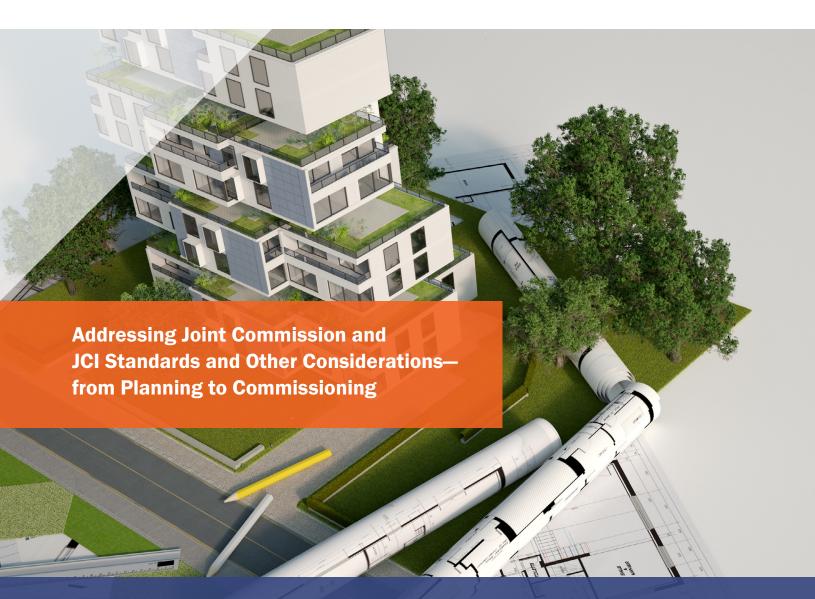


# Planning, Design, and Construction of Health Care Facilities



## **Fifth Edition**

Forewords by Michelle Trott, AIA, NCARB, ACHA, AIA Academy of Architecture for Health and Herman A. McKenzie, MBA, CHSP, The Joint Commission

### **Joint Commission Resources Mission**

The mission of Joint Commission Resources (JCR) is to continuously improve the safety and quality of health care in the United States and in the international community through the provision of education, publications, consultation, and evaluation services.

### **Disclaimers**

JCR educational programs and publications support, but are separate from, the accreditation activities of The Joint Commission. Attendees at Joint Commission Resources educational programs and purchasers of JCR publications receive no special consideration or treatment in, or confidential information about, the accreditation process. The inclusion of an organization name, product, or service in a JCR publication should not be construed as an endorsement of such organization, product, or service, nor is failure to include an organization name, product, or service to be construed as disapproval.

This publication is designed to provide accurate and authoritative information regarding the subject matter covered. Every attempt has been made to ensure accuracy at the time of publication; however, please note that laws, regulations, and standards are subject to change. Please also note that some of the examples in this publication are specific to the laws and regulations of the locality of the facility. The information and examples in this publication are provided with the understanding that the publisher is not engaged in providing medical, legal, or other professional advice. If any such assistance is desired, the services of a competent professional person should be sought.

© 2024 The Joint Commission

Published by Joint Commission Resources Oakbrook Terrace, IL 60181 USA https://www.jcrinc.com Joint Commission Resources, Inc. (JCR), a not-for-profit affiliate of The Joint Commission, has been designated by The Joint Commission to publish publications and multimedia products. JCR reproduces and distributes these materials under license from The Joint Commission.

All rights reserved. No part of this publication may be reproduced in any form or by any means without written permission from the publisher. Requests for permission to make copies of any part of this work should be sent to permissions@icrinc.com.

ISBN (print): 978-1-63585-390-2 ISBN (e-book): 978-1-63585-391-9

Printed in the USA

For more information about The Joint Commission, please visit <a href="https://www.jointcommission.org">https://www.jointcommission.org</a>.

### **Development Team**

Senior Editor (former): Marieke Z. Swerski
Editorial Coordinator: Kristine Stejskal
Senior Project Manager: Heather Yang
Associate Director, Global Publications, Books & Digital
Subscriptions: Phyllis Crittenden
Associate Director, Production: Johanna Harris
Executive Director, Global Publishing: Catherine Chopp
Hinckley, MA, PhD

# Joint Commission Enterprise Reviewers

Robert Aubrey, Physical Environment Specialist Yvonne P. Burdick, MHA, FACHE, EDAC, Consultant

# **Table of Contents**

Forewordsvii	Confirmation of the Strategic Plan	23
From The American Institute of Architects Academy	Documentation of the Current Situation	23
of Architecture for Healthvii	Determination of Future Functional Space	
From The Joint Commissionviii	Requirements	25
	Development of the Master Plan	26
Introduction	Case Study: Planning: Sarasota Memorial Hospital,	
Audiences for This Bookxii	Sarasota, FL	27
Purpose of This Bookxii	Detailed Functional and Space Programming	30
Content and Organization of This Book xiii	Functional Program Overview	30
Joint Commission and Joint Commission International	Developing an Operational or Functional Program	32
Standardsxiv	Evidence-Based Design	33
Manuals to Consultxiv	Case Study: Staff Well-Being: Royal Liverpool University	
Common Themesxvi	Hospital, Liverpool, UK	34
Acknowledgmentsxvii	Logistics and Organizing the Planning Process	38
Other Contributorsxvii	Assembling the Project Team	38
Special Acknowledgmentsxvii	Budgeting4	44
Referencesxvii	References	46
Foundations: Standards and Regulations1	Chapter 2: The Design Process	49
Joint Commission and Joint Commission International	Predesign	50
Standards2	The Functional Plan	50
Standards and the Physical Environment2	Risk Assessments During Predesign	50
The Facility Guidelines Institute6	Process Improvement During Predesign	51
The FGI Guidelines6	Schematic Design	52
Other Relevant Standards and Regulations7	Testing Design Alternatives	52
US/Domestic Standards and Regulations7	Documentation	52
International Standards and Regulations8	Case Study: Flex Spaces: Gundersen St. Joseph's,	
Codes per the Authority Having Jurisdiction (AHJ)8	Hillsboro, WI	53
	Revised Budget and Schedule	58
Chapter 1: Planning9	Design Development	58
Types of Planning10	Interactive Teamwork	58
Strategic Planning10	Space Planning and Standardization	58
Case Study: Health Equity: Friend Health Family Health	Regulatory Review	59
Center, Chicago, IL12	Documentation	59
Master Facility Planning19	Mock-Ups	62
Project Predesign Planning19	Revised Budget and Schedule	63
The Strategic Planning Process19	Case Study: Modular Design for COVID-19 Response	
The Master Facility Planning Process 22	and Beyond: STAAT Mod®	65

Construction Documents Preparation	69	Case Study: Specialty Design: Eating Recovery Center	
Documentation		Willow, Denver, CO	
Separate Contracts	70	Rehabilitation Services	.116
Revised Budget and Schedule	71	References	.117
References	73		
		Chapter 4: Construction	
Chapter 3: Considerations for Designing the		Construction Bidding or Negotiating	.122
Physical Environment of Care	75	Construction Risk Management	.122
Designing for Mechanical, Electrical, and Plumbing		Preconstruction Risk Assessment	.122
Infrastructures	76	Infection Control Risk Assessment (ICRA)	.125
Fire/Smoke Dampers	76	Implementing Preconstruction Risk Assessment	
Air Exchanges	76	Measures	.126
Room Pressurization	77	Interim Life Safety Measures (ILSMs)	.127
Humidity Control	77	ILSM Options	
Redundancies	77	Implementing ILSMs	.128
Emergency Power	78	Statement of Conditions (SOC)	.128
Fuel Storage	78	ILSM Team	.128
Microgrid Systems	78	Construction Activities	.129
Role of Design in Environmentally Sustainable		Project Team Kickoff Meeting	.129
Health Care	79	Construction Worker Education	.129
Incorporating Sustainable Design Principles	81	Implementing Safety Measures During Construction	.130
Case Study: Sustainability: Lucile Packard Children's		Environmental Sustainability During Construction	.130
Hospital Stanford, Palo Alto, CA	82	Cleaning Up	.132
Sustainable Design Certifications	86	References	.133
ZERO Code: A Standard for Zero-Net-Carbon		Focus: Construction Risks and Measures	.134
Buildings	87		
Material Transparency: Health Product and		Chapter 5: Commissioning	.139
Environmental Product Declarations	87	The Commissioning Process	.140
Sustainable Health Care Operations Resources	87	During Planning	.140
Case Study: Sustainability: Emory Musculoskeletal		During Design	.140
Institute, Brookhaven, GA	88	During Construction	.141
Efficiency and Ergonomics	92	During Commissioning	.141
Patient Movement	92	Allowing Time for Commissioning	.141
Human Factors	93	The Commissioning Team	.141
Fall Prevention	95	Commissioning Authority	.141
Visitors and Family	96	Sample Commissioning Team	.141
Evidence-Based Design	97	Standards and Regulations for Commissioning	.142
Technology-Supportive Design	99	Joint Commission International and Commissioning	.142
Patient-Centered Design	.100	Facility Commissioning	.142
Designing for Resiliency	.100	Performance Tests	.142
Case Study: Resiliency: Ruth Bader Ginsburg Hospital,		Issues Log	.143
New York, NY	.101	Process Management with Checklists	.143
Specialty Design	.104	Process Documentation	.143
Laboratories	.104	Joint Commission and JCI Required Documentation	.144
Pharmacies	.106	Commissioning Budget	.145
Hybrid Operating Rooms	.107	Benefits of Commissioning	.145
Diagnostic Imaging	.108	Looking Forward	.145
Behavioral Health Care	.111	References	.145

Chapter 6: Occupancy and Postoccupancy	147
Facility Orientation	148
Simulations	148
Staff Training and Simulations	149
Clinical Operations Commissioning	149
Seven Medical Flows	149
Five Steps for COC Simulations	149
Effect of Workflow Processes on Medical Flows.	149
Using FMEA	151
Move-In	151
Issue Resolution System	151
Postoccupancy Evaluation	152
Dissemination of Evaluation Findings	152
Use of Space	152
Survey Considerations	152
Extension Surveys	152
Reference	153
Focus: Moving Day	154
terter.	457
Index	157