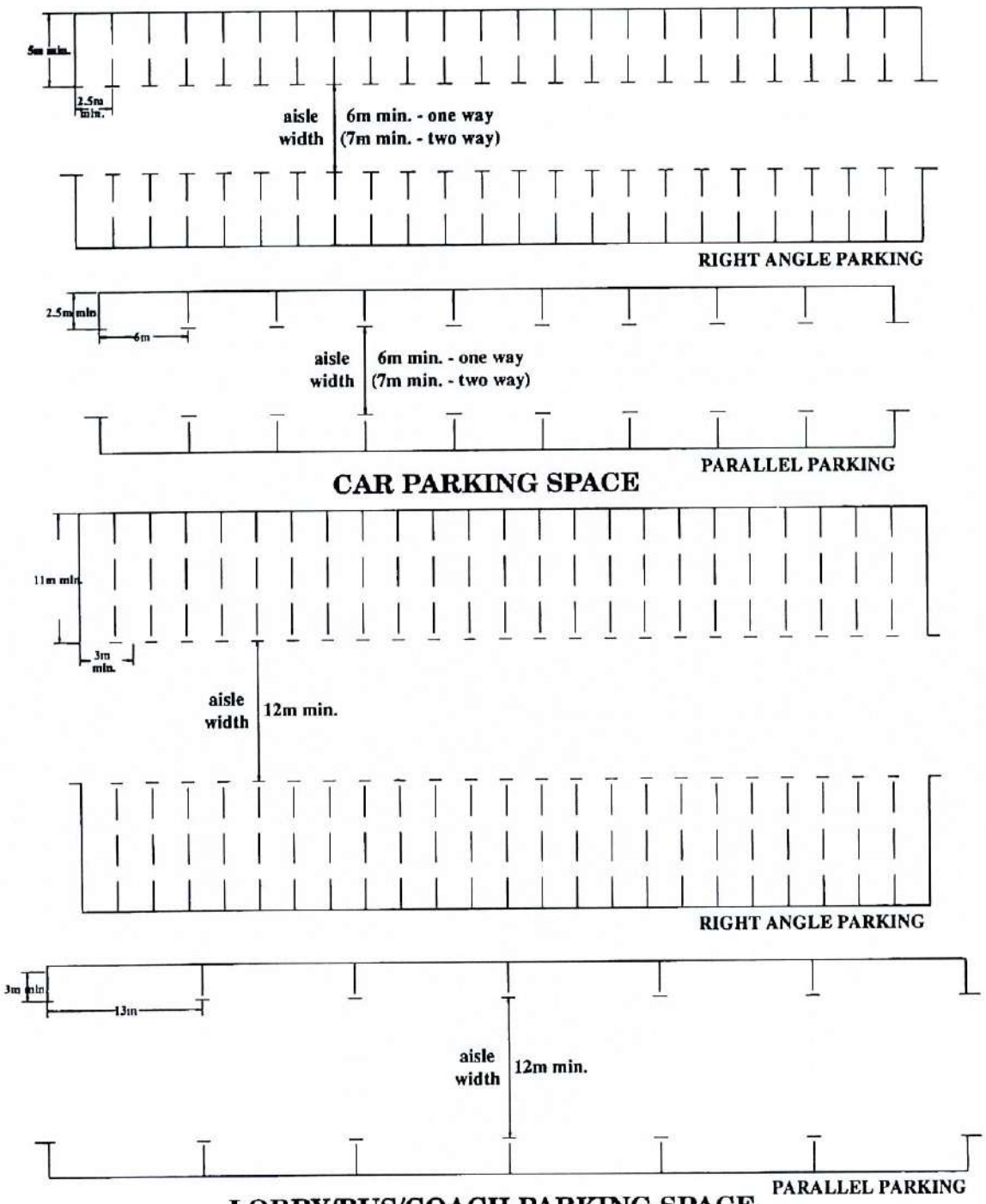


FIG. 7.2 MINIMUM DIMENSIONS OF PARKING SPACES

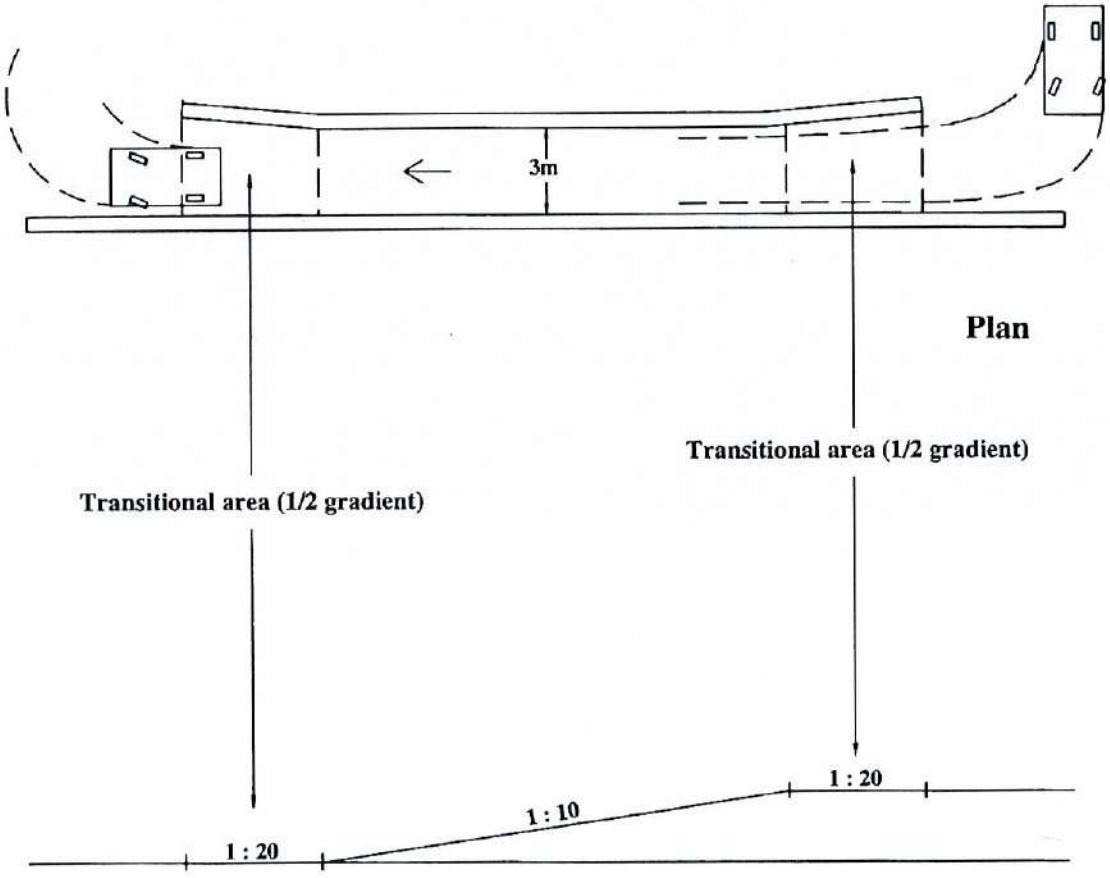


FIG. 7.3 AN EXAMPLE OF STRAIGHT RAMP (WITH 'FLAT SECTION')

CHAPTER 8

SETBACKS OF BUILDINGS FROM LOT BOUNDARIES

CHAPTER 8

SETBACKS OF BUILDINGS FROM LOT BOUNDARIES

8.1 This chapter deals with the minimum setbacks required between the nearest point of the external wall of the main building and the relevant boundary of the plot of land.

8.2 The siting of a building in relation to its lot boundary needs to be regulated for various purposes. This is usually done through the control of setbacks of the building from its lot boundary . In residential schemes, the open space so created provides private grounds for landscaping or gardening, drying of clothes, car parking and outdoor activities. The setback requirements also ensure adequate separation between adjacent buildings thereby creating a firebreak as well as providing a certain degree of privacy and sufficient amount of natural lighting and ventilation.

8.3 In industrial areas, besides serving as a firebreak and access for fire fighting, the space around the building provides an area for the storage of goods and for circulation and parking of vehicles.

8.4 **Definition of setback**

The minimum setback of a building from its lot boundary is defined as the shortest distance between the external wall of the main building to the relevant lot boundary. Setback is measured from the relevant lot boundary to the external walls of the building, either at the ground level or at a higher level, whichever is the nearest.

8.5 **Setbacks from roads**

As a general rule but subject to the particular requirements as shown in T able 8.2, the building setback requirements vary with different categories or widths of road reserves abutting a lot, as shown in T able 8.1. Where there is a road truncation, the building setback from the truncated boundary should be at least 1.5m. (See Fig. 8.1)

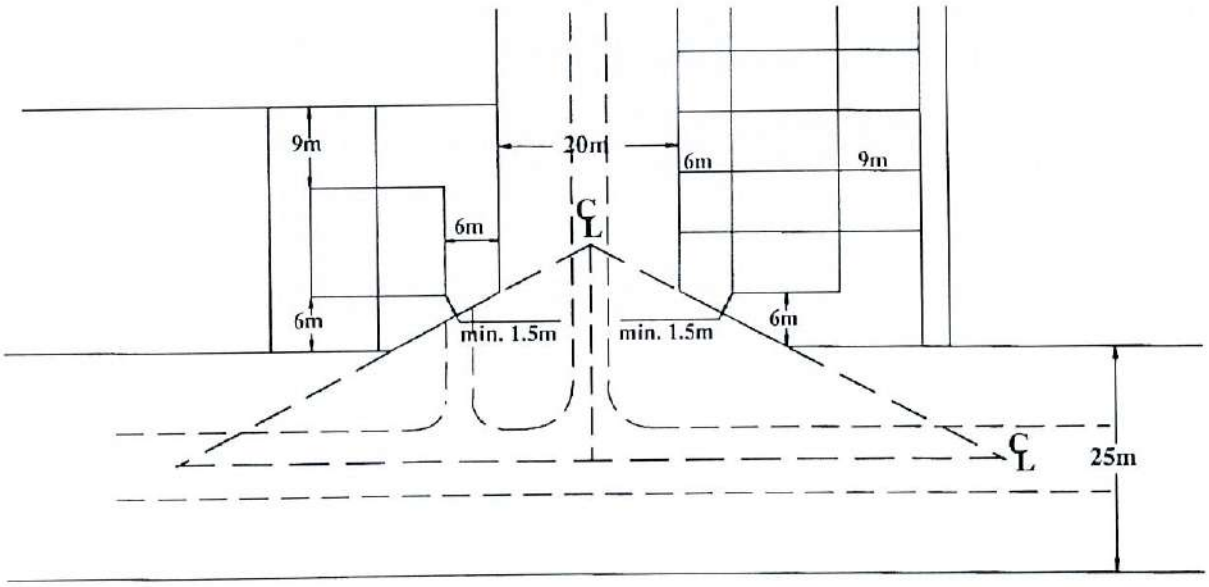


FIG. 8.1 EXAMPLE OF SETBACK FROM TRUNCATED ROAD JUNCTION

TABLE 8.1: BUILDING SETBACK REQUIREMENTS FOR LAND ADJOINING DIFFERENT TYPES OF ROAD RESERVES

Width of road reserve	Minimum building setbacks from road reserve
9m	6m
15m	6m
20m	6m
25m	6m
40m	9m
50m	12m
65m	12m
85m	15m
100m	15m

8.6 Minimum building setback requirements

Table 8.2 shows the required building setbacks for different types of landuses. In all cases, the "half-height" rule (see Chapter 9) applies unless otherwise specified. In order to allow for flexibility in design and in consideration of specific site constraints, variations from the stated standard setbacks may be permitted where justified, provided the required provisions for circulation, parking, utility lines, servicing and landscaping areas can be accommodated by satisfactory design solutions.

TABLE 8.2: MINIMUM BUILDING SETBACK REQUIREMENTS

Building Use and Type	Minimum setbacks (m)			
	Front	Side (1)	Side (2)	Rear
1. **RESIDENTIAL**:				
(a) detached dwelling	6	4.5	4.5	9
(b) semi-detached/corner terraced dwelling	6	4.5	-	9
(c) intermediate terraced dwelling	6	-	-	9
(d) cluster dwelling	6	9	-	-
(e) flats, apartments or condominium	*	*	*	*
* (equals to half the building heights, but not less than 6 metres all round)				
2. **INDUSTRIAL (LIGHT)** including warehouses				
(a) detached	12	6	6	10
(b) semi-detached	12	6	-	10
3. **HOTELS, OFFICES AND COMMERCIAL COMPLEXES** :				
(a) joined to neighbouring buildings (up to 4 storeys)	6	-	-	6
(b) detached building (up to 4 storeys)	6	6	6	6
4. Terraced shophouses (up to 4 storeys)	-	-	-	-

Note: For minimum building setback facing a road please refer to T able 8.1

CHAPTER 9

PERMITTED BUILDING EXTENSION AND USAGE

CHAPTER 9

PERMITTED BUILDING EXTENSION AND USAGE

This Chapter deals with the permitted extension and usage within residential, commercial and industrial lots.

9.1 RESIDENTIAL

The following extension of buildings are permitted beyond the permitted building lines on condition that:

(i) the total length of the main building does not exceed a maximum of 14m as defined and stipulated in Chapter 11, and

(ii) there is no flat roof (e.g. reinforced concrete) on top of the extension.

9.1.1 **Permitted extension**: (Fig. 9.1)

Subject to the limitation of other provision in this Development Control Standards Manual (in particular, plot coverage), the following extensions are permitted:

(a) FRONT:

Within minimum front setback, a single storey porch up to a maximum of 4.5m from the permitted front building line, provided a minimum clear distance of 1.5m from the front boundary is observed;

(b) SIDE:

Within the minimum side setback, a single storey porch up to a maximum of 3.0m from the permitted side building line;

Note: (where the side extension is meant to be used as a car porch the side setback should preferably be increased to a minimum of 5.5m or alternatively, an architectural design solution that would provide adequate space for parking while still complying with this standard, would have to be found.)

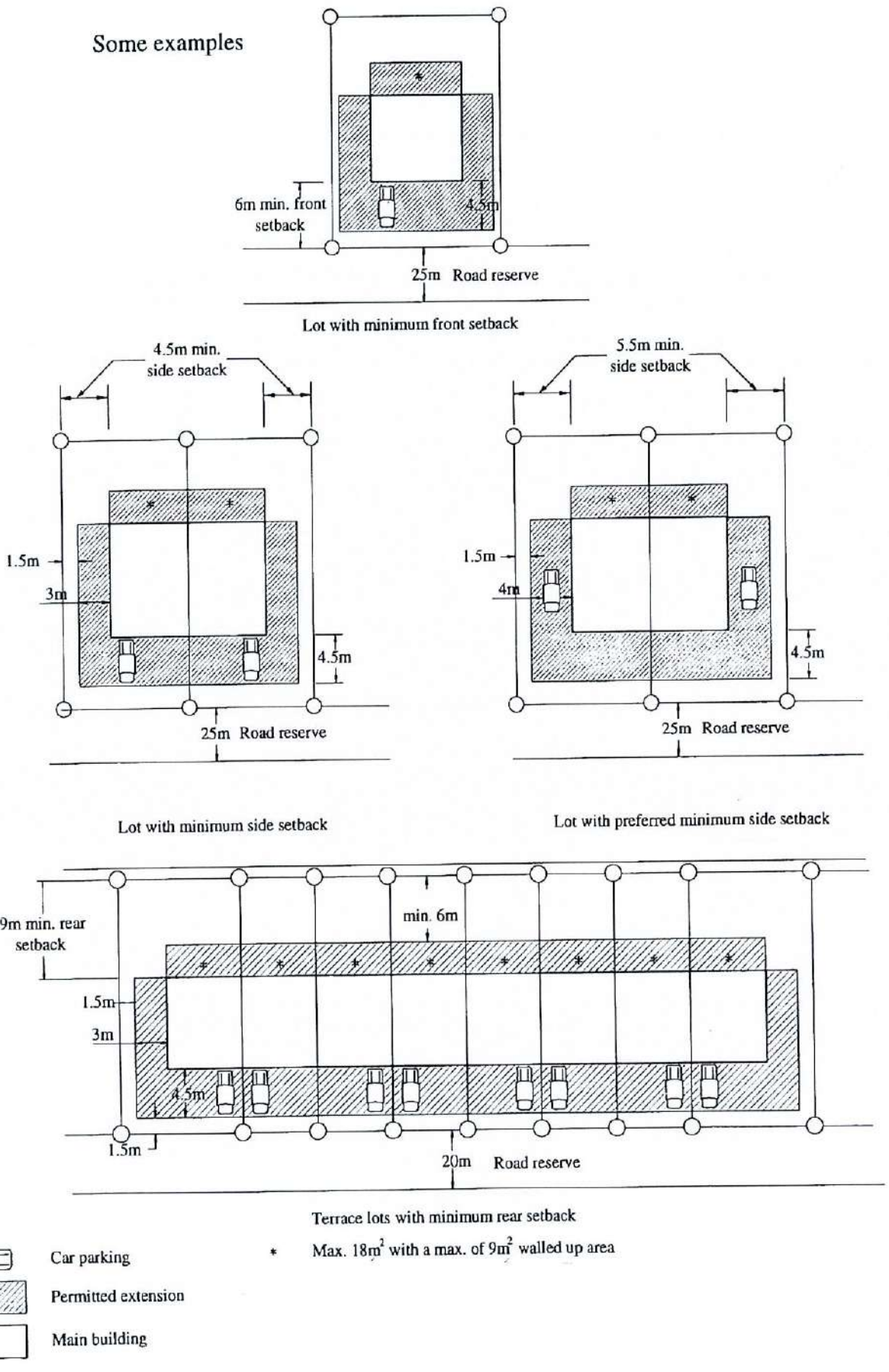


FIG. 9.1 PERMITTED EXTENSIONS IN RESIDENTIAL LOTS

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(c) REAR:

Within the minimum rear setback a single storey extension of a maximum of 18m ^{2} of which a maximum of 9m^2 can be walled up provided no part of this extension shall be nearer than 6m from the rear boundary;

(d) FIRST FLOOR PROJECTION

A concrete balcony on the first floor projecting not more than 1.8m beyond the permitted building line;

(e) MAIN ROOF EAVES PROJECTION:

Canopies, sun shades and main roof eaves projecting not more than 2.0m.

9.1.2 **Stores/sheds within residential plots**

A single storey garden store or shed, detached from the main building at the backyard of a residential building is permitted provided:

- the distance between the external wall of the main building and the rear boundary is not less than 9m;
- the maximum area is 7m^2;
- it is not more than 3m in length or width;
- it is not less than 6m from the external wall of the main building.

9.2 **COMMERCIAL**

9.2.1 **Residential dwelling on top of shophouse**

For residential floor above intermediate units of shophouse buildings, no extension is allowed beyond the permitted length of the residential unit. (See Chapter 1 1, paragraph 11.4). However, full coverage is permitted for residential floor above end units of shophouses.

9.2.2 **Permitted building projections over road reserve or State land** .

In buildings where 100% plot coverage is permitted (e.g. shophouses), projections such as decorative fins, canopies, awnings and sign-boards are allowed to project not more than 0.3m from the building (i.e the boundary), at a minimum height of not less than 3m from the ground level.

9.3 **INDUSTRIAL**

9.3.1 **Permitted extension in industrial lots** (Fig. 9.2)

FRONT:
A single storey open porch of not more than 4m wide is allowed beyond the building line.

SIDE:
A single storey open porch of not more than 4m wide is allowed beyond the building line, preferably with a clearance height of not less than 3.2m so that access for lorries, etc. is possible.

REAR:
A single storey open porch of not more than 4m wide is allowed beyond the building line.

9.3.2 **Permitted ancillary uses in industrial buildings**

Ancillary uses such as jaga's quarters, offices and stores are permitted within an industrial building, provided the total area of the ancillary uses do not exceed one-third of the total floor space of the building, except where the building's predominant usage is for warehousing purpose.

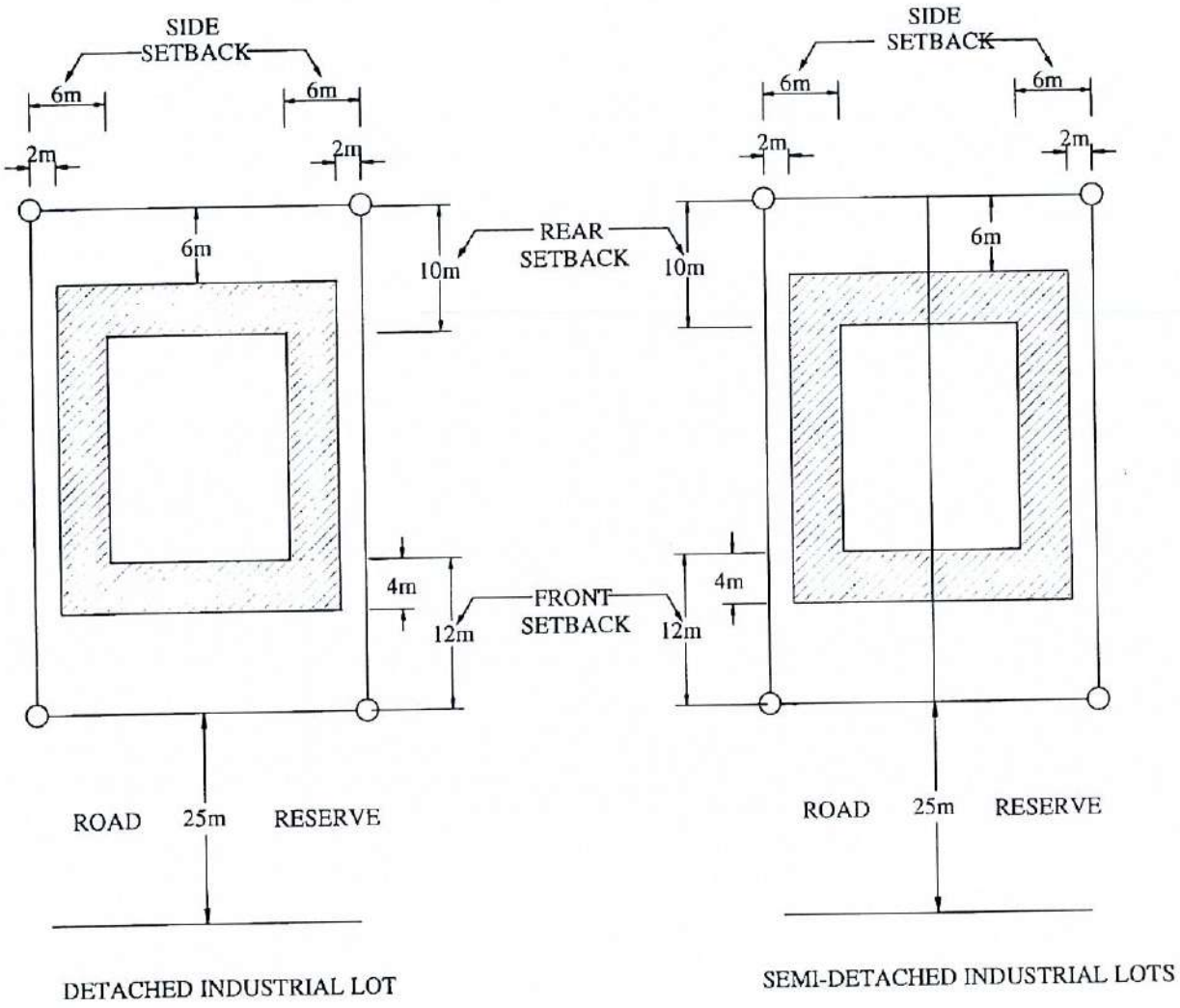

FIG. 9.2 PERMITTED EXTENSIONS IN INDUSTRIAL LOTS

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PART IV

BUILDINGS AND PLOTS

CHAPTER 10

HEIGHT OF BUILDINGS

CHAPTER 10

HEIGHT OF BUILDINGS

10.1 Height control

Besides the plot ratio and other relevant development control standards, the maximum height of a building may be regulated by either one of the following:

(a) the planning authority's policy for skyline control in certain specific areas (e.g. in an urban design or townscape scheme); or

(b) safety or other technical requirements such as height limitations near airports, pylons and high voltage electrical installations and along telecommunication transmitting /relay corridor; or

(c) the required minimum distance between buildings or the 'half-height' standard.

10.2 Height of a building

10.2.1 The height of a building can be specified in terms of the number of storeys or in absolute measurement, i.e. in metres. Where more precise measurements are necessary as in the cases stated in paragraphs 10.1(a and 10.1(b), absolute height is normally specified.

10.2.2 ABSOLUTE HEIGHT is defined as the vertical distance from the ground level to the highest point of a building (usually the roof top).

10.2.3 Where height control needs not be very precise, it is sufficient for the height of a building to be expressed in terms of the number of **STOREYS**. Subject to fulfilling all other requirements of the Development Control Standards, the permitted number of storeys for different types of buildings are as shown in Table 10.1. For the purpose of calculating the minimum distances between buildings or the 'half-height rule' as mentioned in 10.1 (c) above, the height of the building may be measured from the ground level to the ceiling of the top storey (see 10.3).

Table 10.1: PERMITTED NUMBER OF STOREYS FOR DIFFERENT BUILDING TYPES

Use and type of building		Maximum number of storeys
RESIDENTIAL		
(a)	Detached, semi-detached, terraced and cluster houses	2*
(b)	Flats without lift	5
(c)	Flats with lift	**
COMMERCIAL, OFFICE AND HOTEL		
(a)	Lock-up shop	1
(b)	Mini-shop	2
(c)	Building without lift	4
(d)	Buildings with lift	**

(Table 10.1: Permitted number of storeys for different building types)

Use and type of building	Maximum number of storeys
INDUSTRIAL	
Detached and semi-detached	2***

NOTE:

* Normally only 2 storeys are allowed, but depending on design and use, variations may be considered.

** Building with lift can be more than 5-storey high subject to the requirement of other standards or governmental policy.

*** For industrial building the maximum height of the ground floor is 10m for detached building and 4.5m for semi-detached building.

10.3 The 'half-height' rule

The maximum height of a building is controlled by the required minimum distance from the nearest adjacent buildings. The relationship between the maximum building height and the minimum distance is illustrated in Fig. 10.1. From the illustrations, it can be noted that:

10.3.1 The maximum permitted height of a building is equivalent to twice the distance from the building to the plot boundary (i.e. the setback of a building from its boundaries should be at least half its own height. This is also termed the "Half-height" standard.) (Fig. 10.1 a)

10.3.2 When any pair of buildings are considered together the total height of the two buildings should not exceed twice the distance between them. (Fig. 10.1b)

10.4 Depending on the detailed design it may be possible for two neighbouring tall blocks of building to be closer than the required minimum standards, for example, in Central Business Districts or within areas of comprehensive development where the intended sizes and shapes of all buildings are known. In any case, where variations from the standards are required, advice on such proposals with respect to more complex technical standards should be sought from a professional T own Planner.

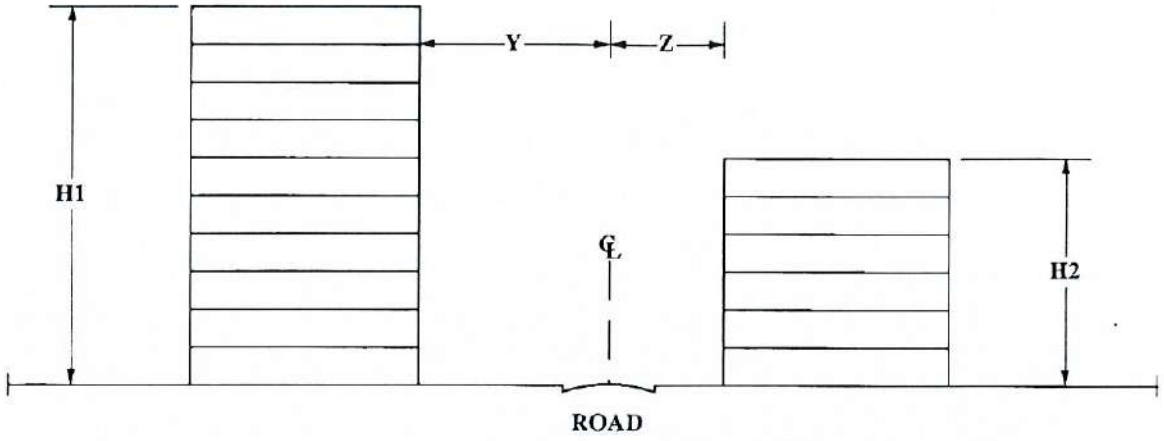


Fig.10.1.a

Where building height are different ,
Y = 1/2 H1
Z = 1/2 H2

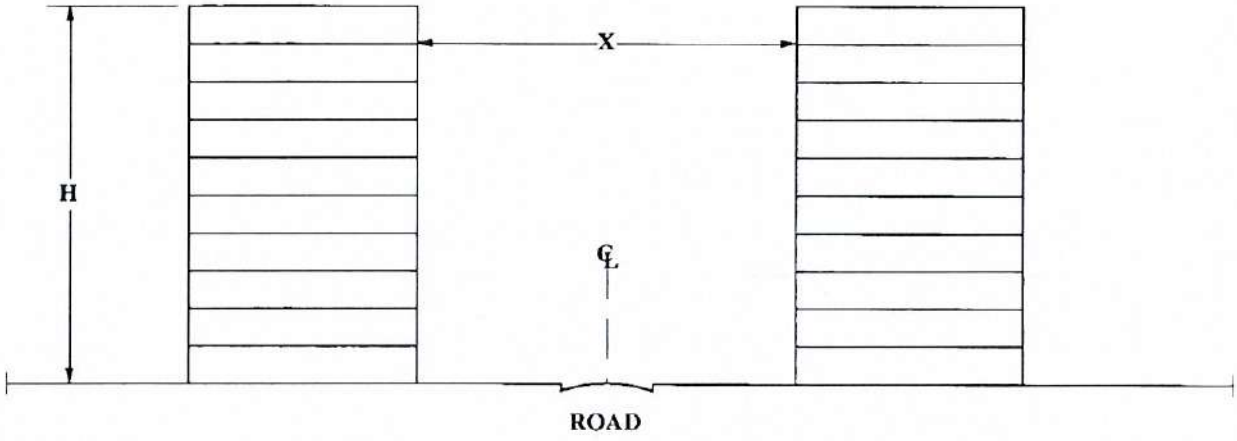


Fig.10.1.b

Where building height are different ,
X = H

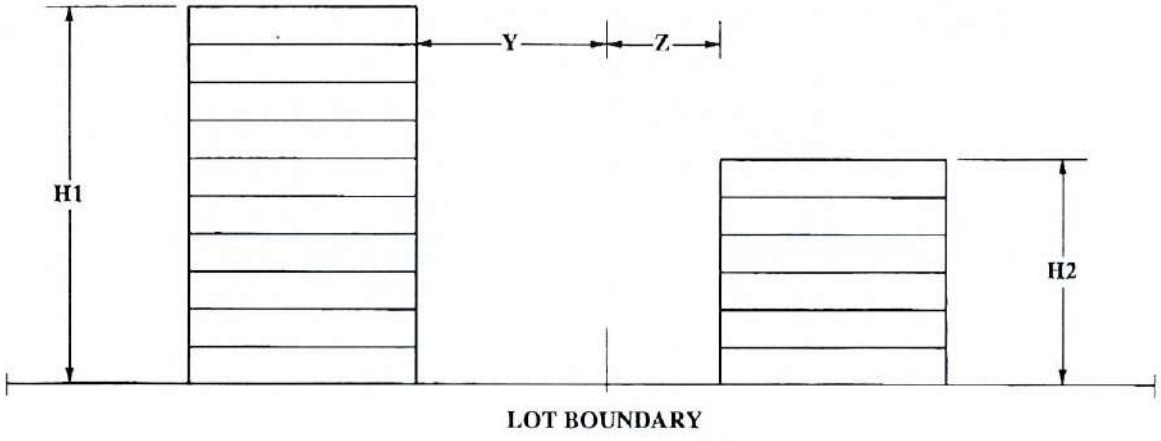


Fig.10.1.c

Where there is no road reserve ,
Y = 1/2 H1
Z = 1/2 H2

FIG. 10.1 MAXIMUM BUILDING HEIGHT AND MINIMUM DISTANCE BETWEEN BUILDINGS

(Half-height standard)

CHAPTER 11

LENGTH OF BUILDINGS

CHAPTER 11

LENGTH OF BUILDINGS

11.1 In Sarawak, regulations limiting the length of residential buildings to a maximum of 14m (45ft.) or 2 $^{1}/_{4}$ times its frontage width, whichever is lesser, have been in use since the introduction of the 1952 K.M.C. Ordinance, Bye-Law 7(3). This regulation was found to be useful in minimising the spread of tuberculosis in the past, especially in residential units above the older type of shophouses which had too great a length in relation to their narrow width. This type of building also tended to be partitioned into small residential cubicles with inadequate natural lighting and ventilation, making these dwellings the ideal breeding ground for the disease.

11.2 The 14m regulation has been very successful in ensuring adequate natural lighting and ventilation that it has also been generally adopted to cover all types of residential dwellings.

11.3 **Definition of maximum building length**

The maximum length of a building is the longest distance between the front and the rear external walls of the building, excluding any permitted extension.

11.4 **Permitted maximum length for residential building**

11.4.1 The maximum permitted length of the intermediate terraced residential building is 14m. (Fig. 1 1.1 a)

11.4.2 The maximum permitted length for dwellings above intermediate units of shophouses is 16.8m (55 ft.). No extension is allowed. (Fig. 11.1b).

11.4.3 For dwellings above end units of shophouses, full coverage may be permitted subject to satisfactory provision of ventilation and lighting while ensuring acceptable degree of privacy.

11.5 **Building length for shophouses**

The most relevant and important consideration with respect to the length of shophouses is the provision of adequate floorspace for the intended commercial activities and ancillary uses. The acceptable length for 'traditional' shophouses may vary, depending on the width of the shophouses, provided they satisfy the minimum floorspace requirement as stated in Table 13.1. The actual length of the shophouses should be appropriate for the setting and the operational requirement of the intended business.

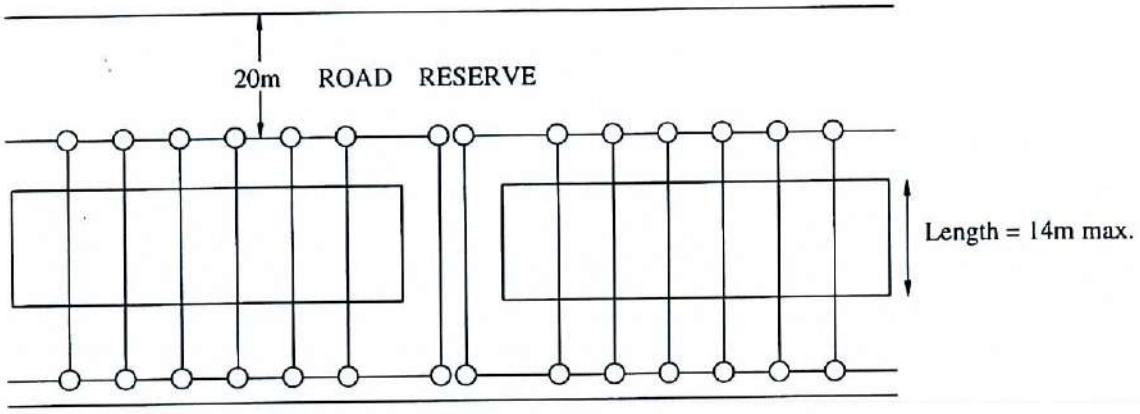


Fig. 11.1.A Permitted length of intermediate terraced residential building

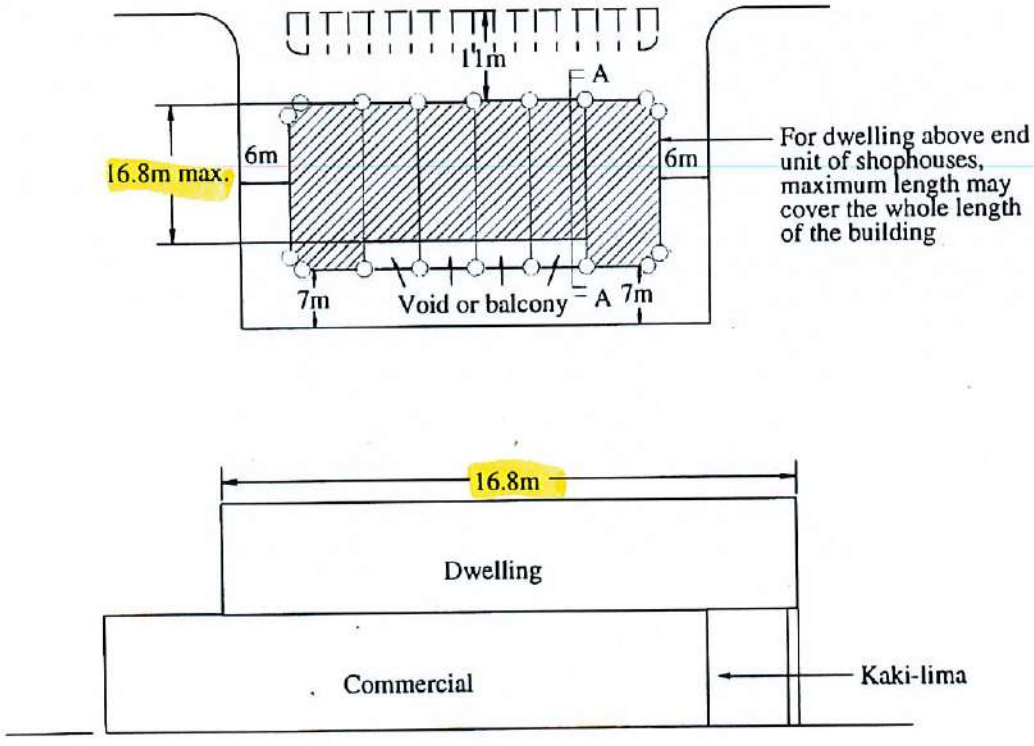


Fig. 11.1.B Permitted length of dwelling above shophouses

FIG. 11.1 PERMITTED LENGTH OF DWELLINGS

CHAPTER 12

WIDTH OF A BLOCK OF BUILDING AND DISTANCE BETWEEN BUILDINGS

CHAPTER 12

WIDTH OF A BLOCK OF BUILDING AND DISTANCE BETWEEN BUILDINGS

12.1 To guard against the spread of fire and to ensure access to the rear of all buildings for fire fighting purposes, the existing regulations of the Fire Service Department limit the width of a block of building to 90m (300 ft.) maximum, and require a space of at least 9m (30 ft.) between two buildings. There is also an existing practice (firebreak) to limit the number of units in terraced development to only 10 in number .

12.2 The above regulations relate well to the requirement for fire fighting, such as the requirement of the Fire Service Department for the provision of fire hydrants at intervals of not more than 90m (about 300ft.) in residential areas.

12.3 In view of the above, the existing regulations are therefore maintained and are tabulated in T able 12.1.

12.4 **Definitions**

12.4.1 The **WIDTH** of a block of building is the longest distance between two side walls of a building block, as shown in Fig. 12.1

12.4.2 A **FIREBREAK** is the space between two buildings, wide enough to minimise the chance of spread of fire from one building to another, as illustrated in Fig. 12.2

Table 12.1: MAXIMUM WIDTH OF A BLOCK OF BUILDING AND MINIMUM FIREBREAK

MAXIMUM WIDTH OF A BLOCK OF BUILDING *(consisting of either detached, semi-detached, terraced or flatted units)*	90 m
MAXIMUM NUMBER OF UNITS IN TERRACED BUILDINGS	10 nos.
MINIMUM FIREBREAK BETWEEN TWO BUILDINGS *(subject to 'half height' rule, see Chapter 10)*	9 m

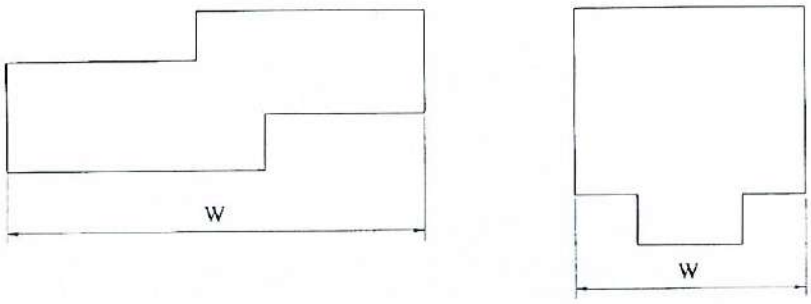


Fig. 12.1.A Width of a block of detached building

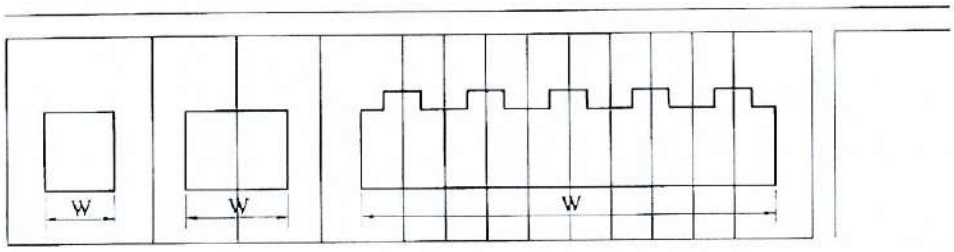


Fig. 12.1.B Width of a block of various types of building

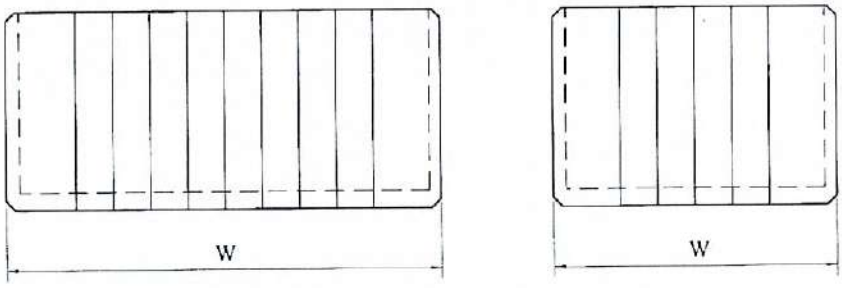
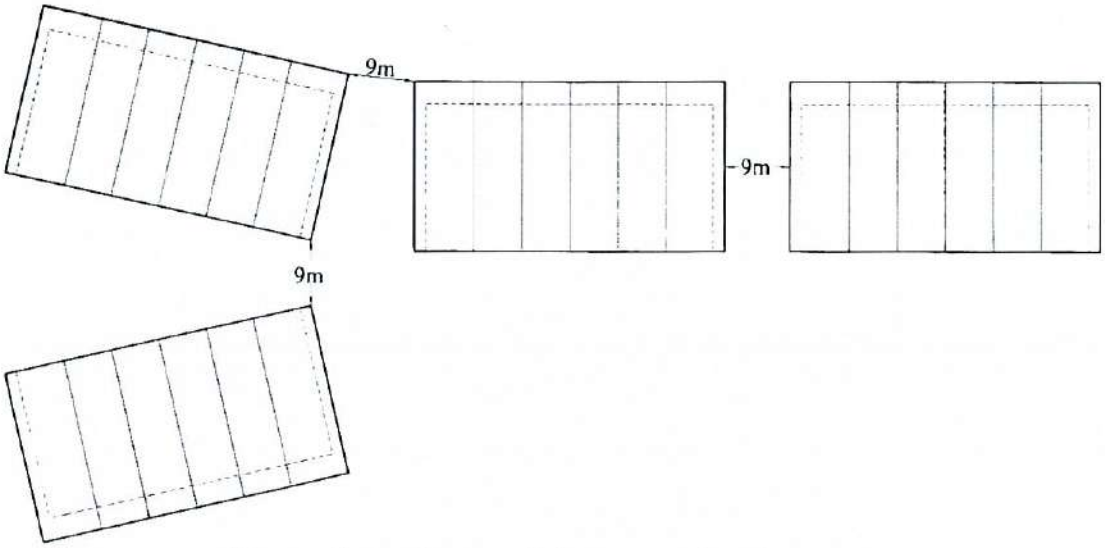


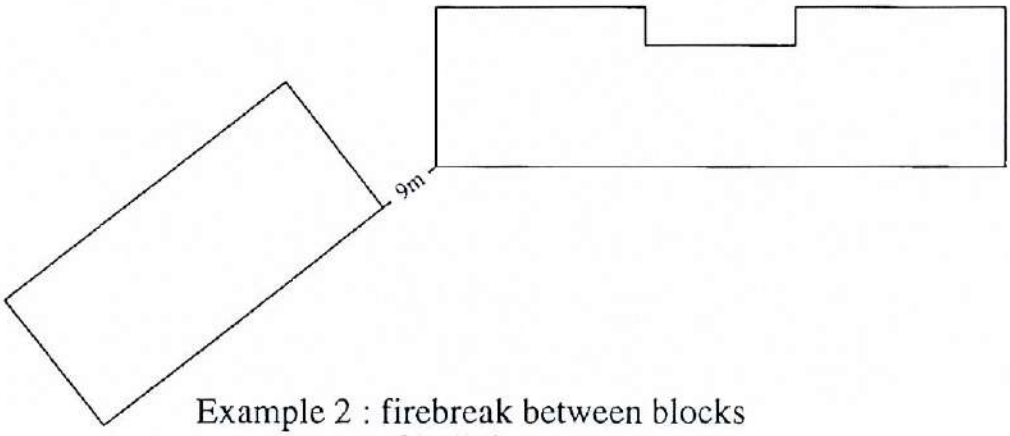
Fig. 12.1.C Width of a blocks of shophouses

W = Width of a block of building
(Maximum width = 90m or 10 units of terraced buildings)

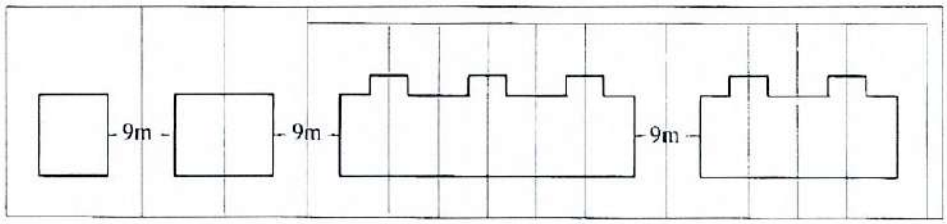
FIG. 12.1 WIDTH OF A BLOCK OF BUILDING



Example 1 : firebreak between shophouses



Example 2 : firebreak between blocks of buildings



Example 3 : firebreak between residential buildings

Note: The above diagrams are some examples illustrating the minimum firebreaks between buildings in different situations. Taller buildings will require a break of greater distance (see Chapter 10) on half-height rule.

FIG. 12.2 FIREBREAK BETWEEN BUILDINGS

CHAPTER 13

BUILDING SIZE AND PLOT SIZE

CHAPTER 13

BUILDING SIZE AND PLOT SIZE

13.1 All buildings should be of sufficient size to provide enough space for all functions of the building. Following this, the building plot should also be large enough to accommodate the intended building which would comply with all the setbacks, plot coverage and other requirements. However, in order to cater for different space requirement and affordability of the potential users, different types of buildings have to be provided. The permitted building widths and lot sizes for the different building types are shown in T able 13.1.

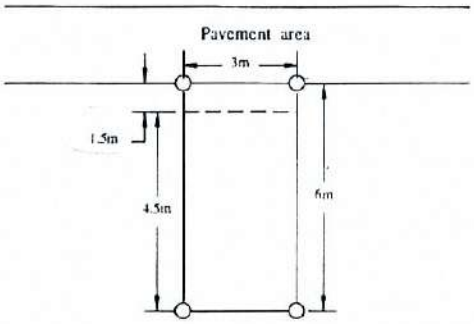


Fig.13.1.A Lock-up shop

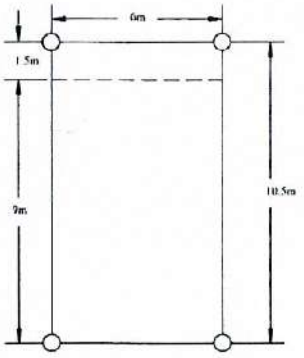


Fig.13.1.B Mini-shop

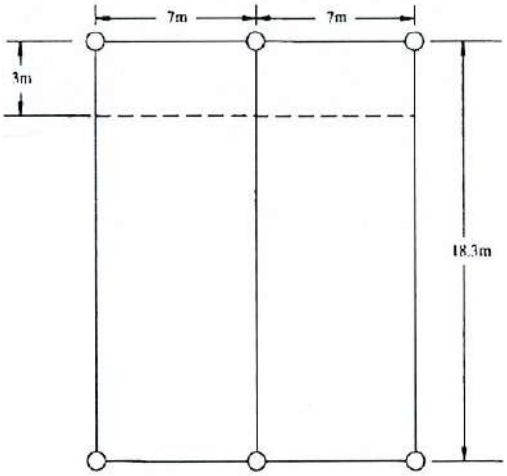


Fig.13.1.C Shophouses

FIG. 13.1 MINIMUM BUILDING WIDTH

Table 13.1: MINIMUM BUILDING WIDTHS AND PLOT SIZES

[NOTE: This Table should be used together with Table 14.1: Plot Coverage]

BUILDING TYPE	Minimum Building Width	Maximum Building Width	Minimum Plot Size*
RESIDENTIAL BUILDING**			
(a) Terraced	6m	-	148m2
(b) Semi-detached	6m	-	260m2
(c) Detached	6m	-	485m2
INDUSTRIAL BUILDING			
(a) Semi-detached	7.5m	10m	432m2
(b) Detached	7.5m	-	624m2
COMMERCIAL			
(a) Lock-up shop	3m	-	13.5m2
(b) Mini-shop	6m	-	63m2
(c) Shophouse***	6m****	-	110m2

NOTE:

* *Minimum plot sizes do not necessary equal to the size of the plot as determined by minimum setbacks.*

** *Terraced buildings for residential uses are taken to be intermediate terraced buildings. Corner terraced buildings share the same standards as semi-detached buildings.*

*** *(i) Where the design of the layout necessitates the shoplots to be of irregular shape (e.g. where the rear has to be narrower than the front), the rear of the building should be not less than 5m wide so that it is wide enough to accommodate the rear door, refuse chute, etc.*

(ii) Where side 'Kaki-Lima' of 1.5m width is required for corner shophouse, the width of the shophouse should be at least 7.5m.

**** *Building width preferred 7m.*

CHAPTER 14

PLOT COVERAGE AND PLOT RATIO

CHAPTER 14

PLOT COVERAGE AND PLOT RATIO

14.1 One of the main purposes of development control is to regulate the amount of development that may be permitted on any plot of land. The amount of development may be controlled by various mechanisms such as setbacks, height limitation, plot coverage and plot ratio, as well as policies on permitted density for the development. Whereas setbacks and height limitation merely have the side-effect of restricting the amount of development on a given piece of land, plot coverage and plot ratio are the only standards that are designed solely for this purpose.

14.2 **Plot coverage**

Plot coverage is defined as the maximum covered floor area of a building (excluding any permitted extension), measured along the outermost external walls, expressed as a percentage of the plot area, i.e.

$$\text{PLOT COVERAGE} = \frac{\text{MAXIMUM COVERED FLOOR AREA}}{\text{PLOT AREA}} \times 100\%$$

Plot coverage is used to regulate the maximum floor coverage of building on a plot of land. Used together with setbacks, plot coverage requirement would ensure certain minimum amount of open areas is available within a building plot. Not withstanding the fulfilment of the setback requirements, development should also comply with the plot coverage as set out in Table 14.1

Table 14.1: MAXIMUM PLOT COVERAGE

BUILDING USE AND TYPE		MAXIMUM PLOT COVERAGE (%)
RESIDENTIAL		
(a)	Detached dwellings	25
(b)	Semi-detached and corner terraced dwellings	35
(c)	Intermediate terraced dwellings	40
(d)	Flats/Apartments/Condominium	30
COMMERCIAL		
(a)	Shophouses (including mini-shops and lock-up shop)	100
(b)	Complexes (including offices and hotels) (* to be determined case by case, based on locations and other factors)	*
INDUSTRIAL		
(a)	Semi-detached	60
(b)	Detached	60

14.3 Plot Ratio

14.3.1 Plot ratio is a concept used in development control which imposes a floor area limitation on the total size of a building without dictating either its height or bulk. Its purpose is to put an upper limit on the amount of development permitted in a particular area so that the existing or intended public infrastructures and utilities would not be strained or over-burdened. One of the main advantages of the plot ratio regulation is that it gives maximum freedom and flexibility to design the building in the most economical manner without dictating its shape.

14.3.2 Plot ratio is the total gross area of all the floors of a building expressed as a percentage of the area of the lot on which it stands, i.e.:

$$\text{PLOT RATIO} = \frac{\text{TOTAL GROSS FLOOR AREA}}{\text{GROSS SITE AREA}} \times 100\%$$

14.3.3 Gross floor area in this context is defined as the area at each floor level enclosed within the external walls of the building, excluding any permitted extention.

14.3.4 Gross site area is normally defined as the individual lot before all new road reserves, open spaces and major road widenings have been excised. In commercial areas where re-development of a single site is intended, the site area for the purposes of assessing plot ratio is deemed to be the site prior to development, i.e. before excising land for road widening. Thus developers purchasing an existing lot and intending re-development of that lot for the same purpose can easily calculate the maximum building size that will be permitted.

14.4 Application of plot ratio

14.4.1 Basically plot ratio can be used to help the Planning Authority in the control of the intensity of development in a given area or a particular plot of land. The plot ratio for any given area or piece of land would depend on the types of development and their locations, where the permitted heights of buildings are not specified (either in the number of storey or absolute height). The actual plot ratio for each zone or parcel of land would be individually specified by the Authority. For example, in auctioning or alienating a piece of State land, the Authority can declare that the land should have a plot ratio of, say, 200%.

In addition, in application for variation of the title condition and subdivision of land, plot ratio for each resultant parcel of land can be prescribed and incorporated as one of the special conditions of title. This would become the controlling standard for the eventual development of the land. It would also help to determine the potential value of the land, when an assessment or valuation is required.

14.4.2 Another use of plot ratio is to enable greater flexibility in building design than most other development control standards. Plot ratio can facilitate various building design options for a given site; this is illustrated in Fig. 14.1.

Given a site with an area of 1,000M2 and a permitted plot ratio of 200%, the total gross floor area allowed would be 2,000M2. The following permutations are possible:-

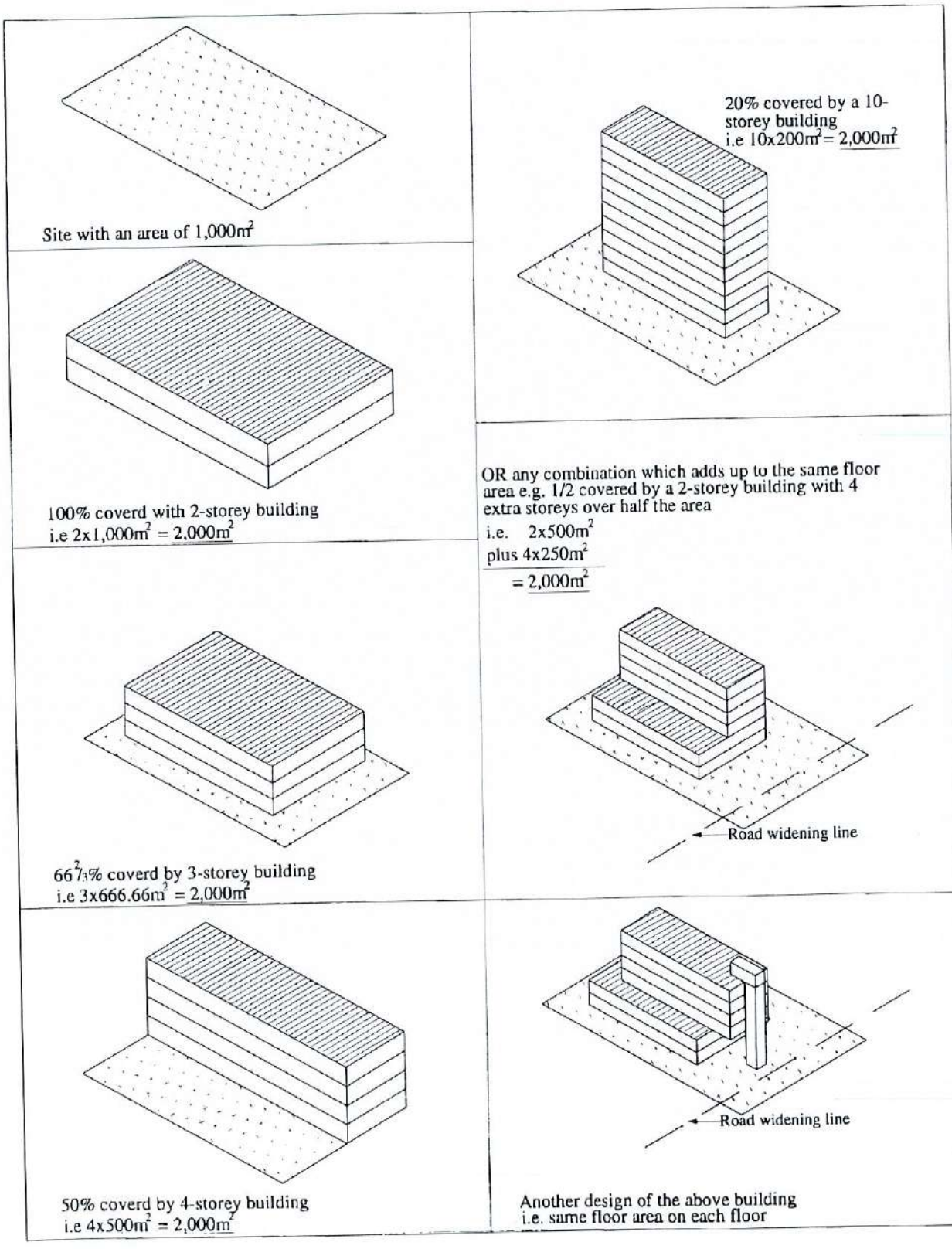


FIG. 14.1 EXAMPLE OF POSSIBLE VARIATION WITH A 200% PLOT RATIO

PART V

OPEN SPACE

CHAPTER 15

OPEN SPACE REQUIREMENTS

CHAPTER 15

OPEN SPACE REQUIREMENTS

15.1 Introduction

This chapter is concerned with the provision of enough open space of various types and sizes that would form part of an overall pattern of open space system in an urban environment. Of particular concern is the need for developers to provide sufficient open space in the right places to cater for the outdoor activities of residents in housing areas.

15.2 Category of open space

Open space may be categorised into Private Open Space which is meant for the exclusive use of the occupants of a dwelling, and Public Open Space which is meant for the enjoyment of the community .

15.2.1 Private open space

Private open space is normally confined within the building plot, in the form of balconies, front, side and rear gardens. The size of a private open space is dictated by the required minimum building setbacks, maximum plot coverage, etc. as prescribed in the preceding Chapters.

15.2.2 Public Open Space

For the purpose of development control, public open space can be taken to mean open space which is accessible to a particular community or the general public.

15.3 Hierarchy of open space

15.3.1 The required sizes of open space vary with their locations and functions, according to the hierarchy of open space. In general, open space can be grouped under the following hierarchy , in ascending order of size and importance.

[1] **Private Open Spaces** are normally the gardens and compounds of houses and other private or semi-private premises, such as government offices.

[2] **Minor or Incidental Open Spaces** which are located within a cluster of houses in residential areas, usually are suitable for the provision of toddlers' playgrounds and where space permits, may include some hard surface areas for informal games. This type of open space can occupy the central open area in an enlarged cul-de-sac, or a courtyard among clusters of houses. The area to be provided for this type of open space could be quite small (but not less than 150m ^{2}) and could be of irregular shapes.

[3] **Principal Open Spaces** are the main open space in a neighbourhood. They are large enough to accommodate such recreational facilities as a tennis court, a basketball court and children' s play equipment. An area of 1,000m^2 or more is required.

[4] **Community Padangs or Local Centre Parks** which are usually located near the local centre of a housing area, serve mainly as communal open spaces. Together with other facilities such as shops and primary schools, these open spaces would form part of the overall central facilities for the residential areas. Their main function is to provide communal recreational facilities demanding larger areas (e.g. football fields, additional tennis courts, basketball courts, or similar facilities). A minimum area of 2,500m^2 is required.

[5] **District Parks** which accommodate a wider range of recreational facilities, particularly those that demand a larger population base to justify their provision. Full size football field, running tracks, and even swimming pools are the types of facilities that could be located within these parks. This type of park serves a larger population and catchment area which includes several sections of a town.

[6] **Central Padang or Town Park** is the major open space of a town, serving the whole town population, where the full range of activities, including passive and active recreation, civic, ceremonial and cultural gatherings and functions, may take place.

[7] **Regional/National Park** is designated in areas of natural beauty or of scientific value, catering for people from a much wider area.

15.3.2 For the purpose of development control, only Groups 1-4 as listed above may be appropriate in most cases. The provision of 'Private Open Spaces' (Group 1) has been ensured by virtue of the requirements of the various development control standards (e.g. building setbacks and plot coverage). While the provision of District Parks, Town Parks and Regional/National Parks (Groups 5-7) is normally within the scope of government agencies; the provision of minor open space, principal parks and in a larger development, local centre parks should be within the purview of a housing developer .

15.4 Distribution of residential open space

15.4.1 To serve its intended purpose, the planned open spaces should be located and distributed at the places that are easily accessible, and where they are needed most. Although it is not possible to give definitive formula on the locational distribution of the various types of recreational open spaces in the hierarchy , Fig. 15.1 does attempt to give some general indications.

15.4.2 It is desirable that linkages in the form of walkways and cycle paths should be planned to connect the various types of open spaces as listed in the hierarchy above. In particular, in the designing of housing layouts, these linkages should be well thought-out and incorporate in the plan (see Chapter 7). Such planned linkage is a type of recreational facility in itself, for example, it can become a system of jogging trails or cycle paths.

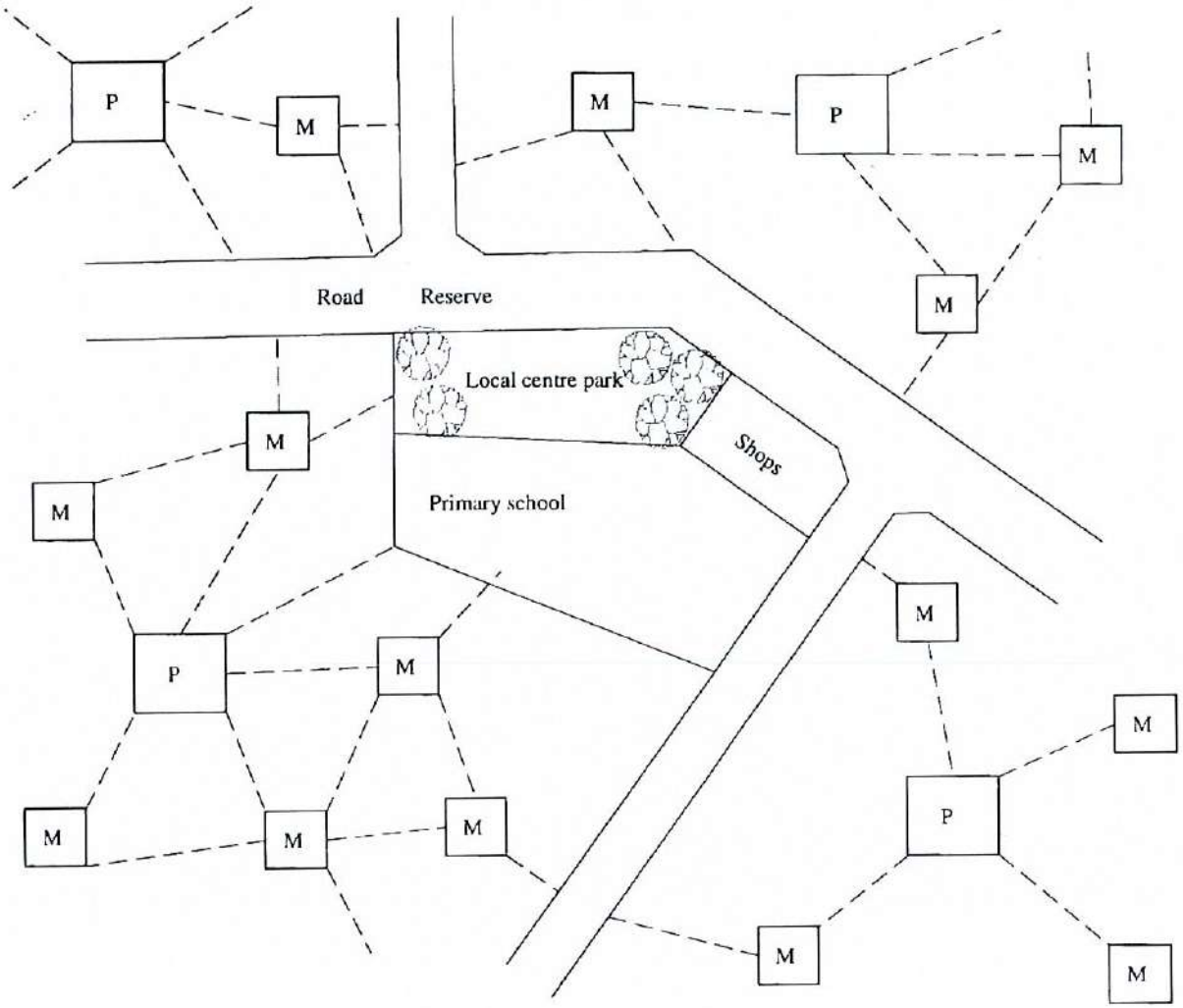


FIG. 15.1 DISTRIBUTION OF RECREATIONAL OPEN SPACE IN RESIDENTIAL AREAS

15.5 Open space requirement

15.5.1 It is generally accepted that the application of rigid standards to the provision of open space is not always appropriate. Different areas have different needs and a wide range of factors influences and constrains the location and amount of open space that can be provided for a given area. However , to facilitate development control, some standard will need to be set, so as to serve as a guide when assessing open space requirement.

15.5.2 The standards for open space requirement may be expressed as the area required for every 1,000 people. Based on an examination of the standards used in different countries, the standard of 2.83 ha (7 acres) per 1,000 people appears to be the yardstick used in most areas, to ensure adequate provision of open space. This figure may be considered generous in the local context, but may be adopted as a guide to determine the overall requirement of a township. This standard will include the provision of such open space as town parks, sports complex, and other major recreational facilities.

15.5.3 Open Space Standard: Most development applications, however, are local in nature and with the low density allowable the standard of $8500m^2$-$9500m^2$ 2(2.1-2.3 acres) per 1,000 people is more appropriate, whereby the appropriate areas of local open spaces (groups 2-4 in the open space hierarchy) can be reserved in the proposed development. This standard works out to be more or less equivalent to the present practice of procuring 10 % of the residential development site area for open space, based on the usual development density of 19.8 units per hectare (8 units per acre). This standard shall therefore continue to be adopted.

15.5.4 Usable Open Space: To ensure that the open space reserves in a residential area can be fully utilized, the area to be planned for open space purposes should be "usable open space". Usable open space is defined as the proportions of development site area which are to be reserved for open space, after deducting any areas that are :

(a) roads and drains;
(b) road reserves and drain reserves; and
(c) any land with slopes exceeding 25% after the necessary earthworks.

15.5.5 Usable open space may consist of:

(a) Recreational open space - Its function is to provide areas for playing fields and other sports and recreational facilities, as well as children's play equipment; and

(b) Amenity open space - Its function is to provide area for soft and hard landscaping primarily for the purposes of environmental improvement and/or aesthetic effects. Examples are buffer or transitional zones between residential areas and other landuses, reserve for preserving the natural features of a site and ornamental gardens.

15.5.6 As a general rule, developers undertaking the various types of development projects should normally be required to surrender the prescribed amount of open spaces as shown in T able 15.1.

Table 15.1: PROVISION OF USABLE OPEN SPACE

Type of use		Usable open space (% of net development site area)	Minimum recreational open space (% of usable open space)	Amenity open space* (% of usable open space)
1.	Residential**	7.5% - 10%	75%	25%
2	Commercial	2.5%	25%	75%
3.	Office	2.5%	25%	75%
4.	Hotel	2.5%	25%	75%
5.	Industrial	2.5%	25%	75%

Note: * *approximate percentage, being the remaining area after deducting the minimum area for recreational open space.*

** *subject to the condition that the land under residential development is 1 hectare or more.*

15.6 **Recreational Open Space Requirement**

Table 15.2 gives a basic guidance as to the number and the minimum area for the various types of recreational open space in the hierarchy which are required to be provided by housing developers. The remaining balance of the usable open space area should be given entirely towards developing amenity open space.

Table 15.2: RECREATIONAL OPEN SPACE (ROS) REQUIREMENT FOR RESIDENTIAL DEVELOPMENT

Number of Dwellings	PRINCIPAL ROS		MINOR ROS		LOCAL CENTRE PARK	
	Number	Min. Area	Number	Min. Area	Number	Min. Area
Less than 20 or land less than 1 ha*	Nil	see note	Nil	see note	Nil	-
20-50	1	1000	1-2	150	Nil	-
51-100	1	1500	2-4	150	Nil	-
101-150	1	2000	3-6	150	Nil	-
151-200	2	1500	4-8	150	Nil	-
201-250	2	2200	5-10	150	Nil	-
251-300	2	2500	6-12	150	Nil	-
300+	2	2500	6-12	150	1	1 ha.

plus the appropriate principal and local recreational open space.

Note: **For smaller developments involving houses of less than 20 units or land of less than 1 hectare, the developer may be required to surrender certain portion of land, so that together with the reserve surrendered from the neighbouring lots, an appropriate minor/ principal open space may be made up. Where this is not practicable, the developer may be required to contribute financially towards the cost of providing open space not located on the land itself, the amount of which to be determined by the authority, possibly as a percentage of the market value of the land.*

PART VI

STANDARDS FOR OTHER MISCELLANEOUS DEVELOPMENTS

CHAPTER 16

PETROL FILLING STATION

CHAPTER 16

PETROL FILLING STATION

16.1 Introduction

By its nature, a petrol filling station attracts large number of motor vehicles which may pose problems of traffic hazard and congestion in the area it is located. As a type of landuse, if not properly planned, petrol filling station can also be a potential source of environmental nuisance and fire hazard to the neighbours and the general public. Thus, the siting and layout of these stations need to be regulated.

16.2 Location

16.2.1 The following general factors should be taken into account when siting a petrol filling station:

(i) Petrol filling station should be sited away from road junctions, schools, high terrain areas and other such 'unsuitable' areas which may give rise to traffic congestion, hazards or nuisance;

(ii) No petrol filling station should be located on road reserve smaller than 20m;

(iii) Petrol filling stations should not be sited directly opposite each other across the road, unless there is a central divider to prevent cross traffic. They should also be at least 60m away from any break in the central divider.

(iv) Petrol filling station should not be sited on steep slope or sharp bend.

16.2.2 **Siting near junction**

16.2.2.1 Petrol filling station should be sited at least 45m away from a minor road junction (road reserve width of 20m) or 90m away from a major road junction (road reserve width of 25m and above) (Fig. 16.1). In cases where these minimum distance cannot be observed and where the siting may be allowed, then a 12.5m side service lane need to be provided, at least 60m away from the junction, with the ingress and egress of the station channelled on to this side lane. (Fig. 16.2)

16.2.2.2 Siting of petrol filling station at a junction itself is not encouraged. However , in cases where it warrants consideration, then the following conditions should be fulfilled:

(a) A filter/service lane of 12.5m wide should be provided;

(b) The ingress and egress should be at least 60m away from the junction;

(c) If the roads are major roads, then there should be central dividers on these roads to prevent too much cross traffic.

(d) The junction should have clear sight-line i.e. no structure or building should cause any visual obstruction;

(e) There should be a clear sight distance from the junction to the ingress and egress.

16.3 Minimum size of plot

In order to ensure the site is large enough for vehicular circulation and the installation of all the appurtenances of a petrol filling/service station, the site should be about 1,000m ^{2} (10,000 sq ft.), excluding the area taken up by the 4.5m wide green buffer (see 16.4.4 (iv) below). The frontage width should be 35m minimum and the length should be 30m minimum. (Fig. 16.3) All structures are to be setback at least 9m from the main road or service lane.

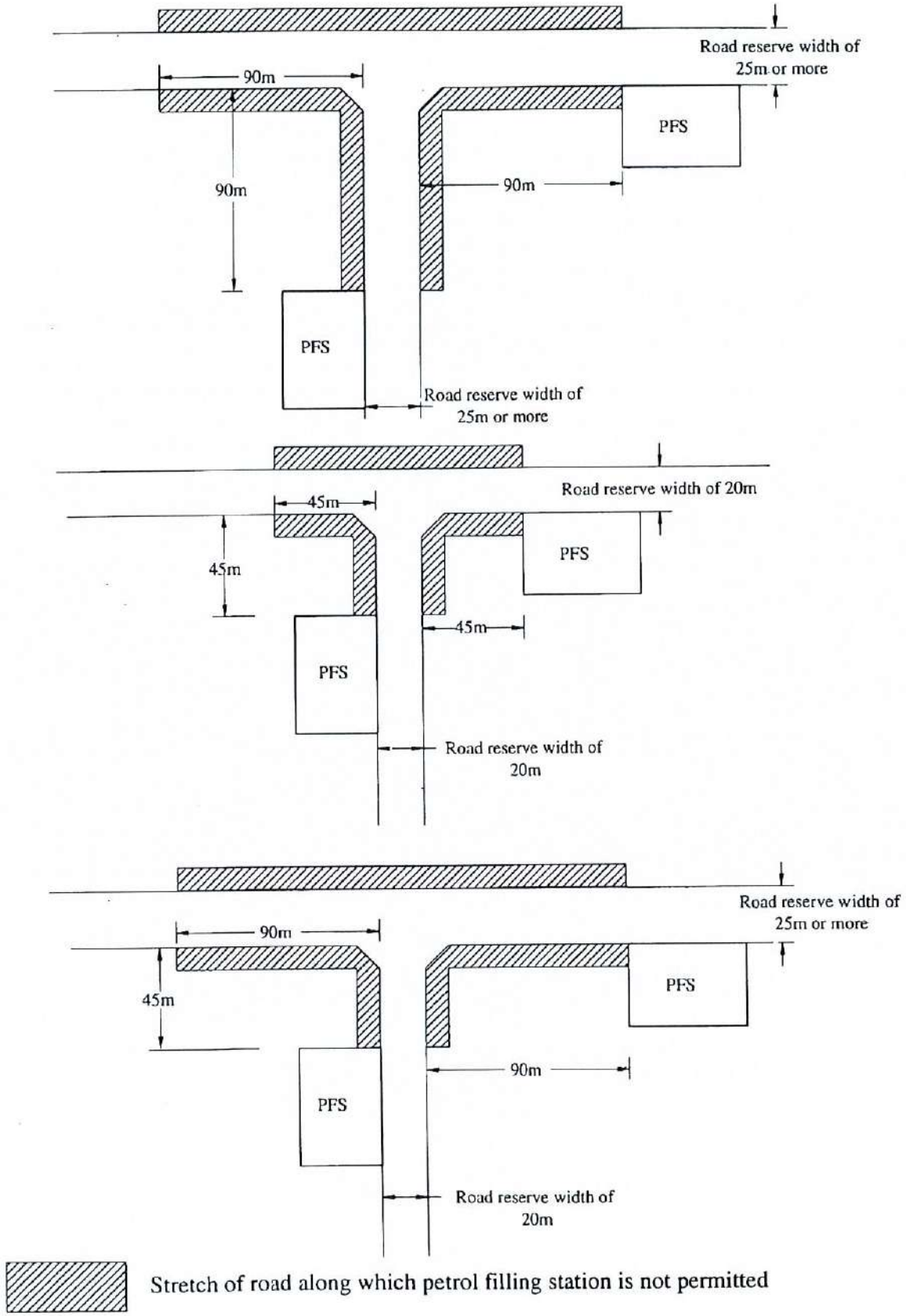


FIG. 16.1 SITING OF PETROL FILLING STATION NEAR ROAD JUNCTION

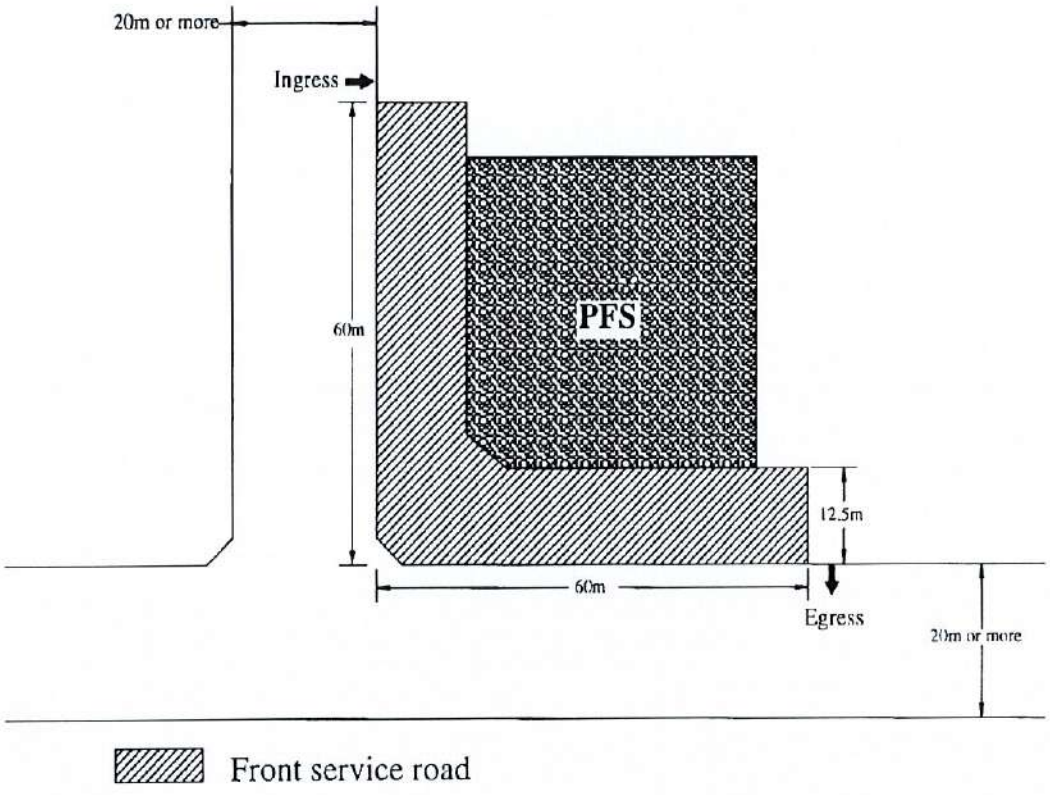


FIG. 16.2 SITING OF PETROL FILLING STATION AT ROAD JUNCTION

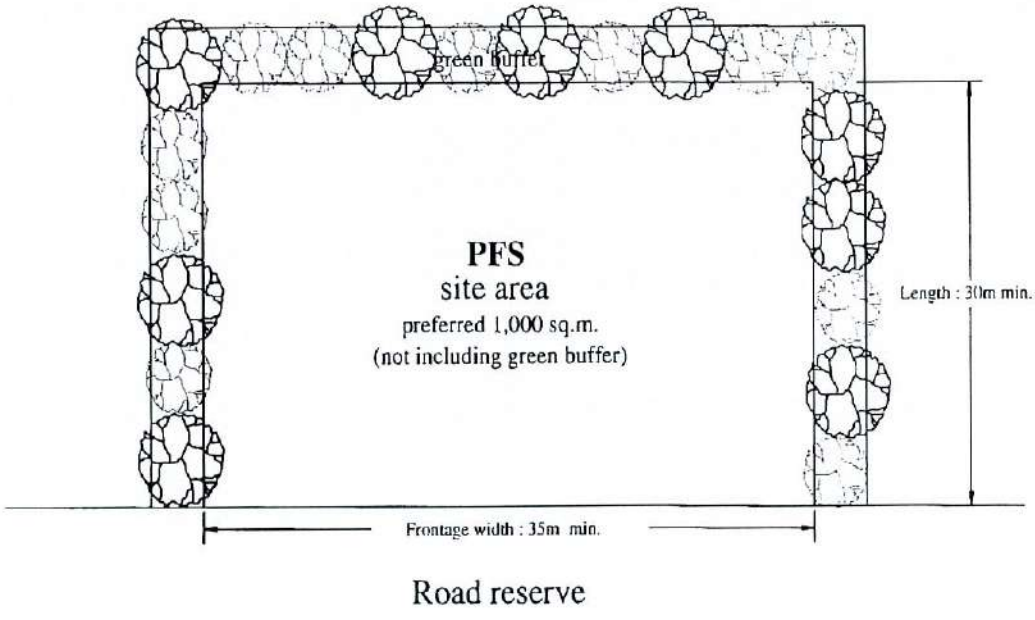


FIG. 16.3 PREFERRED PLOT SIZE OF PETROL FILLING STATION

16.4 OTHER CONSIDERATIONS :

16.4.1 Ingress and Egress:

(i) Not more than one ingress and one egress at the frontage is allowed;

(ii) The ingress and egress of the petrol filling station should not interrupt free flow of traffic on the main road; there should only be a maximum of one ingress and one egress on to the main road;

(iii) The angle of the driveway should not be more than 45^{o}: a smaller angle is preferred for ease of entry and exit, as well as for road safety. (Fig. 16.4); and

(iv) The width of the driveway should not be less than 9m, but not exceeding 15m. Direction signs must be clearly posted and lighted. (Fig. 16.5)

16.4.2 Internal circulation:

(i) All internal circulation to be one way;

(ii) If the petrol filling station provides services other than the normal selling of petrol and servicing of vehicles (e.g. provision of a full scale garage, grocery/confectionary store), then adequate car parking queuing spaces and separate circulation lane to the rear of the pumping station are to be provided.

16.4.3 Difficult Site

If the site is at a different level from the road, the gradients of the ingress and egress should not be more than 1:15 or in accordance with the requirement of the appropriate authority .

16.4.4 Environmental and Safety Considerations

(i) Clearance must be obtained from the appropriate authorities of the safety of the method and location of the installation of the storage tank, pumping stations, etc.;

(ii) Oil spills and other waste materials should be properly disposed of and not simply discharged into roadside drains;

(iii) For privacy, health and safety reasons, a fire-resistant wall (e.g. brick wall of a minimum height of 1.8m) should be erected on all sides except the front. This wall, if built to a height of 2.4m at the required area, will also serve as a 'splash wall', minimising dirty water , oil or paint (caused by car washing, cleaning or repairing) from spreading into the neighbouring area;

(iv) In addition, a landscaped buffer area of 4.5m wide surrounding the wall should also be surrendered to the State.

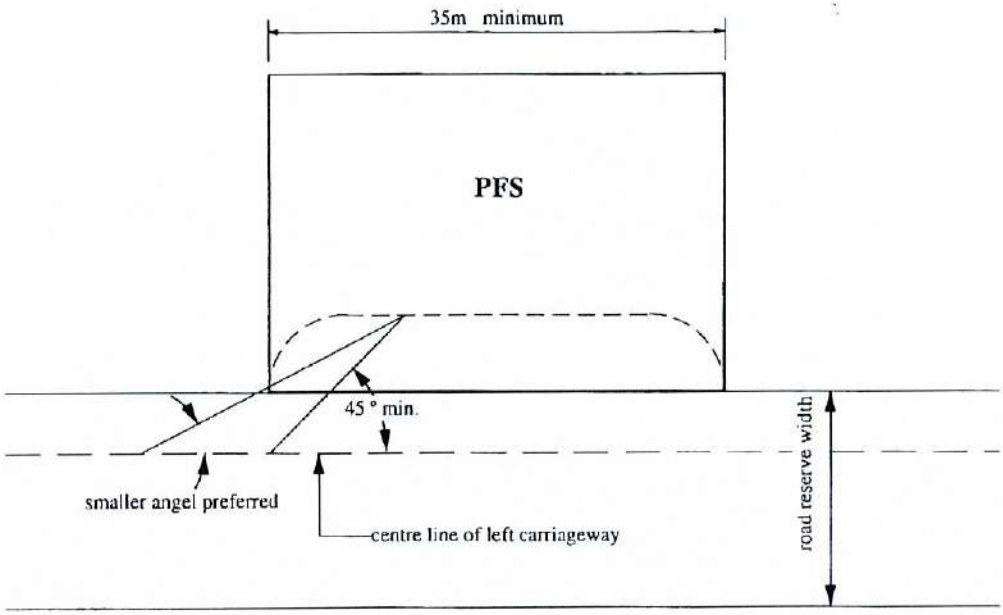


FIG. 16.4 ANGLE OF DRIVEWAY

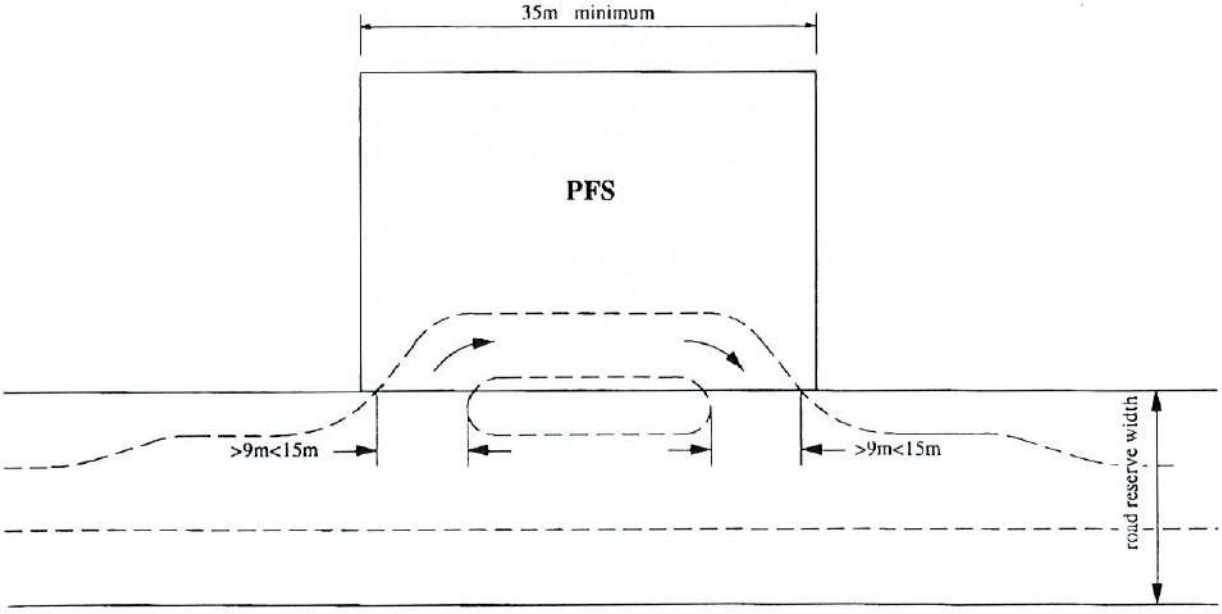


FIG. 16.5 WIDTH OF DRIVEWAY

16.5 **Summary**

The various standards for the locational and setback requirements are set out in T able 16.1 and Figure 16.6.

TABLE 16.1: STANDARDS FOR THE SITING AND LAYOUT OF PETROL FILLING STATION

A.	**SITING**	
(a)	Minimum distance of site from major road junction (road reserve width of 25m or more)	90m
(b)	Minimum distance of site from minor road junction (road reserve width of 20m or less)	45m
B.	**LAYOUT**	
(a)	Minimum frontage width of lot	35m
(b)	Minimum length of lot	30m
(c)	Minimum width of driveways for ingress and egress	9m
(d)	Minimum setback of petrol pumps from edge of road reserve	9m
(e)	In urban areas where land size is restricted, buffer zone with screen planting may be waived	4.5m wide
(f)	A fire-resistent screen wall (e.g. brick wall) in urban areas on all sides of the site except where it fronts onto a road	1.8m min height

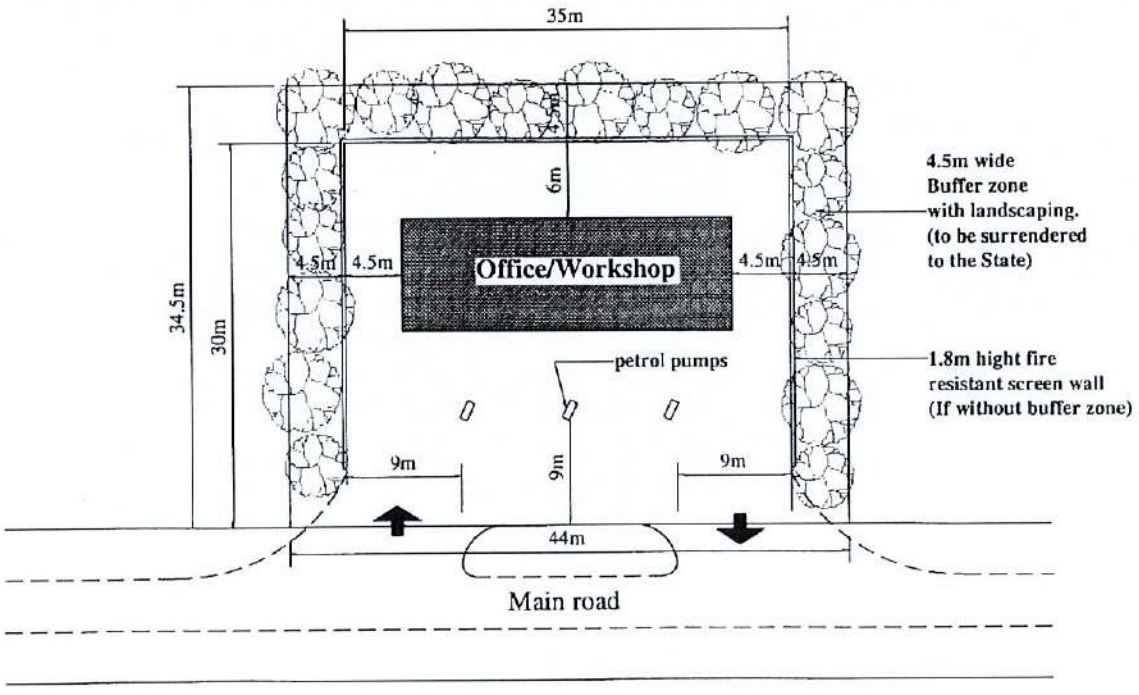


FIG. 16.6 SETBACK REQUIREMENTS OF TYPICAL PETROL FILLING STATION

CHAPTER 17

ELECTRICAL SUBSTATION

CHAPTER 17

ELECTRICAL SUBSTATION

17.1 Introduction

17.1.1 Electrical substation is a common structure in the townscape. As with most landuses, some form of setback standards should be applied to the siting of these structures so as to ensure safety , to ameliorate the environmental impact, to minimise potential hazard to motorists and to allow for possible widening of road reserve.

17.1.2 Normally, except in cases of small developments where the supply can be fed direct from an existing substation with spare capacity, developers will be required to incorporate a substation of appropriate capacity to serve their development, and in certain circumstances adjacent developments. Sarawak Electricity Supply Corporation (SESCO) should be consulted on the availability , type, required capacity and other design details of the substations and the routing of cables.

17.2 Location and access

17.2.1 From the technical point of view, the preferred location for substations is central to the area served. Except where a substation is incorporated within a major building, land must be set aside for each substation which must be provided with protective fencing. (SESCO requires a chain-link fencing or hollow-block concrete wall of 3m height).

17.2.2 In low-rise housing areas, substations tend to be located adjacent to or within areas of open space. If this is the case, they should be carefully sited and screened so as not to detract from the usefulness or appearance of the space. Care should also be taken with the routing of overhead cables to the substation and with the siting of poles.

17.2.3 As a general rule, in low rise residential areas in Sarawak, one substation is required to serve an area of 250m radius.

17.2.4 The substations must be accessible to maintenance vehicles at all time. The access shall be built to withstand heavy vehicles with a total weight of about 10 tons. A minimum width of 3m is required for the access road.

17.3 Setbacks

17.3.1 The most common electrical substation is the 11 kv. type. This is the type whose site is normally required to be provided by a developer in a development scheme. The standard setbacks for a common 11 kv. electrical substation are as shown in Fig. 17.1. Electrical substations of higher voltage (e.g. 33kv) require larger sites, but the minimum setbacks are similar. However, due to their greater environmental impact, more stringent measures may need to be taken in their siting and layout.

17.3.2 A new type of compact cabinet-type 11 kv. substation has just recently been introduced by the Sarawak Electricity Supply Corporation (SESCO), and will be installed in the major towns of Sarawak. This type of compact substation, which is deemed to be safer and neater appearance, may require minimal setbacks. However, the normal minimum setback requirement from road reserves still needs to be complied with, as shown in Fig. 17.1.

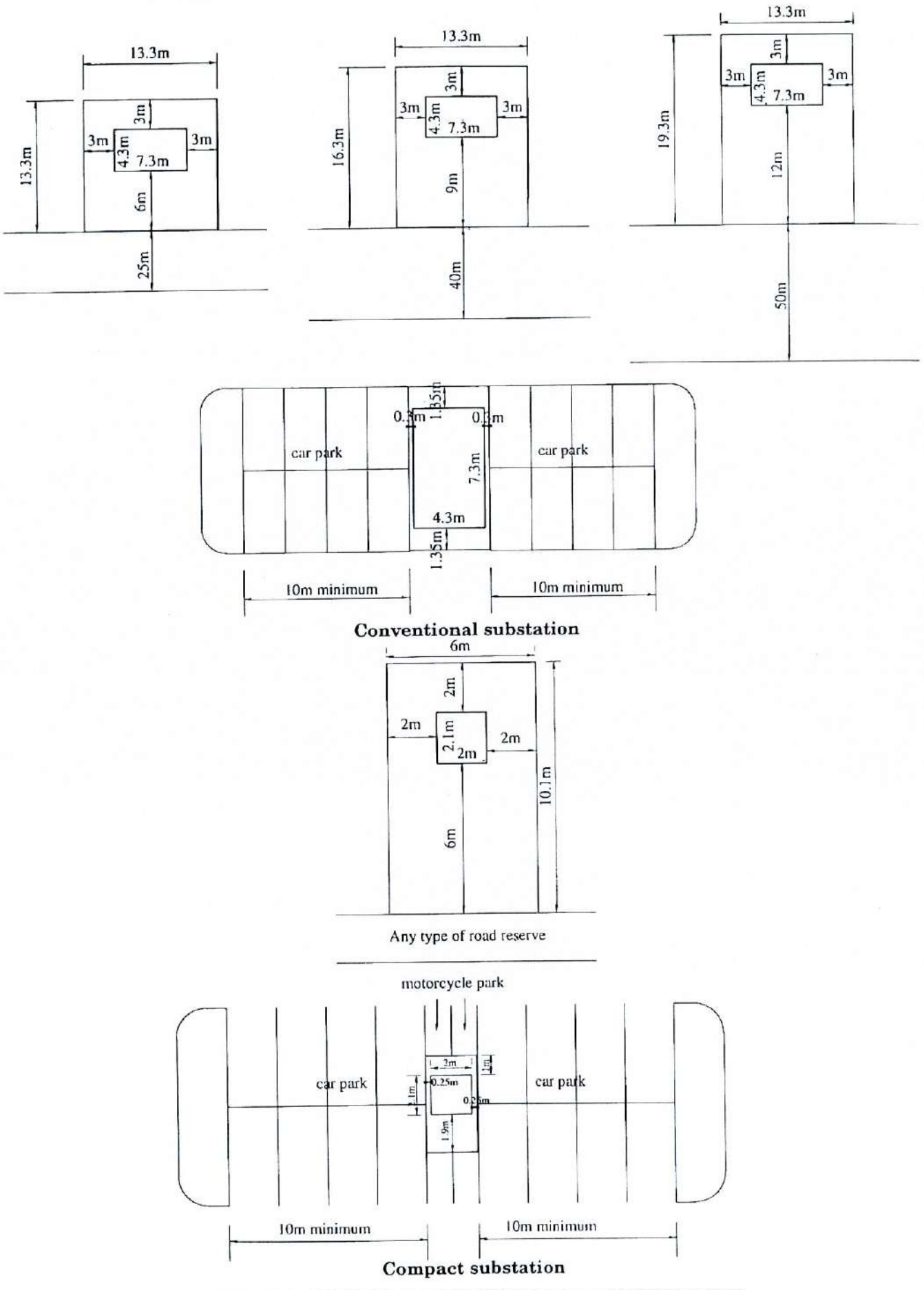
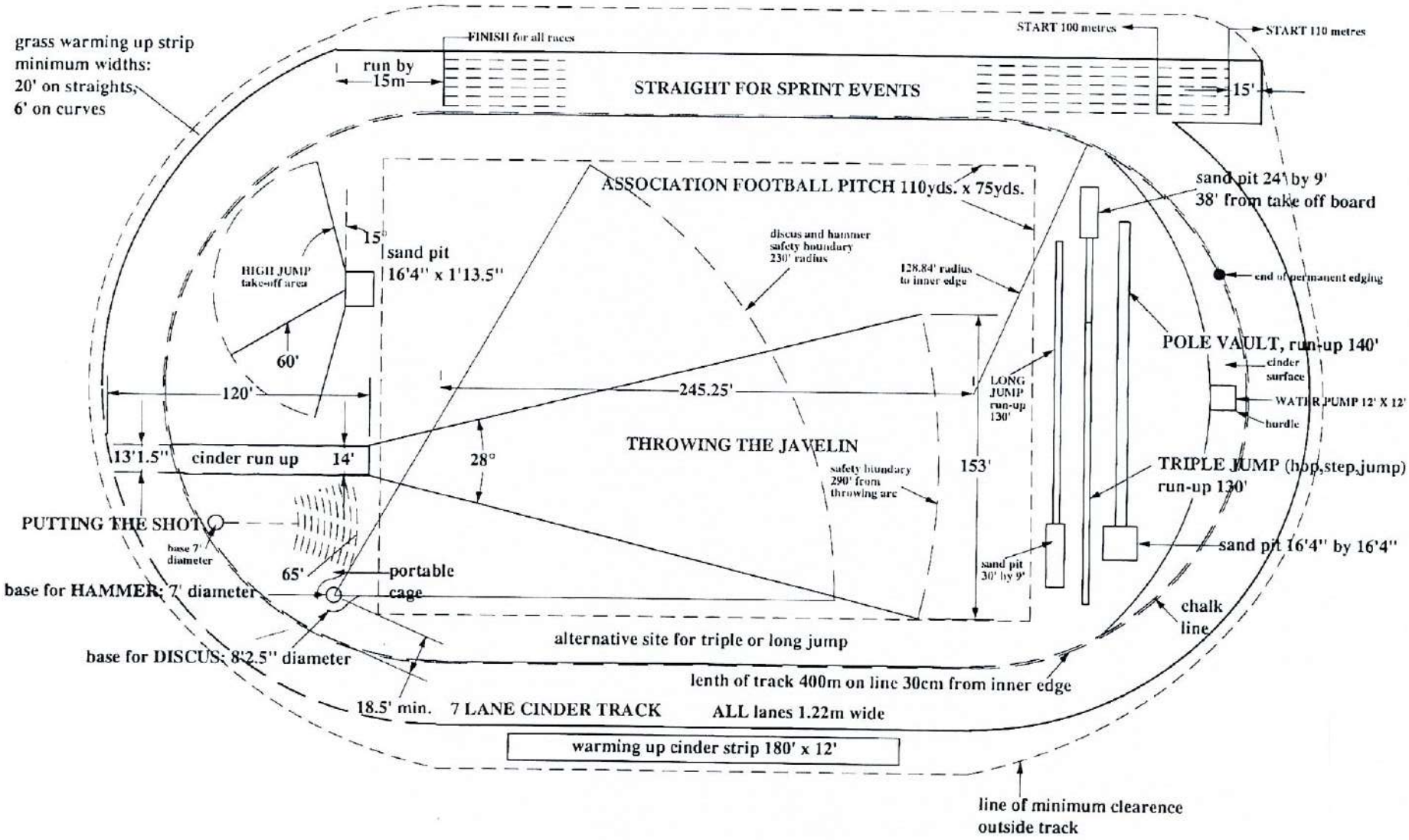


FIG. 17.1 SITING OF ELECTRICAL SUBSTATION

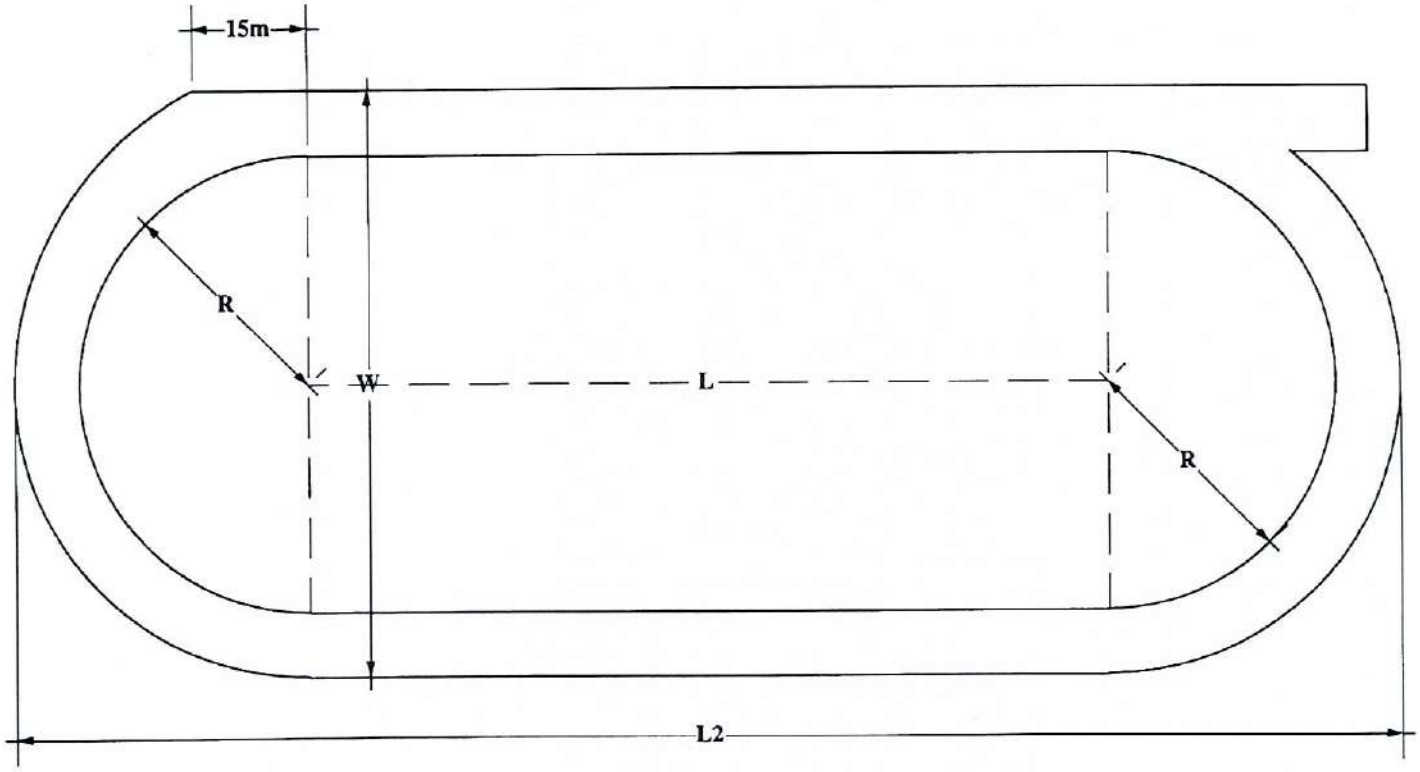
APPENDIX I

SPORTS FACILITIES

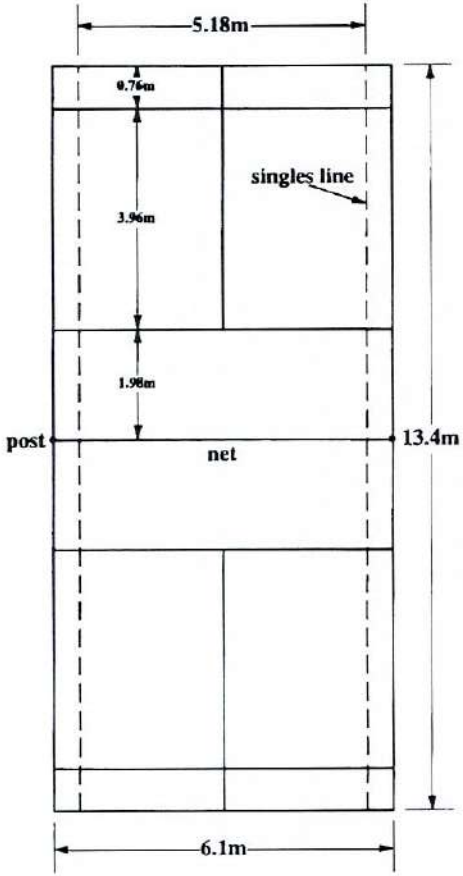
STANDARD LAYOUT FOR ATHLETIC STADIUM



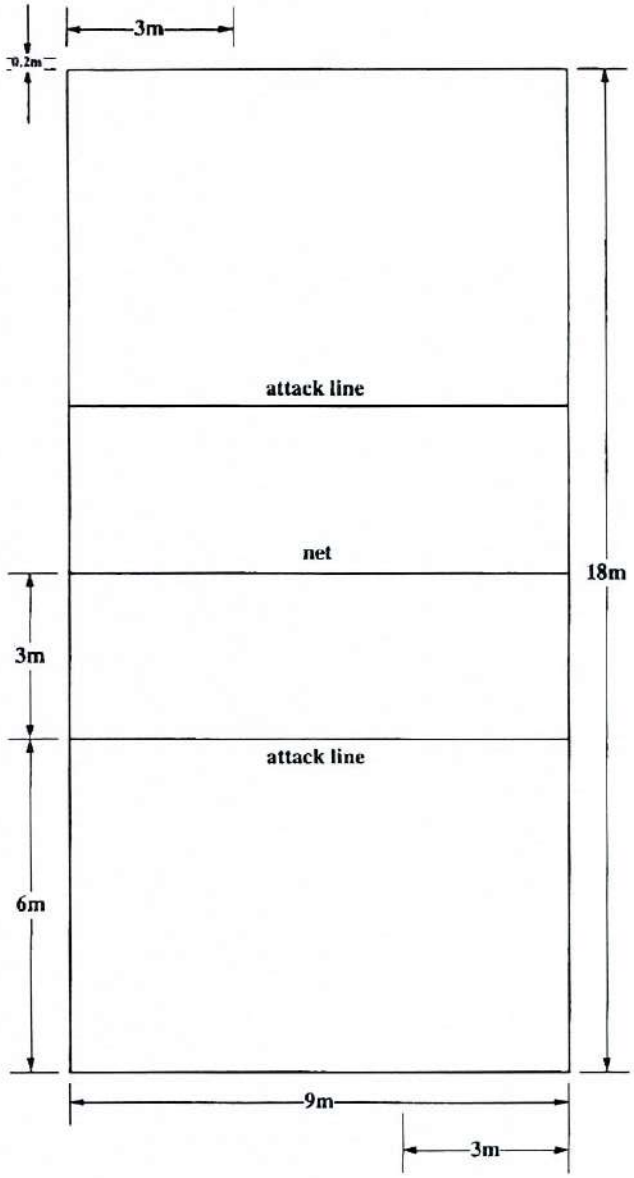
DIMENSIONS OF 400 METRE RUNNING TRACK



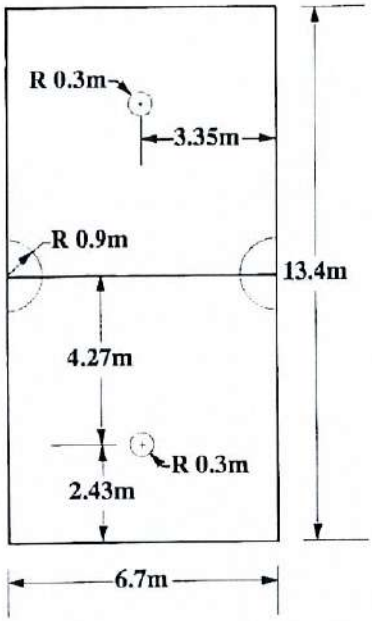
Lenth of Parallels (L)		Lenth of Parallels (L)		Lenth of Parallels (L)		Lenth of Parallels (L)	
Metre	Feet	Metre	Feet	Metre	Feet	Metre	Feet
70.00	228.90	41.08	134.33	169.24	553.41	99.24	324.51
75.00	245.25	39.49	128.84	170.88	558.78	95.88	313.53
85.00	277.95	36.31	118.73	174.70	571.27	89.70	293.32
95.00	310.65	33.12	108.30	178.32	583.11	83.32	272.46
105.00	343.35	29.93	97.87	181.94	594.94	76.94	251.59



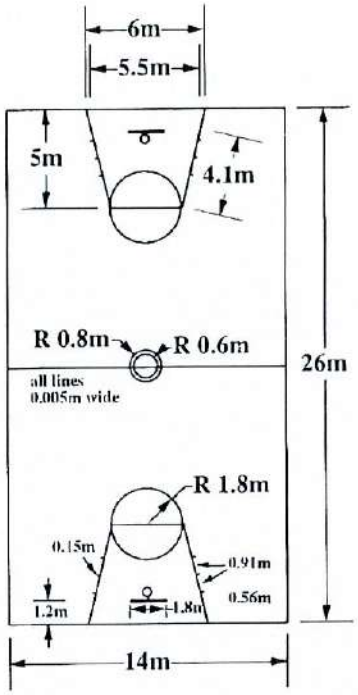
BADMINTON COURT



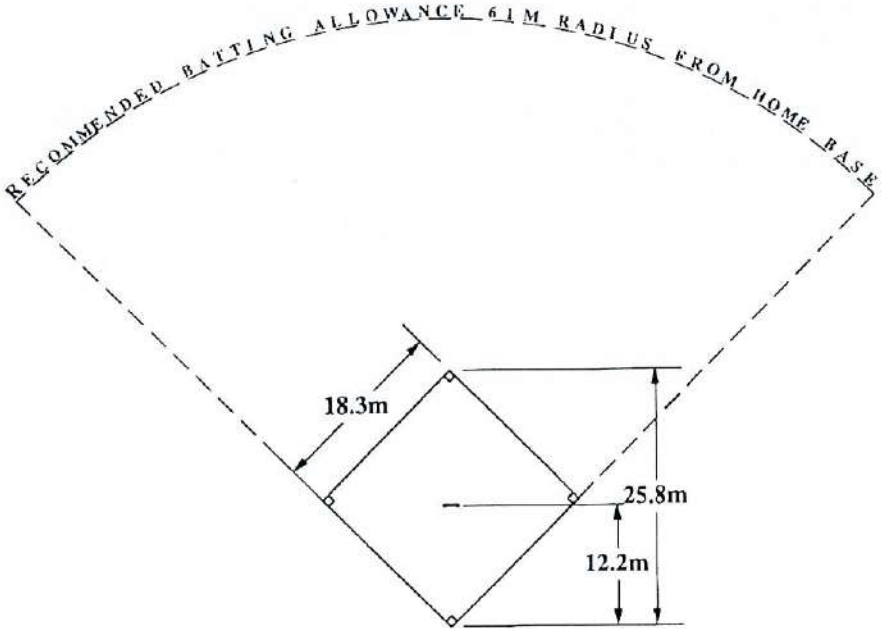
VOLLEY BALL COURT



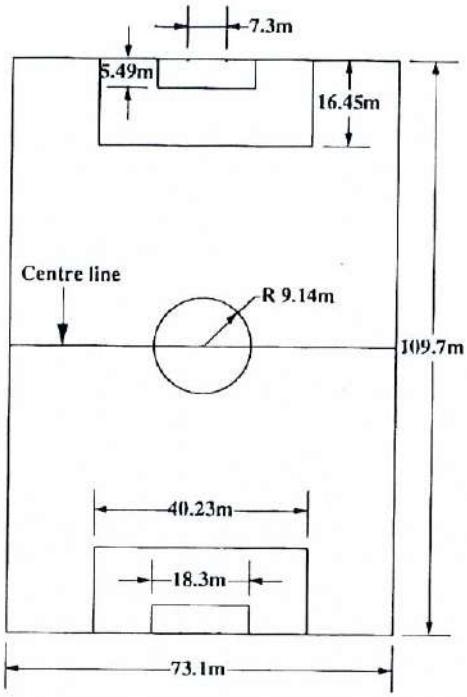
SEPAK RAGA JARING COURT



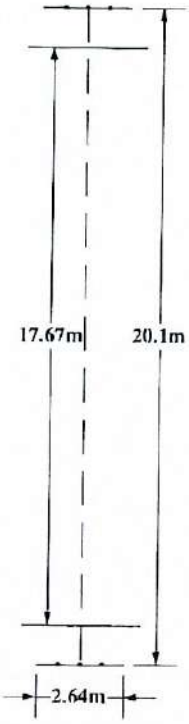
BASKETBALL COURT



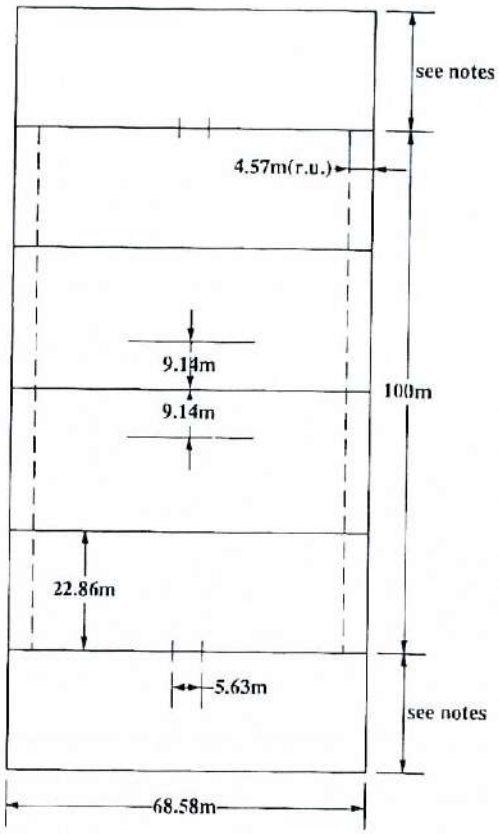
SOFTBALL



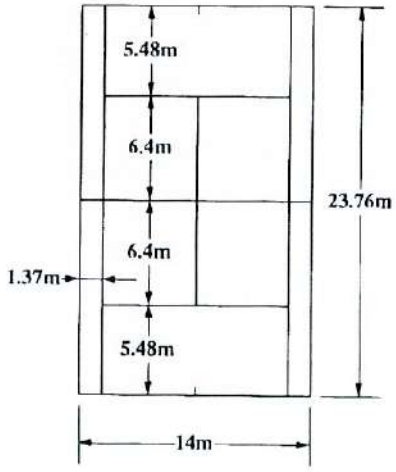
SOCCER PITCH



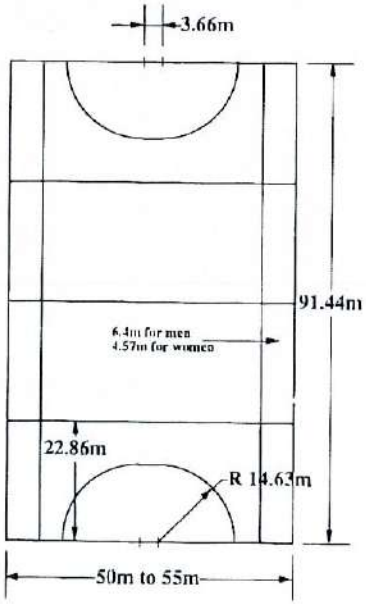
CRICKET PITCH



RUGBY PITCH



TENNIS COURT



HOCKEY PITCH

APPENDIX 2

PLANNING PRINCIPLES

Appendix 2

PLANNING PRINCIPLES
on which the Development Control Standards (1968) were based:

I. FUNCTIONS OF ROADS:

Principle 1: All building lots shall have adequate primary access.

Principle 2: Vehicular access should be provided in a road reserve of minimum 40 feet width to within 200 feet of every building lot.

Principle 3: There shall be a network of traffic distributor roads (i.e. trunk and major) which are separate and distinct from service or access roads.

Principle 4: Road Reserve and carriageway widths should be chosen with regard to the type and volume of traffic likely to use the road.

Principle 5: There shall be adequate secondary access to, and escape from, the rear face of all buildings and those in terraced form shall have a secondary access reserve.

II. HEALTH, FIRE RISKS AND FUNCTIONS OF BUILDINGS:

Principle 6: Half the width of any secondary footpath access reserve may be taken into account when assessing building lines.

Principle 7: All building lots shall be of sufficient size to provide room for all functions of the building within the lot.

Principle 8: All buildings shall:-

(a) be setback a minimum of 20 feet from any primary access or distributor reserve.
(b) have an adequate backyard.

Principle 9: The floor area of buildings permitted on any site shall bear a fixed ratio to the area of the site.

Principle 10: Adequate steps shall be taken to ensure the efficient disposal of sewage.

Principle 11: The main building of any structure intended for human habitation shall not exceed 45 feet deep.

Principle 12: All dwellings shall have a minimum area of private open space adjacent to the dwelling for the use of occupants.

Principle 13: A firebreak of 30 feet between buildings shall be provided at least every 300 feet.

Principle 14: Any outbuilding permitted within 15 feet of a side boundary of a lot shall be of light construction.

Principle 15: Any wall containing openings for the purpose of ventilation to dwellings which faces another wall shall be a distance apart from that wall sufficient to ensure adequate light and ventilation to the dwellings.

III. AMENITY (OPEN SPACE)

Principle 16: Public open space reserves shall be provided.

GLOSSARY OF TERMS

Building envelop	The side of the main building which faces the road or footpath reserve which gives primary access to the lot.
Building length	The distance between outside surfaces of the front wall and back wall of the building.
Building line	The distance, which must be kept free of permanent buildings, from any lot boundary to the outside wall surface of a main building.
Distributor road	A road for the distribution of vehicles to areas of development, designed for efficient movement, and generally having no direct frontage access and on which stopping and parking of vehicles is prohibited.
Dwelling	A suite of rooms served by one kitchen, having exclusive use of one or more entrances.
Flats	Any building containing a dwelling in a floor over another dwelling or other use.
Footpath reserves	Are narrow reserves with a light and cheap carriageway limited to pedestrians, cycles and light motorcycles. Steps are taken to ensure motor cars do not normally use such reserves as special stile structure or sturdy posts must be erected at all junctions with the road network.
Kaki lima	A footway built within and along the front and sometimes along the side of a block of shophouses. At the front, kaki lima is usually 3m in width and at the sides, it is normally 1.5m wide.
Lock-up shop	Single-storey shop, usually smaller than conventional shops, comprising only of space for trading-operator has to 'lock-up' after business hours. No live-in is allowed.
Lot frontage	The boundary facing the road or footpath reserve from which primary access is obtained.
Main building	The main area of a building within the confine of its outer walls or external walls excluding any area of outbuildings or building extensions.
Mini -shop	Two-storey shop, usually smaller than conventional shophouses with the floor use normally restricted to ground floor for commercial use and first floor use as a dwelling unit.
Offices	Shall be permitted in a commercial area but any approval for specifically office purposes does not include approval for any other commercial purpose which is not specifically granted.
Party wall	Is a wall erected at a common boundary which is an integral part of a building and separates two parts of that building which are under different ownerships.
Permitted extension	Building structure added to the main building, with or without wall, beyond the permitted building lines.
Plot ratio	Plot ratio is the ratio, expressed as a percentage, that the gross floor area of a building bears to the total areas of the lot on which it stands.
Primary access	Is a road within a reserve of 25m, 20m or 15m (or , in high density residential zones only, a footpath in a 4.5m reserve). The main purpose of this road is to carry traffic wishing to turn off the road and gain access to fronting lots. Because of the turning movements, and the deceleration of vehicles preceding such turning movements, the average speed along such roads will be low and the constructional standards will be less than for distributor roads.

Private open space An area within the lot, that is largely open to the elements, appurtaining to dwellings but not part thereof.

The following may be included,

(a) public or private covered car parking with an accessible substantial roof*, at no more than one space, nor 14.9m2. per dwelling.

(b) accessible roof gardens, open verandahs or balconies private to each flat having walls* on no more than 60% of the perimeter of the roofed space.

(c) public terraces and roof gardens which are no more than 30% covered by an inaccessible light roof unsuitable for walking upon.

Residential use Residential use shall include the sleeping accommodation and attendant circulation spaces of any hotel on condition that the appropriate areas of private open space are provided.

Secondary access Is an access normally of smaller dimensions than the primary access, to give fire fighting and other access to a second side of buildings in terrace form. It takes the form of a 9m road reserve or a 3m footpath and drain reserves.

Setbacks The minimum required distance between the exterior wall of the building and the lot boundary.

Terrace buildings Are three or more units joined in a row and attached to each other by party walls on one or both sides.

Trunk roads Are those roads designated as being part of the State T runk Road System. Normally 50m reserves are required but in urban areas 40m reserves may be acceptable.

Vehicle parking spaces

Areas of land with an approved impervious surface and used for the permanent or temporary storage of stationary lorries, cars, bicycles and motorcycles. V ehicle parking spaces within a residential lot must be 5m x 2.5m and may be within the yards. Where lots have temporary access to 40m road reserve it must be possible to turn vehicles around without encroaching onto the 40m reserve.

Yard, Back The space created by the imposition of the rear building line.

Yards, Front The space created by the imposition of the front building line.

Yard, Side The space created by the imposition of the side building line.

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