

# CONTENTS

Foreword viii  
Preface ix  
Acknowledgments x

## Part 1

### PLANS AND PLAN MAKING I

#### PLAN MAKING 3

Plan Making 3

#### TYPES OF PLANS 6

Comprehensive Plans 6  
Urban Design Plans 10  
Regional Plans 14  
Neighborhood Plans 16  
Transportation Plans 18  
Housing Plans 22  
Economic Development Plans 25  
Parks and Open-Space Plans 27  
Critical and Sensitive Areas Plans 30

#### PARTICIPATION 32

Role of Participation 32  
Stakeholder Identification 35  
Surveys 37  
Community Visioning 39  
Charrettes 41  
Public Meetings 43  
Public Hearings 46  
Computer-Based Public Participation 47

## Part 2

### ENVIRONMENTAL PLANNING AND MANAGEMENT 49

#### ENVIRONMENTAL MANAGEMENT OVERVIEW 51

Environmental Planning Considerations 51

#### AIR 53

Air Quality 53  
Air Sheds 55  
Heat Islands 57

#### WATER 59

Hydrologic Cycle 59  
Watersheds 61  
Aquifers 63  
Rivers and Streams 65  
Floodplains and Riparian Corridors 68  
Wetlands 72  
Beach and Dune Systems 74  
Estuaries, Flats, and Marshes 77

#### LAND 79

Slope, Relief, and Aspect 79  
Soils Classification and Mechanics 81  
Habitat Patches, Corridors, and Matrix 83  
Biodiversity Protection 85

#### HAZARDS 87

Flood Hazards 87  
Erosion and Sedimentation 90  
Hurricanes and Coastal Storms 93  
Landslides 95  
Sinkholes and Subsidence 98  
Earthquakes 100  
Wildfires 103  
Hazardous Materials 105  
Tsunamis and Seiches 108  
Noise and Vibration 110

## Part 3

### STRUCTURES 117

#### BUILDING TYPES 119

Residential Types 119  
Single-Family Detached 123  
Single-Family Attached 124  
Multifamily Low-Rise 125  
Multifamily Mid-Rise 126  
Multifamily High-Rise 127  
Manufactured Housing 128  
Office Buildings 130  
Elementary, Middle, and High Schools 134  
Medical Facilities 138

## TRANSPORTATION 143

- Sidewalks 143
- Hierarchy of Streets and Roads 150
- Street Networks and Street Connectivity 153
- Vehicle Turning Radii 157
- Traffic Calming 159
- Pedestrian-Friendly Streets 163
- Parking Lot Design 166
- On-Street Bikeways 170
- Multitrail Trails 172
- Transit Systems 176

## UTILITIES 182

- Waste Management 182
- Wastewater 184
- Stormwater Runoff and Recharge 186
- Water Supply 190
- Wireless Infrastructure Overview 192

## PARKS AND OPEN SPACE 194

- Types of Parks 194
- Greenways and Trails 200
- Conservation Areas 204
- Playgrounds 207

## FARMING AND FORESTRY 212

- Farms 212
- Feedlots 215
- Forestry 217

# Part 4

## PLACES AND PLACEMAKING 221

### REGIONS 223

- Regions 223

### PLACES AND DISTRICTS 227

- Neighborhoods 227
- Neighborhood Centers 230
- Historic Districts 233
- Waterfronts 237
- Arts Districts 242
- Industrial Parks 244
- Office Parks 246
- Main Streets 248

## DEVELOPMENT TYPES 251

- Mixed-Use Development 251
- Transit-Oriented Development 254
- Conservation Development 257
- Infill Development 260

## DESIGN CONSIDERATIONS 262

- Environmental Site Analysis 262
- Urban Analysis 265
- Scale and Density 270
- Safety 274
- Walkability 280
- Leadership in Energy and Environmental Design—LEED 283
- Streetscape 286

# Part 5

## ANALYSIS TECHNIQUES 297

### PROJECTIONS AND DEMAND

#### ANALYSIS 299

- Population Projections 299
- Economic Base and Econometric Projections 303
- Housing Needs Assessment 305
- Parks, Recreation, and Open-Space Needs Assessment 308

### IMPACT ASSESSMENT 310

- Environmental Impact Assessment 310
- Fiscal Impact Assessment 314
- Traffic Impact Studies 317

### MAPPING 320

- Mapping Data Overview 320
- Aerial Photographs and Digital Orthophoto Quadrangles 322
- U.S. Geological Survey Topographic Maps 323
- Property Maps in Modern Cadastres 328
- Census Data and Demographic Mapping 329
- Remote Sensing and Satellite Image Classification 331
- Geographic Information Systems 333

### VISUALIZATION 336

- Visualization Overview 336
- Montage Visualization 338
- Three-Dimensional Visualization 340
- Visual Preference Techniques 342

## Part 6

### IMPLEMENTATION TECHNIQUES 345

#### LEGAL FOUNDATIONS 347

- Planning Law Overview 347
- Property Rights, Police Power, Nuisance, and Vested Rights 348
- Due Process and Equal Protection 350
- Freedom of Religion and Expression 352
- Eminent Domain, Takings, and Exactions 355
- Federal Legislation 358
- State Enabling Legislation 362
- Zoning Regulation 364
- Subdivision Regulation 368
- Planned Unit Development 370
- Innovations in Local Zoning Regulations 372
- Sign Regulation 375

#### GROWTH MANAGEMENT 377

- Adequate Public Facilities and Concurrency Management 377
- Urban Growth Areas 379

- Development Impact Fees 382
- Transfer and Purchase of Development Rights 383

#### PRESERVATION, CONSERVATION, AND REUSE 384

- Open-Space Preservation Techniques 384
- Farmland Preservation 386
- Land Evaluation and Site Assessment 389
- Viewshed Protection 390
- Historic Structures 395
- Brownfields 399

#### ECONOMIC AND REAL ESTATE DEVELOPMENT 401

- Capital Improvement Programs 401
- Tax Increment Financing 403
- Financing Methods and Techniques 406
- Financial Planning and Analysis: The Pro Forma 409

#### Resources 415

- Planning Resources 429
- Graphic Symbols and Drawing Annotations 430
- Index 431