

## NOTICE

This user's manual has been developed with the assistance of many individuals who have devoted considerable time and expense to ensure that it is fully operational. Because of the public-domain nature of ASEAM3.0, it is being released without the customer support system that many software vendors provide. Should you have any problems, suggestions, or questions when using this manual or the ASEAM3.0 program, please *write* to

ASEAM Coordinator  
ACEC Research & Management Foundation  
1015 15th Street, N.W., Suite 802  
Washington, DC 20005

For questions that can be answered quickly, the ASEAM coordinator will call or write with a response.

The ASEAM Coordinator will contact the developer of the ASEAM software, James A. Fireovid, P.E, for answers to questions that cannot be answered by in-house staff.

Third Edition, April 1991

Program and user's manual written by:

James A. Fireovid, P.E.  
Lynn R. Fryer

### Trademark and Reproduction Acknowledgments

IBM is a trademark of International Business Machines Corporation. Lotus 1-2-3 is a trademark of LOTUS Development Corporation. Data for several tables in Chapter 5 were taken from the 1985 ASHRAE *Handbook of Fundamentals*.

## **A C K N O W L E D G M E N T S**

The U.S. Department of Energy (DOE), Office of Building and Community Systems, sponsored the original development of this building energy analysis computer program and documentation. DOE's Office of Federal Energy Management Program and Office of State and Local Assistance Programs sponsored final development of ASEAM3.0.

A number of individuals and organizations have contributed to the development of ASEAM. Special acknowledgments are extended to Marvin Gorelick, Kevin Teichman, Ph.D., and K. Dean DeVine, P.E., of DOE, and Steve Petersen, of the National Institute of Standards and Technology, for their guidance and assistance in the development of the earlier ASEAM2.1 version. In addition, we wish to recognize Jan Kreider, Ph.D, P.E., of the University of Colorado, Boulder, and many others who contributed their comments and suggestions for the beta-test version, and Joseph J. Deringer, AIA, of the Deringer Group for his help in the initial planning and development of ASEAM2.1.

Project members on the staff of The Fleming Group include Harry P. Misuriello, principal and James A. Fireovid, P.E., vice president. Lynn R. Fryer, formerly with The Fleming Group, was also instrumental in developing ASEAM2.1.

## **L E G A L   N O T I C E**

This document was prepared as an account of work sponsored by an agency of the United States Government. Neither the United States Government nor any agency thereof, nor any of their employees, makes any warranty, express or implied, or assumes any legal liability or responsibility for the accuracy, completeness or usefulness of any information, apparatus, product or process disclosed, or represents that its use would not infringe privately owned rights. Reference herein to any specific commercial product, process, or service by trade name, trademark, manufacturer, or otherwise, does not necessarily constitute or imply its endorsement, recommendation, or favoring by the United States Government or any agency thereof. The views and opinions of authors expressed herein do not necessarily state or reflect those of the United States Government or any agency thereof.

## **Note on Earlier Versions of ASEAM3.0**

If you are presently using ASEAM2.1, you should replace it with the current ASEAM3.0 version. Input files created with earlier versions can still be used, with one exception. The Systems Input file (extension .SID) should be edited. The new ASEAM3.0 version is capable of simulating 15 load zones (instead of 10 zones for ASEAM2.1). Consequently, the file structure for ASEAM3.0 systems input files are slightly different. To make the necessary changes to this file, you should retrieve earlier ASEAM2.1 systems input files (using the 'Get File' command) and then 'Save File'. ASEAM3.0 systems input program can read both the old (ASEAM2.1) and new (ASEAM3.0) file structures, but saves only with the new structure. The calculations require that the new ASEAM3.0 file structure be used.

The Load and Plant Input files (extensions .LID and .PID, respectively) do not require modification. You may also use existing ASEAM2.1 weather files.

The Introduction (Chapter 1) of this User's Manual describes the changes and improvements made in ASEAM3.0.

# ASEAM3.0 USER'S MANUAL

## TABLE OF CONTENTS

### 1 INTRODUCTION

- 1 INTRODUCTION 1
  - 1.1 What is ASEAM3.0? 1
  - 1.2 New Features in ASEAM3.0 2
  - 1.3 How to Use This Manual 3
  - 1.4 Abbreviations and Terminology 5
  - 1.5 User's Background and Intended Audience 6
  - 1.6 ASEAM3.0 Calculation Overview 6
  - 1.7 Steps in Using ASEAM3.0 7
  - 1.8 ASEAM3.0 Contents 7
  - 1.9 Errors 8

### 2 GETTING STARTED

- 2 GETTING STARTED 9
  - 2.1 What You Need to Get Started 9
    - 2.1.1 Hardware Requirements 9
    - 2.1.2 Diskette Requirements 9
    - 2.1.3 Optional Hardware and Software 9
  - 2.2 Backing Up 10
  - 2.3 Instructions for Hard Disk Installation 10

### 3 USING ASEAM3.0

- 3 USING ASEAM3.0 13
  - 3.0 Introduction 13
  - 3.1 Starting ASEAM3.0 13
  - 3.2 Using ASEAM3.0 Menus 13
    - 3.2.1 Menu Item Selection 13
    - 3.2.2 ASEAM3.0 Main Menu Options 15
      - 3.2.2.1 Input Data 15
      - 3.2.2.2 Print Reports 16
      - 3.2.2.3 Specify Analyses 16
      - 3.2.2.4 Running the Calculations (Run Calcs) 17
      - 3.2.2.5 Exit DOS 17
  - 3.3 ASEAM3.0 Input Conventions 17
    - 3.3.1 General Information 17
    - 3.3.2 Input Menu 17
      - 3.3.2.1 Get L/S/P File 18
      - 3.3.2.2 Save L/S/P File 18
      - 3.3.2.3 Edit L/S/P Data 19
      - 3.3.2.4 Enter New Data 20
      - 3.3.2.5 Exit 20
    - 3.3.3 Cautions about Memory 21

- 3.3.4 L/S/P Input Screens 21
  - 3.3.4.1 Cursor Control 21
  - 3.3.4.2 Function Keys 24
  - 3.3.4.3 Error Checking 24
  - 3.3.4.4 Default Values 25
- 3.4 Printing Data Echo Reports 25
- 3.5 Specifying Analyses 27
- 3.6 Run Calculations 27
- 3.7 Output Reports 27
- 3.8 The Data Subdirectory 27

## **4 MODELING WITH ASEAM3.0**

- 4 MODELING WITH ASEAM3.0 29
  - 4.1 Modeling Buildings 29
    - 4.1.1 Modeling New Buildings 29
    - 4.1.2 Modeling Existing Buildings 29
  - 4.2 Modeling Steps 29
    - 4.2.1 Step 1. Obtain Presurvey Information 29
    - 4.2.2 Step 2. Visit Building/Quick Walk-Through 30
    - 4.2.3 Step 3. Zone the Building 30
    - 4.2.4 Step 4. Detailed Walk-Through and Data Collection (Existing Buildings) 30
    - 4.2.5 Step 5. Discuss Walk-Through Data with Client (Existing Buildings) 32
    - 4.2.6 Step 6. Complete Input Forms 33
    - 4.2.7 Step 7. Enter Input Data into ASEAM3.0 33
    - 4.2.8 Step 8. Specify Base-Case Run Data and Run Calculations 34
    - 4.2.9 Step 9. Validate Base Case Run (Existing Buildings) 35
    - 4.2.10 Step 10. Estimate ECO Costs 36
    - 4.2.11 Step 11. Enter ECO/BLCC Input Data 36
    - 4.2.12 Step 12. Enter ECO Input 36
    - 4.2.13 Step 13. Run ECO Calculations (Single) 37
    - 4.2.14 Step 14. Enter Combined ECO-BLCC Input Data 37
    - 4.2.15 Step 15. Run ECO Calculations (Combined) 38
    - 4.2.16 Step 16. Present Findings 38
  - 4.3 Zoning 38
    - 4.3.1 Zone Definition 39
    - 4.3.2 Zoning Steps 39
  - 4.4 Peak Versus Diversified Loads 40

## **5 LOADS INPUT**

- 5 LOADS INPUT 43
  - 5.1 Introduction 43
  - 5.2 Entering Loads Input Data 43
    - 5.2.1 Creating a New Loads Input File 43
    - 5.2.2 Editing an Existing Loads Input File 43
  - 5.3 Loads Input Screen Map and Editing Sequence 44
    - 5.3.1 Loads Input Screen Map 45

5.3.2	General Categories	45
5.3.3	Selecting Zones for Editing	46
5.3.4	Copying Zone Data	46
5.3.5	Saving Your Data	46
5.4	Loads Input Screens	47
5.4.1	General Project/Building Screens	47
5.4.1.1	Project/Building Data	48
5.4.1.2	Project/Building Data (Screen 2)	49
5.4.1.3	Occupancy Schedules	50
5.4.2	General Zones Screen	51
5.4.2.1	Zone Screen (one per zone)	51
5.4.3	Internal Screens	52
5.4.3.1	Lighting Screen (one per zone)	52
5.4.3.2	Daylighting Screen (one per zone)	56
5.4.3.3	Daylighting Control Screen (one per zone)	60
5.4.3.4	People Screen (one per zone)	61
5.4.3.5	Electrical Equipment Screen (one per zone)	63
5.4.3.6	Miscellaneous Sensible Loads Screen (one per zone)	64
5.4.4	External Load Screens	65
5.4.4.1	Walls Screen (one per zone)	65
5.4.4.2	Roofs Screen (one per zone)	68
5.4.4.3	Windows Screen (one per zone)	70
5.4.4.4	External Shading for Windows Screen (one per zone)	74
5.4.4.5	Doors Screen (one per zone)	78
5.4.4.6	Infiltration Screen (one per zone)	79
5.4.4.7	Miscellaneous Conduction Screen (one per zone)	80
5.4.5	Profile Screens	82
5.4.5.1	Internal Load Diversity Factors	83
5.4.5.2	Monthly Diversities	84

## **6 SYSTEMS INPUT**

6	SYSTEMS INPUT	87
6.1	Introduction	87
6.2	Entering Systems Input Data	88
6.2.1	Creating a New Systems Input File	88
6.2.2	Editing an Existing Systems Input File	88
6.2.3	Selecting Screens and Systems for Editing	88
6.2.4	Copying Systems Data	89
6.3	Using Default Data and Autosizing	89
6.3.1	Using Default Data	89
6.3.2	Autosizing	90
6.4	Systems Modeled by ASEAM3.0	91
6.4.1	Double Duct or Multizone (DDMZ)	91
6.4.2	Constant Volume Reheat (CVRH)	91
6.4.3	Variable Air Volume Reheat (VAVR)	92
6.4.4	Ceiling Bypass Variable Air Volume (CBVAV)	92
6.4.5	Single Zone Reheat (SZRH)	92

- 6.4.6 Fan Coil Unit (FCU) 93
- 6.4.7 Water Source Heat Pump (WSHP) 93
- 6.4.8 Air-to-Air Heat Pump (AAHP) 94
- 6.4.9 Baseboard (BB) 94
- 6.4.10 Furnace (FURN) 94
- 6.4.11 Unitary Heater (UH) 94
- 6.4.12 Heating and Ventilating Unit (HV) 95
- 6.4.13 Window Air Conditioner (WAC) 95
- 6.5 Systems Input Screen Guide 95
- 6.6 Systems Input Screens 99
  - 6.6.1 Screen A: System Definitions 99
  - 6.6.2 Screen B: Zone-System Assignments 100
  - 6.6.3 Screen C: Heating (one screen per system) 101
  - 6.6.4 Screen D: Cooling (one screen per system) 104
  - 6.6.5 Screen E: Preheat (one screen per system) 106
  - 6.6.6 Screen F: Humidification (one screen per system) 107
  - 6.6.7 Screen G: Baseboard (one screen per system) 108
  - 6.6.8 Screen H: Fans (one screen per system) 111
  - 6.6.9 Screen I: Outside Air Controls (one screen per system) 113
  - 6.6.10 Screen J: Heat Pump Cooling (one screen per system) 114
  - 6.6.11 Screen K: Heat Pump Heating (one screen per system) 116
  - 6.6.12 Screen L: Furnace (one screen per system) 118
  - 6.6.13 Screen M: Zone Air (one screen per system) 120
  - 6.6.14 Screen N: Direct Expansion Cooling (one screen per system) 121
  - 6.6.15 Screen O: Zone CFM (one screen per system) 123
  - 6.6.16 Screen P: Zone Fan KW (one screen per system) 123
  - 6.6.17 Screen Q: Zone Total Cooling Capacity (one screen per system) 124
  - 6.6.18 Screen R: Zone Sensible Cooling Capacity (one screen per system) 124
  - 6.6.19 Screen S: Zone Heat Pump Heating Capacity (one screen per system) 125
  - 6.6.20 Screen T: Zone Backup Heating Capacity (one screen per system) 125

## **7 PLANT INPUT**

- 7 PLANT INPUT 127
  - 7.1 Introduction 127
  - 7.2 Entering Plant Input Data 127
    - 7.2.1 Creating a New Plant Input File 127
    - 7.2.2 Editing an Existing Plant Input File 127
  - 7.3 Input Sequence 128
  - 7.4 Plant Input Screens 128
    - 7.4.1 Energy Costs and BTU Conversion Screen 129
    - 7.4.2 Miscellaneous Energy Consumption Screen 129
    - 7.4.3 Chiller Screens 131
    - 7.4.4 Cooling Tower Screen 134
    - 7.4.5 Domestic Hot Water Screen 136

## **8 ENERGY CONSERVATION OPPORTUNITY (ECO) INPUT**

- 8 ENERGY CONSERVATION OPPORTUNITY (ECO) INPUT 143
  - 8.1 Introduction 143
    - 8.1.1 Conventional ECO Modeling 144
    - 8.1.2 ASEAM3.0 ECO Modeling 145
    - 8.1.3 ASEAM3.0 ECO Calculations 147
  - 8.2 Entering ECO Data 148
  - 8.3 Loads ECOs 149
    - 8.3.1 Wall ECOs #100 (1 screen per zone) 151
    - 8.3.2 Roof ECOs #110 (1 screen per zone) 151
    - 8.3.3 Window ECOs #120 (1 screen per zone) 152
    - 8.3.4 Door ECOs #130 (1 screen per zone) 152
    - 8.3.5 Infiltration ECOs #140 (1 screen per zone) 152
    - 8.3.6 Miscellaneous Conduction ECOs #150 (1 screen per zone) 152
    - 8.3.7 Lighting ECOs #160 (1 screen per zone) 153
    - 8.3.8 Electrical Equipment ECOs #170 (1 screen per zone) 153
    - 8.3.9 Miscellaneous Sensible Loads ECOs #180 (1 screen per zone) 153
    - 8.3.10 Daylighting ECOs #190 (2 screens per zone) 154
    - 8.3.11 Operating Use Profiles ECOs #200 (1 screen per zone) 154
    - 8.3.12 Occupancy Schedule ECOs #210 (1 screen only) 155
    - 8.3.13 Thermostat ECOs #220 (1 screen per zone) 155
    - 8.3.14 Operating Schedule ECOs #230 (1 screen only) 155
    - 8.3.15 Special Loads Reset Schedule ECOs #240 (1 screen per zone) 156
  - 8.4 Systems ECOs 157
    - 8.4.1 Heating ECOs #300 (1 screen per system) 157
    - 8.4.2 Cooling ECOs #310 (1 screen per system) 158
    - 8.4.3 Preheat ECOs # 320 (1 screen per system) 158
    - 8.4.4 Humidification ECOs # 330 (1 screen per system) 158
    - 8.4.5 Baseboard ECOs #340 (1 screen per system) 159
    - 8.4.6 Fan ECOs #350 (1 screen per system) 159
    - 8.4.7 Outside Air Control #360 ECOs (1 screen per system) 160
    - 8.4.8 Furnace ECOs #370 (1 screen per system) 160
    - 8.4.9 Heat Pump Cooling ECOs #380 (1 screen per system) 160
    - 8.4.10 Heat Pump Heating ECOs #390 (1 screen per system) 161
    - 8.4.11 Direct Expansion ECOs #400 (1 screen per system) 161
    - 8.4.12 Special System Reset Schedule ECOs #410 (1 screen per system) 161
  - 8.5 Plant ECOs 162
    - 8.5.1 Energy Costs/Conversions ECOs #500 162
    - 8.5.2 Miscellaneous Energy Consumption ECOs #510 163
    - 8.5.3 Centrifugal Chiller ECOs #520 163
    - 8.5.4 Absorption Chiller ECOs #530 164
    - 8.5.5 Double Bundle Chiller ECOs #540 164



- 8.5.6 Reciprocating Chiller ECOs #550 165
- 8.5.7 Cooling Tower ECOs #560 165
- 8.5.8 Domestic Hot Water ECOs #570 166
- 8.5.9 Boiler ECOs #580 166
- 8.6 ECO Input Hints 167

## **9 QUICK INPUT**

- 9 QUICK INPUT 169
  - 9.1 Introduction 169
  - 9.2 Building Shapes Modeled by Quick Input 171
    - 9.2.1 Case 1: Rectangular Building 173
    - 9.2.2 Case 2: L-Shaped Building 174
    - 9.2.3 Case 3: T-Shaped Building 175
    - 9.2.4 Case 4: I-Shaped Building 176
    - 9.2.5 Case 5: U-Shaped Building 177
    - 9.2.6 Case 6: Courtyard Building (low building and/or large courtyard) 178
    - 9.2.7 Case 7: Courtyard Building (tall building and/or small courtyard) 179
    - 9.2.8 Case 8: Rectangular Residence (single zone) 180
    - 9.2.9 Case 9: L-Shaped Residence (single zone) 181
  - 9.3 Entering Quick Input Data 182
    - 9.3.1 Creating a New Quick Input File 182
    - 9.3.2 Editing an Existing Quick Input File 182
    - 9.3.3 Creating Loads, Systems, and Plant Input Files 183
  - 9.4 Quick Input Screens 183
    - 9.4.1 Project Data 183
    - 9.4.2 Building Shape and Orientation Data 185
    - 9.4.3 Building Dimensions 186
    - 9.4.4 Predominant Zone Type and Percent Glass 187
    - 9.4.5 Space Types and Percent Zone Area 188
    - 9.4.6 System Types 189
    - 9.4.7 Zone-System Assignment 190
    - 9.4.8 System-Plant Assignment 191
    - 9.4.9 Energy Costs and Domestic Hot Water Data 193
  - 9.5 Climate Locations for Quick Input 194

## **10 BUILDING LIFE-CYCLE COST (BLCC) PROGRAM**

- 10 BUILDING LIFE-CYCLE COST PROGRAM 201
  - 10.1 Introduction 201
  - 10.2 Changes in ASEAM3.0 201
  - 10.3 Using BLCC Programs with ASEAM3.0 201
  - 10.4 BLCC Output with ASEAM3.0 201
  - 10.5 BLCC Documentation 202

## **11 SPECIFY ANALYSIS**

- 11 SPECIFY ANALYSIS 203
  - 11.1 Introduction 203
  - 11.2 Modes of Calculation: Descriptions, Advantages, Disadvantages 203
    - 11.2.1 Single Run Mode 204
    - 11.2.2 Batch Run Mode 204
    - 11.2.3 Parametric Run Mode 204
    - 11.2.4 Single ECO Run Mode 205
    - 11.2.5 Multiple ECO Run Mode 205
  - 11.3 Specify Analyses: Screens 205
    - 11.3.1 Configuration Screen 206
    - 11.3.2 Single-Run Mode 207
    - 11.3.3 Batch Run Mode 209
    - 11.3.4 Parametric Run Mode 209
    - 11.3.5 Single ECO Run Mode 223
    - 11.3.6 Multiple ECO Run Mode 225
  - 11.4 Run Calcs 227
  - 11.5 Coordinated Parametric Input Program (AS3CPIP) 228
    - 11.5.1 AS3CPIP 229
    - 11.5.2 Data Entry for AS3CPIP 229
    - 11.5.3 Retrieving Your ASEAM Output 233
    - 11.5.4 Applications 235
    - 11.5.6 Post Analysis 244

## **12 OUTPUT REPORTS**

- 12 OUTPUT REPORTS 253
  - 12.1 Introduction 253
  - 12.2 Types of Output 253
    - 12.2.1 Single and Batch Run Modes 253
    - 12.2.2 Parametric Run Mode 256
    - 12.2.3 Single and Multiple ECO Run Modes 256
  - 12.3 Run-Time Graphics and Reports 257
  - 12.4 Accessing Output Reports 257
    - 12.4.1 LOTUS-Compatible Reports 260
    - 12.4.2 Data Files - BEPS and Peak Load Summaries 261
    - 12.4.3 Text Files 262
  - 12.5 Sample Outputs 262
    - 12.5.1 Run-Time Graphics 262
    - 12.5.2 Run-Time Calculation Reports 270
    - 12.5.3 LOTUS-Compatible Reports 303
    - 12.5.4 BEPS Report 314
    - 12.5.5 Peak Loads Summary 317
    - 12.5.6 Parametric Output 318
    - 12.5.7 ECO/BLCC Output 318
    - 12.5.8 Stand Alone Reports 320

## **APPENDIX A - WEATHER AND SOLAR DATA FILES**

- A.1 Bin Temperature Weather Data 335
  - A.1.1 Bin Temperature File Format 336
    - A.1.1.1 ASHRAE Format 337

- A.1.1.2 Battelle Format 337
    - A.1.1.3 DOD Format 338
  - A.1.2 Entering Bin Temperature Weather Data 338
  - A.1.3 Modifying Weather Data File 342
  - A.1.4 Custom Weather Data 344
- A.2 Solar Weather Data 344
  - A.2.1 Solar Data File Format 345
  - A.2.2 Entering Solar Data 346
    - A.2.2.1 Fraction Percent Sunshine Data 348
- A.3 Available Bin Temperature Weather Stations 353

## **APPENDIX B - INPUT SCREEN FORMS**

- B.1 How to Use the Input Forms 365
- B.2 Loads Input Screens 365
  - B.2.1 Project/Building (LIPROJDT) 366
  - B.2.2 Project/Building Screen 2 (LIPRJ2DT) 366
  - B.2.3 Occupancy Schedules (LIOCCSDT) 366
  - B.2.4 Zones (LIZONEDT) 367
  - B.2.5 Lighting (LILITEDT) 367
  - B.2.6 Daylighting (LIDAYLDT) 367
  - B.2.7 Daylighting Control (LIDAYCDT) 368
  - B.2.8 People (LIPEOPDT) 368
  - B.2.9 Electrical Equipment (LIELECDT) 368
  - B.2.10 Misc Sensible Loads (LIMSENDT) 369
  - B.2.11 Walls (LIWALLDT) 369
  - B.2.12 Roofs (LIROOFDT) 369
  - B.2.13 Windows (LIWNDODT) 370
  - B.2.14 External Shading (LISHADDT) 370
  - B.2.15 Doors (LIDOORDT) 370
  - B.2.16 Infiltration (LIINFLDT) 371
  - B.2.17 Misc Conduction (LIMCOND) 371
  - B.2.18 Diversity Factors (LIDIVRDT) 371
  - B.2.19 Monthly Diversity Factors (LIMONDDT) 372
- B.3 Systems Input Screens 372
  - B.3.1 Systems Definitions (SISYSDAT) 372
  - B.3.2 System-Zone Assignment (SIZONDAT) 373
  - B.3.3 Heating (SIHTGDAT) 373
  - B.3.4 Cooling (SICLGDAT) 373
  - B.3.5 Preheat (SIPRHDT) 374
  - B.3.6 Humidification (SIHUMDAT) 374
  - B.3.7 Baseboard (SIBBDAT) 374
  - B.3.8 Fans (SIFANDAT) 375
  - B.3.9 Outside Air Parameters (SIOACDAT) 375
  - B.3.10 Heat Pump Cooling (SIHPCDAT) 375
  - B.3.11 Heat Pump Heating (SIHPHDAT) 376
  - B.3.12 Furnace (SIFURDAT) 376
  - B.3.13 Zone Air Parameters (SIAIRDAT) 376
  - B.3.14 Direct Expansion Cooling (SIDXDAT) 377
- B.4 Plant Input Screens 377
  - B.4.1 Energy Costs/Conversions (PIENEDAT) 377
  - B.4.2 Miscellaneous Energy Consumption (PIMECDAT) 378
  - B.4.3 Centrifugal Chiller (PICENDAT) 378

- B.4.4 Absorption Chiller (PIABCDAT) 379
- B.4.5 Double Bundle Chiller (PIDBCDAT) 379
- B.4.6 Reciprocating Chiller (PIRECDAT) 380
- B.4.7 Cooling Tower (PITOWDAT) 380
- B.4.8 Domestic Hot Water (PIDHWDAT) 381
- B.4.9 Boiler (PIBLRDAT) 381
- B.5 Abbreviated Input Forms 381

## **APPENDIX C - CHANGING INPUT SCREEN PARAMETERS**

- C.1 Introduction 391
- C.2 Modifying Input Screens 391
- C.3 Input Screen File Format 392
  - C.3.1 Sample Files and Screens 392
  - C.3.2 Screen Appearance 395
  - C.3.3 Default Values, Help Messages, and Error Checking. 399
  - C.3.4 Examples 404

## **APPENDIX D - CHANGING ASEAM3.0 SOURCE CODE**

- D.1 Introduction 407
- D.2 Warnings 407
- D.3 Steps in Compiling 409

## **APPENDIX E - ASEAM3.0 FILES**

- E.1 Introduction 411
- E.2 File Types 411
  - E.2.1 Program Files 411
  - E.2.2 Data Files 411
  - E.2.3 Input Screen Files 412
  - E.2.4 Bin Temperature Weather Data Files 412
  - E.2.5 Solar Data Files 412
  - E.2.6 Input Data Files (User Entered Data) 412
  - E.2.7 Specify Analysis Data Files 413
  - E.2.8 Miscellaneous Files 413
- E.3 ASEAM3.0 Directory Files 413
- E.4 ASEAM3.0 Data Disk 417
- E.5 ASEAM3.0 Source Code Files 417
- E.6 Bin Temperature Weather Data 417
- E.7 Solar Data 418

## **APPENDIX F - REFERENCES**

- F.1 References 419

## **APPENDIX G - CHANGING QUICK INPUT DEFAULT VALUES**

- G.1 Quick Input Default Usage 425
- G.2 Loads Dynamic Default Files 429
  - G.2.1 QIFILES.DFT 429
  - G.2.2 Climate Default File 429
  - G.2.3 Building Default File 430
  - G.2.4 Zone Default File 431
  - G.2.5 Space Default Values 432
  - G.2.6 Non-Dynamic Default Values 433
- G.3 Systems Default Values 434
- G.4 Plant Default Values 435
- G.5 Viewing the Loads Default Values 435