

## INFORMATION TO USERS

This manuscript has been reproduced from the microfilm master. UMI films the text directly from the original or copy submitted. Thus, some thesis and dissertation copies are in typewriter face, while others may be from any type of computer printer.

**The quality of this reproduction is dependent upon the quality of the copy submitted.** Broken or indistinct print, colored or poor quality illustrations and photographs, print bleedthrough, substandard margins, and improper alignment can adversely affect reproduction.

In the unlikely event that the author did not send UMI a complete manuscript and there are missing pages, these will be noted. Also, if unauthorized copyright material had to be removed, a note will indicate the deletion.

Oversize materials (e.g., maps, drawings, charts) are reproduced by sectioning the original, beginning at the upper left-hand corner and continuing from left to right in equal sections with small overlaps. Each original is also photographed in one exposure and is included in reduced form at the back of the book.

Photographs included in the original manuscript have been reproduced xerographically in this copy. Higher quality 6" x 9" black and white photographic prints are available for any photographs or illustrations appearing in this copy for an additional charge. Contact UMI directly to order.

# U·M·I

University Microfilms International  
A Bell & Howell Information Company  
300 North Zeeb Road, Ann Arbor, MI 48106-1346 USA  
313 761-4700 800 521-0600



**Order Number 9300166**

**Current problems and trends in facility planning for health,  
physical education, recreation, and athletics at colleges and  
universities**

**Holbrook, James Edward, D.A.**

**Middle Tennessee State University, 1992**

**Copyright ©1992 by Holbrook, James Edward. All rights reserved.**

**U·M·I**

**300 N. Zeeb Rd.  
Ann Arbor, MI 48106**



Current Problems and Trends in Facility Planning for  
Health, Physical Education, Recreation, and  
Athletics at Colleges and Universities

James Edward Holbrook

A dissertation presented to the  
Graduate Faculty of Middle Tennessee State University  
in partial fulfillment of the requirements  
for the degree Doctor of Arts in the  
Department of Physical Education


August 1992

Current Problems and Trends in Facility Planning for  
Health, Physical Education, Recreation, and  
Athletics at Colleges and Universities

APPROVED:

Graduate Committee:

  
Major Professor

  
Committee Member

  
Committee Member

  
Head of the Department of Health, Physical Education,  
and Recreation

  
Dean of the Graduate School

(c) 1992

James Edward Holbrook

ALL RIGHTS RESERVED

## ACKNOWLEDGMENTS

The writer is indebted to the following for their encouragement and contributions to this study:

Dr. A. H. Solomon, major professor, for his leadership, encouragement, patience, and time. Dr. Guy Penny and Dr. Jack Arters, committee members, for their support and suggestions to the project.

Henry Shelby, Charles Pigg, and Robert Gilliam for their expertise in helping the writer to develop the questionnaires used in this study. The 94 campus planners, facility directors, and architects who responded to the questionnaires.

And the writer's parents for their love, faith, and continual support throughout the program.



## TABLE OF CONTENTS

	Page
List of Tables . . . . .	v
List of Appendices . . . . .	vii
 Chapter	
1. Introduction . . . . .	1
Statement of the Problem . . . . .	5
Significance of the Study . . . . .	5
Limitations of the Study . . . . .	6
Delimitations of the Study . . . . .	6
Definition of Terms . . . . .	6
Questions to be Answered . . . . .	8
2. Review of Related Literature . . . . .	9
3. Methods and Procedures . . . . .	23
Subjects . . . . .	23
Instrument . . . . .	24
Administration of the Survey Instrument . . . . .	26
Data Analysis . . . . .	30
4. Analysis of Data . . . . .	31
Survey Responses . . . . .	31
Data Analysis . . . . .	32
Campus Planners . . . . .	33
Facility Directors . . . . .	49

Chapter	Page
Architects . . . . .	64
5. Summary, Discussion, Conclusions, and Recommendations . . . . .	79
Summary . . . . .	79
Discussion . . . . .	81
Backgrounds of the Campus Planners, Facility Directors, and Architects . . . . .	81
Problems and Trends Concerning Facility Design . . . . .	83
Problems and Trends Concerning Safety and Liability . . . . .	87
Problems and Trends Concerning Financial Issues . . . . .	89
Problems and Trends Concerning Facility Management . . . . .	91
Problems and Trends Concerning Technology . . . . .	92
Conclusions . . . . .	93
Recommendations . . . . .	95
APPENDICES . . . . .	98
BIBLIOGRAPHY . . . . .	150

## TABLES

Table	Page
1. Questionnaire for Campus Planners . . . . .	27
2. Questionnaire for Facility Directors . . . . .	28
3. Questionnaire for Architects . . . . .	29
4. Respondents of the Survey . . . . .	32
5. Questions that Concern General Information on the Questionnaire for Campus Planners . . . . .	34
6. Questions that Concern Facility Design on the Questionnaire for Campus Planners . . . . .	37
7. Questions that Concern Safety and Liability on the Questionnaire for Campus Planners . . . . .	43
8. Questions that Concern Finance on the Questionnaire for Campus Planners . . . . .	46
9. Questions that Concern Facility Management on the Questionnaire for Campus Planners . . . . .	48
10. Questions that Concern Technology on the Questionnaire for Campus Planners . . . . .	50
11. Questions that Concern General Information on the Questionnaire for Facility Directors . . . . .	52
12. Questions that Concern Facility Design on the Questionnaire for Facility Directors . . . . .	53
13. Questions that Concern Safety and Liability on the Questionnaire for Facility Directors . . . . .	56

Table		Page
14.	Questions that Concern Finance on the Questionnaire for Facility Directors . . .	59
15.	Questions that Concern Facility Management on the Questionnaire for Facility Directors . . . . .	62
16.	Questions that Concern Technology on the Questionnaire for Facility Directors . .	65
17.	Questions that Concern General Information on the Questionnaire for Architects . . . . .	65
18.	Questions that Concern Facility Design on the Questionnaire for Architects . . .	67
19.	Questions that Concern Safety and Liability on the Questionnaire for Architects . . . . .	70
20.	Questions that Concern Finance on the Questionnaire for Architects . . . . .	73
21.	Questions that Concern Facility Management on the Questionnaire for Architects . . . . .	76
22.	Questions that Concern Technology on the Questionnaire for Architects . . .	78

## APPENDICES

Appendix	Page
A. FACE LETTERS MAILED WITH INSTRUMENT AND ADDITIONAL FACE LETTER WRITTEN BY MR. SHELBY . . . . .	99
B. ADDRESSES OF CAMPUS PLANNERS, FACILITY DIRECTORS, AND ARCHITECTS . . . . .	104
C. CRITERIA FOR PANEL OF EXPERTS TO EVALUATE THE INSTRUMENT . . . . .	121
D. THE INSTRUMENT . . . . .	124

## ABSTRACT

### Current Problems and Trends in Facility Planning for Health, Physical Education, Recreation, and Athletics at Colleges and Universities

James Edward Holbrook

This study investigated the need for contemporary and comprehensive planning concepts to be used when designing facilities used for health, physical education, recreation, and athletic programs. A questionnaire was developed to survey each of three groups: campus planners, facility directors, and architects. A total of 94 campus planners, facility directors, and architects responded to the survey. The conclusions revealed that:

1. Institutions rely too heavily on the architect during the early stages of planning.
2. All three groups agree that preventive maintenance is a good concept; however, they do not believe it is a major consideration for facility planning.
3. All three groups highly agree that the concept of multi-purpose recreational centers is a beneficial financial trend used by colleges to centralize activities and maximize usage.
4. All three groups were reluctant to express preventive maintenance as a way to decrease a facility director's liability in management.

James Edward Holbrook

5. All three groups agree that technology should be acknowledged in facility planning, but they do not believe it is important enough to change financial methodology.

Recommendations were made to include that institutional planning committees need to be more knowledgeable concerning educational specifications, and this concept should be compared to the amount of facilities designed incorrectly. Financial methodology in facility planning must become more innovative, and multi-purpose centers are the most beneficial trend studied in this survey. Preventive maintenance should be implemented more comprehensively in facility planning. Future research is needed in all of these areas.

## CHAPTER 1

### Introduction

Designing facilities to meet the needs of the perceived program is the essence of facility planning. When designing facilities for health, physical education, recreation, and athletics, this concept is not always as simple as it sounds. Historically, these facilities have been designed with great functional concepts in mind for some cultures, while others cared more about aesthetics.

In ancient Greece, physical education and sports facilities were used for many activities other than what they were designed to provide. For example, Forbes (cited in Romano, 1972), explained the many uses of the palestra in ancient Greece. He indicated that the custom of daily exercise and a bath brought men to the building; and once there in the company of their fellows, they found that there was no better place for social intercourse, small talk, relaxation, lounging, dissemination of news and views, and serious conversation and discussion. The sophists of the late fifth century B.C. used some of the rooms facing the interior courtyard of the palestra as lecture halls (Romano, 1972).

Perhaps, the ancient Greeks did not design these facilities for all of the purposes for which they were used. However, they were designed to last such a long time that



their intended purpose was destined to change. According to Harris (1967), the panatheniac stadium at Athens survived in good condition until the end of the nineteenth century, when it was refashioned to make it suitable for the first modern Olympic Games in 1896.

No matter what the specific purposes of these facilities may have been, the ancient Greeks did design their facilities with function in mind. According to Romano (1972), contemporary facilities for physical education and athletics in the United States are not built with the same concern for human use as were the buildings of fifth century B.C. Greece. Although the technological advances of the intervening 2,500 years would have certainly overwhelmed the Greeks by their magnitude, Romano (1972) believes that the Ancients would be quite disappointed by the ways in which our technology has been applied to modern facilities of physical education and athletics. However, the Roman government was quite different than the Greek government. Suetonius explained that when the Emperor Augustus was introducing athletics into Rome he had wooden stands put up in Campus Martius (Harris, 1967). This is not an efficient way to remodel a facility. It was difficult and expensive during that time period. Based on Romano's view of American ideology in facility design, the Romans would have probably agreed with American architectural concepts.

When one writes about Greek and Roman sports, it is important to remember that although they both were involved in the formation of our concept of the Olympic Games, their ideology on sport and physical education was very different. Harris (1967) explains that even the ritual of bathing was different. The Greeks were very robust and enjoyed cold baths at the palestra, while the Romans took warm baths. However, most importantly, the Greek idea of sport was for the enjoyment of the activity itself. The Games represented a sacred belief to the Greeks, while the Romans viewed sport as a spectacle--"win at all costs." Americans often like to compare themselves to the ancient Greeks in sport. However, the American view of sport is more comparable to that of the Romans. It is illustrated quite often in the way that we design sports facilities. The Greeks would have never understood the concepts on which Americans base the need to replace functional activity space for aesthetic appeal.

These comparisons may be accurate to some degree; however, the ancient Greeks and Romans probably would never have imagined the legal and financial issues that the campus planner must face in order to design a facility that will be used for health, physical education, recreation, and athletic programs. An inscription at Epidaurus illustrates that Philon of Corinth, having undertaken a contract for providing starting lines for a stadium and having failed to fulfill his contract within the specified time, was

condemned by the Agonothetes and Hellanodicae to pay a fine of 500 drachmae (Gardiner, 1910). But it does not compare with the complexity of current issues concerned with planning of facilities.

Squeezing maximum efficiency out of existing facilities has never been an easy undertaking for school administrators, nor has anticipating and preparing for the future space needs. Both tasks are made more manageable by a master plan.  
(Rosen, 1987, p. 52)

According to Bronzan (1974), there are at least three major approaches in determining the design and function of facilities for physical activities and related programs to be conducted in them:

1. Equal and adequate facilities for each program of physical education, athletics, and recreation;
2. The elimination or near total sacrifice of one or more of the three programs in order that one or more may excel;
3. A compromise solution in which none of the three programs enjoy a total satisfaction, but all three programs share in facilities that meet 75 to 85% of their needs.

This ideology was popular when Bronzan (1974) wrote his book over 17 years ago. However, many new trends have taken place in the past 17 years, and new concepts have been explored that have changed the viewpoints of architects, facility directors, and campus planners. Most of the college facilities have not illustrated these changes.

Many facets must be recognized to anticipate problems that an institution may face while designing a facility, as well as after the facility is constructed. Preventive maintenance is a term that can be defined as determining all of the facets that affect the use of a facility before it is designed. This concept includes more than just the design. It also includes trends that will affect the use of the facility. The most dominant of these trends are new design concepts, safety and liability issues, financing, technology, and administrative changes. All of these facets are directly related to the management of facilities and should be used as a component of facility planning.

The educational environment has made rapid changes. Whether an educator's role is to be a teacher, fitness instructor, or administrator; technology, legal and financial issues, and a variety of other facets of facility planning will be very important.

#### Statement of the Problem

This study investigated the current problems and trends to show a need for the use of contemporary and comprehensive planning concepts when designing facilities to be used for health, physical education, recreation, and athletic programs.

#### Significance of the Study

Many professionals of health, physical education, recreation, and athletics have not implemented programs in

which anticipated problems and/or trends that will affect the design, construction, and management of their facilities. By developing a study which will help individuals anticipate problems, more functional, efficient facilities can be constructed.

#### Limitations of the Study

This dissertation is limited to the views of a select group of campus planners, facility directors, and architects concerning the planning of facilities designed for health, physical education, recreation, and athletics, including: (1) assessing problems and trends in design, (2) finance, (3) safety and liability, (4) technology, and (5) facility management.

#### Delimitations of the Study

The data used in this study were limited to information derived from a survey of campus planners and facility directors chosen from 50 college campuses located in 11 southeastern states and 50 architects that either designed sports facilities in these states or had offices in these states with a reputation for designing sports facilities. The results of the study were derived from an instrument approved by a panel of experts.

#### Definition of Terms

Architect--designs the facility in a functional language that can be used to communicate to the construction engineer how the facility should be built.

Campus planner--the institutional administrator that oversees the development of a campus facility from the conceptual design to completion of its construction. Universities have a designated campus planner or a university architect. At a small college, this person may be the president.

Conceptual design--a group of statements that illustrate to the architect the facility specifications needed for the institutional program. These are more commonly known as educational specifications.

Consultant--an aid to the architect to help communicate the needs of a program so an architect will clearly understand (Penman & Riggins, 1986).

Facility director--the individual that manages the operation of a facility. Large campuses have a facility coordinator, while at small campuses this person may be a coach or faculty member.

Preventive maintenance--the concept of anticipating liability issues during the planning process.

Reasonable care--operating in a perceived, accepted manner.

Schematic design--a draft of specifications established by the architect to implement the educational specifications desired.

Questions to be Answered

1. What are the experiential backgrounds of the campus planners, facility directors, and architects?
2. What are some problems and trends that concern facility design?
3. What are some problems and trends that concern safety and liability?
4. What are some problems and trends that concern financial issues?
5. What are some problems and trends that concern facility management?
6. What are some problems and trends that concern technology?

Responses to each of these questions will be cross-referenced across campus planners, facility directors, and architects. The conclusions will highlight agreements and differences between the groups.

## CHAPTER 2

### Review of Related Literature

A review of the literature revealed very little information concerning the comprehensive factors that affect the planning of health, physical education, recreation, and athletic (HPERA) facilities. This writer could not find a single dissertation that had been written updating these considerations. However, the most recent comprehensive dissertation that was found during a search of the Dissertation Abstracts International covering a 130-year span, was written nearly 20 years ago by M. Gans (1972). Gans wrote Sequential Steps in Planning Facilities for Health, Physical Education, Recreation and Athletics. His major findings were:

1. Realize that the present and anticipated HPERA program is too large and/or modern for existing facilities.
2. Involve and organize all of the institutional personnel that would necessarily have to function in the planning of HPERA facility construction.
3. Select and hire a well-qualified architect.
4. Gather information concerning institutional enrollments and requirements, program trends, broad space needs, existing facilities, modern facility innovations, and available equipment.



5. Relate all the accumulated information to the program needs of the institution and the HPERA Department.

6. Write the detailed description of the HPERA program, its associated needs, and its manner of functioning.

7. Write the detailed qualitative and quantitative space requirements necessary to accommodate the proposed programs.

8. Develop a well-defined and realistic project calendar.

9. Review carefully the architectural drawings and specifications at each stage.

10. Select and hire reputable contractors for the actual construction of the facility.

11. Complete the facility under the control of a well-qualified, full-time project supervisor.

12. Formally accept the facility, install the fixed and moveable equipment, and orient the HPERA faculty and staff.

13. Occupy the facility and initiate the HPERA program.

Gans (1972) was very concise and thorough in his study; however, many new problems in facility planning have appeared since he wrote his dissertation. In the past 20 years, many changes have occurred in the physical education and sports environment. During the 1970s, community usage

of college facilities seemed to be the major issue. Watkins (1975) studied The Use of Physical Education Facilities by Community Groups in Arizona Community Colleges. Bennett (1975) completed an extensive survey to design A Model for Planning and Operating Physical Education/Recreation Facilities Based Upon Community Education Ideology. Garbett (1976) studied The Effects of the Community School Concept Upon Planning and Utilization of Indoor Physical Education Facilities in the United States Since 1970. This concept became a major financial issue as money became more difficult to obtain. It was also an issue for the administration when deciding which groups were to utilize the campus facility, including use by the general public.

During the past decade, there has been increasing concern about the deteriorating condition of American college and university campus facilities. University executives, higher education associations, and other commentators have raised the spectre of "the growing capital facilities problem" (Rush & Johnson, 1989-1990).

A recent survey, authored by David Halpern (cited in Evangelauf, 1987) and presented at the annual meeting of the Society for College and University Planning, found that 60% of college planners saw a need for new or modernized facilities on their campuses as "extremely urgent" or "very urgent" (cited in Evangelauf, 1987, p. 20). The period of the 1960s was an era of unprecedented campus growth. When

the baby boomers reached college age, schools expanded to meet the demand. Many of the facilities constructed during that spurt are now showing signs of wear and tear, resulting in a new wave of facility construction (Wolfe, 1987). The facilities built during the rapid expansion of higher education in the 1960s are approaching the end of their 25-year life cycle, and the older, better-constructed buildings of a century ago are also wearing out (Evangelauf, 1987).

Many new standards of construction are under investigation. One of the problems is that now there are so many new types of materials, as well as ways to construct a facility. The standards are very difficult to understand, unless an administrator defines specifically what is to be designed. For example, there is a confusing array of standards for different types of swimming pools. Class A is intended for accredited competitive aquatic events, although it may also be used for recreation. Class B is intended for public recreational use. Class C is a semi-public pool operated in conjunction with a hotel, motel, apartment, or condominium. Class D is a special-purpose pool operated for medical treatment, therapy, or other nonrecreational uses ("Aquatic Facilities," 1986).

When a new facility is designed, the architect and the campus planner often do not communicate well. At the present time, there appears to be confusion regarding

conflicting or overlapping concepts and terms. There also appears to be disagreement within specific professional groups regarding these same concepts (Palmer, cited in Penman & Riggins, 1986).

Fortunately, these concepts are being studied by "new" professionals. There seems to be an indication that a new profession is in the budding and that there is a need for people who have training in both the education and architectural fields to bridge the gap between the two bodies of knowledge to be affected, resulting in more functional and economical facilities (Penman & Riggins, 1986). Architects are now hiring specialists in the area of sport management that know the concepts of facility management and can communicate with both the campus planners and the architect. This study is based on the premise that campus planners must understand the problems faced by the facility director and the architect to be successful in the planning of facilities for colleges and universities. From another viewpoint, a facility director can better understand the administration of a facility if there is a better understanding of the intended use of a facility.

Planners need to be sure the architect understands what he will be designing. Not only may educators and architects view the design and construction of educational facilities with limited perspectives, but the language of the design and construction process sometimes lacks clarity, creating

potential communication difficulties (Penman & Riggins, 1986).

Legal issues appear to be the most obvious cause for concern in HPERA facilities. Gaskin (1986) examined 48 court cases involving injuries in school-sponsored physical education and athletic programs due to alleged unsafe conditions of facilities as a part of her study, entitled Court Decisions in School Athletic, Physical Education, and Intramural Programs in Which the Condition of Equipment and Facilities has been Alleged as the Proximate Cause of Injury to Participants and Spectators. The issue in Scott v. State in 1956 was whether New York Teachers College was negligent in having a flag pole in right field of its baseball field (Gaskin, 1986). The plaintiff won under these circumstances; however, in today's litigated society the obvious problem of a flag pole on a baseball field would seem outrageous. However, the same types of problems have revealed themselves in the past 20 years. In the 1979 court case, Thomas v. St. Mary's Roman Catholic Church, the plaintiff was lunging for a ball going out of bounds in the parochial high school gymnasium when he struck a glass panel located within six feet of the boundary line of the basketball court. The glass shattered, and he fell, severing an artery and sustaining extensive lacerations on both arms (cited in Gaskin, 1986).

Unobstructed activity areas are an obvious consideration for legal issues in HPERA facilities. However, facilities planning is a very complex endeavor, and many problems may not be as obvious. For example, in a 1980 court case, Vargo v. Svitchan, a 15 year old was lifting a 250-300 pound weight, fell, and received injuries resulting in paraplegia. The issue in this case was whether the gymnasium facilities were inadequate and defective because of lack of sufficient ventilation causing the plaintiff to perspire excessively and contributing to his injuries. The plaintiff alleged also that the weight room did not have a sufficient number of weight-lifting safety machines or power racks for the number of students and that the available floor mats were not being used on the concrete floor to prevent possible slippage and lessen the likelihood of serious injury (cited in Gaskin, 1986). In this case the courts ruled that the injury was caused by a lack of supervision. However, these are reasonable arguments based on the concept of foreseeability or negligence. Four elements must be present to determine negligence:

1. A duty is involved.
2. A breach of duty must be present.
3. Proximate cause must be established.
4. Damage or loss must accompany the incident (Gaskin, 1986).

If the architect, campus planner, and facility director keep this in mind when planning and operating a facility, the chance of lawsuits is greatly reduced.

Proper facility design can greatly reduce injuries in physical education and athletic facilities. According to Penman and Niccolai (1985), injuries result to participants using sports facilities for four basic reasons:

1. The facility may be inadequately maintained.
2. The facility may be improperly designed and, therefore, is unsafe for certain activities.
3. The facility may have a product associated with it which is defective.
4. There is an inherent risk of injury when using any sports facility.

The educational environment is becoming very litigious, especially when activity equipment and facilities are involved. Gaskin (1986) said that her study did not imply this trend. However, Appenzeller (1978) explains that America is becoming an increasingly litigious society and that his books are written to encourage teachers that realize the worthwhile activities of education and understand the risks that are involved. According to Penman (1986), facility-related lawsuits are on the rise, and administrators must be increasingly aware of all facets of their facility, including design, maintenance procedures, and equipment conditions. He explains that some of the

concepts that an administrator of a facility should remember are:

1. The courts will look favorably upon you if you have documentation that you've used recommended standards in your construction. (Penman, 1986, p. 108)
2. Periodic safety inspections should be conducted, and unsafe situations corrected. (p. 109)
3. Designating a safety officer is absolutely essential. (p. 109)

Good facility management is the key to avoiding lawsuits after the facility is completed. Defining the responsibilities of the facility director should be a major part of any master plan for facility planning. A knowledgeable facility director will save an institution millions of dollars. Rabinoff (cited in "Accident-Proofing," 1988) reported a court case that involved a fitness center that was charged with hiring unqualified staff who failed to warn patrons about a piece of equipment that had previously caused an accident.

Unqualified administrators of any activity are far more dangerous than an activity itself. In many cases the staff of an institution are injured more than the students or patrons. A doctor's survey of 1,200 participants in aerobic classes in California found that 43% of the participants were injured, while 76% of the instructors had also been injured (Copeland, 1988). According to Copeland, less than



5% of fitness-center instructors have a degree in exercise physiology or even an appropriate certification.

Another issue that has changed dramatically is finance. Howell (1986) designed an analysis of usage and financial problems involved in physical education and athletic facilities. His study determined the specific factors necessary in the development of successful fund production through summer usage of athletic and physical education facilities. Howell's conclusions showed that nearly three-fourths of the institutions involved in his study used their facilities to less than 50% of its usage factor.

It would appear that 50% usage is very poor and space is being wasted. Recreation administrators may have discovered that the remedy for this problem is a multi-purpose facility. New constructions will no longer tend toward the development of satellite recreational sports facilities around the campus since multiple constructions and operations are not cost-effective (Preo, 1986). According to Preo, we will see greater cooperation and interchange between athletics, recreational sports, and physical education programs, but he does not anticipate that there will be a significant decrease in the scope and nature of intercollegiate athletics, despite the recent scandals and the hue and cry that have resulted. In a situation at Joliet Junior College, Jerry Yost, the head football coach, built a fitness center without major capital. He used a

variety of marketing strategies that are commonly used in the private sector. He sold corporate memberships and charged student fees for the center. The center made the college a profit, while increasing enrollment ("Creatively Financing," 1988). A study at Tarleton State University (Holcomb, 1989) illustrates how colleges and universities have the ability to use private-sector marketing strategies to advertise their services. They simply do not want to deal with the image of marketing.

Technology is changing so rapidly that so-called standard materials become obsolete about as fast as they are discovered. According to Hyatt (1988-1989), higher education in the United States has been undergoing a technological revolution marked by exciting new research initiatives, such as superconductivity, biotechnology, robotics, and supercomputing. While the programs and operations of many institutions are now oriented toward the twenty-first century, the facilities and campus infrastructures to support these programs are bogged down in the past--victims of neglect, ignorance, and an inability to relate programmatic and operational needs to facility requirements. Recent advances in sun-blocking, U-V blocking, and sound control are dramatically improving architects' options. Window technology is changing so rapidly that it is almost impossible to keep up with the latest developments. Five years ago, it was difficult to

specify a window with a center-of-glazing R-value greater than three; today center-of-glazing R-values above eight are on the market ("An Improved Outlook," 1990). A new exterior sheeting made of crystallized glass offers structured and aesthetic characteristics comparable to stone or marble without the weight ("Made in Japan," 1990). Some types of surfaces are prefabricated, such as an aerobics floor.

There are two categories of material to remember. These are: "surface material" and "cushion." Cushion is mostly dependent on the density of the material and is fairly simple to understand. However, surface material can test one's knowledge. Different materials will fair better in different environments ("Getting Floored," 1988). According to Miller (1988), there are generally four variables to be measured when determining protection and performance characteristics of a surface. These are: compliance, resilience, stability, and traction. Just as hard surfaces can cause stress fractures, soft surfaces can cause instability to joints.

Another example is selecting a track surface. Technical considerations include knowing whether a track should be a prefabricated sheet or poured-in-place. There are many companies that will build a track; however, before purchasing a track surface, objective product performance history should be acquired. George Oomen, who for 17 years has represented Harvard University in the design and

construction of major athletic facilities, says it is like buying a car. However, unlike buying a car, the biggest problem is that there are no consumer reports or repair records available on various makes and models ("Tracking Down Data," 1987).

These problems make selection of any type building material difficult for the untrained campus planner. There are so many types of innovative materials that a campus planner must constantly be aware of which materials are going to benefit the institution the most. If he does not have this ability, a contractor can easily take advantage of an institution. The process may be time-consuming, but with thousands of dollars at stake, administrators cannot afford not to ask the right questions ("Tracking Down Data," 1987).

According to Ferguson (1990), uniform standards to test the quality of athletic surfaces may one day be a regular part of constructing and renovating athletic facilities. Ron Wilson, an American architect, met Hans J. Kolitzus, a European sports surfacing expert who helped establish the Deutsche Industrie Norm (DIN) surfacing standards. Together, they decided to form the United States Sports Surfacing Laboratory, Inc. (USSL) in Richmond, Virginia. This is the first institution of its kind in the United States (Ferguson, 1990).

Ventilation has been described as an unpredictable problem. Now it can be controlled by a computer chip. In

fact, heating, cooling, humidity, and ventilation can all be integrated into one system. According to Moreno (1989), the idea of a control system is simple. Just measure what is going on in each space and provide the heating or cooling required to handle it. Meanwhile, turn the lights off where they are not needed, ventilate as required, and start all equipment just early enough to make the building comfortable when the occupants arrive. Manufacturers claim that the savings from building management systems can amount to approximately 20% of the annual energy cost.

The key to using technology is to use it as it was intended. This concept is true for any part of campus planning. The architect needs to understand the planning concepts derived from the campus planner and his building committee. The facility director should also understand the concepts of planning as they apply to the operation of the facility. The following chapter will discuss the procedures and methods used to carry out this study.

## CHAPTER 3

### Methods and Procedures

The need for a more contemporary approach to planning for health, physical education, recreation, and athletic facilities was established in the related literature. Current issues must be developed to understand the problems and trends in designing new facilities. To assess these issues, an instrument composed of three questionnaires was designed. One questionnaire was constructed and mailed to campus planners, another to facility directors, and a third to architects.

#### Subjects

Fifty campus planners and 50 facility directors were primarily chosen from two lists. One list was selected from facilities nominated by the National Intramural Recreational Sports Association (NIRSA) as "outstanding sports facilities." Only facilities completed in the past 10 years in 11 southeastern states could be used from this list. The second list consisted of sports-related facilities located in 11 southeastern states that were included in a three-year database of new constructions stored by The Association of Higher Education Facilities Officers. However, some of the facilities were chosen from the investigator's personal observation of new facilities recently constructed in 11

southeastern states. Only one facility per institution could be utilized.

Fifty architects were chosen, based upon the criteria that they were either located in the 11 southeastern states designated or they had designed sports-related facilities in one or more of these states. Some of the architects were chosen because of their identity with particular facilities, and others were chosen from the "Professional Guide" in Athletic Business.

Thirty-five (70%) campus planners, 36 (72%) facility directors, and 23 (46%) architects returned the instrument and were used in the study (see Appendix B, the ones marked returned are the responses used in Chapter 4).

#### Instrument

The questions for the instruments were developed from information gathered from a review of related literature.

The instruments were divided into three parts: (1) a 41-statement questionnaire designed for campus planners, (2) a 34-statement questionnaire designed for facility directors, and (3) a 26-statement questionnaire designed for architects. Some of the questions designed for campus planners and facility directors were not applicable to every facility. This possibility was emphasized in the face letter accompanying the questionnaire sent out.

After the questionnaire was developed, it was evaluated by a panel of experts that included: Henry Shelby, Director

of Campus Development and Facilities Planning at Tennessee Technological University (Cookeville, Tennessee); Charles Pigg, Director of Campus Planning and Construction at Middle Tennessee State University (Murfreesboro, Tennessee); and Robert Gilliam, an architect on the Tennessee Board of Regents (Nashville, Tennessee).

Gilliam and Pigg were given copies of the instrument for evaluation on two occasions. The first time a letter explaining the criteria for evaluating the instrument was given to them (see Appendix C). During this time, Shelby evaluated the instrument, question by question, in the presence of the investigator. Then all three copies of the instrument were evaluated, based on the criteria given to Gilliam and Pigg and the personal evaluation by Shelby. The final instrument was based on compiling the questions that all three committee members agreed upon as pertinent and changing the questions that needed editing or modification for clarity or degree of importance rating. After the final instrument was decided upon, copies were given to each of the members of the panel for final approval.

After the instrument was evaluated by the panel of experts, it was evaluated again by the Doctoral Dissertation Committee, consisting of Dr. A. H. Solomon, Dr. Guy Penny, and Dr. Jack Arters. After the questionnaire was approved by the dissertation committee, it was ready to be administered to the subjects (see Appendix D).



The instrument was designed to retrieve six categories of information. These were:

1. General information;
2. Problems and trends that affect the design of a facility;
3. Problems and trends that affect safety and liability issues concerning facility planning;
4. Problems and trends that affect the financing of a facility;
5. Problems and trends that affect the way a facility is to be managed;
6. Problems and trends that are affected by technology.

Tables 1, 2, and 3 establish the method by which these questions are arranged for analysis. Some of the questions may relate to more than one area of concern. However, it is the intent of the investigator to categorize the questions as much as possible. Questions that are pertinent to more than one area are illustrated in brackets.

#### Administration of the Survey Instrument

A face letter was enclosed with each questionnaire mailed (see Appendix A). Most of the campus planners and some of the architects and facility directors also received a second face letter written by Henry Shelby, Director of Campus Development and Facilities Planning at Tennessee Technological University encouraging their participation

Table 1  
Questionnaire for Campus Planners

---

Questions
General information Questions: 1, 2, 3, 4
Problems and trends that concern facility design Questions: 5, 6, 7, 8, 10, 11, 13, 14, 15, 16, 17, 18, 23, 40
Problems and trends that concern safety and liability Questions: 9, 21, 22, 32, 33, 37, 38, 39
Problems and trends that concern finance Questions: 19, 20, 24, 25, 26, 27, 28, 29, 35, 41
Problems and trends that concern facility management Questions: 12, 34, 36
Problems and trends that concern technology Questions: 30, 31

---

Table 2  
Questionnaire for Facility Directors

---

Questions
General information Questions: 1, 2, 3, 4
Problems and trends that concern facility design Questions: 5, 9, 10, 15, 34
Problems and trends that concern safety and liability Questions: 7, 13, 14, 22, 25, 26, 30, 31, 32
Problems and trends that concern finance Questions: 11, 12, 17, 18, 19, 20, 21, 22, 23, 28, 33
Problems and trends that concern facility management Questions: 6, 8, 10, 15, 16, 27, 29
Problems and trends that concern technology Question: 24

---

Table 3  
Questionnaire for Architects

---

Questions
General information Questions: 1, 2
Problems and trends that concern facility design Questions: 3, 5, 6, 7, 8, 9, 25, 26
Problems and trends that concern safety and liability Questions: 4, 11, 15, 16, 17, 20, 21, 22
Problems and trends that concern finance Questions: 10, 11, 12, 13, 19, 23, 24, 25, 26
Problems and trends that concern facility management Questions: 8, 16, 17, 18, 25, 26
Problems and trends that concern technology Questions: 9, 10, 13, 14

---

(see Appendix A). The primary letter instructed the subjects concerning the method to be used to answer the questions and also informed them when to return the questionnaires. The subjects were also informed that the information they gave would only be used for interpretation purposes.

### Data Analysis

The data received on the returned questionnaire are presented in percentages, rounded off to the nearest one-tenth of 1%. The data from each of the statements of the questionnaire were tabulated, using this method. The reporting percentages covered six areas:

1. General information concerning the campus planners, facility directors, and architects;
2. Trends and information that concern the design of a facility;
3. Trends that concern safety and liability;
4. Financial problems and trends;
5. Problems and trends in facility management;
6. Problems and trends in technology.

The following chapter presents the results of the data analysis.

## CHAPTER 4

### Analysis of Data

This survey of selected campus planners, facility directors, and architects in 11 southeastern states was conducted for the purpose of determining six categories of information:

1. General information;
2. Problems and trends that concern facility design;
3. Problems and trends that concern safety and liability;
4. Problems and trends that concern finance;
5. Problems and trends that concern facility management;
6. Problems and trends that concern technology.

Following the development and approval by a committee of recognized experts of a 41-item questionnaire for campus planners, a 34-item questionnaire for facility directors, and a 26-item questionnaire for architects, a copy was mailed to 50 campus planners, 50 facility directors, and 50 architects selected throughout the southeastern states. However, some of the architects had home offices in other states.

#### Survey Responses

Survey responses included 35 (70%) of the campus planners, 36 (72%) of the facility directors, and 23 (46%)

of the architects (see Table 4). An additional 10% of the campus planners mailed their copies after the deadline; and therefore, their responses could not be used in the analysis. Because of on-job requirements, another 10% of the architects could not return their questionnaires on time. Therefore, a smaller sample of architects than was expected responded to the questionnaire. The responses from all groups totaled 94 (63%) (see Table 4).

Table 4  
Respondents of the Survey

Main responsibilities of respondents	Frequency	Percent of various groups responding
Campus planners	35	70
Facility directors	36	72
Architects	23	46
Total	94	63

#### Data Analysis

The data from the survey were analyzed in each of three groups. This included a frequency of responses from campus planners, facility directors, and architects. The data from each of the three groups' questionnaires were analyzed, using the following categories:

1. General information;
2. Questions that concern facility design;
3. Questions that concern safety and liability;
4. Questions that concern finance;
5. Questions that concern facility management;
6. Questions that concern technology.

The responses from the subjects on each of the questionnaires are also accompanied by tables. Some of the questions did not pertain to every facility evaluated. In these cases, subjects were told to not answer the question and mark it not applicable. This approach allowed a valid percentage of each response for analysis.

#### Campus Planners

Questions concerning general information. The purpose of Question 1 was to identify the type of facility described. The responses to Questions 2 and 3 expressed the amount of experience the campus planners possessed, and the responses to Question 4 illustrated the enrollment of the institutions involved (see Table 5).

In Question 1, 35 (70%) respondents indicated four categories of facilities: 10 (28.6%) student recreation centers; 7 (20%) arenas and full complexes; 5 (14.3%) partial gyms and annex buildings; and 13 (32.1%) single-sport facilities (seven tennis centers, three baseball stadiums, two aquatic centers, and one soccer field).



Table 5

Questions that Concern General Information  
on the Questionnaire for Campus Planners

Value label	Frequency	Valid percentage
1. The categories for facilities are:		
SRC	10	28.6
Tennis centers	7	20.0
Arena or full complex	7	20.0
Partial gyms or annex gyms	5	14.3
Baseball stadiums	3	8.6
Aquatic centers	2	5.7
Soccer fields	1	2.9
2. How many years have you been in your current position?		
10 years or more	11	32.4
7 - 9 years	10	29.4
1 - 3 years	7	20.6
4 - 6 years	6	17.6
3. How many years have you been in your profession?		
10 years or more	27	79.4
7 - 9 years	5	14.7
4 - 6 years	1	2.9
1 - 3 years	1	2.9
4. Enrollment of institution:		
5,001 - 10,000	9	26.5
10,001 - 20,000	7	20.6
20,000 or more	7	20.6
1,000 - 2,000	4	11.8
2,001 - 3,000	3	8.8
3,001 - 5,000	2	5.9
Less than 1,000	2	5.9

In Question 2, the majority of campus planners (21, 61.8%) indicated they had held their current positions for more than six years. The responses to Question 3 illustrated that nearly all campus planners (94.1%) had been campus planners for more than six years.

In Question 4, respondents indicated that all the listed enrollment categories were represented, with 67.7% of the institutions housing over 5,000 students.

Questions that concern facility design. Questions 5, 6, 7, 8, 10, 11, 13, 14, 15, 16, 18, and 23 were designed to accumulate specific information concerning the design and planning procedures utilized for the facility development, while Questions 17 and 40 were designed to gather professional opinions concerning long-range planning and flexibility of design (see Table 6).

In Question 5, the respondents were asked to rank their responses in priority order. Many of them failed to comply with this request. However, it was clear that the building committees and campus planners were the most involved groups with educational specifications decisions (15 schools chose building committees as the top choice, and 9 schools chose campus planners). However, eight schools chose the architect.

Question 6 was similar to Question 5. Results indicated a different assortment of answers by the same participants. Significantly less campus planners (3) were

chosen, while 10 chairpersons, 10 building committees, and 10 architects were selected as being most influential in determining educational specifications.

In Question 7, concerning what activities are conducted in the facility, the majority of institutions conduct health, physical education, recreation, athletics, intramurals, special events, and community activities in their facilities. In Question 8, the researcher failed to include community use as an available response choice for intended use. However, campus planners used the "other" category to include community use. Offices were also listed in the "other" category.

Questions 10 and 11 were designed to determine if any schools received architectural drawings from the architect that were incomplete because of poor communication. Only four respondents said the architect did not receive all of the pertinent information, and only three respondents reported important information missing on the schematic design.

The responses to Question 13 were disturbing because the architect was involved in the conceptual design for more facilities than the department chair, building committees, or the campus planner. Even more disturbing was the fact that in Question 14 less than 100% of the respondents stated that the architect was involved in the schematic design.

Table 6

Questions that Concern Facility Design on the  
Questionnaire for Campus Planners

Value label	Frequency	Valid percentage
5. The educational specifications were planned mostly by:		
Building committees	15	53.6
Other	3	50.0
Campus planning	9	42.9
Architect	8	38.1
6. Which of the following individuals had the most input in designing the educational specifications?		
Architect(s)	10	40.0
Building committees	10	40.0
Chairperson and/or department faculty	10	40.0
Other	2	40.0
Campus planning	3	13.0
7. What activities are conducted in the facility?		
Recreation	28	82.4
Athletics	27	79.4
Physical education	25	73.5
Health activities	22	64.7
Intramural	21	61.8
Special events	19	55.9
Community use	17	50.0
Dance	10	29.4
Spillover from other academic departments	4	11.8
Other	3	8.8
8. Which activities were the facilities designed to implement?		
Recreation	27	79.4
Athletics	24	70.6
Physical education	23	67.6
Intramural	21	61.8
Health activities	19	55.9
Special events	16	47.1

Table 6 (continued)

	Value label	Frequency	Valid percentage
	Other	6	17.6
	Spillover from other departments departments	4	11.8
10.	Was the architect given all of the information in the conceptual design in order to write the correct schematic design?		
	Yes	28	87.5
	No	4	12.5
11.	Did the schematic design include all of the important components of the conceptual design (educational specifications)?		
	Yes	29	90.6
	No	3	9.4
13.	Which of the following people were involved in the development planning of the conceptual design of the facility?		
	Architect	24	70.4
	Facility director	23	67.6
	Building committees	21	65.6
	Campus planning	20	62.5
	Department chair	21	61.8
	Consultants	12	36.4
	Other	7	21.9
14.	Which of the following people were involved in the development of the schematic design of the facility?		
	Architect	30	88.2
	Facility director	21	61.8
	Campus planning	18	56.3
	Building committees	17	51.5
	Department chair	16	47.1
	Consultants	10	31.3
	Other	5	15.6
15.	Which of the following people were involved in the development of the long-range plans of the facility?		

Table 6 (continued)

Value label	Frequency	Valid percentage
Facility director	21	63.6
Department chair	20	60.6
Campus planning	19	59.4
Building committees	16	48.5
Architect	15	45.5
Other	8	24.2
Consultants	7	21.9
16. Did the master plan include:		
Design	18	54.5
Short-range plans	15	45.5
Long-range plans	14	42.4
Safety	13	39.4
Financial issues	13	39.4
Expansion of facilities	11	33.3
Legal issues	9	27.3
Anticipation of new technology	8	24.2
Demographic considerations	8	24.2
Administrative strategies	8	24.2
Have no master plan	8	24.2
Remodeling	7	21.2
Other	3	9.1
17. Do you consider the design flexible enough to undergo changes in programming that may occur during the next 10 years?		
Yes	22	66.7
No	11	33.3
18. Was the facility designed with enough flexibility to accommodate different programs?		
Yes	22	66.7
No	10	30.3
Unusable	1	3.0
23. Was the facility completely inspected by the department using the facility during the first 12 months after its completion?		
Yes	28	96.6
No	1	3.4

Table 6 (continued)

Value label		Frequency	Valid percentage
40. Are long-range administrative plans necessary to develop an efficiently operated facility?			
Yes		27	79.4
No		7	20.6

The majority of subjects responding to Question 15 indicated the department chair, campus planner, and facility director were involved in the long-range plans. Significant numbers of respondents reported that their master plan included design, finance, safety, long- and short-range plans, and expansion potential. Legal issues were only represented by nine (27.3%) responses.

No major differences were illustrated by the campus planners concerning the present ability of the facility to accommodate different programs, indicating their ability to accommodate growth in the near future.

Only one campus planner said his or her facility was not completely inspected within the first 12 months after completion. However, some of the facilities are less than 12 months old. In Question 40, 79.4% said long-range plans were necessary to develop an efficiently operated facility.

Questions that concern safety and liability. Questions 9, 21, and 22 were designed to accumulate specific information concerning safety and liability. Questions 32, 33, 37, 38, and 39 were designed to gather the professional opinions of group experts (see Table 7).

Question 9 concerns the intentions of the planners when the facility was designed. Responses received were evenly divided between those who agreed the facility was designed to avoid interaction between activities and those who disagreed.



In response to Question 21, only 6.7% of the respondents stated injuries had occurred in the facility because of obstructions in activity areas.

In Question 22, only a small percent of the respondents (3%) thought that injuries were caused by poor design, lack of unobstructed space (3%), or poor supervision (6.1%). "Other" reasons not listed included the idea that people have accidents in the best of situations.

In Question 32, 66.7% of respondents stated the belief that some facilities were hazardous and injuries will occur, no matter how they were designed. The largest majority chose facility directors as the group most responsible for keeping a facility safe. However, 74.3% of campus planners believed that architects were responsible for making a facility safe. Eleven (31.4%) of the campus planners listed other groups, such as the safety department and consultants. Only 51.4% of participants thought campus planners were responsible, while 31.4% believed the building committees were responsible.

The majority of the campus planners believed that uniform standards would not be adequate to avoid lawsuits in the future and current ventilation codes were not adequate. About half (48.4%) of them believed sports facilities should be designed above normal specifications to avoid lawsuits.

Questions that concern finance. Questions 19, 24, 25, 26, and 27 were designed to accumulate specific information

Table 7

Questions that Concern Safety and Liability  
on the Questionnaire for Campus Planners

	Value label	Frequency	Valid percentage
9.	Was the conceptual design planned to avoid interaction between activities?		
	Yes	15	50.0
	No	15	50.0
21.	Since your facility was completed, have accidents occurred because of obstructions near an activity area? (walls, poles, glass panels)		
	No	27	90.0
	Yes	2	6.7
	New facility	1	3.0
22.	What is the major cause of injury in your facility?		
	Other	12	36.4
	Poor supervision	2	6.1
	Lack of unobstructed space	1	3.0
	Poor design	1	3.0
32.	Do you believe certain facilities are hazardous and that risks and injuries will occur, no matter how they are designed?		
	Yes	20	66.7
	No	10	33.3
33.	Whose responsibility is it to be sure an activity facility is safe?		
	Facility director	29	82.9
	Architect	26	74.3
	Professor/Instructor	19	54.3
	Campus planner	18	51.4
	Building committees	11	31.4
	Other	11	31.4

Table 7 (continued)

	Value label	Frequency	Valid percentage
37.	Do you believe that designing facilities using uniform standards incorporated by other colleges to be enough to insure "reasonable care" to avoid lawsuits during the next 10 years?		
	No	23	69.7
	Yes	10	30.3
38.	Do you believe it is feasible (practical) to design sports facilities beyond their normally required specifications to avoid injuries to spectators? (e.g., a baseball field with a 24-foot fence in areas other than behind home plate)		
	No	16	51.6
	Yes	15	48.4
39.	Do you believe that the current ventilation codes are too liberal and should be changed to prevent the chance of this problem becoming an issue of concern?		
	No	22	75.9
	Yes	7	24.1

concerning financial problems that affect facilities.

Questions 20, 28, 29, 35, and 41 were designed to gather the professional opinions of campus planners (see Table 8).

In Question 19, concerning the financing of the facility state appropriations, institutional fund-raising and student bond issues and the "other" category led the list. Seven schools used methods that are listed as "other." These methods consisted mainly of private gifts and student fees. The majority of the campus planners reported that the methods used were good choices and new methods of fund-raising were not an issue. At 88.2% of the institutions, facilities were used year-round; 64.7% said they were used more than 50% of the time; and only 27.3% of the facilities had a single-use purpose.

In response to Questions 28, 29, and 35, the majority of campus planners thought that anticipating liability issues, consultants, and multi-purpose recreational centers were all good economical choices. However, only 54.3% believed that financing practices will have to change in the near future.

Questions that concern facility management. Questions 12, 34, and 36 were designed to identify the professional opinions of the campus planners (see Table 9).

In Question 12, respondents were asked to rank what issues will probably give the facility director the most problems. The only significant responses were budgeting and

Table 8

Questions that Concern Finance on the  
Questionnaire for Campus Planners

Value label	Frequency	Valid percentage
19. Was the facility financed by:		
State appropriations	10	30.3
Institutional fund-raising	10	30.3
Student bond issues	8	24.2
Other	7	21.2
Joint-ventures with community	1	3.0
Rentals	1	3.0
Corporate funding	0	0.0
Clinics	0	0.0
Conferences	0	0.0
Commercial athletic events	0	0.0
An innovative combination	1	0.0
20. In your opinion, were the methods of financing used in Question 19 a good choice?		
Yes	29	90.6
No	3	9.4
24. Was the use of new funding approaches an issue in developing the facility?		
No	28	84.8
Yes	5	15.2
25. Are your facilities used year-round?		
Yes	30	88.2
No	4	11.8
26. During the facility's open hours, is it utilized:		
Over 75% of the time	16	47.1
25% - 50% of the time	10	29.4
51% - 75% of the time	6	17.6
Less than 25% of the time	2	5.9

Table 8 (continued)

	Value label	Frequency	Valid percentage
27.	Is your facility used for one purpose?		
	No	24	72.7
	Yes	9	27.3
28.	Could institutions save a significant amount of money by anticipating liability issues in facility design (e.g., diving boards in swimming pools, etc.) or merely adhere to the current legal codes?		
	Yes	18	60.0
	No	12	40.0
29.	Is the use of a consultant a good economical decision?		
	Yes	25	86.2
	No	4	13.8
35.	Do you believe that multi-purpose recreational centers represent a beneficial trend that will allow institutions to get more economical use of their facilities for health, physical education, recreation, and athletics?		
	Yes	29	85.3
	No	5	14.7
41.	Do you believe that financing practices for facilities will have to change at your institution in the near future?		
	Yes	19	54.3
	No	16	45.7

Table 9

Questions that Concern Facility Management  
on the Questionnaire for Campus Planners

Value label	Frequency	Valid percentage
12. Which issues will probably give the facility director the most problems over the next 10 years?		
Maintenance	22	71.0
Budgeting	12	57.1
Adapting to new technology	1	7.7
Other	1	100.0*
Legal liability	0	0.0
Safety	0	0.0
*Percentage does not relate to as many responses as the other choices.		
34. Regardless of administrative styles, do you believe that each facility should have a director?		
Yes	29	87.9
No	4	12.1
36. Place a check by each of the programs that should be offered in one of the multi-purpose facilities mentioned in Question 35.		
Health (wellness, health classes)	28	80.0
Recreation	28	80.0
Physical education	26	74.3
Athletics	21	60.0
Community programs	19	54.3
Intradisciplinary programs	17	48.6
Other	6	17.1

maintenance (12 [57.1%] responses for budgeting and 22 [91%] responses for maintenance). Legal issues were not a top priority. Campus planners believed that each facility needs a director, and a high percentage of them believed that all of the programs listed in Question 36 should be conducted in a multi-purpose recreational center, including others that are not listed. An interesting group of these campus planners indicated at this point that the programs may change and, therefore, no given sports were acknowledged.

Questions that concern technology. Questions 30 and 31 were designed to identify professional opinions of campus planners concerning the financing and use of technology in construction of facilities (see Table 10). The responses to these two questions illustrated that a majority (97.1%) of campus planners believed that sports facilities should specifically adhere to technological advances. However, only 57.6% believed that special financial considerations should be provided.

#### Facility Directors

Questions concerning general information. The purpose of Question 1 was to identify the type of facility described. Questions 2 and 3 identify the subjects' experience in facility management. Question 4 identifies the enrollment of the institution (see Table 11).

In Question 1, four categories of facilities were identified, including 9 (25%) multi-purpose campus centers,



Table 10

Questions that Concern Technology on the  
Questionnaire for Campus Planners

Value label	Frequency	Valid percentage
30. Should an escrow account be developed for a facility master plan to include new technology that may arise during the design and construction of a new facility?		
Yes	19	57.6
No	14	42.4
31. Should facilities be designed to specifically adhere to technological advances in sport programming when economically feasible? (e.g., an integrated ventilation system that maximizes efficiency in heat and air conditioning)		
Yes	33	97.1
No	1	2.9

8 (22.2%) complete arenas and HPER buildings, 6 (16.7%) partial or annex gyms, and 13 (36.1%) facilities with one form of athletics as the primary purpose (seven tennis centers, two aquatic centers, one soccer field, one football stadium, one track and field stadium, and one baseball field).

In Question 2, 30.6% of the facility directors stated they had held their current position for 1 to 3 years, 22.2% for 4 to 6 years, 19.4% for 7 to 9 years, and 27.8% for 10 years or more.

In Question 3, 22.2% of the facility directors indicated they had been facility directors for 1 to 3 years, 27.8% for 4 to 6 years, 11.1% for 7 to 9 years, and 38.9% for 10 years or more.

All seven categories of enrollment were represented, with the largest representation (17) coming from institutions with 5,001 to 10,000 and 10,001 to 20,000 students (22.2% and 25%, respectively). The smallest enrollment group was colleges with 1,000 to 2,000 students (2.8%).

Questions that concern facility design. The purpose of Questions 5, 10, and 15 was to accumulate information concerning perceived functions of the facility's design. Questions 9 and 34 relate to professional attitudes of the facility directors toward facility design (see Table 12).

In Question 5, the subjects were asked to rank the individuals that had the most input in designing the educational specifications. Many of the respondents did not rank them in order. However, it was clear that the architect had the most input at 43.5% of the facilities, followed by the chairperson/faculty at 38.1% of the facilities.

In Question 10, concerning the diversity of programs in the facility, 77.8% of the 31 responding facilities accommodated many different programs; and in Question 15,

Table 11

Questions that Concern General Information  
on the Questionnaire for Facility Directors

Value label	Frequency	Valid percentage
1. The categories for facilities are:		
SRC	9	25.0
Arenas and full complexes	8	22.2
Tennis centers	7	19.4
Partial or annex gyms	6	16.7
Aquatic centers	2	5.6
Soccer stadium	1	2.8
Football stadium	1	2.8
Track and field stadium	1	2.8
Baseball stadium	1	2.8
2. How many years have you been in your current position?		
1 - 3 years	11	30.6
10 years or more	10	27.8
4 - 6 years	8	22.2
7 - 9 years	7	19.4
3. How many years have you been in the profession of facility management?		
10 years or more	14	38.9
4 - 6 years	10	27.8
1 - 3 years	8	22.2
7 - 9 years	4	11.1
4. Enrollment of institution:		
10,001 - 20,000	9	25.0
5,001 - 10,000	8	22.2
20,000 or more	6	16.7
Less than 1,000	5	13.9
2,001 - 3,000	4	11.1
3,001 - 5,000	3	8.3
1,000 - 2,000	1	2.8

Table 12

Questions that Concern Facility Design on the  
Questionnaire for Facility Directors

Value label	Frequency	Valid percentage
5. Which individuals had the most input in designing the educational specifications?		
Architect(s)	10	43.5
Chairperson and/or department faculty	8	38.1
Building committees	6	37.5
Campus planning	5	23.8
Other	5	45.5*
*Percentage does not relate to as many responses as the other choices.		
9. Do you consider the design of the facility to be flexible enough to allow for changes in programming that may occur in the next 10 years?		
Yes	28	77.8
No	8	22.2
10. Does the facility accommodate many different programs?		
Yes	28	77.8
No	8	22.2
15. Was the facility completely inspected by the chair and faculty of the department that is using the facility during the first 12 months following completion?		
Yes	28	90.3
No	3	9.7
34. Are long-range administrative plans necessary to develop an efficiently operated facility?		
Yes	33	91.7
No	3	8.3

concerning faculty inspections during the warranty period, 90.3% of the 31 responding facilities were completely inspected during the 12-month warranty period. In Question 9, concerning facility design flexibility, and Question 34, concerning the effect of long-range planning on facility operations, facility directors at 77.8% of the institutions considered their facility capable of undergoing program changes in the next 10 years, and 91.7% believed that long-range administrative plans were necessary to develop an efficiently operated facility.

Questions that concern safety and liability. Questions 7, 13, and 14 were designed to accumulate specific information about safety and liability issues at the facility, while Questions 22, 25, 26, 30, 31, and 32 were designed to gather the professional opinion of the facility directors (see Table 13).

In Question 7, concerning the safety in design of the facility, 91.7% of the respondents claimed that activities did not disturb each other. In Question 13, concerning obstructed functional space, only one institution reported having accidents in the new facility. In Question 14, concerning the reasons for injury in the facility, 82.4% of 22 institutions responding chose the category of "other." (Question 14 should have been responded to in rank order; therefore, only responses given top priority were used.)

The majority of these other reasons for injury were that patrons cause accidents.

In Question 22, concerning the anticipation of liability issues in facility design, a majority of the respondents believed that institutions could save money by anticipating liability issues (91.2%). In Question 31, concerning facilities that should be designed above normal requirements, respondents indicated it wasn't feasible to design facilities above normal requirements (74.3%). However, 70.6% of the respondents to Question 25 believed that injuries would occur at some facilities, no matter how they were designed. In Question 32, a majority of the respondents believed present ventilation codes were adequate (84%), and in Question 30, a majority of the respondents believed the use of uniform standards incorporated by other colleges provided enough "reasonable care" to avoid lawsuits during the next 10 years. The two largest groups of the respondents to Question 26 believed that the architect and the facility director were the most responsible for making a facility safe (80% and 91.4%, respectively).

Questions that concern finance. Questions 11, 17, 18, 19, and 20 were designed to accumulate specific information about the facility. The responses to Questions 12, 21, 22, 23, 28, and 33 are the professional opinions of the facility directors (see Table 14).

Table 13

Questions that Concern Safety and Liability on the  
Questionnaire for Facility Directors

	Value label	Frequency	Valid percentage
7.	Do activities disturb each other in the facility? (e.g., baseballs thrown on the track, volleyballs landing in basketball classes etc.)		
	No	33	91.7
	Yes	3	8.3
13.	Since the facility was completed, have accidents occurred because of obstructions near activity areas? (e.g., walls, poles, and glass panels)		
	No	35	97.2
	Yes	1	2.8
	(2.8%) said the facility has not been open long enough)		
14.	What is the major cause of injury in the facility?		
	Other	14	82.4
	Poor supervision	5	35.7
	Poor design	2	16.7
	Lack of unobstructed space	1	9.1
22.	Could institutions save a significant amount of money by anticipating liability issues in facility design? (e.g., diving boards, swimming pools, etc.)		
	Yes	31	91.2
	No	3	8.8
25.	Do you believe that certain facilities are hazardous and that injuries will occur no matter how they are designed?		
	Yes	24	70.6
	No	10	29.4

Table 13 (continued)

	Value label	Frequency	Valid percentage
26.	Whose responsibility is it to be sure an activity facility is safe?		
	Facility director	32	91.4
	Architect(s)	28	80.0
	Building committees	20	57.1
	Campus planning	19	54.3
	Professor/Instructor	18	51.4
	Other	7	20.0
30.	Do you believe designing facilities using uniform standards incorporated by other colleges to be enough "reasonable care" to avoid lawsuits during the next 10 years?		
	Yes	15	51.7
	No	14	48.3
31.	Do you believe it is feasible (practical) to design sports facilities beyond normally required specifications in order to avoid injuries to spectators? (e.g., baseball field with a 24-foot fence in areas other than behind home plate)		
	Yes	26	74.3
	No	9	25.7
32.	Do you believe that current ventilation codes are adequate?		
	Yes	21	84.0
	No	4	16.0



In Question 11, respondents indicated most of the facilities were funded by state appropriations, fund-raising, and student bond issues. The highest single response was "other," which included student fees and gifts. In Question 17, only 37.5% of the institutions said they used new funding approaches. In Question 18, respondents stated 91.7% of the facilities were used year-round; and in Question 19, respondents stated 54.3% of the facilities were used for one purpose. In response to Question 20, the estimated usage factor at 60% of 35 schools was over 75%.

In Question 12, 94.3% of the respondents believed that the method used in financing the facility was a good choice. In Question 33, only 47.2% of the respondents believed the institutions' financing practices would have to change in the near future. However, the majority of the respondents to Question 21 believed that financial constraints restricted a facility planner's ability to make changes in the design of a facility when it was needed. In Question 28, a large majority of respondents believed multipurpose recreational centers represented a beneficial economic trend in sports facility planning (94.4%). In Question 22, a large majority (91.2%) also believed that preventive maintenance can save money, and in Question 23, the use of a consultant was considered a good idea by 81.3% of the respondents.

Table 14

Questions that Concern Finance on the  
Questionnaire for Facility Directors

Value label	Frequency	Valid percentage
11. Was the facility financed by:		
Other	11	30.6
Institutional fund-raising	10	27.8
State appropriations	9	25.0
Student bond issues	7	19.4
Commercial athletic events	2	5.6
Corporate funding	1	2.8
Joint-ventures with community	0	0.0
Clinics	0	0.0
Conferences	0	0.0
Camps	0	0.0
Rentals	0	0.0
An innovative combination	0	0.0
12. In your opinion, were the methods of financing mentioned in Question 11 a good choice?		
Yes	33	94.3
No	2	5.7
17. Was the use of new funding approaches an issue in developing for the facility?		
No	20	62.5
Yes	12	37.5
18. Is the facility used year-round?		
Yes	33	91.7
No	3	8.3
19. Is most of the facility designed for one purpose?		
Yes	19	54.3
No	16	45.7

Table 14 (continued)

	Value label	Frequency	Valid percentage
20.	Estimate the usage factor for the facility:		
	over 75% of the time	21	60.0
	51% - 75% of the time	5	14.3
	25% - 50% of the time	5	14.3
	Less than 25% of the time	4	11.4
21.	Do financial constraints restrict a facility planner's ability to make needed changes in the design and/or construction of sports facilities when needed?		
	Yes	32	91.4
	No	3	8.6
22.	Could institutions save a significant amount of money by anticipating liability issues in facility design? (e.g., diving boards in swimming pools, etc.)		
	Yes	31	91.2
	No	3	8.8
23.	In most facilities, is the use of a consultant a good economical decision?		
	Yes	26	81.3
	No	6	18.7
28.	Do you believe that multi-purpose recreational centers represent a beneficial trend that will allow institutions to get more economical use of their facilities for health, physical education, recreation, and athletics?		
	Yes	34	94.4
	No	2	5.6
33.	Do you believe that the current financing practices at your institution will have to change in the near future?		
	No	19	52.8
	Yes	17	47.2

Questions that concern facility management. Questions 6, 8, 10, 15, and 16 were designed to accumulate specific information concerning facility management at the institutions. Questions 27 and 29 were designed to gather professional opinions from the facility directors (see Table 15).

Question 6 is difficult to evaluate, given the high response from single-sport facilities. However, the majority of the respondents said that physical education, recreation, athletics, intramurals, and special events were conducted in their facilities. In Question 10, 77.8% of the respondents expressed that facilities accommodated many different programs. In Question 15, 90.3% of the respondents indicated that the chair and faculty of the department inspected the facility during the 12-month warranty period. However, in Question 16, only 42.9% of the respondents said that health, physical education, recreation, and athletics were administered by the same director. In Question 8, the facility directors were asked to give a rank order of problems that should be high priority during the next 10 years. However, many of the responses were not ranked, but merely checked. From the data given, the majority of the directors said that budgeting and maintenance would be the largest problems during the next 10 years. The majority of the respondents

Table 15

Questions that Concern Facility Management on the  
Questionnaire for Facility Directors

Value label	Frequency	Valid percentage
6. Which activities are conducted in the facility?		
Recreation	26	72.2
Athletics	24	66.7
Intramural	24	66.7
Special events	23	63.9
Physical education	21	58.3
Health activities	16	44.4
Community use	12	33.3
Dance	10	27.8
Other	8	22.2
Spillover from other academic departments	3	8.3
8. Which issues will probably give you the most problems over the next 10 years?		
Budgeting	20	62.5
Maintenance	17	53.1
Adapting to new technology	2	9.5
Legal issues	1	4.5
Other	1	12.5*
Safety	0	0.0
*Percentage does not relate to as many responses as the other choices.		
10. Does the facility accommodate many different programs?		
Yes	28	77.8
No	8	22.2
15. Was the facility completely inspected by the chair and faculty of the department using the facility during the first 12 months following completion?		
Yes	28	90.3
No	3	9.7

Table 15 (continued)

	Value label	Frequency	Valid percentage
16.	Are the health, physical education, recreation, and athletic facilities administered by the same director?		
	No	20	57.1
	Yes	15	42.9
27.	Regardless of administrative styles, do you believe that each facility should have a director?		
	Yes	30	88.2
	No	4	11.8
29.	Place a check by each of the programs that should be offered in one of the multi-purpose facilities mentioned in Question 28.		
	Recreation	28	77.8
	Health (wellness, health classes)	26	72.2
	Physical education	25	69.4
	Athletics	24	66.7
	Community programs	13	36.1
	Interdisciplinary programs	11	30.6
	Other	4	11.1

(over 50%) also believed that of the activities listed in Question 29, only health, physical education, recreation, and athletics had a high priority for programming in multi-purpose recreational centers. It is not surprising, however, that in Question 27, 88.2% of the facility directors believed that all facilities need a director.

Questions that concern technology. The facility directors only had to answer one question that concerned technology. The directors were asked to give their opinion concerning the need to specifically adhere to technological advances in sports programming when designing a new facility. The majority (85.3%) expressed that technological changes should be observed whenever possible (see Table 16).

#### Architects

Questions concerning general information. The responses to Questions 1 and 2 describe 23 architects. Eight of them have 4 to 7 years' experience, and 15 have over 10 years' experience assisting in the design of facilities used for health, physical education, recreation, and athletics (see Table 17).

Questions that concern facility design. In Question 3, respondents were asked to rank individuals that should be responsible for the educational specifications. Some of them did not rank the responses. However, it is clear that the most significant responses were the architect and the department chair.

Table 16

Questions that Concern Technology on the  
Questionnaire for Facility Directors

	Value label	Frequency	Valid percentage
24.	Should facilities be designed to specifically adhere to technological advances in sport programming when economically feasible?		
	Yes	29	85.3
	No	5	14.7

Table 17

Questions that Concern General Information  
on the Questionnaire for Architects

	Value label	Frequency	Valid percentage
1.	Type of subjects:		
	Architects	23	100.0
2.	How many facilities used for health, physical education, recreation (HPER) or athletics have you assisted in the design?		
	10 or more	15	65.2
	4 - 6	8	34.8
	1 - 3	0	0.0
	7 - 9	0	0.0



In Question 5, 9 (42.9%) respondents thought that 25% to 50% of health, physical education, recreation, and athletic facilities were improperly designed because the educational specifications were improperly developed. In Questions 6 and 7, the majority of architects believed that all of the individuals listed should be involved in the conceptual and schematic design, with the highest representation needing to come from the architects and facility directors. The percentages only changed slightly in Question 8 when the architects were asked about long-range plans. In this question the department chairs and the campus planners were rated as highly as the architects.

In Question 26, a majority of architects believed that most facilities should have multi-purpose use; and in Question 25, a majority believed that long-range plans were necessary to develop an efficiently operated facility (see Table 18).

Questions that concern safety and liability. In Question 4, only 23.8% of 21 respondents believed that activity areas should be designed to avoid interaction between activities. In Question 11, a majority of architects believed that anticipation of liability issues could save money. However, in Question 15, a majority of architects also believed some facilities were hazardous and injuries would occur, no matter how the facilities were designed.

Table 18

Questions that Concern Facility Design  
on the Questionnaire for Architects

Value label	Frequency	Valid percentage
3. Who should be responsible for planning educational specifications?		
Architect	8	44.4
Chairperson and/or department faculty	7	36.8
Building committees	4	22.2
Campus planning	4	21.1
Other	3	50.0*
*Percentage does not represent as high response as the other choices.		
5. What percent of HPR and athletic facilities do you believe are designed improperly because the conceptual design (educational specifications) was improperly developed?		
25% - 50%	9	42.9
Less than 25%	8	38.1
51% - 75%	4	19.0
Over 75%	0	0.0
6. Which people should be involved in developing the conceptual design?		
Architect	22	95.7
Facility director	22	95.7
Campus planning	19	82.6
Consultants	19	82.6
Department chair	18	78.3
Building committees	17	73.9
Other	7	30.4
7. Which people should be involved in developing the schematic design?		
Architect	22	95.7
Facility director	21	91.3
Consultants	18	78.3
Department chair	17	73.9

Table 18 (continued)

Value label	Frequency	Valid percentage
Campus planning	16	69.6
Building committees	15	65.2
Other	7	31.8
8. Which people should be involved in the long-range plans for the facility?		
Architect	21	91.3
Department chair	21	91.3
Campus planning	21	91.3
Facility director	19	82.6
Building committees	16	69.6
Consultants	11	50.0
Other	6	26.1
9. What percent of HPR and athletic facilities do you think will be obsolete in 10 years because they were not designed with enough flexibility to accommodate changing trends in programming?		
25% - 50%	9	42.9
Less than 25%	8	38.1
51% - 75%	3	14.3
Over 75%	1	4.8
25. Are long-range building plans necessary in order to develop an efficiently operated facility?		
Yes	16	76.2
No	5	23.8
26. Should most sports facilities have multi-purpose use?		
Yes	14	82.4
No	3	17.6

In Question 16, more architects believed they were responsible for safety than any other group; the second highest response included facility directors. In Question 17, the majority of architects thought that poor supervision was the major cause of injury in an athletic facility, followed by other reasons that are not listed (see Table 19). (Many of the architects did not answer Question 17 in rank order as asked; therefore, only the top responses are given.)

In Question 20, only 30% of 20 respondents believed that using uniform standards incorporated by other colleges was enough "reasonable care" to avoid lawsuits. However, only 50% responding to Question 21 believed that facilities should be designed above required specifications. A majority of the 23 respondents answering Question 22 also believed that current ventilation codes were adequate (see Table 19).

Questions that concern finance. In Question 10, a large majority (90.9%) of the respondents believed that financial constraints restricted a facility planner's ability to make needed changes in design or construction of a facility. A majority (66.7%) of the respondents to Question 11 also believed that anticipation of liability issues and the use of a consultant would save an institution money. However, only 31.8% of the respondents to Question 13 believed that the current method for writing contracts

Table 19

Questions that Concern Safety and Liability  
on the Questionnaire for Architects

	Value label	Frequency	Valid percentage
4.	Should all activity areas be designed to avoid interaction of different activities?		
	No	16	76.2
	Yes	5	23.8
11.	Could institutions save a significant amount of money by anticipating liability issues in facility design? (e.g., a trend to change the depth of a diving well in a swimming pool)		
	Yes	14	66.7
	No	7	33.3
15.	Do you believe certain facilities are hazardous and that injuries will occur, no matter how they are designed?		
	Yes	13	61.9
	No	8	38.1
16.	Whose responsibility is it to be sure an activity facility is safe?		
	Architect	21	95.5
	Facility director	19	86.4
	Professor/Instructor	14	63.6
	Building committees	11	50.0
	Campus planner	9	40.9
	Other	5	22.7
17.	What do you believe to be the major causes of injury in an HPR and athletic facility?		
	Other	9	81.8
	Poor supervision	10	66.7
	Lack of unobstructed space	4	28.6
	Poor structural design	0	0.0

Table 19 (continued)

	Value label	Frequency	Valid percentage
20.	Do you believe that designing facilities with the uniform standards used by other colleges is enough "reasonable care" to avoid lawsuits?		
	No	14	70.0
	Yes	6	30.0
21.	Do you believe it is feasible (practical) to design sports facilities beyond normal specifications to avoid injuries to spectators? (e.g., a baseball field with a 24-foot fence in areas other than behind home plate)		
	Yes	10	50.0
	No	10	50.0
22.	Do you believe that current building codes that concern ventilation of a facility are adequate?		
	Yes	18	78.3
	No	5	21.7

should be modified to delay deadlines because of new developments in technology.

All of the architects responding to Question 19 agreed that multi-purpose recreational centers were a beneficial trend; and in Question 23, 95.7% of the respondents believed that maximizing usage of a facility should be a factor in planning. However, in Question 24, only 40% of 20 respondents believed that a facility not used 50% of the time was wasted revenue. But in Question 26, a majority of the respondents believed that most sports facilities should be multi-purpose; and in Question 25, 76.2% of the respondents believed long-range plans were necessary to develop an efficiently operated facility (see Table 20).

Questions that concern facility management. Questions 8 and 16 report some unusual findings. Although in Question 8, 91.3% of the architects believed that architects, department chairs, and campus planners should be involved in the long-range plans of a facility, only 40.9% of the respondents to Question 16 believed that a campus planner was responsible for making sure a facility was safe, and only 63.6% believed that a professor had this responsibility. This is not surprising since the largest number of the respondents to Question 17 also believed that the major cause of injury was poor supervision. In Question 18, nearly all of the respondents (95.2%) also believed that every facility should have a director. However, in

Table 20

Questions that Concern Finance on the  
Questionnaire for Architects

	Value label	Frequency	Valid percentage
10.	Do financial constraints restrict a facility planner's ability to make needed changes in the design and/or construction of facilities?		
	Yes	20	90.9
	No	2	9.1
11.	Could institutions save a significant amount of money by anticipating liability issues in facility design? (e.g., a trend to change the depth of a diving well in a swimming pool)		
	Yes	14	66.7
	No	7	33.3
12.	In most HPR and athletic facilities, is the use of a consultant a good economical decision?		
	Yes	16	76.2
	No	5	23.8
13.	Should the present method of writing contracts be modified to delay deadlines in the event that important new technology is developed during the design/construction of a facility?		
	No	15	68.2
	Yes	7	31.8
19.	Do you believe that multi-purpose recreational centers represent a beneficial trend that will allow institutions to get more economical use of their facilities for health, physical education, recreation, and athletics?		
	Yes	23	100.0
	No	0	0.0



Table 20 (continued)

	Value label	Frequency	Valid percentage
23.	Should planning a facility to maximize usage be an issue in its development?		
	Yes	22	95.7
	No	1	4.3
24.	Do you believe that a facility not used at least 50% of the time is wasted revenue?		
	No	12	60.0
	Yes	8	40.0
25.	Are long-range building plans necessary in order to develop an efficiently operated facility?		
	Yes	16	76.2
	No	5	23.3
26.	Should most sports facilities have multi-purpose use?		
	Yes	14	82.4
	No	3	17.6

Question 25, 76.2% of the respondents believed that long-range plans were necessary in order to develop an efficiently operated facility. A majority (82.4%) of the respondents to Question 26 also believed in the multi-purpose use of sports facilities (see Table 21).

Questions that concern technology. In Question 9, 42.9% of the responding architects believed that 25% to 50% of HPER and athletic facilities would be obsolete in the next 10 years because they were not designed with enough flexibility to accommodate changing trends in programming. In Question 10, 90.9% believed that financial constraints restricted a planner's ability to make needed changes in design or construction. A large majority (90.5%) of the respondents to Question 14 also believed that facilities should be designed to specifically adhere to technological advances in programming when economically feasible. However, only 31.8% of the respondents to Question 13 believed the current method for writing contracts should be modified to delay deadlines in the event that important, new technology was developed during the design/construction of a facility (see Table 22). The next chapter will present the summary, discussion, conclusions, and recommendations for this study.

Table 21

Questions that Concern Facility Management  
on the Questionnaire for Architects

	Value label	Frequency	Valid percentage
8.	Which people should be involved in the long-range plans for the facility?		
	Architect	21	91.3
	Department chair	21	91.3
	Campus planning	21	91.3
	Facility director	19	82.6
	Building committees	16	69.6
	Consultants	11	50.0
	Other	6	26.1
16.	Whose responsibility is it to be sure an activity facility is safe?		
	Architect	21	95.5
	Facility director	19	86.4
	Professor/Instructor	14	63.6
	Building committees	11	50.0
	Campus planner	9	40.9
	Other	5	22.7
17.	What do you believe to be the major causes of injury in an HPR or athletic facility?		
	Other	9	81.8
	Poor supervision	10	66.7
	Lack of unobstructed space	4	28.6
	Poor structural design	0	0.0
18.	Regardless of administrative styles, do you believe that each facility should have a director?		
	Yes	20	95.2
	No	1	4.8
25.	Are long-range plans necessary in order to develop an efficiently operated facility?		
	Yes	16	76.2
	No	5	23.8

Table 21 (continued)

	Value label	Frequency	Valid percentage
26.	Should most sports facilities have multi-purpose use?		
	Yes	14	82.4
	No	3	17.6

Table 22

Questions that Concern Technology on the  
Questionnaire for Architects

	Value label	Frequency	Valid percentage
9.	What percent of HPR and athletic facilities do you think will be obsolete in 10 years because they were not designed with enough flexibility to accommodate changing trends in programming?		
	25%- 50%	9	42.9
	Less than 25%	8	38.1
	51% - 75%	3	14.3
	Over 75%	1	4.8
10.	Do financial constraints restrict a facility planner's ability to make needed changes in design and/or construction of facilities?		
	Yes	20	90.9
	No	2	9.1
13.	Should the present method of writing contracts be modified to delay deadlines in the event that important new technology is developed during the design/construction of a facility?		
	No	15	68.2
	Yes	7	31.8
14.	Should HPR and athletic facilities be designed to specifically adhere to technological advances in programming when economically feasible? (e.g., a new athletic surface)		
	Yes	19	90.5
	No	2	9.5

## CHAPTER 5

### Summary, Discussion, Conclusions, and Recommendations

#### Summary

In ancient Greece, sports facilities were designed using humanistic architecture and were made to last for centuries. However, in twentieth-century United States, the life span of facilities designed for health, physical education, recreation, and athletics is approximately 25 years. Recent legal, financial, administrative, and technological changes have made the avoidance of nonfunctional space difficult. Therefore, facility planning has become more important than it was during the 1960s when the last major "construction boom" required new facilities to consider designing more carefully.

The subjects for this study were: 50 campus planners, 50 facility directors, and 50 architects. Thirty-five (70%) campus planners, 36 (72%) facility directors, and 23 (46%) architects returned their questionnaires to be included in the study (see Appendix B). The campus planners and facility directors were chosen from 50 colleges and universities located in 11 southeastern states that had constructed sports-related facilities during the past 10 years. They were chosen primarily from two lists. One list was selected from facilities nominated by the National Intramural Recreational Sports Association as "outstanding

sports facilities." The other list consisted of sports-related facilities that were included in a three-year database of new constructions stored by the Association of Higher Education Facility Officers. However, some of them were chosen on the basis of personal observation of new constructions. Many of these facilities overlap; therefore, no exact number can be given for each list.

The architects were chosen on the basis of either their association with the design of sports-related facilities in 11 southeastern states or their reputation for designing sports facilities in these states. Some of the architects were chosen by their association with individual facilities, and others were found in the "Professional Guide" in Athletic Business.

The instrument was developed from issues found in the review of related literature and evaluated by a panel of experts. It was evaluated a second time by the writer's dissertation committee. Three separate questionnaires were developed--one for campus planners, one for facility directors, and one for architects.

The purpose of this study was to answer the following questions:

1. What are the experiential backgrounds of the campus planners, facility directors, and architects?
2. What are some problems and trends that concern facility design?

3. What are some problems and trends that concern safety and liability?

4. What are some problems and trends that concern financial issues?

5. What are some problems and trends that concern facility management?

6. What are some problems and trends that concern technology?

Each of these questions concerns the opinions of three groups: (1) campus planners, (2) facility directors, and (3) architects. The conclusions include agreements and differences between these groups.

Response rates were returned and analyzed, and tables were developed to illustrate the frequency and valid percentage of responses. This analysis provided the information used in the discussion section.

### Discussion

#### Backgrounds of the Campus Planners, Facility

#### Directors, and Architects

The general information category identified the different kinds of facilities, the experience of the subjects, and student enrollment of the institutions where the facilities are located. The questionnaire covered a broad base of items. Therefore, only the 10 student recreational centers, 7 full complexes, and some of the



5 partial gyms were required to answer every question on the Questionnaire For Campus Planners. "Single-sport" facilities' respondents found some of the questions asked were irrelevant to them. The responses from facility directors were in a similar situation.

The majority (61.8%) of campus planners had held their position for at least six years. Nearly half (47.2%) of the facility directors also had at least 6 years of experience, and a majority (65.2%) of architects had over 10 years of experience. Under controlled circumstances this is ideal because all of the facilities included in this study are less than 10 years old and most of them are less than 6 years old. However, it should be noted that the title, campus planner, is a generic term that applies to administrators that are delegated responsibility for the planning procedures for a new facility. At most of the large institutions, there is an office for campus planning. It may have different titles, but the administrator will be a university architect or the director of campus planning. However, at some of the smaller schools, this position may be held by the athletic director or even the president.

All of the listed categories concerning student enrollment are represented. However, 67.7% of them have over 5,000 students, and the majority have departments of campus planning. This is very close to the enrollment distribution response by the facility directors (63.9%).

### Problems and Trends Concerning Facility Design

The researcher is puzzled at the results in Questions 5 and 6 concerning the design of educational specifications for a new facility in the Questionnaire for Campus Planners. Only three campus planners responded to the choice of "campus planner" in Question 6, while it was given nine responses in Question 5. However, the most surprising response was that 8 campus planners chose the "architect" in Question 5 and 10 campus planners chose the "architect" in Question 6. Most of the facility directors agreed with the campus planners' choice of the "architect" and the "chairperson and/or department faculty" for having the top priority in designing the educational specifications. The architects indicated that the "architect" and the "chairperson and/or department faculty" should be the individuals most responsible for planning the educational specifications. However, the educational specifications are usually decided before the architect is hired. According to Rosen (1987), some colleges may hire an architect to draw a master plan for the institution. Usually, the architect is not contacted until the educational specifications have been designed. According to Penman and Riggins (1986), educational specifications are developed by individuals involved in the curricular areas that will use the facility. Therefore, Penman and Riggins (1986) and Rosen (1987)

strongly disagree with the majority of the responding groups.

It is not surprising that 42.9% of the architects believe that 25% to 50% of health, physical education, recreation, and athletic facilities are improperly designed because the educational specifications were improperly developed. Some of the respondents thought this figure should be higher. This occurrence may be a result of the institutions' heavy reliance on architects to understand the educational specifications. Penman and Riggins (1986) warn institutions not to make this mistake. The same number of architects also believe that 25% to 50% of facilities will become obsolete in 10 years because of a lack of design. According to Evangelauf (1987), a facility should last 25 years without remodeling. If a facility becomes obsolete in 10 years, it will not be functional for its intended life span.

Designing a facility to meet the needs of the program is the essence of facility planning. Therefore, it is a pleasant surprise that campus planners responded well to community use for sports facilities. This concept was chosen most often as the topic for dissertations on facility planning in the mid-1970s (Bennett, 1975; Garbett, 1976; Watkins, 1975). It seems to be a trend that may help institutions with their financial problems of the future. Special events should also be a component of community use.

Preo (1986) and Wolfe (1987) agree with the trend of community use to enhance funding of facilities.

The campus planners think the important information was given to the architect in order to design the schema. According to Penman and Riggins (1986), this is an area of concern where many educators and architects make costly mistakes, and if architects are left to interpret the educational specifications, the schema will probably have mistakes.

The department chair, building committees, campus planners, professors, and facility directors may be involved with the planning of educational specifications. The architect does not see these specifications until they are finished, in most cases. However, the architect is the only person that can draw a schematic design, and no one else should even try to accomplish this feat. It is not strange that nearly all (95.7%) of the architects indicated they should design the schema. The architect also has very little to do with long-range plans for a facility, even though the architects and the campus planners ranked the "architect" among the highest choices for the development of long-range plans. These plans should be a part of the master plan. Penman and Riggins (1986) warn educators not to overestimate the abilities of an architect, while Rosen (1987) includes an architect as a consultant to aid with the master plan, which may include long-range plans.

The purpose of Question 16 on the Questionnaire for Campus Planners was to see how comprehensive campus planners' ideology was for master planning. Since only design was chosen by more than 50% of responses, it can at least be implied that campus planners do not view the master plan on a very broad basis. Legal issues were only chosen by 23.3% of the respondents. Although an institution may have won a lawsuit, its involvement is very real, and other institutions may find themselves in the same situation in the litigious society in which we live. Appenzeller (1978) and Penman (1986) agree that legal issues are an extremely important area that should concern the long-range plans of any sports facility. This is why a facility must be completely inspected during the 12-month warranty period (Gans, 1972). The campus planners (96.6%) and the facility directors (90.3%) responded highly to inspection of the facility.

Most of the campus planners seem to have "high hopes" for their facilities in the future. As illustrated in Table 6, 79.4% of them believe that long-range plans are necessary for this to happen, even though they did not respond to it in high percentages as a component for a master plan. The facility directors also responded strongly (77.8%) that their facilities would accommodate different programs and long-range plans were necessary to develop efficiently operated programs (91.7%). Penman (1986) and

Rosen (1987) agree strongly with the importance of this concept.

#### Problems and Trends Concerning Safety and

##### Liability

It is interesting that campus planners responded to Question 9 equally. Only two responses indicated unobstructed space caused accidents in the facility, and only one chose the same response for Question 22. They did not respond highly to design, unobstructed space, or poor supervision as a major cause for injury. The majority of facility directors claim that activities do not disturb each other; there was only one reported facility having accidents because of obstructed activity space, and most of the accidents were caused by patron negligence. The architects disagreed somewhat with the facility directors and campus planners on this point. Their higher response that poor supervision is a major cause of injury was the only disagreement. According to Gaskin (1986) and Penman (1986), these issues have been the reason for many lawsuits for several years. Recommended standards for sports facilities are given for this reason. However, this concept is not surprising since 66.7% of the campus planners, 70.6% of the facility directors, and 61.9% of the architects believe that some facilities would produce accidents, no matter how they were designed. A more comprehensive view of planning could change the attitude that architects and facility directors

are the most responsible for making a facility safe, as illustrated by the campus planners in Table 7, the facility directors in Table 13, and the architects in Table 19. If the educational specifications are written to anticipate liability issues, they should decrease the possibility of liability for the architect and facility director. Penman and Niccolai (1985) and Penman (1986) agree with this concept. This concept also relates well to the fact that a majority of the campus planners agreed that uniform standards used by other colleges will not be adequate 10 years from now and neither will the current ventilation codes. However, this concept should result in a high response that sports facilities should be designed beyond their normal specifications. Architects agree that uniform standards do not constitute enough reasonable care for the future, and about half of them even believe facilities should be designed beyond normal standards. However, it is clear that architects and campus planners do not believe this type of planning would reduce potential injuries enough to prevent the major portion of accidents at a sports facility. If one is to anticipate problems, there must be a trend to design facilities accordingly, not merely design them to meet current specifications. Penman (1986) strongly agrees with this concept. The facility would become obsolete very soon. According to Moreno (1989), technology

decreases operational costs. Over a period of time, the facility would save money by using this concept.

#### Problems and Trends Concerning Financial Issues

Financial issues have become much more complex than during the "construction boom" of the 1960s. According to Wolfe (1987), schools are pursuing new ways to generate funds for facilities. Many new issues restrict the methods that were used only a few years ago. According to the campus planners in this survey, the majority were satisfied with the way their facilities were financed, even though few of them used any innovative methods of financing, such as corporate funding and joint-ventures. The facility directors responded in a very similar fashion. The majority of architects were also reluctant to modify normal financial procedures for innovation.

A majority of the facilities are used year-round, with an over-50% usage factor. Campus planners and facility directors gave a similar response to this question. According to Howell (1986), this is a good concept.

A majority (60% of campus planners, 91.2% of facility directors, and 66.7% of architects) believe that anticipating liability issues will save money. This response is contradictory to the fact that only 27.3% of the respondents chose legal issues, and only 39.4% chose financial issues to be part of a master plan. For this reason, both of these concepts should be planned together,



as one entity, before the facility is designed. Rosen (1987) does not stress legal and financial issues as "subheadings" in his article on master planning. However, the concepts that he uses greatly imply the need to address these issues as a part of the plan.

A large majority of campus planners (86.2%), facility directors (81.3%), and architects (76.2%) believe that the use of a consultant is a good economical decision. According to Penman (1986), a new industry is on the rise that will help architects and planners to understand each other. The consultant is part of this industry. This is a very beneficial and important concept.

A trend that seems apparent is the use of multi-purpose recreational centers. A large majority of campus planners (85.3%) and facility directors (94.4%) and all of the architects (100%) agreed with this concept. These centers may be the answer to the financial crisis that now faces institutions wanting to design new facilities with less money. Preo (1986) and Wolfe (1987) agree with this trend. However, only 54.3% of the respondents believed that financing practices for facilities would have to change at their institutions in the near future. As old methods of financing are deleted, new ones have to be established in order for an institution to survive. According to Wolfe (1987), institutions are hiring consultants to determine maximal use for facilities. Howell (1986) even developed an

analysis of usage and financial problems involved in physical education and athletic facilities. Some of the facilities in this study were corporate-sponsored and joint-ventures.

These are concepts that are generally associated with the idea of multi-purpose recreational centers. This type of financing will increase as community use of campus facilities becomes more important. It seems unusual that a high percentage of campus planners would include community use in planning and not expect corporate funding and joint-ventures to be used in financing a facility. Holcomb (1989) agrees that corporate and other joint ventures are very good sources of financing for any campus facility or program.

#### Problems and Trends Concerning Facility

##### Management

A large majority of campus planners (87.9%) and facility directors (88.2%) believe that each facility should have a director; 57.1% of campus planners and 62.5% of facility directors chose budgeting; and 71% of campus planners and 53.1% of facility directors chose maintenance as factors that concern facility directors during the future. These are concepts that a director controls on a day-to-day basis. Legal issues and safety are not recognized as often, but when they need attention, they need more of it than budgeting and maintenance put together.

Appenzeller (1978) agrees that liability issues cause much more expensive occurrences than budgeting or maintenance.

A majority of campus planners believe that health, physical education, recreation, athletics, and community use should be housed in multi-purpose recreational centers.

Also, 48.6% of campus planners believe that intradisciplinary programs should be involved. Most of the facility directors gave a high response to all perceived programs listed, with the exception of health services, intradisciplinary use, dance, and community use. Preo (1986) and Wolfe (1987) agree this is a definite trend. Romano (1972) might agree this ideology is a trend back to the humanistic architecture of ancient Greece.

The specific information concerning facility directors also illustrates that facilities accommodate many different programs, with about half (42.9%) of them administered by a different director. This is becoming a trend since larger universities are forming "athletic associations," which are separate from the health, physical education, and recreation departments.

#### Problems and Trends Concerning Technology

Technology was only briefly considered by the campus planners. Nearly all of them (97.1%) believe that facilities should specifically adhere to technological advances. A majority of facility directors (85.3%) and architects (90.5%) agree with this idea. However, the

campus planners and architects seemed reluctant to set up financial involvement in this development. Evangelauf (1987), Hyatt (1988-1989), Moreno (1989), and Wolfe (1987) disagree with this idea because technology is growing so rapidly that a lack of technology will become very expensive in the future if facilities are not modernized. For example, sports surfacing now has standards to follow in order to achieve perceived levels of performance (Ferguson, 1990). Miller (1988) stressed the need for proper sports surfaces to be designed to avoid injuries. If new sports facilities do not use these standards, they may be obsolete before construction is completed.

#### Conclusions

Most of the campus planners responding to the survey were involved with the same facilities as the responding facility directors. Therefore, much of the specific information concerning these two groups is very similar. But their professional views were different sometimes and often disagreed with the responses of the architects.

The background information indicated that all of the selected categories of campus enrollments were represented, with a majority having more than 5,000 students. The facilities included a good combination of student recreational centers, complex sports facilities, more simple facilities, and single-purpose sports facilities. Nearly half (47.2%) of the facility directors and the majority

(61.8%) of the campus planners had at least six years of experience in their positions, and the majority (65.2%) of the architects had over 10 years' experience.

Campus planners and facility directors indicated that the architect was among the individuals having the most involvement in designing the educational specifications when planning their facility. The architects agreed with this stance, rating themselves and facility directors highest. Nearly half (45.5%) of the campus planners also agreed that the architect had the most input in the long-range plans for the facility. The architects agreed with this concept by rating themselves highest, followed by "campus planners" and "department chairs" as those who should have the most input in long-range plans. Responses by nearly half (42.9%) of the architects indicated that 25% to 50% of facilities are improperly designed because of poorly developed educational specifications, and the same amount of responses indicated that facilities would become obsolete in 10 years because of a lack of proper planning.

All three groups agree that preventive maintenance is a good concept; however, they do not believe it is a major consideration for facility planning.

All three groups responded highly to the concept of multi-purpose recreational centers as a beneficial trend for institutions in financial trouble and to help maximize usage. They also believe these facilities can house many

different programs, including health, physical education, recreation, and athletics, among other programs not normally included.

All three groups agree that the use of a consultant is a beneficial economical decision. They also believe that financial constraints restrict a planner's ability. However, nearly half of the facility directors and over half of the campus planners agree that financial practices at their institutions will not change in the near future.

Campus planners and facility directors disagree somewhat with architects concerning the cause of injuries in a facility. Only the architects responded highly that poor supervision was a major cause of injury. However, all three groups were reluctant to agree that safety can be anticipated and insured.

All three groups agree that technology should be considered in planning. However, campus planners and architects did not respond strongly to the idea that financial methodology should be modified in order to adjust to new technology.

#### Recommendations

Based on the results and discussion of this study, the following recommendations are made:

1. Institutional planning committees must become more knowledgeable concerning the facility planning process and

not rely solely on the architect to understand the needs of the intended programs to be provided by the facility.

2. Further study should be initiated in an attempt to indicate the relationship between institutions that depended on architects to implement the major portion of the planning process and those facilities that were improperly designed because the educational specifications were improperly developed.

3. A knowledgeable consultant should be used to relate the ideas of educators to the ideas of an architect.

4. Institutional financial methodology (e.g., new funding sources) must become more innovative to keep pace with the changing environment of facility planning.

5. Preventive maintenance (anticipating liability issues and normal wear and tear on a facility) is a concept that should be implemented in facility planning and management.

6. The construction of multi-purpose recreational centers is an apparent trend that seems most beneficial to the centralization of many activity programs, as well as helping provide improvement for financial problems at colleges and universities.

7. Technology is changing rapidly, and educators that are involved in facility planning must learn to keep pace with technological trends that affect facility planning.

8. Facility planning must become broader in scope than the currently used methodology, and facility planners need to be aware of the effect of these concepts in order to develop an efficiently operated facility.

9. Further study is needed to investigate the need for a more comprehensive scope of the facility planning process.

10. Research concerning the specific training of those serving in positions of campus planners and facility directors might shed light as to reasons for differences of opinions demonstrated in this study.



## APPENDICES

APPENDIX A

FACE LETTERS MAILED WITH INSTRUMENT AND ADDITIONAL  
FACE LETTER WRITTEN BY MR. SHELBY

## APPENDIX A

FACE LETTERS MAILED WITH INSTRUMENT AND ADDITIONAL  
FACE LETTER WRITTEN BY MR. SHELBY

January 20, 1992

Name  
Title  
Address  
Address

Salutation:

The purpose of this letter is to ask for your assistance in completing a dissertation on "Current Problems and Trends in Facility Planning for Health, Physical Education, Recreation, and Athletics at Colleges and Universities" by completing the enclosed questionnaire. The data taken from this questionnaire will be used for statistical analysis. No firm or institutional name will be used in this analysis. All answers will be kept confidential.

The first 20 questions concern data pertaining to the facility named in Question 1. Some questions may not apply to every facility. In this instance, write a brief statement explaining why the question is not applicable to the facility. Questions 21-34 require your professional opinion on current issues concerning facility planning.

Please return this questionnaire, using the enclosed stamped, self-addressed envelope, before February 28, 1992. If you desire a copy of the results of this study, please complete the enclosed mailing form. Thank you for your help in this survey.

Sincerely,

James E. Holbrook

Enclosure

March 8, 1992

Mr. James C. Kinard  
Director of Physical Plant and Housing  
Campbell University  
Post Office Box 535  
Buis Creek, NC 27506

Dear Mr. Kinard:

The purpose of this letter is to ask for your assistance in completing a dissertation on "Current Problems and Trends in Facility Planning for Health, Physical Education, Recreation, and Athletics at Colleges and Universities" by completing the enclosed questionnaire. The data taken from this questionnaire will be used for statistical analysis. No firm or institutional name will be used in this analysis. All answers will be confidential.

The first 27 questions concern data pertaining to the facility named in Question 1. Some questions may not apply to every facility. Therefore, if a question does not apply, write a brief statement explaining why the question is not applicable to the facility. Questions 28-41 require only a brief answer, using your professional opinion concerning current issues on facility planning.

Please return this questionnaire, using the enclosed stamped, self-addressed envelope, by March 20, 1992. If you desire a copy of the results of this study, please complete the enclosed mailing form. Thank you for your help on this survey.

Sincerely,

James E. Holbrook

Enclosure

January 20, 1982

Name  
Title  
Address  
Address

Salutation:

The purpose of this letter is to ask for the assistance of two of the architects in your firm, who have aided in the design of sports facilities, in completing a dissertation on facility planning by completing the enclosed questionnaire. The title of the dissertation is "Current Problems and Trends in Facility Planning for Health, Physical Education, Recreation, and Athletics at Colleges and Universities."

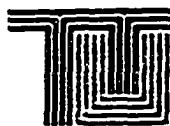
The questionnaire contains 26 questions that require an architect's professional opinion concerning some issues involved in facility planning. The data taken from this questionnaire will be used for statistical analysis. No firm or institutional name will be used in this analysis. All answers will be confidential.

Please return this questionnaire, using the enclosed stamped, self-addressed envelope, before February 28, 1992. If you desire a copy of the results of this study, please complete the enclosed mailing form. Thank you for your help in this survey.

Sincerely,

James E. Holbrook

Enclosure



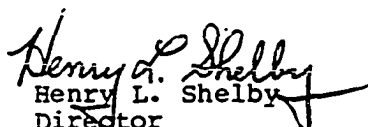
Tennessee Technological University  
Campus Development and Facilities Planning  
Box 5026 • Cookeville, TN 38505 • 615-372-3220

Dear Friend:

During the past few months, I have worked with Mr. James Edward Holbrook as a member of a panel of experts in preparation of a survey concerning "Current Problems and Trends in Facility Planning for Health, Physical Education, Recreation, and Athletics at Colleges and Universities". He is working toward a Doctor of Arts in Physical Education at Middle Tennessee State University. I have found this to be extremely rewarding for me, and I am soliciting your assistance for him so that he might take this project to the next level of expertise in this field.

Thank you in advance for the efforts required in this project, because I believe this will be beneficial to our profession.

Sincerely,

  
Henry L. Shelby  
Director

APPENDIX B  
ADDRESSES OF CAMPUS PLANNERS, FACILITY DIRECTORS,  
AND ARCHITECTS

APPENDIX B  
ADDRESSES OF CAMPUS PLANNERS, FACILITY DIRECTORS,  
AND ARCHITECTS

Campus Planners

Mary Paula Shuh--Returned  
Campus Planning  
Northern Kentucky University  
729 Administrative Center  
Highland Heights, KY 41099

Timothy Czerniec  
Vice President of Business Affairs  
Barry University  
11300 N.E. Second Avenue  
Miami Shores, FL 33161

Jim Stepp--Returned  
Athletic Director  
Alice Lloyd College  
Pippa Passes, KY 41844

Robert D. Neal--Returned  
University Director of Physical Plant  
Mercer University  
1400 Coleman Avenue  
Macon, GA 30341

Waylon Winstead  
University Director of Planning  
Virginia Polytechnic Institute and State University  
201 Burruss Hall  
Blacksburg, VA 24061-0502

John Jarvis--Returned  
Director of Facility Planning  
University of West Florida  
11000 University Parkway  
Pensacola, FL 32514



Campus Planners (continued)

J. Carl Dempsey  
Assoc. Vice Chancellor for Business Affairs  
UNC/Wilmington  
601 South College Road  
Wilmington, NC 28403

Warren Denny--Returned  
Design and Construction  
222 Peterson Service Building  
University of Kentucky  
Lexington, KY 40506

David E. Butler--Returned  
Facility Planning and Management  
UTC  
615 McCallie Avenue  
Chattanooga, TN 37403-2598

Allen Martin--Returned  
Physical Plant Director  
Mary Baldwin College  
Frederick and New Streets  
Staunton, VA 24401

Joe Planck--Returned  
Director of Physical Plant  
MSU  
UPO Box 831  
Morehead, KY 40351

Mark Bertolami--Returned  
Physical Plant  
FSU  
109 Mendenhall  
Tallahassee, FL 32061

Larry Watts  
Department of Campus Planning  
University of Alabama at Birmingham  
Martimer-Jordan Hall, Room B-61  
UAB Station  
Birmingham, AL 35294

Arvil Thompson--Returned  
Director of Physical Plant  
Berry College  
Post Office Box 339  
Mt. Berry, GA 30149

Campus Planners (continued)

Dr. Larry Derouen  
Physical Plant  
McNeese State University  
Post Office Box 90460  
Lake Charles, LA 70609

William Winkler--Returned  
Physical Plant Administrator  
Appalachian State University  
ASU Box 293  
State Farm Road  
Boone, NC 28608

Ron VanBergen--Returned  
Planning Director  
VCU  
909 W. Franklin  
Box 2502  
Richmond, VA 23284

Clinton Davis--Returned  
Acting Director, Physical Plant  
Shepherd College  
Shepherdstown, WV 25443

Michael Besspiata III--Returned  
Director of Facility Management  
Southern Baptist Theological Seminary  
2825 Lexington Road  
Louisville, KY 40280

William W. Traylor--Returned  
Director of Physical Plant  
Hollins College  
7916 Williamson Road  
Roanoke, VA 24020

Paul H. Morris--Returned  
Director, Facilities Management  
College of William and Mary  
Buildings and Grounds  
Williamsburg, VA 23185

Jim Patterson  
University Architect  
University of Mississippi  
Physical Plant  
University, MS 38677

Campus Planners (continued)

William D. Middleton  
Assistant Vice President for Physical Plant  
University of Virginia  
575 Alderman Road  
Charlottesville, VA 22903

Fred Shroyer  
Director of Facility Planning  
GSU  
Landrum Box 8012  
Statesboro, GA 30460

Ronald M. Harley  
Physical Plant Director  
Georgia College  
CPO 85  
Milledgeville, GA 31061

Cliff Newton  
Director of Construction  
P.O. Box 7786, Reynolds Station  
Wake Forest University  
Winston-Salem, NC 27109

Sam Dillard  
Director of Operations Support  
Klugh Avenue  
Clemson University  
Clemson, SC 29634-5901

Robert Johnston  
Facility Planner  
MSU  
P.O. Box 5208  
Mississippi State, MS 39762

Dr. William Turner--Returned  
Associate Dean of Architecture  
Tulane University  
School of Architecture  
112 Richardson Memorial Building  
New Orleans, LA 70118

Dr. Edwin Rugg--Returned  
Vice President of Academic Affairs  
Kennesaw State College  
Post Office Box 444  
Marietta, GA 30061

Campus Planners (continued)

Dr. James Stroeble  
President  
Erskine College  
Due West, SC 29639

Jeff Millgenhall--Returned  
Physical Plant Director  
Queens College  
1900 Selwyn Avenue  
Charlotte, NC 28274

Steve Phillabaum  
University Architect  
Auburn University  
Facilities Division  
Auburn, AL 36849

Gordon Rutherford--Returned  
Director of Facility Planning and Design  
UNC  
Campus Box 1090  
Chapel Hill, NC 27599-1090

David Lundy--Returned  
University Architect  
University of Georgia  
Campus Planning  
300 New College  
Athens, GA 30613

Judson Newbern--Returned  
Assoc. Vice Chancellor, Campus Planning  
Vanderbilt University  
Bryan Building, Room 130  
Nashville, TN 37212

James C. Kinard, Jr.--Returned  
Director of Physical Plant and Housing  
Campbell University  
Buis Creek, NC 27506

Mike M. Meadows--Returned  
Director, Facility Planning and Management  
Marshall University  
400 Hal Greer Boulevard  
Huntington, WV 25755

Campus Planners (continued)

Russ Seagran--Returned  
Director of Campus Planning  
Emory University  
638 Asbury Circle  
Atlanta, GA 30322

G. Thomas Wells--Returned  
Director of Physical Plant  
Rollins College  
Campus Box 2732  
1000 Holt Avenue  
Winter Park, FL 32789

Dr. Thomas R. Kepple, Jr.--Returned  
Vice President  
University of the South  
Sewanee, TN 37375

George Chriss--Returned  
University Architect  
University of Tennessee  
1840 Melrose  
Knoxville, TN 37996

Jim Allen--Returned  
Vice President, Business Affairs  
David Lipscomb University  
Nashville, TN 37204-3951

Robert C. Bell--Returned  
Director of Plant Operations  
Valdosta State College  
1500 North Patterson Street  
Valdosta, GA 31698

Henry Shelby--Returned  
Director, Campus Development and Facility Planning  
TTU  
Box 5026  
Cookeville, TN 38505

Jeff Neighbors--Returned  
University Architect  
University of Alabama  
301 Thomas Street  
Tuscaloosa, AL 35487

Campus Planners (continued)

Brian J. Chase--Returned  
Director of Physical Plant  
NCSU  
Campus Box 7219  
Raleigh, NC 27695-7219

David E. Armstrong  
Director of Physical Plant  
Radford University  
US Route 11 and Norwood Street  
Radford, VA 24142

Deborah Howard--Returned  
Old Dominion University  
5115 Hampton Boulevard, Room 225  
Norfolk, VA 23529

Scott Sloan--Returned  
Director, Campus Planning and Construction Management  
University of Florida  
232 Stadium West  
Gainesville, FL 32611

Facility Directors

Steve Meier--Returned  
Northern Kentucky University  
Campus Recreation  
Albright Health Center  
Nunn Drive  
Highland Heights, KY 41099-7595

Mike Covone--Returned  
Associate Athletic Director  
Barry University  
11300 N.E. Second Avenue  
Miami Shores, FL 33161

Scott Cornett--Returned  
Baseball Coach  
Alice Lloyd College  
Pippa Passes, KY 41844

Bobby Pope--Returned  
Athletic Director  
Mercer University  
1400 Coleman Avenue  
Macon, GA 31207

Donald Perry--Returned  
Athletic Facility Coordinator  
Virginia Polytechnic Institute  
358 Jamerson Athletic Center  
Blacksburg, VA 24061-0502

Ben Healy--Returned  
Recreational Director  
University of West Florida  
11000 University Parkway  
Pensacola, FL 32514

Mel Gibson  
Assistant Athletic Director, Facilities  
UNC/Wilmington  
601 S. College Road  
Wilmington, NC 28403-3297

Rodney Stiles--Returned  
Facility Coordinator  
University of Kentucky  
Athletic Association  
Memorial Coliseum, Room 34A  
Lexington, KY 40506-0019

Facility Directors (continued)

Deborah Middleton-Brewer--Returned

UTC

615 McCallie Avenue

Chattanooga, TN 37403

Mary Ann Casselman--Returned

Athletic Director

Mary Baldwin College

Staunton, VA 24401

Steve Hamilton--Returned

Athletic Director

MSU

Academic Athletic Center

Morehead, KY 40351

Paul Dirks

Florida State University

Bob E. Leach Recreational Center, B-210

Tallahassee, FL 32306

Don Spear--Returned

UAB Arena

617 13th Street South

Birmingham, AL 35294

Bob Pearson

Berry College

Athletic Department

Box 5015

Rome, GA 30149

James Pitrie--Returned

McNeese State University

Health, Physical Education, and Recreational Complex

Post Office Box 91620

Lake Charles, LA 70609

Sherry Crane

Quinn Indoor Recreation Center

Appalachian State University

Boone, NC 28608

Lori Kressin--Returned

University of Virginia

Intramural/Recreational Sports Department

Memorial Gymnasium

Charlottesville, VA 22903



Facility Directors (continued)

Eva Bard  
Athletic Director  
VCU  
819 West Franklin Street, Room 121  
Box 2003  
Richmond, VA 23284

E. J. Schodzinski--Returned  
Shepherd College  
HPER Center  
Shepherdstown, WV 25443

Terry O'Toole--Returned  
Southern Baptist Theological Seminary  
Health and Recreation Center  
2825 Lexington Road  
Louisville, KY 40280

Ms. Lynda Calkus--Returned  
Hollins College  
Post Office Box 9532  
Roanoke, VA 24020

Denny Byrne  
College of William and Mary  
Student Recreation Center  
Williamsburg, VA 23185

William B. Kingery--Returned  
University of Mississippi  
Turner Center, Room 214  
University, MS 38677

Frank Elwood--Returned  
Senior Associate Athletic Director  
Georgia Southern University  
Landrum Box 8115  
Statesboro, GA 30460

Joe Bellflower  
Georgia College  
CBX 065  
Milledgeville, GA 31061

Bucky Dome  
Assistant Director  
Lawrence Joel Veterans Memorial Coliseum  
Wake Forest University  
Winston-Salem, NC 27109

Facility Directors (continued)

James R. Pope--Returned  
Clemson University  
Campus Recreation Department  
Fike Recreation Center, Room 150  
Clemson, SC 29634

Bobby Tomlinson  
MSU  
Post Office Drawer 5327  
Mississippi State, MS 39762

William F. Canning--Returned  
Tulane University  
Reily Student Recreation Center  
New Orleans, LA 70118

Randall Goble--Returned  
Kennesaw State College  
Department of HPER  
Post Office Box 444  
Marietta, GA 30061

Lee Logan--Returned  
Vice President, Facilities and Grounds  
Erskine College  
Due West, SC 29639

Dale Layer--Returned  
Queens College  
Department of Athletics  
1900 Selwyn Avenue  
Charlotte, NC 28274

Jennifer Jarvis  
Associate Recreational Sports Director  
Auburn University  
Recreational Services  
204 Student Activities Center  
Auburn, AL 36849-5324

Jeff Elliott--Returned  
Associate Athletic Director  
UNC  
Dean E. Smith Center  
Post Office Box 2126  
Chapel Hill, NC 27599

Facility Directors (continued)

Greg McGarrity--Returned  
Assistant Athletic Director/Athletic Facilities Coordinator  
University of Georgia  
Post Office Box 1472  
Athens, GA 30613

Keith Davies--Returned  
Vanderbilt University  
Student Recreation Center  
Box 6033, Station B  
Nashville, TN 37212

Wendell Carr--Returned  
Athletic Director  
Campbell University  
Post Office Box 10  
Buis Creek, NC 27506

Dr. Don Williams--Returned  
Marshall University  
Department of HPER  
Gullickson Hall, Room 108  
Huntington, WV 25755

Jamie Krukewitt  
Facility Coordinator  
Emory University  
Woodruff PE Building  
Atlanta, GA 30322

Gordie Howell  
Rollins College  
Department of Athletics  
1000 Holt Avenue  
Box 2730  
Winter Park, FL 32789

Bill Huyck--Returned  
Athletic Director  
University of the South  
Sewanee, TN 37375

James M. (Mike) Sherrell--Returned  
Associate Director of Physical Plant  
University of Tennessee/Knoxville  
2233 Volunteer Boulevard  
Knoxville, TN 37996-3000

Facility Directors (continued)

Lynn Griffith--Returned  
David Lipscomb University  
Department of HPER  
Nashville, TN 37204-3951

Dr. John Merriman--Returned  
Valdosta State College  
Physical Education Complex  
Valdosta, GA 31698

David Mullinax--Returned  
TTU  
TTU Fitness Center  
Box 5107  
Cookeville, TN 38505

Dr. Edward D. Brown, Jr.--Returned  
Post Office Box 6443  
University of Alabama  
Tuscaloosa, AL 35487

Dr. Jack Shannon  
NCSU  
Carmichael Gymnasium  
Box 8111  
Raleigh, NC 27695

Ron Downs--Returned  
Radford University  
Dedmon Center  
Post Office Box 6912  
Radford, VA 24142

Larry Leckomby  
Assistant Athletic Director, Facilities  
Old Dominion University  
Athletic Administration Building  
Norfolk, VA 23529

Danny Sheldon--Returned  
University of Florida  
Department of Athletics/Operations and Facilities  
Post Office Box 14485  
Gainesville, FL 32604

Architects

Thomas & Miller  
Architects, Planners, Engineers & Surveyors  
Two Brentwood Commons, Suite 222  
Nashville, TN 37027-4509

Baskerville and Sons--Returned 2  
Attention: Molly Williams  
Post Office Box 2B  
Richmond, VA 23203-0366

Nix Mann & Associates--Architects--Returned  
Attention: Vance Cheatham and Barbara Crumm  
1382 Peachtree Street, N.E.  
Atlanta, GA 30309

Lord & Sargent and Aeck Associates--Returned 2  
Attention: Barbara Smith  
400 Colony Square, Suite 300  
1201 Peachtree Street, N.E.  
Atlanta, GA 30361-6303

Hastings & Chivetta Architects, Inc.--Returned  
101 South Hanley, Suite 1700  
St. Louis, MO 63105

Odell Associates, Inc.--Returned  
129 West Trade Street  
Charlotte, NC 28202

GSCD  
612 South Gay Street  
Knoxville, TN 37902

Dodge & Associates, Architects  
505 Oberlin Road  
Post Office Box 10246  
Raleigh, NC 27605

Folger Olsen Associates  
100B Evans Street  
Post Office Box 808  
Morganton, NC 28655

Rosser Fabrap International  
100 Peachtree Street, N.W., Suite 400  
Atlanta, GA 30303

The Mathes Group  
929 Howard Avenue  
New Orleans, LA 70113

Architects (continued)

Blondheim, Williams & Galson, Inc.  
2034 Little Valley Road  
Birmingham, AL 35202

Shank and Gray, Architects  
510 East Main Street  
Charlottesville, VA 22901

Chambless and Associates, P.C.--Returned  
Attention: Cindy Porterfield  
5720 Carmichael Road  
Montgomery, AL 36117

Hamilton & Associates--Returned 2  
461 Betheaud Avenue  
Post Office Box 553  
Opelousas, LA 70570

Heery-Fabrap, Architects  
880 West Peachtree Street, N.W.  
Atlanta, GA 30367

Cook Douglas Farr Ltd.--Returned  
Elliot & Britt, P.A.  
3780 I-55 North  
Jackson, MS 39211

Pickering Firm, Inc.  
1750 Madison, Suite 500  
Memphis, TN 38104

Blondheim and Mixon, Inc.  
Post Office Box 1  
Eufaula, AL 36072

TAC, The Architects Collaborative--Returned 2  
46 Brattle Street  
Cambridge, MA 02138

Ellerbe Associates, Inc.--Returned  
One Appletree Square  
Minneapolis, MN 55420

Heery Architects & Engineers, Inc.--Returned  
999 Peachtree N.E.  
Atlanta, GA 30367-5401

Architects (continued)

HOK Sports Facilities Group--Returned 6  
Attention: Kyleen Miller  
323 W. 8th Street, Suite 700  
Kansas City, MO 64105

Barge, Waggoner, Sumner, Sumner & Cannon --Returned 2  
Attention: Angie Mote  
162 Third Avenue North  
Nashville, TN 37201

APPENDIX C  
CRITERIA FOR PANEL OF EXPERTS  
TO EVALUATE THE INSTRUMENT



APPENDIX C  
CRITERIA FOR PANEL OF EXPERTS  
TO EVALUATE THE INSTRUMENT

Criteria for Evaluating Survey Questions

Each question should describe one or more of the following areas:

1. Background questions
2. Effective steps in planning and design
3. Legal issues
4. Financial issues
5. Safety and liability
6. Trends in programming and administration
7. Technology

On the basis of these seven areas, please evaluate the questions. Use the following Likert scale to evaluate their importance in facility planning. The questions may cover more than one of the seven areas listed above.

- 1--not important
- 2--some importance
- 3--important
- 4--very important
- 5--essential

If you think any question should simply be reworded, also put a C next to the scale number. Please add any

questions you think important that are not listed. Several of my questions will be deleted from the final questionnaire.

APPENDIX D  
THE INSTRUMENT

APPENDIX D  
THE INSTRUMENT

QUESTIONNAIRE FOR CAMPUS PLANNERS

1. Name \_\_\_\_\_ Job Title \_\_\_\_\_  
Institution \_\_\_\_\_  
Year Facility Completed \_\_\_\_\_  
Facility Name \_\_\_\_\_  
Address of the Facility \_\_\_\_\_
2. How many years have you been in your current position?  
\_\_\_ 1 to 3 years  
\_\_\_ 4 to 6 years  
\_\_\_ 7 to 9 years  
\_\_\_ 10 years or more
3. How many years have you been in your profession?  
\_\_\_ 1 to 3 years  
\_\_\_ 4 to 6 years  
\_\_\_ 7 to 9 years  
\_\_\_ 10 years or more
4. Enrollment of institution:  
\_\_\_ less than 1,000                      \_\_\_ 5,001 - 10,000  
\_\_\_ 1,000 - 2,000                      \_\_\_ 10,001 - 20,000  
\_\_\_ 2,001 - 3,000                      \_\_\_ over 20,000  
\_\_\_ 3,001 - 5,000

5. In rank order, were the educational specifications planned mostly by:
- ☐ architect
  - ☐ campus planning
  - ☐ building committees
  - ☐ other (specify) \_\_\_\_\_
6. Which individuals had the most input in designing the educational specifications? (in rank order)
- ☐ architect(s)
  - ☐ campus planning
  - ☐ building committees
  - ☐ chairperson and/or department faculty
  - ☐ other (specify) \_\_\_\_\_
7. What activities are conducted in the facility?  
(Check as many as apply)
- ☐ health activities
  - ☐ physical education
  - ☐ recreation
  - ☐ athletics
  - ☐ intramural
  - ☐ dance
  - ☐ special events
  - ☐ spillover from other academic departments
  - ☐ community use
  - ☐ other (specify) \_\_\_\_\_

8. Which activities were the facility designed to implement? (Check as many as apply)
- ☐ health activities
- ☐ physical education
- ☐ recreation
- ☐ athletics
- ☐ intramural
- ☐ dance
- ☐ special events
- ☐ spillover from other departments
- ☐ other (specify) \_\_\_\_\_
9. Was the conceptual design planned to avoid interaction between activities?
- ☐ yes ☐ no
- Why \_\_\_\_\_
10. Was the architect given all of the information in the conceptual design in order to write the correct schematic design?
- ☐ yes ☐ no
11. Did the schematic design include all of the important components of the conceptual design (educational specifications)?
- ☐ yes ☐ no
- If no, why \_\_\_\_\_

12. Which issues will probably give the facility director the most problems over the next 10 years? (in rank order)

\_\_\_ legal liability                      \_\_\_ maintenance  
\_\_\_ budgeting                              \_\_\_ adapting to new technology  
\_\_\_ safety                                      \_\_\_ other

13. Which of the following people were involved in the development planning of the conceptual design of the facility?

\_\_\_ department chair  
\_\_\_ architect  
\_\_\_ campus planning  
\_\_\_ facility director  
\_\_\_ building committees  
\_\_\_ consultants  
\_\_\_ other (specify) \_\_\_\_\_

14. Which of the following people were involved in the development of the schematic design of the facility?

\_\_\_ department chair  
\_\_\_ architect  
\_\_\_ campus planning  
\_\_\_ facility director  
\_\_\_ building committees  
\_\_\_ consultants  
\_\_\_ other (specify) \_\_\_\_\_

15. Which of the following people were involved in the development of the long-range plans of the facility?

☐ department chair

☐ architect

☐ campus planning

☐ facility director

☐ building committees

☐ consultants

☐ other (specify) \_\_\_\_\_

16. Did the master plan include:

☐ design ☐ long-range plans

☐ legal issues ☐ short-range plans

☐ financial issues ☐ expansion of facilities

☐ safety ☐ remodeling

☐ anticipation of new ☐ demographic considerations

technology ☐ administrative strategies

☐ other ☐ have no master plan

17. Do you consider the design flexible enough to undergo changes in programming that may occur during the next 10 years?

☐ yes ☐ no

If no, why \_\_\_\_\_

18. Was the facility designed with enough flexibility to accommodate many different programs?

☐ yes ☐ no

If no, why \_\_\_\_\_



19. Was the facility financed by:
- ☐ corporate funding
  - ☐ joint-ventures with the community
  - ☐ state appropriations
  - ☐ institutional fund-raising
  - ☐ student bond issues
  - ☐ clinics
  - ☐ conferences
  - ☐ rentals
  - ☐ commercial athletic events
  - ☐ an innovative combination that has not yet been tested
  - ☐ other (specify) \_\_\_\_\_
20. In your opinion, were the methods of financing listed in Question 19 a good choice?
- ☐ yes ☐ no
- Specify \_\_\_\_\_
21. Since your facility was completed, have accidents occurred because of obstructions near an activity area? (walls, poles, glass panels)
- ☐ yes ☐ no examples \_\_\_\_\_
- ☐ facility not old enough to have accidents
22. What is the major cause of injury in your facility?
- ☐ poor design
  - ☐ lack of unobstructed space

\_\_\_poor supervision

\_\_\_other (specify)\_\_\_\_\_

23. Was the facility completely inspected by the department using the facility during the first 12 months after its completion?

\_\_\_yes \_\_\_\_\_no

If no, why\_\_\_\_\_

\_\_\_facility less than 12 months old

24. Was the use of new funding approaches an issue in developing the facility?

\_\_\_yes \_\_\_\_\_no

Why\_\_\_\_\_

25. Are your facilities used year-round?

\_\_\_yes \_\_\_\_\_no

Why\_\_\_\_\_

26. During the facility's "open hours," is it utilized:

\_\_\_less than 25% of the time \_\_\_\_\_51% - 75% of the time

\_\_\_25% - 50% of the time \_\_\_\_\_over 75% of the time

27. Is your facility designed for one purpose?

\_\_\_yes \_\_\_\_\_no

Why\_\_\_\_\_

Answer Questions 28 through 41, based on your own opinion.

28. Could institutions save a significant amount of money by anticipating liability issues in facility design

(diving boards in swimming pools, etc.) or merely adhere to the current legal codes?

☐yes ☐no

Why, or why not \_\_\_\_\_

29. Is the use of a consultant a good economical decision?

☐yes ☐no

30. Should an escrow account be developed for a facility master plan to include new technology that may arise during the design and construction of a new facility?

☐yes ☐no

If yes, why \_\_\_\_\_

31. Should facilities be designed to specifically adhere to technological advances in sport programming when economically feasible? (e.g., an integrated ventilation system that maximizes efficiency in heat and air conditioning)

☐yes ☐no

Why \_\_\_\_\_

32. Do you believe certain facilities are hazardous and that risks and injuries will occur, no matter how they are designed?

☐yes ☐no

Examples \_\_\_\_\_

33. Whose responsibility is it to be sure an activity facility is safe? (You may check more than one.)

☐ architect  
☐ campus planner  
☐ building committees  
☐ facility director  
☐ professor/instructor  
☐ other (specify) \_\_\_\_\_

34. Regardless of administrative styles, do you believe that each facility should have a director?

☐ yes ☐ no

Why, or why not \_\_\_\_\_

35. Do you believe that multi-purpose recreational centers represent a beneficial trend that will allow institutions to get more economical use of their facilities for health, physical education, recreation, and athletics?

☐ yes ☐ no

Why \_\_\_\_\_

36. Place a check by each of the programs that should be offered in one of the multi-purpose facilities mentioned in Question 35.

☐ health (wellness, health classes)  
☐ physical education  
☐ recreation  
☐ athletics  
☐ intradisciplinary programs (ROTC, band, etc.)  
☐ community programs (wellness center memberships,

community sports)

\_\_\_other (specify)\_\_\_\_\_

37. Do you believe that designing facilities using uniform standards incorporated by other colleges to be enough to insure "reasonable care" to avoid lawsuits during the next 10 years?

\_\_\_yes \_\_\_\_\_no

Why\_\_\_\_\_

38. Do you believe it is feasible (practical) to design sports facilities beyond their normally required specifications to avoid injuries to spectators? (e.g., a baseball field with a 24-foot fence in areas other than behind home plate)

\_\_\_yes \_\_\_\_\_no

Why\_\_\_\_\_

39. Do you believe that the current ventilation codes are too liberal and should be changed to prevent the chance of this problem becoming an issue of concern?

\_\_\_yes \_\_\_\_\_no

Why\_\_\_\_\_

40. Are long-range administrative plans necessary to develop an efficiently operated facility?

\_\_\_yes \_\_\_\_\_no

Why\_\_\_\_\_

41. Do you believe that financing practices for facilities will have to change at your institution in the near future?

\_\_\_yes

\_\_\_no

Why \_\_\_\_\_

## QUESTIONNAIRE FOR FACILITY DIRECTORS

1. Name \_\_\_\_\_ Title \_\_\_\_\_  
Institution \_\_\_\_\_  
Facility Name \_\_\_\_\_  
Address of the Facility \_\_\_\_\_  
Year completed \_\_\_\_\_
2. How many years have you been in your current position?  
\_\_\_ 1 to 3 years  
\_\_\_ 4 to 6 years  
\_\_\_ 7 to 9 years  
\_\_\_ 10 years or more
3. How many years have you been in the profession of  
facility management?  
\_\_\_ 1 to 3 years  
\_\_\_ 4 to 6 years  
\_\_\_ 7 to 9 years  
\_\_\_ 10 years or more
4. Enrollment of institution:  
\_\_\_ less than 1,000                      \_\_\_ 5,001 - 10,000  
\_\_\_ 1,000 - 2,000                      \_\_\_ 10,001 - 20,000  
\_\_\_ 2,001 - 3,000                      \_\_\_ 20,000 or more  
\_\_\_ 3,001 - 5,000
5. Which individuals had the most input in designing the  
educational specifications? (in rank order)

☐ architect(s)  
☐ campus planning  
☐ building committees  
☐ chairperson and/or department faculty  
☐ other (specify) \_\_\_\_\_

6. Which activities are conducted in the facility?

(Check as many as apply)

☐ health activities  
☐ physical education  
☐ recreation  
☐ athletics  
☐ intramural  
☐ dance  
☐ special events  
☐ spillover from other academic departments  
☐ community use  
☐ other (specify) \_\_\_\_\_

7. Do activities disturb each other in the facility?

(e.g., baseballs thrown on the track, volleyballs  
landing in basketball classes, etc.)

☐ yes ☐ no

Why \_\_\_\_\_

8. Which issues will probably give you the most problems  
over the next 10 years? (in rank order)

☐ legal issues  
☐ budgeting



☐ safety  
☐ maintenance  
☐ adapting to new technology  
☐ other (specify) \_\_\_\_\_

9. Do you consider the design of the facility to be flexible enough to allow for changes in programming that may occur in the next 10 years?

☐ yes ☐ no

If no, why \_\_\_\_\_

10. Does the facility accommodate many different programs?

☐ yes ☐ no

If no, why \_\_\_\_\_

11. Was the facility financed by:

☐ corporate funding  
☐ joint-ventures with the community  
☐ state appropriations  
☐ institutional fund-raising  
☐ student bond issues  
☐ clinics  
☐ conferences  
☐ camps  
☐ rentals  
☐ commercial athletic events  
☐ an innovative combination that has not yet been tested  
☐ other (specify) \_\_\_\_\_

12. In your opinion were the methods of financing mentioned in Question 12 a good choice?

☐yes ☐no

Explain\_\_\_\_\_

13. Since the facility was completed, have accidents occurred because of obstructions near activity areas? (e.g., walls, poles, and glass panels)

☐yes ☐no

Examples\_\_\_\_\_

☐facility has not been open long enough

14. What is the major cause of injury in the facility?

☐poor design

☐lack of unobstructed space

☐poor supervision

☐other (specify)\_\_\_\_\_

15. Was the facility completely inspected by the chair and faculty of the department that is using the facility during the first 12 months following completion?

☐yes ☐no

If no, why\_\_\_\_\_

16. Are the health, physical education, recreation (HPER) and athletic facilities administered by the same director?

☐yes ☐no

Explain\_\_\_\_\_

17. Was the use of new funding approaches an issue in developing for the facility?  
\_\_\_yes \_\_\_no  
Why \_\_\_\_\_
18. Is the facility used year-round?  
\_\_\_yes \_\_\_no  
If no, why \_\_\_\_\_
19. Is most of the facility's activity area designed for one purpose?  
\_\_\_yes \_\_\_no  
Why \_\_\_\_\_
20. During the facility's "open hours," is it utilized?  
\_\_\_less than 25% of the time  
\_\_\_25% - 50% of the time  
\_\_\_51% - 75% of the time  
\_\_\_over 75% of the time

Answer Questions 21 through 34, using your own opinion.

21. Do financial constraints restrict a facility planner's ability to make needed changes in the design and/or construction of sports facilities when needed?  
\_\_\_yes \_\_\_no  
If yes, why \_\_\_\_\_
22. Could institutions save a significant amount of money by anticipating liability issues in facility design? (e.g., diving boards in swimming pools, etc.)

☐yes ☐no

Why \_\_\_\_\_

23. In most facilities, is the use of a consultant a good economical decision?

☐yes ☐no

24. Should facilities be designed to specifically adhere to technological advances in sport programming when economically feasible? (e.g., a new athletic surface)

☐yes ☐no

Why \_\_\_\_\_

25. Do you believe that certain facilities are hazardous and that injuries will occur, no matter how they are designed?

☐yes ☐no

Examples \_\_\_\_\_

26. Whose responsibility is it to be sure an activity facility is safe?

☐architect(s)

☐campus planning

☐building committees

☐facility director

☐professor/instructor

☐other (specify) \_\_\_\_\_

☐facility has not been open long enough

27. Regardless of administrative styles, do you believe that each facility should have a director?

☐ yes ☐ no

Why \_\_\_\_\_

28. Do you believe that multi-purpose recreational centers represent a beneficial trend that will allow institutions to get more economical use of their facilities for health, physical education, recreation, and athletics?

☐ yes ☐ no

Why \_\_\_\_\_

29. Place a check by each of the programs that should be offered in one of the multi-purpose facilities mentioned in Question 28.

☐ health (wellness, health classes, etc.)

☐ physical education

☐ recreation

☐ athletics (swimming, volleyball, etc.)

☐ intradisciplinary programs (ROTC, band, art, etc.)

☐ community programs (wellness center memberships, community sports)

☐ other (specify) \_\_\_\_\_

30. Do you believe that designing facilities using uniform standards incorporated by other colleges to be enough "reasonable care" to avoid lawsuits during the next 10 years?

☐ yes ☐ no

Why \_\_\_\_\_

31. Do you believe it is feasible (practical) to design sports facilities beyond normally required specifications in order to avoid injuries to spectators? (e.g., a baseball field with a 24-foot fence in areas other than behind home plate)
- \_\_\_yes \_\_\_\_\_no
- Why \_\_\_\_\_
32. Do you believe that current ventilation codes are adequate?
- \_\_\_yes \_\_\_\_\_no
- Why \_\_\_\_\_
33. Do you believe that the current financing practices at your institution will have to change in the near future?
- \_\_\_yes \_\_\_\_\_no
- Why \_\_\_\_\_
34. Are long-range administrative plans necessary to develop an efficiently operated facility?
- \_\_\_yes \_\_\_\_\_no
- Why \_\_\_\_\_

- Reproduced with permission of the copyright owner. Further reproduction prohibited without permission.

\_\_\_less than 25%

\_\_\_25% - 50%

\_\_\_51% - 75%

\_\_\_over 75%

6. Which people should be involved in developing the conceptual design? (check as many as apply)

\_\_\_architect

\_\_\_department chair

\_\_\_building committees

\_\_\_campus planning

\_\_\_facility director

\_\_\_consultants

\_\_\_other (specify)\_\_\_\_\_

7. Which people should be involved in developing the schematic design? (check as many as apply)

\_\_\_architect

\_\_\_department chair

\_\_\_building committees

\_\_\_campus planning

\_\_\_facility director

\_\_\_consultants

\_\_\_other (specify)\_\_\_\_\_

8. Which people should be involved in the long-range plans for the facility?

\_\_\_architect

\_\_\_department chair



\_\_\_building committees

\_\_\_campus planning

\_\_\_facility director

\_\_\_consultants

\_\_\_other (specify) \_\_\_\_\_

9. What percent of HPR and athletic facilities do you think will be obsolete in 10 years because they were not designed with enough flexibility to accommodate changing trends in programming?

\_\_\_less than 25%

\_\_\_25% - 50%

\_\_\_51% - 75%

\_\_\_over 75%

10. Do financial constraints restrict a facility planner's ability to make needed changes in the design and/or construction of facilities?

\_\_\_yes

\_\_\_no

Why \_\_\_\_\_

11. Could institutions save a significant amount of money by anticipating liability issues in facility design (e.g., a trend to change the depth of a diving well in a swimming pool)

\_\_\_yes

\_\_\_no

Why \_\_\_\_\_

12. In most HPR and athletic facilities, is the use of a consultant a good economical decision?  
\_\_\_yes \_\_\_no
13. Should the present method of writing contracts be modified to delay deadlines in the event that important new technology is developed during the design/construction of a facility?  
\_\_\_yes \_\_\_no  
Why \_\_\_\_\_
14. Should HPR and athletic facilities be designed to specifically adhere to technological advances in programming when economically feasible? (e.g., a new athletic surface)  
\_\_\_yes \_\_\_no  
Why \_\_\_\_\_
15. Do you believe certain facilities are hazardous and that injuries will occur, no matter how they are designed?  
\_\_\_yes \_\_\_no  
Examples \_\_\_\_\_
16. Whose responsibility is it to be sure an activity facility is safe?  
\_\_\_architect  
\_\_\_campus planner  
\_\_\_building committees  
\_\_\_facility director

\_\_\_professor/instructor

\_\_\_other (specify)\_\_\_\_\_

17. What do you believe to be the major causes of injury in an HPR or athletic facility? (in rank order)

\_\_\_poor structural design

\_\_\_lack of unobstructed space (includes glass near activity area)

\_\_\_poor supervision

\_\_\_other (specify)\_\_\_\_\_

18. Regardless of administrative styles, do you believe that each facility should have a director?

\_\_\_yes

\_\_\_no

19. Do you believe that multi-purpose recreational centers represent a beneficial trend that will allow institutions to get more economical use of their facilities for health, physical education, recreation, and athletics?

\_\_\_yes

\_\_\_no

Why\_\_\_\_\_

20. Do you believe that designing facilities with the uniform standards used by other colleges is enough "reasonable care" to avoid lawsuits?

\_\_\_yes

\_\_\_no

Why\_\_\_\_\_

21. Do you believe it is feasible (practical) to design sports facilities beyond normally required

specifications to avoid injuries to spectators? (e.g., a baseball field with a 24-foot fence in areas other than behind home plate)

\_\_\_yes \_\_\_no

Why\_\_\_\_\_

22. Do you believe that current building codes that concern ventilation of a facility are adequate?

\_\_\_yes \_\_\_no

Why\_\_\_\_\_

23. Should planning a facility to its maximum usage be an issue in its development?

\_\_\_yes \_\_\_no

Why\_\_\_\_\_

24. Do you believe that a facility that is not used at least 50% of the time is wasted revenue?

\_\_\_yes \_\_\_no

Why\_\_\_\_\_

25. Are long-range building plans necessary in order to develop an efficiently operated facility?

\_\_\_yes \_\_\_no

Why\_\_\_\_\_

26. Should most sports facilities have multi-purpose use?

\_\_\_yes \_\_\_no

Why\_\_\_\_\_

## BIBLIOGRAPHY

## BIBLIOGRAPHY

- Accident-proofing your weight room. (1988). Athletic Business, 12(7), 52-55.
- Appenzeller, H. (1978). Physical education and the law. Charlottesville, VA: The Michie Company.
- Aquatic facilities that measure up. (1986). Athletic Business, 10(8), 72.
- Bennett, I. C. (1975). A model for planning and operating physical education/recreation facilities based upon community education ideology. Corvallis, OR: University of Oregon.
- Bronzan, R. T. (1974). New concepts in planning and funding athletic, physical education and recreational facilities. Phoenix: Phoenix Intermedia.
- Copeland, J. (1988, February). Are health clubs risky? Newsweek, p. 62.
- Creatively financing fitness centers. (1988). Athletic Business, 12(4), 32-38.
- Evangelauf, J. (1987, July 29). Construction boom seen on campuses over next 5 years. The Chronicle For Higher Education, p. 20.
- Ferguson, M. (1990). Put to the test. Athletic Business, 14(3), 53-58.
- Gans, M. (1972). Sequential steps in planning facilities for health, physical education, recreation and athletics. Salt Lake City: University of Utah.
- Garbett, M. J. (1976). The effects of the community school concept upon planning and utilization of indoor physical education facilities in the United States since 1970. Provo, UT: Brigham Young University.
- Gardiner, N. (1910). Greek athletic sports and festivals. London: MacMillan and Company.

- Gaskin, L. P. (1986). Court decisions in school athletic, physical education, and intramural programs in which the condition of equipment and facilities has been alleged as the proximate cause of injury to participants and spectators. Greensboro: University of North Carolina at Greensboro.
- Getting floored. (1988). Athletic Business, 12(4), 48-51.
- Harris, H. A. (1967). Greek athletes and athletics. Bloomington: Indiana University.
- Holcomb, J. H. (1989). Here's why public schools should use private-sector marketing strategies. The American School Board Journal, 176(2), 34-35.
- Howell, J. C. (1986). Physical education and athletic facilities: Analysis of usage and financial problems. Corvallis, OR: Oregon State University.
- Hyatt, J. (1988-1989). Financing facilities renewal and replacement. Planning for Higher Education, 17(3), 33-42.
- An improved outlook. (1990). Architecture, 79(4), 95-98.
- Made in Japan. (1990). Architecture, 79(4), 101-104.
- Miller, D. A. (1988). Sports surfaces specs. Athletic Business, 12(8), 72.
- Moreno, E. M. (1989). Computerized control systems. Architecture, 78, 129-130.
- Penman, K. A. (1986). Facility liability: Spotting danger before it strikes. Athletic Business, 10(6), 106-109.
- Penman, K. A., & Niccolai, F. R. (1985). Playing it safe: Part I. American School and University, 57(8), 36-38.
- Penman, K. A., & Riggins, K. (1986). Are planners and architects speaking the same language? Athletic Business, 10(4), 74-76.
- Preo, L. S. (1986). Rec's future is now. Athletic Business, 10(1), 12-17.

- Romano, D. G. (1972). A comparison of aesthetic, educational and philosophical implications regarding physical education and athletic architecture between fifth century B.C. Greece and twentieth century United States [microfilm 269]. Corvallis, OR: University of Oregon.
- Rosen, F. A. (1987, April). What is a master plan? American School and University, 59(4), 52-57.
- Rush, S., & Johnson, S. (1989-90). Campus facilities: A diminishing endowment. Planning for Higher Education, 18(1), 35-49.
- Tracking down data on track surfaces. (1987). Athletic Business, 11(8), 52-54.
- Watkins, W. (1975). The Use of Physical Education by Community Groups in Arizona Community Colleges. Dissertation Abstracts International, 7277A.
- Wolfe, R. (1987). Designing facilities to meet future needs. Athletic Business, 11(9), 48-53.