CONTENTS

Preface	×i	3.3 Obtaining Work	58
Acknowledgments	×iii	3.4 The Residential Developer	60
DARTONE		3.5 Training the Construction Community	67
PART ONE		3.6 Green Builders, Contractors,	60
CONTEXT FOR BUILDING	1	Remodelers, and Developers	68 70
Chapter 1		3.7 Tools of the Trade3.8 Safety	72
The Context for Residential			
Construction	3	Chapter 4	
	3	The Design Community	77
1.1 History	4	44 History	78
1.2 A Culture of Building	6	4.1 History 4.2 Residential Designers	79
1.3 Construction Systems	9	4.3 Consultants	81
1.4 Types of Residential Development	11	4.4 The Design Process	84
1.5 Zoning Ordinances, Building Codes,		4.5 Design Sources	89
and Other Legal Constraints	17	4.6 Communication between Designer	
1.6 Building Costs and Financing	19	and Builder	91
1.7 Building a House: The Typical Process	22	4.7 Green Designers	94
1.8 MasterFormat	26		
Chapter 2			
Sustainability Aspects of		PART TWO	
Construction	31	MATERIALS	07
		IVIATERIALS	97
2.1 Why Sustainability Matters for Buildings	32	Chapter 5	
2.2 Environmental Responsibility:	0.5	Wood and Wood Products	00
Building Green	35	wood and wood Floducts	99
2.3 Comprehensive Certification Systems	45	5.1 Trees	100
Chapter 3		5.2 Lumber	104
The Construction Community:		5.3 Wood Products	114
Builders, Contractors,		5.4 Chemical Treatment	127
and Developers	51	5.5 Wood Fasteners	128
and bototopois	J -	5.6 Wood-Manufactured Building	
3.1 History	52	Components	134
3.2 Builders and Contractors	54	5.7 Types of Wood Construction	134

Chapter 6		Chapter 9	
Masonry	141	Foundations	221
6.1 History	142	9.1 Foundation Loads	222
6.2 Mortar	145	9.2 Foundation Settlement	222
6.3 Concrete Masonry	146	9.3 Soils	223
6.4 Brick Masonry	156	9.4 Designing Foundations	224
6.5 Stone Masonry	168	9.5 Footings	226
6.6 Other Types of Masonry Units6.7 Special Problems of Masonry	172	9.6 Concrete Foundation Walls9.7 Concrete Masonry Foundation	229
Construction	173	Walls	232
		9.8 Concrete Slab Foundations	233
Chapter 7		9.9 Wood Foundations	240
•		9.10 Precast Concrete	
Concrete	17 9	Foundations	240
7.1 History	180	9.11 Pier Foundations	240
7.2 Cement and Concrete	181	9.12 Anchor Bolts and Hold-Downs	241
7.3 Making and Placing Concrete	184	9.13 Drainage and Waterproofing	241
7.4 Formwork	188	9.14 Foundation Insulation	244
7.5 Reinforcing	188	9.15 Backfilling	246
7.6 ACI 301	195	9.16 Foundation Design and the	
7.07101301	190	Building Codes	247
		Chapter 10	
PART THREE		Floor and Wall Framing	251
Wood LIGHT FRAME HOUSE		10.1 History	252
CONSTRUCTION	199	10.2 The Platform Frame	253
		10.3 Building the Frame	255
Chapter 8			255
Rough Site Work	201	Chapter 11	
3		Roof Framing	281
8.1 Design Considerations	202	3	
8.2 Organizing the Site for		11.1 History	282
Construction	203	11.2 Roof Types and Parts	283
8.3 Site Preparation	203	11.3 Building the Roof	285
8.4 Excavation	205	11.4 Wood Framing and the Building	
8.5 Site Utilities	206	Codes	301
8.6 Surface Water Drainage	211	11.5 The Uniqueness of Wood Light	
8.7 Grading	214	Frame Construction	303

		Conte	nts VII
Chapter 12 Finishing the Roof	309	16.3 Radiant Panel Systems 16.4 Other Hydronic Heating Systems 16.5 Ductless, Mini-Split Heat Pumps	416 420 421
12.1 Preparation for Roofing 12.2 Roof Slope	310 312	16.6 Local Source Heaters 16.7 Finishing a Heating/Cooling	421
12.3 Steep Roofs 12.4 Low-Slope Roofs	313 326	System 16.8 Heating and Cooling Systems and	425
12.5 Roof Edge Details 12.6 Roof Drainage	331 334	the Building Codes	426
12.7 Roofing and the Building Codes	336	Chapter 17	
Chapter 13		Fireplaces and Stoves	431
Windows and Exterior Doors	341	17.1 Selecting a Fireplace 17.2 Planning for Fireplace	433
13.1 Windows	342	Construction	434
13.2 Exterior Doors	354	17.3 The Masonry Fireplace	434
Chapter 14		17.4 Masonry Heaters 17.5 Factory-Built Fireplaces	444 444
•	262	17.6 Freestanding Stoves	448
Finishing the Exterior Walls	363	17.7 Fireplaces and the Building Codes	449
14.1 The Weather Barrier Membrane 14.2 Exterior Trim	365 366	Chapter 18	
14.3 Siding 14.4 Exterior Paints and Coatings	366 375	Electrical Wiring	455
14.5 Ladders and Scaffolds	382	18.1 Wiring Basics 18.2 Electrical System Design	456 461
Chapter 15		18.3 Rough-in Electrical Installation	464
Plumbing	389	18.4 Finish Electrical Work	466
		18.5 Electrical Wiring and the Building	
15.1 Plumbing Basics	390	Codes	467
15.2 Planning for Pipes 15.3 Rough-in Plumbing	394	18.6 Low-Voltage Wiring	467
15.4 Finish Plumbing	395 398	Chapter 19	
15.5 Plumbing Codes	398	Thermal Insulation	471
15.6 Other Piping Systems	399	mermat moutation	471
Chapter 16		19.1 The Thermal Envelope and Its	470
		Components 19.2 Thermal Insulation Materials	473
Heating and Cooling	407	19.3 How Much Insulation?	478 482
16.1 Choosing a System	408	19.4 Installation of Insulation	483
16.2 Forced-Air Systems	410	19.5 Control of Water Vapor	485

VIII Contents

19.6 Ventilation of Cavities 19.7 Control of Air Infiltration	487 491	23.2 Types of Panels 23.3 Framed Panel Systems 23.4 Structural Insulated Panels	
Chapter 20		23.5 Prefabricated (Factory-Built) House Construction	F90
Interior Surfaces	497	House Construction	580
20.1 Wall and Ceiling Finish 20.2 Finish Flooring	498 505	Chapter 24	-0-
20.2 1 1113111 (0011119	505	Timber Frame Construction	587
Chapter 21		24.1 The Uniqueness of the	-0-
Finishing the Interior	517	Timber Frame 24.2 Materials and Structure of the	589
21.1 Interior Doors	518	Timber Frame	592
21.2 Cabinets 21.3 Finish Carpentry and Trim	521 528	24.3 Building a Timber Frame House	594
21.4 Paints and Coatings	535	24.4 Timber Framing and the	334
Chapter 22		Building Codes	597
Finish Sitework	541	Chapter 25	
		Loadbearing Masonry	
22.1 Paving Systems 22.2 Level Changes	542 545	and Concrete Construction	603
22.3 Porches and Decks	549	25.1 Loadbearing Masonry	604
22.4 Finish Grading 22.5 Fencing	550 551	25.2 Insulating Concrete Forms	610
22.6 Outdoor Lighting	553	Chapter 26	
22.7 Irrigation 22.8 Planting	554 555	Light-Gauge Steel	
22.0 1 tariting	333	Construction	621
PART FOUR		26.1 Light-Gauge Steel Frame	
ALTERNATIVE CONSTRUCTION		Construction	622
SYSTEMS	559	Chapter 27	
Chapter 23		Low-Tech, Low-Energy	
Panelized and Prefabricated		Construction	637
Construction	561	27.1 Earthen Construction	638
23.1 The Concept of Prefabricated and		27.2 Stacked Log Construction	646
Panelized Construction	563	27.3 Straw Bale Construction	651

		Contents IX
	28.3 Foundations	671
	28.4 Framing	680
00-	28.5 Acoustical Separation	687
665	28.6 Fire Protection	690
	28.7 Systems	692
	28.8 Accessibility	694
	28.9 Site Management	695
667	Glossary	703
668 671	Index	727
	668	28.4 Framing 28.5 Acoustical Separation 28.6 Fire Protection 28.7 Systems 28.8 Accessibility 28.9 Site Management 667 Glossary Index