

## 9.0

### Maintenance and Operations Administrative Guidelines for School Districts and Community Colleges

#### Standard Procedures

For every educational facility maintenance and operations department, there are certain standard procedures that define the manner in which they operate and deliver required services. Although specific approaches may vary, these work practices and methods ultimately define the management style and “culture” of the organization. The following sections identify some of the most important procedures that all maintenance and operations organizations will encounter. Although it is not an exhaustive list, the procedures outlined here are meant to help define the breadth of administrative functions and establish the basis for good practices for each facet of managing educational facility physical plants.



## 9.1

## Maintenance and Operations Administrative Guidelines for School Districts and Community Colleges

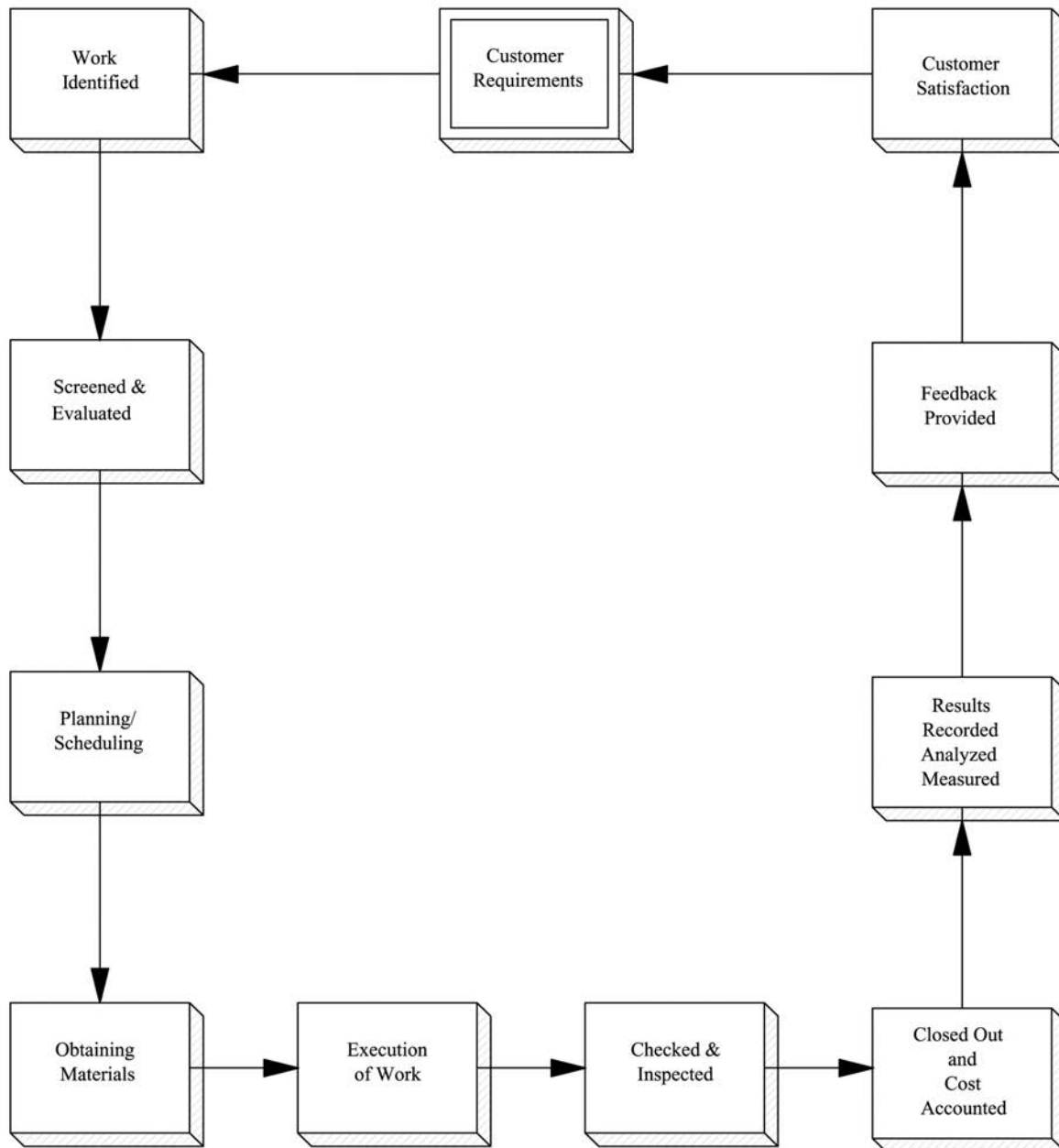
## Work Control Methods



Maintenance and operations departments carry out hundreds of diverse functions at schools and community colleges on a daily basis. It is the primary responsibility of department administrators and supervisors to make sure that financial and human resources are managed wisely and that all facilities remain in good working order. To accomplish these objectives in an efficient manner and provide a high degree of customer satisfaction, administrators should have in place well-defined operating procedures and guidelines for implementing each component of work associated with building, equipment, and grounds maintenance. These guidelines involve careful planning, scheduling, and coordination, bringing together the appropriate combination of labor, skills, experience, knowledge, tools, equipment, and materials - at the right time and in the right combinations to satisfactorily complete work tasks, while simultaneously controlling costs.

Each department within the facilities organization should synchronize individual staff functions to allow the entire organization to operate as a smooth-running team. At school and community college facilities, having a clearly-defined process for coordinating different

types of work tasks and service procedures has proven invaluable in keeping buildings and equipment in good working order. Work control procedures regulate how and when work tasks are completed, as well as who completes them. They define a process for identifying, screening, planning, scheduling, evaluating, and cost accounting for each type of work task performed. They also provide a mechanism for closing out, documenting, analyzing, and providing feedback from each task. Administrators should implement work control procedures that are best suited to their organizations and reflect their respective approaches to providing maintenance, operations, and grounds services.

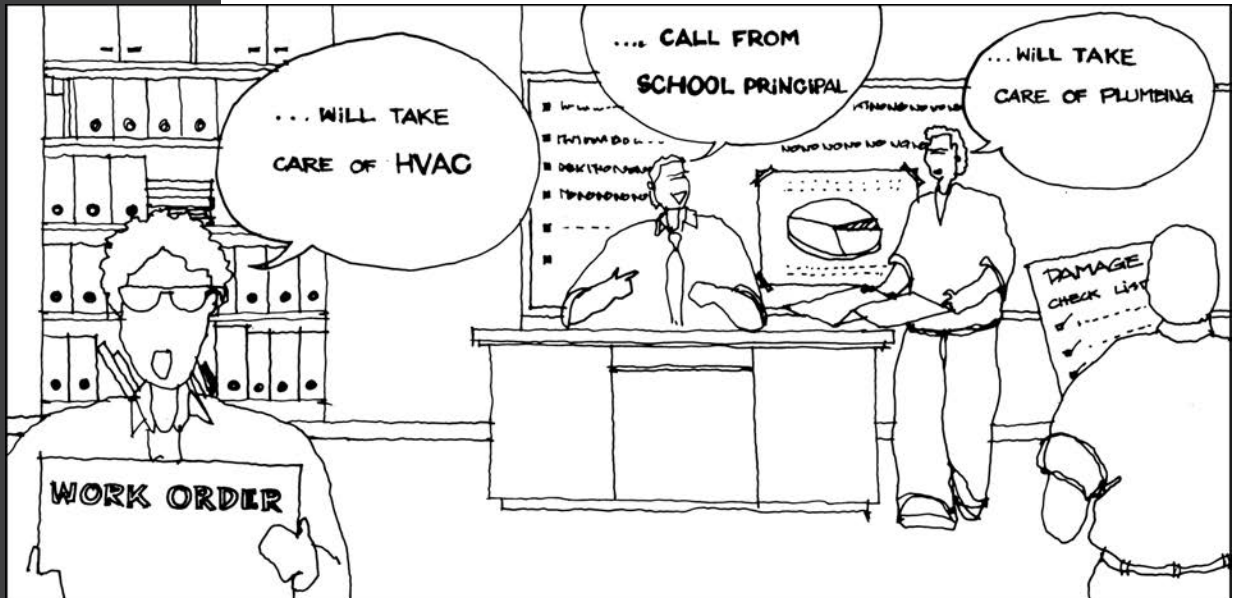


**Figure 9.1: Work Control Procedural Diagram.**

## 9.2

## Maintenance and Operations Administrative Guidelines for School Districts and Community Colleges

## Work Authorization Systems and Work Orders



As the size and complexity of educational institutions and their physical plants continue to expand throughout the state, facility administrators will realize increasing pressure to respond to additional requests for services. The proper control of information, documentation of requests, and the subsequent response by the department is critical to resolving customer needs and facility requirements. An effective work authorization system will help ensure that all service orders, work orders, and standing operating orders are handled in an efficient and professional manner. Many maintenance departments rely heavily on work orders generated by staff and educational facility customers to define the bulk of their regular workload. In these instances, it is imperative that the work authorization system and guidelines for generating individual work orders, are clearly understood and adhered to by all staff members and customers. Although many work orders are generated via e-mail, one of the primary determinants for the ongoing success of any work authorization system is maintaining open lines of communication between staff, administration, and customers; thorough documentation, and follow-up.

Each school district or community college should have in place a systematic program to initiate, receive, process, document, and effectively respond to work order requests for necessary maintenance and repairs. Any program should contain work request procedures such as the following:

- Single point of contact: can either be a centralized call center or work control center, a single e-mail address, or a single web site to place all service requests.
- Methodical system to review and screen work requests, approve or deny the request, and prioritize the request relative to specific circumstances and the availability of resources and personnel. Matters related to life safety and public health must be given top priority under all circumstances.
- Rapid response to all requests indicating approval, denial, reasons for denial, anticipated time and date to commence requested work, cost, and date for completion.
- Efficient means of scheduling work, assigning personnel, obtaining materials from inventory or outside purchases, outsourcing, and tracking the progress of the work effort.
- Control of funds and materials to verify proper use. Provide measures for effective cost control, comparisons and analysis, detailed materials reporting, and items requiring restocking.
- Provide necessary documentation to close out a project, inform customers of completion, request their evaluation of service and personnel, update records, documents, and drawings to indicate all changes and relevant dates.
- Measurement tools to analyze performance, response time, actual or final costs, quality of work, and customer satisfaction.
- Identify work orders and service requests that are not completed and ultimately become deferred maintenance.
- Review all work order requests or other service orders to ensure compliance with the applicable regulations, codes, and statutes.

- Adopt a policy of awareness to these issues to encourage improvement of existing conditions whenever possible.

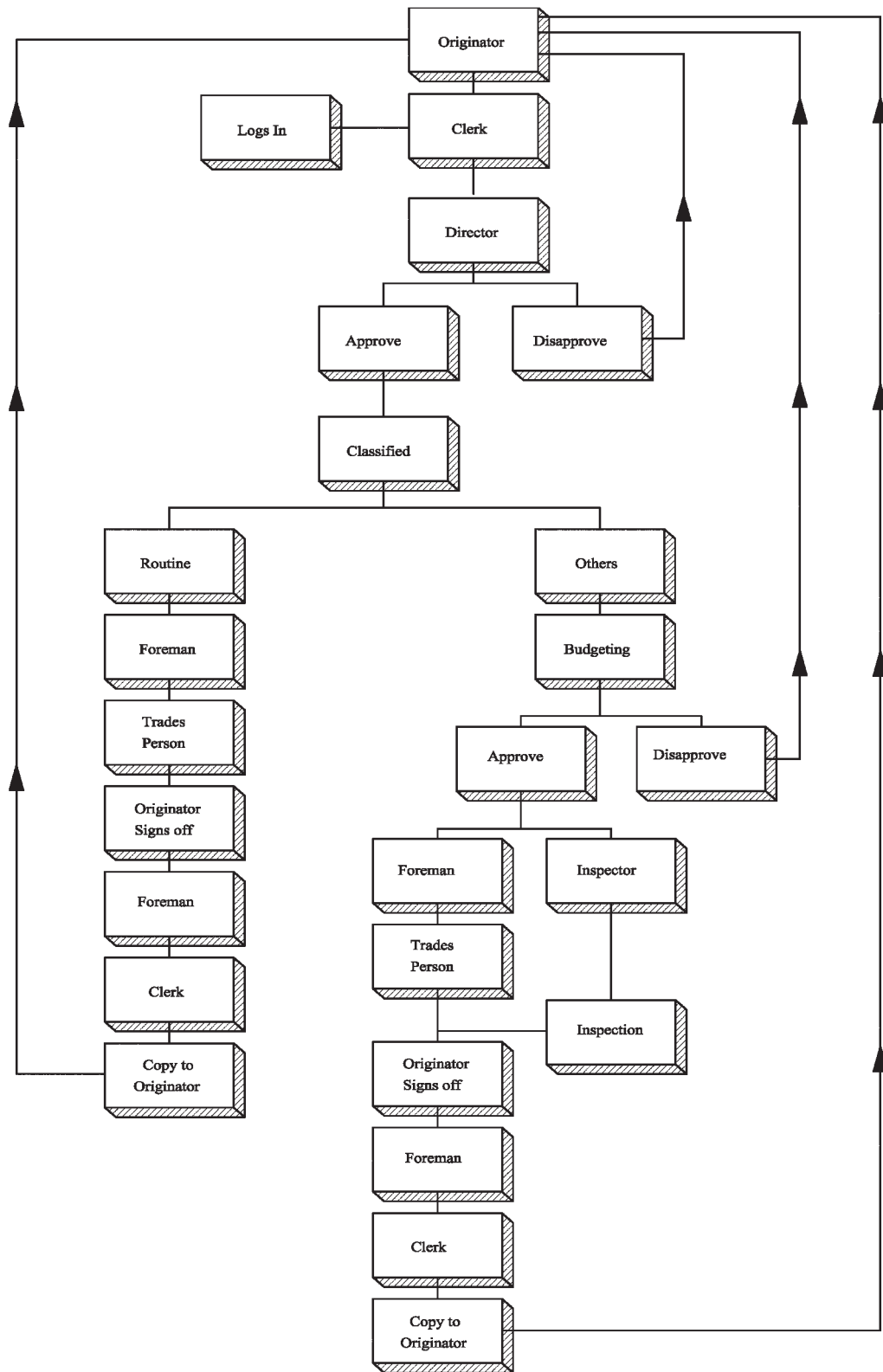


Figure 9.2: Flowchart for Maintenance Work Orders (Origination, Tracking, Completion).

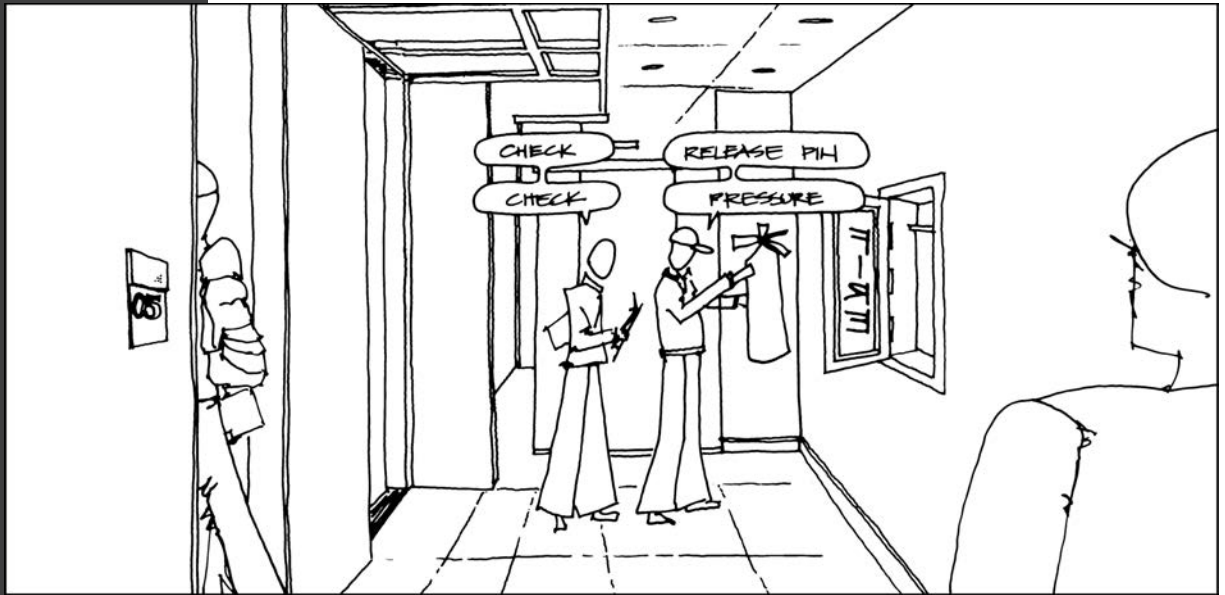




## 9.3

## Maintenance and Operations Administrative Guidelines for School Districts and Community Colleges

## Life Safety, School Safety, and Security



The safety of school inhabitants, employee safety, and the security of school property are all within the administrative parameters of educational facility managers throughout the state of Florida. Collectively, these issues should establish the basis for a comprehensive safety program that pervades every aspect of school-related functions. Administrators should develop, publish, disseminate, and then put into practice safety standards and procedures that apply to school students, faculty, administration, and other support staff. Criteria for maintaining a safe environment and ensuring worker safety at schools and community colleges should be established by individual departments and approved by governing boards. In addition to these, safety standards mandated by government authorities should also be complied with.

Collectively, all safety measures should form the basis for a comprehensive safety plan at each school or community college campus. The purpose of such a plan may appear obvious, but administrators should be diligent in their efforts to establish and enforce guidelines that promote and ensure safe conditions on an ongoing basis. Safety plans are also intended to save money and keep the general issue of safety constantly on the

minds of school users and workers. In order for a safety plan to be effective, all school inhabitants must acknowledge its importance and see safety measures put into practice on a regular basis. In implementing any safety plan, the following actions are necessary:

- Safety requirements should be included in a department's mission statement.
- Safety requirements should be included in job descriptions.
- Safety training should be provided on a continuous basis.
- Consistent enforcement of safety standards should be an integral part of everyday operations.
- Positive reinforcement of safe work habits for employees should be stressed at every level.

Life safety in educational facilities is governed by the State Requirements for Educational Facilities and NFPA 101 Life Safety Code. Safety standards for maintenance and operations activities are governed by the Occupational Safety and Health Administration's (OSHA) 29 CFR regulations. These regulations pertain to worksite-specific safety and health issues and seek to prevent job-related injuries, illnesses, and fatalities. For more information on both of these requirements, see section 10 Relevant Codes, Standards, and Regulations. The following is offered as a list of general guidelines in establishing a safety program and promoting safe working conditions at schools or community colleges:

- Require full employee involvement.
- Create safety committees.
- Identify safety issues relative to individual facilities.
- Define the scope of safety plans.
- Establish and review primary and secondary safety training procedures.
- Investigate and report accidents and other safety problems in a timely manner according to board-approved procedures.
- Conduct routine safety inspections to reduce the potential for hazards.
- Establish procedures for correcting safety violations in a timely manner.
- Provide opportunities for employee input.
- Establish safety logs and records to document conditions, incidents, etc.
- Review safety procedures and conduct safety drills for building inhabitants on a regular basis.

Another area of major concern to facility administrators is school security. The potential is ever present for theft, burglary, arson, and vandalism to the educational property. Not only do these acts compromise school security, but they also have financial consequences, adversely impact the educational process, and threaten the safety of students and staff.

The state of Florida recognizes the importance of safety and security in its burgeoning inventory of educational facilities and has published guidelines to help administrators and staff address a range of issues. The “Safe Schools Design Guidelines” handbook, published by the Department of Education, should be used in conjunction with other safety standards as a guide for implementing measures at the local level.



## Computerized Facilities Management Systems



Coordination of tasks, personnel, budgets, and other facets of work associated with maintaining educational facilities lends itself to some type of automated management system. Administrators have at their disposal several types of computerized maintenance management systems (CMMS) to choose from. Whether designed specifically for a particular organization or adapted from “canned” software, a computerized maintenance management system should be versatile in its ability to perform the following tasks:

- Facilities conditions assessments
- Statistical data bases and maintenance histories
- Interface with other software
- Generate schedules
- Personnel management
- Cost accounting, budgeting, estimating, and financial planning functions
- Inventory control
- Coordinate/control work activities
- Report generation

- Equipment and furniture management
- Data and telecommunications management
- Transactions and contracts
- Audits
- Purchase orders and requisitions

Computerized maintenance management systems are designed to store and manipulate a variety of specialized types of information about buildings, grounds, and equipment. One of the most beneficial features of an effective system is its ability to cross-link disparate types of information such as current staffing and projected workload volumes. Maintenance and operations administrators should find a computer program that best suits their way of doing things or is flexible enough to be easily adapted. Some of the documented benefits of computerized maintenance management systems are:

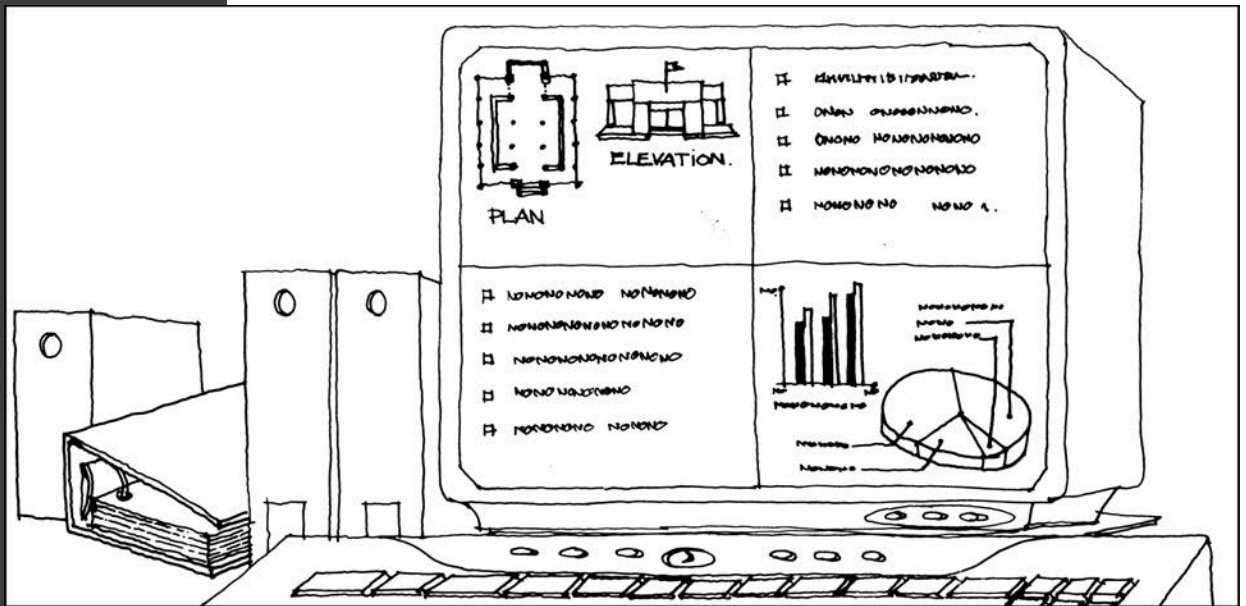
- Easy access to information and data.
- Better control of work orders and the work effort.
- Better control of work schedules.
- Reduction in paperwork and elimination of certain clerical tasks.
- Increased efficiency and unit productivity.
- Better interdepartmental relationships.
- Reduced administrative and operating costs.

Some other important specialized features that should be available with any computerized maintenance management system include the following:

- Convenient to use and lends itself to customization by staff.
- Supports system-wide exchange of data.
- Accepts varied graphic images (computer drawings, scanned images, etc.).
- Project management.
- Cost and time-based reports.
- Ability to be easily upgraded
- Provides automatic “backup” of information and data.

# 9.5

## Computerized Facility Data Bases



In addition to computerized facilities management tools, administrators should also maintain other computerized data and information that could serve as maintenance and operations resources on an ongoing basis.

### Drawings and Specifications

All modern school facilities are designed with computer-aided design/drafting (CADD) architectural software programs. However, some small remodeling, renovation, and capital improvement projects may still be hand-drawn. Computerized architectural drawings and specifications, in the form of 100% construction documents or “as-built” drawings are usually submitted along with the completion of each new building and should be maintained for ease of access. Although this information may reside mostly with facilities planning departments, it can serve as a vital resource for maintenance and operations departments as well. Where modifications to school buildings and equipment warrant close coordination with other features, having this information readily available in a digital format can prove to be both time and cost effective for facility managers, in-house tradespeople and outside

vendors providing contracted services. This graphic data should also be used to generate facility directories, evacuation plans, and schematic plans for the Florida Inventory of School Houses (FISH) reports.

### **Maintenance Records/Performance Histories**

Maintaining performance logs, maintenance records, and other operational statistics for certain types of equipment in modern educational facilities may be crucial to the success of a comprehensive maintenance program. If properly documented, this information may prove invaluable for maintaining equipment under warranty, as part of a predictive/preventive maintenance program, or as an indicator of how human resources are used. With many of the computerized facility management systems in current use, statistical and performance records can be easily generated on an as-needed basis.

### **Project Scheduling**

Scheduling certain work tasks or modifications to educational facilities can also be accomplished with the help of many computerized maintenance management systems. Administrators will find this a useful tool when planning for daily and non-recurring activities, special events, time-sensitive tasks, overlapping or concurrent multi-trades activities, as well as general personnel management. In addition to identifying maintenance, custodial, and grounds-related service priorities, computerized project schedules provide administrators, supervisors, and staff with a clear indication of work objectives and time frame projections for completion. Whether scheduling daily activities, minor repairs, or major projects, school administrators and other facility customers should be involved or apprised as needed in order to minimize disruptions in the educational process.

### **Materials/Equipment Inventories**

The procurement, storage, security, and distribution of materials, supplies, tools, furniture, equipment, and parts are unique to each school district and community college. In most instances, materials and equipment inventories will vary widely and depend on facility needs, size, and the department's ability to manage these resources in an effective manner. Administrators and supervisors should use computerized methods for inventory management that include ordering, receiving, and distributing. Although the use of inventory identification numbers for such items as furniture may be common, this system should be expanded to include other types of educational support equipment that remain in constant use and is ultimately the responsibility of the maintenance and operations department to account for its use.



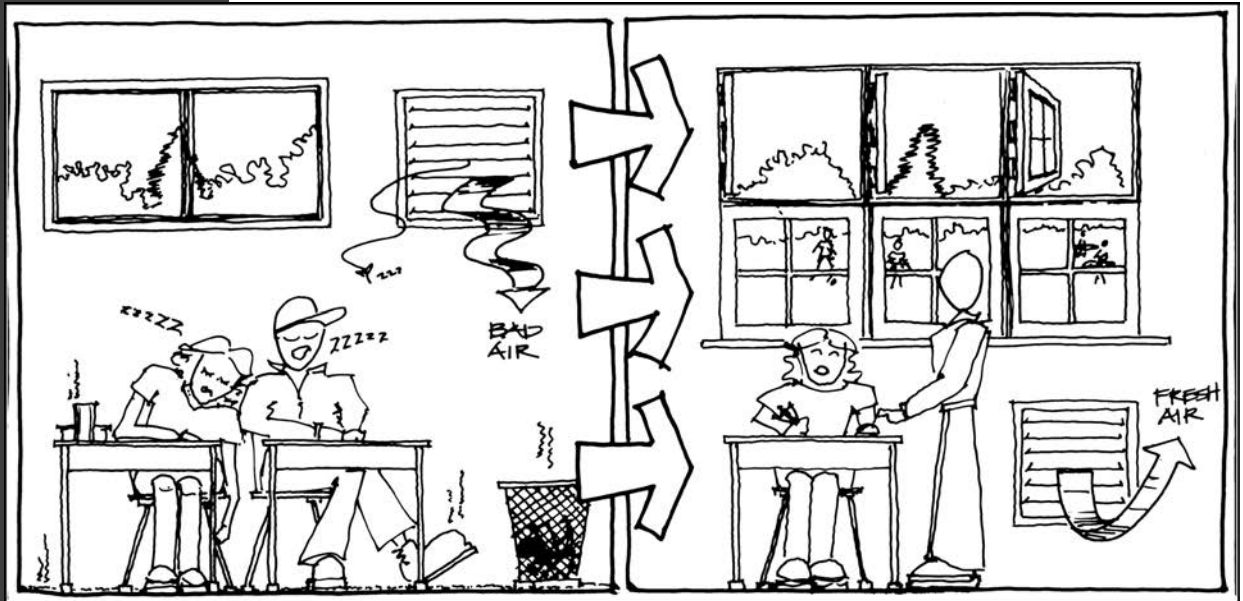
Material inventories also include managing expendable items that are stocked in-house and used on a regular basis. Generally classified as supplies, an inventory of these items may include materials used by school customers, as well as custodial and janitorial staff. In most instances, the rate at which these supplies are depleted will determine inventory quantities - computerized control of inventory supplies, purchasing, and distribution will prove beneficial in managing this aspect of operations.



## 9.6

## Maintenance and Operations Administrative Guidelines for School Districts and Community Colleges

## Indoor Air Quality (IAQ)



The quality of indoor air in school buildings has become a major health concern nationwide. The manner in which many educational buildings are constructed and used is directly related to indoor air quality. Because students, faculty, staff, and members of the general public spend a great deal of time in classrooms and other school spaces, maintaining healthy indoor environments is absolutely essential to the educational process and general public health. Administrators and supervisors should take every complaint about air quality seriously and handle it in a professional manner - to do otherwise would only invite strained relationships between educational facility customers and the maintenance and operations department. Administrators should be constantly aware of the myriad factors that contribute to the degradation of indoor air – which often include the combined adverse impacts of high temperatures and humidity levels, overcrowding, the presence of pollutants, insufficient changes in fresh air, and other building design circumstances.

Private industry studies suggest that the major causes of indoor environmental problems in some buildings are derived mostly from the buildup of indoor pollutants to critical levels. These studies have also identified five primary maintenance-related factors that contribute

to this situation: inadequate or improper maintenance on mechanical systems, poor air filtration, poor humidity control, improper cleaning of carpets, and a lack of fresh air ventilation.

Although the sources of poor air quality in school buildings are numerous, other contributing factors are building age, construction materials, and changes in space/building use from that which it was originally designed. Other sources of poor air quality include: biological contaminants from resulting roof and wall leaks; dirty air conditioning coils, ducts, filters, and registers; contaminants from paint, pressed or treated wood products, flooring adhesives, and other volatile organic compounds (VOC's). Ultimately, all educational facilities in constant use are exposed to contaminants from cleaning materials, air fresheners, copy machines, pesticides, and other biological sources.

Given the varied and complex causes of poor air quality in educational facilities, administrators should implement a range of precautionary and proactive measures to minimize the risks to building users and disruptions to the educational process. Long before students, faculty, staff, and other facility customers complain of health problems attributed to building conditions, administrators should have in place a multi-step action plan for air quality inspections, monitoring, diagnosing potential or real problems, and mitigation/remediation. In most instances, the monitoring, diagnosing, and remediation steps may be completed with specially-trained outside contractors.

## **Inspections**

Inspecting educational buildings for conditions that could contribute to poor indoor air quality should be done on a constant basis. Each facility should have personnel who are designated as the indoor air quality managers, are familiar with the telltale signs of poor air quality, or are otherwise trained in identifying situations that contribute to it. Maintenance technicians, custodians, or school staff who detect such problems as unusually stale air, stained ceiling tiles, higher than usual humidity levels, persistent odors, etc., should alert the appropriate physical plant administrators so they can determine what follow-up measures are warranted. Inspections may consist of a thorough review of individual mechanical systems, sampling and measuring indoor air quality, and an analysis or inspection of other building features and conditions. It is recommended that these inspections should occur during school hours on an annual basis.

## **Monitoring**

If any problems are initially identified, administrators should immediately begin a monitoring process. During this time and under normal operations, a variety of measures should be implemented including, but not limited to, the following:

- Testing of air samples for dust levels, gasses, fungi, bacteria, and other detectable airborne pollutants
- Researching equipment maintenance histories to determine if the building's heating, ventilating, and air conditioning system has received the proper level of preventive maintenance
- Verifying that the system is functioning properly in terms of supply and return air volumes
- Ensuring that adequate fresh air is being introduced into the system
- Checking system controls to verify proper working condition
- Checking for obstructions at fresh air intakes and whether or not they are near automobile exhaust, garbage collection points, rest room vents, and boiler exhausts.

## **Diagnosis**

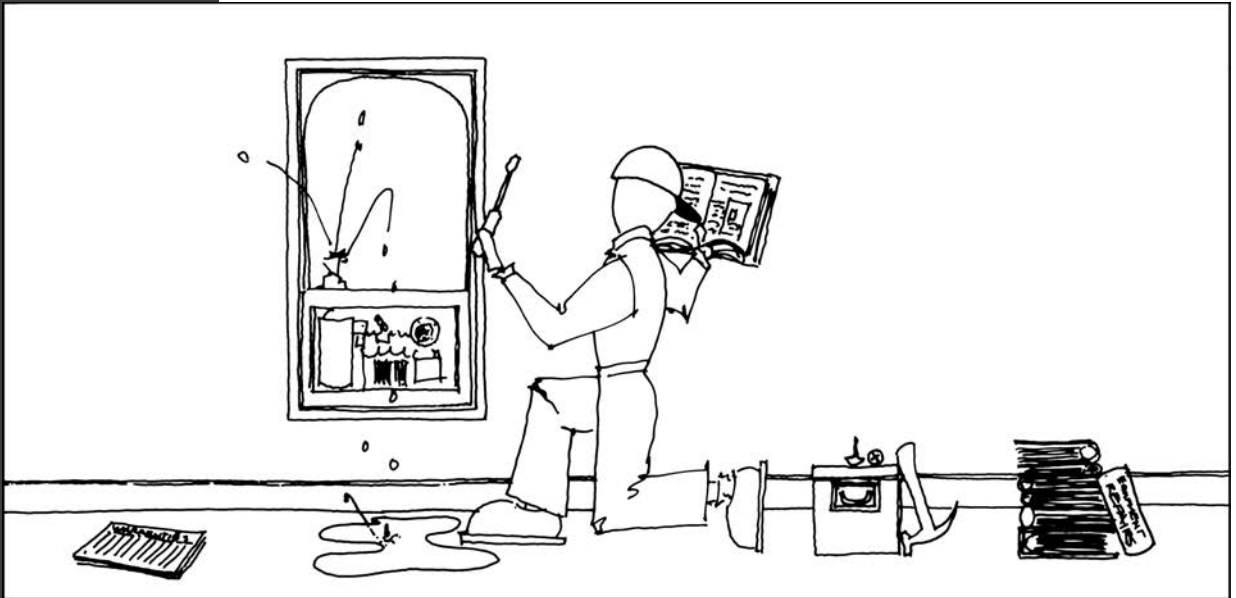
This step requires drawing conclusions as to whether there is in fact an indoor air quality problem, or that the problem lies elsewhere. This phase should also identify conditions that are suspected of adversely affecting air quality in school buildings. It should culminate with a thorough summary report by the entity conducting the air quality diagnosis and be reviewed by school maintenance and operations administrators, as well as by school district or community college central administrations.

## **Mitigation/Remediation**

The diagnostic or findings report should lead into the mitigation and remediation phase. If the earlier steps turn up any problems, this phase should generate several options for correcting the problem(s) contributing to poor indoor air quality. It should also identify the costs associated with making building improvements, the amount of time required, and the potential for disrupting the educational process.

Two other factors that should be considered with regard to indoor air quality are building renovations and early occupancy of new facilities. Renovation and remodeling projects that have or could change the use of the space should be carefully reviewed to ensure that recent modifications do not introduce

pollutants into the building's mechanical system. Administrators should also ensure that supply and return airflows are adequate for both modified and newly created spaces. The pressure to put new school facilities in use before systems are operated, balanced, and thoroughly checked can also contribute to the degradation of indoor air quality. Where possible, administrators should initiate building and equipment operational procedures to reduce the potential for pollutants being introduced in habitable spaces.

**Operations and Service Manuals and Warranties from Equipment Manufacturers****Service Manuals**

In order to properly install, operate, and maintain equipment required for today's educational facilities, it is imperative that ready access to the manufacturer's documentation be available for service technicians and supervisors. Service manuals, which are usually issued with new equipment, are published by manufacturers to define a combination of maintenance procedures for keeping equipment in good working order. These guides may prove invaluable in establishing predictive/preventive maintenance measures, inspection procedures, assessment inventories, technical improvement plans, etc.

In addition to specifications, these manuals contain a variety of other useful information that, if used properly, should help extend the equipment's useful life. They also provide technicians and tradespeople with uniform guidelines for performing required maintenance.

An increasing number of manufacturers will be issuing service manuals in a digital format - either as a compact disk (CD) or on a floppy disk. As a supplement to regular printed documents, these digital manuals will offer greater flexibility in use and will be easier

to integrate different types of equipment with maintenance management systems and other types of software. Original service manuals should be kept in a central location within the maintenance department. Copies of these manuals, as well as service logs, should always be maintained as part of a facility's building manual. Where necessary, duplicate copies of these manuals should be made available to technicians in the field. In addition to providing service manuals for technicians, administrators should consider supplementing them with videotaped training sessions and equipment service procedures.

## **Warranties**

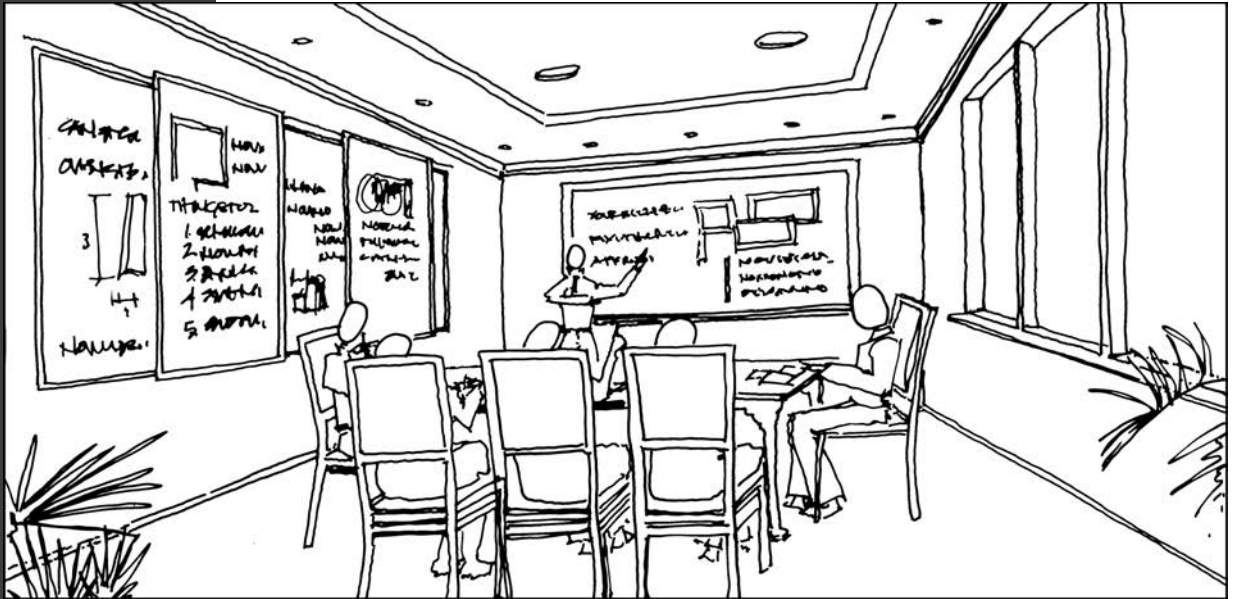
All new or replacement equipment used in Florida's educational facilities should have a warranty against defective workmanship, malfunction within a specified reasonable period of time, and, in some instances, equipment installation. Administrators and supervisors should be aware of all basic warranty terms issued by manufacturers or installers as they pertain to specific pieces of equipment. They should also be aware of the terms and conditions that will void a manufacturer's warranty obligations if equipment is improperly installed, operated, or maintained. All equipment warranty information should be retained in a central, secure location for immediate access as the need arises.



## 9.8

## Maintenance and Operations Administrative Guidelines for School Districts and Community Colleges

## Staff Training



Staff training within maintenance and operations departments is absolutely critical to its success and effectiveness in support of the educational process. In addition to being an investment in individual employee development, training programs serve as investments in the collective knowledge and expertise of maintenance and operations departments. Providing maintenance and operations services with a well-trained staff helps to further ensure that Florida's educational facilities are being cared for in a competent and professional manner. Administrators should put in place a comprehensive training program that is directly related to their department's scope of services - covering custodial/janitorial functions, grounds maintenance, and other trades-related maintenance functions. Opportunities for job-related training should be extended to all employees. While some training may be taken on a voluntary basis, certain technical and specialized trades may require training in order to maintain job certification. When training and/or certification is compulsory for a particular trade, specific requirements should be clearly stated in job descriptions.

Employees at every level should understand the importance of keeping current with information and procedures that pertain to their jobs. Formal training programs within each department or division that are aimed at worker proficiency, career development, and better maintenance and operations practices will best facilitate this process. Training programs may be structured in a variety of ways depending on the type of training being offered and the circumstances under which employees are allowed to participate. Typically, training for maintenance, operations, and grounds staff is provided through classes, seminars, site visits, conferences, self-guided tutorials, correspondence, and mentoring. In addition to this, maintenance and operations personnel are also required to undergo comprehensive safety training on OSHA regulations. See section 10.4 Occupational Safety Health Administration (OSHA) Regulations –29 CFR.

### **Trades-Related Training**

Given the changes in the way school facilities are constructed, and new developments in building materials and equipment and new regulations, all trades-related staff, including plumbers, electricians, mechanical engineers and technicians, carpenters, etc., should participate in varying types of training on a frequent basis. Training programs for many of these trades are critical where staff members are involved with code reviews, equipment and building inspections, maintaining specialized or sensitive equipment, etc. Administrators should also give serious consideration to suggestions by staff members for additional training or changes in existing training programs.

### **Custodial Training**

Administrators should ensure that all custodial staff members are trained in departmental procedures, as well as established cleaning practices for varying types of educational buildings and equipment. In instances where custodians are required to perform minor maintenance tasks, they should be afforded the necessary level of training to do so.

Specific training practices and procedures associated with custodial/janitorial activities should be established by operations divisions at individual school facilities. Among others, some of the more common areas that custodians are trained in include the following:

- Rest room cleaning procedures
- Classroom cleaning procedures
- Administrative area cleaning procedures
- Food service area cleaning procedures
- Cleaning procedures for laboratories and other specialized areas
- General cleanliness/sanitary standards
- Supply requisitions
- Accident reporting
- Handling hazardous waste
- Equipment use and minor maintenance
- Emergency procedures
- Minor maintenance
- First-aid procedures
- Materials safety data sheets (MSDS)
- Bloodborne pathogens
- Lifting

## **Maintenance Training**

The effectiveness of a maintenance department is directly related to the level of training it provides its staff. This includes training for new as well as existing staff. Because of the technically complex and evolving nature of building systems and equipment, administrators and supervisors should ensure that maintenance trades personnel receive periodic training as needed. The Florida Department of Education's Bureau of Educational Facilities offers a series of ongoing maintenance training classes in the following areas:

- Fire extinguisher training/flammable and combustible fire prevention
- Heating, ventilation, air conditioning, and refrigeration
- Industrial electricity
- Industrial powered trucks

## **Multi-Trades Training**

In order to help control personnel costs, better deal with labor shortages, and develop a more diverse workforce, administrators should consider multi-trades training. This approach provides “cross-training” opportunities to certain employees so that one individual can perform tasks in different trades - where normally it may require two. Most school districts and community colleges that use this approach focus on “cross-training” among the technical trades. The benefits of this approach are being revealed in a number of ways, such as completion of an entire service call or repair job by a single staff member, improved productivity, and reduced costs associated with maintenance problems requiring multiple trades. As a result, it is gaining in popularity throughout the state. One example is related to minor repairs. In many instances simple repairs or work order tasks can be accomplished in a more cost and time effective manner if one person is capable of completing the entire effort as opposed to different employees or tradespeople putting in time to complete it. From a practical standpoint, using one person who has been trained to complete all aspects of the task is in most instances an advantageous situation.

## **Safety Training**

All trades-related personnel should undergo safety-training procedures relative to their respective jobs, the individual facility, and policies established by a school district or community college’s central administration. Where such procedures are lacking, they must be expanded or adopted from applicable state and federal guidelines. Custodians should also be trained in general safety procedures as they pertain to different types of educational facility environments. Other types of safety training should be provided on an annual basis and include such areas as workplace safety, maintaining a healthy school environment, vehicle, equipment and tool safety, and other areas deemed appropriate by the department or central administration. The Florida Department of Education’s Bureau of Educational Facilities offers a series of ongoing safety and environmental training classes in the following areas:

- Indoor air quality
- Integrated pest management
- Laboratory safety
- OSHA training
- LP gas qualification

## **Customer Service Training**

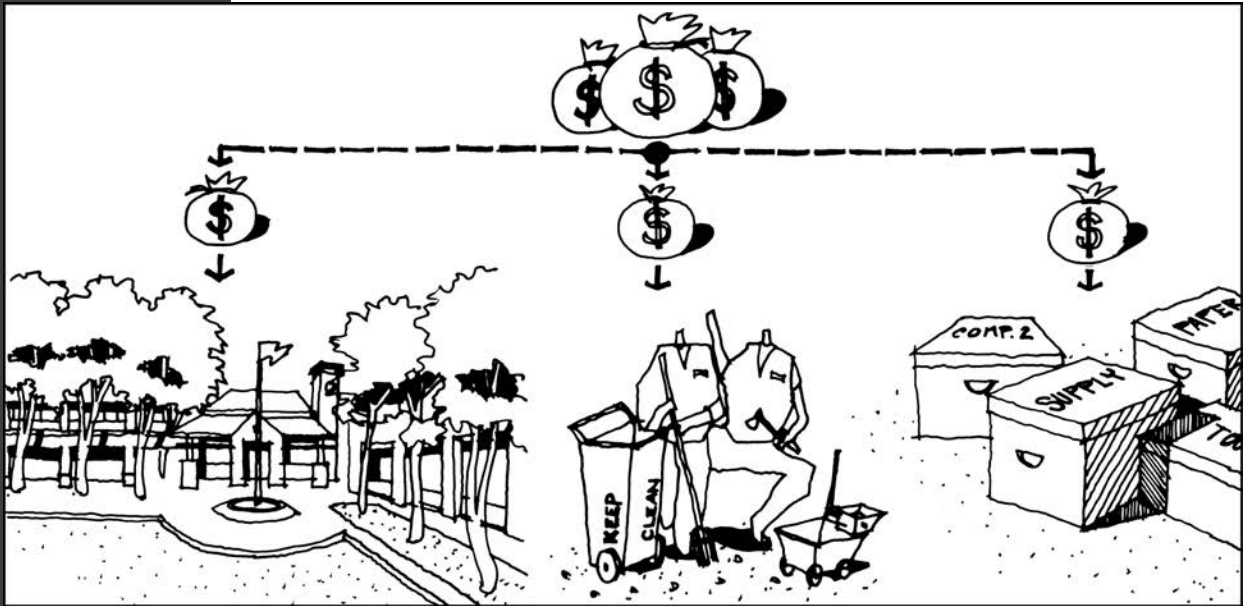
Maintenance and operations departments are front-line entities in support of the educational process. As such, employees are either in constant contact with or have to work around students, faculty, and administrators on a regular basis. Although employees may receive extensive training in their respective job requirements, they are seldom trained in customer service relations. Administrators should provide guidelines or training as appropriate for responding to requests, initiating and conducting communications, and eliciting customer satisfaction feedback.



# 9.9

## Maintenance and Operations Administrative Guidelines for School Districts and Community Colleges

### Budgets/Cost Allocation



Successful management of a comprehensive maintenance and operations department requires adequate fiscal resources. It is imperative that school districts and community colleges allocate sufficient funds in their budgeting processes for the full range of maintenance, custodial, grounds, and auxiliary services required by each school on an annual basis. Inadequate budgets for these services will ultimately lead to personnel and labor shortages, workload backlogs, deteriorating physical plants, and other adverse impacts on the educational process. Administrators should be aware of these circumstances and work with their respective central administrations to develop realistic budgets for maintaining buildings and grounds in the proper manner.

One of the first steps in making valid budget projections is to understand the facility’s overall maintenance and operations requirements and the corresponding scope of work. A number of different, yet relevant, criteria can be used in this process. Projections can be made based on historical data and records, current volume of work, facility square footage ratios, a percentage of the district’s or college’s general budget, or a percentage of the facility’s building and equipment replacement value. In addition to these, other issues should also

be taken into account when defining budgets. Circumstances such as changes in the local economy, advancements in technology, increased responsibilities associated with new facilities, legislated or board-directed mandates, changes in instructional policies, inflation, etc., should also be considered.

Budget-related issues such as reductions, non-recurring or emergency expenditures, and increased responsibilities all play a major part in establishing service priorities and gauging the effectiveness of the department. From the standpoint of cost allocations, administrators should establish management guidelines for the range of required services that accurately reflects the fiscal needs of each division.

Although budgets should reflect the scope of services to be provided, it is almost impossible for administrators to quantify all of the maintenance, custodial, and grounds needs for individual facilities. While most of these requirements are apparent, others are not and may manifest themselves in the form of emergencies, breakdowns, accelerated obsolescence, etc. Where possible, administrators should also establish reserves for funding these types of situations, as well as new maintenance and operations programs and initiatives, equipment replacements, and other facility upgrades. Guidelines for establishing reserve funds should adhere to institutional fiscal management policies and be based on criteria that is specific to a particular institution.

Major budget categories for maintaining physical plants at educational facilities include the following:

- Facilities management administration: costs necessary for managerial functions associated with a maintenance and operations department. This budget category includes all operating costs such as payroll and personnel, supplies, equipment, miscellaneous expenses, etc.
- Utilities: all costs associated with purchased utilities. This category includes electricity, gas, water, etc. It also includes all utility-related personnel and expenses.
- Maintenance: costs associated with all maintenance-related functions. These costs include payroll and personnel, tools, equipment, materials, and contracted services.
- Operations: this budget item covers all custodial and janitorial services. It includes payroll, personnel, equipment, supplies, and contracted services. Where school principals are in charge of custodial operations, it is highly recommended that the budget be used exclusively for this purpose.



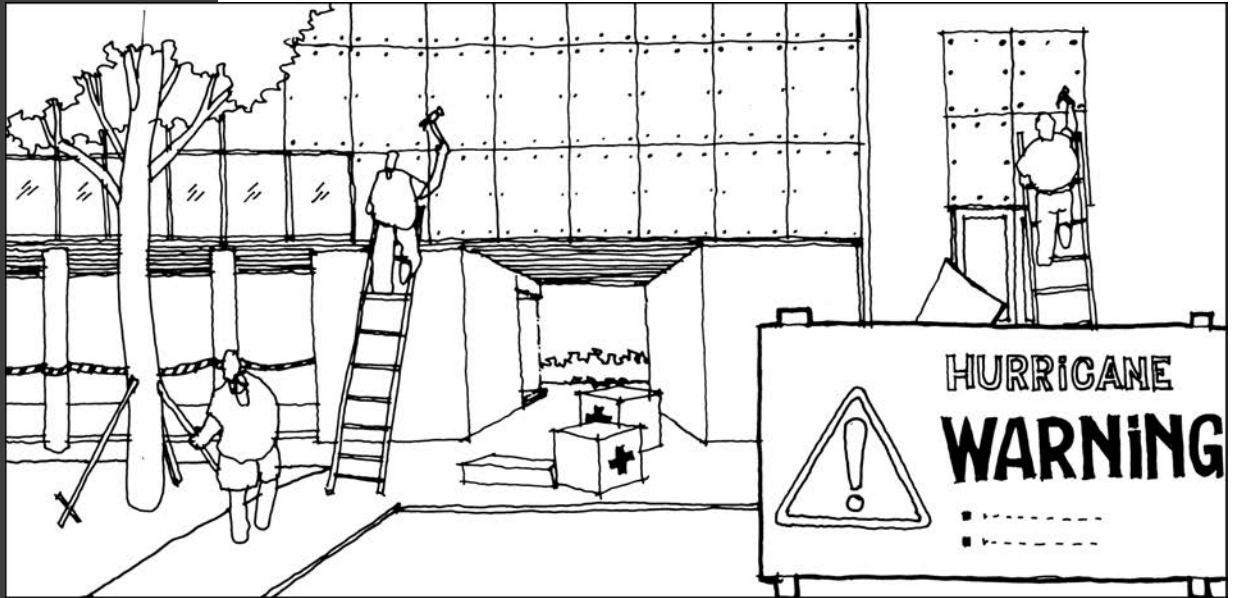
- Major repairs: costs for major equipment repair and replacement. It may also include capital projects, depending on project costs. Contracted services, materials, equipment, and labor are included as well.
- Renovation/Remodeling: costs for repairs and improvements to building envelope or interior spaces. These costs include contracted services, materials, labor, and equipment.
- Other services: this budget item covers all other maintenance and operations functions not covered by one of the budget items above. May also include reserve or emergency funds.



## 9.10

Maintenance and Operations Administrative Guidelines for School Districts and Community Colleges

## Disaster Preparedness/Crisis Management

**Preparations for Natural Disasters**

In addition to their primary functions as centers for learning, educational facilities are increasingly relied upon as safe havens for the general public during emergencies and natural disasters. In order to serve this purpose, maintenance and operations administrators at schools and community colleges need to develop disaster preparedness plans in concert with their central administration and coordinated with local civil emergency management centers. Educational facilities throughout Florida are vulnerable to a variety of natural hazards, including hurricanes, lightning strikes, floods, tornados, severe thunderstorms, sinkholes, etc. Each of these events can occur at any time, with varying degrees of severity, and pose major threats to both life and property.

The role of Florida's educational facilities during any natural disaster depends largely on the hazardous circumstances. However, it is the responsibility of school districts and community colleges, and ultimately their maintenance and operations departments, to have a plan in place that would allow facilities to respond as needed. Administrators who have never

managed a facility during a natural disaster may have a false sense of security as to how their institutions may fare during these types of emergencies. Crafting effective disaster preparedness plans requires an understanding of the multiple functions that educational facilities must perform during and after a disaster. When needed, school buildings may be converted into emergency shelters. Once this function is no longer needed, school buildings will have to quickly revert back to their primary educational functions.

Preparations for natural disasters require planning, as well as a series of proactive measures aimed at protecting life and minimizing damage to the physical plant. Some of the major features of a comprehensive disaster preparedness plan include the following:

- Establish disaster preparedness and recovery teams – assign responsibilities.
- Assess the general vulnerability of the facility under disaster situations.
- Review Board policies and state and federal guidelines.
- Develop an action plan for facility readiness when faced with an imminent threat.
- Define the necessary lines of communication and coordination with other entities.
- Assess emergency and backup capabilities.
- Arrange for the procurement of needed supplies and services prior to and after a disaster.
- Identify shelter locations and clarify logistical issues with setup, access, operation, and reversion.
- Identify location for central operations and information center.
- Define essential and non-essential personnel roles.
- Secure vital information and resources.
- Define post disaster activities and procedures for damage assessment.
- Define contingency plans and strategies.

For more detailed information on disaster preparedness, planning, shelter setup, and other emergency procedures, see “Natural Disaster & Crisis Management in School Districts and Community Colleges,” published by the Florida Department of Education, Bureau of Educational Facilities in 1997.

## **Crisis Management**

Along with natural disasters, educational facilities are faced with other types of crises or emergencies that may occur on a more frequent basis. These occurrences are largely attributable to human actions and often cause major disruptions to the educational process. They also jeopardize individual safety

and pose major threats to school buildings and property. In many instances, these events will create the need for direct intervention by maintenance and operations staff. Some of these events are listed as follows:

- Fire and false fire alarms
- Bomb threats
- Explosions
- Release of hazardous materials
- Gas leaks
- Loss of power, water, communications, or air conditioning
- Vandalism
- Structural failures
- Unsafe conditions

Each of these incidents requires immediate action by school staff, administrators, and support personnel to ensure the safety of all building inhabitants. They may also require communications and coordination with outside entities such as the local police and fire departments, utility companies, contractors, etc. Facility administrators should develop their own policies and procedures for responding to each incident in an appropriate manner, or follow guidelines established by their respective boards. Because these incidents are unpredictable and can happen at any time, administrators should not be caught “off-guard.” Preparedness measures should include pre-plans, immediate or “quick-response” actions to be taken by staff, and follow-up actions. Due to the catastrophic threat to life posed by these incidents, it is absolutely critical that building evacuation procedures be understood by all building occupants and practiced on a regular basis.

Other types of critical incidents that may indirectly involve maintenance and operations staff include:

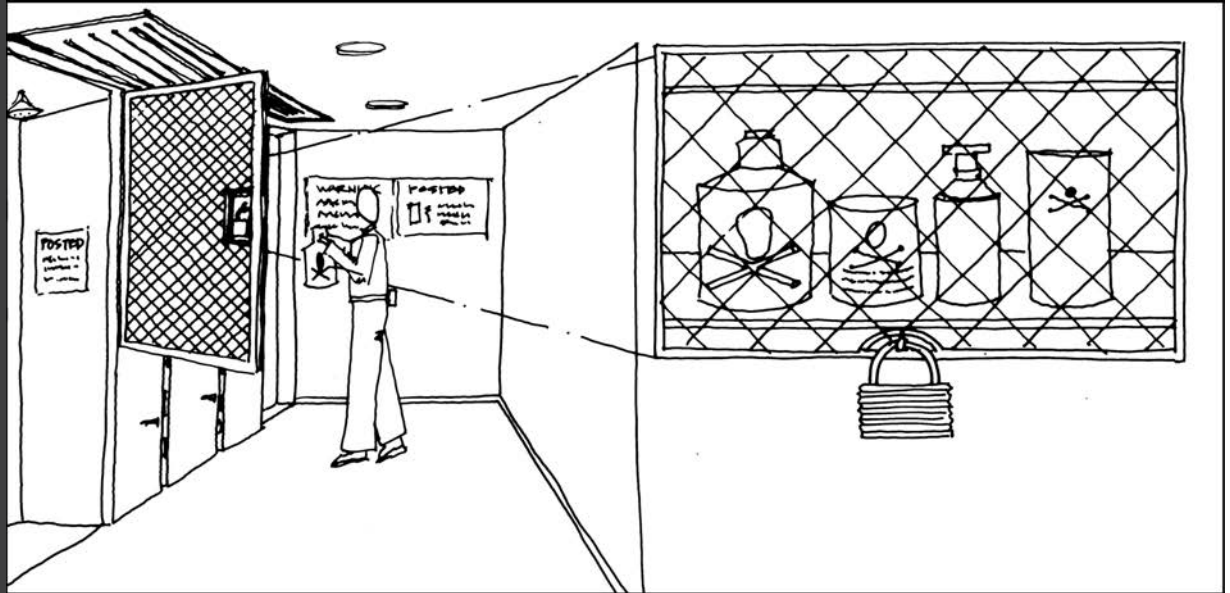
- Medical emergencies
- Security threats
- Special events
- Traffic tie-ups and accidents



# 9.11

Maintenance and Operations Administrative Guidelines for School Districts and Community Colleges

## Department of Education Hazardous Materials Guidelines



Schools and community colleges could at any time have on site a variety of materials that are classified as hazardous or volatile. Most of these materials are toxic and if not used, handled, or stored properly could cause harm to students, faculty, support staff, the general public, and potentially damage school property. These materials may be used directly in the educational process, used by maintenance and operations staff, or exist within the school building itself.

Some of the more common hazardous materials used in classroom settings include:

- Gas
- Paints
- Solvents
- Acids and other chemicals
- Aerosol sprays
- Waste

Some of the materials used by maintenance and operations staff include:

- Paints
- Solvents
- Chlorine
- Pesticides
- Gas
- Adhesives

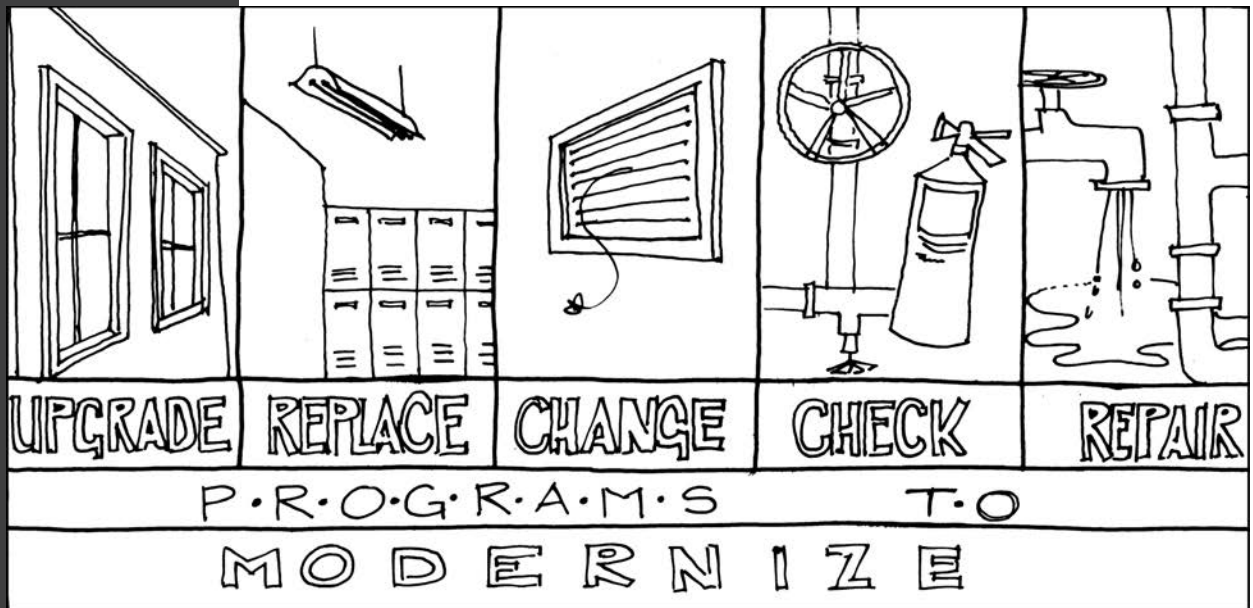
Older facilities may require management of asbestos containment for insulation and fireproofing. In every instance where hazardous materials are present, administrators should require staff to follow recommendations outlined in the Florida Department of Education's "Hazardous Materials Management" manual published by the Bureau of Educational Facilities in 1998. This document identifies all environmental regulations that should be complied with, both state and federal. It also outlines a variety of guidelines for the use, storage, transporting, and disposal of hazardous materials used in educational facilities.



# 9.12

Maintenance and Operations Administrative Guidelines for School Districts and Community Colleges

## Modernization Programs



A significant number of school and community college buildings in current use in Florida were built prior to 1970. Given the changes in the educational process, their age and other building-related advancements in the last thirty years, many of these facilities are in need of renovation, systems upgrades, and equipment overhauls in order for them to better support educational activities. Modernization programs are aimed at bringing older educational facilities, their equipment, and systems up to current standards. In some instances, these programs may also seek to introduce other types of improvements.

Where necessary, administrators should implement efforts to modernize facilities and equipment through prioritizing certain building improvements and maintenance measures, or as part of a broader strategic or transition plan. These practices will help extend the useful life of older educational facilities and help ensure that all learning environments, regardless of age, meet current standards and expectations.



# 9.13

## Maintenance and Operations Administrative Guidelines for School Districts and Community Colleges

### Voluntary Conservation Programs



Maintenance and operations administrators have a responsibility to manage educational facilities in the most cost-effective manner possible. This means that conservation methods should be an integral part of operations. Two areas where conservation efforts can make a difference and lead to cost reductions are in energy, gas or electricity, and water use.

Energy usage is one of the largest budget items of a maintenance and operations department, with heating, air-conditioning, and lighting as major consumers. As a practical measure, temperature controls in educational buildings should be set at levels established by local institutions to ensure thermal comfort for building occupants during regular school hours. Limiting access to controls will also help ensure that energy is being used in the most efficient manner possible. Lighting should also be maintained at required levels. They should be turned off when spaces are not occupied.

Water is an increasingly precious natural resource in Florida. Administrators should ensure that water is used in an efficient manner in all educational buildings and for certain grounds-related functions.

Where possible, administrators should participate in voluntary conservation programs such as the following:

U.S. Environmental Protection Agency's Green Lights program. This program encourages institutions to reduce energy use and power consumption through upgrading existing lighting systems to those that are more energy-efficient. It is estimated that lighting upgrades recommended by this program can result in energy savings, lead to significant reductions in electricity demand, and reduce labor and maintenance costs as well. For more information on this program, refer to the Green Lights' web site: [www.energystar.gov](http://www.energystar.gov)

U.S. Environmental Protection Agency's Energy Star Label for Buildings program. This program allows administrators to compare their building's energy performance with similar buildings throughout the country. For more information on this program, refer to Energy Star Label for Buildings' web site: [www.energystar.gov/](http://www.energystar.gov/), select For Schools and Benchmark Your Building.

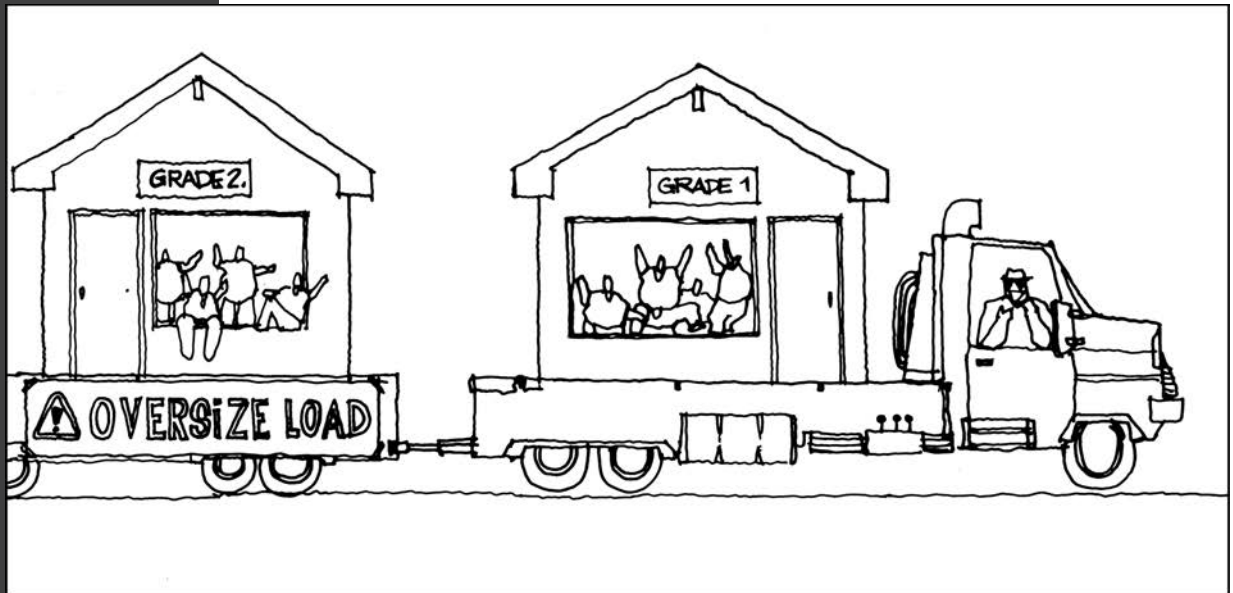
U.S. Environmental Protection Agency's Energy Star Building Partnering program. This program encourages institutions to conserve energy through the introduction of more efficient mechanical equipment and lighting over a seven-year period. The program recommends a five-stage process that includes retrofits, tune-ups, load reductions, and fan and HVAC upgrades. For more information about this program, refer to the Energy Star Building Partners' web site: [www.energystar.gov/](http://www.energystar.gov/), select For Schools, select Organization Type and Partnering with Energy Star.

U.S. Environmental Protection Agency's Water Alliances for Voluntary Efficiency (WAVE) program. This water conservation program encourages efficiency and reductions in usage through awareness measures, systems upgrades, and better management practices – leading to subsequent water cost reductions. In addition to water conservation, it is aimed at protecting the environment. For additional information, refer to the WAVE program's web site: [www.epa.gov/partners/wave.html](http://www.epa.gov/partners/wave.html).

## 9.14

## Maintenance and Operations Administrative Guidelines for School Districts and Community Colleges

## Relocatable Classrooms



Relocatable classrooms are in use in every school district and most community colleges throughout the state of Florida. Recent studies indicate that there are more than 16,000 of these units in current use. Regardless of the reasons for their extensive use, relocatables present their own set of unique challenges from a maintenance and operations standpoint. Primarily intended for temporary use, many of these units remain in use for extended periods of time – requiring increasing amounts of maintenance that will have diminishing value. There is no accepted formula determining the life expectancy of relocatables. Most districts rely on annual inspections and previous experience to determine how long these units should remain in use.

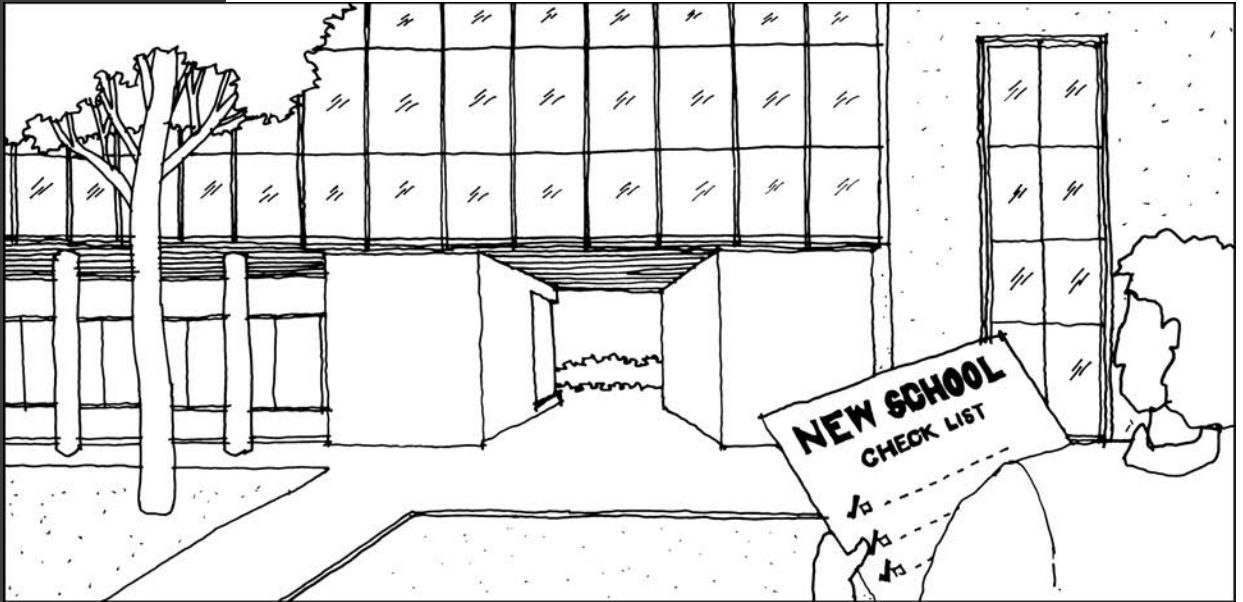
Even though they are called relocatable structures, most of these classrooms are never moved unless taken out of service – thus becoming a semi-permanent part of the educational physical plant. Administrators and other school officials should consider using relocatable classrooms that are built more substantially and have a longer service life than the current projections of 20 years. If these structures are to remain in use, administrators should

encourage the use of units that are less costly to install and maintain and meet more stringent life-safety and fire code standards.

## 9.15

## Maintenance and Operations Administrative Guidelines for School Districts and Community Colleges

## Assuming Maintenance and Operations Responsibilities for New Facilities



Given the current rate of growth in Florida’s educational facility inventory, administrators will increasingly assume maintenance and operations responsibilities for a variety of new community college buildings and school complexes. With education as a “growth industry” throughout Florida for the foreseeable future, educational facilities will also expand in size. Administrators should anticipate responsibilities for new facilities and plan accordingly. Measures should be put in place to assume management and care for these facilities with the least disruptions to existing operations. Along with these responsibilities come added challenges and opportunities. Changes in the way buildings are designed and constructed, new building materials, and technological advancements are all factors to consider when new facilities come on line.

The process for “turning over” a new building or school for facility management needs to ensure that at a minimum the following measures are taken:

- Administrators and maintenance and operations staff should have prior familiarity with the facility – from its general functional requirements to its individual systems.

- Administrators should plan for and request additional staff and budget increase to properly maintain new facilities.
- Administrators should receive all essential paperwork/documentation related to new facilities (e.g., contractor warranty information, equipment specifications and warranties, certificates, “as-built” drawings, equipment training requirements, manuals, maintenance videotapes, etc.).
- Administrators should be fully aware of how new facilities will be integrated into the existing maintenance/custodial/grounds management plan.

Other issues to consider when assuming control of new facilities include:

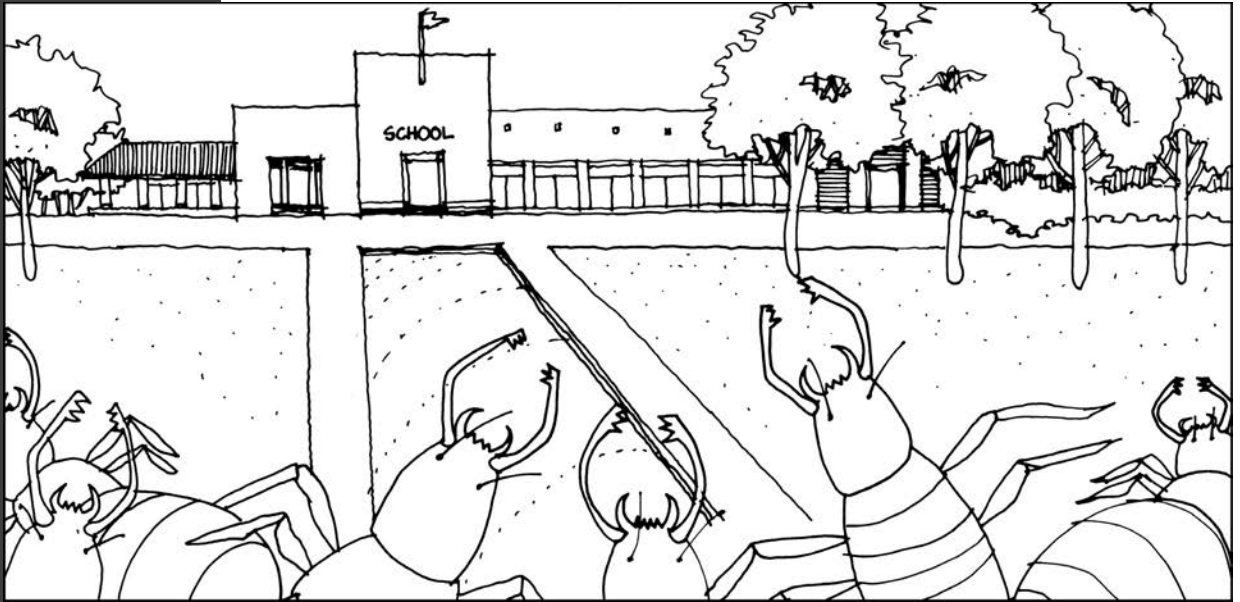
- Completion of “punch list” work items
- Contractor “call backs”
- Final building preparations for occupancy and school functions
- Building commissioning measures and procedures (see section 7.7 Building/Equipment Commissioning)
- Building manuals (see section 9.7 Operations and Service Manuals and Warranties from Equipment Manufacturers)



## 9.16

## Maintenance and Operations Administrative Guidelines for School Districts and Community Colleges

## Integrated Pest Management (IPM)



The use of pesticides and other chemicals in educational environments, particularly schools, is a sensitive issue. In order to ensure public safety and avoid potential problems, administrators should implement an integrated pest management (IPM) approach at each educational facility or school site. This practice can best be described as an innovative approach to pest management that combines environmental sensitivity with long-term pest suppression. The integrated pest management process centers around four main practices:

- Prevention of pests through exclusion and sanitation.
- The application of pesticides only on an “as-needed” basis.
- Use of the least hazardous pesticides for controlling the pest problem.
- Limiting the use of pesticides to areas that are not occupied by students and other educational facility occupants.

Maintenance and operations administrators should ensure that only personnel who are properly trained and certified, or hold the appropriate license, be permitted to apply pesticide

treatments. They should also be mindful of the potential harm to surface waters in adjacent ponds, lakes, and streams when applying ground treatments. For a comprehensive source of information on integrated pest management, see the IPM web site at: [www.schoolipm.ifas.ufl.edu/](http://www.schoolipm.ifas.ufl.edu/).