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TECHNICAL REFERENCE

Facility design guidelines for acute general hospitals

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**Facility design guidelines for acute general
hospitals**

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Contents

	Page
Foreword _____	7
1 Scope _____	9
2 Normative references _____	9
3 Terms and definitions _____	11
4 Requirements common to all functional planning units (FPU) _____	12
4.1 Function and design considerations _____	12
4.2 Environmental considerations _____	15
4.3 Infection control _____	16
4.4 Building services _____	17
4.5 Power supply _____	19
5 Inpatient accommodation: General inpatient unit _____	22
5.1 General _____	22
5.2 Planning considerations _____	22
5.3 Function and design considerations _____	23
5.4 Environmental considerations _____	27
5.5 Infection control _____	28
5.6 Building services _____	29
6 Inpatient accommodation: Intensive care unit (ICU) _____	30
6.1 General _____	30
6.2 Planning considerations _____	31
6.3 Function and design considerations _____	32
6.4 Environmental considerations _____	35
6.5 Infection control _____	35
6.6 Building services _____	36
7 Inpatient accommodation: High dependency unit (HDU) _____	37
7.1 General _____	37
7.2 Planning considerations _____	37
7.3 Function and design considerations _____	39
7.4 Environmental considerations _____	42
7.5 Infection control _____	42
7.6 Building services _____	43
8 Inpatient accommodation: Isolation unit _____	44
8.1 General _____	44
8.2 Planning considerations _____	44
8.3 Function and design considerations _____	46

8.4	Environmental considerations _____	49
8.5	Infection control _____	50
8.6	Building services _____	51
9	Outpatient accommodation: Emergency unit _____	52
9.1	General _____	52
9.2	Planning considerations _____	53
9.3	Function and design considerations _____	54
9.4	Environmental considerations _____	59
9.5	Infection control _____	60
9.6	Building services _____	61
10	Outpatient accommodation: Outpatient unit – Specialist outpatient clinic (SOC) _____	62
10.1	General _____	62
10.2	Planning considerations _____	62
10.3	Function and design considerations _____	64
10.4	Environmental considerations _____	66
10.5	Infection control _____	66
10.6	Building services _____	67
11	Diagnostic and treatment areas: Operating unit _____	67
11.1	General _____	67
11.2	Planning considerations _____	67
11.3	Function and design considerations _____	68
11.4	Environmental considerations _____	73
11.5	Infection control _____	74
11.6	Building services _____	75
12	Diagnostic and treatment areas: Day surgery / procedure unit _____	76
12.1	General _____	76
12.2	Planning considerations _____	77
12.3	Function and design considerations _____	77
12.4	Environmental considerations _____	80
12.5	Infection control _____	81
12.6	Building services _____	81
13	Diagnostic and treatment areas: Endoscopy unit _____	82
13.1	General _____	82
13.2	Planning considerations _____	82
13.3	Function and design considerations _____	83
13.4	Environmental considerations _____	87
13.5	Infection control _____	88
13.6	Building services _____	89

14	Diagnostic and treatment areas: General medical imaging unit _____	89
14.1	General _____	89
14.2	Planning considerations _____	90
14.3	Function and design considerations _____	90
14.4	Environmental considerations _____	95
14.5	Infection control _____	96
14.6	Building services _____	97
15	Diagnostic and treatment areas: Oncology – Radiotherapy unit _____	98
15.1	General _____	98
15.2	Planning considerations _____	98
15.3	Function and design considerations _____	99
15.4	Environmental considerations _____	102
15.5	Infection control _____	103
15.6	Building services _____	103
16	Clinical support areas: Pathology unit _____	104
16.1	General _____	104
16.2	Planning considerations _____	105
16.3	Function and design considerations _____	105
16.4	Environmental considerations _____	108
16.5	Infection control _____	108
16.6	Building services _____	109
17	Clinical support areas: Pharmacy unit _____	110
17.1	General _____	110
17.2	Planning considerations _____	111
17.3	Function and design considerations _____	112
17.4	Environmental considerations _____	114
17.5	Infection control _____	114
17.6	Building services _____	115
18	Clinical support areas: Renal dialysis unit _____	115
18.1	General _____	115
18.2	Planning considerations _____	116
18.3	Function and design considerations _____	116
18.4	Environmental considerations _____	119
18.5	Infection control _____	119
18.6	Building services _____	120
19	Operational support services: Sterile supply unit (SSU) _____	121
19.1	General _____	121
19.2	Planning considerations _____	122

19.3	Function and design considerations _____	122
19.4	Environmental considerations _____	124
19.5	Infection control _____	124
19.6	Building services _____	125

Annexes

A	Corridor width guide _____	127
B	Acoustic guide _____	128
C	Room area guide _____	129

Tables

4.1	Load type categorisation _____	20
4.2	Definition of redundancy levels _____	20
5.1	Operational models for general inpatient unit _____	22
5.2	Operational models for nursing staff _____	22
5.3	Planning models for general inpatient unit _____	23
5.4	Functional areas for general inpatient unit _____	24
5.5	Provision of classed beds _____	24
5.6	Features of greenery provision and healing environment for inpatient unit _____	28
5.7	Modes of ventilation for wards _____	30
6.1	Operational models for ICU _____	31
6.2	Models of care for ICU _____	31
6.3	Functional areas for ICU _____	32
7.1	Operational models for HDU _____	38
7.2	Models of care for HDU _____	38
7.3	Functional areas for HDU _____	39
8.1	Operational models for isolation unit _____	44
8.2	Models of care for isolation unit _____	45
8.3	Classification and features of isolation rooms _____	45
8.4	Functional areas for isolation unit _____	46
8.5	Pressurisation requirements for isolation room(s) _____	52
9.1	Patient acuity category (PAC) scale _____	53
9.2	Models of care for emergency unit _____	53
9.3	Functional areas for emergency unit _____	55
9.4	Furniture and equipment (F&E) for emergency unit _____	58
10.1	Operational models for outpatient unit – SOC _____	63
10.2	Arrangement of consult / examination room(s) _____	63
10.3	Functional areas for outpatient unit – SOC _____	64
11.1	Classification of operating room(s) _____	68

11.2	Planning models for operating unit _____	68
11.3	Functional areas for operating unit _____	69
11.4	Recovery areas in operating unit _____	70
12.1	Functional areas for day surgery / procedure unit _____	78
13.1	Functional areas for endoscopy unit _____	84
14.1	Functional areas for general medical imaging unit _____	91
14.2	Radiation protection zones for general medical imaging unit _____	94
15.1	Patient treatment phases for oncology-radiotherapy unit _____	98
15.2	Functional areas for oncology-radiotherapy unit _____	100
16.1	Sub-specialists disciplines and services of pathology unit _____	104
16.2	Models of care for pathology unit _____	105
16.3	Functional areas for pathology unit _____	106
17.1	Services of pharmacy unit _____	111
17.2	Models of care for pharmacy unit _____	111
17.3	Functional areas for pharmacy unit _____	112
18.1	Functional areas for renal dialysis unit _____	117
19.1	Functional areas for sterile supply unit _____	123
19.2	Air pressure requirements between areas for zones within SSU _____	125
A.1	Recommended corridor width _____	127
B.1	Recommended internal design sound levels _____	128
C.1	Recommended room area guide _____	129
	Bibliography _____	130

Foreword

This Technical Reference was prepared by a Working Group (WG) appointed by the Technical Committee on Architectural Works which is under the direction of the Building and Construction Standards Committee (BCSC). The BCSC endorsed the Technical Reference on behalf of the Singapore Standards Council on 30 July 2015.

Under the Healthcare 2020 Master Plan, one of the key highlights was to improve the capacity of healthcare infrastructure, to meet new demands in healthcare needs. Hence, there was a need to develop a set of design guidelines on facilities relating to acute general hospitals. These guidelines will benefit healthcare operators and planners to enhance quality and safety in the healthcare services. This Technical Reference will also form a basis for future design guidelines in other care models such as sub-acute care – community hospital, nursing home, specialist outpatient clinic and polyclinic.

This TR is a provisional standard made available for application over a period of three years. The aim is to use the experience gained to update the TR so that it can be adopted as a Singapore Standard. Users of the TR are invited to provide feedback on its technical content, clarity and ease of use. Feedback can be submitted using the form provided in the TR. At the end of the three years, the TR will be reviewed, taking into account any feedback or other considerations, to further its development into a Singapore Standard if found suitable.

For ease of reference, the tables in this Technical Reference are numbered to correspond with the respective clauses.

In preparing this Technical Reference, the Working Group has incorporated inputs from the Association of Consulting Engineers Singapore, Association of Property and Facility Managers, Building and Construction Authority, Institution of Engineers Singapore, Ministry of Health, MOH Holdings Pte Ltd, Ministry of Manpower, National Environment Agency, Singapore Civil Defence Force, Singapore Institute of Architects, architects, consultants, medical planners as well as users and operators from the healthcare industry.

It is presupposed that in the course of their work, users will comply with all relevant regulatory and statutory requirements. Some examples of relevant regulations and acts are listed in the Bibliography. The Singapore Standards Council and Enterprise Singapore shall not be responsible for identifying all of such legal obligations.

Acknowledgement is made to the Facilities Guidelines Institute for the reproduction of their materials from the Guidelines for Design and Construction of Hospitals and Outpatient Facilities, 2014 edition, in Annex B of this Technical Reference.

Acknowledgement is made for the use of information from the above publications.

Attention is drawn to the possibility that some of the elements of this TR may be the subject of patent rights. Enterprise Singapore shall not be held responsible for identifying any or all of such patent rights.

NOTE

1. *Singapore Standards (SSs) and Technical References (TRs) are reviewed periodically to keep abreast of technical changes, technological developments and industry practices. The changes are documented through the issue of either amendments or revisions. Where SSs are deemed to be stable, i.e. no foreseeable changes in them, they will be classified as “mature standards”. Mature standards will not be subject to further review unless there are requests to review such standards.*
2. *An SS or TR is voluntary in nature except when it is made mandatory by a regulatory authority. It can also be cited in contracts making its application a business necessity. Users are advised to assess and determine whether the SS or TR is suitable for their intended use or purpose. If required, they should refer to the relevant professionals or experts for advice on the use of the document. Enterprise Singapore and the Singapore Standards Council shall not be liable for any damages whether directly or indirectly suffered by anyone or any organisation as a result of the use of any SS or TR. Although care has been taken to draft this standard, users are also advised to ensure that they apply the information after due diligence.*
3. *Compliance with a SS or TR does not exempt users from any legal obligations.*

Technical Reference for facility design guidelines for acute general hospitals

1 Scope

1.1 This Technical Reference specifies the general requirements for basic space and design planning of all acute general hospitals in Singapore.

It provides guidance on the specific needs of related facilities in an acute general hospital to design consultants and personnel who may be involved in the design, construction, operation and maintenance of the acute general hospital, as well as to enhance the quality of patient care by establishing standards to provide appropriate living conditions, with considerations of the safety, privacy and dignity for patients, staff and visitors.

1.2 Key planning unit (KPU) refers to a unit grouping broadly related activities within a hospital. Functional planning unit (FPU) refers to key components within a key planning unit (KPU) that determine the size of the unit. The KPUs and FPUs covered in this Technical Reference are as follow:

	<u>Key Planning Unit (KPU)</u>	<u>Functional Planning Unit (FPU)</u>
a)	Inpatient accommodation	<ul style="list-style-type: none"> – General inpatient unit – Intensive care unit (ICU) – High dependency unit (HDU) – Isolation unit
b)	Outpatient accommodation	<ul style="list-style-type: none"> – Emergency unit – Specialist outpatient clinics (SOC)
c)	Diagnostic and treatment areas	<ul style="list-style-type: none"> – Operating unit – Day surgery/ procedure unit – Endoscopy unit – General medical imaging unit – Oncology radiotherapy unit
d)	Clinical support areas	<ul style="list-style-type: none"> – Pathology unit – Pharmacy unit – Renal dialysis unit
e)	Operational support services	<ul style="list-style-type: none"> – Sterile supply unit (SSU)

2 Normative references

2.1 General

The following standards / referenced documents are indispensable for the application of this Technical Reference. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

2.2 Space, standards and components

SS 514 Code of practice for office ergonomics

SS 532 Code of practice for the storage of flammable liquids

SS 569 Code of practice for manual handling

Code on accessibility in the Built Environment 2013 (BCA)

European Union's Good Manufacturing Practice (EU-GMP)

USP 797 Standard for pharmaceutical compounding – Sterile preparations

Workplace safety and health guidelines – Laboratories handling chemicals, 2014

2.3 Environmental considerations

ANSI/ASHRAE/ASHE Standard 170-2013 Ventilation of health care facilities

EN779/ASHRAE 52.2 – Indoor air quality

SS 554 Code of practice for indoor air quality for air-conditioned building

SS 593 Code of practice for pollution control

SS 603 Code of practice for hazardous waste management

BCA Green Mark for healthcare facilities version HC/1.0

Guideline on boundary noise limit for air-conditioning and mechanical ventilation systems in non-industrial buildings (NEA)

Requirements for discharge of trade effluent into public sewers (PUB)

First Schedule to the Sewerage and Drainage (Trade Effluent) Regulations

Singapore green label scheme

Singapore green building product label

2.4 Infection control

SS 556 Code of practice for the design and management of aquatic facilities

2.5 Building services

ANSI/ASHRAE/ASHE Standard 170-2013 Ventilation of health care facilities

ISO 9170-1:2008 Terminal units for medical gas pipeline systems – Part 1: Terminal units for use with compressed medical gases and vacuum

SS 531 Code of practice for lighting of work places

SS 553 Code of practice for air-conditioning and mechanical ventilation in buildings

American Conference of Governmental Industrial Hygienist (ACGIH) Industrial ventilation: A manual of recommended practice for design

European Union's Good Manufacturing Practice (EU-GMP)

Health Technical Memorandum (HTM) 02-01 Medical gas pipeline systems

Health Technical Memorandum (HTM) 03-01 Specialised ventilation for healthcare premises

Health Technical Memorandum (HTM) 08-02 Lifts