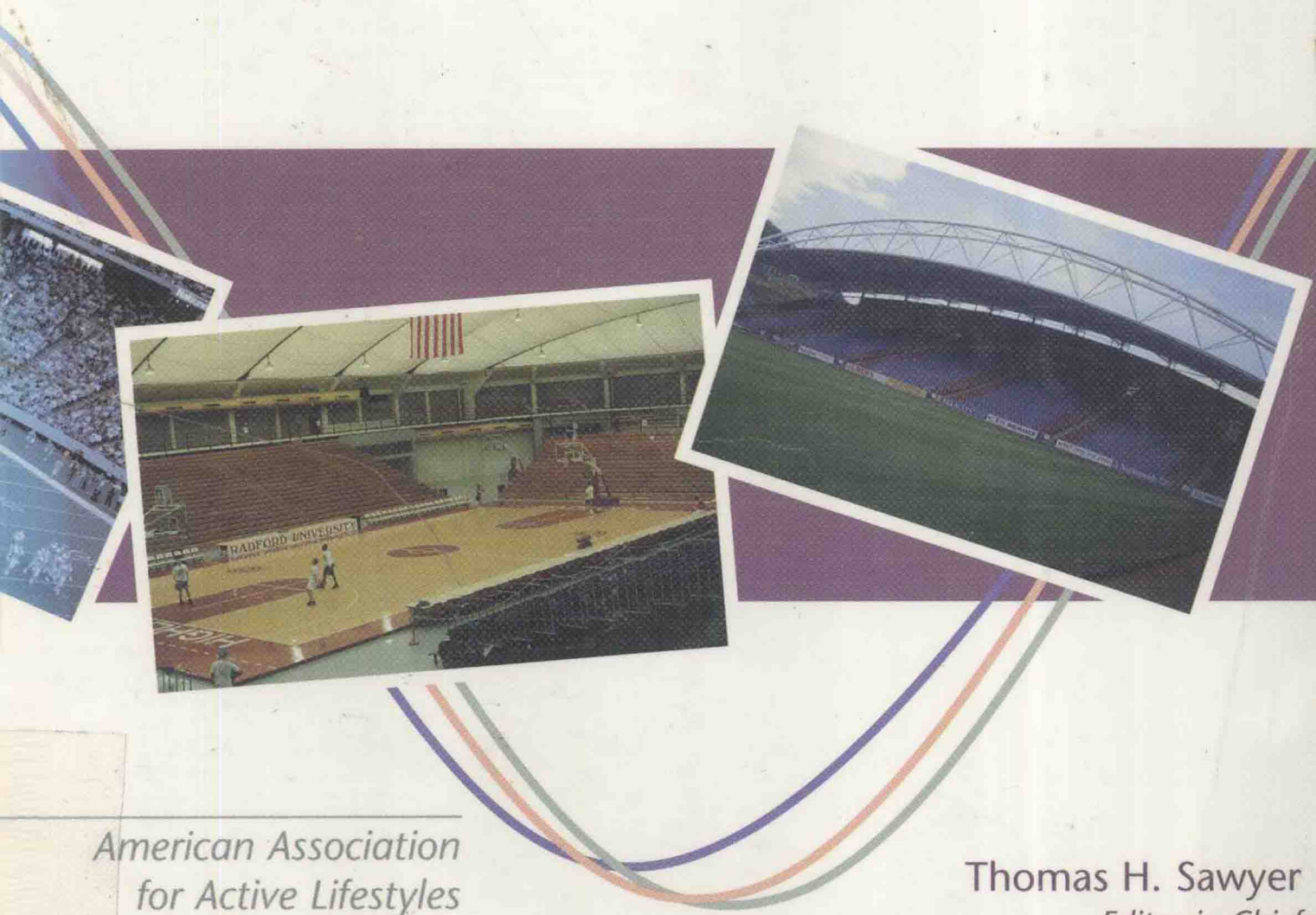


FACILITIES PLANNING FOR PHYSICAL ACTIVITY AND SPORT

Guidelines for Development

Ninth Edition



American Association
for Active Lifestyles
and Fitness

Thomas H. Sawyer
Editor-in-Chief

FACILITIES PLANNING FOR PHYSICAL ACTIVITY AND SPORT

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Ninth Edition

Edited by
Thomas H. Sawyer
Bernie Goldfine
Michael G. Hypes
Richard L. LaRue
Todd Seidler

Developed by the
Council on Facilities and Equipment of the
American Association for Active Lifestyles and Fitness, An Association of the
American Alliance for Health, Physical Education, Recreation, and Dance
1999



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Preface

Aside from Dr. Edward M. Hartwell's comprehensive report on gymnasium construction in 1885 and occasional articles in the *The American Physical Education Review* (the official publication of the American Association for Advancement of Physical Education [AAAPE]), no concerted effort was made by the profession to consider facilities (Rice, Hutchinson, & Lee, 1958). In the early 1920s the Society of Directors of Physical Education in College (College Physical Education Association) appointed a committee, of which Dr. George L. Meylan was chairman, to consider physical education facilities. Its work was published in booklet form in 1923, entitled *Physical Education Buildings for Education Institutions, Part I, Gymnasiums and Lockers* (Hackensmith, 1966). The committee remained active, and following Dr. Meylan the chairmanship was held by Harry A. Scott until 1927, by A.R. Winters 1927-1928, and by Albert H. Prettyman 1928-1945 (Van Dalen, Mitchell, & Bennett, 1953).

In 1945 at the meeting of the Board of Directors of the American Alliance for Health, Physical Education, and Recreation in Washington, D.C., a favorable action was taken on a proposal by Caswell M. Miles, AAHPERD Vice-President for Recreation, that a grant be obtained to finance a national conference on facilities. Subsequently, a request for \$10,000 to finance the 1st facilities conference was placed before Theodore P. Bank, president of The Athletic Institute, the project was approved and money appropriated to finance the 1st conference.

As a result of this conference the *Guide for Planning Facilities for Athletics, Recreation, Physical and Health Education* was published that same year. Thirty-eight years have elapsed since the first printing of the first *Guide* which resulted from the first workshop at Jacob's Mill West Virginia, in December, 1946. Since then there have been 20 printings of the *Guide*.

The second workshop was held May 5-12, 1956, at the Kellogg Center for Continuing Education at Michigan State University in East Lansing. The second workshop, like the first, was financed by The Athletic Institute. The 1956 edition of the *Guide*, which resulted from the second workshop, has been widely used in planning and constructing planning.

The 1963 edition was prepared by the third workshop, which was financed jointly by AAHPER and The Athletic Institute and was held January 15-24,

1965, at the Biddle Continuing Education Center, Indiana University in Bloomington. Two years later, April 29-May 8, 1967, another workshop was held at Indiana University. Among those invited were a number of outstanding college and technical personnel engaged in planning and conducting programs of athletics, recreation, outdoor education, and physical and health education. In addition, invitations were extended to a number of specialists responsible for planning and constructing facilities for these programs. These specialists included city planners, architects, landscape architects, engineers and schoolhouse construction consultants.

At the 1974 facilities committee meeting, five members were assigned the task of restructuring the *Guide* in such a way that it would serve as a more practical tool for school administrators, physical education heads, architects, planning consultants, and all others interested in planning new areas and facilities or checking the adequacy of those already in use.

During recent years, there have been many new developments in facility planning and construction. These have been due to a number of factors. The need for improving education, recreation, and fitness opportunities for the youth of the nation has been highlighted by many groups. The fine work of the President's Council on Physical Fitness is one illustration of the growing national interest in health, physical education, and recreation activities. Much of the research and attention devoted to facility planning and construction during the past three decades has been due to the increased leisure time in society and a growing realization that recreation and especially physical activity, is a fundamental human need essential to the well-being of all people.

The Athletic Institute and AAHPERD Council on Facilities, Equipment, and Supplies initiated the 1979 revision of the *Guide* following a careful review of the 1974 edition. A blue ribbon Steering Committee was appointed by the Council. Edward Coates of Ohio University, and Richard B. Flynn of the University of Nebraska at Omaha, were appointed as co-editors and contributing authors. Professionals well-known for their expertise in facility planning and construction, were invited to assist in a complete rewrite.

The 1984 edition of *Planning Facilities for Athletics, Physical Education, and Recreation* represents a

continuing effort on the part of The Athletic Institute and AAHPERD to keep the text current and relevant. Richard B. Flynn of the University of Nebraska at Omaha, was selected to be editor, and contributing author. Chapter input was solicited from carefully chosen leaders in the field as well as from outstanding architects. Efforts were made to incorporate the most recent advances in facility planning and construction. Certain program areas, such as planning for the handicapped, were expended while outdated or irrelevant materials were deleted.

Richard Flynn was selected to serve as editor and contributing author for the 1992 edition. This edition carried the same title as the 1988 edition. Many of the same contributors volunteered to revise their sections. The text was revised but not expanded.

For the latest edition (1999) a new editorial team was put together by the Council of Facilities and Equipment to do a complete overhaul of the book. The editorial team consisted of Thomas H. Sawyer, Ed.D. (Indiana State University), Chair and Editor-in-Chief; Bernie Goldfine, Ph.D. (Kennesaw State University); Michael G. Hypes, D.A. (Indiana State University); Richard L. LaRue, D.P.E. (University of New England); and Todd Seidler, Ph.D. (University of New Mexico). There were 21 authors involved in writing the 29 chapters. A new edition will be available every third year.

The Council on Facilities and Equipment (CFE) was formerly the Council on Facilities, Equipment, and Supplies. The name was changed in 1993. The Council on Facilities and Equipment (CFE) focuses on concerns relating to facilities and equipment in relationship to physical activity. CFE works to develop policies, standards, guidelines, and innovations to insure the safest and most effective means for quality health, physical education, recreation, dance, sport, and fitness facilities for the young through the aging populations.

The purposes of the CFE are:

- To initiate a national cooperative effort to improve the quality of the facilities and equipment for health, physical education, recreation, and dance.
- To improve the quality of undergraduate and graduate instruction in facilities and equipment design and planning.
- To present research findings and to review needed research projects for possible endorsement and development by the Council.
- To prepare and disseminate information to aid members to keep abreast of current innovations, promising practices, comparative data and practical ideas.
- To cooperate with related professions (Architecture, Engineering, Construction, Manufacturing), representing the Alliance in all matters within its purview and pro-posing and implementing joint projects with other Councils within AAALF.
- To initiate and conduct state, district, and national conferences on facilities and equipment issues.
- To plan and develop needed publications through the Alliance.
- To provide consultant services for referral to potential users and developers of facilities.

The material in this text reflects the composite knowledge of many professionals who have contributed to past CFE projects, as well as of those individuals who were solicited to serve as authors, editors, and reviewers for this text. The American Alliance for Health, Physical Education, Recreation, and Dance (AAHPERD), American Association for Active Lifestyles and Fitness (AAALF), and Council on Facilities and Equipment (CFE) believe this book represents one of the most comprehensive resources available on the topic of planning facilities for fitness, physical activity, and sport.

Acknowledgments

Appreciation is expressed to the Editorial Committee members of the Council for Facilities and Equipment (CFE) for assuming initial responsibility for outlining the content and chapters for the text and selection of the chapter authors. While some served as authors/editors for specific chapters in the text, all served as reviewers for assigned chapter drafts. The Editorial Committee members were:

Dr. Thomas H. Sawyer, Chair and Editor-in-Chief,
Indiana State University, Chair CFE, 1995-97
Dr. Bernie Goldfine, Kennesaw State University,
Chair CFE, 1999-2001
Dr. Michael G. Hypes, Indiana State University,
Chair-Elect CFE, 1999-2001
Dr. Richard LaRue, University of New England,
Chair CFE, 1994-95
Dr. Todd Seidler, University of New Mexico, Chair
CFE, 1991-92
Dr. Jan Seaman, AAALF Executive Director

Thanks also goes to Dr. Rob Ammon, Slippery Rock State University, who served as a chapter reviewer. His insightful comments and guidance were invaluable in the development of this book.

We are indebted to a number of authoritative sources for permission to reproduce material used in this text.

- The National Collegiate Athletic Association for permission to reproduce drawings from selected 1997 NCAA rule books. It should be noted that these specifications, like others, are subject to annual review and change.

- Athletic Business for permission to reprint selected drawings.
- Selected architectural firms for supplying photographs, line drawings, artists renderings, and other materials.

Special recognition is due those professionals, who served as chapter authors or editors: Gordon Calkins, John Gartland, Bernie Goldfine, Thomas Horne, Larry Horine, Susan Hudson, D.J. Hunsacker, Christopher Ingersoll, James Karabetsos, Richard LaRue, David LaRue, Hervey LaVoie, John McNichols, Arthur Mittelstaedt, Thomas Rosandich, Jr., Todd Seidler, Donna Thompson, Ed Turner, Jack Vivian, Hal Walker, and Harvey White. These individuals worked diligently to present chapter material in an informative and useful manner.

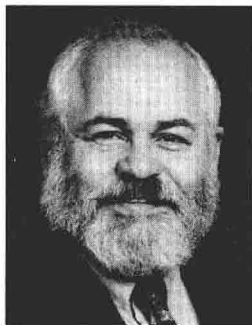
Without the great assistance from a number of very special and important folks this book would not have been possible: Julia Ann Hypes who was responsible for the glossary and author information; Kendall/Hunt, for invaluable advice, counsel, patience, and encouragement during the final edit of the manuscript; Debra Conn, Copy Editor; and Indiana State University's Graphic Arts group, for their graphic design services.

Lastly, the editors wish to thank and acknowledge Jan Seaman, Executive Director of AAALF, for her continued encouragement and support during the preparation of this text.

Thomas H. Sawyer, Ed.D.
Editor-in-Chief

Meet the Authors

Editors



Thomas H. Sawyer

Editor-in-Chief

Contributing Author

(Chapters 1, 3, 4, 5, 6, 13, 15, 21, 22, 24, 25, 28)

Dr. Sawyer is a Professor of Physical Education, and Recreation and Sport Management, and Coordinator of the graduate sport management program in the Department of Recreation and Sport Management at Indiana State University. Dr. Sawyer has been a high school and university coach in the following sports: baseball, soccer, and track and field. He was an associate athletic director at a NAIA, Division II school, an intramural and recreational sports director at three different institutions of higher education, and a department head or chair of a department of HPE or PE in three different institutions.

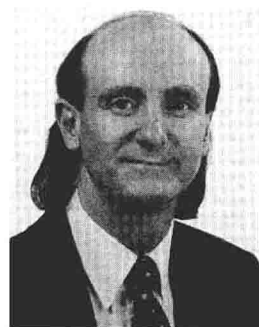
He has 28 peer reviewed professional articles in national and international journals, 31 articles for hire, and 74 other articles in state journals reviewed by editors. He has authored a variety of chapters in a number of textbooks. He has co-authored a management textbook and authored a trade book on sport nutrition.

Dr. Sawyer has given 53 peer reviewed professional presentations at state, regional, national, and international conventions, and 103 workshops at state, regional, and national meetings. His research areas focus on coaching education, facility and equipment development, sport law, and sport nutrition.

Dr. Sawyer has given 53 peer reviewed professional presentations at state, regional, national, and international conventions, and 103 workshops at state, regional, and national meetings. His research areas focus on coaching education, facility and equipment development, sport law, and sport nutrition.

He has been actively involved in professional organizations serving as President, Indiana AHPERD; Chair, Council on Facilities and Equipment; President, American Association for Active Life Styles and Fitness; Treasurer, Society for the Study of the Legal Aspects of Sport and Physical Activity (SSLASPA); Executive Director, SSLASPA; Editor, Indiana AHPERD Journal; Chair, JOPERD Editorial Board; Editor, Journal of the Legal Aspects of Sport; and Editor, AAHPERD Law Review.

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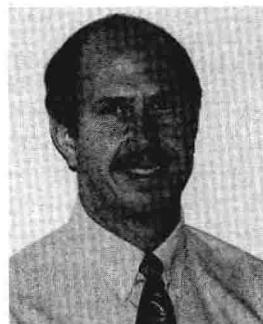
AHPERD Journal, Assistant Editor of the Journal of Legal Aspects of Sport, Director of Higher Education for Indiana AHPERD, was Assistant Editor of the Tennessee AHPERD Journal, and has held various leadership positions in professional organizations. He has completed numerous presentations and articles for publication at the state, national and international levels. Dr. Hypes received his Bachelor of Science and Master of Arts degrees in Physical Education from Appalachian State University and a Doctor of Arts from Middle Tennessee State University.



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Dr. Seidler is coordinator of the graduate program in Sports Administration at the University of New Mexico. He spent six years as the coordinator of the graduate Sports Administration pro-

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recreation. He presents, publishes and teaches classes in Facility Planning and Design, Facility Management, and Risk Management. Dr. Seidler received a Bachelor's degree in Physical Education from San Diego State University, a Master's and Ph. D. in Sports Administration from the University of New Mexico.

Authors



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Dr. Calkins is a Professor of Physical Education at Virginia Military Institute. He has been a coach and boxing instructor for 23 years. Dr. Calkins coached 12 national champions and the VMI team placed third in the nation on two occasions. He is a

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Dr. Horne is the Director of Facility Operations and Program Support within the Department of Physical Education at the U.S. Military Academy. He has been the Department of Physical Education representative for planning and development

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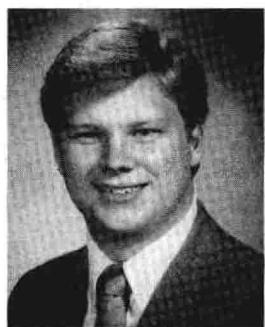


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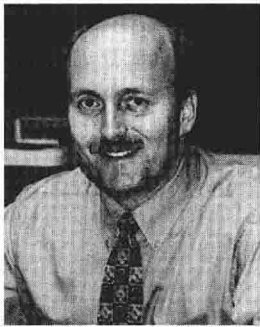
Edward Turner
(Chapters 11, 12, 23)

Dr. Turner is a Professor in the Department of Health, Leisure, and Exercise Science at Appalachian State University in Boone, North Carolina. He has written over 80 journal and chapter publications, published 3 books and completed 48 state, regional, national, and international presentations. Dr. Turner has been a facility consultant on various sports projects and has taught sport facilities design and planning course for 30 years. Currently, he is a consultant for the \$36 million Convocation Center at Appalachian State. He is a past-chair of the Facilities and Equipment Council. Dr. Turner has received numerous teaching awards, most recently he was the system wide recipient of the N.C. Board of Governors Award for Outstanding teaching, 1998. He is a member of AAHPERD, Phi Epsilon Kappa (life member) and the Creative Education Foundation. Dr. Turner received a Bachelor of Science from the Penn State University, a Master of Arts and Ph.D. from the University of Maryland.



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Dr. White is a Professor and head of the Department of Physical Education, Recreation and Dance at New Mexico State University. He has written several papers for publication, completed presentations on facility planning, and received the National Honor Award from the Council for Equipment and Facilities in 1996. Dr. White received a Bachelor of Science in Physical Education from Pembroke State University, a master of Arts in Physical Education from Western Carolina University, and a Ph. D. in Sport Administration from the University of New Mexico.

PROLOGUE

Facility Planning and Design: An Introduction

Todd L. Seidler, University of New Mexico ■ Bernie Goldfine, Kennesaw State University

Have you ever seen a facility with so many design problems that it left you shaking your head in disbelief? Each facility presents its own unique design challenges; if these challenges are not addressed and overcome, the result is a facility with design problems. Typically, the larger a building project, the greater the likelihood that mistakes will be made in the planning and design process. Often details are overlooked, and sometimes even major mistakes are made in the planning process and not discovered until after the facility is built and opened for use. For example, most of us have seen buildings with poor lighting, ventilation, or access control that could have been prevented with appropriate planning. In particular, one of the most common design flaws in recreational, physical education, and sports facilities is a lack of proper storage space. Surely, we have all visited buildings where hallways, classrooms, and even activity spaces were used for temporary or permanent storage of equipment.

A lack of planning has resulted in countless design flaws in sport and recreation facilities. Can you imagine a high school football team playing on an eighty-yard football field? What about a recreation center with access to the locker rooms available only by crossing the gym floor? Do you believe a facility designer would locate a locker room toilet one foot lower than the septic field it was supposed to drain into? How about a gymnasium with large picture windows directly behind the basketball standards? And how safe is an indoor track that has been constructed as part of a pool deck and has water puddles present in every running lane? Impossible? No.

These "Building Bloopers" are real and are not as uncommon as we would like to believe. Such mistakes can be embarrassing, expensive, amazing, and sometimes humorous (if it is not your facility). These and many other planning and design errors can usually be traced to insufficient planning. An example of

outrageous Building Blooper is Olympic Stadium in Montreal. Constructed as the track and field site for the 1976 Montreal Olympics, it has yet to be completed satisfactorily. Originally estimated to cost about \$60 million, the price so far is upwards of \$1 billion. And to top it off, a large percentage of the seats did not have direct sight lines to the finish line on the track.

Building bloopers are often caused by devoting insufficient time, effort and/or expertise to the planning process. The earlier in the process that mistakes are discovered and corrected, the less they are going to cost to rectify. It is cheap to change some words on a paper, somewhat more expensive to change lines on a blueprint, and outrageously expensive or impossible to make changes once the concrete has been poured. Furthermore, the impact of a poorly designed building is staggering when compared with other management problems. Problematic staff or other personnel can be relieved of their responsibilities. Funds can be raised for under-financed programs. However, the consequences of a poorly designed building will have to be endured for decades. Therefore, it is essential to devote all available resources early in the planning process.

All too often facilities are planned without in-depth consideration of the programs that they will support. Basically, a facility is a tool. The better it is planned, designed, and constructed, the better it will support the objectives of the programs it will house. Implementing a new program in an existing or poorly planned facility often requires designing the programs based on the limitations of the facility. Furthermore, poorly designed venues may limit or even prevent some activities from taking place. Conversely, a well-designed facility will support and enhance the programs. Planning and building a new facility is a great opportunity to ensure that it will optimally support the desired programs. Furthermore, if done

properly, well-planned venues allow for flexibility when the popularity of activities and user demand fluctuate; additionally, they allow new activities to be added easily.

This book is intended to provide a basic understanding of the planning and design process as well as the unique features of many different areas and types

of facilities. Although there is no such thing as a perfect building, with significant time, effort, and expertise devoted to the planning and design process, future Building Bloopers can be kept to a minimum. It is hoped that those of you involved with the planning of sports facilities will find this book to be a significant resource.

Contents

Preface ix

Acknowledgments xi

Meet the Authors xiii

Prologue xix

Todd Seidler, University of New Mexico

Bernie Goldfine, Kennesaw State University

Chapter 1 History of the Council on Facilities and Equipment 1

Thomas H. Sawyer, Indiana State University

Michael G. Hypes, Indiana State University

Chapter 2 Planning and Designing Facilities 11

Harvey White, New Mexico State University

James Karabetsos, Western Illinois University

Chapter 3 Site Selection and Development Process 29

Thomas H. Sawyer, Indiana State University

Michael G. Hypes, Indiana State University

Chapter 4 Construction Documents and Bidding 35

Thomas H. Sawyer, Indiana State University

Chapter 5 Financing Facility Development 43

Thomas H. Sawyer, Indiana State University

Chapter 6 Development of Standards 47

Arthur H. Mittelstaedt, Jr., Recreation Safety Institute

Thomas H. Sawyer, Indiana State University

Michael G. Hypes, Indiana State University

Chapter 7 Planning Facilities for Safety and Risk Management 65

Todd Seidler, University of New Mexico

Chapter 8 Designing for Inclusion: The Americans with Disabilities Act (ADA) and Architectural Barriers Act (ABA) 75

Richard LaRue, University of New England

Chapter 9 Indoor Surfaces—Ceilings, Walls, and Floors 85

Hal Walker, Barry University

Chapter 10 Facility Maintenance 97

Thomas Rosandich, Jr., United States Sports Academy

Chapter 11 Electrical and Mechanical 109

Ed Turner, Appalachian State University

Richard LaRue, University of New England

Chapter 12 Signage—Environmental Graphics 125

Ed Turner, Appalachian State University

Chapter 13 Sports Medicine and Rehabilitation 133

Christopher Ingersoll, Indiana State University

Thomas H. Sawyer, Indiana State University

Chapter 14 Ancillary Areas 139

Hervey Lavoie, Ohlson Lavoie Corporation.

Chapter 15 Accademic Classrooms and Research Laboratories 163

Thomas H. Sawyer, Indiana State University

Chapter 16 Landscape Design and Outdoor Spaces 173

Richard LaRue, University of New England

David LaRue, Landscape Architect

Chapter 17 Playgrounds 181

Donna Thompson, University of Northern Iowa

Susan Hudson, University of Northern Iowa

Chapter 18 Aquatic Facilities 197

D.J. Hunsaker, Councilman & Hunsaker and

Associates

Chapter 19 Orienteering Course 225

Thomas Horne, United States Military Academy

Chapter 20 Combative Areas 237

Gordon Calkins, Virginia Military Institute

Thomas Horne, United States Military Academy

Chapter 21 Strength and Cardiovascular Training 251

Thomas H. Sawyer, Indiana State University

Chapter 22 Campus Recreational Sport Centers 263

Thomas H. Sawyer, Indiana State University

Chapter 23 Indoor and Outdoor Courts 273

Bernie Goldfine, Kennesaw State University

Ed Turner, Appalachian State University

Chapter 24 Dance Facilities 301

Thomas H. Sawyer, Indiana State University

Chapter 25 Field Spaces 313

Arthur H. Mittelstaedt, Jr., Recreation Safety Institute

Thomas H. Sawyer, Indiana State University

Chapter 26 Winter Sports 333

Larry Horine, Appalachian State University, Retired

Chapter 27 Ice Facilities 347

Jack Vivian, JRV, Inc.

Chapter 28 Track and Field/Cross Country Facilities 375

John McNichols, Indiana State University

John Gartland, Indiana State University

Thomas H. Sawyer, Indiana State University

Chapter 29 Trends in Stadium and Arena Design 395

Todd Seidler, University of New Mexico

Appendices

- A Field and Court Dimensions 413
- B Planning Checklist for Outdoor Spaces 431
- C Surface Selection Process 433
- D Indoor Activity Dimensions 435
- E Indoor Activity Area Planning Checklist 437
- F Metric Conversion Formulas 441
- G General Resources for Planning Facilities 443
- H Associations Pertinent to Planning Recreation, Athletic, and Physical Education Facilities 445
- I Associations Pertinent to Planning for Accessibility 447
- J Track and Field and Cross Country Layouts 449
- K Renovation, Retrofitting or Replacing Facilities 451
- L Sample ASHRAE Standard 453

Glossary 455