

SCHOOL MAINTENANCE GUIDELINES

I. School Buildings Maintenance Planning

The purpose of the School Maintenance Guidelines is to achieve a clean, orderly, safe, cost-effective, and instructionally supportive school complex that enhances education.

Effective school maintenance protects capital investment, ensures the health and safety of our children, and supports educational performance.

Buildings Maintenance Matters:

School buildings age and as they do, there is a continuing challenge to maintain school buildings at a level that enables teachers to meet the needs of their students. The task of caring for old school buildings, some of which are historically or architecturally significant, at a level that supports contemporary instructional practices is considerable.

Buildings issues occur at all educational levels. Older buildings display more frequently age-related issues such as inefficient energy systems that can lead to uncomfortable indoor climate and high utility bills.

What causes buildings problems? Environmental conditions and a lack of maintenance contribute to building deterioration. Often the lack of maintenance is related to staffing levels, training, and management practices.

Routine as well as unexpected maintenance demands are bound to happen; every school with the assistance of the **Planning and Building Committee (PBC)** must proactively develop and implement plans for dealing with these inevitabilities. The School working with the PBC must plan to meet the challenges of effective buildings maintenance. The consequences of good school maintenance, affect teaching and learning, student and staff health, day-to-day building operations, and the long-range fiscal outlook of the school.

A sound buildings maintenance plan serves as evidence that school buildings are, and will be, cared for appropriately. On the other hand, negligent buildings maintenance planning will cause real problems. Large capital investment can be squandered when buildings and equipment deteriorate or warranties become useless. Failing to maintain school buildings adequately also discourages future public investment in the education system.

School building maintenance is concerned about resource management and providing a clean and safe learning environment for children. It is also about creating a physical setting that is appropriate and adequate for learning. A classroom with broken windows doesn't foster effective student learning. However, neither does an apparently state-of-the-art classroom that is plagued with uncontrollable swings in indoor temperature, which can negatively affect student and instructor alertness, attendance, and even health.

School building maintenance affects the physical, educational, and financial foundation of the school and should, therefore, be a focus of both its day-to-day operations and long-range management priorities.

These School Maintenance Guidelines attempt to provide best practice concepts along with the guidance of the PBC that can be undertaken to develop a plan that meets the unique needs of the school.

Good buildings maintenance programs costs money:

There is no question about it; the return on the expenditure will result in lower future maintenance costs. Buildings maintenance produces savings by:

- decreasing equipment replacement costs over time
- decreasing renovation costs because fewer large-scale repair or replacement work is required.
- decreasing overhead costs (such as utility bills) because of increased system efficiency

Purpose of School Maintenance Guidelines:

To assist school administrators, and staff, with help of the PBC, to understand why and how to develop, implement, and evaluate the school maintenance plan. The PBC has the experience and knowledge to conduct a school buildings assessment, building by building, prioritize the repair and maintenance issues and assign an appropriate cost.

Effective school building maintenance planning:

- contributes to a school's instructional effectiveness and financial well-being
- improves the cleanliness, orderliness, and safety of the School's buildings
- reduces the operational costs and improves the life cycle cost of the school buildings
- helps the school staff along with the PBC to deal with limited resources by proactively identifying buildings priorities.
- extends the useful life of buildings
- increases energy efficiency and help the environment
- focuses specifically on the needs of the student
- stresses strategies and procedures for planning, implementing, and evaluating effective maintenance programs
- relies of the PBC to develop appropriate solutions for each situation
- school Administrators and the PBC; recognize that building maintenance contributes to the physical and financial well-being of the school
- understand that school building maintenance affects building appearance, equipment operation, student and staff health, and student learning
- understand that building maintenance requires funding
- acknowledge that strategic planning for buildings maintenance is a team effort that requires input and expertise from a wide range of stakeholders
- coordinate building maintenance activities throughout the school
- demand appropriate implementation and evaluation of buildings maintenance plans

School Administrators:

- need to understand a wide range of buildings operations and issues
- need to receive training to improve their knowledge and skills related to buildings maintenance
- need to inform the school administrators and PBC about building operations
- need to teach other staff how they can help with buildings maintenance
- a need to appreciate that building maintenance decision-making is influenced by instructional needs

Teachers:

- recognize that buildings maintenance supports student learning
- educate students about how to treat school buildings appropriately
- communicate their expectations for buildings as they relate to enhancing student learning
- treat buildings with respect

Students:

- see school buildings as their learning environment
- treat buildings with respect

Parents and Guardians

- recognize that school buildings are the training grounds for future citizens and Church leaders
- respect decision-making regarding school building use and maintenance
- contribute to school building maintenance decision-making as requested
- consent to the financial obligations associated with good school building maintenance

II. Buildings Maintenance Planning

An essential component of an effective school program is a well-conceived school buildings maintenance plan.

Effective School Maintenance Starts with Planning:

Maintenance planning is a component of a greater district management plan. The district and school budget is the "blueprint" for daily decision-making throughout the school campus. It provides concrete documentation about the school's needs and intentions. Moreover, it is a formal way of communicating priorities, and establishes necessary documentation for funding. Good plans include short- and long-term objectives, budgets, and timelines, all of which demonstrate the commitment to buildings maintenance. Effective planning also requires that administrators evaluate both the Parish's long range goals and the day-to-day details needed to meet those targets. Thus, a comprehensive plan serves both as a blueprint for the here and now and a road map to the future.

Administrators must also accept that the future is not now. Change takes time, and improvements in district-wide endeavors most often occur in steps. If a school finds itself in need of a major overhaul in its buildings maintenance management system, it cannot expect to jump to the top of the plan. Instead, school administrators must institute improvements over longer time frames and accept that progress is measured relative to the district's starting point.

Why Collaborate during Planning?

In many ways, the process of planning is more important than the outcome. The process by which the Planning and Building Committee (PBC) formulates a plan, establishes a forum through which interested parties have an opportunity to voice their opinions about the future of the district/school and prioritization of school maintenance. Collaborative planning with the PBC also helps stakeholders know that their views are respected and valued. In turn, this atmosphere of respect often fosters staff and community support for the decisions being made about the future direction of the school.

Developing a District and School Plan requires:

- involvement of the District and School stakeholders in the planning process
- identifying needs (e.g., improve cleanliness comfort and safety, correct deficiencies address deferred projects, increase efficiency, decrease utility bills)
- having the PBC assist the School in establishing priorities and targets
- sharing the plan with key school stakeholders
- re-evaluating the plan periodically
- refining efforts based on plan reviews
- revising the plan as necessary

Steps for effectively engaging stakeholders in the planning process include:

- Identify all stakeholders (City, State, Neighborhood Boards, police and Neighbors)
- invite stakeholders to share their opinions during the planning process
- contact stakeholders well in advance of the planning meetings
- enter a dialogue that truly welcomes stakeholders' opinions

- invite stakeholders to share unique skills and expertise they bring to the process (engineers, architects, or landscapers in the PTA who could lend their expertise)
- foster consensus-building atmosphere
- recognize dissent as necessary, but not allowing it to derail consensus building
- include stakeholders in follow-up documentation and implementation efforts

Creating a Unified Vision:

District administrators (including stakeholders) develop a vision statement and achieve agreement on the desired outcome for the district and school. The purpose of a vision statement is to develop a shared image of the future, which means gaining consensus about priorities. The vision for the maintenance plan, for example, must be driven by, and aligned with, the mission and goals of the district and school.

For this reason, a vision statement should be supported by measurable objectives.

- describe an ideal future for the school
- think about the district's best interests and not individual or department interests
- be open to change (even substantial change if that is deemed necessary)
- be positive and inspiring
- be clear

Links to Budgeting and Planning:

Any responsible examination of school buildings planning warrants some discussion and a school administrators demonstrates appropriate care and commitment to building maintenance financial support. Responsible buildings maintenance planning demands that attention be given to a wide range of other issues that influence district budgeting, including insurance coverage, land acquisition, equipment purchases, and building construction and renovation.

The maintenance and operations budget is for existing buildings and equipment. Capital project funding, including staff time devoted to capital projects, must come from other sources. Otherwise, existing buildings will be neglected whenever there is a construction or renovation project.

III. Building Assessment: Knowing What You Have

The importance of buildings, grounds, and equipment assessments is essential.

Building assessments require time, energy, expertise and, therefore, resources. Although performing a comprehensive and accurate assessment is time consuming, it is economical all the same because it is a necessary step in the effective and efficient management of school buildings.

The Building Assessment:

The assessment team is normally made up of members of the PBC and school staff. If there are known specific problems a consultant or contractor specializing in that trade accompanies the assessment team. The assessment of the School's buildings leads to a prioritized list of repair or replacement items. The next step is to assign a reasonable estimated cost. This information coupled with the Parish's Building assessment document begins to provide a picture of the repair/replacement needs of the entire district and school complex for the immediate period and into the future.

Why a building by building Assessment?

Things change. The luster of new buildings and equipment are sure to fade over time. When buildings age, the building condition begins to exhibit normal wear and tear. The definition of what constitutes "proper maintenance" changes over the life of the equipment or building. Knowing the age and condition of a building or piece of equipment is a prerequisite for maintaining it properly. Otherwise, maintenance efforts are a hit-or-miss situation-some things only get fixed when they break while others get "maintained" on a routine basis whether they need it or not. When a school knows the status of its buildings and equipment, the need for maintenance, repairs, and upgrades becomes much clearer.

The assessment;

- help the pastor the PBC and School Administration know what they have, its condition, service history, maintenance needs, and location
- provide facts, not guesswork, to inform school administrators
- establish a baseline for measuring buildings maintenance progress in the future

A building assessment is a comprehensive review of a building's assets. Building assessments are a standard method for establishing baseline information about the components, policies, and procedures of a new or existing building. An assessment is a way of determining the "status" of the building at a given time-that is, it provides a snapshot of how the various systems and components are operating. A primary objective of a building audit is to measure the value of an aging asset relative to the cost of replacing that asset. Thus, buildings assessments are a tool for projecting future maintenance costs.

Buildings assessment are accomplished by assessing buildings, grounds, and equipment, documenting the findings, and recommending service options to increase efficiency, reduce waste, and save money. Thus, an assessment provides the landscape against which all buildings maintenance efforts and planning occur.

Building assessment should be a routine part of the buildings maintenance program. By integrating the findings of annual assessment for the 5 Year Plan, the PBC can ascertain,

the impact of various maintenance strategies, and the future demands the aging process might place on the infrastructure of a school. This information can be used to increase the efficiency and cost-effectiveness of building use and maintenance efforts in the future. The assessment along with the 5 year Plan provides valuable information towards the obligations facing the district and school now and into the future.

IV. Providing a Safe Environment for Learning

Identify environmental and safety-related topics that require close attention.

Maintenance efforts must, first and foremost, ensure safe building conditions; safety takes priority over cleanliness, orderliness, cost-effectiveness, and even instructional support.

Ensuring Environmental Safety:

Building maintenance is concerned first and foremost with ensuring safe conditions for building users—be they students, teachers, staff, parents, or guests. As important as cleanliness, orderliness, and instructional support may be to school administrators, occupant safety must always be the top priority. While it may be difficult to define what, precisely, constitutes a "safe" environment, safe conditions are a major component of effective school maintenance program.

The role of school administrators is ensuring new or revised building safety issues are implemented. They are responsible to supervise the implementation of numerous environmental regulations governing school buildings and grounds and to verify compliance with a host of regulations and laws.

For example, Poor Indoor Air Quality (IAQ) can affect student and teacher performance by causing eye, nose, and throat irritation, fatigue, headache, nausea, sinus problems, and other minor or serious illnesses. Thus, steps must be taken to ensure that IAQ causes are neither actual nor perceived to building occupants. School Administrators may consider the following:

- properly ventilate occupied areas
- maintain indoor carbon dioxide (CO₂) between 800 and 1,000 parts per million (ppm).
- install both fresh air supply and exhaust ventilation systems in occupied areas.
- avoid circulating previously exhausted contaminants within the ventilating system
- ensure adequate make-up air in water heaters to minimize backfires and carbon monoxide (CO) contamination.
- maintain indoor air relative humidity below 70 percent.
- maintain indoor air temperature at comfortable levels 70-78°F when the room is being cooled).
- inspect for water damage and eliminate standing water and elevated humidity.
- clean, dry, or remove water-damaged materials within 72 hours of wetting.
- change filters and clean drip pans according to manufacturer's instructions. (Filters in high-pollution areas may require more frequent service.)
- isolate construction/renovation sites from occupied areas to minimize air exchange.
- minimize use of volatile chemicals (in cleaning agents and pesticides), especially while the building is occupied.
- replace toxic and noxious chemicals with less harmful products as available.

- store toxic and noxious supplies in areas with adequate exhaust systems and in accordance with the Fire Department guidelines.
- situate vehicle-idling areas away from occupied buildings and ventilation inlets.
- dispose of used cleaning supplies and water-damaged materials immediately and properly (double-bagged in 6-mil polyethylene plastic).
- professionally balance, air handling, and ventilation systems every five years.
- periodically test air samples for CO₂ (a sign of poor ventilation), CO (a sign of incomplete combustion), relative humidity (a sign of leaks and moisture problems), and air temperature.
- sample for microbial growth (e.g., mold) when an IAQ problem is suspected.

School administrators also need to be concerned about creating air quality problems. For example, landscaping "environmental" areas is a popular and worthwhile school revitalization project. However, if not properly handled, such initiatives can introduce moisture and mold problems (e.g., from mulch near outside air-intake vents), lead to fire-exit violations (e.g., if access to exits are obstructed or impeded), and invite bees and biting insects (e.g., if pollen-releasing flowers are planted). The answer is not to forbid landscape initiatives, but to make sure with the assistance of the PBC that projects are carried out with proper foresight. The right questions - addressing issues such as plot location, intended use, and potential impact on health and safety - must be asked (and answered) prior to granting permission for any improvement projects.

Mold, Mildew, and Moisture:

Mold is a particularly prominent and pernicious IAQ problem. Mold spores occur almost everywhere in the air we breathe, and almost any building surface can support and nourish mold growth. However, the key factor in enabling mold to grow and reproduce is the presence of moisture-from leaks or elsewhere. Thus, moisture control is the primary mechanism for reducing mold growth.

Communicating Not Just What, but Why: Creating Moisture at Dew Point:

The AC equipment is sized for building occupancy, which means that it cools a room based on an assumption of the number of children and a teacher will be in that room giving off body heat. When a classroom thermostat is set at 65 degrees without occupants, the room temperature reaches the thermostat setting so quickly that there isn't time to dehumidify the air completely. As a result, water vapor condenses out in the cool spots, which might reach 60 degrees along the floor and metal surfaces. And once there is standing water, mold is sure to follow."

Asbestos:

The type and amount of asbestos in a product varies depending upon application. The condition, location, and exposure of the material to air are factors in determining the proper response. Asbestos fibers are so small and light that they can remain airborne for many hours (increasing the chance for inhalation) if they are disturbed and released into the air. Preventing the release of asbestos fibers into the air is a serious concern.

Asbestos Hazard Emergency Response Act (AHERA) requires local education agencies to:

- designate and train an asbestos coordinator
- identify friable (i.e., easily crumbled or ground) and nonfriable asbestos-containing materials
- develop, implement and maintain an asbestos management plan that reflects ongoing surveillance, inspections, and response actions
- develop, implement, and maintain a responsible operations and maintenance program
- conduct inspections for asbestos-containing materials every three years
- perform semiannual surveillance activities
- implement response actions in a timely fashion
- provide adequate staff training and meet certification requirements
- notify all occupants (teachers and parents/guardians) about the status of asbestos-containing materials each year.

School Administrators must know where asbestos materials are located in their buildings, inform occupants, train their staff how to work in affected areas, and maintain all records.

Waste Management:

Waste management is a catch-all term that includes trash removal, recycling, and the disposal of hazardous waste. Trash removal is probably the most high-profile aspect of waste management in a school setting. It is illegal to dump, burn, or otherwise dispose of solid waste (e.g., paper, wood, aluminum, trash) without a permit. Thus, School Administrators must be aware of applicable laws and regulations concerning solid waste disposal.

Recycling may also play an important role in an education organization's waste management plan.

Both solid waste and recyclables should be removed from occupied areas as soon as possible after being collected. Storage buildings (even temporary storage areas) must be located away from occupied areas to minimize the risk of fire and infestation.

The Right-to-Know Act requires planning and assessment for a range of hazardous waste materials—from small-engine machine shop oil to science laboratory chemicals. Chemicals used by maintenance and custodial personnel may need to be noted on a material safety data sheet (MSDS) to verify that proper procedures for their use, storage, and disposal have been followed. This information may be needed for the school's annual fire inspections. No potentially hazardous material should be brought into a school building without being properly labeled and having an MSDS on file. School Administrators and the PBC must recognize the potential volatility of chemical agents that can enter breathable air when they are handled improperly. For example, many people know that when the roof leaks, wood can get wet and mold can grow. Fewer people know that the bleach used to clean mold stains may itself have serious health ramifications if the space is not properly ventilated during use. Thus, the ongoing review of systems,

monitoring, and testing is critical to the recognition and handling of potentially hazardous materials.

The disposal of medical waste, including blood-borne pathogens (BBPs), requires additional supervision and planning. "Universal precautions" is an approach to infection control that requires all human blood and certain bodily fluids to be handled as though they were infectious. Thus, all persons who clean or otherwise come in contact with, bodily fluids should routinely take appropriate barrier precautions to prevent skin and membrane exposure. This includes wearing gloves, masks, protective eyewear, gowns, and mouthpieces (e.g., during resuscitation). The disposal of needles and sharp instruments also requires special care (e.g., used needles should never be recapped or broken by hand). All building surfaces exposed to bodily fluids should be decontaminated by cleaning with a bleach/water solution at a 1:10 ratio or another EPA-approved tuberculocidal cleaning agent. All cleaning tools should be disposed of immediately after use (and double-sealed in 6-mil polyethylene plastic bags). It is advisable to refer to local hospitals, clinics, and doctor offices for guidance in this area. Procedures for handling medical waste from the nurse's office and athletic training buildings should be clearly written, and all staff involved in cleanup and transport of such waste must be adequately trained. Storage and transportation of such materials is regulated, and disposal may require the services of certified or licensed individuals or firms.

Training Staff to Recognize Environmental Hazards:

While not every member of the School Administration needs to be an expert at remedying all the environmental hazards that can arise in school buildings, a member of the staff should be trained to identify the signs of common environmental problems they may encounter. For example, recognizing suspicious materials, vulnerable conditions, and potential dangers enables them to take the first step (alerting others) toward protecting themselves, other building occupants, and the building in general. It also ensures that most potential problems will be remedied before they become full-fledged catastrophes. Wastewater management includes care of on-site systems with such as kitchens which should have grease traps to prevent grease from being deposited in the sewer system.

V. Maintaining School Buildings and Grounds

Strategies for planning and implementing “best practices” for maintaining school buildings and grounds are important.

A comprehensive building maintenance program is the foremost tool for protecting the Parish’s and School’s investment in school buildings. Preventive maintenance is the cornerstone of any effective maintenance initiative.

Preventive Maintenance:

An Ounce of Prevention Is Worth a Pound of Cure however, some Parishes and Schools practice what is known as “breakdown maintenance”, a maintenance program in which nothing is done to a piece of equipment until it breaks down. And then, after the equipment breaks, the least expensive repair option is used to return the equipment to service. While this may sound like a cost-saving approach to maintenance, precisely the opposite is true.

Breakdown maintenance defers repairs and allows damage to accumulate, compounding an organization's problems. On the other hand, regularly scheduled equipment maintenance not only prevents sudden and unexpected equipment failure, but also reduces the overall life-cycle cost of the building.

Maintenance entails much more than just fixing broken equipment. A well-designed building maintenance program generally encompasses four categories of maintenance: **emergency** (or response) maintenance, **routine** maintenance, **preventive** maintenance, and **predictive** maintenance. The worst is *emergency maintenance* (the air conditioner fails on the warmest day of the year or the main water line breaks and floods the lunchroom). *Preventive maintenance* is the scheduled maintenance of a piece of equipment (such as the replacement of air conditioner filters periodically or the semiannual inspection of the water fountains).

A good maintenance program is built on a foundation of preventive maintenance. It begins with an assessment of the buildings, grounds, and equipment. Once the 5 Year Plan assessments have been assembled, structural items and pieces of equipment can be prioritized by importance of need which then flows the preventive maintenance program. When designing a preventive maintenance program, cooling systems are always a good place to start. However, School Administrators should think creatively because there may be other components that are necessary for the successful operation of the school.

The Planning and Managing Preventative Maintenance

Once the 5 Year Plan of prioritized items (structures, equipment, and systems) that should receive preventive maintenance have been identified, School Administrators must decide on the frequency and type of inspections. Manufacturers' operations and maintenance manuals are a good place to start when developing a preventive maintenance schedule; they usually provide guidelines about the frequency of preventive service, as well as a complete list of items that must be maintained.

When planning preventive maintenance, School Administrators should consider how to most efficiently schedule the work-i.e., concurrently with academic breaks or other planned work. Whereas emergency events demand immediate attention whenever they occur, preventive maintenance activities can be scheduled at a convenient time. Because a rigorous

preventive maintenance system results in fewer emergency events, it tends to reduce disruptions to the school schedule.

Maintenance and Operations Issues:

Electrical Systems - Electrical equipment must be maintained like any other piece of equipment, whether it is a transformer or a breaker box for controlling a classroom's electrical power. Professional engineers and electricians along with the PBC should help to determine preventive maintenance tasks and schedules for electrical components. Thermo graphic scanning, which identifies overheating in connections, motors, bearings, and other electrical switchgear, can be an important tool for determining the condition of electrical gear.

Energy Management - The cost of energy is a major item in any school budget. Thus, school administrators should embrace ideas that can lead to reduced energy costs. The following guidelines will help Parishes and Schools accomplish more efficient energy management:

- along with the PBC establish an energy policy with specific goals and objectives.
- assign someone to be responsible for the School's energy management program,
- monitor each building's energy use.
- conduct energy audits in all buildings to identify energy-inefficient units.
- install energy-efficient equipment, including electronic ballast, high-efficient lamps, night setbacks, and variable-speed drives for large motors and pumps.
- install motion detectors that turn lights on when a room is occupied (and off when the room is unoccupied).

Fire Alarms - Fire drills should be held as suggested by the Fire Department both to test Life Safety systems and practice occupant response to fire emergencies. During school breaks when buildings are not occupied, detailed inspections of all Life Safety systems should be performed. This includes testing all pull stations, fire extinguishers, smoke detectors, and heat detectors located in the building. A licensed contractor is required to conduct Life Safety inspections and perform Life safety equipment maintenance.

Floor Coverings - Selecting appropriate floor coverings for a school is an important issue and must be addressed during renovation and new construction. Often lunchrooms, main halls, and secondary halls are covered in terrazzo, vinyl composition tile (VCT), or quarry tile. These coverings have hard surfaces that are easily cleaned and do not collect dirt. In classrooms where noise control is important, carpets or carpet tile with an impermeable backing, which prevents the passage of water or dirt and are easily cleaned, may be used. Carpets and carpet tiles can also be purchased with adhesives already attached to the backing, which helps to ensure complete adhesion without the emission of volatile organic compounds (VOCs). Some primary schools use area rugs or carpet tiles rather than carpets because they can be easily removed and cleaned at the end of the school year or as needed. Periodic cleaning of both carpets and rugs is necessary to minimize the likelihood of dirt and other contaminants causing indoor air quality problems. Ceramic floor tile is an excellent surface material for bathrooms or other areas with high exposure to water.

Custodial responsibilities in a school building involves the cleaning of various types of flooring, especially in heavy-traffic areas such as corridors, classrooms, and cafeterias, an effective cleaning regimen.

Although carpets help to protect floors, they are difficult to keep clean. They collect dirt and pesticides, and incubate fungi and bacteria when moisture gets trapped. Adhesive backing can also give off harmful fumes. A hot-water extractor should be available and used weekly to remove stains and dirt. Carpets should be steam-cleaned annually with a professional-quality steam cleaner. Carpet bonnets, which attach over a buffer wheel, should never be used because they damage carpets.

Gym Floors - Gym floors are generally constructed with vinyl composition tile (VCT), one of several grades of maple flooring, sheet rubber, or other synthetic materials. Regardless, all floor types must be kept clean and properly maintained. VCT floors must be periodically stripped and re-waxed to ensure a safe surface. Wood floors require annual screening and resealing with a water-based sealant. They should also be sanded, re-marked, and resealed in their entirety every 10 years. Synthetic floors (including sheet rubber but excluding asbestos tile) require monthly cleaning and scrubbing with buffers.

Air Conditioning Systems - Schools that have Air Conditioning (AC) systems to control indoor climate provide an environment that is conducive to learning. Their components must be maintained on a timely and routine basis. This preventive maintenance will ensure reliability, reduce operating costs, and increase the life expectancy of the equipment.

Two effective ways to improve Central AC systems is through air balancing and water balancing. Air balancing ensures that the desired amount of air reaches each space in the building, as specified in the mechanical plans. Water balancing ensures that the flow of water from the chiller is in accordance with the mechanical plans. Water balancing is normally performed before air balancing. Balancing is usually conducted upon installation of new equipment and at 5- to 8-year intervals. Balancing should also be conducted when building space is substantially modified or room use is changed dramatically.

Hot Water Heaters - Hot water heaters in schools range in size, however preventive maintenance programs must be established for each hot water heater. At a minimum, maintenance should include inspection for failing safety devices and leaks (especially if fired by gas).

Kitchens - Kitchens present special challenges for Parishes and Schools: not only must equipment be maintained properly to ensure reliability, but a high state of cleanliness must be maintained in all food preparation areas. Ovens and stoves are of special fire safety concerns. Floor surfaces are also of particular concern since they must be easy to clean yet slip-resistant. Recommended floor surfaces for kitchens include terrazzo, vinyl composition tile (VCT), quarry tile, and sealed concrete. Kitchen equipment is a prime candidate for inclusion in a preventive maintenance program.

Painting - Painting should be done on a regular schedule that is published well in advance of work dates to minimize inconvenience to building occupants. Painting needs will be determined largely by the type of surface, the type of paint applied previously, and surface use (e.g., a window frames may be expected to receive less wear than a chair rail). A wall constructed of concrete masonry units (CMU) and painted with a two-part epoxy can last 8

or 10 years whereas drywall will require painting every 5 or 6 years. Bathrooms, special education areas, and other high-traffic areas will require painting on a more frequent schedule. A durable, cleanable (i.e., able to be cleaned by the custodial staff with their standard tools), paint from a major manufacturer should be used for indoor areas. Water-based latex paints are a good choice because they are low in volatile organic compounds (VOCs) and do not produce noticeable odors. Surfaces must be properly prepared for painting, which may require the use of a primer to cover stains and discolored patches.

Plumbing - Like other major building components, plumbing should be included in the preventive maintenance program. Landscape irrigation systems, water fountains, sump pumps, lift pumps, steam traps, and drains are likely targets for preventive maintenance. Standing water must be avoided at all costs since it damages building materials and can lead to mold and mildew concerns that affect indoor air quality.

Public Address Systems and Intercoms - These communications tools are vital to the management of school buildings and, in an emergency, the safety of building occupants. Public address (PA) systems must be connected to the emergency power system to ensure uninterrupted communications in the event of a power failure. Public address systems and intercoms should be tested on a daily basis during the broadcast of a school's morning announcements. If broadcast systems fail to perform properly, they must be repaired immediately. It is a violation of the Fire Code to connect the Public Address system to the Fire Alarm system.

Roof Repairs - Roofs should be included in a preventive maintenance program and inspected on a regular schedule. The key to maintaining good roofs is the timely removal of water from the surface and substructure of the roof. Thus, all leaks and damaged tiles must be repaired as soon as possible to prevent water damage and mold growth. On composition built-up roofs, hot tar is the only appropriate repair method. Single-ply and modified roofs should be repaired in accordance with the manufacturer's instructions. The PBC should read carefully all warranties issued with new roofs to ensure that required maintenance is conducted according to specification so as to avoid invalidating the warranty protections. For example, failing to inspect or repair a roof on an annual basis (and document such efforts) may be considered justification for a manufacturer invalidating a warranty.

The PBC must verify the annual assessment of each roof, recording the date of installation, type of roof, type and thickness of insulation, type of drainage, and type and frequency of repair work. Detailed drawings or photographs that show the location of repairs should be maintained, as should contact information for the installing contractor. This information is extremely important in the event of a major roofing problem or an insurance or warranty claim. Whatever type of roof, it should be installed by a reputable licensed and bonded roofer and should include a non-prorated warranty.

Water Softeners - Water softeners are often used in hot water lines where the water has a high concentrate of calcium. Water softeners remove the calcium from the water, which prolongs the life of dishwashers and other kitchen equipment.

School Cleanliness;

School administrators and the PBC members must agree on what constitutes "cleanliness." While there is not a published standard for describing standards of cleanliness, the following is provided as a guide;

- cleaning results in a "spotless" building, as might normally be found in a hospital environment or corporate suite. At this level, a custodian with proper supplies and tools can clean approximately 10,000 to 11,000 square feet in an 8-hour period.
- cleaning is the uppermost standard for most school cleaning, and is generally reserved for restrooms, special education areas, kindergarten areas, or food service areas. A custodian can clean approximately 18,000 to 20,000 square feet in an 8-hour shift.
- cleaning is the norm for most school buildings. It is acceptable to most stakeholders and does not pose any health issues. A custodian can clean approximately 28,000 to 31,000 square feet in 8 hours.
- cleaning is not normally acceptable in a school environment. Classrooms would be cleaned every other day, carpets would be vacuumed every third day, and dusting would occur once a month. At this level, a custodian can clean 45,000 to 50,000 square feet in 8 hours.
- cleaning can very rapidly lead to an unhealthy situation. Trash cans might be emptied and carpets vacuumed on a weekly basis. One custodian can clean 85,000 to 90,000 square feet in an 8-hour period.

The above are estimates. The actual number of square feet per shift a custodian can clean will depend on additional variables, including the type of flooring, wall covers, and number of windows, all of which must be taken into account when determining workload expectations

VI. Hiring Productive Staff

Best practice strategies are important for effectively managing staff.

Hiring Staff:

Most maintenance work demand specialized skills and training. This change in expectations requires a corresponding change in the selection and training of maintenance personnel. Selecting the right staff requires that time and energy be put into identifying the needs of the school, developing accurate job descriptions, envisioning the characteristics of "ideal" employees, and verifying each applicant's qualifications.

The Planning and Building Committee has command of the technical aspects of the position being hired and can verify expertise. The qualities of an "ideal" staff member should be identified before the interview process begins. Doing so requires an accurate assessment of the culture of the School organization and the personalities of the people with whom the newly hired person must interact.

Director of Human Resources;

For detailed assistance in the developing a good hiring practices document and crafting the appropriate job descriptions please contact the Diocesan Director of Human Resources

VII Evaluating Buildings Maintenance Efforts

Regular buildings maintenance program evaluation is important.

Program evaluation allows the School and the PBC to determine which initiatives are working, which are not working, and which strategies need to be reconsidered. There is simply no substitute for good data when evaluating program decisions.

Reasons for evaluating the buildings maintenance program include:

- internal management control
- school board requests
- state reporting mandates
- regulatory inspections (e.g., EPA)

The School Maintenance Guidelines provides a framework for proactively developing a comprehensive, School maintenance plan. A vital component of adequate school maintenance plan is periodic evaluation to assess the success of these efforts at a program level.

To realize the full potential of a comprehensive preventive maintenance system, school staff, the school board, and PBC must incorporate maintenance priorities into school objectives, and budgets. However, it is also fair for stakeholders to expect the maintenance program to yield results-namely: clean, orderly, safe, cost-effective, and instructionally supportive school buildings that enhance the educational experience of all students.

Considerations When Planning Program Evaluations:

Evaluation doesn't have to mean more dollars and more surveys. Many of the day-to-day activities or systems used to plan and operate a maintenance program also generate the types of information needed to evaluate the program's effectiveness. These can include:

Program success can only be evaluated relative to program objectives. Are we reaching our goals and objectives?

- Physical inspections: Records of physical inspections provide the necessary evaluative material. To care for buildings and grounds, Administrators and the PBC must observe and assess their condition on a regular basis. Inspections should be both visual (i.e., how things look) and operational (i.e., how things work), and should result in work orders for items requiring service or repair.
- Work order systems: An effective work order system is a good tool for identifying, monitoring, and projecting future maintenance needs. All maintenance work should be recorded on work orders, which then provide valuable quantitative information for evaluations.
- User feedback/customer satisfaction surveys: There are many ways to gather information from users/customers (i.e., the people who benefit from the maintenance activities), including collecting satisfaction surveys and convening advisory committees of stakeholders. The value of user perception should not be overlooked as an evaluation tool.

Alternative resources - The School Administrators need not reinvent the wheel when it comes to evaluations. Maintenance and operations manuals, vendor expertise, warranties, and other resources (e.g., Web sites) can be sources of benchmarking data or evaluation standards.

A Note about Budgets - Even with the best planning, budget cutbacks are sometimes unavoidable. This may force the School Administration to re-prioritize their operational objectives-which can affect the goals of an evaluation effort as well.

Questions to Drive Evaluation Efforts:

A simple evaluation program can be implemented by answering these four questions:

Step 1:

What is the purpose of the evaluation? That is, what decisions need to be made and by whom?

Step 2:

What questions need to be answered to make an informed decision, as identified in Step 1?

Step 3:

What information needs to be available to answer the questions identified in Step 2?

Step 4:

What is the best way to capture the information needs identified in Step 3?

Collecting Data to Inform a Comprehensive Evaluation:

To evaluate a buildings management program, the School Administration must collect and maintain accurate, timely, and comprehensive data about its buildings. Responsible decision-making requires good data and documentation. Before assessing maintenance improvements, it is necessary to identify the baseline against which progress will be measured. In other words, will the School compare its current status against its previous status, against peer schools, or relative to commonly accepted norms and best-practice standards?

Collecting data may require substantial effort, but it is a necessary task all the same. Proven sources of information about the condition of school buildings and the impact of a building maintenance program include:

- Number of work orders completed
- changes in maintenance costs
- major incident reviews (e.g., number of school shutdowns, safety events, etc.)
- "customer" feedback (e.g., the opinions of principals and other occupants and other stakeholders)
- visual inspections by supervisors and managers
- comprehensive management audits
- performance audits
- organizational studies

- annual snapshots (e.g., maintenance/operations cost per square foot or per student)
- building report cards or other summaries
- comparisons with "peer" Schools
- benchmark performance
- trend analysis (e.g., progress toward the organization's long-range plans)
- external audits/peer reviews
- weekly foreman's meetings
- staff turnover rates
- public opinion (e.g., newspaper articles, etc.)

Pitfalls to Avoid When Interpreting Maintenance Evaluations:

Stakeholders should not assume that improvements to a maintenance program will always yield cost savings in real dollars. To obtain an accurate assessment of maintenance initiatives, evaluators must also look for:

- cost avoidance rather than direct savings (e.g., well-maintained equipment tends not to wear out or need to be replaced as quickly as poorly maintained equipment)
- fewer service interruptions resulting from better maintained, and better performing, equipment.

Moreover, improving buildings maintenance requires patience. A comprehensive, proactive program takes resources, energy, and time to initiate-and even more time before results are realized.