



Operations and Maintenance Manual

March 2004

A Guide for School Trustees, Administrators and Consultants

Prepared by:
Learning Facilities Branch

Reviewed by:
PO&M Committee
Members

Background

The Learning Facilities Branch of Alberta Infrastructure wishes to place high level knowledge for schools operations and maintenance function into the hands of those responsible for overseeing the expenditure of funds within the K-12 environment.

The intent of the Operations and Maintenance Manual is to ensure that:

- School Trustees, administrators and consultants, when considering school District funding strategies have an understanding of the operations and maintenance functions of schools.
- Operations & maintenance is recognized for its value and contribution to student achievement.
- The investment in school infrastructure is maintained to an acceptable standard for a safe, healthy, rewarding, learning environment.

School infrastructure operations and maintenance practices are critical to high achievement outcomes in teaching and learning. Funding for operations and maintenance is only one part of the equation when considering strategic initiatives for school board education plans. Essentially, the more efficiently and effectively schools are operated and maintained, the better the learning environment and the longer the facility will be able to withstand the rigors of a student population before major capital for modernization is required.

In October of 2000 Alberta Infrastructure accepted the Operations and Maintenance Handbook. This Handbook is available on the Alberta Infrastructure website. The intent of the Handbook was to provide detailed guidelines and standards for the day to day operations and management of school infrastructure for professional practitioners either on staff with school board staff or contracted services to school boards.

This Operations and Maintenance Manual will provide high level information for each school district on school infrastructure operations and maintenance. Collectively, the school Capital Manual and this Operations and Maintenance Manual provide information to support investment in and operations of school facilities over their full life cycle. This manual complements existing information available on Capital renewal, building quality restoration program (BQRP), modernization and new schools construction. This manual will assist School Districts in understanding the maintenance and operations of school facilities and sites.

Feedback is encouraged and should be directed to the office of the Executive Director, Alberta Infrastructure, Learning Facilities Branch, 3rd Floor, 6950 – 113 Street, Edmonton, AB, T6H 5V7

A. Goals and Expected Results of School Operations and Maintenance

School facility operations and maintenance exists to support the primary purpose of K-12 education: quality learning. The core business responsibility is to ensure that through the provision of quality operations and maintenance services - administrators, teachers and students have an environment that is safe, healthy and responsive to education programming.

Results expected from proper operations and maintenance are:

- Clean, healthy, and environmentally safe teaching and learning environments
- Building systems that are able to provide reliable, efficient and effective service
- Building components that meet or exceed expectations for normally accepted life cycle
- Responsive and responsible maintenance programs that promote confidence in the school infrastructure

B. Overview

The operations and maintenance function is increasingly being recognized for the important role that it plays by providing teachers and students with optimal learning environments. It is the intent of this manual to assist school and district administrators in making informed, correct decisions about PO&M expenditures. This manual will ensure that available funding for PO&M is optimally expended on those building components and building systems that are most critical to excellent student achievement. A **general rule** is that PO&M applies to the actual building infrastructure. In other words, if you turned the building upside down all those elements that are not attached to the building would not be considered part of the PO&M scope. Chargebacks to other areas such as Instruction or general administration may be required in instances where PO&M staff undertake work that is not strictly related to building infrastructure (see B2 – Maintenance).

Further differentiation is required between minor capital and maintenance. Generally replacement of building systems or components is treated as minor capital. If the building system or component exists, repair is treated as PO&M. The following paragraphs expand on these principles with the intent to inform and establish generally accepted funding norms for PO&M.

B.1 OPERATIONS

School facility operations services include the day to day running of the school facilities. These services include but are not limited to: energy management; heating, ventilation, and air conditioning (HVAC); cleaning; inspections; opening & closing school; boiler operation; responding to daily emergencies; mowing grass; generating work requests to maintenance. In general operating the physical plant to provide optimal learning and teaching conditions. Depending upon the capacity of the boiler, school building operators are required under Alberta labour law to hold various levels of certification for boiler plant operation.

B.1 OPERATIONS (cont'd)

Operating a school is no longer a caretaker mopping the hallways and shoveling coal. Schools are highly complex, largely technology driven environments. Heating, ventilation, lighting, etc. can all be controlled remotely including pre set times for special events. Ambient temperatures are automatically recorded for exterior wall surfaces and interior surfaces and heating is adjusted automatically according to preset temperature requirements. Direct digital control systems are replacing pneumatic systems. Computerized systems allow for greater control over the indoor school environment. Reheat coils in supply air plenums allow for individual room temperature control. Clearly, building operations is a technically advanced profession demanding skilled, well-educated operators. Schools are utilized by community groups well into the night adding to the complexity and cost of the operating function.

B.2 MAINTENANCE

School plant maintenance provides for the repair, replacement and renewal of failed infrastructure elements. Maintenance funds are not to be directed towards instructional or administrative equipment. Maintenance staff provide services through various sources of funding including but not limited to: Plant Operations and Maintenance (PO&M); Building Quality Restoration Program (BQRP); etc. Maintenance staff provide services directly or will facilitate contractors and volunteers.

Maintenance services are provided in the following broad categories: building exterior; building interior; HVAC; plumbing; electrical; grounds;(for greater detail refer to the O & M Handbook). Technology has caught up with the maintenance trades as well as building operators. Not only must maintenance staff know how to operate building systems, they must know how to maintain them as well. The knowledge of how to maintain schools extends from facilities built at the turn of the century to schools completed in the current school year. Maintenance staff by necessity are highly skilled professionals. In larger school districts maintenance staff are highly specialized, normally practicing a single trade. Smaller school jurisdictions on the other hand function better with multi trade professionals, able to respond in many trades areas.

There is no one way to maintain schools; a universal 'cookie-cutter' solution does not exist. Schools in the province cover a large gamut of sizes, ages, structural systems, etc. Maintenance staff take a great deal of pride in their knowledge of 'their' schools and are extremely efficient in their ability to locate and fix problems.

There are three main maintenance functions: regular maintenance, preventive maintenance and emergency maintenance:

B.2 MAINTENANCE (cont'd)

- Regular Maintenance: Generally repairing or replacing building components, equipment or operating systems
- Preventive Maintenance: Proactive maintenance aimed at preventing unexpected equipment or building component failure. Performed on regular intervals throughout the school year preventive maintenance is planned and not reactive.
- Emergency Maintenance: Maintenance staff respond to unexpected equipment breakdowns, building component failures, accidental or deliberate (vandalism) damage.

**C.
Definitions**

The following definitions have been prepared as a guideline, again the intent is to inform. If an element is not specifically listed below administrators are expected to use professional judgment in applying funding from the O & M funding envelope.

Funding for operations and maintenance through Alberta Infrastructure is provided with guidelines for permitted spending. Accounting and financial treatment is more fully dealt with in the Program Accounting and Reporting (PAR) Manual issued by Alberta Learning. The O & M Manual provides guidance in the following areas: Administration; Maintenance; Caretaking; Utilities; Insurance; Capital Assets; General Operations; as well as Health, Safety and Security. Further discussion on each of these categories follows:

C.1 MAINTENANCE

The repair, replacement, minor construction, of building and grounds components including but not limited to security systems, fire alarm systems, Heating Ventilation Air Conditioning (HVAC), plumbing, electrical, roofing, flooring, interior/exterior walls and finishes. Maintenance must inspect and service all building components to ensure they meet normally accepted performance specifications. Regular and preventive maintenance techniques are used to repair and replace components in order that components reach or exceed their life cycle values. Premature failure of building components i.e. in advance of normally expected replacement or repair schedules (life cycle) will result in additional expenses required to either repair or replace prematurely.

C.1.1 Grounds Maintenance

Turf maintenance (mowing, fertilizing, weeding, irrigating), Snow/ice removal (must ensure compliance with local bylaws and meet normally acceptable standards for safety); Hard landscaping (asphalt, concrete, gravel, playgrounds, benches, signage, garbage receptacles, goal posts, flag poles, bollards, fencing, ramps, stairs, bicycle racks, etc.); Soft landscaping (flower beds, shrub beds, trees, including application of herbicides and pesticides); creative playgrounds.

C.1.2 Building Exterior

Roofs, exterior walls, flashings drains, exterior doors, windows, exterior free standing lighting, and skylights.

C.1.3 Building Interior

Ceilings, walls, floors, chalkboards, whiteboards, tack boards, interior doors, glazing, lockers, totes, millwork, railings, ramps.

C.1.4 Mechanical Systems

Heating, mechanical piping, plumbing, fire protection, controls, miscellaneous. Provide inspection and maintenance services for all mechanical systems to ensure compliance with all health and safety standards, codes, bylaws, and government regulations.

Maintenance also ensures that mechanical systems are inspected, repaired or replaced in accord with normally acceptable life cycle standards.

C.1.5 Electrical Systems

Service and power distribution, public address and intercom systems, telephone systems, cabling, signage, bollards, interior lights, miscellaneous. Provide inspection and maintenance services for all electrical systems to ensure compliance with all health and safety standards; codes; bylaws and government regulations.

Maintenance also ensures that electrical systems are inspected, repaired or replaced in accord with normally acceptable life cycle standards.

C.2 OPERATIONS

C.2.1 Caretaking

Cleaning and custodial activities to ensure a clean, healthy and safe school environment.

Activities include but are not restricted to:

- exterior duties (entrances, flag raising/lowering, garbage pick up, fall clean up etc.)
- classroom servicing (empty waste receptacles, low/high dusting, spot cleaning, damp mopping, vacuuming, cleaning, etc.)
- washroom servicing (cleaning, disinfecting, filling dispensers, flush floor drains, empty waste receptacles, etc.)
- gymnasium servicing (dust mop floors, vacuum stage, clean bleachers, fixtures etc.)
- fitness area servicing (clean apparatus, disinfect, low/high dust, routine floor maintenance, etc.)

C.2.1 Caretaking (cont'd)

- hallways/stairways (daily floor maintenance, inspections, clean, vacuuming, remove graffiti, spot check lockers etc.),
- office/staff room (empty waste, clean, low/high dusting, clean windows, replace light bulbs etc.)
- cafeteria/kitchen servicing (daily floor maintenance, garbage removal, inspections, clean, spot wash, etc.)
- ancillary area servicing (empty waste receptacles, clean, low/high dusting, replace burned out light bulbs etc.)
- CTS shops servicing (service dust collector, routine floor maintenance, low/high dusting, empty waste receptacles etc.)
- mechanical area servicing (floor maintenance, low/high dusting, inspections etc.)

C.2.2 Utilities

The water, natural gas, propane, electricity, sanitary and storm drainage utilities associated with the day to day functioning of a school. Check and clean all utility connections, record meter readings, check operation of all valves, ensure free flow of sanitary and storm drainage lines, monitor consumption.

C.2.3 O&M Administration

This category captures all expenses associated with the administration of operations and maintenance including in house staff such as clerical, administration that are assigned to support the operations and maintenance functions. Administrative tasks include but are not limited to the following: contract administration and documentation, negotiations, supervision of employees and contractors, supply of information, certificates.

C.2.4 Capital Administration

This category captures all expenses associated with the administration of capital projects including new schools, additions, BQRP, modernizations, and portable moves.

- **Insurance:**

For both property and personal liability insurance, schools will employ effective risk management practices in accordance with normally accepted standards for school facilities, equipment, vehicles staff and other occupants. Property insurance for school buildings and maintenance shops including contents, vehicles and equipment used in the O & M function is funded by O&M. Liability insurance is covered as a proportion of O&M employees to the total employees within the district.

C.2.4 Capital Administration (cont'd)

- **Capital Assets:**

The purchase of minor equipment and tools (less than \$5,000) related to operations and maintenance functions, is expensed and funded by O & M. The purchase of any equipment or vehicles (\$5,000 plus) used by operations and maintenance, or the modernization, upgrade or acquisition of any maintenance shop or related facility is capitalized, and the applicable annual amortization associated with this capitalization is expensed on an annual basis and funded by O & M.

The amortization of capitalized new, modernized or additions to school buildings, contents and CTS equipment funded by Alberta Infrastructure through capital allocations, is expensed on an annual basis in accordance with the appropriate amortization schedule. An offsetting applicable capital allocations revenue accounting entry is made in the jurisdiction revenues statements to recognize the matching portion funded by Alberta Infrastructure. At the end of the accounting life cycle all the amortization expenses are fully offset against the total funding provided by Alberta Infrastructure for a particular project.

- **Health, Safety and Security:**

WHMIS (Workplace Hazardous Materials Information System), asbestos abatement and control, TDGR (Transportation of Dangerous Goods Regulations), fire safety, abnormal odors, IAQ (Indoor Air Quality), miscellaneous. Provide inspection and maintenance services to all environmental quality systems and ensure their compliance with health and safety standards, codes, bylaws and government regulations. Operations and maintenance staff must be familiar with all emergency evacuation procedures.

- **General Operations and Maintenance Activities:**

Those activities not covered under the previous categories (training, negotiating, system committees, etc). Operations and maintenance staff must be aware of all activities that may contribute to the normal wear and tear of the school infrastructure e.g. rentals activities.