

MANAGEMENT OBJECTIVE(S)

Coordinate an entity’s capital resources to allow for optimum working efficiency and effectiveness.

BACKGROUND

“Facilities” includes buildings, grounds, utilities, and equipment, and will typically represent the majority of an entity’s capital assets. Facility management concerns range from expansion or reductions in the size of a physical plant to the manner in which the quality of the workplace affects employee and/or user productivity. However, this module will not emphasize quality of workplace or productivity. Facility management encompasses not only typical management functions but oversight of the capital assets of an entity as well (Kaiser, pp. 3-4).

The Facility Management Institute (FMI) defines facility management as managing and coordinating interrelated “people, process, and place” issues and functions within the entity or the organization. Facility management has also been defined by the United State Library of Congress as “The practice of coordinating the physical workplace with the people and work of the organization; it integrates the principles of business administration, architecture, and the behavioral and engineering sciences” (Rondeau, p. 3.).

Operating responsibilities of the facility management function include property management, facilities planning, facilities operations and maintenance, and facilities support services. Each of these areas will be discussed in detail in this module.

The facility management function in state agencies and institutions of higher education in Texas is not centralized. Most of the state-owned buildings in Austin, especially those in the Capitol Complex, are managed and maintained by the General Services Commission (GSC). By contrast, buildings owned by Texas Department of Highways and Transportation, Texas Department of Mental Health and Mental Retardation, Texas Parks and Wildlife Department, Texas Adjutant General, Texas Department of Public Safety, Texas School for the Blind and Visually Impaired, Texas School for the Deaf, and the Texas Youth Commission are all managed and maintained internally. In addition, each state-funded college or university has its own facilities management function.

Totaling over \$19 billion, Texas has a tremendous investment in fixed assets. Therefore, the implementation of effective, comprehensive plans is critical to protect this investment. It becomes even more important when contrasting the historical cost, which is reflected here, and the replacement cost, which is much higher. Facility management is the vehicle relied upon to accomplish this task. The following amounts were reported at August 31, 1995:

Total Capital Assets - State Agencies and Higher Education

Capital Asset	State Agencies	Institutions of Higher Education
Land	\$363,949,000	\$311,927,418
Buildings	\$2,004,395,000	\$6,838,110,157
Furniture and Equipment	\$1,500,468,000	\$3,820,518,858
Other Improvements	\$20,109,000	\$850,983,571
Construction in Progress	\$2,210,629,000	\$988,999,259
TOTAL	\$6,099,550,000	\$12,810,539,263

Source: 1995 Comprehensive Annual Financial Report (CAFR) for state agencies; the Texas Higher Education Coordinating Board (Board), *Fiscal Year 1995 Statistical Report for Colleges and Universities*. Note - the figures for higher education include public community colleges, service entities of Texas A&M University, health-related institutions, Texas State Technical College, and Board equipment.

As would be expected, maintenance and utility costs for these facilities are significant. Maintenance and repair costs for Fiscal Year 1995 were budgeted in excess of \$450 million. Budgeted amounts for communications and utilities for the same time period exceeded \$250 million. Because of these large expenditures, it is important that effective preventative maintenance plans are established for all state agencies and institutions of higher education buildings. In addition, deferred maintenance must be adequately addressed and managed. Deferred maintenance refers to renovation and repair projects that have been delayed or postponed for one reason or another, usually because of lack of funds. Inadequately addressing preventative and deferred maintenance results in higher maintenance costs and premature deterioration of facilities and equipment.

In the same way, energy management plans must be established to control an entity's utility expenditures (Government Code, Chapter 447). Statute requires that all state agencies and institutions of higher education buildings implement an energy management plan.

For state-supported colleges and universities, The Higher Education Coordinating Board (Board) is responsible for assuring the maximum use of education and general buildings. The Board is statutorily required to develop space standards for new construction or other capital improvements that address differences in space requirements in teaching, research, and public

service activities. A current facilities inventory is also required to be kept by all colleges and universities.

In addition, statute requires the Board to adopt policies for management of physical plants designed to streamline operations and improve accountability (Education Code, Chapter 61.0651). These must address deferred maintenance and maximum utilization of classroom and laboratory facilities. Similarly, GSC is required by statute to establish space standards for state-owned buildings (Government Code, Chapter 2167).

Legal references

The following federal/state laws or regulations apply to the Facility Management process:

Relevant Legislation	Pertains to:
Education Code Sec. 61.0572	Higher Education - Requires the Higher Education Coordinating Board (Board) to assure maximum use of education and general buildings, and to develop space standards for new construction or other capital improvement that address differences in space requirements in teaching, research, and public service activities
Education Code Sec. 61.0651	Higher Education - requires the Board to adopt policies for management of physical plants that are designed to streamline operations and improve accountability
Government Code Ch. 2165 Subchapter A Subchapter B Subchapter C Subchapter D Subchapter E Subchapter F	State Buildings, Grounds, and Property and the General Services Commission (GSC) Charge and Control of State Buildings and Property Powers and Duties of the GSC Allocation of Space Lease of Public Grounds Lease of Space in State-Owned Buildings to Private Tenants Particular Buildings and Property

Relevant Legislation	Pertains to:
<p>Government Code Ch. 2166</p> <p>Subchapter C</p>	<p>Building Construction and Acquisition, pertaining to General Services Commission charges and duties - note subchapters that deal with maintenance and operations of state buildings.</p> <p>Statewide Planning and Reporting, addresses compilation of construction and maintenance information, long-range plans for state agency space needs, and reporting requirements</p>
<p>Government Code Ch. 2167</p>	<p>Lease of Space for State Agencies - addresses provisions for state agencies to lease space and delegates authority to institutions of Higher Education to enter into lease contracts for space.</p>
<p>Government Code Ch. 447</p>	<p>Energy Management Center of the Office of the Governor</p> <ul style="list-style-type: none"> • establishes energy management center for state agencies and institutions of higher education • develops energy conservation information for the State • makes rules relative to adoption and implementation of energy programs applicable to state buildings and facilities • provides for energy audits of state-owned buildings • provides for energy management planning assistance to state agencies and institutions of higher education for long-range energy efficiency planning.

Relevant Legislation	Pertains to:
Natural Resources Code, Chapter 31, General Land Office	Enabling legislation for General Land Office. See sections 31.067, 31.151, 31.152, 31.153, 31.154, 31.156, 31.158, dealing with authority to sell agency property, definitions, asset management responsibilities and state property accounting and records.

Useful materials

To plan for the audit, the auditor should review the following materials:

- Reporting information compiled by the Texas Higher Education Coordinating Board covering the respective subject areas the auditor intends to review
- Reporting information compiled by the Leasing and Rental Section of the Design, Construction and Leasing Division of the General Services Commission
- Reporting information compiled by the Building and Maintenance Division of the General Services Commission
- Access the Texas Higher Education Coordinating Board’s database via its Internet address (Call the Board for current address and information available, (512) 483-6800)
- Review information in USAS, CAFE, and the entity’s AFR pertaining to the entity to be audited
- General Services Commission, State Leased Property rules, Section 115.31-.40 (A copy is located in the Methodology resource file.)

DEFINITIONS
(in alphabetical order, as applicable to Higher Education)

(Source for all of the following definitions is the *Texas Higher Education Facilities Inventory Procedures Manual*, Texas Higher Education Coordinating Board, pp. F-1 through F-10)

Actual Capital Investment consists of these elements for a new building:

Building Cost includes all costs of construction within five feet of the building line.

Fixed Equipment includes all equipment items which may be installed before completion of the building and which are a part of the construction contract.

Site Development includes all work required which lies within the site boundary and five feet from the edge of the building.

Site Acquisition and/or Demolition is money budgeted for purchasing the project site and/or demolition of existing structures.

Movable Equipment includes all movable equipment and furniture items, but does not include instructional equipment.

Fees are the costs of architectural and engineering services.

Contingency is a percentage of the total construction cost that is included to serve as a planning contingency, bidding contingency, and construction reserve for change orders.

Administrative Costs are items the owner is responsible for during the planning process, such as legal fees, surveys, soil and material testing, and insurance.

Total Budget represents the total budget required to occupy the new facility and/or renovated areas. This is the total of all the above Actual Capital Investment.

Assignable Area is the sum of the area of all of the rooms in the building, exclusive of the **Circulation Area**.

Backlog is the same as **Deferred Maintenance**. See **Deferred Maintenance**.

A **Building** is considered to be a roofed structure with at least two walls for permanent or temporary shelter of persons, animals, plants, equipment, or supplies.

Circulation Area refers to all areas of a building which are used primarily to provide physical access to assignable rooms. Circulation area includes: corridors, lobbies, public stairways, elevators, escalators, loading platforms, tunnels, etc.

Date of Initial Occupancy is considered to be the year that a building was initially occupied by its original owner, whether the original owner was the facilities inventory institution or not.

Deferred Maintenance

Accumulated Deferred Maintenance - Projects from prior years and the current year that were not included in the maintenance program because of perceived lower-priority status than those funded within the budget.

Critical Deferred Maintenance - Accumulated deferred maintenance projects that place facilities, occupants, or mission at risk if left undone.

Dormitories are buildings used exclusively for residence.

Education and General Space is a category of assignable space and consists of all assignable space except: auxiliary enterprise space, space used by outside agencies, and space which is permanently unassigned.

Facilities Renewal and Replacement Programs are programs known for future cyclic repair and replacement requirements which extends the life and retains the useable condition of campus facilities, components, and systems that are not normally contained in the annual operating budget.

Gross Area is the sum of the floor areas of a building included within the outside faces of exterior walls for all of the stories or areas that house floor surfaces including basements, subbasements, and penthouses for mechanical and air conditioning spaces.

Newly Mandated or Legislated Facilities Requirements include all projects to retrofit for energy conservation, newly recognized health and life safety standards, and environmental or social policy requirements, such as PCB removal, asbestos abatement, and accessibility requirements.

DEFINITIONS

(in alphabetical order, as applicable to other than higher education facilities)

Room Capacity (in reference to higher education) is the number of student stations (desks, tables, chairs, etc.) in a room at the beginning of a semester’s use, by actual count.

Unfinished Area refers to that area of a building that, due to budgetary or other constraints, a floor, wing, or other area is not finished for use along with the rest of the assignable area within the building.

(Source for all of the following definitions is *Facility Management*, by Rondeau, Brown and Lapides, pp. 606-613, and *The Facilities Manager’s Reference*, by Harvey H. Kaiser, pp. 42-46)

Amenity Areas are areas in a facility used by employees or tenants for non-work activity, such as employee dining rooms, vending areas, lounges, day-care centers, fitness or health centers

Asbestos/Hazardous Materials are materials in a facility that may pose a detriment to the tenant or occupant’s health.

Building Core is the “guts” of a building, which usually includes building elevators, restrooms smoke towers, fire stairs, mechanical shafts, janitorial, electrical, and phone closets.

Building Efficiency Rate is the usable area divided by the rentable area, multiplied by 100 (usable areas are all areas of the building, including common areas; rentable areas are those areas that would produce income).

Building Maintenance is the preventative and remedial upkeep of building components (heating, ventilating, and air conditioning systems, electrical, plumbing, elevators, carpentry, painting, etc.) excluding janitorial and grounds maintenance.

Common Area is the area with common access to all users within a gross space.

Cost of Operation are the total costs associated with the day-to-day operation of a facility. Typically, they include all maintenance and repair, administrative costs, labor costs, janitorial, housekeeping and other cleaning costs, all utility costs, and all costs associated with roadways and grounds.

Efficiency is the percent of rentable area that is usable area (a 90 percent efficient building offers 900 useable square feet for every 1,000 rentable square feet).

Fair Market Value is the rental value of space similar to the leased premises for comparison purposes in rental adjustments.

Improvement Allowance is the estimated dollar value of the building standard work letter being offered by the landlord.

Leases - *net lease* is base rent plus tenant pays directly a share of real estate taxes; *triple net lease* is base rent plus tenant pays directly a share of real estate taxes, insurance, maintenance, repair and operating costs; *gross lease* is one payment in which the owner has included estimated cost of operations.

Life Cycle Analysis is defined by the American Institute of Architects as “Any technique which allows assessment of a given solution or choice among alternative solutions on the basis of considering all relevant economic consequences over time.”

Life Safety refers to government regulations and building code requirements for buildings relative to fire, handicapped, seismic, and existing conditions.

Preventive Maintenance is a program in which wear, tear, and change are anticipated and continuous corrective actions are taken to ensure peak efficiency and minimum deterioration.

Pro Rata Share is the ratio between the tenant’s percentage of occupancy of the rentable square footage of the building and the entire building rentable area.

Recapture is the billing to tenants of their pro rata share of increased operating costs after those expenses have been incurred and paid for by the landlord.

Support Area includes: computer centers, mail rooms, copy center, library space, training rooms, communications centers, auditoriums, conference rooms, security areas, and shipping and receiving areas.

Tenant Improvements Building Standards is the standard building materials and quantities as identified by the landlord that are to be provided at no cost to the tenant to improve tenant premises.

Turnkey refers to a complete build-out of a tenant’s premises to the tenant’s specifications.

User is the generic term defining the occupant of a space.

Zones refers to those portions of a building served by the heating, ventilating, and air conditioning system that have separate thermostatic and temperature controls.

OVERVIEW OF THE PROCESS

The basic phases of the Facility Management process are (Refer to Table 1):

1. MANAGE THE PROPERTY

Property management covers a wide range of activities in facility management. Consequently, the functions of property management vary from entity to entity, as well as from private industry to the public sector. Since the scope of property management is so broad, only the functions with the most risk from an audit standpoint will be discussed here. Most of the emphasis will be on higher education facilities. The specific areas of property management discussed will be strategic property management, property acquisition, disposal of real property, risk management, lease management, and financial and data management.

2. PLAN FOR RENOVATION AND NEW FACILITIES

Like property management, facilities planning also covers a wide range of functional areas in many different types of organizations. The emphasis in this module will include a discussion on strategic facilities planning, building design and construction, and energy management.

3. OPERATING AND MAINTAINING THE FACILITIES

All facilities require a maintenance and operations function. This function is critical to the protection of real property, buildings, and equipment, which generally make up a majority of an entity's assets. Two areas of operations and maintenance discussed in this module are facility maintenance and condition assessment. Condition assessment is a process an entity should use to identify all of the maintenance needs in its facilities inventory.

PROCEDURES

Suggested procedures, organized according to the elements of a finding, are listed below. They should be expanded or tailored to fit the specific entity being reviewed.

Note: The following procedures and the process described above are normative, rather than prescriptive. That is, they represent "average" or baseline thinking since they assemble information which repeatedly appeared in the various resources used to prepare this module. Do not be too hasty or literal in applying a given criterion or procedural step to a specific entity. While omissions or variations may be *obvious*, judgment must still be used to determine whether such omissions or variations are *material*.

Table 1

Basic Phases of the Facility Management Process			
Property Management	Facilities Planning	Facilities Operations and Maintenance	Facilities Support Services
Functions: •Strategic Property Management •Real Estate Acquisition, Disposal, and Control •Lease Management •Risk Management •Governmental Relations - Land Use, Regulatory •Financial and Data Management	Functions: •Strategic Facilities Planning •Building Design and Construction •Space Planning: Utilization, Allocation, and Construction •Interior Design •Energy Management Planning •Telecommunications Network Coordination •Cost Controls and Data Management	Functions: •Maintenance Management •Utility Operations •Facility Maintenance •Condition Assessment •Major Maintenance and Renovation •Grounds Maintenance •Custodial Services •Life Safety Systems •Energy Management Operations •Material Control •Transportation and Vehicle Maintenance •General Services •Cost Controls and Data Management	Functions: •Security •Telecommunications •Transportation and Parking •Mail Services
◀ Management Controls ▶			
•External Relations •Organizational Planning •Resource Allocation •Functional Coordination and Relationships •Monitoring Performance •Audit and Analysis •Administrative Support			

Note: Facility management covers a wide range of activities in an organization. Because of this, it is not feasible to include a discussion on each of these areas. The shaded topics in the table above are not discussed in this module, even though they are a part of the process. This module attempts to cover the areas that would most likely be included as part of a management control audit, with emphasis on higher education. In addition, organizational structures vary from entity to entity. Some of the above functions may be under other departments in the entity.

**Review criteria:
General criteria**

General criteria applicable to the Facility Management process are as follows:

1. MANAGE THE PROPERTY

Functional areas of property management include the following:

- 1.A.** Strategic Property Management
- 1.B.** Real Estate Acquisition
- 1.C.** Disposal of Real Estate
- 1.D.** Risk Management
- 1.E.** Lease Management
- 1.F.** Financial and Data Management

1.A. MANAGE THE PROPERTY: Strategic Property Management

Effective strategic property management must include input on the following activities, for which the noted divisions within the facility management function of the entity are generally responsible:

- Master planning (Facilities Planning and Construction, Strategic Planning)
- Feasibility studies of land use or building alternatives (Facilities Planning and Construction)
- Inspections of existing structures (Facilities Planning and Construction, Physical Plant)
- Preliminary architectural and engineering designs and cost estimates (Facilities Planning and Construction)
- Analysis of regulations for land use, zoning, environment, and building codes (Facilities Planning and Construction)
- Operations and maintenance costs (Physical Plant)
- Support services costs: telecommunications, special transportation needs, parking, and security

1.B. MANAGE THE PROPERTY: Real Estate Acquisition

Three phases of site acquisition: (Tompkins, pp. 514-526)

- Develop several feasible alternatives
- Reduce the feasible alternatives to the best three or four candidates
- Select the preferred site

Steps in the real estate acquisition process should include:

- Ensuring that a fair market value has been determined through appraisals from competent professionals
- Ensuring that the State's interests are protected
- Assessing the environmental impact cost—will there be any environmental remediation required on the property, and have these

- cost been included in the overall analysis to make the decision whether or not to purchase?
- Determine if the proposed acquisition aligns with the entity’s mission, goals and objectives. The entity should have assessed why it really needs the property.
- Determine where this project fits into the master plan.
- Assess the community-related issues—determine how this project will affect the entity’s neighbors or how the neighbors will affect the entity.
- Determine where the funds for the purchase will come from, or how the entity will pay for the property.
- For an institution of higher education, ensure that all of the Texas Higher Education Coordinating Board requirements have been met.
- For a state agency, follow the General Services Commission rules on property acquisition.

1.C. MANAGE THE PROPERTY: Disposal of Real Estate

Under most circumstances, the General Land Office has the responsibility for disposition of all state-owned real estate. Institutions of higher education may dispose of their own real estate (purchased, donated, etc., with non-general revenue funds). Otherwise, the General Land Office has authority to make the property disposition. General criteria applicable to the disposition of real estate includes:

- Determine applicable legislation and rules pertaining to the disposition of state-owned property
- Obtain appraisals to determine the fair market value—except for small value property, more than one appraisal should be obtained and each appraisal should include more than one methodology to determine the fair market value
- Maintain a written land disposition policy
- Perform a space utilization analysis
- Involve entity’s attorney in title transfers
- Dispense proceeds of the sale to the proper account

1.D. MANAGE THE PROPERTY: Risk Management

Risk management is a process that has the purpose of minimizing losses or injuries in the entity. Steps that should be included in the risk management process are (*Risk Management for Texas State Agencies*, Vol. I, Ch. 2, pp.1-2):

- Identify the perils and risk exposures.
- Assess the significance of the exposure.
- Select an appropriate risk management method.
- Implement the chosen risk management method.
- Evaluate the risk management program.

Safety and health management programs should be developed and encompass these areas:

- Safety training - lack of training or inadequate training is the cause of many accidents.
- Risk prevention and loss control focus on methods to prevent a peril or loss from occurring.
- Program design, which includes management's commitment to a successful program and incorporates a team or committee with diverse membership from the entity.
- Motivational programs or incentive programs for safety.

1.E. MANAGE THE PROPERTY: Lease Management

General Services Commission (GSC) has responsibility for securing all leases for property for state agencies and institutions of higher education that use state-appropriated funds for leasing facilities, unless that authority has been delegated to the specific agency. Specific criteria for leasing of space by state entities is listed under the Specific Criteria section. A summary of GSC rules, titled State Leased Property, Section 115.31-.40, is included in the Specific Criteria section also. Refer to this section of the GSC rules for specific information and requirements.

1.F. MANAGE THE PROPERTY: Financial and data management

Annual maintenance and repair budgets should be prepared to consist of two components: 1) routine expenditures for maintenance, repairs and planned replacement, and 2) expenditures of deferred maintenance or backlog reduction (*Committing*, p. 8). These two components should be separated in the budget.

Routine expenditures are related to the physical nature of the facilities and their uses, including design, age, intensity of use, and climate of the region where the building is located. These factors influence the rate at which a building deteriorates (*Committing*, p. 8). The second component, backlog reduction, or deferred maintenance, is related to the level of funding available for routine maintenance and repair and the effectiveness of the entity's maintenance efforts. Funding and backlog are inversely proportional: the less funding available, the larger the backlog. These two components are important factors in the cost of ownership (*Committing*, p. 8).

2. PLAN FOR RENOVATION AND NEW FACILITIES

2.A. Strategic Facilities Planning

2.B. Building Design and Construction

2.C. Energy Management

2.A. PLAN FOR RENOVATION AND NEW FACILITIES: Strategic Facilities Planning (also see related material, Construction Module, pages 12, 14, 15, 19, A-1 to A-5)

The entity should have a strategic facilities plan. The plan may be part of the entity’s master planning process. Issues that need to be addressed in the strategic facilities plan include (*Facility Management*, pp. 173-177):

- Capacity requirements forecast
- Facility location, relocation, expansion, and consolidation
- Facility acquisition, utilization, and divestiture
- Life-cycle costing and productivity incorporating perspectives on potential trade-offs
- Facilities financing, including the capital budget plan
- Facilities standards

2.B. PLAN FOR RENOVATION, UPKEEP, AND NEW FACILITIES: Building Design and Construction (also refer to the Construction Module)

The entity should carefully consider selection of building materials since this decision will directly impact the cost of future maintenance. (*Committing*, pp. 9-10). Design and material selection should take the following conditions or considerations into account:

- Decisions made in a building’s design to use short-lived materials and equipment, to save on construction costs, will generally result in increased maintenance and repair requirements.
- Poor design or improper construction or installation can cause inadequate performance from the outset and increase maintenance and repair requirements.
- Abuse, misuse, neglect, and overuse of building components all increase needs for maintenance and repair.

2.D. PLAN FOR RENOVATION AND NEW FACILITIES: Energy Management

Planning for the energy management function can be done by the Facilities Planning department if properly equipped, by outside consultants, or a combination of the two. The Maintenance department usually acts as the installation, inspection, and maintenance staff for an organization’s energy management systems. Costs related to energy and environmental requirements can change rapidly so a strict list of conservation measures should be avoided. Written policies should be developed, but they need to be periodically evaluated for cost effectiveness. (*The Facility Managers’s Reference*, pp. 103-104)

Basic criteria for energy management planning includes the following (*Facility Managers's Reference*, pp. 71-72):

- Select system and operation specifically for building occupancy.
- Determine energy use level when and where required to provide minimum acceptable environmental conditions.
- Minimize heat loss and gain.
- Perform cost-benefit analysis of systems and retrofit proposals.
- Provide optimum operating efficiency for energy systems and equipment.
- Perform regular energy audits to monitor performance and consumption.

Building utilities include (*Facility Managers's Reference*, p. 72):

- Electric power, on-site generated or from a public utility
- Fuel power, includes gas, heating oil, and other fuels
- Heating and cooling
- Water supply
- Liquid sewage disposal
- Storm drainage systems
- Solid waste disposal

3. OPERATING AND MAINTAINING THE FACILITIES

3.A. Facility Maintenance

3.B. Condition Assessment

3.A. OPERATING AND MAINTAINING THE FACILITIES: Facility Maintenance

In times of tight budgets and competing demands for public resources, it may be difficult to convince those responsible for policy making that neglect of maintenance of fixed assets and equipment can lead to significant losses of those assets (*Committing*, p. ix). Recognition of the full cost of ownership of these assets and the commitment to properly maintain them by policy makers presents a challenge to the management that has the responsibility of operating these facilities to carry out the entity's mission. The following are general criteria that pertain to operations and maintenance (*Committing*, p. 3):

- Being able to predict the impact decisions regarding construction materials and building systems will have on future operation, maintenance, and repair costs
- Implementing a plan to improve the methods of determining professional staffing required for field-level facilities management
- Improving procedures for programming and budgeting for operation, maintenance, and repair work

- Making effective use of diagnostic techniques for determining the need for maintenance and repair
- Establishing a direct link between the maintenance and operations budget and plan and the entity’s mission, goals and objectives, as they relate to maintenance
- Setting priorities for resource allocation
- Incorrect maintenance procedures can shorten the life of systems and components and cause premature failure.

The functional areas of maintenance management include the following (*The Facility Managers’s Reference*, p. 95):

- Budgeting
- Initiating - receiving and reviewing requests for work to be performed by tradespeople
- Planning - work assignments and material needs for the work orders
- Scheduling work requests
- Executing work request
- Reporting - measuring performance, including customer satisfaction surveys

**3.B. OPERATING AND MAINTAINING THE FACILITIES:
Condition Assessment**

The entity should implement a periodic condition assessment procedure for all facilities in its inventory. The frequency with which this assessment should be performed will vary according to the age and inventory of facilities. This could range from annually to every three to five years. A condition assessment serves as the basis for establishing appropriate levels of funding required to reduce and eventually eliminate backlog.

Specific criteria

The specific criteria related to the basic phases of the Facility Management process are as follows:

1. MANAGE THE PROPERTY**1.A. MANAGE THE PROPERTY: Strategic Property Management**

Life Cycle Analysis should be used by management for assessing alternatives in strategic property management. Decisions to buy, sell, lease, or build deal with costs over time. This analysis method deals with both present and future costs and attempts to relate the two so that management can make decisions.

(*The Facilities Manager's Reference*, p.42):

- Establish objectives of the analysis
- Formulate the alternative to be analyzed
- Decide on the time period for the analysis
- Identify cost factors
- Determine the life cycle cost for a common time period
- Carry out the analysis
- Analyze the results

1.B. MANAGE THE PROPERTY: Real Estate Acquisition

In some instances, though not usually for a college or university, an entity may advertise for a request for proposals (RFP) to other political entities or the public to locate a site for a facility. The Texas Department of Criminal Justice used this method to locate sites for a number of its prison projects. There are advantages as well as disadvantages to this procedure, and care must be taken that all cost factors, present and future, are considered and analyzed. If an RFP is used in the site selection process, the entity should consider some of these factors before making its final decision (*Behind the Walls*, Sharp, pp. 150-152):

- Financial incentives should be requested in the RFP.
- Financial incentives offered by the respondent to the RFP should include a list of those incentives and an explanation of their values.
- Consider requiring that a performance bond be furnished by the offeror.
- Use the life-cycle cost model to combine all of the quantifiable costs of a facility to determine total cost over expected life—offeror incentives are generally one-time benefits but higher operating costs at a disadvantageous site can quickly negate the value of an incentive.

Other factors that need to be considered in the site selection process to determine the total cost of a facility include the following (also see Construction Module, page A-3):

- The cost of preparing the site
- The cost of bringing roads or streets to the site
- Determine the cost of bringing utilities to the site
- The local labor wage

- The availability of skilled labor to build the facility, as well as to staff the facility
- The utility costs
- The transportation costs

1.C. MANAGE THE PROPERTY: Disposal of Real Estate

Refer to Relevant Legislation section of this module for specific requirements.

1.D. MANAGE THE PROPERTY: Risk Management

For a detailed discussion of this area, refer to *Risk Management for Texas State Agencies*, Vol. II., Property Exposures, Chs. 1-5, and Vol. III, Workers’ Compensation Exposures, Ch. 1. This document is located in the SAO Staff Services, Business Services Division. Principal areas in risk management that are discussed here are procedures necessary to protect the physical property and ensure minimum risk to human safety and health. All entities should have basic procedures that address these areas.

A property conservation program should be included in every entity’s planning, organizing, budgeting, coordinating, directing, and evaluating activities. A property conservation program is a formal, written system developed to identify, conserve, and protect the physical assets of an organization. The goal of this type of program is to reduce property losses and personal injuries through formal control systems (*Risk Management for Texas State Agencies*, Vol. II., Ch. 1, p. 1). Elements of the written program should include:

- Identification of exposures through an accurate property/equipment inventory (*Ibid.*, p. 1)
- Loss control measures with the purpose of identifying exposures to hazardous conditions in an entity when these conditions may threaten real and personal property, and/or the safety of employees or the public– examples of these conditions could include: fire protection systems, security deficiencies, and the adequacy of emergency plans (*Ibid.*, p. 1)
- Loss reporting mechanism which provides a means of identifying losses, maintaining an up-to-date picture of exposures, prioritizing loss control efforts, and evaluating the property conservation program (*Ibid.*, p. 2)
- Monitoring the program, which is an additional means of evaluation and may result in identifying other exposures as incidental to the program (*Ibid.*, p. 2)

The Texas Workers’ Health and Safety Division of the Texas Workers’ Compensation Commission has identified seven components of an effective accident prevention plan for employers of the State (*Risk Management for Texas State Agencies*, Vol. III., Ch. 1, p. 8). These components include:

- A management component with a written safety policy statement and assignment, by position or title, of safety responsibilities and authority
- An analysis component which includes identified operational and safety hazards
- A safety program record keeping component
- A safety and health education and training component
- A safety audit/review component which includes the identification, by title or position, of a qualified person(s) to conduct the audits/reviews
- An accident investigation component to identify the cause factors of injuries
- A periodic review and revision of the safety program and operational procedures component to determine the effectiveness of abatement measures

1.E. MANAGE THE PROPERTY: Lease Management

An entity may need to lease space or facilities to carry out its mission. General Services Commission (GSC) is the agency that coordinates and procures leased facilities for the State. The auditor should refer to GSC rules, State Leased Property, section 115.31-.40. The following is a summary of these rules and criteria that must be met for entities that plan to lease facilities with state funds:

- All requests from state agencies for leased space must be submitted to GSC
- All requisitions for leased space must contain written specifications
- Space specifications may not be prepared for the agency by a prospective bidder on the requested space
- Preference must be given to available state-owned space under GSC control
- Space may be subleased from another agency through an interagency contract
- Space may be leased from the Federal Government through a negotiated lease
- Space may be leased from a political subdivision through a negotiated lease so long as the State pays no more than the fair market price
- All leasing from private sources must be through competitive bidding whenever possible
- Bids must be solicited by GSC using a prescribed method as spelled out in the Commission Rules
- All bid openings must be open to the public
- GSC must perform an evaluation of all bids. The evaluation is subject to criteria listed in the Commission Rules
- GSC may not negotiate a lease after it has been acquired through competitive bidding to alter any of the terms and conditions advertised in the proposal

- GSC may negotiate a lease for a state agency with a private source only when GSC determines that competitive bidding is not possible. The following are three examples of cases that meet this requirement:
 - (1) Emergency leases entered into under section 115.33(a)
 - (2) When only one bid meeting specifications is received
 - (3) When GSC determines that specifications needed by the requesting entity are so restrictive as to effectively eliminate competition

GSC may delegate to institutions of higher education the authority to enter into leases for space that are to be paid for from funds other than general revenue appropriations. The institution must comply with the competitive proposal, process spelled out in the Commission Rules pertaining to this subject. All potential bidders must be on the GSC approved bidders list to be considered for bid proposals. Specific evaluation criteria of potential bidders is listed in the Commission rules.

1.F. MANAGE THE PROPERTY: Financial and Data Management

Factors to consider in developing a maintenance and repair budget include the following:

- Develop information on facilities that have not received regular maintenance or inspections in order to develop a comprehensive database.
- The budget should be developed with the objective of reducing the backlog, or deferred maintenance, as soon as possible (*Committing*, p. 20).
- Repair spending must be adequate to outpace backlog growth that occurs as a cumulative result of past neglect.
- Isolate minor alterations and improvements from routine maintenance and repair in the budget.
- Determine what can realistically be done in terms of maintenance with the current budget. For example, one study of a major urban school district found that the current maintenance and repair budgets were only adequate to paint classrooms once every 100 years and to replace floor coverings once every 50 years (*Committing*, p.13)
- Those who decide on funding levels for maintenance and repair should fully recognize the impact of their decisions on the public’s capital assets and investment in public buildings (*Committing*, p.13-14)
- Those who decide funding levels must have adequate information to help them to evaluate the budgets submitted by their facilities management staff (*Committing*, p.13-14)

Formulation and evaluation of maintenance and repair budgets should consider explicitly these items (*Committing*, p. 14):

- The appropriate size of the routine maintenance and repair budget (this is part of the cost of ownership)
- The maintenance and repair backlog (which can be estimated according to the condition assessment procedure)

Factors that have a major influence on the appropriate level of maintenance and repair expenditures (*Committing*, pp. 17-18) include:

- Building size and complexity
- Types of finishes
- Current age and condition
- Mechanical and electrical system technologies
- Telecommunications and security technologies
- Historic or community value
- Type of occupants or users
- Climate severity
- Tenant or user turnover rates
- Criticality of role or function
- Ownership time horizon
- Labor prices
- Energy prices
- Material prices
- Distances between buildings in inventory

The following are methods to determine an appropriate level of maintenance and repair budgeting (*Committing*, p. 18):

- Typical maintenance expenditure per square foot for similar types of buildings (General Services Commission would be a source to obtain information from)
- Base maintenance and repair spending on 2 to 4 percent of current replacement value of inventory. The specific percentage will depend on:
 - (1) Age of the buildings in the inventory
 - (2) Type of construction (permanent vs. temporary)
 - (3) Use level of the buildings
 - (4) Structure of the maintenance organization
 - (5) Climate

Note that the 2 to 4 percent range is most valid for a large inventory of buildings over a time period of several years. Small building inventories could be applied over a period of 5 to 10 years.

Methods to determine a reliable estimate of replacement value include the following (*Committing*, pp. 18-19):

- Estimate what it would cost in any given year to construct or purchase each building in the inventory—this is the most accurate.

- Apply escalation factors to the acquisition cost of the buildings in the inventory (estimates will be less accurate the older the buildings are with this method).
- Maintain a comprehensive database of information on all facility inventory of repairs and use it for planning, budgeting, and other special reporting.

The auditor should plan to include in the audit program verification of reported data by the entity. Perform sample testing to verify the reliability of the data. For example, the Board requires a number of reports from institutions on their facilities, including total current inventory, assignment and classification of space, maintenance and operations costs, facilities planning, and deferred maintenance status just to name a few. However, the Board is usually not able to verify all of this information. Consequently, it relies on the entity to provide accurate data. The auditor should consider testing the reliability of the entity’s reported data by using the procedures outlined in the certification of performance measures (see current working papers on Performance Measures project or current project manager).

2. PLAN FOR RENOVATION, UPKEEP, AND NEW FACILITIES

2.A. PLAN FOR RENOVATION, UPKEEP, AND NEW FACILITIES: Strategic Facilities Planning

A strategic facilities plan should list priorities and describe major maintenance, renovation and new construction projects (*The Facility Managers’s Reference*, pp. 126-127). The strategic facilities plan must be careful to differentiate capital asset management from functional improvements. Capital asset management is restoring deterioration and extending the life of a facility. Functional improvements enhance space to provide adequate facilities to meet the mission of an organization and reverse obsolescence. Priorities can become distorted and unclear between these two areas if they are combined. Therefore, they should remain distinct in the planning process. A facilities improvement plan should include the following (*Facility Managers’s Reference*, pp. 126-127):

- Project schedules organized by types of projects and priorities, including:
 - (1) Capital additions
 - (2) Repairs and renovations (over an established minimum limit)
 - (3) Deferred maintenance
 - (4) Functional improvements
 - (5) Energy improvements
 - (6) Regulatory mandates (local, state, federal)
- Project descriptions, including:
 - (1) Space program and justification

- (2) Cost estimates
- (3) Location and site plan
- (4) Project schedule
- (5) Construction delivery (method of contracting for construction)

Strategic facilities planning requires annual and long-range planning based on a realistic schedule that will support the entity's strategic plan (*Facility Management*, pp. 173-177). The annual and long-range plans should address the geographic locations where a site or space will be required. Strategic facilities planning must be directly linked to the master plan and the mission and goals of the entity. Initial assessments of a project by the entity should include these steps (*Elements of Project Review*, the Higher Education Coordinating Board):

- Perform analysis of existing space—determine what the best utilization of the existing space is
- Determine if the initial estimates of the cost per square foot are reasonable
- Calculate ratio of assignable square footage to gross square footage—minimum should be 60 percent; 70 percent is very good
- Review accessibility standards and determine if the project will meet these requirements
- Determine if the existing infrastructure will support the new facility or what modifications will need to be made to the infrastructure
- Determine or set energy standards
- Determine if the need for construction is greater than the need for equipment
- Obtain governing board approval

Pertaining to higher education, a project planning review should be conducted by the entity and consist of the following steps and procedures (*Elements of Project Review*, the Higher Education Coordinating Board):

- Assess the need for the type of space planned
- Evaluate existing space for alteration to meet needs or consider other alternatives before deciding to construct new space
- Assess the status of accumulated and critical deferred maintenance—determine if this need has been taken care of first
- Analyze enrollment trends considering the last five years and anticipating the next five years
- Determine whether general population of the service area is growing, stable, or declining
- Determine where the funds will be obtained
- Determine what portion of the debt the students will be required to bear
- Ensure that the proposed building will be cost-efficient for maintenance and repairs

- Determine if construction of this facility will help to reduce operations and maintenance for the campus
- Consider the significant factors regarding the service area
- Determine if this facility will duplicate any other higher education offerings in the area
- Ensure that cooperation has been established with other higher education institutions in the area
- Make an assessment of the needs and desires of the general population (this is the environmental scanning process in strategic planning)
- Determine if there is a cooperative atmosphere with the city, county, or other state agencies that may be affected or involved
- Determine or review the operation and maintenance costs per square foot in existing space
- Assess the semester credit hour production and trends
- Determine what degrees are offered
- Ensure that input from the other divisions of the entity are requested
- Review all relevant legislation that might affect the project
- Ensure that relevant literature has been adequately researched in relation to the project
- Determine ownership of land—lease or buy
- Consider the proximity of the development to the campus

2.B. PLAN FOR RENOVATION, UPKEEP, AND NEW FACILITIES: Building Design and Construction

Refer to Construction Module for additional information and specific criteria.

2.C. PLAN FOR RENOVATION, UPKEEP, AND NEW FACILITIES: Energy Management

The entity should perform regular energy audits to fit the specific needs of the facilities. The energy audit process should include these steps (*The Facility Managers's Reference*, p. 71):

- Select energy management team
 - Survey buildings for the energy audit
 - Tabulate present energy use
 - Identify energy conservation opportunities
 - Summarize costs and benefits
 - Establish an energy budget
- Implement and monitor the program. Note: System conversion projects require major renovations to the existing energy consuming systems. Examples of these modifications include central control energy management systems, waste heat reclamation systems, storm windows, and heat exchangers. These modifications should produce a 10 percent to 20 percent rate of return on the capital investment (*Committing*, p. V-44)

Maintain a database for the energy audit. The database should include (*The Facility Managers's Reference*, p. 71):

- Historical data on fuel and energy consumption and expenditures
- Explanation of rate systems and billing procedures
- Building system diagrams
- Building construction drawings and specifications
- Operating characteristics of all energy-using systems for varied operating conditions
- Space operating conditions required by functional use

3. OPERATING AND MAINTAINING THE FACILITIES

3.A. OPERATING AND MAINTAINING THE FACILITIES: Facility Maintenance

The entity should develop specific goals for the maintenance function. Specific goals should include (*Comprehensive Maintenance*, p. I-1):

- Decrease operating interruptions of critical systems and equipment
- Extend the life and improve the capability of buildings and equipment to perform at their maximum potential
- Increase the productivity of the maintenance personnel
- Improve work methods and procedures
- Reduce callback and overtime of maintenance personnel
- Select the most cost-effective method of maintenance, i.e., outside contracts versus plant forces– when and what to privatize
- Reduce and eliminate safety and fire hazards
- Improve and maintain the aesthetic qualities of the facility
- Maintain sufficient management information systems to allow analysis and audit of maintenance functions
- Implement programs to conserve energy and bring facilities into compliance with code modifications (such as OSHA, ADA, Fire Safety or Life Safety Code)

Maintenance priorities should be classified. The following is an example of priority consideration (*Comprehensive Maintenance*, pp. I-4, I-5):

- Top priority considerations:
 - (1) Safety, fire, and health for protection of people
 - (2) Avoidance of agency operating interruptions
 - (3) Compliance with code requirements
 - (4) Legal and legislative mandates
 - (5) Security
 - (6) Protection of facilities
- Essential considerations:
 - (1) Budget constraints
 - (2) Energy conservation

- (3) Scheduled commitments
- Other considerations:
 - (1) Person making request
 - (2) Individual complaints
 - (3) Comfort conditions

The entity should consider privatization as an alternative to providing some or all of the services of this function. The process to determine this should include, but not be limited to the following:

- Determine which components of maintenance and repair could realistically be privatized
- Analyze and compare costs of privatization verses in-house staff (See SAO Report No. 95-139, *Guide to Cost-Based Decision-Making* to determine if privatization is feasible)
- Even if privatization is not initially feasible, study the potential at least every five years to determine if it is still cost effective to perform work in-house

Specific criteria should include the following: (*Committing*, pp. xi -xii)

- Structure maintenance and repair (M&R) budgets to identify explicitly the expenditures associated with routine M&R requirements and activities to reduce the backlog of deferred maintenance

**3.B. OPERATING AND MAINTAINING THE FACILITIES:
Condition Assessment**

The entity should perform condition assessments on a regular basis. The following are criteria used to perform a condition assessment:

- Formal assessment should be made by the department responsible for the maintenance and repair budget
- Assessment program team should require experienced and trained technicians and managers
- Program should be standardized to control cost of the program and ensure consistency of the results
- Establish guidelines for condition assessment programs
- Make specific assignments of responsibility to qualified and trained staff and managers
- Minor alterations and improvements should be clearly identified in the maintenance and repair budget so as not to divert resources from legitimate maintenance and repair functions
- Ensure that staff who make the condition assessment are trained
- Ensure top management has a firm commitment to effective management of capital assets
- Condition assessment should be used to assure that performance is being maintained at target levels (*Committing*, p. 20)

- Determine the scope of each condition assessment—the depth or level of detail may vary in each circumstance (*Committing*, p. 21)
- Control the cost of the assessment inspection by standardizing the inspection procedure
- Use fixed checklists or guidelines
- Give the assessment team target estimates of levels of anticipated problems and time required for inspection
- Assessments should be standardized, performed by trained staff or contracted to competent professionals, and be done on a regular basis (the state of Florida requires condition assessments at least every 3 years)
- Understand what the entity’s definition of maintenance and repair is—this definition can vary from entity to entity
- Ensure that the entity has assessed environmental impacts to its facilities and has developed a plan for addressing these needs, such as asbestos abatement, Americans with Disabilities Act (ADA), other environmental hazards requiring remediation
- Ensure that current technology for plant and equipment has been obtained at a reasonable cost and that the purchase anticipated future needs

Measures/Benchmarks

The following indicator, measures, or benchmarks can be applied to the Facility Management process (*Higher Education Facilities Management*):

- An appropriate budget allocation for routine maintenance and repair is in the range of 2 to 4 percent of the aggregate current replacement value of the facilities (exclusive of land costs). Use this budget allocation as an absolute minimum – where neglect of maintenance has caused a backlog of needed repairs to accumulate, spending must exceed this level until the backlog is eliminated
- Eliminate all critical deferred maintenance and limit accumulated deferred maintenance to 5 percent of the total replacement value of the facilities (*Higher Education Facilities Management*, p. 2)
- All maintenance employees are considered team members and assume leadership role in carrying out their work (*Higher Education Facilities Management*, p.13)
- Personnel development is an established policy (*Ibid.*)
- Craft employees assist in planning and estimating jobs (*Ibid.*)
- Operations drives the schedules (*Ibid.*)
- Quality audits of repairs and root-cause analysis of failures are regularly performed (*Ibid.*)
- Corrective maintenance program utilizes expert systems where practical (*Ibid.*)
- Operations department is active in cost decisions as a means to improve cost control (*Ibid.*)
- Inventory and materials management are controlled by electronic on-line material requisitioning (*Ibid.*)
- On-line maintenance management systems are integrated with business systems (*Ibid.*)
- Management performs cost bench marking and tracking (*Ibid.*)
- Technology applications focus on maintenance influence on institutional performance. The cost of technology must be balanced with the benefits (*Ibid.*)

**Assess Condition:
Determine the actual
process used**

Conduct interviews, observe operations, and identify and collect available documentation in order to gain an understanding of the entity's actual Facility Management process and controls. Included in the actual process are both official/unofficial and formal/informal processes and controls. An official process may exist even if it is not documented. Possible procedures include, but are not limited to:

- Determine where the Facility Management process resides in the entity, who participates in the process, and how the participants are selected
- Obtain and review any manuals, policies, and forms that could document any phase of the Facilities Management process, including its relationship to entity goals, objectives, strategies, and plans

- Determine if and how management consciously selects and employs the assumptions, criteria, methods, processes, and techniques used in the Facility Management process. Obtain and review available documentation on the assessment of risks, costs, and benefits

In addition to gaining an understanding of the actual process, also try to find out:

- How the participants view the actual process
- What parts of the process they see as successful or unsuccessful and why
- What they think is important about the process and why

This information may help identify causes and barriers.

Accounting

The Facility Management process in Texas is usually accounted for in the following way(s):

- Budget and required reporting standards by state-funded higher education institutions to the Texas Higher Education Coordinating Board
- Budget and reporting requirements by the General Services Commission on all state-owned buildings other than higher education institutions. GSC has developed performance measures tied to its operation and maintenance of state-owned buildings

“Red Flags”

Be especially alert to evidence of the following “red flags” indicating management weaknesses. Red flags include but are not limited to the following: (*Committing*, pp 10-11.)

- Current procedures and allocation of resources fail to protect fixed assets
- Under funding of maintenance and repair is a widespread and persistent problem
- Commitment from top management is absent from the condition assessment program and management’s attitude is to maintain the buildings “at the lowest possible cost”
- Condition assessments have not been made or are not made regularly
- There is a backlog of deferred maintenance
- Inadequate funds are allocated to maintenance and repairs
- Personnel are not properly trained or are not provided with any training programs
- Maintenance records are poorly kept or not kept at all
- Maintenance records are not reviewed to extract lessons learned for future maintenance planning
- Outstanding debt—the higher the debt, the greater the tendency to reduce the maintenance effort
- Accumulated deferred maintenance exceeds 5 percent of the total replacement value of the entity’s building inventory

- The entity transfers dollars out of the building maintenance budget to fund other non-maintenance activities
- A high number of middle- and lower-level supervisors are on the maintenance staff in relation to total maintenance staff
- Technical skills are “self-taught” and, training is limited to safety and OSHA required training
- Poor documentation exists in the work order system or work orders are verbal
- No outside technology is applied; all technical skills are with the first line supervisors

Determine the strengths and weaknesses of the actual process

Using the tailored criteria, the understanding of the entity's process gained above, and the procedures in this section, analyze the actual process to determine if it:

- Is designed to accomplish the management objective(s) (this module, page 1)
- Has controls that provide reasonable assurance that the process will work as intended
- Is implemented and functioning as designed
- Is actually achieving the desired management objective(s)

Suggested procedures for each of these four analysis steps are detailed below. In executing these procedures, remember to identify and analyze both strengths and weaknesses.

Identify and review the steps in the actual process to determine if the process is designed to accomplish the management objective(s). Possible procedures include, but are not limited to:

- Determine if all major steps in the criteria are included in the actual process. If steps are missing, determine if their absence is likely to have a materially negative effect on the Facility Management process at the entity you are reviewing
- Determine if all the steps in the process appear to add value. If there are steps that do not appear to add value, try to get additional information on why they are included in the process
- Review the order of the steps in the process to determine if it promotes productivity
- Review the level of technology used in the process to determine if it is up-to-date and appropriate to the task. Besides computer, electronic, communications, and other mechanical technology, you should also consider what kinds of management technology are used (Gantt charts, process maps, decision matrices, etc.). See the appendix to the module on Problem-Solving and Decision-Making for more information

Identify the controls over the process to determine if they provide reasonable assurance that the process will work as intended. These controls should be appropriate, placed at the right point(s) in the process, timely, and cost effective. Possible procedures include, but are not limited to:

- Draw a picture of the process, the controls, and the control objectives (see page 13 of the Introduction for an example). Flowcharts of the Facility Management process can help identify inputs, processes, and outputs
- Determine if the control objectives are in alignment with the overall management objective(s) (this module, page 1)
- Identify the critical points of the process (i.e., those parts of the process most likely to determine its success or failure or expose the entity to high levels of risk) and the controls related to them.
Consider whether the controls are:
 - In the right location within the process (input, operations, output)
 - Timely (real time, same day, weekly, etc.)
- Compare the cost of the control(s) to the risk being controlled to determine if the cost is worth the benefit
- Determine what controls are in place for monitoring and evaluating the overall effectiveness of the Facility Management process and making sure that changes are made in the process if it does not yield the desired results
- Identify, describe, and assess the process used to gather input from employees who might reasonably discover flaws in the process

Review observations, interviews, documentation, and other evidence and design specific audit procedures as needed to determine if the process and/or the controls have been implemented and are functioning as designed.

Depending upon the objectives of the project, these procedures may include both tests of controls and substantive tests, more information on which is found in Policies and Procedures Manual. Possible procedures include, but are not limited to:

- Determine if any evidence of management override exists.
- Walk through the actual process, i.e., follow a transaction through the people and documents involved, and compare to the official process.

Review and analyze any reports used by the entity to monitor the outcome(s) of the Facility Management process and/or any other information available to determine if the process is actually achieving the desired management objective(s) (this module, page 1). Possible procedures include, but are not limited to:

- Analyze these process reports over time for trends
- Discuss materially negative or positive trends with management

- Determine if and how management acts upon these trend reports and what changes, if any, were made in the process or controls as a result. Some process refinements, especially those affecting entity mission, goals, and outcome measures, may need to wait until the next appropriation cycle

Determine effect(s)

Compare the actual entity process to a recommended and alternative process(es) and determine if each weakness in the entity process is material. Alternatives can be developed by using the criteria contained in this module, applying general management principles to the process, using the processes at comparable entities, etc. Materiality can be measured by comparing the dollar cost, impact on services (either quantity or quality), impact on citizens, impact on the economy, risks, etc., of the actual process to the recommended and alternative process(es). Measurements can be quantitative, qualitative, or both. Possible procedures include, but are not limited to:

- Identify performance benchmarks (industry standards, historical internal data, other comparable entities, etc.) for the process in question and compare to actual performance. Measure the difference, if possible. Include the cost of the additional controls or changes in the process
- Estimate the cost of the actual process and the alternative process(es) and compare
- Estimate the quantity and/or quality of services provided by the actual process and by the alternative process(es) and compare
- Identify the risks associated with the actual process and with the alternative process(es). Measure and compare the risks

Under funding of maintenance can affect public health and safety, reduce productivity of public employees, and cause long-term financial losses when buildings must be prematurely renewed or replaced. These are some of the consequences of a poorly managed or under-funded maintenance and operations function (*Committing*, pp. 10-11):

- Threats to health and safety: health failure - respiratory problems resulting from inadequate maintenance of air ducts and filters; safety failure - accidents resulting from poorly maintained lighting, stair coverings, and floors; structural failure - water infiltration from poorly maintained roof decks can lead to structural corrosion and failure.
- Service failures: power service loss; heating, ventilating, and air-conditioning system failure; leakage for other shelter failure, other losses of use.
- Excessive costs: energy costs; “domino effect”, minor failures leading to major failures; replacement versus repair costs; absenteeism and turnover; losses of production; loss of assets (building contents).
- Social costs: inability to attract and retain personnel, clients, students, etc.; poor morale (studies have cited that poor maintenance is demoralizing to teachers and students); poor image; loss of readiness.
- Consequences of legal actions resulting from negligence and liability.

If the effect is significant, consider investigating its cause.

Determine cause(s)

Determine what circumstances, if any, caused the identified weaknesses in the Facility Management process. Possible procedures include, but are not limited to:

- Determine if the participants in the Facility Management process understand the entity's mission, goals, and values and support them through their management of the Facility Management process.
- Determine if the participants understand both the purpose of and their role in the Facility Management process.
- Determine if the relationship between the Facility Management process and other entity processes is clear.
- If the process occurs at multiple locations, determine the nature and scope of the communications and coordination among them.
- Determine if the Facility Management process has adequate human, dollar, time, information, and asset resources. If they appear inadequate, determine if entity resources have been allocated according to the materiality of the Facility Management process relative to other entity processes.
- Determine if the entity has considered using alternative resources such as industry associations, nonprofit organizations, academic institutions, or other governmental entities to meet its resource needs.

- Determine if resources available to the Facility Management process have been allocated and used in a manner consistent with the importance of that resource to the Facility Management process.
- If there are negative trends in the reports used to monitor the outcome(s) of the Facility Management process, determine if these reports are communicated to and used by the appropriate parties to modify the process.

Determine what internal or external constraints or barriers, if any, must be removed in order to overcome these identified weaknesses. Possible procedures include, but are not limited to:

- Review the applicable entity, state, or federal laws or regulations to determine if any of them prevent the necessary changes from being made in the Facility Management process.
- Determine if any key employees are unwilling to change the process and why they are unwilling.

Develop recommendations

Develop specific recommendations to correct the weaknesses identified as material in the previous section. In developing these recommendations, consider the tailored criteria, kind of process and control weaknesses identified, causes and barriers, effects, and additional resources listed at the end of this module. Possible procedures include, but are not limited to:

- Identify alternative solutions used by other entities.
- Identify solutions for removing barriers.
- Provide general guidelines as to the objectives each solution should meet, then the entity can tailor the solution to its specific situation.
- Provide specific information, if available, on how each recommendation can be implemented.

RESOURCES

Additional Data Sources

CAFE, USAS, AFR

Related Modules and Reports

Construction Module
 SAO Report 95-139, *Guide to Cost-Based Decision-Making*, August 1995.

Texas Comptroller of Public Accounts, *Higher Education Facilities Management (A Report by the Texas Performance Review and The Texas Higher Education Coordinating Board)*, April 1994. Location: Methodology resource file.

State of Maryland, Department of General Services, *Guidelines and Standards for the Maintenance and Repair of State-Owned Facilities*, 1983. Location: Methodology resource file.

Committee on Advanced Maintenance Concepts for Buildings, National Research Council, *Committing to the Cost of Ownership: Maintenance and Repair of Public Buildings*, National Academy Press, Washington, D.C., 1990. Location: Methodology resource file.

Various reports from the Texas Higher Education Coordinating Board. Location: Methodology resource file.

Contact: Association of Physical Plant Administrators of Colleges and Universities (APPA), Washington, D.C.

Building Owners and Managers Association (BOMA), Austin Chapter, (512) 250-0113.

Training

Books

Kaiser, Harvey H., Ph.D., *The Facilities Manager's Reference*, R.S. Means & Co., Inc., Construction Consultants and Publishers, Kingston, MA, 1989. Location: The University of Texas at Austin Engineering Library. (NOTE: This is an excellent reference pertaining to facilities management. Highly recommend checking out this book as part of research and scoping on a facilities management audit.)

Tompkins, James A. and White, John A., *Facilities Planning*, John Wiley & Sons, New York, 1984. Location: The University of Texas at Austin Engineering Library.

Rondeau, E., Brown, R., and Lapides, P., *Facility Management*, John Wiley & Sons, New York, 1995. Location: University of Texas at Austin Perry Castenada Library (main library).

(Texas) General Services Commission, *State Leased Property*, Commission Rules, Section 115.31-.40. Rules for leasing state property. Location: Methodology resource files.

**Professional Associations
and Research Entities**

Association of Physical Plant Administrators of Colleges and Universities
(APPA), Alexandria, VA

Building Owners and Managers Association (BOMA), Austin Chapter, (512)
250-0113.

National Research Council, Commission on Engineering and Technical
Systems, Washington, D.C.