

# APPENDIX



# Illuminance recommendations

Space/activity	Recommended min. illuminance E (lx)	Light source
Office	300	T, TC
Team office	500	T
Open plan office	750	T, TC
Technical drawing office	750	T, TC
Data processing	500	T, TC
CAD	200/500	A, QT, T, TC
Control room	200	TC
Corridor	50	TC
Staircase	100	T, TC
Canteen	200	A, QT, QT-LV, TC
Bathroom, WC	100	T, TC
Sales area	300	QT, QT-LV, T, TC, HST, HSE, HIT
Department store	300	QT, QT-LV, T, TC, HST, HSE, HIT
Cashdesk	500	T, TC
Supermarket	500	T, HIT
Reception	200	A, QT, QT-LV, TC
Restaurant	200	A, PAR, R, QT, QT-LV, TC
Café, bistro	200	A, PAR, R, QT, QT-LV, TC
Self-service restaurant	300	T, TC
Canteen kitchen	500	T
Museum, gallery	200	A, PAR, R, QT, QT-LV, T, TC
Exhibition space	300	PAR, R, QT, QT-LV, T, TC, HST, HSE, HIT
Trade fair hall	300	T, HME, HIT
Library, media library	300	T, TC
Reading room	500	T, TC
Gymnasium, competition	400	T, HME, HIE, HIT
Gymnasium, training	200	T, HME, HIE, HIT
Laboratory	500	T
Beauty salon	750	QT, QT-LV, T, TC
Hairdressing salon	500	T, TC
Hospital, ward - ambient lighting	100	T, TC
- reading light	200	A, QT-LV, T, TC
- examination light	300	QT, T, TC
Hospital, examination	500	T
Reception, lobby	100	QT, T, TC
Circulation area	200	QT, T, TC
Classroom	300/500	T, TC
Large classroom	750	T, TC
College hall	500	T, TC
Art studio	500	T, TC
Laboratory	500	T, TC
Lecture hall, auditorium	500	QT, T, TC
Multi-purpose space	300	QT, T, TC
Concert, theatre, festival hall	300	A, PAR, R, QT
Concert platform	750	PAR, R, QT
Meeting room	300	A, QT, TC
Church	200	A, PAR, R, QT

Recommended minimum illuminances (E) for typical interior tasks. The illuminances are aimed at providing an appropriate level of lighting for the specific tasks to be performed in the space or part of the space. They do not include structural lighting elements or other

aspects for the specific situation. The average horizontal illuminances quoted are in accordance with national and international standards. Using the light sources indicated lighting qualities can be achieved to meet the requirements of the particular visual task economically.

# Classification of lamps

The ZVEI, the German Electrical Engineering and Industrial Federation, has developed a system of abbreviations for electric lamps used for general lighting purposes. Some lamp do manufacturers use different abbreviations, however.

The ZVEI system of designation consists up to three characters. These are complemented by further abbreviations for special models or versions, which are phenated.

The first letter indicates the light production.

I	Incandescent lamp
H	High-pressure discharge lamp
L	Low-pressure discharge lamp

The second letter indicates the material of the outer envelope for incandescent lamps, or the gas contained in discharge lamps.

G	Glass
Q	Quartz glass
M	Mercury
I	Metal halide
S	Sodium vapour

The third letter or combination of letters indicates the form of the outer envelope.

A	General
E	Ellipsoidal
PAR	Parabolic reflector
R	Reflector
T	Tubular
TC	Compact tubes

To complete the classification of a lamp data regarding diameter of lamp or reflector, power, colour of outer envelope, beam spread, type of cap and voltage can be added to the above identification.

General service lamp	(I) (G) A	A
Parabolic reflector lamp	(I) (G) PAR	PAR
Reflector lamp	(I) (G) R	PAR
Mercury reflector lamp	(I) Q R	QR
Mercury lamp (tubular form)	(I) Q T	QT
Mercury lamp (ellipsoidal form)	H M E	HME
Mercury lamp (reflector form)	H M R	HMR
Metal halide lamp (ellipsoidal form)	H I E	HIE
Metal halide lamp (reflector form)	H I R	HIR
Metal halide lamp (tubular form)	H I T	HIT
High-pressure sodium lamp (ellipsoidal form)	H S E	HSE
High-pressure sodium lamp (tubular form)	H S T	HST
Fluorescent lamp	(L) (M) T	T
Compact fluorescent lamp	(L) (M) TC	TC
Low-pressure sodium lamp	L S T	LST

Standard abbreviations for lamps in this book. The letters in brackets are not used in practice. The resulting abbreviations are given in the right-hand column.

Mercury lamp, double-ended	QT-DE
Mercury reflector lamp, coolbeam, without cover	QR-CB
Mercury reflector lamp, coolbeam, with cover	QR-CBC
Metal halide lamp, double-ended	HIT-DE
Compact fluorescent lamp	TC
without starter for EB	TC-EL
with 4 discharge tubes	TC-D
with 4 discharge tubes, with integral EB	TC-DSE
with 4 discharge tubes, without starter for EB	TC-DEL
Linear form	TC-L

Abbreviations for special models or versions are separated from the main abbreviation by a hyphen.

Table 6.2 Flux distribution (1)

Surface	Area	Reflectance	Relative illuminance	Illuminance	Reflected flux (lm)	Direct illuminance (lx)	Direct flux	Lamp wattage (W)	Lamp watts per zone (W)
S	As (m <sup>2</sup> )	$\rho_s$	$E_s$ (rel)	$E_s$ (lx)		(lx)	$F_{s(d)}$ (lm)		
<b>SANCTUARY</b>									
altar front	1	0.25	5	1000	250	939.2013129	939.2013129	218.41891	
panelling	8	0.7	3	600	3360	539.2013129	4313.610503	1003.165233	
East wall	20	0.6	1.5	300	3600	239.2013129	4784.026258	1112.564246	
vault	30	0.3	0.5	100	900	39.20131291	1176.039387	273.4975319	
floor	25	0.5	1.5	300	3750	239.2013129	5980.032823	1390.705308	
N & S walls	60	0.7	0.5	100	4200	39.20131291	2352.078775	546.9950639	4545.346293
NAVE				0	0	-60.79868709	0	0	
floor & chairs	110	0.15	1	200	3300	139.2013129	15312.14442	3560.963819	
chancel arch	10	0.7	1	200	1400	139.2013129	1392.013129	323.7239835	
N side of S arcade	30	0.7	0.5	100	2100	39.20131291	1176.039387	273.4975319	
S side of N arcade	30	0.7	0.75	150	3150	89.20131291	2676.039387	622.3347412	
S half of vault	60	0.6	0.5	100	3600	39.20131291	2352.078775	546.9950639	
N half of vault	60	0.6	0.3	60	2160	-0.79868709	-47.92122538	-11.14447102	
W wall	50	0.4	0.5	100	2000	39.20131291	1960.065646	455.8292199	5772.199888
SOUTH AISLE				0	0	-60.79868709	0	0	
East wall	15	0.7	0.5	100	1050	39.20131291	588.0196937	136.748766	
ceiling	50	0.6	0.5	100	3000	39.20131291	1960.065646	455.8292199	
S & W walls	100	0.5	0.75	150	7500	89.20131291	8920.131291	2074.449137	
floor and chairs	45	0.15	1	200	1350	139.2013129	6264.059081	1456.757926	4123.785049
NORTH AISLE				0	0	-60.79868709	0	0	
East wall	15	0.25	1	200	750	139.2013129	2088.019694	485.5859753	
ceiling	50	0.6	0.3	60	1800	-0.79868709	-39.93435449	-9.287059183	
N & W walls	100	0.5	0.5	100	5000	39.20131291	3920.131291	911.6584398	
floor and chairs	45	0.15	1	200	1350	139.2013129	6264.059081	1456.757926	2844.715282
Total surface area	914				Reflected flux		55570 lm	Total Watts	17286.04651
					Indirect illuminance (E(i) or $M_{rs}$ )		60.79868709 lux or lm/m <sup>2</sup>		
					Anchor illuminance 200 lux		Beam efficacy (neta B) 4.3 lm/W		

Table XI Design of building elements

Element	Type	Advantages or purposes	Disadvantages or problems	Details
Structure	<i>Generally</i>	<ul style="list-style-type: none"> <li>• Absence of freezing conditions</li> <li>• Regulatory controls may permit more imaginative solutions</li> <li>• Local expertise in alternative technologies may offer new design potential</li> </ul>	<ul style="list-style-type: none"> <li>• Climate extremes, including diurnal temperature range, wind and rainfall</li> <li>• Limited skills or technical knowledge in some places</li> <li>• Limited performance data on local materials (Are there local materials testing labs?)</li> <li>• Season restrictions on working (dust storm, monsoon, etc.)</li> </ul>	<ul style="list-style-type: none"> <li>• Check if in earthquake zone</li> <li>• Check windloading from cyclones, etc.</li> <li>• Obtain rainfall data for short-term loading on roofs, gutters, etc.</li> <li>• Consider sustainability of all aspects of design (embodied energy, consumption of non-renewable resources, environmental contamination and depletion, especially of water supplies)</li> </ul>
	<i>Loadbearing masonry</i>	<ul style="list-style-type: none"> <li>• Are bricks and stone local materials?</li> <li>• Is brickwork a local skill?</li> <li>• Is masonry part of the vernacular style?</li> <li>• Thermal mass</li> <li>• Able to accommodate small fittings and accommodate alterations</li> </ul>	<ul style="list-style-type: none"> <li>• Limited availability, quality and consistency of materials and accessories</li> <li>• Traditional clamp-firing may consume huge quantities of non-renewable forest timber</li> </ul>	<ul style="list-style-type: none"> <li>• Check local practice</li> <li>• Is cavity wall construction used?</li> <li>• Establish strength and consistency of locally produced materials and materials testing regime</li> </ul>
	<i>Concrete frame and in-situ concrete work</i>	<ul style="list-style-type: none"> <li>• Is cement manufactured locally?</li> <li>• Is concrete construction a locally familiar technology?</li> <li>• Lower labour and formwork costs may facilitate one-off designs (hyperc, etc.)</li> </ul>	<ul style="list-style-type: none"> <li>• Limited availability, quality and consistency of materials, plant and resources</li> <li>• Extreme care needed during curing</li> </ul>	<ul style="list-style-type: none"> <li>• Is/are formwork, reinforcement, mixing and transporting plant available?</li> <li>• Is there sufficient water for mixing, cooling, cleaning of plant?</li> </ul>
	<i>Steel frame</i>	<ul style="list-style-type: none"> <li>• Reusable material</li> </ul>	<ul style="list-style-type: none"> <li>• Limited availability, quality and consistency of materials and resources including skilled labour</li> <li>• Humidity</li> </ul>	<ul style="list-style-type: none"> <li>• What is the distance from foundry, workshop or supplier to site?</li> </ul>
	<i>Timber frame</i>	<ul style="list-style-type: none"> <li>• Timber produced locally?</li> <li>• From renewable forests?</li> </ul>	<ul style="list-style-type: none"> <li>• Resistance to humidity and termites</li> <li>• Effect of climate on lifespan</li> </ul>	<ul style="list-style-type: none"> <li>• Check windloading from cyclones, etc.</li> <li>• Strapping and bracing of timber elements</li> </ul>
Floors	<i>Ground-supported floors</i>	<ul style="list-style-type: none"> <li>• Use the delayed thermal flywheel effect of ground and/or floor mass to stabilise floor temperature and keep it cool (concrete, stone and ceramic floors always feel cooler and in some circumstances can be wetted to produce evaporative cooling – but this will increase humidity)</li> <li>• Reduce costs</li> <li>• Provide disabled access</li> <li>• Concrete floors are easy to clean – they are often waxed polished in the tropics</li> </ul>	<ul style="list-style-type: none"> <li>• Seasonal flooding risk</li> <li>• Risk of rain splashback</li> <li>• Termites, vermin, snakes, etc.</li> <li>• Restricted structural option – concrete?</li> <li>• Suitability of ground conditions for foundation type</li> <li>• Risk of damp and mould growth</li> <li>• Concrete, stone and ceramic floors, if polished, can be very slippery and cause accidents</li> <li>• Snakes may breed in poorly compacted hardcore under the slab</li> </ul>	<ul style="list-style-type: none"> <li>• Take precautions against termites and vermin penetrating the slab at junctions, changes of level, and points where the slab is penetrated by services or structure</li> <li>• The slab must be continuous (not split into bays separated by internal walls)</li> <li>• Keep termites out by poisoning soil (but avoid organophosphates such as Aldrin or Dieldrin) or by using a special oversite steel mesh with a gauge too small for insects to penetrate (Australian solution)</li> <li>• Project slabs beyond foundations, with sharp external 90° angles which termites dislike</li> <li>• Floors with a high thermal mass should be kept shaded in hot weather, but can be allowed to absorb some solar radiation in the cold season to warm up the building (passive design).</li> </ul>
	<i>Suspended floors</i>	<ul style="list-style-type: none"> <li>• Keeps floor clear of seasonal flooding and splash-back from heavy rain</li> <li>• Keeps the floor away from termites and vermin</li> <li>• Use materials other than concrete, including open deck vented floors to improve air movement</li> </ul>	<ul style="list-style-type: none"> <li>• Floors should remain dry and free from damp</li> <li>• Security risk from below</li> <li>• Accessible soffit may be colonised by bats, snakes, etc.</li> <li>• Voids within the floor structure may be used by insects and small mammals (wasps, ants, etc.)</li> <li>• Termites may find timber and destroy it</li> <li>• In humid climates, damp and mould growth may accumulate unseen in sealed voids</li> </ul>	<ul style="list-style-type: none"> <li>• Low mass floors will maintain temperature closer to air temperature – an advantage in winter</li> <li>• All voids must be protected on the external faces by mesh strong enough to deter gnawing by rodents and of a gauge fine enough to keep out ants – except where bats, etc. are tolerated</li> <li>• Check timber floors (and structures) for fire risk from bush fires</li> <li>• Suspended floors may permit the introduction or seasonal use of vent stack/solar chimneys drawing cool air from shaded ground.</li> <li>• Leave underside of floor visible for inspection</li> <li>• Allow airflow and ventilation below the floor</li> </ul>
	<i>Raised access floors</i>	<ul style="list-style-type: none"> <li>• May be used to duct cooling air through a structure, or to recycle or remove heated air</li> </ul>	<ul style="list-style-type: none"> <li>• Do not contribute thermal mass</li> <li>• May be difficult to maintain</li> <li>• Insects and vermin may infest voids</li> </ul>	<ul style="list-style-type: none"> <li>• Failure of a raised access floor in an earthquake may critically affect escape from office buildings</li> </ul>
	<i>Intermediate floors and mezzanines</i>	<ul style="list-style-type: none"> <li>• Discontinuities in the building section, with mezzanine floors and variation in storey height, permit air movement</li> </ul>	<ul style="list-style-type: none"> <li>• Continuous floor slabs restrict vertical air movement</li> <li>• Structural continuity may be essential to maintain rigidity in earthquake zones</li> </ul>	<ul style="list-style-type: none"> <li>• Sound transmission</li> <li>• Spread of fire</li> </ul>

Table XI (Continued)

Element	Type	Advantages or purposes	Disadvantages or problems	Details
	<i>External floors, decks, platforms, balconies and terraces</i>	<ul style="list-style-type: none"> <li>• Can shade lower floors and walls</li> <li>• If in low mass materials (timber) and perforated, will reduce temperature and allow air movement</li> </ul>	<ul style="list-style-type: none"> <li>• May reflect light, glare and heat into buildings if light coloured and reflective, but if used as a light shelf, can shade windows whilst reflecting light off ceilings</li> </ul>	<ul style="list-style-type: none"> <li>• Outdoor living and sleeping in sun, shade or breeze should utilise roof spaces, courtyards, atria and the periphery of the building in a range of climate-responsive ways.</li> </ul>
Ceilings	<i>Suspended ceilings</i>	<ul style="list-style-type: none"> <li>• Ceiling void may be used to duct air</li> <li>• Ceiling may be used to deflect or reflect light</li> <li>• May contain heat or light sensors to adjust temperature, or the position of external or internal blinds</li> </ul>	<ul style="list-style-type: none"> <li>• Void may harbour insects and vermin – must be accessible</li> <li>• Void may trap hot air if poorly designed</li> <li>• Materials used for acoustic insulation in ceilings may be attractive to insects – avoid any containing cellulose</li> </ul>	<ul style="list-style-type: none"> <li>• Use wire or plastic mesh of appropriate gauge to keep out bats, birds, vermin whilst maintaining ventilation</li> </ul>
	<i>Exposed soffits; integrated ceilings</i>	<ul style="list-style-type: none"> <li>• Reduce costs</li> </ul>	<ul style="list-style-type: none"> <li>• Reduce options in servicing and air movement</li> </ul>	
Wall features	<i>Flyscreens</i>	<ul style="list-style-type: none"> <li>• Essential in food preparation, kitchen and sleeping areas where any flying insect is a nuisance</li> <li>• In mosquito infested areas, <i>all</i> rooms should be fly-screened.</li> </ul>	<ul style="list-style-type: none"> <li>• Impede air circulation</li> </ul>	<ul style="list-style-type: none"> <li>• Usually green or black plastic or coated wire gauze – must be robust</li> <li>• Fix with timber bead or metal cramp</li> </ul>
	<i>Shutters</i>	<ul style="list-style-type: none"> <li>• Personal security</li> <li>• Protection from severe weather</li> <li>• Adjustable (American) shutters cut down glare</li> <li>• Cut down extraneous noise</li> </ul>	<ul style="list-style-type: none"> <li>• Trap heat</li> </ul>	<ul style="list-style-type: none"> <li>• Consider fixing and maintenance</li> </ul>
Cladding	<i>Rainscreen</i>	<ul style="list-style-type: none"> <li>• Allows use of rough finish to structure concealed behind rainscreen</li> <li>• Can be used over pisé/adobe</li> </ul>	<ul style="list-style-type: none"> <li>• Voids can harbour vermin and conceal defects and deterioration</li> </ul>	<ul style="list-style-type: none"> <li>• Consider fixing and maintenance</li> </ul>
Roof	<i>pitched roof</i>	<ul style="list-style-type: none"> <li>• Essential in wet climates</li> <li>• Void can be used to vent inner rooms</li> </ul>	<ul style="list-style-type: none"> <li>• Can trap heat if not vented</li> <li>• Voids can harbour vermin and conceal defects and deterioration</li> </ul>	<ul style="list-style-type: none"> <li>• Large overhangs in wet tropics</li> <li>• Roof pitch, valleys, etc. must cope with intense rainfall</li> </ul>
	<i>flat roof</i>	<ul style="list-style-type: none"> <li>• Can be used as sleeping platform</li> </ul>	<ul style="list-style-type: none"> <li>• Difficult to weatherproof against rainstorms</li> <li>• Climate change may cause unpredictable weather</li> </ul>	<ul style="list-style-type: none"> <li>• Security is increasingly an issue</li> </ul>
	<i>double roof including aerofoil roof</i>	<ul style="list-style-type: none"> <li>• This structure places an open ventilated space between the weather-protection of the upper roof and the shaded element of the inner and lower roof, which may serve as a sleeping platform in hot weather</li> <li>• The aerofoil uses two converging and aerodynamically designed profiles to accelerate air movement over the roof</li> </ul>	<ul style="list-style-type: none"> <li>• May be vulnerable to storm damage in severe weather</li> <li>• There may be loss of security or privacy</li> <li>• Extra height</li> <li>• Extra cost</li> <li>• Aerofoil may need extensive modelling and testing to prove</li> </ul>	<ul style="list-style-type: none"> <li>• See Le Corbusier's houses in India and more recent European buildings</li> </ul>

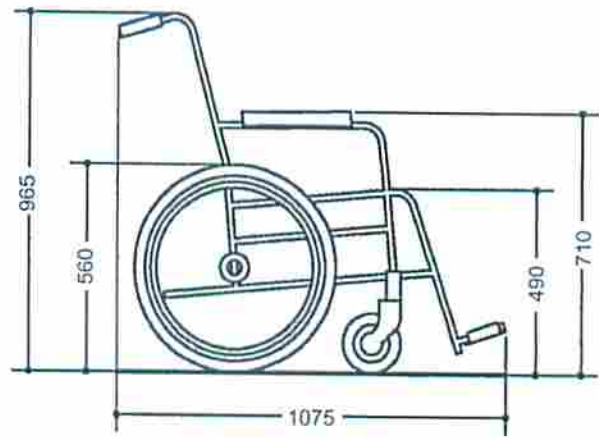
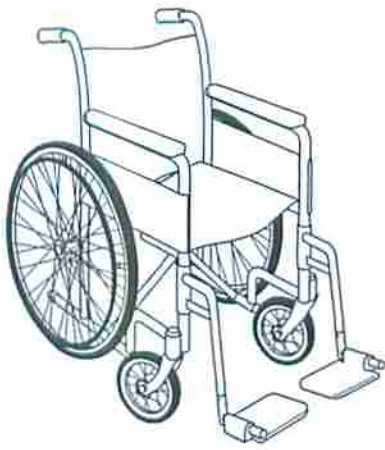
When designing buildings in earthquake zones, the following points should be noted:

#### Structural form

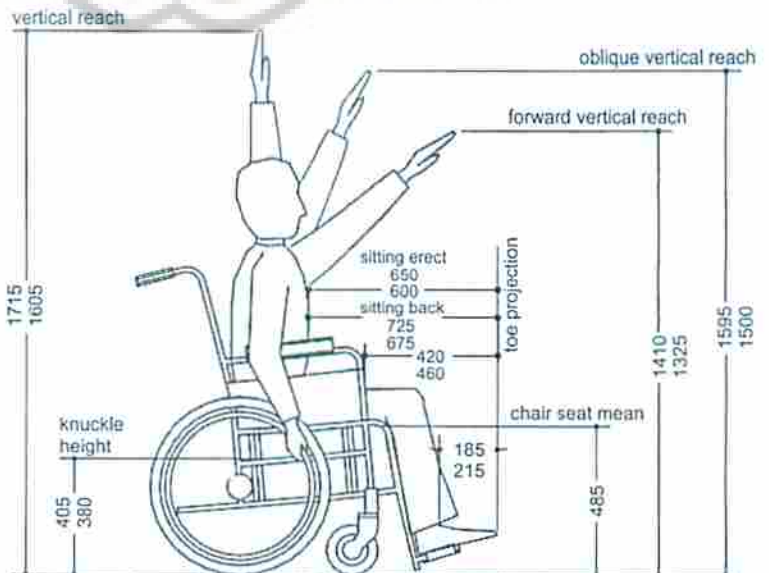
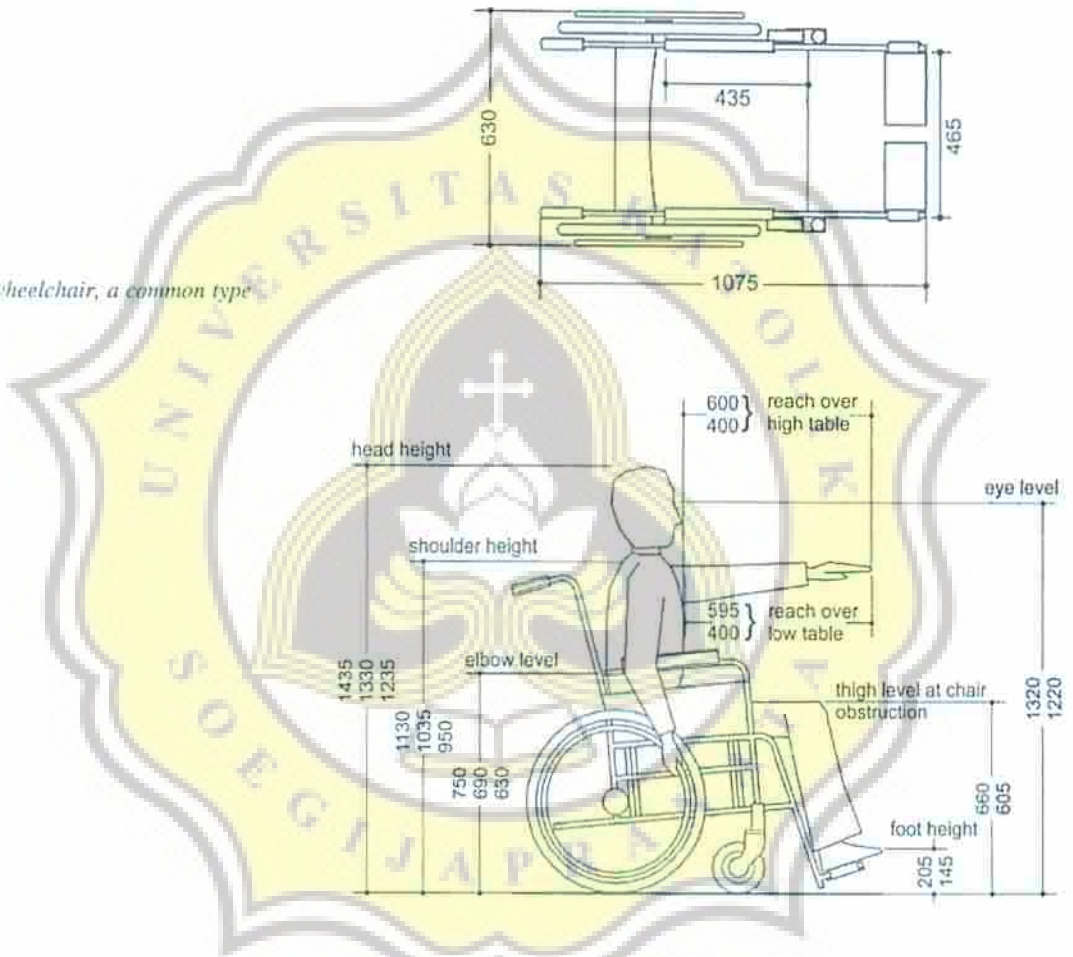
#### Structural detail

- engineers may adopt a weak beam/strong column philosophy to allow beams to flex more than columns
- corner columns are more at risk: elevations may act as plates and resist compression

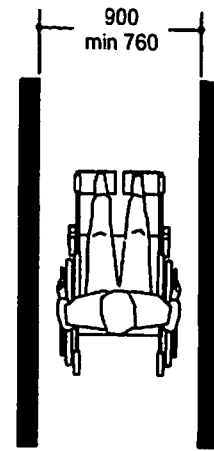
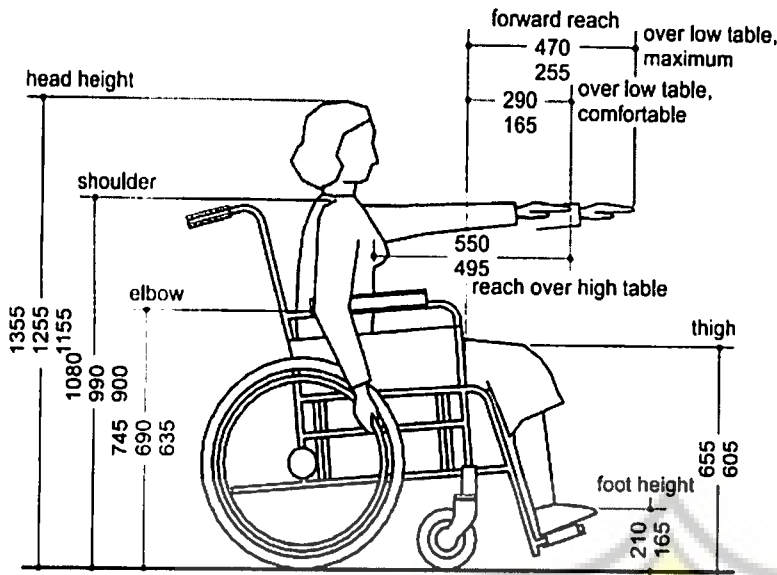




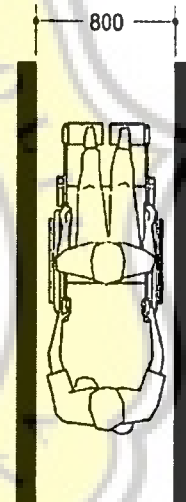
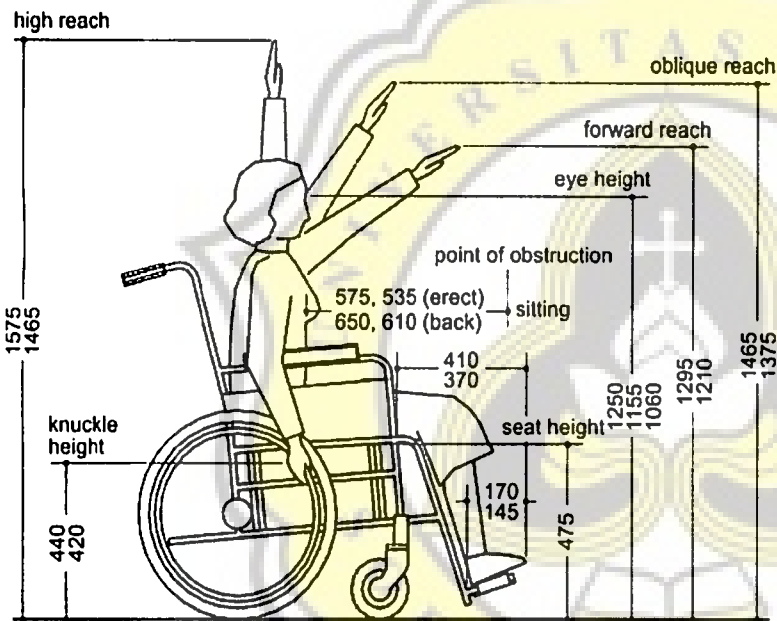
2.19 DSS model 8G wheelchair, a common type



2.20 Dimensions of different percentiles of adult male wheelchair users. These dimensions and those in 2.21 relate to people who use standard wheelchairs and have no major impairment of upper limbs. Figures are given for 95th, 50th and 5th percentiles or two of these

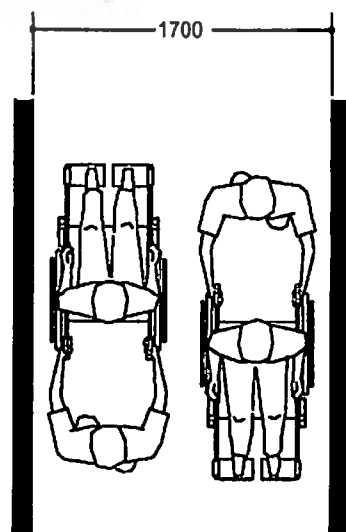
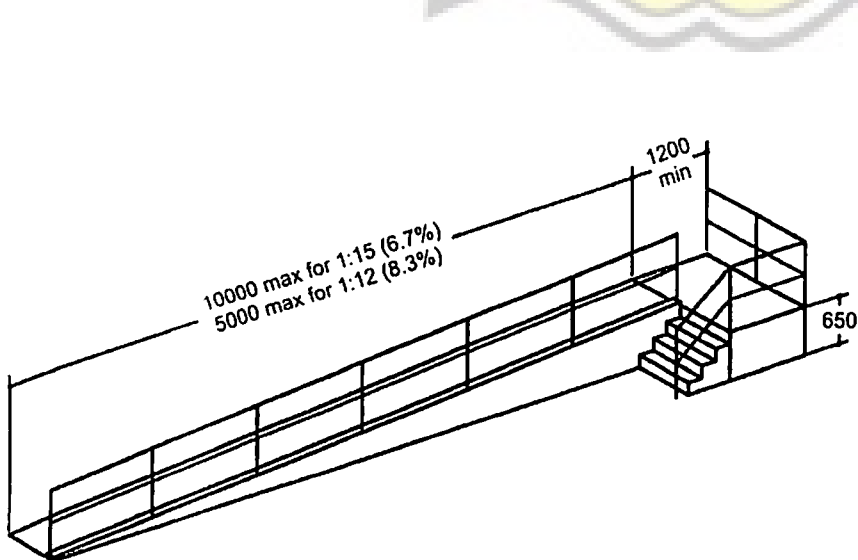


2.23 Forward movement for self-propelled wheelchair



2.24 Forward movement for wheelchair with attendant

2.21 Dimensions of adult female wheelchair users. Figures are given for 95th, 50th and 5th percentiles or two of these

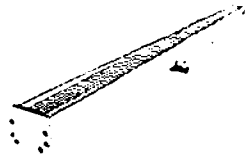


2.25 Passing place for two wheelchairs with attendants

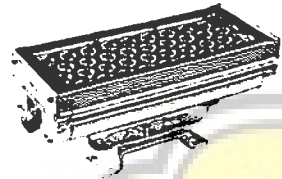
2.22 Wheelchair ramp of rise 650 mm



# Product summary



LedStrip II Activemix  
LedStrip II mono color



LED Dynaflood Activemix  
LED Dynaflood mono color



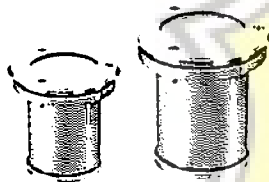
LedFlood Bi-color  
LedFlood mono color



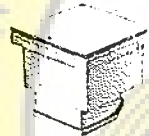
LedVision



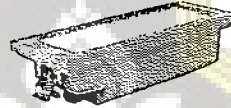
ObstiVision



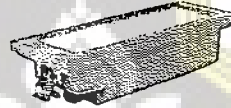
LedBatten RGB\*)  
LedBatten mono color



LedUplight Activemix  
LedUplight mono color



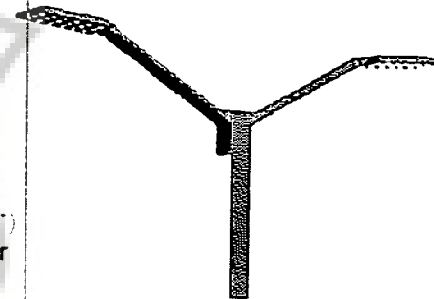
LedStep sq Activemix  
LedStep II mono color



LedStep rect Activemix  
LedStep rect mono color



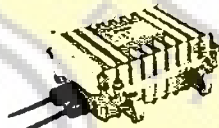
LedSpot Activemix \*)  
LedSpot mono color



Equinox mono color



LedFlex I mono color



PS050



PS300DR



LM200

# RELIGIOUS BUILDINGS

## RELIGIOUS AFFILIATION

The approximate percentage of the adult UK population claiming active membership of a particular religion is as follows.

### *Trinitarian (Christian):*

Anglican	3.1%
Protestant	4.1%
(Baptist, Methodist, United Reformed Church, Church of Scotland, other 'Free Church')	
Orthodox	0.5%
Roman Catholic	3.4%

### *Other religions:*

Jewish	0.17%
Hindu	0.17%
Muslim	1.0%
Sikh	0.5%

## CHRISTIAN CHURCHES

**Anglicanism** The Anglican communion exists in many countries. In England, it is the official state church, and in the UK it is therefore generally known as the Church of England; the monarch is the Supreme Governor, and the Archbishop of Canterbury is the primate. The Church of England was established as a result of Henry VIII's disagreement with the Papacy (the Act of Supremacy, 1534), and is often regarded as mid-way between Roman Catholicism and Protestantism; those closest to Catholic thinking are known as Anglo-Catholic.

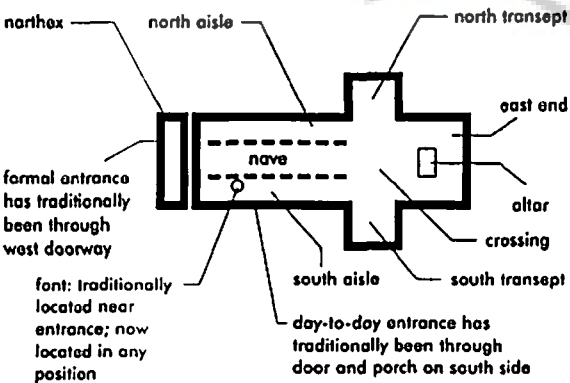
**Roman Catholicism** is a world-wide religion, centred on the Pope in Rome, and claiming direct succession from St Peter, one of the 12 apostles of Jesus. Doctrine is summarised in the Nicene Creed. The Roman Catholic church is a large and complex organisation, with many religious orders. It could generally not be practised in the UK from the time of the Reformation until the Catholic Emancipation Act of 1829. In layout and services, great emphasis is usually placed on liturgy and tradition.

**Eastern Orthodox** A communion of self-governing churches developed from the Eastern Roman or Byzantine Empire, this now mainly describes the autonomous Greek Orthodox and Russian Orthodox Churches. The Trinity and the sacraments are considered of great importance.

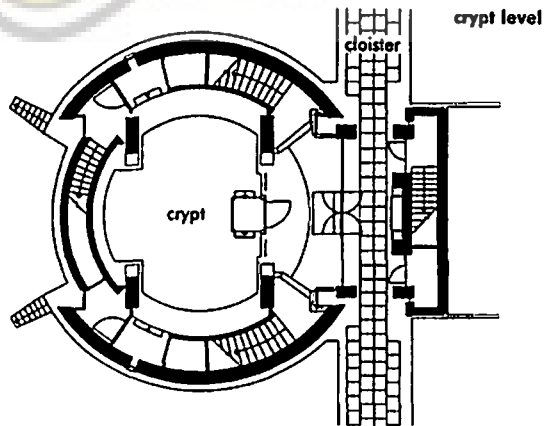
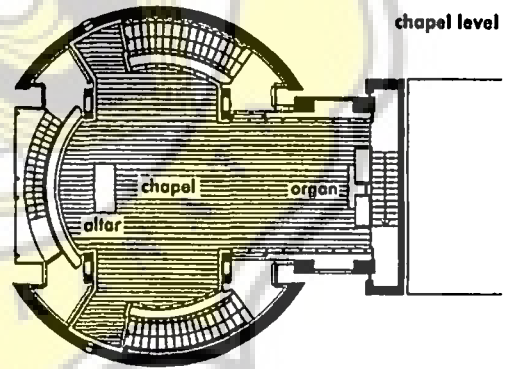
**Protestantism** Sometimes known as 'Free Church' this has itself now split into many different groups, particularly with the growth of the evangelical and house-church movements over the last 30 years. High Church implies sympathy with Roman Catholicism; Low Church aligns with Methodism and the United Reformed Church. The traditional distinction of Low Church having chapels is now rare in the south of England.

The main Protestant denominations are as follows:

- **Methodism** was founded by John Wesley in the late 18th century, after gradual separation from the Church of England. Traditionally, Methodism has a strong emphasis on preaching, and the involvement of lay members. Similar to Low-Church Anglicanism.
- **Other Protestant denominations** include Baptists (who believe in baptism by total immersion), Presbyterians and Congregationalists, most of whom united in 1970 to form the United Reformed Church.



1 Traditional church layout, representing the cross on which Jesus died



2 Fitzwilliam College Chapel, Cambridge (Arch: MJP Architects)

- *The Salvation Army*, formed by William Booth in 1865 as a non-sectarian, evangelical Christian organisation, has a quasi-military structure, and its mission is to care for the poor and needy. Meetings are held in halls, and apart from a platform and seating there are virtually no liturgical requirements.
- *Quakers*. Generally known as the Quakers, the Society of Friends was established in the 18th century and they do not describe themselves as a church. They have no priesthood or formal liturgy. Their meeting halls are simple and usually rectangular; there is no altar, pulpit or font. Worship is often conducted largely in silence.

**General arrangement**

Declining congregations in the last 50 years have made many churches redundant. New forms of worship, and new uses for buildings, have had to be developed. Many denominations now share worship facilities although fundamental doctrinal differences remain: for instance, over the ordination of women, the interpretation of communion, and the role of the Papacy. Considerable co-operation often exists at a local level.

Some denominations have been re-established in the UK, coming from the USA (e.g. the Free Methodists). These denominations have no formal links with UK denominations of the same, or similar, names.

In Roman Catholic churches, the emphasis is now often placed on mass in the common tongue, rather than Latin. Protestants place more emphasis on preaching and communion carried out around 'Lord's Table'. Many newer religious sects have particular requirements related to special forms, singing, dancing and musical performances.

Most churches now have strong community concern; planning often relates to week-day uses - the key consideration is flexibility. Ancillary accommodation is usually required: for instance, meeting rooms (preferably for groups of different sizes), a coffee room, counselling room and office. Other factors include provision for people with mobility difficulties, good acoustic design (for both music and voice), security against crime, and adequate car parking space.

Traditional church services tend to emphasise importance of liturgy, mass (holy communion) and vestments etc., although the building layout may be informal. Less traditional services place more importance on preaching and individual participation.

A centralised plan is often popular with designers, but this is difficult to integrate with processional and ritualistic requirements. The importance of the priest, pastor or leader must not be lost.

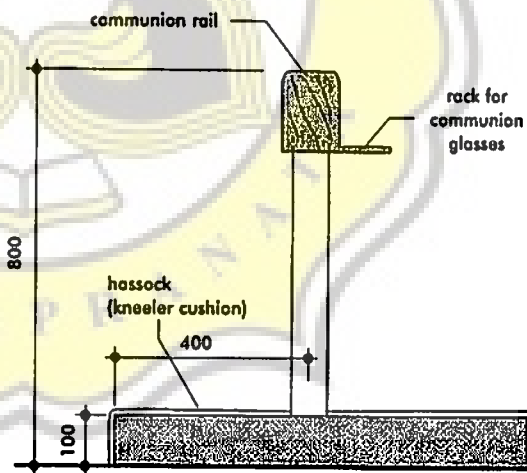
**Liturgical requirements**

There are numerous items of equipment needed, depending on the religious attitude of the denomination or worshippers. Many will require individual design. Those generally encountered are noted below.

**Altar or table** This is the most important element in a church layout. Traditionally located at the east end (although there may also be subsidiary altars elsewhere). High Church uses the word altar, Low Church the word table. It is often located on a platform or raised area several steps above the nave. With a centralised plan, and in some experimental layouts, the altar is placed in the centre of the church. Size and ornamentation vary with each church; some altars are highly decorated, with elaborate cloths which need a suitable altar cloth chest.

**Baptistry** A receptacle for total immersion when initiates are baptised; used in Baptist and some evangelical denominations. It must be large enough to hold the minister and several initiates, and is usually covered when not in use. A heated water supply, steps on one side and drainage are required. Dressing and drying rooms (possibly both male and female) must be adjacent.

**Communion rail** The method of taking communion (or mass in High Church) varies between denominations and should be agreed at an early design stage. Communicants may have bread and wine passed around while seated, or may share a communal cup (and in both cases no communion rail will be necessary); or they may line up along a rail near the altar. The rail may need a rack for communion glasses, and must allow for elderly and infirm people kneeling adjacent (see 3).



3 Communion rail

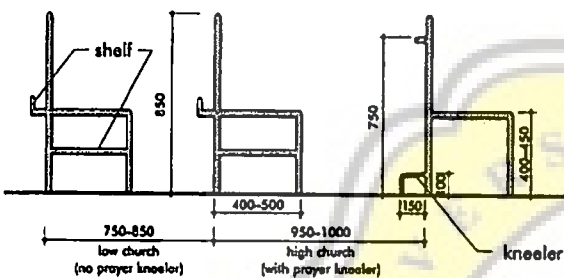
**Confessional box** Only found in High-Church buildings, this is an enclosure seating both priest and penitent, separated by a partition, in which the latter can talk in confidence to the priest.

**Font** Intended to hold water for baptisms, the font is traditionally at the entry to the church (i.e. at the west end), although it can now be located anywhere. Historically a large, carved object, with a cover, fonts are now often a simple bowl.

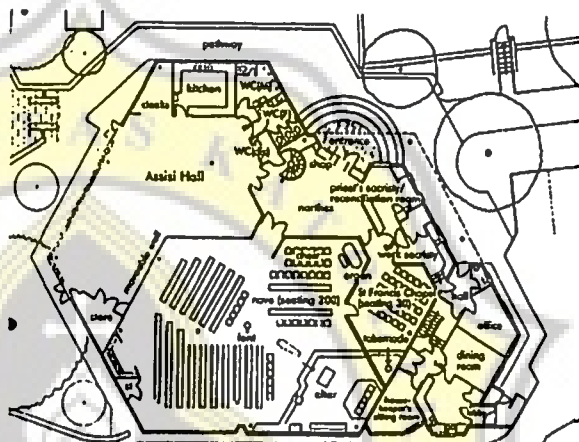
**Lectern** A book-rest, usually for the bible, located in the crossing or near the altar rail. Readings are made from a standing position, so the height of the lectern should be adjustable.

**Pulpit** Of major importance in Low-Church buildings, where preaching is given great prominence, the pulpit is usually elevated, with enclosed sides, and a book-rest and shelves.

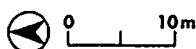
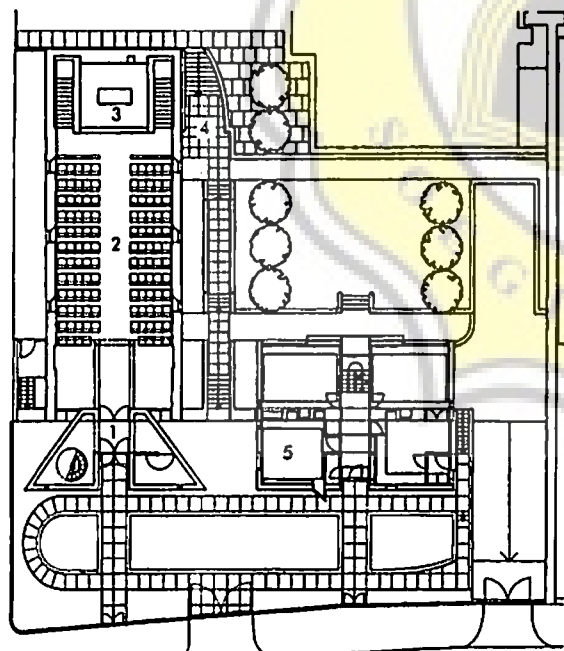
**Seating and pews** Traditional layouts usually retain pews (often Victorian); other layouts often require a flexible space with individual upholstered chairs, with holders for order of service and hymn-books etc. (see 4). Before adapting good-quality Victorian and pre-19th century pews, specialist advice should be sought. Choir stalls are sometimes required for choir seating. If worshippers are to kneel, a kneeler is required, sometimes hinged to the pew; otherwise a hassock (a decorated cushion) will be provided.



4 Seating/pews

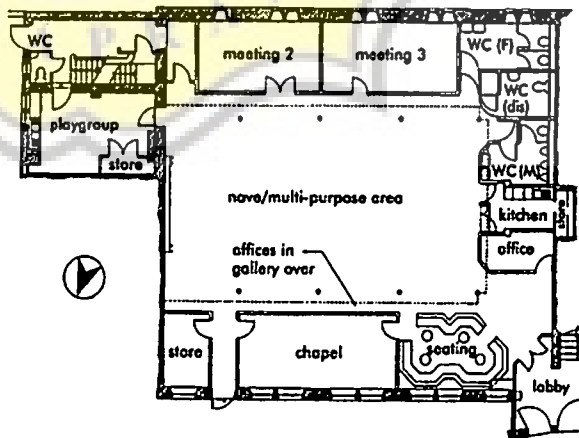


6 St Francis of Assisi, Crosspool, Sheffield (RC): the priest's accommodation is provided above the community facilities on the south side (Arch: Vicente Stienlet)



1 entrance 2 nave (seating for 140) 3 altar 4 vestry (below chancel) 5 vicarage

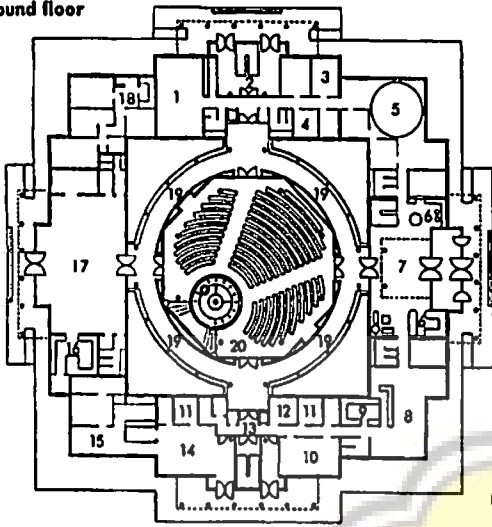
5 St Paul, Wightman Road, London (Anglican) (Arch: Inskip & Jenkins)



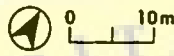
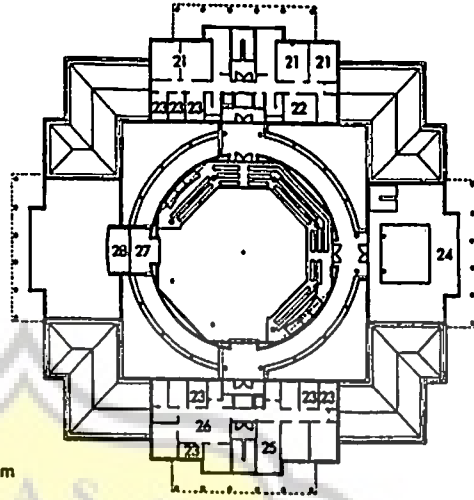
7 St Paul, Rossmore Road, London (Anglican): a re-ordering of a Victorian church to provide shared religious and community use (Arch: Q. Pickard)



ground floor

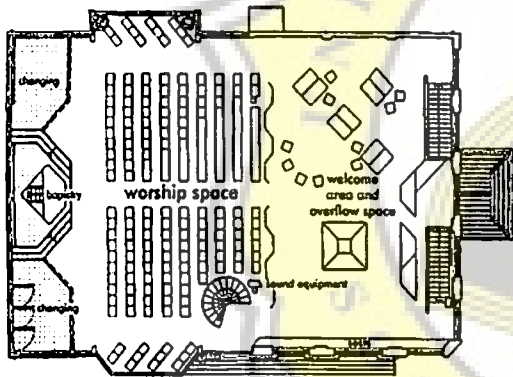


first floor

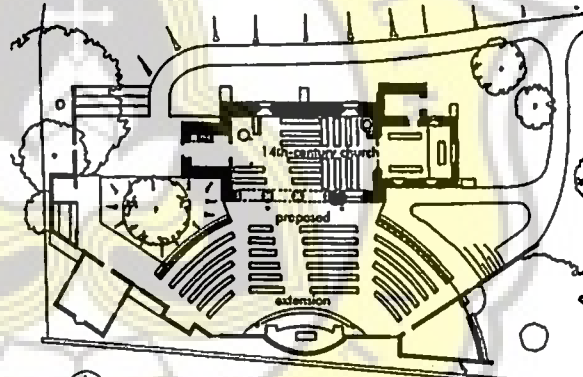


3 Church of Christ the Cornerstone, Milton Keynes: shared by five denominations (Anglican, Baptist, Methodist, Roman Catholic and URC) (Arch: PDD Architects)

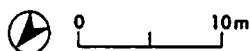
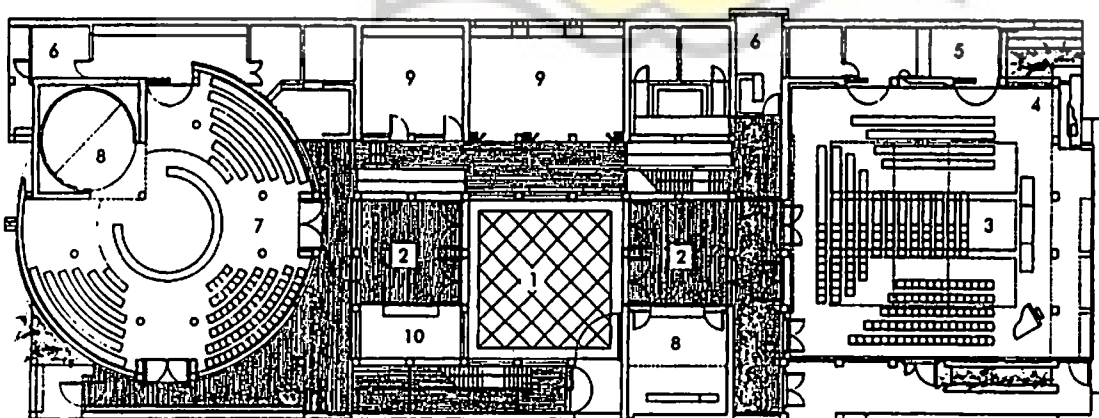
1 small hall; 2 lobby; 3 resource centre; 4 vestry; 5 chapel; 6 retail; 7 reception; 8 coffee shop; 9 kitchen; 10 meeting/activity room 11 counselling; 12 reception/admin; 13 lobby; 14 display area; 15 flat; 16 kitchen; 17 large hall; 18 warden's flat; 19 cloister; 20 worship area; 21 meeting room; 22 study; 23 counselling; 24 mezzanine; 25 common room; 26 reception; 27 organ; 28 projection



9 Emmanuel Christian Centre, Walthamstow: a Pentecostal church, with the worship hall on the first floor, and community facilities on the ground floor (Arch: Praxis Architecture)



10 St Peter, Ditton, Kent (Anglican) (Arch: Peter Melvin, Atelier MLM)



11 Bar Hill Ecumenical Church Centre (Arch: Ivor Richards)

1 main entrance and courtyard; 2 entrance foyers and social spaces; 3 worship space (400 seats, shared Protestant/Roman Catholic); 4 sanctuary and bell tower; 5 prayer room; 6 vestry/office; 7 worship space (300 seats, shared Protestant/Roman Catholic); 8 chapels; 9 teaching and community rooms; 10 coffee bar