

TABLE OF CONTENTS

FOREWORD V
ABOUT THE AUTHORS IX
PREFACE XXIV

PART ONE

INTRODUCTION TO LAW

CHAPTER 1

EVOLUTION OF ENGINEERING AND LAW 2

- 1.1 Introduction to Engineering and Law 2
- 1.2 Military and Civil Engineering 2
- 1.3 Criminal and Civil Law 3
- 1.4 Society and the Law 3
- 1.5 The Code of Hammurabi 4
- 1.6 Law as a Process 5
- 1.7 The Law in General 6
 - 1.7.1 *Substantive v. Procedural Law* 7
 - 1.7.2 *Criminal v. Civil Law* 7
 - 1.7.3 *Common Law v. Statute Law v. Administrative Law v. Constitutional Law* 8
 - 1.7.4 *International Law v. Commercial Law v. Maritime Law* 8
 - 1.7.5 *Conclusion* 8
- 1.8 Contacts with Lawyers 9
- 1.9 Licensing 10
- 1.10 Code of Ethics of the National Society of Professional Engineers (NSPE) 11
- 1.11 Definitions 17
- 1.12 A General Picture of Engineering 17
- 1.13 Responsibility of the Engineer 18
- 1.14 Phases of the Development of a Construction Project 18

CHAPTER 2

LEGAL SYSTEMS IN THE UNITED STATES AND THE WORLD 20

- 2.1 The English Common Law System 20
 - 2.1.1 *Common Law* 20
 - 2.1.2 *Statute Law* 22
 - 2.1.3 *Federal v. State Law* 23
 - 2.1.4 *Uniform Laws and Codes* 25
 - 2.1.5 *Merger of Consensus, Statutes, and Codes* 26
 - 2.1.6 *Equity* 26
- 2.2 The European Civil Law System 28
 - 2.2.1 *The Napoleonic Code* 28
 - 2.2.2 *Modern French Law* 29
 - 2.2.3 *Export to Spain and Colonies of Spain* 30
 - 2.2.4 *Global Diversity of Civil Law* 31
 - 2.2.5 *Common and Civil Law and NAFTA* 31
 - 2.2.6 *Civil Law in the United States* 32
- 2.3 The Chinese (Justice) Law System 33
 - 2.3.1 *Historical* 33
 - 2.3.2 *Post 1945* 34
 - 2.3.3 *Current Trends* 34
- 2.4 The Shari'a Law and Other Legal Systems 35
 - 2.4.1 *Historical* 35
 - 2.4.2 *Sunni* 36
 - 2.4.3 *Shi'a* 36
 - 2.4.4 *Understanding of Law and the Global Economy* 37

CHAPTER 3

SUBSTANTIVE V. PROCEDURAL LAW 38

- 3.1 The Ten Commandments 38
- 3.2 Evidence 39

3.2.1 Competency of Witnesses and Excluded Communications 41
3.2.2 The Hearsay Evidence Rule and Exceptions 41
3.2.3 Best-Evidence Rule 43
3.2.4 Parol Evidence Rule 44
3.2.5 Reference Material as Evidence 44
3.3 Civil Procedure 45
3.4 Criminal Procedure 47
3.5 Choice of Law 47

CHAPTER 4
SYSTEMS OF COURTS 49

4.1 U.S. Federal Courts 49
4.2 U.S. Court of Federal Claims 50
4.3 Armed Services Board of Contract Appeals 51
4.4 U.S. State Courts 52
4.5 U.S. Arbitration 52
4.6 Transnational Adjudication 53
■ Questions on Introduction to Law 53

PART TWO
LAW OF CONTRACTS

CHAPTER 5
TYPES OF CONTRACTS 57

5.1 Expressed and Implied 57
5.2 Quasi-contracts 58
5.3 Unilateral and Bilateral 59
5.4 Joint and Several 60
5.5 Entire and Severable 61
5.6 Void and Voidable 63
5.7 Executory and Executed 63
5.8 Negotiated and Adhesion 64
5.9 Privity, Subcontracts, and Mechanic’s Liens 65
5.10 Transactional Analysis 66

CHAPTER 6
FORMATION OF CONTRACTS 68

6.1 Definition of the Word “Contract” 68
6.2 Competent Parties 68
6.3 Proper Subject Matter 71
6.4 Offer 73
6.5 Acceptance 75
6.6 Meeting of the Minds 78
6.7 Consideration 80
6.8 Mutuality of Obligation 85
6.9 Minimum Terms 87

CHAPTER 7
PROCEDURAL ISSUES IN FORMATION OF CONTRACTS 89

7.1 Assignment 89
7.2 Promissory Estoppel 90
7.3 Fraud and Material Misrepresentation 91
7.4 Statute of Frauds 92

CHAPTER 8
TERMS AND CONDITIONS 95

8.1 Definition and Classification 95
8.2 Potestative, Casual, and Mixed 95
8.3 Single, Copulative, and Disjunctive 95
8.4 Expressed, Implied in Fact, and Implied in Law 95
8.5 Precedent and Subsequent 96
8.6 Concurrent 97
8.7 Personal Taste 97
8.8 Time of Performance 97
8.9 Place of Performance 98
8.10 Amount of Compensation 98
8.11 Failure of Condition 98

CHAPTER 9

PRIVITY AND THIRD-PARTY BENEFICIARIES 99

- 9.1 Requirement for Privity 99
- 9.2 The Creditor Beneficiary 99
- 9.3 The Donee Beneficiary 100
- 9.4 The Incidental Beneficiary 100
- 9.5 The Intended Beneficiary 100
- 9.6 Rescission of Third-Party Beneficiary Contracts 101

CHAPTER 10

CONSTRUCTION AND INTERPRETATION 102

- 10.1 General Rules of Construction 102
- 10.2 Intent v. Parol Evidence Rule 102
- 10.3 Contract to Be Considered as a Whole 102
- 10.4 Construing Ambiguous Terminology 103
- 10.5 Parties' Own Interpretation 103
- 10.6 Implied Terms 103
- 10.7 Priority of Documents 104
- 10.8 Unilateral and Clerical Errors 105
- 10.9 Conflict of Laws—Substantive v. Procedural 105

CHAPTER 11

DISCHARGE OF OBLIGATIONS 106

- 11.1 Performance 106
- 11.2 Tender 106
- 11.3 Condition Subsequent 107
- 11.4 Impossibility 109
- 11.5 Destruction of Subject Matter 111
- 11.6 Commercial Frustration 112
- 11.7 Rescission 112
- 11.8 Substitution of Contract 113
- 11.9 Reformation 114

- 11.10 Release 114
- 11.11 Novation 114
- 11.12 Cancellation 114
- 11.13 Accord and Satisfaction 115
- 11.14 Waiver 116
- 11.15 Account Stated 118
- 11.16 Lapse 118
- 11.17 Statutes of Limitations v. Doctrine of Laches 118
- 11.18 Judgment 118

CHAPTER 12

ISSUES WITH DISCHARGE BY PERFORMANCE 119

- 12.1 Substantial Performance of an Entire Contract 119
- 12.2 Substantial Performance of a Severable Obligation 119
- 12.3 Partial Performance and Divisibility 120
- 12.4 Timely Performance v. Time Is of the Essence 121
- 12.5 Evaluation of Performance v. Good Faith 121

CHAPTER 13

REMEDIES FOR BREACH OF CONTRACT 124

- 13.1 General Considerations for Remedies for Breach 124
- 13.2 Termination 125
- 13.3 Specific Performance 125
 - 13.3.1 *Specific Performance for Land* 125
 - 13.3.2 *Specific Performance for Services* 125
 - 13.3.3 *Specific Performance for Goods* 126
 - 13.3.4 *Additional Considerations for Specific Performance* 126
- 13.4 Monetary Damages 126

13.4.1	<i>Compensatory Damages</i>	126
13.4.2	<i>Incidental Damages</i>	127
13.4.3	<i>Consequential Damages</i>	127
13.4.4	<i>Nominal Damages</i>	127
13.4.5	<i>Punitive Damages and Common Law</i>	128
13.4.6	<i>Punitive Damages and Civil Law</i>	128
13.5	Liquidated or Stipulated Damages	128
13.6	Duty to Mitigate Damages	129
13.7	Restitution and Constructive Trusts	130
13.8	Special Rules for Goods	131
13.9	Special Rules for Improvements to Real Property—The Economic Waste Rule	132
■	<i>Questions on Law of Contracts</i>	133

PART THREE

RELATIONSHIPS OF INDIVIDUALS AND SOCIETY

CHAPTER 14

AGENCY 142

14.1	Definitions and Distinctions	142
14.2	Independent Contractor Distinguished from Agent	142
14.3	Trustee Distinguished from Agent	143
14.4	Importance of Agency	143
14.5	Creating the Agency Relationship	143
14.6	Agency by Estoppel or Ratification	144
14.7	General and Special Agent	144
14.8	Position of the Agent	145
14.9	Position of the Principal	146
14.10	The Undisclosed Principal	146
14.11	Subagents	146
14.12	Termination of the Agency	147

CHAPTER 15

PARTNERSHIPS 149

15.1	Nature of a General Partnership	149
15.2	Articles of Partnership	150
15.3	Oral and Implied Partnerships	151
15.4	Each Partner as Agent of the Partnership	151
15.5	Overreaching by a Partner	152
15.6	Tort Liability	152
15.7	Contract Liability	152
15.8	Incoming and Retiring General Partners	153
15.9	Termination of the Partnership	153
15.10	Limited Partnership	154
15.11	Subpartnership	156
15.12	Joint Ventures	156

CHAPTER 16

CORPORATIONS 157

16.1	Concept of a Fictitious Entity	157
16.2	History of Corporations	157
16.3	Types of Corporations	158
16.3.1	<i>Public Corporations</i>	158
16.3.2	<i>Quasi-Public Corporations</i>	159
16.3.3	<i>Membership Corporations</i>	159
16.4	Characteristics of a Private Corporation	161
16.5	Powers of a Private Corporation	162
16.6	Formation of a Private Corporation	162
16.7	Issues Regarding Defectively Formed Corporations	163
16.8	Ultra Vires Activity	163
16.9	Stock and Stockholders	164
16.10	Directors	165
16.11	Officers	167
16.12	Control Devices of Stockholders	168
16.13	Subsidiary and Affiliated Corporations	171

16.14 Holding Companies, Consolidations,
and Mergers 171
16.15 Dissolution and Winding Up 171
16.16 Bankruptcy and Reorganization 171

CHAPTER 17

INSURANCE 172

17.1 Introduction 172
17.2 Nature of Insurance 172
17.3 The Policy Is the Contract 172
17.4 Insurable Interest 172
17.5 Governmental Regulation 173
17.6 Some Types of Insurance Coverage 174
17.7 Professional Liability Insurance 175
17.8 Owner's Protective Liability Insurance 177
17.9 Contractor's Liability Insurance 177
17.10 Builder's Risk Insurance 179

CHAPTER 18

BONDS AND SURETYSHIP 181

18.1 Bonds in General 181
18.2 Tripartite Parties to a Bond 181
18.3 Fidelity Bonds 181
18.4 Bail Bonds 181
18.5 Surety Bonds 182
18.6 Bonds in Public Works 182
18.7 Contract Bonds 183
18.8 Principal's Relations with Surety 186
18.9 Obligee's Relations with Surety 186

CHAPTER 19

**FEDERAL STATUTES AND
REGULATIONS 188**

19.1 Labor Law 188
19.2 Employment Discrimination 191

19.3 Affirmative Action 192
19.4 Americans with Disabilities Act 193
19.5 Workman's Compensation Acts 193
19.6 Occupational Safety and Health Act 193
19.7 Responsibility for Employee Health,
Safety, and Welfare 198
■ *Questions on Law of Relationships* 198

PART FOUR

LAW OF TORTS

IV

CHAPTER 20

**DEFINITION AND SCOPE
OF TORTS 207**

20.1 Definition and Scope of Torts 207
20.2 Classes of Torts 207
20.3 Bases of Tort Liability 207
20.4 Vicarious Liability 208
20.5 Immunities 210

CHAPTER 21

**TORTS BASED UPON INTENTIONAL
ACTIONS 213**

21.1 Introduction 213
21.2 Intent 213
21.3 Battery 214
21.4 Assault 215
21.5 False Imprisonment 215
21.6 Trespass to Land 217
21.7 Conversion 217
21.8 Trespass to Chattel 218
21.9 Nuisance 218
21.10 Emotional Disturbance 219
21.11 Intentional Infliction of Emotional Distress 220
21.12 Defamation 220

21.13 Right to Privacy	222
21.14 Injurious Falsehood	224
21.15 Intentional Interference with Economic Relations	225
21.16 Fraudulent Misrepresentation	225
21.17 Malicious Prosecution	225
21.18 Malicious Use of Process	226
21.19 Punitive Damages for Intentional Torts	227

CHAPTER 22

TORTS BASED UPON NEGLIGENT ACTIONS 228

22.1 Definition	228
22.2 Elements of Negligence	228
22.3 Standard of Care for Reasonable Person	229
22.4 Standard of Care for Reasonable Professional	229
22.5 Proof of Negligence	230
22.6 Res Ipsa Loquitur	230
22.7 Violation of Statute	232
22.8 Gross Negligence	233
22.9 Proximate Cause and Foreseeability	233
22.10 Imputed Negligence	234
22.11 Contributory Negligence	235
22.12 Comparative Negligence	235
22.13 Assumption of Risk	236
22.14 Last Clear Chance	237
22.15 Guest Statutes	238
22.16 Family Purpose Doctrine	238
22.17 Damages for Negligence	239

CHAPTER 23

TORTS WITHOUT FAULT 240

23.1 Strict Liability v. Absolute Liability	240
23.2 Torts Based Upon Ownership of Real Property	240

23.2.1 Liability of Landowners	240
23.2.2 Liability for Lateral and Subjacent Support	243
23.2.3 Liability of Lessors	245
23.2.4 Liability of Lessees v. Lessors	246
23.2.5 Damages for Real Property Torts	246

23.3 Torts Based Upon Ownership of Personal Property 246

23.3.1 Strict Liability for Dangerous Instrumentality	247
23.3.2 Strict Liability for Nondangerous Animals	247
23.3.3 Strict Liability for Extra-Hazardous Activity	247
23.3.4 Damages for Strict Liability	248

23.4 Torts Based Upon Products Liability 248

23.4.1 Historical Basis for Liability Based Upon Distribution	249
23.4.2 Manufacture or Distribution of Defective Goods	249
23.4.3 Damages for Product Liability	250

23.5 Torts Based Upon Provision of Services 250

23.5.1 Past Practice of Protecting Professionals	251
23.5.2 Trends in Medicine, Accounting, and Law	251
23.5.3 Trends in Engineering	252

CHAPTER 24

PROCEDURAL ISSUES RELATING TO TORTS 253

24.1 Choice of Remedy and the Economic Loss Rule	253
24.2 Statutes of Limitations	255
24.3 Statutes of Repose	255
24.4 Common Law Equitable Doctrine of Laches	255
24.5 Survival and Wrongful Death Statutes	255

- 24.6 Intrafamily Torts 256
- 24.7 The Future of Torts 257

CHAPTER 25

PROFESSIONAL LIABILITY FOR ARCHITECTS AND ENGINEERS 259

- 25.1 Scope of the Problem 259
- 25.2 Definitions and Distinctions 259
- 25.3 The Architect's Undertaking 260
- 25.4 The Requisite Degree of Skill 261
- 25.5 Duty to the Owner or Employer 262
- 25.6 Measure of Damages for Defective Plans 262
- 25.7 Measure of Damages for Defective Inspection 262
- 25.8 Liability to Third Parties 263
- 25.9 The Trend Toward Liability Without Fault 264
- 25.10 Defensive Posture 269
- 25.11 Measure of Damages for Personal Injury 271
- 25.12 Problems of Proof 271
- 25.13 A Representative Case 271
- 25.14 Small Things May Prove Important 274
- 25.15 Indemnification Clauses and the Third-Party Demand 277
- 25.16 A Case to Think About 277
- *Questions on Law of Torts* 278

PART FIVE

LAW OF REAL AND OTHER PROPERTY

CHAPTER 26

REAL AND PERSONAL PROPERTY 283

- 26.1 History of Ownership of Real and Personal Property 283
- 26.2 Realty v. Personalty 286
- 26.3 Ownership of When 289

- 26.4 Ownership by Whom 290
- 26.5 Ownership of What 291
- 26.6 Encumbrances Upon Realty 292

- 26.6.1 Easements 292
- 26.6.2 Nature of Easements 294
- 26.6.3 Easement Acquisition 295
- 26.6.4 Licenses 296
- 26.6.5 Profits 296
- 26.6.6 Covenants 297
- 26.6.7 Equitable Servitude 299
- 26.6.8 Zoning 300
- 26.6.9 Taxes 302
- 26.6.10 Liens 302

26.7 Acquisition of Realty 302

- 26.7.1 Grant 302
- 26.7.2 Reversion 303
- 26.7.3 Reservation 303
- 26.7.4 Adverse Possession 303
- 26.7.5 Mortgages 303

26.8 Landlord/Tenant Relationships 304

- 26.8.1 Types of Leases 304
- 26.8.2 Duties of Landlord 306
- 26.8.3 Duties of Tenant 308

26.9 Mechanics of Transfer of Title 308

- 26.9.1 The Contract of Sale 308
- 26.9.2 The Deed 309
- 26.9.3 Surveying and Boundary Law 312
- 26.9.4 Recordation 313
- 26.9.5 Dedication 314
- 26.9.6 Eminent Domain 315

CHAPTER 27

ABOVE AND BELOW—AIR, WATER, AND MINERAL RIGHTS 316

- 27.1 Introduction 316
- 27.2 Definitions and Distinctions 316
- 27.3 Riparian System 317

27.4 Overlying and Percolating Groundwater 321
 27.5 Appropriation System 322
 27.6 Surface Water and Drainage 325
 27.7 Navigable Waterways 326
 27.8 Reservoirs 326
 27.9 Rights to Water Power 327
 27.10 Mining and Water Rights 328
 27.11 Flood Control 328
 27.12 State Water Codes 330
 27.13 Air Rights 332
 27.14 Mineral Rights 332

CHAPTER 28
INTELLECTUAL PROPERTY 334

28.1 Introduction 334
 28.2 Definitions and Purposes 334
 28.3 Patent Records 335
 28.4 Patentability 336
 28.5 Application for a Patent 336
 28.6 Specifications 338
 28.7 Claims 338
 28.8 Validity 340
 28.9 Date of Conception of Idea 341
 28.10 Reduction to Practice 342
 28.11 Diligence 342
 28.12 Keeping Notes on the Invention 343
 28.13 Ownership of the Patent 344
 28.14 Secret Information 344
 28.15 Licenses, Assignments, and Grants 345
 28.16 Patents on New Technology 347
 28.17 Copyrights and Trademarks 349
 ■ *Questions on Law of Real and Other Property* 352

PART SIX
**APPLICATION TO ENGINEERING
 AND CONSTRUCTION PROJECTS**

CHAPTER 29
**CONTRACTS FOR CONSTRUCTION
 PROJECTS 359**

29.1 Preliminary Matters Relating
 to Contract Documents 359
 29.2 Application to Construction Industry 360
 29.3 Contracts for Engineering
 and Architectural Services 360
 29.4 Components of a Construction Contract 364
 29.5 Types of Contracts for Construction 365
 29.5.1 *Stipulated Sum Contract* 365
 29.5.2 *Unit-Price Contract* 366
 29.5.3 *Cost-Plus-Percentage Contract* 368
 29.5.4 *Cost-Plus-Fixed-Fee Contract* 369
 29.5.5 *Guaranteed Maximum Price Contract* 370
 29.5.6 *Design-Build Contracts* 370
 29.5.7 *Design-Build-Operate Contracts* 371
 29.5.8 *Subdivision into Several Contracts* 371
 29.6 Preparing Enforceable Contract
 Documents 372
 29.7 Standard Form Contracts of the Industry 373

CHAPTER 30
DRAWINGS 374

30.1 Introduction 374
 30.2 Preparing Enforceable Drawings 375
 30.3 Use of Design Drawings 377
 30.4 Tabulation of Drawings 377

30.5 Preservation of Contract Drawings 379
30.6 Sources of Trouble 379
30.7 Development of Details 380
30.8 Revisions 386
30.9 Notes 386
30.10 Sealing of Electronic CAD Drawings 387

CHAPTER 31
SPECIFICATIONS 389

31.1 Introduction 389
31.2 Preparation of Enforceable Specifications 389
31.3 Write the Specification for the Reader 390
31.4 General Considerations 391
31.5 Types of Specification 392
31.6 Organization 393
31.7 Dividing the Specification into Sections 394
31.8 Organization Within Each Section 398
31.9 Language 398
31.10 Examples of Wording 402

CHAPTER 32
**SPECIFICATIONS FOR
WORKMANSHIP 405**

32.1 Specifying Procedures 405
32.2 Sample Paragraphs 407
32.3 Specifying Workmanship 407
32.4 Specifying the Quality of Results 409
32.5 Itemizing 411
32.6 Standard Specifications for Workmanship 412
32.7 Use of Previous Specifications 414
32.8 "As Directed by the Engineer" 414
32.9 First Quality Workmanship 415
32.10 Intent of Plans and Specifications 416

32.11 Planning Specifications for Workmanship 417
32.12 Sample Paragraphs 418
32.13 Typical List of Items 422

CHAPTER 33
SPECIFICATIONS FOR MATERIALS 424

33.1 Introduction 424
33.2 Discretionary Power of the Engineer 426
33.3 Standard Products 427
33.4 Standard Specifications for Materials 429
33.5 Use of Previous Specifications 432
33.6 Specifications in Terms of Service 433
33.7 Planning Detailed Specifications 435
33.8 Special Items 436

CHAPTER 34
GENERAL CONDITIONS 438

34.1 Introduction 438
34.2 Purpose of Written Contract Papers 438
34.3 Standard Contracts 439
34.4 Standard Contract Clauses 439
34.5 Contractor's Warranties 439
34.6 Approval of Contractor's Plans
and Equipment 440
34.7 Defective Drawings 441
34.8 Approval of Contractor's Drawings 441
34.9 Guarantee by the Contractor 443
34.10 Conduct of Work 443
34.11 Defective Work 444
34.12 Relations with Other Contractors
and Subcontractors 445
34.13 Order of Completion 447
34.14 Inspection of Materials 448

34.15 Inspection of Field Operations 448
 34.16 Duties of an Inspector 449
 34.17 Land and Facilities 450
 34.18 Permits and Licenses 451
 34.19 Labor Considerations 452
 34.20 Notices 452
 34.21 Work Done by the Owner 453
 34.22 Lines and Grades 453
 34.23 Underpinning 454
 34.24 Order and Discipline 454
 34.25 Performance 455
 34.26 Final Inspection and Acceptance 455
 34.27 Miscellaneous 456

CHAPTER 35

CLAUSES RELATING TO FINANCE 458

35.1 Suspension of the Contract 458
 35.2 Cancellation or Termination of the Contract 459
 35.3 Transfer of Contract 459
 35.4 Revisions 460
 35.5 Extras in General 462
 35.6 Extras Caused by Subsurface Conditions 463
 35.7 Extras Caused by Additional Quantities of Work or Materials 463
 35.8 Extras Caused by Additional Difficulty of Performance 464
 35.9 Extras Caused by Reduction of Work 465
 35.10 Responsibility for Extra Cost 465
 35.11 Errors Discovered by Contractor 466
 35.12 Exculpatory Language Relating to Claims for Extra Costs 467
 35.13 Delays 468
 35.14 Partial Payments 470

35.15 Withholding of a Portion of Partial Payment 472
 35.16 Final Payment 472
 35.17 Failure to Make Payments 473
 35.18 Liquidated Damages 474
 35.19 Damages for Defective or Incomplete Work 476
 35.20 Special Claims for Damages Against the Contractor 477
 35.21 Risk, Liability, and Indemnity 478
 35.22 Power of Engineer in Settling Disputes 480

CHAPTER 36

PROPOSALS 481

36.1 Significance of a Proposal 481
 36.2 Purpose of Proposal Forms 481
 36.3 Standard Proposal Forms 482
 36.4 Special Proposal Forms 482
 36.5 Proposal Forms for Lump-Sum Contracts 482
 36.6 Proposal Forms for Unit-Price Contracts 484
 36.7 Proposal Forms for Cost-Plus Contracts 491
 36.8 Lowest Responsible Bidder 491
 36.9 Prequalification of Bidders 492
 36.10 Deposit for Securing Plans 493
 36.11 Miscellaneous Items for Information to Bidders 493
 36.12 Preparation of Bid on Lump-Sum Contract 494
 36.13 Preparation of Bid on Unit-Price Contract 496
 36.14 Preparation of Bid on Cost-Plus Contract 498
 36.15 Improper Proposals 499
 36.16 Alternatives 499
 36.17 Withdrawal of Proposals 501
 36.18 Opening of Proposals 502

36.19 Rejection of Proposals 502
36.20 Readvertisement 503
36.21 Awarding the Contract 503

CHAPTER 37

ADVERTISING FOR BIDS 504

37.1 Purpose of Advertisement 504
37.2 Advertising Media 504
37.3 Timing of Advertisement 505
37.4 Attracting Attention 505
37.5 Information to Be Given in the Text 505

CHAPTER 38

**DUTY TO DESIGN—ENGINEERING V.
STATUTORY CODES 508**

38.1 Duty to Design v. Building Codes 508
38.2 ADA Design Considerations 508
 38.2.1 *Design Considerations of the Statute* 509
 38.2.2 *Selected Language from the Statute* 509
38.3 OSHA Design Considerations 513
 38.3.1 *Selected Language from the Statute* 513
 38.3.2 *Design for End Users* 517
 38.3.3 *Design for Constructability* 518
38.4 Environmental Law Design Considerations 518
 38.4.1 *National Environmental Policy Act* 519
 38.4.2 *Council on Environmental Quality* 519
 38.4.3 *Environmental Impact Statements* 519
 38.4.4 *Air Pollution Control* 521
 38.4.5 *Clean Air Act* 521
 38.4.6 *New Stationary Sources* 525
 38.4.7 *Nondegradation* 525
 38.4.8 *Mobile Sources of Air Pollution* 526

38.4.9 *Noise Pollution* 526
38.4.10 *Water Pollution* 527
38.4.11 *Point Source Discharges* 527
38.4.12 *Nonpoint Sources* 527
38.4.13 *Dredged Material* 528
38.4.14 *Oil and Hazardous Substances* 528
38.4.15 *Ocean Dumping* 528
38.4.16 *Pesticides* 529
38.4.17 *Solid Wastes* 529
■ *Questions on Application to Engineering
and Construction Issues* 530

PART SEVEN

**ENGINEERING AND LEGAL
PROCEDURE**

CHAPTER 39

**THE ENGINEER'S ROLE IN
LITIGATION 546**

39.1 Introduction 546
39.2 Engineer as an Expert 546
39.3 Compensation of an Expert 547
39.4 Qualifications for an Expert 548
39.5 Knowledge of Subject 551
39.6 Necessity for Honest Advice 552
39.7 Discovery 553
 39.7.1 *Broad Reach of Discovery* 553
 39.7.2 *Informal Discovery* 554
 39.7.3 *Interrogatories* 554
 39.7.4 *Production of Documents* 554
 39.7.5 *Spoilation of Evidence* 554
 39.7.6 *Email, Phone Logs, and Voicemail* 555

39.7.7 Metadata	555	40.3 Distinctions	566
39.7.8 Expert Reports and Drafts	556	40.4 The Demand or Submission	566
39.7.9 Attorney Work Product	556	40.5 Resort to Arbitration	566
39.7.10 Depositions	557	40.6 Disputes Subject to Arbitration	569
39.7.11 Requests for Admissions	557	40.7 Scope of Arbitrator's Authority	569
39.8 Commencing a Suit	558	40.8 Reference to Courts	570
39.9 Preparing to Testify	558	40.9 Role and Qualifications of an Arbitrator	570
39.10 Presentation of Information	559	40.10 Selection of an Arbitrator	571
39.11 Direct Examination	561	40.11 Procedure in Arbitration	571
39.12 Cross-Examination	562	40.12 The Award	572
39.13 Objections by Counsel	563	40.13 Allocation of Costs of Arbitration	572
 		40.14 Mediation	573
CHAPTER 40		40.15 Private Judicial Proceedings	573
THE ENGINEER'S ROLE IN		■ Questions on Engineering and Legal Procedure	574
ARBITRATION	565	Glossary	577
40.1 Function of Arbitration	565	Index	581
40.2 Definition of Arbitration	565		